

SERVICE MANUAL

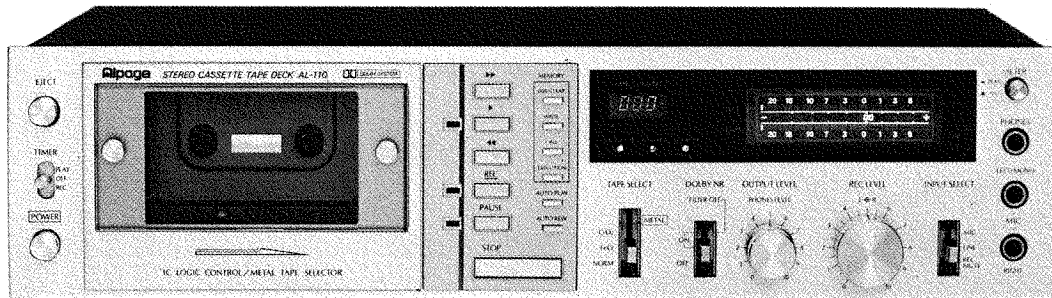
Alpage

AL-110

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STEREO CASSETTE DECK

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Specifications

Type	4-track, 2-channel/stereo cassette deck, front loading vertical type
Power Consumption	30W
Power Source	120V 60Hz AC (For U.S.A./Canadian model) 110/127/220/240V 50/60 Hz AC (For European model)
Tape Speed	4.76 cm/sec \pm 1.5%
FF/REW Time	90 sec Max. (C-60)
Wow & Flutter	\pm 15% (DIN WRMS Playback Mode) (For U.S.A./Canadian Model) 0.2% (DIN WRMS Rec./Play Mode) (For European Model)
Distortion	2% Max.
Signal to Noise Ratio	55 dB Min. (Dolby NR OFF)
Motor	Electrical Governor Controlled DC Type
Heads	Sen Alloy Core REC/PLAY Head, Ferrite erase head
Input Sensitivity	Line 300mV, Mic 3mV DIN: 1mV/KM (For European Model)
Output Level	Line: 1000mV \pm 1.5 dB/100K ohm Headphone: 100mV/8 ohm
Semiconductors	6 ICs, 67 Transistors, 48 Diodes, 4 Zener Diodes (For U.S.A./Canadian Model) 6 ICs, 71 Transistors, 2 FETs, 50 Diodes 4 Zener Diodes (For European Model)
Dimensions	420(W) x 106(H) x 261(D) mm
Weight	5.9 kg

FEATURES

Memory Tape Counter	Resettable three figure digital F.L. counter
Dolby NR	* Dolby Noise Reduction System
MPX Switch	MPX Filter ON/OFF Switch
Tape Selector Switch	4 Positions Lever Switch
Peak//VU Switch	2 Positions Push Switch
Input Selector	Line/Mic Manual Switching Lever Type
Output Control	Output Level Attenuator Control

* Noise reduction circuit is made under licence from Dolby Laboratories. The word "DOLBY" and the Double-D symbol are trademarks of Dolby Laboratories.

Parts Location and Disassembly Instructions

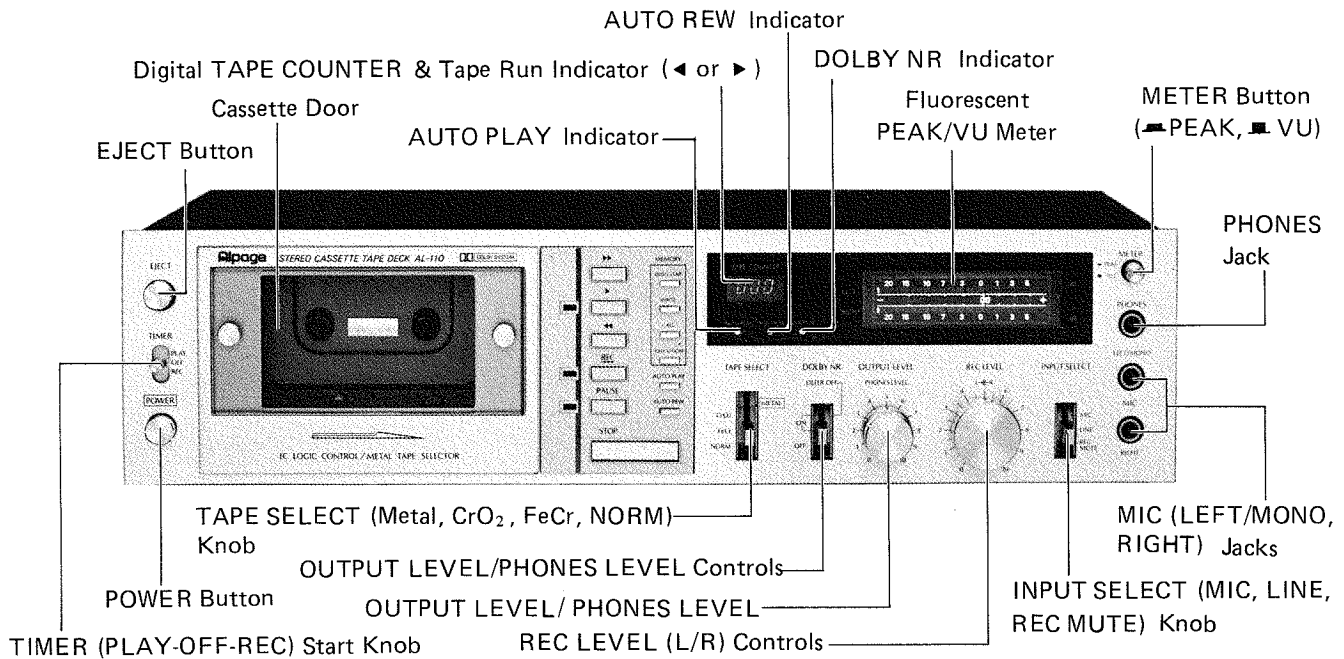


Figure 1

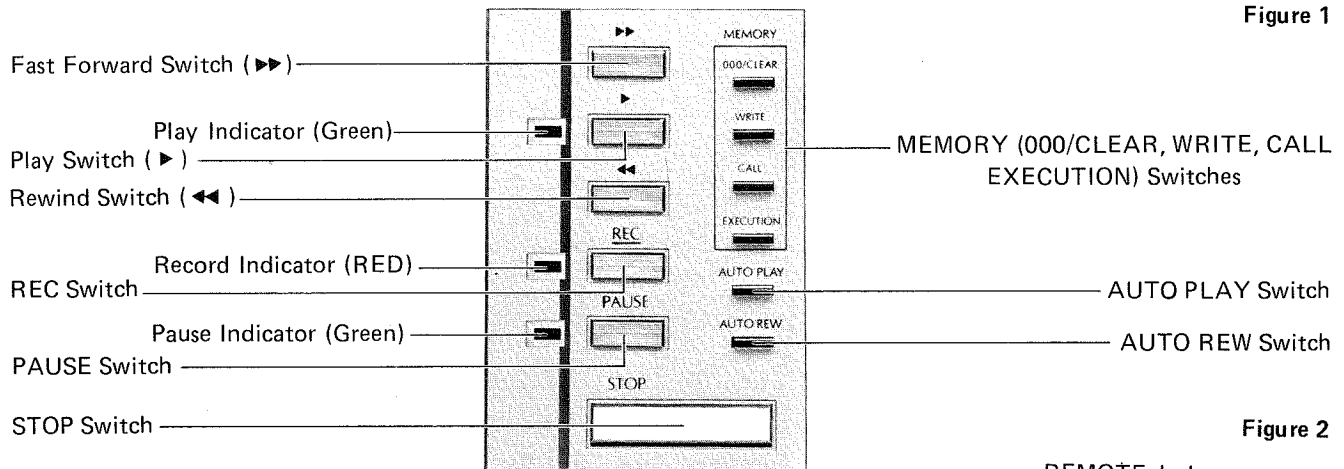


Figure 2

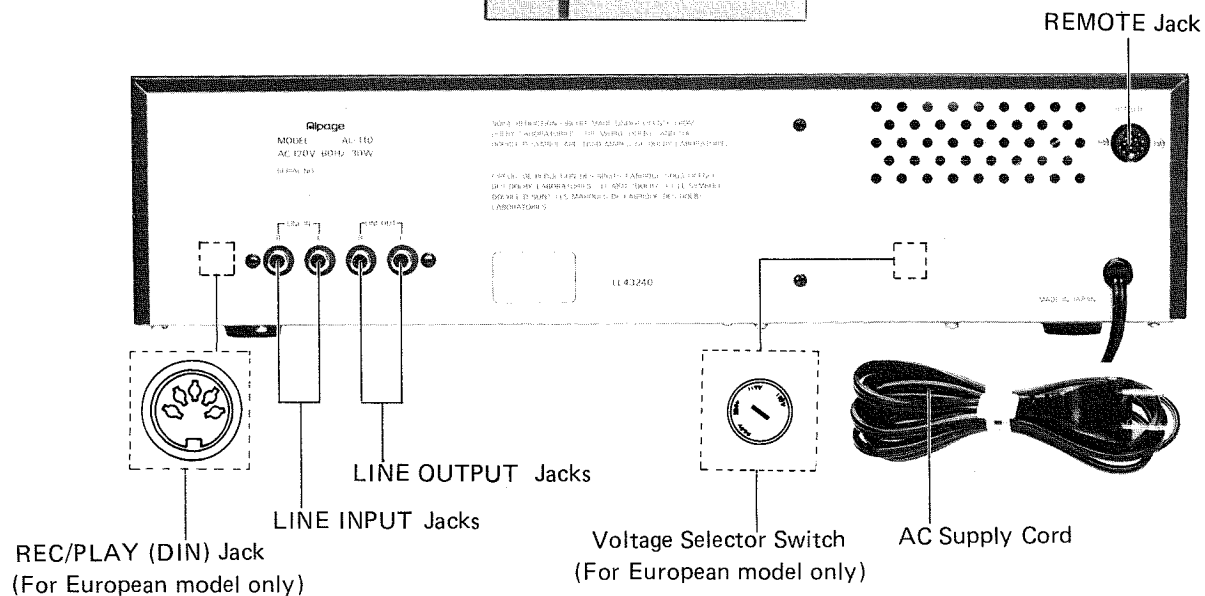


Figure 3

1. Removal of Top Cover

- (1) Remove six screws marked "△" from both sides of top cover as shown in Figure 4 and 5.
- (2) Slide out the top cover backward.

2. Removal of Front Panel

- (1) Remove two screws holding the cassette door and then remove the cassette door as shown in Figure 5.
- (2) Pull out five knobs as shown in Figure 5.
- (3) Remove sixteen screws marked "※" from top and bottom side of front panel as shown in Figure 6 and 7.
- (4) Carefully remove the front panel lead wire connections to the LED P.C.B.

3. Removal of Counter Frame with LED P.C. Board and FL Counter Assembly

- (1) Remove two screws marked "□" as shown in Figure 8.
- (2) Take up the Counter Frame and reverse it as shown in Figure 9.
- (3) Remove four screws from two P.C. Boards as shown in Figure 9.
- (4) Disconnect all wires from both P.C. Boards.

4. Removal of FL Meter P.C. Board

- (1) Remove two screws marked "●" as shown in Figure 8.
- (2) Disconnect all wires from the P.C. Board.

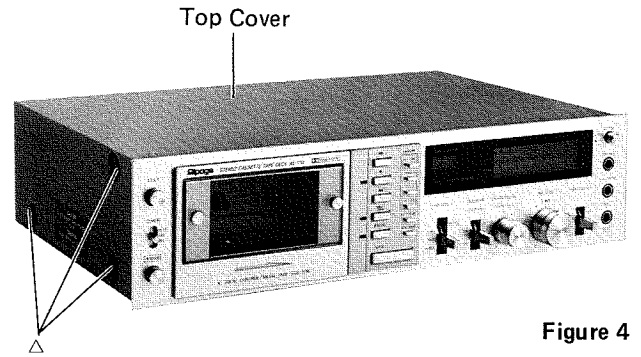


Figure 4

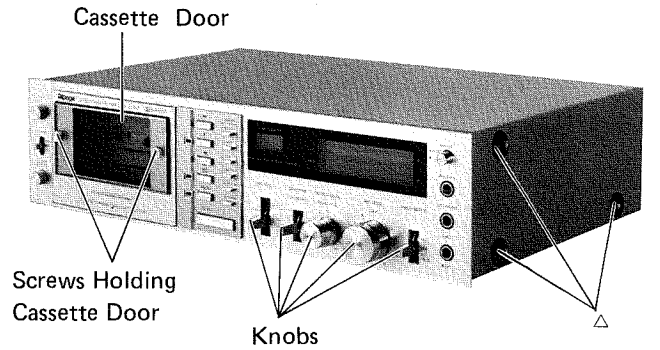


Figure 5

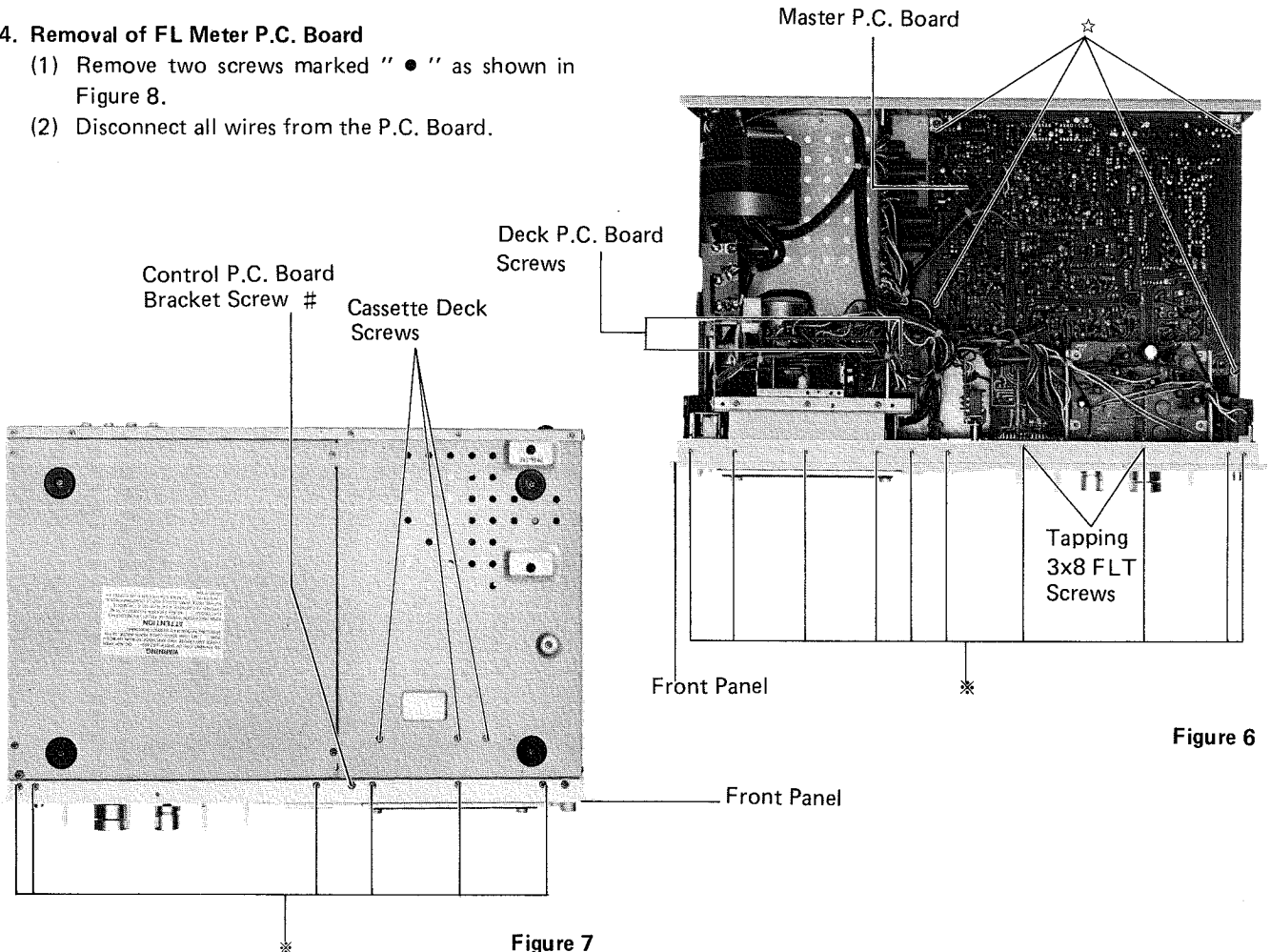


Figure 6

Figure 7

5. Removal of Control P.C. Board Bracket, Key Board P.C. Board and Counter Function Key P.C. Board

- (1) Remove three tacks marked " ★ " from the Key Board P.C. Board as shown in Figure 8.
- (2) Remove two screws marked " ■ " from the Counter Function Key P.C. Board as shown in Figure 8.
- (3) Remove three screws marked " # " as shown in Figure 7 and 8.
- (4) Remove the Control P.C. Board Bracket.
- (5) Disconnect all wires from P.C. Boards.

6. Removal of Timer Switch P.C. Board

- (1) Remove two screws from the Timer Switch as shown in Figure 8.
- (2) Disconnect all wires from the P.C. Board.

7. Removal of Jack P.C. Board

- (1) Remove three nuts from the jack as shown in Figure 8.
- (2) Disconnect all wires from the P.C. Board.

8. Removal of Power Switch P.C. Board (For U.S.A. & Canadian model only)

- (1) Pull out the switch lever from the Power Switch as shown in Figure 10.
- (2) Remove two screws marked " ★ " as shown in Figure 10.
- (3) Disconnect all wires from the P.C. Board.

