

NEWLETT

PACKARD

SIGNAL ANALYZER 5480AB WITH 5485A 5486AB, 5487A, 5488A PLUG-INS
SERVICE VOL. II III & IV SERIAL PFX ALL SERIALS
PART NO. 05480-90013 (MANUAL) 05480-90016 (FICHE)
APRIL 1971 6 of 8

A3 CORRELATION COEFFICIENT GENERATOR BOARD (05488-60003)

DESCRIPTION

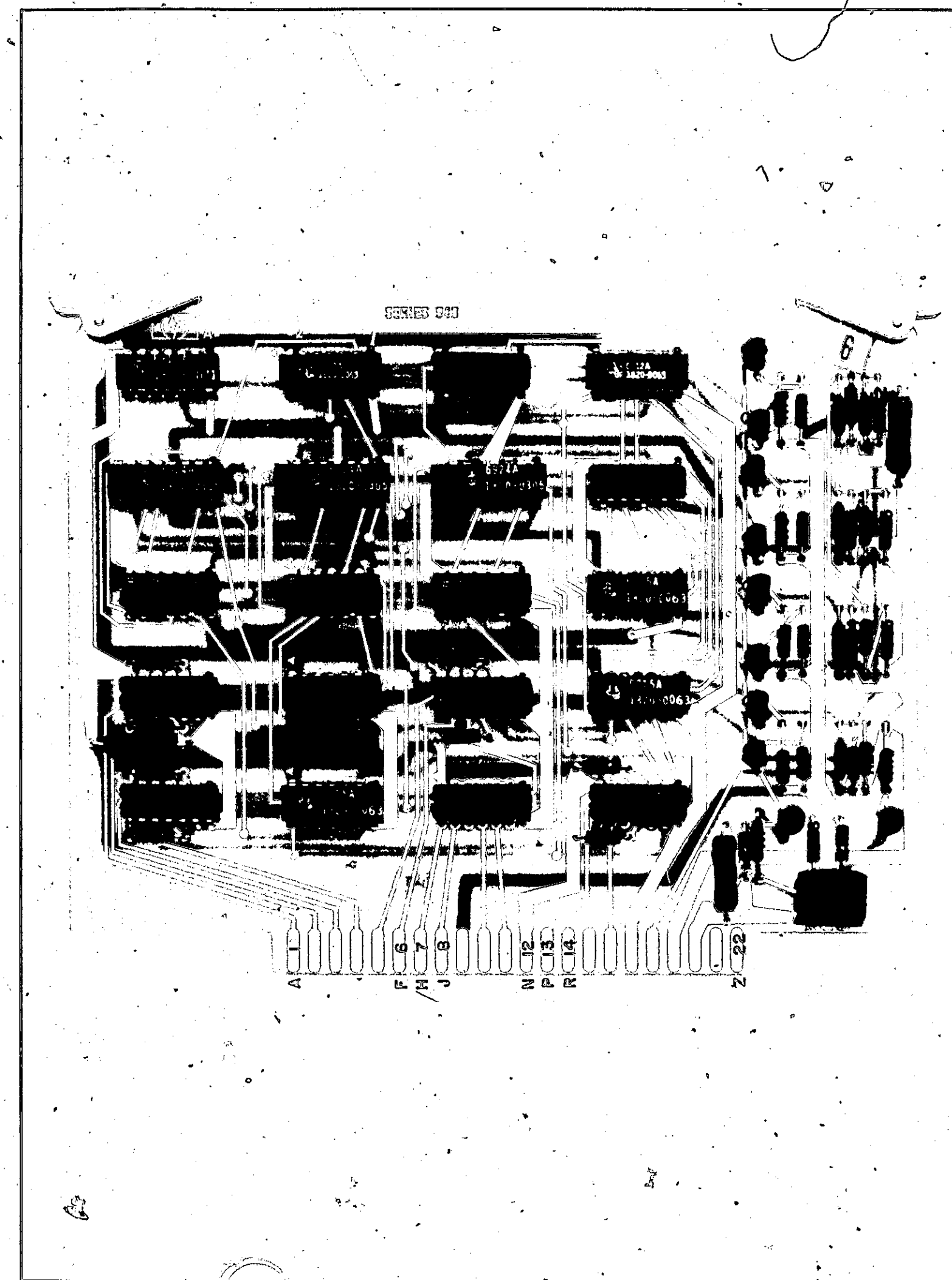
The 05488-60003 Correlation Coefficient Generator Assembly performs four operations on the input signals.

The four Gray-coded bits from the Fast ADC are received in parallel on pins 13, 16, 3, and 4 and also on pins 6, 5, 1, and 2. When this digital data represents input A (as determined by a negative pulse at pins 10 and 11), it is strobed into buffer storage A (IC20, IC17). When it represents input B (as determined by positive pulses at pins 7 and 8), it is strobed into buffer storage B (IC15, IC13).

The stored data is converted to sign-and-magnitude binary form by IC18 and IC14. The outputs of the converters feed a digital multiplier circuit.

Four-bit Full Adders IC5, IC6, and IC7 and NOR gates IC9, IC10, and IC11 do the multiplication. The eight-bit product or its complement is fed to the output stage via IC2-4, IC8, IC12, and IC16. Complementing is required when the sign detector (IC16) determines that the product is negative.

The output stage is an eight-bit resistive ladder DAC, which operates in a current mode. Transistors Q3-Q10 provide current to the ladder nodes if the associated product bit is at a logical "1" (or if the complement is at a logical "1" if the product sign is negative); otherwise, they are switched off. Q2 and CR2 generates a reference level for the transistors, and Q1 and R2 allow the analog output level at pin 18 to be adjusted.



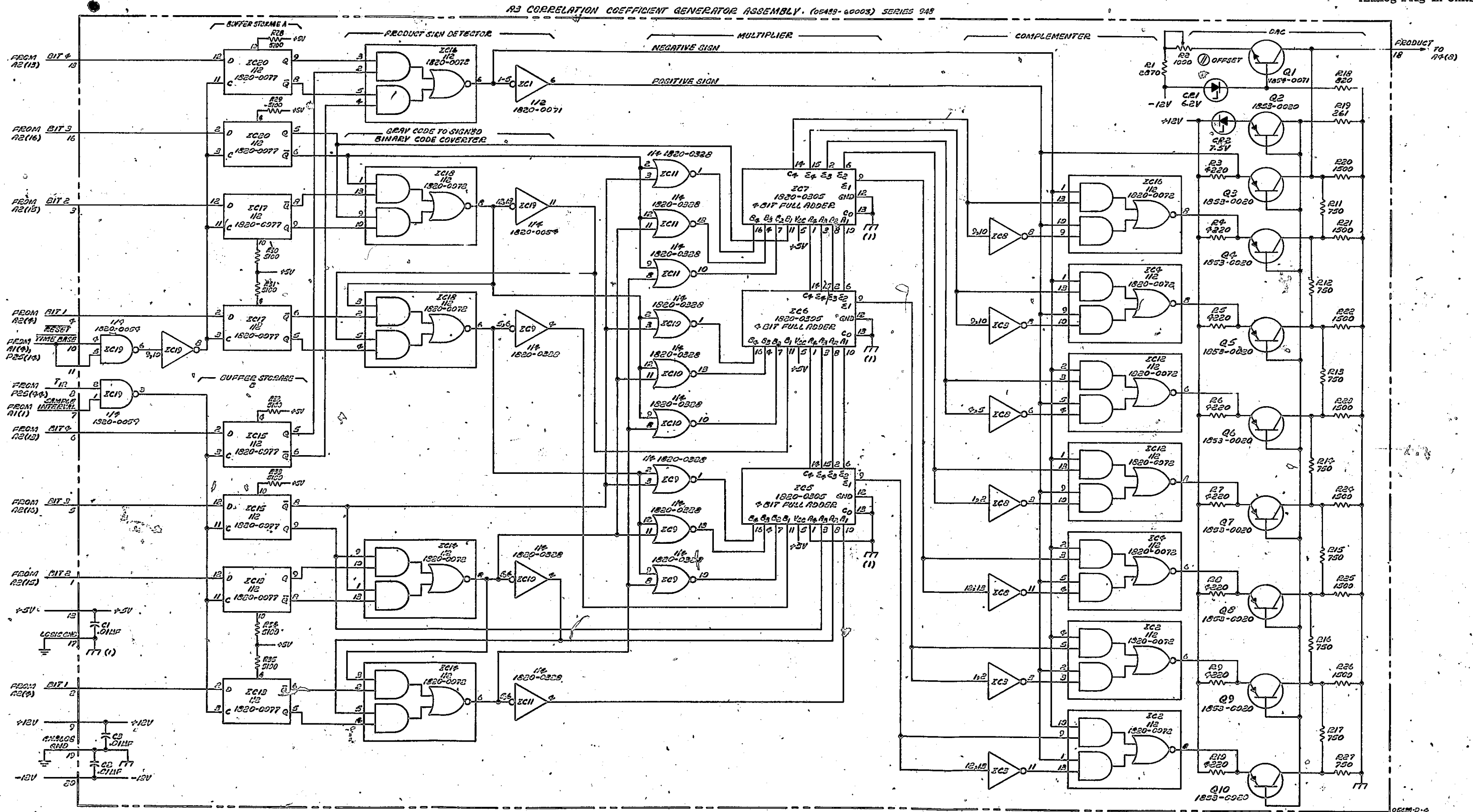


Figure 3-28
A3 Correlation Coefficient Generator Series 948

A4 SAMPLE AND HOLD BOARD (05488-60004)

