

CONTROL DATA® 6638 DISK FILE SYSTEM

**STANDARD OPTION 10037-A
6639-A/B DISK FILE CONTROLLER**

**DIAGRAMS AND
CIRCUIT DESCRIPTION
MAINTENANCE
MAINTENANCE AIDS
PARTS LIST
WIRE LISTS
CHASSIS TABS**

RECORD of REVISIONS

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MANUAL TO EQUIPMENT LEVEL CORRELATION SHEET

SHEET 1 OF 1

EQUIPMENTS						
MANUAL REV	FCO OR ECO	6639-A	6639-B	St. Opt 10037-A		
F	FCO29035	A09	B08	A09		
G	ECO34071	A09	B08	A09		
	ECO34061	A10	B09	A10		
H	FCO34710	A11	B10	A11		

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PREFACE

The CONTROL DATA® 6638 Disk File System consists of a large capacity disk file with two independent positioning controls, and a controller for interfacing the disk to a CONTROL DATA® 6000 Series Computer. CONTROL DATA® Standard Option 10037-A supplements the normal time-shared access to the file (one read-write control services two data channels) with a second read-write control, thereby permitting simultaneous access to the file.

Logic diagrams contained in this manual do not attempt to show the entire device. The purpose of the diagrams is to show the logical significance of circuits that may involve parts of many modules. The logic diagrams do not replace the chassis tabs, but they are a valuable tool in understanding the tabs and the overall operation of the controller.

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SECTION 1

GENERAL DESCRIPTION

SECTION 2

OPERATION AND PROGRAMMING

**(Refer to 6638 Disk File Subsystem Reference Manual,
Publication No. 60334100 for information on these sections.)**

SECTION 3

INSTALLATION AND CHECKOUT

SECTION 4

THEORY OF OPERATION

(These sections are not available.)

SECTION 5

DIAGRAMS

KEY TO LOGIC SYMBOLS

Logic diagrams represent a symbolic approach to electronic schematics. By using symbols to represent building block circuits, the schematic becomes easy to read if the reader understands the function of the symbols. In CONTROL DATA® logic, two signals, a "0" and a "1" are the possible input or output conditions of a circuit. For example, "1" is considered "up" and "0" is considered "down" on a timing chart. Detailed descriptions of logic symbols and their associated electronic representations are contained in the Printed Circuit Manual, Cordwood Modules. See Literature Distribution Center Catalog for publication numbers.

STANDARD LOGIC SYMBOLS

Standard logic diagram symbols for Control Data equipment using 6000 Series card types are inverters, test points, flip-flops, twisted pair line drivers, and coaxial cable line drivers.

Inverters

An inverter is a logic element which provides an output that is a negation of its input. When more than one input is provided to an inverter, "0's" take precedence over "1's" and therefore drive the output of the inverter to "1". Because all of the several inputs have to be "1" to drive the output of the inverter to a "0", the inverter may be considered an inverting AND (or NAND) gate when more than one input is present. The basic inverter is shown in the logic diagrams as an arrow into either a circle or a square (Figure 1). Both symbols represent the same electronic circuit and have the same logic interpretation. In a logic sequence of inverters, circle and square symbols are usually alternated as an aid in tracing signals, e.g., a "1" output from a square symbol implies a "1" output from subsequent squares in the logic chain.



Figure 1. Inverter Symbols

Certain card types employ variations of the standard inverter building block. These differences are indicated in the logic diagrams by a dot or a cross in the circle or square (Figure 2). Both the chassis tabs containing the card in question and the Printed Circuit Manual, Cordwood Modules contain electronic schematics of these special variations.

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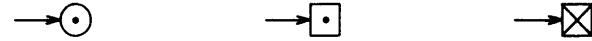


Figure 2. Special Inverters

Acceptable conventions for showing multiple inputs and outputs are given in Figure 3. Note that the output of inverter A is "0" only if inputs X, Y, and Z are all "1". The multiple outputs are identical.



Figure 3. Multiple Inputs/Outputs

Acceptable conventions for showing inverter networks are illustrated in Figure 4. As a general rule, circle inverters alternate with square inverters wherever possible. Because multiple outputs are identical, only one arrow is shown in cases where an inverter (A) serves as the single input to several succeeding inverters. In more complex inverter networks, multiple arrows are used (B to C and D; in this case because B is not the only input to C or D).

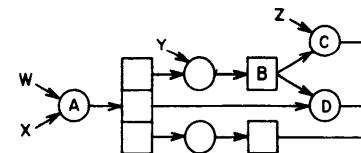


Figure 4. Inverter Networks

Test Points

A test point has no logic function, but is shown in the logic diagrams as a triangle (Figure 5). They are numbered from 1 to 6.

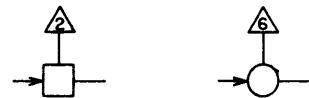


Figure 5. Test Point Symbols

KEY TO LOGIC SYMBOLS (Cont'd.)

Flip-Flops (FF)

The flip-flop (FF) is a storage device with two stable states--designated as Set and Clear--and is composed of two inverters (Figure 6). The flip-flop is said to be set when the set output (B) is a "1", and clear when it is a "0". Note that the input (A) must be "0" to set the flip-flop and (C) must be "0" to clear it.

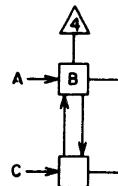


Figure 6. Flip-Flop Symbol

Logic signals are transmitted from one module to another by means of a line driver. Modules on the same chassis are connected with twisted pair lines, and those on separate chassis are connected by coaxial cable.

Twisted Pair Drivers

The twisted pair driver is represented by the standard square or circle. The output of the square or circle, however, is connected to a pin of the module in question and wired from there to a pin on another module (Figure 7). The ground wire of the pair is wired to the connector ground bus of each module. The pins are represented by small circles and are numbered from 1 to 28 (Pins 29 and 30 are ground and +6 volts, respectively, and generally are not shown in logic diagrams). The module location is shown above the card, and the module type is denoted in the upper right corner.

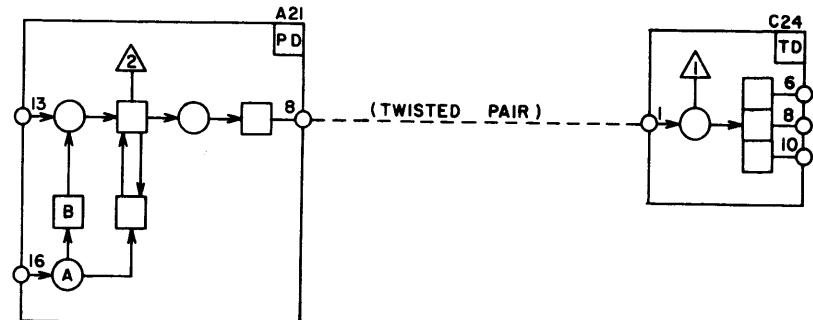


Figure 7. Twisted Pair Line Driver

Coaxial Cable Drivers

The coaxial cable driver is a 25 nsec pulse circuit, and is represented as shown in Figure 8. The pins used are represented by a small double circle.

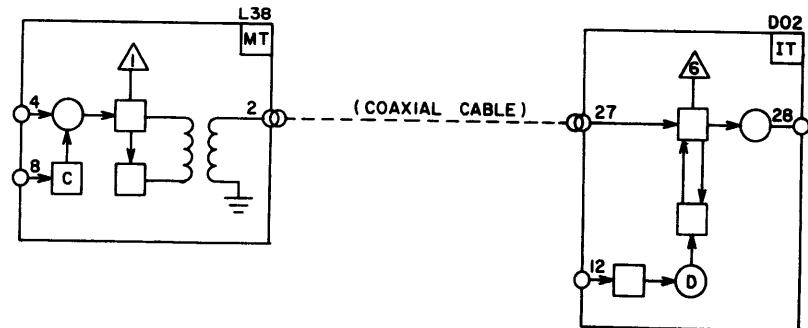


Figure 8. Coaxial Cable Driver

KEY TO LOGIC SYMBOLS (Cont'd)

3000 Series Interface Modules

These modules convert 3000 Series logic voltage levels to cordwood module logic levels. In Figure 9, the crossed wire representation shows that both wires in a twisted pair line are used. The transmitter/receiver modules are used for bidirectional signals. The others are for unidirectional signals. Electrical schematics appear in the chassis tabs.

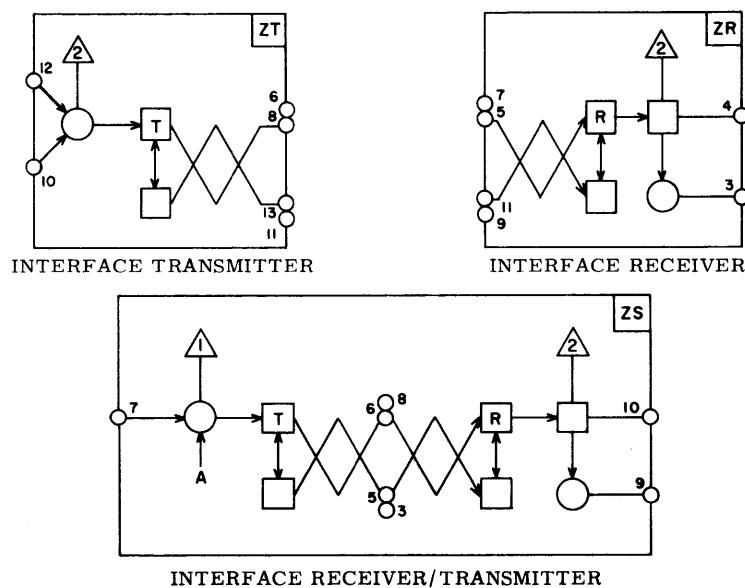


Figure 9. 3000 Series Interface Modules

MODULE LOCATION INDEX

CHASSIS ROW A	MODULE TYPE	PUB. NO.	SECTION	PAGE
01	PC	14		
02	PC	14		
03	QK	14		
04	QK	14		
05	PD	14		
06	PD	14		
07	TE	15		
08	AB	15		
09	AB	9, 14, 15, 18, 19		
10	AA	9		
11				
12				
13				
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MODULE LOCATION INDEX

CHASSIS ROW B	MODULE TYPE	PUB. NO.	SECTION	PAGE
01	PC	14		
02	PC	14		
03	QK	14		
04	QK	14		
05	PD	14		
06	PD	14		
07	TH	9, 14, 15		
08	HQ	14		
09	TH	15		
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MODULE LOCATION INDEX

CHASSIS ROW C	MODULE TYPE	PUB. NO.	SECTION	PAGE
01	PC	8		
02	PC	8		
03	QK	8		
04	QK	8		
05				
06	PJ	7		
07	TE	7, 9		
08	TL	9, 14, 15, 17, 18		
09	TB	15, 18		
10	TD	5, 12, 17		
11	PD	18		
12	PD	18		
13	QK	18		
14	QK	18		
15	PC	18		
16	PC	18		
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MODULE LOCATION INDEX

CHASSIS ROW D	PUB. NO.	SECTION
MODULE TYPE	PAGE	
01		
02	QH	7, 15, 18
03	TB	7, 14
04	TB	7, 8
05	PJ	7
06	JR	15
07	AE	7, 9
08	AA	7, 16
09	XL	7, 9, 10
10	AA	5, 9, 17
11		
12	TB	10, 16, 18, 19
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MODULE LOCATION INDEX

CHASSIS ROW E	PUB. NO.	SECTION
MODULE TYPE	PAGE	
01	TH	7, 8
02	AA	7, 8, 11
03	HQ	8, 10
04	HC	19
05	HC	19
06	HC	19
07	HC	19
08	AA	12, 15
09	TL	6, 10, 15, 17, 18, 19
10	TH	1, 10, 12, 13
11	HC	11, 18
12	HC	12
13	HC	9, 12, 13
14	IP	16
15	PJ	16
16	PJ	16
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MODULE LOCATION INDEX

CHASSIS ROW F	PUB. NO.	SECTION
MODULE TYPE	PAGE	
01	TH	10, 12, 14, 17, 19
02	PD	19
03	PD	19
04	TH	7, 10
05	AA	10
06	AA	9, 10, 15
07	TL	7, 10, 11, 16, 17, 19
08	QH	12, 13, 17
09	TH	9, 10, 14
10	AA	10, 12, 13
11	PD	11, 13, 17
12	PD	11, 13, 17
13	TE	16
14	TE	16
15	AB	16
16	AB	16
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MODULE LOCATION INDEX

CHASSIS ROW G	PUB. NO. MODULE TYPE	SECTION PAGE
01	QH	10, 16, 17, 19
02	TC	10
03	TD	7, 10
04	TB	7, 10
05	PD	7, 9
06	PD	7, 9, 13
07	AE	7, 9, 10, 12
08	TB	10, 11, 12
09	TE	11
10	TE	11
11	CX	6, 7, 11
12	AE	11, 13, 17
13	TH	6, 7, 11, 12
14	PC	16
15	PC	16
16	PC	16
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MODULE LOCATION INDEX

CHASSIS ROW H	PUB. NO. MODULE TYPE	SECTION PAGE
01		
02		
03		
04	TI	4, 6, 14, 17
05	AA	11, 17
06	PJ	11
07	PJ	11
08	PJ	11
09	PJ	11
10	PO	11
11	PO	11
12	PO	11
13	QH	11, 12
14	IV	6
15	KL	4
16	PJ	4, 5
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MODULE LOCATION INDEX

CHASSIS ROW I	PUB. NO. MODULE TYPE	SECTION PAGE
01		
02		
03	KS	6, 11
04	KS	6, 11
05	QH	6, 17, 18
06	TE	6
07	TE	6
08	TE	6
09	QH	4, 5, 19
10	QH	4, 5, 17
11	TG	4
12	TG	4
13	TG	4
14	TG	4
15	TG	4
16	TG	4
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MODULE LOCATION INDEX

