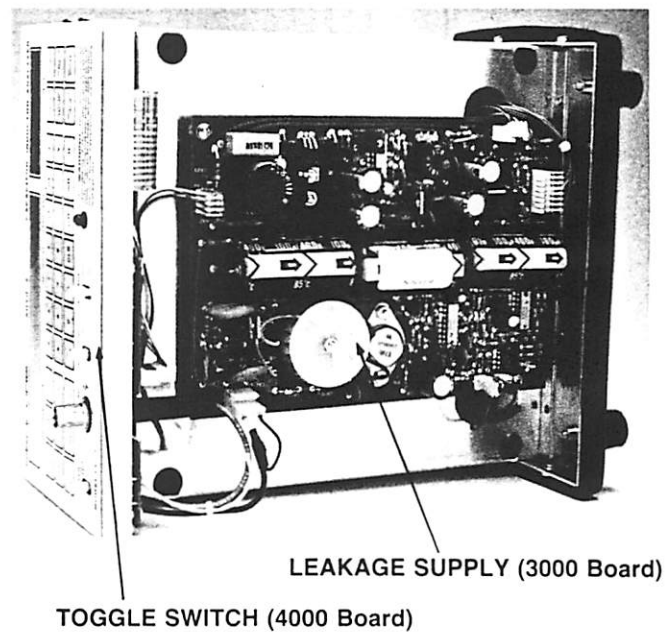
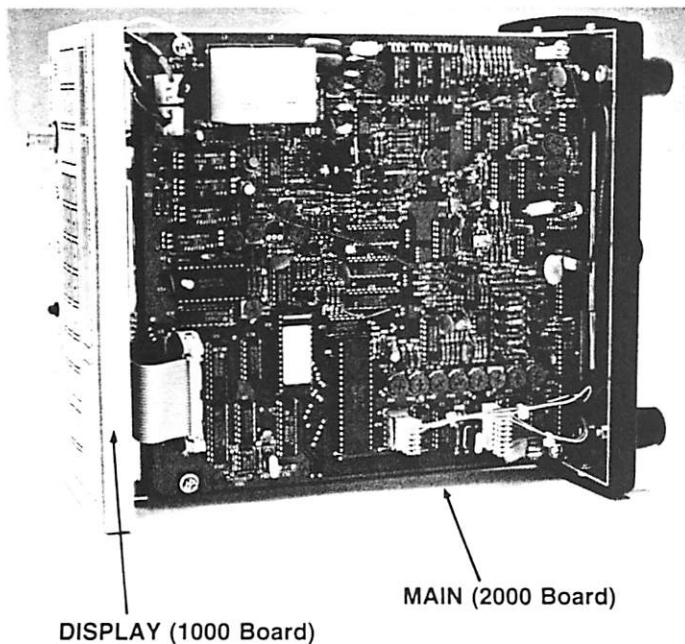


LC77

“AUTO-Z”

CAPACITOR — INDUCTOR ANALYZER

Schematic & Parts List



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This sheet includes parts list, P.C. board layouts, and board numbers 1000 and 4000.

SHEET 1

**SCHEMATIC
REFERENCE**

PART NO.

DESCRIPTION

DISPLAY BOARD ASSEMBLY (1000 Board)

IC1,2,3	69G92	IC,4332,LCD Driver
IC4	69G150	IC,MN74C374N,D Flip-Flop
IC5	69G57-B	IC,4042,Quad Latch
IC6	69G205	IC,7556,Dual Timer
TR1	19A33-1	Transistor,2N3904,NPN
C1,4	24G223	Capacitor,MYLAR,.15uF,100V
C2,3	24G207	Capacitor,DISC,.01uF,100V
C5	24G382	Capacitor,LYTIC,10uF,16V
D1	23A86	Display,LCD,6-Digit
D2	23A87	Display,LCD,4-Digit
CR1-9	20G24	LED Indicator
SW1-36	25G353	

MAIN BOARD ASSEMBLY (2000 Board)

IC1,13,39,42	69G210-B	IC,HEF4071,Quad OR
IC2	69G209	IC,HEF4001B,Quad NOR
IC3	69G107	IC,78L15,+15V Reg.
IC4	69G171	IC,LM236H,2.5V Voltage Ref.
IC5,18	69G211	IC,74C244,Not Inverting Buffer
IC6	69G238	IC,Pullup Resistor,8X10K
IC7	69G202	IC,74C373,D Flip-Flop
IC8	69G207	IC,80C39,Microprocessor
IC9	69G266	IC,27C256,EPR0M
IC10	69G172	IC,Resistor Network,5X10K
IC11,12,19,35,37,40	69G150	IC,MN74C374N,D Flip-Flop
IC14	69G47	IC,MC14433,A/D Converter
IC15-17	69G65-B	IC,4051,8 Input Switch
IC20,25	69G169	IC,HEF4011BP,Quad NAND
IC21	69G123-B	IC,4066B,Quad Switch
IC22,23,28	69G46	IC,TL084,Quad BIFET OP-AMP
IC24,41	69G212	IC,LM317,Adj. Voltage Reg.
IC26,33,43,44	69G63	IC,TL081,BIFET OP-AMP
IC27	69G213	IC,LM319,Comparator
IC29	69G113	IC,LM306,Voltage Comparator
IC30	69G208-B	IC,4081,Quad AND
IC31	69G214	IC,74HC4040,Counter
IC32	69G8-B	IC,4013,D Flip-Flop
IC36,38	69G130	IC,DAC0802,D/A Converter
IC45	69G295	IC,MM5369AA-N,Divider
TR1,4,6,14,16,20-22, 27,29,30,32,34,36, 38,45,47	19A33-1	Transistor,2N3904,NPN
TR2,3,5,7,9,10,17, 31,33,35,37,39,46	19A34-1	Transistor,2N3906,PNP
TR8	19G68	Transistor,MTP3055A
TR11,12	19A45	Transistor,2N5771,PNP
TR15	19G58	Transistor,2N6559,NPN
TR18	19A30-1	Transistor,MJE170,PNP
TR19	19G50	Transistor,J211,N-Channel FET
TR24-26	19G62	Transistor,MPF930,MOSFET
TR40-42	19G70	Transistor,2N7000,Fetlington
CR1,24	50C4-13	Diode,1N4733,Zener,5.1V
CR2,4	16G21	Diode,UF4002B
CR3,6,7,9,11,13, 15-23,26-28,31,32	50C5-2:A	Diode,1N4148
CR5	50C12-1	Diode,1N825,Zener,6.2V
CR25	50C3-2:A	Diode,1N695
CR29,30	50G24	Diode,PAD20
CR33,34	16G18	Diode,1N4007

**SCHEMATIC
REFERENCE**

PART NO.

DESCRIPTION

R8	14A38-1502A	Resistor,150 Ohm,1/4W,1%
R13	14A38-1603A	Resistor,1.6K,1/4W,1%
R18	14A38-1604A	Resistor,16K,1/4W,1%
R21,22,24,25,76,134, 143,144,180,181	14A38-1004A	Resistor,10K,1/4W,1%
R34,35	14A72-5	Resistor,100 Ohm,22W
R47	14A38-3013A	Resistor,3.01K,1/4W,1%
R49,137	14A38-1005A	Resistor,100K,1/4W,1%
R56	14A38-1476A	Resistor,1.47M,1/4W,1%
R60	14A38-1474A	Resistor,14.7K,1/4W,1%
R72	14A38-1694A	Resistor,16.9K,1/4W,1%
R74	14A38-3244A	Resistor,32.4K,1/4W,1%
R81	14A38-2001A	Resistor,20 Ohm,1/4W,1%
R82	14C32-3300A	Resistor,3.3 Ohm,1W,1%
R104	14A38-4992A	Resistor,500 Ohm,1/4W,1%
R106	14A38-2403A	Resistor,2.4K,1/4W,1%
R108	14A38-9093A	Resistor,9.09K,1/4W,1%
R110	14A38-2704A	Resistor,27K,1/4W,1%
R112	14A38-9094A	Resistor,90.9K,1/4W,1%
R114	14A38-2705A	Resistor,270K,1/4W,1%
R116	14A38-9095A	Resistor,909K,1/4W,1%
R120,172	14A38-1002A	Resistor,100 Ohm,1/4W,1%
R125	14A38-3322A	Resistor,332 Ohm,1/4W,1%
R127	14A38-1003A	Resistor,1K,1/4W,1%
R130	14A38-3323A	Resistor,3.32K,1/4W,1%
R136	14A38-3324A	Resistor,33.2K,1/4W,1%
R138,139,150,153	14A38-4993A	Resistor,4.99K,1/4W,1%
R149,151,161	14A38-4994A	Resistor,49.9K,1/4W,1%
R159	14A38-1501A	Resistor,15 Ohm,1/4W,1%
R162	14A38-7803A	Resistor,7.8K,1/4W,1%
R163	14A38-2703A	Resistor,2.7K,1/4W,1%
R164	14A38-4224A	Resistor,42.2K,1/4W,1%
R169	14A38-1105A	Resistor,110K,1/4W,1%
R171	14C29-1001A	Resistor,10 Ohm,1/2W,1%
R175	14A38-1501A	Resistor,1.5K,1/4W,1%
R177	14A38-1103A	Resistor,1.1K,1/4W,1%
R182,183	14A38-2496A	Resistor,2.49M,1/4W,1%
R187	14A38-1605A	Resistor,160K,1/4W,1%
R9	15C26-12	Pot,20 Ohm,1/2W
R14	15C26-13	Pot,200 Ohm,1/2W
R19,71,91,109	15C26-18	Pot,2K,1/2W
R20,147	15C26-21	Pot,5M,1/2W
R46,55,189,191	15C26-14	Pot,100K,1/2W
R48,59	15C26-15	Pot,1K,1/2W
R80	15C26-17	Pot,100 Ohm,1/2W
R95,115	15C26-19	Pot,50K,1/2W
R105,107	15C26-3	Pot,500 Ohm,1/2W
R111	15C26-20	Pot,5K,1/2W
R113,188	15C26-10	Pot,20K,1/2W
R117	15C26-11	Pot,200K,1/2W
R158	15C26-16	Pot,10 Ohm,1/2W
C1,6,9,13,17 23,40,49-54	24G104	Capacitor,DISC,.1uF,100V
C2,3	24G452	Capacitor,DISC,8.2pF,100V
C5,7,38	24G384	Capacitor,LYTIC,2.2uF,50V
C8,32,37	24G188	Capacitor,POLY,.001uF,33V
C10,11,21,22,34	24G70	Capacitor,DISC,100pF,500V
C12	24G279	Capacitor,POLY,470pF,125V
C16,18,19,44	24G216	Capacitor,MYLAR,.1uF,100V
C20,42,48	24G214	Capacitor,DISC,.001uF,500V
C24	24G262	Capacitor,POLY,150pF,125V
C26	24G345	Capacitor,POLY,.0022uF,160V

SCHEMATIC REFERENCE	PART NO.	DESCRIPTION
C27	24G403	Capacitor,POLY,.01uF,400V
C28	24G404	Capacitor,POLY,.033uF,200V
C29,30,31	24G176	Capacitor,DISC,47pF,500V
C33,36,39,45,46	24G382	Capacitor,DISC,.01uF,100V
C35,47	24G207	Capacitor,DISC,.01uF,100V
C41	24G195	Capacitor,MYLAR,.022uF,250V
C43	24G450	Capacitor,LYTIC,1uF,50V
C55	24G83	Capacitor,DISC,33pF,500V
C56	24G151	Capacitor,DISC,22pF,500V
L1,9	41G13	Relay,SPST
L2,3	41G6	Relay,SPDT
L4	41G15	Relay,SPST
L5-8,10	41G12	Relay,SPST
X1	47A38	Crystal,6Mhz
X2	47A47	Crystal,3.579545Mhz

LEAKAGE SUPPLY BOARD ASSEMBLY (3000 Board)

IC1	69G46	IC,TL084,Quad BIFET Op-Amp
IC2	69G189	IC,TL082CP,Dual Op-Amp
IC3,4	69G223	IC,TL594I,Pulse Width Modulator
IC5	69G212	IC,LM317,Voltage Reg.
IC6	69G231	IC,LM317LZ,100mA Adjustable Reg.
IC7	69G273	IC,79M05,-5V,.5A Reg.
TR1,7,9-12	19A33-1	Transistor,2N3904,NPN,
TR2,3,13	19A34-1	Transistor,2N3906,PNP
TR4	19G61	Transistor,MTM6N60,600V,6A MOSFET
TR5,6	19G71	Transistor,MTP2N85
TR8	19G70	Transistor,2N7000,Fetlington
TR14,15	19A68	Transistor,MTP3055A
CR1-5,13-15,19,22	50C5-2:A	Diode,1N4148
CR6,7	50G23	Diode,Zener,200V
CR8,9,10	16G22	Diode,MR817,Fast Recovery
CR11	50C4-9	Diode,Zener,68V
CR12,21	16G21	Diode,UF4002B
CR16,24	16G10	Diode,1N4004
CR17,25	16G14	Diode,1N5401
CR18	16G24	Diode,1N5822,Schottky
CR20	50C4-26	Diode,Zener,15V
CR23	16G19	Diode,1N5158,Schottky
R32,33,65,66	14C29-4995A	Resistor,499K,1/2W,1%
R41	14A38-2403A	Resistor,2.4K,1/4W,1%
R43,52	14A38-2402A	Resistor,240 Ohm,1/4W,1%
R45	14B49-18	Resistor,5 Ohm,5W
R54	14A38-3013A	Resistor,3.01K,1/4W,1%
R53	15C26-3	Pot,500 Ohm,1/4W
C1	24G442	Capacitor,LYTIC,100uF,16V
C2,5,7,9,16	24G104	Capacitor,DISC,.1uF,100V
22,23,24,25 26,29,30		
C3,31	24G207	Capacitor,DISC,.01uF,100V
C4,20	24G214	Capacitor,DISC,.001uF,500V
C6,18,24	24G382	Capacitor,LYTIC,10uF,16V
C8,19,28	24G437	Capacitor,LYTIC,470uF,25V
C10-12	24G469	Capacitor,LYTIC,100uF,400V
C13,32	24G221	Capacitor,DISC,.01uF,2000V
C14	24G424	Capacitor,LYTIC,2200uF,25V
C15	24G9	Capacitor,DISC,.005uF,600V
C17	24G450	Capacitor,LYTIC,1uF,50V
C21,27	24G411	Capacitor,LYTIC,220uF,50V
L1	46G129	Inductor,500uH
T1	28A100	Transformer,High Voltage Flyback
T2	28A97	Transformer,Switching Power Supply

**SCHEMATIC
REFERENCE**

PART NO.