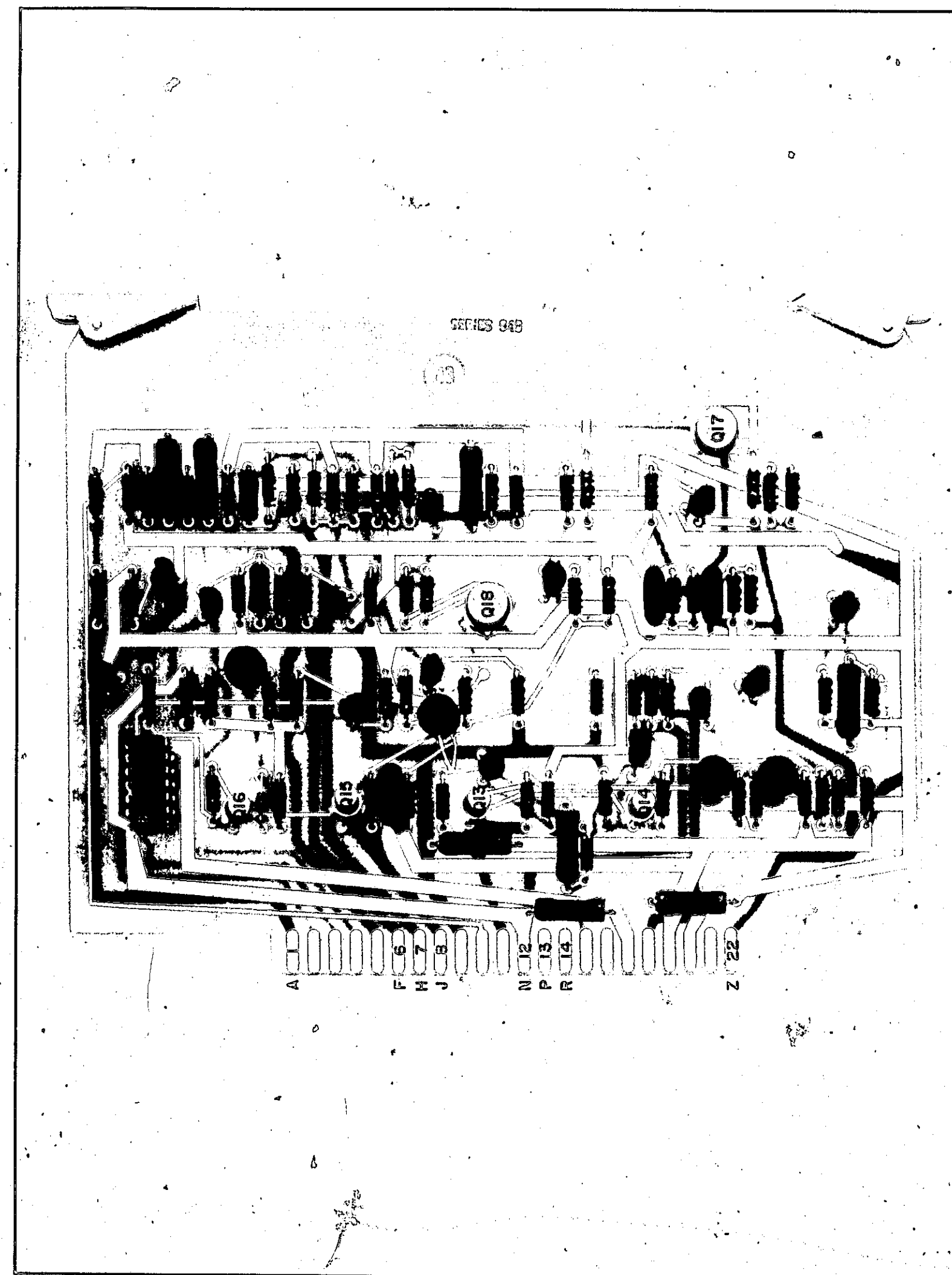
DESCRIPTION

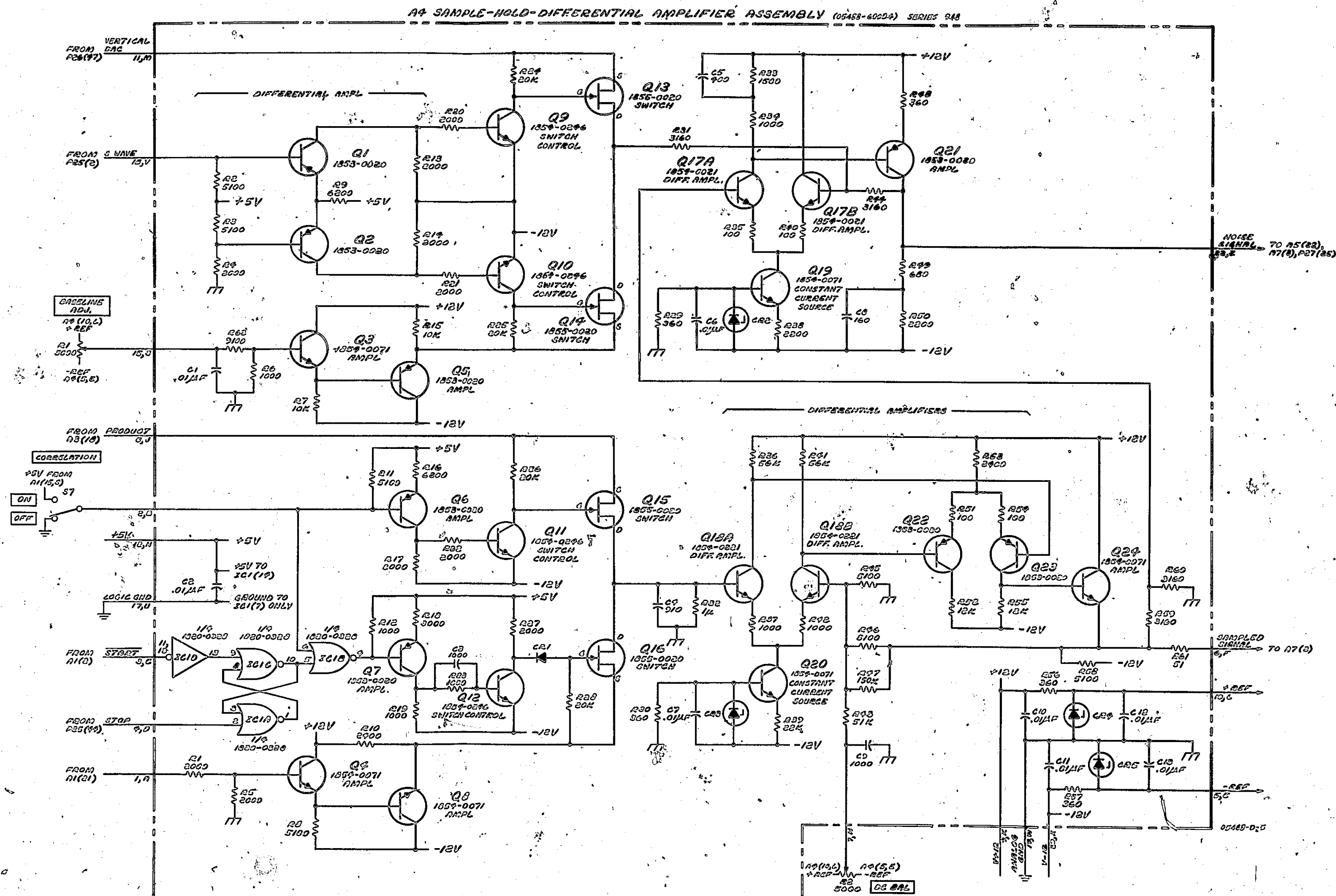
The 05488-60004 Sample-Hold Differential Amplifier Assembly compares the input signal with the output of the Vertical DAC (if averaging) or a baseline (if summing) so as to provide a difference (NOISE) signal to the ADC Assembly.

FET's Q15 and Q16 electronically switch to the input (Q18A) of an amplifier either the output of the Correlation Coefficient Generator (PRODUCT on pin 8) or a sampled version of the input amplifier output (pin 1), as determined by the setting of the front panel MODE switch. If the switch is set to CORR, then Q6 and Q11 turn ON Q15, transferring the signal on pin 8 to the base of Q18A. If the switch is set to AVG, then IC1 in conjunction with Q7 and Q12 turns ON Q16 for 1.4 μ s. In turn, the signal on pin 1, after being divided by two by R1 and R5 and buffered by Q4 and Q8, is transferred to Q18A. C4 holds the signal after sampling termination.

Q18, Q20, Q22, and Q24 amplify by five the signal at the base of Q18A, with the output (SAMPLED SIGNAL) available at pin 6. The output level is adjustable via the front panel dc BAL Control. This output is also divided by two by R59 and R60 and then sent to the positive input of a differential amplifier (Q17A).

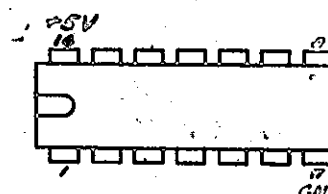
If SW AVG is at a logical "1", then Q1 and Q9 turn ON FET switch Q13, transferring the signal at pin 11 to the negative input of the differential amplifier (Q17B). If SW AVG is at a logical "0", then Q2 and Q10 turn ON Q14, transferring a dc level to Q17B, as determined by the front panel BASELINE ADJ Control. Q17, Q19, and Q21 provide at pin 22 the voltage difference (or NOISE) between the bases of Q17A and Q17B.





