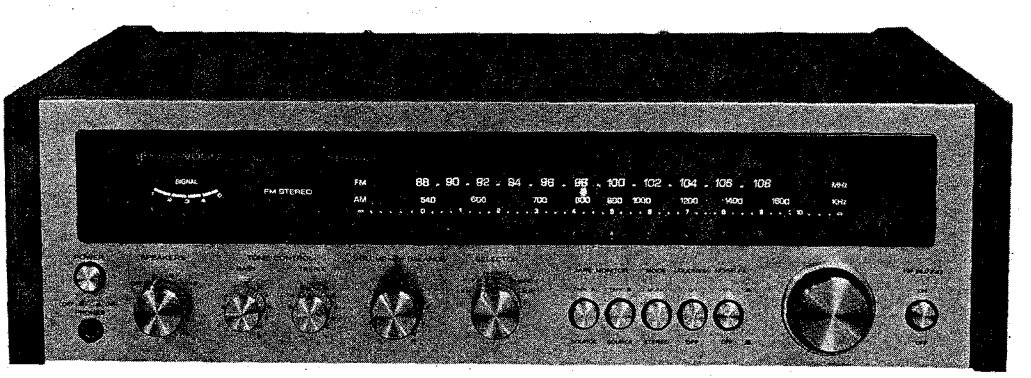
KENWOOD

HI/FI STEREO COMPONENTS

SERVICE MANUAL

KR-4400



AM-FM STEREO RECEIVER

X13/37

CONTENTS

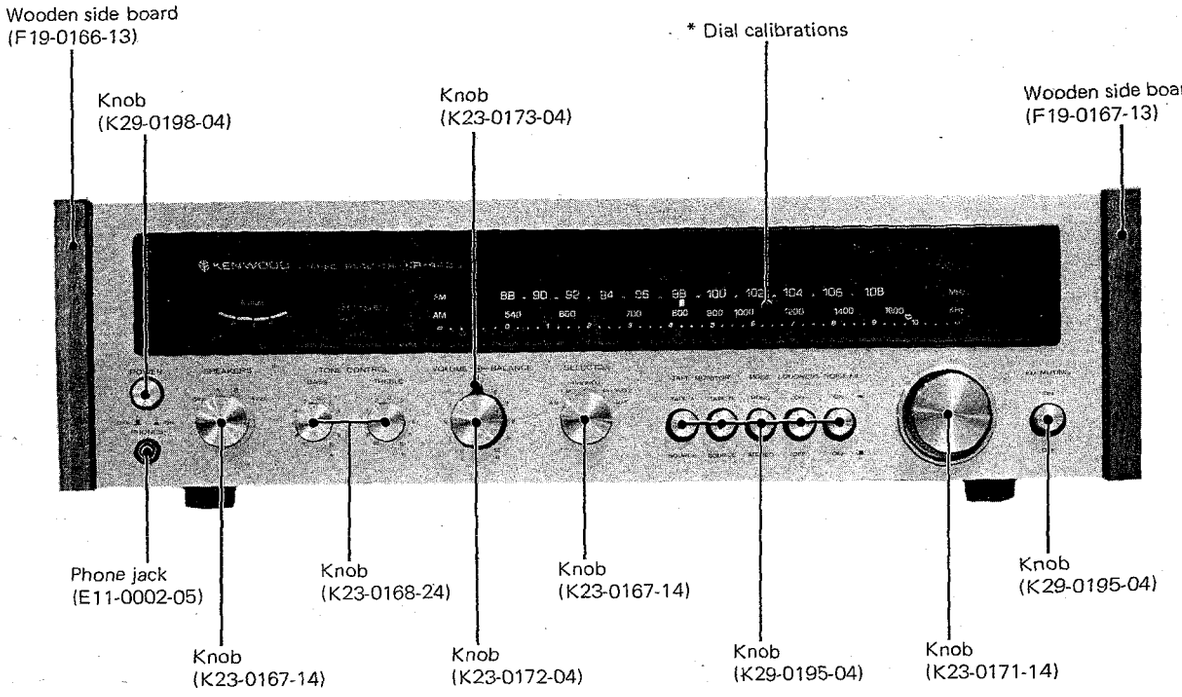
Note:
The products are subject to modification in components and circuits in different countries and regions. This is because each product must be used under the best condition. This manual provides information of modification based on the standard in the U.S., for the convenience of ordering associated components and parts.
We employ the following abbreviations of respective countries:

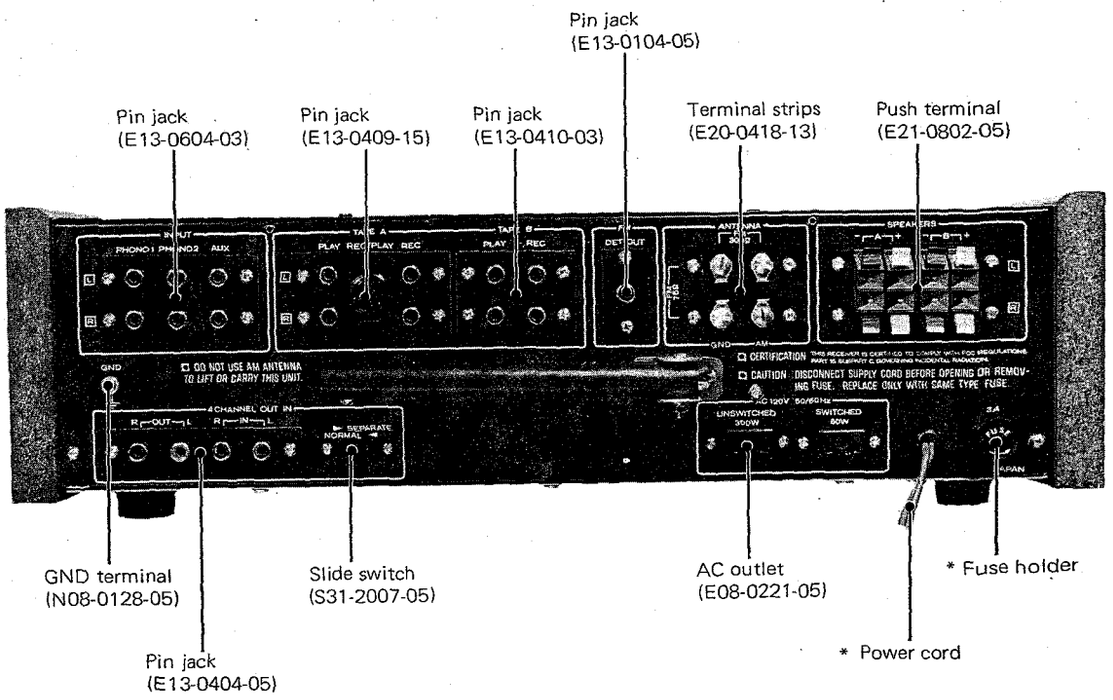
U.S.A.	**K**	England	**T**
Canada	**P**	Scandinavia	**L**
PX	**U**	South Africa	**S**
Australia	**X**	Other areas	**M**
Europe	**W**		

EXTERNAL VIEW

The KR-4400 is one of the NEW KR series receivers. It consists of TUNER unit of well-established, PRE and TONE amplifier equipped with IC, and pure complementary OCL MAIN amplifier with differential amplifier in its first stage.

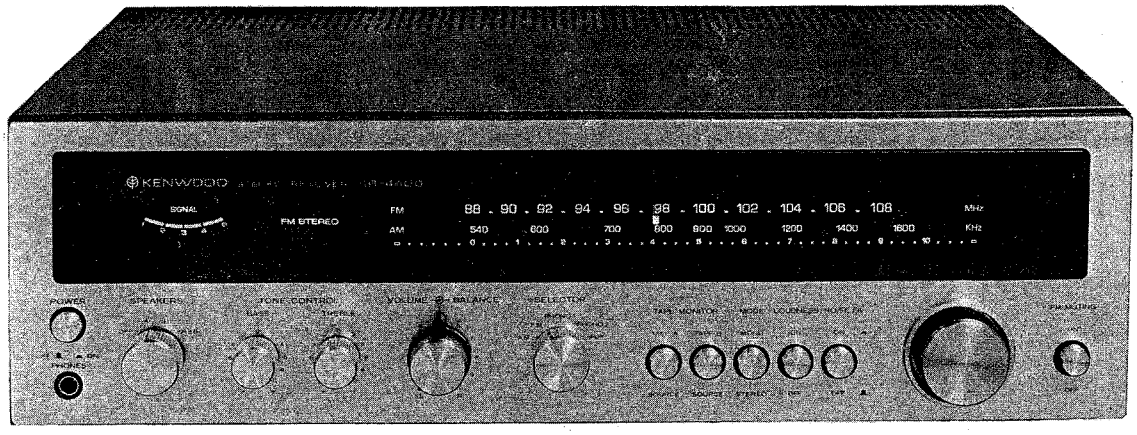
The protection circuit is composed of ASO limitter and DC drift detecter of center voltage.
4-channel OUT-IN for those who wish to enjoy 4-channel reproduction can do so through this receiver by connecting a SQ, RM, or CD-4 type adapter to these jacks.





* Refer to MODIFICATION PARTS LIST.
This unit is K type.

EUROPE TYPE/POWER VOLTAGE SELECTOR



EUROPE (W, L) TYPE

■ POWER VOLTAGE SELECTOR AND FUSE

The KR-4400 operates on 110 ~ 120 volts AC or 220 ~ 240 volt AC. There is the AC Voltage Selector Switch on the rear panel (except for K.P.L Type) which is set to the line voltage of the destination. Before operating this receiver, make sure that the position of the AC Voltage Selector Switch matches your line voltage. If not, it must be changed to the proper setting.

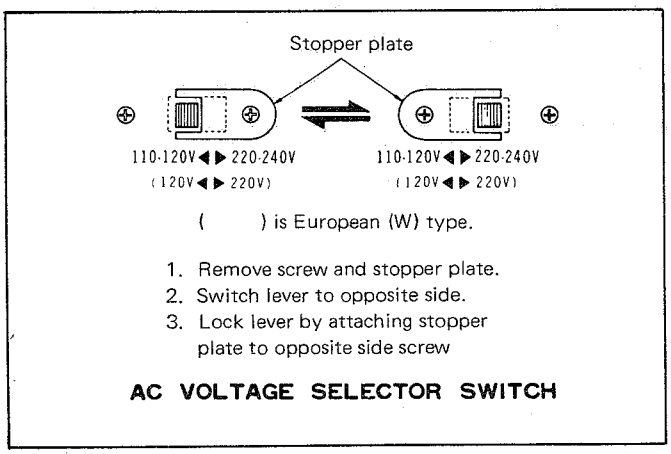
To change; turn the receiver off and pull off the power cord, then remove the stopper plate and slide the AC Voltage Switch to the opposite side. Then reattach the stopper plate to the other side.

When the position of the AC Voltage Selector Switch is changed, it is also necessary to change the power fuse. For 110 ~ 120 volt operation a 2.5 ampere fuse should be used. For 220 ~ 240 volt operation a 1.5 or 1.25 AT ampere fuse should be used.

If the power fuse fails, remove blown fuse and replace with the same type fuse of the same capacity. Any trouble in the power supply circuit will cause the fuse to blow again. When you replace the fuse, turn the fuse holder in the direction of the arrow using a Phillips screw driver. In some districts, the set will be provided with another type of fuse holder, which allows easy replacement of the fuse without using the Phillips screw driver.

NOTES:

Always disconnect power supply before replacing a fuse.

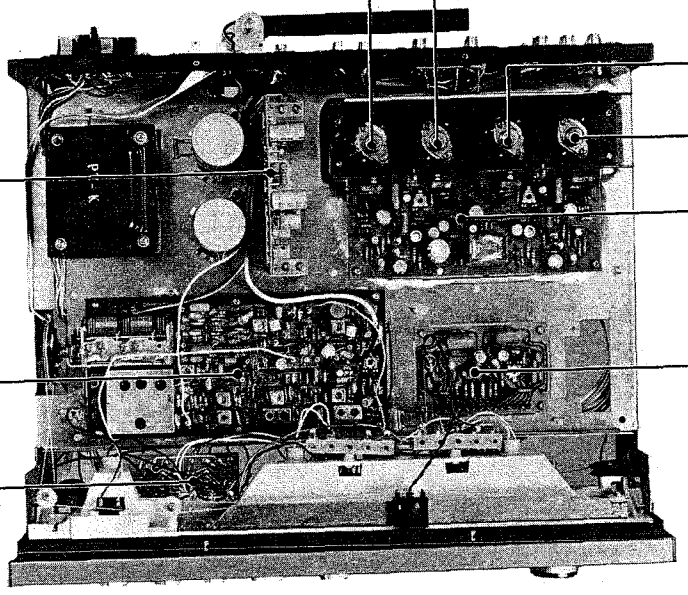


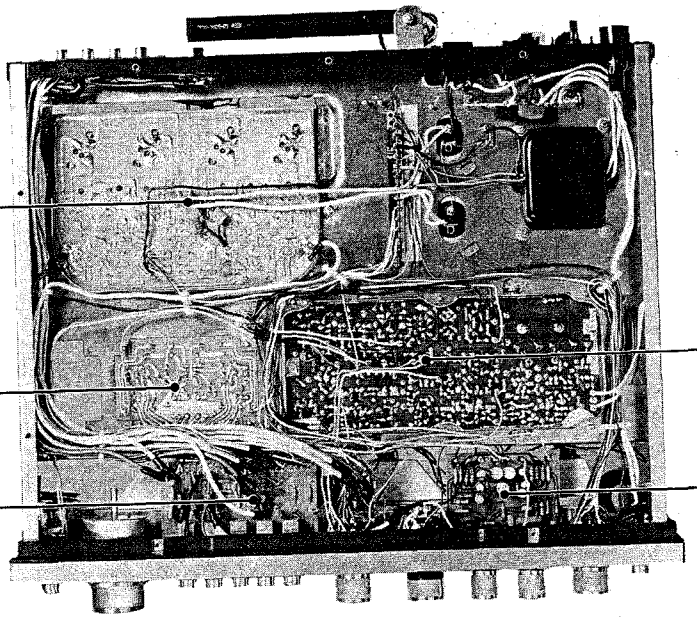
( ) is European (W) type.

