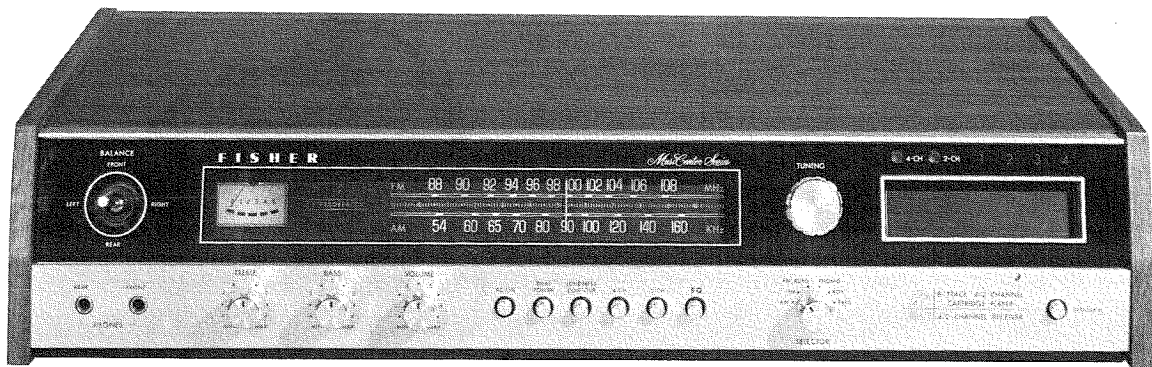
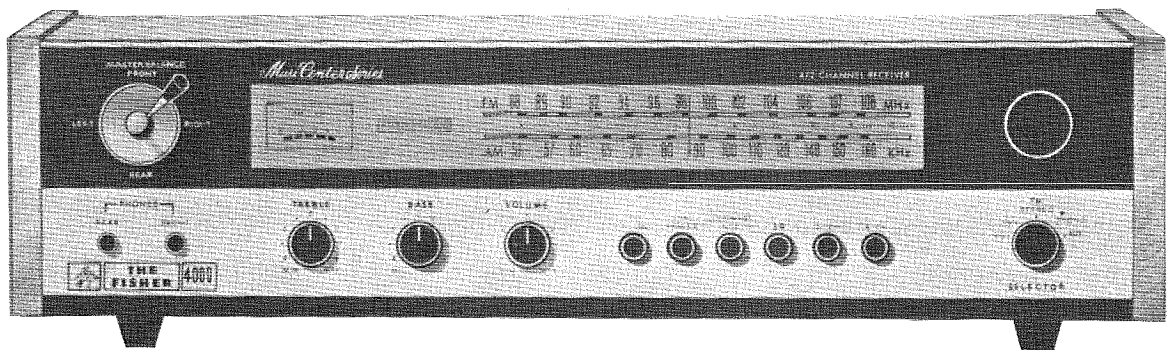


**SERVICE MANUAL**

# The Fisher®

## 4000 4080



## 4/2—Channel Stereo Receivers

WORLD LEADER IN HIGH QUALITY STEREO

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## REQUIRED EQUIPMENT

The following test equipment is required to align and to service the Receiver:

- Line Voltage Autotransformer or Voltage Regulator
- AC DC Multimeter
- Accurately Calibrated AC Voltmeter
- Oscilloscope (Flat to 100kHz Minimum)
- Low-Distortion Audio Sine-Wave Generator
- Harmonic Distortion Analyzer
- Four (4) Load Resistors, 8-ohms,  
50 Watts (Minimum Rating)
- Low-Distortion AM-FM Signal Generator
- 10.7 MHz Sweep-Generator
- Multiplex Generator
- 455kHz Sweep Generator

### **CAUTION:**

This precision high-fidelity instrument should be serviced only by qualified personnel, trained in the repair of transistorized equipment and printed circuitry.

## NOTES

1. The FM IF circuit utilizes a non-tunable ceramic filter which establishes the IF bandpass. To insure symmetrical tuning and selectivity, the IF must be aligned precisely to the center of the filter bandpass, rather than to 10.7 MHz as in conventional LC circuits.
2. The 120-ohm composition resistors in series with each lead from the RF generator match the 50 ohm output to the 300-ohm input impedance. Generator output voltage is reduced to one-half at antenna terminals. Signal voltages specified in the FM alignment instructions are generator output levels not antenna voltages.

TAPE DECK AZIMUTH AND HEAD HEIGHT ALIGNMENT

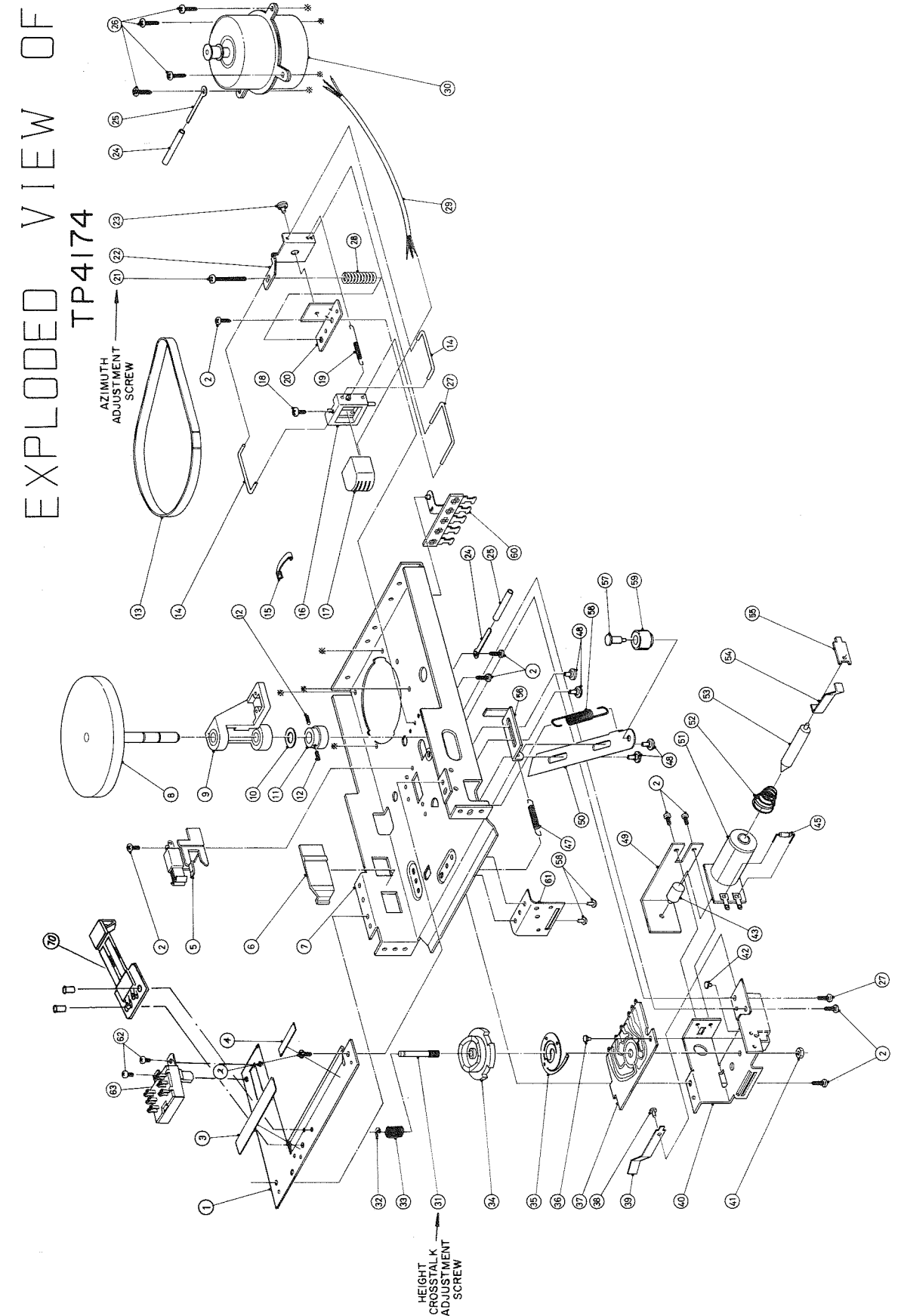
1. Preset Bass, Treble and Balance controls to their mechanical center position, Volume Control to 4.
2. Selector to Tape.
3. Connect Oscilloscope or AC-VTVM to the Main Left Speaker Output.
4. Insert prerecorded test tape, (RCA.No. 378 or equivalent), into tape player.
5. Select Tape Program Number 2.
6. Adjust Head Height Crosstalk Adjustment screw for minimum output as indicated on VTVM or Oscilloscope.
7. Connect Oscilloscope or AC-VTVM to the Main Right Speaker Output.
8. Adjust Azimuth Adjustment Screw for maximum output as indicated on VTVM or Oscilloscope.
9. Repeat Head Height and Azimuth adjustment procedure until no further improvement is obtained.

