

The Harman Kardon Model CD91

Manual No. 51B

ULTRAWIDEBAND LINEAR PHASE CASSETTE DECK

Technical Manual



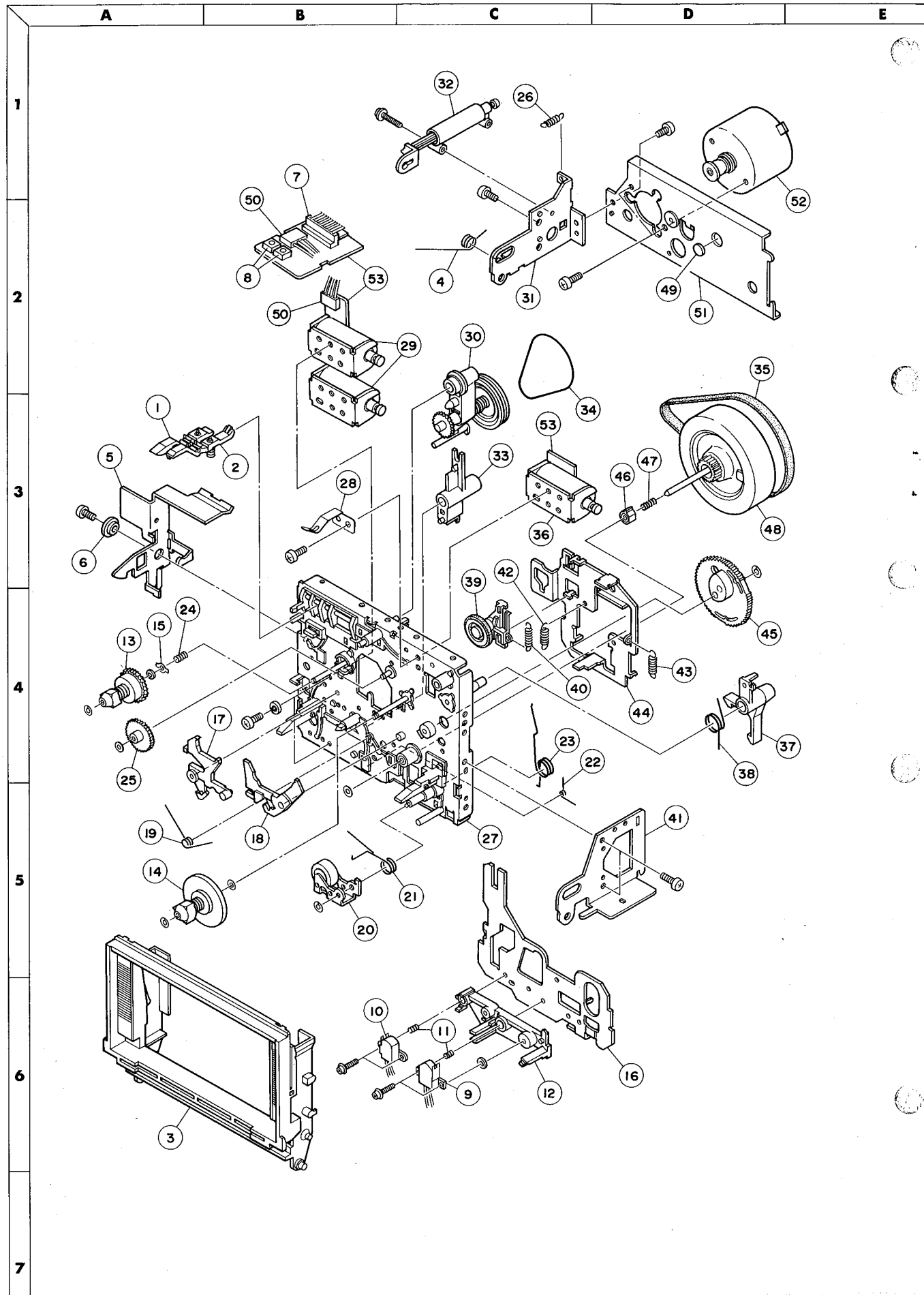
SUPPLEMENTARY MANUAL

THE CASSETTE MECHANISM WAS REVISED AT SERIAL NUMBER 27001. FOLLOWING IS THE COMPLETE PARTS LIST AND ASSEMBLY DRAWINGS OF THE REVISED CASSETTE MECHANISM. ALSO, SOME REVISIONS IN THE CIRCUITRY ARE INCORPORATE. REFER TO TECHNICAL MANUAL NO. 51A FOR ALL OTHER REPLACEMENT PARTS AND SERVICE INFORMATION EXCEPT FOR THE CHANGES AS NOTED IN THIS SUPPLEMENT.

harman/kardon

240 CROSSWAYS PARK WEST, WOODBURY, N.Y. 11797
1112-H15251B1 P-088412 1250 PRINTED IN JAPAN

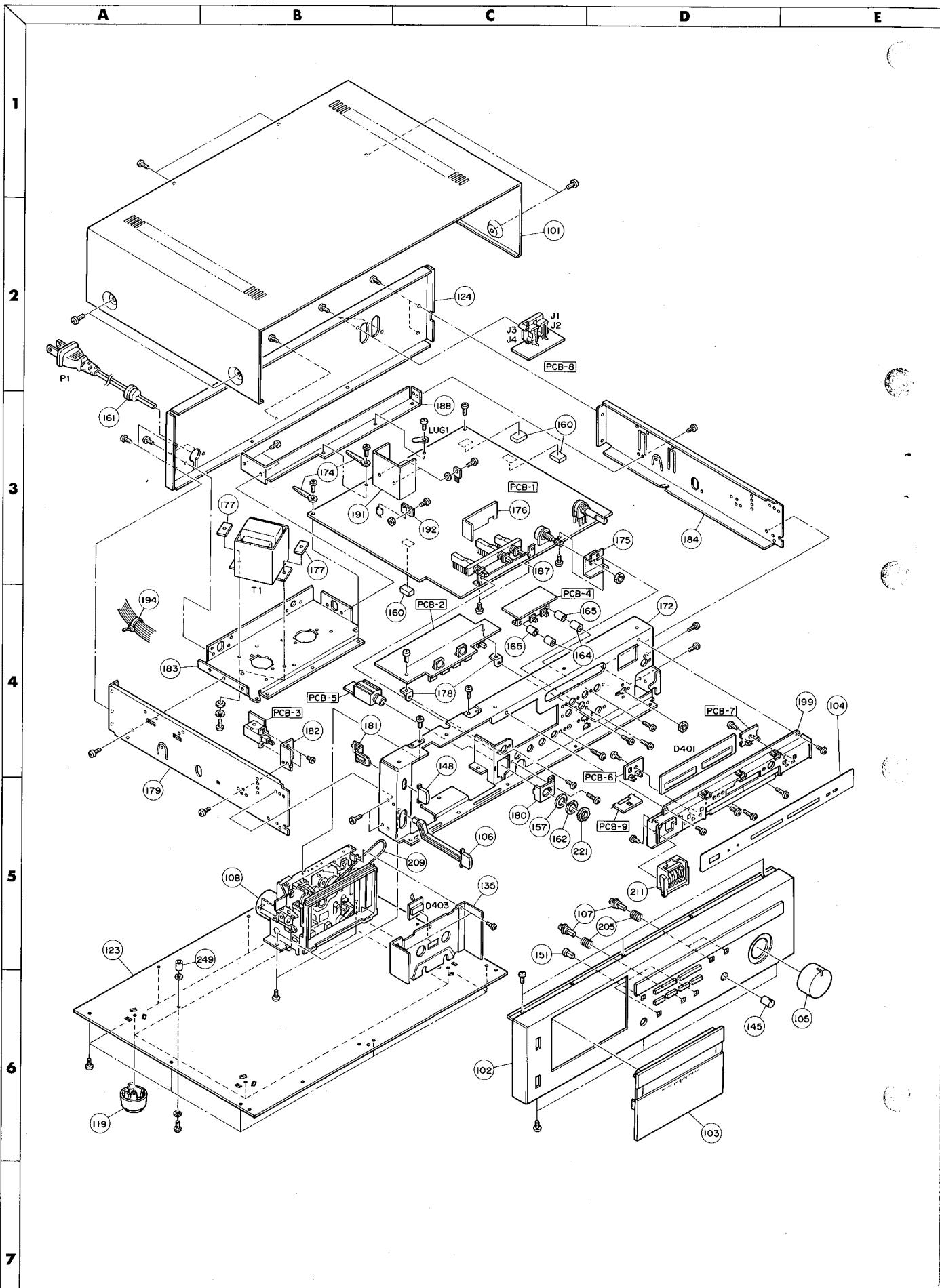
CASSETTE MECHANISM EXPLODED VIEW



CASSETTE MECHANISM PARTS LIST

Ref. No.	Part No.	Description
1	F245-011	Record Arm
2	F244-011	Switch Arm
3	FD28S-14	Cassette Support
4	FK568-11	Spring, Door
5	FC30K-11	Eject Lock Arm
6	FM296-11	Spacer
7	KY130-11	Connector, 8-Pin
8	UE13K-11	Switch
9	FU161-13	Head, Record/Playback
10	FU192-11	Head, Erase
11	FK572-11	Spring, Azimuth
12	FD23C-13	Spacer, Head
13	F105-020	Supply Reel Assembly
14	F123-026	Take-up Reel Assembly
15	FC29K-11	Spring Holder
16	FC29N-13	Head Base
17	FD24H-12	Brake Arm (L)
18	FD24K-12	Brake Arm (R)
19	FK18U-11	Spring, Brake
20	F014-075	Pinch Roller
21	FK18S-11	Spring, Pinch Roller
22	FK18V-11	Spring, Solenoid Arm
23	FK18T-14	Spring, Assist
24	FK11F-47	Spring, Back Tension
25	FN14B-12	Idler Gear
26	FK18M-11	Spring, Eject Lock Arm
27	F011-163	Chassis Assembly
28	FC29E-11	Spring, Cassette
29	PKA16112	Solenoid, F. FWD, REW.
30	FR17M-13	Clutch Assembly
31	FC29F-11	Bracket, Dumper
32	FP472-11	Dumper Assembly
33	FD23B-12	F. FWD/REW. Solenoid Arm
34	FP463-11	Sub-Belt
35	FF14A-11	Main Belt
36	PKA16113	Solenoid, Play
37	FD23E-12	Play Arm
38	FK18W-12	Spring, Play Arm
39	FR17N-11	Idler Assembly
40	FK18R-11	Spring, Idler
41	FC29G-11	Bracket, Door
42	FK18N-11	Spring, Head Base
43	FK18P-11	Spring, Assist Base
44	FC29M-12	Assist Base
45	FN14C-12	Play Gear
46	FD24G-12	Collar
47	FK11F-51	Spring, Flywheel
48	FR17E-11	Flywheel Assembly
49	UJ11S-11	Spacer
50	WH20C-01	Connector with Lead Wire, 4-Pin
51	FC29H-15	Bracket, Motor
52	F064-129	Motor
53	FP12T-12	Connector Panel

