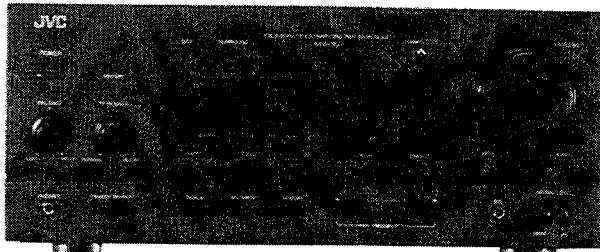


JVC

SERVICE MANUAL

COMPACT COMPONENT SYSTEM

**DX-MX70BK
MODEL No. CA-MX70BK
(UNIT No. AX-MX70BK)**



* Refer to the CA-MX70BK (S.M. No. 20243) or DX-MX70BK (S.M. No. 20249) as instruction manual.

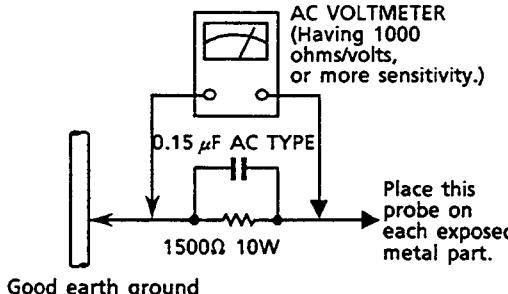
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Safety Precautions

1. The design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Services should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the product should not be made. Any design alterations of the product should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the Parts List of Service Manual. Electrical components having such features are identified by shading on the schematics and by (Δ) on the Parts List in the Service Manual. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement parts shown in the Parts List of Service Manual may create shock, fire, or other hazards.
4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.
5. Leakage current check (Electrical shock hazard testing)
After re-assembling the product, always perform an isolation check on the exposed metal parts of the product (antenna terminals, knobs, metal cabinet, screw heads, headphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.
Do not use a line isolation transformer during this check.
 - Plug the AC line cord directly into the AC outlet. Using a "Leakage Current Tester", measure the leakage current from each exposed metal parts of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground. Any leakage current must not exceed 0.5mA AC (r.m.s.).
 - Alternate check method
Plug the AC line cord directly into the AC outlet. Use an AC voltmeter having, 1,000 ohms per volt or more sensitivity in the following manner. Connect a $1,500\Omega$ 10 W resistor paralleled by a $0.15 \mu F$ AC-type capacitor between an exposed metal part and a known good earth ground.
Measure the AC voltage across the resistor with the AC voltmeter.
Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor.
Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75 V AC (r.m.s.).
This corresponds to 0.5 mA AC (r.m.s.).



Warning

1. This equipment has been designed and manufactured to meet international safety standards.
2. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
3. Repairs must be made in accordance with the relevant safety standards.
4. It is essential that safety critical components are replaced by approved parts.
5. If mains voltage selector is provided, check setting for local voltage.

Air-cooling Fan

(1) Outline:

By using an air blower with a motor in the AX-MX70BK, the heat sink has been made smaller and high power has been achieved in a compact format. The air blower rotates with a 2-step speed according to the music signal level. The rise of the temperature in the heat sink is detected by a thermistor, and if the temperature becomes abnormal, the speaker relay is turned OFF.

(2) Operation principle:

The music signal level detected by the A/D converter (IC093) is input to the microcomputer, and the fan motor is driven with a 2-step speed according to that signal level. The temperature of the heat sink is detected by the resistance value of the thermistor (SR041), and is input to the A/D converter (IC093).

(3) Fan operation (standard value)

- ① When the speaker output continues for more than 1 minute (continuously more than 4 V or at a music peak above 10 V), the rotation speed is lowered.
- ② When the condition of ① continues for more than 15 minutes, the rotation speed is raised.
- ③ When the signal detection is turned OFF while the fan is rotating, the fan will be stopped after 1 minute.
- ④ When condition ② continues, the rotation is stopped for 2 minutes after 30 minutes and, thereafter, high speed rotation will continue.

(4) Abnormal rise in temperature (standard value)

When the temperature of the heat sink is higher than 125°C for more than a minute, the speaker relay is turned OFF.

Check of Fan Motor Rotation

- ① Short-circuit of W049 and GND → Low speed rotation
- ② Short-circuit of W050 and GND → High speed rotation

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Disassembly Procedures

(1) Removing the top cover

1. Remove the screw on each side and the 4 screws on the rear.
2. Pull the top cover slightly backward and lift it while spreading the backs of the left and right sides to remove it.

(2) Removing the Front panel

1. Remove the top cover.
2. Remove the 5 screws under the front panel

(3) Confirming the Main P.C. board

1. Remove the top cover.
2. Remove the 6 screws ①②③ fastening the main P.C. board and heat sink bracket. (Fig. 1)
3. Remove the screw ⑤ fastening the rear side. (Fig. 2)
4. Confirm the main P.C. board as shown in the Fig. 3.

(4) Removing the Heat Sink.

1. Remove the top cover.
2. Remove the 2 screws ② fastening the heat sink.
3. Remove the 4 screws ③④ fastening the heat sink bracket.
4. Pull out the heat sink Ass'y from main P.C. board.

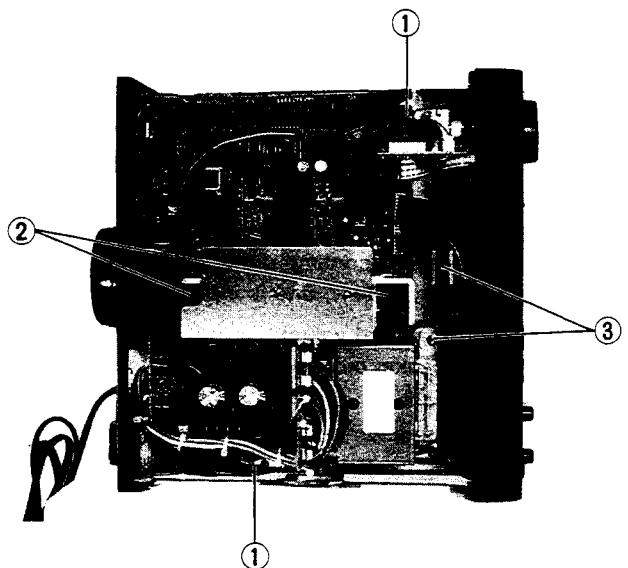


Fig. 1

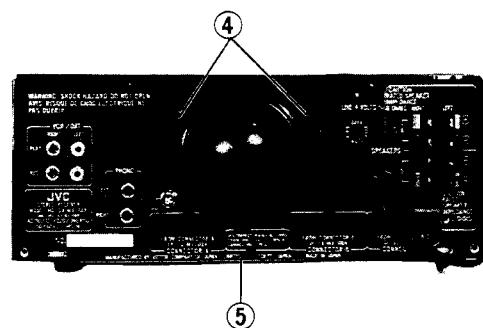


Fig. 2

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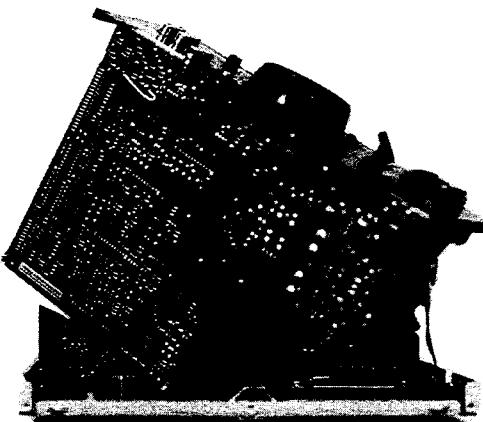


Fig. 3

Description of Major LSIs

■ MN171202JNY (IC901)..... System Control Microcomputer

1. Terminal Layout

Vcc	1	64	OSC2
S1	2	63	OSC1
S2	3	62	Vss
S3	4	61	
S4	5	60	X1
S5	6	59	D
S6	7	58	C
S7	8	57	B
S8	9	56	A
S9	10	55	G2 DIGIT1
S10	11	54	CS DCM/EXP
S11	12	53	STANDBY
S12	13	52	
S13	14	51	FL OFF
S14	15	50	MUTING
AI IND	16	49	POWER ON/OFF
VOL. IND	17	48	DCS OUT
Vpp	18	47	DCS IN
VOL. UP	19	46	INH
VOL. DOWN	20	45	REMOCON IN
SURROUND	21	44	PROTECT IN
ENG. ON/OFF	22	43	RESET
ENG. SPEED	23	42	A/D SO
SPK. OUT	24	41	A/D SI
AC RELAY	25	40	A/D SCK
KI 0	26	39	G
KI 1	27	38	SW SO
KI 2	28	37	SW STB
KI 3	29	36	SW SCK
CLOCK	30	35	A/D STB
DATA	31	34	A/D CS
	32	33	RCK(STB)

2. Pin Functions

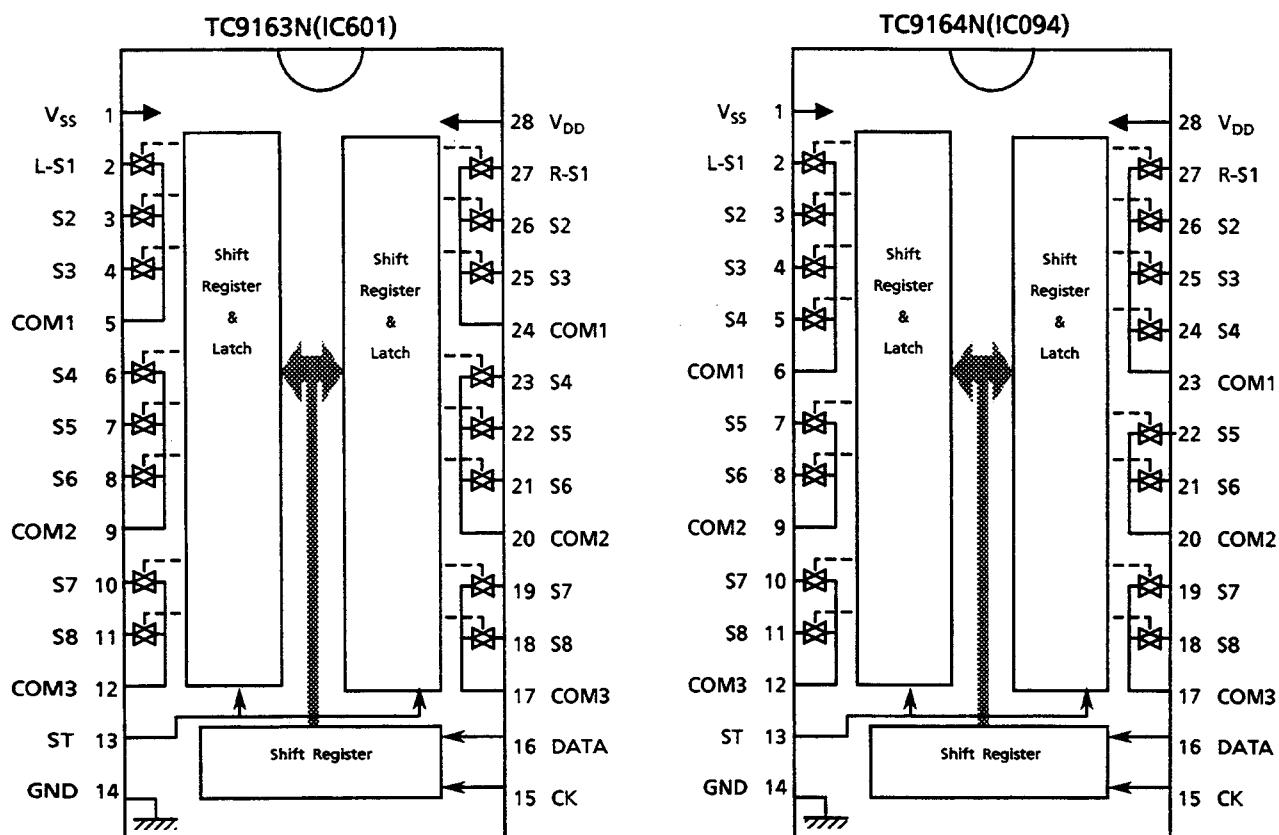
Pin No.	Name	I/O	Function	Pin No.	Name	I/O	Function
1	Vcc	—	Power supply voltage(+ 5V).	39	G	O	Output control signal to IC905.
2~15	S1~S14	O	FL segment control output.	40	A/D SCK	O	Clock signal output to IC093, IC094 and IC905.
16	AI IND	O	AI indicator signal output.	41	A/D SI	I	Serial data input from IC093.
17	VOL. IND	O	Volume indicator signal output.	42	A/D SO	O	Clock signal output to IC093 and IC094.
18	Vpp	—	Power supply for FL display.	43	RESET	I	Reset signal input.
19	VOL. UP	O	Volume up signal output.	44	PROTECT IN	I	Protector detect signal input.
20	VOL.DOWN	O	Volume down signal output.	45	REMOCON IN	I	Remocon signal input.
21			Non connect.	46	INH	I	INH signal input.
22	SURROUND	O	Surround control signal output.	47	DCS IN	I	DCS signal input.
23	ENG. ON/OFF	O	FAN on/off control signal output.	48	DCS OUT	O	DCS signal output.
24	ENG. SPEED	O	FAN speed control signal output.	49	POW. ON/OFF	O	Outputs power on/off signal to mech. control.
25	SPK.OUT	O	Speaker relay control signal output.	50	MUTING	O	Muting signal output.
26	AC RELAY	O	AC relay control signal output.	51	FL OFF	O	FL display control signal output.
27~30	KI 0~KI 3	I	Key matrix input.	52			Non connect.
31	CLOCK	O	Clock signal output to IC641.	53	STANDBY	O	STANDBY indicator signal output.
32	DATA	O	Data signal output to IC641.	54	CS DCM/EXP	I	Pull down.
33	RCK(STB)	O	Stb signal output to IC905.	55	G2 DIGIT1	O	FL grid control signal.
34	A/D CS	O	Chip select signal output to IC093.	56~59	A~D	O	FL grid control signal.
35	A/D STB	O	Stb signal output to IC094.	60	X1	I	Pull down.
36	SW SCK	O	Clock signal output to IC601.	61			Non connect.
37	SW STB	O	Stb signal output to IC601.	62	Vss	—	GND.
38	SW SO	O	Data signal output to IC601.	63~64	OSC1 · OSC2	—	clock oscillation.

■ TC9163N, TC9164N (IC601, 094) : Analog Switch

1. Functions

These analog switches are controlled by 14 bit serial data from computer for selecting the source.

2. Terminal Layout & Block diagram

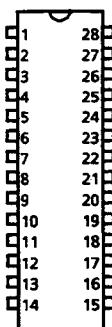


3. First 10bits are used to source select. Last 4 bits are chip select. The switches (S1~S8) are connected to common terminals (COM1~COM3) according to the DATA from computer.

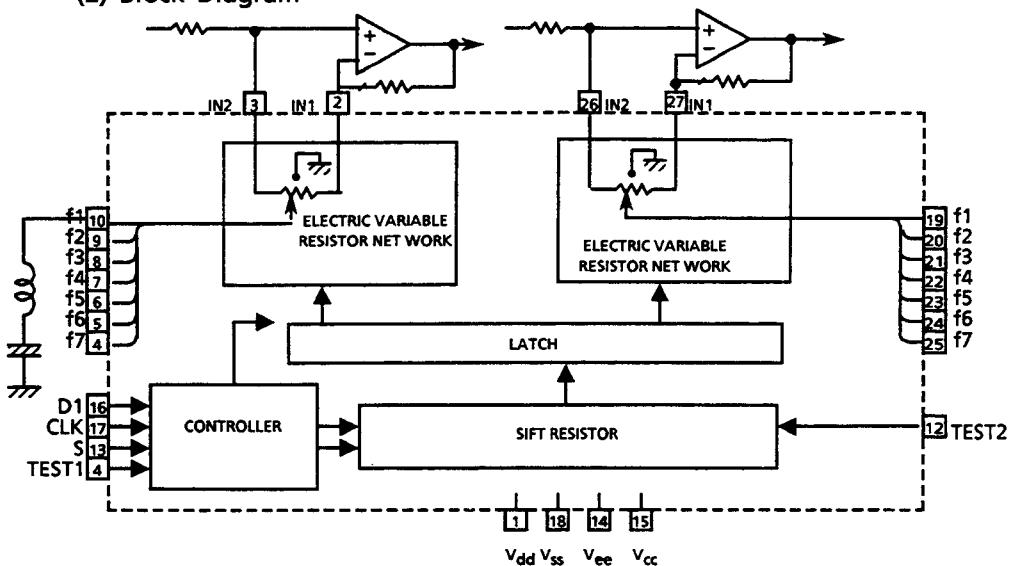
	Switch Select bit										CH1 CH2 (L-S1~S8)(R-S1~S8)				Chip Select bit			
	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14				
TC9163N	The switch is ON when the data is "1".										1	0	0	0				
TC9164N											0	1	0	0				

■ IC641 : LC7522 (Variable Resistor for SEA Control)

(1) Terminal Layout



(2) Block Diagram



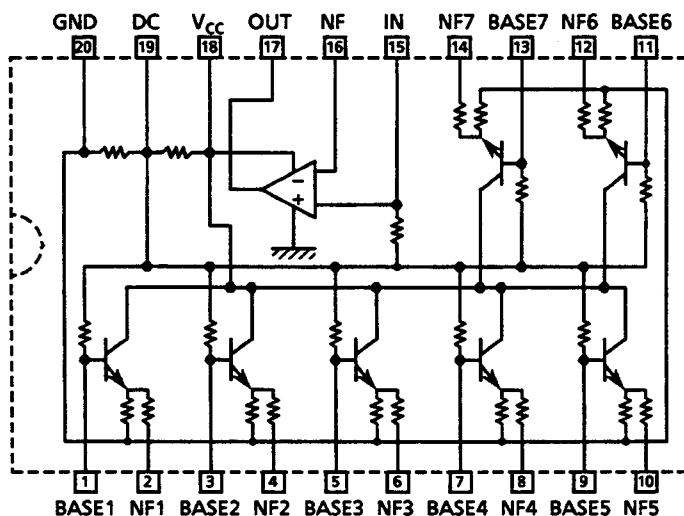
(3) Pin Functions

Pin No.	Pin Name	Functions
1	V_{dd}	Power supply +7V for audio signal
18	V_{ss}	Ground.
14	V_{ee}	Power supply -7V for audio signal.
15	V_{cc}	Power supply +5V
2,27 3, 26	IN 1 IN 2	Audio signal input The inversion signal of the operational amplifier inputs to IN 1 normally. The non-inversion signal of the operational amplifier inputs to IN 2 normally.
16	DI	Data input from the CPU. Schmitt inverter type
17	CLK	Clock signal input from the CPU. Schmitt inverter type
4~10 19~25	f1~f7	For connect to band-pass filter. f1~f7x2 (Left and Right)
11	TEST 1	Not use
12	TEST 2	Not use
13	S	Chip Select
28	NC	Not use

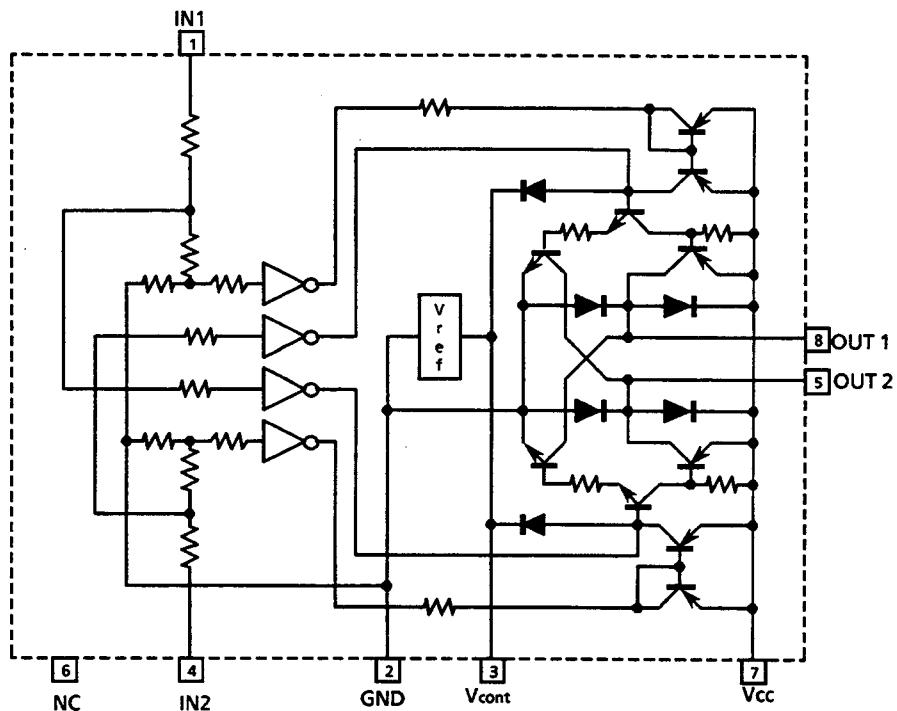
■ LA3607S (IC643,IC644) : S.E.A. GRAPHIC EQUALIZER

1. Functions

It makes inductive characteristic instead of coil.

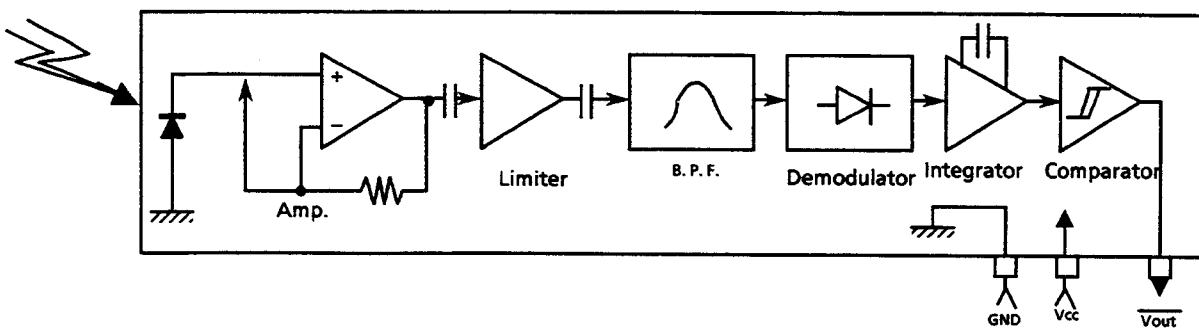


■ LB1639-CV (IC972) : Motor Driver

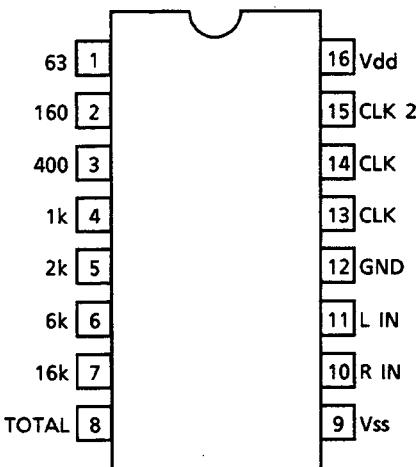


IN 1	IN 2	OUT 1	OUT 2	MOTOR
H	L	H	L	CLOCKWISE
L	H	L	H	COUNTER-CLOCKWISE
H	H	OFF	OFF	WAITING
L	L	OFF	OFF	WAITING

■ GP1U501X (IC906) : Receiver for remote controller



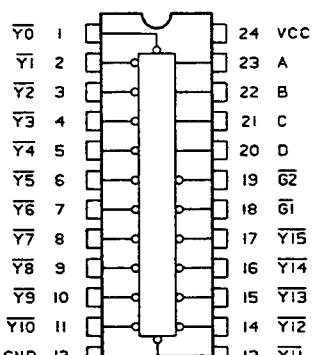
■ XR1091DCP (IC095) : Display Filter



Pin No.	Symbol	Descriptions
1	63	Peak hold output of 63Hz band-pass filter
2	160	Peak hold output of 160Hz band-pass filter
3	400	Peak hold output of 400Hz band-pass filter
4	1k	Peak hold output of 1kHz band-pass filter
5	2k	Peak hold output of 2kHz band-pass filter
6	6k	Peak hold output of 6kHz band-pass filter
7	16k	Peak hold output of 16Hz band-pass filter
8	TOTAL	Total frequency output (peak hold)

Pin No.	Symbol	Descriptions
9	Vss	Power supply (- 6V)
10	R IN	Right channel input
11	L IN	Left channel input : Connecting to ground
12	GND	Ground terminal
13	CLK	Connecting capacitor for clock
14	CLK	Connecting resistor to pin 13 for clock
15	CLK / 2	1/2 clock output
16	Vdd	Power supply (+ 6V)

■ TC74HC154AP (IC904) : Decoder



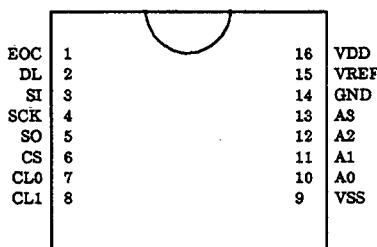
(Top View)

INPUTS						SELECTED OUT PUT(L)
GI	G2	D	C	B	A	
L	L	L	L	L	L	Y0
L	L	L	L	L	H	Y1
L	L	L	L	H	L	Y2
L	L	L	L	H	H	Y3
L	L	L	H	L	L	Y4
L	L	L	H	L	H	Y5
L	L	L	H	H	L	Y6
L	L	L	H	H	H	Y7
L	L	H	L	L	L	Y8
L	L	H	L	L	H	Y9
L	L	H	L	H	L	Y10
L	L	H	L	H	H	Y11
L	L	H	H	L	L	Y12
L	L	H	H	L	H	Y13
L	L	H	H	H	L	Y14
L	L	H	H	H	H	Y15
X	H	X	X	X	X	NONE
H	X	X	X	X	X	NONE

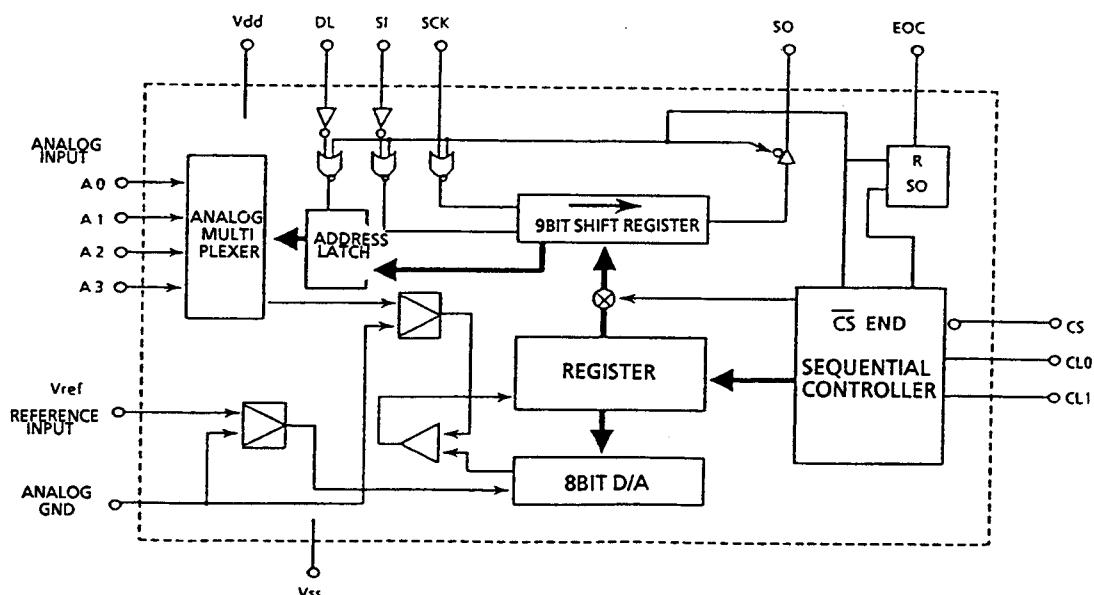
X : Don't care

■ μPD7001C(IC093)..... A/D Converter

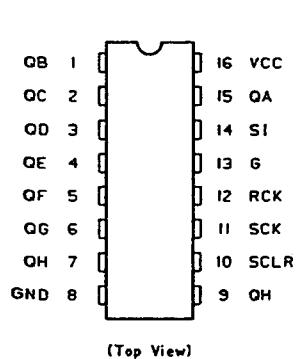
1. Terminal Layout



2. Block Diagram



■ TC74HC595AP(IC905)..... 8Bit Shift Register



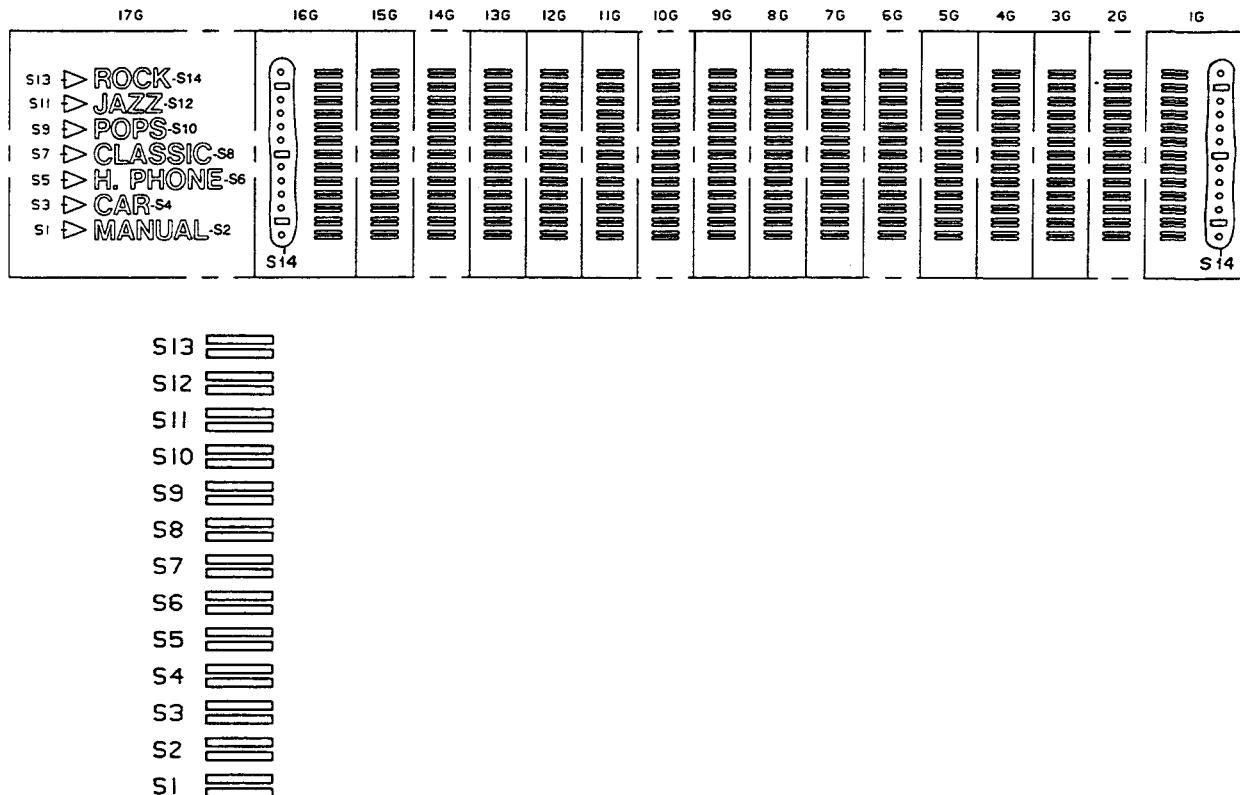
Inputs					Function
B1	SCK	SCLR	RCK	G	
X	X	X	X	H	Output (QA-QH) disable.
X	X	X	X	L	Output (CA-QH) enable.
X	X	L	X	X	Shift register is cleared.
L	—	H	X	X	Condition of shift register in initial stage is "L". In the other stages, data from the former stage is stored.
H	—	H	X	X	Condition of shift register in initial stage is "H". In the other stages, data from the former stage is stored.
X	—	H	X	X	Shift register does not change.
X	X	X	—	X	Shift register data is stored in the storage register.
X	X	X	—	X	Storage register does not change.

X: Don't care

Internal Connections for the Display Tube

■ FL901 : ELU0001-106

(1) Grid Division



(2) Terminal Connections

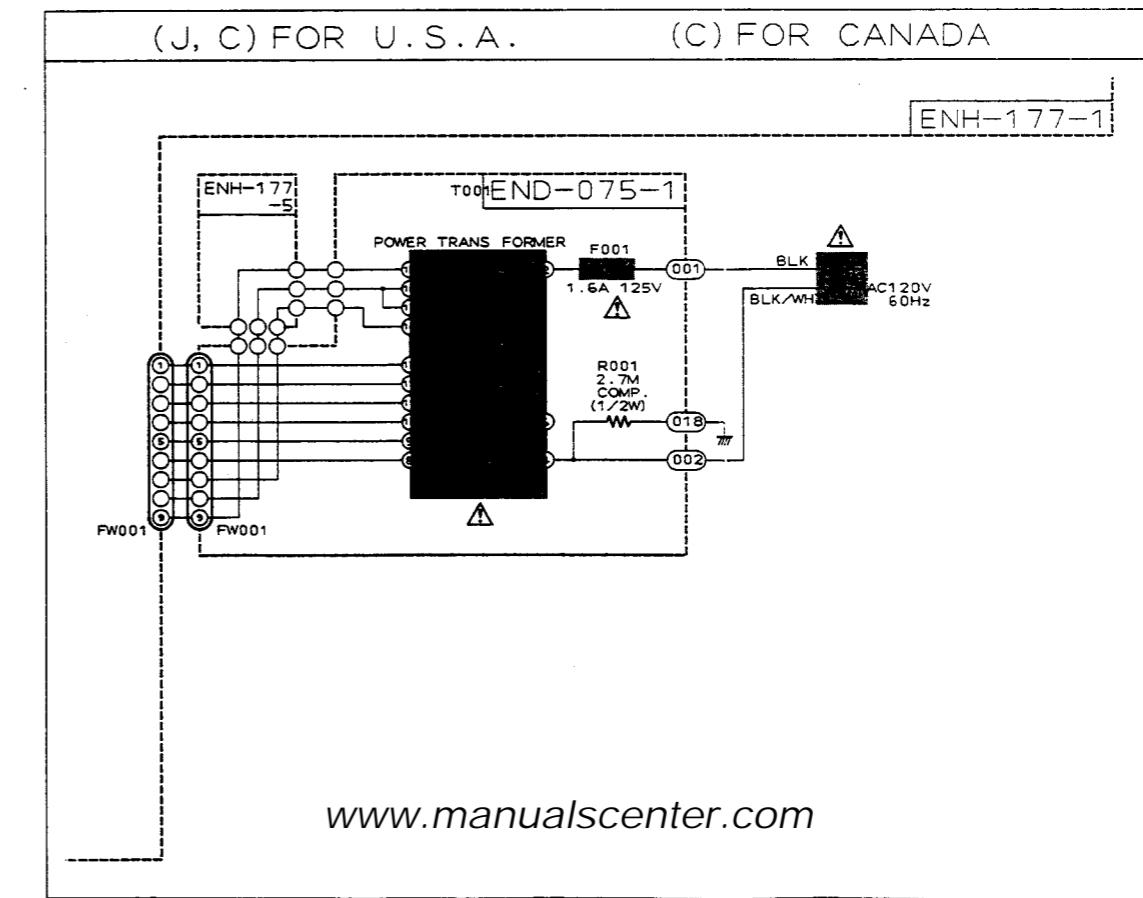
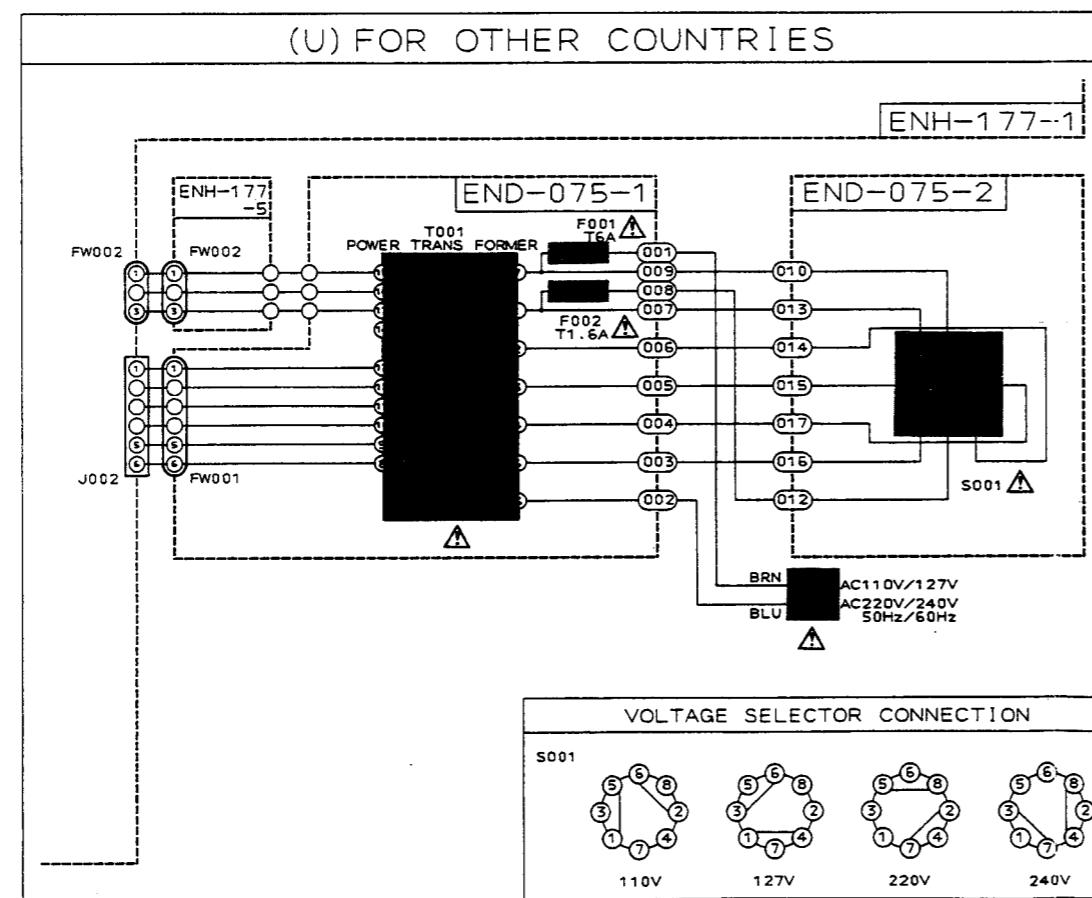
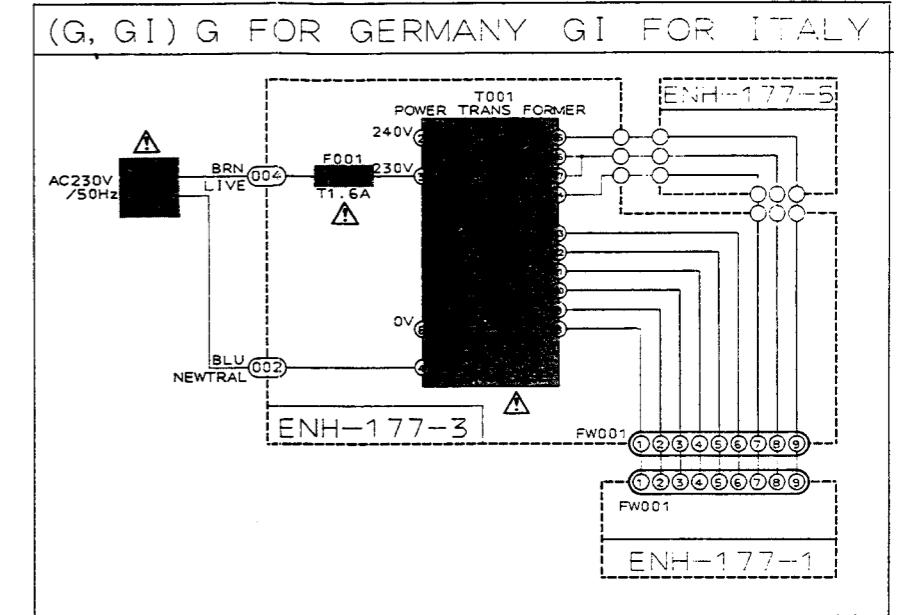
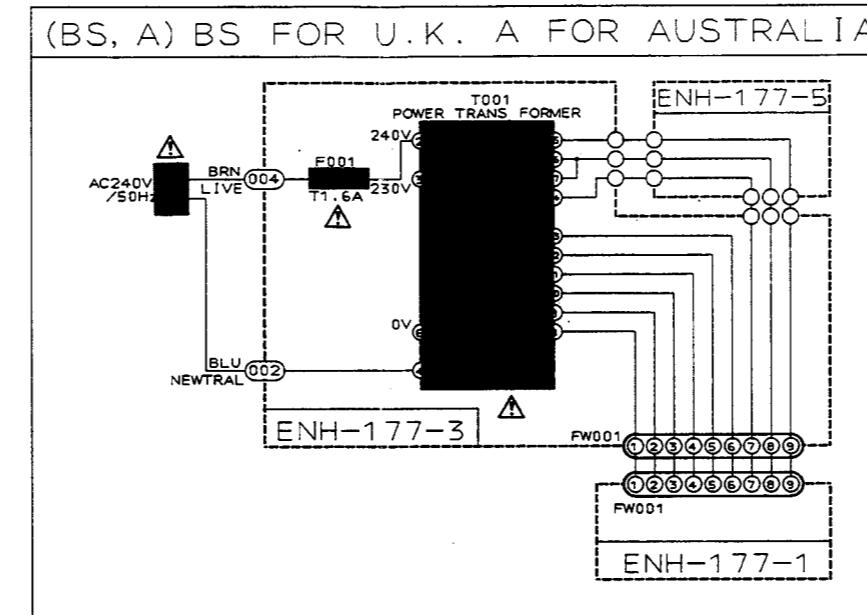
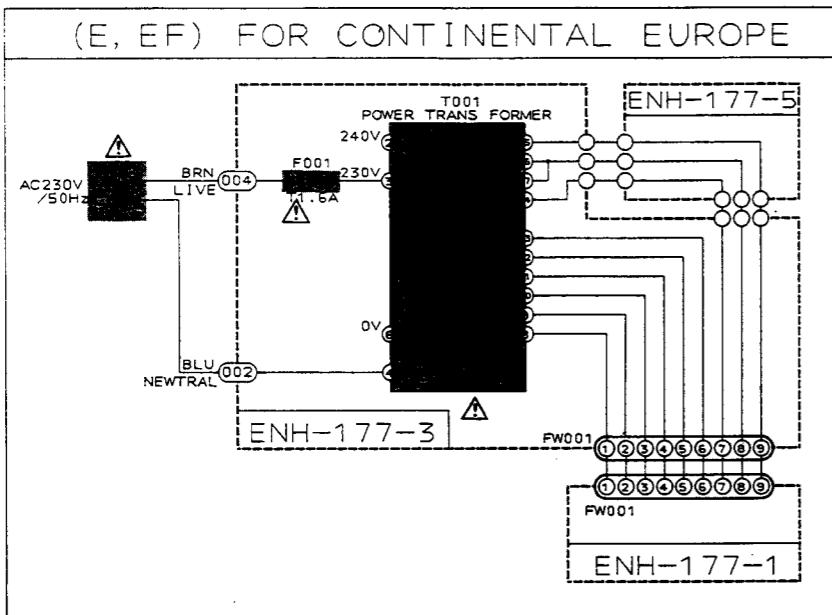
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PIN CONNECTION

PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
CONNECTION	F	F	N	N	I	S	S	S	I	S	S	I	S	I	S	I	S	I	S	I	S	I	S	I	S	I	S	I		
	I	I	P	C	G	I	2	3	G	4	5	G	6	G	7	G	8	G	9	G	10	G	11	G	12	G	13	G		

PIN NO.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
CONNECTION	S	6	5	N	4	N	3	N	2	N	I	N	I	N	F	F
	I	4	G	C	G	C	G	C	G	C	G	C	G	P	2	2

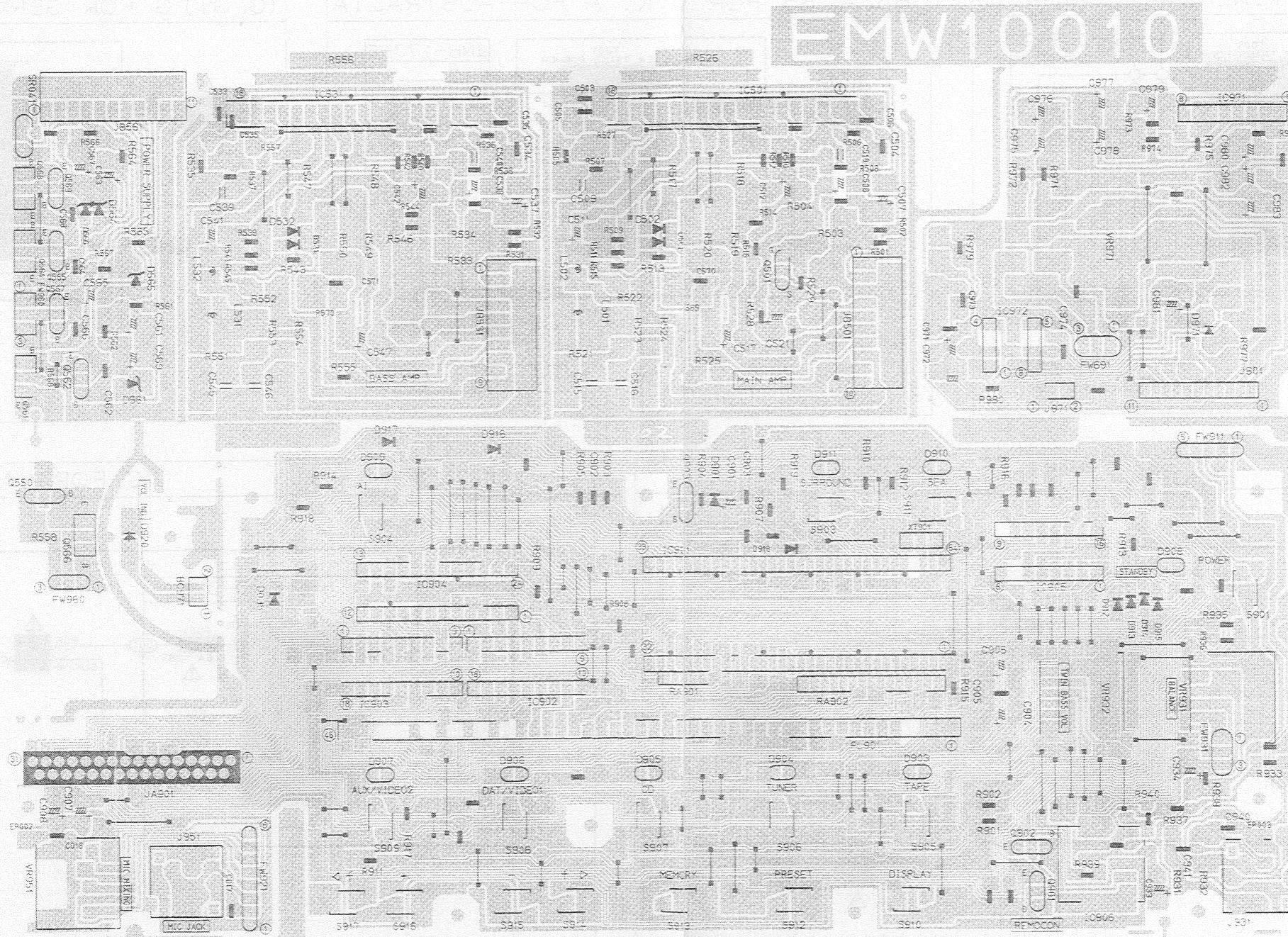
■ Power Primary Section



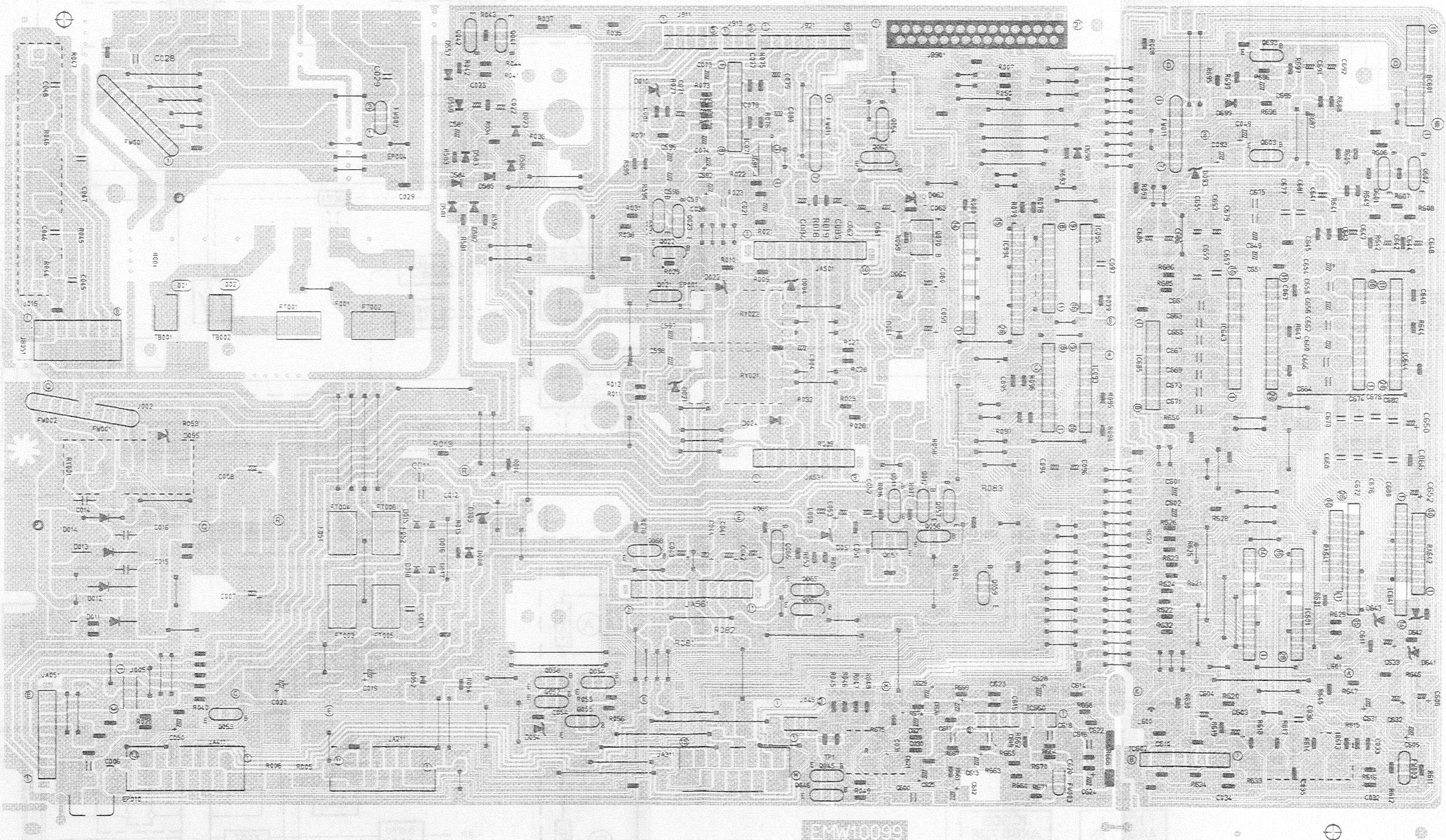
Printed Circuit Board

■ System Control & FL Display & Power Amplifier PC Board Ass'y (ENB-127)

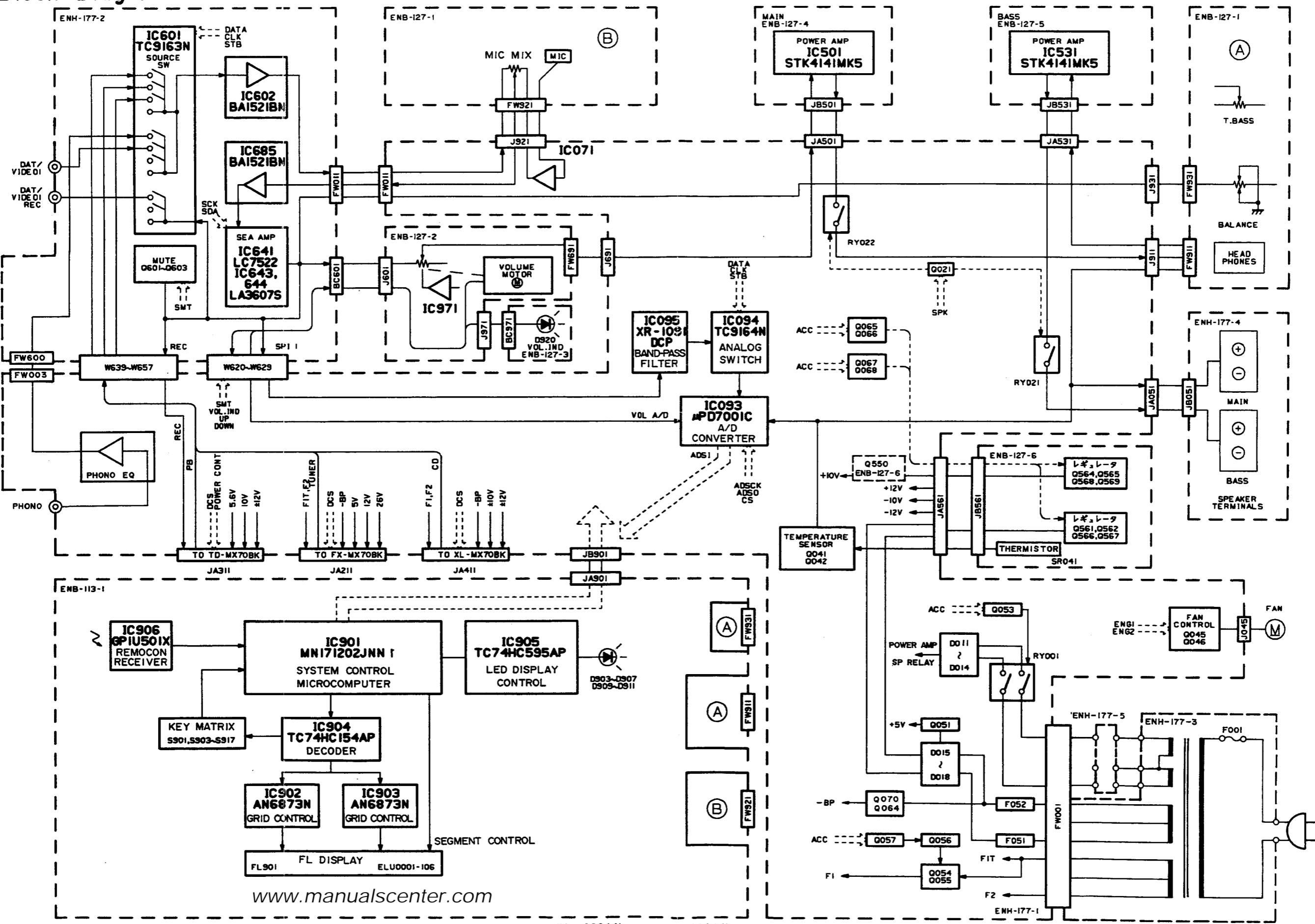
AX-MX70BK AX-MX70BK



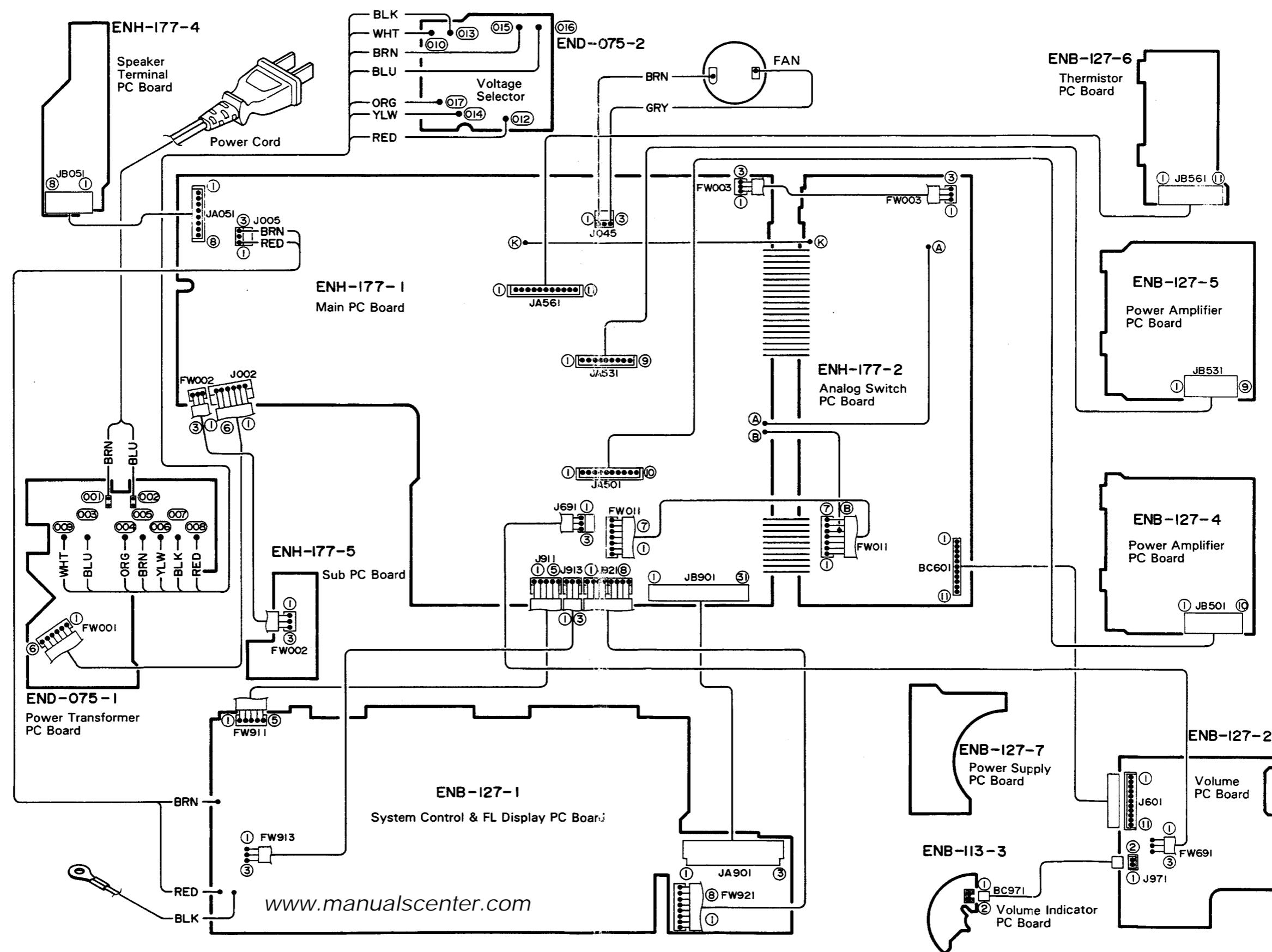
■ Analog Switch & Power Supply PC Board (ENH-177)



Block Diagram



Connection Diagram



PARTS LIST

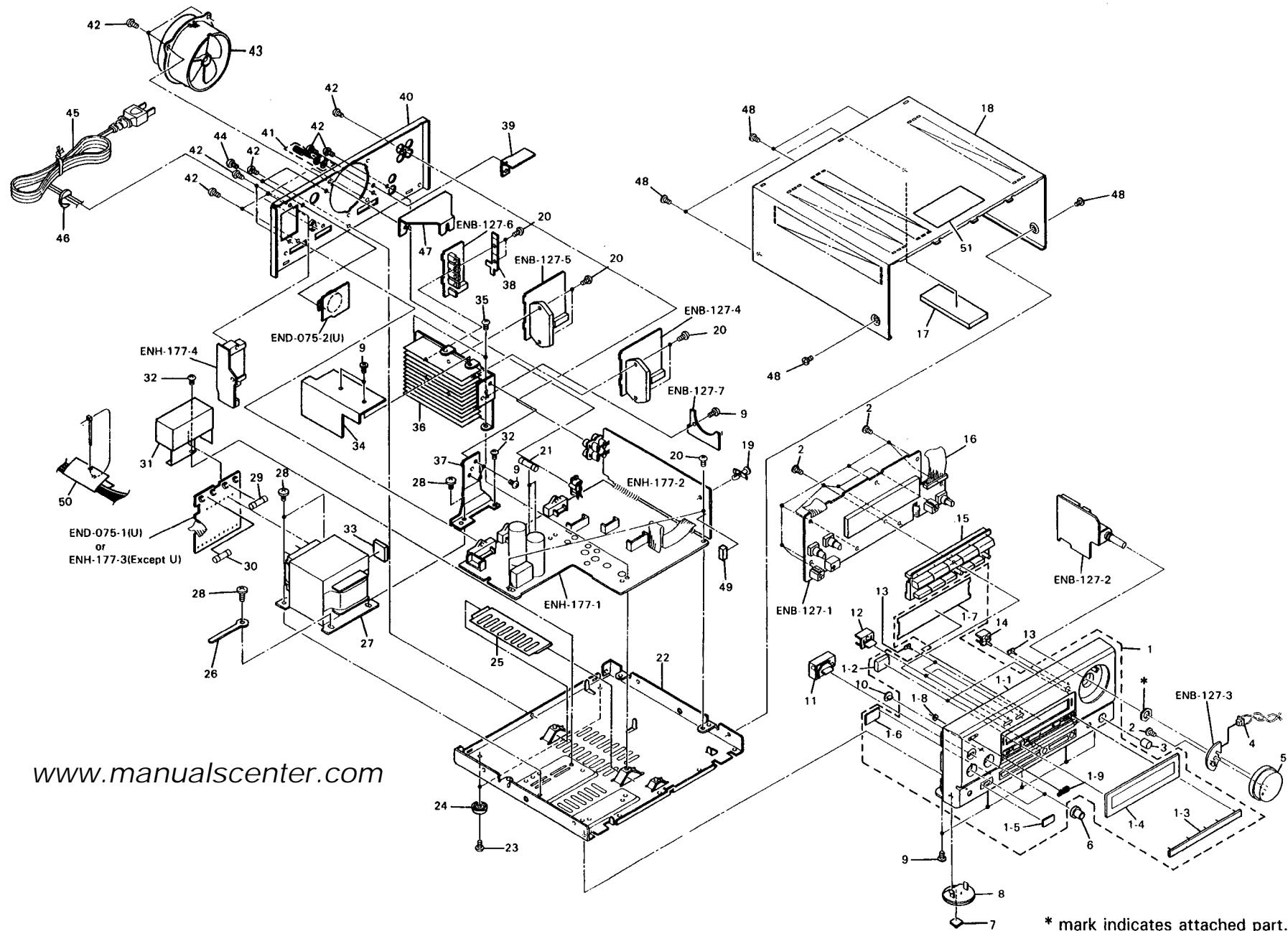
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■ENB-127 <input type="checkbox"/> System Control & FL Display & Power Amplifier PC Board Ass'y	2 - 9
■END-075 <input checked="" type="checkbox"/> Power Primary PC Board Ass'y	2-12

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General Exploded View and Parts List

2-2 (No. 20244)



■ Parts List

⚠	Item	Part Number	Part Name	Q'ty	Description	Areas
	1 1-1 1-2 1-3 1-4	EFP-AXMX70BKE (S E102322-005 E306805-003 E306922-003 E306925-002)	Front Panel Ass'y Front Panel Spacer Fitting Window Screen	1 1 2 1 1		
	1-5 1-6 1-7 1-8 1-9	E406093-002 E406259-002 E406575-001 E60912-003 PQ42561	Remote Plate Spacer FL Screen Speed Nut JVC Mark	1 1 1 1 1		
	2 3 4 5 6	SDSF2608Z E306921-001 EWS142-025 E306918-002 E306920-001	Screw Knob Socket Wire Ass'y Volume Knob Ass'y Knob	11 1 1 1 2	MIXING BALANCE BASS	
	7 8 9 10 11	E75896-001 E306935-001 SDSG3008M E406089-001 E306914-002	Spacer Foot Screw Indicator Push Button Ass'y	2 2 10 1 1	for Foot (Front) Front STANDBY POWER	
	12 13 14 15 16	E306916-002 E406091-001 E306917-001 E306913-001 EWR1ZE-11TT	Push Button Indicator Push Button Push Button Ass'y Flat Cable	2 3 1 1 1	SORROUND AI SOURCE	
⚠	17 18 19 20 21	E306805-024 E206809-006 E69384-002 SBSG3014Z QMF51U1-1R6S	Spacer Metal Cover Fastener Screw Fuse	1 1 1 8 2	for Metal Cover	J,C
⚠ ⚠	22 23 24	QMF51A2-1R6S QMF51E2-1R6SBS E102324-004 SBSG3010N E47227-029	Fuse Fuse Chassis Base Screw Foot	2 2 1 2 2	for Foot (Rear) Rear	Except J,C,BS BS
⚠ ⚠ ⚠	25 26 27	E406638-001 E72018-001 ETP1050-23JA ETP1050-23FA ETP1050-23EA	Protect Sheet Wire Clamp Power Transformer Power Transformer Power Transformer	1 1 1 1 1		J,C U A,E,EF,G,GI
⚠ ⚠ ⚠ ⚠	28 29	ETP1050-23EABS E65389-004 QMF51U1-4R0S QMF51A2-1R6S QMF51E2-1R6SBS	Power Transformer Special Screw Fuse Fuse Fuse	1 4 1 1 1	for Power Transformer	BS J,C Except J,C,IS BS
⚠	30 31 32 33 34	QMF51A2-4R0S E307564-001 SBSG3006M E306805-025 E307511-001	Fuse Primary Cover Screw Spacer Heat Sink	1 1 2 1 1		U
	35 36 37 38 39	SBSG3010CC E307506-001 E406636-001 E406237-002 E406637-001	Screw Heat Sink Heat Sink Bracket Leaf Spring Shield Plate	2 1 1 1 1		
	40	E206807-014 E206807-015 E206807-016 E206807-017 E206807-018	Rear Panel Rear Panel Rear Panel Rear Panel Rear Panel	1 1 1 1 1		J C U A E,EF,G,GI

⚠	Item	Part Number	Part Name	Q'ty	Description	Areas
	41 42 43 44	E206807-019 E70078-003 SBSG3008M E206880-001 SBST3006M	Rear Panel GND Terminal Screw Fan Ass'y Screw	1 1 13 1 2	for Voltage Selector	BS U
⚠ ⚠ ⚠ ⚠ ⚠	45	QMP1D00-200H QMP2560-244 QMP3900-200 QMP39A0-200 QMP7520-200	Power Cord Power Cord Power Cord Power Cord Power Cord	1 1 1 1 1		J, C A E, EF G, GI U
⚠ ⚠ ⚠	46 47 48	QMP9017-008BS QHS3876-162 QHS3876-162BS E307571-001 E75440-001	Power Cord Cord Stopper Cord Stopper Heat Sink Bracket Special Screw	1 1 1 1 6	for Metal Cover	BS Except BS BS
	49 50 51 — —	E306805-027 E406642-001 E67000-017 E307570-001 E61029-009	Spacer Protect Cover Caution Label Number Label Number Label	1 1 1 1 1		Except J, C J Except J
	— — — — —	E76016-004 E65507-001 E75803-001 QZL1001-001 E45858-002	Caution Label Caution Label Fuse Caution Label UL Label CSA Label	1 1 1 1 1		J C J J C
	— —	E70028-001 E74792-100	Approval Label FTZ Label	1 1		E G

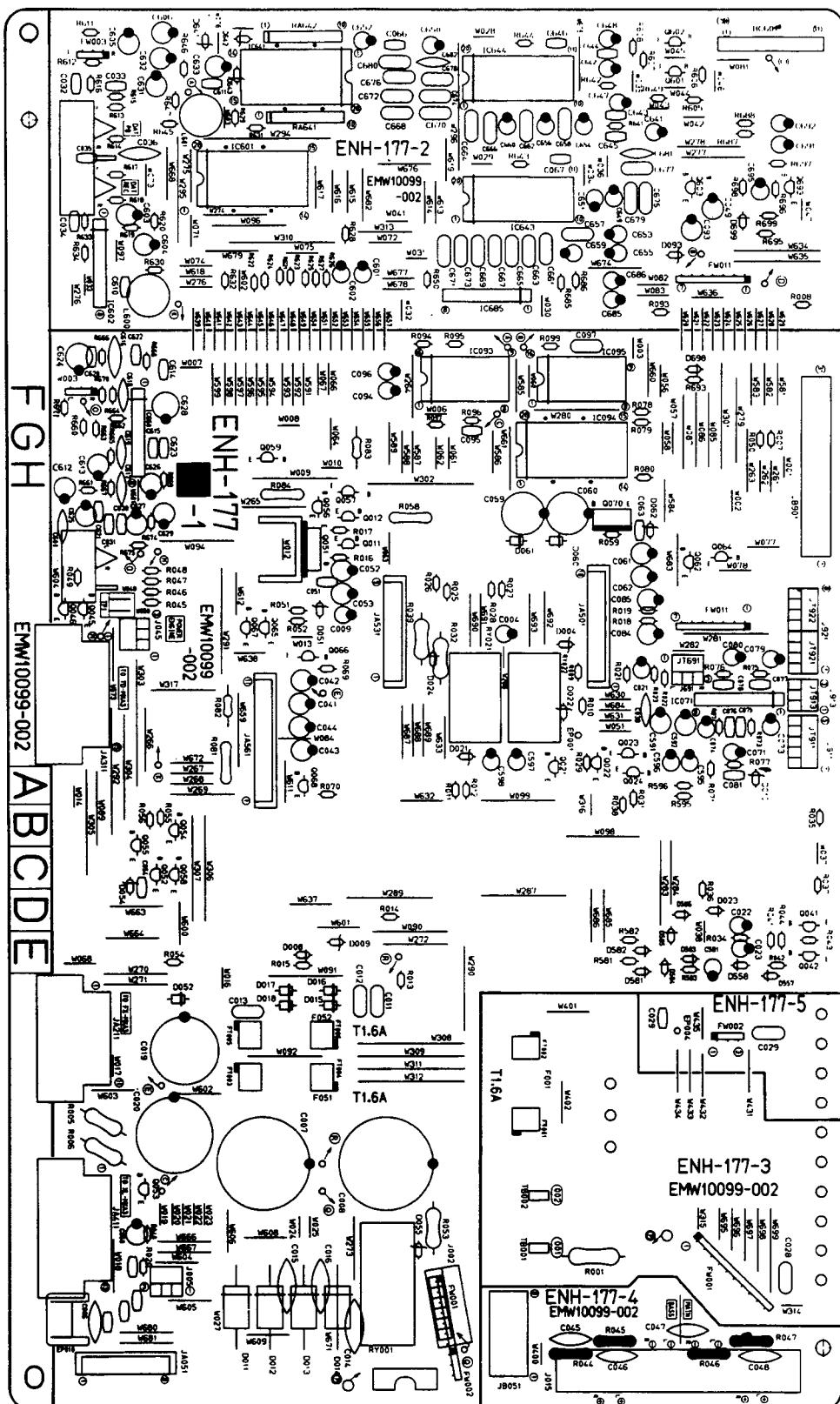
The Marks for Designated Areas**⚠ Safety Parts**

J.....the U.S.A.
 C.....Canada
 A.....Australia
 E,EF.....Continental Europe
 G.....Germany
 BS.....the U.K.
 GI.....Italy
 U.....Universal Type
No mark indicates all areas.

