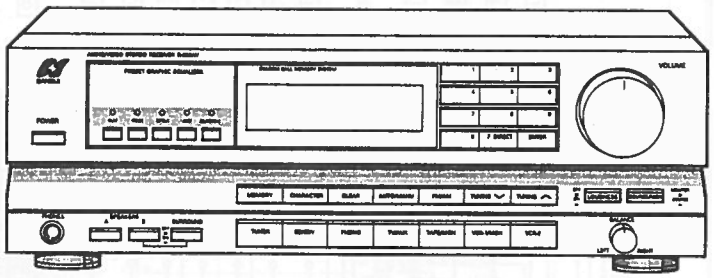
SANSUI

SERVICE MANUAL

R-950AV

AUDIO/VIDEO STEREO RECEIVER



CAUTION

1. Parts identified by the ⚠ symbol on the schematic diagram and the parts list are critical for safety. Use only replacement parts that have critical characteristics recommended by the manufacturer.
2. Make leakage-current or resistance measurements to determine that exposed parts are acceptably insulated from the supply circuit before returning the appliance to the customer.

NOTE

The symbols UL, SS and XX <EXPORT> on the parts list and the schematic diagram mean followings respectively.

UL ..... Manufactured for U.S.A. market. (Underwriters Laboratories approved model.)
SS ..... Manufactured for Saudi Arabian market.
XX ..... Standard Version.
<EXPORT>
NON MARK ... Common Parts.

Specifications

Power output
Min. RMS, both channels driven, from 20 to 20,000 Hz, with no more than 0.09% total harmonic distortion.
105 watts per channel into 8 ohms.
Load impedance..... 8 to 16 ohms
Frequency response
PHONO (MM).....20 to 20,000 Hz, +0.5 dB, –0.5 dB (at 1 watt)
CD, TAPE, VCR-1,2, TV/AUX ..... 10 to 50,000 Hz, +1 dB, –3 dB (at 1 watt)
Input sensitivity and impedance (at 1 kHz)
PHONO (MM)..... 2.5 mV/47 kohms
CD, TAPE, VCR-1,2, TV/AUX ..... 150 mV/47 kohms
VIDEO IN..... 1 Vp-p/75 ohms
VIDEO OUTPUT ..... 1 Vp-p/75 ohms
Signal to noise ratio (Over all, 0 dB=1 watt, A-network)
PHONO (MM)..... 73 dB
CD, TAPE, VCR-1,2, TV/AUX ..... 100 dB
Controls
PRESET GRAPHIC EQUALIZER
..... FLAT, ROCK, OPELA, JAZZ, CLASSICAL
LOUDNESS (VOLUME: –30dB position)
..... +9 dB at 50 Hz

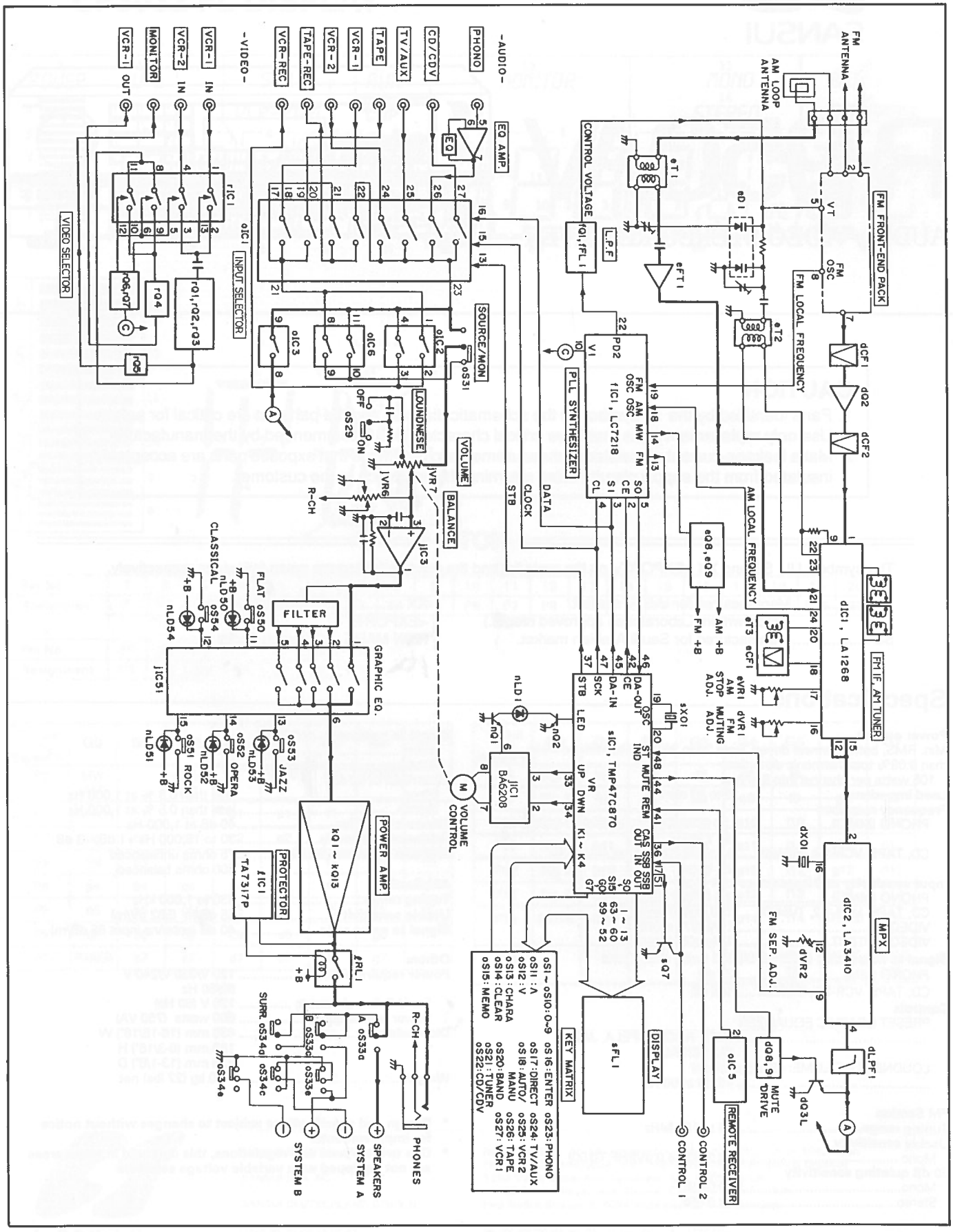
FM Section
Tuning range.....88 to 108 MHz
Usable sensitivity
Mono .....13.2 dBf (4.0 µV/IHF T-100)
50 dB quieting sensitivity
Mono.....18.0 dBf
Stereo.....40.0 dBf
Signal to noise ratio at 65 dBf
Mono.....76 dB
Stereo.....70 dB
Distortion at 65 dBf
Mono.....less than 0.3 % at 1,000 Hz
Stereo.....less than 0.5 % at 1,000 Hz
Stereo separation.....40 dB at 1,000 Hz
Frequency response.....30 to 15,000 Hz +1 dB, –3 dB
Antenna input impedance.....75 ohms unbalanced
300 ohms balanced

AM Section
Tuning range.....530 to 1,600 kHz
Usable sensitivity.....55 dB/m (562 µV/m)
Signal to noise ratio.....40 dB (antenna input 85 dB/m)

Others
Power requirements. ..... 120 V/220 V/240 V 50/60 Hz
For U.S.A. and Canada ..... 120 V (60 Hz)
Power consumption ..... 600 watts (750 VA)
Dimensions.....430 mm (16-15/16") W
156 mm (6-3/16") H
333 mm (13-1/8") D
Weight.....10.0 kg (22 lbs) net

* **Design and specifications subject to changes without notice for improvements.**
* **Due to local laws and regulations, this unit sold in some areas are not equipped with variable voltage selectors.**

1. BLOCK DIAGRAM



2. ADJUSTMENT (See Fig. 2-4 Adjustment Points on Page 4)

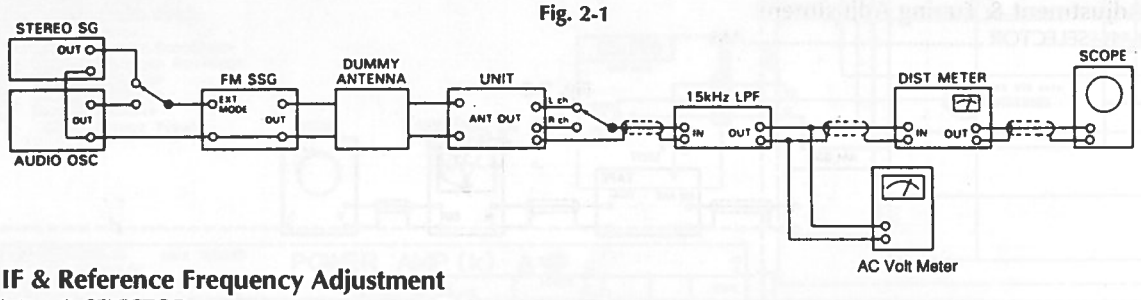
2-1. Bias Adjustment of Power Amp.

Note: 1. Master Volume ..... Minimum
2. Room Temperature ..... 18°C ~ 28°C (65°F ~ 83°F)
3. Impedance sel. sw. (ps2) ..... A, B A+B
4. For this adjustment, run the unit for more than 5 minutes after the power is switched ON.
5. Before turning ON power switch, set kVR1 on F-6007 to center position.

STEP	SUBJECT	MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
1.	Bias Current Adj. L-CH	Between Point Ⓐ & Point Ⓑ <Between emitters of power transistor (kQ12 & kQ13), F-6511>, DC Volt Meter	kVR1, L-CH (F-6007)	DC 10 ~ 18 mV	•This bias value is converted from current value to voltage by ohms law.
2.	Bias Current Adj. R-CH	Between Point Ⓒ & Point Ⓓ <Between emitters of power transistor (kQ12 & kQ13), F-6511>, DC Volt Meter	kVR1, R-CH (F-6007)	DC 10 ~ 18 mV	

2-2. FM Adjustment

Fig. 2-1



1) FM IF & Reference Frequency Adjustment

Note: 1. SELECTOR ..... FM
2. FM AUTO/MANU ..... MANU

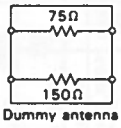
STEP	SUBJECT		FEED SIGNAL FROM	FEED SIGNAL TO	MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
1.	Reference Frequency Adj.		No Input (Tune to 108MHz)	——	Between Point Ⓔ (JW58, F-6511) & Ground, Freq. counter	fTC1 (F-6511)	118.7MHz ± 100Hz	
2.	Discriminator Coil Adj.	1	98MHz ANT Input 65dBf (59.8dB), 1kHz (100% MOD.), FM SSG	ANT Terminal 300Ω	Between Point Ⓕ & Point Ⓖ (Across dR17, F-6512), DC Volt Meter	dT1 (F-6512)	DC 0V ± 30mV	•Repeat procedures as stated in subject 1 & 2.
		2	Same as above	Same as above	REC OUT L or R-CH, Dist Meter & Scope	dT2 (F-6512)	Min. THD	

♦ Technical Hint for FM Adjustment

There are two kind in indication of FM SSG output attenuator.
1. Attenuator with marking of 75Ω open ..... open indication type.
2. Attenuator with marking of 75Ω load or close ..... load or close indication type.

FM SG output level in this FM adjustment are described as open indication type.
To feed FM signal, a dummy antenna circuit as Fig. 2-2 must be connected between FM SG output and ANT terminal (300Ω) fo the unit.

Fig. 2-2



- The following table shows relations among FM SG attenuator indication (dB), available power ratio (dBf) and antenna terminal voltage (dB/μV) in each indication type.

