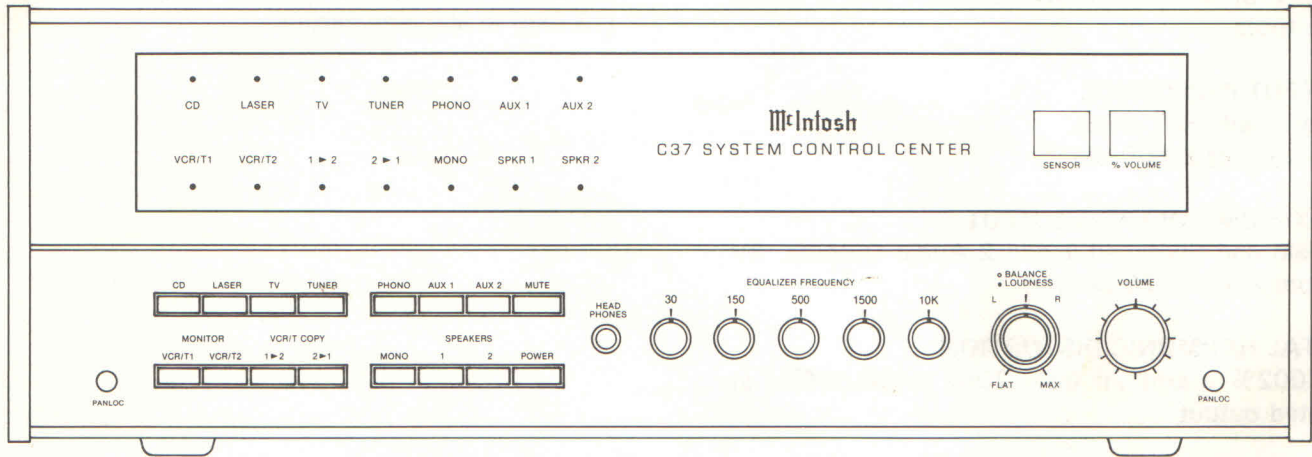


C37

SYSTEM CONTROL CENTER



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McIntosh® Service Manual

Performance Specifications

POWER REQUIREMENTS

120 volts, 50/60Hz, 25 watts.

MECHANICAL INFORMATION

Size: Front panel measures 16-1/8" wide (41cm) by 5-7/16" high (13.8cm). Depth is 13" (33cm) including connectors. Knob clearance required in front of the mounting panel is 1-1/4" (3.2cm).

Weight: 18 pounds (8.2kg) net, 30 pounds (13.6kg) in shipping carton.

FREQUENCY RESPONSE

+0, - 0.5dB from 20Hz to 20,000Hz

RATED OUTPUT

2.5V at MAIN and SWITCHED 1 and 2 Audio Outputs.

OUTPUT IMPEDANCE

Balanced: 600 ohms.
Unbalanced: 600 ohms.

MAXIMUM VOLTAGE OUTPUT

Main and Switched 1 and 2 Audio Outputs, 8V from 20Hz to 20,000Hz.

TOTAL HARMONIC DISTORTION

0.002% maximum from 20Hz to 20,000Hz at rated output.

SENSITIVITY

Phono: 2.5mV for 2.5V rated output, (0.5mV IHF).
High Level: 250mV for 2.5V rated output (50mV IHF).

SIGNAL TO NOISE RATIO, A-WEIGHTED

Phono: 90dB below 10mV input (85dB IHF).
High Level: 105dB below rated output (95dB IHF).

MAXIMUM INPUT SIGNAL

Phono: 90mV.
High Level: 10V.

INPUT IMPEDANCE

Phono: 47K ohm and 65pf capacitance.
High Level: 22K ohms.

VOLTAGE GAIN

Phono to Tape: 40dB
Phono to Main: 60dB.
High Level to Tape: 0dB.
High Level to Main: 20dB.

EQUALIZATION CONTROLS

Variable 12dB boost to 12dB cut at center frequencies of 30, 150, 500, 1500, and 10,000Hz.

AC POWER OUTPUTS

(3) Switched, (1) Power Amp, and (1) Unswitched.

Mechanical Views

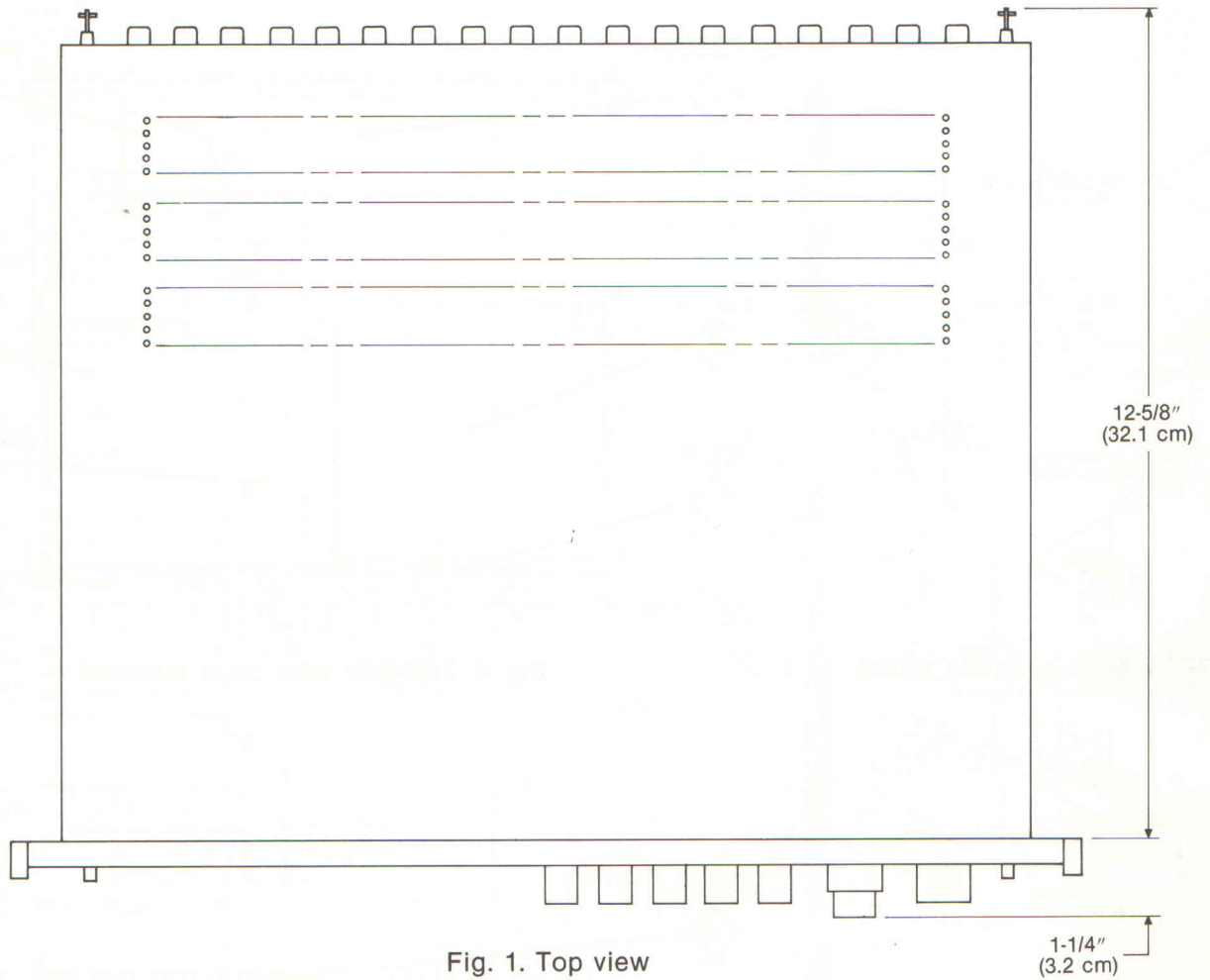


Fig. 1. Top view

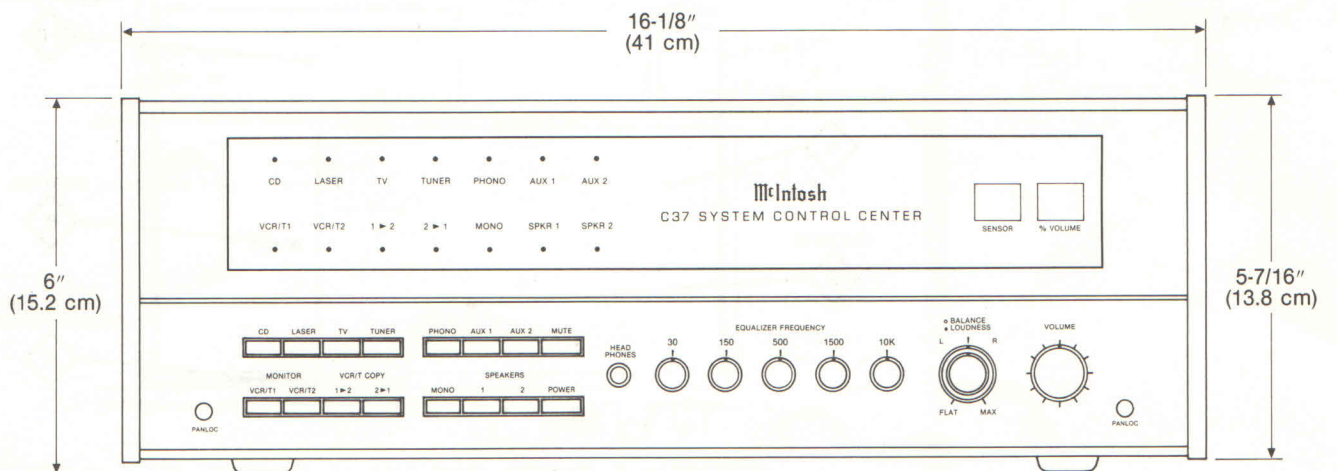
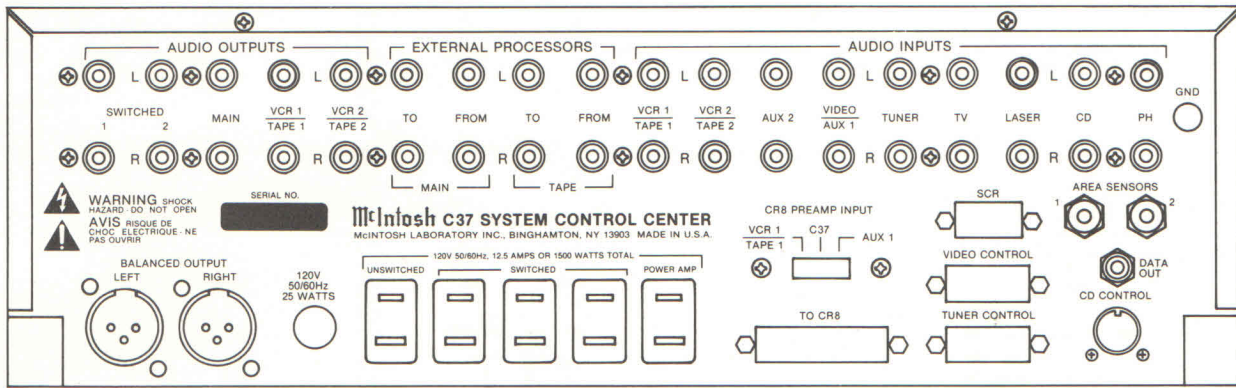


Fig. 2. Front view




Notes

- The heavy lines on the schematic denote the primary signal path.
- Unless otherwise specified:
 - Resistor values are in ohms.
 - Capacitance values smaller than 1 are in microfarads (μF) and greater than 1 are in picofarads (pF).
 - Inductor values are in microhenries (μH).
- Unless otherwise noted, all voltages indicated on the schematics are measured under the following conditions:
 - AC input at 120 volts, 50/60Hz.
 - All voltages are $\pm 10\%$ with respect to ground. A high impedance (10 megohm) voltmeter must be used.
 - Front panel controls are set at:

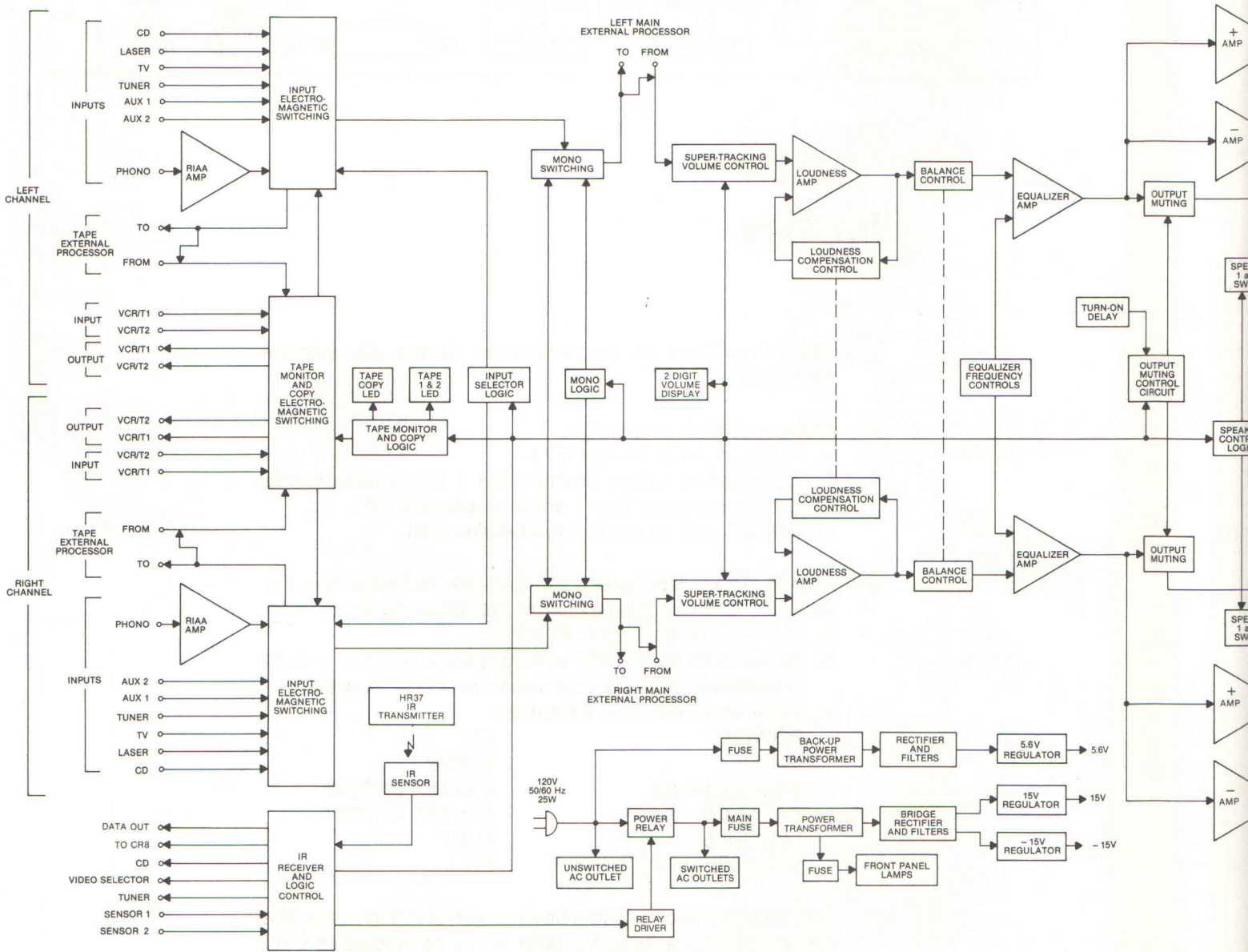
POWER	ON
INPUT	TUNER
EQUALIZER (5)	CENTER DETENT
BALANCE	CENTER DETENT
LOUDNESS	FLAT
VOLUME	FULL
- The voltages enclosed in a box are signal voltages that are measured with a 250mV, 1kHz signal connected to both channels at the TUNER input jacks.

WARNING:

Parts marked with the symbol  have critical characteristics.

Use ONLY replacement parts recommended by the manufacturer.

Block Diagram



Section Locations

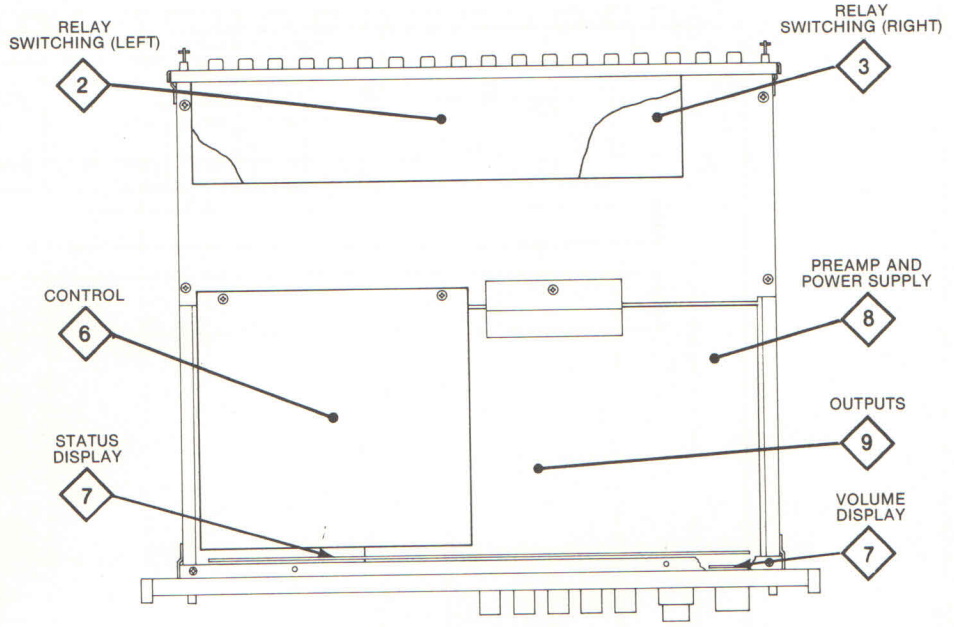
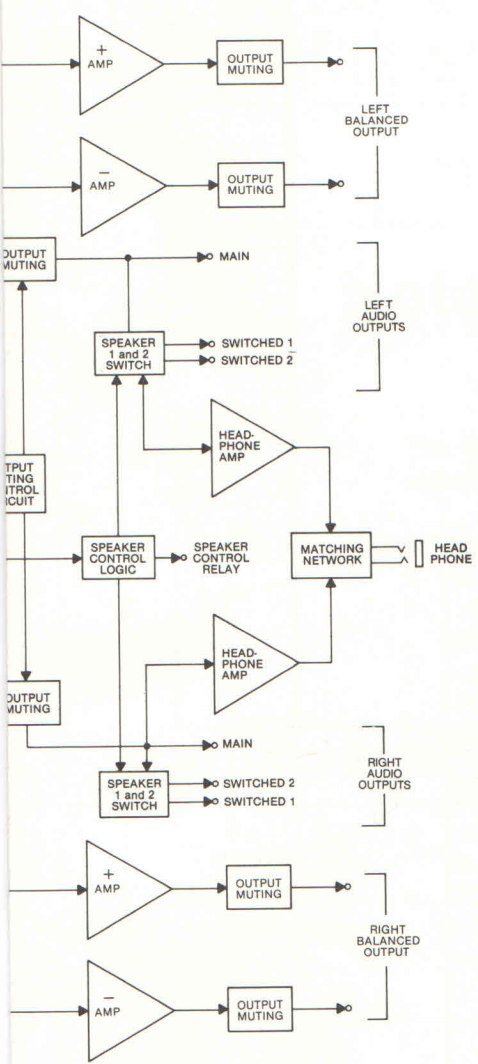