GENERAL UNIT EXPLODED VIEW



GENERAL UNIT PARTS LIST

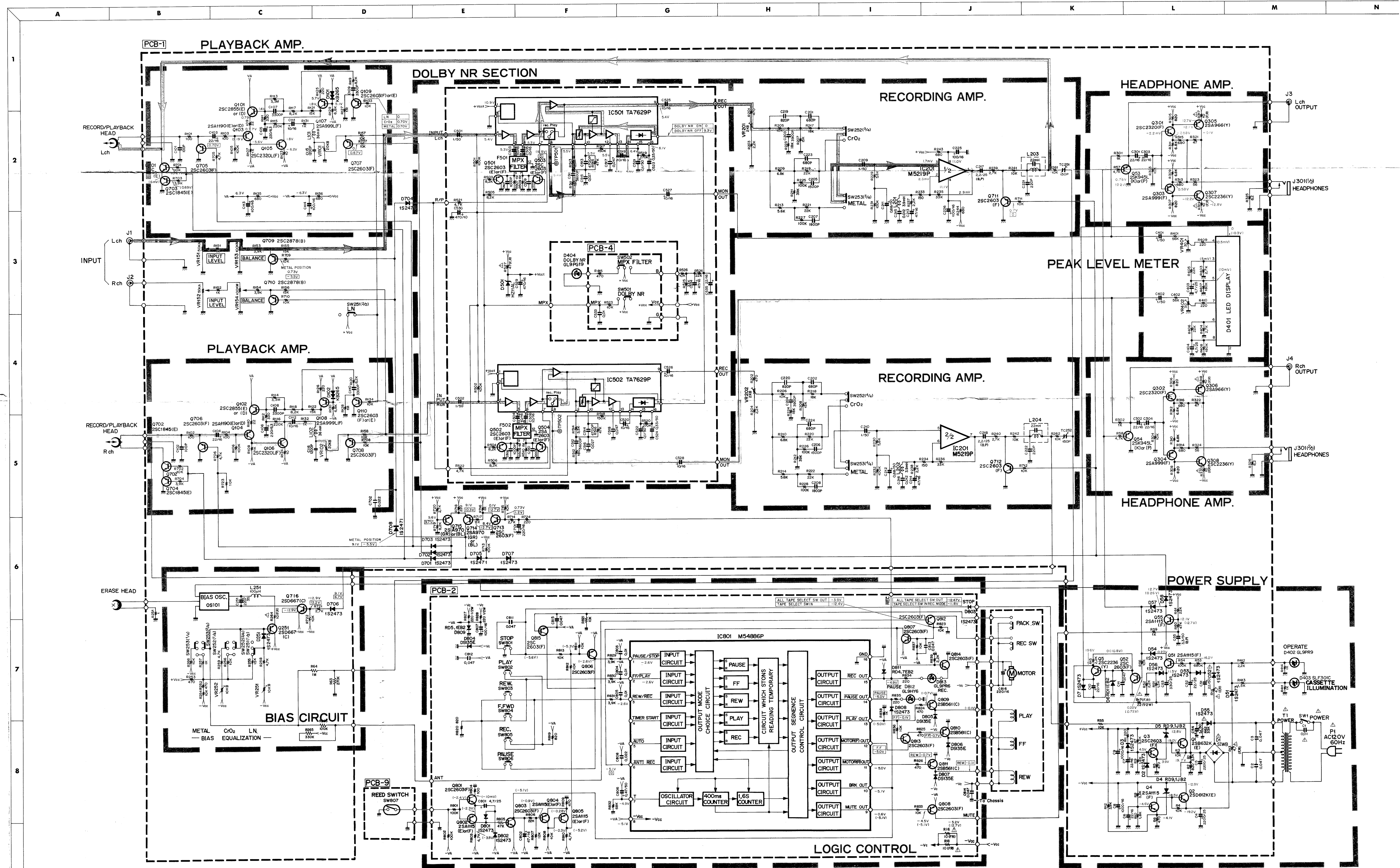
Ref. No.	Part No.	Description
103	A452-CD91B	Cover Assembly
104	A514-CD91C	Plate Assembly, LED Display
106	A662-CD91B	Push Button Assembly, Power
107	A662-CD91C	Push Button Assembly, Tape Selector, Dolby NR System, MPX Filter
108	3112-12801	Cassette Tape Recorder Mechanical Assembly
135	1514-15401	Dressing Plate
164	2132-5052	Spacer
165	2132-7016	Spacer
187	2219-7899	Bracket
199	2240-7181	Holder
205	2651-210187	Spring

ELECTRICAL PARTS LIST

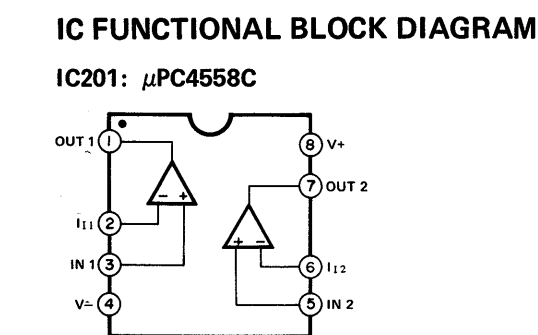
Ref. No.	Part No.	Description
CHASSIS MISCELLANEOUS		
C815 JM151	5345-227C041 4242-034202	Capacitor, 220 μ F, \pm 20%, 16V, Electrolytic Jumper Lead, 3-Wire
PCB-1 MAIN P.C. BOARD		
RESISTORS		
R16, 18	5102-1004715	10 Ω , \pm 2%, 1/4W, Fuse
CAPACITORS		
C54	5345-105-50	1 μ F, +75%–10%, 50V, Electrolytic
C101, 102	5353-101534	100pF, \pm 5%, 500V, Mica
C105, 106	5345-227A0952	220 μ F, \pm 20%, 6.3V, Electrolytic
C209, 210, 501, 502	5345-105F0952	1 μ F, \pm 20%, 50V, Electrolytic
C211, 212	5345-L684M50	0.68 μ F, \pm 20%, 50V, Electrolytic
C217, 218	5342-225F0951	2.2 μ F, \pm 20%, 50V, Electrolytic
C219, 220	5359-8215851	820pF, \pm 5%, 100V, Polypropylene
C223, 224	5359-6815851	680pF, \pm 5%, 100V, Polypropylene
C301, 302, 303, 304	5345-226C041	22 μ F, \pm 20%, 16V, Electrolytic
C525, 526, 527, 528	5345-106C0952	10 μ F, \pm 20%, 16V, Electrolytic
INTEGRATED CIRCUIT		
IC201	5652-M5219P	M5219P
TRANSISTORS		
Q53, 54	5613-945L(K) or (P)	2SC945L (K) or 2SC945L (P)
Q105, 106	5613-2320L(F)	2SC2320L (F)
Q107, 108	5611-999L(F)	2SA999L (F)
Q301, 302	5613-2603(F) or (E)	2SC2603(F) or 2SC2603 (E)
Q303, 304	5611-1115(F)	2SA1115(F)
Q714, 715	5611-970(GR) or (BL)	2SA970 (GR) or 2SA970 (BL)
DIODES		
D4, 5	5635-RD9R1JB2	Zener, RD9.1JB2
D705, 708	5631-1S2471	1S2471
COILS		
L101, 102	5995-363156	
L201, 202	5933-70323	
MISCELLANEOUS		
F203, 204	5214-43	LC Components
P701	4443-060185	Connector, 6-Pin

Ref. No.	Part No.	Description
PCB-2 LOGIC CONTROL P.C. BOARD		
CAPACITORS		
C802	5345-476C041	47 μ F, \pm 20%, 16V, Electrolytic
C806	5345-474F041	0.47 μ F, \pm 20%, 50V, Electrolytic
TRANSISTOR		
Q815	5613-2603(F)	2SC2603 (F)
MISCELLANEOUS		
J801	4163-70996	Connector with Lead Wire, 8-Pin
JM701	4242-062007	Jumper Lead, 6-Wire