	FM SG Attenuator Indication	Available Power Ratio	Antenna Terminal Voltage
Open indication type	0 dB 66 dB	–0.8 dBf 65.2 dBf	–6 dB/μV 60 dB/μV
Load or close indication type	0 dB 60 dB	5.2 dBf 65.2 dBf	0 dB/μV 60 dB/μV

2) FM STEREO Adjustment

Note: 1. SELECTOR ..... FM 2. FM AUTO/MANU ..... AUTO

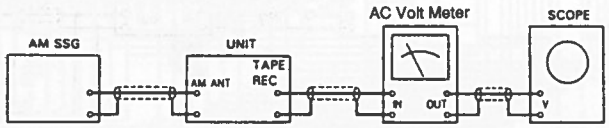
STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM	TO				
1.	Distortion Adj. (IF Coil)	98MHz ANT Input 65dBf (59.8dB), FM SSG, Pilot 19kHz (9% MOD.), L-R MODE 1kHz+Pilot (100% MOD.), STEREO SG.	ANT Terminal 300Ω	REC OUT L or R-CH, AC Volt Meter & SCOPE	IFT Coil (Front-end Pack)	Min. THD	
2.	Separation Adj.	98MHz ANT Input 65dBf (59.8dB), FM SSG, Pilot 19kHz (9% MOD.), L MODE 1kHz+Pilot (100% MOD.), STEREO SG.	Same as above	REC OUT L-CH, AC Volt Meter & SCOPE REC OUT R-CH, AC Volt Meter & SCOPE	dVR2 (F-6512)	Max. Separation	
3.	Muting Level Adj.	98MHz ANT Input 22dBf (14.8dB), FM SSG, Pilot 19kHz (9% MOD.), L or R MODE 1kHz+Pilot (100% MOD.), STEREO SG.	Same as above	Stereo indicator or REC OUT (L-CH or R-CH), AC Volt Meter & SCOPE	dVR1 (F-6512)	Stereo indicator turns On or Output Signal Comes out	

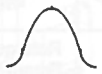
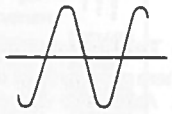
2-3. AM Adjustment

1) AM IF Adjustment & Tuning Adjustment

Note: 1. SELECTOR ..... AM

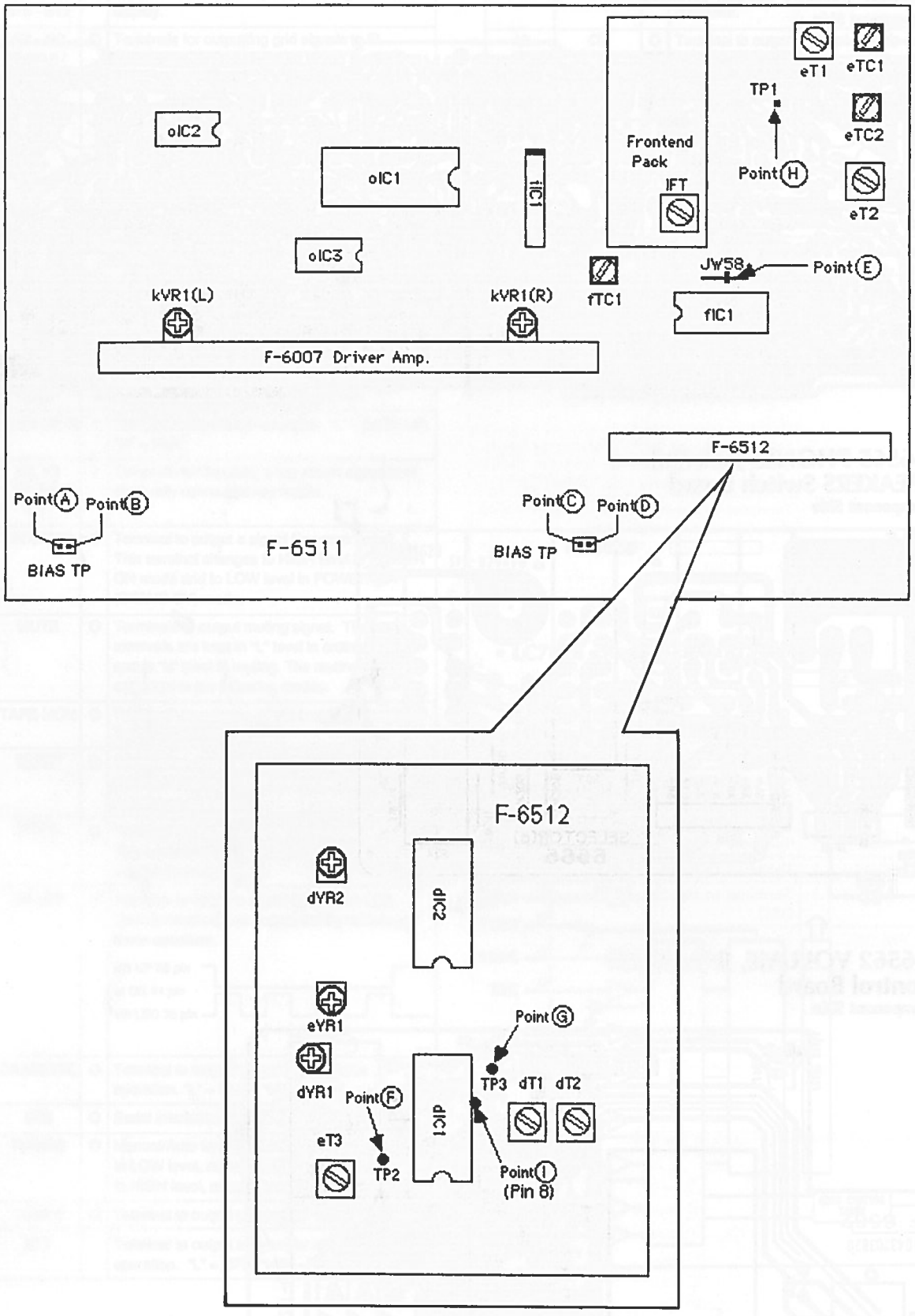
Fig. 2-3



STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM	TO				
1.	IF Coil Adj.	1400kHz (9kHz step) or 1404kHz (10kHz step) ANT Input 55dB 400Hz (30% MOD.), AM SSG	ANT Terminal	REC OUT L or R-CH, AC Volt Meter & SCOPE	eT3 (F-6512)	Max, Waveform	
2.	531kHz (9kHz step) or 530kHz (10kHz step Tuning Adj.	No Input	—	Between Point Ⓗ (collector of eQ3) & GND, DC Volt Meter	eT2 (F-6511)	DC 0.85V ± 0.1V	•Repeat procedures as stated in subject 2 & 3.
3.	1602kHz (9kHz step) or 1710kHz (10kHz step) Tuning Adj.	No Input	—	Same as above	eTC2 (F-6511)	DC 9.0V ± 0.1V	
4.	603kHz (9kHz step) or 600kHz (10kHz step) RF Adj.	603kHz (or 600kHz) ANT Input 0dB 400Hz (30% MOD.), AM SSG	ANT Terminal	REC OUT L-CH or R-CH, AC Volt Meter & SCOPE	eT1 (F-6511)	Max. Output	
5.	1404kHz (9kHz step) or 1400kz (10kHz step) RF Adj.	1404kHz (or 1400kHz) ANT Input 30dB 400Hz (30% MOD.), AM SSG	Same as above	Same as above	eTC1 (F-6511)	Max. Output	
6.	Auto Stop Level Adj.	999kHz (9kHz step) or 1000kHz (10kHz step) ANT Input 60dB 400Hz (30% MOD.), AM SSG	Same as above	Point ① (Pin 8 of dIC1) DC Volt Meter	eVR1 (F-6512)	Voltage from High Level to Low Level Low Level (1.7V)	

*** Notice when the frequency-step of AM broadcasting is set to 9kHz or 10kHz by the AM channel (9kHz/10kHz) selection switch. Set the AM channel selection switch (oS901) on the Step Switch Board.**

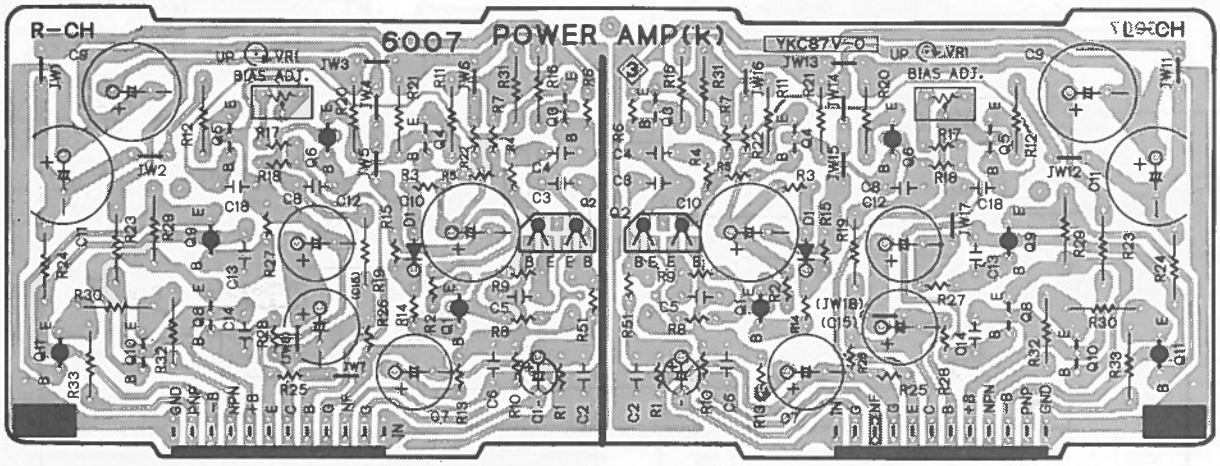
Fig. 2-4 F-6511 & F-6512 Adjustment Points



3. PARTS LOCATION ON BOARD

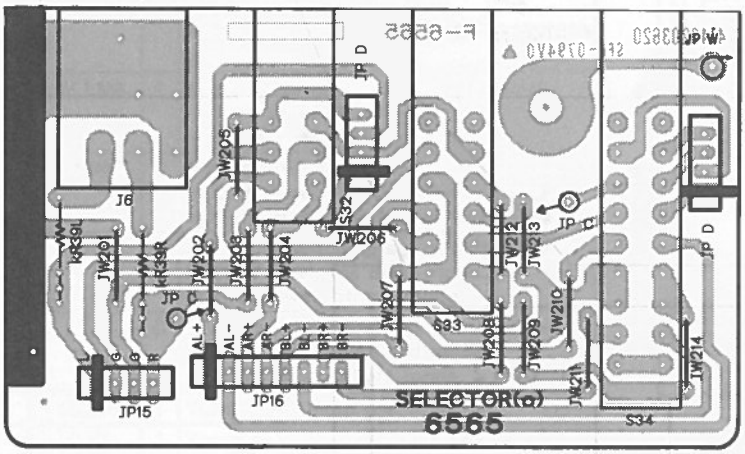
3-1. F-6007 Power Amp. Board

Component Side



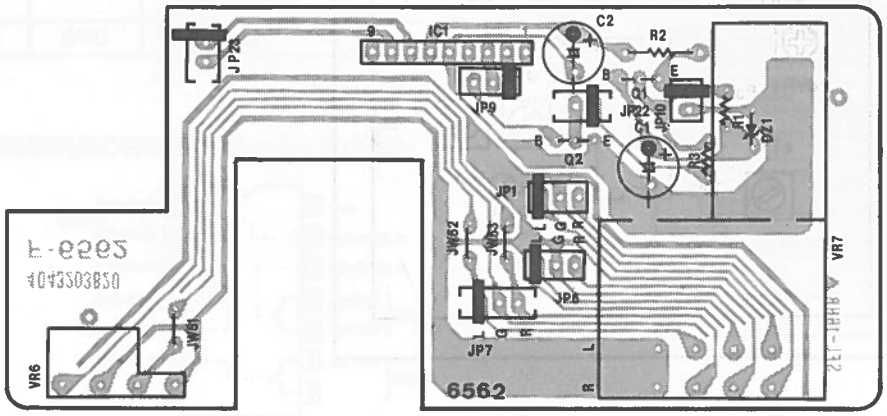
3-2. F-6565 PHONES Jack and SPEAKERS Switch Board

