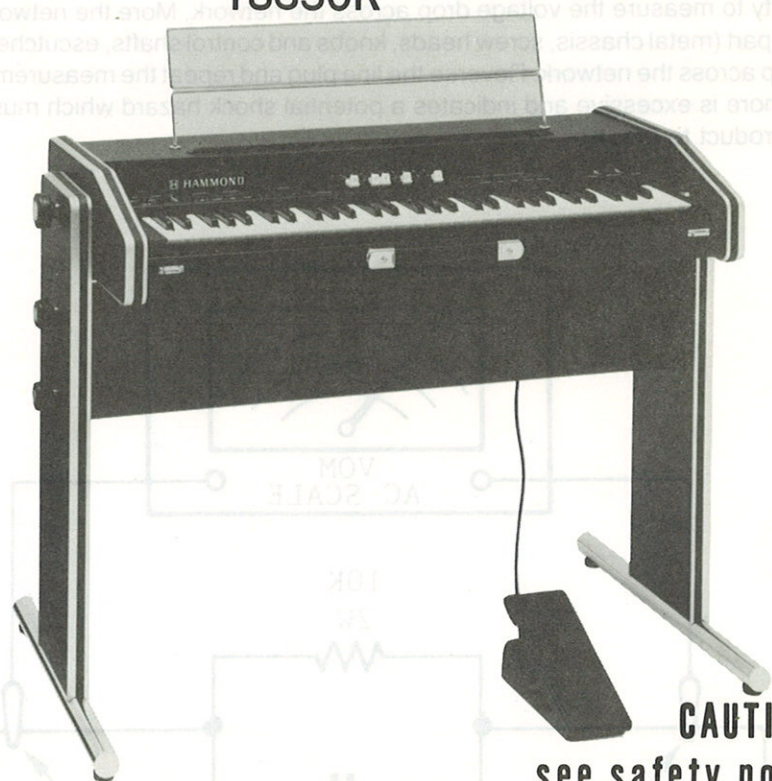


SERVICE MANUAL

HAMMOND B-100 COMBO ORGAN 18350K



CAUTION!
see safety notice inside

H000-006146-00J



NIHON HAMMOND LIMITED

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& FACTORY 〒559 (For Service Assistance Contact)
• PHONE / (06)-685-3905

SAFETY NOTICE

Great care has been taken in the design and manufacture of this product to assure that no shock hazard exists on any exposed metal parts. Internal service operations can expose the technician to hazardous line voltages and accidentally cause these voltages to appear on exposed metal parts during repair or reassembly of product components. To prevent this, work on these products should only be performed by those who are thoroughly familiar with the precautions necessary when working on this type of equipment.

To protect the user, it is required that all enclosure parts and safety interlocks be restored to their original condition and the following tests be performed before returning the product to the owner after any service operation.

Plug the AC line cord directly into a line voltage AC receptacle (do not use an isolation transformer for this test) and turn the product on. Connect the network (as shown below) in series with all exposed metal parts and a known earth ground such as a water pipe or conduit. Use an AC VOM of 5,000 ohms per volt or higher sensitivity to measure the voltage drop across the network. Move the network connection to each exposed metal part (metal chassis, screw heads, knobs and control shafts, escutcheon, etc.) and measure the voltage drop across the network. Reverse the line plug and repeat the measurements. Any reading of 4 volts RMS or more is excessive and indicates a potential shock hazard which must be corrected before returning the product to the user.

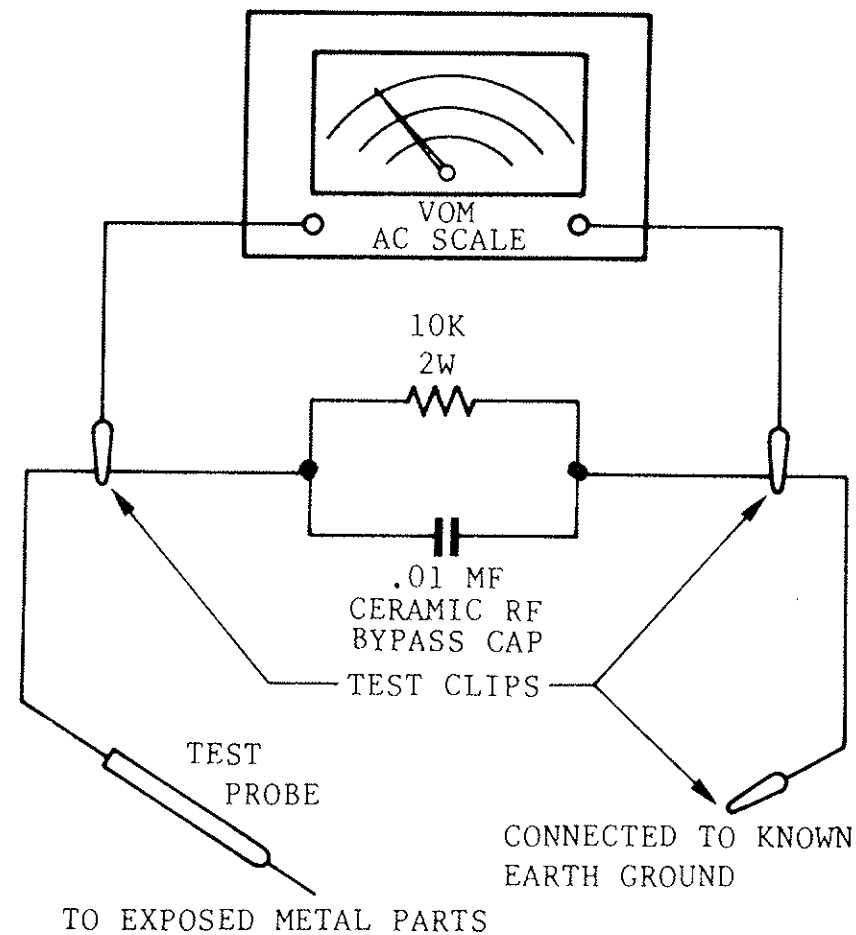


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SECTION I DISASSEMBLY AND MAINTENANCE

1-1 GENERAL

This section contains instructions for removal of specific assemblies of the organ. The removal of some sub-assemblies and unplugging connectors or unsoldering is obvious.
This procedure is layed out in a disassembly sequence, reverse procedure for reassembly.

1-2 TOP & REAR COVER

- Pull up Music Stand.
- Remove four (4) screws, retaining Top & Rear Cover to Bracket through Foot, from back (rear) side.
- From back side, pull slightly, then Top & Rear Cover will be removed.

1-3 FRONT PANEL

- Follow steps 1-2 a) ~ c).
- Remove two (2) screws retaining Front Panel to Tonebar Base, at both side.

1-4 TONEBAR BASE

- Follow Step 1-2.
- Remove two (2) screws retaining Tonebar Base to Hinges at both side.
- Raise Tonebar Base to swing up position.

1-5 MANUAL KEYBOARD ASSEMBLY

- Follow steps 1-2 and 1-4.
- Remove three (3) bronze screws from front under side of cabinet.
- Rise Manual Keyboard Assembly to swing up position.

1-6 TONEBAR ASSEMBLY

- Follow steps 1-2 and 1-3.
- Remove self tapping screws mounting Tonebar Assembly to Tonebar Base.

1-7 PRINTED WIRING BOARD (REMOVAL)

- The removal of PWB Assemblies is quite obvious and will not be necessary describe.

TEST AND ADJUSTMENT PROCEDURES

NOTE: During test procedure the following must be maintained unless otherwise stated:

- a) Without expression pedal.
- b) All switches, tonebars in the off position. Switch for Tonebar ON.
- c) Tonebars to position 8 when it is required to extend tonebars.
- d) Tuning Pot. at middle position.
Potentiometer Warmth at minimum.
Potentiometer Brilliance and Volume at maximum.

STEP	TITLE OF TEST	SETUP PROCEDURE (TABS DEPRESSED) (TONEBARS OUT)	KEY (S) DEPRESSED	TEST POINT	POT AND BOARD	SPECIFICATION AND/OR ACCEPTABLE CONNECTION
1	TUNING	Tonebar 2' a) Tuning Pot. at middle Position b) Tuning Pot. at Sharp Max. c) Tuning Pot. at Flat Max.	No. 58 (A5)	Pin 1 in Leslie Socket	a) Coil (L1) (DV-14) 229-21206	a) 7040Hz $\pm$ 7Hz b) 7240Hz or Upper c) 6860Hz or Under
2	LESLIE CONTROL	Connect to Leslie Socket, 11 pin Leslie Box a) Leslie Sw. ON b) as a) & Fast Sw. ON c) Leslie Sw. OFF		Ear		a) Leslie Slow b) Leslie Fast c) Leslie Stop
3	CHORUS CONTROL	Tonebar Connect to Line Out or Leslie Socket, Amp. & Tone Box. a) CHORUS SW. ON b) as a) & CHORUS FAST SW. ON	Any Key	Ear		a) Chorus Effect b) Chorus Slow to Fast
4	PRESET	a) PRESET 1 b) PRESET 2 c) PRESET 3				a) 888800000 b) 800000888 c) 888543788
5	KEY CLICK	KEY CLICK ACCENT SW. ON Tonebar 8' Amp. & Tone Box	Any Key	Ear		Key Click
6	PERCUSSION	Connect to Leslie Socket P1 Oscillo-scope a) 2nd PERCUSSION SW. ON b) 3rd PERCUSSION SW. ON c) PERCUSSION DECAY SW. ON 2nd PERCUSSION SW. ON d) PERCUSSION DECAY SW. ON 3rd PERCUSSION SW. ON e) PERCUSSION LOUD SW. ON 3rd PERCUSSION SW. ON	a) Any Key b) Any Key c) Any Key d) Any Key e) C ₃			a) 0.8V $\pm$ 20% 90mSec $\pm$ 20% b) 0.8V $\pm$ 20% 90mSec $\pm$ 20% c) 300mSec $\pm$ 20% d) 300mSec $\pm$ 20% e) 2V Peak
7	WARMTH	a) PRESET 1 SW. ON	a) C ₃ , E ₃ , G ₃	a) Ear		WARMTH Volume to Max. a) Soft Distortion

