

SERVICE MANUAL

AM/FM STEREO RECEIVER
SANSUI 221/331/331L/331SS



Sansui

SANSUI ELECTRIC CO., LTD.

This service manual is designed for service engineers to repair, adjust, maintain and order the replacement parts of the 331, 331L, 331SS, 221 correctly.

When ordering the parts, use the stock number and parts name specifically referring to the Parts Locations & Parts Lists.

For general usage and maintenance of the unit, please refer to the Operating Instructions attached with the unit.

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1. SPECIFICATIONS

POWER OUTPUT

Min. RMS, both channels driven, from 40 to 20,000Hz, with no more than 1.0% total harmonic distortion.

12 watts per channel into 4 ohms *8 watts (221 only)

12 watts per channel into 8 ohms *8 watts (221 only)

Min. RMS, both channels driven, at 1kHz, with no more than 1.0% total harmonic distortion.

14 watts per channel into 4 ohms *10 watts (221 only)

13 watts per channel into 8 ohms *9 watts (221 only)

LOAD IMPEDANCE..... 4 ohms and 8 ohms

POWER BANDWIDTH 40 to 20,000Hz
at or below rated min. RMS power output and total harmonic distortion

TOTAL HARMONIC DISTORTION

OVERALL (from AUX)..... less than 1.0%
at or below rated min. RMS power output

INTERMODULATION DISTORTION (70Hz: 7,000Hz=4: 1 SMPTE method)

OVERALL (from AUX)..... less than 1.0%
at rated min. RMS power output

FREQUENCY RESPONSE (at 1 Watt power output)

OVERALL (from AUX)..... 25 to 30,000Hz ± 2.0 dB / -3.0 dB

EQUALIZATION (at TAPE REC output)

..... RIAA Curve
(30 to 15,000Hz ± 1.5 dB)

DAMPING FACTOR 30 (8 Ω)

CHANNEL SEPARATION (1,000Hz, at rated power output)

PHONO better than 45dB

AUX better than 45dB

HUM AND NOISE (IHF)

PHONO better than 70dB

AUX better than 80dB

INPUT SENSITIVITY AND IMPEDANCE (1,000Hz, for rated power output)

PHONO 2.5mV 50k Ω
(Max. input capability: 120mV at 0.5% distortion)

AUX 150mV 50k Ω

TAPE

PLAY Pin Jacks 150mV 50k Ω

REC/PLAY DIN Socket 150mV 50k Ω

RECORDING OUTPUT

TAPE

REC Pin jacks 150mV

REC/PLAY DIN Socket 30mV

SWITCHES AND CONTROLS

BASS +12dB, -12dB at 50Hz

TREBLE +10dB, -10dB at 10,000Hz

LOUDNESS +10dB at 50Hz
+8dB at 10,000Hz

TUNER SECTION

[FM]

TUNING RANGE 88 to 108MHz

SENSITIVITY 2.5 μ V (IHF)

1.3 μ V (DIN)

TOTAL HARMONIC DISTORTION

MONO 0.8%

STEREO 1.0%

SIGNAL TO NOISE RATIO..... better than 65dB

SELECTIVITY better than 60dB

CAPTURE RATIO 1.5dB

IMAGE REJECTION better than 50dB at 98MHz

IF REJECTION better than 70dB at 98MHz

SPURIOUS RESPONSE REJECTION better than 70dB at 98MHz

SPURIOUS RADIATION less than 34dB

STEREO SEPARATION..... better than 35dB at 1kHz

FREQUENCY RESPONSE..... 30 to 12,000Hz

ANTENNA INPUT IMPEDANCE .. 300 Ω balanced

75 Ω unbalanced

[AM]

<MW> * Not Included in 331SS

TUNING RANGE 535 to 1,605kHz

SENSITIVITY (bar antenna) 50dB/m at 1MHz 54dB (331L)

SELECTIVITY better than 40dB at 1MHz

IMAGE FREQUENCY REJECTION .. better than 80dB/m at 1MHz

IF REJECTION better than 80dB/m at 1MHz

<SW1> * 331SS ONLY

TUNING RANGE 2.3 to 6.5MHz

SENSITIVITY 20 μ V at 4MHz

SELECTIVITY better than 40dB at 4MHz

IMAGE FREQUENCY REJECTION .. better than 40dB at 12MHz

IF REJECTION better than 80dB at 12MHz

<SW2> * 331SS ONLY

TUNING RANGE 6.5 to 18MHz

SENSITIVITY 30 μ V at 12MHz

SELECTIVITY better than 40dB at 4MHz

IMAGE FREQUENCY REJECTION .. better than 40dB at 12MHz

IF REJECTION better than 80dB at 12MHz

<LW> * 331L ONLY

TUNING RANGE 150 to 350kHz

SENSITIVITY { 60dB/m at 250kHz (Bar Antenna)
300 μ V at 250kHz (EXT)

SELECTIVITY (± 10 kHz) better than 40dB at 1,000kHz

IMAGE REJECTION better than 90dB/m

at 250kHz

IF REJECTION better than 90dB at 250kHz

OTHERS

POWER REQUIREMENTS

VOLTAGE 120, 220, 240V, 50/60Hz

CONSUMPTION (331, SS, L) .. 50W (rated), 90W (max.)

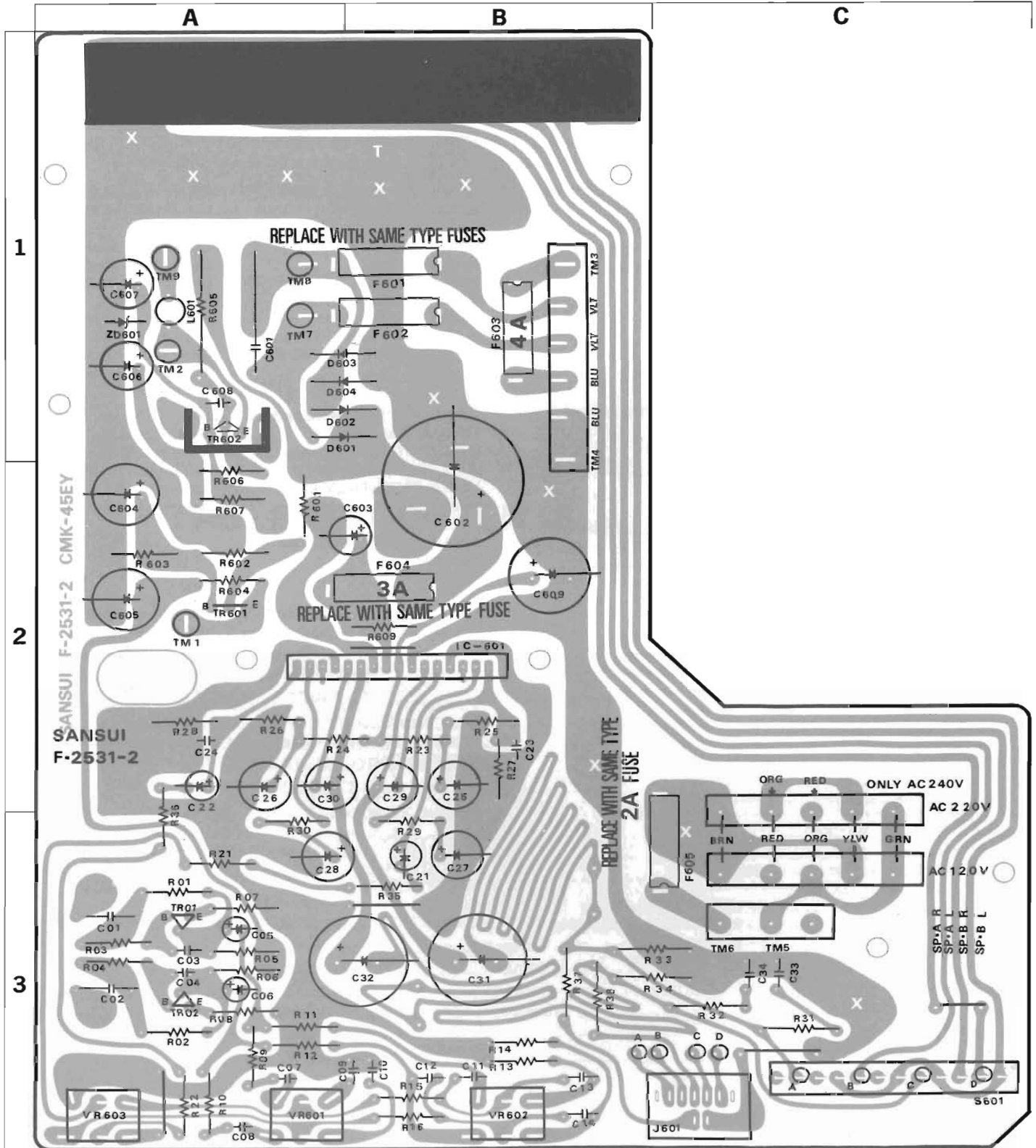
CONSUMPTION (221)..... 45W (rated), 75W (max.)

* Design and specifications subject to change without notice for improvement.

2. PARTS LOCATION AND PARTS LIST

2-1. F-2531 Main Circuit Board (Complete Circuit Board) MODEL: 331 (Stock No. 7592391)
 331L (Stock No. 7592693)
 331SS (Stock No. 7592686)
 221 (Stock No. 7592481)

Conductor Side



Parts List

Parts No.	Stock No.	Description	Position	Parts No.	Stock No.	Description	Position	Parts No.	Stock No.	Description	Position	
TR01, 02	{ 0306011, 2 0306070, 1	25C1222 (E, F) 25C1313 (F, G)	Transistor	R27, 28	0107224	220kΩ 1/4W C.R.	2 B . 2 A	R602	0210153	15kΩ	2 A	
TR601	0306131, 2	25C1364 (6, 7)		2 A	R31, 32	0111689	6.8Ω 1 1/2W S.R.	3 C	R603	0210104	100kΩ 1/2W Ce.R.	2 A
TR602	0308361, 2	25D330 (D, E)		1 A	R33, 34	0111471	470Ω 1 1/2W S.R.	3 B C	R604	0210121	120Ω	2 A
D601	0310340	10D1	1 A, B	R35, 36	0107102	1kΩ 1/4W C.R.	3 B . 2,3A	R605	0133181	180Ω 3W Ce.R.	1 A	
D602	0310340	10D1	1 A, B	R37, 38	0111331	330Ω 1 1/2W S.R.	3 B	R606	0210332	3.3kΩ	2 A	
D603	0310340	10D1	1 A, B	R601	0111471	470Ω	2 A	R607	0210332	3.3kΩ 1/2W Ce.R.	2 A	
D604	0310340	10D1	1 A, B	R604	0107121	120Ω	2 A	R609	0210101	100Ω 1/2W Ce.R.	2 A, B	
ZD601	{ 0315980 0316320	EQA01-14R RD-13E C	Zener Diode	R606	0107332	3.3kΩ 1/4W C.R.	2 A	S601	1101660	N-1-2-5 Rotary Switch	3 C	
C01, 02	0601228	0.22μF 50V M.C.	3 A	R607	0107332	3.3kΩ 1/4W C.R.	2 A	F601	0435160	4A 250V	1 B	
C03, 04	0660100	10pF 50V C.C.	3 A	R609	0107101	100Ω	2 B	F602	0435160	4A 250V	Time Lag Fuse	1 B
C05, 06	0519101	1μF 50V E.C.	3 A	L601	4900110	100μH Inductor	1 A	F603	0435160	4A 250V	1 B	
C07, 08	0601276	0.0027μF	3 A	VR601	1015140, 1	100kΩ A x 2	3 A	F604	0433630	4A 250V	Q.A. Fuse	2 A, B
C09, 10	0601187	0.018μF	3 B	VR602	1015140, 1	100kΩ A x 2	3 B	F605	0435120	1.6A 250V	Time Lag Fuse	2, 3 C
C11, 12	0601227	0.022μF	3 B	VR603	1015130, 1	100kΩ MN	3 A					
C13, 14	0601188	0.18μF	3 B	J601	2430240	JACK	3 C	331SS ONLY				
C21, 22	0519103	0.47μF	3 B . 2 A	2230110	2230110	Push Terminal (Red)		IC601	0360240	STK-014C IC		
C25, 26	0515100	10μF	2 B . 2 A	2230120	2230120	Push Terminal (Black)		C23, 24	0660101	100pF 50V C.C.	2 B . 2 A	
C27, 28	0512221	220μF 16V E.C.	3 B . 3A, B	2310051	2310051	F Type Fuse Holder		C601	0659012	22000pF 500V C.C.	1 A	
C29, 30	0513101	100μF 25V E.C.	2 B . 2A, B	2410610	2410610	3P Connector		R29, 30	0107151	150Ω 1/4W C.R.	3 B . 3 A	
C31, 32	0514222	2200μF 35V E.C.	3 B . 3A, B	2410630	2410630	5P Connector		R602	0107153	15kΩ 1/4W C.R.	2 A	
C33, 34	0601108	0.1μF 50V M.C.	3 C	331 ONLY				R603	0107104	100kΩ	2 A	
C602	0549109	2200μF	1, 2 B	IC601	0360240	STK-014 IC	2 A, B	R605	0133181	180Ω 3W Ce.R.	1 A	
C603	0515100	10μF	2 A, B	C23, 24	0660101	100pF 50V C.C.	2 B . 2 A	S601	1101660	N-1-2-5 Rotary Switch	3 C	
C604	0515221	220μF	2 A	C601	0659012	22000pF 500V C.C.	1 A	F603	0431270	4A 250V AC Fuse	1 B	
C605	0515101	100μF	2 A	R29, 30	0107151	150Ω	3 B . 3 A	F604	0433270	4A 250V Q.A. Fuse	2 A, B	
C606	0514101	100μF 35V E.C.	1 A	R602	0107153	15kΩ 1/4W C.R.	2 A	F605	{ 0431220 0431230	1.5A 250V 2A 250V	AC Fuse	3 C
C607	0512221	220μF 16V E.C.	1 A	R603	0107104	100kΩ	2 A	221 ONLY				
C608	0657222	2200pF 50V C.C.	1 A	R605	0133181	180Ω 3W Ce.R.	1 A	IC601	0360230	STK-013 IC		
C609	0515221	220μF 50V E.C.	2 B	S601	1101660	N-1-2-5 Rotary Switch	3 C	C23, 24	0660101	100pF 50V C.C.	2 B . 2 A	
R01, 02	0107105	1MΩ	3 A	F603	0431270	4A 250V AC Fuse	2 A	C601	0659012	22000pF 500V C.C.	1 A	
R03, 04	0107561	560Ω	3 A	F604	0431270	4A 250V Q.A. Fuse	2 A	R29, 30	0107271	270Ω 1/4W C.R.	3 B . 3 A	
R05, 06	0107562	5.6kΩ	3 A	F605	{ 0431220 0432230	1A 250V 1.5A 250V	AC Fuse	1 A	R605	0163221	220Ω 3W Ce.R.	1 A
R07, 08	0107271	270Ω	3 A	331L ONLY				F603	0431270	4A 250V AC Fuse	1 B	
R09, 10	0107561	560Ω	3 A	IC601	0360240	STK-014 IC	2 A B	F604	0433270	4A 250V Q.A. Fuse	2 A, B	
R11, 12	0107123	12kΩ 1/4W C.R.	3 A	C23, 24	0660331	330pF 50V C.C.	2 A	F605	{ 0431210 0431220	0.5A 250V 1A 250V	AC Fuse	2, 3 C
R13, 14	0107182	1.8kΩ	3 B	C601	0606109	1μF 250V M.C.	1 A	Abbreviations				
R15, 16	0107272	2.7kΩ	3 B	R29, 30	0107151	150Ω 1/4W C.R.	3 B . 3 A	C.R.	: Carbon Resistor	BP.E.C.:	Bi-Polar Electrolytic Capacitor	
R21, 22	0107122	1.2kΩ	3 A	R601	0210471	470Ω 1/2W Ce.R.	2 A	S.R.	: Solid Resistor	C.C.:	Ceramic capacitor	
R23, 24	0107224	220kΩ	2 B . 2A, B									
R25, 26	0107394	390kΩ	2 B . 2 A									