1. Remove screw and stopper plate.
2. Switch lever to opposite side.
3. Lock lever by attaching stopper plate to opposite side screw

AC VOLTAGE SELECTOR SWITCH

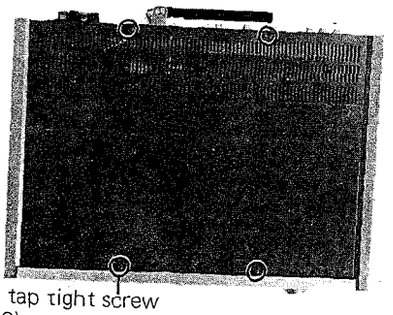
TOP & BOTTOM VIEW



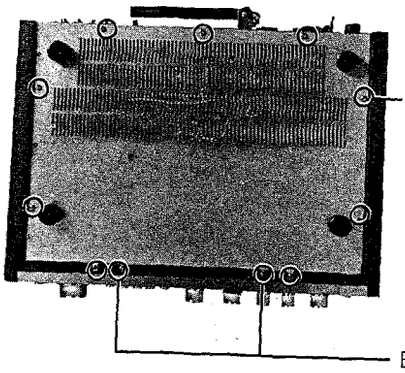


* Refer to MODIFICATION PARTS LIST.
This unit is K type.

DISASSEMBLY/CORD STRINGING

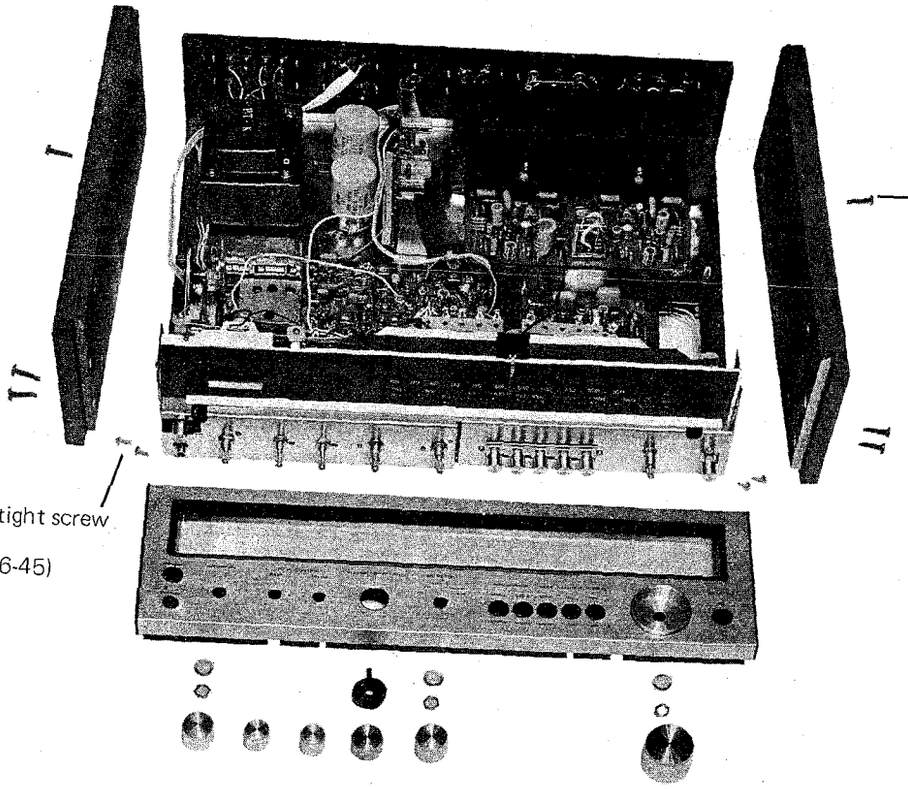


Bind tap tight screw
(3 x 6)
(N89-3006-45)



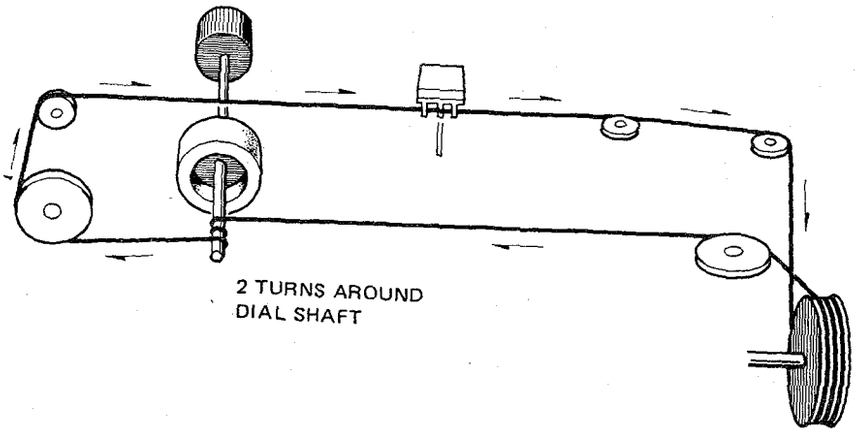
Blazer tap tight screw
(4 x 8)
(N87-4008-46)

Blazer tap tight screw
(3 x 8)
(N87-3008-46)



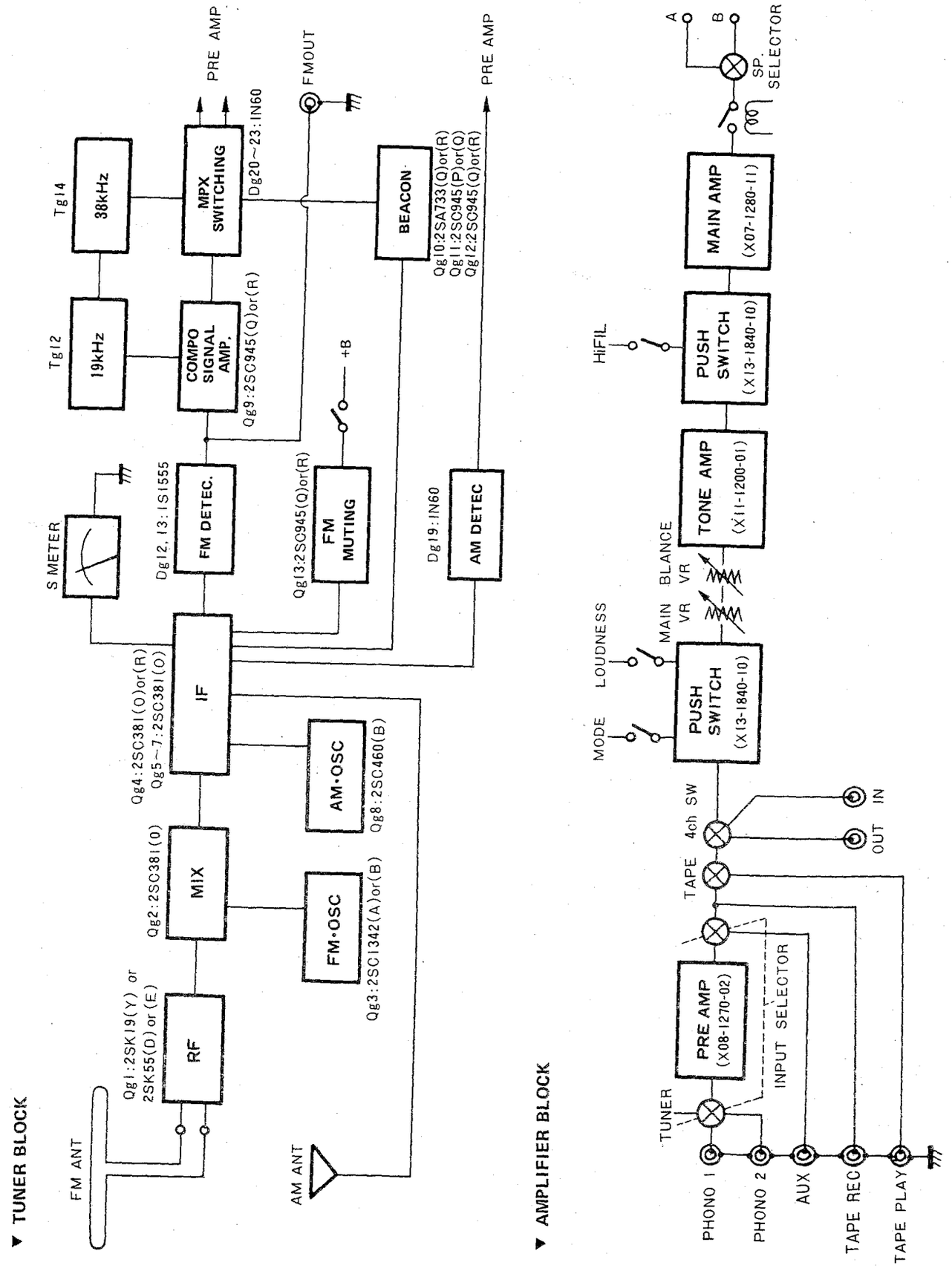
Dress screw
(4 x 20)
(N08-0126-05)

Bind tap tight screw
(3 x 6)
(N89-3006-45)



2 TURNS AROUND
DIAL SHAFT

BLOCK DIAGRAM



CIRCUIT DESCRIPTION

TUNER (X05-1120-10, -42, -61)

The FM section is the acknowledged one including a FET in the front end, IF block of four stage, and the diode switch circuit in the MPX stage.

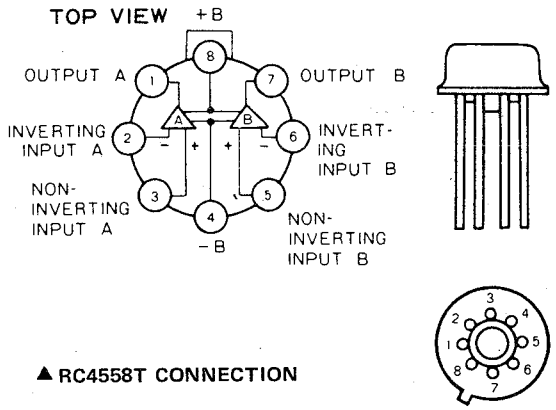
FM separation is performed by adjusting VRd1 on the PRE AMP unit.

PRE AMP (X08-1270-02)

In this section, a metal can sealed monolithic IC is used.

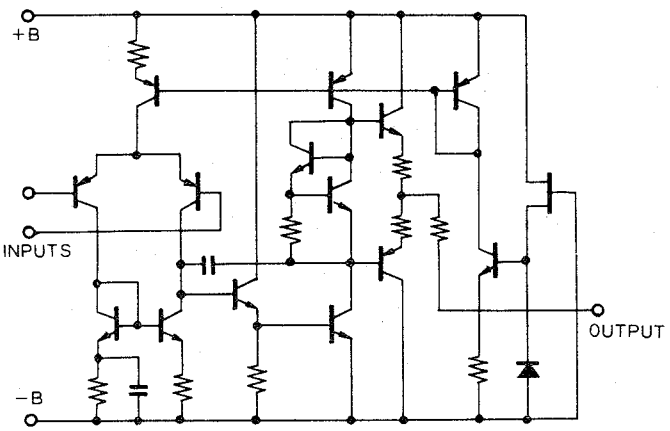
It is made up of the differential amplifier in the first stage, emitter followers in next stage, class A driver, and pure complementary output stage.

This circuit posesses the characteristics of wide dynamic range and low distortion by drawing two power supplies, positive and negative.



▲ RC4558T CONNECTION

▼ RC4558T INTERNAL CIRCUIT



TONE AMP (X11-1200-01)

This TONE AMP is stable CR control type in which the amplification part is the same IC as in PRE AMP UNIT.

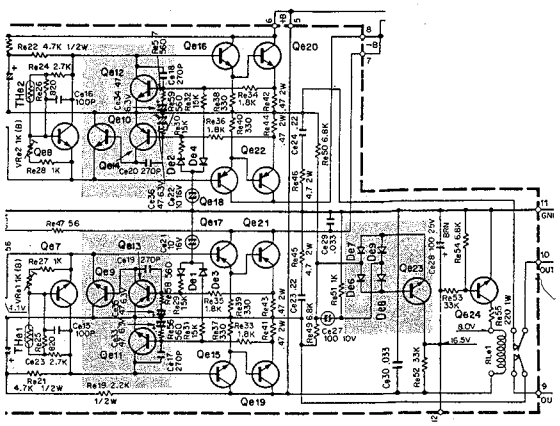
MAIN AMP (X07-1280-11)

Good N.F.B effect and bias current stability are established by using the metal can sealed transistors in the differential amplifier of the first stage and in class A driver.

Transistors and thermistor for bias setting are used in the complementary circuit, and full temperature compensation is effective. Complementary and final circuitry consists of a direct-coupled pure complementary.