STEP	TITLE OF TEST	SETUP PROCEDURE (TABS DEPRESSED) (TONEBARS OUT)	KEY (S) DEPRESSED	TEST POINT	POT AND BOARD	SPECIFICATION AND/OR ACCEPTABLE CONNECTION
8	EXPRESSION LOSS	Connect Expression Pedal Tonebar 8'	C ₁	Leslie Socket Pin 1	Expression Board (EF-208) 223-40216 R2	± 3dB
9	EXPRESSION VARIATION	Connect Expression Pedal Tonebar 8'	a) C ₁ b) C ₅	Leslie Socket Pin 1		a) 13dB ~ 18dB b) Minimum 30dB
10	HUM & NOISE	Connect to Leslie Socket Pin 1, Noise Meter thru A Net, Filter a) CHORUS SW. ON		a) Leslie Socket Pin 1		a) 3mV RMS, Max.

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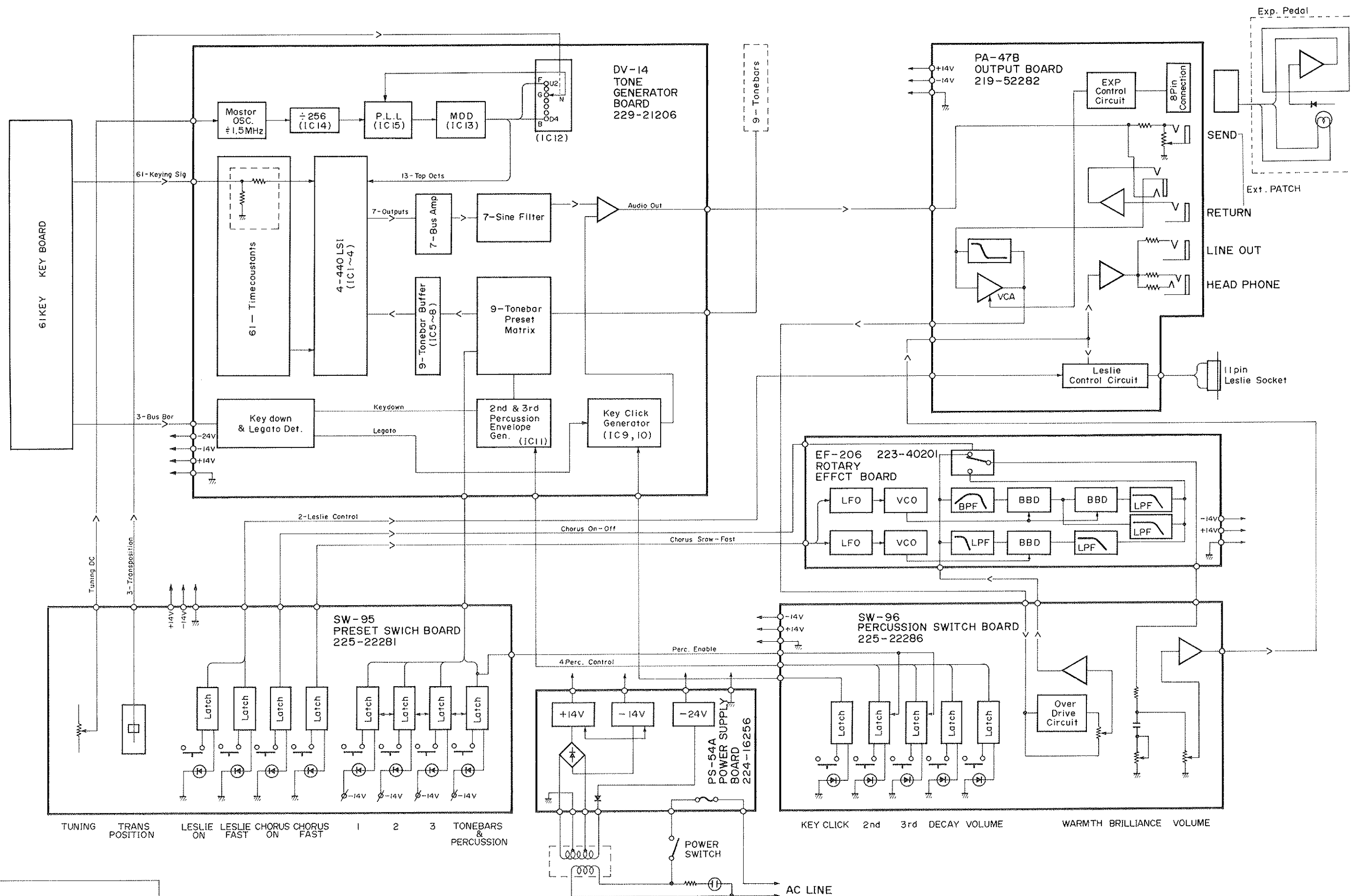


FIGURE 3-1
B-100 (18350K)
BLOCK DIAGRAM

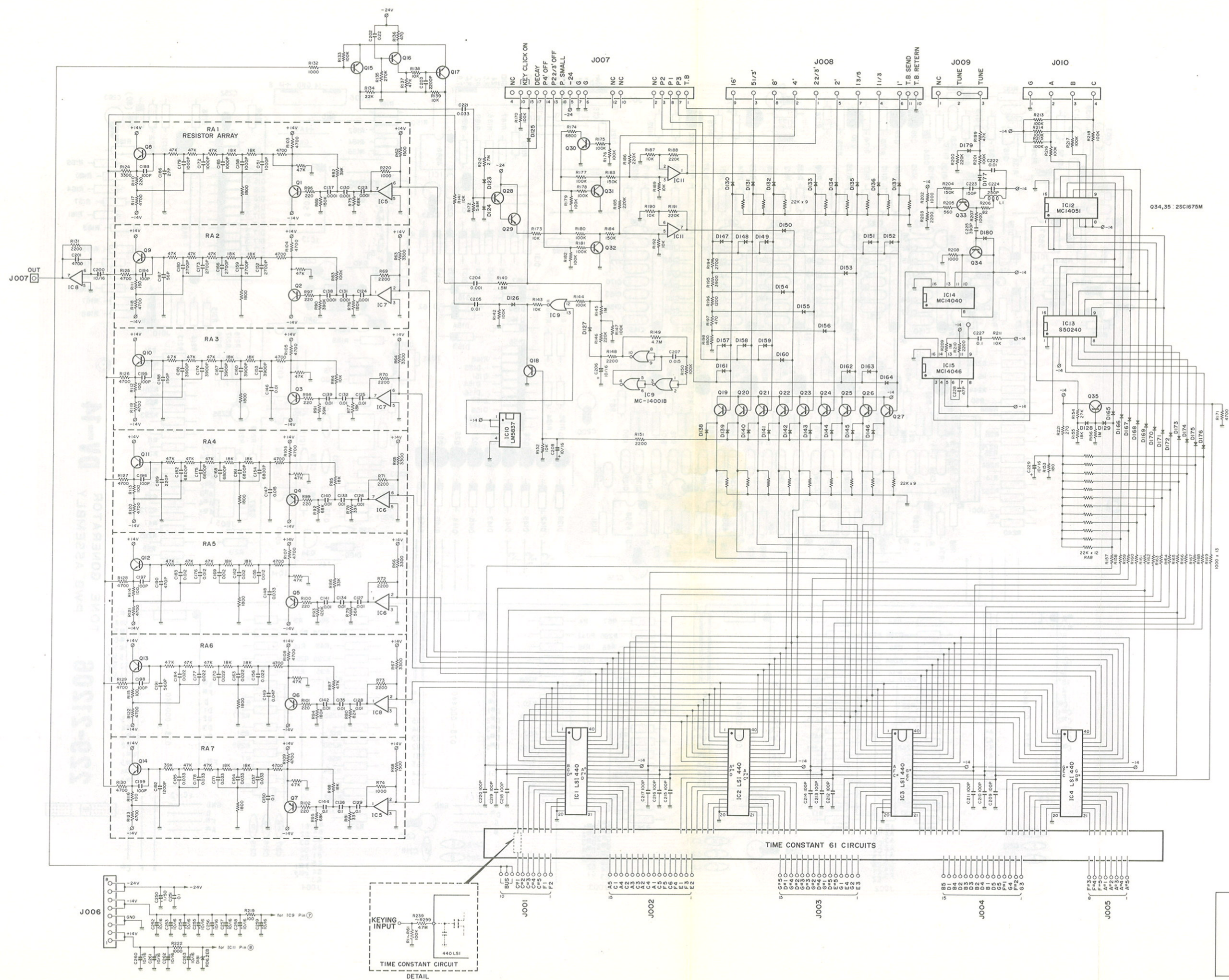


FIGURE 3-2
TONE GENERATOR BOARD
(DV-14) 229-21206
SCHEMATIC



3-4 B-100 (18350K)

