

Magnum 518

Service Manual

SPECIFICATIONS

Speaker Impedance: 8 ohm

Antenna:

AM, Built-in ferrite bar

FM, 75 ohm unbalanced, ext. terminal

AM SECTION

Frequency range : 535 kHz – 1605 kHz

Usable Sensitivity : 400 μ V

Image Rejection : 35 dB

FM SECTION

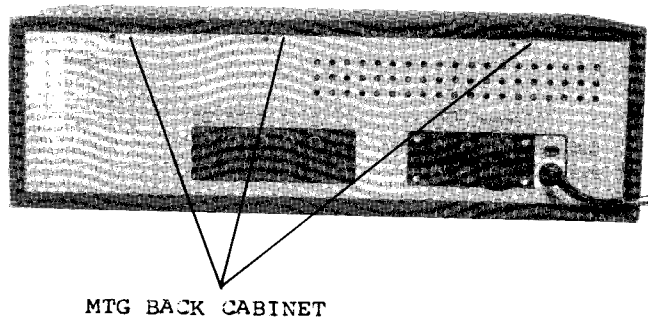
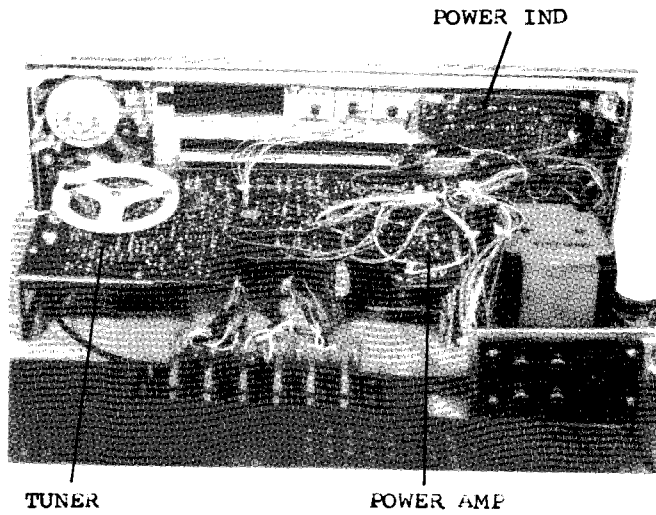
Frequency range : 88 MHz – 108 MHz