DESCRIPTION

TOGGLE SWITCH ASSEMBLY (4000 Board)

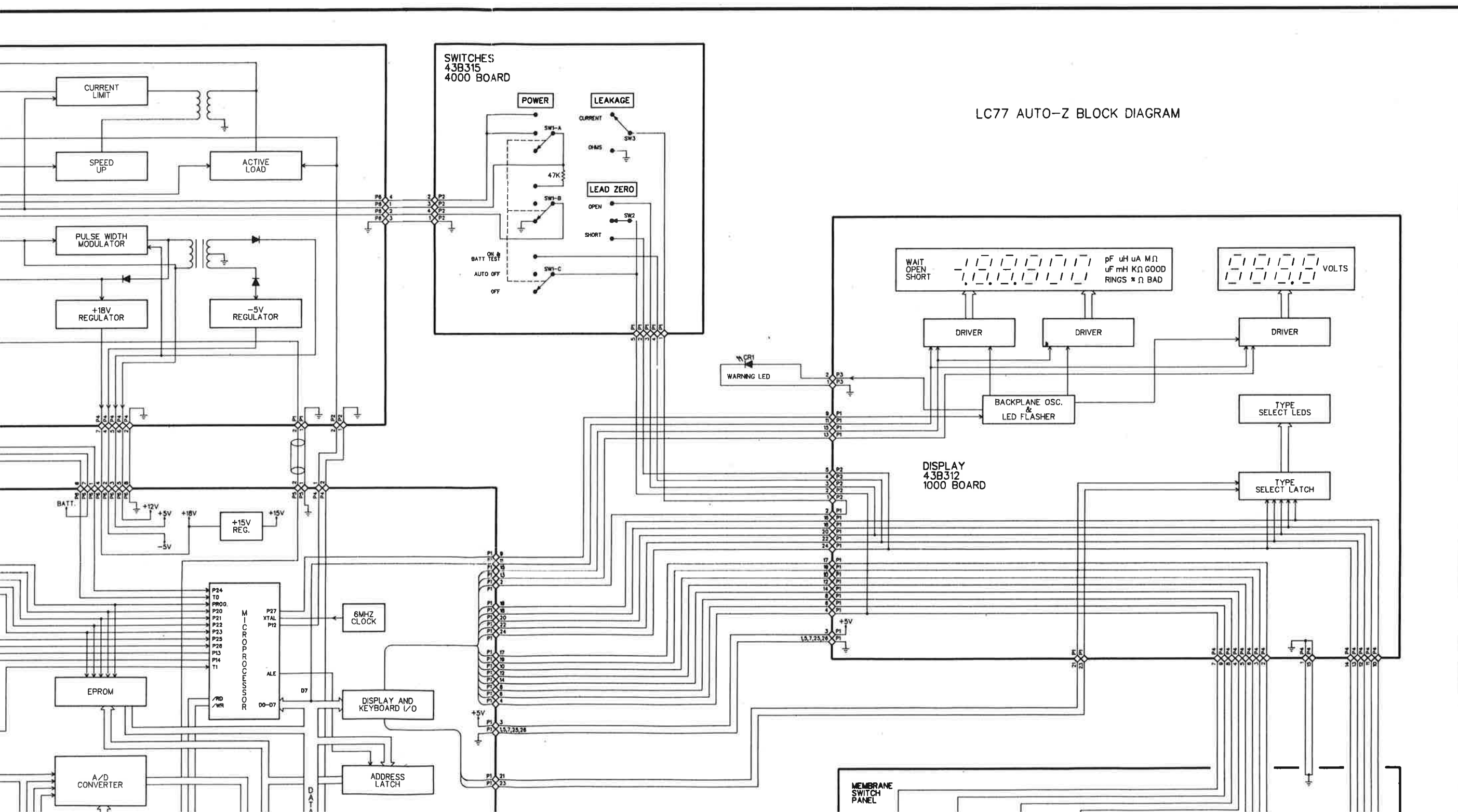
25G352
25G355
25G384

Switch,LEAD ZERO
Switch,POWER
Switch,LEAKAGE

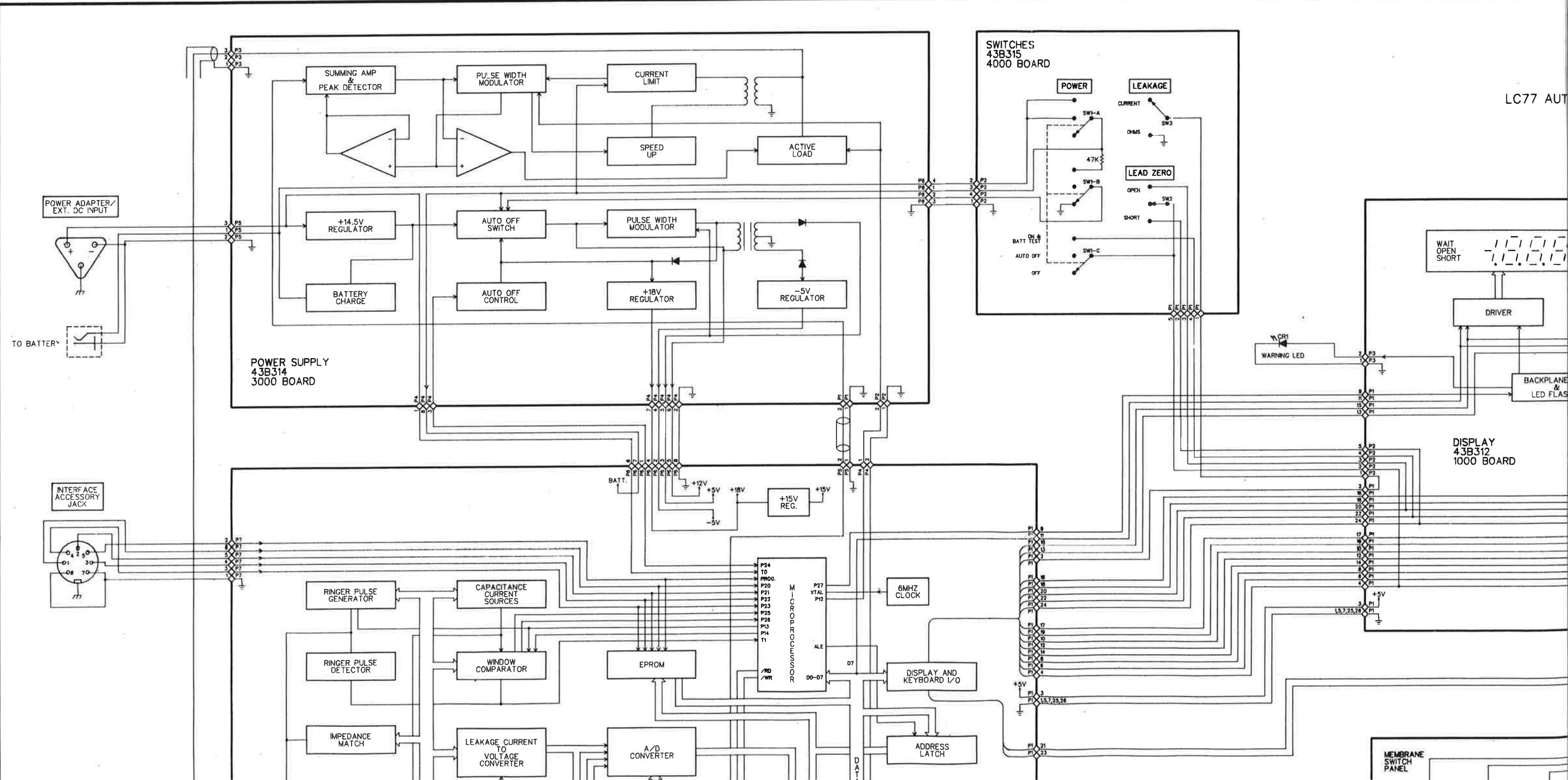
MISCELLANEOUS

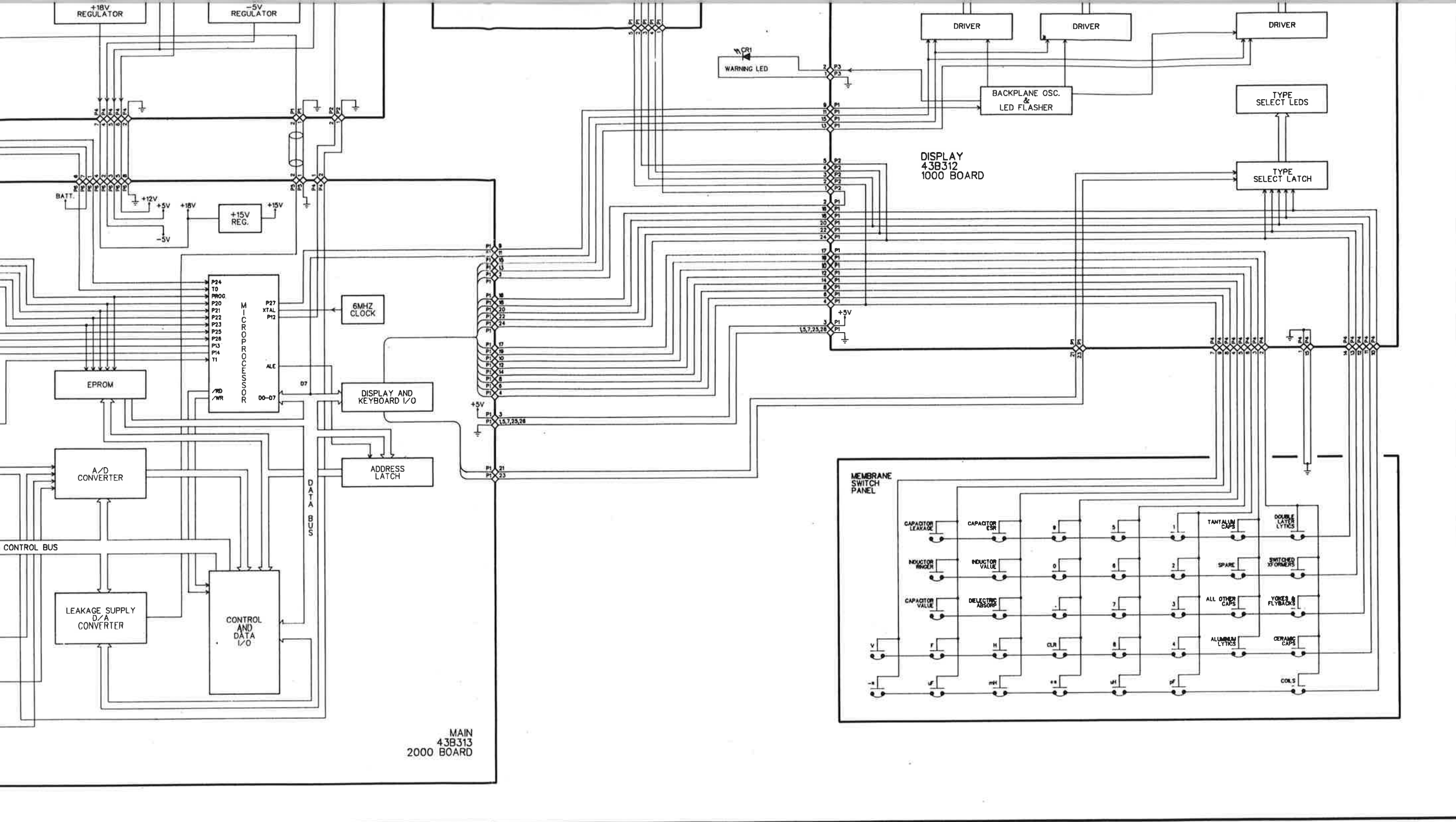
44G20
