



SERVICE MANUAL

6155

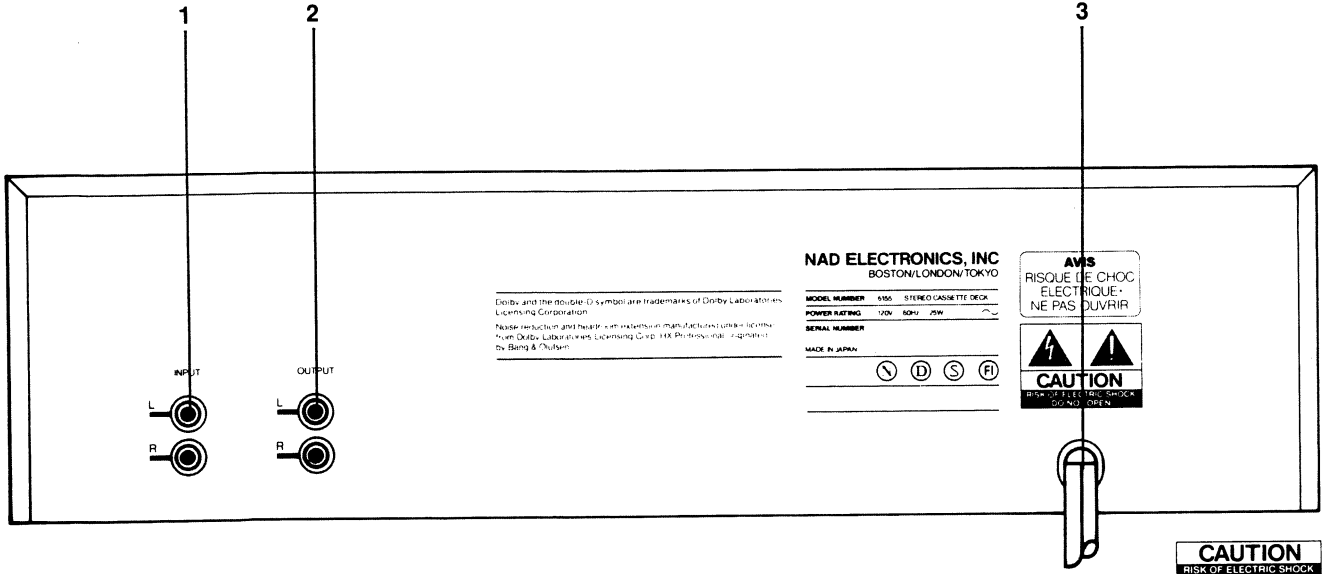
STEREO CASSETTE DECI

SPECIFICATIONS

| | |
|---|---|
| Speed Accuracy | ±1% |
| Wow & Flutter | < 0.06% JIS wtd. RMS < 0.10% DIN wtd. RMS |
| Frequency Response, 3 dB (MPX filter off) | 30 Hz - 20 kHz |
| MPX filter response | Flat within 1 dB to 15 kHz |
| Harmonic Distortion | Varies with recording level; typically < 0.3% at -10 dB. |
| THD at 0 dB | < 0.5% (Normal) < 1.5% (CrO ₂ , Metal) |
| Signal-to-Noise Ratio re 3% THD at 333 Hz, CCIR or A weighting | Dolby Dolby Dolby OFF B C 59 dB 68 dB 77 dB |
| Channel Separation | 45 dB at 1 kHz 40 dB broadband |
| Erase | > 70 dB |
| Input Sensitivity / Impedance | 110mV / 47kΩ |
| Maximum input level before overload | 25V |
| Output Level at 0 dB | 580 mV |
| Output Impedance | 1000Ω |
| Dimensions | |
| Width | 42 cm (16.5 in.) |
| Height | 12 cm (4.75 in.) |
| Depth | 25 cm (10.75 in.) |
| Net Weight | 4.75 kg (10 lbs. 8 oz) |
| Shipping Weight | 5.6 kg (12 lbs. 4 oz) |

REAR PANEL

- 1. Input
- 2. Output
- 3. AC Power Cord

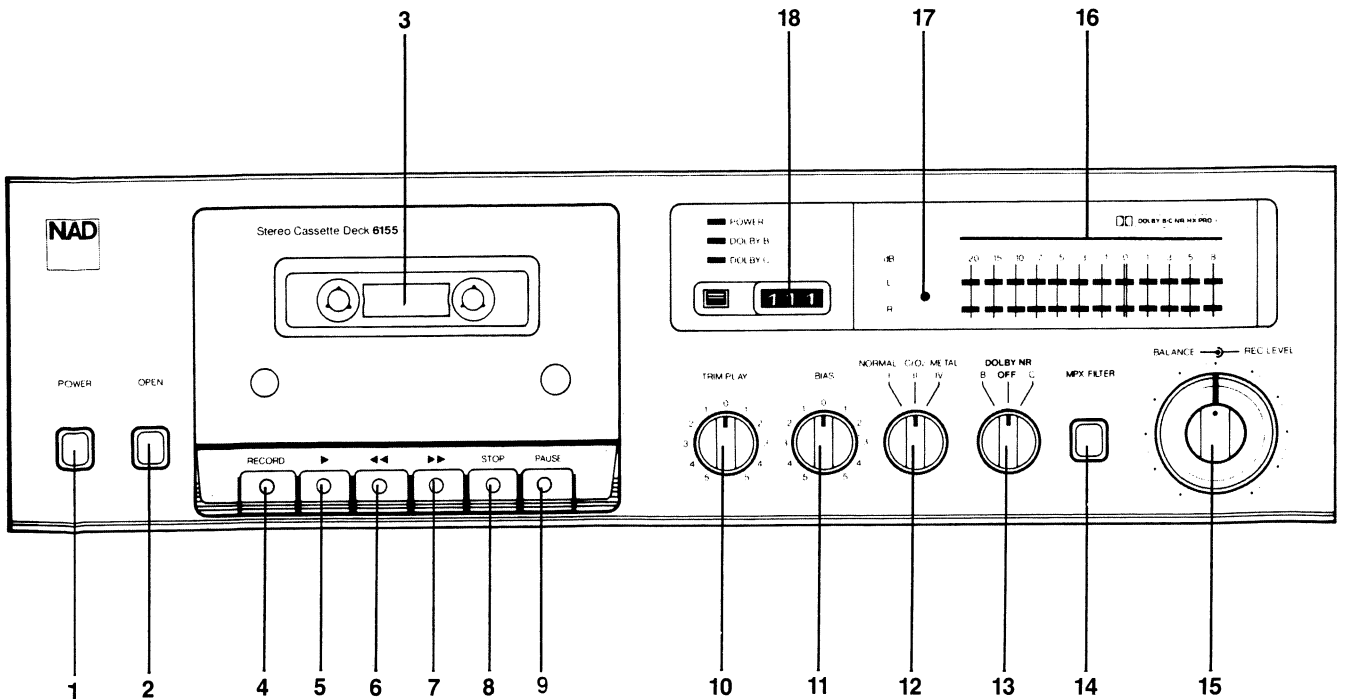


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION TO REDUCE
THE RISK OF ELECTRIC
SHOCK, DO NOT REMOVE
COVER (OR BACK).
NO USER-SERVICEABLE
PARTS INSIDE. REFER
SERVICING TO QUALIFIED
SERVICE PERSONNEL.

