

SYSTRON DONNER FREQUENCY COUNTER

TABLE 1.1 (Cont'd)

Display:	kHz with autopositioned DP.
Accuracy:	± 1 count \pm time base accuracy.
PERIOD MEASUREMENT	
Range:	
Sine Wave Input:	1 μ s to 50 ms.
Pulse or Square Wave Input:	1 μ s to 999999.99 μ sec.
Resolution:	
Automatic:	Period average 100 to 10^6 periods. Automatically searches multiple average required to fill register. Counts 10 MHz.
Manual:	Selection of multiple period average from 10 to 10^6 periods. Counts 10 MHz.
Display:	μ s with autopositioned DP.
Accuracy:	± 1 count \pm trigger error \pm time base accuracy.
TIME INTERVAL A+B	
Range:	1 μ s to 9999999.9 ms.
Resolution:	0.1 μ s to .1 ms.
Slope Selection:	Independent positive or negative slope selection for Start and Stop inputs.
Display:	ms with autopositioned DP.
Accuracy:	± 1 count \pm trigger error \pm time base accuracy.
TOTALIZE	
Rate Limits:	20 Hz to 50 MHz.
Register Capacity:	10^8 events.
Control:	Front panel pushbutton for Totalize/Hold.
RATIO A/B	
Range A	20 Hz to 50 MHz
Range B	20 Hz to 1 MHz
Automatic:	Ratio average 100 to 10^6 multiple of "B" input.
Manual:	Ratio average 10 to 10^6 multiplier.
Accuracy:	\pm trigger error B; ± 1 count A.

TABLE 1.1 (Cont'd)

STANDARD TIME BASE

Aging Rate: ± 3 parts in 10^7 per month.
 Temperature Stability: ± 5 parts in $10^6</math> from 0 to 50°C, ± 2 parts in $10^6</math> from 20 to 40°C typical.
 Line Voltage: ± 1 part in $10^7</math> for 10% line variation.
 External Input: 100 kHz to 10 MHz at 1 volt rms into 500 ohms.
 (10 MHz for proper legend and decimal indication)$$$

GENERAL

Readout: 8 digits, plus off-scale indicator for register overflow. Automatic leading zero suppression.
 Display Storage: Holds reading between samples.
 Sensitivity
 Sine Wave Input: 35 mV rms. AGC, approx 40 dB dyn.rge.
 Pulse Input: 300 mV p-p with minimum rise time of 1 V/20 ms.
 Input Impedance: 1 M Ω , 25 pF, ac coupled.
 Attenuation: Step attenuator with factors of X1, X10, X100.

Maximum Input without Damage (X1 attenuator)

- (A) 500 V pk. dc plus ac components
- (B) 250 V rms, 20 Hz to 10 kHz; 50 V rms, 10 kHz to 10 MHz; 10 V rms above 10 MHz.

Dimensions: 3 1/2" H x 8 3/8" W x 13 1/2" D
 Weight: 10 lbs, net; 15 lbs, shipping.
 Power: 100, 115 or 200, 230 V ac ($\pm 10\%$), 48-440 Hz, 18 W.

1.3 OPTIONS

TABLE 1.2 OPTIONS

Option	Description
06	Internally mounted Battery Pack with built-in recharging circuit. Approximate 4 hour operating cycle.
07	DC Operation - Permits operation from external dc power source.

CIRCUIT DESCRIPTION
OPTIONS 11, 12, 13, 3 MHz OSCILLATOR
FINAL ASSEMBLY #045849

DESCRIPTION

The oscillator options provide higher stability than the standard oscillator. The added assemblies include U1, 3 MHz oscillator, the oscillator power supply.

SPECIFICATIONS OPTION 11

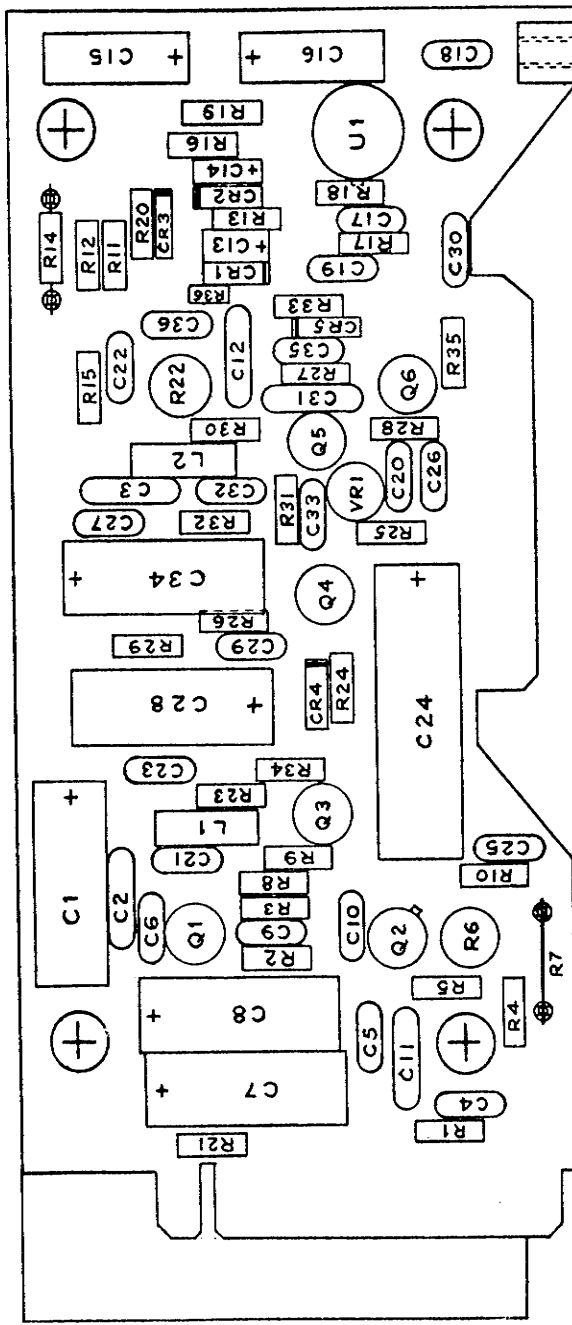
Temperature variation: $< \pm 2$ parts in $10^{10}/C^{\circ}$ typical.
(Max ± 4 parts in 10^9 over $20^{\circ}C$ change within $-10^{\circ}C$ to $+50^{\circ}C$)
Aging rate: 3×10^{-9} per day after 72 hour operation following a 72 hour shutdown.
After 24 hour shutdown: 1 hour to reach $\pm 6 \times 10^{-8}$ maximum; $\pm 1 \times 10^{-8}$ typical.
Short term stability: 2×10^{-10} rms, 1 second.
Voltage stability: $28 V \pm 1.0 V$; $\pm 5 \times 10^{-10}$ maximum