Printed Circuit Board Ass'y and Parts List

■ENH-177 □ Analog Switch & Power Supply PC Board Ass'y

Note : ENH-177 □ varies according to the areas employed. See note (1) when placing an order.



Note (1)

PC Board Ass'y	Designated Areas
ENH-177 A	the U.S.A.
ENH-177 B	Canada
ENH-177 C	Universal Type
ENH-177 D	Continental Europe
ENH-177 EBS	the U.K.
ENH-177 F	Germany, Italy
ENH-177 G	Australia

Transistors

△ ITEM	PART NUMBER	DESCRIPTION		AREA
Q011	DTC114YS	SILICON	ROHM	
Q012	DTC114YS	SILICON	ROHM	
Q021	2SC1685(R-S)	SILICON	MATSUSHITA	
Q022	2SC1685(R-S)	SILICON	MATSUSHITA	
Q023	2SC1740S(R-S)	SILICON	ROHM	
Q024	2SA733A(P,Q)	SILICON	NEC	
Q041	2SC1740S(R-S)	SILICON	ROHM	
Q042	2SC1740S(R-S)	SILICON	ROHM	
Q045	2SD2144S(VW)	SILICON	ROHM	
Q046	2SD2144S(VW)	SILICON	ROHM	
Q051	2SD1944(J-K)	SILICON	ROHM	
Q052	2SC1741A(Q,R)	SILICON	ROHM	
Q053	2SC1685(R-S)	SILICON	MATSUSHITA	
Q054	2SD1302(S,T)	SILICON	MATSUSHITA	
Q055	2SD1302(S,T)	SILICON	MATSUSHITA	
Q056	DTA114YS	SILICON	ROHM	
Q057	DTC114ES	SILICON	ROHM	
Q058	DTC114YS	SILICON	ROHM	
Q059	DTC114YS	SILICON	ROHM	
Q062	DTA144ES	SILICON	ROHM	
Q064	DTC114YS	SILICON	ROHM	
Q065	DTC144ES	SILICON	ROHM	
Q066	DTA114YS	SILICON	ROHM	
Q067	DTA144ES	SILICON	ROHM	
Q068	DTC114YS	SILICON	ROHM	
Q070	2SB1357(E,F)	SILICON	ROHM	
Q601	2SD2144S(VW)	SILICON	ROHM	
Q602	2SD2144S(VW)	SILICON	ROHM	
Q603	DTA144ES	SILICON	ROHM	
Q693	2SC1740S(R-S)	SILICON	ROHM	

△ : SAFETY PARTS

I.C.s

△ ITEM	PART NUMBER	DESCRIPTION		AREA
IC071	BA15218N	I.C.	ROHM	
IC093	UPD7001C	I.C.	NEC	
IC094	TC9164N	I.C.	TOSHIBA	
IC095	XR-1091DCP	I.C.	EXAR JAPAN	
IC601	TC9163N	I.C.	TOSHIBA	
IC602	BA15218N	I.C.	ROHM	
IC641	LC7522	I.C.	SANYO	
IC643	LA3607S	I.C.	SANYO	
IC644	LA3607S	I.C.	SANYO	
IC660	VC4580LD	I.C.	DAINICHI	
IC685	BA15218N	I.C.	ROHM	

△ : SAFETY PARTS

Diodes

△ ITEM	PART NUMBER	DESCRIPTION		AREA
D004	MTZ12JC	ZENER	ROHM	
D008	ISS133	SILICON	ROHM	
D009	MTZ5.1JC	ZENER	ROHM	
D010	MTZ5.1JC	ZENER	ROHM	
D011	S3V20F	SILICON	SINDENGEN	A
D011	S3V20F	SILICON	SINDENGEN	B
D011	30DL2FC	SILICON	NIHONINTER	C
D011	S3V20F	SILICON	SINDENGEN	D
D011	30DL2FC	SILICON	NIHONINTER	EBS
D011	S3V20F	SILICON	SINDENGEN	F
D012	S3V20F	SILICON	SINDENGEN	G
D012	30DL2FC	SILICON	NIHONINTER	C
D012	S3V20F	SILICON	SINDENGEN	D

△ : SAFETY PARTS

Diodes

△ ITEM	PART NUMBER	DESCRIPTION		AREA
D012	S3V20F	SILICON	SINDENGEN	EBS
D012	30DL2FC	SILICON	NIHONINTER	F
D012	S3V20F	SILICON	SINDENGEN	G
D013	S3V20F	SILICON	SINDENGEN	A
D013	S3V20F	SILICON	SINDENGEN	B
D013	30DL2FC	SILICON	NIHONINTER	C
D013	S3V20F	SILICON	SINDENGEN	D
D013	30DL2FC	SILICON	NIHONINTER	EBS
D013	S3V20F	SILICON	SINDENGEN	F
D014	S3V20F	SILICON	SINDENGEN	G
D014	30DL2FC	SILICON	NIHONINTER	C
D014	S3V20F	SILICON	SINDENGEN	D
D014	30DL2FC	SILICON	NIHONINTER	EBS
D014	S3V20F	SILICON	SINDENGEN	F
D015	1SR139-200	SILICON	ROHM	
D016	1SR139-200	SILICON	ROHM	
D017	1SR139-200	SILICON	ROHM	
D018	1SR139-200	SILICON	ROHM	
D021	MTZ12JC	ZENER	ROHM	
D022	MTZ12JC	ZENER	ROHM	
D023	ISS133	SILICON	ROHM	
D024	ISS133	SILICON	ROHM	
D051	MTZ6.2JC	ZENER	ROHM	
D052	1SR139-200	SILICON	ROHM	
D054	MTZ7.5JC	ZENER	ROHM	
D055	MTZ12JC	ZENER	ROHM	
D060	1SR139-200	SILICON	ROHM	
D061	1SR139-200	SILICON	ROHM	
D062	MTZ30JC	ZENER	ROHM	
D093	MTZ5.1JC	ZENER	ROHM	
D557	ISS133	SILICON	ROHM	
D558	ISS133	SILICON	ROHM	
D581	ISS133	SILICON	ROHM	
D582	ISS133	SILICON	ROHM	
D583	ISS133	SILICON	ROHM	
D584	ISS133	SILICON	ROHM	
D585	ISS133	SILICON	ROHM	
D586	ISS133	SILICON	ROHM	
D641	RD6.8JSB3	ZENER	NEC	
D642	RD6.8JSB3	ZENER	NEC	
D643	MTZ5.1JC	ZENER	ROHM	
D699	ISS133	SILICON	ROHM	

△ : SAFETY PARTS

Capacitors

△ ITEM	PART NUMBER	DESCRIPTION		AREA
C004	QEKS1CM-226	22MF	16V	ELECTRO
C006	QCS21HJ-331	330PF	50V	CERAMIC
C007	EEW4205-688T	6800MF	ELECTRO	
C008	EEW4205-688T	6800MF	ELECTRO	
C009	QEKS1HM-225G	2.2MF	50V	ELECTRO
C011	QFLC2AK-103Z	0.01MF	100V	MYLAR
C012	QFLC2AK-103Z	0.01MF	100V	MYLAR
C013	QFLC2AK-103Z	0.01MF	100V	MYLAR
C014	QCE22HP-103	0.01MF	500V	CERAMIC
C015	QCE22HP-103	0.01MF	500V	CERAMIC
C016	QCE22HP-103	0.01MF	500V	CERAMIC
C019	EET3504-228T	2200MF	ELECTRO	
C020	EET3504-338T	5300MF	ELECTRO	
C021	QETB1HM-474	0.47MF	50V	ELECTRO
C022	QERS1CM-226	22MF	16V	ELECTRO
C023	QERG0JM-476	47MF	6.3V	ELECTRO
C025	QCY21HK-102	1000PF	50V	CERAMIC
C028	QFN81HK-103	0.01MF	50V	MYLAR
C029	QFN82AK-103	0.01MF	100V	MYLAR
C029	QFN82AK-103	0.01MF	100V	MYLAR
C029	QFN82AK-103	0.01MF	100V	MYLAR
C030	QCB81HK-331	330PF	50V	CERAMIC
C031	QCB81HK-331	330PF	50V	CERAMIC
C032	QCB81HK-331	330PF	50V	CERAMIC
C033	QCB81HK-331	330PF	50V	CERAMIC
C034	QCB81HK-331	330PF	50V	CERAMIC
C035	QCB81HK-331	330PF	50V	CERAMIC
C036	QCF21HP-102	1000PF	50V	CERAMIC
C038	QCS21HJ-331	330PF	50V	CERAMIC
C041	QETB1CM-476	47MF	16V	ELECTRO
C042	QETB1CM-476	47MF	16V	ELECTRO
C043	QETB1CM-476	47MF	16V	ELECTRO
C044	QETB1CM-476	47MF	16V	ELECTRO
C045	QFN81HK-103	0.01MF	50V	MYLAR
C046	QFN81HK-103	0.01MF	50V	MYLAR
C047	QFN81HK-103	0.01MF	50V	MYLAR
C048	QFN81HK-103	0.01MF	50V	MYLAR
C049	QETB1AM-107	100MF	10V	ELECTRO
C050	QETB1HM-106	10MF	50V	ELECTRO
C052	QETB1AM-107	100MF	10V	ELECTRO
C053	QETB1CM-226	22MF	16V	ELECTRO
C054	QCVB1CM-103	0.01MF	16V	CERAMIC
C059	QETB1JM-227	220MF	63V	ELECTRO
C060	QETB1JM-227	220MF	63V	ELECTRO
C061	QETB1HM-226	22MF	50V	ELECTRO

△ : SAFETY PARTS

Capacitors

△ ITEM	PART NUMBER	DESCRIPTION			AREA
C062	QETB1HM-226	22MF	50V	ELECTRO	
C063	QCGB1HK-102	1000PF	50V	CERAMIC	
C066	QCBB1HK-101	100PF	50V	CERAMIC	F
C067	QCBB1HK-101	100PF	50V	CERAMIC	F
C071	QEKS1EM-475G	4.7MF	25V	ELECTRO	
C073	QEKS1CM-106G	10MF	16V	ELECTRO	
C074	QEKS1CM-106G	10MF	16V	ELECTRO	
C075	QCBB1HK-101	100PF	50V	CERAMIC	
C076	QCBB1HK-101	100PF	50V	CERAMIC	
C077	QGBB1HK-102	1000PF	50V	CERAMIC	
C078	QGBB1HK-102	1000PF	50V	CERAMIC	
C079	QEKS1EM-475G	4.7MF	25V	ELECTRO	
C080	QEKS1EM-475G	4.7MF	25V	ELECTRO	
C081	QGBB1HK-102	1000PF	50V	CERAMIC	
C084	QEKS1EM-106	10MF	25V	ELECTRO	
C085	QEKS1EM-106	10MF	25V	ELECTRO	
C086	QCF21HP-473	0.047MF	50V	CERAMIC	
C087	QCF21HP-473	0.047MF	50V	CERAMIC	
C090	QETB1HM-475E	4.7MF	50V	ELECTRO	
C091	QCF21HP-223	0.022MF	50V	CERAMIC	
C092	QCF21HP-223	0.022MF	50V	CERAMIC	
C093	QEKS1CM-106G	10MF	16V	ELECTRO	
C094	QEKS1CM-106G	10MF	16V	ELECTRO	
C095	QCSB1HJ-470	47PF	50V	CERAMIC	
C096	QEKS1EM-475G	4.7MF	25V	ELECTRO	
C097	QFLC1HJ-102Z	1000PF	50V	MYLAR	
C581	QEKS1CM-106G	10MF	16V	ELECTRO	
C591	EEZ5009-106	10MF		ELECTRO	
C592	EEZ5009-106	10MF		ELECTRO	
C595	QEKS1HM-474G	0.47MF	50V	ELECTRO	
C596	QEKS1HM-474G	0.47MF	50V	ELECTRO	
C597	QETB1HM-474	0.47MF	50V	ELECTRO	
C598	QETB1HM-474	0.47MF	50V	ELECTRO	
C600	QCC21EM-473	0.047MF	25V	CERAMIC	
C601	QETB1HM-475	4.7MF	50V	ELECTRO	
C602	QETB1HM-475	4.7MF	50V	ELECTRO	
C603	QETB1HM-475	4.7MF	50V	ELECTRO	
C604	QETB1HM-475	4.7MF	50V	ELECTRO	
C605	QETB1HM-475	4.7MF	50V	ELECTRO	
C606	QETB1HM-475	4.7MF	50V	ELECTRO	
C607	QCC21EM-473	0.047MF	25V	CERAMIC	
C608	QCC21EM-473	0.047MF	25V	CERAMIC	
C610	QCBB1HK-101	100PF	50V	CERAMIC	
C611	QCBB1HK-101	100PF	50V	CERAMIC	
C612	QETS1HM-475	4.7MF	50V	ELECTRO	
C613	QETS1HM-475	4.7MF	50V	ELECTRO	
C614	QCBB1HK-101	100PF	50V	CERAMIC	
C615	QCBB1HK-101	100PF	50V	CERAMIC	
C616	QCY21HK-182	1800PF	50V	CERAMIC	
C617	QCY21HK-182	1800PF	50V	CERAMIC	
C618	QCY21HK-682	6800PF	50V	CERAMIC	
C619	QCY21HK-682	6800PF	50V	CERAMIC	
C620	QCBB1HK-101	100PF	50V	CERAMIC	
C621	QCBB1HK-101	100PF	50V	CERAMIC	
C622	QCBB1HK-101	100PF	50V	CERAMIC	
C623	QCBB1HK-101	100PF	50V	CERAMIC	
C624	QETB1HM-475	4.7MF	50V	ELECTRO	
C625	QETB1HM-475	4.7MF	50V	ELECTRO	
C626	QETB1EM-476	4.7MF	25V	ELECTRO	
C627	QETB1EM-476	4.7MF	25V	ELECTRO	
C628	QETB1EM-107	100MF	25V	ELECTRO	
C629	QETB1EM-107	100MF	25V	ELECTRO	
C631	QETB1CM-226	22MF	16V	ELECTRO	
C632	QETB1CM-226	22MF	16V	ELECTRO	
C633	QETB1AM-107	100MF	10V	ELECTRO	
C641	QEKS1EM-475G	4.7MF	25V	ELECTRO	
C642	QEKS1EM-475G	4.7MF	25V	ELECTRO	
C643	QCSB1HJ-470	47PF	50V	CERAMIC	
C644	QCSB1HJ-470	47PF	50V	CERAMIC	
C645	QCBB1HK-101	100PF	50V	CERAMIC	
C646	QCBB1HK-101	100PF	50V	CERAMIC	
C647	QEKS1EM-475G	4.7MF	25V	ELECTRO	
C648	QEKS1EM-475G	4.7MF	25V	ELECTRO	
C649	QEKS1EM-475G	4.7MF	25V	ELECTRO	
C650	QEKS1EM-475G	4.7MF	25V	ELECTRO	
C651	QEKS1HM-225G	2.2MF	50V	ELECTRO	
C652	QEKS1HM-225G	2.2MF	50V	ELECTRO	
C653	QEKS1HM-474G	0.47MF	50V	ELECTRO	
C654	QEKS1HM-474G	0.47MF	50V	ELECTRO	
C655	QEKS1HM-224G	0.22MF	50V	ELECTRO	
C656	QEKS1HM-224G	0.22MF	50V	ELECTRO	
C657	QFV81HJ-124	0.12MF	50V	T.FILM	
C658	QFV81HJ-124	0.12MF	50V	T.FILM	
C659	QEKS1HM-224G	0.22MF	50V	ELECTRO	
C660	QEKS1HM-224G	0.22MF	50V	ELECTRO	
C661	QFV81HJ-473	0.047MF	50V	T.FILM	
C662	QFV81HJ-473	0.047MF	50V	T.FILM	
C663	QFV81HJ-104	0.1MF	50V	T.FILM	
C664	QFV81HJ-104	0.1MF	50V	T.FILM	
C665	QFV81HJ-183	0.018MF	50V	T.FILM	
C666	QFV81HJ-183	0.018MF	50V	T.FILM	
C667	QFV81HJ-393	0.039MF	50V	T.FILM	
C668	QFV81HJ-393	0.039MF	50V	T.FILM	
C669	QFLB1HJ-682	6800PF	50V	MYLAR	
C670	QFLB1HJ-682	6800PF	50V	MYLAR	
C671	QFV81HJ-153	0.015MF	50V	T.FILM	
C672	QFV81HJ-153	0.015MF	50V	T.FILM	
C673	QFLB1HJ-272	2700PF	50V	MYLAR	

△ : SAFETY PARTS

Capacitors

△ ITEM	PART NUMBER	DESCRIPTION			AREA
C674	QFLB1HJ-272	2700PF	50V	MYLAR	
C675	QFLB1HJ-562	5600PF	50V	MYLAR	
C676	QFLB1HJ-562	5600PF	50V	MYLAR	
C677	QFLB1HJ-122	1200PF	50V	MYLAR	
C678	QFLB1HJ-122	1200PF	50V	MYLAR	
C679	QFLB1HJ-222	2200PF	50V	MYLAR	
C680	QFLB1HJ-222	2200PF	50V	MYLAR	
C681	QCS21HJ-471	470PF	50V	CERAMIC	
C682	QCS21HJ-471	470PF	50V	CERAMIC	
C685	QEKS1EM-475G	4.7MF	25V	ELECTRO	
C686	QEKS1EM-475G	4.7MF	25V	ELECTRO	
C691	QEKS1EM-475G	4.7MF	25V	ELECTRO	
C692	QEKS1EM-475G	4.7MF	25V	ELECTRO	
C695	QEKS1HM-474G	0.47MF	50V	ELECTRO	

△ : SAFETY PARTS

Resistors

△ ITEM	PART NUMBER	DESCRIPTION			AREA
△ R001	QRC128K-275EM	2.7M	1/2W	COMPOSI	A
△ R001	QRC128K-275EM	2.7M	1/2W	COMPOSI	B
R005	QRX012J-R82A	0.82	1W	M.FILM	
R006	QRX012J-R82A	0.82	1W	M.FILM	
R007	QRD167J-102	1K	1/6W	CARBON	
R008	QRD167J-332	3.3K	1/6W	CARBON	
R009	QRD167J-102	1K	1/6W	CARBON	
R010	QRD167J-102	1K	1/6W	CARBON	
R011	QRD167J-102	1K	1/6W	CARBON	
R012	QRD167J-102	1K	1/6W	CARBON	
R015	QRD167J-103	10K	1/6W	CARBON	
R016	QRD167J-103	10K	1/6W	CARBON	
R017	QRD167J-102	1K	1/6W	CARBON	
R018	QRD167J-681	680	1/6W	CARBON	
R019	QRD167J-681	680	1/6W	CARBON	
R021	QRD167J-105	1M	1/6W	CARBON	
R022	QRD167J-473	4.7K	1/6W	CARBON	
R023	QRD167J-224	220K	1/6W	CARBON	
R025	QRD167J-823	82K	1/6W	CARBON	
R026	QRD167J-104	100K	1/6W	CARBON	
R027	QRD167J-823	82K	1/6W	CARBON	
R028	QRD167J-104	100K	1/6W	CARBON	
R029	QRD167J-473	4.7K	1/6W	CARBON	
R031	QRD167J-103	10K	1/6W	CARBON	
△ R032	QRG012J-271A	270	1W	O.M.FILM	
R034	QRD167J-104	100K	1/6W	CARBON	
R035	QRD167J-222	2.2K	1/6W	CARBON	
R036	QRD167J-152	1.5K	1/6W	CARBON	
R037	QRD167J-103	10K	1/6W	CARBON	
R038	QRD167J-104	100K	1/6W	CARBON	
△ R039	QRG012J-122A	1.2K	1W	O.M.FILM	
R040	QRD167J-223	22K	1/6W	CARBON	
R041	QRD167J-302	3K	1/6W	CARBON	
R042	QRD167J-820	82	1/6W	CARBON	
R043	QRD167J-820	32	1/6W	CARBON	
R044	QRD167J-751	750	1/6W	CARBON	
△ R044	QRD14CJ-1005	10	1/4W	UNF.CARBON	F
△ R045	QRD14CJ-1005	10	1/4W	UNF.CARBON	F
△ R046	QRD14CJ-1005	10	1/4W	UNF.CARBON	F
△ R047	QRD14CJ-1005	10	1/4W	UNF.CARBON	F
R049	QRD167J-222	2.2K	1/6W	CARBON	
R050	QRD167J-222	2.2K	1/6W	CARBON	
R051	QRD167J-103	10K	1/6W	CARBON	
R052	QRD167J-103	10K	1/6W	CARBON	
△ R053	QRG012J-221A	220	1W	O.M.FILM	
R054	QRD167J-222	2.2K	1/6W	CARBON	
R055	QRD167J-562	5.6K	1/6W	CARBON	
R056	QRD167J-562	5.6K	1/6W	CARBON	
△ R058	PTH61G25AR4R7M	3.3K	1/6W	FUSIBLE	
R059	QRD167J-332	43	1/6W	CARBON	
R066	QRD167J-470	43	1/6W	CARBON	
R067	QRD167J-240	24	1/6W	CARBON	
R068	QRD167J-240	24	1/6W	CARBON	
R069	QRD167J-103	10K	1/6W	CARBON	
R070	QRD167J-103	10K	1/6W	CARBON	
R071	QRD167J-103	10K	1/6W	CARBON	
R073	QRD167J-331	330	1/6W	CARBON	
R074	QRD167J-331	330	1/6W	CARBON	
R075	QRD167J-223	22K	1/6W	CARBON	
R076	QRD167J-223	22K	1/6W	CARBON	
R077	QRD167J-331	330	1/6W	CARBON	
R078	QRD167J-102	1K	1/6W	CARBON	
R079	QRD167J-102	1K	1/6W	CARBON	
R080	QRD167J-102	1K	1/6W	CARBON	
△ R081	QRX012J-R47A	0.47	1W	M.FILM	C
△ R081	QRX012J-R47A	0.47	1W	M.FILM	D
△ R081	QRX012J-R47A	0.47	1W	M.FILM	EBS
△ R081	QRX012J-R47A	0.47	1W	M.FILM	F
△ R081	QRX012J-R47A	0.47	1W	M.F	

Resistors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
R093	QRD167J-471	470	1/6W CARBON	
R094	QRD167J-223	22K	1/6W CARBON	
R095	QRD167J-223	22K	1/6W CARBON	
R096	QRD167J-273	27K	1/6W CARBON	
R097	QRD167J-223	22K	1/6W CARBON	
R099	QRD167J-152	1.5K	1/6W CARBON	
R581	QRD167J-153	15K	1/6W CARBON	
R582	QRD167J-153	15K	1/6W CARBON	
R583	QRD167J-103	10K	1/6W CARBON	
R595	QRD167J-272	2.7K	1/6W CARBON	
R596	QRD167J-272	2.7K	1/6W CARBON	
R605	QRD167J-103	10K	1/6W CARBON	
R606	QRD167J-103	10K	1/6W CARBON	
R607	QRD167J-472	4.7K	1/6W CARBON	
R608	QRD167J-472	4.7K	1/6W CARBON	
R611	QRD167J-562	5.6K	1/6W CARBON	
R612	QRD167J-562	5.6K	1/6W CARBON	
R613	QRD167J-123	12K	1/6W CARBON	
R614	QRD167J-123	12K	1/6W CARBON	
R615	QRD167J-683	68K	1/6W CARBON	
R616	QRD167J-683	68K	1/6W CARBON	
R617	QRD167J-102	1K	1/6W CARBON	
R618	QRD167J-102	1K	1/6W CARBON	
R619	QRD167J-104	100K	1/6W CARBON	
R620	QRD167J-104	100K	1/6W CARBON	
R621	QRD167J-102	1K	1/6W CARBON	
R622	QRD167J-102	1K	1/6W CARBON	
R623	QRD167J-562	5.6K	1/6W CARBON	
R624	QRD167J-562	5.6K	1/6W CARBON	
R625	QRD167J-222	2.2K	1/6W CARBON	
R626	QRD167J-222	2.2K	1/6W CARBON	
R627	QRD167J-562	5.6K	1/6W CARBON	
R628	QRD167J-562	5.6K	1/6W CARBON	
R629	QRD167J-102	1K	1/6W CARBON	
R630	QRD167J-102	1K	1/6W CARBON	
R631	QRD167J-103	10K	1/6W CARBON	
R632	QRD167J-103	10K	1/6W CARBON	
R633	QRD167J-104	100K	1/6W CARBON	
R634	QRD167J-104	100K	1/6W CARBON	
R641	QRD167J-123	12K	1/6W CARBON	
R642	QRD167J-123	12K	1/6W CARBON	
R643	QRD167J-113	11K	1/6W CARBON	
R644	QRD167J-113	11K	1/6W CARBON	
R645	QRD167J-271	270	1/6W CARBON	
R646	QRD167J-271	270	1/6W CARBON	
R647	QRD167J-431	430	1/6W CARBON	
R649	QRD167J-223	22K	1/6W CARBON	
R650	QRD167J-223	22K	1/6W CARBON	
R660	QRD167J-222	2.2K	1/6W CARBON	
R661	QRD167J-222	2.2K	1/6W CARBON	
R662	QRD167J-473	47K	1/6W CARBON	
R663	QRD167J-473	47K	1/6W CARBON	
R664	QRD167J-474	470K	1/6W CARBON	
R665	QRD167J-474	470K	1/6W CARBON	
R666	QRD167J-393	39K	1/6W CARBON	
R667	QRD167J-393	39K	1/6W CARBON	
R668	QRD167J-561	560	1/6W CARBON	
R669	QRD167J-561	560	1/6W CARBON	
R670	QRD167J-122	1.2K	1/6W CARBON	
R671	QRD167J-122	1.2K	1/6W CARBON	
R674	QRD167J-681	680	1/6W CARBON	
R675	QRD167J-681	680	1/6W CARBON	
R685	QRD167J-104	100K	1/6W CARBON	
R686	QRD167J-104	100K	1/6W CARBON	
R687	QRD167J-224	220K	1/6W CARBON	
R688	QRD167J-224	220K	1/6W CARBON	
R695	QRD167J-562	5.6K	1/6W CARBON	
R696	QRD167J-104	100K	1/6W CARBON	
R697	QRD167J-103	10K	1/6W CARBON	
R698	QRD167J-104	100K	1/6W CARBON	
R699	QRD167J-473	47K	1/6W CARBON	
RA641	QRB099J-474	470K	1/10W R.NETWORK	
RA642	QRB099J-474	470K	1/10W R.NETWORK	

△ : SAFETY PARTS

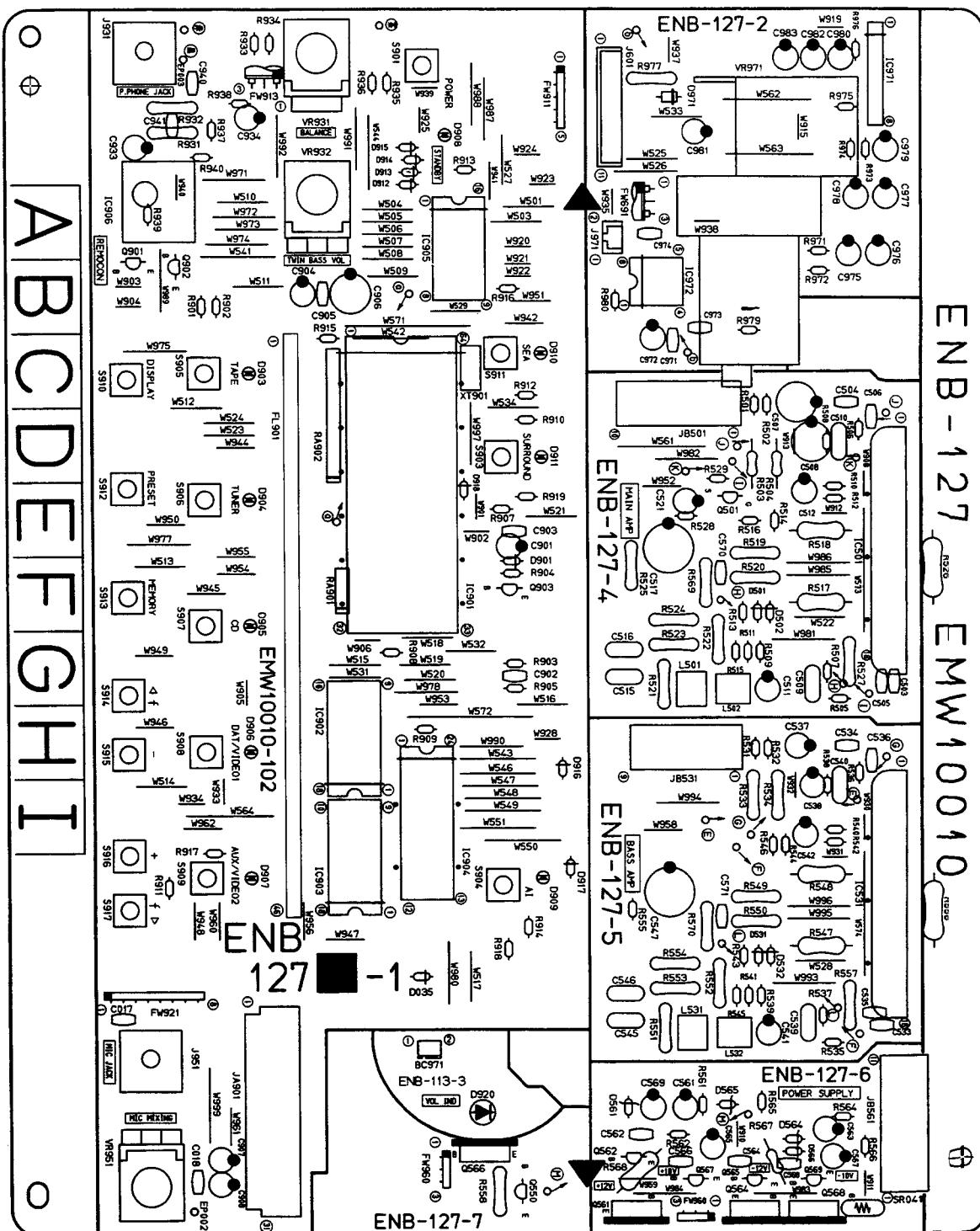
Others

△	ITEM	PART NUMBER	DESCRIPTION	AREA
		E3400-431	SPACER	
		E70306-005	HEAT SINK	
		SBSG3008Z	SCREW	
		EMW10099-002	CIRCUIT BOARD	A
		E61380-010	FUSE LABEL	A
		E61380-032	FUSE LABEL	A
		EMW10099-002	CIRCUIT BOARD	B
		E61380-010	FUSE LABEL	B
		E61380-032	FUSE LABEL	B
		EMW10099-002	CIRCUIT BOARD	C
		EMW10099-002	CIRCUIT BOARD	D
		EMW10099-002BS	CIRCUIT BOARD	EBS
		EMW10099-002	CIRCUIT BOARD	F
		EMW10099-002	CIRCUIT BOARD	G
J002		VMC0107-006	CONNECT TERMINAL (6PIN)	C
	J005	EMV7122-103	CONNECTOR (2PIN)	
	J015	EMB90TV-803A	SPEAKER TERMINAL	
	J045	EMV7122-103	CONNECTOR (2PIN)	
	J085	EMN00TV-215A	2P PIN JACK	
	J601	EMN00TV-405A	4P PIN JACK	
	L600	EQL2106-223	INDUCTOR	
	L601	EQL2106-223	INDUCTOR	
	BC601	EWS25B-A057	SOCKET WIRE (11PIN)	
	EP001	EWT011-092	TERMINAL WIRE	F
	EP002	E70859-001	EARTH PLATE	
	EP010	E70225-001	EARTH PLATE	
	FT001	ENG7331-002	FUSE CLIP	A
	FT001	ENG7331-002	FUSE CLIP	B
	FT001	ENG7331-002	FUSE CLIP	D
	FT001	ENG7331-002	FUSE CLIP	EBS
	FT001	ENG7331-002	FUSE CLIP	F
	FT001	ENG7331-002	FUSE CLIP	G
	FT002	ENG7331-002U	FUSE CLIP	A
	FT002	ENG7331-002U	FUSE CLIP	B
	FT002	ENG7331-002U	FUSE CLIP	D
	FT002	ENG7331-002U	FUSE CLIP	EBS
	FT002	ENG7331-002U	FUSE CLIP	F
	FT002	ENG7331-002U	FUSE CLIP	G
	FT003	ENG7331-002	FUSE CLIP	
	FT004	ENG7331-002U	FUSE CLIP	
	FT005	ENG7331-002	FUSE CLIP	
	FT006	ENG7331-002U	FUSE CLIP	
	FW001	EWR3AB-16SSST	FLAT WIRE (10PIN)	A
	FW001	EWR3AB-16SSST	FLAT WIRE (10PIN)	B
	FW001	EWR3AB-16SSST	FLAT WIRE (10PIN)	D
	FW001	EWR3AB-16SSST	FLAT WIRE (10PIN)	EBS
	FW001	EWR3AB-16SSST	FLAT WIRE (10PIN)	F
	FW001	EWR3AB-16SSST	FLAT WIRE (10PIN)	G
	FW002	EWR33B-20SSST	FLAT WIRE (8PIN)	C
	FW003	EWR33B-16SSST	FLAT WIRE (8PIN)	
	FW011	EWR37B-16SSST	FLAT WIRE (7PIN)	
	JA051	EMV5125-008	PLUG ASSY (8PIN)	
	JA211	EMV7127-011	CONNECTOR (11PIN)	
	JA311	EMV7127-015	CONNECTOR (15PIN)	
	JA411	EMV7127-013	CONNECTOR (18PIN)	
	JA501	EMV5125-010	PLUG ASSY (10PIN)	
	JA501	EMV5125-009	PLUG ASSY (9PIN)	
	JA561	EMV5125-011	PLUG ASSY (11PIN)	
	JB051	EMV7125-008R	CONNECTOR (8PIN)	
	JB901	EMV7123-031	CONNECTOR (31PIN)	
	JT691	EMV7122-103	CONNECTOR (3PIN)	
	JT911	EMV7122-005	CONNECTOR (5PIN)	
	JT913	EMV7122-103	CONNECTOR (3PIN)	
	JT921	EMV7122-004	CONNECTOR (4PIN)	
	JT922	EMV7122-004	CONNECTOR (4PIN)	
	RY001	E8K1D12-211M	RELAY	
	RY021	E8K8D12-211M	RELAY	
	RY022	E8K8D12-211M	RELAY	
	TB001	E65508-002	TAB	A
	TB001	E65508-002	TAB	B
	TB001	E65508-002	TAB	D
	TB002	E65508-002	TAB	EBS
	TB002	E65508-002	TAB	F
	TB002	E65508-002	TAB	G
	TB002	E65508-002	TAB	A
	TB002	E65508-002	TAB	B
	TB002	E65508-002	TAB	D
	TB002	E65508-002	TAB	EBS
	TB002	E65508-002	TAB	F
	TB002	E65508-002	TAB	G

△ : SAFETY PARTS

■ENB-127 □ System Control & FL Display & Power Amplifier PC Board Ass'y

Note : ENB-127 □ varies according to the areas employed. See note (1) when placing an order.



Note (1)

PC Board Ass'y	Designated Areas
ENB-127 [A]	the U.S.A., Canada
ENB-127 [B]	Australia, the U.K. Continental Europe Universal Type
ENB-127 [C]	Germany, Italy

Transistors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	Q501	2SK301(P,Q)	F.E.T	MATSUSHITA
	Q550	2SC1685(R,S)	SILICON	MATSUSHITA
	Q561	2SD2061(E,F)	SILICON	ROHM
	Q562	2SC1685(R,S)	SILICON	MATSUSHITA
	Q563	2SC1685(R,S)	SILICON	MATSUSHITA
	Q564	2SB1187(E,F)	SILICON	ROHM
	Q565	2SA564(R,S)	SILICON	MATSUSHITA
	Q566	2SD2061(E,F)	SILICON	ROHM
	Q567	2SC1685(R,S)	SILICON	MATSUSHITA
	Q568	2SB1187(E,F)	SILICON	ROHM
	Q569	2SA564(R,S)	SILICON	MATSUSHITA
	Q901	DTC113ZS	SILICON	ROHM
	Q902	DTA144ES	SILICON	ROHM
	Q903	DTC114YS	SILICON	ROHM

△ : SAFETY PARTS

I.C.s

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	IC501	STK4141MK5	I.C.	SANYO
	IC531	STK4141MK5	I.C.	SANYO
	IC901	MN171202JNY	I.C.	MATSUSHITA
	IC902	AN6873N	I.C.	MATSUSHITA
	IC903	AN6873N	I.C.	MATSUSHITA
	IC904	TC74HC154AP	I.C.	TOSHIBA
	IC905	TC74HC595AP	I.C.	TOSHIBA
	IC906	GP1U501X	I.C.	SHARP
	IC971	BA15218N	I.C.	ROHM
	IC972	LB1639-CV	I.C.	SANYO

△ : SAFETY PARTS

Diodes

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	D035	1SS133	SILICON	ROHM
	D501	1SS133	SILICON	ROHM
	D502	1SS133	SILICON	ROHM
	D531	1SS133	SILICON	ROHM
	D532	1SS133	SILICON	ROHM
	D561	RD13JS83	ZENER	NEC
	D564	RD13JS83	ZENER	NEC
	D565	MTZ11JC	ZENER	ROHM
	D566	MTZ11JC	ZENER	ROHM
	D900	MTZ5.6JC	ZENER	ROHM
	D901	1SS133	SILICON	ROHM
	D903	SLH-34VC3F	L.E.D.	ROHM
	D904	SLH-34VC3F	L.E.D.	ROHM
	D905	SLH-34VC3F	L.E.D.	ROHM
	D906	SLH-34VC3F	L.E.D.	ROHM
	D907	SLH-34VC3F	L.E.D.	ROHM
	D908	SLH-34VC3F	L.E.D.	ROHM
	D909	SLH-34VC3F	L.E.D.	ROHM
	D910	SLH-34DC3F	L.E.D.	ROHM
	D911	SLH-34DC3F	L.E.D.	ROHM
	D912	1SS133	SILICON	ROHM
	D913	1SS133	SILICON	ROHM
	D914	1SS133	SILICON	ROHM
	D915	1SS133	SILICON	ROHM
	D916	1SS133	SILICON	ROHM
	D917	1SS133	SILICON	ROHM
	D918	1SS133	SILICON	ROHM
	D920	LN282RPX	L.E.D.	
	D971	1SR139-200	SILICON	ROHM

△ : SAFETY PARTS

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Capacitors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	C017	QCC21EM-473	0.047MF 25V	CERAMIC
	C503	QCBB1HK-101	100PF 50V	CERAMIC
	C504	QCBB1HK-101	100PF 50V	CERAMIC
	C505	QCBB1HK-101	100PF 50V	CERAMIC
	C506	QCBB1HK-101	100PF 50V	CERAMIC
	C507	EEZ2505-107	100MF	ELECTRO
	C508	EEZ2505-107	100MF	ELECTRO
	C509	QCS21HJ-SR0	SPF 50V	CERAMIC
	C510	QCS21HJ-SR0	SPF 50V	CERAMIC
	C511	QETB1HM-226	22MF 50V	ELECTRO
	C512	QETB1HM-226	22MF 50V	ELECTRO
	C515	QFLB1HK-473	0.047MF 50V	MYLAR
	C516	QFLB1HK-473	0.047MF 50V	MYLAR
	C517	QETB2AM-476	47MF 100V	ELECTRO
	C521	QEKS1HM-224G	0.22MF 50V	ELECTRO
	C533	QCBB1HK-101	100PF 50V	CERAMIC
	C534	QCBB1HK-101	100PF 50V	CERAMIC
	C535	QCXB1CM-392	3900PF 16V	CERAMIC
	C536	QCXB1CM-392	3900PF 16V	CERAMIC
	C537	QETB1HM-225	2.2MF 50V	ELECTRO
	C538	QETB1HM-225	2.2MF 50V	ELECTRO
	C539	QFLB1HK-333	0.033MF 50V	MYLAR
	C540	QFLB1HK-333	0.033MF 50V	MYLAR
	C541	QETB1HM-226	22MF 50V	ELECTRO
	C542	QETB1HM-226	22MF 50V	ELECTRO
	C545	QFLB1HK-473	0.047MF 50V	MYLAR
	C546	QFLB1HK-473	0.047MF 50V	MYLAR
	C547	QETB2AM-476	47MF 100V	ELECTRO
	C561	QETB1EM-226	22MF 25V	ELECTRO
	C562	QCGB1HK-102	1000PF 50V	CERAMIC
	C563	QETB1CM-226	22MF 16V	ELECTRO
	C564	QCGB1HK-102	1000PF 50V	CERAMIC
	C565	QETB1CM-226	22MF 16V	ELECTRO
	C566	QCGB1HK-102	1000PF 50V	CERAMIC
	C567	QETB1CM-226	22MF 16V	ELECTRO
	C568	QCGB1HK-102	1000PF 50V	CERAMIC
	C569	QETB1CM-476	47MF 16V	ELECTRO
	C570	QCBB1HK-681	680PF 50V	CERAMIC
	C571	QCBB1HK-681	680PF 50V	CERAMIC
	C901	QETB1HM-225	2.2MF 50V	ELECTRO
	C902	QCVB1CM-103	0.01MF 16V	CERAMIC
	C903	QCVB1CM-103	0.01MF 16V	CERAMIC
	C904	QETB1AM-107	100MF 10V	ELECTRO
	C905	QCHB1EZ-223	0.022MF 25V	CERAMIC
	C906	QETB1AM-477	470MF 10V	ELECTRO
	C907	QEKS1HM-225G	2.2MF 50V	ELECTRO
	C908	QEKS1HM-225G	2.2MF 50V	ELECTRO
	C933	QER51HM-105G	1MF 50V	ELECTRO
	C934	QER51HM-105G	1MF 50V	ELECTRO
	C940	QCBB1HK-221	220PF 50V	CERAMIC
	C941	QCBB1HK-221	220PF 50V	CERAMIC
	C971	QCVB1CM-103	0.01MF 16V	CERAMIC
	C972	QETB1CM-226	22MF 16V	ELECTRO
	C973	QCHB1EZ-223	0.022MF 25V	CERAMIC
	C974	QCVB1CM-103	0.01MF 16V	CERAMIC
	C975	QETB1AM-476	47MF 10V	ELECTRO
	C976	QETB1AM-476	47MF 10V	ELECTRO
	C977	QETB1HM-105	1MF 50V	ELECTRO
	C978	QETB1HM-105	1MF 50V	ELECTRO
	C979	QETB1HM-225	2.2MF 50V	ELECTRO
	C980	QETB1HM-225	2.2MF 50V	ELECTRO
	C981	QETB1AM-476	47MF 10V	ELECTRO
	C982	QETB1EM-106	10MF 25V	ELECTRO
	C983	QETB1EM-106	10MF 25V	ELECTRO

△ : SAFETY PARTS

Resistors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	R501	QRD167J-104	100K 1/6W	CARBON
	R502	QRD167J-104	100K 1/6W	CARBON
	R503	ERD141J-561S	560 1/4W	CARBON
	R504	ERD141J-561S	560 1/4W	CARBON
	R505	QRD167J-471	470 1/6W	CARBON
	R506	QRD167J-471	470 1/6W	CARBON
	R507	QRD167J-104	100K 1/6W	CARBON
	R508	QRD167J-104	100K 1/6W	CARBON
	R509	QRD167J-562	5.6K 1/6W	CARBON
	R510	QRD167J-562	5.6K 1/6W	CARBON
	R511	QRD167J-562	5.6K 1/6W	CARBON
	R512	QRD167J-562	5.6K 1/6W	CARBON
	R513	QRD167J-562	5.6K 1/6W	CARBON
	R514	QRD167J-562	5.6K 1/6W	CARBON
	R515	QRD167J-562	5.6K 1/6W	CARBON
	R516	QRD167J-562	5.6K 1/6W	CARBON
	R517	QRX012J-R22AM	0.22 1W	M.FILM
	R518	QRX012J-R22AM	0.22 1W	M.FILM
	R519	QRZ0077-101	100 1/4W	FUSIBLE
	R520	QRZ0077-100	10 1/4W	FUSIBLE
	R521	QRD14CJ-100S	10 1/4W	UNF.CARBON
	R522	QRD14CJ-100S	10 1/4W	UNF.CARBON
	R523	QRD14CJ-100S	10 1/4W	UNF.CARBON
	R524	QRD14CJ-100S	10 1/4W	UNF.CARBON
	R525	GRD14CJ-222S	2.2K 1/4W	UNF.CARBON

△ : SAFETY PARTS

Resistors

△ ITEM	PART NUMBER	DE S C R I P T I O N	AREA
△ R526	QRG022J-102AM	1K 2W O.M.FILM	
△ R527	QRD14CJ-100S	10 1/4W UNF.CARBON	
R528	QRD167J-112	1.1K 1/6W CARBON	
R529	QRD167J-105	1M 1/6W CARBON	
R531	QRD167J-104	100K 1/6W CARBON	
R532	QRD167J-104	100K 1/6W CARBON	
△ R533	QRD14CJ-681S	680 1/4W UNF.CARBON	
△ R534	QRD14CJ-681S	680 1/4W UNF.CARBON	
R535	QRD167J-473	47K 1/6W CARBON	
R536	QRD167J-473	47K 1/6W CARBON	
R537	QRD167J-473	47K 1/6W CARBON	
R538	QRD167J-473	47K 1/6W CARBON	
R539	QRD167J-562	5.6K 1/6W CARBON	
R540	QRD167J-562	5.6K 1/6W CARBON	
R541	QRD167J-562	5.6K 1/6W CARBON	
R542	QRD167J-562	5.6K 1/6W CARBON	
R543	QRD167J-562	5.6K 1/6W CARBON	
R544	QRD167J-562	5.6K 1/6W CARBON	
R545	QRD167J-562	5.6K 1/6W CARBON	
R546	QRD167J-562	5.6K 1/6W CARBON	
△ R547	QRX012J-R22AM	0.22 1W M.FILM	
△ R548	QRX012J-R22AM	0.22 1W M.FILM	
△ R549	QRZ0077-101	100 1/4W FUSIBLE	
△ R550	QRZ0077-100	10 1/4W FUSIBLE	
△ R551	QRD14CJ-100S	10 1/4W UNF.CARBON	
△ R552	QRD14CJ-100S	10 1/4W UNF.CARBON	
△ R553	QRD14CJ-100S	10 1/4W UNF.CARBON	
△ R554	QRD14CJ-100S	10 1/4W UNF.CARBON	
△ R555	QRD167J-103	10K 1/6W CARBON	
△ R556	QRG022J-102AM	1K 2W O.M.FILM	
△ R557	QRD14CJ-100S	10 1/4W UNF.CARBON	
△ R558	QRX012J-R47A	0.47 1W M.FILM	A
R561	QRD167J-152	1.5K 1/6W CARBON	
R562	QRD167J-471	470 1/6W CARBON	
R564	QRD167J-222	2.2K 1/6W CARBON	
R565	QRD167J-332	3.3K 1/6W CARBON	
R566	QRD167J-332	3.3K 1/6W CARBON	
△ R567	QRZ0077-4R7	4.7 1/4W FUSIBLE	
△ R568	QRX012J-R68AM	0.68 1W M.FILM	
△ R569	QRD14CJ-101S	100 1/4W UNF.CARBON	
△ R570	QRD14CJ-101S	100 1/4W UNF.CARBON	
R901	QRD167J-472	4.7K 1/6W CARBON	
R902	QRD167J-472	4.7K 1/6W CARBON	
R903	QRD167J-472	4.7K 1/6W CARBON	
R904	QRD167J-104	100K 1/6W CARBON	
R905	QRD167J-103	10K 1/6W CARBON	
R907	QRD167J-473	47K 1/6W CARBON	
R908	QRD167J-223	22K 1/6W CARBON	
R909	QRD167J-472	4.7K 1/6W CARBON	
R910	QRD167J-331	330 1/6W CARBON	
R911	QRD167J-331	330 1/6W CARBON	
R912	QRD167J-331	330 1/6W CARBON	
R913	QRD167J-331	330 1/6W CARBON	
R914	QRD167J-331	330 1/6W CARBON	
R915	QRD167J-101	100 1/6W CARBON	
R916	QRD167J-103	10K 1/6W CARBON	
R917	QRD167J-104	100K 1/6W CARBON	
R918	QRD167J-104	100K 1/6W CARBON	
R919	QRD167J-104	100K 1/6W CARBON	
R931	QRD12CJ-331S	330 1/2W R.NETWORK	
R932	QRD12CJ-331S	330 1/2W R.NETWORK	
R933	QRD167J-123	12K 1/6W CARBON	
R934	QRD167J-123	12K 1/6W CARBON	
R935	QRD167J-102	1K 1/6W CARBON	
R936	QRD167J-102	1K 1/6W CARBON	
R937	QRD167J-222	2.2K 1/6W CARBON	
R938	QRD167J-222	2.2K 1/6W CARBON	
R939	QRD167J-102	1K 1/6W CARBON	
R940	QRD167J-102	1K 1/6W CARBON	
R971	QRD167J-272	2.7K 1/6W CARBON	
R972	QRD167J-272	2.7K 1/6W CARBON	
R973	QRD167J-393	39K 1/6W CARBON	
R974	QRD167J-393	39K 1/6W CARBON	
R975	QRD167J-560	56 1/6W CARBON	
R976	QRD167J-560	56 1/6W CARBON	
△ R977	QRD14CJ-4R7S	4.7 1/4W UNF.CARBON	
R979	QRD167J-102	1K 1/6W CARBON	
R980	QRD167J-102	1K 1/6W CARBON	
RA901	QRB049J-473	47K 1/10W R.NETWORK	
VR931	QVCA84W-E15B	100K VARIABLE	
VR932	QVCB84A-E53C	5K VARIABLE	
VR951	QVCB84W-E54B	50K VARIABLE	
VR971	QVDC91A-E15B	100K VARIABLE	

△ : SAFETY PARTS

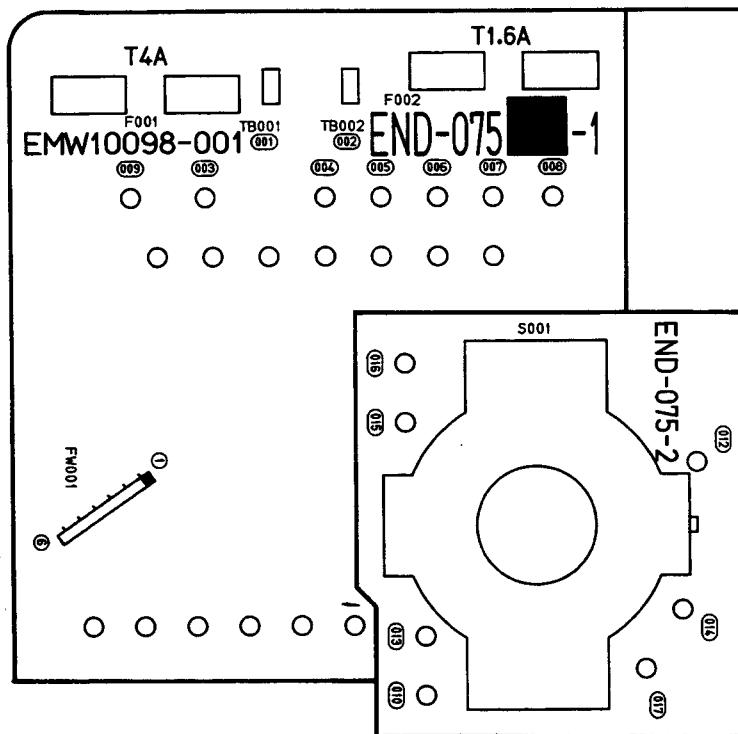
Others

△ ITEM	PART NUMBER	DE S C R I P T I O N	AREA
	EMW10010-102	CIRCUIT BOARD	
	E3400-431	SPACER	
J601	EMV5109-011A	PLUG ASSY (11PIN)	
J931	QMS5R10-E40S	MINI JACK (H.PHONES)	
J951	QMS5R10-E40S	MINI JACK (MIC)	
J971	EMV5103-002A	PLUG ASSY (2PIN)	
L501	EQL0001-R45	INDUCTOR	
L502	EQL0001-R45	INDUCTOR	
L531	EQL0001-R45	INDUCTOR	
L532	EQL0001-R45	INDUCTOR	
S901	ESP0001-018	TACT SWITCH (POWER)	
S903	ESP0001-018	TACT SWITCH (SURROUND)	
S904	ESP0001-018	TACT SWITCH (AI)	
S905	ESP0001-018	TACT SWITCH (TAPE)	
S906	ESP0001-018	TACT SWITCH (TUNER)	
S907	ESP0001-018	TACT SWITCH (CD)	
S908	ESP0001-018	TACT SWITCH (DAT/VIDEO1)	
S909	ESP0001-018	TACT SWITCH (AUX/VIDEO2)	
S910	ESP0001-018	TACT SWITCH (DISPLAY)	
S911	ESP0001-018	TACT SWITCH (SEA)	
S912	ESP0001-018	TACT SWITCH (PRESET)	
S913	ESP0001-018	TACT SWITCH (MEMORY)	
S914	ESP0001-018	TACT SWITCH (<1>)	
S915	ESP0001-018	TACT SWITCH (-)	
S916	ESP0001-018	TACT SWITCH (+)	
S917	ESP0001-018	TACT SWITCH (FD)	
BC971	EMV5109-002A	PLUG ASSY (2PIN)	C
EP002	EWT011-092	TERMINAL WIRE	
EP003	EWT011-132	TERMINAL WIRE	
FL901	ELU0001-106	FL TUBE	
FS901	E3400-420	FELT SPACER	
FW691	EWR23C-20LN	FLAT WIRE (3PIN)	
FW911	EWR35B-25LST	FLAT WIRE (6PIN)	
FW913	EWR23C-30LN	FLAT WIRE (3PIN)	
FW921	EWR38B-16LST	FLAT WIRE (4PIN)	
FW960	EMV7122-103	CONNECTOR (3PIN)	A
JA901	EMV7123-031R	CONNECTOR (1PIN)	
JB501	EMV7125-010R	CONNECTOR (10PIN)	
JB531	EMV7125-009R	CONNECTOR (9PIN)	
JB561	EMV7125-011R	CONNECTOR (11PIN)	
SR041	ERT-D2WHK202S	NEGATIVE THERMISTOR	
TB901	E33754-001	TIE BAND	
XT901	ECX0060-000EM	RESONATOR	

△ : SAFETY PARTS

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■END-075[A] Power Primary PC Board Ass'y



Others

△	ITEM	PART NUMBER	DESCRIPTION	AREA
△	S001 F001 TB001 TB002	EMG7331-001 EMW10098-001 GSR0085-018 EWR369-16KST E65503-002 E65508-002	FUSE CLIP CIRCUIT BOARD VOLTAGE SELECTOR FLAT WIRE(6PIN) TAB TAB	

△ : SAFETY PARTS

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JVC

SERVICE MANUAL

MODEL No. CA-MX70BK / DX-MX70BK
(Unit No. TD-MX70BK)



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- * For instruction manual , please refer to the CA-MX70BK(SM.No.20243) or DX-MX70BK(SM.No.20249).
- * AX-MX70BK is needed for power supply etc when servicing.

Contents

Safety Precautions	1-2	Adjustment Procedures	1-9
Block Diagram	1-3	Schematic Diagrams	Insertion
Description of Main LSI	1-4	Printed Circuit Board	Insertion
Internal Block Diagram of other ICs	1-5	Connection Diagram	Insertion
Disassembly Procedures	1-7	Parts List	Separate-volume Insertion

650

No. 20246
Mar. 1991

Safety Precautions

1. The design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Services should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the product should not be made. Any design alterations of the product should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the Parts List of Service Manual. Electrical components having such features are identified by shading on the schematics and by (Δ) on the Parts List in the Service Manual. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement parts shown in the Parts List of Service Manual may create shock, fire, or other hazards.
4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.
5. Leakage current check (Electrical shock hazard testing)

After re-assembling the product, always perform an isolation check on the exposed metal parts of the product (antenna terminals, knobs, metal cabinet, screw heads, headphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

Do not use a line isolation transformer during this check.

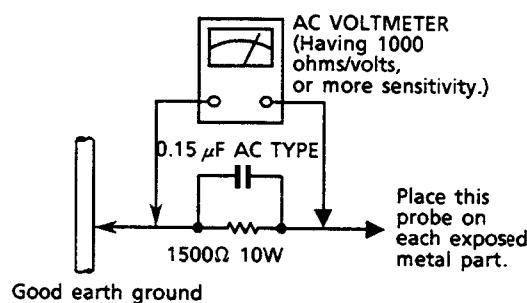
- Plug the AC line cord directly into the AC outlet. Using a "Leakage Current Tester", measure the leakage current from each exposed metal parts of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground. Any leakage current must not exceed 0.5mA AC (r.m.s.).

- Alternate check method

Plug the AC line cord directly into the AC outlet. Use an AC voltmeter having, 1,000 ohms per volt or more sensitivity in the following manner. Connect a $1,500\Omega$ 10 W resistor paralleled by a $0.15 \mu F$ AC-type capacitor between an exposed metal part and a known good earth ground.

Measure the AC voltage across the resistor with the AC voltmeter.

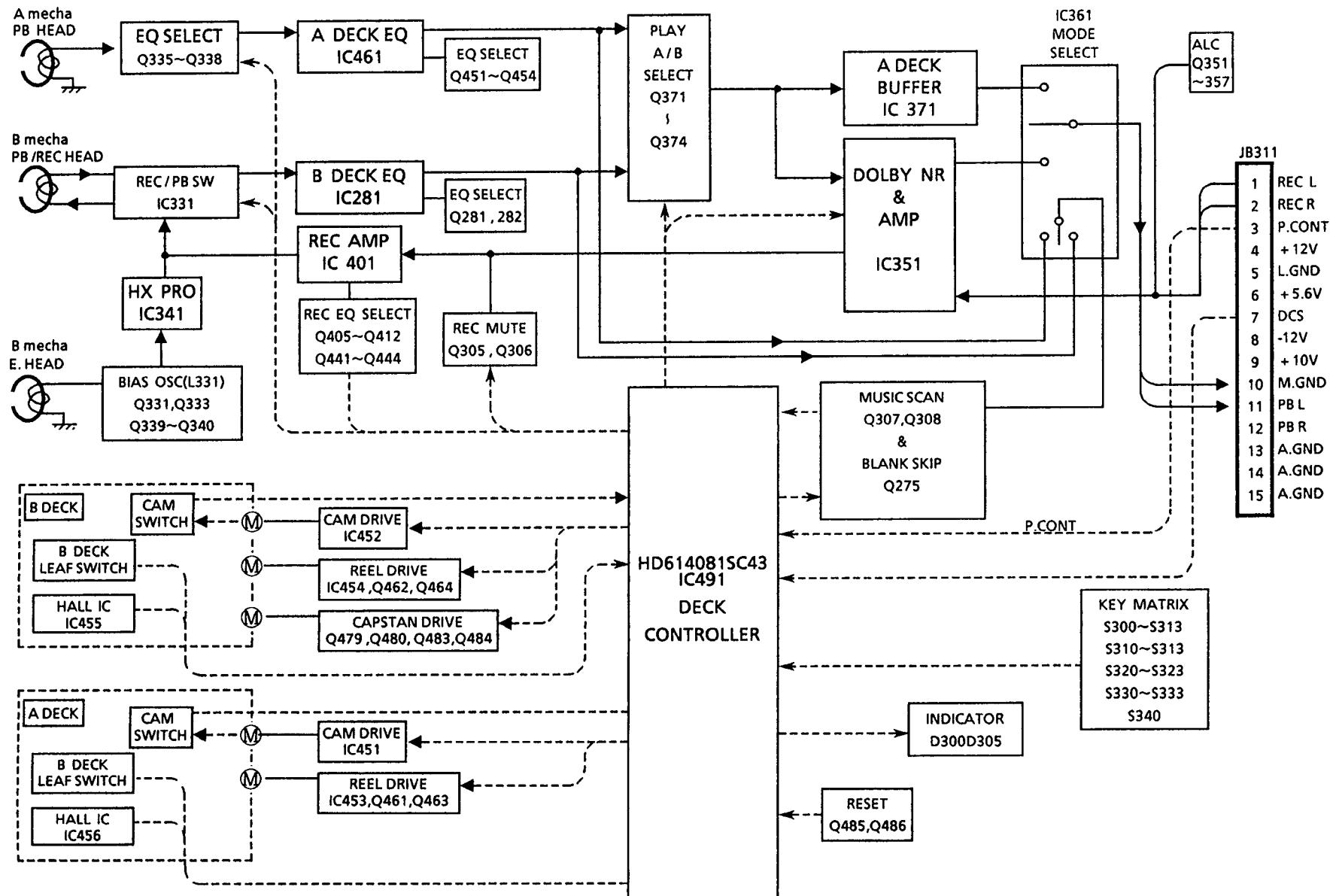
Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75 V AC (r.m.s.). This corresponds to 0.5 mA AC (r.m.s.).



Warning

1. This equipment has been designed and manufactured to meet international safety standards.
2. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
3. Repairs must be made in accordance with the relevant safety standards.
4. It is essential that safety critical components are replaced by approved parts.
5. If mains voltage selector is provided, check setting for local voltage.

