

Digital Equipment Corporation
Maynard, Massachusetts

digital

Maintenance Manual

PDP-8/L

Volume II

PDP-8/L
MAINTENANCE MANUAL
Volume II

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DIGITAL	COMPUTER LAB

ENGINEERING DRAWINGS

Engineering drawings, necessary for understanding the logic circuits and performance of maintenance on the equipment, are contained in this volume. Only those drawings that are essential, and not available in the referenced documents, are included. If any discrepancies are found between the drawings in this volume and those supplied with the equipment, it should be assumed that the drawings supplied with the equipment are correct.

DRAWING NUMBERS

Digital Equipment Corporation (DEC) engineering drawing numbers are composed of an alphanumeric number containing five discrete parts. Each discrete part contains specific information as shown in the following example.

D-BS-99XX-1-5

Reading from left to right: a one-letter code specifying the drawing size (D size); a two-letter code specifying the type of drawing (block schematic (BS)); a group of numbers and letters specifying the type number of the equipment (99XX or a 99XX module); a single-digit number specifying the manufacturing series of the equipment (1 or first engineering change); and the last single-digit number specifying the number of the drawing within a particular series (5 or the fifth in the series).

The drawing type codes are:

BS	block schematic or logic diagram	DI	drawing index list
CD	cable diagram	FD	flow diagram
CL	cable list	KS	key sheet
CS	circuit schematic	ML	master drawing list
MU	module utilization	TD	timing diagram
PW	power wiring	WD	wiring diagram
RS	replacement schematic	WL	wiring list

CIRCUIT SYMBOLS

DEC engineering block schematic diagrams indicate signal flow, logic functions, circuit type and physical location, wiring, and other pertinent information. Individual circuits are shown in block or semiblock form, using standard symbols similar to those that appear in other DEC publications.

LOCATION DESIGNATIONS

General

To make signal tracing easier, DEC uses a numbering system on drawings that gives the location, in the equipment, of all signals named on the drawing. In the main frame, module receptacle connectors are identified with capital letters that designate horizontal rows of modules within the mounting frame from top to bottom (A is the first row, B is the second row, etc.). Module receptacles are numbered from left to right viewed from the wiring side (right to left from the module side). Capital letters (G, I, O and Q are omitted) are assigned to the terminal connectors from top to bottom.

Double-Sided Modules

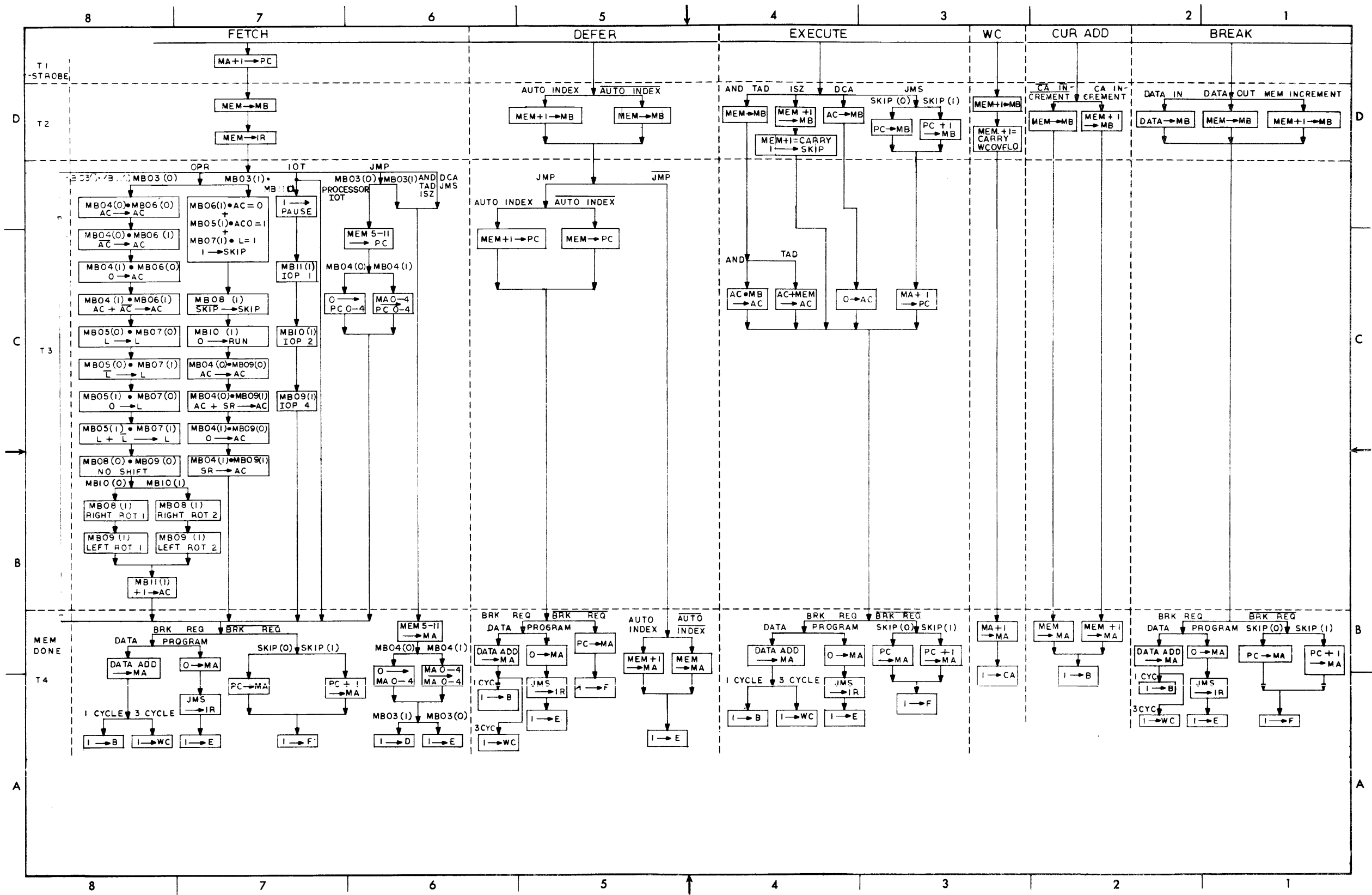
On double-sided modules or connectors, the sides are designated by a suffix number (1 for the left side and 2 for the right side). The drawings are divided into subunits, by dashed lines, that indicate different modules. Inside the dashed lines appear two sets of numbers (together) that tell the type and location of the module; for example, M113 F32 shows an M113 module located in row F (6th from the top), slot 32 (32nd from left side, wiring side). All signals have a number associated with them that tells the pin number and module side number; for example, M2 is pin M, side 2 (right) of a double-sided module. Hence, a signal with M113 F32 M2 is found on pin M, side 2, of module M113 located in row F, slot 32.

Double-Height Modules

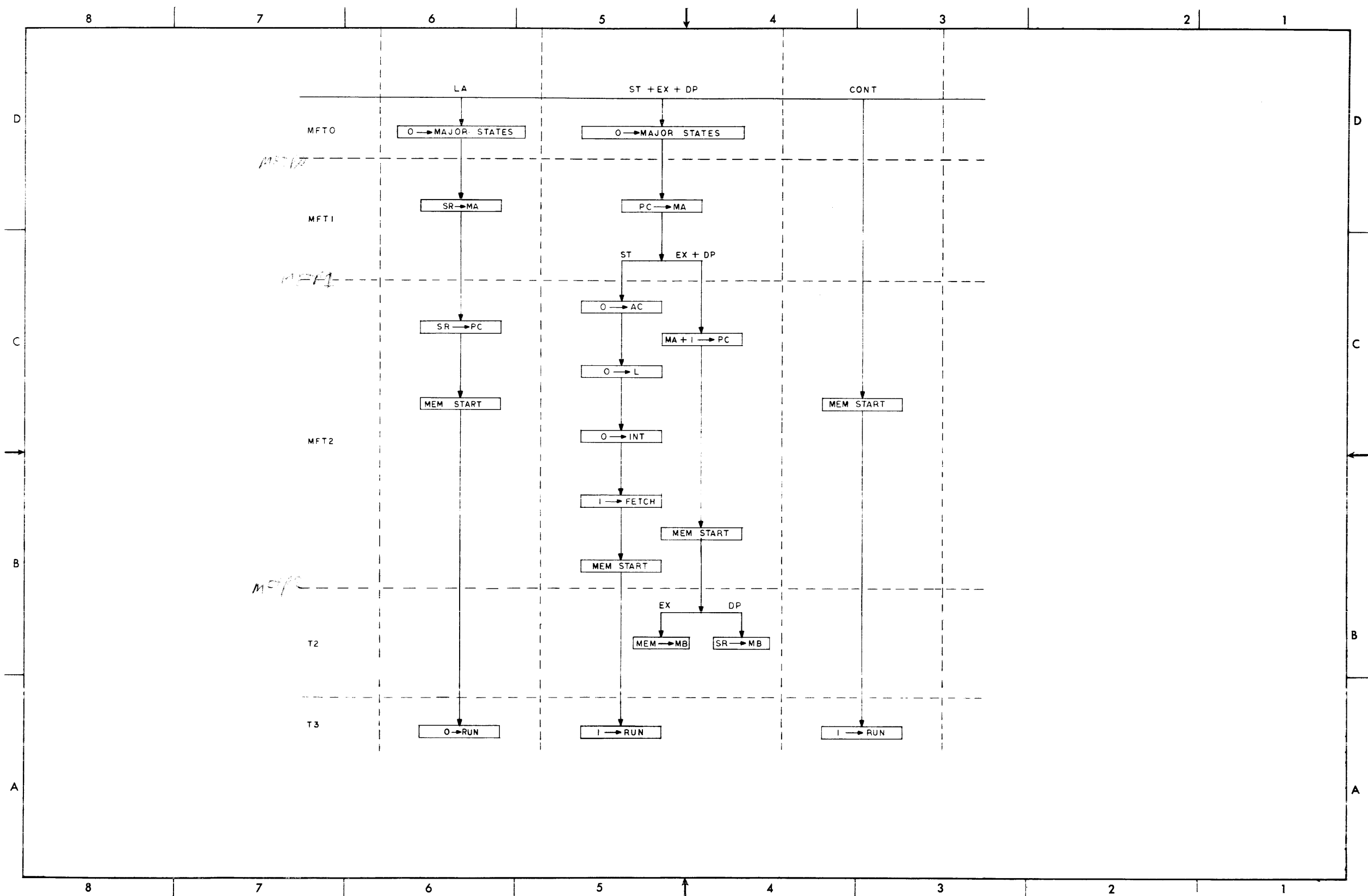
On modules or connectors that are double-height (occupy two places in a block of connectors, one above the other), the module location and pin numbers identification is similar to the double-sided module identification, except that there are two letters associated with the module location and pin numbers. For example, a signal with M710 HJ28 HE2 is found on an M710 module located in rows H and J, slot 28, and the signal is on pin E, side 2 on the connector in row H.

ENGINEERING DRAWINGS

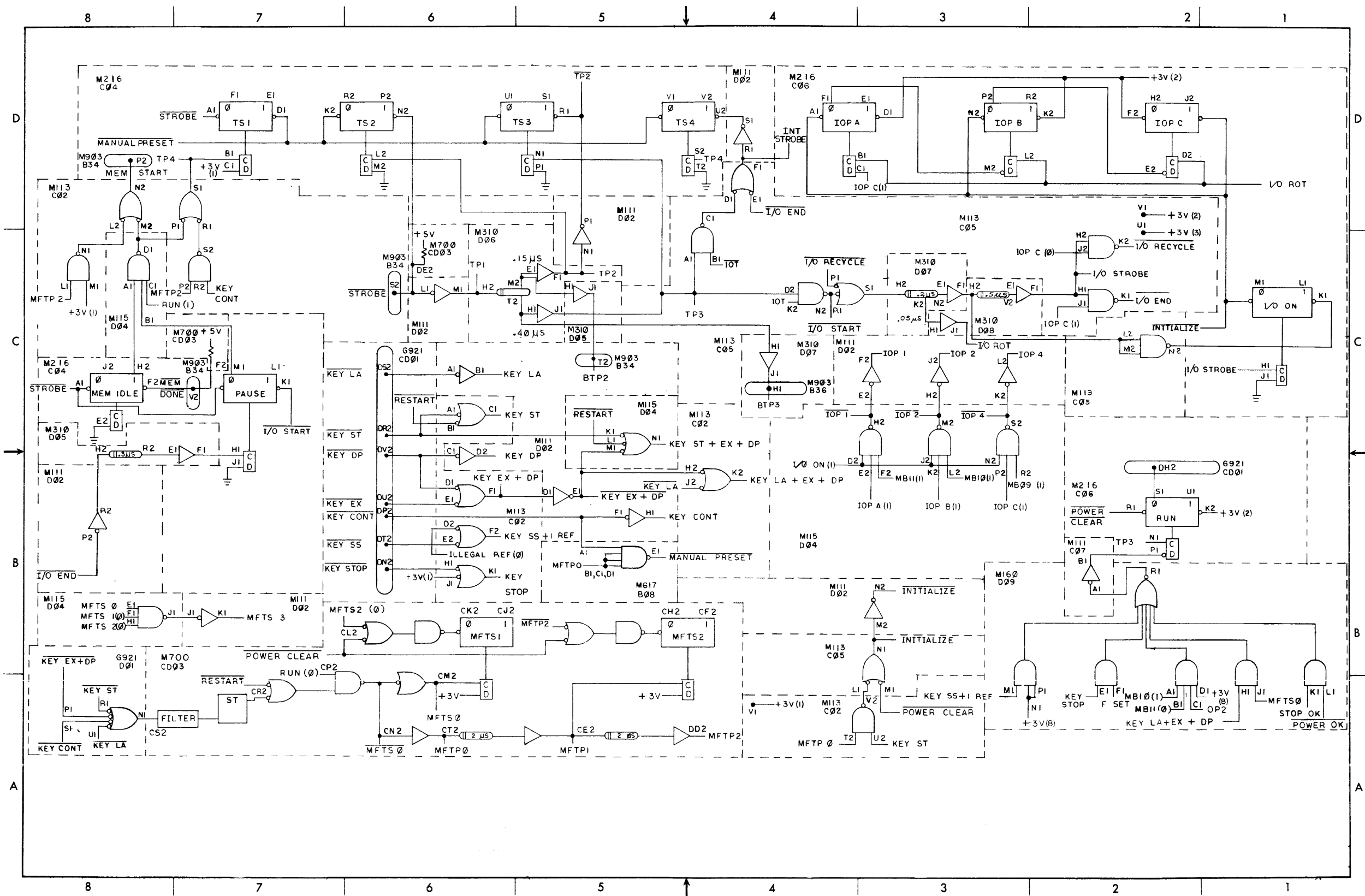
Drawing Number	Title	Rev	Page
D-FD-8L-0-21	Flow Diagram (2 sheets)		2
D-BS-8L-0-2	Timing, Manual Functions and Run	D	4
D-BS-8L-0-3	Instruction Reg. and Major States	B	5
D-BS-8L-0-4	Reg. Output Gate Control	C	6
D-BS-8L-0-5	Shift and Carry Gate Control	C	7
D-BS-8L-0-6	Reg. Input Control and Skip	B	8
D-BS-8L-0-7	Interrupt and Break Control	B	9
D-BS-8L-0-8	Major Registers		10
D-BS-8L-0-9	Major Register Gating (4 sheets)		11
D-BS-8L-0-10	I/O Converters	B	15
D-BS-8L-0-11	Teletype Receiver	A	16
D-BS-8L-0-12	Teletype Transmitter	B	17
D-BS-8L-0-13	Memory Control	E	18
D-BS-8L-0-14	Sense Amps and Inhibit Drivers		19
D-BS-8L-0-15	X-Axis Selection		20
D-BS-8L-0-16	Y-Axis Selection		21
D-BS-8L-0-17	Misc. Connections MC8/L	B	22
D-MU-8L-0-18	Module Utilization (2 sheets)	H	23
D-CS-718-0-1	Power Supply 718		25
B-CS-G020-0-1	Sense Amplifier	D	26
B-CS-G221-0-1	Memory Selector	C	26
B-CS-G228-0-1	Inhibit Driver	A	26
C-CS-G610-0-1	A-Diode Board	B	27
C-CS-G611-0-1	B-Diode Board	A	27
B-CS-G624-0-1	Resistor Board	D	27
B-CS-G785-0-1	Power Connector		27
C-CS-G826-0-1	Regulator Control	L	28
D-CS-G921-0-1	PDP-8/L Control Panel		29
B-CS-M002-0-1	15 Loads		30
B-CS-M111-0-1	Inverter	A	30
B-CS-M113-0-1	10 2-Input NAND Gates	C	30
B-CS-M115-0-1	8 3-Input NAND Gates	C	30
B-CS-M117-0-1	6 4-Input NAND Gates	C	31
B-CS-M119-0-1	3 8-Input NAND Gates	B	31
B-CS-M160-0-1	Gate Module	B	31
B-CS-M216-0-1	Six Flip-Flops	B	31
D-CS-M220-0-1	Major Registers	B	32
B-CS-M310-0-1	Delay Line	A	33
B-CS-M360-0-1	Variable Delay	B	33
B-CS-M452-0-1	Variable Clock	A	34
B-CS-M516-0-1	Positive Bus Receiver		34
B-CS-M617-0-1	6 4-Input NOR Buffers	B	34
C-CS-M623-0-1	Bus Driver		34
B-CS-M660-0-1	Positive Level Driver	A	35
C-CS-M700-0-1	Manual Timing Generator	B	35
C-CS-M706-0-1	Teletype Receiver	B	36
C-CS-M707-0-1	Teletype Transmitter	D	36
B-CS-M901-0-1	Flexprint Cable Connector		37
B-CS-M903-0-1	Connector (Flexprinter)		37
B-CS-M906-0-1	Cable Terminator		37
B-CS-W076-0-1	Teletype Connector		37



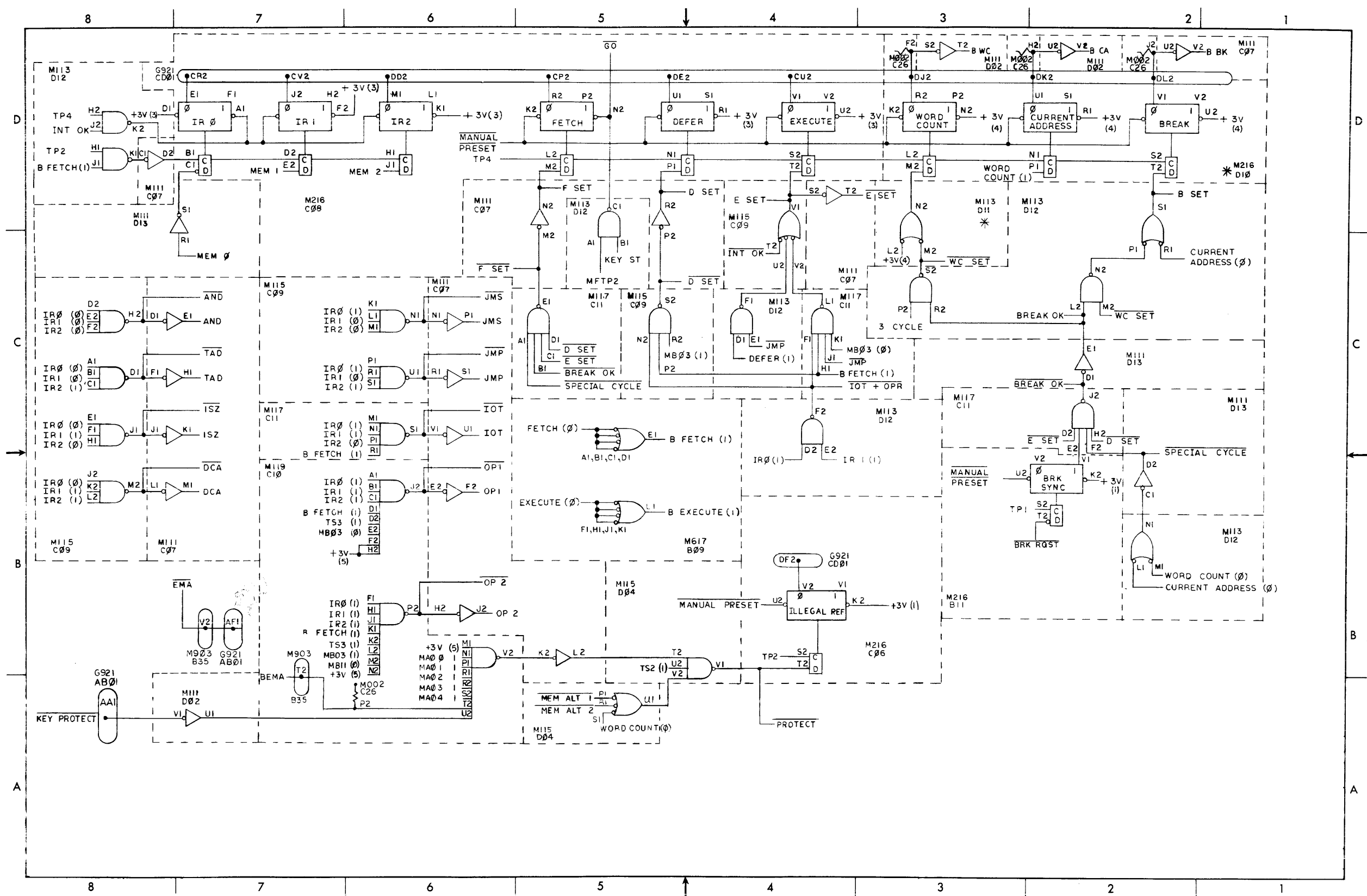
D-FD-8L-0-21 Flow Diagram (Sheet 1)



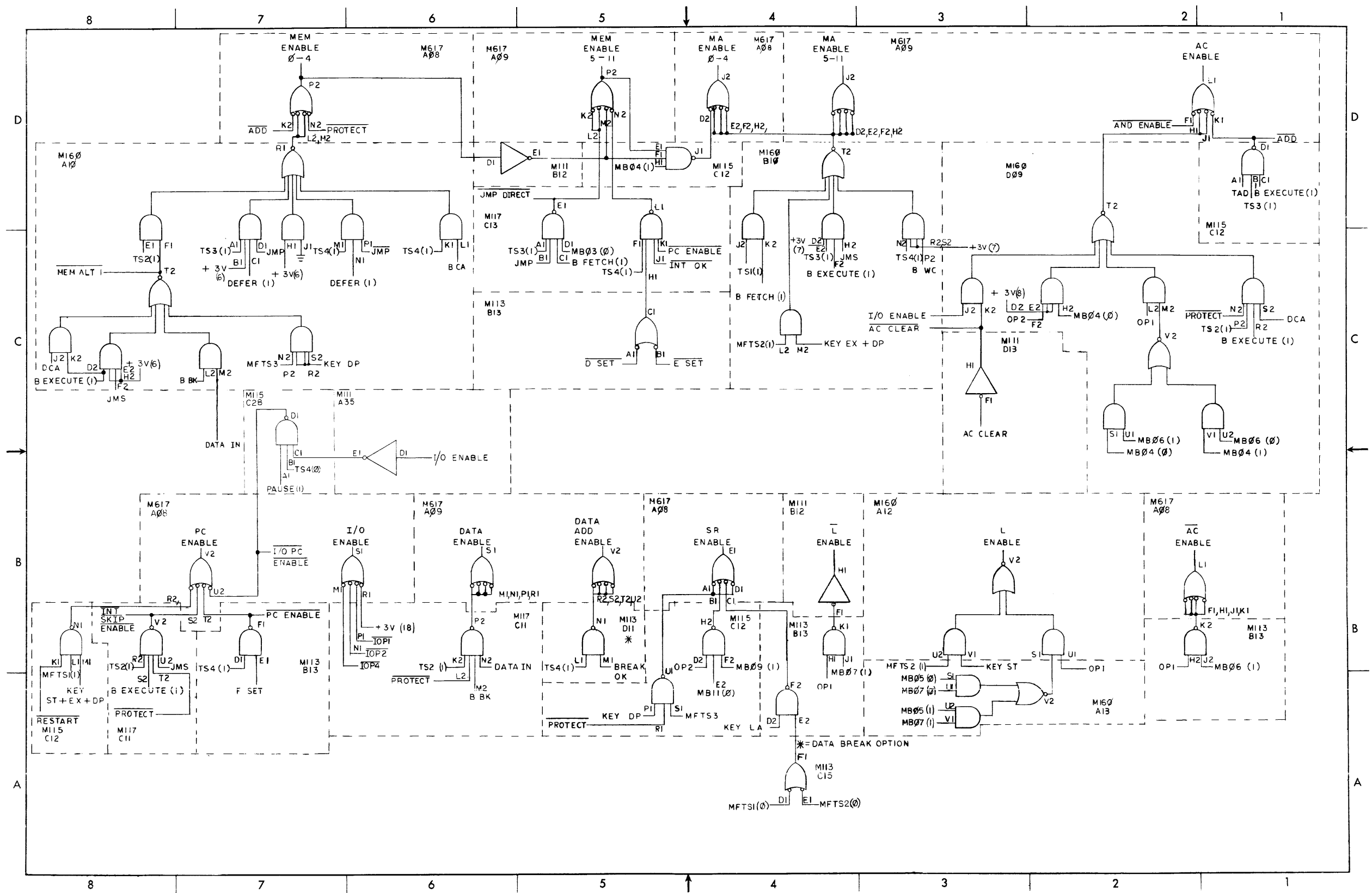
D-FD-8L-0-21 Flow Diagram (Sheet 2)



