VH

INSTRUCTION MANUAL

RS 660



SETTON

TOWARDS PERFECTION

1. SPECIFICATIONS

AMPLIFIER SECTION

POWER OUTPUT (RMS, 2 channels driven, at 20 – 20,000 Hz, at 0.07% T.H.D.)	100 Watts per channel at 8 ohms	
TOTAL HARMONIC DISTORTION	0.07% at rated output	
INTERMODULATION DISTORTION	0.07% at rated output	
FREQUENCY RESPONSE	20 – 20,000 Hz ± 0.5 dB	
POWER BANDWIDTH (–3 dB)	5 – 40,000 Hz	
HUM AND NOISE (IHF, short-circuited A network, at rated power)	AUX:	90 dB
	TAPE PLAY:	90 dB
	MAG PHONO:	90 dB (Low sensitivity) 65 dB (High sensitivity)
INPUT SENSITIVITY (For rated output)	MAG PHONO:	5 mV (Low sensitivity) 2.5 mV (High sensitivity)
	AUX:	150 mV
	TAPE PLAY A:	150 mV
	TAPE PLAY B:	150 mV
	TAPE B (DIN):	150 mV
	MIC:	6 mV
DAMPING FACTOR	45 (1 Khz 8 ohms)	
MAXIMUM INPUT VOLTAGE	MAG PHONO:	360 mV (Low sensitivity) 180 mV (High sensitivity)
TONE CONTROL RANGE	BASS:	± 10 dB (62 Hz/125 Hz)
	Turn Over Frequency:	250 Hz/500 Hz
	MIDRANGE:	± 6 dB (1 kHz)
	TREBLE:	± 10 dB (10 kHz/20 kHz)
	Turn Over Frequency:	2.5 kHz/5 kHz
TONE CONTROL SWITCH	Switchable:	FLAT or VARIABLE
AUDIO MUTE	–20 dB	
LOUDNESS SWITCH (VOLUME control set at –30 dB position)	50 Hz:	+12 dB
	10 kHz:	+3.5 dB
HIGH FREQUENCY FILTER (–3 dB)	7 kHz, 12 kHz, 12 dB oct.	
LOW FREQUENCY FILTER (–3 dB)	15 Hz, 40 Hz, 12 dB oct.	
OUTPUT LEVEL	TAPE REC A:	150 mV
	TAPE REC B:	150 mV
	TAPE REC B (DIN):	30 mV
	HEADPHONES:	Low impedance

FM SECTION

TUNING RANGE	88 – 108 MHz	
USABLE SENSITIVITY (1)	MONO:	10.3 dBf
	STEREO:	18.0 dBf

IHF ('58) SENSITIVITY (2)	MONO:	1.8 μV
SELECTIVITY (1) (alternate channel)	80 dB	
CAPTURE RATIO (1)	1 dB	
FM DISTORTION (1)	100 Hz:	0.15% (MONO) 0.4% (STEREO)
	1 kHz:	0.15% (MONO) 0.4% (STEREO)
	6 kHz:	0.3% (MONO) 0.5% (STEREO)
STEREO SEPARATION (1)	100 Hz:	32 dB
	1 kHz:	40 dB
	10 kHz:	32 dB
50 dB QUIETING SENSITIVITY (1)	MONO:	16 dBf
	STEREO:	38 dBf
FREQUENCY RESPONSE (1) (30 Hz to 15 kHz)	+0.5 dB, −1.5 dB	
SIGNAL TO NOISE RATIO (1)	72 dBf (MONO), 67 dBf (STEREO)	
MUTING THRESHOLD (2)	14 dBf	
SPURIOUS RESPONSE REJECTION (2)	100 dB	
IF REJECTION (2)	95 dB	
IMAGE REJECTION (2)	85 dB	
SUBCARRIER PRODUCT RATIO (2)	65 dB	
TAPE OUTPUT LEVEL (1)	0.77 volt	
ANTENNA	75 ohms unbalanced and 300 ohms balanced input external antenna	

(1) At 98 MHz, 1 mV input signal, 100% mod.

(2) At 98 MHz.

AM SECTION

TUNING RANGE	525 – 1605 kHz
SENSITIVITY (IHF) (4)	25 μV (ANT Terminal)
IMAGE REJECTION	60 dB at 600 kHz
SELECTIVITY (4)	45 dB
AUDIO FREQUENCY RESPONSE (3)	Up to 2,300 Hz, −6 dB
SIGNAL TO NOISE RATIO (3)	45 dB
TAPE OUTPUT LEVEL (3)	0.3 volt
ANTENNA	Built-in adjustable Ferrite-bar plus provision for exter antenna

(3) At 1 MHz, 1 mV input signal, 30% Mod.

(4) At 1 MHz.

EXTERNAL DOLBY FM ADAPTOR

DE-EMPHASIS	25 μS
OUTPUT LEVEL TO EXTERNAL DOLBY ADAPTOR	0.77 volt (100% MOD.)

GENERAL

SOLID STATE DEVICE	FETs: 2 ICs: 6 Dual-Transistors: 4 Transistors: 51
AC POWER REQUIREMENT	110 V/130 V/220 V/240 V (switchable), 50 – 60 Hz
POWER CONSUMPTIONS	450 watts (maximum, at 4 ohms load) 200 watts (UL) 300 watts (CSA)
DIMENSIONS	22.4"(W) x 6.7"(H) x 13.8"(D). 570(W) x 170(H) x 350(D) mm (without legs and knobs)
NET WEIGHT	Without package: 37 lbs., 17 kgs With package: 46 lbs., 21 kgs

ACCESSORIES

T-type antenna and Instructions Manual	1 piece each

"DOLBY" is a registered trade mark of DOLBY Laboratries.

2. CIRCUIT DESCRIPTIONS

FM FRONT END AND AM TUNER

The FM Front End and AM Tuner sections of this receiver are assembled on a precision printed circuit PSTU022COX.

FM FRONT END

The FM signals applied to the FM antenna circuit will be led to the first gate of FET (FTR1: Dual Gate MC amplifier through FT1 and FC2.
The amplified FM signal from the drain of FTR1 is led to the double-tuned circuit (FT2, FT3) and the s output is finally applied to the FET Mixer Gate (FTR2).
The FTR3 is a local oscillator.
The oscillating voltage will be applied to the source of FT2 through FT4 and FC18 as an injection signal fo conversion.
Both FM and oscillator injection signals will be mixed between gate-source junction of the FET Mixer and cor into 10.7 MHz IF signal and its output is supplied to the first IF amplifier stage Q1.

AM TUNER

The most of AM tuner circuits have been integrated in a small IC (IC3) and one transistor (Q4) is used in AM for audio amplifier.
The AM tuner consists of two tuned circuits, one RF amplifier, converter, high gain 455 kHz IF amplifier ceramic band pass filter for ineressed selectivity, local oscillator and a tuning meter drive source amplifier.
T3 is the RF coil for RF amplifier and T4 is the local oscillator coil.
CF4 is the 455 kHz IF ceramic band pass filter.
RV2 is the AM tuning meter zero adjust potentio-meter.
The AM tuner output is connected to the terminal 33 on the PC board, PSTU022COX.

FM IF AMPLIFIER AND MPX STEREO DECODER

These are assembled on one printed circuit board, PSTU022COX.
The IF amplifier unit consists of one transistor amplifier and two ICs amplifier – IF amplifier consisting of IC – a muting circuit consisting of IC (IC2), and MPX decoder section, phase locked loop MPX decoder IC (IC2 precision de-emphasis network.
The main route of 10.7 MHz IF signal is as follows;
10.7 MHz IF signal – Q1 FM IF preamplifier – ceramic band pass filter CF1 – IC1 (PIN 7, 5) FM IF amp 10.7 MHz ceramic band pass filter (CF2, CF3) – IC2 (PIN 1) – IC2 (PIN 6) – IC4 (PIN 2) – IC4 (PIN 6, 7) – (low pass filter) – terminal 41, 42 on PC Board.

MUTING CIRCUIT

This receiver incorporates a sophisticated FM muting circuit with dual functions. One of its functions is to eli the "rushing" noise normally heard between FM stations.
This form of FM muting is of the conventional type found in other receivers. A second function of this FM r circuit is that it will mute (silence) the receiver if you are not properly tuned to a FM-station – even thou station may be an extremely strong one.
This consists IC2, transistor switching circuit Q2, Q3, relay RY and active filter circuit Q5, Q6.
With the FM mute switch push "ON" position, IC2 (PIN 12) control voltage injects switching transistor Q2, makes Q2 operate OFF, Q3 operate ON, relay RY, operate "ON".
Thus FM muting circuit will be operate.
On the other hand, when muting switch release "OFF" position, it becomes inoperative for muting.

SIGNAL METER

The PIN 15 of IC3 (PSTU022COX) will also be used for signal strength meter drive source.
The DC voltage is applied to the positive terminal of the meter through RV2.
The PIN 13 of IC2 will be used for FM signal strength meter drive source.
The DC voltage is applied to the positive terminal of the meter through RV1.

AUDIO AMPLIFIER

The operation theory the audio amplifier are not complicated and generally failures in operation can be locat
tracing the circuit where normal signal should be expected with audio signal injected to the input circuit.
A high sensitive with high input impedance oscilloscope will be necessary.

PROTECTION CIRCUIT

This consists of (emitter) Q1, Q2, Q3 and Q4 (Both channels), Q5, Q6, Q7, Q8 and relay L2 on PC E
PSMA027COX. (electrically-controlled protection circuit).
The relay is used for controlling the protection for speakers and Main Amplifier circuit. DC control voltage
opes at the emitter between Q1 and Q2 or Q3 and Q4 or Q2 and Q4 (Both channels), and if DC control v
potential exceeds a predetermined level for protection of speakers and of transistors, it makes speaker circuit c
by the relay.
When Speaker Mode switch (power) is turned on, L2 relay does not operate during 2 – 5 seconds until Main A
fier correctly operates.
When Speaker Mode switch is turned off, the relay cut off circuit to speakers output (Both left and right char
instantly.
Also, if speaker terminals or speaker cables make a short circuit, the control voltage developes the differer
electric potential between base and emitter of Q5 and it makes Q6 operate ON, Q7 operate ON, Switching T
operate OFF, the L2 relay operate, thus transistors within Main Amplifier circuit will be protected by the
switching circuit.
When the transistors are broken down, the abnormal voltage developes at the point between R22 and R24 o
and R26 or R27 and R28 and it makes the speaker circuit cut off by the relay for speakers protection.
When the temperature of the radiator in this circuit has reached more than 90°C, the relay will be operat
POSISTOR-detection and Heat lamp will illuminate brightly.
When the Clipping is occured for output level, the control voltage developed at the point between R27 an
makes Q1, Q2 and Q3 on PC Board PSAZ008COX, then the Clipping lamp will be illuminated by Q4.

3. ALIGNMENT PROCEDURES

3.1 TEST EQUIPMENT

The Test Equipment listed below is required to evaluate and to align the RS 660 FM/AM HI-FI St Receiver.

1)	Audio Signal Generator:	Frequency, 20 Hz to 200 kHz variable output Level, 0.5 mV to 1 V variable.
2)	Level Meter:	Frequency response, better than 20 kHz Measurement range, 0.5 mV to 10 V or higher.
3)	Oscilloscope:	Input Sensitivity 1 mV/cm or higher Frequency response, 100 kHz or higher.
4)	VTVM:	Capable of measuring 10 mV – 50 V, 100 kHz Input impedance 500 k ohm or higher Input capacitance 25 pF or less.
5)	Clamp-on Ammeter:	Measurement range, 0.1 A to 1 A or higher
6)	Sweep Generator:	Sweep frequency, 455 kHz ± 50 kHz, 10.7 MHz ± 1 MHz.
7)	Distortion Analyzer:	Frequency, 20 Hz to 100 kHz ± 0.5 dB.

3.2 MAIN AMPLIFIER IDLE CURRENT ADJUSTMENT

1. Connect an ampere meter in series with the main amplifier PC board (PSMA027COX) terminal No.2 adjust "RV1" so that the current reading of 50 mA is obtained.
2. In the similar way, proceed the adjustment for the remaining channel.

3.3 AM TUNER ALIGNMENT

A. AM IF ALIGNMENT

1. Place the SELECTOR switch in the AM position.
2. Connect 455 kHz sweep generator output to the chassis ground and the antenna terminal on r panel.
3. Connect oscilloscope directly to the PIN 12 of IC3 and chassis ground.
4. Adjust "CF4" for maximum and symmetrical scope display.

B. AM FRONT END ALIGNMENT

1. Connect the test equipment to RS 660 as shown in Figure 1, "AM FRONT END ALIGNME SETUP".
2. Place the AM bar antenna in the correct position by pulling it outward.
3. Set AM signal generator frequency to 600 kHz for 30 % modulation at 1 kHz with tuning c pointer set to the same frequency.
4. Increase the signal generator output until a sine wave appears on the oscilloscope display. Th adjust "T4" for maximum audio output (dial frequency alignment). Also, adjust "T3" and scr core on AM bar antenna for maximum output (tracking alignment).
5. Set the signal generator frequency to 1400 kHz and place the dial pointer in the 1400 kHz pc tion. Adjust "CT7" for maximum audio output (dial frequency alignment). Also, adjust "CT5 CT6" for maximum output (tracking alignment).
6. Repeat the above steps (at 600 kHz and 1400 kHz) until no further improvement is obtain

   NOTE: When adjusting the cores or trimming capacitors the audio output level will rapic increase and the level meter pointer go off scale.

