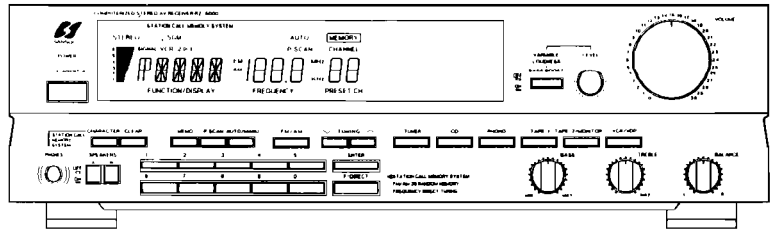




SERVICE MANUAL

RZ-5000

COMPUTERIZED STEREO RECEIVER



CAUTION

1. Parts identified by the \triangle 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.

•SPECIFICATIONS

Audio section

Power output

Min. RMS, both channels driven, from 20 to 20,000 Hz with no more than 0.05% total harmonic distortion
60 watts per channel into 8 ohms

Total harmonic distortion less than 0.05% at or below rated min. RMS power output

Load impedance..... 4–16 ohms

Input sensitivity and impedance (1 kHz)

PHONO..... 2.5 mV/47 kohms

CD..... 200 mV/47 kohms

TAPE PLAY, VCR-1,

2/VDP..... 150 mV/47 kohms

VIDEO INPUT sensitivity/impedance

VCR-1, 2/VDP..... 1.0 Vp-p/75 ohms

VIDEO OUTPUT level/impedance

MONITOR OUT..... 1.0 Vp-p/75 ohms

Frequency response (at 1 watt)

..... 10 to 70,000 Hz,
+1 dB, –3 dB

Signal to noise ratio (short-circuit, A-network)

PHONO..... 73 dB

CD, TAPE PLAY, VCR-1,

2/VDP..... 90 dB

Controls

BASS..... ± 8 dB at 50 Hz

TREBLE..... ± 7 dB at 10 kHz

LOUDNESS

(BASS BOOST OFF)..... +8 dB at 50 Hz

LOUDNESS

(BASS BOOST ON)..... +10 dB at 100 Hz

..... +5 dB at 10 kHz

(VOLUME: –30 dB position)

FM section

Tuning range..... 88 to 108 MHz

Usable sensitivity

Mono IHF..... 11.2 dBf (2.0 μ V: T-100)

50 dB quieting sensitivity

Stereo..... 38.2 dBf

Signal to noise ratio (at 65 dBf)

Stereo..... 70 dB

Distortion (at 65 dBf)

Stereo..... less than 0.3% at 1,000 Hz

Stereo separation..... 40 dB at 1,000 Hz

AM section

Tuning range..... 530 to 1,600 kHz

Usable sensitivity (Loop antenna)

..... 55 dB/m (562 μ V/m)

Signal to noise ratio..... 40 dB

Others

Power requirements..... 120/220/240V

50/60 Hz

For U.S.A. and Canada 120V (60 Hz)

Power consumption..... 360 watts 440 VA Rated

Dimensions..... 430 mm (16-15/16") W

125 mm (4-15/16") H

335 mm (13-1/4") D

Weight..... 9.5 kg (21.0 lbs) net

11.3 kg (25 lbs) packed

Remote controller: RS-1080

Control system..... Infra-red ray pulse system

Power requirements..... DC 3V

Dimensions..... 60 mm (2-3/8") W

18 mm (3/4") H

160 mm (6-5/16") D

Weight..... 95 g (0.2 lbs)

including dry batteries

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

NOTE

1. The symbols, UL, CSA, 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.)

CSA Manufactured for Canadian market.

SS..... Manufactured for Saudi Arabia market.

XX..... Standard Version.

<EXPORT>

NON MARK..... Common Parts.

2. Some printed circuit boards are not supplied assembled. To separate these in this service manual, the stock numbers are not indicated for these boards. However, stock numbers for individual parts are indicated.

3. Since some capacitors and resistors are omitted from parts lists in this service manual, refer to the Common Parts List for capacitors and resistors, which was issued on June 1987.

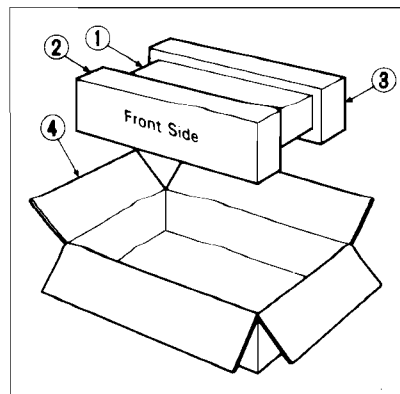
4. Abbreviations in this service manual are as follows.

•Abbreviations List

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

1. PACKING LIST

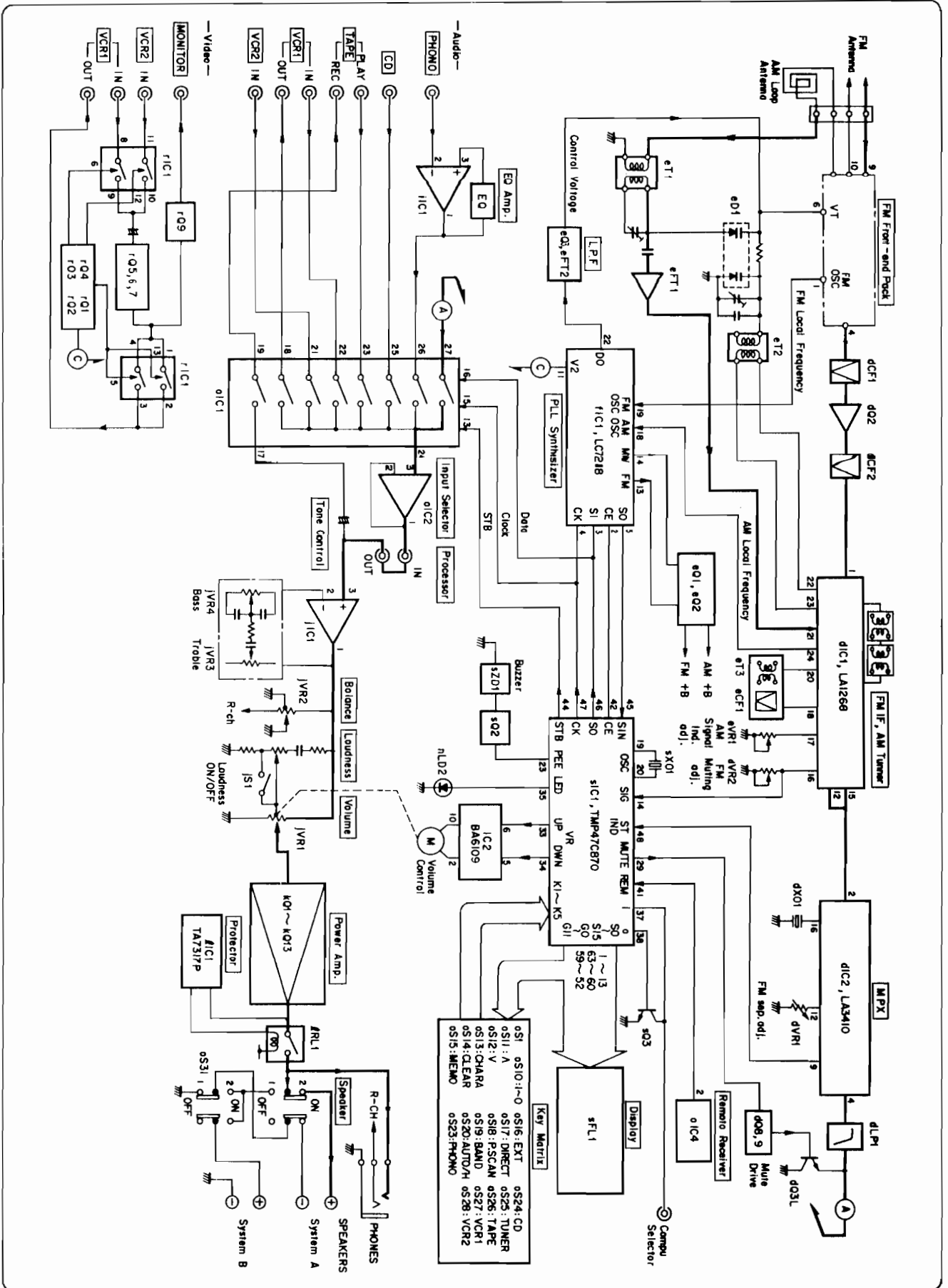
Parts No.	Stock No.	Description
1	47859600	Vinyl Bag
2	84582400	Styrofoam Packing F (Front-Side)
3	84584600	Styrofoam Packing R (Rear-Side)
4	84582100	Carton Case