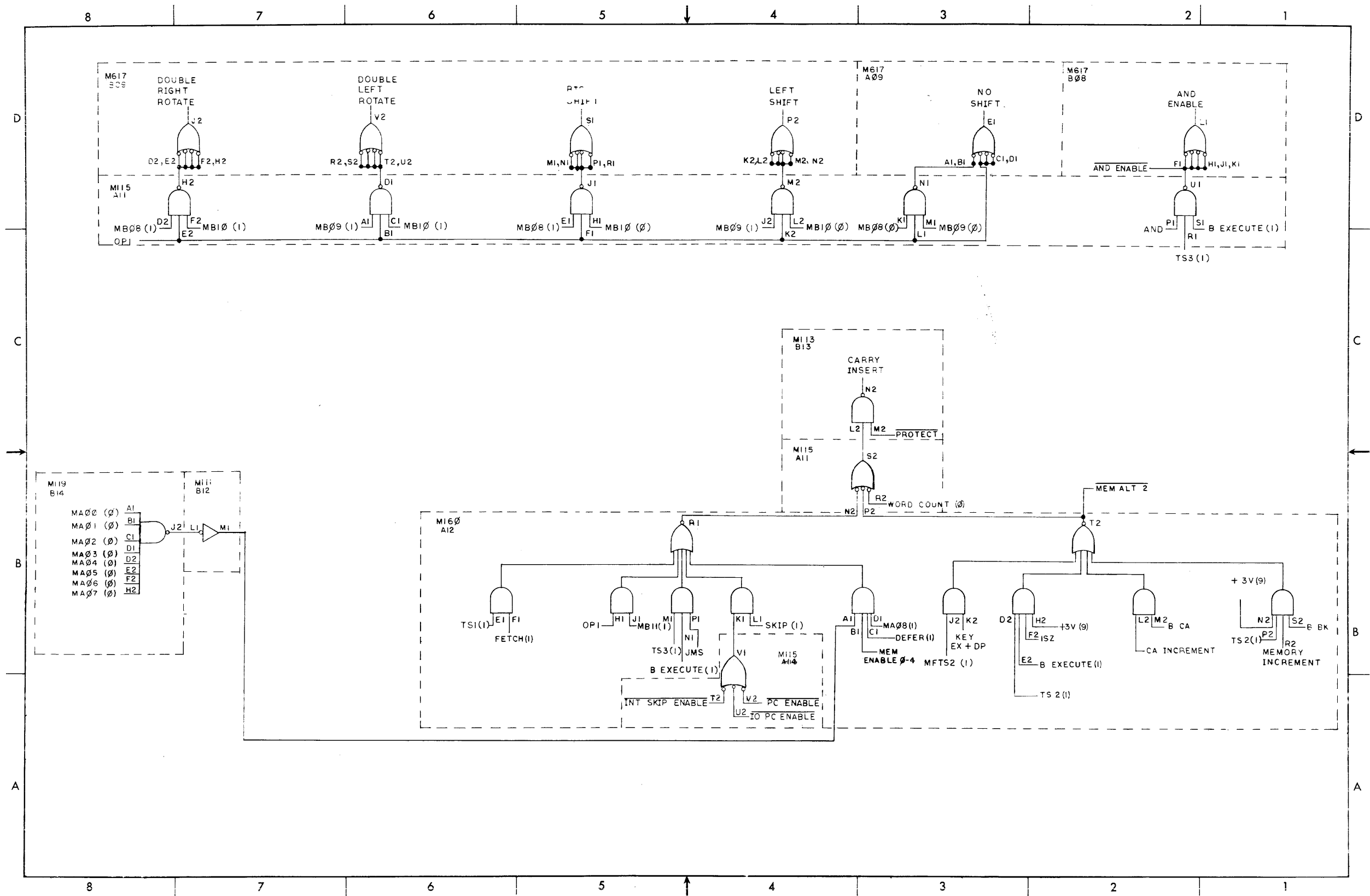
D-BS-8L-0-2 Timing, Manual Functions and Run



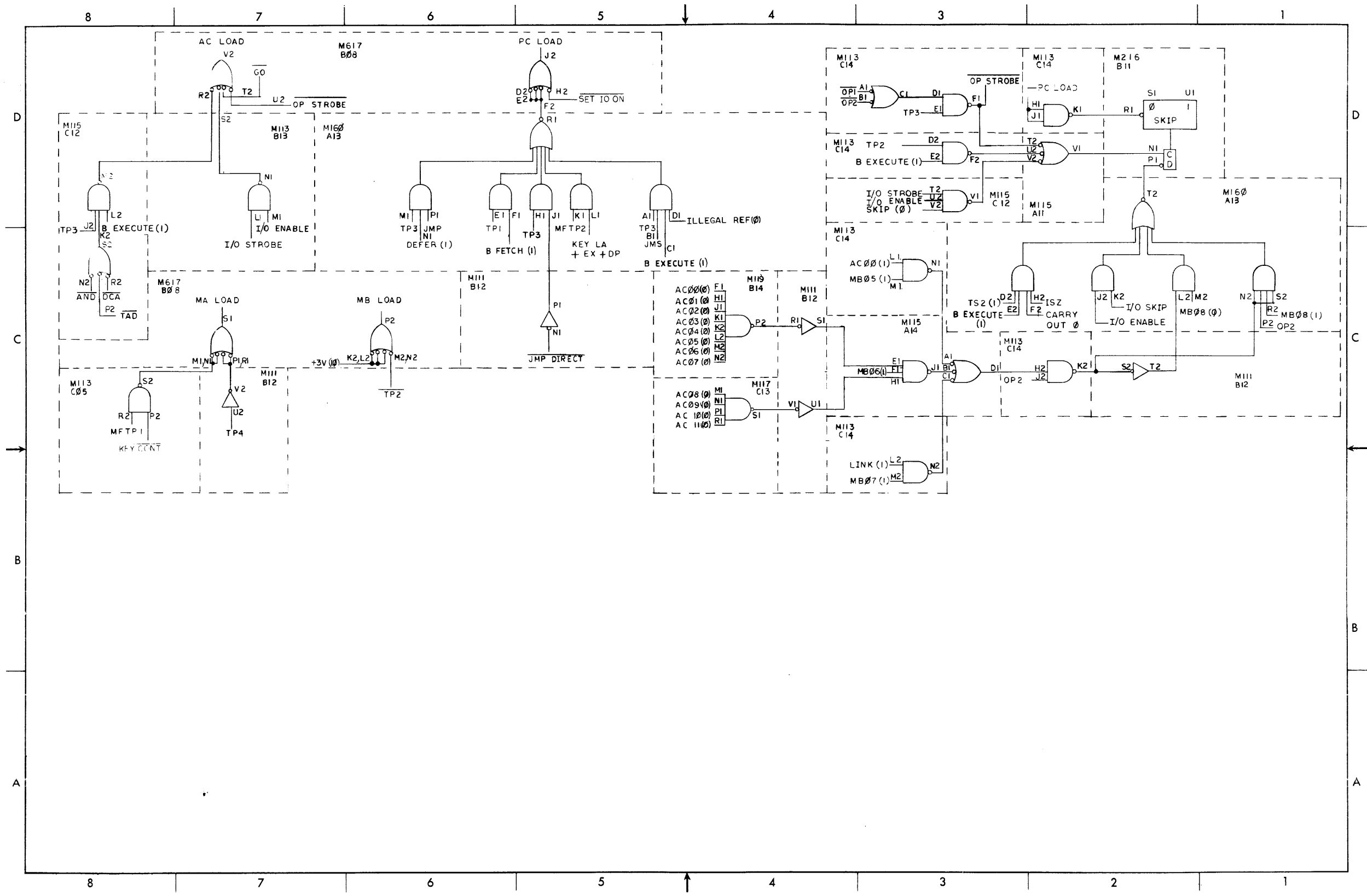
D-BS-8L-0-3 Instruction Reg. and Major States



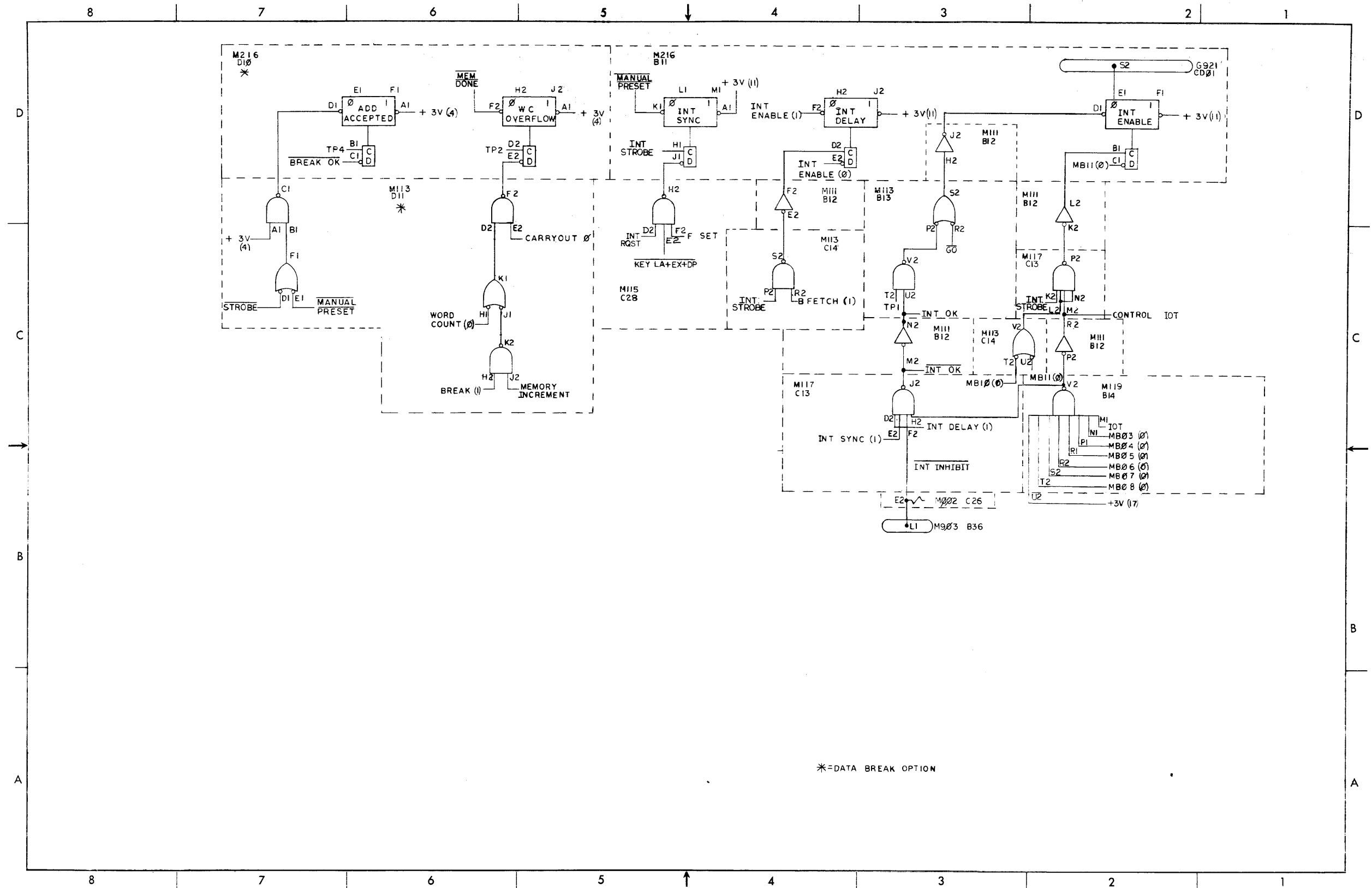
D-BS-8L-0-4 Reg. Output Gate Control



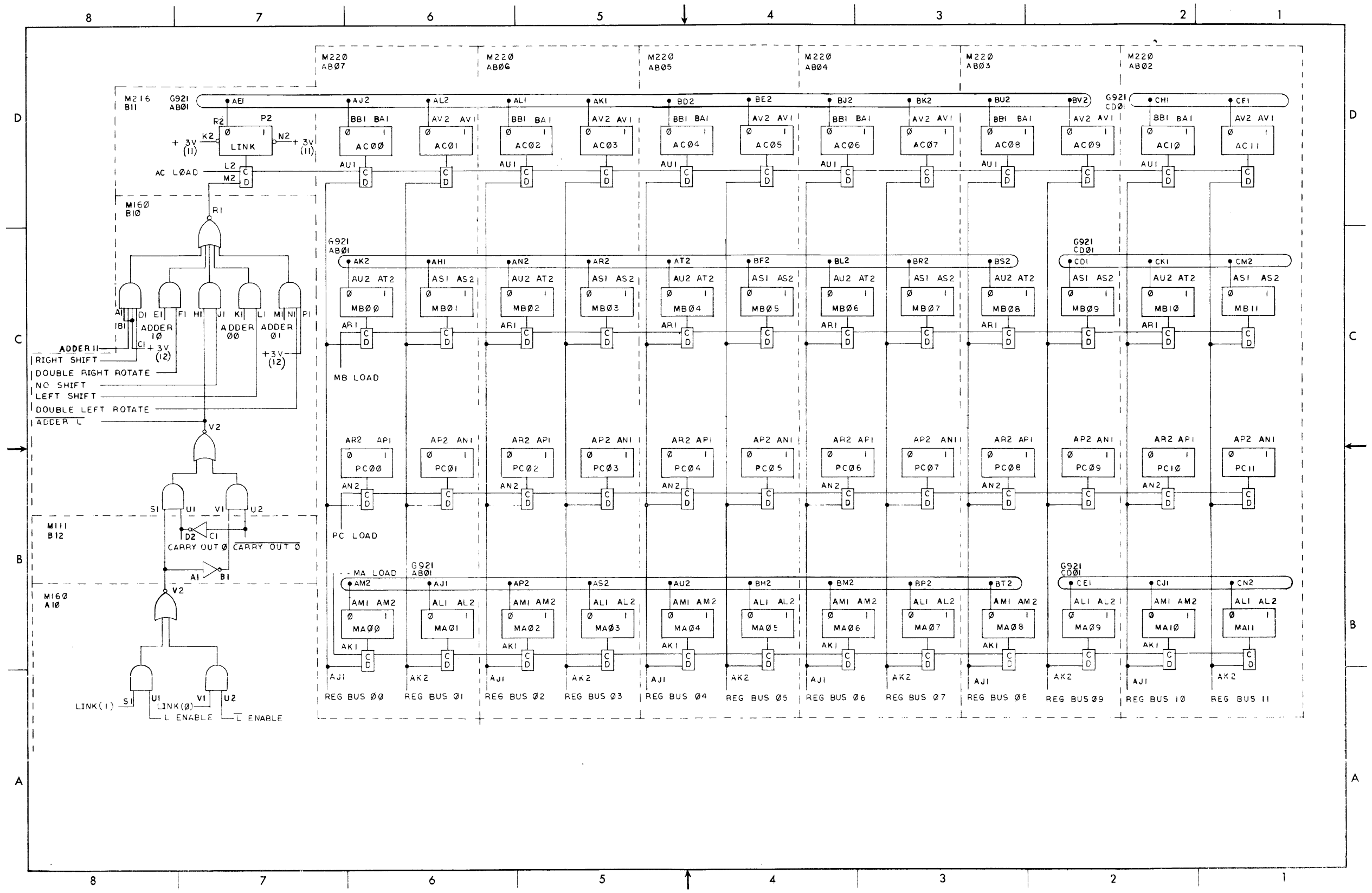
D-BS-8L-0-5 Shift and Carry Gate Control