In this case always decrease the signal generator output for proper audio output. Do change the level meter range to match the increased audio output. Keep the AM sig generator output as low as possible to avoid AGC action during AM tuner alignm

AM TUNER ALIGNMENT SET-UP

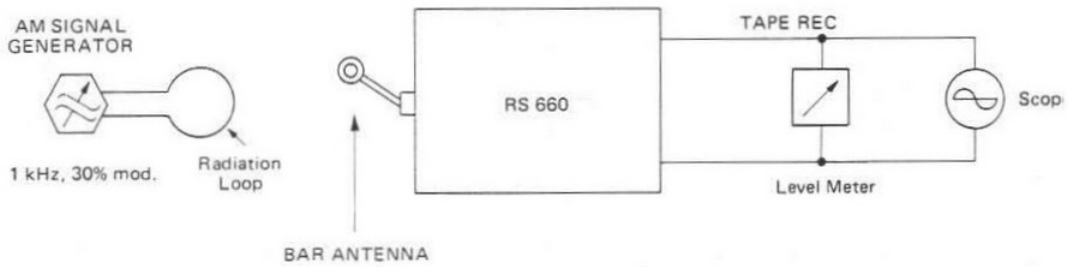


Figure 1. AM FRONT END ALIGNMENT SETUP

C. AM SIGNAL METER ALIGNMENT

The same test-setup as shown in Figure 1 will be used.

1. Increase signal generator output to approximately 90 dB and adjust the "RV2" for 90% deflec of the full scale.

3.4 FM IF ALIGNMENT

A. CENTER TUNING METER ALIGNMENT

1. Place the SELECTOR switch in the FM position.
2. Adjust "T1" to bring the meter pointer on the exact center of meter scale with no signal appl

B. FM IF ALIGNMENT

The IF section should only be adjusted IF the unit has very poor sensitivity.

1. Connect the test equipment to the RS 660 as shown in Figure 2, FM IF Alignment Test Se

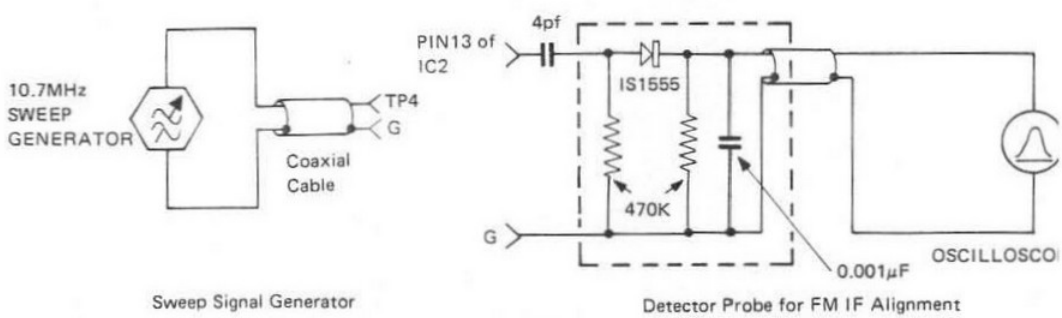


Figure 2.

2. Connect the detector probe to the PIN 13 of IC2 and "G" (ground).
   The hot lead of the probe should be made as short as possible and the ground lead should b
   nected to ground, the closest point to IC2.
3. Set the program SELECTOR switch to the FM position.
4. Short the local oscillator by shorting the oscillator variable capacitor (CV4) using a 0.0
   ceramic capacitor.
5. Increase sweep generator to provide about a half of the saturation level.
6. Adjust upper core of "FT5" for highest, widest and round top response as shown in Fig
   (Since ceramic filters are used in the IF circuit, ignore 10.7 MHz center marker in the above
   ment).

   NOTE: When replacing a ceramic filter always use the one having the same color dot (same
   frequency).

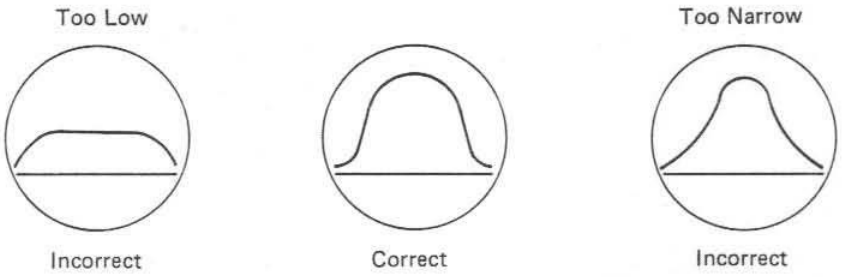


Figure 3.

3.5 FM FRONT END ALIGNMENT

IF it is necessary to adjust the FM FRONT END, proceed as follows.

1. Set the program SELECTOR switch to the FM position, and FM MUTE switch in the OFF po
2. Connect the test equipment to the RS 660 as shown in Figure 4.

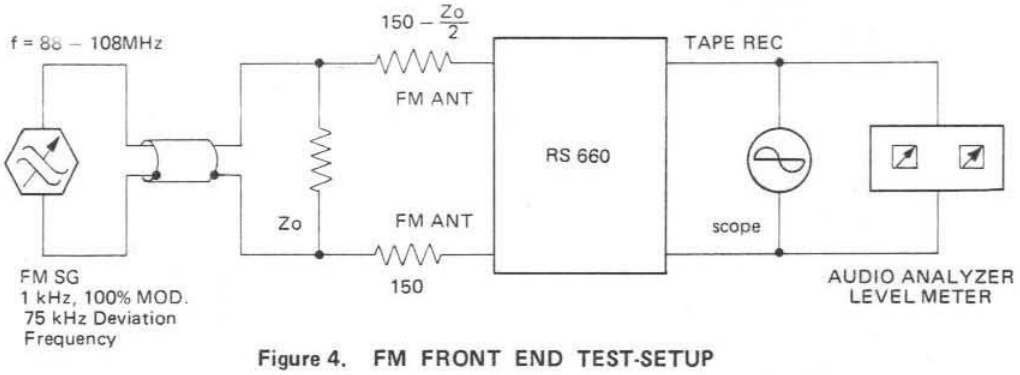


Figure 4. FM FRONT END TEST-SETUP

3. Set the FM signal generator frequency to 90 MHz and tuning dial pointer to 90 MHz.
   Then, adjust "FT5" for maximum indication on the level meter.
4. Set the FM signal generator frequency to 106 MHz and dial pointer to 106 MHz.
   Then adjust "FT5" for maximum indication on the level meter.

5. Repeat steps 3 and 4 until no further improvement may be obtained.

NOTE: When audio output is increased during alignment, always decrease the signal generator o to such a level at which the sine wave on the scope includes visible noise pulses to avoid curate alignment due to limiting action.

3.6 IF DISTORTION ALIGNMENT

1. Connect the test equipment to the RS 660 as shown in Figure 4, FM Front End Test-Setup.
2. Make sure the FM TUNING Meter, with no signal condition, indicates exact center of scale. I adjust "T1" with no signal condition.
   Then, set the signal generator frequency to 98 MHz so that the FM TUNING meter pointer ind exact center of the scale.
3. Increase the signal generator output to 0.5 – 1 mV.
4. Set the audio distortion analyzer to the distortion position and adjust the core of "T2" for mini distortion. Adjusting "T2" may upset the FM TUNING meter alignment slightly.
   So repeat steps 2 – 5 a few times until no further improvement is obtained.

3.7 SIGNAL METER ALIGNMENT

1. Set the signal generator to 98 MHz 90 dB output and tune the receiver to the same frequency, usir TUNING meter.
2. Then make sure the meter pointer deflects approximately 80 – 90 %.
   If not, adjust "RV1" on PC Board PSTU022COX.

3.8 FM MPX STEREO CIRCUIT ALIGNMENT

Connect the test equipment to the receiver as shown in Figure 4.

A. 76 kHz ALIGNMENT

1. Set the signal generator to 98 MHz and tune the receiver to the same frequency.
   Adjust signal generator to provide 65 dBf antenna input (about 1 mV) with modulation of 1 audio signal (no pilot signal of 19 kHz should be included).
2. Connect a frequency counter to the "TP" and chassis ground and read the frequency. It shou 76 kHz ± 300 Hz. If not, adjust "RV4" to obtain that reading.

B. SEPARATION ALIGNMENT

1. Modulate signal generator with stereo composite signal (mod. f = 1 kHz, 10% pilot signal, 7.5 dev.).
2. Tune the receiver exactly to the signal generator frequency, using FM TUNING meter for t to the exact center of channel. Then, increase the generator output up to about 65 dBf (1
3. Modulate the signal generator with the normal left channel composite signal and observe the put signal of the right channel TAPE REC jack. There should be very little leakage from th channel. Adjust "RV3" for minimum leakage voltage (separation).
4. Next, modulate signal generator with right channel composite signal and observe the right ch signal leakage appeared on the left channel TAPE REC jack. The leakage voltage should hav same level as that of the right channel.
   If not, readjust "RV3" for equal and minimum leakage at both outputs. The normal le voltage (separation) is approximately 40 – 45 dB.

3.9 ALIGNMENT LOCATION

TOP VIEW OF TUNER UNIT (PSTU022COX).

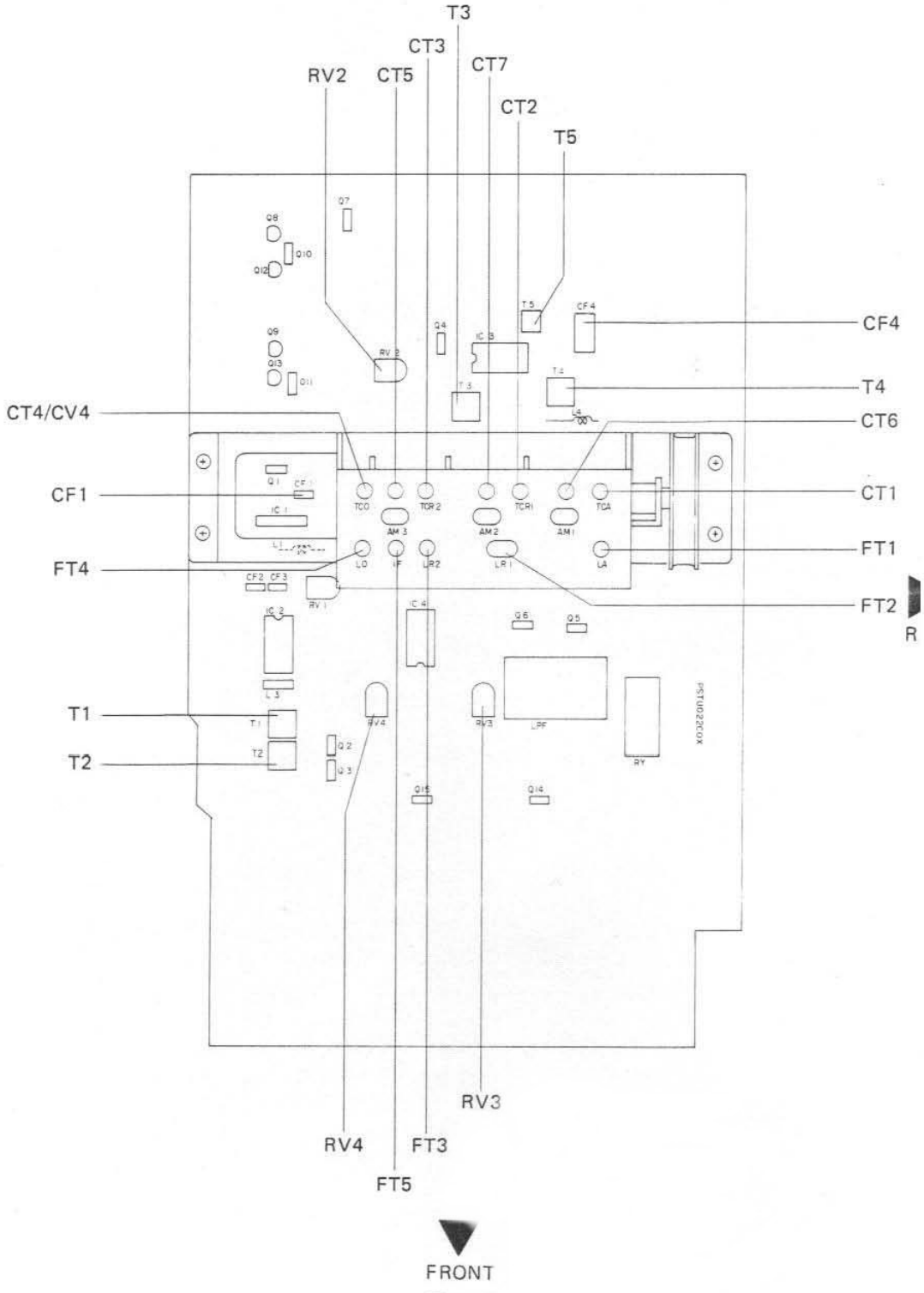
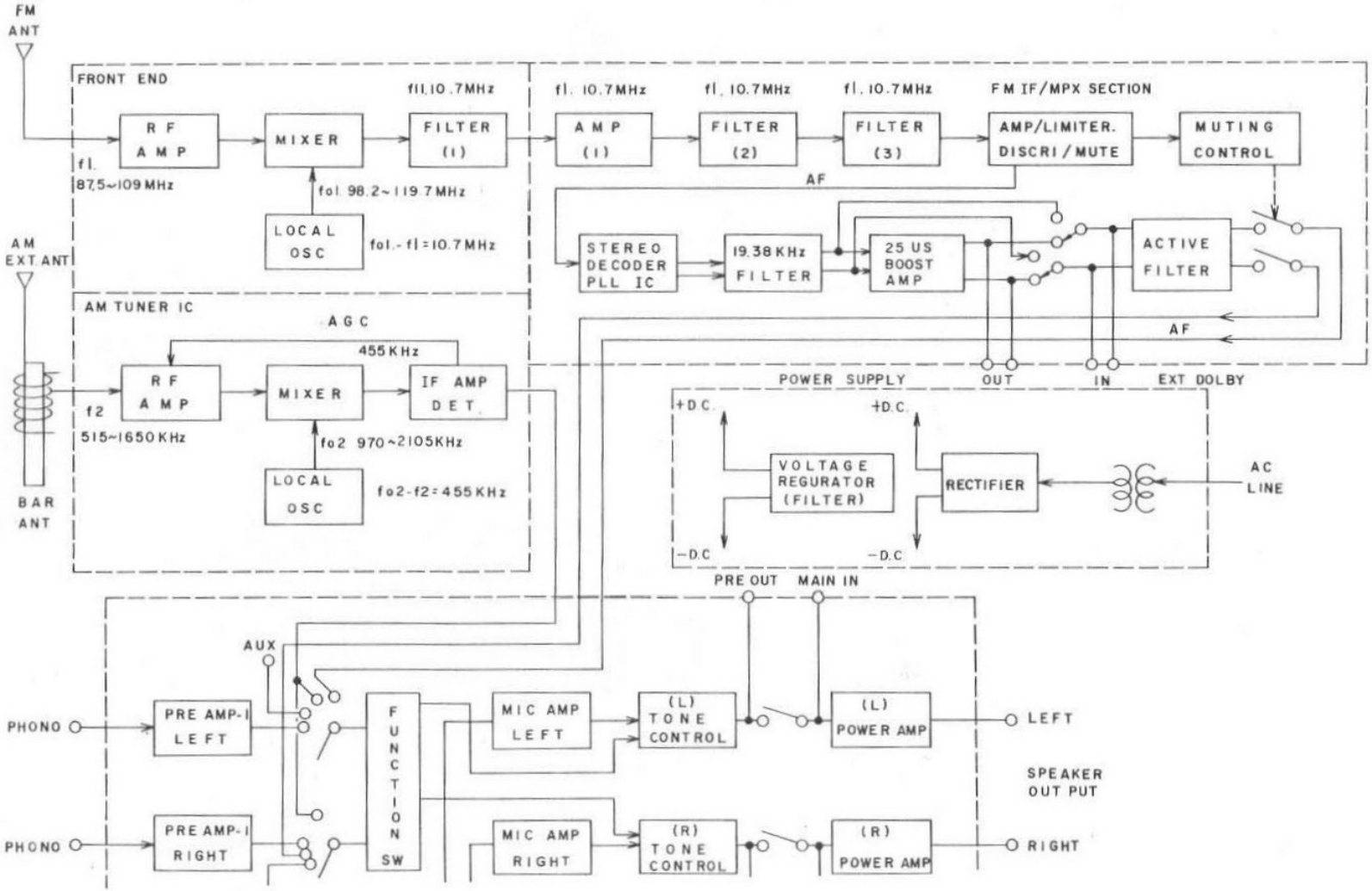


