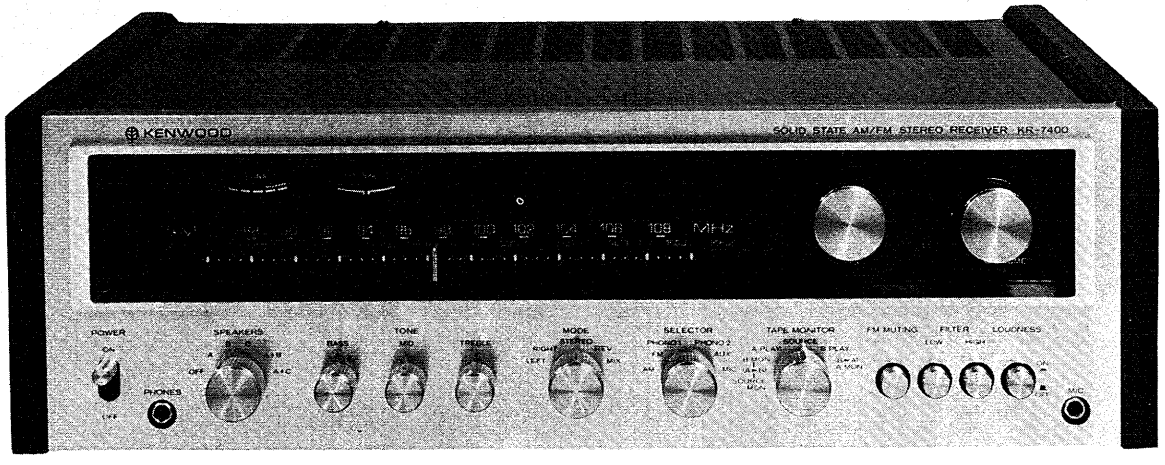
KENWOOD

HI/FI STEREO COMPONENTS

SERVICE MANUAL

KR-7400



AM-FM STEREO RECEIVER

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

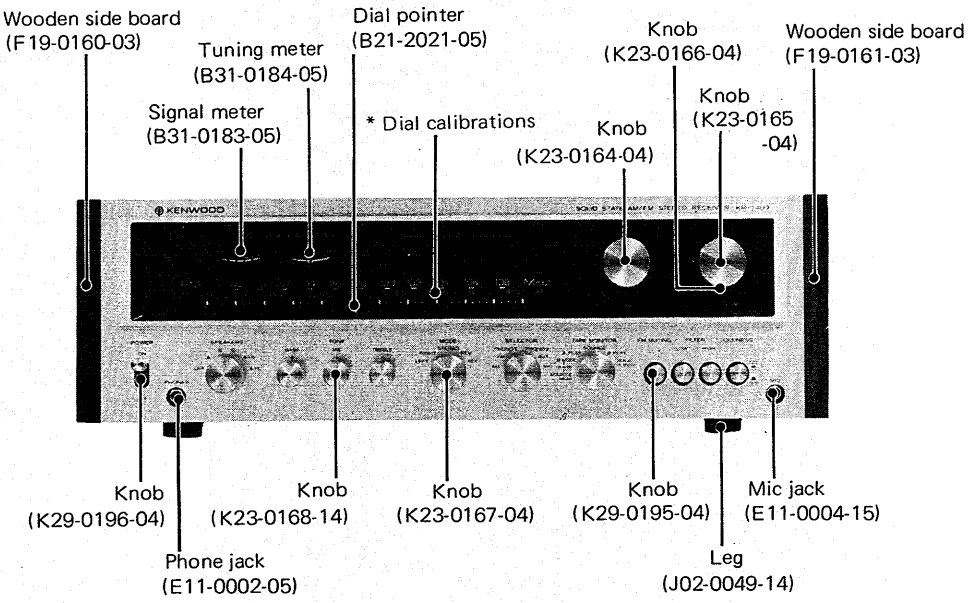
The KR-7400 is one of the NEW KR series and the highest grade products. Its tuner section consists of frequency linear 4 gangs variable capacitor, linear scaled front dial calibrations, LED (light emitted diode) dial pointer, 3 MOS FET's of front end, local oscillator with buffer amplifier, PLL IC of MPX stage, 2 meters for accurate tuning, and FM DET OUT jack.

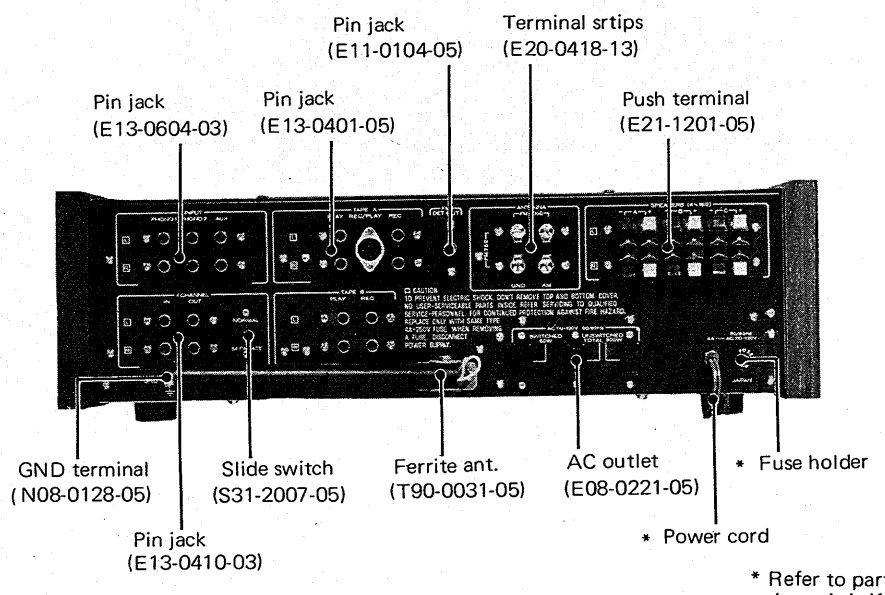
PLL assures excellent channel separation and improved stability. FM DET OUT jack is available, permitting this receiver to be ready for FM 4-channel broadcasts whenever they became available. Its tuner section is also super sensitivity and higher spurious response rejection ratio.

Meanwhile, main amplifier section consists of direct-coupled with differential amplifier, and SOA limiter and DC drift of center voltage protection.

They assures to protect the damage of power transistor and speakers.

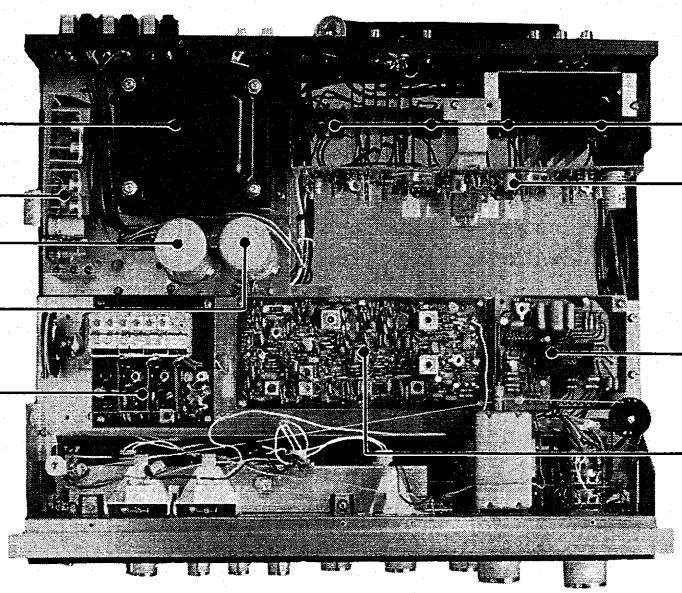
Driver stage is pure complementary circuit. Equarizer and tone amplifier have dual power supply and low noise dual-can type IC. One of the special feature of KR-7400 is the availability of two independent tape monitor circuits which permit tape dubbing from one tape recorder to another while listing to a completely different source such as an FM broadcasts. 4-CH 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 adaptor to these jacks. Tuner and audio section in KR-7400 can stand comparison with separated TUNER and AMPLIFIER.

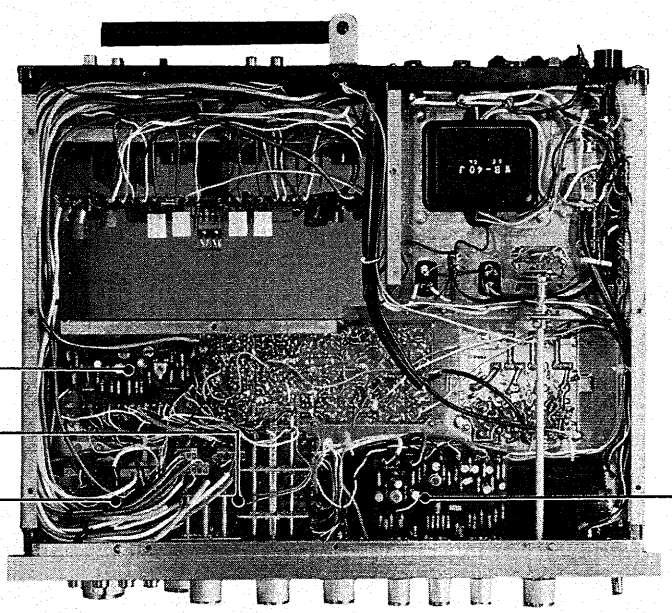




* Refer to parts list the unit is K type.