Usable Sensitivity : 10 μ V

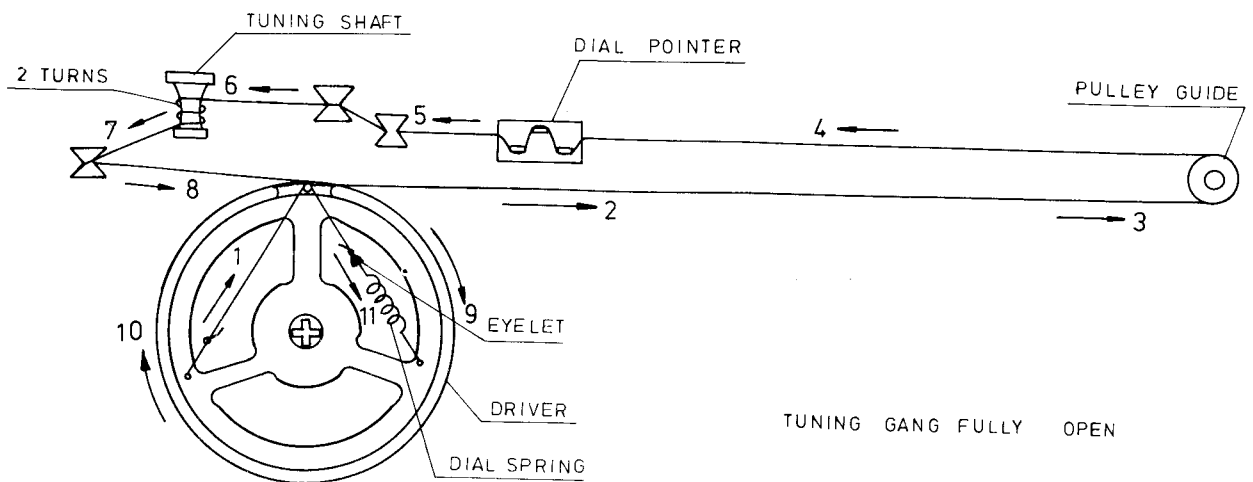
Image Rejection : 28 dB

Separation : 30 dB

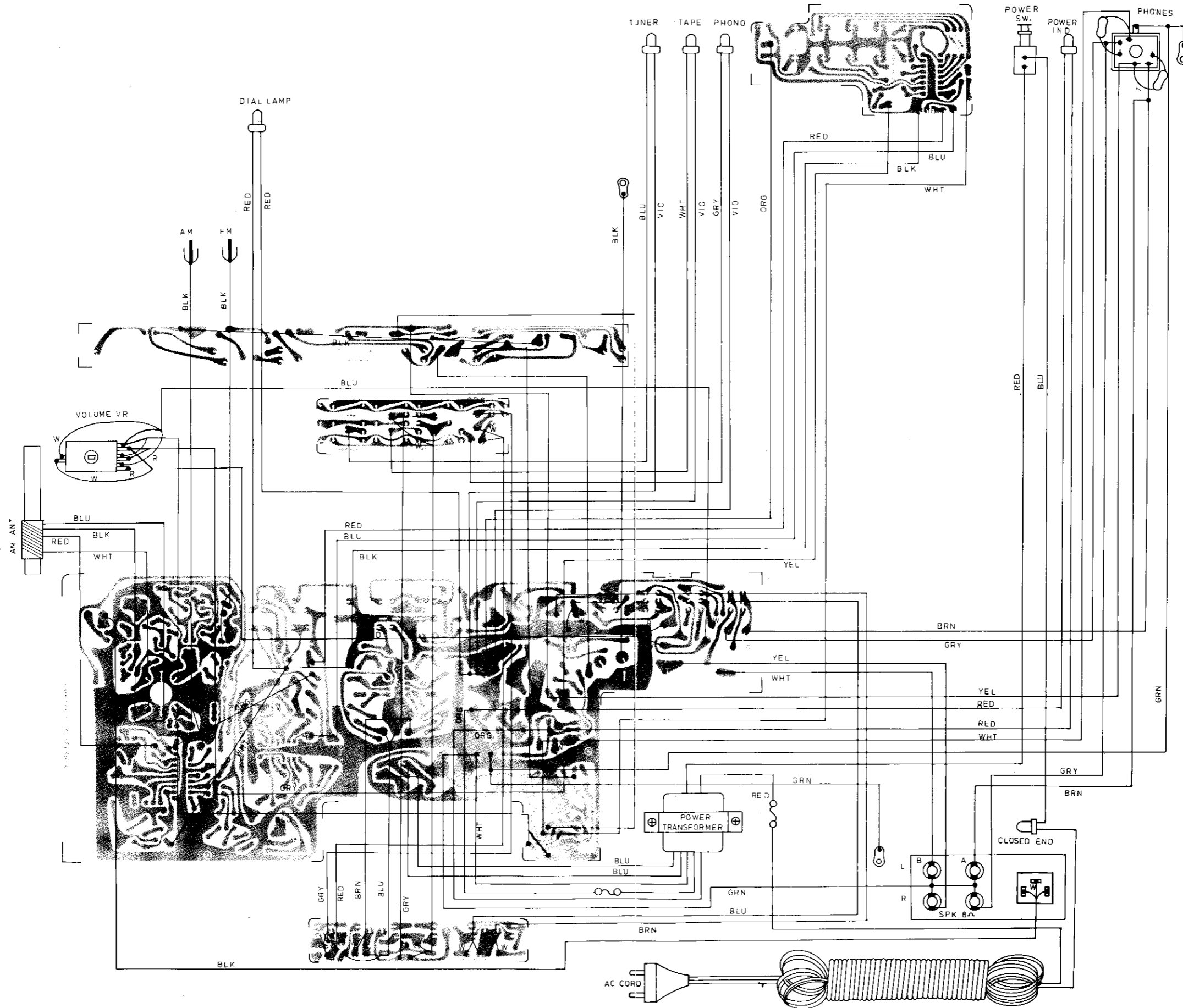
PARTS LOCATION



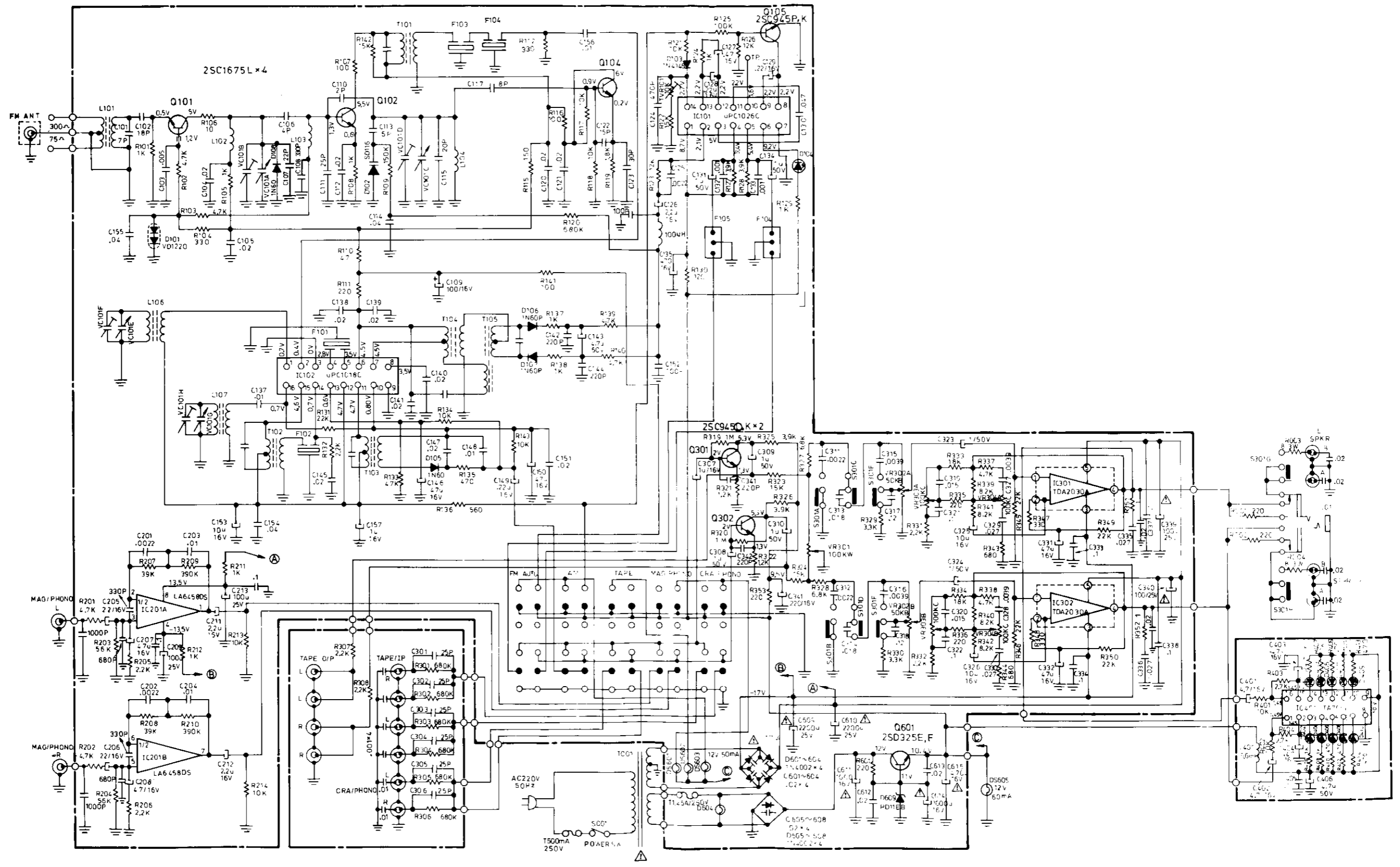