PARTS LIST

TP4174 TAPE PLAYER

4080

Symbol No.	Part No.	Description	Symbol No.	Part No.	Description
1	Not Available	Bracket Hold Down	33	TP4172-33	Spring, Cam
2	Not Available	Screw Tap Type (M3x6)	34	TP4172-34	Cam, Ratchet
3	Not Available	Label Model No.	35	TP4172-35	Clip, Slide
4	Not Available	Label Date Code	36	Not Available	Rivet (.122x3/16)
5	TP4174-5	Assy. Tape Guide & Switch	37	TP4172-37	Panel Etched Indicator
6	Not Available	Spacer Side	38	Not Available	Rivet (.122x5/32)
7	Not Available	Chassis, Tape Player	39	Not Available	Spring Stopper
8	TP4174-8	Assy. Flywheel & Shaft	40	Not Available	Bracket, Cam
9	TP4174-9	Assy. Housing & Bearings	41	TP4174-41	Nut (M4x0.5)
10	TP4174-10	Washer, Flat	42	TP4174-42	Spacer, Capstan
11	TP4174-11	Roller, Drive Cam	43	TP4174-43	Stop Solenoid
12	TP4174-12	Set Screw	45	TP4174-45	Rectifier, Silicon (10D2) CR501, CR502
13	TP4174-13	Belt Drive	47	TP4174-47	Spring Slide
14	TP4174-14	Arm, Radius	48	Not Available	Rivet, Shoulder
15	TP4174-15	Spring Keeper	49	Not Available	Bracket, Solenoid
16	TP4174-16	Block Head	50	Not Available	Bracket, Delatch
17	TP4174-17	Head Playback 4 Channel	51	TP4174-51	Solenoid Coil Assy.
18	TP4172-18	Machine Screw (M2.6x7)	52	TP4174-52	Spring Solenoid
19	TP4172-19	Spring, Head Tension	53	TP4174-53	Plunger Solenoid
20	Not Available	Bracket Head Assy. Mtg.	54	TP4174-54	Spring, Push
21	TP4172-21	Screw Machine (M3x2.8)	55	TP4174-55	Guide, Plunger
22	TP4172-22	Bracket, Azimuth	56	Not Available	Bracket Slide
23	Not Available	Rivet, Shoulder	57	Not Available	Rivet, Shoulder
24	Not Available	UL & CSA Tube	58	TP4174-58	Spring Delatch
25	Not Available	Lug, Wrap Around	59	TP4174-59	Roller, Cartridge
26	TP4172-26	Screw, Tap Type (M3x8)	60	Not Available	Assy. Strip Term
27	TP4172-27	Arm, Radius	61	Not Available	Spring P.C. Board Mtd.
28	TP4172-28	Spring Azimuth	69	Not Available	Rivet
29	Not Available	C. W. Shield	63	TP4174-63	Mode Switch SW505
30	TP4172-30	D. C. Motor Assy. M501	70	TP4174-70	Leaf Switch S502
31	TP4172-31	Shaft Cam			
32	TP4172-32	Washer C Type			
R704	RP3W220J	Resistor 22 ohm 3W 5%			
PL501, PL502,		LMEPX 192 Lamp 6V, 60mA			
PL505, PL506,					
PL503, PL504					



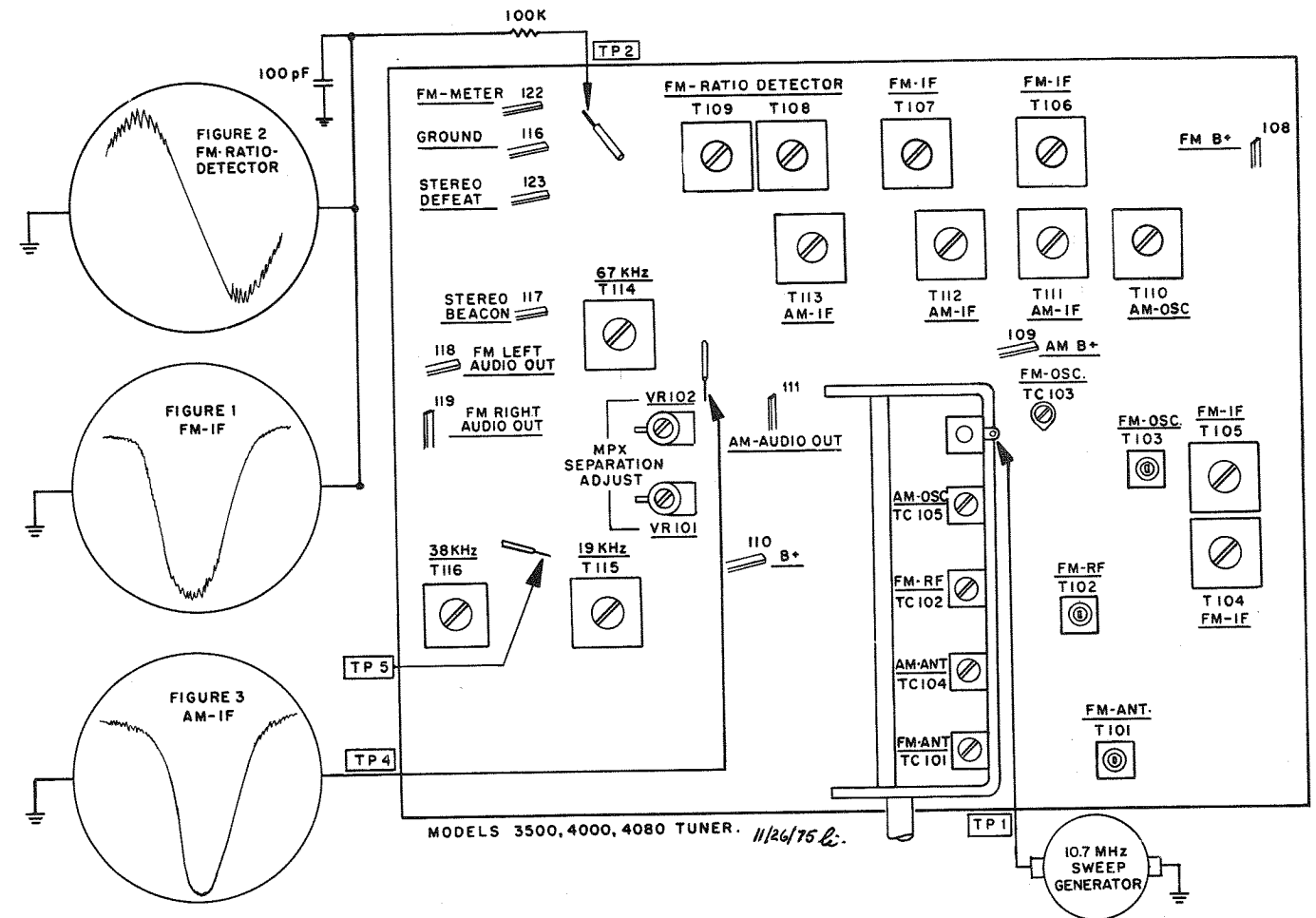
SELECTOR to FM, MODE to 2CH, VOLUME MIMIMUM

