

**The Harman Kardon
Model hk570i**

**AM/FM/Stereo FM
Solid State Receiver**

Technical Manual

harman/kardon

PRECAUTIONS

1. Always disconnect the chassis from power line when soldering. Turning the power switch OFF is not enough. Power line leakage passing through the heating element may destroy the transistors.
2. Never attempt to do any work on the transistor amplifiers without first disconnecting the AC line cord and waiting until the power supply filter capacitors have discharged.
3. Replacement for output and driver transistors, if necessary, must be made from the same beta group as the original type.
4. If one output transistor burns out (open or short) always remove all the output transistors in that channel and check the bias adjustment, the control and other parts in the network with an ohmmeter before inserting a new transistor. All transistors in one channel will be destroyed if the base biasing circuit is open on the emitter end.
5. When mounting a replacement power transistor, be sure that the bottom of the flange, the mica insulators and the surface of the heat sink are free of foreign matter, for they may cause transistor failure.
6. Silicone grease must be applied between the transistor and the mica insulator, and between the mica insulator and the heat sink for better heat conduction.
7. Fuses must be replaced with size and type indicated. Use of other types can expose components to destructive current levels.

ALIGNMENT PROCEDURES

AM ALIGNMENT

- Instruments:**
1. AM Signal Generator modulated with 400Hz at 30%.
 2. Oscilloscope
 3. AC V.T.V.M.

- Notes:**
1. Set function selector switch to AM position.
 2. Connect signal source to a loop placed to radiate signals into AM antenna loop stick (L251).

Step	Signal Source	Connect Output Meter To	Dial Setting	Adjust	Adjust For
1	455kHz	VTVM and oscilloscope to TP1 and ground	Quiet point on band	T251, T252, T253	Maximum output on VTVM and at the same time clean wave form on oscilloscope
2	540kHz	Same as above	540kHz	L252	Same as above
3	1600kHz	Same as above	1600kHz	TC252	Same as above
4	Repeat steps 2 and 3 for optimum sensitivity				
5	600kHz	VTVM and oscilloscope to TP1 and ground	Tune for signal	L251	Maximum output on VTVM and at the same time clean wave form on oscilloscope
6	1400kHz	Same as above	Same as above	TC251	Same as above
7	Repeat steps 5 and 6 for optimum sensitivity				

ALIGNMENT PROCEDURES

FM ALIGNMENT

- Instruments:**
1. FM Signal Generator modulated with 1000Hz at 100% (75kHz).
 2. Center Zero Meter
 3. Distortion Meter
 4. AC V.T.V.M.

- Notes:**
1. Set function selector switch to FM position.
 2. Set muting switch to OFF (button in) position.
 3. Connect signal source to FM antenna terminals.
 4. Set signal weak to obtain an exact tuning point when tuning.

Step	Signal Source	Connect Output Meter To	Dial Setting	Adjust	Adjust For
1		VTVM to tape out 1 jack	Quiet point on band	T101	Maximum noise on VTVM
2		Center zero meter to TP2 and TP3	Same as above	T201(A)	Indicating "0" on center zero meter
3		VTVM to tape out 1 jack	Same as above	T201(B)	Minimum noise on VTVM
4	88MHz 6dBf (1 μ V)	Same as above	88MHz	L105	Maximum output on VTVM
5	108MHz 6dBf (1 μ V)	Same as above	108MHz	TC103	Same as above
6	Repeat steps 4 and 5 for optimum sensitivity				
7	90MHz 6dBf (1 μ V)	VTVM to tape out 1 jack	Tune for signal	L102, L103	Maximum output on VTVM
8	106MHz 6dBf (1 μ V)	Same as above	Same as above	TC101, TC102	Same as above
9	Repeat steps 7 and 8 for optimum sensitivity				
10	98MHz 65dBf (970 μ V)	Distortion meter to tape out 1 jack	Tune for signal	T201(B)	Minimum reading on distortion meter
11	Repeat step 2 (DC balance adjustment) once again.				

MUTING SENSITIVITY ADJUSTMENT

- Instruments:**
1. FM Signal Generator modulated with 1000Hz at 100% (75kHz).
 2. AC V.T.V.M.

- Notes:**
1. Set function selector switch to FM position.
 2. Set muting switch to ON (button out) position.
 3. Connect signal source to FM antenna terminals.
 4. Turn VR1 (at cabinet back) to clockwise fully.

Signal Source	Connect Output Meter To	Dial Setting	Adjust	Adjust For
98MHz 30dBf (16 μ V)	AC VTVM to tape out 1 jack	98MHz	VR1	Turn VR1 to counter-clockwise till needle deflection on VTVM

ALIGNMENT PROCEDURES

STATION LOCK AND SIGNAL STRENGTH INDICATORS ADJUSTMENT

Instrument: FM Signal Generator modulated with 1000Hz at 100% (75kHz).

- Notes:**
1. Set function selector switch to FM position.
 2. Connect signal source to FM antenna terminals.
 3. Set signal weak to obtain an exact tuning point when tuning.

Step	Signal Source	Dial Setting	Adjust	Adjust For
1	98MHz 24dBf (8 μ V)	98MHz	VR354	"1" of signal strength display LEDs lights
2			VR351	Center of station lock indicator LED lights
3	98MHz 85dBf (9.7mV)		VR352	All signal strength display LEDs lights
4	Repeat step 1 once again.			

MPX ADJUSTMENT

Instruments:

1. FM Signal Generator modulated with 1000Hz at 100% (75kHz).
2. Frequency Counter

- Notes:**
1. Set function selector switch to FM position.
 2. Connect signal source to FM antenna terminals.

Signal Source	Connect Output Meter To	Dial Setting	Adjust	Adjust For
98MHz 65dBf (970 μ V)	Frequency Counter to TP4 and ground	98MHz	VR302	76kHz

STEREO FM INDICATOR ADJUSTMENT

Instrument: FM Stereo Signal Generator modulated with 1000Hz at 100% (75kHz).

- Notes:**
1. Set function selector switch to AUTO FM position.
 2. Connect signal source to FM antenna terminals.
 3. Set main signal ON and pilot signal (9%) ON of FM stereo signal generator.

Signal Source	Dial Setting	Adjust	Adjust For
98MHz 36dBf (30 μ V)	98MHz	VR353	Stereo FM indicator LED lights to just light

ALIGNMENT PROCEDURES

SEPARATION ADJUSTMENT

Instruments: 1. FM Stereo Signal Generator modulated with 1000Hz at 100% (75kHz).
(L + R = 45% L - R = 45% 19kHz = 9%)

2. AC V.T.V.M.

- Notes:** 1. Set function selector switch to AUTO FM position.
2. Set blend control to STEREO position.
3. Connect signal source to FM antenna terminals.
4. Set signal weak to obtain an exact tuning point when tuning.

Step	Signal Source	Connect Output Meter To	Dial Setting	Adjust	Adjust For
1	Set Lch signal ON at FM stereo signal generator				
2	98MHz 65dBf (970 μ V)	VTVM to Rch tape out 1 jack	98MHz	VR301, VR303	Minimum output on VTVM
3	Set Rch signal ON at FM stereo signal generator				
4	98MHz 65dBf (970 μ V)	VTVM to Lch tape out 1 jack	98MHz	VR301, VR303	Minimum output on VTVM

IDLING CURRENT ADJUSTMENT

Instrument: DC V.T.V.M.

- Notes:** 1. Set function selector switch to AUX position.
2. Set volume control to minimum position.

Step	Connect Output Meter To	Adjust	Adjust For
1	DC VTVM to TP5(+) and TP6(-)	VR404	33mV
2	DC VTVM to TP7(+) and TP8(-)	VR403	33mV

DC VOLTAGE BALANCE ADJUSTMENT

Instrument: DC V.T.V.M.

- Notes:** 1. Set function selector switch to AUX position.
2. Set volume control to minimum position.
3. Press in speaker 1 push button to ON (button in) position.