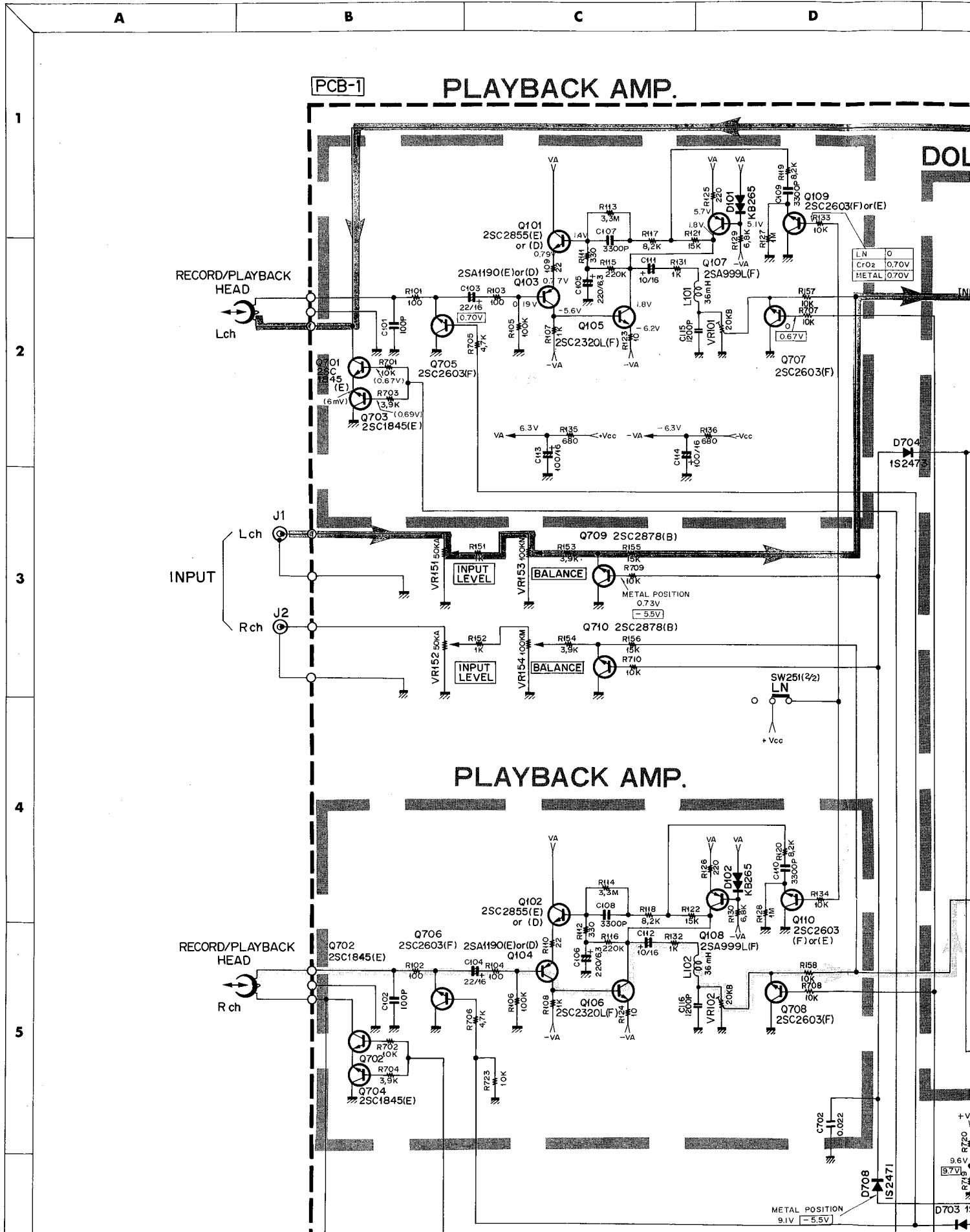
SCHEMATIC DIAGRAM



- RECORDING SIGNAL (Lch)
 - - - - - PLAYBACK SIGNAL (Rch)
- ALL RESISTANCES VALUES ARE IN Ω .
 $k\Omega = 1000\Omega$, $M\Omega = 1000k\Omega$.
 - THE WATTAGE OF RESISTORS IS 1/4W UNLESS OTHERWISE NOTED.
 - ALL CAPACITANCES VALUES ARE IN μF UNLESS OTHERWISE NOTED. P = μF
 - V: DC VOLTAGE AT NO SIGNAL.
 ... V STOP MODE
 (... V) PLAYBACK MODE
 (- V) RECORDING MODE
 - SAFETY REQUIREMENTS COMPONENTS IN ACCORDANCE WITH PRESENT SAFETY REGULATIONS. THESE COMPONENTS MUST ONLY BE REPLACED BY ORIGINAL PARTS.



SCHEMATIC DIAGRAM



K

L

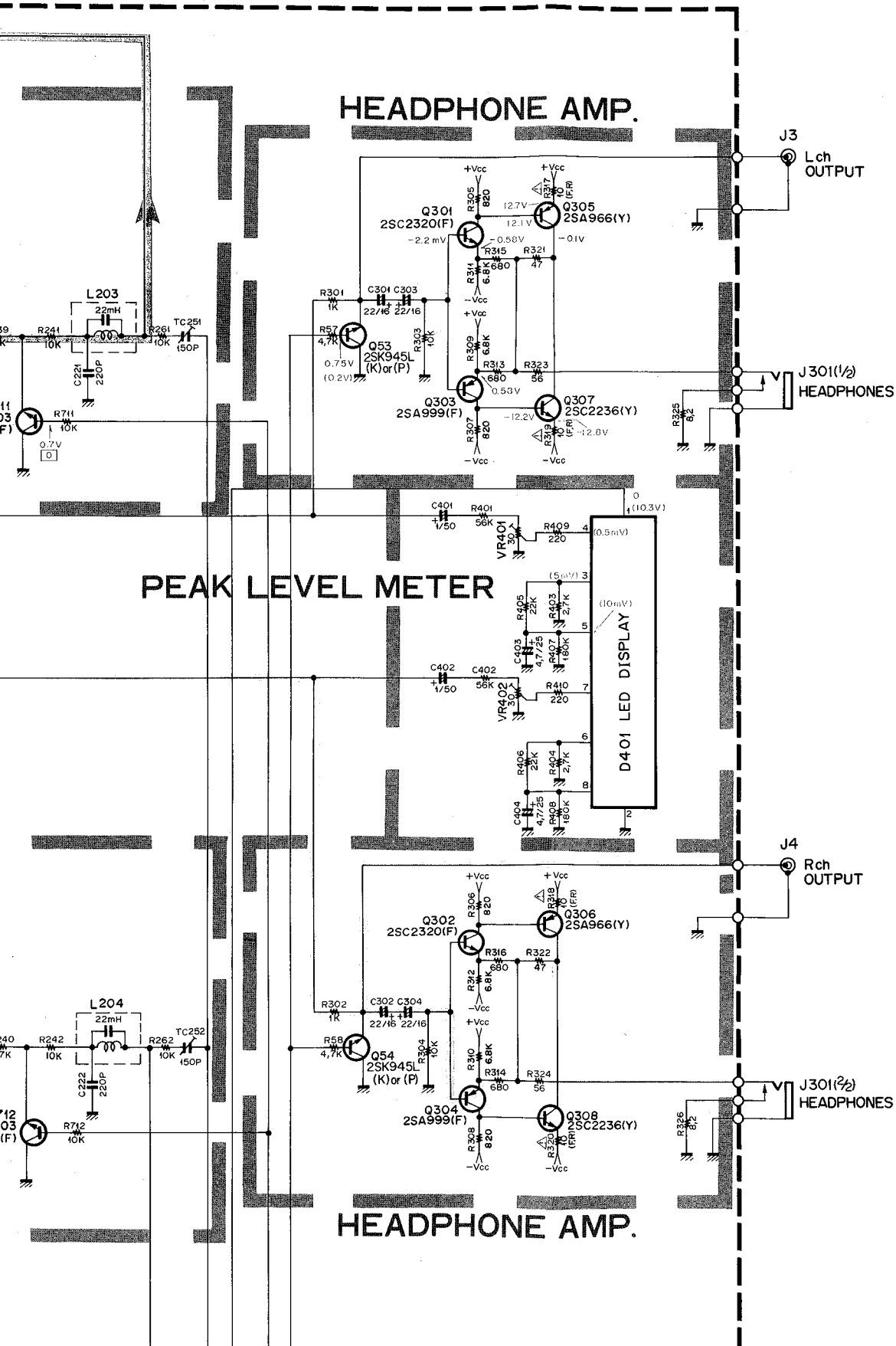
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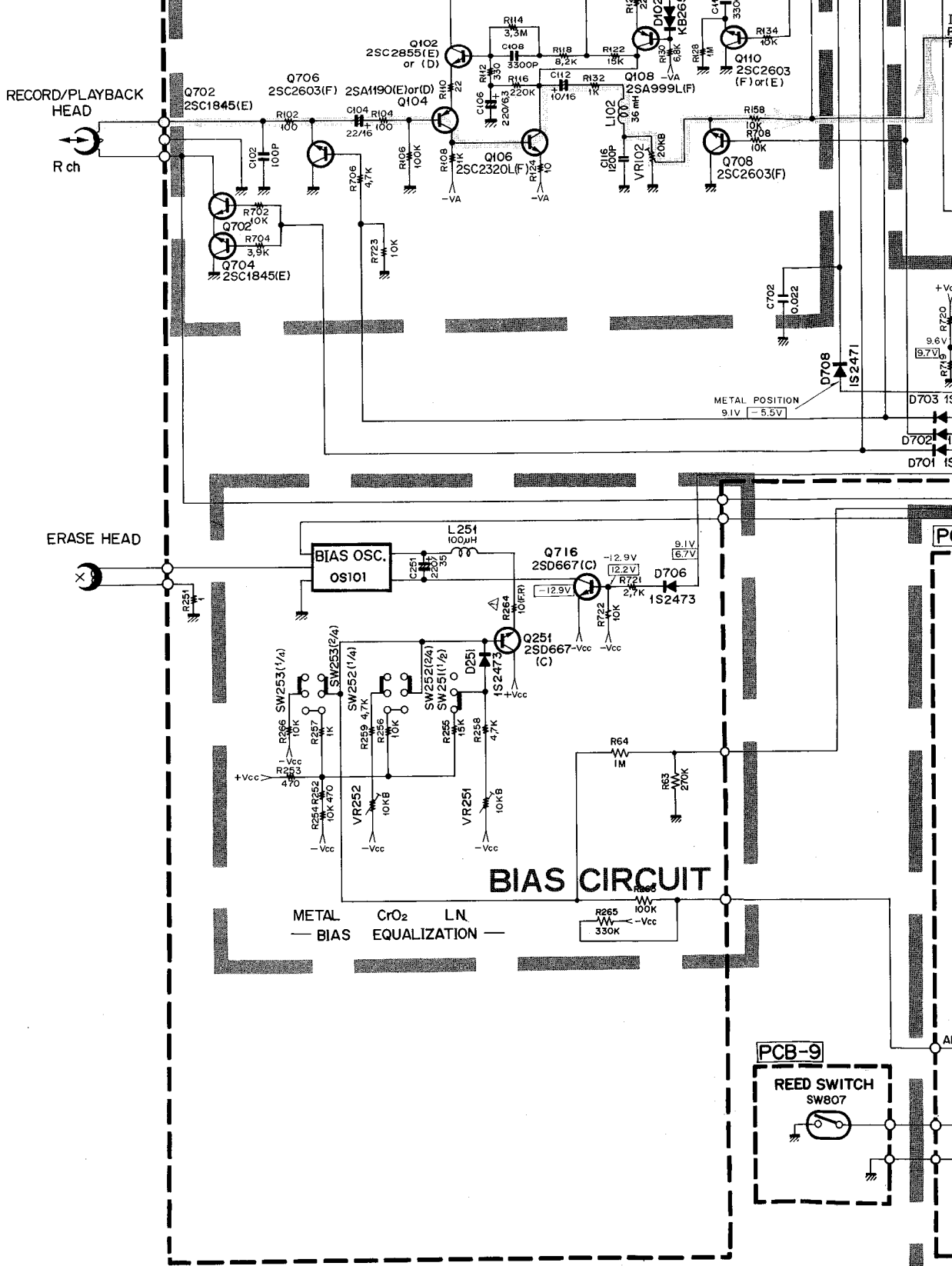
N

HEADPHONE AMP.

HEADPHONE AMP.

PEAK LEVEL METER



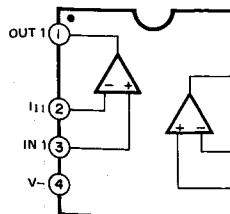


..... RECORDING SIGNAL (Lch)
 PLAYBACK SIGNAL (Rch)

1. ALL RESISTANCES VALUES ARE IN Ω .
 $k\Omega = 1000\Omega$, $M\Omega = 1000 k\Omega$
2. THE WATTAGE OF RESISTORS IS 1/4W UNLESS OTHERWISE NOTED.
3. ALL CAPACITANCES VALUES ARE IN μF UNLESS OTHERWISE NOTED. $P = \mu\mu F$
4. V: DC VOLTAGE AT NO SIGNAL.
 ... V STOP MODE
 (... V) PLAYBACK MODE
 (... V) RECORDING MODE
5. SAFETY-REQUIREMENTS COMPONENTS IN ACCORDANCE WITH PRESENT SAFETY REGULATIONS. THESE COMPONENTS MUST ONLY BE REPLACED BY ORIGINAL PARTS.