Maintain generator output as low as possible for suitable indication.

ITEM	GENERATOR	DIAL SETTING	INDICATOR	PROCEDURE
1. IF ALIGNMENT	Connect to 10.7 MHz sweep generator to TP1. Connect ground lead to chassis. Markers are not required.	Position of non-interference.	Scope vertical input to TP2 through 100k resistor and 100pF capacitor as shown. Connect ground lead to chassis.	Detune T109 by turning core up (ccw). Adjust in the following order: T108, T107, T106, T105 and T104 for maximum gain and symmetrical shape of curve as shown in FIGURE 1.
2. PRELIMINARY DETECTOR ALIGNMENT	As above	As above	As above	Adjust T109 for maximum gain and symmetry. See FIGURE 2.
3. FRONT END ALIGNMENT		Tuning knob fully CCW.		Center dial pointer on 0 (zero) cement it in place.
4. FRONT END ALIGNMENT	Connect FM RF generator through two 120-ohm resistors to FM ANT screw terminals. Set generator to 90 MHz, modulate with 400 Hz to provide $\pm 75$ kHz deviation. Set generator output attenuator as low as possible.	Center of 90 MHz calibration mark on dial.	Scope vertical input and AC-VTVM to Recorder output.	Adjust T103, T102 and T101 for maximum gain. Repeat this step as required.
5. FRONT END ALIGNMENT	Change generator setting to 106 MHz.	Center of 106 MHz calibration mark on dial.	As above	Adjust TC103, TC102 and TC101 for maximum gain. Repeat this step as required.
6. FINAL DETECTOR ALIGNMENT	As above, except set to position of non-interference near 100 MHz. Set generator output attenuator to 2mV.	Position of non-interference near 100 MHz.	Scope vertical input and distortion meter to recorder output.	Adjust T109 for minimum distortion.

SELECTOR to FM AUTO

7. MPX ALIGNMENT	As above Step 6 except modulation. Modulate LEFT channel $\pm 67.5$ kHz - 400Hz audio and $\pm 7.5$ kHz - 19kHz pilot carrier.	As above Step 6	Scope and AC-VTVM to LEFT Recorder output.	Set VR101 and VR102 to mechanical center. Adjust T115 and T116 for maximum LEFT channel output.
8. STEREO SEPARATION	As above Step 6	As above Step 6	Scope and AC-VTVM to Right Recorder output.	Adjust VR102 for minimum output.
9. STEREO SEPARATION	As above except modulate RIGHT Channel.	As above	Scope and AC-VTVM to LEFT Recorder output.	Adjust VR101 for minimum output.
10. SCA REJECTION	Connect Audio-Generator to TP2. Set frequency to 67kHz, output level to 500mV.		Scope and AC-VTVM to TP5.	Adjust T114 for miniumm.

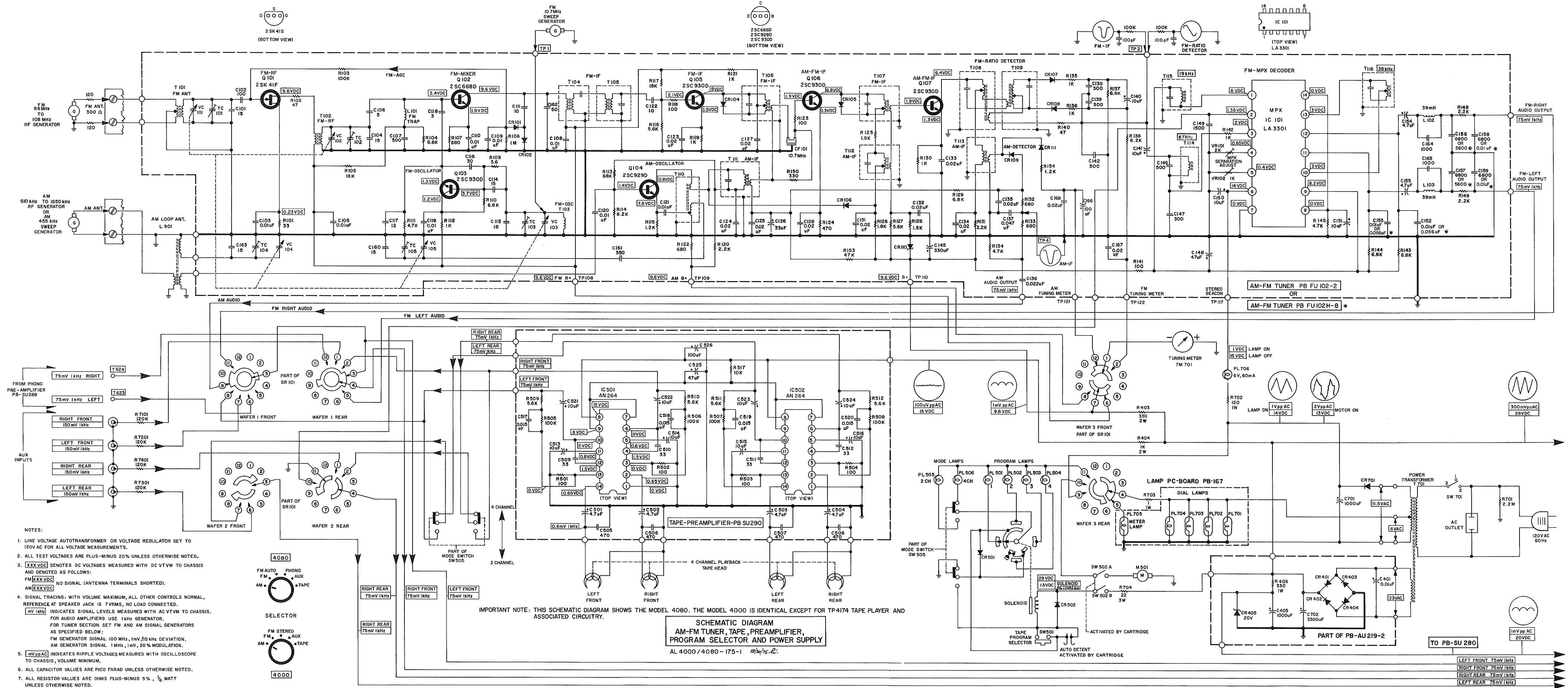


AM-TUNER ALIGNMENT

SELECTOR to AM, VOLUME MINIMUM.