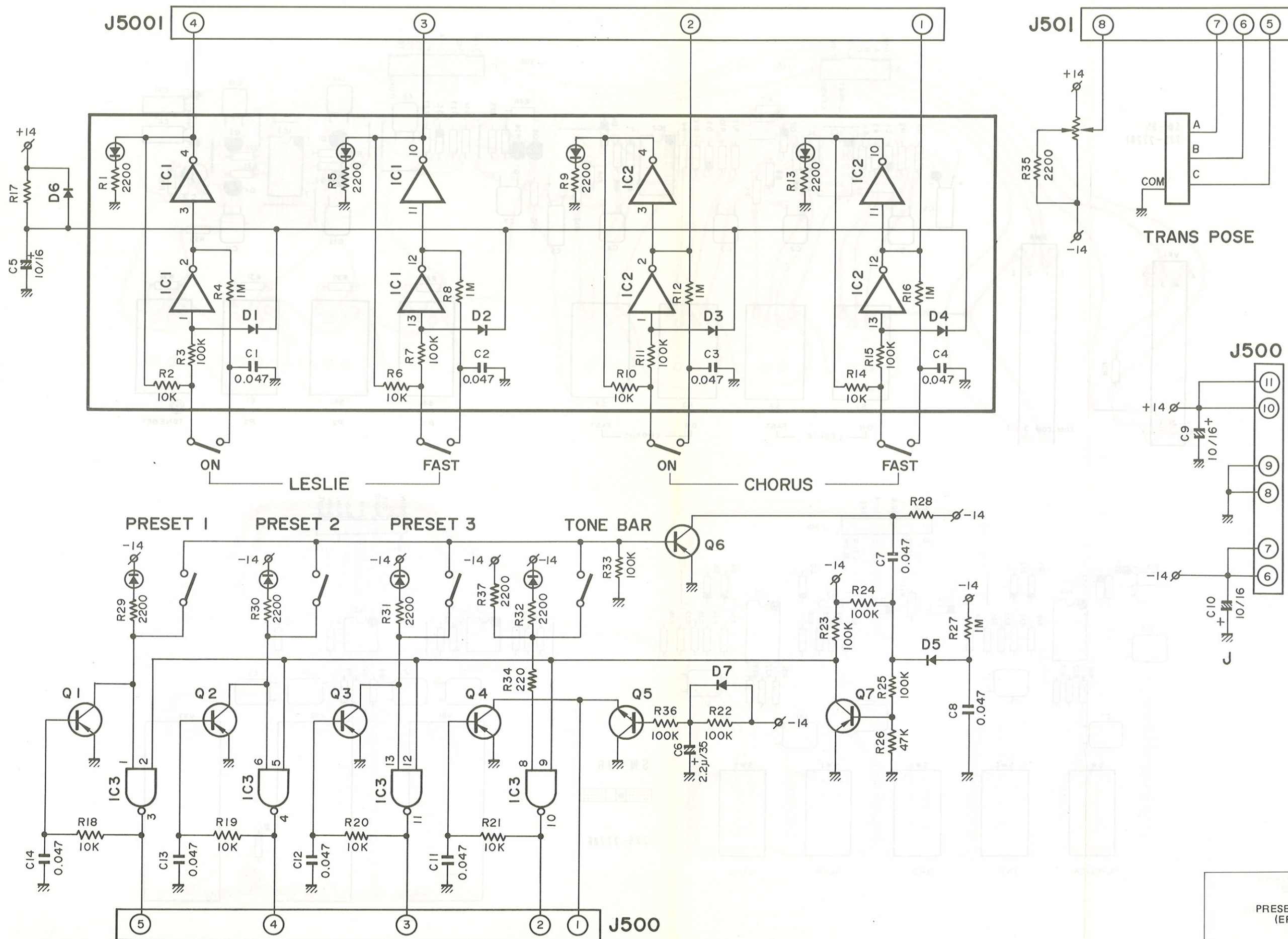


FIGURE 3-4
PRESET SWITCH BOARD
(EF-95) 225-22281
SCHEMATIC

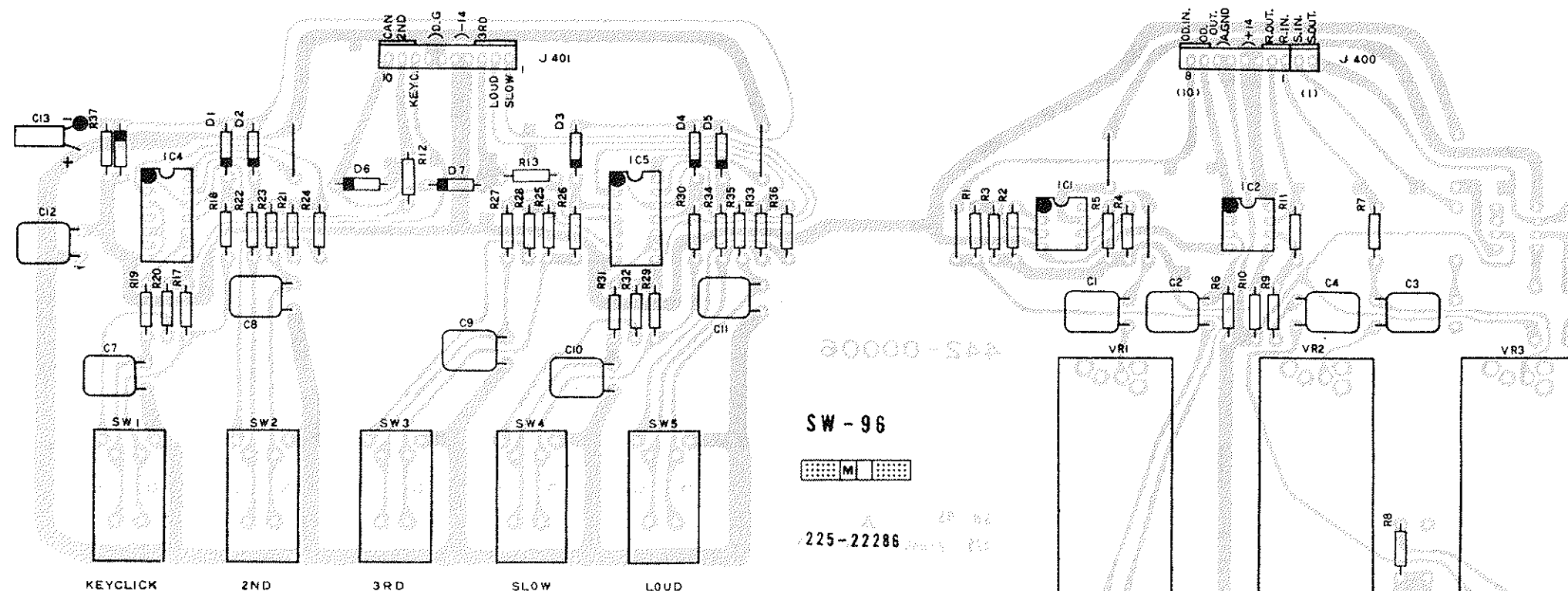
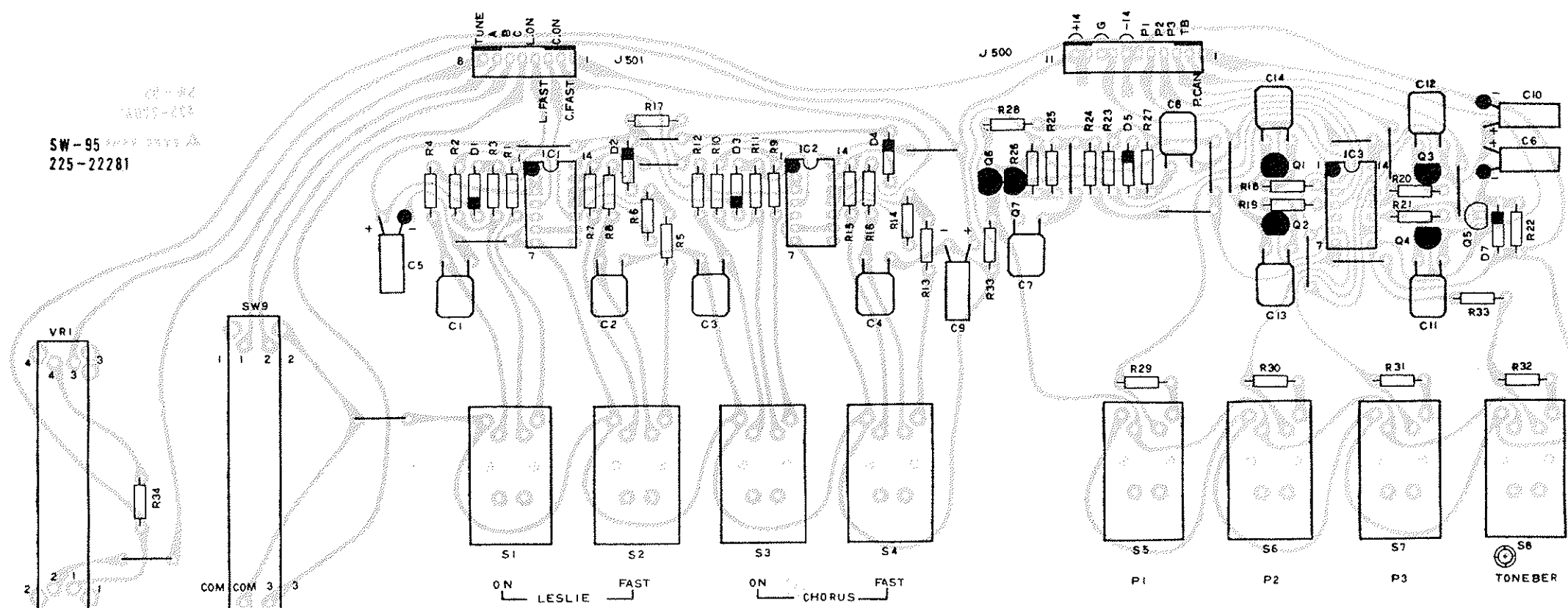