CHASSIS ROW	MODULE TYPE	PUB. NO.	SECTION PAGE
01			
02	TH	4, 6	
03	SB	13	
04	SB	13	
05	SB	13	
06	XL	1, 5, 6	
07	TI	1, 7, 9, 11, 17	
08	TH	1, 6, 9	
09	HC	6, 18	
10	TH	1	
11	TD		
12	TD	18	
13	HQ	18	
14	TD	18	
15	TD	18	
16	HQ	18	
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MODULE LOCATION INDEX

CHASSIS ROW	MODULE TYPE	PUB. NO.	SECTION PAGE
01	ZR	8	
02	ZR	14	
03	ZR	19	
04	AA	1	
05	CX	1	
06	AE	1	
07	AE	1	
08	TD	1, 5, 6	
09	TB	1, 11, 17	
10	TB	1, 17	
11	QJ	4	
12	QJ	4	
13	QJ	4	
14	QJ	4	
15	QJ	4	
16	QJ	4	
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MODULE LOCATION INDEX

CHASSIS ROW	MODULE TYPE	PUB. NO.	SECTION PAGE
01	ZS	11, 13	
02	ZS	11, 13	
03	ZS	11, 13	
04	ZS	11, 13	
05	ZT	7, 9, 10, 12	
06	ZT	5	
07	QI	1	
08	QI	1	
09	QI	1	
10	QI	1	
11	QI	1	
12	QI	1	
13	QI	1	
14	QI	1	
15	QI	1	
16	QI	1	
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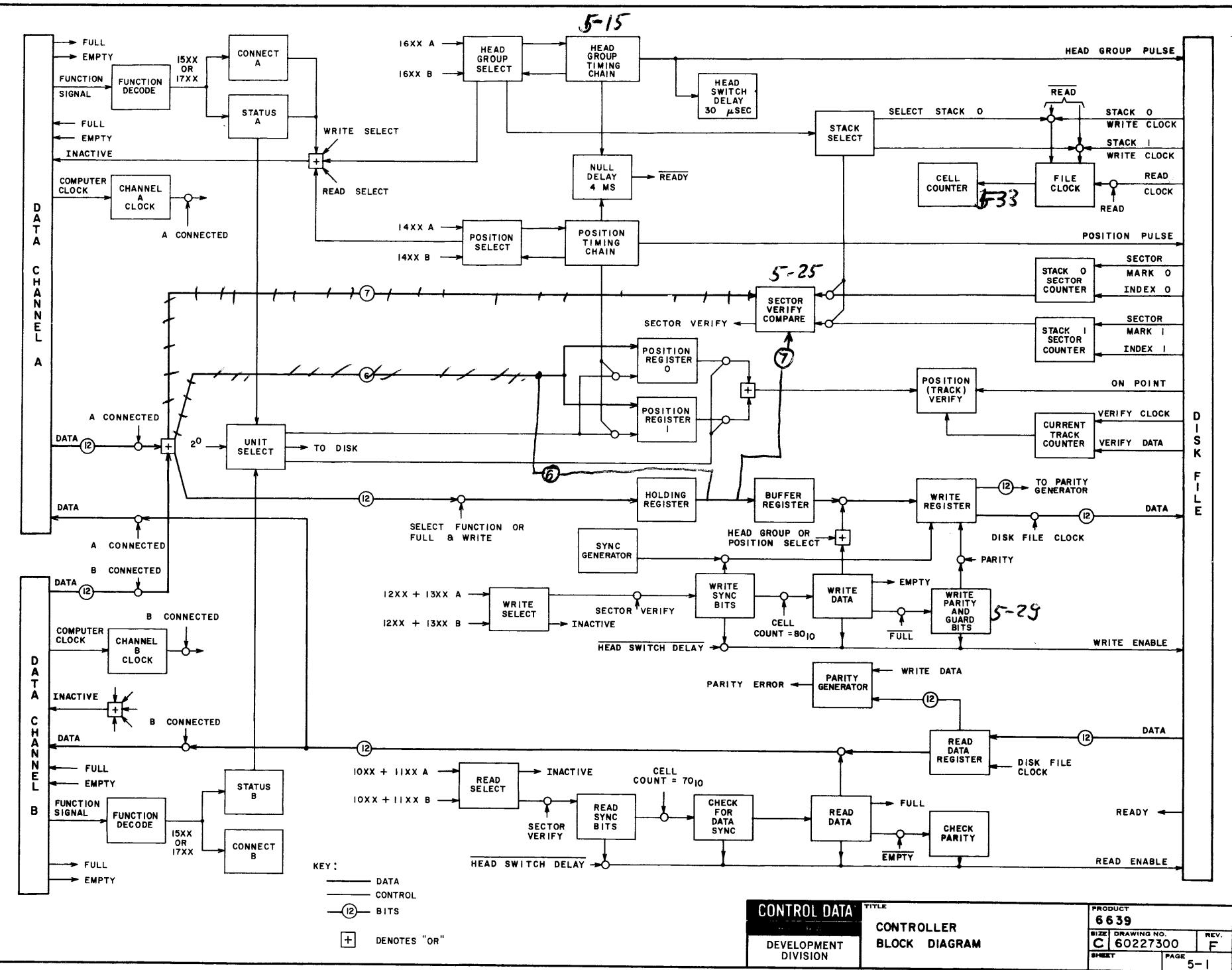
The controller buffers data in a 12-bit parallel format between the computer and disk file via the data channel. A 12-bit function code conditions the controller to connect to the disk file and designates a location on the disk from which data is to be transferred, thus initiating an I/O operation.

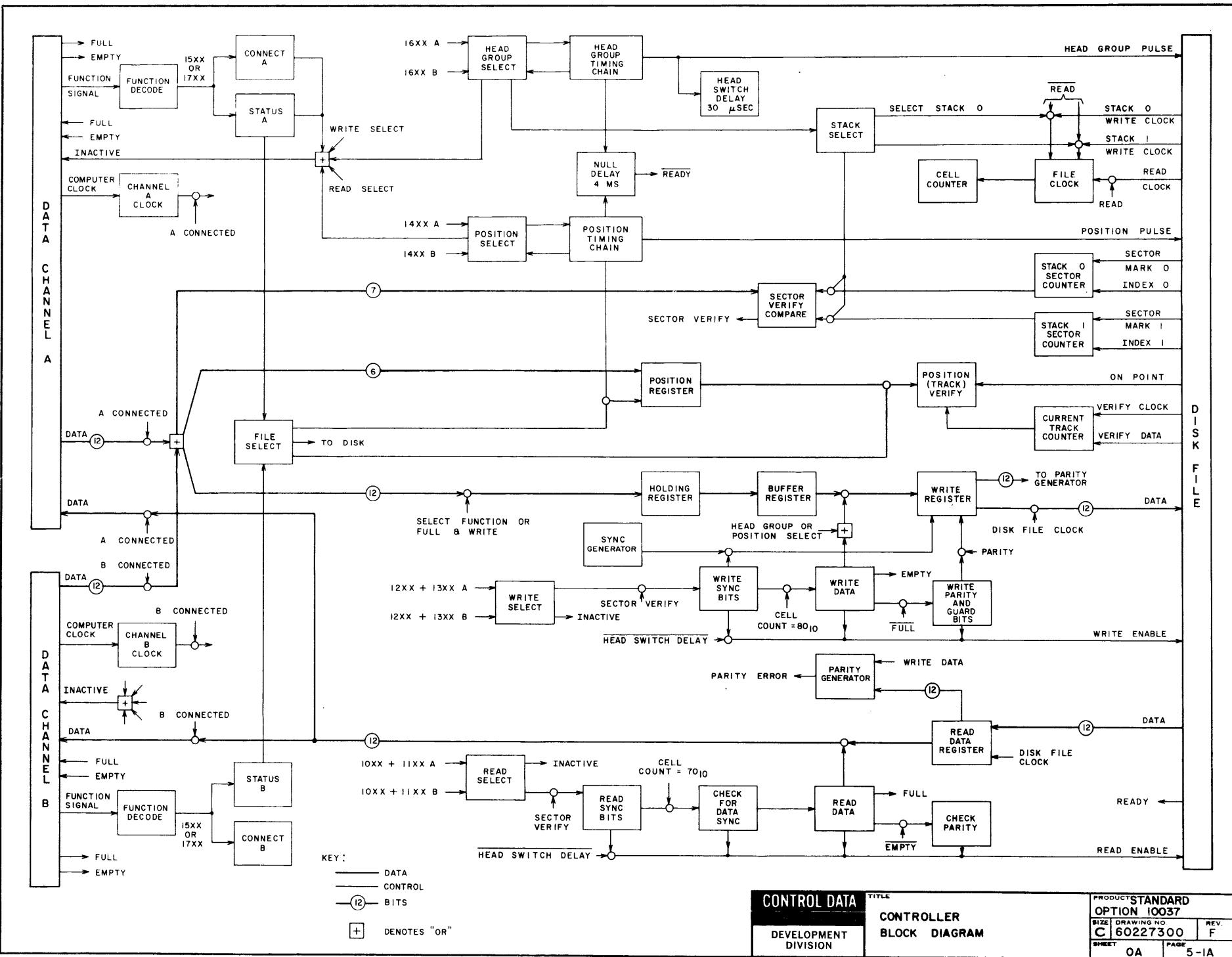
The data channel issues an output word to the controller. If the output word is accompanied by a function signal, the controller defines it as a function code. Otherwise, the controller recognizes it as a data word. When the controller accepts a function word, it returns an inactive signal to the data channel. The eight function codes are: connect and status, position select, head group select, read, write, select offset, clear file, and select file status. The connect code selects the disk file in which an I/O operation will be performed. A status response check can be performed to determine the state of conditions within the controller. The position select function causes the disk file access mechanism (positioner) to move to one of 32 positions. The position select function provides a position address which the

controller compares against a position code from the disk file to verify that the access mechanism is positioned correctly. The head group select function selects one of 32 head groups to correspond with the position selected.

If the function is a read, the active signal (sent with the read code) requests the controller to send data. The controller sends a data word and a full signal. The data channel then returns an empty signal, causing the controller to send the next word. Operations continue in this way until the end of the read buffer.

On a write operation, the full signal (send with the write code) signals the controller that the data channel is ready to start sending data. The controller acknowledges the data word by returning an empty signal, causing the data channel to send the next data word. Operation continues in this way until the end of the write buffer.

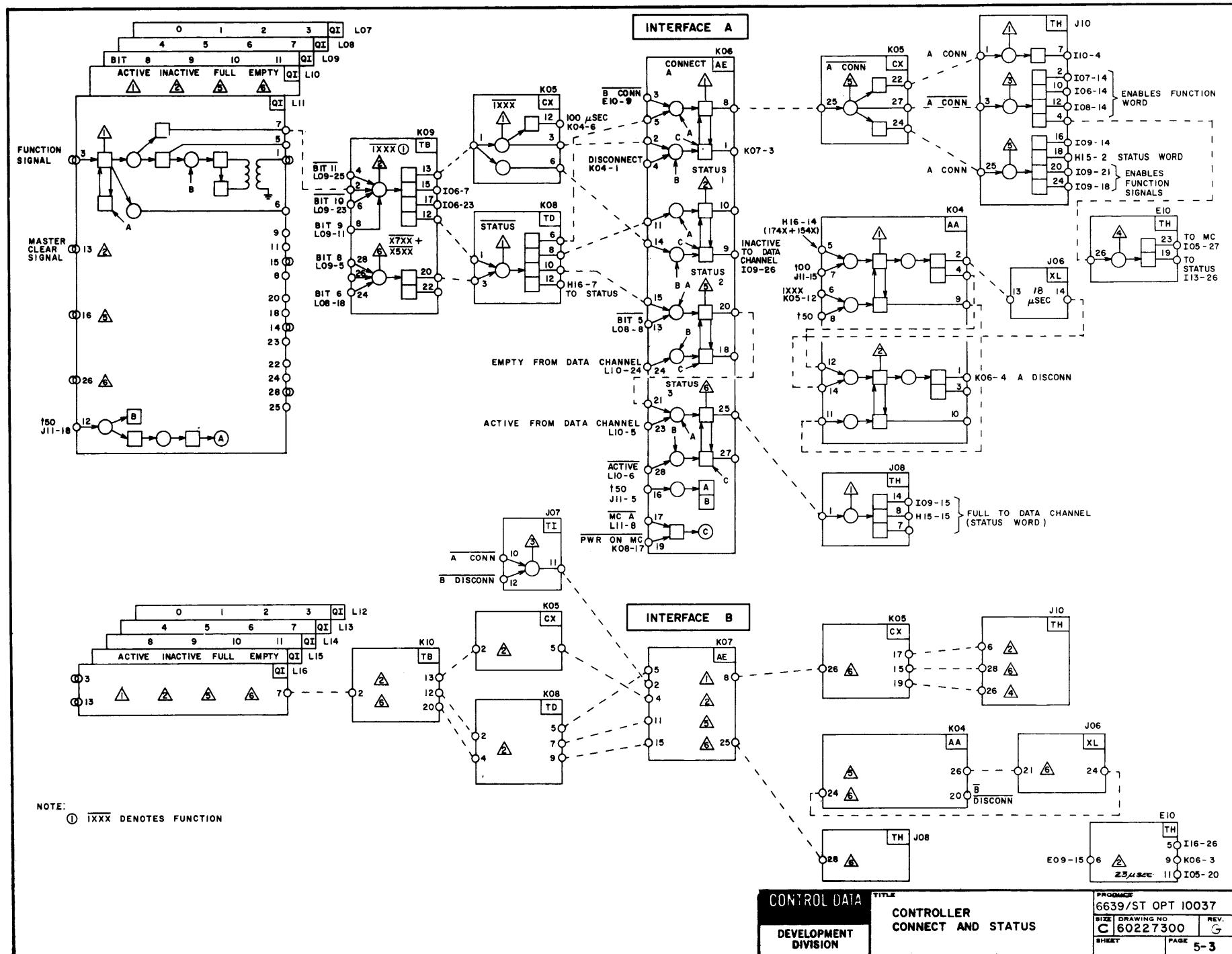




This logic provides for receiving signals and data from the data channel for transmission to the disk file. Interfaces A and B connect the controller to data channels A and B, respectively. If the connect and status function word is received through interface A, it sets the connect A flip flop (FF) which provides various enables for transmitting the status word, data, and function signals through the controller during operation. The controller connects to data channel A if channel B is not connected and vice versa. If channels A and B attempt to connect simultaneously, the controller gives priority to channel A.