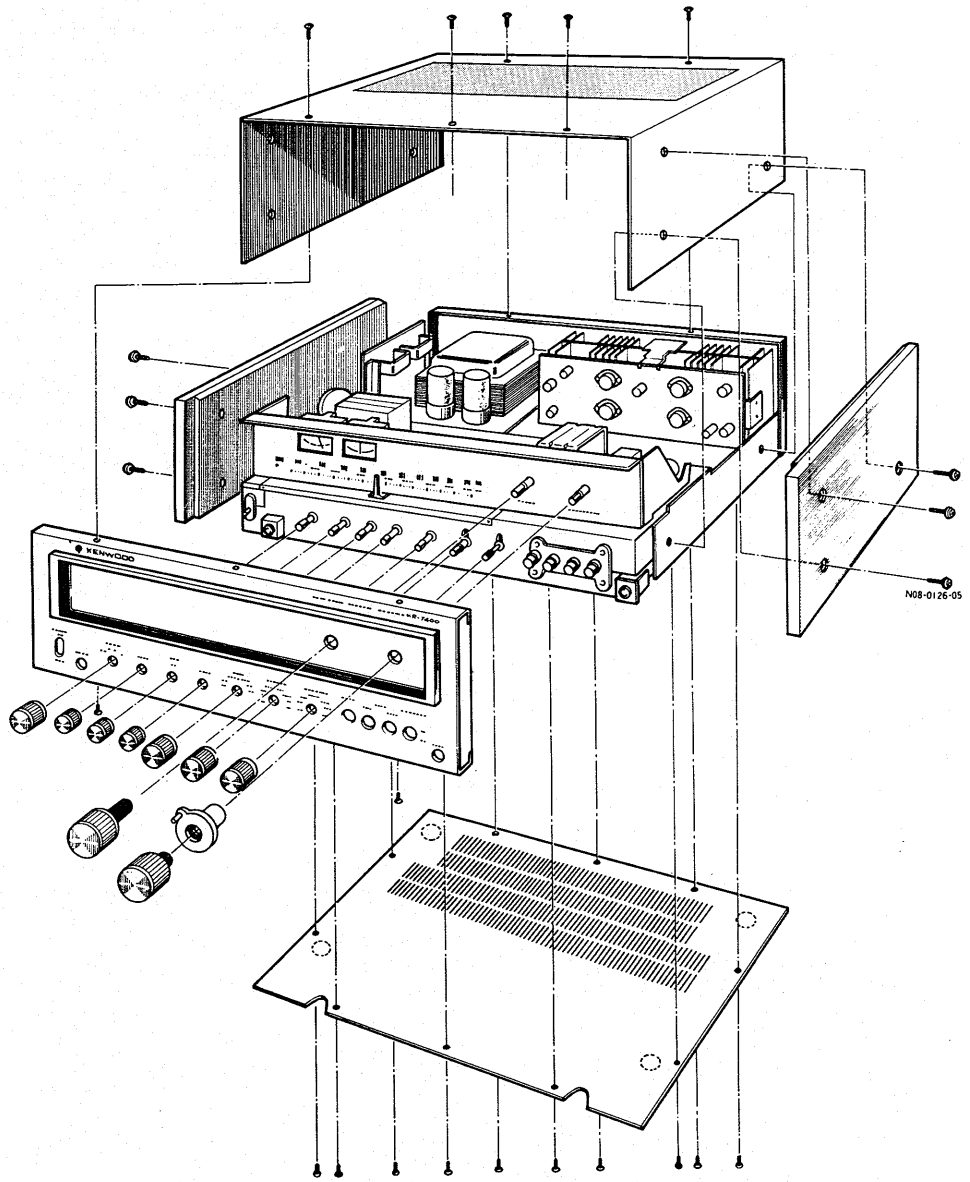
TOP & BOTTOM VIEW

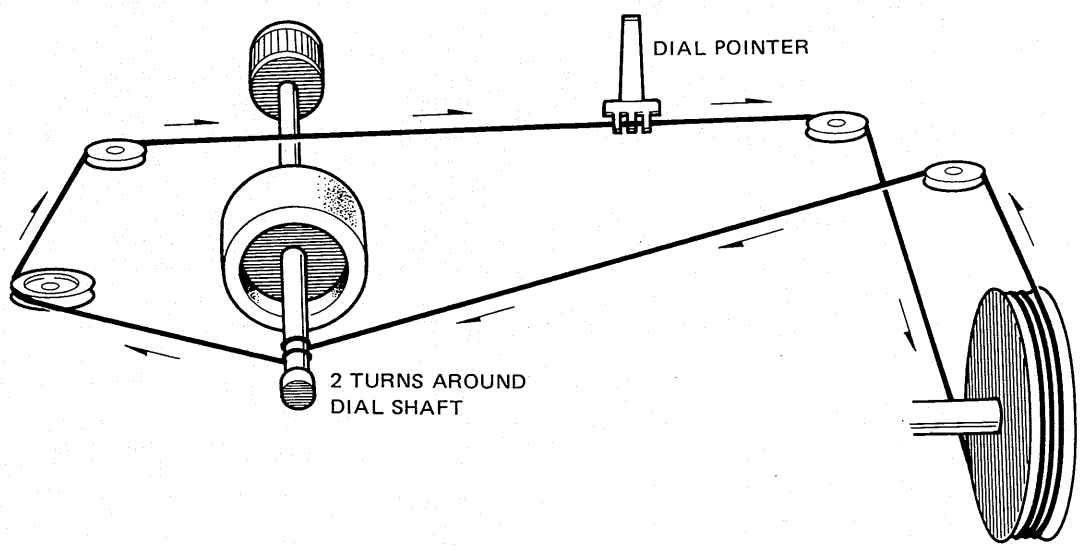




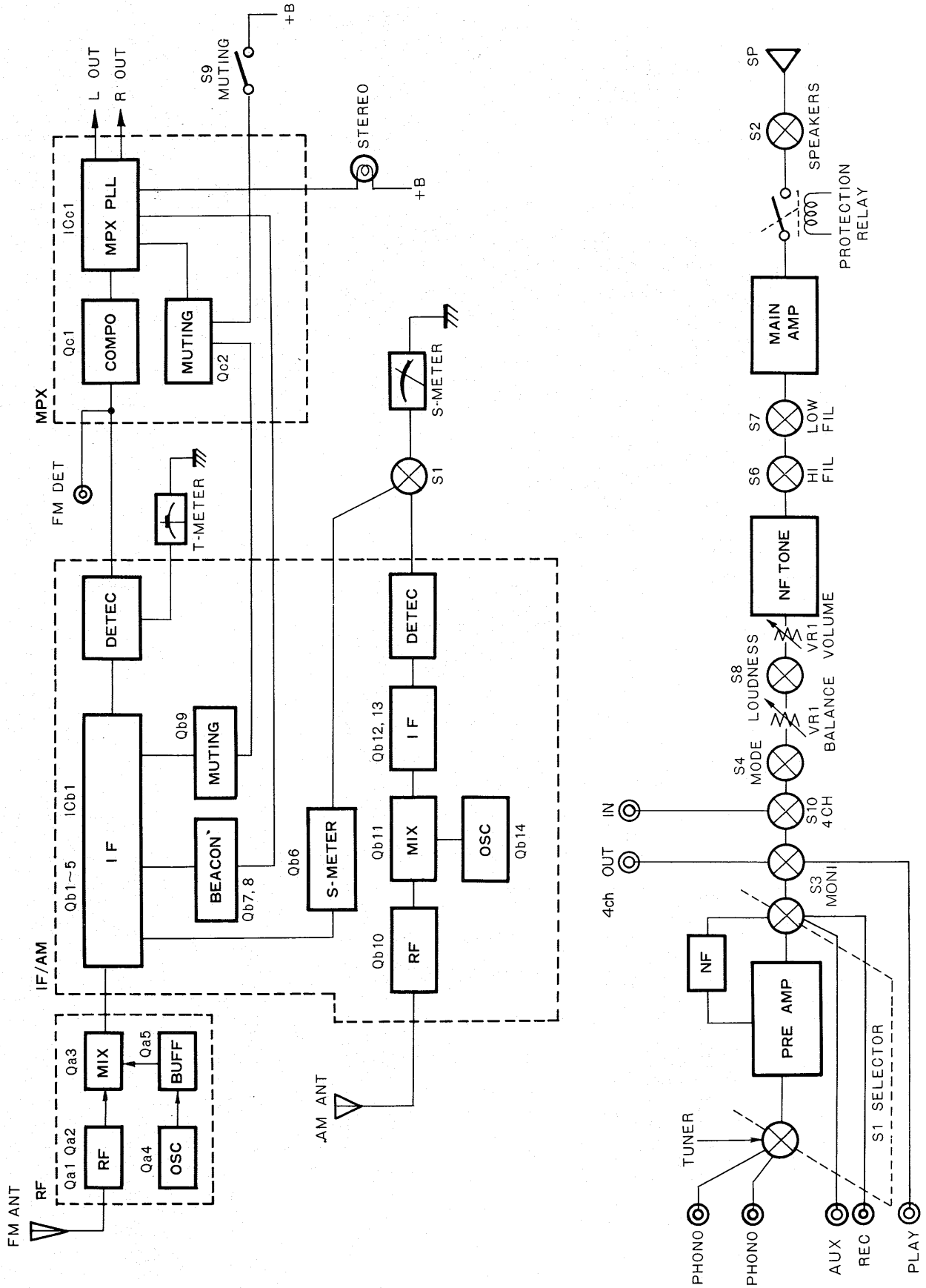
* Refer to parts list

DISASSEMBLY / CORD STRINGING





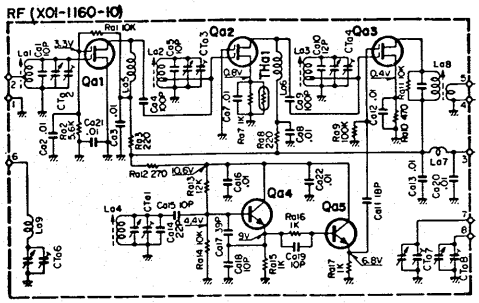
BLOCK DIAGRAM



CIRCUIT DESCRIPTION

FM-RF (X01-1160-10)

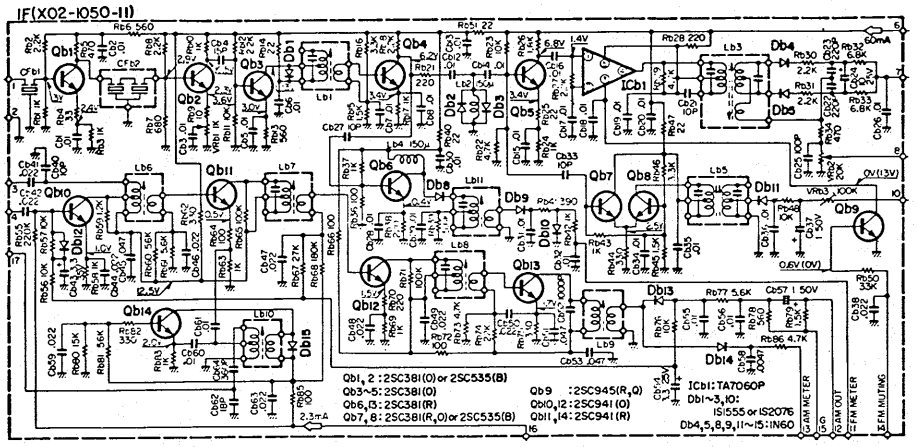
Two dual-gate MOS FETs are used for RF stage. FET in the mixing stage, too, are of this type and produces ideal mixing effects. A buffer follows the local oscillator (OSC) to inject a stable oscillator output into the mixer, so that the front end is high in both stability and sensitivity.



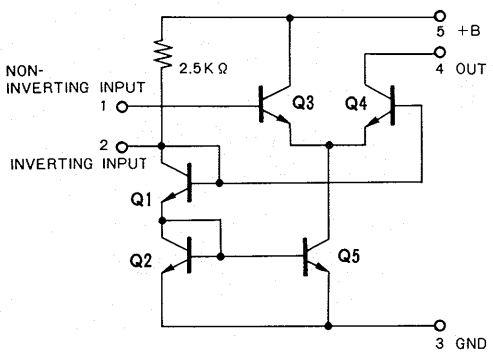
◀RF CIRCUIT

FM-IF (X02-1050-11)

The IF circuit consists of three-elements ceramic filters in two stages, five transistors, one IC, two IFTs, and ratio detection. The trigger circuit for stereo beacon has two special transistors for differential amplifier and single IFT stage. The S-meter circuit consists of a transistor and an IFT stage. FM muting is employed to cut IC bias with transistor.



▲IF CIRCUIT



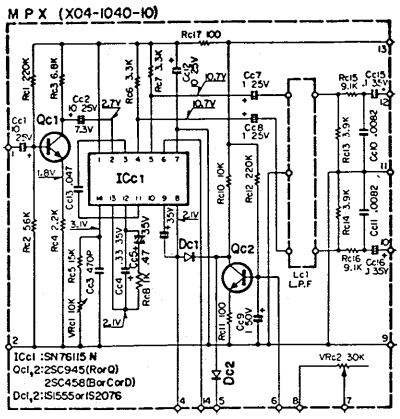
◀ TA7060P CIRCUIT (ICb1)

FM MPX (X04-1040-10)

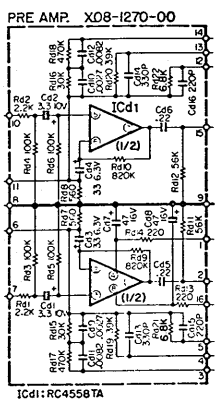
The MPX has PLL MPX integrated circuit (Refer to page 8). Unlike the conventional circuitry by which a 38-kHz switching signal is derived from the 19-kHz pilot signal contained in the incoming signal, this MPX produces a very accurate switching signal by error voltage of phase difference between the incoming signal and VCO (Voltage Control Oscillator) through a phase locked loop (PLL). This method does away with the 19, and 38-kHz coil and SCA filter traps, which are located in the composite signal path, of the conventional circuitry.

The new circuitry provides improved phase characteristics of the signals, and optimizes the phase relationship on switching as well as the separation characteristic.

MPX CIRCUIT ▶



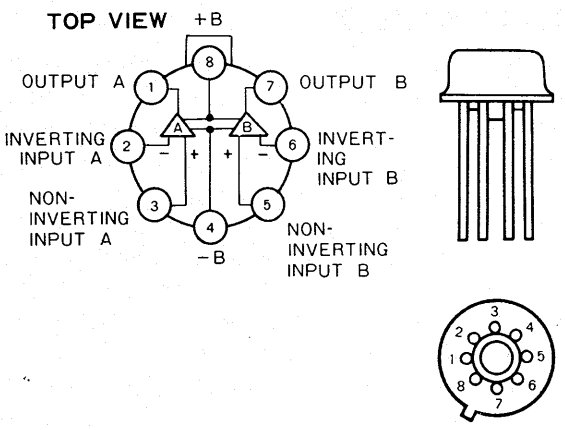
PREAMP CIRCUIT ▶



PREAMP (X08-1270-00)

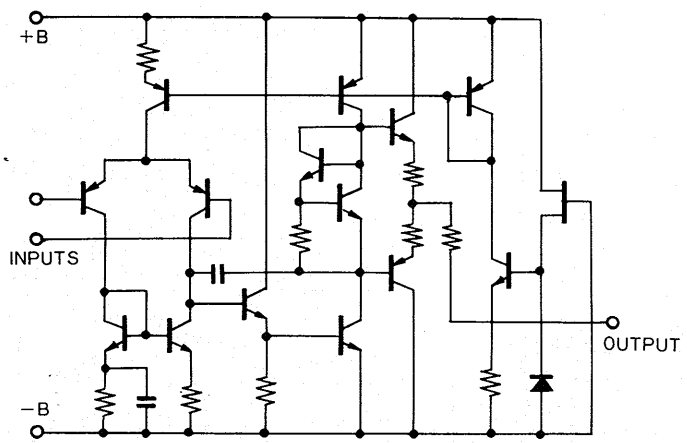
Metal can sealed monolithic IC is used here. This IC consists of the differential amplifier of the first stage and emitter followers of next stage, operating to provide Class A drive and pure complementary output. The circuit is a wide dynamic range circuit, operating with high input impedance and low output impedance and drawing two power supplies, positive and negative, and thus ensures stabilized equalizer characteristics.

CIRCUIT DESCRIPTION

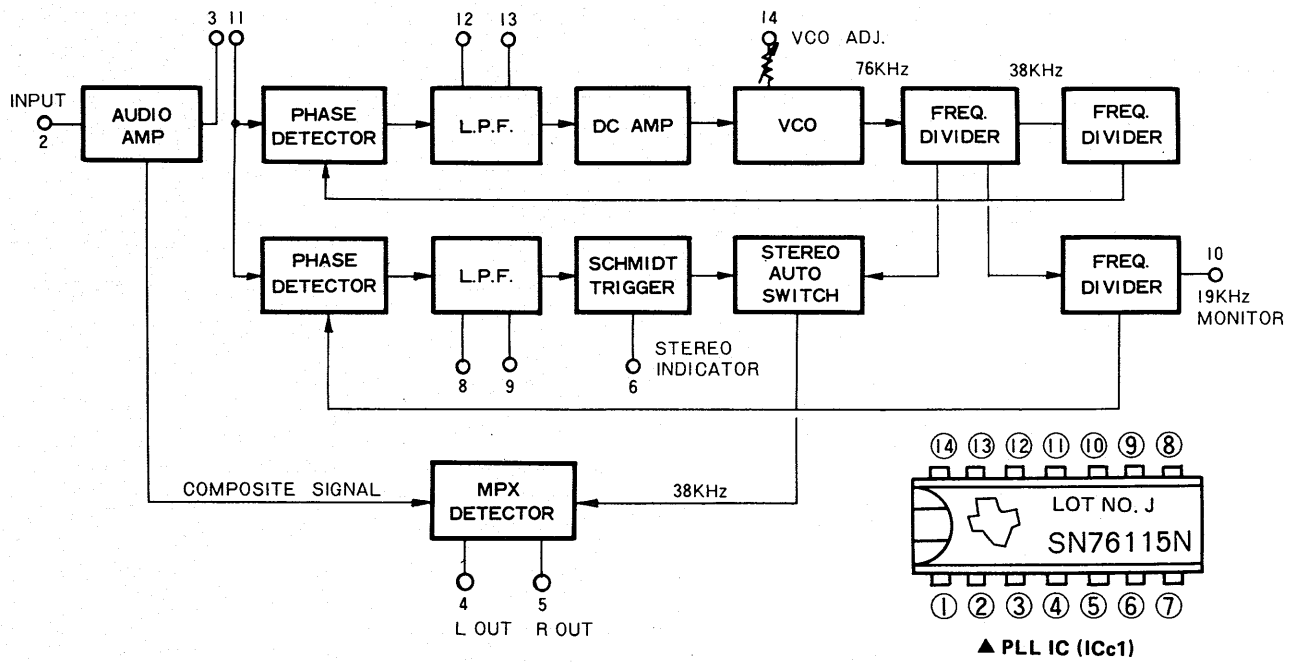


▲RC4558T CONNECTION

▼RC4558T CIRCUIT



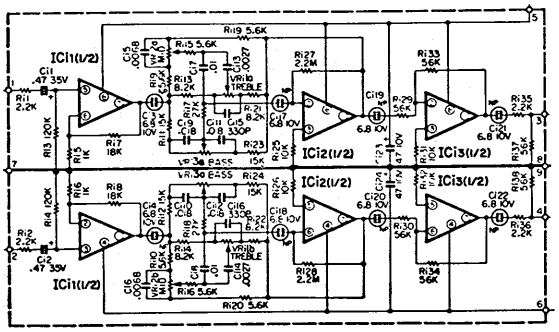
▼PLL IC BLOCK DIAGRAM



▲PLL IC (ICc1)

TONE AMP (X11-1210-00)

This, too, is a two power supply amplifier of NF tone type, providing differential amplifier in the first stage with 3 pure complementary ICs. Input and output are in phase; total gain is about 25 dB; and the accurate tone control extends throughout the wide dynamic range. The final stage of this IC tone amplifier is for phase inversions.



▲TONE AMP (X11-1210-00)

MAIN AMP (X07-1270-10)

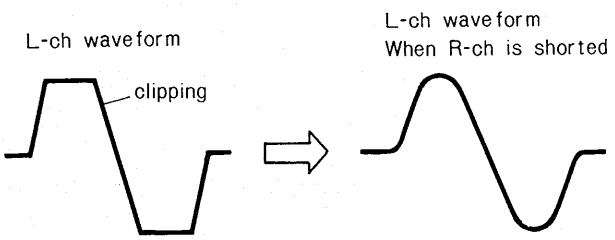
Transistors are employed with all metal can sealed type. The first stage consists of differential amplifier which ensures good NFB effects and feeds the stabilized bias for a driver stage.

Transistors and thermistor for bias setting are used in the complementary circuit. Full temperature compensation is effected. Complementary and final circuitry consist of a direct-coupled pure complementary.

CIRCUIT DESCRIPTION

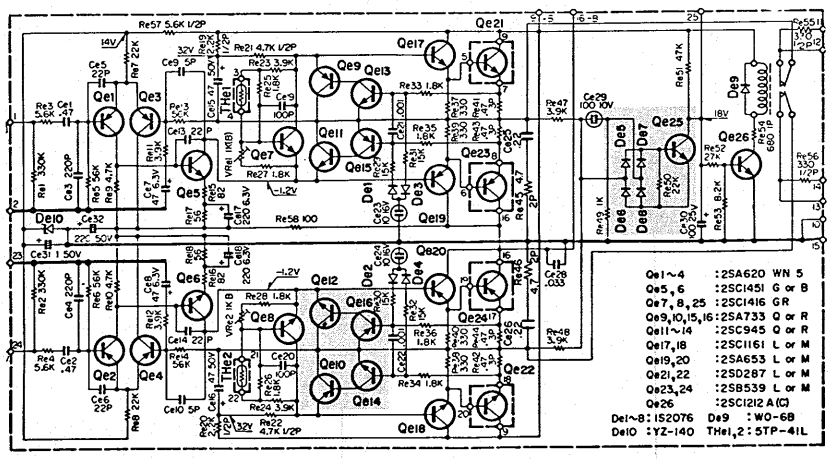
PROTECTION CIRCUIT

Current limiter protection operates out of transistor's SOA (Safe Operating Area). This protection circuit is accomplished by detecting the Ic of power transistor. Safeguard against overcurrent is decreased by the bias on the complementary stage. For DC drifts of the center voltage level, a relay is employed to cut the speaker line out of service when the center level drifts more than ±7 volts. This protective action, as well as the SOA protection mentioned above, is self-return. All these protective schemes operate free from the influence of speaker load impedance. Confirm the current limiter protection to operate. The following is the method: connect the dummy resistor to both speaker terminals, and the oscilloscope across the dummy resistor of the left channel.
And then feed the signal (1 kHz) to AUX jack of the receiver. Next short-circuit the right speaker terminal, and the left output is increase. Other channel in the same.