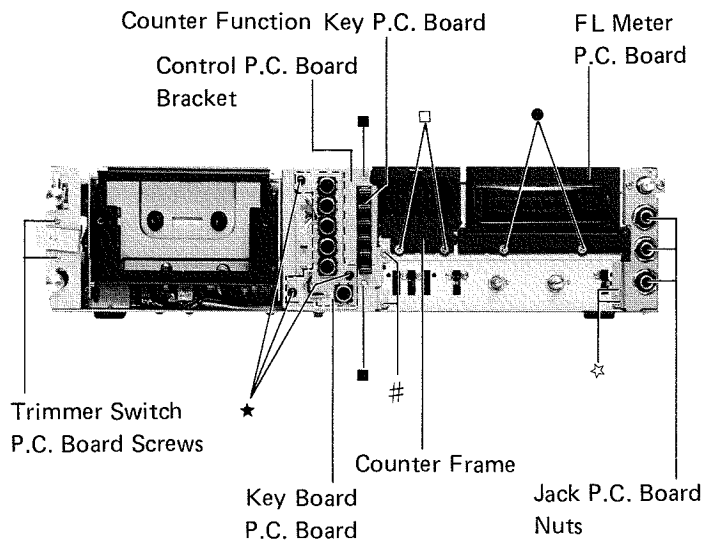


Figure 8

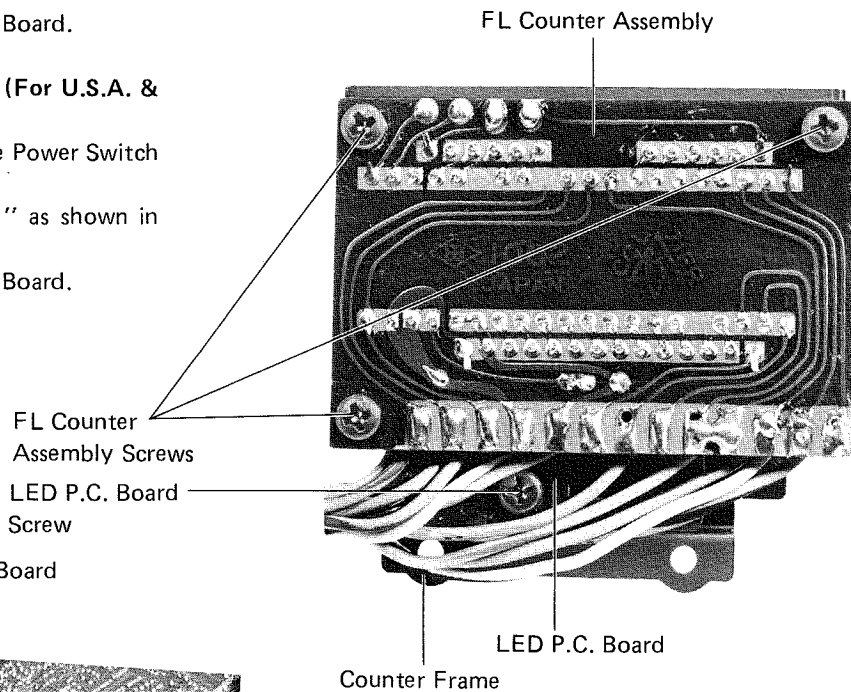


Figure 9

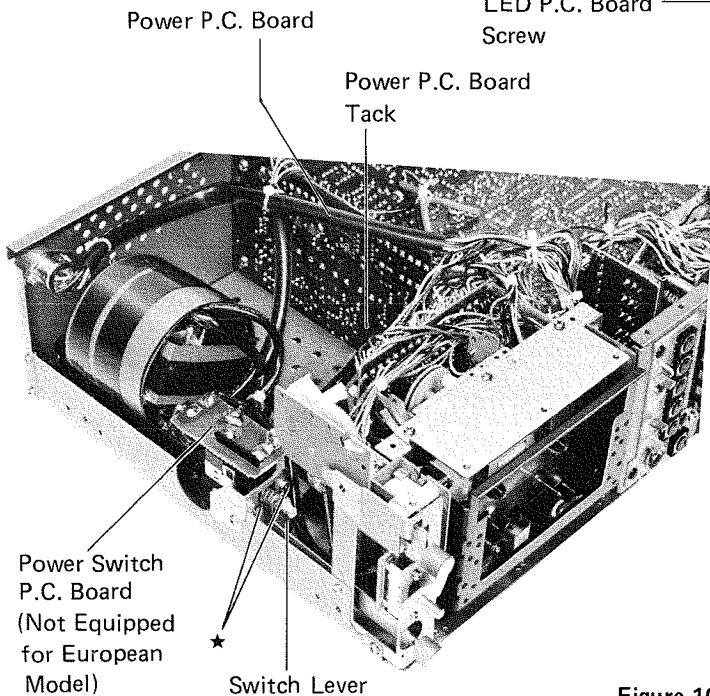


Figure 10

9. Removal of Power P.C.Board

- (1) Remove one tack from the Power P.C.Board as shown in Figure 10.
- (2) Remove two screws marked "○" as shown in Figure 11.
- (3) Disconnect all wires from the P.C.Board.

10. Removal of Master P.C.Board

- (1) Remove six screws marked "☆" as shown in Figure 6 and 8.
- (2) Remove two tacks from the rear cover as shown in Figure 11. (For U.S.A. & Canadian model)
- (3) Remove three tacks from the rear cover as shown in Figure 11. (For European model)
- (4) Disconnect all wires from the P.C.Board.
- (5) The P.C.Board can be completely removed from the chassis to this side.

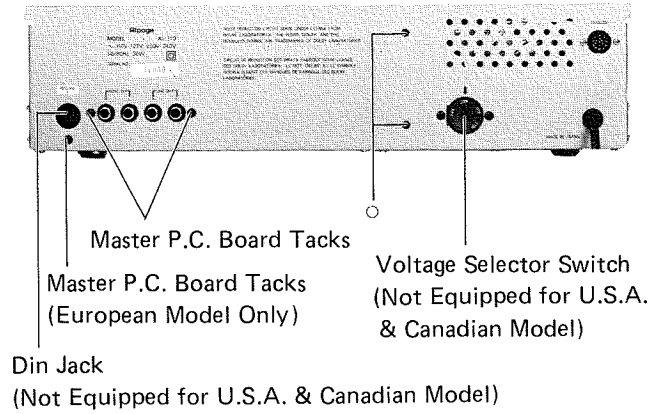


Figure 11

11. Removal of Cassette Deck

- (1) Remove three screws from the bottom chassis as shown in Figure 7.

12. Removal of Control P.C.Board

- (1) Remove four screws from the Control P.C. Board as shown in Figure 12.
- (2) Disconnect all wires from the P.C.Board.

13. Removal of Deck P.C. Board

- (1) Remove two screws from the cassette deck as shown in Figure 6.
- (2) Disconnect all wires from the P.C.Board.

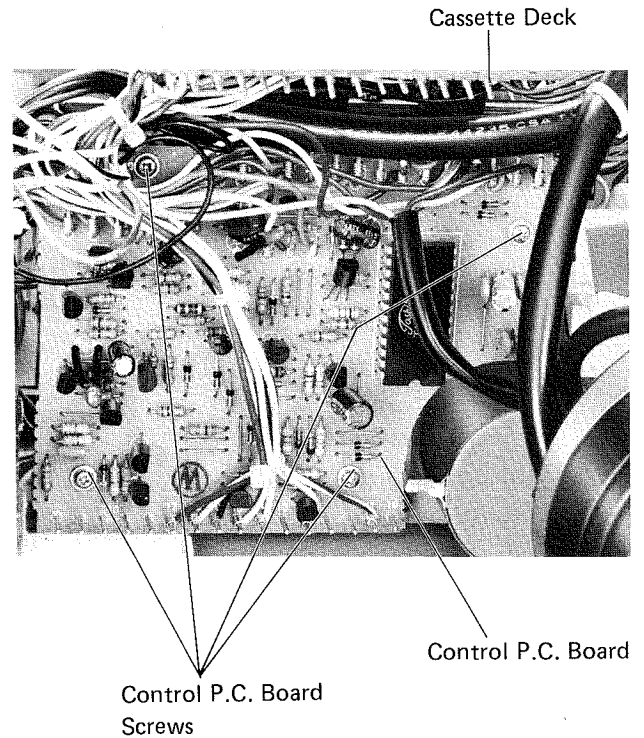


Figure 12

Adjustment Procedures

Step	Description	Switch Mode	Adjust Point	Test Point	Connection Instruction	Remarks
1	Head Azimuth Adjustment	Playback EQ: Norm Dolby: Off	"A" Screw	Line Out	Figure, 13, 14	Test Tape: MTT-114 T.P. Output: Max.
2	Playback Level Adjustment	Playback EQ: Norm Dolby: Off	VR101 VR102	T.P. 2 T.P. 2'	Figure 14	Test Tape: MTT-150 T.P. Output: 580mV
3	Input Level Adjustment	Record EQ: Metal Dolby: Off	VR1-1 VR1-2	T.P. 2 T.P. 2'	Figure 15	Test Signal Line Input: 400 Hz 300mV T.P. Output: 580mV

Step	Description		Switch Mode	Adjust. Point	Test Point	Connection Instruction	Remarks
4	1	FL Meter Adjustment (0 dB)	Record EQ: Metal Dolby: Off	VR107 VR108	Level Meter Reading	Figure 15	At conditions of Step 3. Adjust for 0 dB.
	2	FL Meter Adjustment (-20 dB)	Record EQ: Metal Dolby: Off	VR109 VR110	Level Meter Reading	Figure 15	Test Signal Line Input: 400 Hz 30mV Adjust for " -20" dB.
5	Rec. Current Adjustment		Record EQ: Metal Dolby: Off Bias: Cut	VR103 VR104	T.P. 1 T.P. 1'	Figure 15	Remove dipping solder on Point "B". Test Signal Line Input: 400Hz 300mV T.P. Output: 0.9mV
6	Bias Adjustment		Record Bias: Metal Dolby: Off	VR105 VR106	T.P. 1 T.P. 1'	Figure 15	Non-Input T.P. Output: 13mV
7	Bias Readjustment		Rec/Play Bias: Metal EQ: Metal Dolby: Off	VR105 VR106	T.P. 2 T.P. 2'	Figure 15	At conditions of Step 3 Test Signal Line Input: -25 dB Rec/Play Level (17 kHz/1 kHz) ● 17 kHz = 1 kHz → OK ● 17 kHz > 1 kHz Decrease bias (See Step 6) ● 17 kHz < 1 kHz Increase bias (See Step 6) Repeat Step 7 above.
8	Rec. Current Readjustment		Rec/Play Bias: Metal EQ: Metal Dolby: Off	VR103 VR104	T.P. 2 T.P. 2'	Figure 15	At conditions of Step 3. Rec./Play Level ● 580mV → OK ● > 580mV Decrease rec. current (See Step 5) ● < 580mV Increase rec. current (See Step 5)

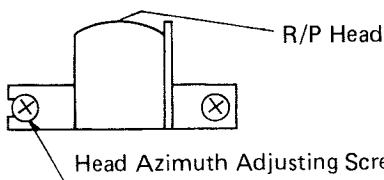


Figure 13

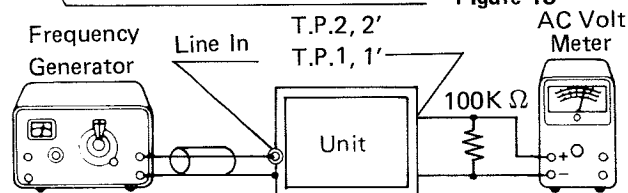


Figure 15

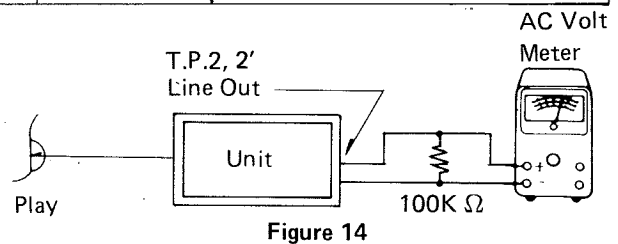
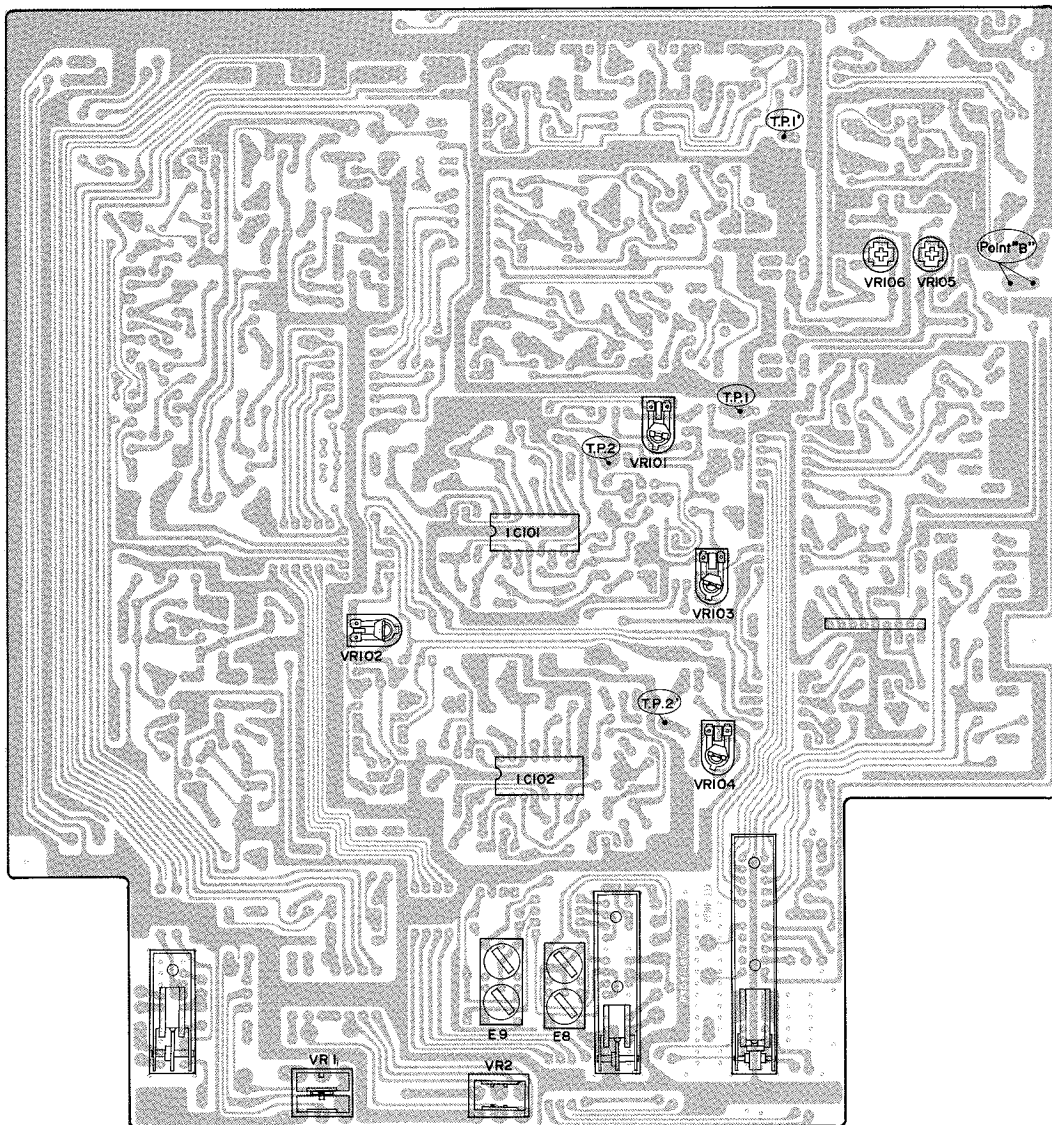
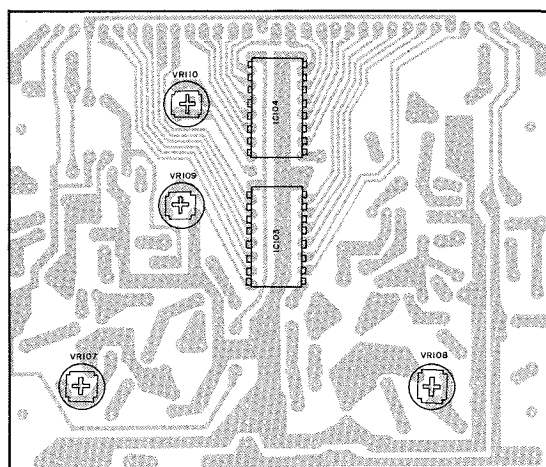


Figure 14

Adjustment Procedures



Master P.C. Board



F.L. Meter P.C. Board

Trouble Shooting

Symptoms & Possible Causes	Symptoms & Possible Causes
<p>No power</p> <ol style="list-style-type: none"> 1. Defective power switch 2. Defective DC supply block 3. Defective power connections <p>No power to motor</p> <ol style="list-style-type: none"> 1. Defective motor 2. Defective servo 3. Defective start switch <p>Distorted sound</p> <ol style="list-style-type: none"> 1. Record/Play head dirty 2. Defective cassette tape 3. Record/Play head magnetized 4. Record/Play head defective <p>High frequency deteriorated</p> <ol style="list-style-type: none"> 1. Playback Azimuth improperly adjusted 2. Record/Play head dirty 3. Record/Play head magnetized 4. Excessive Wow/Flutter 5. Incorrect tape travel 6. Record/Play head defective 7. Cassette tape defective <p>Excessive Wow/Flutter</p> <ol style="list-style-type: none"> 1. Flywheel assembly defective 2. Motor defective 3. Defective servo 4. Drive belt defective 5. Pinch roller assembly defective 6. Slippage between tape and pinch roller 7. Idler pulley defective 8. No clearance between flywheel and thrust screw 9. Tape counter defective 10. Excessive back-tension 11. Improper take-up torque 12. Defective tape cassette <p>Signal to Noise Ratio Deteriorated</p> <ol style="list-style-type: none"> 1. Record/Play head magnetized 2. Record/Play head dirty 3. Record/Play head defective 4. Output amplifier defective 5. Cassette tape defective <p>Loss of channel separation</p> <ol style="list-style-type: none"> 1. Improper tape travel 2. Record/Play head defective <p>Level Variations</p> <ol style="list-style-type: none"> 1. Record/Play head dirty 2. Record/Play head defective 3. Record/Play head misaligned 4. Cassette tape defective 	<p>Improper tape travel</p> <ol style="list-style-type: none"> 1. Pinch roller misaligned 2. Weak pinch roller pressure 3. Capstan defective 4. Pinch roller defective 5. Record/Play head misadjusted <p>Tape speed too fast/slow</p> <ol style="list-style-type: none"> 1. Defective cassette tape 2. Defective motor 3. Defective servo <p>Tape does not move</p> <ol style="list-style-type: none"> 1. Defective cassette tape 2. Defective motor 3. Defective servo 4. Drive belt off 5. Reel hub defective 6. Pinch roller not contacting capstan 7. Defective power connections 8. Cassette loaded incorrectly 9. Drive belt out of place <p>Drive Belt out of place</p> <ol style="list-style-type: none"> 1. Idler pulley misaligned 2. Motor misaligned 3. Drive belt defective 4. Excessive clearance between flywheel and flywheel holder <p>Does not record</p> <ol style="list-style-type: none"> 1. Record/Play head defective 2. Record/Play head dirty 3. Record amp defective 4. Defective record interlock switch 5. Cassette has safety tabs removed 6. Broken head wire 7. Bias oscillator defective 8. Input jack defective 9. Defective mute switch <p>Does not playback</p> <ol style="list-style-type: none"> 1. Record/Play head dirty 2. Record/Play head defective 3. Defective playback amplifier 4. Defective output buffer amplifier 5. Defective tape output jack 6. Defective mute switch 7. Defective Dolby circuit 8. Wire between Record/Play head and playback amplifier broken 9. Improper tape travel 10. Defective preamp output jack

Symptoms & Possible Causes

Does not erase

1. Defective erase head
2. Erase head dirty
3. Bias oscillator defective
4. Broken wire on head

CHECKS TO BE PERFORMED AFTER REPAIR

Replaced Parts & Checks

Drive belt

1. Belt position
2. Tape speed
3. Wow/Flutter

Motor

1. Tape speed
2. Wow/Flutter
3. Drive belt position

Record/Play head

1. Inclination of Record/Play head
2. Azimuth/height
3. Tape travel
4. Playback output
5. Playback frequency response
6. Signal to noise ratio
7. Record/Play response