Step	Connect Output Meter To	Adjust	Adjust For
1	DC VTVM to Lch terminal of speaker system 1	VR402	0V \pm 60mV
2	DC VTVM to Rch terminal of speaker system 1	VR401	0V \pm 60mV

ALIGNMENT PROCEDURES

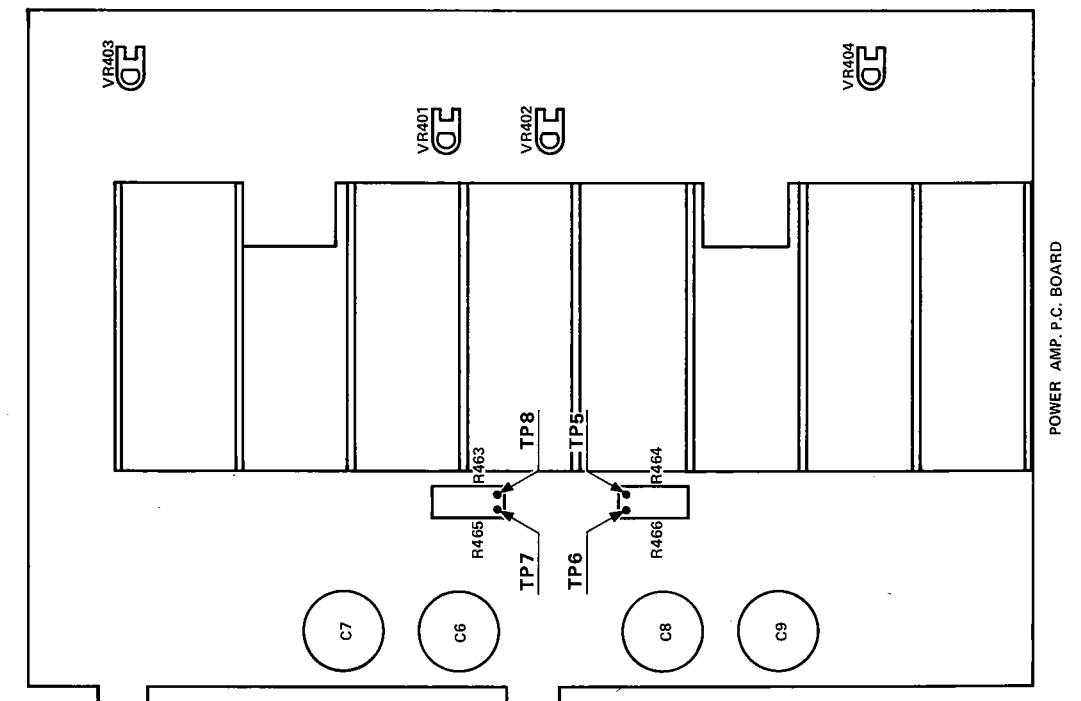
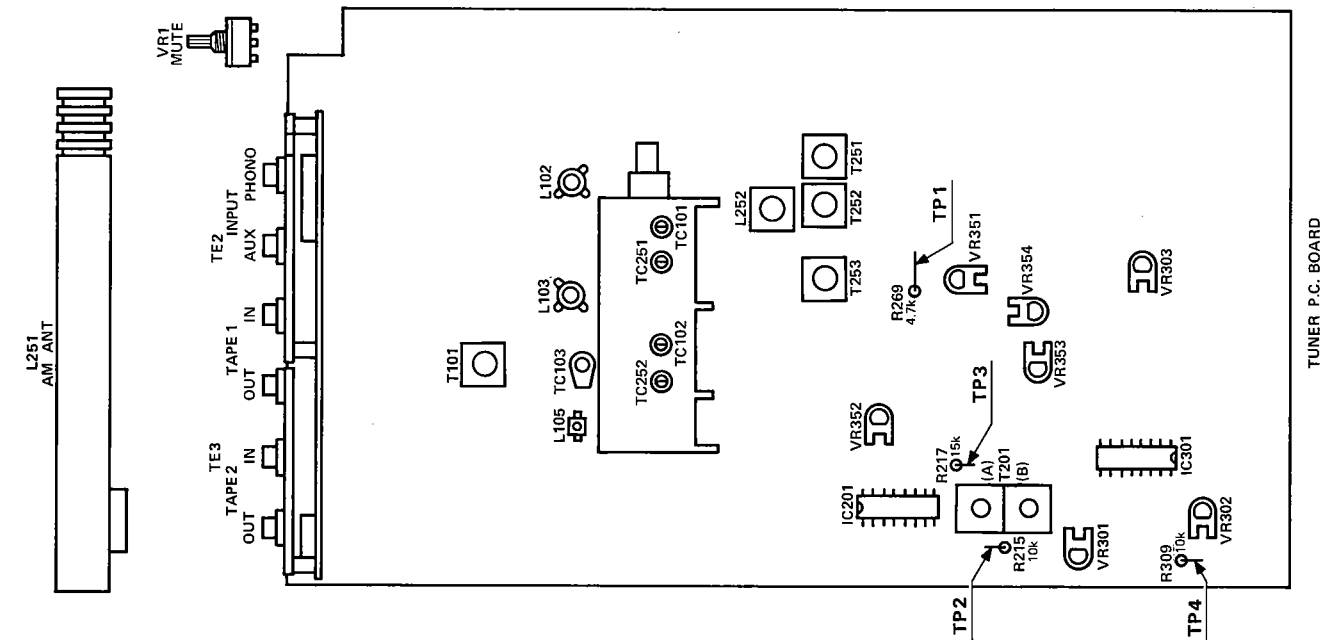
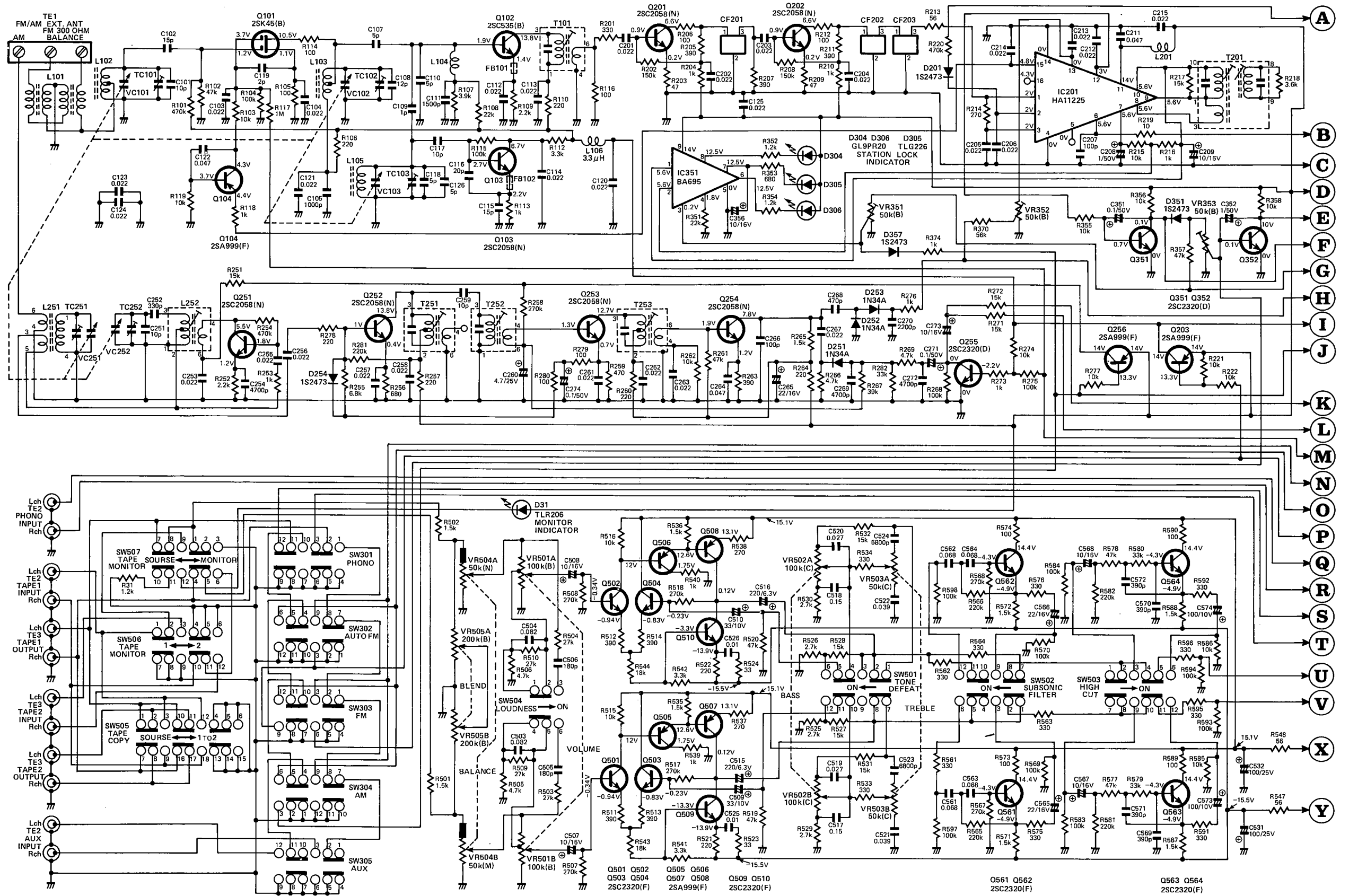
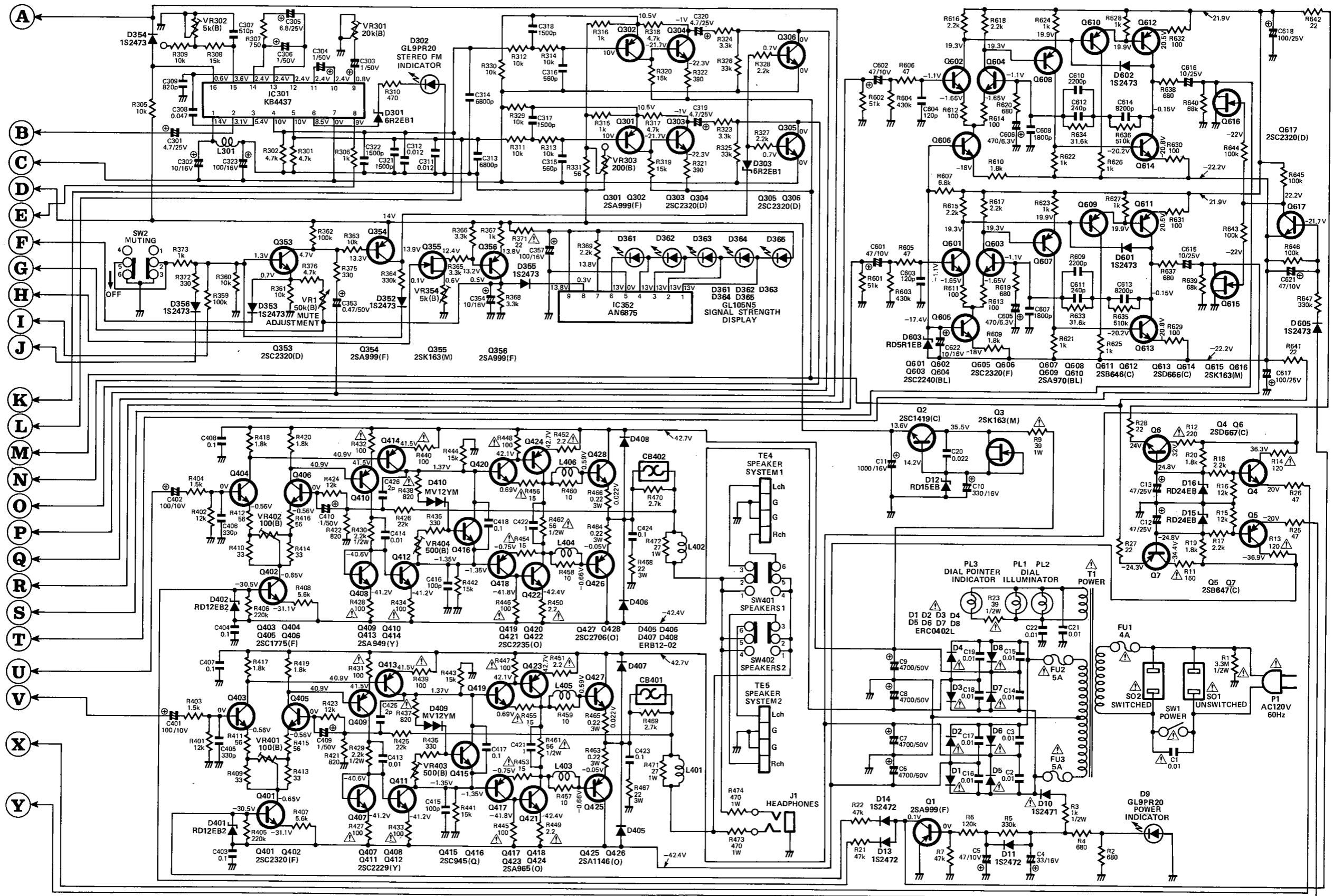


