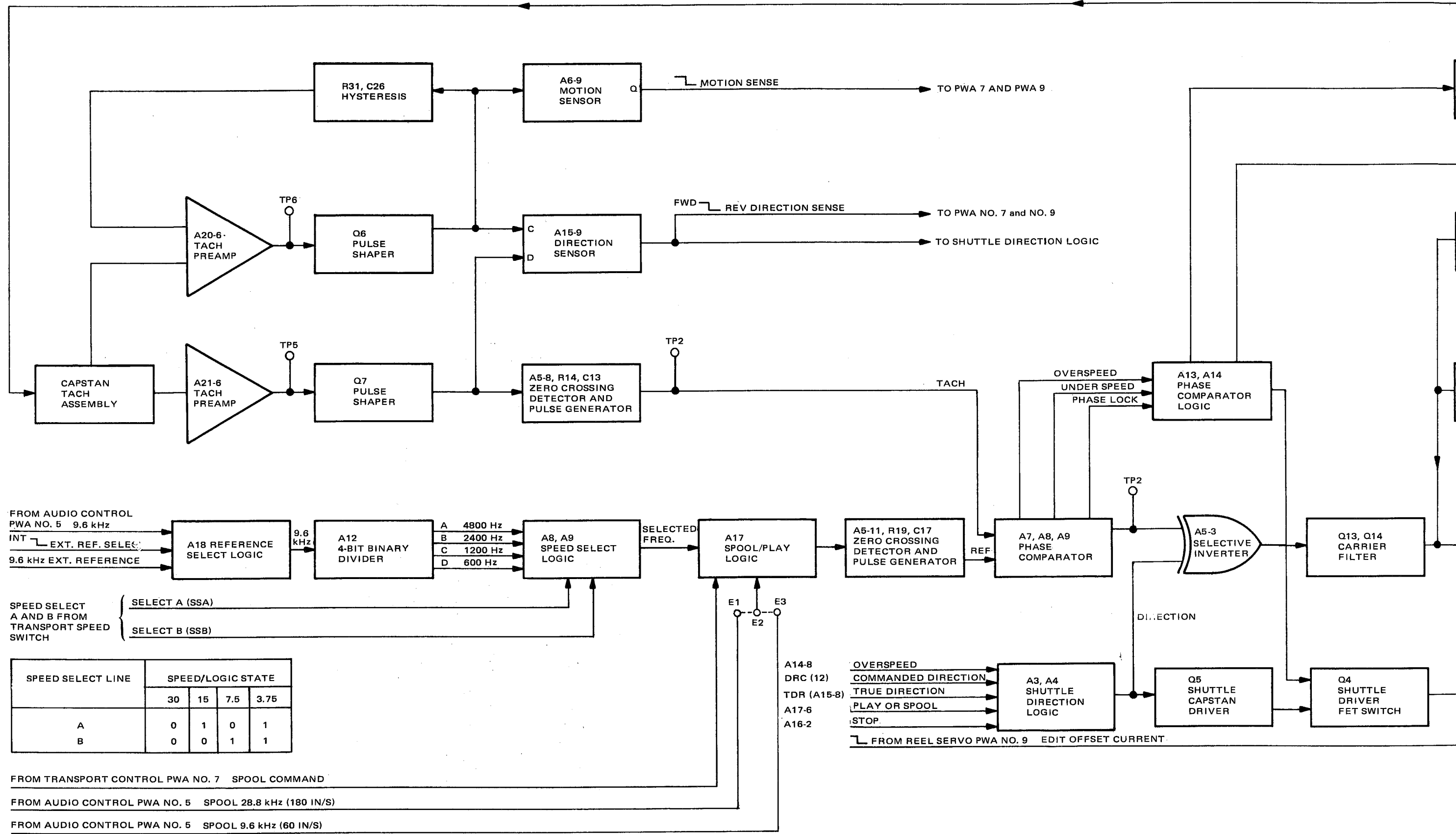


Figure 4-1. ATR-100 System, Simplified Block Diagram



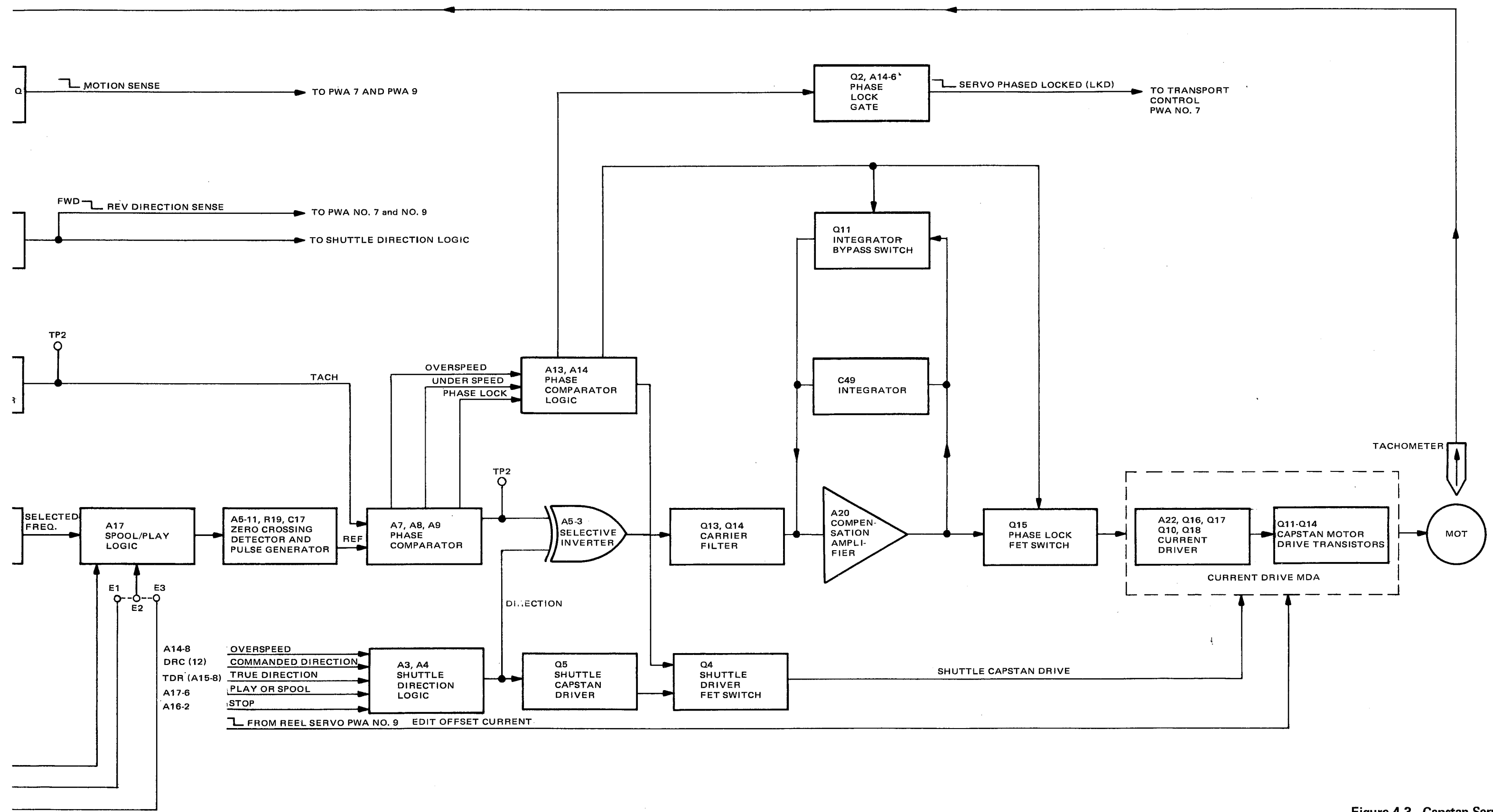


Figure 4-3. Capstan Servo Simplified Block Diagram

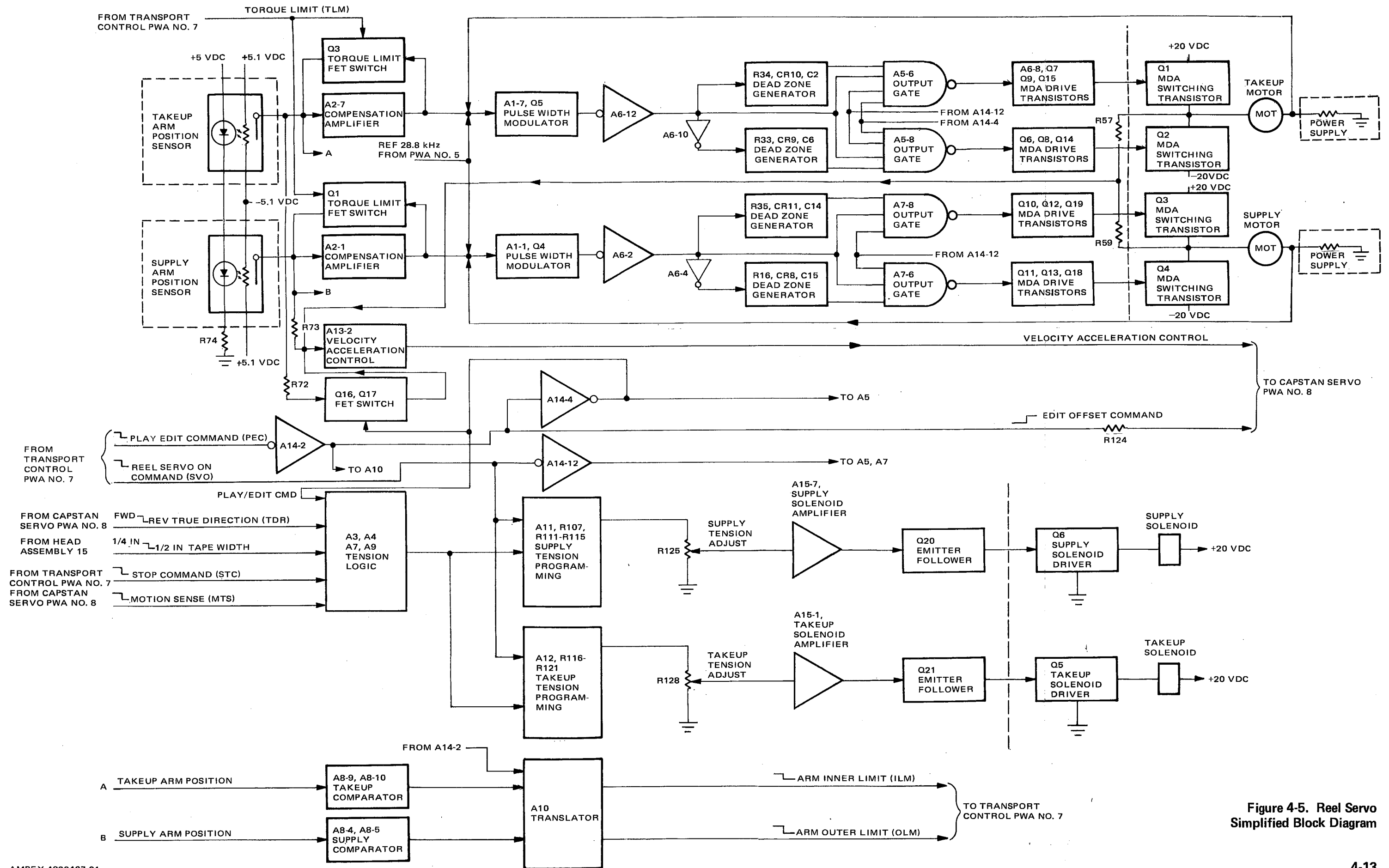


Figure 4-5. Reel Servo Simplified Block Diagram

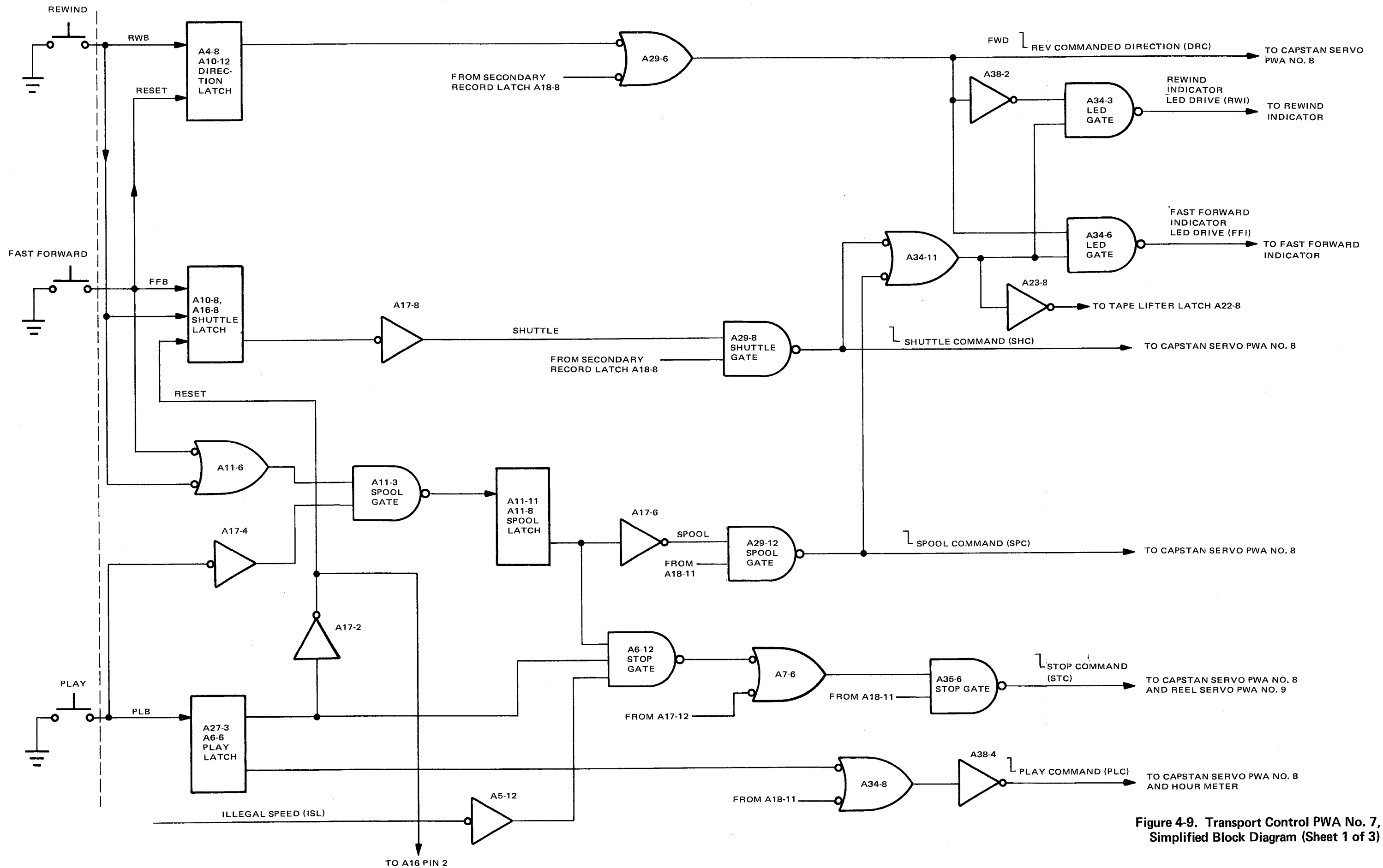


Figure 4-9. Transport Control PWA No. 7, Simplified Block Diagram (Sheet 1 of 3)

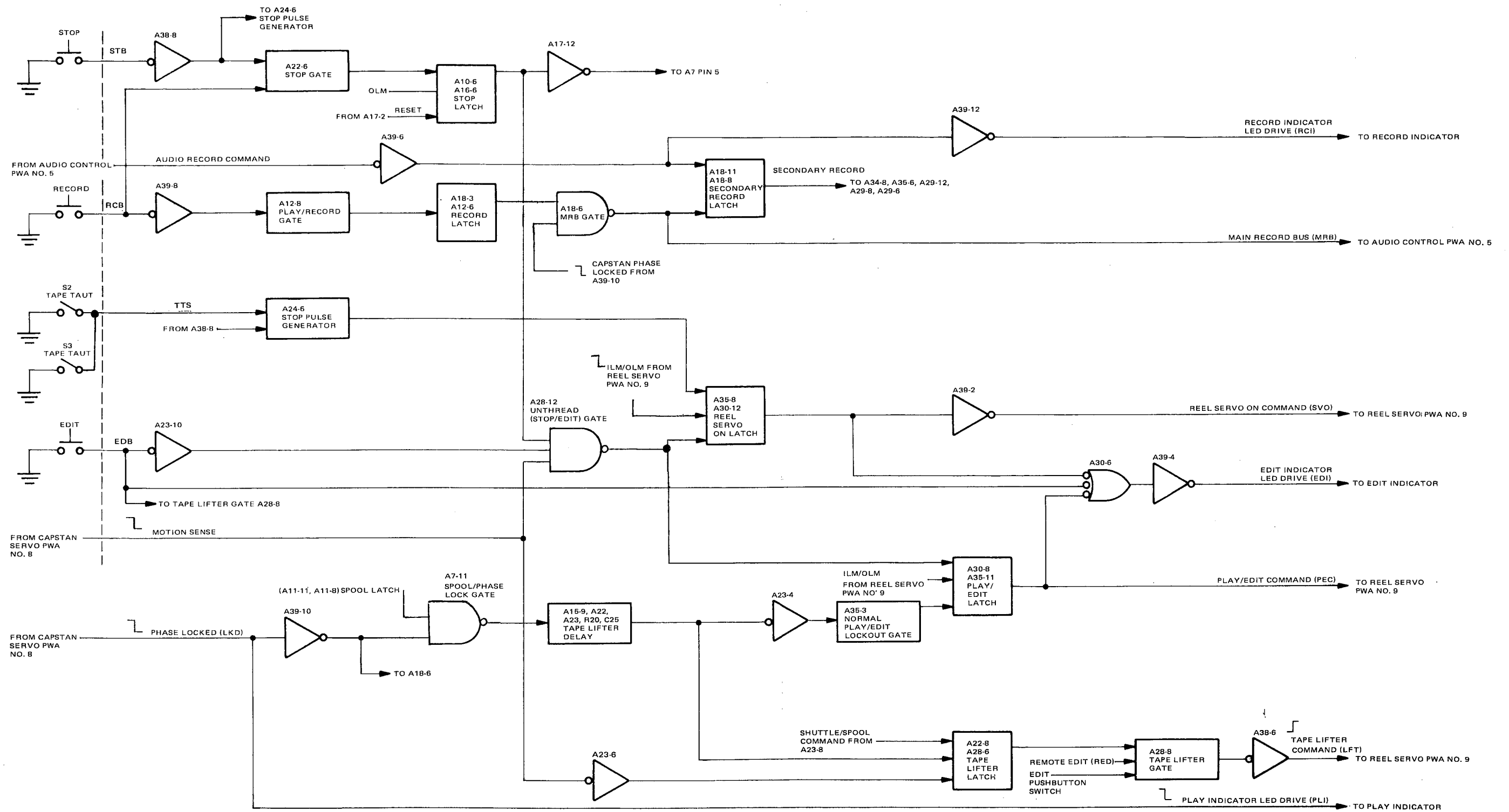
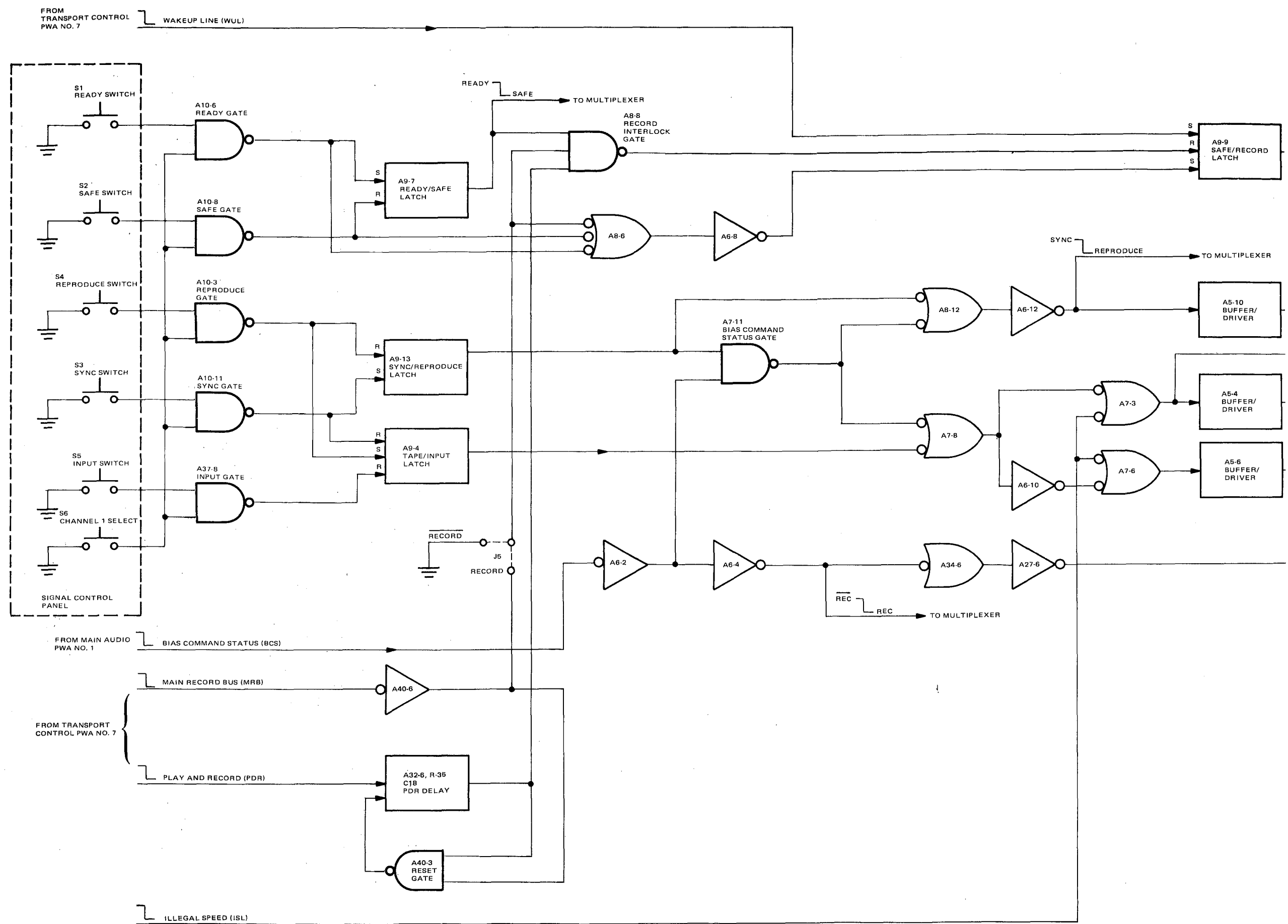


Figure 4-9. Transport Control PWA No. 7, Simplified Block Diagram (Sheet 2 of 3)