Fig. 4. Top view with cover removed

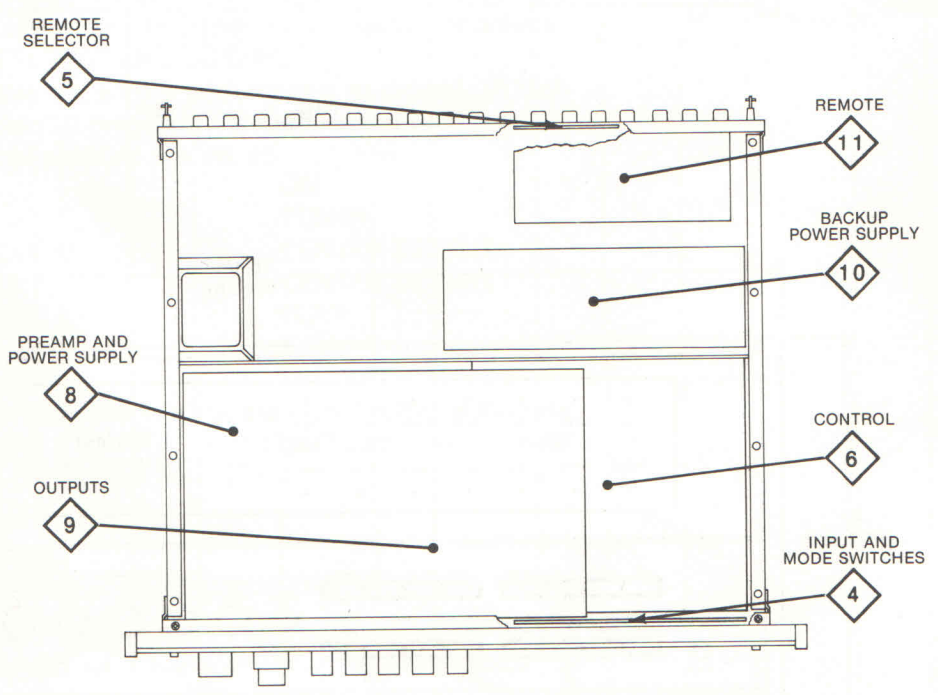


Fig. 5. Bottom view with cover removed

Interconnection Diagram



FRONT PANEL and TRIM PARTS LIST

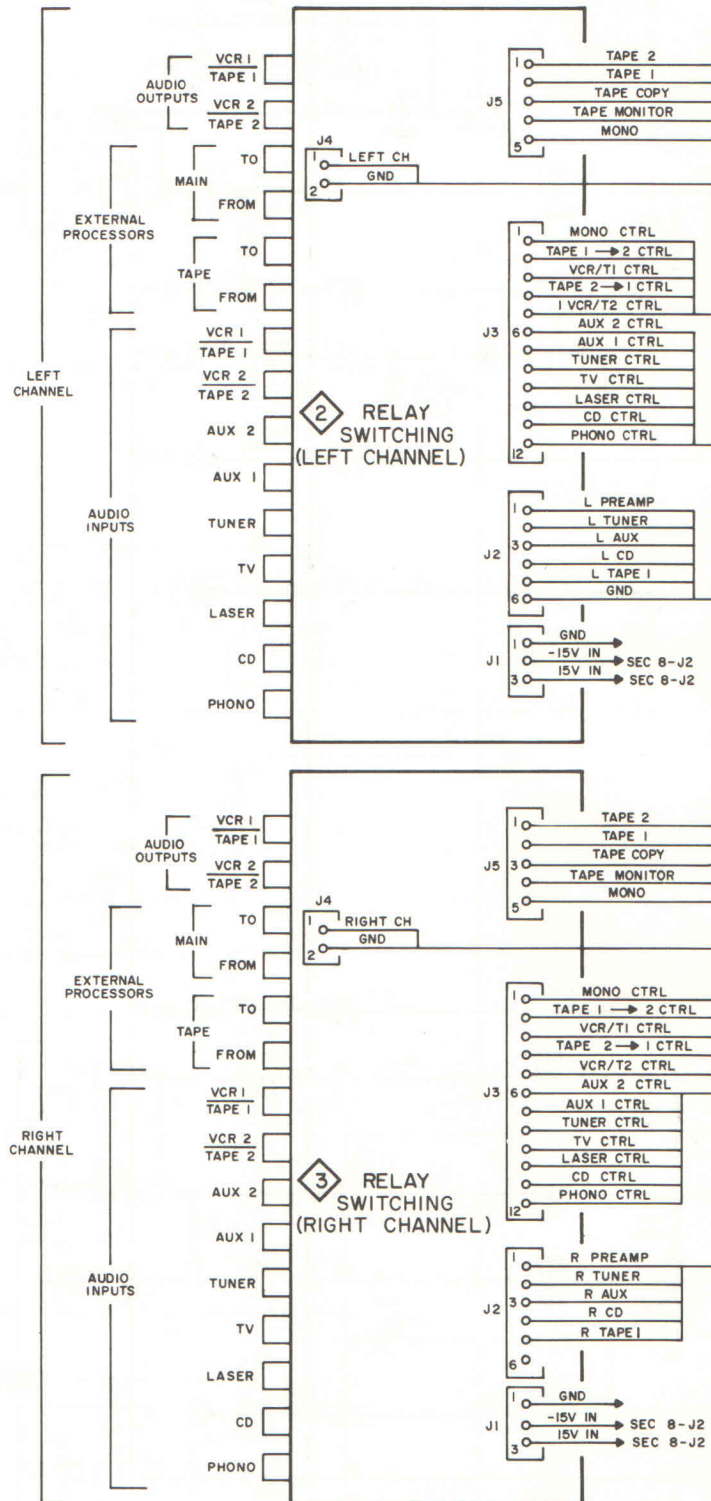
Part	Description
017396	Pushbutton, Black
017397	Pushbutton, Red
018375	Top Panel Rail
047238	Bottom Extrusion
018232	End Cap
047237	Front Panel, Glass
047442	Front Panel, Complete
090207	Balance Knob, Rear
090218	Loudness Knob, Front
090214	Volume Knob
090221	Equalizer Frequency Knob
104017	Knob Felt Washer, 3/4 Dia.

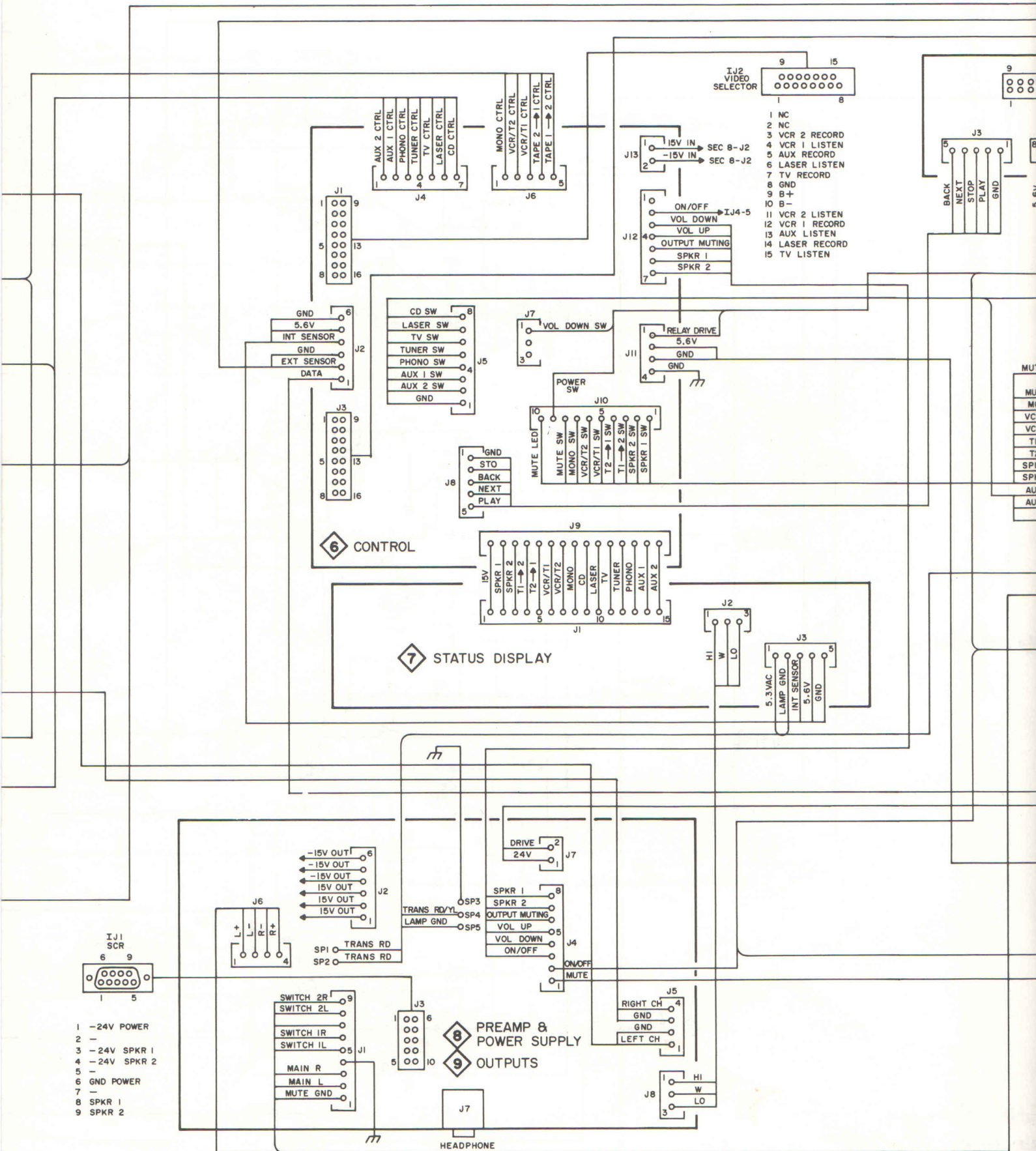
INSTALLATION HARDWARE PARTS LIST

Part	Description
003508	Panloc Shelf Bracket, Right
003509	Panloc Shelf Bracket, Left
017218	Plastic Foot, Secure w/100159 Screws
039671	Mounting Template
043401	Mounting Strip
046722	Hardware Package
100159	Mach Screw, 10-32 x 3/4

INTERCONNECTION PARTS LIST

Symbol	Part	Description
CAPACITORS		
C1, C2	061276	CD, .0047uF, 400V, UL/CSA
FUSES		
F1	089048	FUSE, SB, 0.25A, 250V, MDL-1/4
F2	089003	FUSE, SB, 1.5A, 125V, MDL-1.5
JACKS		
J1, J2	117437	XLR Connector, Male
TRANSFORMERS		
T1	159217	Power

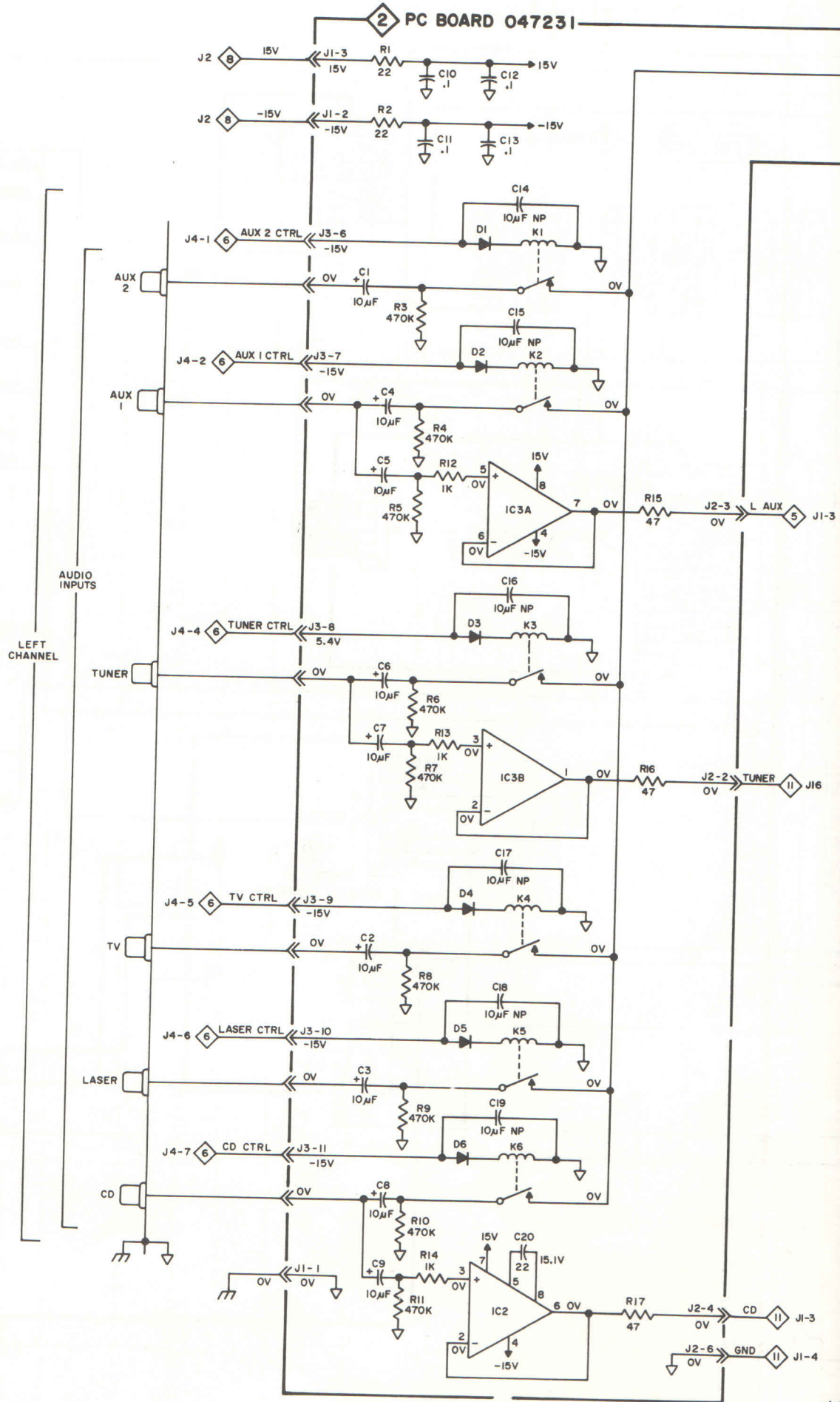


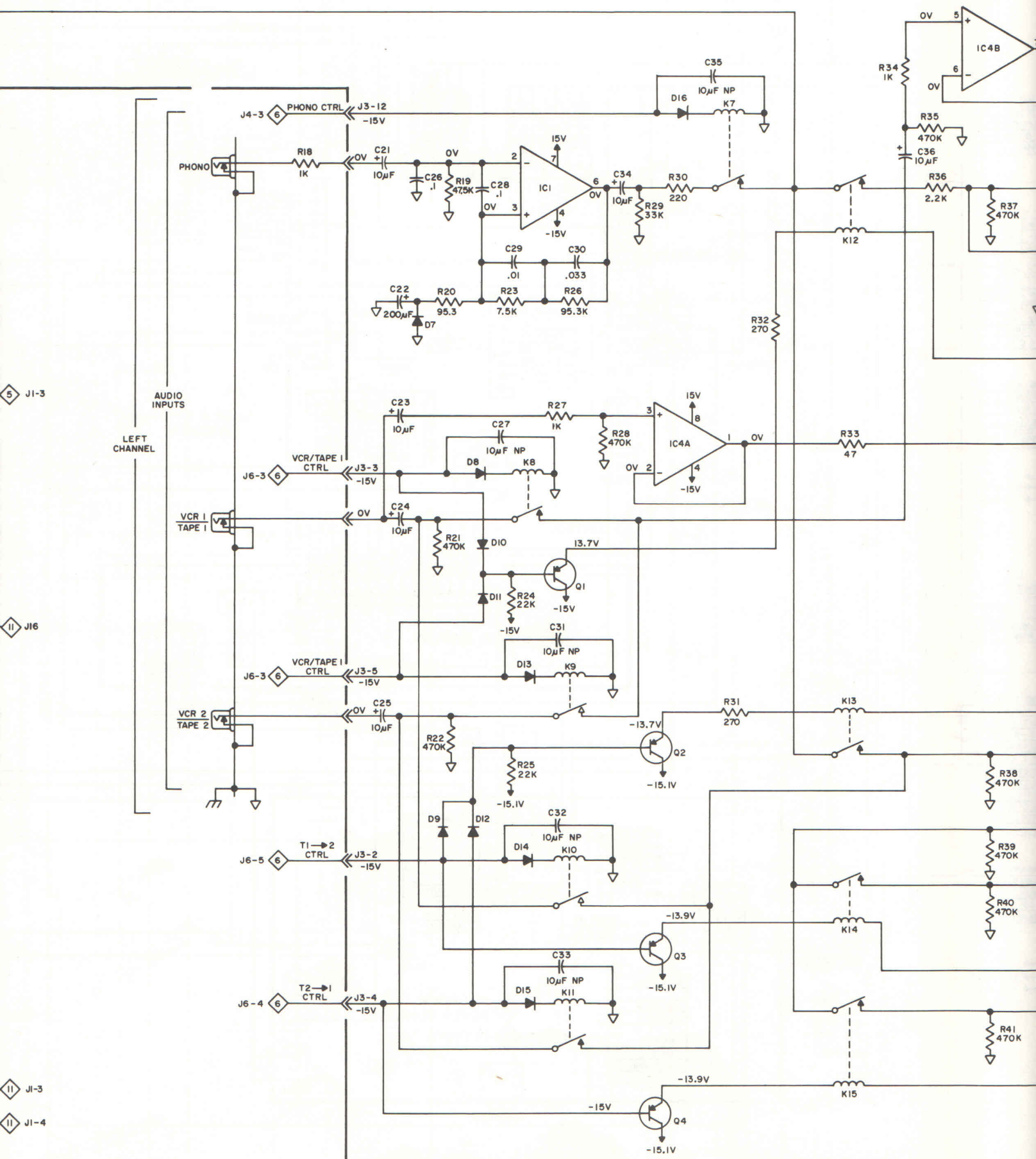


- 1 -24V POWER
- 2 -
- 3 -24V SPKR 1
- 4 -24V SPKR 2
- 5 -
- 6 GND POWER
- 7 -
- 8 SPKR 1
- 9 SPKR 2

2

Relay Switching (Left Channel)