DIAL STRINGING



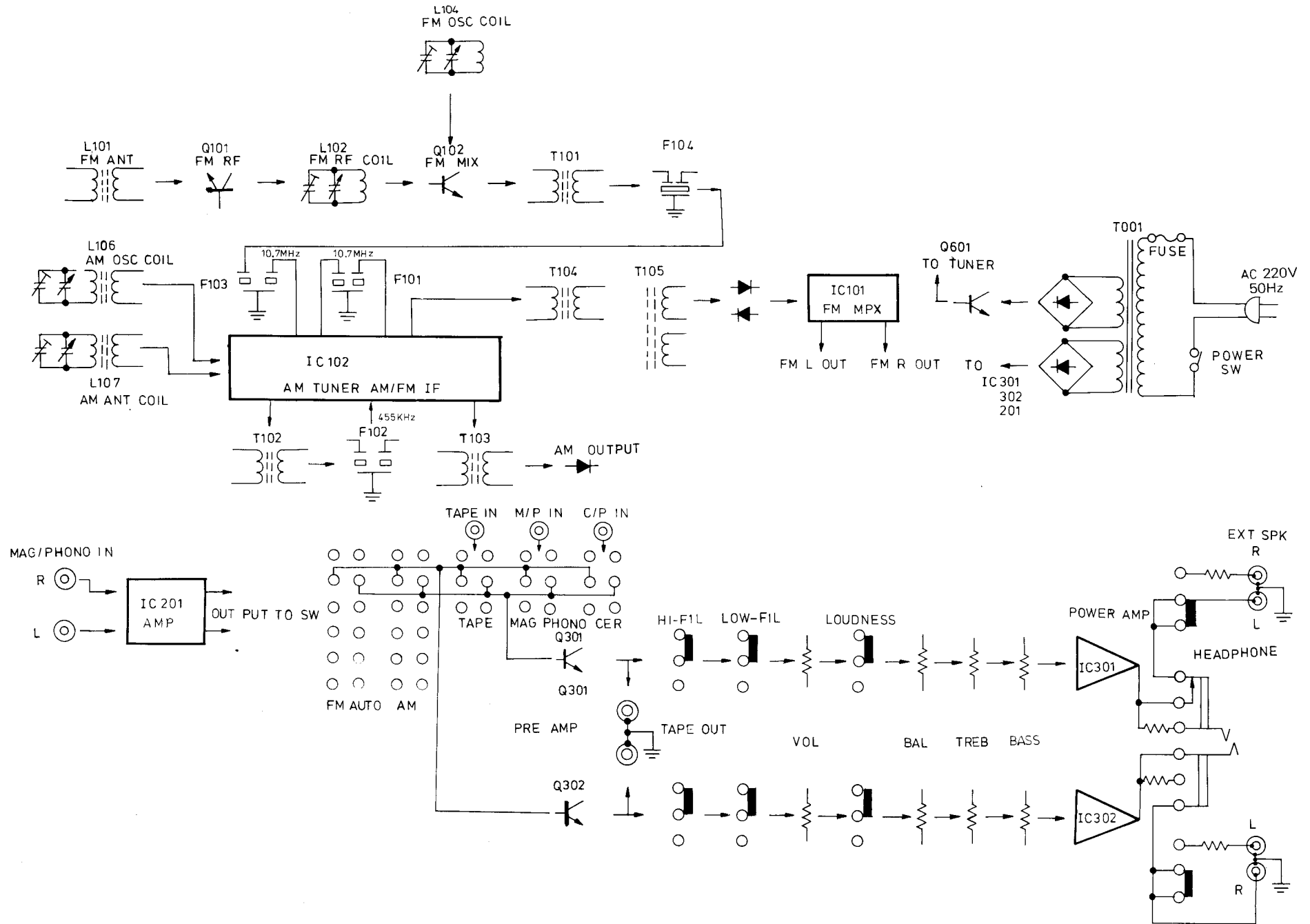
WIRING DIAGRAM



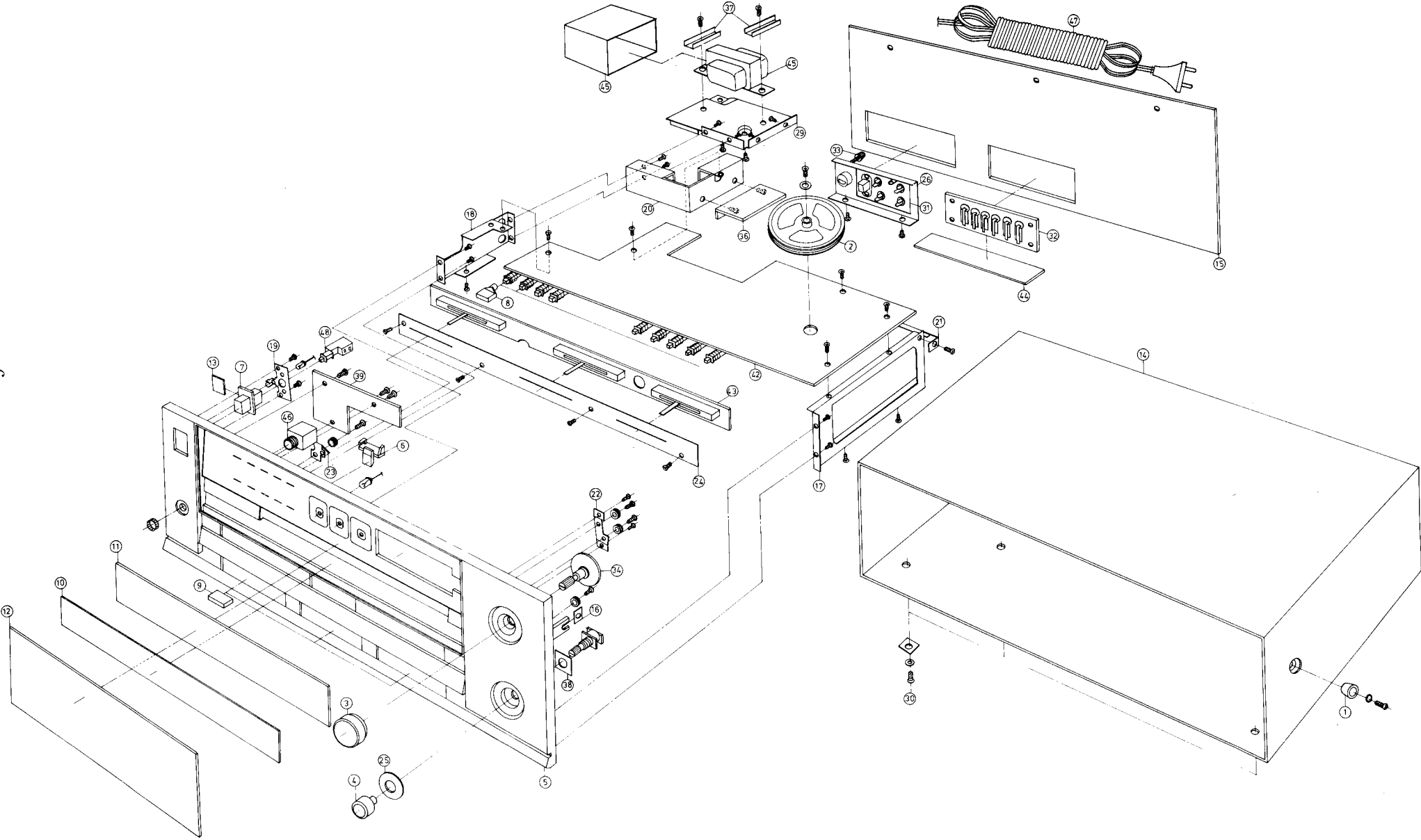
SCHEMATIC DIAGRAM



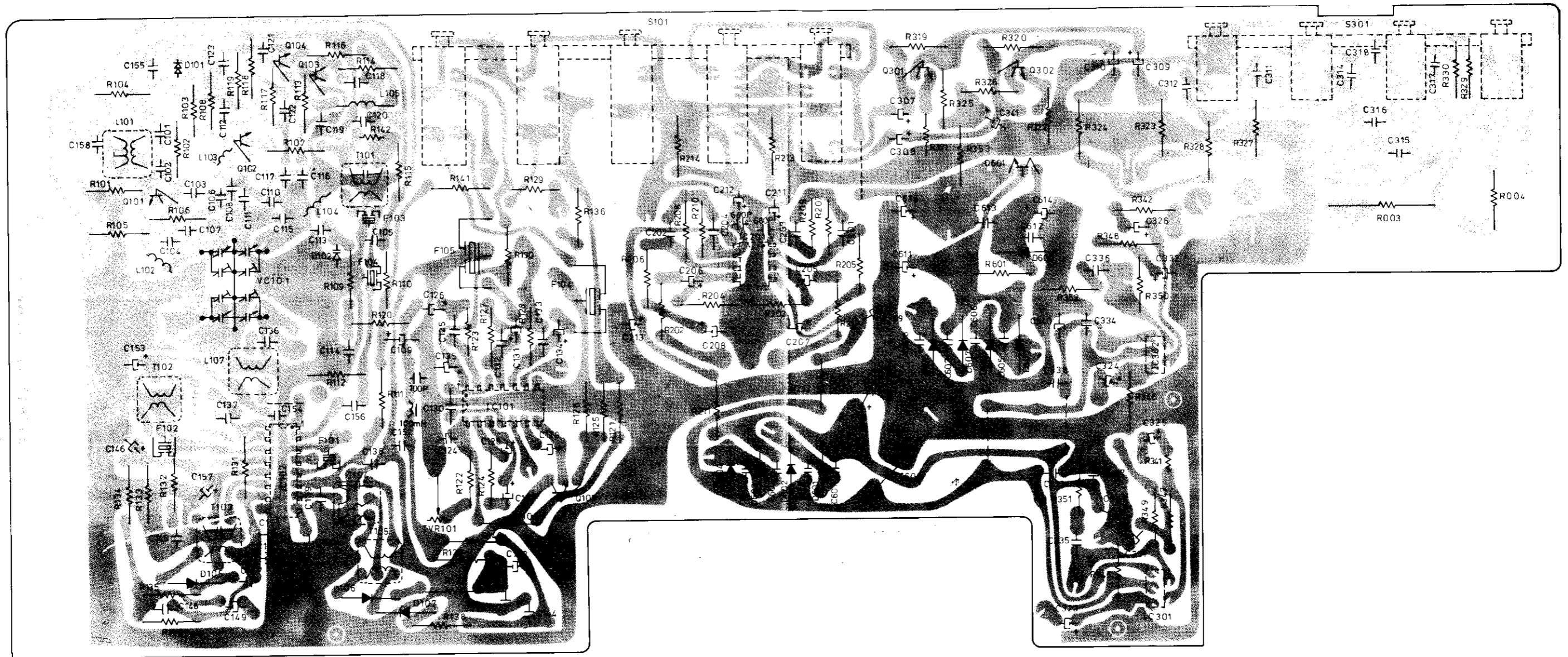
BLOCK DIAGRAM