NOTES

1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED:
RESISTANCE IN OHMS;
CAPACITANCE IN PICOFARADS;



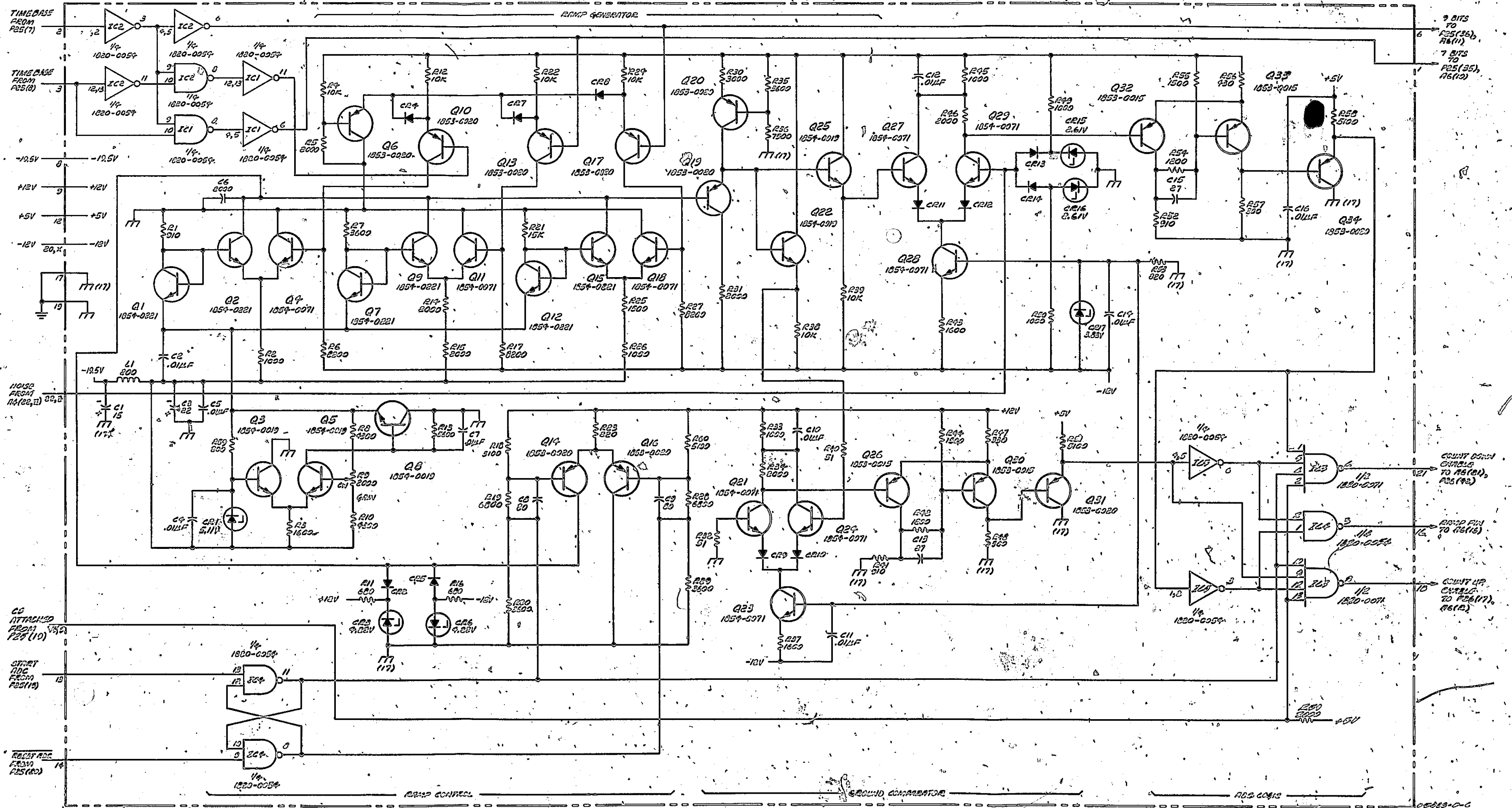
REFERENCE DESIGNATIONS

NO PREFIX	NO
	CI-1 CBI- XCI CI-2 CI-3
BI, C SP	

Figure 3-29
A4 Sample Hold Differential Amplifier
Series 948

See Figure 3-6 for Board description and Component Locator.

A5 ANALOG DIGITAL CONVERTOR ASSEMBLY (105425-60003) (NOTE 1) SERIES 852 AND 920

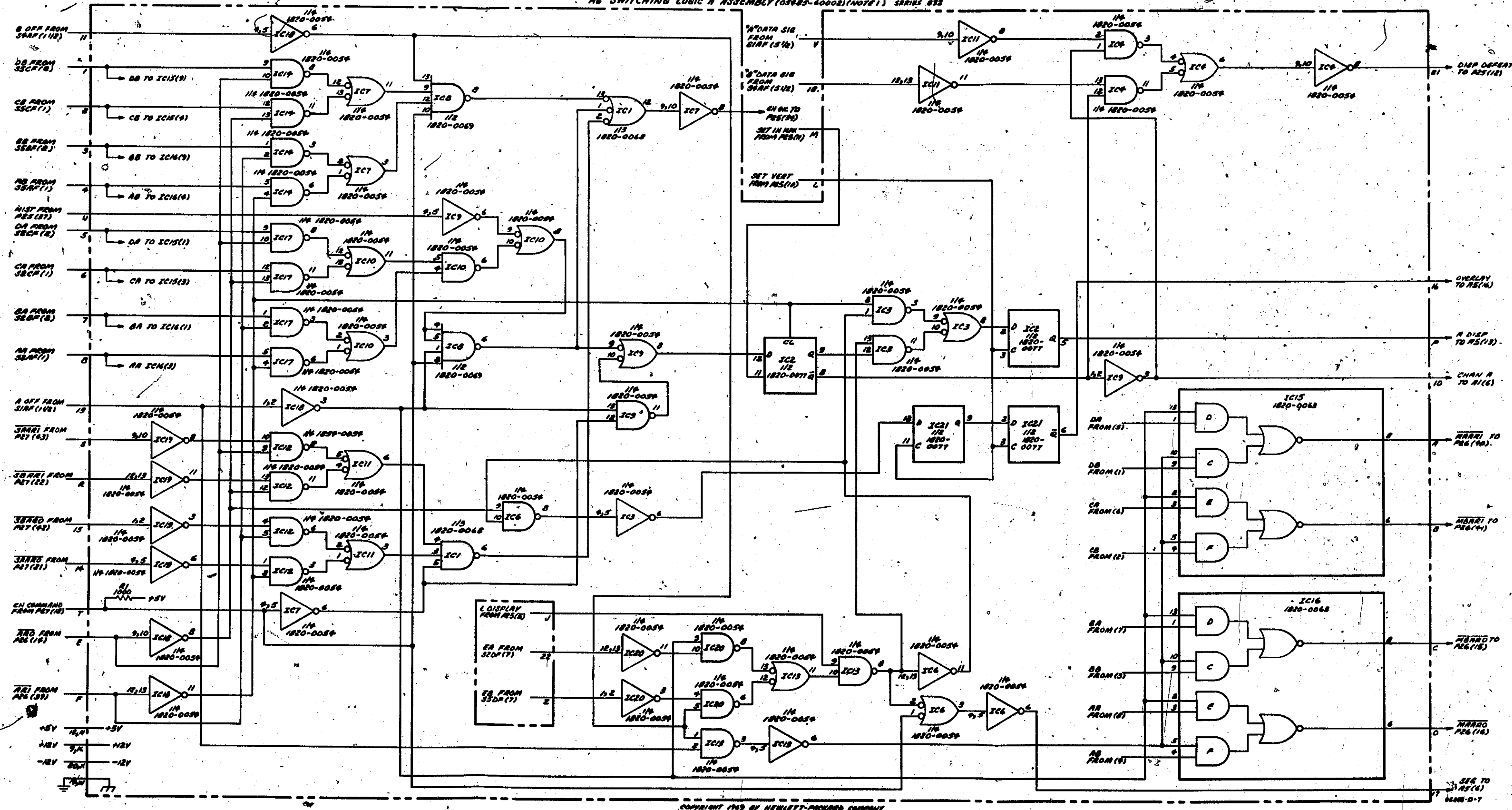


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Figure 3-30
A5 ADC Assembly Series 852, 920

See Figure 3-8 for Board description and Component Locator.

A6 SWITCHING LOGIC A ASSEMBLY (05985-60002) (NOTE 1) SERIES 832



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Figure 3-31
A6 Switching Logic A Series 832
3-67

See Figure 3-9 for Board description and Component Locator.