MUTING CIRCUIT

When the power switch is on the protection relay does not operate to eliminate the shock noise from speaker. And then the relay operates after power switch is on.



▲ MAIN AMP (X07-1270-10)

SOA protection DC drift protection

ADJUSTMENTS

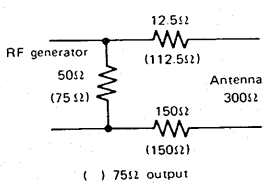
* Tuning dial is set to the proper point corresponding to no radio stations.
* The sweep and the r.f. generator are set to the lowest response possible on oscilloscope.
* When connecting the r.f. generator to the antenna terminal use the dummy antenna . . . refer to figure 1.
* Use the insulated screwdriver 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.
* INPUT means antenna input level.

No.	ALIGN	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.	Lb1	Maximum deflection (Fig. 2)
2	IFT	RF-SG to ANT via. dummy ant	98 MHz 75 kHz (Dev.) 400 Hz (Mod.)	98 MHz	same	La8	Maximum deflection
3	DISCRIMI-NATOR	SWEEP to TP1 via. 5pF cap.	10.7 MHz	Non-station	VTVM & SCOPE to TP3 via. 100kΩ resist.	Lb3	S-response and its symmetry on each side of 10.7 MHz center frequency (Fig. 3)
4	TRACKING	RF-SG to ANT via. dummy ant	90 MHz 75 kHz (Dev.) 400 Hz (Mod.)	90 MHz	VTVM & SCOPE to REC jack	La1-4	Maximum deflection
5	TRACKING	same	105 MHz 75 kHz (Dev.) 400 Hz (Mod.)	105 MHz	same	CTa1-4	same
6	TRIGGER	SWEEP to TP1 via. 5pF	10.7 MHz	Non-station	VTVM & SCOPE to TP4 via. 100kΩ resist.	Lb6	same
7	BEACON	RF-SG to ANT via. dummy ant	98 MHz 75 kHz (Dev.) 400 Hz (Mod.) 60 dB (Input)	98 MHz	VTVM & SCOPE to TP5 via. 100kΩ resist.	VRb3	TP5 is 5V (d.c.)
8	BEACON	same	98 MHz 75 kHz (Dev.) 400 Hz (Mod.) 22-23 dB (Input)	same	same	VRb1	TP5 is 3.5V (d.c.)
9	MUTING	same	98 MHz 75 kHz (Dev.) 400 Hz (Mod.) 17 dB (Input)	98 MHz MUTING on	–	VRb3	MUTING operates
10	BEACON	MPX-SG to RF-SG ext jack	98 MHz 67.5 kHz (Dev.) 400 Hz (Mod.) 17 dB (Input)	98 MHz	–	–	STEREO indicator lights
11	OUTPUT	RF-SG to ANT via. dummy ant	98 MHz 75 kHz (Dev.) 400 Hz (Mod.) 60 dB (Input)	same	VTVM & SCOPE to REC jack	VRb2	Output is 1V

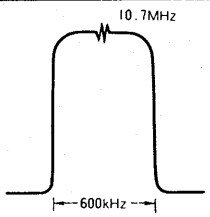
ADJUSTMENTS

* **When switching the 19 kHz of MPX-SG on or off, the phase of output waveform doesn't drift.**

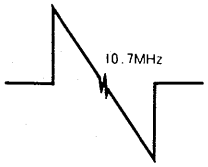
No.	ALIGN	TEST EQUIPMENTS		RECEIVER SETTING	OUTPUT INDICATOR	ADJUSTMENT POINTS	REMARKS
		CONNECTION	SETTING				
12	METER	RF-SG to ANT via. dummy ant	98 MHz 75 kHz (Dev.) 400 Hz (Mod.) 60 dB (Input)	98 MHz	S meter	Lb5	Maximum deflection
13	MPX	MPX-SG to RF-SG ext jack	98 MHz 67.5 kHz (Dev.) 400 Hz (Mod.) L + R (Select)	same	STEREO indicator	–	STEREO indicator lights
14a	VCO	–	–	–	FREQ counter to TP6	VRc1	Counter indicates 19 kHz
14b	VCO	MPX-SG to RF-SG ext jack	98 MHz 67.5 kHz (Dev.) 400 Hz (Mod.) L + R (Select)	98 MHz	VTVM & SCOPE to TP6 via. 100kΩ resist.	VRc1	* Phase not drift
15	SEPARATION	same	98 MHz 67.5 kHz (Dev.) 400 Hz (Mod.) L or R (Select)	same	VTVM & SCOPE to REC jack	VRc2	Minimum deflection
AM SECTION							
1	IFT	SWEEP to TP7	455 kHz	Non-station	VTVM & SCOPE to TP8	Lb7-9	Maximum deflection
2	IFT	RF-SG to ANT	1,000 kHz 400 Hz (30% Mod.)	1,000 kHz	VTVM & SCOPE to REC jack	Lb7-9	same
3	RF	same	600 kHz 400 Hz (30% Mod.)	600 kHz	same	Lb6, Lb10 Ferrite ANT	same
4	RF	same	1,400 kHz 400 Hz (30% Mod.)	1,400 kHz	same	CTa6-8	same
5	S METER	same	1,000 kHz 400 Hz (30% Mod.)	1,000 kHz	S meter	–	Confirm the meter deflection at 4.5
AUDIO SECTION							
1a	BIAS	–	–	VOLUME is its min.	DC VTVM to TP10 and TP11 TP10 (Positive)	VRe1,2	Meter indicates 40mV (Ref. to P29)
1b	BIAS	–	–	same	Ammeter to TP12 (disconnect the collector lead.)	same	Meter indicates 40mA (Ref. to P29)



Dummy antenna
Fig. 1

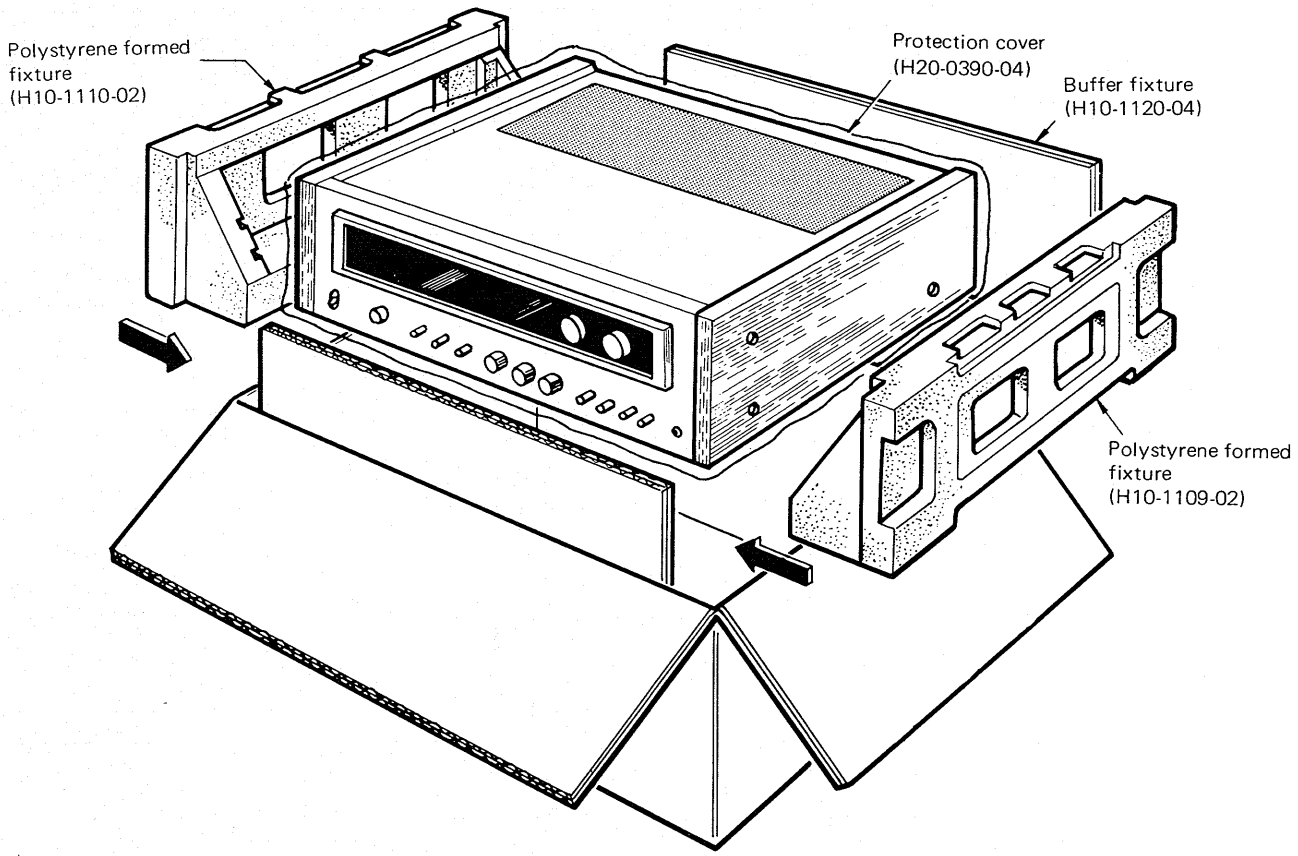


IF wave form
Fig. 2



DISCRI waveform
Fig. 3

PACKING



* The set for U.S., K type, provides with buffer fixture only.

MODIFICATIONS' PARTS LIST

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
–	A20-0770-02	A20-0770-02	A20-0770-02	A20-0770-02	A20-0770-02	A20-0770-02	A20-0771-02	A20-0770-02	A20-0770-02	Panel assembly
–	A20-0772-02	A20-0772-02	A20-0772-02	A20-0772-02	A20-0772-02	A20-0772-02	A20-0773-02	A20-0772-02	A20-0772-02	Panel
–	B20-0304-12	B20-0304-12	B20-0304-12	B20-0304-12	B20-0304-12	B20-0304-12	B20-0304-12	B20-0305-12	B20-0304-12	Dial calibrations
–	B42-0359-04 x 2	B42-0359-04	–	–	–	–	–	–	–	Cuation sticker
–	B46-0002-00	B46-0021-00	B46-0022-00	–	–	–	–	–	–	Warranty card
–	–	–	B46-0023-00	–	–	–	–	–	–	Warranty card
–	B50-1167-00	B50-1167-00	B50-1167-00	B50-1167-00	B50-1167-00	B50-1167-00	B50-1168-00	B50-1167-00	B50-1167-00	Instruction manual
–	–	–	B58-0139-00	B58-0003-00	B58-0156-00	–	B58-0003-00	B58-0003-00	B58-0003-00	Power supply caution card
–	B58-0043-00	B58-0043-00	–	–	–	–	–	–	–	Carton case caution card
–	–	–	B58-0144-00	B58-0101-00	B58-0157-00	–	B58-0101-00	B58-0101-00	B58-0101-00	Power voltage selector caution card
–	–	–	B58-0146-00	B58-0108-00	–	–	B58-0108-00	B58-0108-00	B58-0108-00	Spare fuse caution card
–	–	–	B59-0018-00	–	–	–	–	–	–	KENWOOD service stations' list
–	–	–	F05-2023-05	F05-4022-05	F05-4025-05	F05-4022-05	F05-4022-05	F05-4022-05	F05-4022-05	Fuse
–	X90-1090-10	X90-1090-01	X90-1090-81	X90-1090-71	X90-1090-61	X90-1091-71	X90-1090-51	X90-1090-41	X90-1090-21	Audio section assembly
–	X90-1100-10	X90-1100-10	X90-1100-81	X90-1100-81	X90-1100-61	X90-1100-51	X90-1100-51	X90-1100-41	X90-1100-81	Tuner section assembly
AUDIO SECTION ASSEMBLY										
–	A23-0468-02	A23-0468-02	A23-0469-02	A23-0472-02	A23-0470-02	A23-0471-02	A23-0472-02	A23-0472-02	A23-0469-02	Rear panel
–	B40-0946-04	B40-0947-04	B40-0948-04	B40-0949-04	B40-0950-04	B40-0951-04	B40-0952-04	B40-0949-04	B40-0949-04	Model name plate
–	–	–	–	–	B42-0024-04	–	–	–	–	SEV sticker
–	B42-0517-04	B42-0517-04	–	–	–	–	–	–	–	Caution sticker
–	D32-0021-04	D32-0021-04	D32-0021-04 x 2	D32-0021-04 x 2	D32-0021-04 x 2	D32-0021-04	D32-0021-04 x 2	D32-0021-04 x 2	D32-0021-04 x 2	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 3
–	E30-0181-05	E30-0181-05	E30-0034-05	E30-0185-05	E30-0176-05	E30-0292-05	–	–	E30-0034-05	Power cord
–	F05-4026-05	F05-4026-05	F05-4022-05	–	–	–	–	–	–	Fuse (4A)
–	–	–	–	F05-2023-05	F06-2021-05	F06-2021-05	F05-2023-05	F05-2023-05	F05-2023-05	Fuse (2A)
–	–	–	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	Power cord bushing
–	L04-0052-05	L04-0052-05	L03-0094-05	L03-0094-05	L09-0125-05	L09-0115-05	L03-0094-05	L03-0094-05	L03-0094-05	Power transformer
R300	RC05GF2H225K	RC05GF2H225K	RC05GF2H225K	–	–	–	–	–	–	Carbon resister 2.2MΩ ±10% 1/2W
–	–	–	S31-2001-05	S31-2001-05	S31-2001-05	–	S31-2001-05	S31-2001-05	S31-2001-05	Slide switch (power voltage selector)
–	X00-1430-10	X00-1430-10	X00-1430-10	X00-1430-10	X00-1430-61	X00-1430-61	X00-1430-10	X00-1430-10	X00-1430-10	Power supply unit
TUNER SECTION ASSEMBLY										
S5	S36-2032-05	S36-2032-05	S36-2033-05	S36-2033-05	S36-2033-05	S36-2033-05	S36-2033-05	S36-2033-05	S36-2033-05	Pushbutton switch (POWER)
–	X01-1160-10	X01-1160-10	X01-1160-10	X01-1160-10	X01-1160-10	X01-1160-10	X01-1160-10	X01-1180-40	X01-1160-10	FM-RF unit
–	X02-1050-11	X02-1050-11	X02-1050-11	X02-1050-11	X02-1050-11	X02-1050-11	X02-1050-11	X02-1050-02	X02-1050-11	IF unit
–	X04-1040-10	X04-1040-10	X04-1040-10	X04-1040-10	X04-1040-61	X04-1040-01	X04-1040-01	X04-1040-10	X04-1040-10	MPX unit

TOTAL PARTS LIST

Ref. No.	Parts No.	Description	Remarks
–	A01-0240-03	Case	
–	A13-0088-03	Frame (A)	
–	A13-0089-03	Frame (B)	
–	A40-0129-13	Bottom plate	
–	A48-0018-04	Panel side plate (L)	
–	A48-0019-04	Panel side plate (R)	
–	B01-0088-05	Panel escutcheon	
–	B10-0148-03	Frontglass	
–	B19-0163-12	Color board	
–	B21-2021-05	Dial pointer	
–	B42-0009-04	Passed sticker	
–	B52-0164-00	Schematic diagram	
–	D21-0361-14	Dial shaft assembly	
–	D22-0018-05	Shaft coupler	
–	D23-0048-04	Bearing	
–	F19-0160-03	Wooden side board (L)	
–	F19-0161-03	Wooden side board (R)	
–	F19-0162-14	Blinder	
–	J02-0049-14	Leg x 4	
–	J19-0415-03	Frontglass stopper (Top)	
–	J19-0416-03	Frontglass stopper (Bottom)	
–	J90-0057-13	Dial pointer rail	
–	K23-0164-04	Knob (TUNING)	
–	K23-0165-04	Knob (VOLUME)	
–	K23-0166-04	Knob (BALANCE)	
–	K23-0167-04	Knob (TAPE MODE, SPEAKERS, MODE, SELECTOR) x 4	
–	K23-0168-14	Knob (TONE) x 3	
–	K29-0195-04	Knob (Pushbutton) x 4	
–	K29-0196-04	Knob (POWER)	
–	N08-0126-05	Dress screw x 6	
–	T90-0002-05	FM indoor antenna	