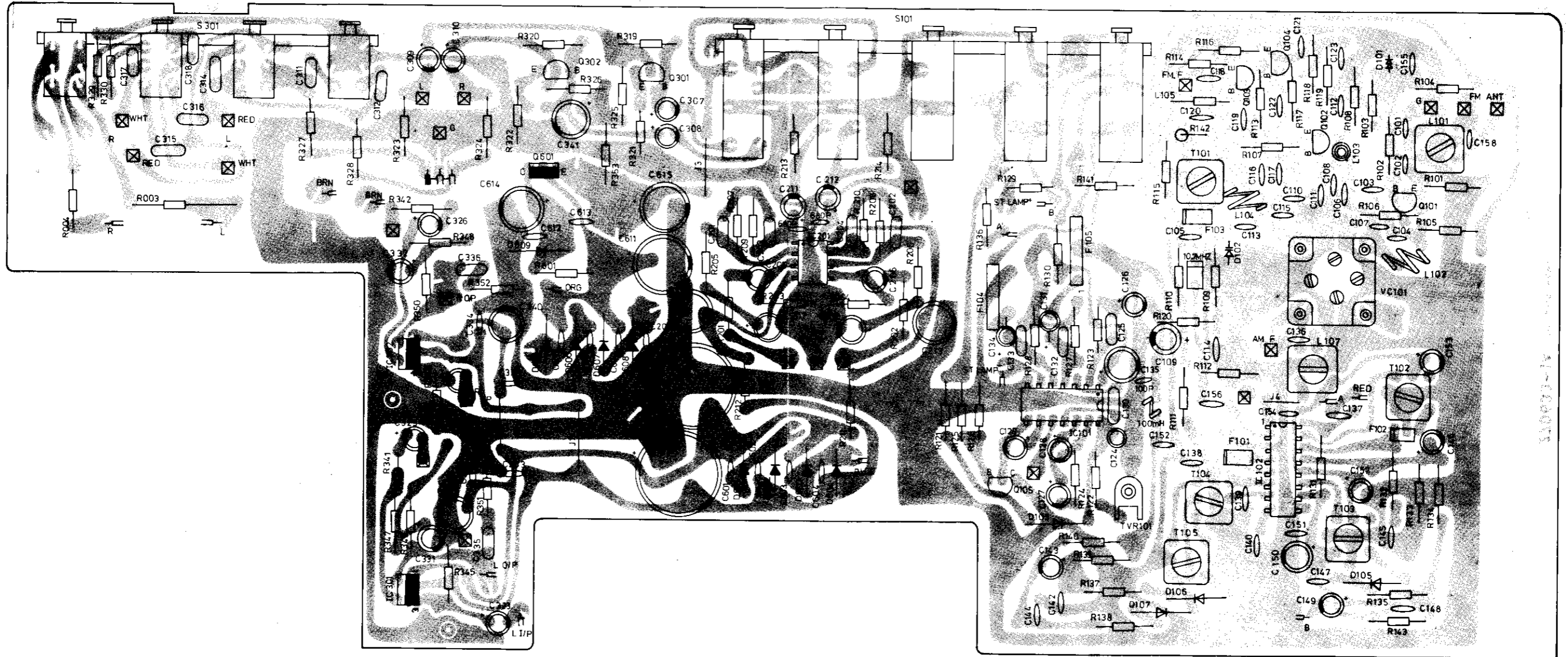
CHASSIS EXPLODED VIEW



MAIN PCB (BOTTOM VIEW)

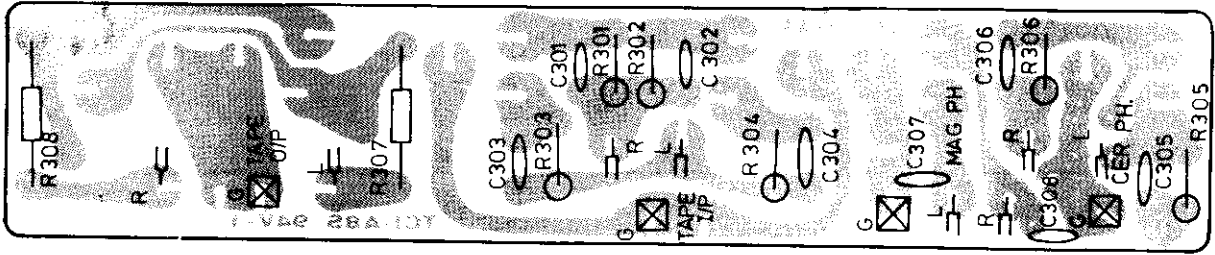


MAIN PCB (TOP VIEW)

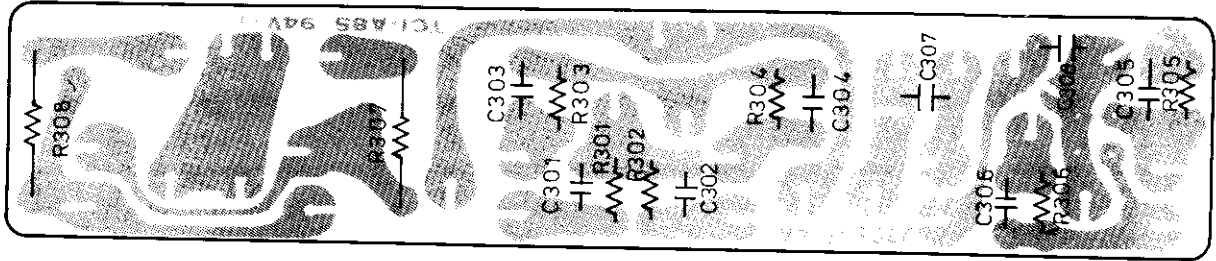


JACK BOARD P.C.B.