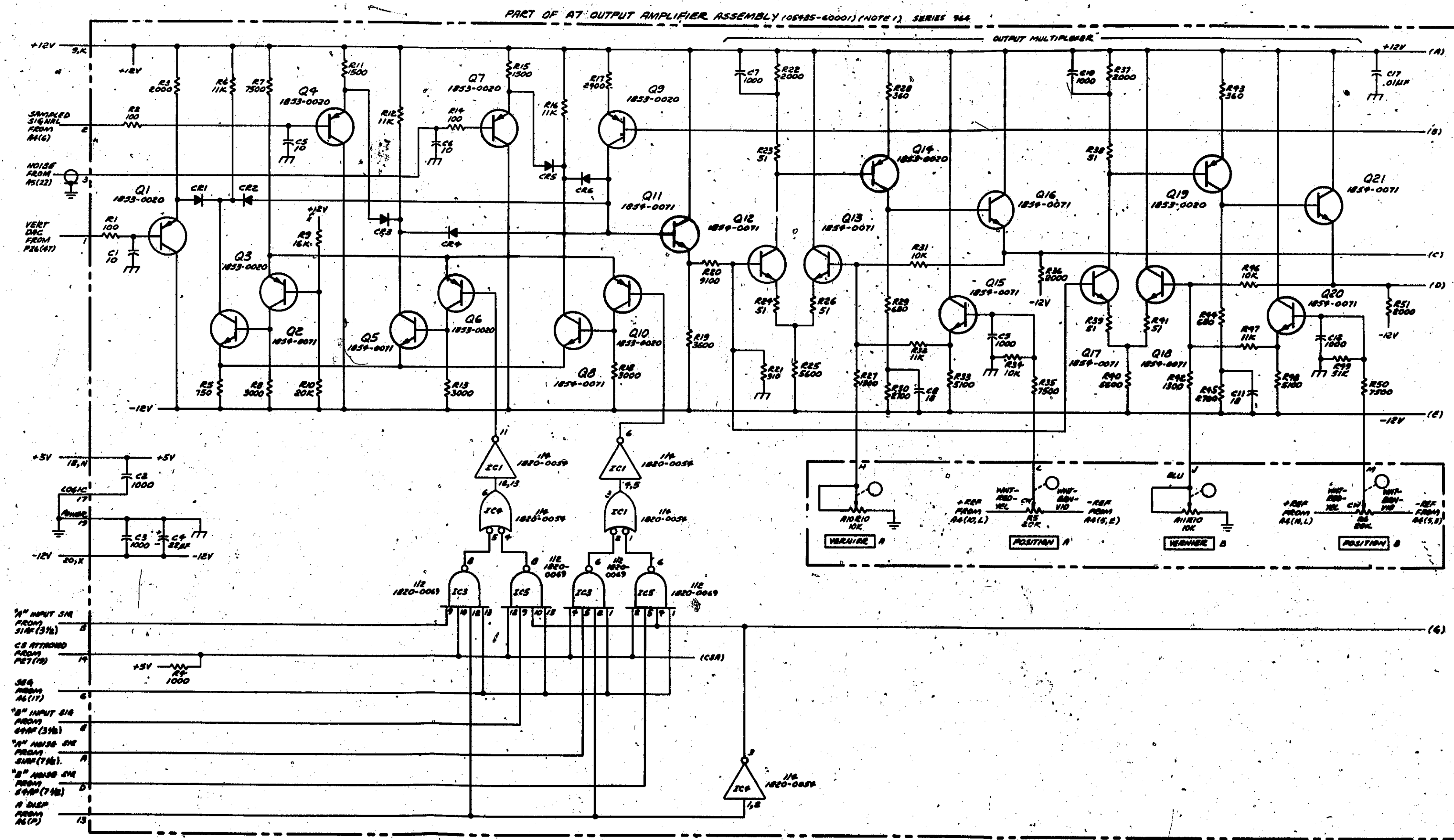
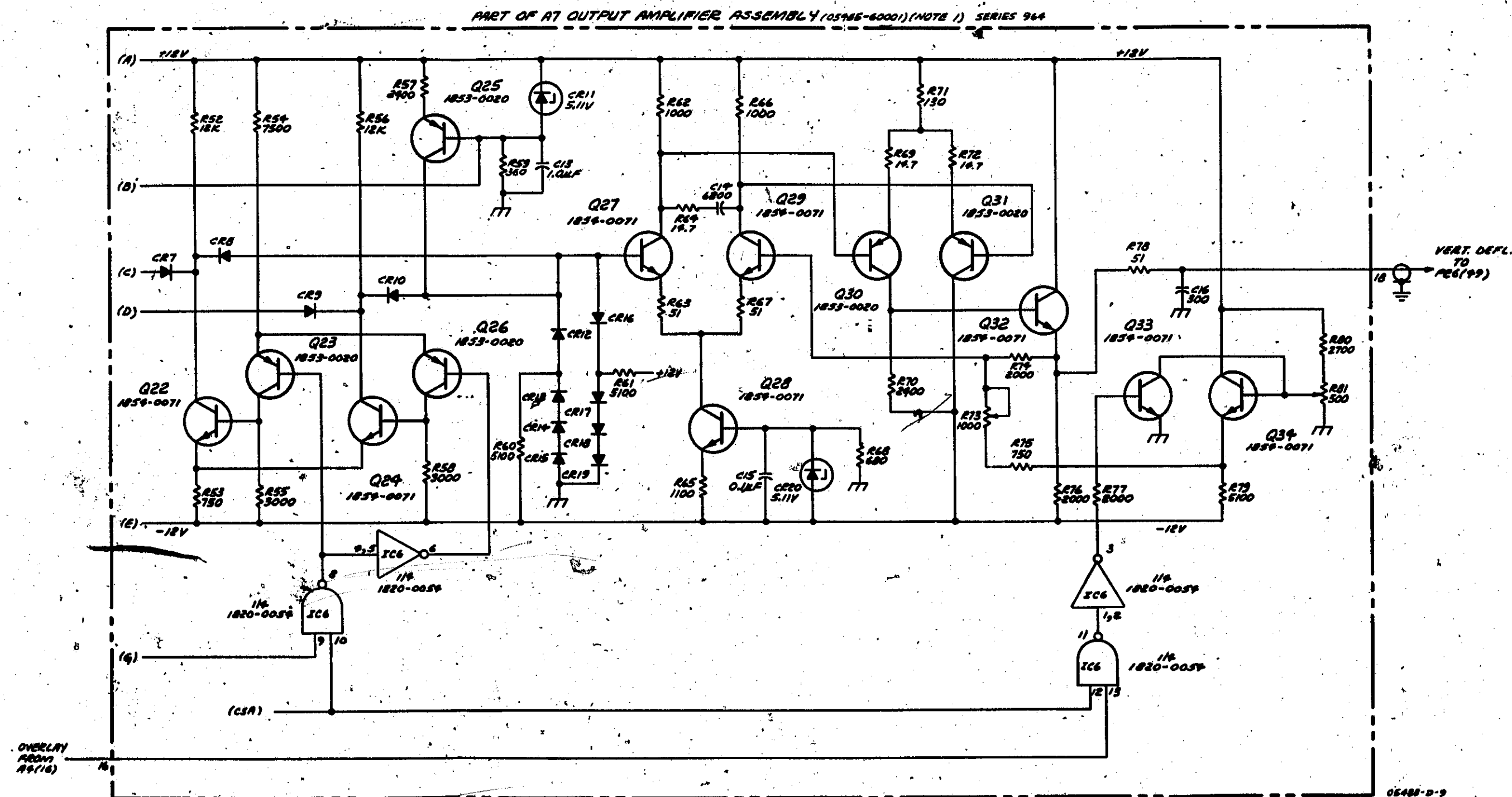


Figure 3-32
A7 Output Amplifier Series 964 (Sheet 1 of 2)
3-69

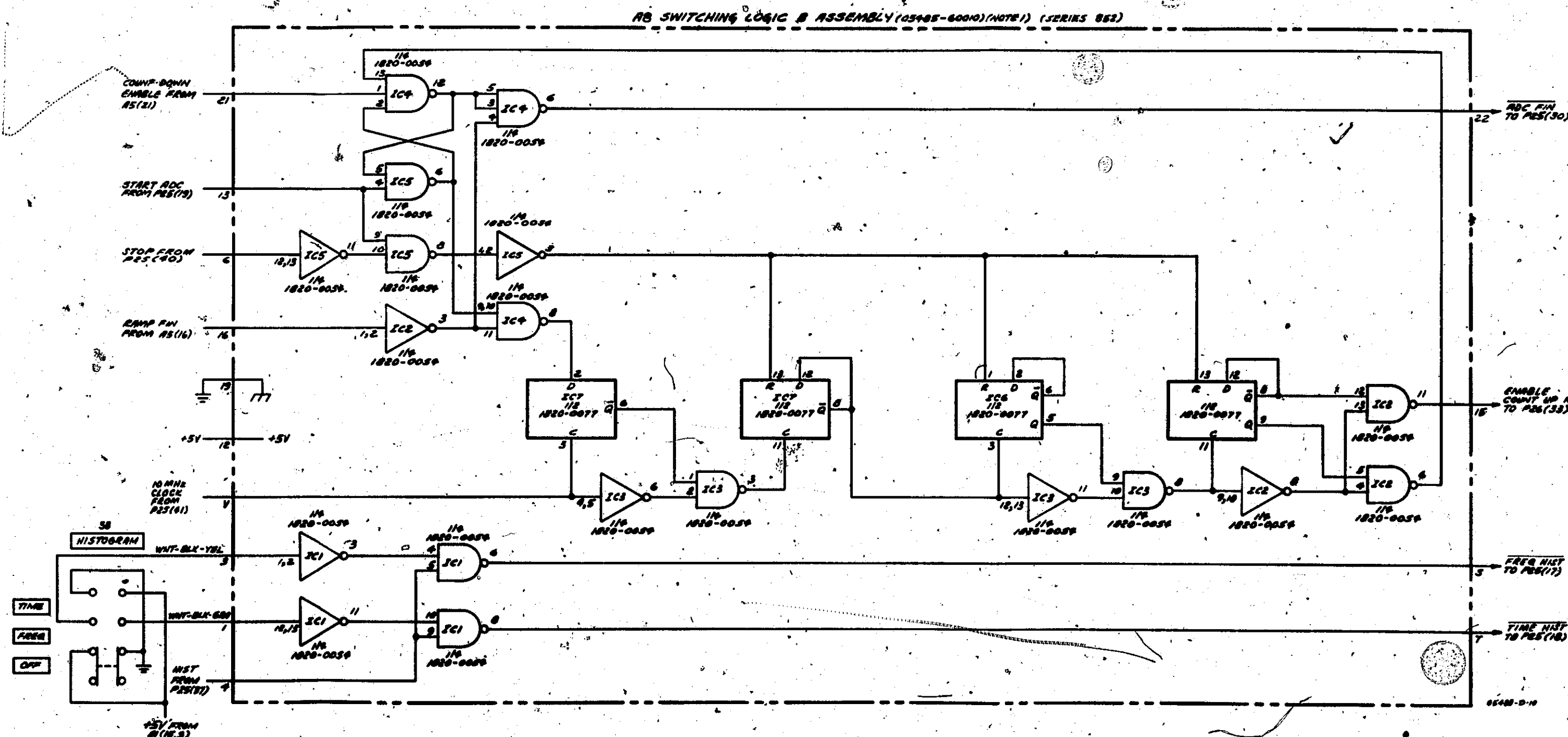


REFERENCE DESIGNATIONS

A7
C1-17
CR1-20
IC1,3-6
Q1-34
R1-81
NOT ASSIGNED:
ICC

Figure 3-32
A7 Output Amplifier Series 964 (Sheet 2 of 2)
3-71

See Figure 3-10 for Board description and Component Locator.