SPECIFICATIONS OPTION 12

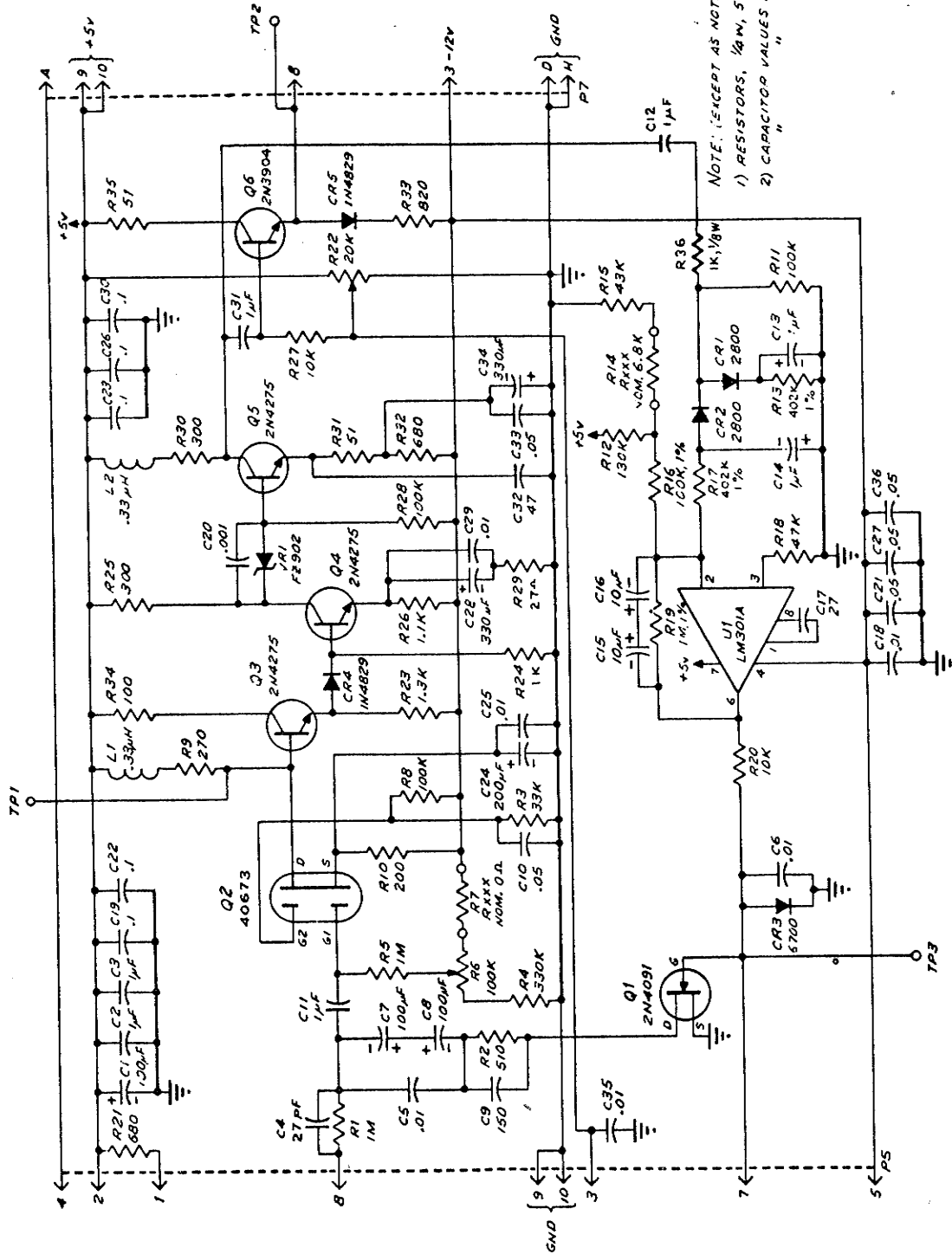
Temperature stability: $< \pm 2$ parts in $10^{10}/C^{\circ}$ typical.
(Maximum ± 4 parts in 10^9 over $20^{\circ}C$ change within $-15^{\circ}C$ to $+60^{\circ}C$.)
Aging rate: 1×10^{-9} per day after 72 hours operation following a 72 hour shutdown.
After 24 hour shutdown: 1 hour to reach $\pm 6 \times 10^{-8}$ maximum; $\pm 1 \times 10^{-8}$ typical.
Short term stability: 1×10^{-10} rms, 1 second
Voltage stability: $28 V \pm 2 V$, $\pm 5 \times 10^{-10}$ maximum.