Block Diagram



Description of Main LSI

■ HD614081SC43(IC491) : Deck Controller

1. Terminal Layout

A SPEED UP	1		64	A FWD PLAY
B SPEED UP	2		63	A REV PLAY
NR OFF	3		62	B FWD PLAY
B NORMAL	4		61	B REV PLAY
CAP CONT	5		60	REC
B REEL FWD	6		59	BLANK SKIP
B REEL REV	7		58	BIAS
B CAM REV	8		57	NR REC
B CAM FWD	9		56	REC MUTE
A CAM SW 2	10		55	DCS IN
A CAM SW 1	11		54	DCS OUT
A CAM SW 0	12		53	GND
A PULSE	13		52	X1
B CAM SW 2	14		51	X2
B CAM SW 1	15		50	TEST
B CAM SW 0	16		49	K13
B PULSE	17		48	K12
POWER OFF	18		47	K11
MS IN	19		46	K10
A REEL FWD	20		45	K03
A REEL REV	21		44	K02
A CAM REV	22		43	K01
B CAM FWD	23		42	K00
GAIN CONT	24		41	K04
B MUTE	25		40	K05
A MUTE	26		39	H.S.D
O MUTE	27		38	HC
BMS	28		37	HM
REC	29		36	HN
FADE CONT	30		35	LC
BEQ	31		34	LM
VDD	32		33	

HD614081SC43

2. Key Matrix

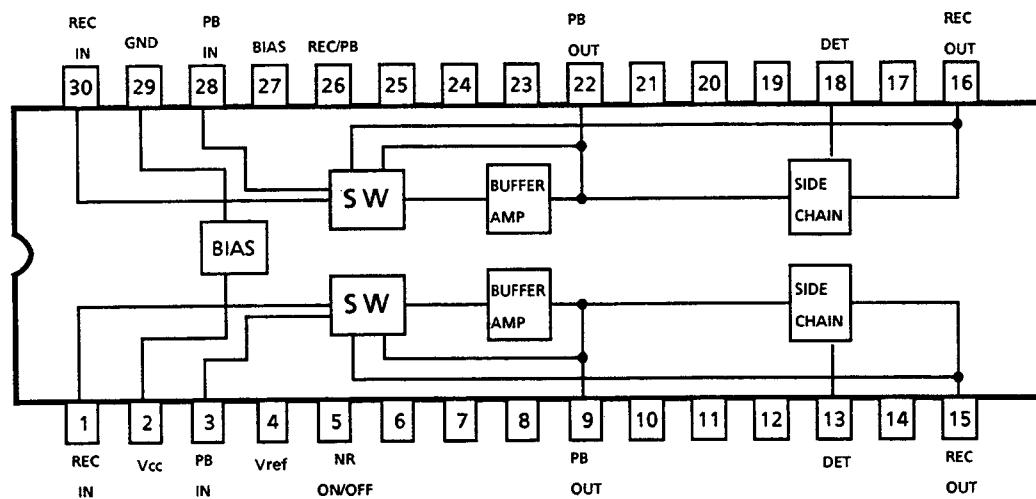
	KEY IN 0	KEY IN1	KEY IN2	KEY IN 3
KEY OUT 0	A◀	A◀	A▶	A▶
KEY OUT 1	B◀	B◀	B▶	B▶
KEY OUT 2	A	B	B◎	B■
KEY OUT 3	H.DUB	BLANK SKIP		CD D.REC
KEY OUT 2	B PACK	REV REC	FWD REC	A PACK
KEY OUT 3	REV MODE	B CrO2	B METAL	

3. Pin Function

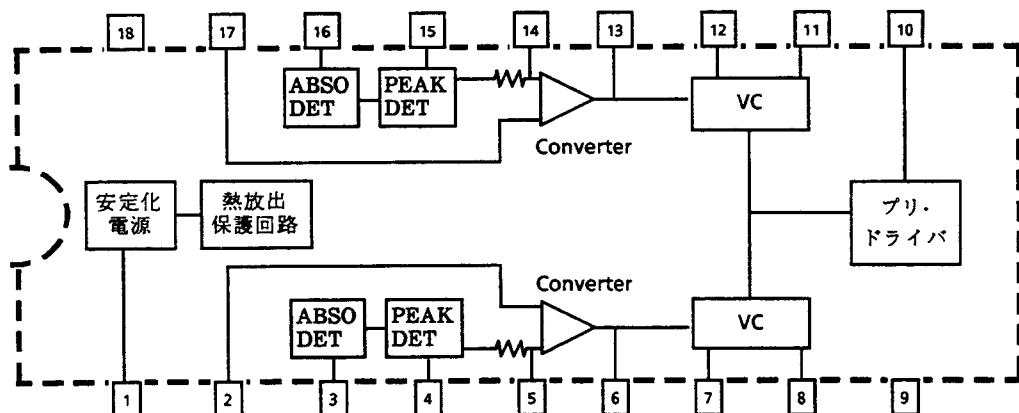
Pin NO.	symbol	I/O	Function and Operations	Pin NO.	symbol	I/O	Function and Operations
1	A SPEED UP	O	A deck speed control output	33	LM	O	"H" when recording to Metal at N-speed
2	B SPEED UP	O	B deck speed control output	34	LC	O	"H" when recording to CrO2 at N-speed
3	NR OFF	O	NR ON/OFF signal output	35	NH	O	"H" when recording to Normal at H-speed
4	B NORMAL	O	"H" when normal tape in the B Deck	36	HM	O	"H" when recording to Metal at H-speed
5	CAP CONT	O	Capstan control output	37	HC	O	"H" when recording to CrO2 at H-speed
6	B REEL FWD	O	FWD direction control for B reel motor	38	HSD	O	High speed dubbing control signal
7	B REEL REV		REV direction control for B reel motor	39	K05	O	Key matrix output 5
8	B CAM REV		REV direction control for B cam motor	40	K04	O	Key matrix output 4
9	B CAM FWD		FWD direction control for B cam motor	41	K00	O	Key matrix output 0
10	A CAM SW 2	O	A CAM SW input	42	K01	O	Key matrix output 1
11	A CAM SW 1	O	A CAM SW input	43	K02	O	Key matrix output 2
12	A CAM SW 0	O	A CAM SW input	44	K03	O	Key matrix output 3
13	A PULSE	O	A CAM SW input	45	K10	I	Key matrix input 0
14	B CAM SW 2	I	B CAM SW input	46	K11	I	Key matrix input 1
15	B CAM SW 1	I	B CAM SW input	47	K12	I	Key matrix input 2
16	B CAM SW 0	I	B CAM SW input	48	K13	I	Key matrix input 3
17	B PULSE	I	B CAM SW input	49	RESET	I	Reset signal input
18	POWER OFF	I	Power ON/OFF input	50	TEST	-	Test terminal
19	MS IN	I	Blank detector terminal at music scan	51	X2	I	Clock oscillator input
20	A REEL FWD	O	FWD direction control for A reel motor	52	X1	O	Clock oscillator output
21	A REEL REV	O	REV direction control for A reel motor	53	GND	-	Ground
22	A CAM REV	O	REV direction control for A cam motor	54	DCS OUT	O	Compulink signal output
23	A CAM FWD	O	FWD direction control for A cam motor	55	DCS IN	I	Compulink signal input
24	GAIN CONT	O	Gain control output for M.S amp	56	REC MUTE	O	Recording mute control signal output
25	B MUTE	O	B deck muting control output	57	NR REC	O	NR recording control signal output
26	A MUTE	O	A deck muting control output	58	BIAS	O	"H" with recording
27	O MUTE	O	Play back muting control output	59	BLANK SKIP	O	BLANK SKIP LED control signal output
28	BMS	O	"H" with B deck PB and M.S	60	REC	O	REC LED control signal output
29	REC	O	Recording control ("H" with recording)	61	B REV LED	O	B REV LED control signal output
30	FADE CONT	O	Fade control signal output	62	B FWD LED	O	B FWD LED control signal output
31	BEQ	O	"H" with CrO2 SW off of B deck	63	A REV LED	O	A REV LED control signal output
32	VDD	-	Power supply	64	A FWD LED	O	A FWD LED control signal output

Internal Block Diagram of other ICs

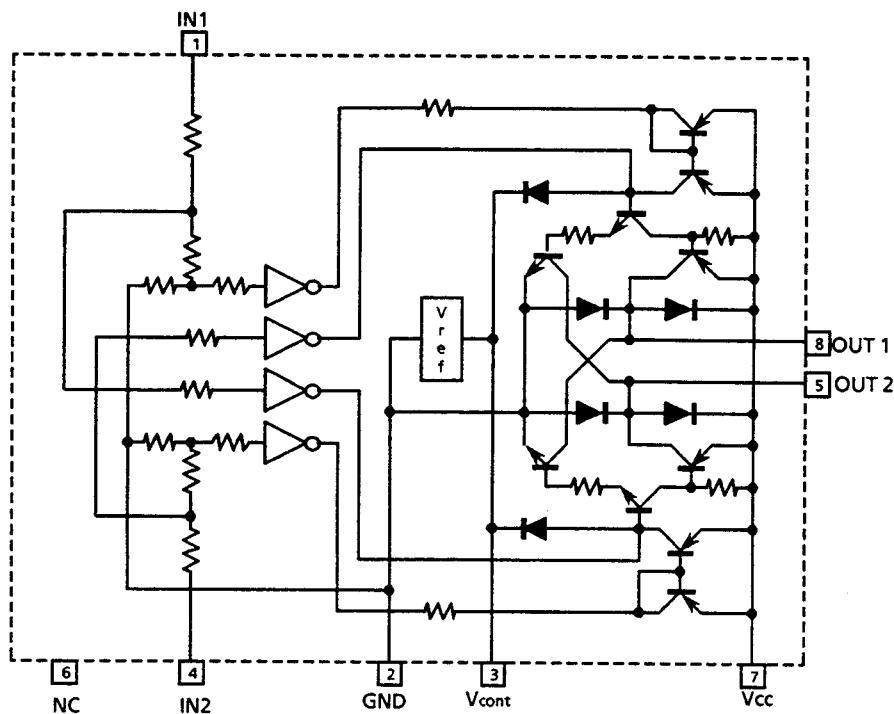
■ HA 12142 (IC351) : Dolby B-C Noise Reduction Amplifier IC



■ μPC1297CA (IC341) : Dolby HX PRO System IC



■ LB1639-CV (IC581) : Motor Driver



IN 1	IN 2	OUT 1	OUT 2	MOTOR
H	L	H	L	CLOCKWISE
L	H	L	H	COUNTER-CLOCKWISE
H	H	OFF	OFF	WAITING
L	L	OFF	OFF	WAITING

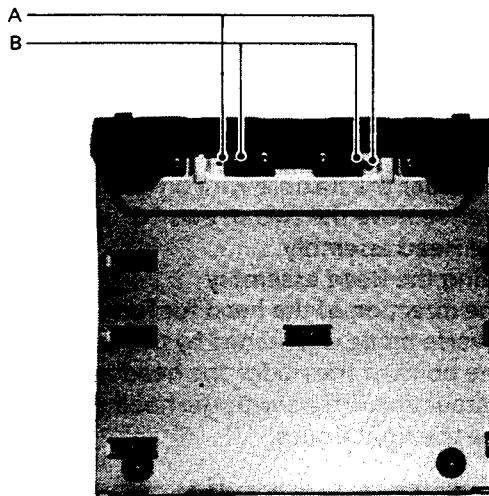
Disassembly Procedures

1. Removing the Top Cover

- (1). Remove 2 screws on both sides of the metal cover.
- (2). Remove 4 screws located on the rear panel.
- (3). Slightly open both sides of the metal cover to the left and right, and raise the rear side. Then slowly lift it up and straight backward.

2. Removing the Front Panel assembly

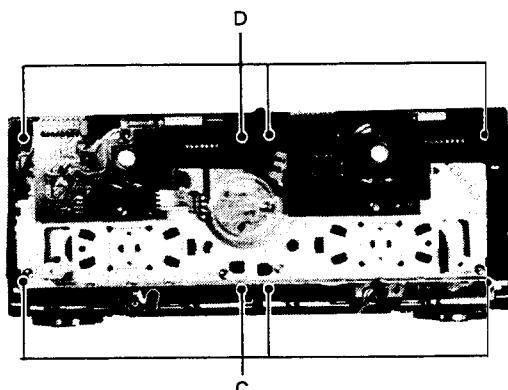
- (1). Remove the 2 screws "A" fixing the front panel from the bottom, then the 2 screws "B" fixing the mechanism.
- (2). Remove all connectors from the front panel.



3. Removing the Cassette Mechanism

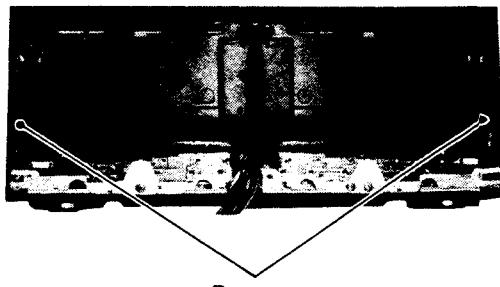
- (1). Remove the 8 screws "C", "D" fixing the cassette mechanism.
Reference : The screw "C" is a doublethread screw for plastics.
The screw "D" is a tap tight screw for chassis.
- (2). Push the EJECT button, then remove the cassette mechanism assembly.

Note : The cassette mechanism is grounded through the bottom cover, so when checking the operations with the bottom cover removed (especially when checking the signal system), be sure to ground the chassis by using an alligator clip or other suitable gadget. Also, as this cassette mechanism is designed for pack sensing, remember that it cannot be operated without any tape.



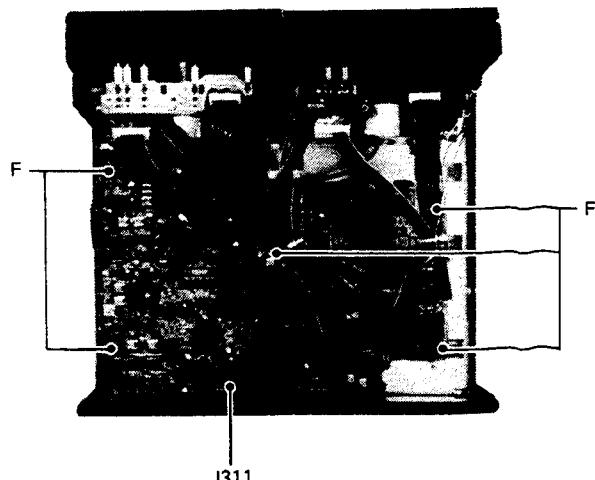
4. Removing the Cassette Holder

- (1). Remove the gear oil damper fixing with a double-thread screw "E".
- (2). Remove the Holder Spring from the bracket.
- (3). Remove the Cassette Holder from the Holder Bracket.



5. Removing the Cassette Deck Main P.C.B

- (1). Remove the top cover and front panel.
- (2). Remove the 5 screws "F" fixing the Cassette Deck Main P.C.B.
- (3). Unsolder the defective connector J311.



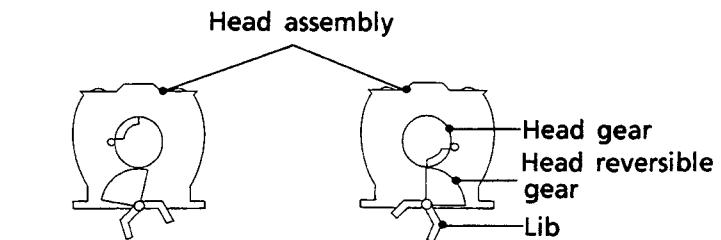
6. Removing the Cassette Mechanism Units

■ Head assembly

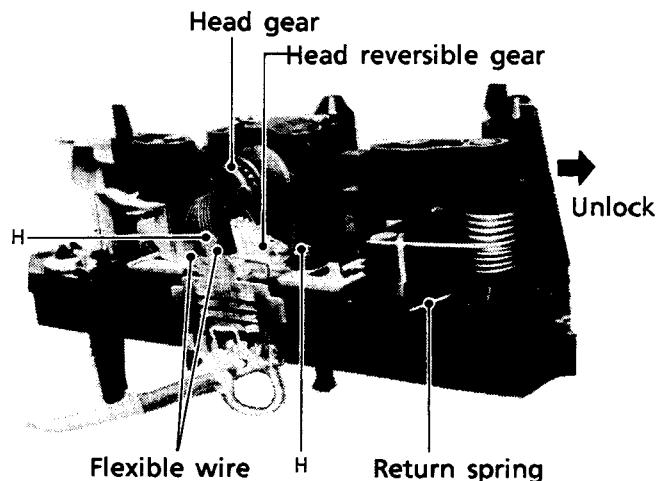
1. Unsolder the flexible wire on P.C.Board, then remove the two screws "G" installing the Head assembly.

Installing the Head assembly

1. The direction of the head for forward or reverse mode is switched by the cam gear.
2. The point of the rib for the head assembly installation differs with the head direction.
3. See the right figure.



Head sets FWD mode. Head sets REV mode.

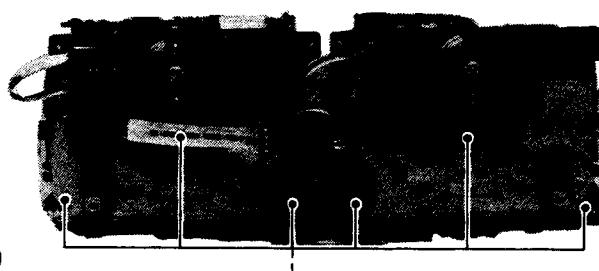


■ Pinch Roller Arm assembly

1. Detach the Pinch Roller Return Spring (small outside spring) from the hook.
2. Remove the pawl fixing the Pinch Roller Arm assembly.

■ FM Bracket and Flywheel

1. Remove the 6 screws "H" fixing the FM Bracket.
2. Unsolder the reel motor from reel motor P.C.B.
3. Remove the pawl fixing the FM Bracket and Cassette Mechanism assembly.
4. Remove the belt. Fit the belt by the method shown in figure.
5. Detach the Flywheel.(The washer can be removed in the direction of the Pinch Roller)



■ Leaf Switch P.C.B

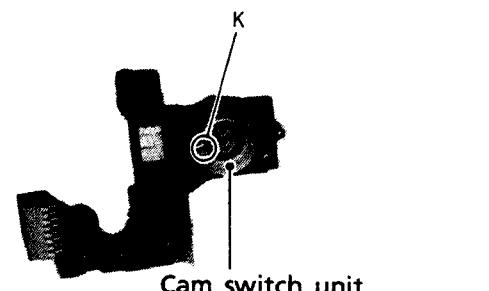
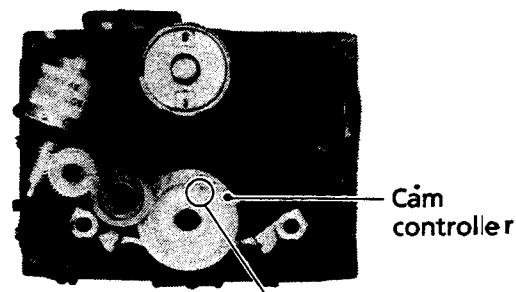
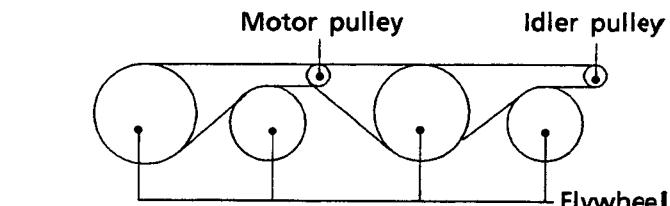
1. Remove the pawl fixing the Leaf Switch P.C.B.

■ CAM Switch P.C.B

1. Remove the FM Bracket and Flywheel.
2. Remove the pawl fixing the Sensor P.C.B.

■ CAM Motor

1. Remove the Cassette Mechanism assembly on FM Bracket.
2. Remove the pawl fixing the CAM Motor, then remove the motor.



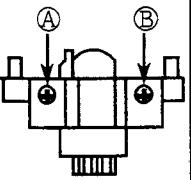
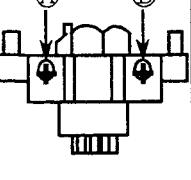
Adjustment Procedures (Cassette Deck)

(1) Measuring instruments for Adjustment

1. Audio frequency signal generator (0db output at the 600 ohm output terminal from 50Hz to 20KHz)
2. Attenuator (600 ohm impedance)
3. Electronic voltmeter
4. STANDARD TAPES
 - VTT-703L(head azimuth adjustment)
 - VTT-712 (tape speed , wow & flutter)
 - VTT-724 (Reference level)
5. Recording standard tapes AC-513 (CrO₂), TS-5 (SF) or equivalent. (Use JVC standard tape)
6. 600-ohm resistor for attenuator matching
7. WOW & FLUTTER meter with frequency counter
8. Distortion meter with band-pass filter
9. Torque gauge : CTG-N (cassette type)
10. C-120 tape (for checking the tape running)

(2) Adjustment and repairing the mechanism

(Adjust and inspect the mechanism before adjusting the electronic circuit)

Item	Adjustment Method	Standard value	Remarks
Adjusting azimuth of rec/play head	<ol style="list-style-type: none"> 1. Connect an electronic voltmeter to the VCR/DAT REC terminal. (about 1 volt output) 2. Play back VTT-703L 		1) When the specified characteristic cannot be obtained because of head wear, cut wire, excessive magnetization, etc., replace the head and adjust the head azimuth. Also, perform the adjustment of the playback level, recording bias current, recording level, etc.
A mechanism 	<ol style="list-style-type: none"> 3. Adjust screw Ⓐ so that the output of the voltmeter becomes maximum when PLAY (▶) is pressed. 4. Adjust screw Ⓑ so that the output of the voltmeter becomes maximum when PLAY (◀) is pressed. 5. After making the adjustment, apply screw lock to prevent screws Ⓐ and Ⓑ coming loose . 	Maximum	2) When there is the difference of more than 3 ~ 4 dB between left and right output levels, replace the head to avoid complaints.
B mechanism 	<ol style="list-style-type: none"> 6. Adjust screw Ⓐ so that the output of the voltmeter becomes maximum when PLAY (▶) is pressed. 7. Adjust screw Ⓑ so that the output of the voltmeter becomes maximum when PLAY (◀) is pressed. 8. After making the adjustment, apply screw lock to prevent screws Ⓐ and Ⓑ coming loose . 	Maximum	
Playback torque	Measure the torque in the playback mode using the torque measurement cassette CTG-N.	26 ~ 62 g-cm	When the standard torque cannot be obtained, replace the FR arm assembly or motor.
Fast forward torque	Measure the torque in the fast forward mode by the above method.	80 ~ 200 g-cm	When the standard torque cannot be obtained, replace the FR arm assembly or motor.
Rewind torque	Measure the torque in the rewind mode by the above method.	80 ~ 200 g-cm	When the standard torque cannot be obtained, replace the FR arm assembly or motor.
Wow & flutter	Play back VTT-712 and connect the wow & flutter meter to the SPK OUT terminals , its reading should be within 0.2% (WRMS).	Less than 0.2%	As a complaint may occur if the wow & flutter fluctuates by 0.1% even though it is allowed in the standard, repairing is required.

(3) Electrical Circuit Adjustments

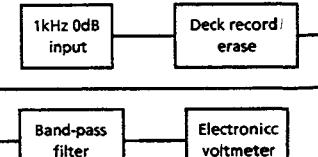
Make the following adjustments after adjusting the head azimuth.

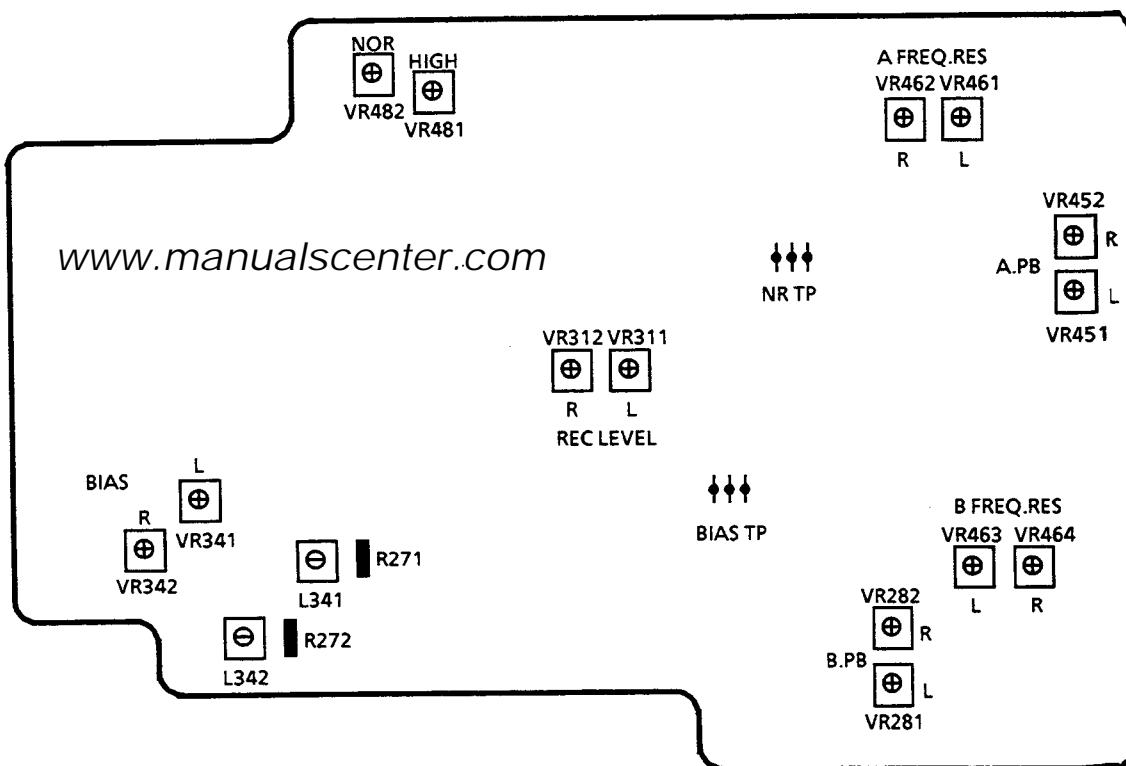
In principle, the adjustments should be made in the following sequence.

Set the NR switch to OFF and the BEAT CUT switch to "1".

Adjustments marked with an asterisk (*) should always be made after the head is replaced.

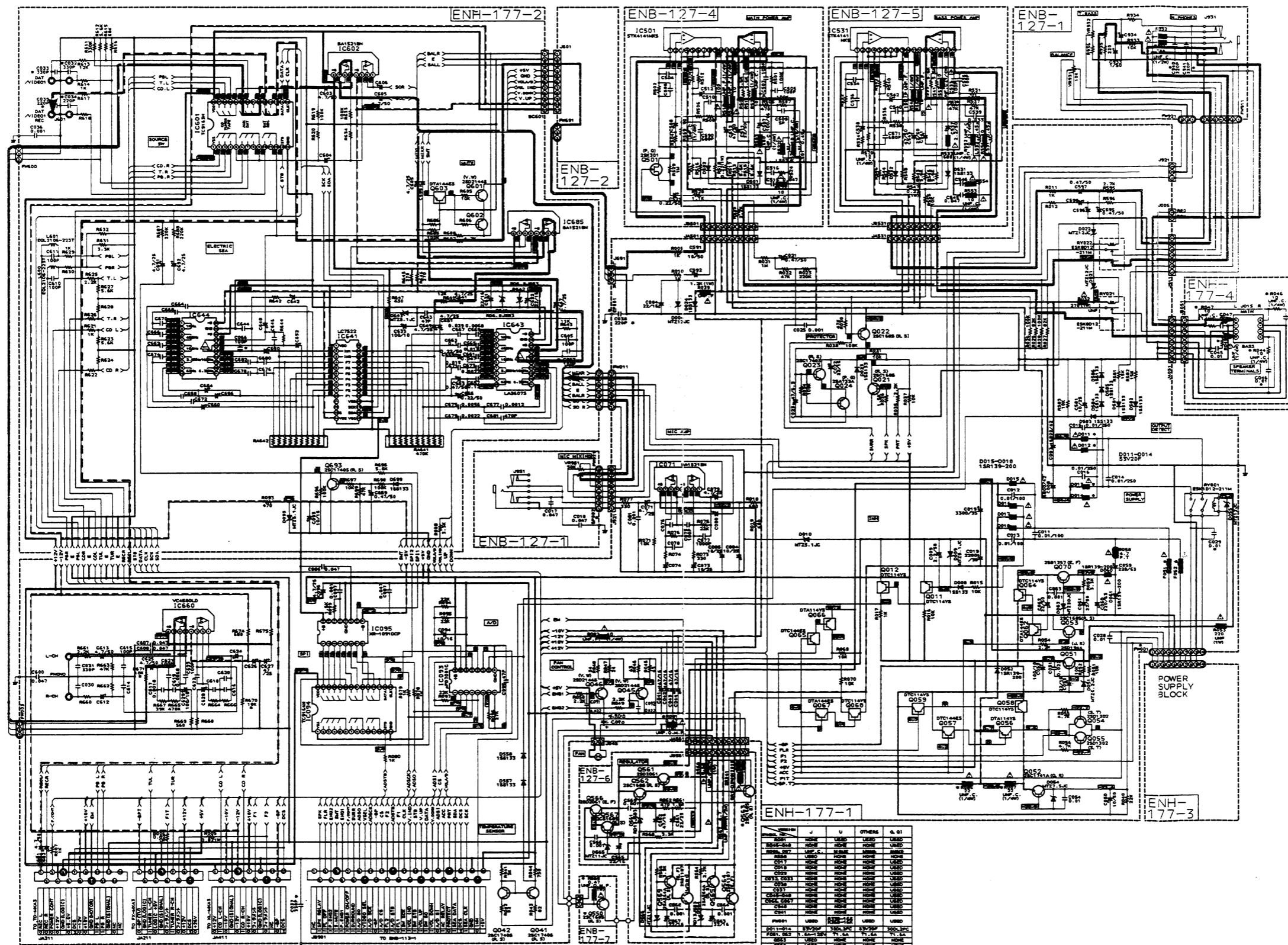
Item	Adjustment Method	Adjustment Location	Standard Value	Remarks
Motor speed	1. Play back VTT-712 and connect a frequency counter to the VCR / DAT terminals.	Semi-fixed resistor on the main PC Board		Connect a wow & flutter meter with a built-in frequency counter to the VCR / DAT REC terminal.
	2. Normal-speed adjustment Play back deck B and adjust the semi-fixed resistor VR482.	VR482	3,000 ± 10 Hz	Adjust the normal speed first, and perform the high speed adjustment.
	3. High-speed adjustment Play back deck A and adjust the semi-fixed resistor VR481.	VR481	6000 ± 10Hz	
* 1	Playback level Play back VTT-724 (1 kHz) and connect an electronic voltmeter between W491 and W330 for left, or W329 and W330 for right. And then, adjust the semi - fixed resistors.	A deck (L) VR451 (R) VR452 B deck (L) VR281 (R) VR282	400mV	The playback level varies when the head is replaced so should be adjusted. Use an electronic voltmeter with an impedance of 100 kΩ or more.
* 2	Recording bias frequency Connect a frequency counter between W325 (L), W399(R) and W326(E) , and play back a METAL tape.	L331	100 ± 5 kHz	
* 3	HX PRO adjustment Adjust the L341 for L channel (L342 for R channel) so that the DC voltage becomes minimum at both ends of R271 (R272).	L341(L) L342(R)	90~130mV	
* 4	Recording frequency response Record 1 kHz/10 kHz with the NR switch off and input 30mV to VCR /DAT terminals . While playing back these recorded signals, adjust the variation of the 10 kHz outputs from the 1kHz output to the standard value using VR341 and VR342. (Basically, adjust so that the 1 kHz and 10 kHz outputs become flat.)	(L)VR341 (R)VR342	0±3 dB for 10 kHz with 1 kHz as the standard.	1) The recording and playback frequencies of a cassette deck are adjusted by adjusting the bias. This is because the frequency response depends more on the bias current than with an open-reel deck. 2) Perform the adjustment with normal tape and confirm that the values are within the range for metal tape.
Note : After completing the recording level adjustment in item 3, check the recording and playback frequencies with the NR switch on. Fine adjust again if the value is 0±4 dB or more at 1 kHz and 10 kHz.				

	Item	Adjustment Method	Adjustment Location	Standard Value	Remarks
* 5	Recording Level	1) Input a 1 kHz (300mV) to VCR / DAT terminals and record on the left and right channels . 2) Connect an electronic voltmeter between L and E of NR TR for left, or R and E for right. And then, adjust the semi - fixed resistors when playing back.	(L)VR311 (R)VR312	300mV	Adjust with normal tape and make sure that the level difference is 1.5 dB or less with metal tape and that the left/right level difference is 1.0 dB or less.
* 6	Recording/ playback distortion	1) Input a 1 kHz (300mV) to VCR / DAT terminals and record it. 2) Play it back and check the out-put with a distortion meter to make sure it is the rated value.		less than 2%	Perform after the bias current and recording level adjustments.
7	Recording/ playback S/N ratio	1) Input a 1 kHz (300mV) to VCR / DAT terminals and record it. While recording, remove the input and record without a signal. 2) Play back and use an electronic voltmeter to compare the 0 dB recording output and the out-put of the recording without a signal to make sure this is the rated value.		more than 45 dB	
8	Erase ratio check	1) Input a 1 kHz (950mV) to VCR / DAT terminals and record it. 2) Rewind and erase part of the recorded section. 3) Compare the outputs of the recorded and erased sections using an electronic voltmeter.		more than 55 dB	Connect a 1 kHz band-pass filter between the deck and electronic Voltmeter When making the adjustment.
9	Auto-stop check	When playing back and recording, make sure to operate AUTO STOP.			



Schematic Diagrams

■ Analog Switch & Power Amplifier Section

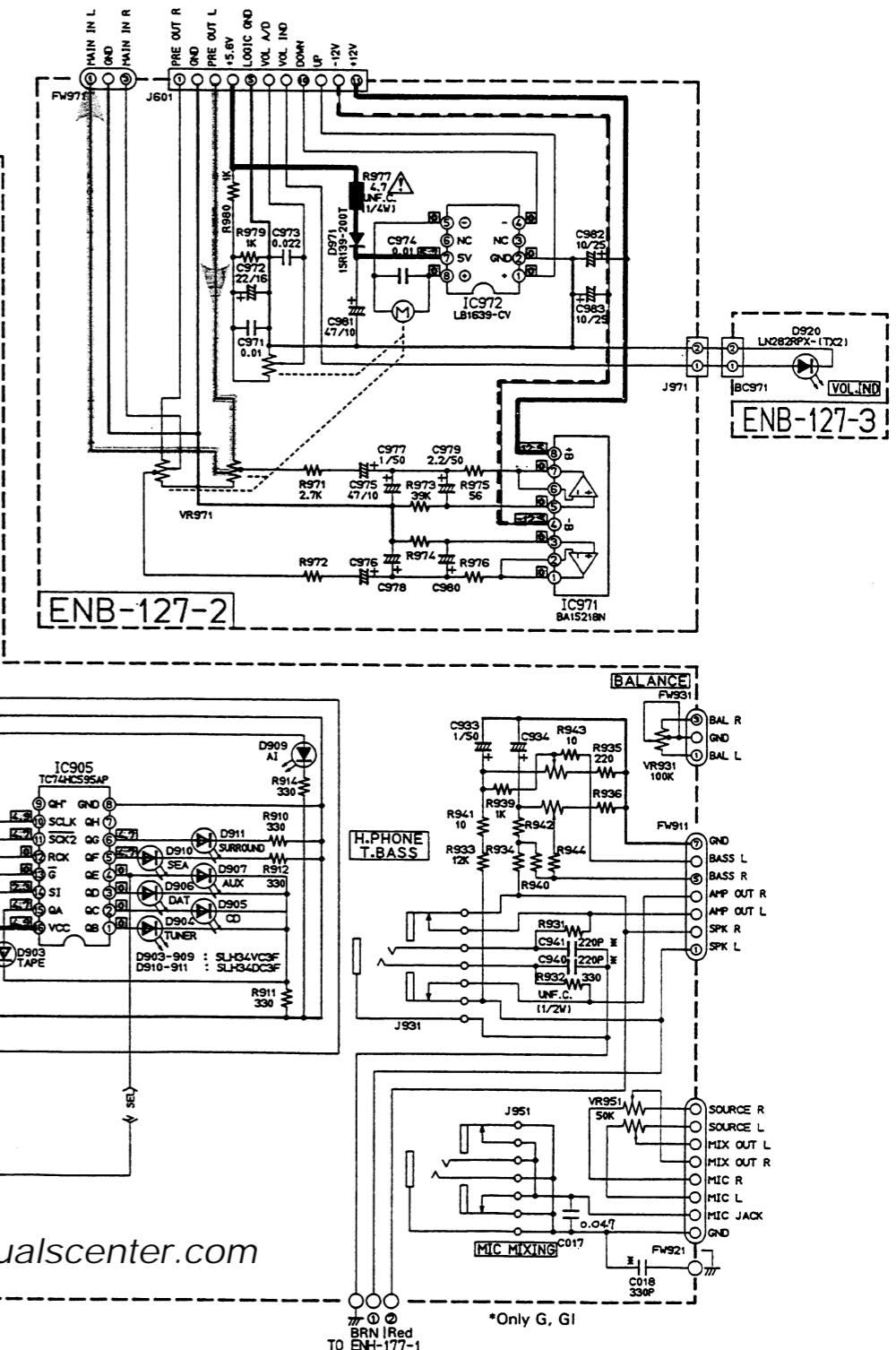
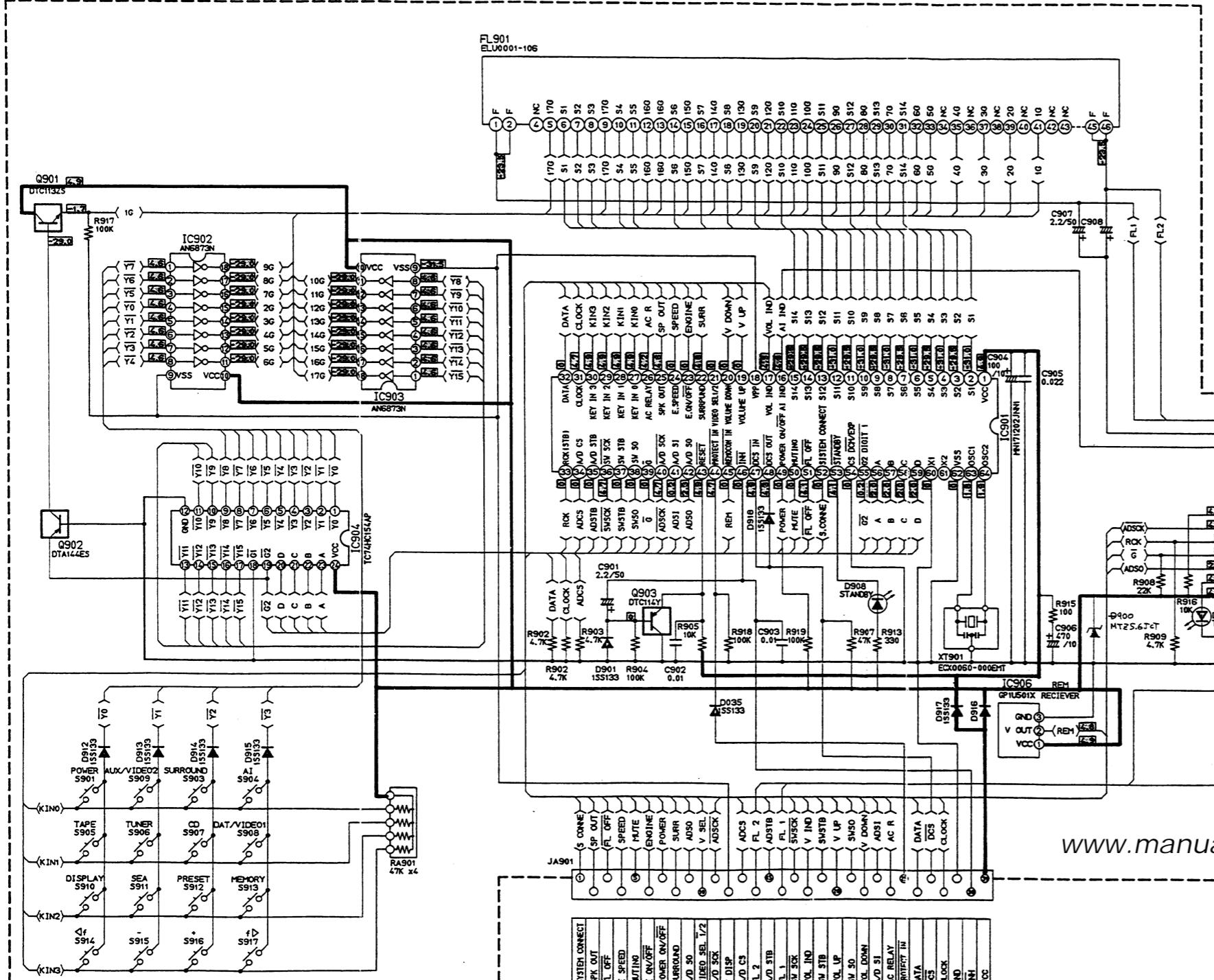


Notes:

1. shows DC voltage applied to the chassis in the stop mode. (Digital section: PLAY mode)
2. indicates positive B power supply.
3. indicates negative B power supply.
4. indicate signal path.
5. When replacing the parts in the darkened area (and those marked with) and those marked with , be sure to use the designated parts to ensure safety.
6. This is the standard circuit diagram
The design and contents are subject to change without notice.

AX-MX70BK AX-MX70BK

■ System Control & FL Display Section

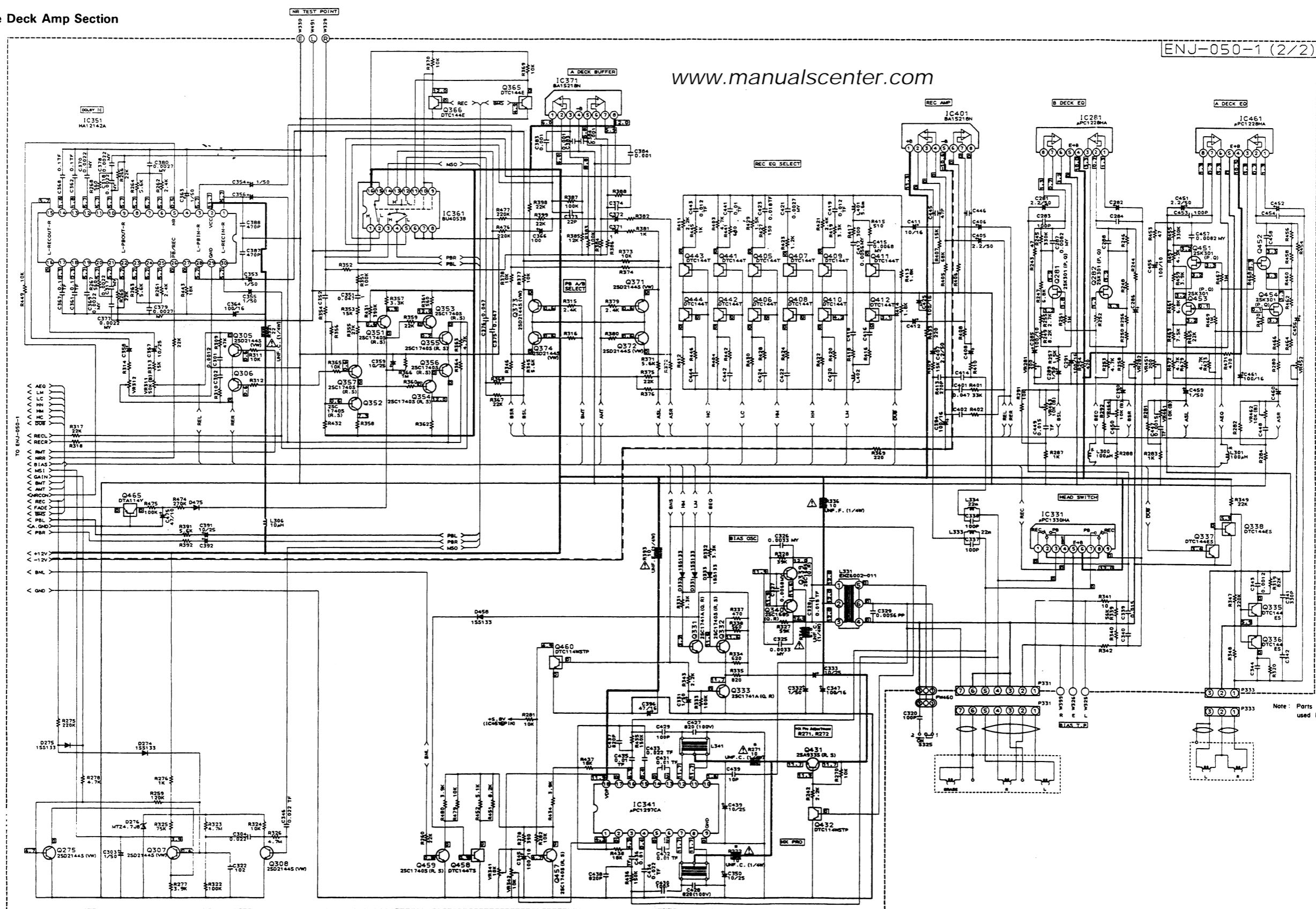


Notes:

1. shows DC voltage applied to the chassis in the stop mode. (Digital section: PLAY mode)
2. indicates positive B power supply.
3. indicates negative B power supply.
4. indicate signal path.
5. When replacing the parts in the darkened area () and those marked with , be sure to use the designated parts to ensure safety.
6. This is the standard circuit diagram
The design and contents are subject to change without notice.

Schematic Diagram

■ Cassette Deck Amp Section



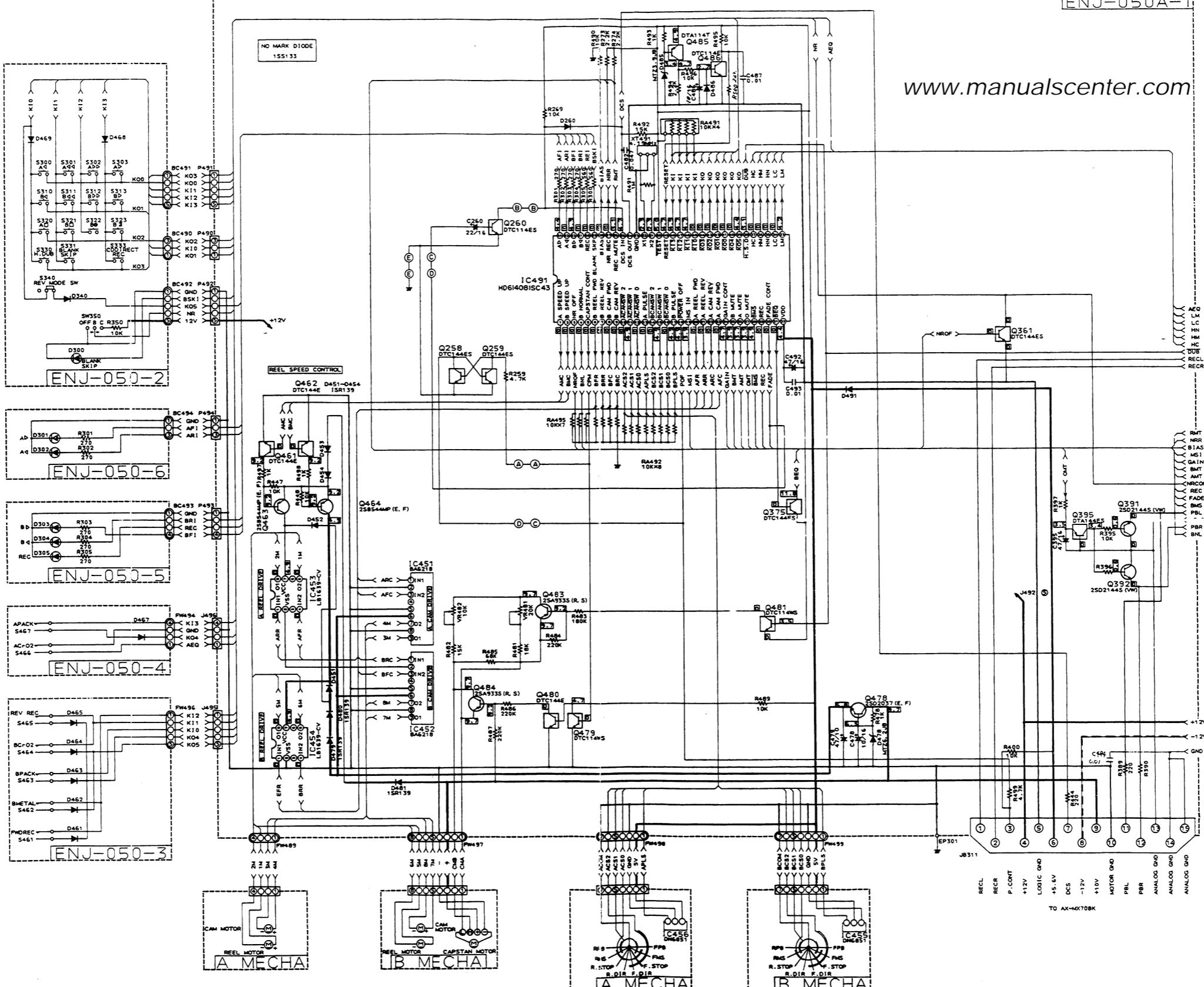
Note: Parts with X mark are used in Germany and Italy.

Notes:

1. [] shows DC voltage to the chassis with no signal input.
2. — indicates +B power supply.
3. - - - indicates -B power supply.
4. - - - indicates signal path.
5. When replacing the parts in the darkened area (—) and those marked with Δ , be sure to use the designated parts to ensure safety.
6. This is the standard circuit diagram.
The design and contents are subject to change without notice.

LENJ-050A-1

■ Deck Control Section



Notes:

1. [] shows DC voltage to the chassis with no signal input.
2. — indicates +B power supply.
3. - - - indicates -B power supply.
4. - - - indicates signal path.
5. When replacing the parts in the darkened area (■) and those marked with Δ , be sure to use the designated parts to ensure safety.
6. This is the standard circuit diagram.
The design and contents are subject to change without notice.

PARTS LIST

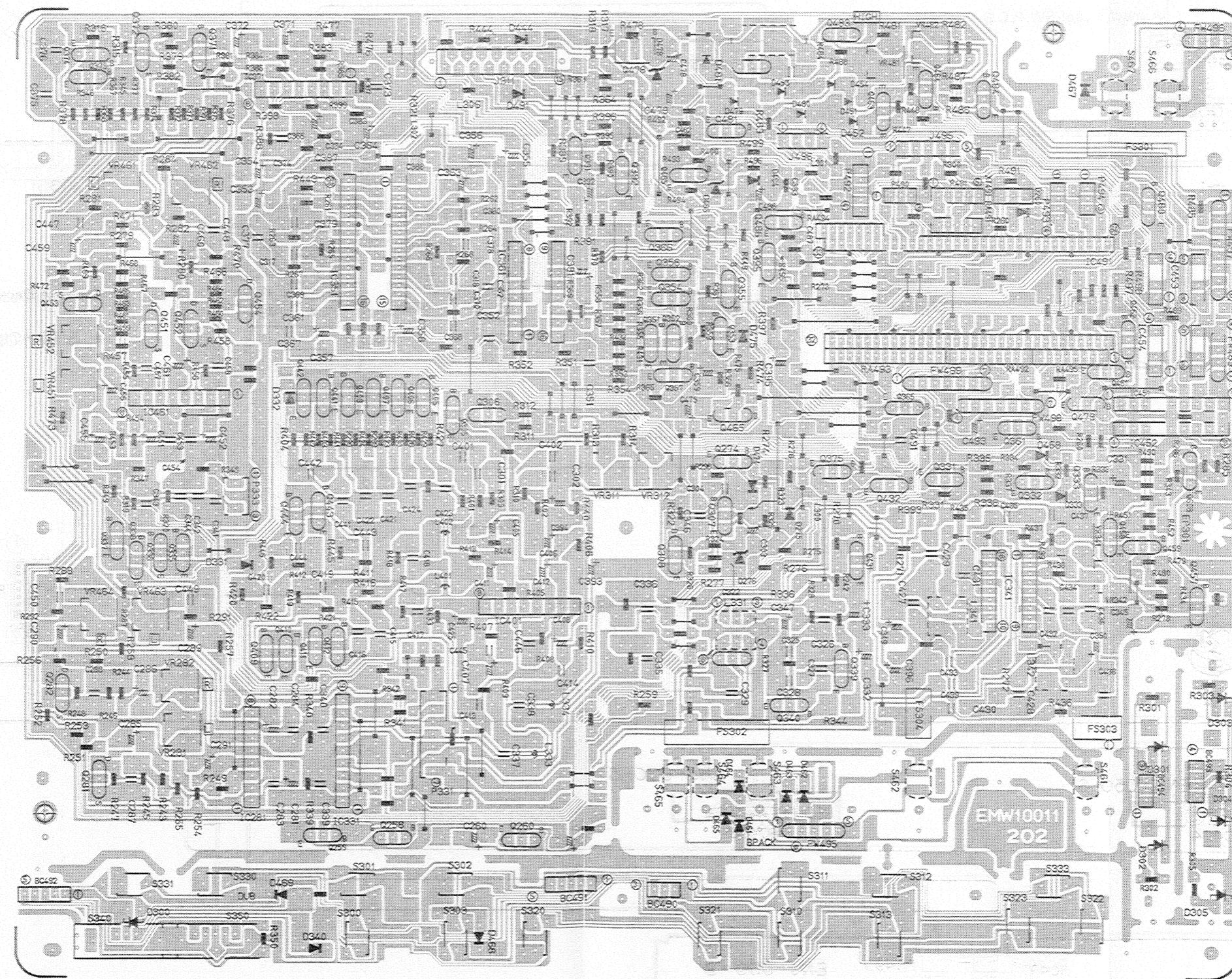
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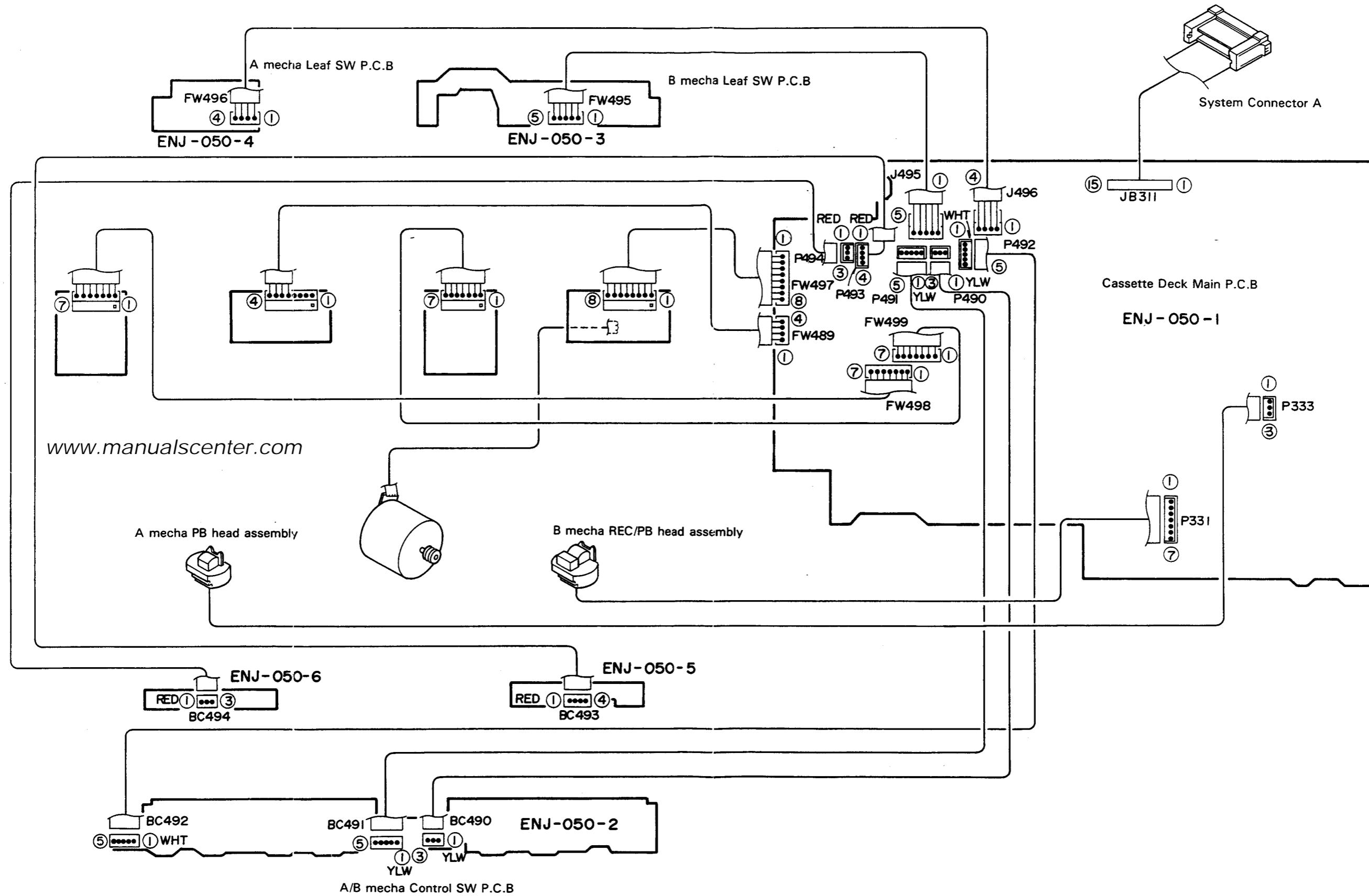
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Printed Circuit Board

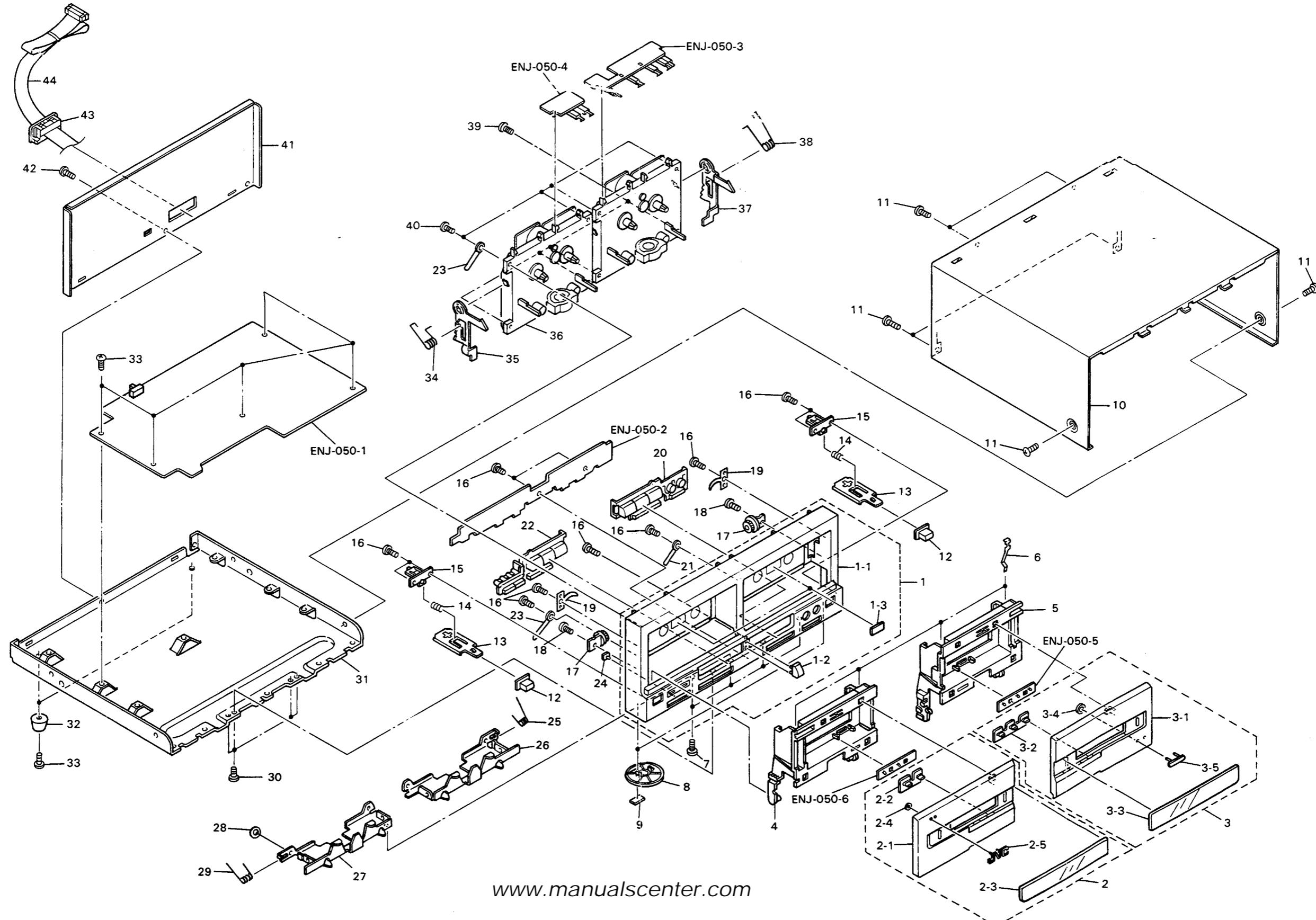
■ Cassette and P.C.B. (ENJ-050)



Connection Diagram



General Exploded View and Parts List



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■ Parts List

⚠ Item	Part Number	Part Name	Q'ty	Description	Areas
1 1-1 1-2 1-3 2	EFP-TDMX70BKE(S E102325-005 E406110-001 E69777-003 E307065-003SA)	Front Panel Ass'y Front Panel Cap Reflection Plate Cassette Lid Ass'y	1 1 1 2 1	A	
2-1 2-2 2-3 2-4 2-5	E307065-003 E406100-001 E406193-001 E60912-003 PQ42561	Cassette Lid Indicator Cassette Window Speed Nut JVC Mark	1 1 1 1 1	A A A A A	
3 3-1 3-2 3-3 3-4	E307067-002SA E307067-002 E406099-001 E406193-002 E60912-003	Cassette Lid Ass'y Cassette Lid Indicator Cassette Window Speed Nut	1 1 1 1 1	B B B B B	
3-5 4 5 6 7	E406347-001 E206813-002 E206814-002 E406085-001 SDST3006Z	Mark Cassette Holder Cassette Holder Cassette Spring Screw	1 1 1 4 4	B A B	
8 9 10 11 12	E306935-001 E75896-001 E206809-002 SDSG3008M E406097-002	Foot Spacer Metal Cover Screw Push Button	2 2 1 6 2	Front for Front Foot Eject	
13 14 15 16 17	E406103-001 E406112-001 E306938-003 SDSF2608Z E305654-003	Push Plate Spring Eject Guide Screw Damper Ass'y	2 2 2 11 2	Eject Eject Eject Eject	
18 19 20 21 22	SBSF3008Z E406251-001 E206821-003 PU49485-4 E206811-002	Screw Leaf Spring Push Button Wire Clamp Push Button	2 2 1 1 1	for Damper B A	
23 24 25 26 27	PU49485-3 E406111-001 E406276-001 E306911-002 E306910-002	Wire Clamp Indicator Holder Spring Holder Bracket Holder Bracket	2 1 1 1 1	B.Skip Right Right Left	
28 29 30 31 32	E406359-001 E406275-002 SDST3006M E102327-002 E47227-029	Spacer Holder Spring Screw Chassis Base Foot	1 1 4 1 2	for Holder Bracket (Left) Left Rear	
33 34 35 36 37	SBSG3008N E406277-003 E307099-003 — E307100-004	Screw Eject Spring Eject Lever Cassette Mechanism Ass'y Eject Lever	7 1 1 1 1	Left Left See page 2-7 Right	
38 39 40 41	E406278-002 SBST3008C SBSF3010C E206823-009 E206823-010	Eject Spring Screw Screw Rear Panel Rear Panel	1 4 4 1 1	Right for Cassette Mechanism for Cassette Mechanism J C,U,A	

⚠: Safety Parts

⚠ Item	Part Number	Part Name	Q'ty	Description	Areas
42	E206823-011 E206823-012 SBSG3008M	Rear Panel Rear Panel Screw	1 1 1		E, EF, G, GI BS
43	E305920-001	Cord Holder	1		
44	EWP902-021	Plug Cord Ass'y	1	JB311 (15Pin)	
—	E61029-009	Number Label	1		

⚠: Safety Parts

The Marks Designated Areas

J.....the U.S.A.

BS.....the U.K.

C.....Canada

E, EF.....Continental Europe

A.....Australia

U.....Universal Type

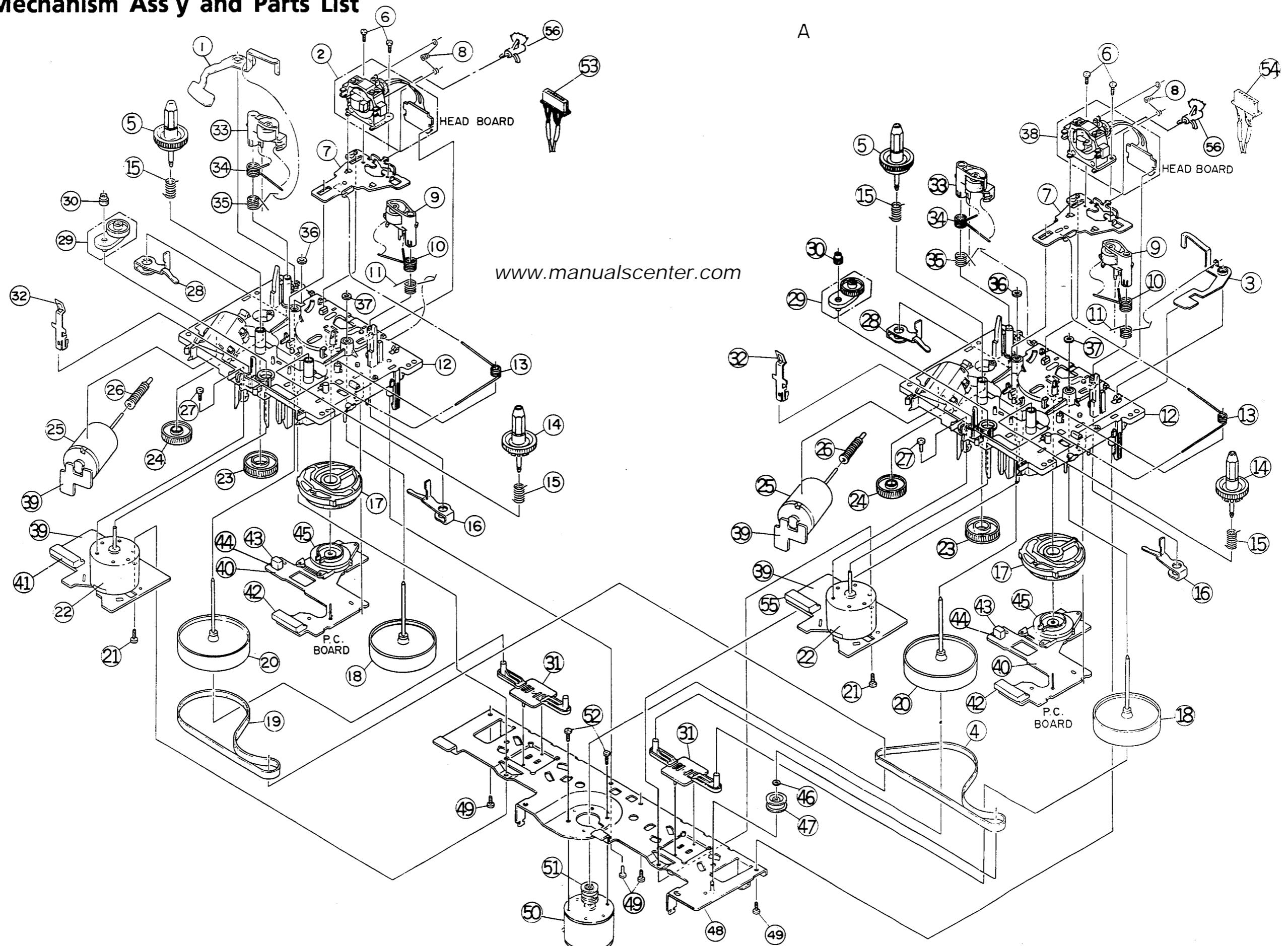
G.....Germany

GI.....Italy

No mark indicates all areas.