FRONT PANEL

- 1. Power
- 2. Open
- 3. Cassette Compartment
- 4. Record
- 5. Play
- 6. Rewind
- 7. Fast Forward
- 8. Stop
- 9. Pause
- 10. Play Trim
- 11. Bias Trim
- 12. Tape Selector
- 13. Dolby NR
- 14. MPX Filter
- 15. Recording Level/Balance
- 16. Recording Level Display
- 17. Recording Indicator
- 18. Tape Counter



ALIGNMENT

IMPORTANT

The tape head should be correctly adjusted and the tape path (heads, tape guides, capstan and pinch roller) should be cleaned and degaussed before alignments.

The NAD 6155 is designed to work well with a variety of tapes. However, maximum performance will be obtained with the following recommended tapes:

RECOMMENDED TAPES

| | |
|---------|--------------------------|
| TYPE I | MAXELL UD XL-I or XL-I |
| TYPE II | MAXELL UD XL-II or XL-II |
| TYPE IV | MAXELL MX |

Before beginning adjustments set DOLBY NR off, MPX FILTER off, PLAY TRIM and BIAS control to center position.

1. TAPE SPEED

Connect one of the outputs to a wow and flutter meter or frequency counter. Play speed test tape (TEAC MTT-111) and adjust semi-fixed resistor accessible through hole in motor casing for correct reading.

Tolerance: +/- 0.5%

2. AZIMUTH

Play azimuth tape (TEAC MTT-114) and observe outputs on VTVMs or oscilloscope. Rotate azimuth adjust screw to maximum output. Reseal adjustment screw with nail polish or similar (do not use glue).

3. PLAYBACK LEVEL

Connect outputs to VTVMs and/or oscilloscope with no load connected. Play Dolby level tape 200 nWb/m (TEAC MTT-150) and adjust VR101 left channel and VR201 right channel for 580mV at outputs.

Tolerance: +/- 5mV

4. LED DISPLAY AND PLAYBACK

Play Dolby level tape (TEAC MTT-150) and adjust VR107 left channel and VR207 right channel for 0dB reading on the meters. LED should just turn on.

5. BIAS OSCILLATOR FREQUENCY

Adjustments are not normally required. Insert TYPE I tape and engage RECORD and PAUSE mode. Connect frequency counter to resistor R301 and adjust L301 to 105kHz.

Tolerance: +/- 3kHz

6. BIAS TRANSFORMER ADJUSTMENTS

Turn tape selector to TYPE IV position, engage RECORD and PAUSE. Connect oscilloscope to base Q112 and adjust L107 left channel for minimum. Connect oscilloscope to base Q212 and adjust L207 right channel for minimum.

7. BIAS TRAP

Adjustments are not normally required. Engage RECORD and PAUSE. Connect VTVM or oscilloscope to TP14 left channel and adjust L106 to minimum. Connect VTVM or oscilloscope to TP24 right channel and adjust L206 to minimum.

Tolerance: Less than 40mV RMS.

8. INITIAL CHECKING AND ADJUSTMENT OF BIAS

Engage RECORD and PAUSE. Connect VTVM between TP11 and TP12 left channel and TP21 and TP22 right channel. Connect and adjust as follows:

| <u>TAPE TYPE</u> | <u>TAPE SELECTOR</u> | <u>ADJUSTMENT CONTROL</u> | <u>ADJUST FOR:</u> |
|------------------|----------------------|---------------------------|--------------------|
| TYPE I | TYPE I | VR110, VR210 | 2mV RMS |
| TYPE II | TYPE II | VR109, VR209 | 3mV RMS |
| TYPE IV | TYPE IV | VR108, VR208 | 4mV RMS |

Be aware that these levels are approximate. If measured level is close to desired level, do not adjust.

9. RECORD LEVEL

Connect audio signal generator to both inputs and VTVMs and/or oscilloscope to outputs. Use TYPE I tape and switch selector to TYPE I. Engage RECORD and PAUSE. Turn input level to maximum. Set audio signal generator to 400Hz and adjust output level so that output from cassette deck reads approximately -22dB from 580mV (-25dBm) on VTVMs. Reset counter to 0 and release PAUSE to record onto tape. Record for approximately 5 seconds, rewind to 0 on counter and play back while observing the VTVMs. The level should be the same as when the unit was in record. Adjust VR102 left channel and VR202 right channel if necessary and repeat the record/play procedure until the readings are the same.

Tolerance: +/- 0.5dB from record level. Less than 0.5dB difference between the channels.

10. FREQUENCY RESPONSE

Adjust audio generator frequency to 1200Hz without changing output level. Reset counter to 0 and start recording. After 5 seconds change audio generator frequency to 12000Hz (do not stop machine) and continue recording for another 5 seconds. Stop and rewind to 0 on the counter. Play back while observing VTVMs. There should be no level difference between the 1200Hz and 12000Hz tones when played back. If 12000Hz is different in level from 1200Hz, adjust VR110 left channel and VR210 right channel and repeat the record/playback procedure until both levels are the same.

Tolerance: +/- 0.5dB

Warning: Greater tolerance will grossly affect the Dolby tracking, especially the Dolby C tracking.

11. PEAKING CIRCUIT

Adjust audio signal generator to 18kHz while maintaining the same output level. Record and play back the 18kHz tone and adjust VR103 left channel and VR203 right channel so that 18kHz playback is the same level as the 1200Hz and 12000Hz signals.

Tolerance: +/- 1dB

Warning : If the R/P head is worn, the tape may not have adequate contact with the head, resulting in severe dropouts. A worn head will make this adjustment very difficult or impossible. Do not try to adjust a worn R/P head. Leave VR103, VR203 in the factory preset condition, or if they have already been adjusted, readjust them to their approximate midposition.