SPECIFICATIONS OPTION 13

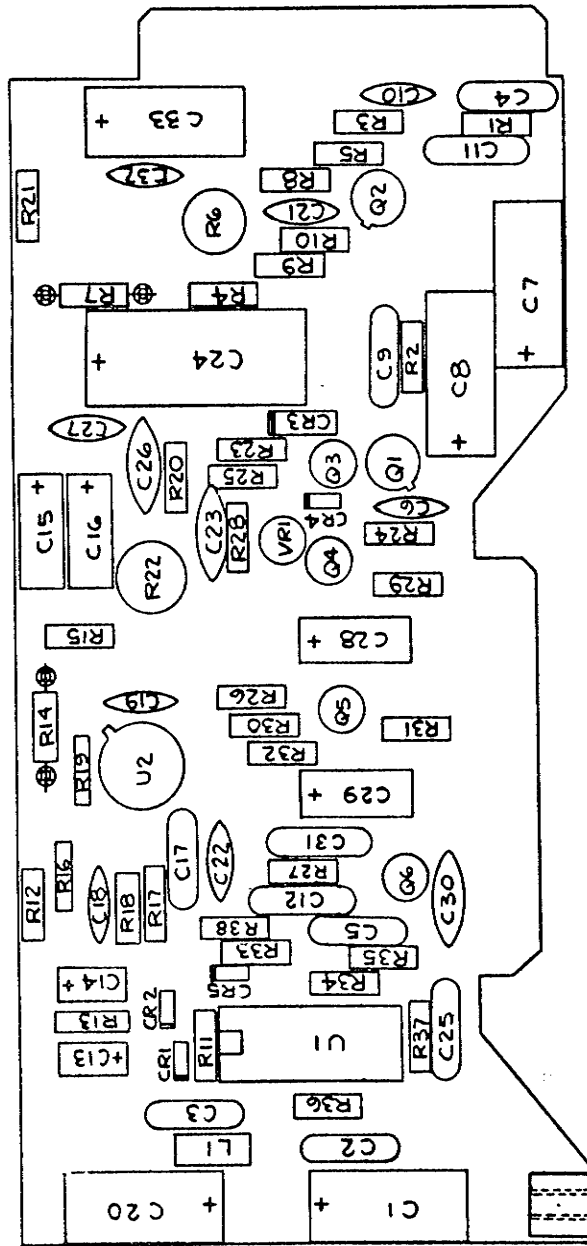
Temperature stability: $< \pm 5$ parts in $10^{11}/C^{\circ}$ typical.
(Maximum ± 1 part in 10^9 over $20^{\circ}C$ change within $+10^{\circ}C$ to $+60^{\circ}C$)
Aging rate: 5×10^{-10} per day after 72 hours following 72 hour shutdown.
After 24 hour shutdown: 1 hour typical to reach 5×10^{-9} of turnoff frequency.
Short term stability: 5×10^{-11} rms, 1 second.
Voltage stability: $28 V \pm 2 V$, $\pm 5 \times 10^{-10}$ maximum