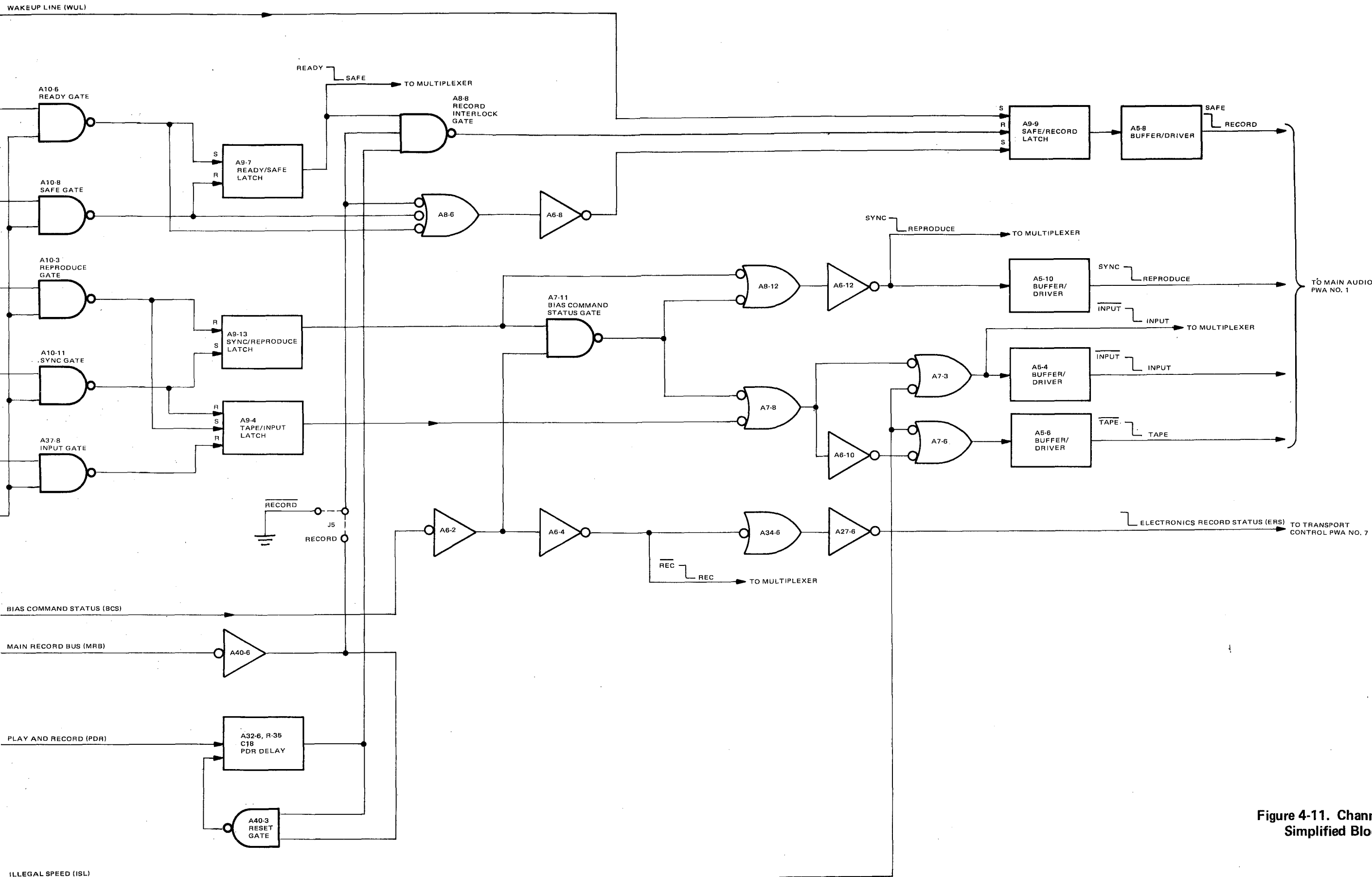
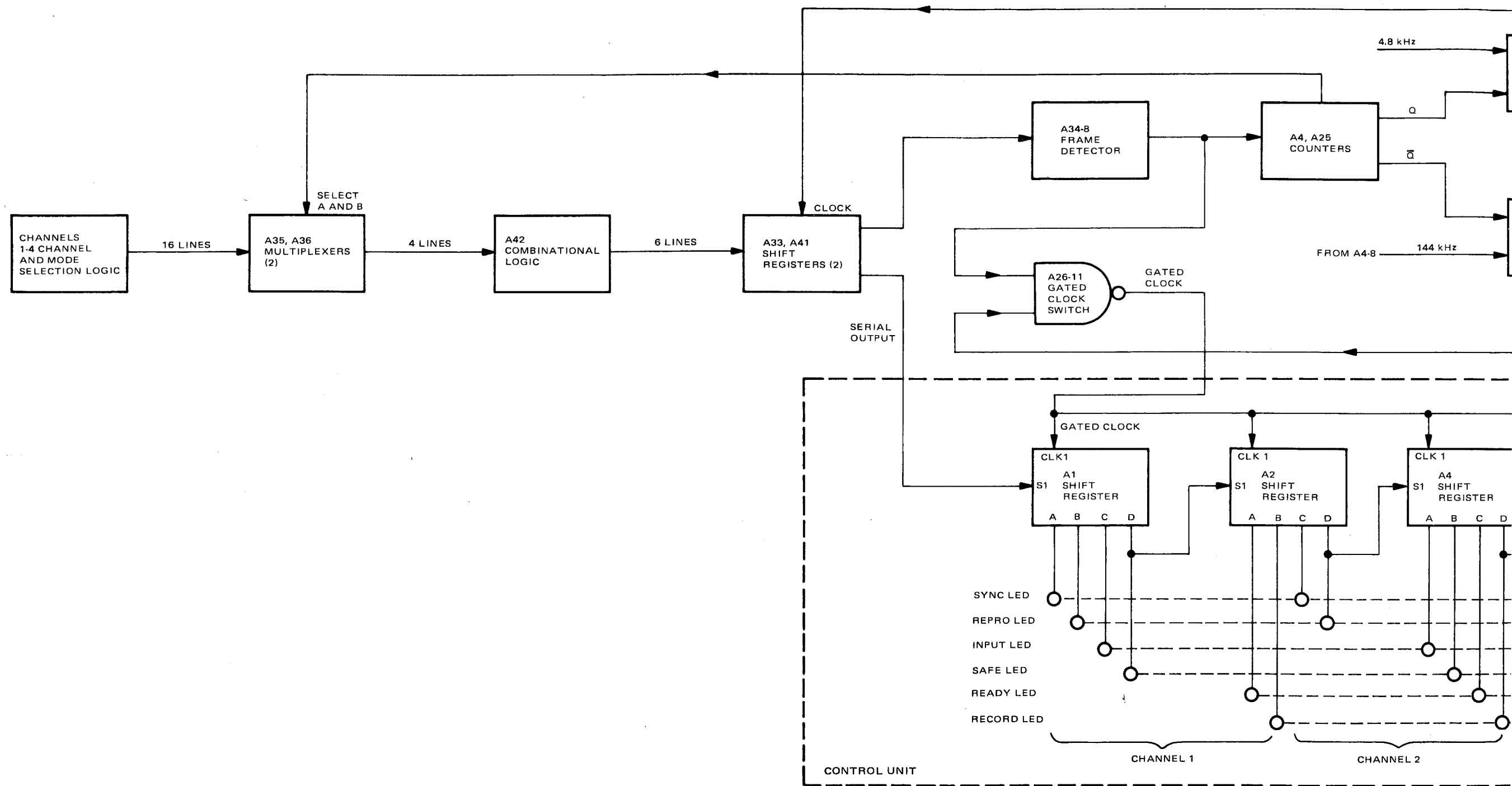


Figure 4-11. Channel 1 Signal-Mode Selection Simplified Block Diagram, Audio Control PWA No. 5



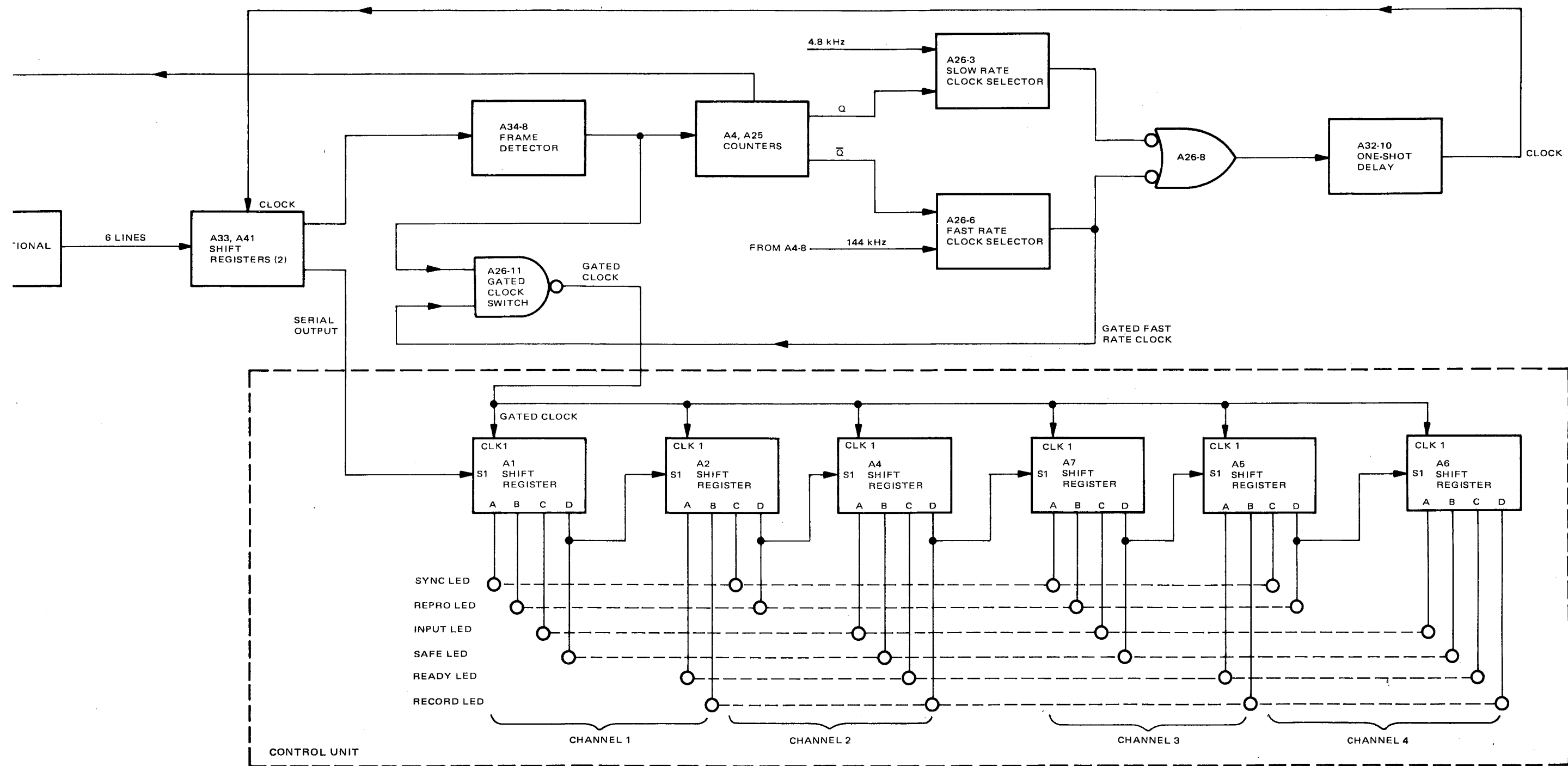
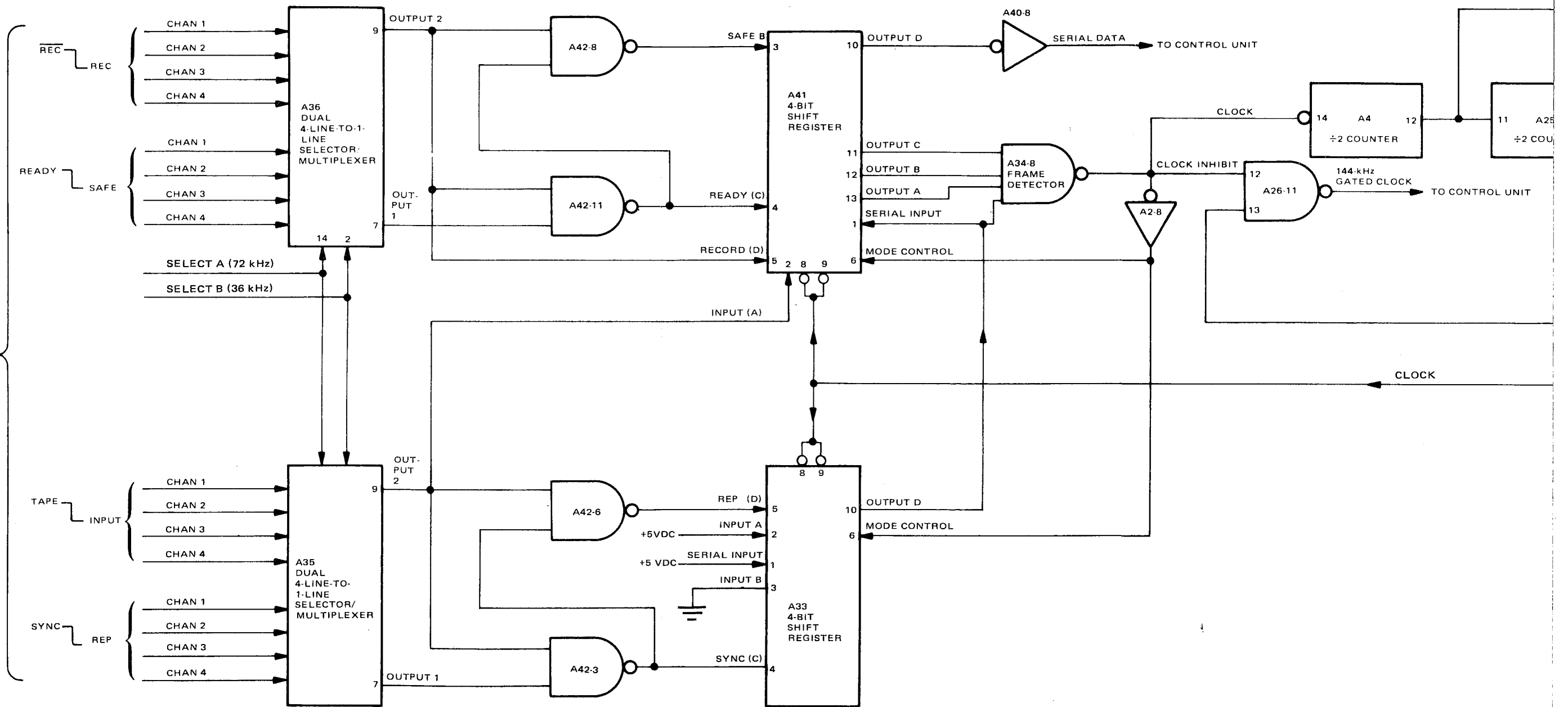


Figure 4-12. Multiplexer Simplified Interconnect Block Diagram, Audio Control PWA No. 5 and Control Unit

FROM SIGNAL MODE
SELECTION LOGIC
(FIGURE 4-11)



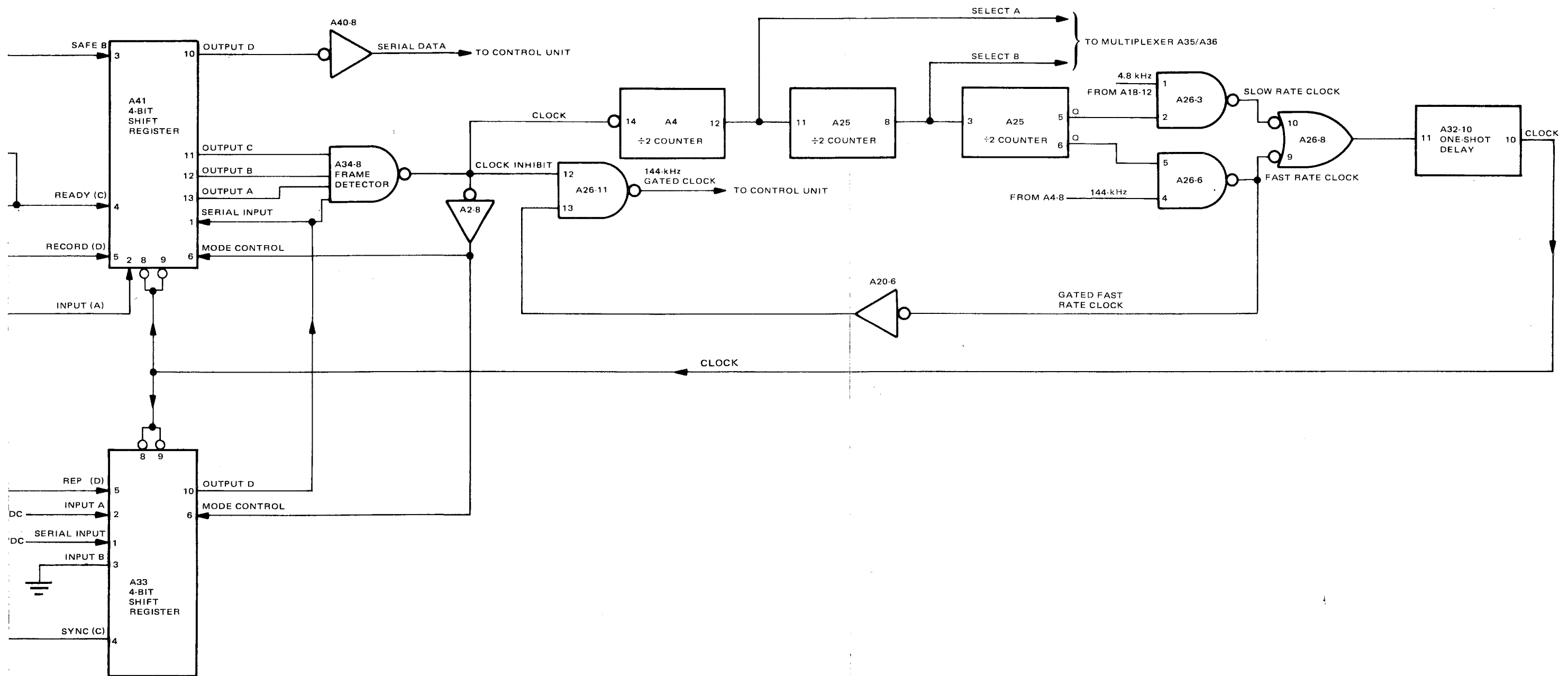


Figure 4-13. Multiplexer Simplified Block Diagram, Audio Control PWA No. 5

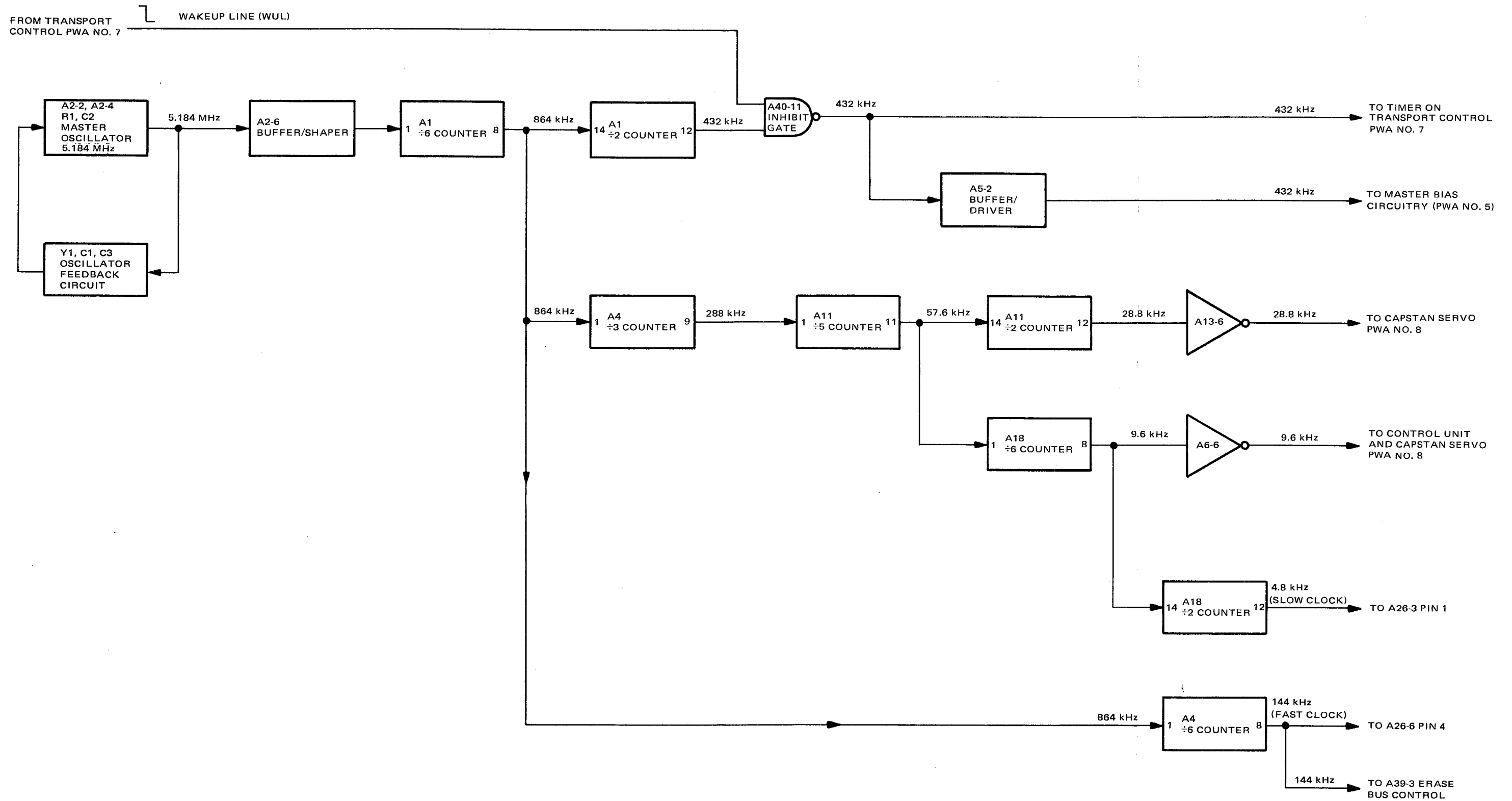


Figure 4-14. Master Oscillator and Counters, Simplified Block Diagram (PWA No. 5)