Maintain generator output as low as possible for suitable indication.

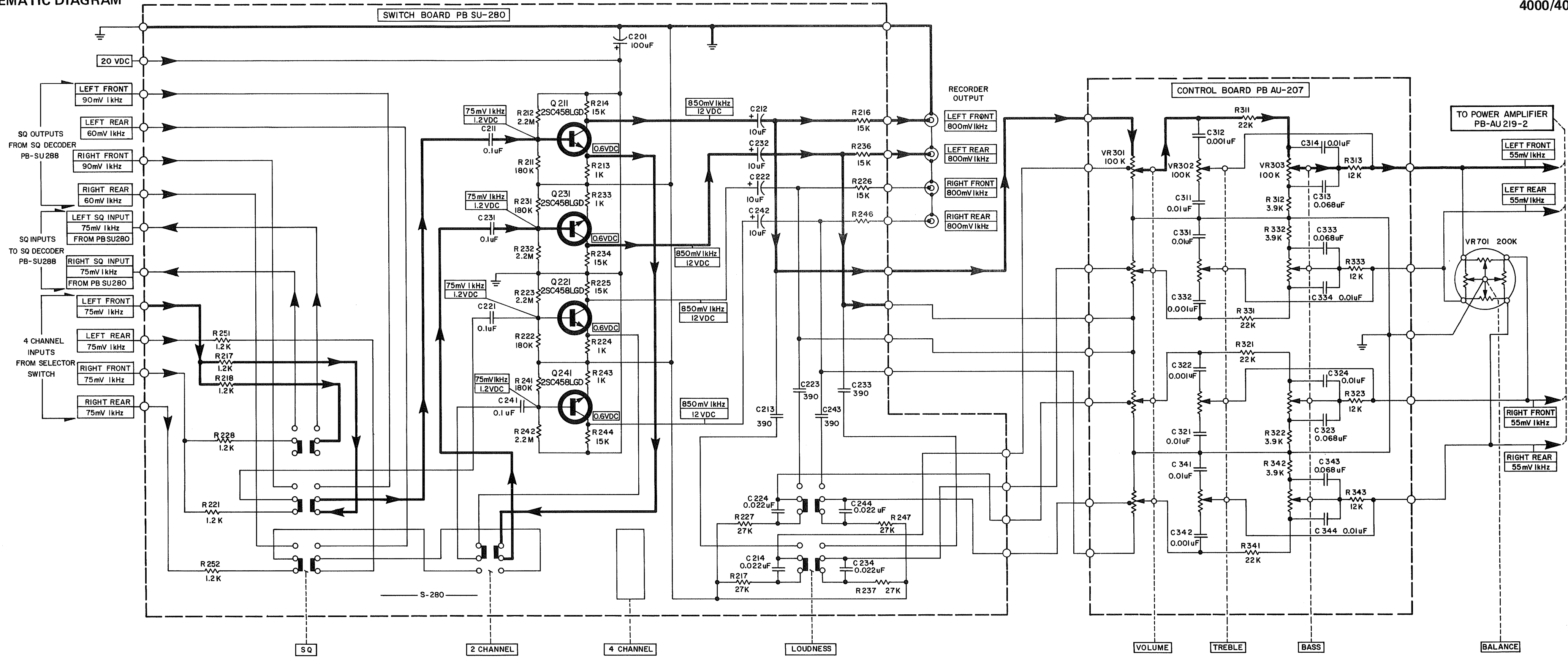
ITEM	GENERATOR	DIAL SETTING	INDICATOR	PROCEDURE
1. AM IF	Connect 445 kHz sweep generator to AM EXT ANT terminals. Note: After each adjustment reduce generator output as required.	Position of non-interference.	Scope vertical input to TP4. See FIGURE 3.	Adjust T113, T112 and T111 for maximum gain and symmetry.
2. AM FRONT END ALIGNMENT	AM generator to EXT AM ANT and GND terminals. Set to 600 kHz. Modulate with 30%, 1kHz.	Center of 600 kHz calibration mark	Scope and VTVM to RCDR OUT jack.	Adjust T110 (OSC.) and L901 (Loop ANT) for maximum.
3. AM FRONT END ALIGNMENT	Change frequency to 1400 kHz.	Center of 1400 kHz calibration mark on dial.	As above	Adjust TC105 (OSC.) TC104 (Ant.) for maximum. Repeat steps 2 and 3 until optimum alignment is reached.



- NOTES:
1. LINE VOLTAGE AUTOTRANSFORMER OR VOLTAGE REGULATOR SET TO 120V AC FOR ALL VOLTAGE MEASUREMENTS.
  2. ALL TEST VOLTAGES ARE PLUS-MINUS 20% UNLESS OTHERWISE NOTED.
  3. [XXX VDC] DENOTES DC VOLTAGES MEASURED WITH DC VTVM TO CHASSIS AND DENOTED AS FOLLOWS:  
 FM [XXX VDC] NO SIGNAL (ANTENNA TERMINALS SHORTED).  
 AM [XX VDC] REFERENCE AT SPEAKER JACK IS 7 VRMS, NO LOAD CONNECTED.  
 [mV kHz] INDICATES SIGNAL LEVELS MEASURED WITH AC VTVM TO CHASSIS. FOR AUDIO AMPLIFIERS USE 1kHz GENERATOR.  
 FOR TUNER SECTION SET FM AND AM SIGNAL GENERATORS AS SPECIFIED BELOW:  
 FM GENERATOR SIGNAL 100 MHz, 1mV, ±15 kHz DEVIATION.  
 AM GENERATOR SIGNAL 1 MHz, 1mV, 20% MODULATION.
  4. SIGNAL TRACING: WITH VOLUME MAXIMUM, ALL OTHER CONTROLS NORMAL, REFERENCE AT SPEAKER JACK IS 7 VRMS, NO LOAD CONNECTED.  
 [mV kHz] INDICATES SIGNAL LEVELS MEASURED WITH AC VTVM TO CHASSIS. FOR AUDIO AMPLIFIERS USE 1kHz GENERATOR.  
 FOR TUNER SECTION SET FM AND AM SIGNAL GENERATORS AS SPECIFIED BELOW:  
 FM GENERATOR SIGNAL 100 MHz, 1mV, ±15 kHz DEVIATION.  
 AM GENERATOR SIGNAL 1 MHz, 1mV, 20% MODULATION.
  5. [mV ppAC] INDICATES RIPPLE VOLTAGES MEASURED WITH OSCILLOSCOPE TO CHASSIS, VOLUME MINIMUM.
  6. ALL CAPACITOR VALUES ARE PICO FARAD UNLESS OTHERWISE NOTED.
  7. ALL RESISTOR VALUES ARE OHMS PLUS-MINUS 5%, 1/4 WATT UNLESS OTHERWISE NOTED.