Meanwhile, protection circuit consists of both the current limiter type (ASO limiter) suppressing the over current through the power transistor, and DC drift detection type of center voltage level which operates the protection relay to cut off the speaker system from the output line.

These protective actions are self-return.



ADJUSTMENT

- Tuning dial is set to the proper point corresponding to no radio stations.
- The sweep and the r.f. generator are set to the lowest response possible on oscilloscope.
- When connecting the r.f. generator to the antenna terminal use the dummy antenna . . . refer to Fig. 2.
- Use the insulated screwdriver adjusting the i.f.t.
- SELECTOR is FM position.
- FM MUTING is OFF position unless it is required.
- Test point shown in the schematic diagram.
- For TRACKING adjustment, repeat several times and confirm the reception of broadcasting.

No.	ALIGNMENT	TEST EQUIPMENTS		RECEIVER SETTING	OUTPUT INDICATOR	ADJUSTMENT POINTS	REMARKS
		CONNECTION	SETTING				
FM SECTION							
1	IFT	SWEEP to TP1 via. 5pF cap.	10.7 MHz	Non-station	VTVM & SCOPE to TP2 via. 100kΩ resist.	Tg4, 5, 7	Maximum deflection (Fig. 1~4)
2	DISCRIMI-NATOR	same	same	same	VTVM & SCOPE to TP3 via. 100kΩ resist.	Tg9	S-response and its symmetry on each side of 10.7 MHz center frequency (Fig. 5)
3	TRACKING	RF-SG to ANT via. dummy ant.	90 MHz 75 kHz (Dev.) 400 Hz (Mod.)	90 MHz	VTVM & SCOPE to REC jack	Tg1, 2, 3	Maximum deflection
4	TRACKING	same	108 MHz 75 kHz (Dev.) 400 Hz (Mod.)	108 MHz	same	TCg1, 2, 3	same

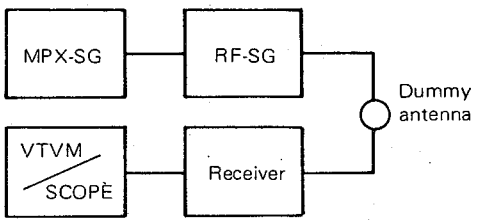


Fig. 1 SETTING

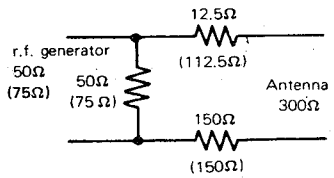


Fig. 2 DUMMY ANTENNA

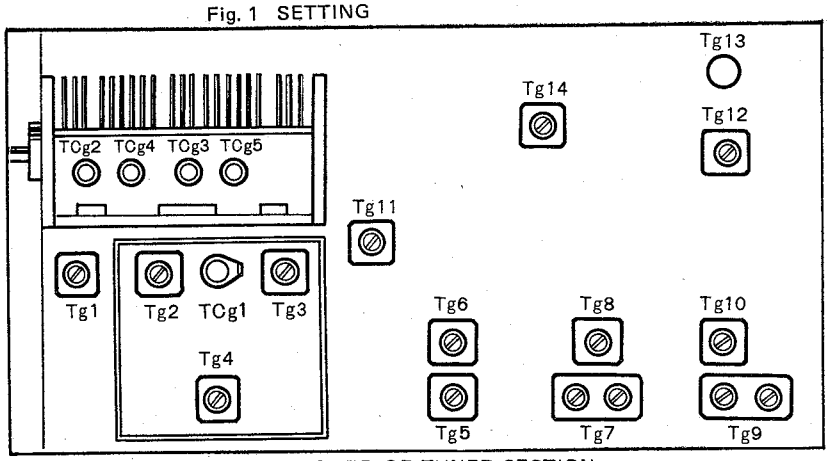


Fig. 3 PC BOARD OF TUNER SECTION

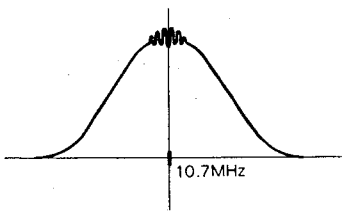


Fig. 4 IF WAVE FORM

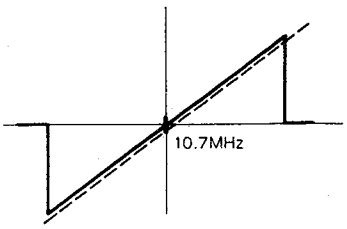


Fig. 5 DISCRI WAVE FORM

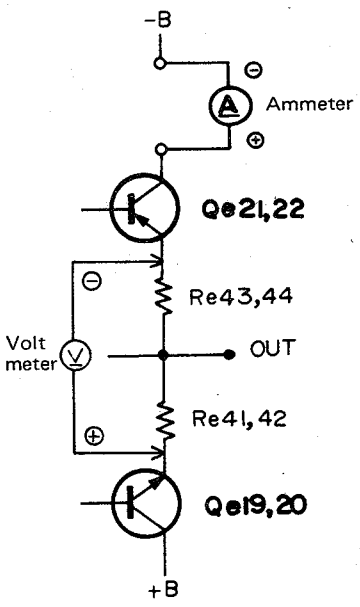


Fig. 6

ADJUSTMENT

No.	ALIGNMENT	TEST EQUIPMENTS		RECEIVER SETTING	OUTPUT INDICATOR	ADJUSTMENT POINTS	REMARKS
		CONNECTION	SETTING				
5	OUTPUT	RF-SG to ANT via. dummy ant.	98 MHz 75 kHz (Dev.) 400 Hz (Mod.) 60 dB (Input)	98 MHz	VTVM to REC jack	–	Confirm 0.33V output
6	SCA FILTER	AG to TP3	67 kHz 100 mV	–	VTVM & SCOPE to REC jack	Tg13	Minimum deflection
7	19 KHz, 38 KHz	FM-MPX to RF-SG ext. jack	PHASE (NORMAL) 98 MHz 67.5 kHz (Dev.) 400 Hz (Mod.) 60 dB (Input) PHASE (REVERSE)	98 MHz	same	Tg12, 14	Maximum deflection
8	MUTING	MPX-SG to RF-SG ext. jack	PHASE (NORMAL) 98 MHz 67.5 kHz (Dev.) 400 Hz (Mod.) 25 dB (Input)	98 MHz MUTING on	–	–	Confirm MUTING operation
9	BEACON	same	same	98 MHz	–	–	STEREO indicator lights
10	SEPARATION	same	98 MHz 67.5 kHz (Dev.) 400 Hz (Mod.) L or R (Select) 60 dB (Input)	same	VTVM & SCOPE to REC jack	VRd1	Minimum deflection
AM SECTION							
1a	IFT	SWEEP to TP3	455 kHz	Non-station	VTVM & SCOPE to TP5	Tg6, 8, 10	Maximum deflection
1b	IFT	RF-SG to ANT	S Meter deflection 3 or 4	–	VTVM & SCOPE to REC jack	Tg6, 8, 10	same
2	RF	same	600 kHz 400 Hz (30% Mod.)	600 kHz	same	Tg11 Ferrite ANT	same
3	RF	same	1,400 kHz 400 Hz (30% Mod.)	1,400 kHz	same	TCg4,5	same
4	S METER	same	1,000 kHz 400 Hz (30% Mod.)	1,000 kHz	S meter	–	Confirm the meter deflection is above 3
AUDIO SECTION							
1a	BIAS	–	–	VOLUME is its min.	Ammeter	VRe1, 2	Meter indicates 30 mA (Fig. 6)
1b	BIAS	–	–	same	DC VTVM	same	Meter indicates 30 mV (Fig. 6)

MODIFICATION PARTS LIST OF KR-4400

Ref. No.	U.S.A. (K)	Canada (P)	PX (U)	Australia (X)	Europe (W)	Scandinavia (L)	England (T)	South Africa (S)	Other area (M)	Description
–	A01-0246-03	A01-0246-03	A01-0246-03	A01-0246-03	A01-0247-02	A01-0247-02	A01-0246-03	A01-0246-03	A01-0246-03	Case
–	A20-0784-01	A20-0784-01	A02-0784-01	A20-0784-01	A20-0786-01	A20-0786-01	A20-0784-01	A20-0784-01	A20-0784-01	Panel assembly
–	A20-0785-05	A20-0785-05	A20-0785-05	A20-0785-05	A20-0787-05	A20-0787-05	A20-0785-05	A20-0785-05	A20-0785-05	Panel
–	A21-0178-02	A21-0178-02	A21-0178-02	A21-0178-02	A21-0179-02	A21-0179-02	A21-0178-02	A21-0178-02	A21-0178-02	Dress panel
–	A23-0488-02	A23-0488-02	A23-0489-02	A23-0490-02	A23-0491-02	A23-0492-02	A23-0490-02	A23-0490-02	A23-0489-02	Rear panel
–	B10-0152-04	B10-0152-04	B10-0152-04	B10-0152-04	B10-0161-04	B10-0161-04	B10-0153-04	B10-0152-04	B10-0152-04	Front glass
–	B20-0315-03	B20-0315-03	B20-0315-03	B20-0315-03	B20-0316-13	B20-0316-13	B20-0315-03	B20-0317-03	B20-0315-03	Dial calibrations
–	B40-0987-04	B40-0988-04	B40-0989-04	B40-0990-04	B40-0992-04	B40-0993-04	B40-0991-04	B40-0990-04	B40-0990-04	Model name plate
–	B42-0515-04	B42-0515-04	–	–	–	–	–	–	–	Fuse sticker
–	–	–	–	–	B42-0024-04	–	–	–	–	SEV sticker
–	B42-0359-04X2	B42-0359-04	–	–	–	–	–	–	–	Caution sticker
–	B46-0002-00	B46-0021-00	B46-0022-00 B46-0023-00	–	–	–	–	–	–	Warranty card
–	B50-1187-00	B50-1187-00	B50-1187-00	B50-1187-00	B50-1187-00	B50-1187-00	B50-1188-00	B50-1187-00	B50-1187-00	Instruction manual
–	B58-0043-00	B58-0043-00	–	–	–	–	–	–	–	Caution card for carton case
–	–	–	B58-0139-00	B58-0003-00	B58-0156-00	–	B58-0003-00	B58-0003-00	B58-0003-00	Caution card for power supply
–	–	–	B58-0146-00	B58-0108-00	B58-0108-00	–	B58-0108-00	B58-0108-00	B58-0108-00	Caution card for spare fuse
–	–	–	B58-0144-00	B58-0101-00	B58-0157-00	–	B58-0101-00	B58-0101-00	B58-0101-00	Caution card for power voltage selector
–	–	–	B59-0018-00	–	–	–	–	–	–	KENWOOD service station's list
–	–	–	D32-0021-04	D32-0021-04	D32-0021-04	–	D32-0021-04	D32-0021-04	D32-0021-04	Switch stopper
–	E08-0221-05	E08-0221-05	E08-0221-05	E08-0221-05	E08-0221-05	–	E08-0221-05	E08-0221-05	E08-0221-05	AC outlet x 2
–	E30-0181-05	E30-0181-05	E30-0034-05	E30-0185-05	E30-0176-05	E30-0292-05	–	–	E30-0034-05	Power cord
–	F05-2524-05	F05-2522-05	F05-2521-05 F05-1521-05	F05-2521-05 F05-1521-05	F05-2525-05 F05-1222-05	F05-1222-05	F05-2521-05 F05-1521-05	F05-2521-05 F05-1521-05	F05-2521-05 F05-1521-05	Fuse
–	F19-0166-13	F19-0166-13	F19-0166-13	F19-0166-13	–	–	F19-0166-13	F19-0166-13	F19-0166-13	Wooden side board (L)
–	F19-0167-13	F19-0167-13	F19-0167-13	F19-0167-13	–	–	F19-0167-13	F19-0167-13	F19-0167-13	Wooden side board (R)
–	H01-1156-04	H01-1157-04 H03-0334-04	H01-1157-04 –	H01-1157-04 H03-0334-04	H01-1159-04 H03-0336-04	H01-1159-04 H03-0336-04	H01-1158-04 H03-0335-04	H01-1157-04 H03-0334-04	H01-1157-04 H03-0334-04	Carton case (internal) Carton case (external)
–	–	H10-1142-02	H10-1142-02	H10-1142-02	H10-1144-02	H10-1144-02	H10-1142-02	H10-1142-02	H10-1142-02	Polystyrene foamed fixture
–	H10-1142-02	H10-1143-02	H10-1143-02	H10-1143-02	H10-1145-02	H10-1145-02	H10-1143-02	H10-1143-02	H10-1143-02	Polystyrene foamed fixture
–	H10-1143-02	–	H25-0029-04	H25-0029-04	H25-0029-04	–	H25-0029-04	H25-0029-04	H25-0029-04	Polyethylene bag
–	–	–	–	–	J19-0421-03	J19-0421-03	–	–	–	Front glass stopper
–	–	–	J13-0033-15	J13-0033-15	J13-0031-05	J13-0031-05	J13-0033-15	J13-0033-15	J13-0033-15	Fuse holder
–	J41-0006-00	J41-0006-00	J41-0006-00	J41-0024-15	J41-0017-05	J41-0017-05	J41-0024-15	J41-0024-15	J41-0006-00	AC cord bushing
–	L04-0050-05	L04-0050-05	L03-0099-05	L03-0099-05	L09-0121-05	L09-0122-05	L03-0099-05	L03-0099-05	L03-0099-05	Power transformer
–	–	–	S31-2001-05	S31-2001-05	S31-2001-05	–	S31-2001-05	S31-2001-05	S31-2001-05	Slide switch (power voltage selector)
–	S59-2022-15	S59-2022-15	S59-2024-15	S59-2022-15	S59-2023-15	S59-2023-15	S59-2022-15	S59-2022-15	S59-2024-15	Push switch (power)
–	X00-1460-10	X00-1460-10	X00-1460-01	X00-1460-01	X00-1460-61	X00-1460-61	X00-1460-01	X00-1460-01	X00-1460-01	Power supply unit
–	X05-1120-11	X05-1120-11	X05-1120-11	X05-1120-11	X05-1120-62	X05-1120-62	X05-1120-62	X05-1120-42	X05-1120-11	Tuner unit
C301	–	–	CK45E3D103P-MU	CK45E3D103P-MU	CK45E3D103P-MU	CK45E3D103P-MU	CK45E3D103P-MU	CK45E3D103P-MU	CK45E3D103P-MU	Ceramic capacitor 0.01μF +80% −20%
C301	C90-0145-05	C90-0145-05	–	–	–	–	–	–	–	Polyester capacitor 0.01μF ±20%
R300	RC05GF2H225K	RC05GF2H225K	–	–	–	–	–	–	–	Carbon resistor 2.2MΩ ±10% 1/2W