Figure 5

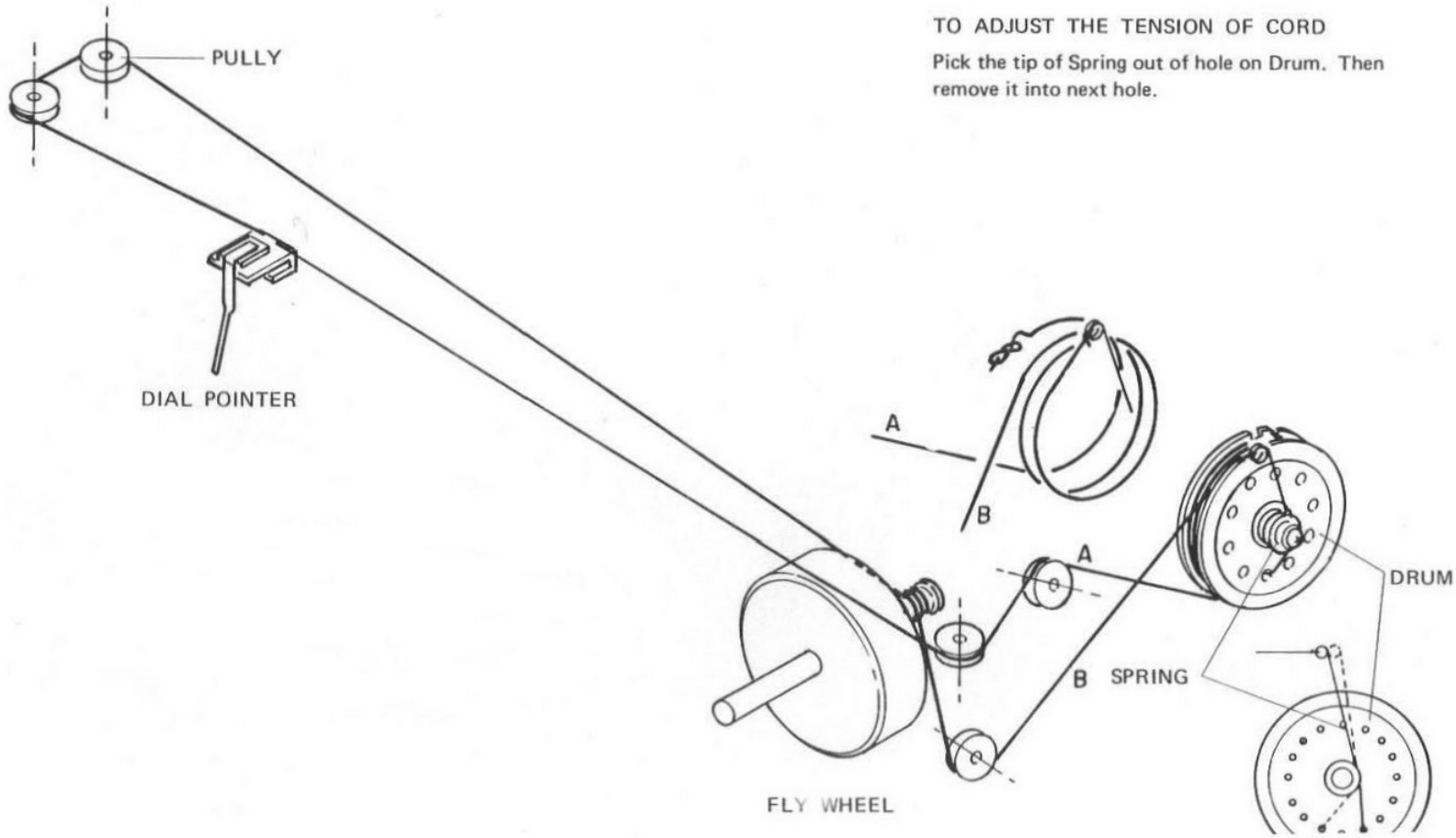
4. BLOCK DIAGRAM



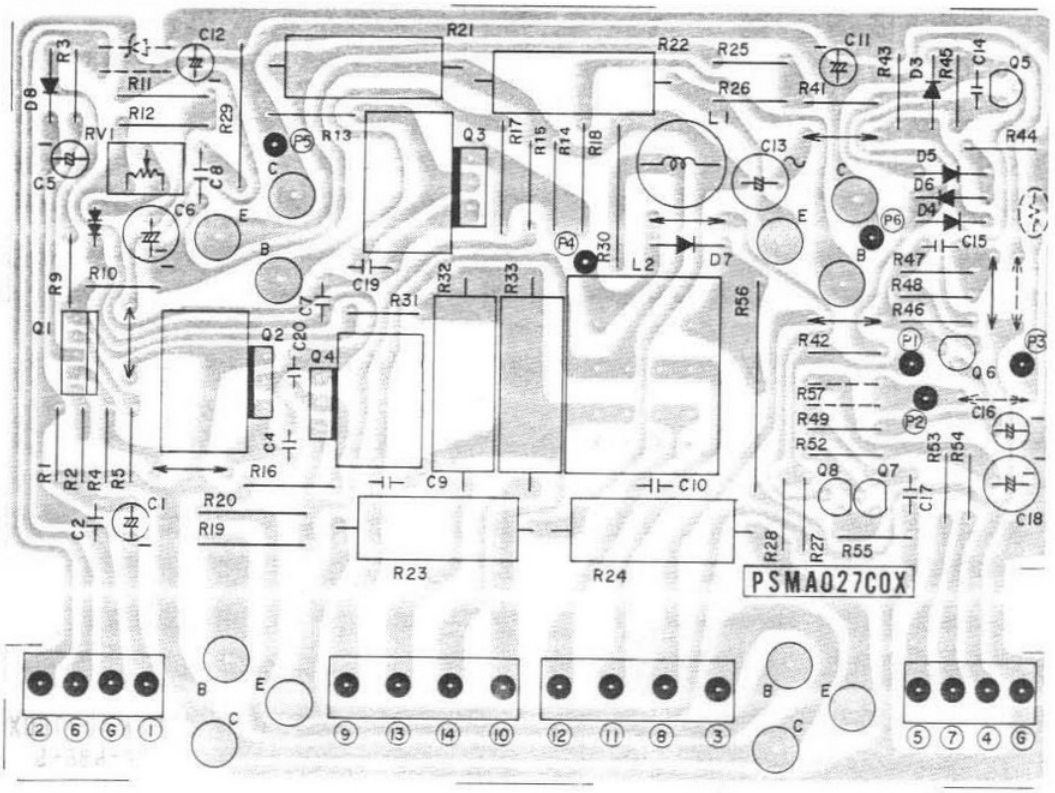
5. DIAL CORD STRINGING

TO ADJUST THE TENSION OF CORD

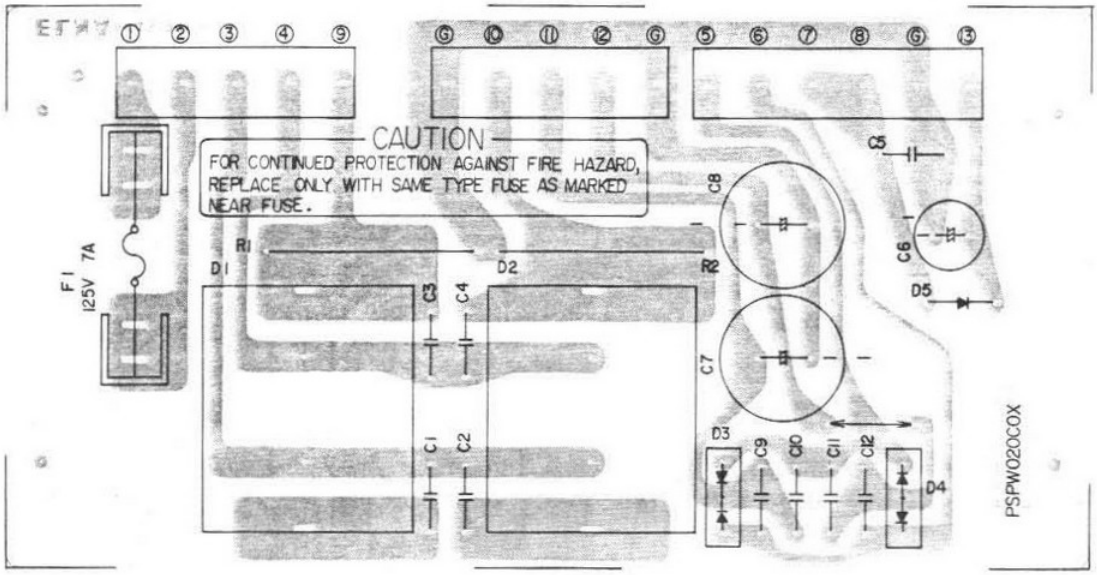
Pick the tip of Spring out of hole on Drum. Then remove it into next hole.