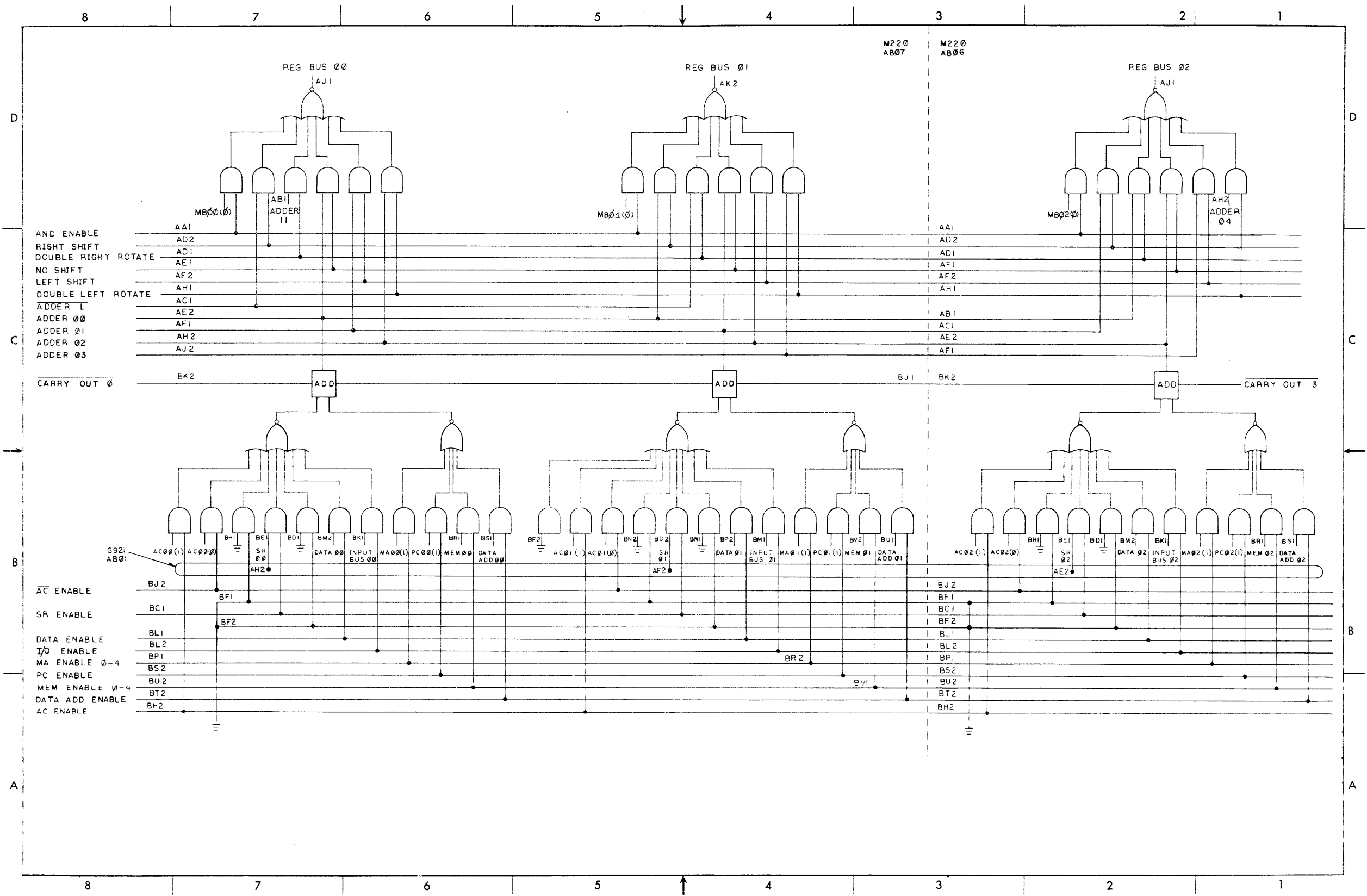
D-BS-8L-0-6 Reg. Input Control and Skip



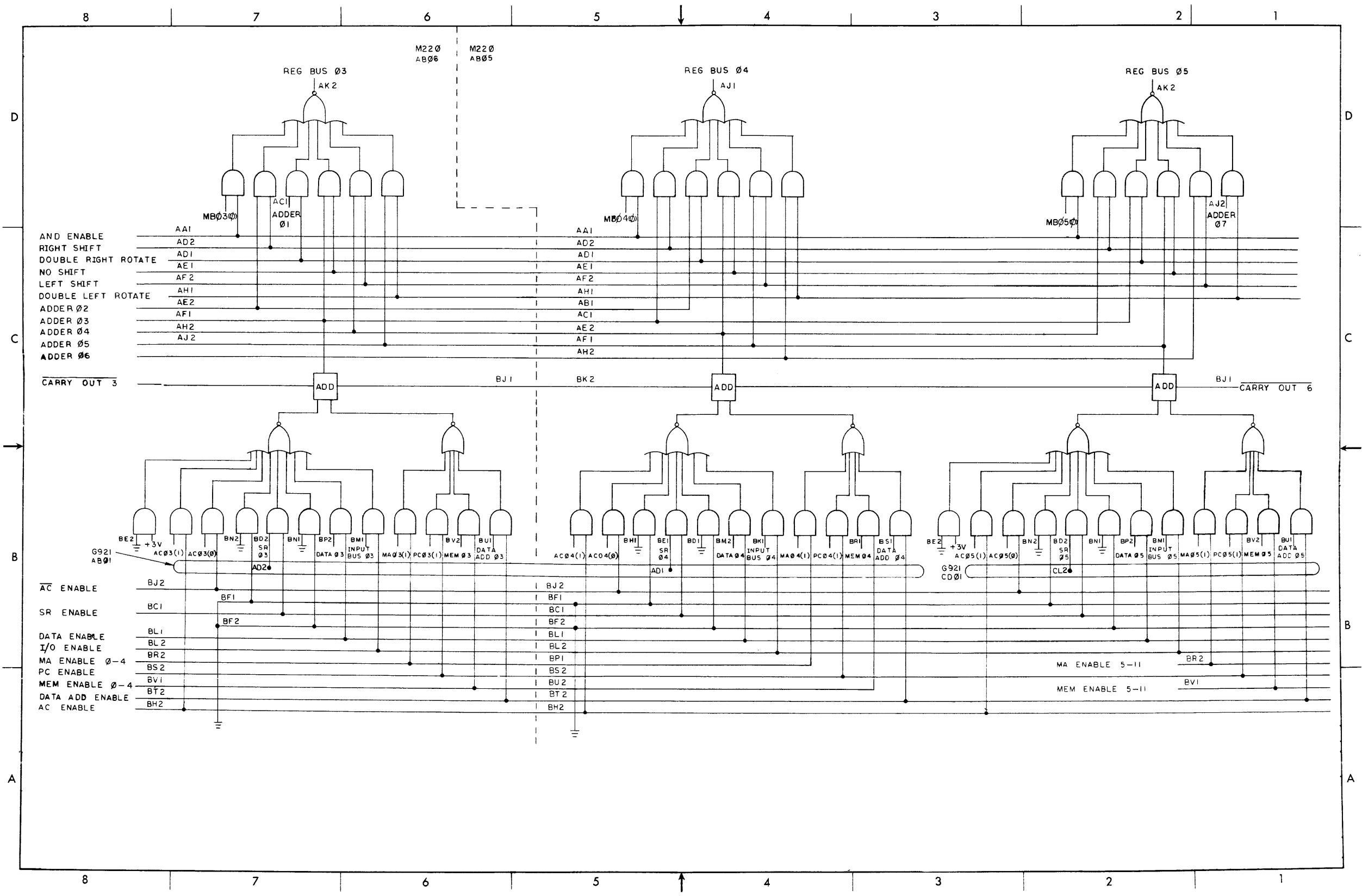
D-BS-8L-0-7 Interrupt and Break Control



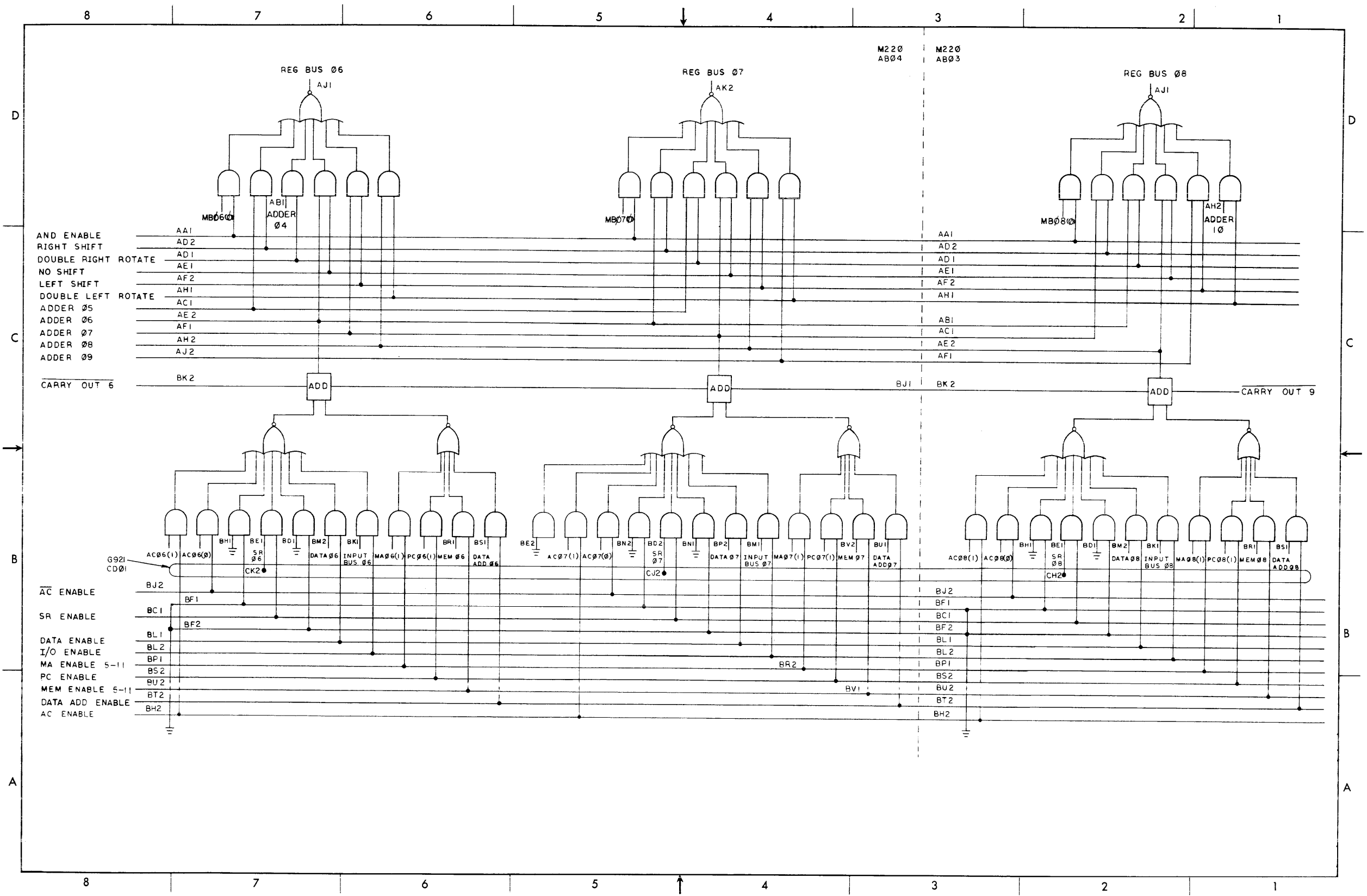
D-BS-8L-0-8 Major Registers



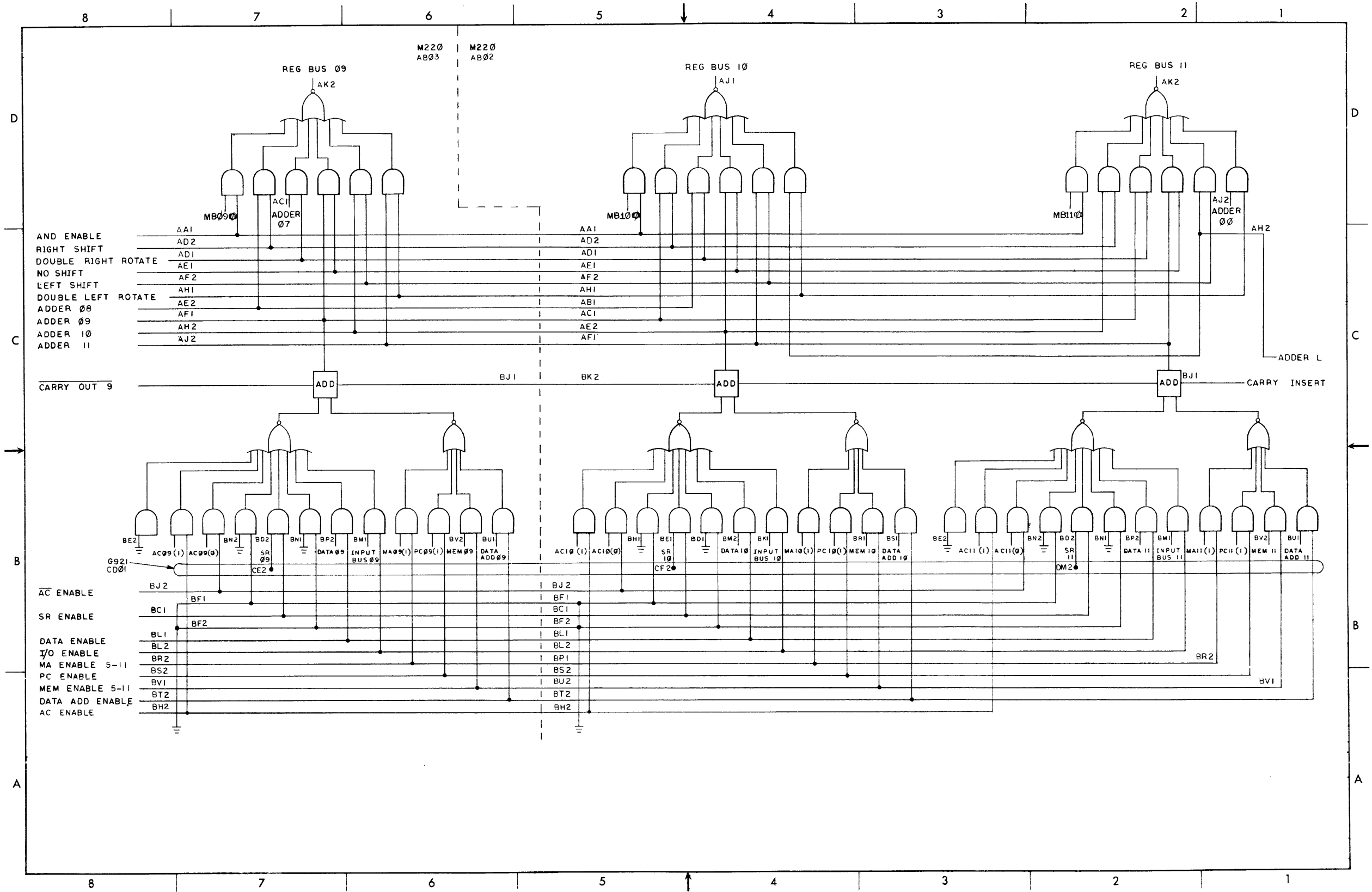
D-BS-8L-0-9 Major Register Gating (Sheet 1)



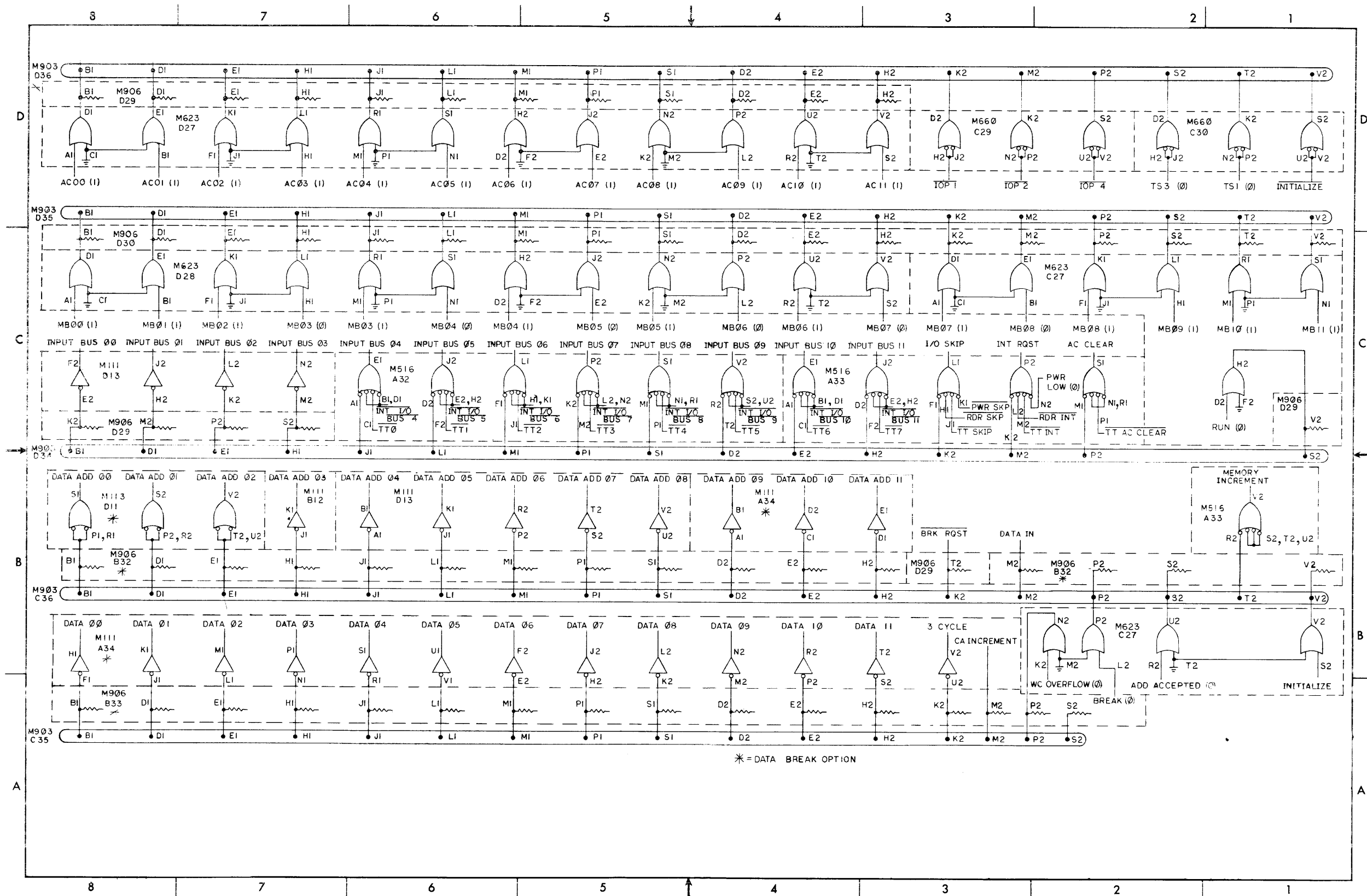
D-BS-8L-0-9 Major Register Gating (Sheet 2)



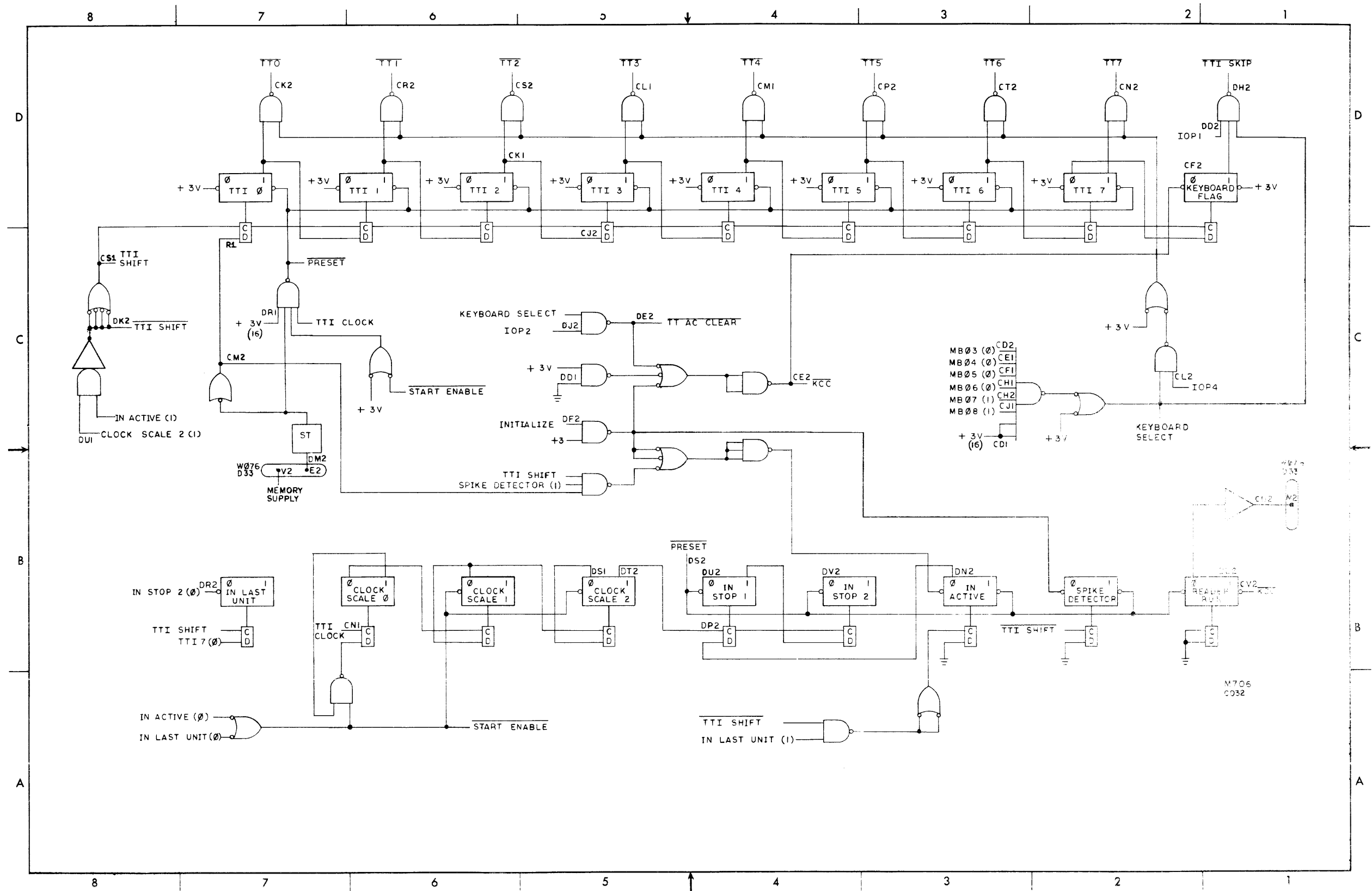
D-BS-8L-0-9 Major Register Gating (Sheet 3)



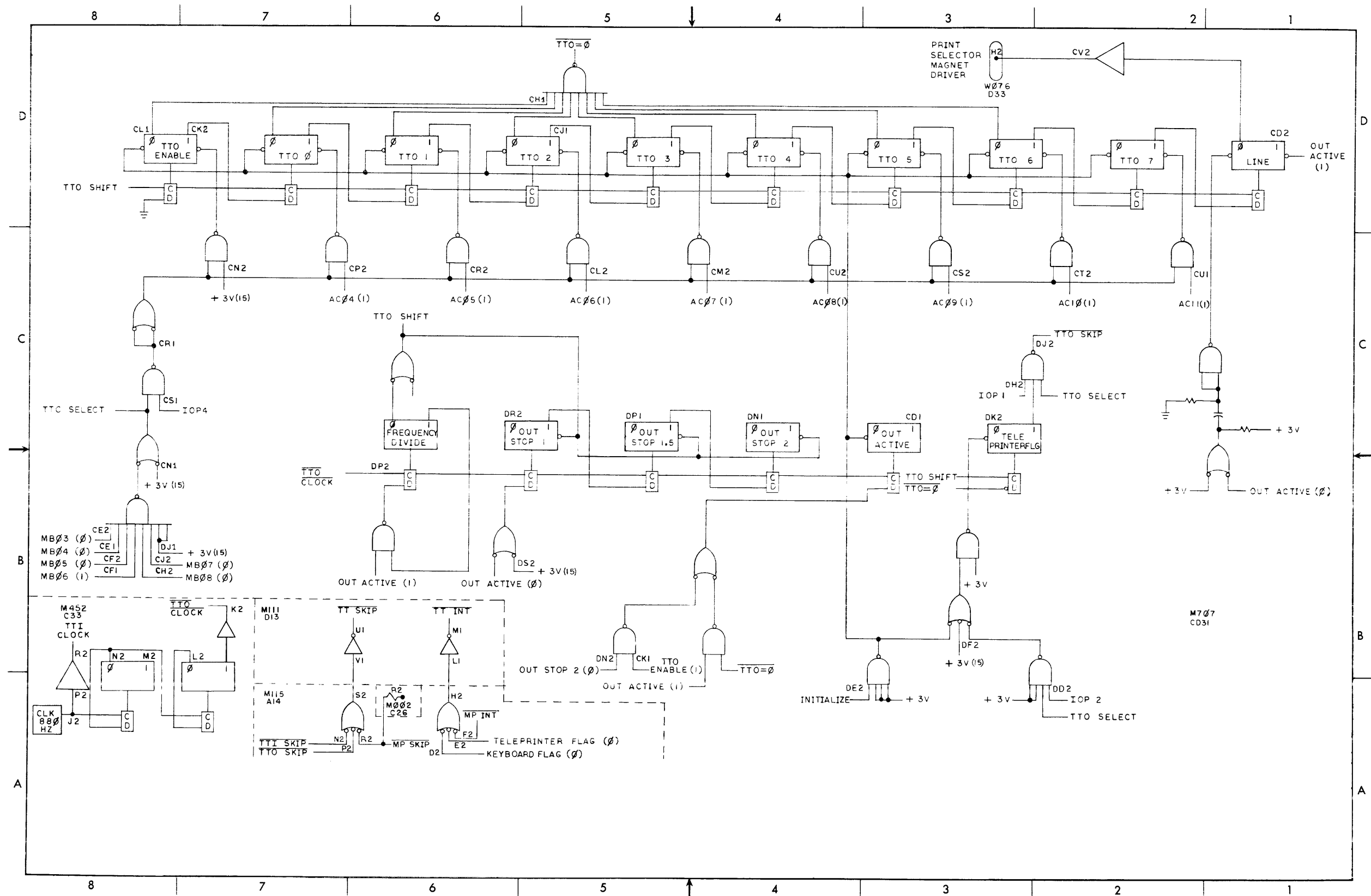
D-BS-8L-0-9 Major Register Gating (Sheet 4)



