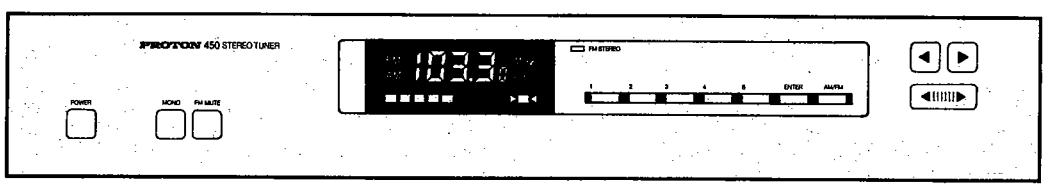
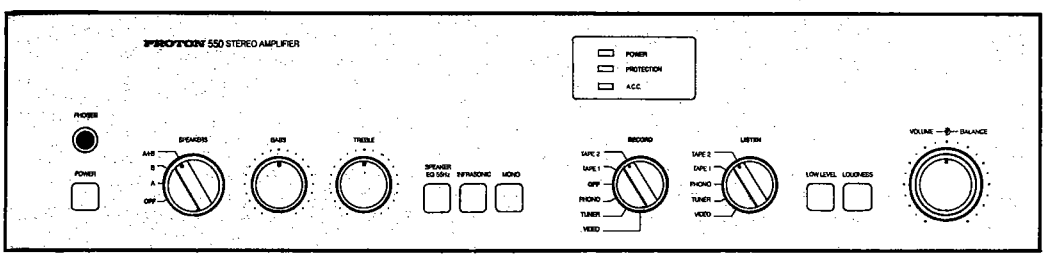
Service Manual

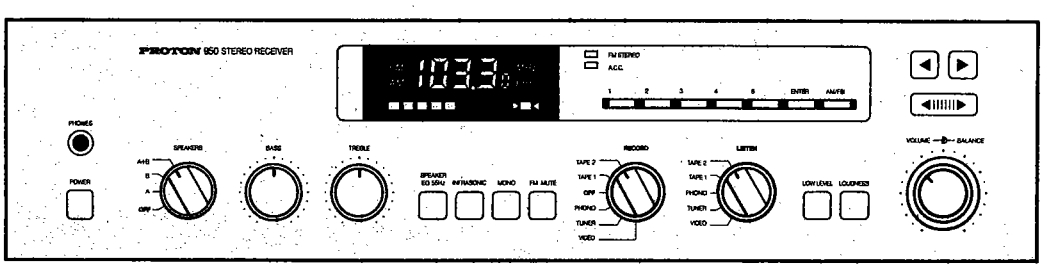


MODELS

450



550



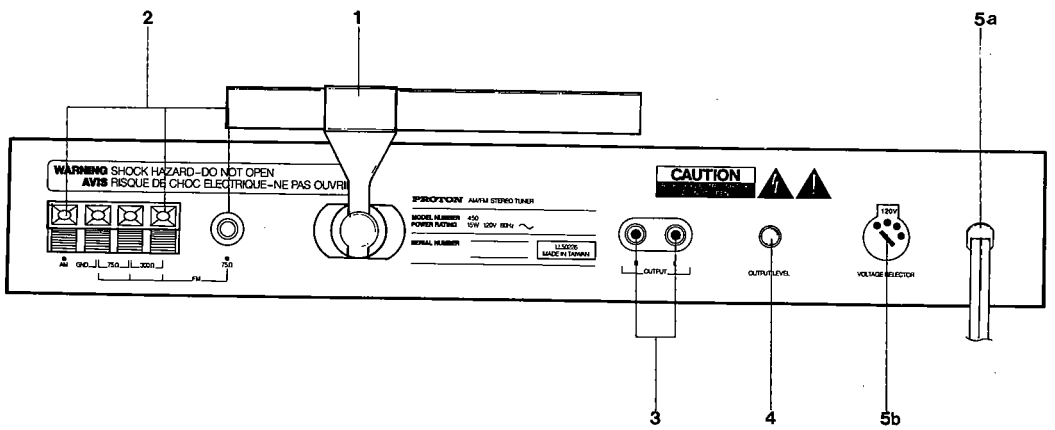
950

CONTENTS

450 FRONT/REAR VIEW.....3
550 FRONT/REAR VIEW.....4
950 FRONT/REAR VIEW.....5
SPECIFICATIONS.....6
950 AUDIO/550 BLOCK DIAGRAM.....8
950 TUNER/450 BLOCK DIAGRAM.....9
550/450/950 ALIGNMENT POINT & PROCEDURE.....10
550 CIRCUIT DIAGRAM.....13
950 TUNER/450 CIRCUIT DIAGRAM.....14
950 AUDIO CIRCUIT DIAGRAM.....15
950 TUNER/450 PCB PARTS LOCATION (BOTTOM VIEW).....16
950 AUDIO/550 PCB PARTS LOCATION (BOTTOM VIEW).....17
450 WIRING DIAGRAM.....18
550 WIRING DIAGRAM.....19
950 WIRING DIAGRAM.....20
ELECTRICAL PARTS LIST.....21
450 ASSEMBLY DIAGRAM.....25
550 ASSEMBLY DIAGRAM.....26
950 ASSEMBLY DIAGRAM.....27
950 SUB-ASSEMBLY DIAGRAM (TUNER PCB).....28
MECHANICAL PARTS LIST.....29
PACKING DIAGRAM.....30

450 FRONT/REAR VIEW

1. AM Bar Antenna
2. Antenna Terminals
3. Audio Output
4. Output Level
5a. Ac Line Cord
5b. Voltage Selector (Not in U.S. / Canada models)



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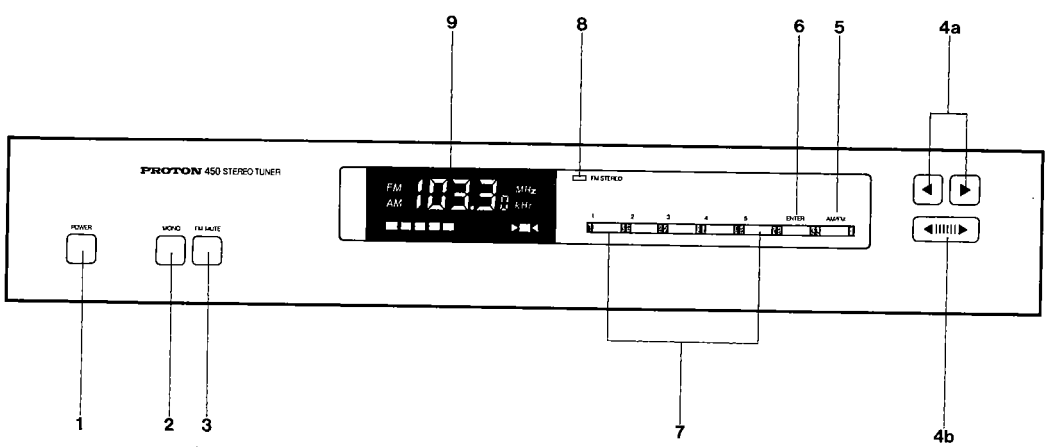
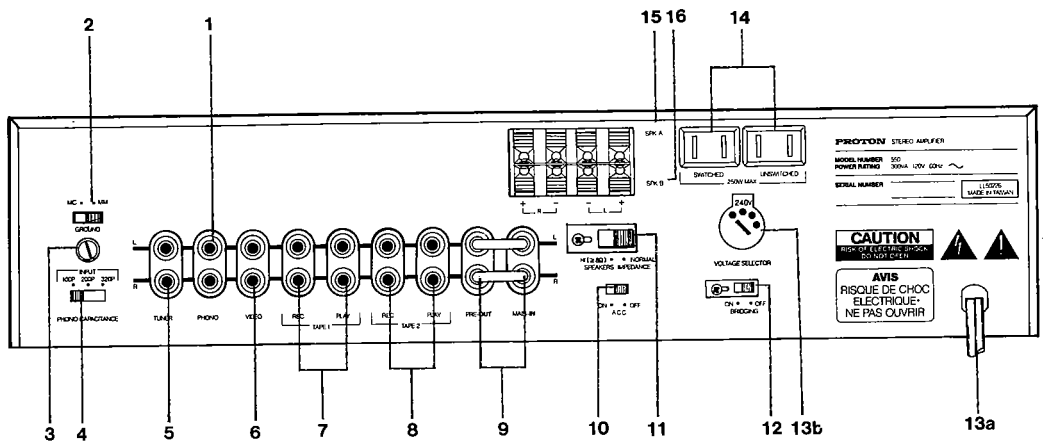
1. Power
2. Mono
3. FM Mute
4. (a) Up/Down Scan
4. (b) Search
5. FM/AM
6. Enter
7. Pre-sets
8. FM Stereo Indicator
9. Tuning Display



550 FRONT/REAR VIEW

1. Phono Input
2. MM/MC Selector
3. Ground
4. Capacitance Selector
5. Tuner Input
6. Video Input
7. Tape 1 Rec/Play
8. Tape 2 Rec/Play
9. Preamp Out, Main in
10. A.C.C.
11. Speaker Impedance
12. Bridging
13a. AC Line Cord
13b. (Not in U.S./Canada models)
14. AC Convenience Outlets
15. Speakers A
16. Speakers B



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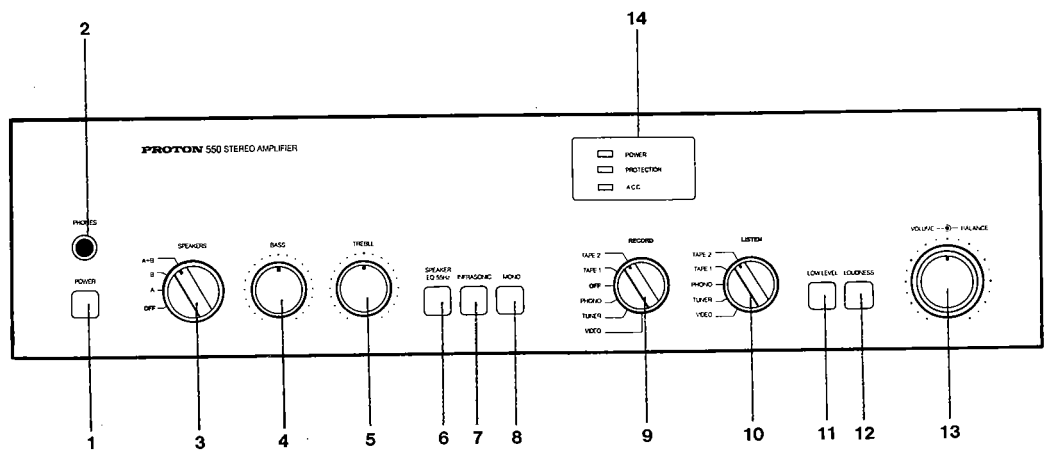
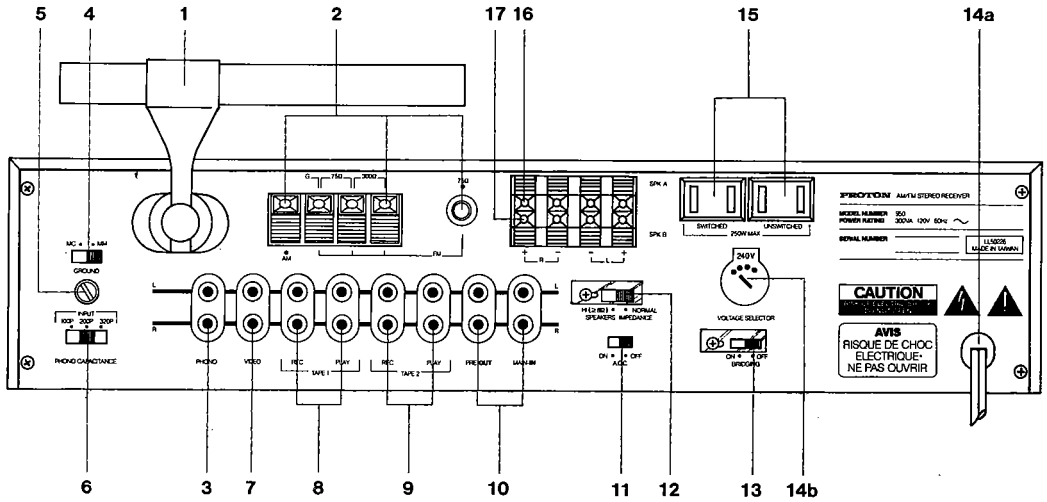
1. Power
2. Phones
3. Speaker Selector
4. Bass
5. Treble
6. Speaker EQ.
7. Infrasonic Filter
8. Mono
9. Recording Selector
10. Listen Selector
11. Low Level
12. Loudness Compensation
13. Volume/Balance
14. Status Indicators



950 FRONT/REAR VIEW

1. AM Bar Antenna
2. Antenna Terminals
3. Phono Input
4. MM/MC Phono Selector
5. Ground
6. Capacitance Selector
7. Video
8. Tape 1 Rec/Play
9. Tape 2 Rec/Play
10. Preamp Out, Main In
11. A.C.C.
12. Speaker Impedance
13. Bridging
14a. Ac Line Cord
14b. Voltage Selector (Not in U.S./Canada models)
15. Ac Convenience Outlets (Not in U.K. model)
16. Speakers A
17. Speakers B



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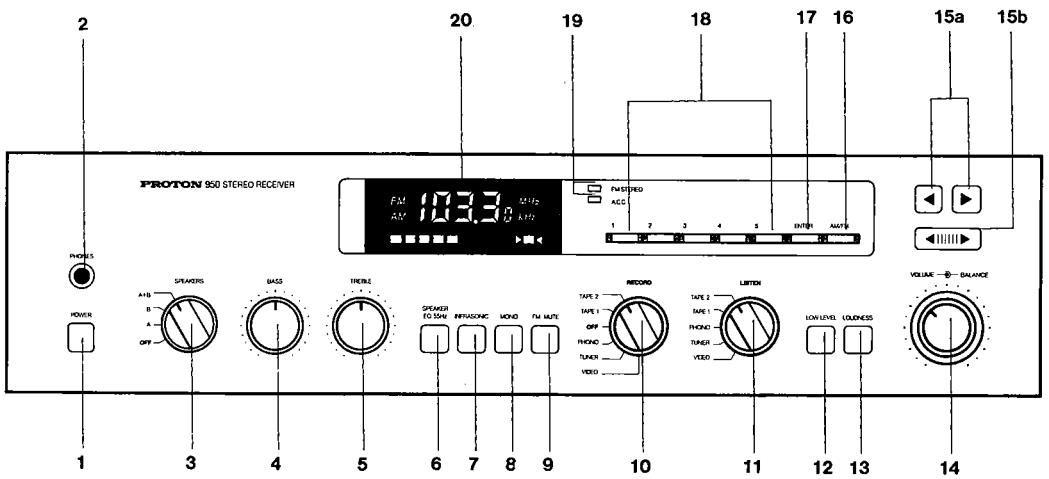
1. Power
2. Phones
3. Speaker Selector
4. Bass
5. Treble
6. Speaker EQ.
7. Infrasonic Filter
8. Mono
9. FM Mute
10. Recording Selector
11. Listen Selector
12. Low Level
13. Loudness Compensation
14. Volume/Balance
15a. Up/Down
15b. Search
16. FM/AM
17. Enter
18. Pre-sets
19. Status Indicators
20. Tuning Display



SPECIFICATIONS

950 AUDIO/550 SPECIFICATIONS

* Measurements identified by an asterisk are taken in accordance with the new IHF A-202 amplifier measurement standard.

		Normal	Hi(≥ 8 Ω)
Speaker Impedance Switch Set:			
Power Amplifier Section			
* Continuous average power output at 8 ohms			
20-20K Hz both Channels Driven		50 W	60 W
Rated distortion	20020K Hz	<0.03%	<0.03%
* Clipping Headroom	at 8 ohm	+0.5 dB	+0.5 dB
Clipping Power	at 8 ohm	57 W	68 W
	at 4 ohm	80 W	-
	at 2 ohm	90 W	-
Dynamic Headroom	at 8 ohm	+1.8 dB	+1.6 dB
Dynamic Power	at 8 ohm	90 W	100 W
	at 4 ohm	150 W	-
	at 2 ohm	180 W	-
* Transient Overload Recovery Time		<1 usec	
* Slew Factor		>50	
Slew Rate		20 V/usec	
Damping factor at 50 Hz (Ref. 8 ohm)		>100	
THD 20-20K Hz From 250 mW to 60 W			
SMPTTE IMD (60K Mz + 7K Hz, 4:1)			
from 250 mW to 60 W		<0.03%	
IHF IMD (19K Hz + 20K Hz) at 60 W		<0.03%	
TIM (15K Hz Sine Wave +3.18K Hz Square Wave)			
	at 60 W	<0.03%	
Frequency Response.	20-20K Hz	+-0.5 dB	
Frequency Response Range	-3 dB	10-35K Hz	

		MM	MC
Preamplifier Section			
Phono Input Resistance		47K ohm	47K ohm
Phono Input Capacitance (Selectable)		100P/200P/320P	100P/200P/320P
Input Sensitivity (1K Hz) *	For 1 Watt out	0.4 mV	0.035 mV
	50 Watt out	2.5 mV	0.25 mV
Input Overload at 1K Hz		240 mV	24 mV
	20Hz	24 mV	2.4 mV
	20K Hz	2.4VVV	180 mV
THD (20-20K Hz) and IMD at +30 dB input level		< 0.015%	0.04%
RIAA Response Accuracy		+-0.2 dB	+-0.5 dB
Signal to Noise Ratio A-Weighted			
(a) with phono cartridge connected			
	Ref 10 mV	>82 dB	
	*Ref 5 mV	>76 dB	
	*Ref 0.5 mV	>68 dB	
(b) With short-circuit input			
	Ref 10 mV	>90 dB	
	Ref 0.5 mV		70 dB