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Cassette Mechanism Ass'y and Parts List



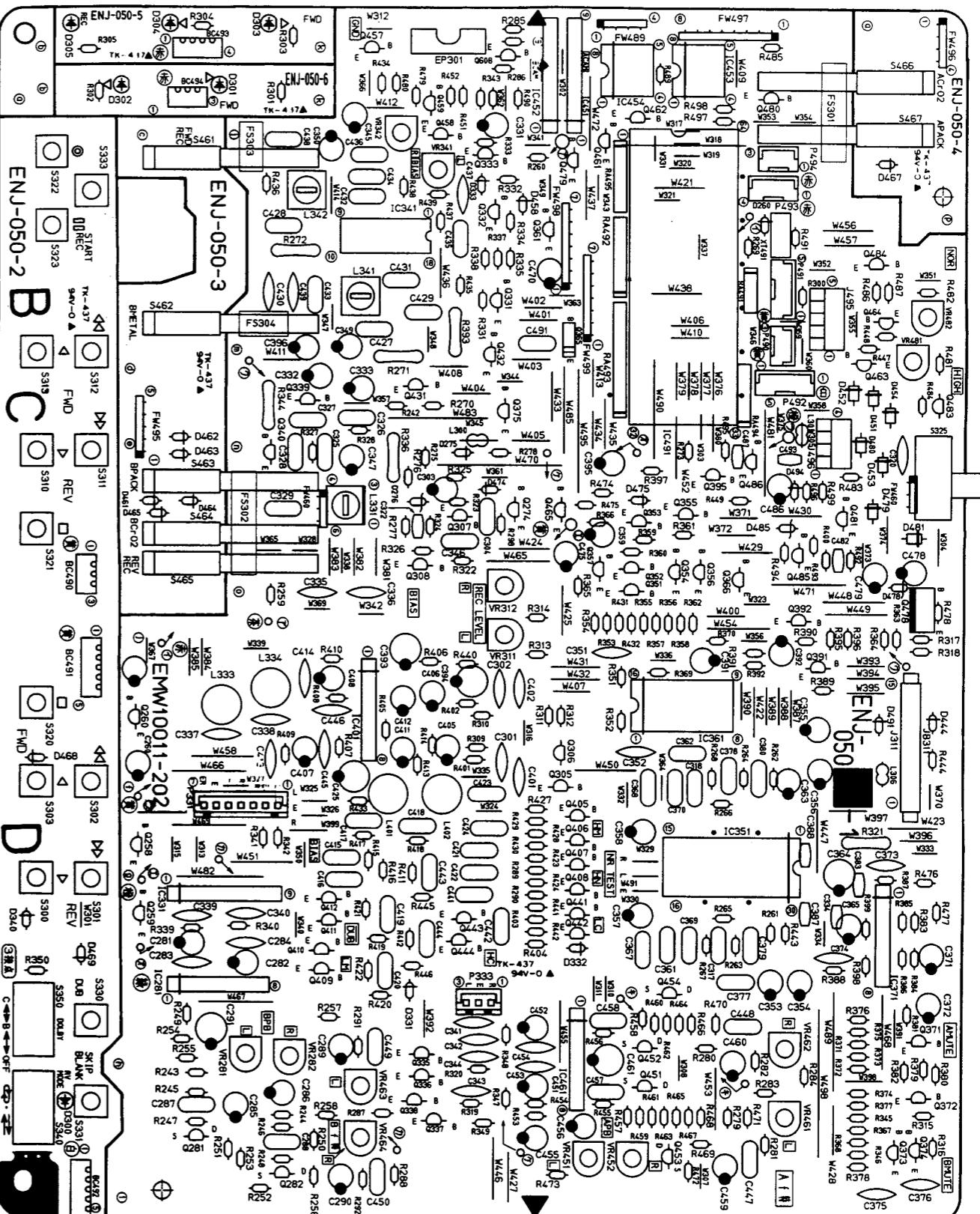
■ Cassette Mechanism Parts List

Item	Part Number	Part Name	Q'ty	Description	Areas
1	VKL6954-002	Eject Safety Lever	1	B Mechanism	
2	VDG5149-002MB1	Head Mount Ass'y	1	B Mechanism	
3	VKL6943-002	Eject Safety Lever	1	A Mechanism	
4	VKB3001-047	Capstan Belt	1	A Mechanism	
5	VKS5321-00A	Reel Ass'y	2	Right	
6	SDST2004Z	Screw	4	for Head Mount Ass'y	
7	VKL6942-00B	Head Base Ass'y	2		
8	VKW4914-001	Head Spring	2		
9	VKP4221-00A	Pinch Roller Ass'y	2	Left	
10	VKW3006-213	Torsion Spring	2	Left	
11	VKW4933-001	Torsion Spring	2	Left	
12	VKS1112-00A	Chassis Base Ass'y	2		
13	VKW4930-002	Return Spring	2		
14	VKS3480-001	Reel Ass'y	4	Left for Reel Ass'y	
15	VKW4928-001	B.T Spring			
16	VKL6940-001	Pinch Roller Lever	2	Left	
17	VKS2209-002	Controller Cam	2	Left	
18	VKF3174-00A	Flywheel Ass'y	2		
19	VKB3001-048	Capstan Belt	1	B Mechanism	
20	VKF3172-00A	Flywheel Ass'y	2	Right	
21	SDSF2608Z	Screw	2	Reel	
22	MMN-6F4RA88	D.C Motor	2		
23	VKS5331-001	Gear (6)	2		
24	VKS5330-001	Gear (5)	2		
25	MXN-13FB12F	D.C Motor	2	Cam	
26	VKS5329-001	Gear (4)	2		
27	SDSP2605Z	Screw	2		
28	VKL6939-001	Pinch Roller Lever	2	Right	
29	VKS5325-008	FR Arm Ass'y	2		
30	VKS5328-002	Reel Motor Gear	2		
31	VKS5327-002	Thrust Plate	2		
32	VKY4628-001	Pack Spring	2		
33	VKP4219-00A	Pinch Roller Ass'y	2	Right	
34	VKW3006-212	Torsion Spring	2	Right	
35	VKW4932-001	Torsion Spring	2	Right	
36	VKZ4035-009	Washer	2		
37	Q03093-527	Washer	2		
38	VDG5149-002MA1	Head Mount Ass'y	1	Left	
39	VMW3272-001	Printed Board	2	A Mechanism	
40	VMW3273-001	Printed Board	2		
41	VMC0107-R08	Connector	1		
42	VMC0107-R07	Connector	2		
43	DN6851A	Hall IC	2		
44	VKS3487-001	IC Holder	2		
45	VKS3495-00A	Cam Switch Ass'y	2		
46	WDL163525-4	Washer	1		
47	VKR4631-002	Idler Pulley	1		
48	VKM3419-00C	FM Bracket	1		
49	SDSF2605Z	Screw	4		
50	MMI-6H2LWSK	Motor	1	Capstan	
51	VKR4632-001	Motor Pulley	1		
52	SPSP2603Z	Screw	2		
53	VDM007P-040	Head Wire	1	B Mechanism	
54	VDM003P-040	Head Wire	1	A Mechanism	
55	VMC0107-R04	Connector	1	A Mechanism	
56	VKS3485-002	Head Block Gear	2		

Printed Circuit Board Ass'y and Parts List

■ ENJ-050 □ Cassette PC Board Ass'y

Note : ENJ-050 □ varies according to the areas employed. See note (1) when placing an order.



Capacitors

ITEM	PART NUMBER	DESCRIPTION	AREA
C339	QCY21HK-152	1500PF 50V CERAMIC	
C340	QCY21HK-152	1500PF 50V CERAMIC	
C341	QCS21HJ-331	330PF 50V CERAMIC	
C342	QCS21HJ-331	330PF 50V CERAMIC	
C343	QCY21HK-122	1200PF 50V CERAMIC	
C344	QCY21HK-122	1200PF 50V CERAMIC	
C345	QETB1AM-107	100MF 10V ELECTRO	
C346	QFV81HJ-223	0.022MF 50V T.FILM	
C347	QETB1CM-107	100MF 16V ELECTRO	
C349	QETB1EM-106	10MF 25V ELECTRO	
C350	QETB1EM-106	10MF 25V ELECTRO	
C351	QCF21HP-473	0.047MF 50V CERAMIC	
C352	QCF21HP-473	0.047MF 50V CERAMIC	
C353	QETB1HM-105	1MF 50V ELECTRO	
C354	QETB1HM-105	1MF 50V ELECTRO	
C355	QETB1HM-105	1MF 50V ELECTRO	
C356	QETB1HM-105	1MF 50V ELECTRO	
C357	QETB1EM-106	10MF 25V ELECTRO	
C358	QETB1EM-106	10MF 25V ELECTRO	
C359	QETB1EM-106	10MF 25V ELECTRO	
C361	QFV81HJ-104	0.1MF 50V T.FILM	
C362	QFV81HJ-104	0.1MF 50V T.FILM	
C363	QETB1HM-105	1MF 50V ELECTRO	
C364	QETB1CM-107	100MF 16V ELECTRO	
C365	QETB1AM-107	100MF 10V ELECTRO	
C367	QFV81HJ-104	0.1MF 50V T.FILM	
C368	QFV81HJ-104	0.1MF 50V T.FILM	
C369	QFLB1HJ-222	2200PF 50V MYLAR	
C370	QFLB1HJ-222	2200PF 50V MYLAR	
C371	QETB1HM-105	1MF 50V ELECTRO	
C372	QETB1HM-105	1MF 50V ELECTRO	
C373	QCS21HJ-220	22PF 50V CERAMIC	
C374	QCS21HJ-220	22PF 50V CERAMIC	
C375	QCF21HP-473	0.047MF 50V CERAMIC	
C376	QCF21HP-473	0.047MF 50V CERAMIC	
C377	QFLB1HJ-222	2200PF 50V MYLAR	
C378	QFLB1HJ-222	2200PF 50V MYLAR	
C379	QFLB1HJ-272	2700PF 50V MYLAR	
C380	QFLB1HJ-272	2700PF 50V MYLAR	
C383	QCGB1HK-102	1000PF 50V CERAMIC	
C384	QCGB1HK-102	1000PF 50V CERAMIC	
C387	QCBB1HK-471	470PF 50V CERAMIC	
C388	QCBB1HK-471	470PF 50V CERAMIC	
C391	QEKS1EM-106	10MF 25V ELECTRO	
C392	QEKS1EM-106	10MF 25V ELECTRO	
C393	QETB1CM-107	100MF 16V ELECTRO	
C394	QETB1CM-107	100MF 16V ELECTRO	
C395	QETB1AM-476	47MF 10V ELECTRO	
C396	QETB1CM-476	47MF 16V ELECTRO	
C401	QCF21HP-473	0.047MF 50V CERAMIC	
C402	QCF21HP-473	0.047MF 50V CERAMIC	
C405	QETB1HM-223	2.2MF 50V ELECTRO	
C406	QETB1HM-225	2.2MF 50V ELECTRO	
C407	QETB1HM-225	2.2MF 50V ELECTRO	
C408	QETB1HM-225	2.2MF 50V ELECTRO	
C411	QETB1EM-106	10MF 25V ELECTRO	
C412	QETB1EM-106	10MF 25V ELECTRO	
C413	QCS21HJ-271	270PF 50V CERAMIC	
C414	QCS21HJ-271	270PF 50V CERAMIC	
C415	QFLB1HJ-682	6800PF 50V MYLAR	
C416	QFLB1HJ-682	6800PF 50V MYLAR	
C417	QFLB1HJ-562	5600PF 50V MYLAR	
C418	QFLB1HJ-562	5600PF 50V MYLAR	
C419	QFV81HJ-123	0.012MF 50V T.FILM	
C420	QFV81HJ-123	0.012MF 50V T.FILM	
C421	QFLB1HJ-272	2700PF 50V MYLAR	
C422	QFLB1HJ-272	2700PF 50V MYLAR	
C423	QFV81HJ-183	0.018MF 50V T.FILM	
C424	QFV81HJ-183	0.018MF 50V T.FILM	
C425	QETB1CM-107	100MF 16V ELECTRO	
C427	QFP81HG-821	820PF 50V POLY	
C428	QFP81HG-821	820PF 50V POLY	
C429	QCS21HJ-101	100PF 50V CERAMIC	
C430	QCS21HJ-101	100PF 50V CERAMIC	
C431	QFV81HJ-333	0.033MF 50V T.FILM	
C432	QFV81HJ-333	0.033MF 50V T.FILM	
C433	QFV81HJ-223	0.022MF 50V T.FILM	
C434	QFV81HJ-223	0.022MF 50V T.FILM	
C435	QFV81HJ-103	0.01MF 50V T.FILM	
C436	QFV81HJ-103	0.01MF 50V T.FILM	
C437	QCF21HP-102	1000PF 50V CERAMIC	
C438	QCF21HP-102	1000PF 50V CERAMIC	
C439	QCS21HJ-100	10PF 50V CERAMIC	
C441	QFV81HJ-103	0.01MF 50V T.FILM	
C442	QFV81HJ-103	0.01MF 50V T.FILM	
C443	QFV81HJ-123	0.012MF 50V T.FILM	
C444	QFV81HJ-123	0.012MF 50V T.FILM	
C445	QCS21HJ-470	47PF 50V CERAMIC	
C446	QCS21HJ-470	47PF 50V CERAMIC	
C447	QFV81HJ-153	0.015MF 50V T.FILM	
C448	QFV81HJ-153	0.015MF 50V T.FILM	
C449	QFV81HJ-153	0.015MF 50V T.FILM	
C450	QFV81HJ-153	0.015MF 50V T.FILM	
C451	QETB1HM-225	2.2MF 50V ELECTRO	
C452	QETB1HM-225	2.2MF 50V ELECTRO	

△ : SAIPIETY PARTS

Capacitors

ITEM	PART NUMBER	DESCRIPTION	AREA
C453	QCS21HJ-101	100PF 50V CERAMIC	
C454	QCS21HJ-101	100PF 50V CERAMIC	
C455	QETB1AM-107	100MF 10V ELECTRO	
C456	QETB1AM-107	100MF 10V ELECTRO	
C457	QFLB1HJ-822	8200PF 50V MYLAR	
C458	QFLB1HJ-822	8200PF 50V MYLAR	
C459	QETB1HM-105	1MF 50V ELECTRO	
C460	QETB1HM-105	1MF 50V ELECTRO	
C461	QETB1CM-107	100MF 16V ELECTRO	
C475	QETB1AM-476	47MF 10V ELECTRO	
C478	QETB1EM-106	10MF 25V ELECTRO	
C479	QETB1AM-476	47MF 10V ELECTRO	
C482	QCVB1CM-103	0.01MF 16V CERAMIC	
C486	QETB1CM-106	10MF 16V ELECTRO	
C487	QCVB1CM-103	0.01MF 16V CERAMIC	
C491	QCZ0202-155	1.5MF 25V CERAMIC	
C493	QCVB1CM-103	0.01MF 16V CERAMIC	
C494	QCF21HP-103	0.01MF 50V CERAMIC	

△ : SAFETY PARTS

Resistors

ITEM	PART NUMBER	DESCRIPTION	AREA
R242	QRD167J-222	2.2K 1/6W CARBON	
R243	QRD167J-470	47 1/6W CARBON	
R244	QRD167J-470	47 1/6W CARBON	
R245	QRD167J-334	330K 1/6W CARBON	
R246	QRD167J-334	330K 1/6W CARBON	
R247	QRD167J-682	6.8K 1/6W CARBON	
R248	QRD167J-682	6.8K 1/6W CARBON	
R249	QRD167J-822	8.2K 1/6W CARBON	
R250	QRD167J-822	8.2K 1/6W CARBON	
R251	QRD167J-105	1M 1/6W CARBON	
R252	QRD167J-105	1M 1/6W CARBON	
R253	QRD167J-472	4.7K 1/6W CARBON	
R254	QRD167J-471	470 1/6W CARBON	
R255	QRD167J-272	2.7K 1/6W CARBON	
R256	QRD167J-272	2.7K 1/6W CARBON	
R257	QRD167J-102	1K 1/6W CARBON	
R258	QRD167J-102	1K 1/6W CARBON	
R259	QRD167J-472	4.7K 1/6W CARBON	
R260	QRD167J-102	1K 1/6W CARBON	
R261	QRD167J-242	2.4K 1/6W CARBON	
R262	QRD167J-242	2.4K 1/6W CARBON	
R263	QRD167J-562	5.6K 1/6W CARBON	
R264	QRD167J-562	5.6K 1/6W CARBON	
R265	QRD167J-223	22K 1/6W CARBON	
R266	QRD167J-223	22K 1/6W CARBON	
R267	QRD167J-561	560 1/6W CARBON	
R268	QRD167J-561	560 1/6W CARBON	
R269	QRD167J-103	10K 1/6W CARBON	
R270	QRD167J-103	10K 1/6W CARBON	
R271	QRD14CJ-100S	10 1/4W UNF-CARBON	
R272	QRD14CJ-100S	10 1/4W UNF-CARBON	
R273	QRD167J-222	2.2K 1/6W CARBON	
R275	QRD167J-224	220K 1/6W CARBON	
R276	QRD167J-102	1K 1/6W CARBON	
R277	QRD167J-392	3.9K 1/6W CARBON	
R278	QRD167J-472	4.7K 1/6W CARBON	
R279	QRD167J-102	1K 1/6W CARBON	
R280	QRD167J-102	1K 1/6W CARBON	
R281	QRD167J-223	22K 1/6W CARBON	
R282	QRD167J-223	22K 1/6W CARBON	
R283	QRD167J-102	1K 1/6W CARBON	
R284	QRD167J-102	1K 1/6W CARBON	
R285	QRD167J-103	10K 1/6W CARBON	
R286	QRD167J-103	10K 1/6W CARBON	
R287	QRD167J-102	1K 1/6W CARBON	
R288	QRD167J-102	1K 1/6W CARBON	
R291	QRD167J-103	10K 1/6W CARBON	
R292	QRD167J-103	10K 1/6W CARBON	
R298	QRD167J-124	120K 1/6W CARBON	
R300	QRD167J-391	390 1/6W CARBON	
R301	QRD167J-271	270 1/6W CARBON	
R302	QRD167J-271	270 1/6W CARBON	
R303	QRD167J-271	270 1/6W CARBON	
R304	QRD167J-271	270 1/6W CARBON	
R305	QRD167J-561	560 1/6W CARBON	
R309	QRD167J-473	47K 1/6W CARBON	
R310	QRD167J-473	47K 1/6W CARBON	
R311	QRD167J-103	10K 1/6W CARBON	
R312	QRD167J-103	10K 1/6W CARBON	
R313	QRD167J-153	15K 1/6W CARBON	
R314	QRD167J-153	15K 1/6W CARBON	
R315	QRD167J-103	10K 1/6W CARBON	
R316	QRD167J-103	10K 1/6W CARBON	
R317	QRD167J-223	22K 1/6W CARBON	
R318	QRD167J-223	22K 1/6W CARBON	
R319	QRD167J-823	82K 1/6W CARBON	
R320	QRD167J-823	82K 1/6W CARBON	
R321	QRZ0077-220	22 1/4W FUSIBLE	
R322	QRD167J-124	120K 1/6W CARBON	
R323	QRD167J-475	4.7M 1/6W CARBON	

△ : SAFETY PARTS

Note (1)

PC Board Ass'y	Designated Areas
ENJ-050 [A]	Canada, the U.S.A.
ENJ-050 [B]	Australia, the U.K., Continental Europe, Universal Type
ENJ-050 [C]	Germany, Italy

Transistors

△ ITEM	PART NUMBER	DESCRIPTION	AREA
Q258	DTC144ES	SILICON ROHM	
Q259	DTC144ES	SILICON ROHM	
Q260	DTC114ES	SILICON ROHM	
Q274	2SD2144S(VW)	SILICON ROHM	
Q281	2SK301(P,Q)	F.E.T MATSUSHITA	
Q282	2SK301(P,Q)	F.E.T MATSUSHITA	
Q305	2SD2144S(VW)	SILICON ROHM	
Q306	2SD2144S(VW)	SILICON ROHM	
Q307	2SD2144S(VW)	SILICON ROHM	
Q308	2SD2144S(VW)	SILICON ROHM	
Q331	ZSC1740S(R,S)	SILICON ROHM	
Q332	ZSC1740S(R,S)	SILICON ROHM	
Q333	ZSC1740S(R,S)	SILICON ROHM	
Q335	DTC144ES	SILICON ROHM	
Q336	DTC144ES	SILICON ROHM	
Q357	DTC144ES	SILICON ROHM	
Q358	DTC144ES	SILICON ROHM	
Q359	ZSC1685(Q,R)	SILICON MATSUSHITA	
Q340	ZSC1685(Q,R)	SILICON MATSUSHITA	
Q351	ZSC1740S(R,S)	SILICON ROHM	
Q352	ZSC1740S(R,S)	SILICON ROHM	
Q353	ZSC1740S(R,S)	SILICON ROHM	
Q354	ZSC1740S(R,S)	SILICON ROHM	
Q355	ZSC1740S(R,S)	SILICON ROHM	
Q356	ZSC1740S(R,S)	SILICON ROHM	
Q357	ZSC1740S(R,S)	SILICON ROHM	
Q361	DTC144ES	SILICON ROHM	
Q365	DTC144EFF	SILICON ROHM	
Q366	DTC144ES	SILICON ROHM	
Q371	2SD2144S(VW)	SILICON ROHM	
Q372	2SD2144S(VW)	SILICON ROHM	
Q373	2SD2144S(VW)	SILICON ROHM	
Q374	2SD2144S(VW)	SILICON ROHM	
Q375	DTC144ES	SILICON ROHM	
Q391	2SD2144S(VW)	SILICON ROHM	
Q392	2SD2144S(VW)	SILICON ROHM	
Q395	DTA144ES	SILICON ROHM	
Q405	DTC144TS	SILICON ROHM	
Q406	DTC144TS	SILICON ROHM	
Q407	DTC144TS	SILICON ROHM	
Q408	DTC144TS	SILICON ROHM	
Q409	DTC144TS	SILICON ROHM	
Q410	DTC144TS	SILICON ROHM	
Q411	DTC144TS	SILICON ROHM	
Q412	DTC144TS	SILICON ROHM	
Q431	2SA933S(R,S)	SILICON ROHM	
Q432	DTC114WS	SILICON S001	
Q441	DTC144TS	SILICON ROHM	
Q442	DTC144TS	SILICON ROHM	
Q443	DTC144TS	SILICON ROHM	
Q444	DTC144TS	SILICON ROHM	
Q451	2SK301(P,Q)	F.E.T MATSUSHITA	
Q452	2SK301(P,Q)	F.E.T MATSUSHITA	
Q453	2SK301(P,Q)	F.E.T MATSUSHITA	
Q454	2SK301(P,Q)	F.E.T MATSUSHITA	
Q457	DTC144TS	SILICON ROHM	
Q458	DTC144TS	SILICON ROHM	
Q459	ZSC1740S(R,S)	SILICON ROHM	
Q460	DTC114WS	SILICON S001	
Q461	DTC144ES	SILICON ROHM	
Q462	DTC144ES	SILICON ROHM	
Q463	ZSB544MP(E,F)	SILICON SANYO	
Q464	ZSB544MP(E,F)	SILICON SANYO	
Q465	DTA114YS	SILICON ROHM	
Q478	2SD2037(E,F)	SILICON ROHM	
Q479	DTC114WS	SILICON S001	
Q480	DTC144ES	SILICON ROHM	
Q481	DTC114WS	SILICON S001	
Q483	2SA933S(R,S)	SILICON ROHM	
Q484	2SA933S(R,S)	SILICON ROHM	
Q485	DTA114TS	SILICON ROHM	
Q486	DTC114ES	SILICON ROHM	

△ : SAFETY PARTS

I.C.s

△ ITEM	PART NUMBER	DESCRIPTION	AREA
IC281	UPC1228HA	I.C. NEC	
IC331	UPC1330HA	I.C. NEC	
IC341	UPC1297CA	I.C. NEC	
IC351	HA12142NT	I.C. HITACHI	
IC361	BU4053B	I.C. ROHM	
IC371	BA15218N	I.C. ROHM	
IC401	BA15218N	I.C. ROHM	
IC451	BA6218	I.C. ROHM	
IC452	BA6218	I.C. ROHM	
IC453	LB1639-CV	I.C. SANYO	
IC454	LB1639-CV	I.C. SANYO	
IC461	UPC1228HA	I.C. NEC	
IC491	HD614081SC43	I.C. HITACHI	

△ : SAFETY PARTS

Diodes

△ ITEM	PART NUMBER	DESCRIPTION	AREA
D260	1SS133	SILICON ROHM	
D275	1SS133	SILICON ROHM	
D276	MT2-7JB	ZENER ROHM	
D300	SLH-34VC3F	L.E.D. ROHM	
D301	SLH-34MC3F	L.E.D. ROHM	
D302	SLH-34MC3F	L.E.D. ROHM	
D303	SLH-34MC3F	L.E.D. ROHM	
D304	SLH-34MC3F	L.E.D. ROHM	
D305	SLH-34VC3F	L.E.D. ROHM	
D331	1SS133	SILICON ROHM	
D332	1SS133	SILICON ROHM	
D333	1SS133	SILICON ROHM	
D340	1SS133	SILICON ROHM	
D451	1SR139-200	SILICON ROHM	
D452	1SR139-200	SILICON ROHM	
D453	1SR139-200	SILICON ROHM	
D454	1SR139-200	SILICON ROHM	
D458	1SS133	SILICON ROHM	
D461	1SS133	SILICON ROHM	
D462	1SS133	SILICON ROHM	
D463	1SS133	SILICON ROHM	
D464	1SS133	SILICON ROHM	
D465	1SS133	SILICON ROHM	
D467	1SS133	SILICON ROHM	
D468	1SS133	SILICON ROHM	
D469	1SS133	SILICON ROHM	
D474	1SS133	SILICON ROHM	
D475	1SS133	SILICON ROHM	
D478	MTZ6.2JC	ZENER ROHM	
D479	1SR139-200	SILICON ROHM	
D480	1SR139-200	SILICON ROHM	
D481	1SR139-200	SILICON ROHM	
D485	MTZ3.9JB	ZENER ROHM	
D491	1SS133	SILICON ROHM	
D494	1SS133	SILICON ROHM	

△ : SAFETY PARTS

Capacitors

△ ITEM	PART NUMBER	DESCRIPTION	AREA
C260	QET81CM-226	22MF 16V ELECTRO	
C281	QET81HM-225	2.2MF 50V ELECTRO	
C282	QET81HM-225	2.2MF 50V ELECTRO	
C283	QCS21HJ-101	100PF 50V CERAMIC	
C284	QCS21HJ-101	100PF 50V CERAMIC	
C285	QET81AM-107	100MF 10V ELECTRO	
C286	QET81AM-107	100MF 10V ELECTRO	
C287	QFLB1HJ-822	8200PF 50V MYLAR	
C288	QFLB1HJ-822	8200PF 50V MYLAR	
C289	QET81HM-105	1MF 50V ELECTRO	
C290	QET81HM-105	1MF 50V ELECTRO	
C291	QEK51CM-107	100MF 16V ELECTRO	
C301	QCY21HK-122	1200PF 50V CERAMIC	
C302	QCY21HK-122	1200PF 50V CERAMIC	
C303	QET81HM-105	1MF 50V ELECTRO	
C304	QFV81HJ-223	0.022MF 50V T.FILM	
C317	QFLB1HJ-222	2200PF 50V MYLAR	
C318	QFLB1HJ-222	2200PF 50V MYLAR	
C320	QCB81HK-471	470PF 50V CERAMIC	
C322	QCGB1HK-102	1000PF 50V CERAMIC	
C325	QFLB1HJ-222	2200PF 50V MYLAR	
C326	QFLB1HJ-222	2200PF 50V MYLAR	
C327	QFLB1HJ-682	6800PF 50V MYLAR	
C328	QFV81HJ-153	0.015MF 50V T.FILM	
C329	QFP81HG-562	5600PF 50V POLY	
C331	QET81HM-105	1MF 50V ELECTRO	
C332	QET81HM-105	1MF 50V ELECTRO	
C333	QET81EM-106	10MF 25V ELECTRO	
C337	QCS21HJ-101	100PF 50V CERAMIC	
C338	QCS21HJ-101	100PF 50V CERAMIC	

△ : SAFETY PARTS

Others

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	J311	EMV10011-202	PRINTED BOARD	
	J495	EMV7130-015	CONNECTOR(15PIN)	
	J496	EMV7122-005	CONNECTOR(SPIN)	
	L300	EMV7122-004	CONNECTOR(4PIN)	
	L301	EQL4004-101	INDUCTOR	C
	L306	EQL4004-100	INDUCTOR	C
	L331	ENZ6002-011	OSCILLATOR COIL	
	L333	EQL2106-223	INDUCTOR	
	L334	EQL2106-223	INDUCTOR	
	L341	ENZ2500-001	SPACER	
	L342	ENZ2500-001	SPACER	
	L401	EQL2106-562	INDUCTOR	
	L402	EQL2106-562	INDUCTOR	
	P331	QMV5011-007K	PLUG ASSY(7PIN)	
	P333	QMV5011-003K	PLUG ASSY(3PIN)	
	P490	EMV5109-003A	PLUG ASSY(3PIN)	
	P491	EMV5109-005A	PLUG ASSY(5PIN)	
	P492	EMV5109-005A	PLUG ASSY(5PIN)	
	P493	EMV5109-004A	PLUG ASSY(4PIN)	
	P494	EMV5109-003A	PLUG ASSY(3PIN)	
	S300	ESP0001-018	TACT SWITCH(A REV PLAY)	
	S301	ESP0001-018	TACT SWITCH(A REW)	
	S302	ESP0001-018	TACT SWITCH(A F.FWD)	
	S303	ESP0001-018	TACT SWITCH(A FWD PLAY)	
	S310	ESP0001-018	TACT SWITCH(B REV PLAY)	
	S311	ESP0001-018	TACT SWITCH(B REW)	
	S312	ESP0001-018	TACT SWITCH(B F.FWD)	
	S313	ESP0001-018	TACT SWITCH(B FWD PLAY)	
	S320	ESP0001-018	TACT SWITCH(A STOP)	
	S321	ESP0001-018	TACT SWITCH(B STOP)	
	S322	ESP0001-018	TACT SWITCH(B REC)	
	S323	ESP0001-018	TACT SWITCH(B PAUSE)	
	S325	QSS6A12-E01	SLIDE SWITCH(BEAT CUT)	
	S330	ESP0001-018	SLIDE SWITCH(H.DUBBING)	

△ : SAFETY PARTS

Others

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	S331	ESP0001-018	TACT SWITCH(BLANK SKIP)	
	S333	ESP0001-018	TACT SWITCH(CD DIRECT)	
	S340	QSS1A12-E02	SLIDE SWITCH(REV MODE)	
	S350	QSS1A13-E03	SLIDE SWITCH(DOLBY B C NR)	
	S461	ESB1100-003	LEAF SWITCH(RWD.REC)	
	S462	ESB1100-003	LEAF SWITCH(B MBAL)	
	S463	ESB1100-003	LEAF SWITCH(B PACK)	
	S464	ESB1100-003	LEAF SWITCH(C CrO ₂)	
	S465	ESB1100-003	LEAF SWITCH(REV REC)	
	S466	ESB1100-003	LEAF SWITCH(A CrO ₂)	
	S467	ESB1100-003	LEAF SWITCH(A PACK)	
	BC490	EWS253-A108	SOCKET WIRE(3PIN)	
	BC491	EWS255-A108	SOCKET WIRE(5PIN)	
	BC492	EWS255-A209	SOCKET WIRE(5PIN)	
	BC493	EWS254-A009	SOCKET WIRE(4PIN)	
	BC494	EWS253-A009	SOCKET WIRE(3PIN)	
	EP301	E70859-001	EARTH PLATE	
	FS301	EX0020005N10S	SPACER	
	FS302	EX0020005N10S	SPACER	
	FS303	EX0010005N10S	SPACER	
	FS304	EX0010005N10S	SPACER	
	FW460	EWR33B-25SST	FLAT WIRE(3PIN)	
	FW489	EWR34B-25LST	FLAT WIRE(4PIN)	
	FW495	EWR35B-30LST	FLAT WIRE(5PIN)	
	FW496	EWR34B-25LST	FLAT WIRE(4PIN)	
	FW497	EWR38B-35LST	FLAT WIRE(8PIN)	
	FW498	EWR37B-20LST	FLAT WIRE(7PIN)	
	FW499	EWR37B-25LST	FLAT WIRE(7PIN)	
	JB311	EWP902-021	PLUG CORD ASSY(15PIN)	
	XT491	ECX0004-194KM	RESONATOR	

△ : SAFETY PARTS

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Resistors

△ ITEM	PART NUMBER	DESCRIPTION	AREA
R324	QRD167J-103	10K 1/6W CARBON	
R325	QRD167J-104	100K 1/6W CARBON	
R326	QRD167J-475	4.7M 1/6W CARBON	
R327	QRD167J-563	56K 1/6W CARBON	
R328	QRD167J-563	56K 1/6W CARBON	
R331	QRD167J-332	3.3K 1/6W CARBON	
R332	QRD167J-332	3.3K 1/6W CARBON	
R333	QRD167J-104	100K 1/6W CARBON	
R334	QRD167J-621	620 1/6W CARBON	
R335	QRD167J-821	820 1/6W CARBON	
△ R336	QRD20077-100	10 1/4W FUSIBLE	
R337	QRD167J-471	470 1/6W CARBON	
R338	QRD167J-561	560 1/6W CARBON	
R339	QRD167J-563	56K 1/6W CARBON	
R340	QRD167J-563	56K 1/6W CARBON	
R341	QRD167J-100	10 1/6W CARBON	
R342	QRD167J-100	10 1/6W CARBON	
R343	QRD167J-222	2.2K 1/6W CARBON	
△ R344	QRD14CJ-6R8S	6.8 1/4W UNF. CARBON	
R345	QRD167J-562	5.6K 1/6W CARBON	
R346	QRD167J-562	5.6K 1/6W CARBON	
R347	QRD167J-224	220K 1/6W CARBON	
R348	QRD167J-224	220K 1/6W CARBON	
R349	QRD167J-223	22K 1/6W CARBON	
R350	QRD167J-103	10K 1/6W CARBON	
R351	QRD167J-104	100K 1/6W CARBON	
R352	QRD167J-104	100K 1/6W CARBON	
R353	QRD167J-153	15K 1/6W CARBON	
R354	QRD167J-153	15K 1/6W CARBON	
R355	QRD167J-273	27K 1/6W CARBON	
R356	QRD167J-273	27K 1/6W CARBON	
R357	QRD167J-332	3.3K 1/6W CARBON	
R358	QRD167J-332	3.3K 1/6W CARBON	
R359	QRD167J-223	22K 1/6W CARBON	
R360	QRD167J-223	22K 1/6W CARBON	
R361	QRD167J-561	560 1/6W CARBON	
R362	QRD167J-561	560 1/6W CARBON	
R363	QRD167J-472	4.7K 1/6W CARBON	
R364	QRD167J-472	4.7K 1/6W CARBON	
R365	QRD167J-103	10K 1/6W CARBON	
R366	QRD167J-105	1M 1/6W CARBON	
R367	QRD167J-223	22K 1/6W CARBON	
R368	QRD167J-223	22K 1/6W CARBON	
R369	QRD167J-103	10K 1/6W CARBON	
R370	QRD167J-103	10K 1/6W CARBON	
R371	QRD167J-562	5.6K 1/6W CARBON	
R372	QRD167J-562	5.6K 1/6W CARBON	
R373	QRD167J-103	10K 1/6W CARBON	
R374	QRD167J-103	10K 1/6W CARBON	
R375	QRD167J-223	22K 1/6W CARBON	
R376	QRD167J-223	22K 1/6W CARBON	
R377	QRD167J-103	10K 1/6W CARBON	
R378	QRD167J-103	10K 1/6W CARBON	
R379	QRD167J-103	10K 1/6W CARBON	
R380	QRD167J-103	10K 1/6W CARBON	
R381	QRD167J-102	1K 1/6W CARBON	
R382	QRD167J-102	1K 1/6W CARBON	
R383	QRD167J-104	100K 1/6W CARBON	
R384	QRD167J-104	100K 1/6W CARBON	
R385	QRD167J-123	12K 1/6W CARBON	
R386	QRD167J-123	12K 1/6W CARBON	
R387	QRD167J-104	100K 1/6W CARBON	
R388	QRD167J-104	100K 1/6W CARBON	
R389	QRD167J-221	220 1/6W CARBON	
R390	QRD167J-221	220 1/6W CARBON	
R391	QRD167J-562	5.6K 1/6W CARBON	
R392	QRD167J-562	5.6K 1/6W CARBON	
R393	QRD20077-100	10 1/4W FUSIBLE	
R395	QRD167J-103	10K 1/6W CARBON	
R396	QRD167J-103	10K 1/6W CARBON	
R397	QRD167J-102	1K 1/6W CARBON	
R398	QRD167J-223	22K 1/6W CARBON	
R399	QRD167J-223	22K 1/6W CARBON	
R400	QRD167J-103	10K 1/6W CARBON	
R401	QRD167J-333	33K 1/6W CARBON	
R402	QRD167J-333	33K 1/6W CARBON	
R403	QRD167J-472	4.7K 1/6W CARBON	
R404	QRD167J-472	4.7K 1/6W CARBON	
R405	QRD167J-683	68K 1/6W CARBON	
R406	QRD167J-683	68K 1/6W CARBON	
R407	QRD167J-153	15K 1/6W CARBON	
R408	QRD167J-153	15K 1/6W CARBON	
R409	QRD167J-153	15K 1/6W CARBON	
R410	QRD167J-153	15K 1/6W CARBON	
R411	QRD167J-222	2.2K 1/6W CARBON	
R412	QRD167J-222	2.2K 1/6W CARBON	
R413	QRD167J-182	1.8K 1/6W CARBON	
R414	QRD167J-182	1.8K 1/6W CARBON	
R415	QRD167J-511	510 1/6W CARBON	
R416	QRD167J-511	510 1/6W CARBON	
R417	QRD167J-301	300 1/6W CARBON	
R418	QRD167J-301	300 1/6W CARBON	
R419	QRD167J-332	3.3K 1/6W CARBON	
R420	QRD167J-332	3.3K 1/6W CARBON	
R421	QRD167J-242	2.4K 1/6W CARBON	

Resistors

△ ITEM	PART NUMBER	DESCRIPTION	AREA
R422	QRD167J-242	2.4K 1/6W CARBON	
R423	QRD167J-122	1.2K 1/6W CARBON	
R424	QRD167J-122	1.2K 1/6W CARBON	
R427	QRD167J-151	150 1/6W CARBON	
R428	QRD167J-151	150 1/6W CARBON	
R429	QRD167J-152	1.5K 1/6W CARBON	
R430	QRD167J-152	1.5K 1/6W CARBON	
R431	QRD167J-394	390K 1/6W CARBON	
R432	QRD167J-394	390K 1/6W CARBON	
R433	QRD167J-221	220 1/6W CARBON	
R434	QRD167J-392	3.9K 1/6W CARBON	
R435	QRD167J-154	150K 1/6W CARBON	
R436	QRD167J-154	150K 1/6W CARBON	
R437	QRD167J-183	18K 1/6W CARBON	
R438	QRD167J-183	18K 1/6W CARBON	
R440	QRD167J-221	220 1/6W CARBON	
R441	QRD167J-681	680 1/6W CARBON	
R442	QRD167J-681	680 1/6W CARBON	
R443	QRD167J-183	18K 1/6W CARBON	
R444	QRD167J-221	220 1/6W CARBON	
R445	QRD167J-221	220 1/6W CARBON	
R446	QRD167J-221	220 1/6W CARBON	
R447	QRD167J-103	10K 1/6W CARBON	
R448	QRD167J-103	10K 1/6W CARBON	
R449	QRD167J-103	10K 1/6W CARBON	
R451	QRD167J-822	8.2K 1/6W CARBON	
R452	QRD167J-512	5.1K 1/6W CARBON	
R453	QRD167J-470	47 1/6W CARBON	
R454	QRD167J-470	47 1/6W CARBON	
R455	QRD167J-334	330K 1/6W CARBON	
R456	QRD167J-334	330K 1/6W CARBON	
R457	QRD167J-432	4.3K 1/6W CARBON	
R458	QRD167J-432	4.3K 1/6W CARBON	
R459	QRD167J-392	3.9K 1/6W CARBON	
R460	QRD167J-392	3.9K 1/6W CARBON	
R461	QRD167J-682	6.8K 1/6W CARBON	
R462	QRD167J-682	6.8K 1/6W CARBON	
R463	QRD167J-752	7.5K 1/6W CARBON	
R464	QRD167J-752	7.5K 1/6W CARBON	
R465	QRD167J-223	22K 1/6W CARBON	
R466	QRD167J-223	22K 1/6W CARBON	
R467	QRD167J-105	1M 1/6W CARBON	
R468	QRD167J-105	1M 1/6W CARBON	
R469	QRD167J-105	1M 1/6W CARBON	
R470	QRD167J-105	1M 1/6W CARBON	
R471	QRD167J-471	470 1/6W CARBON	
R472	QRD167J-472	4.7K 1/6W CARBON	
R473	QRD167J-472	4.7K 1/6W CARBON	
R474	QRD167J-274	270K 1/6W CARBON	
R475	QRD167J-104	100K 1/6W CARBON	
R476	QRD167J-224	220K 1/6W CARBON	
R477	QRD167J-224	220K 1/6W CARBON	
R478	QRD167J-102	1K 1/6W CARBON	
R479	QRD167J-562	5.6K 1/6W CARBON	
R480	QRD167J-392	3.9K 1/6W CARBON	
R481	QRD167J-183	18K 1/6W CARBON	
R482	QRD167J-155	15K 1/6W CARBON	
R483	QRD167J-224	220K 1/6W CARBON	
R484	QRD167J-224	220K 1/6W CARBON	
R485	QRD167J-683	68K 1/6W CARBON	
R486	QRD167J-224	220K 1/6W CARBON	
R487	QRD167J-224	220K 1/6W CARBON	
R489	QRD167J-103	10K 1/6W CARBON	
R490	QRD167J-103	10K 1/6W CARBON	
R491	QRD167J-105	1M 1/6W CARBON	
R492	QRD167J-153	15K 1/6W CARBON	
R493	QRD167J-102	1K 1/6W CARBON	
R494	QRD167J-222	2.2K 1/6W CARBON	
R495	QRD167J-103	10K 1/6W CARBON	
R496	QRD167J-103	10K 1/6W CARBON	
R497	QRD167J-102	1K 1/6W CARBON	
R498	QRD167J-102	1K 1/6W CARBON	
R499	QRD167J-472	4.7K 1/6W CARBON	
R500	QRD167J-223	22K 1/6W CARBON	
RA491	QRB049J-103	10K 1/10W R.NETWORK	
RA492	QRB089J-103	10K 1/10W R.NETWORK	
RA495	QRB079J-103	10K 1/10W R.NETWORK	
VR281	QVP4601-201A	200 VARIABLE	
VR282	QVP4601-201A	200 VARIABLE	
VR311	QVP4601-503A	50K VARIABLE	
VR312	QVP4601-503A	50K VARIABLE	
VR341	QVP4601-203A	20K VARIABLE	
VR342	QVP4601-203A	20K VARIABLE	
VR451	QVP4601-201A	200 VARIABLE	
VR452	QVP4601-201A	200 VARIABLE	
VR461	QVP4601-103A	10K VARIABLE	
VR462	QVP4601-103A	10K VARIABLE	
VR463	QVP4601-103A	10K VARIABLE	
VR464	QVP4601-103A	10K VARIABLE	
VR481	QVP4601-203A	20K VARIABLE	
VR482	QVP4601-103A	10K VARIABLE	

△ : SAFETY PARTS

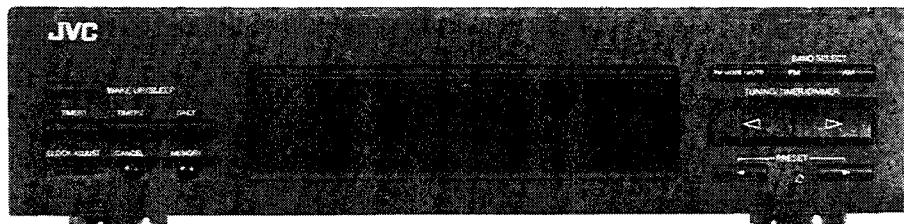
△ : SAFETY PARTS

JVC

SERVICE MANUAL

ONE-PRICE COMPONENT SYSTEM

MODEL NO. **DX-MX70BK/CA-MX70BK**
(UNIT NO. FX-MX70BK)



- * For instruction manual, please refer to the CA-MX70BK (S.M.NO.20243) or DX-MX70BK (S.M.NO.20249).
- * AX-MX70BK is needed (for power supply etc.) when servicing.

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Safety Precautions

1. The design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Services should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the product should not be made. Any design alterations of the product should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the Parts List of Service Manual. Electrical components having such features are identified by shading on the schematics and by (Δ) on the Parts List in the Service Manual. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement parts shown in the Parts List of Service Manual may create shock, fire, or other hazards.
4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.
5. Leakage current check (Electrical shock hazard testing)

After re-assembling the product, always perform an isolation check on the exposed metal parts of the product (antenna terminals, knobs, metal cabinet, screw heads, headphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

Do not use a line isolation transformer during this check.

- Plug the AC line cord directly into the AC outlet. Using a "Leakage Current Tester", measure the leakage current from each exposed metal parts of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground. Any leakage current must not exceed 0.5mA AC (r.m.s.).

Alternate check method

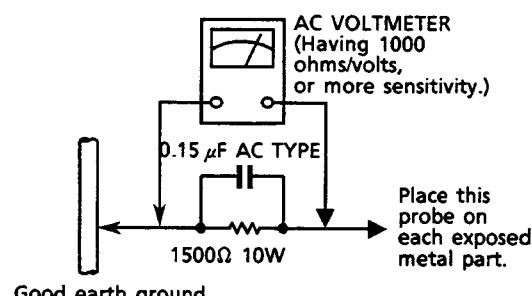
Plug the AC line cord directly into the AC outlet. Use an AC voltmeter having, 1,000 ohms per volt or more sensitivity in the following manner. Connect a $1,500\Omega$ 10 W resistor paralleled by a $0.15 \mu F$ AC-type capacitor between an exposed metal part and a known good earth ground.

Measure the AC voltage across the resistor with the AC voltmeter.

Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor.

Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75 V AC (r.m.s.).

This corresponds to 0.5 mA AC (r.m.s.).



Warning

1. This equipment has been designed and manufactured to meet international safety standards.
2. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
3. Repairs must be made in accordance with the relevant safety standards.
4. It is essential that safety critical components are replaced by approved parts.
5. If mains voltage selector is provided, check setting for local voltage.

Specifications

FM TUNER SECTION

Tuning range	: 87.5 MHz ~ 108.0 MHz
Usable sensitivity	: 0.95µV / 75 ohms(10.8 dBf)
Signal-to-noise ratio (IHF-A Weighted / DIN)	: MONO (at 85dBf) 80 dB / 72dB STEREO (at 85dBf) 73 dB / 64dB

AM TUNER SECTION

MW

Tuning range

Area	Channel space	
	9kHz	10kHz
U.S.A. Canada	—	530kHz~1710kHz
Continental Europe, U.K.	522kHz~1629kHz	—
Italy	522kHz~1629kHz	—
Australia	522kHz~1629kHz	—
Other Area	531kHz~1602kHz	530kHz~1600kHz

LW

Tuning range

Area	Channel Space (1kHz)
U.S.A. Canada	—
Continental Europe, U.K.	144kHz~353kHz
Italy	144kHz~290kHz
Australia	—
Other Area	—

GENERAL

Dimensions (W×H×D)	: 10-7/8" × 2-11/16" × 10-7/8" inches (275×68×275 mm)
Weight	: 3.6 lbs. (1.6 kg)

Design and specifications subject to change without notice.

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Description of Major LSIs

H614089SC35(IC201) : System Controller

1. Terminal Layout

G5	1		64	G6
G4	2		63	G7
G3	3		62	G8
G2	4		61	G9
G1	5		60	G10
S1	6		59	G11
S2	7		58	G12
S3	8		57	G13
S4	9		56	
S5	10		55	DCS IN
S6	11		54	DCS OUT
S7	12		53	GND
S8	13		52	OSC2
S9	14		51	OSC1
S10	15		50	TEST
S11	16		49	RST IN
S12	17		48	KIN1
-BP	18		47	KIN2
K09	19		46	KIN3
FREQ. OUT	20		45	KIN4
RM IN	21		44	KO1
STEREO IN	22		43	KO2
TUNED IN	23		42	KO3
INH IN	24		41	KO4
MUTE	25		40	
MONO	26		39	
VCC	27		38	
	28		37	KO8
	29		36	CE
	30		35	DATA OUT
	31		34	DATA IN
	32		33	CLK

HD614089SC35

2. Key Matrix

	KEY OUT 1 (pin44)	KEY OUT2 (pin43)	KEY OUT3 (pin42)	KEY OUT4 (pin41)
KEY IN 1 (pin48)	TP203 (POWER)	WAKE-UP /SLEEP	UP	FM
KEY IN 2 (pin47)	TIMER1	CLOCK ADJ	DOWN	AM
KEY IN 3 (pin46)	TIMER2	CANCEL	PRESET UP	FM MODE/MUTE
KEY IN 4 (pin45)	DAILY	MEMORY	PRESET DOWN	—

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3. Pin Functions

Pin NO.	symbol	I/O	Function and Operations	Pin NO.	symbol	I/O	Function and Operations
1	G5	O	FL grid control output	33	CLK	O	Clock output for data transmit
2	G4	O	"	34	DATA IN	I	Data input
3	G3	O	"	35	DATA OUT	O	Data output
4	G2	O	"	36	CE	O	Chip enable
5	G1	O	"	37	KO8	O	Version setting signal
6	S1	O	FL segment control output	38	—	—	Non connection
7	S2	O	"	39	—	—	"
8	S3	O	"	40	—	—	"
9	S4	O	"	41	KO4	O	Key matrix output
10	S5	O	"	42	KO3	O	"
11	S6	O	"	43	KO2	O	"
12	S7	O	"	44	KO1	O	"
13	S8	O	"	45	KIN4	I	Key matrix input
14	S9	O	"	46	KIN3	I	"
15	S10	O	"	47	KIN2	I	"
16	S11	O	"	48	KIN1	I	"
17	S12	O	"	49	RST IN	I	Reset signal input
18	—	—	Non connection	50	TEST	—	TEST terminal
19	-BP	I	Power supply for FL Display	51	OSC1	I	Clock oscillation input
20	—	—	Non connection	52	OSC2	O	Clock oscillation output
21	K09	O	Key matrix output	53	GND	—	Ground
22	FREQ. OUT	O	Clock frequency output	54	DCS OUT	O	Compulink signal output
23	RM IN	I	Remote control signal input	55	DCS IN	I	Compulink signal input
24	—	—	Non connection	56	—	—	Non connection
25	STEREO IN	I	Input for indication of "STEREO"	57	G13	O	FL grid control output
26	TUNED IN	I	Input for indication of "TUNED"	58	G12	O	"
27	INH IN	I	Inhibit signal input	59	G11	O	"
28	—	—	Non connection	60	G10	O	"
29	MUTE	O	Muting signal output	61	G9	O	"
30	MONO	—	Non connection	62	G8	O	"
31	—	—	"	63	G7	O	"
32	VCC	I	Power supply	64	G6	O	"

■ LC7218 (IC102) : PLL Synthesizer

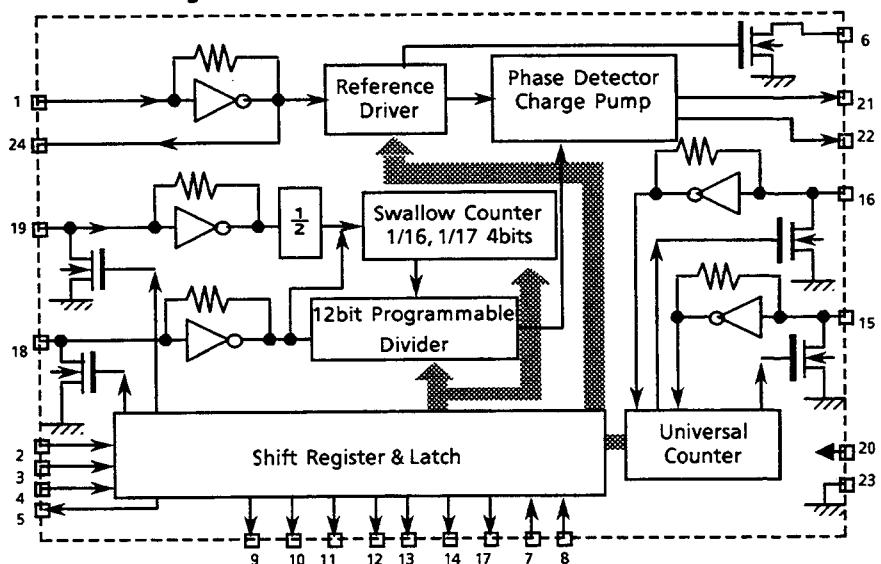
1. The main function descriptions

- (1) It makes the local oscillation frequency by the control data from IC201.
- (2) Decode the control signal and transmit the signal for receiving conditions.
- (3) For the best tuning, count the internal-frequency and transmit the data to IC201.

2. Terminal Layout

X IN	1	X OUT
CE	2	VSS
DI	3	PD2
CLK	4	PD1
DO	5	VDD
SYC	6	FM-OSC IN
TUNED	7	AM-OSC IN
STOP IN	8	IF Req.
POWER	9	FM IF
QSC	10	AM IF
MONO	11	LW
FM	12	MW

3. Block Diagram



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4. Pin Functions

Pin No.	Symbol	I/O	Functions and Operations
1,24	Xin , Xout	I/O	Crystal oscillator (7.2MHz).
2	CE	I	Fix the chip enable to "H" when inputting (DI) and outputting (DO) the serial data.
3	DI	I	Receive the control data from the controller (IC201).
4	CLK	I	This clock is used to synchronize data when transmitting the data of DI and DO.
5	DO	O	Transmit the data from LC7218 to the controller which is synchronized with CL.
6	SYC	-	Not used.
7	TUNED	I	Receive the tuned signal from IC104 (LA1266A).
8	STOP IN	I	Not used.
9	POWER	O	Not used.
10	QSC	O	ON mode with "H" and OFF mode with "L".(NOT USED)
11	MONO	O	It is "H" on FM-monaural, "L" on FM-Stereo.
12	FM	O	It is "H" on FM mode.
13	MW	O	It is "H" on MW mode.
14	LW	O	It is "H" on LW mode.
15	AM-IF	I	Universal counter input for AM-IF from IC104 (LA1266A).
16	FM-IF	I	Universal counter input for FM-IF from IC104(LA1266A).
17	IF Req.	O	Output the "IF-signal request" to IC104 when the pin-7 (TUNED) go to "H".
18	AM OSC IN	I	Input the local oscillator signal of AM.
19	FM OSC IN	I	Input the local oscillator signal of FM.
20	VDD	--	This is a terminal of power supply.
21	PD1	O	PLL charge pump output : When the local oscillator signal frequency is higher than the reference frequency high level signals will output. When it is lower than the reference frequency, low level signals will output. When it is same as reference frequency signals, it will be floating.
22	PD2	O	Not used.
23	VSS	-	Power supply.

FX-MX70BK

■ LA1266A (IC104) : FM AM IF AMP & detector

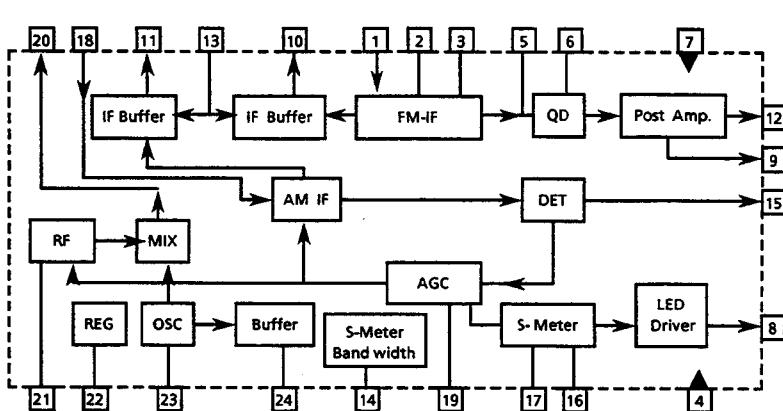
1. The main function descriptions

- (1) Amplify and detect of FM IF frequencies.
- (2) It has local oscillator and mixer for AM, and amplify the AM-IF signal.

2. Terminal Layout

FM-IF	1	24	AM-OSC OUT
BYPASS	2	23	AM-OSC
BYPASS	3	22	V.REF
GND	4	21	AM-IN
FM-DET	5	20	AM-MIX
FM-DET	6	19	AM-AGC
V _{CC}	7	18	AM-IF
SIG	8	17	AM ADJ.
FM-AFC	9	16	FM ADJ
FM-IF	10	15	AM OUT
AM-IF	11	14	NAR SM
FM-OUT	12	13	STRQ

3. Block Diagram



4. Pin Functions

Pin No.	Symbol	I/O	Functions and Operations
1	FM IF	I	This is an input terminal of FM IF Signal.
2,3	BYPASS	-	Bypass of FM IF Amp.
4	GND	-	This is the device ground terminal.
5,6	FM DET	-	FM detect transformer.
7	V _{CC}	-	This is the power supply terminal.
8	TUNED	O	When the set is tuning ,this terminal become "L".
9	FM AFC	O	This is an output terminal of voltage for FM - AFC.
10	FM IF OUT	O	When the signal of IF REQ of IC102(LC7218) applied to pin17, the signal of FM IF does output.
11	AM IF OUT	O	When the signal of IF REQ of IC102(LC7218) applied to pin17, the signal of AM IF does output.
12	FM OUT	O	FM detection output.
13	STRQ	I	The IF-signals come out from pin10 (FM-IF) or pin11 (AM-IF) while this terminal going to "High".
14	NAR SM	-	Control the Band-width of signal meter.
15	AM OUT	O	AM detection output.
16	FM ADJ	-	For adjust the stop level (or mute level) of FM.
17	AM ADJ	-	For adjust the stop level (or mute level) of AM.
18	AM-IF	I	Input of AM IF Signal.
19	AM-AGC	I	This is an AGC voltage Input terminal for AM.
20	AM-MIX	O	This is an output terminal for AM mixer.
21	AM-IN	I	This is an input terminal for AM RF Signal.
22	V.REF	-	Register value between pin9 and pin22 desides the frequency width of the input signal.
23	AM-OSC	-	This is a terminal of AM Local oscillation circuit.
24	AM-OSC OUT	O	AM Local Oscillation Signal output.

■ LA3401 (IC105) : FM MPX Decoder

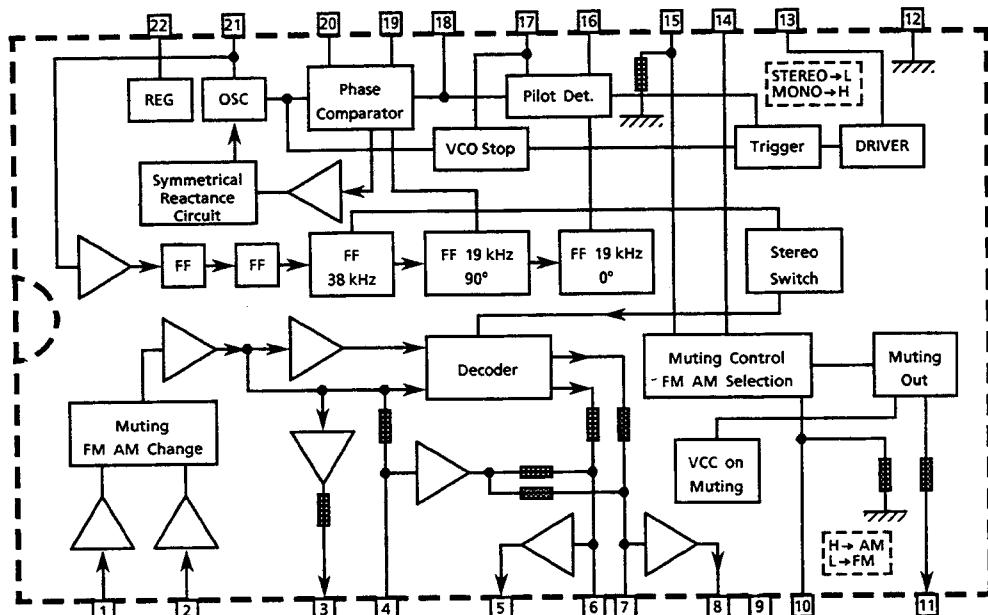
1. The main function descriptions

- (1) Decord the FM Multiplex Signal (Stereo signal).
- (2) When receiving FM Stereo Signal, it outputs the signal for indicator.
- (3) AM / FM Audio Amplifier.

2. Terminal Layout

AM IN	1	V _{CC}	22
FM IN	2	VCO	21
PILOT OUT	3	LPF	20
SEPA ADJ	4	LPF	19
LOUT	5	PILOT IN	18
L	6	LPF	17
R	7	LPF	16
R OUT	8	MUTE IN	15
MUTE CONT	9	MUTE CONT	14
FM/AM	10	STEREO	13
MUTE OUT	11	GND	12

3. Block Diagram



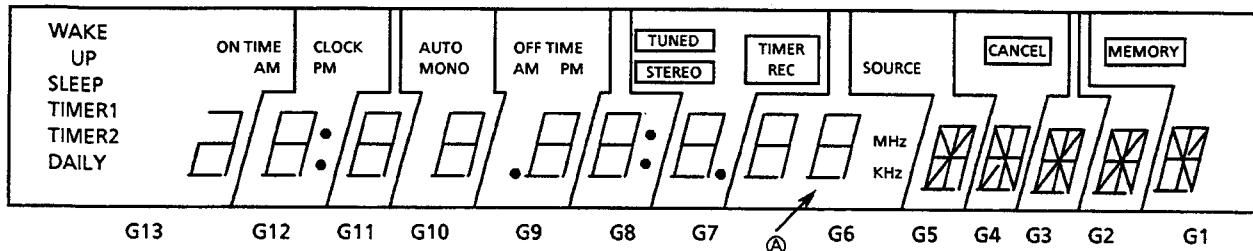
4. Pin Functions

Pin No.	Symbol	I/O	Functions and Operations
1	AM IN	I	This is an input terminal for AM detection signal.
2	FM IN	I	This is an input terminal for FM detection signal.
3	PILOT OUT	O	Output of MPX pilot signal (Connect to Pin18).
4	SEPA. ADJ.	-	Separation adjustment.
5	L. OUT	O	Left channel signal output.
6	L	O	Input terminal of the Left channel Post AMP.
7	R	O	Input terminal of the right channel Post AMP.
8	R OUT	O	Right channel signal output
9	MUTE CONT	-	The mute time is controlled by the connected capacitor when turning the power switch on.
10	FM / AM	I	Change over the FM / AM input. "H" : AM, "L" : FM
11	MUTE OUT	--	Not use
12	GND	-	Ground terminal.
13	STEREO	O	Stereo indicator output. Stereo : "L", Mono : "H"
14	MUTE CONT	-	The mute time is controlled by the connected capacitor when changing over the FM / AM .
15	MUTE IN	I	Mute signal input. "H" : Mute on, "L" : Mute off.
16	LPF	-	Low pass filter of pilot detector.
17	LPF	-	While this terminal goes to "H", the VCO stop.
18	PILOT IN	I	PLL input.
19	LPF	-	Low-pass filter of PLL.
20	LPF	-	Low-pass filter of PLL.
21	VCO	I	Voltage controlled oscillator terminal.
22	V _{cc}	-	Power supply.

Internal Connections for the FL Display Tube

■ ELU0001-101:(FL201)

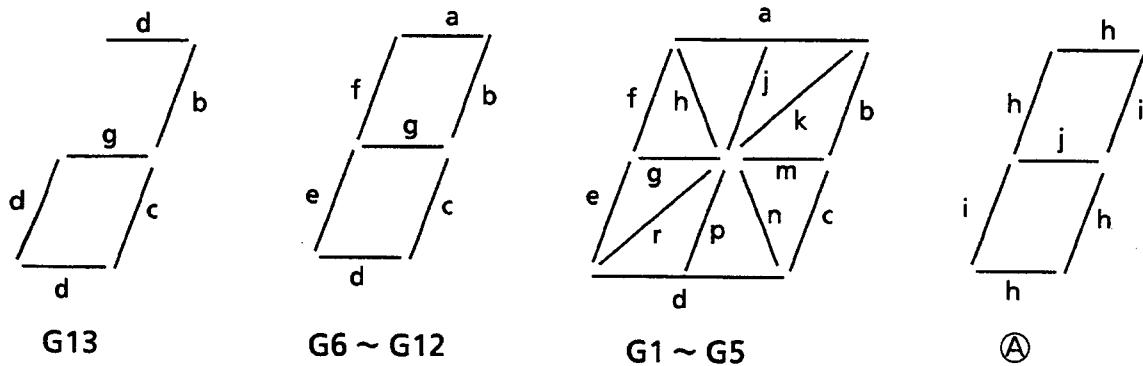
1. Grid Assignment



2. Pin Connections

PIN NO.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
CONNECTION	FL1	FL1	NP	NC	G13	S1	S2	G13	S3	S4	G12	G12	S5	G11	S6	G10	S7	G9	G9	S8	S9	G8	S10
PIN NO.	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46
CONNECTION	G7	S11	G6	S12	NC	NC	NC	G6	NC	G5	NC	G4	NC	G3	NC	G2	NC	G1	NC	NP	F2	F2	

[Note] F:Filament S:Segment G :Grid NP:No Pin NC:Non Connection



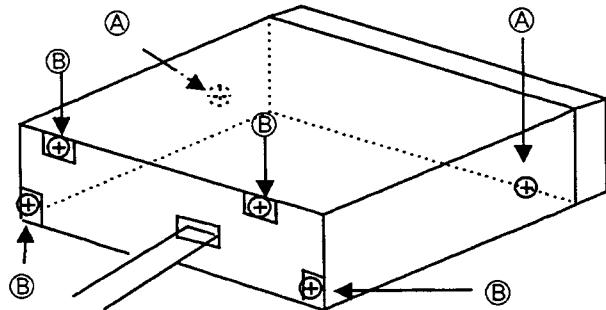
3. Anode Connections

	G13	G12	G11	G10	G9	G8	G7	G6	G5	G4	G3	G2	G1
S1	d	d	d	d	d	d	d	d	d	d	d	d	d
S2	-	e	e	e	e	e	e	e	e	e	e	e	e
S3	c	c	c	c	c	c	c	c	c	c	c	c	c
S4	g	-	-	-	-	-	-	kHz	r	r	r	r	m
S5	b	•	-	-	•	•	•	MHz	k	n	n	n	n
S6	DAILY	-	-	-	AM	-	STEREO	i	j,p	j,p	j,p	j,p	j,p
S7	TIMER2	g	g	g	g	g	g	g	g,m	g,m	g,m	g,m	g
S8	TIMER1	f	f	f	f	f	f	f	f	f	f	f	f
S9	SLEEP	b	b	b	b	b	b	b	b	b	b	b	b
S10	WAKE UP	a	a	a	a	a	a	a	a	a	a	a	a
S11	AM	PM	-	MONO	PM	-	TUNED	j	h	h	h	h	h,k
S12	ON TIME	CLOCK	-	AUTO	OFFTIME	-	TIMER REC	h	SOURCE	CANCEL	k	k	MEMORY

Disassembly Procedures

■ Removing the Top Cover

1. Remove the 4 screws ② fastening the rear side of the Top cover, and 2 screws ④ fastening both sides.
2. Remove the Top Cover.

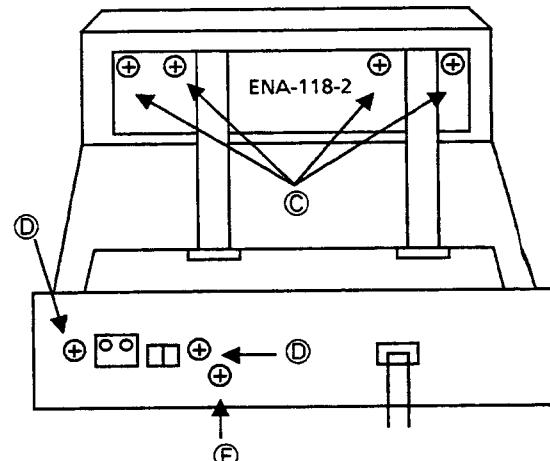
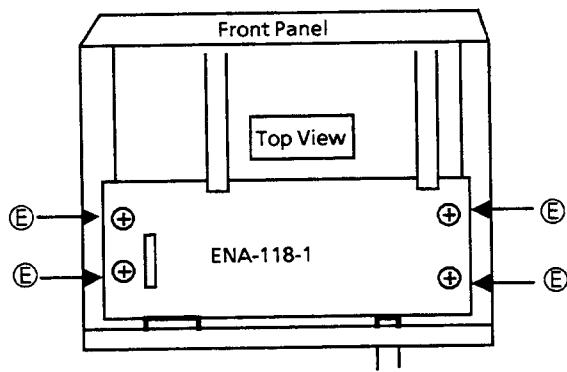


■ Removing the Front P.C. Board.

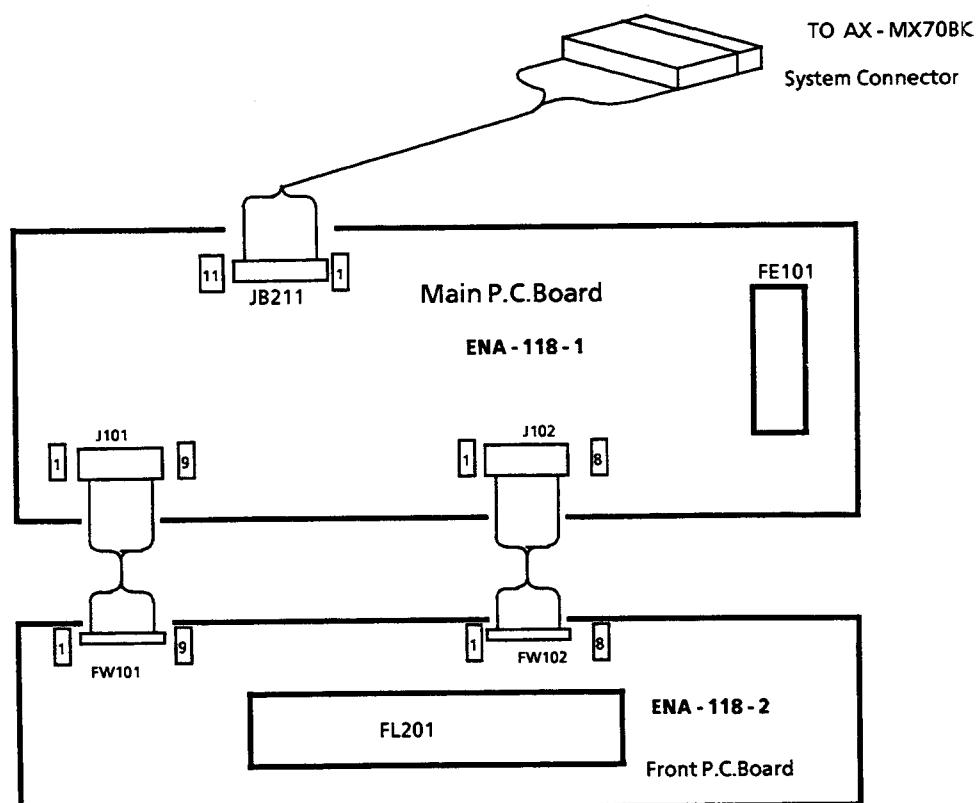
1. Remove the Top Cover.
2. Remove 4 screws ⑤ fastening the P.C. Board, and remove it.