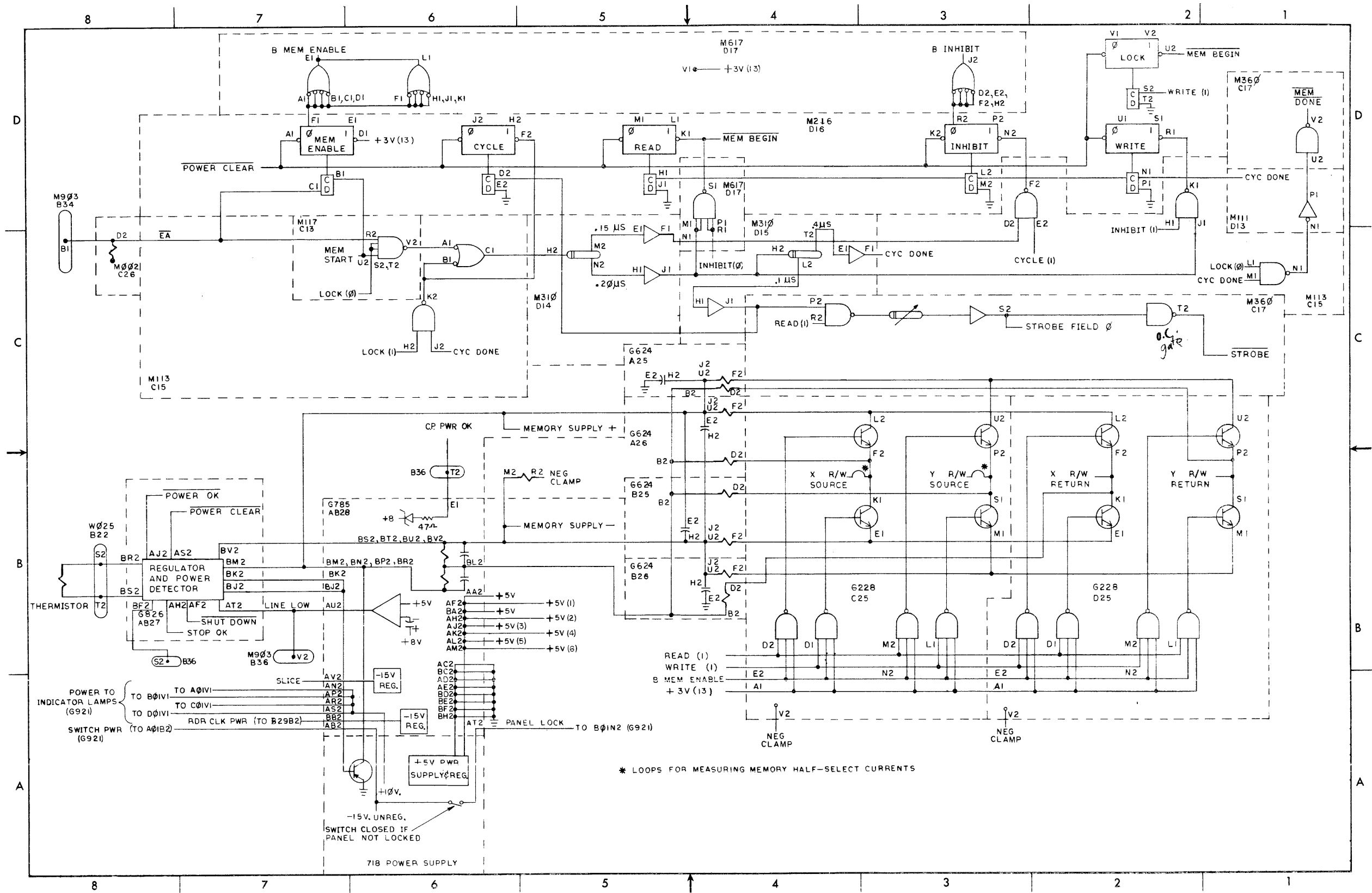
D-BS-8L-0-10 I/O Converters



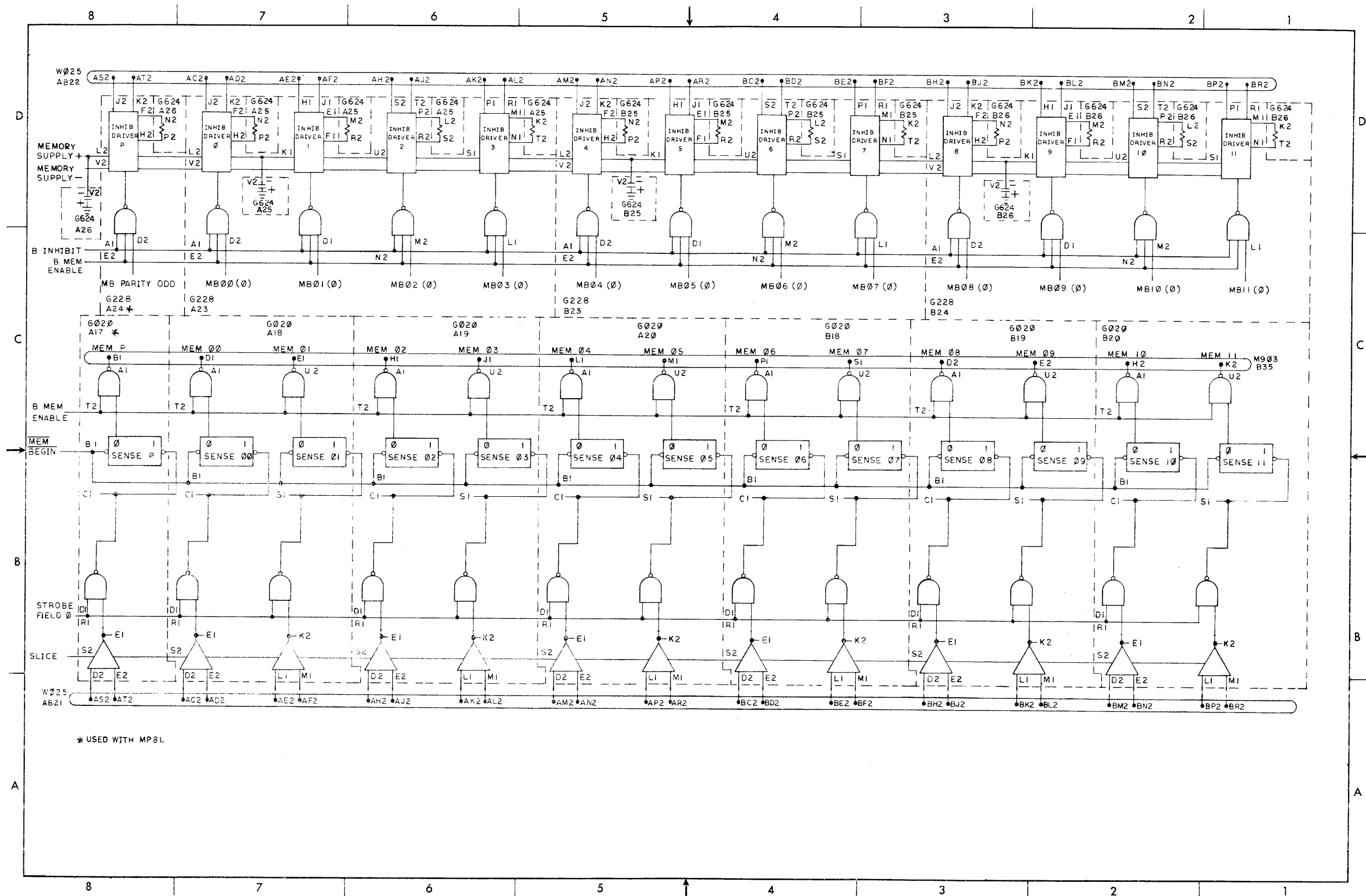
D-BS-8L-0-11 Teletype Receiver



D-BS-8L-0-12 Teletype Transmitter

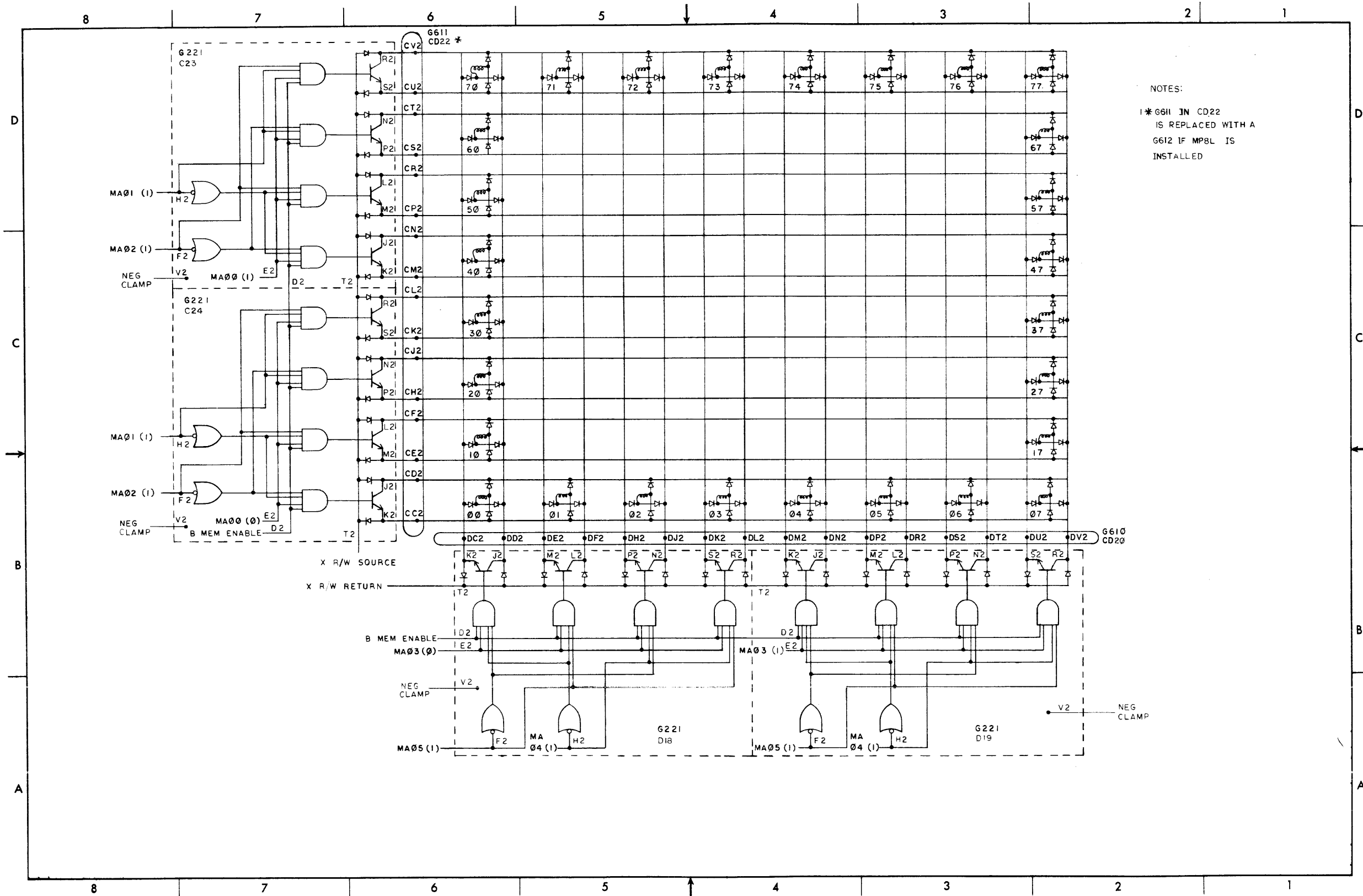


D-BS-8L-0-13 Memory Control



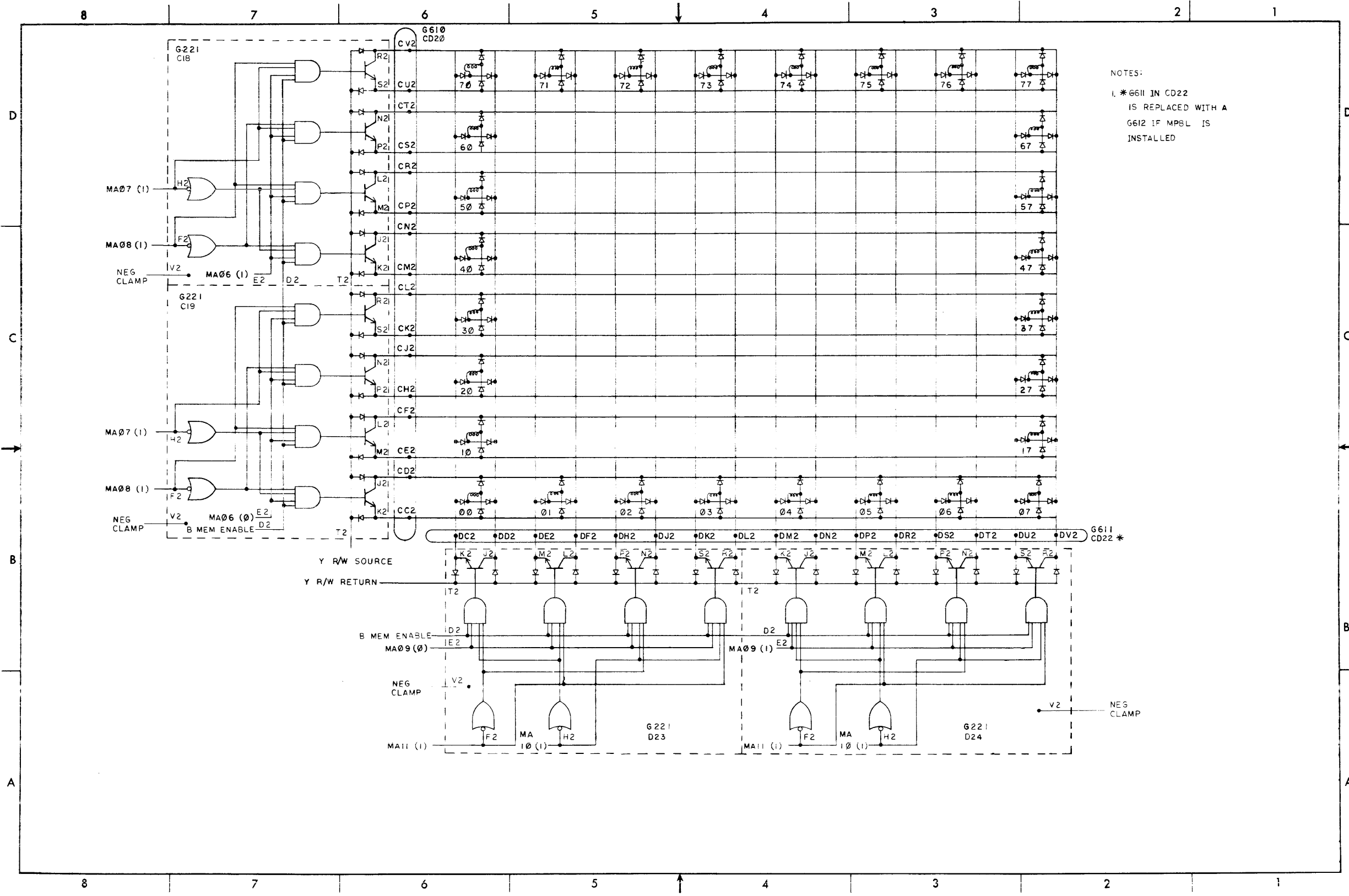
* USED WITH MP8L

D-BS-8L-0-14 Sense Amps and Inhibit Drivers

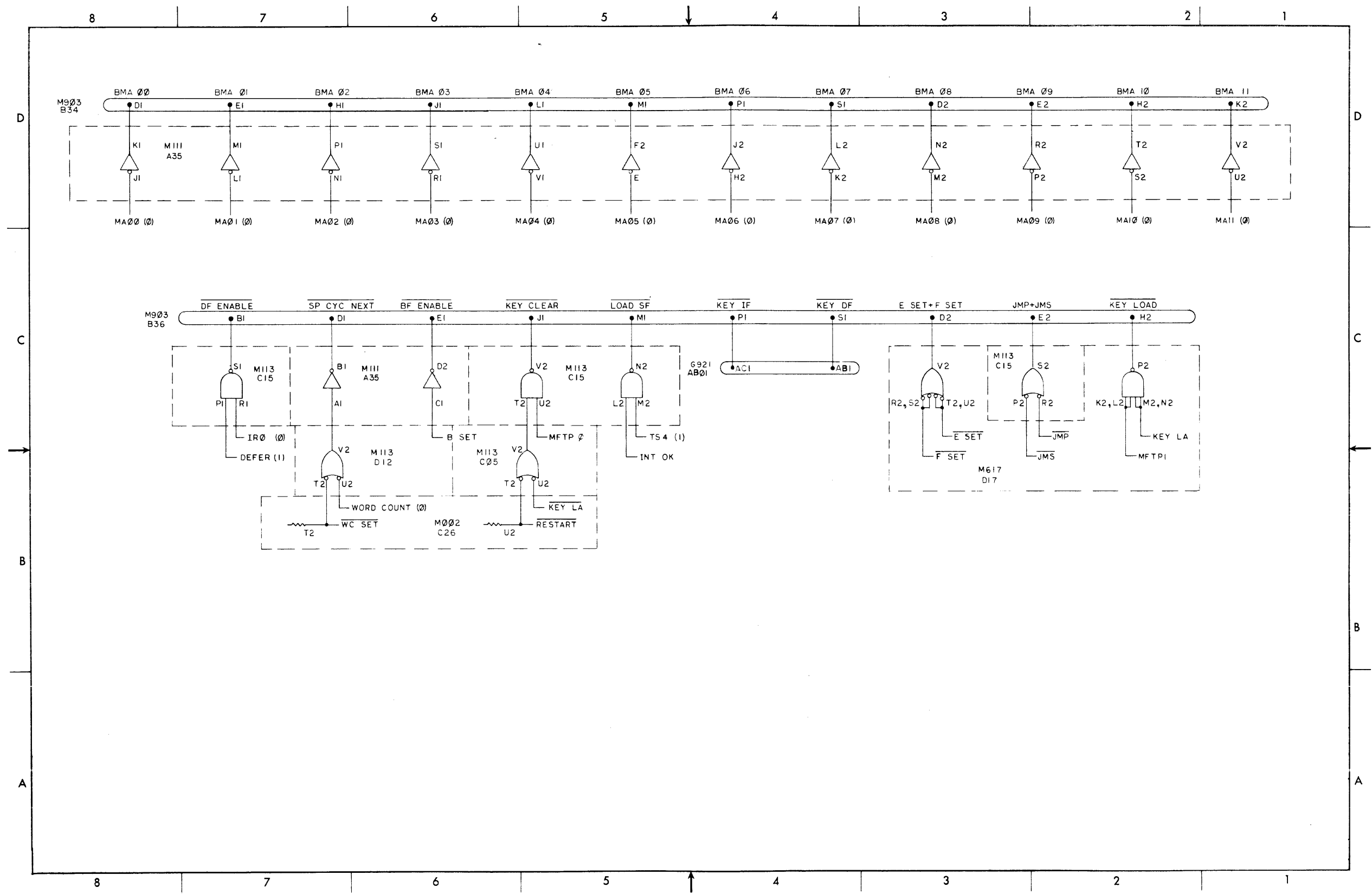


NOTES:
 *G611 IN CD22
 IS REPLACED WITH A
 G612 IF MP8L IS
 INSTALLED

D-BS-8L-0-15 X-Axis Selection



D-BS-8L-0-16 Y-Axis Selection



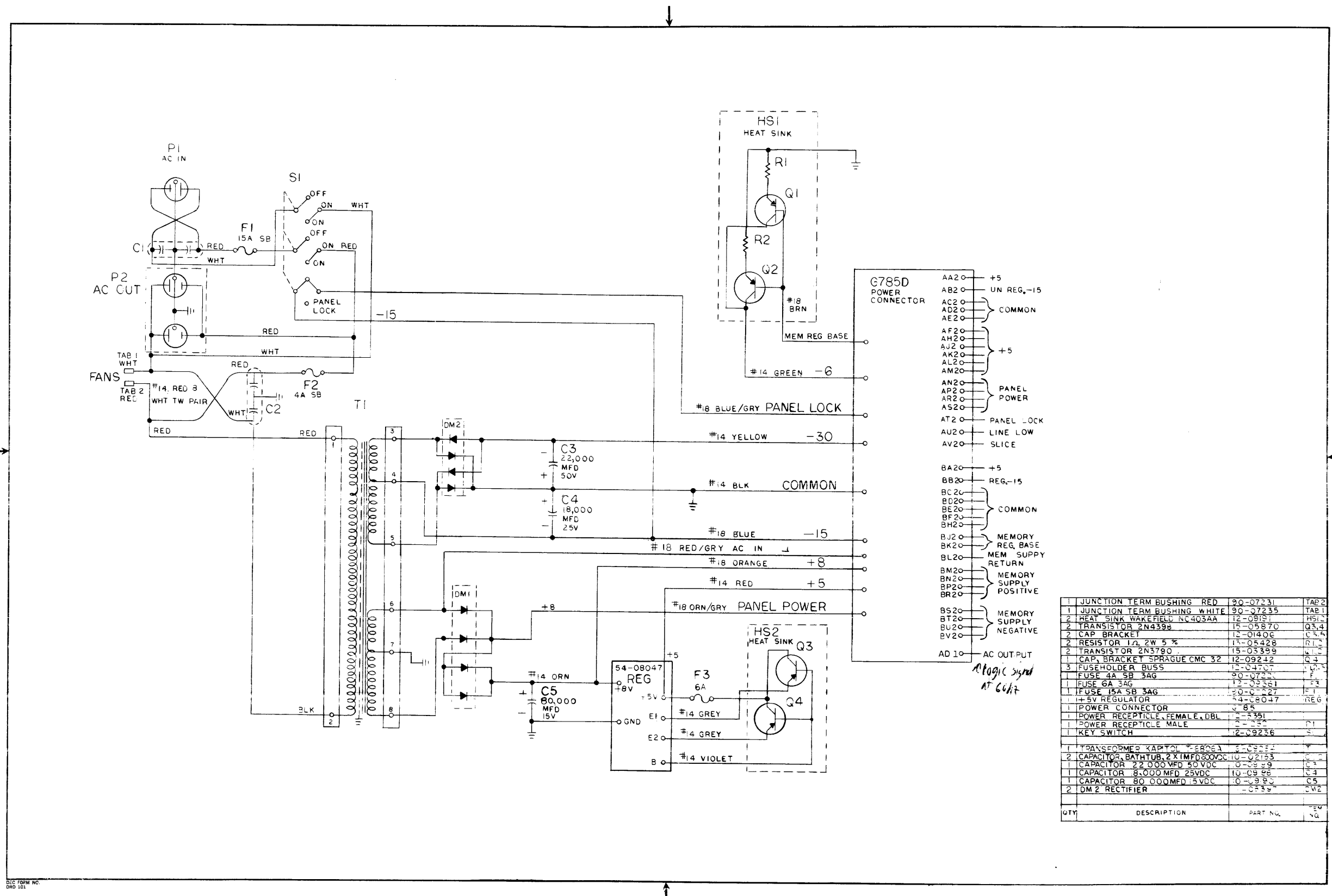
D-BS-8L-0-17 Misc. Connections MC8/L

		8				7				6				5				4				3				2		1																									
		1		2		3		4		5		6		7		8		9		10		11		12		13		14		15		16		17		18		19		20		21		22									
USAGE		G921		M220		M220		M220		M220		M220		M220		M17		M17		M16		M15		M16		M15		M162		M162		G020		G020		G020		G020		M025		M025											
		2 1		2 1		2 1		2 1		2 1		2 1		2 1		2 1		2 1		2 1		2 1		2 1		2 1		2 1		2 1		2 1		2 1		2 1		2 1		2 1		2 1											
		REG BUS 10		REG BUS 11		REG BUS 08		REG BUS 09		REG BUS 06		REG BUS 07		REG BUS 04		REG BUS 05		REG BUS 02		REG BUS 03		REG BUS 00		REG BUS 01		SR ENABLE		MA ENABLE 0-4		NO SHIFT		MA ENABLE 5-11																					
		PC 11		PC 09		PC 07		PC 05		PC 03		PC 01		AC ENABLE		MEM ENABLE 0-4		AC ENABLE		MEM ENABLE 5-11		MEM ENABLE 0-4		MEM ALT 1		DOUBLE LEFT ROTATE		DOUBLE RIGHT ROTATE		CARRY INSERT		PC LOAD		SKIP		TT INT		MEM PARITY ODD		MEM P													
		MA 11		MA 09		MA 07		MA 05		MA 03		MA 01		I/O ENABLE		PC ENABLE		DATA ENABLE		DATA ADD ENABLE		ADDER L		SKIP		NO SHIFT		LEFT SHIFT		CARRY INSERT																							
		MA 10		MB 11 (1)		MA 08		MB 09 (1)		MA 06		MB 07 (1)		MA 04		MB 05 (1)		MA 02		MB 03 (1)		MA 00		MB 01 (1)		I/O ENABLE		PC ENABLE		DATA ENABLE		DATA ADD ENABLE																					
		MB 11 (0)		MB 10		MB 09 (0)		MB 08		MB 07 (0)		MB 06		MB 05 (0)		MB 04		MB 03 (0)		MB 02		MB 01 (0)		MB 00		MANUAL PRESET		PC LOAD		B FETCH (1)		DOUBLE RIGHT ROTATE																					
		AC 10		AC 08		AC 06		AC 04		AC 02		AC 00		AND ENABLE		MB LOAD		B EXECUTE (1)		LEFT SHIFT		LINK		ADD L		INT SYNC		INT DELAY		ADDER L		CARRY OUT 0		CARRY OUT 10		MEM ENABLE 5-11		SR ENABLE		PC ENABLE		AC ENABLE											
		AC 11		AC 09		AC 07		AC 05		AC 03		AC 01		AND ENABLE		MB LOAD		B EXECUTE (1)		LEFT SHIFT		LINK		ADD L		INT SYNC		INT DELAY		ADDER L		CARRY OUT 0		CARRY OUT 10		MEM ENABLE 5-11		SR ENABLE		PC ENABLE		AC ENABLE											
		CARRY INSERT		CARRY OUT 10		CARRY OUT 08		CARRY OUT 06		CARRY OUT 04		CARRY OUT 02		MA LOAD		AC LOAD		RIGHT SHIFT		DOUBLE LEFT ROTATE						SKIP		BREAK OK		SKIP		CLEAR PAUSE		INT ENABLE		CONTROL TOT																	
USAGE		G228		G228		G624		G624		G826		G785		M715		M705		M710		M516		M516		M111		M111		M703																									
		2 1		2 1		2 1		2 1		2 1		2 1		2 1		2 1		2 1		2 1		2 1		2 1		2 1		2 1		2 1		2 1		2 1		2 1		2 1		2 1		2 1											
		INHIB DRIVER 1		INHIB DRIVER 0		INHIB DRIVER P		Y R/W RETURN		MEM SUPPLY		X R/W SOURCE		MEM SUPPLY		STOP DELAY		RDR STROBE		RDR CLR		RDR RUN		RDR INT		CLR REG		PB 0		INPUT BUS 04		INPUT BUS 05		INPUT BUS 10		INPUT BUS 11		DATA ADD 09		DATA ADD 10		DATA ADD 11		SP CYC NEXT TO ENABLE		BF ENABLE							
		INHIB DRIVER 3		INHIB DRIVER 2		INHIB DRI. 1		INHIB DRI. 2		INHIB DRI. 3		REGULATOR AND POWER DETECTOR		NEG CLAMP		INHIB DRI. P		MEM SUPPLY		MEM SUPPLY		REGULATOR AND POWER DETECTOR		POWER SUPPLY REGULATOR		STOP DELAY		RDR STROBE		RDR CLR		RDR RUN		RDR INT		CLR REG		PB 0		INPUT BUS 04		INPUT BUS 05		INPUT BUS 10		INPUT BUS 11		DATA ADD 09		DATA ADD 10		DATA ADD 11	
		INHIB DRIVER 5		INHIB DRIVER 4		INHIB DRIVER 9		INHIB DRIVER 8		Y R/W SOURCE		MEM SUPPLY		X R/W RETURN		MEM SUPPLY		STOP DELAY		RDR STROBE		RDR CLR		RDR RUN		RDR INT		CLR REG		PB 0		INPUT BUS 04		INPUT BUS 05		INPUT BUS 10		INPUT BUS 11		DATA ADD 09		DATA ADD 10		DATA ADD 11		SP CYC NEXT TO ENABLE		BF ENABLE					