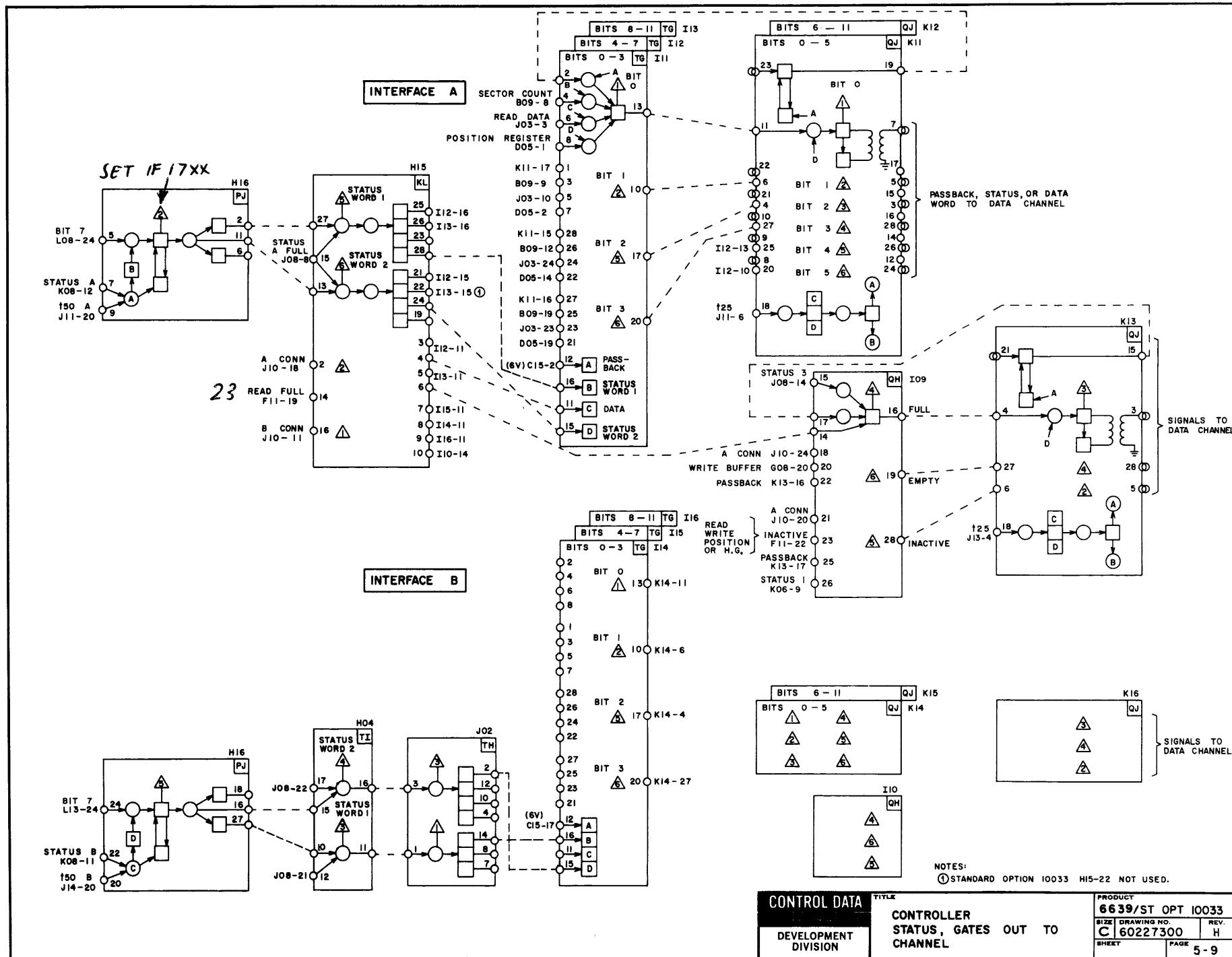
Receiving the connect and status function word and function signal causes the controller to set the status 1 FF. This causes the controller to return an inactive signal to the data channel, indicating acceptance of the function word. It also sets the status 2 FF which, together with the active signal from the data channel, sets the status 3 FF. Setting the status 3 FF enables the status word (and full signal) to the data channel.

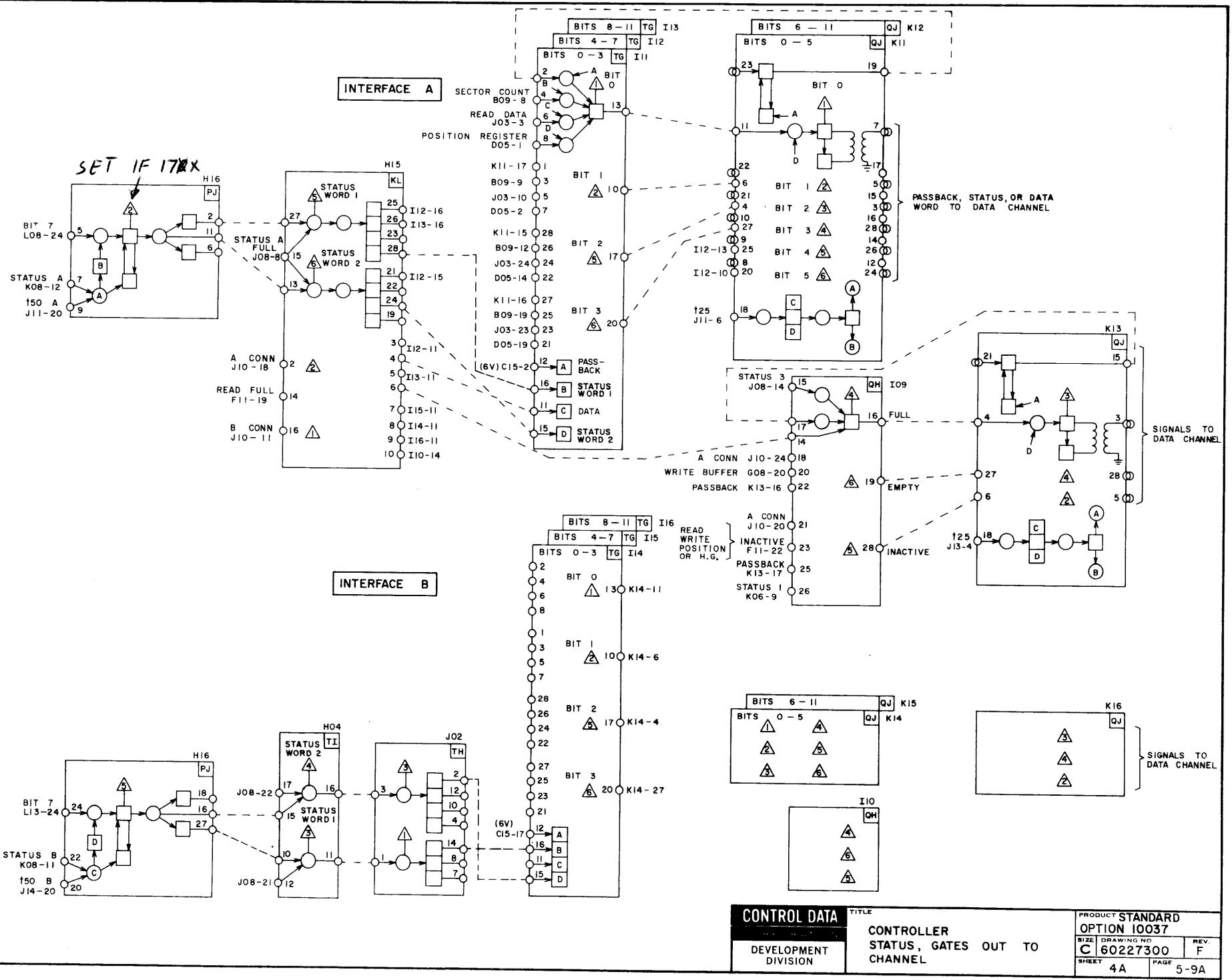
A function code of 1740 or 1540 will disconnect the controller from the data channel approximately 100 microseconds after a function instruction is received.



NOTE

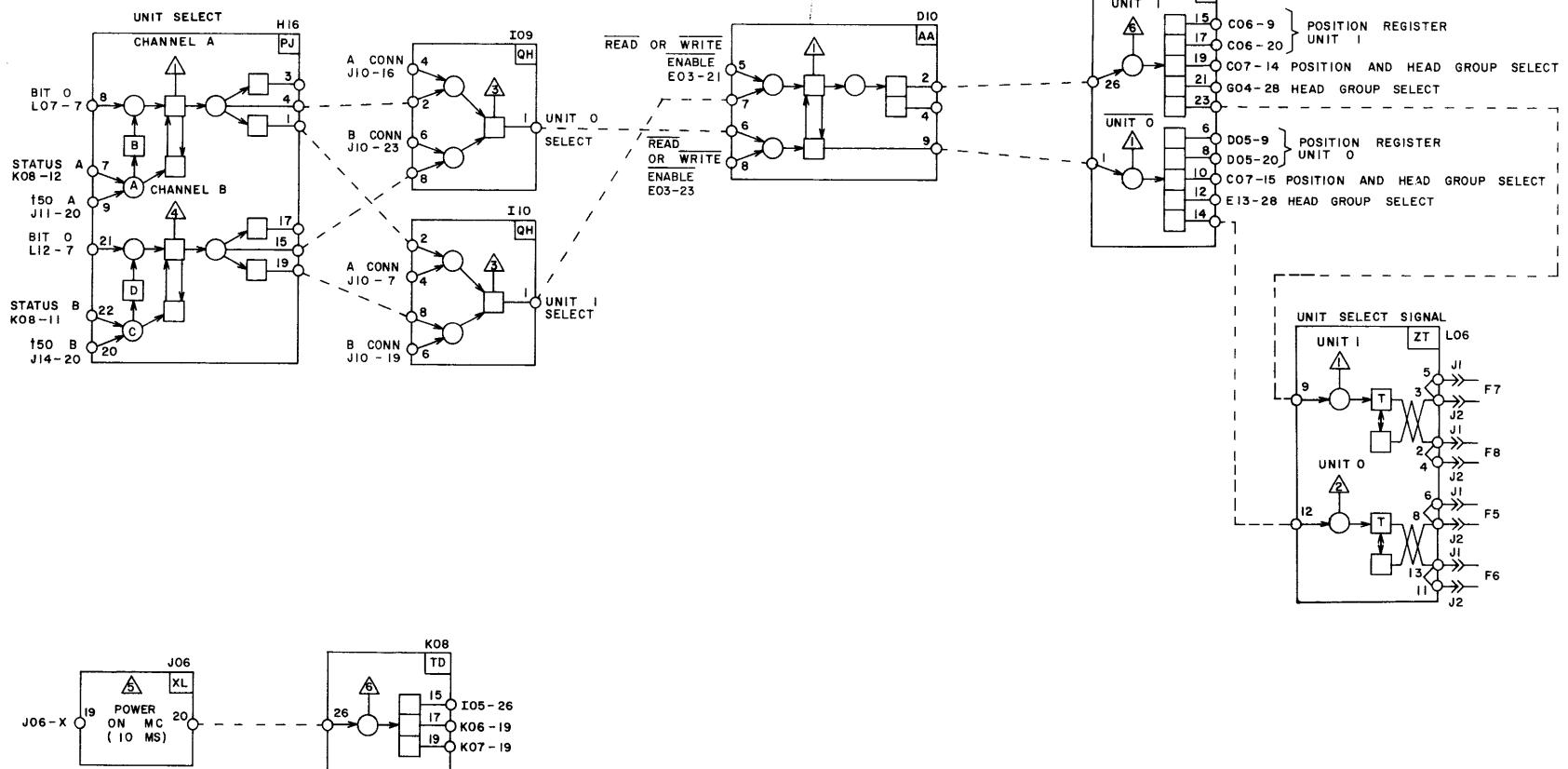
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are not included intentionally.