Component Side



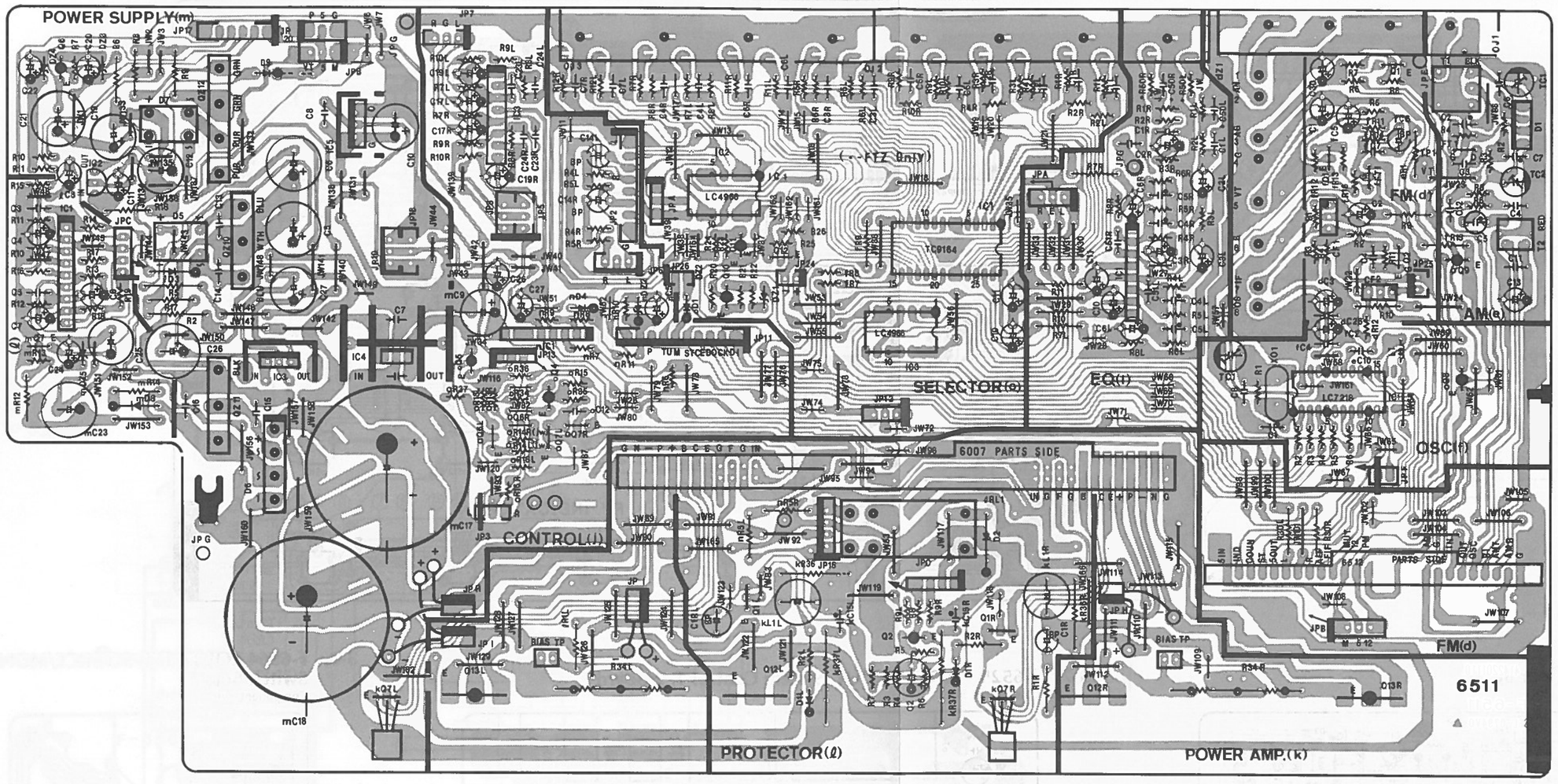
3-3. F-6562 VOLUME, BALANCE Control Board

Component Side



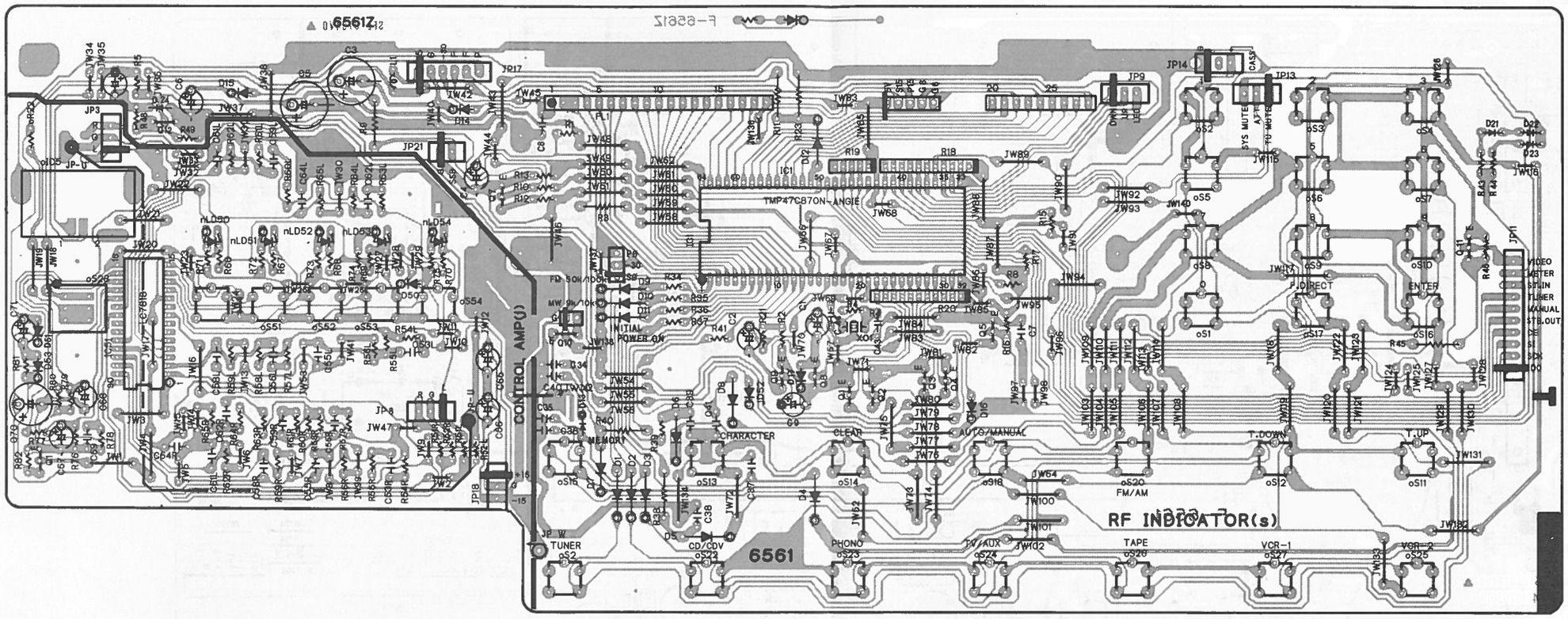
3-4. F-6511 Main Board

Component Side



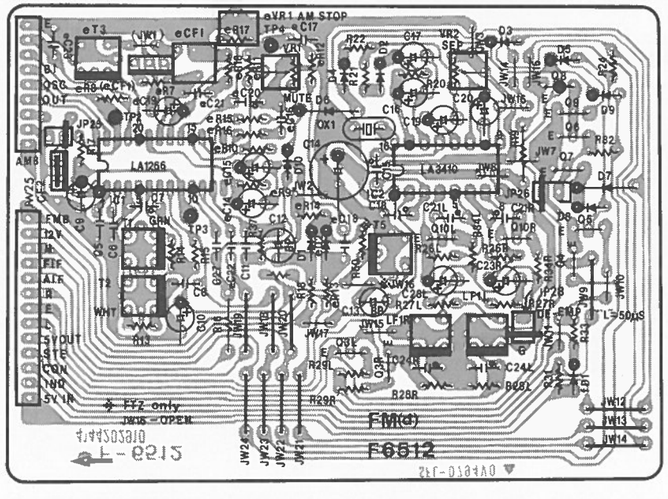
3-5. F-6561 Display and Operation Switch Board

Component Side



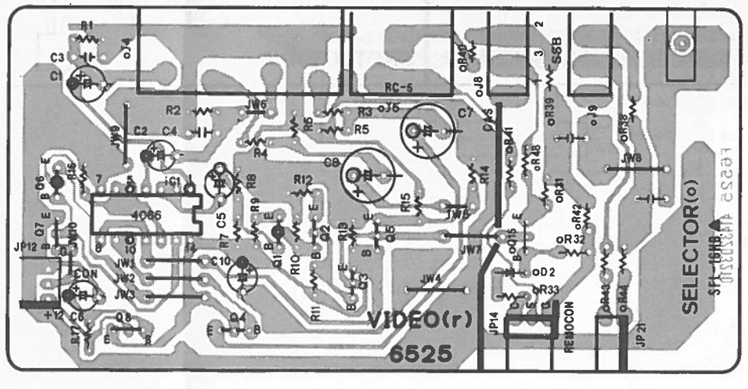
3-6. F-6512 FM/AM Tuner Board

Component Side



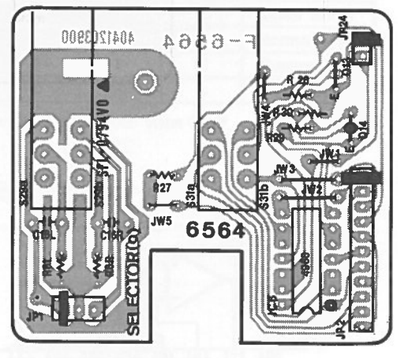
3-7. F-6525 VIDEO IN/OUT, System Control 1, 2 Board

Component Side



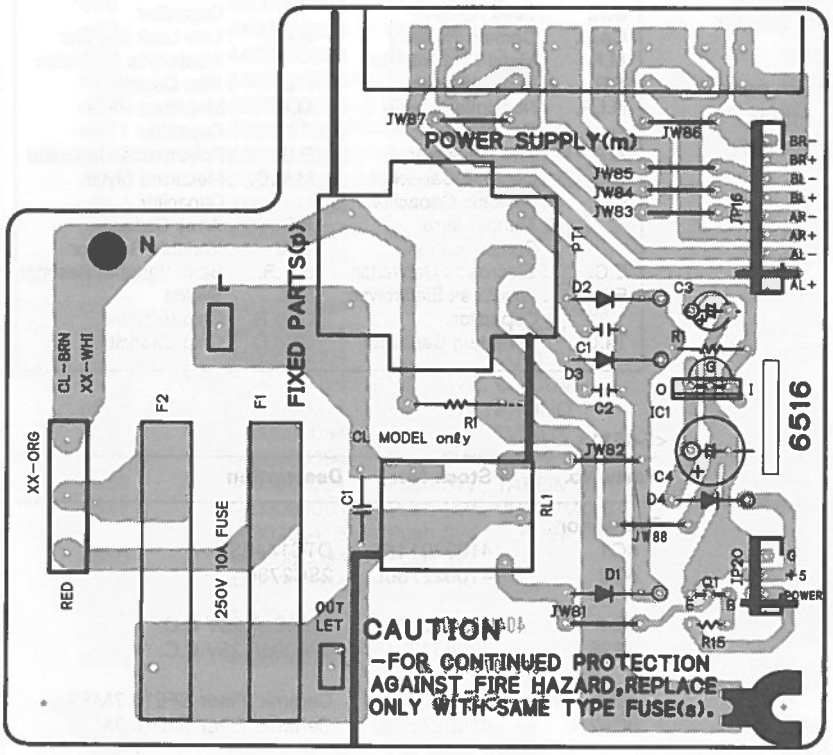
3-8. F-6564 LOUDNESS·SOURCE/MON Switch Board

Component Side



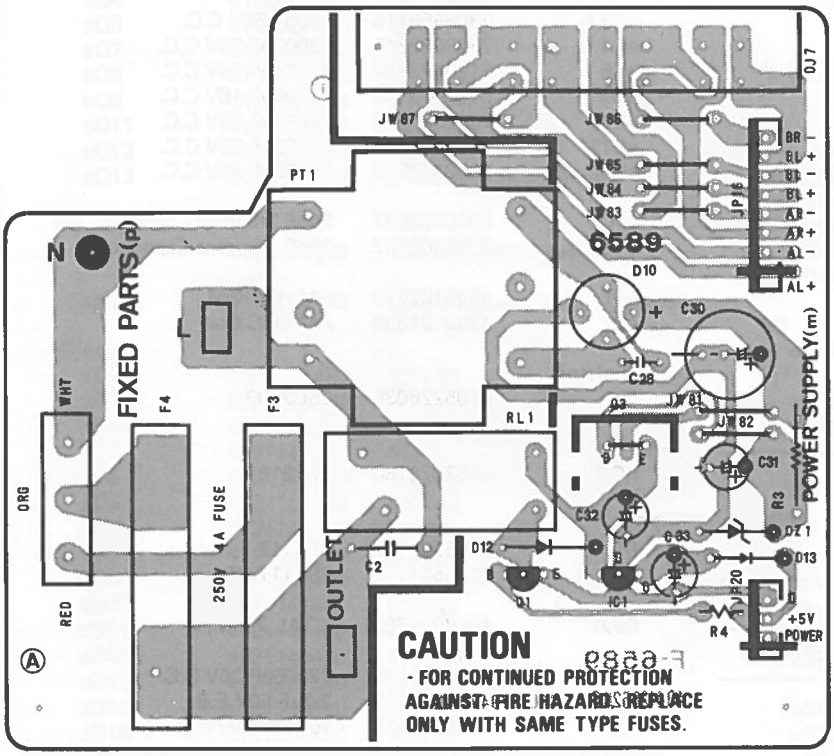
3-9. F-6516 Power Supply and Speaker Terminal Board (UL only)

Component Side



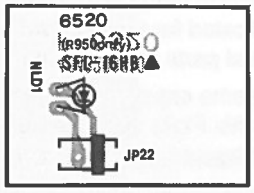
3-10. F-6589 Power Supply and Speaker Terminal Board (XX·SS only)

Component Side



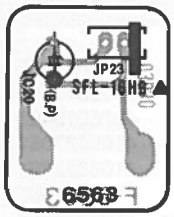
3-11. F-6520 VOLUME Indicator Board

Component Side



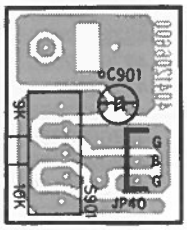
3-12. F-6563 VR. Motor Terminal Board

Component Side



3-13. Step Switch Board (XX·SS only)

Component Side



4. PARTS LIST OF BOARD

1. Some printed circuit board are not supplied assembled. To separate these in this Parts list, the stock numbers are not indicated for these boards. However, stock numbers for indivisual parts are indicated.
2. Since some capacitors and resistors are omitted from parts lists in this Parts List, refer to the Common Parts List for capacitors and resistors, which was issued on June 1987.
3. Abbreviations in this Parts List are as follows.