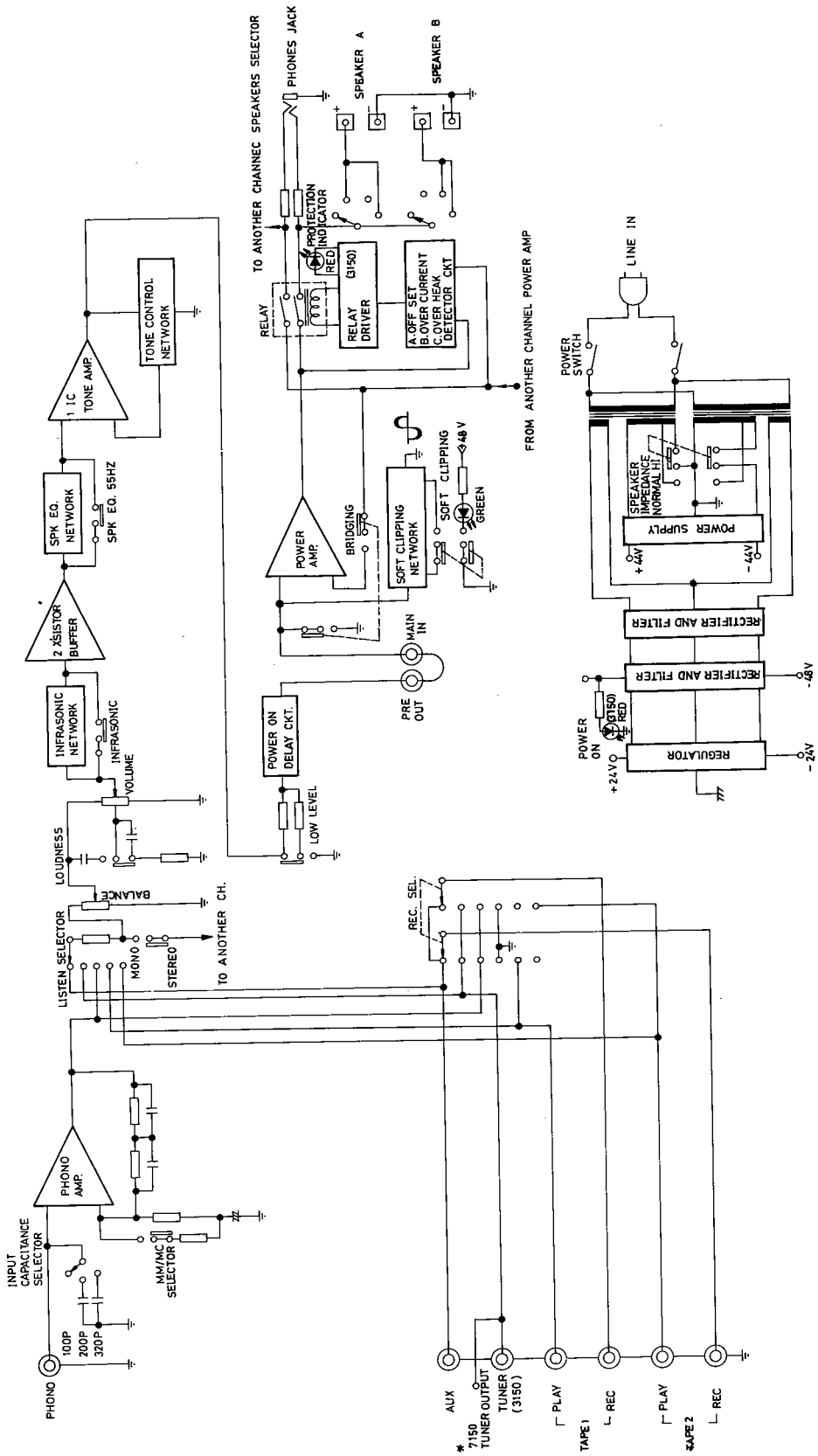
High Level Input		
* Input Impedance Resistance/Capacitance		150K ohm/220pF
Input sensitivity	*for 1 Watt out	20 mV
	for 50 Watt out	145 mV

Signal to Noise Ratio A-Weighted Ratio	
(a) with mute off Ref 1 Watt out	>80 dB
Ref 50 Watt out	>95 dB
(b) with mute on Ref 1 Watt out	>93 dB
* Maximum Input Siganl	15V
Frequency Response, 20-20K Hz	+-0.5 dB
Controls	
Bass Control, Range at 100K Hz Range	+-8 dB
Treble Control, Range at 10K Hz	+-7 dB
Infrasonic Filter Turn Over Frequency	20 Hz
Slope (dB/Octave)	12
Speaker Eq Turn Orer Frequency	55
Slope (dB/Octave)	12
Mute	-20 dB
Physical Specifications	
Dimensions WxHxD (inch)	16.5x3,8x12
(cm)	42x9.6x310
Net Weight	9.0Kg/19.8 Lbs

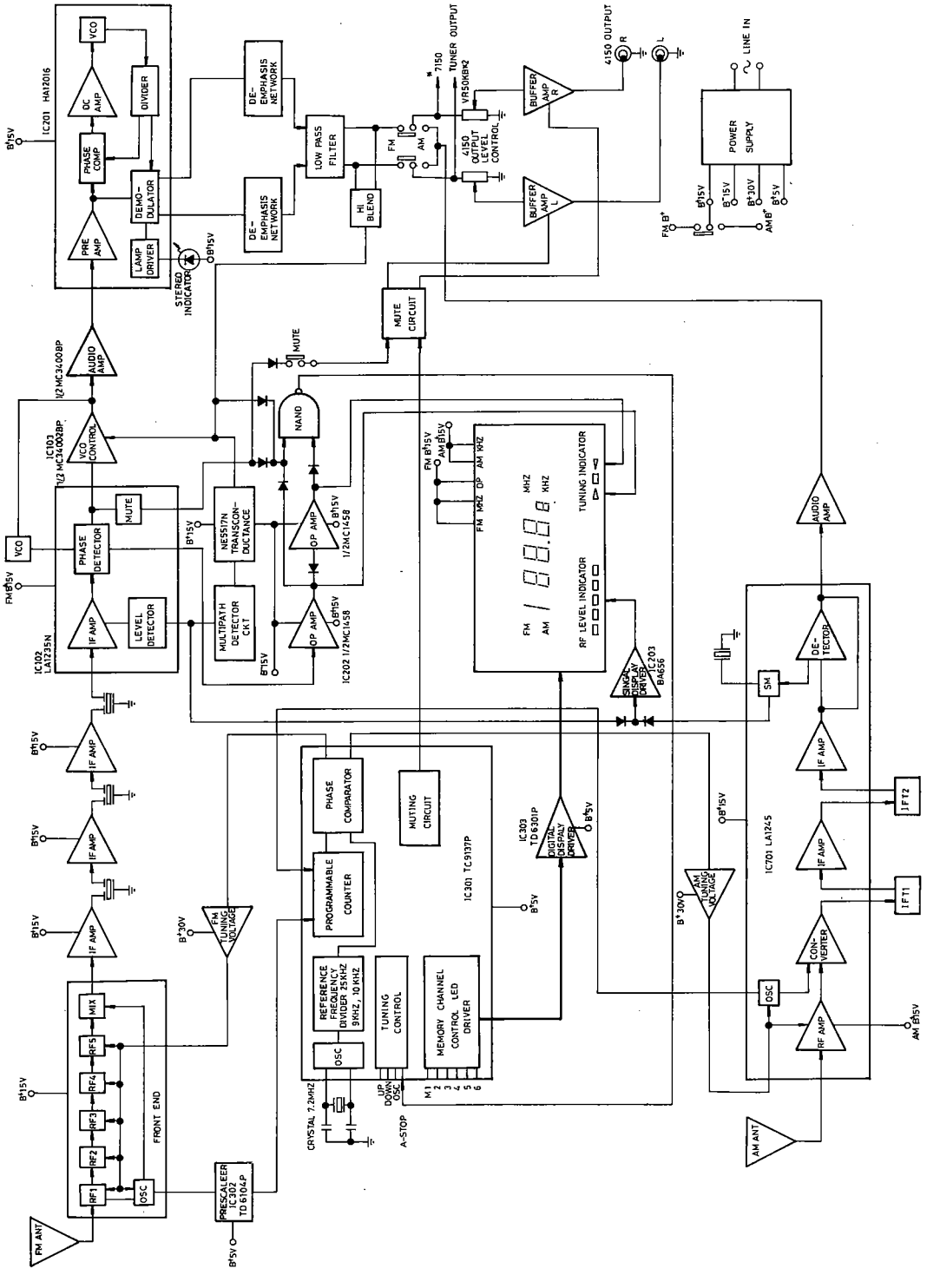
950 TUNER/450 SPECIFICATIONS

	Norminal	Limited
FM Tuner Section		
Input Sensitivity IHF, 30 dB Quieting	1.4uV	1.8 uV
IHF, 50 dB S/N Mono/Stereo	3.5 uV/30 uV	4.5 uV/40 uV
Signal to NOise Ratio (A Weighted, at 65 dBf)		
Mono/Stereo	83 dB/75 dB	78 dB/70 dB
Frequency Response, 30-15K Hz	+-0.5 dB	+-0.5 dB
De-emphasis Accuracy, 75 usec	+-0.5 dB	+-1 dB
Channel Separation 1K Hz	45 dB	40 dB
30-15K Hz	35 dB	30 dB
Selectivity, Alternate Channel (400K Hz)	70 dB	65 dB
Capture Ratio at 45 dBf and 65 dBf	1.0 dB	2.0 dB
AM Suppression at 45 dBf and 65 dBf	58 dB	53 dB
Image Rejection	100 dB	90 dB
IF Rejection	95 dB	90 dB
SCA Rejection	70 dB	65 dB
Pilot Signal Suppression	60 dB	55 dB
T.H. D. at 100% Modulation 1K Hz Mono/Stereo	0.08%/0.1%	0.15%/0.2%
100K Hz Mono/Stereo	0.10%/0.2%	0.2%/0.3%
6K Hz Mono/Stereo	0.10%/0.2%	0.2%/0.3%
T.H.D. Stereo 1K Hz 50%/150%	0.1%/0.2%	0.2%/0.3%
AM Tuner Section		
Usable Sensitivity	300 uV/m	450 uV/m
Selectivity	30 dB	25 dB
Image Rejection	50 dB	45 dB
IF Rejection	50 dB	45dB

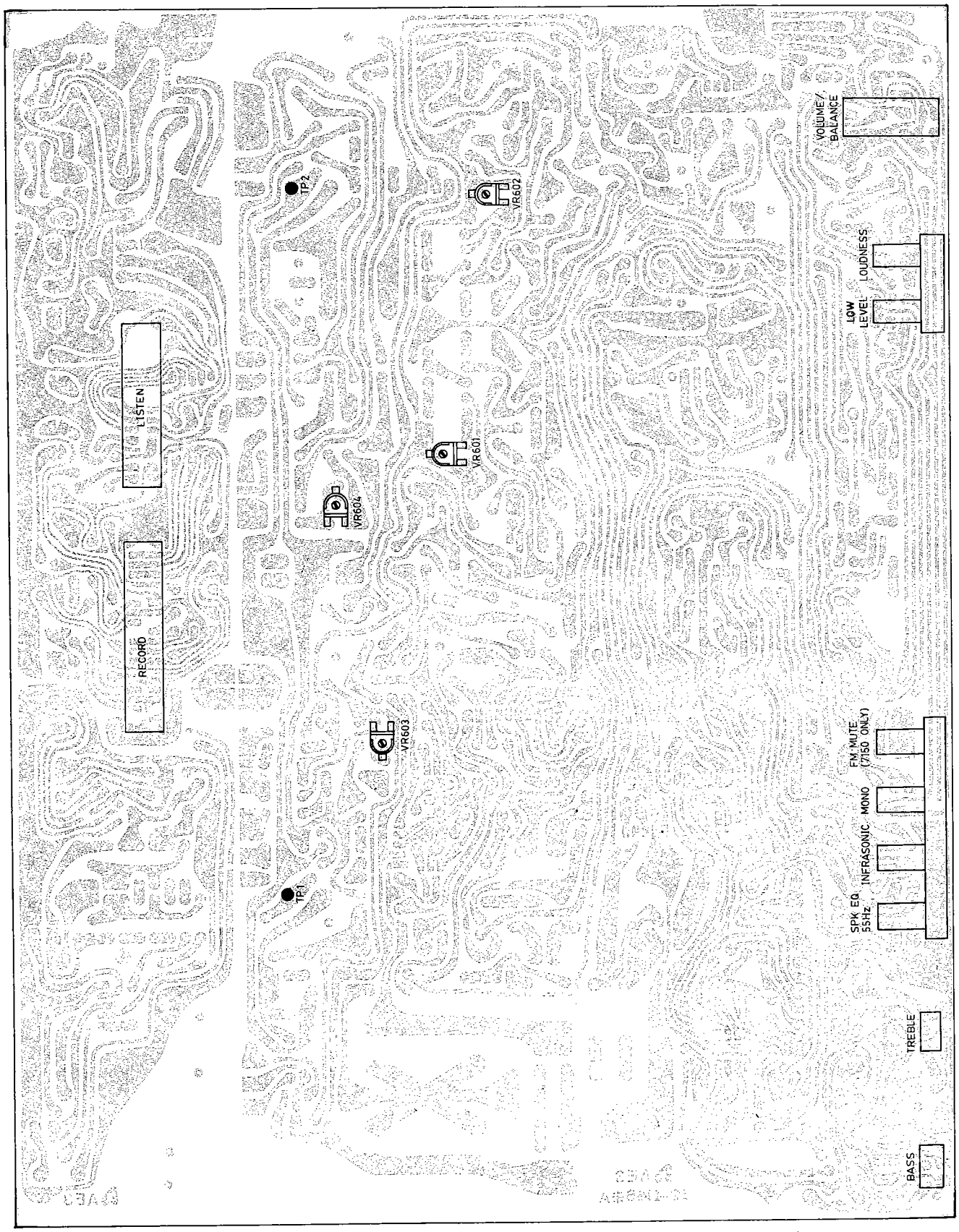
950 AUDIO/550 BLOCK DIAGRAM



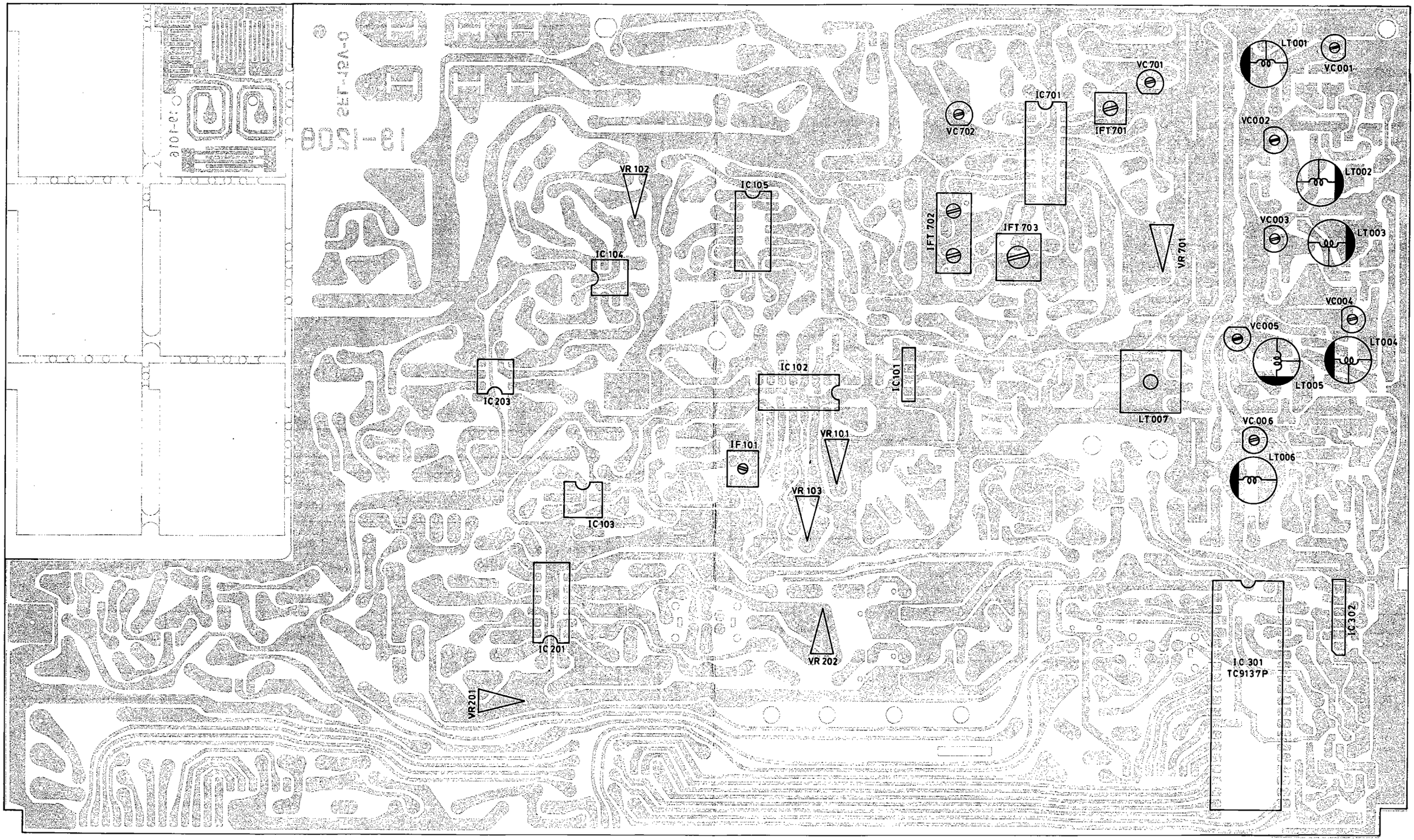
950 TUNER/450 BLOCK DIAGRAM



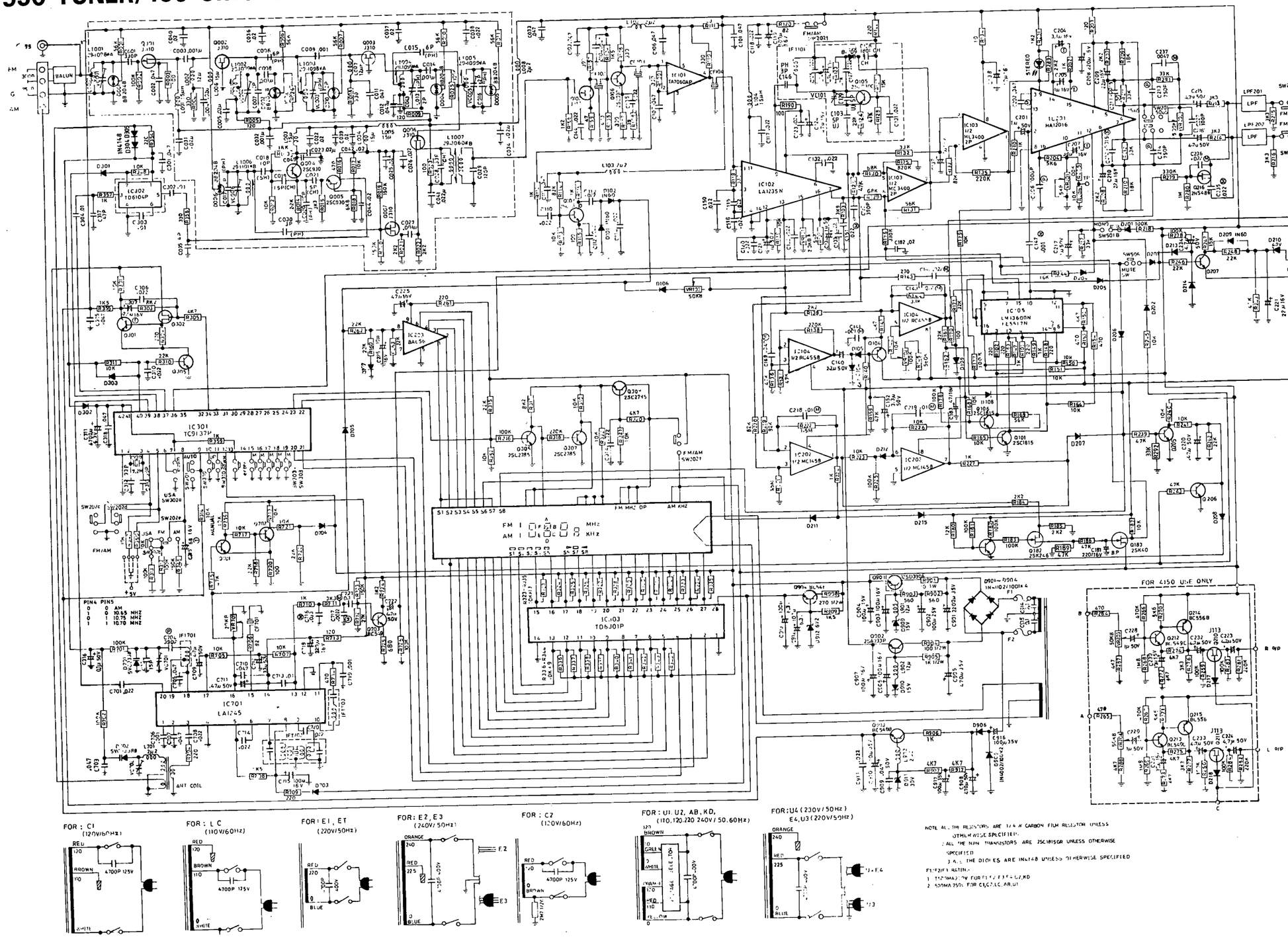
950 AUDIO/550 ADJUSTMENT POINT



950 TUNER/450 ALIGNMENT POINT



950 TUNER/450 CIRCUIT DIAGRAM



NOTE ALL THE RESISTORS ARE 1/4 W CARBON FILM RESISTOR UNLESS OTHERWISE SPECIFIED.
2 ALL THE NPN TRANSISTORS ARE 2SC1815GR UNLESS OTHERWISE SPECIFIED
3 ALL THE DIODES ARE IN4148 UNLESS OTHERWISE SPECIFIED