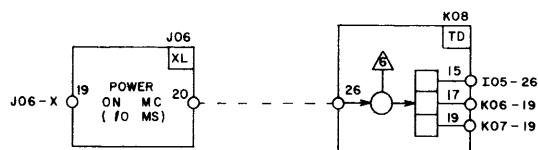
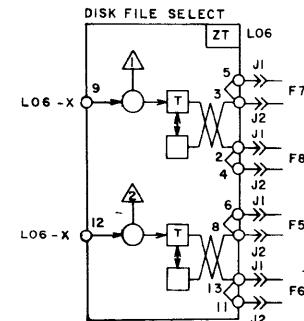
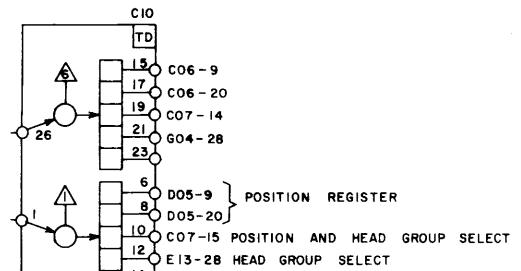
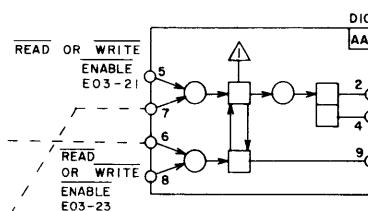
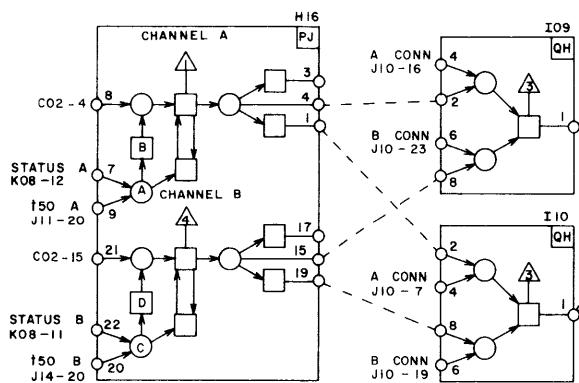


"0" = UNIT 0 SELECT

"1" = UNIT 1 SELECT



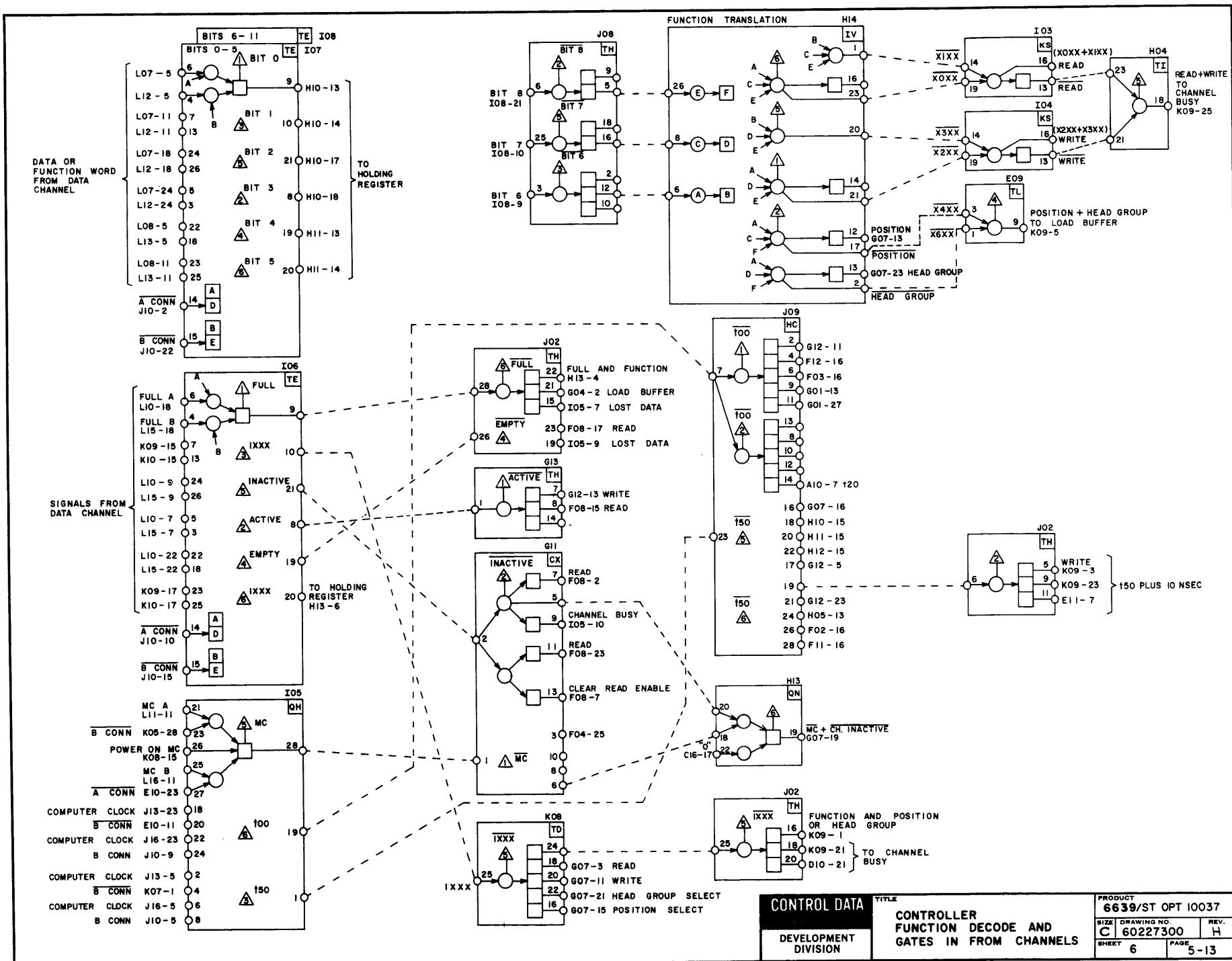
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DEVELOPMENT DIVISION	CONTROLLER UNIT SELECT	SIZE C DRAWING NO 60227300 REV. F
SHEET 5	PAGE 5-11	



CONTROL DATA

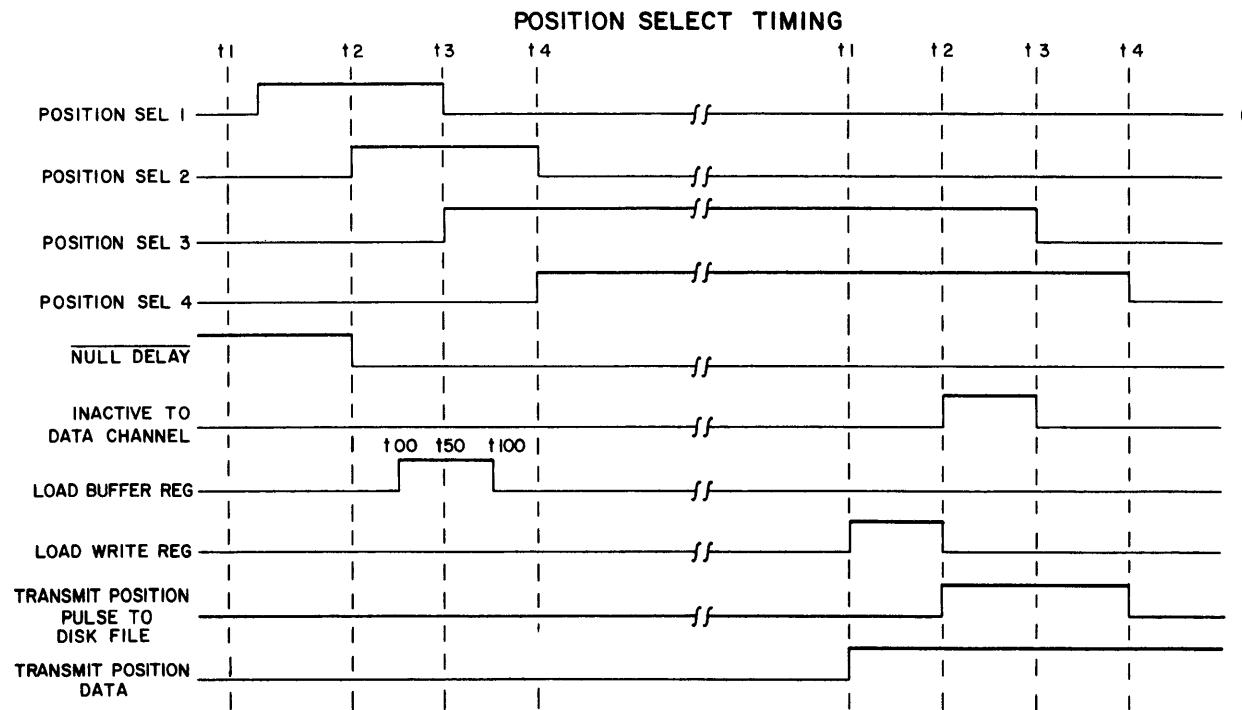
DEVELOPMENT
DIVISIONTITLE
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DISK FILE SELECTPRODUCT STANDARD
OPTION 10037SIZE DRAWING NO.
C 60227300 FSHEET PAGE
5A 5-IIA

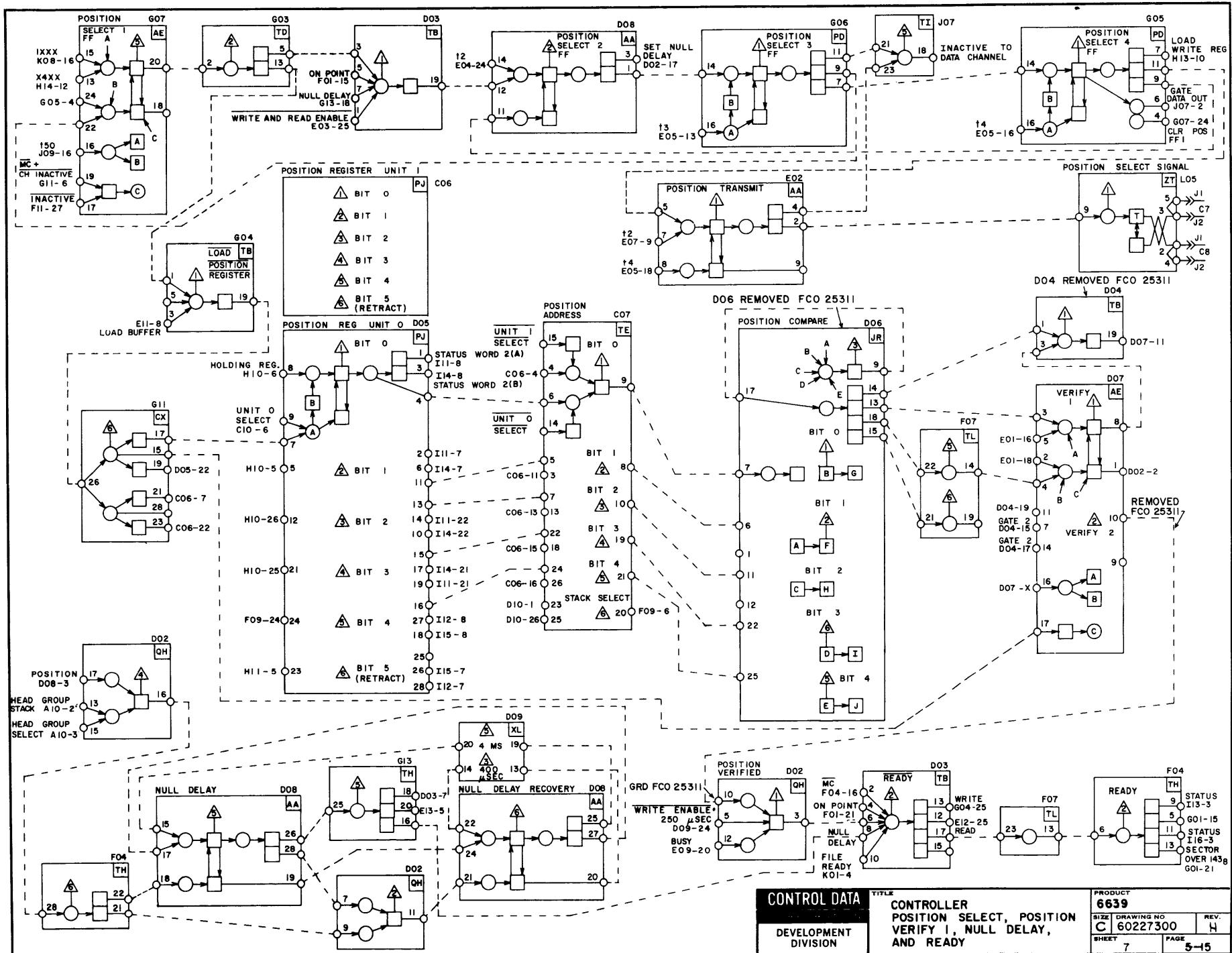
Function words from the data channel are transmitted to the holding register and are also translated to initiate a read, write, position select, or head group select. Either a read or write causes a channel busy condition prior to an I/O operation. A position select or head group select function causes the position address or head group number to be gated to the buffer register for register to the disk file. Inactive, active, full, and empty signals sent by the data channel are distributed here to enable various controller operations. The function signal is fanned out to the position select, head group select, read, and write logic to enable the function being selected.

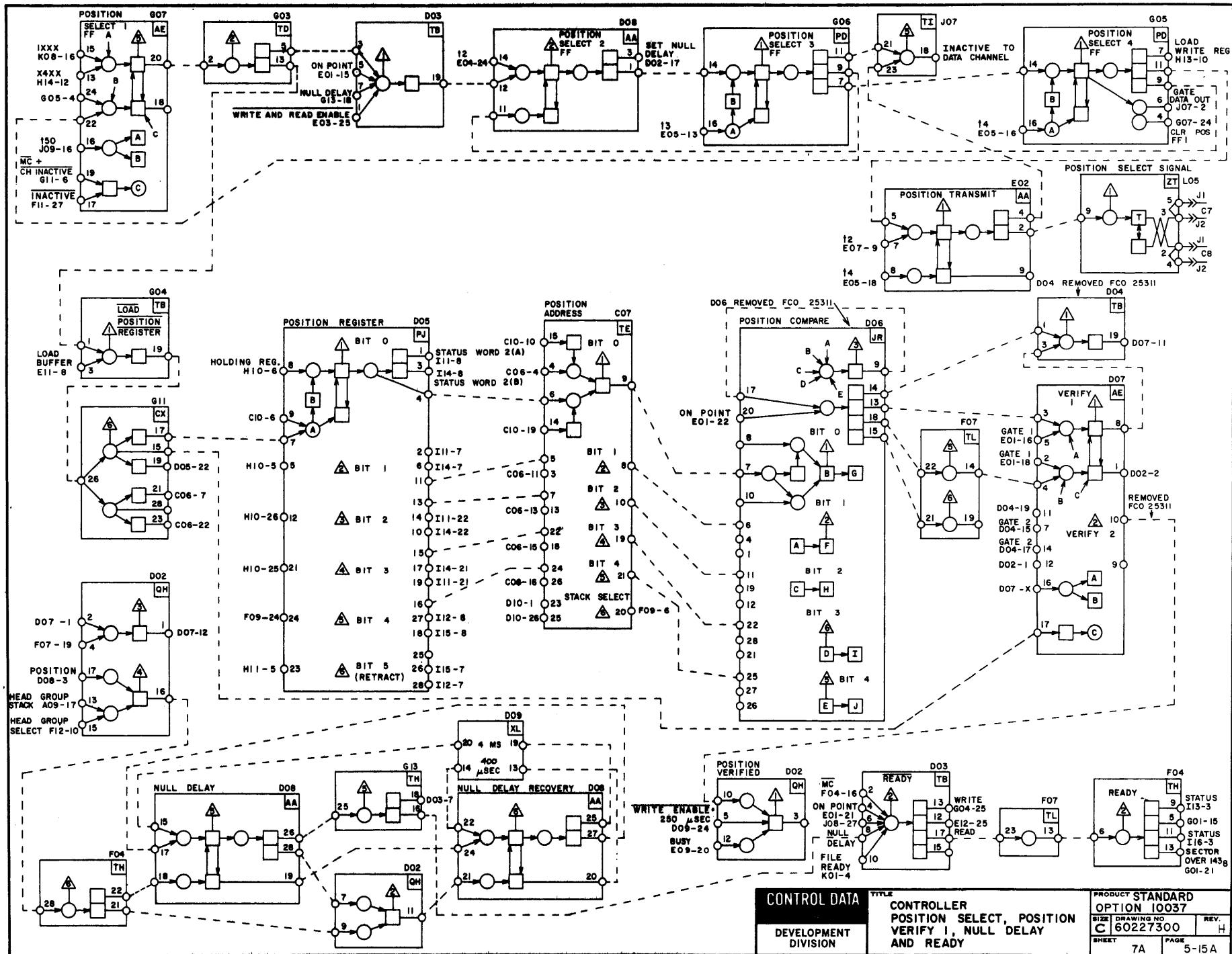


The position select function word activates the position select logic and provides a position address for selecting one of 32 positions in the disk file. An inactive signal is sent to the data channel which indicates acceptance of the position select function word by the controller. The address is fed through the holding register (page 5-23), buffer register, write register and sent to the disk file. The address is also gated to the position register for comparison against a position code from the disk file. Two successive valid comparisons are necessary to set the verify 1 and verify 2 FF's, respectively, and to verify the new position.