Flywheel

1. Clearance between flywheel and thrust screw
2. Tape travel
3. Azimuth/height
4. Tape speed

Replaced Parts & Checks

Pinch roller

1. Tape travel
2. Tape speed
3. Azimuth/height
4. Wow/flutter

Tape counter

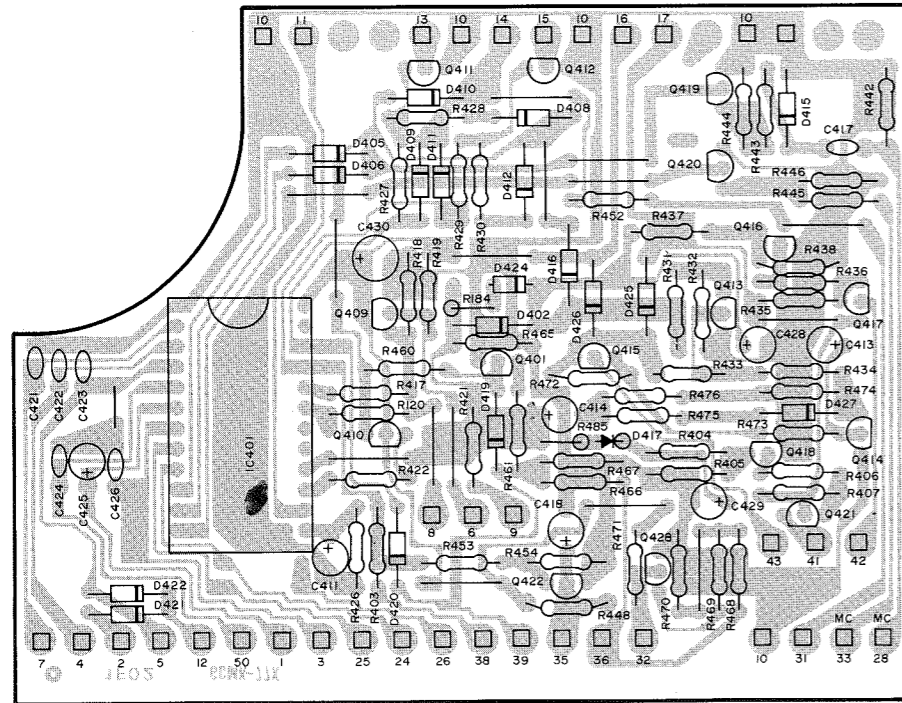
1. Tape speed
2. Auto-shut off
3. Counter
4. Wow/Flutter

Reel Hub

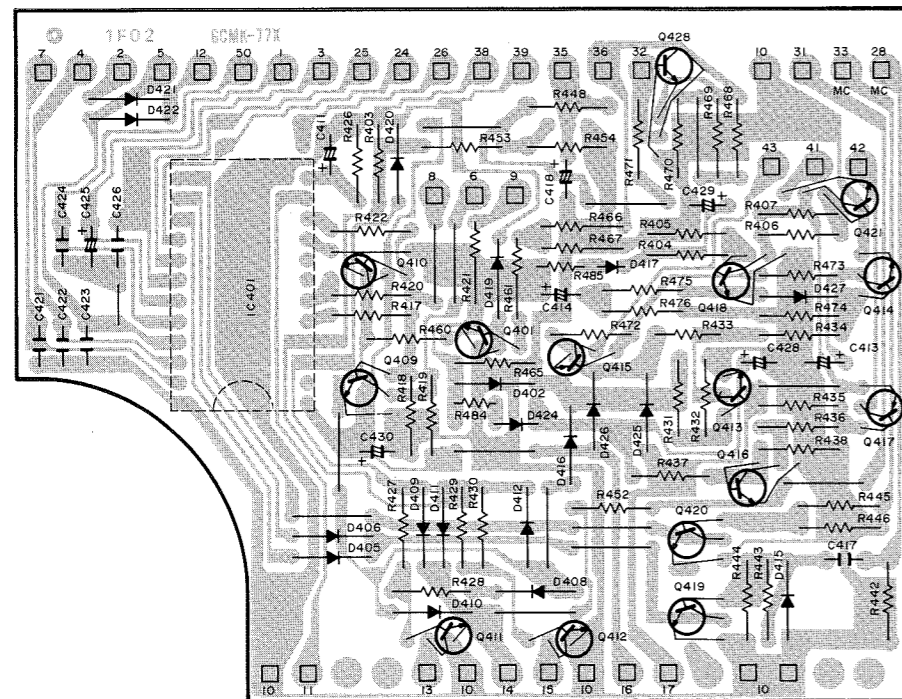
1. Torque check
2. Tape speed
3. Wow/Flutter

Printed Circuit Boards

Control P.C.Board

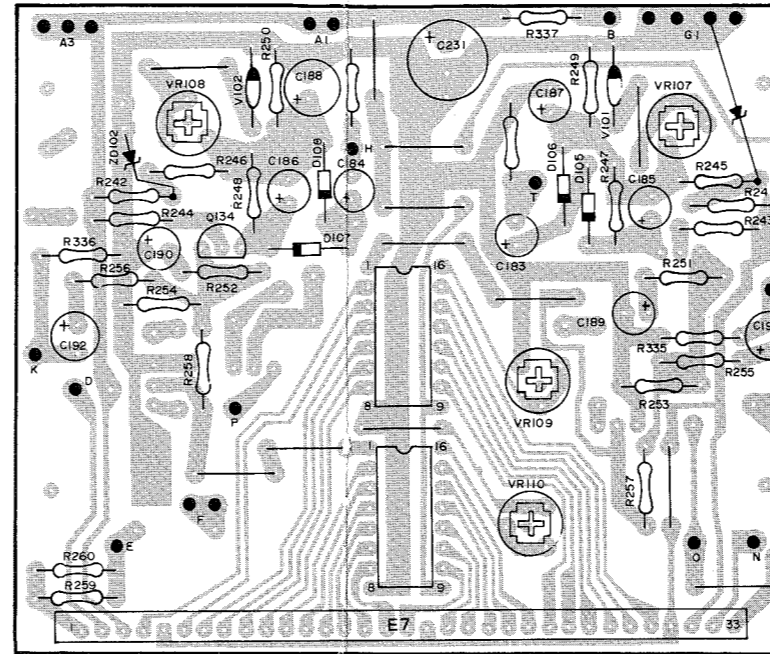


Top View

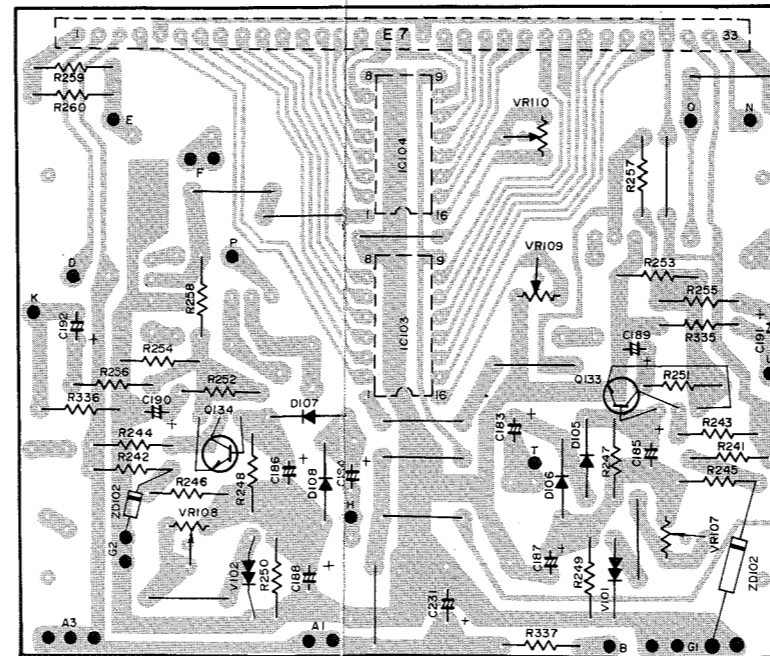


Bottom View

F.L Counter P.C.Board

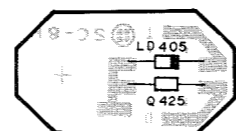


Top View

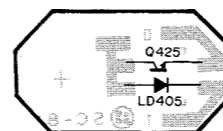


Bottom View

Sensor P.C.Board

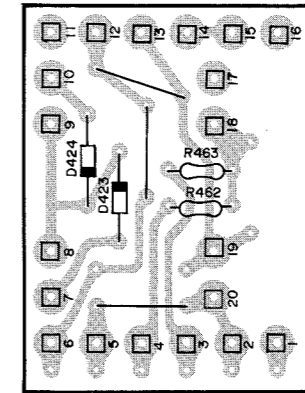


Top View

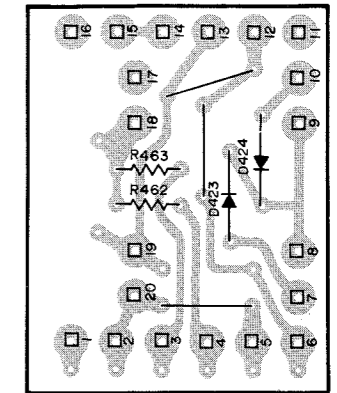


Bottom View

Terminal P.C.Board

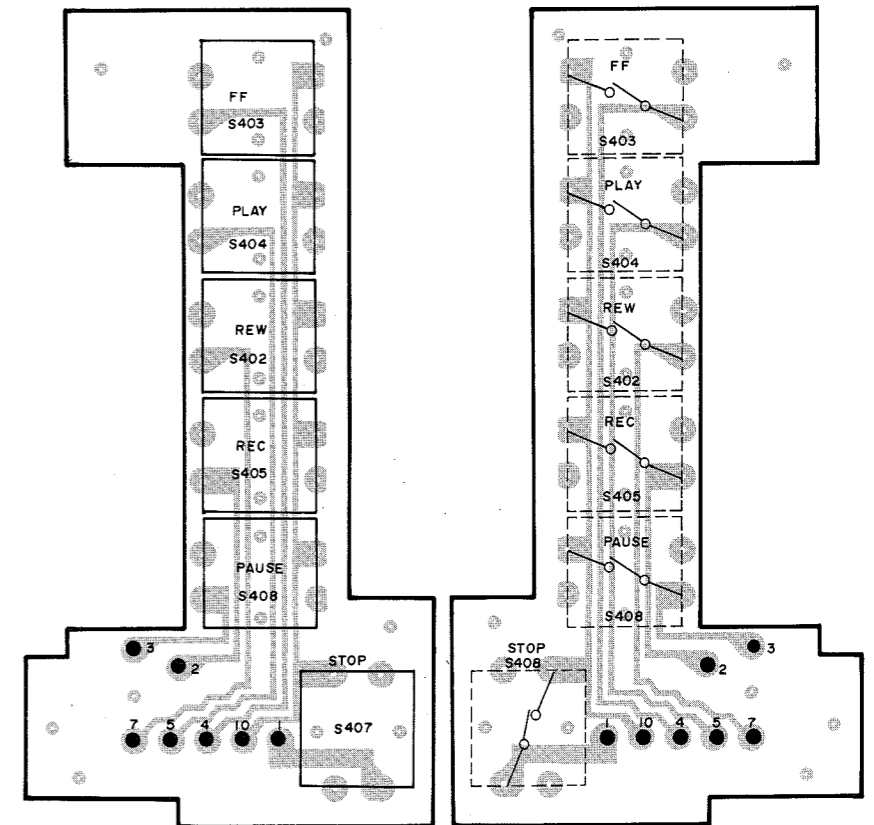


Top View



Bottom View

Key Switch P.C.Board



Top View

Bottom View

LED P.C. Board

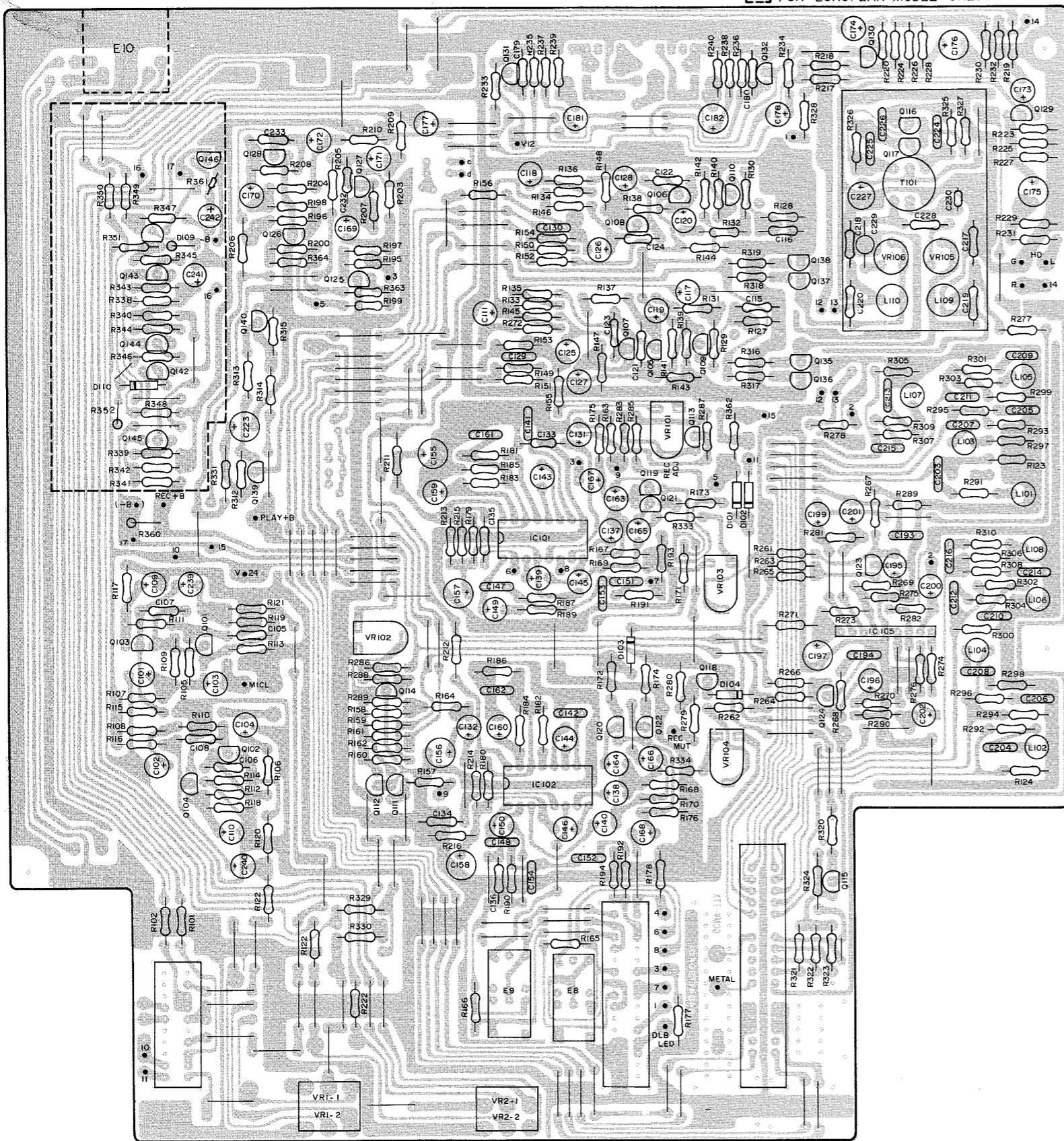


Top View

Bottom View

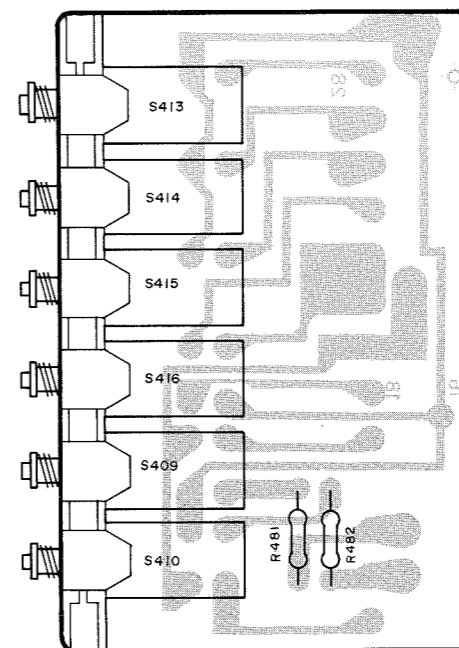
Master P.C.Board

FOR EUROPEAN MODEL ONLY



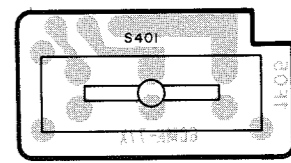
Top View

Counter Function Key P.C.Board



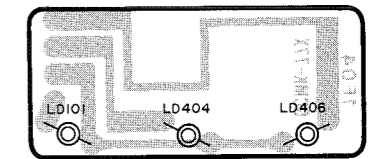
Top View

Timer Switch P.C.Board



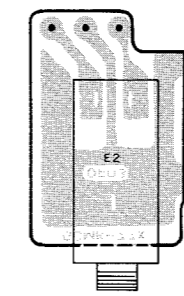
Top View

LED P.C.Board



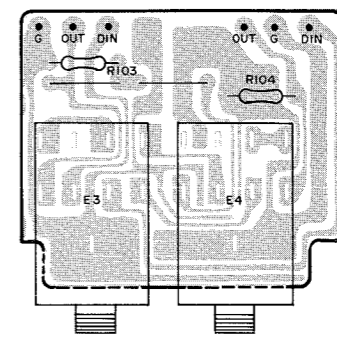
Top View

Headphone Jack P.C.Board



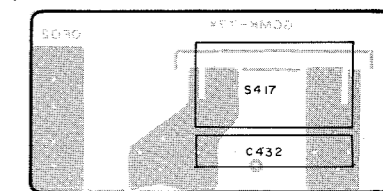
Top View

Mic Jack P.C.Board



Top View

Switch P.C. Board
(For U.S.A./Canadian Model only)

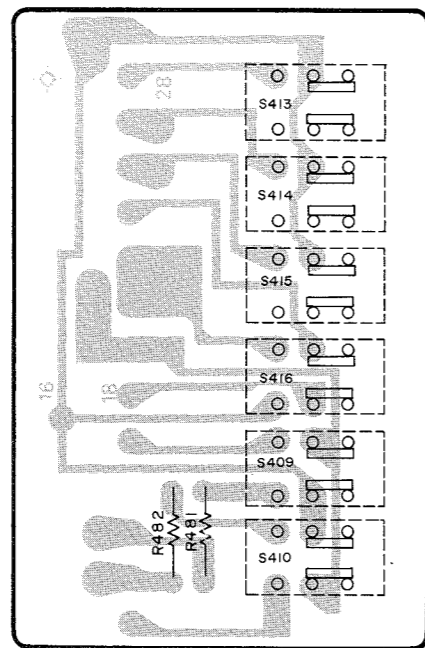


Top View

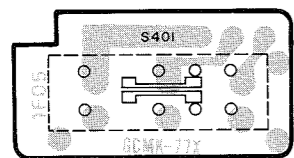
Master P.C. Board

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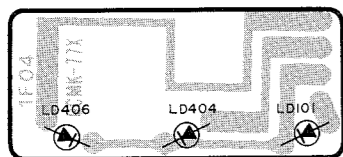
Counter Function Key P.C. Board