FUSE RATING :
1 125VAC/3A FUSE FOR E1, E7, E2, E3, U2, KD
2 500MA 250V FOR C1, C2, LC, AB, U1

Adjustment	Adjust for
IFT 101	to pin TP3 Voltage OV
LT 006	Tuning Voltage 4.3V ±0.1V
VC 006	Tuning Voltage 18.7V±0.2V

LT001 to LT005	Maxmimum OUTPUT
VC001 to VC005	
LT007	

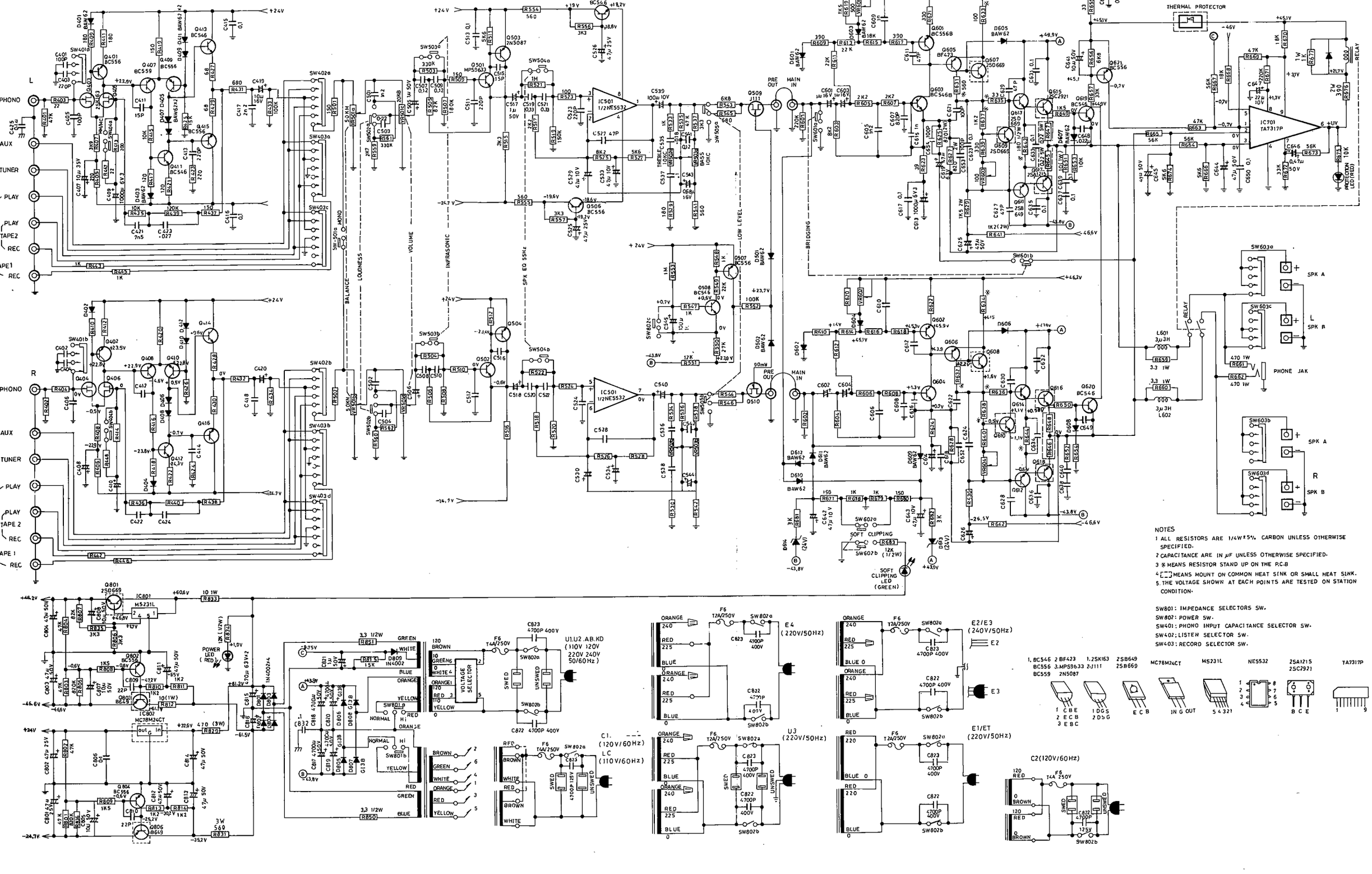
14dB

VR 101	OUTPUT just disappear

udio OUTPUT
1.2.3

Adjustment	Adjust ofr
IFT 703 IFT 702	Maximun OUTPUT
IFT 701	Tuning Voltage 4.5V±0.1
VC 701	Tuning Voltage 20.5V±0.2V
ANT VAR VC 702	Maximum OUTPUT

950 AUDIO CIRCUIT DIAGRAM

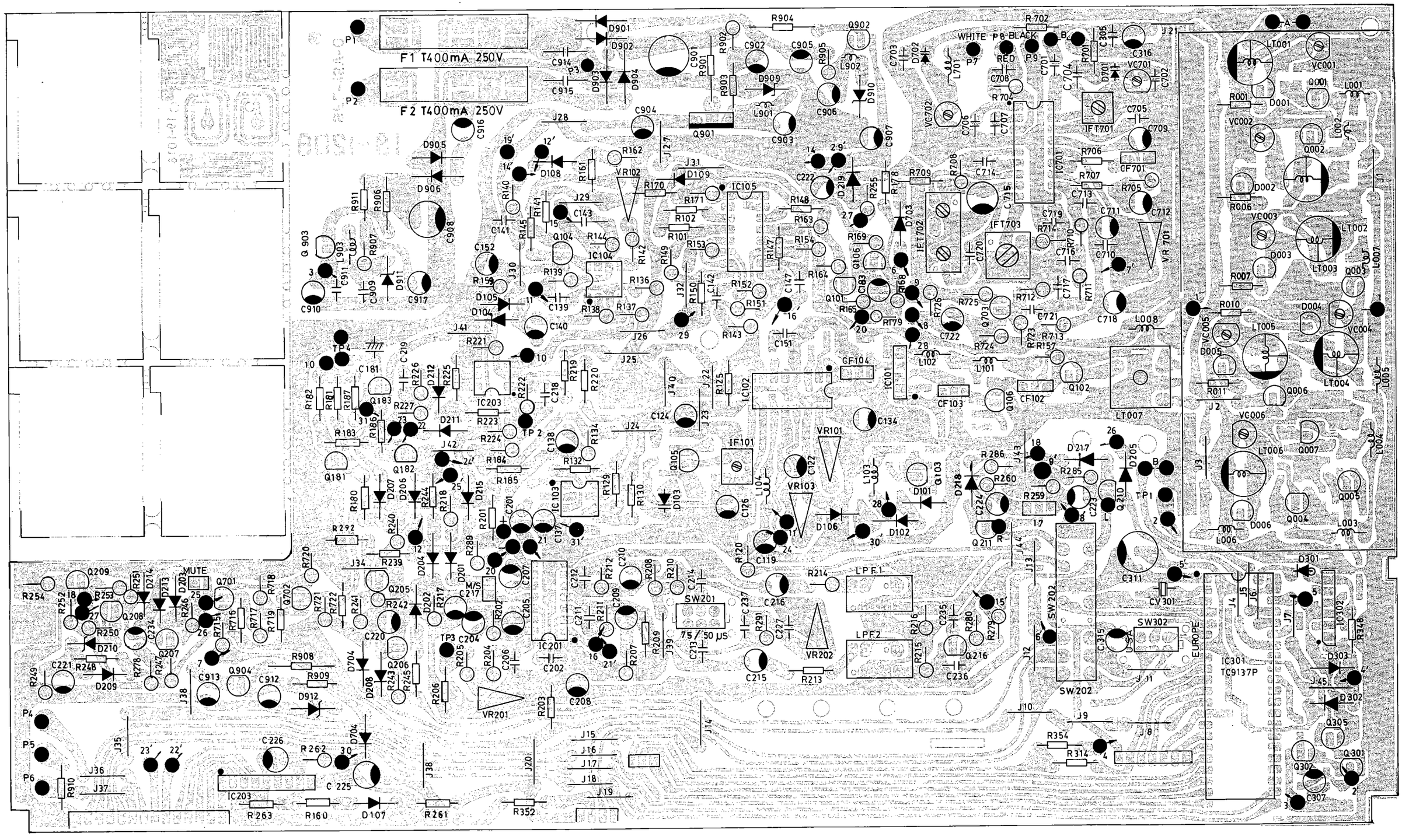


NOTES

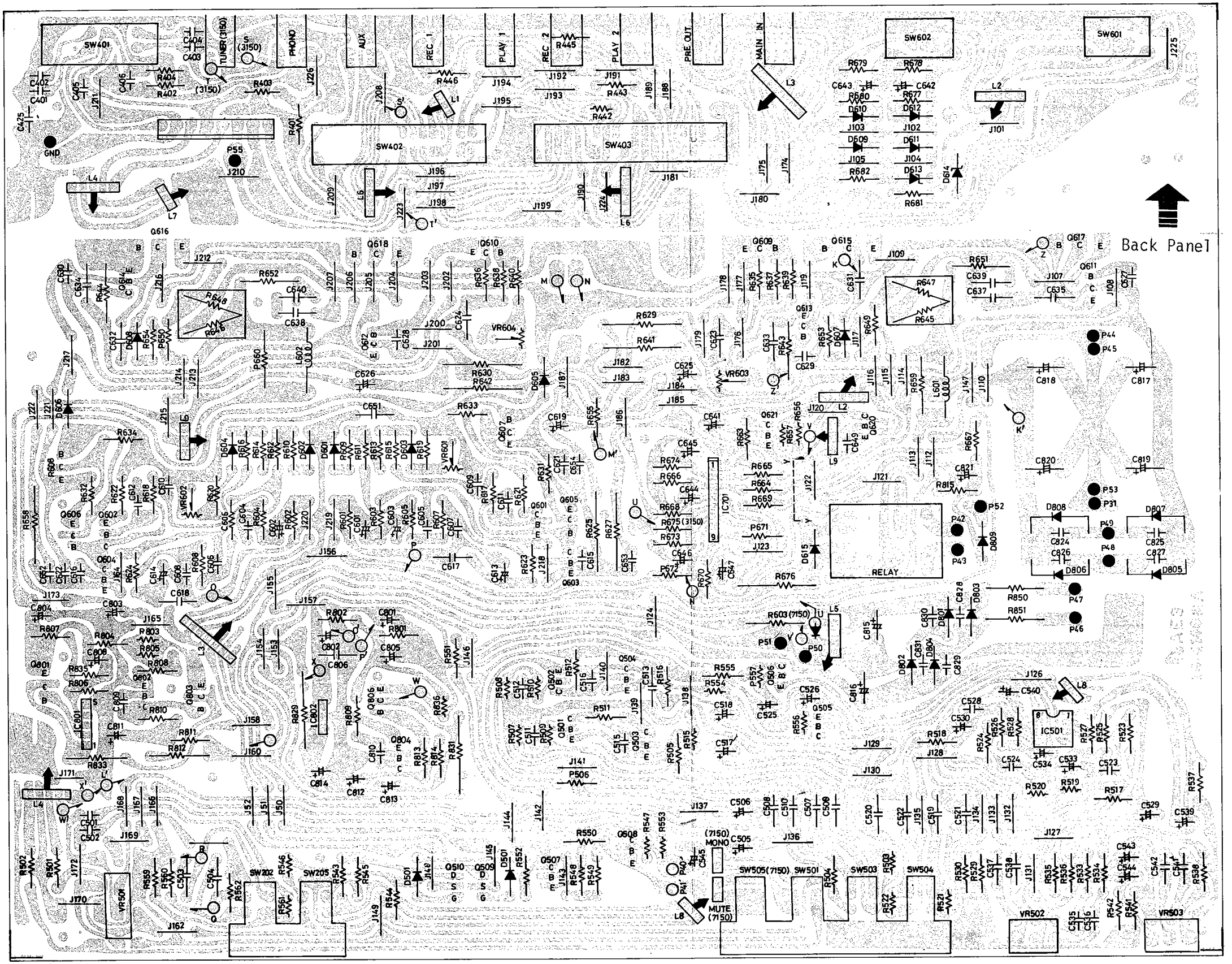
1 ALL RESISTORS ARE 1/4W ±5% CARBON UNLESS OTHERWISE SPECIFIED.
2 CAPACITANCE ARE IN µF UNLESS OTHERWISE SPECIFIED.
3 % MEANS RESISTOR STAND UP ON THE P.C.B
4 [ ] MEANS MOUNT ON COMMON HEAT SINK OR SMALL HEAT SINK.
5. THE VOLTAGE SHOWN AT EACH POINTS ARE TESTED ON STATION CONDITION.

SW801 : IMPEDANCE SELECTORS SW.
SW802 : POWER SW.
SW401 : PHONO INPUT CAPACITANCE SELECTOR SW.
SW402 : LISTEN SELECTOR SW.
SW403 : RECORD SELECTOR SW.

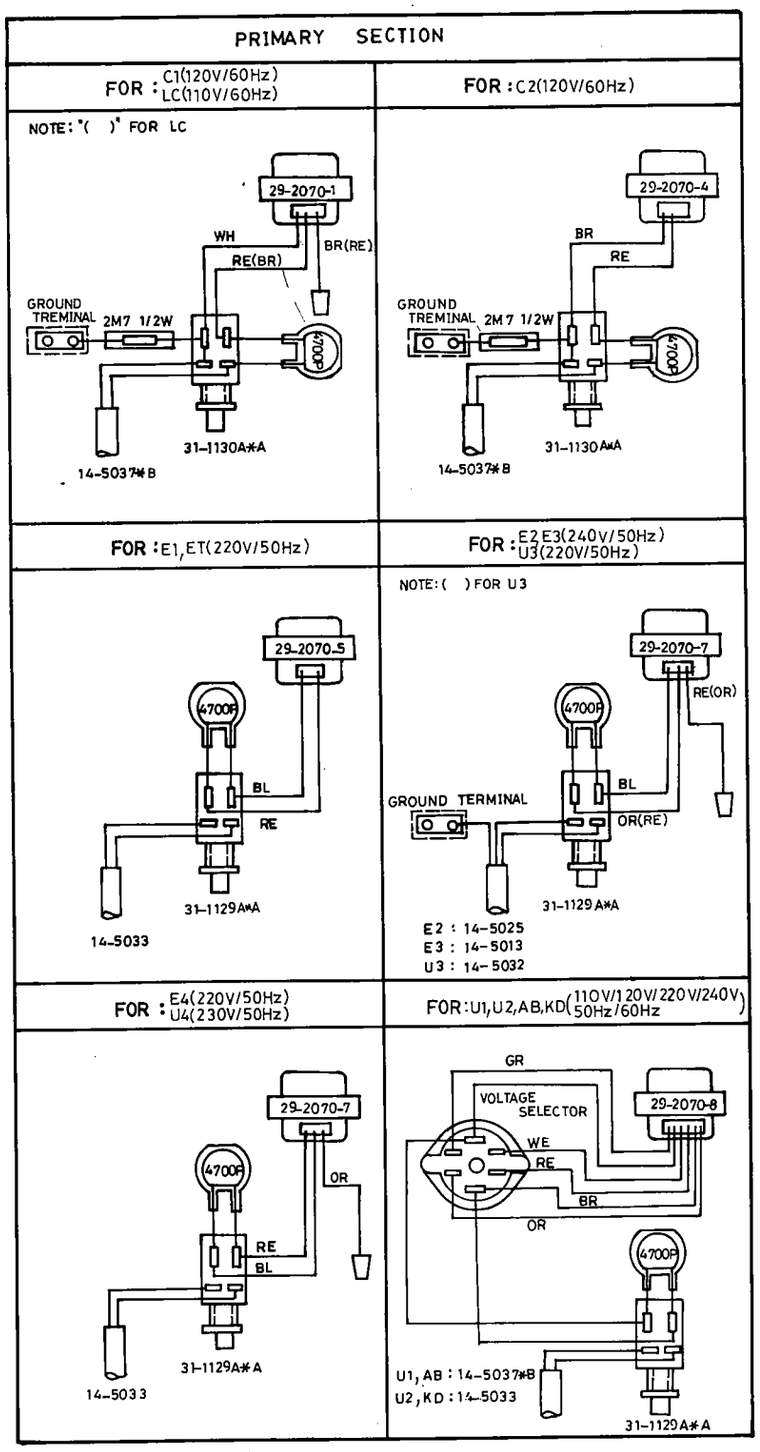
950 TUNER/450 PCB PARTS LOCATION (BOTTOM VIEW)