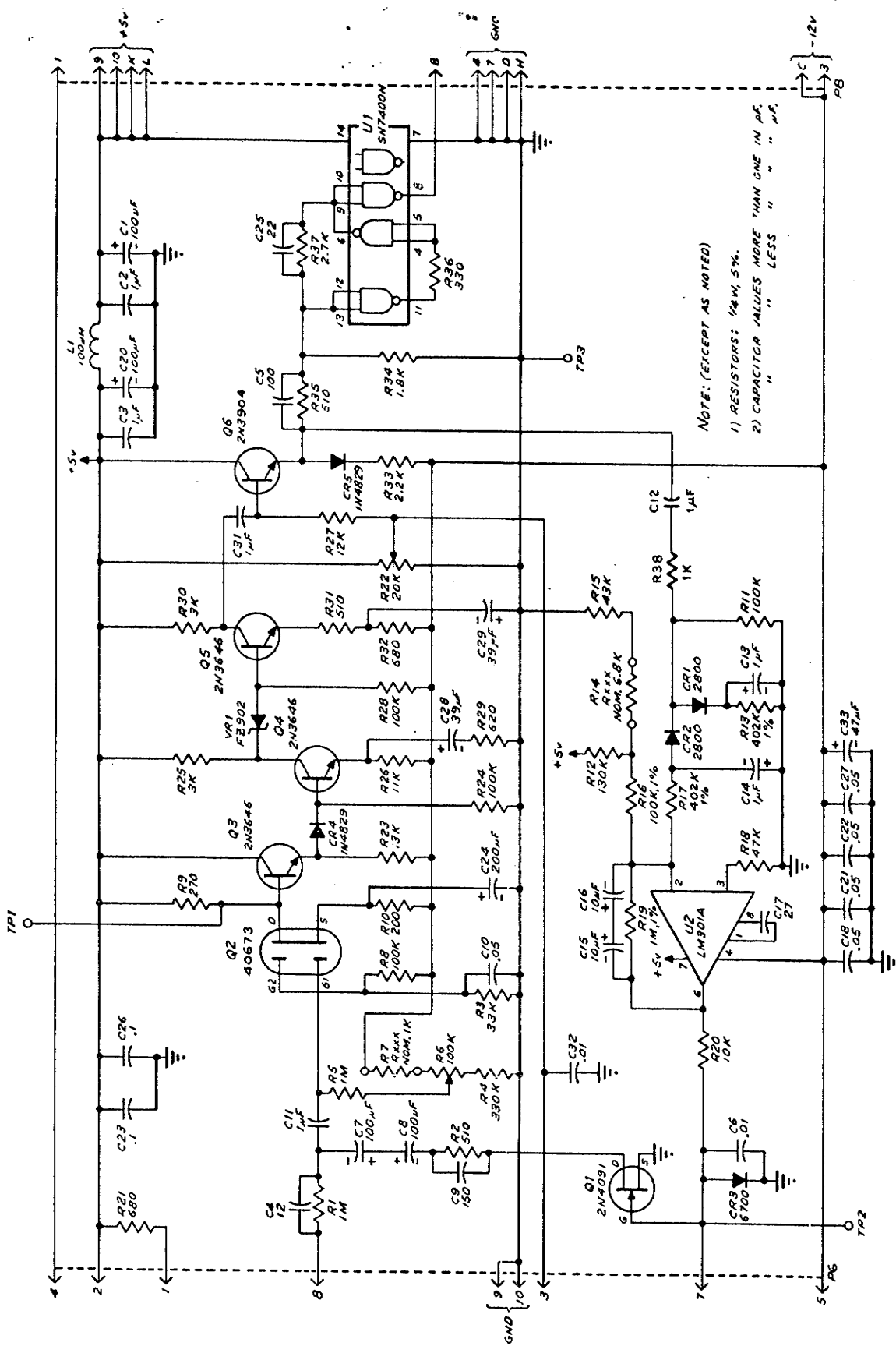
A AMPLIFIER ASSEMBLY #45577 REV A



A AMPLIFIER SCHEMATIC #45577 REV A



B AMPLIFIER ASSEMBLY #45578 REV A



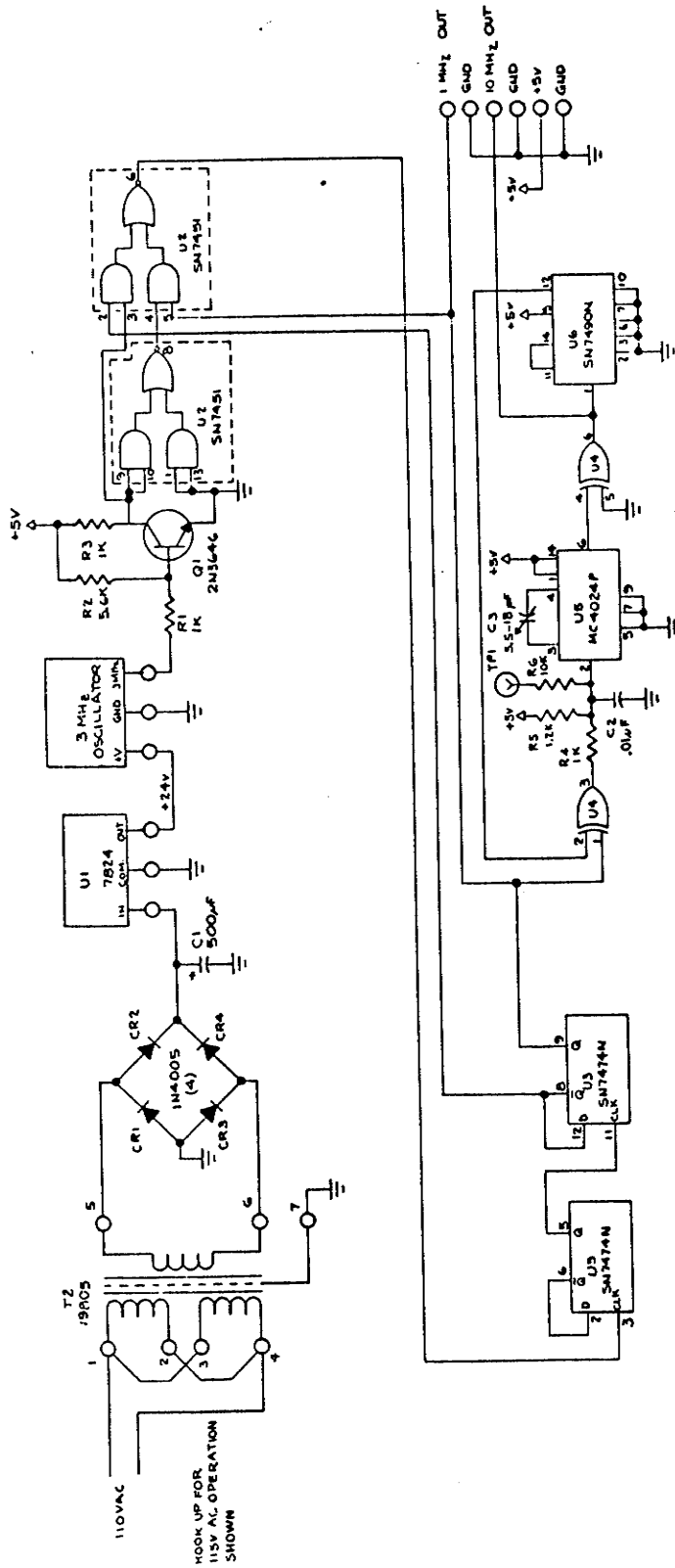
B AMPLIFIER SCHEMATIC #45578 REV A

CIRCUIT DESCRIPTION, SCHEMATIC #045849

When the instrument power cord is plugged into line voltage, the bridge rectifier provides power to the crystal oven through the 24 V dc regulator, U1. The 3 MHz output is fed through amplifier Q1 to U2, dual AND/OR gate. The output of U2-6 is applied to U3-3 as a clock signal. U3 is a dual D flip-flop divide-by-three circuit. The 1 MHz output of U3 is applied through U4, exclusive OR gate, to provide a phase lock for the 10 MHz oscillator, U5. Decade counter, U6 provides a 1 MHz feedback to exclusive OR gate, U4, for phase comparison.

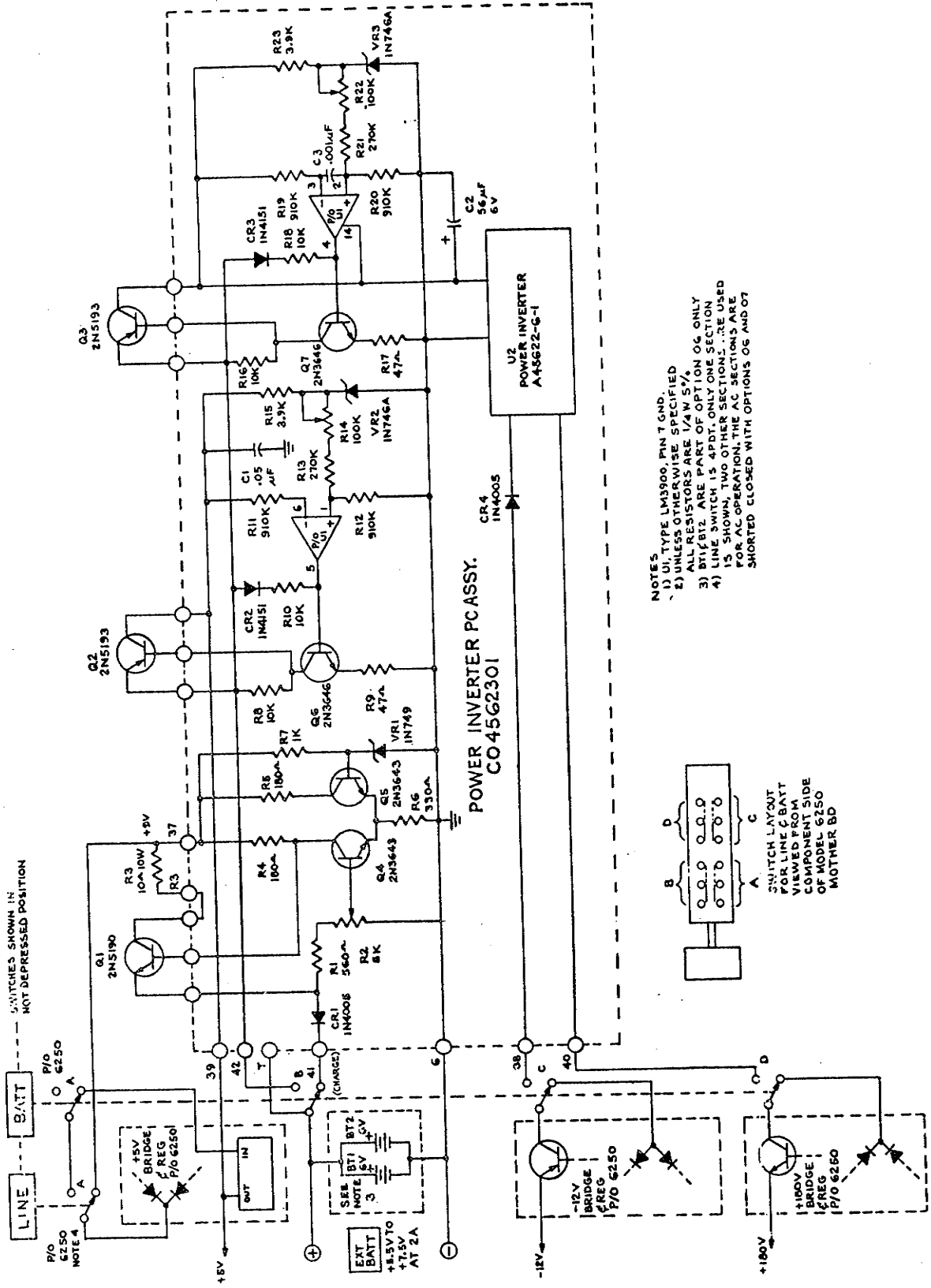
ADJUSTMENT:

Measure the voltage at TP1, adjust C8 for +3.4 V dc at TP1.

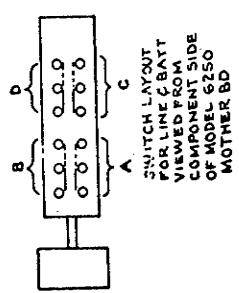


NOTES
 1) UNLESS OTHERWISE SPECIFIED
 ALL RESISTORS ARE 1/4W 5%

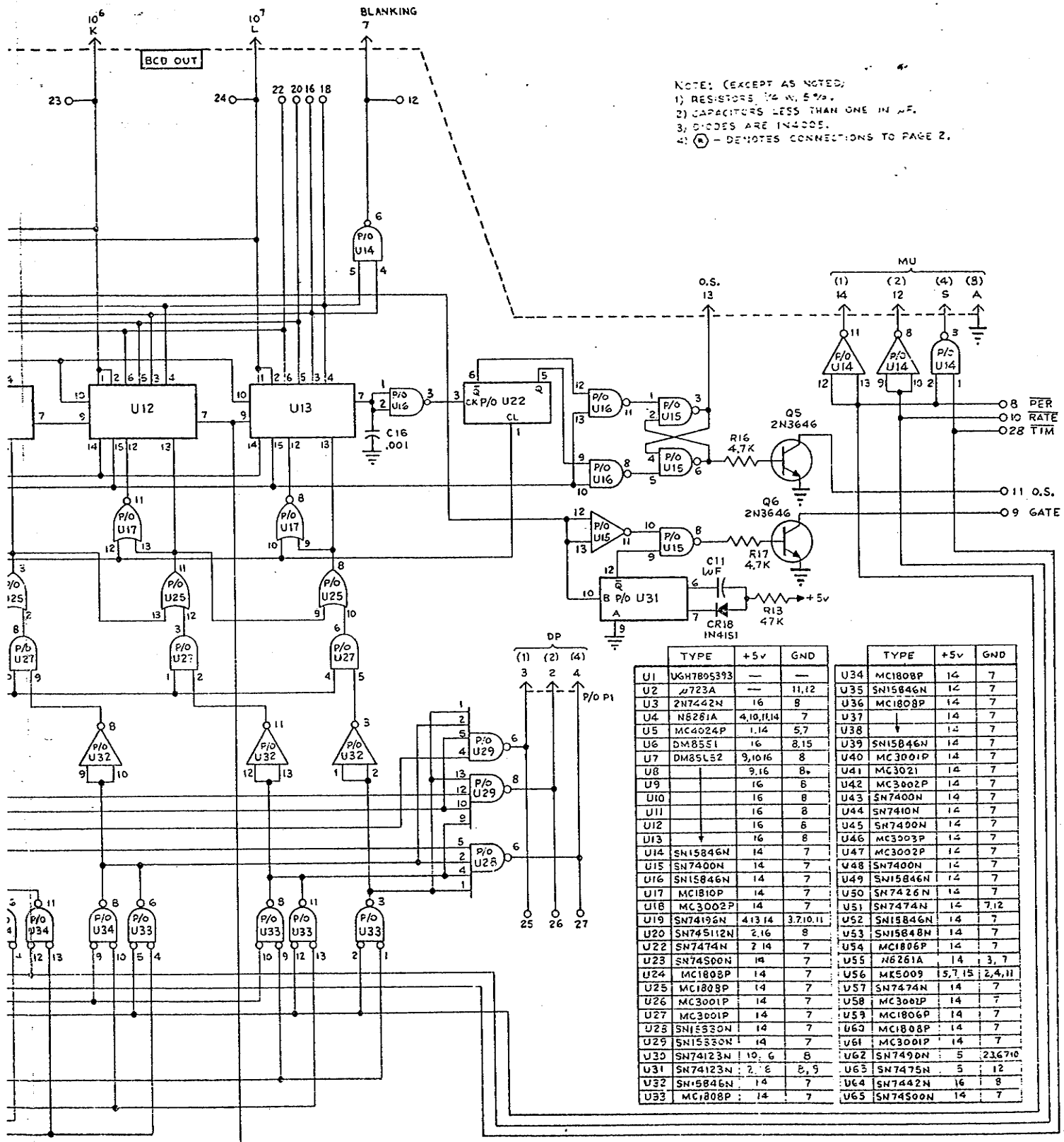
B OSCILLATOR OPTION SCHEMATIC #045849 REV A