20G26

Fuse,Slowblow,3AG,1Amp
LED Indicator

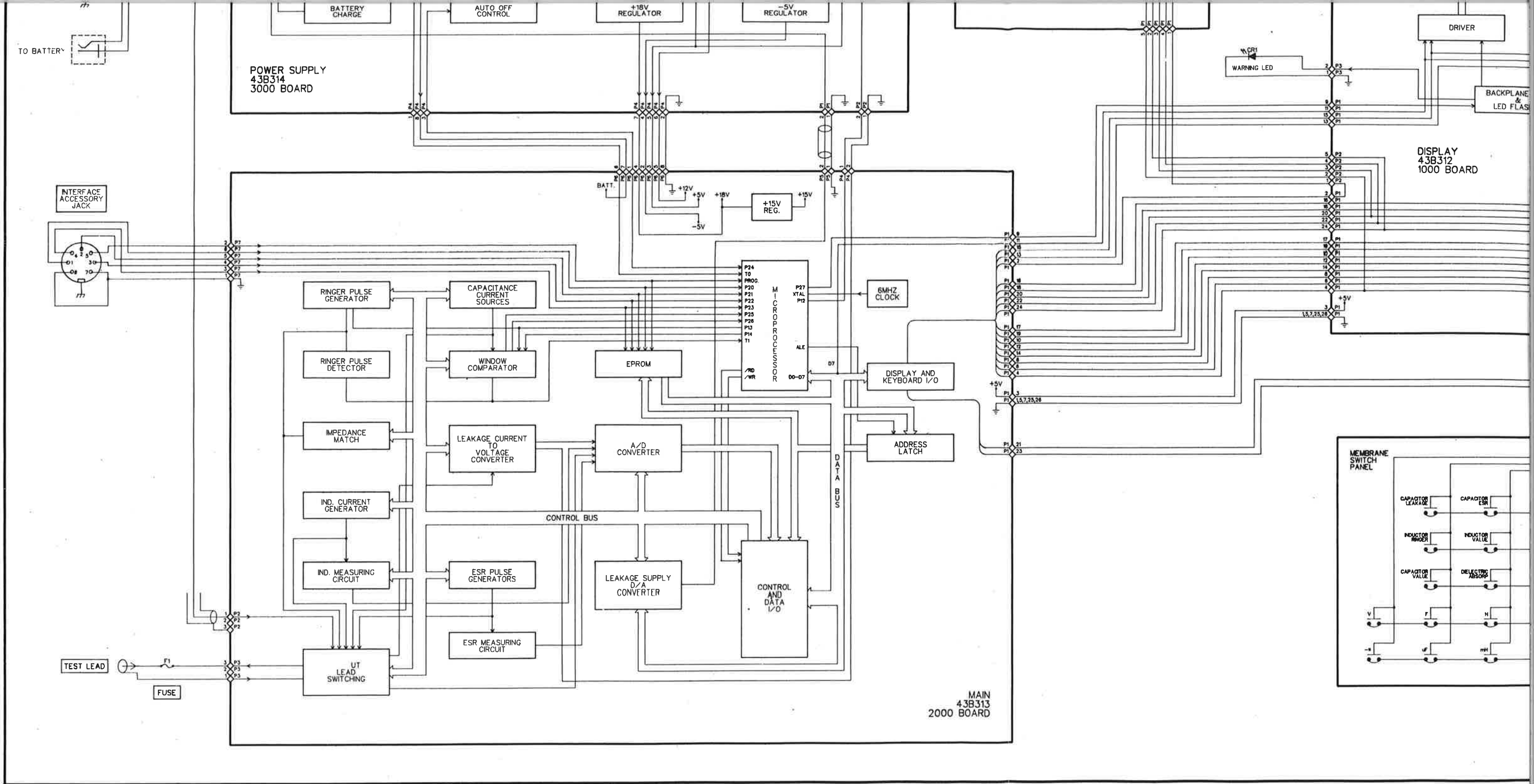


LC77 AUTO-Z BLOCK DIAGRAM

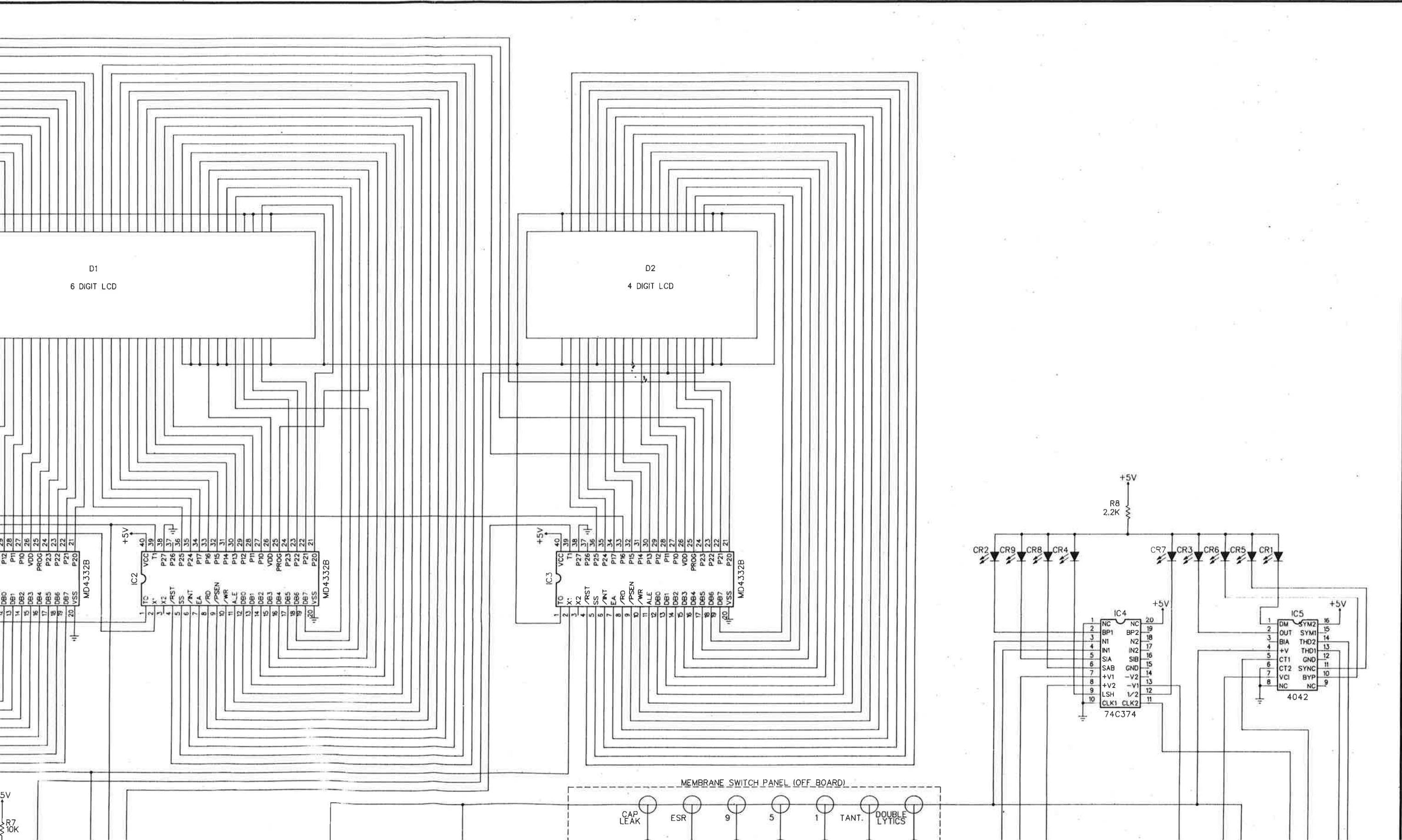




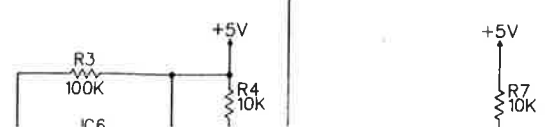
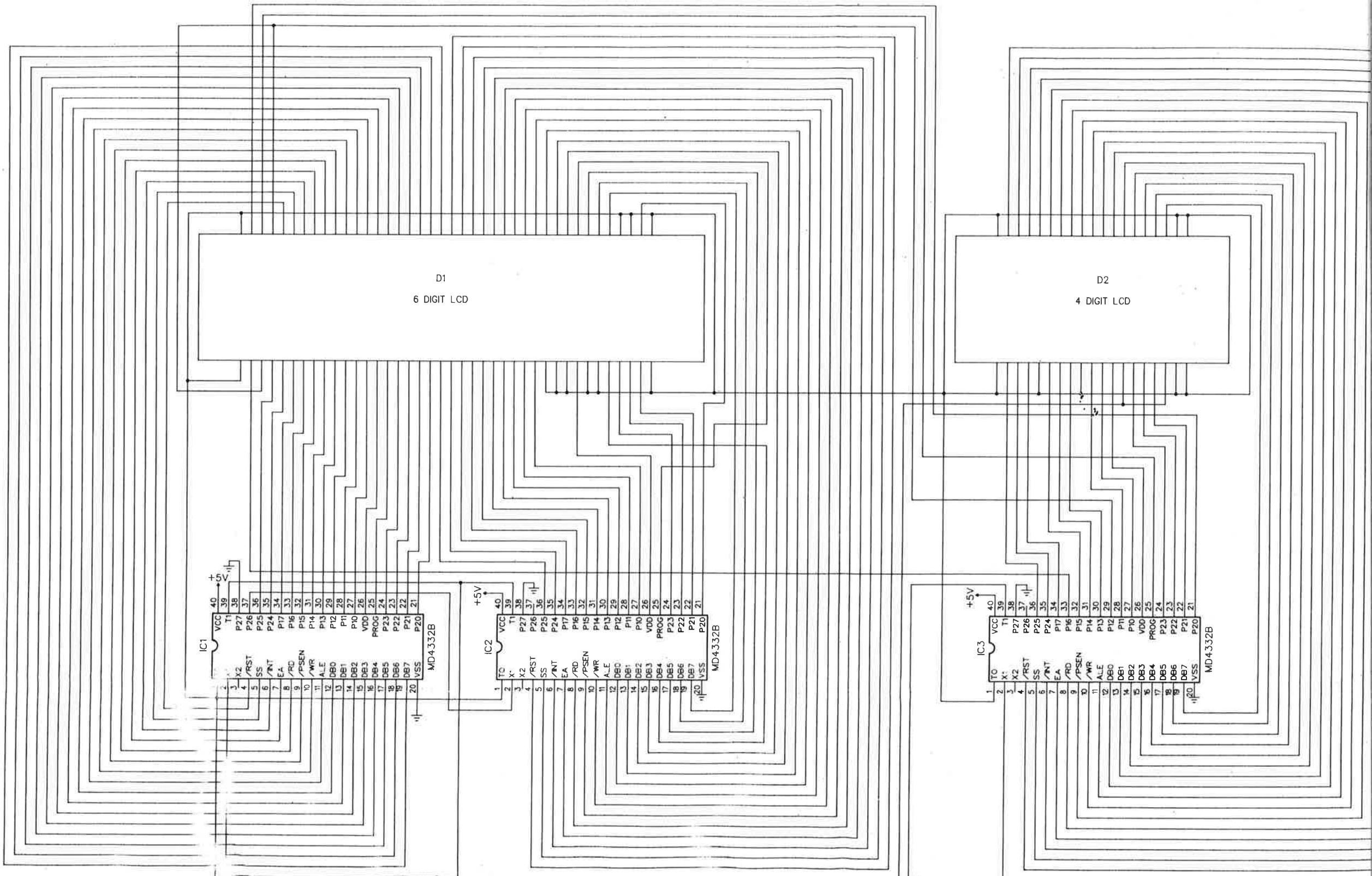
LC77 BLOCK DIAGRAM