NOTES

1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.

REFERENCE DESIGNATIONS

NO	AS
1820-0054	IC1-7
1820-0077	

Figure 3-33
A8 Switching Logic B (Standard) Series 852

See Figure 3-11 for Board description and Component Locator.

A8 SWITCHING LOGIC B ASSEMBLY (OPTION 01) SERIES 908

NOTES

- REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
- UNLESS OTHERWISE INDICATED:
RESISTANCE IN OHMS;
CAPACITANCE IN PICOFARADS;

REFERENCE DESIGNATIONS

ASSEMBLY	OPTION 01
C1	1853-0020
Q1-21	1853-0020
Q1-8	1853-0020
R1-23	1853-0020

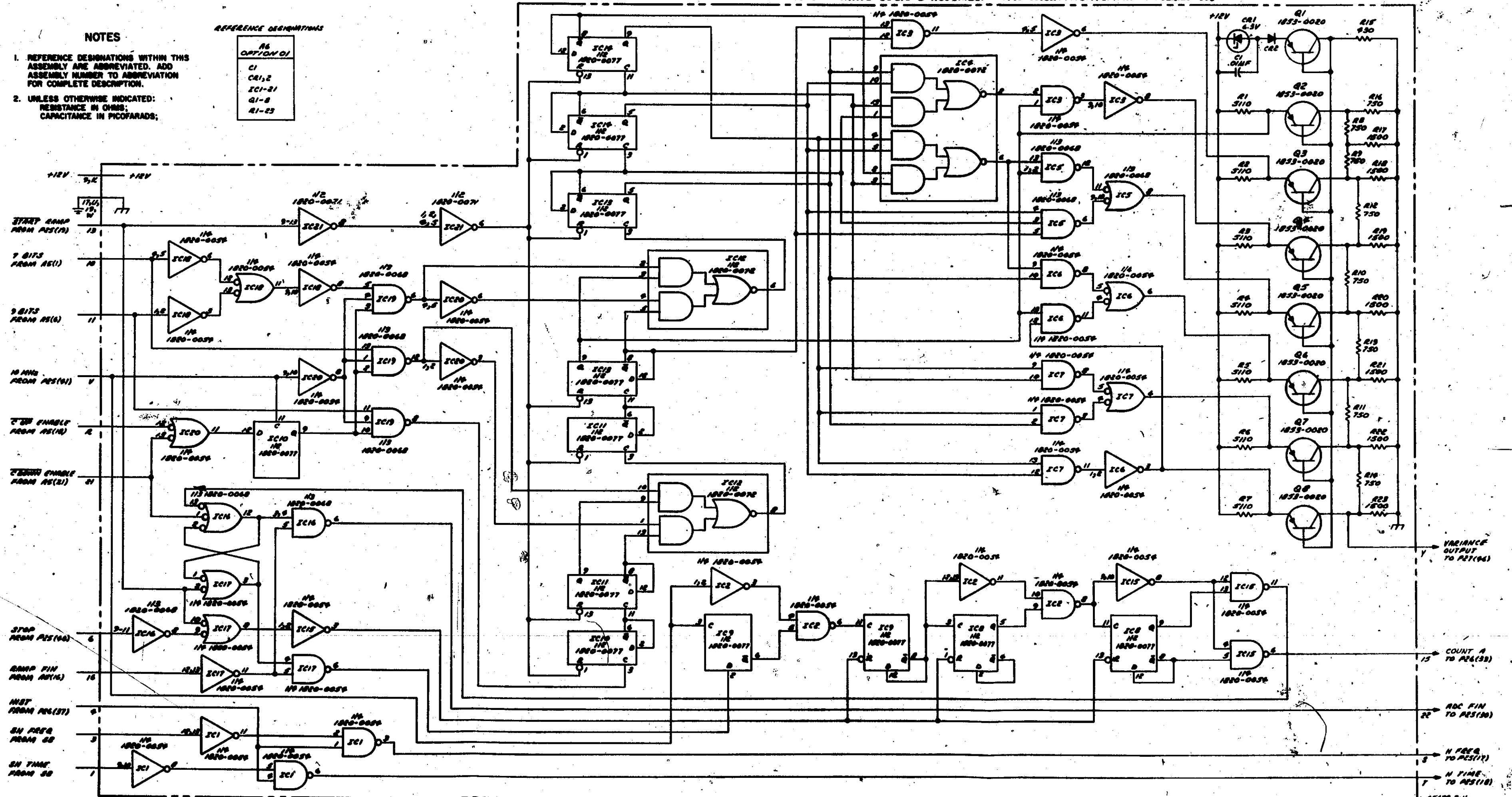
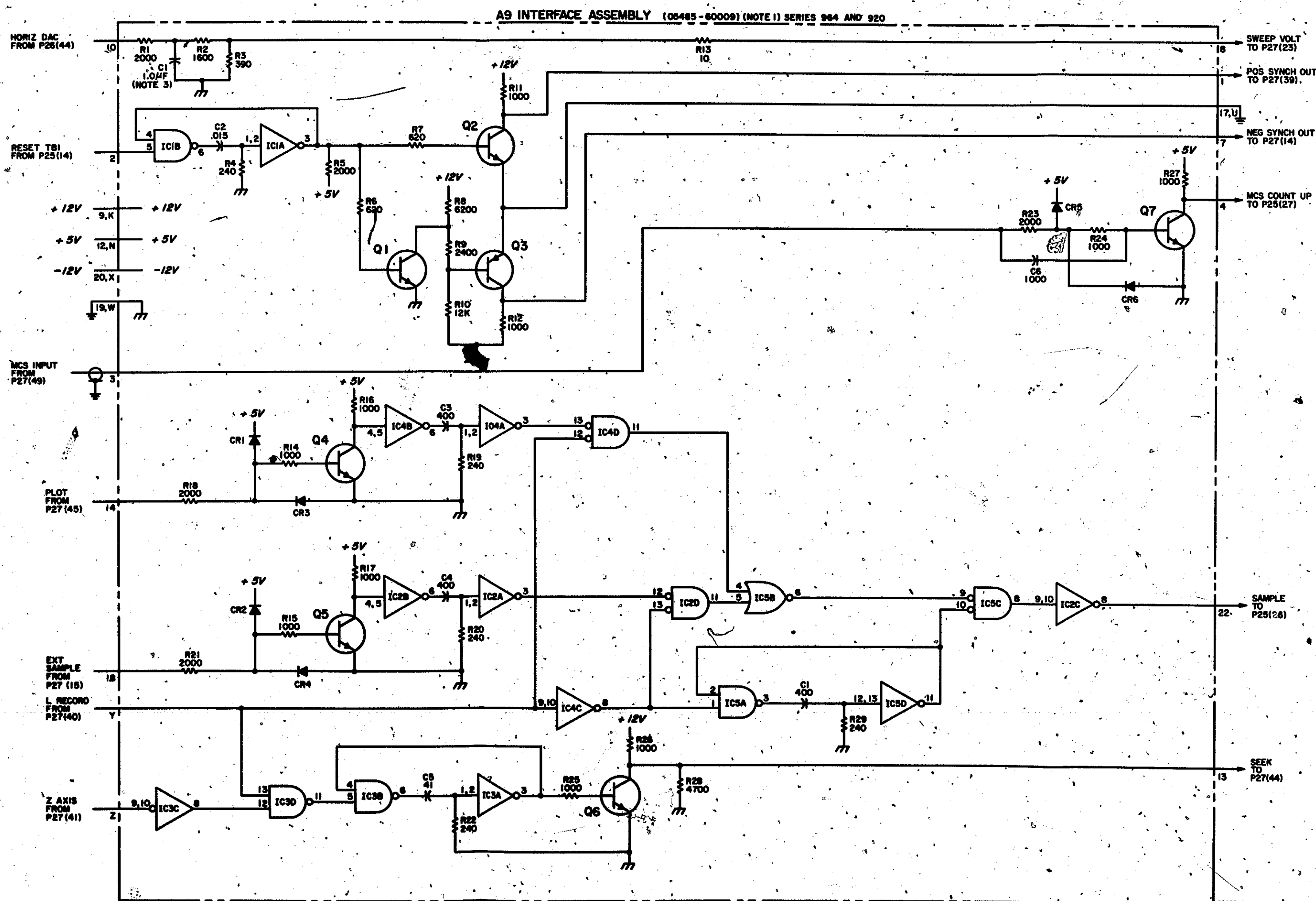


Figure 3-34
A8 Switching Logic B (Option 01) Series 908
3-75

See Figure 3-12 for Board description and Component Locator.



NOTES

1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED: RESISTANCE IN OHMS; CAPACITANCE IN PICOFARADS.
3. C1 ON SERIES 920 ONLY. DELETED FROM SERIES 964.