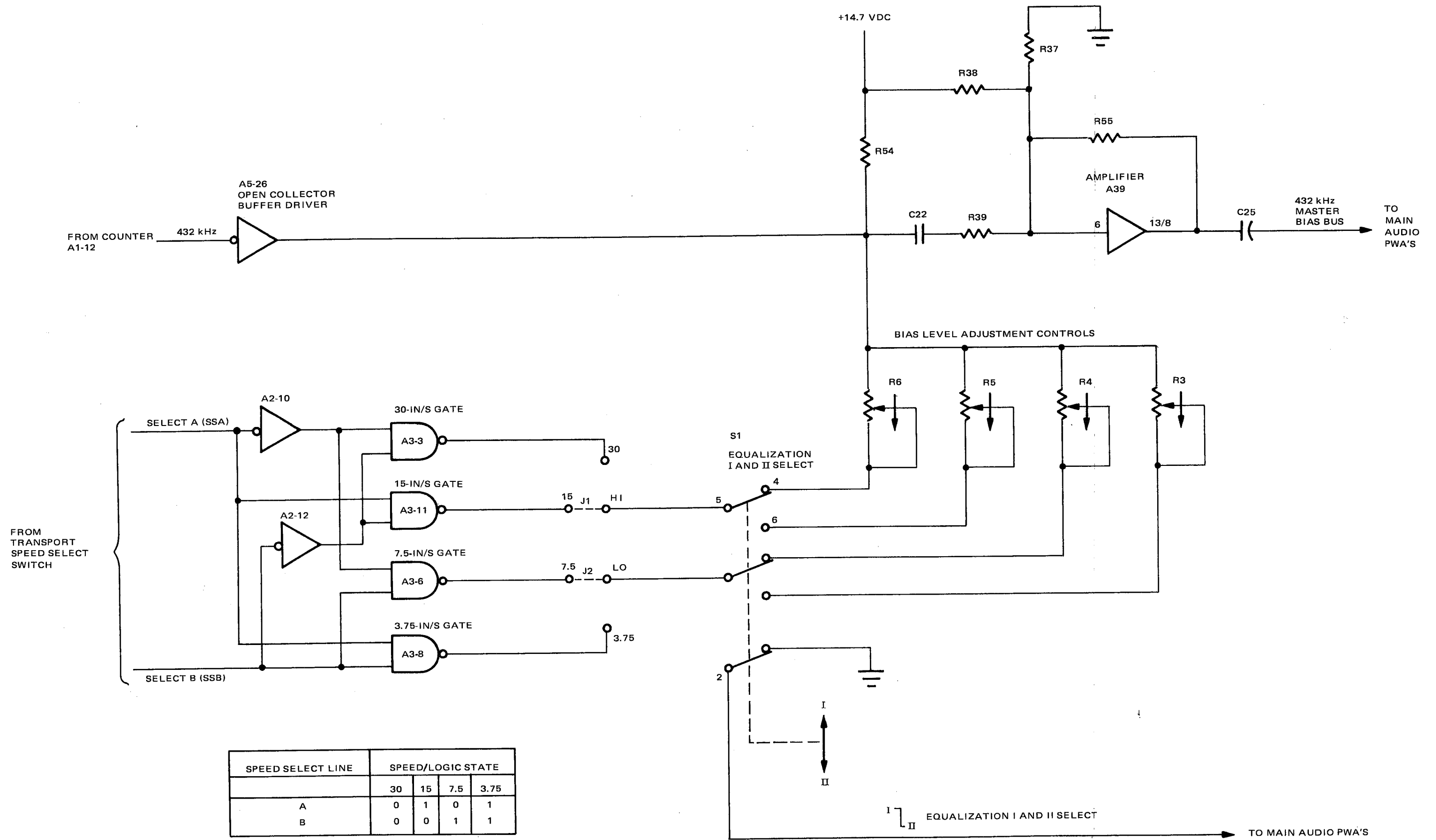
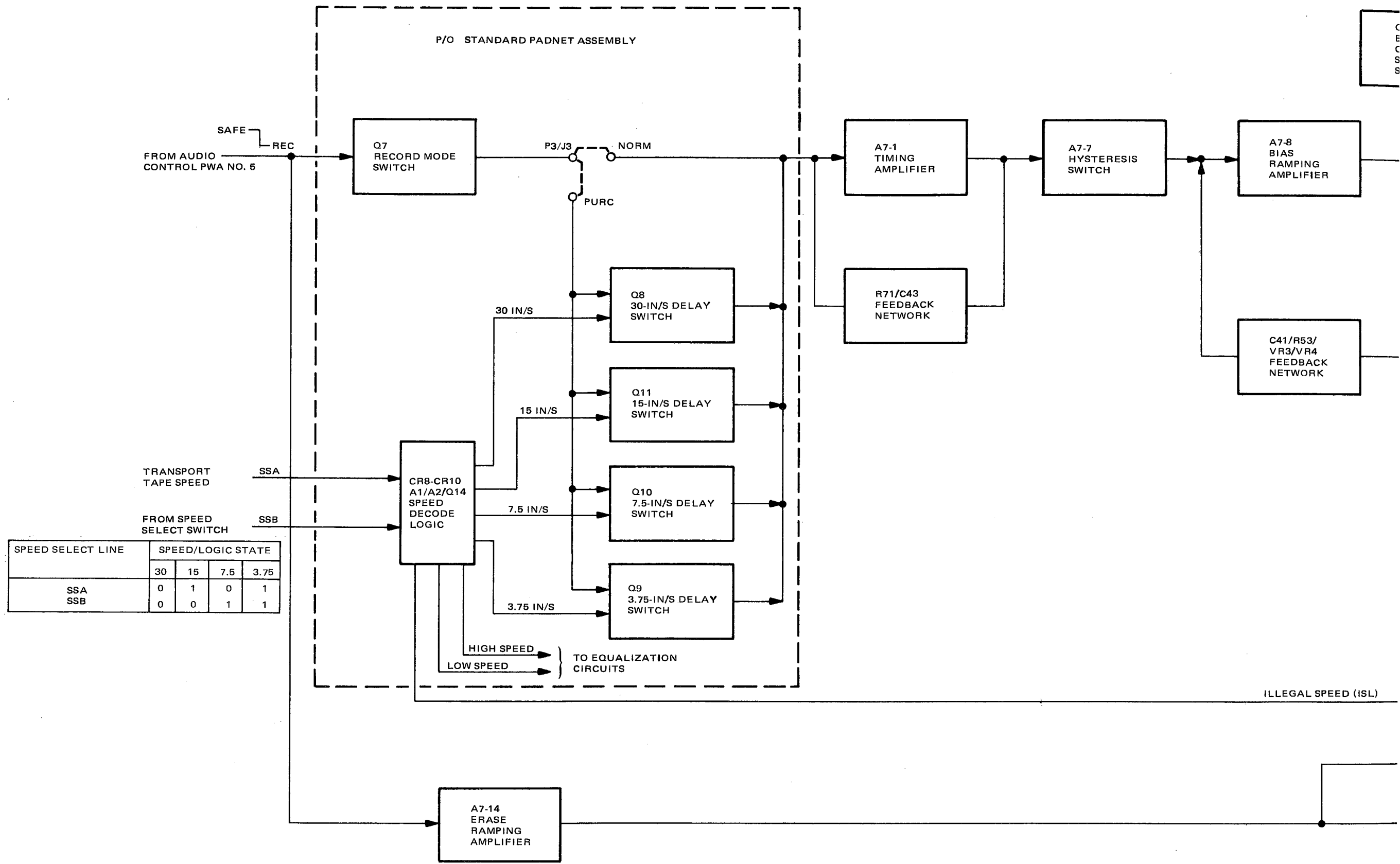


Figure 4-16. Master Bias Bus, Two-Speed Simplified Schematic (PWA No. 5)



SPEED SELECT LINE	SPEED/LOGIC STATE			
	30	15	7.5	3.75
SSA	0	1	0	1
SSB	0	0	1	1

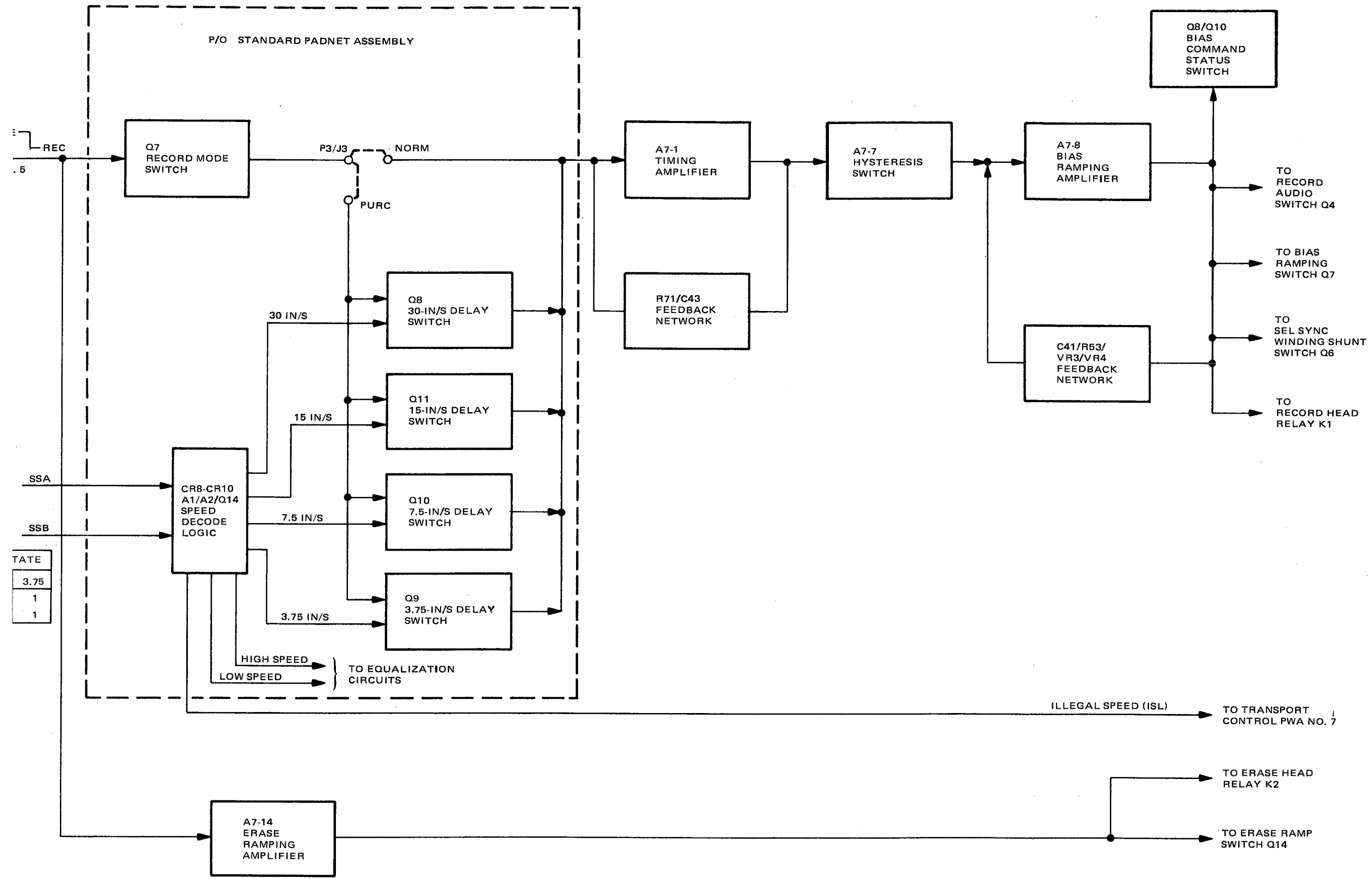
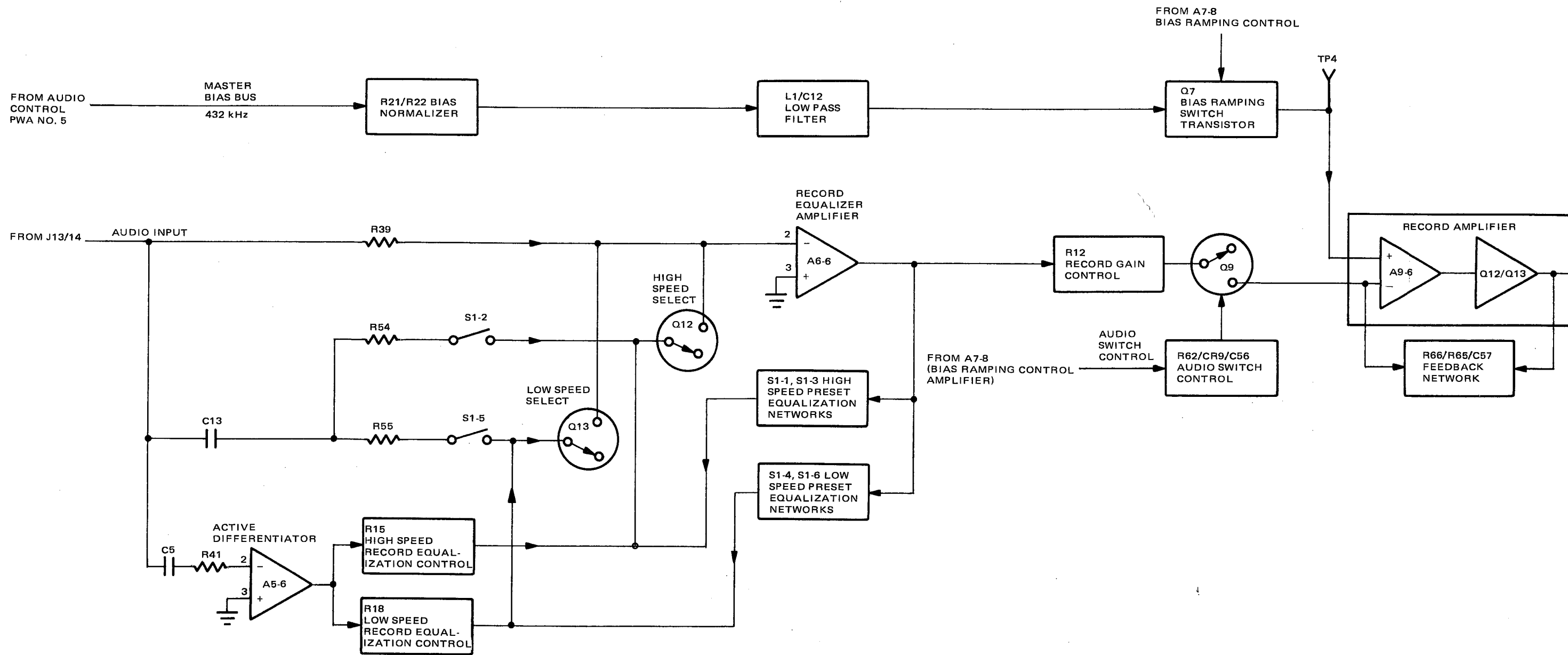


Figure 4-18. Main Audio Control Logic, Simplified Block Diagram



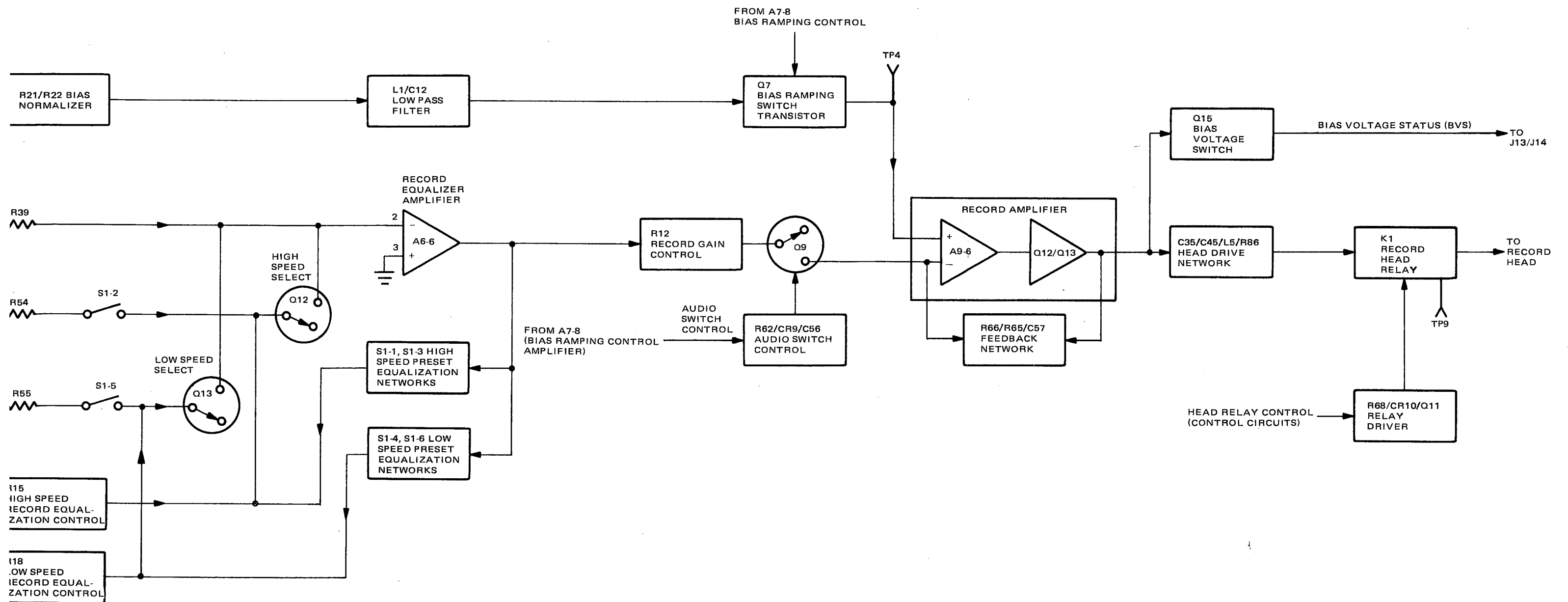
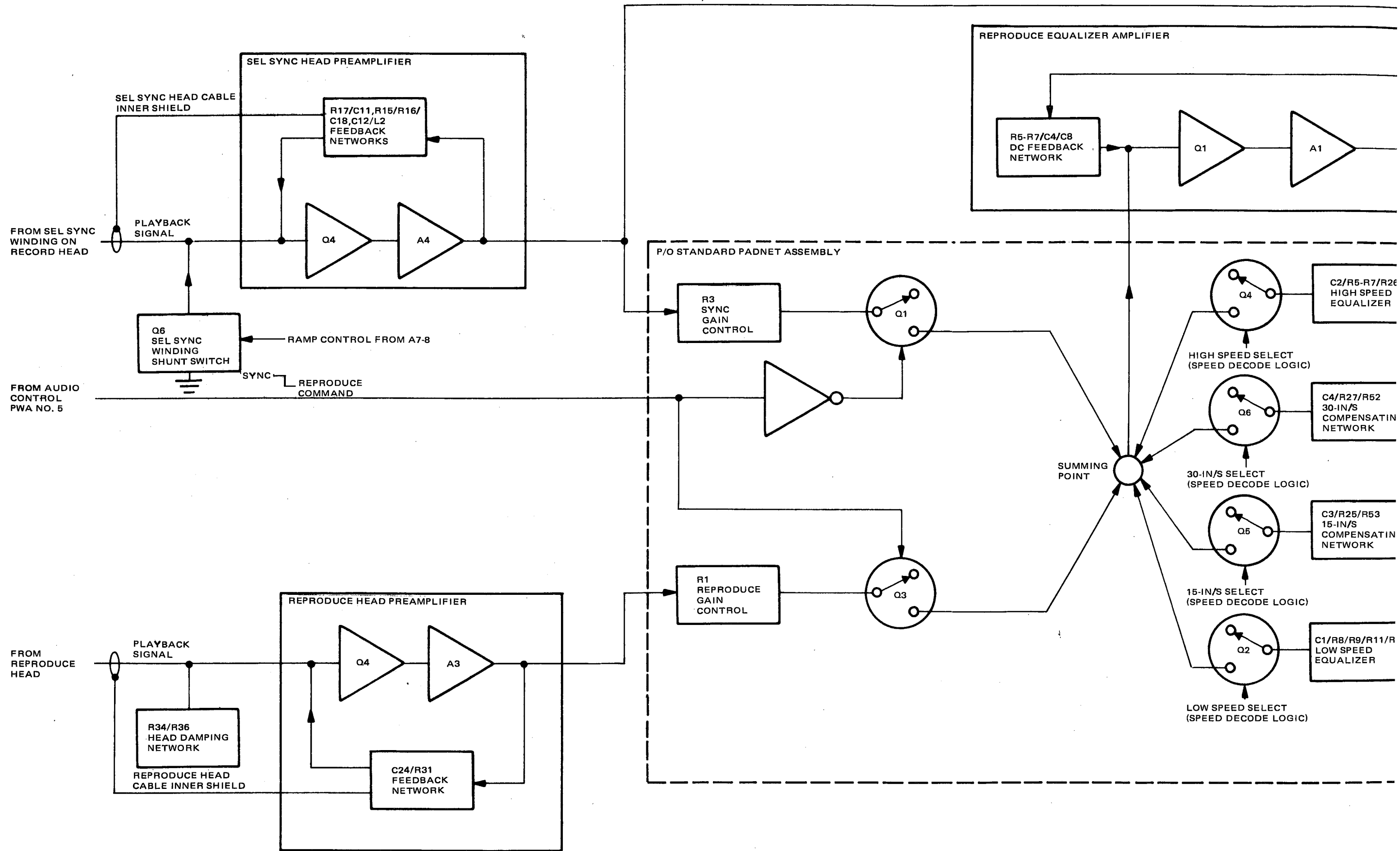