FIGURE 3-5
PRESET SWITCH BOARD
(SW-95) 225-22281
&
PERCUSSION SWITCH BOARD
(SW-96) 225-22286
LAYOUT

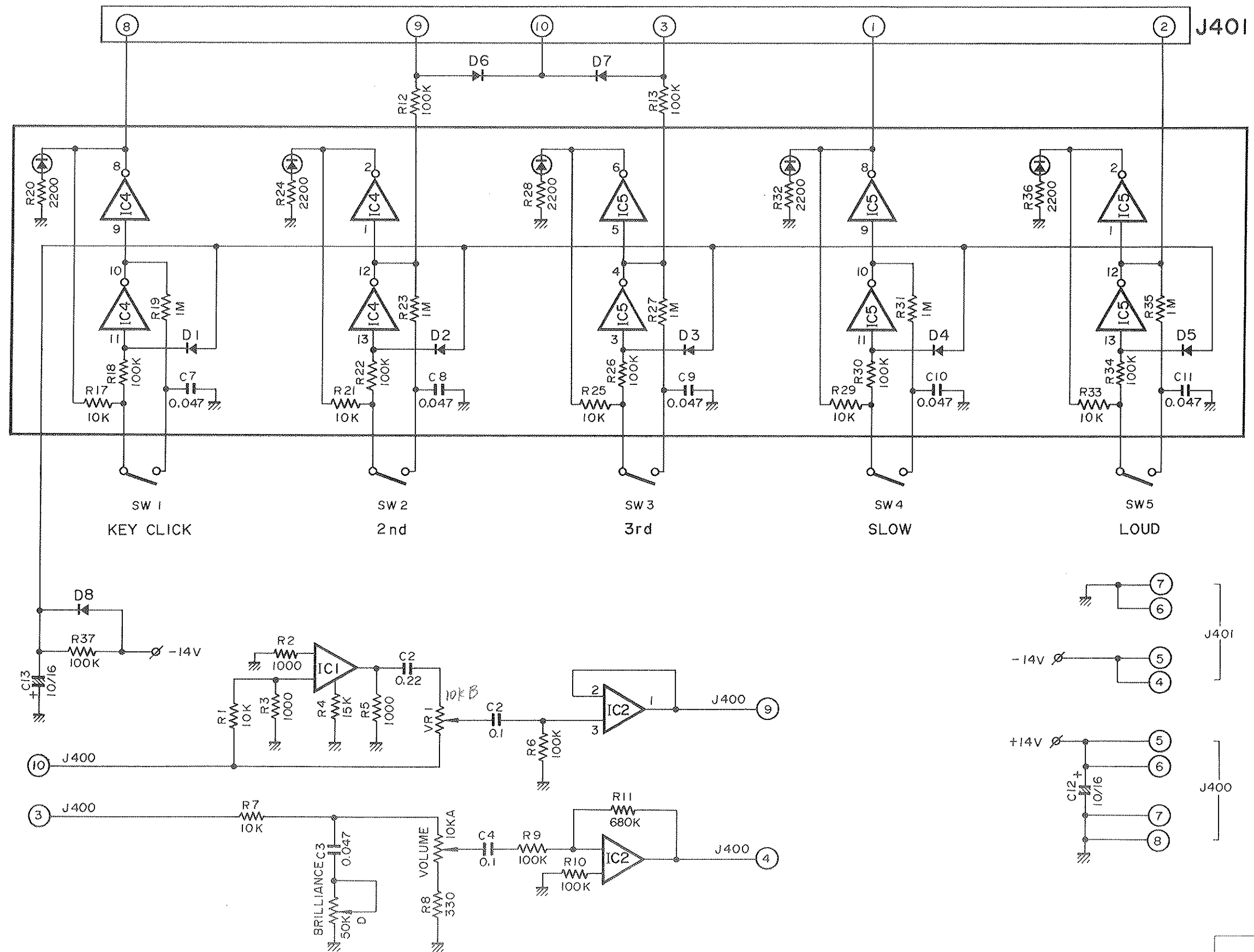


FIGURE 3-6
PERCUSSION SWITCH BOARD
(SW-96) 225-22286
SCHEMATIC

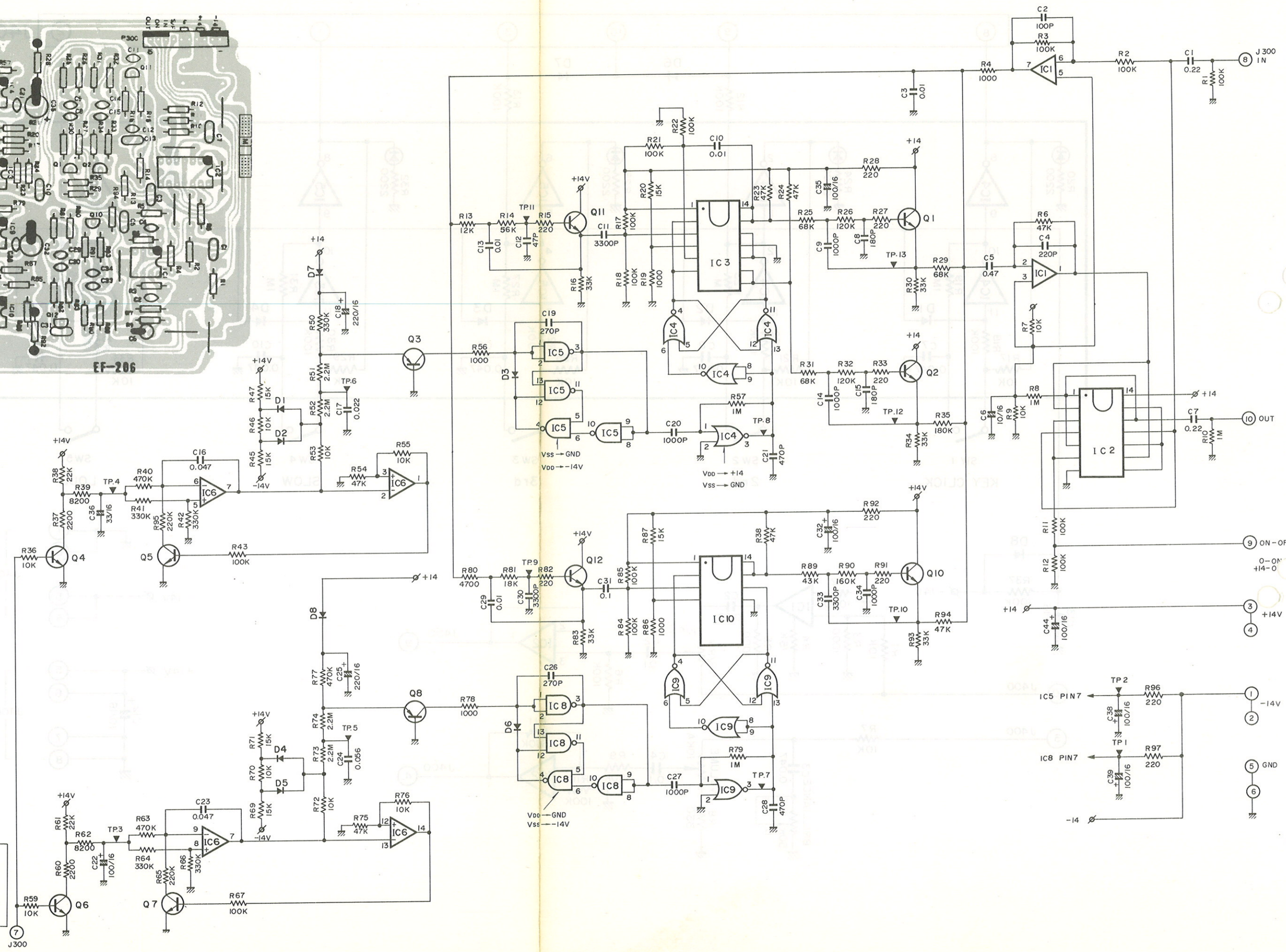
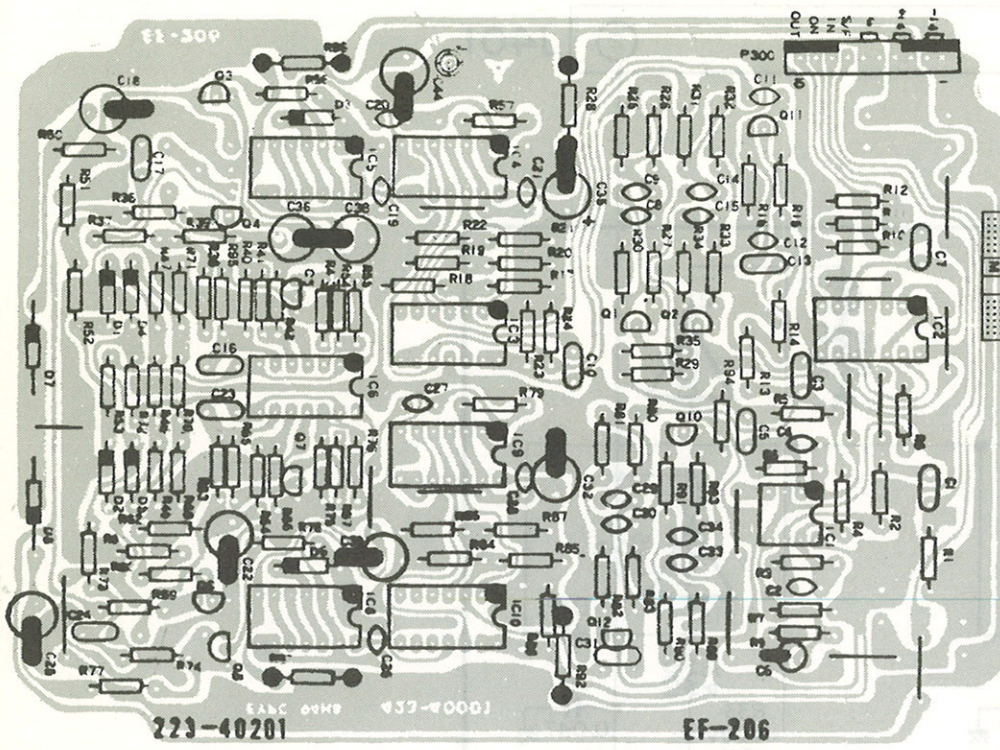