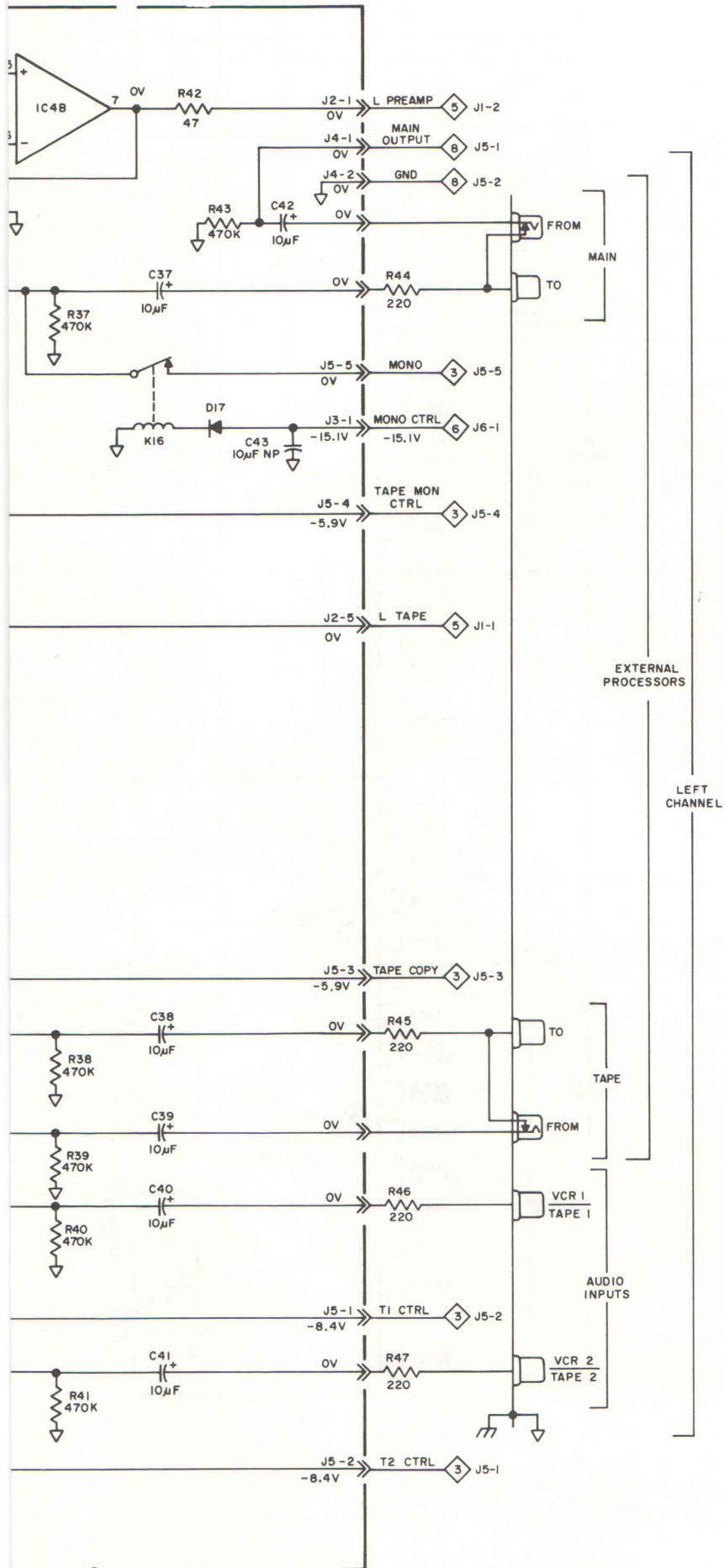


5 J1-3

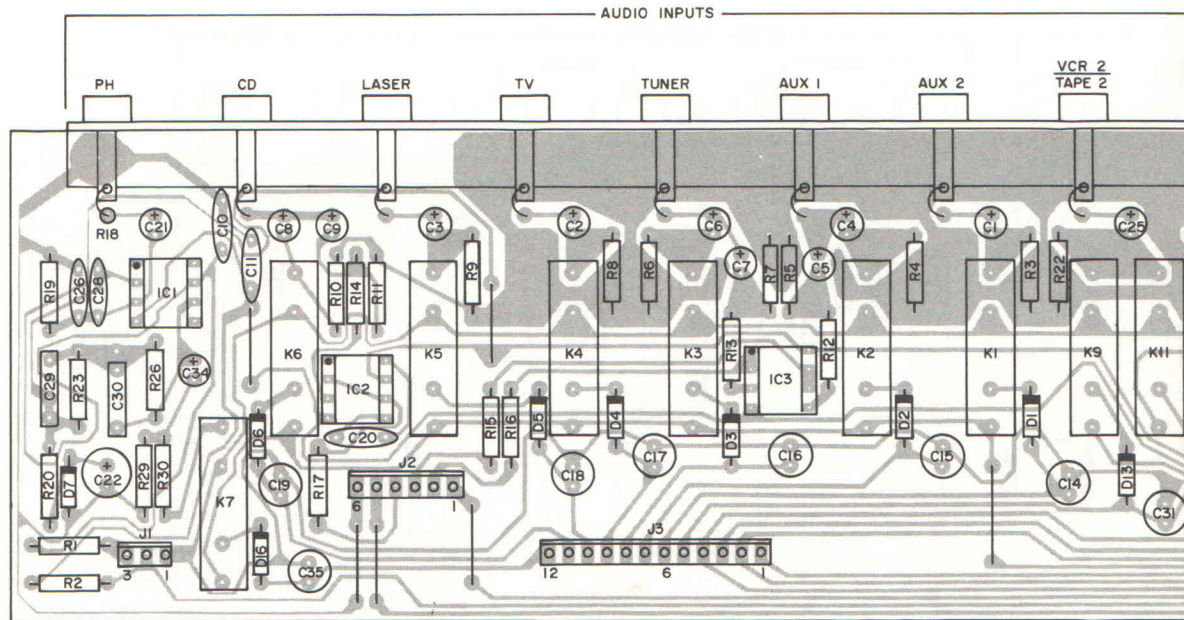
11 J16

11 J1-3

11 J1-4



Relay Switching (Left Channel)



RELAY SWITCHING (LEFT CHANNEL)

RELAY SWITCHING (LEFT CHANNEL) PARTS LIST

Symbol Part Description

DIODES

D1-D17 070047 SIG, 75V, 150mA, 1N4148

INTEGRATED CIRCUITS

IC1 133067 Operational Amp, Low Noise
NE5534AN

IC2 133066 Operational Amp, NE5534N

IC3, IC4 133094 Dual Operational Amp, NE5532N

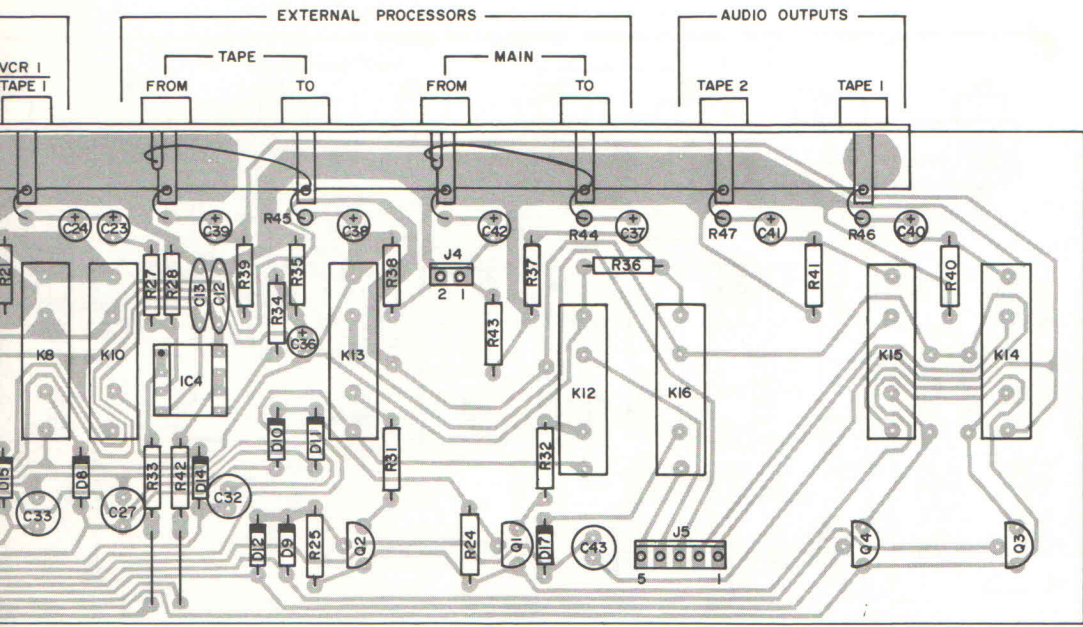
RELAYS

K1-K16 087050 SPST, 5VDC, Reed HE3321A0400

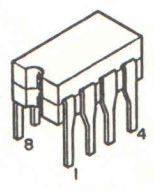
TRANSISTORS

Q1, Q2 132056 PNP, 2N5087

Q3, Q4 132182 PNP, DAR, MPSA64



CHANNEL) PCB 047231



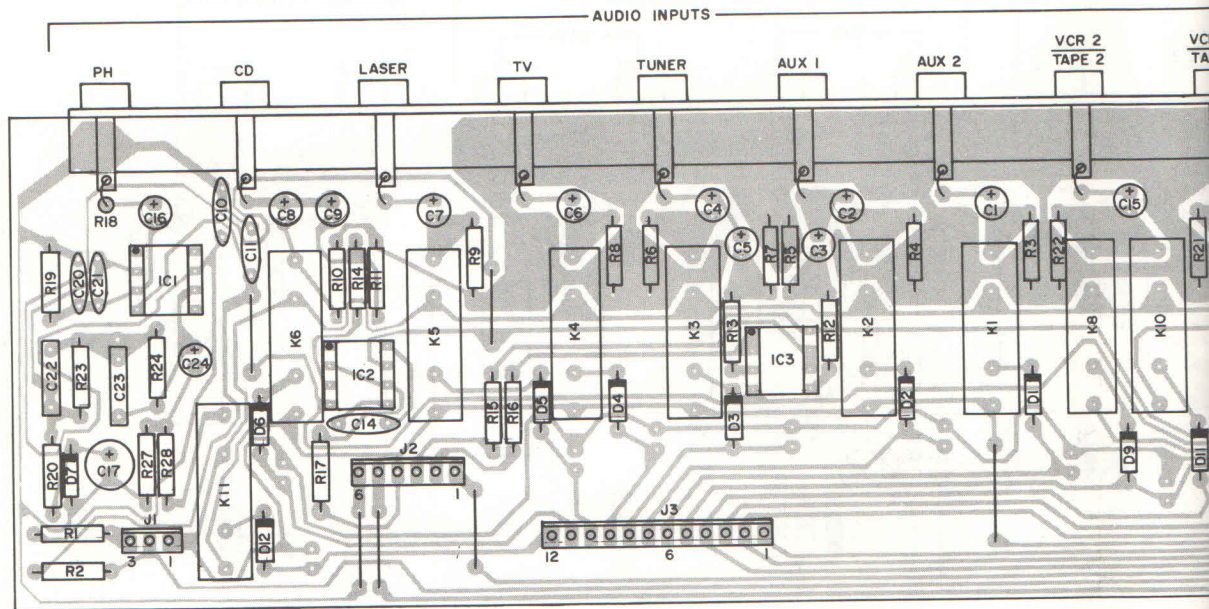
IC1-IC4



Q1-Q4

3

Relay Switching (Right Channel)



RELAY SWITCHING (RIGHT CH)

RELAY SWITCHING (RIGHT CHANNEL) PARTS LIST

Symbol	Part	Description
--------	------	-------------

DIODES

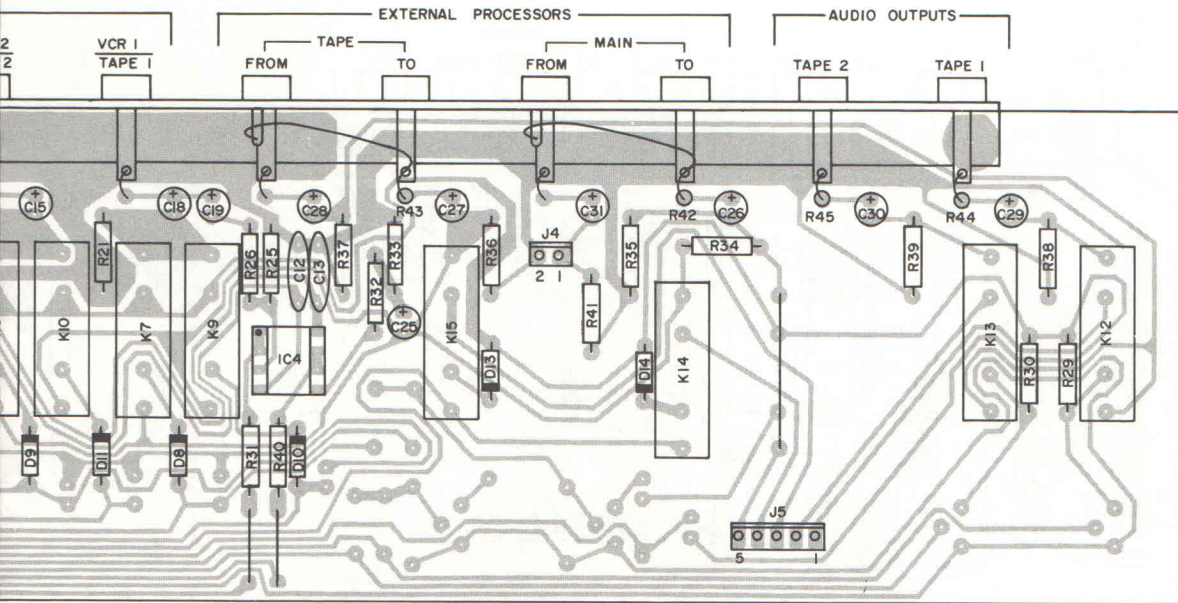
D1-D14	070047	SIG, 75V, 150mA, 1N4148
--------	--------	-------------------------

INTEGRATED CIRCUITS

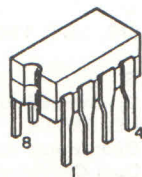
IC1	133067	Operational Amp, Low Noise, NE5534AN
IC2	133066	Operational Amp, NE5534N
IC3, IC4	133094	Dual Operatonal Amp, NE5532N