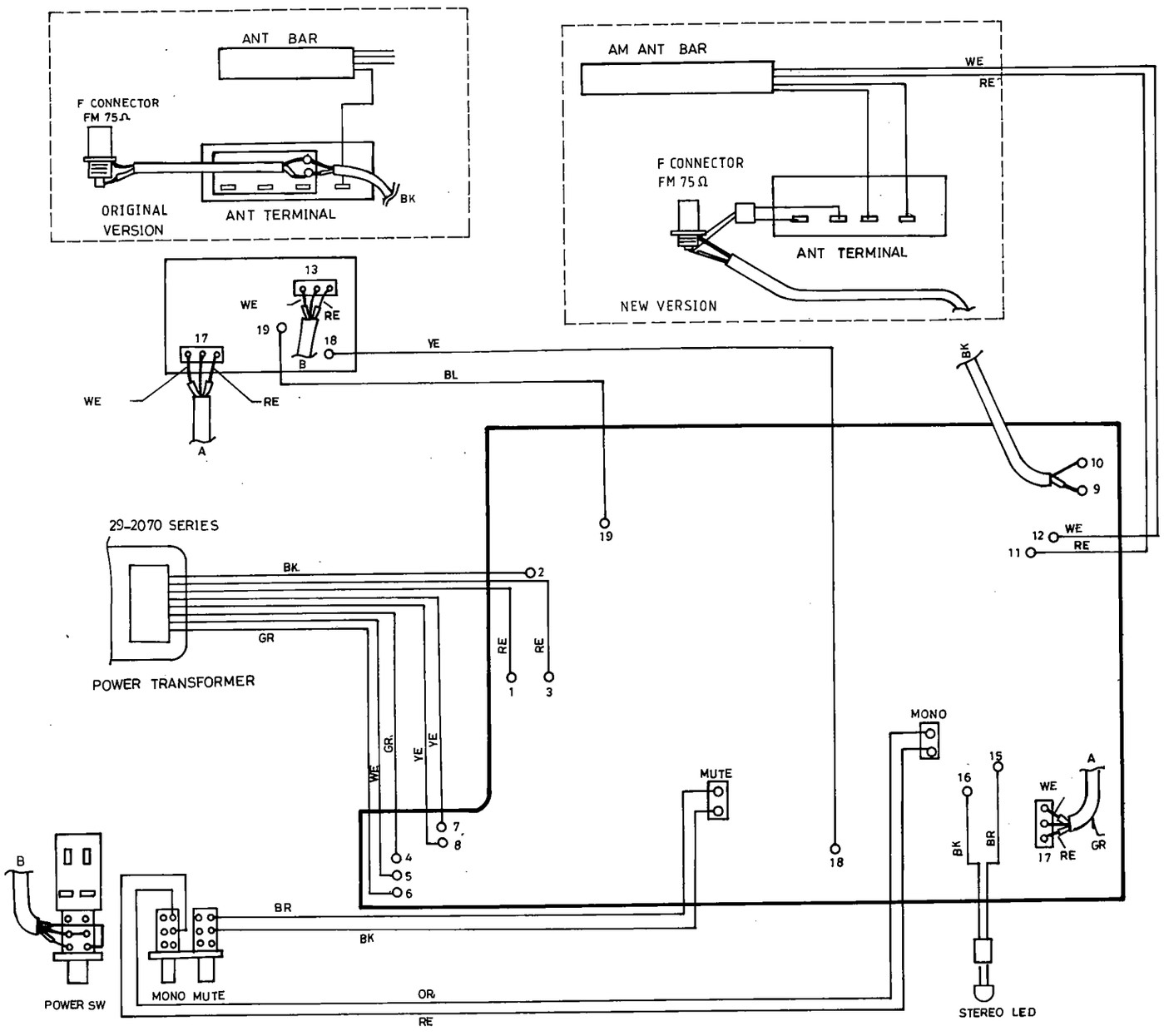


950 AUDIO/550 PCB PARTS LOCATION (BOTTOM VIEW)



450 WIRING DIAGRAM



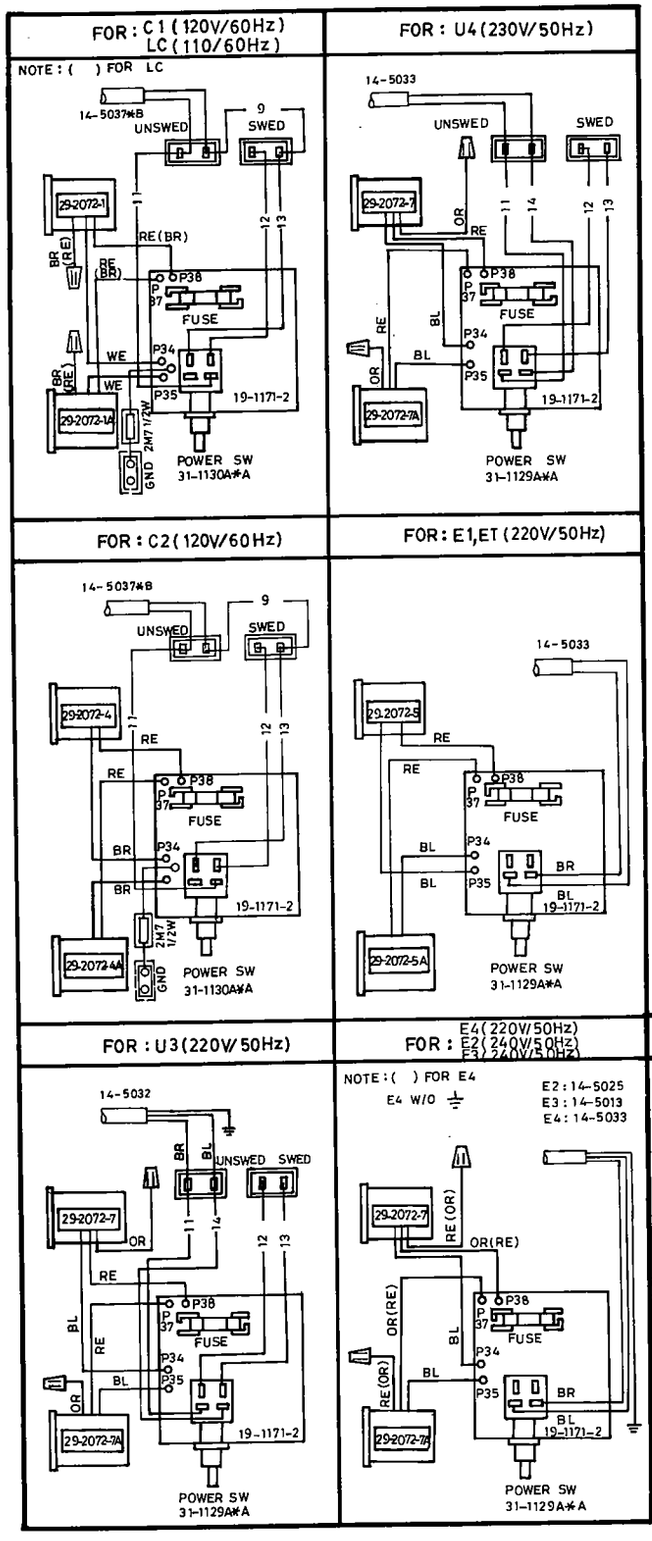


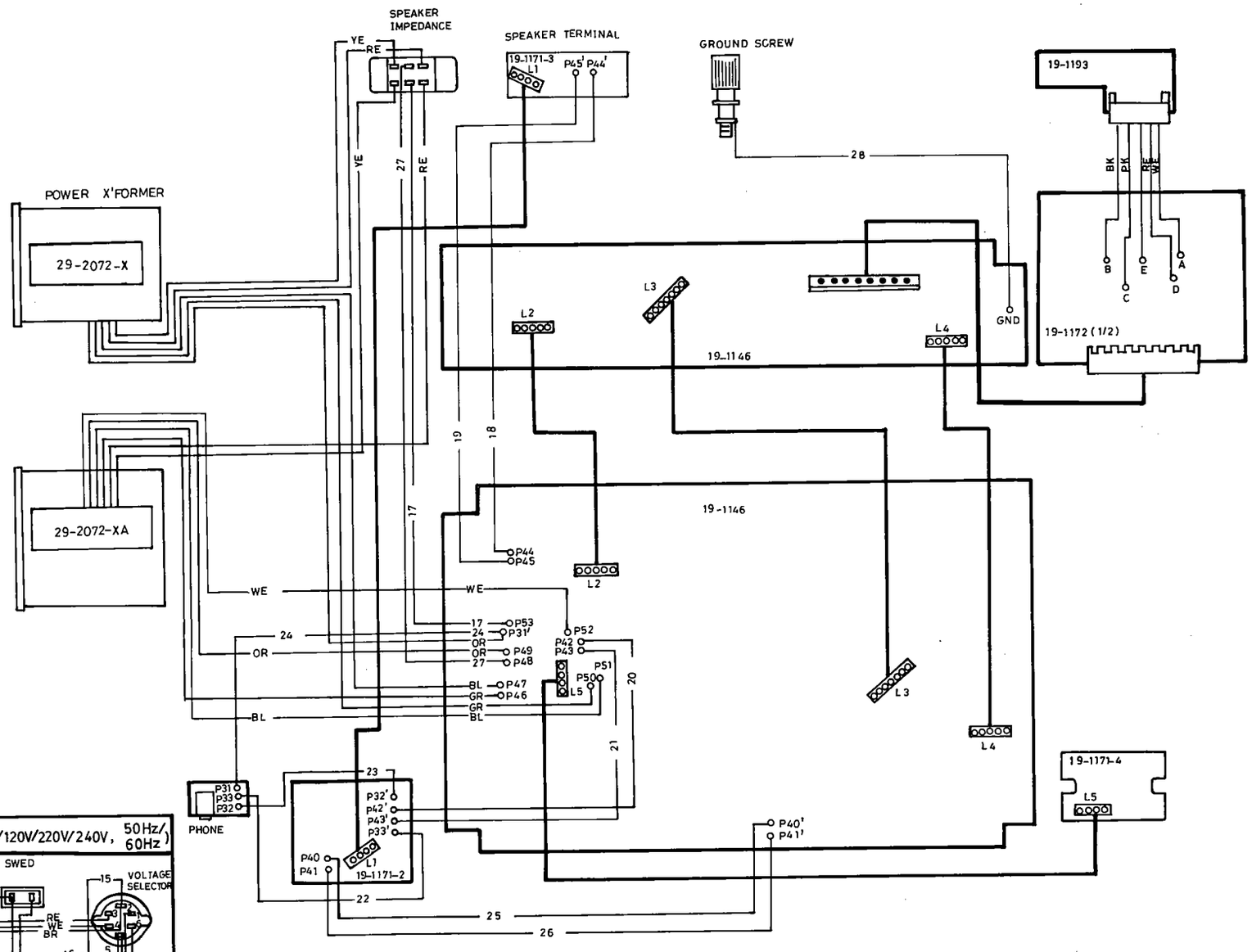
WIRE COLOR ABBREVIATIONS:

BK-BLACK
BR-BROWN
RE-RED
OR-ORANGE
YE-YELLOW
GR-GREEN
BL-BLUE
WE-WHITE
PK-PINK

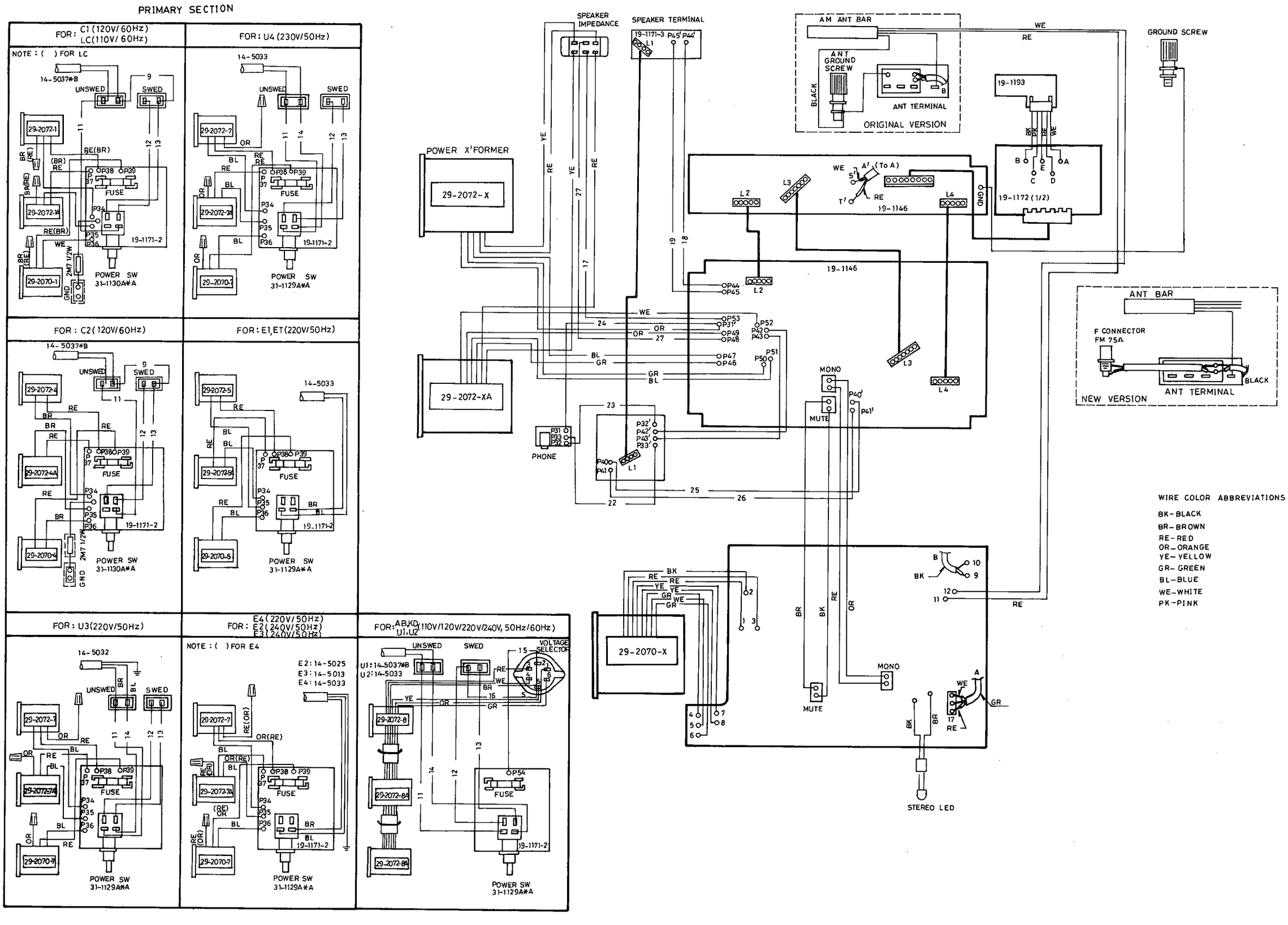
50 WIRING DIAGRAM

PRIMARY SECTION





950 WIRING DIAGRAM



WIRE COLOR ABBREVIATIONS

BK-BLACK
BR-BROWN
RE-RED
OR-ORANGE
YE-YELLOW
GR-GREEN
BL-BLUE
WE-WHITE
PK-PINK

ECTRICAL PARTS LIST

ELECTRICAL PARTS LIST

NO.	PART NO.	DESCRIPTION
STORS (All are carbon film 1/4W +-5% unless noted otherwise)		
	16-1/4CA563J	56K OHM
	16-1/8TY104J	100K OHM CHIP 1/8W
	16-1/8TY101J	100 OHM CHIP 1/8W
	16-1/8TY331J	330 OHM CHIP 1/8W
	16-1/8TY121J	120 OHM CHIP 1/8W
-R007	16-1/4CA563J	56K OHM
	16-1/8TY331J	330 OHM CHIP 1/8W
	16-1/8TY121J	120 OHM CHIP 1/8W
-R011	16-1/4CA563J	56K OHM
	16-1/8TY103J	10K OHM CHIP 1/8W
	16-1/8TY183J	18K OHM CHIP 1/8W
	16-1/8TY222J	2K2 OHM CHIP 1/8W
	16-1/8TY332J	3K3 OHM CHIP 1/8W
	16-1/8TY471J	470 OHM CHIP 1/8W
	16-1/8TY103J	10K OHM CHIP 1/8W
	16-1/8TY682J	6K8 OHM CHIP 1/8W
-R020	16-1/8TY154J	150K OHM CHIP 1/8W
-R022	16-1/8TY222J	2K2 OHM CHIP 1/8W
	16-1/8TY101J	100 OHM CHIP 1/8W
-R025	16-1/8TY104J	100K OHM CHIP 1/8W
-R102	16-1/4CA221J	220 OHM
	16-1/8TY392J	3K9 OHM CHIP 1/8W
	16-1/8TY152J	1K5 OHM CHIP 1/8W
	16-1/8TY471J	470 OHM CHIP 1/8W
	16-1/8TY331J	330 OHM CHIP 1/8W
	16-1/8TY391J	390 OHM CHIP 1/8W
	16-1/8TY101J	100 OHM CHIP 1/8W
	16-1/8TY391J	390 OHM CHIP 1/8W
	16-1/8TY331J	330 OHM CHIP 1/8W
	16-1/8TY330J	33 OHM CHIP 1/8W
	16-1/8TY102J	1K OHM CHIP 1/8W
	16-1/8TY103J	10K OHM CHIP 1/8W
	16-1/8TY823J	82K OHM CHIP 1/8W
	16-1/8TY101J	100 OHM CHIP 1/8W
	16-1/8TY102J	1K OHM CHIP 1/8W
	16-1/8TY331J	330 OHM CHIP 1/8W
	16-1/8TY103J	10K OHM CHIP 1/8W
	16-1/4CR820J	82 OHM
	16-1/8TY563J	56K OHM CHIP 1/8W
	16-1/8TY221J	220 OHM CHIP 1/8W
	16-1/8TY473J	47K OHM CHIP 1/8W
	16-1/8TY223J	22K OHM CHIP 1/8W
	16-1/4CA473J	47K OHM
	16-1/8TY153J	15K OHM CHIP 1/8W
	16-1/8TY473J	47K OHM CHIP 1/8W
9-R130	16-1/4CA683J	68K OHM
	16-1/8TY563J	56K OHM CHIP 1/8W
	16-1/4CA333J	33K OHM
	16-1/8TY823J	82K OHM CHIP 1/8W
	16-1/4CR100J	10 OHM
	16-1/8TY154J	150K OHM CHIP 1/8W
6-R137	16-1/4CR473J	47K OHM
	16-1/4CR224J	220K OHM
	16-1/4CR222J	2K2 OHM
	16-1/4CR472J	4K7 OHM
	16-1/4CA472J	4K7 OHM
	16-1/4CR103J	10K OHM
	16-1/4CR271J	270 OHM
	16-1/4CR333J	33K OHM
	16-1/4CA564J	560K OHM
	16-1/4CA102J	1K OHM
	16-1/4CA221J	220 OHM
	16-1/4CR102J	1K OHM