■ Removing the Main P.C. Board

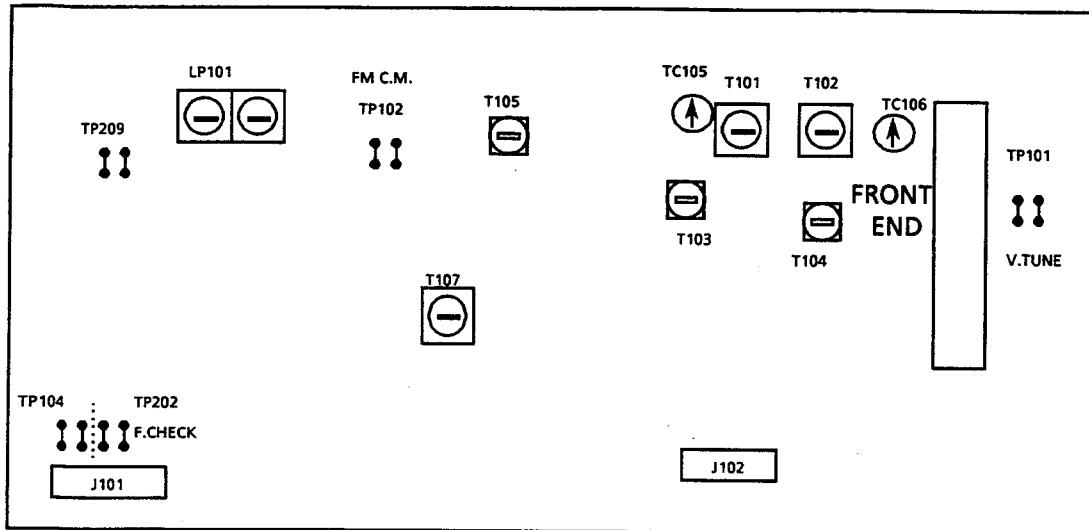
1. Remove the Top Cover.
2. Remove the 4 screws ⑥ fastening the P.C. Board.
3. Remove the screws ⑦ ⑧ and remove the P.C. Board.



Connection Diagram



FM/AM Tuner Alignment Procedures



■ DISCHARGE

When discharging the backup, shortcircuit the two terminals of TP104.

1. FM section

■ FM oscillator

- (1) Set the frequency display to "108.0MHz".
- (2) Confirm that the FM inter-station noise is received.
- (3) Confirm that the voltage of test point "TP101" is $8.0V \pm 2.0V$.
- (4) Set the frequency display to "87.5MHz" and confirm the voltage of test point "TP101" is $1.6V \pm 1.0V$.

■ FM detector coil : T105

- (1) Connect a digital voltmeter to test point "TP102", and receive to "100.1MHz" signal with SSG at 70dB.
- (2) Adjust T105 so that the digital voltmeter reads $0 \pm 1.5mV$.

2. MW section

- Note () : Australia ,the U.K. and Continental Europe
 { } : Channel space 9kHz for universal version
 [] : Channel space 10kHz for universal version
 [] : America ,Canada

■ MW oscillator : T103

- (1) Set the frequency display to (522kHz) {531kHz} [530kHz] [530kHz] and confirm that the voltage of test point TP101 is $(0.9V \pm 0.2V)$ { $1.0V \pm 0.2V$ } [$1.0V \pm 0.2V$] [$1.0V \pm 0.2V$].
- (2) Set the frequency display to (1629kHz) {1602kHz} [1600kHz] [1710kHz] and confirm that the voltage of test point TP101 is $(7.5V \pm 0.8V)$ { $7.2V \pm 0.7V$ } [$7.2V \pm 0.7V$] [$8.0V \pm 0.8V$].
- (3) If its voltage exceeds the allowance , adjust T103 to obtain the voltage .

■ MW antenna coil : T101

- (1) Connect a loop antenna to the "AM Loop" terminal on the rear panel.
- (2) Adjust T101 to obtain the best receiving sensitivity on 600kHz or 603kHz.

■ MW antenna trimmer : TC105

- (1) Adjust TC105 to obtain the best receiving sensitivity on 1400kHz or 1404kHz.

3. LW section (for Long Wave Version)

Note : [] for Italy

■ LW oscillator : T104

- (1) Set the frequency display to 144kHz and adjust T104 so that the voltage of TP101 becomes $0.8V \pm 0.1V$.
- (2) Set the frequency display to 353kHz[290kHz] and confirm that the voltage of test point TP101 becomes $8.0V \pm 0.9V$ [$5.7V \pm 0.6V$].

■ LW antenna coil : T102

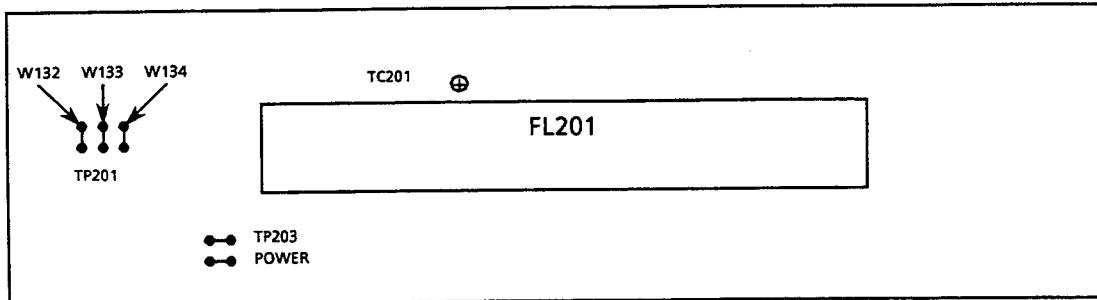
- (1) Connect a loop antenna to the "AM Loop" terminal on the rear panel.
- (2) Adjust T102 to obtain the best receiving sensitivity on 164kHz [164kHz].

■ LW antenna trimmer : TC106

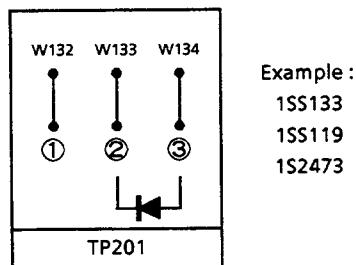
- (1) Adjust TC106 to obtain the best receiving sensitivity on 353kHz [245kHz].

* Alternately adjust T102 and TC106 so that each sensitivity becomes maximum.

Clock Generator Frequency Adjustment



1. Switch OFF the AX-MX70BK's power source, then pull out the AC plug.
2. Shortcircuit TP201's terminals ② and ③ with the diode as shown in the accompanying diagram, then insert the AC plug into the receptable to switch the power ON.
3. Confirm that the tuner's FL display is off, then remove the diode and connect the frequency counter to TP 202(FREQ. CHECK).
4. Adjust TC201 so that the counter becomes $34,952.5 \pm 0.15$ Hz.



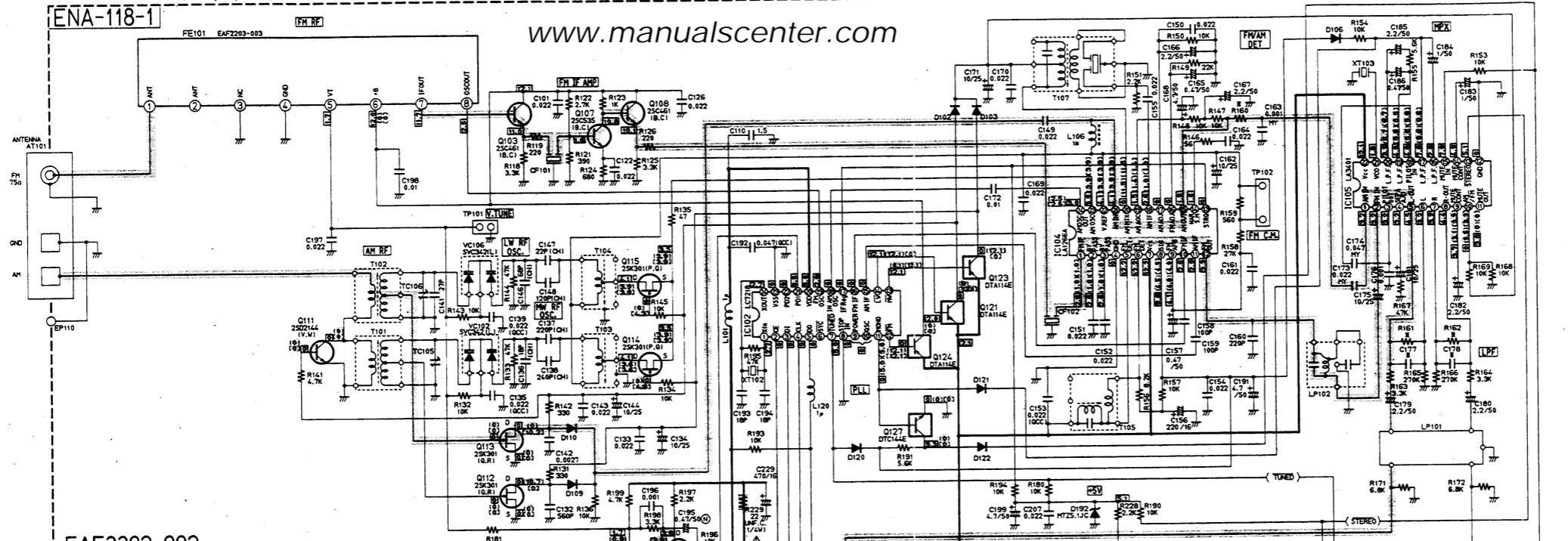
Example :
1SS133
1SS119
1S2473

Schematic Diagrams

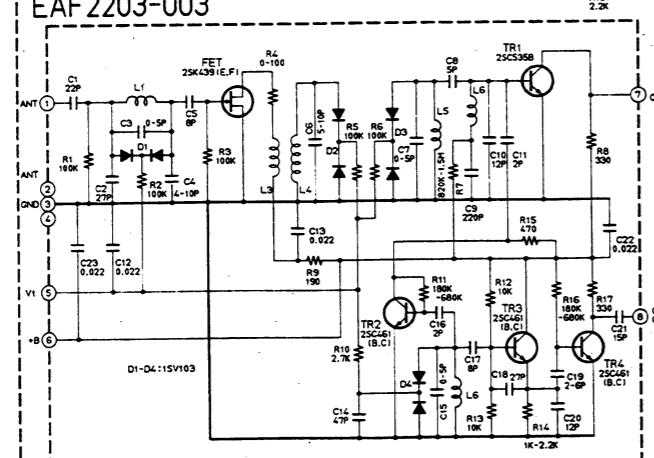
■ Tuner 1

FX-MX70BK (E,EF,G,BS,GI)

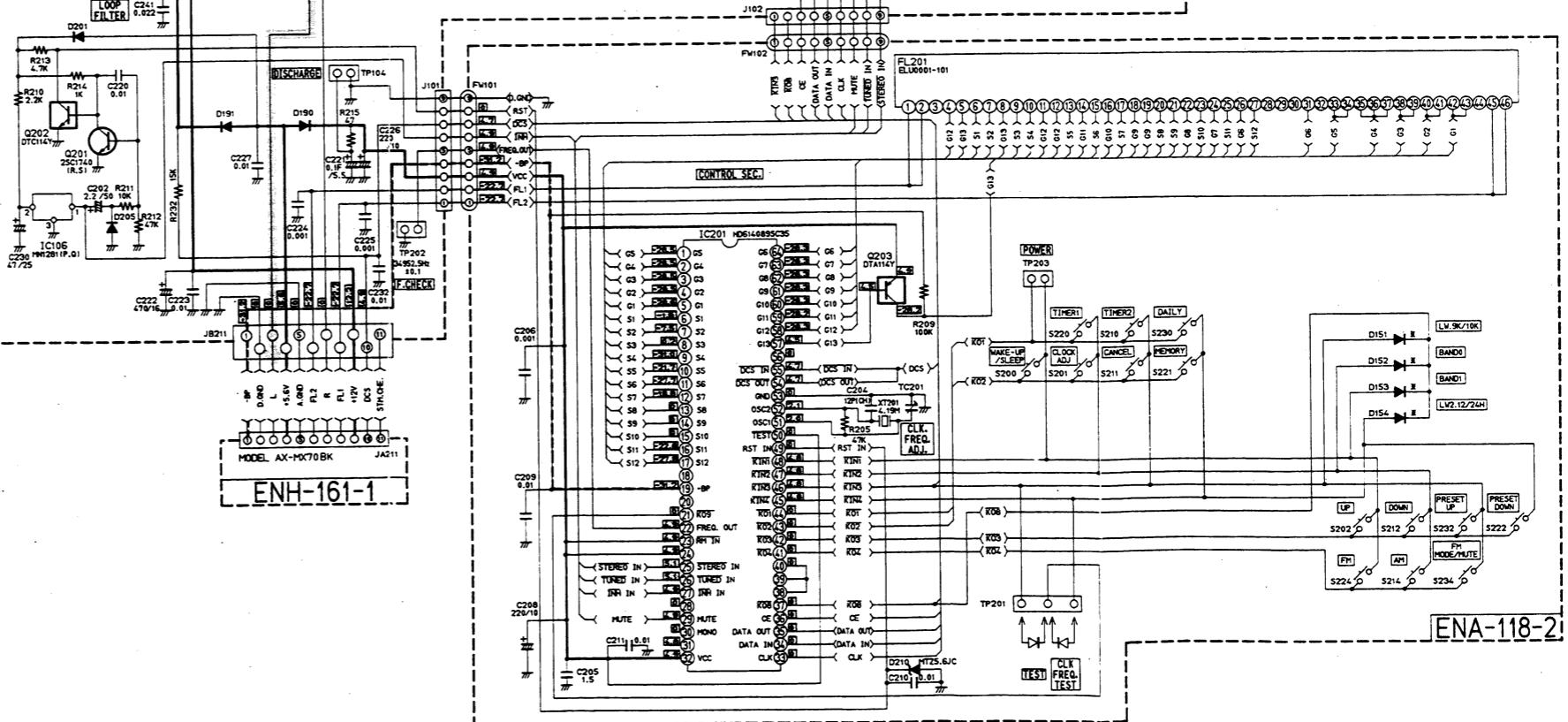
ENA-118-1



EAF2203-003



ENH-161-1



ENA-118-2

#	MARK	E	EF	G	GI	BS
R160		18K		18K		8.2K
R161,162		120K		120K		8.2K
C177,178		390P		390P		560P
D151	DIS1	NONE	NONE	NONE		
D152	DIS2	NONE	NONE	NONE		
D153	DIS3	NONE	NONE	NONE		
D154	DIS4	NONE	USED(G1)	NONE		

NO MARK DIODES ARE 1SS133
 FM AUTO NO SIGNAL (87.5MHz)
 MW NO SIGNAL (522kHz)
 LW NO SIGNAL (144kHz)

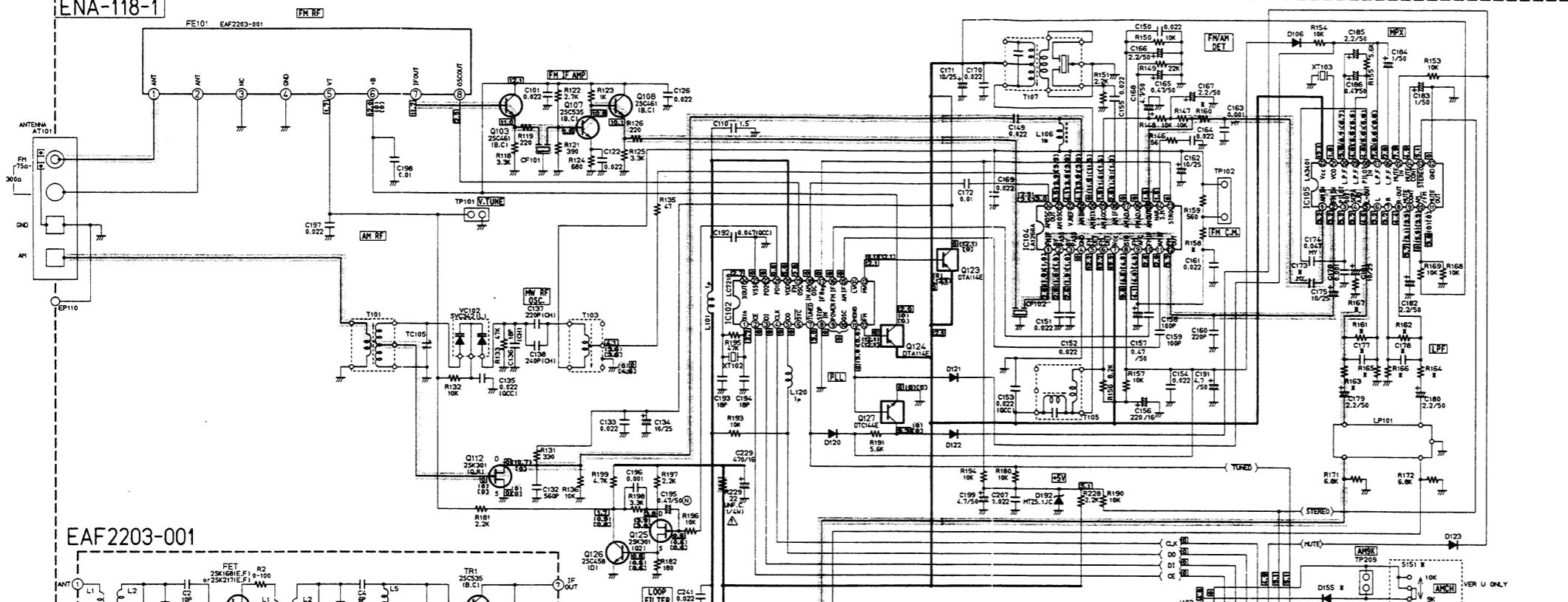
How to Use Schematic Diagrams

- indicates the +B line.
- indicates the -B line.
- indicates signal path.
- indicates voltage value.
- Parts marked with Δ and those in the shaded area — are parts for safety. Be sure to use one with the specified part number.
- This is the standard circuit diagram. The circuits and circuit constants are subject to change for improvement without notice.

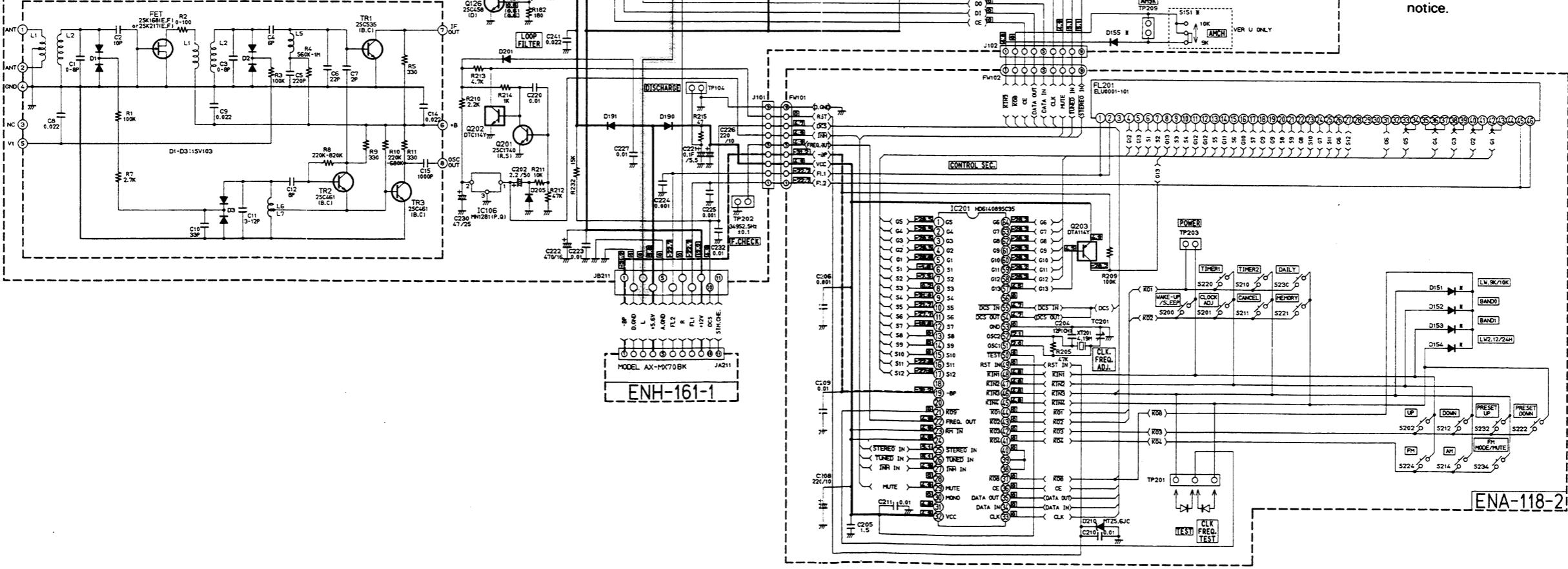
■ Tuner 2

FX-MX70BK (J,C,U,A)

ENA-118-1



EAF2203-001



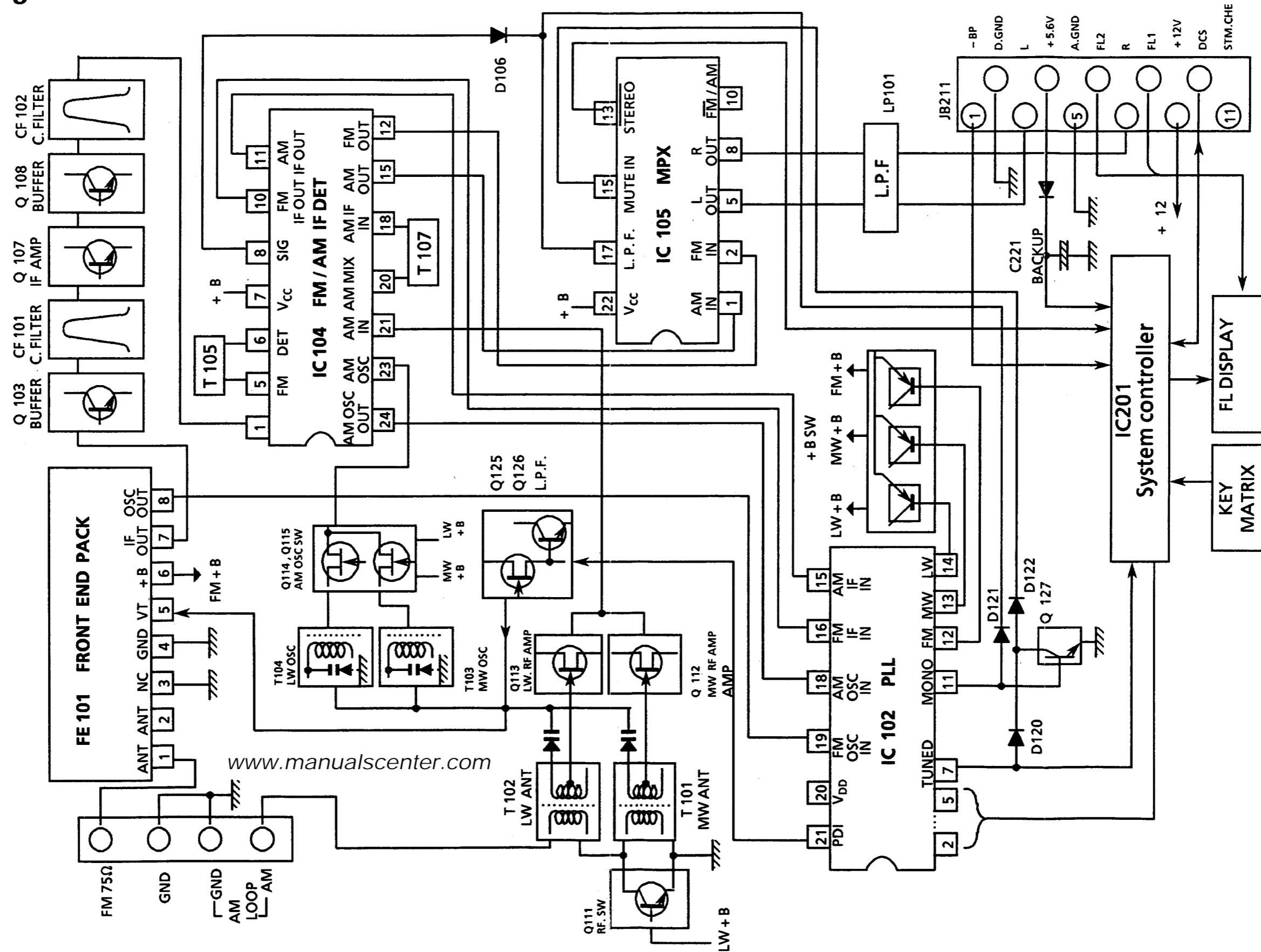
X	MARK	J.C	U	A
R158		1K	27K	27K
R160		5.6K	5.6K	1K
R161,162		82K	82K	120K
R163,164		4.7K	4.7K	3.9K
R165,166		180K	180K	270K
R167		39K	39K	4.7K
C173		0.039	0.039	0.022
C174,178		820P	B20P	350P
S151		NONE	USED	NONE
D151		NONE	USED	NONE
D152		USED	NONE	NONE
D153		NONE	USED	NONE
D154		USED	NONE	NONE
D155		NONE	USED	NONE

NO MARK DIODES ARE 1SS133
 FM AUTO NO SIGNAL (87.5MHz)
 MW NO SIGNAL (522kHz)
 LW NO SIGNAL (144kHz)

How to Use Schematic Diagrams

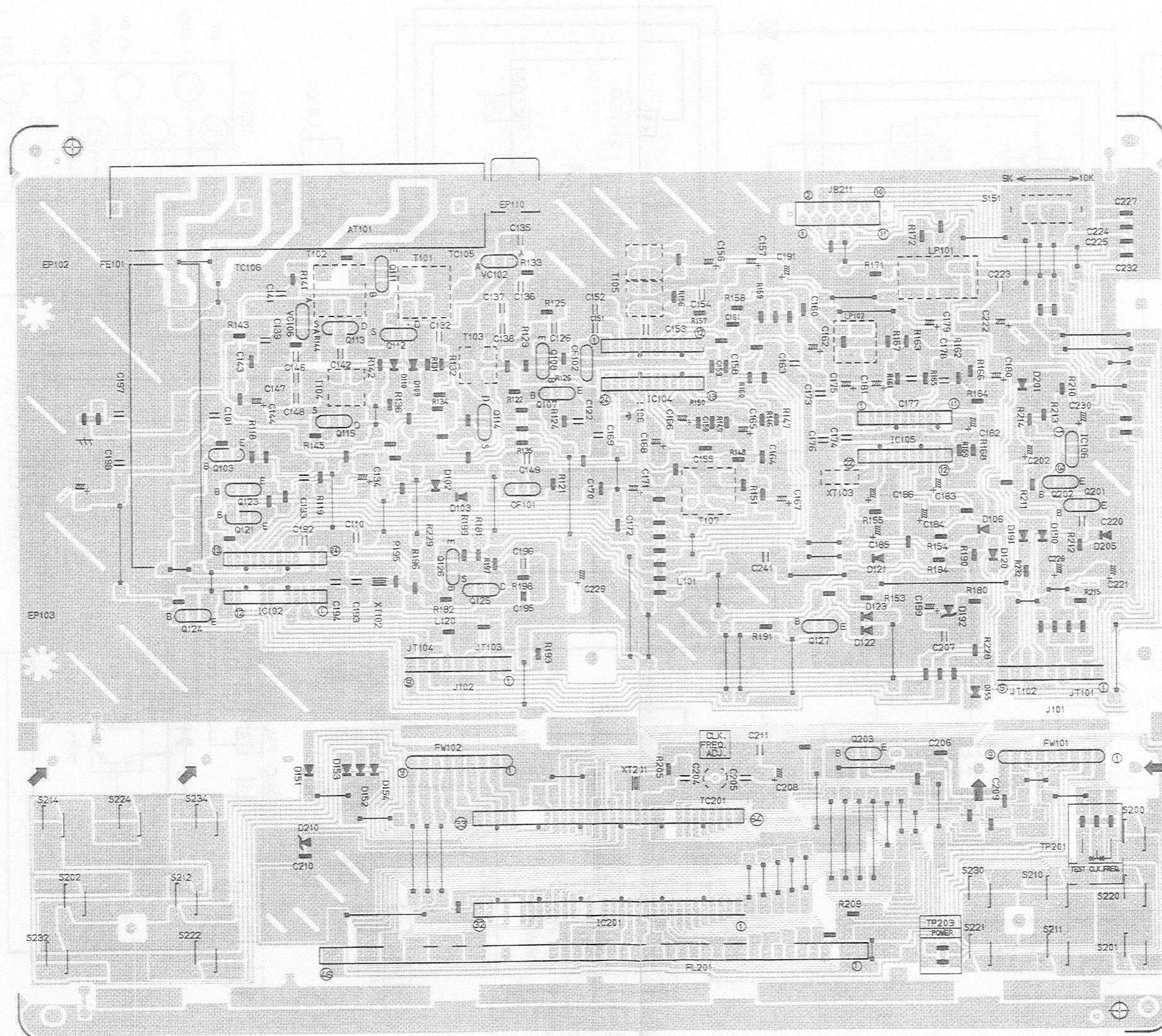
- indicates the +B line.
- indicates the -B line.
- indicates signal path.
- indicates voltage value.
- Parts marked with Δ and those in the shaded area — are parts for safety.
- This is the standard circuit diagram. The circuits and circuit constants are subject to change for improvement without notice.

Block Diagram



Printed Circuit Board

■ Tuner PCB (ENA118)



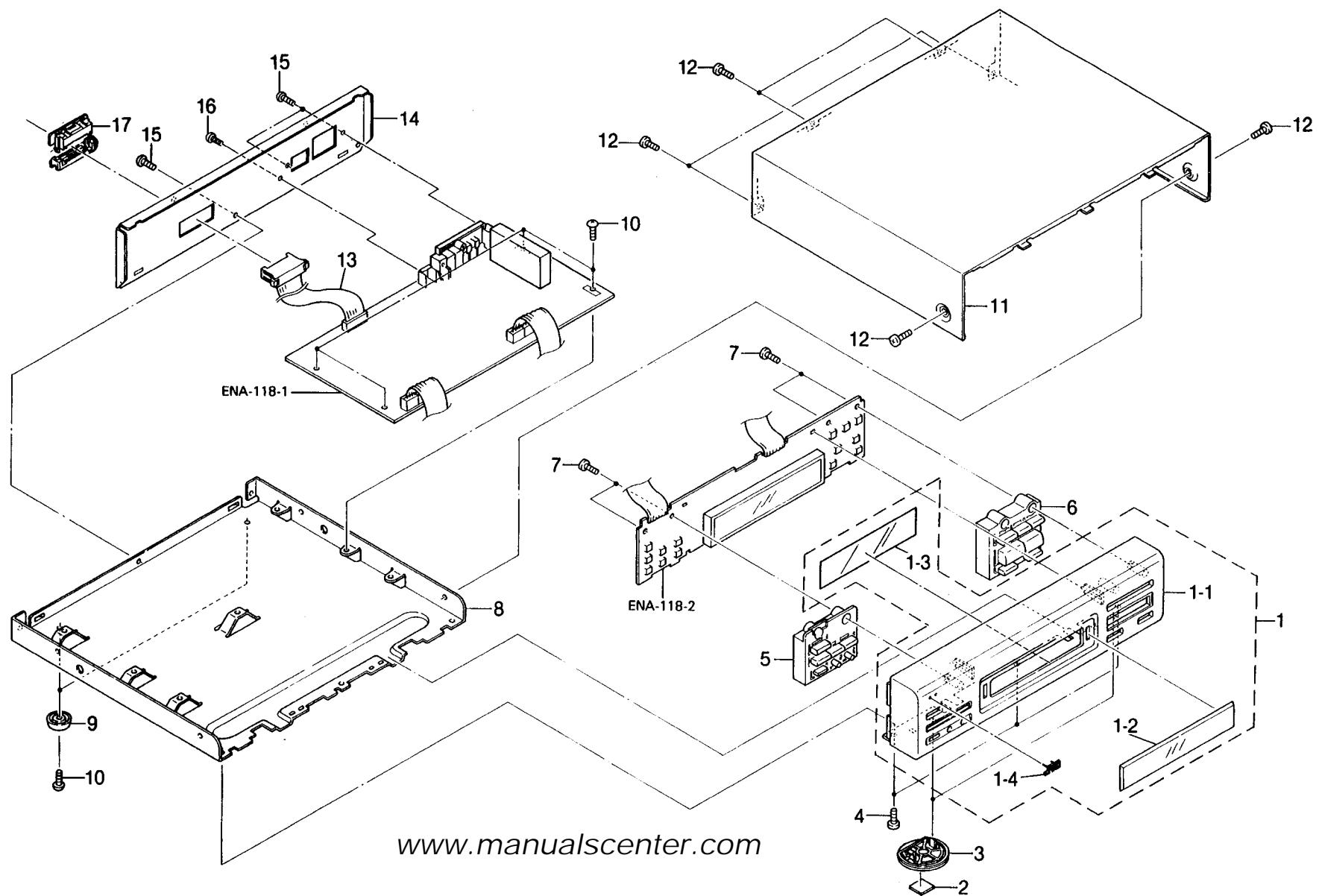
PARTS LIST

www.manualscenter.com

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■ENA-118 □ Tuner PC Board Ass'y	2-4
Packing Materials and Part Numbers	2-8

General Exploded View and Parts List



■ Parts List

⚠ Item	Part Number	Part Name	Q'ty	Description	Areas
1 1-1 1-2 1-3 1-4	EFP-FXMX70BKE(S E102331-003 E306956-002 E70561-028 PQ42561)	Front Panel Ass'y Front Panel Window Screen FL Screen JVC Mark	1 1 1 1 1		
2 3 4 5 6	E75896-001 E306935-001 SDSG3006M E306952-001 E306954-002	Spacer Foot Screw Push Button Push Button	2 2 3 1 1	for Front Foot Front Tuning Preset	J, C, U, A
7 8 9 10	E306954-003 SDSF2608Z E102327-002 E47227-029 SBSG3008N	Push Button Screw Chassis Base Foot Screw	1 4 1 2 6	Preset Rear	E, EF, G, GI, BS
11 12 13 14	E206817-001 SDSG3008M EWP902-019 E206818-007 E206818-008	Metal Cover Screw Plug Cord Ass'y Rear Panel Rear Panel	1 6 1 1 1	FW001(11Pin)	J C, A
15 16 17	E206818-009 E206818-010 SBSG3008M SBST3008M E305920-001	Rear Panel Rear Panel Screw Screw Cord Holder	1 1 3 1 1		U E, EF, G, GI, BS
—	E61029-009	Number Label	1		

⚠: Safety Parts

The Marks Designated Areas

J.....the U.S.A.

BS.....the U.K.

C.....Canada

E, EF.....Continental Europe

A.....Australia

U.....Universal Type

G.....Germany

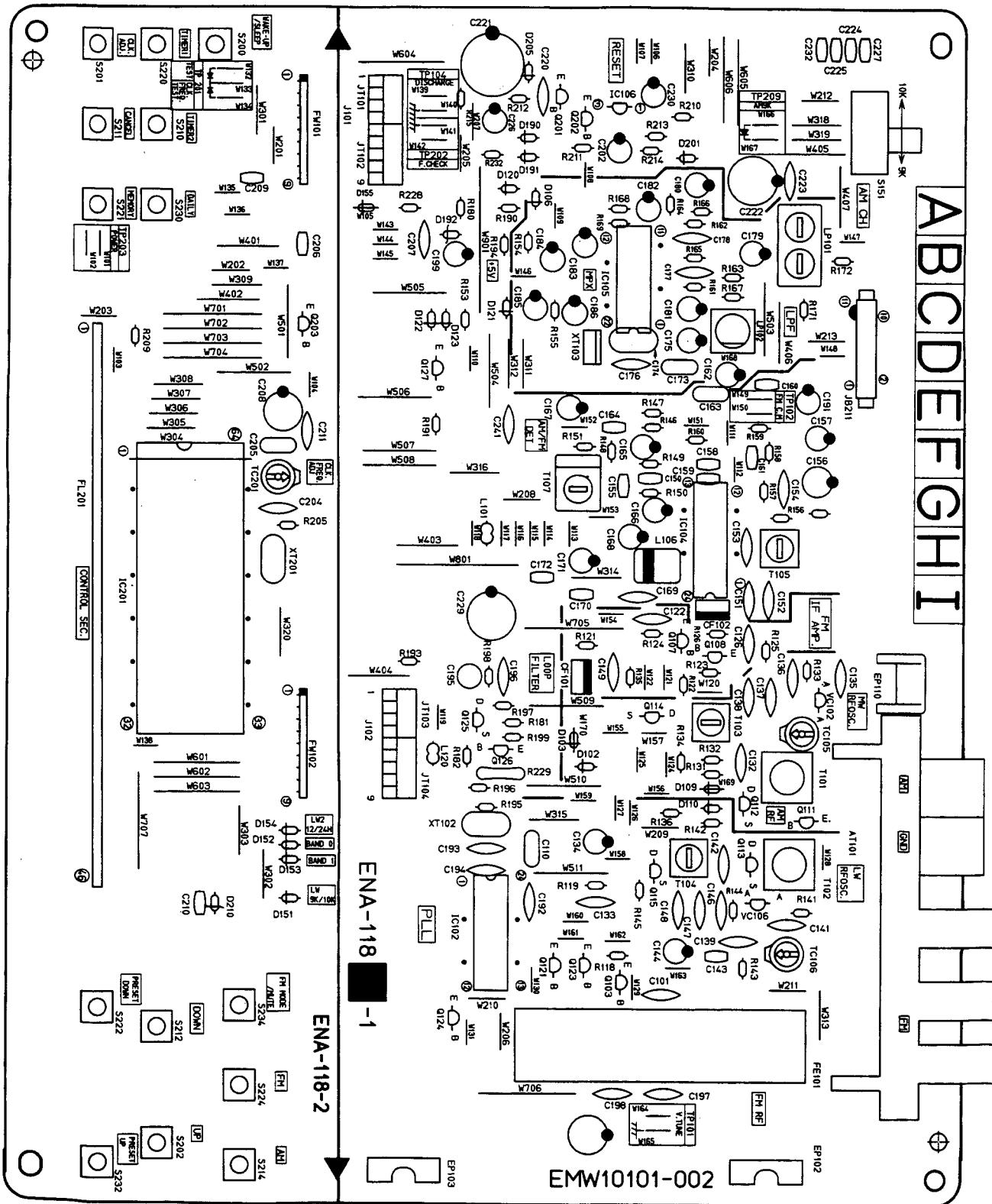
No mark indicates all areas.

GI.....Italy

Printed Circuit Board Ass'y and Parts List

■ ENA-118 □ Tuner PC Board Ass'y

Note : ENA-118 □ varies according to the areas employed. See note (1) when placing an order.



Note (1)

PC Board Ass'y	Designated Areas
ENA-118 [A]	the U.S.A., Canada
ENA-118 [B]	Universal Type
ENA-118 [C]	Australia
ENA-118 [D]	Continental Europe
ENA-118 [E]	Germany
ENA-118 [F]	the U.K.
ENA-118 [G]	Italy

Transistors

△ ITEM	PART NUMBER	DESCRIPTION	AREA
Q103	2SC461(B,C)	SILICON HITACHI	
Q107	2SC535(B,C)	SILICON HITACHI	
Q108	2SC461(B,C)	SILICON HITACHI	
Q111	2SD2144S(VW)	SILICON ROHM	D
Q111	2SD2144S(VW)	SILICON ROHM	E
Q111	2SD2144S(VW)	SILICON ROHM	F
Q111	2SD2144S(VW)	SILICON ROHM	G
Q112	2SK301(Q,R)	F.E.T MATSUSHITA	D
Q113	2SK301(Q,R)	F.E.T MATSUSHITA	E
Q113	2SK301(Q,R)	F.E.T MATSUSHITA	F
Q113	2SK301(Q,R)	F.E.T MATSUSHITA	G
Q114	2SK301(P,Q)	F.E.T MATSUSHITA	D
Q114	2SK301(P,Q)	F.E.T MATSUSHITA	E
Q114	2SK301(P,Q)	F.E.T MATSUSHITA	F
Q114	2SK301(P,Q)	F.E.T MATSUSHITA	G
Q115	2SK301(P,Q)	F.E.T MATSUSHITA	D
Q115	2SK301(P,Q)	F.E.T MATSUSHITA	E
Q115	2SK301(P,Q)	F.E.T MATSUSHITA	F
Q115	2SK301(P,Q)	F.E.T MATSUSHITA	G
Q121	DTA114ES	SILICON ROHM	D
Q121	DTA114ES	SILICON ROHM	E
Q121	DTA114ES	SILICON ROHM	F
Q123	DTA114ES	SILICON ROHM	G
Q124	DTA114ES	SILICON ROHM	
Q125	2SK301(Q2)	F.E.T MATSUSHITA	
Q126	2SC458(D)	SILICON HITACHI	
Q127	DTC144ES	SILICON ROHM	
Q201	2SC1740S(R,S)	SILICON ROHM	
Q202	DTC114YS	SILICON ROHM	
Q203	DTA114YS	SILICON ROHM	

△ : SAFETY PARTS

I.C.s

△ ITEM	PART NUMBER	DESCRIPTION	AREA
IC102	LC7218	I.C. SANYO	
IC104	LA1266A	I.C. SANYO	
IC105	LA3401	I.C. SANYO	
IC106	MN1281(P,Q)	I.C. MATSUSHITA	
IC201	HD614089SC35	I.C. HITACHI	

△ : SAFETY PARTS

Diodes

△ ITEM	PART NUMBER	DESCRIPTION	AREA
D102	ISS133	SILICON ROHM	D
D102	ISS133	SILICON ROHM	E
D102	ISS133	SILICON ROHM	F
D102	ISS133	SILICON ROHM	G
D103	ISS133	SILICON ROHM	D
D103	ISS133	SILICON ROHM	E
D103	ISS133	SILICON ROHM	F
D103	ISS133	SILICON ROHM	G
D106	ISS133	SILICON ROHM	D
D109	ISS133	SILICON ROHM	E
D109	ISS133	SILICON ROHM	F
D109	ISS133	SILICON ROHM	G
D110	ISS133	SILICON ROHM	D
D110	ISS133	SILICON ROHM	E
D110	ISS133	SILICON ROHM	F
D110	ISS133	SILICON ROHM	G
D121	ISS133	SILICON ROHM	
D122	ISS133	SILICON ROHM	

△ : SAFETY PARTS

Diodes

△ ITEM	PART NUMBER	DESCRIPTION	AREA
D123	ISS133	SILICON ROHM	
D151	ISS133	SILICON ROHM	C
D152	ISS133	SILICON ROHM	A
D153	ISS133	SILICON ROHM	B
D154	ISS133	SILICON ROHM	A
D154	ISS133	SILICON ROHM	G
D155	ISS133	SILICON ROHM	B
D190	ISS133	SILICON ROHM	
D191	ISS133	SILICON ROHM	
D192	MTZ5.1JC	ZENER ROHM	
D201	ISS133	SILICON ROHM	
D205	ISS133	SILICON ROHM	
D210	MTZ5.6JC	ZENER ROHM	
VC102	SVC342(L)	VARICAP SANYO	D
VC106	SVC342(L)	VARICAP SANYO	E
VC106	SVC342(L)	VARICAP SANYO	F
VC106	SVC342(L)	VARICAP SANYO	G

△ : SAFETY PARTS

Capacitors

△ ITEM	PART NUMBER	DESCRIPTION	AREA
C101	QCF21HP-223	0.022MF 50V CERAMIC	
C110	QCZ0205-155	1.5MF 25V CERAMIC	
C122	QCF21HP-223	0.022MF 50V CERAMIC	
C126	QCF21HP-223	0.022MF 50V CERAMIC	
C132	QCS21HJ-561	560PF 50V CERAMIC	
C133	QCF21HP-223	0.022MF 50V CERAMIC	
C134	QETB1EM-106	10MF 25V ELECTRO	
C135	QCC21EM-223	0.022MF 25V CERAMIC	
C136	QCT26CH-180	18PF 50V CERAMIC	
C137	QCT26CH-221	220PF 50V CERAMIC	
C138	QCT26CH-241	240PF 50V CERAMIC	
C139	QCC21EM-223	0.022MF 25V CERAMIC	D
C139	QCC21EM-223	0.022MF 25V CERAMIC	E
C139	QCC21EM-223	0.022MF 25V CERAMIC	F
C139	QCC21EM-223	0.022MF 25V CERAMIC	G
C141	QCS21HJ-270	27PF 50V CERAMIC	D
C141	QCS21HJ-270	27PF 50V CERAMIC	E
C141	QCS21HJ-270	27PF 50V CERAMIC	F
C142	QCY21HK-272	2700PF 50V CERAMIC	G
C142	QCY21HK-272	2700PF 50V CERAMIC	D
C142	QCY21HK-272	2700PF 50V CERAMIC	E
C142	QCY21HK-272	2700PF 50V CERAMIC	F
C143	QCHB1EZ-223	0.022MF 25V CERAMIC	G
C143	QCHB1EZ-223	0.022MF 25V CERAMIC	D
C143	QCHB1EZ-223	0.022MF 25V CERAMIC	E
C144	QETB1EM-106	10MF 25V ELECTRO	F
C144	QETB1EM-106	10MF 25V ELECTRO	G
C146	QCT26CH-680	68PF 50V CERAMIC	D
C146	QCT26CH-680	68PF 50V CERAMIC	E
C146	QCT26CH-680	68PF 50V CERAMIC	F
C146	QCT26CH-680	68PF 50V CERAMIC	G
C147	QCT26CH-220	22PF 50V CERAMIC	D
C147	QCT26CH-220	22PF 50V CERAMIC	E
C147	QCT26CH-220	22PF 50V CERAMIC	F
C147	QCT26CH-220	22PF 50V CERAMIC	G
C148	QCT26CH-121	120PF 50V CERAMIC	D
C148	QCT26CH-121	120PF 50V CERAMIC	E
C148	QCT26CH-121	120PF 50V CERAMIC	F
C148	QCT26CH-121	120PF 50V CERAMIC	G
C149	QCF21HP-223	0.022MF 50V CERAMIC	
C150	QCHB1EZ-223	0.022MF 25V CERAMIC	
C151	QCF21HP-223	0.022MF 50V CERAMIC	
C152	QCF21HP-223	0.022MF 50V CERAMIC	
C153	QCC21EM-223	0.022MF 25V CERAMIC	
C154	QCF21HP-223	0.022MF 50V CERAMIC	
C155	QCHB1EZ-223	0.022MF 25V CERAMIC	
C156	QETB1CH-227	220MF 16V ELECTRO	
C157	QETB1HM-474	0.47MF 50V ELECTRO	
C158	QCB81HK-101	100PF 50V CERAMIC	
C159	QCB81HK-101	100PF 50V CERAMIC	
C160	QCB81HK-221	220PF 50V CERAMIC	
C161	QCHB1EZ-223	0.022MF 25V CERAMIC	
C162	QETB1EM-106	10MF 25V ELECTRO	
C163	QFN81HK-102	1000PF 50V MYLAR	
C164	QCHB1EZ-223	0.022MF 25V CERAMIC	
C165	QETB1HM-474	0.471F 50V ELECTRO	
C166	QETB1HM-225	2.2MF 50V ELECTRO	
C167	QETB1HM-225	2.2MF 50V ELECTRO	
C168	QETB1HM-475	4.7MF 50V ELECTRO	
C169	QCF21HP-223	0.022MF 50V CERAMIC	
C170	QCHB1EZ-223	0.022MF 25V CERAMIC	
C171	QETB1EH-106	10MF 25V ELECTRO	
C172	QCV81HM-103	0.011F 16V CERAMIC	
C173	QFN81HK-393	0.035MF 50V MYLAR	A
C173	QFN81HK-393	0.035MF 50V MYLAR	B
C173	QFN81HK-223	0.022MF 50V MYLAR	C

△ : SAFETY PARTS

Capacitors

Δ	ITEM	PART NUMBER	DESCRIPTION	AREA
C173	QFN81HK-223	0.022HF 50V	MYLAR	D
C173	QFN81HK-223	0.022HF 50V	MYLAR	E
C173	QFN81HK-223	0.022HF 50V	MYLAR	F
C174	QFLB1HK-473	0.047HF 50V	MYLAR	G
C175	QETB1EM-106	10MF 25V	ELECTRO	
C176	QCY21HK-102	1000PF 50V	CERAMIC	
C177	QCS21HJ-821	820PF 50V	CERAMIC	A
C177	QCS21HJ-821	820PF 50V	CERAMIC	B
C177	QCS21HJ-391	390PF 50V	CERAMIC	C
C177	QCS21HJ-391	390PF 50V	CERAMIC	D
C177	QCS21HJ-391	390PF 50V	CERAMIC	E
C177	QCS21HJ-561	560PF 50V	CERAMIC	F
C177	QCS21HJ-391	390PF 50V	CERAMIC	G
C178	QCS21HJ-821	820PF 50V	CERAMIC	A
C178	QCS21HJ-821	820PF 50V	CERAMIC	B
C178	QCS21HJ-391	390PF 50V	CERAMIC	C
C178	QCS21HJ-391	390PF 50V	CERAMIC	D
C178	QCS21HJ-391	390PF 50V	CERAMIC	E
C178	QCS21HJ-561	560PF 50V	CERAMIC	F
C178	QCS21HJ-391	390PF 50V	CERAMIC	G
C179	QETB1HM-225	2.2MF 50V	ELECTRO	
C180	QETB1HM-225	2.2MF 50V	ELECTRO	
C181	QETB1EM-106	10MF 25V	ELECTRO	
C182	QETB1HM-225	2.2MF 50V	ELECTRO	
C183	QETB1HM-105	1MF 50V	ELECTRO	
C184	QETB1HM-105	1MF 50V	ELECTRO	
C185	QETB1HM-225	2.2MF 50V	ELECTRO	
C186	QETB1HM-474	0.47HF 50V	ELECTRO	
C191	QETB1HM-475	4.7NF 50V	ELECTRO	
C192	QCC21EM-473	0.047HF 25V	CERAMIC	
C193	QCS21HJ-180	18PF 50V	CERAMIC	
C194	QCS21HJ-180	18PF 50V	CERAMIC	
C195	QEN51HM-474	0.47HF 50V	NON POLE	
C196	QCY21HK-102	1000PF 50V	CERAMIC	
C197	QCF21HP-223	0.022HF 50V	CERAMIC	
C198	QCF21HP-103	0.011F 50V	CERAMIC	
C199	QETB1HM-475	4.7MF 50V	ELECTRO	
C202	QETB1HM-225	2.2MF 50V	ELECTRO	
C204	QCT26CH-120	12PF 50V	CERAMIC	
C205	QCZ0202-155	1.5MF 25V	CERAMIC	
C206	QCVB1CM-103	0.01MF 16V	CERAMIC	
C207	QCF21HP-223	0.022MF 50V	CERAMIC	
C208	QEKA1AM-2272	220MF 10V	ELECTRO	
C209	QCVB1CM-103	0.01MF 16V	CERAMIC	
C210	QCVB1CM-103	0.01MF 16V	CERAMIC	
C211	QCF21HP-103	0.01MF 50V	CERAMIC	
C220	QCF21HP-103	0.01MF 50V	CERAMIC	
C221	QEA40HZ-10AB		ELECTRO	
C222	QETB1CM-477	470MF 16V	ELECTRO	
C223	QCF21HP-103	0.01MF 50V	CERAMIC	
C224	QGB1HK-102	1000PF 50V	CERAMIC	
C225	QGB1HK-102	1000PF 50V	CERAMIC	
C226	QETB1AM-227	220MF 10V	ELECTRO	
C227	QCVB1CM-103	0.01MF 16V	CERAMIC	
C229	QETB1CM-477	470MF 16V	ELECTRO	
C230	QETB1EM-476	47MF 25V	ELECTRO	
C232	QCVB1CM-103	0.01MF 16V	CERAMIC	
C241	QCF21HP-223	0.022MF 50V	CERAMIC	

Δ : SAFETY PARTS

Resistors

Δ	ITEM	PART NUMBER	DESCRIPTION	AREA
R118	QRD167J-332	3.3K 1/6W	CARBON	
R119	QRD167J-221	220 1/6W	CARBON	
R121	QRD167J-391	390 1/6W	CARBON	
R122	QRD167J-272	2.7K 1/6W	CARBON	
R123	QRD167J-102	1K 1/6W	CARBON	
R124	QRD167J-681	680 1/6W	CARBON	
R125	QRD167J-332	3.3K 1/6W	CARBON	
R126	QRD167J-221	220 1/6W	CARBON	
R131	QRD167J-331	330 1/6W	CARBON	
R132	QRD167J-103	10K 1/6W	CARBON	
R133	QRD167J-473	47K 1/6W	CARBON	
R134	QRD167J-103	10K 1/6W	CARBON	D
R134	QRD167J-103	10K 1/6W	CARBON	E
R134	QRD167J-103	10K 1/6W	CARBON	F
R135	QRD167J-470	47 1/6W	CARBON	G
R136	QRD167J-103	10K 1/6W	CARBON	
R141	QRD167J-472	4.7K 1/6W	CARBON	D
R141	QRD167J-472	4.7K 1/6W	CARBON	E
R141	QRD167J-472	4.7K 1/6W	CARBON	F
R141	QRD167J-472	4.7K 1/6W	CARBON	G
R142	QRD167J-331	330 1/6W	CARBON	D
R142	QRD167J-331	330 1/6W	CARBON	E
R142	QRD167J-331	330 1/6W	CARBON	F
R142	QRD167J-331	330 1/6W	CARBON	G
R143	QRD167J-103	10K 1/6W	CARBON	D
R143	QRD167J-103	10K 1/6W	CARBON	E
R143	QRD167J-103	10K 1/6W	CARBON	F
R144	QRD167J-473	47K 1/6W	CARBON	G

Δ : SAFETY PARTS

Resistors

Δ	ITEM	PART NUMBER	DESCRIPTION	AREA
R144	QRD167J-473	4.7K 1/6W	CARBON	E
R144	QRD167J-473	4.7K 1/6W	CARBON	F
R144	QRD167J-473	4.7K 1/6W	CARBON	G
R145	QRD167J-103	10K 1/6W	CARBON	D
R145	QRD167J-103	10K 1/6W	CARBON	F
R145	QRD167J-103	10K 1/6W	CARBON	G
R146	QRD167J-560	56 1/6W	CARBON	
R147	QRD167J-103	10K 1/6W	CARBON	
R148	QRD167J-103	10K 1/6W	CARBON	
R149	QRD167J-223	22K 1/6W	CARBON	
R150	QRD167J-103	10K 1/6W	CARBON	
R151	QRD167J-222	2.2K 1/6W	CARBON	
R153	QRD167J-103	10K 1/6W	CARBON	
R154	QRD167J-103	10K 1/6W	CARBON	
R155	QRD167J-562	5.6K 1/6W	CARBON	A
R156	QRD167J-822	8.2K 1/6W	CARBON	B
R157	QRD167J-103	10K 1/6W	CARBON	C
R158	QRD167J-183	18K 1/6W	CARBON	D
R158	QRD167J-273	27K 1/6W	CARBON	E
R158	QRD167J-273	27K 1/6W	CARBON	F
R158	QRD167J-273	27K 1/6W	CARBON	G
R159	QRD167J-561	560 1/6W	CARBON	
R160	QRD167J-562	5.6K 1/6W	CARBON	A
R160	QRD167J-562	5.6K 1/6W	CARBON	B
R160	QRD167J-183	18K 1/6W	CARBON	C
R160	QRD167J-183	18K 1/6W	CARBON	D
R160	QRD167J-183	18K 1/6W	CARBON	E
R160	QRD167J-822	8.2K 1/6W	CARBON	F
R160	QRD167J-183	18K 1/6W	CARBON	G
R161	QRD167J-823	82K 1/6W	CARBON	A
R161	QRD167J-823	82K 1/6W	CARBON	B
R161	QRD167J-124	120K 1/6W	CARBON	C
R161	QRD167J-124	120K 1/6W	CARBON	D
R161	QRD167J-124	120K 1/6W	CARBON	E
R161	QRD167J-124	120K 1/6W	CARBON	F
R162	QRD167J-823	82K 1/6W	CARBON	G
R162	QRD167J-823	82K 1/6W	CARBON	A
R162	QRD167J-823	82K 1/6W	CARBON	B
R162	QRD167J-124	120K 1/6W	CARBON	C
R162	QRD167J-124	120K 1/6W	CARBON	D
R162	QRD167J-124	120K 1/6W	CARBON	E
R162	QRD167J-124	120K 1/6W	CARBON	F
R162	QRD167J-124	120K 1/6W	CARBON	G
R163	QRD167J-472	4.7K 1/6W	CARBON	A
R163	QRD167J-472	4.7K 1/6W	CARBON	B
R163	QRD167J-332	3.3K 1/6W	CARBON	C
R163	QRD167J-332	3.3K 1/6W	CARBON	D
R163	QRD167J-332	3.3K 1/6W	CARBON	E
R163	QRD167J-332	3.3K 1/6W	CARBON	F
R163	QRD167J-332	3.3K 1/6W	CARBON	G
R164	QRD167J-472	4.7K 1/6W	CARBON	A
R164	QRD167J-472	4.7K 1/6W	CARBON	B
R164	QRD167J-332	3.3K 1/6W	CARBON	C
R164	QRD167J-332	3.3K 1/6W	CARBON	D
R164	QRD167J-332	3.3K 1/6W	CARBON	E
R164	QRD167J-332	3.3K 1/6W	CARBON	F
R165	QRD167J-184	180K 1/6W	CARBON	G
R165	QRD167J-184	180K 1/6W	CARBON	A
R165	QRD167J-274	270K 1/6W	CARBON	B
R165	QRD167J-274	270K 1/6W	CARBON	C
R165	QRD167J-274	270K 1/6W	CARBON	D
R166	QRD167J-184	180K 1/6W	CARBON	E
R166	QRD167J-184	180K 1/6W	CARBON	F
R166	QRD167J-274	270K 1/6W	CARBON	G
R166	QRD167J-274	270K 1/6W	CARBON	A
R166	QRD167J-274	270K 1/6W	CARBON	B
R166	QRD167J-274	270K 1/6W	CARBON	C
R166	QRD167J-274	270K 1/6W	CARBON	D
R166	QRD167J-274	270K 1/6W	CARBON	E
R167	QRD167J-393	39K 1/6W	CARBON	B
R167	QRD167J-473	47K 1/6W	CARBON	C
R167	QRD167J-473	47K 1/6W	CARBON	D
R167	QRD167J-473	47K 1/6W	CARBON	E
R167	QRD167J-473	47K 1/6W	CARBON	F
R167	QRD167J-473	47K 1/6W	CARBON	G
R168	QRD167J-103	10K 1/6W	CARBON	
R169	QRD167J-103	10K 1/6W	CARBON	
R171	QRD167J-682	6.8K 1/6W	CARBON	
R172	QRD167J-682	6.8K 1/6W	CARBON	
R180	QRD167J-103	10K 1/6W	CARBON	
R181	QRD167J-222	2.2K 1/6W	CARBON	
R182	QRD167J-181	180 1/6W	CARBON	
R190	QRD167J-103	10K 1/6W	CARBON	
R191	QRD167J-562	5.6K 1/6W	CARBON	
R193	QRD167J-103	10K 1/6W	CARBON	
R194	QRD167J-103	10K 1/6W	CARBON	
R195	QRD167J-473	47K 1/6W	CARBON	
R196	QRD167J-103	10K 1/6W	CARBON	A

Δ : SAFETY PARTS

Resistors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	R196	QRD167J-103	10K 1/6W CARBON	B
	R196	QRD167J-103	10K 1/6W CARBON	C
	R196	QRD167J-222	2.2K 1/6W CARBON	D
	R196	QRD167J-222	2.2K 1/6W CARBON	E
	R196	QRD167J-222	2.2K 1/6W CARBON	F
	R197	QRD167J-222	2.2K 1/6W CARBON	G
	R198	QRD167J-332	3.3K 1/6W CARBON	A
	R198	QRD167J-332	3.3K 1/6W CARBON	B
	R198	QRD167J-332	3.3K 1/6W CARBON	C
	R198	QRD167J-822	8.2K 1/6W CARBON	D
	R198	QRD167J-822	8.2K 1/6W CARBON	E
	R198	QRD167J-822	8.2K 1/6W CARBON	F
	R198	QRD167J-822	8.2K 1/6W CARBON	G
	R199	QRD167J-472	4.7K 1/6W CARBON	
	R205	QRD167J-473	4.7K 1/6W CARBON	
	R209	QRD167J-104	100K 1/6W CARBON	
	R210	QRD167J-222	2.2K 1/6W CARBON	
	R211	QRD167J-103	10K 1/6W CARBON	
	R212	QRD167J-473	4.7K 1/6W CARBON	
	R213	QRD167J-472	4.7K 1/6W CARBON	
	R214	QRD167J-102	1K 1/6W CARBON	
	R215	QRD167J-470	47 1/6W CARBON	
	R228	QRD167J-222	2.2K 1/6W CARBON	
△	R229-	QRD14CJ-220S	22 1/4W UNF. CARBON	
	R232	QRD167J-153	15K 1/6W CARBON	

△ : SAFETY PARTS

Others

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	FE101	EAF2203-003	FRONT END	E
	FE101	EAF2203-003	FRONT END	F
	FE101	EAF2203-003	FRONT END	G
	FL201	ELU0001-101	FL TUBE	
	FS201	E306805-021	FELT SPACER	
	FW001	EWV902-019	PLUG WIRE ASSY	
	FW101	EWV398-25LST	FLAT WIRE(9PIN)	
	FW102	EWV398-25LST	FLAT WIRE(9PIN)	
	JB211	EMV7130-011	CONNECTOR(1PIN)	
	JT101	EMV7122-004	CONNECTOR(4PIN)	
	JT102	EMV7122-005	CONNECTOR(5PIN)	
	JT103	EMV7122-004	CONNECTOR(4PIN)	
	JT104	EMV7122-005	CONNECTOR(5PIN)	
	LP101	EGF0101-002	LOW PASS FILTER	
	LP102	EGF0102-001	LOW PASS FILTER	D
	LP102	EGF0102-001	LOW PASS FILTER	E
	LP102	EGF0102-001	LOW PASS FILTER	F
	LP102	EGF0102-001	LOW PASS FILTER	G
	TC105	ENZ1003-006	TRIMMER	
	TC106	ENZ1003-006	TRIMMER	D
	TC106	ENZ1003-006	TRIMMER	E
	TC106	ENZ1003-006	TRIMMER	F
	TC106	ENZ1003-006	TRIMMER	G
	TC201	ENZ1003-015	TRIMMER	
	XT102	EXC0007-200KC	RESONATOR	
	XT103	EXC0000-454KR	RESONATOR	
	XT201	EXC4194-304CF	RESONATOR	

△ : SAFETY PARTS

Others

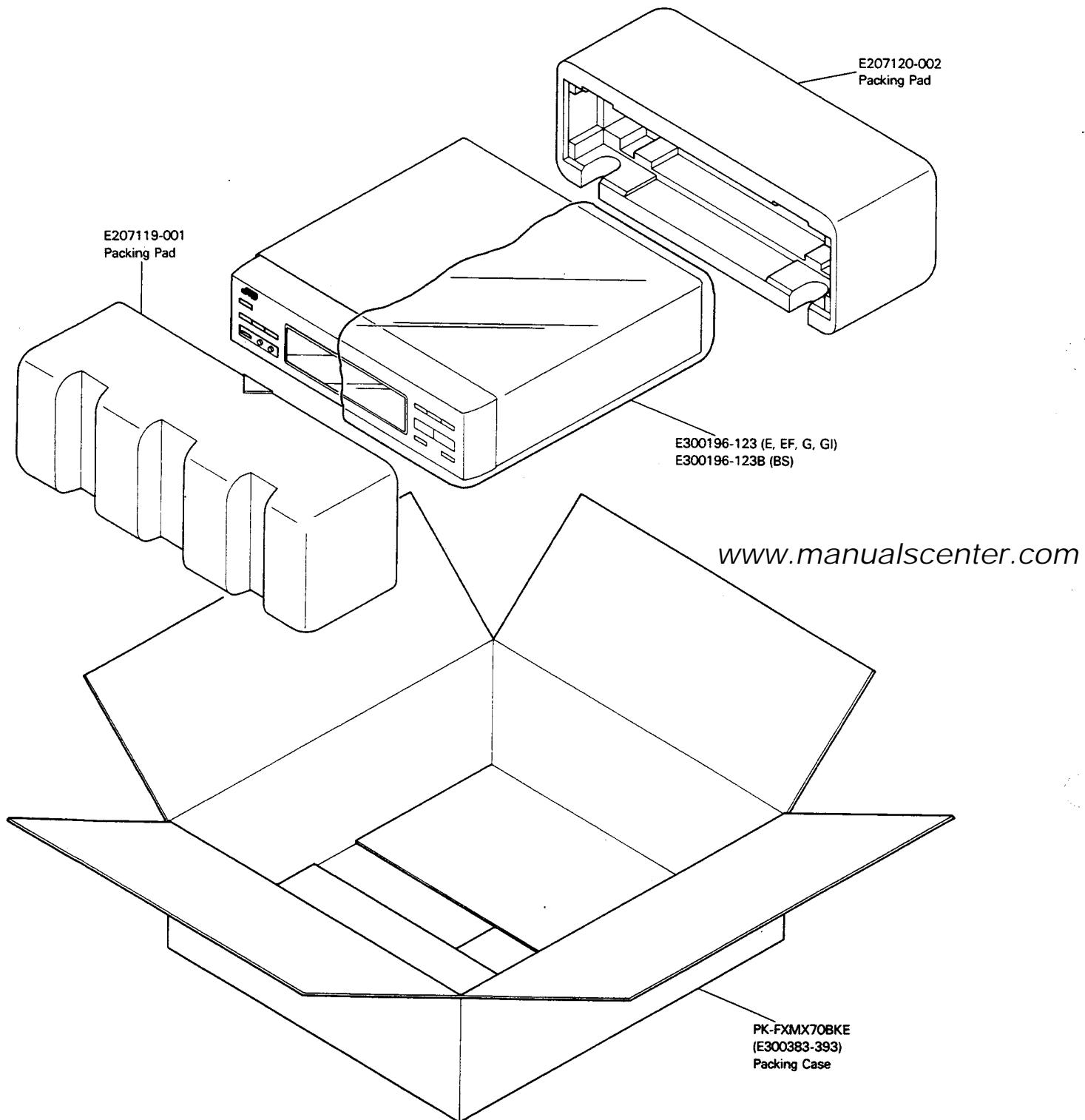
△	ITEM	PART NUMBER	DESCRIPTION	AREA
	EMW10101-002	PRINTED BOARD		
	L101	EQL4004-1R0	INDUCTOR	
	L106	EQL3001-102K	INDUCTOR	
	L120	EQL4004-1R0	INDUCTOR	
	S151	QSS6A12-E01	SLIDE SWITCH(AM CH. SPACE)	B
	S200	ESP0001-018	TACT SWITCH(WAKE UP/SLEEP)	
	S201	ESP0001-018	TACT SWITCH(CLOCK ADJ)	
	S202	ESP0001-018	TACT SWITCH(U/I)	
	S210	ESP0001-018	TACT SWITCH(TIMER 2)	
	S211	ESP0001-018	TACT SWITCH(CANCEL)	
	S212	ESP0001-018	TACT SWITCH(DOWN)	
	S214	ESP0001-018	TACT SWITCH(AM)	
	S220	ESP0001-018	TACT SWITCH(TIMER 1)	
	S221	ESP0001-018	TACT SWITCH(MEMORY)	
	S222	ESP0001-018	TACT SWITCH(PRESET DOWN)	
	S224	ESP0001-018	TACT SWITCH(FM)	
	S230	ESP0001-018	TACT SWITCH(DAILY)	
	S232	ESP0001-018	TACT SWITCH(PRESET UP)	
	S234	ESP0001-018	TACT SWITCH(FM MODE/MUTE)	
	T101	EQR1111-014	AM RF COIL	
	T102	EQR1111-005	AM RF COIL	D
	T102	EQR1111-005	AM RF COIL	E
	T102	EQR1111-005	AM RF COIL	F
	T102	EQR1111-005	AM RF COIL	G
	T103	EQR1207-017	MW OSC COIL	
	T104	EQR1307-010	LW OSC COIL	D
	T104	EQR1307-010	LW OSC COIL	F
	T104	EQR1307-010	LW OSC COIL	G
	T105	EQT2140-017	I.F. TRANSFORMER	
	T107	ECB1560-008	CERAMIC FILTER	
	AT101	EMB41YY-401K	ANTENNA TERMINAL	A
	AT101	EMB41YY-401K	ANTENNA TERMINAL	B
	AT101	EMB41YY-301K	ANTENNA TERMINAL	D
	AT101	EMB41YY-301K	ANTENNA TERMINAL	E
	AT101	EMB41YY-301K	ANTENNA TERMINAL	F
	AT101	EMB41YY-301K	ANTENNA TERMINAL	G
	EK201	E306958-002	FL DISPLAY HOLDER	
	CF101	ECB2123-006R	CERAMIC FILTER	A
	CF101	ECB2123-006R	CERAMIC FILTER	B
	CF101	ECB2123-006R	CERAMIC FILTER	C
	CF101	ECB2118-007R	CERAMIC FILTER	D
	CF101	ECB2118-007R	CERAMIC FILTER	E
	CF101	ECB2118-007R	CERAMIC FILTER	F
	CF101	ECB2118-007R	CERAMIC FILTER	G
	CF102	ECB2123-006R	CERAMIC FILTER	A
	CF102	ECB2123-006R	CERAMIC FILTER	B
	CF102	ECB2123-006R	CERAMIC FILTER	C
	CF102	ECB2118-007R	CERAMIC FILTER	D
	CF102	ECB2118-007R	CERAMIC FILTER	E
	CF102	ECB2118-007R	CERAMIC FILTER	F
	CF102	ECB2118-007R	CERAMIC FILTER	G
	E70859-001	EARTH PLATE		
	EP103	E70859-001	EARTH PLATE	
	EP110	E70225-001	EARTH PLATE	
	FE101	EAF2203-001	FRONT END	A
	FE101	EAF2203-001	FRONT END	B
	FE101	EAF2203-001	FRONT END	C
	FE101	EAF2203-003	FRONT END	D

△ : SAFETY PARTS

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Packing Materials and Part Numbers

(Only for Continental Europe , the U.K. , Germany , Italy)



The Marks Designated Areas

G.....Germany	E , EF.....Continental Europe
BS.....the U.K.	No mark indicates all areas.
GI.....Italy	



V12069

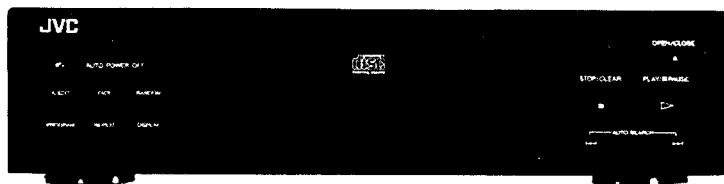
JVC

SERVICE MANUAL

COMPACT COMPONENT SYSTEM

MODEL NO. DX-MX70BK/CA-MX70BK

(UNIT NO. XL-MX70BK)



www.manualscenter.com

- * For instruction manual, please refer to the CA-MX70BK (S.M.NO.20243) or DX-MX70BK (S.M.NO.20249).
- * AX-MX70BK is needed (for power supply etc.) when servicing.