RELAYS

K1-K15	087050	SPST, 5VDC, Reed, HE3321A0400
--------	--------	-------------------------------



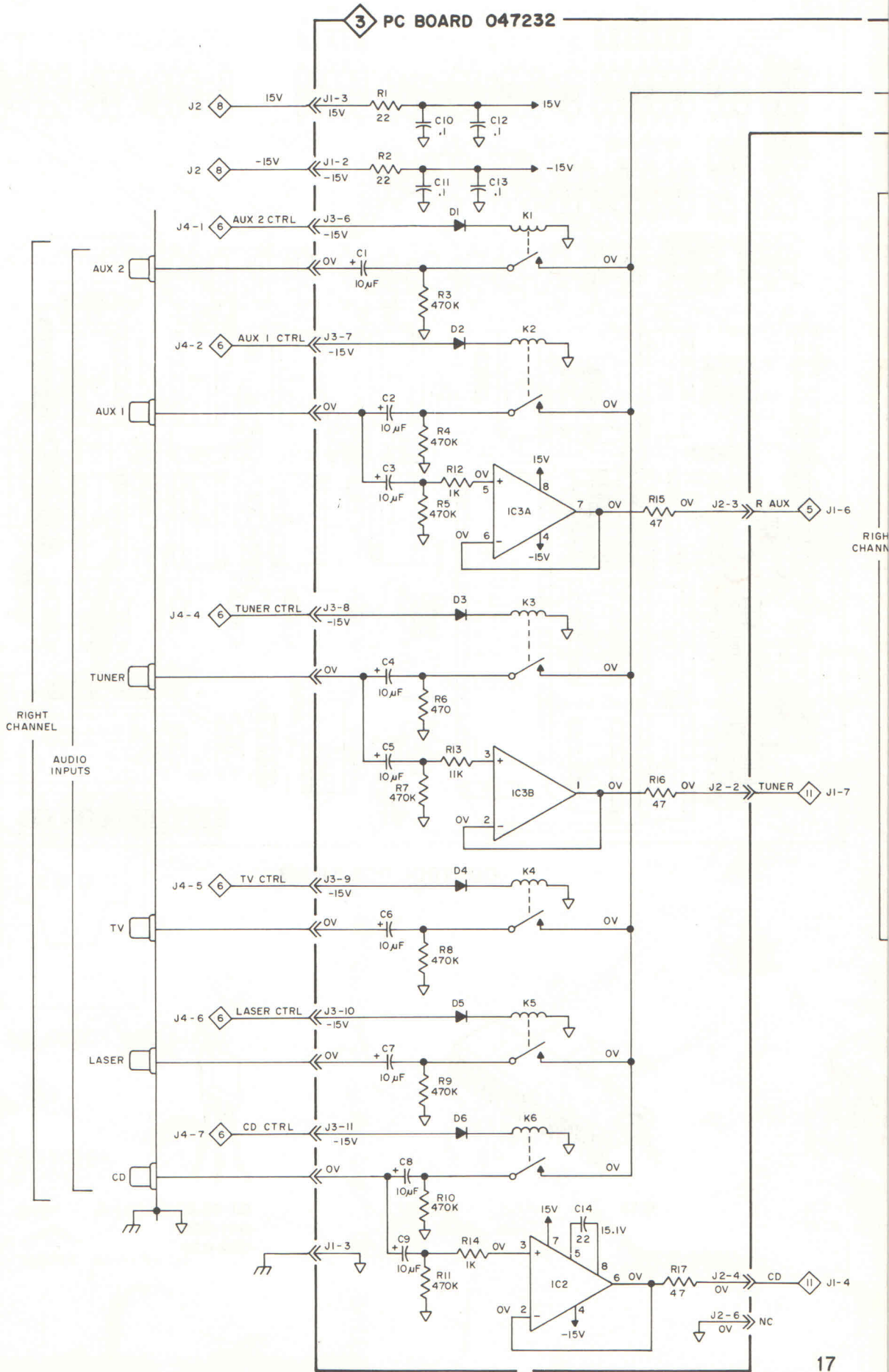
RIGHT CHANNEL) PCB 047232

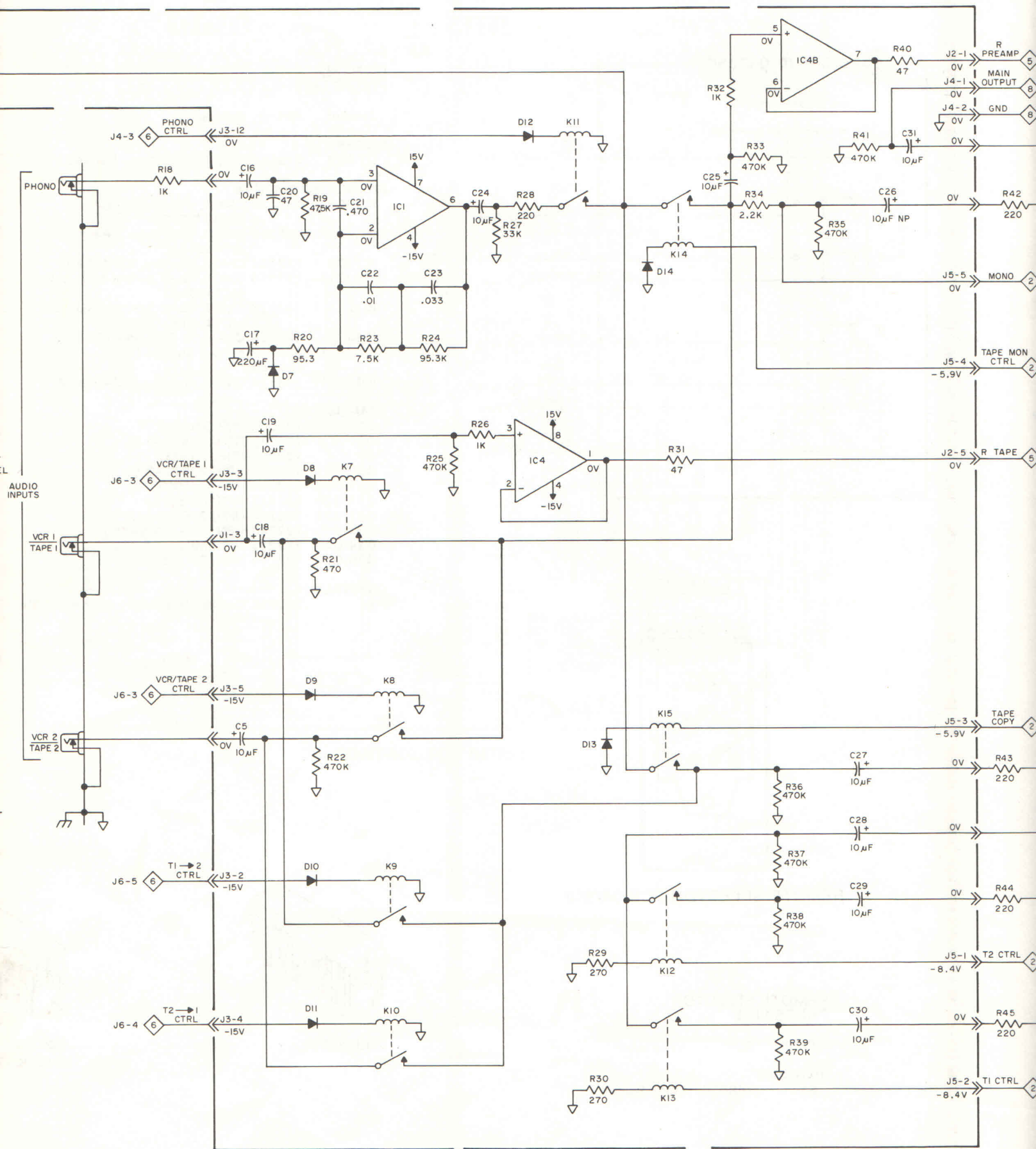


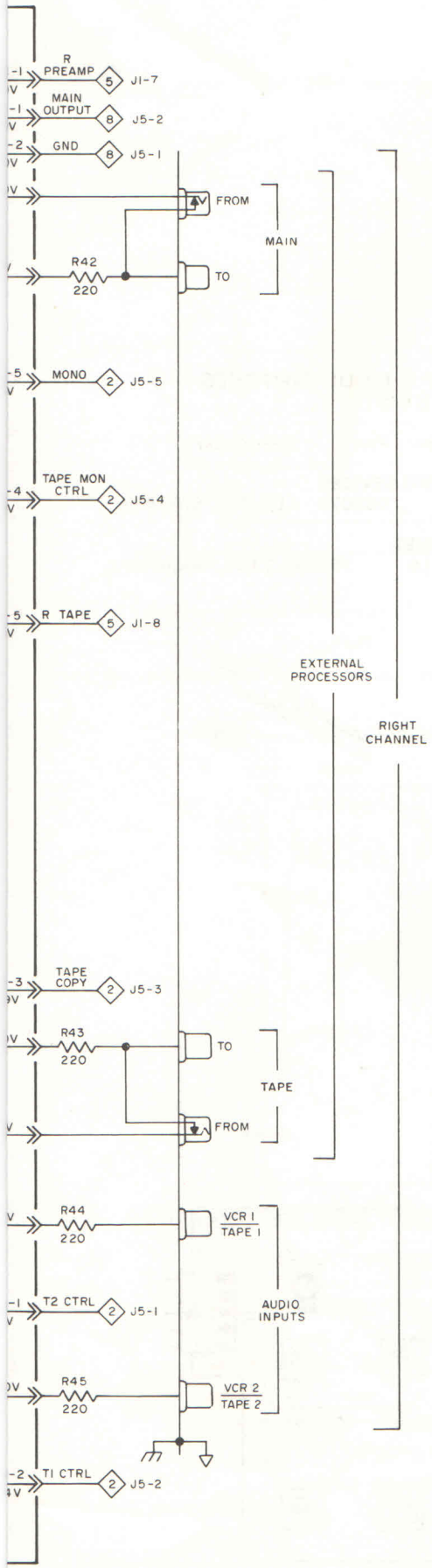
IC1-IC4

Relay Switching (Right Channel)

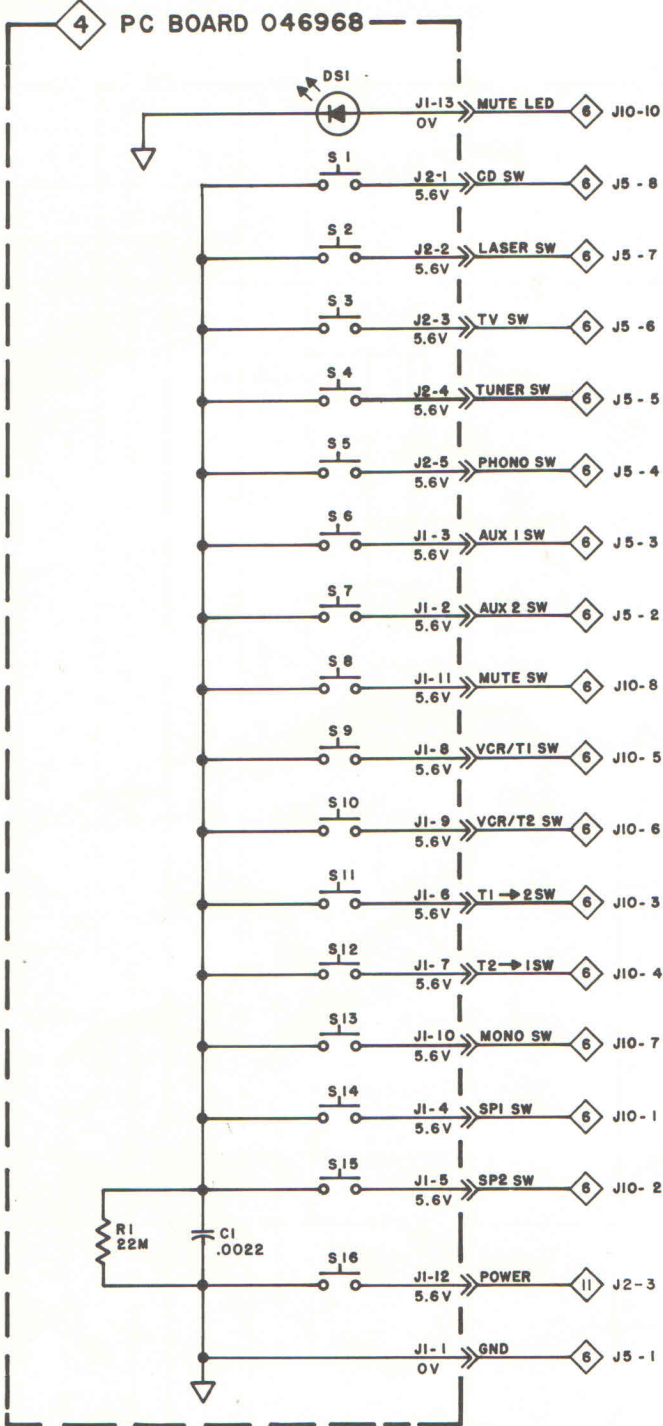
3







4 Input and Mode Switches



INPUT & MODE SWITCHES PARTS LIST

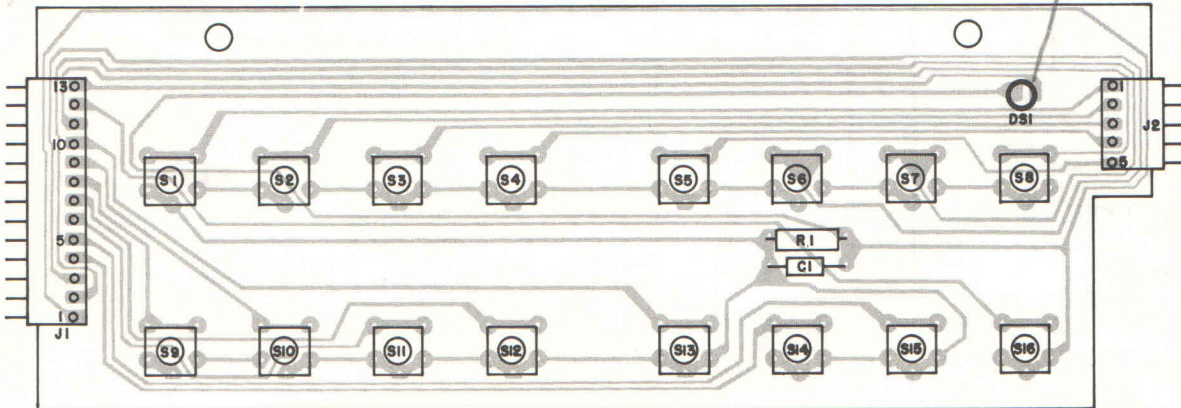
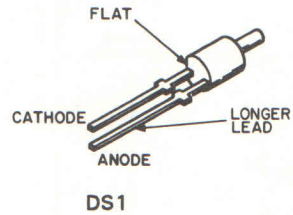
Symbol Part Description

LIGHTING DEVICES

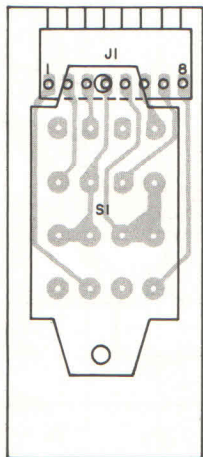
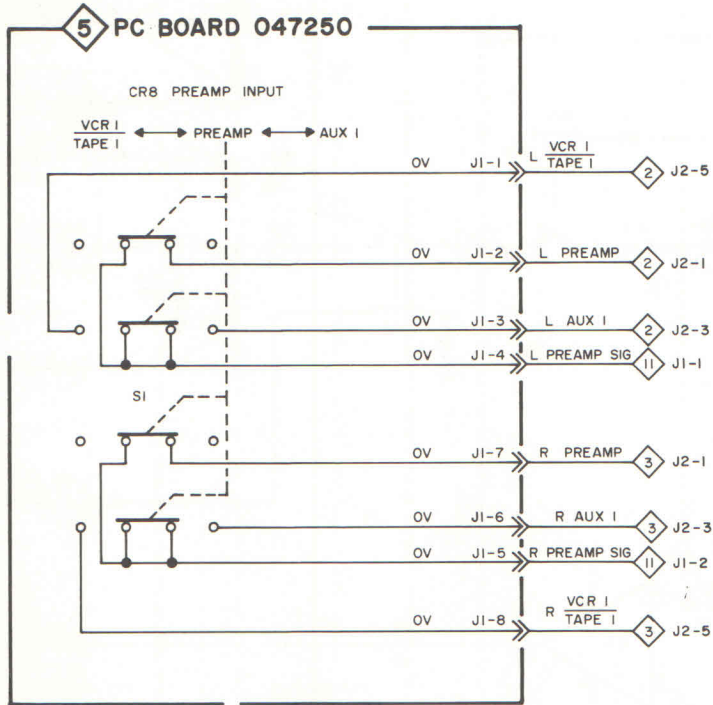
DS1 058078 LED, Red, SLP144B

SWITCHES

S1-S16 150051 TACT, Momentary



5 Remote Selector



REMOTE SELECTOR PCB 047250

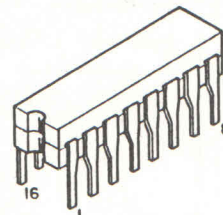
REMOTE SELECTOR PARTS LIST

Symbol	Part	Description
SWITCHES		
S1	148054	Mode Switch

6 Control

CONTROL PARTS LIST

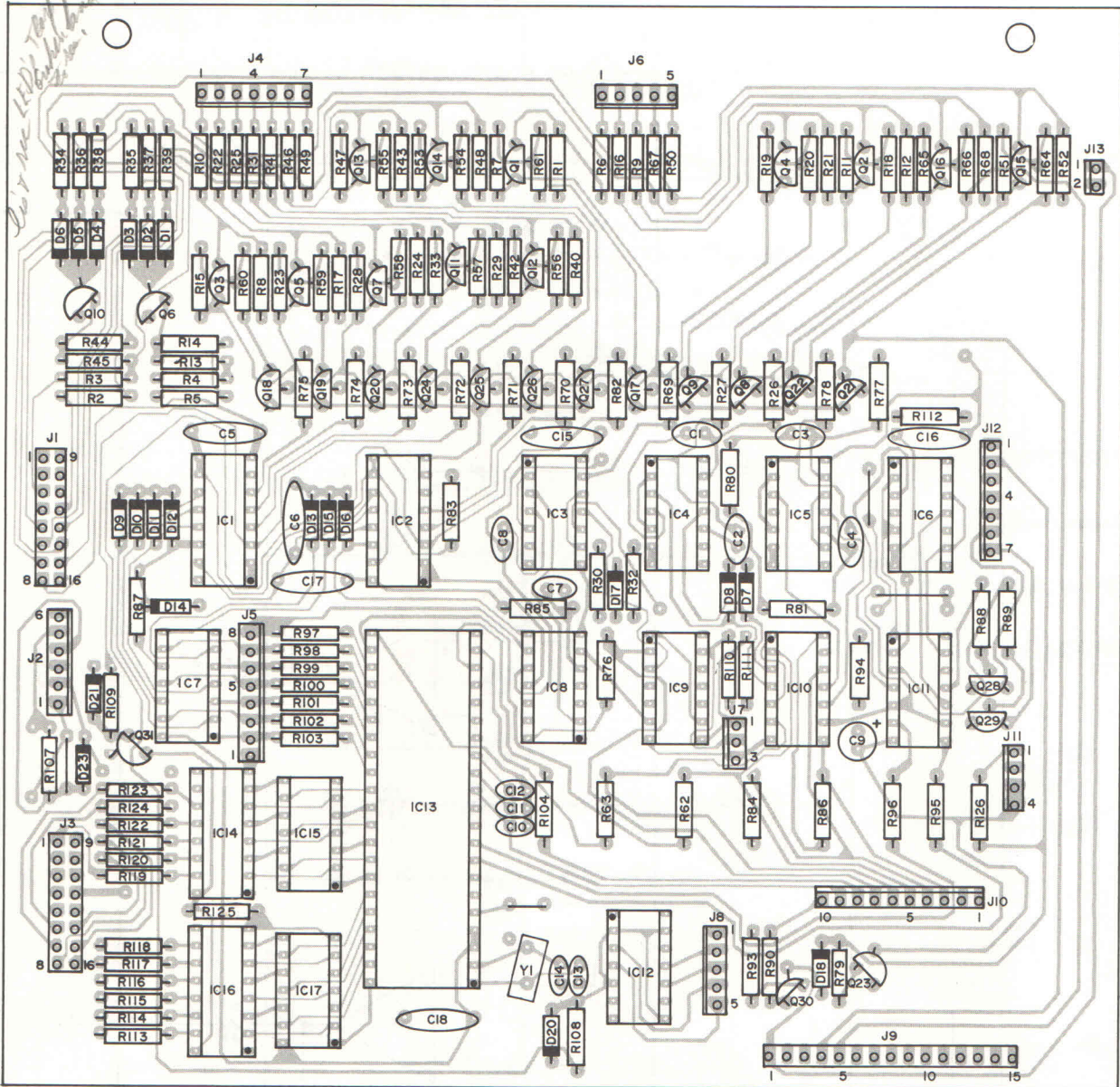
Symbol	Part	Description
DIODES		
D1-D23	070047	SIG, 75V, 150mA, 1N4148
INTEGRATED CIRCUITS		
IC1,IC2	133135	CMOS, 4-Bit Register, HEF4076BPN
IC3-IC6	133053	CMOS, Dual Type-D F-F, MC14013AL
IC7,IC8	133124	CMOS, Hex Inv, HEF4069UB
IC9-IC11	133064	CMOS, Quad 2-input NOR Gate, MC14001B
IC12	133076	CMOS, Quad 2-input AND Gate, MC14081B
IC13	133123	CMOS, IR Receiver, TC9134P
IC14,IC16	133137	6-input Strobed Driver, LB1760
IC15,IC17	133124	CMOS, Hex Inv, HEF4069UB
TRANSISTORS		
Q1-Q5	132056	PNP, 2N5087
Q6	132235	NPN, 2SC2240-BL
Q7	132056	PNP, 2N5087
Q8-Q10	132235	NPN, 2SC2240-BL
Q11-Q16	132056	PNP, 2N5087
Q17-Q20	132223	NPN, MPS4124
Q21,Q22	132235	NPN, 2SC2240-BL
Q23	132090	NPN, DAR, MPSA25
Q24-Q29	132223	NPN, MPS4124
Q30,Q31	132235	NPN, 2SC2240-BL
CRYSTALS		
Y1	180033	Ceramic Resonator, 455KHz, ±3%



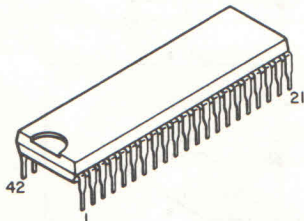
IC1,IC2,IC14, IC16



IC3 - IC15, IC17



CONTROL PCB 047229



IC13

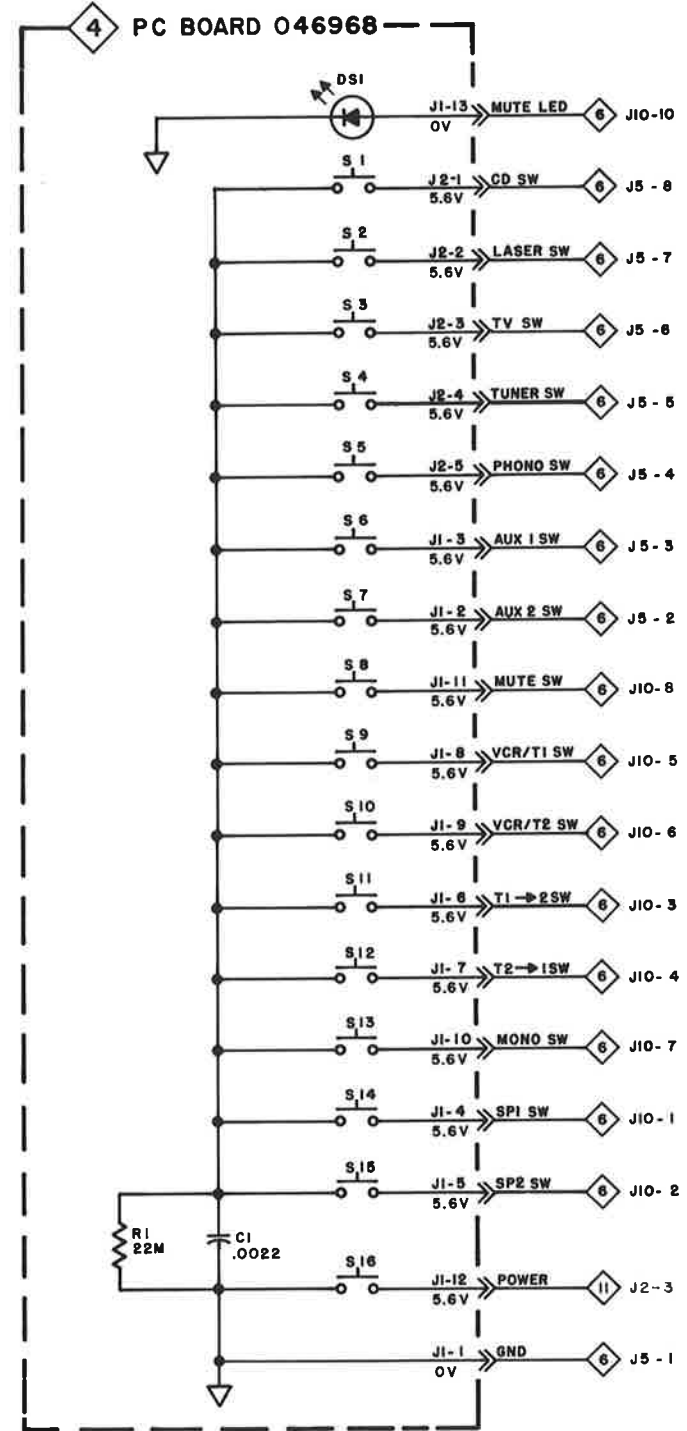


Q1-Q5, Q7
Q11-Q20,
Q23-Q29



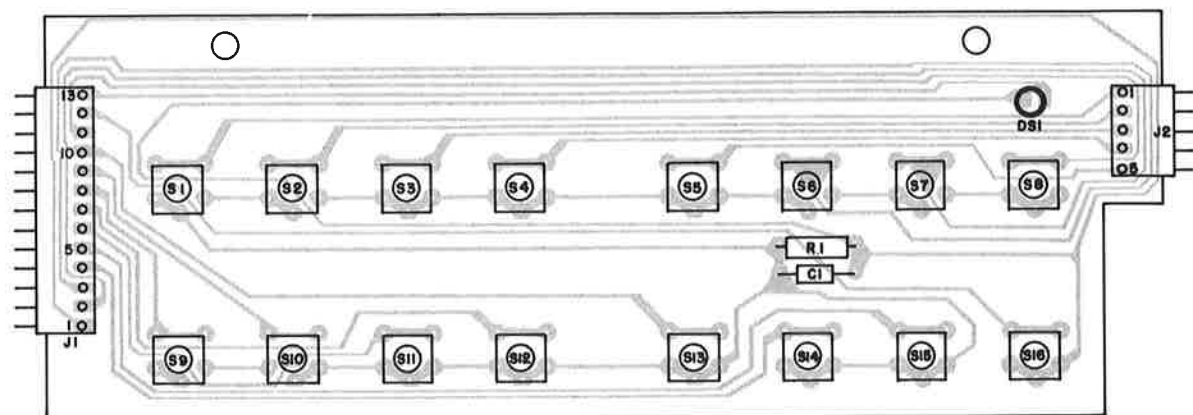
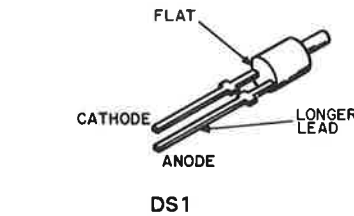
Q6, Q8-Q10,
Q21, Q22
Q30, Q31