FIGURE 3-7
ROTARY EFFECT BOARD
(EF-206) 223-40201
SCHEMATIC & LAYOUT

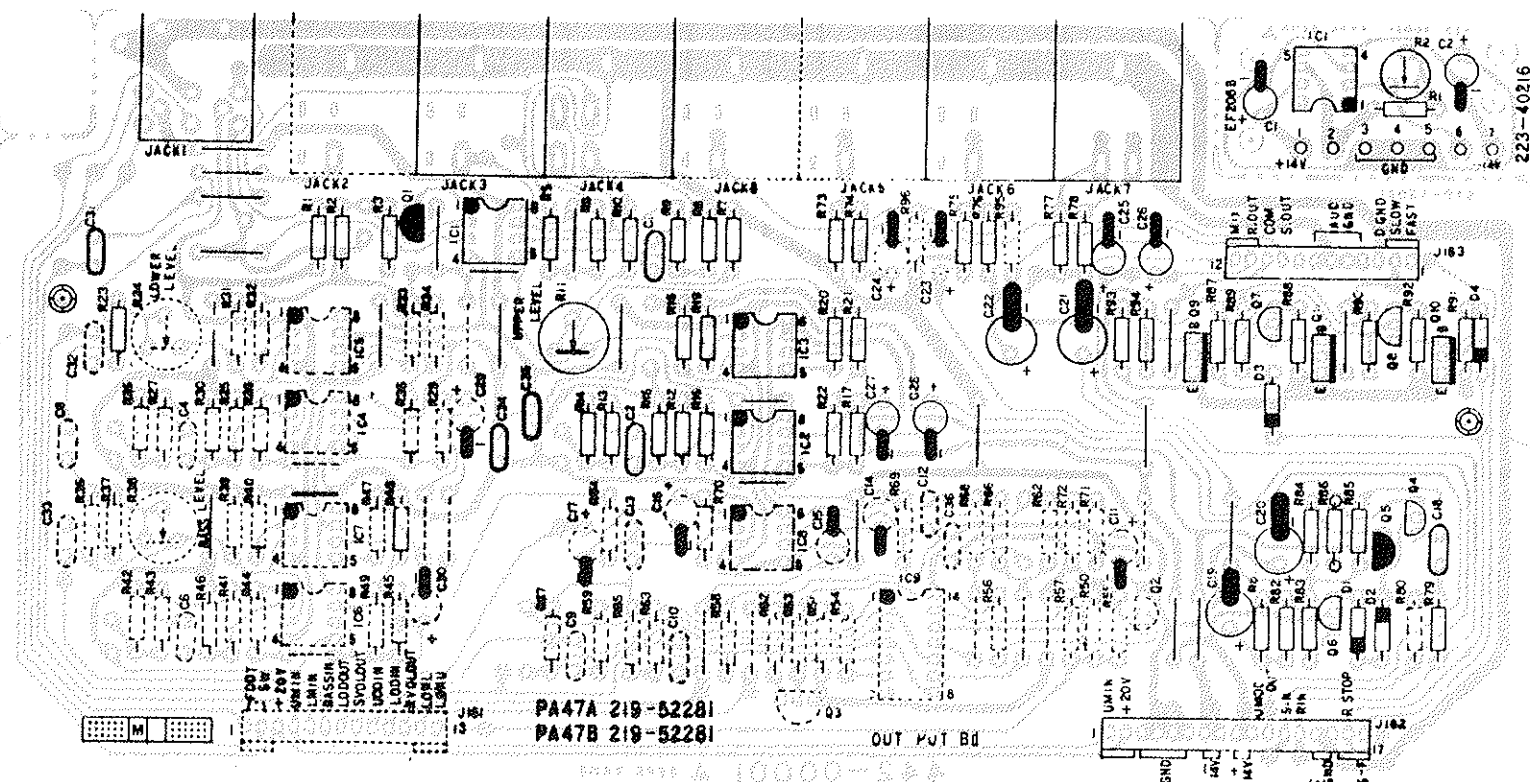
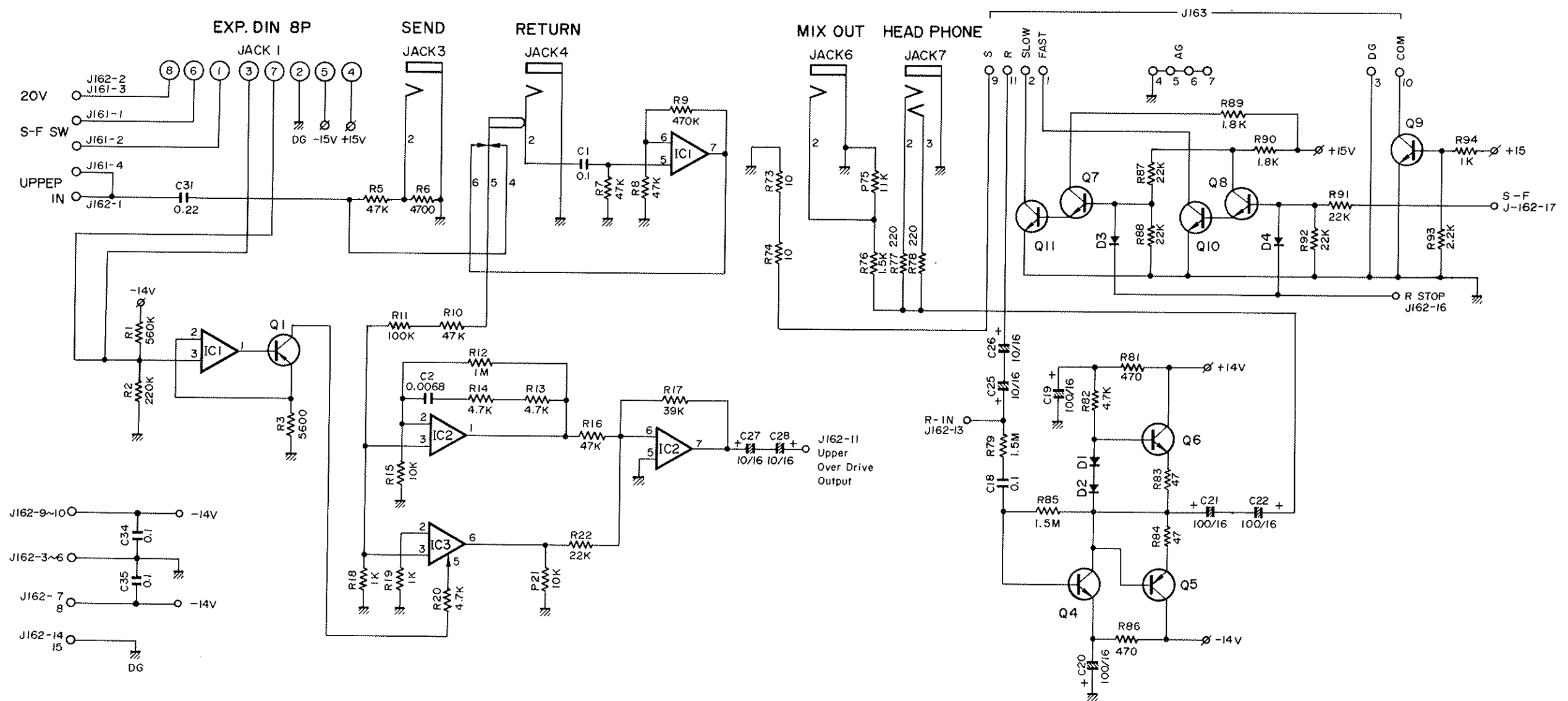