TUNER SECTION ASS'Y (X90-1100-10) PARTS LIST

Ref. No.	Parts No.	Description	Remarks
–	A10-0389-11	Front chassis	
–	A22-0151-01	Sub panel	
–	A33-0029-02	Reflector	
–	B30-0064-15	Pilot lamp (STEREO, 50mA)	
–	B30-0068-05	Pilot lamp (METER, 200mA) x 2	
–	B30-0069-05	Pilot lamp (Reflector, 300mA) x 4	
–	B31-0183-05	Meter (S)	
–	B31-0184-05	Meter (T)	
C304	CE04W0F221	Electrolytic 220μF 3.15WV	
C305	CQ93M1H224M	Mylar 0.22μF ±20%	
–	D01-0009-15	Flywheel	
–	D15-0073-14	Pulley (middle) x 4	
–	D15-0075-04	Pulley (small)	
–	D15-0132-03	Dial pulley	
–	D20-0099-13	Dial shaft assembly	
–	E08-0222-04	Connector bushing (2P) x 2	
–	E11-0002-05	Phone jack	
–	E11-0004-15	Mic jack	
–	F07-0336-13	Front end cover	
–	F10-0340-04	Shield plate	
–	G01-0044-04	Dial spring	
–	J90-0058-14	Guide	
R301	PD14BY2E102J	Carbon 1kΩ ±5% 1/4W	
VR1	R11-9004-05	Potentiometer 100K(B) x 2, 200K (W) VOLUME & BALANCE	
S4	S01-1020-05	Rotary switch (MODE)	
–	X08-1270-00	Preamp unit	
–	X11-1210-00	Tone amp unit	
–	X13-1800-10	Pushbutton switch unit	
–	X13-1810-10	Connection unit	

POWER SUPPLY (X00-1430-10) PARTS LIST

Ref. No.	Parts No.	Description	Remarks
		CAPACITOR	
Ck1	CE04W1C331	Electrolytic 330μF 16WV	
Ck2, 3	CK45E2H103P	Ceramic 0.01μF +100%, −0%	
Ck4	CE04W1V221	Electrolytic 220μF 35WV	
Ck5	CE04W1C331	Electrolytic 330μF 16WV	
Ck6	CE04W1V221	Electrolytic 220μF 35WV	
Ck7, 8	CE04W1C221	Electrolytic 220μF 16WV	
Ck9	CE04W1J100	Electrolytic 10μF 63WV	(X00-1430-61)
Ck10	CE04W1C330	Electrolytic 33μF 16WV	
Ck11	CE04W1C331	Electrolytic 330μF 16WV	
		RESISTOR	
Rk1	RN14AB3D151KB	Metal film 150Ω ±10% 2W	
Rk2	PD14BY2H391KB	Carbon 390Ω ±10% 1/2W	
Rk3	RC05GF2H560K	Carbon 56Ω ±10% 1/2W	
Rk4	PD14BY2E561JB	Carbon 560Ω ±5% 1/4W	
Rk5	RC05GF2H471K	Carbon 470Ω ±10% 1/2W	
Rk6	PD14BY2E221JB	Carbon 220Ω ±5% 1/4W	
Rk7, 8	PD14BY2E102J	Carbon 1KΩ ±5% 1/4W	
Rk9	PD14BY2E221JB	Carbon 220Ω ±5% 1/4W	
Rk10	PD14BY2H103KB	Carbon 10KΩ ±10% 1/2W	(X00-1430-61)
Rk11	PD14BY2H391KB	Carbon 390Ω ±10% 1/2W	
		SEMICONDUCTOR	
Qk1		2SC1419	
Dk1, 2		S-5151R	
Dk3, 4		S-5151	
Dk5		V06B	
Dk6		YZ-140	
Dk7		DZ-140	
Dk8, 9		V06B	(X00-1430-61)
		MISCELLANEOUS	
–	B41-0184-04	Fuse sticker (250V-2A)	(X00-1430-10)
–	F01-0180-04	Heat sink	
–	F05-2021-05	Fuse (2A) UL	(X00-1430-10)
–	F05-2029-05	Fuse (2A) SEV	(X00-1430-61)
–	J13-0032-05	Fuse holder (5 x 20) SEV	(X00-1430-61)
–	J13-0034-05	Fuse holder (UL)	(X00-1430-10)
–	J21-1003-14	PC board mounting hardware (L)	
–	J21-1004-14	PC board mounting hardware (R)	

RF (X01-1160-10) PARTS LIST

Ref. No.	Parts No.	Description				Remarks
		CAPACITOR				
Ca1	CC45SH1H100J	Ceramic	10pF	±5%		
Ca2, 3	CK45F1H103Z	Ceramic	0.01μF	+80%, −20%		
Ca4	CC45SL1H101J	Ceramic	100pF	±5%		
Ca5	CC45SH1H100J	Ceramic	10pF	±5%		
Ca7, 8	CK45F1H103Z	Ceramic	0.01μF	+80%, −20%		
Ca9	CC45SL1H101J	Ceramic	100pF	±5%		
Ca10	CC45SL1H120J	Ceramic	12pF	±5%		
Ca11	CC45SG1H180J	Ceramic	18pF	±5%		
Ca12, 13	CK45F1H103Z	Ceramic	0.01μF	+80%, −20%		
Ca14	CC45RG1H220J	Ceramic	22pF	±5%		(X01-1160-10)
	CC45RG1H060J	Ceramic	6pF	±5%		(X01-1180-40)
Ca15	CC45TH1H100J	Ceramic	10pF	±5%		
Ca16	CK45F1H103Z	Ceramic	0.01μF	+80%, −20%		
Ca17	CC45TH1H390J	Ceramic	39pF	±5%		
Ca18, 19	CC45TH1H100J	Ceramic	10pF	±5%		
Ca20	CQ93M1H103K	Mylar	0.01μF	±10%		
Ca21, 22	CK45F1H103Z	Ceramic	0.01μF	+80%, −20%		
		RESISTOR				
Ra1	PD14BY2B103J	Carbon	10KΩ	±5%	1/8W	
Ra2	PD14BY2B562J	Carbon	5.6KΩ	±5%	1/8W	
Ra3	PD14BY2B221J	Carbon	220Ω	±5%	1/8W	
Ra7	PD14BY2B102J	Carbon	1KΩ	±5%	1/8W	
Ra8	PD14BY2B221J	Carbon	220Ω	±5%	1/8W	
Ra9	PD14BY2B104J	Carbon	100KΩ	±5%	1/8W	
Ra10	PD14BY2B471J	Carbon	470Ω	±5%	1/8W	
Ra11	PD14BY2B103J	Carbon	10KΩ	±5%	1/8W	
Ra12	PD14BY2B271J	Carbon	270Ω	±5%	1/8W	
Ra13	PD14BY2B123J	Carbon	12KΩ	±5%	1/8W	
Ra14	PD14BY2B103J	Carbon	10KΩ	±5%	1/8W	
Ra15 ~ 17	PD14BY2B102J	Carbon	1KΩ	±5%	1/8W	
		SEMICONDUCTOR				
Qa1		3SK45C				
Qa2, 3		3SK41 (L) or (M)				
Qa4, 5		2SC785 (R)				
THa1		SDT-65				
		COIL/IFT				
La1	L34-0301-04	FM-ANT Coil				
La2, 3	L34-0358-05	FM-RF Coil				
La4	L34-0459-05	FM-OSC Coil				(X01-1160-10)
	L34-0449-05	FM-OSC Coil				(X01-1180-40)
La5, 6	L33-0025-05	Choke coil				
La7	L33-0086-05	Choke coil				
La8	L30-0202-05	FM-IFT				
La9	L33-0086-05	Choke coil				
		MISCELLANEOUS				
–	C01-0186-05	Variable capacitor				
CTa1	C05-0009-15	Ceramic trimmer				
–	E29-0041-04	Lead plate				
–	F10-0204-24	Front end shield plate				

IF (X02-1050-11) PARTS LIST

Ref. No.	Parts No.	Description				Remarks
		CAPACITOR				
Cb1 ~ 3	CK45F1H103Z	Ceramic	0.01μF	+80%, −20%		
Cb4	CC45SL1H150K	Ceramic	15pF	±10%		
Cb5	CQ93M1H103K	Mylar	0.01μF	±10%		
Cb6 ~ 8	CK45F1H103Z	Ceramic	0.01μF	+80%, −20%		
Cb12 ~ 19	CK45F1H103Z	Ceramic	0.01μF	+80%, −20%		
Cb20	CQ93M1H103K	Mylar	0.01μF	±10%		
Cb21	CC45PH1H100D	Ceramic	10pF	±0.5pF		(X02-1050-11)
Cb22, 23	CC45SL1H221K	Ceramic	220pF	±10%		
Cb24	CE04W1E100	Electrolytic	10μF	25WV		
Cb25	CC45SL1H101K	Ceramic	100pF	±10%		
Cb26	CK45F1H103Z	Ceramic	0.01μF	+80%, −20%		
Cb27	CC45SL1H100D	Ceramic	10pF	±0.5pF		
Cb28 ~ 32	CK45F1H103Z	Ceramic	0.01μF	+80%, −20%		
Cb33	CC45SL1H100D	Ceramic	10pF	±0.5pF		
Cb34 ~ 36	CK45F1H103Z	Ceramic	0.01μF	+80%, −20%		
Cb37	CE04W1H010	Electrolytic	1μF	50WV		
Cb38	CK45F1H223Z	Ceramic	0.022μF	+80%, −20%		
Cb40	CC45SL1H100D	Ceramic	10pF	±0.5pF		
Cb41, 42	CK45F1H223Z	Ceramic	0.022μF	+80%, −20%		
Cb43	CE04W1E3R3	Electrolytic	3.3μF	25WV		
Cb44	CK45F1H223Z	Ceramic	0.022μF	+80%, −20%		
Cb45	CQ93M1H473K	Mylar	0.047μF	±10%		
Cb46 ~ 50	CK45F1H223Z	Ceramic	0.022μF	+80%, −20%		
Cb51	CK45F1H473J	Ceramic	0.047μF	±5%		
Cb52	CQ93M1H102J	Mylar	0.001μF	±5%		
Cb53	CK45F1H473Z	Ceramic	0.047μF	+80%, −20%		
Cb54	CE04W1E3R3	Electrolytic	3.3μF	25WV		
Cb55, 56	CQ93M1H103K	Mylar	0.01μF	±10%		
Cb57	CE04W1H010	Electrolytic	1μF	50WV		
Cb58	CQ93M1H472K	Mylar	0.0047μF	±10%		
Cb59	CK45F1H223Z	Ceramic	0.022μF	+80%, −20%		
Cb60, 61	CQ93M1H103K	Mylar	0.01μF	±10%		
Cb62	CC45SL1H180K	Ceramic	18pF	±10%		
Cb63	CQ93M1H223K	Mylar	0.022μF	±10%		
Cb64	CQ09S1H361J	Polystyrene	360pF	±5%		
		RESISTOR				
Rb1	PD14BY2B102J	Carbon	1KΩ	±5%	1/8W	
Rb2	PD14BY2B222J	Carbon	2.2KΩ	±5%	1/8W	
Rb3	PD14BY2B102J	Carbon	1KΩ	±5%	1/8W	
Rb4	PD14BY2B330J	Carbon	33Ω	±5%	1/8W	
Rb5	PD14BY2B471J	Carbon	470Ω	±5%	1/8W	
Rb6	PD14BY2B561J	Carbon	560Ω	±5%	1/8W	
Rb7	PD14BY2B681J	Carbon	680Ω	±5%	1/8W	
Rb8	PD14BY2B222J	Carbon	2.2KΩ	±5%	1/8W	
Rb9	PD14BY2B100J	Carbon	10Ω	±5%	1/8W	
Rb10	PD14BY2B102J	Carbon	1KΩ	±5%	1/8W	
Rb11	PD14BY2B103J	Carbon	10KΩ	±5%	1/8W	
Rb12	PD14BY2B223J	Carbon	22KΩ	±5%	1/8W	
Rb13	PD14BY2B561J	Carbon	560Ω	±5%	1/8W	
Rb14	PD14BY2B220J	Carbon	22Ω	±5%	1/8W	
Rb15	PD14BY2B152J	Carbon	1.5KΩ	±5%	1/8W	

IF (X02-1050-11) PARTS LIST

Ref. No.	Parts No.	Description				Remarks
Rb16	PD14BY2B332J	Carbon	3.3KΩ	±5%	1/8W	
Rb17	PD14BY2B102J	Carbon	1KΩ	±5%	1/8W	
Rb18	PD14BY2B222J	Carbon	2.2KΩ	±5%	1/8W	
Rb21	PD14BY2B221J	Carbon	220Ω	±5%	1/8W	
Rb22	PD14BY2B472J	Carbon	4.7KΩ	±5%	1/8W	
Rb23	PD14BY2B103J	Carbon	10KΩ	±5%	1/8W	
Rb24	PD14BY2B102J	Carbon	1KΩ	±5%	1/8W	
Rb25	PD14BY2B220J	Carbon	22Ω	±5%	1/8W	
Rb26	PD14BY2B182J	Carbon	1.8KΩ	±5%	1/8W	
Rb27	PD14BY2B222J	Carbon	2.2KΩ	±5%	1/8W	
Rb28	PD14BY2B221J	Carbon	220Ω	±5%	1/8W	
Rb29	PD14BY2B472J	Carbon	4.7KΩ	±5%	1/8W	(X02-1050-11)
	PD14BY2B682J	Carbon	6.8KΩ	±5%	1/8W	(X02-1050-02)
Rb30, 31	PD14BY2B222J	Carbon	2.2KΩ	±5%	1/8W	
Rb32, 33	PD14BY2B682J	Carbon	6.8KΩ	±5%	1/8W	
Rb34	PD14BY2B471J	Carbon	470Ω	±5%	1/8W	
Rb36	PD14BY2B101J	Carbon	100Ω	±5%	1/8W	
Rb37	PD14BY2B102J	Carbon	1KΩ	±5%	1/8W	
Rb38	PD14BY2B221J	Carbon	220Ω	±5%	1/8W	
Rb39	PD14BY2B562J	Carbon	5.6KΩ	±5%	1/8W	
Rb40	PD14BY2B220J	Carbon	22Ω	±5%	1/8W	
Rb41	PD14BY2B391J	Carbon	390Ω	±5%	1/8W	
Rb42, 43	PD14BY2B102J	Carbon	1KΩ	±5%	1/8W	
Rb44	PD14BY2B331J	Carbon	330Ω	±5%	1/8W	
Rb45	PD14BY2B152J	Carbon	1.5KΩ	±5%	1/8W	
Rb46	PD14BY2B332J	Carbon	3.3KΩ	±5%	1/8W	
Rb47	PD14BY2B220J	Carbon	22Ω	±5%	1/8W	
Rb48	PD14BY2B103J	Carbon	10KΩ	±5%	1/8W	
Rb50	PD14BY2B333J	Carbon	33KΩ	±5%	1/8W	
Rb51	PD14BY2B220J	Carbon	22Ω	±5%	1/8W	
Rb55	PD14BY2B224J	Carbon	220KΩ	±5%	1/8W	
Rb56, 57	PD14BY2B103J	Carbon	10KΩ	±5%	1/8W	
Rb58	PD14BY2B102J	Carbon	1KΩ	±5%	1/8W	
Rb59	PD14BY2B122J	Carbon	1.2KΩ	±5%	1/8W	
Rb60	PD14BY2B563J	Carbon	56KΩ	±5%	1/8W	
Rb61	PD14BY2B562J	Carbon	5.6KΩ	±5%	1/8W	
Rb62	PD14BY2B331J	Carbon	330Ω	±5%	1/8W	
Rb63	PD14BY2B102J	Carbon	1KΩ	±5%	1/8W	
Rb64	PD14BY2B101J	Carbon	100Ω	±5%	1/8W	
Rb65	PD14BY2B104J	Carbon	100KΩ	±5%	1/8W	
Rb66	PD14BY2B101J	Carbon	100Ω	±5%	1/8W	
Rb67	PD14BY2B273J	Carbon	27KΩ	±5%	1/8W	
Rb68	PD14BY2B184J	Carbon	180KΩ	±5%	1/8W	
Rb69	PD14BY2B102J	Carbon	1KΩ	±5%	1/8W	
Rb70	PD14BY2B221J	Carbon	220Ω	±5%	1/8W	
Rb71	PD14BY2B104J	Carbon	100KΩ	±5%	1/8W	
Rb72	PD14BY2B101J	Carbon	100Ω	±5%	1/8W	
Rb73	PD14BY2B472J	Carbon	4.7KΩ	±5%	1/8W	
Rb74	PD14BY2B223J	Carbon	22KΩ	±5%	1/8W	
Rb75	PD14BY2B331J	Carbon	330Ω	±5%	1/8W	
Rb76	PD14BY2B103J	Carbon	10KΩ	±5%	1/8W	
Rb77	PD14BY2B562J	Carbon	5.6KΩ	±5%	1/8W	
Rb78	PD14BY2B561J	Carbon	560Ω	±5%	1/8W	