REFERENCE DESIGNATIONS

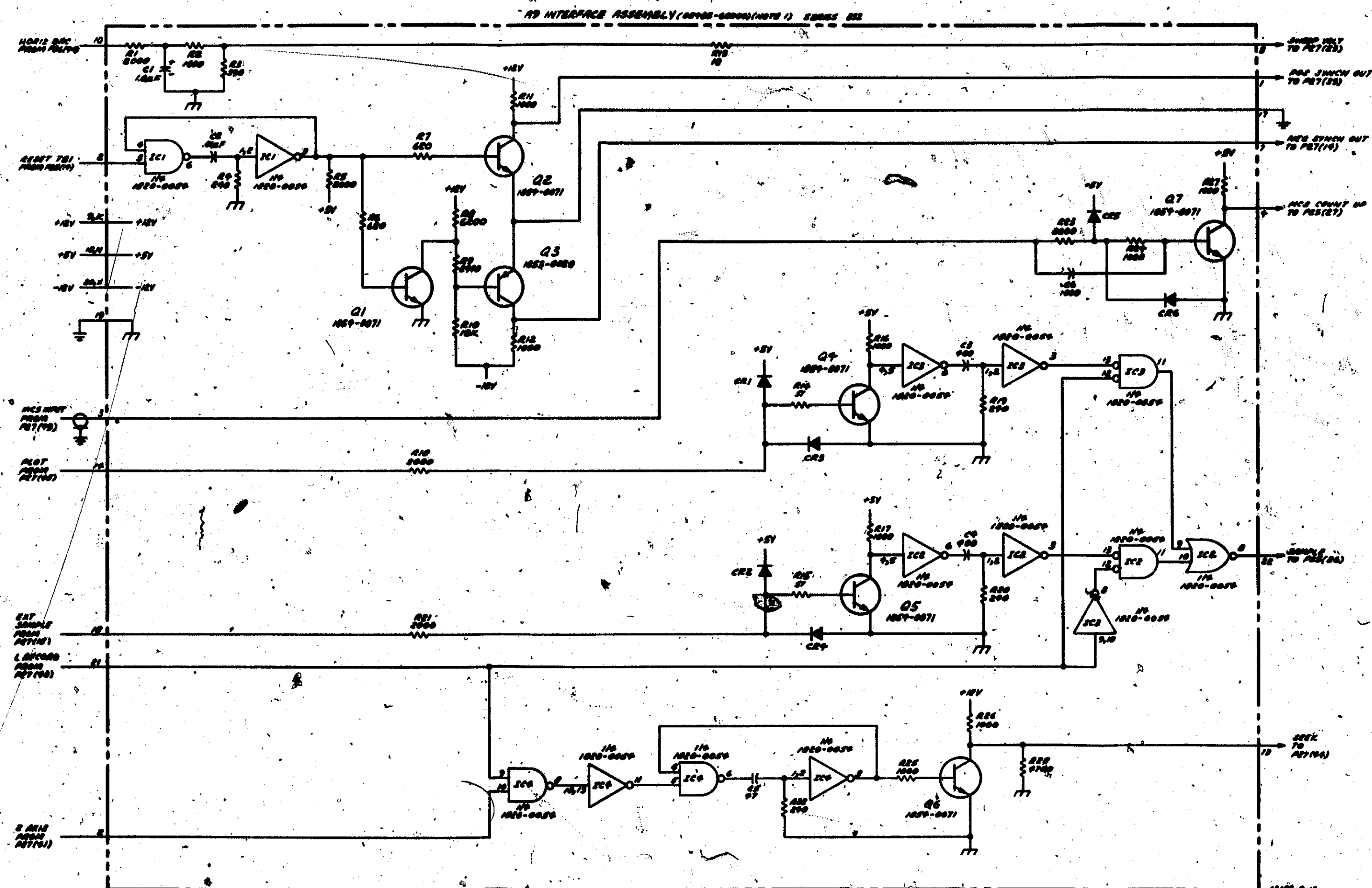
A9
C1-6
CR1-6
IC1-5
Q1-7
R1-29

TABLE

REFERENCE DESIGNATIONS	HP PART NUMBERS
CR1-6	1620-0034
IC1-5	1654-0071
Q1, 2, 4-7	1653-0020
Q3	

Figure 3-35
A9 Interface Assembly Series 964, 920

See Figure 3-12 for Board description.
See Figure 3-13 for Component Locator.



NOTES

1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED:
RESISTANCE IN OHMS;
CAPACITANCE IN PICOFARADS.

REFERENCE DESIGNATIONS

A9
IC1-6 CR1-6 IC1-9 Q1-7 R1-28

Figure 3-36
A9 Interface Assembly Series 832
3-79

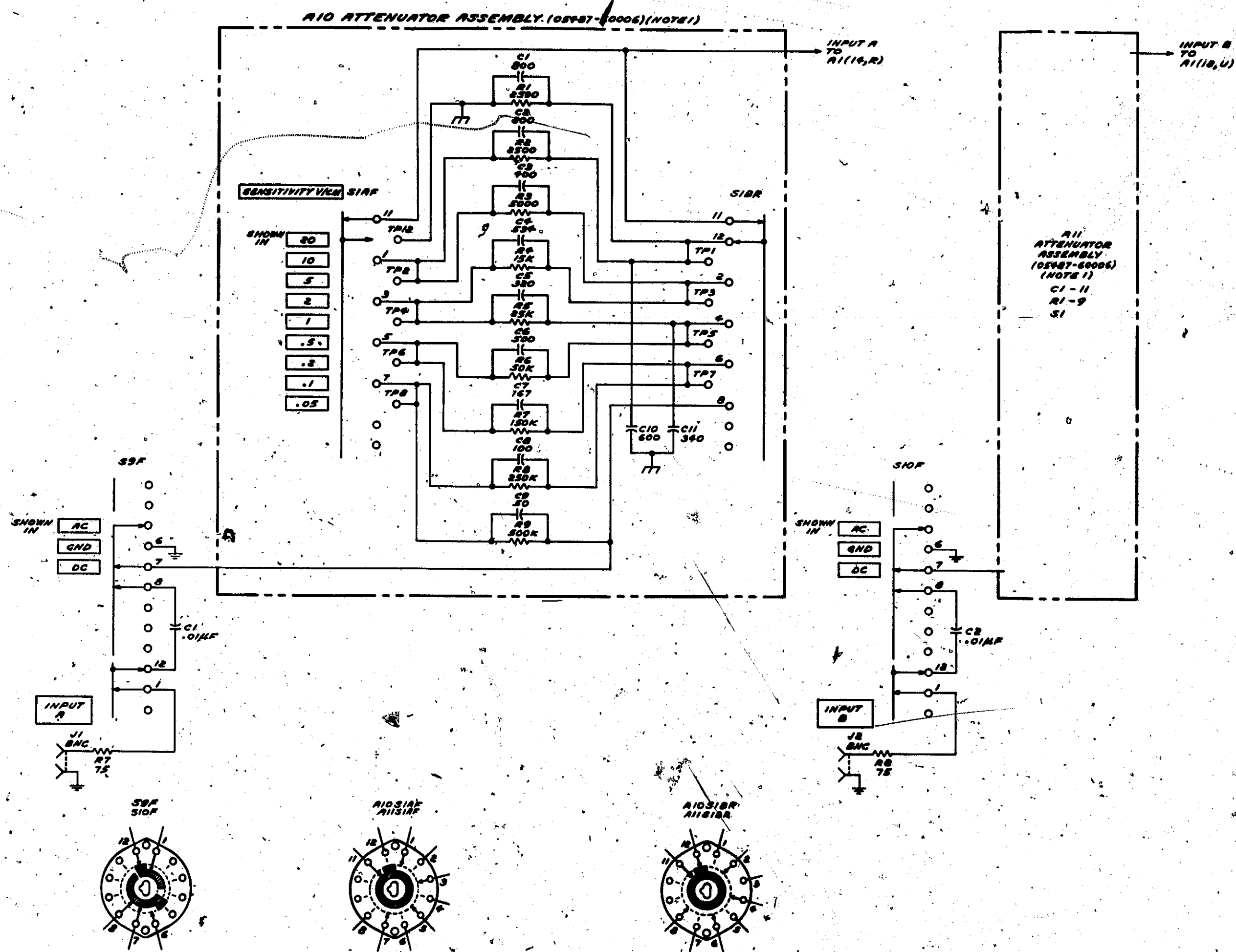
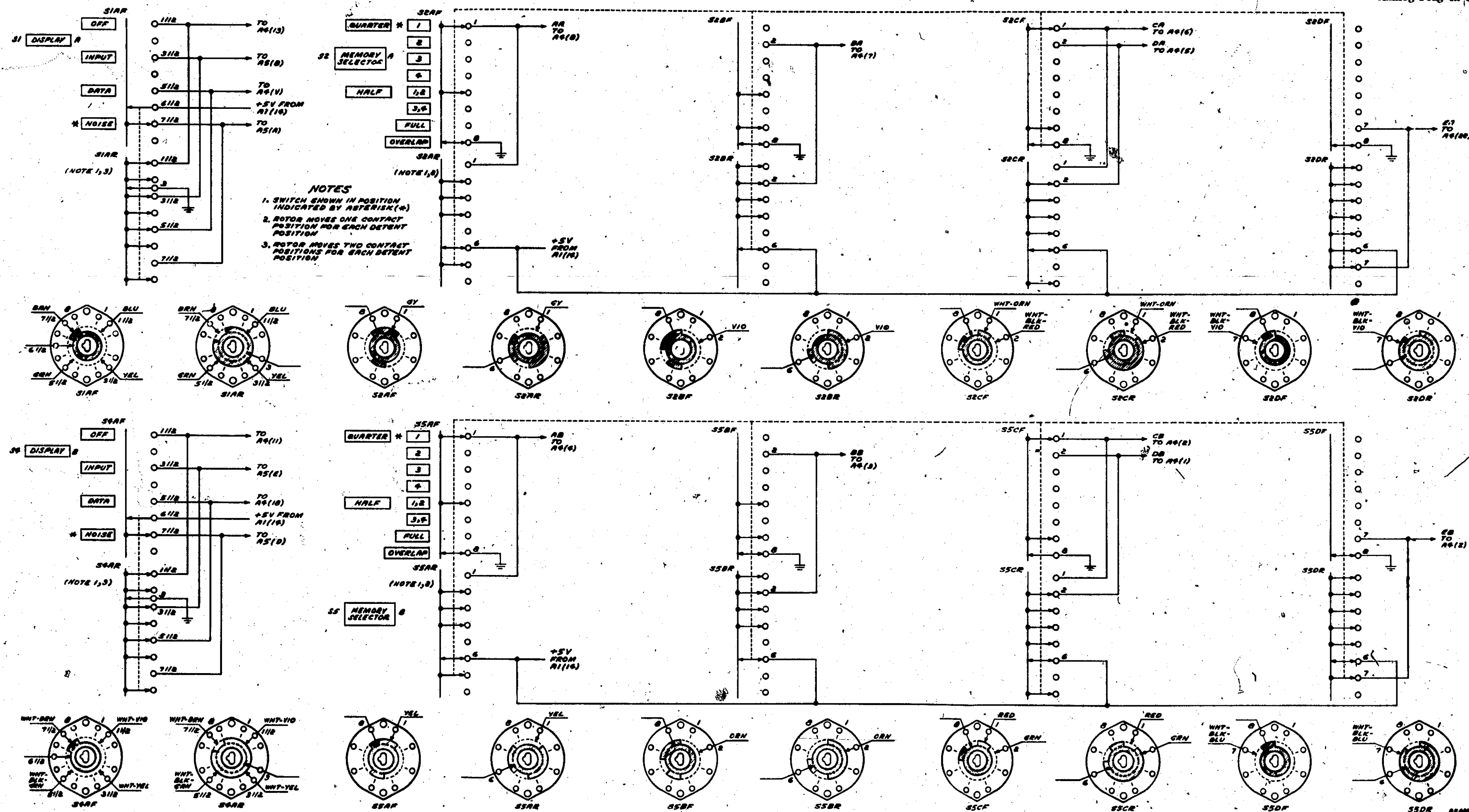