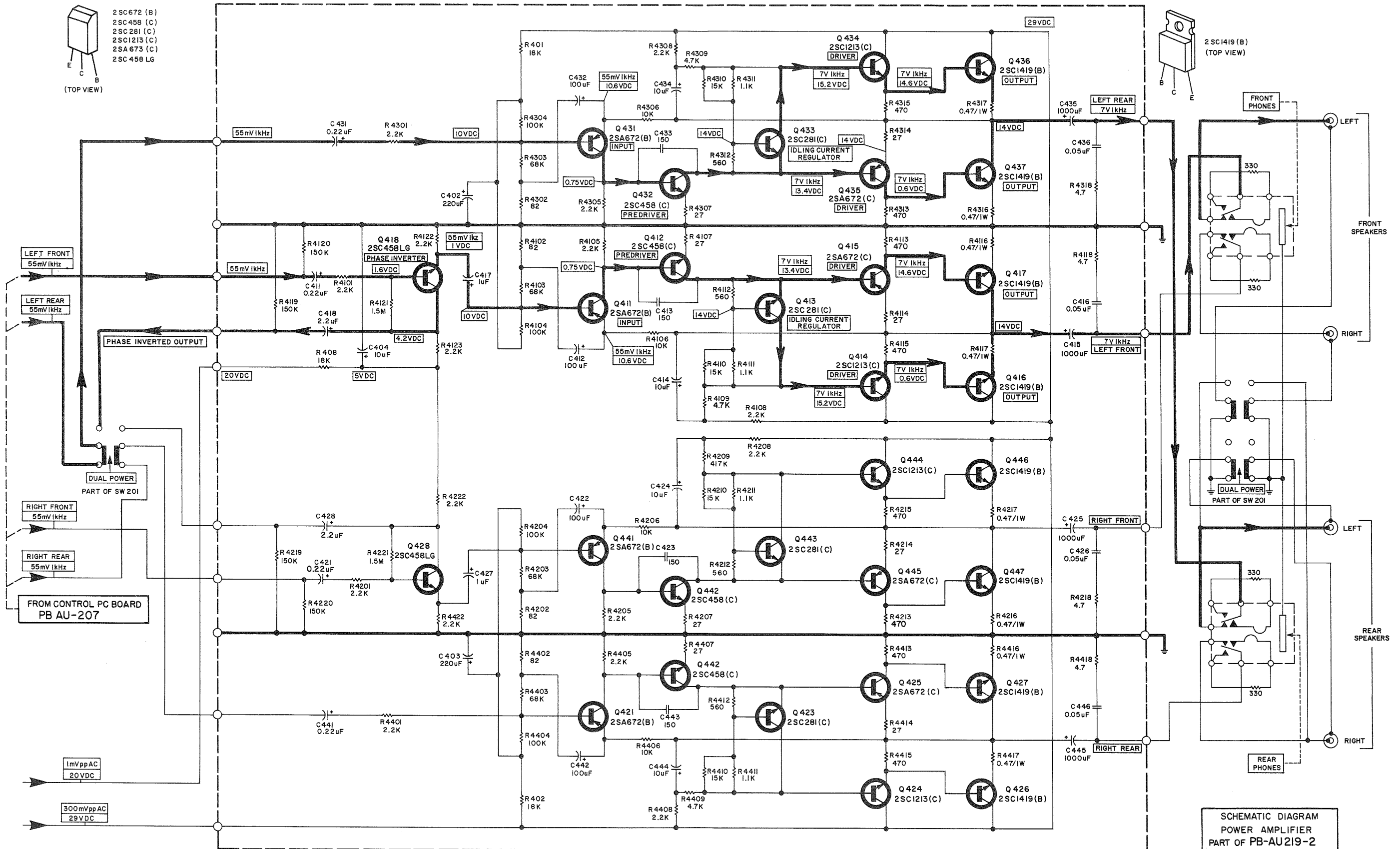
SCHEMATIC DIAGRAM  
 AM-FM TUNER, TAPE, PREAMPLIFIER,  
 PROGRAM SELECTOR AND POWER SUPPLY  
 AL 4000/4080-175-1 10/6/75 R.L.

IMPORTANT NOTE: THIS SCHEMATIC DIAGRAM SHOWS THE MODEL 4080. THE MODEL 4000 IS IDENTICAL EXCEPT FOR TP4174 TAPE PLAYER AND ASSOCIATED CIRCUITRY.

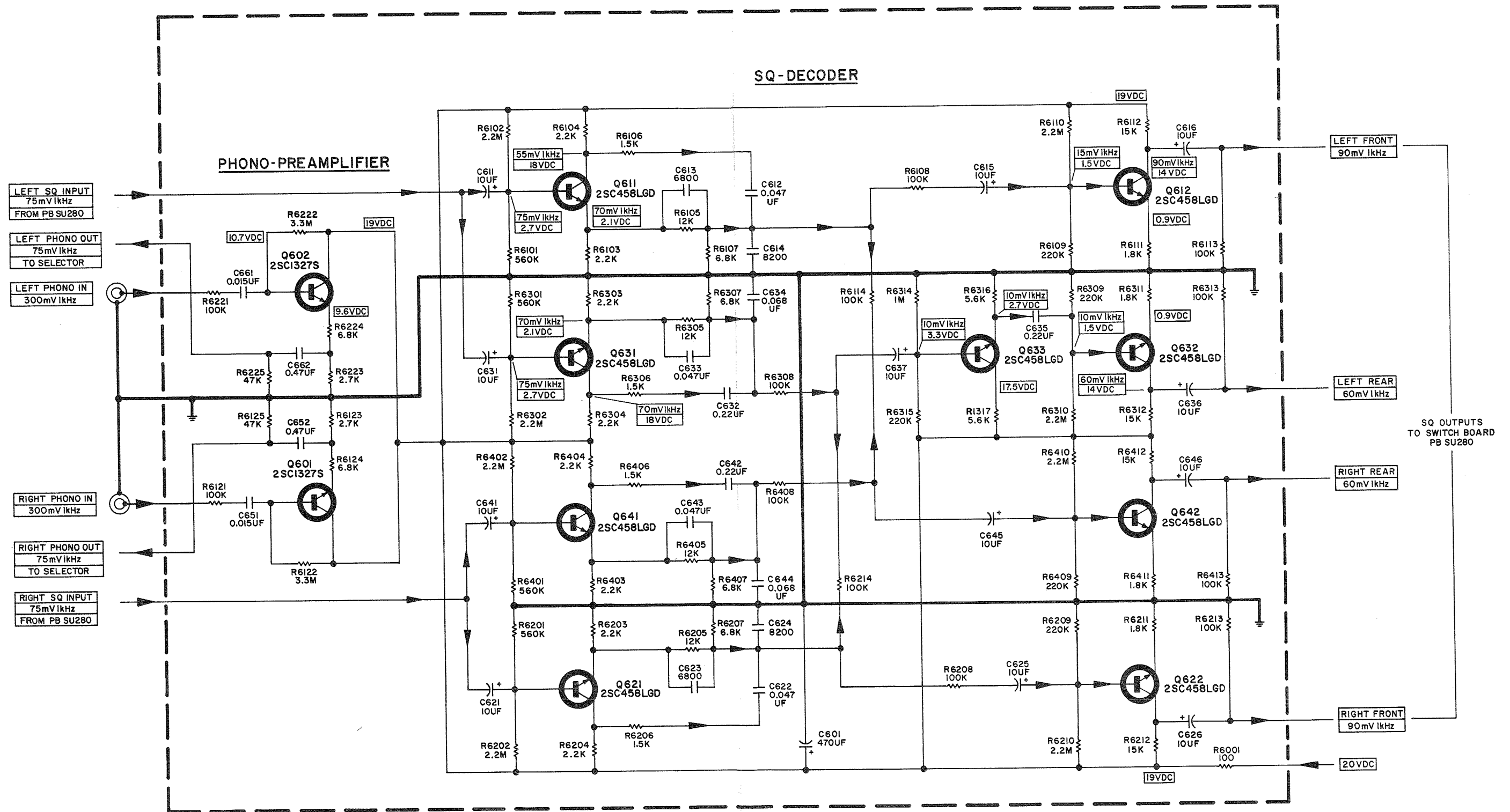
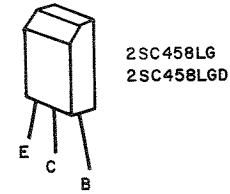
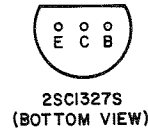


