

ONKYO SERVICE MANUAL

SOLID STATE STEREO RECEIVER TX-560



INDEX

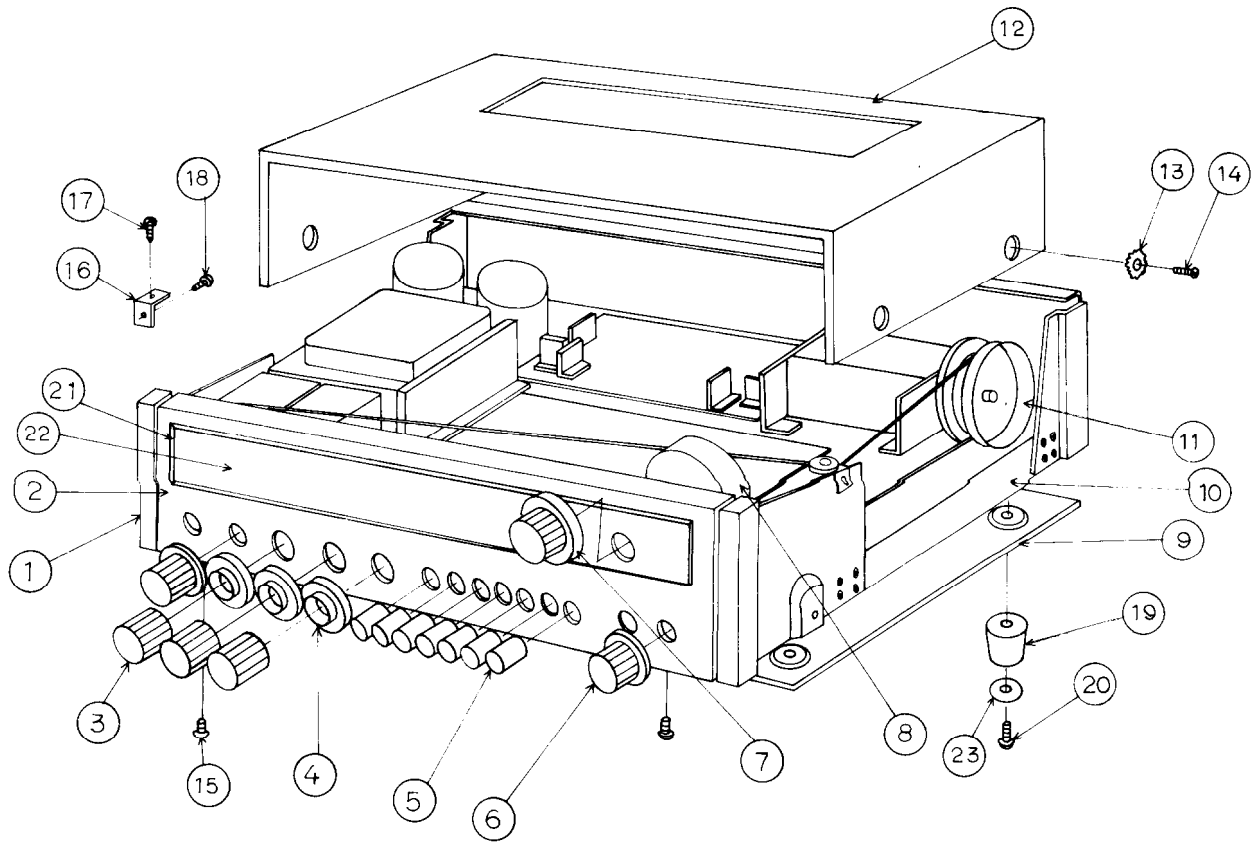
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ONKYO[®]
AUDIO COMPONENT