2. ACCESSORY LIST

Parts No.	Stock No.	Description
		RS-1080 Remote Controller
		SUM-3K Dry Battery
	83041000	AM Loop Antenna
	46051700	FM Antenna Wire
	84529800	AM Antenna Holder
	84454100	RZ-7000/5000 Operating Instruction

3. BLOCK DIAGRAM



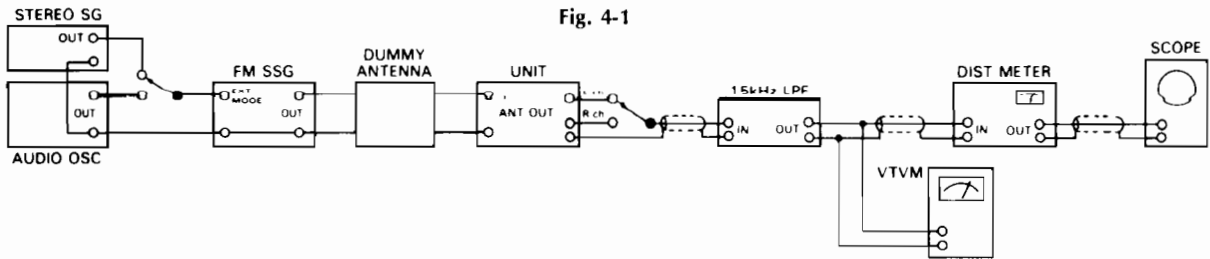
4. ADJUSTMENT

4-1. Bias Adjustment of Power Amp. (See Parts Location F-6007 on page 5 and F-6014 on page 6)

- Note:** 1. Master Volume Minimum
 2. Room Temperature 18°C ~ 28°C (65°F ~ 83°F)
 3. For this adjustment, run the unit for more than 5 minutes after the power is switched ON.
 4. 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(A) & Point(B) < Between emitters of power transistor (kQ12 & kQ13), F-6014>, DC Volt Meter	kVR1, L-CH (F-6007)	DC 7 ~ 17mV	•This bias value is converted from current value to voltage by ohms law.
2.	Bias Current Adj. R-CH	Between Point(C) & Point(D) < Between emitters of power transistor (kQ12 & kQ13), F-6014>, DC Volt Meter	kVR1, R-CH (F-6007)	DC 7 ~ 17mV	

4-2. FM Adjustment (See Parts Location F-6017 on page 7)



1) FM IF & Reference Frequency Adjustment

- Note:** 1. SELECTOR FM
 2. FM MUTING/MODE OFF/MONO

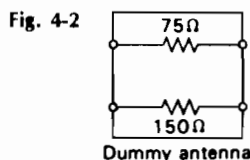
STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS	
		FROM	TO					
1.	Reference Frequency Adj.	No Input (Tune to 98MHz)	—	Between Point(E) (Pin 1 of Front-end, F-6017) & Ground, Freq. counter	fTC1 (F-6017)	108.7MHz ± 100Hz		
2.	Discriminator Coil Adj.	1	98MHz ANT Input 65dBf (59.8dB), 1kHz (100% MOD.), FM SSG	ANT Terminal 300Ω	Between Point(F) & Point(G) (Across dR17, F-6017), DC Volt Meter	dt1 (F-6017)	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-6017)	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 SSG output level in this FM adjustment are described as open indication type.
 To feed FM signal, a dummy antenna circuit as Fig. 4-2 must be connected between FM SSG output and ANT terminal (300Ω) of the unit.

- 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

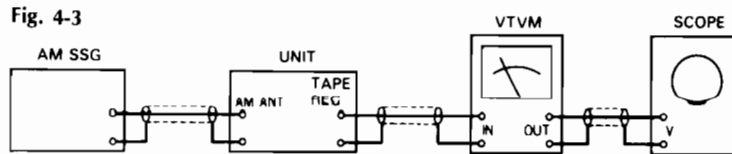
Note: 1. SELECTOR FM 2. FM MUTING/MODE..... AUTO

STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM	TO				
1.	Separation Adj.	98MHz ANT Input 65dBf (59.8dB), FM SSG, Pilot 19kHz (9% MOD.), R or L MODE 1kHz + Pilot (100% MOD.), STEREO SG.	ANT Terminal 300Ω	REC OUT L-CH, VTVM & SCOPE REC OUT R-CH, VTVM & SCOPE	dVR1 (F-6017)	Max. Separation	Confirm R→L-CH
2.	Muting Level Adj.	98MHz ANT Input 20dBf (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), VTVM & SCOPE	dVR2 (F-6017)	Stereo indicator turns On or Output Signal comes out	

4-3. AM Adjustment (See Parts Location F-6017 on page 7)

1) AM IF Adjustment & Tuning Adjustment

Note: 1. SELECTOR AM



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, VTVM & SCOPE	eT3 (F-6017)	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-6017)	DC 1.0V ± 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-6017)	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, VTVM & Scope	eT1 (F-6017)	Max. Output	
5.	1404kHz (9kHz step) or 1400kHz (10kHz step) RF Adj.	1400kHz (or 1400kHz) ANT Input 30dB 400Hz (30% MOD.), AM SSG	Same as above	Same as above	eTC1 (F-6017)	Max. Output	
6.	Signal Indicator Level Adj.	999kHz (9kHz step) or 1000kHz (10kHz step) ANT Input 70dB 400Hz (30% MOD.), AM SSG	Same as above	Signal Indicator of FL Display	eVR1 (F-6017)	Make all signal indicators lighting up.	

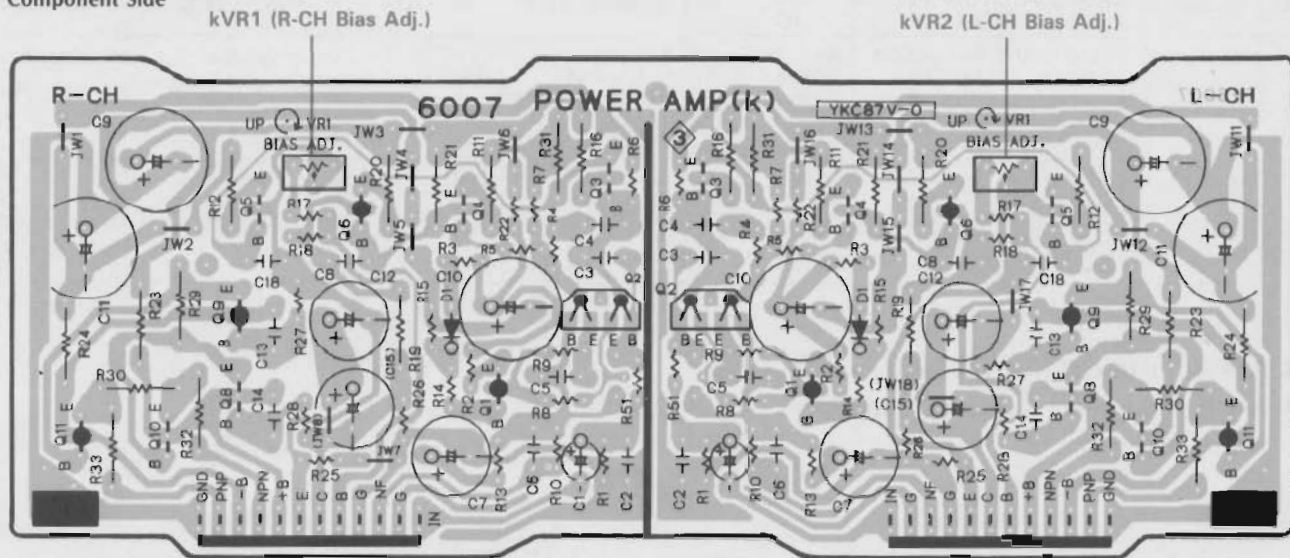
* Notice when the frequency-step of AM broadcasting is set to 9kHz or 10kHz by the AM channel (9kHz/10kHz) selection switch. Set the AM channel selection switch (oS47) on the F-6014 board in the following sequency.

1. Pull out the power supply cord from the power outlet.
2. Remove the bonnet.
3. Short the Pin 64 of sIC1 (TMP47C870N) on the F-6015 board and ground for more than thirty seconds.
4. Set the AM channel selection switch (oS47) on the F-6014 board to proper position.