		INHIB DRIVER 7		INHIB DRIVER 6		INHIB DRIVER 11		INHIB DRIVER 10		MEM SUPPLY		MEM SUPPLY		INHIB DRI. 11		INHIB DRI. 10		INHIB DRI. 9		INHIB DRI. 8		INHIB DRI. 7		INHIB DRI. 6		REGULATOR AND POWER DETECTOR		NEG CLAMP		INHIB DRI. P		MEM SUPPLY		MEM SUPPLY		REGULATOR AND POWER DETECTOR		POWER SUPPLY REGULATOR		STOP DELAY		RDR STROBE		RDR CLR		RDR RUN		RDR INT		CLR REG		PB 0	
		INHIB DRIVER 7		INHIB DRIVER 6		INHIB DRIVER 11		INHIB DRIVER 10		MEM SUPPLY		MEM SUPPLY		INHIB DRI. 9		INHIB DRI. 8		INHIB DRI. 7		INHIB DRI. 6		INHIB DRI. 5		INHIB DRI. 4		REGULATOR AND POWER DETECTOR		NEG CLAMP		INHIB DRI. P		MEM SUPPLY		MEM SUPPLY		REGULATOR AND POWER DETECTOR		POWER SUPPLY REGULATOR		STOP DELAY		RDR STROBE		RDR CLR		RDR RUN		RDR INT		CLR REG		PB 0	
		INHIB DRIVER 5		INHIB DRIVER 4		INHIB DRIVER 9		INHIB DRIVER 8		Y R/W SOURCE		MEM SUPPLY		X R/W RETURN		MEM SUPPLY		STOP DELAY		RDR STROBE		RDR CLR		RDR RUN		RDR INT		CLR REG		PB 0		INPUT BUS 04		INPUT BUS 05		INPUT BUS 10		INPUT BUS 11		DATA ADD 09		DATA ADD 10		DATA ADD 11		SP CYC NEXT TO ENABLE		BF ENABLE					
		INHIB DRIVER 5		INHIB DRIVER 4		INHIB DRIVER 9		INHIB DRIVER 8		MEM SUPPLY		MEM SUPPLY		INHIB DRI. 7		INHIB DRI. 6		INHIB DRI. 5		INHIB DRI. 4		INHIB DRI. 3		INHIB DRI. 2		REGULATOR AND POWER DETECTOR		NEG CLAMP		INHIB DRI. P		MEM SUPPLY		MEM SUPPLY		REGULATOR AND POWER DETECTOR		POWER SUPPLY REGULATOR		STOP DELAY		RDR STROBE		RDR CLR		RDR RUN		RDR INT		CLR REG			
		INHIB DRIVER 5		INHIB DRIVER 4		INHIB DRIVER 9		INHIB DRIVER 8		MEM SUPPLY		MEM SUPPLY		INHIB DRI. 7		INHIB DRI. 6		INHIB DRI. 5		INHIB DRI. 4		INHIB DRI. 3		INHIB DRI. 2		REGULATOR AND POWER DETECTOR		NEG CLAMP		INHIB DRI. P		MEM SUPPLY		MEM SUPPLY		REGULATOR AND POWER DETECTOR		POWER SUPPLY REGULATOR		STOP DELAY		RDR STROBE		RDR CLR		RDR RUN		RDR INT		CLR REG			
		INHIB DRIVER 7		INHIB DRIVER 6		INHIB DRIVER 11		INHIB DRIVER 10		MEM SUPPLY		MEM SUPPLY		INHIB DRI. 5		INHIB DRI. 4		INHIB DRI. 3		INHIB DRI. 2		INHIB DRI. 1		INHIB DRI. 0		REGULATOR AND POWER DETECTOR		NEG CLAMP		INHIB DRI. P		MEM SUPPLY		MEM SUPPLY		REGULATOR AND POWER DETECTOR		POWER SUPPLY REGULATOR		STOP DELAY		RDR STROBE		RDR CLR		RDR RUN		RDR INT					
		INHIB DRIVER 7		INHIB DRIVER 6		INHIB DRIVER 11		INHIB DRIVER 10		MEM SUPPLY		MEM SUPPLY		INHIB DRI. 5		INHIB DRI. 4		INHIB DRI. 3		INHIB DRI. 2		INHIB DRI. 1		INHIB DRI. 0		REGULATOR AND POWER DETECTOR		NEG CLAMP		INHIB DRI. P		MEM SUPPLY		MEM SUPPLY		REGULATOR AND POWER DETECTOR		POWER SUPPLY REGULATOR		STOP DELAY		RDR STROBE		RDR CLR		RDR RUN		RDR INT					

PDP-8L OPTIONS

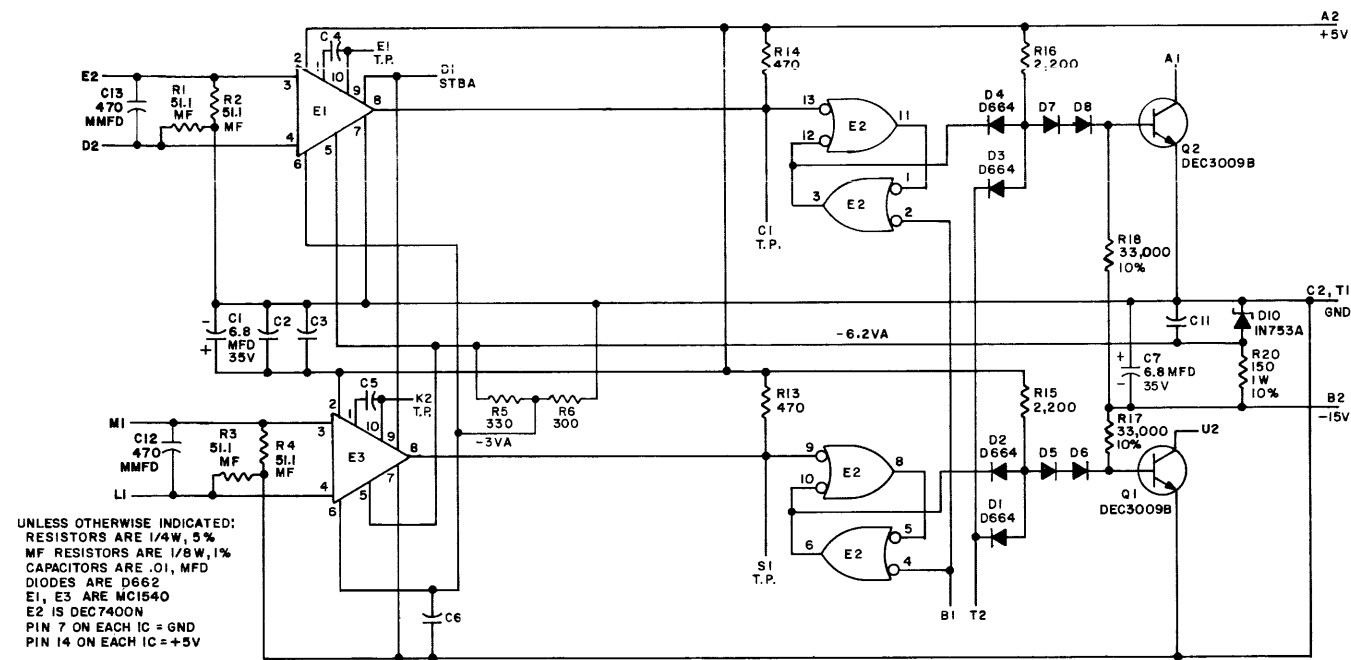
1. * = DATA BREAK
2. (M) = MEMORY PARITY
3. (P) = POWER FAIL
4. (H) = HIGH SPEED READER AND/OR PUNCH
5. (X) = REPLACED BY 6612 IF MEMORY PARITY OPTION IS INSTALLED

D-MU-8L-0-18 Module Utilization (Sheet 1)



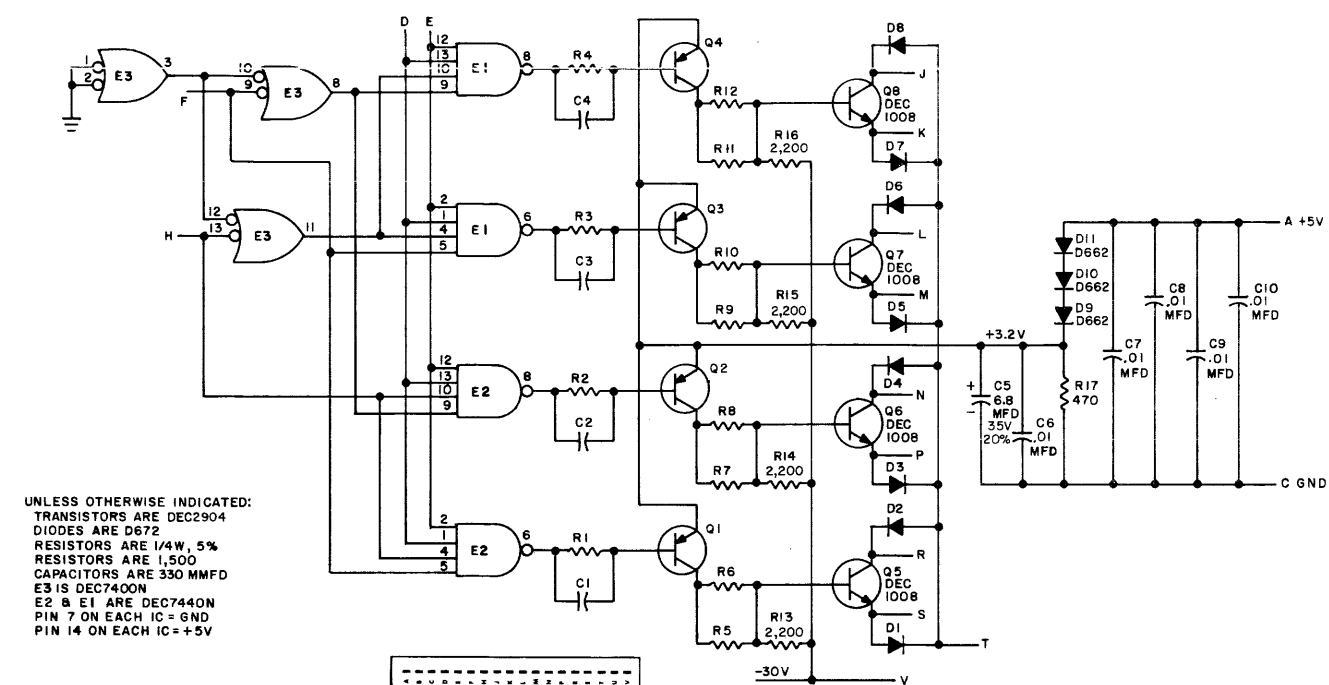
1	JUNCTION TERM BUSHING RED	90-07231	TAB 2
1	JUNCTION TERM BUSHING WHITE	90-07235	TAB 1
2	HEAT SINK WAKEFIELD NC403AA	12-0919	HS1,2
2	TRANSISTOR 2N4398	15-05870	Q3,4
2	CAP BRACKET	12-01406	C3,4
2	RESISTOR 1/2, 2W 5%	15-05428	R1,2
2	TRANSISTOR 2N3790	15-03399	Q1,2
1	CAP BRACKET SPRAGUE CMC 32	12-09242	C1
3	FUSEHOLDER BUSS	12-04705	F1,2,3
1	FUSE 4A 5B 3AG	90-07233	F1
1	FUSE 6A 3AG	12-02351	F2
1	FUSE 15A 5B 3AG	90-07227	F3
1	+5V REGULATOR	54-08047	REG
1	POWER CONNECTOR	67-85	G785D
1	POWER RECEPTICLE FEMALE, DBL	12-5351	AD 10
1	POWER RECEPTICLE MALE	12-5352	AD 10
1	KEY SWITCH	12-09236	S1
1	TRANSFORMER KAPTON *-5805A	2-09251	T1
2	CAPACITOR, BATHTUB, 2X1MFD80VDC	10-02153	C3,4
1	CAPACITOR 22,000 MFD 50VDC	10-09299	C3
1	CAPACITOR 8,000 MFD 25VDC	10-09298	C4
1	CAPACITOR 80,000 MFD 15VDC	10-09290	C5
2	DM 2 RECTIFIER	12-09238	DM1,2
QTY	DESCRIPTION	PART NO.	REV NO.

D-CS-718-0-1 Power Supply 718



PARTS LIST IS A-PL-G020-0-0

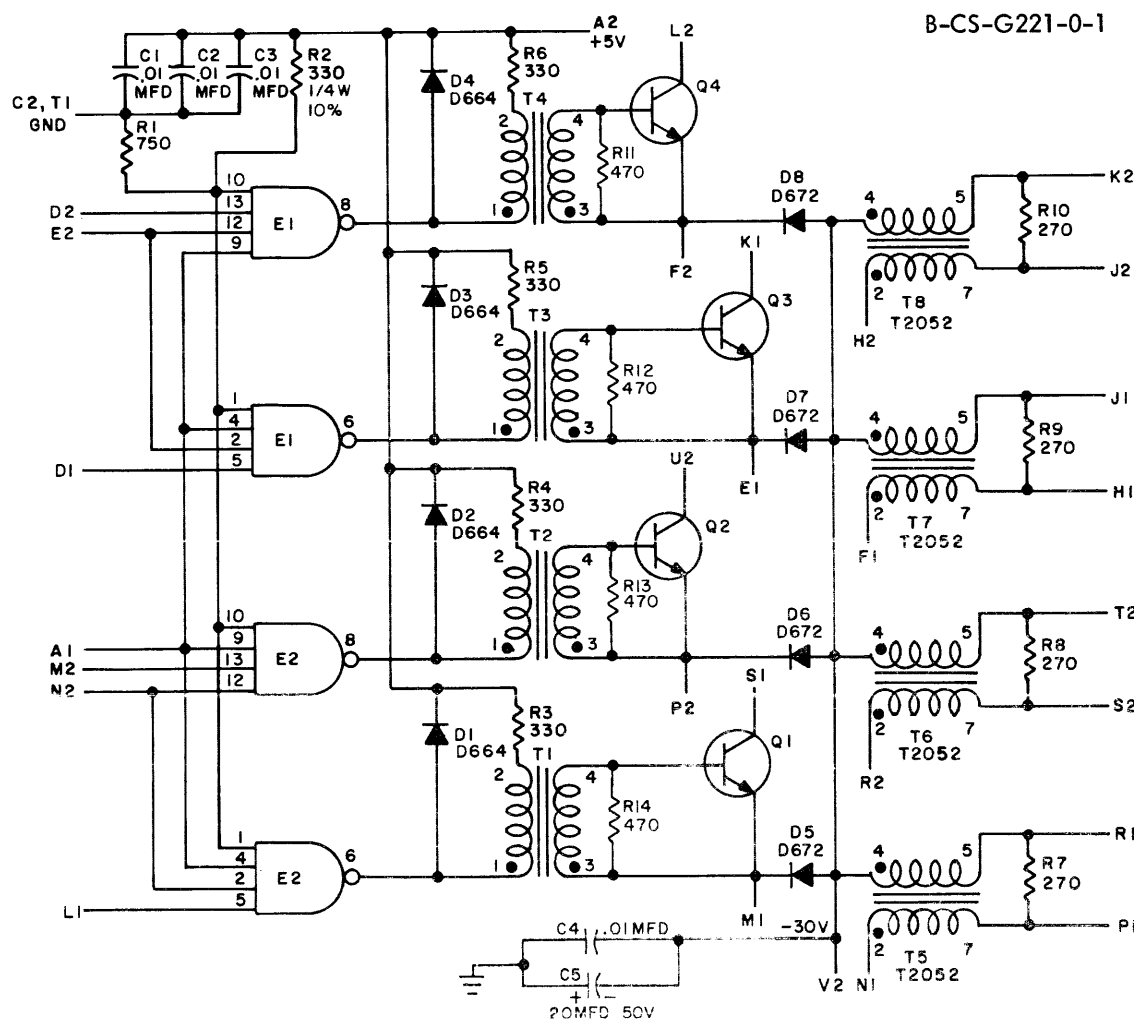
B-CS-G020-0-1 Sense Amplifier



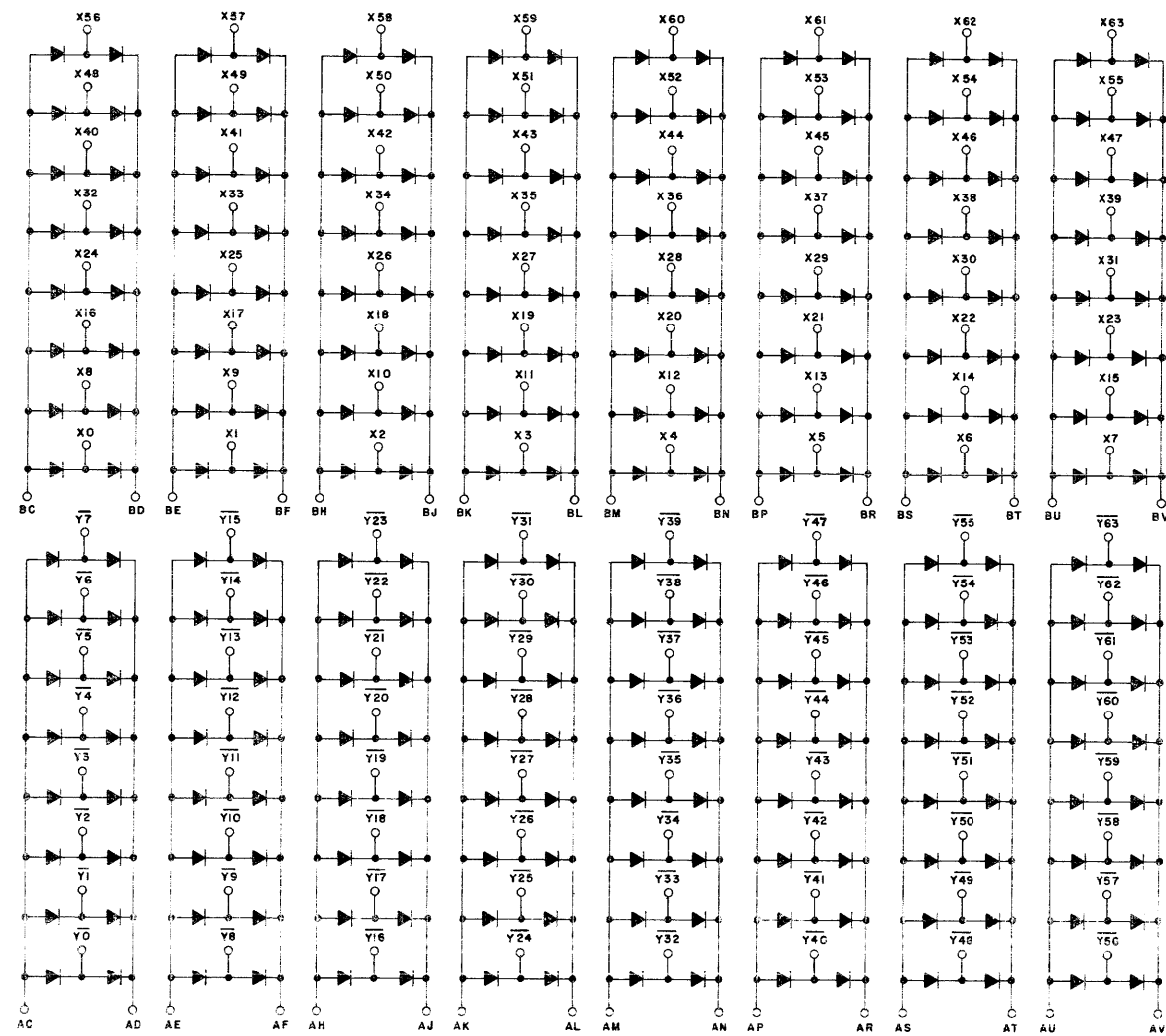
PARTS LIST IS A-PL-G221-0-1

B-CS-G221-0-1 Memory Selector

UNLESS OTHERWISE INDICATED:
 TRANSISTORS ARE DEC1008
 RESISTORS ARE 1/4W, 5%
 TRANSFORMERS ARE T2037
 IC'S ARE DEC7440N
 PIN 7 ON EACH IC = GND
 PIN 14 ON EACH IC = +5V