•Abbreviations List

C.R.	: Carbon Resistor	E.B.	: Bi-Polar Electrolytic Capacitor
S.R.	: Solid Resistor		
Ce.R.	: Cement Resistor	E.B.L	: Low Leak Bi-Polar Electrolytic Capacitor
M.R.	: Metal Film Resistor		
F.R.	: Fusing Resistor	F.C.	: Film Capacitor
N.I.R.	: Non-Inflammable Resistor	M.P.	: Metalized Paper Capacitor
A.R.	: Array Resistor	P.C.	: Polystyrene Capacitor
C.C.	: Ceramic Capacitor	M.M.C.	: Metalized Mylar Capacitor
C.T.	: Ceramic Capacitor, Temperature Compensation	A.C.	: Array Capacitor
		V.R.	: Variable Resistor
E.C.	: Elecrolytic Capacitor	S.V.R.	: Semi Variable Resistor
E.L.	: Low Leak Electrolytic Capacitor	SW.	: Switch
		Chip R.	: Chip Resistor
Ta.C.	: Tantalum Capacitor	Chip C.	: Chip Capacitor

4-1. F-6007 Power Amp. Board

<Stock No. C143191113>

Parts No.		Stock No.	Description
•Transistor			
kQ1		410501115F	2SA1115
	or	410501175F	2SA1175
kQ2		4100013497	2SA1349
kQ3		410522705Y	2SC2705
	or	410522229Y	2SC2229
kQ4		410522705Y	2SC2705
	or	410522229Y	2SC2229
kQ5		410021904G	2SC1904
	or	410022911S	2SC2911
kQ6		410000899G	2SA899
	or	410001209S	2SA1209
kQ8		410523244D	2SC3244
kQ9		410501284D	2SA1284
kQ10		410023298Y	2SC3298
	or	410022591R	2SC2591
kQ11		410001306Y	2SA1306
	or	410001111R	2SA1111
⚠ kR11		4270247155	470Ω 1/2W N.I.R.
⚠ kR12		4270282055	82Ω 1/2W N.I.R.
⚠ kR16		4270247155	470Ω 1/2W N.I.R.
⚠ kR20		4270282055	82Ω 1/2W N.I.R.
⚠ kR21		4270247155	470Ω 1/2W N.I.R.
⚠ kR23		4270233055	33Ω 1/2W N.I.R.
⚠ kR24		4270233055	33Ω 1/2W N.I.R.
⚠ kR29		4270210255	1kΩ 1/2W N.I.R.
⚠ kR30		4270233155	330Ω 1/2W N.I.R.
⚠ kR32		4270247955	4.7Ω 1/2W N.I.R.
⚠ kR33		4270247955	4.7Ω 1/2W N.I.R.
•Diode			
kD1		4121901330	ISS133
kD2		4121901330	ISS133
kVR1		5226102146	1kΩ S.V.R., Bias Current Adj.

4-2. F-6511 Main Board

<Stock No. C141201100>

Parts No.	Stock No.	Description
dZ1	7160228001	FM Frontend Pack FE337-A07

<F-6511>

Parts No.		Stock No.	Description
•Transistor			
dQ1		4109201445	DTC144ES
dQ2		410522786L	2SC2786
dC4		7308622345	22000pF 25V C.C.
dC26		7308622345	22000pF 25V C.C.
dCF1		4160220014	Ceramic Filter SFE10.7MS2
dCF2		4160220014	Ceramic Filter SFE10.7MS2
•FET			
eFT1		410650192Y	2SK192A-Y
	or	4106501927	2SK192A-GR
eD1		4120112362	Variable Capacitance, Diode KV1236Z2
	or	413000321S	Variable Capacitance, Diode SVC321
eC3		7306556115	560pF 50V C.C.
eC4		7308622345	22000pF 25V C.C.
eC6		5105473142	47000pF 16V C.C.
eC7		5105473142	47000pF 16V C.C.
eC10		7308622345	22000pF 25V C.C.
eC11		7308622345	22000pF 25V C.C.
eC12		7308622345	22000pF 25V C.C.
eTC1		5010300027	30pF Trimmer Capacitor
eTC2		5010300027	30pF Trimmer Capacitor
eT1		4300102770	AM ANT Coil
eT2		4330101800	AM OSC Coil
•Transistor			
fQ1		410522603F	2SC2603
•IC			
fIC		4152072180	LC7218
•FET			
fFT1		410650117Y	2SK117-Y
	or	4106501177	2SK117-GR
fXO1		410090270M	X'TAL 7.2 MHz
fC4		7308622345	22000pF 25V C.C.
fC6		5165229250	2.2µF 50V E.B.
fC7		7306510215	1000pF 50V C.C.

<F-6511>

Parts No.	Stock No.	Description
fTC1	5010300027	30pF Trimmer Capacitor
fL1	4326647012	47µH Coil
•IC		
iIC1	41594558LD	NJM4558L-D
iC1	7306522115	220pF 50V C.C.
iC51	7306910055	10pF 50V C.C.
•IC		
jIC3	41594558LD	NJM4558L
•Transistor		
⚠ kQ7	410021845E	2SC1845
⚠ kQ12	410023857P	2SC3857
⚠ kQ13	410001493P	2SA1493
⚠ kR34	7197022612	0.22Ω x 2 7W Ce.R.
⚠ kR36	4271010055	10Ω 1W N.I.R.
⚠ kR37	4272010055	10Ω 2W N.I.R.
•Transistor		
lQ1	410523244D	2SC3244
lQ2	410500992E	2SA992
•IC		
lIC1	415307317P	TA7317P
•Diode		
lD1	4121901330	ISS133
lD2	4138104002	IN4002
lD3	4138104002	IN4002
lC1	5104223452	0.022µF 50V C.C.
lC3	7306647345	0.047µF 50V C.C.
lC5	7306647345	0.047µF 50V C.C.
lRL1	4390000020	Relay
•Transistor		
mQ6	410501284D	2SA1284
mQ7	410523244D	2SC3244
•IC		
⚠ mIC2	4159780060	NJM78L06
mIC3	4157780123	MC78M12
mIC4	4157078153	MC78M15
mIC5	4157079153	MC79M15
•Diode		
⚠ mD5	413000002M	DF02M
⚠ mD6	413000008D	KBU8D
⚠ mD7	413000002M	DF02M
⚠ mD8	4138104003	IN4003
mD9	4121141480	IN4148
•Zener Diode		
mDZ3	412150300C	MTZ30C
mDZ4	412150051C	MTZ5.1C
mDZ5	412150240C	MTZ24C
mC17	5155103280	10000µF 80V E.C.
mC18	5155103280	10000µF 80V E.C.
⚠ mR2	4271010055	10Ω 1W N.I.R.
⚠ mR5	4271010055	10Ω 1W N.I.R.
⚠ mR6	4270210055	10Ω 1/2W N.I.R.
⚠ mR12	4270256155	560Ω 1/2W N.I.R.
⚠ mR14	4270222055	22Ω 1/2W N.I.R.

<F-6511>

Parts No.	Stock No.	Description
•IC		
nIC1	41594558LD	NJM4558L-D
•Diode		
nD4	4121901330	ISS133
•Zener Diode		
nDZ2	412150047C	MTZ4.7
•Transistor		
oQ4	410501115E	2SA1115
or	41050933SS	2SA933
oQ5	410501115E	2SA1115
or	41050933SS	2SA933
oQ6	410522878A	2SC2878
or	410523327A	2SC3327
oQ7	410522878A	2SC2878
or	410523327A	2SC3327
oQ8	4109101245	DTA124ES
oQ9	4109101245	DTA124ES
oQ10	410501115E	2SA1115
or	41050933SS	2SA933
oQ11	410501115E	2SA1115
or	41050933SS	2SA933
oQ12	4109201114T	DTC114TS
•IC		
oIC1	415309164N	TC9164N
oIC2	41524966BP	LC4966BP
oIC3	41524966BP	LC4966BP
•Zener Diode		
oDZ1	412150120C	MTZ12C
oJ1	4500800275	4P Antenna Terminal
oJ2	4500800276	8P Terminal, PHONO·CD/CDV TV/AUX·VCR-2
oJ3	4500800276	8P Terminal, TAPE PLAY/REC VCR-1 IN/OUT

4-3. F-6512 FM/AM Tuner Board

<Stock No. C144202910=UL>
<Stock No. C144202912=XX, SS>

Parts No.	Stock No.	Description
•Transistor		
dQ3	410522878A	2SC2878
dQ4	4109201445	DTC144ES
dQ5	4109201445	DTC144ES
dQ6	4109201445	DTC144ES
dQ7	4109201445	DTC144ES
dQ8	4109201445	DTC144ES
dQ9	4109201445	DTC144ES
•IC		
dIC1	4152012660	LA1266
dIC2	415203410A	LA3410A
dXO1	4160500161	Resonator CSB456
•Diode		
dD1	4121901330	ISS133
dD2	4121901330	ISS133
dD3	4121901330	ISS133
dD4	4121901330	ISS133
dD5	4121901330	ISS133
dD6	4121924730	IS2473

<F-6512>

Parts No.	Stock No.	Description
dD7	4121924730	IS2473
dD8	4121901330	ISS133
dD9	4121901330	ISS133
dD10	4121901330	ISS133
dC5	7308622345	22000pF 25V C.C.
dC6	7308622345	22000pF 25V C.C.
dC7	5105223142	22000pF 16V C.C.
dC8	7308622345	22000pF 25V C.C.
dC11	7306510115	100pF 50V C.C.
dC12	5163220225	22µF 25V E.B.
dC13	5163220225	22µF 25V E.B.
dC15	5105473142	4700pF 16V C.C.
dC21	5116102550	1000pF 25V M.M.C. (UL)
	5144821511	820pF 25V M.M.C. (XX.SS)
dC26	7308622345	22000pF 25V C.C.
dC27	7306510115	100pF 50V C.C.
⚠ dR19	4270222055	22Ω 1/2W N.I.R.
dLPF1	4169930204	Low Pass Filter
dT1	4340201410	FM IF Coil
dT2	4340201420	FM IF Coil
dVR1	5226503137	50kΩ S.V.R. FM Muting Level Adj.
dVR2	5226504137	500kΩ S.V.R. FM Stereo Sep.Adj.
eD2	4121901330	ISS133
eC20	5105473142	4700pF 16V C.C.
eC21	7308622345	22000pF 25V C.C.
eC22	7306510215	1000pF 50V C.C.
eC23	5105473142	4700pF 16V C.C.
eCF1	4160500180	Ceramic Filter BFCFL-450
eT3	4340101270	AM IF Coil
eVR1	5226203137	20kΩ S.V.R. AM Muting Level Adj.
•Diode		
fD1	4121901330	ISS133

4-4. F-6516 Power Supply and Speaker Terminal Board (UL Only)

<Stock No. C041203400=UL>

Parts No.	Stock No.	Description
•Transistor		
mQ1	410022603E	2SC2603
•IC		
⚠ mIC1	4159780060	NJM78L06
•Diode		
⚠ mD1	4138104002	IN4002
⚠ mD2	4138104003	IN4003
⚠ mD3	4138104003	IN4003
mD4	4120141480	IN4148
⚠ mR1	4270210055	10Ω 1/2W N.I.R.
mRL1	4390000018	Relay
⚠ mPT1	4208281214	Back Up Transformer

<F-6516>

Parts No.	Stock No.	Description
oJ7	4560008059	8P Speaker Terminal
⚠ pC1	5106472121	4700pF 400V C.C.
⚠ pF2	526610A05T	Fuse 10A
pR1	4050233554	3.3MΩ 1/2W S.R.