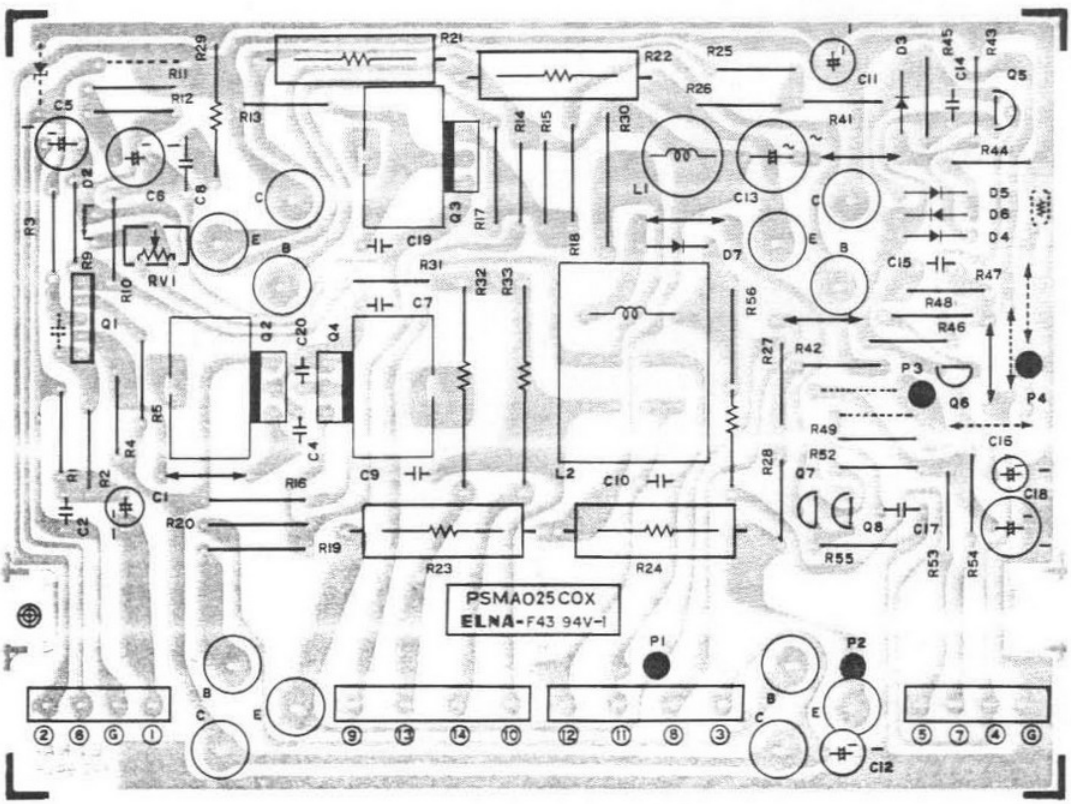
6. PC BOARD PARTS LOCATION



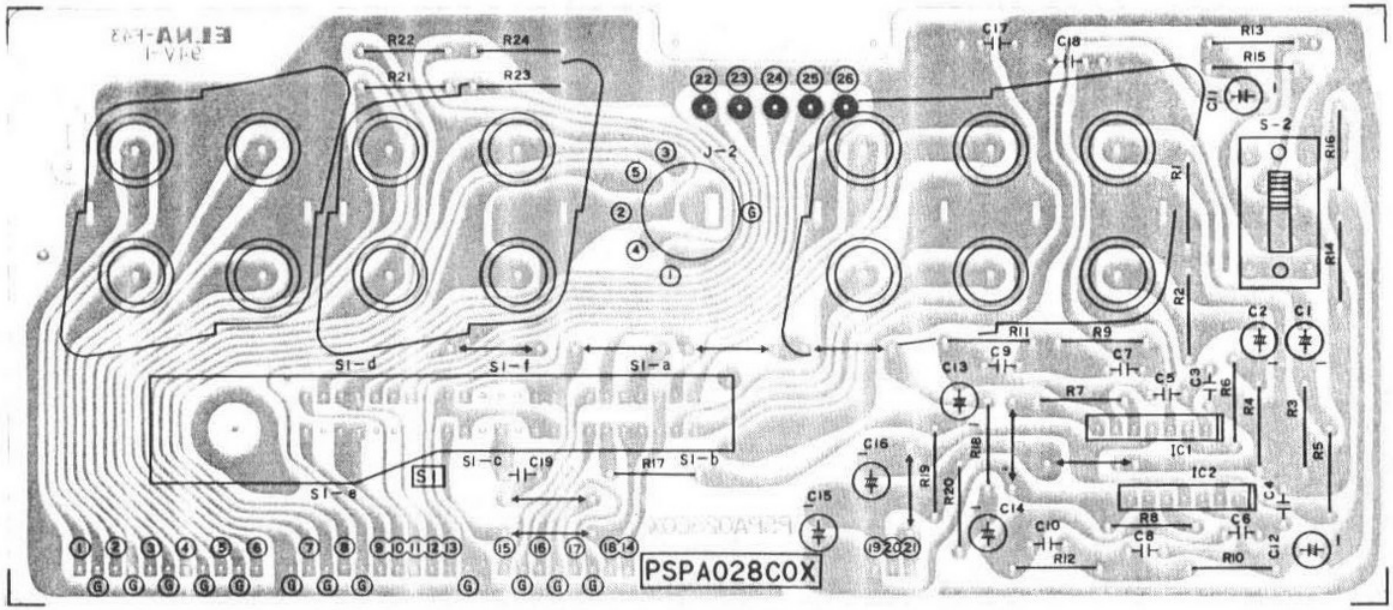
PSMA027COX MAIN AMP.