4 Input and Mode Switches



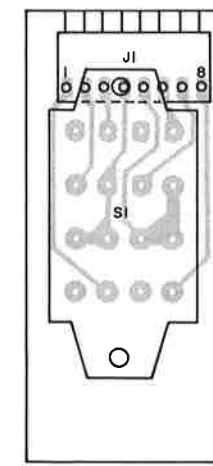
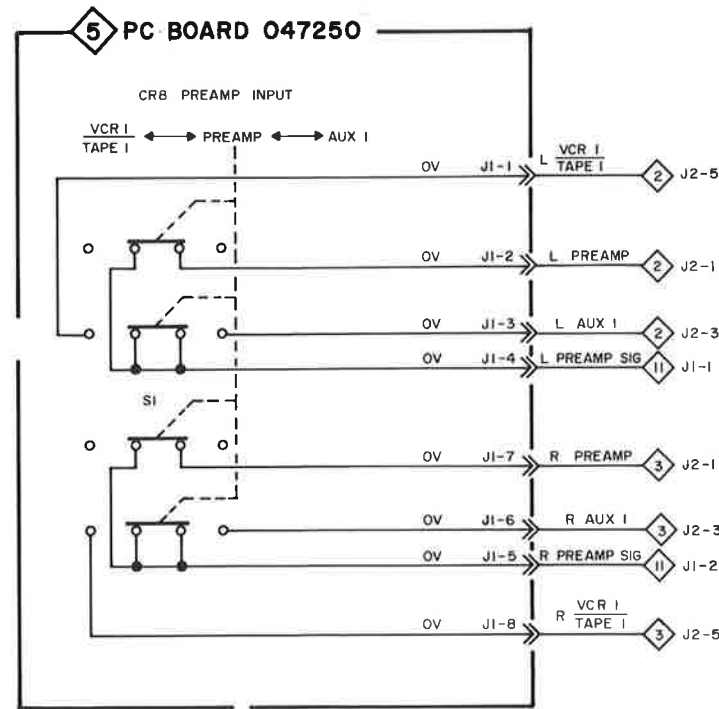
INPUT & MODE SWITCHES PARTS LIST

Symbol	Part	Description
DS1	058078	LED, Red, SLP144B
S1-S16	150051	TACT, Momentary



INPUT AND MODE SWITCHES PCB 046968

5 Remote Selector



REMOTE SELECTOR PCB 047250

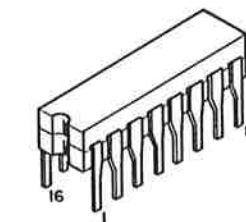
REMOTE SELECTOR PARTS LIST

Symbol	Part	Description
S1	148054	Mode Switch

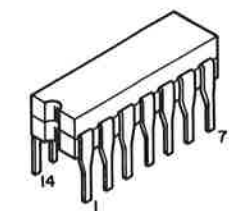
6 Control

CONTROL PARTS LIST

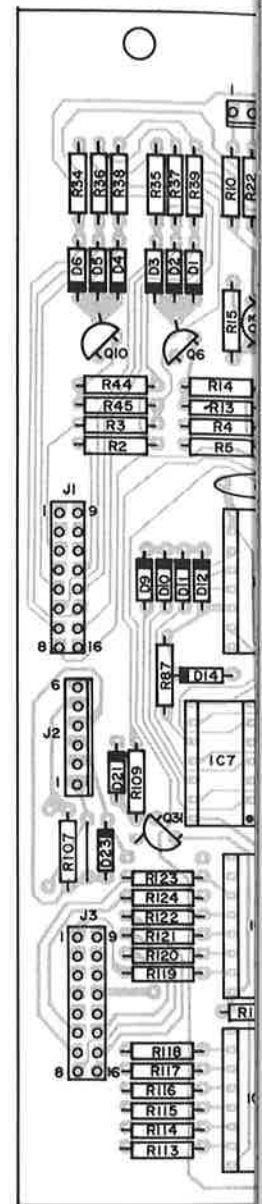
Symbol	Part	Description
D1-D23	070047	SIG, 75V, 150mA, 1N4148
IC1, IC2	133135	CMOS, 4-Bit Register, HEF4076BPN
IC3-IC6	133053	CMOS, Dual Type-D F-F, MC14013AL
IC7, IC8	133124	CMOS, Hex Inv, HEF4069UB
IC9-IC11	133064	CMOS, Quad 2-input NOR Gate, MC14001B
IC12	133076	CMOS, Quad 2-input AND Gate, MC14081B
IC13	133123	CMOS, IR Receiver, TC9134P
IC14, IC16	133137	6-input Strobed Driver, LB1760
IC15, IC17	133124	CMOS, Hex Inv, HEF4069UB
Q1-Q5	132056	PNP, 2N5087
Q6	132235	NPN, 2SC2240-BL
Q7	132056	PNP, 2N5087
Q8-Q10	132235	NPN, 2SC2240-BL
Q11-Q16	132056	PNP, 2N5087
Q17-Q20	132223	NPN, MPS4124
Q21, Q22	132235	NPN, 2SC2240-BL
Q23	132090	NPN, DAR, MPSA25
Q24-Q29	132223	NPN, MPS4124
Q30, Q31	132235	NPN, 2SC2240-BL
Y1	180033	Ceramic Resonator, 455KHz, ±3%



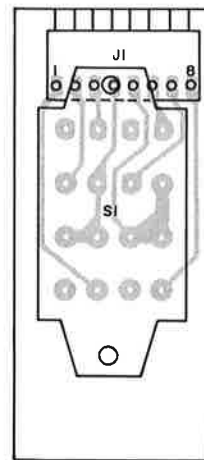
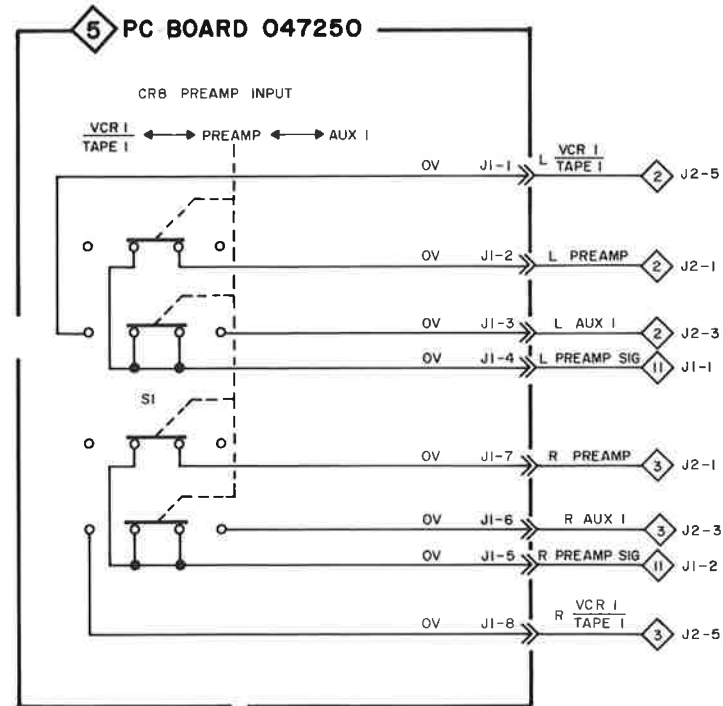
IC1, IC2, IC14, IC16



IC3 - IC12, IC15, IC17



5 Remote Selector



REMOTE SELECTOR PCB 047250

REMOTE SELECTOR PARTS LIST

Symbol	Part	Description
SWITCHES		
S1	148054	Mode Switch

6 Control

CONTROL PARTS LIST

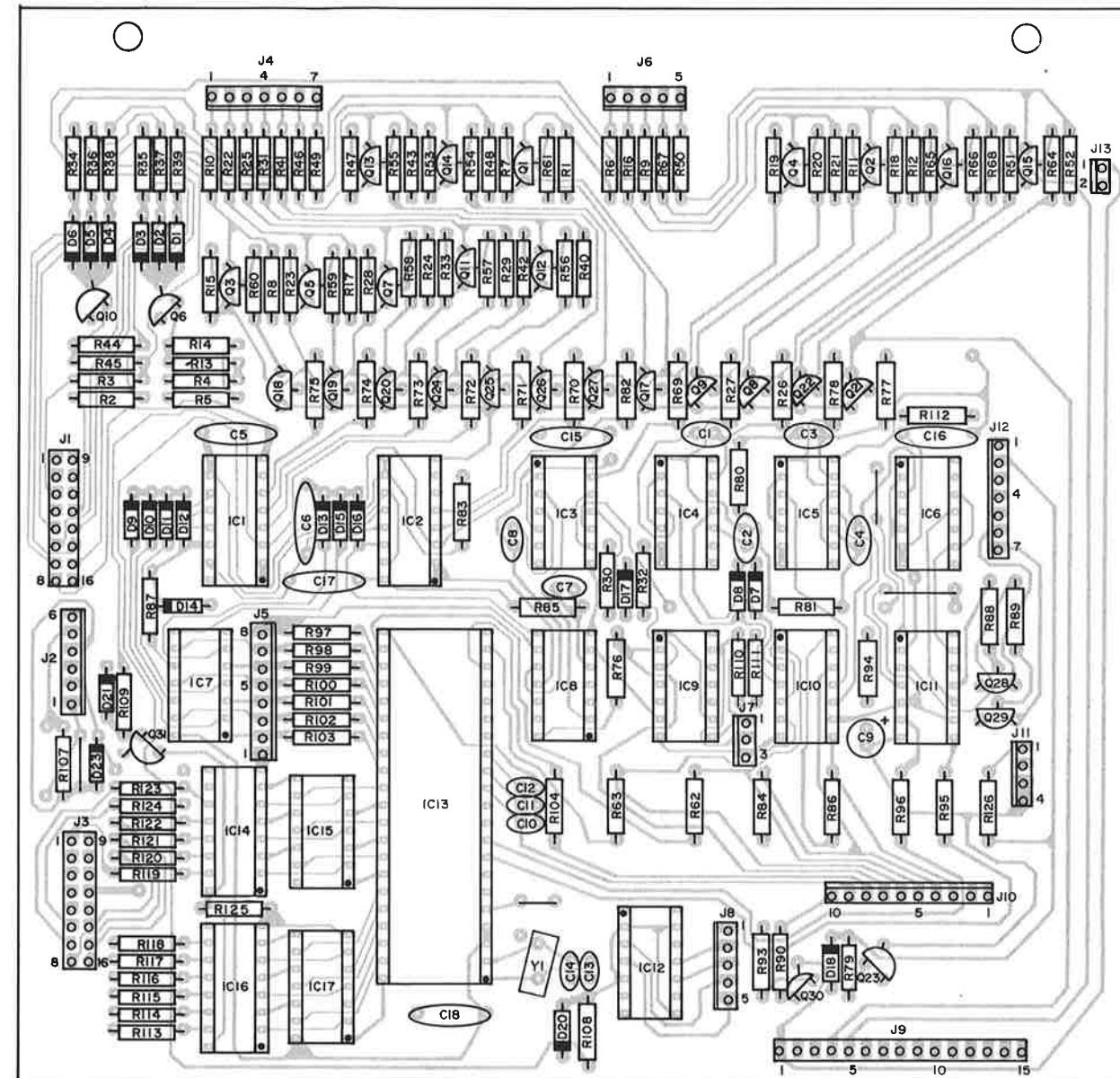
Symbol Part Description

DIODES
D1-D23 070047 SIG, 75V, 150mA, 1N4148

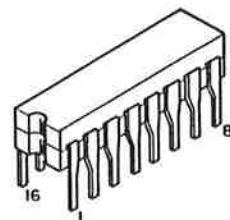
INTEGRATED CIRCUITS
IC1,IC2 133135 CMOS, 4-Bit Register, HEF4076BPN
IC3-IC6 133053 CMOS, Dual Type-D F-F, MC14013AL
IC7,IC8 133124 CMOS, Hex Inv, HEF4069UB
IC9-IC11 133064 CMOS, Quad 2-input NOR Gate, MC14001B
IC12 133076 CMOS, Quad 2-input AND Gate, MC14081B
IC13 133123 CMOS, IR Receiver, TC9134P
IC14,IC16 133137 6-input Strobed Driver, LB1760
IC15,IC17 133124 CMOS, Hex Inv, HEF4069UB

TRANSISTORS
Q1-Q5 132056 PNP, 2N5087
Q6 132235 NPN, 2SC2240-BL
Q7 132056 PNP, 2N5087
Q8-Q10 132235 NPN, 2SC2240-BL
Q11-Q16 132056 PNP, 2N5087
Q17-Q20 132223 NPN, MPS4124
Q21,Q22 132235 NPN, 2SC2240-BL
Q23 132090 NPN, DAR, MP5A25
Q24-Q29 132223 NPN, MPS4124
Q30,Q31 132235 NPN, 2SC2240-BL

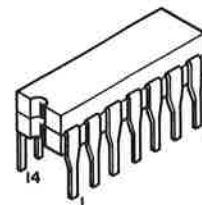
CRYSTALS
Y1 180033 Ceramic Resonator, 455KHz, ±3%