4-5. F-6525 VIDEO IN/OUT, System Control 1, 2 Board

<Stock No. C143203210>

Parts No.	Stock No.	Description
•Transistor		
rQ1	410501115E	2SA1115
rQ2	410522603E	2SC2603
rQ3	410522603E	2SC2603
rQ4	410522603E	2SC2603
rQ5	410522603E	2SC2603
rQ6	4109101445	DTA144ES
rQ7	41092144TS	DTC144TS
rQ8	410523244D	2SC3244
•IC		
rIC1	41524066BH	LC4066BH
•Transistor		
oQ15	410522603E	2SC2603
•Diode		
oD1	4121901330	ISS133
oJ4	4500800310	4P Terminal, VCR-1 IN·VCR-2 IN MONITOR OUT·VCR-1 OUT
oJ8	4500100240	Mini Jack, SYSTEM CONTROL 2
oJ9	4500100240	Mini Jack, SYSTEM CONTROL 1

4-6. F-6561 Display and Operation Switch Board

<Stock No. C143203610=UL>
<Stock No. C143203611=XX, SS>

Parts No.	Stock No.	Description
•Transistor		
jQ1	410522603F	2SC2603
•IC		
jIC51	4152078180	LC7818
•Diode		
jD50	4121901330	ISS133
jD51	4121901330	ISS133
jD52	4121901330	ISS133
jD53	4121901330	ISS133
jC69	5105473142	4700pF 16V C.C.
oIC5	7148101001	Remote Control Receiver
oS1	4400000094	Push SW., 0
oS2	4400000094	Push SW., 1
oS3	4400000094	Push SW., 2
oS4	4400000094	Push SW., 3

to be continued

<F-6561>

Parts No.	Stock No.	Description
oS5	4400000094	Push SW., 4
oS6	4400000094	Push SW., 5
oS7	4400000094	Push SW., 6
oS8	4400000094	Push SW., 7
oS9	4400000094	Push SW., 8
oS10	4400000094	Push SW., 9
oS11	4400000094	Push SW., TUNING ∧
oS12	4400000094	Push SW., TUNING ∨
oS13	4400000094	Push SW., CHARACTOR
oS14	4400000094	Push SW., CLEAR
oS15	4400000094	Push SW., MEMORY
oS16	4400000094	Push SW., ENTER
oS17	4400000094	Push SW., F. DIRECT
oS18	4400000094	Push SW., AUTO/MANU
oS20	4400000094	Push SW., FM/AM
oS21	4400000094	Push SW., TUNER
oS22	4400000094	Push SW., CD/CDV
oS23	4400000094	Push SW., PHONO
oS24	4400000094	Push SW., TV/AUX
oS25	4400000094	Push SW., VCR-2
oS26	4400000094	Push SW., TAPE/MON
oS27	4400000094	Push SW., VCR-1/MON
oS28	4430206415	Push SW., POWER
oS50	4400000094	Push SW., FLAT
oS51	4400000094	Push SW., ROCK
oS52	4400000094	Push SW., OPERA
oS53	4400000094	Push SW., JAZZ
oS54	4400000094	Push SW., CLASSICAL
•LED		
nLD50	4120607092	LTL709R, FLAT
nLD51	4120607092	LTL709R, ROCK
nLD52	4120607092	LTL709R, OPERA
nLD53	4120607092	LTL709R, JAZZ
nLD54	4120607092	LTL709R, CLASSICAL
•Transistor		
sQ1	4109201245	DTC124ES
sQ2	4109201245	DTC124ES
sQ3	4109201245	DTC124ES
sQ4	4109201245	DTC124ES
sQ5	4109201245	DTC124ES
sQ7	410522603F	2SC2603
sQ8	41092124XS	DTC124XS
sQ9	4109201445	DTC144ES
sQ11	410522603F	2SC2603
sQ12	410522603F	2SC2603
sQ13	41091124ES	DTA124ES (XX·SS)
•IC		
sIC1	4153470870	TMP47C870N-4694
sX01	4161500195	Quartz Element CST 4.00MGW
•Diode		
sD1	4121141480	IN4148
sD2	4121141480	IN4148
sD3	4121141480	IN4148
sD4	4121141480	IN4148
sD5	4121141480	IN4148
sD6	4121141480	IN4148
sD7	4121141480	IN4148
sD8	4121141480	IN4148
sD9	4121141480	IN4148
sD10	4121141480	IN4148
sD11	4121141480	IN4148
sD12	4121141480	IN4148
sD13	4121901330	ISS133 (XX·SS)
sD14	4121901330	ISS133
sD15	4121901330	ISS133

<F-6561>

Parts No.	Stock No.	Description
sD16	4121901330	ISS133
sD17	4121901330	ISS133
sD21	4121901330	ISS133
sD22	4121901330	ISS133
sD23	4121901330	ISS133
sD24	4121901330	ISS133
sFL1	4110303200	FL. Display Tube CP3032
sR18	408Y10J472	4.7kΩ x 10 A.R.
sR19	408Y10J472	4.7kΩ x 4 A.R.
sR20	408Y10J472	4.7kΩ x 10 A.R.
sC5	5156471206	470µF 6.3V E.C.
sC6	2000001014	0.1µF 5.5V E.C.
sC7	5104104452	0.1µF 50V C.C.
sL1	4326647012	47µH Inductor

4-7. F-6562 VOLUME, BALANCE Control Board

<Stock No. C043203820>

Parts No.	Stock No.	Description
•IC		
jIC1	4159062080	BA6208
jVR6	5020115115	100kΩ (W) V.R., BALANCE
jVR7	5025254121	50kΩ x 2 V.R., with Motor VOLUME
•Transistor		
nQ1	410030882Q	2SD882
nQ2	4104201445	DTC144ES
•Zener Diode		
nDZ1	412000051C	MTZ5.1C

4-8. F-6564 LOUDNESS·SOURCE/MON Switch Board

<Stock No. C041203900>

Parts No.	Stock No.	Description
•Transistor		
oQ13	410001115E	2SA1115
oQ14	410420114T	DTC114TS
•IC		
oIC6	41524966BP	LC4966BP
oS29	4330109614	Push SW., LOUDNESS
oS31	4430202552	Push SW., SOURCE/MON

4-9. F-6565 PHONES Jack and SPEAKERS Switch Board

Parts No.	Stock No.	Description
oJ6	4500500265	Jack, PHONES
oS32	4430202591	Push SW., SPEAKERS A
oS33	4430204592	Push SW., SPEAKERS B
oS34	4430102577	Push SW., SURROUND

4-10. F-6589 Power Supply and Speaker Terminal Board (XX·SS Only)

<Stock No. C041205200=XX, SS>

Parts No.	Stock No.	Description
•Transistor		
mQ2	410022603E	2SC2603
⚠ mQ3	410030313E	2SD313
•IC		
⚠ mIC6	4159780060	NJM78L06
•Diode		
⚠ mD10	4138150020	B20S
⚠ mD12	4138104002	IN4002
mD13	4120141480	IN4148
•Zener Diode		
mZD1	4120501205	RD12EB23
⚠ mRL2	4390000019	Relay
⚠ mPT3	420A359214	Back Up Transformer
oJ10	4560008059	8P Speaker Terminal
⚠ pC2	5106472241	4700pF 400V C.C.
⚠ pF3	526640005T	Fuse 4A
⚠ pF4	526640005T	Fuse 4A

5. OTHER PARTS

Parts List (Front View)

Parts No.	Stock No.	Description
1	JS27833300	Logo Badge
2	1001069995	Front Panel
3	1002069995	Knob Ass'y., FLAT·ROCK·OPERA JAZZ·CLASSICAL
4	1011079955	PRESET GRAPHIC EQ. LENS
5	1003069995	Front Window
6	1010069995	Bonnet
7	1004069995	Knob Ass'y., PRESET 1·2·3·4·5·6·7·8·9·0 F. DIRECT·ENTER
8	1008079955	Knob, VOLUME
9	303210007A	Nut, 7ø
10	2043077004	Washer, 7ø
11	1014069995	Panel Spacer
12	1012079955	Knob, SOURCE/MON.
13	1005079955	Knob, LOUDNESS
14	JS85014900	Foot
15	JS27593800	Foot Sheet
16	1009069995	Knob, BALANCE
17	1006069995	Knob Ass'y, TUNER·CD/CDV PHONO·TV/AUX·TAPE/MON VCR-1/MON·VCR-2
18	1005069995	Knob Ass'y, MEMORY·CHARACTER CLEAR·AUTO/MANU·FM/AM TUNING ∨·TUNING ∧
19	1002079975	Knob, SPEAKERS A·B·SURROUND
20	1006079975	Knob, POWER
21	1008069995	Sensor Window

4-11. F-6563 VR. Motor Terminal Board

Parts No.	Stock No.	Description
jC28	5164108250	0.1µF 50V E.B.

4-12. F-6520 VOLUME Indicator Board

Parts No.	Stock No.	Description
•LED		
nLD1	4120632132	LTL-709R

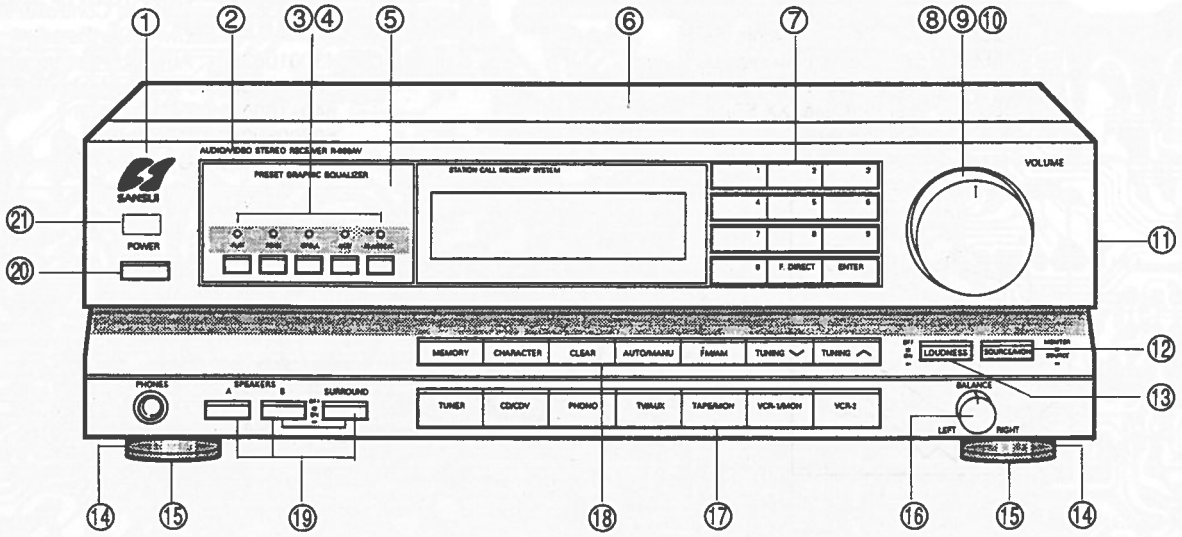
4-13. Step Switch Board (XX·SS Only)

Parts No.	Stock No.	Description
oS901	4410102136	Slide SW., 9kHz/10kHz Step

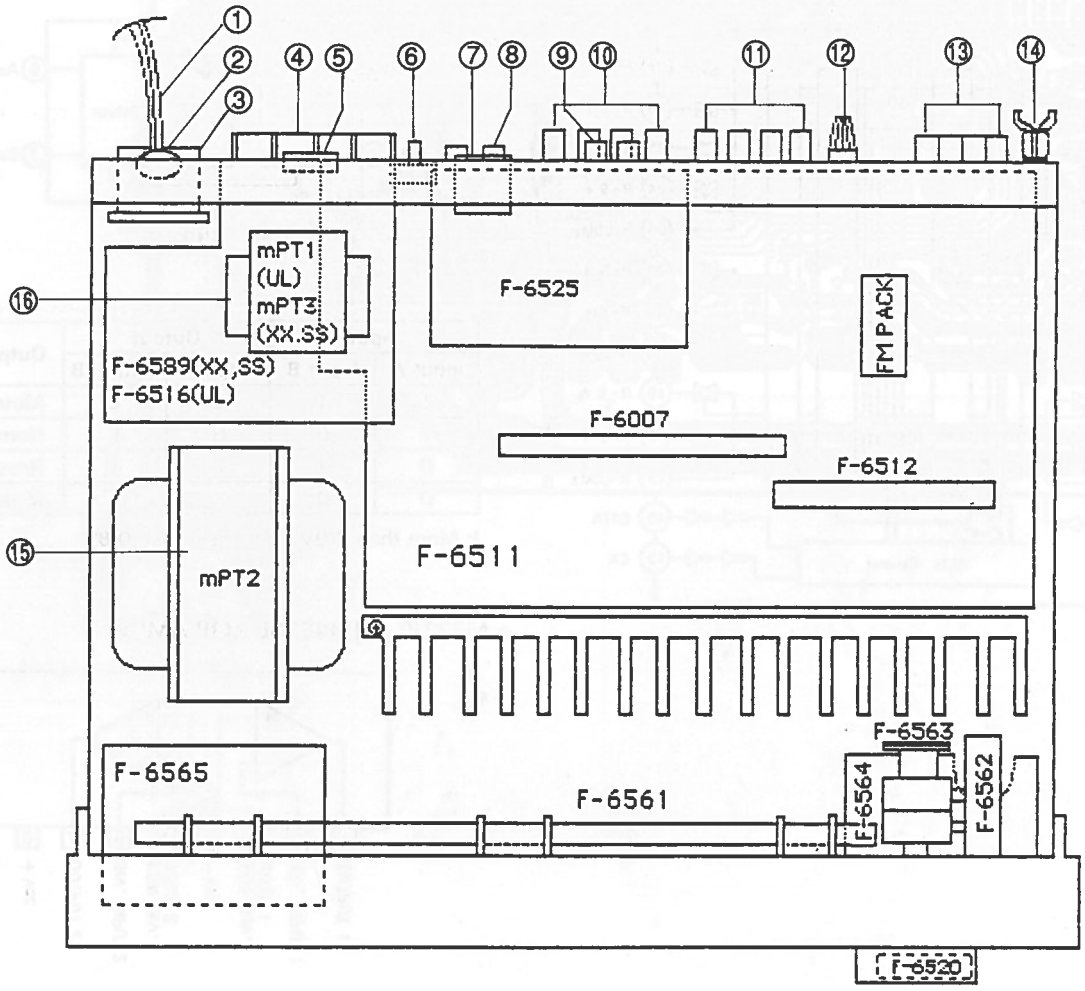
Parts List (Top View)