PARTS LIST

■ TOTAL PARTS LIST OF KR-4400

Ref. No.	Parts No.	Description	Remarks
		CAPACITOR	
C120, 220	CK45D1H561M	Ceramic 560pF ±20%	
C302, 303	C90-0220-05	Electrolytic 4700μF 35WV x 2	
		RESISTOR	
R120	PD14BY2B394J	Carbon 390kΩ ±5% 1/8W	
R121	PD14BY2B104J	Carbon 100kΩ ±5% 1/8W	
R122	PD14BY2B222J	Carbon 2.2kΩ ±5% 1/8W	
R170	RC05GF2H331K	Carbon 330Ω ±10% 1/2W	
R220	PD14BY2B394J	Carbon 390kΩ ±5% 1/8W	
R221	PD14BY2B104J	Carbon 100kΩ ±5% 1/8W	
R222	PD14BY2B222J	Carbon 2.2kΩ ±5% 1/8W	
R270	RC05GF2H331K	Carbon 330Ω ±10% 1/2W	
R301	RC05GF2H270K	Carbon 27Ω ±10% 1/2W	
		POTENTIOMETER	
VR1	R11-9006-05	Potentiometer 100kΩ(B) x 2 200kΩ (W)	
		SWITCH	
S1	S01-3016-05	Rotary switch (SELECTOR)	
S2	S04-1024-05	Rotary switch (SPEAKER)	
S3	S40-2032-05	Push switch (MUTING)	
S4~8	S40-2050-05	Push switch (TAPE A,B, MODE, LOUDNESS, HI-FILTER)	
		MISCELLANEOUS	
–	A10-0398-11	Cahssis	
–	A22-0157-02	Sub panel	
–	A30-0089-15	Dial board	
–	A40-0229-03	Bottom board	
–	B07-0128-04	Ring (Tuning)	
–	B21-9013-05	Dial pointer	
–	B30-0064-15	Pilot lamp (50mA)	
–	B30-0068-05	Pilot lamp (200mA)	
–	B30-0069-05	Pilot lamp (300mA) x 3	
–	B31-0190-05	Meter	
–	B42-0009-04	Passed sticker	
–	B52-0166-00	Schematic diagram	
–	D01-0024-05	Flywheel	
–	D15-0067-24	Dial pulley	
–	D15-0073-14	Pulley	
–	D15-0075-04	Pulley x 5	
–	D20-0091-14	Dial shaft	
–	E08-0410-04	Connector Bushing x 3	
–	E08-0607-04	Connector Bushing x 4	
–	E11-0002-05	Phone jack	
–	E13-0104-05	Pin jack (1P)	
–	E13-0404-05	Pin jack (4P)	
–	E13-0409-15	Pin jack (4P, DIN)	
–	E13-0410-03	Pin jack (4P)	
–	E13-0604-03	Pin jack (6P)	
–	E20-0418-13	Terminal strips	
–	E21-0802-05	Push terminal (8P)	
–	F19-0170-04	Blinder	
–	G01-0044-04	Dial spring	

Ref. No.	Parts No.	Description	Remarks
–	H20-0394-04	Protection cover	
–	H25-0078-00	Instruction bag	
–	J02-0049-14	Leg x 4	
–	J19-0258-04	Wire stopper	
–	J19-0418-13	Front glass stopper	
–	J21-0806-14	Antenna fittings	
–	J21-1263-14	Pulley fittings	
–	J25-0768-14	PC board	
–	J90-0061-03	Dial pointer rail	
–	K23-0167-14	Knob (SELECTOR, SPEAKER) x 2	
–	K23-0168-24	Knob (TONE) x 2	
–	K23-0171-14	Knob (TUNING)	
–	K23-0172-04	Knob (LOUDNESS)	
–	K23-0173-04	Knob (BALANCE)	
–	K29-0195-04	Knob (PUSH) x 5	
–	K29-0198-04	Knob (POWER)	
–	T90-0002-05	FM Antenna	
–	T90-0026-05	Bar Antenna	
–	X07-1280-11	Main Amp. Block	
–	X08-1270-02	Pre-Amp. Block	
–	X11-1200-01	Tone Amp. Block	
–	X13-1840-10	Push switch Block	

■ POWER SUPPLY (X00-1460-10, -61, -01)

Ref. No.	Parts No.	Description	Remarks
		CAPACITOR	
Ck1,2	CK45E2H103P	Ceramic 0.01μF +100%, –0%	
Ck3	CE04W1V221	Electrolytic 220μF 35WV	
Ck4	CE04W1V101	Electrolytic 100μF 35WV	
Ck5	CE04W1C221	Electrolytic 200μF 16WV	
Ck6,7	CE04W1C101	Electrolytic 100μF 16WV	
Ck9	CE04W1C471	Electrolytic 470μF 16WV	
		RESISTOR	
Rk1	RN14AB3D101J-B	Metal film 100Ω ±5% 2W	
Rk2	RN14AB3A561J-B	Metal film 560Ω ±5% 1W	
Rk3	RN14AB3A560J-B	Metal film 56Ω ±5% 1W	
Rk4	PD14BY2E121J-B	Carbon 120Ω ±5% 1/4W	
Rk5,6	PD14BY2E681J	Carbon 680Ω ±5% 1/4W	
Rk7,8	PD14BY2E332J	Carbon 3.3kΩ ±5% 1/4W	
Rk9	PD14BY2E470J	Carbon 47Ω ±5% 1/4W	
		SEMICONDUCTOR	
Dk1~4		Diode U0-5B	
Dk5		Zener Diode DZ-140	
Dk6		Zener Diode YZ-140	
Dk7		Diode W0-6B	
		MISCELLANEOUS	
–	B41-0184-04	Fuse sticker	-10
–			
–	E23-0006-04	Terminal x 14	
–	F05-2021-05	Fuse (2A) UL	-10

PARTS LIST

Ref. No.	Parts No.	Description	Remarks
–	F05-2029-05	Fuse (2A)	-01
–	F05-2029-05	Fuse (2A) SEMKO	-61
–	J13-0034-05	Fuse holder UL	-10, -01
–	J13-0032-05	Fuse holder SEMKO	-61
–	J25-1086-04	PC board	

■ TUNER (X05-1120-11, -42, -62)

Ref. No.	Parts No.	Description	Remarks
		CAPACITOR	
Cg1	CC45SL1H150K	Ceramic 15pF ±10%	
Cg2	CC45SL1H101K	Ceramic 100pF ±10%	
Cg3,4	CK45F1H103Z	Ceramic 0.01μF +80%,–20%	
Cg5	CC45SL1H050D	Ceramic 5pF ±0.5pF	
Cg6	CC45SL1H150K	Ceramic 15pF ±10%	
Cg7	CC45SL1H030D	Ceramic 3pF ±0.5pF	
Cg8	CC45TH1H030C	Ceramic 3pF ±0.25pF	
Cg9	CC45SL1H221K	Ceramic 220pF ±10%	
Cg11	CK45F1H103Z	Ceramic 0.01μF +80%,–20%	
Cg12	CC45SG1H150K	Ceramic 15pF ±10%	-11, -62
	CC45UH1H050D	Ceramic 5pF ±0.5pF	-42
Cg13	CC45SG1H220K	Ceramic 22pF ±10%	-11, -62
	CC45TH1H220K	Ceramic 22pF ±10%	-42
Cg14	CC45SG1H470K	Ceramic 47pF ±10%	
Cg15	CC45SG1H220K	Ceramic 22pF ±10%	-11,-62
	CC45TH1H220K	Ceramic 22pF ±10%	-42
Cg16	CK45F1H103Z	Ceramic 0.01μF +80%,–20%	
Cg17,18	CK45F1H223Z	Ceramic 0.022μF +80%,–20%	
Cg19	CC45SL1H101K	Ceramic 100pF ±10%	
Cg20	CK45F1H223Z	Ceramic 0.022μF +80%,–20%	
Cg21	CC45SL1H221K	Ceramic 220pF ±10%	
Cg22	CQ93M1H223M	Mylar 0.022μF ±20%	
Cg23	CK45F1H223Z	Ceramic 0.022μF +80%,–20%	
Cg24	CC45SL1H151K	Ceramic 150pF ±10%	
Cg25, 26	CK45F1H223Z	Ceramic 0.022μF +80%,–20%	
Cg27	CC45SL1H100K	Ceramic 10pF ±10%	
Cg28	CC45SL1H331K	Ceramic 330pF ±10%	
Cg29~ 31	CK45F1H223Z	Ceramic 0.022μF +80%,–20%	
Cg32	CE04W1C101	Electrolytic 100μF 16WV	
Cg33	CK45B1H471K	Ceramic 470pF ±10%	
Cg34	CK45F1H223Z	Ceramic 0.022μF +80%,–20%	
Cg35	CQ93M1H223M	Mylar 0.022μF ±20%	
Cg36	CC45SL1H221K	Ceramic 220pF ±10%	
Cg37	CK45F1H223Z	Ceramic 0.022μF +80%,–20%	
Cg38	CQ93M1H102K	Mylar 0.001μF ±10%	
Cg39	CK45F1H223Z	Ceramic 0.022μF +80%,–20%	
Cg40	CE04W0F101	Electrolytic 100μF 3.15WV	
Cg41, 42	CC45SL1H331K	Ceramic 330pF ±10%	
Cg43	CC45SL1H221K	Ceramic 220pF ±10%	
Cg44	CQ93M1H223M	Mylar 0.022μF ±20%	
Cg45	CE04W1H010	Electrolytic 1μF 50WV	
Cg46	CE04W1E4R7	Electrolytic 4.7μF 25WV	
Cg47	CQ93M1H223M	Mylar 0.022μF ±20%	
Cg48	CQ93M1H472M	Mylar 0.0047μF ±20%	
Cg49	CQ93M1H223M	Mylar 0.022μF ±20%	

Ref. No.	Parts No.	Description	Remarks
Cg50	CQ09S1H361J	Polystyrene 360pF ±5%	
Cg51	CC45SL1H180K	Ceramic 18pF ±10%	
Cg52	CE04W1E100	Electrolytic 10μF 25WV	
Cg53	CQ08S1H472J	Polystyrene 0.0047μF ±5%	
Cg54	CQ08S1H682J	Polystyrene 0.0068μF ±5%	
Cg55	CE04W1H010	Electrolytic 1μF 50WV	
Cg56	CE04W1E100	Electrolytic 10μF 25WV	
Cg57	CQ93M1H472M	Mylar 0.0047μF ±20%	
Cg58	CQ08S1H472J	Polystyrene 0.0047μF ±5%	
Cg59	CQ93M1H223M	Mylar 0.022μF ±20%	
Cg61	CE04W1E100	Electrolytic 10μF 25WV	
Cg62, 63	CC45SL1H101K	Ceramic 100pF ±10%	
Cg64, 65	CK45B1H471K	Ceramic 470pF ±10%	
Cg66 67	CQ93M1H104M	Mylar 0.1μF ±20%	
Cg68 69	CQ93M1H822J	Mylar 0.0082μF ±5%	-11, -42
	CQ93M1H562J	Mylar 0.0056μF ±5%	-62
Cg70~ 72	CK45F1H223Z	Ceramic 0.022μF +80%,–20%	
		RESISTOR	
Rg1	PD14BY2B102J	Carbon 1kΩ ±5% 1/8W	
Rg2	PD14BY2B104J	Carbon 100kΩ ±5% 1/8W	
Rg3	PD14BY2B471J	Carbon 470Ω ±5% 1/8W	
Rg4	PD14BY2B103J	Carbon 10kΩ ±5% 1/8W	
Rg5	PD14BY2B472J	Carbon 4.7kΩ ±5% 1/8W	
Rg6	PD14BY2B223J	Carbon 22kΩ ±5% 1/8W	
Rg7	PD14BY2B101J	Carbon 100Ω ±5% 1/8W	
Rg8	PD14BY2B103J	Carbon 10kΩ ±5% 1/8W	
Rg9	PD14BY2B223J	Carbon 22kΩ ±5% 1/8W	
Rg10	PD14BY2B222J	Carbon 2.2kΩ ±5% 1/8W	
Rg11	PD14BY2B221J	Carbon 220Ω ±5% 1/8W	
Rg12	PD14BY2B561J	Carbon 560Ω ±5% 1/8W	
Rg13	PD14BY2B332J	Carbon 3.3kΩ ±5% 1/8W	
Rg14	PD14BY2B561J	Carbon 560Ω ±5% 1/8W	
Rg15, 16	PD14BY2B680J	Carbon 68Ω ±5% 1/8W	
Rg17	PD14BY2B103J	Carbon 10kΩ ±5% 1/8W	
Rg18	PD14BY2B102J	Carbon 1kΩ ±5% 1/8W	
Rg19	PD14BY2B104J	Carbon 100kΩ ±5% 1/8W	
Rg20	PD14BY2B102J	Carbon 1kΩ ±5% 1/8W	
Rg21, 22	PD14BY2B103J	Carbon 10kΩ ±5% 1/8W	
Rg23	PD14BY2B222J	Carbon 2.2kΩ ±5% 1/8W	
Rg24	PD14BY2B333J	Carbon 33kΩ ±5% 1/8W	
Rg25	PD14BY2B102J	Carbon 1kΩ ±5% 1/8W	
Rg26	PD14BY2B123J	Carbon 12kΩ ±5% 1/8W	
Rg27	PD14BY2B682J	Carbon 6.8kΩ ±5% 1/8W	
Rg28	PD14BY2B101J	Carbon 100Ω ±5% 1/8W	
Rg29	PD14BY2B332J	Carbon 3.3kΩ ±5% 1/8W	
Rg30	PD14BY2B103J	Carbon 10kΩ ±5% 1/8W	
Rg31	PD14BY2B102J	Carbon 1kΩ ±5% 1/8W	
Rg32	PD14BY2B471J	Carbon 470Ω ±5% 1/8W	
Rg33	PD14BY2B223J	Carbon 22kΩ ±5% 1/8W	
Rg34	PD14BY2B821J	Carbon 820Ω ±5% 1/8W	
Rg35	PD14BY2B332J	Carbon 3.3kΩ ±5% 1/8W	
Rg36, 37	PD14BY3B471J	Carbon 470Ω ±5% 1/8W	
Rg38	PD14BY2B103J	Carbon 10kΩ ±5% 1/8W	
Rg39	PD14BY2B123J	Carbon 12kΩ ±5% 1/8W	
Rg40	PD14BY2B101J	Carbon 100Ω ±5% 1/8W	
Rg41	PD14BY2B153J	Carbon 15kΩ ±5% 1/8W	