Fig. 1 - Alignment Points Location

SCHEMATIC DIAGRAM



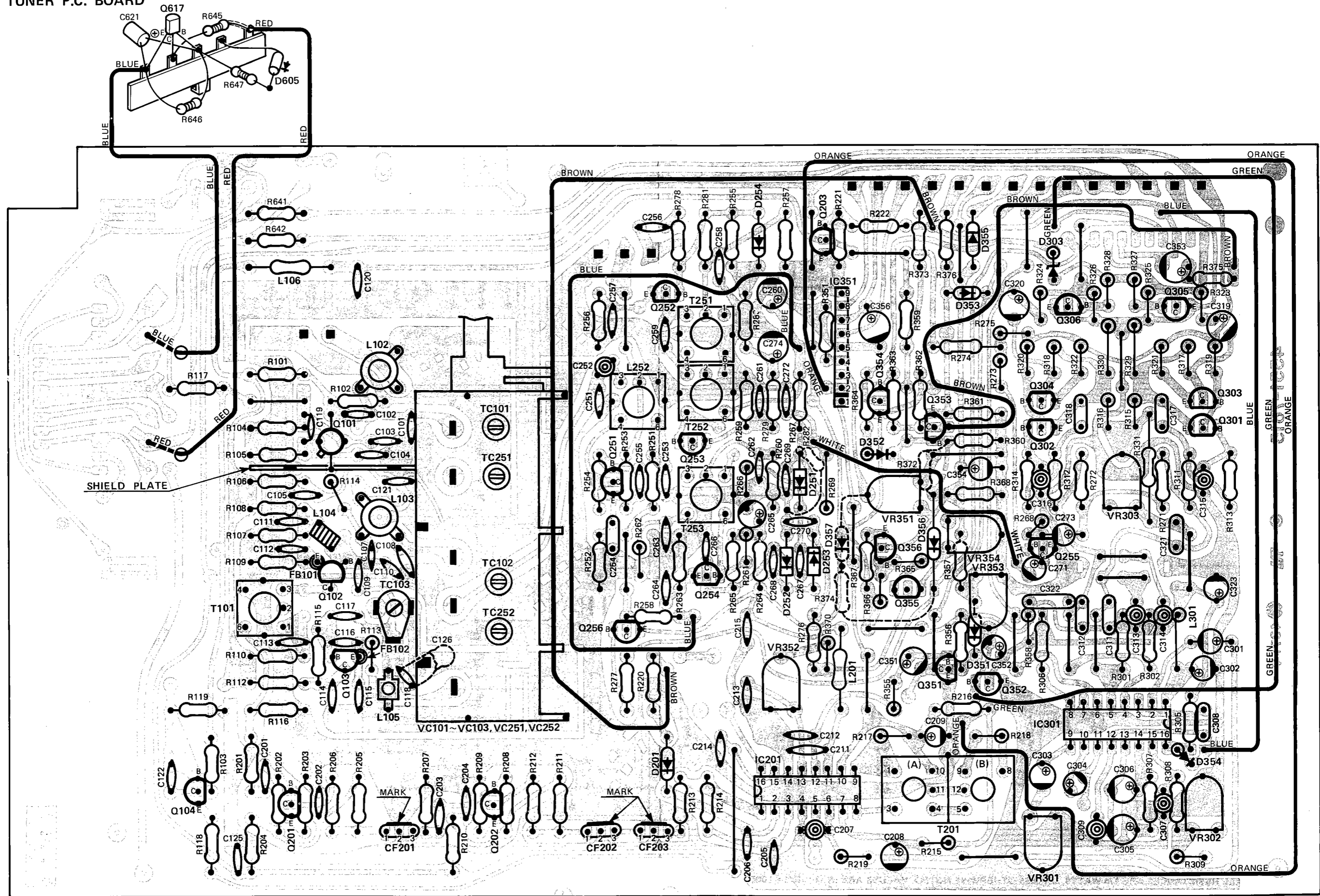
SCHEMATIC DIAGRAM



NOTES: 1. ALL RESISTANCES ARE 1/4 WATTS, UNLESS OTHERWISE NOTED, VALUES ARE IN Ω. KΩ = 1000Ω, MΩ = 1000 KΩ
 2. ALL CAPACITANCES VALUES ARE IN μF UNLESS OTHERWISE NOTED. pF = μμF

3. ALL VOLTAGES READING FROM CHASSIS ARE MEASURED WITH V.T.V.M. UNDER NO SIGNAL CONDITIONS.
 4. SAFETY-REQUIREMENTS COMPONENTS IN ACCORDANCE WITH PRESENT SAFETY REGULATIONS, THESE COMPONENTS MUST ONLY BE REPLACED BY ORIGINAL PARTS.