SPECIFICATIONS

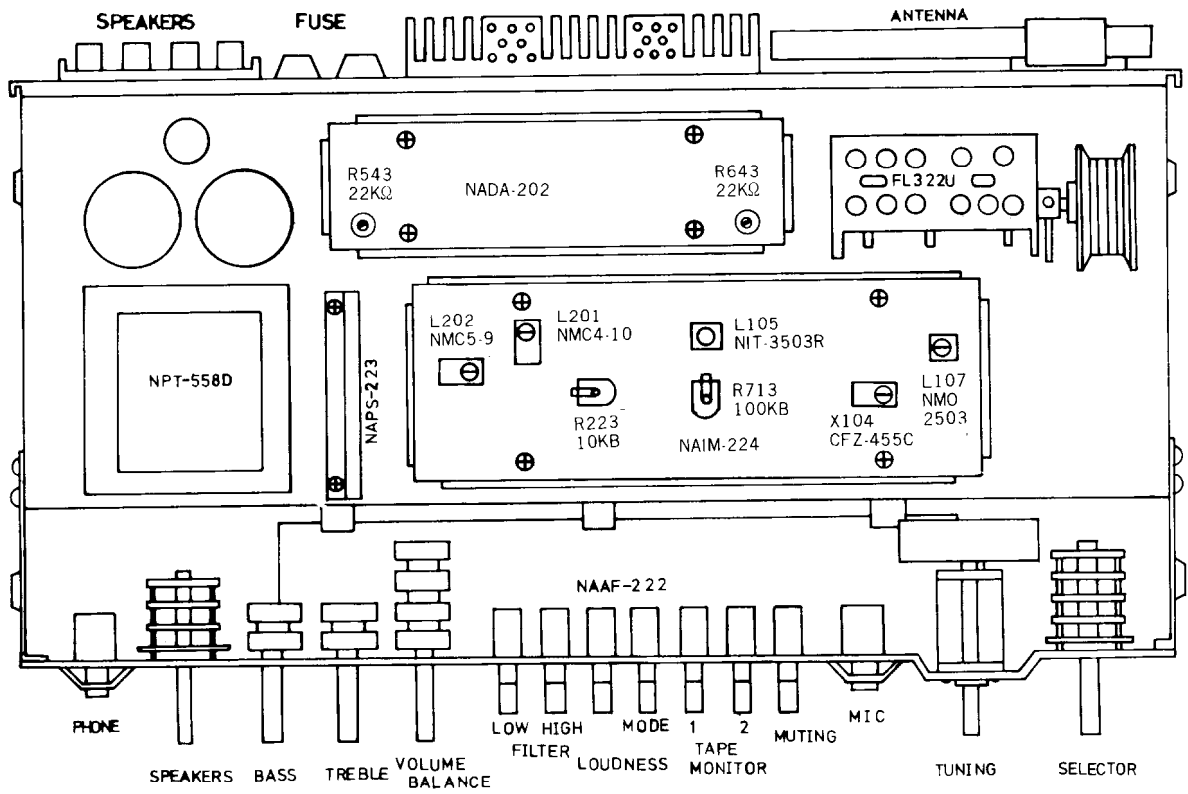
Type	All Silicon Transistor Integrated Stereo Receiver	Tuner Section	
Circuit	Direct Coupling and Differential Circuit. Quasi Complementary SEPP System. Transistor 56, FET 1, Diode 47, IC 1,	Tuning Range	FM: 88–108MHz AM: 530–1605kHz
Amplifier Section		Sensitivity	FM: 2.0 μ V (IHF) AM: 40 μ V, 150 μ V/m
Dynamic Power	160W (IHF4 Ω) 130W (IHF8 Ω)	Intermediate Frequency	FM: 10.7MHz AM: 455kHz
Continuous Power	55W/55W (8 Ω Each channel Driven) 55W+55W (4 Ω both channel driven) 48W+48W (8 Ω both channel driven) 43W+43W (8 Ω in the range of 20–20,000Hz 0.2%)	Capture Ratio	FM: 1.5dB
Total Harmonic Distortion	0.2% at Rated Power 0.1% at 10W	Image Rejection Ratio	FM: 70dB AM: 40dB
Damping Factor	50 (8 Ω 1kHz 10W)	IF Rejection Ratio	FM: 90dB AM: 40dB
Frequency Response	15–30,000Hz (\pm 1dB)	Signal to Noise Ratio	FM: 70dB AM: 45dB
Power Bandwidth	20–40,000Hz (–3dB THD 0.2%)	Alternate Channel Att.	FM: 70dB
Sensitivity and Impedance	PHONO: 2.5mV/50k Ω . AUX: 200mV/50k Ω . MIC: 4mV/50k Ω . TAPE PLAY-1/-2: 200mV/50k Ω TAPE REC-1/-2: 200mV/100k Ω	AM Suppression Ratio	FM: 50dB
Phono Overload	100mV/1kHz 0.2% 420mV/10kHz 0.2%	Harmonic Distortion	FM MONO: 0.3% AM: 0.8% FM ST: 0.7%
Bass Control	\pm 8dB at 100Hz	Frequency Response	FM: 20–15,000Hz \pm 1dB
Treble Control	\pm 8dB at 10kHz	Stereo Separation	FM ST: 40dB (400Hz) 30dB (100– 10,000Hz)
Signal to Noise Ratio	PHONO: More than 65dB (IHF C Network) AUX: More than 80dB (IHF C Network)	Muting Level	FM: 20 μ V
Loudness Control	+7dB at 100Hz, +4.5dB at 10kHz	Stereo Lamp Level	FM ST: 20 μ V
Filter High	6kHz (6dB/oct)	Tuning Meter	Signal Strength & Center Tuning
Low	70Hz (6dB/oct)	Antennas	FM: 300 Ω Balanced/ 75 Ω Unbalanced/Local AM: Built in Ferrite Core Antenna
		Power Supply Rating	AC120V, 60Hz or AC110/120/220/240V, 50/60Hz
		Dimensions	470W \times 140H \times 375Dmm 18 $\frac{1}{2}$ " W \times 5 $\frac{1}{2}$ " H \times 14 $\frac{3}{4}$ " D
		Weight	12Kg, 26.5lbs
		Specifications and features are subject to change without notice.	