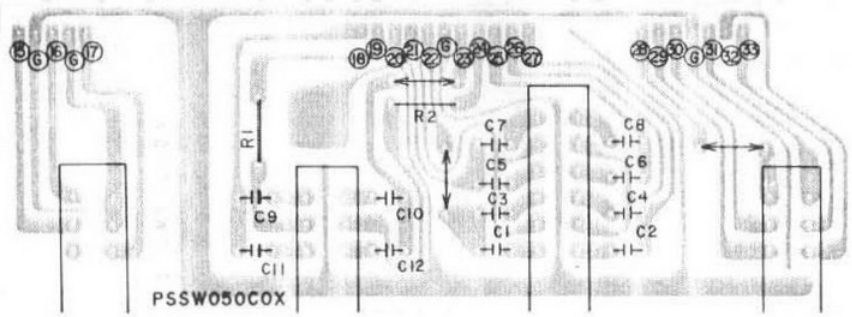
PSPW020COX POWER SUPPLY UNIT

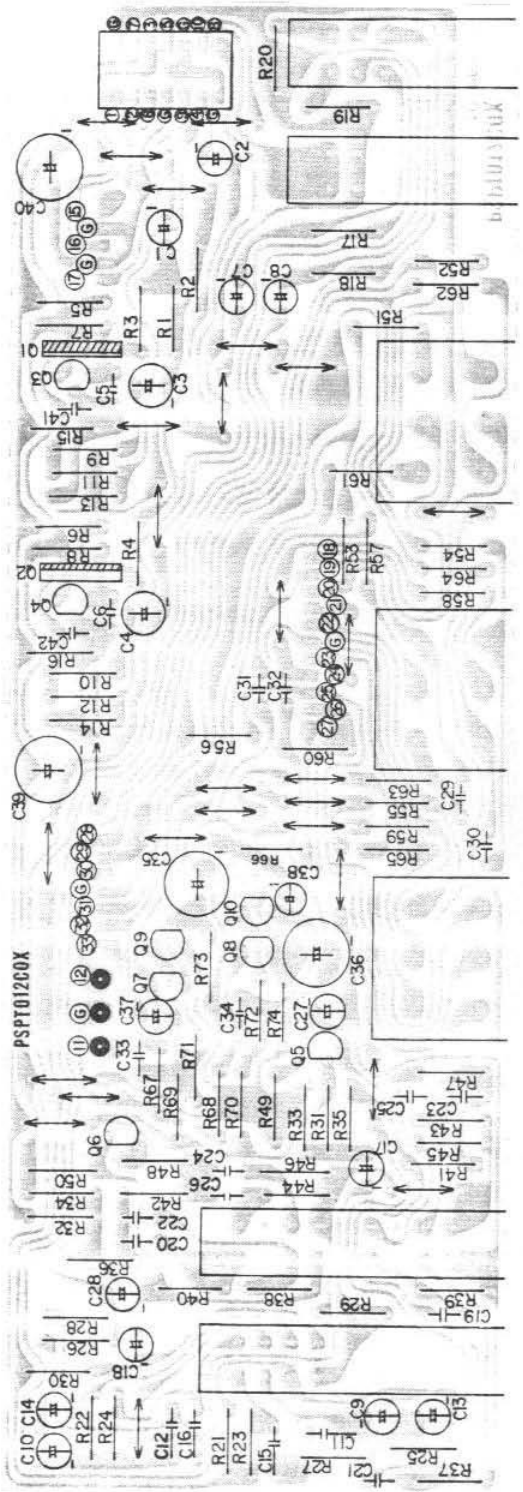


PSMA025COX MAIN AMP. UNIT

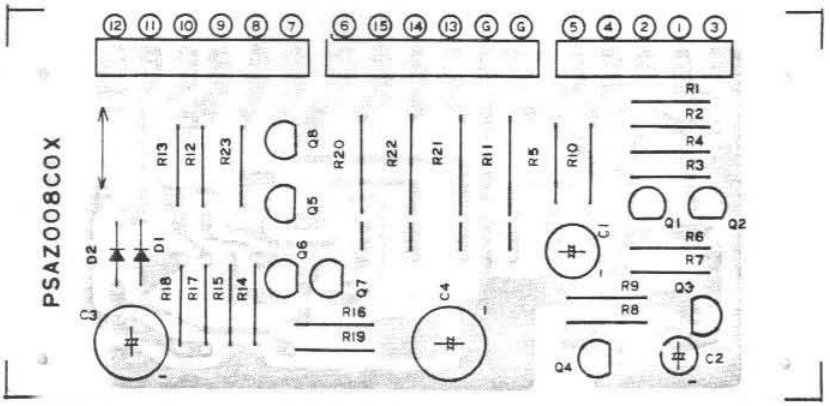


PSPA028COX PRE-AMP. UNIT

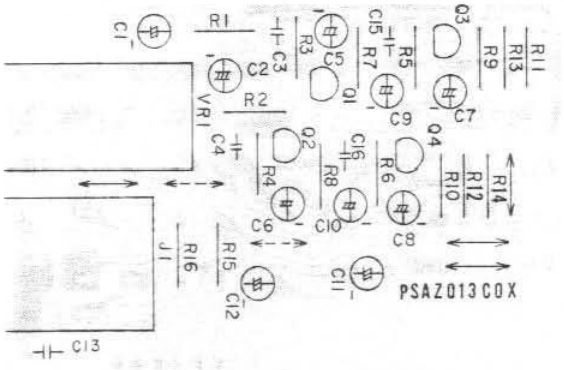




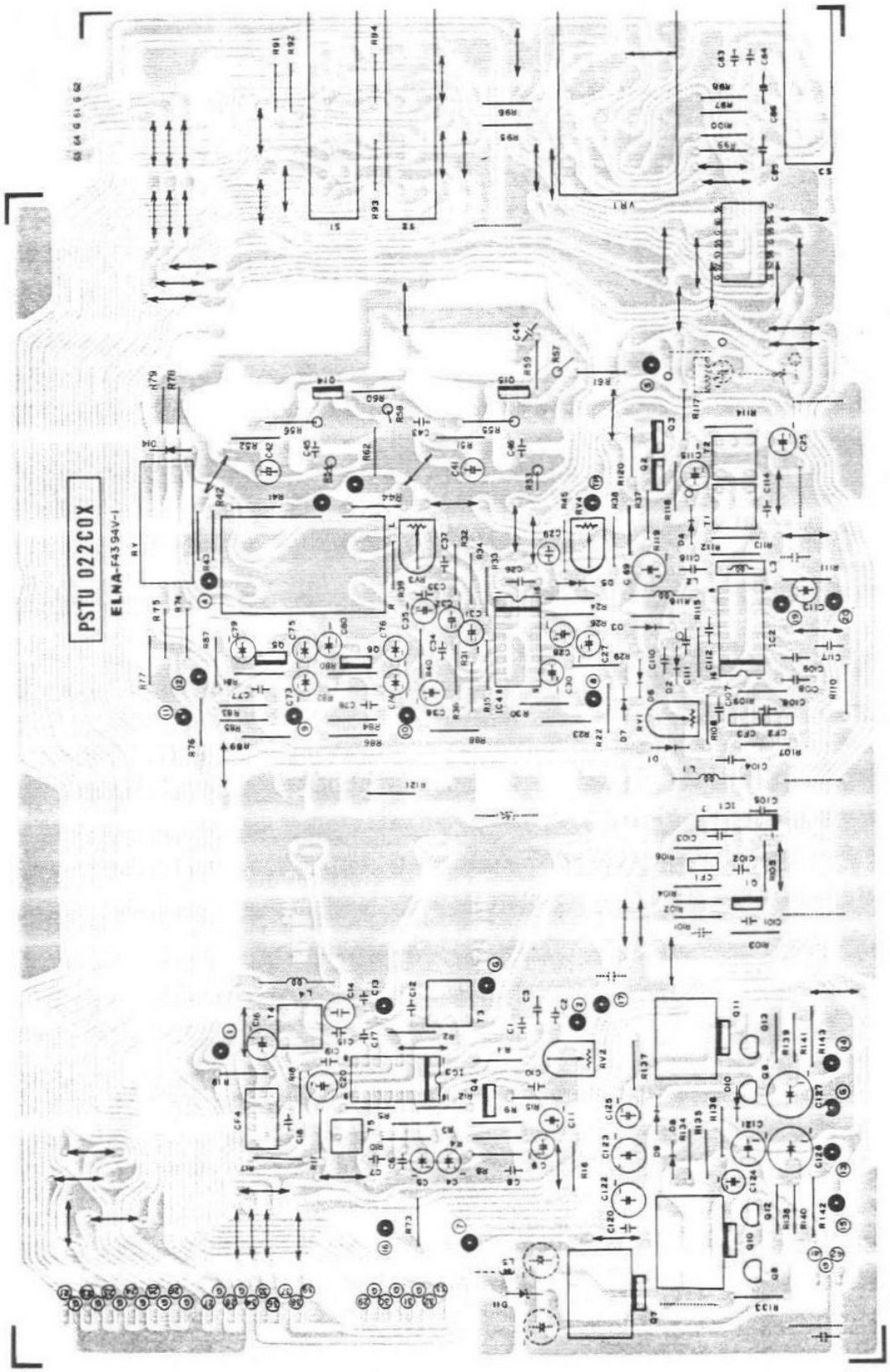
PSPT012COX TONE AMP. UNIT



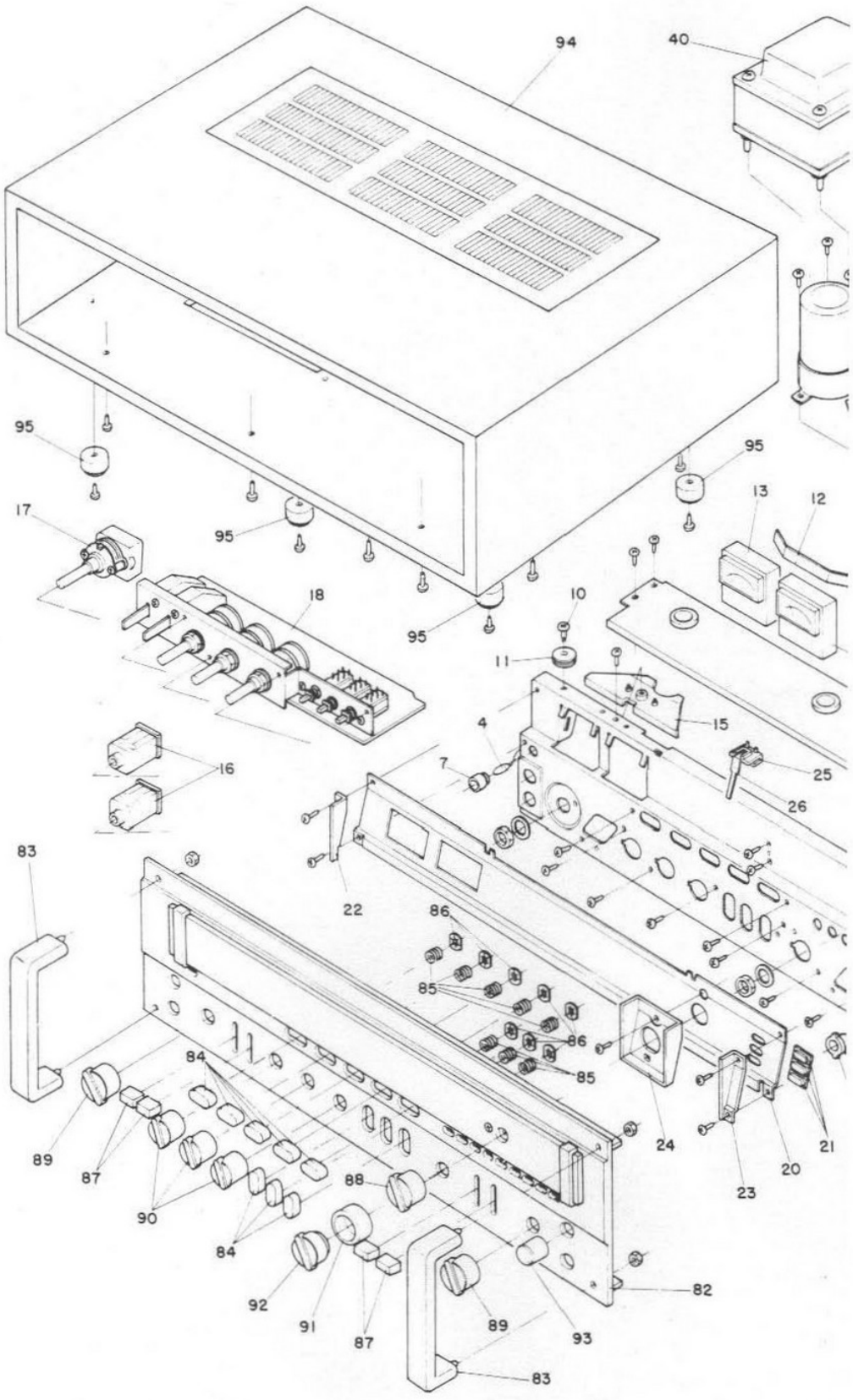
PSAZ008COX SECURITY UNIT

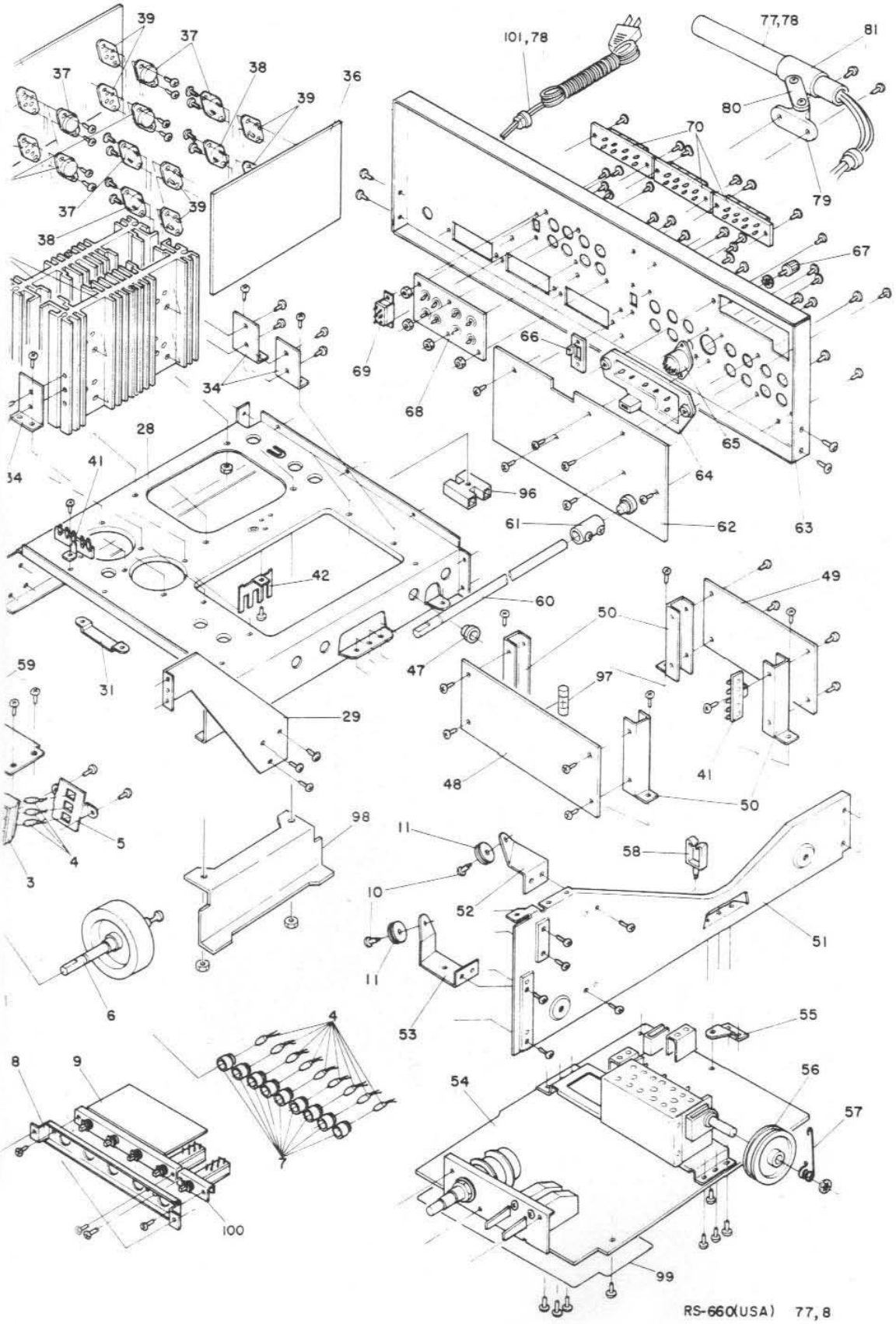


PSAZ013COX MIC AMP. UNIT


PSTU 022C0X
ELNA-F4394V-I

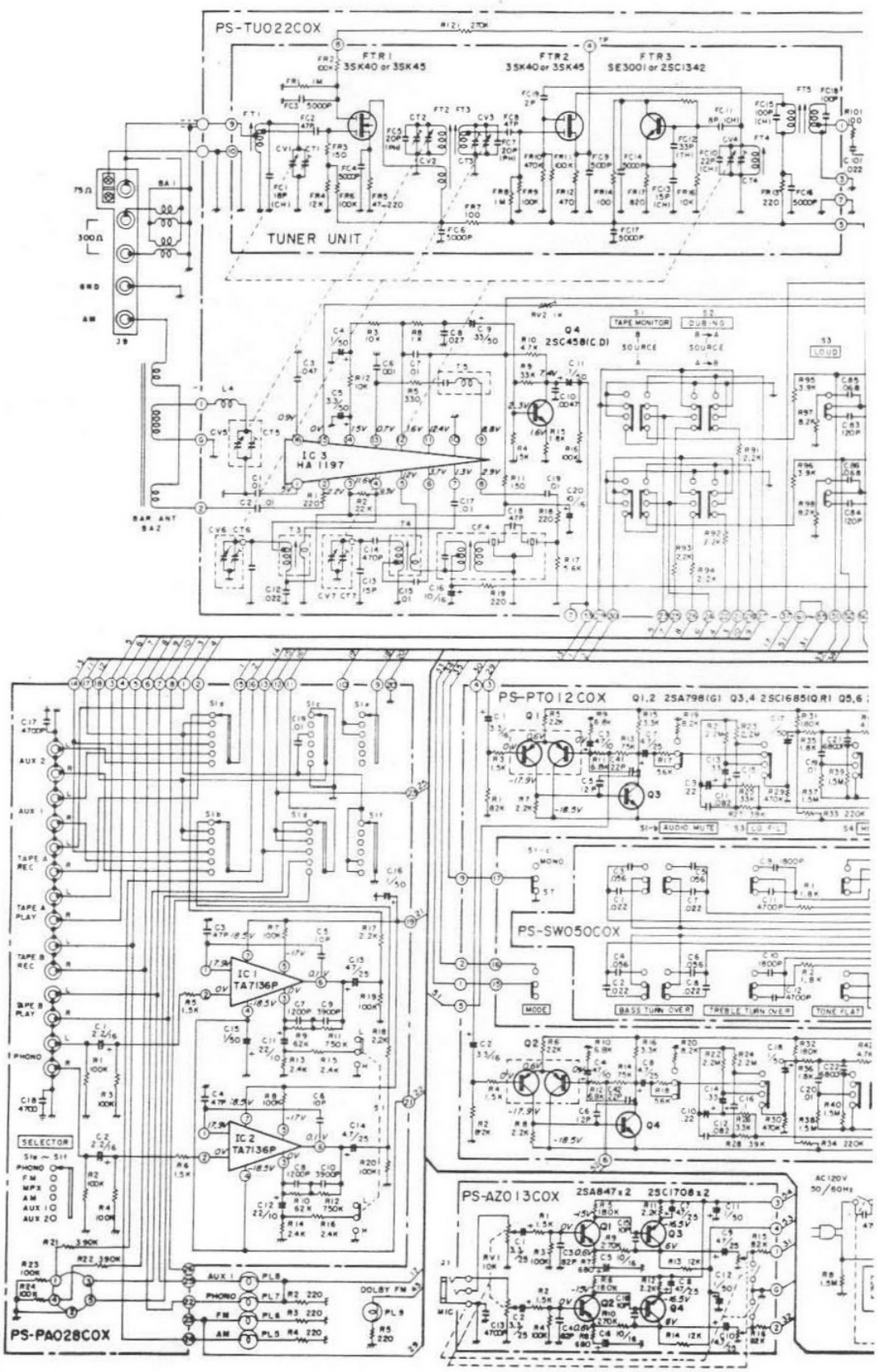
8. EXPLODED VIEW FOR AMERICAN MODEL

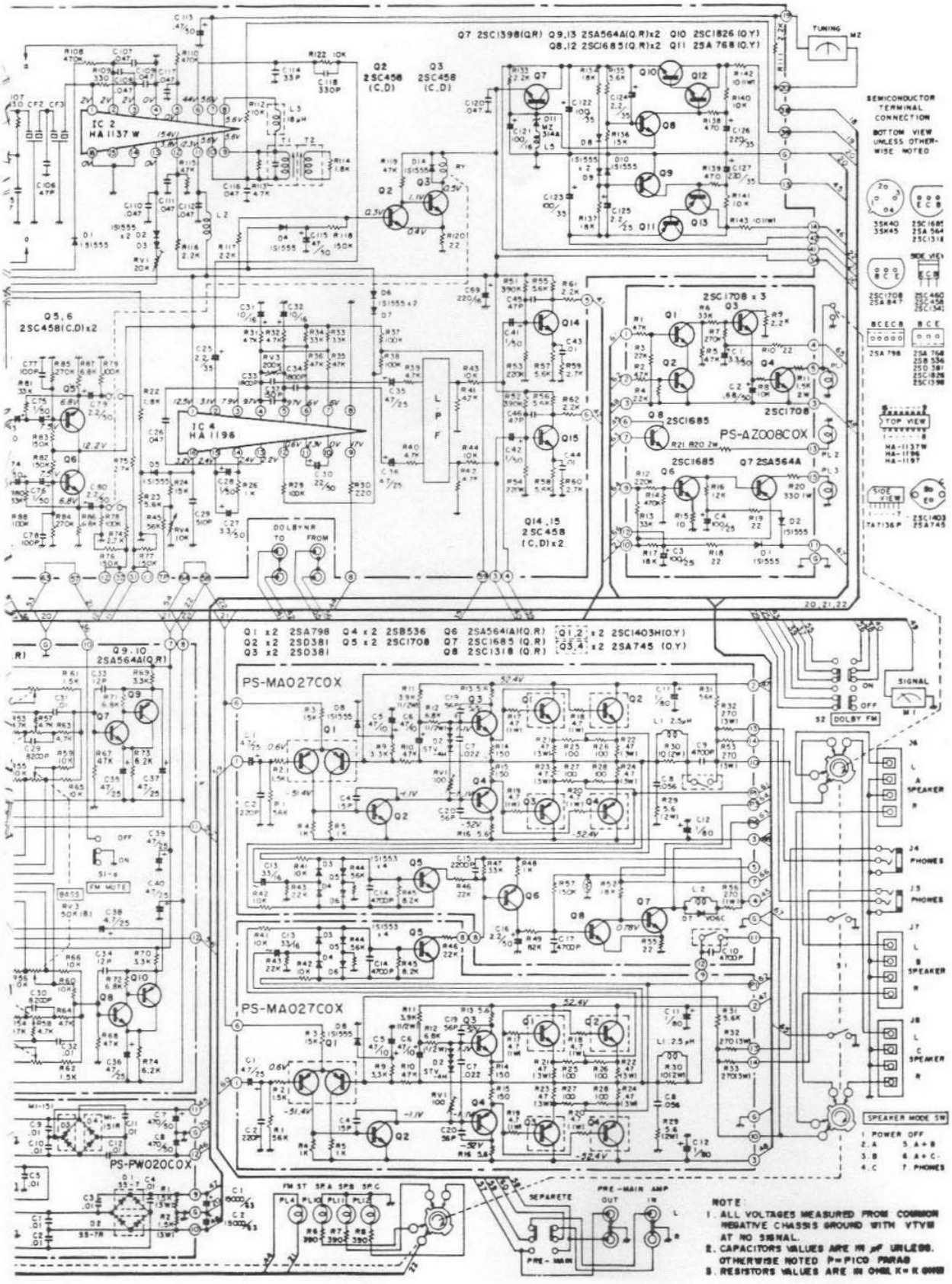




RS-660(USA) 77,8

10. SCHEMATIC DIAGRAM FOR AMERICAN MODEL




Q7 2SC1398(Q,R) Q9,13 2SA564A(Q,R)x2 Q10 2SC1826 (O,Y)
Q8,12 2SC1685(Q,R)x2 Q11 2SA 768 (O,Y)
Q2 2SC458 (C,D)
Q3 2SC458 (C,D)
IC 2 HA 1137 W
IC 4 HA 1196
Q5,6 2SC458(C,D)x2
Q14,15 2SC458 (C,D)x2
2SC1708 x 3
PS-AZ008C0X
PS-MA027C0X
PS-MA027C0X
PS-PW020C0X
Q1 x2 2SA798 Q4 x 2 2SB536 Q6 2SA564A(Q,R) Q1,2 x2 2SC1403H(O,Y)
Q2 x2 2SD381 Q5 x 2 2SC1708 Q7 2SC1685 (Q,R) Q3,4 x2 2SA745 (O,Y)
Q3 x2 2SD381 Q8 2SC1318 (Q,R)
Q9,10 2SA564A(Q,R)
TUNING
SEMICONDUCTOR TERMINAL CONNECTION
BOTTOM VIEW UNLESS OTHERWISE NOTED
SIDE VIEW
TOP VIEW
DOLBY NR
TO
FROM
SIGNAL
DOLBY FM
FM MUTE
SPEAKER MODE SW
1 POWER OFF
2 A 5 A+B
3 B 6 A+C
4 C 7 PHONES
SEPARETE
PRE-MAIN AMP
OUT
IN
PRE-MAIN
NOTE:
1. ALL VOLTAGES MEASURED FROM COMMON NEGATIVE CHASSIS GROUND WITH VTVM AT NO SIGNAL.
2. CAPACITORS VALUES ARE IN μF UNLESS OTHERWISE NOTED P=PICO FARAD
3. RESISTORS VALUES ARE IN OHM K=K OHM

11. PARTS LIST FOR RS 660

SYMBOL NO.		DESCRIPTION	PARTS CORD	U / A
	(1)	Front Panel	MZ-974SZ006	1
	(2)	PW Board ass'y, details; page 8 (MIC)	AP-SAZ013AA	1
	(3)	Bushing, security lamp	VK-241RW001	1
PL1-13	(4)	Lamp, 6.3V 35mA	ZP-A064126U	13
	(5)	Bracket, security lamp	MC-415SZ001	1
	(6)	Flywheel ass'y	AV-FLYWL006	1
	(7)	Bushing, lamp	VM-165RW001	10
	(8)	Bracket, push switch	MC-272SZ002	1
	(9)	PW Board ass'y, details; page 9 (TURNOVER)	AP-SSW050AA	1
	(10)	Stud, dial pu-ley	MT-142SN001	5
	(11)	Pulley, dial thread	VM-183EN001	5
	(12)	Spring Board, meter	MU-261LY001	1
M1	(13)	Meter, 500μA SIGNAL	ZM-G2050N01	1
M2	(14)	Meter, 250μA TUNING	ZM-F4050K01	1
	(15)	Reflector, meter	VX-742AC001	1
J4.5	(16)	Jack, 3P PHONE	YJ-S03S017Z	2
S1	(17)	Switch, rotary, POWER/SP MODE	SU-067301SA	1
	(18)	PW Board ass'y, details; page 10 (TONE AMP)	AP-SPT012AA	1
	(19)	Bushing, function SW.	VF-221DN001	1
	(20)	Channel indicating plate	ME-96PAX005	1
	(21)	Cover, security lamp	VF-121AA003	3
S4		Push Switch	SP-01AAXZ1A	1
	(22)	Shade, channel plate, left	VL-622SH003	1
	(23)	Shade, channel plate, right	VL-622SH004	1
	(24)	Shade, tuning knob	VB-642AH001	1
	(25)	Holder, dial pointer	VK-122DN001	1
	(26)	Dial Pointer	MJ-412RC001	1
	(27)	Bracket, chassis supporting, left	MU-671SZ002	1
	(28)	Chassis	MC-886SZ003	1
	(29)	Bracket, chassis supporting, right	ML-762SZ002	1
C1.2	(30)	Elyt. Capacitor 15000μF 63V	CE-J1H15301	2
C3.4		Polyester Capacitor .47 " 250V AC	CQ-UZ473MEX	2
C5		Ceramic Capacitor 4700pF 1.4KV DC 125V AC	CK-DX472PMM	-
	(31)	Terminal, Elyt. capacitor earth	MC-161CD001	1
	(33)	Heat Sink, power transistor	MH-763AA005	2
	(34)	Stiffener, heat sink	ML-422SZ004	4
	(35)	PW Board ass'y, details; p.13-15 (MAIN AMP, L)	AP-SMA027CA	1
	(36)	PW Board ass'y, details; p.13-15 (MAIN AMP, R)	AP-SMA027DA	1
Q1.2(L.R)	(37)	Transistor 2SC1403A(O.Y)	QT-C1403AAD	4
Q3.4(L.R)	(38)	" 2SA745A(O.Y)	QT-A0745AAD	4
	(39)	Socket, transistor	YS-T010003U	8
PT1	(40)	Power Transformer	TP-AB4S001N	1

NOTE: A: AMERICAN MODEL E: EUROPEAN MODEL