PARTS LIST

Ref. No.	Parts No.	Description	Re-marks
Rg42	PD14BY2B562J	Carbon 5.6kΩ ±5% 1/8W	
Rg43	PD14BY2B101J	Carbon 100Ω ±5% 1/8W	
Rg44	PD14BY2B222J	Carbon 2.2kΩ ±5% 1/8W	
Rg45	PD14BY2B223J	Carbon 22kΩ ±5% 1/8W	
Rg46	PD14BY2B154J	Carbon 150kΩ ±5% 1/8W	
Rg47	PD14BY2E102J	Carbon 1kΩ ±5% 1/4W	
Rg48	PD14BY2B221J	Carbon 220Ω ±5% 1/8W	
Rg49	PD14BY2B103J	Carbon 10kΩ ±5% 1/8W	
Rg50	PD14BY2B473J	Carbon 47kΩ ±5% 1/8W	
Rg51	PD14BY2B221J	Carbon 220Ω ±5% 1/8W	
Rg52	PD14BY2B102J	Carbon 1kΩ ±5% 1/8W	
Rg53, 54	PD14BY2B224J	Carbon 220kΩ ±5% 1/8W	
Rg55	PD14BY2B472J	Carbon 4.7kΩ ±5% 1/8W	
Rg56	PD14BY2B101J	Carbon 100Ω ±5% 1/8W	
Rg57 58	PD14BY2B103J	Carbon 10kΩ ±5% 1/8W	
Rg59	PD14BY2B333J	Carbon 33kΩ ±5% 1/8W	
Rg60	PD14BY2B101J	Carbon 100Ω ±5% 1/8W	
Rg61	PD14BY2B472J	Carbon 4.7kΩ ±5% 1/8W	
Rg62	PD14BY2B220J	Carbon 22Ω ±5% 1/8W	
Rg63	PD14BY2B221J	Carbon 220Ω ±5% 1/8W	
Rg65	PD14BY2B124J	Carbon 120kΩ ±5% 1/8W	
Rg66, 67	PD14BY2B103J	Carbon 10kΩ ±5% 1/8W	
Rg68	PD14BY2B333J	Carbon 33kΩ ±5% 1/8W	
Rg69	PD14BY2B124J	Carbon 120kΩ ±5% 1/8W	
Rg70, 71	PD14BY2B103J	Carbon 10kΩ ±5% 1/8W	
Rg73	PD14BY2B104J	Carbon 100kΩ ±5% 1/8W	
Rg74, 75	PD14BY2B123J	Carbon 12kΩ ±5% 1/8W	
Rg76	PD14BY2B104J	Carbon 100kΩ ±5% 1/8W	
Rg77~79	PD14BY2B102J	Carbon 1kΩ ±5% 1/8W	
Rg101~103	PD14BY2B333J	Carbon 33kΩ ±5% 1/8W	
SEMICONDUCTOR			
Qg1		FET 2SK19 (Y) or (GR) 2SK55 (D) or (E)	
Qg2		Transistor 2SC381 (O)	
Qg3		Transistor 2SC1342 (A) or (B)	
Qg4		Transistor 2SC381 (O) or (R)	
Qg5~7		Transistor 2SC381 (O)	
Qg8		Transistor 2SC460 (B)	
Qg9		Transistor 2SC945 (Q) or (R)	
Qg10		Transistor 2SA733 (Q) or (R)	
Qg11		Transistor 2SC945 (P) or (Q)	
Qg12		Transistor 2SC945 (Q) or (R)	
Qg13		Transistor 2SC945 (Q) or (R)	
Dg1		Diode 1S1555	
Dg2		Diode 1N60	
Dg3,4		Diode 1S1555	
Dg5		Diode 1N60	
Dg6,7		Diode 1S1555	
Dg8		Diode M8513A-O	
Dg9,10		Diode 1N60	
Dg11~13		Diode 1S1555	
Dg14		Zener diode DZ140	
Dg15		Diode 1N60	
Dg16~18		Diode 1S1555	
Dg19~23		Diode 1N60	
COIL/IFT/FILTER/TRIMMER CAPACITOR			
TCg1	C05-0055-05	Ceramic trimmer capacitor	
Tg1	L34-0410-05	FM ANT coil	
Tg2	L34-0436-05	FM RF coil	
Tg3	L34-0409-05	FM OSC coil	-11, -62
	L34-0412-05	FM OSC coil	-42
Tg4	L30-0257-05	FM IFT	
Tg5	L30-0258-05	FM IFT	
Tg6	L30-0261-05	AM IFT	
Tg7	L30-0259-05	FM IFT	
Tg8	L30-0262-05	AM IFT	
Tg9	L30-0260-05	FM discriminator coil	
Tg10	L30-0052-05	AM IFT	
Tg11	L30-0082-05	AM OSC	
Tg12	L35-0044-05	MPX coil (19kHz)	
Tg13	L35-0056-05	MPX coil (67kHz)	
Tg14	L35-0055-05	MPX coil (38kHz)	
Lg1	L33-0221-05	Choke coil	
Lg2	L33-0092-05	Ferri-inductor	
Lg3~5	L33-0086-05	Ferri-inductor	
Lg6	L33-0117-05	Ferir-inductor	
MISCELLANEOUS			
CFg1	L72-0014-05	Ceramic filter	
–	C01-0172-05	Variable capacitor	-11, -62
	C01-0181-05	Variable capacitor	-42
–	F10-0320-04	Shield plate	
–	F10-0323-03	Shield plate	
–	J25-0930-12	PC board	

■ MAIN AMP (X07-1280-11)

Ref. No.	Parts No.	Description	Re-marks
CAPACITOR			
Ce1,2	CC45SL1H221K	Ceramic 220pF ±10%	
Ce3,4	CC04W1H010	Electrolytic 1μF 50WV	
Ce5,6	CE04W1E100	Electrolytic 10μF 25WV	
Ce7,8	CC45SL1H050D	Ceramic 5pF ±0.5pF	
Ce9,10	CC45SL1H470K	Ceramic 47pF ±10%	
Ce11,12	CE04W0J221	Electrolytic 220μF 6.3WV	
Ce13,14	CE04W1H470	Electrolytic 47μF 50WV	
Ce15,16	CC45LS1H101K	Ceramic 100pF ±10%	
Ce17~Ce20	CC45SL1H271K	Ceramic 270pF ±10%	
Ce21,22	CE04W1C100(NP)	Electrolytic 10μF 16WV	
Ce23,24	CQ93M1H224M	Mylar 0.22μF ±20%	
Ce25	CE04W1H221	Electrolytic 220μF 50WV	
Ce26	CE04W1H010	Electrolytic 1μF 50WV	
Ce27	CE04W1A101(NP)	Electrolytic 100μF 10WV	

PARTS LIST

Ref. No.	Parts No.	Description	Remarks
Ce28	CE04W1E101M-BR	Electrolytic 100μF 25WV	
Ce29,30	CQ93M1H333M	Mylar 0.033μF ±20%	
Ce33~36	CE04W0J470	Electrolytic 47μF 6.3WV	
	RESISTOR		
Re1,2	PD14BY2E334J	Carbon 330kΩ ±5% 1/4W	
Re3,4	PD14BY2E562J	Carbon 5.6kΩ ±5% 1/4W	
Re5,6	PD14BY2E563J	Carbon 56kΩ ±5% 1/4W	
Re7,8	PD14BY2E272J	Carbon 2.7kΩ ±5% 1/4W	
Re9,10	PD14BY2E153J	Carbon 15kΩ ±5% 1/4W	
Re11,12	PD14BY2E562J	Cabron 5.6kΩ ±5% 1/4W	
Re13,14	PD14BY2E563J	Carbon 56kΩ ±5% 1/4W	
Re15~18	PD14BY2E560J	Carbon 56Ω ±5% 1/4W	
Re19,20	RC05GF2H222K	Carbon 2.2kΩ ±10% 1/2W	
Re21,22	RC05GF2H472K	Carbon 4.7kΩ ±10% 1/2W	
Re23,24	PD14BY2E272J	Carbon 2.7kΩ ±10% 1/4W	
Re25,26	PD14BY2E821J	Carbon 820Ω ±10% 1/4W	
Re27,28	PD14BY2E102J	Carbon 1kΩ ±5% 1/4W	
Re29~32	PD14BY2E153J	Carbon 15kΩ ±5% 1/4W	
Re33~36	PD14BY2E182J	Carbon 1.8kΩ ±5% 1/4W	
Re37~40	PD14BY2E331J-B	Carbon 330Ω ±5% 1/4W	
Re41~44	RN14AB3DR47K-B	Metal film 0.47Ω ±10% 2W	
Re45,46	RN14AB3D4R47K-B	Metal film 4.7Ω ±10% 2W	
Re47	PD14BY2E560J-B	Carbon 56Ω ±5% 1/4W	
Re48	RC05GF2H222K	Carbon 2.2kΩ ±10% 1/2W	
Re49	PD14CY2E682J	Carbon 6.8kΩ ±5% 1/4W	
Re50	PD14BY2E682J	Carbon 6.8kΩ ±5% 1/4W	
Re51	PD14BY2E102J	Carbon 1kΩ ±5% 1/4W	
Re52	PD14CY2E333J	Carbon 33kΩ ±5% 1/4W	
Re53	PD14BY2E333J	Carbon 33kΩ ±5% 1/4W	
Re54	PD14CY2E682J	Carbon 6.8kΩ ±5% 1/4W	
Re55	RN14AB3A221J	Metal film 220Ω ±5% 1W	
Re56~59	PD14BY2E102J	Carbon 1kΩ ±5% 1/4W	
	SEMICONDUCTOR		
Qe1~4		Transistor 2SA620WN4 or 5	
Qe5,6		Transistor 2SC1451 (G) or (B)	
Qe7,8		Transistor 2SC1416GR	
Qe9,10		Transistor 2SC945	
Qe11,12		Transistor 2SC945 (Q) or (P)	
Qe13,14		Transistor 2SA733	
Qe15,16		Transistor 2SC1212A (B) or (C)	
Qe17,18		Transistor 2SA743A (B) or (C)	
Qe19,20		Transistor 2SC1444	
Qe21,22		Transistor 2SA764	
Qe23		Transistor 2SC1416	
Qe24		Transistor 2SC1213A (C)	
De1~4		Diode 1S2076	
De5		Zener diode YZ-140	
De6~9		Diode 1S2076	
THe1,2		Thermistor 5TP-41L	

Ref. No.	Parts No.	Description	Remarks
	POTENTIOMETER/RELAY		
VRe1,2	R12-1021-05	PC trimmer potentiometer 1kΩ (B)	
RLe1	S51-4029-05	Relay	
	MISCELLANEOUS		
–	E02-0210-05	Transistor socket x 4	
–	F01-0187-03	Heat sink	
–	F20-0067-05	Mica plate x 4	
–	J25-1080-03	PC board	

■ PREAMP (X08-1270-02)