TOP VIEW

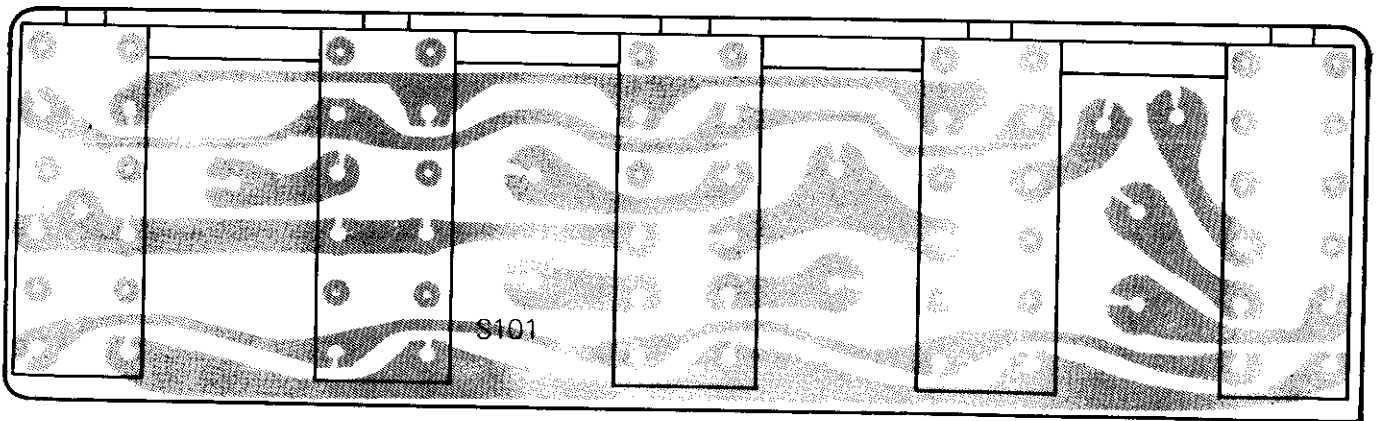


BOTTOM VIEW

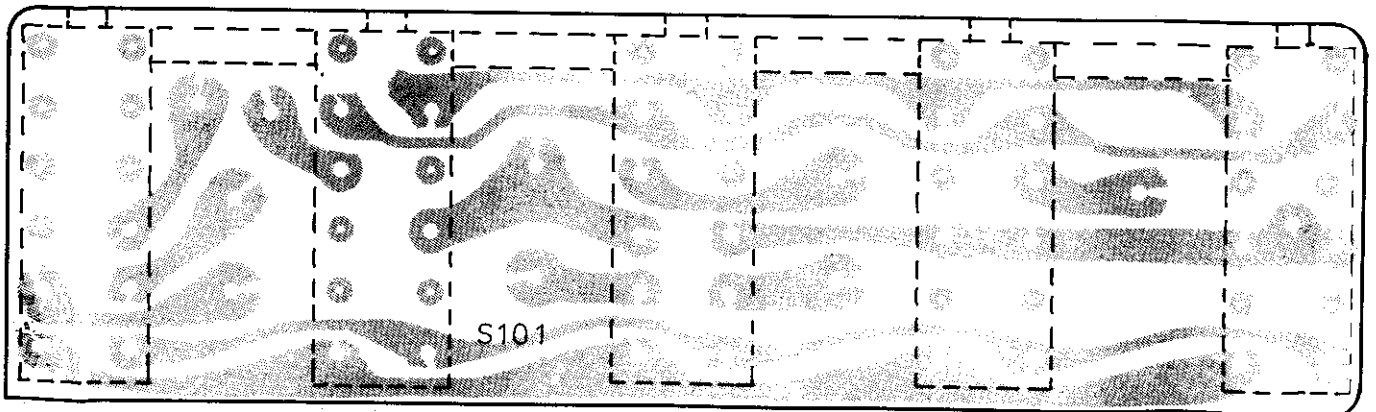


FUNCTION SWITCH CONNECTING P.C.B.