FIGURE 3-8
 OUTPUT BOARD
 (PA-47B) 219-52282
 SCHEMATIC & LAYOUT

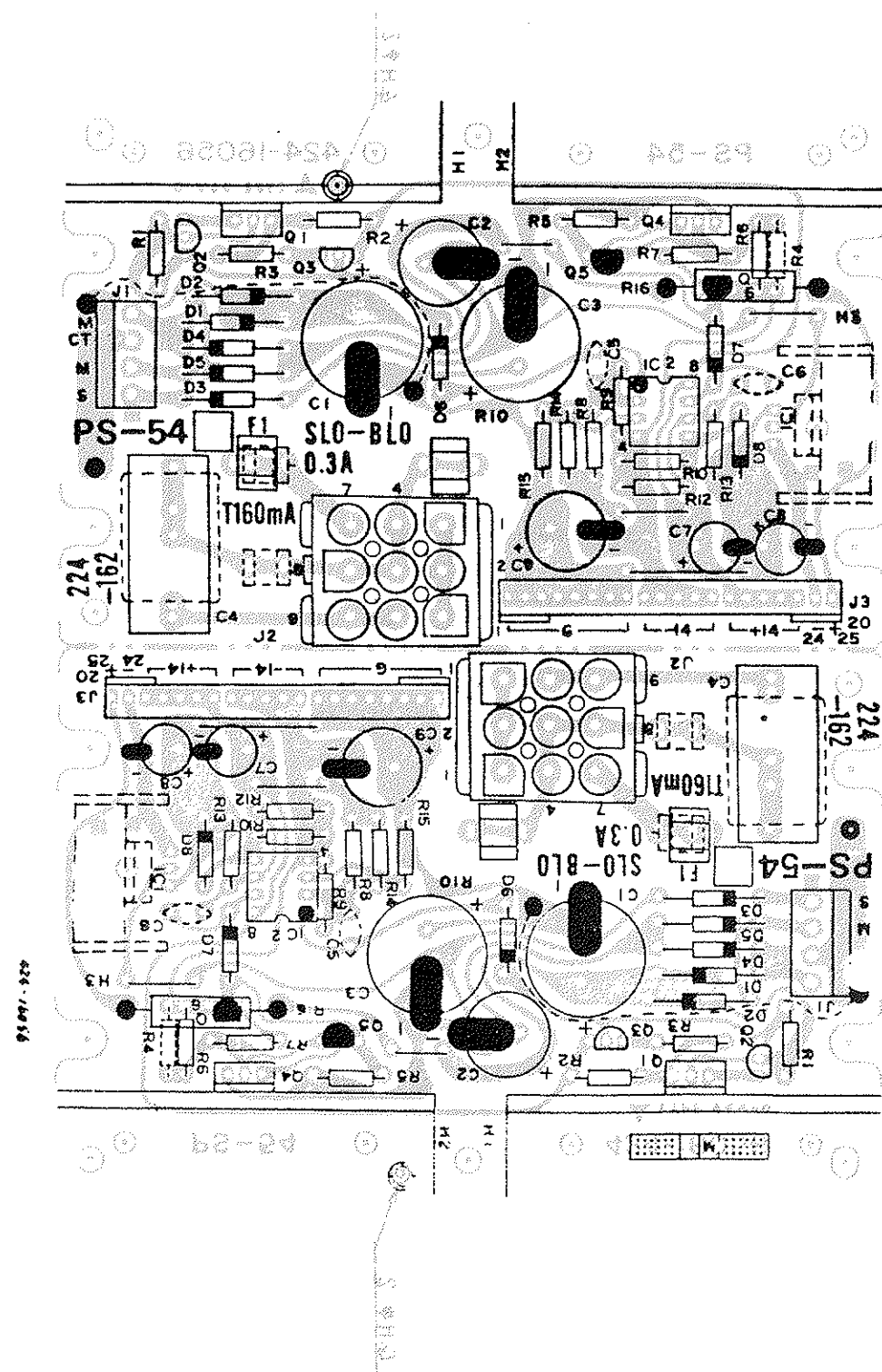
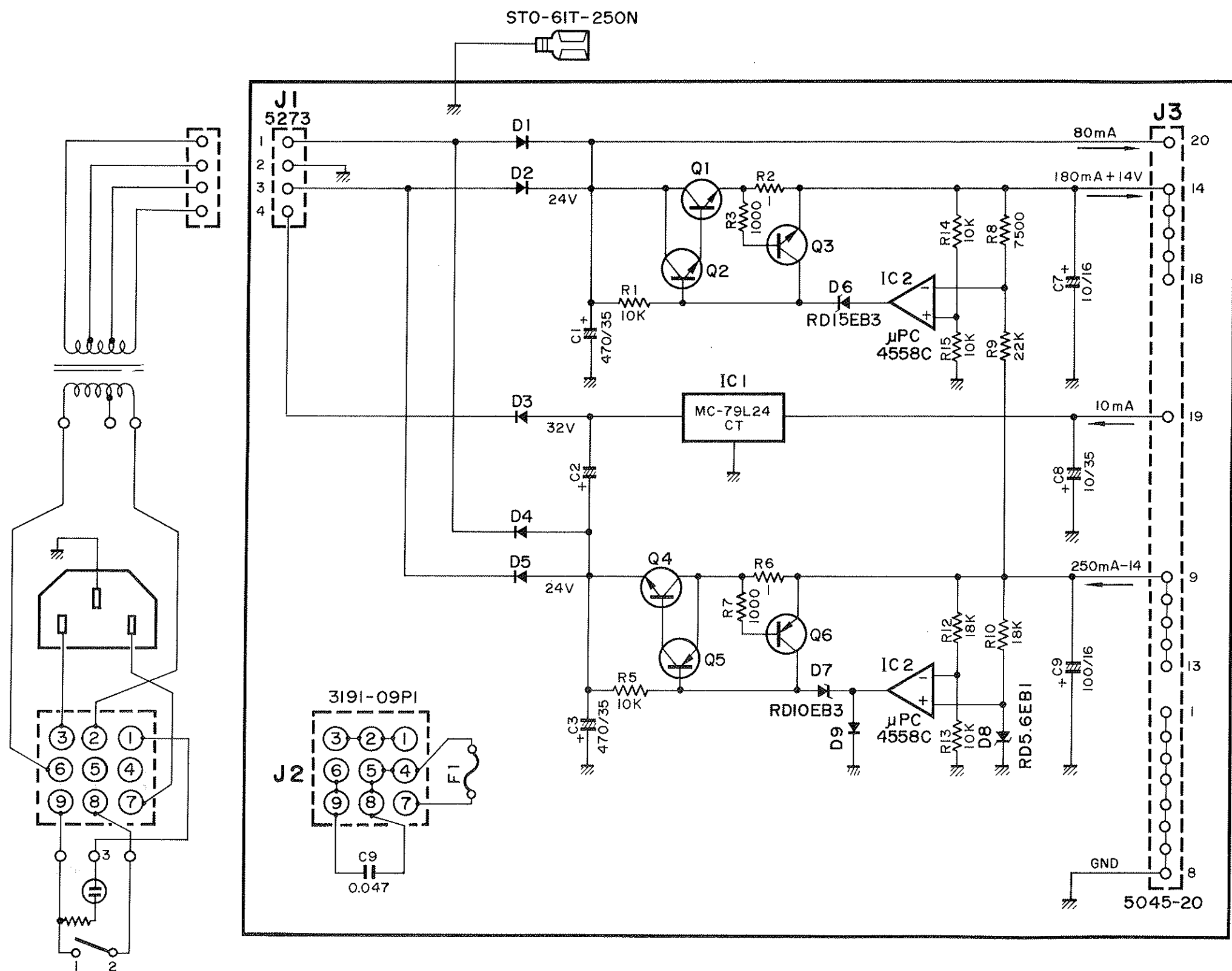
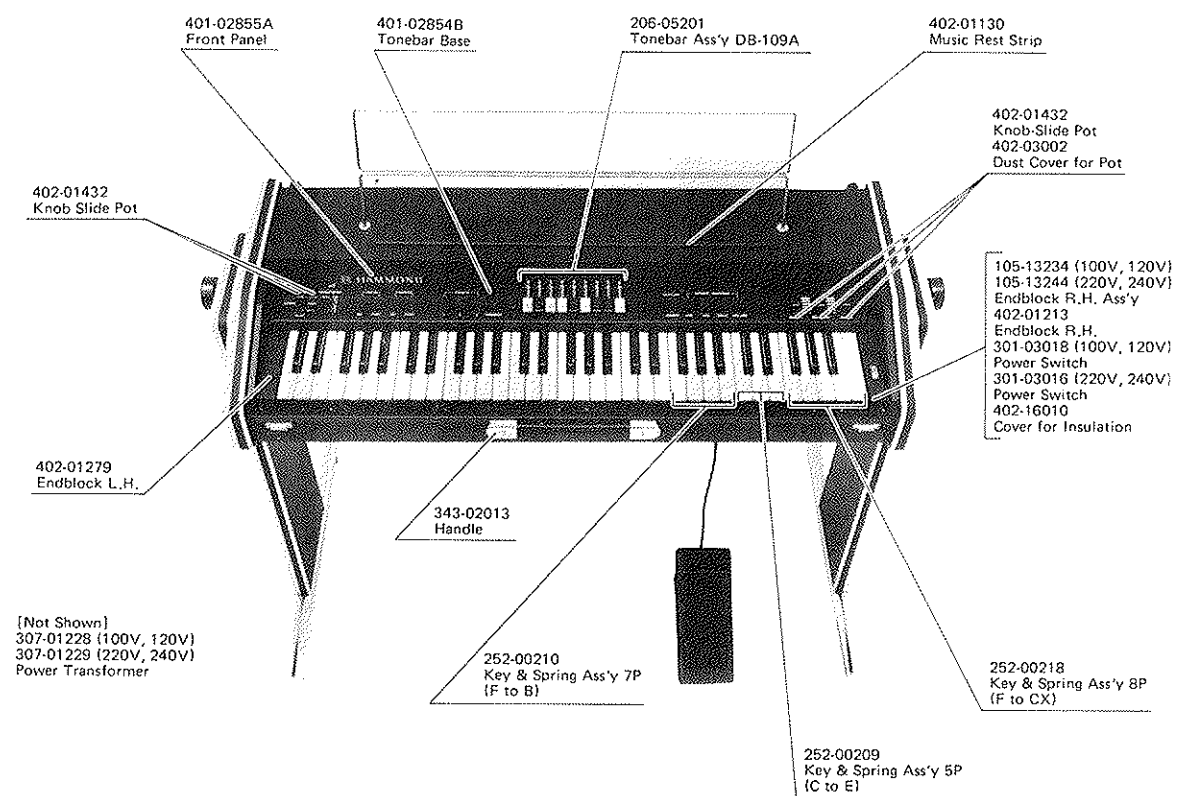