TUNER P.C. BOARD



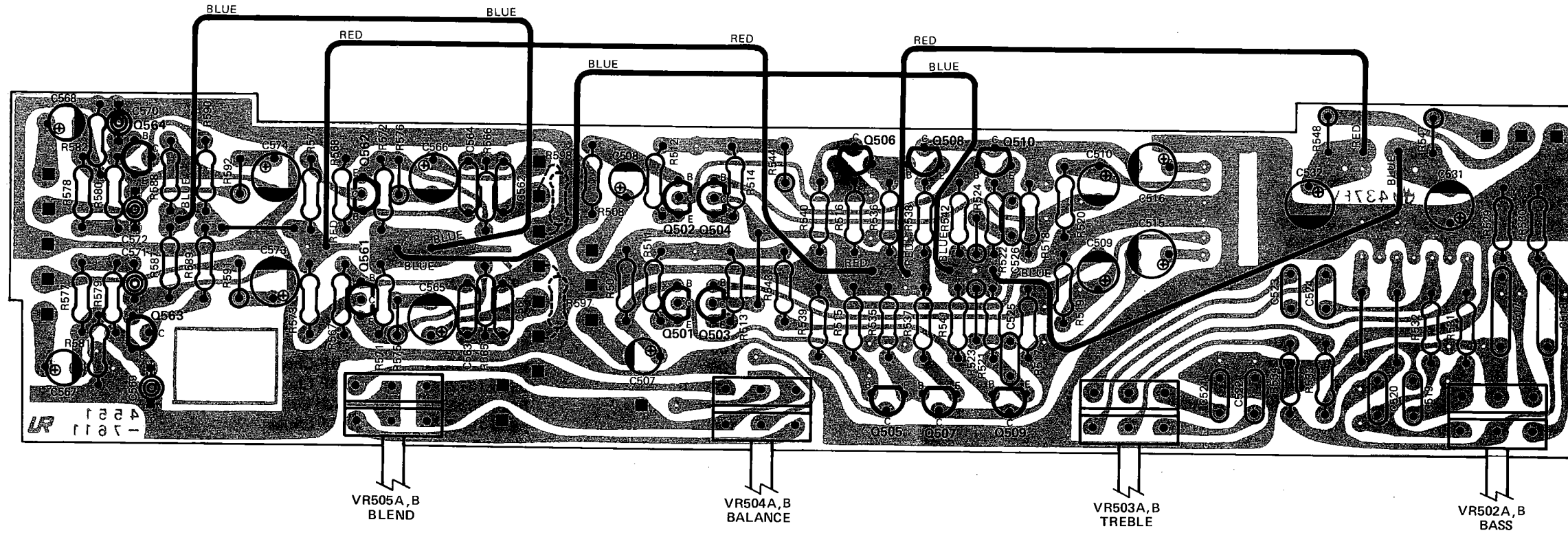
TUNER P.C. BOARD

Ref. No.	Part No.	Description
RESISTORS		
VR301	5101-20371913	Variable Resistor, 20k Ω
VR302, 354	5101-50271913	Variable Resistor, 5k Ω
VR303	5101-20171913	Variable Resistor, 200 Ω
VR351, 352, 353	5101-50371913	Variable Resistor, 50k Ω
CAPACITORS, ELECTROLYTIC		
C208, 352	5345-105-50	1 μ F +75%–10% 50V
C209, 273, 302, 354, 356	5345-106-16	10 μ F +50%–10% 16V
C260	5345-475-25	4.7 μ F +50%–10% 25V
C265	5345-226-16	22 μ F +50%–10% 16V
C271, 274, 351	5345-104F0212	0.1 μ F \pm 20% 50V
C301, 319, 320	5345-475D0212	4.7 μ F \pm 20% 25V
C303, 304, 306	5345-105F0212	1 μ F \pm 20% 50V
C305	5345-685D0212	6.8 μ F \pm 20% 25V
C323	5345-107-16	100 μ F +50%–10% 16V
C353	5345-474-50	0.47 μ F +75%–10% 50V
C621	5345-476-10	47 μ F +50%–10% 10V
VC101, 102, 103, 251, 252	5315-718	5-Gang Variable Capacitor (w/Trimmers TC101, 102, 251, 252)
TC103	5371-55	Trimmer Capacitor
TRANSISTORS		
Q101	5616-2SK45(B)	F.E.T., 2SK45(B) FM RF Amp.
Q102	5613-535(B)	2SC535(B) FM Mixer
Q103	5613-2058(N)	2SC2058(N) or (P) FM Osc.
Q104	5611-999(F)	2SA999(F) FM AGC Switching
Q201, 202	5613-2058(N)	2SC2058(N) or (P) FM IF Amp.
Q203	5611-999(F)	2SA999(F) FM Voltage Supply
Q251	5613-2058(N)	2SC2058(N) or (P) AM Osc.
Q252	5613-2058(N)	2SC2058(N) or (P) AM Mixer
Q253, 254	5613-2058(N)	2SC2058(N) or (P) AM IF Amp.
Q255	5613-2320(D)	2SC2320(D) AM Signal Switching
Q256	5611-999(F)	2SA999(F) AM Voltage Supply
Q301, 302	5611-999(F)	2SA999(F) } MPX Output Amp.
Q303, 304	5613-2320(D)	2SC2320(D) }
Q305, 306	5613-2320(D)	2SC2320(D) FM Muting
Q351, 352	5613-2320(D)	2SC2320(D) Stereo FM Indicator Control
Q353	5613-2320(D)	2SC2320(D) } FM Muting
Q354	5611-999(F)	2SA999(F) }
Q355	5616-2SK163(M)	F.E.T., 2SK163(M) } Signal Strength Display Level Amp.
Q356	5611-999(F)	2SA999(F) }
Q617	5613-2320(D)	2SC2320(D) Equalizer Muting

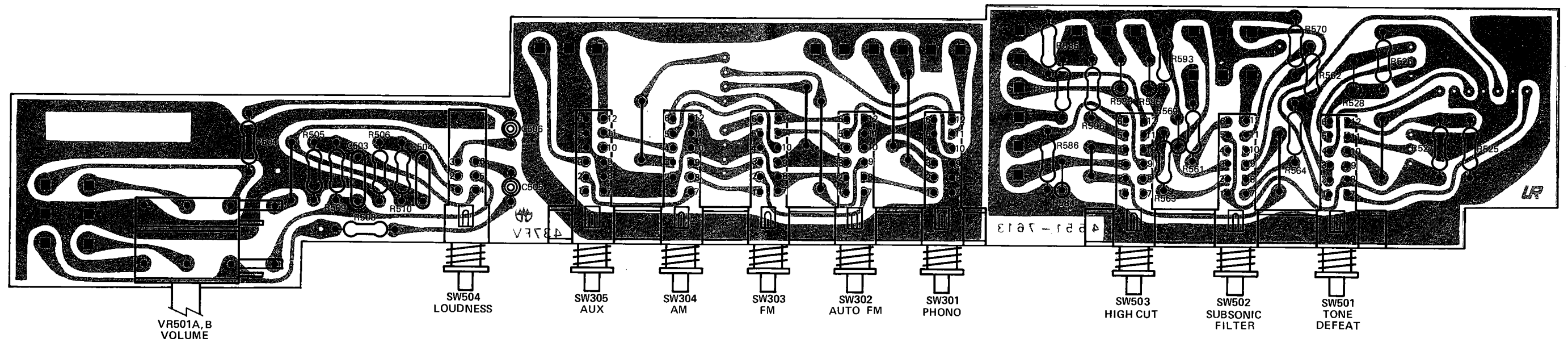
TUNER P.C. BOARD

Ref. No.	Part No.	Description
INTEGRATED CIRCUITS		
IC201	5652-HA11225	HA11225 FM IF Amp. & FM Det.
IC301	5652-KB4437	KB4437 FM Multiplex
IC351	5652-BA695	BA695 Station Lock Indicators Driver
DIODES		
D201, 254, 351, 352, 353, 354, 355, 356, 357, 605	5631-1S2473	1S2473
D251, 252, 253	5631-1N34A	1N34A
D303	5635-6R2EB1	Zener, 6.2EB1
COILS		
L102	5943-70125	FM RF
L103	5943-70225	FM RF
L104	5991-7065	FM IF Trap
L105	5942-70215	FM Osc.
L106	5995-3R3225	RF Choke
L201	5995-101225	RF Choke
L252	5923-70327	AM Osc.
L301	5995-100225	RF Choke
TRANSFORMERS		
T101	5563-0027	FM IF
T201	5574-7023	Quadrature Det.
T251, 252	5553-0097	AM IF
T253	5553-0087	AM IF
MISCELLANEOUS		
CF201, 202, 203	5671-7117Z	Ceramic Filter, FM IF
FB101, 102	5597-4	Ferrite Bead, Q102 & Q103