Figure 3-37
A10, A11, S9, S10 Attenuators
3-81



SECTION IV
LOGIC PLUG-IN UNITS
(5486A/B)

The Plug-In Units described in this manual section are operated in the 5480A/B left-hand plug-in compartment. The plug-in units are similar, but direct substitution of a 5486B for a 5486A (or vice-versa) should not be made.

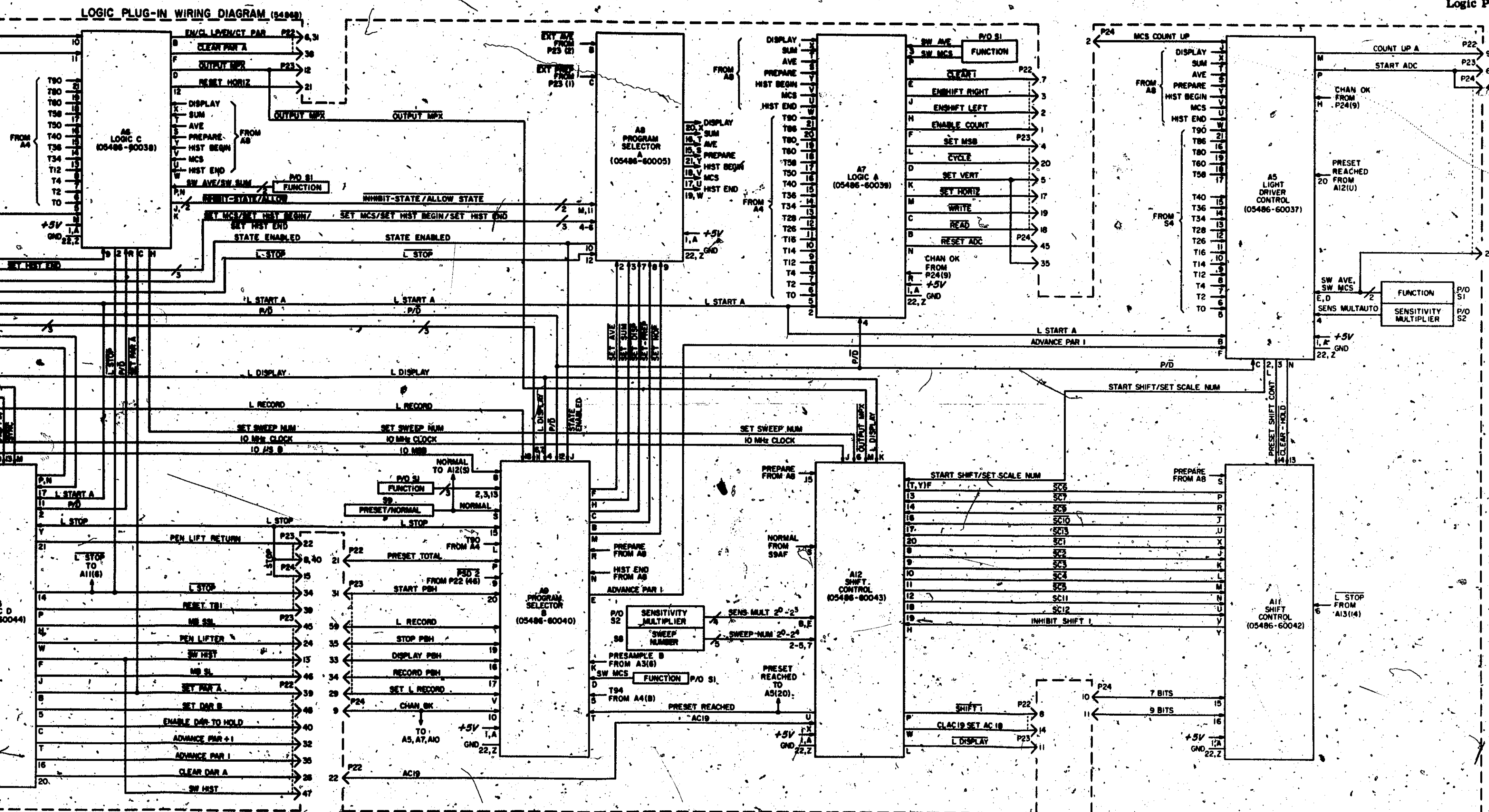
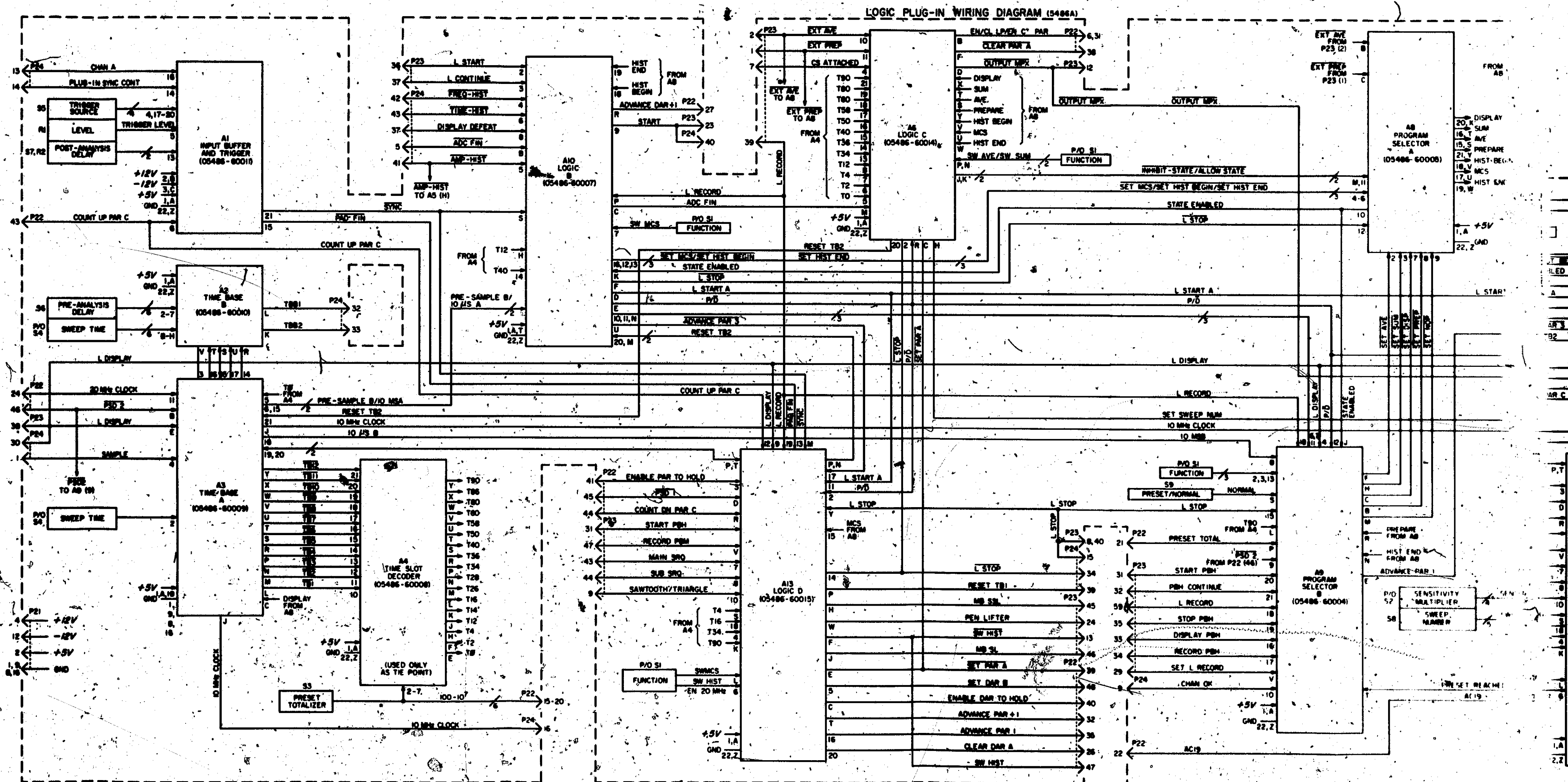