FIGURE 3-9
POWER SUPPLY BOARD
(PS-54A) 224-16256 (220V, 240V Area)
SCHEMATIC & LAYOUT
224-16259 (120V Area)
224-16262 (100V Area)

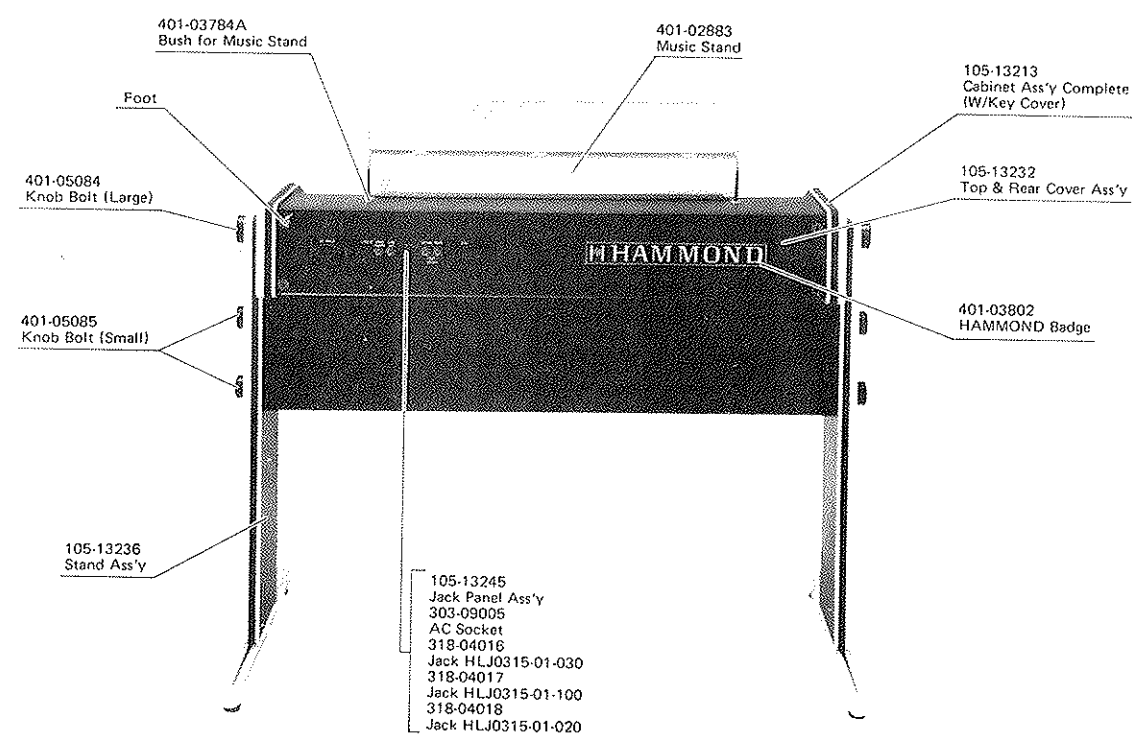
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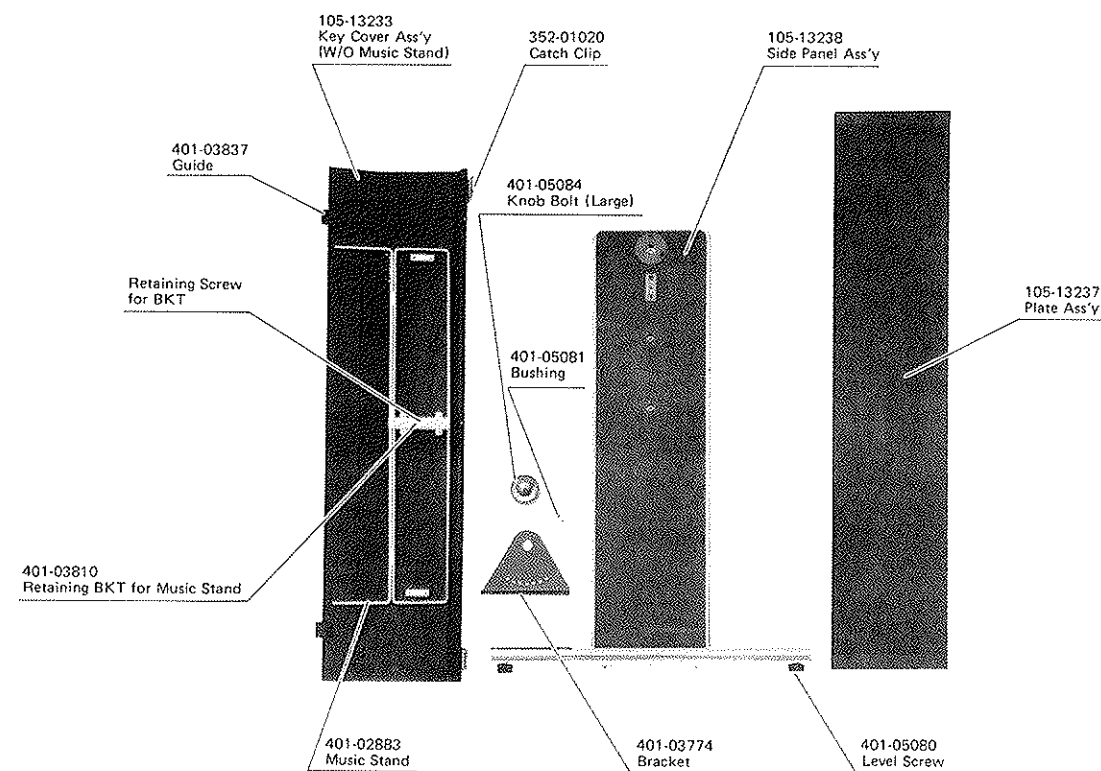
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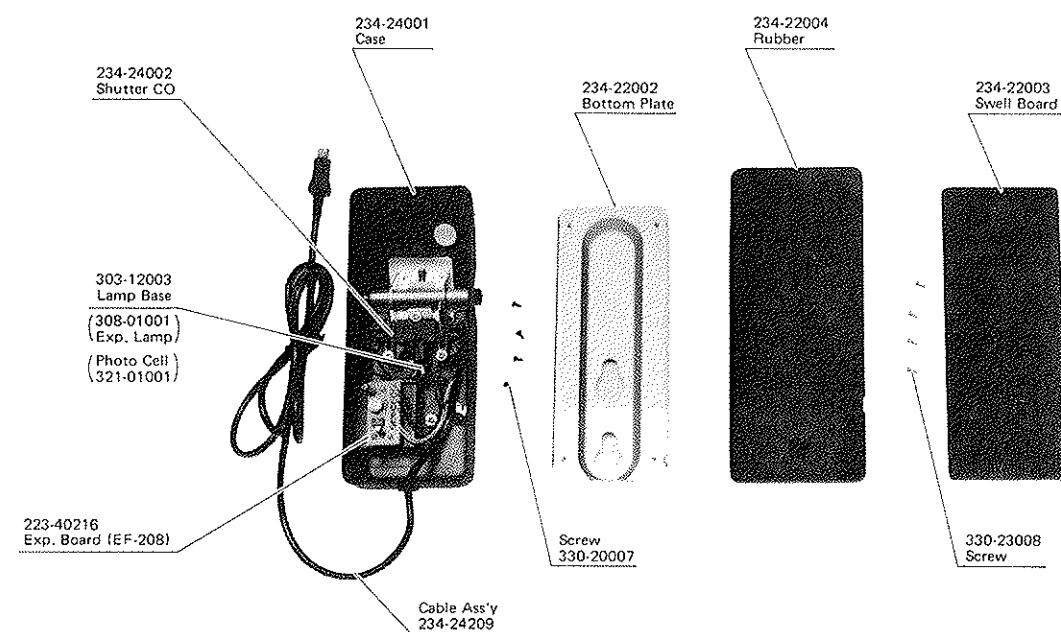
COMBO ORGAN B-100 (18350K)
FRONT UPPER VIEW