1. COMPONENT LOCATIONS

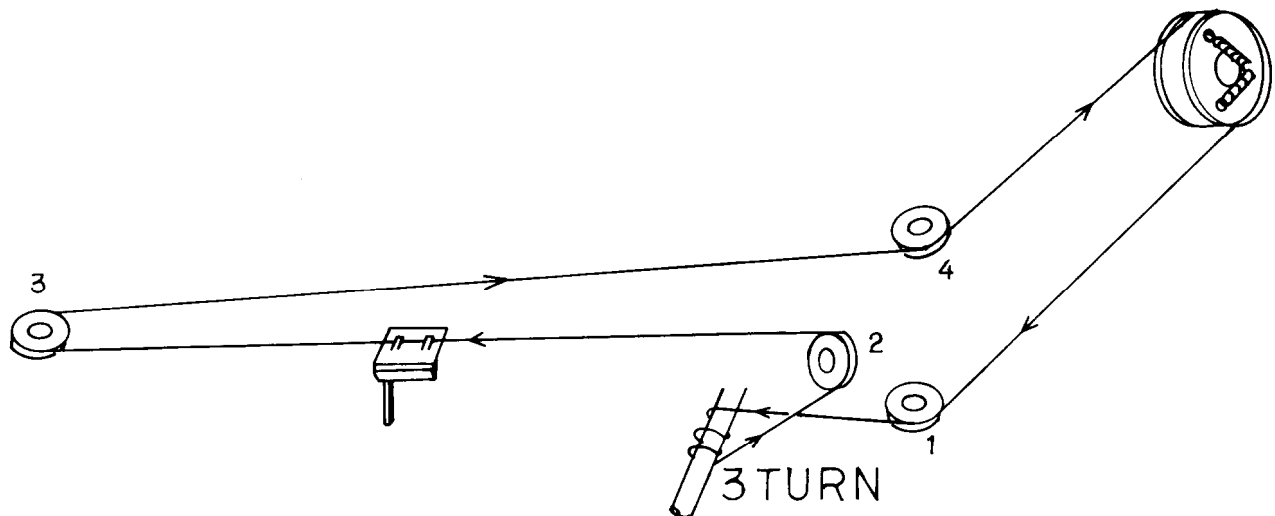


KEY NO.	DESCRIPTION	KEY NO.	DESCRIPTION
1	End Cap	13	Toothed Lock Washer
2	Front Panel	14	Truss Screw
3	Knob-Tone (small)	15	Tapping Screw
4	Knob-Tone (large)	16	Joiner (B)
5	Knob-Push Switch	17	Binder Screw
6	Knob-Speaker	18	Tapping Screw
7	Knob-Tuning	19	Rubber Cushion
8	Drive Shaft	20	Tapping Screw
9	Bottom Cover	21	Dial Flame
10	Chassis	22	Glass Plate
11	Drum	23	Washer
12	Amp Box assembly		

2. CHASSIS LAYOUT



3. DIAL CORD ARRANGEMENT



4. ALIGNMENT PROCEDURE

INSTRUMENT REQUIRED

1. AM and FM sweep generator
2. AM and FM signal generator
3. Vacuum tube voltmeter (V.T.V.M.) AC/DC
4. Oscilloscope
5. Distortion meter
6. Stereo Modulator

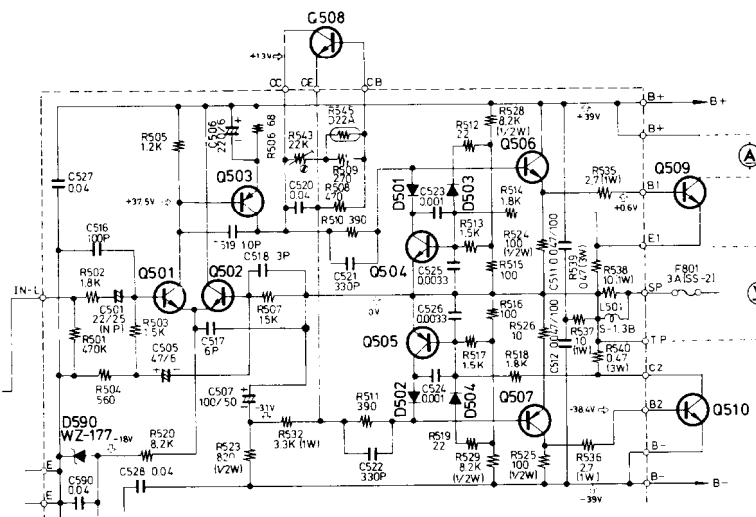
GENERAL ALIGNMENT CONDITIONS

1. Signal input should be kept low as possible.
2. Standard modulation is 400Hz 30% (AM)
400Hz 100% (FM.MONO), pilot 10% Sub & Main 90% (FM.ST)
3. Standard output is 500mW (2.0V, 8Ω)