Ref. No.	Parts No.	Description	Remarks
	CAPACITOR		
Cd1,2	CS15E1A3R3M	Tantalum 3.3μF 10WV	
Cd3,4	CE04W0J330	Electrolytic 33μF 6.3WV	
Cd5,6	CQ93M1H224M	Mylar 0.22μF ±20%	
Cd7,8	CE04W1C470	Electrolytic 47μF 16WV	
Cd9,10	CQ93M1H272J	Mylar 0.0027μF ±5%	
Cd11,12	CQ93M1H822J	Mylar 0.0082μF ±5%	
Cd15,16	CC45SL1H470K	Ceramic 47pF ±10%	
Cd17	CQ93M1H222K	Mylar 0.0022μF ±10%	
	RESISTOR		
Rd1,2	PD14BY2E222J	Carbon 2.2kΩ ±5% 1/4W	
Rd3~6	PD14BY2E104J	Carbon 100kΩ ±5% 1/4W	
Rd7,8	PD14BY2E561J	Carbon 560Ω ±5% 1/4W	
Rd9,10	PD14BY2E824J	Carbon 820kΩ ±5% 1/4W	
Rd11,12	PD14BY2E563J	Carbon 56kΩ ±5% 1/4W	
Rd13,14	PD14BY2E221JB	Carbon 220Ω ±5% 1/4W	
Rd15,16	PD14BY2E303J	Carbon 30kΩ ±5% 1/4W	
Rd17,18	PD14BY2E474J	Carbon 470kΩ ±5% 1/4W	
Rd21,22	PD14BY2E183J	Carbon 18kΩ ±5% 1/4W	
	SEMICONDUCTOR		
ICd1		RC4558TA	
	POTENTIOMETER		
VRd1	R12-2016-05	PC trimmer potentiometer 5kΩ (B)	
	MISCELLAENOUS		
–	J25-1042-03	PC board	

■ TONE AMP (X11-1200-01)

Ref. No.	Parts No.	Description	Remarks
	CAPACITOR		
Ci1,2	CE04W1E010	Electrolytic 1μF 25WV	
Ci3,4	CE04W1E100	Electrolytic 10μF 25WV	
Ci5,6	CE04W1E4R7	Electrolytic 4.7μF 10WV	
Ci7,8	CQ93M1H183K	Mylar 0.018μF ±10%	
Ci9,10	CQ93M1H154K	Mylar 0.15μF ±10%	
Ci11,12	CQ93M1H392K	Mylar 0.0039μF ±10%	
Ci13,14	CQ93M1H273K	Mylar 0.027μF ±10%	
Ci15,16	CE04W1A101	Electrolytic 100μF 10WV	

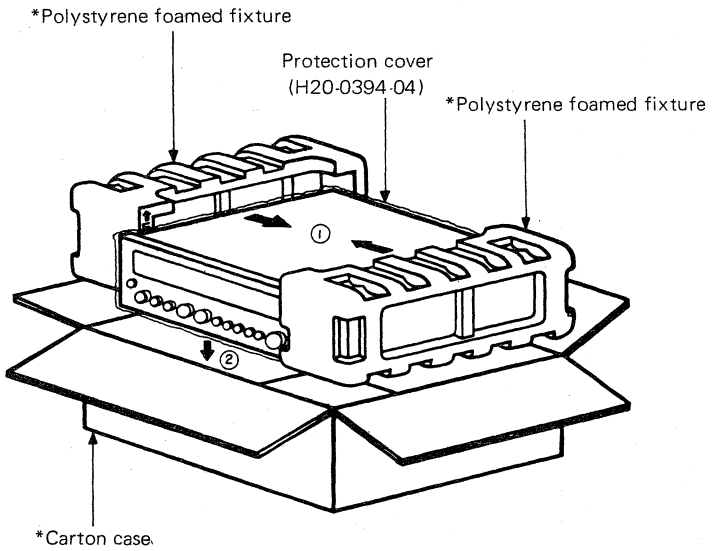
PARTS LIST/ PACKING

Ref. No.	Parts No.	Description	Re-marks
Ri5,6	PD14BY2E562J	Carbon 5.6kΩ ±5% 1/4W	
Ri7,8	PD14BY2E824J	Carbon 820kΩ ±5% 1/4W	
Ri9,10	PD14BY2E301J	Carbon 300Ω ±5% 1/4W	
Ri11,12	PD14BY2E103J	Carbon 10kΩ ±5% 1/4W	
Ri13,14	PD14BY2E332J	Carbon 3.3kΩ ±5% 1/4W	
Ri15,16	PD14BY2E682J	Carbon 6.8kΩ ±5% 1/4W	
Ri17,18	PD14BY2E152J	Carbon 1.5kΩ ±5% 1/4W	
Ri19,20	PD14BY2E222J	Carbon 2.2kΩ ±5% 1/4W	
Ri21,22	PD14BY2E621J	Carbon 620Ω ±5% 1/4W	
SEMICONDUCTOR			
ICi1		RC4558T (A) or (B)	
POTENTIOMETER			
VRi1,2	R06-4013-05	Potentiometer 100kΩ (B)	
MISCELLANEOUS			
–	J25-1071-03	PC board	

■ PUSH SWITCH (X13-1840-10)

Ref. No.	Parts No.	Description	Re-marks
CAPACITOR			
Ch1,2	CK45D1H561M	Ceramic 560pF ±20%	
Ch3,4	CQ93M1H393K	Mylar 0.039μF ±10%	
Ch5,6	CK45D1H681M	Ceramic 680Ω ±20%	
Ch7,8	CQ93M1H273K	Mylar 0.027μF ±10%	
RESISTOR			
Rh1,2	PD14BY2E153J	Carbon 15kΩ ±5% 1/4W	
Rh3,4	PD14BY2E222J	Carbon 2.2kΩ ±5% 1/4W	
Rh5~10	PD14BY2E123J	Carbon 12kΩ ±5% 1/4W	
MISCELLANEOUS			
–	J25-1087-04	PC board	

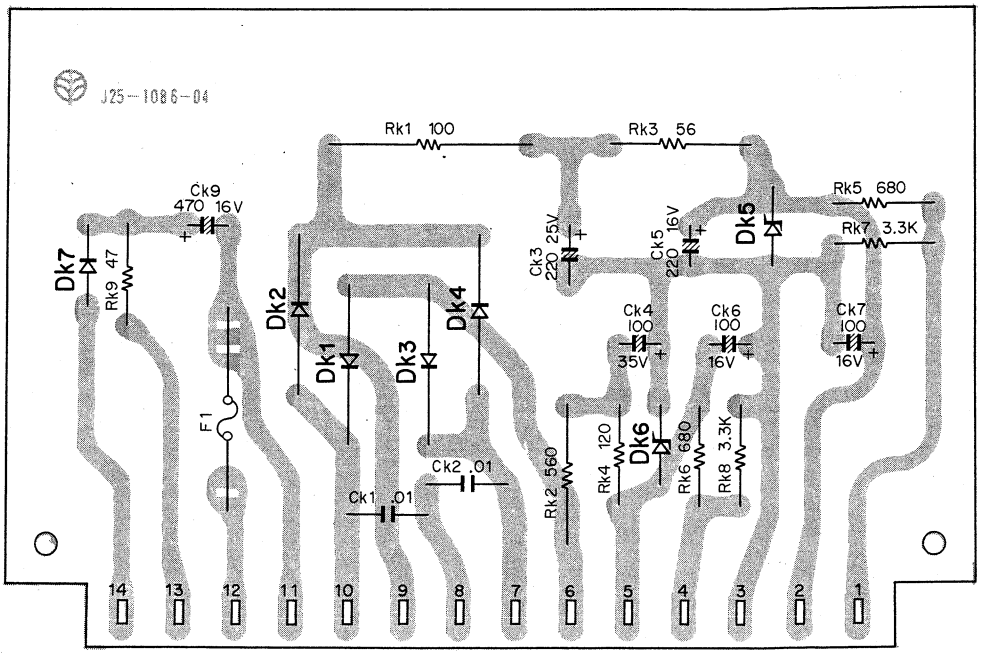
■ PACKING



*Refer to MODIFICATION Parts List.

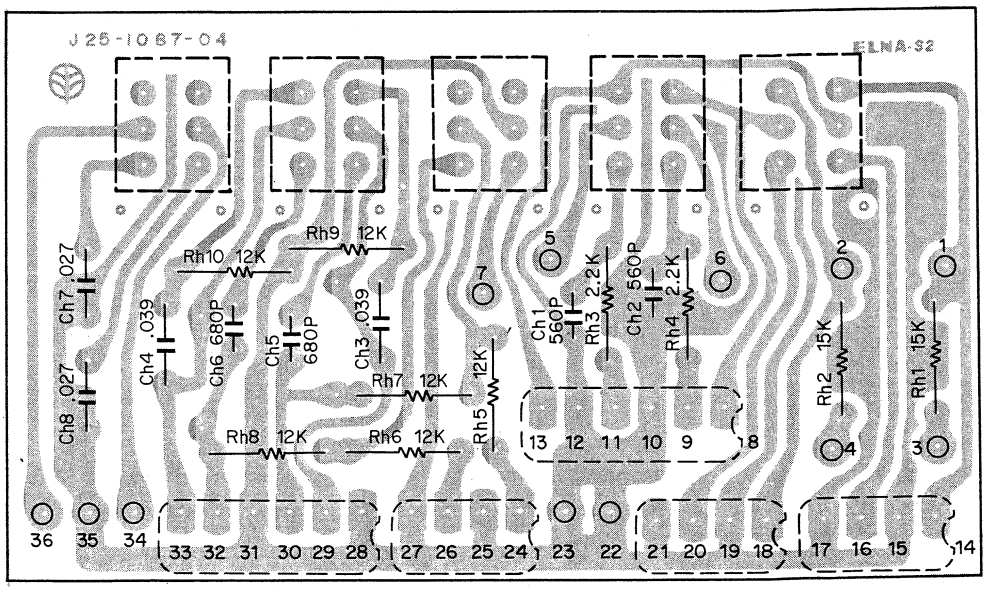
PC BOARD

▲ POWER SUPPLY (X00-1460-10)



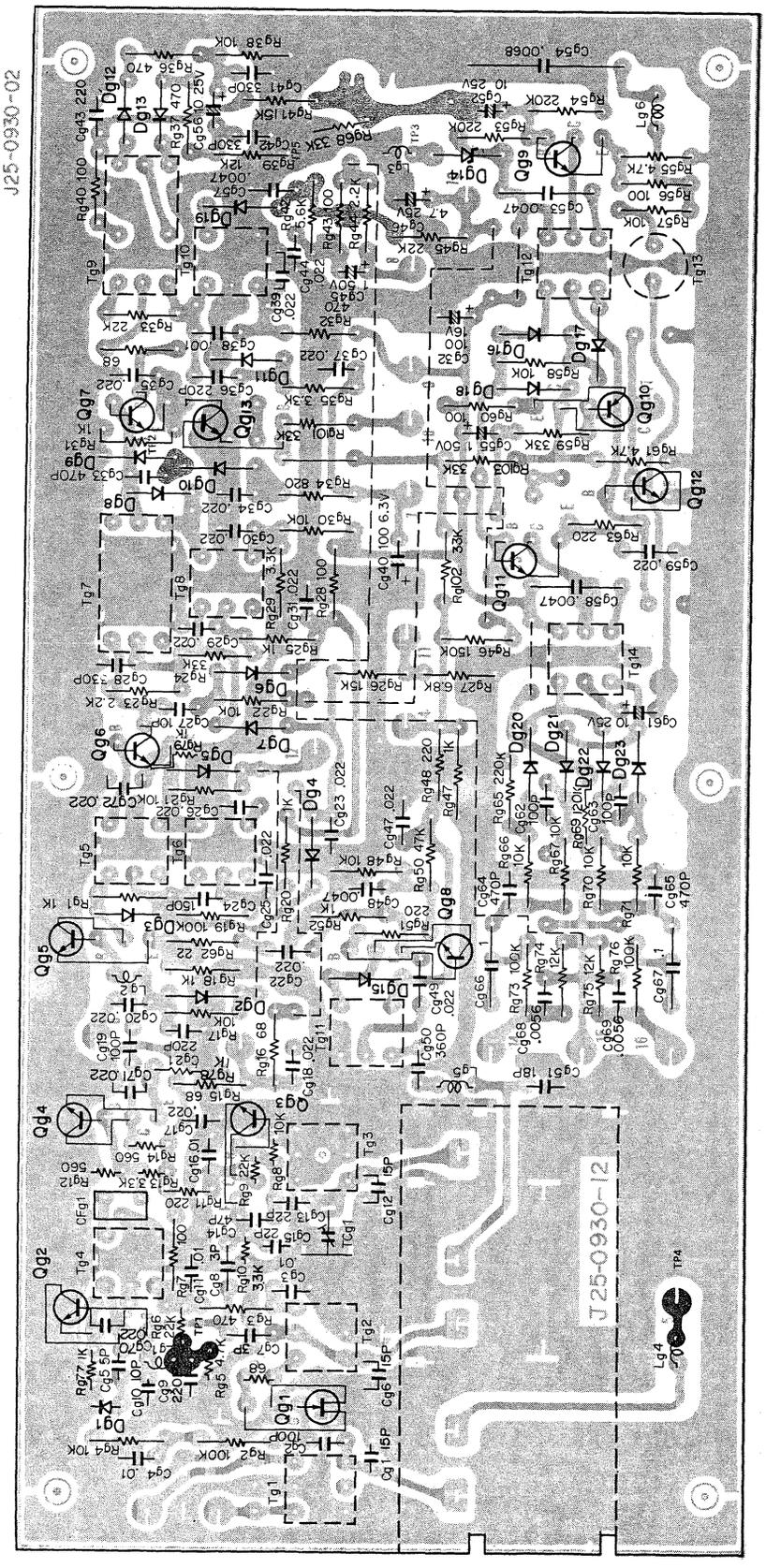
Dk1~4:VO3C, Dk5,7:WO6B, Dk6:YZ-140

▲ PUSH SWITCH (X13-1840-10)