12. ADJUST RECORD METER

Adjust audio signal generator to 400Hz and output to 580mV on the VTVMs. Engage RECORD and PAUSE and adjust VR106 left channel and VR206 right channel for the 0dB LEDs to barely turn on.

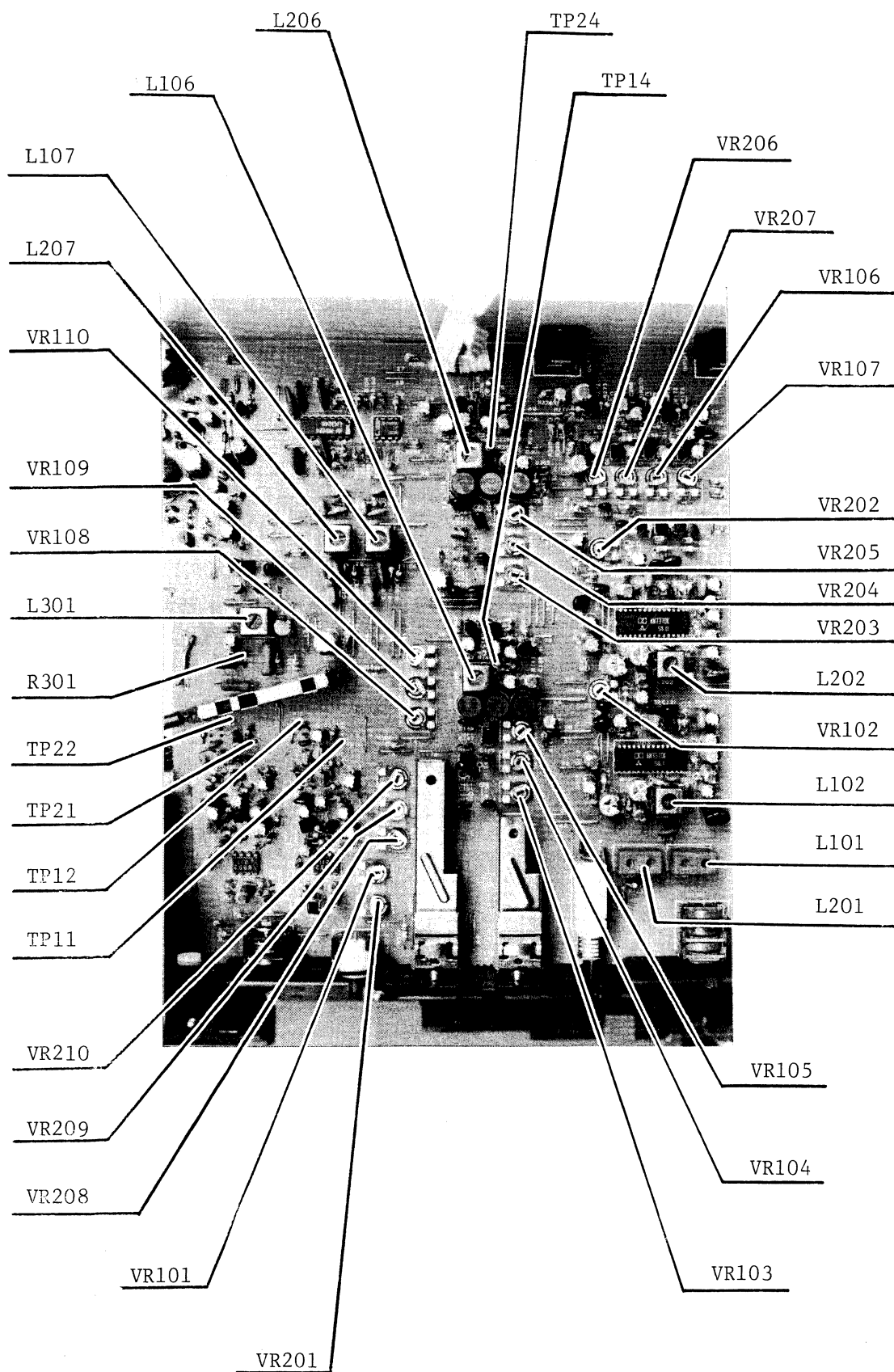
13. CHECK THD

Connect THD meter to left channel. Reset counter to 0 and release PAUSE to record the 400Hz signal on the tape. Record for 10-20 seconds, rewind to 0 on the counter and play back while measuring distortion. Connect THD meter to right channel and repeat the recording/playback process while measuring the distortion.