STEP	CONNECT SIGNAL SOURCE TO-	SET SIGNAL TO-	CONNECT OUTPUT INDICATOR TO-	SET RADIO DIAL TO-	ADJUST	ADJUST FOR	REMARKS	STEP
1	Set Radio Selector Switch to "AM"							1
2	AM Sweep Generator to-AM Ant.	455KHz	Oscilloscope to-across "AM" OUT" terminal (NAIM-224)	Quiet Point on Band	X104	Maximum Symmetrical response	Usually not necessary to adjust	2
3	AM Signal Generator to-AM Ant.	515KHz modulated	V. T. V. M. or oscilloscope to-across "SPEAKER" terminal	Lower end	L107	Maximum	Repeat steps 3 and 4 as necessary to obtain Maximum sensitivity on stations	3
4	through a standard radiating loop	1680KHz modulated		Upper end	AM Trimmer (OSC. side)	Maximum		4
5	"	600KHz modulated	"	600KHz (Tuned to Signal)	L001	Maximum	Repeat steps 5 and 6 as necessary	5
6	"	1400KHz modulated	"	1400KHz (Tuned to Signal)	AM Trimmer (Ant. side)	Maximum		6
7	Set Radio Selector Switch to "FM"							7
8	FM Sweep Generator to-"FM IN" terminal	± 0.3MHz Sweep Centered at 10.7MHz	Oscilloscope to-across "TP2" terminal (NAIM-224)	Quiet Point on Band	L105	Maximum "S" curve Lineality	Not necessary to adjust for Symmetrical response or Zero Voltage	8
9	No Signal		Tuning Indicator may be used as the output indicator	Quiet Point Where FM Signals are not received	L105	The needle of Tuning Indicator comes to the center		9
10	FM Signal Generator to-across FM Ant. terminal	92MHz (100% Mod.)	V. T. V. M to-across "SPEAKER" terminal	92MHz	LO on FM Tuner	Maximum	Repeat steps 10 and 11 as necessary	10
11	through a matching network	104MHz (100% Mod.)		104MHz	TCO on FM Tuner	Maximum		11
12		88MHz (100% Mod.)		Tuned to Signal	LA LR (2 points) on FM Tuner	Maximum	Repeat steps 12 and 13 as necessary	12
13		108MHz (100% Mod.)		"	TCA TCR (2 points) on FM Tuner	Maximum		13
14	FM Signal Generator to-across FM Ant. terminal through a matching network	98MHz (100% Mod.)	Distortion meter to-across "SPEAKER" terminal	Tuned to Signal	L105	Minimum Distortion	Less than 0.3%	14
15	Set Radio Selector Switch to "FM"							15
				Set Muting Switch to "ON"				

STEP	CONNECT SIGNAL SOURCE TO-	SET SIGNAL TO-	CONNECT OUTPUT INDICATOR TO-	SET RADIO DIAL TO-	ADJUST	ADJUST FOR	REMARKS	STEP
16	"	"	Osilloscope to- across "SPEAKER" terminal	Tuned and Detuned to Signal	Variable Resistor R713 (100K Ω)	No noise when detuned but less effective for Signal Output when tuned	Signals are not necessarily Squelching by turning R713 counter clockwise	16
17	Set Radio Selector Switch to "FM AUTO"			Set Muting Switch to "OFF"				17
18	"	98MHz (Pilot Sig. 19KHz 10%) 1mV input	V. T. V. M. to- across "TP3" terminal (NALM-224)	Tuned to Signal	L201 NMC-4-10	Maximum		18
19	"	98MHz (Pilot Sig. 19KHz 10%) 1KHz R ch 90%	V. T. V. M. to- across "SPEAKER" terminal (R ch)	"	L202 NMC5-9	Maximum		19
20	"	98MHz (Pilot Sig. 19KHz 10%) Main & Sub Sig. 1KHz L ch 90%	" (R ch)	"	Variable Resistor R223 (10K Ω)	Minimum	Retouch slightly Repeat Steps 20 and 21 an necessary	20
21	"	" R ch 90%	" (L ch)	"	"	"		21

5. ADJUSTMENT OF THE IDLING CURRENT



Instrument required; DC Ammeter 50mA or 100mA. DC Voltmeter 50mV or VTVM.

When replacing Power transistor (Q509, Q510, Q609, Q610) or Driver transistor (Q506, Q507, Q606, Q607), check the idling current of Power transistor.

To adjust to normal value (40 ± 10) mA, proceed as follows:

- (Lch) (1) Cut the connection between B+ and collector of Q509 on Main Amp. assembly, and connect DC Ammeter.
- (2) Adjust the current to (40 ± 10) mA with R543 (22K Ω).
- (3) After adjusting, connect original wiring.

If a DC voltmeter (50mV) or VTVM is available, connect the voltmeter between E1 and TP terminals.

Adjust the voltage to (20 ± 10) mV with R543 (22K Ω).

(Rch) Using R643 (22K Ω), adjust in the same manner as indicated above.