5. PARTS LOCATION ON BOARD

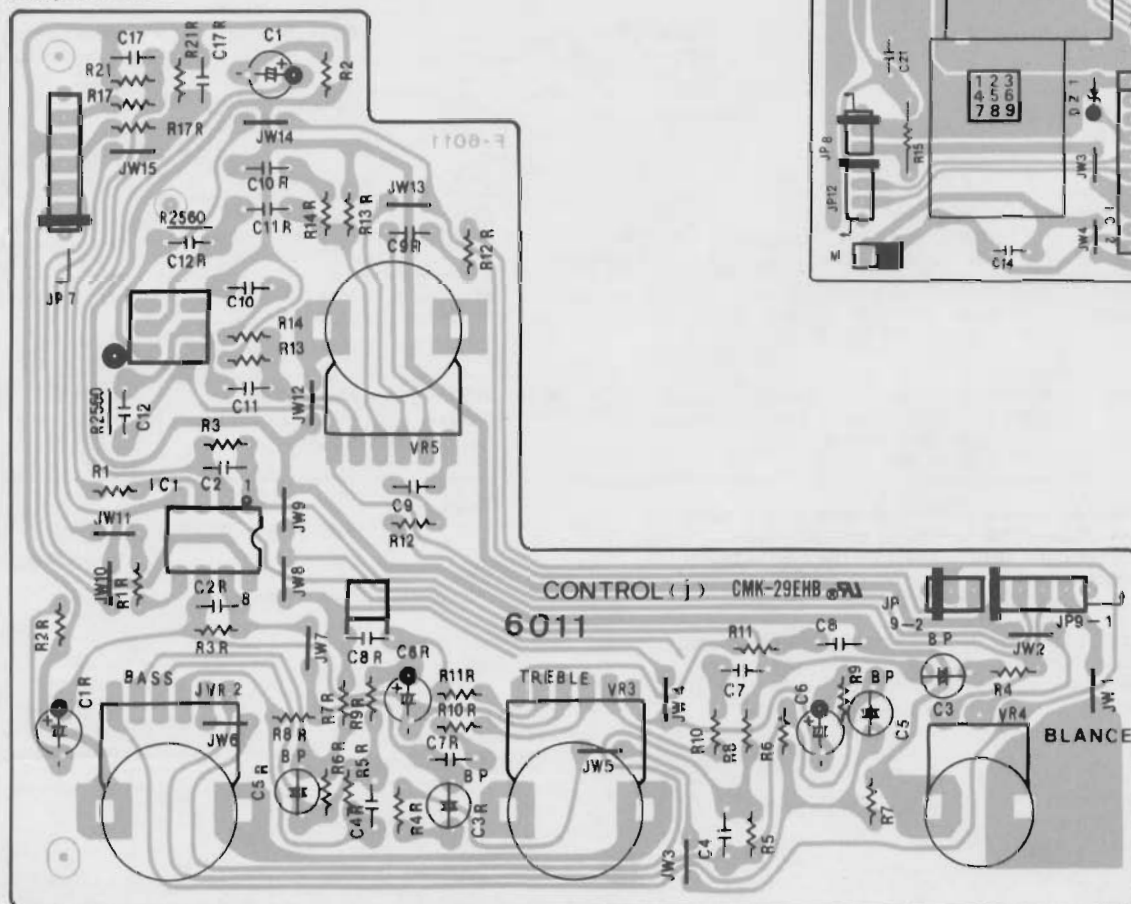
5-1. F-6007 Power Amp. Board

Component Side



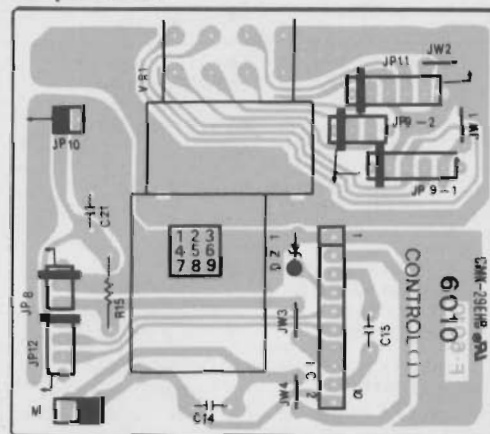
5-2. F-6011 BALANCE, TREBLE and BASS Volume Board