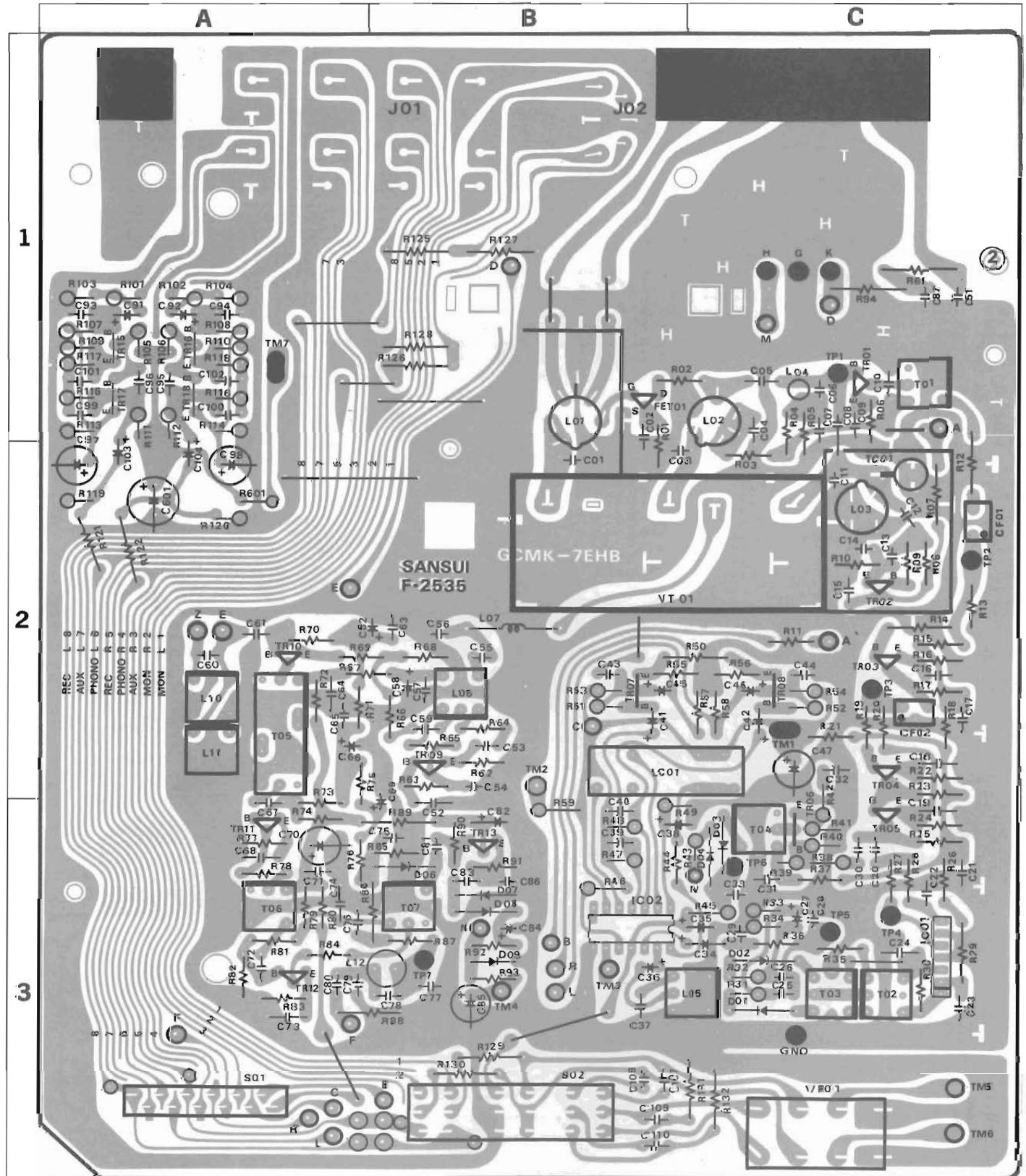
Figures

SEMICONDUCTORS	COMPLETE CIRCUIT BOARD	SEMICONDUCTORS	COMPLETE CIRCUIT BOARD	SEMICONDUCTORS	COMPLETE CIRCUIT BOARD	SEMICONDUCTORS	COMPLETE CIRCUIT BOARD
2SC1047 2SC1222 2SC1675 2SC1364	 F-2540 F-2535 F-2531	μpc555H	 F-2540 F-2535		F-2540 F-2535	1S2473D	F-2540 F-2535
2SC738 2SC1313	 F-2540 F-2535	μpc554C	 F-2540 F-2535	10D-1	F-2531	RD-13EC	F-2531
2SC930	 F-2540 F-2535	2SK49 2SK83	 F-2540 F-2535	Abbreviations C.R. : Carbon Resistor S.R. : Solid Resistor Ce.R. : Cement Resistor M.R. : Metallized Film Resistor M.C. : Mylar Capacitor E.C. : Electrolytic Capacitor BP.E.C.: Bi-Polar Electrolytic Capacitor C.C. : Ceramic capacitor Mi.C. : Mica Capacitor O.C. : Oil Capacitor P.C. : Polystyrene Capacitor T.C. : Tantalum Capacitor			
2SB330	 F-2531	STK014 STK013	 F-2531				

2-2. F-2535 Tuner & Equalizer Circuit Board (Complete Circuit Board)

MODEL: 331 (Stock No. 7521071)
 221 (Stock No. 7521081)