TONE CONTROL P.C. BOARD



VOLUME CONTROL & FUNCTION P.C. BOARD



TONE CONTROL P.C. BOARD

Ref. No.	Part No.	Description
RESISTORS		
VR502A, B	5113-1047877	Variable Resistor, 100k Ω Bass Control
VR503A, B	5113-5037977	Variable Resistor, 50k Ω Treble Control
VR504A, B	5113-50376100	Variable Resistor, 50k Ω Balance Control
VR505A, B	5113-2047140	Variable Resistor, 200k Ω Blend Control
CAPACITORS, ELECTROLYTIC		
C507, 508, 567, 568	5345-106C0951	10 μ F \pm 20% 16V
C509, 510	5345-336B0951	33 μ F \pm 20% 10V
C515, 516	5345-227-06	220 μ F +50%–10% 6.3V
C531, 532	5345-107-25	100 μ F +50%–10% 25V
C565, 566	5345-226C0951	22 μ F \pm 20% 16V
C573, 574	5345-107-10	100 μ F +50%–10% 10V
TRANSISTORS		
Q501, 502, 503, 504, 509, 510	6513-2320(F)	2SC2320(F) } Flat/Tone Control Amp.
Q505, 506, 507, 508	5611-999(F)	2SA999(F) }
Q561, 562, 563, 564	5613-2320(F)	2SC2320(F) Subsonic Filter, High-Cut Filter

VOLUME CONTROL & FUNCTION P.C. BOARD

Ref. No.	Part No.	Description
VR501A, B	5116-1047343	Variable Resistor, 100k Ω Volume Control
SW301, 302, 303, 304, 305	4431-01017358	5-Gang Push Switch, Function Selector
SW501, 502, 503	4431-03127250	3-Gang Push Switch, Tone Defeat, Subsonic Filter, High Cut
SW504	4431-01027194	Push Switch, Loudness

POWER AMP. P.C. BOARD

Ref. No.	Part No.	Description
RESISTORS		
R9	5102-3905711	39Ω ±5% 1W Fuse
R11	5102-1514713	150Ω ±2% 1/4W Fuse
R12	5102-2214713	220Ω ±2% 1/4W Fuse
R13, 14	5102-1214713	120Ω ±2% 1/4W Fuse
R427, 428, 431, 432, 433, 434, 439, 440, 445, 446, 447, 448	5102-1014713	100Ω ±2% 1/4W Fuse
R437, 438	5102-8214713	820Ω ±2% 1/4W Fuse
R449, 450, 451, 452	5102-2R2579	2.2Ω ±5% 1/4W Fuse
R453, 454, 455, 456	5102-1504713	15Ω ±2% 1/4W Fuse
R461, 462	5102-5605114	56Ω ±5% 1/2W Fuse
R463/465, 464/466	5273-R22672	0.22Ω ±10% 3W×2 Special Dual
VR401, 402	5101-10171913	Variable Resistor, 100Ω
VR403, 404	5101-50171913	Variable Resistor, 500Ω

CAPACITORS, ELECTROLYTIC

C4	5345-336-16	33μF +50%—10% 16V
C5	5345-476-10	47μF +50%—10% 10V
C6, 7, 8, 9	5341-478F0955	4700μF ±20% 50V
C10	5345-337-16	330μF +50%—10% 16V
C11	5345-108-16	1000μF +50%—10% 16V
C12, 13	5345-476-25	47μF +50%—10% 25V
C401, 402	5345-107B0951	100μF ±20% 10V
C409, 410	5345-105-50	1μF +75%—10% 50V

TRANSISTORS

Q1	5611-999(F)	2SA999(F) Audio Muting
Q2	5613-1419(C)	2SC1419(C) Voltage Regulator
Q3	5616-2SK163(M)	F.E.T., 2SK163(M) Current Regulator
Q4, 6	5614-667(C)	2SD667(C) Voltage Regulator
Q5, 7	5612-647(C)	2SB647(C) Voltage Regulator
Q401, 402	5613-2320(F)	2SC2320(F)
Q403, 404, 405, 406	5613-1775(F)	2SC1775(F)
Q407, 408, 411, 412	5613-2229(Y)	2SC2229(Y)
Q409, 410, 413, 414	5611-949(Y)	2SA949(Y)
Q415, 416	5613-945(Q)	2SC945(Q)
Q417, 418, 423, 424	5611-965(O)	2SA965(O)
Q419, 420, 421, 422	5613-2235(O)	2SC2253(O)
Q425, 426	5611-1146(O)	2SA1146(O)
Q427, 428	5613-2706(O)	2SC2706(O)

} Power Amp.

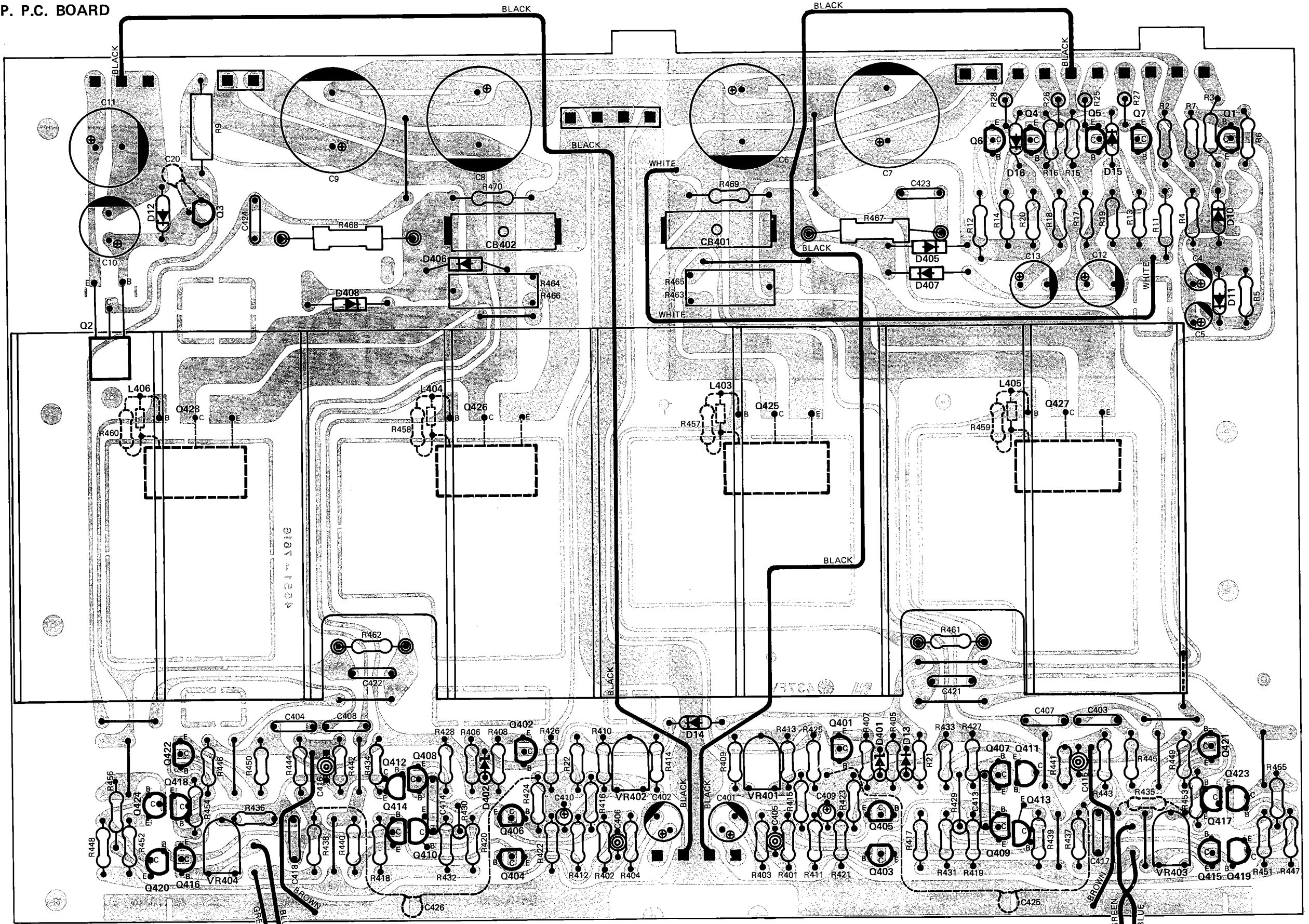
DIODES

D10	5636-1S2471	1S2471
D11, 13, 14	5636-1S2472	1S2472
D12	5635-RD15EB	Zener, RD15EB
D15, 16	5635-RD24EB	Zener, RD24EB
D401, 402	5635-RD12EB2	Zener, RD12EB2
D405, 406, 407, 408	5632-ERB12-02	ERB12-02
D409, 410	5641-MV12YM	Varistor, MV12YM