REF. NO.	PART NO.	DESCRIPTION
RESISTORS (All are carbon film 1/4W +-5% unless noted otherwise)		
R150	16-1/4CA103J	10K OHM
R151	16-1/4CR103J	10K OHM
R152	16-1/4CR472J	4K7 OHM
R153-R154	16-1/4CR471J	470 OHM
R156	16-1/8TY122J	1K2 OHM CHIP 1/8W
R157	16-1/4CR391J	390 OHM
R158	16-1/8TY470J	47 OHM CHIP 1/8W
R159	16-1/4CR473J	47K OHM
R160	16-1/4CR223J	22K OHM
R161	16-1/4CA223J	22K OHM
R162	16-1/4CR272J	2K7 OHM
R163	16-1/4CR221J	220 OHM
R164-R165	16-1/4CR103J	10K OHM
R168	16-1/4CR103J	10K OHM
R169	16-1/4CR563J	56K OHM
R170	16-1/4CA101J	100 OHM
R171	16-1/4CR223J	22K OHM
R175	16-1/4CA824J	820K OHM
R176	16-1/4CA334J	330K OHM
R177	16-1/4CA104J	100K OHM
R178	16-1/4CR104J	100K OHM
R179	16-1/4CA103J	10K OHM
R180	16-1/4CA123J	12K OHM
R181-R182	16-1/4CA104J	100K OHM
R183	16-1/4CR104J	100K OHM
R184-R185	16-1/4CA222J	2K2 OHM
R186	16-1/4CA473J	47K OHM
R187	16-1/4CA103J	10K OHM
R189	16-1/4CA473J	47K OHM
R190	16-1/8TY101J	100 OHM CHIP 1/8W
R201	16-1/4CA122J	1K2 OHM
R202	16-1/4CR102J	1K OHM
R203	16-1/4CA121J	120 OHM
R204	16-1/4CR562J	5K6 OHM
R205	16-1/4CR104J	100K OHM
R206	16-1/4CA103J	10K OHM
R207	16-1/4CR222J	2K2 OHM
R208	16-1/4CR222J	2K2 OHM
R209	16-1/4CA183J	18K OHM
R210	16-1/4CR183J	18K OHM
R211-R212	16-1/4CR333J	33K OHM
R213	16-1/4CA332J	3K3 OHM
R214-R216	16-1/4CR332J	3K3 OHM
R217	16-1/4CR333J	33K OHM
R218	16-1/4CR103J	10K OHM
R219-R220	16-1/4CA823J	82K OHM
R221-R222	16-1/4CA155J	1M5 OHM
R223	16-1/4CA103J	10K OHM
R224	16-1/4CR102J	1K OHM
R225	16-1/4CA104J	100K OHM
R226	16-1/4CR103J	10K OHM
R227	16-1/4CR102J	1K OHM
R239	16-1/4CA473J	47K OHM
R240-R241	16-1/4CR103J	10K OHM
R242	16-1/4CR223J	22K OHM
R243	16-1/4CR473J	47K OHM
R244-R245	16-1/4CA103J	10K OHM
R246	16-1/4CR223J	22K OHM
R247	16-1/4CR153J	15K OHM
R248	16-1/4CA223J	22K OHM
R249	16-1/4CR473J	47K OHM
R250	16-1/4CR153J	15K OHM
R251	16-1/4CR101J	100 OHM

REF. NO.	PART NO.	DESCRIPTION
RESISTORS (All are carbon film 1/4W +-5% unless noted otherwise)		
R252	16-1/4CR472J	4K7 OHM
R253	16-1/4CR333J	33K OHM
R254	16-1/4CR103J	10K OHM
R255	16-1/4CR223J	22K OHM
R256	16-1/4CR101J	100 OHM
R261	16-1/4CA221J	220 OHM
R262	16-1/4CR223J	22K OHM
R263	16-1/4CA223J	22K OHM
R279	16-1/4CR334J	330K OHM
R280	16-1/4CR105J	1M OHM
R259-R260	16-1/4CR104J	100K OHM
R264-R265	16-1/4CA471J	470 OHM
R266-R267	16-1/4CR474J	470K OHM
R268-R269	16-1/4CA185J	1M8 OHM
R270-R271	16-1/4CR562J	5K6 OHM
R272-R273	16-1/4CA472J	4K7 OHM
R274-R275	16-1/4CA472J	4K7 OHM
R276-R277	16-1/4CA332J	3K3 OHM
R278	16-1/4CR104J	100K OHM
R281-R282	16-1/4CR224J	220K OHM
R283-R284	16-1/4CA104J	100K OHM
R285-R286	16-1/4CR224J	220K OHM
R287-R288	16-1/4CA472J	4K7 OHM
R290	16-1/8TY102J	1K OHM CHIP 1/8W
R291	16-1/4CR333J	33K OHM
R292	16-1/4CR333J	33K OHM
R289	16-1/4CR682J	6K8 OHM
R301	16-1/8TY103J	10K OHM CHIP 1/8W
R303	16-1/8TY822J	8K2 OHM CHIP 1/8W
R304	16-1/8TY271J	270 OHM CHIP 1/8W
R305	16-1/8TY472J	4K7 OHM CHIP 1/8W
R310	16-1/8TY223J	22K OHM CHIP 1/8W
R311	16-1/8TY103J	10K OHM CHIP 1/8W
R312	16-1/8TY104J	100K OHM CHIP 1/8W
R313	16-1/8TY104J	100K OHM CHIP 1/8W
R314	16-1/4CA103J	10K OHM
R315	16-1/4CS223J	22K OHM
R316	16-1/4CS104J	100K OHM
R317	16-1/4CS822J	8K2 OHM
R318	16-1/4CS224J	220K OHM
R319	16-1/4CS103J	10K OHM
R320	16-1/4CS472J	4K7 OHM
R321-R344	16-1/4CS103J	10K OHM
R345	16-1/8TY154J	150K OHM CHIP 1/8W
R348	16-1/4CA103J	10K OHM
R350	16-1/8TY103J	10K OHM CHIP 1/8W
R352	16-1/4CA103J	10K OHM
R354	16-1/4CA221J	220 OHM
R355	16-1/8TY152J	1K5 OHM CHIP 1/8W
R357	16-1/8TY102J	1K OHM CHIP 1/8W
R358	16-1/8TY471J	470 OHM CHIP 1/8W
R359	16-1/8TY102J	1K OHM CHIP 1/8W
R701-R702	16-1/4CA104J	100K OHM
R704	16-1/4CR221J	220 OHM
R705	16-1/4CR103J	10K OHM
R706	16-1/4CA820J	82 OHM
R707	16-1/4CA103J	10K OHM
R708	16-1/4CR152J	1K5 OHM
R709	16-1/4CA221J	220 OHM
R710	16-1/4CR102J	1K OHM
R711	16-1/4CR332J	3K3 OHM
R712	16-1/4CR273J	27K OHM
R713	16-1/4CR121J	120 OHM

REF. NO.	PART NO.	DESCRIPTION
RESISTORS (All are carbon film 1/4W +-5% unless noted otherwise)		
R714	16-1/4CR471J	470 OHM
R715	16-1/4CR473J	47K OHM
R716-R717	16-1/4CA103J	10K OHM
R718	16-1/4CR223J	22K OHM
R719	16-1/4CA103J	10K OHM
R720	16-1/4CR101J	100 OHM
R721	16-1/4CR103J	10K OHM
R722	16-1/4CA223J	22K OHM
R723	16-1/4CR154J	150K OHM
R724	16-1/4CR122J	1K2 OHM
R725	16-1/4CR561J	560 OHM
R726	16-1/4CR104J	100K OHM
R901	16-1/2CN101J	100 OHM
R902	16-1/4CR561J	560 OHM
R903	16-1/4CA561J	560 OHM
R904	16-1/2CN101J	100 OHM
R905	16-1/4CR102J	1K OHM
R906	16-1/4CN391J	390 OHM
R907	16-1/4CR472J	4K7 OHM
R908	16-1/2CN271J	270 OHM
R909	16-1/4CA152J	1K5 OHM
R917	16-1/4CR472J	4K7 OHM
CAPACITORS		
C001	17-5DR331M	CER 330pF 50V +-20%
C002	17-5DR473Z	CER .047μF 50V +80-20%
C003	17-5DR102M	CER .001μF 50V +-20%
C004-C005	17-5DR223Z	CER .022μF 50V +80-20%
C006	17-5DR6R0DPH	CER 6pF 50V +-0.5pF PH
C007	17-5DR2R0DPH	CER 2pF 50V +-0.5pF PH
C008-C009	17-5DR102M	CER .001μF 50V +-20%
C010	17-5DR2R0DPH	CER 2pF 50V +-0.5pF PH
C011-C012	17-5DR473Z	CER .047μF 50V +80-20%
C013	17-5DR2R0DPH	CER 2pF 50V +-0.5pF PH
C014	17-5DR102M	CER .001μF 50V +-20%
C015	17-5DR6R0DPH	CER 6pF 50V +-0.5pF PH
C016-C017	17-5DR2R0DPH	CER 2pF 50V +-0.5pF PH
C018	17-5DR100FSH	CER 10pF 50V +-1pF SH
C019	17-5DR150JCH	CER 15pF 50V +-5% CH
C020	17-5DR100FPH	CER 10pF 50V +-1pF PH
C021	17-5DR5R0DCH	CER 5pF 50V +-0.5pF CH
C022	17-5DR223Z	CER .022μF 50V +80-20%
C023	17-5DR223Z	CER .022μF 50V +80-20%
C025	17-5DR473Z	CER .047μF 50V +80-20%
C026	17-5DR223Z	CER .022μF 50V +80-20%
C027	17-5DR102M	CER .001μF 50V +-20%
C028	17-5DR330YCH	CER 33pF 50V +50-10% CH
C029	17-5DR121KSL	CER 120pF 50V +-10% SL
C030	17-5DR3R0DPH	CER 3pF 50V +-0.5pF PH
C031	17-5DR203Z	CER .02μF 50V +80-20%
C032	17-5DR102M	CER .001μF 50V +-20%
C033	17-5DR473Z	CER .047μF 50V +80-20%
C034	17-5DR203Z	CER .02μF 50V +80-20%
C305	17-5DR4R0DPH	CER 4pF 50V +-0.5pF PH
C036-C045	17-5DR203Z	CER .02μF 50V +80-20%
C101	17-5DR473Z	CER .047μF 50V +80-20%
C103	17-5DR473Z	CER .047μF 50V +80-20%
C104	17-5DR473Z	CER .047μF 50V +80-20%
C105	17-5DR223Z	CER .022μF 50V +80-20%
C106	17-5DR473Z	CER .047μF 50V +80-20%
C107	17-5DR473Z	CER .047μF 50V +80-20%
C110	17-5DR223Z	CER .022μF 50V +80-20%
C111	17-5DR473Z	CER .047μF 50V +80-20%
C112-C118	17-5DR223Z	CER .022μF 50V +80-20%

REF. NO.	PART NO.	DESCRIPTION
CAPACITORS		
C119	17-1.6ER107Y	EL 100μF 16V +50-10%
C120	17-5DR223Z	CER .022μF 50V +80-20%
C121	17-5ER105Y	EL 1μF 50V +50-10%
C122-C123	17-5DR223Z	CER .022μF 50V +80-20%
C124	17-1.6ER476Y	EL 47μF 16V +50-10%
C125	17-5DR223Z	CER .022μF 50V +80-20%
C126	17-1.6ER476Y	EL 47μF 16V +50-10%
C127	17-5DR223Z	CER .022μF 50V +80-20%
C128	17-5DR181KCH	CER 180pF 50V +-10% CH
C129-C130	17-5DR5R0DUJ	CER 5pF 50V +-0.5pF UJ
C131-C133	17-5DR223Z	CER .022μF 50V +80-20%
C134	17-5ER105Y	EL 1μF 50V +50-10%
C135	17-5DR391M	CER 390pF 50V +-20%
C137-C138	17-1.6ER106Y	EL 10μF 16V +50-10%
C169	17-5FR473Z	MY .047μF 50V +80-20%
C140	17-5ER225M	EL 2.2μF 50V +-20%
C141	17-5FR102M	MY .001μF 50V +-20%
C142	17-5FR223Z	MY .022μF 50V +80-20%
C143	17-5FR224J	MY .22μF 50V +-5%
C144	17-5DR223Z	CER .022μF 50V +80-20%
C146	17-5DR3R0DUJ	CER 3pF 50V +-0.5pF UJ
C147	17-5FR103M	MY .01μF 50V +-20%
C152	17-5ER335Y	EL 3.3μF 50V +50-10%
C150	17-5DR223Z	CER .022μF 50V +80-20%
C151	17-5FR223Z	MY .022μF 50V +80-20%
C181	17-1.6SR227Y	ELBP 220μF 16V +50-10%
C182	17-5DR223Z	CER .022μF 50V +80-20%
C183	17-1.6ER476Y	EL 47μF 16V +50-10%
C201	17-5ER105Y	EL 1μF 50V +50-10%
C202	17-5FR473J	MY .047μF 50V +-5%
C204	17-1.6OF335M	TAN 3.3μF 16V +-20%
C205	17-1.6OF105M	TAN 1μF 16V +-20%
C206	17-5PU102M	PP .001μF 50V +-20%
C207	17-1.6OF335M	TAN 3.3μF 16V +-20%
C208	17-1.6EF227Y	EL 220μF 16V +50-10%
C209	17-1.6ER226Y	EL 22μF 16V +50-10%
C210	17-1.6ER226Y	EL 22μF 16V +50-10%
C211-C212	17-1.6FR152M	MY .0015μF 16V +-20%
C213-C214	17-5PU751M	PP 750pF 50V +-20%
C215-C216	17-5ER475Y	EL 4.7μF 50V +50-10%
C217	17-5ER105M	EL 1μF 50V +-20%
C218-C219	17-5FR103Z	MY .01μF 50v +80-20%
C220	17-5ER474Y	EL .47μF 50V +50-10%
C221	17-1.6ER226Y	EL 22μF 16V +50-10%
C222	17-1.6ER476Y	EL 47μF 16V +50-10%
C223-C224	17-5ER475Y	EL 4.7μF 50V +50-10%
C225	17-1.6ER476Y	EL 47μF 16V +50-10%
C226	17-1.6ER106Y	EL 10μF 16V +50-10%
C227	17-5DR101K	CER 100pF 50V +-10%
C228	17-5ER105Y	EL 1μF 50V +50-10%
C229	17-5ER105Y	EL 1μF 50V +50-10%
C230-C231	17-1.6ER106Y	EL 10μF 16V +50-10%
C232-C233	17-5ER475Y	EL 4.7μF 50V +50-10%
C234	17-5ER476Y	EL 47μF 50V +50-10%
C235	17-5FR223Z	MY .022μF 50V +80-20%
C236	17-5FR223Z	MY .022μF 50V +80-20%
C237	17-5FR472M	MY .0047μF 50V +-20%
C301	17-5DR473Z	CER .047μF 50V +80-20%
C302-C304	17-5DR103Z	CER .01μF 50V +80-20%
C305	17-5DR473Z	CER .047μF 50V +80-20%
C306	17-5DR223Z	CER .022μF 50V +80-20%
C307	17-1.6OR224J	TAN .22μF 16V +-5%
C310	17-5DR223Z	CER .022μF 50V +80-20%

REF. NO.	PART NO.	DESCRIPTION
CAPACITORS		
C311	17-.63EG478J	EL 4700μF 6.3V +-5%
C312	17-5DR330KCH	CER 33pF 50V +-10% CH
C313	17-5DR390K	CER 39pF 50V +-10%
C314	17-5DR223Z	CER .022μF 50V +80-20%
C315	17-1.60684K	TAN .68μF 16V +-10%
C316	17-5ER474Y	EL .47μF 50V +50-10%
C317	17-5DR470K	CER 47pF 50V +-10%
C318	17-5DR473Z	CER .047μF 50V +80-20%
C701	17-5DR223Z	CER .022μF 50V +80-20%
C702	17-5DR150KCH	CER 15pF 50V +-10% CH
C703	17-5DR223Z	CER .022μF 50V +80-20%
C704	17-5PU391J	PP 390pF 50V +-5%
C705	17-5DR473Z	CER .047μF 50V +80-20%
C706	17-5DR102Z	CER .001μF 50V +80-20%
C707	17-5DR473Z	CER .047μF 50V +80-20%
C708	17-5DR223Z	CER .022μF 50V +80-20%
C709	17-5ER475Y	EL 4.7μF 50V +50-10%
C710	17-5DR473Z	CER .047μF 50V +80-20%
C711	17-5ER474Y	EL .47μF 50V +50-10%
C712	17-5ER335Y	EL 3.3μF 50V +50-10%
C713	17-5DR103Z	CER .01μF 50V +80-20%
C714	17-5DR223Z	CER .022μF 50V +80-20%
C715	17-1.6ER107Y	EL 100μF 16V +50-10%
C716	17-5FR333Z	MY .033μF 50V +80-20%
C717	17-5FR222Z	MY .0022μF 50V +80-20%
C718	17-1.6EF227Y	EL 220μF 16V +50-10%
C719	17-5DR102M	CER .001μF 50V +-20%
C720	17-5DR223Z	CER .022μF 50V +80-20%
C721	17-5FF104J	MY .1μF 50V +-5%
C722	17-5ER475Y	EL 4.7μF 50V +50-10%
C901	17-3.5EG228Y	EL 2200μF 35V +50-10%
C902	17-2.5ER107Y	EL 100μF 25V +50-10%
C903-C904	17-1.6ER107Y	EL 100μF 16V +50-10%
C905	17-3.5ER477Y	EL 470μF 35V +50-10%
C906-C907	17-1.6ER107Y	EL 100μF 16V +50-10%
C908	17-5EF227Y	EL 220μF 50V +50-10%
C909	17-3.5ER107Y	EL 100μF 35V +50-10%
C910	17-3.5ER106Y	EL 10μF 35V +50-10%
C911	17-5DR223Z	CEL .022μF 50V +80-20%
C912-C913	17-.63ER107Y	EL 100μF 6.3V +50-10%
C914-C915	17-5DH104J	CEL .1μF 50V +-5%
C916-C917	17-3.5ER107Y	EL 100μF 35V +50-10%
VARIABLE RESISTOR		
VR101	29-4184	SEMI 8ø 20KB FLAT
VR102	29-4156	SEMI 8ø 100KB FLAT
VR103	29-4163	SEMI 8ø 50KB FLAT
VR201	29-4165	SEMI 8ø 5KB FLAT
VR202	29-4156	SEMI 8ø 100KB FLAT
VR203	29-4181	GM80R00434-FL(50KB*2)
VR701	29-4184	SEMI 8ø 20KB FLAT
VC001-		
VC006	17-1040	
VC101	17-1051	
VC701-		
VC702	17-1040	
DIODE		
D001-D006	30-1082*A	BB204B
D101-D102	30-1010	1N60
D103	30-1127	VARI CAP. BB109G
D104-D105	30-1152TA	1N4148
D106	30-1010	1N60
D107-D108	30-1152TA	1N4148