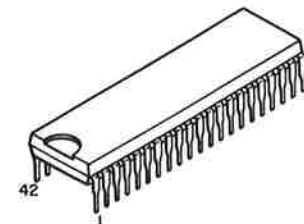
CONTROL PCB 047229



IC1,IC2,IC14,
IC16



IC3 - IC12
IC15, IC17



IC13

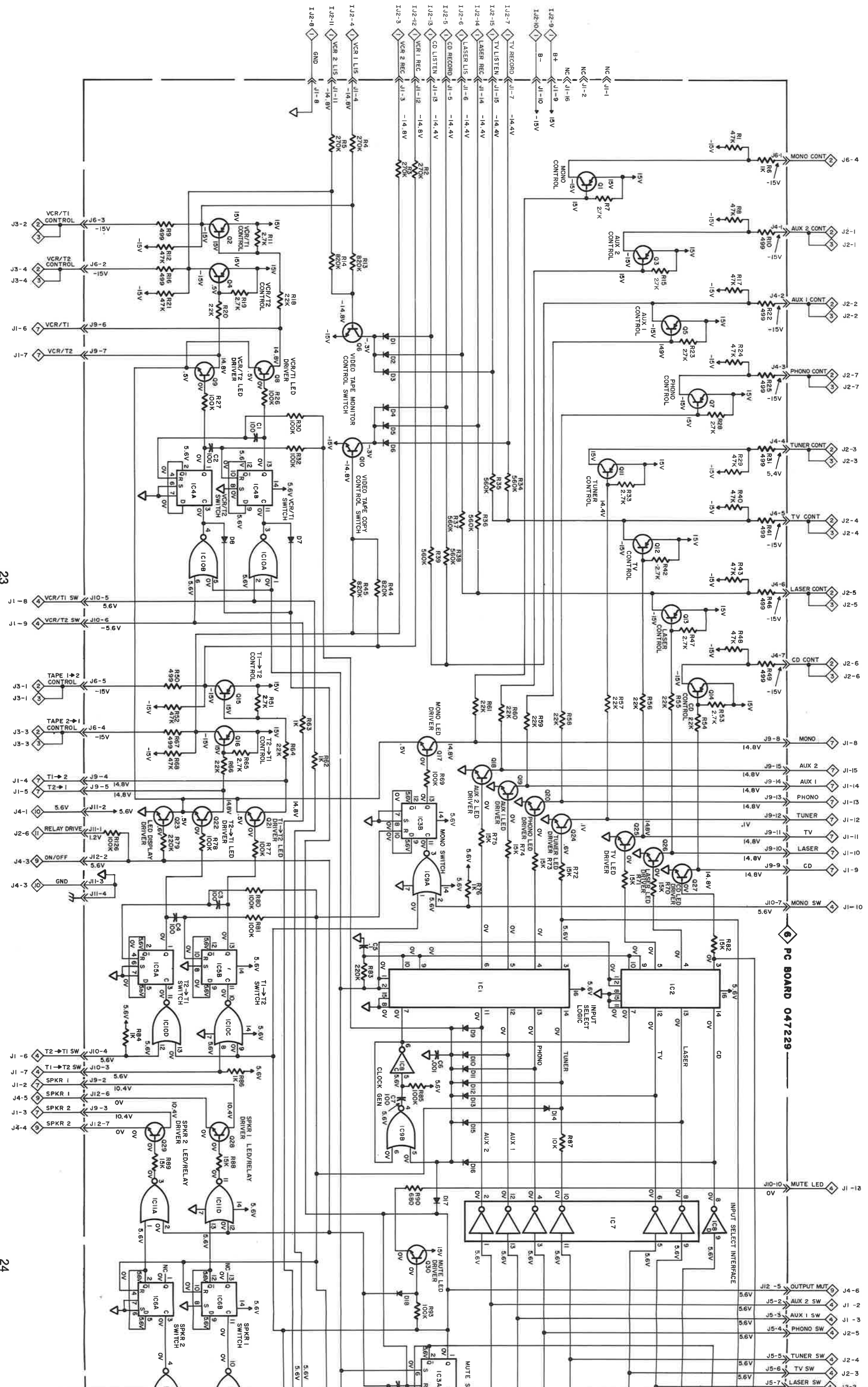


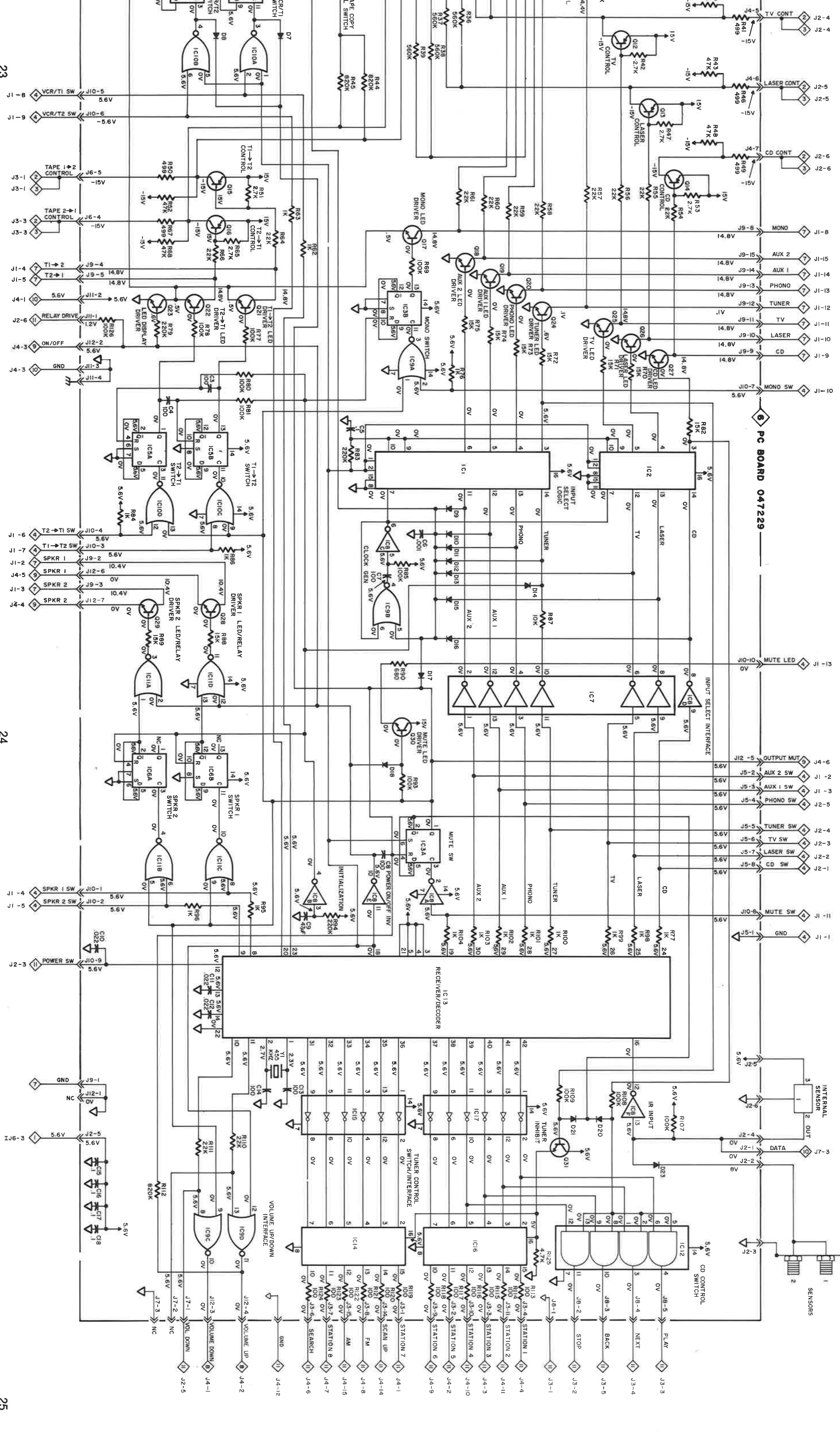
Q1-Q5,Q7
Q11-Q20,
Q23-Q29

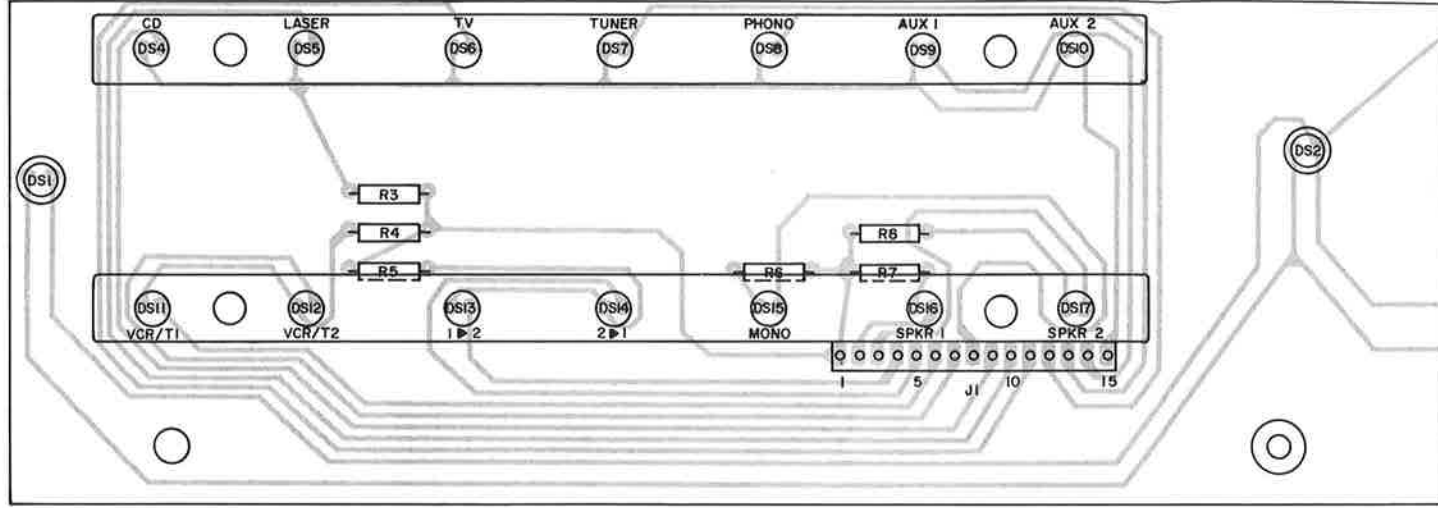
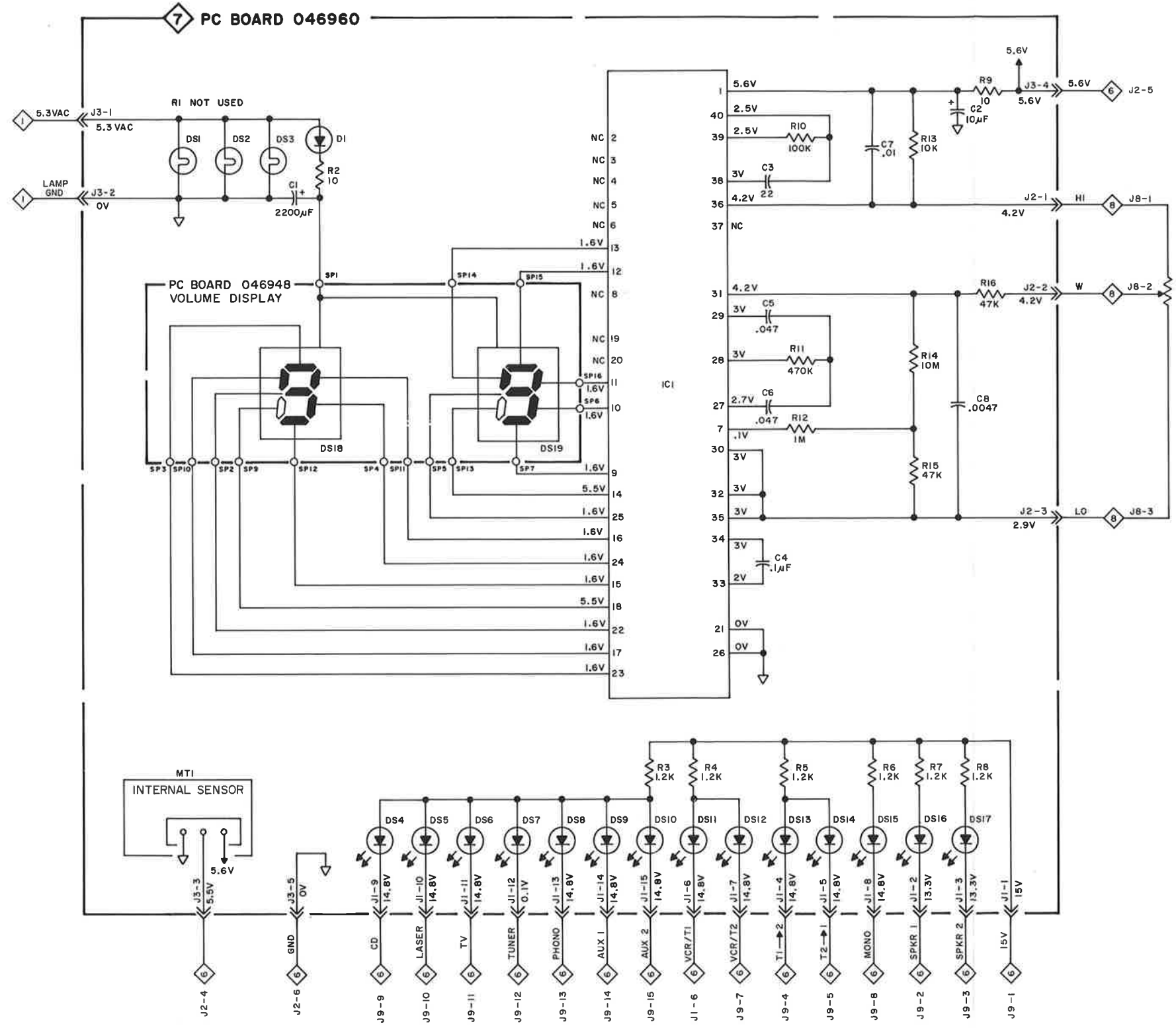


Q6,Q8-Q10,
Q21,Q22
Q30,Q31

Control 6



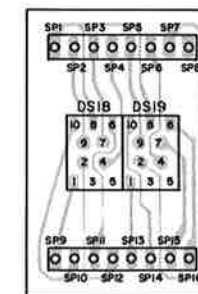
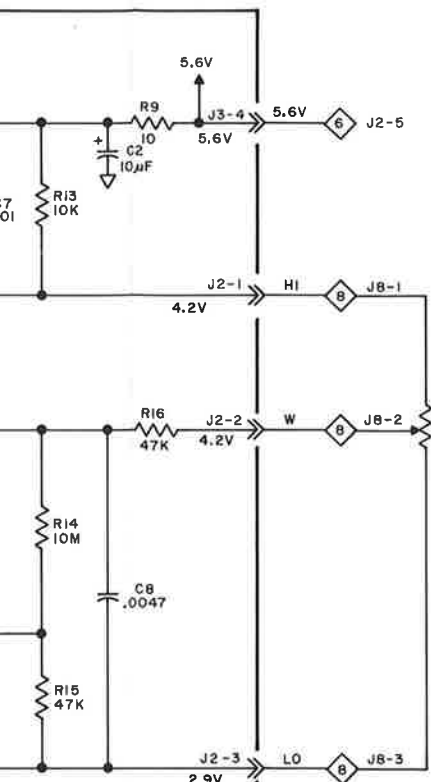




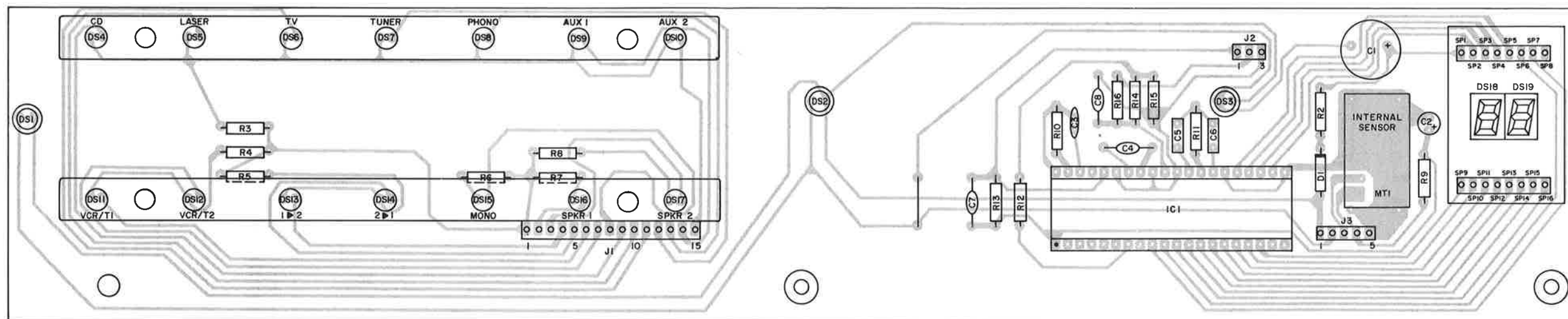
STATUS DISPLAY PCB 046960

STATUS DISPLAY PARTS LIST

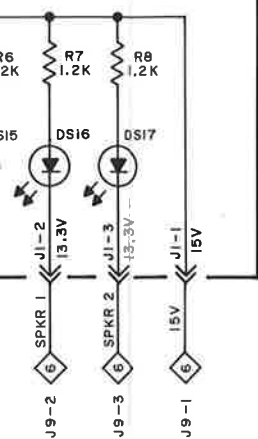
Symbol	Part	Description
DIODES		
D1	070131	RECT, 400V, 1A, 1N4004
LIGHTING DEVICES		
DS1-DS3	058062	INC, 6.3V, 7381
DS4-DS17	070093	LED, Red, HP5082-4658
DS18, DS19	058093	LED, 7-Segment Display
INTEGRATED CIRCUITS		
IC1	133152	3-1/2 Digit A/D Converter
SENSORS		
MT1	121010	Sensor, IR



VOLUME DISPLAY PCB 046948

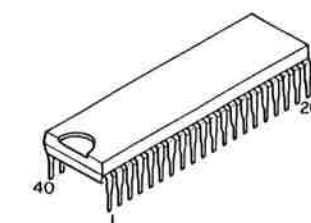
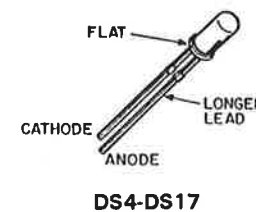


STATUS DISPLAY PCB 046960

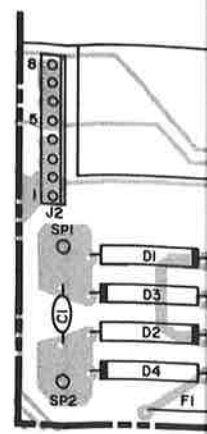
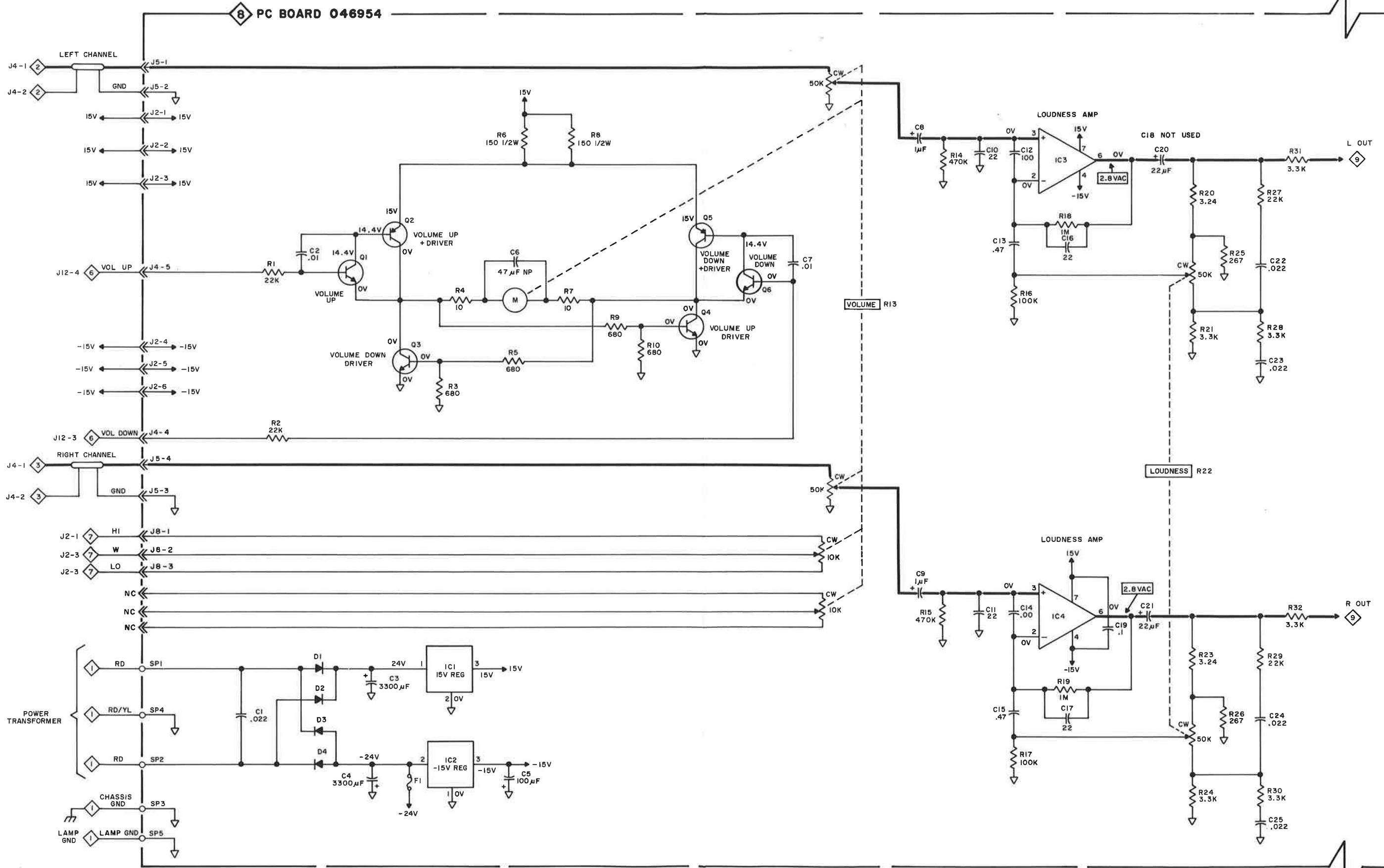


STATUS DISPLAY PARTS LIST

Symbol	Part	Description
DIODES		
D1	070131	RECT, 400V, 1A, 1N4004
LIGHTING DEVICES		
DS1-DS3	058062	INC, 6.3V, 7381
DS4-DS17	070093	LED, Red, HP5082-4658
DS18, DS19	058093	LED, 7-Segment Display
INTEGRATED CIRCUITS		
IC1	133152	3-1/2 Digit A/D Converter
SENSORS		
MT1	121010	Sensor, IR