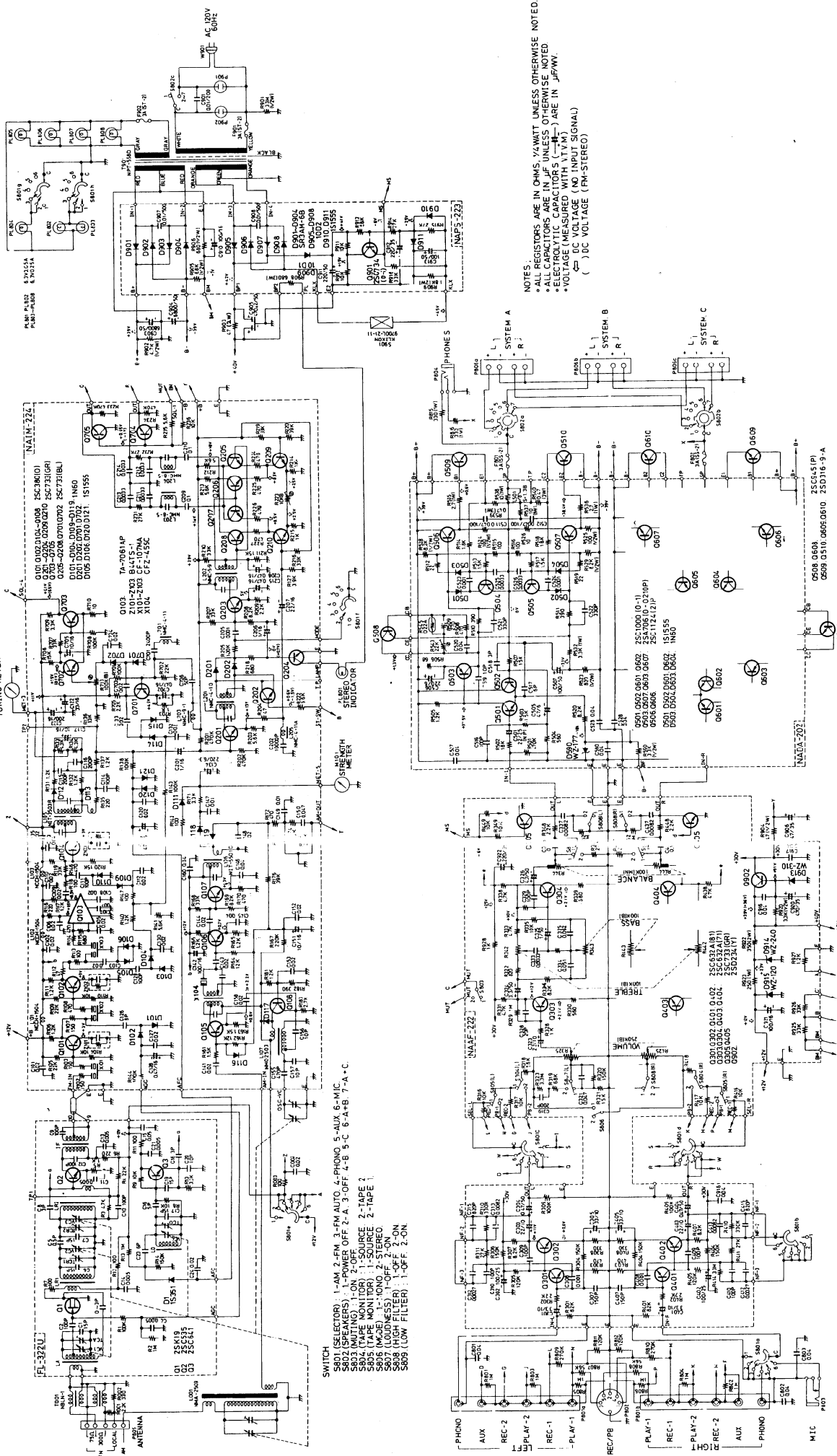
* Note: Volume—Minimum. Open Load.