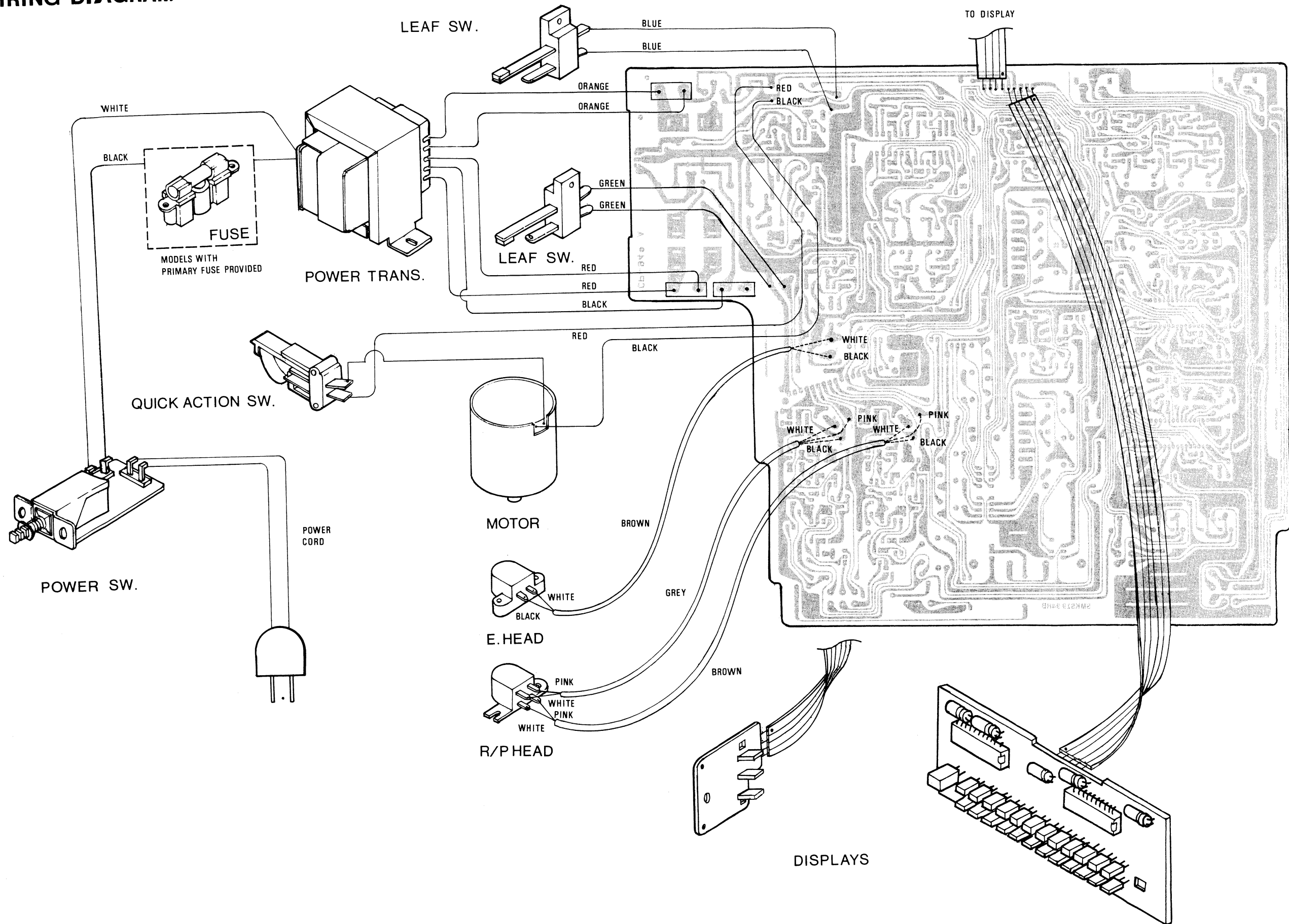
Tolerance: Less than 2%

14. FREQUENCY RESPONSE TYPE II AND TYPE IV TAPES

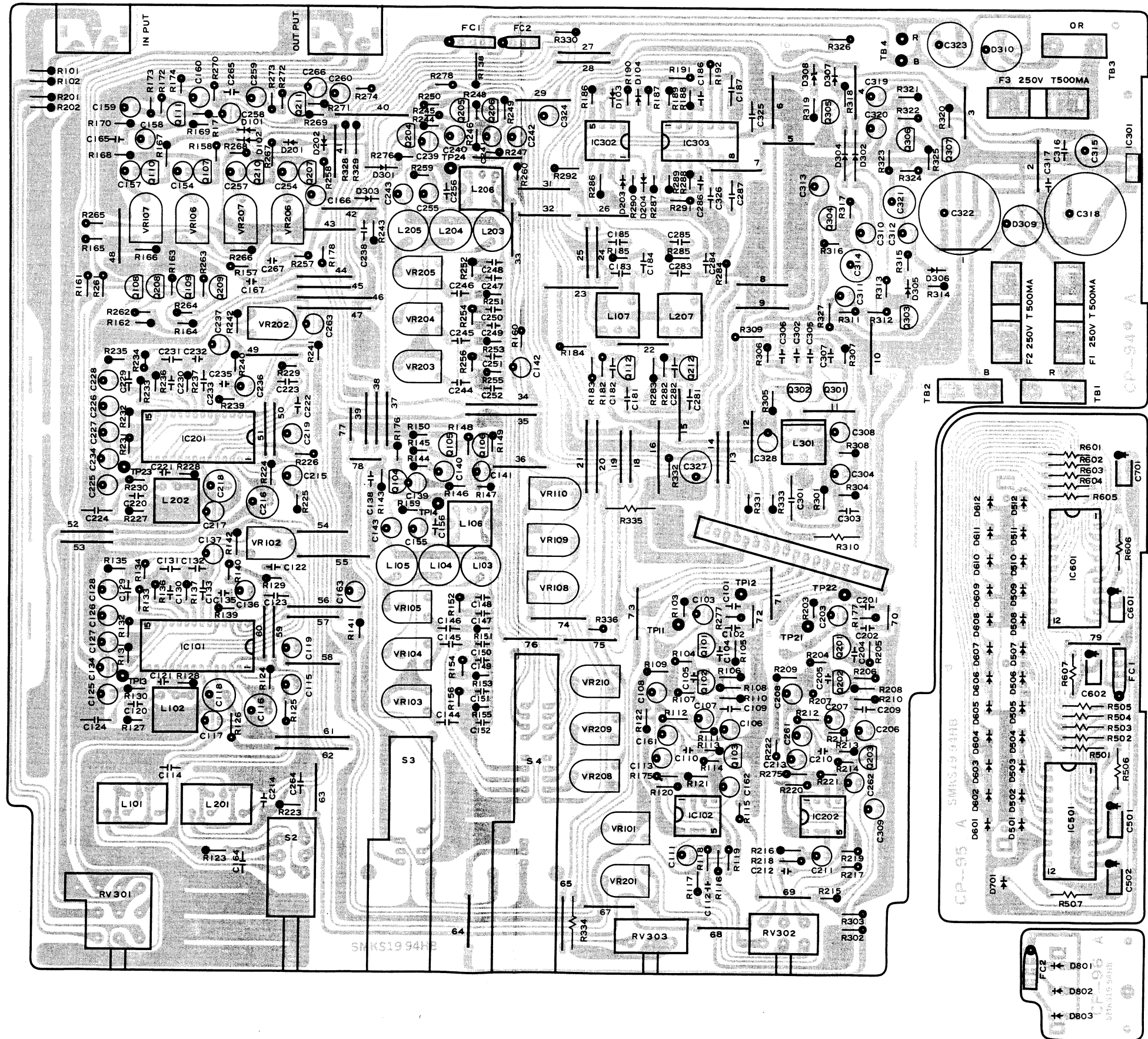
Insert a TYPE II tape and switch selector to the TYPE II position. Engage RECORD and PAUSE and adjust audio generator frequency to 1200Hz, and the generator output level so that the VTVMs read approximately -22dB from Dolby level 580mV (-25dBm). Repeat the procedure as described in step 10 adjusting VR109 left channel and VR209 right channel. Continue with adjustment as described in step 11 using VR104 left channel and VR204 right channel. Insert a TYPE IV tape and switch selector to TYPE IV position. Repeat the procedure as described in step 10 and 11 using VR108 left and VR208 right channel for 12000Hz adjustment and VR105 left channel and VR205 right channel for the peaking circuit adjustment.