Contents

Safety Precautions	1-2	Flow of Functional Operation	
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Safety Precautions

1. The design of this product contains special hardware and many circuits and components specially for safety purposes. For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Services should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the product should not be made. Any design alterations of the product should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the products have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the Parts List of Service Manual. Electrical components having such features are identified by shading on the schematics and by (Δ) on the Parts List in the Service Manual. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement parts shown in the Parts List of Service Manual may create shock, fire, or other hazards.
4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard. When service is required, the original lead routing and dress should be observed, and it should be confirmed that they have been returned to normal, after re-assembling.
5. Leakage current check (Electrical shock hazard testing)

After re-assembling the product, always perform an isolation check on the exposed metal parts of the product (antenna terminals, knobs, metal cabinet, screw heads, headphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

Do not use a line isolation transformer during this check.

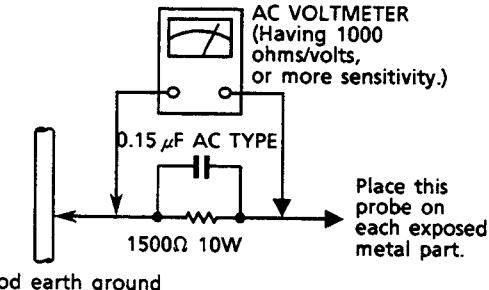
 - Plug the AC line cord directly into the AC outlet. Using a "Leakage Current Tester", measure the leakage current from each exposed metal parts of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground. Any leakage current must not exceed 0.5mA AC (r.m.s.).
 - Alternate check method

Plug the AC line cord directly into the AC outlet. Use an AC voltmeter having, 1,000 ohms per volt or more sensitivity in the following manner. Connect a $1,500\Omega$ 10 W resistor paralleled by a $0.15 \mu\text{F}$ AC-type capacitor between an exposed metal part and a known good earth ground.

Measure the AC voltage across the resistor with the AC voltmeter.

Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor.

Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75 V AC (r.m.s.). This corresponds to 0.5 mA AC (r.m.s.).



Warning

1. This equipment has been designed and manufactured to meet international safety standards.
2. It is the legal responsibility of the repairer to ensure that these safety standards are maintained.
3. Repairs must be made in accordance with the relevant safety standards.
4. It is essential that safety critical components are replaced by approved parts.
5. If mains voltage selector is provided, check setting for local voltage.

Important for Laser Products

1. CLASS 1 LASER PRODUCT
2. DANGER : Invisible laser radiation when open and interlock failed or defeated. Avoid direct exposure to beam.
3. CAUTION : There are no serviceable parts inside the Laser Unit. Do not disassemble the Laser Unit. Replace the complete Laser Unit if it malfunctions.
4. CAUTION : The compact disc player uses invisible laser radiation and is equipped with safety switches which prevent emission of radiation when the drawer is open and the safety interlocks have failed or are defeated. It is dangerous to defeat the safety switches.
5. CAUTION : If safety switches malfunction, the laser is able to function.
6. CAUTION : Use of controls, adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
7. CAUTION : The compact disc player provides a laser diode of wavelength 780-790nm and optical output power typical 3mW at the laser diode.

VARNING : Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad. Betrakta ej strålen.

VARO : Avattaessa ja suojaalukitus ohitettaessa olet altiina näkymättömälle lasersäteilylle. Älä katso sääteeseen.

ADVARSEL : Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå utsættelse for stråling.

ADVARSEL : Usynlig laserstråling ved åpning, når sikkerhetsbryteren er avslott. unngå utsettelse for stråling.

REPRODUCTION AND POSITION OF LABELS

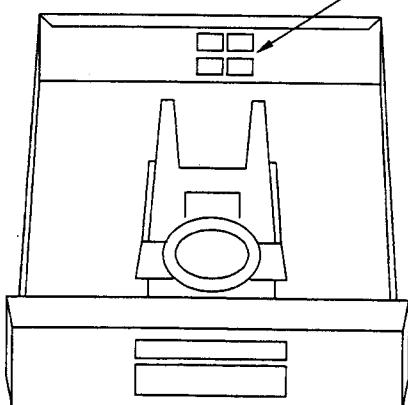
WARNING LABEL (Except for the U.S.A.)

DANGER: Invisible laser radiation when open and interlock failed or defeated.
AVOID DIRECT EXPOSURE TO BEAM. (e)

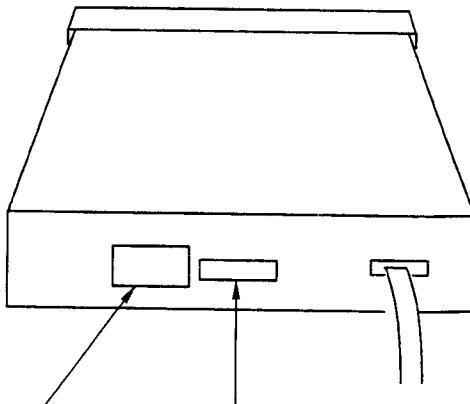
VARNING: Osynlig laserstrålning när denna del är öppnad och spärren är urkopplad. Betrakta ej strålen. (s)

ADVARSEL: Usynlig laserstråling ved åbning, når sikkerhedsafbrydere er ude af funktion. Undgå utsættelse for stråling. (d)

VARO: Avattaessa ja suojaalukitus ohitettaessa olet altiina näkymättömälle lasersäteilylle. Älä katso sääteeseen. (f)



CLASSIFICATION LABEL
(Except for the U.S.A. and Canada)



CERTIFICATION PRINT BY DHHS
(Only for the U.S.A.)

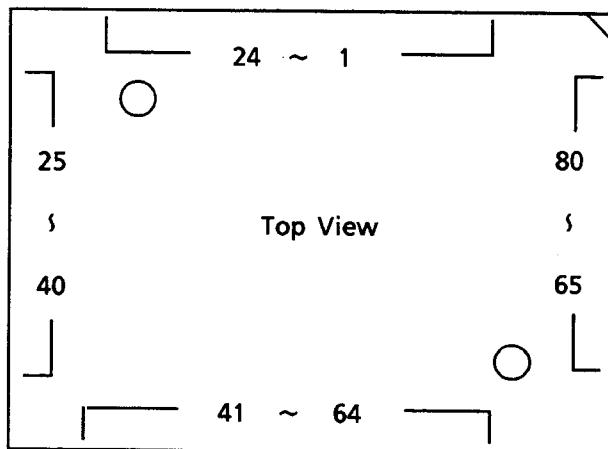
Description of ICs

■ YM3805-H IC841

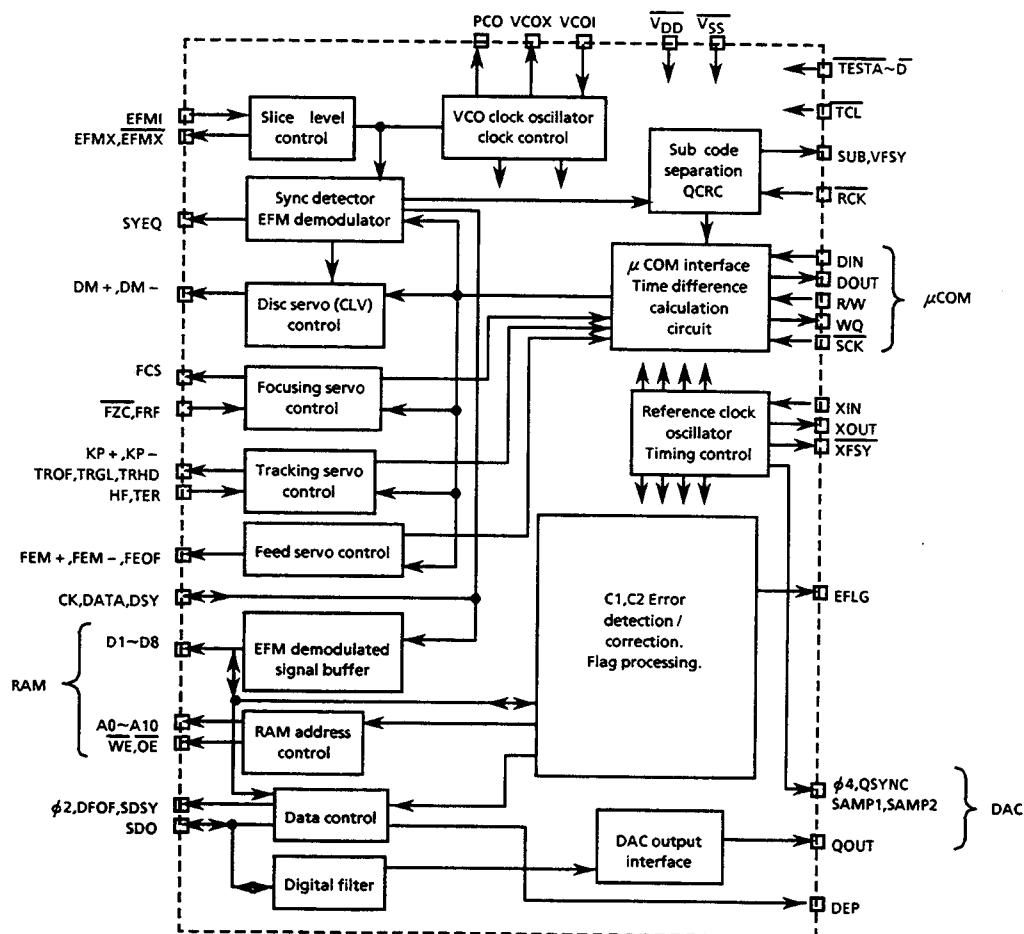
1. Outline:

YM3805-H is a C-MOS LSI for signal processing (SGP) and servo control (SVC) in a CD player. It is used for the demodulation of the EFM signal from the laser pickup, detection / correction of the error signal, signal processing in digital filtering, etc. and for various servo controls (focusing, tracking, spindle and feed servos).

2. Terminal Layout



3. Internal Block Diagram



4. Pin Functions Description

Pin No.	Symbol	I/O	Functions and Operations
1 32 72	V _{DD}	-	These are +5V power supply terminals.
2 ~ 3	VCOX VCOI	O I	These terminals are used for oscillating VCO (Voltage Controlled Oscillator) clock. (8.6436MHz)
4	PCO	O	This terminal is control output terminal for VCO clock, and sets oscillation circuit to rise frequency when average voltage is high.
5 ~ 9 41 ~ 78	V _{SS}	-	These are ground terminals.
6 7	EFMX EFMX	O O	These terminals connect with EFM signal slice level control circuit. Amplified EFM signal by limited amplitude comes from these terminals.
8	EFMI	I	Input the EFM signal (1~2Vpp) to the this terminal.
10	SYEQ	O	This is a monitor output terminal. It becomes "H" when there is a agreement synchronizing signal in EFM signal and inner counter.
11 12	DM+ DM-	O O	They are output terminals controlling disc motor drive circuit. These do not become "H" at the same time.
13 14	FCS FZC	O I	This is an output terminal for taking in focus. This is a terminal to get FZC signal which changing "H" to "L" when pick-up is in focus.
15	FRF	I	Input "H" signal when there is reflected light of compact disc at this terminal.
16 17	HF TER	I I	This is a terminal inputting envelope of EFM. This is a terminal inputting tracking error signal.
19 20 21	TROF TRGL TRHD	O O O	This is a terminal for cutting off the tracking error signal of tracking servo circuit. This is an output terminal for getting down the gain of tracking servo circuit. This is an output terminal for holding tracking error signal of tracking servo circuit while following KP+ or KP- are output.
22 23	KP+ KP-	O O	They are connected with tracking servo circuit. They are terminals for searching.
24 25 26	FEOF FEM+ FEM-	O O O	This is an output terminal for cutting off the input signal of feed servo circuit. There are output signals for high speed feed and they are connected with feed servo circuit.
27	CK	I/O	This is the check terminal. It has a 4.3218MHz; half of VCO.
35	WQ	O	This connects with microcomputer. It is a request output terminal for demanding to send the data from SVC to microcomputer.
36	R/W	I	This connects with microcomputer and it is an output terminal for switching data transmission mode. It enables to transmit data from SVC to microcomputer when R/W is "L" and from microcomputer to SVC when R/W is "H". (Read/Write)
37	DOUT	O	This is a data output terminal. It enables to transmit the data from SVC to microcomputer according SCK clock input when R/W is "L".
38	DIN	I	This is a data input terminal. It enables to transmit the data from microcomputer to SVC according SCK clock input when R/W is "H".
39	SCK	I	It is a clock input terminal needed for transmitting the data.
40 42~50 53	A0 A1~A9 A10	O	These are address output terminals and are connected to the RAM.
51	WE	O	This terminal is connected to the RAM; the RAM is set to the write mode when this terminal is "L". (Write enable)
52	OE	O	This terminal is connected to the RAM; the RAM is set to the read mode when this terminal is "L". (Output enable)
54~61	D8~D1	I/O	These are data Input and Output terminals and are connected to the RAM.
62	DEP	O	This terminal a Flag for de-emphasis. De-emphasis is necessary when this terminal is "H".
64	QSYNC	I/O	This terminal output the clock signals to find that the serial data is channel 1 or channel 2.
65	QOUT	O	This terminal output the digitized audio signal. they come out channel 1 and channel 2 alternately.
68	Φ4	O	Φ4 is a 4.3218MHz crystal clock.
76 77	SAMP1 SAMP2	O O	These terminals connect with D/A converter. These signal are use to make deglitching signal.
79 80	XIN XOUT	I O	A crystal resonator (8.6436MHz) is connected.
18 28~31 33~34 63 66~67 69~71 73~75			Not used.

XL-MX70BK

■ HD404019RB14S (IC991) : Micro-computer

1. Terminal Layout

8G	1		64	9G
7G	2		63	10G
6G	3		62	11G
5G	4		61	NC
S9	5		60	NC
4G	6		59	NC
3G	7		58	NC
2G	8		57	<u>GND</u>
1G	9		56	<u>DCS OUT</u>
S1	10		55	DCS IN
S2	11		54	IND
S3	12		53	GND
S4	13		52	OSC2
S5	14		51	OSC1
S6	15		50	TEST
S7	16		49	RESET
S8	17		48	KEY IN3
NC	18		47	KEY IN2
- VDISP	19		46	KEY IN1
GND	20		45	KEY IN0
GND	21		44	KEY OUT3
GND	22		43	KEY OUT2
R/W	23		42	KEY OUT1
<u>CLOSE SW</u>	24		41	GND
<u>OPEN SW</u>	25		40	GRAPH MU
<u>RESET SW</u>	26		39	P.OFF
TEST	27		38	DDRP MU
CLOSE	28		37	L.ON
OPEN	29		36	WQ
TLOF	30		35	SO
GU	31		34	<u>SI</u>
+ 5V	32		33	SCK

2. Pin Description

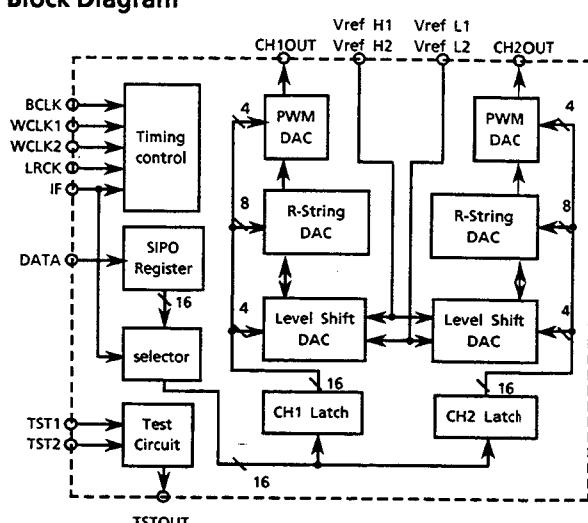
Pin No.	Symbol	I/O	Functions and Operations	Pin No.	Symbol	I/O	Functions and Operations
1~4	8G~5G	O	FL grid control output	35	SO	O	Serial data output for IC841
5	S9	O	FL segment control output	36	WQ	I	Write request signal input
6~9	4G~1G	O	FL grid control output	37	L.ON	O	Laser on signal output
10~17	S1~S8	O	FL segment control output	38	DDRP MU	O	Mute signal output when stopping
18	NC	-	Non connection	39	P.OFF	O	Power off signal output
19	- VDISP	I	FL Power supply	40	Graph mu	O	ute signal output excepting CD
20~22	GND	-	Ground	41	GND	-	Ground
23	R/W	O	Read / Write signal output	42~44	KEY OUT0 ~ KEY OUT3	O	Key matrix output
24	<u>CLOSE SW</u>	I	Close switch : active low	45~48	KEY IN0 ~ KEY IN3	I	Key matrix input
25	<u>OPEN SW</u>	I	Open switch : active low	49	RESET	I	Reset signal input
26	<u>RESET SW</u>	I	Reset switch : active low at the inmost position of pickup	50	TEST	I	Test mode input : connected to +5V
27	<u>TEST</u>	I	Test mode input	51	OSC 1	I	Clock Oscillation input
28	CLOSE	O	Close signal output	52	OSC 2	O	Clock Oscillation output
29	OPEN	O	Open signal output	53,57	GND	-	Ground
30	TLOF	O	Tracking servo off signal output	54	<u>IND</u>	O	Auto power off indicator signal
31	GU	O	Tracking gain up signal output	55	<u>DCS IN</u>	I	Compu-link signal input
32	Vcc	-	+ 5V	56	<u>DCS OUT</u>	O	Compu-link signal output
33	SCK	O	Clock output for IC841	58~61	NC	-	Non connection
34	SI	I	Serial data input from IC841	62~64	11G~9G	O	FL grid control output

■ LC7881-C (IC873) : D/A converter

1. Terminal Layout

CH1OUT	1	20	CH2OUT
Vref H1	2	19	NC
Vref H2	3	L	18
V _{DD}	4	C	17
WCLK2	5	8	16
LRCK	6	8	15
WCLK1	7	1	IF
DATA	8	13	TST2
BCLK	9	12	TST1
V _{DD}	10	11	TSTOUT

2. Block Diagram

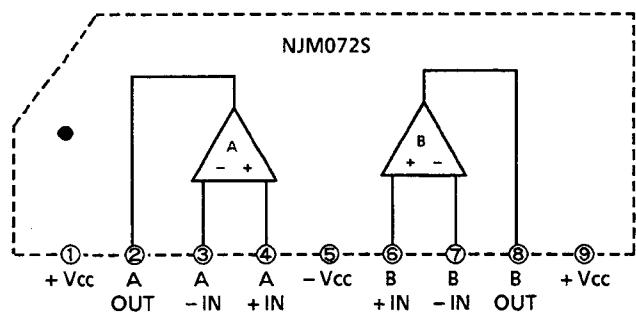


3. Pin Functions

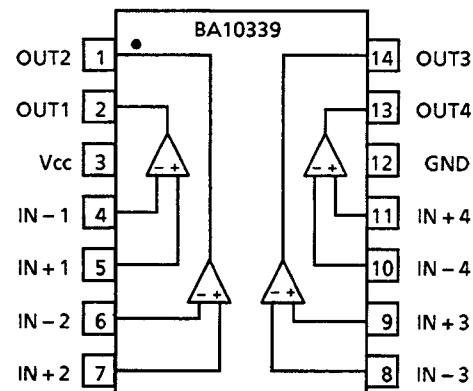
Pin No	Symbol	I/O	Functions and Operations
1	CH1 OUT	O	Channel 1 Output pin.
2	Vref H1	I	Reference voltage "H" input pin1.
3	Vref H2	I	Reference voltage "H" input pin2.
4	V _{DD}	-	Power supply, +5V.
5	WCLK2	I	Word clock 2 input pin. When IF pin is at high level, WCLK2 pin should be set at low level. When IF pin is at low level, this generates the internal signal used to latch the CH1 data of the digital audio signal, using the falling edge of WCLK2.
6	LRCK	I	LR clock input pin. This shows the CH1 and CH2 of the input digital audio data. When LRCK is at high level, it corresponds to CH1 data. When LRCK is at low level, it corresponds to CH2 data.
7	WCLK1	I	Word clock 1 input pin. When IF pin is at high level, this pin generates the internal signal used to latch both the CH1 and CH2 data, using the falling edge of WCLK1. When IF pin is at low level, it generates the internal signal used to latch the CH2 data.
8	DATA	I	Digital audio data input pin. When IF pin is at high level, the data signal is input by each bit serially from the MSB. When IF pin is at low level, the data signal is input by each bit serially from the LSB.
9	BCLK	I	Bit clock pin. This clock signal is used when reading the digital audio data by each bit serially, and also used for PWM D/A converter.
10	V _{DD}	-	Power supply, +5V.
11	TST OUT	O	Test signal output pin. Normally leave this pin open.
12	TST1	I	Test signal input pin. Normally connect to GND terminal.
13	TST2	I	
14	IF	I	Interface select pin. When IF pin is at high level, the digital audio data is input from the MSB first. When IF pin is at low level, the digital audio data is input from the LSB first.
15	GND	-	Ground.
16	Vref L1	I	Reference voltage "L" input pin1.
17	GND	-	Ground.
18	Vref L2	I	Reference voltage "L" input pin2.
19	NC	-	No connection.
20	CH2 OUT	O	Channel 2 output pin.

XL-MX70BK

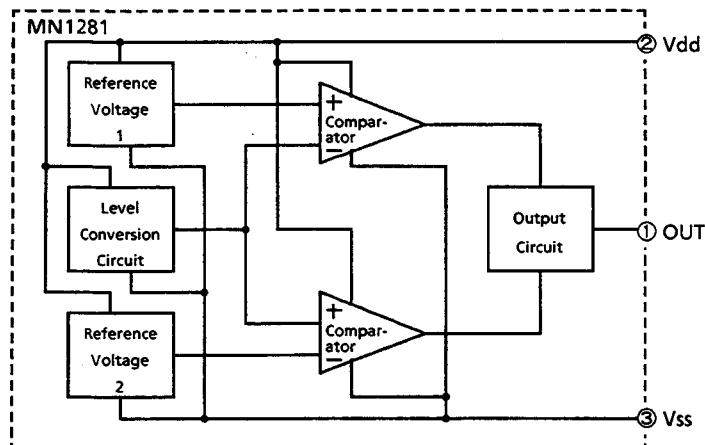
■ NJM072S (IC801) : Dual OP Amp.



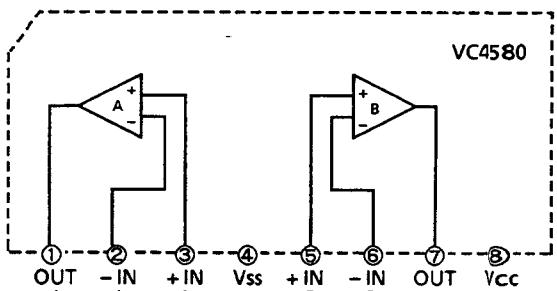
■ BA10339 (IC802) : Comparator



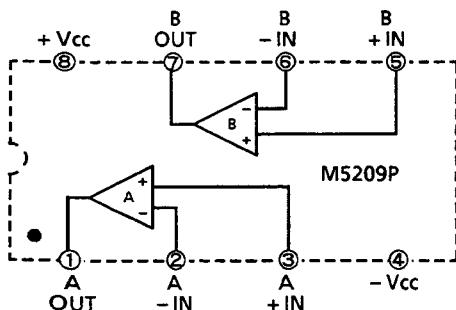
■ MN1281 (P,Q) (IC992) : Reset IC



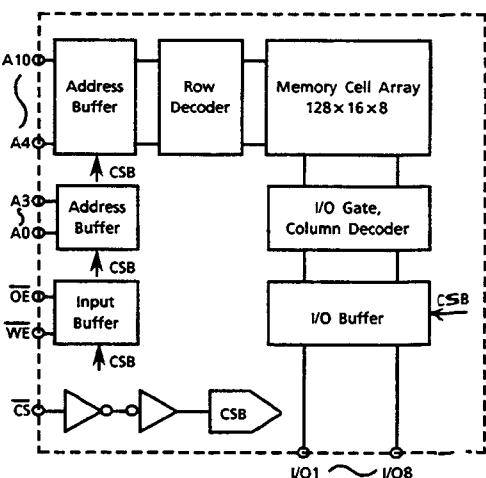
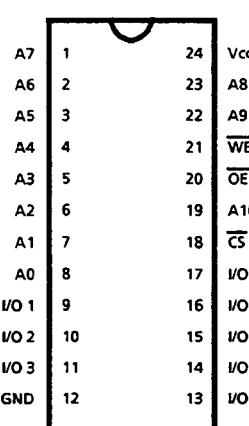
■ VC4580L (IC762,781,803) XRA15218N (IC871,872) : Dual OP Amp.



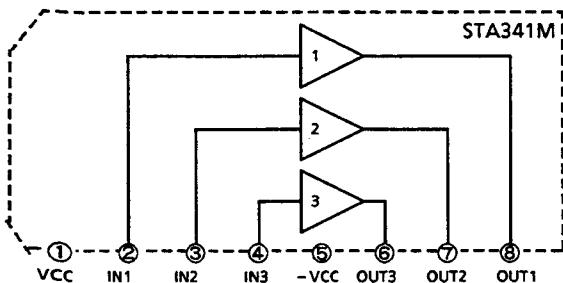
■ M5209P (IC843) : Dual OP Amp.



■ LC3517BS-15 (IC842) : Static RAM



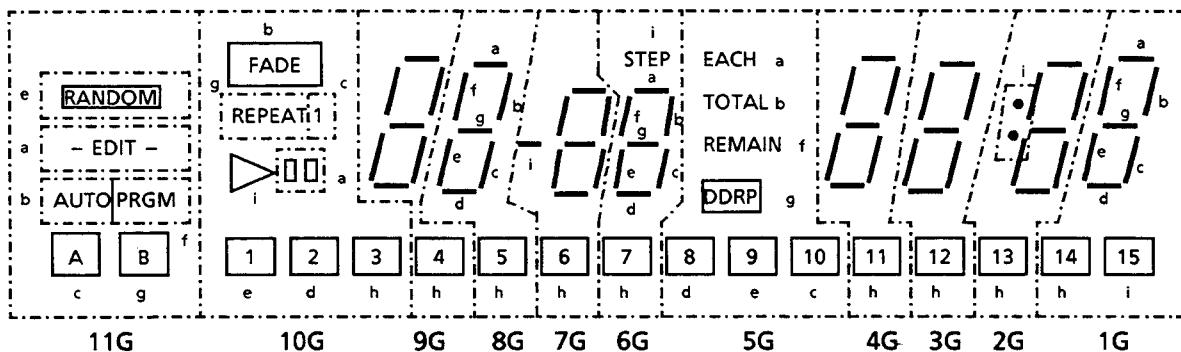
■ STA341M (IC801) : Motor Driver



Internal Connections of FL Display Tube

■ ELU0001-114 (FL991)

1. Grid Layout



2. Pin Connection

Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
Electrode	F1	F1	NP	NC	11G	10G	9G	8G	7G	6G	5G	P	4G	3G	2G	1G	P	P	P

Pin No.	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
Electrode	P (g)	P (c)	P (e)	P (d)	P (h)	NC	NP	F2	F2										

Note ··· F : Filament, G : Grid, a~i : Element, NP : No pin, NC : No connection

Disassembly Procedures

1 Removing the top cover

- (1) Remove the 2 screws on both sides of the top cover and the 4 screws on the rear side.
- (2) Gently spread both sides of the top cover to the outside, lift up the rear section, and remove the top cover.

2 Removing the tray

- (1) Remove the top cover.
- (2) Switch on the power of AX-MX70BK.
Press the OPEN / CLOSE switch to bring the tray forward and with the tray forward, switch off the power.

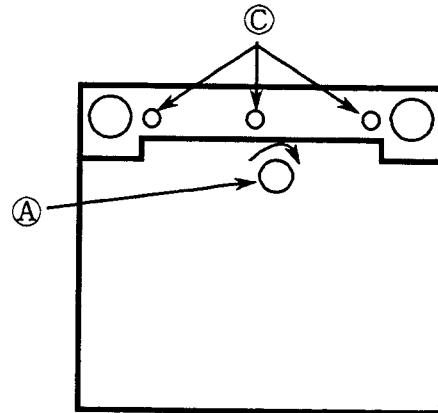
- (3) Remove the screw on the tray ④.

- (4) Pull the tray toward the front to move it.

Note : If the power does not come on due to breakdown or the , insert a Philips screwdriver through the hole at the bottom of the front panel and turn it clockwise to bring the tray forward ⑤.

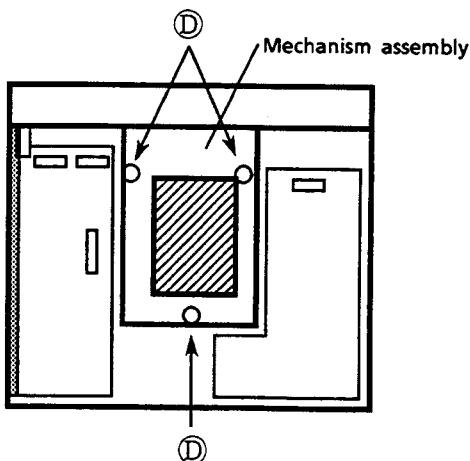
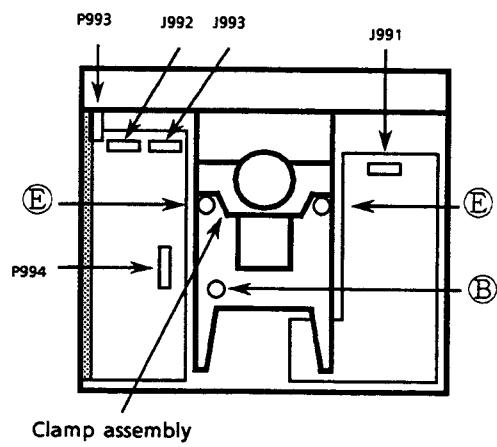
3 Removing the front panel assembly

- (1) Remove the top cover.
- (2) Remove the connectors(J991, J992, J993) connecting with main PC Boards.
- (3) Remove the 3 screws ⑥ at the bottom of the front panel.



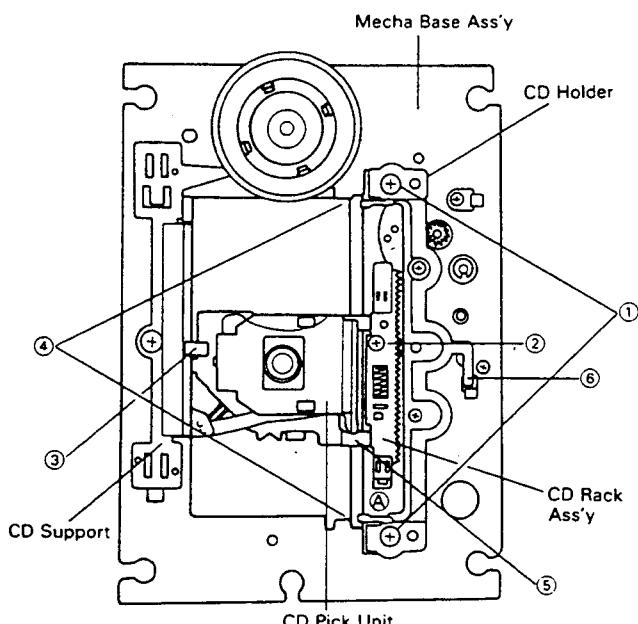
4 Removing the mechanism assembly

- (1) Remove the top cover.
- (2) Remove the tray.
- (3) Remove the connectors (P993, P994).
- (4) Remove the 2 screws ⑦ holding the clamp assembly, then remove it.
- (5) Remove the 3 screws ⑧ holding the mechanism assembly.



6. Removing the Laser Pickup

- (1) Remove the top cover, tray assembly and the clamp.
- (2) Move the Pickup Unit from rest position to the center pushing ⑤ point with finger.
- (3) Remove the screw ② from the CD RACK assembly, and remove the CD RACK assembly.
- (4) Remove the screw ① from the mechanical base assembly.
- (5) Remove the CD HOLDER fastening the shaft from the mechanical base assembly.(Release the hook ⑥)
- (6) Remove the CD Pick Unit with the shaft.



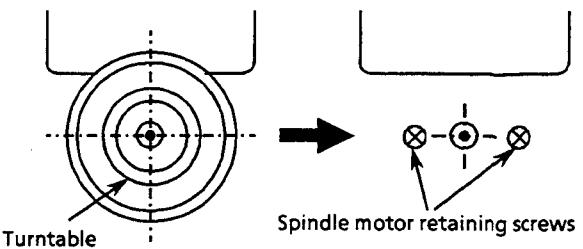
7. Laser Pickup installation

- (1) Connect two wires with the connectors of P.C. Board.
- (2) While installing the ③ in the CD Support, set the shaft on the base hook④.
- (3) Install the CD Holder.
- (4) Install THE CD Rack assembly in CD Pick Unit.
 - 1) Fit end ①
 - 2) Fix screw ②.

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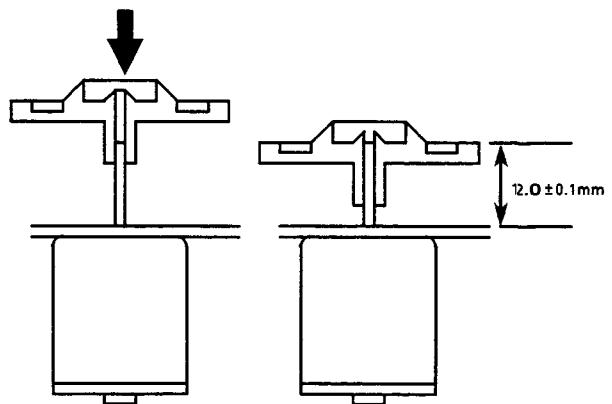
8. Spindle motor removal

- (1) Remove the Mechanism assembly.
- (2) Remove the Clamp assembly.
- (3) Remove the turntable, and remove the two screws retaining the spindle motor.
- (4) Remove the screw retaining the Spindle and Feed Motor P.C. Board and unsolder it.

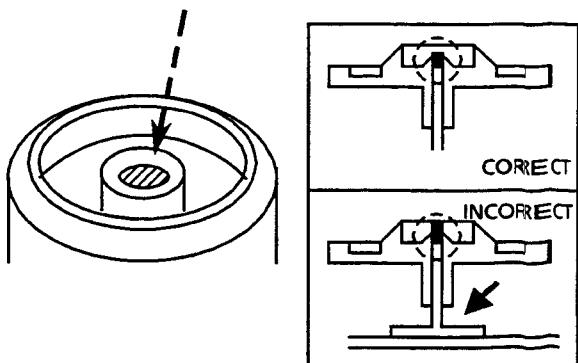


9. Spindle motor installation

- (1) Tighten the 2 screws to the same torque.
- (2) Fasten the Spindle and Feed Motor P.C. Board with the screw and solder.
- (3) Install the turntable. When installing, press straight down at the center of the turntable until the distance from the surface of the mechanism base to the top of the turntable is exactly $12.0 \pm 0.1\text{mm}$.



- (4) After insertion is complete, bond the motor shaft and turntable together (at the section marked by an arrow in the figure on the left below).

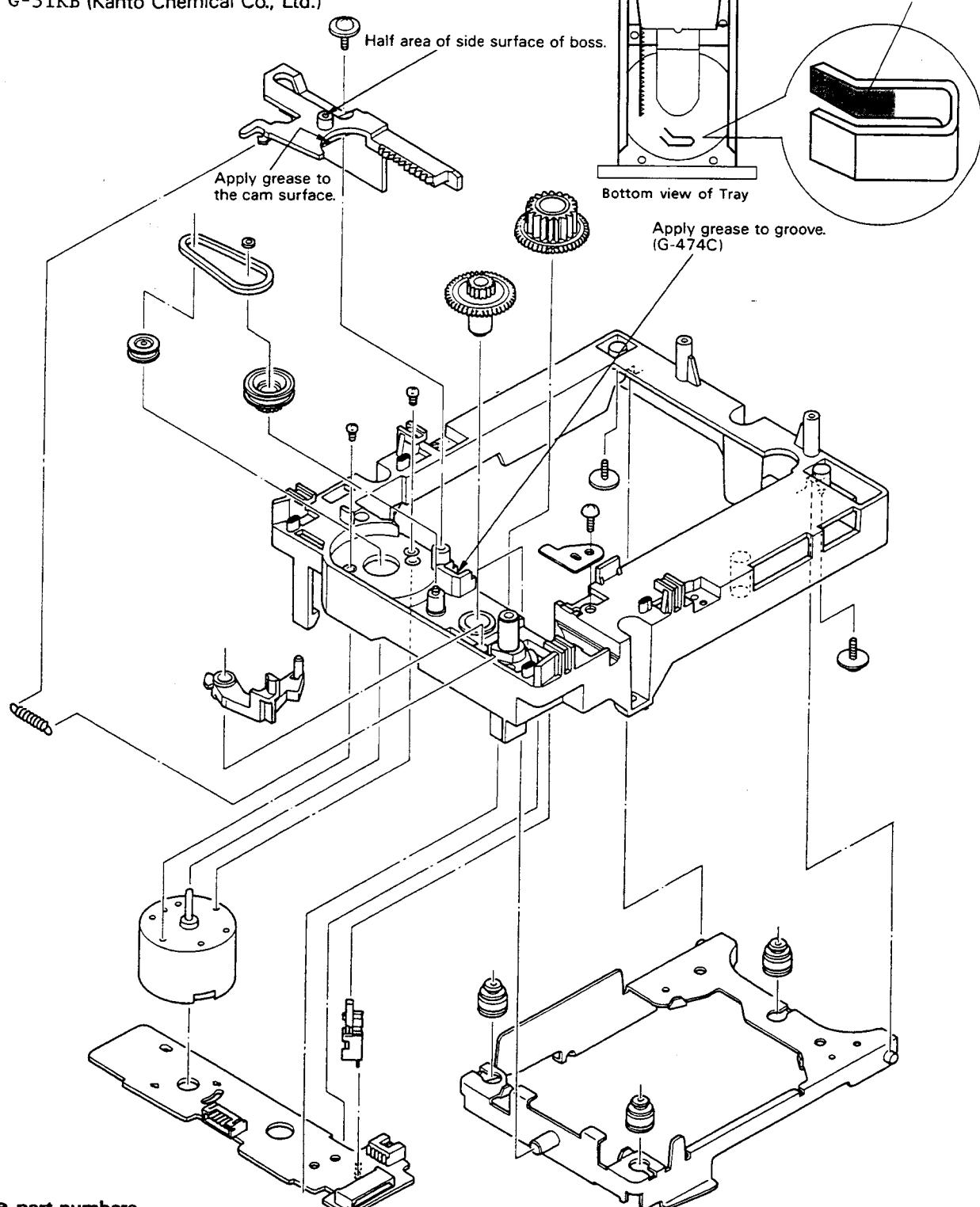


- (5) Use "LOCKTITE" #460 bonding agent, and apply as little as possible. Take care not to allow any excess bonding agent to get onto the turntable. Be extremely careful not to allow bonding agent to adhere to the motor bearings (the section marked by an arrow in the figure on the right.)

Application Points for Grease

Grease used

- G-334 (Shin-Etsu Chemical Co., Ltd.)
- G-474C (Kanto Chemical Co., Ltd.)
- G-31KB (Kanto Chemical Co., Ltd.)



Grease part numbers
 G-334: EBS0006-009B
 G-474C: EBS0006-019B
 G-31KB: EBS0006-013B

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Maintenance of Laser Pickup

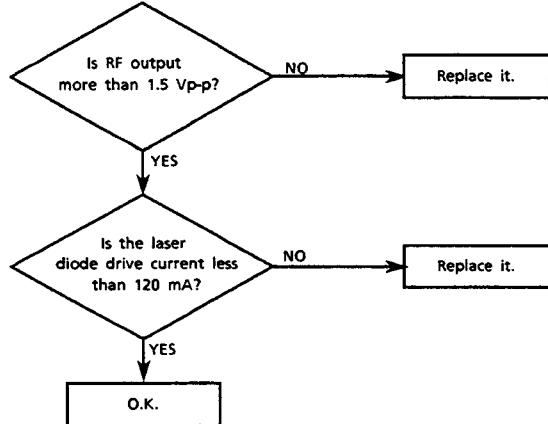
1. Life of the laser diode

When the life of the laser diode has expired, the following symptoms will appear.

(1) The level of RF output (EFM output: amplitude of eye pattern) will be low.

(2) The drive current required by the laser diode will be increased.

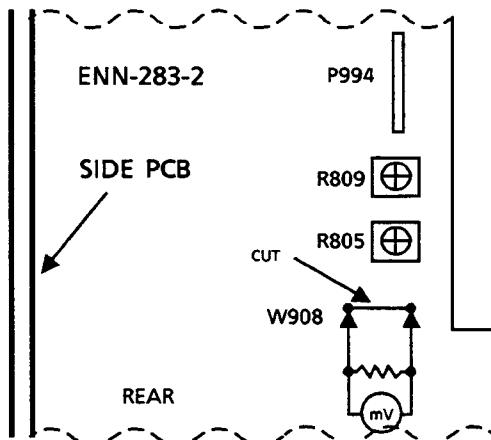
In such a case, check the life of the laser diode following the flowchart below



2. Measurement of laser diode drive current

Replace the jump wire (W908) shown below with the resistor (1Ω).

Measure the voltage across the resistor with a milli-voltmeter. When the voltage is more than 120mV, it shows that the life of the laser diode has expired



3. Semi-fixed resistor on the APC PC board

The semi-fixed resistor on the APC printed circuit board which is attached to the pickup is used to adjust the laser power. Since this adjustment should be performed to match the characteristics of the whole optical block, do not touch the semi-fixed resistor.

If the laser power is lower than the specified value, the laser diode is almost worn out, and the laser pickup should be replaced.

If the semi-fixed resistor is adjusted while the pickup is functioning normally, the laser pickup may be damaged due to excessive current.

Replacement of Laser Pickup

Turn off the power switch of AX-MX70BK and, disconnect the power cord from the AC outlet, then disconnect the system connector

Replace the pickup with a normal one. (Refer to "Laser pickup Removal" on the previous page.)

Plug in the system connector and the AC cord of AX-MX70BK, then turn the power switch on. At this time, check that the laser emits for about 3 seconds and the objective lens moves up and down.

Play a disc, and when it starts rotating, short circuit between TP7(TEST) and TP5(GND).

Adjust tracking gain.

Adjust tracking offset.

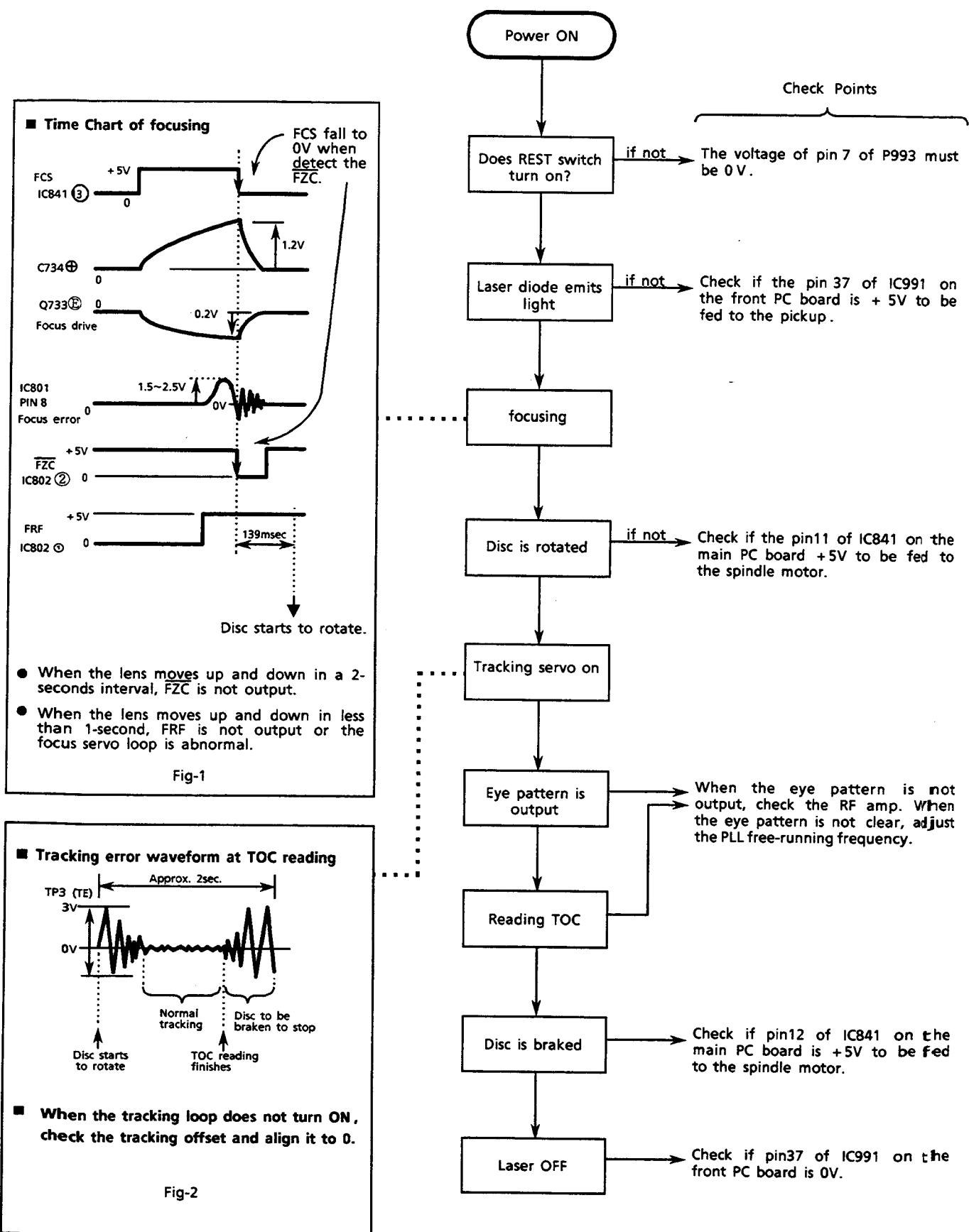
Disconnect TP7 (TEST) from TP5 (GND).

Check the eye-pattern at the TP4 (RF).

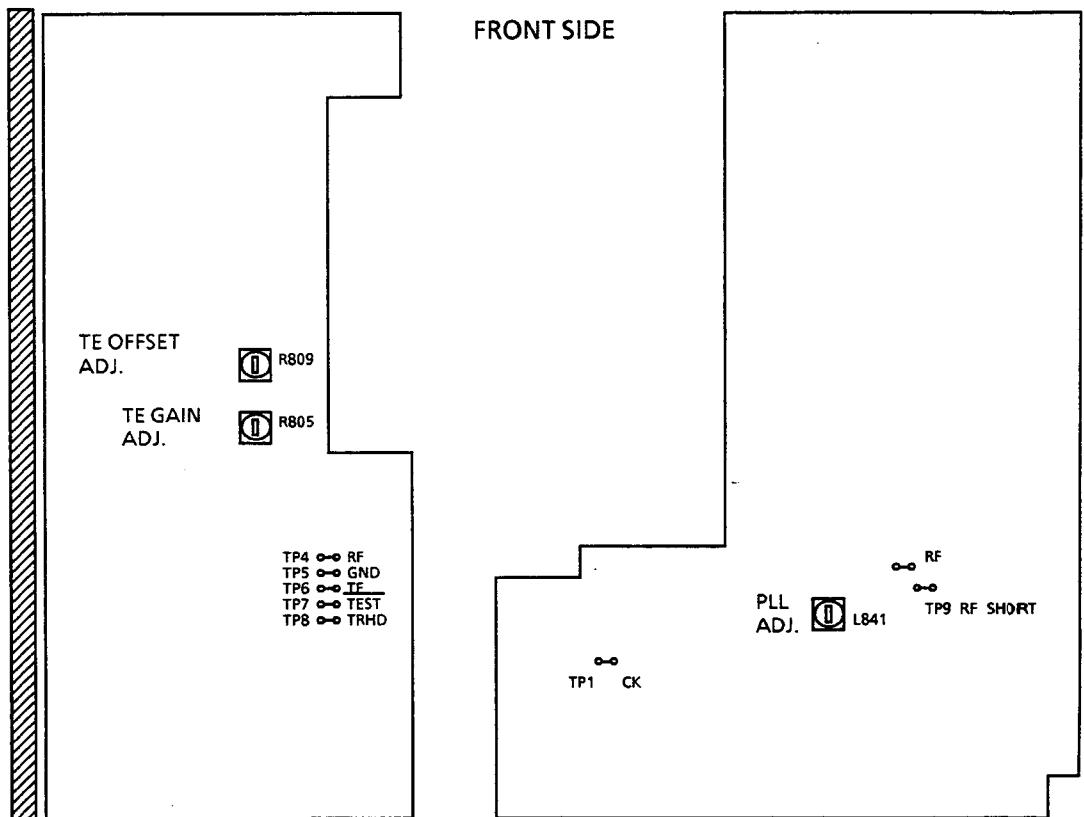
Finish.

Note: Since one adjustment may affect other settings, repeat these adjustments a few times.

Flow of Functional Operation Until TOC is Read



Adjustment Procedures



* Use AX-MX70BK when adjusting .

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1. PLL free-running adjustment

- 1) Measuring instrument
Frequency counter
- 2) Adjusting procedure
 - (1) Connect a frequency counter with TP1 (CK) and TP5 (GND) on the main PC board. Short circuit TP9 to TP5(GND).
 - (2) Adjust L841 for setting the frequency counter's value becomes $4.320 \pm 0.005\text{MHz}$.

2. Tracking gain adjustment

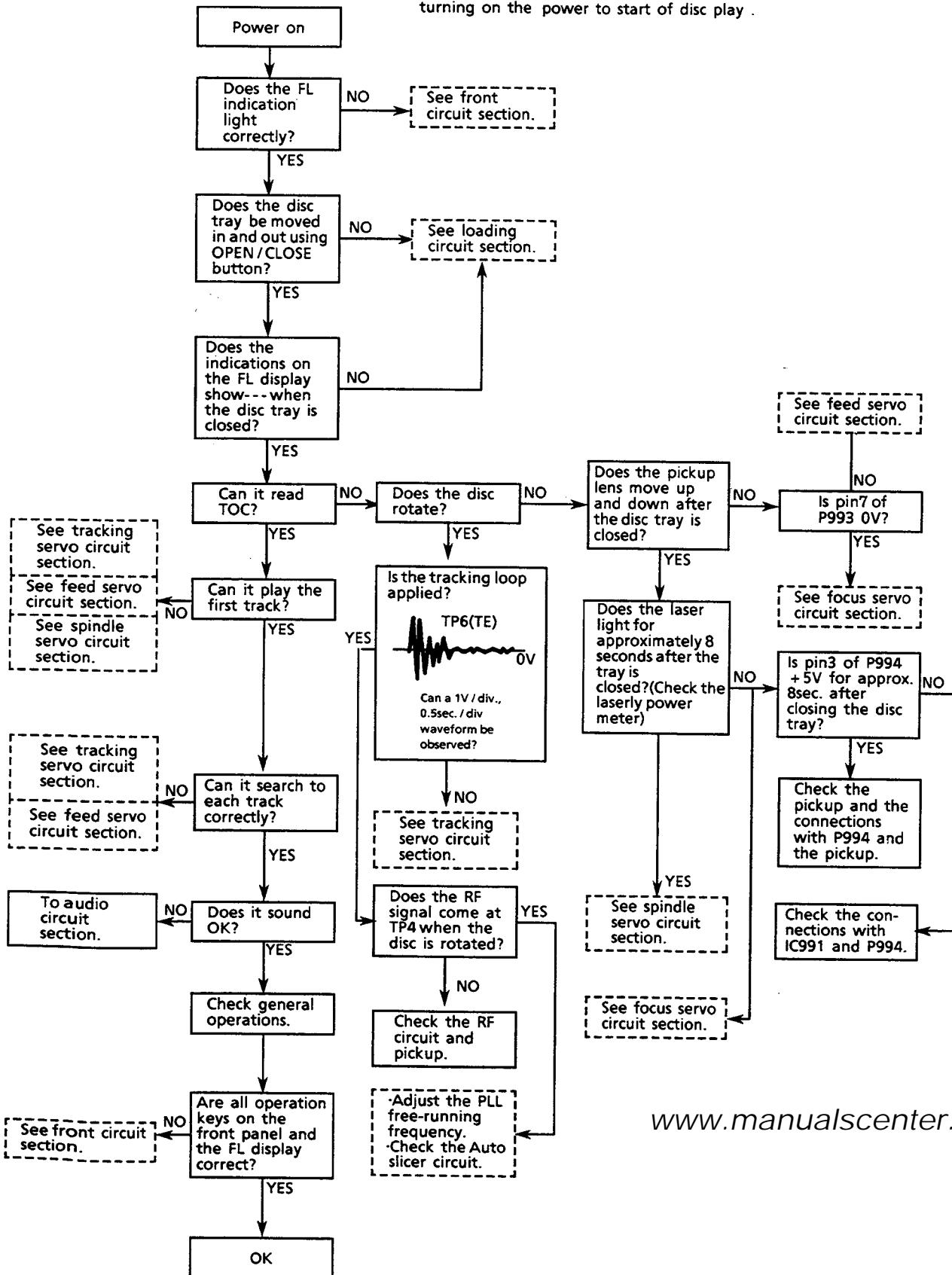
- 1) Measuring instruments
Oscilloscope, Normal disc
- 2) Adjusting procedure
 - (1) Connect an oscilloscope with TP6 (TE) and TP5 (GND) on the main PC board.
 - (2) Play a disc.
 - (3) Short circuit TP7 (TEST) to TP5 (GND).
 - (4) Adjust R805 for setting tracking error signal becomes $2.0\text{ V}_{\text{P-P}}$.

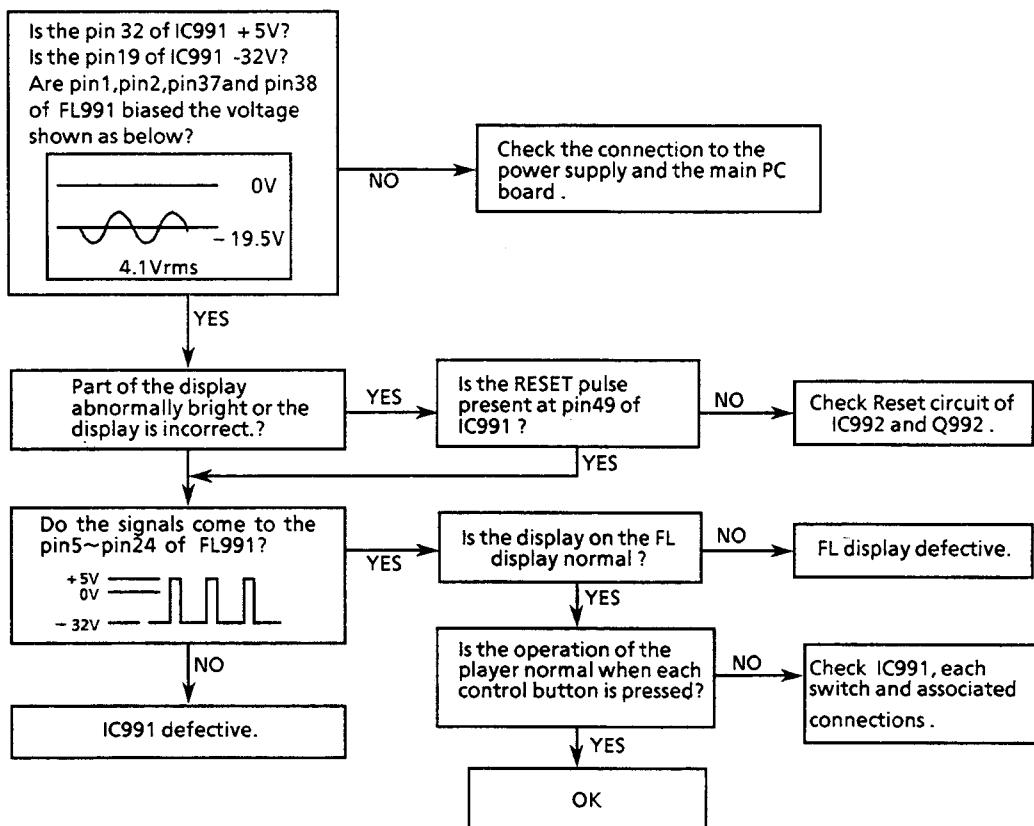
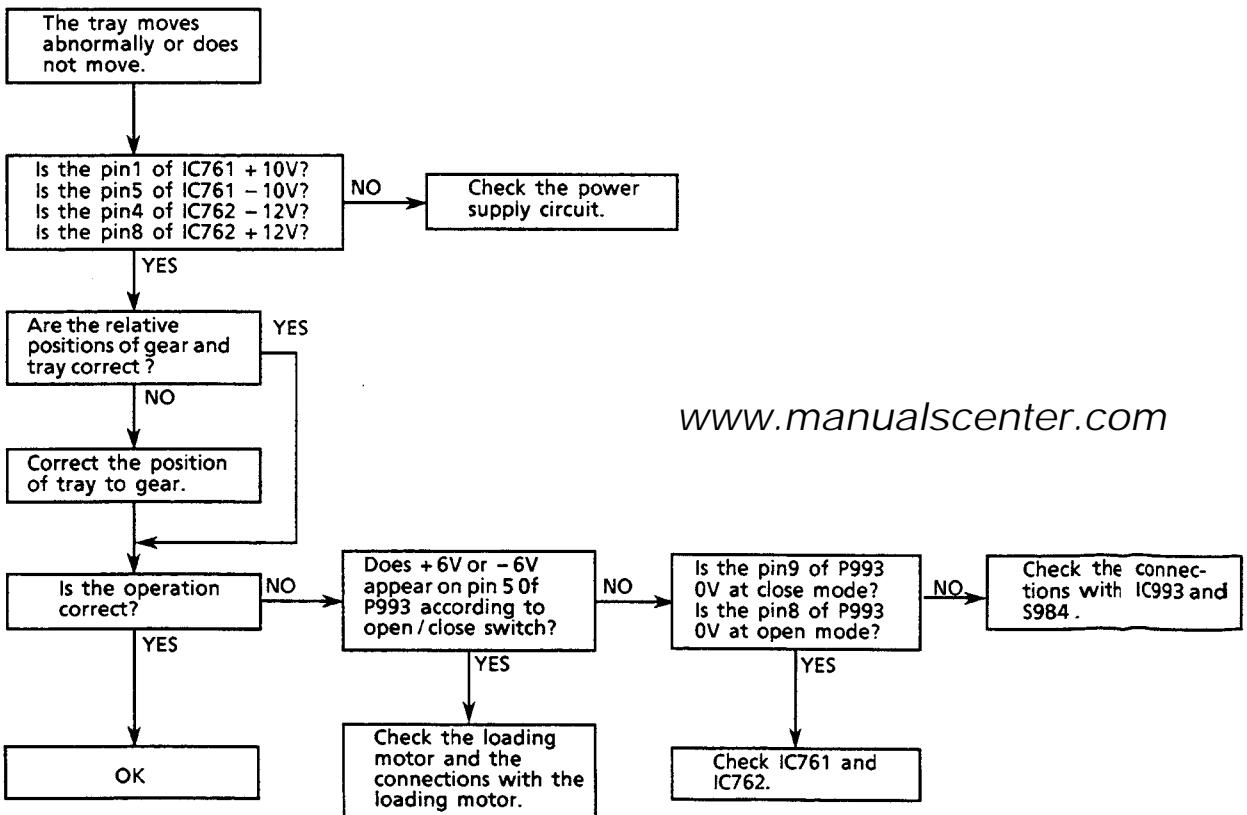
3. Tracking offset adjustment

- 1) Measuring instruments
Oscilloscope, Normal disc
- 2) Adjusting procedure
 - (1) Connect an oscilloscope with TP6 (TE) and TP5 (GND) on the main PC board.
 - (2) Play a disc.
 - (3) Short circuit TP7 (TEST) to TP5 (GND).
 - (4) Adjust R809 for setting the DC level of the tracking error (offset) becomes 0.

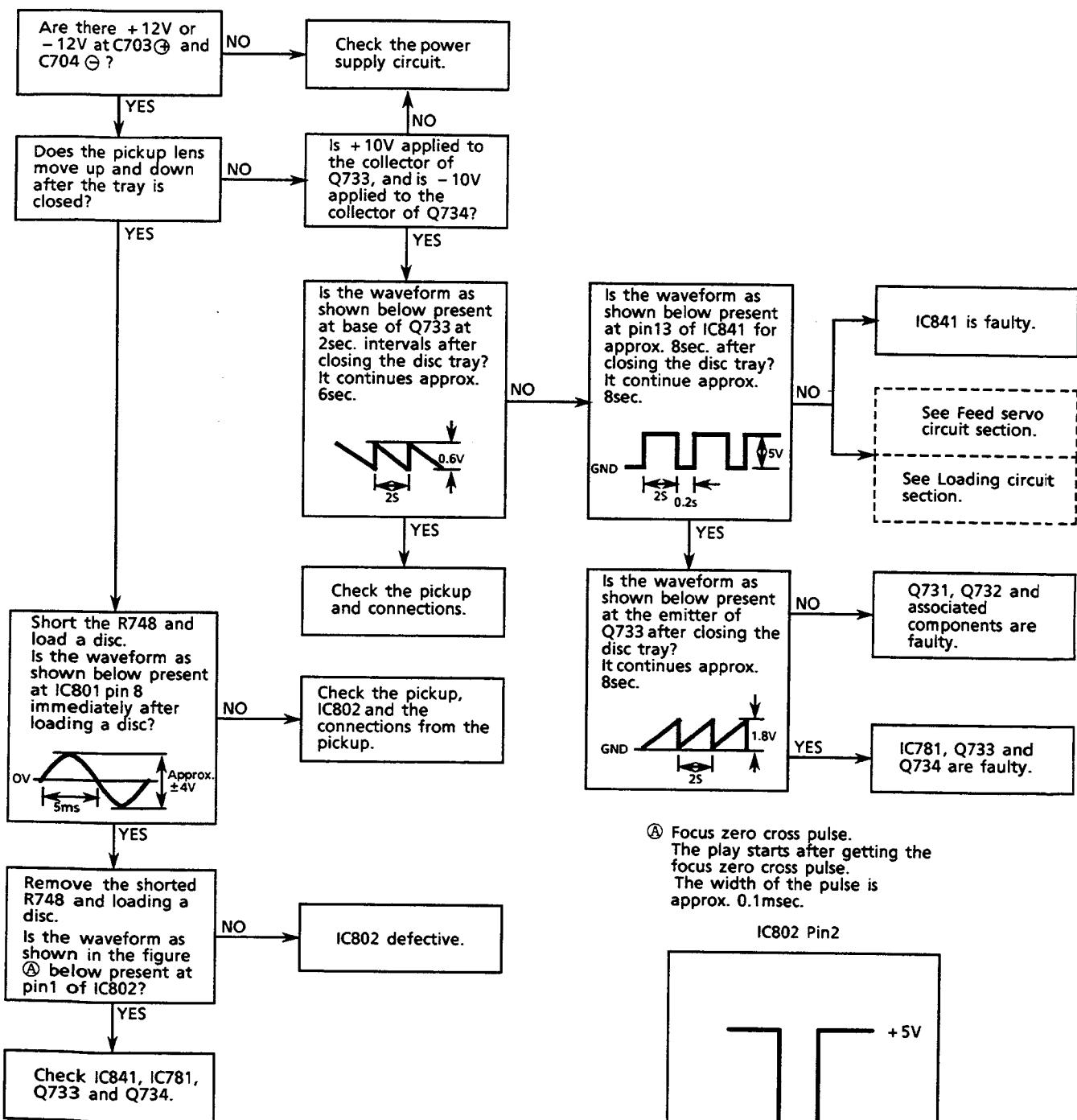
Troubleshooting

The following shows the status of the various circuits from turning on the power to start of disc play .