Conductor Side



Parts List

Parts No.	Stock No.	Description	Position	Parts No.	Stock No.	Description	Position	Part# No.	Stock No.	Description	Position
TR01	0305801, 2	25C1047 (B, C)	1 C	C61	0657223	22000pF 50V C.C.	2 A	R54	0106332	3.3kΩ 1/4W C.R.	2 C
TR02	0305790, 1	25C930 (C, D)	2 C	C62	0515109	1μF 50V E.C.	2 A, B	R55	0113681	680Ω	2 B, C
TR03	0306112, 3	25C738 (C, D)	2 C	C63	0657223	22000pF	2 B	R56	0113681	680Ω	2 C
TR04	0306112, 3	25C738 (C, D)	2 C	C64	0657473	42000pF 50V C.C.	2 A	R57	0113473	47kΩ	2 C
TR05	0306112, 3	25C738 (C, D)	3 C	C65	0657223	22000pF	2 A	R58	0113473	47kΩ	2 C
TR06	0306112, 3	25C738 (C, D)	3 C	C66	0512100	10μF 16V E.C.	2 A	R59	0111561	560Ω 1/2W S.R.	3 B
TR07	0306011, 2	25C1222 (E, F)	2 B	C67	0657223	22000pF 50V C.C.	2, 3 A	R61	0111682	6.8kΩ 1/2W M.R.	1 C
	0306070, 1	25C1313 (F, G)		C68	0601687	0.068μF 50V M.C.	3 A	R62	0113102	1.0kΩ	2 B
	0306011, 2	25C1222 (E, F)		C69	0512100	10μF 16V E.C.	2, 3 B	R63	0113334	330kΩ	2 B
TR08	0306070, 1	25C1313 (F, G)	Transistor	C70	0512470	47μF	3 A	R64	0113100	10Ω	2 B
	0306241, 2	25C1675 (L, K)	2 B	C71	0657223	22000pF	3 A	R65	0113331	330Ω	2 B
TR09	0306241, 2	25C1675 (L, K)	2 B	C72	0657223	22000pF	3 A	R66	0113101	100Ω	2 B
TR10	0306241, 2	25C1675 (L, K)	3 A	C73	0601687	0.068μF 50V M.C.	3 A	R67	0113272	2.7kΩ	2 A, B
TR11	0306241, 2	25C1675 (L, K)	3 A	C74	0657473	47000pF 50V C.C.	3 A	R68	0113102	1.0kΩ	2 B
TR12	0306241, 2	25C1675 (L, K)	3 B	C75	0601157	0.015μF	3 B	R69	0113220	22Ω	2 A, B
TR13	0306241, 2	25C1675 (L, K)	3 B	C76	0601227	0.022μF	3 A	R70	0113103	10kΩ	2 A
TR15, 16	0306011, 2	25C1222 (E, F)	1 A	C77	0601107	0.01μF	3 B	R71	0113222	2.2kΩ	2 A
	0306070, 1	25C1313 (F, G)		C78	0601107	0.01μF	3 B	R72	0113221	2.2kΩ	2 A
TR17, 18	0306011, 2	25C1222 (E, F)	1 A	C79	0601127	0.012μF	3 A	R73	0113102	1kΩ	2, 3 A
	0306070, 1	25C1313 (F, G)		C80	0601567	0.056μF	3 A	R74	0113104	100kΩ	3 A
IC01	0360120	μPC555H	3 C	C81	0660101	100pF 50V C.C.	3 B	R75	0113222	2.2kΩ	2, 3 A
IC02	0360250	μPC554H	3 B	C82	0515109	1μF 50V E.C.	3 B	R76	0113153	15kΩ	3 A
FET01	0370172	FET 25K49 H	FET	C83	0657223	22000pF 50V C.C.	3 B	R77	0113471	470Ω	3 A
	0370182	FET 25K83 R		C84	0515109	1μF 50V E.C.	3 B	R78	0113101	100Ω	3 A
	0370191, 2	FET 25K61 (Y, G, R)		C85	0510101	100μF 6.3V E.C.	3 B	R79	0113221	2.2kΩ	3 A
D01	0311060	1N60-P	3 C	C91, 92	0519104	1.5μF 50V E.C.	1 A	R80	0113470	47Ω	3 A
D02	0311060	1N60-P	3 C	C93, 94	0660151	150pF 50V C.C.	1 A	R81	0113223	2.2kΩ	3 A
D03	0310330, 1	1N60	3 C	C95, 96	0660151	150pF	1 A	R82	0113472	4.7kΩ	3 A
D04	0311160	1S2473D	3 C	C97, 98	0510101	100μF 6.3V E.C.	7 A	R83	0113331	330Ω	3 A
D05	0310330, 1	1N60	3 B	C99, 100	0601276	0.0027μF	1 A	R84	0113331	330Ω	3 A
D06	0310330, 1	1N60	3 B	C101, 102	0601107	0.01μF	1 A	R85	0113103	10kΩ	3 B
D07	0310330, 1	1N60	3 B	C103, 104	0519103	0.47μF 50V E.C.	1, 2 A	R86	0107102	1kΩ 1/4W C.R.	3 A, B
D08	0310330, 1	1N60	3 B	C107, 108	0620471	470pF 50V P.C.	3 B	R87	0113102	1.0kΩ 1/4W S.R.	3 B
D09	0311160	1S2473D	3 B	C109, 110	0601227	0.022μF 50V M.C.	3 B	R88	0107473	47kΩ 1/4W C.R.	3 A, B
C01	0669350	15pF	2 B	C601	0514101	100μF 35V E.C.	2 A	R89	0107152	1.5kΩ	3 A, B
C02	0657223	22000pF	1, 2 B	R01	{ 0113101 (FET01→25K61 GY) 100Ω } 1/4W S.R.	1, 2 B	R90	0113154	150kΩ	3 B	
C03	0669353	18pF	2 B, C		{ 0113180 (FET01→25K49, 25K61, Y 25K56) 18Ω } 1/4W S.R.		R91	0113222	2.2kΩ	3 B	
C04	0657223	22000pF	1 C	R02	0113220	22Ω	1 B, C	R92	0113472	4.7kΩ	3 B
C05	0661100	10pF	1 C	R03	0113220	22Ω	2 C	R93	0113182	1.8kΩ	3 B
C06	0661100	10pF	1 C	R04	0113123	12kΩ	1, 2 C	R101, 102	0106222	2.2kΩ	1 A
C07	0660221	220pF	1 C	R05	0113222	2.2kΩ	1, 2 C	R103, 104	0106563	56kΩ	1 A
C08	0669021	1.5pF	1, 2 C	R06	0113102	1.0kΩ	1 C	R105, 106	0106104	100kΩ	1 A
C09	0657223	22000pF	50V C.C.	R07	0107332	3.3kΩ 1/4W C.R.	2 C	R107, 108	0106224	220kΩ	1 A
C10	0657223	22000pF	1 C	R08	0113184	180kΩ	2 C	R109, 110	0106561	560Ω	1 A
C11	0669356	22pF	2 C	R09	0113220	22Ω	2 C	R111, 112	0106562	5.6kΩ	1 A
C12	0669345	10pF	2 C	R10	0113102	1.0kΩ	2 C	R113, 114	0106331	330Ω	1 A
C13	0669345	10pF	2 C	R11	0113270	27Ω	2 C	R115, 116	0106273	27kΩ	1 A
C14	0669345	10pF	2 C	R12	0107101	100Ω	1, 2 C	R117, 118	0106394	390kΩ	1 A
C15	0657223	22000pF	2 C	R13	0113392	3.9kΩ 1/4W C.R.	1, 2 C	R119, 120	0106104	100kΩ	2 A
C16	0657223	22000pF	2 C	R14	0107101	100Ω 1/4W C.R.	2 C	R121, 122	0107681	680Ω	2 A
C17	0657223	22000pF	2 C	R15	0113152	1.5kΩ	2 C	R125, 126	0107394	390kΩ	1 B
C18	0601397	0.039μF	50V M.C.	R16	0113152	1.5kΩ	2 C	R127, 128	0107104	100kΩ	1 B
C19	0601397	0.039μF	50V M.C.	R17	0113471	470Ω	2 C	R129, 130	0107123	12kΩ	3 B
C20	0657223	22000pF	3 C	R18	0113100	10Ω	2 C	R131, 132	0107183	18kΩ	3 B C, 3 C
C21	0657223	22000pF	3 C	R19	0113101	100Ω	2 C	R601	0106391	220Ω	2 A
C22	0657223	22000pF	50V C.C.	R20	0113102	1.0kΩ	2 C	L01	4200720	Antenna Coil	1, 2 B
C24	0657473	47000pF	3 C	R21	0113100	10Ω	1/4W S.R.	L02	4210340	RF Coil	1, 2 C
C25	0660101	100pF	3 C	R22	0113152	1.5kΩ	2 C	L03	4220400	OSC Coil	2 C
C26	0660101	100pF	3 C	R23	0113821	820Ω	2 C	L04	4900140	Inductor	1 C
C27	0512100	10μF 16V E.C.	3 C	R24	0113152	1.5kΩ	3 C	L05	4240720, 1	MPX Coil	3 B, C
C28	0660101	100pF	3 C	R25	0113471	470Ω	3 C	L06	4220630	OSC Coil	2 B
C29	0660101	100pF	3 C	R26	0113100	10Ω	3 C	L07	4290011	Choke Coil	2 B
C30	0657223	22000pF	50V C.C.	R27	0113100	10Ω	3 C	L08	4200750	Antenna Coil	2 B
C31	0657223	22000pF	3 C	R28	0113102	1.0kΩ 1/4W S.R.	3 C	L12	4900220	Inductor	3 B
C32	0657223	22000pF	2 C	R29	0107100	10Ω 1/4W C.R.	3 C	T01	4235930		1 C
C33	0657102	1000pF	3 C	R30	0113682	6.8kΩ 1/4W S.R.	3 C	T02	4235750		3 C
C34	0513479	4.7μF 25V E.C.	3 C	R31	0106102	1kΩ	3 C	T03	4235760		3 C
C35	0519103	0.47μF 50V E.C.	3 C	R32	0106102	1kΩ	3 C	T04	4235940	IF Coil	3 C
C36	0519103	0.47μF 50V E.C.	3 B	R33	0106562	5.6kΩ	3 C	T05	4230550		2 A
C37	0629001	6800pF 50V P.C.	3 B	R34	0106562	5.6kΩ	3 C	T06	4230610		3 A
C38	0513479	4.7μF 25V E.C.	3 B, C	R35	0113101	100Ω	3 C	T07	4230500		3 B
C39	0601187	0.018μF 50V M.C.	3 B	R36	0113102	1.0kΩ 1/4W S.R.	3 C	CF01	0910150	Ceramic Filter	2 C
C40	0601187	0.018μF 50V M.C.	3 B	R37	0113101	100Ω	3 C	CF02	0910150	Ceramic Filter	2 C
C41	0515109	1μF 50V E.C.	2 B	R38	0106331	330Ω	3 C	LC01	4240710, 1	MPX Unit	2 B
C42	0515109	1μF 50V E.C.	2 C	R39	0106392	3.9kΩ	3 C	VR01	1011020, 1	250kΩB×2 Volume	3 C
C43	0601226	0.0022μF 50V M.C.	2 B	R40	0106152	1.5kΩ	3 C	S01	1101670	Rotary Switch	3 A
C44	0601226	0.0022μF 50V M.C.	2 C	R41	0106471	470Ω	3 C	S02	1131060, 1	Push Switch	3 B
C45	0519105	2.2μF 50V E.C.	2 B	R42	0106331	330Ω	2, 3 C	VT01	1220210	AM-FM VARIABLE CAPACITOR	2 C
C46	0519105	2.2μF 50V E.C.	2 C	R43	0106392	3.9kΩ	3 C	TC01	1230090	6pF Trimmer	
C47	0512470	47μF 16V E.C.	2 C	R44	0113470	47Ω 1/4W S.R.	3 B	J01	2200410	Push (PIN)	1 B
C51	0660101	100pF	1 C	R45	0106473	47kΩ	3 C	J02	2090030	5P Connector Socket	1 B
C52	0657473	47000pF	50V C.C.	R46	0106334	330kΩ	3 B		2230120	Push Terminal (Black)	
C53	0601107	0.01μF 50V M.C.	2 B	R47	0106392	3.9kΩ	3 B				
C54	0660150	15pF 50V C.C.	2 B	R48	0106392	3.9kΩ	3 B				
C55	0620361	360pF 50V P.C.	2 B	R49	0106472	4.7kΩ	1/4W C.R.				
C56	0669400	15pF	2 B	R50	0107393	39Ω	2, 3 B, C				
C57	0657223	22000pF	50V C.C.	R51	0106105	1MΩ	2 B				
C58	0512100	10μF 16V E.C.	2 B	R52	0106105	1MΩ	2 C				
C59	0601227	0.022μF 50V M.C.	2 B	R53	0106332	3.3kΩ	2 B				

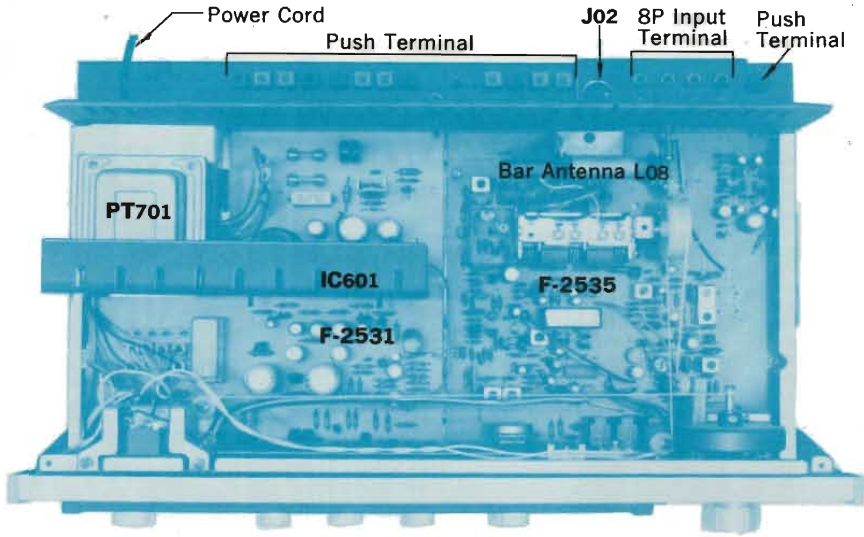
Parts No.	Stock No.	Description	Position
TR01	0305801, 2	25C1047 (B, C)	1C
TR02	0305790, 1	25C930 (C, D)	2C
TR03	0306112, 3	25C738 (C, D)	2C
TR04	0306112, 3	25C738 (C, D)	2C
TR05	0306112, 3	25C738 (C, D)	3C
TR06	0306112, 3	25C738 (C, D)	3C
TR07	0306011, 2	25C1222 (E, F)	2B
	0306070, 1	25C1313 (F, G)	
TR08	0306011, 2	25C1222 (E, F)	2C
	0306070, 1	25C1313 (F, G)	Transistor
TR09	0306241, 2	25C1675 (L, K)	2B
TR10	0306241, 2	25C1675 (L, K)	3A
TR11	0306241, 2	25C1675 (L, K)	3B
TR12	0306241, 2	25C1675 (L, K)	3B
TR13	0306241, 2	25C1675 (L, K)	2B
TR15, 16	0306011, 2	25C1222 (E, F)	1A
	0306070, 1	25C1313 (F, G)	
TR17, 18	0306011, 2	25C1222 (E, F)	1A
	0306070, 1	25C1313 (F, G)	
IC01	0360120	μ pc555H	3C
IC02	0360250	μ pc554C	3B
FET01	0370171, 2	25K49 H	FET
	0370182	25K83 R	
	0370191, 2	25K61 Y, GR	
D01	0311060	1N60-P	3C
D02	0311060	1N60-P	3C
D03	0310330, 1	1N60	3C
D04	0311160	1S2473D	3C
D06	0310330, 1	1N60	3B
D07	0310330, 1	1N60	3A, B
D08	0310330, 1	1N60	3A
D09	0311160	1S2473D	3A
C01	0669350	15 pF	2B
C02	0667223	22000 pF	1, 2B
C03	0669353	18 pF	2C
C04	0657223	22000 pF	1, 2C
C05	0661100	10 pF	1C
C06	0661100	10 pF	1C
C07	0660221	220 pF	1, 2C
C08	0669021	1.5 pF	1, 2C
C09	0657223	22000 pF	50V C.C.
C10	0657223	22000 pF	2C
C12	0669345	10 pF	2C
C13	0669345	10 pF	2C
C14	0669345	10 pF	2C
C15	0657223	22000 pF	2C
C16	0657223	22000 pF	2C
C17	0657223	22000 pF	2C
C18	0601397	0.039 pF	50V M.C.
C19	0601397	0.039 pF	50V M.C.
C20	0657223	22000 pF	3C
C21	0657223	22000 pF	3C
C22	0657223	22000 pF	3C
C24	0657473	47000 pF	50V C.C.
C25	0660101	100 pF	3C
C26	0660101	100 pF	3C
C27	0512100	10 pF	16V E.C.
C28	0660101	100 pF	3C
C29	0660101	100 pF	3C
C30	0657223	22000 pF	50V C.C.
C31	0657223	22000 pF	3C
C32	0657223	22000 pF	2C
C33	0657102	1000 pF	3C
C34	0513479	4.7 pF	25V E.C.
C35	0519103	0.47 pF	50V E.C.
C36	0519103	0.47 pF	50V E.C.
C37	0629001	6800 pF	50V P.C.
C38	0513479	4.7 pF	25V E.C.
C39	0601127	0.012 pF	50V M.C.
C40	0601127	0.012 pF	50V M.C.
C41	0515109	1 pF	50V E.C.
C42	0515109	1 pF	50V E.C.
C43	0601226	0.0022 pF	50V M.C.
C44	0601226	0.0022 pF	50V M.C.
C45	0519105	2.2 pF	50V E.C.
C46	0519105	2.2 pF	50V E.C.
C47	0512470	47 pF	16V E.C.
C57	0657223	22000 pF	50V C.C.
C58	0515109	1 pF	50V E.C.
C59	0601227	0.022 pF	50V M.C.
C60	0657473	47000 pF	50V C.C.
C61	0657223	22000 pF	50V C.C.
C62	0512100	10 pF	16V E.C.
C63	0657223	22000 pF	3B
C64	0657223	22000 pF	50V C.C.
C65	0657223	22000 pF	3B
C66	0601687	0.068 pF	50V M.C.
C67	0657473	47000 pF	50V C.C.
C68	0657223	22000 pF	50V C.C.
C69	0601687	0.068 pF	50V M.C.
C70	0657473	47000 pF	50V C.C.
C71	0512100	10 pF	16V E.C.
C72	0601157	0.015 pF	50V M.C.
C74	0601227	0.022 pF	50V M.C.
C75	0601107	0.01 pF	50V M.C.
C76	0601107	0.01 pF	50V M.C.
C77	0601127	0.012 pF	50V M.C.
C78	0601567	0.056 pF	50V M.C.
C79	0660101	100 pF	3A
C80	0657473	47000 pF	50V C.C.
C81	0657223	22000 pF	3A, B
C82	0515109	1 pF	50V E.C.
C85	0657473	47000 pF	50V C.C.
C87	0601107	0.01 pF	50V M.C.
C92	0657223	22000 pF	50V C.C.