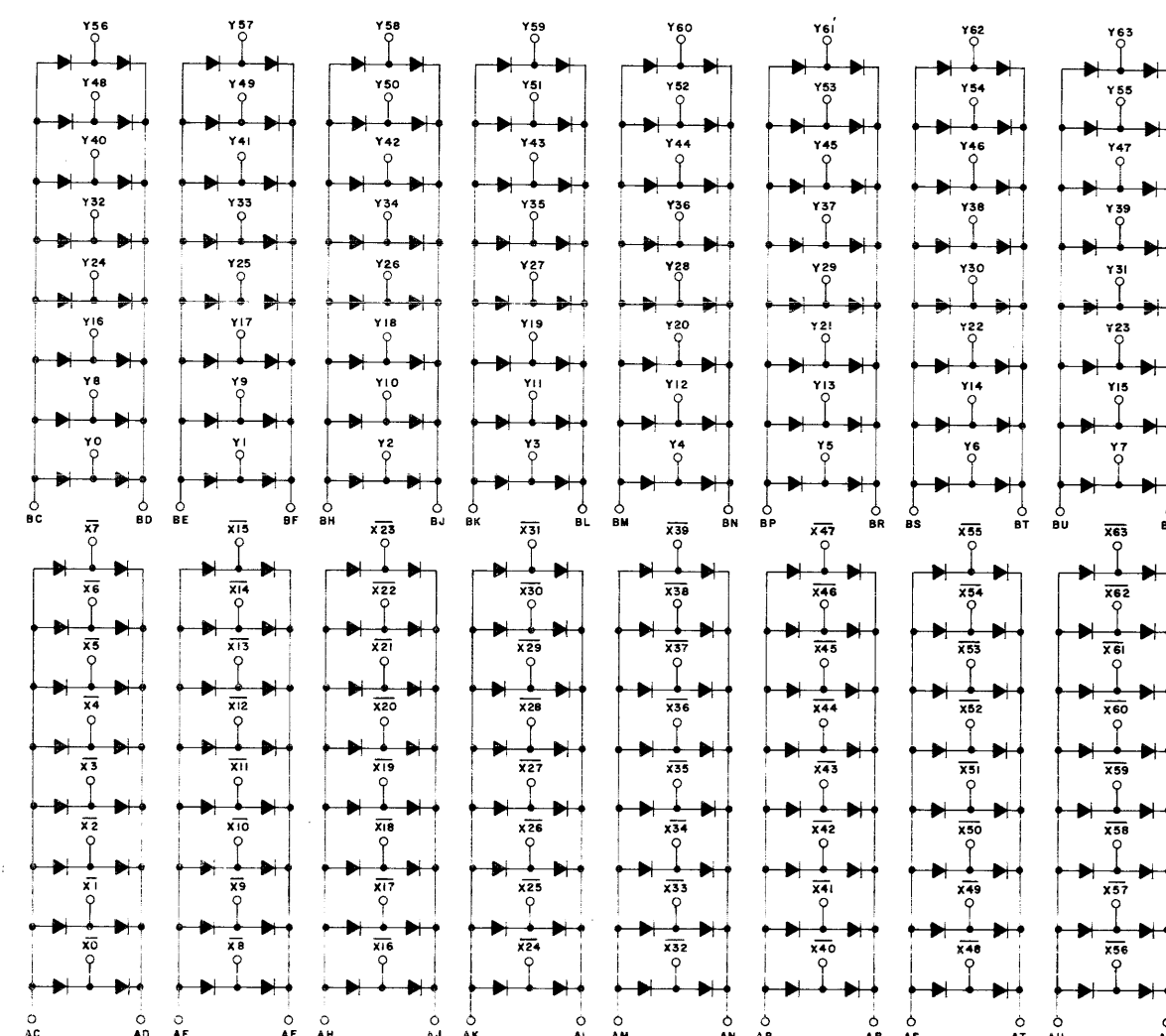


B-CS-G228-0-1 Inhibit Driver



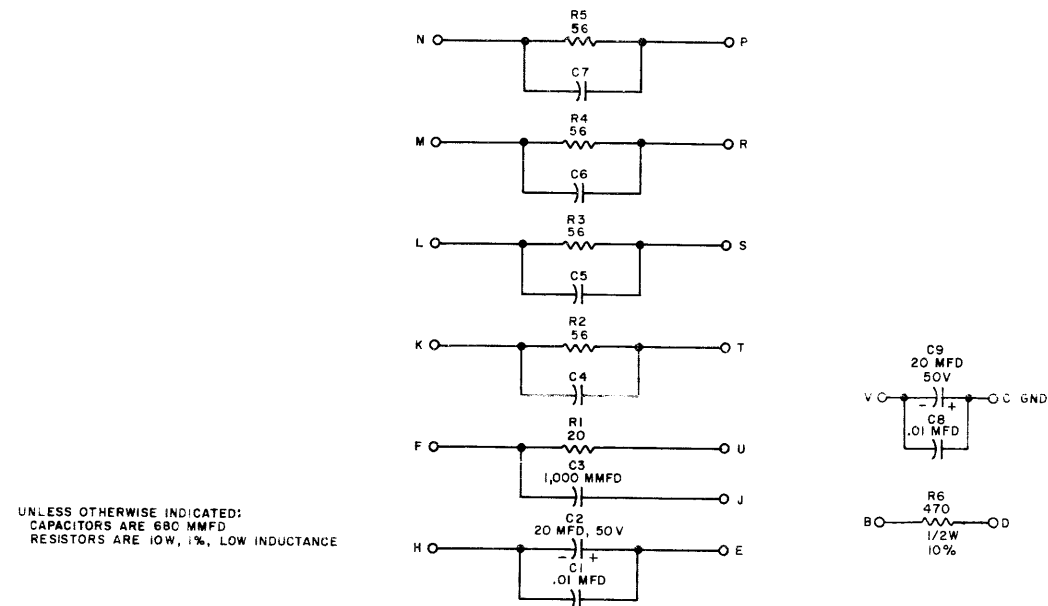
UNLESS OTHERWISE INDICATED:
 DIODES ARE D672
 USE D671 AS SUBSTITUTE
 R1 IS A 330Ω THERMISTOR
 25% #2090EP-E

C-CS-G610-0-1 A-Diode Board



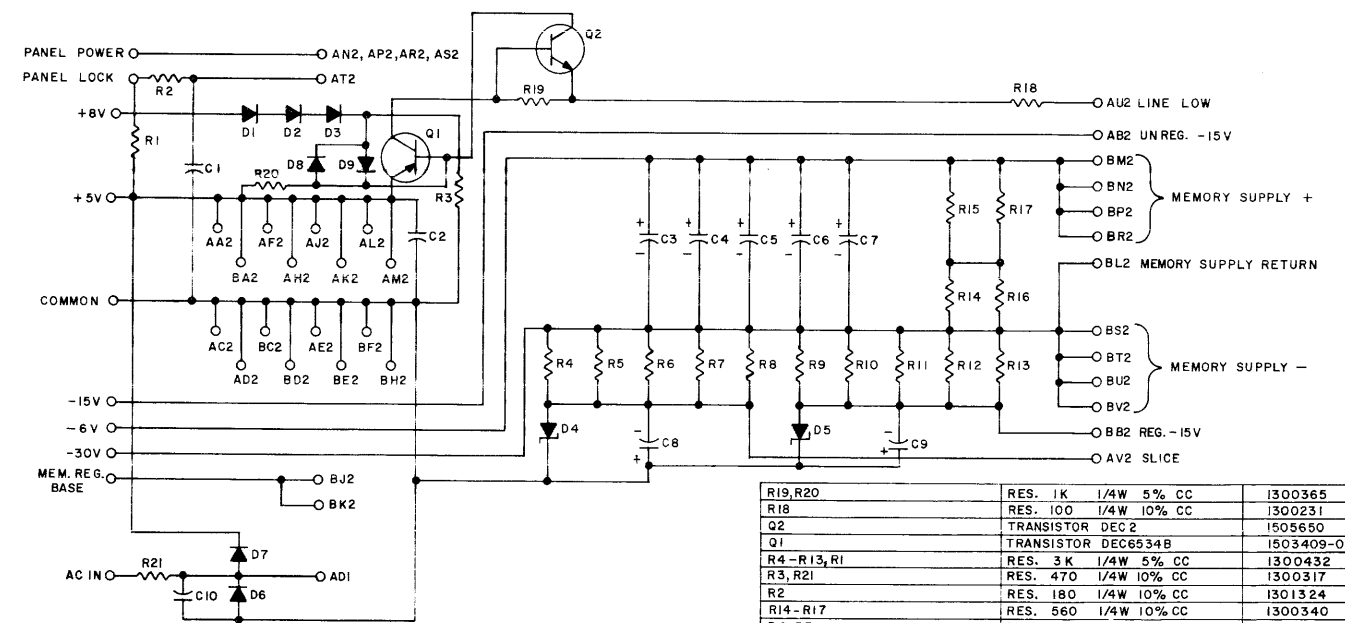
UNLESS OTHERWISE INDICATED:
 DIODES ARE D672
 USE D671 AS SUBSTITUTE

C-CS-G611-0-1 B-Diode Board



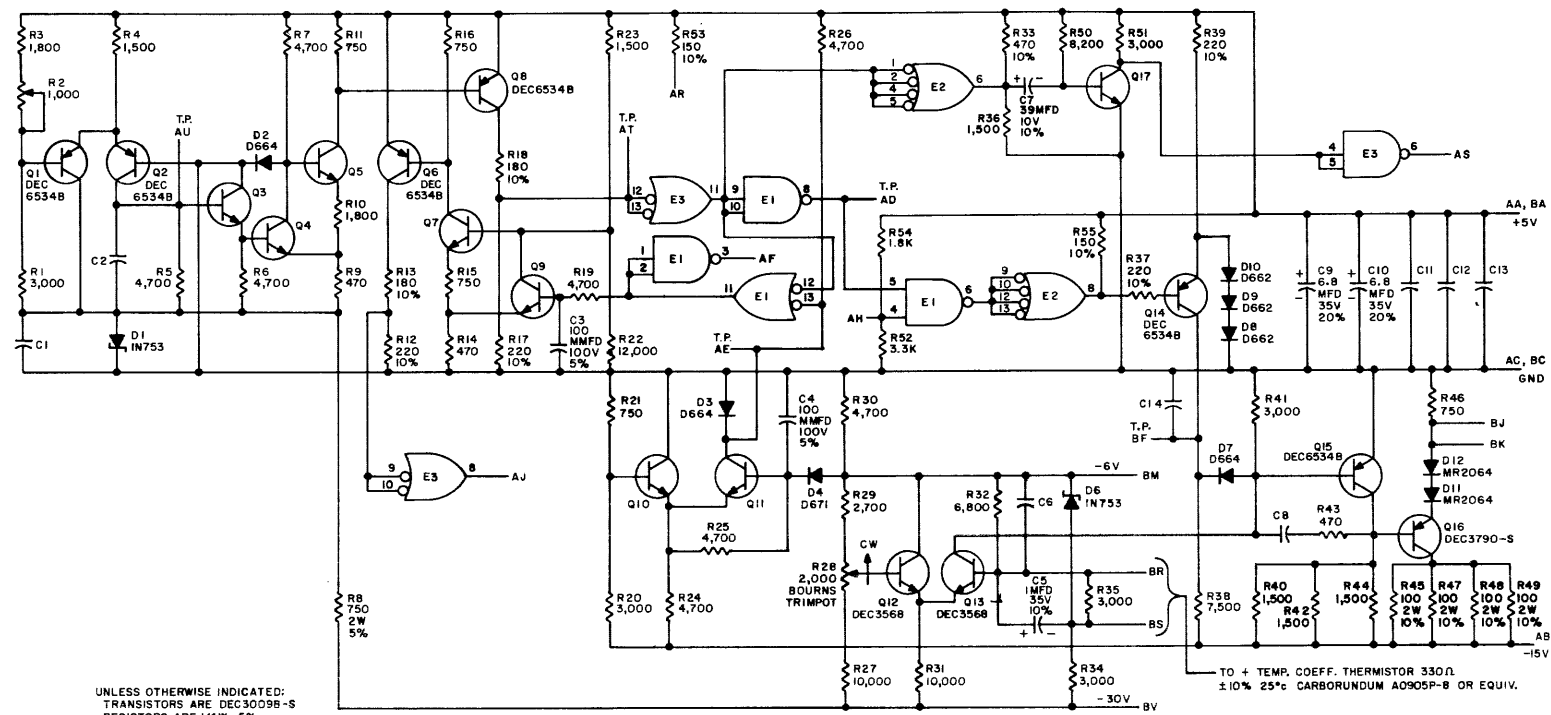
UNLESS OTHERWISE INDICATED:
 CAPACITORS ARE 680 MMFD
 RESISTORS ARE 10W, 1%, LOW INDUCTANCE

B-CS-G624-0-1 Resistor Board



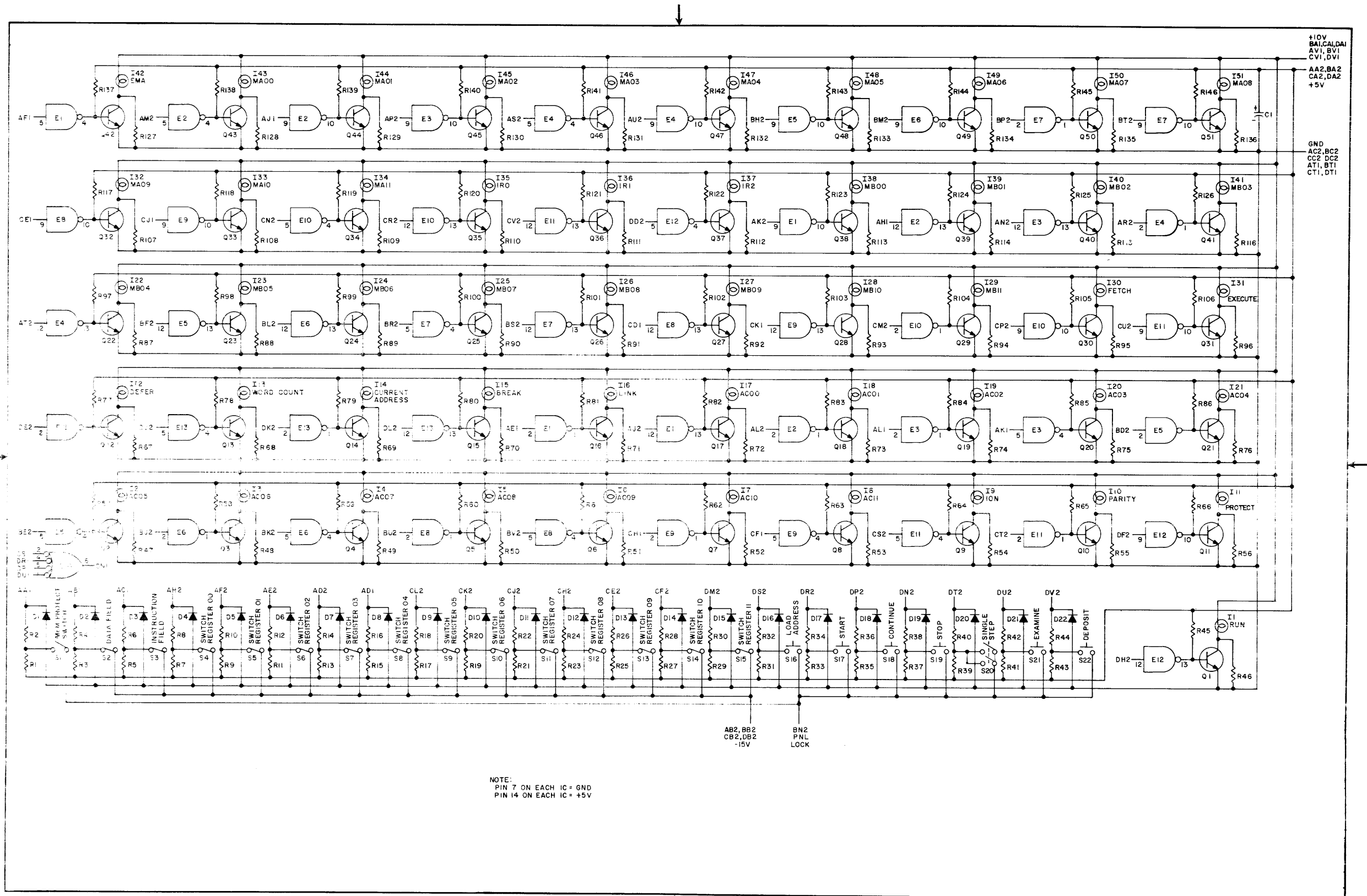
REFERENCE DESIGNATION	DESCRIPTION	PART NO.
R19, R20	RES. 1K 1/4W 5% CC	1300365
R18	RES. 100 1/4W 10% CC	1300231
Q2	TRANSISTOR DEC 2	1503650
Q1	TRANSISTOR DEC6534B	1503409-01
R4-R13, R1	RES. 3K 1/4W 5% CC	1300432
R3, R21	RES. 470 1/4W 10% CC	1300317
R2	RES. 180 1/4W 10% CC	1301324
R14-R17	RES. 560 1/4W 10% CC	1300340
D4, D5	DIODE 1N4744	1105648
D1-D3, D6-D9	DIODE D664	1100114
C3-C9	CAP. 20MFD 50V -10+75% ELECT	1002839
C1, C2, C10	CAP. .01MFD 100V 20% DISC	1001610
	PARTS LIST	A-PL-6785-0-0
	PARTS LIST	

B-CS-G785-0-1 Power Connector



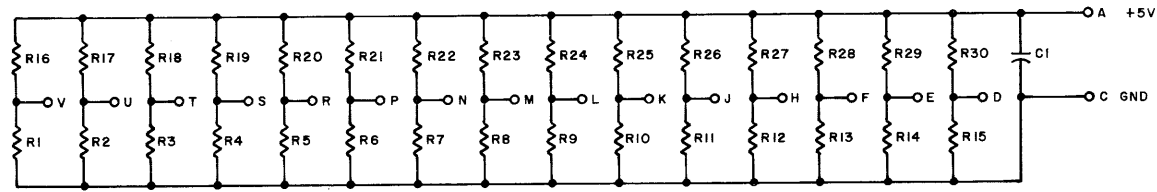
UNLESS OTHERWISE INDICATED:
 TRANSISTORS ARE DEC3009B-S
 RESISTORS ARE 1/4W, 5%
 CAPACITORS ARE .01 MFD
 E1 & E3 ARE DEC7400N
 E2 IS DEC7400N
 PIN 7 ON EACH IC = GND
 PIN 14 ON EACH IC = +5V

C-CS-G826-0-1 Regulator Control



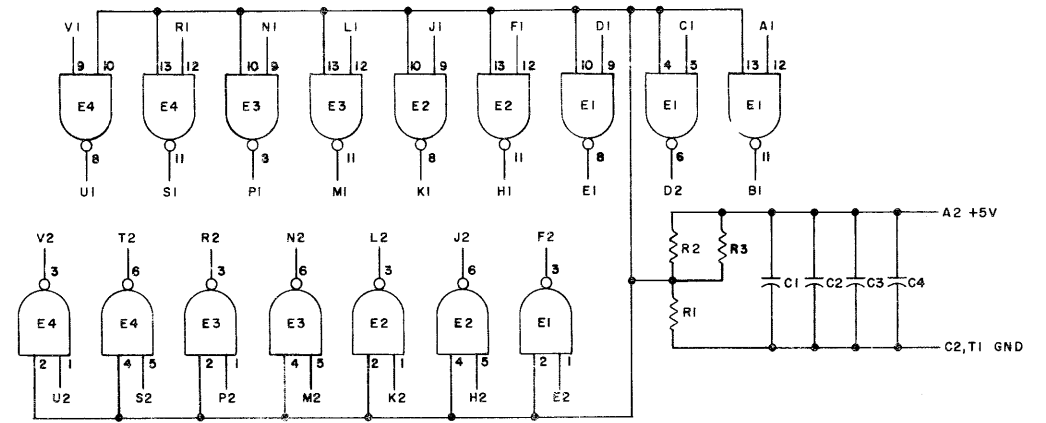
NOTE:
 PIN 7 ON EACH IC = GND
 PIN 14 ON EACH IC = +5V

D-CS-G921-0-1 PDP-8/L Control Panel



R16 - R30	RES. 1.8K 1/4W 10% CC	1301428
R1 - R15	RES. 3.3K 1/4W 5% CC	1300439
C1	CAP. .01MFD 100V 20% DISC	1001610
	PARTS LIST	A-PL-M002-0-0
REFERENCE DESIGNATION	DESCRIPTION	PART NO.
	PARTS LIST	

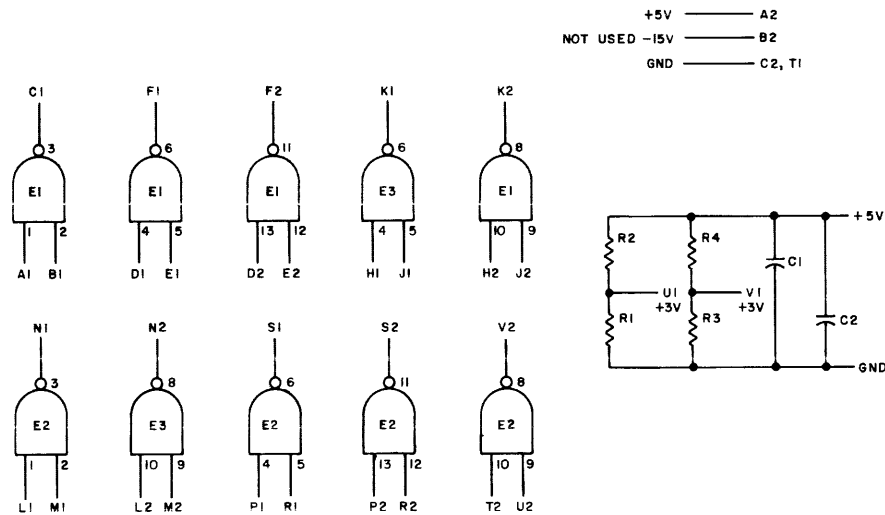
B-CS-M002-0-1 15 Loads



NOTES:
PIN 7 ON EACH IC = GND
PIN 14 ON EACH IC = +5V

E1 - E4	INTEGRATED CKT. DEC7400N	1905575
R1 - R3	RES. 750 1/4W 5% CC	1301401
C1 - C4	CAP. .01MFD 100V 20% DISC	1001610
	PARTS LIST	A-PL-M111-0-0
REFERENCE DESIGNATION	DESCRIPTION	PART NO.
	PARTS LIST	

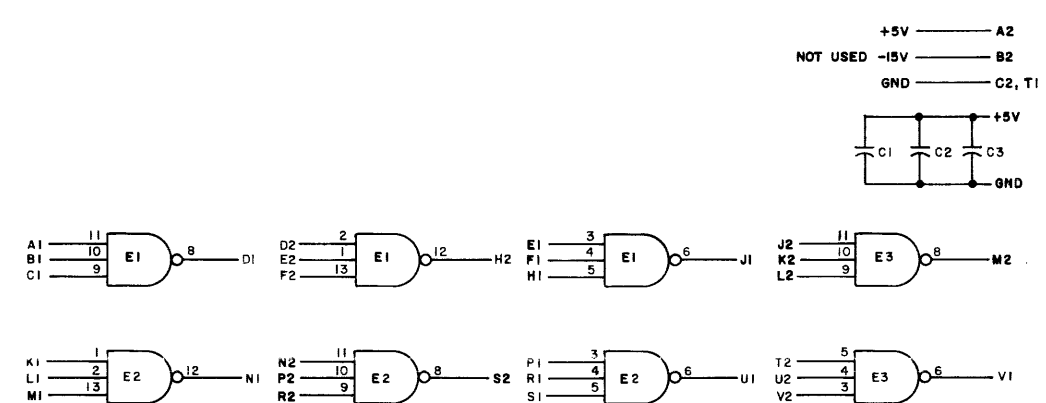
B-CS-M111-0-1 Inverter



NOTES:
PIN 7 ON EACH IC = GND
PIN 14 ON EACH IC = +5V

E1 THRU E3	INTEGRATED CKT. DEC7400N	1905575
R1 AND R3	RES. 750 1/4W 5% CC	1301401
R2 AND R4	RES. 330 1/4W 10% CC	1300293
C1 AND C2	CAP. .01MFD 100V 20% DISC	1001610
	PARTS LIST	A-PL-M113-0-0
REFERENCE DESIGNATION	DESCRIPTION	PART NO.
	PARTS LIST	

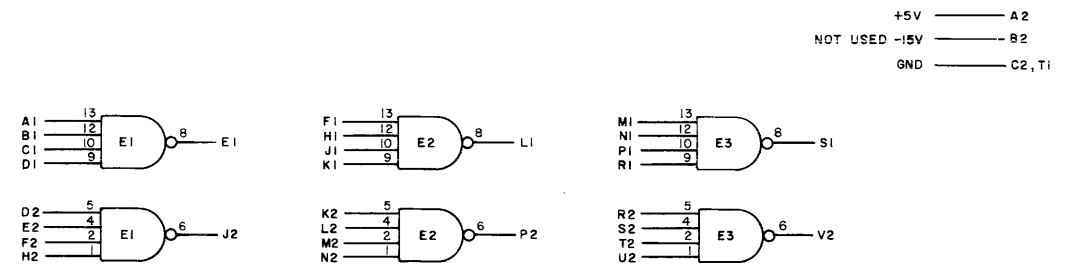
B-CS-M113-0-1 10 2-Input NAND Gates



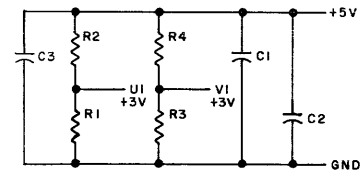
NOTES:
PIN 7 ON EACH IC = GND
PIN 14 ON EACH IC = +5V