NOTES:  
 SET UP: VOLUME MAXIMUM, 2 CHANNEL PUSH BUTTON DEPRESSED, ALL OTHER CONTROLS AND SWITCHES TO NORMAL POSITIONS, SELECTOR TO PHONO.  
 SIGNAL TRACING: FEED 300mV RMS 1kHz SIGNAL INTO LEFT AND RIGHT PHONO INPUTS SIMULTANEOUSLY.  
 XXXmV 1kHz INDICATES SIGNAL LEVELS MEASURED WITH AC-VTVM TO CHASSIS.

SCHEMATIC DIAGRAM  
 AUDIO-CONTROL AMPLIFIER  
 PB SU-280 SWITCH BOARD AND PB AU-207  
 CONTROL BOARD



SCHEMATIC DIAGRAM  
POWER AMPLIFIER  
PART OF PB-AU219-2  
AL 4000/4080-175-3 11/80/5-2



NOTES:  
 SET UP: VOLUME MINIMUM, SQ PUSH BUTTON DEPRESSED, ALL OTHER CONTROLS AND SWITCHES TO NORMAL POSITIONS, SELECTOR TO PHONO.  
 SIGNAL TRACING: FEED 300mV RMS, 1kHz SIGNAL INTO LEFT AND RIGHT PHONO INPUTS SIMULTANEOUSLY.  
 XXXmV 1kHz INDICATES SIGNAL LEVELS MEASURED WITH AC-VTVM TO CHASSIS.

SCHEMATIC DIAGRAM PB-SU288  
 SQ DECODER AND PHONO PREAMPLIFIER



## CHASSIS PARTS AND MISCELLANEOUS ITEMS

Part Number	Description	Symbol No.	Part Number	Description
PBFU102-2	Tuner AM/FM PC Board	L901	LAHTX-241	AM Antenna
PBFU102H-8	Tuner AM/FM PC Board	PL701, 702,	LMEPX179-2	Pilot Lamp 6.3V 220ma
PBAU207	Audio Control PC Board	703, 704,		
PBSU280	Audio Switch PC Board	705		
PB167	Lamp PC Board	TM701	MCEPX237-1	Tuning Meter
PBAU219	Power Amp/Supply PC Board 4080	PL706	LMEPX241	Lamp 6V 60ma Stereo Beacon
PBAU219-2	Power Amp/Supply PC Board 4000	SR101	SRSPX187-2M	Switch, Rotary 4080
PBSU290	Tape Preamp PC Board 4080	SR101	SREPX187-1	Switch, Rotary 4000
ASCAA105	Cabinet Assy. 4080	C702	CECEL3300/35	Capacitor, Electrolytic 3300uf 35V
ASCAA104	Cabinet Assy. 4000			
EMMPM127	Feet	VR701	RVVVRX262	Balance Control RV30NB 200K X4
ASCFA185	Dress Panel Assy. 4080			
ASCFA184	Dress Panel Assy. 4000			
EKMPM345A	Knob, Tuning	R703	JKEPX242	Headphone Jack
EKMPM346B	Knob, Function/Bass/Treble/Volume	T701	RPW300W010J	Resistor 1 ohm 1W 5%
EKMPM337-2	Knob, Push		TDPTX193H	Power Transformer
EKMPM338H	Knob, Program		W2740241	AC Cord
EKMPM347	Knob, Joystick	R701	JKEPX201	AC Outlet
EADLM204	Pulley	SW501	RC20BF225J	Resistor 2.2M ohm 1/2W 5%
EADLM102H	Pulley	C701	SPSSX163	Switch, Push 4080
NDLM207	Dial Scale		CEO256010	Capacitor, Electrolytic 1000uf 16V
ASDLA214	Pointer Assy.	R702	RW200W121J	Resistor 120 ohm 1W 5%
ASDLA225	Tuning Shaft Assy.			
ANDLM9	Tension Spring			

## PBFU - 102-2 AM/FM/MPX TUNER PC BOARD (Cont.)

Symbol No.	Part Number	Description	Symbol No.	Part Number	Description
C164, 165	CY2235-3	Capacitor Mylar 1000pF50V	R107, 122,	RF25DC681J	Resistor 680ohm 1/4W 5%
C149	CY22335-24	Capacitor Mylar 1500 pF50V	132, 133		
C156, 157,	CY22335-9	Capacitor Mylar 6800pF50V	R112, 119,	RF25DC102J	Resistor 1k ohm 1/4W 5%
158, 159			121, 130,		
C137	CY22335-22	Capacitor Mylar 0.047uF50V	135, 136,		
C136	CY22335-12	Capacitor Mylar 0.022uF50V	142		
			R115, 154	RF25DC122J	Resistor 1.2k ohm 1/4W 5%
			R125, 128	RF25DC152J	Resistor 1.5k ohm 1/4W 5%
C154, 155	CE1252615	Capacitor Electrolytic 4.7uF25V	R126	RF25DC182J	Resistor 1.8k ohm 1/4W 5%
			R120, 131,	RF25DC222J	Resistor 2.2k ohm 1/4W 5%
C140, 141,	CE1252521	Capacitor Electrolytic 10uF10V	148, 149		
151			R111, 134,	RF25DC472J	Resistor 4.7k ohm 1/4W 5%
			145		
C150	CE1252821	Capacitor Electrolytic 10uF35V	R109, 116,	RF25DC562J	Resistor 5.6k ohm 1/4W 5%
			127		
C126	CE1252323	Capacitor Electrolytic 33uF10V	R104, 110,	RF25DC682J	Resistor 6.8k ohm 1/4W 5%
			129, 137,		
C148	CE1252525	Capacitor Electrolytic 47uF 10V	143, 144		
			R114	RF25DC822J	Resistor 8.2k ohm 1/4W 5%
C166	CE22342-13	Capacitor Electrolytic 100uF 6V	R105, 117	RC07BF183J	Resistor 18k ohm 1/4W 5%
C145	CE22342-18	Capacitor Electrolytic 330uF 10V	R153	RF25DC473J	Resistor 47k ohm 1/4W 5%
R101	RF25DC330J	Resistor 33ohm 1/4W 5%	R113	RF25DC683J	Resistor 68k ohm 1/4W 5%
R102, R140	RF25DC470J	Resistor 47ohm 1/4W 5%	R103	RF25DC104J	Resistor 100k ohm 1/4W 5%
R118, 123,	RF25DC101J	Resistor 100ohm 1/4W 5%	R106	RF25DC105J	Resistor 1Mk ohm 1/4W 5%
141			R138	RF25DC622J	Resistor 6.2k ohm 1/4W 5%
R150	RF25DC331J	Resistor 330ohm 1/4W 5%			
R124	RF25DC471J	Resistor 470ohm 1/4W 5%			