TOP VIEW

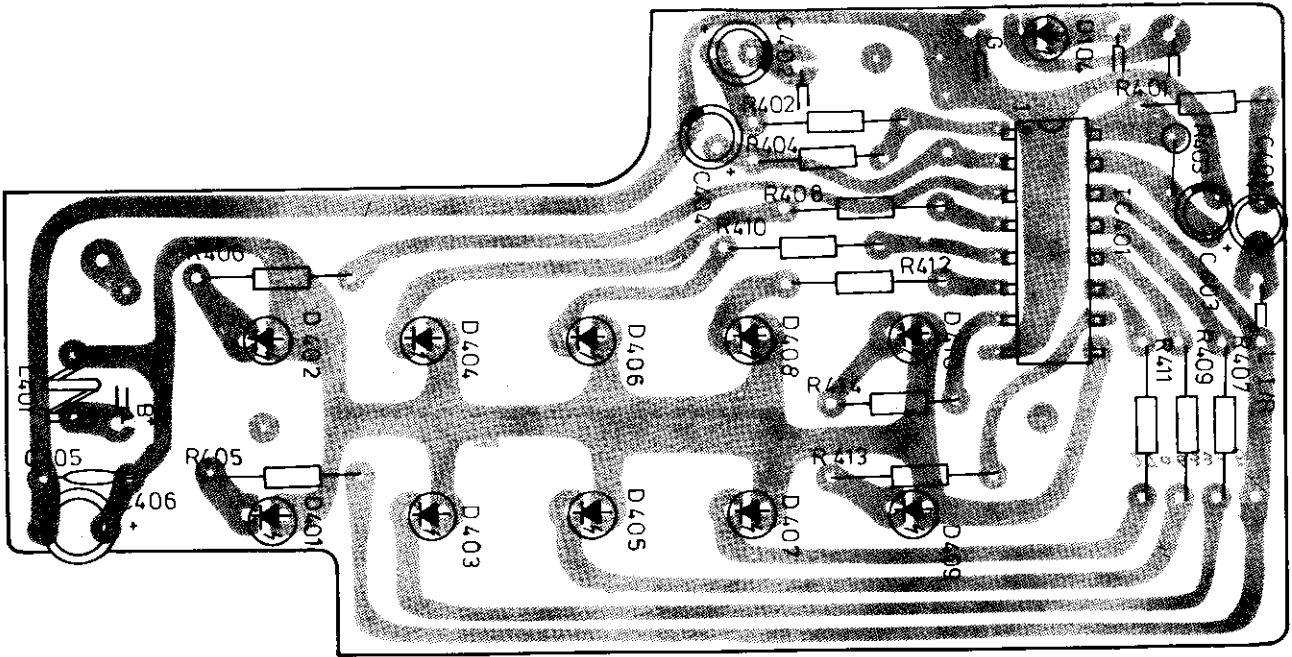


BOTTOM VIEW

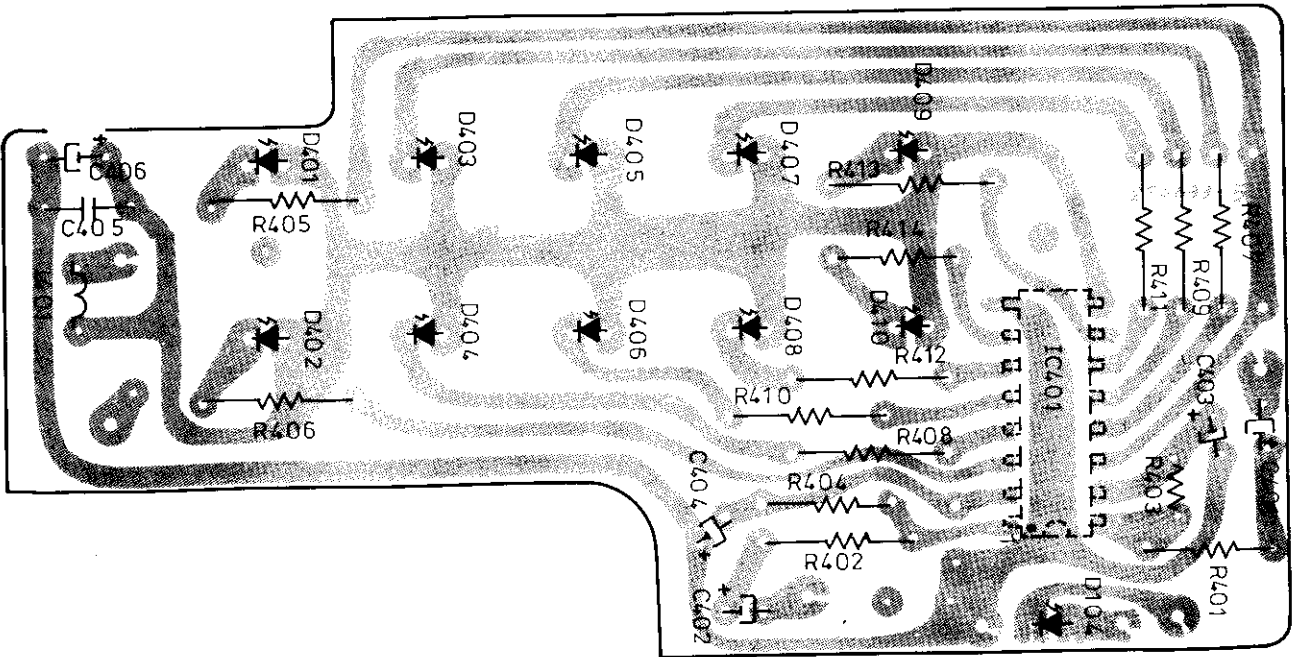


POWER INTENSITY PCB

TOP VIEW

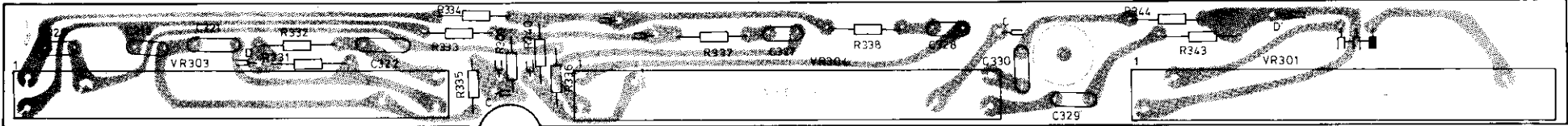


BOTTOM VIEW

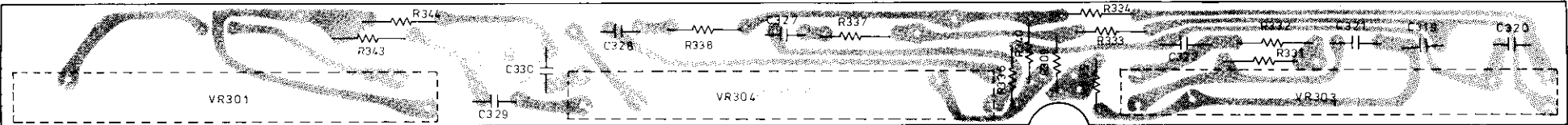


CONTROLS P.C.B.

TOP VIEW



BOTTOM VIEW



ALIGNMENT PROCEDURES

Equipment

1. AM signal generator.
2. FM signal generator (VHF)
3. IF sweep generator (for FM)
4. Audio generator
5. MPX stereo generator
6. VTVM
7. Oscilloscope
8. Distortion meter
9. Frequency counter

CENTER FREQUENCY OF CERAMIC FILTER F102

| COLOR MARK | CENTER FREQUENCY |
|------------|-----------------------|
| Black | 10.64 MHz \pm 30KHz |
| Blue | 10.67 MHz \pm 30KHz |
| Red | 10.70 MHz \pm 30KHz |
| Orange | 10.73 MHz \pm 30KHz |
| White | 10.76 MHz \pm 30KHz |

General Preparation

1. Check source voltage
2. Set Function switch to Band being aligned.
3. Connect low side of signal source and output indicator to chassis ground unless otherwise specified, Ground connection should be kept close to signal connection.
4. Signal input should be kept as low as possible to avoid AGC and Limiting action.
(at alignment AM & FM).
5. Standard modulation is 1000Hz at 30% amplitude for AM, 1000Hz at 22.5KHz deviation for FM, 1000Hz at 33.75KHz (L & R) 19KHz at 6.75KHz deviation for MPX.
6. FM Ant. input impedance is 300 ohm balanced.
7. Balance, TREBLE, TONE, control all at center.

1. Tuner Section

(a) AM IF Alignment

| Step | Connect Signal Source To- | Connect output Indicator To- | Set Signal To- | Set Tuning Dial To | Adjust- | Adjust For- |
|------|---|--|---------------------|--------------------|--------------|-------------|
| 1 | AM signal generator connected with std. radiation loop ant. | VTVM connected across 8 ohm resistor through Ext. Sp. jack | 455 KHz (Modulated) | Tuning gang Open | T102 T103 | Maximum |
| 2 | Repeat step 1 until no further increase in gain is evident. | | | | | |

(b) FM IF Alignment

| Step | Connect Signal Source To- | Connect Output Indicator To- | Set Signal To- Insert Markers | Set Radio Dial To- | Adjust- | Adjust For- |
|------|---|---|---|--------------------|---------|----------------------------------|
| 1 | FM IF sweep generator (output) connected to TP-1 & TP-1(E) through 0.02uf ceramic capacitor | FM IF sweep generator (input) connected to TP-2 & TP-2 (E). | Sweep centered at 10.7MHz (unmodulated) 10.6 10.7, 10.8 MHz markers | Tuning gang open | T101 | Max. gain with symmetrical curve |
| 2 | | | | | T104 | |
| 3 | | | | | | |
| 4 | | | | | T105 | Symmetrical "S" curve |
| 5 | Repeat steps 1 through 4 until no further increase in gain is evident. | | | | | |

(c) AM RF Alignment

| Step | Connect Signal Source To- | Connect Output Indicator To- | Set Signal To- | Set Tuning Dial To- | Adjust | Adjust For- | | |
|------|---|---|--|---------------------|--------------------|-------------|--|--|
| 1 | AM signal generator. connected with std radiation loop ant. | VTVM connected. across 8 ohm resistor through Ext. SP. Jack | 525 HKz (Modulated) | Minimum Frequency | L106 | Max. Output | | |
| 2 | | | 1650KHz (Modulated) | Maximum Frequency | VC101F (C1 on PVC) | | | |
| 3 | | | Repeat steps 1 & 2 until tuning range covers exactly from 525 KHz to 1650 KHz. | | | | | |
| 4 | | | 600KHz (modulated) | Tune to. Signal | AM Ant Coil L107 | Max. output | | |
| 5 | | | 1400KHz (Modulated) | Tune to signal | VC101H (C2 on PVC) | | | |
| 6 | | | Repeat steps 4 & 5 until no further improvement is possible. | | | | | |

(d) FM RF Alignment

| Step | Connect Signal Source To- | Connect Output Indicator To- | Set Signal To- | Set Tuning Dial To- | Adjust | Adjust For- | | |
|------|---|---|--|---------------------|---------------------------|-------------|--|--|
| 1 | FM signal generator connected to FM Ant terminals through 300 ohm dummy ant | VTVM connected across 8 ohm resistor through Ext SP. Jack | 86.5MHz (Modulated) | Minimum Frequency | L104 (stretch or squeeze) | Max. output | | |
| 2 | | | 109.5MHz (Modulated) | Maximum Frequency | VC101D (FC1 on PVC) | | | |
| 3 | | | Repeat steps 1 & 2 until tuning range covers exactly from 87 MHz to 109 MHz. | | | | | |
| 4 | | | 90MHz (Modulated) | Tune to signal | L102 (stretch or squeeze) | Max. output | | |
| 5 | | | 106MHz (Modulated) | Tune to signal | VC101B (FC2 on PVC) | | | |
| 6 | | | Repeat steps 4 & 5 until no further gain can be obtained. | | | | | |

(e) MPX, P.L.L. OSC Frequency Alignment

1. Frequency counter connected to TP-3 & TP-3(E).
2. Set function switch to FM stereo position.
3. Set tuning dial to no signal frequency.
4. Adjust TVR101 (10K ohm) for 19.0 KHz.