E1 THRU E3	INTEGRATED CKT. DEC7410N	1905576
C1 THRU C3	CAP. .01MFD 100V 20% DISC	1001610
	PARTS LIST	A-PL-M115-0-0
REFERENCE DESIGNATION	DESCRIPTION	PART NO.
	PARTS LIST	

B-CS-M115-0-1 8 3-Input NAND Gates

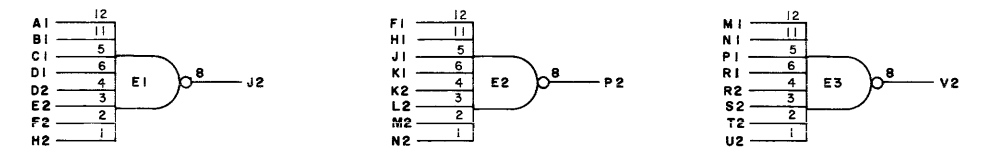


NOTES:
PIN 7 ON EACH IC = GND
PIN 14 ON EACH IC = +5V

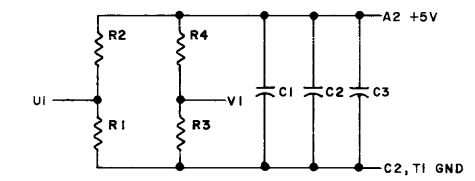


E1 THRU E3	INTEGRATED CKT. DEC7420N	1905577
R1 & R3	RES. 750 1/4W 5% CC	1301401
R2 & R4	RES. 330 1/4W 10% CC	1300293
C1 THRU C3	CAP. .01MFD 100V 20% DISC	1001610
	PARTS LIST	A-PL-M117-O-O
REFERENCE DESIGNATION	DESCRIPTION	PART NO.
PARTS LIST		

B-CS-M117-0-1 6 4-Input NAND Gates

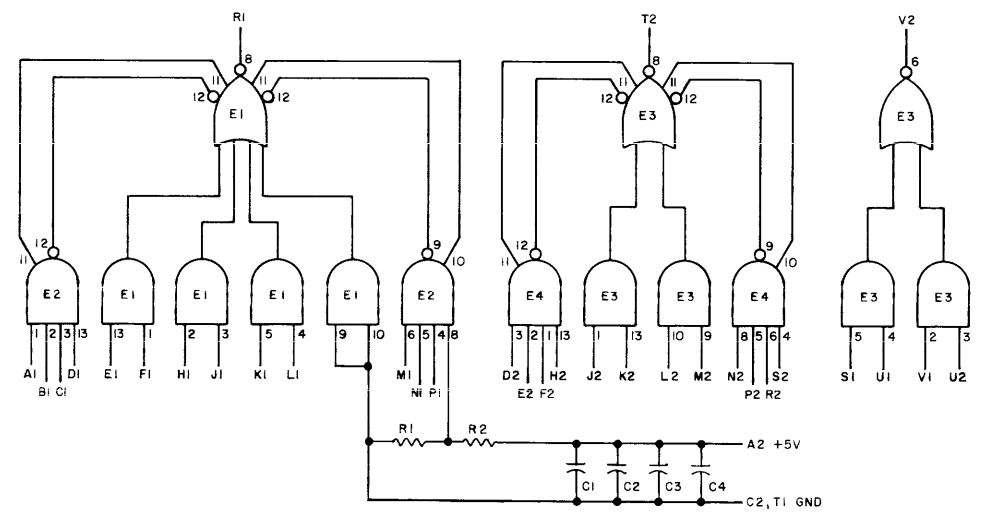


NOTES:
PIN 7 ON EACH IC = GND
PIN 14 ON EACH IC = +5V



E1 THRU E3	INTEGRATED CKT. DEC7430N	1905578
R2 & R4	RES. 330 1/4W 10% CC	1300293
R1 & R3	RES. 750 1/4W 5% CC	1301401
C1 THRU C3	CAP. .01MFD 100V 20% DISC	1001610
	PARTS LIST	A-PL-M119-O-O
REFERENCE DESIGNATION	DESCRIPTION	PART NO.
PARTS LIST		

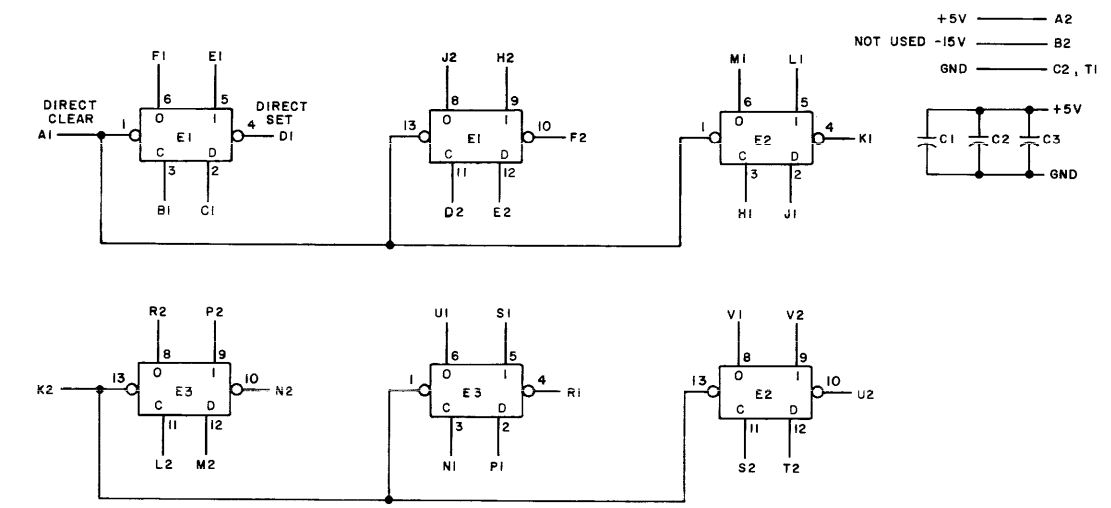
B-CS-M119-0-1 3 8-Input NAND Gates



NOTES:
PIN 7 ON EACH IC = GND
PIN 14 ON EACH IC = +5V

E3	INTEGRATED CKT. DEC7450N	1905580
E1	INTEGRATED CKT. DEC7453N	1905582
E2 & E4	INTEGRATED CKT. DEC7460N	1905581
R2	RES. 4.7K 1/4W 10% CC	1300448
R1	RES. 6.8K 1/4W 10% CC	1300463
C1 THRU C4	CAP. .01MFD 100V 20% DISC	1001610
	PARTS LIST	A-PL-M160-O-O
REFERENCE DESIGNATION	DESCRIPTION	PART NO.
PARTS LIST		

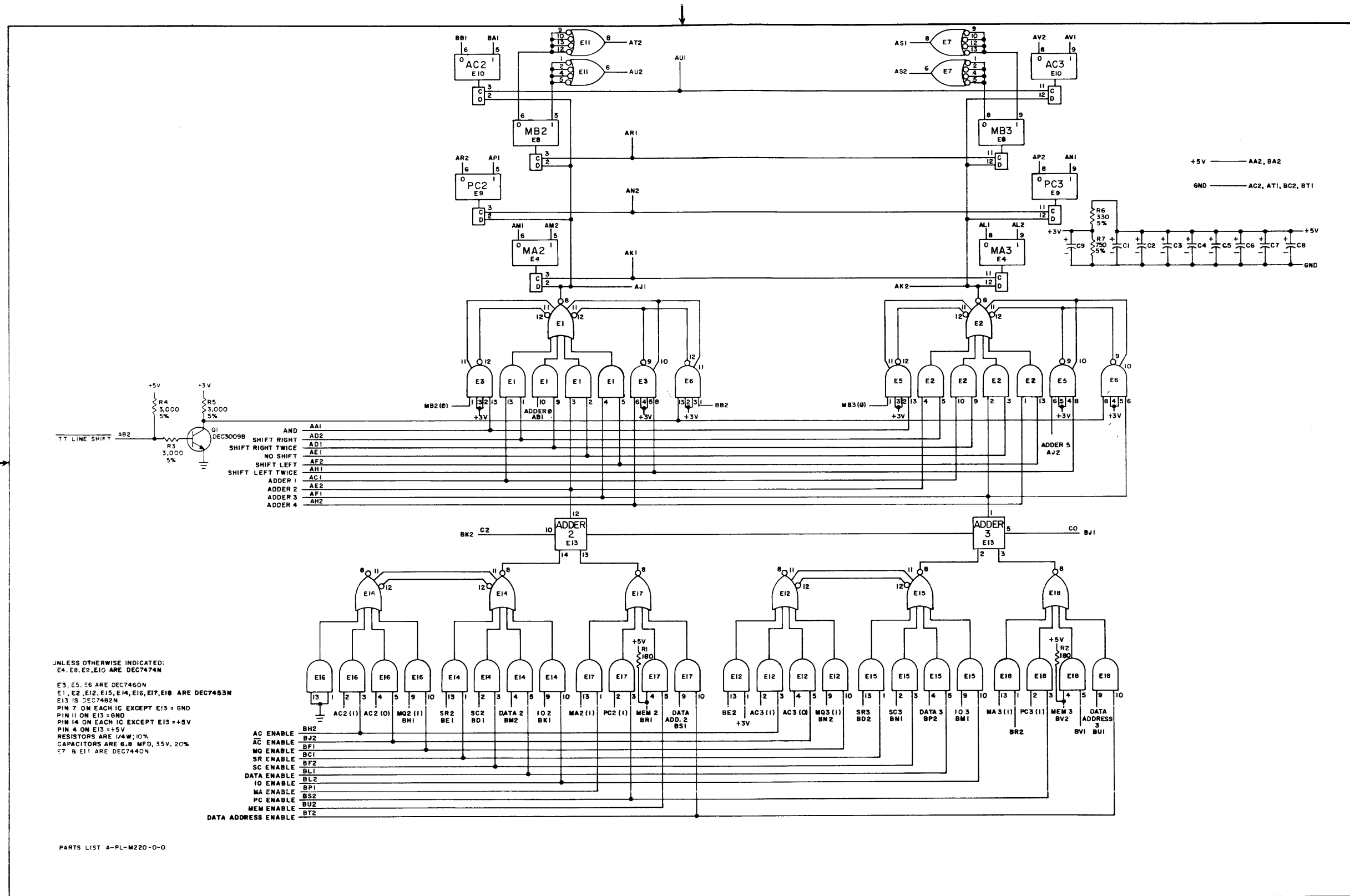
B-CS-M160-0-1 Gate Module



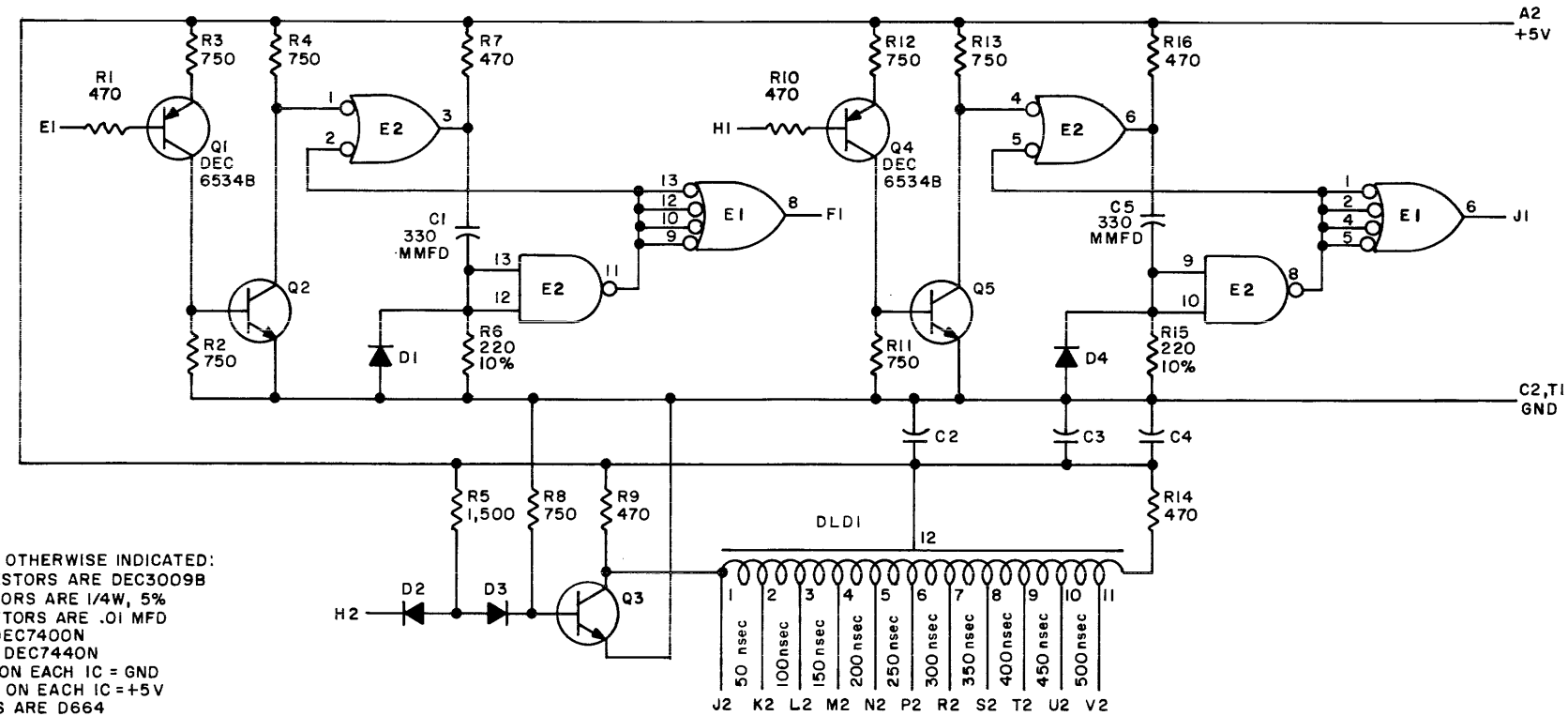
NOTES:
PIN 7 ON EACH IC = GND
PIN 14 ON EACH IC = +5V

E1 THRU E3	INTEGRATED CKT. DEC7474N	1905547
C1 THRU C3	CAP. .01MFD 100V 20% DISC	1001610
	PARTS LIST	A-PL-M216-O-O
REFERENCE DESIGNATION	DESCRIPTION	PART NO.
PARTS LIST		

B-CS-M216-0-1 Six Flip-Flops

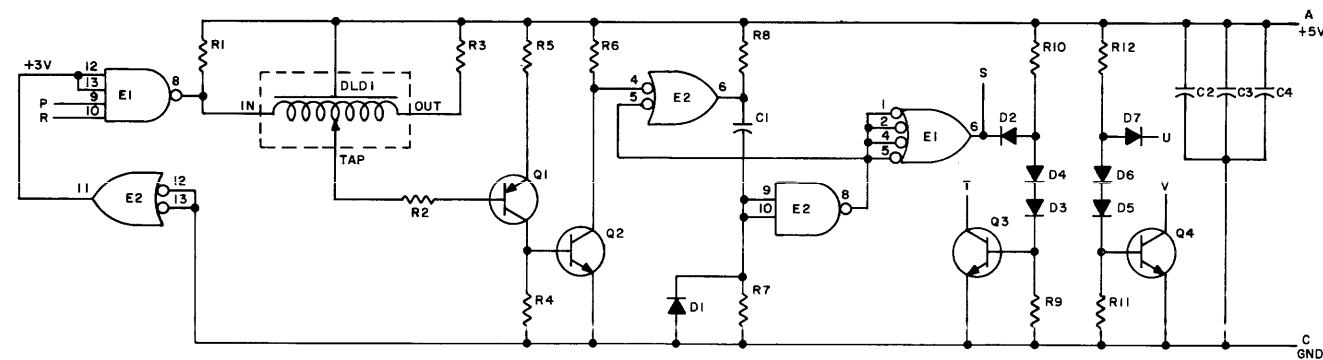


D-CS-M220-0-1 Major Registers



UNLESS OTHERWISE INDICATED:
 TRANSISTORS ARE DEC3009B
 RESISTORS ARE 1/4W, 5%
 CAPACITORS ARE .01 MFD
 E2 IS DEC7400N
 E1 IS DEC7440N
 PIN 7 ON EACH IC = GND
 PIN 14 ON EACH IC = +5V
 DIODES ARE D664
 DL D1 IS DEC16-05530

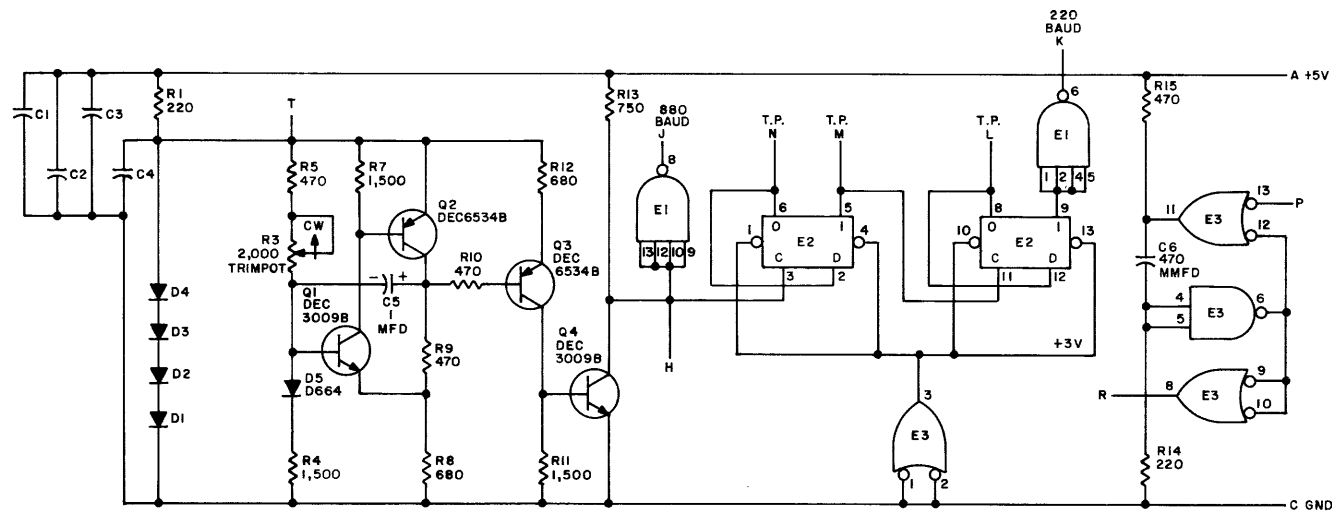
B-CS-M310-0-1 Delay Line



NOTES:
 PIN 7 ON EACH IC = GND
 PIN 14 ON EACH IC = +5V

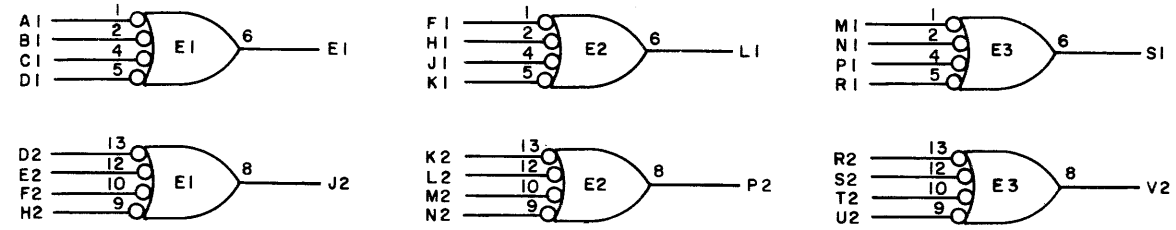
DL D1	DELAY LINE 500	1602167
E2	INTEGRATED CKT. DEC7400N	1905575
E1	INTEGRATED CKT. DEC7440N	1905579
Q1	TRANSISTOR DEC6534B	1503409-01
Q2, Q3, Q4	TRANSISTOR DEC3009B-S	1503100
R10, R12	RES. 1.5K 1/4W 5% CC	1300391
R9, R11	RES. 3K 1/4W 5% CC	1300432
R7	RES. 220 1/4W 5% CC	1300271
R4, R5, R6	RES. 750 1/4W 5% CC	1301401
R1, R2, R3, R8	RES. 470 1/4W 5% CC	1300316
D1-D7	DIODE D664	1100114
C2, C3, C4	CAP. .01MFD 100V 20% DISC	1001610
C1	CAP. 330MMF 100V 5% D.M.	1000023
	PARTS LIST	A-PL-M360-0-0
REFERENCE DESIGNATION	DESCRIPTION	PART NO.
	PARTS LIST	

B-CS-M360-0-1 Variable Delay

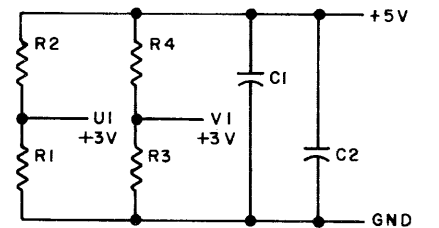


UNLESS OTHERWISE INDICATED:
 RESISTORS ARE 1/4W, 5%
 CAPACITORS ARE .01 MFD
 C5 IS 35V, 10%, TANT.
 DIODES ARE D662
 E1 IS DEC7440N
 E2 IS DEC7474N
 E3 IS DEC7400N
 PIN 7 ON EACH IC = GND
 PIN 14 ON EACH IC = +5V
 R3 IS A #275P