SYMBOL NO.		DESCRIPTION	PARTS CORD	Unit C
				A
PT1		Power Transformer	TP-AB4U001N	-
C6		Ceramic Capacitor 0.47 μF 50V	CK-DB473ZFM	1
	(41)	Lug Terminal, 1L4P	YL-L05CXXUS	2
	(42)	Terminal, GND earth, chassis	ML-331SS001	1
	(43)	Fuseholder	YH-F1P2001Z	5
F2.3	(44)	Fuse 6.3AT yellow	ZF-BQ63201A	2
F4.5	(45)	" 630mAT blue	ZF-BQ63101A	2
F6	(46)	" 2.5AT green	ZF-BQ25203A	1
	(47)	Bushing, lead wire	VF-177FB001	1
	(48)	PW Board ass'y, details; page 16.17 (SECURITY)	AP-SAZ008CA	1
	(49)	PW Board ass'y, details; page 18 (POWER)	AP-SPW020CA	1
		PW Board ass'y, details; page 18 (POWER)	AP-SPW020DA	-
	(50)	Bracket, power board	MU-621SZ003	4
	(51)	Side Panel, right	MU-871SZ004	1
	(52)	Bracket, dial pulley, L-shape	MZ-232SZ004	1
	(53)	Bracket, dial pulley, U-shape	MU-233SZ002	1
	(54)	PW Board ass'y, details; page 19-25 (TUNER)	AP-STU022AA	1
		PW Board ass'y, details; page 19-25 (TUNER)	AP-STU022BA	-
	(55)	Bracket, tuner board	MP-243SZ001	1
	(56)	Dial Drum	VM-297SB001	1
	(57)	Spring, dial drum	MW-362LY002	1
	(59)	Dial Light ass'y	AM-R9090#02	1
	(60)	Shaft, function sw.	MT-865AD006	1
	(61)	Coupler, function sw.	MT-266BD001	1
	(62)	PW Board ass'y, details; page 26.27 (PRE AMP)	AP-SPA028AA	1
	(63)	Rear Panel	MB-972SE009	1
		"	MB-972SE023	-
	(64)	Terminal, ANT	YT-D05D001U	1
	(65)	Connector, 5P DIN	YJ-D05S006Z	1
	(66)	Spacer, phone sw.	VK-133SB002	2
	(67)	Terminal, GND earth, rear panel	YT-D01S001U	1
	(68)	Jack, 4P PRE-MAIN AMP. DOLBY	YJ-P04S011U	2
S3	(69)	Switch, slide, PREMAIN SEPARATE	SS-020228ZA	1
	(70)	Terminal, SP jack	YJ-S04S004U	3
	(71)	Fuseholder	YH-F1S2001D	1
F1	(72)	Fuse 3.15AT (one for spare)	ZF-BQ32201A	2
F1		Fuse 7A, UL	ZF-BQ70201U	-
S2	(73)	Socket, VOLTAGE SELECT	SZ-019901DZ	1
	(74)	Support, voltage selector	MT-264SZ001	2
	(75)	Cover, voltage selector	MS-536SE001	1
	(76)	Jack, AC	YJ-A03S001S	1
		T-type FM Antenna	ZA-T0015002	1
BA1		Balance Coil	TV-750301A2	1
BA2	(77)	Bar Antenna	TE-AR120E02	1

SYMBOL NO.	DESCRIPTION	PARTS CORD	L / A
(78)	Bushing, AM antenna lead	VM-270NB004	1
	Bushing, AC Cord	VM-270NB001	-
(79)	Holder, Bar antenna	MF-422PB001	1
(80)	"	MH-632PB001	1
(81)	"	MM-480PB001	1
(82)	Escutchoen ass'y	AM-RS660#01	1
(83)	Handle, escutchoen	MU-274AA001	2
(84)	Button, push sw.	MN-376AA016	8
(85)	Spring, push sw.	MW-261LY002	8
(86)	Ring, push sw.	MS-113SP001	8
(87)	Knob, lever sw.	AV-KNOB#074	4
(88)	Knob, tuning	AV-KNOB#073	1
(89)	Knob, rotary sw.	AV-KNOB#071	2
(90)	Knob, tone	AV-KNOB#070	3
(91)	Knob, balance	MN-186AA007	1
(92)	Knob, volume	AV-KNOB#072	1
(93)	Knob, microphone level	MN-271AA002	1
(94)	Cabinet case ass'y	AM-RS660#02	1
(95)	Foot	VM-285SB001	4
	Bracket, transformer	MZ-753SZ001	1
	Shield plate	VS-776VX001	1
	Cover, C5 ceramic capacitor	VX-431UL001	-
	Connect wire	YZ-F2000002	-
	Sheet, Lever sw	VS-523YB001	4
	Sponge	VQ-111MB001	8
	Sponge, Lamp Assy	VQ-911MB002	1
	PT shield	MU-763SE002	1
	AC Cord ass'y, UL/CSA	AC-AC010ULA	-
R1	Metal Oxide Film Resistor 82 ohm 1/2W	RG-HANJ820B	1
R2-5	" 220 " "	RG-HANJ221B	4
R6-8	" 390 " 2W	RG-2ANJ391B	3
R9	Solid Resistor 1.5M " 1/2W	RC-12GK155X	-
	Label, serial number	VV-SRS660#1	1
	"	VV-SRS660#2	-
	Label, FTC	VV-L521WN02	1
	Label, bottom cabinet	VV-L631UL03	1
	Instruction Book	KT-RS660#XX	1
	"	KT-RS660#XA	-
	Label, fuse	VV-L711GE01	1
	Screw, tapping, cabinet, trans. AC cord M3x20	BT-PW3020BB	2
	Screw, tapping, dial light etc. M3x8	BT-PW3008BZ	54
	Screw, tapping, Elyt. capacitor M4x8	BT-PW4008BZ	6
	Screw, tapping, speaker terminal, etc. M3x8	BT-PW3008BB	19
	Screw, inside toothed, rear panel etc. M3x8	BT-PX3008BZ	12