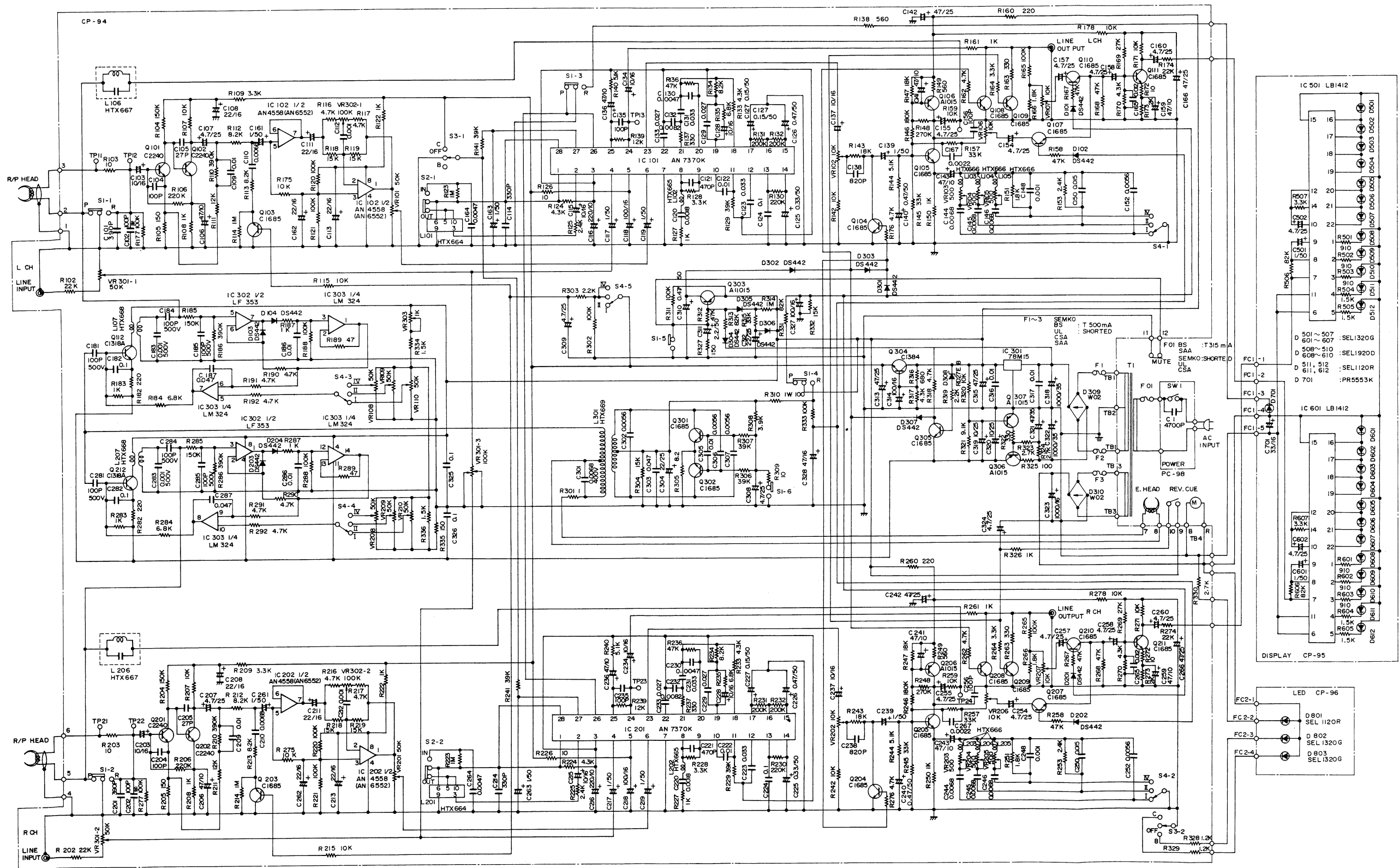


WIRING DIAGRAM



MAIN PCB





- | | | | | |
|--------|------------------------|------------|--------------------|--------------------------------------|
| SWITCH | | VOLUME | | |
| S1-1~6 | REC / PB (P.B) | RV301-1~3 | REC LEVEL, BALANCE | * C 102 CAPACITOR FOR ADJUSTMENT 202 |
| S2-1~2 | MPX FILTER (OUT) | VR 302-1~2 | PLAY TRIM | |
| S3-1~2 | DOLBY NR (OFF) | VR 303 | BIAS | |
| S4-1~5 | TAPE SELECTOR (TYPE I) | | | |

PARTS LIST

| Ref. No. | Description | Type No. |
|----------|---|--|
| P 1 | Top Cover | SN-210028B |
| P 2 | Transport Mechanism Cover | SN-230379B |
| P 3 | Power Cord | UL, CSA (120V) SEMKO (220V) BS (240V) SAA (240V) |
| P 4 | Power Switch | ESB-8213V |
| P 5 | Eject Knob | SN-23038E |
| P 6 | Key Knob, RECORD Key Knob, PAUSE Key Knob, STOP PLAY FF REW | SN-241181B (RED) SN-241181B (BROWN) SN-241181B (BLACK) |
| P 7 | Transport Mechanism DC Motor R/P Head Erase Head | KBD-5101F MMI-6A2LK AUDCASM RP42-119 H4322-0201 |
| P 8 | LED Display (Level Meter) | |
| P 9 | Tape Counter Belt | SN-241206 |
| P10 | Tape Counter | T3SG100-065B1-839 |
| P11 | Counter Intermediate Pulley | 215YT2222-00 |
| P12 | Dial String | L = 320 0.7 ϕ |
| P13 | Main P.C.B. | CP-94 (with 95A, 96A) |
| P14 | Slide Switch For Recording | 00620594 |
| P15 | 2P RCA Socket | YKC21-0061 |
| P16 | Cassette Window | SN-241182B |
| P17 | Rotary Volume, PLAY TRIM | V113G-5193 |
| P18 | Rotary Volume, BIAS | 113-9252 |
| P19 | Rotary Slide Switch, TAPE SELECT. | SRSY1-6-3K15 - 7x6N |
| P20 | Rotary Slide Switch, DOLBY MODE | SRSY1-2-3K15 - 7x6N |
| P21 | Push Switch, MPX-FILTER | PSC 00-C2L |
| P22 | Rotary Volume, REC LEVEL | R113D-B4049 |
| P23 | Sub-Front Panel | SN-210030E |
| P24 | LED Display (Power, Dolby mode) | |
| P25 | LED Window | SN-230382C |
| P26 | Power Transformer | UL, CSA (120V) SEMKO (220V) BS, SAA (240V) |
| P27 | Power Switch Knob | PTX-263F PTX-263E PTX-263BS |
| P28 | MPX Filter Knob | SN-230343B KG-10F (GREEN) SN-230343B KB-10F (BLACK) |
| P29 | Control Knob | 62-2317-0-0 |
| P30 | P.C.B. Spacer | SN-241191B |