Timer Switch P.C. Board

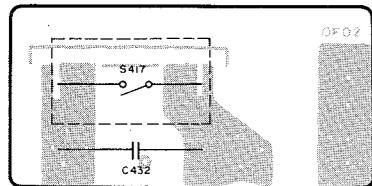


LED P.C. Board

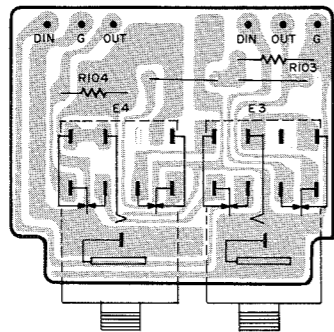


Switch P.C. Board

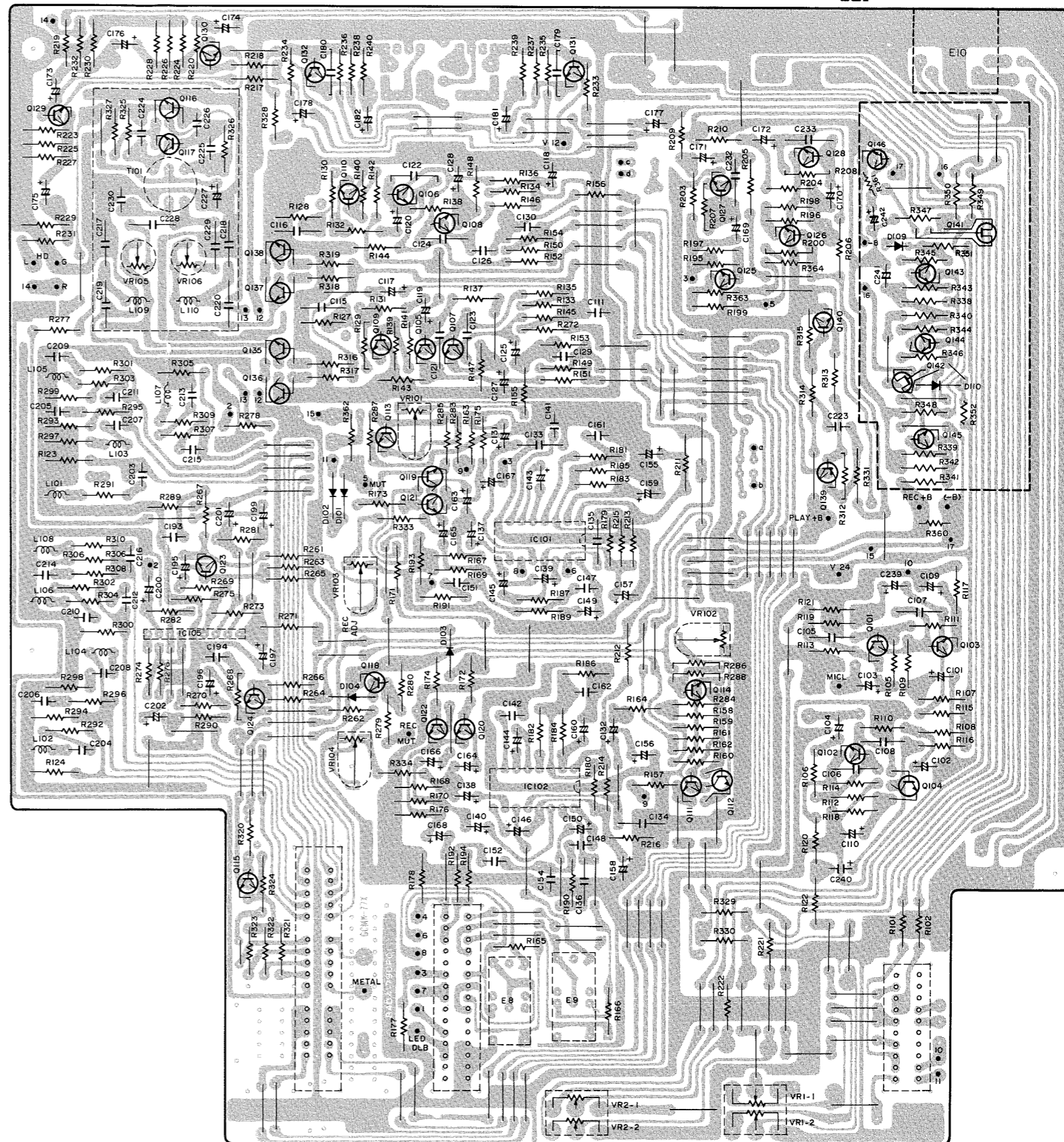
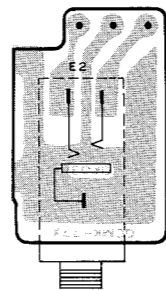
(For U.S.A./Canadian Model only)



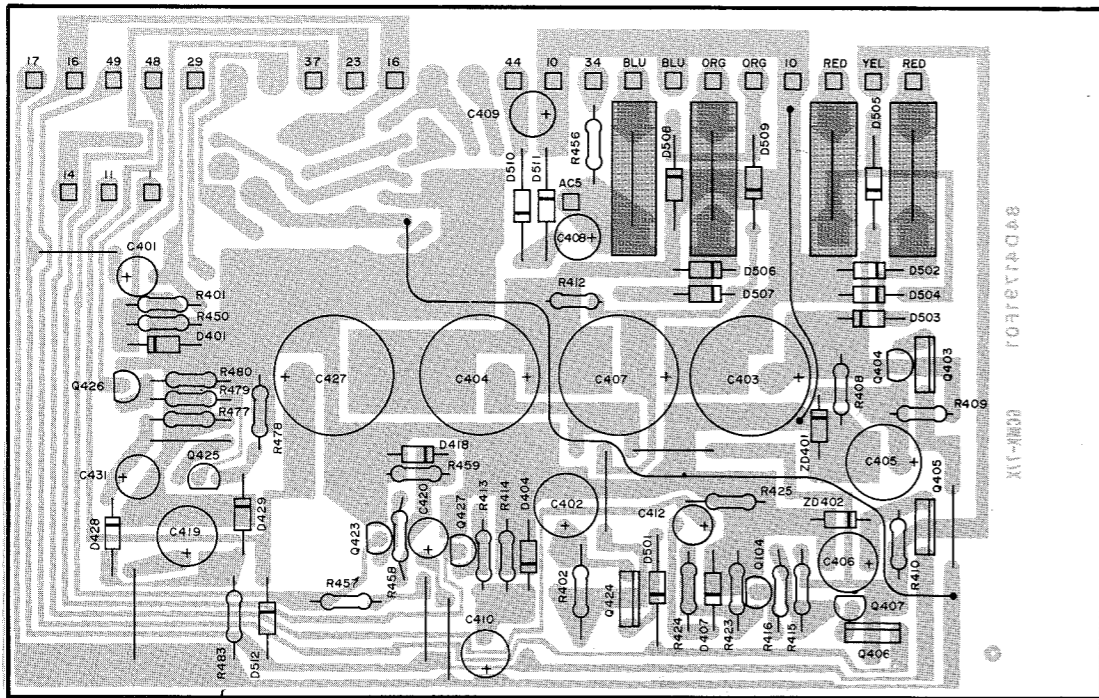
Mic Jack P.C. Board



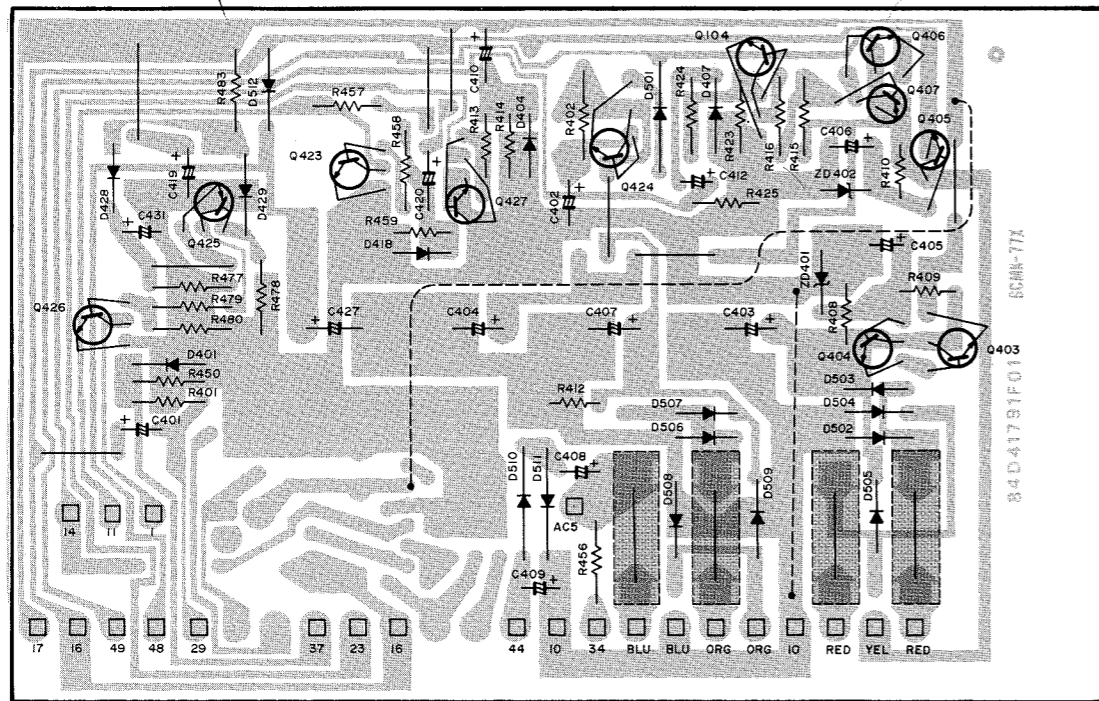
Headphone Jack P.C. Board



Power Switch P.C.Board



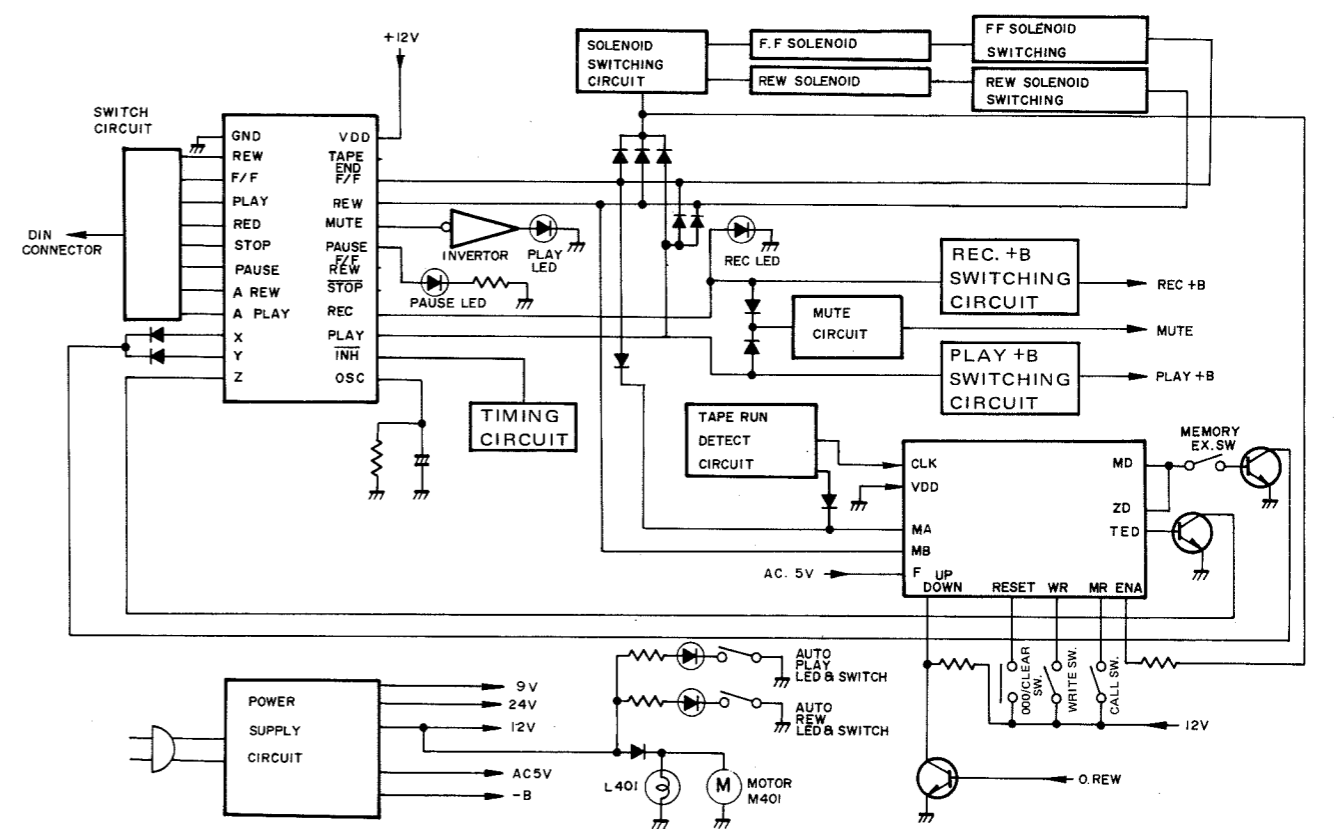
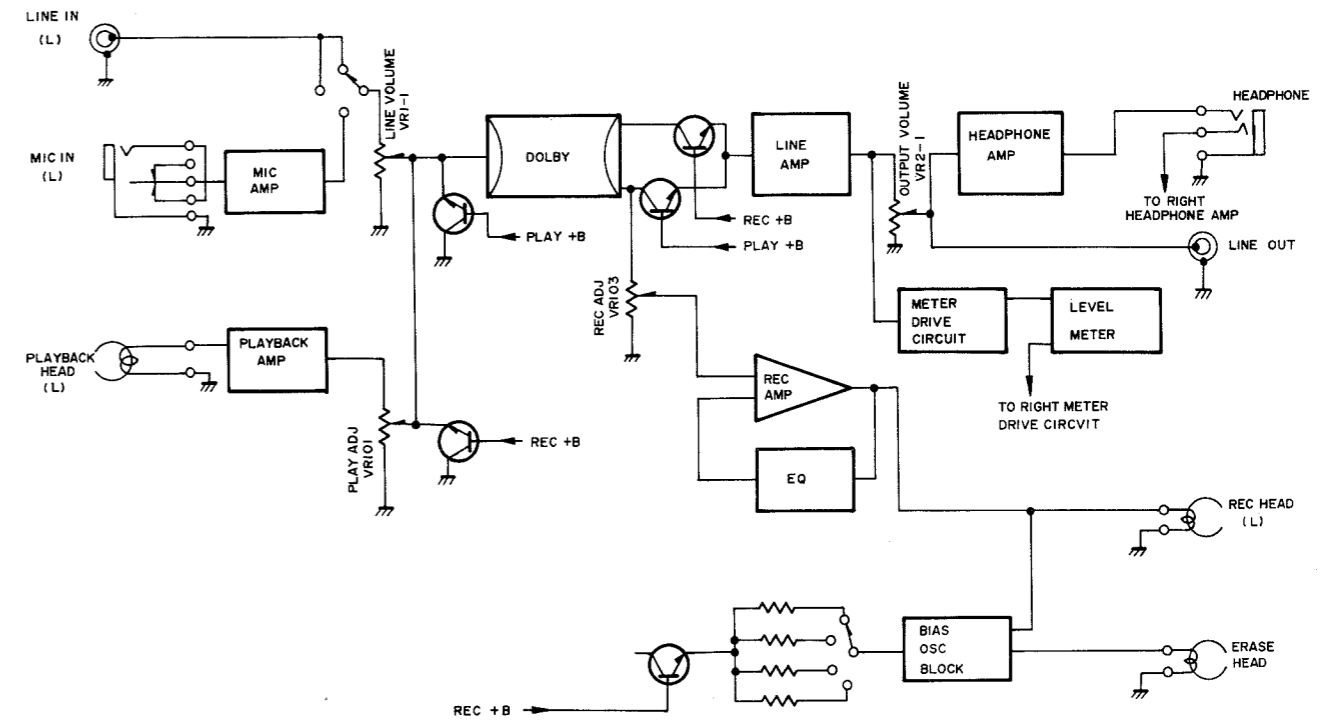
Top View