IC FUNCTIONAL

IC201: $\mu PC4558C$



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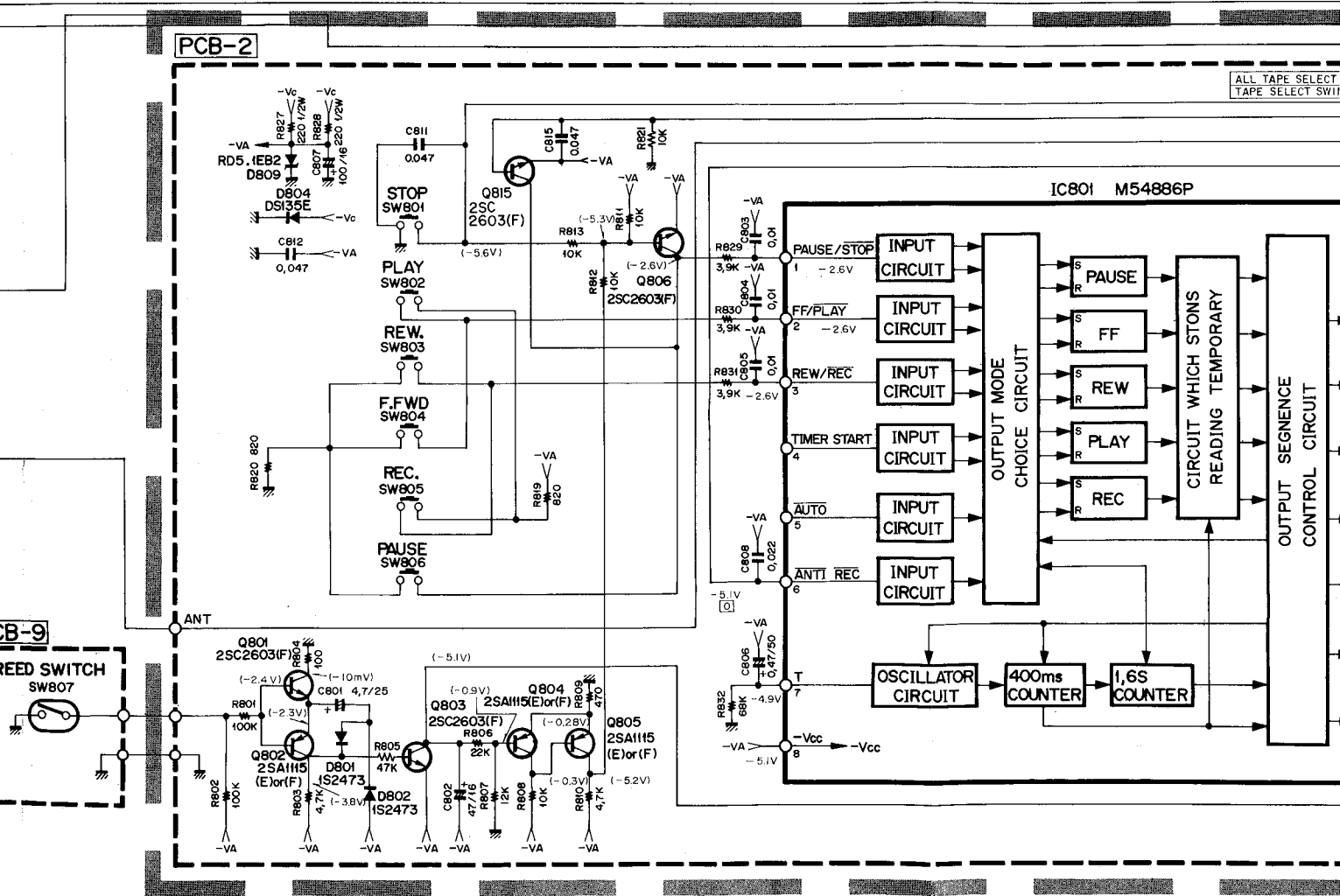
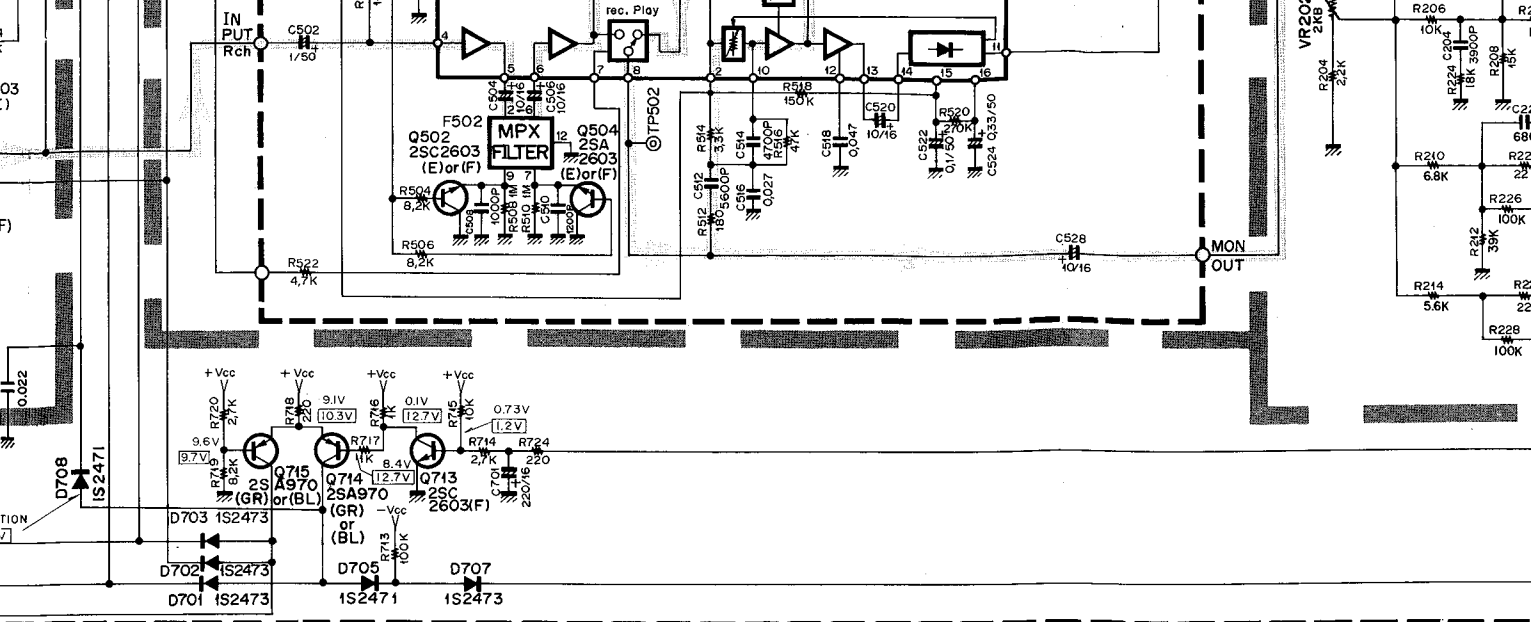
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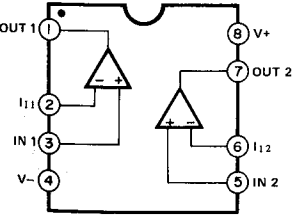
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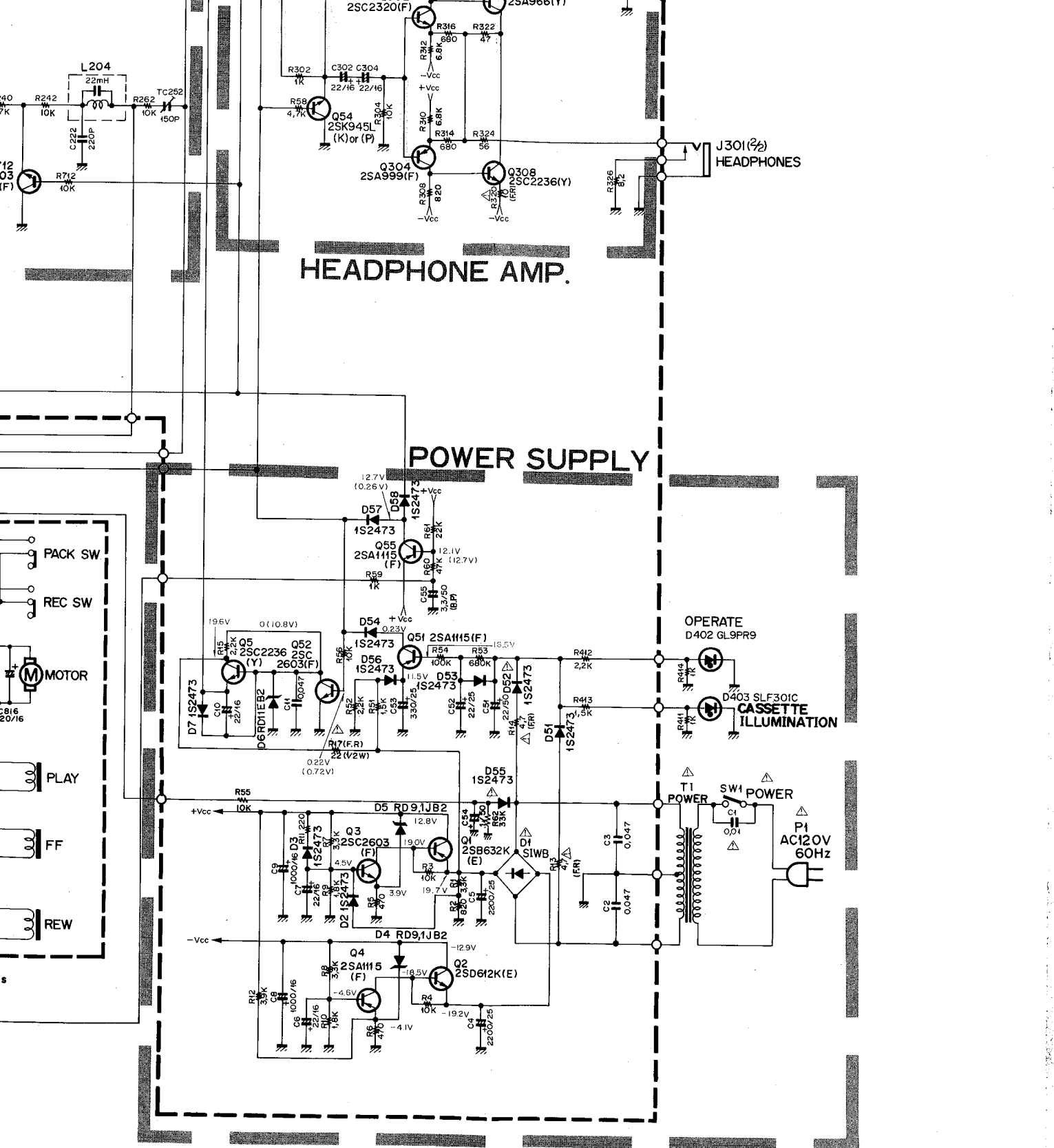
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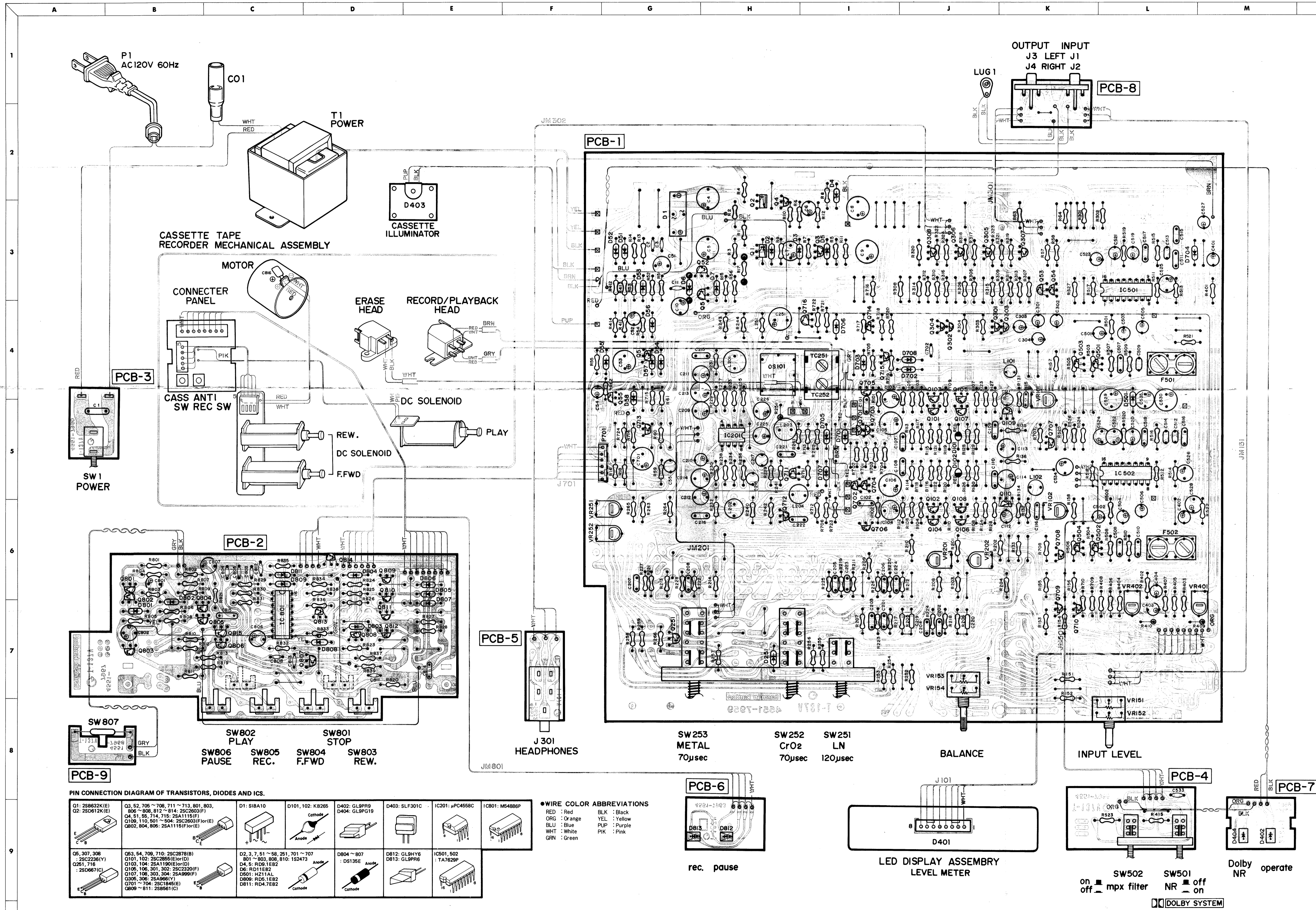
IC FUNCTIONAL BLOCK DIAGRAM