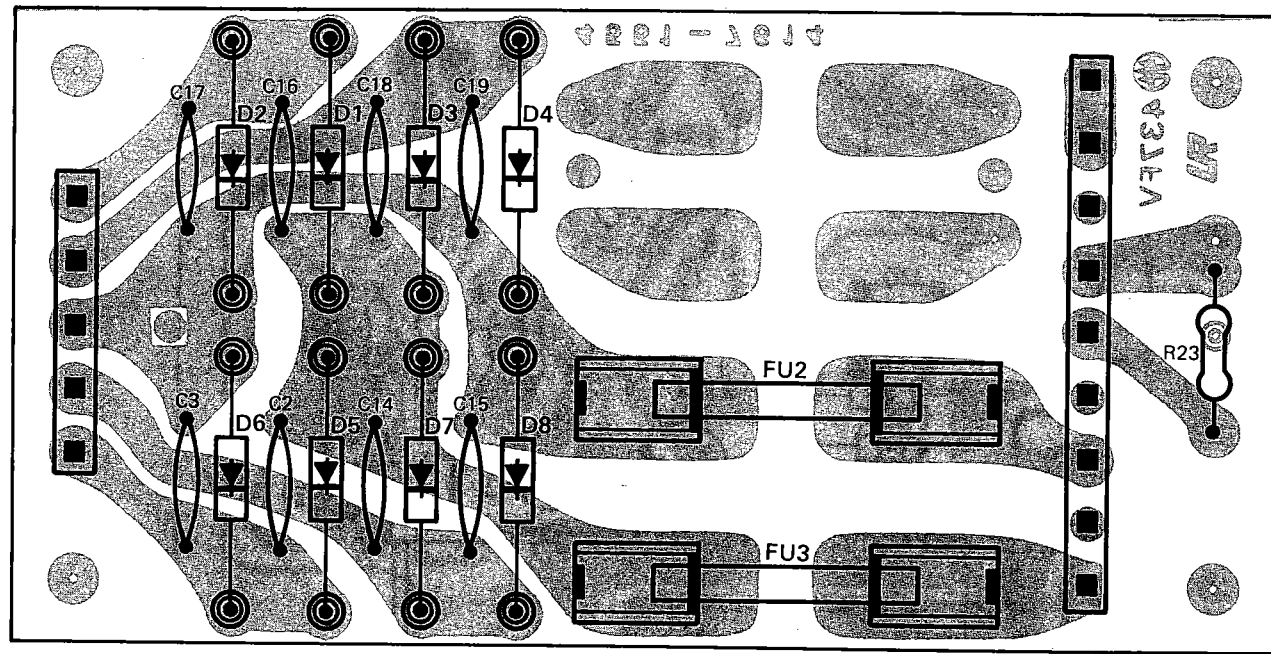
MISCELLANEOUS

CB401, 402	4361-252014	Speaker Protector
L403, 404, 405, 406	5597-35502	Ferrite Bead

POWER AMP. P.C. BOARD

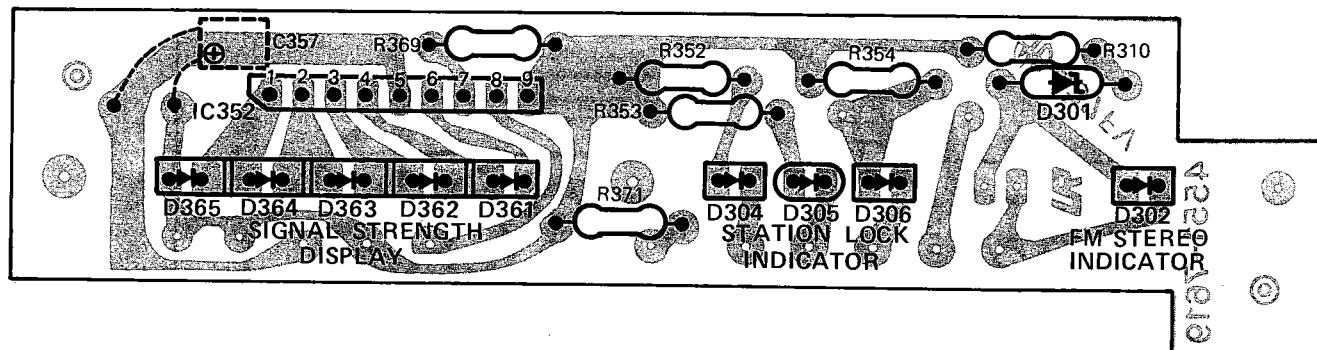


RECTIFIER P.C. BOARD



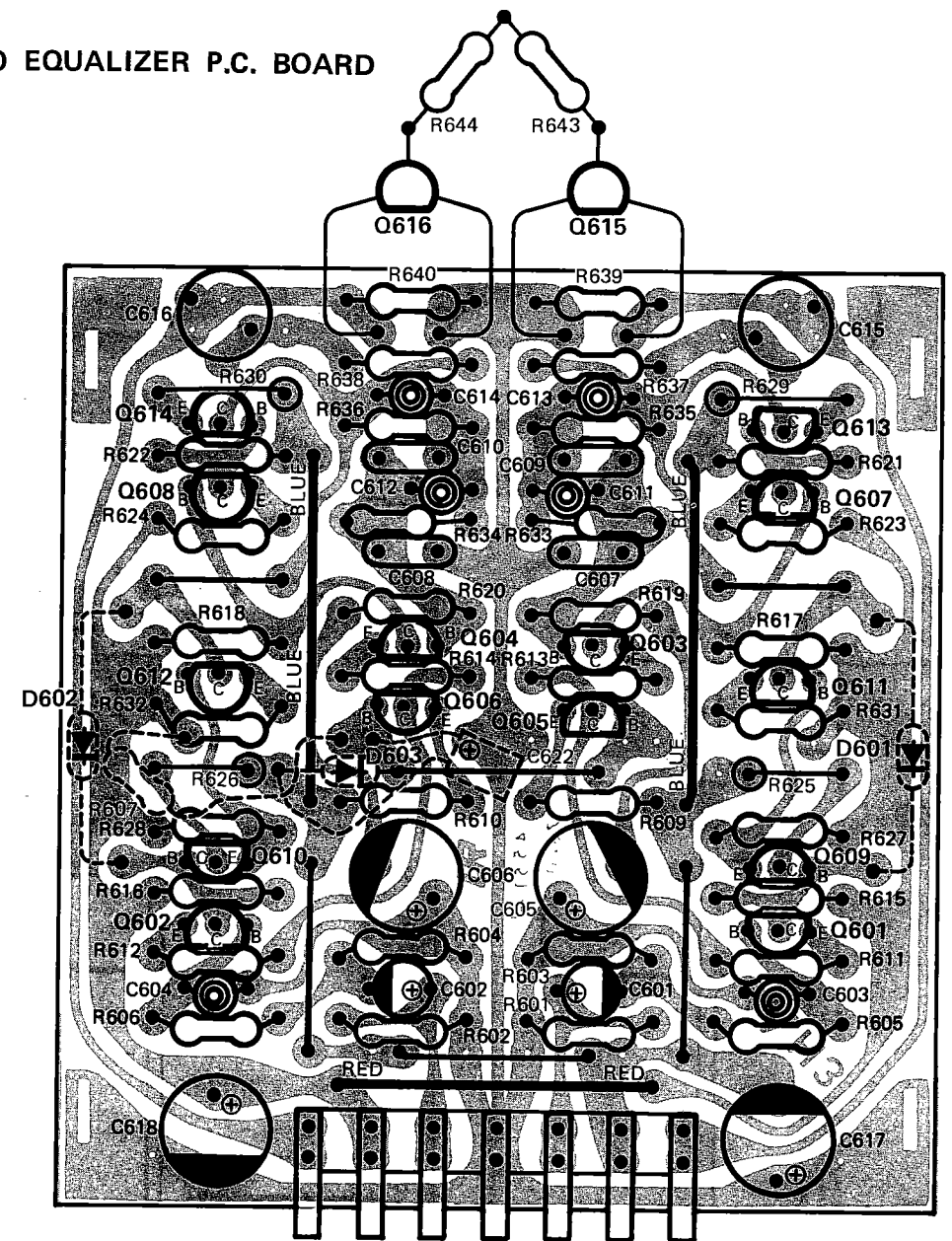
Ref. No.	Part No.	Description
D1, 2, 3, 4, 5, 6, 7, 8	5632-ERC0402L	Diod, ERC0402L
R23	5102-3905114	Resistor, 39Ω ±5% 1/2W
FU2, 3	5732-502028	Fuse, 5A 125V
	4472-7113	Fust Holder