Since it takes a comparatively long time (4 milliseconds) for the positioner mechanism to move from the old on point, a null delay circuit is provided to force a not ready condition for at least 4 milliseconds after the position is issued. This provides time for the positioner to become off point with respect to the original position. Otherwise, the controller could possibly output a ready based on the previous on point, causing an I/O operation to begin before the positioning mechanism had begun to move.



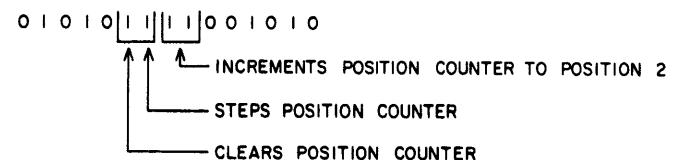




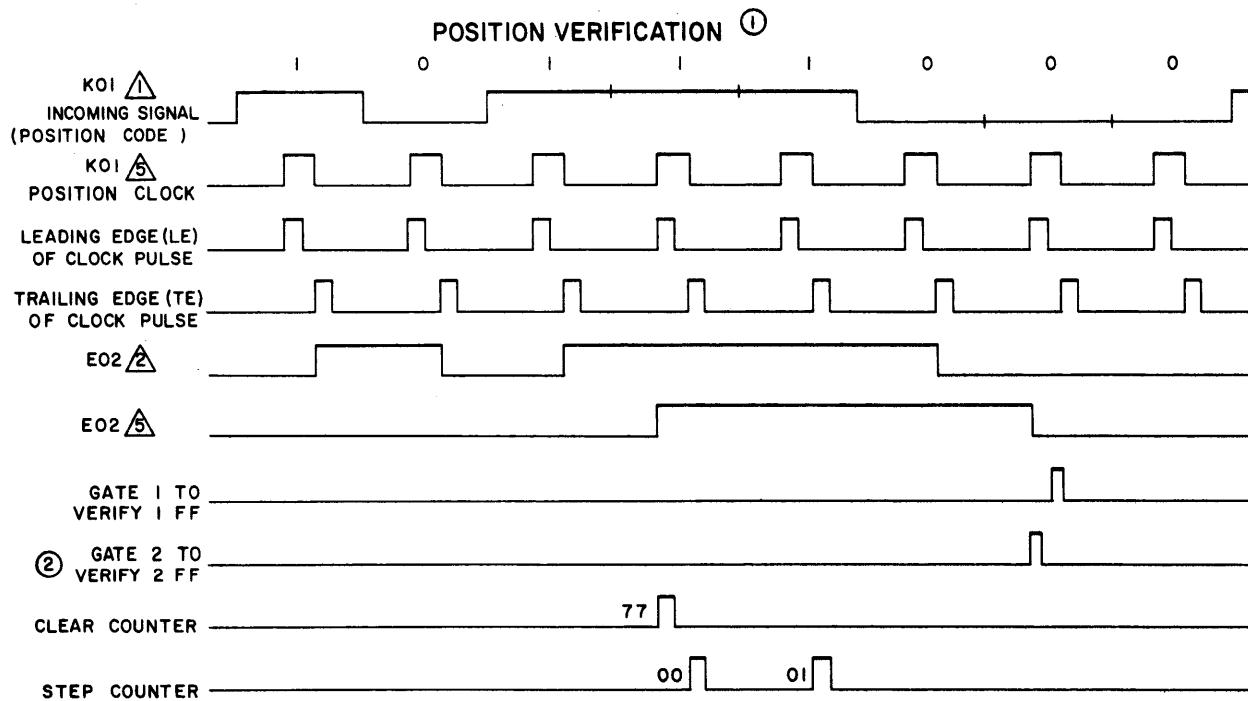
Position codes which have been prerecorded on separate tracks for each of the 32 positions in a disk file unit are translated to determine that the read/write heads are positioned properly on the disks. Each track contains one position code which is repeated every 64 bits around the track. The position codes are received in non-return to zero (NRZ) data. Examples of the first five position codes are as follows:

<u>Position</u>	<u>Data Pattern</u>
0	0 1 0 1 0 1 1 0 0 1 0 1 0 1 0
1	0 1 0 1 0 1 1 1 0 0 1 0 1 0
2	0 1 0 1 0 1 1 1 1 0 0 1 0 1 0
3	0 1 0 1 0 1 1 1 1 1 0 0 1 0
4	0 1 0 1 0 1 1 1 1 1 1 0 0 1 0

Position-clock pulses derived from the position code tracks are used to gate position code data to the position counter. The position-clock pulses provide leading edge (LE) and trailing edge (TE) pulses which gate the position code data through the logic, causing the position counter to be stopped if the proper bit combination of position code data is present. An example of the bit combination for position 2 is as follows.

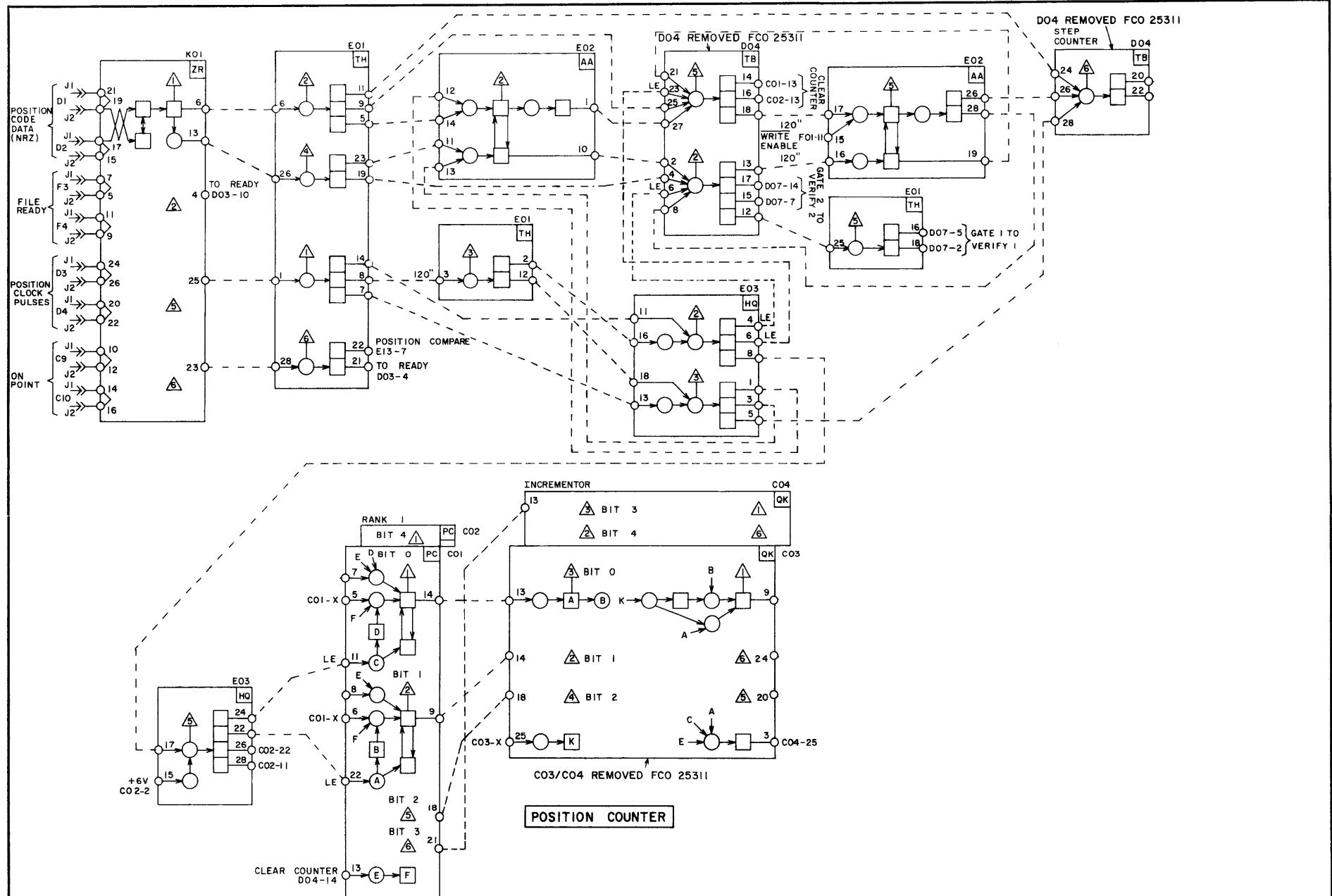


To increment the position counter, two or more 1 bits in succession are required. In addition to the position code data and the position-clock pulses, file ready and on point signals from the disk file are gated in for transfer to other logic circuits.



NOTES:

- ① POSITION VERIFICATION ON TRACK 1 IS SHOWN.
THREE "1" BITS IN SUCCESSION SIGNIFY TRACK 1.
- ② AN ON-POINT AND TWO VERIFIES ARE NEEDED TO SET THE VERIFY 2 FF.



CONTROL DATA	TITLE	PRODUCT
DEVELOPMENT DIVISION	CONTROLLER POSITION VERIFY 2	6639/ST OPT 10037
		SIZE DRAWING NO. RF
		C 60227300 G
		SHEET 8 PAGE 5-17

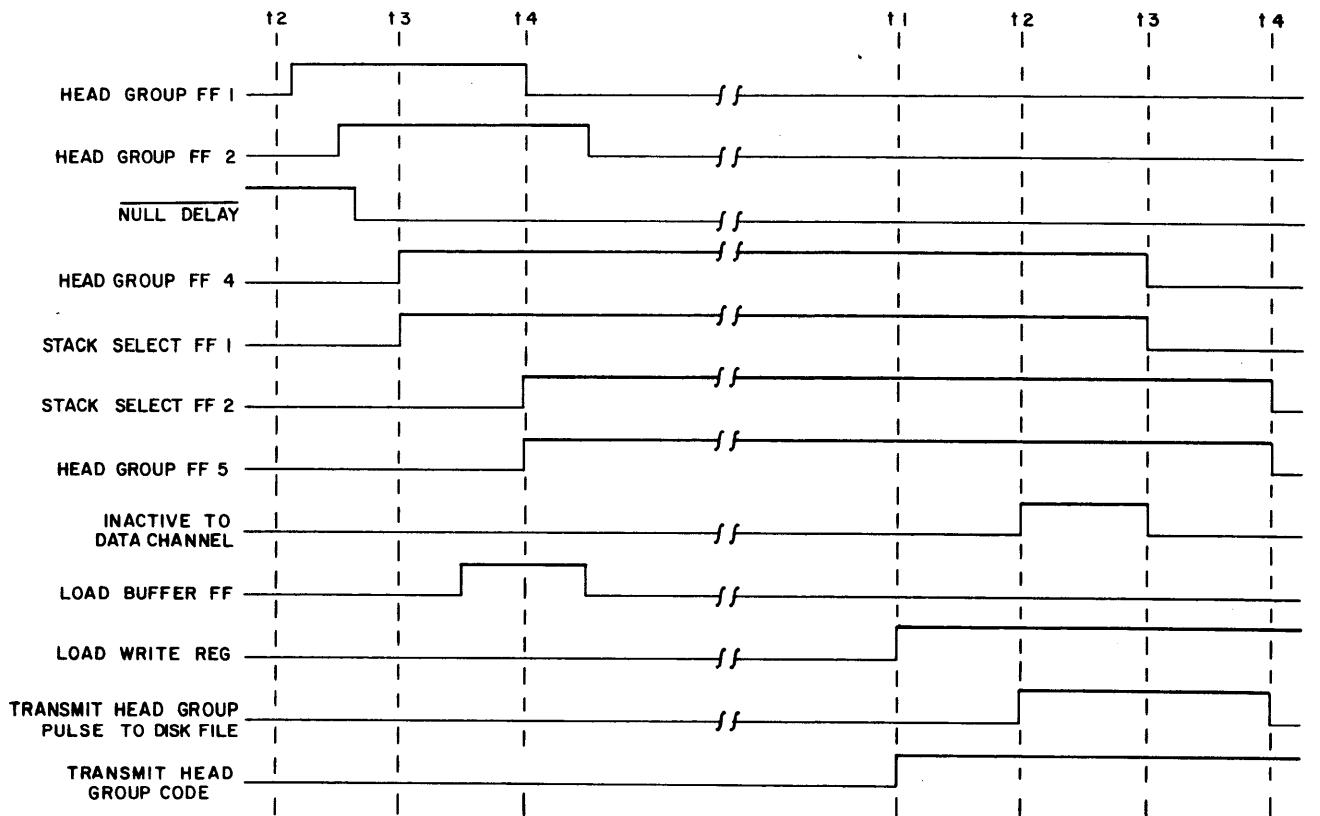
The head group select function word activates the head group select logic and loads the 5-bit head group address in the holding register. Activating the logic provides a head group pulse which provides for transmitting a head group inactive signal to the data channel. This indicates acceptance of the function word, enables a head group select signal to the disk file, and activates the head switch delay circuit to provide time for the read/write heads to complete switching before a read or write operation. At completion of the delay, read or write enables are provided.