Parts No.	Stock No.	Description
⚠ 1	4631372070	Power Supply Cord (UL)
⚠	463137L070	Power Supply Cord (XX)
⚠	463021L065	Power Supply Cord (SS)
2	4580200006	Cord Stopper SR-4N-6
⚠ 3	4570100511	AC Outlet
4	4560008059	8P Speaker Terminal
5	4410202143	Slide SW., Speaker Impedance Selector
6	4410102136	Slide SW., 9kHz/10kHz Step (XX·SS)
7	4429551143	Change SW., (XX·SS)
8	4500100240	Mini Jack, SYSTEM CONTROL 1.2
9	4500800310	4P Terminal, VCR-1·VCR-2 (Video)
10	4500800276	8P Terminal, TAPE·VCR-1 (Audio)
11	4500800276	8P Terminal, PHONO·CD/CDV TV AUX·VCR-2 (Audio)
12	1020079926	Ground Terminal
13	4500800275	4P Antenna Terminal
14	1035068801	Antenna Holder
⚠ 15	7059995001	Power Transformer (UL), mPT2
⚠	7059995007	Power Transformer (XX·SS), mPT2
⚠ 16	4208281214	Back Up Transformer (UL), mPT1
⚠	420A359214	Back Up Transformer (XX·SS), mPT3

• **Front View**

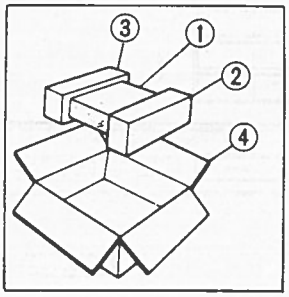


• **Top View**



6. PACKING LIST

Parts No.	Stock No.	Description
1	9905006541	Vinyl Bag
2	9003069995	Styrofoam Packing, R-CH
3	9002069995	Styrofoam Packing, L-CH
4	9001069995	Carton Case (UL)
	9005069995	Carton Case (XX-SS)
	9004069930	Soft Sheet

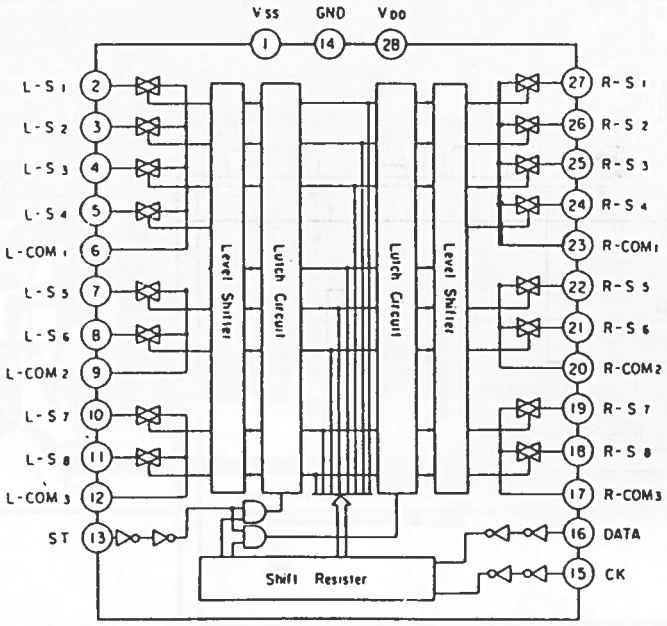


7. ACCESSORY LIST

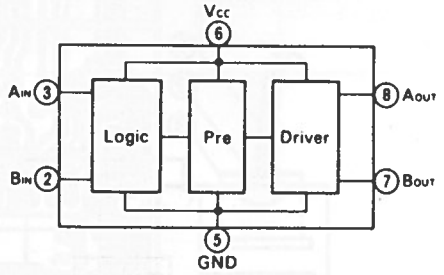
Parts No.	Stock No.	Description
	71599550S1	Remote Controller Ass'y
	————	UM-4 Dry Battery
	4300103250	Am Loop Antenna
	1041068801	Antenna Holder
	5401160021	FM Antenna
	5620060042	Plug Cord
	9080017430	Operating Instructions

8. INTERIOR BLOCK DIAGRAM & TERMINAL FUNCTION OF IC

• TC9164N <Analog Switch>



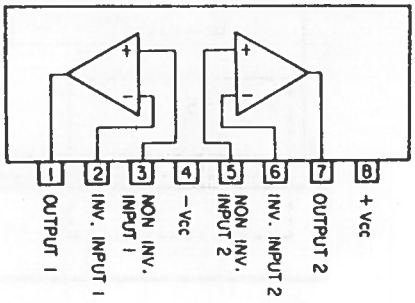
• BA6208 <Motor Drive>



Input		Output		Output Mode
Input A	Input B	Output A	Output B	
1	1	L	L	Motor Short
1	0	H	L	Normal Turn
0	1	L	H	Reverse Turn
0	0	—	—	Motor Open

I: More than 2.0V, O: Less Than 0.8V

• M5218L/NJM4558L <OP AMP>



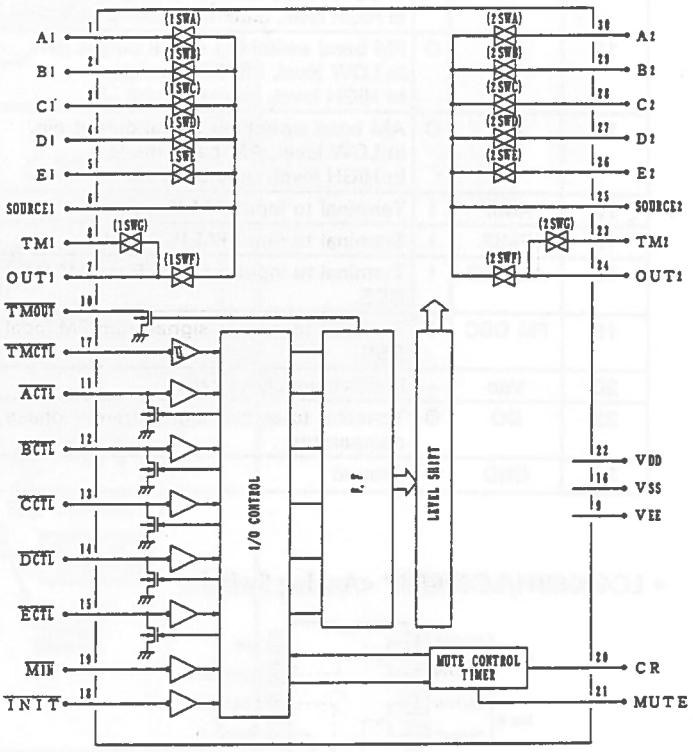
• TMP47C870N-4694 <Tuner/Audio System Controller>

• Terminal Function <TMP47C870N-4694>

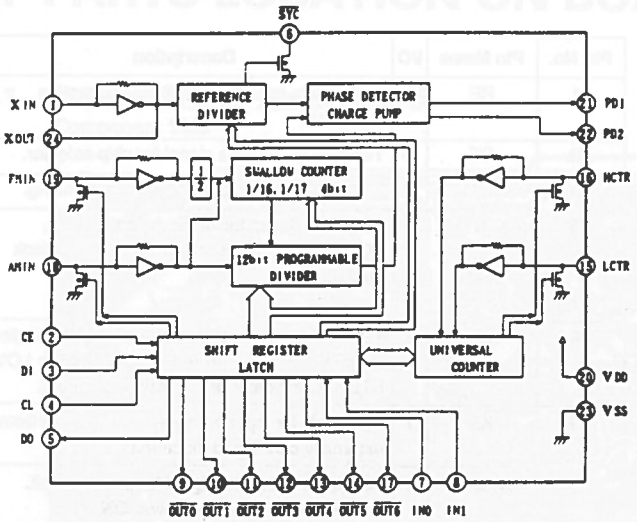
Pin No.	Pin Name	I/O	Description
2 - 13 60 - 63	S0 - S11 S15 - S12	O	Terminals for outputting segment signals to FL display.
52 - 59	G7 - G0	O	Terminals for outputting grid signals to FL display and key matrix return timing signals.
14	METER	I	Terminal for inputting analog signal for Power Indicator of FL display. Input voltage / Signal Indicator of FL display more than 0.62V — Indicator (1) lighting more than 0.94V — Indicator (1 and 2) lighting more than 1.25V — Indicator (1 - 3) lighting more than 1.56V — Indicator (1 - 4) lighting more than 1.87V — Indicator (1 - 5) lighting more than 2.19V — All Indicator lighting
15	BACK UP	I	Terminal to input back-up signal.
16	FL DUTY	I	Terminals are used to determine a brightness for FL display. Terminal to input serial buss data.
17	SSB	I	Terminal to input serial buss data.
22	BACK UP IN	I	Terminal to input back-up signal. "L" = BACK UP, "H" = RUN
25, 26 27, 49 24	K2, K3 $\overline{K4}$, $\overline{K5}$, $\overline{K1}$	I	Terminals for inputting a key return signal from externally connected key matrix.
28	POWER	O	Terminal to output a signal for power on/off. This terminal changes to HIGH level in POWER ON mode and to LOW level in POWER OFF (STAND-BY) mode.
29	MUTE	O	Terminals to output muting signal. These terminals are kept in "L" level in ordinary state, and in "H" level in muting. The muting signal is outputted in the following modes:
31	TAPE MON	O	Terminals to output a signal for VCR-1 and TAPE MONITOR.
33	$\overline{VR\ UP}$	O	Terminal to output a signal for volume up. This terminal outputs a LOW level signal during volume up operation.
34	$\overline{VR\ DN}$	O	Terminal to output a signal for volume down. This terminal outputs a LOW level signal during volume down operation.
35	VR LED	O	Terminal to output a signal for volume LED. This terminal outputs pulses during volume up/down operation. VR UP 33 pin or DN 34 pin VR LED 35 pin 50ms
36	CASSETTE	O	Terminal to output a signal for cassette operation. "L" = PLAY, "H" = STOP
37	STB	O	Serial interfaces for STB (Strobe Pulse Output)
38	TUNING	O	Manual/Auto tuning Select Signal output. In LOW level, manual tuning operation. In HIGH level, automatic tuning operation.
39	TUNER	O	Terminal to output a signal for Tuner operation.
40	ATT		Terminal to output a signal for attenuator operation. "L" = OFF, "H" = –20dB

Pin No.	Pin Name	I/O	Description
41	RE	I	Terminal to input a signal from the remote controller.
42	CE	O	Terminal to output a signal for chip selector.
44	TU-MUT	O	Terminal to output a signal for tuner muting.
45 46 47	DA-IN (SI) DA-OUT (SO) SCK (CK)	I O O	Serial interfaces for SI (Serial data input), SO (Serial data output), and CK (Serial clock output).
48	ST	I	Terminal to input a signal for FM STEREO indicator of FL display. When this terminal is LOW, STEREO indicator of FL display is lighted.
49	K5	I	Terminals for inputting a key return signal from externally connected diode matrix.
50	Power SW.	I	Terminals to input a signal for power on/off. "L" = Power OFF, "H" = Power ON
51	SSB-OUT	O	Terminal to output serial buss data.