REF. NO.	PART NO.	DESCRIPTION
DIODE		
D109	30-1152TA	1N4148
D201-D208	30-1152TA	1N4148
D209	30-1010	1N60
D210	30-1077-1	ZENER HZ5A-3
D211-D215	30-1152TA	1N4148
D217-D218	30-1152TA	1N4148
D219	30-1152TA	1N4148
D301-D305	30-1152TA	1N4148
D701-D702	30-1146	VARIABLE CAPACITOR SVC333B
D703-D705	30-1152TA	1N4148
D901-D908	30-1002	RECTIFIER 100V1A 1N4002/10D1
D909-D910	30-1044-1	ZENER HZ15-2
D911	30-1147-1	ZENER HZ30-2
D912	30-1136-1	ZENER HZ7A-2
INTEGRATED CIRCUIT		
IC101	30-3155	FM-IF UPC1163H
IC102	30-3206	FM-IF LA1235N
IC103	30-3118	DUAL OP MC34002P
IC104	30-3069	DUAL OP RC4558/UPC4558N
IC105	30-3205	DUAL OP NE5517N/LM13600N
IC201	30-3079	MPX HA12016
IC202	30-3069	DUAL OP RC4558/UPC4558N
IC203	30-3051	METER DRIVER BA656
IC301	30-3148	PLL CONTRLLER TC9137P
IC302	30-3149	PRECALLER TD6104P
IC303	30-3050	DISPLAY DRIVER TD6301P
IC701	30-3195	AM IF LA1245
TRANSISTOR		
Q001-Q003	30-2201*A	FET J310
Q004-Q005	30-2019	2SC930
Q006-Q007	30-2201*A	FET J310
Q101-Q102	30-2201*A	FET J310
Q103	30-2019	2SC930
Q104	30-2156	2SC1815GR
Q105-Q106	30-2019	2SC930
Q201-Q208	30-2156	2SC1815GR
Q209	30-2171	2SA733A
Q210-Q211	30-2265	FET J111
Q212-Q213	30-2084-3	BC549C
Q214-Q215	30-2096	BC556B
Q216	30-2267*A	FET 2N5486
Q301	30-2156	2SC1815GR
Q302	30-2161	FET K40
Q303	30-2156	2SC1815GR
Q304	30-2161	FET K40
Q305	30-2156	2SC1815GR
Q306-Q308	30-2255	2SC2785
Q701-Q702	30-2156	2SC1815GR
Q703	30-2084-3	BC549C
Q901	30-2078	2SD330E
Q902	30-2171	2SA33A
Q903-Q904	30-2090-2	BC546B
Q181	30-2171	2SA733P
Q182	30-2367	2SK246
Q183	30-2161	2SK40
MISCELLANEOUS		
LT001	29-1098*A	COIL VARI 23pF +-6% 100MHz
LT002	29-1099*A	COIL VARI 22pF +-6% 100MHz
LT003	29-1098*A	COIL VARI 23pF +-6% 100MHz
LT004-		
LT005	29-1099*A	COIL VARI 22pF +-6% 100MHz

DEF. NO.	PART NO.	DESCRIPTION
MISCELLANEOUS		
LT006	29-1101*B	COIL VARI 30pF +-6% 100MHz
IFT101	29-3175	COIL AIR FM 1F 7μH
LT007	29-3060*B	IFT FM V4FCC-FP034X
IFT702	29-3137	IFT AM CFTS-167A
L001	29-1102*B	COIL 15μH +-10% 2.52MHz
L002	29-1092	COIL 12μH +-10% 7.96MHz
L003-L005	29-1102*B	COIL 15μH +-10% 2.52MHz
L006	29-1102*B	COIL 15μH +-10% 2.52MHz
L007	29-1092	COIL 12μH +-10% 7.96MHz
L008	29-1050	COIL 2.2μH +-10% 7.96MHz
L102-L103	29-1050	COIL 2.2μH +-10% 7.96MHz
L104	29-1102*B	COIL 15μH +-10% 2.52MHz
IF701	29-3109	IFT AM OSC 7BR-BP119Y
IF703	29-3029	IFT AM WE 10AI/21K10H/10EE
L701	29-1050	COIL 2.2μH +-10% 7.96MHz
L901-L902	29-1092	COIL 12μH +-10% 7.96MHz
LPF201-		
LPF202	29-3049	LPF FM NPS LA1196
CF102-		
CF104	29-3128	CF SFE10.7MLH-Z
CF701	29-3123	CER FILTER BFU450K2
SW303-		
SW308	31-1221	SW TOUCH EVQ-PYR12K
SW301	31-1233	SW PUSH PS-135-A22S
SW309-		
SW310	31-1221	SW TOUCH EVQ-PYR12K
SW2021	31-1237	SW PUSH SUFE2AE034-FL
SW202a-		
SW202e	31-1237	SW PUSH SUFE2AE034-FL
SW302a-		
SW302b	31-1282	SW SLID SLB22BP-03
SW201	31-1282	SW SLID SLB22BP-03
SW501		
SW506	31-1236	SW PUSH SUF22AF002-FL

AUDIO/550 ELETRICAL PARTS LIST

NO.	PART NO.	DESCRIPTION
STORS (All are carbon film 1/4W +-5% unless noted otherwise)		
-R402	16-1/4CA473J	47K OHM
-R404	16-1/4CA220J	22 OHM
-R406	16-1/4CR271J	270 OHM
-R408	16-1/4CR392J	3K9 OHM
	16-1/4CA181J	180 OHM
	16-1/4CR181J	180 OHM
	16-1/4CA181J	180 OHM
	16-1/4CU181J	180 OHM
-R414	16-1/4CR201J	200 OHM
-R416	16-1/4CR103J	10K OHM
	16-1/4CA121J	120 OHM
	16-1/4CR121J	120 OHM
	16-1/4CA151J	150 OHM
	16-1/4CU151J	150 OHM
-R422	16-1/4CA121J	120 OHM
-R424	16-1/4CA221J	220 OHM
	16-1/4CA153J	15K OHM
	16-1/4CR153J	15K OHM
	16-1/4CN680J	68 OHM
-R430	16-1/4CR680J	68 OHM
-R432	16-1/4CR681J	680 OHM
-R434	16-1/4CA104J	100K OHM
	16-1/4CA103J	10K OHM
	16-1/4CR103J	10K OHM
-R438	16-1/4CR151J	150 OHM
-R440	16-1/4CR124J	120K OHM
	16-1/4CR102J	1K OHM
-R446	16-1/4CA102J	1K OHM
-R502	16-1/4CA151J	150 OHM
-R504	16-1/4CA334J	330K OHM
-R506	16-1/4CA823J	82K OHM
-R508	16-1/4CR184J	180K OHM
-R510	16-1/4CR151J	150 OHM
-R512	16-1/4CA562J	5K6 OHM
	16-1/4CR332J	3K3 OHM
	16-1/4CA332J	3K3 OHM
-R518	16-1/4CA222J	2K2 OHM
-R520	16-1/4CR154J	150K OHM
-R522	16-1/4CR105J	1M OHM
-R524	16-1/4CA101J	100 OHM
-R526	16-1/4CA822J	8K2 OHM
-R528	16-1/4CA562J	5K6 OHM
-R530	16-1/4CA181J	180 OHM
-R534	16-1/4CA102J	1K OHM
-R536	16-1/4CA473J	47K OHM
-R538	16-1/4CA332J	3K3 OHM
-R542	16-1/4CA561J	560 OHM
-R544	16-1/4CA682J	6K8 OHM
	16-1/4CA681J	680 OHM
	16-1/4CR681J	680 OHM
	16-1/4CR102J	1K OHM
	16-1/4CA102J	1K OHM
	16-1/4CA223J	22K OHM
	16-1/4CA273J	27K OHM
	16-1/4CA123J	12K OHM
	16-1/4CA104J	100K OHM
	16-1/4CR561J	560 OHM
	16-1/4CA561J	560 OHM
-R557	16-1/4CR332J	3K3 OHM
-R560	16-1/4CA272J	2K7 OHM
	16-1/4CR334J	330K OHM
	16-1/4CA334J	330K OHM
-R602	16-1/4CA224J	220K OHM

REF. NO.	PART NO.	DESCRIPTION
RESISTORS (All are carbon film 1/4W +-5% unless noted otherwise)		
R603-R604	16-1/4CA822J	8K2 OHM
R605-R608	16-1/4CA222J	2K2 OHM
R609-R610	16-1/4CA391J	390 OHM
R611-R614	16-1/4CA222J	22K OHM
R615-R616	16-1/4CA183J	18K OHM
R617-R618	16-1/4CA391J	390 OHM
R619-R620	16-1/4CA152J	1K5 OHM
R621-R622	16-1/4CA331J	330 OHM
R623-R624	16-1/4CA390J	39 OHM
R625-R628	16-2AS821J	Metal oxide 2W 820 OHM +-5%
R629-R630	16-2AS152J	Metal oxide 2W 1K5 OHM +-5%
R631-R632	16-1/4CN561J	560 OHM
R633-R634	16-1/4CN101J	100 OHM
R635-R636	16-1/4CN330J	33 OHM
R637-R638	16-1/4CN122J	1K2 OHM
R639-R640	16-1/4CA331J	330 OHM
R641-R642	16-2AS122J	Metal oxide 2W 1K2 OHM +-5%
R643-R644	16-1/2CN181J	½W 180 OHM
R645-R648	16-1033	WIREWOUND 5W+5W 0.22 OHM
R649-R650	16-1/4CA152J	1K5 OHM
R651-R652	16-1AS100J	Metal oxide 1W 10 OHM +-5%
R653-R654	16-1/4CA103J	10K OHM
R655	16-1/4CA330J	33 OHM
R656	16-1/4CR682J	6K8 OHM
R657	16-1/4CR333J	33K OHM
R659-R660	16-1AS3R3J	Metal oxide 1W 3.3 OHM +-5%
R661-R662	16-1AS471J	Metal oxide 1W 470 OHM +-5%
R663	16-1/4CA473J	47K OHM
R664-R665	16-1/4CA563J	56K OHM
R666	16-1/4CA562J	5K6 OHM
R667	16-1/4CA563J	56K OHM
R668	16-1/4CA183J	18K OHM
R669	16-1/4CA473J	47K OHM
R670	16-1/4CA183J	18K OHM
R671	16-1/4CA224J	220K OHM
R672	16-1/4CA333J	33K OHM
R673	16-1/4CA563J	56K OHM
R674	16-1/4CA562J	5K6 OHM
*R675	16-1/4CA153J	15K OHM
R676	16-2AS681J	Metal oxide 2W. 680 OHM +-5%
R677	16-1/4CA151J	150 OHM
R678-R679	16-1/4CA102J	1K OHM
R680	16-1/4CA151J	150 OHM
R681-R682	16-1/4CA332J	3K3 OHM
*R683	16-1/2CS123J	½W 12K OHM
ΔR683	16-1AS682J	Metal oxide 1W 6K8 OHM +-5%
R801-R802	16-1/4CA473J	47K OHM
R803	16-1/4CR473J	47K OHM
R804	16-1/4CA473J	47K OHM
R805	16-1/4CR824J	820K OHM
R806	16-1/4CA332J	3K3 OHM
R807	16-1/4CA823J	82K OHM
R808-R809	16-1/4CA152J	1K5 OHM
R810-R811	16-1/4CA122J	1K2 OHM
R812	16-1AS100J	Metal oxide 1W 10 OHM +-5%
R813-R814	16-1/4CA122J	1K2 OHM
R815	16-1/4CA153J	15K OHM
R829	16-3AN471J	Metal oxide 3W 470 OHM +-5%
R831	16-3AN561J	Metal oxide 3W 560 OHM +-5%
R833	16-1AS100J	Metal oxide 1W 10 OHM +-5%
*R834	16-1/2CS123J	½W 12K OHM
R835	16-1/4CA332J	3K3 OHM
R836	16-1/4CR824J	820K OHM

Note: 1)Asterisk * denotes for 550 only 2)Delta Δ denotes for 950 only

REF.NO.	PART NO.	DESCRIPTION
RESISTORS (All are carbon film 1/4W +-5% unless noted otherwise)		
R840	16-1/2CP275J	½W 2M7 OHM
R850-R851	16-1/2AN3R3J	Metal oxide ½W 3.3 OHM +-5%
CAPACITORS		
C401-C402	17-5DR101M	Ceramic 100pF 50V +-20%
C403-C404	17-5DR221M	Ceramic 220pF 50V +-20%
C405-C406	17-5DR101M	Ceramic 100pF 50V +-20%
C407-C408	17-3.5ER106Y	Electrolytic 10uF 35V +50-10%
C409-C410	17-0.63EF108Y	Electrolyic 1000uF 6.3V +50-10%
C411-C412	17-5DR150M	Ceramic 15pF 50V +-20%
C413-C414	17-5DR221M	Ceramic 220pF 50V +-20%
C415-C416	17-5DH104Z	Ceramic 0.1uF 50V +80-20%
C417-C418	17-5FF222J	Mylar 0.0022uF 50V +-5%
C419-C420	17-1.6ER106Y	Electrolytic 10uF 16V +50-10%
C421-C422	17-5FF752J	Mylar 0.0075uF 50V +-5%
C423-C424	17-5FF273J	Mylar 0.027uF 50V +-5%
C425	17-5DH104Z	Ceramic 0.1uF 50V +80-20%
C501-C502	17-5FF122J	Mylar 0.0012uF 50V +-5%
C503-C504	17-5FH224J	Mylar 0.22uF 50V +-5%
C505-C506	17-5ER105Y	Electrolytic 1uF 50V +50-10%
C507-C510	17-5FF124J	Mylar 0.12uF 50V +-5%
C511-C512	17-5DR221M	Ceramic 220pF 50V +-20%
C513	17-5DH104Z	Ceramic 0.1uF 50V +80-20%
C515-C516	17-5DR150M	Ceramic 15pF 50V +-20%
C517-C518	17-5ER105Y	Electrolytic 1uF 50V +50-10%
C519-C522	17-5FH334J	Mylar 0.33uF 50V +-5%
C523-C524	17-5DR221M	Ceramic 220pF 50V +-20%
C525-C526	17-2.5ER476Y	Electrolytic 47uF 25V +50-10%
C527-C528	17-5DR470M	Ceramic 47pF 50V +-20%
C529-C534	17-1ER476Y	Electrolytic 47uF 10V +50-10%
C535-C536	17-5FF183J	Mylar 0.018uF 50V +-5%
C537-C538	17-5FF104J	Mylar 0.1uF 50V +-5%
C539-C540	17-1ER107Y	Mylar 100uF 10V +50-10%
C541-C542	17-5FF124J	Mylar 0.12uF 50V +-5%
C543-C544	17-1.6R684K	Electrolytic solid 0.68uF 16V +-10%
C545	17-1ER107Y	Electrolytic 100uF 10V +50-10%
C601-C604	17-1.6R105K	Electrolytic solid 1uF 16V +-10%
C605-C606	17-5FF122J	Mylar 0.0012uF 50V +-5%
C607-C608	17-5DF821K	Ceramic 820pF 50V +-10%
C609-C610	17-5FF102J	Mylar 0.001uF 50V +-5%
C611-C612	17-5DR470M	Ceramic 47pF 50V +-20%
C613-C614	17-0.63EF108Y	Electrolytic 1000uF 6.3V +50-10%
C615-C616	17-5FF102J	Mylar 0.001uF 50V +-5%
C617-C618	17-5DH104Z	Ceramic 0.1uF 50V +80-20%
C619	17-6.3EF476Y	Electrolytic 47uF 63V +50-10%
C621-C622	17-5DR101M	Ceramic 100pF 50V +-20%
C623-C624	17-5DH104Z	Ceramic 0.1uF 50V +80-20%
C625-C626	17-5ER476Y	Electrolytic 47uF 50V +50-10%
C627-C630	17-5DR470M	Ceramic 47pF 50V +-20%
C631-C640	17-5DH104Z	Ceramic 0.1uF 50V +80-20%
C641	17-5ER106Y	Electrolytic 10uF 50V +50-10%
C642-C643	17-1ER476Y	Electrolytic 47uF 10V +50-10%
C644-C645	17-5ER476Y	Electrolytic 47uF 50V +50-10%
C646	17-5ER474Y	Electrolytic 0.47uF 50V +50-10%
C647	17-1ER226Y	Electrolytic 22uF 10V +50-10%
C648-C649	17-5DR223Z	Ceramic 0.022uF 50V +80-20%
C650-C651	17-5DH104Z	Ceramic 0.1uF 50V +80-20%
C652-C654	17-5DR101M	Ceramic 100pF 50V +-20%
C801-C802	17-2.5ER476Y	Electrolytic 47uF 25V +50-10%
C803-C804	17-5ER476Y	Electrolytic 47uF 50V +50-10%
C805	17-5ER106Y	Electrolytic 10uF 50V +50-10%
C806	17-5DH104Z	Ceramic 0.1uF 50V +80-20%
C807-C808	17-5ER106Y	Electrolytic 10uF 50V +50-10%