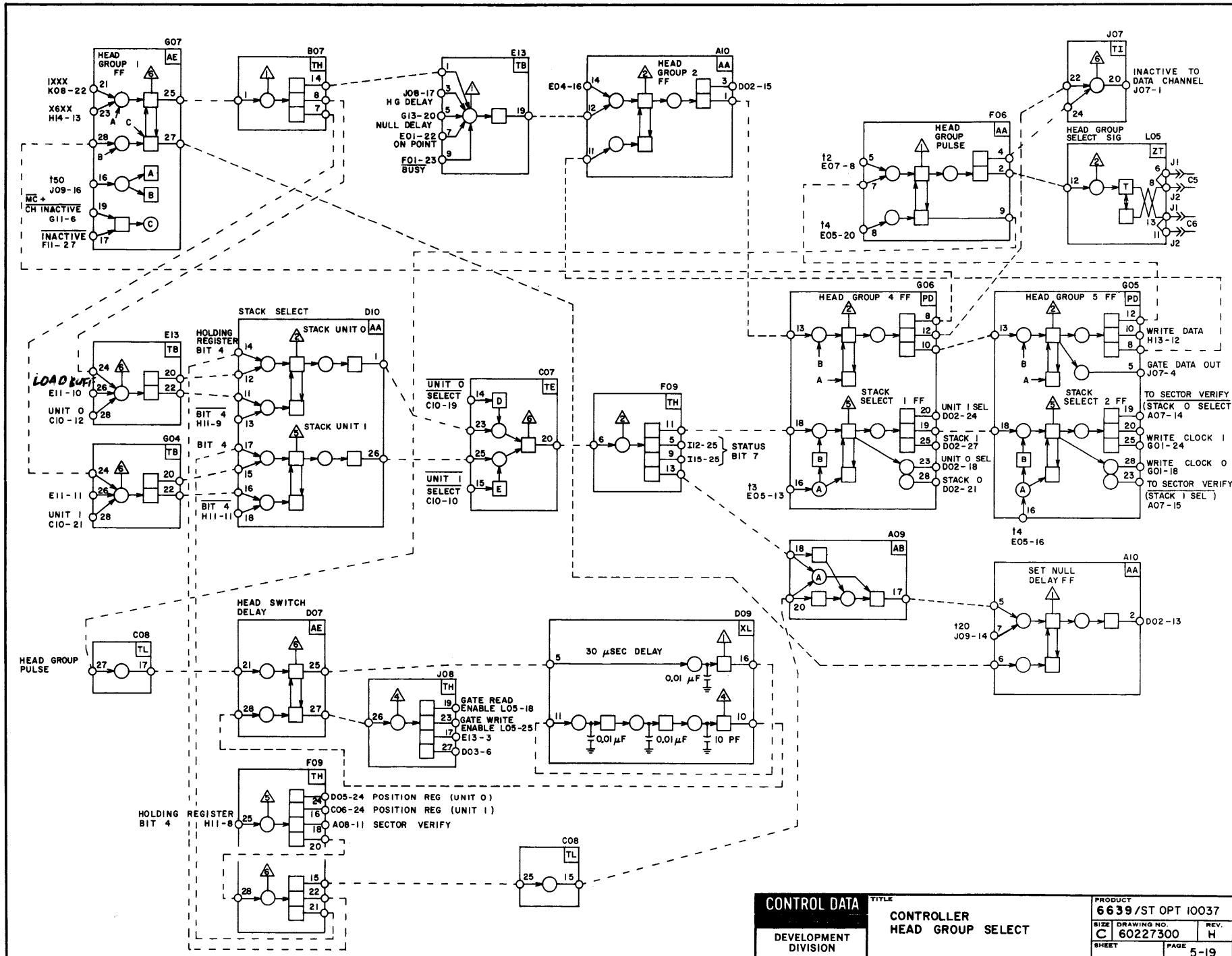
Bit 4 of the holding register determines if a head group is to be selected in stack 0 or 1. If bit 4 is a 0, the head group is selected in stack 0 (bits 0-15). If bit 4 is a 1, the head group is selected in stack 1 (bits 16-31). When the head group selection

is made in the designated stack, this information is available for sampling as the next status word, and enables are provided for the write clock and sector verify logic.

If the head groups are to be selected (switched) during an I/O operation, a head group select function can be issued to switch heads between sectors. However, if the switching involves changing to heads in the other stack, the null delay circuit (page 5-15) provides a 4-millisecond delay to allow the positioner to become off point and start to reposition on the other stack. This delay occurs each time that the heads are switched between stacks.

HEAD GROUP SELECT TIMING





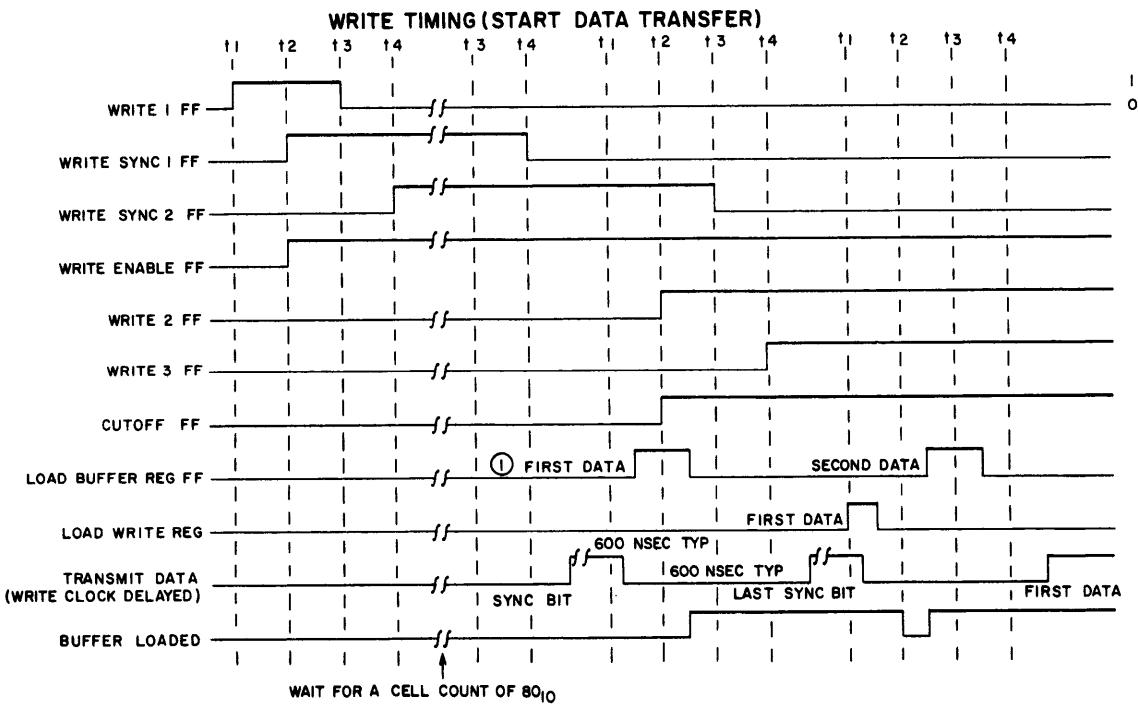
CONTROL DATA
DEVELOPMENT
DIVISION

TITLE
CONTROLLER
HEAD GROUP SELECT

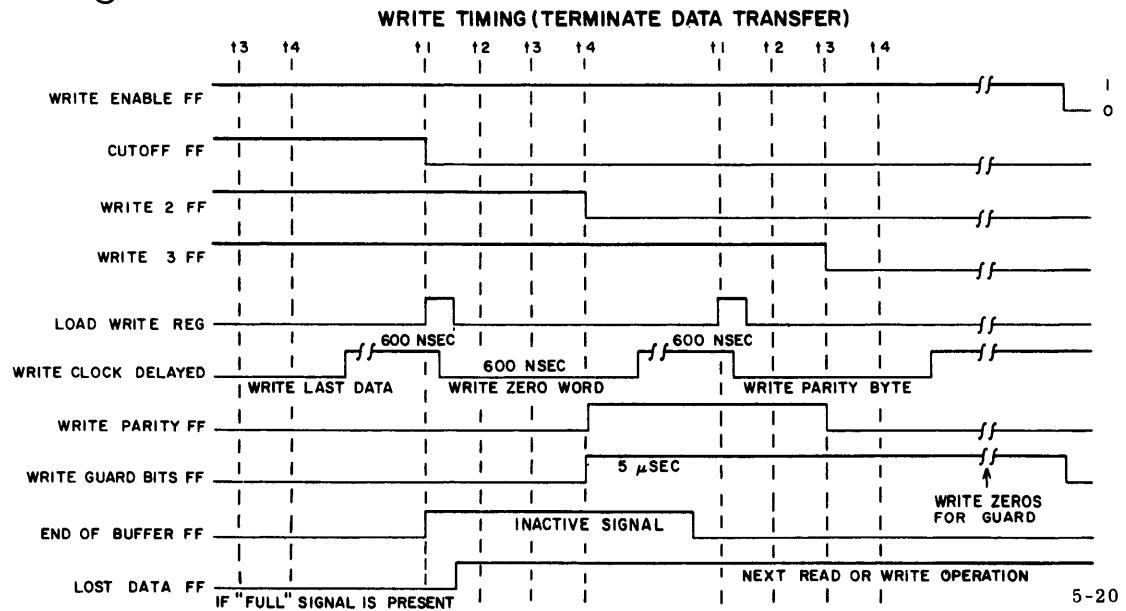
PRODUCT
6639/ST OPT 10037
SIZE DRAWING NO.
C 60227300 REV.
SHEET PAGE 5-19

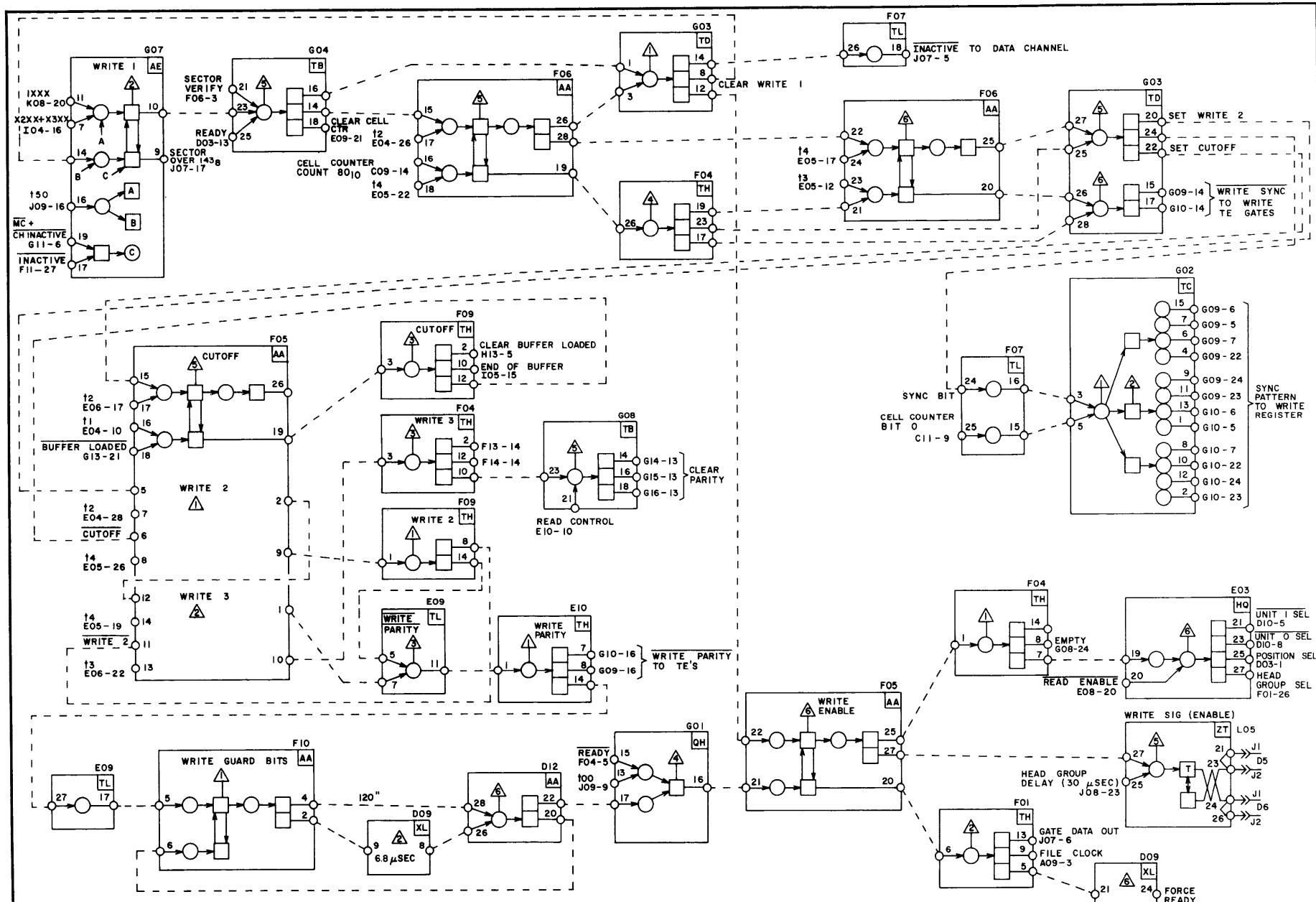
The write function word activates the write logic and loads the 7 bits of the function word containing the sector address to the holding register. Further operations in the write control logic depend upon completion of sector verify and the presence of ready. Sector verify ensures that the write operation will begin at the sector designated by the write function word. A ready indicates that the disk file positioner is on point, that the position at which the write operation is to take place has been verified, and that the disk file is ready for operation.