SYMBOL NO.	DESCRIPTION		PARTS CORD	Uni E
	Screw, pan tapping, shade etc.	M3x8	BT-PP3008BZ	10
	Screw, pan tapping, ant. terminal etc.	M3x8	BT-PP3008AB	12
	Screw, pan tapping, foot	M4x18	BT-PP4018AN	4
	Screw, pan tapping, escutchoen etc.	M3x8	BT-PP3008TZ	10
	Screw, flat tapping, escutchoen	M3x6	BT-PS3006TZ	3
	Screw, flat tapping, AC jack	M3x8	BT-PS3008BB	2
	Screw, ovel flat, cabinet	M4x18	BS-PY4018NB	12
	Screw, pan head, DIN jack etc.	M3x6	BS-PP3006NB	3
	Screw, pan head, Ant. holder	M3x20	BS-PP3020NB	2
	Screw, pan head, FM Ant. GND	M3x10	BS-PP3010NB	1
	Screw, pan head, pre amp slide sw.	M2.6x8	BS-PP2608NB	4
	Screw, pan head, voltage selector	M3x16	BS-PP3016NB	2
	Screw, semus, pwr transistor	M3x16	BS-PC3016NZ	16
	Screw, semus, push sw. tone pwr etc.	M3x6	BS-PC3006NZ	7
	Screw, flat head, handle	M4x12	BS-PS4012NN	4
	Screw, bind head, dial drum	M2.6x6	BS-PB2606NN	1
	Rose Washer, cabinet	M4	BW-R4012PSB	14
	Washer, inside toothed lock, flywheel	M9	BW-U90D05SW	1
	Washer, inside toothed lock, vol. selector,	M3	BW-U30655SW	4
	Hexa Nut, FN ant. volt. selector		BN-HAX30NSN	3
	Hexa Nut, Ant. holder		BN-HAX30NSB	2
	Hexa Nut, flywheel		BN-HVX90HSZ	1
	GND Washer, FM Ant.		BW-T30602BN	1
	Stop Ring, dial drum		BC-S8025XSP	1
	Flat Washer, GND terminal		BW-M30A08SN	4
	Flat Washer, Foot		BW-M40805SN	4
	PW Board		DS-AZ013COX	1
Q1.2	Transistor	2SA847(F.G)	QT-A0847XAE	2
Q3.4	"	2SC1708(F.G)	QT-C1708XAE	2
J1	Jack,	MIC	YJ-S09S002Z	1
RV1	Control 10KA MIC LEVEL		RV-SA102X01	1
	Short jumper	10mm	MW-401CX001	6
C1.2	Elyt. Capacitor	3.3 μF 25V	CE-EE3R3ZRC	2
C3.4	Ceramic Capacitor	82 pF 50V	CC-CB820KOM	2
C5.6	Elyt. Capacitor	10 μF 16V	CE-ED100ALC	2
C7-10	"	4.7 " 25V	CE-EE4R7ALC	4
C11.12	"	1 " 50V	CE-EG010ALC	2
C13	Ceramic Capacitor	4700 pF 50V	CK-CB472PEM	1
C15.16	"	10 " 50V	CC-CB100DOM	2
R1.2	Carbon Resistor	1.5k ohm 1/4W	RD-25PJ152X	2
R3.4	"	100k " "	RD-25PJ104X	2
R5.6	"	180k " "	RD-25PJ184X	2
R7.8	"	680 " "	RD-25PJ681X	2
R9.10	"	270k " "	RD-25PJ274X	2

SYMBOL NO.	DESCRIPTION		PARTS CORD	U / E
R11.12	Carbon Resistor	2.2k ohm 1/4W	RD-25PJ222X	2
R13.14	"	12k " "	RD-25PJ123X	2
R15.16	"	82k " "	RD-25PJ823X	2
	PW Board		PS-SW050COX	1
	Push Switch, Bass, Treble, Tone		SP-04YAX04A	1
S4-1.2	Push Switch, Mode, Ext. Dolby		SP-02YAX06A	1
	Short jumper	10m	MW-401CX001	3
C1.2.7.8	Mylar Capacitor	.022 μF 50V	CQ-MB223KCH	4
C3.4.5.6	"	.056 " "	CQ-MB563KCH	4
C9.10	"	.0018 " "	CQ-MB182KCH	2
C11.12	"	.0047 " "	CQ-MB472KCH	2
R1.2	Carbon Resistor	1.8k ohm 1/4W	RD-25PJ182X	2
	PW Board		PS-PT012COX	1
Q1.2	Transistor	2SA798(G)	QT-A0798XCE	2
Q3-8	"	2SC1685(Q.R)	QT-C1685XAN	6
RV1-3	Control 50 KB TONE		RV-DA503B03	3
S1 abc	Push Switch	MUTE, LOUDNESS	SP-03DAX05A	1
S2	Slide Switch	FILTER/Lo	SL-020303ZB	1
S3	"	FILTER/Hi	SL-040301ZB	1
	Connection Cord		AC-CN055ULA	1
	pw board joint wire,	11P	ZZ-Z0000039	1
	"	7P	ZZ-Z0000038	1
	"	5P	ZZ-Z0000037	1
	Short jumper	10mm	MW-401CX001	27
	Tie point	16mm	MW-201BS003	3
	Bracket		MZ-472SZ003	1
	Screw, semus	M3x6	BS-PC3006NZ	5
C1.2	Tantalum Capacitor	3.3 μF 16V	CS-SD3R3MDC	2
C3.4	Elyt. Capacitor	47 " 10V	CE-EC470ALC	2
C5.6	Ceramic Capacitor	12 pF 50V	CC-CB120KOM	2
C7.8.37.38	Elyt. Capacitor	4.7 μF 25V	CE-EE4R7ALC	4
C9.10	Tantalum Capacitor	.22 " 16V	CS-SDR22MDC	2
C11.12	Mylar Capacitor	.082 " 50V	CQ-MB823KCH	2
Q9.10	Transistor	2SA564A(Q.R.)	QT-A0564ACN	2
C13.14	Tantalum Capacitor	.33 μF 16V	CS-ADR33MDC	2
C15.16	Mylar Capacitor	.1 " 50V	CQ-MB104KCH	2
C17.18	Elyt Capacitor	1 " "	CE-EG010ALC	2
C19.20.31.32	"	.01 " "	CQ-MB103KCH	4
C21.22	"	.0068 " "	CQ-MB682KCH	2
C23.24	"	.0027 " "	CQ-MB272KCH	2
C25.26	"	.0047 " "	CQ-MB472KCH	2
C27.28	"	10 " 16V	CE-ED100ALC	2
C29.30	Mylar Capacitor	.0082 " 50V	CQ-MB822KCH	2
C33.34	Ceramic Capacitor	12 pf "	CC-CB120KOM	2

SYMBOL NO.	DESCRIPTION		PARTS CORD	U E
C35.56.39.40	Elyt. Capacitor	47 μF 25V	CE-EE470ALC	4
C41.42	Ceramic Capacitor	22 pF 50V	CC-CB220KOM	2
R1.2	Carbon Resistor	82k ohm 1/4W	RD-25PJ823X	2
R3.4.51.52.61.62	"	1.5k " "	RD-25PJ152X	6
R5.6	"	22k " "	RD-25PJ223X	2
R7.8.47.48	"	2.2k " "	RD-25PJ222X	4
R9-12.71.72	"	6.8k " "	RD-25PJ682X	6
R13.14	"	75k " "	RD-25PJ753X	2
R15.16.69.70	"	3.3k " "	RD-25PJ332X	4
R17.18	"	56k " "	RD-25PJ563X	2
R19.20	"	8.2k " "	RD-25PJ822X	2
R21.22.23.24	"	2.2M " "	RD-25PJ225X	4
R25.26	"	33k " "	RD-25PJ333X	2
R27.28	"	39k " "	RD-25PJ393X	2
R29.30	"	470k " "	RD-25PJ474X	2
R31.32	"	180k " "	RD-25PJ184X	2
R33.34	"	220k " "	RD-25PJ224X	2
R35.36	"	1.8k " "	RD-25PJ182X	2
R37.38.39.40.43.44.45 46	"	1.5M " "	RD-25PJ155X	8
R47.48	"	2.2k " "	RD-25PJ222X	2
R49.50	"	3.9k " "	RD-25PJ392X	2
R53.54.57.41.58.63.64 42	"	4.7k " "	RD-25PJ472X	8
R55.56.59.60.65.66	"	10k " "	RD-25PJ103X	6
R67.68	"	47k " "	RD-25PJ473X	2
R71.72	"	6.8k " "	RD-25PJ682X	
R73.74	"	6.2k " "	RD-25PJ622X	2
	Support		MT-263RD002	1
	Washer		BW-G30655SW	1
	PW Board		PS-MA027COX	1
Q1	Transistor	2SA798	QT-A0798XDE	1
Q2.3	"	2SD381 (L or M)	QT-D0381XBA	2
Q4	"	2SB536 (L or M)	QT-B0536XBA	1
Q5	"	2SC1708(F.G)	QT-C1708XAE	1
Q6	"	2SA564A(Q.R)	QT-A0564ABN	1
Q7	"	2SC1685(Q.R)	QT-C1685XAN	1
Q8	"	2SC1318(Q.R)	QT-C1318XDN	1
PS	Positor	PTH487A03BE302TS	QP-302X001M	1
D2	Varistor	STV-4H	QV-FSTV4HXD	1
D3-6	Diode	1S1553	QD-SS1553XT	4
D7	"	V06C	QD-SV06CXXB	1
D8	"	1S1555	QD-SS1555XT	1
L1	Choke Coil	2.5μH	LA-3QH1323B	1

SYMBOL NO.	DESCRIPTION	PARTS CORD	U E
L2	Relay	ZR-A444102U	1
RV1	Resistor semi-fixed 100 ohm	RP-JNB10102	1
	Short jumper 10mm	MW-401CX001	7
	Tie point	MW-201BS003	4
	Heat Sink	MU-232AD002	3
	Terminal, 4P 7.5mm	YZ-A2750002	2
	" 4P 5mm	YZ-A2000002	2
	Screw, pan head M3x8	BT-PP3008AZ	3
C1	Elyt. Capacitor 4.7 μF 25V	CE-EE4R7ZWC	1
C2	Ceramic Capacitor 220 pF 50V	CC-CB221KOM	1
C4	" 4 " 50V	CC-CB150KOM	1
C5	Elyt. Capacitor 47 μF 10V	CE-EC470ALC	1
C6	" 47 " 50V	CE-AG470ALC	1
C7	Mylar Capacitor .022 " 50V	CQ-MB223KCH	1
C8	" .056 " 50V	CQ-MB563KCH	1
C9.10.17	" .0047 " 50V	CQ-MB472KCH	3
C11.12	Elyt. Capacitor 1 " 80V	CE-EJ010ALC	2
C13	" 33 " 16V	CE-AD330NLC	1
C14	Mylar Capacitor .0047 " 50V	CQ-MB472KCH	1
C15	" .0022 " 50V	CQ-MB222KCH	1
C16	Elyt. Capacitor 2.2 " 50V	CE-EG2R2ALC	1
C19.20	Ceramic Capacito 56 pF 50V	CC-CB560KOM	2
R1.44	Carbon Resistor 56k ohm 1/4W	RD-25PJ563X	2
R2	" 1.5k " "	RD-25PJ152X	1
R3	" 15k " "	RD-25PJ153X	1
R4.5	" 1k " "	RD-25PJ102X	2
R9	" 3.3k " "	RD-25PJ332X	1
R10	" 47k " "	RD-25PJ473X	1
R11	Metal Oxide Film Resistor 3.9k " 1/2W	RG-HAPJ392B	1
R12	" 6.8k " "	RG-HAPJ682B	1
R13.16.29	" 5.6 " "	RX-HAPJ5R6B	3
R14.15	" 150 " "	RG-HAPJ151B	2
R17-20	" 4.7 " 1W	RX-1APJ4R7B	4
R21-24	Cement Resistor .47 " 3W	RF-03SKR47B	4
R25-28	Carbon Resistor 100 " 1/4W	RD-25PJ101X	4
R30	Metal Oxide Film Resistor 10 " 2W	RX-2APJ100B	1
R32.33	" 270 " 3W	RG-3ANJ271N	2
R41.42	Carbon Resistor 10k " 1/4W	RD-25PJ103X	2
R43	" 22k " "	RD-25PJ223X	1
R45	" 8.2k " "	RD-25PJ822X	1
R46	" 22k " "	RD-25PJ223X	1
R47	" 33k " "	RF-25PJ333X	1
R48	" 1k " "	RD-25PJ102X	1
R49	" 82k " "	RD-25PJ823X	1

SYMBOL NO.	DESCRIPTION				PARTS CORD	U E
R52	Carbon Resistor	18k	ohm	1/4W	RD-25PJ183X	1
R55	"	22k	"	"	RD-25PJ220X	1
R56	Metal Oxide Film Resistor	270	"	1W	RG-1APJ271B	1
R57	Carbon Resistor	150k	"	1/4W	RD-25PJ154X	1
	PW Board				PS-AZ2008COX	1
Q1-4	Transistor	2SC1708(ForG)			QT-C1708XAE	4
Q6.8	"	2SC1685(Q.R)			QT-C1685XAN	2
Q7	"	2SA564A(Q.R)			QT-A0564ACN	1
D1.2	Diode	1S1555			QD-SS1555XT	2
	Terminal, 5P 5mm				YZ-A2500002	1
	Terminal, 6P 5mm				YZ-A3000002	1
C1	Elyt. Capacitor	3.3	μF	50V	CE-EG3R3ZRC	1
C2	"	.68	"	"	CE-EGR68ZRC	1
C3	"	100	"	25V	CE-EE101ALC	1
C4	"	33	"	"	CE-EE330ALC	1
R1.2	Carbon Resistor	47k	ohm	1/4W	RD-14PJ473X	2
R3.4	"	22k	"	"	RD-14PJ223X	2
R5	"	4.7k	"	"	RD-14PJ472X	1
R6	"	33k	"	"	RD-14PJ333X	1
R7	"	274N	"	"	RD-14PJ274X	1
R8	"	10k	"	"	RD-14PJ103X	1
R9	"	2.2k	"	"	RD-14PJ222X	1
R10.18.19	"	22	"	"	RD-14PJ220X	3
R11	Metal Oxide Film Re.	820	"	2W	RG-2ANG152B	1
R12	Carbon Resistor	220k	"	1/4W	RD-14PJ224X	1
R13	"	33k	"	"	RD-14PJ333X	1
R14	"	470k	"	"	RD-14PJ474X	1
R15	"	10	"	"	RD-14PJ100X	1
R16	"	12k	"	"	RD-14PJ123X	1
R17	"	18k	"	"	RD-14PJ183X	1
R20	Metal Oxide Film Re.	330	"	1W	RG-1APJ331B	1
R21	"	820	"	2W	RG-2ANJ821B	1
	Short Jumper	12.5mm			MW-401CX002	1
R24	Solid Resistor	10k	"	1/4W	RC-12GK103X	1
	PW Board				PS-PW020COX	1
D1	Diode	SS-7	] pair		QD-SSS7XXXD	1
D2	"	SS-7R			QD-SSS4RXXD	1
D3	"	Mi-151	] pair		QD-S1151X3D	1
D4	"	Mi-151R			QD-S1151R3D	1
	Terminal, 5P				YZ-A3500001	2
	Terminal, 6P				YZ-A4250001	1
	Short jumper				MW-401CX002	1
	Fuse Holder				YH-F0P0002Z	2
C1-4. 9-12	Ceramic Capacitor	.01	μF	500V	CK-DE103PEM	8