## PBFU - 102-2 AM/FM/MPX TUNER PC BOARD

Symbol No.	Part Number	Description	Symbol No.	Part Number	Description
VC101-105	CVVC20	Variable Capacitor-Air	CF101	CFHTX101	Ceramic Filter SFE 10.7ma5
TC101, 102			L102, 103	LCHTX273	MPX Filter Coil
104, 105			VR102	RVVVRX186	Variable Resistor 1KB
Q101	TR2SK41F	FET 2SK41F	VR101	RVVVRX237	Variable Resistor 2KB
Q102	TR2SC668D	Transistor 2SC668D, NPN	TC103	TCVC-2	Trimmer Condenser
Q104	TR2SC929D	Transistor 2SC929D, NPN			
Q103, 105,	TR2SC930D	Transistor 2SC930D, NPN	C106	CK22344-1	Capacitor Ceramic 5pF50V
106, 107			C111, 122,	CK22344-32	Capacitor Ceramic 10pF50V
CR109, 111	TR1S188 AM	Diode 1S188 AM Germanium	104, 163,	CK22344-9	Capacitor Ceramic 15pF50V
CR101, 102,	TR1S188 FM	Diode 1S188 FM Germanium	160, 114		
107, 108			C102	CK22347-1	Capacitor Ceramic 100pF50V
CR104, 105,	TRDS442	Diode DS442, Silicon	C138, 139,	CK23347-6	Capacitor Ceramic 300pF50V
105			142, 147		
			C107, 146	CK22350-8	Capacitor Ceramic 500pF50V
CR110	TR1S334K	Zener Diode 1S334K, 9.6V	C103, 105,	CK22355-1	Capacitor Ceramic 0.01uF 50V
IC101	TRLA3301S	IC LA3301 I.C., MPX Decoder	C108, 109,		
T101	LCHTX237	FM Antenna Coil	110, 120, 119		
T102	LCHTX238	FM RF Coil	121, 136		
T103	LCHTX275	FM Osc. Coil	C152, 153		
L101	LCHT47	FM Trap Coil	C168	CK22355-3	Capacitor Ceramic .02uF50V
T104	ZZHTX246	FM 1st IFT	C123, 124,		
T105	ZZHTX247	FM 1st IFT	C125, 127,		
T106	ZZHTX243	FM 2nd IFT	C128, 131,		
T107	ZZHTX248	FM 3rd IFT	C132, 133,		
T108	ZZHTX234	FM Ratio Detector	C134, 135,		
T109	ZZHTX235	FM Ratio Detector	C143, 167		
T110	LCHTX240	AM Osc. Coil	C118	CK22345-1	Capacitor Ceramic 3pF50V
T111	ZZHTX156	AM 1st IFT			
T112	ZZHTX236	AM 2nd IFT	C117	CK22344-6	Capacitor Ceramic 12pF50V
T113	ZZHTX158	AM 3rd IFT	C116	CK22344-36	Capacitor Ceramic 30pF50V
T114	LCHTX199	MPX Coil 67kHz	C162	CK22345-9	Capacitor Ceramic 50pF50V
T115	LCHTX215	MPX Coil 19kHz	C161	CK22347-7	Capacitor Ceramic 350pF50V
T116	LCHTX216	MPX Coil 38kHz	C115	CK22344-12	Capacitor Ceramic 18pF50V

PBSU 280 AUDIO SWITCH PC BOARD  
PARTS LIST

Symbol No.	Part Number	Description
Q211, 221,	TR2320063	Transistor 2SC458LGD
231, 241		
C213, 223,	CK22350-7	Capacitor, Ceramic 390pF 50V
233, 243		
C214, 224,	CY22335-12	Capacitor, Mylar .022uF 50V
234, 244		
C212, 222,	CE1252621	Capacitor, Electrolytic 10uF 25V
232, 242		
C201	CE22342-11	Capacitor, Electrolytic 100uF 25V
C211, 221,	CY22335-1	Capacitor, Mylar 0.1uF 50V
231, 241		
R213, 233,	RF25DC102J	Resistor 1k ohm 1/4W 5%
224, 243		
R217, 218,	RF25DC122J	Resistor 1.2k ohm 1/4W 5%
228, 221,		
251, 252		
R214, 234,	RF25DC153J	Resistor 15k ohm 1/4W 5%
225, 244,		
216, 226,		
236, 246		
R217, 227,	RF25DC273J	Resistor 27k ohm 1/4W 5%
237, 247,		
211, 231,		
222, 241		
R212, 232,	RC07BF225J	Resistor 2.2M ohm 1/4W 5%
223, 242		
S280	SPSSX188	Switch, Pushbutton

PBAU 207 AUDIO CONTROL  
PC BOARD

Symbol No.	Part Number	Description
VR303	RPVVRX249	Pot RV 16fp 30KA 100k Tone
VR301	RPVVRX248	Pot RV 16ftp 30KB 100k Volume
C313, 323,	CY22335-16	Capacitor, Mylar .068uF 50V
333, 343		
C311, 321,	CY22335-1	Capacitor, Mylar .01uF 50V
331, 341,		
314, 324,		
334, 344		
C312, 322,	CY22335-3	Capacitor, Mylar .001uF 50V
332, 342		
R312, 322,	RF25DC 392J	Resistor 3.9k ohm 1/4W 5%
332, 342		
R313, 323,	RF25DC123J	Resistor 12k ohm 1/4W 5%
333, 343		
R311, 321,	RF25DC223J	Resistor 22k ohm 1/4W 5%
331, 341		