When the sector is verified and the system is ready, the write enable gates the write signal to the disk file. The cell counter begins counting preamble bits, starting at the sector mark determined by sector verify. An inactive signal is returned to the data channel to indicate acceptance of the write function word. The 80 preamble bits are written in an alternating 1's and 0's pattern. Two 1 bits in succession signify the beginning of data. The second 1 bit is the sync bit. The data buffer (record) may cover from 1 to 10 sectors. At the end of data is the postamble, consisting of at least 28 bits, including the parity and guard bits. Only the parity and guard bits (5 bits) are written on the record. At the end of the record, the buffer register is not loaded, clearing the cutoff FF. This causes the Write 2 FF to clear, resulting in the writing of the guard bit 0's. The write 3 FF clears, enabling the parity byte generated from the last record to be written as well as the remainder of the postamble.



NOTES: ① OCCURS WHEN FULL SIGNAL COMES IN ANY TIME DURING SYNC WRITING.





CONTROL DATA
DEVELOPMENT DIVISION

TITLE
CONTROLLER WRITE CONTROLS

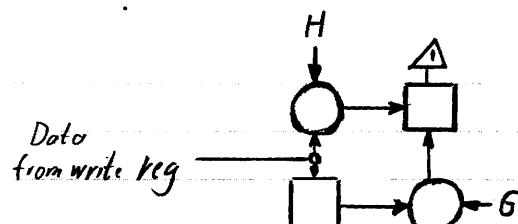
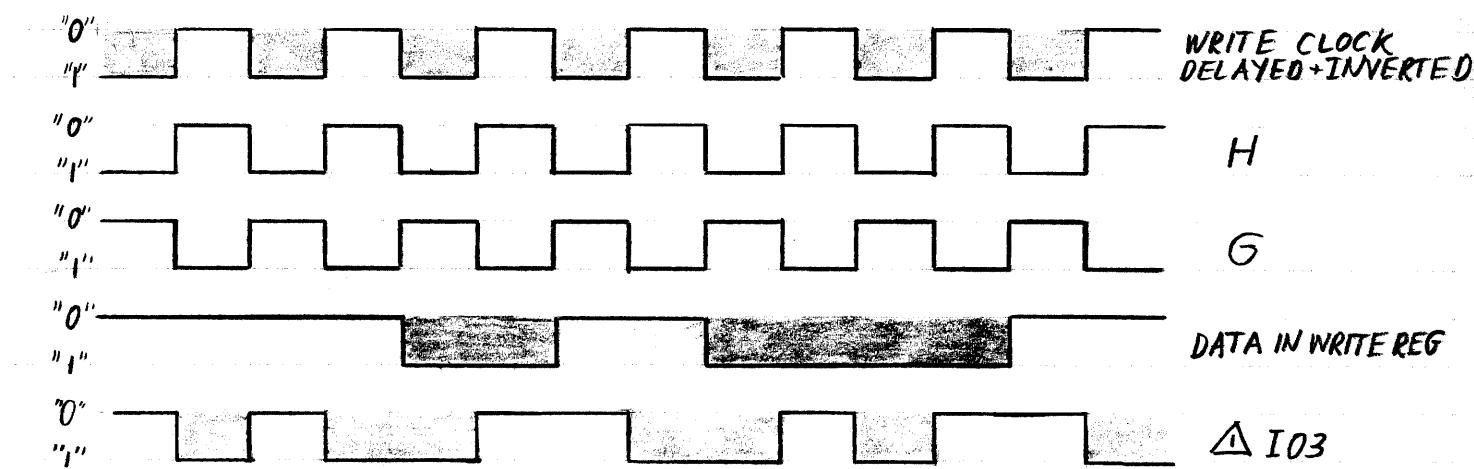
PRODUCT
6639/ST OPT 10037
SIZE C DRAWING NO. 60227300 REV. H
SHEET 10 PAGE 5-21

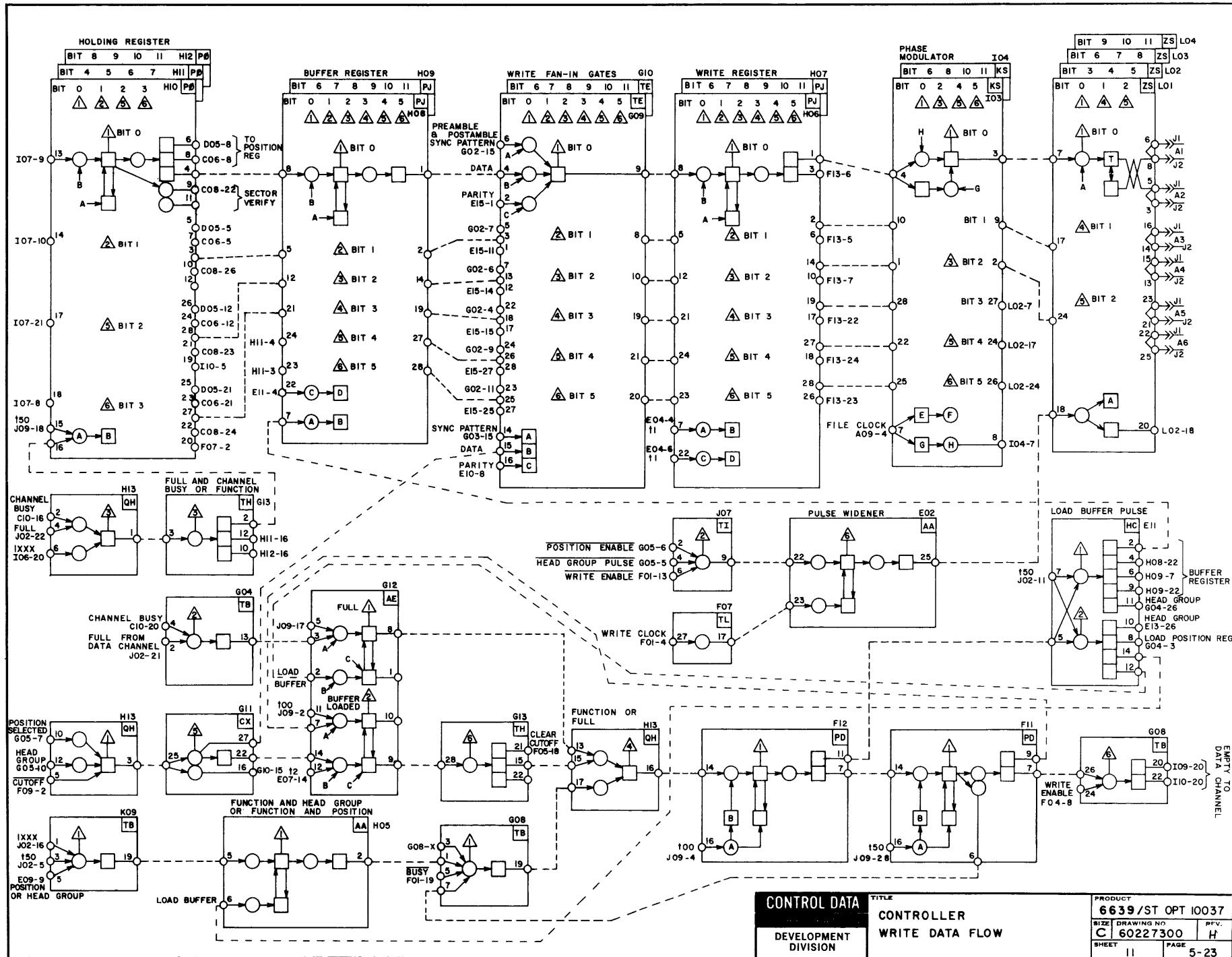
The holding, buffer, and write register, and write fan-in gates provide a path for the transmission of data out to the disk file. All function or data words are transmitted to the holding register. During a write, a full signal is needed from the data channel to enable data to the buffer register.

The write fan-in gates allow gating of the sync pattern (preamble) bits, data, or parity byte out to the disk file.

As data is shifted in parallel to the disk file, an empty signal is generated and sent to the data channel. The data channel returns another data word with a full pulse and the process is repeated. Operation continues in this manner until the end of the buffer (record).

PHASE MODULATOR

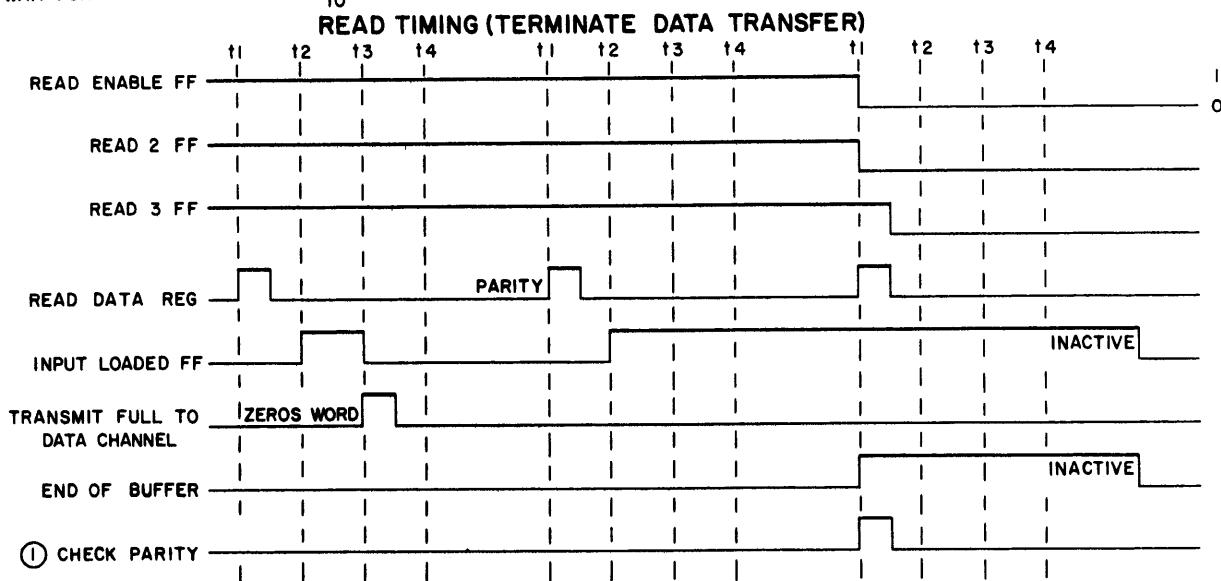
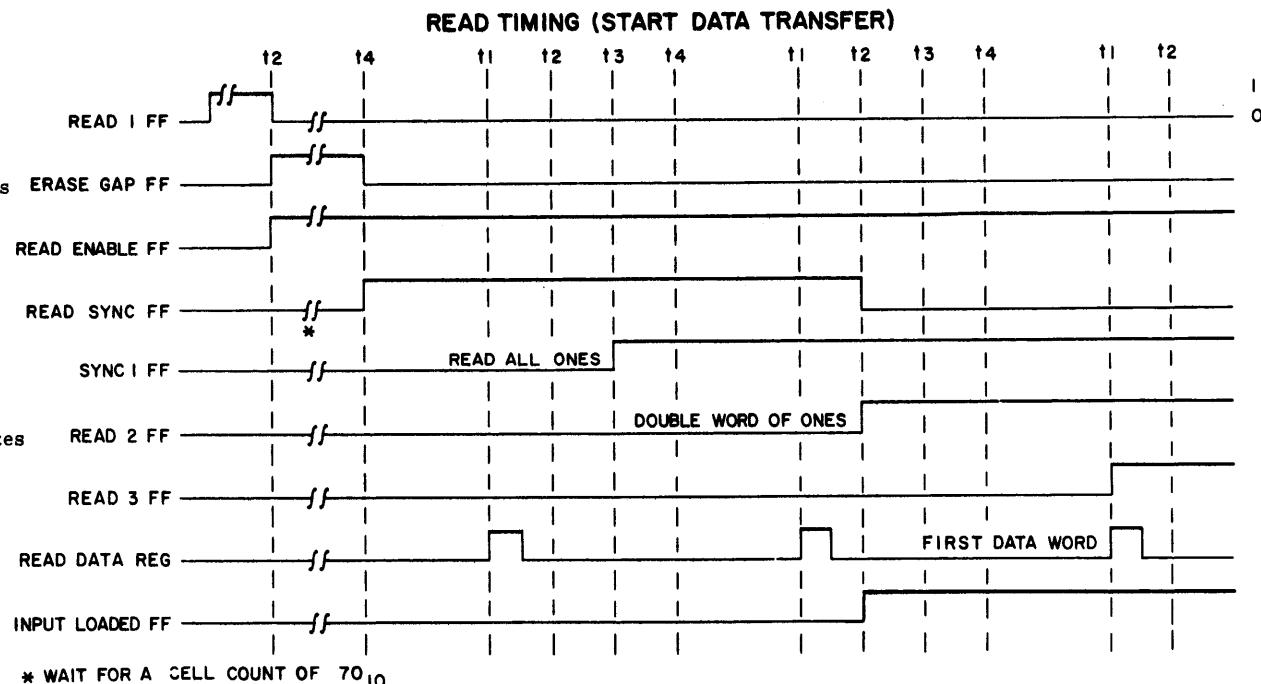




The function code portion of the read function word activates the read logic. The address portion of the read function word contains the sector address.