IF (X02-1050-11) PARTS LIST

Ref. No.	Parts No.	Description				Remarks
Rb79	PD14BY2B152J	Carbon	1.5KΩ	±5%	1/8W	
Rb80	PD14BY2B153J	Carbon	15KΩ	±5%	1/8W	
Rb81	PD14BY2B563J	Carbon	56KΩ	±5%	1/8W	
Rb82	PD14BY2B331J	Carbon	330Ω	±5%	1/8W	
Rb83	PD14BY2B102J	Carbon	1KΩ	±5%	1/8W	
Rb85	PD14BY2B101J	Carbon	100Ω	±5%	1/8W	
Rb86	PD14BY2B472J	Carbon	4.7KΩ	±5%	1/8W	
SEMICONDUCTOR						
Qb1, 2		2SC381 (O) or 2SC535 (B)				
Qb3 ~ 5		2SC381 (O)				
Qb6		2SC381 (R)				
Qb7, 8		2SC381 (O) or (R) 2SC535 (B)				
Qb9		2SC945 (Q) or (R)				
Qb10		2SC941 (O)				
Qb11		2SC941 (R)				
Qb12		2SC941 (O)				
Qb13		2SC381 (R)				
Qb14		2SC941 (R)				
ICb1		TA7060P				
Db1 ~ 3		1S1555 or 1S2076				
Db4, 5		1N60				
Db8, 9		1N60				
Db10		1S1555 or 1S2076				
Db11 ~ 15		1N60				
COIL/FILTER/IFT						
Lb1	L30-0243-05	FM-IFT				
Lb2	L33-0098-05	Ferri-inductor				
Lb3	L30-0207-15	Discriminator coil				
Lb4	L33-0098-05	Ferri-inductor				
Lb5	L30-0244-05	Trigger coil				
Lb6	L31-0111-05	AM-RF coil				
Lb7	L30-0272-05	AM-IFT				
Lb8	L30-0273-05	AM-IFT				
Lb9	L30-0052-05	AM-IFT				
Lb10	L30-0082-05	AM-OSC coil				
Lb11	L30-0255-05	Meter coil				
CFb1	L72-0010-05	Ceramic filter				
CFb2	L72-0019-05	Ceramic filter				
POTENTIOMETER						
VRb1	R12-1021-05	PC trimmer	1KΩ (B)			
VRb2	R12-3028-05	PC trimmer	20KΩ (B)			
VRb3	R12-5019-05	PC trimmer	100KΩ (B)			

MPX (X04-1040-10) PARTS LIST

Ref. No.	Parts No.	Description				Remarks
		CAPACITOR				
Cc1, 2	CE04W1E100	Electrolytic	10μF	25WV		
Cc3	CQ08S1H471J	Polystyrene	470pF	±5%		
Cc4	CS15E1VR33M	Tantalum	0.33μF	35WV		
Cc5	CS15E1VR47M	Tantalum	0.47μF	35WV		
Cc6	CS15E1V0R1M	Tantalum	0.1μF	35WV		
Cc7, 8	CS15E1E010M	Tantalum	1μF	25WV		
Cc9	CE04W1H010	Electrolytic	1μF	50WV		
Cc10, 11	CQ93M1H822J	Mylar	0.0082μF	±5%		(X04-1040-10)
	CQ93M1H562J	Mylar	0.0056μF	±5%		(X04-1040-61, -01)
Cc12	CE04W1E100	Electrolytic	10μF	25WV		
Cc13	CQ93M1H473K	Mylar	0.047μF	±10%		
Cc15, 16	CS15E1V0R1M	Tantalum	0.1μF	35WV		
Cc17, 18	CQ93M1H332J	Mylar	0.033μF	±5%		(X04-1040-61)
		RESISTOR				
Rc1	PD14BY2E224J	Carbon	220KΩ	±5%	1/4W	
Rc2	PD14BY2E563J	Carbon	56KΩ	±5%	1/4W	
Rc3	PD14BY2E682J	Carbon	6.8KΩ	±5%	1/4W	
Rc4	PD14BY2E222J	Carbon	2.2KΩ	±5%	1/4W	
Rc5	PD14BY2E153J	Carbon	15KΩ	±5%	1/4W	
Rc6, 7	PD14BY2E332J	Carbon	3.3KΩ	±5%	1/4W	
Rc8	PD14BY2E102J	Carbon	1KΩ	±5%	1/4W	
Rc10	PD14BY2E103J	Carbon	10KΩ	±5%	1/4W	
Rc11	PD14BY2E101J	Carbon	100Ω	±5%	1/4W	
Rc12	PD14BY2E224J	Carbon	220KΩ	±5%	1/4W	
Rc13, 14	PD14BY2E392J	Carbon	3.9KΩ	±5%	1/4W	
Rc15, 16	PD14BY2E912J	Carbon	9.1KΩ	±5%	1/4W	(X04-1040-10)
	PD14BY2E822J	Carbon	8.2KΩ	±5%	1/4W	(X04-1040-61, -01)
Rc17	PD14BY2E101J	Carbon	100Ω	±5%	1/4W	
		SEMICONDUCTOR				
Qc1, 2		2SC945 (Q) or (R) or 2SC458 (B), (C) or (D)				
Dc1, 2		1S1555 or 1S2076				
ICc1		SN76115N				
		FILTER				
Lc1	L79-0014-05	Low-pass filter				
		POTENTIOMETER				
VRc1	R12-3030-05	PC trimmer	10KΩ(B)			
VRc2	R12-3029-05	PC trimmer	30KΩ(B)			

MAIN AMP (X07-1270-10) PARTS LIST

Ref. No.	Parts No.	Description				Remarks
CAPACITOR						
Ce1, 2	CQ93M1H474M	Mylar	0.47μF	±20%		
Ce3, 4	CC45SL1H221K	Ceramic	220pF	±10%		
Ce5, 6	CC45SL1H220K	Ceramic	22pF	±10%		
Ce7, 8	CE04W0J470	Electrolytic	47μF	6.3WV		
Ce9, 10	CC45SL1H050D	Ceramic	5pF	±0.5pF		
Ce13, 14	CC45SL1H220K	Ceramic	22pF	±10%		
Ce15, 16	CE04W1H470	Electrolytic	47μF	50WV		
Ce17, 18	CE04W0J221	Electrolytic	220μF	6.3WV		
Ce19, 20	CC45SL1H101K	Ceramic	100pF	±10%		
Ce21, 22	CQ93M1H102M	Mylar	0.001μF	±20%		
Ce23, 24	CE04W1C100NP	Electrolytic	10μF	16WV		
Ce25, 26	CQ93M1H224M	Mylar	0.22μF	±20%		
Ce28	CQ93M1H333M	Mylar	0.033μF	±20%		
Ce29	CE04W1A101NP	Electrolytic	100μF	10WV		
Ce30	CE04W1E101MBR	Electrolytic	100μF	25WV		
Ce31	CE04W1H010	Electrolytic	1μF	50WV		
Ce32	CE04W1H221	Electrolytic	220μF	50WV		
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	PD14BY2E223J	Carbon	22KΩ	±5%	1/4W	
Re9, 10	PD14BY2E472J	Carbon	4.7KΩ	±5%	1/4W	
Re11, 12	PD14BY2E392J	Carbon	3.9KΩ	±5%	1/4W	
Re13, 14	PD14BY2E563J	Carbon	56KΩ	±5%	1/4W	
Re15, 16	PD14BY2E820J	Carbon	82Ω	±5%	1/4W	
Re17, 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	PD14BY2E392J	Carbon	3.9KΩ	±5%	1/4W	
Re25 ~ 28	PD14BY2E182J	Carbon	1.8KΩ	±5%	1/4W	
Re29 ~ 32	PD14BY2E153J	Carbon	15KΩ	±5%	1/4W	
Re33 ~ 36	PD14BY2E182J	Carbon	1.8KΩ	±5%	1/4W	
Re37 ~ 40	PD14BY2E331JB	Carbon	330Ω	±5%	1/4W	
Re41 ~ 44	R92-0111-05	Wire wound	0.47Ω	±10%	5W	
Re45, 46	RN14AB3D4R7JB	Metal film	4.7Ω	±5%	2W	
Re47, 48	PD14BY2E393J	Carbon	3.9KΩ	±5%	1/4W	
Re49	PD14BY2E102J	Carbon	1KΩ	±5%	1/4W	
Re50	PD14BY2E223J	Carbon	22KΩ	±5%	1/4W	
Re51	PD14BY2E473J	Carbon	47KΩ	±5%	1/4W	
Re52	PD14BY2E273J	Carbon	27KΩ	±5%	1/4W	
Re53	PD14BY2E822J	Carbon	8.2KΩ	±5%	1/4W	
Re54	RN14AB3A681JB	Metal film	680Ω	±5%	1W	
Re55, 56	RC05GF2H331K	Carbon	330Ω	±10%	1/2W	
Re57	RC05GF2H562K	Carbon	5.6KΩ	±10%	1/2W	
Re58	PD14BY2E101JB	Carbon	100Ω	±5%	1/4W	

MAIN AMP (X07-1270-10) PARTS LIST

Ref. No.	Parts No.	Description	Remarks
		SEMICONDUCTOR	
Qe1 ~ 4		2SA620WN5	
Qe5, 6		2SC1451 (G) or (B)	
Qe7, 8		2SC1416 (GR)	
Qe9, 10		2SA733 (Q) or (R)	
Qe11 ~ 14		2SC945 (Q) or (R)	
Qe15, 16		2SA733 (Q) or (R)	
Qe17, 18		2SC1161 (L) or (M)	
Qe19, 20		2SA653 (L) or (M)	
Qe21, 22		2SD287 (L) or (M)	
Qe23, 24		2SB539 (L) or (M)	
Qe25		2SC1416 (GR)	
Qe26		2SC1212A (C)	
De1 ~ 8		1S2076	
De9		W06B	
De10		YZ-140	
THe1, 2		5TP-41L	
		POTENTIOMETER	
VRe1,2	R12-1007-05	PC trimmer 1KΩ (B)	
		MISCELLANEOUS	
–	E02-0209-05	Transistor socket x 4	
–	F01-0182-03	Heat sink x 2	
–	F20-0066-05	Mica plate x 4	
–	F10-0338-04	Shield plate x 2	
–	J21-1251-04	PC board mounting hardware (L)	
–	J21-1252-04	PC board mounting hardware (R)	
–	J21-1253-14	PC board mounting hardware (Top, bottom)	
–	J21-1254-03	Heat sink mounting hardware	
–	S51-4029-05	Relay (24V)	

PREAMP (X08-1270-00)PARTS LIST

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%		
Cd13, 14	CC45SL1H331K	Ceramic	330pF	±10%		
Cd15, 16	CC45SL1H221K	Ceramic	220pF	±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	
Rd19, 20	PD14BY2E393J	Carbon	39KΩ	±5%	1/4W	
Rd21, 22	PD14BY2E682J	Carbon	6.8KΩ	±5%	1/4W	
SEMICONDUCTOR						
ICd 1		RC4558TA				

TONE AMP (X11-1210-00) PARTS LIST

Ref. No.	Parts No.	Description	Remarks
		CAPACITOR	
Ci1, 2	CS15E1VR47M	Tantalum 0.47μF 35WV	
Ci3, 4	CE04W1A6R8NP	Electrolytic 6.8μF 10WV	
Ci5, 6	CQ93M1H682K	Mylar 0.0068μF ±10%	
Ci7, 8	CQ93M1H103K	Mylar 0.01μF ±10%	
Ci9 ~ 12	CQ93M1H183K	Mylar 0.018μF ±10%	
Ci13, 14	CQ93M1H272K	Mylar 0.0027μF ±10%	
Ci15, 16	CC45SL1H331K	Ceramic 330pF ±10%	
Ci17 ~ 22	CE04W1A6R8NP	Electrolytic 6.8μF 10WV	
Ci23, 24	CE04W1A470	Electrolytic 47μF 10WV	
		RESISTOR	
Ri1, 2	PD14BY2E222J	Carbon 2.2KΩ ±5% 1/4W	
Ri3, 4	PD14BY2E124J	Carbon 120KΩ ±5% 1/4W	
Ri5, 6	PD14BY2E102J	Carbon 1KΩ ±5% 1/4W	
Ri7, 8	PD14BY2E183J	Carbon 18KΩ ±5% 1/4W	
Ri9, 10	PD14BY2E562J	Carbon 5.6KΩ ±5% 1/4W	
Ri11, 12	PD14BY2E153J	Carbon 15KΩ ±5% 1/4W	
Ri13, 14	PD14BY2E822J	Carbon 8.2KΩ ±5% 1/4W	
Ri15, 16	PD14BY2E562J	Carbon 5.6KΩ ±5% 1/4W	
Ri17, 18	PD14BY2E273J	Carbon 27KΩ ±5% 1/4W	
Ri19, 20	PD14BY2E562J	Carbon 5.6KΩ ±5% 1/4W	
Ri21, 22	PD14BY2E822J	Carbon 8.2KΩ ±5% 1/4W	
Ri23, 24	PD14BY2E153J	Carbon 15KΩ ±5% 1/4W	
Ri25, 26	PD14BY2E103J	Carbon 10KΩ ±5% 1/4W	
Ri27, 28	RC05GF2H225K	Carbon 2.2MΩ ±10% 1/2W	
Ri29, 30	PD14BY2E563J	Carbon 56KΩ ±5% 1/4W	
Ri31, 32	PD14BY2E103J	Carbon 10KΩ ±5% 1/4W	
Ri33, 34	PD14BY2E563J	Carbon 56KΩ ±5% 1/4W	
Ri35, 36	PD14BY2E222J	Carbon 2.2KΩ ±5% 1/4W	
Ri37, 38	PD14BY2E563J	Carbon 56KΩ ±5% 1/4W	
		SEMICONDUCTOR	
ICi1 ~ 3		RC4558T (A) or (B)	
		POTENTIOMETER	
VRi 1 ~ 3	R06-5008-05	Potentiometer 100KΩ (B) dual	

PUSHBUTTON SW / CONNECTION PARTS LIST

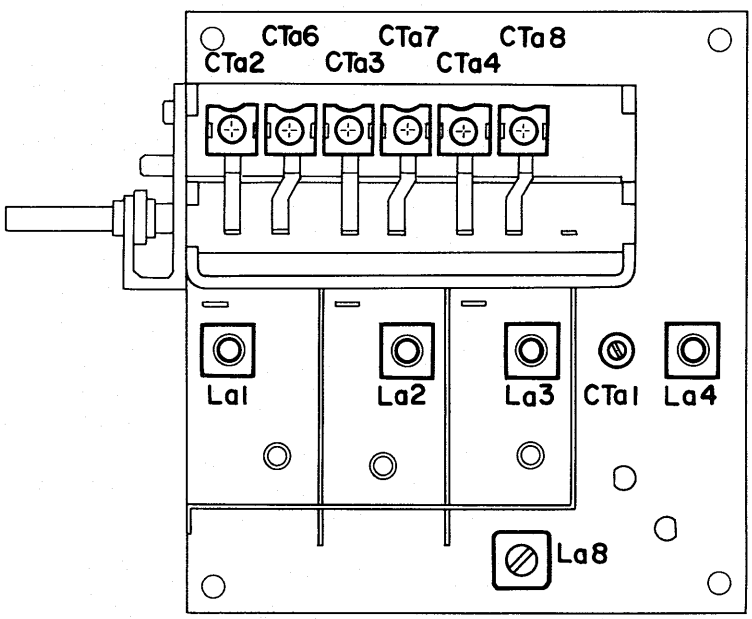
PUSHBUTTON SW (X13-1800-10)