Figure 4-20. Audio Record Circuits, Simplified Block Diagram



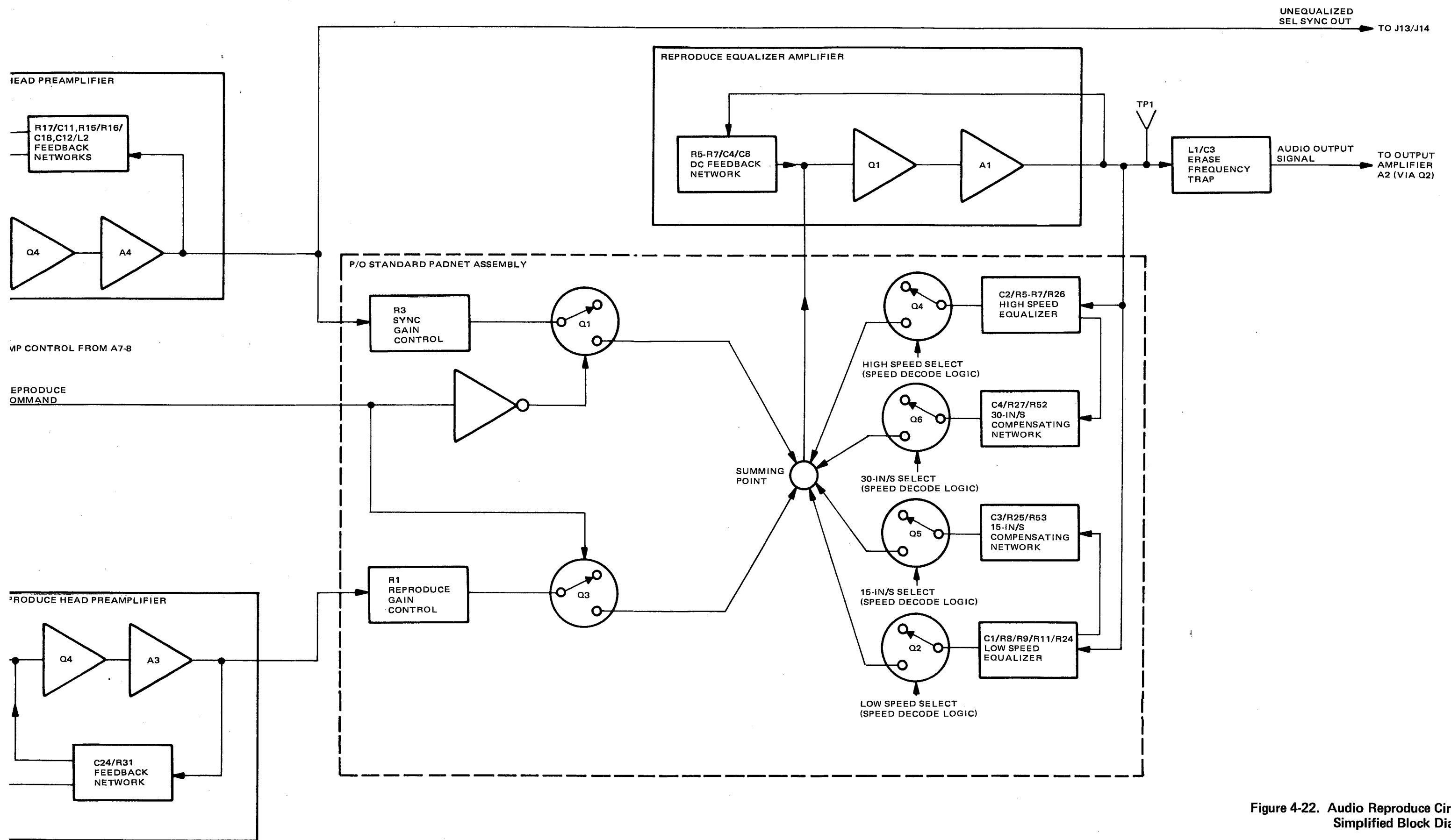
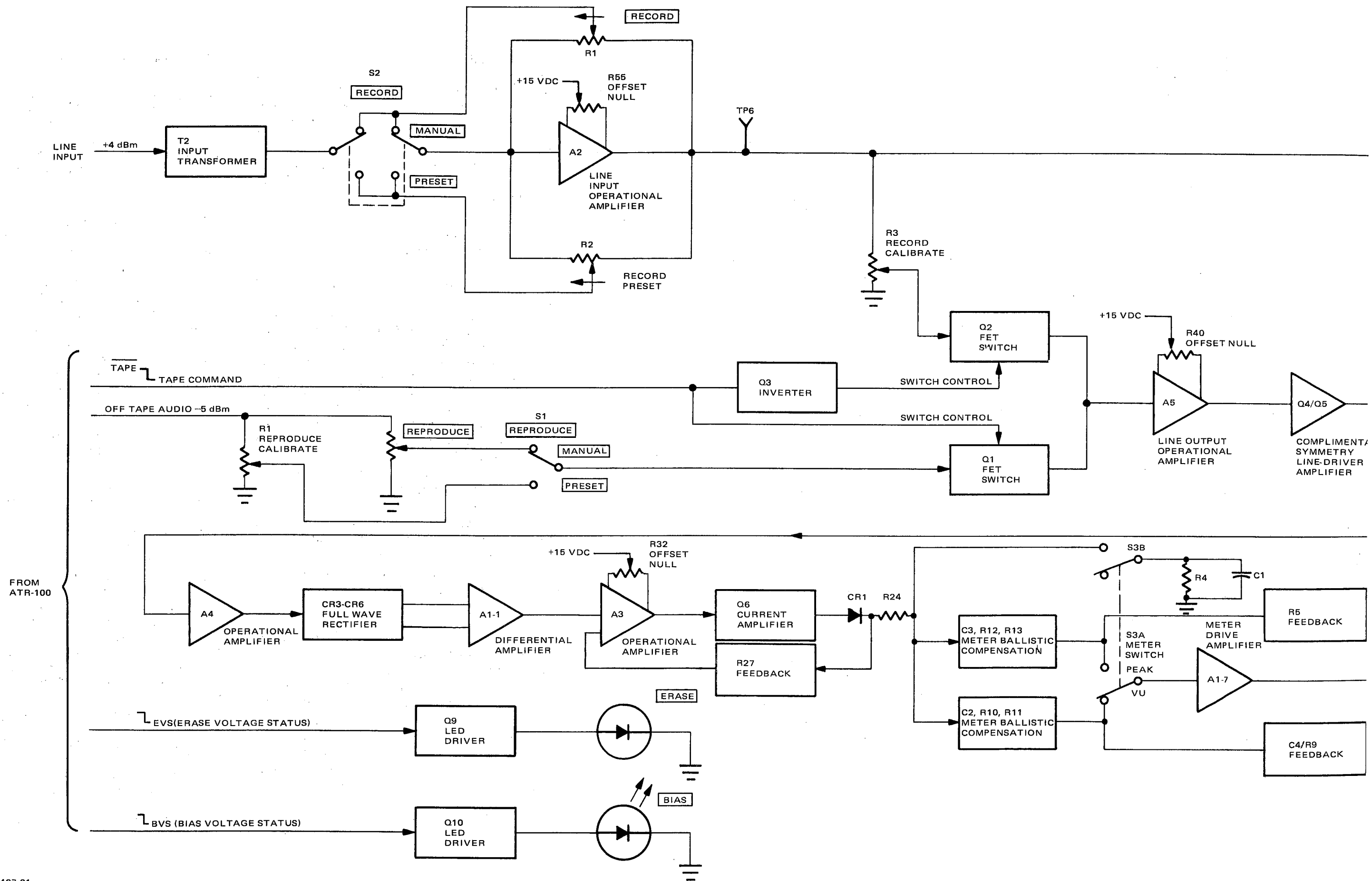