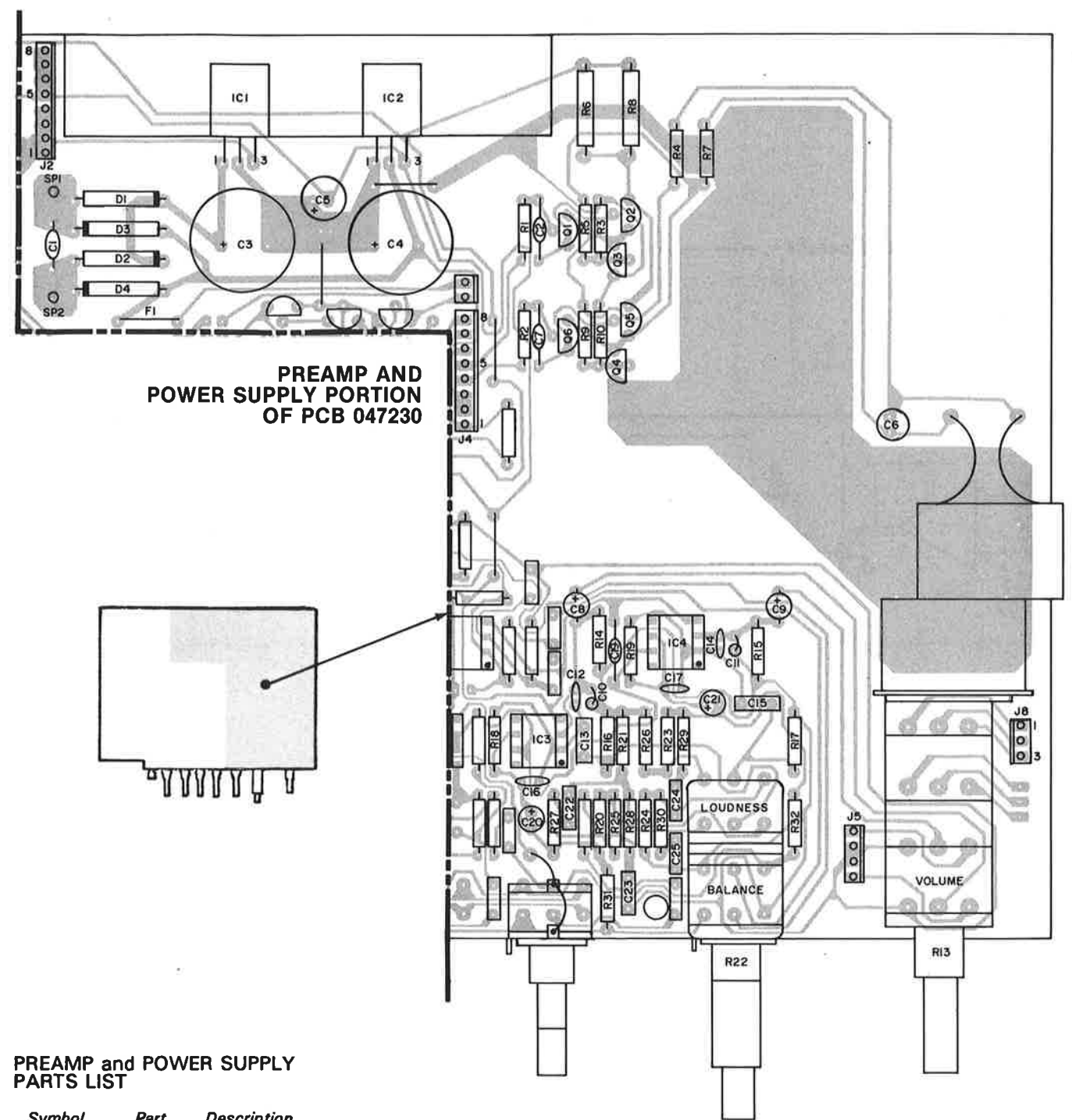
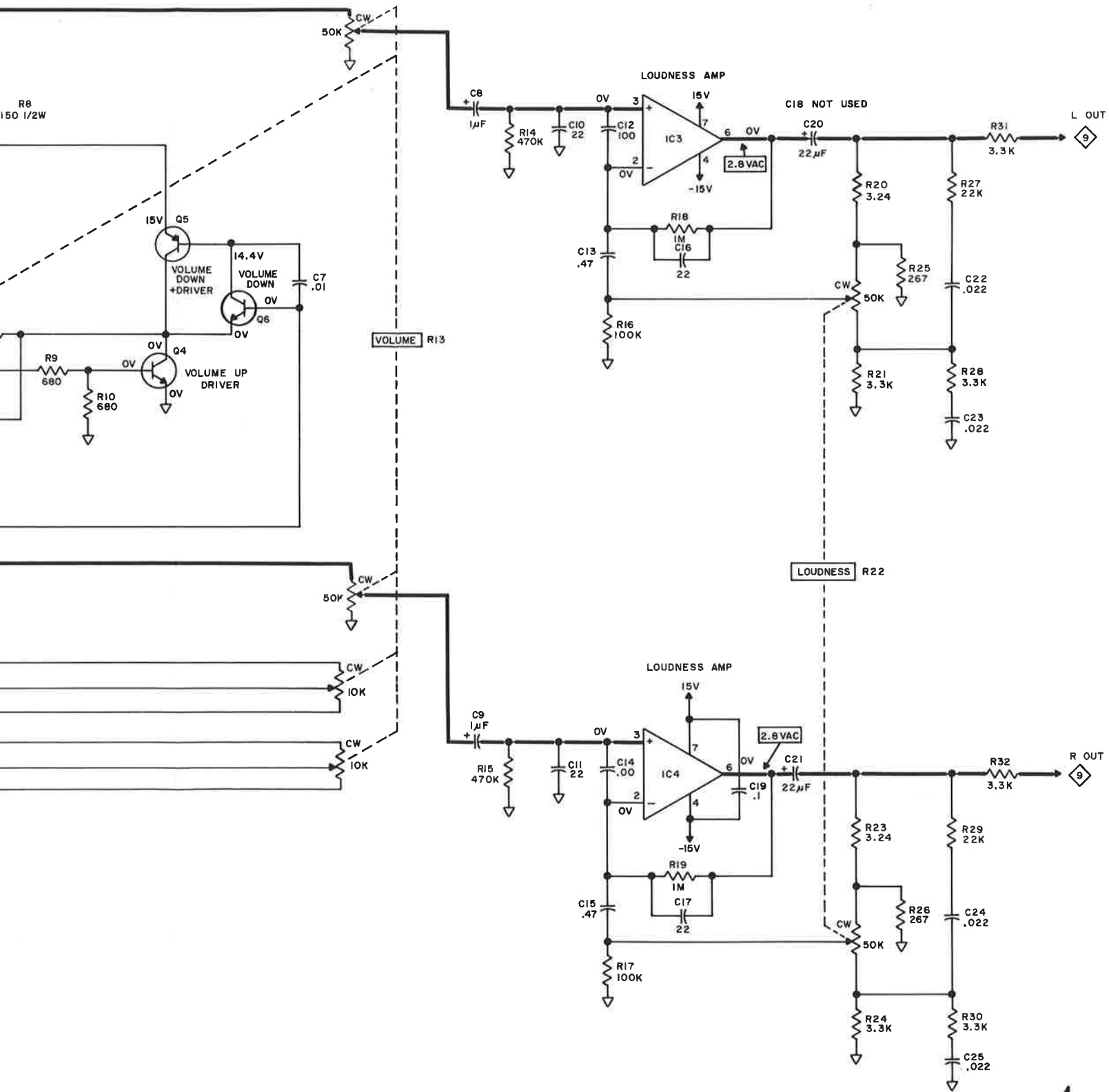


Preamp and Power Supply



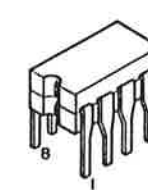
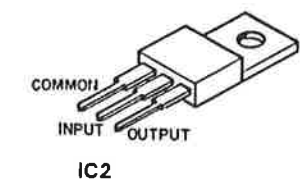
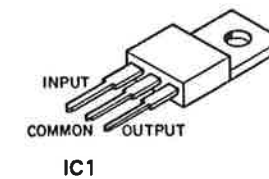
PREAMP and PO PARTS LIST

Symbol	Part
DIODES	
D1-D4	070
FUSES	
F1	174
INTEGRATED CIRCUITS	
IC1	133
IC2	133
IC3, IC4	133
TRANSISTORS	
Q1, Q3	132
Q2	132
Q4, Q6	132
Q5	132
RESISTORS	
R13	134
R22	134



PREAMP and POWER SUPPLY PARTS LIST

Symbol	Part	Description
DIODES		
D1-D4	070131	RECT, 400V, 1A 1N4004
FUSES		
F1	174198	Fuse, 36 Guage Tinned Copper Wire
INTEGRATED CIRCUITS		
IC1	133154	+15V Regulator, MC78M15CT
IC2	133153	-15V Regulator, MC79M15CT
IC3,IC4	133066	Operational Amp, NE5534N
TRANSISTORS		
Q1,Q3	132223	NPN, MPS4124
Q2	132224	PNP, MPS4126
Q4,Q6	132223	NPN, MPS4124
Q5	132224	PNP, MPS4126
RESISTORS		
R13	134445	POT, Motor Driven Volume Control
R22	134437	POT, Balance/Loudness



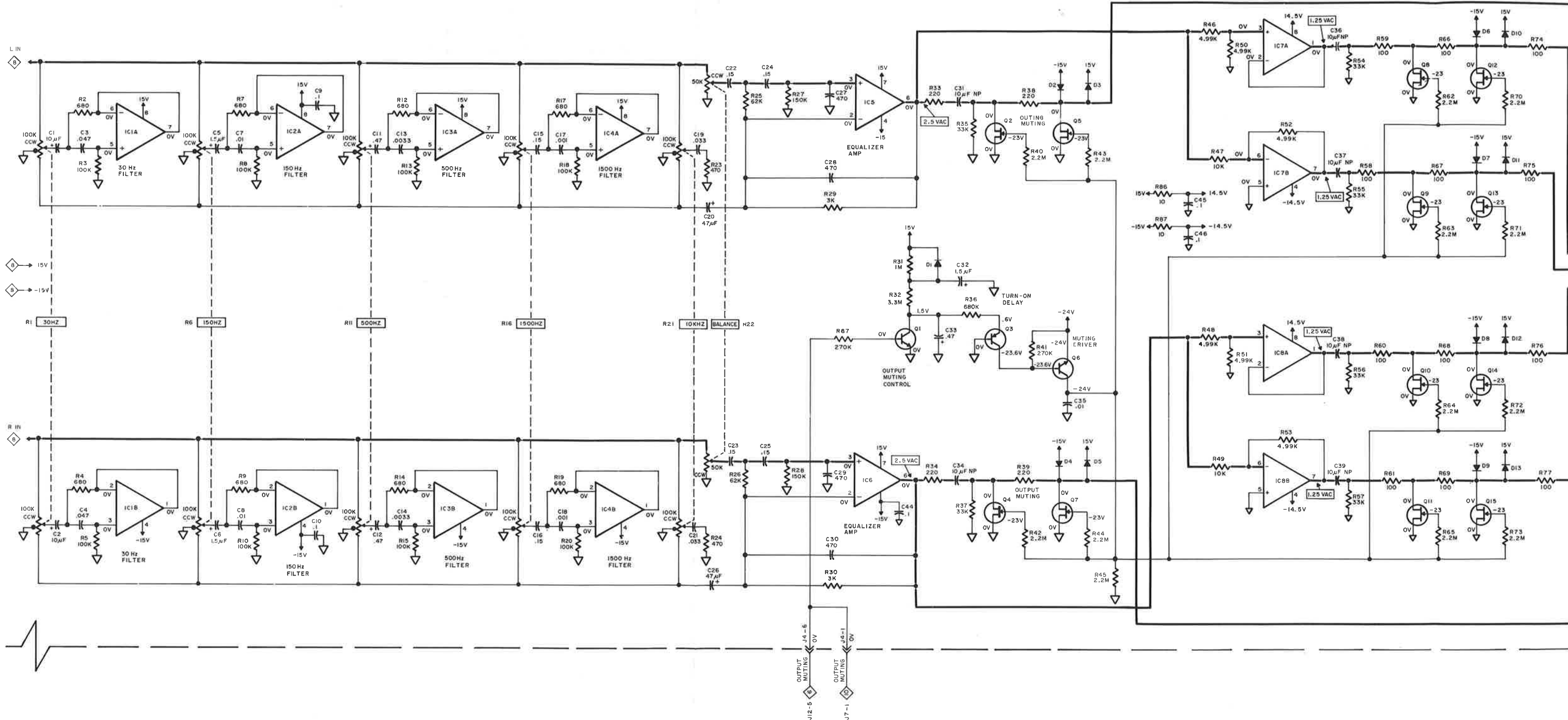
IC3,IC4

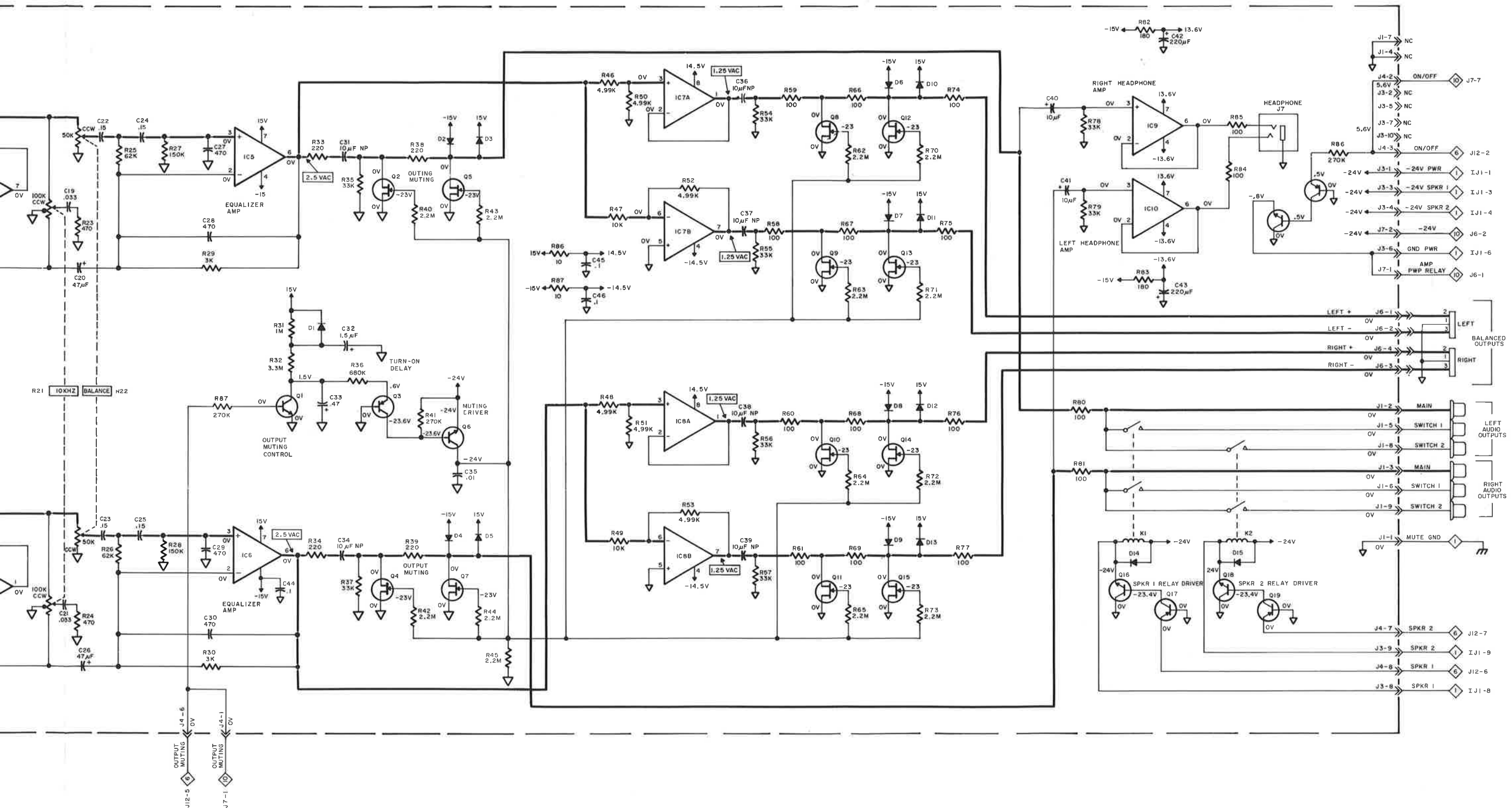
Q1-Q6

9 Outputs

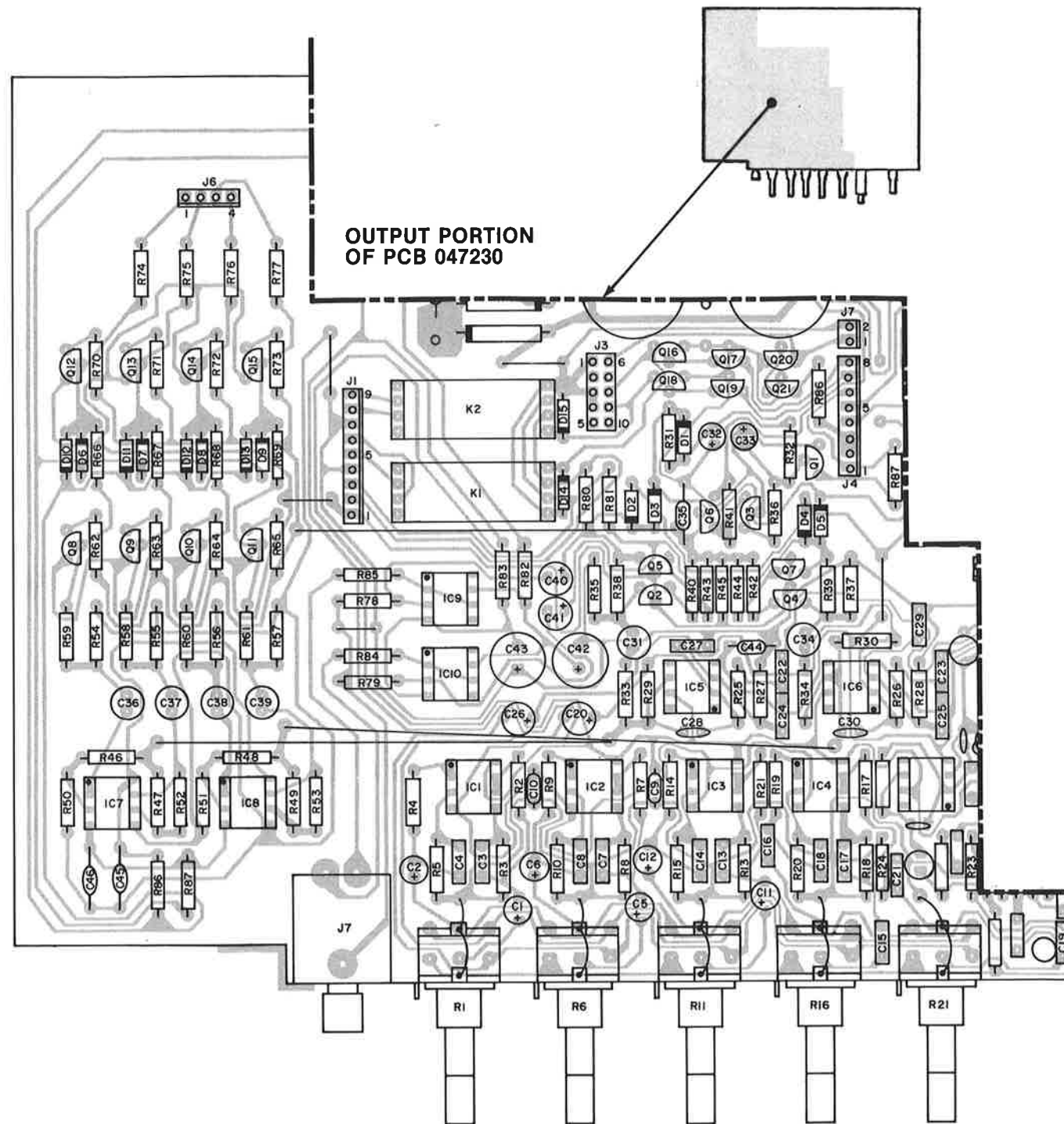
9

PC BOARD 046954



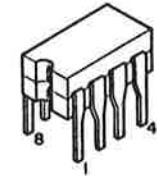


Outputs 9



OUTPUTS PARTS LIST

Symbol	Part	Description
DIODES		
D1-D15	070047 SIG, 150mA, 1N4148	
INTEGRATED CIRCUITS		
IC1-IC4	133028 Dual Hi-speed Operational Amp, MC4558CP1	
IC5, IC6	133066 Operational Amp, NE5534N	
IC7, IC8	133094 Dual Operational Amp, NE5532N	
IC9, IC10	133066 Operational Amp, NE5534N	
JACKS		
J7	117340 Headphone Jack	
RELAYS		
K1, K2	087041 DPST, 12VDC, REED	
TRANSISTORS		
Q1	132235 NPN, 2SC2240-BL	
Q2	132222 N, FET, J108	
Q3	132056 PNP, 2N5087	
Q4, Q5	132222 N, FET, J108	
Q6	132235 NPN, 2SC2240-BL	
Q7-Q15	132222 N, FET, J108	
Q16, Q18	132171 NPN, MPSA05	
Q17, Q19	132056 PNP, 2N5087	
Q20, Q21	132056 PNP, 2N5087	
RESISTORS		
R1, R6	134316 POT, 100K ohm/100K ohm, Equalizer	
R11, R16	134316 POT, 100K ohm/100K ohm, Equalizer	
R21	134316 POT, 100K ohm/100K ohm, Equalizer	