LED DISPLAY P.C. BOARD



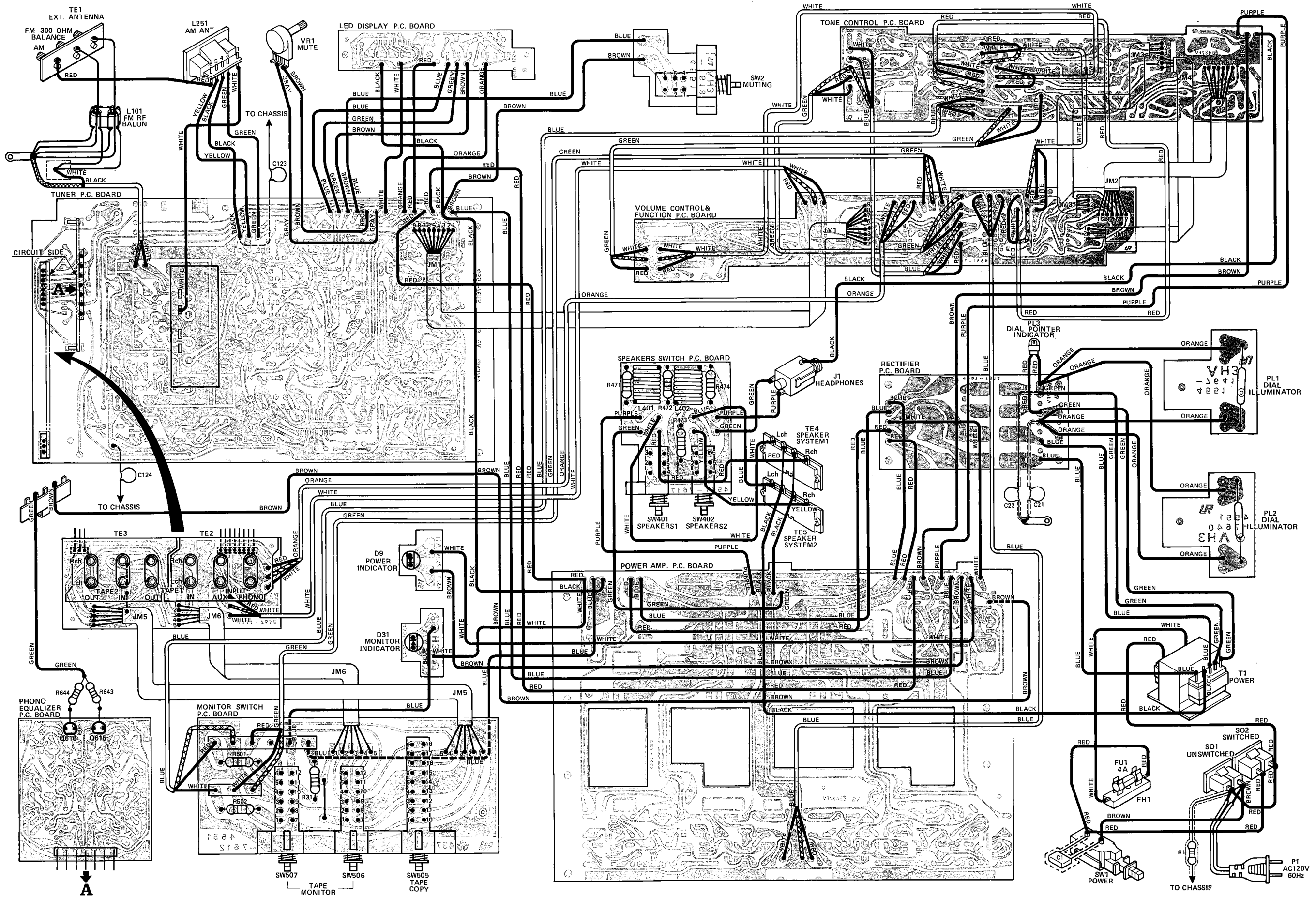
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IC352	5652-AN6875	Integrated Circuit, AN6875 Signal Strength Display Driver
D301	5635-6R2EB1	Zener Diode, 6.2EB1
D302, 304, 306	5637-GL9PR20	Light Emitting Diode, GL9PR20 Stereo FM Indicator, Station Lock Indicators
D305	5637-TLG226	Light Emitting Diode, TLG226 Station Lock Indicator
D361, 362, 363, 364, 365	5637-GL105N5	LED Display Assembly, GL105N5 Signal Strength Display
C357	5345-107-16	Capacitor, 100μF +50%–10% 16V Electrolytic