6. PARTS LIST

CIRCUIT NO.	DESCRIPTION	SPECIFICATION	Q'TY	STOCK NO.	
U 1	FM Front End	FL-322U	1	24005	
U 2	IF & MPX assembly	NAIM-224	1	13899524	
U 3	Pre-Amp assembly	NAAF-222	1	13899522	
U 4	Driver Amp assembly	NADA-202	1	1349502	
U 5	Power Supply assembly	NAPS-223	1	13899523	
Q508, Q608	Transistor	2SC945 (P)	2	2210353	
Q509, Q510	"	2SD316-9-A	4	2200022	
Q609, Q610	"				
PL801, PL802	Pilot Lamp	6.3V 0.05AW-3	2	210015	STEREO INDICATOR S. METER POINTER, DIAL T. METER
PL803-PL808	"	6.3V 0.25A	6	210012	
T 901	Transformer-Power	NPT-558D UL	1	230050	
L 001	Coil-Antenna	NMA-2509	1	232025	
T 001	Transformer-Balloon	NBLN-1	1	233026	
C903, C904	Capacitor-Electrolytic	CE62W50V6800S-R	2	3504042A	
C905	"	" 470X2S-R	1	3504027A	
C906	"	CE02W35V47 μ F	1	351764701A	
C901	Capacitor-Polyester (UL)	UL200V0.01 μ F(M)	1	3504012	
S801	Switch-Rotary	NRSM-486-30Y-A	1	250106	
S802	"	NRS-227-30Y-AP	1	250188	
P806	Jack-stereo Head Phone	XG-7716	1	250078	
F901a, F801a, F802a	Fuse Holder	S-N1301	3	250080	
F 902a	"	FF-1S4	1	250143	
F901, F902	Fuse	3A-T (ST-2) UL	2	252005	
F801, F802	"	3A-T (SS-2) UL	2	252006	
M101	Tuning Indicator	NIND-0500S29	1	243020	STRENGTH METER TUNING METER
M102	"	NIND-0250S30	1	243021	
S 901	Klixon	9700L-21-11 UL	1	252011	
	Dial Plate		1	270565	
	Drive Shaft		1	270218	
	Dial Pointer		1	270273	
	Dial Pointer Case		1	270172-2	
	Pointer Holder AS		1	270173	
	Back Plate		1	270211-1	
	Transistor Cover		1	270567	
	Drum		1	270220	
	Amp Box assembly		1	280495	
	Front Panel		1	280711	
	End Cap		2	280319	
	Joiner (L)		2	280352-1	
	Joiner (B)		2	280499	
	Dial Flame		1	280322	
	Glass Plate Holder	(large)	1	280338	
	"	(small)	2	280323	
	Glass Plate		1	280259-1	
	Knob Guide		1	280418	
	Knob Guide N		1	280710	
	Bottom Cover		1	280497	
	Rubber Cushion		4	280560	
	Knob-Tuning		1	283051	
	Knob-Tone (small)		3	283053	
	Knob-Tone (large)		3	283054-3	
	Knob-Push Switch		7	283069	
	Knob-Speaker, Selector		2	283056	
	Master Carton Box		1	290334	
	Side Pad		2	290284	
NAIM-224					
Q101, Q102 Q104-Q108	Transistor	2SC380 (O)	7	2210123	
Q201-Q203 Q209-Q210 Q703-Q705	Transistor	2SC733 (GR)	8	2210085	
Q204	"	2SC734 (Y)	1	2210064	
Q205-Q208 Q701-Q702	"	2SC733 (BL)	6	2210086	
Q103	IC	TA-7061AP	1	222402	
D201-D202 D101-D104 D701-D702 D109-D119	Germanium Diode	1N60 (N) FM	17	2231031	
D105, D106 D120, D121	Silicon Diode	1S1555	4	223105	
L101, L102	Coil-Choke	NCCH-1504	2	233040	
L103	"	NCCH-1501	1	233024	
L105	Transformer-IFT	NIT-3503R	1	233022	
L106	"	NIT-5501D	1	232012	
L107	Coil-OSC	NMO-2503	1	232013	
L201	Coil-MPX	NMC-4-10	1	233017	

CIRCUIT NO.	DESCRIPTION	SPECIFICATION	Q'TY	STOCK NO.
L202	Coil-MPX	NMC-5-9	1	233019
L203, L204	"	NMC-8-5	2	233021
L205, L701	"	NMC-4-11	2	233018
L703	"	NMC-9-1	1	233031
C117,	Capacitor-Electrolytic	CE04W16V10 μ F	3	352741001A
C151, C705	"	" 0.47 μ F	4	352744791A
C128, C208	"	" 100 μ F	1	352741011A
C215, C702	"	" 1 μ F	2	352740101A
C142	"	CE04W6.3V200 μ F	2	352742011A
C201, C206	"	R-HK10KB3L	1	5225002
C123, C134	"	R-HK10KB3L	1	5225003
R223	Resistor-Semi Fixed	SFE-10.7MA	3	3010003
R713	"	CFZ-455C	1	3010004
X101~X103	Ceramic Filter	B44TS-1	3	3020001
X104	"			
Z101~Z103	CR Composit			
NAAF-222				
Q301~Q302	Transistor	2SC632A-81	4	2210208
Q401~Q402	"			
Q303~Q304	"	2SC632A-71	4	2210207
Q403~Q404	"			
Q305, Q405	"	2SC733 (GR)	2	2210085
Q902	"	2SD234 (Y)	1	2200020
D913	Zener Diode	WZ-310	1	223909
D914	"	WZ-240	1	223907
D915	"	WZ-120	1	223910
C302, C402	Capacitor-Electrolytic	CE.04W25V100 μ F	2	352751011A
C303, C403	"	" 50V22 μ F	2	352782201A
C304, C404	"	" 0.47 μ F	2	352784791A
C324, C424	"	" 3.3 μ F	2	352780331A
C325, C425	"	" 1 μ F	2	352780101A
C326, C426	"	" 4.7 μ F	2	352780471A
C405	"	" 10V33 μ F	1	352733301A
C305	"	" 10V33 μ F	1	352733301A
C920	"	" 35V470 μ F	1	352764711A
C922	"	" 220 μ F	1	352762211A
C921	"	" 16V100 μ F	1	352741011A
C301, C401	Capacitor-Aluminum Electrolytic	AL04B10V3.3 μ F	2	392130337
C323, C423	"	" 2.2 μ F	2	392130227
R325, R344	Resistor-Variable	N24RTL100KMN	1	5104005
R425, R444	"	250KBT30.20H		
R342 (R442)	"			
R343 (R443)	"	N24RDL100KB 30.20H	2	5104007
S803~S809	Push Switch	NPS-122LA3	7	250184
NADA-202				
Q501, Q502	Transistor	2SC1000 (0-1)	4	2210280
Q601, Q602	"			
Q503, Q507	"	2SA706 (0-0210) P	4	2200033
Q603, Q607	"			
Q504, Q604	"	2SC735 (GR)	2	2210245
Q505, Q605	"	2SA562 (GR)	2	2210255
Q506, Q606	"	2SC1124 (2) P	2	2200016
D501, D502	Silicon Diode	1S1555	4	223105
D601, D602	"			
D503, D504	Germanium Diode	1N60 (N) FM	4	2231031
D603, D604	"			
D590	Zener Diode	WZ-177	1	223920
L501, L601	Coil-Compensation	S-1.3B	2	231001
C505, C605	Capacitor-Electrolytic	CE04W6.3V47 μ F	2	352724701A
C506, C606	"	" 220 μ F	2	352722211
C507, C607	"	" 50V100 μ F	2	352781011A
C501, C601	Capacitor-Bipolar	SNP04C25V22 μ F	2	392352209
R543, R643	Resistor-Semi Fixed	R-HK2.2KB	2	5225005
R545, R645	Thermistor	D-22A	2	4000003
NAPS-223				
Q901	Transistor	2SC734 (0-1)	1	2210060
D901~D904	Silicon Diode	SR3AM-6B	4	223815
D905~D908	"	10D2	4	223805
D909	"	10D1	1	223801
D910, D911	"	1S1554	2	223106
C910	Capacitor-Electrolytic	CE04W16V100 μ F	1	352741011A
C911	"	" 50V220 μ F	1	352782211A
C913	"	" 100 μ F	1	352781011A
C912	"	" 35V220 μ F	1	352762211A
Universa type				
	Transformer-Power	NPT-558ADGQ	1	230060
	Capacitor-Interference Suppressor	PME271M510	1	3500038
	Voltage Selector		1	250224