Figure 4-22. Audio Reproduce Circuits, Simplified Block Diagram



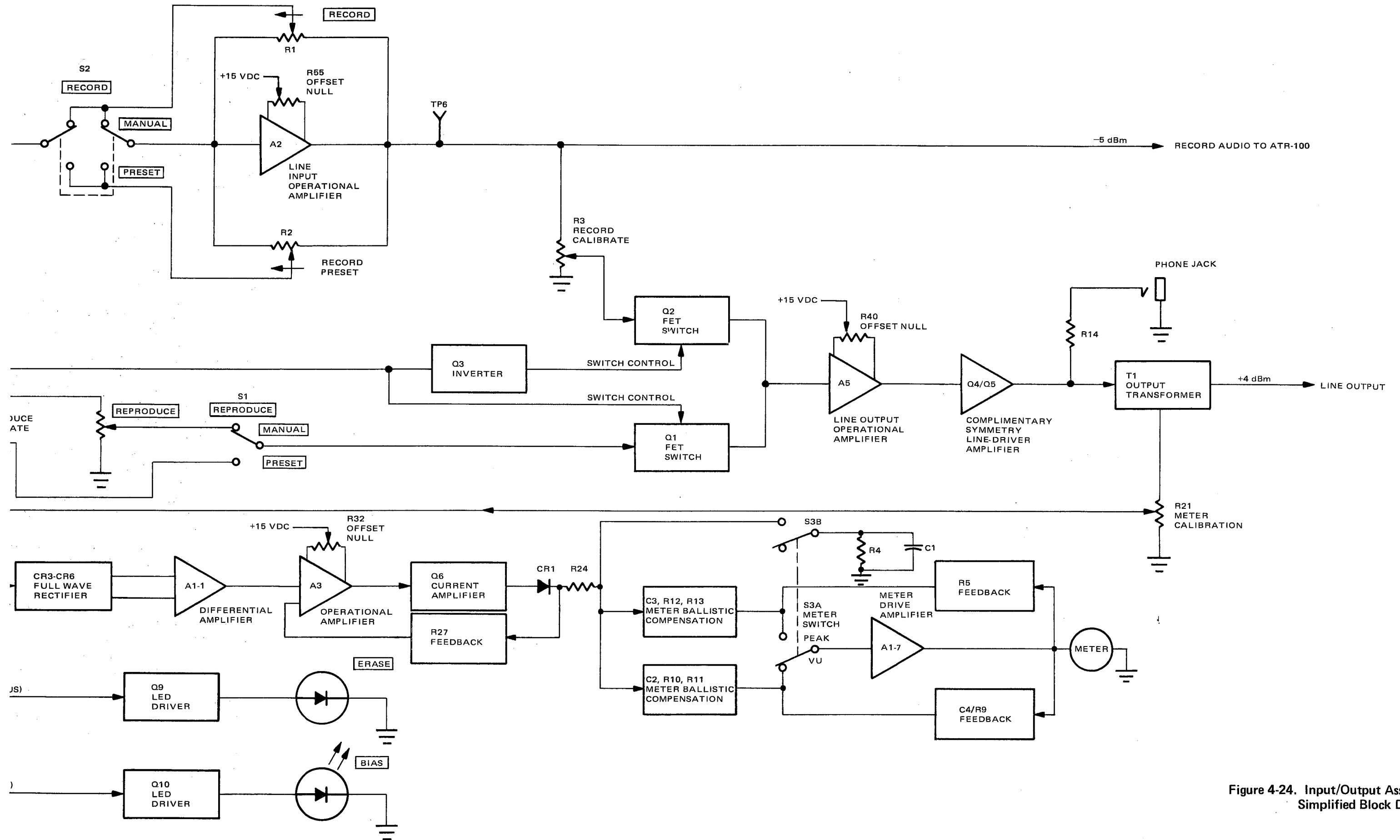


Figure 4-24. Input/Output Assembly, Simplified Block Diagram

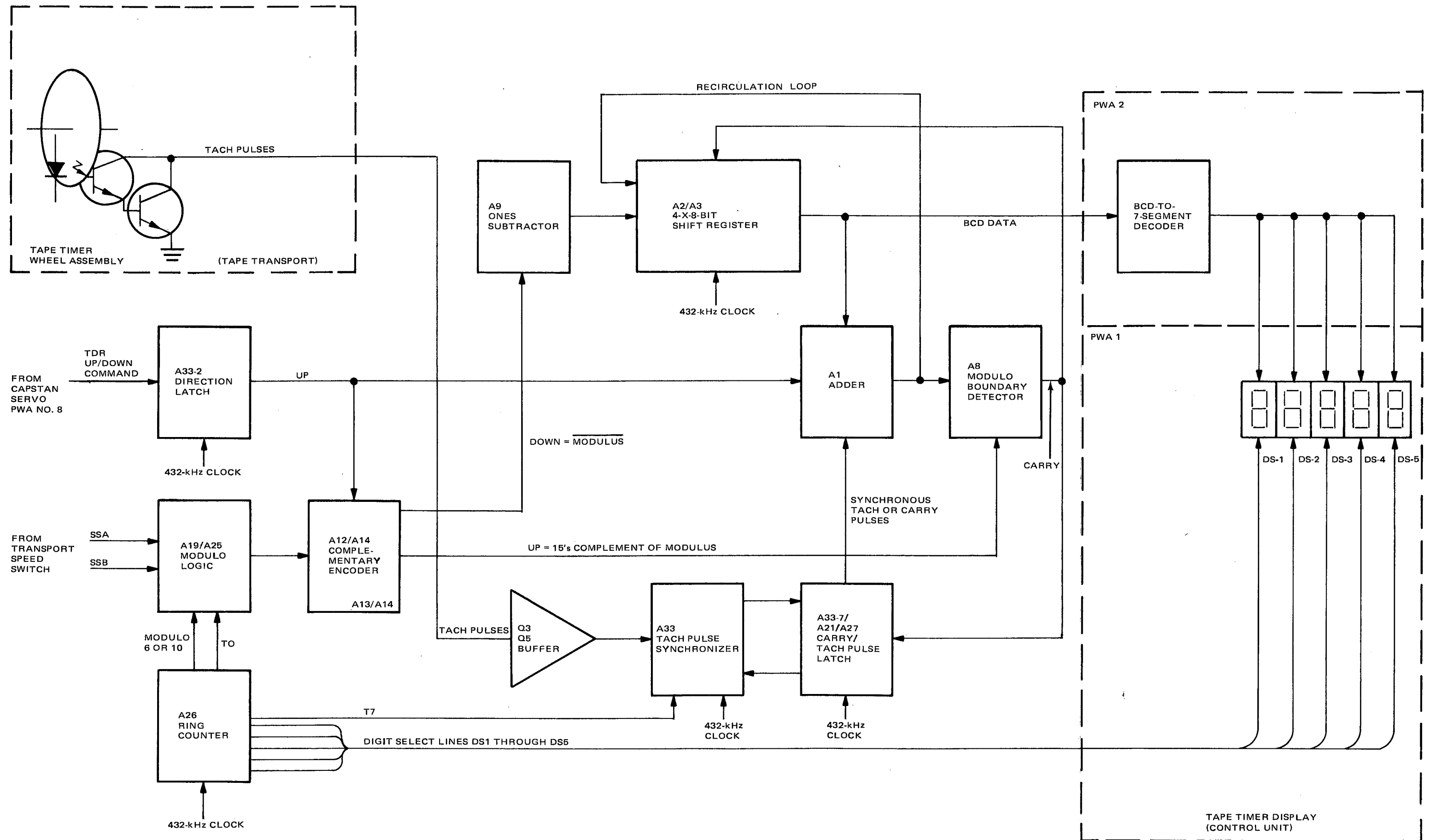


Figure 4-25. Tape Timer, Simplified Block Diagram

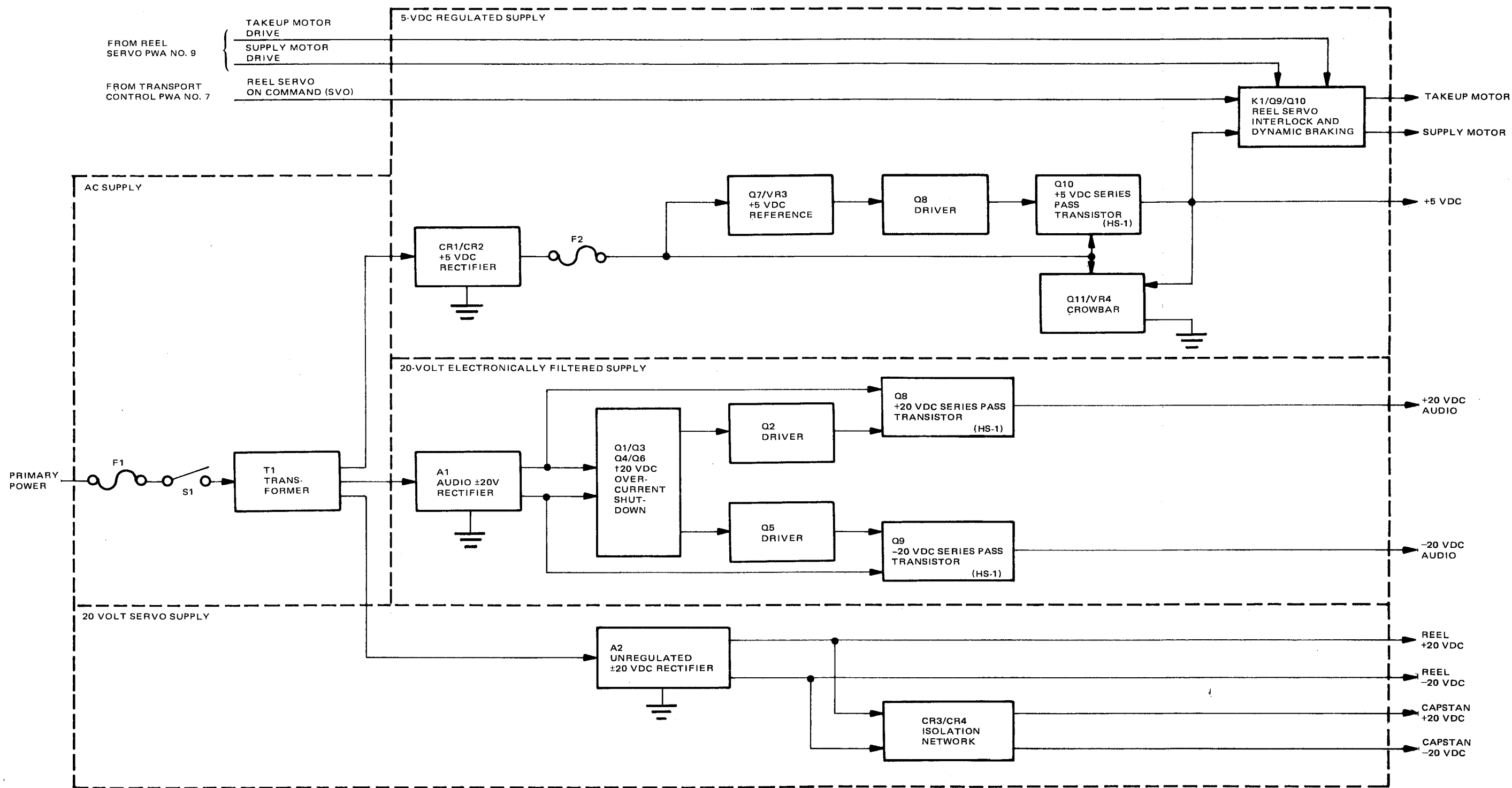


Figure 4-28. Power Supply Assembly, Simplified Block Diagram

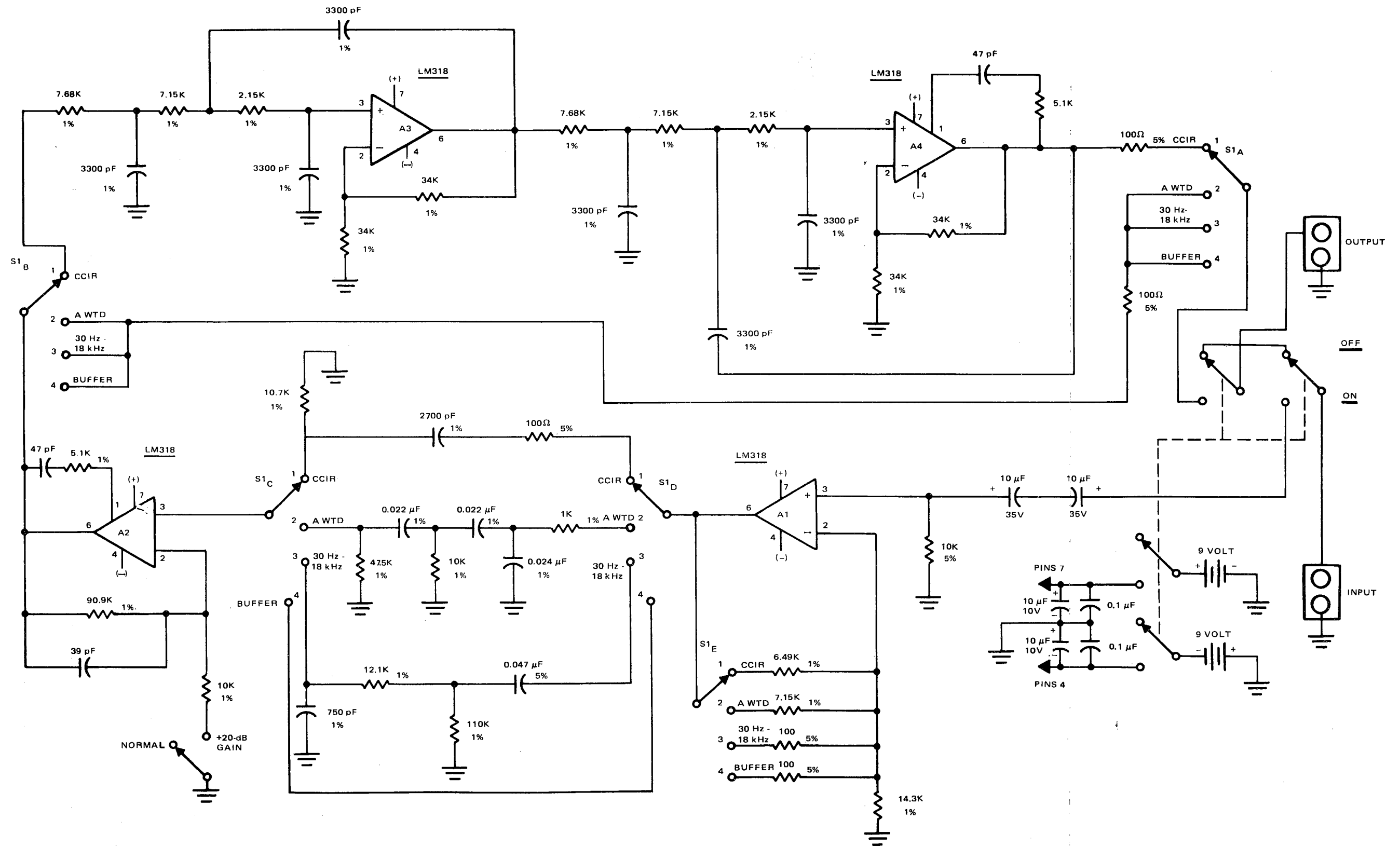


Figure 5-35. Universal Noise Filter Schematic

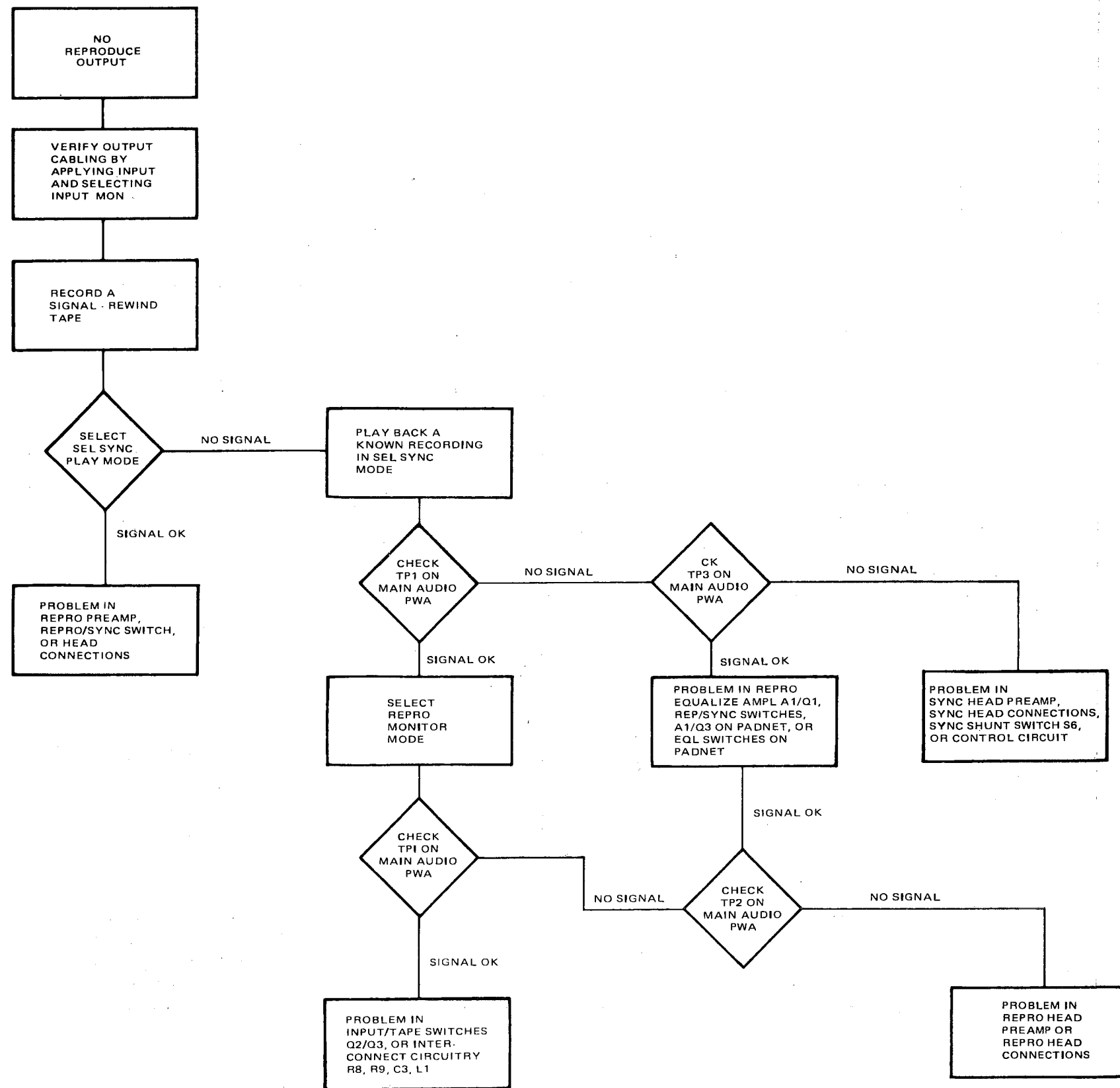


Figure 5-41. No Reproduce Output
 – Troubleshooting Flow Chart

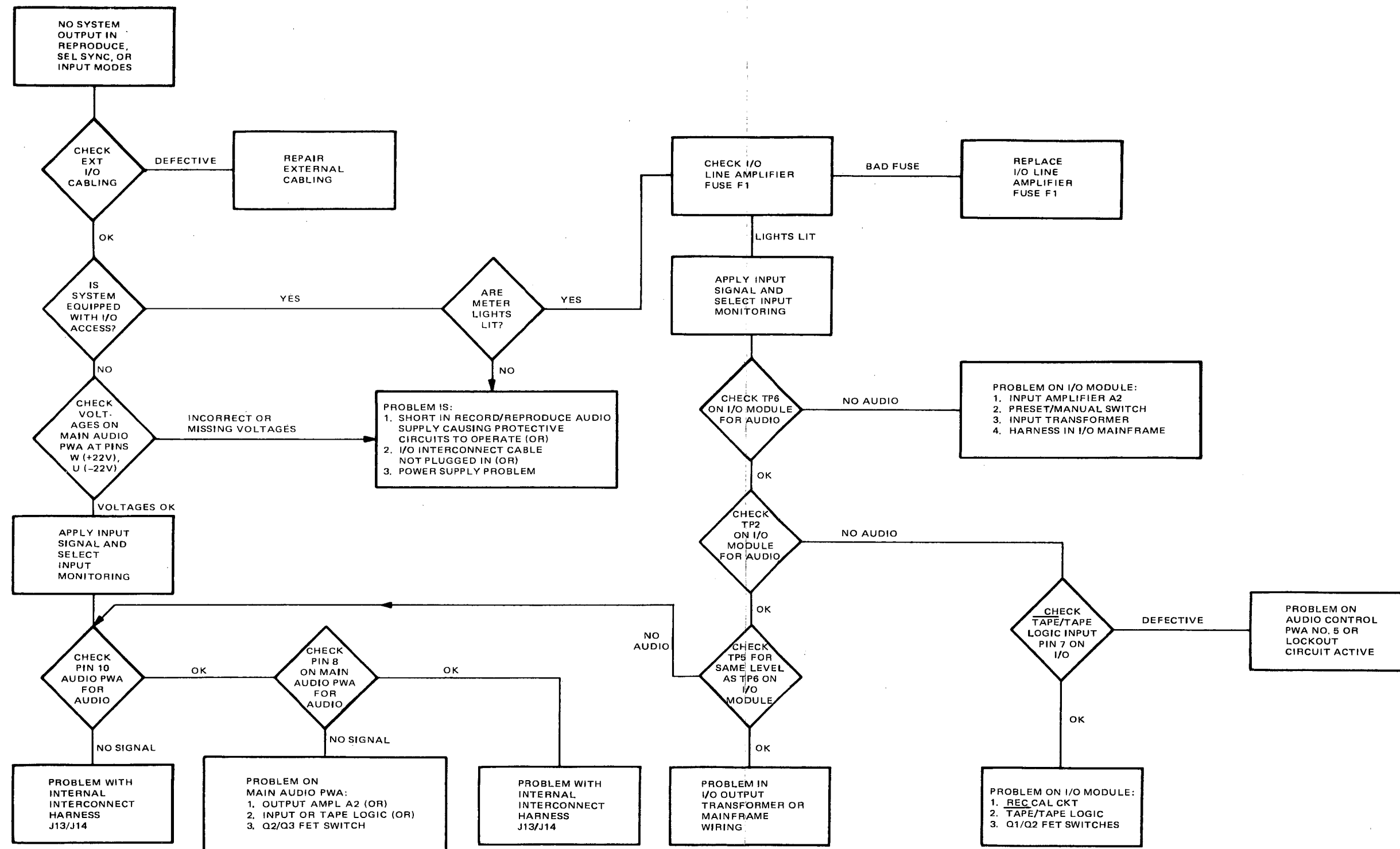


Figure 5-42. No System Output in Reproduce, Sel Sync, or Input Modes — Troubleshooting Flow Chart

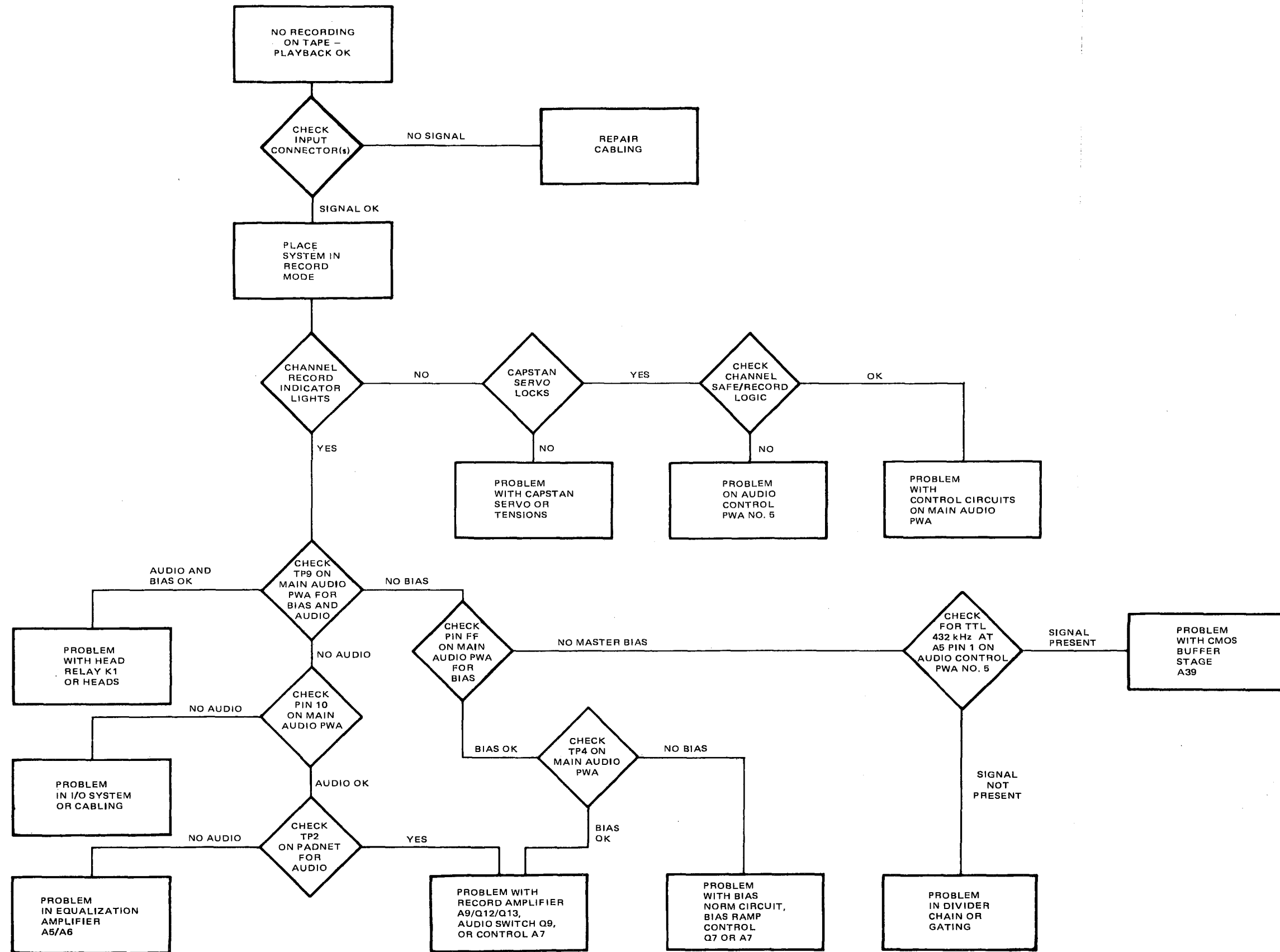


Figure 5-43. No Recording on Tape
- Troubleshooting Flow Chart

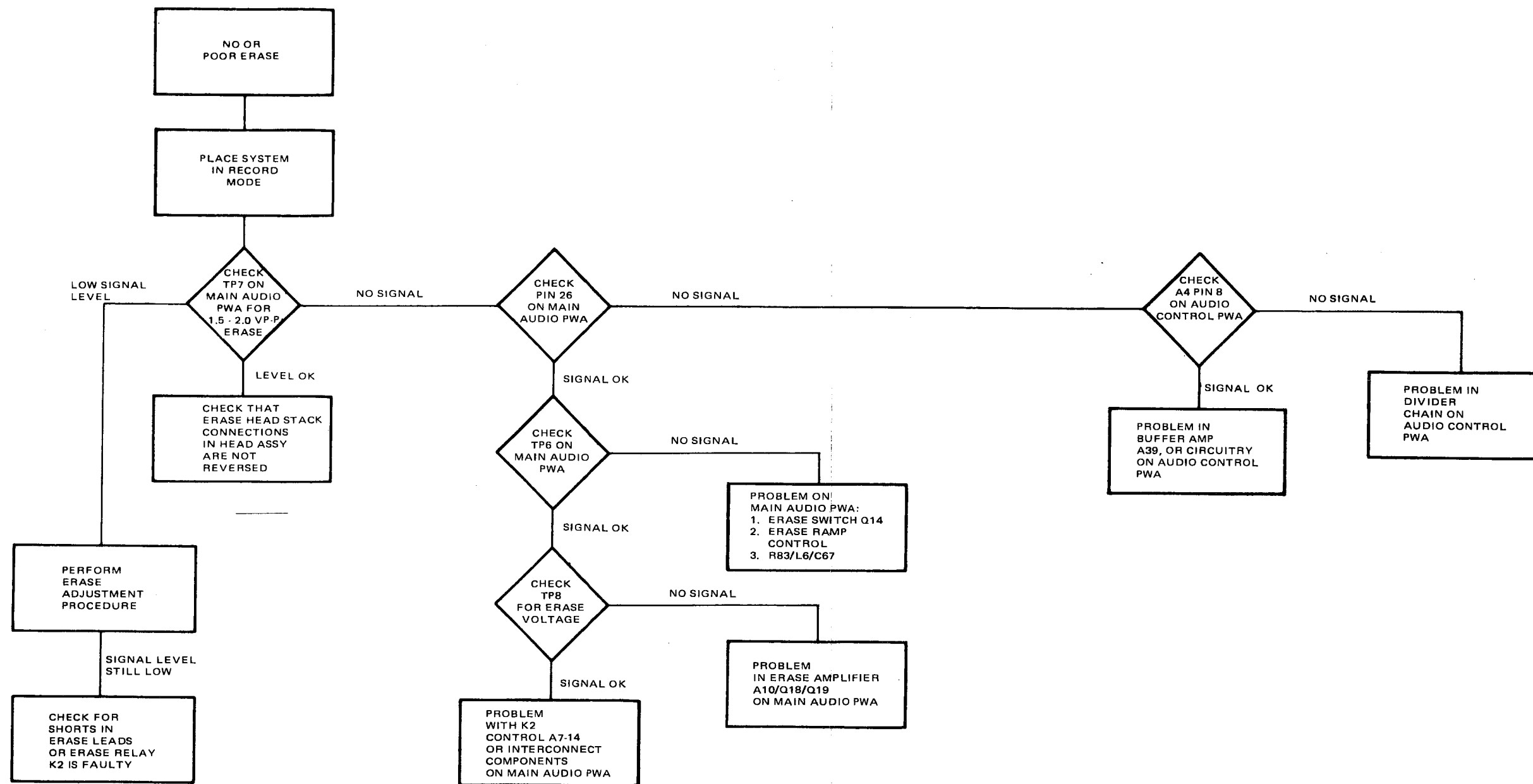
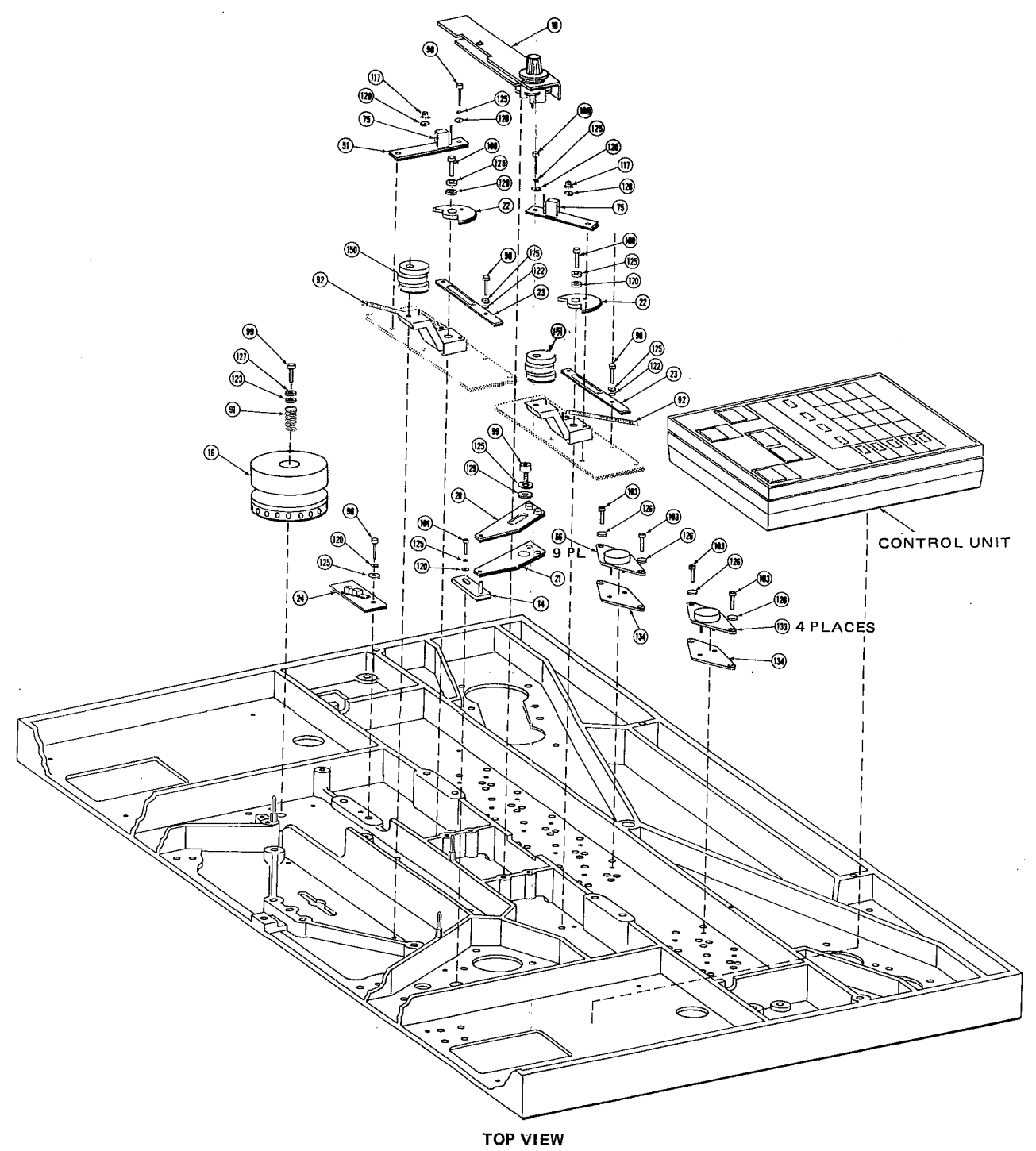
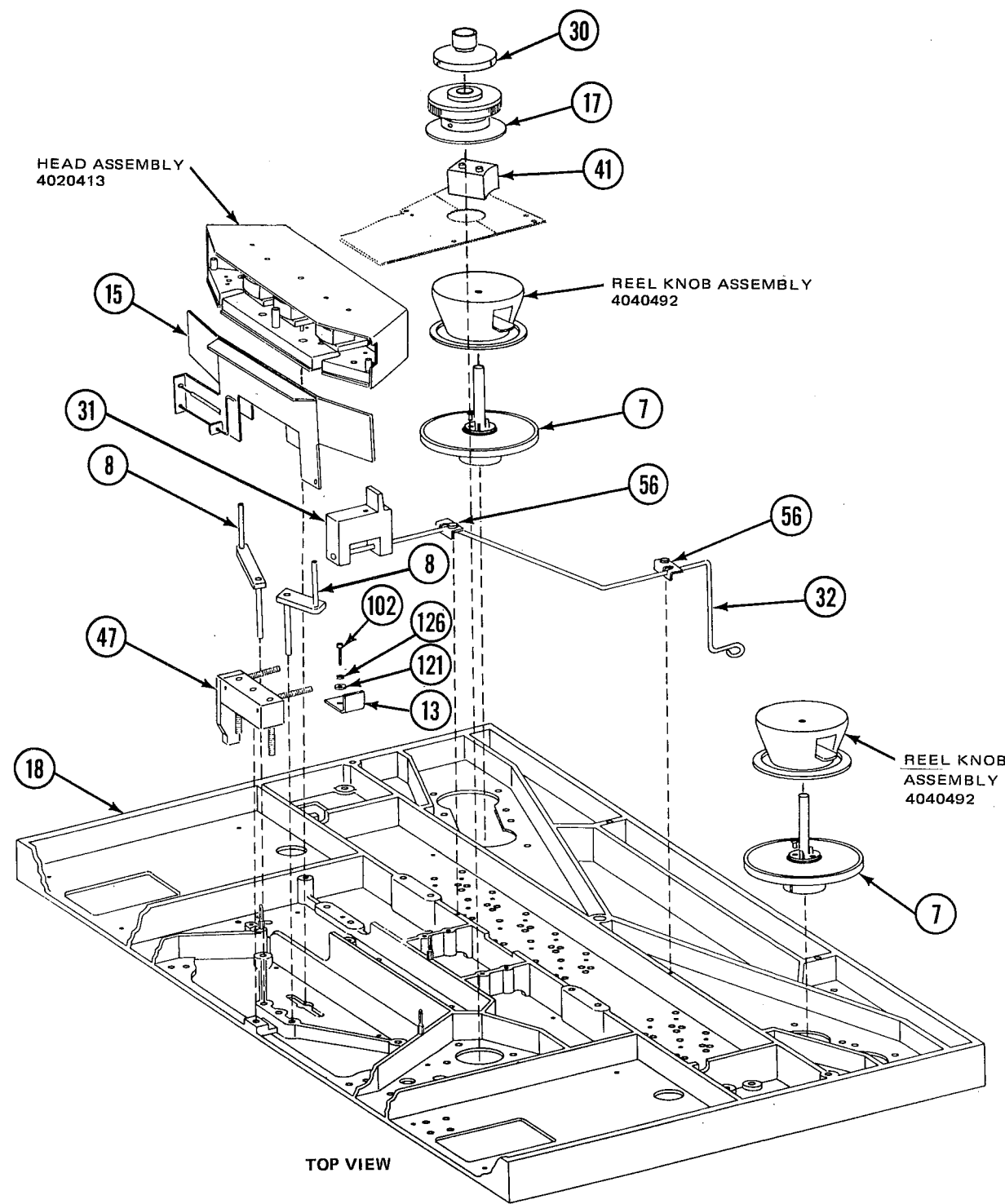
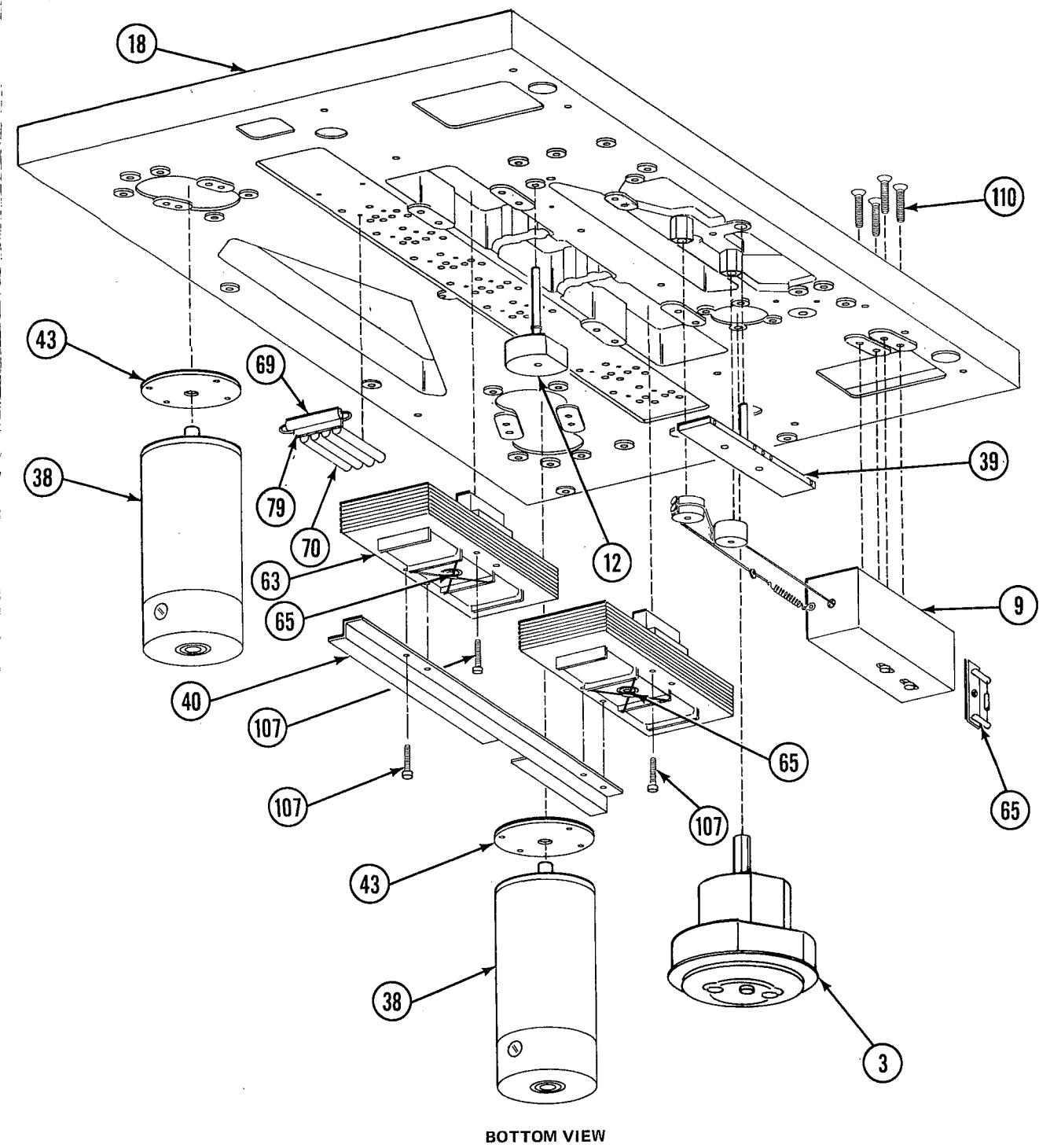
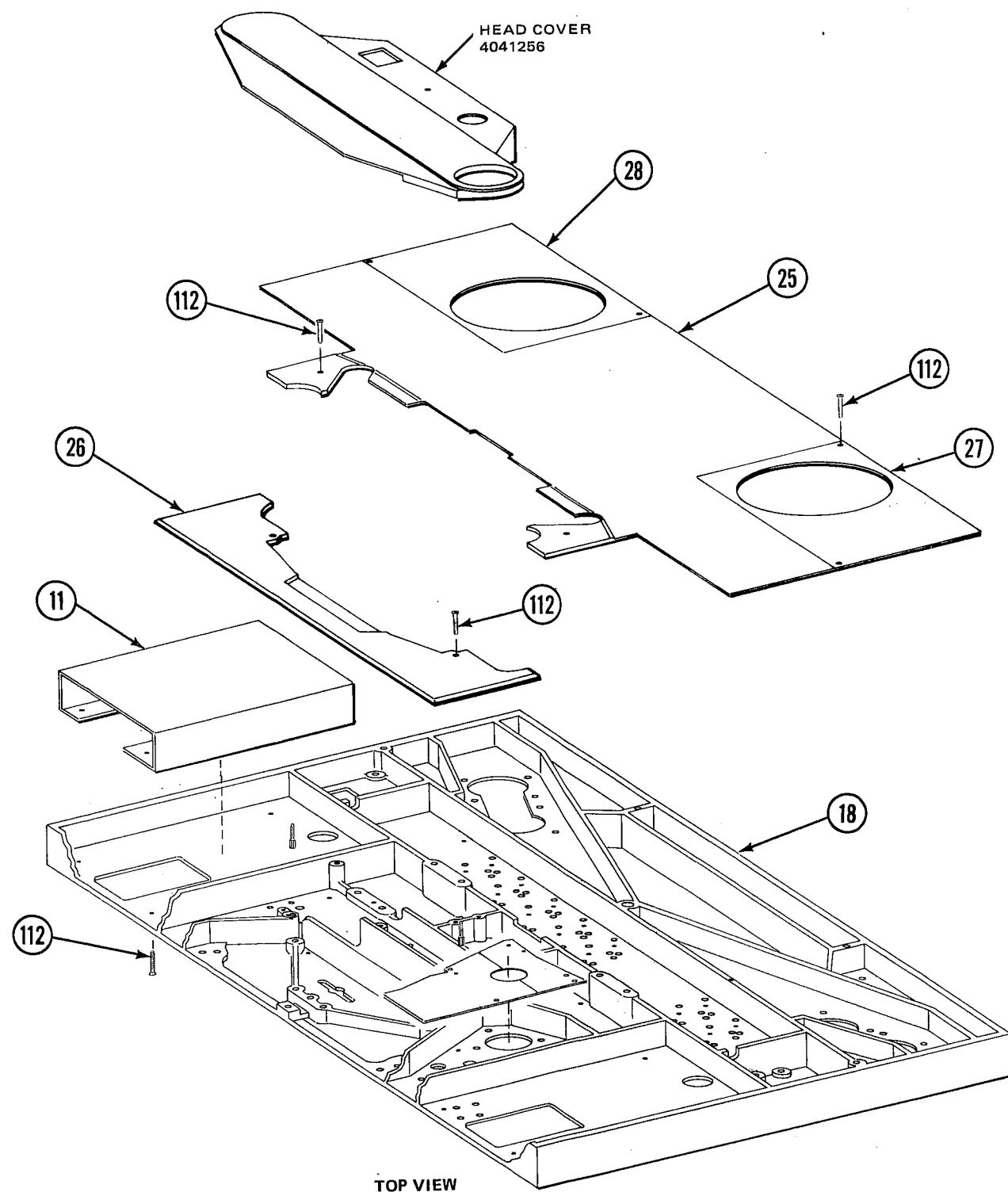