• LC7818 <Analog Electric Switch>



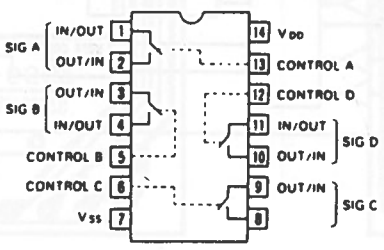
• LC7218 <PLL Synthesizer>



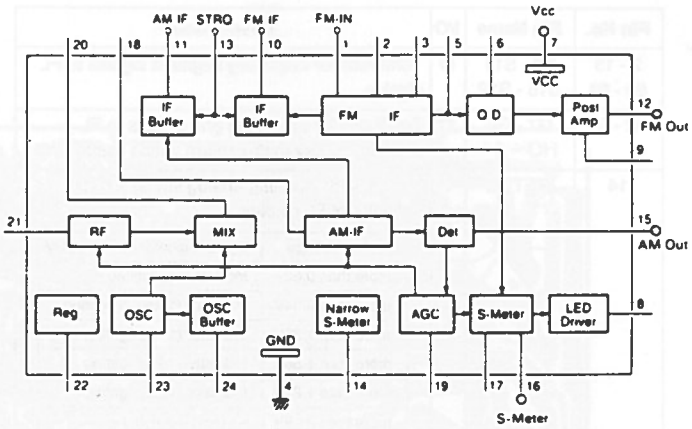
◆ Terminal Function <LC7218>

Pin No.	Pin Name	I/O	Description
1, 24	XIN, XOUT	—	Terminals for connecting a oscillator of 7.2 MHz.
3 4 5	SI CK SO	I I O	Serial interfaces for SI (Serial data input), SO (Serial data output) and CK (Serial clock input) from/to the TMP47C870.
7	fCON	I	Terminal to input a signal for performing the automatic search stop. When this pin is HIGH, the automatic search stop.
8	LW ENA	I	MW/LW select signal input terminal. In LOW level, MW mode. In HIGH level, MW/LW mode.
9	TUNING	O	Manual/Auto tuning select signal output. In LOW level, manual tuning operation. In HIGH level, automatic tuning operation.
13	$\overline{FM}$	O	FM band switching signal output pin. In LOW level, FM band mode. In HIGH level, others mode.
14	$\overline{AM}$	O	AM band switching signal output pin. In LOW level, AM band mode. In HIGH level, others mode.
15	AMIF	I	Terminal to input AM IF signal.
16	FMIF	I	Terminal to input FM IF signal.
18	AMOSC	I	Terminal to input a signal from AM local OSC.
19	FM OSC	I	Terminal to input a signal from FM local OSC.
20	V_{DD}	—	Positive supply voltage.
22	DO	O	Terminal to output signal from a phase comparator.
23	GND	—	Ground

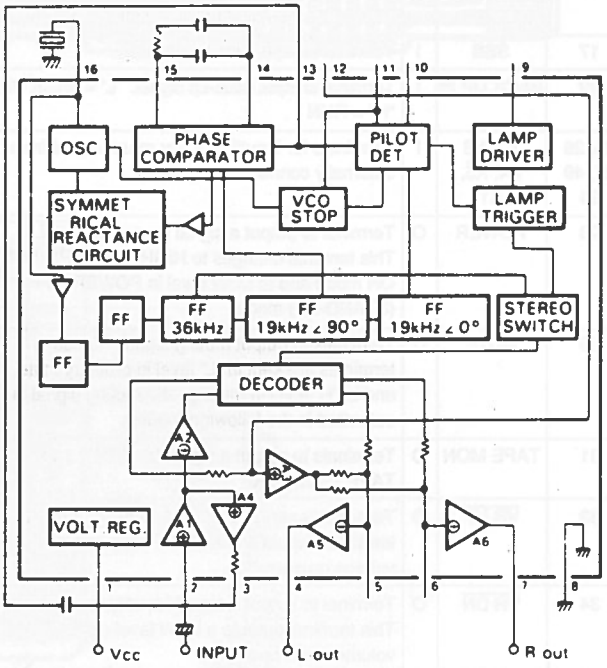
• LC4066BH/LC4966BP <Analog Switch>



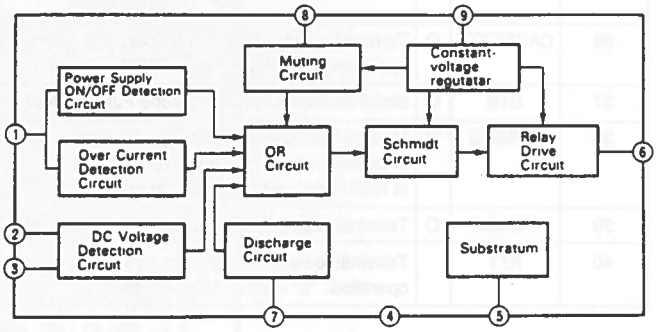
• LA1266 <FM-IF, AM-RF-MIX-IF>



•LA3410 <MPX>



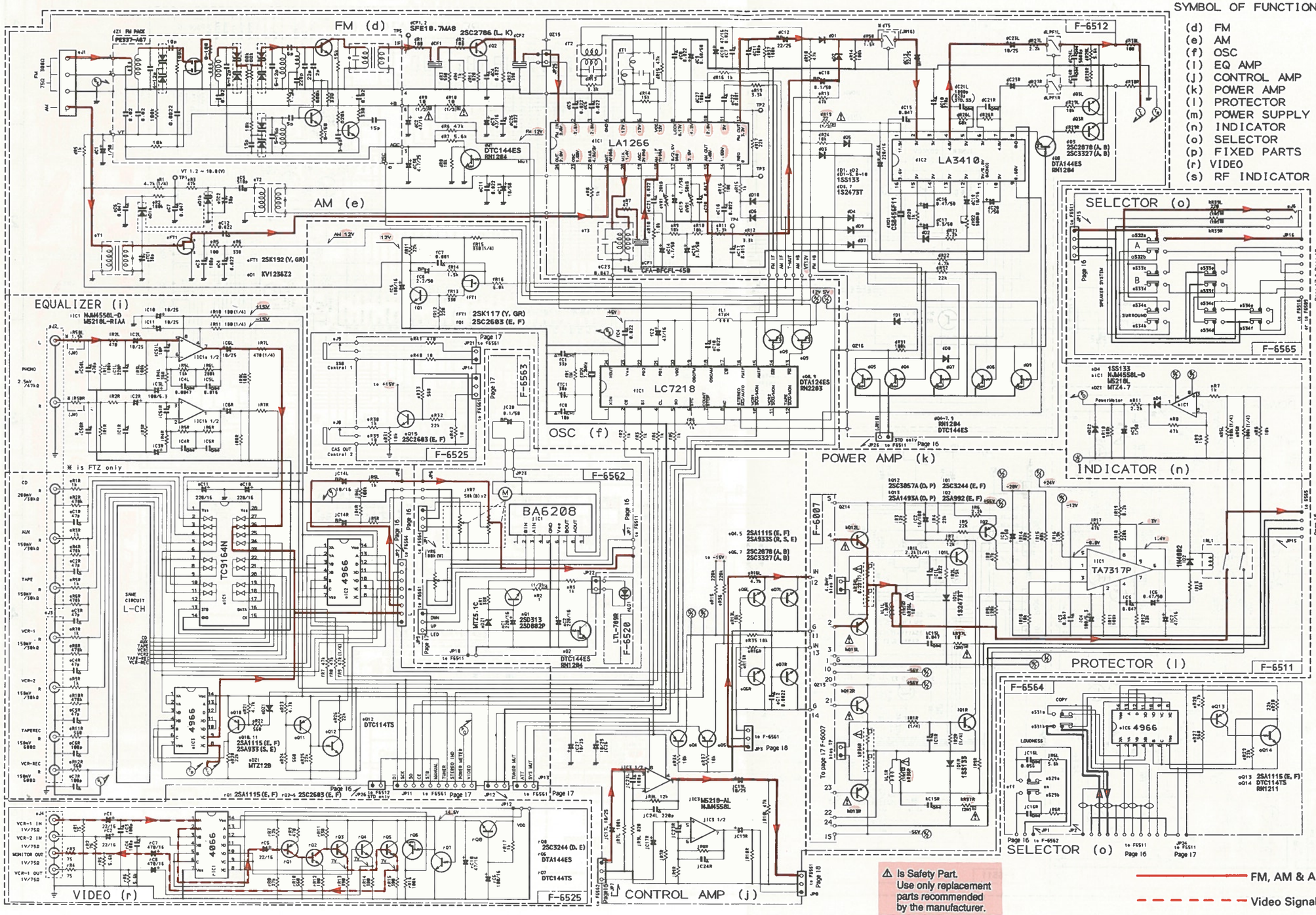
• TA7317P <Protector>



9. SCHEMATIC DIAGRAM

9-1. Tuner & Input Selector Section

* Design and specifications subject to changes without noitice for improvements.



A	B	C	D	E	F	G	H

9-2. RF/Audio Indicator & Power AMP Section

* Design and specifications subject to changes without noitice for improvements.

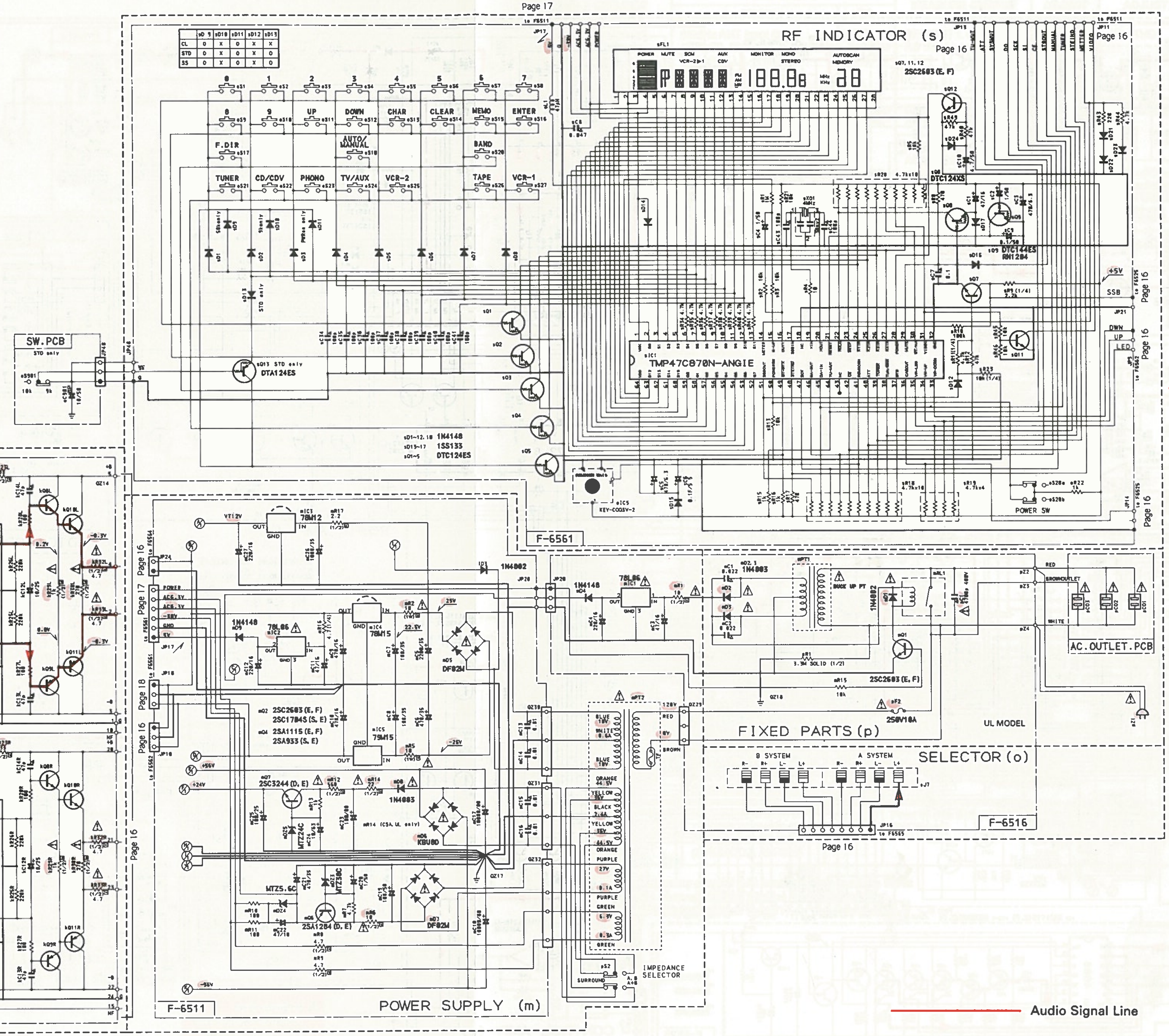
RESISTORS
Are in ohms, 1/6Watts, ±5% Tolerance
Unless Otherwise Noted
k:kΩ, M:MΩ
TOLERANCE G:±2% F:±1%