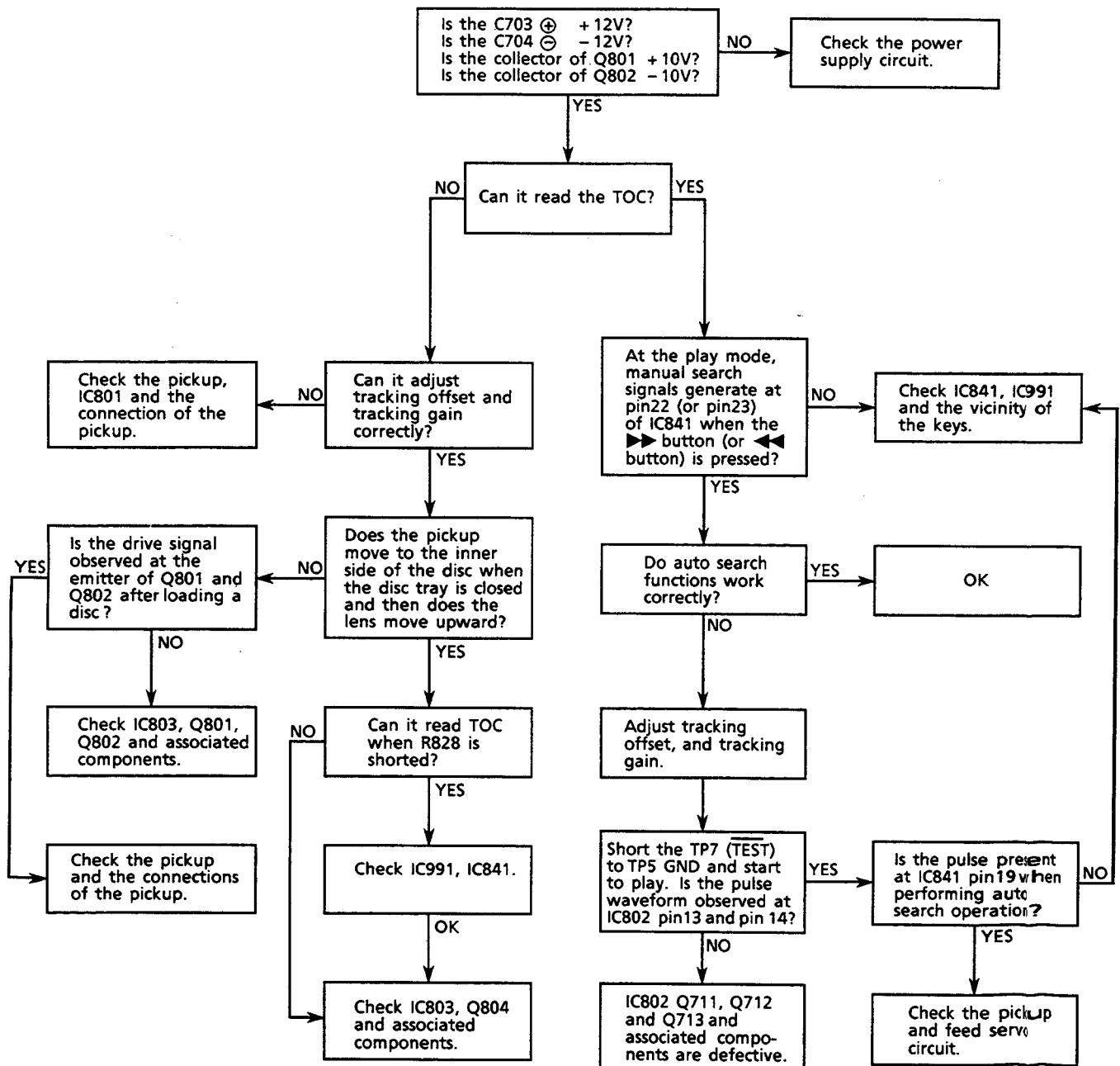


Front circuit Section**Loading circuit section**

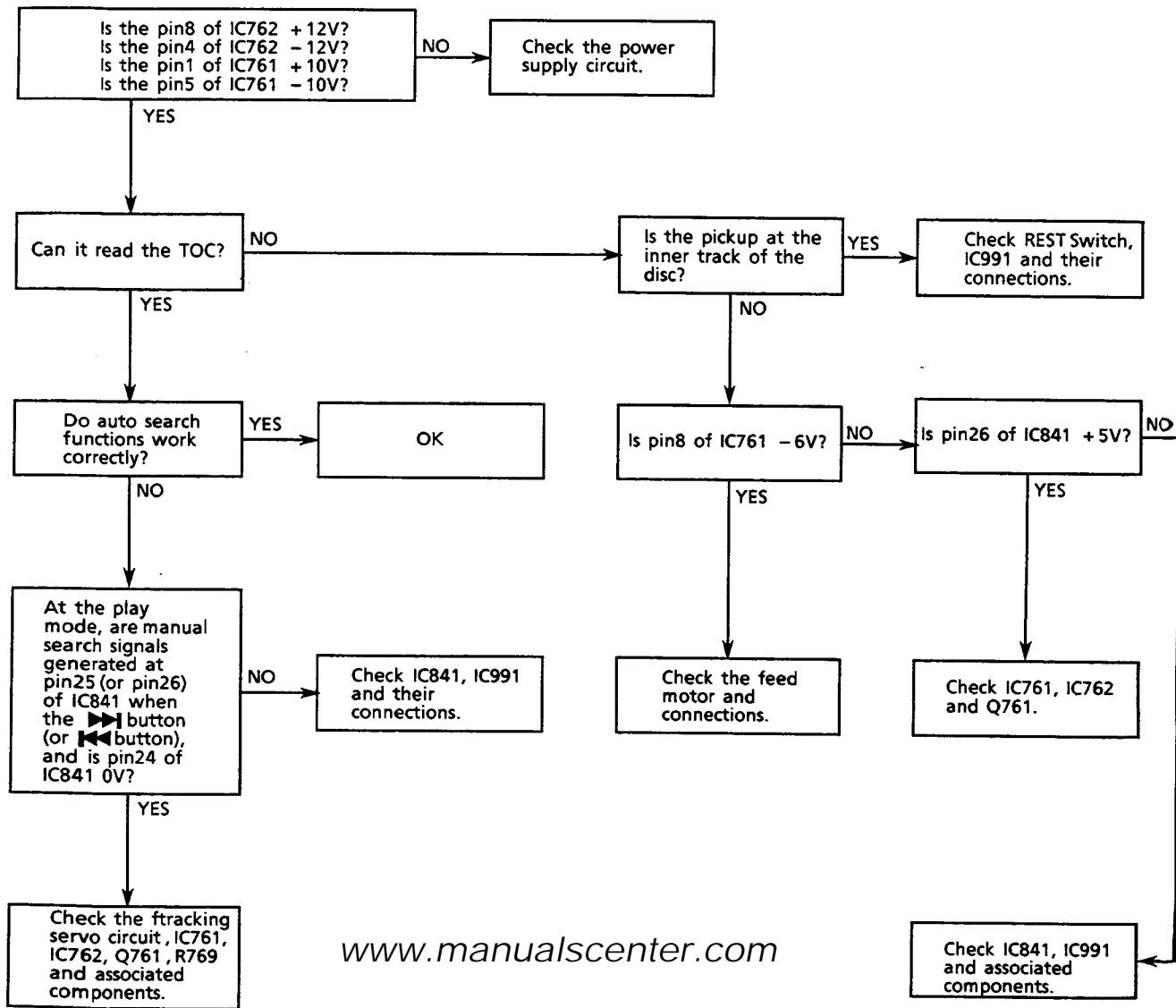
Focus circuit section



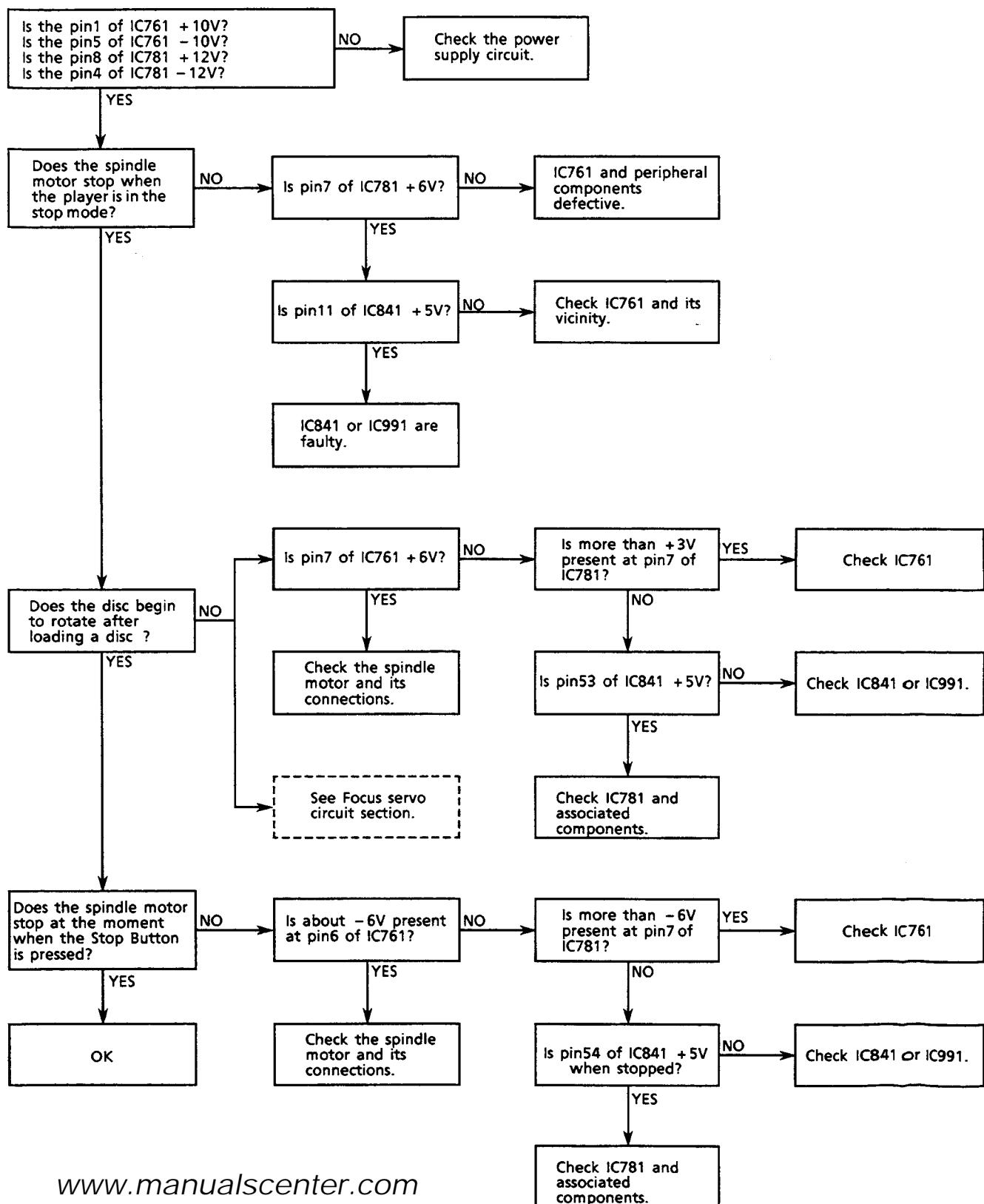
Tracking circuit section



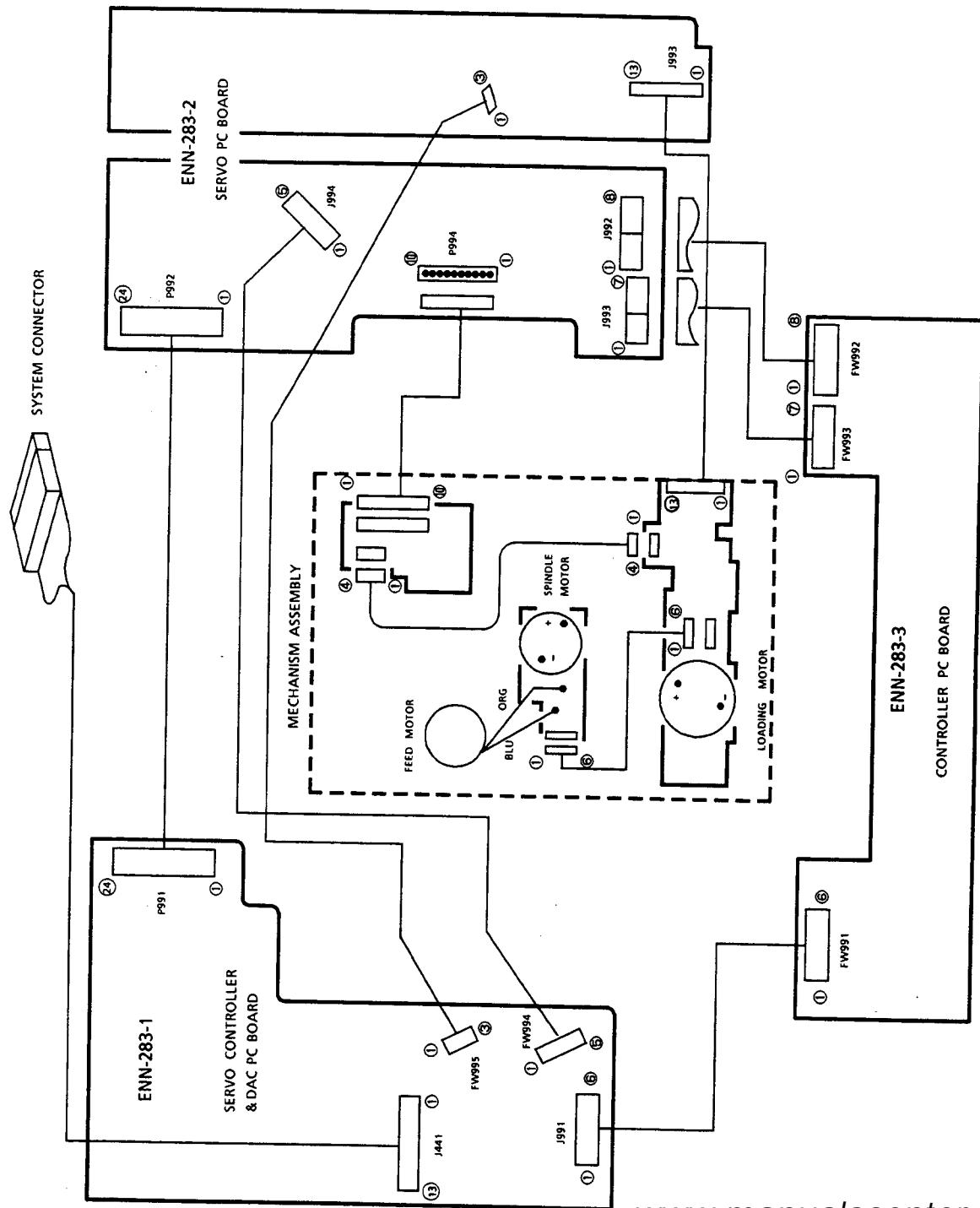
Feed circuit section



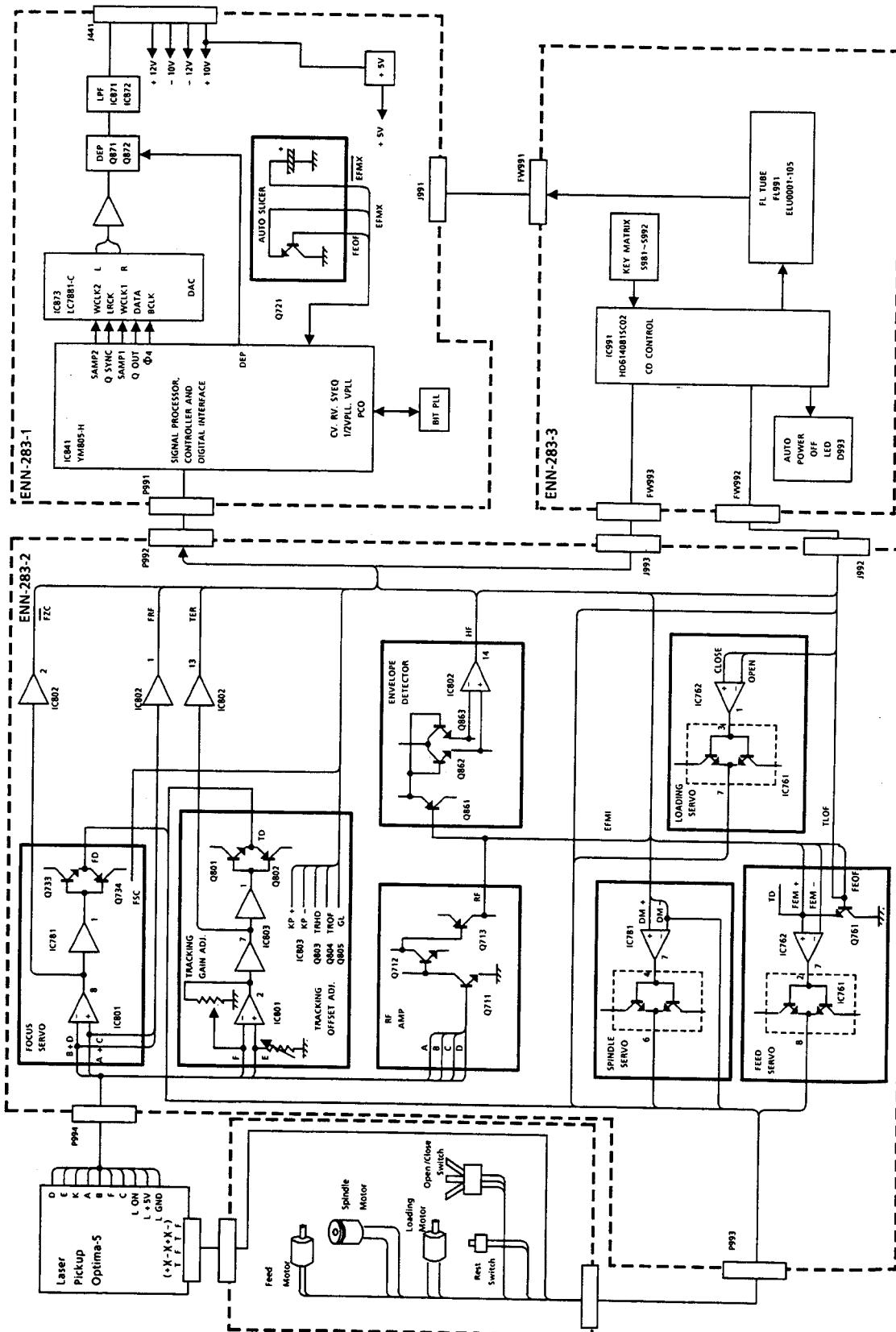
Spindle circuit section



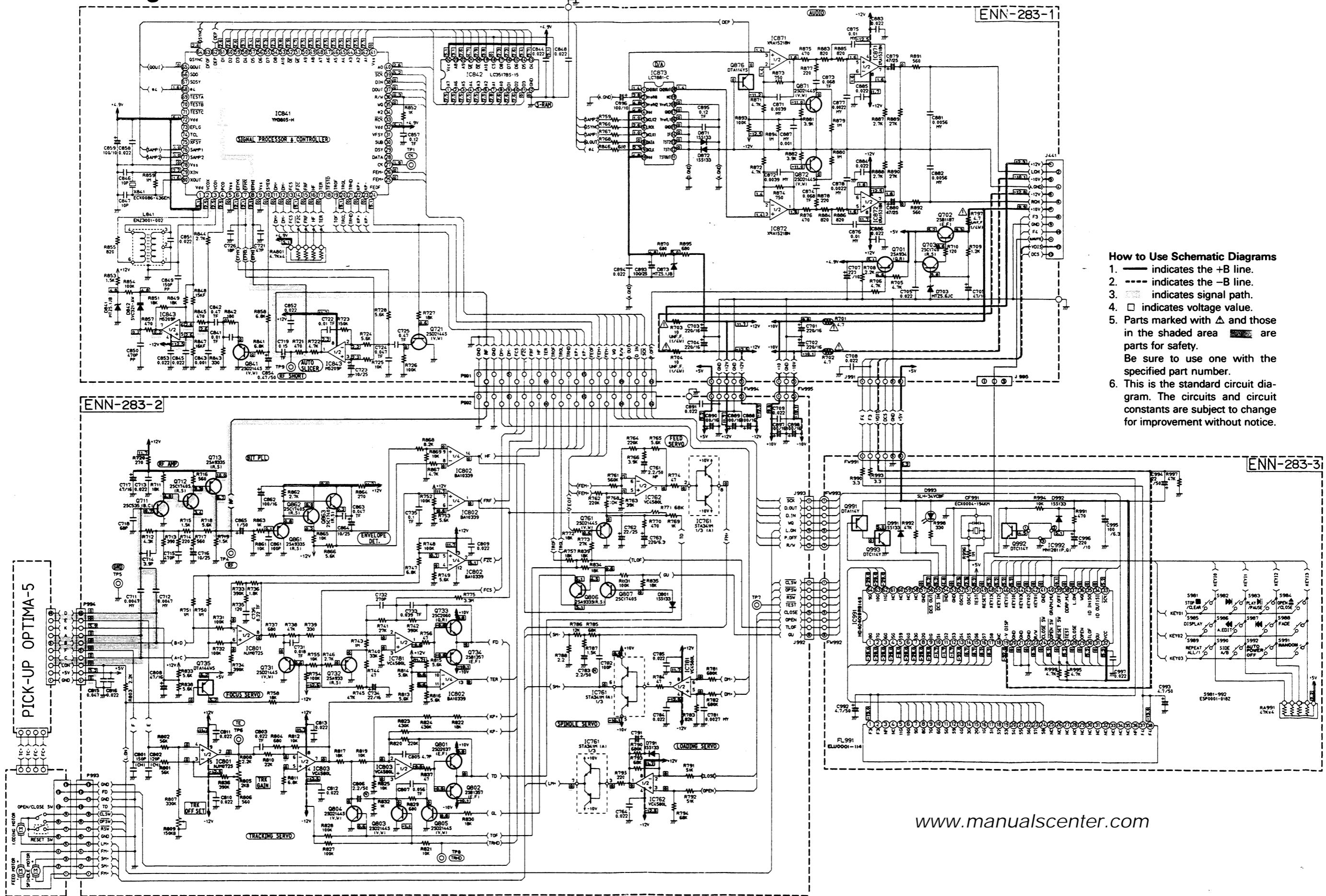
Connection Diagram


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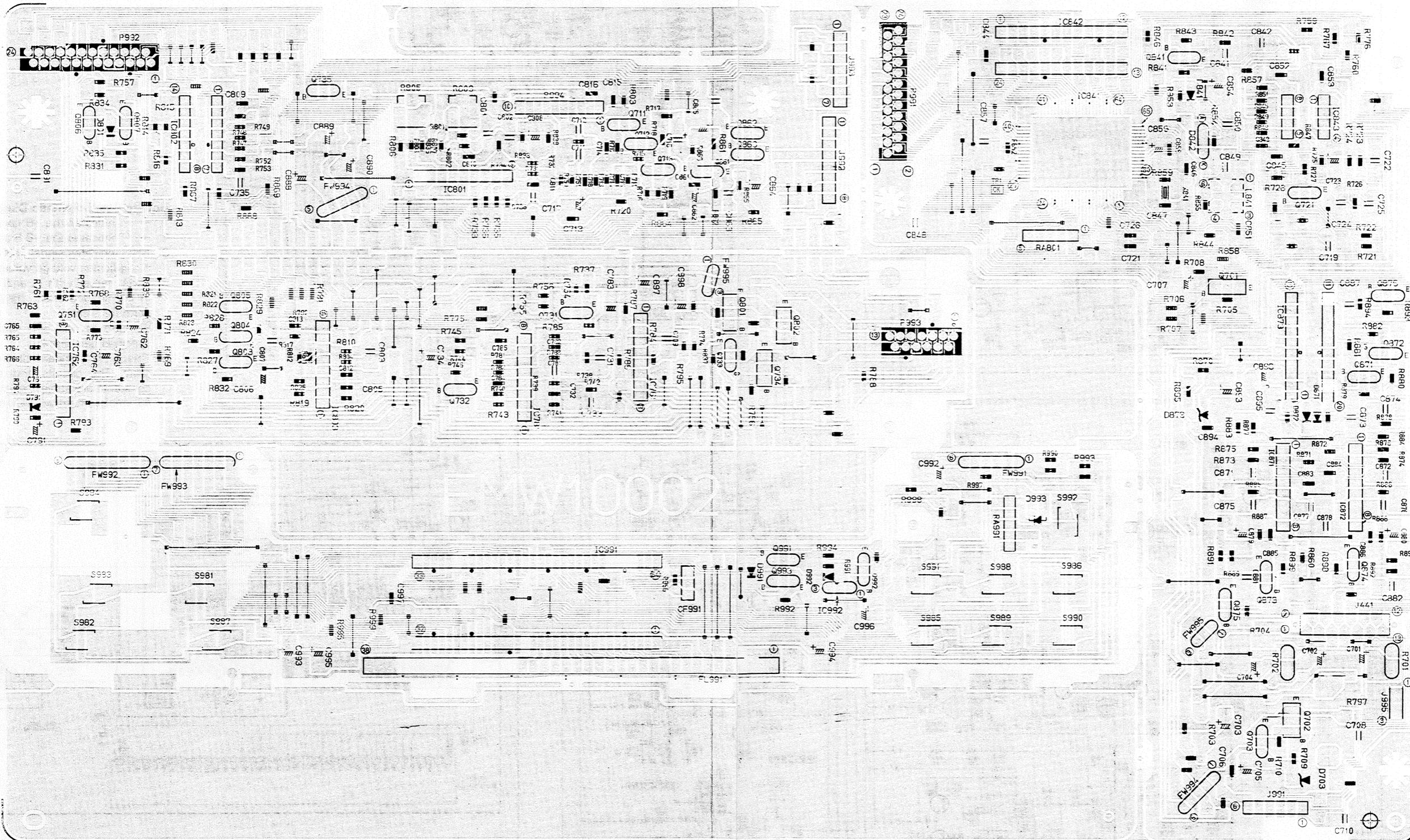
Block Diagram



Schematic Diagram


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Printed Circuit Board



PARTS LIST

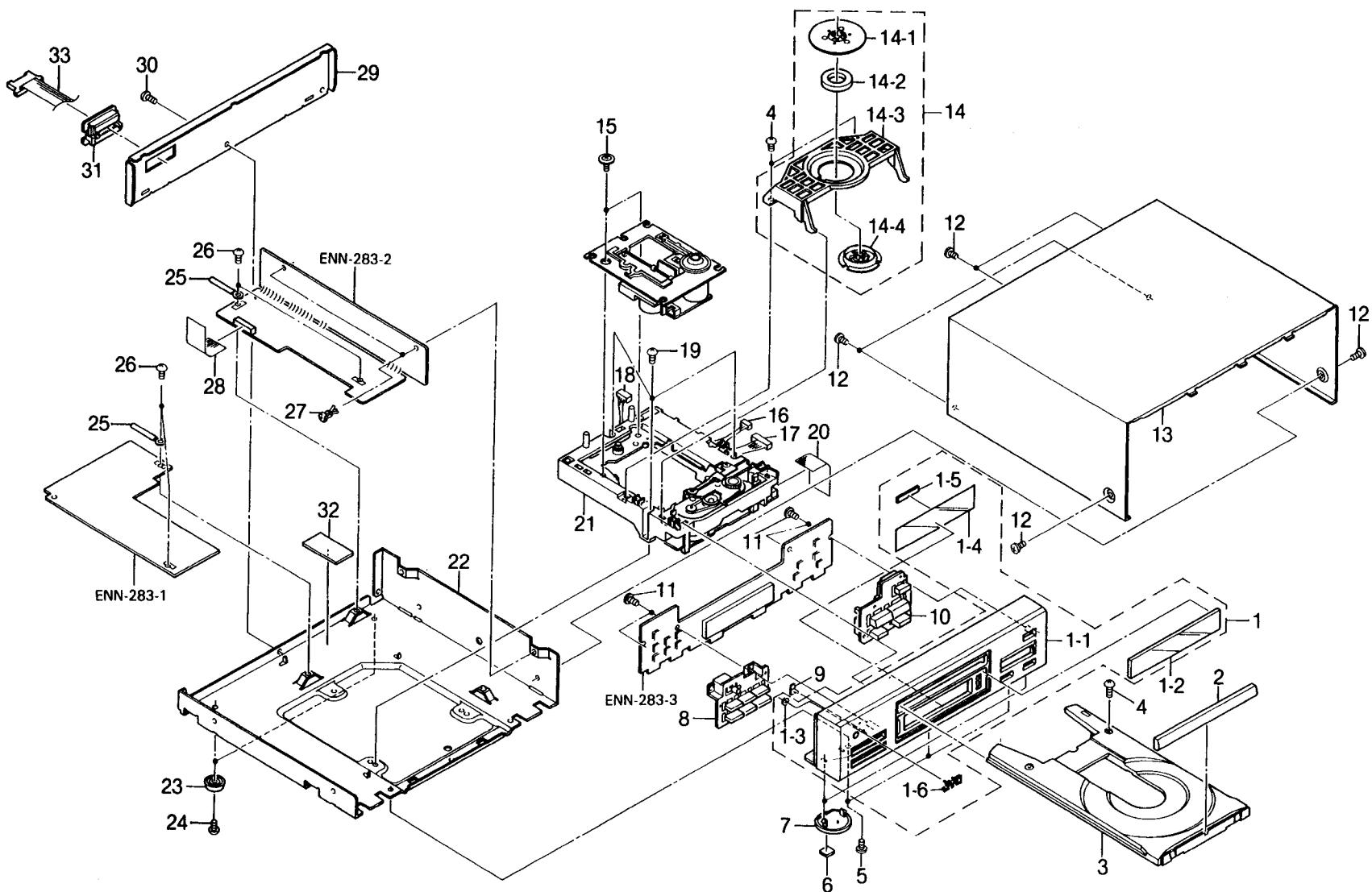
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General Exploded View and Parts List

2-2 (No. 20247)



■ Parts List

△	Item	Part Number	Part Name	Q'ty	Description	Areas
	1 1-1 1-2 1-3 1-4	EFP-XLMIX70BKE (S E102328-005 E306949-003 E60912-003 E70561-027	Front Panel Ass'y Front Panel Window Screen Speed Nut FL Screen	1 1 1 1 1		
	1-5 1-6 2 3 4	EXO035003R10S13 PQ42561 E306947-003 E12289-005 SBSF3008M	Spacer JVC Mark Fitting Tray Screw	1 1 1 1 3		
	5 6 7 8 9	SDSG3006M E75896-001 E306935-001 E306943-002 E406091-001	Screw Spacer Foot Push Button Indicator	3 2 2 1 1	for Foot (Front) Front POWER	
	10 11 12 13 14	E306945-002 SDSF2608Z SDSG3008M E206817-001 E306837-003	Push Button Screw Screw Metal Cover Clamper Base Ass'y	1 4 6 1 1	CD PLAY for Metal Cover	
	14-1 14-2 14-3 14-4 15	E306836-003 E74897-002 E26756-001 E306835-001 E75871-003	Yoke Magnet Clamper Base Clamper Special Screw	1 1 1 1 2		
	16 17 18 19 20	EWS254-B103 EWS25A-B102 EWS256-B102 SBST3006Z EWR1DE-10TT	Socket Wire Ass'y Socket Wire Ass'y Socket Wire Ass'y Screw Flat Cable	1 1 1 3 1	4PIN 10PIN 6PIN 13PIN	
	21 22 23 24 25	E102330-001 E47227-023 SBSG3008N E72018-001	CD Mechanism Unit Ass'y Chassis Base Foot Screw Wire Clamp	1 1 2 2 2	See page 2-4 Rear for Foot	
	26 27 28 29	SBSG3008CC E48729-008 EWR1QE-11TT E206815-008 E206815-009	Screw Plastic Rivet Flat Cable Rear Panel Rear Panel	4 2 1 1 1	24PIN	J C,A,U
	— 30 31 32	E206815-010 E307534-001 SBSG3008M E305920-001 E306805-027	Rear Panel Rating Label Screw Cord Holder Spacer	1 1 1 1 1		E,EF,G,BS,GI J
	33 — — —	EWP902-020 E406507-001 E61029-009 E70891-001	Plug Cord Ass'y Caution Label Number Label Class 1 Label	1 1 1 1	JB441	Except J Except J Except J,C

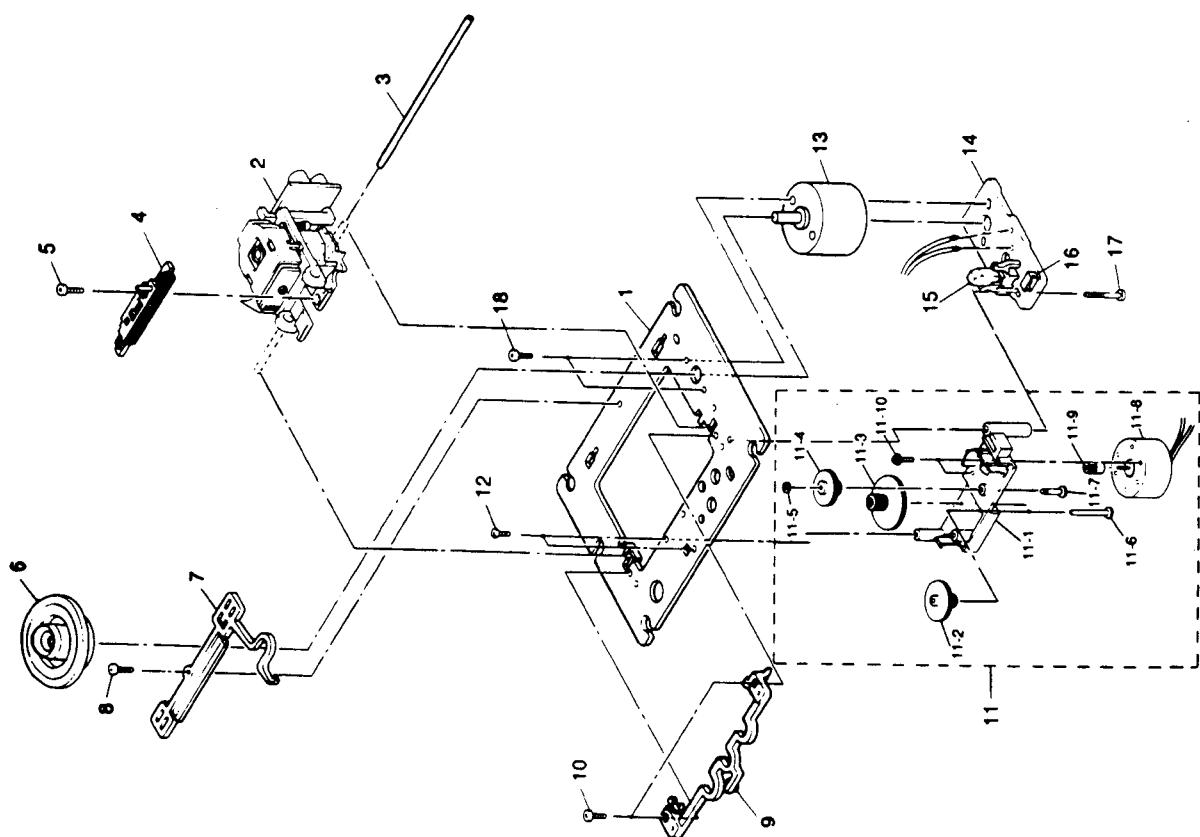
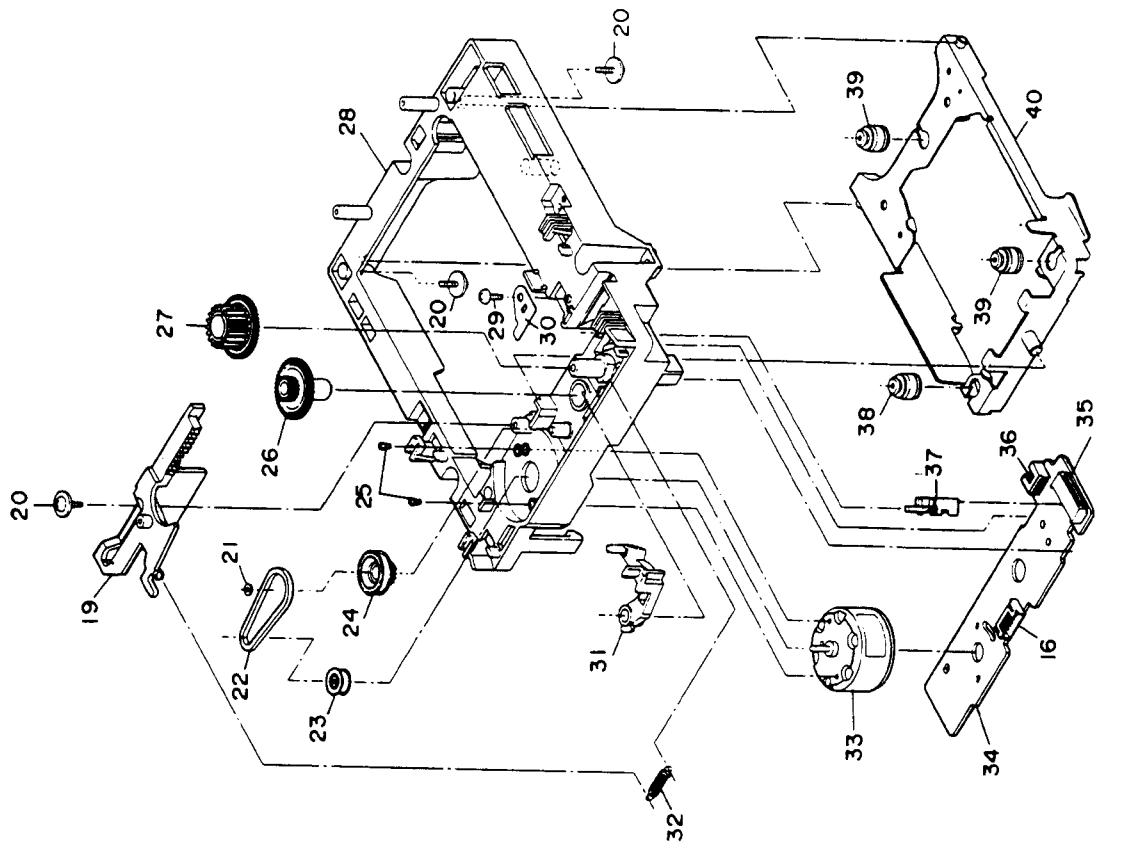
The Marks for Designated Areas

J.....the U.S.A.
 C.....Canada
 A.....Australia
 E,EF.....Continental Europe
 G.....Germany

BS.....the U.K.
 GI.....Italy
 U.....Universal Type
 No mark indicates all areas.

△ Safety Parts

CD Mechanism Ass'y and Parts List



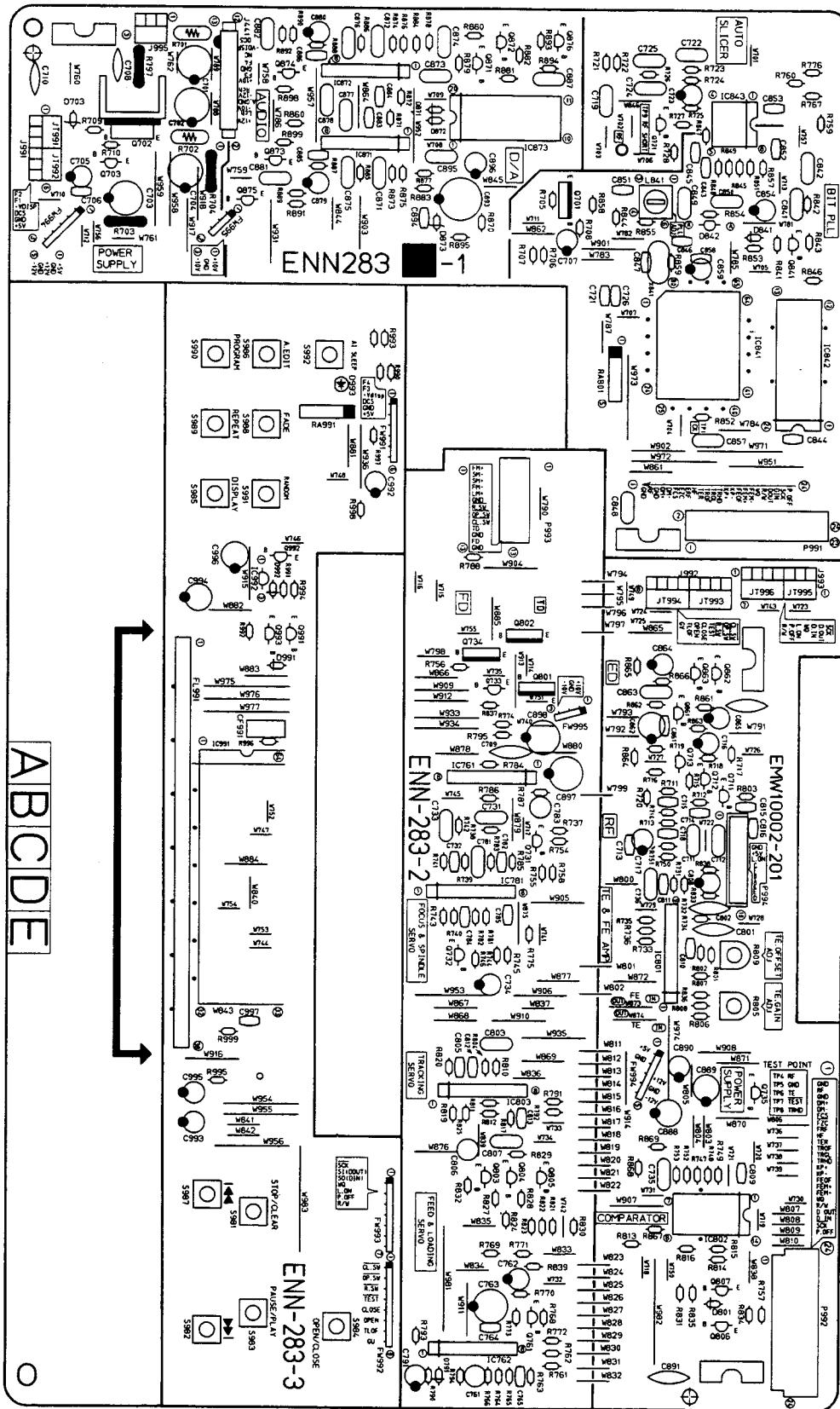
■ Parts List

Item	Part Number	Part Name	Q'ty	Description	Areas
1	E26487-003	Mechanism Base	1		
2	OPTIMA-5S	Pick up Ass'y	1		
3	E74930-003	Shaft	1		
4	E306282-001	Rack Ass'y	1		
5	SPSH2050M	Screw	1		
6	E406064-002	Turn Table Ass'y	1		
7	E306275-003	Support	1		
8	SDST2005Z	Screw	1		
9	E306277-001	Holder	1		
10	SDST2004Z	Screw	2		
11	SE10351-11	Gear Ass'y	1		
11-1	E306276-001	Gear Base	1		
11-2	E75444-001	Gear	1		
11-3	E75443-001	Gear	1		
11-4	E75445-001	Gear	1		
11-5	WDM163550	Slit Washer	1		
11-6	E75494-003	Shaft	2		
11-7	E75494-002	Shaft	1		
11-8	HKN-3A6RDNV	Feed Motor	1		
11-9	E75493-001	Pinion Gear	1		
11-10	LPSH1735Z	Screw	2		
12	E72713-001	Special Screw	2		
13	E74539-001B	Spindle Motor	1		
14	E12114-005 (S)	Circuit Board	1		
15	ESB1100-005	Leaf Switch	1	S001	
16	EMV5109-006B	6P Plug Ass'y	2	P011	
17	E75832-001	Special Screw	1		
18	SDSP2003N	Screw	2		
19	E306834-001	Cam	1		
20	E65923-003	Special Screw	3		
21	E72024-001	Speed Nut	1		
22	E75950-002	Belt	1		
23	E75984-001	Motor Pulley	1		
24	E75985-001	Gear (1)	1		
25	SPSK2640Z	Screw	2		
26	E75986-002	Gear (2)	1		
27	E75987-001	Gear (3)	1		
28	E12288-002	Loading Base	1		
29	SBSF3008Z	Screw	1		
30	E75988-001	Plate	1		
31	E306833-001	Lever	1		
32	E75989-001	Spring	1		
33	RF-500TB-12560	Loading Motor	1		
34	EMW10045-001 (S)	Circuit Board	1		
35	EMV7123-013R	Connector	1	13PIN	
36	EMV5109-004B	Plug Ass'y	1	4PIN	
37	ESS1200-002	Switch	1		
38	E75609-002	Insulator	1		
39	E75609-001	Insulator	2		
40	E307087-001	Elevator Base Ass'y	1		

Printed Circuit Board Ass'y and Parts List

■ ENN-283 □ Main PC Board Ass'y

Note : ENN-283□ varies according to the areas employed. See note (1) when placing an order.



Note (1)

PC Board Ass'y	Designated Areas
ENN-283 [A]	the U.S.A., Canada
ENN-283 [B]	Australia, the U.K. Continental Europe Universal Type
ENN-283 [C]	Germany, Italy

Transistors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	Q701	2SB1357(E,F)	SILICON ROHM	
	Q702	2SB1187(E,F)	SILICON ROHM	
	Q703	2SC1740(R,S)	SILICON ROHM	
	Q711	2SC535(B,C)	SILICON HITACHI	
	Q712	2SC1740S(R,S)	SILICON ROHM	
	Q713	2SA933S(R,S)	SILICON ROHM	
	Q721	2SD2144S(VW)	SILICON ROHM	
	Q731	2SD2144S(VW)	SILICON ROHM	
	Q752	2SA933S(R,S)	SILICON ROHM	
	Q753	2SC2060(Q,R)	SILICON ROHM	
	Q754	2SB1357(E,F)	SILICON ROHM	
	Q755	DTA1144WS	SILICON ROHM	
	Q761	2SD2144S(VW)	SILICON ROHM	
	Q801	2SD2037(E,F)	SILICON ROHM	
	Q802	2SB1357(E,F)	SILICON ROHM	
	Q803	2SD2144S(VW)	SILICON ROHM	
	Q804	2SD2144S(VW)	SILICON ROHM	
	Q805	2SD2144S(VW)	SILICON ROHM	
	Q806	2SA933S(R,S)	SILICON ROHM	
	Q807	2SC1740S(R,S)	SILICON ROHM	
	Q841	2SD2144S(VW)	SILICON ROHM	
	Q861	2SA933S(R,S)	SILICON ROHM	
	Q862	2SC1740S(R,S)	SILICON ROHM	
	Q863	2SC1740S(R,S)	SILICON ROHM	
	Q871	2SD2144S(VW)	SILICON ROHM	
	Q872	2SD2144S(VW)	SILICON ROHM	
	Q876	DTA1144YS	SILICON ROHM	
	Q991	DTA1144YS	SILICON ROHM	
	Q992	DTA1144YS	SILICON ROHM	
	Q993	DTA1144YS	SILICON ROHM	

△ : SAFETY PARTS

I.C.s

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	IC761	STA341M(A)	I.C. SANKEN	
	IC762	VC4580L	I.C. DAINICHI	
	IC781	VC4580L	I.C. DAINICHI	
	IC801	TL072S	I.C. DAINICHI	
	IC802	BA10339	I.C. ROHM	
	IC803	VC4580L	I.C. DAINICHI	
	IC841	YM3805-H	I.C. YAMAHA	
	IC842	LC3517BS-15	I.C. SANYO	
	IC843	M520SP	I.C. MITSUBISHI	
	IC871	XRA15218N	I.C. EXAR JAPAN	
	IC872	XRA15218N	I.C. EXAR JAPAN	
	IC873	LC7881-C	I.C. SANYO	
	IC991	HD404019RB14S	I.C. HITACHI	
	IC992	MN1281(P,Q)	I.C. MATSUSHITA	

△ : SAFETY PARTS

Diodes

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	D703	MTZ5-6JC	ZENER ROHM	
	D791	ISS133	SILICON ROHM	
	D801	ISS133	SILICON ROHM	
	D841	MTZ5-1JB	ZENER ROHM	
	D842	SVC321-AW	VARICAP SANYO	
	D871	ISS133	SILICON ROHM	
	D872	ISS133	SILICON ROHM	
	D873	MTZ5-1JB	ZENER ROHM	
	D991	ISS133	SILICON ROHM	
	D992	ISS133	SILICON ROHM	
	D993	SLH-34VC3F	L.E.D. ROHM	

△ : SAFETY PARTS

Capacitors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
	C701	QETB1CM-227	220MF 16V ELECTRO	
	C702	QETB1CM-227	220MF 16V ELECTRO	
	C703	QETB1CM-227	220MF 16V ELECTRO	
	C704	QETB1CM-227	220MF 16V ELECTRO	
	C705	QETB1CM-476	47MF 16V ELECTRO	
	C706	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C707	GETB1AM-227	220MF 10V ELECTRO	
	C708	QCF21HP-223	0.022MF 50V CERAMIC	
	C709	QCF21HP-223	0.022MF 50V CERAMIC	
	C711	QFLB1HJ-472	4700PF 50V MYLAR	
	C712	QFLB1HJ-472	4700PF 50V MYLAR	
	C713	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C714	QCSB1HK-3R9	3.9PF 50V CERAMIC	
	C715	QCBB1HK-471	470PF 50V CERAMIC	
	C716	GETB1EM-106	10MF 25V ELECTRO	
	C717	QETB1CM-476	47MF 16V ELECTRO	
	C718	QCSB1HJ-680	68PF 50V CERAMIC	
	C719	QFV81HJ-154	0.15MF 50V T.FILM	
	C721	QCSB1HJ-470	47PF 50V CERAMIC	
	C722	QFV81HJ-103	0.01MF 50V T.FILM	
	C723	QETB1EM-106	10MF 25V ELECTRO	
	C724	QFV81HJ-473	0.047MF 50V T.FILM	
	C725	QFV81HJ-474	0.47MF 50V T.FILM	
	C726	QCSB1HK-180	18PF 50V CERAMIC	
	C731	QFV81HJ-183	0.018MF 50V T.FILM	
	C732	QCBB1HK-271	270PF 50V CERAMIC	
	C733	QFV81HJ-393	0.039MF 50V T.FILM	
	C734	GETB1CM-226	22MF 16V ELECTRO	
	C735	QFV81HJ-104	0.1MF 50V T.FILM	
	C736	QFV81HJ-224	0.22MF 50V T.FILM	
	C761	GEN51HM-225	2.2MF 50V NON POLE	
	C762	QETB1EM-226	22MF 25V ELECTRO	
	C763	QETB0JM-227	220MF 6.3V ELECTRO	
	C764	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C765	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C781	QFLB1HJ-272	2700PF 50V MYLAR	
	C782	QCBB1HK-101	100PF 50V CERAMIC	
	C783	GEN51HM-225	2.2MF 50V NON POLE	
	C784	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C785	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C791	QETB1HM-475	4.7MF 50V ELECTRO	
	C801	QCT26CH-151	150PF 50V CERAMIC	
	C802	QCT26CH-121	120PF 50V CERAMIC	
	C803	QFV81HJ-223	0.022MF 50V T.FILM	
	C805	QCSB1HK-4R7	4.7PF 50V CERAMIC	
	C806	QFV81HJ-225	2.2MF 50V NON POLE	
	C807	QFV81HJ-563	0.056MF 50V T.FILM	
	C808	QETB1CM-476	47MF 16V ELECTRO	
	C809	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C810	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C811	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C812	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C813	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C815	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C816	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C841	QFV81HJ-103	0.01MF 50V T.FILM	
	C842	QFV81HJ-474	0.47MF 50V T.FILM	
	C843	QGBB1HK-102	1000PF 50V CERAMIC	
	C844	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C845	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C846	QCSB1HJ-100	10PF 50V CERAMIC	
	C847	QCSB1HJ-100	10PF 50V CERAMIC	
	C848	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C849	QTP81HJ-151	150PF 50V POLY	
	C850	QFP81HJ-471	470PF 50V POLY	
	C851	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C852	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C853	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C854	QETB1HM-474	0.47MF 50V ELECTRO	
	C857	QFV81HJ-124	0.12MF 50V T.FILM	
	C858	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C859	QETB1AM-107	100MF 10V ELECTRO	
	C861	QCBB1HK-101	100PF 50V CERAMIC	
	C862	QETB1CM-107	100MF 16V ELECTRO	
	C863	QFV81HJ-473	0.047MF 50V T.FILM	
	C864	QETB1EM-106	10MF 25V ELECTRO	
	C865	QETB1HM-105	1MF 50V ELECTRO	
	C871	QFLB1HJ-392	3900PF 50V MYLAR	
	C872	QFLB1HJ-392	3900PF 50V MYLAR	
	C873	QFV81HJ-683	0.068MF 50V T.FILM	
	C874	QFV81HJ-683	0.068MF 50V T.FILM	
	C875	QFV81HJ-103	0.01MF 50V T.FILM	
	C876	QFV81HJ-103	0.01MF 50V T.FILM	
	C877	QFLB1HJ-222	2200PF 50V MYLAR	
	C878	QFLB1HJ-222	2200PF 50V MYLAR	
	C879	EEZ2505-476	47MF ELECTRO	
	C880	EEZ2505-476	47MF ELECTRO	
	C881	QFLB1HJ-562	5600PF 50V MYLAR	
	C882	QFLB1HJ-562	5600PF 50V MYLAR	
	C883	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C884	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C885	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C886	QCHB1EZ-223	0.022MF 25V CERAMIC	
	C887	QFLC1HJ-1022	1000PF 50V MYLAR	
	C888	QETB1CM-107	100MF 16V ELECTRO	

△ : SAFETY PARTS

Capacitors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
C889	QETB1CM-107	100MF	16V ELECTRO	
C890	QETB1AM-107	100MF	10V ELECTRO	
C891	QCF21HP-223	0.022MF	50V CERAMIC	
C893	EEZ2503-107	100MF	ELECTRO	
C894	QCHB1E-223	0.022MF	25V CERAMIC	
C895	QTV81HJ-124	0.12MF	50V T.FILM	
C896	QETB1AM-107	100MF	10V ELECTRO	
C897	QETB1CM-107	100MF	16V ELECTRO	
C898	QETB1CM-107	100MF	16V ELECTRO	
C899	QETB1HN-475	4.7MF	50V ELECTRO	
C993	QER61HN-475	4.7MF	50V ELECTRO	
C994	QEK51HN-226	22MF	50V ELECTRO	
C995	QER50JM-107	100MF	6.3V ELECTRO	
C996	QETB1AM-227	220MF	10V ELECTRO	
C997	QCHB1EZ-223	0.022MF	25V CERAMIC	

Resistors

△	ITEM	PART NUMBER	DESCRIPTION	AREA
R783	QRD167J-823	82K	1/6W CARBON	
R784	QRD167J-470	47	1/6W CARBON	
R785	QRD167J-683	68K	1/6W CARBON	
R786	QRD167J-123	12K	1/6W CARBON	
R787	QRD167J-152	1.5K	1/6W CARBON	
R788	QRD167J-2R2	2.2	1/6W CARBON	
R790	QRD167J-684	680K	1/6W CARBON	
R791	QRD167J-513	51K	1/6W CARBON	
R792	QRD167J-513	51K	1/6W CARBON	
R793	QRD167J-683	68K	1/6W CARBON	
R794	QRD167J-683	68K	1/6W CARBON	
R795	QRD167J-221	220	1/6W CARBON	
R797	QRZ0077-4R7	4.7	1/4W FUSIBLE	
P801	ORD167J-563	56K	1/6W CARBON	
R802	ORD167J-563	56K	1/6W CARBON	
R303	ORD167J-222	2.2K	1/6W CARBON	
R804	ORD167J-681	680	1/6W CARBON	
R805	QVA601-202A	2K	VARIABLE	
R806	QRD167J-561	560	1/6W CARBON	
R807	QRD167J-334	330K	1/6W CARBON	
R808	QRD167J-222	2.2K	1/6W CARBON	
R809	QVA601-154A	150K	VARIABLE	
R810	QRD167J-223	22K	1/6W CARBON	
R811	QRD167J-682	6.8K	1/6W CARBON	
R812	QRD167J-103	10K	1/6W CARBON	
R813	QRD167J-562	5.6K	1/6W CARBON	
R814	QRD167J-562	5.6K	1/6W CARBON	
R815	QRD167J-562	5.6K	1/6W CARBON	
R816	QRD167J-562	5.6K	1/6W CARBON	
R817	QRD167J-183	18K	1/6W CARBON	
R819	QRD167J-103	10K	1/6W CARBON	
R820	QRD167J-224	220K	1/6W CARBON	
R821	QRD167J-103	10K	1/6W CARBON	
R822	QRD167J-183	18K	1/6W CARBON	
R823	QRD167J-434	430K	1/6W CARBON	
R824	QRD167J-434	430K	1/6W CARBON	
R825	QRD167J-103	10K	1/6W CARBON	
R827	QRD167J-104	100K	1/6W CARBON	
R828	QRD167J-104	100K	1/6W CARBON	
R829	QRD167J-681	680	1/6W CARBON	
R830	QRD167J-183	18K	1/6W CARBON	
R831	QRD167J-104	100K	1/6W CARBON	
R832	QRD167J-102	1K	1/6W CARBON	
R833	QRD167J-562	5.6K	1/6W CARBON	
R834	QRD167J-183	18K	1/6W CARBON	
R835	QRD167J-183	18K	1/6W CARBON	
R836	QRD167J-394	390K	1/6W CARBON	
R837	QRD167J-470	47	1/6W CARBON	
R838	QRD167J-562	5.6K	1/6W CARBON	
R839	QRD167J-183	18K	1/6W CARBON	
R841	QRD167J-682	6.8K	1/6W CARBON	
R842	QRD167J-181	180	1/6W CARBON	
R843	QRD167J-331	330	1/6W CARBON	
R844	QRD167J-272	2.7K	1/6W CARBON	
R845	QRD167J-471	470	1/6W CARBON	
R846	QRD167J-681	680	1/6W CARBON	
R847	QRV144F-1602	16K	1/4W M.FILM	
R848	QRV144F-1502	15K	1/4W M.FILM	
R849	QRD167J-183	18K	1/6W CARBON	
R851	QRD167J-183	18K	1/6W CARBON	
R852	QRD167J-102	1K	1/6W CARBON	
R853	QRD167J-152	1.5K	1/6W CARBON	
R854	QRD167J-104	100K	1/6W CARBON	
R855	QRD167J-821	820	1/6W CARBON	
R857	QRD167J-471	470	1/6W CARBON	
R858	QRD167J-682	6.8K	1/6W CARBON	
R859	QRD167J-105	1M	1/6W CARBON	
R861	QRD167J-103	10K	1/6W CARBON	
R862	QRD167J-272	2.7K	1/6W CARBON	
R863	QRD167J-102	1K	1/6W CARBON	
R864	QRD167J-271	270	1/6W CARBON	
R865	QRD167J-103	10K	1/6W CARBON	
R866	QRD167J-562	5.6K	1/6W CARBON	
R867	QRD167J-472	4.7K	1/6W CARBON	
R868	QRD167J-822	8.2K	1/6W CARBON	
R869	QRD167J-103	10K	1/6W CARBON	
R870	QRD167J-101	100	1/6W CARBON	
R871	QRD167J-472	4.7K	1/6W CARBON	
R872	QRD167J-472	4.7K	1/6W CARBON	
R873	QRD167J-751	750	1/6W CARBON	
R874	QRD167J-751	750	1/6W CARBON	
R875	QRD167J-471	470	1/6W CARBON	
R876	QRD167J-471	470	1/6W CARBON	
R877	QRD167J-221	220	1/6W CARBON	
R878	QRD167J-221	220	1/6W CARBON	
R879	QRD167J-105	1M	1/6W CARBON	
R880	QRD167J-105	1M	1/6W CARBON	
R881	QRD167J-392	3.9K	1/6W CARBON	
R882	QRD167J-392	3.9K	1/6W CARBON	
R883	QRD167J-821	820	1/6W CARBON	
R884	QRD167J-821	820	1/6W CARBON	
R885	QRD167J-821	820	1/6W CARBON	
R886	QRD167J-821	820	1/6W CARBON	
R887	QRD167J-272	2.7K	1/6W CARBON	
R888	QRD167J-272	2.7K	1/6W CARBON	

△ : SIMILARITY! ▲: PARTS

Resistors

△	ITEM	PART NUMBER	DESCRIPTION			AREA
	R889	QRD167J-273	27K	1/6W	CARBON	
	R890	QRD167J-273	27K	1/6W	CARBON	
	R891	QRD167J-561	560	1/6W	CARBON	
	R892	QRD167J-561	560	1/6W	CARBON	
	R893	QRD167J-104	100K	1/6W	CARBON	
	R894	QRD167J-105	1M	1/6W	CARBON	
	R895	QRD167J-681	680	1/6W	CARBON	
	R899	QRD167J-152	1.5k	1/6W	CARBON	
	R990	QRD167J-3R3	3.3	1/6W	CARBON	
	R991	QRD167J-471	470	1/6W	CARBON	
	R992	QRD167J-473	47K	1/6W	CARBON	
	R993	QRD167J-3R3	3.3	1/6W	CARBON	
	R994	QRD167J-103	10K	1/6W	CARBON	
	R995	QRD167J-472	4.7K	1/6W	CARBON	
	R996	QRD167J-105	1M	1/6W	CARBON	
	R997	QRD167J-473	47K	1/6W	CARBON	
	R998	QRD167J-331	330	1/6W	CARBON	
	R999	QRD167J-472	4.7K	1/6W	CARBON	
	RA801	QRB045J-472	4.7K	1/8W	R.NETWORK	
	RA991	QRB045J-473	47K	1/8W	R.NETWORK	

△ THIS IS A REVERSE PARTS LIST

Others

△	ITEM	PART NUMBER	DESCRIPTION			AREA
		EMW10002-201	CIRCUIT BOARD			
		E306951-002	FL DISPLAY HOLDER			
		E3400-420	FELT SPACER			
		E70859-001	EARTH PLATE			
J441		EMV7130-013	CONNECTOR (18PIN)			
L841		ENZ3001-002	OSCILLATOR COIL			
P991		EMV7123-024	CONNECTOR (24PIN)			
P992		EMV7123-024R	CONNECTOR (24PIN)			
P993		EMV7123-013	CONNECTOR (13PIN)			
P994		EMV5109-010A	PLUG ASSY (10PIN)			
S981		ESP0001-018	TACT SWITCH (STOP/CLEAR)			
S982		ESP0001-018	TACT SWITCH (CD) AUTO SEARCH			
S983		ESP0001-018	TACT SWITCH (PLAY/PAUSE)			
S984		ESP0001-018	TACT SWITCH (OPEN/CLOSE)			
S985		ESP0001-018	TACT SWITCH (DISPLAY)			
S986		ESP0001-018	TACT SWITCH (A.EDIT)			
S987		ESP0001-018	TACT SWITCH (OK) AUTO SEARCH			
S988		ESP0001-018	TACT SWITCH (FADE)			
S989		ESP0001-018	TACT SWITCH (REPEAT)			
S990		ESP0001-018	TACT SWITCH (PROGRAM)			
S991		ESP0001-018	TACT SWITCH (RANDOM)			
S992		ESP0001-018	TACT SWITCH (AUTO POWER)			
X841		ECX0086-436EW	RESONATOR			
CF991		ECX0004-194KM	RESONATOR			
FL991		ELU0001-114	FL TUBE			
FW991		EWR36B-10LST	FLAT WIRE (6PIN)			
FW992		EWR38B-10LST	FLAT WIRE (8PIN)			
FW993		EWR37B-10LST	FLAT WIRE (7PIN)			
FW994		EWR35B-40SST	FLAT WIRE (6PIN)			
FW995		EWR33B-45SST	FLAT WIRE (8PIN)			
JB441		EWP902-020	PLUG WIRE ASSY (13PIN)			
J1991		EMV7122-103	CONNECTOR (3PIN)			
JT992		EMV7122-103	CONNECTOR (3PIN)			
JT993		EMV7122-004	CONNECTOR (4PIN)			
JT994		EMV7122-004	CONNECTOR (4PIN)			
JT995		EMV7122-103	CONNECTOR (3PIN)			
JT996		EMV7122-004	CONNECTOR (4PIN)			
JT997		EMV7122-103	CONNECTOR (3PIN)			

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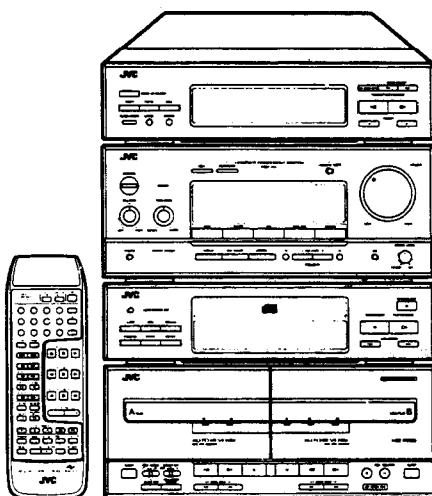
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JVC

SERVICE MANUAL

COMPACT COMPONENT SYSTEM

MODEL No. **DX-MX70BK**



COMPACT
disc
DIGITAL AUDIO

This Service Manual is mainly for Accessories List , Packing Materials , Part Numbers and Instruction Book . About the disassembly procedure , adjustment procedure and so on , we issued another four Service Manuals for AX-MX70BK , FX-MX70BK , TD-MX70BK , and XL-MX70BK , so please refer to them.

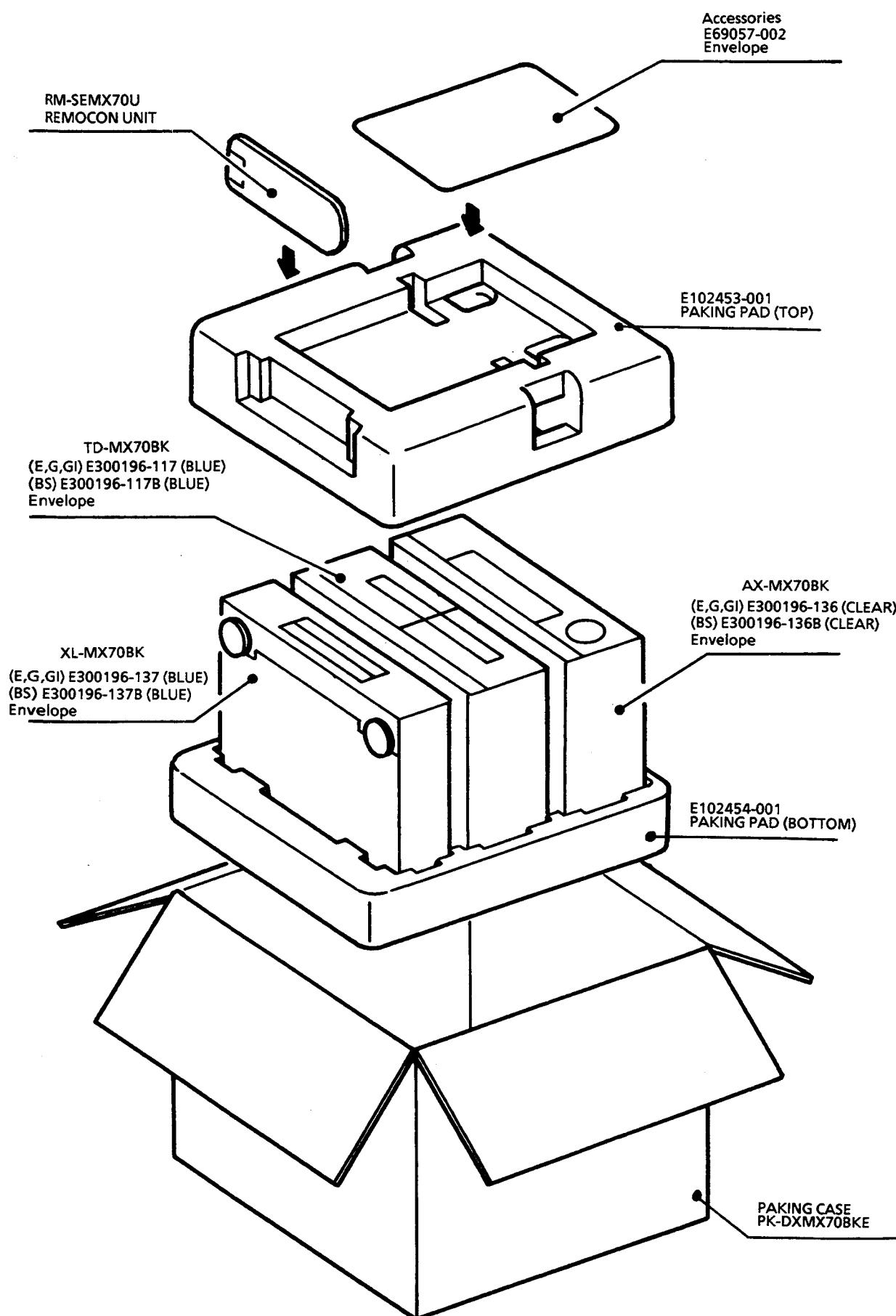
Component

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Compact component (DX-MX70BK) is a unit composing of the following units.