Ref. No.	Parts No.	Description				Remarks
		CAPACITOR				
Ch1, 2	CQ93M1H563K	Mylar	0.056μF	±10%		
Ch3, 4	CQ93M1H102K	Mylar	0.001μF	±10%		
Ch5, 6	CQ93M1H223K	Mylar	0.022μF	±10%		
Ch7, 8	CQ93M1H103K	Mylar	0.01μF	±10%		
		RESISTOR				
Rh1, 2	PD14BY2E682J	Carbon	6.8KΩ	±5%	1/4W	
Rh5, 6	PD14BY2E823J	Carbon	82KΩ	±5%	1/4W	
Rh7, 8	PD14BY2E103J	Carbon	10KΩ	±5%	1/4W	
		SWITCH				
S6 ~ 9	S41-4009-05	Pushbutton (4 keys)				

CONNECTION (X13-1810-10)

Ref. No.	Parts No.	Description				Remarks
		RESISTOR				
Rq 1 ~ 4	PD14BY2E103J	Carbon	10KΩ	±5%	1/4W	
Rq5, 6	PD14BY2E102J	Carbon	1KΩ	±5%	1/4W	
Rq7	RC05GF2H471K	Carbon	470Ω	±10%	1/2W	
		SWITCH				
S1	S01-5009-05	Rotary (SELECTOR)				
S3	S01-2026-05	Rotary (TAPE MONITOR)				

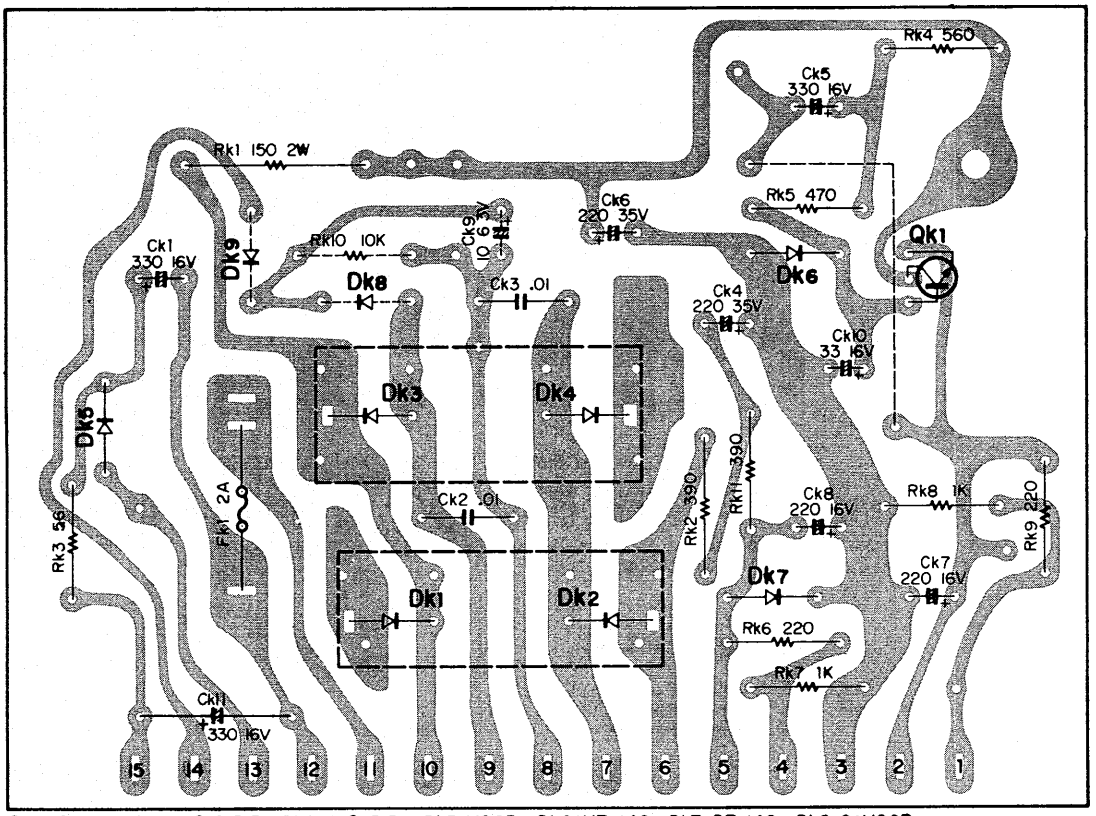
▼PARTS POSITION OF RF UNIT



PC BOARD

▼POWER SUPPLY (X00-1430-10)

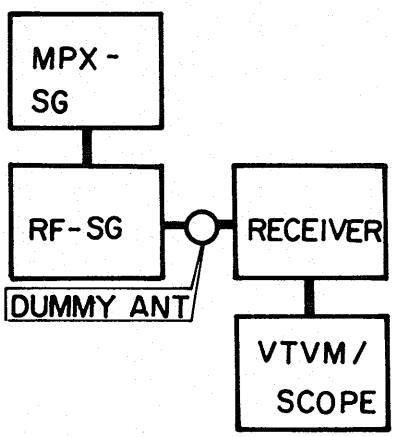
Caution: They, Ck9 (10μ 63V), Rk 10 (10kΩ), and Dk8, 9 (V06B), are mounted on X00-1430-61 only.

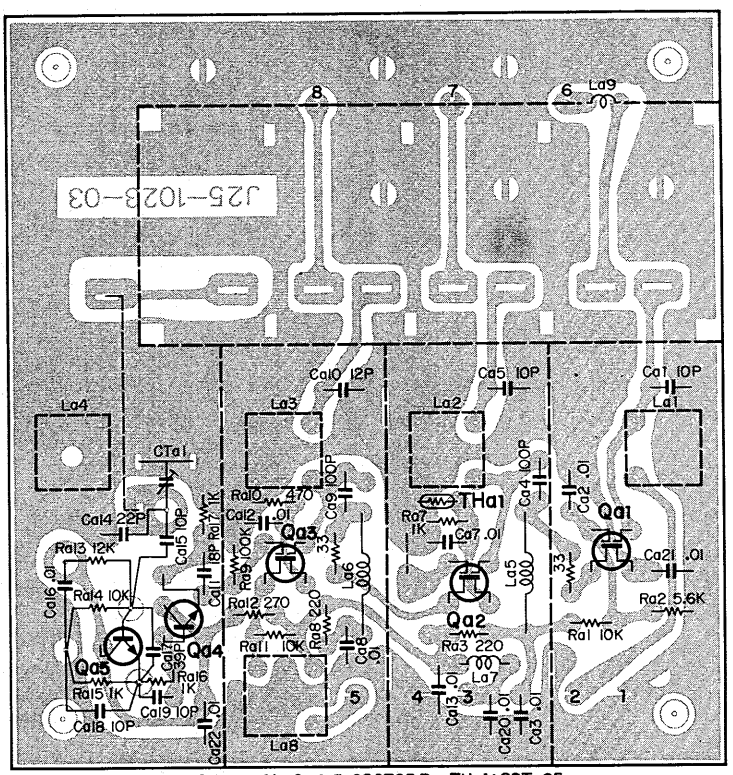


Qk1:2SC1419 Dk1,2:S-5151R Dk3,4:S-5151 Dk5:V06B Dk6:YZ-140 Dk7:DZ-140 Dk8,9:V06B

▶RF (X01-1160-10)

Caution: X01-1180-40 is changed with the value of Ca14.

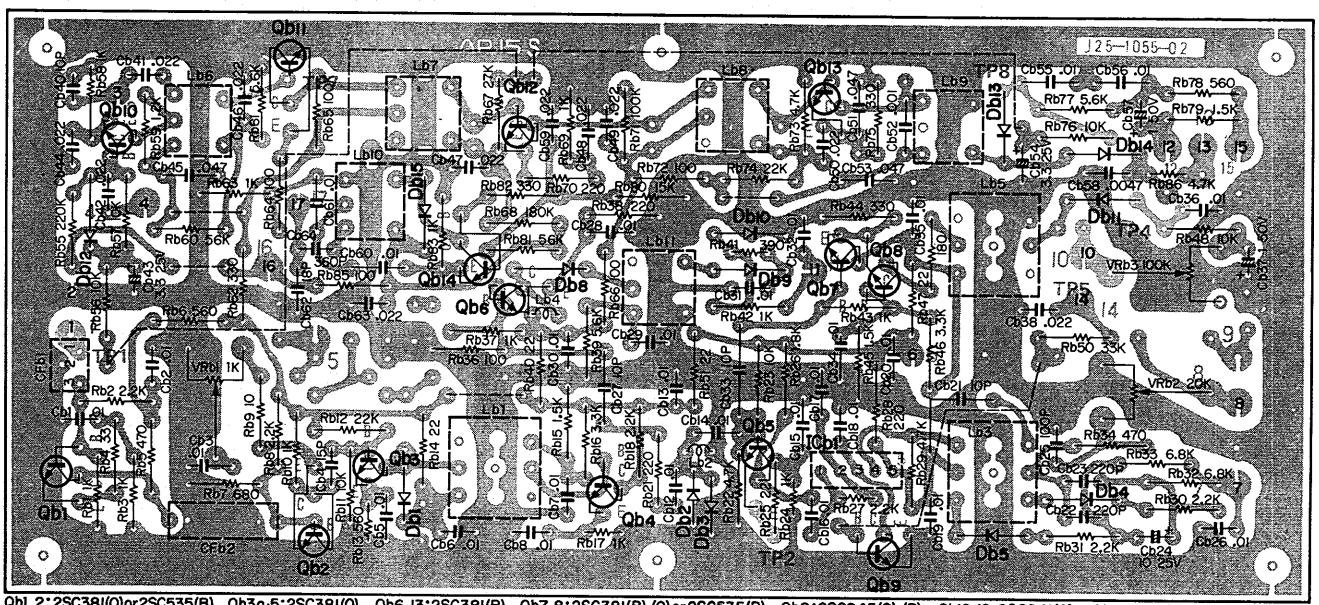




Qa1:3SK45C. Qa2,3:3SK41LorM Qa4,5:2SC785R THa1:SDT-65

PC BOARD

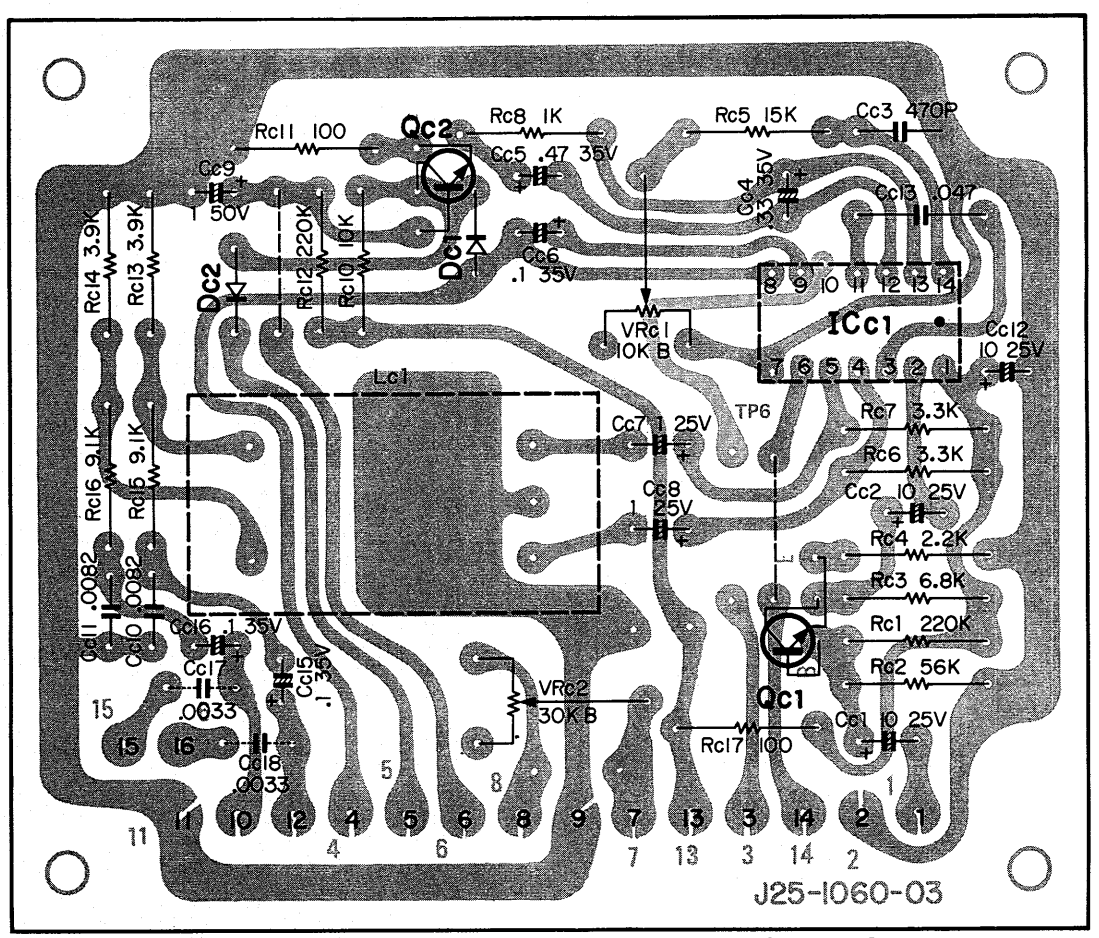
▼IF (X02-1050-11)



Qb1,2:2SC381(O)or2SC535(B) Qb3~5:2SC381(O) Qb6,13:2SC381(R) Qb7,8:2SC381(R),(O)or2SC535(B) Qb9:2SC945(Q),(R) Qb10,12:2SC941(O) Qb11,14:2SC941(R)
ICb1:TA7060P Db1~3,10:1S1555or1S2076 Db4,5,8,9,11~15:1N60

▼MPX (X04-1040-10)

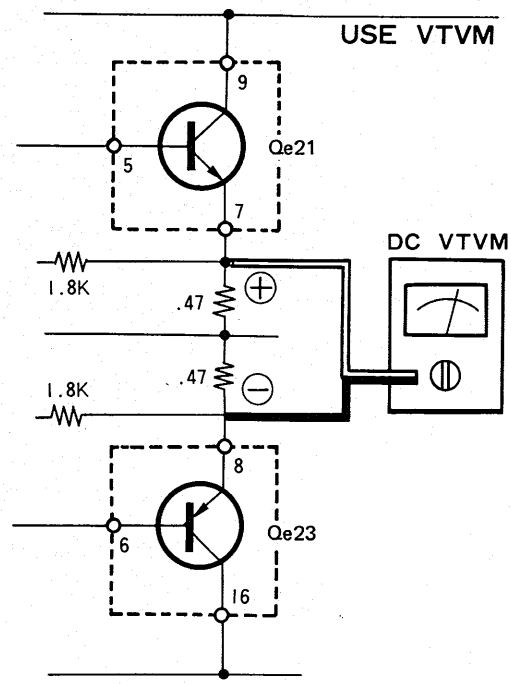
Caution: X04-1040-01 and -61 are changed with the value of Cc10, 11 and Rc15, 16.
Cc17, 18 are mounted on X04-1040-61 only.