Component Side

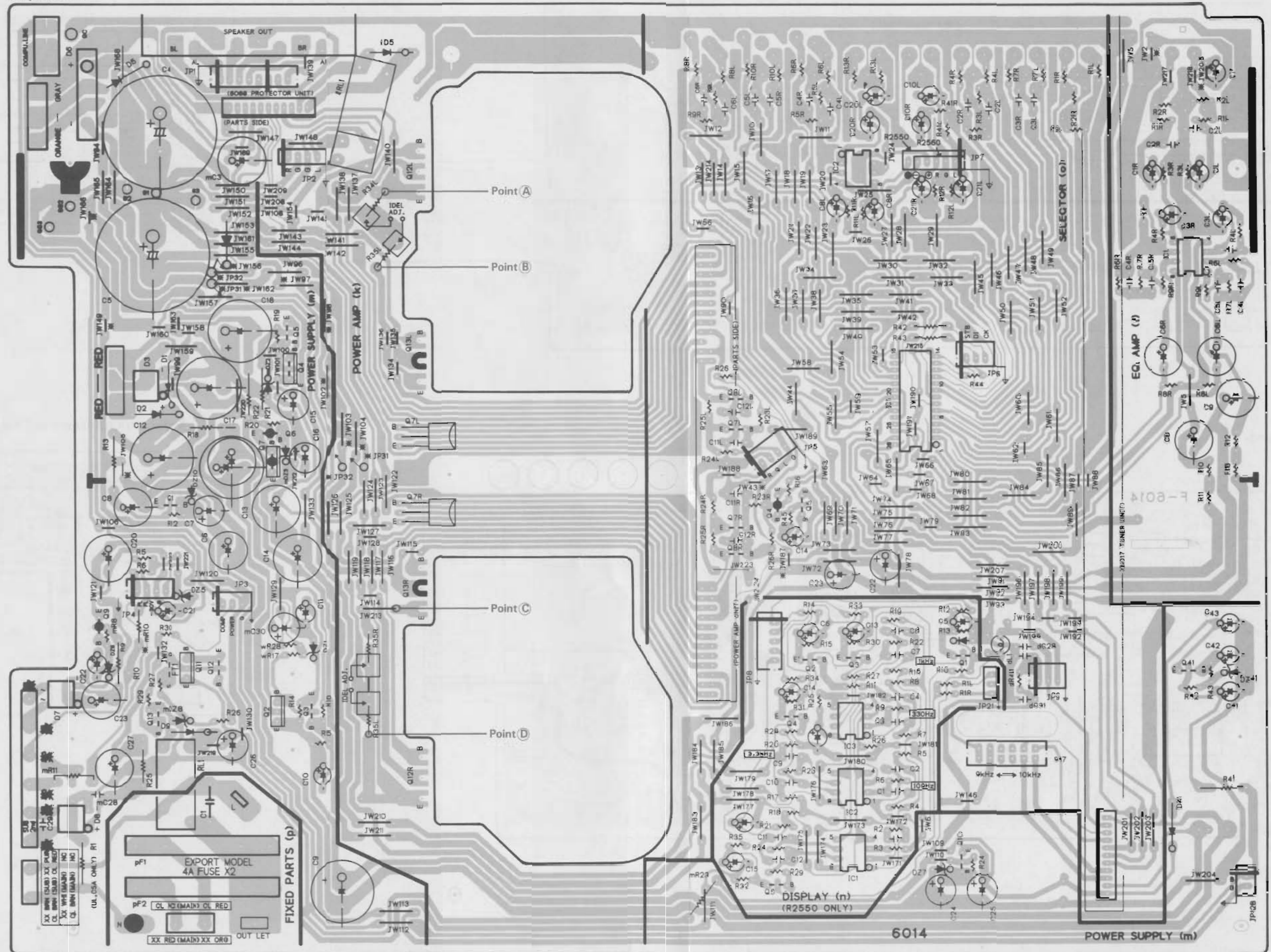


5-3. F-6010 Volume Motor Drive Board

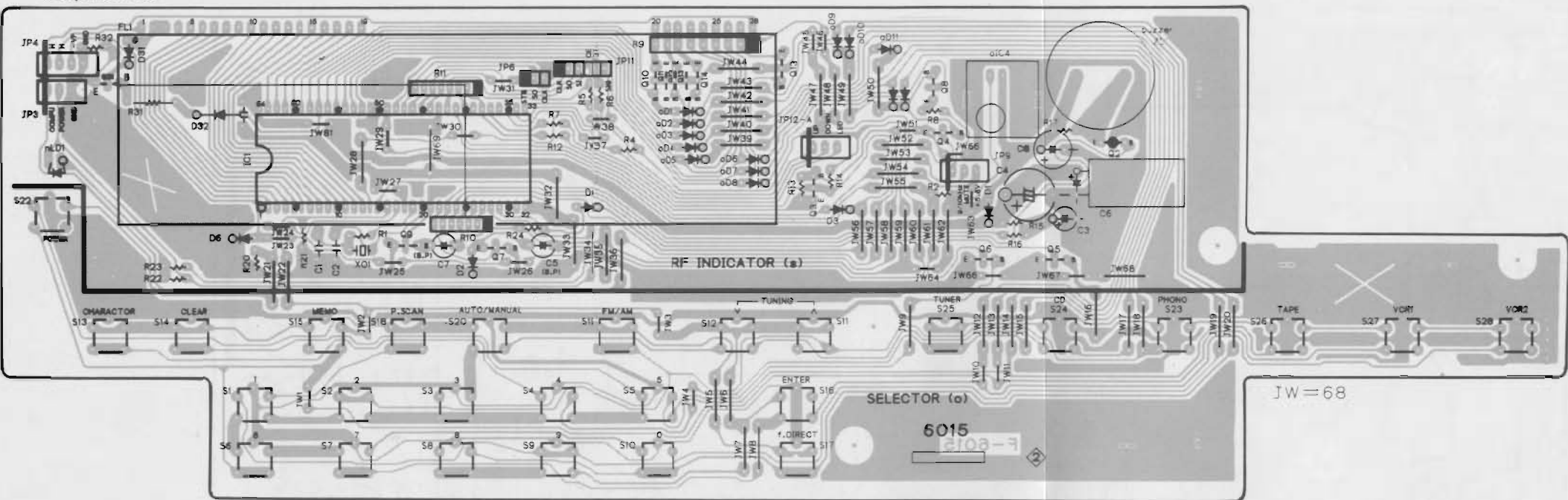
Component Side



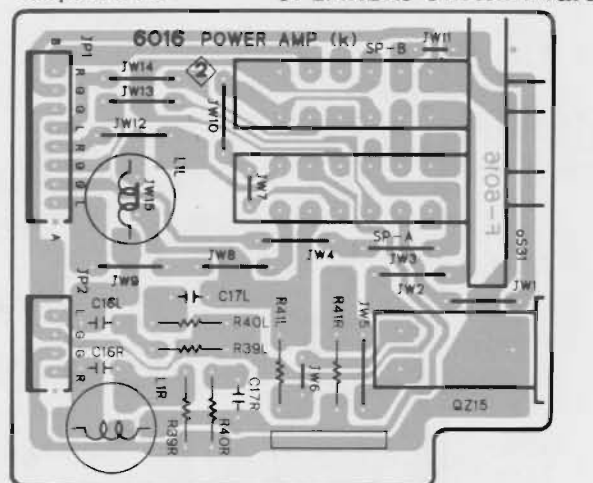
5-4. F-6014 Power Supply and Input Selector Board
Component Side



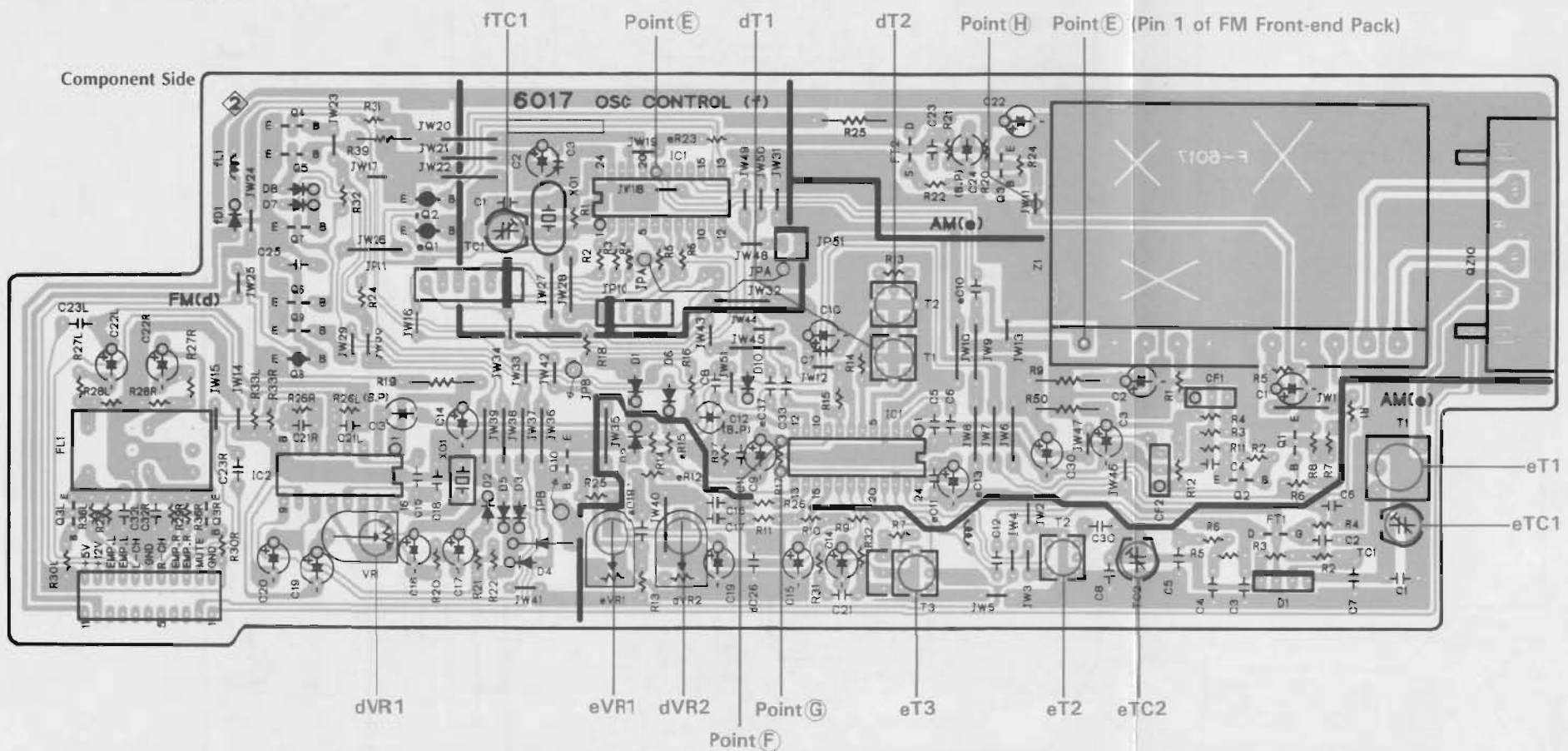
5-5. F-6015 Display and Operation Switch Board
Component Side



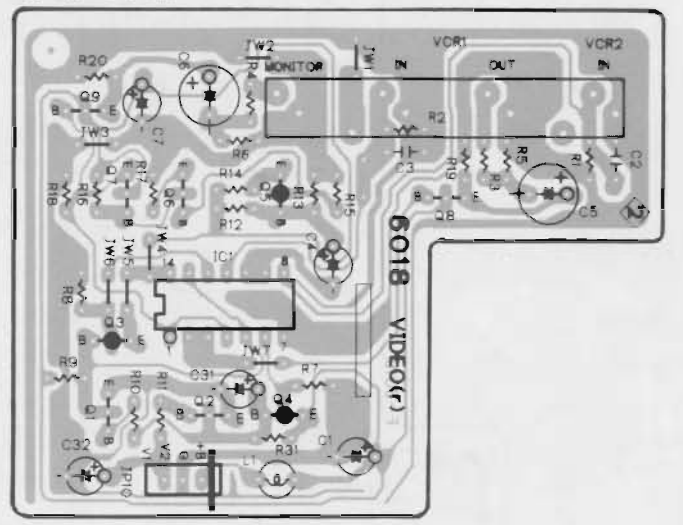
5-7. F-6016 PHONES Jack and SPEAKERS Switch Board
Component Side



5-6. F-6017 Tuner Board

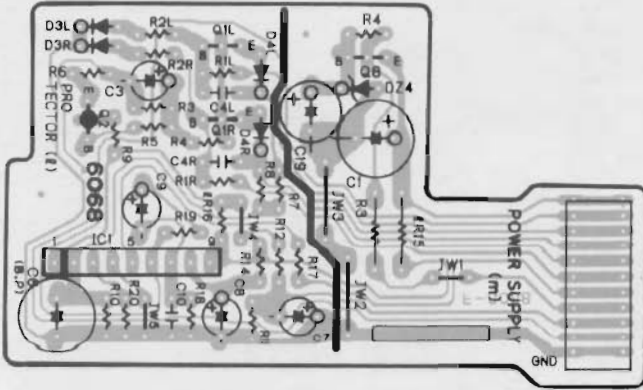


5-8. F-6018 Video In/Out Terminal Board
Component Side



5-9. F-6068 Protector Board

Component Side



5-10. F-6012 VOLUME Indicator Board

Component Side



6. PARTS LIST OF BOARD

6-1. F-6007 Power Amp. Board <Stock No. 01122301>

Parts No.	Stock No.	Description
kQ1	46367001	2SA1115
	or 46392001	2SA1175
kQ2	48577701	2SA1349
kQ3	46728301	2SC2705
	or 48113001	2SC2229
kQ4	46728301	2SC2705
	or 48113001	2SC2229
kQ5	03064001	2SC1904
	or 46128101	2SC2911
kQ6	03007901	2SA899
	or 46128001	2SA1209(R)
kQ8	48061801	2SC3244
kQ9	48064001	2SA1284
kQ10	46728901	2SC3298
	or 48158701	2SC2591
kQ11	46728801	2SA1306
	or 48158601	2SA1111
ΔkR11	46229800	470Ω 1/2W N.I.R.
ΔkR12	46228900	82Ω 1/2W N.I.R.
ΔkR16	46229800	470Ω 1/2W N.I.R.
ΔkR19	46228500	39Ω 1/2W N.I.R.
ΔkR20	46228900	82Ω 1/2W N.I.R.
ΔkR21	46229800	470Ω 1/2W N.I.R.
ΔkR23	46228400	33Ω 1/2W N.I.R.
ΔkR24	46228400	33Ω 1/2W N.I.R.
ΔkR29	46230200	1kΩ 1/2W N.I.R.
ΔkR30	46229100	120Ω 1/2W N.I.R.
ΔkR32	46227000	2.2Ω 1/2W N.I.R.
ΔkR33	46227000	2.2Ω 1/2W N.I.R.
•Diode		
kD1, 2	46464100	1SS133
kVR1	48078600	1kΩ S.V.R., Bias Current Adj.