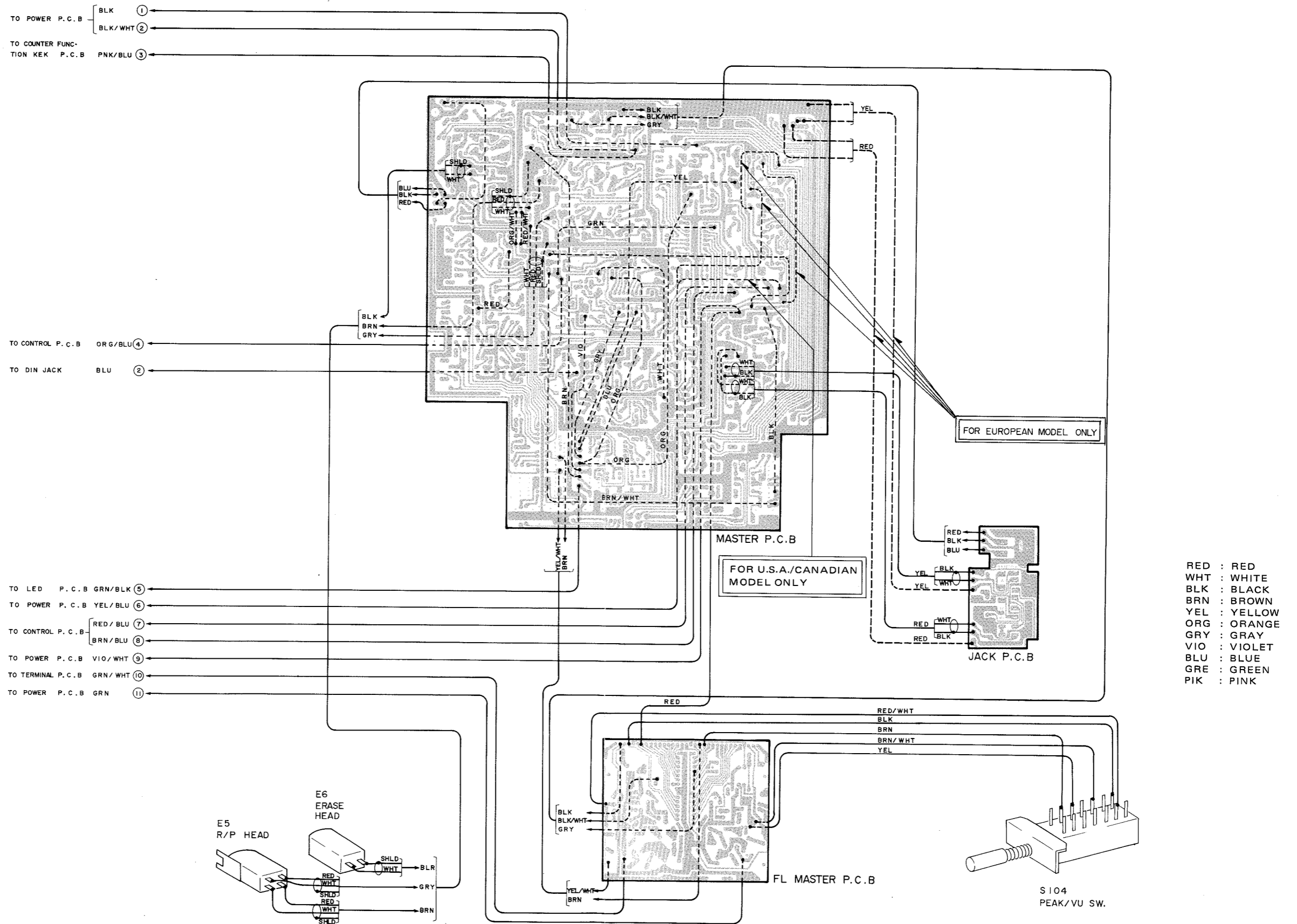
Bottom View

Jamper: U.S.A./CANADA Model Only
 Fuse: EUROPE Model Only
 Double Screen

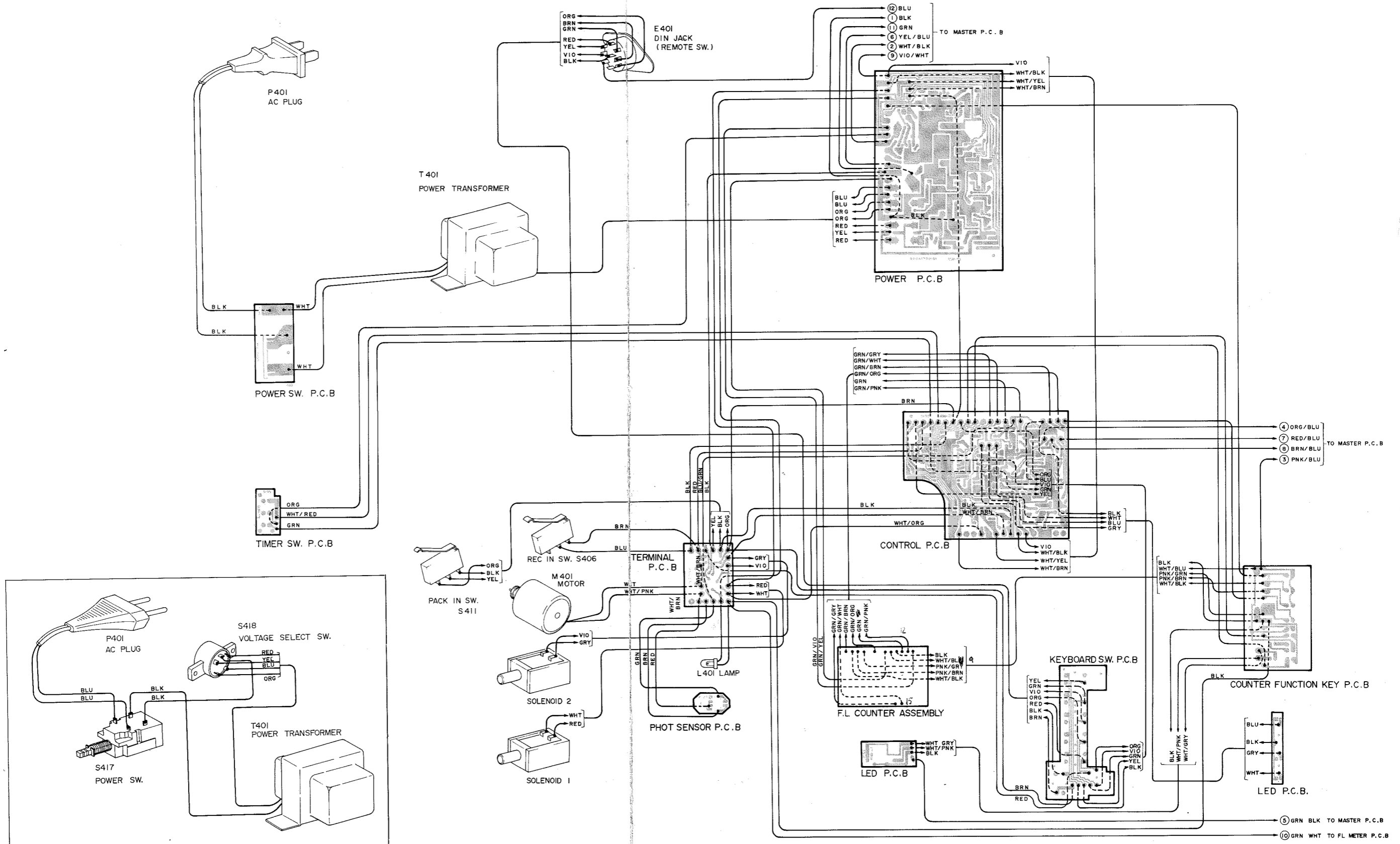
Block Diagram



Wiring Diagram (1/2)

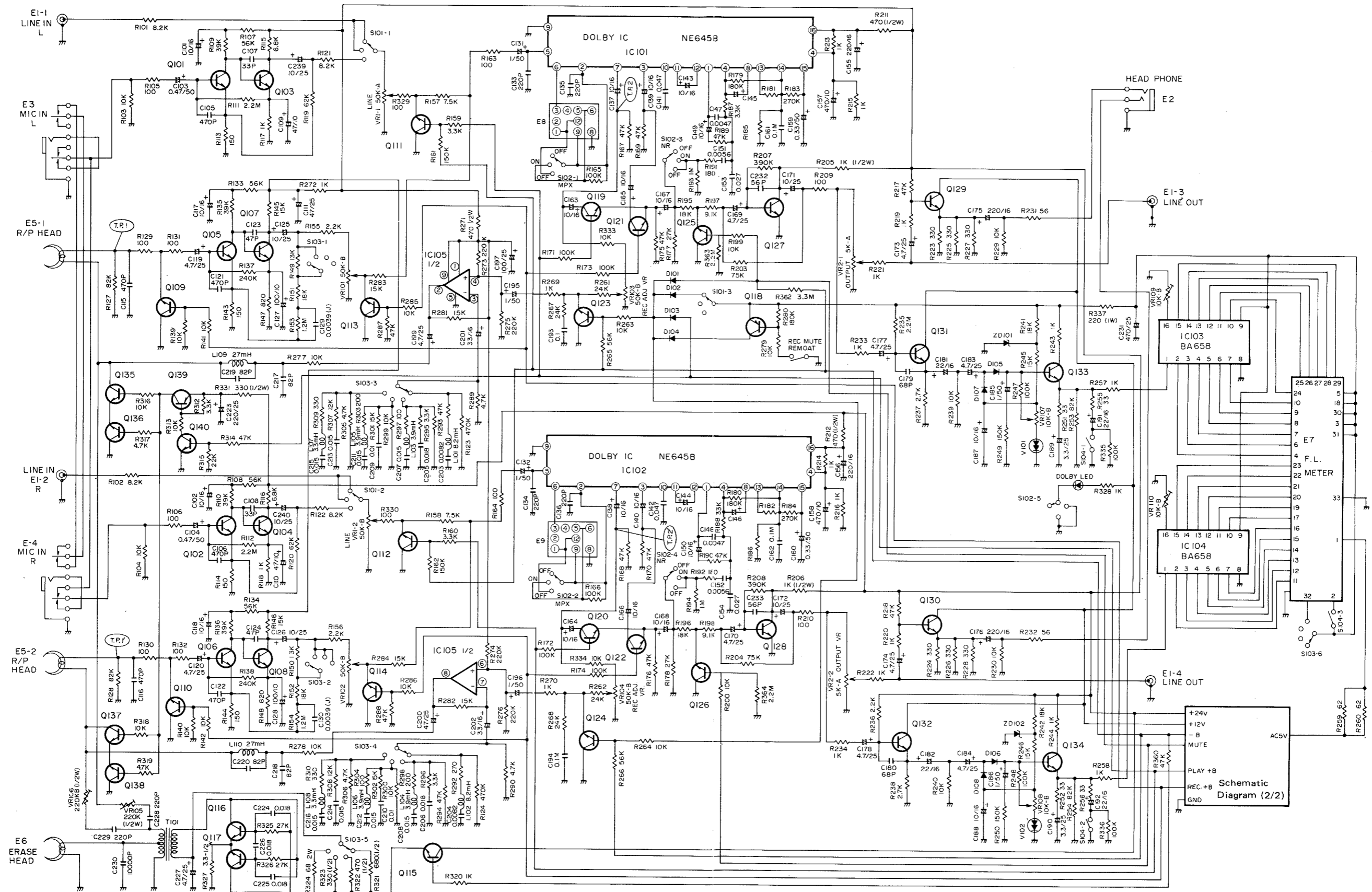


Wiring Diagram (2/2)



FOR EUROPEAN MODEL ONLY

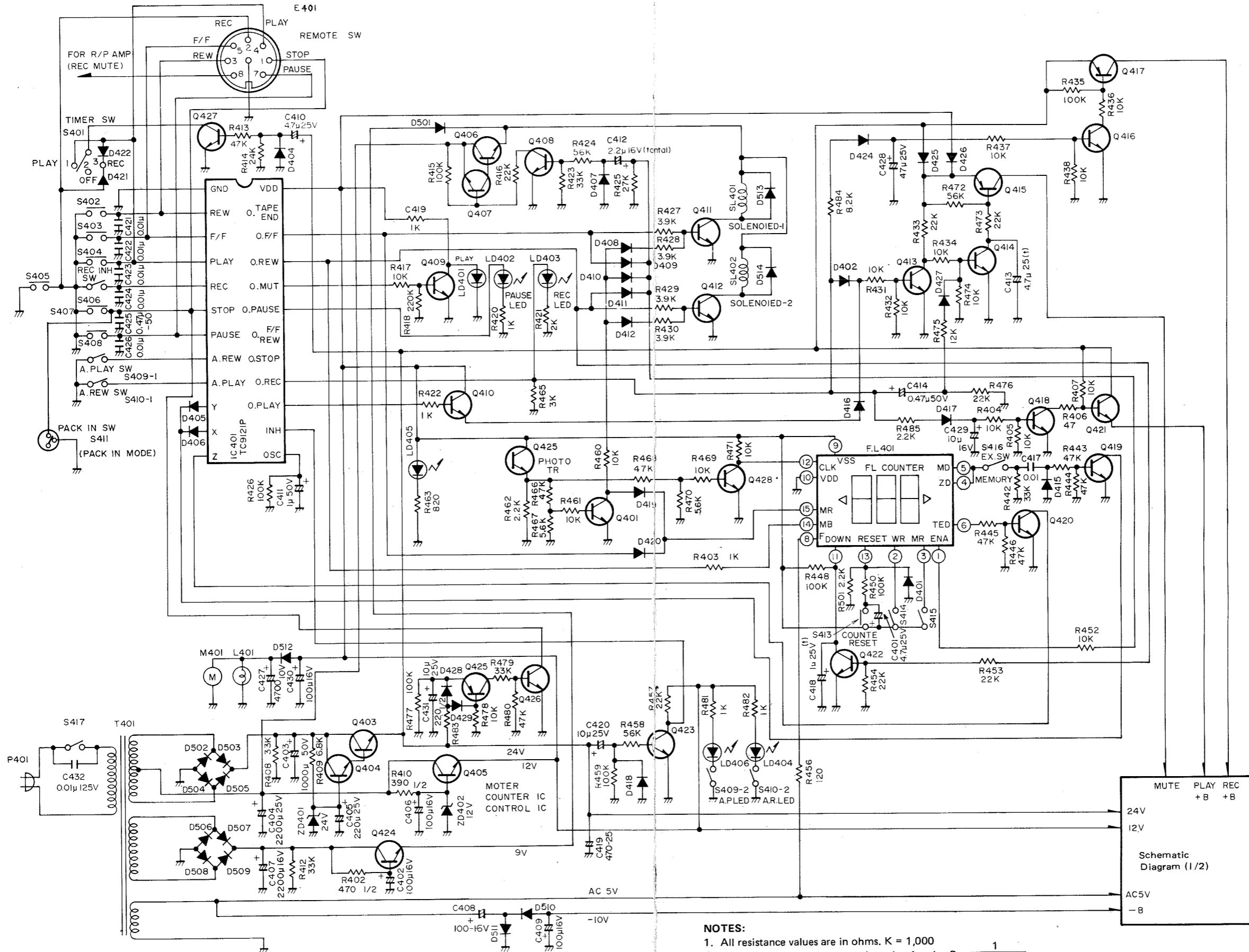
Schematic Diagram (1/2) U.S.A./CANADA



Schematic Diagram (2/2)

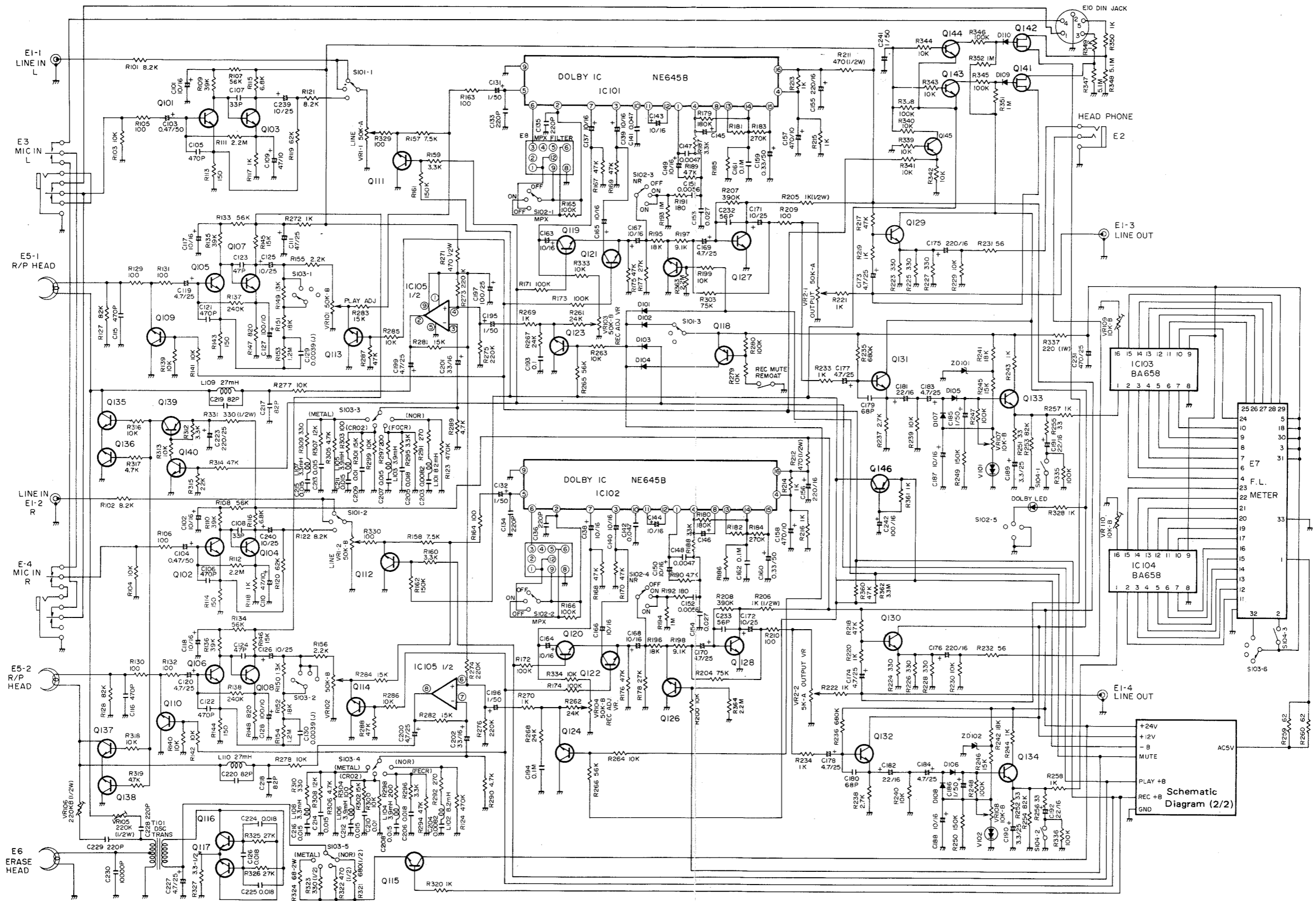
Schematic Diagram (2/2) U.S.A./CANADA

TM3140B (LEDs)

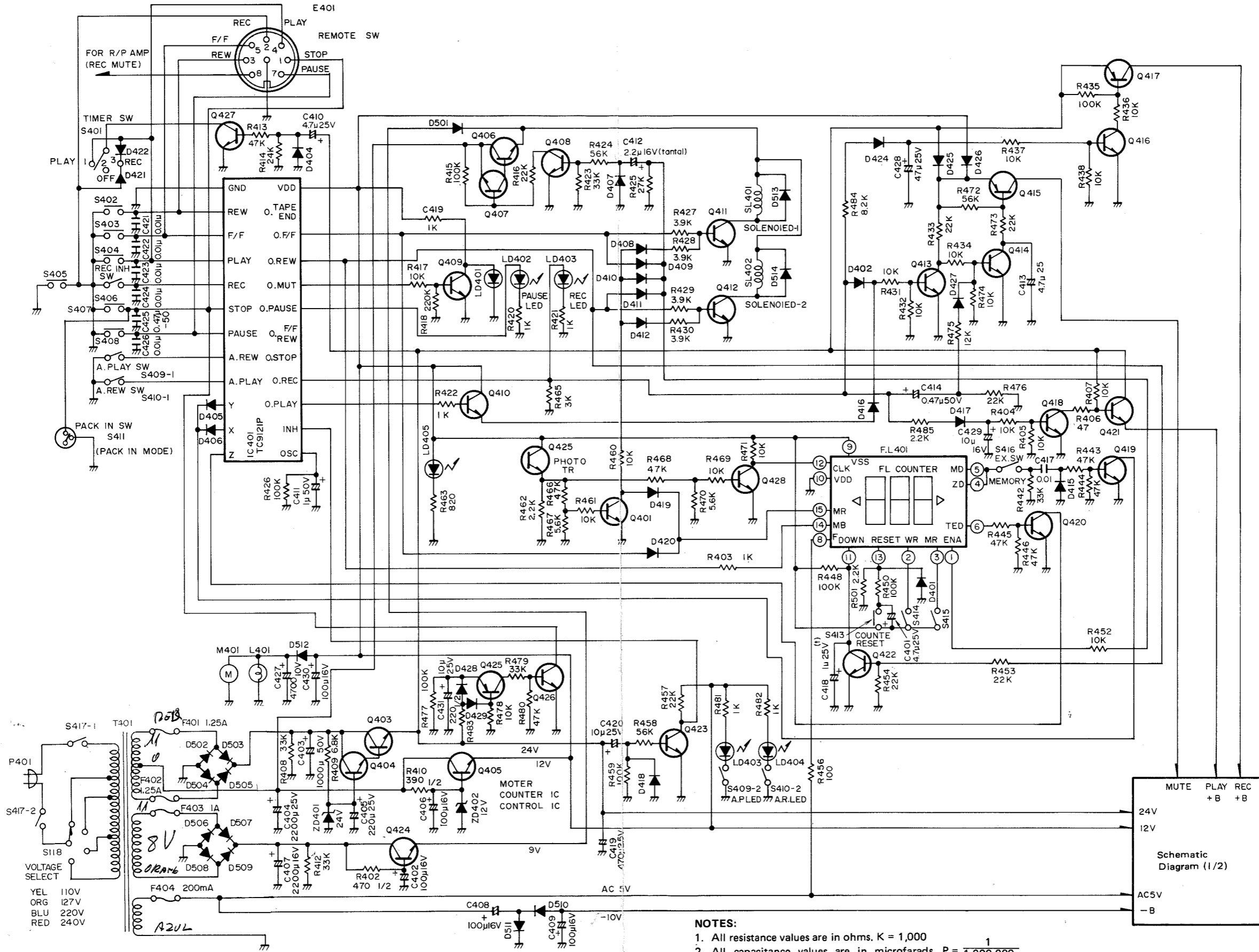


- NOTES:
1. All resistance values are in ohms. K = 1,000
 2. All capacitance values are in microfarads. P = $\frac{1}{1,000,000}$