Figure 4-1
5486B Wiring Diagram
4-1



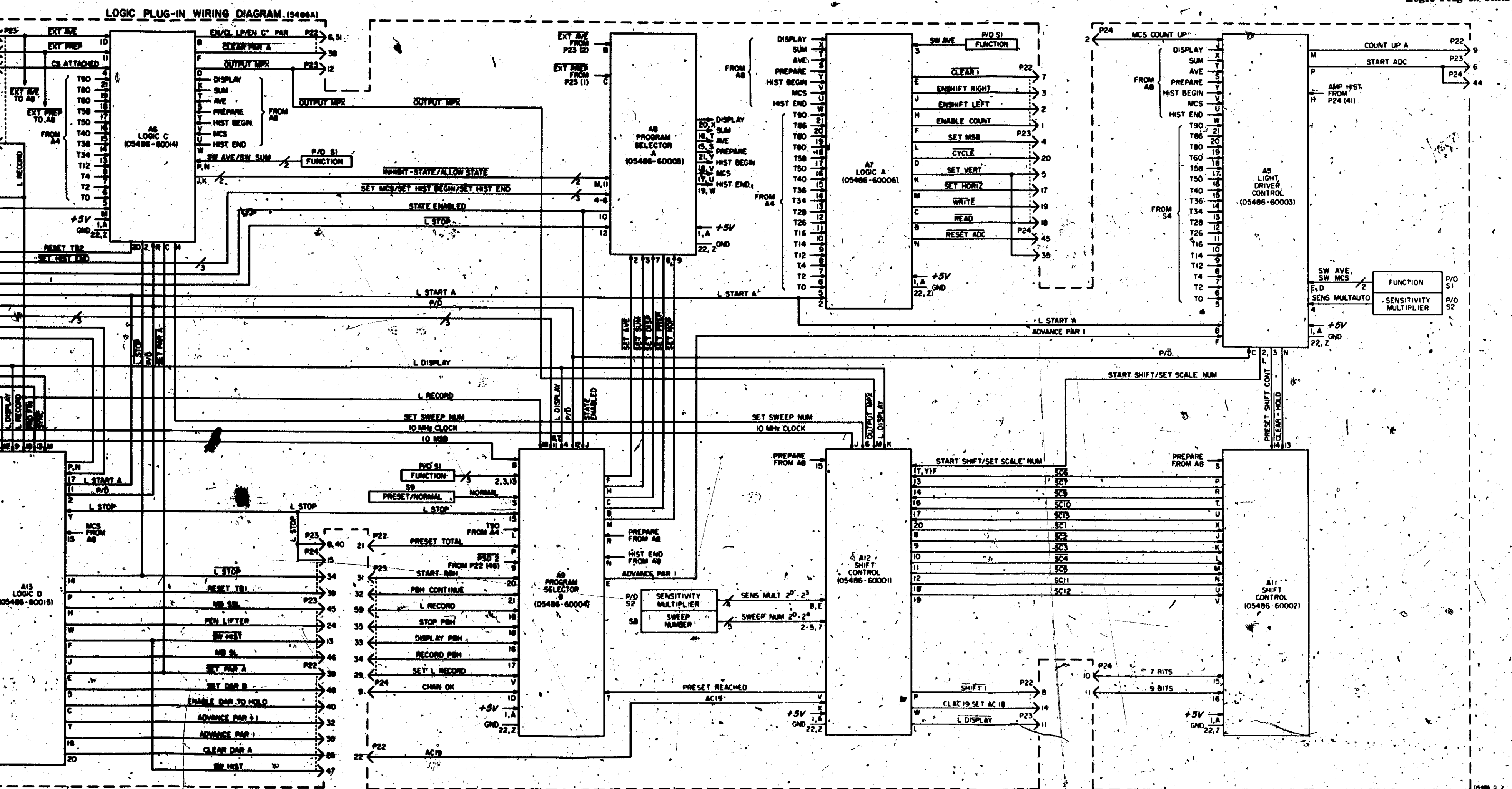
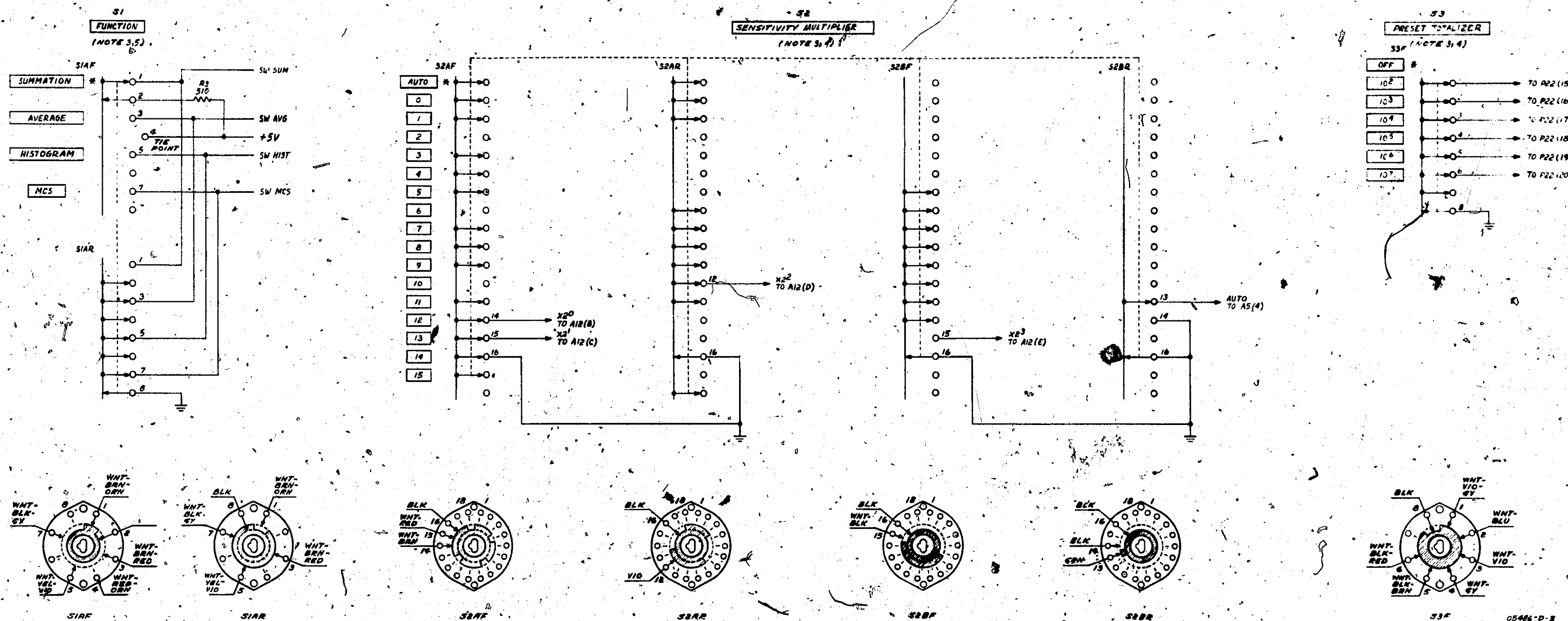


Figure 4-2
5486A Wiring Diagram
4-3



NOTES

1. REFERENCE DESIGNATIONS WITHIN THIS ASSEMBLY ARE ABBREVIATED. ADD ASSEMBLY NUMBER TO ABBREVIATION FOR COMPLETE DESCRIPTION.
2. UNLESS OTHERWISE INDICATED: RESISTANCE IN OHMS; CAPACITANCE IN PICOFARADS;
3. '50 SHOWN IN \square
4. '50 ROTOR MOVES ONE CONTACT POSITION FOR EACH DETENT POSITION.

REFERENCE DESIGNATIONS

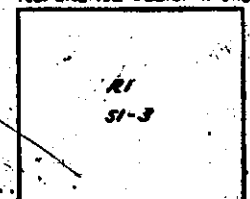


Figure 4-3
S1, S2, S3 Function - Sensitivity Multiplier -
Preset Totalizer Switches

A1 SYNC AND DELAY BOARD (05486-60057, 05486-60011)

DESCRIPTION

The Sync and Delay Board contains a variable-threshold trigger circuit used in forming logic pulses to synchronize the 5480A/B to an external frequency. Triggering off the positive or negative slope is provided. A post-analysis delay circuit is provided for setting in delays from 10 ms to greater than 10 sec, between the end of data accumulation and acceptance of the next sync pulse. This delay is generally used in conjunction with the "internal" sync mode where the 5480A/B provides a sync pulse to external equipment. The logic for this section is included on the board.

CHANGES FOR OLDER BOARDS

Current Boards: 05486-60057, Series 1104A

Older Boards: 05486-60011, Series 0964A or 964, 852, 832

The current board may be used as a direct replacement for any series of the older board.

The Series 0964A or 964 board is identical to the current board, except it does not contain the START/START SYNC circuit between pins 10 and 12, as shown at the bottom of the schematic.

The Series 852 board is identical to the Series 964 board, except R37 (1000 ohms) is not on the Series 852 board. On the Series 852 board, IC2(11) is connected directly to Q5 base.

The Series 832 board is identical to the Series 852 board, except R15 and R27 were 1000 ohms.