SYMBOL NO.	DESCRIPTION	PARTS CORD	E
C7.8	Elyt Capacitor 470 μF 50V	CE-AG471ALC	2
R1.2	Metal Oxide Film Resistor 1.5k 3W	RG-3ANJ152N	2
	PW Board	PS-TU022COX	1
	Tuner Unit	ZU-V4300001	1
IC1	Integrated Circuit uPC555H	QQ-M00555BA	1
IC2	" HA1137W	QQ-MA1137AB	1
IC3	" HA1197	QQ-MA1197AB	1
IC4	" HA1196	QQ-MA1196AB	1
Q1	Transistor 2SC460(B)	QT-C0460XDB	1
Q2-6. 14.15	" 2SC458(C.D)	QT-C0458XBB	7
Q7	" 2SC1398(Q.R)	QT-C1398XAN	1
Q8.12	" 2SC1685(Q.R)	QT-C1685XAN	2
Q9.13	" 2SA564A(Q.R)	QT-A0564ACN	2
Q10	" 2SC1986(O.Y)	QT-C1986XBD	1
Q11	" 2SA768(O.Y)	QT-A0768XBD	1
D1-10. 14	Diode 1S1555	QD-SS1555XT	11
D11	" MZ314	QD-ZMZ314AE	1
R.Y	Relay	ZR-A231101Z	1
S1.2	Switch, lever slide TAPE MONITOR, DUBBING	SL-040301ZB	2
L.P.F.	Low Pass Filter	FJ-RR38L03C	1
CF1-3	Ceramic Filter 10.7M	FB-10R7F06M	3
CF4	" 455kHz	FB-R455A15M	1
VR1	Control 100KN. M/200KB	RV-GA204X03	1
RV1	Resistor semi-fixed 20k	RP-GNB20301	1
RV2	" 1k	PR-GNB10201	1
RV3	" 200k	RP-GNB20401	1
RV4	" 10k	RP-JNB10302	1
L1.2.4	RF Coil 1.95 μF	LC-ADA3938A	3
L3	" 18 "	LF-180KB01S	1
L5	" 100 "	LF-101KA01T	1
T1	I.F.T. 10.7MHz	TR-10MM013M	1
T2	" 10.7MHz	TR-10MM014M	1
T3	AM RF Coil 145 μH	TR-10BN018S	1
T4	AM OSC Coil 108 "	TR-10BN019S	1
T5	I.F.T. 455KHz	TR-07BM001M	1
	Socket	YS-C140001U	1
	Terminal, tuner unit	YZ-F0000002	3
	Bracket, tuner unit	MC-572SZ001	1
	Bracket, control	ML-741SZ008	1
	Heat Sink, 2SC1986	MU-622AD002	1
	" 2SC1398	MU-242AD001	1
	Short jumper 12.5mm	MW-401CX002	58
	Tie point 16mm	MW-201BS003	22
C1.2	Ceramic Capacitor .01 μF 50V	CK-CB103ZFM	2

SYMBOL NO.	DESCRIPTION	PARTS CORD	U / E
C3	Ceramic Capacitor .047 μF 50V	CK-DB473ZFM	1
C4	Elyt. Capacitor 1 " "	CE-EG010ALC	1
C5	" 3.3 " "	CE-EG3R3ALC	1
C6	Ceramic Capacitor .001 " "	CK-CB102KBM	1
C7	" .01 " "	CK-CB103ZFM	1
C8	Mylar Capacitor .027 " "	CQ-MB273KCH	1
C9	Elyt. Capacitor .33 " "	CE-EGR33ZWC	1
C10	Ceramic Capacitor .0047 " "	CK-CB472KBM	1
C11. 73-76	Elyt. Capacitor .1 " "	CE-EGR10ZWC	5
C12	Ceramic Capacitor .022 " "	CK-DB223ZFM	1
C13	" 15 pF "	CC-DB150KOM	1
C14	Styroflex Capacitor 470 pF 100V/125V	CQ-SC471JCF	1
C15	Ceramic Capacitor .01 μF 50V	CK-CB103ZFM	1
C16	Elyt. Capacitor 10 " 16V	CE-ED100ALC	1
C17	Ceramic Capacitor .01 " 50V	CK-CB103ZFM	1
C18.45.46	" 47 pF "	CC-CB470KOM	3
C19	" .01 μF "	CK-CB103ZMF	1
C20	Elyt. Capacitor 10 " 16V	CE-ED100ALC	1
C25	" 2.2 " 50V	CE-EG2R2ZWC	1
C26.104.105.107-112 116.117.120	" .047 " "	CK-DB473ZFM	12
C27	" 3.3 " "	CE-EG3R3ZWC	1
C28.41.42.73.76	" 1 " "	CE-EG010ZWC	7
C29	Styroflex Capacitor 510 pF 100V/125V	CQ-SC511JCF	1
C30	Elyt. Capacitor .22 μF 50V	CE-EGR22ZWC	1
C31.32	" 10 " 16V	CE-ED100ALC	2
C33.34	Styroflex Capacitor 1800 pF 100V/125V	CQ-SC182JCF	
C35.36	Elyt. Capacitor 4.7 μF 25V	CE-EE4R7ZWC	2
C37	Ceramic Capacitor 150 pF 50V	CC-CB151KOM	1
C43.44	Mylar Capacitor 0.01 μF "	CQ-MB103JCH	2
C77.78	Ceramic Capacitor 100 pF "	CC-CB101KOM	2
C79.80	Elyt. Capacitor 2.2 μF "	CE-EG2R2ALC	2
C83.84	Ceramic Capacitor 120 pF "	CC-CB121KOM	2
C85.86	Mylar Capacitor .068 μF "	CQ-MB683KCH	2
C101.102.103	Ceramic Capacitor .022 " "	CK-DB223ZFM	3
C106	" 47 pF "	CC-CB470KOM	1
C113	Elyt. Capacitor .47 μF "	CE-EGR47ZWC	1
C114	Ceramic Capacitor 33 pF "	CC-CB330KOM	1
C115	Elyt. Capacitor .47 μF "	CE-EGR47ZWC	1
C121	" 100 " 16V	CE-AD101ALC	1
C122.123	" 100 " 35V	CE-AF101ALC	2
C124.125	" 2.2 " 50V	CE-EF2R2ALC	2
C126.127	" 220 " 35V	CE-AF221ALC	2
R1	Carbon Resistor 220 ohm 1/4W	RD-14PJ221X	1

SYMBOL NO.	DESCRIPTION				PARTS CORD	E
R2	Carbon Resistor	22k	ohm	1/4W	RD-14PJ221X	1
R3.43.44.122	"	10k	"	"	RD-14PJ103X	3
R4.24	"	15k	"	"	RD-14PJ153X	2
R5	"	330	"	"	RD-14PJ331X	1
R8.26	"	1k	"	"	RD-14PJ102X	2
R9	"	33k	"	"	RD-14PJ333X	1
R10	"	4.7k	"	"	RD-14PJ472X	1
R11	"	150	"	"	RD-14PJ151X	1
R12	"	10k	"	"	RD-14PJ103X	1
R15.22.114	"	1.8k	"	"	RD-14PJ182X	3
R16	"	100k	"	"	RD-14PJ104X	1
R17.23.55.56	"	5.6k	"	"	RD-14PJ562X	2
R18.19	"	220	"	"	RD-14PJ221X	2
R29	"	100k	"	"	RD-14PJ104X	1
R30	Metal Oxide Film Re.	220	"	1/2W	RG-HANJ221B	1
R31.32	Carbon Resistor	4.7k	"	1/4W	RD-14PJ472X	2
R33.34	"	33k	"	"	RD-14PJ333X	2
R35.36.115	"	47k	"	"	RD-14PJ473X	3
R37.38	"	100k	"	"	RD-14PJ104X	2
R39-42.113	"	4.7k	"	"	RD-14PJ472X	5
R45	"	56k	"	"	RD-14PJ563X	1
R51.52	"	390k	"	"	RD-14PJ394X	2
R53.54	"	220k	"	"	RD-14PJ224X	2
R55-58. 91-94. 111.116 61.62	"	2.2k	"	"	RD-14PJ222X	12
R59.60.74.75.103	"	2.7k	"	"	RD-14PJ272X	5
R76.77.83.84	"	150k	"	"	RD-14PJ154X	4
R78.79.88.89	"	100k	"	"	RD-14PJ104X	4
R80.81	"	33k	"	"	RD-14PJ333X	2
R84.85	"	270k	"	"	RD-14PJ274X	2
R86.87	"	6.8k	"	"	RD-14PJ682X	2
R95.96	"	3.9k	"	"	RD-14PJ392X	2
R97.98	"	8.2k	"	"	RD-14PJ822X	2
R99.100	"	680	"	"	RD-14PJ681X	2
R101	"	100	"	"	RD-14PJ101X	1
R102	"	39k	"	"	RD-14PJ393X	1
R104.106	"	470	"	"	RD-14PJ471X	2
R105	"	220	"	"	RD-14PJ221X	1
R107.109	"	330	"	"	RD-14PJ331X	2
R108.110	"	470k	"	"	RD-14PJ474X	2
R112	"	10k	"	"	RD-14PJ103X	1
R113	"	4.7k	"	"	RD-14PJ472X	1
R117	"	22k	"	"	RD-14PJ223X	1
R118	"	150k	"	"	RD-14PJ154X	1

SYMBOL NO.	DESCRIPTION		PARTS CORD	Uni E
R119	Carbon Resistor	47k ohm 1/4W	RD-14PJ473X	1
R120	"	22 " "	RD-14PJ220X	1
R121	"	270k " "	RD-14PJ274X	1
R133	"	2.2k " "	RD-14PJ222X	1
R134.137	"	18k " "	RD-14PJ183X	2
R135	"	5.6k " "	RD-14PJ562X	1
R136	"	15k " "	RD-14PJ153X	1
R138.139	"	470 " "	RD-14PJ471X	2
R140.141	"	10k " "	RD-14PJ103X	2
R142.143	Metal Oxide Film Res.	10 " 1W	RX-1APJ100B	2
C69	Elyt. Capacitor	220 pF 16V	CE-AD221ALC	1
C118	Ceramic Capacitor	330 " 50V	CC-CB331KOM	1
	Screw, cemus	M3x6	BS-PC3006NZ	12
	Screw, tapping	M3x8	BT-PW3008BZ	5
	PW Board		PS-PA028COX	1
IC1.2	Integrated Circuit	TA7136P	QQ-M07136AT	2
S1	Switch, slide rotary		SH-060604ZA	1
S2	Switch slide		SS-020221ZA	1
J1.2	Jack, 4P		YJ-P04S012U	2
J3	Jack, 6P		YJ-P06S004U	1
	Terminal, 5P		YZ-A2500001	1
	pw board joint wire,	3P	ZZ-Z0000013	1
	"	8P	ZZ-Z0000015	1
	"	11P	ZZ-Z0000016	2
	Short jumper		MW-401CX002	9
C1.2	Tantalum Capacitor	2.2 μF 16V	CS-TD2R2MDC	2
C3.4	Ceramic Capacitor	47 pF 50V	CC-CB470KOM	2
C5.6	"	10 " "	CC-CB100DOM	2
C7.8	Mylar Capacitor	1200 " "	CQ-MB122KCH	2
C9.10	"	3900 " "	CQ-MB392KCH	2
C11.12	Elyt. Capacitor	22 μF 10V	CE-EC220ZWC	2
C13.14	"	4.7 " 25V	CE-EE4R7ALC	2
C15.16	"	1 " 50V	CE-EG010ALC	2
C17.18	Ceramic Capacitor	4700 pF "	CK-CB472PEM	2
C19	Mylar Capacitor	.01 μF "	CQ-MB103KCH	1
R1-4. 7.8.19.20.23.24	Carbon Resistor	100k ohm 1/4W	RD-14PJ104X	10
R5.6	"	1.5k " "	RD-14PJ152N	2
R9.10	"	62k " "	RD-14PJ623N	2
R11.12	"	750k " "	RD-14PJ754N	2
R13-16	"	2.4k " "	RD-14PJ242N	4
R17.18	"	2.2k " "	RD-14PJ222N	2
R21.22	"	390k " "	RD-14PJ394N	2