- NOTES
- 1) U1, U2 TYPE LM3900, PIN 7 GND.
 - 2) UNLESS OTHERWISE SPECIFIED ALL RESISTORS ARE 1/4 W 5%.
 - 3) BT1, BT2 ARE PART OF OPTION 06 ONLY
 - 4) LINE SWITCH IS 4PDT. ONLY ONE SECTION IS SHOWN, TWO OTHER SECTIONS ARE FOR AC OPERATION. THE AC SECTIONS ARE SHORTED CLOSED WITH OPTIONS 06 AND 07



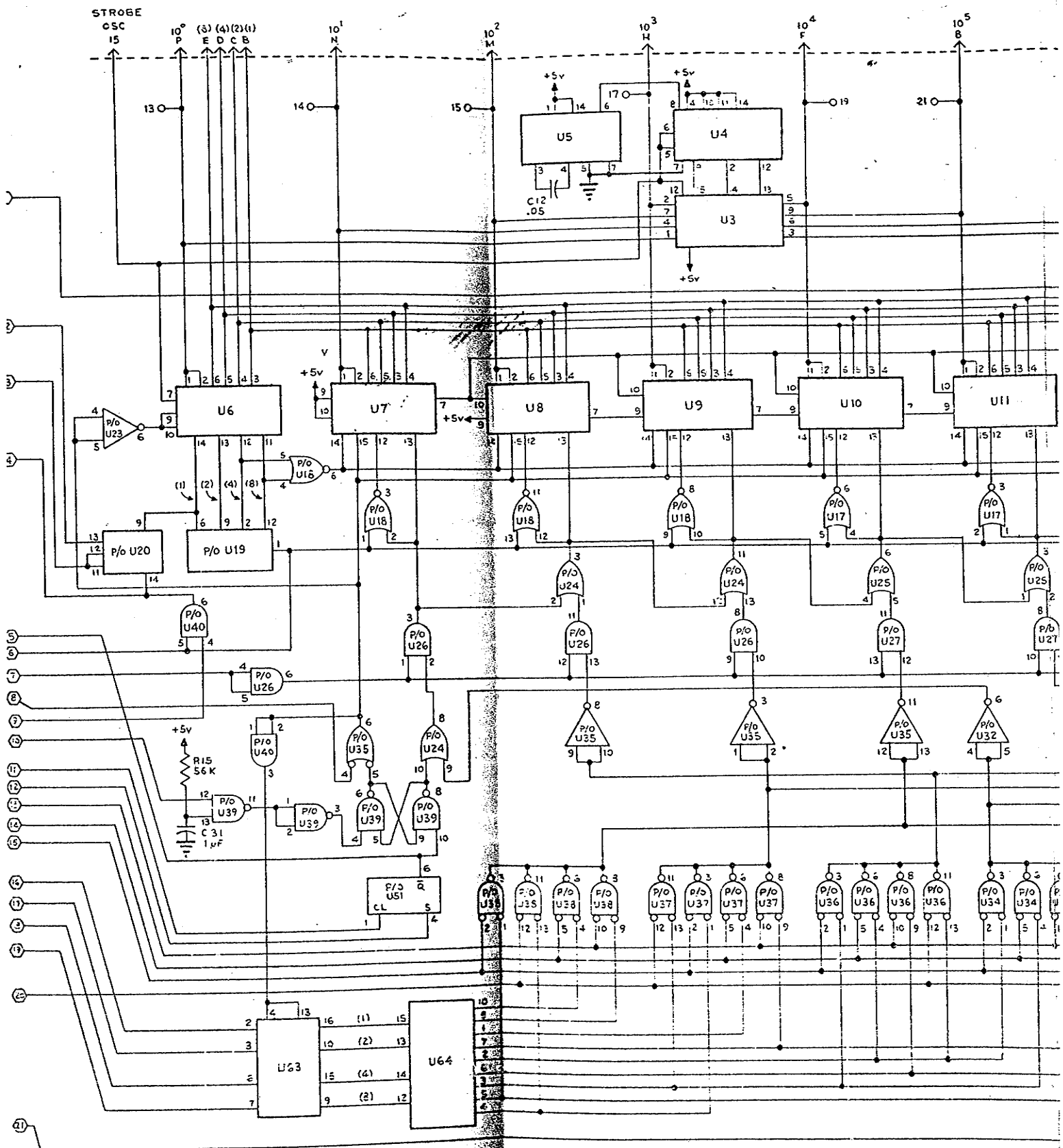
6 VOLT DC OPERATION SCHEMATIC #7-04562301 REV B