PC BOARD

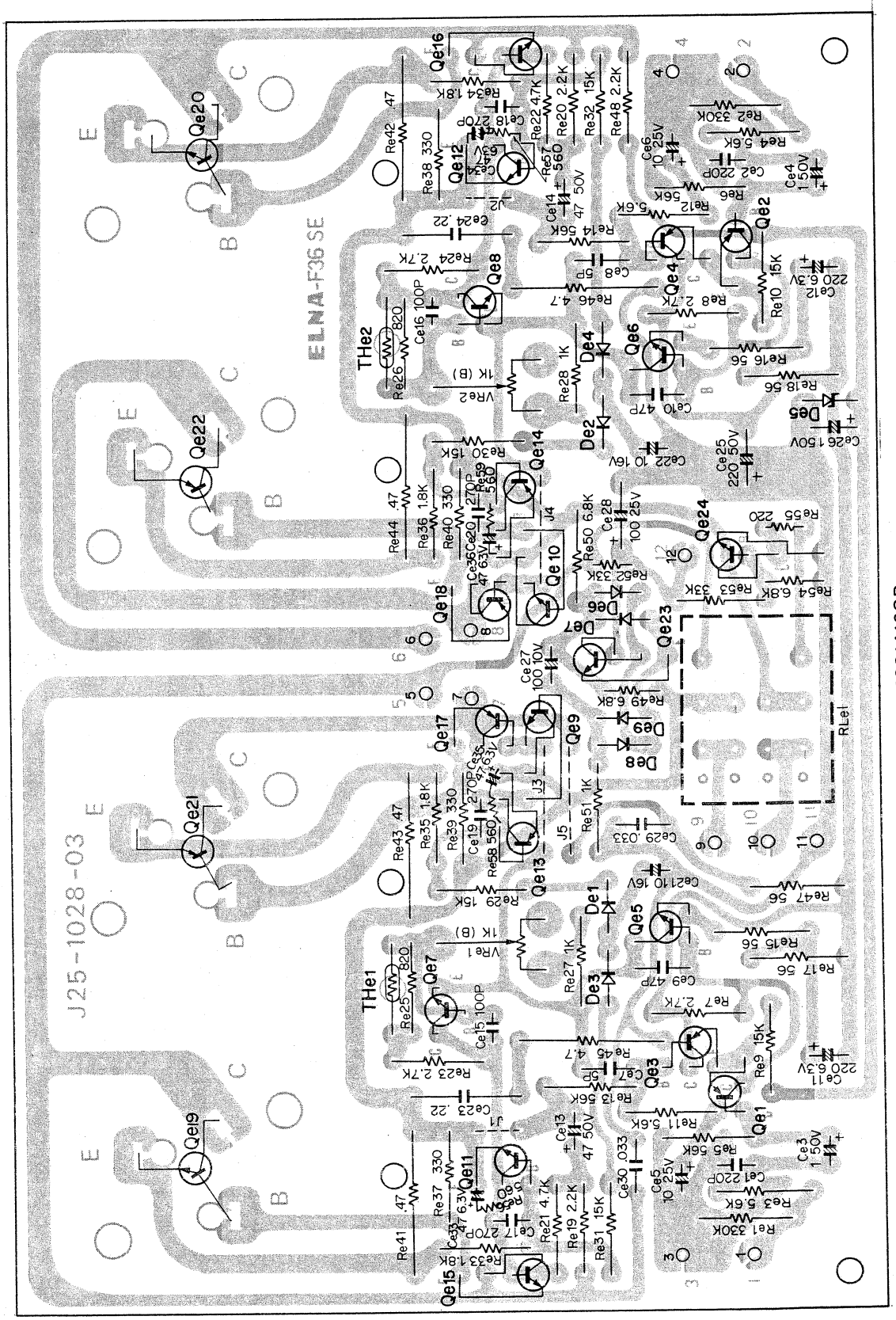
▲ **TUNER**
(X05-1120-11)



Qg1: 2SK19, Qg2, 5~7 : 2SC381(O), Qg3 : 2SC1342(A) or (B), Qg4 : 2SC381(O) or (R), Qg8 : 2SC460(B)
Qg9, 12, 13 : 2SC945(Q) or (R), Qg10 : 2SA733(Q) or (R), Qg11 : 2SC945(P) or (Q)

PC BOARD

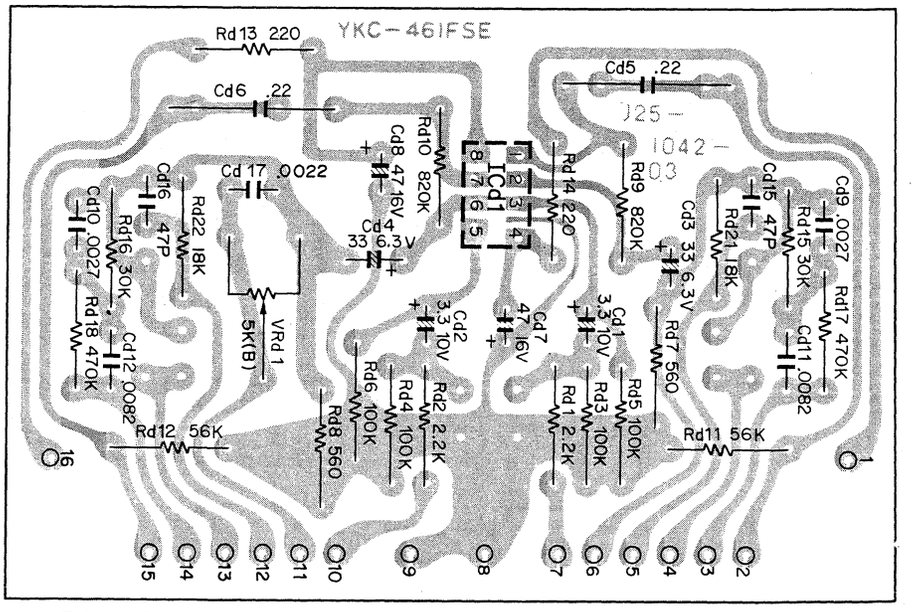
▲ MAIN AMP (X07-1280-11)



Qe1 ~ 4 : 2SA620WN (4) or (5), Qe5, 6 : 2SC1451 (G) or (B) Qe7, 8 : 2SC1416GR,
Qe9, 10 : 2SC945, Qe11, 12 : 2SC945 (Q) or (P), Qe13, 14 : 2SA733, Qe15, 16 : 2SC1212A (B) or (C),
Qe17, 18 : 2SA743A (B) or (C), Qe19, 20 : 2SC1444, Qe21 , 22 : 2SA764, Qe23 : 2SC1416, Qe24 : 2SC1213A (C)

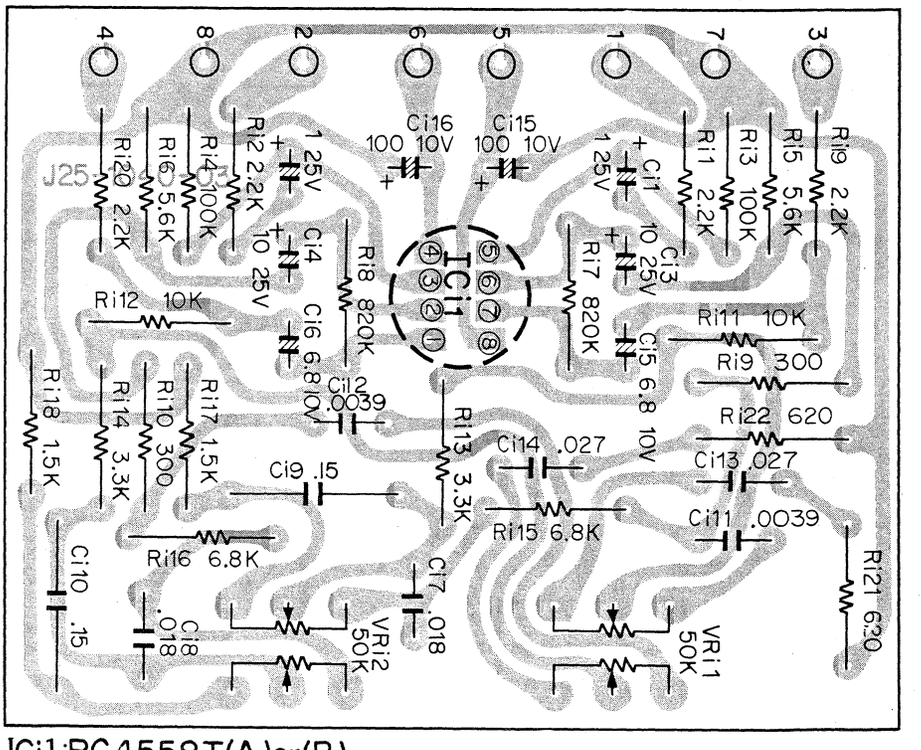
PC BOARD

▲ PRE AMP
(X08-1270-02)



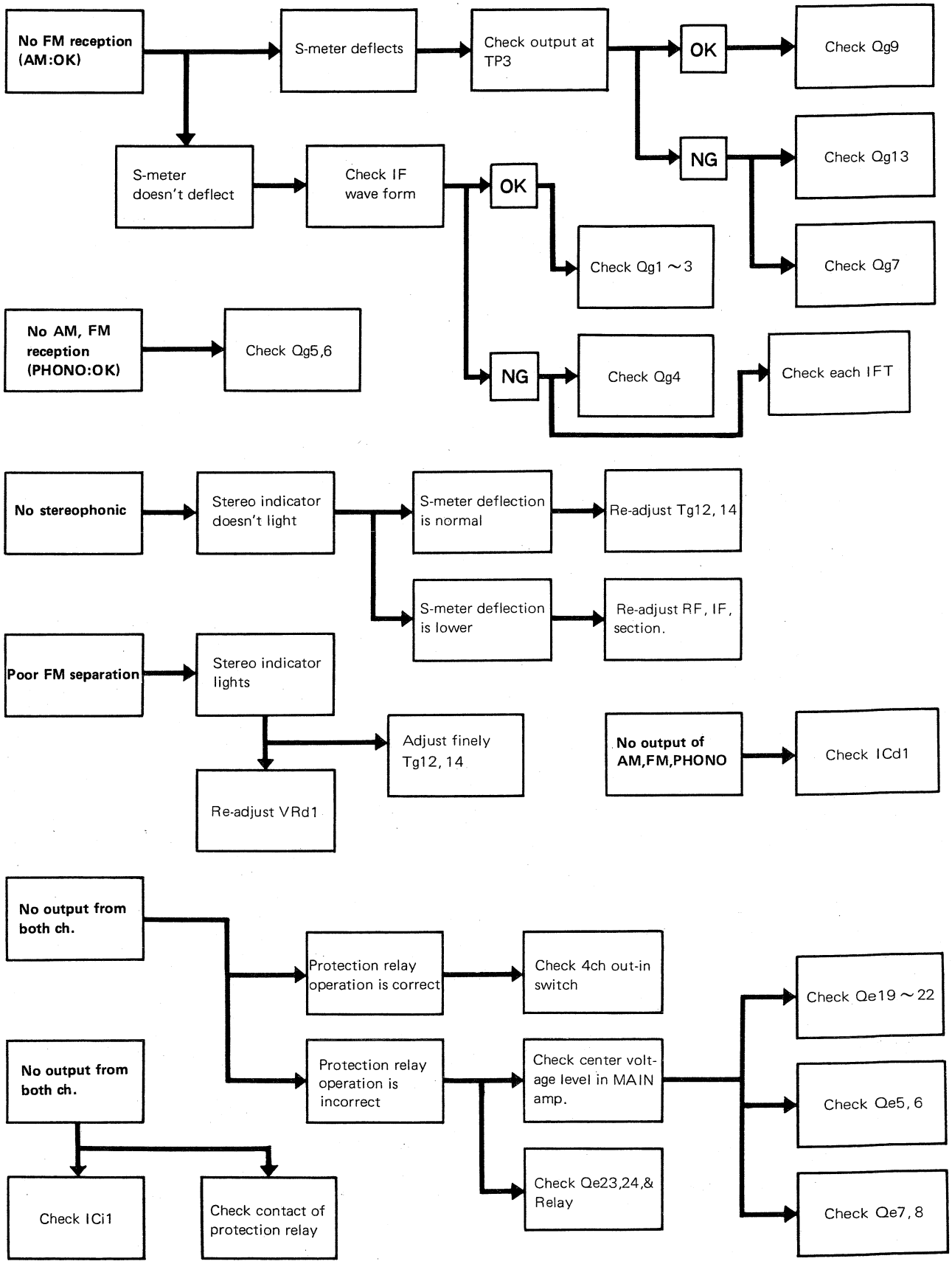
ICd1: RC 4558TA

▲ TONE AMP
(X11-1200-01)