PHONO EQUALIZER P.C. BOARD

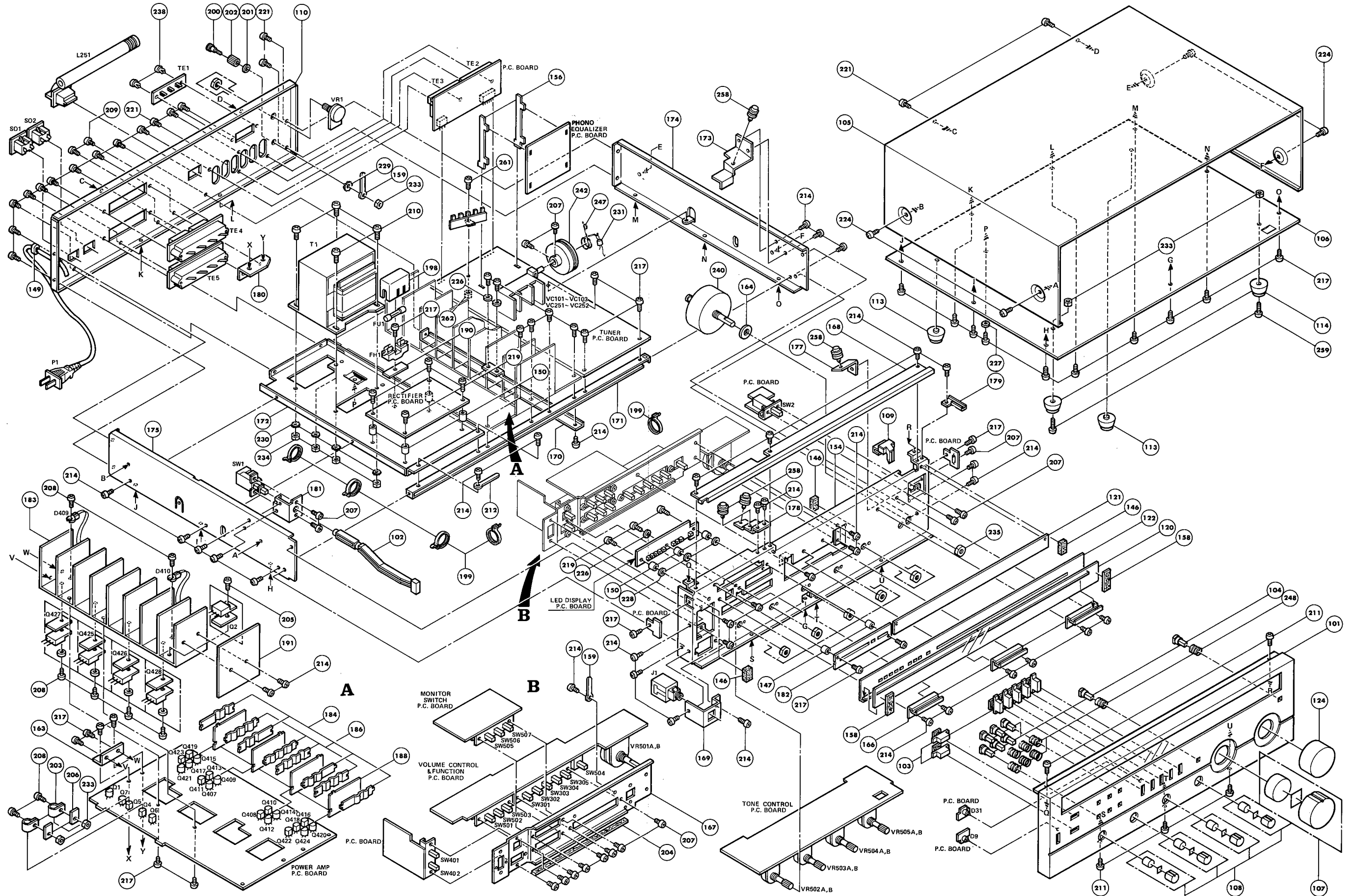


Ref. No.	Part No.	Description
CAPACITORS, ELECTROLYTIC		
C601, 602	5345-476B0951	47μF ±20% 10V
C605, 606	5345-477A0952	470μF ±20% 6.3V
C615, 616	5342-106D023	10μF ±20% 25V
C617, 618	5345-107-25	100μF +50%–10% 25V
C622	5345-106-16	10μF +50%–10% 16V
TRANSISTORS		
Q601, 602, 603, 604	5613-2240(BL)	2SC2240(BL)
Q605, 606	5613-2320(F)	2SC2320(F)
Q607, 608, 609, 610	5611-970(BL)	2SA970(BL)
Q611, 612	5612-646(C)	2SB646(C)
Q613, 614	5614-666(C)	2SD666(C)
Q615, 616	5616-2SK163(M)	F.E.T., 2SK163(M) Equalizer Muting
DIODES		
D601, 602	5631-1S2473	1S2473
D603	5635-RD5R1EB	Zener, RD5.1EB

WIRING DIAGRAM



GENERAL UNIT EXPLODED VIEW



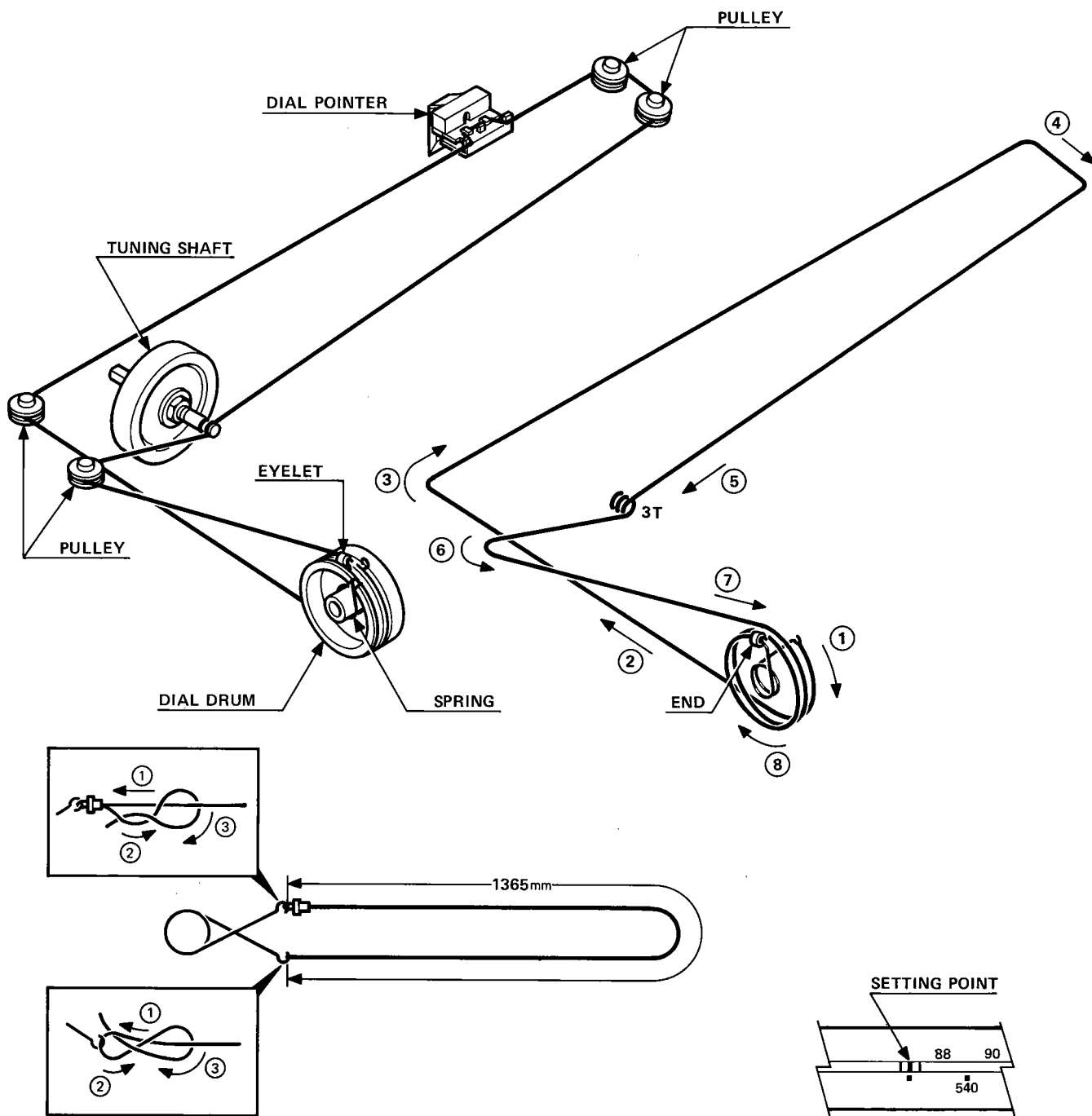
CHASSIS PARTS LIST

Ref. No.	Part No.	Description
GENERAL UNIT		
101	A443-HK570	Front Panel Assembly
102	A662-HK570-A	Push Button Assembly, Power
103	A662-HK570-B	Push Button Assembly, Speakers, Function
104	A662-HK570-C	Push Button Assembly, Tape Copy, Tape Monitor, Tone Defeat, Subsonic Filter, High Cut, Loudness, Muting
105	A414-HK570	Cabinet Top Assembly
106	A423-HK570	Cabinet Bottom Assembly
107	A634-HK570-A	Knob Assembly, Volume
108	A634-HK570-B	Knob Assembly, Bass, Treble, Balance, Blend
109	A672-HK570	Dial Pointer Assembly
110	A424-HK570	Cabinet Back Assembly
113	1319-0139	Foot, Cabinet Bottom Rear
114	1319-7138	Foot, Cabinet Bottom Front
120	1541-01001	Dial Panel
121	1553-00601	Dial Back Plate, Chassis
122	1554-00401	Dial Back Plate, Dial Panel Holding
124	1634-01601	Knob, Tuning
198	2240-7718	Protector, Fuse
200	2310-7015	Special Screw, Ground Terminal
202	2440-7011	Special Nut, Ground Terminal
240	2602-007109	Tuning Shaft
242	2611-7157	Dial Drum
258	2612-7001	Pulley, Dial Cord

CHASSIS PARTS LIST

Ref. No.	Part No.	Description
ELECTRICAL		
T1	5584-701308	Power Transformer
SW1	4431-01017358	Push Switch, Power
SW2	4431-01027294	Push Switch, Muting
SW401, 402	4431-02047451	2-Gan Push Switch, Speakers 1, Speakers 2
SW505, 506, 507	4431-03147150	3-Gang Push Switch, Tape Copy, Tape Monitor
FU1	5732-402031	Fuse, 4A 125V
FH1	4472-0125	Fuse Holder, FU1
P1	4161-7187	AC Line Cord
TE1	4214-102	FM/AM External Antenna Terminal
TE2, 3	4486-5	6-Pin Jack, Phono, Aux., Tape 1, Tape 2
TE4, 5	4214-7034	Speaker Output Terminal, Speaker System 1 & 2
SO1, 2	4474-108	External AC Socket, Unswitched, Switched
J1	4451-0085	Headphones Jack
PL1, 2	5731-1507245	Lamp, 15V 100mA Dial Illuminator
PL3	5731-1207149	Lamp, 12V 60mA Dial Pointer Indicator
L101	5995-703027	Coil, FM RF Balun
L251	5911-211	AM Ferrite Bar Antenna
L401, 402	5991-7125	Coil, RF Choke
D9	5637-GL9PR20	Light Emitting Diode, GL9PR20 Power Indicator
D31	5637-TLR206	Light Emitting Diode, TLR206 Monitor Indicator
VR1	5113-5037221	Variable Resistor, 50k Ω Mute Adjustment

DIAL CORD STRINGING



Start stringing with variable capacitor in closed position.