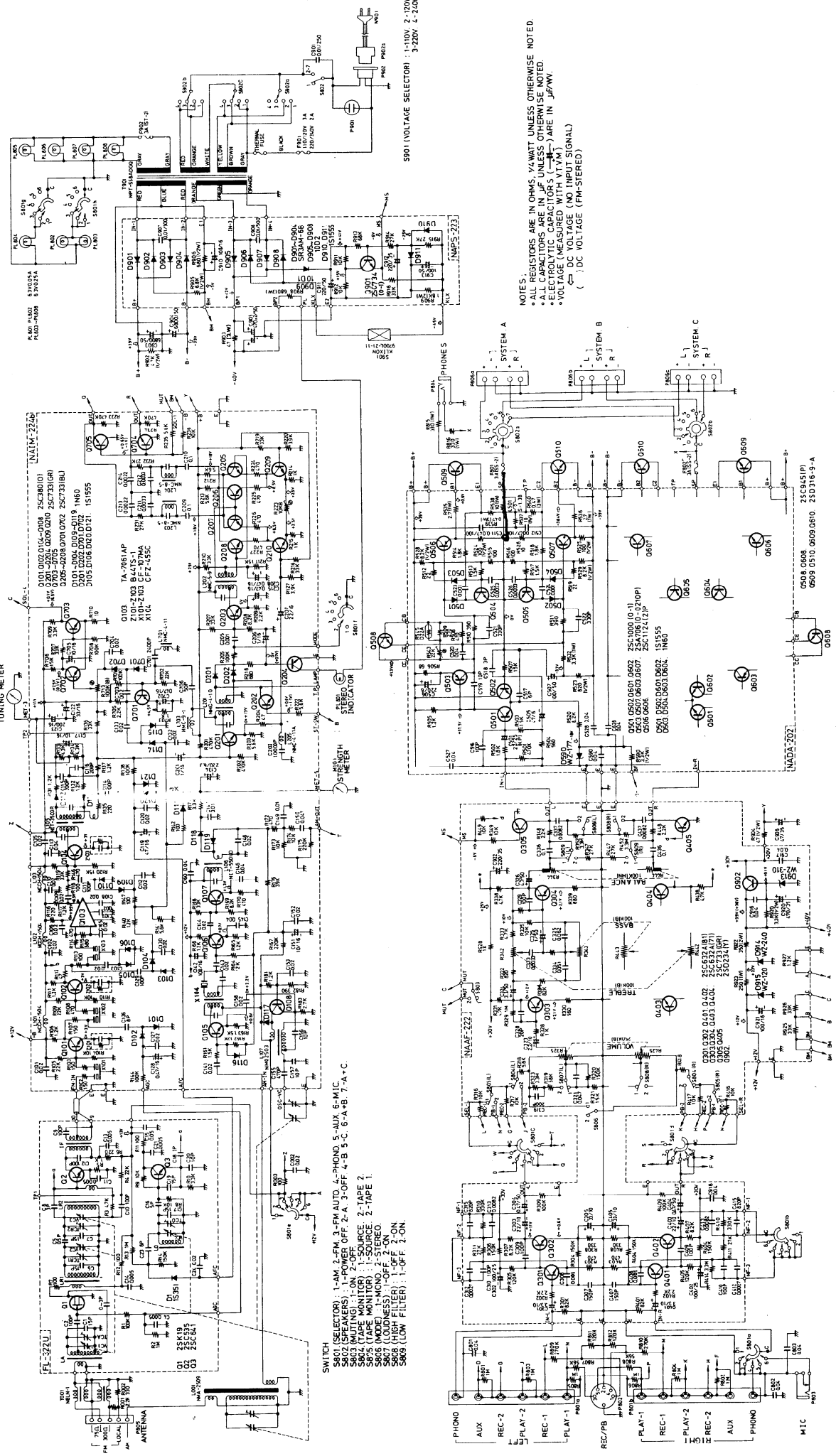
**1A-200
CIRCUIT DIAGRAM**



NOTES:
 * ALL RESISTORS ARE IN OHMS, 1/2 WATT UNLESS OTHERWISE NOTED.
 * ALL CAPACITORS ARE IN P.F. UNLESS OTHERWISE NOTED.
 * ELECTROLYTIC CAPACITORS (---E---) ARE IN P.P.W.V.
 * VOLTAGE MEASURED WITH A.T.M.
 * --- DC VOLTAGE (NO SIGNAL)
 * --- AC VOLTAGE (R.M.S.)