6-2. F-6012 Volume Indicator Board

Parts No.	Stock No.	Description
•LED		
nLD2	48126300	SEL2210S, VOLUME

6-3. F-6010 VOLUME Control Board

Parts No.	Stock No.	Description
•IC		
jIC2	07233100	BA6109
•Zener Diode		
jDZ1	48552200	MTZ5.1C
jVR1	48977500	150kΩ (B) V.R. with Motor, VOLUME

6-4. F-6011 BALANCE, TREBLE and BASS Volume Board

Parts No.	Stock No.	Description
•IC		
jIC1	07208900 or 46673800	NJM4558D-X M5218P
jC2	48660200	47pF 50V C.C.
jC3	48102000	10μF 16V E.B.
jC5	48102900	0.15μF 50V E.B.
jC9	48663700	820pF 50V C.C.
jC10	48665900	5600pF 50V C.C.
jC17	48663000	220pF 50V C.C.
jVR2	83012800	50kΩ (C) V.R., BASS
jVR3	83012800	50kΩ (C) V.R., TREBLE
jVR4	83013000	250kΩ V.R., BALANCE
jVR5	83046000	150kΩ (B) V.R., LOUDNESS
jS1	83046700	Push SW., LOUDNESS

6-5. F-6014 Power Supply and Input Selector Board <Stock No. 01116701 = XX-SS/01116702 = UL-CSA>

Parts No.	Stock No.	Description	Parts No.	Stock No.	Description
dC28	48426900	22000pF 25V C.C.	•Zener Diode		
dC31	48426900	22000pF 25V C.C.	mDZ1	48552800	MTZ6.2C
dL1	83043200	Inductor 100 μ H	mDZ2	48555900	MTZ16C
•IC			mDZ3	48555900	MTZ16C
iIC1	46673800	M5218P	mDZ5	48552200	MTZ5.1C
•Transistor			mDZ6	48558100	MTZ30C
kQ7	03067401	2SC1845	mDZ7	48552800	MTZ6.2C
Δ kQ12	48489401	2SC3284	mDZ8	48555300	MTZ13C
Δ kQ13	48489301	2SA1303	mDZ10	48555900	MTZ16C
Δ kR34	83057500	0.22 Ω 3W Ce.R.	mDZ11	48553400	MTZ7.5C
Δ kR35	83057500	0.22 Ω 3W Ce.R.	Δ mR3	46229900	560 Ω 1/2W N.I.R.
•Diode			Δ mR9	46227800	10 Ω 1/2W N.I.R.
ID5	83005000	1N4002	Δ mR13	46623900	47 Ω 2W N.I.R.
ID6	83049400	1N4003	Δ mR18	46248100	10 Ω 1W N.I.R.
IRL1	48183100	Relay	Δ mR21	46249200	82 Ω 1W N.I.R.
•Transistor			Δ mR22	46249200	82 Ω 1W N.I.R.
Δ mQ1	48061801	2SC3244	Δ mR23	46249000	56 Ω 1W N.I.R.
Δ	or 48581701	2SD438	Δ mR25	46248100	10 Ω 1W N.I.R. (XX-SS)
Δ mQ2	03083901	2SD313HP	Δ	46248900	47 Ω 1W N.I.R. (UL-CSA)
Δ	or 46546701	2SD880	mC4	08301800	6800 μ F 63V E.C.
mQ3	46367101	2SC2603	mC5	08301800	6800 μ F 63V E.C.
or	48058801	2SC1740S	mRL1	48982000	Relay
mQ4	03083901	2SD313HP	•Transistor		
or	46546701	2SD880	oQ4	46834200	DTA144ES
mQ5	46367101	2SC2603	oQ5	46834300	DTC144ES
or	48058801	2SC1740S	oQ7	46540801	2SC2878
mQ6	46367001	2SA1115	or	46604301	2SC3327
or	48058601	2SA933S	oQ8	46540801	2SC2878
mQ7	48063301	2SB 507	or	46604301	2SC3327
mQ9	48064001	2SA1284	•IC		
mQ10	48061801	2SC3244	oIC1	49312200	TC9163N
or	48581701	2SD438	oIC2	07208900	NJM4558D-X
mQ11	03083901	2SD313HP	or	46673800	M5218P
or	46546701	2SD880	oC2	48659400	22pF 50V C.C.
mQ12	46367101	2SC2603	oC3	48660200	47pF 50V C.C.
or	48058801	2SC1740S	oC4~6	48659400	22pF 50V C.C.
mQ13	46367101	2SC2603	oS47	83045800	Slide SW., 9/10kHz (XX-SS)
or	48058801	2SC1740S	Δ pC1	46425800	0.01 μ F 400V C.C.
mQ41	46367101	2SC2603	Δ	or 46943200	0.01 μ F 400V C.C.
or	48058801	2SC1740S	Δ pF1	83022000	Fuse 4A (XX-SS)
•FET			Δ	83022200	Fuse 6A (UL-CSA)
mFT1	46643500	2SK163-K1	Δ pF2	83022000	Fuse 4A (XX-SS)
or	46643501	2SK163-K2	qZ18	83012600	Mini Jack, SYSTEM CONTROL
or	46643502	2SK163-L1	qZ11	48528400	2P Terminal, PHONO
or	46643503	2SK163-L2	qZ12	48528300	6P Terminal, TAPE-CD
or	46643504	2SK163-M1	qZ13	49317900	6P Terminal, VCR-1, VCR-2 (Audio)
or	46643505	2SK163-M2	qZ14	48528200	4P Terminal, PROCESSOR
or	46643601	2SK117-Y	qZ19	46947500	8P Speaker Terminal
or	46643602	2SK117-GR			
or	46643603	2SK117-BL			
or	46643700	2SK246-Y			
or	46643701	2SK246-GR			
or	46643702	2SK246-BL			
•Diode					
Δ mD1	83049400	1N4003			
Δ mD2	83049400	1N4003			
Δ mD3	83020200	DF04M			
Δ mD5	83049400	1N4003			
mD6	83002100	KBU4D			
mD7	83020200	DF04M			
mD8	83020200	DF04M			
mD9	83049400	1N4003			
mD41	46464100	1SS133			

6-6. F-6015 Display and Operation Switch Board

<Stock No. 01116901>

Parts No.	Stock No.	Description
•LED		
nLD1	48841100	SEL3210S, POWER STANDBY
oIC4	48525000 or 49324500	BX1407 Remote Control Receiver SBX1483-52 Remote Control Receiver
•Diode		
oD1 ~ 11	46464100	1SS133
oS1	83049900	Push SW., 1
oS2	83049900	Push SW., 2
oS3	83049900	Push SW., 3
oS4	83049900	Push SW., 4
oS5	83049900	Push SW., 5
oS6	83049900	Push SW., 6
oS7	83049900	Push SW., 7
oS8	83049900	Push SW., 8
oS9	83049900	Push SW., 9
oS10	83049900	Push SW., 0
oS11	83049900	Push SW., Λ (TUNING)
oS12	83049900	Push SW., ∇ (TUNING)
oS13	83049900	Push SW., CHARACTER
oS14	83049900	Push SW., CLEAR
oS15	83049900	Push SW., MEMO
oS16	83049900	Push SW., ENTER
oS17	83049900	Push SW., F.DIRECT
oS18	83049900	Push SW., P.SCAN
oS19	83049900	Push SW., FM/AM
oS20	83049900	Push SW., AUTO/MANU
oS22	83049900	Push SW., STANDBY
oS23	83049900	Push SW., PHONO
oS24	83049900	Push SW., CD
oS25	83049900	Push SW., TUNER
oS26	83049900	Push SW., TAPE
oS27	83049900	Push SW., VCR-1
oS28	83049900	Push SW., VCR-2
•Transistor		
sQ2	46367001 or 48058601	2SA1115 2SA933S
sQ3	46367101 or 48058801	2SC2603 2SC1740S
sQ4 ~ 6	46719900	DTC124ES
sQ7	46367101 or 48058801	2SC2603 2SC1740S
sQ8	46367101 or 48058801	2SC2603 2SC1740S
sQ9	46834300	DTC144ES
sQ10 ~ 13	48223100	DTC114TS
sQ31	46367101 or 48058801	2SC2603 2SC1740S
•IC		
sIC1	49346400	TMP47C870N-4612
sXO1	48241600	Ceramic OSC Element KBR-4.0MS
•Diode		
sD1 ~ 4	46464100	1SS133
sD6	46464100	1SS133
sD31	46464100	1SS133
sD32	83000100	1N4148
sFL1	49317200	FL. Display Tube CP3024GR
sR9	46350500	100k Ω X8 1/8W A.R.
sR10	48770700	47k Ω X6 A.R.
sR11	49346000	10k Ω X7 A.R.
sC4	49299400	0.047 μ F 5.5V E.C.
sC6	49345000	470 μ F 6.3V E.C.
sC9	49345000	470 μ F 6.3V E.C.
sZD1	48268200	Buzzer KBS20DB