Parts No.	Stock No.	Description	Position
C93	0512100	10 pF	16V E.C.
C101-102	0519104	1.5 pF	50V E.C.
C103-104	0660151	150 pF	50V C.C.
C105-106	0660151	150 pF	50V C.C.
C107-108	0510101	100 pF	6.3V E.C.
C109-110	0601276	0.0027 pF	50V M.C.
C111-112	0601107	0.01 pF	50V M.C.
C113-114	0519103	0.47 pF	50V E.C.
C115-116	0620471	470 pF	50V P.C.
C117-118	0601227	0.022 pF	50V M.C.
C601	0514101	100 pF	35V E.C.
Ro1	0113101	100 Ω	1/4W S.R.
	(FET01 \rightarrow 25K61, GR)		
	0113180	100 Ω	1/4W S.R.
	(FET01 \rightarrow 25K49, 25K56, 25K61, Y)		
Ro2	0113220	22 Ω	1B, C
Ro3	0113220	22 Ω	2B
Ro4	0113123	12k Ω	1/4W S.R.
Ro5	0113222	2.2k Ω	1, 2C
Ro6	0113102	1.0k Ω	1, 2C
Ro7	0107332	3.3k Ω	1/4W C.R.
Ro8	0113184	180k Ω	2C
Ro9	0113220	22 Ω	2C
R10	0113102	1k Ω	2C
R11	0113270	27 Ω	2C
R12	0107101	100 Ω	1/4W C.R.
R13	0113392	3.9k Ω	1/4W S.R.
R14	0107101	100 Ω	1/4W C.R.
R15	0113152	1.5k Ω	2C
R16	0113152	1.5k Ω	2C
R17	0113471	470 Ω	2C
R18	0113100	10 Ω	2C
R19	0113101	100 Ω	2C
R20	0113102	1.0k Ω	2C
R21	0113100	10 Ω	2C
R22	0113152	1.5k Ω	1/4W S.R.
R23	0113821	820 Ω	2C
R24	0113152	1.5k Ω	3C
R25	0113471	470 Ω	3C
R26	0113100	10 Ω	3C
R27	0113100	10 Ω	3C
R28	0113102	1.0k Ω	3C
R29	0107100	10 Ω	1/4W C.R.
R30	0113682	6.8k Ω	1/4W S.R.
R31	0106102	1k Ω	3C
R32	0106102	1k Ω	1/4W C.R.
R33	0106562	5.6k Ω	3C
R34	0106562	5.6k Ω	3C
R35	0113101	100 Ω	3C
R36	0113102	1.0k Ω	1/4W S.R.
R37	0113101	100 Ω	3C
R38	0106331	330 Ω	3C
R39	0106392	3.9k Ω	3C
R40	0106152	1.5k Ω	1/4W C.R.
R41	0106471	470 Ω	3C
R42	0106331	330 Ω	2, 3C
R43	0106392	3.9k Ω	3B
R44	0113470	47 Ω	1/4W S.R.
R45	0106473	47k Ω	3B, C
R46	0106334	330k Ω	3B
R47	0106392	3.9k Ω	3B
R48	0106392	3.9k Ω	3B
R49	0106472	4.7k Ω	2, 3B, C
R50	0107393	39k Ω	2C
R51	0106105	1M Ω	2B
R52	0106105	1M Ω	2C
R53	0106332	3.3k Ω	2B
R54	0106332	3.3k Ω	2C
R55	0113681	680 Ω	2B, C
R56	0113681	680 Ω	2C
R57	0113473	47k Ω	1/4W S.R.
R58	0113473	47k Ω	2C
R64	0113103	10k Ω	2B
R65	0113220	22 Ω	2B
R66	0113102	1.0k Ω	1/4W S.R.
R67	0113222	2.2k Ω	2B
R68	0113221	220 Ω	2A, B
R72	0113221	220 Ω	3B
R73	0106222	2.2k Ω	1/4W C.R.
R74	0106221	220 Ω	3B
R75	0113223	22k Ω	3B
R76	0113472	4.7k Ω	1/4W S.R.
R77	0113331	330 Ω	3B
R78	0113331	330 Ω	3B
R79	0113221	220 Ω	3B
R80	0113103	10k Ω	3B
R81	0113102	1.0k Ω	3B
R82	0113102	1.0k Ω	3A, B
R83	0113153	1.5k Ω	3B
R84	0113473	47k Ω	3A
R85	0113154	150k Ω	1/4W S.R.
R86	0113152	1.5k Ω	3B
R87	0113222	2.2k Ω	3B
R88	0113472	4.7k Ω	3A
R89	0113182	1.8k Ω	3A
R90	0113470	47 Ω	3A
R97	0113102	1.0k Ω	1/4W S.R.
R98	0113101	100 Ω	3B
R101, 102	0106222	2.2k Ω	1A
R103, 104	0106563	5.6k Ω	1A
R105, 106	0106104	100k Ω	1A
R107, 108	0106224	220k Ω	1A
R109, 110	0106561	5.6k Ω	1A
R111, 112	0106562	5.6k Ω	1, 2A, 1A
R113, 114	0106331	330 Ω	1A
R115, 116	0106273	27k Ω	1A

Parts No.	Stock No.	Description	Position
R117, 118	0106394	390k Ω	1A
R119, 120	0106104	100k Ω	2B, 2A
R121, 122	0106681	680 Ω	2A
R125, 126	0107394	390k Ω	1B
R127, 128	0107104	100k Ω	1B
R129, 130	0107123	12k Ω	3B
R131, 132	0107183	18k Ω	3B, 3C
Re01	0106391	390 Ω	2A
Lo1	4200720	Antenna Coil	1, 2B
Lo2	4210340	RF Coil	1, 2C
Lo4	4900140	1 μ F Inductor	1C
Lo5	4240726, 1	MPX Coil	3B, C
L15	4900220	100 μ F Inductor	3A
L16	4290011	Choke Coil	2B
To1	4235930	10.7MHz IF Coil	1C
To2	4235750	IF Coil (FM)	3C
To3	4235760	IF Coil (FM)	3C
To4	4235940	10.7MHz IF Coil	3C
To5	4230550	455kHz IF Coil	2B
To6	4230610	455kHz IF Coil	3B
To7	4230500	455kHz IF Coil	3B
CF01	0910150	10.7 μ H Ceramic Filter	2C
CF02	0910150	10.7 μ H Ceramic Filter	2C
LC01	4240710, 1	MPX Coil	2B, C
VR01	1011020, 1	250k Ω Volume	3C
So1	1103530	Rotary Switch	3A
So2	1131060, 1	Push Switch	3B
VT01	1220220	AM FM Variable Capacitor	2B, C
TC01	1230090	Trimmer Capacitor	2C
TC02	1230060	Trimmer Capacitor	2A
TC03	1230060	Trimmer Capacitor	2A
TC05	1230060	Trimmer Capacitor	3A
TC06	1230060	Trimmer Capacitor	2, 2A
Jo1	2200410	Pin Terminal	1A, B
Jo2	2090030	SP Connector Socket	1B
	2230126	Push Terminal (Black)	
331L ONLY			
C11	0669356	22 pF	2C
C51	0660101	100 pF	2C
C52	0657102	1000 pF	2C
C54	0660509	5 pF	50V C.C.
C55	0660509	5 pF	2A
C56	0657473	47000 pF	2A
C73	0620562	5600 pF	50V P.C.
C83	0510101	100 pF	6.3V E.C.
C84	2512470	47 pF	16V E.C.
C86	0660150	10 pF	50V C.C.
C88	0669437	6.8 pF	50V C.C.
C89	0620361	360 pF	50V P.C.
C90	0669408	33 pF	2, 3A
C91	0620121	120 pF	50V C.C.
R59	0200561	560 Ω	1/2W M.R.
R61	0111681	680 Ω	1/2W S.R.
R62	0111472	4.7k Ω	1C
R63	0103223	22k Ω	1/2W

2-4. Other Parts (Top Side)

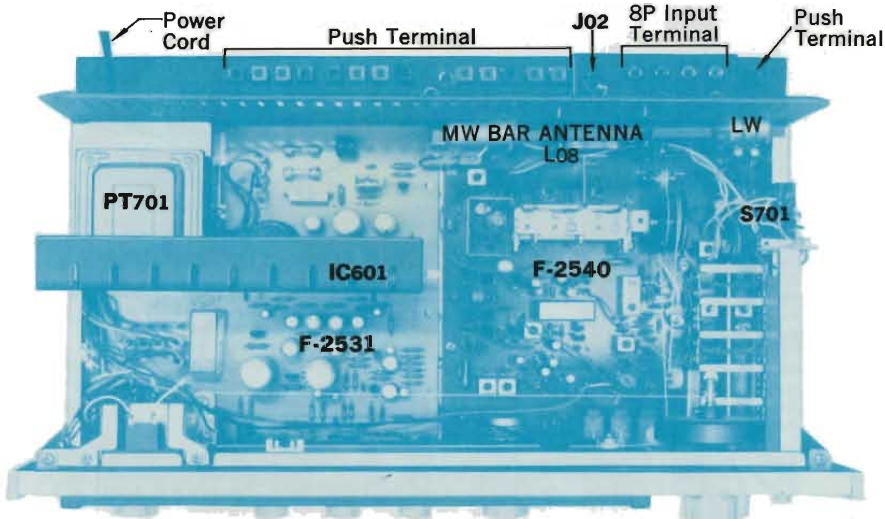
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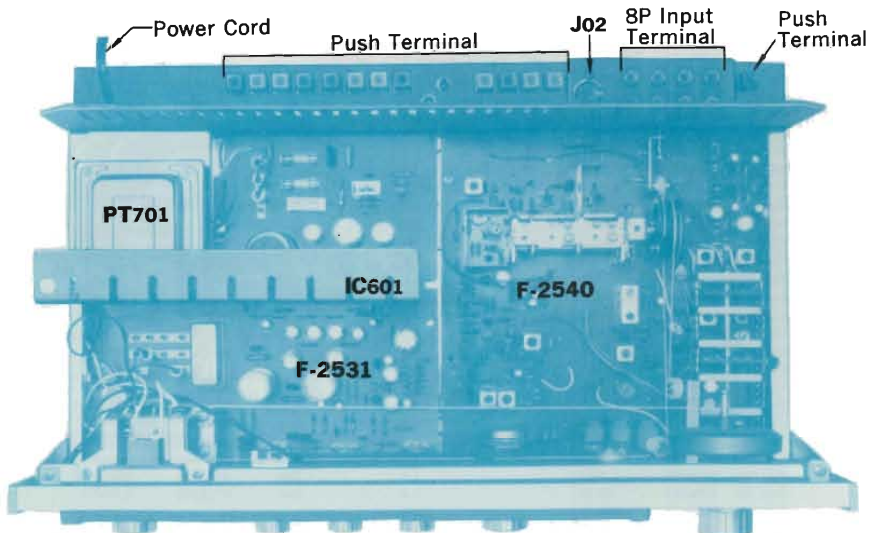
Parts List

Parts No.	Stock No.	Description
PT701	4002230	Power Transformer (331, 331SS)
	4002234	Power Transformer (331L)
	4002220	Power Transformer (221)
CO701	2450060	AC Outlet (331, 331SS, 221)
	3800190	Power Cord (331L)
	3800010	Power Cord (331SS)
	3800261	Power Cord (221, 331)
IC601	0360240	Power IC STK014 (331, 331L, 331SS)
	0360230	Power IC STK013 (221)
L08	4200750	Bar Antenna (331, 221)
	4200740	Bar Antenna (331L)
S701	1131050	LW Antenna Switch (331L)
J01	2200410	8P Input Terminal
J02	2090030	5P Connector Socket
	2230110	Push Terminal (Red)
	2230120	Push Terminal (Black)

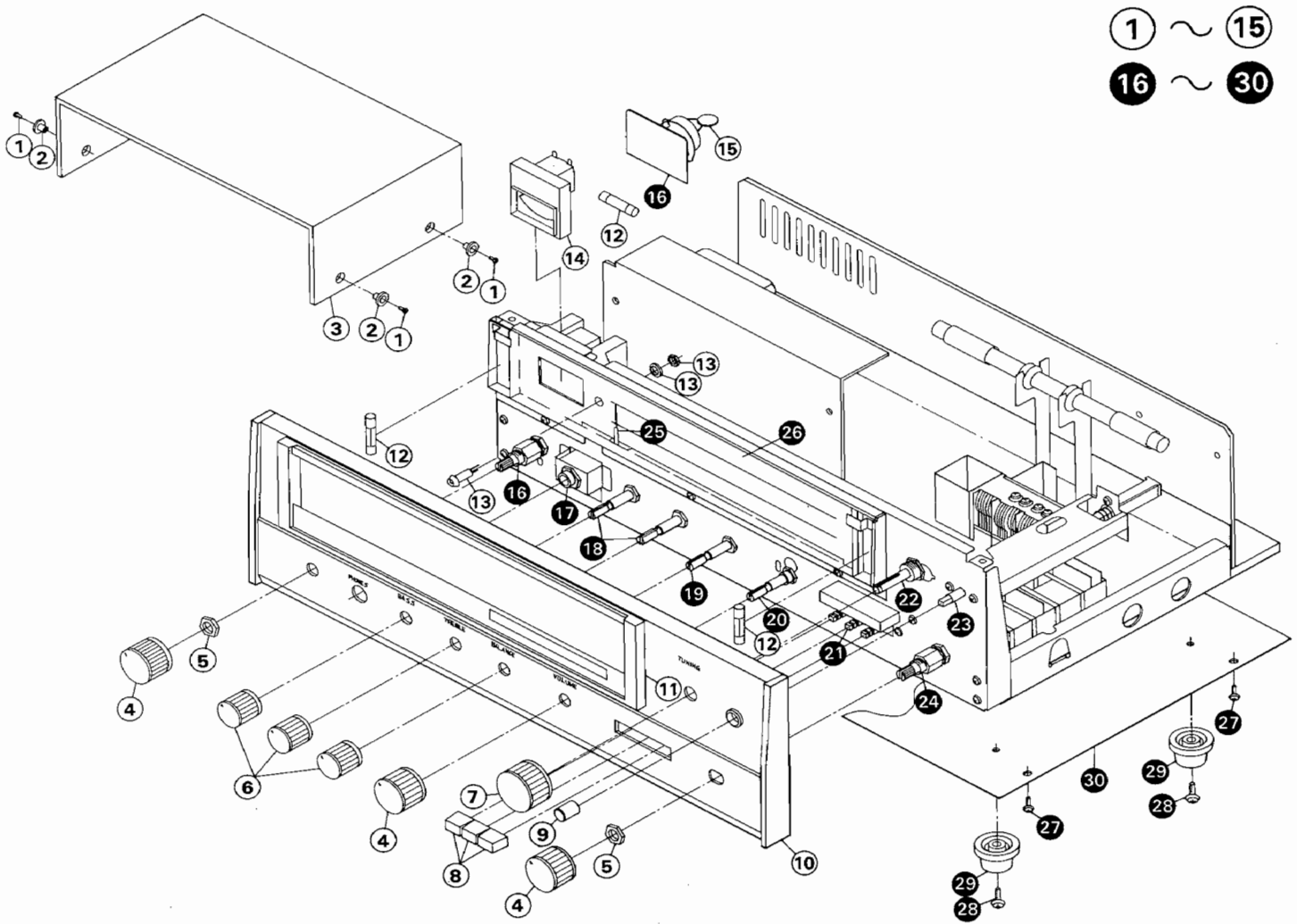
331L



331SS



2-5. Other Parts (Front Side)