IC201: μ PC4558C





WIRING DIAGRAM



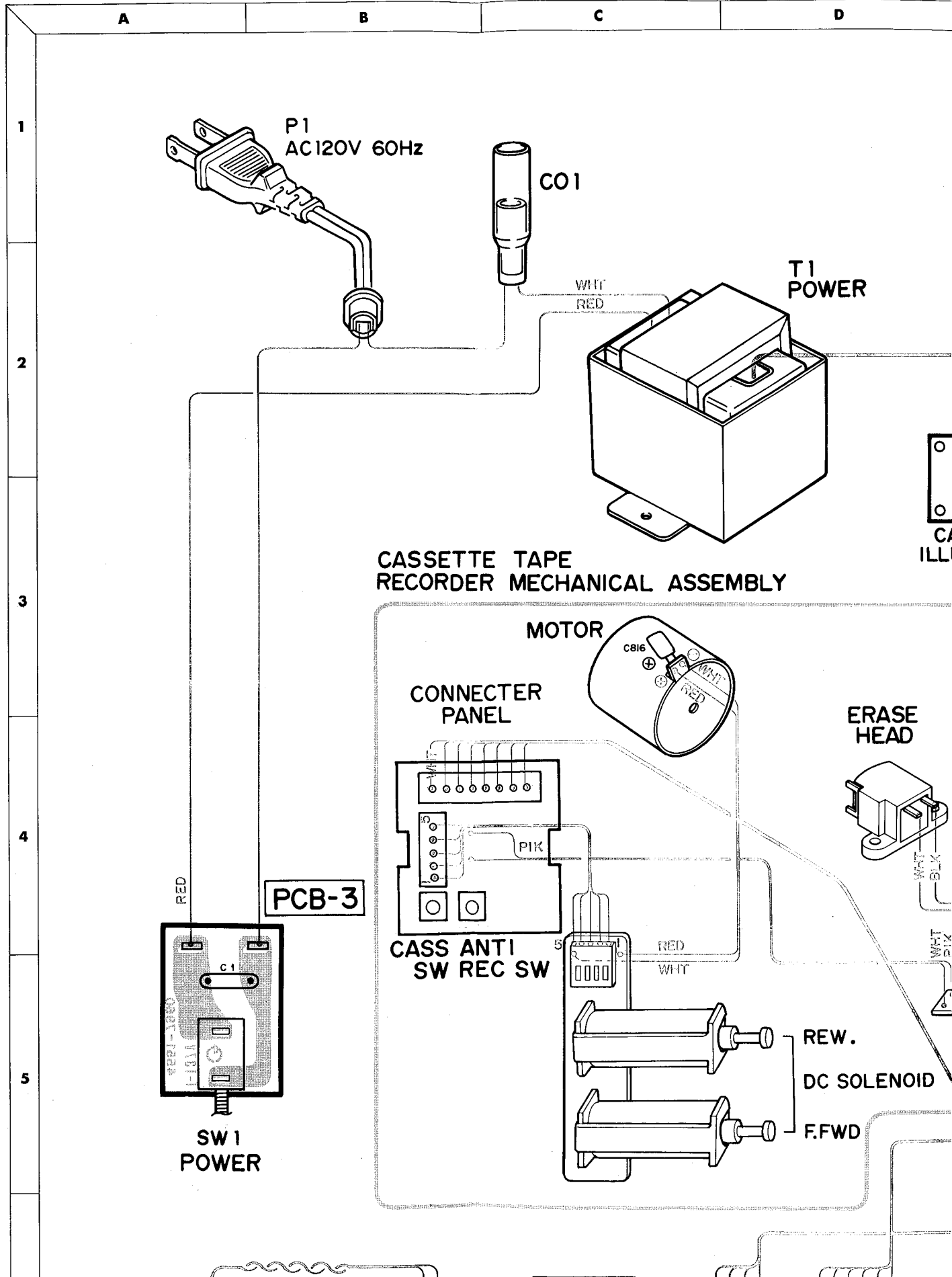
PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND ICs.

Q1: 2S862K(E) Q2: 2SD612K(E)	Q3, 52, 705 ~ 708, 711 ~ 713, 801, 803, 806 ~ 808, 812 ~ 814: 2SC2603(F) Q4, 51, 58, 714, 715: 2SA1115(F) Q109, 110, 301 ~ 304: 2SC2603(F)(E) Q802, 804, 805: 2SA1115(F)(E)	D1: 1S18A10	D101, 102: K8265	D402: GL9P99 D404: GL9P19	D403: SLF301C	IC201: μ PC4558C	IC801: M54886P
Q5, 307, 308 Q251, 716 Q252, 717 Q253, 718 Q254, 719 Q255, 720 Q256, 721 Q257, 722 Q258, 723 Q259, 724 Q260, 725 Q261, 726 Q262, 727 Q263, 728 Q264, 729 Q265, 730 Q266, 731 Q267, 732 Q268, 733 Q269, 734 Q270, 735 Q271, 736 Q272, 737 Q273, 738 Q274, 739 Q275, 740 Q276, 741 Q277, 742 Q278, 743 Q279, 744 Q280, 745 Q281, 746 Q282, 747 Q283, 748 Q284, 749 Q285, 750 Q286, 751 Q287, 752 Q288, 753 Q289, 754 Q290, 755 Q291, 756 Q292, 757 Q293, 758 Q294, 759 Q295, 760 Q296, 761 Q297, 762 Q298, 763 Q299, 764 Q300, 765 Q301, 766 Q302, 767 Q303, 768 Q304, 769 Q305, 770 Q306, 771 Q307, 772 Q308, 773 Q309, 774 Q310, 775 Q311, 776 Q312, 777 Q313, 778 Q314, 779 Q315, 780 Q316, 781 Q317, 782 Q318, 783 Q319, 784 Q320, 785 Q321, 786 Q322, 787 Q323, 788 Q324, 789 Q325, 790 Q326, 791 Q327, 792 Q328, 793 Q329, 794 Q330, 795 Q331, 796 Q332, 797 Q333, 798 Q334, 799 Q335, 800 Q336, 801 Q337, 802 Q338, 803 Q339, 804 Q340, 805 Q341, 806 Q342, 807 Q343, 808 Q344, 809 Q345, 810 Q346, 811 Q347, 812 Q348, 813 Q349, 814 Q350, 815 Q351, 816 Q352, 817 Q353, 818 Q354, 819 Q355, 820 Q356, 821 Q357, 822 Q358, 823 Q359, 824 Q360, 825 Q361, 826 Q362, 827 Q363, 828 Q364, 829 Q365, 830 Q366, 831 Q367, 832 Q368, 833 Q369, 834 Q370, 835 Q371, 836 Q372, 837 Q373, 838 Q374, 839 Q375, 840 Q376, 841 Q377, 842 Q378, 843 Q379, 844 Q380, 845 Q381, 846 Q382, 847 Q383, 848 Q384, 849 Q385, 850 Q386, 851 Q387, 852 Q388, 853 Q389, 854 Q390, 855 Q391, 856 Q392, 857 Q393, 858 Q394, 859 Q395, 860 Q396, 861 Q397, 862 Q398, 863 Q399, 864 Q400, 865 Q401, 866 Q402, 867 Q403, 868 Q404, 869 Q405, 870 Q406, 871 Q407, 872 Q408, 873 Q409, 874 Q410, 875 Q411, 876 Q412, 877 Q413, 878 Q414, 879 Q415, 880 Q416, 881 Q417, 882 Q418, 883 Q419, 884 Q420, 885 Q421, 886 Q422, 887 Q423, 888 Q424, 889 Q425, 890 Q426, 891 Q427, 892 Q428, 893 Q429, 894 Q430, 895 Q431, 896 Q432, 897 Q433, 898 Q434, 899 Q435, 900 Q436, 901 Q437, 902 Q438, 903 Q439, 904 Q440, 905 Q441, 906 Q442, 907 Q443, 908 Q444, 909 Q445, 910 Q446, 911 Q447, 912 Q448, 913 Q449, 914 Q450, 915 Q451, 916 Q452, 917 Q453, 918 Q454, 919 Q455, 920 Q456, 921 Q457, 922 Q458, 923 Q459, 924 Q460, 925 Q461, 926 Q462, 927 Q463, 928 Q464, 929 Q465, 930 Q466, 931 Q467, 932 Q468, 933 Q469, 934 Q470, 935 Q471, 936 Q472, 937 Q473, 938 Q474, 939 Q475, 940 Q476, 941 Q477, 942 Q478, 943 Q479, 944 Q480, 945 Q481, 946 Q482, 947 Q483, 948 Q484, 949 Q485, 950 Q486, 951 Q487, 952 Q488, 953 Q489, 954 Q490, 955 Q491, 956 Q492, 957 Q493, 958 Q494, 959 Q495, 960 Q496, 961 Q497, 962 Q498, 963 Q499, 964 Q500, 965 Q501, 966 Q502, 967 Q503, 968 Q504, 969 Q505, 970 Q506, 971 Q507, 972 Q508, 973 Q509, 974 Q510, 975 Q511, 976 Q512, 977 Q513, 978 Q514, 979 Q515, 980 Q516, 981 Q517, 982 Q518, 983 Q519, 984 Q520, 985 Q521, 986 Q522, 987 Q523, 988 Q524, 989 Q525, 990 Q526, 991 Q527, 992 Q528, 993 Q529, 994 Q530, 995 Q531, 996 Q532, 997 Q533, 998 Q534, 999 Q535, 1000	D2, 3, 7, 51 ~ 58, 251, 701 ~ 707 801 ~ 803, 808, 810: 1S2473 D4, 5: RD91EB2 D6: RD11EB2 D501: H211AL D809: RD5.1EB2 D811: RC4.7EB2	D804 ~ 807 D812: GL9HY6 D813: GL9PR6	IC501, 502 : TA7629P				