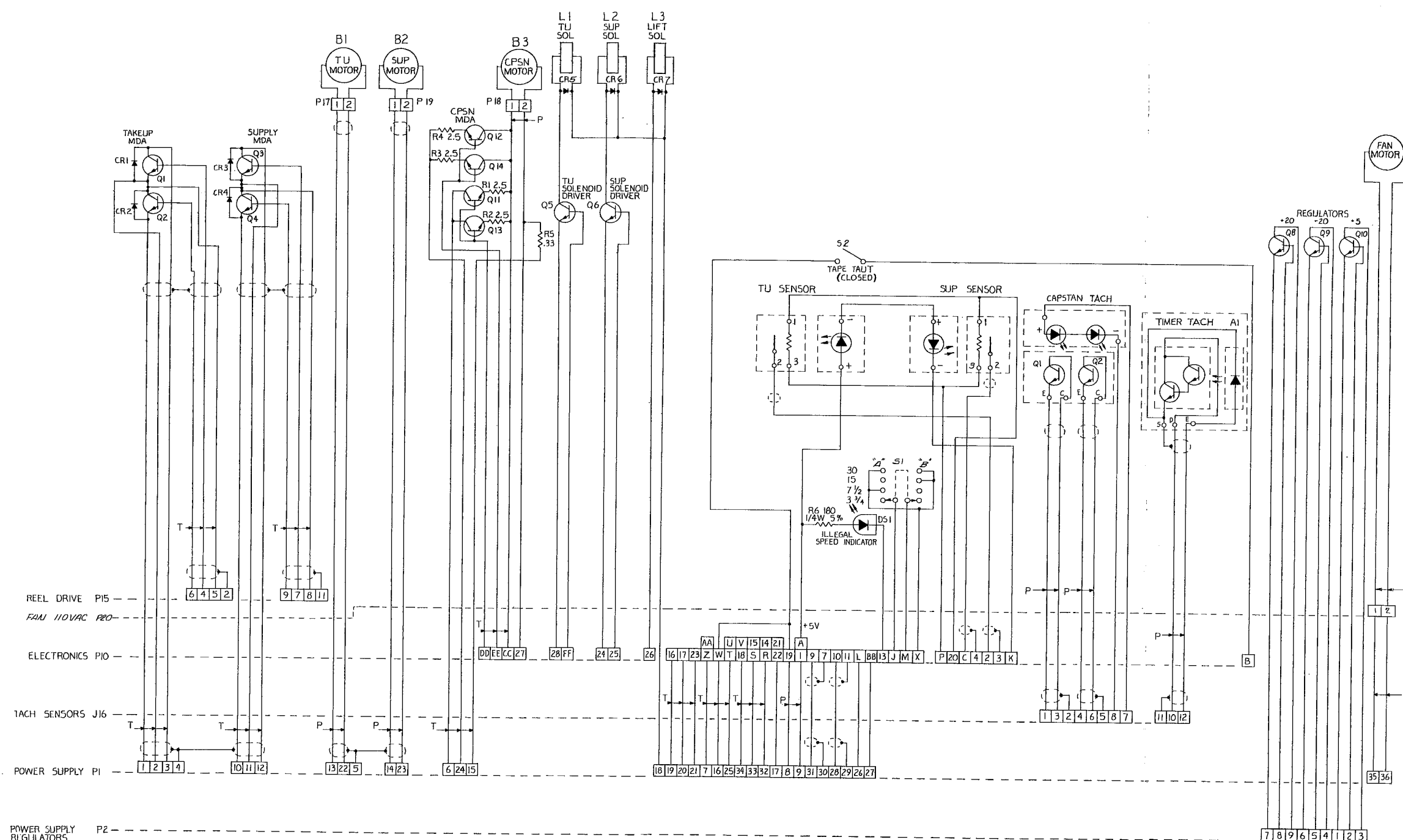
Figure 5-44. No or Poor Erase
— Troubleshooting Flow Chart



Assembly No. 4020400
Transport Assembly
(Sheet 1 of 2)



Assembly No. 4020400
Transport Assembly
(Sheet 2 of 2)

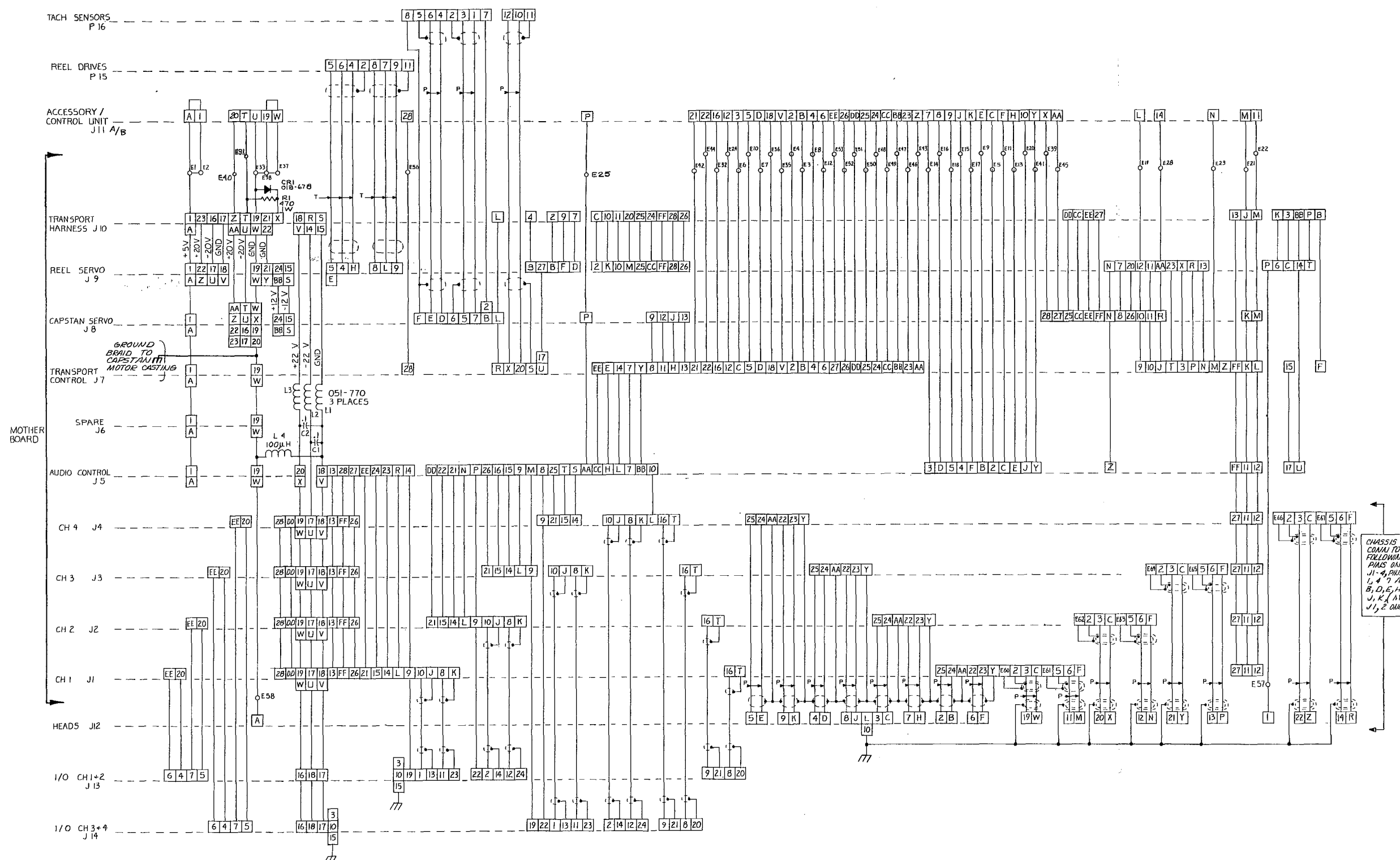


NOTES: UNLESS OTHERWISE SPECIFIED
 1. RESISTANCE VALUES ARE IN OHMS 10W, 1%.

FIELD SERVICE COMPONENT SUBSTITUTION		
REF DES.	AMPEX P/N	NEAREST COML EQUIV
Q1, Q2, Q3, Q4	580 - 781	2N6254
Q5, Q6, Q8, Q9, Q10, Q11, Q12, Q13, Q14	014 - 630	2N3055
CR5, CR6, CR7	013 - 678	1N4005
CR1, CR2, CR3, CR4	013 - 878	1N4935

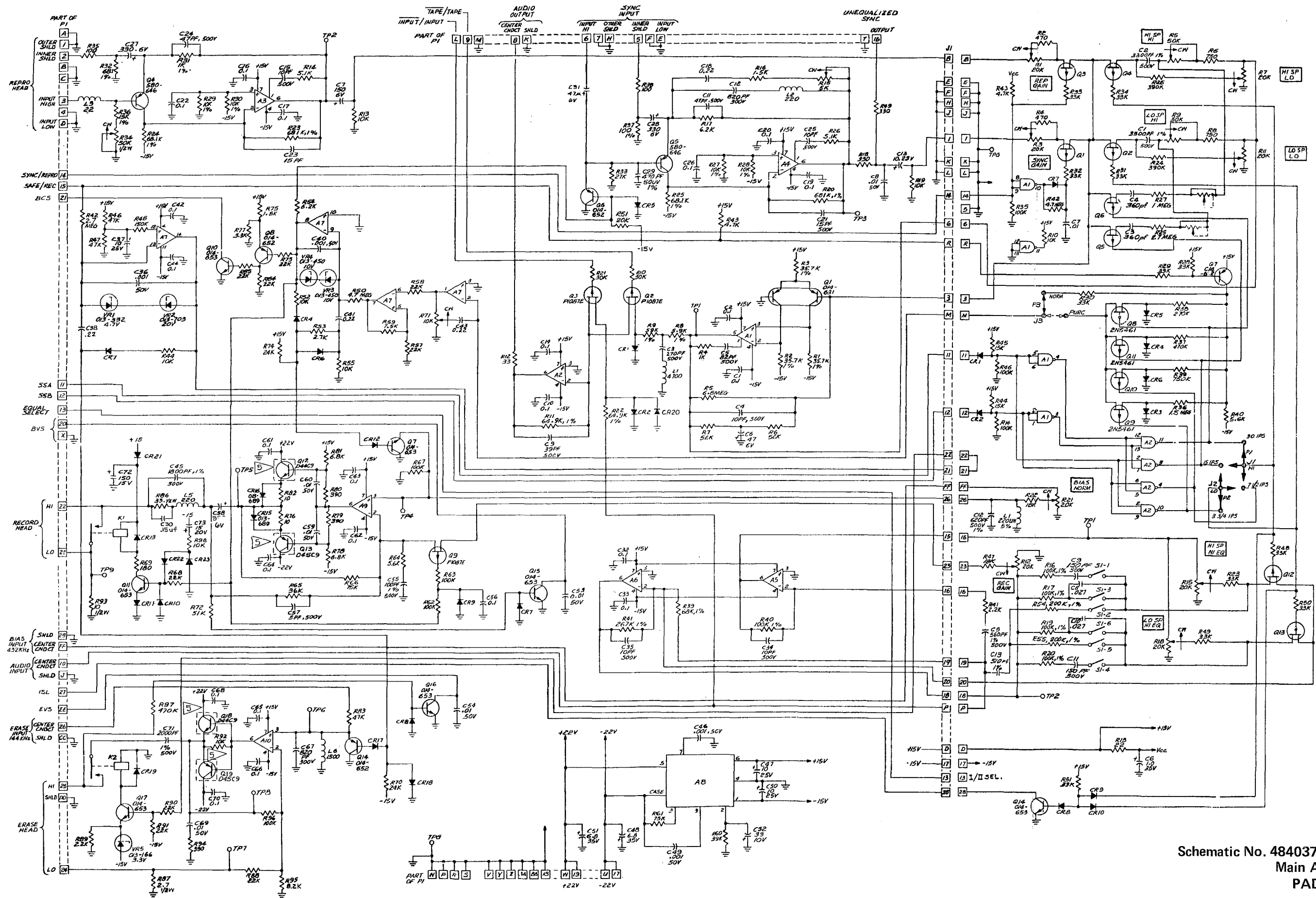
REFERENCE DESIGNATION	
LAST USED	NOT USED
R6	
DS1	
CR7	Q7
Q14	
S1	

Schematic No. 4840423B.
 Transport Interconnect Diagram

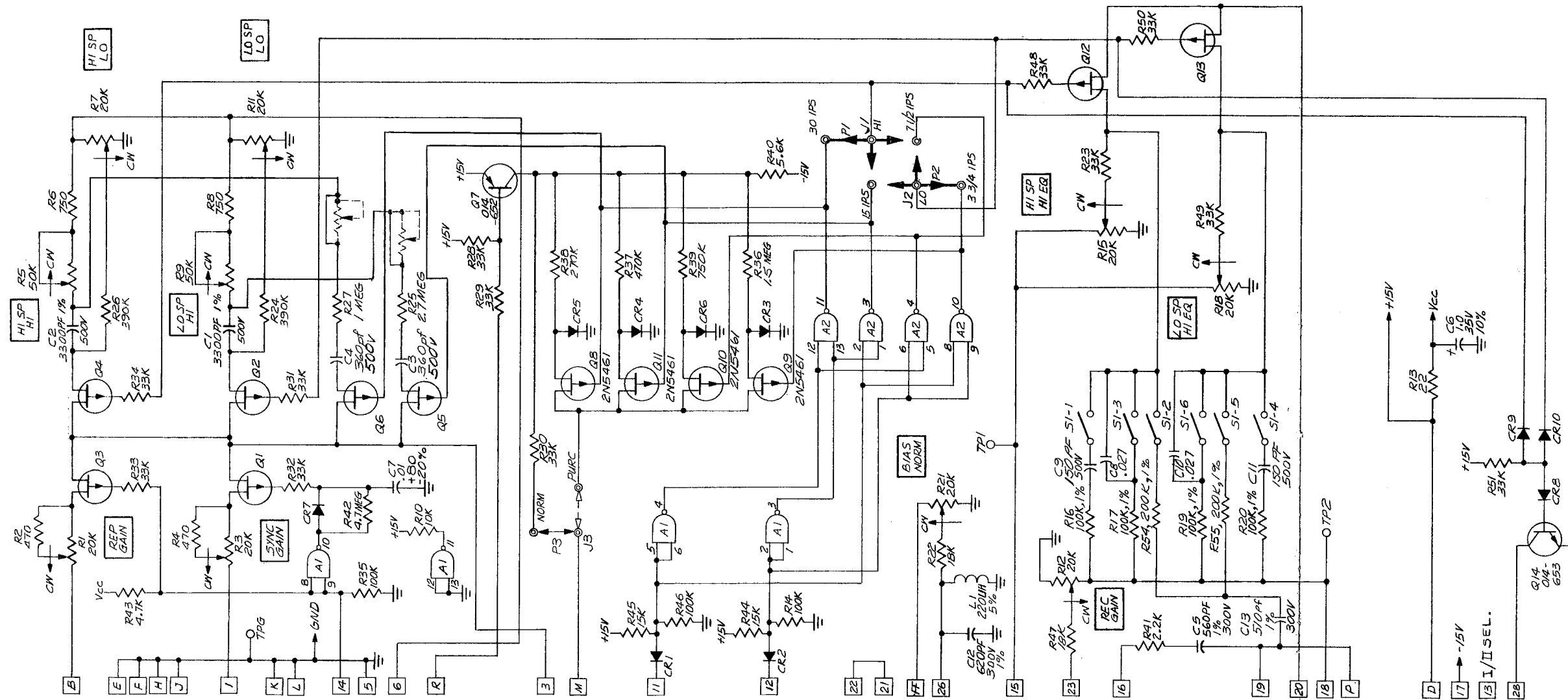


NOTES:

Schematic No.4840422C.
Electronics Wiring Diagram



Schematic No. 4840378/4840379
Main Audio PWA,
PADNET PWA



NOTES: UNLESS OTHERWISE SPECIFIED

- CAPACITANCE VALUES ARE IN MICROFARADS, 50V, 5%.
- DIODES ARE AMPEX P/N 013-599
- RESISTANCE VALUES ARE IN OHMS, 1/4W, 5%.
- TRANSISTORS ARE TYPE 10B7E
- INTEGRATED CIRCUITS ARE TYPE 4011, PIN 14 TO Vcc, PIN 7 TO GROUND.

6. FIELD SERVICE COMPONENT SUBSTITUTION LIST

AMPEX P/N	NEAREST COMMERCIAL EQUIVALENT
014-652	2N3906
014-653	2N3904

- J1 & J2 SHOWN CONNECTED FOR 30 IPS HIGH SPEED AND 3 3/4 IPS LOW SPEED.