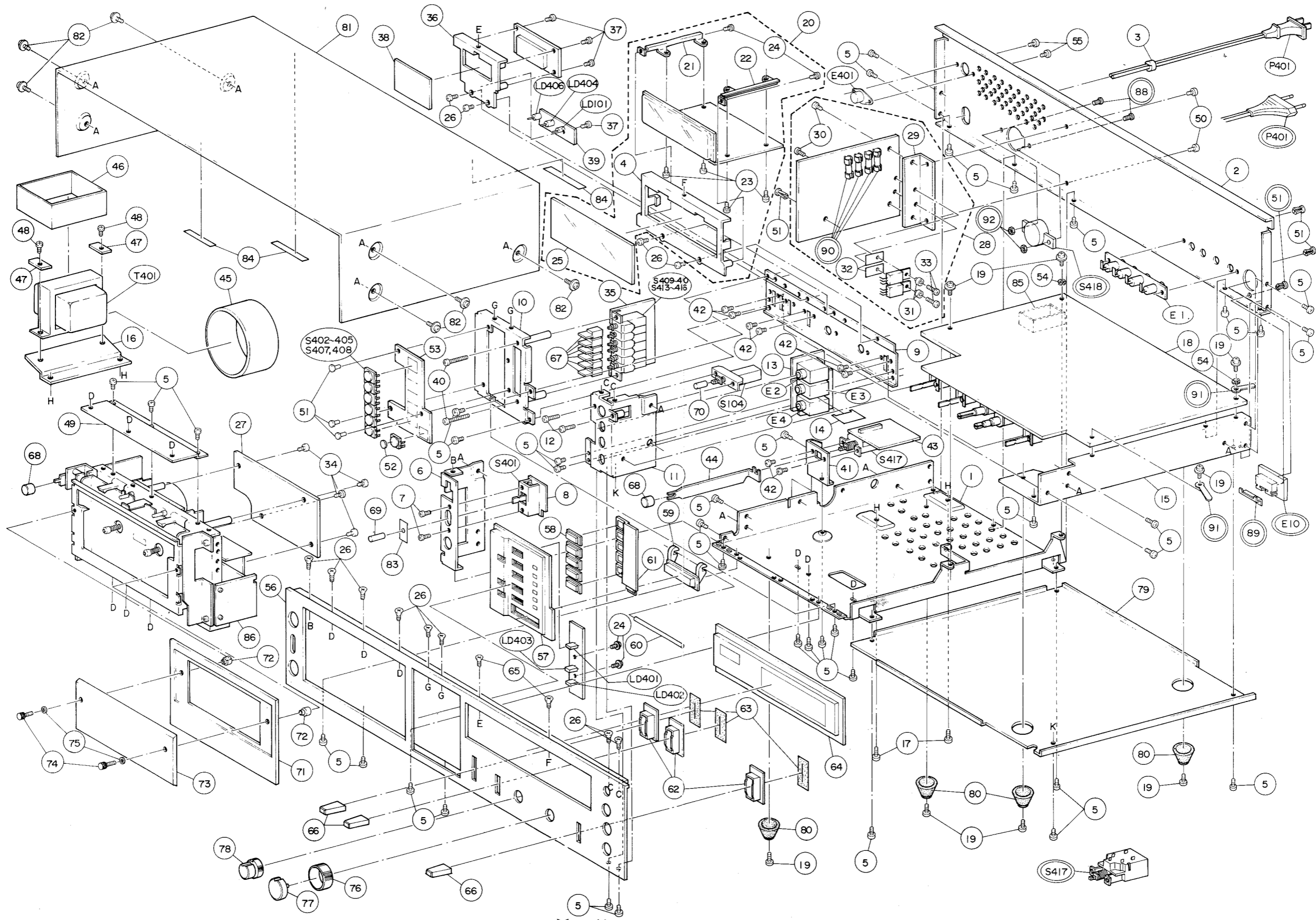
Schematic Diagram (1/2) EUROPE



Schematic Diagram (2/2) EUROPE

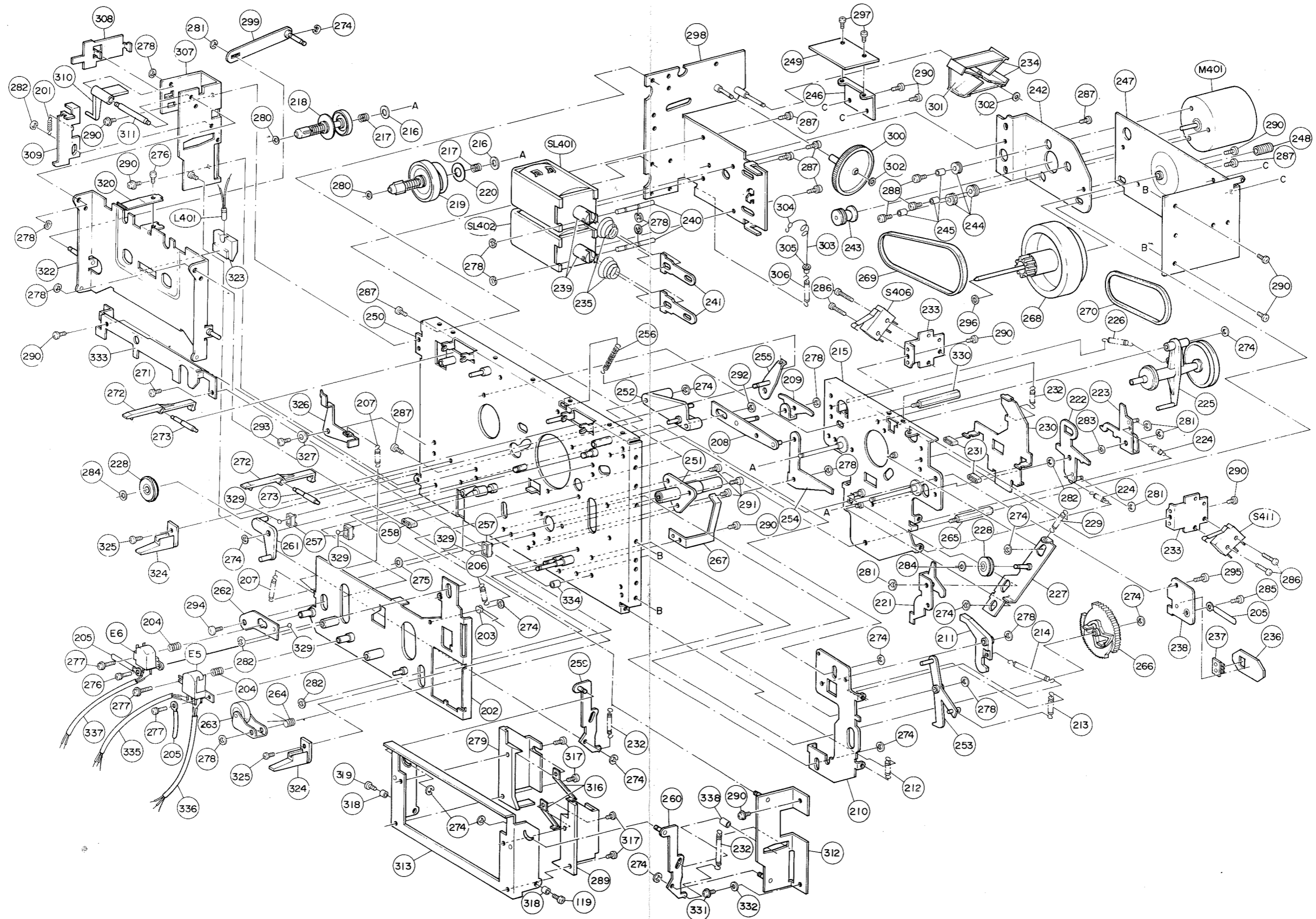


Exploded Views (General)




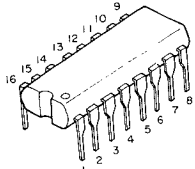
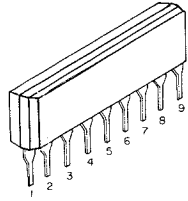
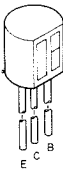
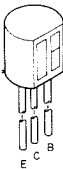
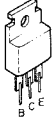

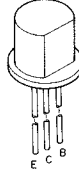
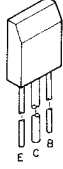
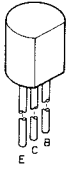
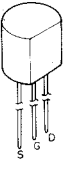
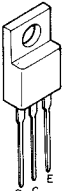
* Symbol numbers enclosed with double-circles are for European model only.

Exploded View (Mechanism)

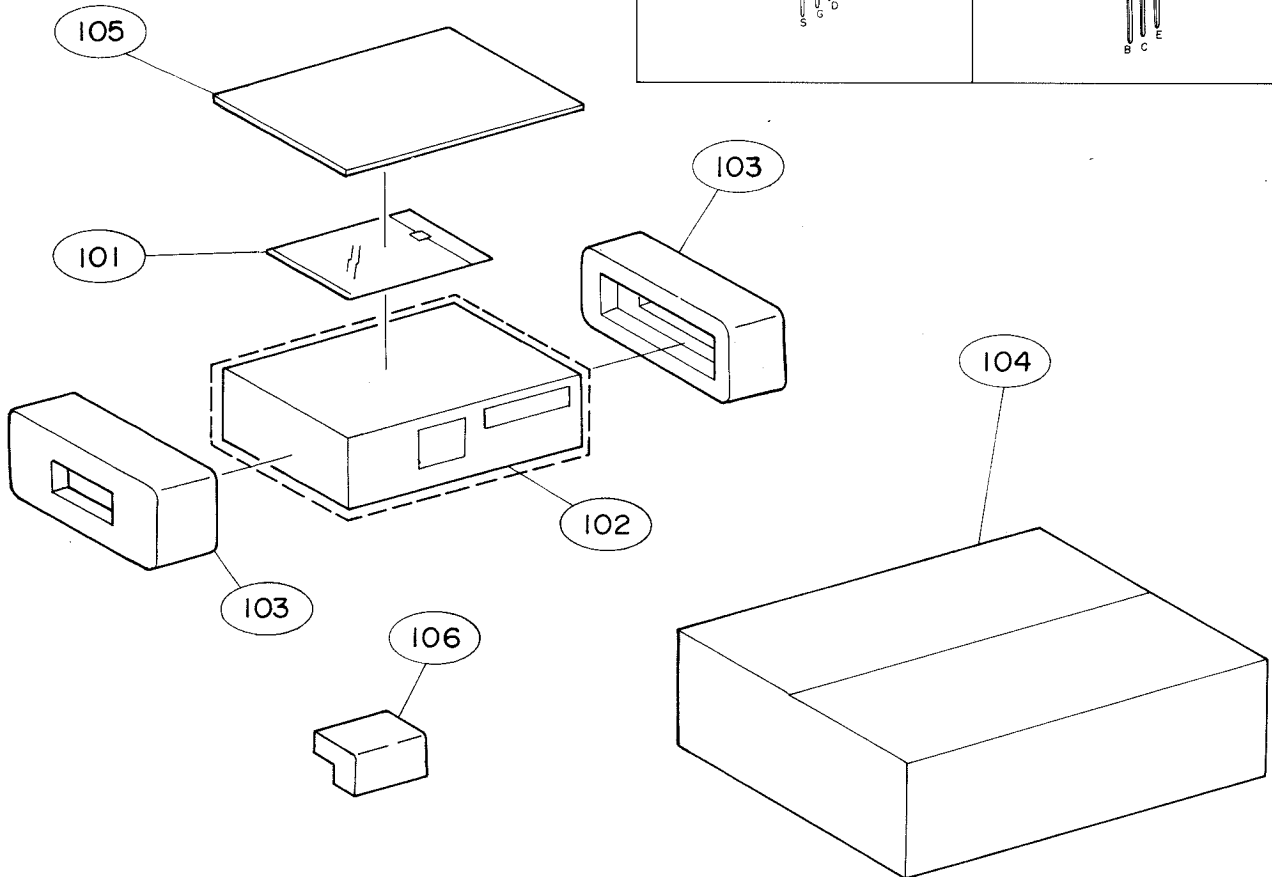


Semiconductor Lead Identifications

 For European Model only.

<p>NE645B: IC101, 102 BA658A: IC103, 104</p> 	<p>AN6551: IC105</p> 	<p>2SC900E: Q103, 104, Q119 to 128, Q131, 132, Q133, 134, Q140, Q143, 144, Q107 to 114, Q401, 404, Q408 to 410, Q413, 414 416, Q418, to 423, Q426 to 428.</p> <p>2SC1222: Q101, 102, Q105, 106</p> 	<p>2SA733BL: Q118, 139 Q417, Q145, 146</p> 	<p>2SD235Y: Q403, 405, 406</p> 
<p>2SC1890: Q135 to 138</p> 	<p>2SC732BL: Q140, 103, 104 Q119, to 128, 131 132, Q143, 144</p> 	<p>2SC509: Q116, 117</p> 	<p>2SC1318NCR: Q115, 129, 130 Q411, 412 2SC1684: Q401, 409, 410, 414, 416 Q418 to 422</p> 	
<p>2SK127: Q141, 142</p> 			<p>2SC1983: Q424</p> 	

Packing Method View



Parts List

Symbol No.	Part No.	Description
Master P.C.Board		
ICs		
IC101	51T40114T01	NE645B
IC102	51T40114T01	NE645B
IC105	51T40676F01	AN6551
Diodes		
D101	48S134816	Silicon 1S1555
D102	48S134816	Silicon 1S1555
D103	48S134816	Silicon 1S1555
D104	48S134816	Silicon 1S1555
Transistors		
Q101	48S40929P01	2SC1222
Q102	48S40929P01	2SC1222
Q103	48S40149P01	2SC900E
Q104	48S40149P01	2SC900E
Q105	48S40929P01	2SC1222
Q106	48S40929P01	2SC1222
Q107	48S40149P01	2SC900E
Q108	48S40149P01	2SC900E
Q109	48S40149P01	2SC900E
Q110	48S40149P01	2SC900E
Q111	48S40149P01	2SC900E
Q112	48S40149P01	2SC900E
Q113	48S40149P01	2SC900E
Q114	48S40149P01	2SC900E
Q115	48T40832F03	2SC1318NC-R
Q116	48S43239G02	2SC509
Q117	48S43239G02	2SC509
Q118	48T40081T03	2SA733BL
Q119	48S40149P01	2SC900E
Q120	48S40149P01	2SC900E
Q121	48S40149P01	2SC900E
Q122	48S40149P01	2SC900E
Q123	48S40149P01	2SC900E
Q124	48S40149P01	2SC900E
Q125	48S40149P01	2SC900E
Q126	48S40149P01	2SC900E
Q127	48S40149P01	2SC900E
Q128	48S40149P01	2SC900E

Symbol No.	Part No.	Description
Q129	48T40832F03	2SC1318NC-R
Q130	48T40832F03	2SC1318NC-R
Q131	48S40149P01	2SC900E
Q132	48S40149P01	2SC900E
Q135	48T43394P01	2SC1890
Q136	48T43394P01	2SC1890
Q137	48T43394P01	2SC1890
Q138	48T43394P01	3SC1890
Q139	48T40081T03	2SA733BL
Q140	48S40149P01	2SC900E
	2SC900E used as sameas 48S40246G01	2SC732BL
Transformer		
T101	25T40363F01	Transformer, OSC
Filters		
E8	51T42537U01	MPX Filter
E9	51T42537U01	MPX Filter
Coils		
L101	24S41448F84	Coil, Ind. Radial 8200 μ H
L102	24S41448F84	Coil, Ind. Radial 8200 μ H
L103	24S41448F80	Coil, Ind. Radial 3900 μ H
L104	24S41448F80	Coil, Ind. Radial 3900 μ H
L105	24S41448F80	Coil, Ind. Radial 3900 μ H
L106	24S41448F80	Coil, Ind. Radial 3900 μ H
L107	24S41448F79	Coil, Ind. Radial 3300 μ H
L108	24S41448F79	Coil, Ind. Radial 3300 μ H
L109	24T44499P01	Coil, Ind. Radial 27 μ H
L110	24T44499P01	Coil, Ind. Radial 27 μ H

Symbol No.	Part No.	Description
Switches		
S101	40T42671U01	Switch Lever 4C-3P
S102	40T43860U01	Switch Lever
S103	40T41789F01	Switch Lever SLR564
Capacitors		
C101	23S40657F10	Electrolytic 10 μ F 16V
C102	23S40657F10	Electrolytic 10 μ F 16V
C103	23S40657F27	Electrolytic 0.47 μ F 50V
C104	23S40657F27	Electrolytic 0.47 μ F 50V
C105	8S44505P45	Ceramic 470p F
C106	8S44505P45	Ceramic 470p F
C107	8S44505P25	Ceramic 33p F
C108	8S44505P25	Ceramic 33p F
C109	23S40657F07	Electrolytic 47 μ F 10V
C110	23S40657F07	Electrolytic 47 μ F 10V
C111	23D44333G26	Electrolytic 47 μ F 25V
C115	8S44505P45	Ceramic 470p F
C116	8S44505P45	Ceramic 470p F
C117	23S40657F10	Electrolytic 10 μ F 16V
C118	23S40657F10	Electrolytic 10 μ F 16V
C119	23S40657F16	Electrolytic 4.7 μ F 25V
C120	23S40657F16	Electrolytic 4.7 μ F 25V
C121	8S44505P45	Ceramic 470p F
C122	8S44505P45	Ceramic 470p F
C123	8S44505P29	Ceramic 47p F
C124	8S44505P29	Ceramic 47p F
C125	23S40657F17	Electrolytic 10 μ F 25V
C126	23S40657F17	Electrolytic 10 μ F 25V
C127	23D44333G30	Electrolytic 100 μ F 10V
C128	23S40657F08	Electrolytic 100 μ F 10V
C129	8S40656F08	Mylar 0.0039 μ F
C130	8S40656F08	Mylar 0.0039 μ F
C131	23S40657F28	Electrolytic 1 μ F 50V
C132	23S40657F28	Electrolytic 1 μ F 50V
C133	8S44505P41	Ceramic 220p F
C134	8S44505P41	Ceramic 220p F
C135	8S44505P41	Ceramic 220p F
C136	8S44505P41	Ceramic 220p F
C137	23S40657F10	Electrolytic 10 μ F 16V
C138	23S40657F10	Electrolytic 10 μ F 16V
C139	23S40657F10	Electrolytic 10 μ F 16V
C140	23S40657F10	Electrolytic 10 μ F 16V
C141	8S40656F21	Mylar 0.047 μ F
C142	8S40656F21	Mylar 0.047 μ F
C143	23S40657F10	Electrolytic 10 μ F 16V
C144	23S40657F10	Electrolytic 10 μ F 16V
C147	8S40656F09	Mylar 0.0047 μ F

Symbol No.	Part No.	Description
C148	8S40656F09	Mylar 0.0047 μ F
C149	23S40657F10	Electrolytic 10 μ F 16V
C150	23S40657F10	Electrolytic 10 μ F 16V
C151	8S40656F10	Mylar 0.0056 μ F
C152	8S40656F10	Mylar 0.0056 μ F
C153	8S40656F18	Mylar 0.027 μ F
C154	8S40656F18	Mylar 0.027 μ F
C155	23S41198U41	Electrolytic 220 μ F 16V
C156	23S41198U41	Electrolytic 220 μ F 16V
C157	23S41198U55	Electrolytic 470 μ F 10V
C158	23S41198U55	Electrolytic 470 μ F 10V
C159	23T40475U03	Electrolytic 0.33 μ F 50V
C160	23T40475U03	Electrolytic 0.33 μ F 50V
C161	8S40656F25	Mylar 0.1 μ F
C162	8S40656F25	Mylar 0.1 μ F
C163	23D44333G08	Electrolytic 10 μ F 16V
C164	23D44333G08	Electrolytic 10 μ F 16V
C165	23S40657F10	Electrolytic 10 μ F 16V
C166	23S40657F10	Electrolytic 10 μ F 16V
C167	23S40657F10	Electrolytic 10 μ F 16V
C168	23S40657F10	Electrolytic 10 μ F 16V
C169	23S40657F16	Electrolytic 4.7 μ F 25V
C170	23S40657F16	Electrolytic 4.7 μ F 25V
C171	23S40657F17	Electrolytic 10 μ F 25V
C172	23S40657F17	Electrolytic 10 μ F 25V
C173	23S40657F16	Electrolytic 4.7 μ F 25V
C174	23S40657F16	Electrolytic 4.7 μ F 25V
C175	23S41198U41	Electrolytic 220 μ F 16V
C176	23S41198U41	Electrolytic 220 μ F 16V
C177	23S40657F16	Electrolytic 4.7 μ F 25V
C178	23S40657F16	Electrolytic 4.7 μ F 25V
C179	8S44505P33	Ceramic 68pF 50V
C180	8S44505P33	Ceramic 68pF 50V
C181	23S40657F11	Electrolytic 22 μ F 16V
C182	23S40657F11	Electrolytic 22 μ F 16V
C193	8S40656F25	Mylar 0.1 μ F
C194	8S40656F25	Mylar 0.1 μ F
C195	23T40475U05	Electrolytic 1 μ F 50V
C196	23T40475U05	Electrolytic 1 μ F 50V
C197	23S41198U35	Electrolytic 100 μ F 25V
C199	23S40657F16	Electrolytic 4.7 μ F 25V
C200	23S40657F16	Electrolytic 4.7 μ F 25V
C201	23S40657F12	Electrolytic 33 μ F 16V
C202	23S40657F12	Electrolytic 33 μ F 16V
C203	8S40656F12	Mylar 0.0082 μ F
C204	8S40656F12	Mylar 0.0082 μ F
C205	8S40656F16	Mylar 0.018 μ F
C206	8S40656F16	Mylar 0.018 μ F
C207	8S40656F15	Mylar 0.015 μ F
C208	8S40656F15	Mylar 0.015 μ F
C209	8S40656F13	Mylar 0.01 μ F
C210	8S40656F13	Mylar 0.01 μ F
C211	8S40656F15	Mylar 0.015 μ F