- WIRE COLOR ABBREVIATIONS**
- RED : Red
 - ORG : Orange
 - BLU : Blue
 - WHT : White
 - GRN : Green
 - BLK : Black
 - YEL : Yellow
 - PUR : Purple
 - PIK : Pink

on SW502 off mpx filter
 on SW501 off NR
 DOLBY SYSTEM

WIRING DIAGRAM

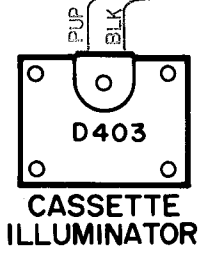
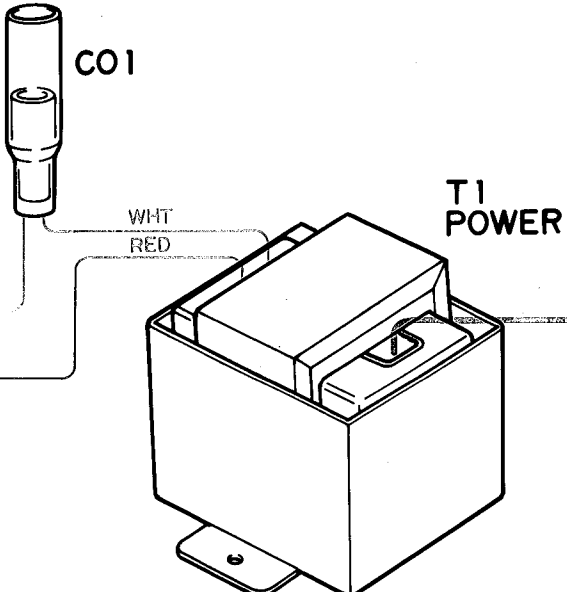


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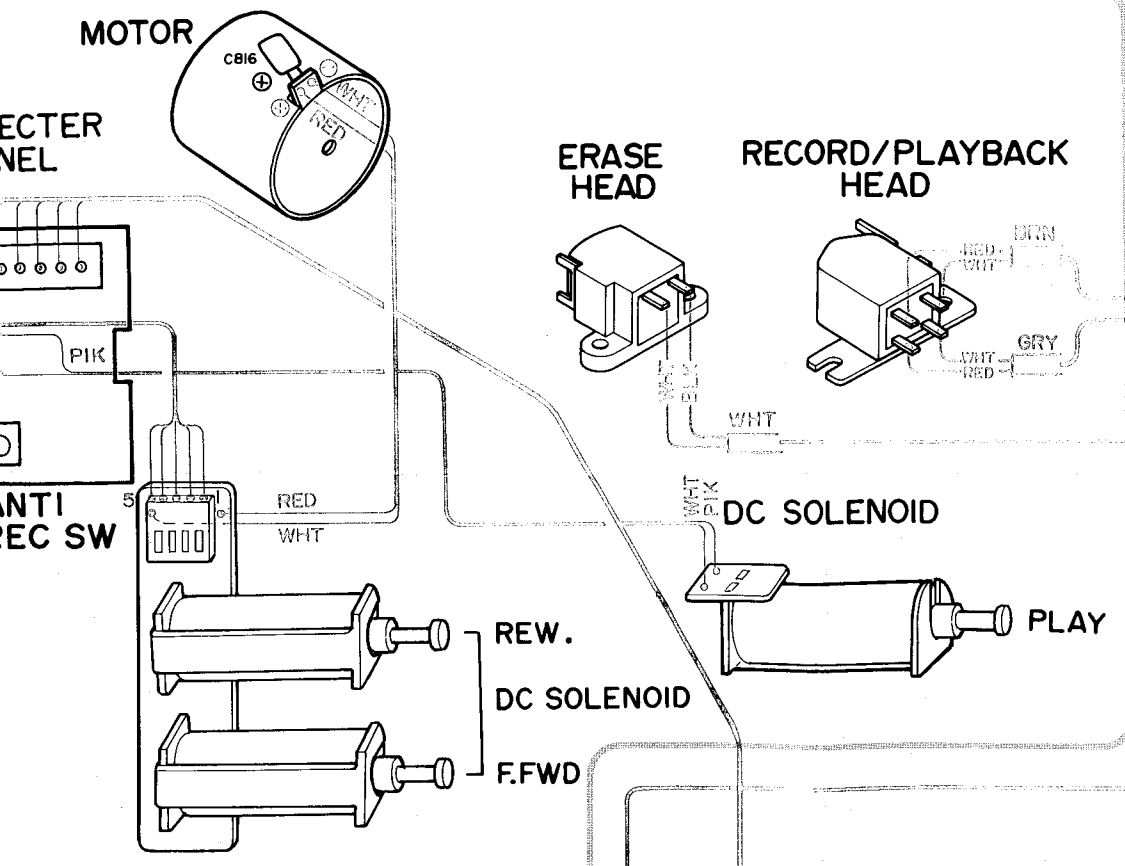
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E

F

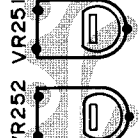
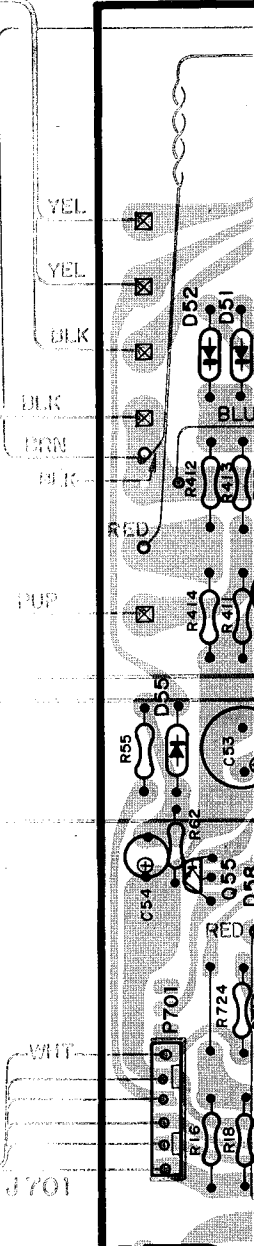