FREQUENCY COUNTER ALIGNMENT PROCEDURE

| Step | Connect Signal Source To- | Connect Output Indicator To- | Set Signal To- | Tune Radio Near To Max. For Audio Output | Adjust- | Adjust For- |
|------|--|---|---------------------|--|--------------|----------------------------|
| 1 | AM Signal Generator Connected With Std. radiation 100P ant. | VTVM Connected across 8 ohm resistor through Ext. oSo. jack | 100 KHz (modulated) | 100 KHz | VR 502 (10K) | Frequency display 1000 MHz |
| 2 | FM Signal generator connected to FM Ant. terminals through 300 ohm dummyant. | VTVM connected across 8 ohm resistor through Ext. Sp. jack | 98 MHz (Modulated) | 98 MHz | VR 501 (10K) | Frequency display 98 KHz |

ELECTRICAL PARTS LIST

| REF. NO. | SUPPLIER PART NO. | DESCRIPTION | Q'TY | REF. NO. | SUPPLIER PART NO. | DESCRIPTION | Q'TY |
|---|-------------------|-----------------------|------|--|-------------------|-----------------------|------|
| SEMI-CONDUCTORS & DIODES | | | | | | | |
| Q101-104 | 2SC1675L | FM RF, FM Conv Buffer | 4 | C118 | | 6PF | 1 |
| Q105 | 2SC945P | Switch | 1 | C122,115 | | 15PF | 2 |
| Q301,302 | 2SC945L-K | AF AMP | 2 | C102,107 | | 18PF | 3 |
| Q601 | 2SD325EF | Regulator | 1 | 123 | | | |
| D601-608 | IN4002 | Rectifier | 8 | C111,301-306 | | 25PF | 7 |
| D609 | RD11EB | Zener Diode 12V | 1 | C152,507 | | 100PF | 2 |
| D104,401-404 | LT-3211 | LED RED | 5 | C142,144 | | 220PF | 3 |
| D405-410 | BG-5531K | LED GREEN | 6 | 342 | | | |
| D106,107 | 1N60P | FM Detector | 2 | C108 | | 330PF | 1 |
| D105 | 1N60 | AM Detector | 1 | C103 | | .005 μ F | 1 |
| D101 | VD1220 | Bias | 1 | C119,156 | | .01 μ F | 4 |
| D102 | SD116 | FM, A.F.C. | 1 | 148,137 | | | |
| D103,105 | 1N4148 | Switching | 2 | C104,105,109,112,120,121,138,139,140,141,145,147,151,601-608,612,613 | | .02 μ F | 23 |
| D609 | BZX79C11V | Zener Diode 11V | 1 | | | | |
| IC101 | μ PC1026C | P.L.L. M.P.X. IC | 1 | | | | |
| IC102 | μ PC1018C | AM-FM IF IC | 1 | | | | |
| IC201 | LA6458DS | MAG Phono Preamp IC | 1 | | | | |
| IC301,302 | TDA2030A | Power Output IC | 2 | | | | |
| IC401 | TA7666P | Led Driver IC | 1 | | | | |
| COILS AND TRANSFORMERS | | | | | | | |
| L101 | 240028-0001 | FM ANT Coil | 1 | C114,154,155 | | .04 μ F | 3 |
| L102 | 240029-0001 | FM RF Coil | 1 | C33,334,337,338, | | .1 μ F | 4 |
| L103 | 240058-0001 | FM Trap Coil | 1 | | | | |
| L104 | 240029-0002 | FM OSC Coil | 1 | C301-304 | | 56PF | 4 |
| L106 | 240293-0001 | AM OSC Coil | 1 | C132,133 | | .001 μ F | 2 |
| L105 | 240218-0001 | Choke Coil 2.2MH | 1 | C113 | | 5PF | 1 |
| L503 | 240227-0001 | Choke Coil 24MH | 1 | C136 | | 3PF | 1 |
| L401 | 240233-0001 | Choke Coil 5.6MH | 1 | C124 | | 470PF | 1 |
| L107 | 240342-0501 | AM ANT Coil Ass'y | 1 | C125,201,202,311,312 | | .0022 μ F Mylar | 5 |
| T101 | 230023-0001 | FM 1FT (Orange) 1st | 1 | C315,316,327,328 | | .0039 μ F Mylar | 4 |
| T104 | 230053-0003 | FM 1FT (Pink) Det Pri | 1 | C313,314 | | .018 μ F Mylar | 2 |
| T105 | 230053-0004 | FM 1FT (Blue) Det Sec | 1 | C130 | | .047 μ F Mylar | 1 |
| T102 | 230101-0001 | AM IFT (White) 1st | 1 | C203,204 | | .0082 Mylar | 2 |
| T103 | 230011-0003 | AM IFT (Black) 2nd | 1 | C317,318 | | .12 μ F Mylar | 2 |
| T001 | 220165-0501 | Power Transformer | 1 | C319,320 | | .015 μ F Mylar | 2 |
| F101,103 | SFE10.7MA5 | FM IF Ceramic Filter | 2 | C329,330,335,336, | | .027 μ F Mylar | 4 |
| F102 | SFU455B | AM IF Ceramic Filter | 1 | | | | |
| F104,105 | B3BN4103-32 | Notch Filter | 2 | C321,322, | | .1 μ F Mylar | 2 |
| CAPACITORS | | | | | | | |
| All Capacitors are ceramic, 50WV Unless Otherwise Indicated | | | | | | | |
| C136 | 1PF | | 1 | C128,129,149 | | .22 μ F/50V Elec. | 3 |
| C110 | 2PF | | 1 | C127,403,404 | | .47 μ F/50V Elec. | 3 |
| C116,106 | 4PF | | 2 | | | | |
| C101 | 7PF | | 1 | | | | |
| C117,158 | 8PF | | 2 | | | | |

| REF. NO. | SUPPLIER PART NO. | DESCRIPTION | Q'TY |
|--|-------------------|------------------------|------|
| C323,324, 307-310, 134,157, 131 | | 1 μ F/50V Elec. | 9 |
| C211,212, 126 | | 2.2 μ F/50V Elec. | 3 |
| C148,143, 406 | | 4.7 μ F/50V Elec. | 3 |
| C153,325 326 | | 10 μ F/25V Elec. | 3 |
| C205,206 | | 22 μ F/16V Elec. | 2 |
| C146,150, 207,208, 332,331 | | 47 μ F/16V Elec. | 6 |
| C209,213, 339,340 | | 100 μ F/25V Elec. | 4 |
| C341 | | 220 μ F/16V Elec. | 1 |
| C135,615 | | 470 μ F/16V Elec. | 2 |
| C611,614 | | 1000 μ F/16V Elec. | 2 |
| C609,610 | | 2200 μ F/25V Elec. | 2 |
| C153 | | 10 μ F/16V Elec. | 1 |
| C109 | | 100 μ F/16V Elec. | 1 |
| C124 | | 470PF Poly. | 1 |
| RESISTORS | | | |
| All Resistors are carbon Film \pm 5% 1/4 Watt Unless Otherwise Indicated | | | |
| R003,004 | | 8ohm 3 Watt | 2 |
| R351,352 | | 1ohm 1/2 watt | 2 |
| R106 | | 10 ohm | 1 |
| R110 | | 47 ohm | 1 |
| R107,141, 116,501 | | 100 ohm | 4 |
| R130 | | 120 ohm | 1 |
| R115 | | 150 ohm | 1 |
| R347,348, 104,114, | | 330 ohm | 4 |
| R112,135, 409-414 | | 470 ohm | 8 |
| R136 | | 560 ohm | 1 |
| R101,105, 108,124 129,137, 138,211, 114 405-408 | | 1K ohm | 13 |
| R321,322 | | 1.2K ohm | 2 |
| R119 | | 1.8K ohm | 1 |
| R132,205, | | 2.2K ohm | 7 |