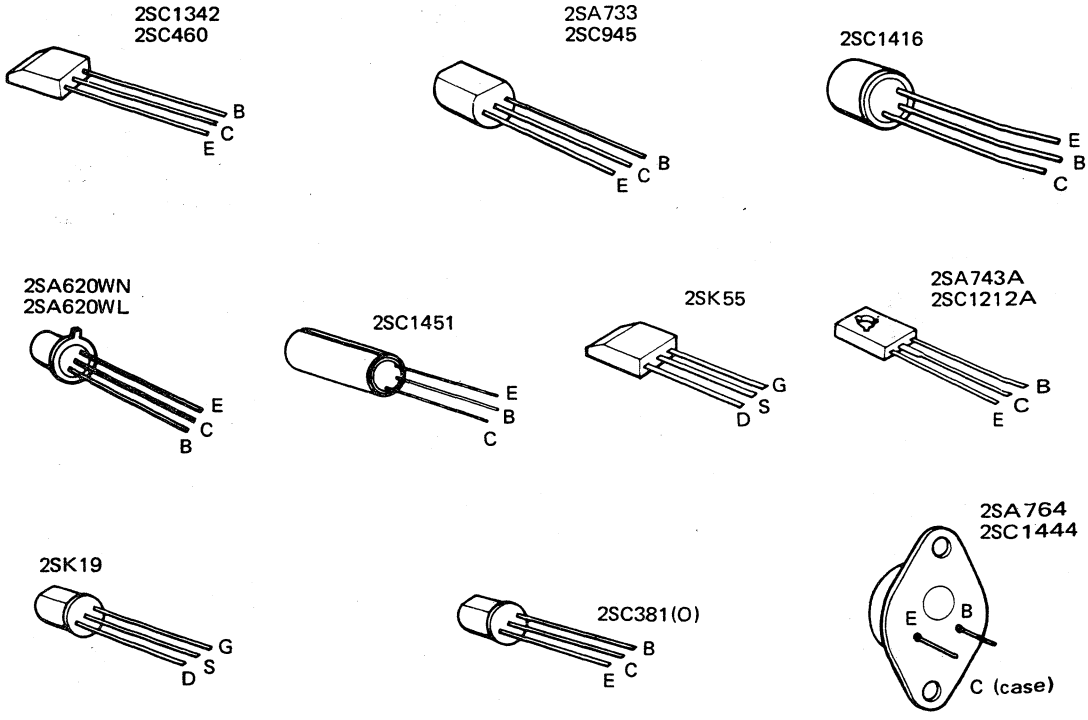
ICi1: RC4558T(A)or(B)

TROUBLESHOOTING



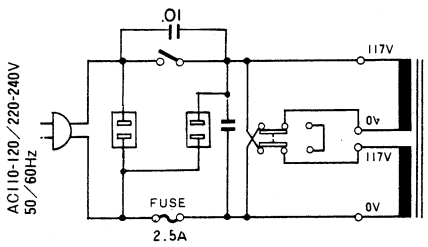
SEMICONDUCTOR SUBSTITUTIONS AND LEADS

SEMICONDUCTOR	SEMICONDUCTOR SUBSTITUTIONS
TUNER (X05-1120-11, -41, -62)	
2SK19 (Y) or (GR)	2SK55 (D) or (E)
2SC381 (O)	2SC535 (B) or (C), 2SC1047 (C)
2SC1342 (A) or (B)	2SC785 (R)
2SC460 (B)	2SC941 (O)
2SC945 (Q) or (R)	2SC1213A, 2SC458 (R) or (C)
2SA733 (Q) or (R)	2SA620WL (4) or (5)
MAIN AMP (X07-1280-11)	
2SA620WN (4) or (5)	2SA493, 2SA620WL
2SC1451 (G) or (B)	2SC983 (O), (Y)
2SC1416 (GR)	2SC1000 (RR), 2SC1345 (D)
2SC945	2SC984 (C), 2SC1213A (C)
2SA733	2SA620WL
2SC1212A (B) or (C)	2SC497 (Y), 2SC627, 2SD220
2SA743A (B) or (C)	2SA497, 2SA484
2SC1444	–
2SA764	–
PRE AMP (X08-1270-02)	
RC4558TA	–
TONE CONTROL AMP (X11-1200-01)	
RC4558TA or B	–

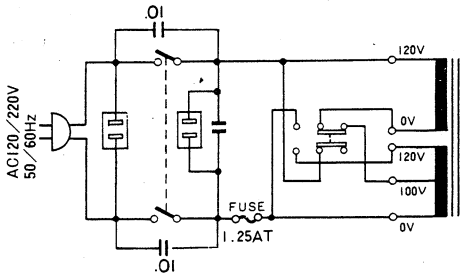


MODIFICATION OF SCHEMATIC DIAGRAM

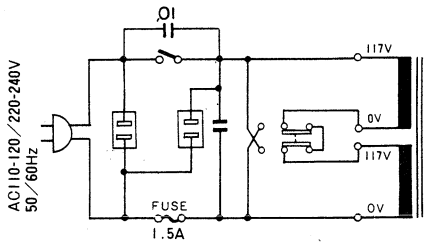
For 110-120/220-240V sets(1)



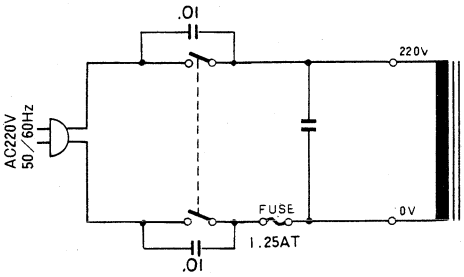
For the sets sold in Europe except England.



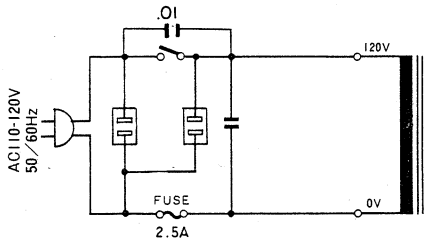
For 110-120/220-240V sets(2)



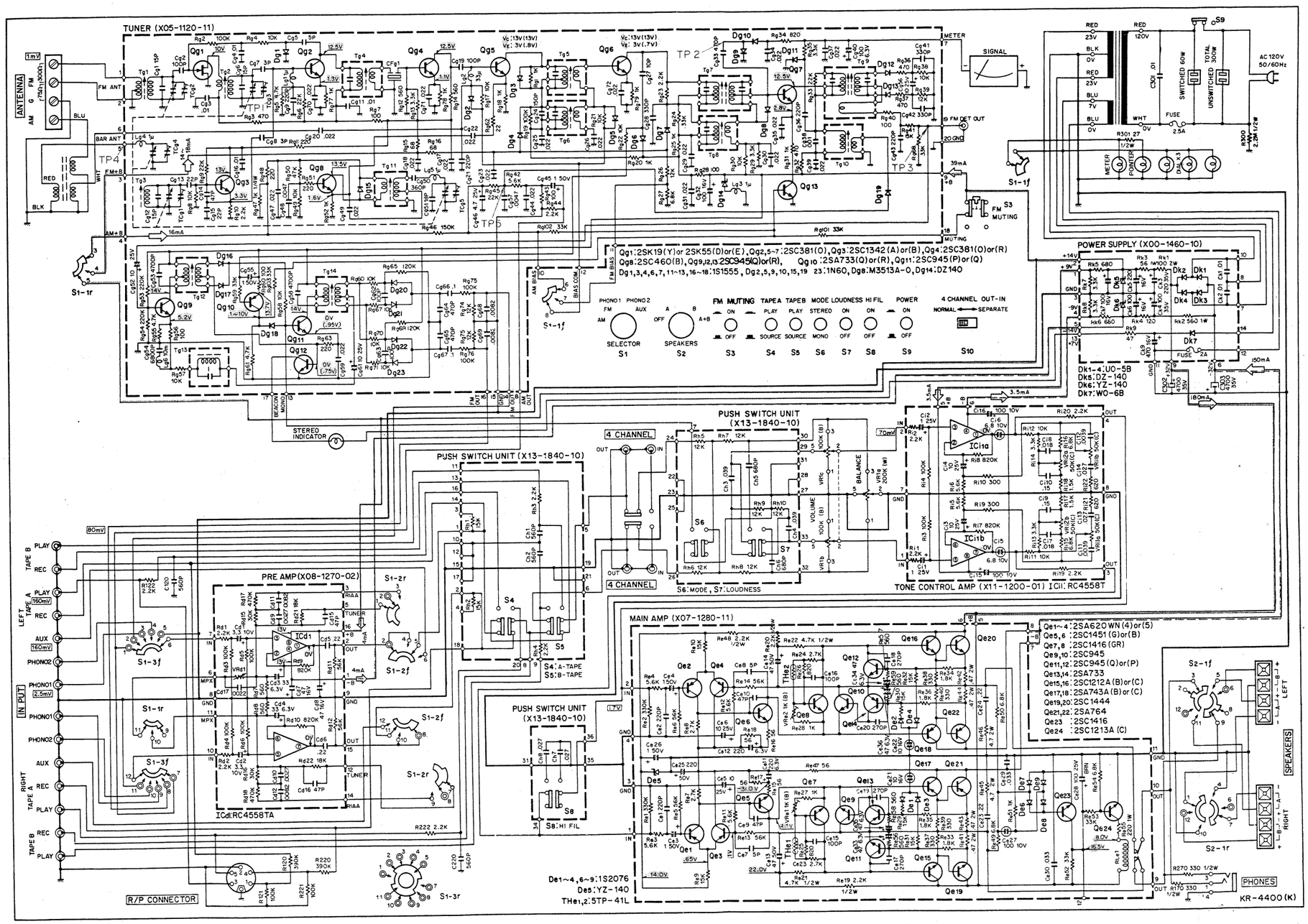
For the sets sold in Scandinavia



For the sets sold in Canada.



SCHEMATIC DIAGRAM



SPECIFICATIONS

FM TUNER SECTION

Frequency Range	88 MHz to 108 MHz
	87.5 MHz to 108 MHz (FTZ approved)
Usable Sensitivity (IHF)	2.1 μV
Quieting Slope	5 μV 45 dB, 10 μV 60 dB, 50 μV 65 dB
Frequency Response	20 Hz ~ 15,000 Hz $^{+0.5}_{-2.0}$ dB
Harmonic Distortion	0.4% Mono (at 400 Hz 100% modulation)
	0.6% Stereo (at 400 Hz 100% modulation)
Signal to Noise Ratio	65 dB at 1 mV input
Image Rejection	60 dB
Selectivity (IHF ALT channel)	55 dB
IF Rejection	85 dB
Spurious Signal Rejection	80 dB
AM Suppression	50 dB
Capture Ratio	2.0 dB
Stereo Separation	35 dB at 1,000 Hz
Sub Carrier Suppression	50 dB
Antenna Impedance	300 ohms Balanced & 75 ohms Unbalanced

AM TUNER SECTION

Usable Sensitivity (IHF)	20 μV
Signal to Noise Ratio	45 dB at 1 mV input
Image Rejection	50 dB
Selectivity (IHF)	28 dB
IF Rejection	35 dB
Antenna	Built-in ferrite bar antenna, External antenna terminals

MAIN AMPLIFIER SECTION

RMS Power Output	
Both channels driven	25 W x 2 into 8 ohms at 20 Hz ~ 20,000 Hz
	27 W x 2 into 8 ohms at 1,000 Hz
	33 W x 2 into 4 ohms at 1,000 Hz
Dynamic Power Output	90 watts into 8 ohms
	130 watts into 4 ohms
Total Harmonic Distortion	0.5% at rated power into 8 ohms
	0.08% at 1/2 rated power into 8 ohms at 1,000 Hz
Inter Modulation Distortion	0.5% at rated power into 8 ohms
(60 Hz : 7 kHz = 4 : 1)	0.08% at 1/2 rated power into 8 ohms
Power Bandwidth	10 Hz ~ 30,000 Hz
Signal to Noise Ratio at 50 mW	55 dB
Damping Factor	30 at 8 ohms
Speaker Impedance	Accept 4 ohms to 16 ohms

PRE-AMPLIFIER SECTION

Input Sensitivity and Impedance	
Phono 1	2.5 mV, 50 Kohms
Phono 2	2.5 mV, 50 Kohms
AUX	150 mV, 45 Kohms
Tape Play A, B	150 mV, 45 Kohms
Maximum Input Voltage (rms)	
Phono 1, 2	120 mV T.H.D. 0.5% at 1,000 Hz
Signal to noise Ratio (IHF A CURVE)	
Phono 1, 2	70 dB
AUX	90 dB
Tape Play A, B	90 dB
Output Voltage and Impedance	
Tape Rec. A, B (Pin)	150 mV, 100 ohms
(Din connector)	30 mV, 80 Kohms
4-CH OUT	150 mV
Frequency Response	
Phono 1, 2	RIAA Standard curve ±1.5 dB
AUX, Tape Play	10 Hz ~ 40,000 Hz ±1.5 dB
Tone Controls	
Bass	±10 dB at 100 Hz
Treble	±10 dB at 10,000 Hz
Loudness Control (–30 dB)	+8 dB at 100 Hz
	+5 dB at 10,000 Hz
Noise Filter	–10 dB at 10,000 Hz

GENERAL

Switches	
Speaker Selector	OFF, A, B, A + B
Input Selector	AM–FM-PHONO 1–PHONO 2–AUX
Mode	MONO-STEREO
Tape Monitor	A (ON-SOURCE); B (ON-SOURCE)
Others	NOISE FILTER, FM MUTING, LOUDNESS, PHONES JACK
AC Outlet	Switched 1, Unswitched 1
Power Consumption	210 watts at full power
	30 watts at no signal
Dimension	W 18-15/16" (480 mm), H 5-3/8" (137 mm), D 13-9/16" (344 mm)
Weight	22.3 lbs (10 kg)
	19.8 lbs (9 kg) (Europe & Scandinavia)

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