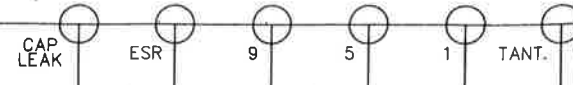
LC77 BLOCK DIAGRAM

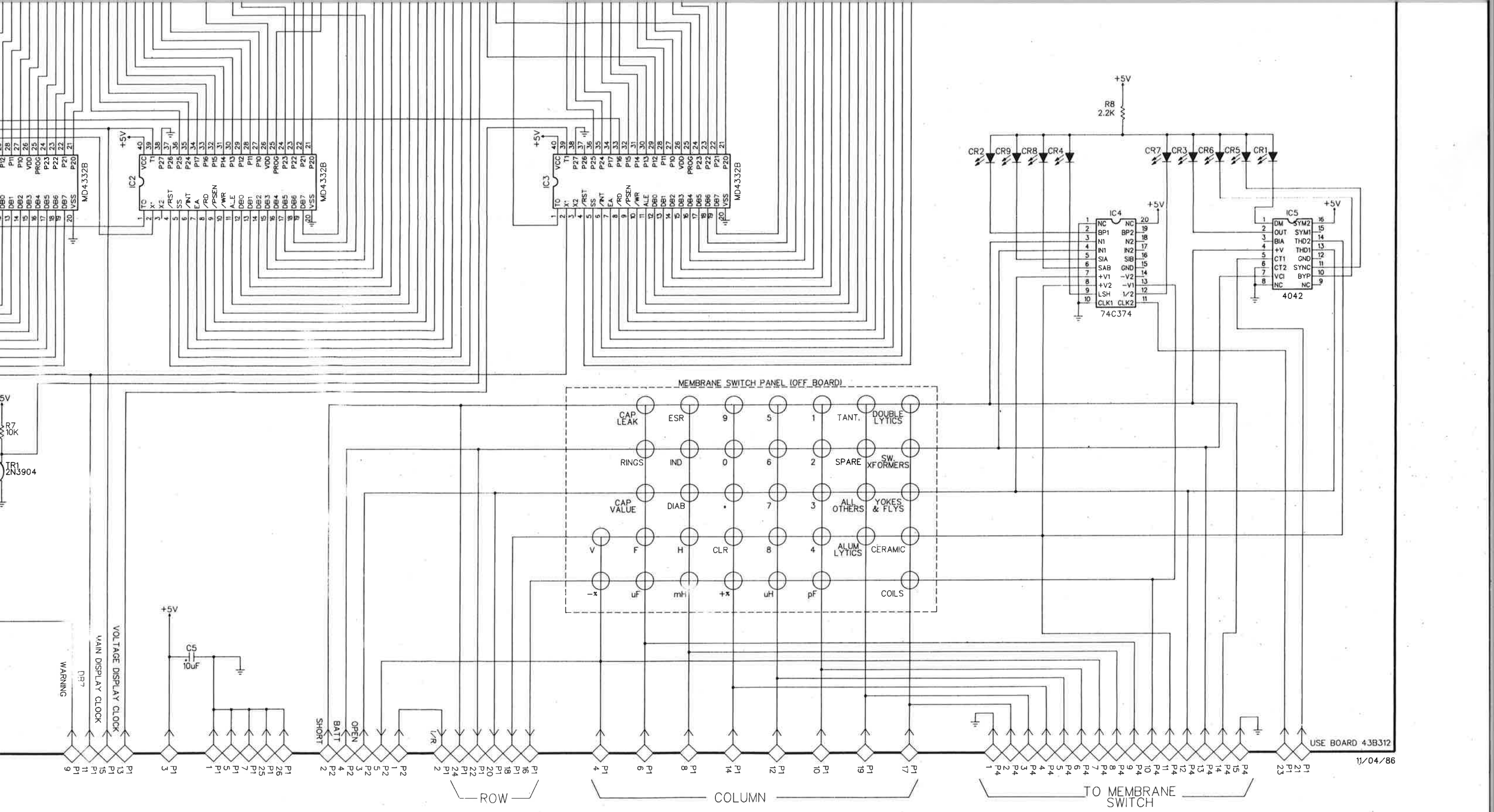


LC77 DISPLAY
43B312
1000 BOARD



MEMBRANE SWITCH PANEL (OFF BOARD)