SPEED SELECT JUMPER CHART

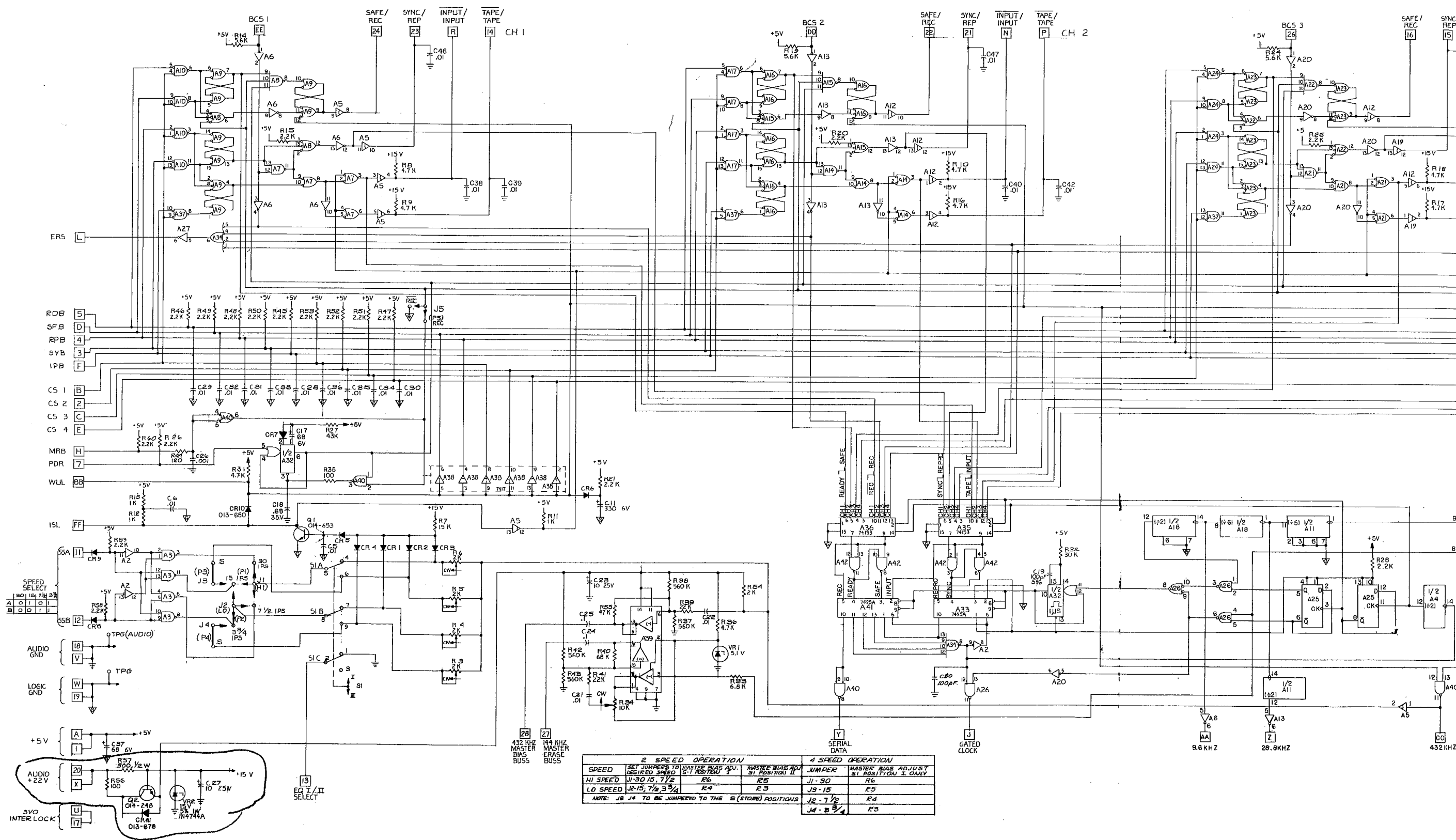
HI SPEED	LO SPEED
J1 - 30 IPS	J2 - 15 IPS
J1 - 15 IPS	J2 - 7 1/2 IPS
J1 - 7 1/2 IPS	J2 - 3 3/4 IPS

REFERENCE DESIGNATIONS

LAST USED	NOT USED
A2 C13 J9 Q14 R55 S1 TP2, TPG CR10	R58, 53

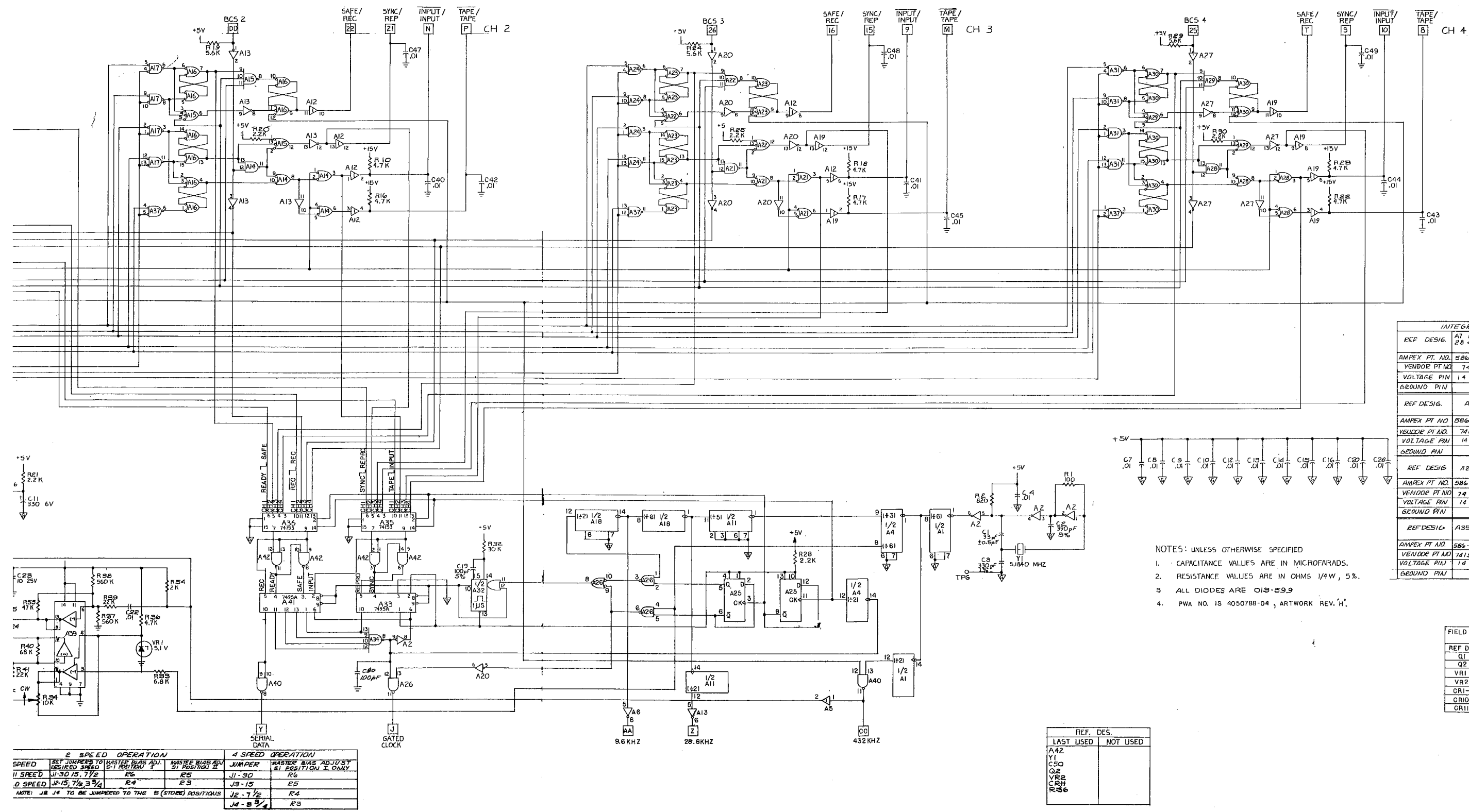
PRESET RECORD EQUALIZATION

PRESET	RECORD	EQUALIZATION
SI-1	SHELF DOWN	HI SPEED
SI-2	SHELF UP	
SI-3	3180 / ∞	
SI-4	SHELF DOWN	LO SPEED
SI-5	SHELF UP	
SI-6	3180 / ∞	



2 SPEED OPERATION				4 SPEED OPERATION			
SPEED	SET JUMPERS TO DESIRED SPEED	MASTER BIAS ADJ. POSITION I ONLY	MASTER BIAS ADJ. POSITION II	JUMPER	MASTER BIAS ADJUST POSITION I ONLY	POSITION II ONLY	
HI SPEED	J1-30 15, 7/2	R6	R5	J1-30	R5	R4	
LO SPEED	J2-15, 7/2 3 3/4	R4	R3	J9-15	R5	R4	
				J2-7 1/2	R4	R3	
				J4-8 3/4	R5	R4	

NOTE: J8-14 TO BE JUMPED TO THE S (STORE) POSITION



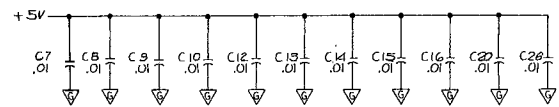
INTEGRATED CIRCUIT LIST

REF DESIG.	A1 14 21 26	A2 6 13 20 27	A3 12 19	A4 15 22 29
AMPEX PT. NO.	586-075	586-326	586-719	586-076
VENDOR PT. NO.	7400	7404	7407	7410
VOLTAGE PIN	14 (+5)	14 (+5)	14 (+5)	14 (+5)
GROUND PIN	7	7	7 (AUDIO)	7

REF DESIG.	A38	A34	A3	A10, 17, 24, 31, 37
AMPEX PT. NO.	586-890	586-077	587-549	586-918
VENDOR PT. NO.	7417	7420	7426	7432
VOLTAGE PIN	14 (+5)	14 (+5)	14 (+5)	14 (+5)
GROUND PIN	7	7	7 (AUDIO)	7

REF DESIG.	A25	A11	A1, 4, 18	A33, 41
AMPEX PT. NO.	586-108	586-248	587-084	586-785
VENDOR PT. NO.	7474	7490	7492	7495
VOLTAGE PIN	14 (+5)	14 (+5)	14 (+5)	14 (+5)
GROUND PIN	7	7	7	7

REF DESIG.	A35, 36	A9, 16, 23, 30	A32	A39
AMPEX PT. NO.	586-948	587-266	587-144	587-447
VENDOR PT. NO.	74153	74279	9602	MC14007
VOLTAGE PIN	14 (+5)	14 (+5)	14 (+5)	11A (+15)
GROUND PIN	7	7	7	4, 7, 9 (AUDIO)



- NOTES: UNLESS OTHERWISE SPECIFIED
- CAPACITANCE VALUES ARE IN MICROFARADS.
 - RESISTANCE VALUES ARE IN OHMS 1/4W, 5%.
 - ALL DIODES ARE 01S-599
 - PWA NO. IS 4050789-04, ARTWORK REV. H.

FIELD SERVICE COMPONENT SUBSTITUTION LIST

REF DESIG.	AMPEX P/N	COMM. EQUIV.
Q1	014-653	2N3094
Q2	014-248	2N2222
VR1	013-358	1N751A
VR2	581-290	1N4744A
CR1-9	013-599	1N4153
CR10	013-650	1N270
CR11	013-678	1N4005

2 SPEED OPERATION

SPEED	SET JUMPERS TO MASTER BIAS ADJ. DESIRED SPEED 5-1 REV. 1	MASTER BIAS ADJ. S1 POSITION II
11 SPEED	J1-30, 15, 7 1/2	R2
0 SPEED	J2-15, 7 1/2, 3 1/4	R4

4 SPEED OPERATION

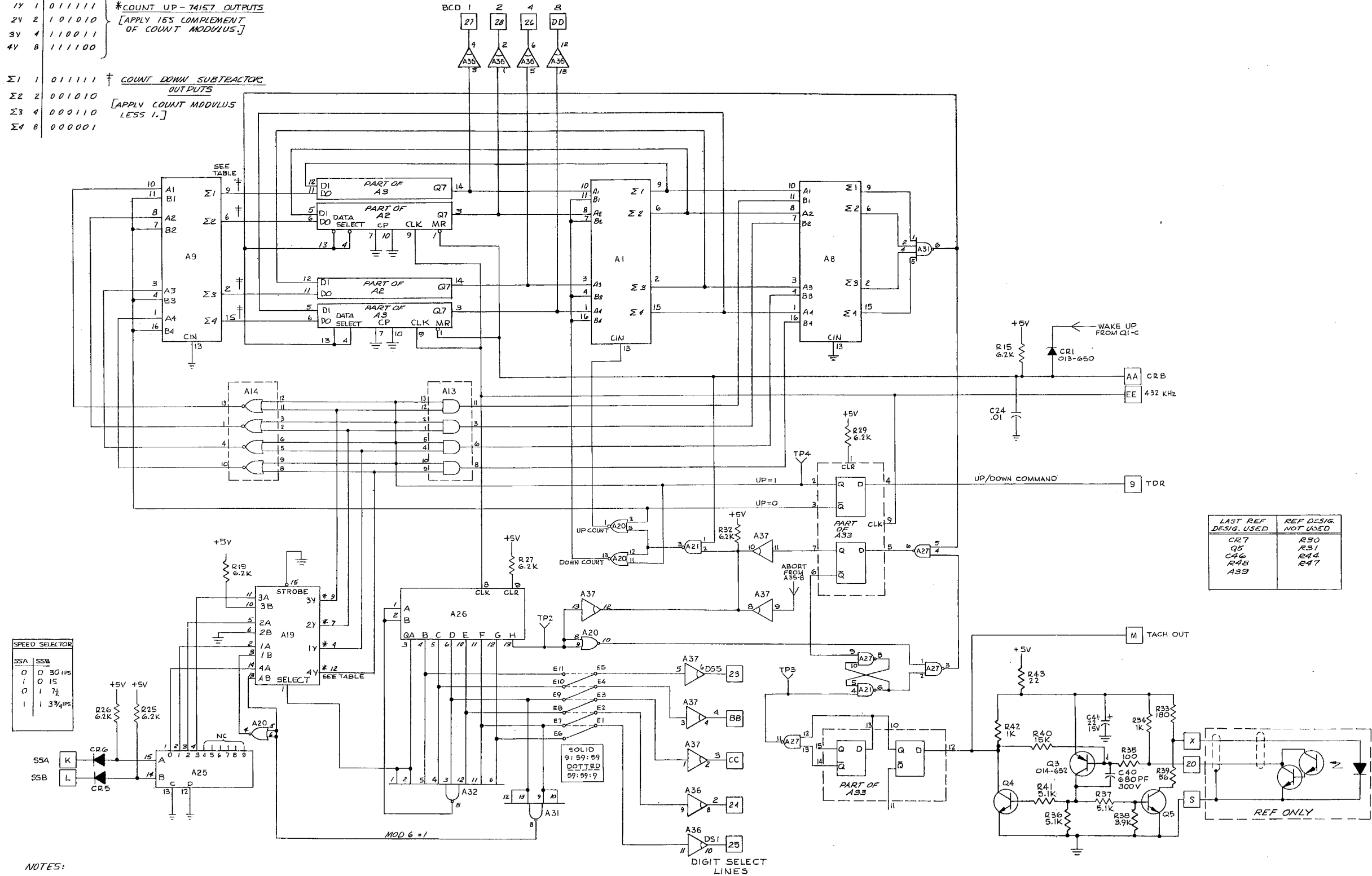
JUMPER	MASTER BIAS ADJ. S1 POSITION I ONLY
J1-90	R6
J3-15	R5
J2-7 1/2	R4
J4-5 1/4	R3

NOTE: J3 & J4 TO BE JUMPED TO THE S (STORE) POSITIONS

REF. DES.	
LAST USED	NOT USED
A42	
Y1	
C50	
Q2	
VR2	
CR9	
R36	

Schematic No. 4840398E.
Audio Control PWA

WEIGHT	MOD 1	MOD 2	MOD 4	MOD 8	MOD 10
1Y 1	0	1	1	1	1
2Y 2	1	0	1	0	1
3Y 4	1	1	0	0	1
4Y 8	1	1	1	1	0
*COUNT UP - TAIST OUTPUTS [APPLY 1'S COMPLEMENT OF COUNT MODULUS.]					
Σ 1	0	1	1	1	1
Σ 2	0	0	1	0	1
Σ 3	0	0	0	1	1
Σ 4	0	0	0	0	1
† COUNT DOWN SUBTRACTOR OUTPUTS [APPLY COUNT MODULUS LESS 1.]					



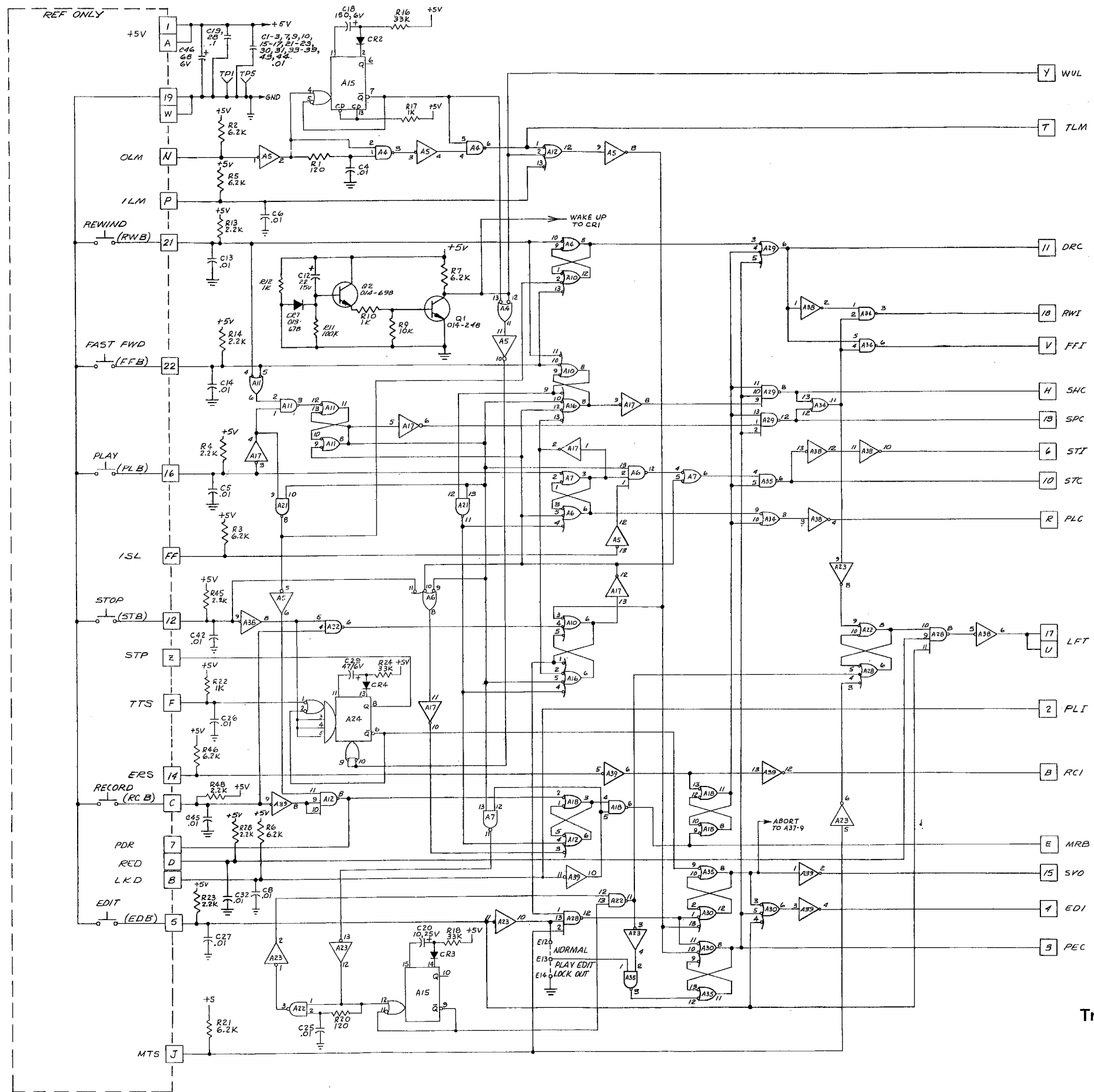
LAST DESIG. USED	REF DESIG. NOT USED
CR7	R30
Q5	R31
A16	R44
R48	R47
A39	

- NOTES:
- UNLESS OTHERWISE SPECIFIED:
1. ALL RESISTOR VALUES ARE IN OHMS, 1/4W, 5%.
 2. ALL CAPACITOR VALUES ARE IN MICROFARADS, 50V.
 3. ALL DIODES ARE 013-599.
 4. ALL TRANSISTORS ARE 014-653.

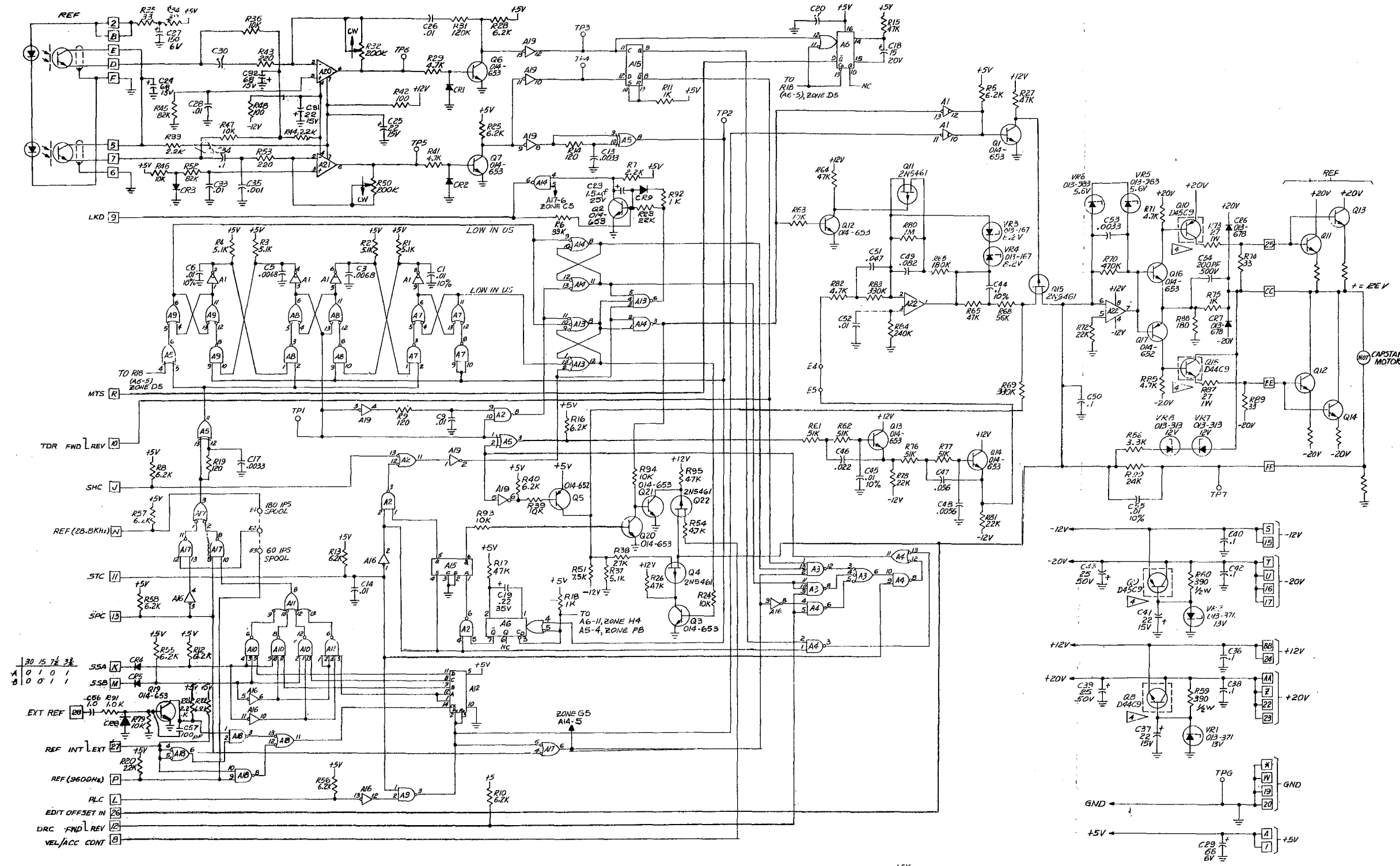
REFERENCE DESIGNATION	A4, 7, 11, 18, 21, 22, 27, 34, 35	A14, 20	A5, 17, 23, 38	A13	A6, 10, 12, 28, 29, 30	A36, 37	A16, 31	A32
AMPEX PART NO.	586-075	586-109	586-326	586-759	586-076	586-890	586-077	586-078
VENDOR PART NO.	7400	7402	7404	7408	7410	7417	7420	7430
VCC +5V PIN	14	14	14	14	14	14	14	14
GND PIN	7	7	7	7	7	7	7	7

REFERENCE DESIGNATION	A25	A26	A1, 8, 9	A19	A33	A2, 3	A24	A15
AMPEX PART NO.	586-423	586-450	586-554	586-903	586-925	586-303	587-416	587-144
VENDOR PART NO.	7442	74164	7483	74157	74175	9328	9600	9602
VCC +5V PIN	16	14	5	16	16	16	14	16
GND PIN	8	7	12	8	8	8	7	8

Schematic No. 4840397B.
Transport Logic Tape Timer
(Transport Control)
(Sheet 1 of 2)