Symbol No.	Part No.	Description
C212	8S44503P15	Mylar 0.015 μ F 50V
C213	8S40656F15	Mylar 0.015 μ F
C214	8S40656F15	Mylar 0.015 μ F
C215	8S40656F15	Mylar 0.015 μ F
C216	8S40656F15	Mylar 0.015 μ F
C217	8S44505P35	Ceramic 82p F
C218	8S44505P35	Ceramic 82p F
C219	6S44505P35	Ceramic 82p F
C220	6S44505P35	Ceramic 82p F
C223	23S41198U42	Electrolytic 220 μ F 25V
C224	8S40656F16	Mylar 0.018 μ F
C225	8S40656F16	Mylar 0.018 μ F
C226	8S40656F16	Mylar 0.018 μ F
C227	23S40657F16	Electrolytic 4.7 μ F 25V
C228	8S44505P41	Ceramic 220p F
C229	8S44505P41	Ceramic 220p F
C230	8T42081U49	Polyesthylene 10000pF
C232	8S44505P31	Ceramic 56p F
C233	8S44505P31	Ceramic 56p F
C239	23D44333G09	Electrolytic 10 μ F 25V
C240	23S40657F17	Electrolytic 10 μ F 25V
Resistors (All resistors are Carbon Film $\frac{1}{4}$ W, $\pm 5\%$ unless otherwise noted)		
R101	6S44593P87	8.2K ohm
R102	6S44593P87	8.2K ohm
R105	6S44593P41	100 ohm
R106	6S44593P41	100 ohm
R107	6S44594P08	56K ohm
R108	6S44593P08	56K ohm
R109	6S44594P04	39K ohm
R110	6S44594P04	39K ohm
R111	6S44594P46	2.2M ohm
R112	6S44594P46	2.2M ohm
R113	6S44593P45	150 ohm
R114	6S44593P45	150 ohm
R115	6S44593P85	6.8K ohm
R116	6S44593P85	6.8K ohm
R117	6S44593P65	1K ohm
R118	6S44593P65	1K ohm
R119	6S44594P09	62K ohm
R120	6S44594P09	62K ohm
R121	6S44593P87	8.2K ohm
R122	6S44593P87	8.2K ohm
R123	6S44594P30	470K ohm
R124	6S44594P30	470K ohm
R127	6S44594P12	82K ohm
R128	6S44594P12	82K ohm

Symbol No.	Part No.	Description
R129	6S44593P41	100 ohm
R130	6S44593P41	100 ohm
R131	6S44593P41	100 ohm
R132	6S44593P41	100 ohm
R133	6S44594P08	56K ohm
R134	6S44594P08	56K ohm
R135	6S44594P04	39K ohm
R136	6S44594P04	39K ohm
R137	6S44594P23	240K ohm
R138	6S44594P23	240K ohm
R139	6S44593P89	10K ohm
R140	6S44593P89	10K ohm
R141	6S44593P89	10K ohm
R142	6S44593P89	10K ohm
R143	6S44593P45	150 ohm
R144	6S44593P45	150 ohm
R145	6S44593P93	15K ohm
R146	6S44593P93	15K ohm
R147	6S44593P63	820 ohm
R148	6S44593P63	820 ohm
R149	6S44593P92	13K ohm
R150	6S44593P92	13K ohm
R151	6S44593P95	18K ohm
R152	6S44593P95	18K ohm
R153	6S44594P40	1.2M ohm
R154	6S44594P40	1.2M ohm
R155	6S44593P73	2.2K ohm
R156	6S44593P73	2.2K ohm
R157	6S44593P86	7.5K ohm
R158	6S44593P86	7.5K ohm
R159	6S44593P77	3.3K ohm
R160	6S44593P77	3.3K ohm
R161	6S44594P18	150K ohm
R162	6S44594P18	150K ohm
R163	6S44593P41	100 ohm
R164	6S44593P41	100 ohm
R165	6S44594P14	100K ohm
R166	6S44594P14	100K ohm
R167	6S44594P06	47K ohm
R168	6S44594P06	47K ohm
R169	6S44594P06	47K ohm
R170	6S44594P06	47K ohm
R171	6S44594P14	100K ohm
R172	6S44594P14	100K ohm
R173	6S44594P14	100K ohm
R174	6S44594P14	100K ohm
R175	6S44594P06	47K ohm
R176	6S44594P06	47K ohm
R177	6S44593P99	27K ohm
R178	6S44593P99	27K ohm
R179	6S44594P20	180K ohm
R180	6S44594P20	180K ohm
R183	6S44594P24	270K ohm
R184	6S44594P24	270K ohm

Symbol No.	Part No.	Description
R187	6S44593P77	3.3K ohm
R188	6S44593P77	3.3K ohm
R189	6S44594P06	47K ohm
R190	6S44594P06	47K ohm
R191	6S44593P47	180 ohm
R192	6S44593P47	180 ohm
R193	6S44594P38	1M ohm
R194	6S44594P38	1M ohm
R195	6S44593P95	18K ohm
R196	6S44593P95	18K ohm
R197	6S44593P88	9.1K ohm
R198	6S44593P88	9.1K ohm
R199	6S44593P89	10K ohm
R200	6S44593P89	10K ohm
R203	6S44594P10	68K ohm
R204	6S44504P10	68K ohm
R205	6D40801G63	1.0K ohm ½W
R206	6D40801G63	1.0K ohm ½W
R207	6S44594P28	390K ohm
R208	6S44594P28	390K ohm
R209	6S44593P41	100 ohm
R210	6S44593P41	100 ohm
R211	6D40801G55	470 ohm ½W
R212	6D40801G55	470 ohm ½W
R213	6S44593P65	1K ohm
R214	6S44593P65	1K ohm
R215	6S44593P65	1K ohm
R216	6S44594P65	1K ohm
R217	6S44594P06	47K ohm
R218	6S44594P06	47K ohm
R219	6S44593P65	1K ohm
R220	6S44593P65	1K ohm
R221	6S44593P65	1K ohm
R222	6S44593P65	1K ohm
R223	6S44593P53	330 ohm
R224	6S44593P53	330 ohm
R225	6S44593P53	330 ohm
R226	6S44593P53	330 ohm
R227	6S44593P53	330 ohm
R228	6S44593P53	330 ohm
R229	6S44593P89	10K ohm
R230	6S44593P89	10K ohm
R231	6S44593P35	56 ohm
R232	6S44593P35	56 ohm
R233	6S44593P65	1K ohm
R234	6S44593P65	1K ohm
R235	6S44594P46	2.2M ohm
R236	6S44594P46	2.2M ohm
R237	6S44593P75	2.7K ohm
R238	6S44593P75	2.7K ohm
R239	6S44593P89	10K ohm
R240	6S44593P89	10K ohm
R261	6S44593P98	24K ohm

Symbol No.	Part No.	Description
R262	6S44593P98	24K ohm
R263	6S44593P89	10K ohm
R264	6S44593P89	10K ohm
R265	6S44594P08	56K ohm
R266	6S44594P08	56K ohm
R267	6S44593P98	24K ohm
R268	6S44593P98	24K ohm
R269	6S44593P65	1K ohm
R270	6S44593P65	1K ohm
R271	6D40801G55	470 ohm ½W
R272	6S44593P65	1K ohm
R273	6S44594P22	220K ohm
R274	6S44594P22	220K ohm
R275	6S44594P22	220K ohm
R276	6S44594P22	220K ohm
R277	6S44593P89	10K ohm
R278	6S44503P89	10K ohm
R279	6S44593P89	10K ohm
R280	6S44594P14	100K ohm
R281	6S44593P93	15K ohm
R282	6S44593P93	15K ohm
R283	6S44593P93	15K ohm
R284	6S44593P93	15K ohm
R285	6S44593P89	10K ohm
R286	6S44593P89	10K ohm
R287	6S44594P06	47K ohm
R288	6S44594P06	47K ohm
R289	6S44593P81	4.7K ohm
R290	6S44593P81	4.7K ohm
R291	6S44593P51	270 ohm
R292	6S44593P51	270 ohm
R293	6S44594P06	47K ohm
R294	6S44594P06	47K ohm
R295	6S44593P77	3.3K ohm
R296	6S44593P77	3.3K ohm
R297	6S44593P48	200 ohm
R298	6S44593P48	200 ohm
R299	6S44593P89	10K ohm
R300	6S44593P89	10K ohm
R301	6S44593P93	15K ohm
R302	6S44593P93	15K ohm
R303	6S44593P41	100 ohm
R304	6S44593P41	100 ohm
R305	6S44593P81	4.7K ohm
R306	6S44593P81	4.7K ohm
R307	6S44593P91	12K ohm
R308	6S44593P91	12K ohm
R309	6S44593P53	330 ohm
R310	6S44593P53	330 ohm
R312	6S44593P77	3.3K ohm
R313	6S44593P89	10K ohm
R314	6S44594P06	47K ohm
R315	6S44593P97	22K ohm

Symbol No.	Part No.	Description
R316	6S44593P89	10K ohm
R317	6S44593P81	4.7K ohm
R318	6S44593P89	10K ohm
R319	6S44593P81	4.7K ohm
R320	6S44593P65	1K ohm
R321	6D40801G59	680 ohm ½W
R322	6D40801G55	470 ohm ½W
R323	6D40801G51	330 ohm ½W
R324	6C44652G08	Metal 68 ohm 2W
R325	6S44593P99	27K ohm
R326	6S44593P99	27K ohm
R327	6D40801G27	33 ohm ½W
R328	6S44593P65	1K ohm
R329	6S44593P41	100 ohm
R330	6S44593P41	100 ohm
R331	6D40801G51	330 ohm ½W
R333	6S44593P89	10K ohm
R334	6S44593P89	10K ohm
R360	6S41801P52	47K ohm
R362	6S44594P50	3.3M ohm
R363	6S44594P46	2.2M ohm
R364	6S44594P46	2.2M ohm
VR101	18C42061J15	Variable 50K ohm
VR102	18C42061J15	Variable 50K ohm
VR103	18C42061J15	Variable 50K ohm
VR104	18C42061J15	Variable 50K ohm
VR105	18T43406P01	Variable 220K ohm ½W
VR106	18T43406P01	Variable 220K ohm ½W
Fluorescent Meter P.C.Board		
ICs & Diodes		
IC103	51T44525U01	IC BA658A
IC104	51T44525U01	IC BA658A
ZD101	48T40059U01 or 48T40059U02	Zener HZ6A-1L Zener HZ6A-2L
ZD102	48T40059U01 or 48T40059U02	Zener HZ6A-1L Zener HZ6A-2L
D105	48B41768G01	Diode 1N60
D106	48B41768G01	Diode 1N60
D107	48B41668G01	Diode 1N60
D108	48B41768G01	Diode 1N60
E7	65T444064U01	F.L. Meter

Symbol No.	Part No.	Description
Transistors		
Q133	48S40149P01	Transistor 2SC900E
Q134	48S40149P01	Transistor 2SC900E
Capacitors		
C183	23D44333G05	Electrolytic 4.7 μF 25V
C184	23D44333G05	Electrolytic 4.7 μF 25V
C185	23D44333G01	Electrolytic 1 μF 50V
C186	23D44333G01	Electrolytic 1 μF 50V
C187	23D44333G08	Electrolytic 10 μF 16V
C188	23D44333G08	Electrolytic 10 μF 16V
C189	23D44333G02	Electrolytic 3.3 μF 25V
C190	23D44333G02	Electrolytic 3.3 μF 25V
C191	23D44333G13	Electrolytic 22 μF 16V
C192	23D44333G13	Electrolytic 22 μF 16V
C231	23S41198U57	Electrolytic 470 μF 25V
Resistors (All resistors are Carbon Film ¼W, ±5% unless otherwise noted)		
R241	6S40150T95	18K ohm
R242	6S40150T95	18K ohm
R243	6S40150T65	1K ohm
R244	6S40150T65	1K ohm
R245	6S40150T93	15K ohm
R246	6S40150T93	15K ohm
R247	6S40151T14	100K ohm
R248	6S40151T14	100K ohm
R249	6S40151T18	150K ohm
R250	6S40151T18	150K ohm
R251	6S40150T29	33 ohm
R252	6S40150T29	33 ohm
R253	6S40151T12	82K ohm
R254	6S40151T12	82K ohm
R255	6S40150T29	33 ohm
R256	6S40150T29	33 ohm
R257	6S40150T65	1K ohm
R258	6S40150T65	1K ohm
R259	6S40150T36	62 ohm
R260	6S40150T36	62 ohm
R335	6S40151T14	100K ohm
R336	6S40151T14	100K ohm
R337	6C44652G10	Metal 220 ohm 1W
V101	48S44107J01	Varistor
V102	48S44107J01	Varistor
VR107	18C41732G06	Variable 10K ohm
VR108	18C41732G06	Variable 10K ohm

Symbol No.	Part No.	Description
VR109	18C41732G06	Variable 10K ohm
VR110	18C41732G06	Variable 10K ohm
Control P.C.Board		
IC & Diodes		
IC401	51T40471U01	TC-9121P
D402	48S134816	Silicon 1S1555
D405	48S134816	Silicon 1S1555
D406	48S134816	Silicon 1S1555
D408	48S134816	Silicon 1S1555
D409	48S134816	Silicon 1S1555
D410	48S134816	Silicon 1S1555
D411	48S134816	Silicon 1S1555
D412	48S134816	Silicon 1S1555
D415	48S134816	Silicon 1S1555
D416	48S134816	Silicon 1S1555
D417	48S134816	Silicon 1S1555
D419	48S134816	Silicon 1S1555
D420	48S134816	Silicon 1S1555
D421	48S134816	Silicon 1S1555
D422	48S134816	Silicon 1S1555
D424	48S134816	Silicon 1S1555
D425	48S134816	Silicon 1S1555
D426	48S134816	Silicon 1S1555
D427	48S134816	Silicon 1S1555
Transistors		
Q401	48S40149P01	2SC900E
Q409	48S40149P01	2SC900E
Q410	48S40149P01	2SC900E
Q411	48T40832F04	2SC1318NC-S
Q412	48T40832F04	2SC1318NC-S
Q413	48S40149P01	2SC900E
Q414	48S40149P01	2SC900E
Q415	48T40081T03	2SA733BL
Q416	48S40149P01	2SC900E
Q417	48T40081T03	2SA733BL
Q418	48S40149P01	2SC900E
Q419	48S40149P01	2SC900E
Q420	48S40149P01	2SC900E
Q421	48S40149P01	2SC900E
Q422	48S40149P01	2SC900E
	2SC900E used as same as	
	48T42943U01	2SC1684
Q428	48S40149P01	2SC900E

Symbol No.	Part No.	Description
Capacitors		
C411	23D44333G01	Electrolytic 1 μ F 50V
C413	23T40654F27	Tantalum
C414	23C42909J02	Electrolytic 0.47 μ F
C417	8S40656F13	Mylar 0.010 μ F
C418	23S41059P07	Tantalum 1 μ F 35V
C421	8S40656F13	Mylar 0.01 μ F
C422	8S40656F13	Mylar 0.01 μ F
C423	8S40656F13	Mylar 0.01 μ F
C424	8S40656F13	Mylar 0.01 μ F
C425	23C42909J02	Electrolytic 0.47 μ F
C426	8S40656F13	Mylar 0.01 μ F
C428	23D44333G05	Electrolytic 4.7 μ F 25V
C429	23S40657F10	Electrolytic 10 μ F 16V
C430	23S41198U34	Electrolytic 100 μ F 16V
Resistors (All resistors are Carbon Film $\frac{1}{4}$W, \pm5% unless otherwise noted)		
R403	6S44593P65	1K ohm
R404	6S44593P89	10K ohm
R405	6S44593P89	10K ohm
R406	6S44593P33	47 ohm
R407	6S44593P89	10K ohm
R417	6S44593P89	10K ohm
R418	6S44594P22	220K ohm
R419	6S44593P65	1K ohm
R420	6S44593P65	1K ohm
R421	6S44593P72	2K ohm
R422	6S44593P65	1K ohm
R426	6S44594P14	100K ohm
R427	6S44593P79	3.9K ohm
R428	6S44593P79	3.9K ohm
R429	6S44593P79	3.9K ohm
R430	6S44593P79	3.9K ohm
R431	6S44593P89	10K ohm
R432	6S44593P89	10K ohm
R433	6S44593P97	22K ohm
R434	6S44593P89	10K ohm
R435	6S44594P14	100K ohm
R436	6S44593P89	10K ohm
R437	6S44593P89	10K ohm
R438	6S44593P89	10K ohm
R442	6S44594P02	33K ohm
R443	6S44594P06	47K ohm
R444	6S44594P06	47K ohm
R445	6S44594P06	47K ohm
R446	6S44594P06	47K ohm
R448	6S44594P14	100K ohm
R452	6S44593P89	10K ohm
R453	6S44593P97	22K ohm

Symbol No.	Part No.	Description
R454	6S44593P97	22K ohm
R460	6S44593P89	10K ohm
R461	6S44593P89	10K ohm
R465	6S44593P76	3K ohm
R466	6S44594P06	47K ohm
R467	6S44593P89	10K ohm
R468	6S44594P06	47K ohm
R469	6S44693P89	10K ohm
R470	6S44593P89	10K ohm
R471	6S44593P89	10K ohm
R472	6S44594P08	56K ohm
R473	6S44593P97	22K ohm
R474	6S44593P89	10K ohm
R475	6S44593P91	12K ohm
R476	6S44593P97	22K ohm
R484	6S41801P43	8.2K ohm
R485	6S41801P36	2.2K ohm

Power P.C.Board

Diodes

D401	48S134816	Silicon 1S1555
D404	48S134816	Silicon 1S1555
D407	48S134816	Silicon 1S1555
D418	48S134816	Silicon 1S1555
D428	48S134816	Silicon 1S1555
D429	48S134816	Silicon 1S1555
D501	48C40235G02	10E2
D502	48C40235G02	10E2
D503	48C40235G02	10E2
D504	48C40235G02	10E2
D505	48C40235G02	10E2
D506	48C40235G02	10E2
D507	48C40235G02	10E2
D508	48C40235G02	10E2
D509	48C40235G02	10E2
D510	48C40235G02	10E2
D511	48C40235G02	10E2
D512	48C40235G02	10E2
ZD401	48T40150U85 or 48T40150U86	Zener HZ24-1 Zener HZ24-2
ZD402	48T40150U61 or 48T40150U62	Zener HZ12A-1 Zener HZ12A-2