1000 BOARD - DISPLAY

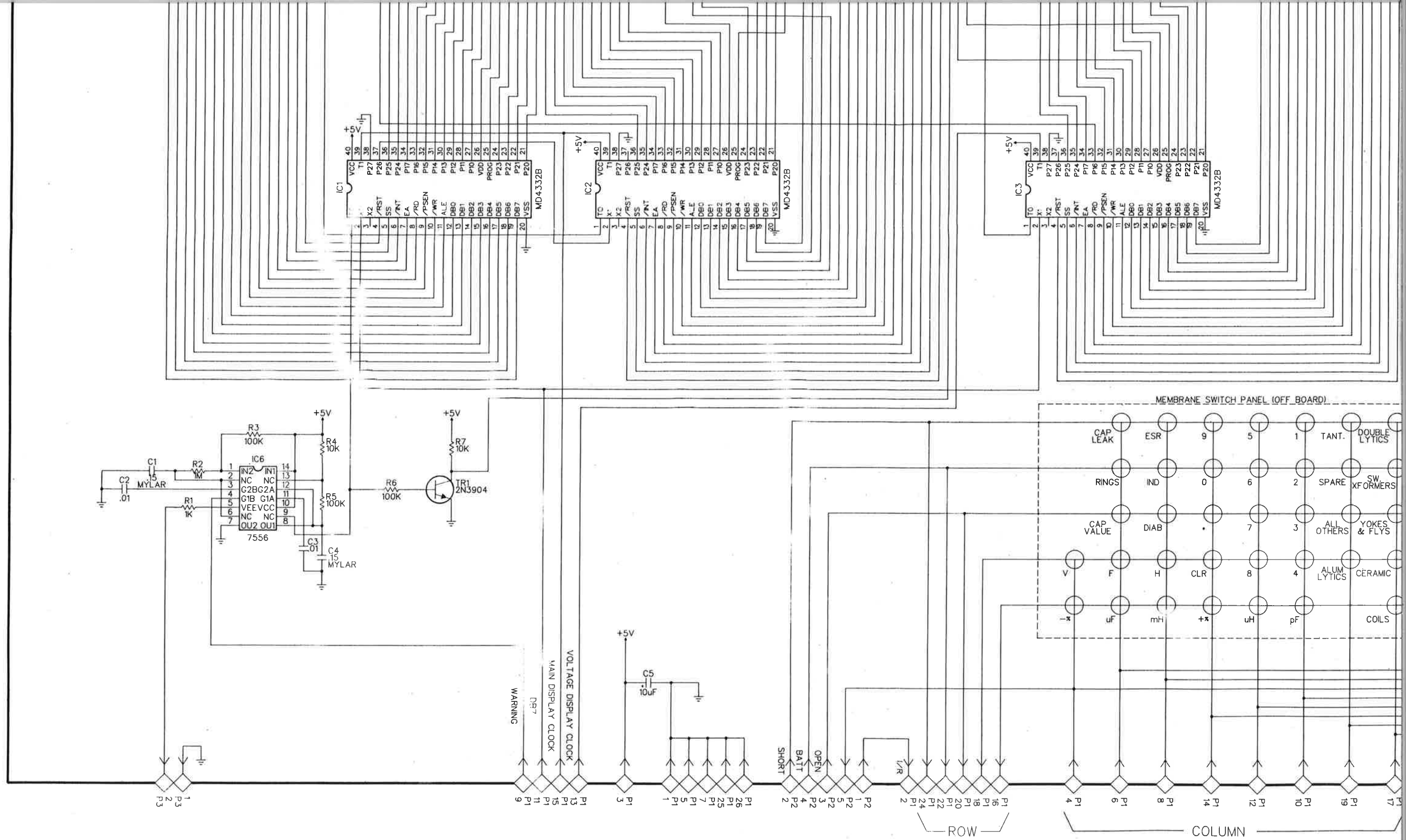
11/04/86

USE BOARD 43B312

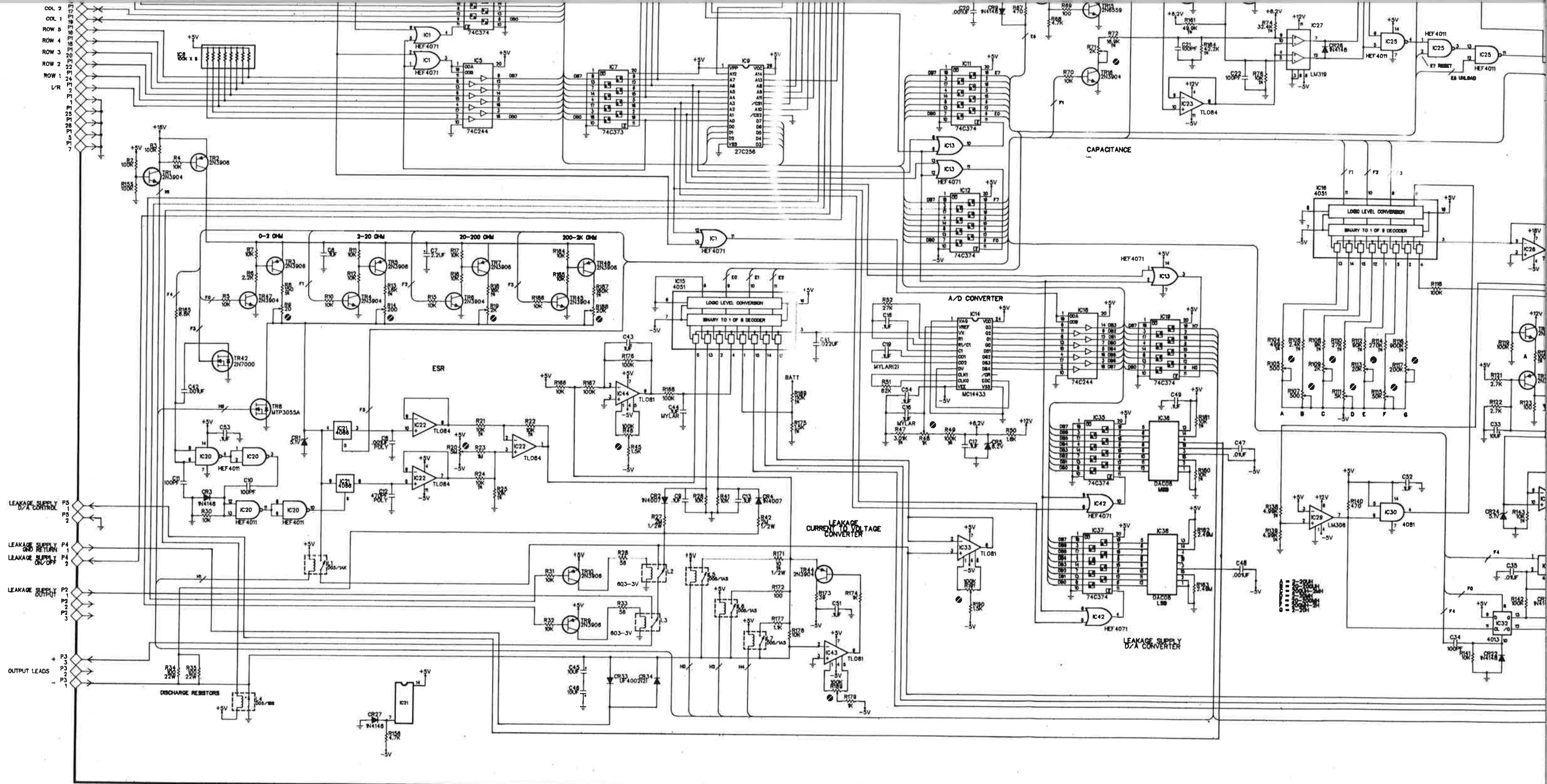
TO MEMBRANE SWITCH

COLUMN

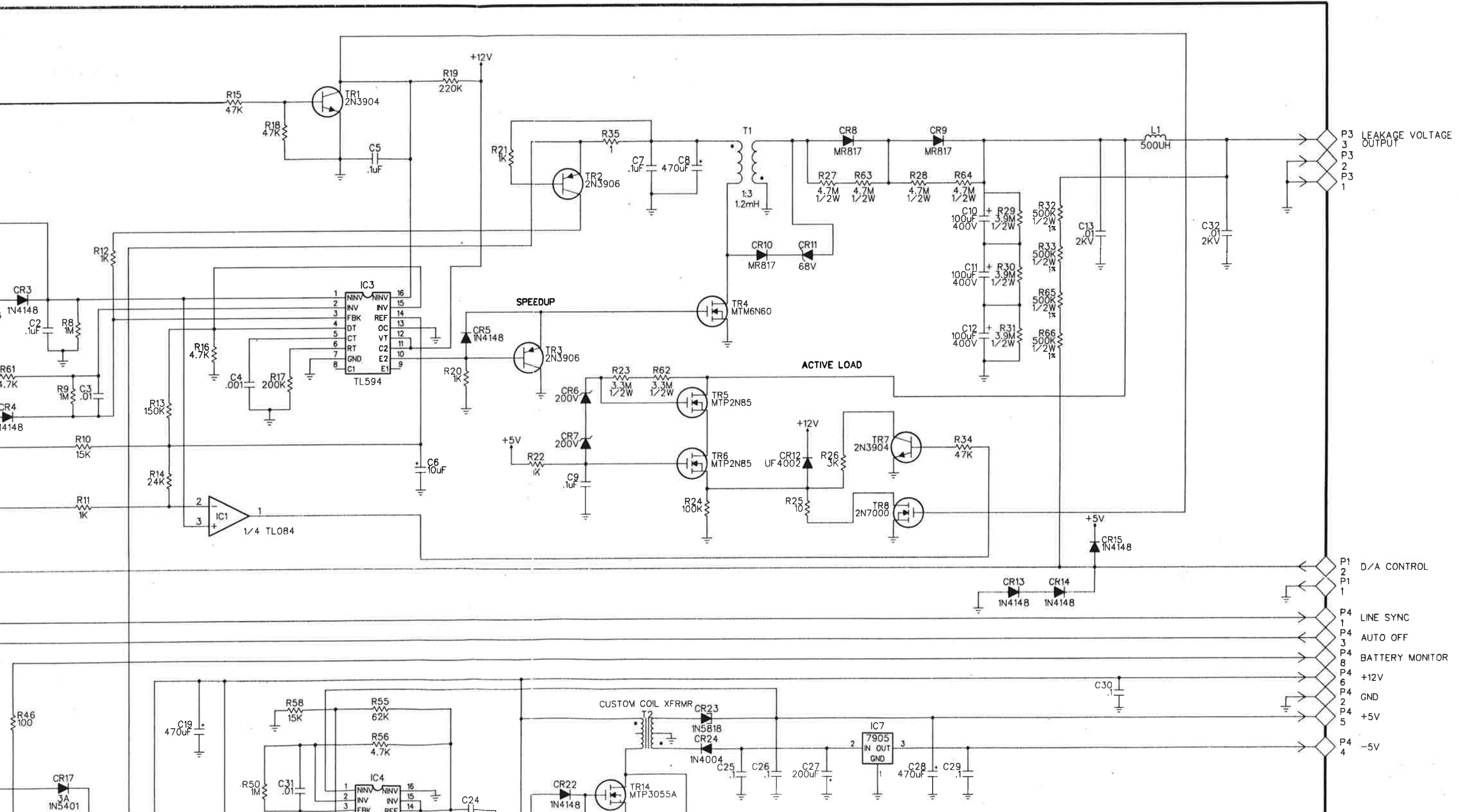
ROW



1000 BOARD — DISPLAY



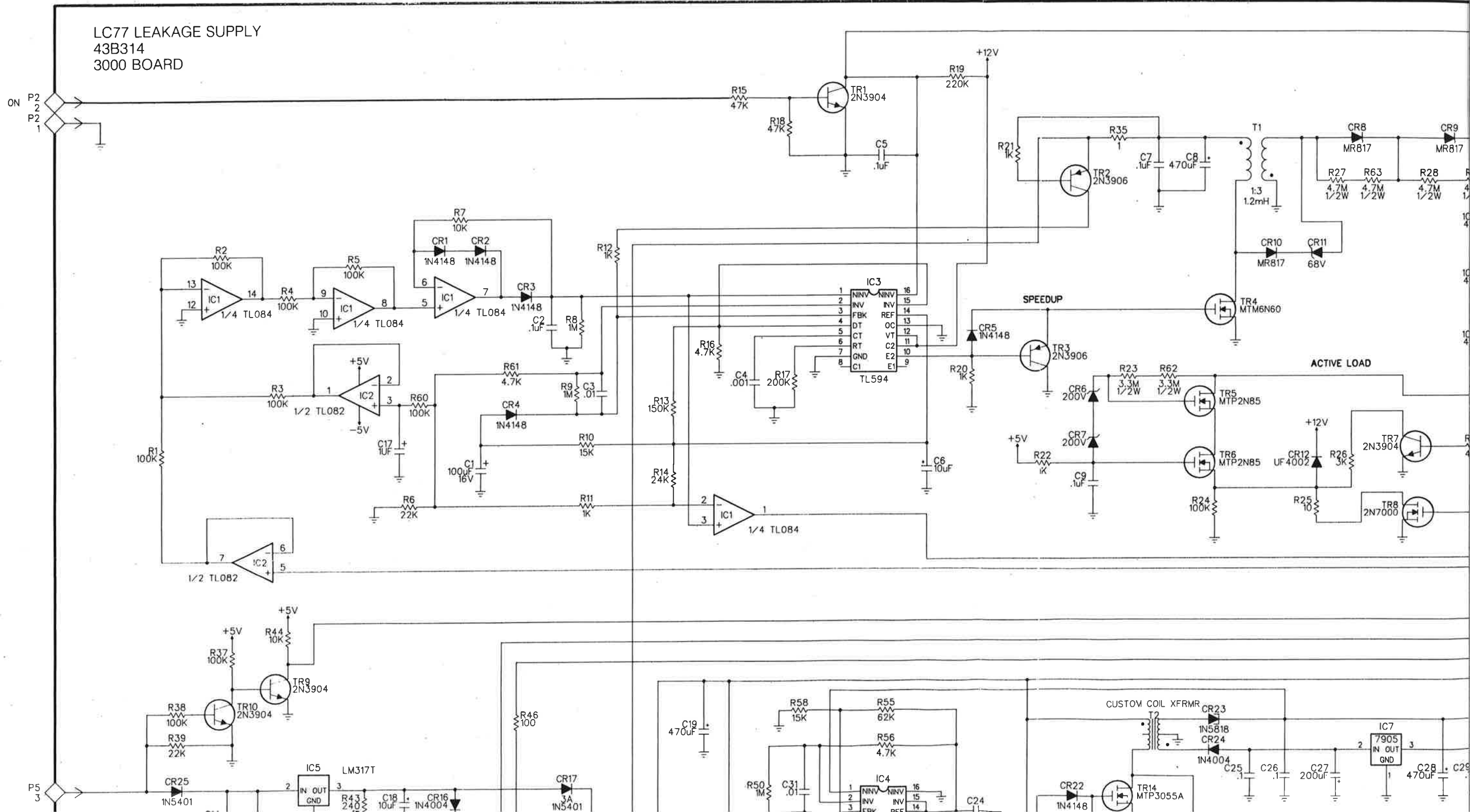
2000 BOARD — MAIN

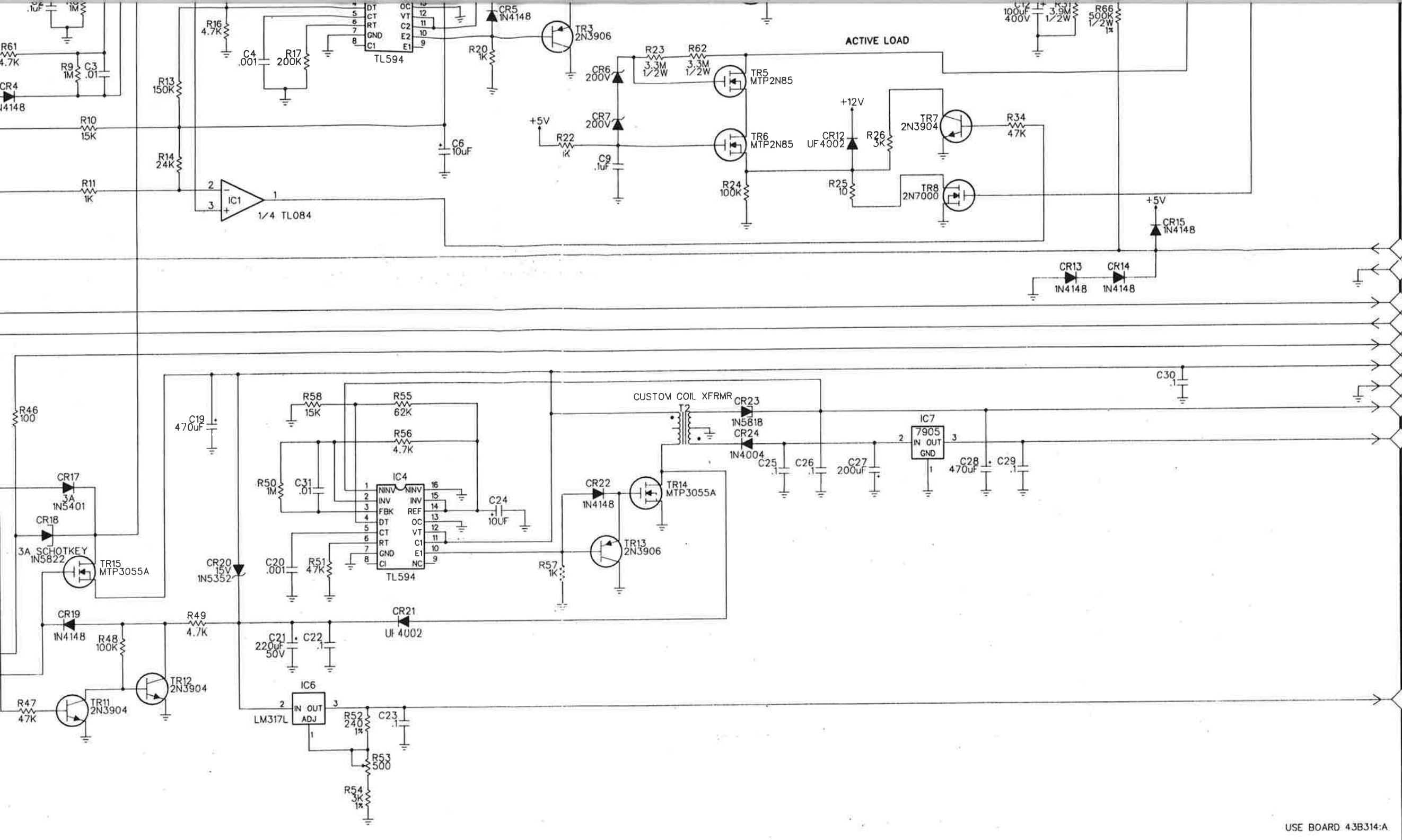


This sheet includes board numbers 2000 and 3000.

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LC77 LEAKAGE SUPPLY
43B314
3000 BOARD





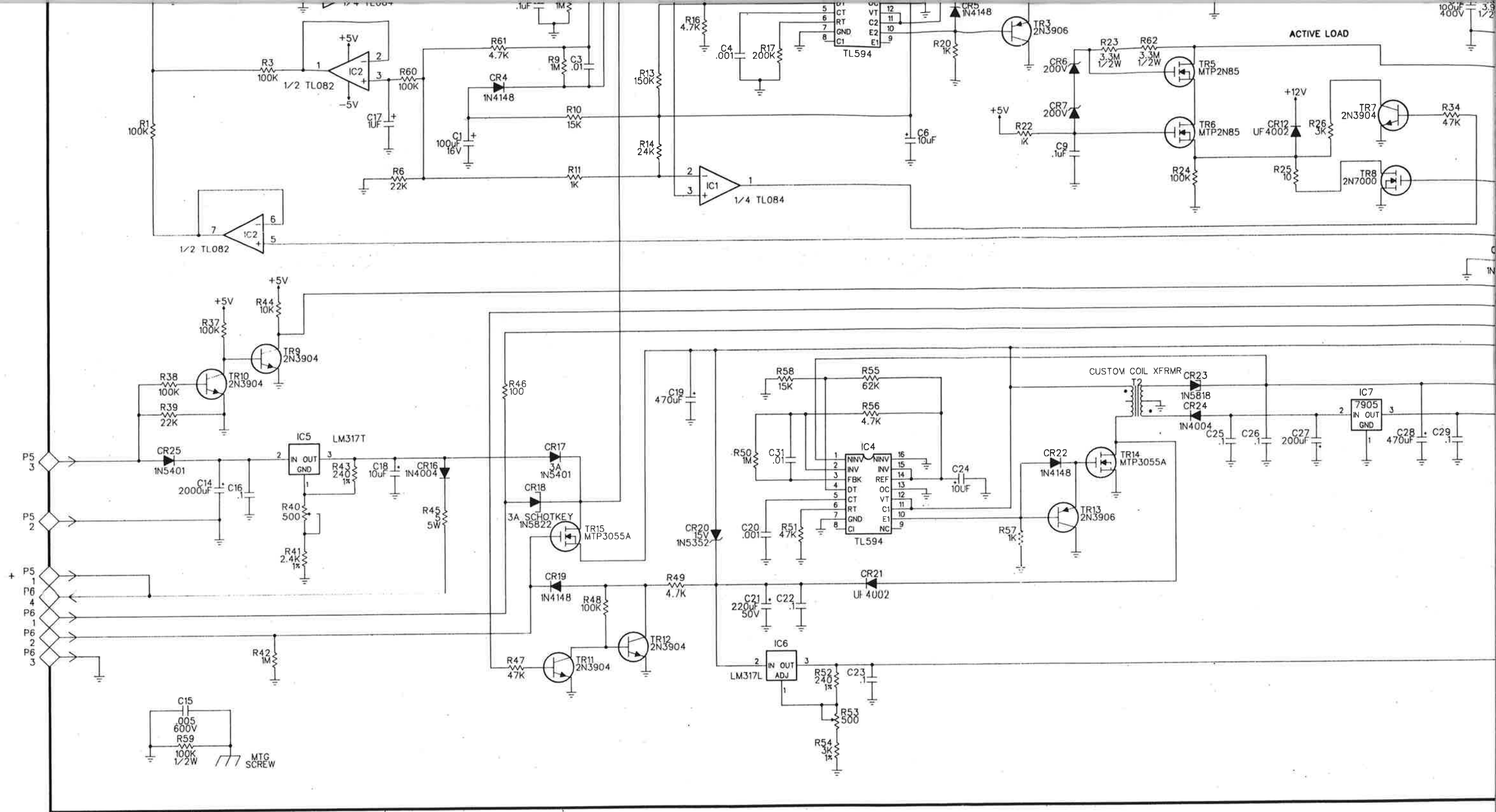
- P1 2
- P1 1
- P4 1
- P4 3
- P4 8
- P4 6
- P4 2
- P4 5
- P4 4