| Ref. No. | Description | Type No. |
|----------|------------------------------|-----------------------------|
| P31 | Cassette Cushion | SN-241198B |
| P32 | Frame Cushion | SN-240841A |
| P33 | Double Round Knob, BALANCE | 62-2318-0-0 |
| P34 | Double Round Knob, REC LEVEL | 62-2319-0-0 |
| P35 | Cassette Door | SN-230381D |
| P36 | Cord Stopper | UL, CSA SEMKO, BS, SAA |
| P37 | Chassis with Rear Panel | UL, CSA SEMKO BS, SAA |
| P38 | Adjuster | SN-240899B |
| P39 | Bottom Plate | SN-230377B |
| P40 | Rubber Foot | 2299-1-9-086-02 |
| P41 | Aluminum Front Panel | SN-220301C |
| S 1 | S tight pan screw | 2.6 x 4 |
| S 2 | S tight binding screw | 4.0 x 6 |
| S 3 | B tight binding screw | 4.0 x 8 |
| S 4 | S tight pan screw | 3.0 x 12 |
| S 5 | B tight binding screw | 3.0 x 8 |
| S 6 | Pan screw | M3 x 6 |
| S 7 | B tight pan screw | 3.0 x 8 |
| S 8 | B tight binding screw | 2.6 x 8 |
| S 9 | Hexagon socket head tap bolt | M3 x 5 |
| S10 | S tight pan screw | 3.0 x 5 |
| S11 | Pan screw | M3 x 45 |
| S12 | Pan Screw w/sprint washer | M4 x 10 |
| S13 | B tight pan screw | 3.0 x 6 |
| S14 | S tight pan screw | 3.0 x 5 |
| S15 | B tight flat screw | 3.0 x 8 |
| S16 | Spring lock washer for S4 | |
| S17 | Hexagon nut for S4 | |
| | Time Lag Fuse (Primary) | 250V T 315mA (BS/SAA) |
| | Time Lag Fuse (Secondary) | 250V T 500mA (BS/SAA/SEMKO) |