Model No.	Unit No.	Service Manual No.
DX-MX70BK	AX-MX70BK(Amplifier)	20244
	FX-MX70BK(Tuner)	20245
	TD-MX70BK(Cassette Deck)	20246
	XL-MX70BK(CD Player)	20247

■ Packing Materials and Part Numbers



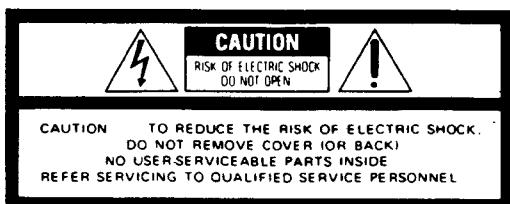
■ Accessories List

⚠	Part Number	Part Name	Q'ty	Description	Areas
	E30580-1744A	Instruction Book	1		BS,E,G
	E30580-1745A	Instruction Book	1		GI
	BT-20117	Warranty Card	1		G
	BT20060	Warranty Card	1		BS
	BT20066A	EEC Agency	1		BS
	E43486-340A	Safety Sheet	1		BS
	E43486-451	Caution Sheet	1		BS,E,G,GI
	QZL1008-001	FTZ Information Sheet	1		G
	QPGA025-03505B	Envelope	1	for Instruction Book	BS
	QPGA025-03505	Envelope	1	for Instruction Book	E,G,GI
	EQB4001-015	AM Loop Antenna	1		BS,E,G,GI
	E67007-001	Wire Antenna	1		G
	EWP101-006	Speaker Cord Ass'y	2		BS,E,G,GI
	EWP502-005K	Built in Antenna	1		BS,E,G,GI
	EMZ2001-011	Adapter	1		BS,E,GI
	E35960-012	Assuring Card	1		BS,E,G,GI
	UM-4NJ-2PSA	Battery	2		BS,E,G,GI
	E304880-001	Cord Holder	1		BS,E,G,GI

The Marks for Designated Areas

BS … the U.K. E … Continental Europe
 G … Germany GI … Italy

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WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

IMPORTANT FOR LASER PRODUCTS

1. CLASS 1 LASER PRODUCT
2. DANGER: Invisible laser radiation when open and interlock failed or defeated. Avoid direct exposure to beam.
3. CAUTION: Do not open the top cover. There are no user serviceable parts inside the unit; leave all servicing to qualified service personnel.

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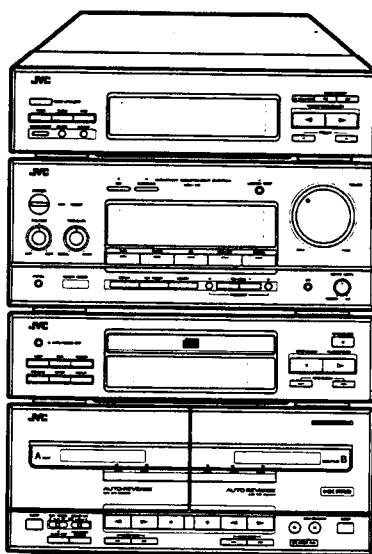
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Introduction



This system produces a full, powerful bass sound.

- With JVC's newly-developed forced air cooling system, Compact component system can produce the same high-quality bass sound as a large stereo system.

Thank you for purchasing this JVC Compact Component Stereo System. We hope it will be valued addition to your home, giving you years of enjoyment.

Be sure to read this instruction manual carefully before operating your new stereo system. Here you will find all the information you need to set up and use the system.

For questions that cannot be answered in this manual, please contact your dealer.

Features

It has a variety of functions, which are equivalent to those of large, expensive stereo systems.

- Remote control of computerized 7-band SEA graphic equalizer.
- Programmable timers for setting recording, wake-up music, and fall-asleep music.
- Storage of 40 radio stations (FM and AM) in memory.
- Fade-out of last track during direct CD-to-tape recording.
- CD tracks can be recorded on both sides of a cassette tape without splitting songs at the end of a side.
- CD tracks can be played back or recorded on both sides of a cassette tape in any order.
- Input terminals for connecting a turntable, a Digital Audio Tape (DAT) Deck, and the sound portion of Video Cassette Recorder (VCR).

About This Manual

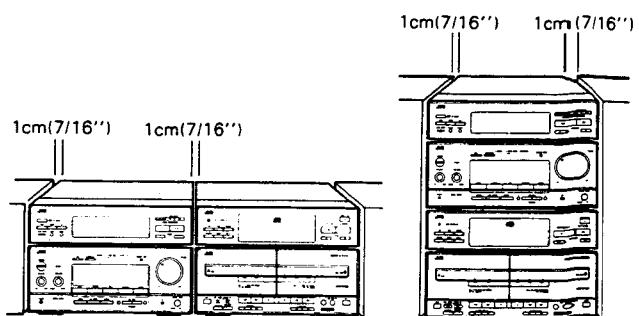
This instruction manual will help you with the following:

- Connecting the components of the system, installing the antennas, and connecting other components such as a turntable or VCR to the system.
- Learning the operations of the components of the system (Amplifier, CD Player, Tape Deck, Tuner, and the Remote Controller).
- Learning additional functions of the system, such as using the timers, using the SEA graphic equalizer, presetting broadcast stations in memory, and using the various recording capabilities.
- Trouble-shooting, if a problem should occur.

Laying Out the System

There are two ways to lay out the system as shown below.

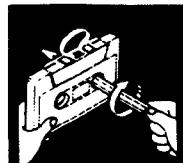
- Leave a space of at least one cm on both sides of the amplifier and keep the back at least 10 cm from the wall for ventilation.



Care and Handling

You must handle your compact discs, cassette tapes, and tape deck carefully to keep them for a long time.

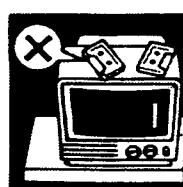
Cassette Tape



- If the tape is loose in the cassette, take up the slack by inserting a pencil in one of the reels and rotating. If the tape is loose, it may get stretched, cut, or caught in the cassette.



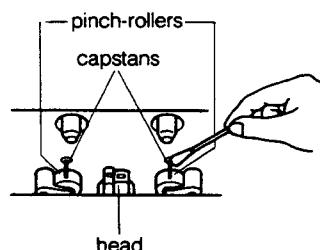
- Do not touch the tape surface.



- Do not store the tape:
 - In dusty places
 - In direct sunlight or heat
 - In moist areas
 - On a TV or speaker
 - Near a magnet

Tape Deck

- If the head, capstans, and pinch-rollers of the tape deck become dirty, the following will occur:
 - Impaired sound quality
 - Discontinuous sound
 - Fading
 - Incomplete erasure
 - Impossible to record
- Clean the head, capstans, and pinch-rollers with a cotton swab moistened with alcohol.



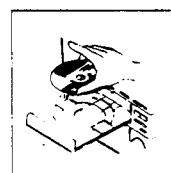
- If the head becomes magnetized, it will produce noise or lose high frequencies.

To demagnetize the head, turn off the system, and use a head demagnetizer (available at electronics and record shops).

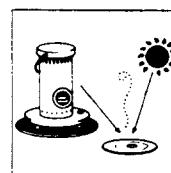
Compact Discs



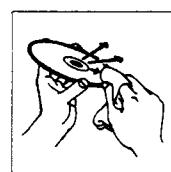
- Remove the CD from the case by holding it at the edges while pressing the center hole lightly.
- Do not touch the shiny surface of the CD, or bend the CD.



- Place the CD in the tray with the label up.



- Put the CD back in its case after use to prevent warping.
- Avoid exposure to direct sunlight, temperature extremes, and moisture.



- If the CD becomes dirty, wipe it with a soft dry cloth in a straight line from center to edge.

Caution! Do not use any solvent (for example, conventional record cleaner, spray, thinner, benzine, etc.)

Only use compact-discs bearing the mark shown below.



Important Notes

1. Installation

- Select a place which is level, dry, and neither too hot nor too cold (between 5 and 35 degrees Celsius/41 and 95 degrees Fahrenheit).
- Be sure there is adequate ventilation; poor ventilation may cause the unit to malfunction.
- Leave sufficient distance between the receiver and your TV.

2. Power

- Do not handle the power cord with wet hands!
- When unplugging from the wall outlet, always pull the plug, not the power cord.

3. Malfunctions, etc.

- Do not insert any metallic objects into the receiver.

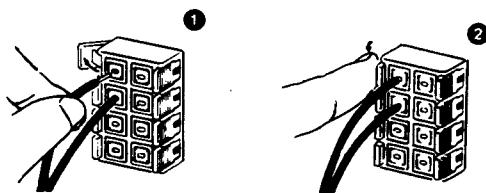
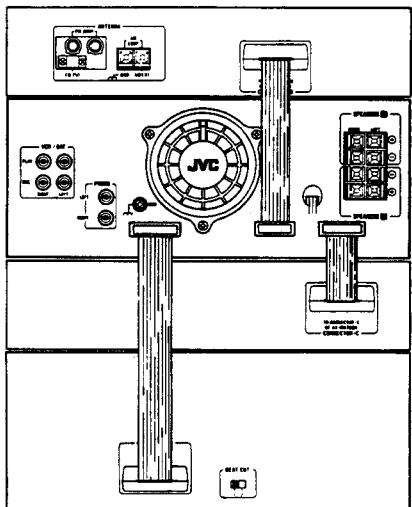
Caution

To reduce the risk of electrical shocks, fire, etc.:

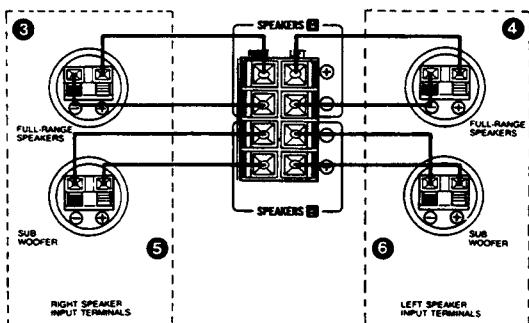
- Do not remove screws, covers or cabinet.
- Do not expose this appliance to rain or moisture.

Getting Started

Connecting the System Components



Example:



Connection Notes

- Before you plug in the system, you must make all the necessary connections.

Connecting the Four Stereo Components

- Connecting the Tuner, Amplifier, CD Player, and Tape Deck.

Connect three ribbon cables extending from the tuner, CD player, and tape deck to the amplifier.

- If the system does not work well or needs repairing, please take all the components with you to the nearest agent.

Connecting the Speakers

Speaker Terminals

- When connecting speakers, open each terminal and insert the end of the speaker wire as shown.
- Close the terminals as shown to clamp the speaker wires in place.

SPEAKERS A

Connect the Full Range Speakers to the SPEAKERS A terminal on the amplifier as follows.

- Connect the (+) and (-) terminals of the right-side Full Range Speaker to the upper (+) and (-) terminals marked RIGHT on the amplifier.
- Connect the (+) and (-) terminals of the left-side Full Range Speaker to the upper (+) and (-) terminals marked LEFT on the amplifier.

SPEAKERS B

Connect the Subwoofers to the SPEAKER B terminal on the amplifier as follows.

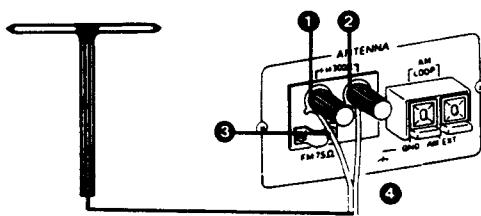
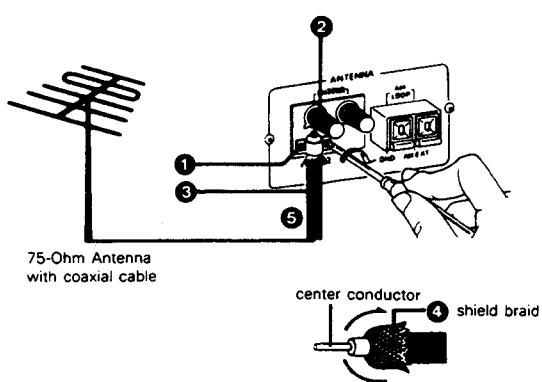
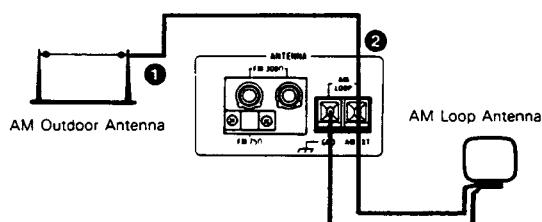
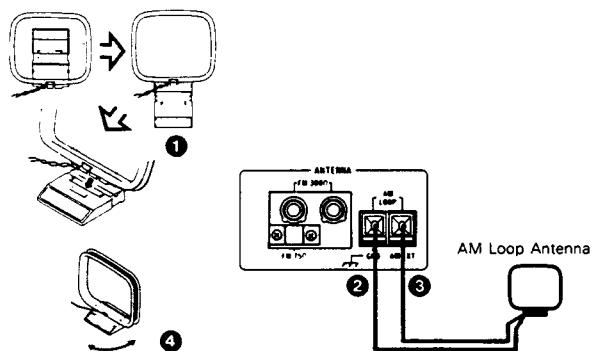
- Connect the (+) and (-) terminals of the right-side Subwoofer to the lower (+) and (-) terminals marked RIGHT on the amplifier.
- Connect the (+) and (-) terminals of the left-side Subwoofer to the lower (+) and (-) terminals marked LEFT on the amplifier.

Note: Connect speaker cables to terminals matching cable colors with terminal lever color.

- Use speakers with the correct impedance. The correct impedance is indicated on the rear panel of the amplifier.

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AM and FM Antenna Connections



To receive radio broadcasts, you will have to connect AM and FM antennas to the Tuner.

An AM loop antenna is included with your system.

FM antennas use two types of cable connections: 75-ohm cables have a round coaxial connection while 300-ohm cables

AM Loop Antenna

- ① Fold out the loop from the antenna base.
- ② Connect one antenna wire to one of the AM LOOP terminals.
- ③ Connect the remaining antenna wire to the other AM LOOP terminal.
- Note:** These two terminals open and close the same way as the speaker terminals.
- ④ Adjust the loop antenna as needed to get the best reception.

AM Outdoor Antenna

If your AM broadcast reception is unsatisfactory, you should connect an AM outdoor antenna in addition to the loop antenna.

Important! The AM loop antenna must be installed to receive AM broadcasts. Do not disconnect the loop antenna when installing an outdoor antenna.

- ① Install a single vinyl-covered antenna wire outdoors. The antenna wire should be about 16 to 40 feet (5 to 12 meters) long.
- ② Connect one end of the antenna to the AM loop terminal marked AM EXT.

Note: Except for the connection, make sure no uninsulated antenna wire touches the rear panel of this system. Otherwise, you might not receive AM broadcasts.

FM 75-Ohm Antenna Cable

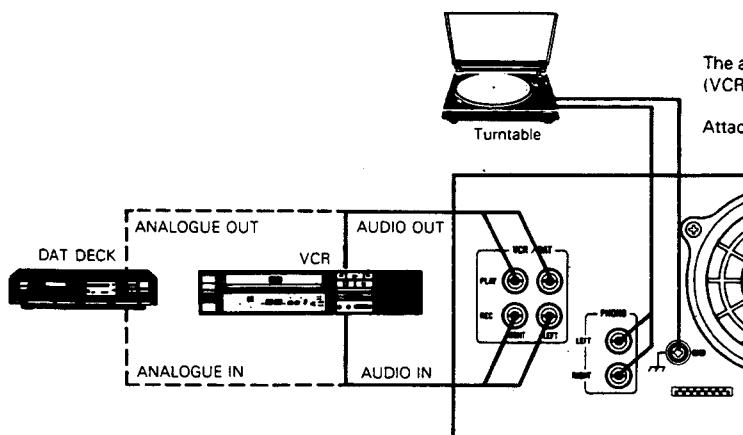
- ① Loosen the screws holding the bracket.
- ② Loosen the cap of the 300/75-ohm terminal.
- ③ Insert the round antenna cable through the bracket from below.
- ④ Make sure that the shield braid on the cable contacts the bracket, and that the center conductor of the cable contacts the 300/75-ohm terminal.
- ⑤ Tighten the bracket screws and the cap on the 300/75-ohm terminal.

FM 300-Ohm Antenna Cable

- ① Loosen the cap on the 300/75-ohm terminal.
- ② Loosen the cap on the 300-ohm terminal.
- ③ Connect the two conductors of the antenna cable to the 300/75-ohm terminal and the 300-ohm terminal.
- ④ Tighten the caps on both terminals.

Note: Whether you use the 75-ohm or 300-ohm cable, make sure the antenna conductors do not touch any other terminals on the rear panel. This could cause poor reception.

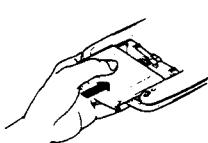
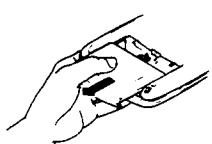
Connecting Other Components



The amplifier can also be connected to a turntable, a Video Cassette Recorder (VCR), and a Digital Audio Tape (DAT) Deck.

Attach these components as shown.

Installing the Batteries in the Remote Controller



1. Remove the battery compartment lid.

Press the lid and slide it in the direction of the arrow.

2. Insert the batteries.

Use two UM-4/AAA/R03 size batteries. Make sure the + and - polarities on the batteries and compartment are the same.

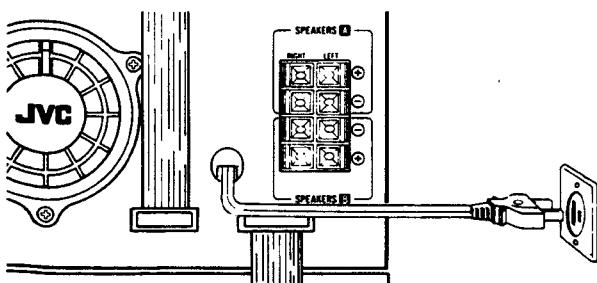
3. Attach the lid.

Press the lid and slide it in the direction of the arrow.

Note: Batteries installed incorrectly may burst or leak. Pay attention to the following:

- When the Remote Controller is not in use for a long period of time, remove the batteries.
- Do not mix old and new batteries.
- Do not mix batteries of different types, even if their shapes are the same.
- When batteries become weak, the operating distance of the Remote Controller is greatly reduced and you will need to replace the batteries.

AC Power Connection



Plug the power cord on the back of the amplifier into a 120 Volt, 60 Hz AC household electrical outlet.

Caution: To prevent electric shock, turn all stereo components off before you install or remove power cords.

Important! Before you plug the power cord into an outlet, make sure all Stereo components are connected correctly.

Using the Amplifier

Using the Power Switch

1. Press the POWER switch to turn on the stereo system.

When the POWER switch is not pressed and the power cord is plugged in, the stereo is in STANDBY mode and STANDBY indicator lights. In STANDBY mode, the stereo uses a small amount of power (13 watts) for the clock, memory contents, and any timers which are set.

2. To disconnect power completely, unplug the power cord.

Adjusting the Volume Controls

Volume

Turn the VOLUME knob to adjust the volume level of the speakers or headphones.

- Connect headphones to the PHONES jack on the amplifier for listening through headphones. No sound will be produced from the speakers.
- Turn the MIXING LEVEL knob to the SOURCE position unless a microphone is used.

Balance

Turn the BALANCE knob to adjust the left-and-right sound balance in the speakers or headphones.

Twin Bass

Turn the TWIN BASS knob to adjust the output level of the Subwoofers. Turning this control toward MAX will boost the low frequencies.

Using the SEA Function

You can think of the SEA function as an enhanced version of the conventional Bass and Treble knobs on most sound systems. Use it to alter the tone of the source (for example, CD, tape, or broadcast) by increasing or decreasing the levels of selected frequency ranges.

The total frequency range that the amplifier can reproduce (from the lowest-pitched sounds to the highest) is divided into seven sections: 63Hz, 160Hz, 400Hz, 1kHz, 2.5kHz, 6.3kHz, and 16kHz.

By making certain frequency ranges louder or softer, you can change the sound to suit your taste. You can also choose from six pre-programmed SEA settings.

Controlling Sound with the SEA Function

1. Press the SEA button on the Amplifier.



The SEA indicator lights up.

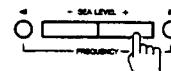
2. Press the FREQUENCY ▲ or ▼ button on the Amplifier to select one of the seven frequency ranges to work on.



Press the FREQUENCY ▲ button to select the next higher frequency and the ▼ button for the next lower frequency.

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3. Press the SEA LEVEL button (+ or -) on the Amplifier to set the level for the selected frequency range.



- Press the + button to increase sounds in the selected frequency range, and pressing the - button to decrease sounds in this frequency range.
- Repeat steps 2-3 for each frequency range.

Note: If you want to compare the new sound you have created with the way the system sounded before, press the SEA button on the Amplifier and listen to a selection of music. Then press the SEA button again to hear the new sound.

4. Press the MEMORY button on the Amplifier to store your SEA pattern in memory.



Using an SEA Pattern

You can use the SEA pattern you created, or one of the six pre-programmed SEA patterns, each of which has its own sound characteristics.

The pre-programmed SEA patterns are:

ROCK	Boosted low and high frequencies.
JAZZ	Gives a feeling of a live atmosphere.
	Good for acoustic music.
POPS	Good for vocal music.
CLASSIC	Set for wide and dynamic sound stereo systems.
HPHONE	When creating tapes for headphone use.
CAR	When creating tapes for use in a car stereo.

1. Press the SEA button on the Amplifier.

The SEA indicator light goes on.

2. Press the SEA PRESET button to select an SEA Pattern.



Each press of the SEA PRESET button changes the pattern displayed in the following order:

- ROCK ► JAZZ ► POPS ► CLASSIC ► H. PHONE
- CAR ► MANUAL (back to the beginning)

Changing the SEA Display

The display on the amplifier indicates the sound being played back in seven frequency bands. Five display modes (PEAK HOLD, PEAK LINE, SHOWER, MOUTH, SHUTTER) are available. Every time the DISPLAY button is pressed, the display mode changes in the following order:



- PEAK HOLD ► PEAK LINE ► SHOWER ► MOUTH
- SHUTTER (back to the beginning)

Using Turntable, VCR and DAT

In addition to the CD Player, Tuner, and Cassette Tape Deck, the amplifier can also play a turntable, a VCR, and a DAT.

1. To play records, press the **PHONO** button on the Amplifier.
 2. To operate the each component, refer to its instruction manual.
- To play VCR or DAT, press the **VCR/DAT** button on the Amplifier.
- You can operate a JVC VCR and DAT using the remote controller. See page 23 for more information.

Playing Back with a Surround Sound Effect

You can enjoy surround sound only with two speakers.

Press the SURROUND button.



The indicator light will go on.

Mixing the Microphone Sound

You can sing or narrate to the music with the optionally available microphone connected to the MIC jack.

1. **Connect the microphone.**
 - Set the MIXING LEVEL knob to SOURCE before connecting or disconnecting the microphone.
2. **Play your desired source.**
3. **Adjust the volume balance between the music and microphone using the MIXING LEVEL knob.**



- Note:** Raising the MIXING LEVEL too high may cause howling.
- Do not hold the microphone toward the speaker or move it away from the speaker.
 - Lower the microphone level with the MIXING LEVEL knob.
 - Lower the volume level with the VOLUME knob.
- When the microphone is no in use, set the MIXING LEVEL knob to SOURCE.

Using the LEARNING CSRP Feature

The LEARNING CSRP (Compu-link Source Related Preset system) is the state-of-art electronic feature that learns VOLUME and other control settings on each source. This was previously done automatically each time a difference source was played back or each time the system was turned off. It remembers the last five settings of each parameter you have set and automatically recalls the most frequently used ones.

This feature lets you invoke your favorite control settings by simply selecting a source (TAPE, TUNER, CD, VCR/DAT, PHONO) without repeating many settings each time sources are changed.

When the LEARNING CSRP button is set to ON, the following parameters are learned each time a different source was played back or the system was turned off.

- Volume level
- SEA settings (Preset Pattern and display mode)

They will be set based on the last five settings.

- SEA ON/OFF
- SURROUND ON/OFF

They will be set to the last setting.

Press the LEARNING CSRP button



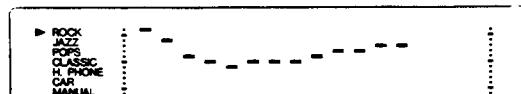
The indicator light will go on.

- When sources are switched, the VOLUME level, SEA, and SURROUND are automatically set.
- When turning the POWER off, the VOLUME control automatically turns toward MIN.
- When turning the POWER on again, the VOLUME control automatically turns up to the position set by the LEARNING CSRP function.

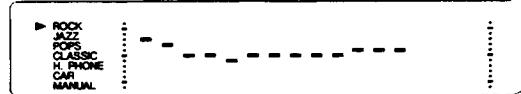
Using the Loudness Function

The loudness function makes up for loss of the human auditory sensation when the sound is low.

1. **Press the SEA button to turn the SEA on.**
 2. **Press the SEA PRESET button to select a preset pattern other than MANUAL.**
 3. **Press the LEARNING CSRP button.**
- The indicator light will go on.
- If the volume level is lowered:
Low and high frequencies are boosted to make the sound powerful and distinct.



- If the volume level is raised:
The SEA setting becomes similar to the preset pattern and the sound becomes natural.



Using the CD Player

Starting Playback

1. Press the OPEN/CLOSE button on the CD Player.



The CD tray slides out.

2. Place a CD (with the label facing up) in the tray, and press the OPEN/CLOSE button again.

The tray slides back in.

3. Press the PLAY/PAUSE button on the CD Player, or the CD button on the Amplifier.



The CD Player begins playing the first track on the CD.

Stopping Playback and Ejecting the CD

1. Press the STOP/CLEAR button.



2. Press the OPEN/CLOSE button, and take the CD out of the tray.

3. Press the OPEN/CLOSE button again to close the tray.

Stopping and Restarting Playback

1. Press the PLAY/PAUSE button.

Playback stops temporarily.

2. Press the PLAY/PAUSE button again.

Playback restarts.

Note: When Tuner is selected as the source, Cd OFF is displayed, and only the OPEN/CLOSE disc tray and PLAY/PAUSE buttons can be used. To use other buttons, press the CD button on the Amplifier or the PLAY/PAUSE button on the CD Player first.

Selecting a Track to Play

Press the SEARCH buttons on the CD player to scan through the track numbers.

Press the **◀◀** button to find tracks with decreasing numbers, and the **▶▶** button to find tracks with increasing numbers.

- If you press the SEARCH buttons when the CD Player is in the pause/stop mode, you will find the track you selected. You can restart playback by pressing the PLAY/PAUSE button.
- If you press the SEARCH button continuously during playback, the CD will advance rapidly in the direction of the button.

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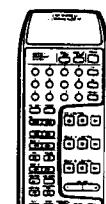
Using the Remote Controller to Select a Track

There are three ways to search for a track with the remote controller:

Numeric keypad

AUTO SEARCH buttons **◀◀** or **▶▶**

MANUAL SEARCH buttons **◀◀** or **▶▶**



Using the Numeric Keypad

1. Press the CD 10KEY button on the Remote Controller.

2. Enter the track's number with the numeric keys.

- If the track you want to hear is the 8th track, press the 8 key.
- If the track you want to hear is the 15th track, press the + 10 key and the 5 key.
- If the track you want to hear is the 20th track, press the + 10 key and the 10 key.

Using the Auto Search Buttons

Press the Auto Search **◀◀** or **▶▶** button on the Remote Controller to scan through the track numbers.

Using the Manual Search Buttons

Press the Manual Search **◀◀** or **▶▶** buttons on the Remote Controller to search for a certain part of the track.

Listening Repeatedly

Using the REPEAT button, you can play the entire CD or a selected track repeatedly.



Playing the Entire CD Repeatedly

- During playback, press the REPEAT button once.

REPEAT

The CD will play through the last track and then start over again. It will keep repeating until you cancel the repetition.

Playing a Selected Track Repeatedly

- During playback, press the REPEAT button twice.

REPEAT 1

The current track will play to the end and then start over again. It will keep repeating until you cancel the repetition.

Cancelling Repetition

Press the REPEAT button again.
Each track will play to the end and not repeat.

Displaying the Elapsed and Remaining Playing Time

Using the DISPLAY button, you can display the total time the CD (or current track) has been playing, and the amount of time that remains. This is useful in situations such as recording, when you need to know how long the track or CD has been playing, or the amount of time that remains on the track or CD.

Press the DISPLAY button to show the time you want.

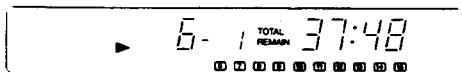


There are four display times:

EACH	The total elapsed playing time since the beginning of playback of the current track
EACH REMAIN	The time remaining until the end of the current track
TOTAL	The total elapsed playing time since the beginning of playback of the CD
TOTAL REMAIN	The time remaining until the end of the CD

The display changes each time you press the DISPLAY button.

For Example:



Display mode:	TOTAL REMAIN
Current track:	6th
Total remaining time:	37 minutes 48 seconds

Programming Your Own Playback Sequence

You can program the CD Player to play back the tracks of a CD in any order.

1. Press the STOP/CLEAR button on the CD Player.

This puts the CD Player in STOP mode and clears existing programs from the memory.

2. Press the PROGRAM button.



3. Press the CD 10KEY button on the Remote Controller.

4. Enter the track numbers with the numeric keys in the order you want them played back.

- You can program up to 32 tracks.

If the total time of all the programmed tracks is 100 minutes or more, the display will show "— : —" (since the highest time the display can show is "99:59").

5. Press the PLAY/PAUSE button on the CD Player, or the CD CONTROL ▶ button on the Remote Controller.

Playback begins with the first track in the program.

6. To add a track to the program during playback, enter the track number with the numeric keys on the Remote Controller.

The new track is added to the end of the program.

Checking the Program

You can check the programmed sequence of playback to determine which tracks will be played in which order.

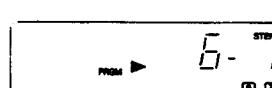
Note: The program contents cannot be displayed during playback. Press the STOP/CLEAR button if the CD Player is in play mode.

1. Press the SEARCH button once.



The first track in the program is displayed, along with its sequence number.

For example:



This display shows that the 6th track will be played first.

2. Press the SEARCH button repeatedly.

The rest of the tracks in the program are displayed, along with their sequence numbers.

Listening to Programmed Tracks Repeatedly

1. Press the REPEAT button to listen to the programmed sequence of playback repeatedly.



2. Then press the PLAY/PAUSE button.

Updating the Program

You can add and delete tracks from the program.

Adding Tracks to the Program

1. Press the CD 10KEY button on the Remote Controller.

2. Enter the track numbers with the numeric keys in the order you want them played back.

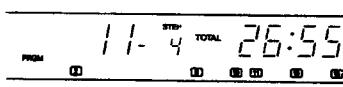
The track numbers you enter are added to the end of the program.

Deleting Tracks from the Program

Note: The program contents cannot be deleted during playback. Press the STOP/CLEAR button if the CD Player is in play mode.

1. Press the SEARCH buttons to select the track to be deleted from the program.

For example:



This display shows that the 11th track is selected to be deleted.

2. Press the CANCEL button on the Remote Controller.

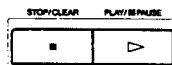


■ The track being displayed will be deleted.

Updating the Entire Program

You can replace the old program with a new one.

1. Press the STOP/CLEAR button on the CD Player.



This clears the programmed sequence of playback from memory.

To clear the program during playback:

- Press the STOP/CLEAR button twice (once to stop, twice to clear the program from memory).

2. Press the PROGRAM button.

3. Press the CD 10KEY button on the Remote Controller.

Pressing the CD 10KEY button puts the numeric keys in CD mode.

4. Enter the track numbers with the numeric keys in the order you want them played back.

Cancelling Programmed Playback

1. Press the PROGRAM button.



This puts the CD Player in normal playback mode. The tracks will play back in their regular order.

Playing Tracks at Random

In RANDOM mode, the CD player selects and plays tracks at random.

1. Press the RANDOM button on the CD player.



CD player starts playing tracks at random.

2. To cancel random playback, press the STOP/CLEAR button.

- When all tracks in the disc are played once, the random playback ends.
- If you set the CD player to the REPEAT mode by pressing the REPEAT button, even after all tracks have been played once, the CD player will again select and play tracks at random to continue the random playback.

Using the AUTO POWER OFF Function

The power can be automatically turned off when the CD playback is completed.

1. Press the AUTO POWER OFF button on the CD player.



The indicator light will go on.

2. Press the PLAY/PAUSE button on the CD player or the CD CONTROL ▶ button on the Remote Controller.

The power goes off automatically when the CD playback is completed.

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Using the Tape Deck

The tape deck has an Auto Tape Select feature, which can tell the difference between various types of cassette tape. It can distinguish between Normal (Type I), CrO₂ — High Position (Type II), and Metal (Type IV).

Playing a Tape

1. Press the EJECT button to open the cassette holder.
2. Insert a cassette and shut the cassette holder.
3. If the tape was recorded with Dolby noise reduction, use the DOLBY NR switch.

Set the switch to the same mode as the tape was recorded in.



4. Start playback by either of the following methods:

- Press the button.

Press the button if the tape is wound mostly on the left side.



Press the button if the tape is wound mostly on the right side.



- Press the TAPE button on the Amplifier.

Note: When cassettes are in both decks A and B, deck B starts first.

Stopping Playback and Ejecting the Tape

1. Press the STOP button on the tape deck.
2. Press the EJECT button to open and remove the tape from the cassette holder.
3. Shut the cassette holder.

Note: If the system is turned off while a tape is playing, you may not be able to eject the tape. You will need to turn the system back on and press the EJECT button to open the cassette holder.

Stopping and Restarting Playback

1. Press the PAUSE button on the tape deck.



Playback of the tape in deck B stops temporarily.

Note: The PAUSE button only applies to deck B.

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2. Press the or button.

This restarts playback of the tape in deck B.

Changing the Playback Direction

1. To change the playback direction during playback, press the or button.
2. To change the playback direction without starting playback, press the or button while also pressing the stop button.

This allows you to set the tape direction for a timed recording.

Fast-Winding the Tape

Press the or buttons on the Tape Deck to advance the tape rapidly in the direction of the arrows.

Listening to Tape Continuously

You can set the tape deck up to play both sides of the tapes in decks A and B repeatedly.

1. Insert cassettes into decks A and B.
2. Set the REV.MODE switch to (auto reverse) position.



■ The tape deck will be placed in auto reverse mode, which means that it will play all of one side of the tape and then all of the other side.

3. Press the or button of the deck to be started first.

- Now both sides of both tapes will play repeatedly.
- After playback in reverse direction ends, the playing deck (A or B) will be switched to the other deck.
- If the tape deck is not placed in auto reverse mode, only one side of the tapes in decks A and B will play continuously.
- If you press the TAPE button on the Amplifier, deck B will start first.

Skipping Blanks

When there is a blank of 10 seconds or more, the tape skips forward to the beginning of the next track.

1. Press the BLANK SKIP button on the tape deck.



2. Press the or button.

Blank Skip playback starts.

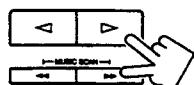
The BLANK SKIP function is not effective:

- When the track contains an area of low sound level.
- When the blank between tracks is short.
- When there is noise, for example, a hum between tracks.

Music Scanning

The music scan function will detect the blank segments between tracks. The blank should be about 4 seconds long for the music scan to be effective.

You can locate the beginning of the current track or next track quickly by pressing the playback button and the fast-winding button simultaneously.



Searching for Beginning of the Current Track

- If the tape is travelling in the forward direction, press the \ll fast-winding button while simultaneously pressing the \triangleright playback button.
- If the tape is travelling in the reverse direction, press the \gg fast-winding button while simultaneously pressing the \triangleleft playback button.

Searching for Beginning of the Next Track

- If the tape is travelling in the forward direction, press the \gg fast-winding button while simultaneously pressing the \triangleright playback button.
- If the tape is travelling in the reverse direction, press the \ll fast-winding button while simultaneously pressing the \triangleleft playback button.

Note: The deck that is playing will stop if the music scan function is used on the other deck.

The music scan function is not effective:

- When the track being scanned contains an area of low sound level.
- When the blank between tracks is short.
- When there is noise, for example, a hum between tracks.

Recording a Tape

The recording system uses Dolby HX PRO to improve the high-frequency characteristic and to reduce level fluctuations at low frequencies. You will enjoy dynamic recording ranging from low through high frequencies.

Note: No switch operation or operation at playback is needed.

Recording Notes:

- Deck A is used for playback only, and deck B is used for both recording and playback.
- To reduce hiss, use the Dolby noise reduction system. Set the DOLBY NR switch to B or C.
 - B: Popular noise reduction
 - C: Highly effective noise reduction
- To dub both sides of tape, set the REV MODE switch to the auto reverse position (), and start dubbing in the forward direction (\triangleright) for both decks A and B.
- The recording level is set automatically.
- If the small tabs on cassette tapes to prevent accidental erasure have been removed, the contents of the tape cannot be recorded or erased over. To record or erase, cover the holes with adhesive tape. (The tab in the upper left corner is the tab for the side facing you, and the other tab is for the opposite side.)
- If you are recording an AM broadcast and you hear interference, move the BEAT CUT switch on the back of the stereo from Position 1 (the normal mode) to Position 2.



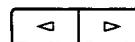
Recording from Various Sources

1. Insert a cassette for recording into deck B.
2. Select the source you are recording from TAPE (Deck A), TUNER, CD, VCR/DAT, PHONO.
3. Press the Pause II button on the Tape Deck while simultaneously pressing the REC/REC MUTE button.



This puts the deck B in REC/PAUSE mode.

4. Start the source to be recorded.
5. Press the Play \triangleleft or \triangleright button on deck B to start recording.



To record on both sides of tape, start recording in the forward (\triangleright) direction.

6. To stop recording, press the Stop ■ button.
7. To stop recording temporarily, press the Pause II button on deck B. To restart recording again, press the Play button \triangleleft or \triangleright .

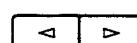
Dubbing a Tape

Normal-Speed Dubbing

1. Insert the cassette for playback into deck A and the cassette for recording into deck B.
- The type of tape (Normal, CrO₂, or Metal) used for recording must be the same as that used for playback.
- To dub a tape which was recorded with Dolby noise reduction, set the DOLBY NR switch on the Tape Deck and the SEA button on the Amplifier to the OFF position.
2. Press the Pause II button while simultaneously pressing the REC/REC MUTE button on deck B.

This places deck B in REC/PAUSE mode.

3. Press the Play button \triangleleft or \triangleright (depending on which side of the tape you want to record from) on deck A.
4. Press the Play button \triangleleft or \triangleright (depending on which side of the tape you want to record onto) on deck B.



The tape-to-tape recording starts.

Note: You cannot listen to another source during normal-speed dubbing.

- To stop normal-speed dubbing before the end of either the play back or record tape, press the Stop ■ buttons on decks A and B.

High-Speed Dubbing

1. Insert the cassette for playback into deck A and the cassette for recording into deck B.

■ To change the playback direction of deck A, hold down the Stop □ button and press the ▲ or ▼ button.

2. Press the HIGH SPEED DUBBING button on the Tape Deck.



■ The high-speed tape-to-tape recording starts.

Note: You can listen to another source while high-speed dubbing is in progress.

■ To stop high-speed dubbing before reaching the end of either the playback or record tape, press the Stop ■ button on deck B.

Note: If a nearby television is on during high-speed dubbing, a beeping noise may be recorded onto the record tape. Turn off the television or move it farther away.

3. Press the Stop ■ button on deck A when you hear the end of a track to record from many different tapes (for example, to create a "Greatest Hits" tape)



Deck A stops playback, and deck B automatically creates about a 4 second blank, then pauses.

Note: If you don't want this blank, press the PAUSE ■ button on deck B before pressing the Stop ■ button.

4. Put another tape into deck A.

5. Press the HIGH SPEED DUBBING button on the Tape Deck.

The high-speed dubbing restarts.

6. To record tracks from other tapes, repeat steps 3 - 5.

■ The SEA Function is not effective during high-speed dubbing.

Note: It may be unlawful to record or playback copyrighted material without the consent of the copyright owner.

Erasing a Tape

1. Insert the tape to be erased into deck B.

■ To erase music on both sides, set the REV.MODE switch to the auto reverse position.

2. Press the Pause ■ button while simultaneously pressing the REC/REC MUTE button.

This puts the deck in REC/PAUSE mode.

3. Press the TAPE button on the Amplifier.

4. Press the ▲ or ▼ button (depending on which side of the tape you want to erase) on deck B.

The erasure of the tape begins.

Direct Recording from the CD Player

Direct recording permits a tapedeck to start recording automatically in synchronism with a CD player.

1. Insert the cassette for recording into deck B.

■ Set the REV.MODE switch to Auto reverse ▶ position if you want to record on both sides of the cassette.

2. Put a CD in the CD Player.

3. Press the CD DIRECT REC button on the Tape Deck.



■ The CD Player and the Tape Deck are activated, and recording begins with the first track of the CD.

■ To stop direct recording, press the Stop ■ button on deck B or the STOP/CLEAR button on the CD Player.

4. To fade out the CD gradually at the end of the tape, press the FADE button on the CD Player.



The volume level of the last track on the tape is lowered gradually to 0. This makes a nice ending to your tape and prevents an abrupt cut-off of music if the tape ends before the CD.

5. To cancel the fade-out function during recording, press the FADE button again on the CD Player.

The fade-out function operates in both forward and reverse directions.

■ When the end of the tape is reached, the tape is rewound to the beginning of the last track.
 ■ The last track is played back again from the CD Player and recorded again on the tape. This time the sound level is reduced gradually at the end.

Dolby noise reduction and HX PRO headroom extension manufactured under license from Dolby Laboratories Licensing Corporation. HX PRO originated by Bang and Olufsen. "Dolby", the Double-D symbol and HX PRO are trademarks of Dolby Laboratories Licensing Corporation.

Recording CD Tracks in Auto-Edit Mode

In Auto-Edit mode, tracks from the CD will automatically be selected to determine which tracks should go on side A of the tape and which should go on side B.

The selection is based on the lengths of the tracks and the length of the tape. This ensures a proper "fit" of the tracks recorded on the tape. It prevents a track from being cut off when the end of the tape is reached.

1. Insert the cassette for recording in deck B.

- Set the REV. MODE switch to the Auto reverse  position if you want to record on both sides of the cassette.

2. Put the CD in the CD Player.

3. Press the STOP/CLEAR button on the CD Player.

4. Press the A. EDIT button on the CD Player to tell the system the length of the tape in the Tape Deck.



- The tape length most suitable for CD recording is displayed first.
 - Each time the A. EDIT button is pressed, the next standard tape length blinks, in this order:
-  C46  C54  C60  C74  C90  (back to the beginning)
- You can also enter a non-standard tape length from the Remote Controller using the numeric keys.

For example: To enter a tape length of 50 minutes, press the CD 10KEY button on the Remote Controller, then press the + 10 key four times and the 10 key once.

5. Press the SIDE A/B button on the Remote Controller.



- The CD Player calculates which tracks should be placed on side A and which should be placed on side B, based on the lengths of the tracks and the length of the tape.
- If you do not press the SIDE A/B button, the CD Player automatically decides which tracks should be placed on sides A and B about 4 seconds after the A. EDIT button is pressed.

Note: Up to 16 tracks can be allocated for each side of the cassette.

6. Press the CD DIRECT REC button on the Tape Deck.



- The tape is automatically rewound to the beginning of side A, and then recording begins.
- When the Tape Deck is set in the auto reverse mode, after the last track is recorded on side A, the tape deck high-speed-erases to the end of side A. Then it changes direction to side B and begins recording the remaining tracks.
- To stop recording, press the Stop ■ button on deck B, or press the STOP/CLEAR button on the CD Player.

Note: During recording in the Auto-Edit Mode, do not operate the CD Player.

Recording CD Tracks in Programmed-Edit Mode

In Programmed-Edit Mode, you decide which tracks from the CD will be recorded, and in what order.

1. Insert the cassette for recording in deck B.

- Set the REV. MODE switch to the Auto reverse  position if you want to record on both sides of the cassette.

2. Put the CD in the CD Player.

3. Press the STOP/CLEAR button on the CD Player.

4. Press the PROG. EDIT button on the Remote Controller to tell the system the length of the tape in the Tape Deck.



- Each time the PROG. EDIT button is pressed, the next standard tape length blinks, in this order:
-  C46  C54  C60  C74  C90  (back to the beginning)
- You can enter a non-standard tape length from the Remote Controller using the numeric keys.

For example: To enter a tape length of 50 minutes, press the CD 10KEY button on the Remote Controller. Then press the + 10 key four times and the 10 key once.

5. Press the SIDE A/B button on the Remote Controller.



- This tells the system that you will be choosing tracks to be recorded on side A of the tape.
- The length of time for one side of the tape is displayed. This is half of the total tape length. The total time for the tracks you choose for each side cannot exceed this time.
- If you do not press the SIDE A/B button, side A is automatically selected.

6. Press the CD 10KEY button on the Remote Controller.

7. Enter the numbers of the tracks you want recorded on one side of the tape.

- Tracks on a CD assigned numbers 32 or greater cannot be entered in the program.
- If the length of a track exceeds the remaining tape length, the time indication blinks on the display. Choose a different track number.
- To delete a track from the program, specify the track with the AUTO SEARCH buttons on the Remote Controller. Then press the CANCEL button on the Remote Controller.

8. If you also want to record on the other side of the tape, press the SIDE A/B button on the Remote Controller and repeat step 7.

9. Press the CD DIRECT REC button on the Tape Deck.



- The tape is automatically rewound to the beginning of side A, and then recording begins.
- When the Tape Deck is set in auto reverse mode, after the last track is recorded on side A, the tape deck high-speed-erases to the end of side A. Then it changes direction to side B and begins recording the remaining tracks.
- To stop recording, press the STOP button on deck B, or press the STOP/CLEAR button on the CD Player.

Note: The program cannot be edited during recording. To change the program, press the STOP/CLEAR button on the CD Player and begin with step 4 of this procedure.

Note: During recording in the Programmed-Edit Mode, do not operate the CD Player.

Recording with the SEA Function

The SEA Function is used to alter the tone of the source by increasing or decreasing the levels of selected frequency ranges.

You can use this function to control the way the tracks from the CD will sound when they are recorded on the tape.

1. Insert the cassette for recording in deck B.

2. Press the SEA button on the Amplifier.

- The indicator light will go on.
- To create the desired sound, see "Controlling Sound with the SEA Function" on page 9.

3. Press the < or > button on the Tape Deck while holding down the REC/REC MUTE button.

Recording starts.

SEA Function Notes

- The SEA Function cannot be used during high-speed dubbing.
- If the source you are recording from is a cassette in deck A that was created using Dolby noise reduction, the noise reduction effect is lost when you dub using the SEA Function.
- To keep the noise reduction effect of the cassette in deck A, use either of these methods:
 - High-speed dubbing.
 - Normal speed dubbing, with the SEA Function off and the DOLBY NR button set to OFF.
- When LEARNING CSRP is ON, do not change the volume level during recording because the loudness feature will cause the SEA settings to be altered.

Creating a Blank During Recording

Use the Record Muting function when you do not want to record a section of the source.

1. Press the REC/REC MUTE button on the Tape Deck at the beginning of the section you don't want to record.



A blank of about 4 seconds is created on the cassette, and then the deck pauses.

2. To start recording again, press the < or > button.

- To create a blank of more than 4 seconds, hold down the REC/REC MUTE button. When you release this button, the deck pauses.
- When the source you are recording from is the CD Player and the CD DIRECT REC button is used, the REC/REC MUTE button will not function.

Recording with the Timer

This compact component system can be set up to record a tape automatically. This is especially useful for recording broadcasts when you are not around, or late at night when you are asleep.

1. Insert a cassette for recording into deck B.

2. Set the timer, by following the steps in "Setting the Timers" on page 18.

3. Select one of the following sources:

TUNER TIMER REC
— — TIMER REC

Records TUNER preset stations
Records from the source selected before turning off the system

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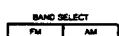
Using the Tuner

Listening to Broadcasts

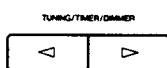
The Tuner can receive FM and AM broadcasts. Stations can be tuned in manually, automatically, or from preset memory storage.

Manual Tuning

- Select the broadcast band you want to tune in by pressing the FM or AM button on the Tuner.



- Press the TUNING/TIMER/DIMMER button (< or >) to tune in a station.



- Hold down the TUNING/TIMER/DIMMER button to change the frequency rapidly, then tap the button to set the frequency precisely.

Automatic Tuning

- Select the broadcast band you want to tune in by pressing the FM or AM button on the Tuner.
- Hold down the TUNING/TIMER/DIMMER button (< or >) for a moment, and then release the button.

- When a station is tuned in, the TUNED indicator lights up.

Note: The Tuner will tune in the nearest strong station.

Presetting Stations in Memory

You can store up to 40 of your favorite radio stations (FM and AM) in memory, giving you quick, easy access to the stations.

- Select a band by pressing either the FM or AM button on the Tuner.
- Press the TUNING/TIMER/DIMMER button (< or >) to tune in a station.
- Press the MEMORY button on the Tuner.



The "MEMORY" indicator on the Tuner display blinks for 5 seconds.

- Press the PRESET button (< or >) on the Tuner to assign a number (1-40) to the station, or enter a number (1-40) with the Remote Controller's numeric keypad.

Example:

To enter 7, press "7".
To enter 17, press "+10", then "7".
To enter 20, press "+10", then "10".

- To enter a number with the numeric keypad, you must press the FM or AM button on the remote controller first.
- If the "MEMORY" indicator has stopped blinking, press the MEMORY button again and repeat step 4.
- If the preset number you choose already has a station assigned to it, the old station will be replaced by the new one.

- Press the MEMORY button again.

This stores the station in memory, with the preset number (1-40) you chose in step 4.

- Repeat steps 1-5 for each station you want to store in memory with a preset number.

Caution! If the system is unplugged or if a power failure occurs, the preset stations stored in memory may be lost.

Cancelling Preset Stations

- Press the CANCEL button on the Tuner.



The "CANCEL" light on the Tuner display blinks for 5 seconds.

- Press the PRESET button (< or >) on the Tuner to select the preset station you want to cancel.

If the "CANCEL" light has stopped blinking, press the CANCEL button again and repeat step 2.

- Press the CANCEL button again.

The preset station will be cancelled.

Tuning in Preset Stations

- Press the PRESET button (< or >) on the Tuner to select the preset station you want. The preset station numbers are displayed sequentially each time you press the PRESET button.
- You can also select a station by entering its preset number on the Remote Controller's numeric keypad.

FM Reception Modes

There are two FM reception modes: AUTO and MONO.

AUTO: Stations are tuned in with either STEREO or MONO, depending on the strength of the FM signal.

MONO: Stations are tuned in with MONO only. This will reduce interference noise of weak stations and make the reception sound better.

- Press the FM MODE/MUTE button on the Tuner to switch between the AUTO and MONO reception modes.



- Press the FM MODE/MUTE button on the Tuner to the AUTO mode to receive the station in stereo.

- If a stereo broadcast is received when the FM band is selected, the "STEREO" light will be displayed on the Tuner.
- If the FM Reception Mode is MONO, the "STEREO" light will not be displayed.

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Using the Timers

Setting the Clock

The clock will be displayed even when the system is turned off. Pressing the TUNING/TIMER/DIMMER buttons (\triangleleft or \triangleright) will switch between two brightness levels for the clock.

1. Press the CLOCK ADJUST button on the Tuner.



The hours digits blink.

2. Press the TUNING/TIMER/DIMMER button (\triangleleft or \triangleright) to set the hours digit.



- Press the \triangleright button to increase the hour, and press the \triangleleft button to decrease the hours.
- To enter a new hour digit, press the CANCEL button and repeat step 2.



3. Press the MEMORY button on the Tuner.



This sets the hour portion of the time.

The minutes digits will blink.

4. Press the TUNING/TIMER/DIMMER button (\triangleleft or \triangleright) to set the minutes digit.

- It's a good idea to set the minutes digits one minute ahead. Then you can start the clock when it reaches the set time exactly (according to the correct time from the TV, radio, or telephone).
- To enter a new minute digit, press the CANCEL button and repeat step 4.

5. Press the MEMORY button.

The clock starts as soon as you press the MEMORY button.

Caution: If there is a power failure, or if you unplug the stereo, the clock time will be lost. Repeat steps 1-5 when power is restored.

- Use the TUNING/TIMER/DIMMER buttons to change luminosity of time display by two steps under STANDBY status.

Setting the Timers

This system has three timers (**TIMER 1, TIMER 2, DAILY**) that are used to turn the system on and off automatically:

With the timers you can make tape recordings of broadcasts, CD's, or tapes when you're not around. You can also play these music sources at specified times without recording them.

- Use TIMER1 and TIMER2 to record a radio broadcast when you're not home, or late at night when you're asleep.
- Use the DAILY timer to record a broadcast that occurs at the same time every day.
- The procedure for setting TIMER1, TIMER2, and the DAILY timer is the same. You need to tell the system:
 - The name of the timer (TIMER1, TIMER2, or DAILY).
 - The time the timer should turn the system on.
 - The time the timer should turn the system off.
 - The source the timer should turn on (Tuner, CD, or Tape).
 - The volume level that should be used during recording or playback.

Note: The clock must be set to the correct time for the timers to be effective.

Caution! Do not operate the remote controller when you are programming the timer.

Choosing a Timer

Press the TIMER1, TIMER2, or DAILY button on the Tuner to select a timer. This puts the system in the Timer Setting mode. The information that the system expects next will blink on the display.

Setting the Start Time

1. Press the TUNING/TIMER/DIMMER buttons to set the hour that the system will turn on.



The \triangleleft button makes the hour number decrease, and the \triangleright button makes the hour number increase.

2. Press the MEMORY button.



This stores the hour portion of the start-time in memory.

3. Press the TUNING/TIMER/DIMMER buttons to set the minutes.

4. Press the MEMORY button.

This stores the minute portion of the start-time in memory.

Setting the Stop Time

1. Press the TUNING/TIMER/DIMMER buttons to set the hour that the system will turn off.
 2. Press the MEMORY button.
- This stores the hour portion of the stop-time in memory.
3. Press the TUNING/TIMER/DIMMER buttons to set the minute.
 4. Press the MEMORY button.
- This stores the minute portion of the stop time in memory.

Selecting the Source

1. Press the TUNING/TIMER/DIMMER button to select a source.

Repeatedly pressing the ▶ button displays the sources in the following order:

Display	What it means
-- -- --	Plays from whichever source was used just before turning off the system
TUNER	Plays FM or AM broadcast
TUNER TIMER REC	Records FM or AM broadcast
CD	Plays a CD
TAPE	Plays a tape
-- -- --TIMER REC	Records from whichever source was used just before turning off the system

Note: If you choose an FM or AM radio station as the source, select the preset station by pressing the PRESET button on the Tuner.

2. Press the MEMORY button.

This stores the source to play or record in memory.

Setting the Volume

1. Press the TUNING/TIMER/DIMMER button to select a volume level.
- Repeatedly pressing the ▶ button displays the volume levels in the following order:

Display	What It Means
VOL -- --	Volume set to the level used before shut the power off.
VOL -- 0	Volume off
VOL -- A	Volume barely on
VOL -- B	Volume at 1/4 power
VOL -- C	Volume at 1/3 power

2. Press the MEMORY button.

This stores the volume level for timed playback or recording in memory.

Starting the Timer

Press the Timer button to start the timer. The timer you chose should light on the display.

Note: If the timer light does not light, the timer was not set properly, and you need to set the start time again.

To change your selection, press the CANCEL button and enter a new value.

Turning the System Off

Press the POWER button on the Amplifier to turn the system off.



- The system is now programmed to turn on at the preset start-time, and play or record until the stop-time.
- It will record or play the preset source at the preset volume level until the stop-time is reached.
- If you turn the system on before the start-time, the timer will still operate as programmed at the start-time.

Resetting the Timers

To reset a timer, press the button (TIMER1, TIMER2, or DAILY) on the Tuner twice. Now the timer is set again and will use the same start-time, stop-time, source, and volume level as before.

Setting the Wake-Up and Sleep Timers

You can set a timer so it turns on to wake you up or turns off when you go to sleep.

Setting the Wake-Up Timer

The wake-up timer serves as an alarm clock. It turns the system on after a programmed time lapse and plays the source that was used before the system was turned off. You can set a wake-up time from between 5 minutes and 12 hours.

1. Press the POWER switch on the Amplifier so it is off.
2. Press the WAKE UP/SLEEP button on the Tuner.



This tells the system that you are going to set the wake-up time.

3. Press the WAKE UP/SLEEP button repeatedly until the desired wake-up time appears.

Each time you press the WAKE UP/SLEEP button, the wake-up time lapse changes in the following order:

▶0:05▶0:10▶0:15▶0:30▶0:45▶1:00▶1:30▶2:00▶3:00▶ (every hour) ▶12:00▶ (back to the beginning)

- If you make a mistake, press the CANCEL button on the Tuner and enter a new wake-up time with the WAKE UP/SLEEP button.

The system will now turn on after this time lapse.

- The wake-up timer has priority over TIMER1, TIMER2, and the DAILY timer.
- This means that if the start-time for one of the timers occurs before the wake-up time, the system will wait until the wake-up time to turn on.

Note: If CD is the source that will be used, playback begins with the first track.

Setting the Sleep Timer

The sleep timer is used to turn off the system after a specified time lapse. With this timer you can fall asleep listening to music, knowing that the system will shut off automatically and not stay on all night. You can set the sleep timer to turn the system off from between 5 minutes and 2 hours.

1. Press the **POWER** switch on the Amplifier so it is on.
2. Start the source you want to listen to.
3. Press the **WAKE UP/SLEEP** button on the Tuner.



This tells the system that you are going to set the sleep time.

4. Press the **WAKE UP/SLEEP** button repeatedly until the desired sleep time appears.

Each time you press the **WAKE UP/SLEEP** button, the sleep time lapse changes in the following order:

►0:05►0:10►0:15►0:30►0:45►1:00►1:15►1:30►1:45►2:00► (back to the beginning)

■ If you make a mistake, press the **CANCEL** button on the Tuner and enter a new sleep time with the **WAKE UP/SLEEP** button.

The system will now turn off after this time lapse.

■ The sleep timer has priority over TIMER1, TIMER2, and the DAILY timer.

This means that if the stop-time for one of the timers occurs before the sleep time, the system will wait until the sleep time before turning itself off.

Checking the Remaining Time

After setting the wake-up or sleep timer, you can check the time remaining until the system turns on (wake-up time) or shuts off (sleep time).

Press the WAKE UP/SLEEP button.

The remaining time is displayed for 5 seconds. Then the clock time appears again.

Adding More Time

If you want more time before the wake-up timer turns the system on (or the sleep timer turns the system off), follow these steps:

1. Press the **WAKE UP/SLEEP** button.

The remaining time is displayed for 5 seconds. Then the clock time appears again.

2. Press the **WAKE UP/SLEEP** button again before the clock time is displayed.

■ Keep pressing this button until the desired additional time is reached.

Now the system will wait until the added amount of time until turning on or shutting off.

Cancelling the Time Setting

If you decide you don't want the system to wake you up or play music while you fall asleep, you can turn these timers off.

1. To cancel the wake-up timer, press the **POWER** button on the Amplifier.



This turns the power on.

2. To cancel the sleep timer, press the **POWER** button on the Amplifier.

This turns the power off.

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Using the Remote Controller

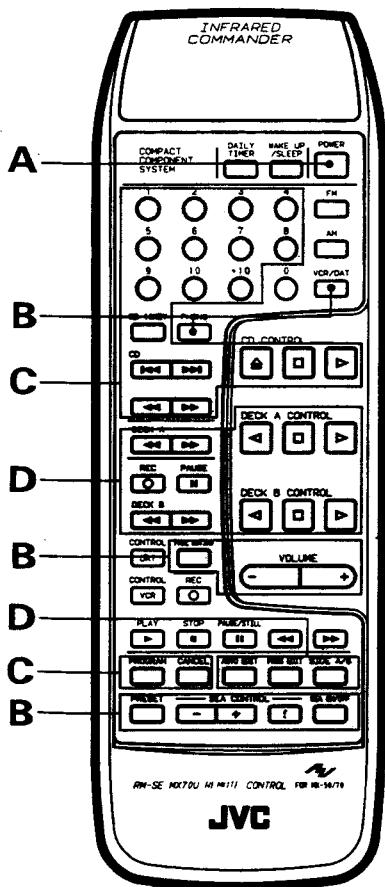
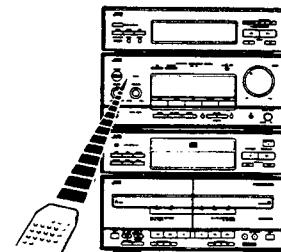
Operating the Remote Controller

You can use the Remote Controller to operate the system without leaving your chair. You can use it up to a distance of 23 feet.

Point the Remote Controller at the remote sensor on the Amplifier.

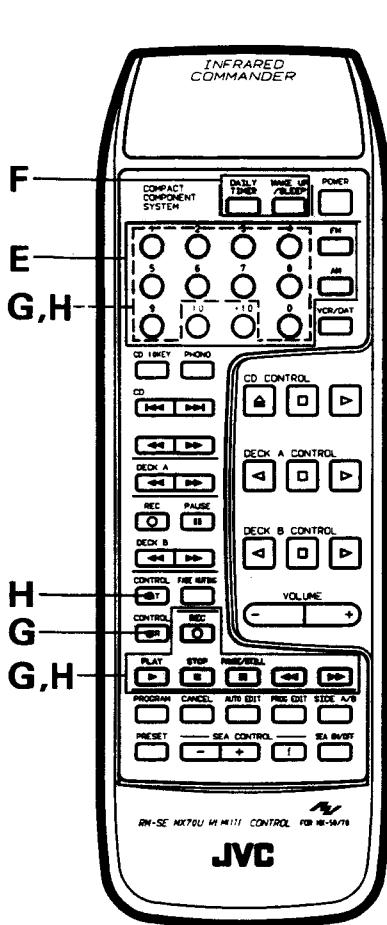
Note: When the Tuner is Selected as the source, and Cd OFF is displayed, only the OPEN/CLOSE and PLAY buttons on the Remote Controller can be used.

To use other buttons on the Remote Controller (for programming and other operations), press the CD button on the Amplifier or the CD PLAY button on the Remote Controller first.



Function	Button(s) To Use
A Turn power on or off	
B Amplifier	
Adjust volume level	
Lower volume level gradually to 0	
Listen to VCR or DAT	
Listen to records	
Turning SEA Function on or off	
Selecting a frequency range for the SEA Function	
Setting a SEA level	
Using a SEA pattern	
C CD Player	
Open and close the disc tray	
Play a CD	
Stop playback of a CD	
Place numeric keys in CD mode	
Select track number	
Scanning through the track numbers	
Search for a certain part of the track	
Program playback order	
Cancelling a program	
D Tape Deck	
(Press buttons corresponding to the deck being used, either deck A or B)	
Play a tape in forward direction	
Play a tape in reverse direction	
Stop playback temporarily (deck B)	
Stop playback	
Fast forwarding or fast rewinding	
Search for beginning of the track while in forward direction	
Search for beginning of the track while in reverse direction	
Recording in forward direction	
Recording in reverse direction	
Pausing recording	
Restarting recording in forward direction	
Restarting recording in reverse direction	
Stopping recording	
Recording from CD in the Auto-Edit mode	
Recording from CD in the Programmed-Edit mode	

Note: Where '+' is indicated, press and hold the first button illustrated, then press the second.

**Function****Button(s) To Use****E Tuner**

- Selecting Tuner mode / Selecting a band
- Selecting a preset station

F Timers

- Setting/resetting the DAILY timer
- Setting the wake-up/sleep timer

G VCR

- First select VCR mode
- Recording +
- Play a tape
- Stop playback
- Stop recording or playback temporarily
- Rewind the tape
- Fast forwarding
- Select a TV channel

- When using the remote controller to operate a VCR, point the controller at the VCR.
- The numeric keys may have different functions depending on the JVC model VCR you have. See your VCR's manual for operating instructions.

H DAT

- First select DAT mode
- Recording +
- Play a tape
- Stop playback
- Stop recording or playback temporarily
- Rewind the tape
- Fast forwarding
- Select a track number for playback

- When using the remote controller to operate a DAT, point the controller at the DAT.
- The numeric keys may have different functions depending on the JVC model DAT you have. See your DAT's manual for operating instructions.

Troubleshooting

Symptom	Possible Cause	Action
No sound is heard.	Speakers are connected incorrectly.	Re-connect speakers (see "Connecting the System Component" on page 6).
Impossible to record.	Tape tabs are broken out.	Cover tabs with adhesive tape.
Interference during broadcast.	Antenna is disconnected. The loop antenna is too close to the system.	Re-connect the antenna securely. Change the position and direction of the loop antenna.
CD sound is discontinuous.	The CD is scratched or stained.	Clean or replace the CD.
The Remote Controller cannot be operated.	There is an obstruction blocking the remote sensor on the amplifier. The batteries of the Remote Controller are weak.	Remove the obstruction. Replace the batteries.
The CD disc tray cannot be operated.	The power plug is disconnected. The POWER button is set to STANDBY.	Connect the power plug securely. Set the POWER button to ON.
The CD does not play.	The CD is in the tray upside down.	Put the CD in the tray with the label side facing up.
Operations are disabled.	The built-in microprocessor may malfunction due to external electrical interference.	Unplug the system, then plug it back in.
The cassette holder cannot be opened.	The system was turned off because the timer was operated while the tape was running.	Turn on the system.

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Specifications

Amplifier

Output Power SPEAKERS A	23 watts per channel, min. RMS, both channels driven into 8 ohms, from 40 Hz to 20 kHz, with no more than 0.9% total harmonic distortion.
SPEAKERS B	27 watts per channel into 6 ohms at 80 Hz with 0.9 % total harmonic distortion.
Total Harmonic Distortion at Half-Rated Power	0.07%
Input Sensitivity/ Impedance (1kHz) VCR/DAT PHONO	300mV/40k ohms 3mV/47k ohms
SEA Center Frequencies	63, 160, 400, 1k, 2.5k, 6.3k, 16kHz
SEA Control Range	± 12dB
Dimensions	10-7/8 × 4-9/16 × 11-1/2 inches (275 × 115 × 291 mm)
Weight	10.8 lbs (4.9 kg)

Compact Disc Player

Dynamic Range	90dB
Signal-to-Noise Ratio	100dB
Wow and Flutter	Unmeasurable
Dimensions	10-7/8 × 2-11/16 × 10-7/16 inches (275 × 68 × 265 mm)
Weight	4.5 lbs (2.0 kg)

POWER SPECIFICATIONS

Area	Line Voltage & Frequency	Power Consumption
Canada	AC 120V ~ ,60Hz	190 watts, 230VA
U.K.	AC 240V ~ ,50Hz	365 watts
Australia		
Continental Europe	AC 230V ~ ,50Hz	160 watts
Other Area	AC 110/127/220/240V ~ , 50/60Hz	145 watts

Tape Deck

Frequency Response	
Metal:	30 — 17,000Hz
CrO ₂ :	30 — 16,000Hz
Normal:	30 — 15,000Hz
Wow and Flutter (WRMS)	0.09%
Dimensions	10-7/8 × 4-9/16 × 10-1/2 inches (275 × 115 × 266 mm)
Weight	6.2 lbs (2.8 kg)

Tuner

FM

Tuning range	87.5 MHz — 108.0 MHz
Usable Sensitivity	0.95μV/75 ohms (10.8dBf)
Signal-to-Noise Ratio (IHF-A Weighted / DIN)	MONO (at 85dBf) 80dB/72dB STEREO (at 85dBf) 73dB/64dB

AM

Tuning range	530 kHz — 1,710 kHz
Dimensions	10-7/8 × 2-11/16 × 10-7/8 inches (275 × 68 × 275 mm)
Weight	3.1 lbs (1.4 kg)

General

Power Requirements	AC 120 V ~ 60 Hz
Power Consumption	190 W, 230 VA

Accessories

FM Feeder antenna	1
AM Loop antenna	1
Speaker cable	2
Remote Controller (RM-SEMX70U)	1
Batteries (UM-4/AAA/R03)	2

AM Tuner

Tuning range MW

Area	Channel Spase	
	9kHz	10kHz
Continental Europe, U.K., Australia	522kHz ~1629kHz	---
Other Area	531kHz ~1602kHz	530kHz ~1600kHz

LW (CA-MX70BK, DX-MX70BK)

144kHz~353kHz

Design and specifications subject to change without notice.

JVC

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