1 ~ 15
16 ~ 30

Parts List

Parts No.	Stock No.	Description
1	5166470	Washer Head Tapping Screw, M3×8
2	5236560	Bushing
3	5726912	Wood Bonnet
4	5318220	M-6 Type Knob
5	5110781	Hex. Nut, M9
6	5318210	S-9 Type Knob
7	5318200	T-11 Type Knob
8	5326420	Push Button
9	5326430	Push Button, LM ANT switch (331L only)
10	7007060	Front Panel Ass'y (331)
	7007100	Front Panel Ass'y (221)
	7007111	Front Panel Ass'y (331SS)
	7007120	Front Panel Ass'y (331L)
	5336540	Name Plate (331)
	5336550	Name Plate (331L)
	5336560	Name Plate (331SS)
	5336570	Name Plate (221)
11	5309600	Frame, dial scale
12	0420040	7V, 320mA Fuse Type Lamp
13	7726080	Light Emitted Diode Ass'y (A)
14	4300820	Signal Meter
15	0659802	Ceramic Capacitor 0.0047μF (Not Included in 331L)

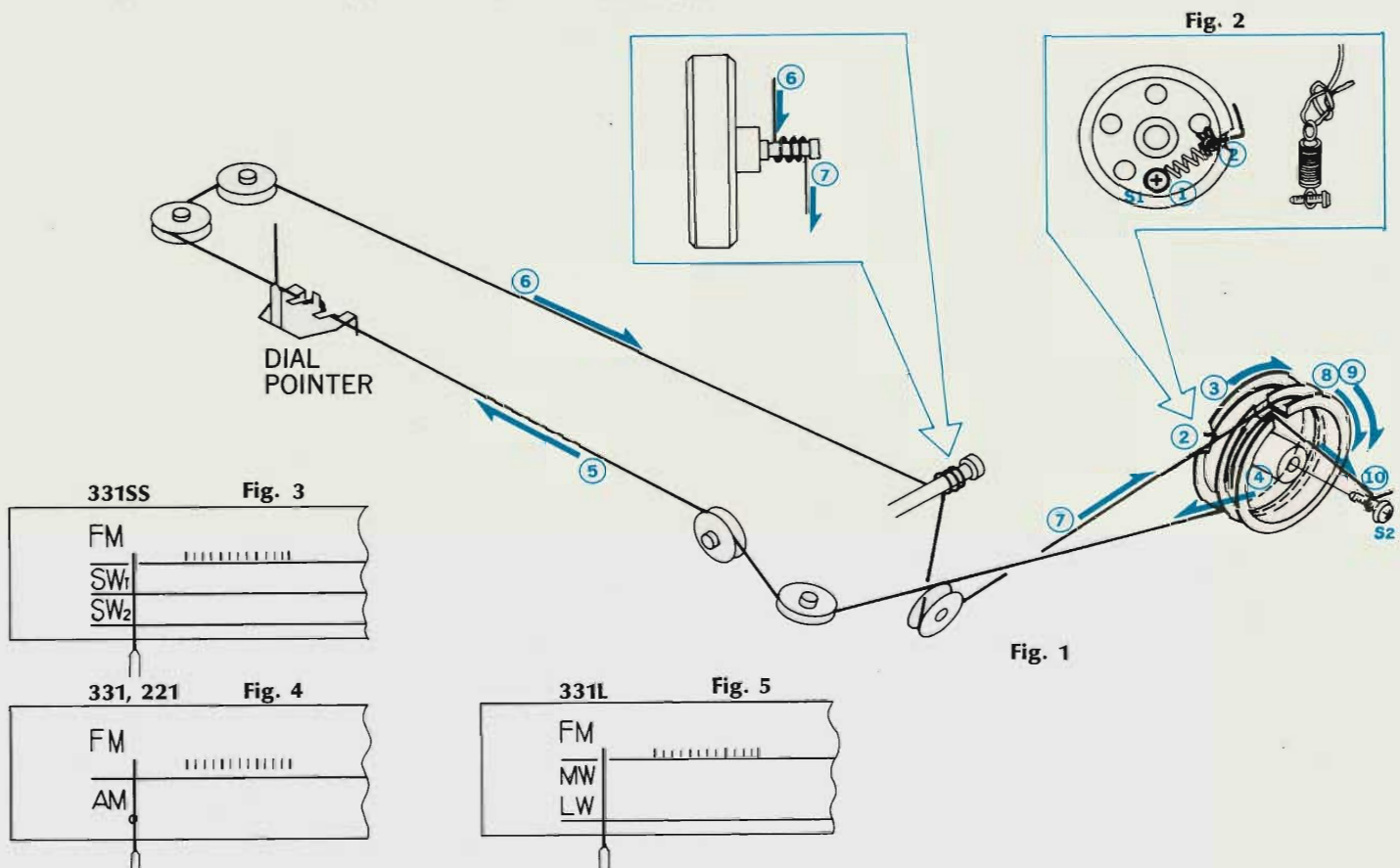
Parts No.	Stock No.	Description
16	1101660	Rotary Switch, POWER (331, 331SS)
	1101710	Rotary Switch, POWER (331L)
	1190210	Rotary Switch, POWER (221)
17	2430240	Headphone Jack
18	1015140, 1	100kΩ (A) × 2 BASS, TREBLE Volume
19	1015130, 1	100kΩ (MN) × 2 BALANCE Volume
20	1011020, 1	250kΩ (B) × 2 VOLUME
21	1131060, 1	Push Switch (3 Stage)
22	7036440	Tuning Ass'y
23	1131050	Push Switch, LW ANT (331L only)
24	1103530	Rotary Switch, SELECTOR (331SS, 331L)
	1101670	Rotary Switch, SELECTOR (331, 221)
25	5416400	Dial Pointer
	5407871	Dial Scale (331, 221)
	5407881	Dial Scale (331SS)
	5407891	Dial Scale (331L)
26	5407891	Dial Scale (331L)
27	5109122	Binding Head Tapping Screw, M3×8
28	5166520	Washer Head Tapping Screw, M3×8
29	5516911	Foot
30	5058370	Bottom Plate

3. THREADING OF DIAL CORD

*If a dial cord is cut off or slips, replace it by following procedures.

These units use 0.6mmφ cord, please replace it with the same type certainly.

*The length of dial cord is approximately 170cm (66 inch).



3-1. Threading of Dial Cord

Thread the dial cord in numerical order from ① to ⑩ as Fig. 1.

- 1) Close the variable capacitor completely (Max. capacitance).
- 2) Tie dial cord to the dial spring (Fig. 2).
- 3) Fix the dial spring with screw to S1 of the dial pulley (Fig. 2).
- 4) Thread cord in the direction of arrow from ① to ⑩ (Fig. 1).
- 5) After ⑩, tie the cord to the screw S2 of the dial pulley (Fig. 1)

*To strengthen the dial cord's tension, hold the end of cord, then pull it toward the front panel.

Turn tuning shaft counterclockwise so that the cord's tension will be more obtained.

*After procedure 5), lock the knots of the cord and the screws, S1, S2 with paint.

3-2. Attachment of Dial Pointer

- 1) Close the variable capacitor completely.
- 2) Set the dial pointer to the position on dial scale as shown in Fig. 3~5.

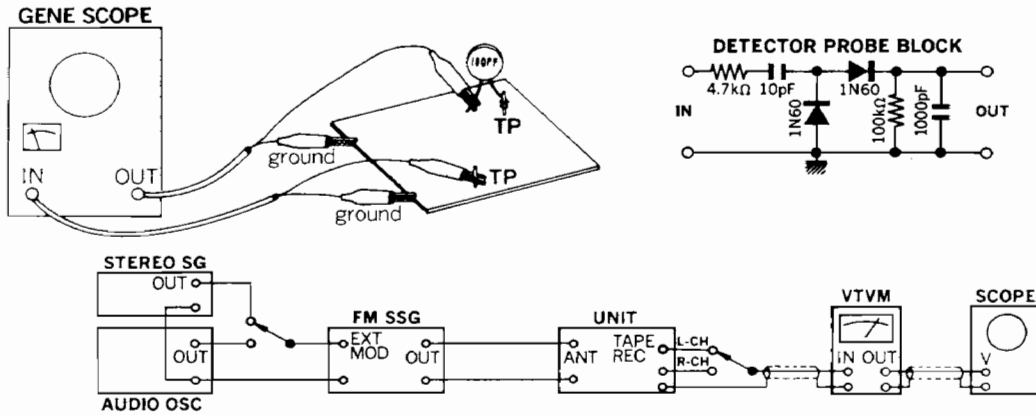
*Confirm that the dial pointer runs smoothly on the dial scale by turning the tuning shaft.

Stock No.	Description
6036050	Dial cord (0.6mmφ)
6906461	Spring
6146700	Dial pulley (D-35)

4. ALIGNMENTS

4-1. FM Alignment

Note: IF alignmentConnect the output of genescoper to TP01 through 100pF ceramic capacitor



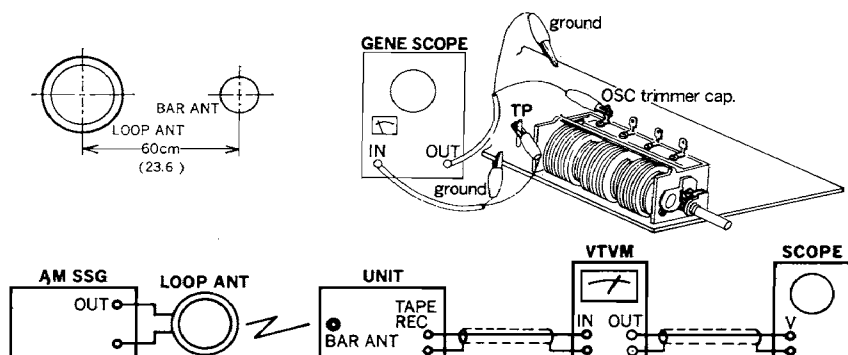
STEP	SUBJECT	STEP	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	
			FROM	TO				
1.	FM IF Alignment F-2535....Fig. 4-4 F-2540....Fig. 4-5	1. IF Coil	Output 100dB Genescope	TP01 F-2540 or F-2535	TP03 F-2540 or F-2535 Use Detector probe	T01 F-2540 or F-2535	MAX. IF Waveform 1 as Fig. 4-3	
		2. Meter Coil	Output 70dB Genescope	Same as above	TP06 F-2540 or F-2535	T04 F-2540 or F-2535	MAX. IF Waveform 2 as Fig. 4-3	
		3. Discriminator Coil	Same as above	Same as above	TP05 F-2540 or F-2535	T03 F-2540 or F-2535	MAX. linearity of S curve (Fig. 4-3)	
2.	FM Dial Calibration and RF Alignment F-2535....Fig. 4-4 F-2540....Fig. 4-5	1. Dial Caribration	90MHz	ANT Input 400Hz (100% MOD) 60dB FM SSG 90 or 106MHz	ANT Terminal 300Ω	REC OUT L or R-CH VTVM & SCOPE	L03 F-2540 or F-2535	MAX. Output
			106MHz				TC01 F-2540 or F-2535	
		2. RF Adj	90MHz	ANT Input 400Hz (100% MOD) 50dB FM SSG 90 or 106MHz	ANT Terminal	REC OUT L or R-CH VTVM & SCOPE	L01, L02 F-2540 or F-2535	MAX. Output
			106MHz				VT01 f, VT01 h F-2540 or F-2535	
3.	MPX Alignment F-2535....Fig. 4-4 F-2540....Fig. 4-5		98MHz ANT Input 60dB FM SSG Pilot 19kHz (10% MOD) L-CH 1kHz (40% MOD) R-CH (0% MOD) Stereo SG	ANT Terminal 300Ω	REC OUT R-CH VTVM & SCOPE	L05 F-2540 or F-2535	Separation: Over than 27dB Confirm Separation: R→L Over than 27dB	

* Signal Meter..... 4.3 on Meter (98MHz ANTENNA
Input 60dB 400Hz 100% MOD)
Indicator level..... 25dB