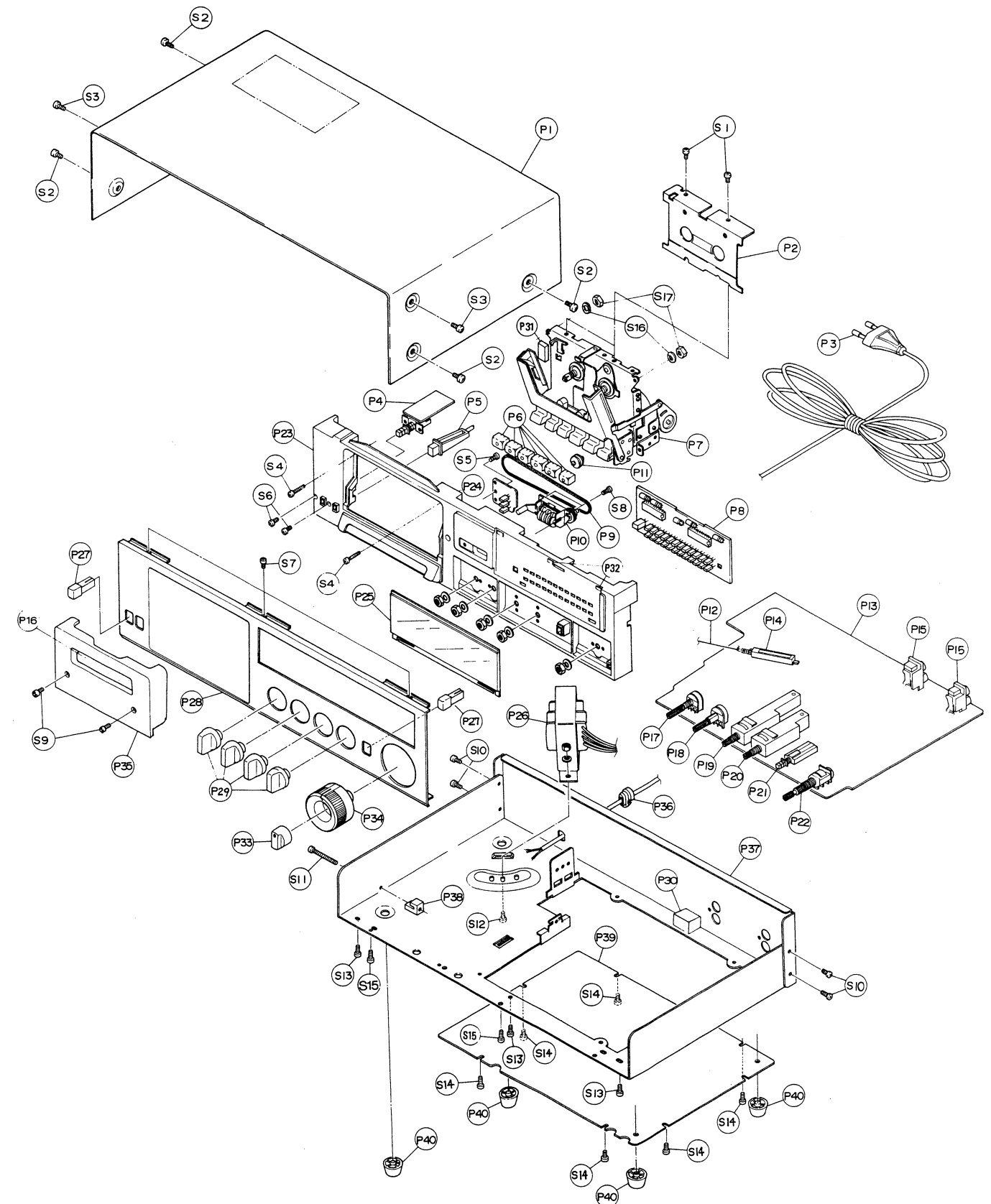
Major Electrical Parts

| Description | Type No. | Description | Type No. |
|------------------------|------------------|--------------------|---------------------|
| DISPLAY SECTION | | | |
| PCBs for Display | CP-95A/96A | LED | SEL 1920D |
| IC for Display | LB 1412 | LED | SEL 1120R |
| LED | SEL 1320G | LED | PR 5553K |
| MAIN CIRCUIT | | | |
| PCB | CP-94A | Silicon Diode | DS 442 |
| IC for Dolby | AN7370K | Zener Diode | RD27EB2 or 3 |
| IC for HX-PRO | AN4558 or AN6552 | Silicon Stuck | W02RL |
| IC for HX-PRO | LF353N | MPX Filter | HTX 664 |
| IC for HX-PRO | LM324N | Filter Coil | HTX 665 |
| IC, Regulator | AN78M15 | Peaking Coil | HTX 666 |
| Transistor | 2SC2240BL | Trap Coil | HTX 667 |
| Transistor | 2SC1685Q | Bias Coil | HTX 668 |
| Transistor | 2SA1015Y | OSC Coil | HTX 669 |
| Transistor | 2SC1318AR | Semi-Fixed Resist. | EVN-K4A A00B54(50K) |
| Transistor | 2SC1384R | Semi-Fixed Resist. | EVN-K4A A00B14(10K) |
| | | Semi-Fixed Resist. | EVN-K4A A00B52(500) |

Other capacitors and resistors : cf. Circuit Diagrams

Note :
 UL for USA market
 CSA for Canadian market
 BS for UK market
 SAA for Australian market
 SEMKO for Europe and others