6-7. F-6016 PHONES Jack and SPEAKERS Switch Board

Parts No.	Stock No.	Description
kL1	83020100	Inductor
Δ kR39	46248100	10 Ω 1W N.I.R.
Δ kR40	46248100	10 Ω 1W N.I.R.
Δ kR41	46249700	220 Ω 1W N.I.R.
oS31	83045900	Push SW., SPEAKERS
qZ17	46579600	Jack, PHONES

6-8. F-6018 Video In/Out Terminal Board

<Stock No. 01115401>

Parts No.	Stock No.	Description
•Transistor		
rQ1, 2	46367101 or 48058801	2SC2603 2SC1740S
rQ3, 4	46834200	DTA144ES
rQ5	46367001 or 48058601	2SA1115 2SA933S
rQ6 ~ 9	46367101 or 48058801	2SC2603 2SC1740S
•IC		
rIC1	07224800 or 46255000	TC4066BP LC4066BH
rC2, 3	48662600	100pF 50V C.C.
rL1	83042600	Inductor 10 μ H

6-9. F-6068 Protector Board <Stock No. 01130701>

Parts No.	Stock No.	Description
•Transistor		
IQ1	48863701 or 48863901	2SC2857 2SC1473
IQ2	46581601	2SA992
•IC		
IIIC1	46207600	TA7317P
•Diode		
ID3, 4	46464100	1SS133
IC4	48426900	22000pF 25V C.C.
IC6	48104200	220 μ F 6.3V E.B.
IC10	48663000	220pF 50V C.C.
•Transistor		
mQ8	48061801 or 48581701	2SC3244 2SD438
•Zener Diode		
mDZ4	48557300	MTZ24C

6-10. F-6017 Tuner Board <Stock No. 01115301>

Parts No.	Stock No.	Description
dZ1	48569000	FM Frontend Pack
•Transistor		
dQ1	46834300	DTC144ES
dQ2	46393201	2SC2786
dQ3	46540801	2SC2878
	or 46604301	2SC3327
dQ4 ~ 7	46834300	DTC144ES
dQ8	46834200	DTA144ES
dQ9, 10	46834300	DTC144ES
•IC		
dIC1	48715100	LA1266
dIC2	48491000	LA3410A
dXO1	83000200	Ceramic OSC Element
•Diode		
dD1 ~ 8	46464100	1SS133
dD9	83000100	1N4148
dD10	46464100	1SS133
dC4 ~ 8	48426900	22000pF 25V C.C.
dC11	48662600	100pF 50V C.C.
dC12, 13	48102400	4.7μF 25V E.B.
dC18	48663100	270pF 50V C.C.
dC33	48662600	100pF 50V C.C.
△ dR9	46227800	10Ω 1/2W N.I.R.
△ dR19	46228200	22Ω 1/2W N.I.R.
dCF1, 2	83000000	Ceramic Filter SFE10.7MS2
dLP1	83030100	• Low Pass Filter
dT1	83005900	FM IF Coil
dT2	83006000	FM IF Coil
dVR1	83007600	200kΩ S.V.R., FM Stereo Sep. Adj.
dVR2	83007600	200kΩ S.V.R., FM Muting Level Adj.
•Transistor		
eQ1, 2	46719800	DTA124ES
eQ3	46367101	2SC2603
	or 48058801	2SC1740S

Parts No.	Stock No.	Description
•FET		
eFT1	46393000	2SK192A-Y
	or 46393001	2SK192A-GR
eFT2	46643501	2SK163-K2
	or 46643502	2SK163-L1
	or 46643601	2SK117-Y
	or 46643602	2SK117-GR
•Diode		
eD1	46146300	KV1236Z2 (Variable Capacitance)
eD2	46464100	1SS133
eC2	48658600	10pF 50V C.C.
eC3	48662600	100pF 50V C.C.
eC4	48426900	22000pF 25V C.C.
eC10 ~ 12	48426900	22000pF 25V C.C.
eC16	48426900	22000pF 25V C.C.
eC17	48666200	0.01μF 50V C.C.
eC21	48426900	22000pF 25V C.C.
eC23	48663800	1000pF 50V C.C.
eC24	48103500	2.2μF 50V E.B.
eC37	48426900	22000pF 25V C.C.
eTC1, 2	46095700	Trimmer Capacitor 30pF
	or 46162900	Trimmer Capacitor 30pF
eCF1	48865700	Ceramic Filter BFCFL-450
eT1	83005600	AM ANT Coil
eT2	83005700	AM OSC Coil
eT3	83013400	AM IF Coil
eVR1	83007500	100kΩ S.V.R., AM Signal Indicator Level Adj.
•IC		
fIC1	49317500	LC7218
fXO1	83004400	Quartz Element
•Diode		
fD1	46464100	1SS133
fTC1	46095700	Trimmer Capacitor 30pF
	or 46162900	Trimmer Capacitor 30pF
fL1	83042600	Inductor 10μH

7. OTHER PARTS

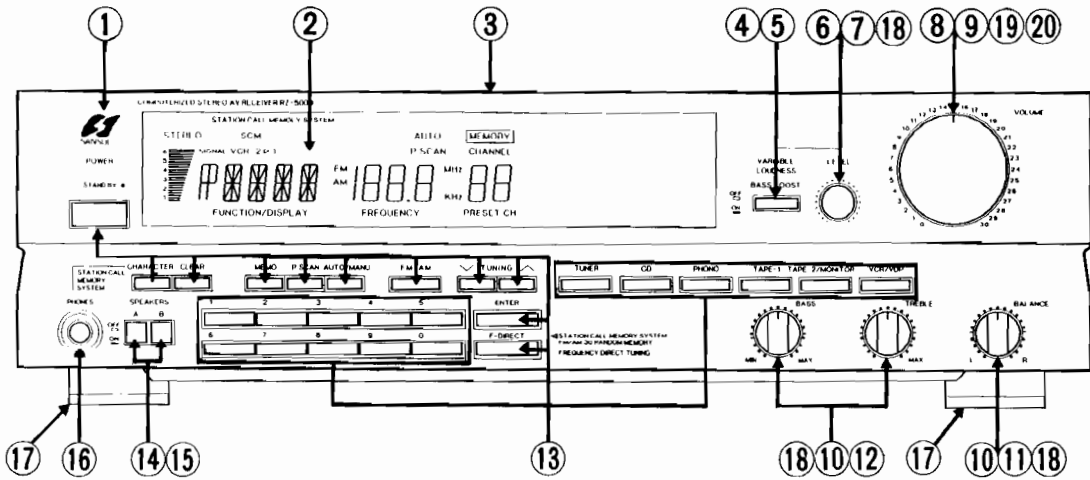
Parts List <Front View>

Parts No.	Stock No.	Description
1	37504401	Front Panel Ass'y
2	49317200	CP3024GR FL. Display Tube
3	84578500	Bonnet
4	83046700	Push SW., VARIABLE LOUDNESS ON/OFF
5	84580300	Push Knob, VARIABLE LOUDNESS ON/OFF
6	83046000	150kΩ (B) V.R., LOUDNESS LEVEL
7	84580200	Knob, LOUDNESS LEVEL
8	48977500	150kΩ (B) V.R. with Motor, VOLUME
9	84599900	Knob Ass'y, VOLUME
10	84580100	Knob, BALANCE•TREBLE•BASS
11	83013000	250kΩ (W) V.R., BALANCE
12	83012800	50kΩ (B) V.R., TREBLE•BASS
13	83049900	Push SW., Operation
14	83045900	Push SW., SPEAKERS
15	84580000	Push Knob, SPEAKERS
16	46579600	Jack, PHONES
17	84586400	Leg
18	07105800	Nut, φ9.0
19	07105600	Nut, φ7.0
20	07106100	Washer, φ7.0