Abbreviation	
AM Standard Signal Generator.....	AM SSG
FM Stereo Generator	Stereo SG
Audio Oscillator	Audio OSC
AM FM Generator Oscilloscope.....	Genescope
FM Standard Signal Generator	FM SSG
Oscilloscope	Scope

4-2. AM Alignment

- Note:** 1. Selector.....AM (MW, SW, or LW)
 2. Confirm start point of dial pointer before alignment.
 3. In case of using loop antenna, increase output of AM SSG for 26dB than bar antenna's direct input as it attenuates input sensitivity for 26dB



STEP	SUBJECT	STEP	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR		
			FROM	TO					
1.	MW IF, Dial Calibration and RF F-2535....Fig. 4-4 F-2540....Fig. 4-5 MODEL 331 331L 221	1. IF Coil	Output 70dB Genescope	OSC Trimmer Cap VT01i F-2535 VC01 F-2540	TP7 F-2535 or F-2540	T05 F-2535 or F-2540	MAX. IF Waveform (Fig. 4-1)		
			Output 60dB Genescope			T06, T07 F-2535 or F-2540	MAX. IF Waveform (Fig. 4-2)		
		2. Dial Calibration 600kHz	ANT Input 60dB 400Hz (30% MOD) AM SSG 600 or 1400kHz	MW ANT Terminal	REC OUT L or R-CH VTVM & SCOPE	L06 F-2535 L12 F-2540	MAX Output		
			1400kHz			VT01i F-2535 TC05 F-2540			
		3. RF Adj 600kHz	ANT Input 60dB 400Hz (30% MOD) AM SSG 600 or 1400kHz	MW ANT Terminal	REC OUT L or R-CH VTVM & SCOPE	Bar Antenna	MAX Output		
			1400kHz			VT01g F-2535 TC02 F-2540			
2.	SW IF, Dial Calibration and RF F-2535....Fig. 4-4 F-2450....Fig. 4-5 MODEL 331SS	1. IF Coil (Selector Switch SW1)	Output 95dB Genescope	OSC Trimmer Cap VC01 F-2540	TP7 F-2540	T05 F-2540	MAX. IF Waveform (Fig. 4-1)		
			Output 80dB Genescope				T06 F-2540	MAX. IF Waveform (Fig. 4-2)	
			Output 70dB Genescope				T07 F-2540		
		2. Dial Calibra- tion	SW1	2.5MHz	ANT Input 60dB 400Hz (30% MOD) AM SSG 2.5 or 6.5MHz	AM ANT Terminal	REC Out L or R-CH VTVM & SCOPE	L12 F-2540	MAX Output
				6.5MHz				TC05 F-2540	
		SW2	7MHz	ANT Input 60dB 400Hz (30% MOD) AM SSG 7 or 16MHz		L13 F-2540			
			16 MHz			TC06 F-2540			
		3. RF Adj	SW1	2.5MHz	ANT Input 50dB 400Hz (30% MOD) AM SSG 2.5 or 6MHz	AM ANT Terminal	REC Out L or R-CH VTVM & SCOPE	L06 F-2540	MAX
				6MHz				TC02 F-2540	
			SW2	7MHz	ANT Input 50dB 400Hz (30% MOD) AM SSG 7 or 16MHz				
16 MHz					TC03 F-2540				

STEP	SUBJECT	STEP	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR
			FROM	TO			
3.	LW IF, Dial Calibration and RF F-2535....Fig. 4-4 F-2540....Fig. 4-5 MODEL 331L	1. IF Coil	Output 70dB Genescope	OSC Trimmer Cap VC01 F-2540	TP7 F-2540 or F-2535	TC05 F-2540	MAX. IF Waveform (Fig. 4-1)
			Output 60dB Genescope			T06, T07 F-2540	MAX. IF Waveform (Fig. 4-2)
		2. Dial Calibration 170kHz	ANT Input 70dB 400Hz (30% MOD) AM SSG 170 or 320kHz	LM/MW EXT Bar ANT Terminal	REC OUT L or R-CH VTVM & SCOPE	L13 F-2540	MAX. Output
						TC06 F-2540	
		3. RF Adj 170kHz	ANT Input 65dB 400Hz (30% MOD) AM SSG 170 or 320kHz	LM/MW EXT Bar ANT Terminal	REC OUT L or R-CH VTVM & SCOPE	LW Bar Antenna	MAX. Output
						TC04 F-2540	
		170kHz	ANT Input 65dB 400Hz (30% MOD) AM SSG 170 or 320kHz	LM EXT ANT Terminal	REC OUT L or R-CH VTVM & SCOPE	L07 F-2540	MAX. Output
						TC03 F-2540	
		320kHz	ANT Input 65dB 400Hz (30% MOD) AM SSG 170 or 320kHz	LM/MW EXT Bar ANT Terminal	REC OUT L or R-CH VTVM & SCOPE	L10, L11 F-2540	MIN. Output
		4. 460kHz Dip Filter (Selector MW)	ANT Input 400Hz (30% MOD) AM SSG 100dB 460kHz Dial pointer 1000kHz..MW				

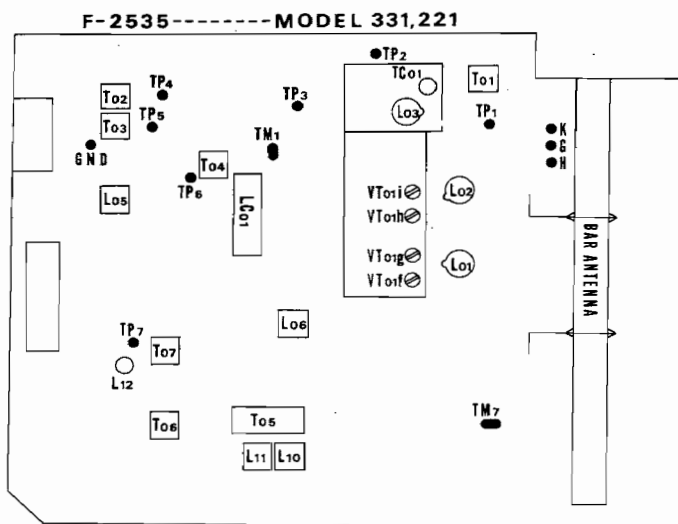
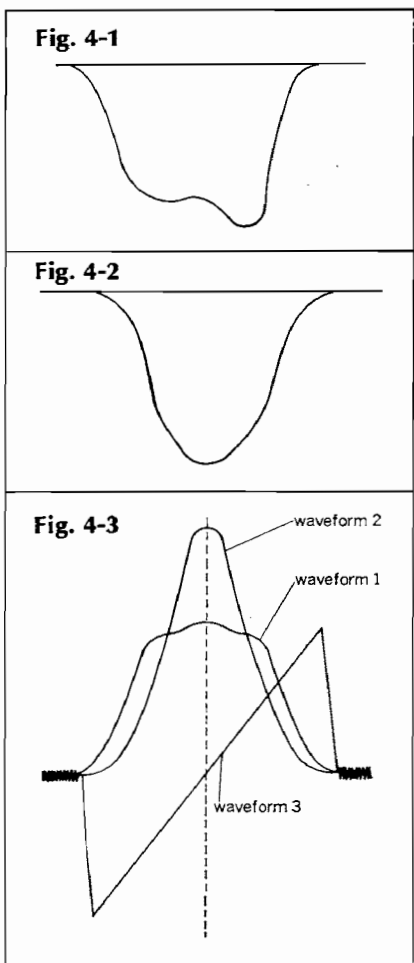


Fig. 4-4

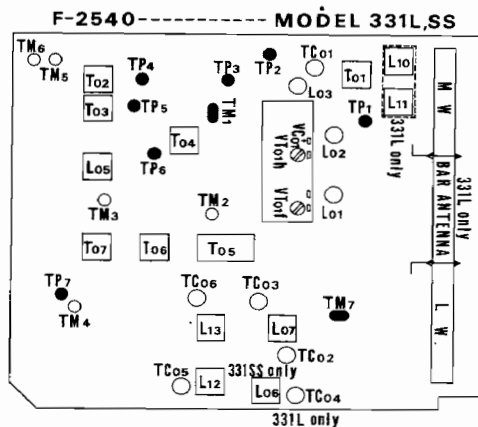


Fig. 4-5

5. TROUBLESHOOTING CHART

5-1. Troubleshooting on Audio Section

1. Trouble on Power Amplifier

Symptom	Cause
1-1. Power supply section inoperative	1. Defective power switch, S601 2. Power fuse, F-605 opens 3. Defective Diode, D601~D604 4. Quick acting fuse F-604, opens
1-2. Power amplifier section inoperative	5. Shorted speaker terminals by speaker wires 6. Imperfect contact of speaker selector switch, S601 7. Defective IC601 or IC602
2. Trouble on Tone Control Section	8. Shorted C601 on F-2531 9. Opens TR601 on F-2531 10. Defective TR01 or TR02 on F-2531
3. Trouble on Phono Circuit Section	11. Imperfect contact of mode switch, tape monitor switch or selector switch 12. Defective TR15~TR18 on Equalizer circuit 13. Defective input capacitor C101 or C102 on Equalizer circuit

5-2. Troubleshooting on Tuner Section

1. FM and AM inoperative

1-1. No voltage supplied to each section	1. Defective TR602 on F-2531 2. Imperfect contact of selector switch
1-2. Imperfect contact of selector switch	3. AM and FM output signal not supplied to audio section

2. Inoperative FM section

F-2535 (Tuner & Equalizer circuit board).....MODEL 331, 221

F-2540 (Tuner & Equalizer circuit board).....MODEL 331L, 331SS

2-1. FM tuner inoperative	
1) signal meter inoperative (No output signal at checkpoint, TP4)	4. IF or RF out of adjustment 5. Defective FET01 or TR01~TR05 6. Antenna coil, osc coil or IF coil open 7. Weak input signal at FM antenna terminal
2) Signal meter operative (No output signal at checkpoint TP5)	8. Defective IC01 9. T02 or T03 out of adjustment 10. T02 or T03 open 11. Defective D01 or D02
2-2. MPX inoperative	12. Defective IC02 13. Defective TR07, TR08
2-3. No channel separation on FM Stereo broadcasting	14. 19kHz coil, L05 open 15. 19kHz coil, L05 out of adjustment 16. Low input MPX signal 17. Defective IC02
2-4. Stereo indicator lamp not lighted	18. Defective MPX indicator, LED. D01 19. Defective IC02
2-5. Signal meter inoperative (FM broadcasting sound can be heard)	20. Defective TR06 21. T04 out of adjustment or open 22. Defective D03, D04 or D09 23. Defective signal meter

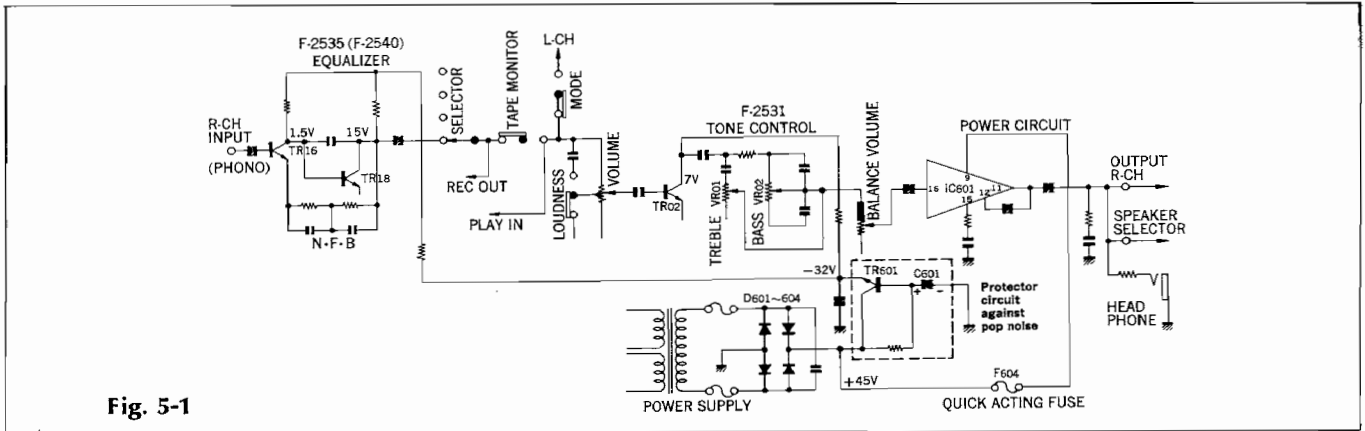
5-3. Inoperative AM Section

1. MW, SW, or LW circuit section inoperative

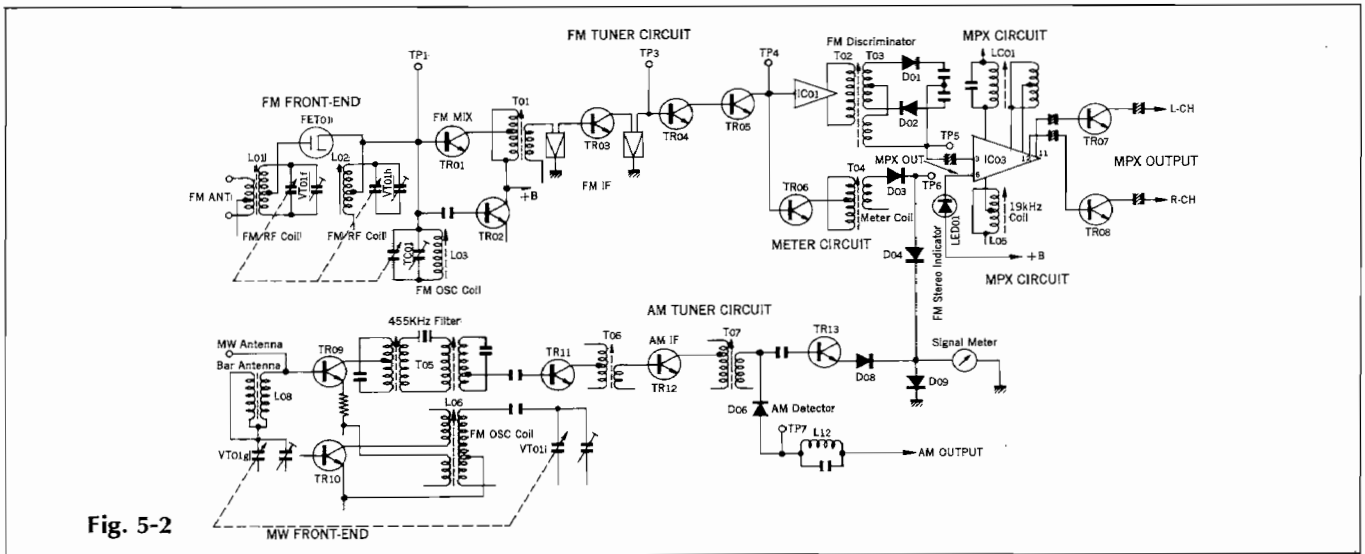
1-1. Signal meter inoperative (Signal meter circuit operative)	1. IF or RF out of adjustment 2. Defective TR09~TR12 3. Antenna coil, OSC coil or IF coil open 4. Weak input signal at each antenna terminal 5. Imperfect contact of selector switch
1-2. Signal meter circuit inoperative	6. Defective TR13 7. Defective D08 or D09 8. Defective signal meter