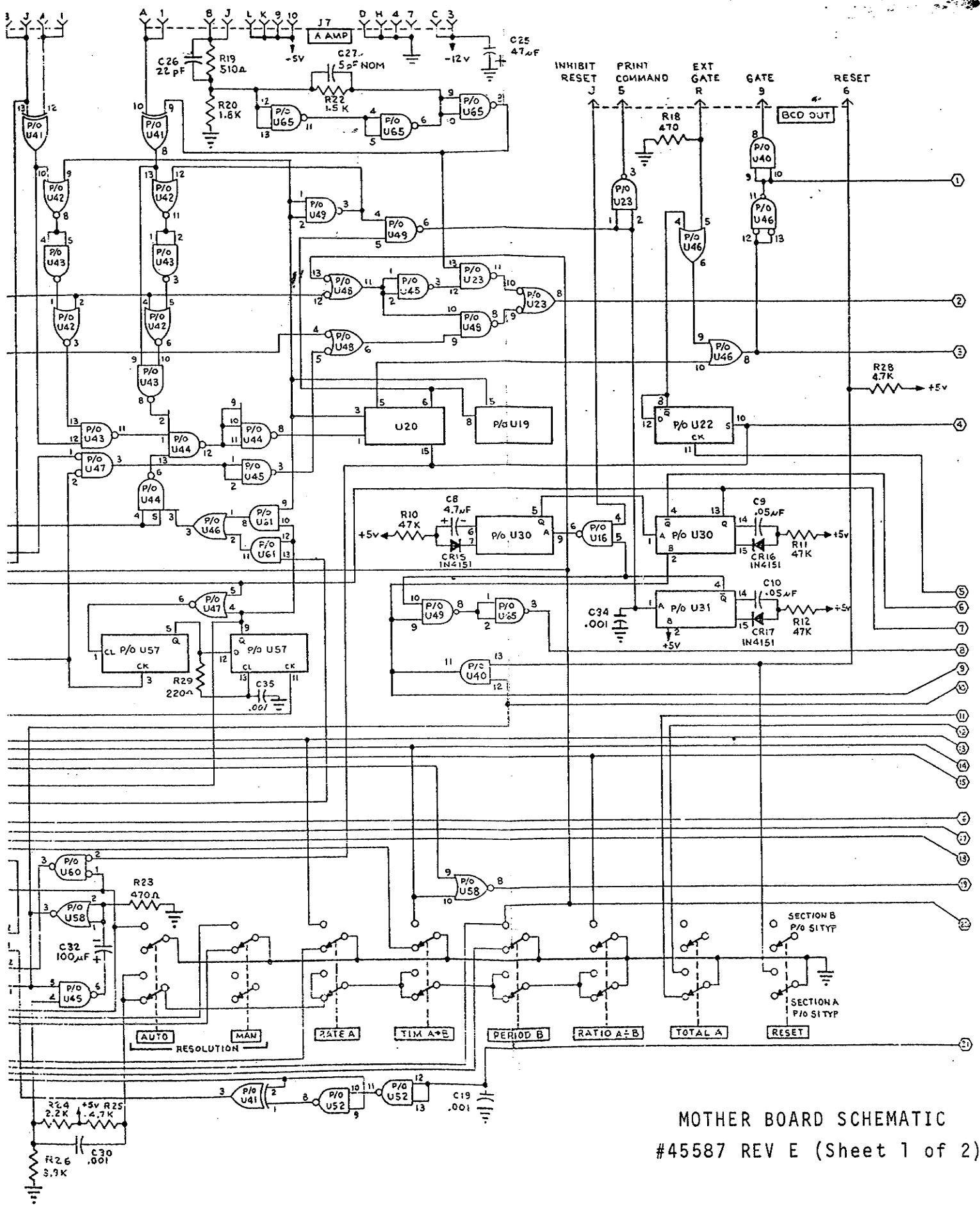


NOTE: (EXCEPT AS NOTED;
 1) RESISTORS 1/4 W. 5%.
 2) CAPACITORS LESS THAN ONE IN AF.
 3) DIODES ARE IN4005.
 4) (A) - DENOTES CONNECTIONS TO PAGE 2.

	TYPE	+5v	GND		TYPE	+5v	GND
U1	UGH7895393	—	—	U34	MC1808P	14	7
U2	723A	—	11,12	U35	SN15846N	12	7
U3	2N7442N	16	8	U36	MC1808P	14	7
U4	N8261A	4,10,11,14	7	U37	—	14	7
U5	MC4024P	1,14	5,7	U38	—	14	7
U6	DM8551	16	8,15	U39	SN15846N	14	7
U7	DM85L52	9,10,16	8	U40	MC3001P	14	7
U8	—	9,16	8	U41	MC3021	14	7
U9	—	16	6	U42	MC3002P	14	7
U10	—	16	8	U43	SN7400N	14	7
U11	—	16	8	U44	SN7410N	14	7
U12	—	16	8	U45	SN7490N	14	7
U13	—	16	8	U46	MC3003P	14	7
U14	SN15846N	14	7	U47	MC3002P	14	7
U15	SN7400N	14	7	U48	SN7400N	14	7
U16	SN15846N	14	7	U49	SN15846N	14	7
U17	MC1810P	14	7	U50	SN7426N	14	7
U18	MC3002P	14	7	U51	SN7474N	14	7,12
U19	SN74192N	4,13,14	3,7,10,11	U52	SN15846N	14	7
U20	SN745112N	2,16	8	U53	SN15848N	14	7
U22	SN7474N	2,14	7	U54	MC1806P	14	7
U23	SN74500N	14	7	U55	N8261A	14	3,7
U24	MC1808P	14	7	U56	MK5009	5,7,15	2,4,11
U25	MC1808P	14	7	U57	SN7474N	14	7
U26	MC3001P	14	7	U58	MC3001P	14	7
U27	MC3001P	14	7	U59	MC1806P	14	7
U28	SN15530N	14	7	U60	MC1808P	14	7
U29	SN15530N	14	7	U61	MC3001P	14	7
U30	SN74123N	10,6	8	U62	SN7490N	5	2,3,6,7,10
U31	SN74123N	2,8	8,9	U63	SN7475N	5	12
U32	SN15846N	14	7	U64	SN7442N	16	8
U33	MC1808P	14	7	U65	SN74500N	14	7