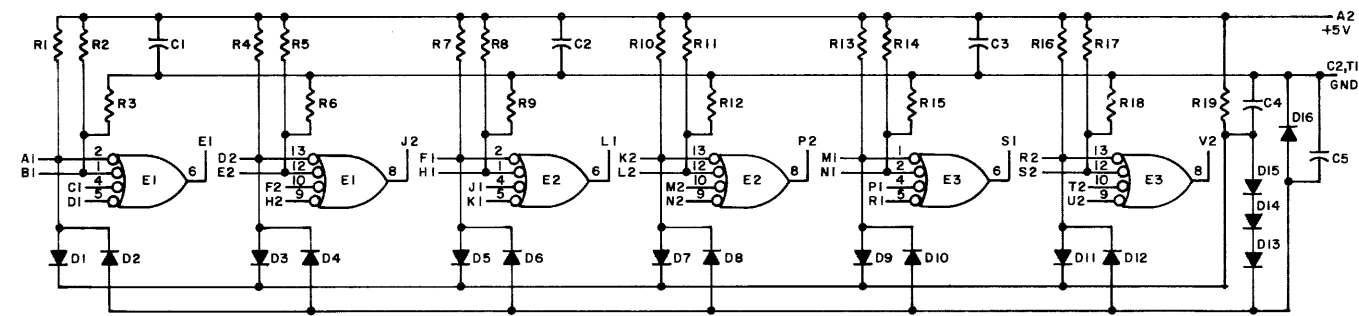
B-CS-M452-0-1 Variable Clock



NOTES:
 PIN 7 ON EACH IC = GND
 PIN 14 ON EACH IC = +5V
 USE THE ETCH BOARD OF THE M117



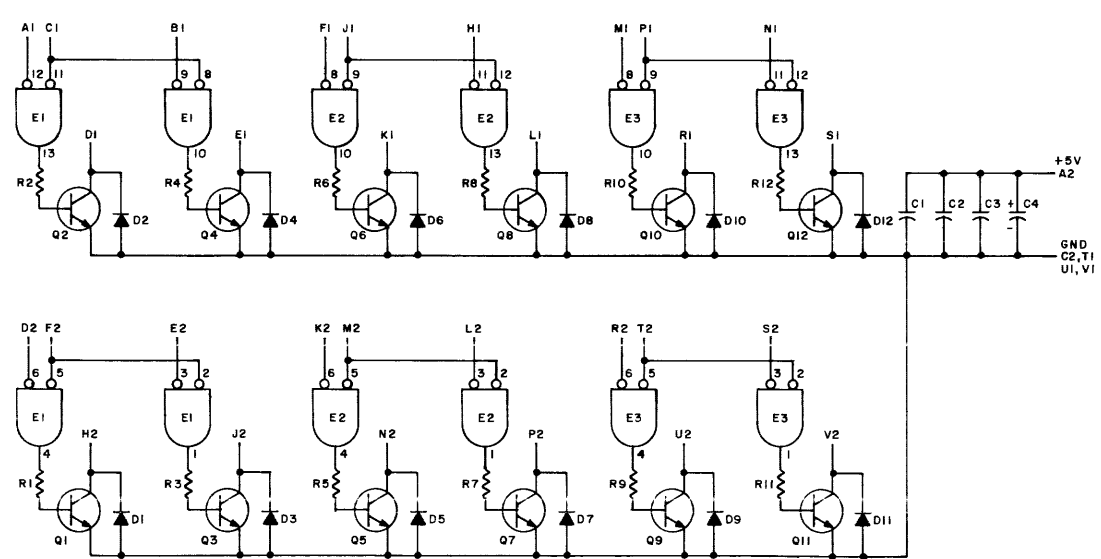
B-CS-M617-0-1 6 4-Input NOR Buffers



NOTES:
 PIN 7 ON EACH IC = GND
 PIN 14 ON EACH IC = +5V

REFERENCE DESIGNATION	DESCRIPTION	PART NO.
E1-E3	INTEGRATED CKT. DEC7420N	I90577
R19	RES. 330 1/4W 5% CC	I300295
R3,R6,R9,R12,R15,R18	RES. 1.5K 1/4W 5% CC	I300391
R2,R5,R8,R11,R14,R17	RES. 750 1/4W 5% CC	I301401
R1,R4,R7,R10,R13,R16	RES. 220 1/4W 5% CC	I300271
D13-D16	DIODE D662	I100113
D1-D12	DIODE D664	I100114
C1-C5	CAP. .01MFD 100V 20% DISC	I001610
	PARTS LIST	A-PL-M516-0-0
	REFERENCE DESIGNATION	DESCRIPTION
		PARTS LIST

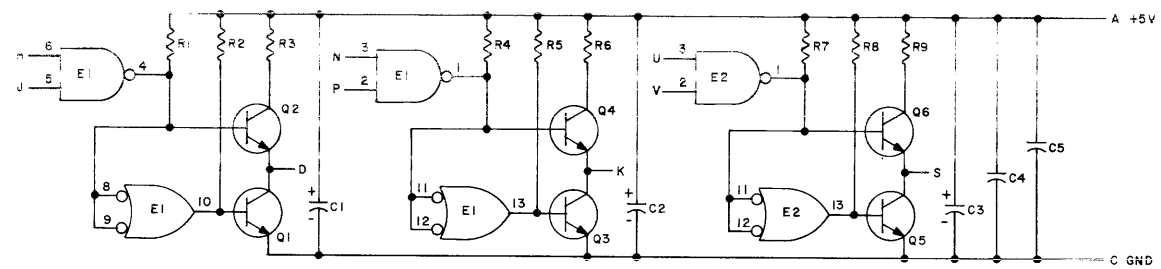
B-CS-M516-0-1 Positive Bus Receiver



NOTES:
 PIN 7 ON EACH IC = GND
 PIN 14 ON EACH IC = +5V

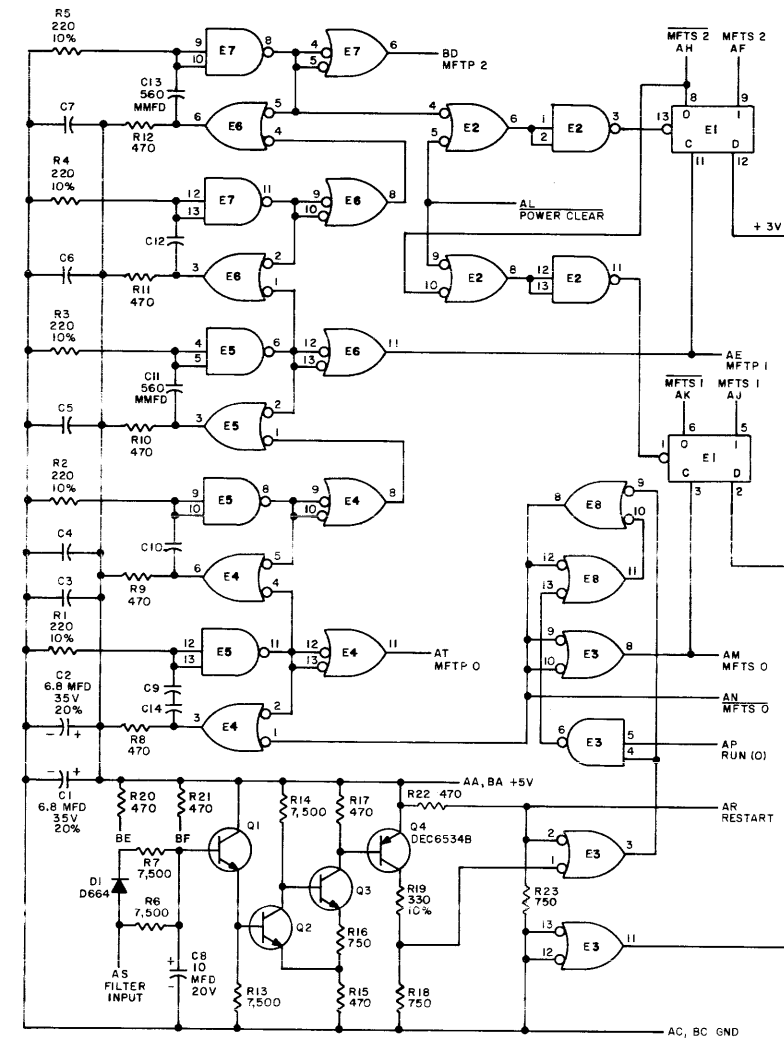
REFERENCE DESIGNATION	DESCRIPTION	PART NO.
E1-E3	INTEGRATED CKT. DEC7402N	I909004
Q1-Q12	TRANSISTOR DEC3009B	I503100
R1-R12	RES. 390 1/4W 5% CC	I300309
D1-D12	DIODE D664	I100114
C4	CAP. 6.8MFD 35V 20% STANT	I000067
C1-C3	CAP. .01MFD 100V 20% DISC	I001610
	PARTS LIST	A-PL-M623-0-0
	REFERENCE DESIGNATION	DESCRIPTION
		PARTS LIST

C-CS-M623-0-1 Bus Driver



NOTES:
 PIN 7 ON EACH IC = GND
 PIN 14 ON EACH IC = +5V

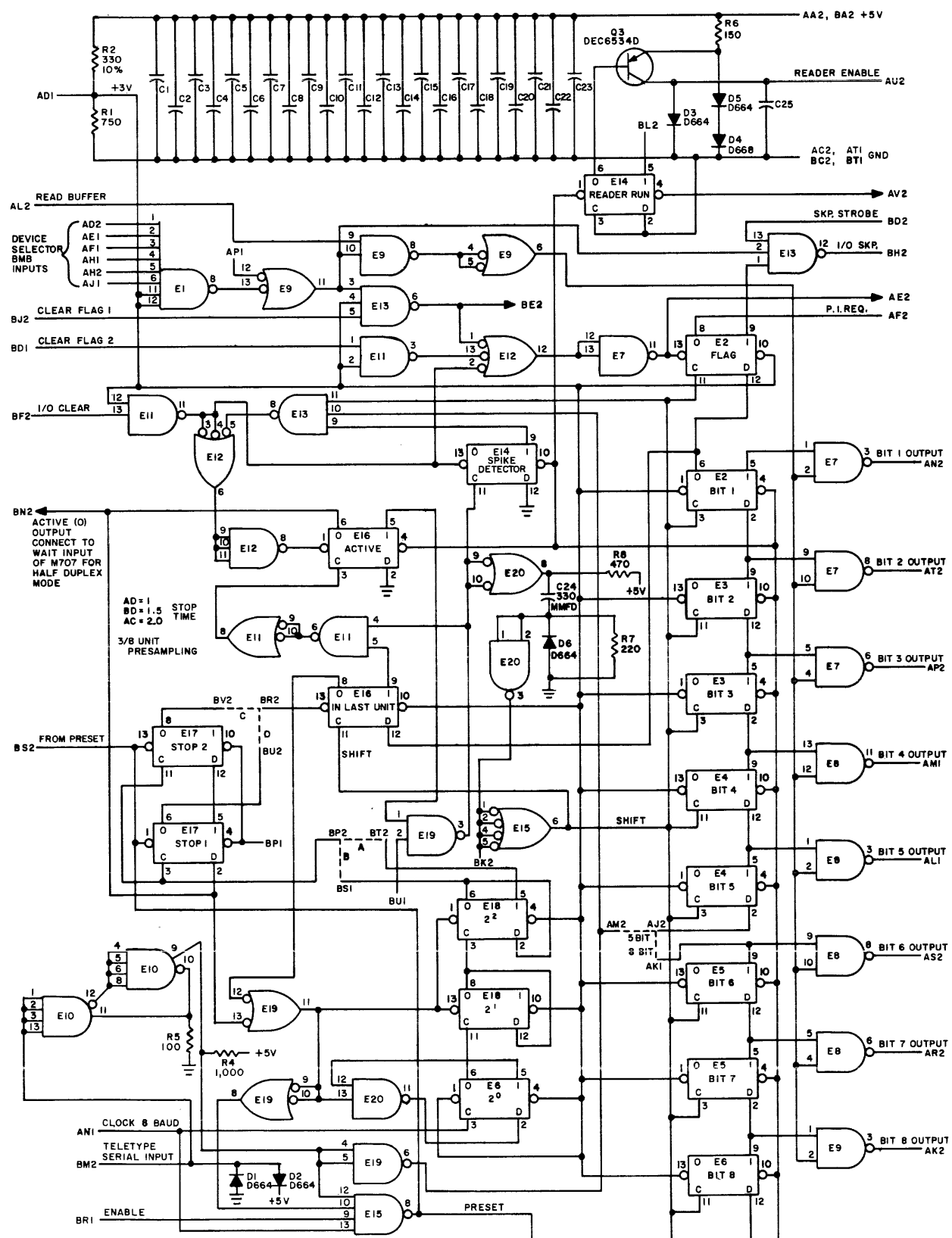
B-CS-M660-0-1 Positive Level Driver



UNLESS OTHERWISE INDICATED:
 TRANSISTORS ARE DEC3009B
 CAPACITORS ARE .01 MFD
 RESISTORS ARE 1/4W, 5%
 E1 IS DEC7474N
 E2, E3, E4, E5, E6, E7, E8 ARE DEC7400N
 PIN 7 ON EACH IC = GND
 PIN 14 ON EACH IC = +5V

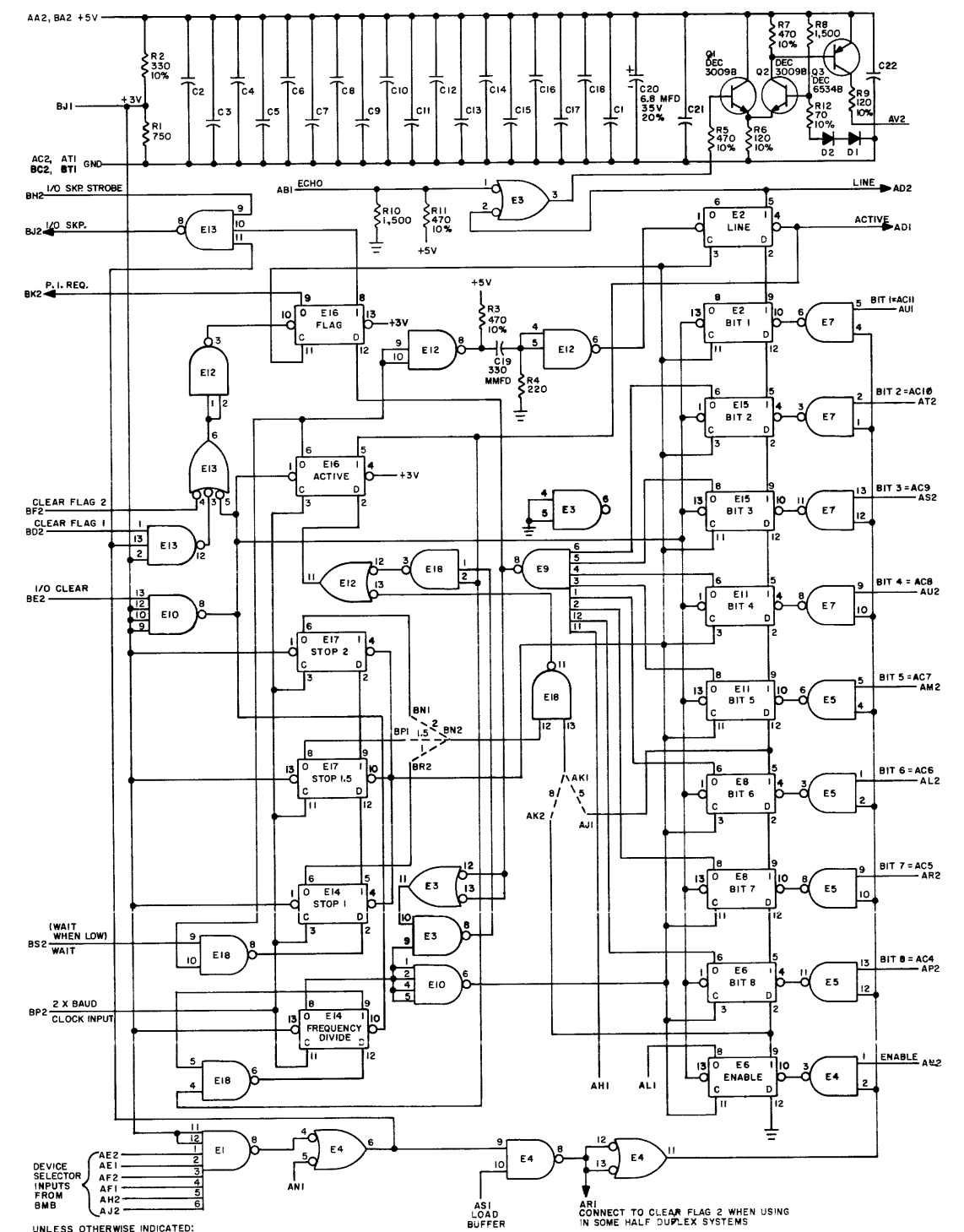
PARTS LIST A-PL-M700-0-0

C-CS-M700-0-1 Manual Timing Generator



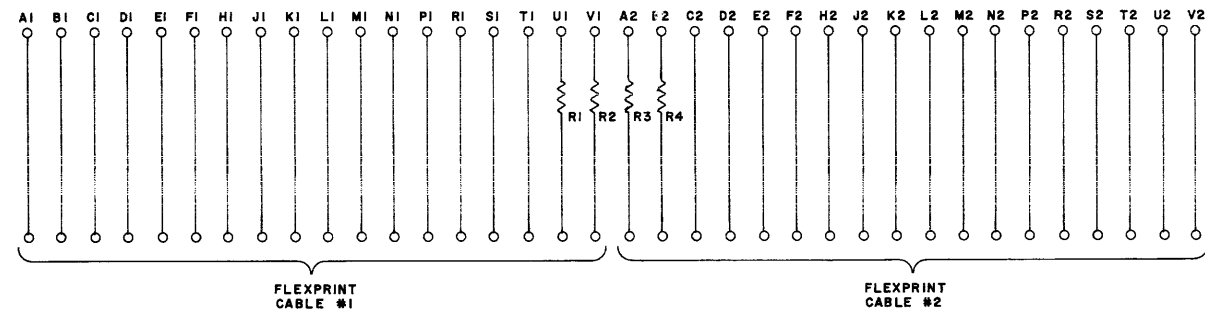
UNLESS OTHERWISE INDICATED:
 CAPACITORS ARE .01 MFD
 RESISTORS ARE 1/4W, 5%
 DIODES ARE D662
 PIN 7 ON EACH IC = GND
 PIN 14 ON EACH IC = +5V
 E1 IS DEC7430N
 E2, E3, E4, E5, E6, E14, E16,
 E17 & E18 ARE DEC7474N
 E7, E8, E9, E11, E19 & E20 ARE DEC7400N
 E12 & E13 ARE DEC7410N
 E15 IS DEC7440N
 E10 IS DEC7460N

C-CS-M706-0-1 Teletype Receiver



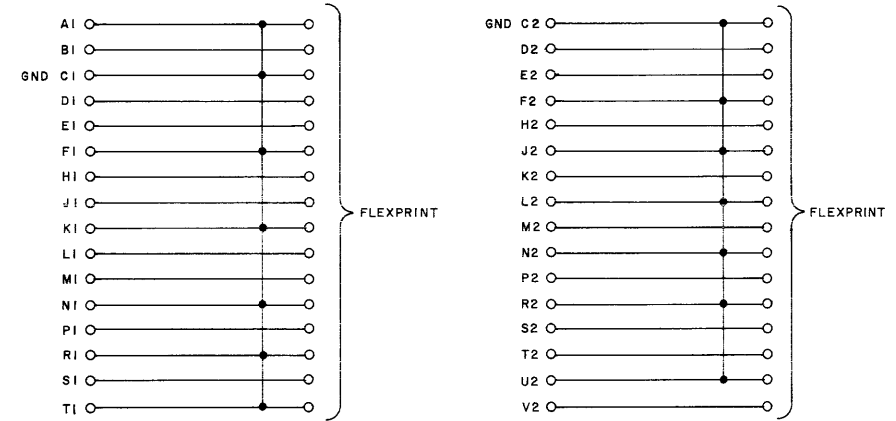
UNLESS OTHERWISE INDICATED:
 CAPACITORS ARE .01 MFD
 RESISTORS ARE 1/4W, 5%
 DIODES ARE D662
 PIN 7 ON EACH IC = GND
 PIN 14 ON EACH IC = +5V
 E1 & E9 ARE DEC7430N
 E2, E6, E8, E11, E14, E15, E16 & E17 ARE DEC7474N
 E3, E4, E5, E7, E12 & E18 ARE DEC7400N
 E10 IS DEC7410N
 E13 IS DEC7440N

C-CS-M707-0-1 Teletype Transmitter



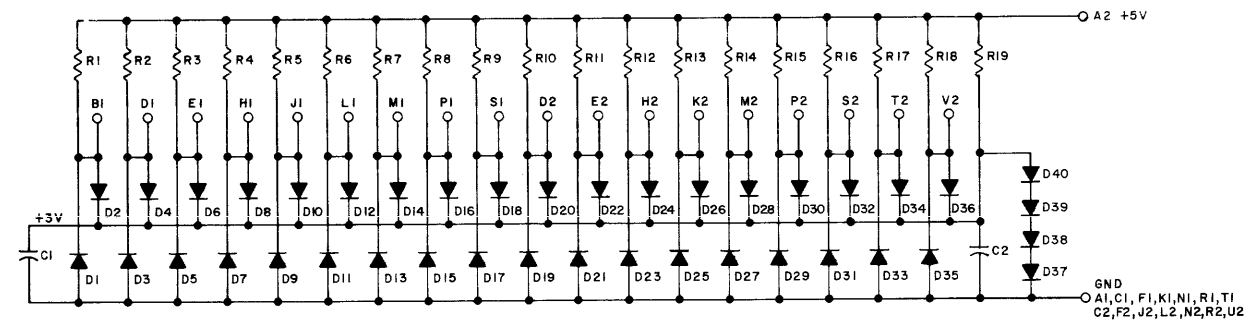
R1-R4	RES. 10 1/4W 10% CC	1300170
	PARTS LIST	A-PL-M901-0-0
REFERENCE DESIGNATION	DESCRIPTION	PART NO.
	PARTS LIST	

B-CS-M901-0-1 Flexprint Cable Connector



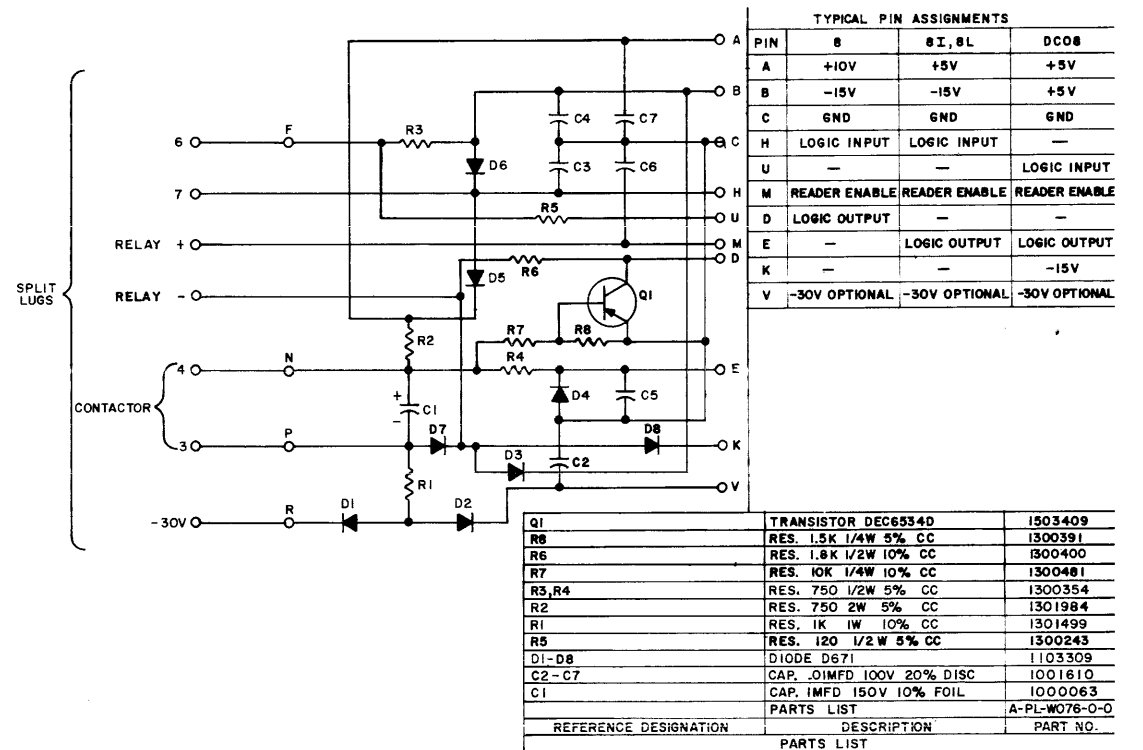
PARTS LIST IS A-PL-M903-0-0

B-CS-M903-0-1 Connector (Flexprinter)



R1-R19	RES. 220 1/4W 5% CC	1300271
D37-D40	DIODE D662	1100113
D1-D36	DIODE D664	1100114
C1, C2	CAP. .01MFD 100V 20% DISC	1001610
	PARTS LIST	A-PL-M906-0-0
REFERENCE DESIGNATION	DESCRIPTION	PART NO.
	PARTS LIST	

B-CS-M906-0-1 Cable Terminator



B-CS-W076-0-1 Teletype Connector

Digital Equipment Corporation
Maynard, Massachusetts

digital