SWITCH
 SB01 (SELECTOR): 1-AM, 2-FM, 3-FM AUTO, 4-PHONO, 5-AUX, 6-MIC.
 SB02 (SPEAKERS): ON, 1-POWER OFF, 2-A, 3-OFF, 4-B, 5-C, 6-A+B, 7-A+C.
 SB03 (TAPES): 1-ON, 2-TAPE MONITOR, 3-SOURCE, 4-TAPE 2.
 SB04 (TAPE MONITOR): 1-SOURCE, 2-TAPE 2.
 SB05 (TAPES): 1-SOURCE, 2-TAPE 2.
 SB06 (TAPES): 1-SOURCE, 2-TAPE 2.
 SB07 (TAPES): 1-SOURCE, 2-TAPE 2.
 SB08 (HIGH FILTER): 1-OFF, 2-ON.
 SB09 (LOW FILTER): 1-OFF, 2-ON.

TX-560 (Universal type) CIRCUIT DIAGRAM



SWITCH
 S801 (SELECTOR): 1-AM, 2-FM, 3-FM AUTO, 4-PHONO, 5-AUX, 6-MIC
 S802 (SPEAKERS): 1-POWER OFF, 2-A, 3-OFF, 4-B, 5-C, 6-A+B, 7-A+C
 S803 (MUTING): 1-ON, 2-OFF
 S805 (TAPE MONITOR): 1-SOURCE, 2-TAPE
 S806 (MODE): 1-MONO, 2-STEREO
 S807 (LOUDNESS): 1-OFF, 2-ON
 S809 (LOW FILTER): 1-OFF, 2-ON

NOTES:
 • ALL RESISTORS ARE IN OHMS UNLESS OTHERWISE NOTED
 • ALL CAPACITORS ARE IN μ F UNLESS OTHERWISE NOTED
 • ELECTROLYTIC CAPACITORS (E) ARE IN μ F/WV
 • VOLTAGE (MEASURED WITH VTVM)
 • DC VOLTAGE (NO INPUT SIGNAL)
 • () : DC VOLTAGE (FM-STEREO)

5901 (VOLTAGE SELECTOR): 1-110V, 2-120V, 3-220V, 4-240V

LINE VOLTAGE AND FUSE

The model TX-560 is available in two models: one model operates only on 120V, and the other operates on one of the four line voltages, 110V, 120V, 220V, and 240V. If your TX-560 is the latter model, set the unit to the proper line voltage by following the procedure described below.

CHANGING LINE VOLTAGE SETTING AND FUSE

Turn the selector switch so that the proper line voltage marking can be seen through the slot on the rear panel. Whenever the position of the selector is changed, check the rating of the fuse.

A 2A fuse is to be used for either 220V or 240V operation and a 3A fuse for 110V or 120V operation.

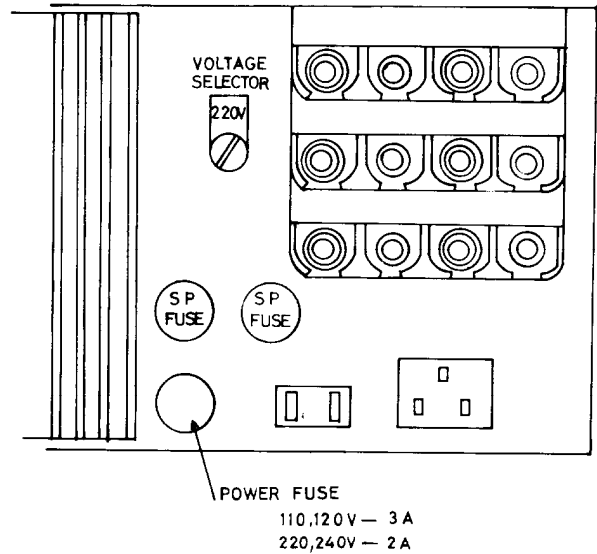


Fig 1

REPACKING PROCEDURE

Repacking procedure is as follows.

- (1) Wrap the power cord with AC cord wrapper and bind it with rubber band.
- (2) Make sure to write serial number on the carton, to same as unit coincide with S.N on bottom or back of unit.
- (3) Wrap unit with the special plastic cover wrapper (AMP COVER) and attach foamed plastic pads (SIDE PAD) to both sides.
- (4) Place in carton box, make sure the front marks of the carton matches the unit front.
- (5) Put the accessory bag with all parts included into the box.
- (6) Close the carton box and seal.