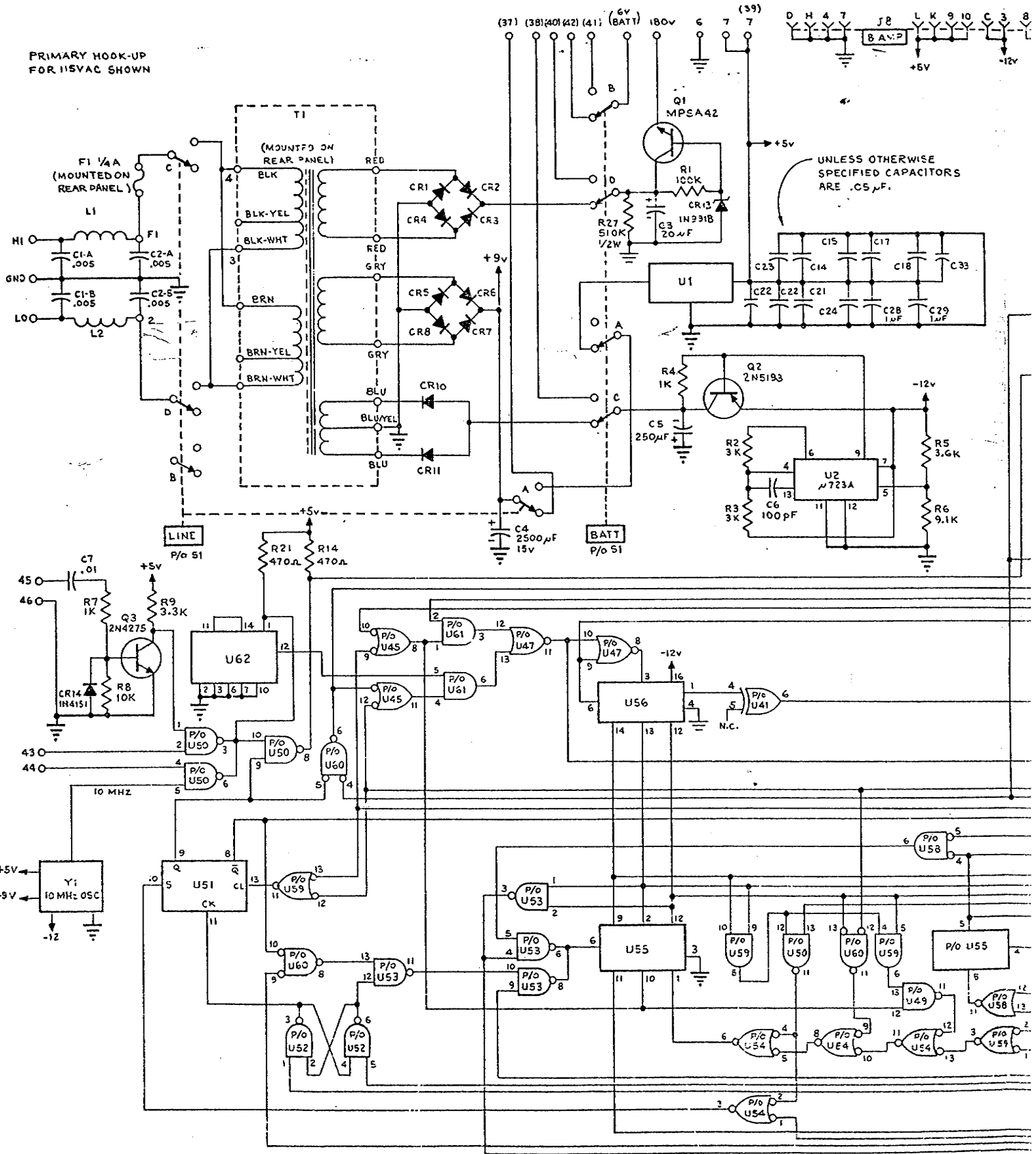
MOTHER BOARD SCHEMATIC
 #45587 REV E (Sheet 2 of 2)

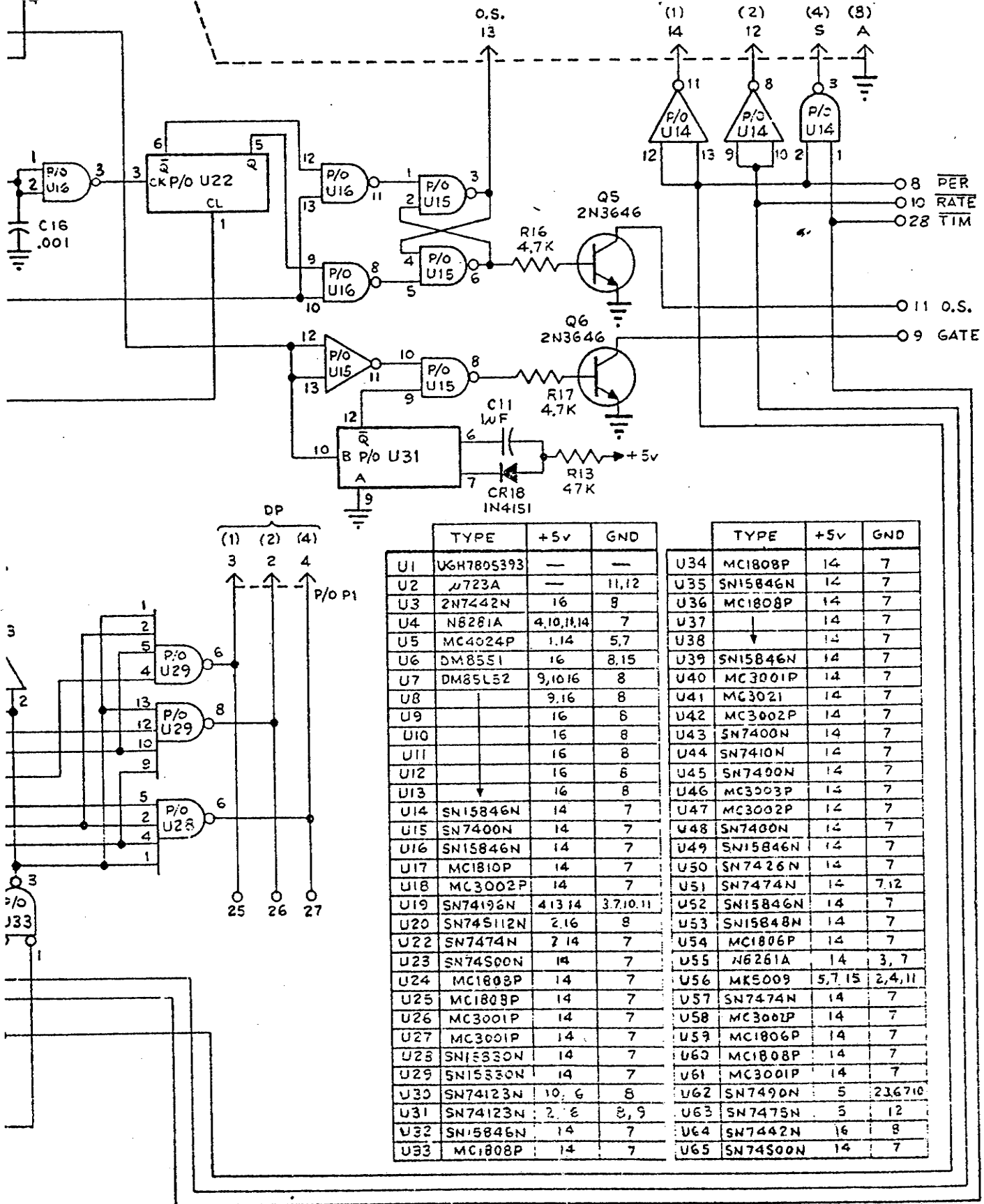




MOTHER BOARD SCHEMATIC
 #45587 REV E (Sheet 1 of 2)

PRIMARY HOOK-UP FOR IISVAC SHOWN





MOTHER BOARD SCHEMATIC
 #45587 REV E (Sheet 2 of 2)

6250-11-73 SUPPLEMENT