## PARTS LIST

4000/4080

## PBSU 288 SQ-DECODER AND PHONO PRE-AMPLIFIER PC BOARD

Symbol No.	Part Number	Description	Symbol No.	Part Number	Description
Q602, 601	TR2SC1327S	Transistor 2SC1327S	R6109, 6309,	RF25DC224J	Resistor 220K ohm 1/4W 5%
Q611, 631, 641, 621	TR2320073	Transistor 2SC458 LGD or C.	6409, 6209, 6315		
Q633, 612, 632, 642, 622			R6114, 6214, 6308, 6408, 6108, 6208, 6121, 6113, 6313, 6413, 6213	RF25DC104J	Resistor 100K ohm 1/4W 5%
Q652, 662	CE22342-1	Capacitor, Electrolytic 0.47 25V	R6112, 6312, 6412, 6212	RF25DC153J	Resistor 15K ohm 1/4W 5%
C611, 631, 641, 621, 637, 645, 625, 626, 646, 636, 616, 615	CE1252621	Capacitor, Electrolytic 10uF 25V	R6105, 6305, 6405, 6205	RF25DC123J	Resistor 12K ohm 1/4W 5%
C601	CE22342-21	Capacitor, Electrolytic 470uF 25V	R6407, 6207, 6224, 6124, 6107, 6307, R1317, 6317	RF25DC682J	Resistor 6.8K ohm 1/4W 5%
C651, 661	CY22335-2	Capacitor, Mylar 0.015uF 50V	R6403, 6404, 6203, 6104, 6103, 6303, 6304	RF25DC562J	Resistor 5.6K ohm 1/4W 5%
C632, 642, 635	CY22335-20	Capacitor, Mylar 0.22uF 25V	R6111, 6311, 6411, 6211	RF25DC222J	Resistor 2.2K ohm 1/4W 5%
C634, 624	CY22335-16	Capacitor, Mylar 0.068uF 50V	R6001	RF25DC101J	Resistor 100 ohm 1/4W 5%
C612, 633, 643, 622	CY22335-22	Capacitor, Mylar 0.047uF 50V	R6106, 6206	RF25DC152J	Resistor 1.5K ohm 1/4W 5%
C613, 623	CY22335-9	Capacitor, Mylar 6800pF 50V	R6222, 6122	RC07BF335J	Resistor 3.3M ohm 1/4W 5%
C614, 644	CY22335-25	Capacitor, Mylar 8200pF 50V	R6225, 6125	RF25DC473J	Resistor 47K ohm 1/4W 5%
R6314	RF25DC105J	Resistor 1M ohm 1/4W 5%	R6223, 6123	RF25DC272J	Resistor 2.7K ohm 1/4W 5%
R6110, 6310, 6410, 6210, 6102, 6402, 6202	RC07BF225J	Resistor 2.2M ohm 1/4W 5%			
R6101, 6301, 6401, 6201	RC07BF564J	Resistor 560K ohm 1/4W 5%			

## PARTS LIST

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## PBSU 290 TAPE PRE-AMPLIFIER PC BOARD

Symbol No.	Part Number	Description	Symbol No.	Part Number	Description
IC501, 502	TRAN264	IC AN264	C516, 521, 513, 522, 514, 523, 515, 524	CE1252521	Capacitor, Electrolytic 10uF 16V
C505, 506 507, 508	CK22358-8	Capacitor, Ceramic 470pF 50V	C501, 502, 503, 504	CE0252515	Capacitor, Electrolytic 4.7uF 10V
C520, 509, 510, 511, 512	CK22347-7	Capacitor, Ceramic 33pF 50V	R508, 505, 506, 507	RF25DC104J	Resistor 100K ohm 1/4 5%
C517, 518, 519	CY22335-2	Capacitor, Mylar .015uF 16V	R517	RF25DC103J	Resistor 10K ohm 1/4W 5%
C526	CE22342-12	Capacitor, Electrolytic 100uF 16V	R511, 509, 510, 512	RF25DC562J	Resistor 5.6K ohm 1/4W 5%
C525	CE22342-8	Capacitor, Electrolytic 47uF 16V	R504, 510,	RF25DC101J	Resistor 100 ohm 1/4W 5%

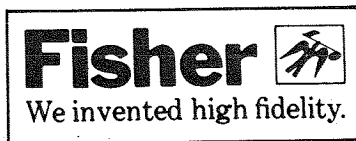
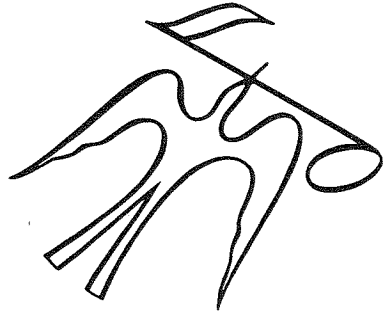
## PARTS LIST

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## PBAU 219 POWER AMPLIFIER AND POWER SUPPLY PC BOARD

Symbol No.	Part Number	Description	Symbol No.	Part Number	Description
Q417, 427, 437, 447, 416, 426, 436, 446	TR2327593	Transistor 2SC1419B	R4116, 4216, 4117, 4217, 4316, 4317, 4416, 4417	RFRD1-0.47	Resistor 0.47 ohm-1W
Q414, 424, 434, 444	TR2327333	Transistor 2SC1213C	R4315, 4313, 4113, 4115, 4215, 4213, 4413, 4415	RF25DC471J	Resistor 470 ohm 1/4W 5%
Q415, 425, 435, 445	TR2327283	Transistor 2SA673C	R4107, 4207, 4307, 4407, 4114, 4214, 4314, 4414	R33DC270J	Resistor 27 ohm 1/4W 5%
Q411, 421, 431, 441	TR2327263	Transistor 2SA672B	R4112, 4212, 4312, 4412	RF25DC561J	Resistor 560 ohm 1/4W 5%
Q412, 422 432, 442	TR2320063	Transistor 2SC458C	R403	RW2W331J	Resistor 330 ohm 2W
Q413, 423, 433, 443	TR2SC281C	Transistor 2SC281C	R406	RFRD1-330	Resistor 330 ohm 1W
Q418, 428	TR2320073	Transistor 2SC458 LGD or C	R4102, 4202, 4302, 4402	RF25DC820J	Resistor 82 ohm 1/4W 5%
CR405	TRWZ210	Zener Diode WZ210	R4118, 4218, 4318, 4418	RC20BF4R7J	Resistor 4.7 ohm 1/2W 5%
CR701, 401, 402, 403, 404	SR1K-2	Rectifier SRIK-2	R4111, 4211, 4311, 4411	RF25DC112J	Resistor 1.1K ohm 1/4W 5%
C401	CK22349-1	Capacitor, Ceramic 0.01uF 50V	R4110, 4210, 4310, 4410	RF25DC153J	Resistor 15K ohm 1/4W 5%
C416, 426, 436, 446	CK22348-1	Capacitor Ceramic 0.05uF 50V	R4108, 4208, 4308, 4408, 4105, 4205, 4305, 4405, 4301, 4122, 4401, 4322, 4422, 4101, 4201, 4222	RF25DC103J	Resistor 10K ohm 1/4W 5%
C404	CE1252521	Capacitor, Electrolytic 10uF 16V	R4109, 4209, 4309, 4409	RF25DC222J	Resistor 2.2K ohm 1/4W 5%
C418, 428	CE2083-25	Capacitor, Electrolytic 2.2uF 16V	R4104, 4204, 4304, 4404	RF25DC472J	Resistor 4.7K ohm 1/4W 5%
C425, 405, 435, 415, 445	CE22342-23	Capacitor, Electrolytic 1000uF 25V	R4103, 4203, 4303, 4403	RF25DC104J	Resistor 100K ohm 1/4W 5%
C402, 403	CE22342-14	Capacitor, Electrolytic 220uF 25V	R4119, 4120, 4219, 4220	RF25DC683J	Resistor 68K ohm 1/4W 5%
C414, 424,	CE125621	Capacitor, Electrolytic 10uF 25V	R4121, 4221	RF25DC154J	Resistor 150K ohm 1/4W 5%
C412, 422, 432, 442	CE22342-12	Capacitor, Electrolytic 100uF 16V	R401, 402, 408	RF25DC155J	Resistor 1.5M ohm 1/4W 5%
C417, 427	CE1252611	Capacitor, Electrolytic 1uF 16V		RF25DC183J	Resistor 18K ohm 1/4W 5%
C411, 421, 431, 441	CS22340-2	Capacitor, Sint. AL .22uF 25V			
C413, 433, 423, 443	CK22347-3	Capacitor, Ceramic 150pF 50V			

# NOTES



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