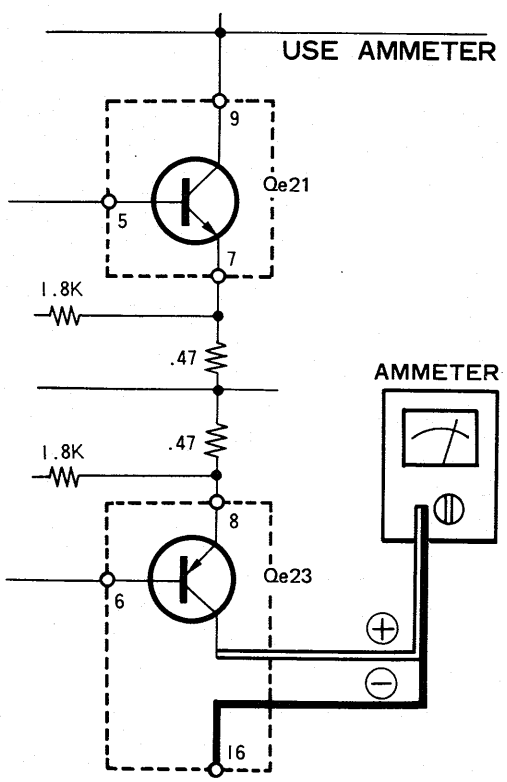


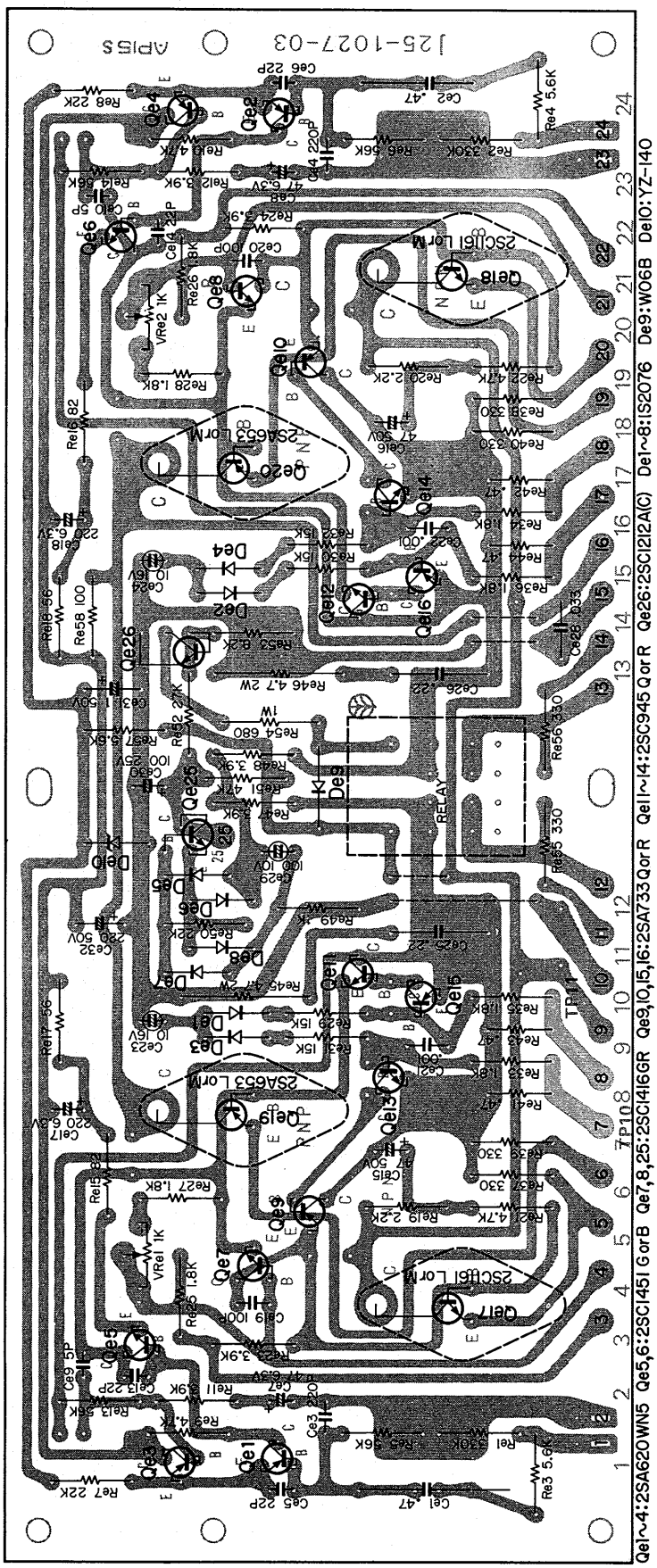
Qc1,2:2SC945(R),(Q)or2SC458(B),(C),(D) ICc1:SN76115N Dc1,2:1S1555or1S2076

PC BOARD

▶ MAIN AMP (X07-1270-10)

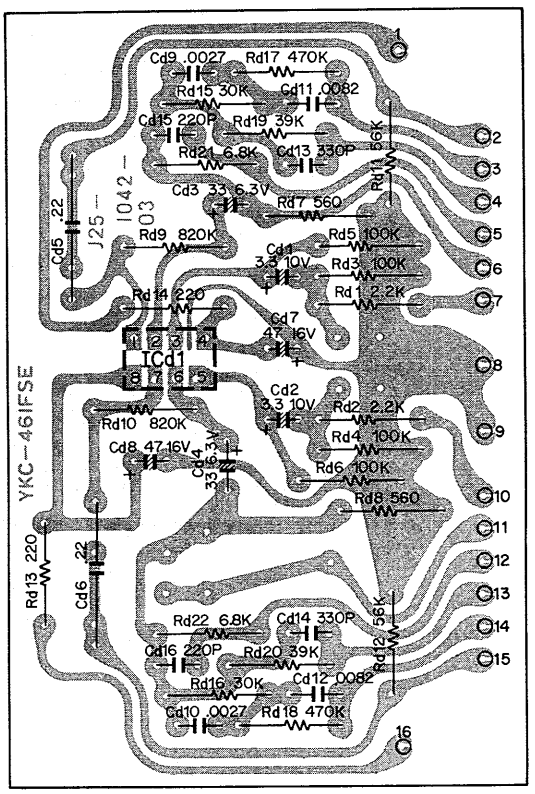






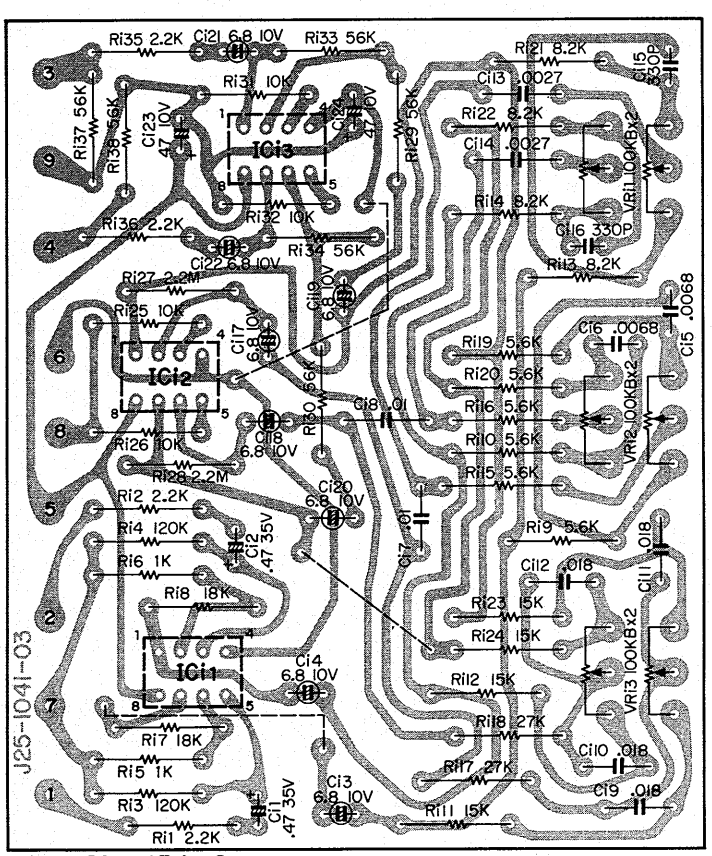
PC BOARD

▶ PREAMP (X08-1270-00)



ICd1: RC4558TA

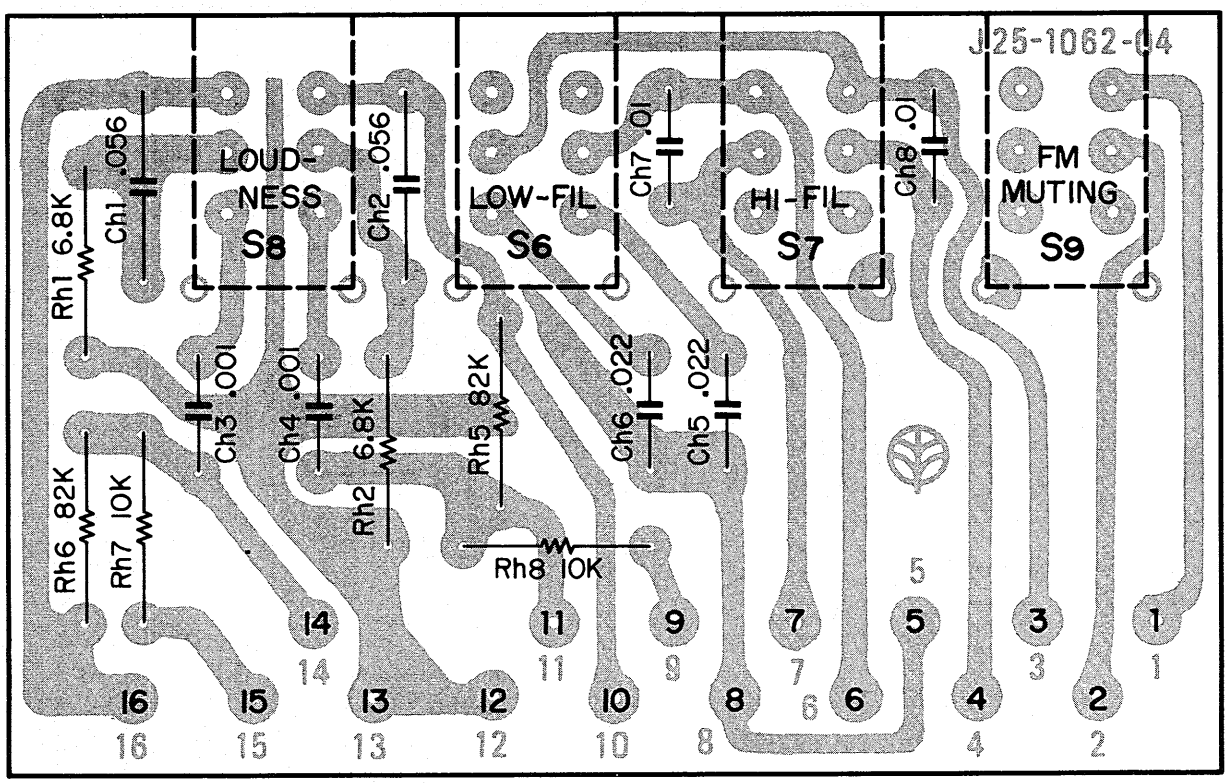
◀ TONE AMP (X11-1210-00)



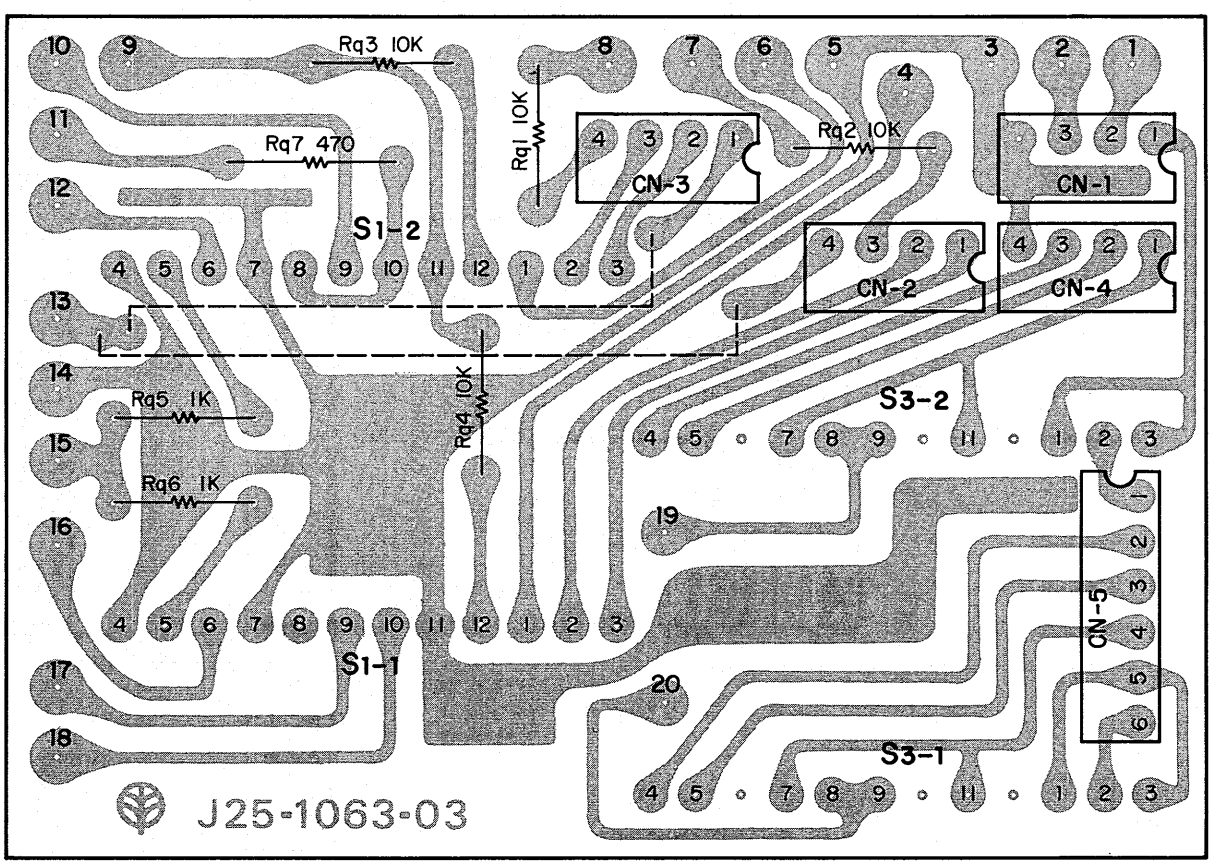
ICi 1~3: RC4558T A or B

PC BOARD

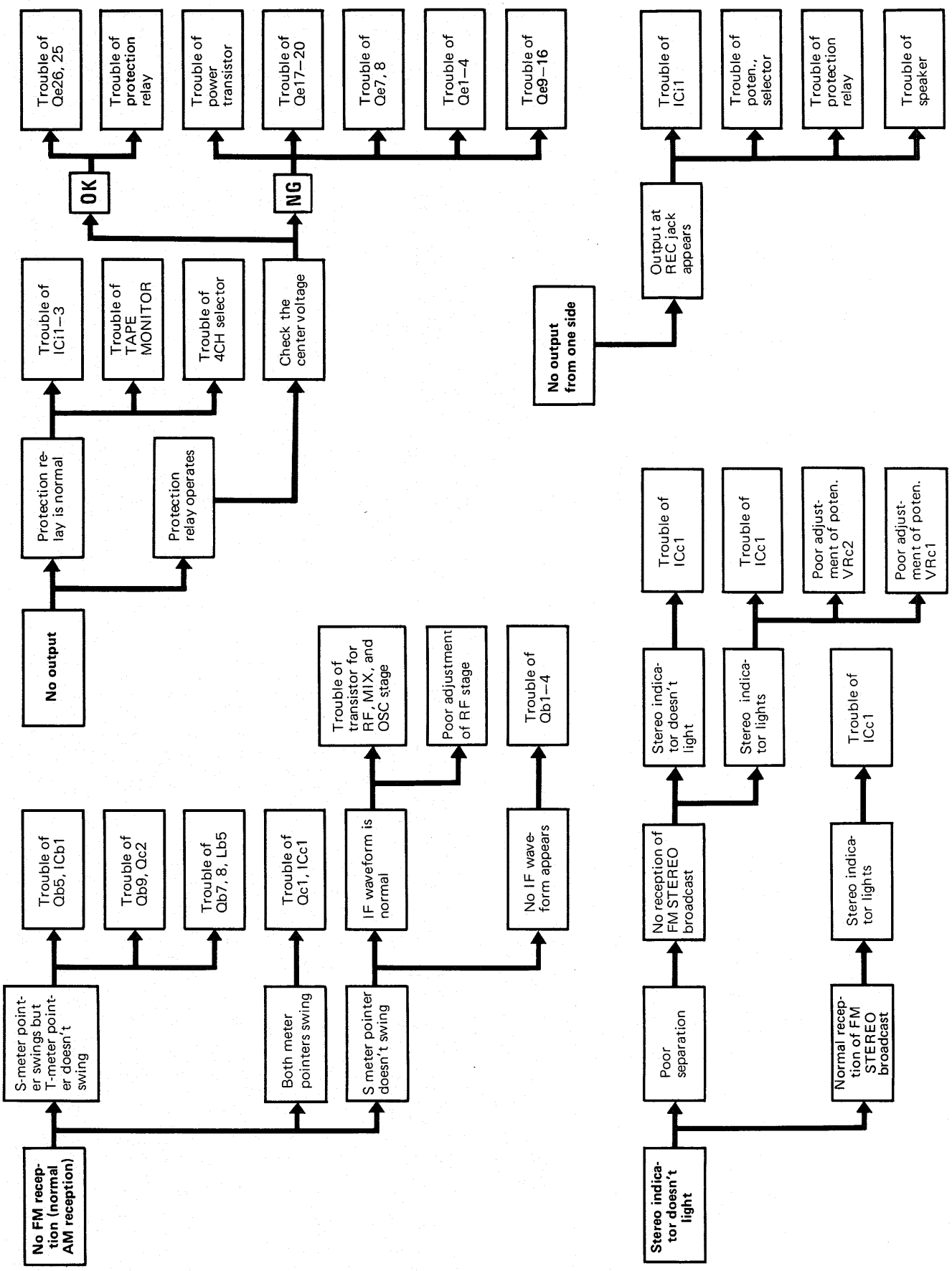
▼ PUSHBUTTON SW (X13-1800-10)