- D/A CONTROL
- LINE SYNC
- AUTO OFF
- BATTERY MONITOR
- +12V
- GND
- +5V
- 5V
- +18V

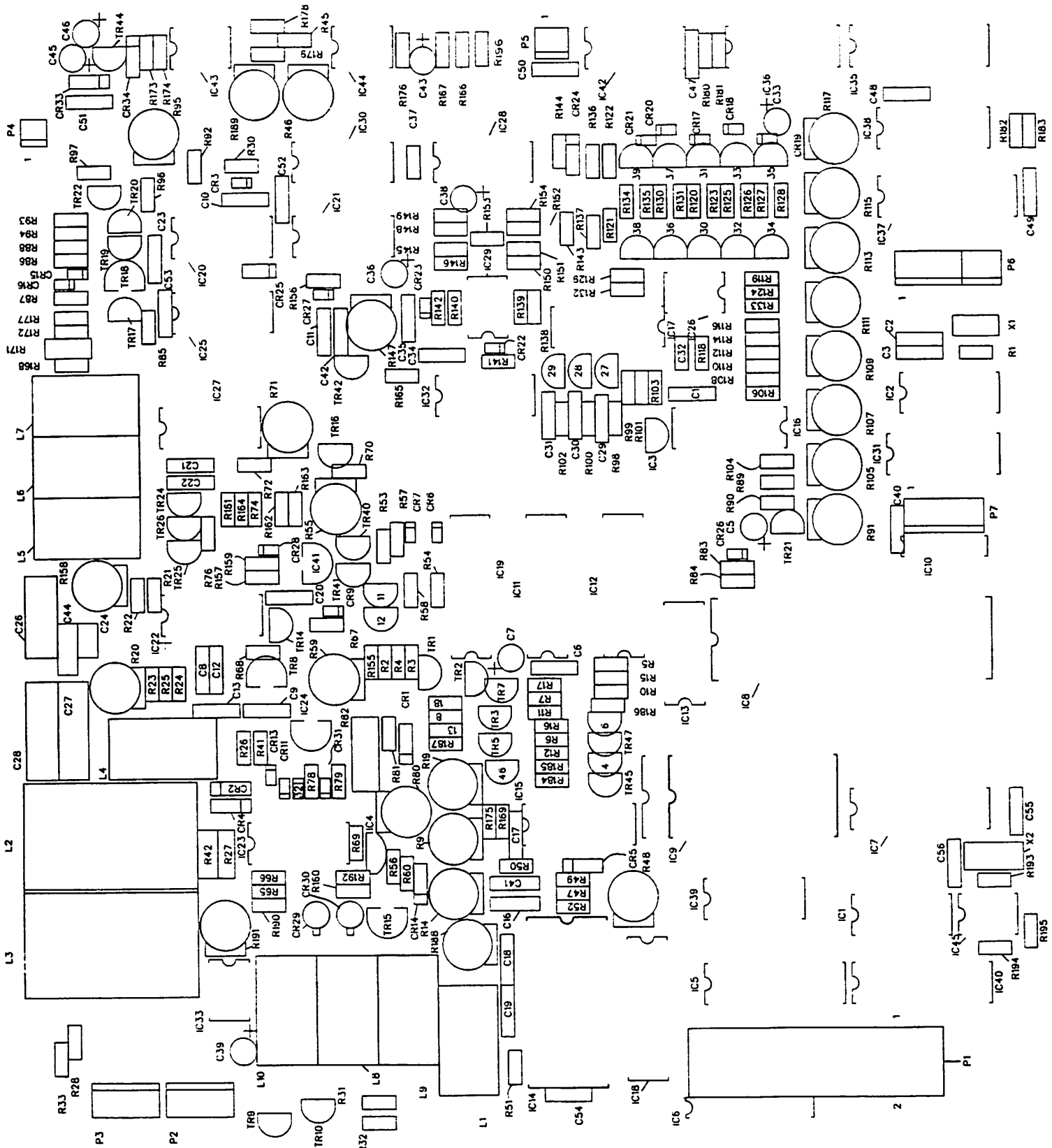
USE BOARD 43B314:A

11/18/86


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3000 BOARD — LEAKAGE SUPPLY

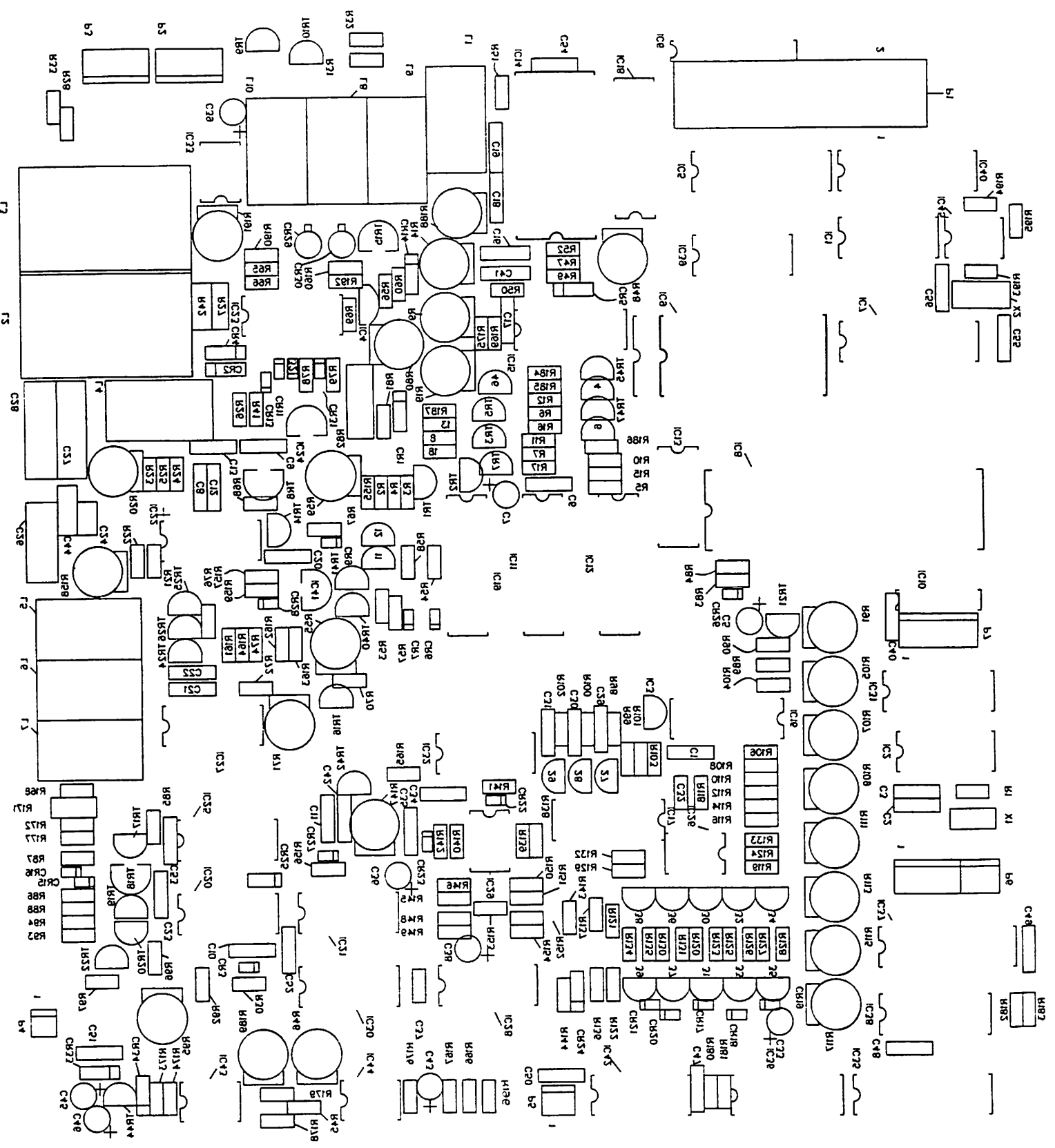


MAIN BOARD (Component Side)

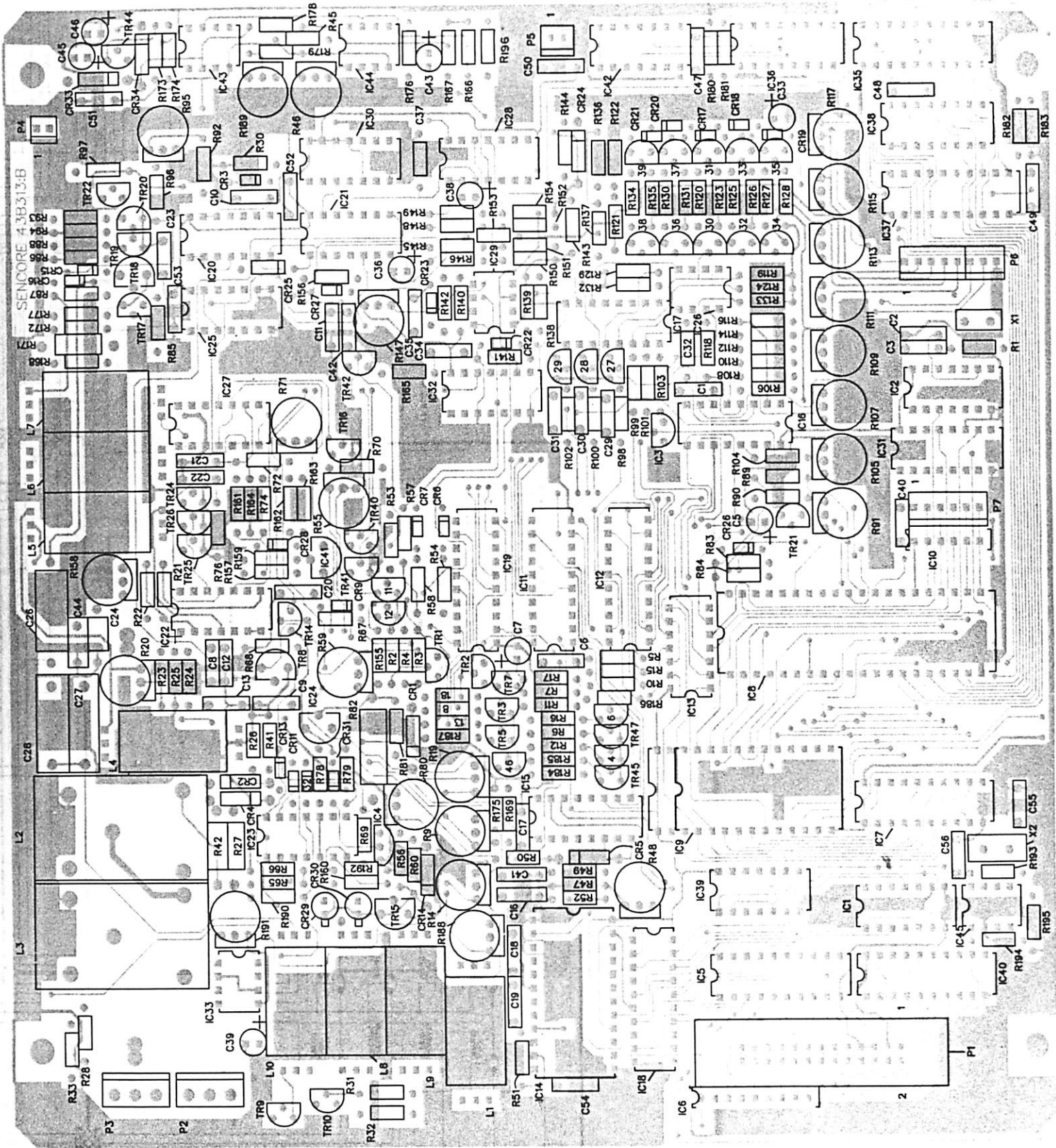

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This sheet includes P.C. board layouts and Block Diagram.