REF. NO.	PART NO.	DESCROPTION
CAPACITORS		
C809-C810	17-5DR220M	Ceramic 22pF 50V +-20%
C811-C814	17-5ER476Y	Electrolytic 47uF 50V +50-10%
C815-C816	17-6.3EG477Y	Electrolytic 470uF 63V +50-10%
C817-C820	17-5P478Y	Electrolytic 4700uF 50V +50-10%
C821	17-5ER105Y	Electrolytic 1uF 50V +50-10%
C822	17-2014	Ceramic 4700pF 400V AC KC
C823	17-2011	Ceramic 4700pF 125V AC MY
ΔC824-C831	17-5FF103K	Mylar 0.01uF 50V +-10%
C832	17-5DH104Z	Ceramic 0.1uF 50V +80-20%
COILS		
L601-L602	29-1147	AIR 1.2ø×6.9(12.6)Dx30T
VARIABLE RESISTORS		
VR501	29-4103A	16ø 20KBx2/50kHMx2 P2KF25
VR502-VR503	29-4075F	16ø 10KCx2 P1K25
VR601-VR602	29-4168	Semi 8ø 500B Flat
VR603-VR604	29-4170	Semi 8ø 100B Flat
DIODES		
D401-D412	30-1019-1	BAW62/BAW76
D501-D502	30-1019-1	BAW62/BAW76
D601-D612	30-1019-1	BAW62/BAW76
D613-D614	30-1038	Zener 18V ½W RD18EB3
D615	30-1002	Rectifier 100V 1A IN4002/10D1
D801-D804	30-1002	Rectifier 100V 1A IN4002/10D1
D805-D808	30-1017-1	Rectifier 100V 3A G3B
D809	30-1002	Rectifier 100V 1A IN4002/10D1
LEDS		
LD601	30-1085	Green LT3231G/X-253FG
*LD602	30-1075	RED LT3211R/X-253FPR
*LD801	30-1075	RED LT3211R/X-253FPR
TRANSISTORS		
Q401-Q402	30-2096	BC556B
Q403-Q406	30-2264	FET 2SK163L
Q407-Q408	30-2085-2	BC559B
Q409-Q410	30-2096	BC556B
Q411-Q414	30-2090-2	BC546B
Q415-Q416	30-2096	BC556B
Q501-Q502	30-2090-2	BC546B
Q503-Q504	30-2096	BC556B
Q505	30-2090-2	BC546B
Q506-Q507	30-2096	BC556B
Q508	30-2090-2	BC546B
Q509-Q510	30-2265	FET J111
Q601-Q602	30-2096	BC556B
Q603-Q604	30-2090-2	BC546B
Q605-Q606	30-2238	BF423
Q607-Q610	30-2260	2SD669C/2SD669D
Q611-Q612	30-2259	2SB649C/2SB649D
Q613-Q614	30-2260	2SD669C/2SD669D
Q615-Q616	30-2305	2SC2921
Q617-Q618	30-2304	2SA1215
Q619-Q620	30-2090-2	BC546B
Q621	30-2096	BC556B
Q801	30-2260	2SD669C/2SD669D
Q802	30-2096	BC556B
Q803	30-2259	2SB649C/2SB649D
Q804	30-2096	BC556B
Q806	30-2259	2SB649C/2SB649D
INTEGRATED CIRCUITS		
IC501	30-3179	Dual OP RC5532/NE5532

Note: 1)Asterisk * denotes for 550 only 2)Delta Δ denotes for 950 only

IC701	30-3187	Protector	TA7317P
IC801	30-3178	Regulator	M5231L
IC802	30-3213	Regulator	MC78M24CT/AN7824
SWITCHES			
SW401	31-1228	Slide	SSB23FL313
SW402	31-1204	Rotary	RZL45FL504
SW403	31-1253	Switching Part	ESA-26132
	31-1261	Operating Part	ESA-33446B
SW404	31-1260	Slide	SSB022NA01-FL
SW501	31-1247	Push	SUF32AE023-FL
SW503-			
SW504	31-1247	Push	SUF32AE023-FL
SW502-			
SW505	31-1235	Push	SUF22AA012-FL
SW601-			
SW602	31-1226	Slide	SSP22FL080
SW603	31-1024F	Rotary	SRZV044N37-FL

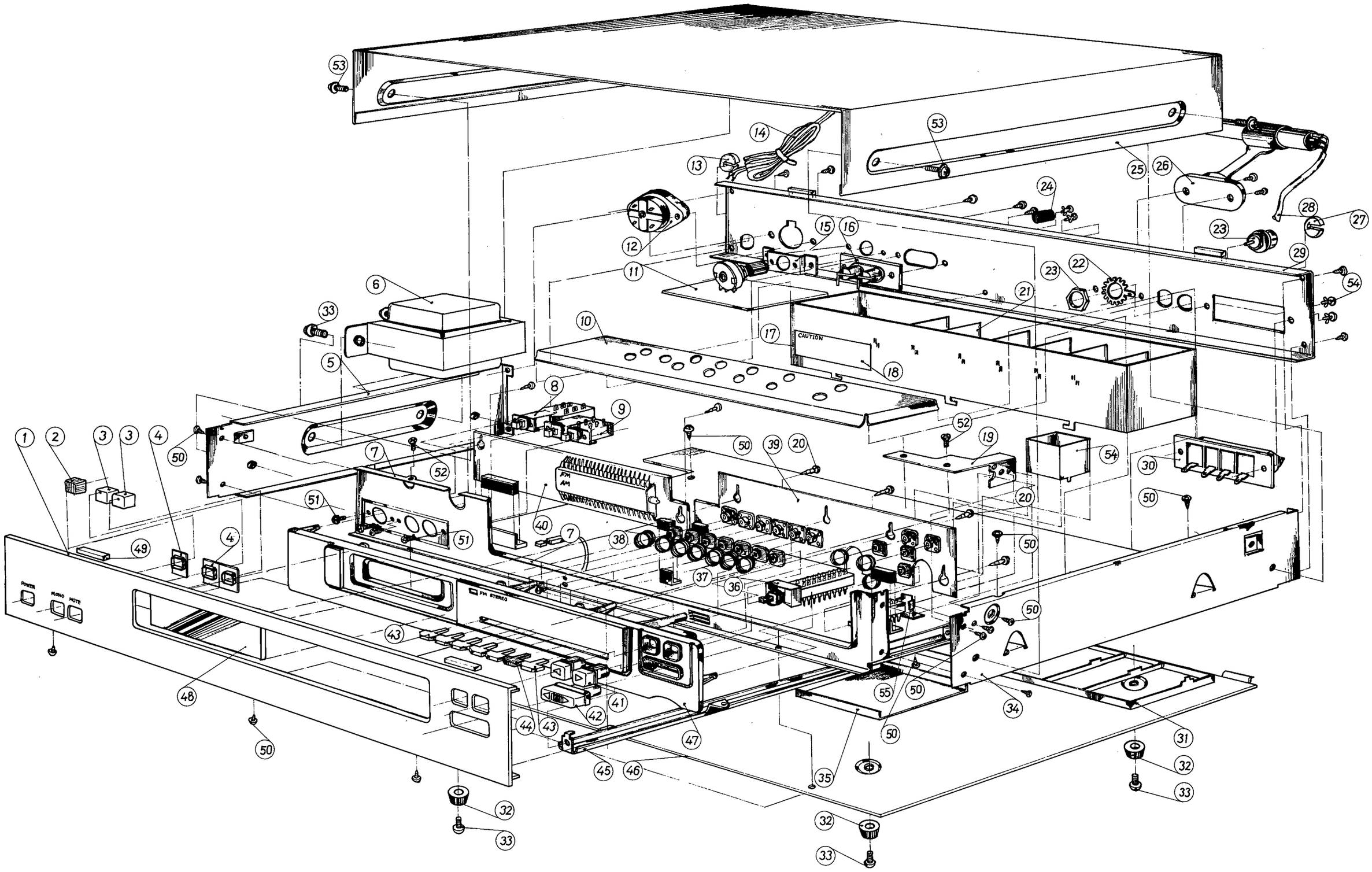
950 AUDIO/550 CRITICAL COMPONENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	
Switched Unswitched	12-2121	AC Outlet	AB/C1/C2/LC/U1-U4 Version
	14-5013	Power Cord	E3 Version
	14-5025	Power Cord	E2 Version
	14-5032	Power Cord	U3 Version
	14-5033	Power Cord	E1/ET/E4/U2/U4
	14-5037*B	Power COrd	C1/C2/LC/U1/AB
C822-C823	17-2011	Capacitor	AB/E1-E4/ET/U1-U4 Version
C823	17-2014	Capacitor	C1/C2/LC Version
	29-2072-1	Transformer	C1/LC Version
	29-2072-1A	Transformer	C1/LC Version
	29-2072-4	Transformer	C2 Version
	29-2072-4A	Transformer	C2 Version
	29-2072-5	Transformer	E1/ET Version
	29-2072-5A	Transformer	E1/ET Version
	29-2072-7	Transformer	E2/E3/E4/U3/U4 Version
	29-2072-7A	Transformer	E2/E3/E4/U3/U4 Version
	29-2072-8	Transformer	AB/U1/U2 Version
	29-2072-8A	Transformer	AB/U1/U2 Version
SW802a-			
SW802b	31-1129A*A	Switch	AB/E1-E4/ET/U1-U4 Version
SW802a	31-1130A*A	Switch	C1/C2/LC Version
F6	32-14001W	Fuse 4A 250V Nomal	AB/C1/C2/LC/U1 Version
F6	32-12001S	Fuse aA 250V Time-lag	E1-E4/ET/U2-U4 Version

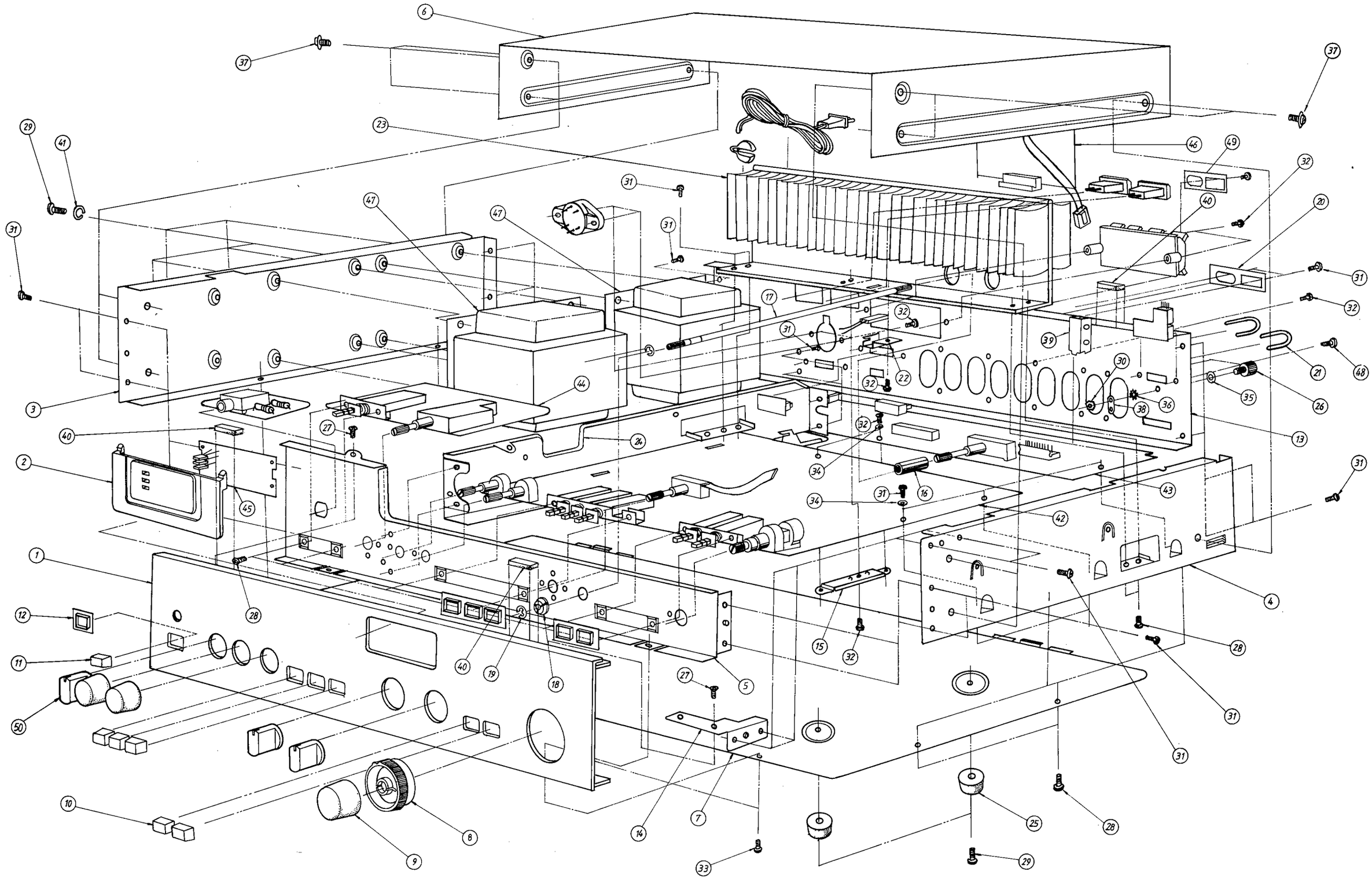
450/950 TUNER CRITICAL COMPONENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	
	14-5013	Power Cord	E3 Version
	14-5025	Power Cord	E2 Version
	14-5032	Power Cord	U3 Version
	14-5033	Power Cord	E1/ET/E4/U2/U4 Version
	14-5037*B	Power Cord	C1/C2/LC/U1/AB
	17-2011	Capacitor	AB/E1-E4/ET/U1-U4 Version
	17-2014	Capacitor	C1/C2/LC Version
	29-2070-1	Transformer	C1/LC Version
	29-2070-4	Transformer	C2 Version
	29-2070-5	Transformer	E1/ET Version
	29-2070-7	Transformer	E2/E3/E4/U3/U4 Version
	29-2070-8	Transformer	AB/U1/U2 Version
	31-1129A*A	Switch	AB/E1-E4/ET/U1-U4 Version
	31-1130A*A	Swich	C1/C2/LC Version
F1-F2-F3	32-15000U	Fuse 500mA 250V Normal	AB/C1/C2/LC/U1 Version
F1-F2-F3	32-15000S	Fuse 500mA 250V Time-lag	E1-E4/ET/U2-U4 Version