▼ CONNECTION (X13-1810-10)

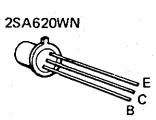


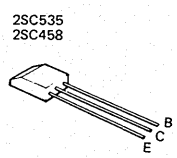
TROUBLESHOOTING

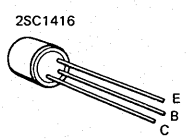


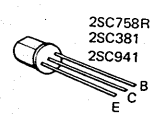
SEMICONDUCTOR SUBSTITUTIONS AND LEADS

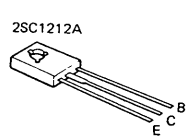
SEMICONDUCTOR NAME	SEMICONDUCTOR SUBSTITUTIONS
(X00-1430-10)	
2SC1419	2SC1061
(X01-1160-10)	
2SC785R	2SC1342 (A) or (B)
3SK41 (L) or (M)	–
3SK45 (C)	–
(X02-1050-11)	
2SC381 (O) or (R)	2SC535 (B)
2SC535 (B)	2SC381 (O) or (R)
2SC941 (O) or (R)	2SC460 (B)
TA7060P	–
(X04-1040-10)	
2SC485 (B), (C) or (D)	2SC945 (Q) or (R)
2SC945 (Q) or (R)	2SC458 (B), (C) or (D)
SN76115N	–
(X07-1270-10)	
2SA620WN5	2SA493, 2SA620WL
2SA653 (L) or (M)	2SA566 (A), (B) or (C)
2SA733 (Q) or (R)	2SA620WL
2SB539 (L) or (M)	2SA679
2SC945 (Q) or (R)	2SC984 (C), 2SC1213A (C)
2SC1161 (L) or (M)	2SC680 (A), (B) or (C)
2SC1212A (C)	2SC497 (Y), 2SC627, 2SD220
2SC1416 (GR)	2SC1000 (GR), 2SC1345 (D)
2SC1451 (G) or (B)	2SC983 (O) or (Y)
2SD287 (L) or (M)	2SC1079, 2SC1115
(X08-1270-00)	
RC4558T (A)	–
(X11-1210-00)	
RC4558T (A) or (B)	–

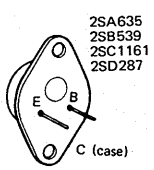


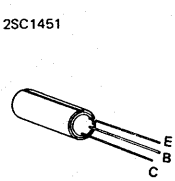


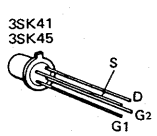


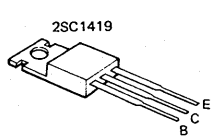


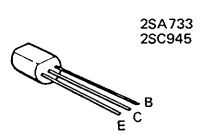






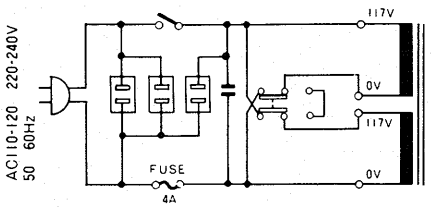




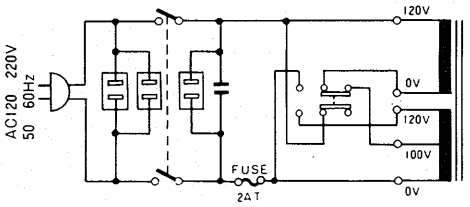


MODIFICATIONS

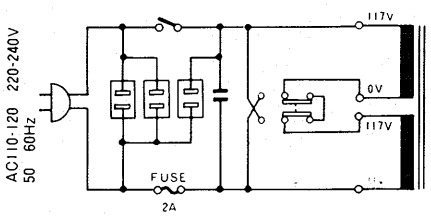
For 110-120/220-240V sets(1)



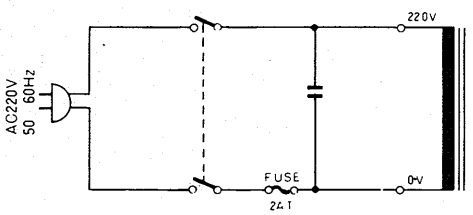
For the sets sold in Europe except England.



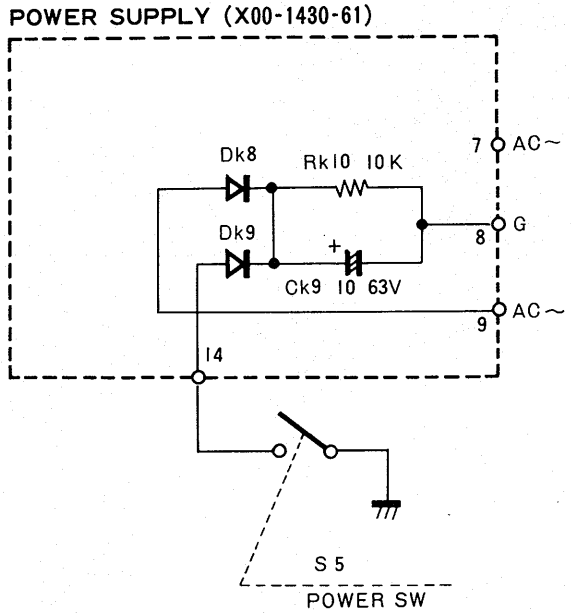
For 110-120/220-240V sets(2)



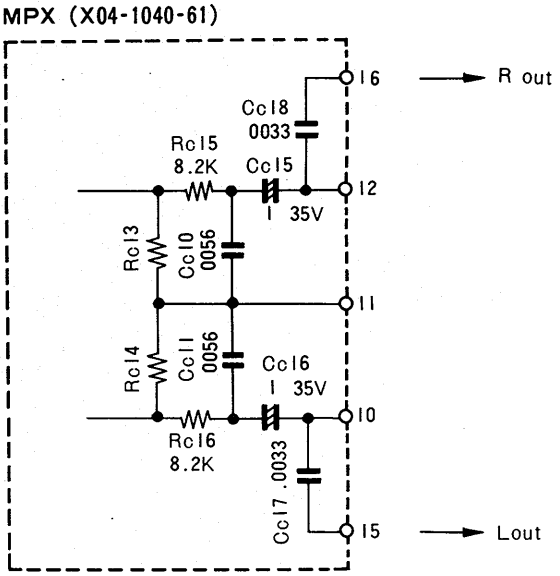
For the sets sold in Scandinavia



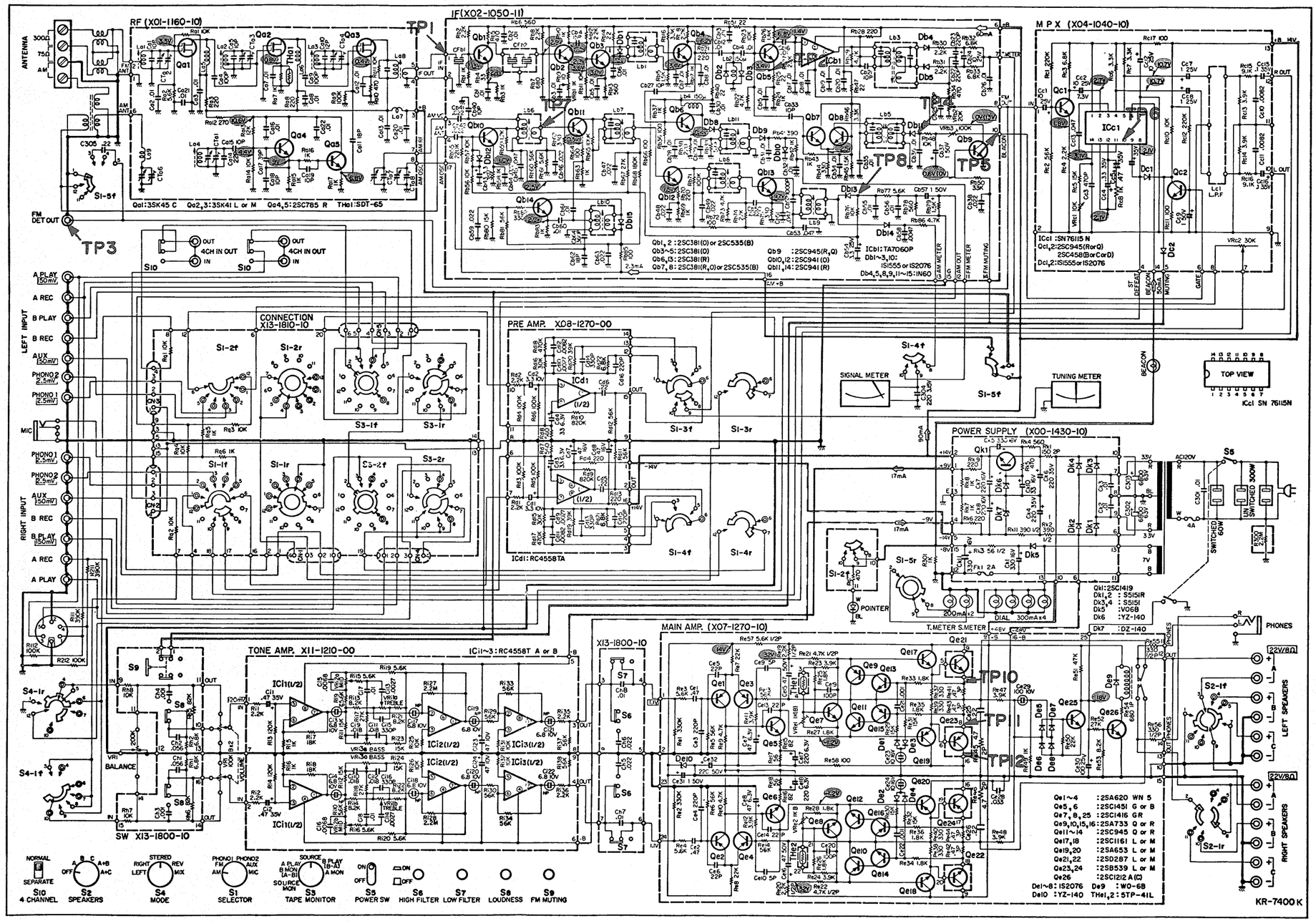
POWER SUPPLY (X00-1430-61)



MPX (X04-1040-61)



SCHEMATIC DIAGRAM



SPECIFICATIONS

FM TUNER SECTION

FM Frequency Range	88 MHz to 108 MHz
	87.5 MHz to 108 MHz (FTZ approved)
Usable Sensitivity (IHF)	1.7 μV
Quieting Slope	5 μV 55 dB, 10 μV 60 dB, 50 μV 70 dB
Frequency Response	20 Hz – 15,000 Hz – $^{+0.5}_{-1.5}$ dB
Harmonic Distortion	0.3% Mono (at 400 Hz 100% modulation)
	0.5% Stereo (at 400 Hz 100% modulation)
Signal to Noise Ratio	70 dB at 1 mV input
Image Rejection	90 dB
Selectivity (IHF ALT Channel)	80 dB
IF Rejection	100 dB
Spurious Signal Rejection	100 dB
AM Suppression	70 dB
Capture Ratio	1.3 dB
Stereo Separation	40 dB at 1,000 Hz
	30 dB at 10,000 Hz
Sub Carrier Suppression	60 dB
Antenna Impedance	300 ohms Balanced & 75 ohms unbalanced

AM TUNER SECTION

Usable Sensitivity (IHF)	15 μV
Signal to Noise Ratio	45 dB at 1 mV input
Image Rejection	70 dB
Selectivity (IHF)	35 dB
IF Rejection	70 dB
Antenna	Built-in ferrite bar antenna,
	External antenna terminals

MAIN-AMPLIFIER SECTION

RMS Power Output	
Both Channels Driven	63 watts x 2 into 8 ohms at 20 Hz – 20,000 Hz
	65 watts x 2 into 8 ohms at 1,000 Hz
	75 watts x 2 into 4 ohms at 1,000 Hz
Dynamic Power Output	200 watts into 8 ohms
	290 watts into 4 ohms
Total Harmonic Distortion	0.3% at rated power into 8 ohms
	0.07% at 1/2 rated power into 8 ohms at 1,000 Hz
Intermodulation Distortion	0.3% at rated power into 8 ohms
(60 Hz : 7 kHz = 4 : 1)	0.07% at 1/2 rated power into 8 ohms
Power Bandwidth	10 Hz – 35,000 Hz
Signal to Noise Ratio at 50 mW	55 dB
Damping Factor	50 at 8 ohms
Speaker Impedance	Accept 4 ohms to 16 ohms

PRE-AMPLIFIER SECTION

Input Sensitivity & Impedance	
Phono 1	2.5 mV. 50 K ohms
Phono 2	2.5 mV. 50 K ohms
AUX	150 mV. 80 K ohms
Tape Play A, B	150 mV. 80 K ohms
Mic	2.5 mV. 50 K ohms
Maximum Input Voltage (rms)	
Phono 1, 2	120 mV T.H.D. 0.3% 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
Mic	65 dB
Output Voltage & Impedance	
Tape Rec A, B (Pin)	150 mV 100 ohms
(Din Connector)	30 mV 80 K ohms
4CH Out	150 mV
Frequency Response	
Phono 1, 2	RIAA Standard curve ±1 dB
AUX, Tape Play	10 Hz – 40,000 Hz ±1 dB
Tone Controls	
Bass	±10 dB at 100 Hz
Mid	±10 dB at 800 Hz
Treble	±10 dB at 10,000 Hz
Loudness Control (–30 dB)	+ 8 dB at 100 Hz, +5 dB at 10,000 Hz
Low Filter 100 Hz	– 8 dB
High Filter 10,000 Hz	–10 dB

GENERAL

Switches	
Speaker Selector	OFF, A, B, C, A+B, A+C
Input Selector	AM–FM–PHONO1–PHONO 2–AUX–MIC
Mode	LEFT–RIGHT–STEREO–REV–MIX
Tape Monitor	(A→B) (A→B) SOURCE MON–B MON–A PLAY– (B→A) SOURCE–B PLAY–A MON
Others	LOW FILTER, HIGH FILTER, FM MUTING, LOUDNESS, MIC JACK, PHONE JACK
AC Outlet	Switched 1, Unswitched 2
Power Consumption	370 watts at full power
	50 watts at no signal
Dimensions	W 18-15/16" (480mm), H 5-15/16" (151mm), D 13-9/16" (344mm)
Weight	30.9 lbs (14 kg)