SHEET 3



MAIN BOARD (Foil Side)



MAIN BOARD (Component Side)



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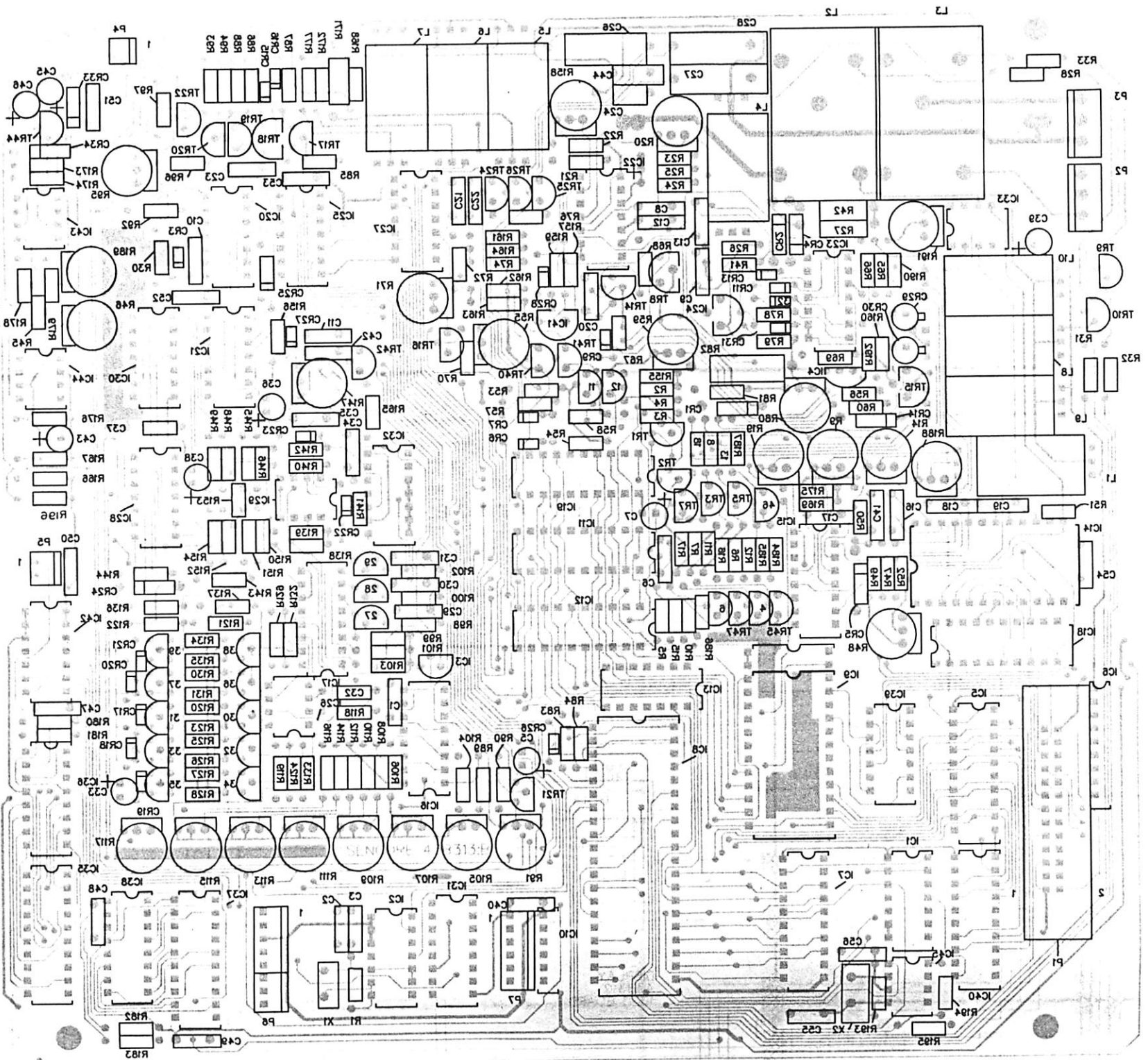
Sioux Falls, SD 57107

Call Collect 605-339-0100 In SD

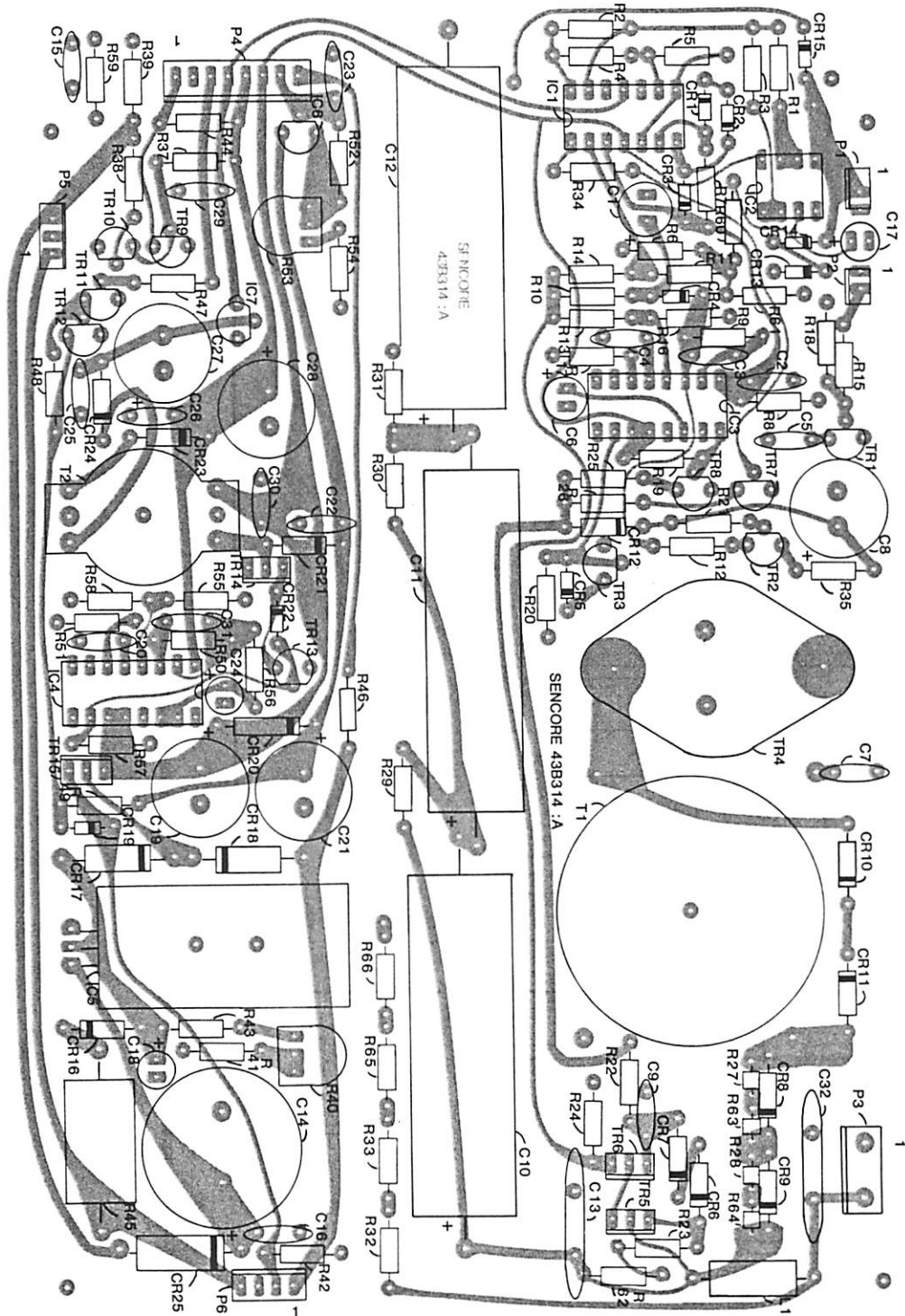
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This sheet includes P.C.
board layouts and Block
Diagram.

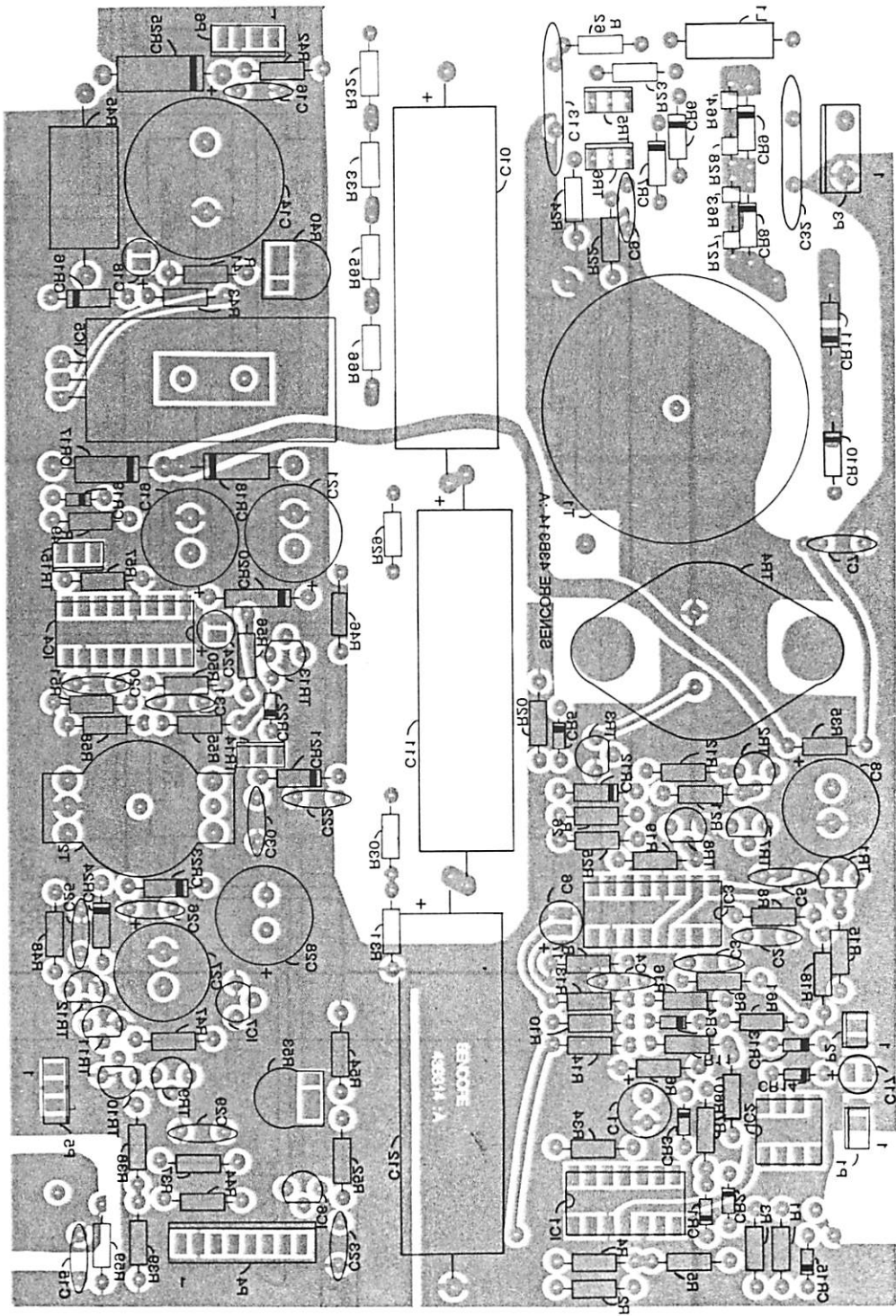
SHEET 3



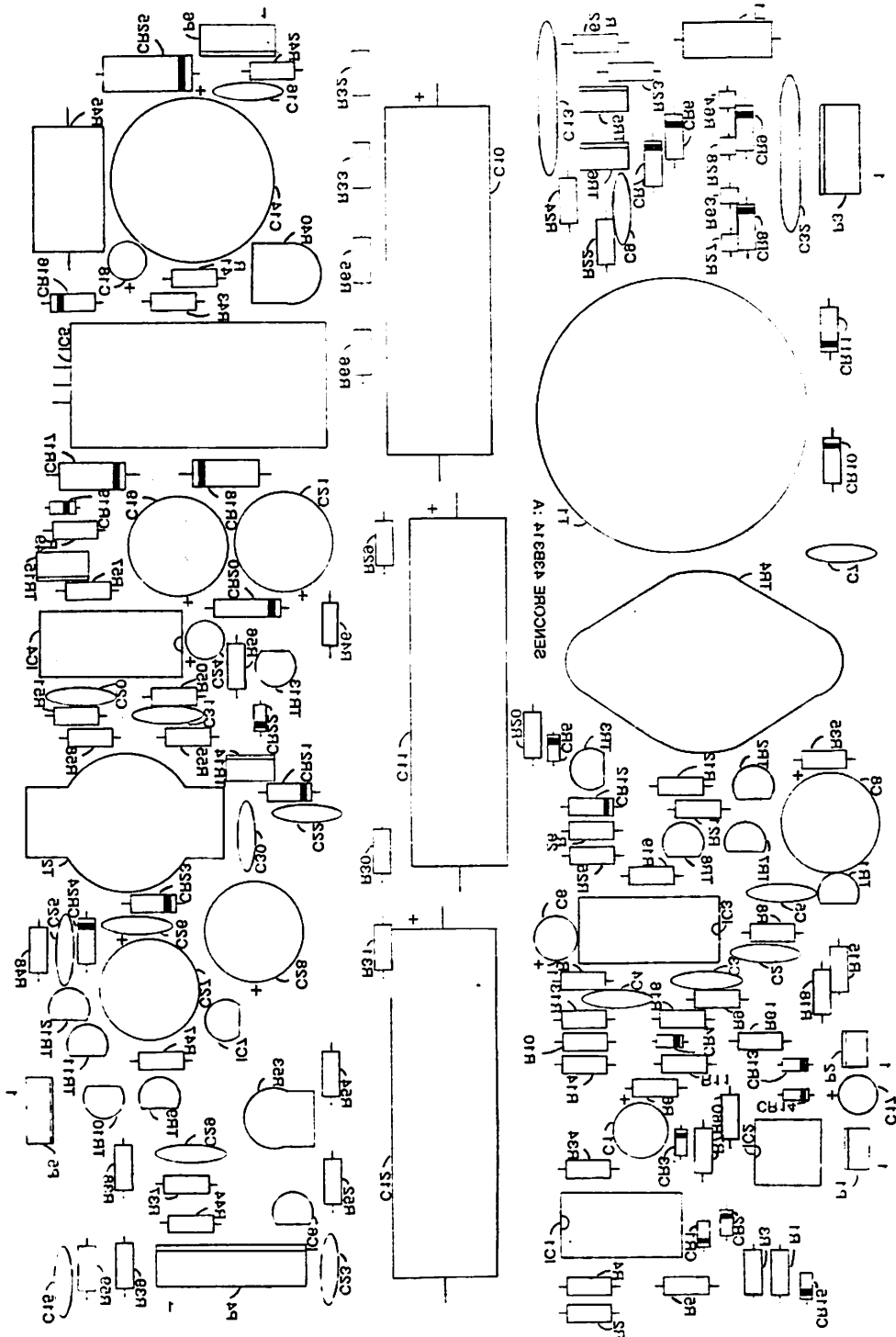
MAIN BOARD (Foil Side)