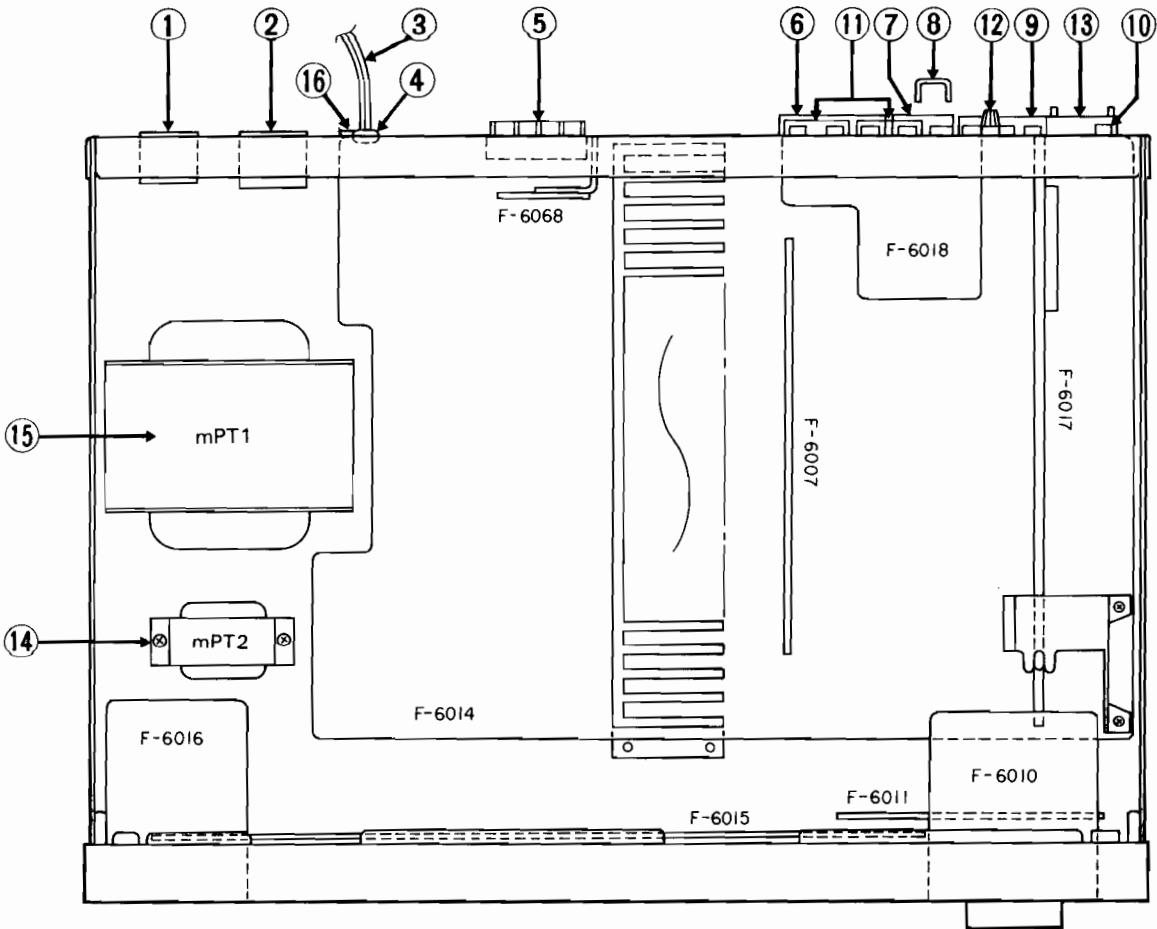
Parts List <Top View>

Parts No.	Stock No.	Description
△ 1	83004100	AC Outlet (XX•SS)
△	83002200	AC Outlet (UL•CSA)
△ 2	48175200	Voltage Selector (XX•SS)
△ 3	83000400	Power Supply Cord (XX)
△	83034900	Power Supply Cord (SS)
△	83003600	Power Supply Cord (UL)
△	83000500	Power Supply Cord (CSA)
△ 4	39106000	Strain Relief (XX)
△	48913500	Strain Relief (SS)
△	39104900	Strain Relief (UL•CSA)
5	46947500	8P Speaker Terminal
6	49317900	6P Pin Terminal, VCR-1, VCR-2 (Audio)
7	48528200	4P Pin Terminal, PROCESSOR
8	46413400	PM Connector, PROCESSOR
9	48528300	6P Pin Terminal, TAPE•CD
10	48528400	2P Pin Terminal, PHONO
11	48850800	2P Pin Terminal, VCR-1, VCR-2 (Video)
12	84528300	Ground Terminal
13	49299700	4P Antenna Terminal
△ 14	83046401	Power Transformer (XX•SS), mPT2
△	83046402	Power Transformer (UL•CSA), mPT2
△ 15	83046209	Power Transformer (XX•SS), mPT1
△	83046202	Power Transformer (UL•CSA), mPT1
16	83012600	Mini Jack, SYSTEM CONTROL

•Front View



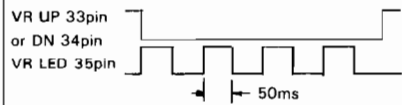
•Top View



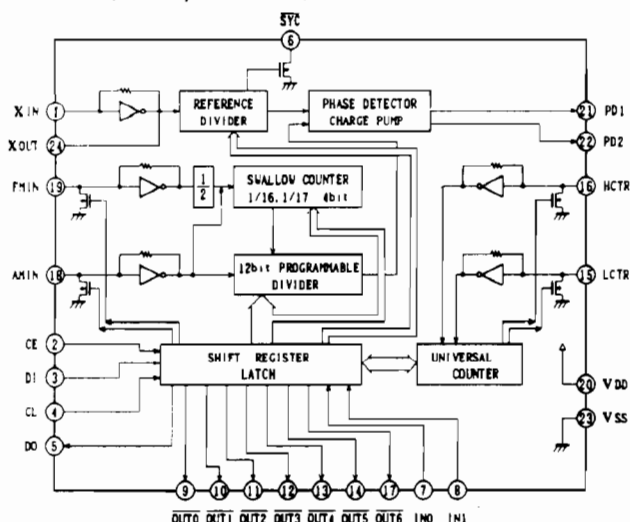
8. TERMINAL FUNCTION & INTERIOR BLOCK DIAGRAM OF IC

•TMP47C870N (Tuner/Audio System Controller)

◆ Terminal Function < TMP47C870N >

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	G11 ~ G4	O	Terminals for outputting grid signals to FL display and key matrix return timing signals.	
14	SIG	I	Terminal for inputting analog signal for signal indicator of FL display.	
			Input voltage more than 0.62V	Indicator (1) lighting
			more than 0.94V	Indicator (1 and 2) lighting
			more than 1.56V	Indicator (1 ~ 3) lighting
			more than 2.19V	Indicator (1 ~ 4) lighting
			more than 2.81V	Indicator (1 ~ 5) lighting
			more than 3.12V	All indicator lighting
15	BACK UP	I	Terminal to input back-up signal.	
16, 17 24, 25 49	K2, K3 K4, K5, 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: <ul style="list-style-type: none"> •When selector is switched. •In Graphic Equalizer ON/OFF. •In AUTO/MANUAL tuning (Up/Down) •In FM/AM band is switched. 	
33	VR UP	O	Terminal to output a signal for volume up. This terminal outputs a LOW level signal during volume up operation.	
34	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. 	
37	COMPU I	I	Terminal to input a signal for COMPU SELECTOR operation.	
38	COMPU O	O	Terminal to output a signal for COMPU SELECTOR operation.	
41	RF	I	Terminal to input a signal from the remote controller.	
44 45 46 47	STB SI SO CK	O I O O	Serial interfaces for STB (strobe pulse output), SO (serial data output), SI (serial data input) 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.	
50 51	FL DUTY1 FL DUTY2	I	Terminals are used to determine a brightness for FL display.	