IC1-IC10



Q1, Q6



Q2, Q4, Q5, Q7-Q15

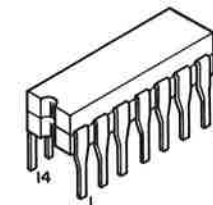
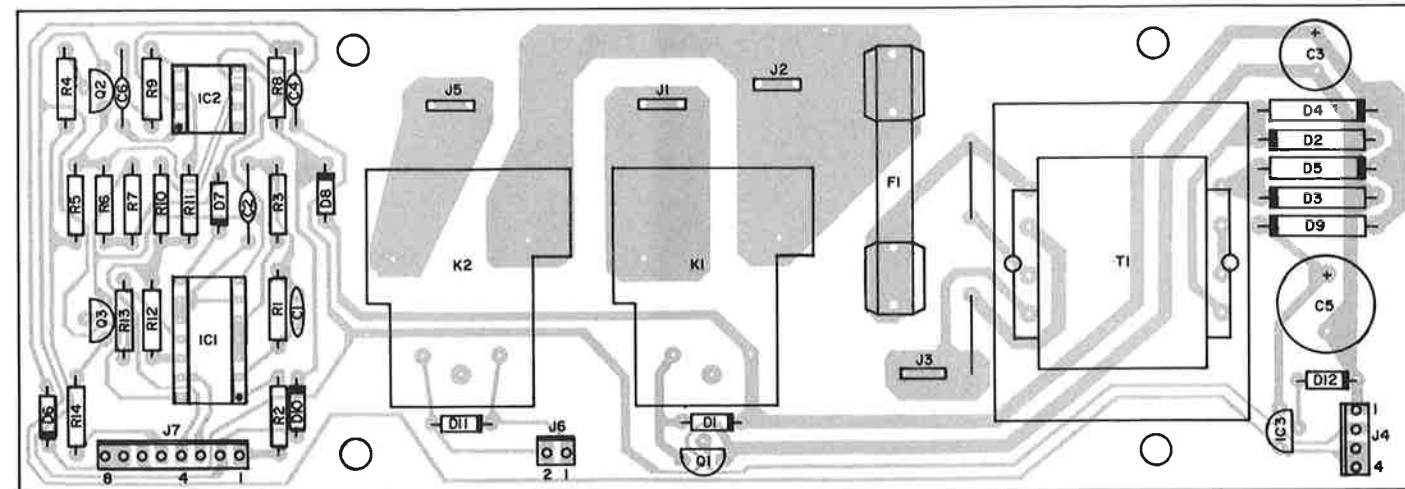
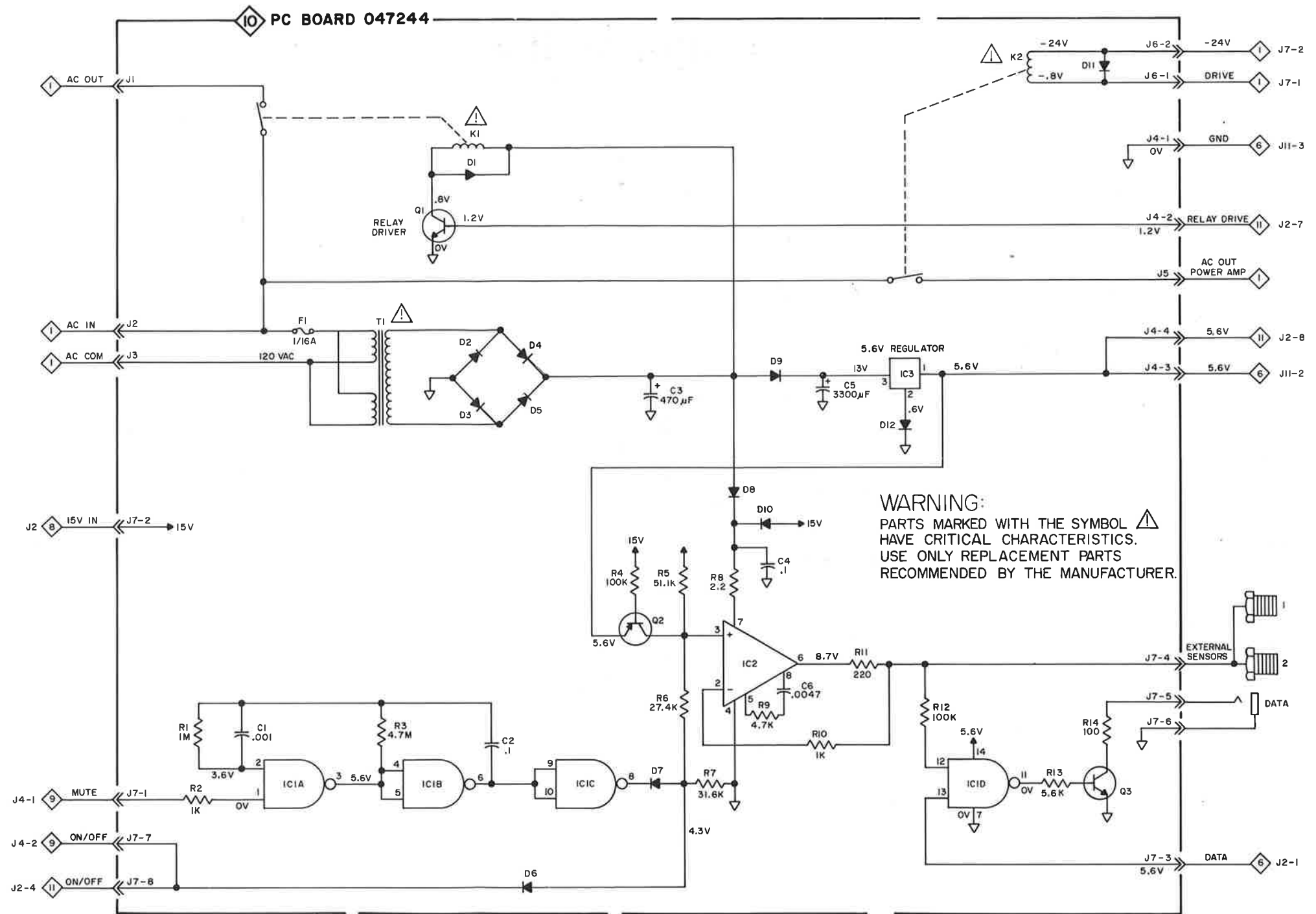


Q3, Q16-Q21

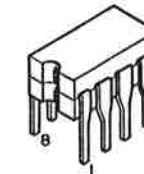
10 Backup Power Supply

BACK UP POWER SUPPLY PARTS LIST

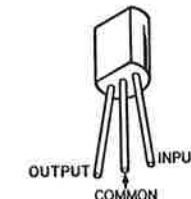
Symbol	Part	Description
DIODES		
D1	070047	SIG, 75V, 150mA, 1N4148
D2-D5	070131	RECT, 400V, 1A, 1N4004
D6-D8	070047	SIG, 75V, 150mA, 1N4148
D9	070131	RECT, 400V, 1A, 1N4004
D10-D12	070047	SIG, 75V, 150mA, 1N4148
FUSES		
F1	089047	Fuse, FA, 1/16A, 250V
INTEGRATED CIRCUITS		
IC1	133161	QUAD 2-input NAND Gate, 74HC00N
IC2	133066	Operational Amp, NE5534N
IC3	133093	+5V Regulator, MC78L05ACP
RELAYS		
K1	087054	SPST, 12VDC, JT1AE-DC12V
K2	087053	SPST, 24VDC, JT1AE-DC24V
TRANSISTORS		
Q1	132090	NPN, DAR, MPSA25
Q2	132224	PNP, MPS4126
Q3	132223	NPN, MPS4124
TRANSFORMERS		
T1	159195	POWER



IC1



IC2

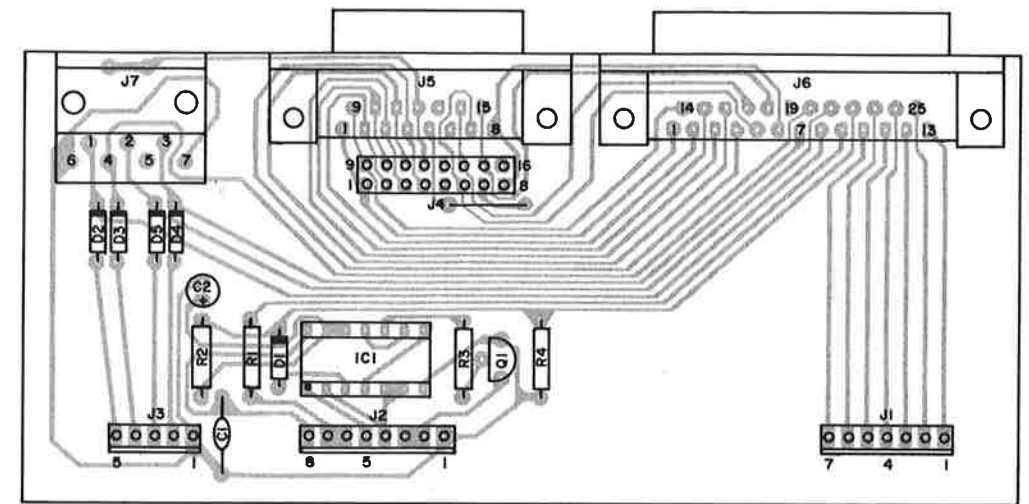
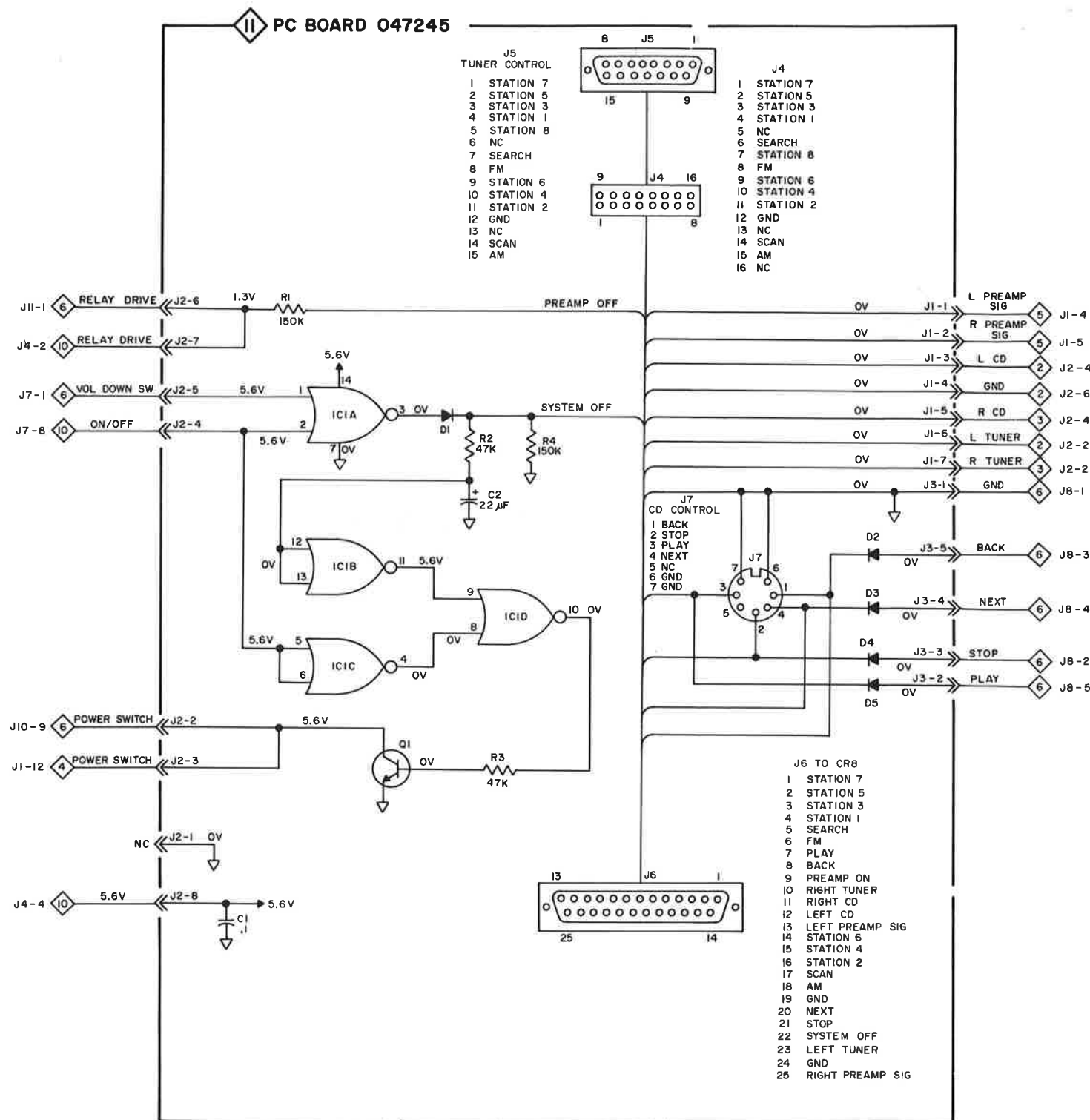


IC3



Q1-Q3

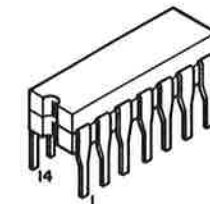
Remote 11



REMOTE PCB 047245

REMOTE PARTS LIST

Symbol	Part	Description
DIODES		
D1-D5	070047	SIG, 75V, 150mA, 1N4148
INTEGRATED CIRCUITS		
IC1	133064	CMOS, Quad 2-input Nor Gate, MC14001B
TRANSISTORS		
Q1	132223	NPN, MPS4124



IC1



Q1

Repacking Instructions

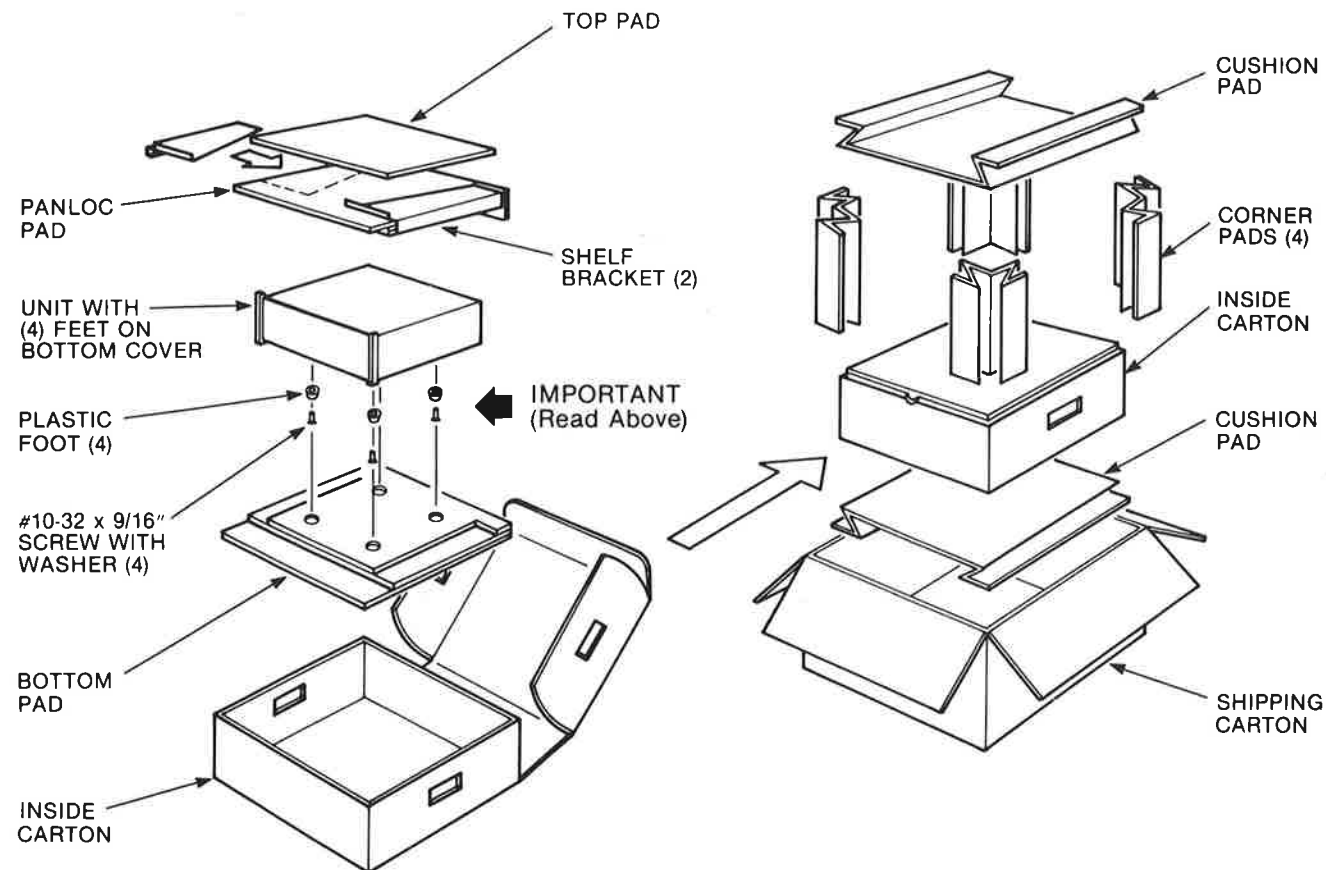
In the event it is necessary to repack the unit for shipment, the unit must be packed exactly as shown below. The shelf brackets do not have to be included in the carton for the unit to be packed properly, but their position in the carton is indicated.

IMPORTANT - The four plastic feet must be attached to the bottom of the unit so they will locate in the four holes of the bottom pad. Failure to do this will result in shipping damage.

If a shipping carton or any of the interior parts is needed, please call or write the Customer Service Department of McIntosh Laboratory. Order parts from the accompanying list by part number.

Use the original shipping carton and interior parts only if they are all in good serviceable condition.

Qty	Part No.	Description
1	033466	Shipping carton only
2	033332	Cushion pad
4	033333	Corner pad
1	033118	Inside carton only
1	033331	Top pad
1	033330	Panloc pad
1	033566	Bottom pad
4	017218	Plastic foot, 1" high
4	100159	#10-32 x 3/4 Machine screw
4	104080	#10 Flat washer
1	047315	Shipping carton complete with all the above parts



McIntosh[®] C37 SYSTEM CONTROL CENTER

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Part No. 039814

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