COMBO ORGAN B-100 (18350K)
REAR VIEW



KEY BOARD COVER & STAND
ILLUSTRATED PARTS



234-24204 (EXP-7B)
EXPRESSION PEDAL ASS'Y
EXPOSED VIEW

DV-14 TONE GENERATOR BOARD 229-21206

PARTS NAME	DESCRIPTION	RC. NUMBER	PARTS NUMBER
Printed Wiring Board	No Parts		429-21006
Integrated Circuit	075-000440	IC1 thru 4	319-07007
Integrated Circuit	μ PC4558C	IC5 thru 8, 11	319-23020
Integrated Circuit	MC14001BCP	IC9	319-06012
Integrated Circuit	MM5837N	IC10	319-08001
Integrated Circuit	MC14051BCP	IC12	319-06033
Integrated Circuit	S50240	IC13	319-01014
Integrated Circuit	MC14040BCP	IC14	319-03012
Integrated Circuit	MC14046BCP	IC15	319-25007
Transistor	2SA1015Y	Q1 thru 7, 19 thru 32, 35	305-01051
Transistor	2SC1675M	Q33, 34	305-03082
Transistor	2SC1815Y	Q15 thru 18	305-03087
Transistor	2SC1222E	Q8 thru 14	305-03101
Zener Diode	RD6.2EB2	D181	337-06012
Diode	1S1555	D123 thru 176, 179, 180	306-01005
Vari Cap.	MV104	D177	306-05005
Coil	14S-080-2170	L1	312-02020
Printed Network	D13002110	RA1 thru 7	320-97040
Printed Network	22K x 12	RA8	320-97059
IC Socket	DICA-40A-T1		303-13004
Capacitor Electrolytic	10 μ F/16V	C200, 206, 208, 229, 252 thru 256, 259 thru 263	311-08034
Capacitor Electrolytic	100 μ F/16V	C257, 258	311-08038
Capacitor Electrolytic	1 μ F/50V	C250	311-08058
Capacitor Ceramic (Thermal Compensator)	220pF	C224	311-19026
Capacitor Ceramic	47pF	C228	311-01027
Capacitor Ceramic	100pF	C193 thru 199, 209 thru 220	311-01010
Capacitor Ceramic	150pF	C223	311-01011
Capacitor Ceramic	390pF	C225	311-01053
Capacitor Ceramic	2200pF	C203	311-01020
Capacitor Ceramic	4700pF	C201	311-01021
Connector	5045-3A		317-03163
Connector	5045-4A		317-03164
Connector	5045-8A		317-03168
Connector	5045-10A		317-03170
Connector	5045-11A		317-03171
Connector	5045-18A		317-03178
Connector	5046-15A		317-03263
Connector	5046-16A		317-03306

EF-206 ROTARY EFFECT BOARD 223-40201

PARTS NAME	DESCRIPTION	RC. NUMBER	PARTS NUMBER
Printed Wiring Board	No Parts		423-40001
Integrated Circuit	μ PC4558C	IC1	319-23020
Integrated Circuit	MC14007BCP	IC2	319-06011
Integrated Circuit	MN3010	IC3	319-26010
Integrated Circuit	MC14001BCP	IC4, 9	319-06005
Integrated Circuit	MC14011UBCP	IC5, 8	319-06006
Integrated Circuit	μ PC324C	IC6	319-23014
Integrated Circuit	MN3004	IC10	319-26006
Transistor	2SA1015Y	Q3, 8	305-01051
Transistor	2SC1815Y	Q1, 2, 4 thru 7, 10 thru 12	305-03087
Diode	1S1555	D1 thru 6	306-01005
Diode	1S1885	D7, 8	306-01020
Capacitor Electrolytic	10 μ F/16V	C6	311-08034
Capacitor Electrolytic	33 μ F/16V	C36	311-08036
Capacitor Electrolytic	100 μ F/16V	C18, 22, 25, 32, 35, 38, 39, 44	311-08038
Capacitor Ceramic	47pF	C12	311-01027
Capacitor Ceramic	100pF	C2	311-01010
Capacitor Ceramic	180pF	C8, 15	311-01069
Capacitor Ceramic	220pF	C4	311-01046
Capacitor Ceramic	270pF	C19, 26	311-01029
Capacitor Ceramic	470pF	C21, 28	311-01015
Capacitor Ceramic	1000pF	C9, 14, 20, 27, 34	311-01050
Capacitor Ceramic	3300pF	C11, 30, 33	311-01054
Connector	5045-10A		317-03170

PA-47B OUTPUT BOARD 219-52282

PARTS NAME	DESCRIPTION	RC. NUMBER	PARTS NUMBER
Printed Wiring Board	No Parts		419-52081
Integrated Circuit	μ PC4558C	IC1, 2	319-23020
Integrated Circuit	LM3080N	IC3	319-23021
Transistor	2SA1015Y	Q1	305-01051
Transistor	2SA1020O or 1020Y	Q5	305-01059 or 305-01058
Transistor	2SC1173Y	Q9, 10, 11	305-03081
Transistor	2SC1815Y	Q4, 7, 8	305-03087
Transistor	2SC2655O or 2655Y	Q6	305-03106 or 305-03105
Diode	1S2473	D1 thru 4	306-01017
Capacitor Electrolytic	10 μ F/16V	C25 thru 28	311-08034
Capacitor Electrolytic	100 μ F/16V	C19 thru 22	311-08038
Connector	5045-12A		317-03172
Connector	5045-17A		317-03177
Din Connector	Din 8P TCS5380-01A	Jack 1	318-04019
Jack	HLJ0315-01-030	Jack 4	318-04016
Jack	HLJ0315-01-100 or HLJ0315-01-30	Jack 3, 6	318-04017 or 318-04016
Jack	HLJ0315-01-020	Jack 7	318-04018
Trimmer Pot	100KB EVL-R4S-A00	R11	336-01010

PS-54A POWER SUPPLY BOARD 224-16256 (220V, 240V Area)
224-16259 (120V Area)
224-16262 (100V Area)

PARTS NAME	DESCRIPTION	RC. NUMBER	PARTS NUMBER
Printed Wiring Board	No Parts		424-16056
Integrated Circuit	MC79L24CP	IC1	319-28031
Integrated Circuit	μ PC4558C	IC2	319-23020
Transistor	2SA1015Y	Q5, 6	305-01051
Transistor	2SC1815Y	Q2, 3	305-03087
Transistor	2SD526Y	Q1, 4	305-04014
Zener Diode	RD15EB3	D6	337-06034
Zener Diode	RD5.6EB1	D8	337-06042
Zener Diode	RD10EB3	D7	337-06036
Diode	1S1885	D1 thru 5	306-01005
Diode	1S2473	D9	306-01020
Capacitor Electrolytic	10 μ F/16V	C7	311-08034
Capacitor Electrolytic	100 μ F/16V	C2, 9	311-08038
Capacitor Electrolytic	10 μ F/35V	C8	311-08076
Capacitor Electrolytic	470 μ F/35V	C1, 3	311-08083
Capacitor Polyester	.047 μ F/ECQ-UF (220V-240V Area Only)		311-04058
Capacitor Polyester	.047 μ F/ECQ-UC (120V Area Only)		311-06011
Capacitor Polyester	.047 μ F/ECQ-F1A (100V Area Only)		311-04097
Fuse	160mA NSD (220V-240V Area Only)		302-01077
Fuse	0.3A UL Slow Blow (120V Area Only)		302-01083
Fuse	315mA NSD (100V Area Only)		302-01063
Connector	3191-09P1		317-01069
Connector	5045-20A		317-03180
Connector	5273-4A		317-03334

SW-95 PRESET SWITCH BOARD 225-22281

PARTS NAME	DESCRIPTION	RC. NUMBER	PARTS NUMBER
Printed Wiring Board	No Parts		425-22081
Integrated Circuit	MC14069UBCP	IC1, 2	319-11001
Integrated Circuit	MC14011BCP	IC3	319-06014
Transistor	2SA1015Y	Q1 thru 4, 6, 7	305-01051
Transistor	2SC1815Y	Q5	305-03087
Diode	1S1555	D1 thru 5, 7	306-01005
Capacitor Electrolytic	10 μ F/16V	C5, 9, 10	311-08034
Capacitor Electrolytic	2.2 μ F/50V	C6	311-08059
L·E·D Switch	KHC11013	S1 thru 8	301-02129
Slide Switch	SGC1017	SW9	301-09001
Slide Pot	S-3015 10KB	VR1	358-05051
Connector	5045-08A		317-03168
Connector	5045-11A		317-03171

SW-96 PERCUSSION SWITCH BOARD 225-22286

PARTS NAME	DESCRIPTION	RC. NUMBER	PARTS NUMBER
Printed Wiring Board	No Parts		425-22086
Integrated Circuit	LM3080N	IC1	319-23021
Integrated Circuit	μ PC4558C	IC2	319-23020
Integrated Circuit	MC14069UBCP	IC4, 5	319-11001
Diode	1S2473	D1 thru 8	306-01017
Capacitor Electrolytic	10 μ F/16V	C12, 13	311-08034
L·E·D Switch	KHC11013	S1 thru 5	301-02129
Slide Pot	S-3015 10KA	VR3	358-05004
Slide Pot	S-3015 10KB	VR1	358-05014
Slide Pot	S-3015 50KD	VR2	358-05052
Connector	5045-08A		317-03168
Connector	5045-10A		317-03170

EF-208B EXPRESSION BOARD 223-40216

PARTS NAME	DESCRIPTION	RC. NUMBER	PARTS NUMBER
Printed Wiring Board	No Parts		423-40016
Integrated Circuit	TL081	IC1	319-23025
Capacitor Electrolytic	10 μ F/16V	C1, 2	311-08034