TE TAPE
ER MECHANICAL ASSEMBLY



JM302

PCB-1



G

H

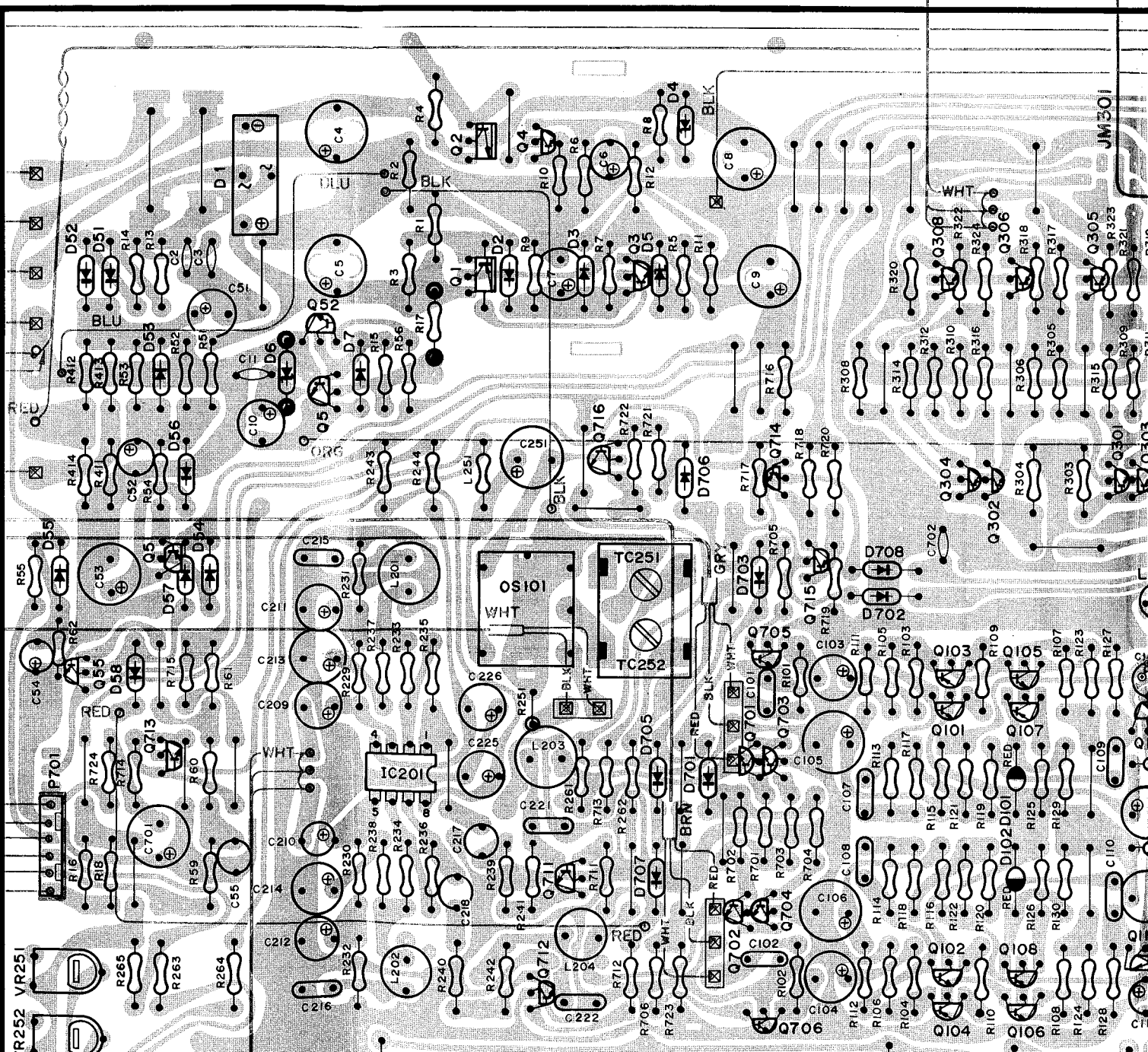
I

J

LUG 1



PCB-1



JM301

WHT

BLK

BLK

WHT

WHT

WHT

WHT

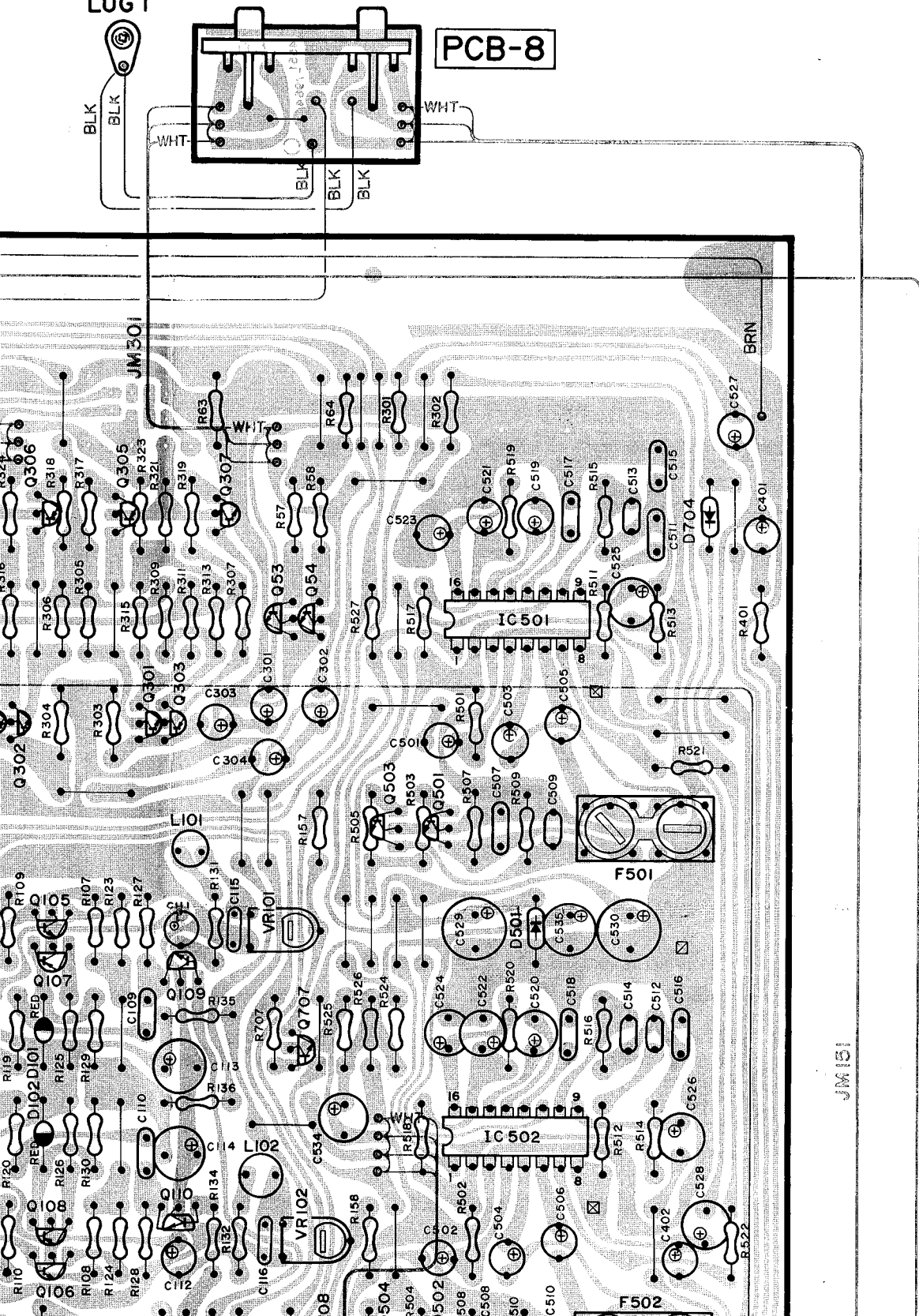
WHT

OUTPUT INPUT

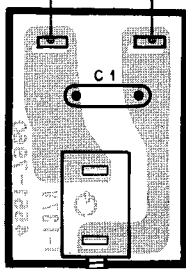
J3 LEFT J1
J4 RIGHT J2

LUG 1

PCB-8

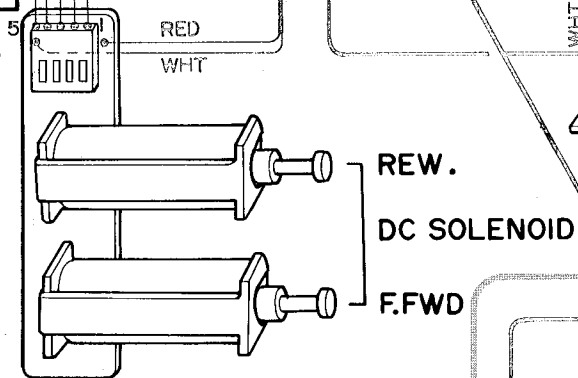


JM131

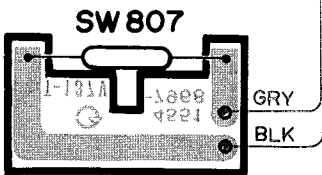
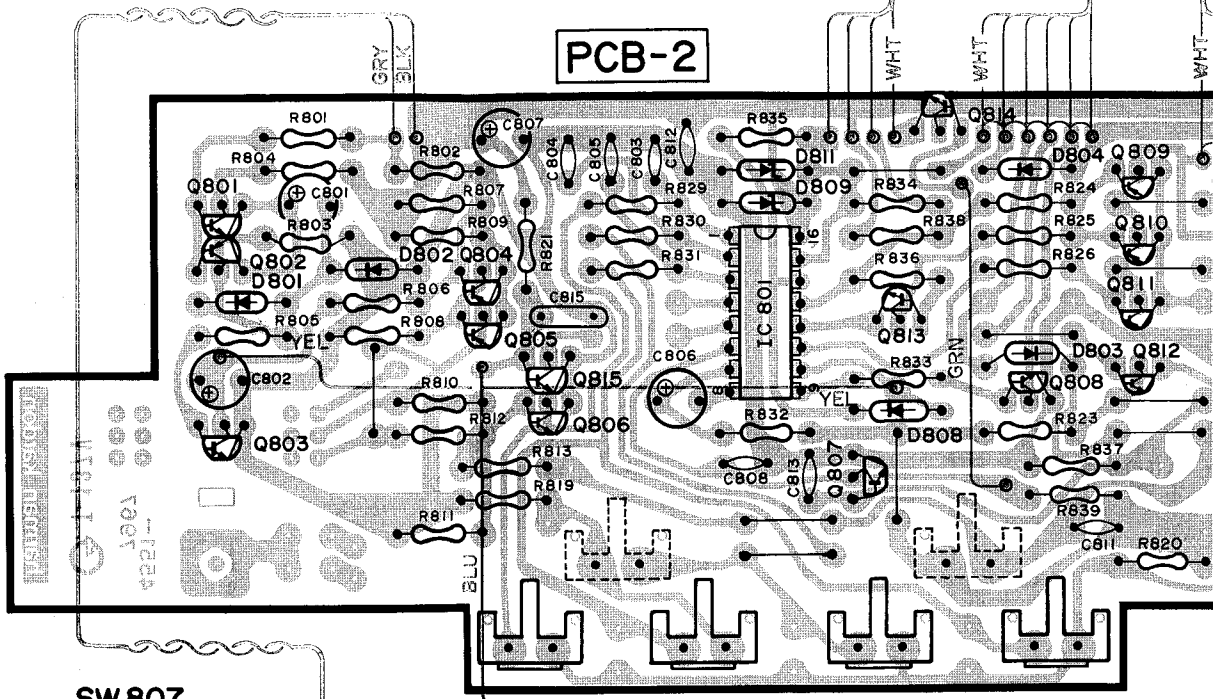


SW 1
POWER

CASS ANTI
SW REC SW



PCB-2



SW 807

SW802 PLAY
SW806 PAUSE
SW805 REC.
SW804 F.FWD
SW801 STOP
SW803 REW.

PCB-9

PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND ICs.