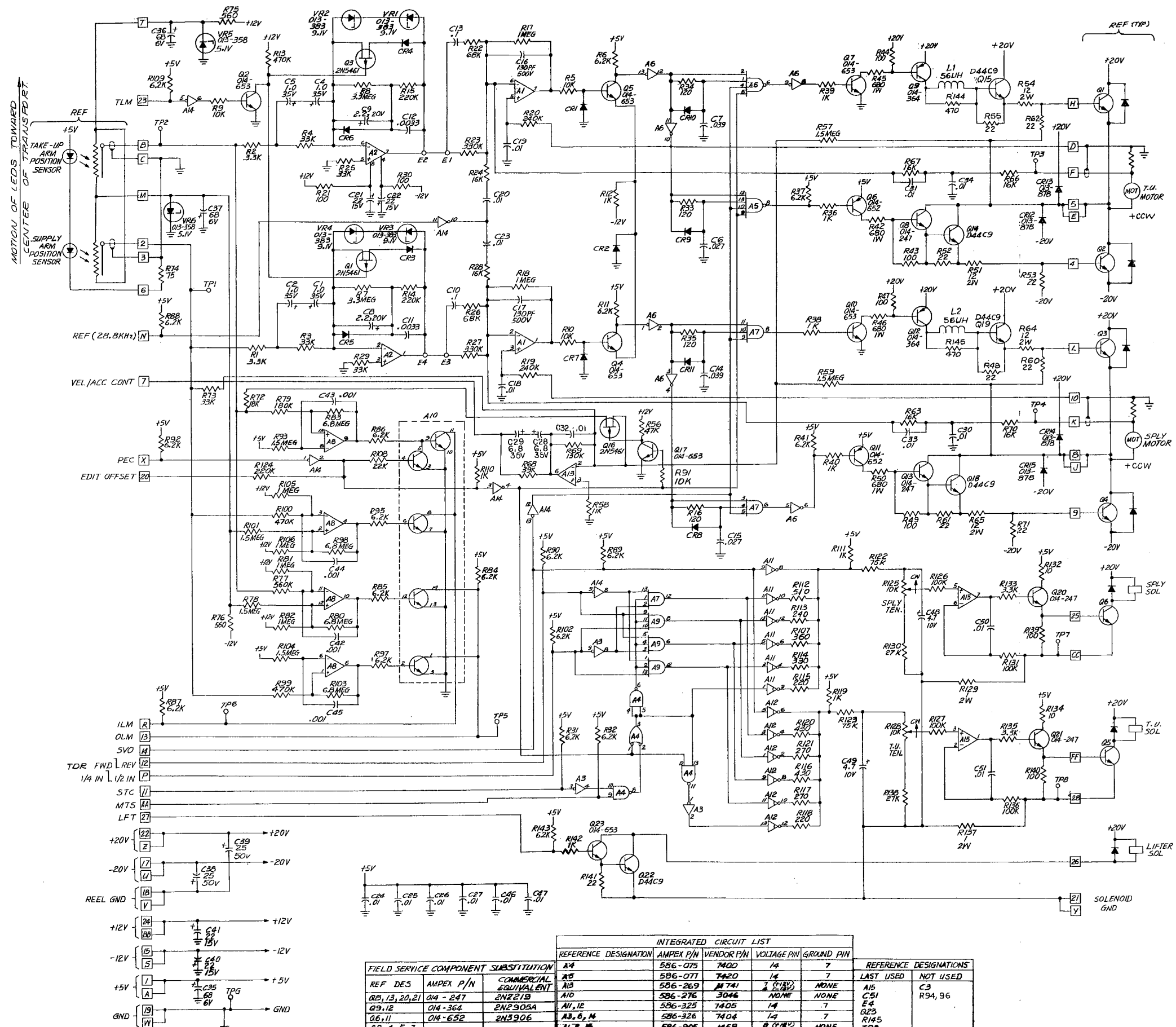
Schematic No. 4840397B.
 Transport Logic Tape Timer
 (Transport Control)
 (Sheet 2 of 2)



- NOTES, UNLESS OTHERWISE SPECIFIED
1. CAPACITANCE VALUES ARE IN MICROFARADS, 50V.
 2. DIODES ARE TYPE 013-599.
 3. RESISTANCE VALUES ARE IN OHMS, 1/4 W, 5%.
 4. THESE TRANSISTORS TO HAVE HEAT SINK.
 5. ALL LOGIC INPUT LEVELS ARE LOW TRUE.
 6. PWA IS 4950776-07, A/W REV "J"

REFERENCE DESIGNATION	AMPEX P/N	VENDOR P/N	VOLTAGE TYP 5V	GROUND PIN	REFERENCE DESIGNATIONS	LAST USED	NOT USED
A2, 4, 7, 8, 9, 14, 17, 18	586-075	7400	14	7			
A3, 10, 13	586-076	7410	14	7			
A11	586-077	7420	14	7			
A15	586-108	7474	14	7			
A20, 21	587-178	318A	4 (1.5V)	NONE	A22		
A12	586-283	7493	5	10	C57		
A1	586-325	7405	14	7	R95		
A16, 19	586-326	7404	14	7	CR9		
A5	586-705	7486	14	7	VR3		
A22	586-905	1458	4 (1.5V)	NONE	TP7		
A6	587-144	9602	16	8			

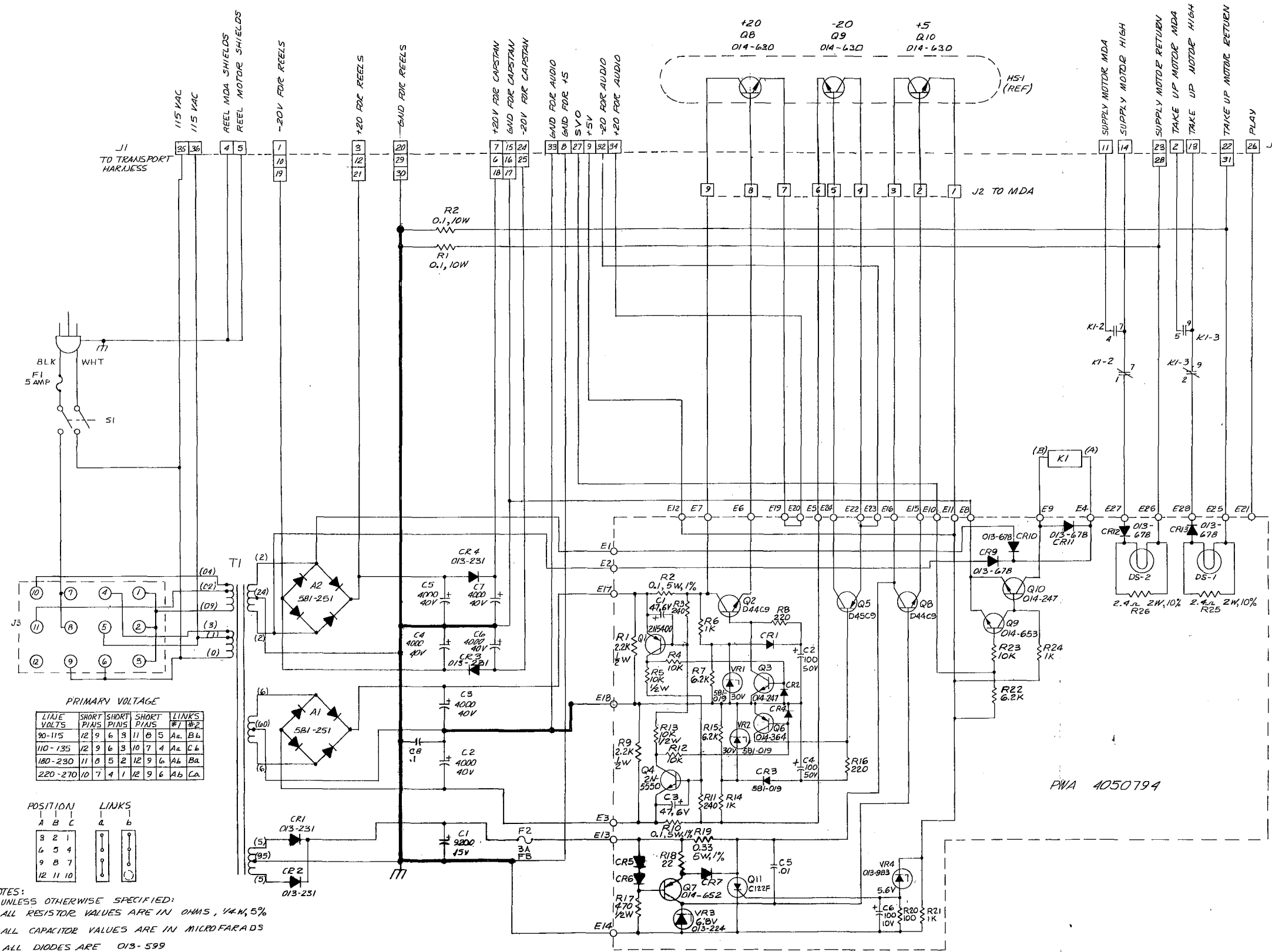
Schematic No. 4840390H.
Capstan Servo PWA



- NOTES: UNLESS OTHERWISE SPECIFIED
1. CAPACITANCE VALUES ARE IN MICROFARADS, 50V.
 2. DIODES ARE TYPE 013-599.
 3. RESISTANCE VALUES ARE IN OHMS, 1/4W, 5%.
 4. PWA IS 4850778-03 REV G.

INTEGRATED CIRCUIT LIST					
REFERENCE DESIGNATION	AMPEX P/N	VENDOR P/N	VOLTAGE PIN	GROUND PIN	
A4	586-075	7400	14	7	REFERENCE DESIGNATIONS
A5	586-071	7420	14	7	LAST USED
A3	586-269	M741	7 (14V)	NONE	C3
A10	586-276	3046	NONE	NONE	R94, 96
Q9, 13, 20, 21	014-247	2N2219	A1, 1E	7	E4
Q9, 12	014-364	2N2305A	A1, 1E	7	Q23
Q6, 11	014-652	2N3906	A3, 6, M	7	R145
Q2, 4, 5, 7, 10, 11, 23	014-653	2N3904	A1, 2, M	NONE	TP8
			A17, 9	7	CR15
			AB	7	VR6
					L2

Schematic No. 4840395F.
Reel Servo PWA



PRIMARY VOLTAGE

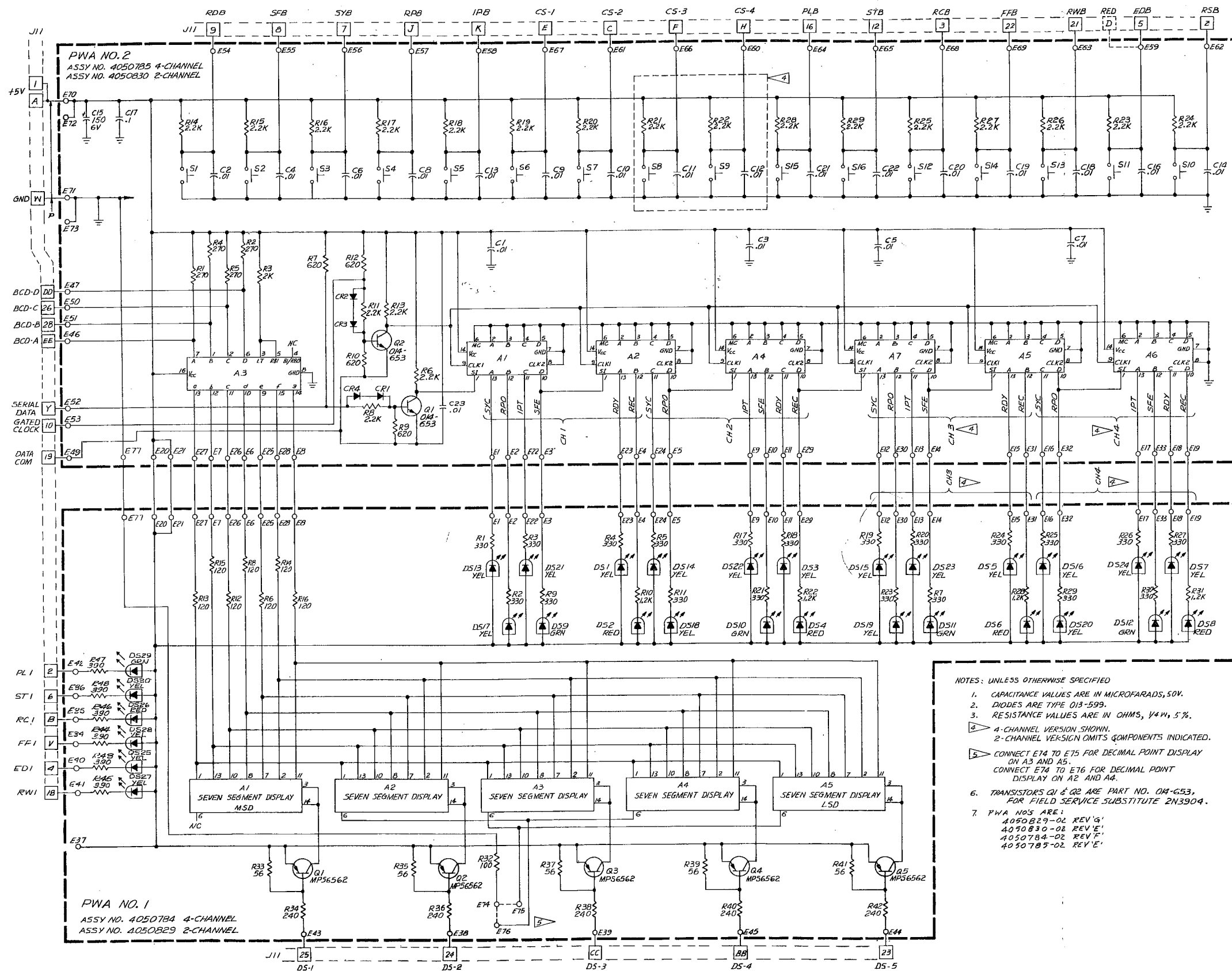
LINE VOLTS	SHORT PINS	SHORT PINS	SHORT PINS	LINKS #1 #2
90-115	12 9	6 3	11 8	5 Aa Bb
110-135	12 9	6 3	10 7	4 Aa Cb
180-230	11 8	5 2	12 9	6 Ab Ba
220-270	10 7	4 1	12 9	6 Ab Ca

POSITION LINKS

POSITION	LINKS
A B C	a b
8 2 1	
6 5 4	
9 8 7	
12 11 10	

- NOTES:
UNLESS OTHERWISE SPECIFIED:
1. ALL RESISTOR VALUES ARE IN OHMS, $\frac{1}{4}$ W, 5%
2. ALL CAPACITOR VALUES ARE IN MICROFARADS
3. ALL DIODES ARE 013-599

Schematic No. 4840412D.
Power Supply and Dynamic Brakes



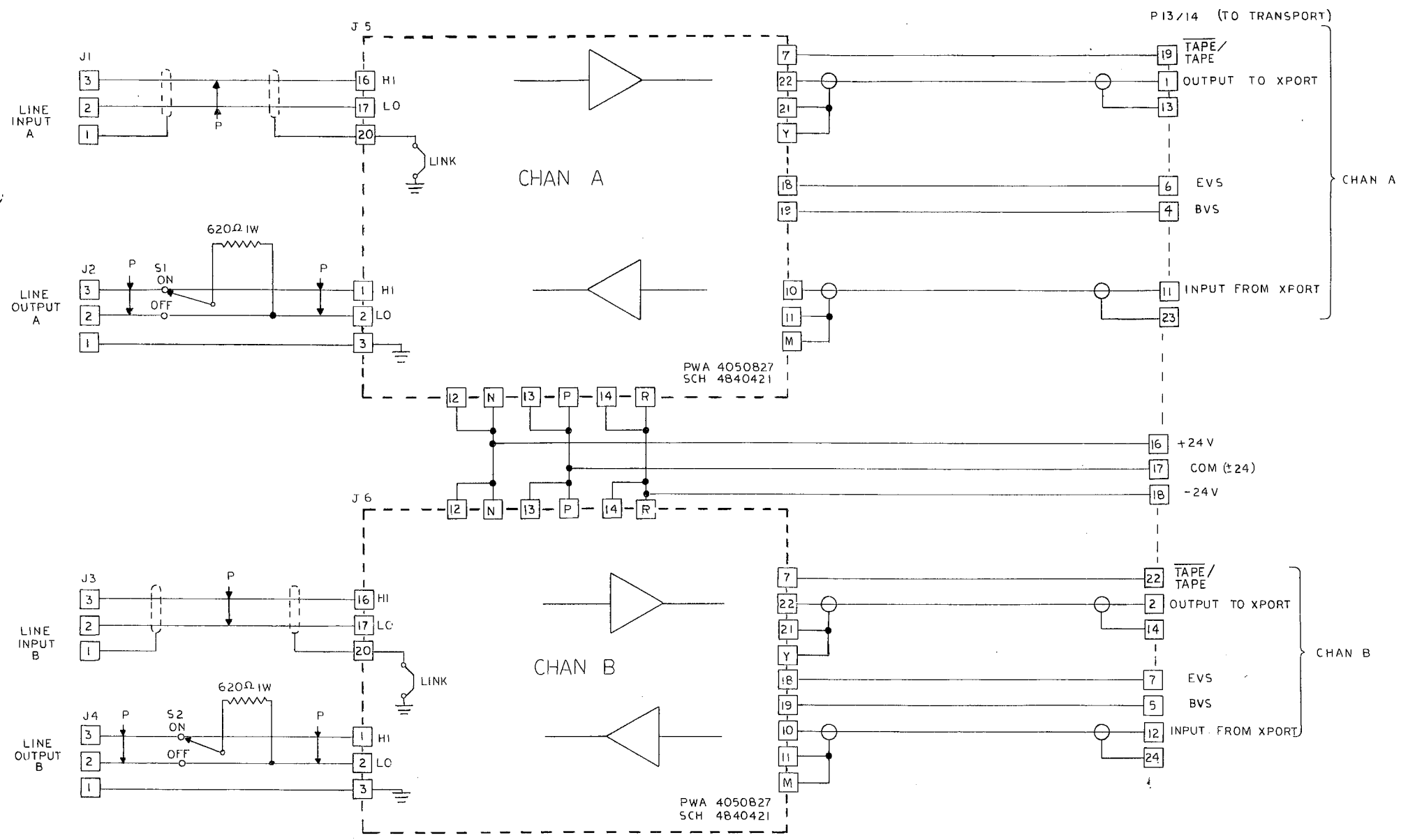
REF. DES'G.	LAST USED	NOT USED
R29		
A7		
C24		
C23		
S16		
E77	E64-55111	E74-74

IC LIST			
REF DES	A1	A2	A4
A3			
AMPEX P/N	586-785	587-544	
VENDOR P/N	7495	7447	

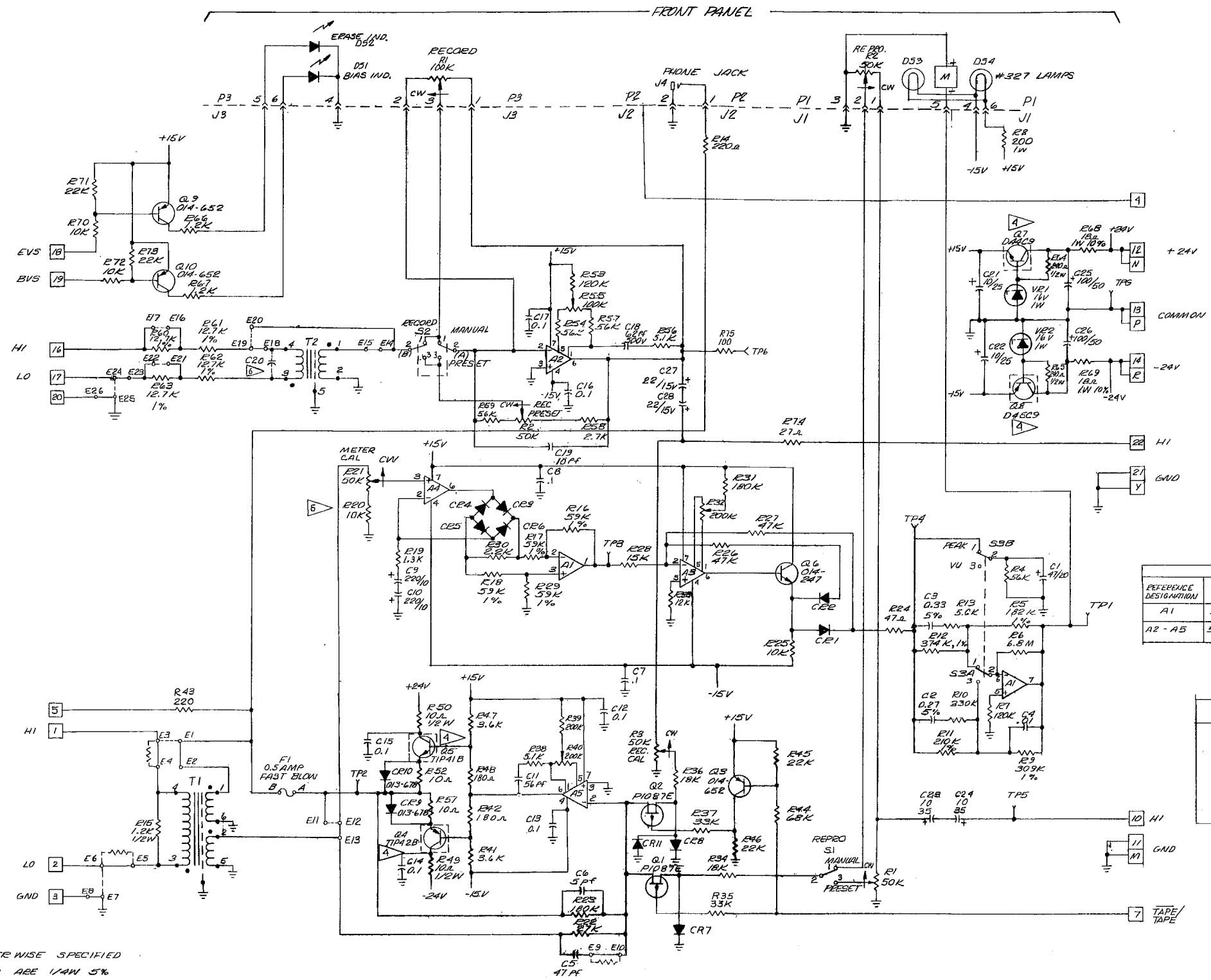
REF. DES'G.	LAST USED	NOT USED
DS80		
Q5		
A6		
R48		
E77	E46-E73	

IC LIST	
REF DES	A1-5
AMPEX P/N	581-557
VENDOR P/N	5082-7730

Schematic No. 4840396D.
Control Unit Assembly



Schematic No. 404027A.
Input/Output Mainframe



REFERENCE DESIGNATION	AMPEX P/N	VEINDE P/N	VOLTAGE P/N
A1	506-305	145B	B(+15) 4(-15)
A2 - A5	587-478	318H	X(+15) 4(-15)

LAST USED	NOT USED
VE2	
CR11	
CR2	
CR5	
CR7	
CR10	
CR15	
CR16	

- NOTES
UNLESS OTHERWISE SPECIFIED
- ALL RESISTORS ARE 1/4W 5%
 - ALL CAPACITORS ARE IN MICROFARADS.
 - ALL DIODES ARE 013-533.
 - THESE TRANSISTORS HAVE HEATSINKS.
 - R20 TO BE 1.5K IF E12 IS CONNECTED TO E11.
 - C20 TO BE 47PF IF E17 IS CONNECTED TO E16 AND E22 IS CONNECTED TO E21.
 - PWA IS 4050827-02 REV 'C'

Schematic No. 4840421D.
Input/Output PWA