Symbol No.	Part No.	Description
Transistors		
Q403	48S40662G05	2SD235Y
Q404	48S40149P01	2SC900E
Q405	48S40662G05	2SD235Y
Q406	48S40662G05	2SD235Y
Q407	48T40081T03	2SA733BL
Q408	48S40149P01	2SC900E
Q423	48S40149P01	2SC900E
Q424	48T40469U01	2SC1983
Q425	48T40081T03	2SA733BL
Q426	48S40149P01	2SC900E
Q427	48S40149P01	2SC900E

Capacitors

C401	23S40657F16	Electrolytic 4.7 μ F 25V
C402	23S40657F14	Electrolytic 100 μ F 16V
C403	23S41198U67	Electrolytic 1000 μ F 50V
C404	23S41198U72	Electrolytic 2200 μ F 25V
C405	23S41198U42	Electrolytic 220 μ F 25V
C406	23S40657F14	Electrolytic 100 μ F 16V
C407	23S41198U71	Electrolytic 2200 μ F 16V
C408	23S40657F14	Electrolytic 100 μ F 16V
C409	23S40657F14	Electrolytic 100 μ F 16V
C410	23D44333G05	Electrolytic 4.7 μ F 25V
C412	23S40654F16	Tantalum 2.2 μ F 16V
C419	23S41198U57	Electrolytic 470 μ F 25V
C420	23S40657F17	Electrolytic 10 μ F 25V
C427	23S41198U79	Electrolytic 4700 μ F 10V
C431	23S40657F17	Electrolytic 10 μ F 25V

Resistors (All resistors are carbon film $\frac{1}{4}W \pm 5\%$ unless otherwise noted)

R401	6S44593P73	2.2K ohm
R402	6C42305J25	Metal 470 ohm $\frac{1}{2}W$
R408	6S44594P02	33K ohm
R409	6S44593P85	6.8K ohm
R410	6D40801G53	390 ohm $\frac{1}{2}W$
R412	6S44594P02	33K ohm
R413	6S44594P06	47K ohm
R414	6S44593P98	24K ohm
R415	6S44594P14	100K ohm
R416	6S44593P97	22K ohm
R423	6S44594P02	33K ohm
R424	6S44594P08	56K ohm
R425	6S44593P99	27K ohm
R450	6S44594P14	100K ohm
R456	6S44593P43	120 ohm
R457	6S44593P97	22K ohm
R458	6S44594P08	56K ohm
R459	6S44594P14	100K ohm
R477	6S44594P14	100K ohm

Symbol No.	Part No.	Description
R478	6S44593P89	10K ohm
R479	6S44594P02	33K ohm
R480	6S44594P06	47K ohm
R483	6C44652G10	Metal 220 ohm 1W
Miscellaneous Parts		
C432	8C42962P07	Capacitor Metal ECQ-UC 0.01 μ F
D513	48C40235G01	Diode 10E1
D514	48C40235G01	Diode 10E1
E1	9B44393P01	Plate, Phone (W/No, 18)
E2	9T40027F01	Jack, HD Phone
E3	9T42988F01	Jack, Mic 2C-2P
E4	9T42988F01	Jack, Mic 2C-2P
E5	88T40191F01	Head, Record/Playback
E6	88T40192F01	Head, Erase
E401	9T42751F01	Din Jack 8P
LD101	48T41787F01	LED (Grn)
LD401	48T41563F01	LED (Grn) 5x2
LD402	48T41563F01	LED (Grn) 5x2
LD403	48T41562F01	LED (Red) 5x2
LD404	48T41787F01	LED (Grn) 5x2
LD405	48T41632F01	LED (Grn) 5x2
LD406	48T41787F01	LED (Grn) 5x2
L401	65C42544U02	Lamp, Pilot
M401	59T40783T01	Motor
FL401	65T41785F01	Lamp FL Counter Assembly
P401	28T40916U01	Plug AC Cord
R103	6S44593P89	Res. Carbon Film 10K ohm
R104	6S44593P89	Res. Carbon Film 10K ohm
R462	6S44593P73	Res. Carbon Film 2.2K ohm
R463	6S44593P63	Res. Carbon Film 820 ohm
R481	6S44593P65	Resistor, Carbon Film 1Kohm
R482	6S44593P65	Resistor, Carbon Film 1Kohm
VR1	18T44716P01	Resistor, Variable
VR2	18T44715P01	Resistor, Variable

Symbol No.	Part No.	Description
S406	40C40349J02	Switch, Micro
S411	40C40349J02	Switch, Micro
S104	40T41784F01	Switch, Push Sut 4C-2PNS
S401	40T41786F01	Switch, Slide SSB023
S402	40T42904U01	Switch, AKC8S
S403	40T42904U01	Switch, AKC8S
S404	40T42904U01	Switch, AKC8S
S405	40T42904U01	Switch, AKC8S
S407	40T42904U01	Switch, AKC8S
S408	40T42904U01	Switch, AKC8S
S409	40T41788F01	Switch, Push SuF60
S410	40T41788F01	Switch, Push SuF60
S413	40T41788F01	Switch, Push SuF60
S414	40T41788F01	Switch, Push SuF60
S415	40T41788F01	Switch, Push SuF60
S416	40T41788F01	Switch, Push SuF60
S417	40T44111U01	Switch, Power
SL401	80T42892F01	Solenoid
SL402	80T42892F01	Solenoid
T401	25T41666F01	Transformer Power
Q425	48T41633F01	Transistor, Photo
General Assembly Parts		
1	27C41765F01	Chassis, Bottom
2	15D41766F01	Cover, Rear
3	43B41625J01	Stopper, Cord
4	7C41749F01	Frame, Meter
5	3S44205G05	Screw, Tapping (M3x5)
6	7B41762F01	Bracket, Slide Switch
7	3C40014G12	Screw, Machine (M2.6x4)
8	84D41791F05	Panel, Timer Switch
9	7B41763F01	Bracket, Switch & Volume
10	7B41757F01	Bracket, Control Panel
11	7B41761F01	Bracket, Microphone Jack
12	3B41643J01	Screw, Machine (M3x10.5)
13	84D41790F03	Panel, Microphone/Headphone
14	7A42249U02	Bracket, Shield
15	7C41760F01	Bracket, Side (R)
16	7A43087F01	Bracket, Transformer
17	3S44205G17	Screw, Tape Tite (M4x6, Blk)
18	1V41600F33	Assembly, Master Board
19	3C42723U01	Screw, Cap (M3x6)
20	1V41600F34	Assembly, Fluorescent Meter
21	7A40210F01	Bracket, Panel (A)
22	7A40211F01	Bracket, Panel (B)
23	3S40018G01	Screw, Tapping (M3x6)
24	3S40012G03	Screw, Tapping (M3x6)

Symbol No.	Part No.	Description
25	91A41642F01	Filter, Acryl
26	3S44205G16	Screw, Tap Tite (M3x6)
27	1V41600F35	Assembly, Control Panel
28	1V41600F36	Assembly, Power Panel
29	7A43683U01	Bracket, Heat Sink
30	3S40019G31	Screw, F-Lock (M3x5)
31	43A43182P01	Spacer, Transistor
32	14A40472G02	Insulator, Transistor
33	3A43146G01	Screw, Machine (M2x6)
34	3S40019G23	Screw, F-Lock (M2.5x6)
35	84D41791F03	Panel, Six Keys
36	7C41747F01	Frame, Counter
37	3S40012G09	Screw, Tapping (M3x8)
38	91A41642F03	Filter, Acryl
39	84D41791F04	Panel, LED
40	3S40011G53	Screw, Machine (M3x28)
41	7A40962U01	Bracket, Power Switch
42	3C40014G04	Screw, Machine (M3x6)
43	84D41790F02	Panel, Power Switch
44	45A44249U01	Lever, Switch
45	26A44163F01	Shield, Magnet Inside
46	26A42779F01	Shield, Magnet
47	7A40871F01	Support, Transformer
48	3S44205G09	Screw, Tap Tite (M4x8)
49	7A41758F01	Bracket, Deck
50	3S40011G17	Screw, Machine (M3x0.5x6)
51	5B41635J02	Rivet, Push
52	43A41006F02	Spacer, Polyslider
53	84B41889F01	Panel, Key Board
54	4S40072G16	Washer, T.L. (M3)
55	3S40011G91	Screw, Machine (M2.6x5)
56	64D41755F01	Panel, Front
57	7C41748F01	Frame, Control
58	36A41752F01	Knob, Cassette Control
59	36B41754F01	Knob, Stop
60	47A41779F01	Shaft, Stop
61	41A44247F01	Spring, Push Switch
62	7B41750F01	Frame, Knob
63	14A41646G01	Cover, Dust
64	61B41769F01	Meter, Crystal
65	3S40012G55	Screw, Tapping (M3x8, Flat)
66	36A41751F01	Knob, Lever
67	36A41753F01	Knob, Push Switch
68	36B41772F01	Knob, Eject
69	36A42464U01	Knob, Slide, Switch
70	36A43278U02	Knob, Push
71	64B41756F01	Panel, Door
72	46A41771F01	Stud, Door
73	61A41770F01	Crystal, Door
74	3A42493U01	Screw, Special (M4x13.5)
75	4A41014U01	Washer, Rubber
76	36B41776F01	Knob, Control (L)

Symbol No.	Part No.	Description
77	36B41777F01	Knob, Control (R)
78	36B41778F01	Knob, Control
79	15C41759F01	Cover, Bottom
80	75A42510U01	Pad, Rubber
81	15D41764F01	Cover, Top
82	3S40036U12	Screw, Tap Tite (M4x6)
83	15A42952U02	Cover, Switch
84	75A44632G04	Pad, Cushin
85	7B44494P01	Shield, OSC (W/No, 18)
86	81D42579F01	Cassette Deck (FM87E010)
87	84B41889F02	Panel, LED
Tape Mechanism Parts Assembly		
201	41T42885F01	Spring, Sub Chassis
202	1T42791F01	Assembly, Rivet Head Base
203	41T42852F01	Spring, Head Base
204	41T42861F01	Spring, Azimuth
205	29T42902F01	Lug, Cord Clamp
206	41T42905F01	Spring, Head Pull (B)
207	41T42906F01	Spring, Eject Arm
208	1T42795F01	Assembly, Solenoid Lever
209	45T42803F01	Arm, Solenoid
210	1T42794F01	Assembly, Shift Lever
211	45T42836F01	Arm, Head Chassis Lock
212	41T42856F01	Spring, Shift Lever
213	41T42855F01	Spring, Stopper Arm
214	41T42896F01	Spring, Record Lever
215	1T42796F01	Assembly, Sub Chassis
216	4T42908F01	Washer, Back Tension
217	41T42859F01	Spring, Back Tension
218	1T42824F01	Assembly, Supply Reel
219	1T42825F01	Assembly, Take-up Reel
220	64T42903F01	Plate, Reflector
221	45T42812F01	Arm, F.F./Rew Lock
222	1T42829F01	Assembly, F.F. Arm
223	1T42828F01	Assembly, Rew. Arm
224	41T42904F01	Spring, Idler
225	1T42826F01	Assembly, Pulley Arm
226	41T42894F01	Spring, Push Lever
227	1T42827F01	Assembly, FF Idler Plate
228	49T42834F01	Idler, Center
229	41T42855F01	Spring, Stopper Arm
230	45T42804F01	Lever, Brake
231	75T42864F01	Pad, Brake
232	41T42895F01	Spring, Lever
233	7T42893F01	Bracket, Micro Switch
234	7A40675F01	Bracket, Poise
235	41T42890F01	Spring, Solenoid
236	84A42689F01	Panel, Sensor
237	15A41630F01	Cover, Sensor
238	7T42815F01	Bracket, Photo Sensor

Symbol No.	Part No.	Description
239	47T42891F01	Plunger, Solenoid
240	22T42845F01	Pin, Solenoid
241	45T42805F01	Link, Plunger
242	7T42806F01	Bracket, Motor
243	49T42846F01	Pulley, Motor
244	75T42888F01	Cushion, Motor
245	42T42889F01	Ring, Motor
246	7T42814F01	Bracket, Deck Panel
247	1T42830F01	Assembly, Flywheel Bracket
248	3T42887F01	Screw, Bearing
249	84B42688F01	Panel, Deck
250	1T42790F01	Assembly, Chassis
251	15T42865F01	Housing, Capstan
252	45T42837F01	Arm, Shift
253	45T42879F01	Arm, Stopper
254	45T42802F01	Arm, Play
255	1T42793F01	Assembly, Play Idler Lever
256	41T42881F01	Spring, Cam
257	15T42842F01	Holder, Ball
258	43T42882F01	Bush, Rubber
259	1T42820F01	Assembly, Cassette Arm (L)
260	1T42823F01	Assembly, Cassette Arm (R)
261	45T42835F01	Arm, Play Idler
262	41T42883F01	Spring, Ball
263	1T42792F01	Assembly, Pinch Roller
264	41T42853F01	Spring, Pinch Roller
265	47T42847F01	Rod, Motor
266	44T42843F01	Gear, Shift
267	41T42801F01	Spring, Reset
268	49T42866F01	Flywheel
269	42T42862F01	Belt, Main
270	42T42863F01	Belt, Sub
271	3S44205G08	Screw, Tapping (M3x12)
272	45T42884F01	Arm, Record Safety
273	47T42844F01	Shaft, Record Arm
274	4C42091G11	Washer, "C"
275	43A44303P01	Washer, Oil Seal
276	3C40014G07	Screw, Machine (M2x4)
277	3S40019G06	Screw, F-Lock (M2x6)
278	4C242091G05	Washer "C"
279	15T42839F01	Holder, Cassette (L)
280	4A41345P02	Washer
281	4C42091G06	Washer, "C"
282	4C42091G04	Washer, "C"
283	4S40075G12	Washer
284	4A41345P03	Washer, Lock
285	3C40014G02	Screw, Machine (M2x6)
286	3S40019G17	Screw, F-Lock (M2.3x10)
287	3S40019G29	Screw, F-Lock (M3x4)
288	3C40121T06	Screw, Machine (M2.6x8)
289	15T42840F01	Holder, Cassette (R)
290	3S44205G12	Screw, Tap Tite (M3x4)
291	3S44205G03	Screw, Tap Tite (M3x8)
292	4C42091G03	Washer, "C"

Symbol No.	Part No.	Description
293	3S44205G01	Screw, Tapping (M3x6)
294	3C40014G19	Screw, Machine (M2.6x5)
295	3S40011G88	Screw, Machine (M3x5)
296	4S40075G09	Washer (STW)
297	3S40036U03	Screw, Tap Tite (M3x6)
298	1T42797F01	Assembly, Solenoid Bracket
299	1T42798F01	Assembly, Dumper Link
300	44B40208T01	Gear, Drive
301	44B40207T01	Gear, Drive
302	4A41345P01	Washer, Lock
303	30S43803G05	Cord, Dial
304	41T42854F01	Spring, Hook
305	5A44852G08	Eyelet
306	41T42857F01	Spring, Dumper
307	1T42799F01	Assembly, Cassette Bracket(L)
308	45T42809F01	Lever, Eject
309	64T42811F01	Plate, Cassette Lock
310	45T42838F01	Arm, Eject
311	47T42849F01	Shaft, Eject Arm
312	1T42822F01	Assembly, Cassette Bracket(R)
313	15T42818F01	Case (B), Cassette
314		— Not Used —
315		— Not Used —
316	41T42808F01	Spring, Cassette Case (A)
317	3S40011G65	Screw, Machine (M3x4)
318	43T42850F01	Collar, Door
319	3S44205G34	Screw, Tap Tite (M2.6x5)
320	41T42807F01	Spring, Cassette Case (B)
321		— Not Used —
322	1T42821F01	Assembly, Tray
323	61T42841F01	Lens, Lamp
324	7T42833F01	Guide, Cassette
325	3S44205G29	Screw, Tap Tite (M2.6x6)
326	45T42810F01	Arm, Eject Safety
327	43T42851F01	Collar, Arm
328		— Not Used —
329	43A41182P01	Ball, Steel (2)
330	47T42848F01	Rod, Panel (A)
331	3S44205G05	Screw, Tap Tite (M3x5)
332	41T42860F01	Spring, Clamp
233	15B42591F01	Cover, Head Base
334	43A41289U02	Sleeve, Cushion
335	30B44668J12	Shield, Cord Wire (Brn)
336	30B44668J13	Shield, Cord Wire (Gry)
337	30T43888U08	Shield, Cord Wire (Blk)
338	75A44238P01	Pad, Brake

Symbol No.	Part No.	Description
Packing Assembly Parts		
101	1V41600F23	Assembly, Pamphlet
101-1	56B40230G14	Sack, Polyethylene
101-2	75A44469P01	Head Cleaning Tip
101-3	68P40880F23	Owner's Manual
101-4	1V44200J30	Assembly, Kit
101-4-1	28C42374J02	Cord, Output
101-4-2	56B40230G16	Sack, Polyethylene
102	56B40442T03	Packing, Front Frame
103	56C41774F01	Tray, Packing
104	56C44246U46	Carton, Packing
105	56D41118J23	Pad, Packing
106	56A43694F01	Tray, Packing

Parts List (For European Model)

This list shows different or additional parts only from/to the U.S.A./Canadian model.

Symbol No.	Part No.	Description
Master P.C. Board		
Transistors & Diodes		
Q141	48T42538U01	FET, 2SK127
Q142	48T42538U01	FET, 2SK127
Q143	48S40149P01 or 48S40246G01	Transistor, 2SC900E Transistor, 2SC732 (BL)
Q144	48S40149P01 or 48S40246G01	Transistor, 2SC900E Transistor, 2SC732 (BL)
Q145	48T40081T03	Transistor, 2SA733
Q146	48T40081T03	Transistor, 2SA733
D109	48S134816	Diode, Silicon 1S1555
D110	48S134816	Diode, Silicon 1S1555
Capacitors		
C241	23S40657F28	Electrolytic, 1 μ F 50V
C242	23S40657F14	Electrolytic, 100 μ F 16V
Resistors (All resistors are carbon film, 1/4W, \pm5% unless otherwise noted)		
R338	6S44594P14	100K ohm
R339	6S44593P89	10K ohm
R340	6S44593P89	10K ohm
R341	6S44593P89	10K ohm
R342	6S44593P89	10K ohm
R343	6S44593P89	10K ohm
R344	6S44593P89	10K ohm
R345	6S44594P14	100K ohm
R346	6S44594P14	100K ohm
R347	6S44594P55	5.1M ohm
R348	6S44594P55	5.1M ohm
R349	6S44593P65	1K ohm
R350	6S44593P65	1K ohm
R351	6S44594P38	1M ohm
R352	6S44594P38	1M ohm
R361	6S44593P65	1K ohm
Power P.C. Board		
R456	6S44593P41	Resistor, Carbon Film, 100 ohm 1/4W

Symbol No.	Part No.	Description
Miscellaneous Parts		
C432		— Not Used —
E10	9T40584T01	Jack, DIN
F401	65T42077U17	Fuse, Semko (1.25A)
F402	65T42077U17	Fuse, Semko (1.25A)
F403	65T42077U16	Fuse, Semko (1A)
F404	65T42077U09	Fuse, Semko (200mA)
P401	28B40832P01	Plug, AC Cord (Semko)
S417	40B41998P02	Switch, Power
S418	40T40705T01	Switch, Voltage Select
T401	25T42754F01	Transformer, Power
General Assembly Parts		
2	15D41766F05	Cover, Rear
3	43B41625J02	Stopper, Cord
43	84D41790F02	— Not Used —
56	64D41755F02	Panel, Front
88	3S40011G93	Screw, Machine (M3x8)
89	7A40703T01	Support, Din Jack
90	9A40961P01	Holder, Fuse
91	29C41045P03	Lug, Wrap Around
92	2S40000G12	Nut, Hex (M3x0.5)
Packing Assembly Parts		
104	56C42357F21	Carton, Packing