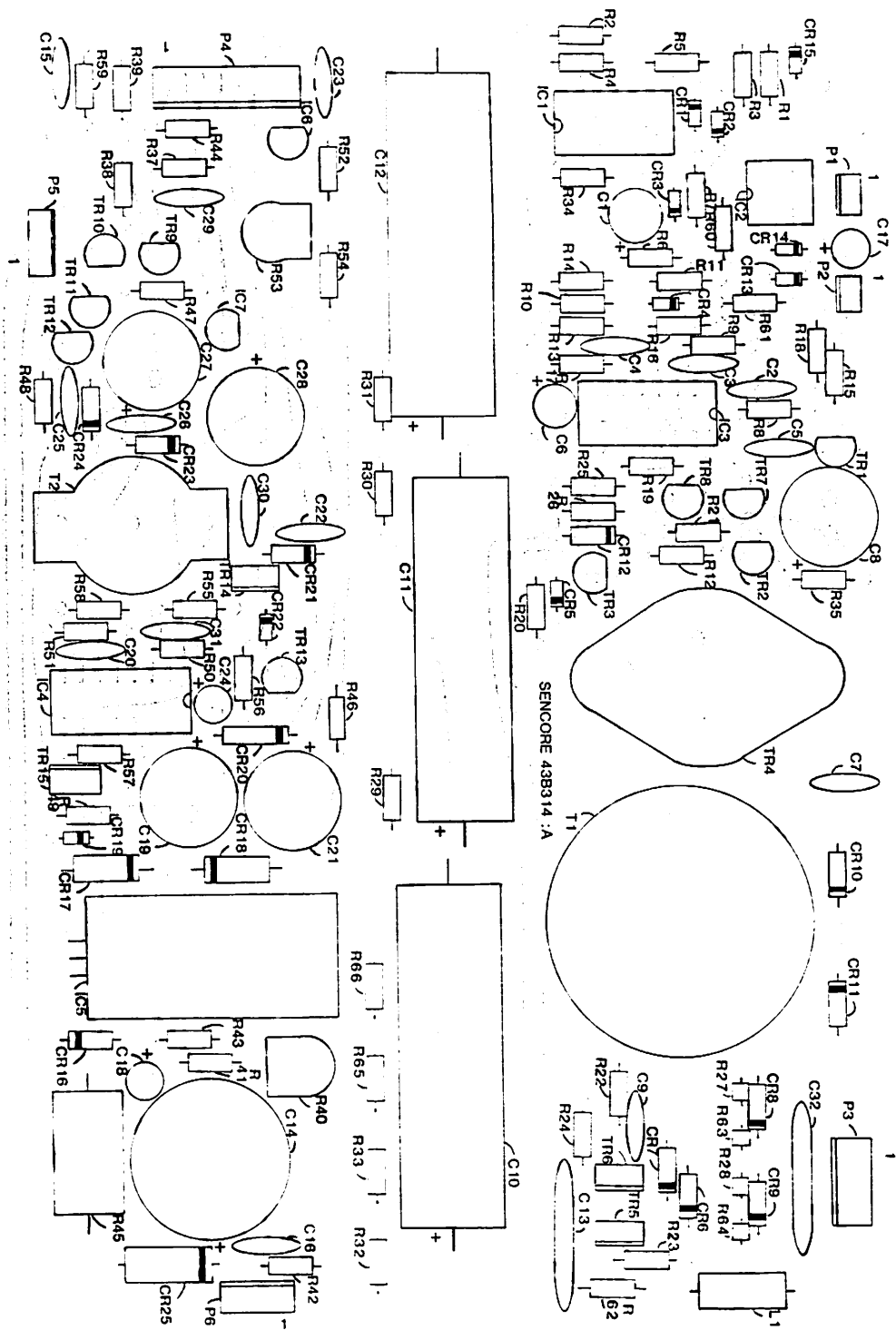
LEAKAGE SUPPLY BOARD (Component Side)



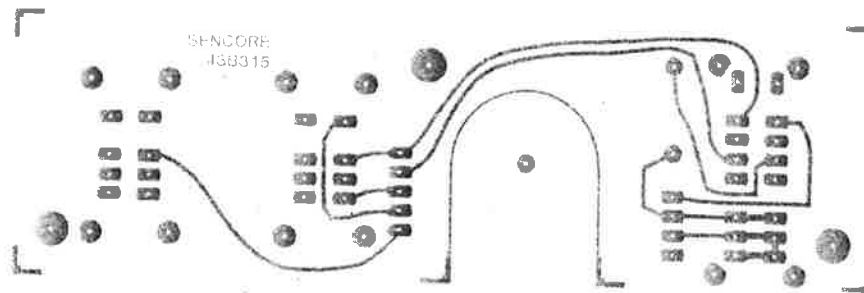
LEAKAGE SUPPLY BOARD (Foil Side)



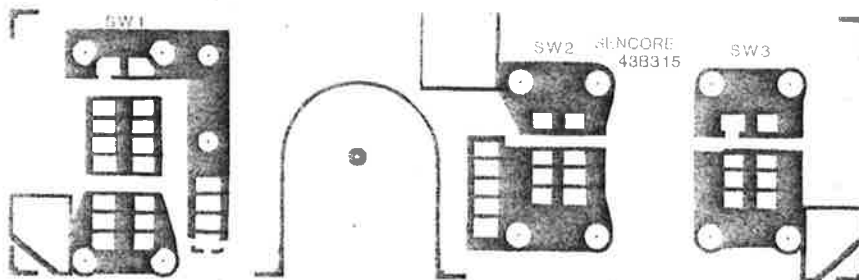
LEAKAGE SUPPLY BOARD (Foil Side)



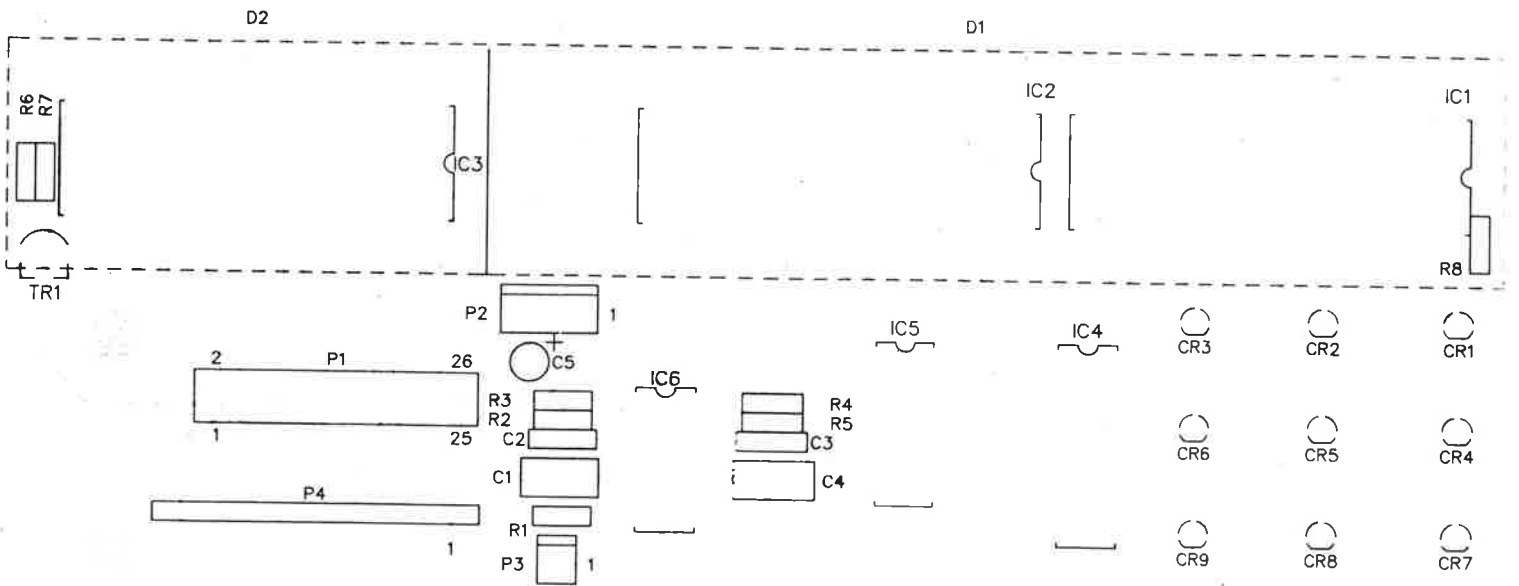
LEAKAGE SUPPLY BOARD (Component Side)



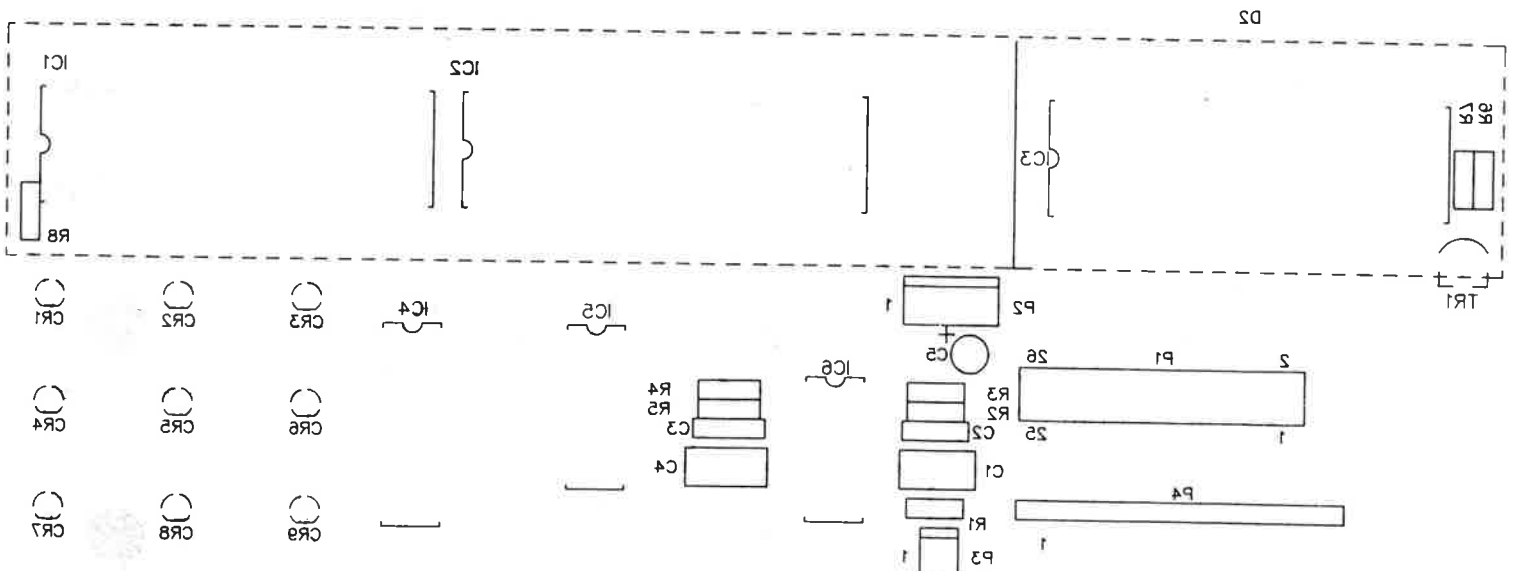
TOGGLE SWITCH BOARD (Foil Side)



TOGGLE SWITCH BOARD (Component Side)



DISPLAY BOARD (Component Side)



DISPLAY BOARD (Foil Side)

NOTES:

- 1 All resistances in ohms
- 2 All capacitances greater than one are in pF, less than one in uF, unless otherwise indicated
- 3 Board interconnection notes:
 - denotes a single push-on type connector.
 - denotes wire soldered to PC board.
 - denotes molex connection. Numbers inside or along side indicate the pin number of the plug-in connector.
4. All controls, jacks, and displays on exterior of unit are shown with box around the name

WARNING



Avoid damage to parts caused by static electricity!

Most solid-state devices and film resistors are susceptible to damage due to discharge of static electricity. Observe the following precautions when a PC board is removed from the unit, or when handling components:

1. The person handling the part must be grounded through a 1 megohm resistor via a wrist strap or similar ground connection.
2. A PC board or component should never be placed on an insulated surface. The surface must be grounded (through a 1 megohm resistor) and conductive.
3. All replacement parts must be left in a completely enclosed, conductive container or package until ready for use. The person removing the part from the container must be properly grounded. All parts susceptible to static damage are shipped in conductive containers when ordered from the Sencore Service Department.

Components not listed are standard replacement parts and may be purchased locally. When ordering parts, please specify instrument model number, schematic reference, part number, and description. Please include remittance (check or money order) with your order, otherwise invoice will be shipped C.O.D. Minimum billing is \$5.00



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