5-4. Operation Block Diagram

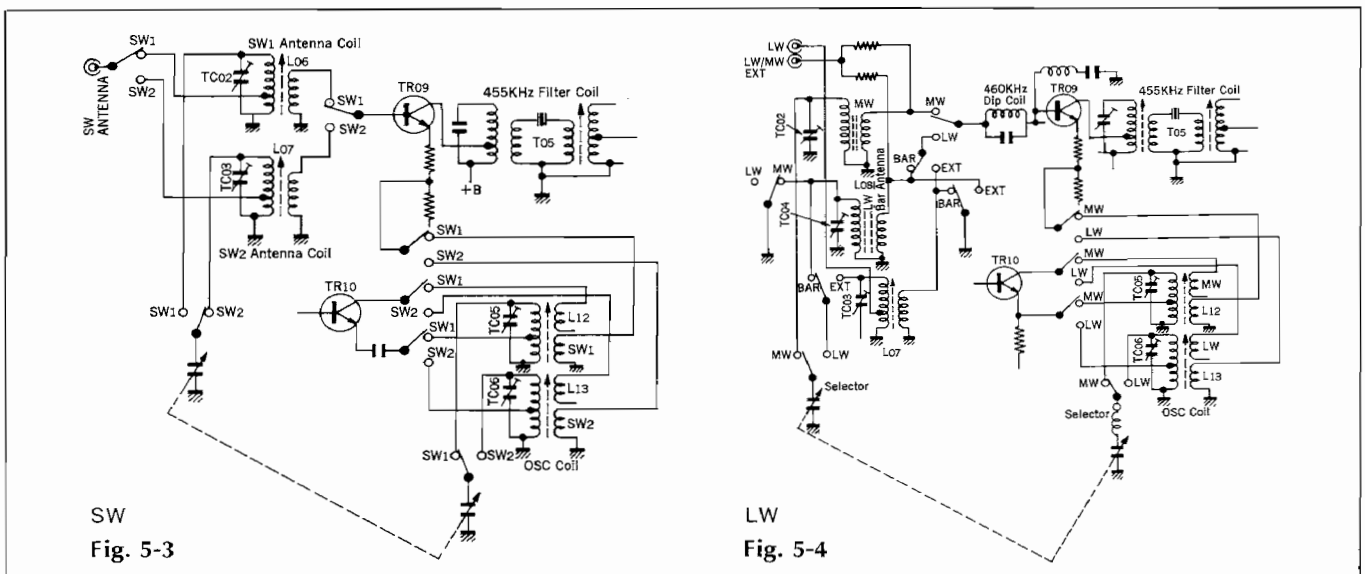
1) Audio Section



2) Tuner Section AM-FM Block Diagram

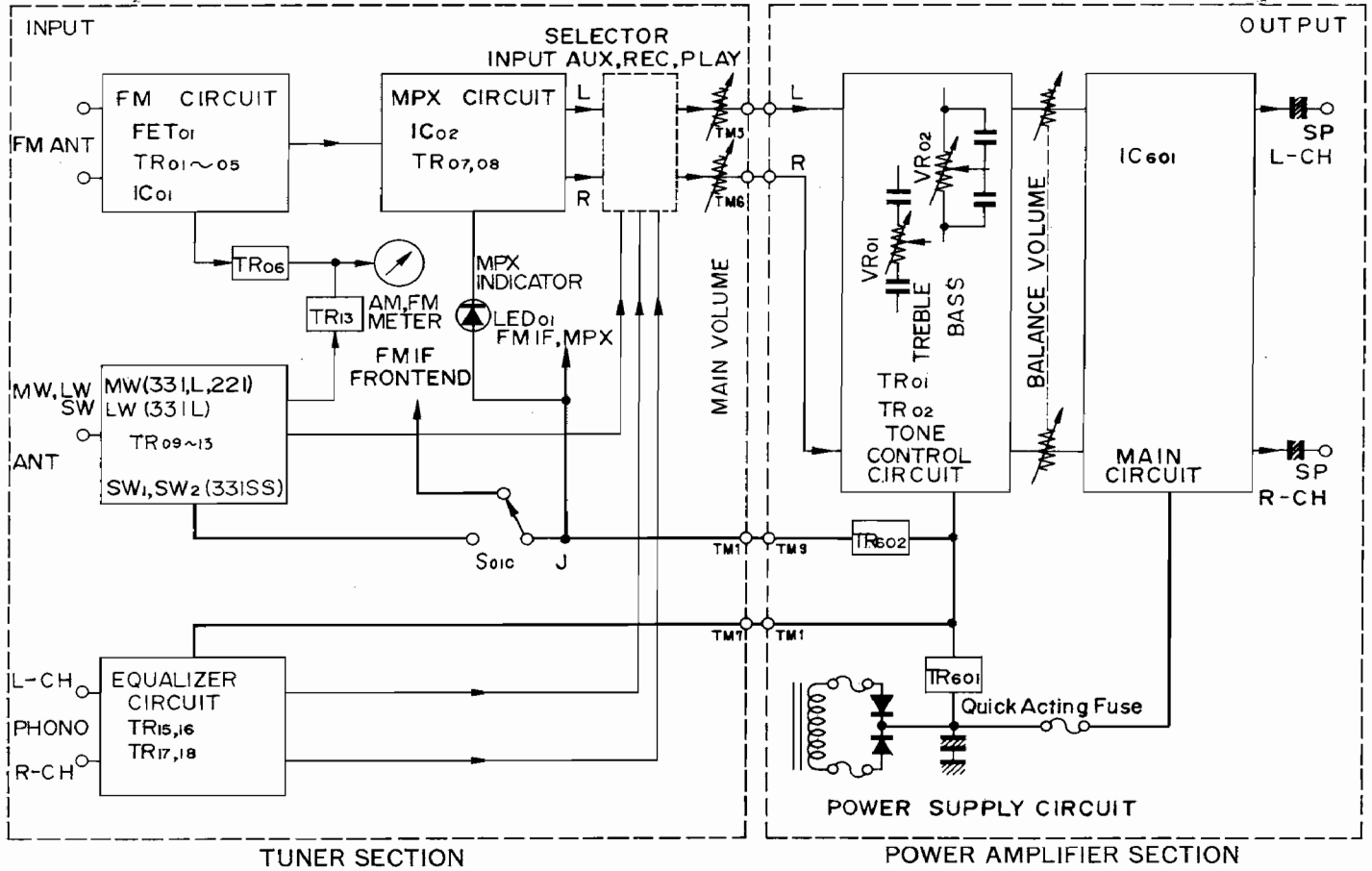


3) SW & LW Front-end Block Diagram

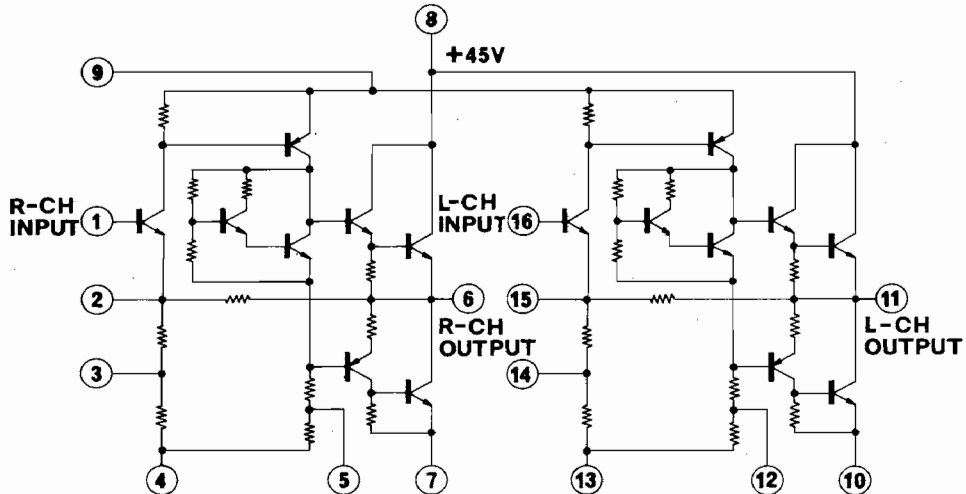


6. BLOCK DIAGRAM

F-2535 (M: 331, 221) F-2540 (M: 331, 331SS, 331L) F-2531 (M: 331, 331SS, 331L, 221)