EXPLODED VIEW



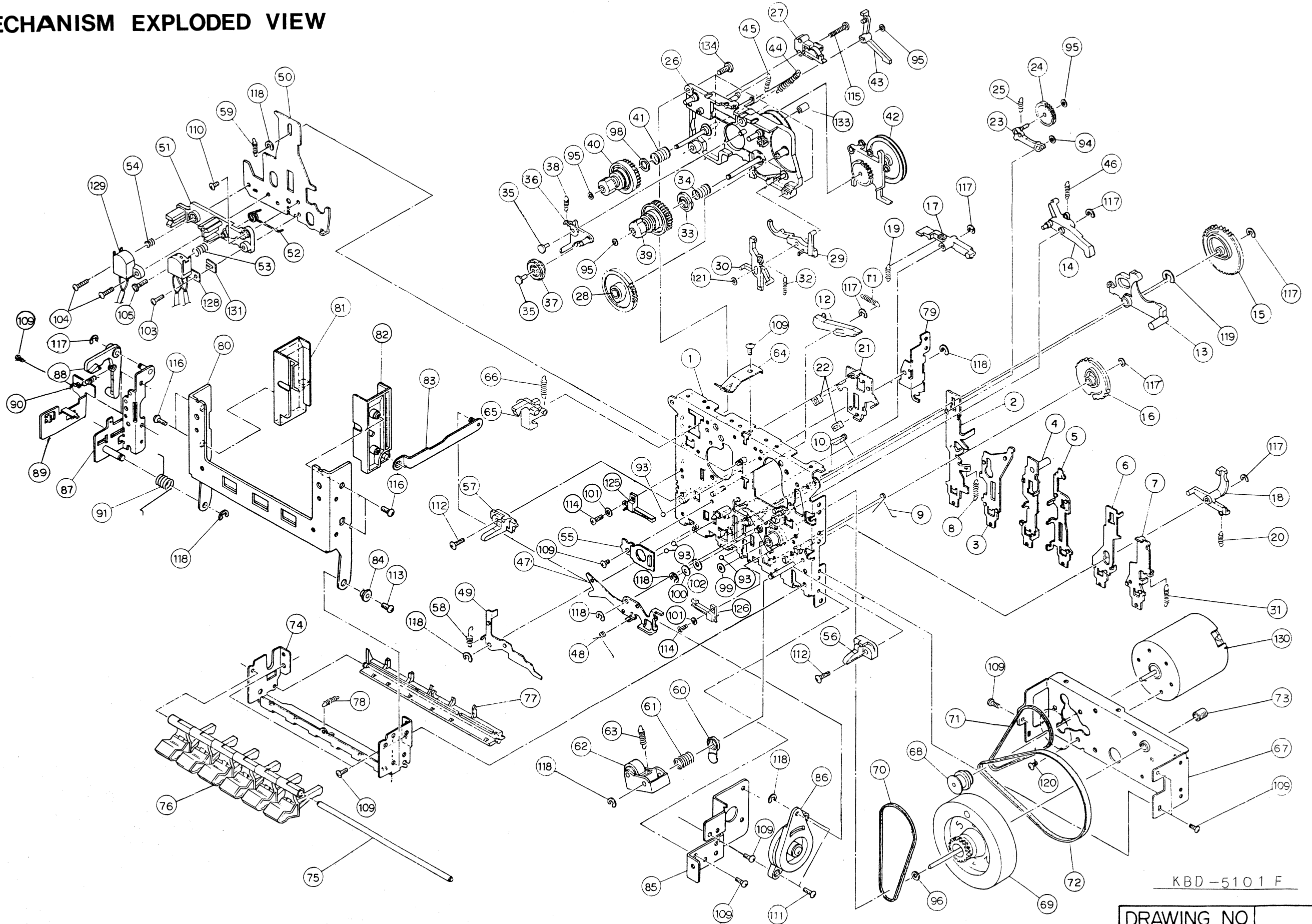
TRANSPORT MECHANISM MODEL KBD-5101F

| Ref. No. | Parts No. | Description | Qty/unit |
|----------|-----------|--------------------------|----------|
| 1 | KB 1204 | Chassis ass'y | 1 |
| 2 | KD 1012 | Rec Lever | 1 |
| 3 | KD 1011 | Play Lever | 1 |
| 4 | KD 1026 | Rew Lever ass'y | 1 |
| 5 | KD 1014 | FF Lever | 1 |
| 6 | KD 1008 | Stop Lever | 1 |
| 7 | KD 1027 | Pause Lever ass'y | 1 |
| 8 | KD 6001 | Rec Lever Spring | 1 |
| 9 | KD 6019 | Lever Spring (B) | 1 |
| 10 | KD 6035 | Lever Spring (C) | 1 |
| 11 | KD 6007 | Pause Lever Spring | 1 |
| 12 | KD 3014 | Rec Lever (B) | 1 |
| 13 | KD 3063 | Shift Arm (A) | 1 |
| 14 | KD 3158 | Shift Arm (B) ass'y | 1 |
| 15 | KC 3015 | Gear (A) | 1 |
| 16 | KC 3011 | Gear (B) | 1 |
| 17 | KD 3084 | Gear Lock Arm (A) | 1 |
| 18 | KD 3009 | Gear Lock Arm (B) | 1 |
| 19 | KD 6006 | Shift Arm (A) Spring | 1 |
| 20 | KD 6011 | Lock Arm (B) Spring | 1 |
| 21 | KD 1013 | Brake Lever | 1 |
| 22 | KD 4001 | Brake Shoe | 2 |
| 23 | KD 3048 | FF Idler Arm ass'y | 1 |
| 24 | KD 3026 | FF Gear | 1 |
| 25 | KD 6045 | FF Gear Spring | 1 |
| 26 | KC 3142 | Reel Base ass'y | 1 |
| 27 | 94019001 | Quick Action Switch | 1 |
| 28 | KD 3019 | Auto Gear | 1 |
| 29 | KD 3059 | Sensor Arm | 1 |
| 30 | KD 3099 | Auto Arm | 1 |
| 31 | KD 6048 | Pause Lever Spring | 1 |
| 32 | KD 6068 | Auto Arm Spring | 1 |
| 33 | KD 3038 | Auto Clutch ass'y | 1 |
| 34 | KD 6043 | Tension Spring | 1 |
| 35 | KD 3052 | Bush | 2 |
| 36 | KD 3062 | Play Arm | 1 |
| 37 | KD 3138 | Play Idler | 1 |
| 38 | KD 6023 | Play Arm Spring | 1 |
| 39 | KD 3033 | T Reel ass'y | 1 |
| 40 | KD 3032 | S Reel ass'y | 1 |
| 41 | KD 6049 | Back Tension Spring | 1 |
| 42 | KD 3035 | FR Pulley Arm ass'y (D) | 1 |
| 43 | KD 3037 | Rew Arm | 1 |
| 44 | KD 6028 | FR Pulley Arm Spring (A) | 1 |
| 45 | KD 6029 | FR Pulley Arm Spring (B) | 1 |
| 46 | KD 6012 | Shift Arm (B) Spring | 1 |
| 47 | KD 1005 | Auto Lock Arm | 1 |
| 48 | KD 6065 | Auto Lock Arm Spring | 1 |
| 49 | KD 1004 | FR Lock Arm (N) | 1 |
| 50 | KC 1110 | Head Chassis | 1 |
| 51 | KC 3001 | Head Base | 1 |
| 52 | KD 6041 | Head Base Spring | 1 |

| Ref. No. | Parts No. | Description | Qty/unit |
|----------|------------|------------------------|----------|
| 53 | KD 6009 | Head Spring | 1 |
| 54 | G 46084 | Head Spring | 1 |
| 55 | KD 1003 | Head Chassis Spring | 1 |
| 56 | KC 3039 | Cassette Guide (R) | 1 |
| 57 | KC 3040 | Cassette Guide (L) | 1 |
| 58 | KD 6026 | FR Lock Arm Spring | 1 |
| 59 | KD 6021 | Brake Spring | 1 |
| 60 | KC 3103 | Pause Cam | 1 |
| 61 | KD 6057 | Pause Cam Spring | 1 |
| 62 | KD 3046 | Pinch Roller Arm ass'y | 1 |
| 63 | KD 6002 | Pinch Roller Spring | 1 |
| 64 | KD 1025 | Pack Spring (F) | 1 |
| 65 | KD 3007 | Rec Sensor | 1 |
| 66 | KD 6013 | Rec Sensor Spring | 1 |
| 67 | KC 1030 | Motor Bracket (D) | 1 |
| 68 | KD 2028 | Motor Pulley (C) | 1 |
| 69 | KD 5002 | Flywheel | 1 |
| 70 | KD 4004 | Belt | 1 |
| 71 | KD 4007 | Belt | 1 |
| 72 | KD 4008 | Belt, Drive | 1 |
| 73 | G 43076 | Capstan Screw | 1 |
| 74 | KC 1207 | Button Holder | 1 |
| 75 | KD 2076 | Button Shaft | 1 |
| 76 | SN-230375A | Button Lever (Black) | 6 |
| 77 | KC 3044 | Lock Cam (F) | 1 |
| 78 | KD 6025 | Lock Cam Spring | 1 |
| 79 | KD 1038 | Rec Arm | 1 |
| 80 | KC 1227 | Cassette Case | 1 |
| 81 | KD 3049 | Cassette Pocket (L) | 1 |
| 82 | KD 3050 | Cassette Pocket (R) | 1 |
| 83 | KD 1041 | Damper Link ass'y | 1 |
| 84 | KD 2034 | Case Collar | 1 |
| 85 | KD 1032 | Damper Bracket | 1 |
| 86 | JD 3089 | Damper ass'y | 1 |
| 87 | KD 1042 | Case Bracket ass'y | 1 |
| 88 | KD 3051 | Case Lock Arm | 1 |
| 89 | KCS 1265 | Eject Lever | 1 |
| 90 | JD 6015 | Pause Lever Spring | 1 |
| 91 | KD 6022 | Case Spring | 1 |

| Ref. | Description | Ref. | Description |
|------|-------------------------|------|---------------------------------|
| 93 | Steel Ball SB-2 | 110 | Tap Tight Screw 2.6 x 4 |
| 94 | Polyslider washer | 111 | Tap Tight Screw 2.6 x 6 |
| 95 | Polyslider washer | 112 | Bind Tap Tight Screw (BL) 2.6x8 |
| 96 | Polyslider washer | 113 | Tap Tight Screw 2.6 x 8 |
| 98 | Reel washer KD8016 | 114 | Tapping Screw 2 x 6 |
| 99 | Nylon washer | 115 | Tapping Screw 2 x 12 |
| 100 | Nylon washer KD8009 | 116 | Tapping Screw 2.6 x 6 |
| 101 | Plain washer (S) 2Ø | 117 | E Ring 2Ø |
| 102 | Plain washer (L) 3Ø | 118 | E Ring 2.5Ø |
| 103 | Binding Screw 2 x 8 | 119 | E Ring 4Ø |
| 104 | Binding Screw 2 x 9.5 | 120 | Pan Screw 2.6 x 3 |
| 105 | Washer Head Screw 2x9 | 125 | Leaf Switch LSB-1123 |
| 109 | Tap Tight Screw 2.6 x 4 | 126 | Leaf Switch LSA-1123-4 |

MECHANISM EXPLODED VIEW



KBD-5101 F

DRAWING NO