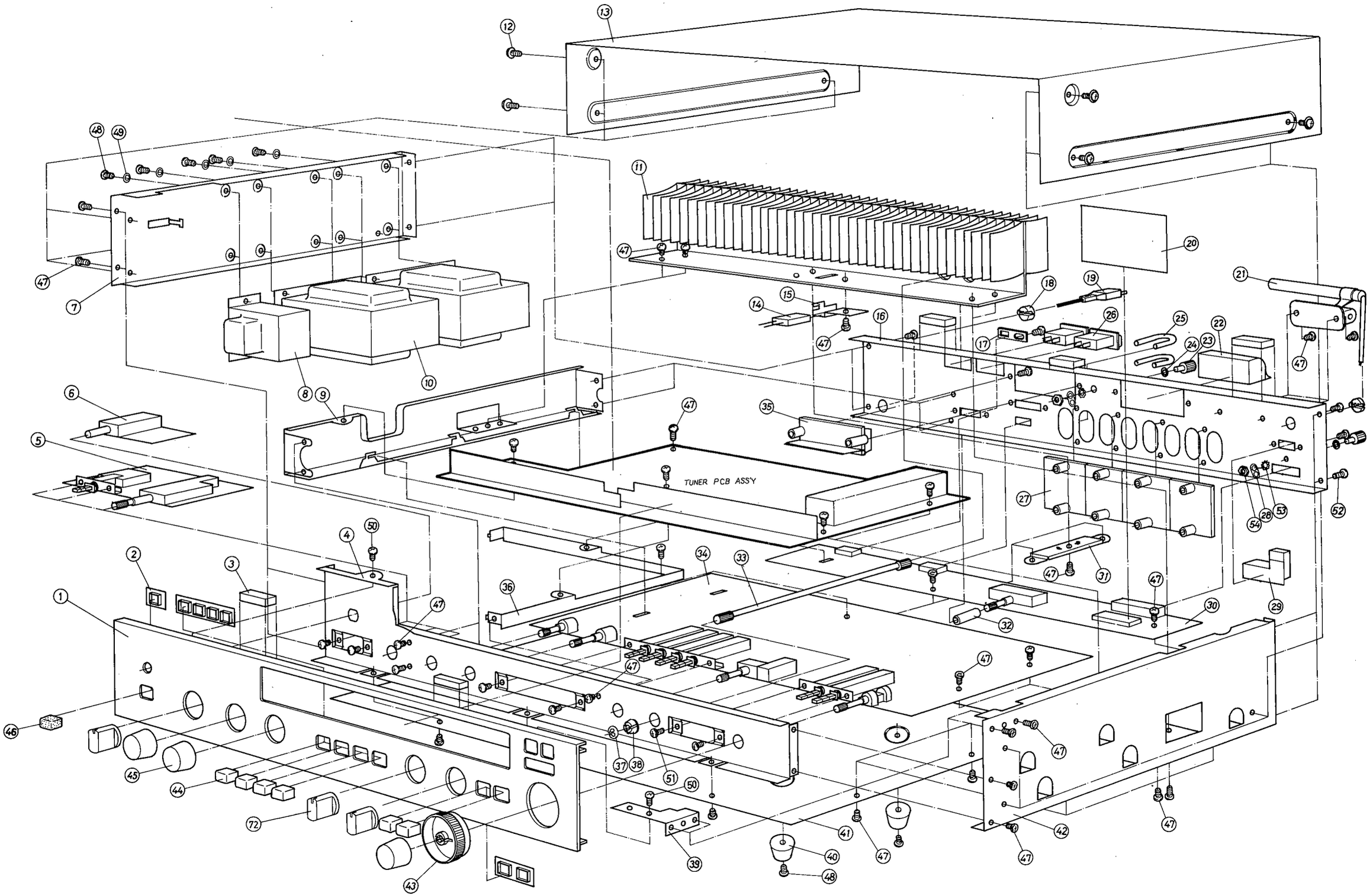
0 ASSEMBLY DIAGRAM



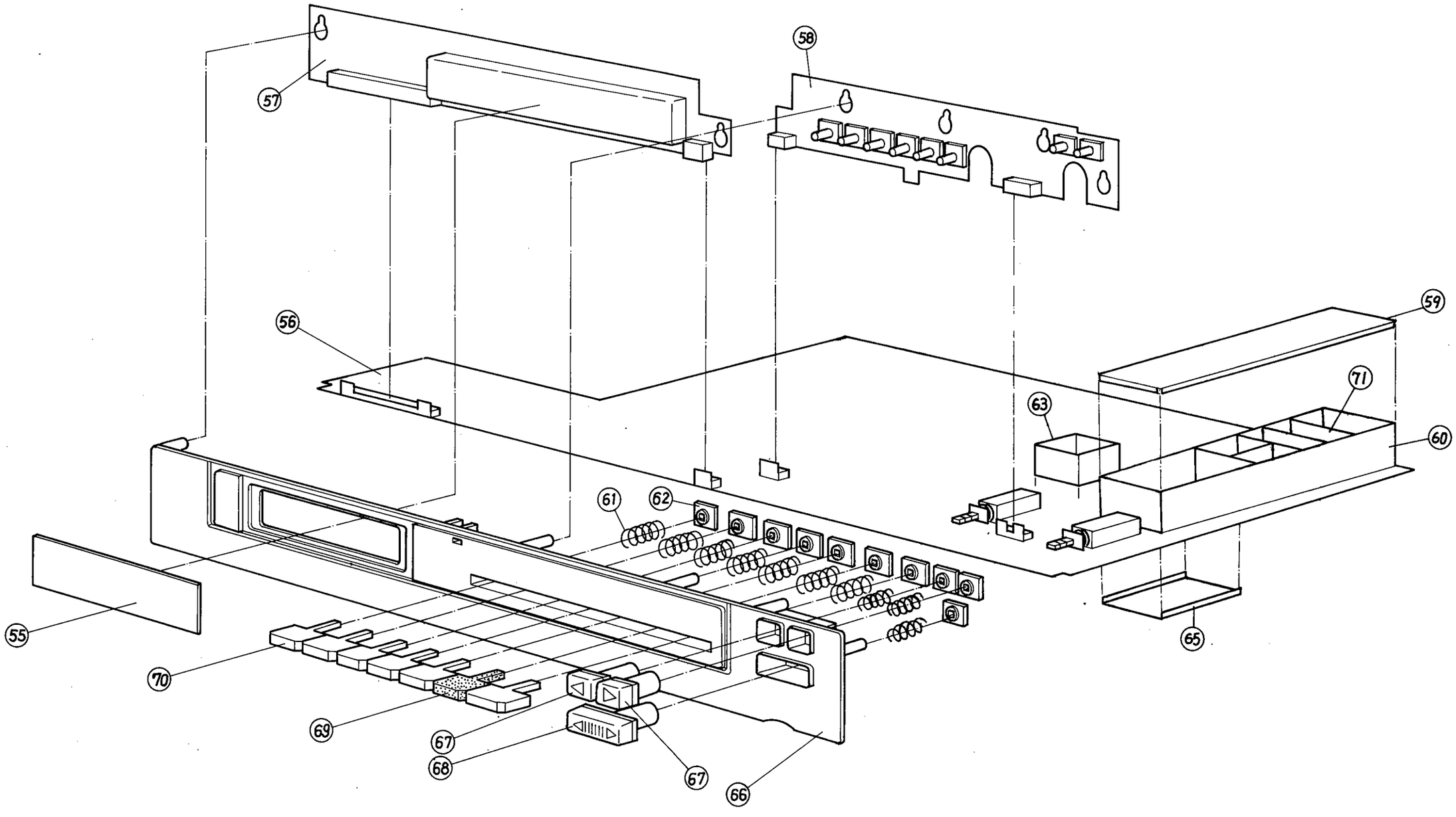
550 ASSEMBLY DIAGRAM



0 ASSEMBLY DIAGRAM



950 SUB-ASSEMBLY DIAGRAM (TUNER PCB)



ECHANICLA PARTS LIST

MECHANICAL PARTS LIST

NO.	DESCRIPTION	RS PART NO.	Q'ty
1	FRONT PANEL	11-8327	1
2	POWER KNOB GREEN	12-3175-2	1
3	PUSH KNOB BLACK	12-3175	2
4	BUSHING FOR PUSH KNOB	28-1067	3
5	LEFT CHASSIS	11-6128	1
6	TRANSFORMER	29-2070	1
7	FRONT CHASSIS	11-6125	1
8	POWER SWITCH	31-1129A	1
9	PUSH SWITCH 2P	31-1236	1
10	METAL COVER	11-1011	1
11	BUFFER PCB ASS'Y	90-1192	1
12	VOLTAGE SELECTOR SWITCH	31-1121	1
13	BUSHING 4N4	14-5003	1
14	POWER CORD	14-5037	1
15	BRACKET FOR O/P	11-2295	1
16	RCA JACK 2P	12-2110	1
17	SHIELD CASE	11-9101	1
18	CAUTION LABEL	21-2T15	1
19	BRACKET FOR FRONT PANEL	11-2287	1
20	RIVET 2.5ϕx14L	15-2061	6
21	INNER SHIELD PLATE	11-9100	6
22	LUG	11-3033	1
23	CONNECTOR & NUT	12-1032	1
24	KNOB FOR O/P	12-3147	1
25	CABINET	50-1035	1
26	AM ANT	29-5010	1
27	BUSHING 5N4	14-5005	1
28	TUBING 6.5ϕ PVC	W8-0A65	1
29	BACK PANEL	11-8328	1
30	ANT TERMINAL	12-2012	1
31	BOTTOM SHIELD	11-9102	1
32	RUBBER FOOT	28-1029	4
33	MACHINE SCREW M4x8	S1B04+I08SL-2	6
34	RIGHT CHASSIS	11-6126	1
35	SHIELD FOR OSC	11-9105	1
36	BAND SWITCH	31-1237	1
37	BUSHING FOR KNOB	28-1065	10
38	SPRING FOR KNOB	12-5036	10
39	SWITCH PCB ASS'Y	90-1157	1
40	DISPLAY PCB ASS'Y	90-1155	1
41	UP/DOWN KNOB	12-3177	2
42	SEARCH KNOB	12-3176	1
43	PUSH KNOB BLACK	12-3127	6
44	PUSH KNOB GREEN	12-3127-1	1
45	CENTER CHASSIS	11-6129	1
46	BOTTOM CHASSIS	11-6127	1
47	AUX PANEL	11-8204-4	1
48	ACRY WINDOW	11-8203	1
49	RETAINER	28-2090	4
50	TAPPING SCREW T3x8	S2B03+I08SL-2	29
51	MACHINE SCREW M3x6	S1B03+I06SL-2	6
52	FLAT SCREW M3x6	S1E03+I06SZ-2	2
53	SPECIAL SCREW M4x8	15-2051	4
54	SHIELD PLATE FOR IF	11-9098	1
55	BRACKET FOR SEARCH SW.	11-2290	1

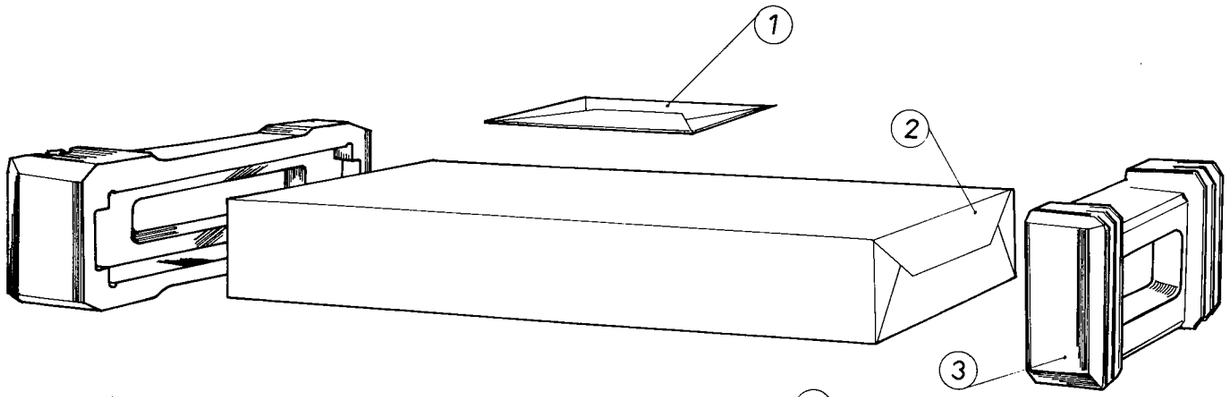
550 MECHANICAL PARTS LIST

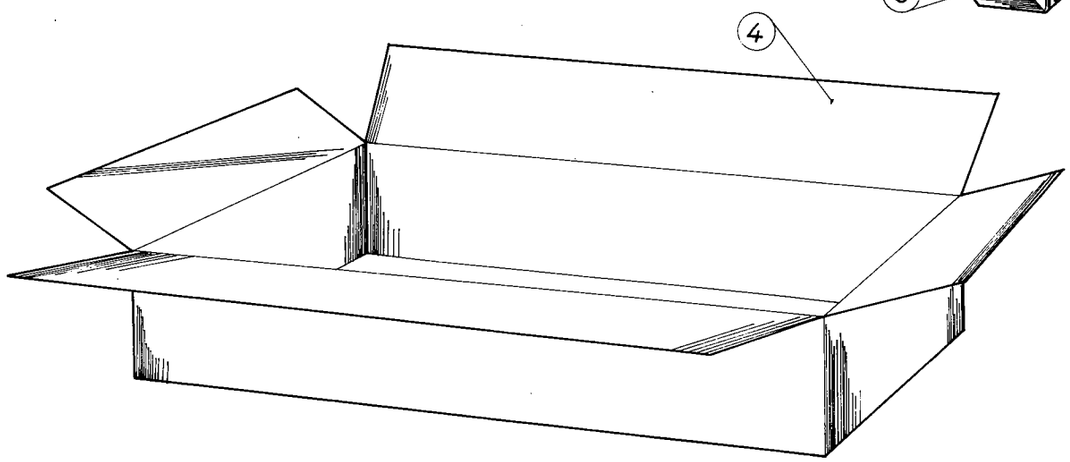
REF. NO.	DESCRIPTION	RS PART NO.	Q'ty
1	FRONT PANEL	11-8235-2	1
2	AUX. PANEL	11-8233-2	1
3	AUX. CHASSIS L	11-6119	1
4	AUX. CHASSIS R	11-6112-1	1
5	FRONT CHASSIS	11-6110	1
6	CABINET	50-1033	1
7	BOTTOM CHASSIS	11-6111	1
8	BALANCE KNOB	12-3071-1	1
9	CONTROL KNOB	12-3178	3
10	PUSH KNOB BLACK	12-3175	5
11	PUSH KNOB GREEN	12-3175-2	1
12	BUSHING	28-1067	6
13	BACK PANEL	11-8236	1
14	BKT. FOR FRONT PNL.	11-2293	1
15	BKT. FOR PCB	11-2208	1
16	TUBE FOR SHAFT	13-7003	1
17	SHAFT	11-7047	1
18	TUBE	12-4027	1
19	E-RING	15-5014	2
20	STOPPER SW.	11-9106	1
21	JUMPER	11-4011	2
22	RELAY HOLDER	11-3064	1
23	HEAT SINK	11-5064	1
24	CHASSIS CENTER	11-6113	1
25	RUBBER FOOT	28-1029	4
26	GROUND SCREW	15-2037	1
27	MACHINE SCREW F. 3x6	S1E03+I06SL-2	2
28	MACHINE SCREW 3x6	S1B03+I06SL-2	16
29	MACHINE SCREW 4x10	S1B04+I10SL-2	12
30	NUT	N3.5B06I2.8SZ	1
31	TAPPINE SCREW 3x6	S2B03+I06SL-2	22
32	TAPPINE SCREW 3x8	S2B03+I08SL-2	16
33	MACHINE SCREW 3x10	S1B03+I10SL-2	13
34	FIBER WASHER	A03A08F0.5	5
35	GROUND WASHER	A3.5A09SN01	1
36	GEAR WASHER	A3.5I07SZ01	1
37	SPECIAL SCREW	15-2062	6
38	LUG	11-3026	1
39	SHIELD PLATE	11-9104	1
40	RETAINER	28-2025	5
41	SPRING WASHER	A04G07SL01	8
42	PCB MAIN	19-1146	1
43	PCB CUB	19-1146	1
44	PCB POWER	19-1171	1
45	PCB LED	19-1171	1
46	PCB PHONO	19-1172	1
47	TRANSFORMER	29-2072	2
48	MACHINE SCREW 2.6x4	S1B2.6+I04SL-2	2
49	STOPPER SW.	11-9107	1
50	SELECTOR KNOB	12-3179	3

950 MECHANICAL PARTS LIST

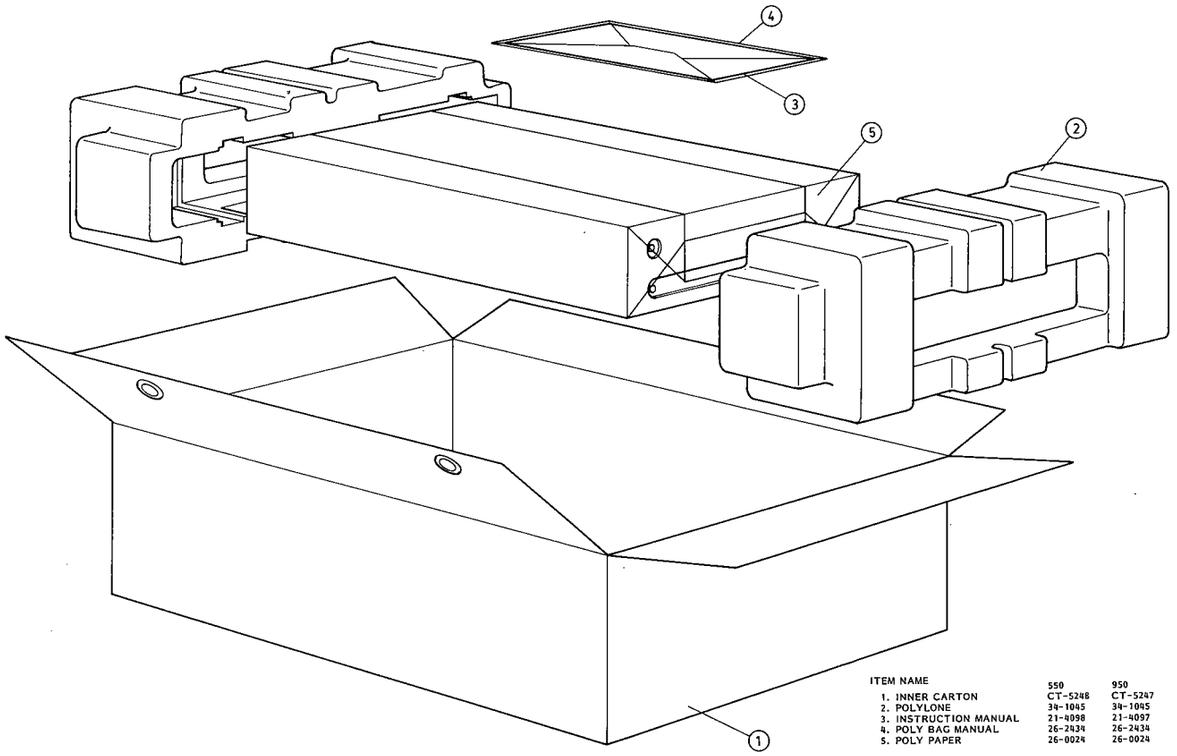
REF. NO.	DESCRIPTION	RS PART NO.	Q'ty
1	FRONT PANEL	11-8205-1	1
2	BUSHING	28-1067	7
3	RETAINER	28-2090	4
4	FRONT CHASSIS	11-6110	1
5	POWER SW. PCB ASS'Y	90-1171	2/3
6	HEADPHONES JACK PCB ASS'Y	90-1171	1/3
7	LEFT CHASSIS	11-6119	1
8	TUNER'S POWER TRANSFORMER	29-6070	1
9	CENTER CHASSIS	11-6113	1
10	POWER TRANSFORMER	29-2072	2
11	HEAT SINK	11-5064	1
12	SPECIAL SCREW	15-2062	6
13	CABINET	50-1033	1
14	THERMAL PROTECTOR RELAY	16-2002	1
15	HOLDER FOR THERMAL RELAY	11-3064	1
16	BACK PANEL	11-8324	1
17	STOPPER FOR SW.	11-9107	1
18	BUSHING 4N-4	14-5003	1
19	POWER CORD	14-5037	1
20	PEONO PCB ASS'Y	90-1172	1
21	AN. ANT	29-5010	1
22	ANT. TERMINAL	12-2012	1
23	GROUND SCREW	15-2037	1
24	WASHER ϕ3.5x9x1T	A3.5A09SN01	6
25	JUMPER	11-4011	2
26	RECEPTACLE UL/CSA IR19-1	12-2121	2
27	RCA JACK (4P)	12-2092	4
28	LUG	11-3026	2
29	MC/MM PCB ASS'Y	90-1193	1
30	MAIN PCB ASS'Y	90-1146	1/3
31	HOLD FOR PCB	11-2208	1
32	TUBE	12-7003	1
33	SHAFT	11-7047	1
34	MAIN PCB ASS'Y	90-1146	2/3
35	SPEAKERS TERMINAL (8P)	12-2109	1
36	BRACKET FOR PCB	11-2234	1
37	E-RING 5ϕ	15-5014	2
38	TUBE FOR SHAFT	13-4027	1
39	BRACKET FOR FRONT PANEL	11-2293	1
40	RUBBER FOOT	28-1029	4
41	BOTTOM CHASSIS	11-6111	1
42	RIGHT CHASSIS	11-6112	1
43	BALANCE KNOB	12-3071-1	1
44	PUSH KNOB BLACK	12-3175	6
45	CONTROL KNOB (INCL. VOLUME)	12-3178	3
46	PUSH KNOB GREEN	12-3175-2	1
47	TAPPING SCREW T3x6	S2B03+I06SL-2	28
48	MACHINE SCREW M4x8	S1B04+I08SL-2	14
49	S./WASHER ϕ4x8x1	A04G08SL01	10
50	FLAT SCREW M3x6	S1E03+I06SZ-2	2
51	MACHINE SCREW M3x6	S1B03+I06SL-2	28
52	TAPPING SCREW T3x6	S2B03+I08SL-2	10
53	GEAR WASHER	A3.5I07SZ01	2
54	NUT ϕ3.5x7	N3.5B06I2.8SZ	2
55	ACRY WINDOW	11-8203	1
56	TUNER PCB ASS'Y	90-1156	1
57	DISPLAY PCB ASS'Y	90-1155	1
58	TOUCH SW. PCB ASS'Y	90-1157	1
59	METAL COVER	11-1101	1
60	SHIELD CASE	11-9011	1
61	SPRING FOR KNOB	19-5036	10
62	BUSHING FOR KNOB	28-1065	3
63	SHIELD PLATE FOR IF.	11-9098	1
64	BOTTOM SHIELD	11-9102	1
65	SHIELD FOR OSC	11-9105	1
66	AUXILIARY PANEL	11-8204	1
67	UP/DOWN KNOB	12-3177	2
68	SEARCH KNOB	12-3176	1
69	PUSH KNOB BROWN	12-3127-1	1
70	PUSH KNOB BLACK	12-3127	1
71	INNER SHIELD PLATE	11-9100	6
72	SELECTOR KNOB	12-3179	3

PACKING DIAGRAM





ITEM NUMBER	MANE	Q'ty
1. 26-2434	MANUAL'S POLY BAG	1
2. 26-0005	POLY PAPER	1
3. 34-1044	POLYLONE	2
4. CT-5161	INNER CARTON	1



ITEM NAME	550	950	Q'ty
1. INNER CARTON	CT-5248	CT-5247	1
2. POLYLONE	34-1045	34-1045	2
3. INSTRUCTION MANUAL	21-4098	21-4097	1
4. POLY BAG MANUAL	26-2434	26-2434	1
5. POLY PAPER	26-0024	26-0024	1

PROTON

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