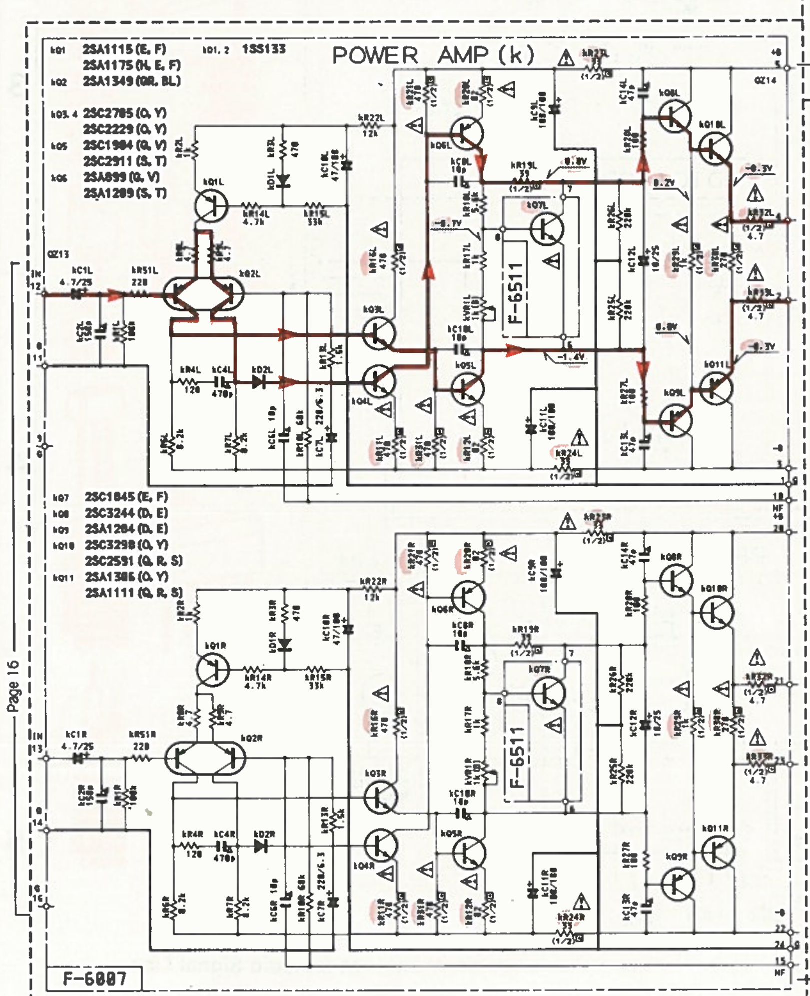
CAPACITORS
Are in μF, Unless Otherwise Noted P:pF

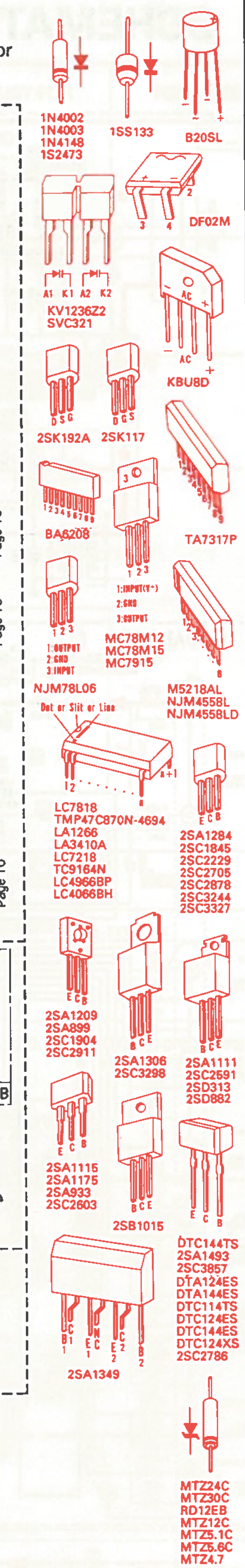
ELECTROLYTIC CAPACITORS
Capacitance(μF)/Volt(V)

⚠ is Safety Part. Use only replacement parts recommended by the manufacturer.

SYMBOL
- △ Ceramic Capacitor
- ⊖ Low-Leak Electrolytic
- B.P Bi-Polar Electrolytic
- (M) Mylar
- (PP) Polypropylene Film
- ⊗ Polystyrene
- ⚠ Barrier Layer Capacitor
- ▣ Non-Inflammable Resistor
- □ Cement Resistor
- ▨ Fusing Resistor
- ⊗ Chip Component (Cylindrical Type)







Audio Signal Line

A	B	C	D

9-3. Control & Power Supply Section

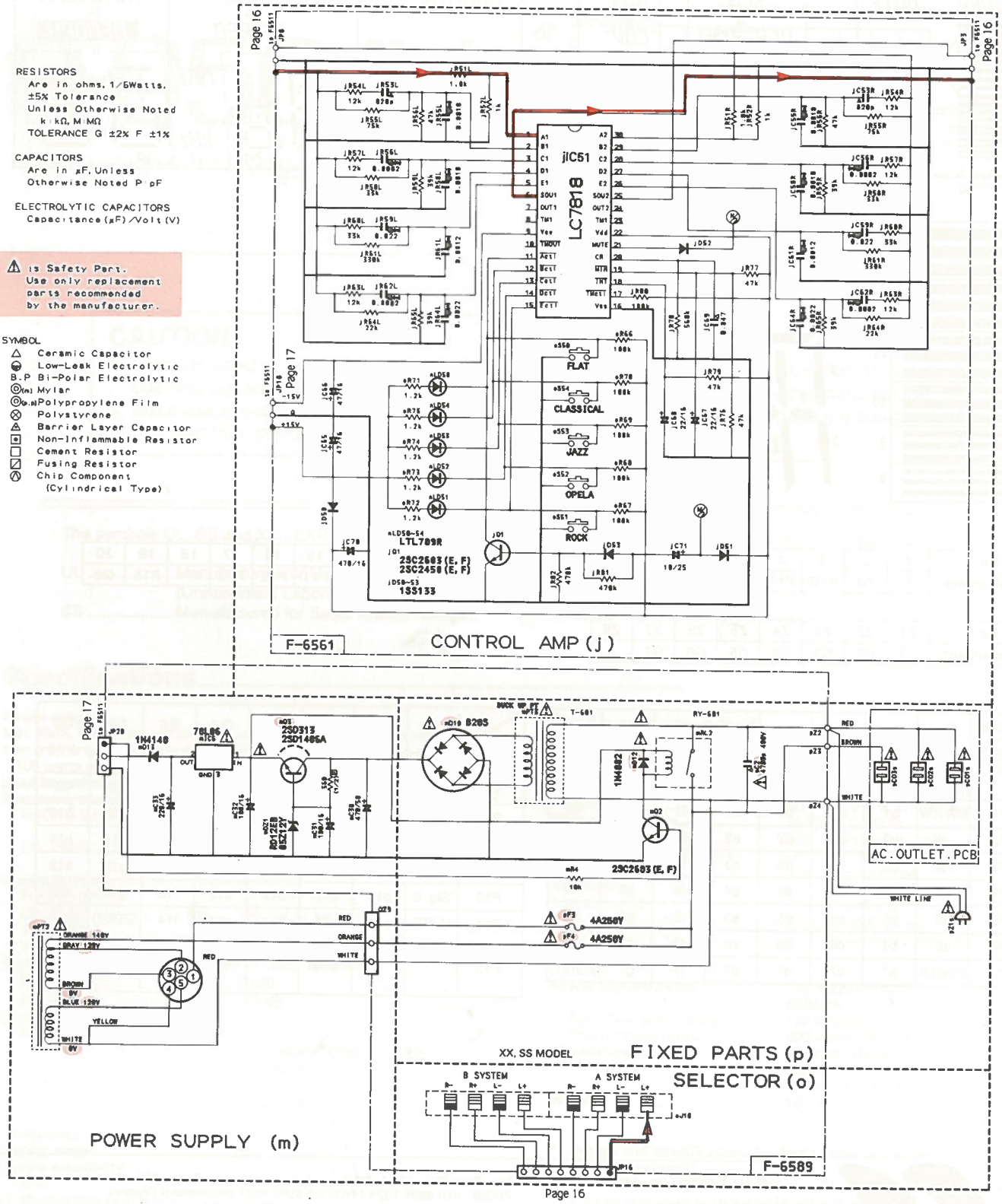
RESISTORS
Are in ohms, 1/6Watts,
±5% Tolerance
Unless Otherwise Noted
k:kΩ, M:MΩ
TOLERANCE G ±2% F ±1%

CAPACITORS
Are in μF, Unless
Otherwise Noted P:pF

ELECTROLYTIC CAPACITORS
Capacitance (μF) / Volt (V)

⚠ is Safety Part.
Use only replacement parts recommended by the manufacturer.

SYMBOL
- △ Ceramic Capacitor
- Low-Leak Electrolytic
- B.P Bi-Polar Electrolytic
- Mylar
- Polypropylene Film
- Polystyrene
- Barrier Layer Capacitor
- Non-Inflammable Resistor
- Cement Resistor
- Fusing Resistor
- Chip Component (Cylindrical Type)



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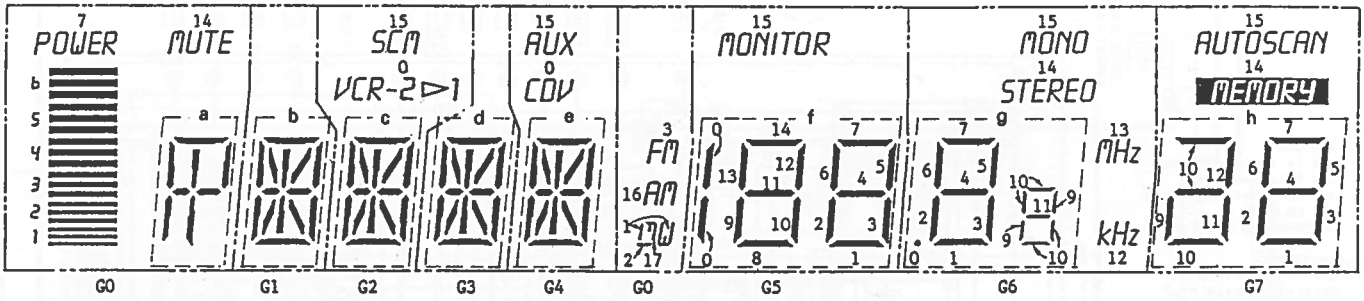
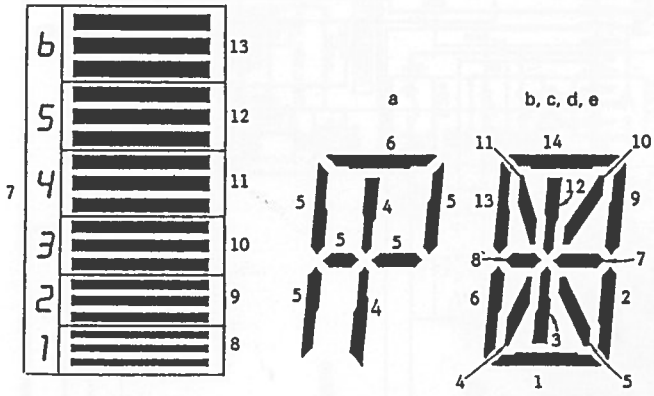
Audio Signal Line

10. DISPLAY PATTERN AND PIN ASSIGNMENT OF CP3032 FL DISPLAY





Pin No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Assignment	F	P0	P16	P17	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	G0

Pin No.	21	22	23	24	25	26	27	28
Assignment	G1	G2	G3	G4	G5	G6	G7	F

Grid / Segment	G0	G1	G2	G3	G4	G5	G6	G7
P0	MW (AM)		VCR-2 ▷1		CDV	f0	• (Dot)	
P1	MW+LW	b1	c1	d1	e1	f1	g1	h1
P2	LW	b2	c2	d2	e2	f2	g2	h2
P3	FM	b3	c3	d3	e3	f3	g3	h3
P4	a4	b4	c4	d4	e4	f4	g4	h4
P5	a5	b5	c5	d5	e5	f5	g5	h5
P6	a6	b6	c6	d6	e6	f6	g6	h6
P7	POWER	b7	c7	d7	e7	f7	g7	h7

Grid / Segment	G0	G1	G2	G3	G4	G5	G6	G7
P8	Sig. 1	b8	c8	d8	e8	f8		
P9	Sig. 2	b9	c9	d9	e9	f9	g9	h9
P10	Sig. 3	b10	c10	d10	e10	f10	g10	h10
P11	Sig. 4	b11	c11	d11	e11	f11	g11	h11
P12	Sig. 5	b12	c12	d12	e12	f12	g12	h12
P13	Sig. 6	b13	c13	d13	e13	f13	g13	h13
P14	MUTE	b14	c14	d14	e14	f14	STEREO	MEM-ORY
P15			SCM		AUX	MONI-TOR	MONO	AUTOS-CAN

SANSUI

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