<p>Q1: 2S8632K(E) Q2: 2SD612K(E)</p>	<p>Q3, 52, 705 ~ 708, 711 ~ 713, 801, 803, 806 ~ 808, 812 ~ 814: 2SC2603(F) Q4, 51, 55, 714, 715: 2SA1115(F) Q109, 110, 501 ~ 504: 2SC2603(F)or(E) Q802, 804, 805: 2SA1115(F)or(E)</p>	<p>D1: SIBA10</p>	<p>D101, 102: KB265</p>	<p>D402: GL9PR9 D404: GL9PG19</p>	<p>D403: SL</p>
<p>Q5, 307, 308 : 2SC2236(Y) Q251, 716 : 2SD667(C)</p>	<p>Q53, 54, 709, 710: 2SC2878(B) Q101, 102: 2SC2855(E)or(D) Q103, 104: 2SA1190(E)or(D) Q105, 106, 301, 302: 2SC2320(F) Q107, 108, 303, 304: 2SA999(F) Q305, 306: 2SA966(Y) Q701 ~ 704: 2SC1845(E) Q809 ~ 811: 2SB561(C)</p>	<p>D2, 3, 7, 51 ~ 58, 251, 701 ~ 707 801 ~ 803, 808, 810: 1S2473 D4, 5: RD9.1EB2 D6: RD11EB2 D501: HZ11AL D809: RD5.1EB2 D811: RD4.7EB2</p>	<p>D804 ~ 807 : DS135E</p>	<p>D812: G D813: G</p>	

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6

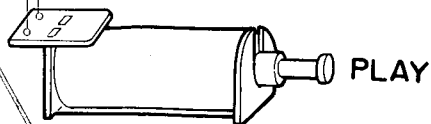
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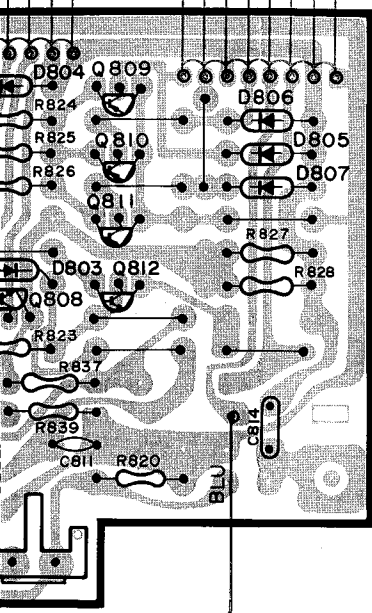
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WHT PIK DC SOLENOID



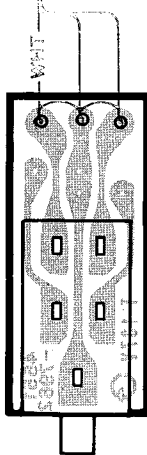
SOLENOID

VD



W803
REW.

PCB-5

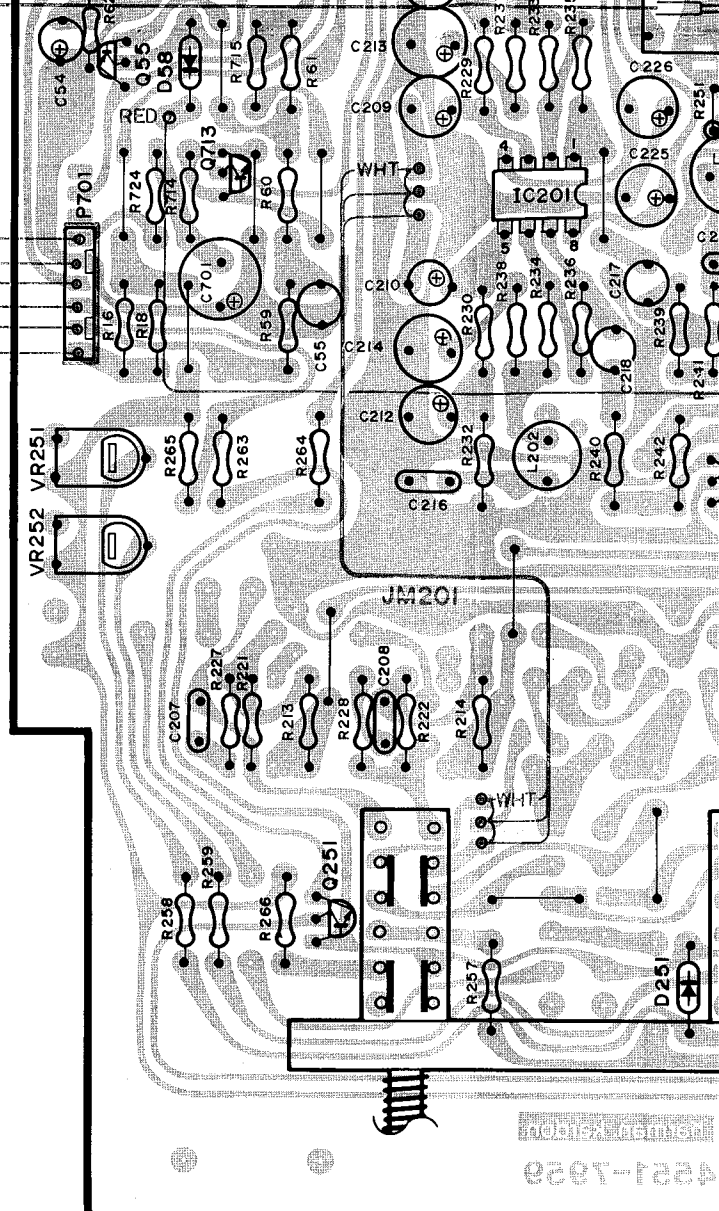


J 301
HEADPHONES

JM801

WHT

J701



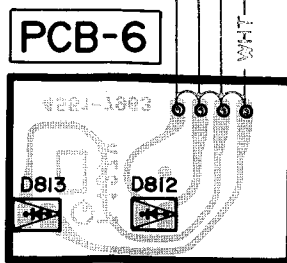
SW 253
METAL
70µsec

GL9PR9 GL9PG19	D403: SLF301C	IC201: µPC4558C	IC801: M54886P

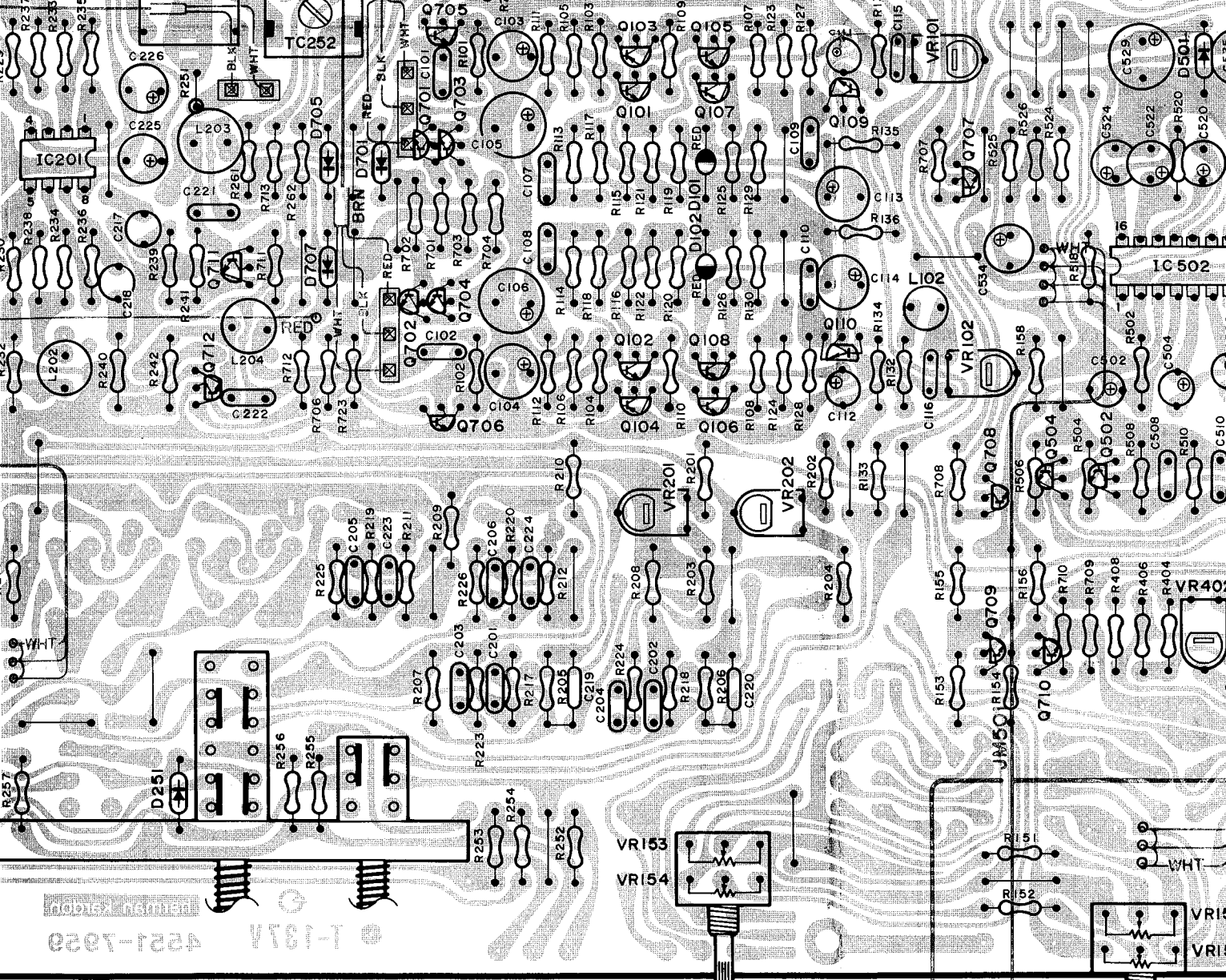
● WIRE COLOR ABBREVIATIONS

- RED : Red
- ORG : Orange
- BLU : Blue
- WHT : White
- GRN : Green
- BLK : Black
- YEL : Yellow
- PUP : Purple
- PIK : Pink

807 85E Anode	D812: GL9HY6 D813: GL9PR6	IC501, 502 : TA7629P



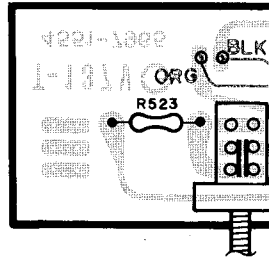
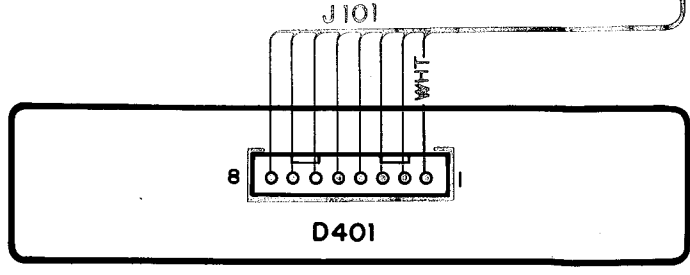
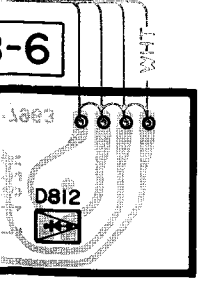
rec. pause



SW 252 CrO₂ 70µsec
 SW 251 LN 120µsec

BALANCE

INPUT LEVEL



LED DISPLAY ASSEMBLY
 LEVEL METER

SW500
 on mpX filter
 off

pause