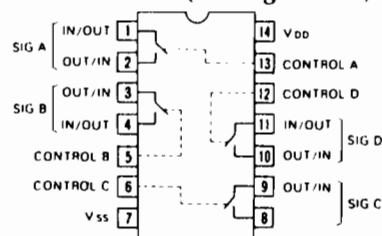
•LC7218 (PLL Synthesizer)



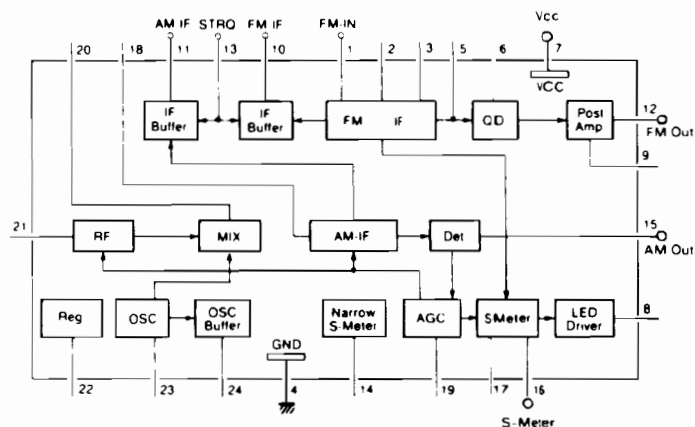
◆ Terminal Function < LC7218 >

Pin No.	Pin Name	I/O	Description
1, 24	XIN, XOUT	—	Terminals for connecting a oscillator of 1.2 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	FM	O	FM band switching signal output pin. In LOW level, FM band mode. In HIGH level, others mode.
14	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	VDD	—	Positive supply voltage.
22	DO	O	Terminal to output signal from a phase comparator.
23	GND	—	Ground

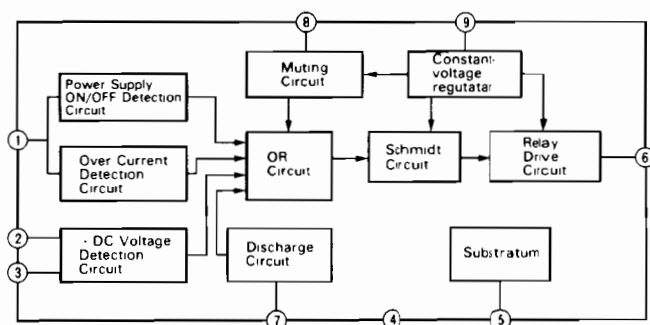
•LC4066BH/TC4066BP (Analog Switch)



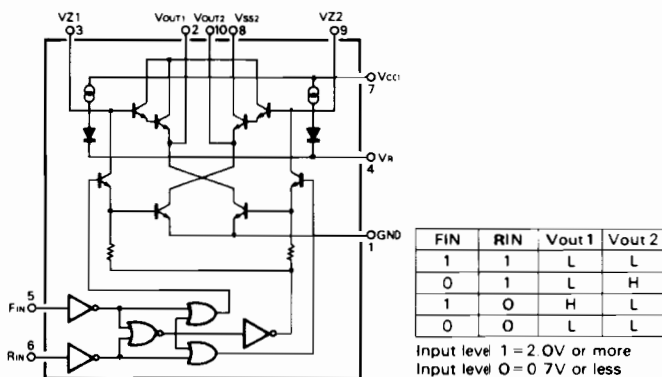
•LA1266 (FM-IF, AM-RF-MIX-IF)



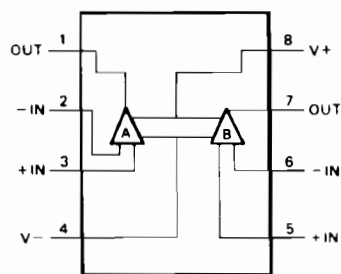
•TA7317P (Protector)



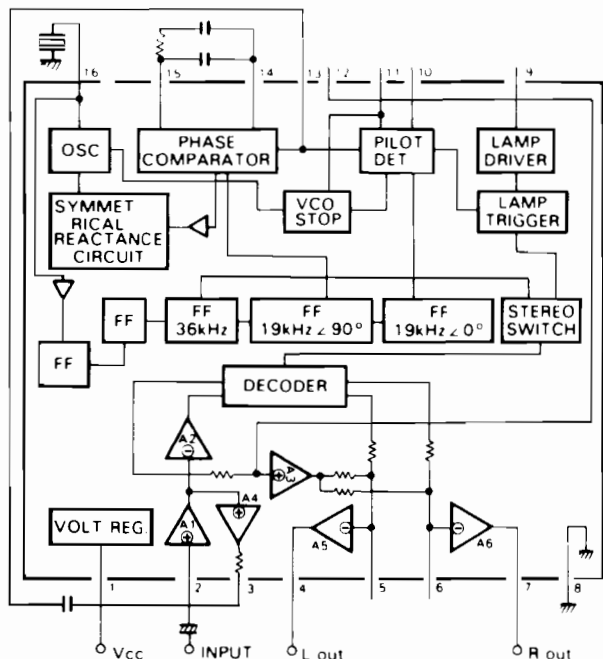
•BA6109 (Motor Drive)



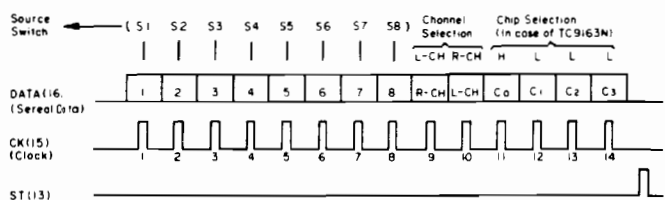
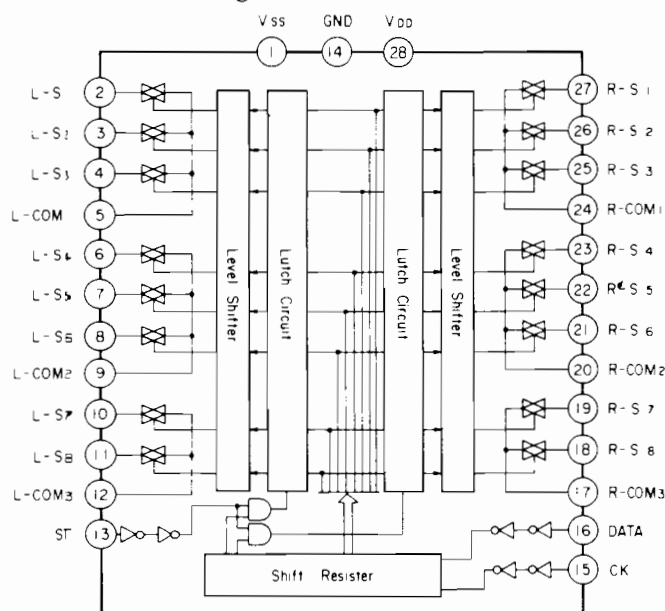
•M5218P/NJM4558D-X (OP Amp.)



•LA3410 (MPX)



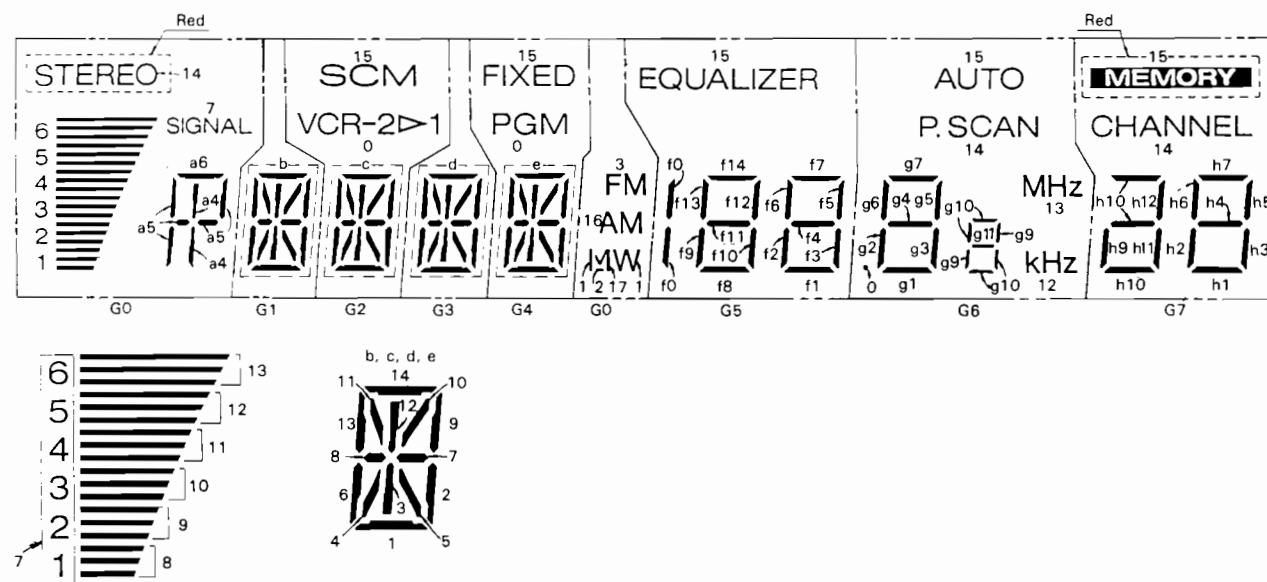
•TC9163N (Analog Switch)



◆ ST Terminal Function

- * When data bit 1 is High level, source switch 1 is ON.
- In the same manner, when data bit 2 (3~8) is High level, source switch 2 (3~8) is ON.
- * Shift register receives 14 bit serial data, and their data are sent to the latch circuit by the ST signal.

10. DISPLAY PATTERN AND PIN ASSIGNMENT OF CP3024GR 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		VCR-2 ▷ 1		PGM	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	SIGNAL 123456	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	kHz	h12
P13	Sig.6	b13	c13	d13	e13	f13	MHz	
P14	STEREO	b14	c14	d14	e14	f14	P.SCAN	CHANNEL
P15			SCM		FIXED	EQUALIZER	AUTO	MEMORY



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