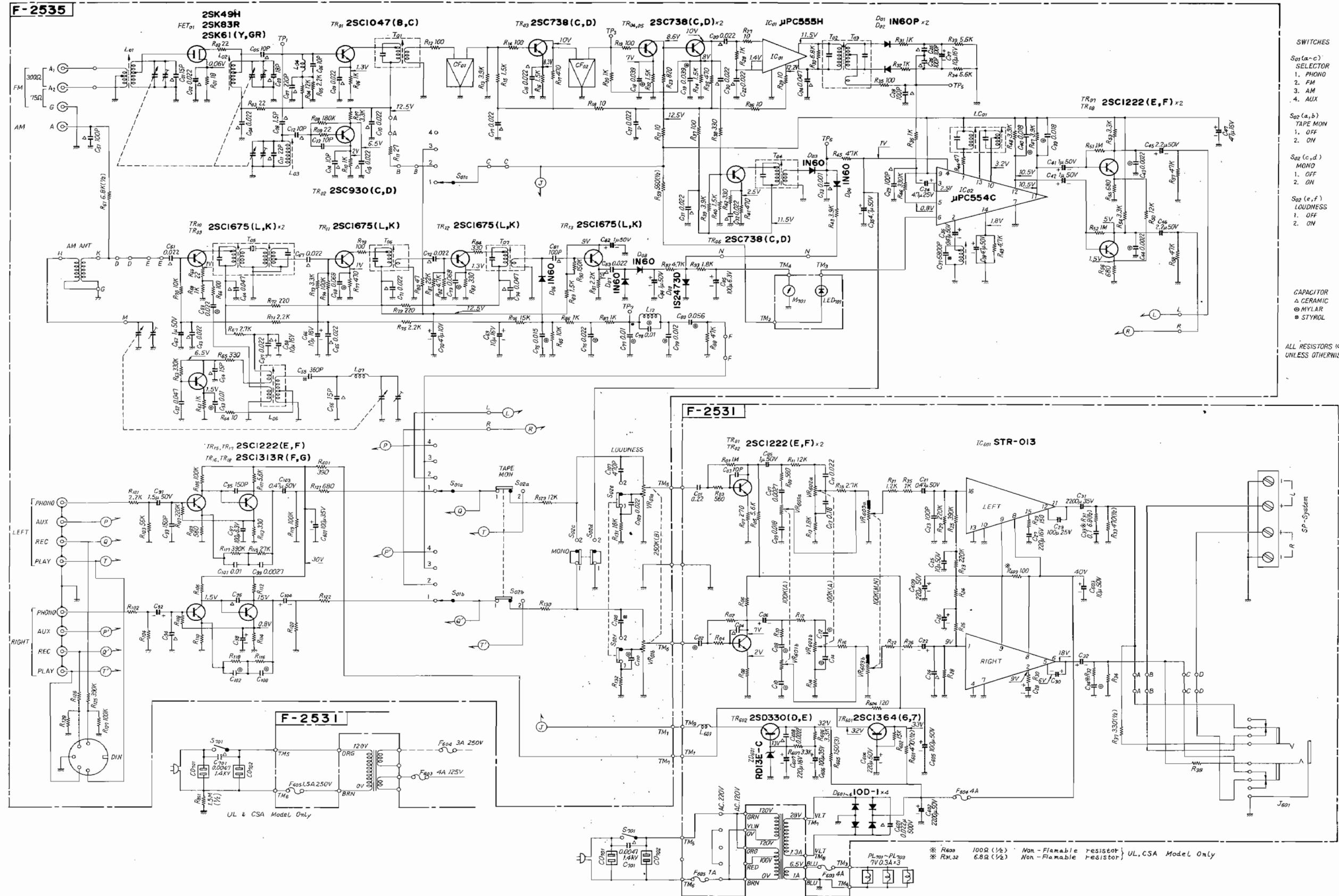
IC STK-014 STK-013 BLOCK DIAGRAM



7. SCHEMATIC DIAGRAM

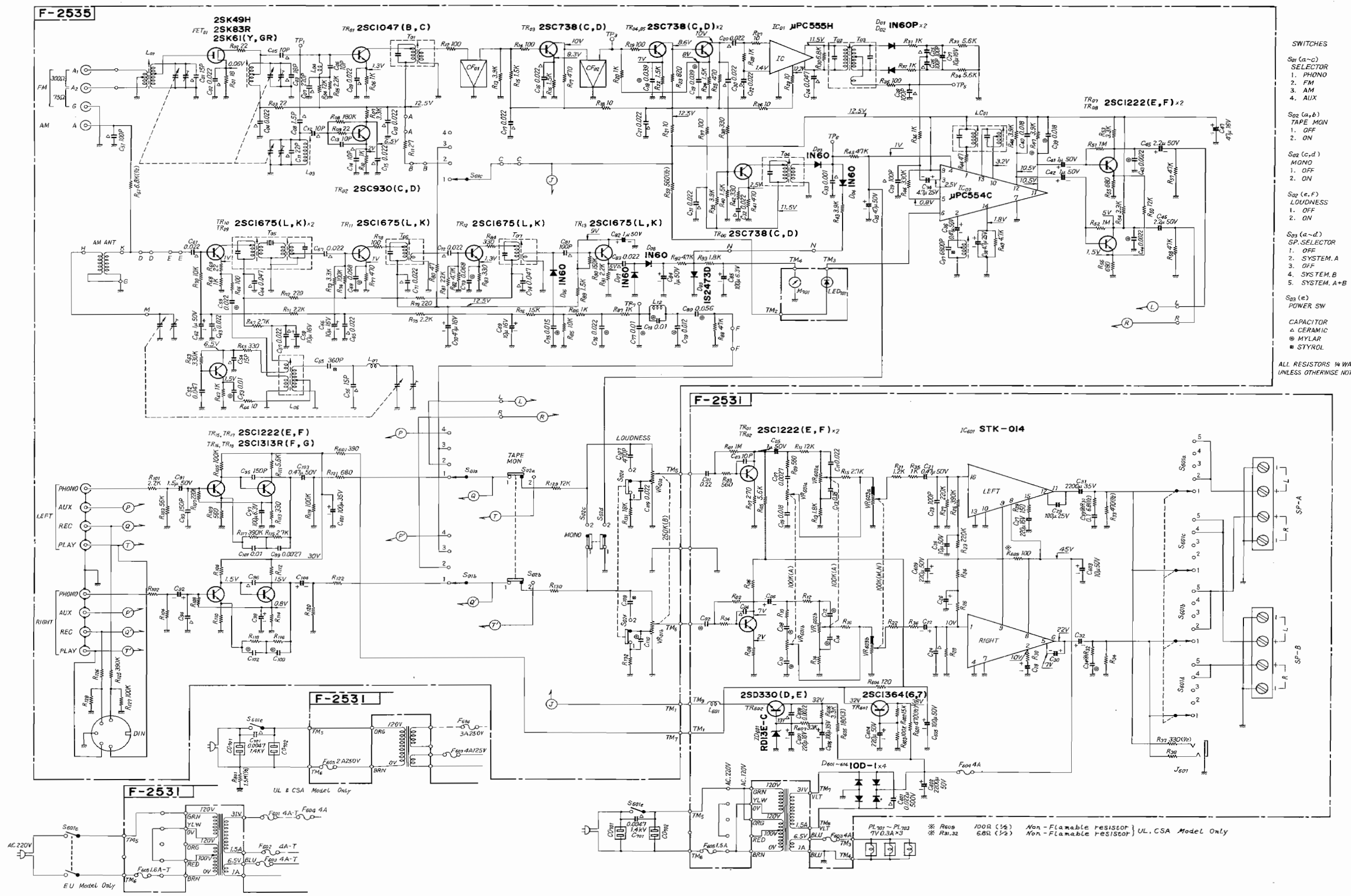
7-1. SANSUI 221 Schematic Diagram

* Design and specifications subject to change without notice for improvements.



7-2. SANSUI 331 Schematic Diagram

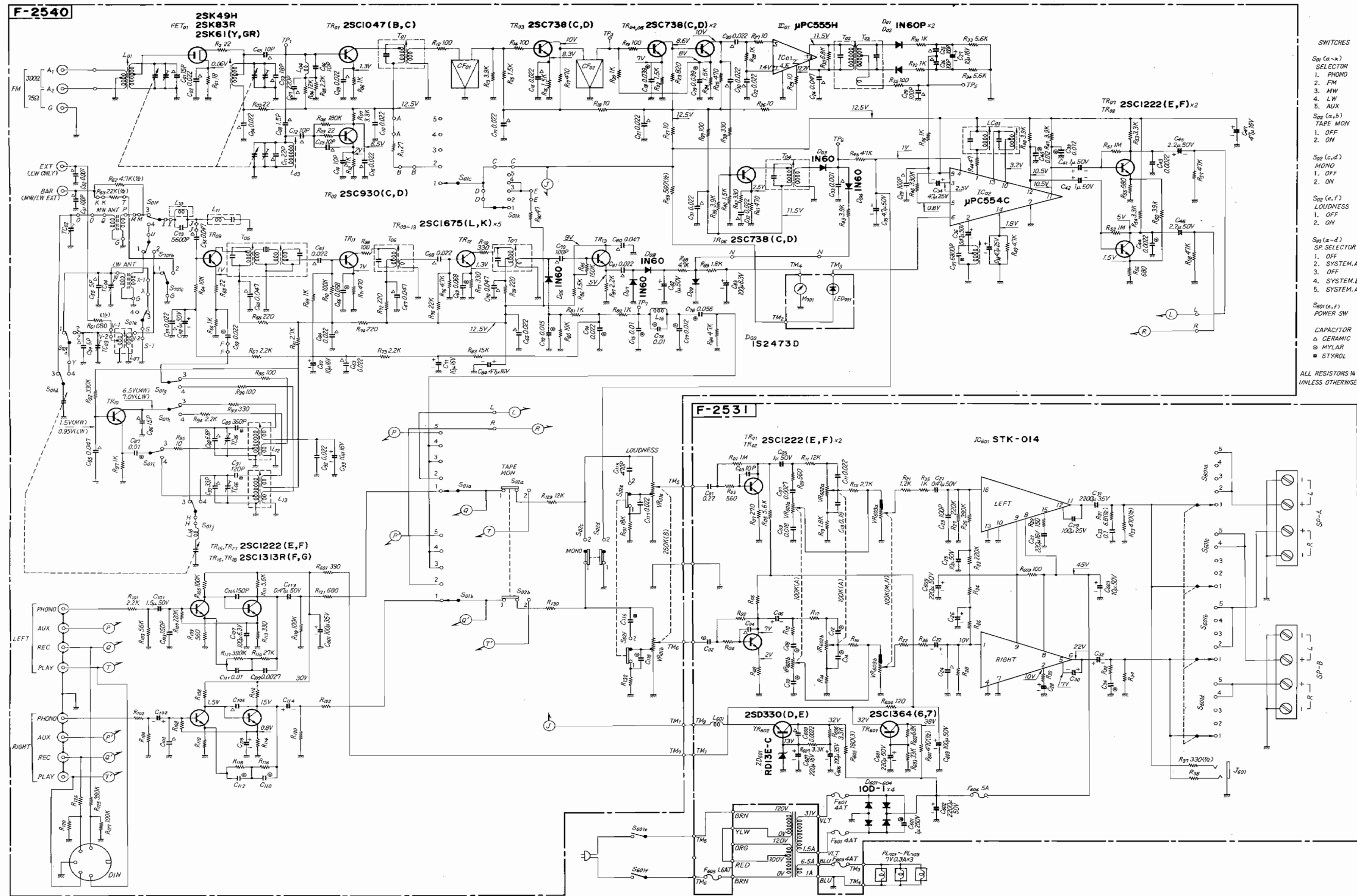
* Design and specifications subject to change without notice for improvements.



- SWITCHES**
- S₂₁ (a-c) SELECTOR
 1. PHONO
 2. FM
 3. AM
 4. AUX
 - S₂₂ (a, b) TAPE MON
 1. OFF
 2. ON
 - S₂₃ (c, d) MONO
 1. OFF
 2. ON
 - S₂₄ (e, f) LOUDNESS
 1. OFF
 2. ON
 - S₂₅ (a-d) SP. SELECTOR
 1. OFF
 2. SYSTEM. A
 3. OFF
 4. SYSTEM. B
 5. SYSTEM. A+B
 - S₂₆ (e) POWER SW
- CAPACITOR**
- △ CERAMIC
 - MYLAR
 - STYROL
- ALL RESISTORS 1/4 WATT UNLESS OTHERWISE NOTED

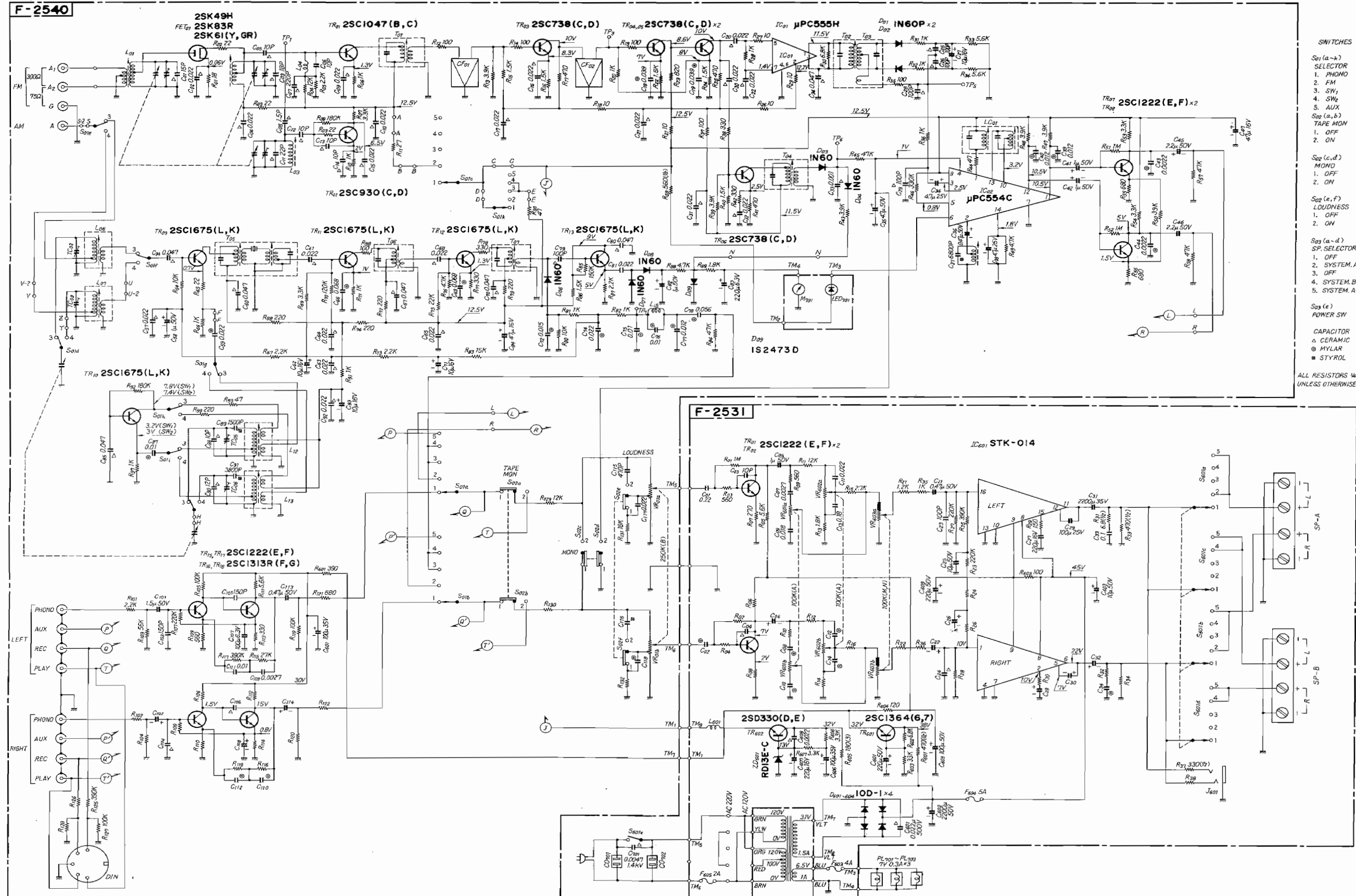
7-3. SANSUI 331L Schematic Diagram

* Design and specifications subject to change without notice for improvements.



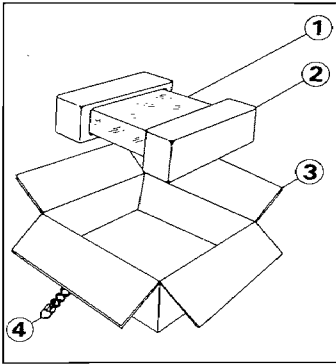
7-4. SANSUI 331SS Schematic Diagram

* Design and specifications subject to change without notice for improvement.



8. PACKING LIST

Parts No.	Stock No.	Description
1	9116640	Vinyl Cover
2	9027870	Stylofoam Packing
3	9008260	Carton Case (331L)
	9008270	Carton Case (331SS)
	9008280	Carton Case (331L)
	9008290	Carton Case (221)
4	5996080	Curl Stopper



9. ACCESSORY PARTS LIST

Parts No.	Stock No.	Description	Position
	3820090, 1	FM Antenna	
	3820110	SW Antenna (331SS only)	
}	9208820	Operating Instruction (331)	
	9208830	Operating Instruction (331SS)	
	9208840	Operating Instruction (331)	
	9208850	Operating Instruction (221)	



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