| REF. NO. | SUPPLIER PART NO. | DESCRIPTION | Q'TY |
|--|-------------------|------------------------------------|------|
| 206,307, 305,331, 335 | | 2.2K ohm | |
| R329,330, | | 3.3K ohm | 2 |
| R127,128, 325,326 | | 3.9K ohm | 4 |
| R102,103, 139,140, 337,338, 201,202 | | 4.7K ohm | 8 |
| R327,328 | | 6.8K ohm | 2 |
| R341,342 | | 8.2K ohm | 2 |
| R117,121, 118,134, 213,214, 143 | | 10K ohm | 7 |
| R123,126 | | 12K ohm | 2 |
| R122,142, 323,324, | | 15K ohm | 4 |
| R131,345, 346,349, 350 | | 22K ohm | 5 |
| R207,208 | | 39K ohm | 2 |
| R133 | | 47K ohm | 1 |
| R203,204 | | 56K ohm | 2 |
| R125,404 | | 100K ohm | 2 |
| R109 | | 150K ohm | 1 |
| R209,210, 508 | | 390K ohm | 3 |
| R301-306, 120 | | 680K ohm | 7 |
| R113 | | 820K ohm | 1 |
| R319,320 | | 1M ohm | 2 |
| R335,336, 353,601, 611 | | 220 ohm | 5 |
| R343,344 | | 680 ohm | 2 |
| R403,404 | | 2.7K ohm | 2 |
| R333,334 | | 18 ohm | 2 |
| R339,340 | | 82K ohm | 2 |
| R006,005 | | 4.7Mohm 1/2 watt | 2 |
| R001,002 | | 220 ohm 1/2 watt | 2 |
| TVR101, VR501 | 630013-0023 | Semi-Fixed VR 8 ϕ 10K "B" | 3 |
| VR502 | | | |
| VR301 | 630240-0001 | BALANCE Control 100KW/CENT Lock | 1 |
| VR304,303 | 630241-0001 | Bass/Treble Control | 2 |

| REF. NO. | SUPPLIER PART NO. | DESCRIPTION | Q'TY |
|--------------------------|-------------------|---|------|
| VR320 | 630239-0001 | 100KC/Cent Lock 50KB W/Tap Volume Control | 1 |
| MISCELLANEOUS COMPONENTS | | | |
| S001 | 720240-0001 | Power Switch | 1 |
| S101 | 720271-0001 | Push Switch Function | 1 |
| S301 | 720270-0001 | Push Switch HI/LO Filter Loudness, Speaker | 1 |
| DS601 | 640004-0026 | Lamp 12V 50MA (Vio, Blu) Phono | 1 |
| DS602 | 640004-0027 | Lamp 12V 50MA (Vio, Gry) Tape | 1 |
| DS603 | 640004-0028 | Lamp 12V 50MA (Vio. Wht) Tuner | 1 |
| DS604 | 640004-0032 | Lamp 12V 60MA (GRN) Power Switch | 1 |
| DS605 | 640004-0033 | Lamp 12V 60MA (GRN) Pointer | 1 |
| VC101 | 610027-0003 | PVC | 1 |
| J001 | 670003-0001 | Headphone Jack | 1 |
| | 640006-0016 | Fuse 0.5A 250V | 1 |
| | 640006-0031 | Fuse 1.25A 250V | 1 |

CHASSIS PARTS LIST

| REF. NO. | MFR'S PART NO. | DESCRIPTION | Q'TY |
|----------|----------------|--|------|
| 1 | 211025-0001A | FASTENING BUSHING | 2 |
| 2 | 211099-0001 | DIAL DRUM | 1 |
| 3 | 211686-0001 | TUNING KNOB | 1 |
| 4 | 211687-0001 | VOLUME KNOB | 1 |
| 5 | 211892-0001 | FRONT PANEL | 1 |
| 6 | 211893-0001 | DIAL POINTER | 1 |
| 7 | 211894-0001 | POWER KNOB | 1 |
| 8 | 211895-0001 | FUNCTION KNOB (Speaker, Loudness, Low Filter, Hi Filter, Ceramic PH/AUX, MAG, PH, TAPE, AM FM, AUTO | 9 |
| 9 | 211896-0001 | SLIDE KNOB (Bass, Treble, Balance) | 3 |
| 10 | 211897-0001 | DIAL SCALE | 1 |
| 11 | 211898-0001 | DECORATION PLATE | 1 |
| 12 | 211899-7001 | DIAL WINDOW | 1 |
| 13 | 211904-0001 | ACRYLIC SHEET FOR POWER KNOB | 1 |
| 14 | 250136-0001 | WOOD CABINET | 1 |
| 15 | 250137-0001 | BACK BOARD | 1 |
| 16 | 313213-0001 | CHASSIS NUT FOR FRONT PANEL | 2 |
| 17 | * | MAIN PCB BRKT (A) | 1 |
| 18 | * | MAIN PCB BRKT (B) | 1 |
| 19 | * | POWER SW BRKT | 1 |
| 20 | * | HEAT SINK | 1 |
| 21 | * | MAIN PCB HOLDER | 1 |
| 22 | * | PULLEY HOLDER (A) | 1 |
| 23 | * | PULLEY HOLDER (B) | 1 |
| 24 | * | SLIDE VR HOLDER | 1 |
| 25 | * | VOLUME DECORATION PLATE | 1 |
| 26 | * | TERMINAL BOARD (A) BRKT | 1 |
| 29 | * | TRANSFORMER BRKT | 1 |
| 30 | 350223-0001 | CABINET SCREW ASSY | 7 |
| 31 | 350232-0001 | TERMINAL BOARD ASSY (A) | 1 |
| 32 | 350233-0001 | TERMINAL BOARD ASSY (B) | 1 |
| 33 | 350234-0001 | GROUND SCREW | 1 |
| 34 | 350237-0001 | TUNING SHAFT ASSY | 1 |
| 36 | 313454-0001 | HEAT SINK PLATE | 1 |
| 37 | | TRANS MOUNTING WASHER | 2 |
| 38 | 313451-0001 | EARTH PLATE | 1 |
| 39 | DB5180 PIPA | POWER IND PCB ASSEMBLY | 1 |
| 42 | 270633-0001 * | MAIN PCB ASSEMBLY | 1 |
| 43 | DB5180TCPA | TONE CONTROL PCB ASSEMBLY | 1 |
| 44 | DB5180JPA | JACK PCB ASSEMBLY | 1 |
| 45 | 220165-0501 | POWER TRANSFORMER | 1 |
| 46 | 670003-0001 | HEADPHONE JACK | 1 |
| 47 | 710032-0009 | AC CORD | 1 |

| REF. NO. | MFR'S PART NO. | DESCRIPTION | Q'TY |
|----------|----------------|--------------------|------|
| 48 | 720240-0001 | POWER SWITCH | 1 |
| 48 | 720240-0001 | POWER SWITCH | 1 |
| | 210080-0001 | GUIDE PULLEY | 3 |
| | 210080-0002 | GUIDE PULLEY | 1 |
| | 211332-0001 | BAR ANTENNA HOLDER | 2 |
| | 310565-0002 | DIAL SPRING | 1 |
| | 311013-0008 | GUIDE PULLEY SCREW | 3 |
| | 677013-0001 | AC OUTLET | 1 |
| | 270633-0002 | SWITCH PCB | 1 |
| | 330069-0002 | FUSE HOLDER | 2 |
| | 2605770001 | SHIELD PAPER | 1 |