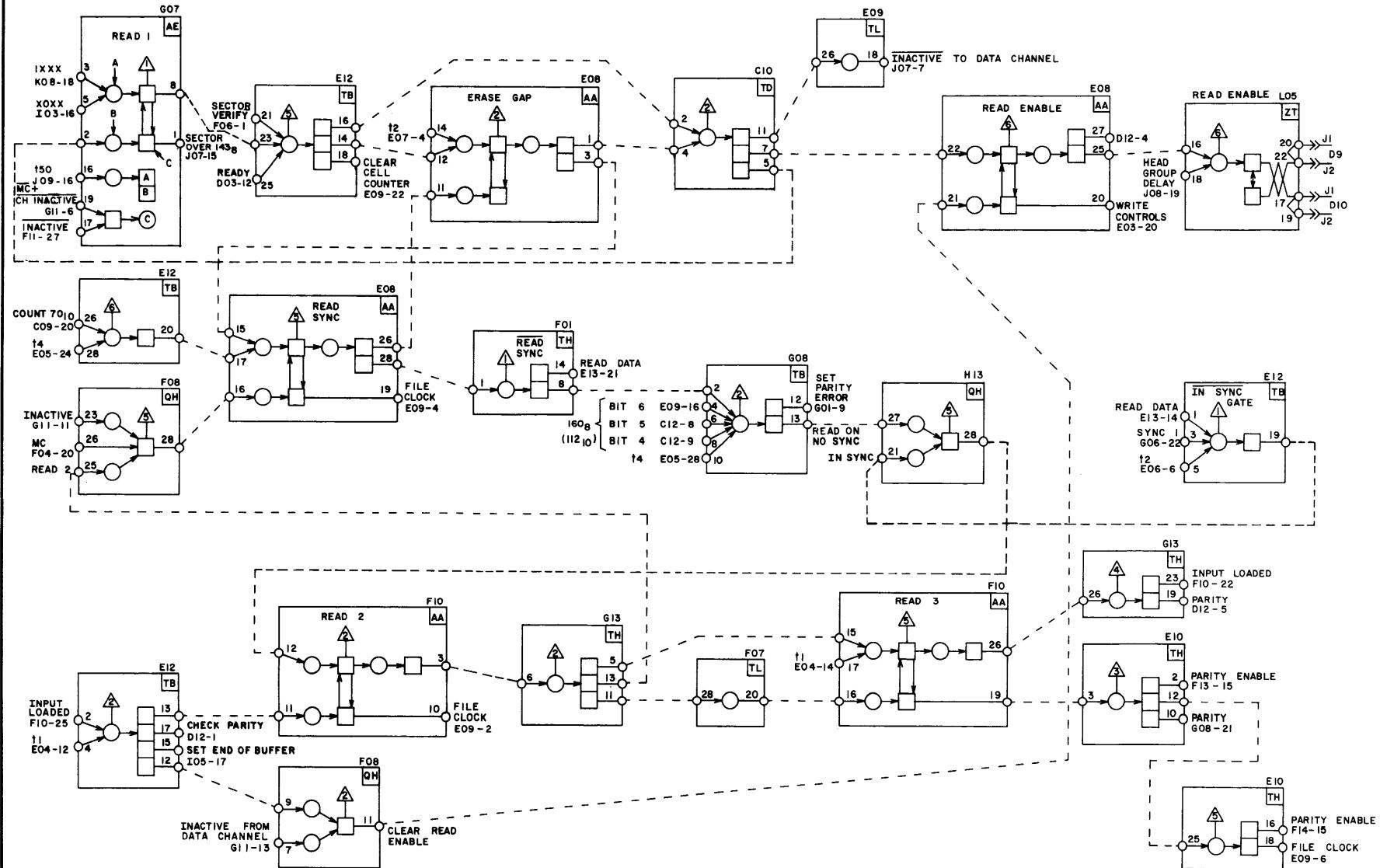
Sector verify and ready signals must be present as for a write function. The sector verify pulse indicates that the sector mark has been determined at which reading will begin. An inactive signal is returned to the data channel to denote the acceptance of the function word. When the cell counter reaches a count of 106_8 (70_{10}), the controller begins looking at the preamble. When 2 bytes of sevens are read in succession (page 5-27), the read 2 FF sets. Setting the read 2 and read 3 FF's denotes the beginning of data transfer. It enables the data being read off the disk to be gated through the controller registers to the data channel.

If 2 bytes of all seven are not read in succession by the time the cell counter reaches a count of 160_8 (112_{10}), the read 2 FF is forced to set in order to prevent a hang-up, and the parity error FF is set automatically.



NOTES:

(1) SEE PAGE I-29, GOI-TP2



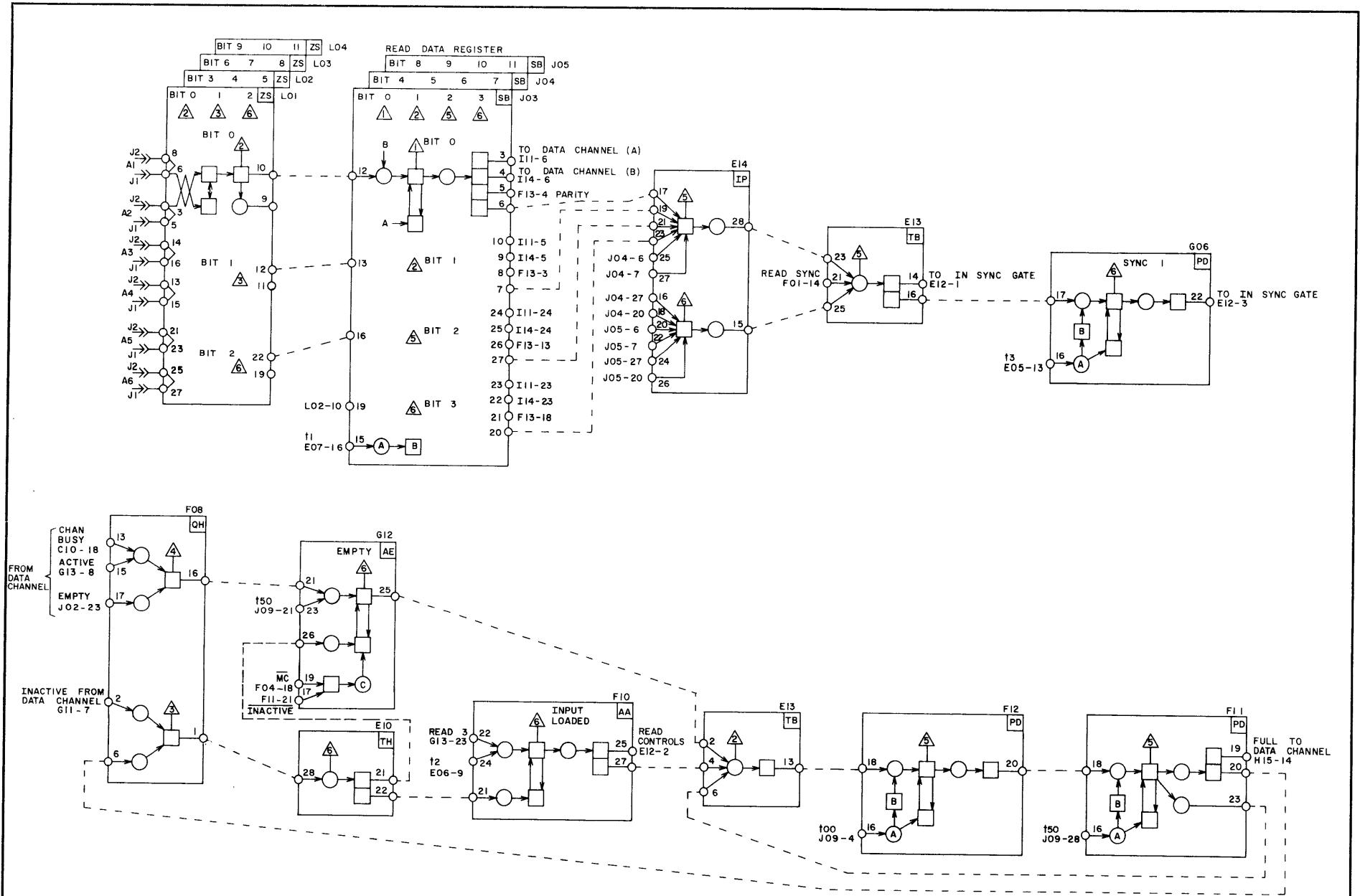
CONTROL DATA
DEVELOPMENT
DIVISION

TITLE
CONTROLLER
READ CONTROLS

PRODUCT
6639/ST OPT 10037
SIZE DRAWING NO.
C 60227300 REV.
SHEET PAGE
12 5-25

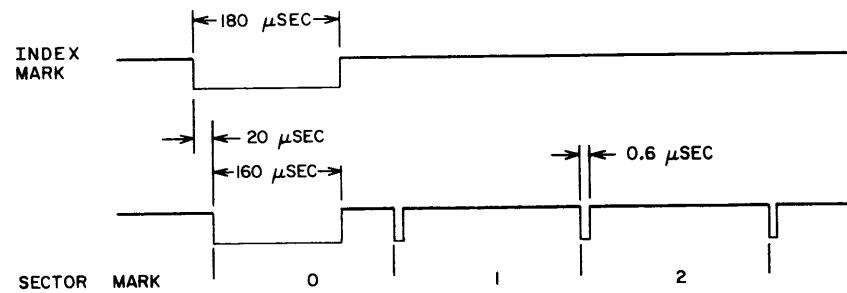
Data being read from the disk file is transmitted through the read data register to the data channel. During reading of the preamble, alternating bytes of 1's (7777_8) and 0's (0000) are read off the disk. Each time T1 comes up, a byte is gated into the read data register. A byte of 1's sets the sync I FF at T3. A byte of 0's clears the sync I FF. Since the preamble contains alternating 1's and 0's bytes, the sync I FF is alternately set and cleared until the beginning of data. Two consecutive bytes of 1's denote the beginning of data. The sync I FF is set, and the read register is all sevens, allowing the in sync gate (page 5-25) to output a 1 at the next T2, thereby setting the read 2 FF (page 5-25).

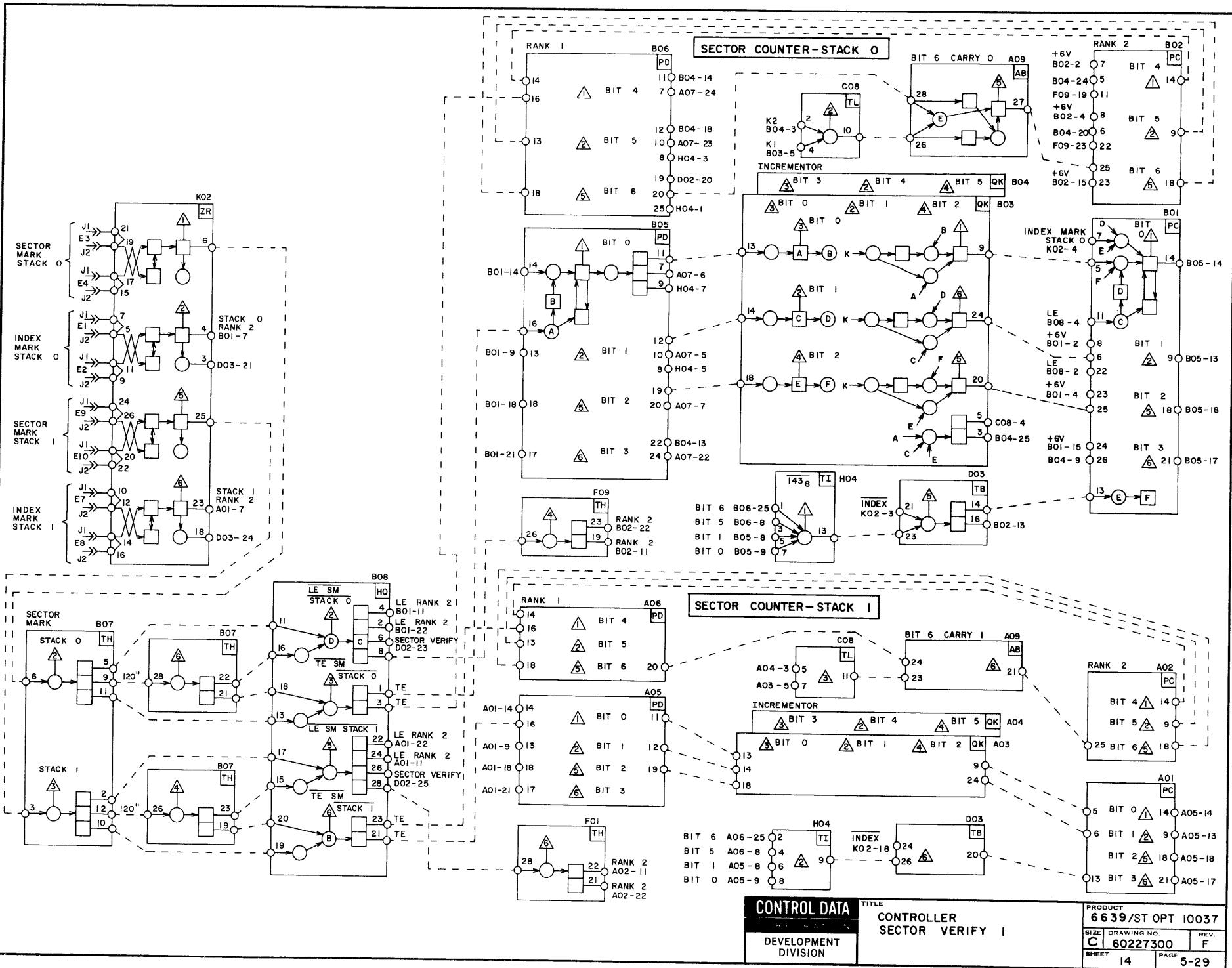
The data channel sends an active signal requesting the controller to send the first data word. In this case, the active serves as the first empty. The controller responds with the data word accompanied by a full signal. Thereafter, the data channel returns an empty signal to request more data. The process is repeated to the end of the buffer (record).



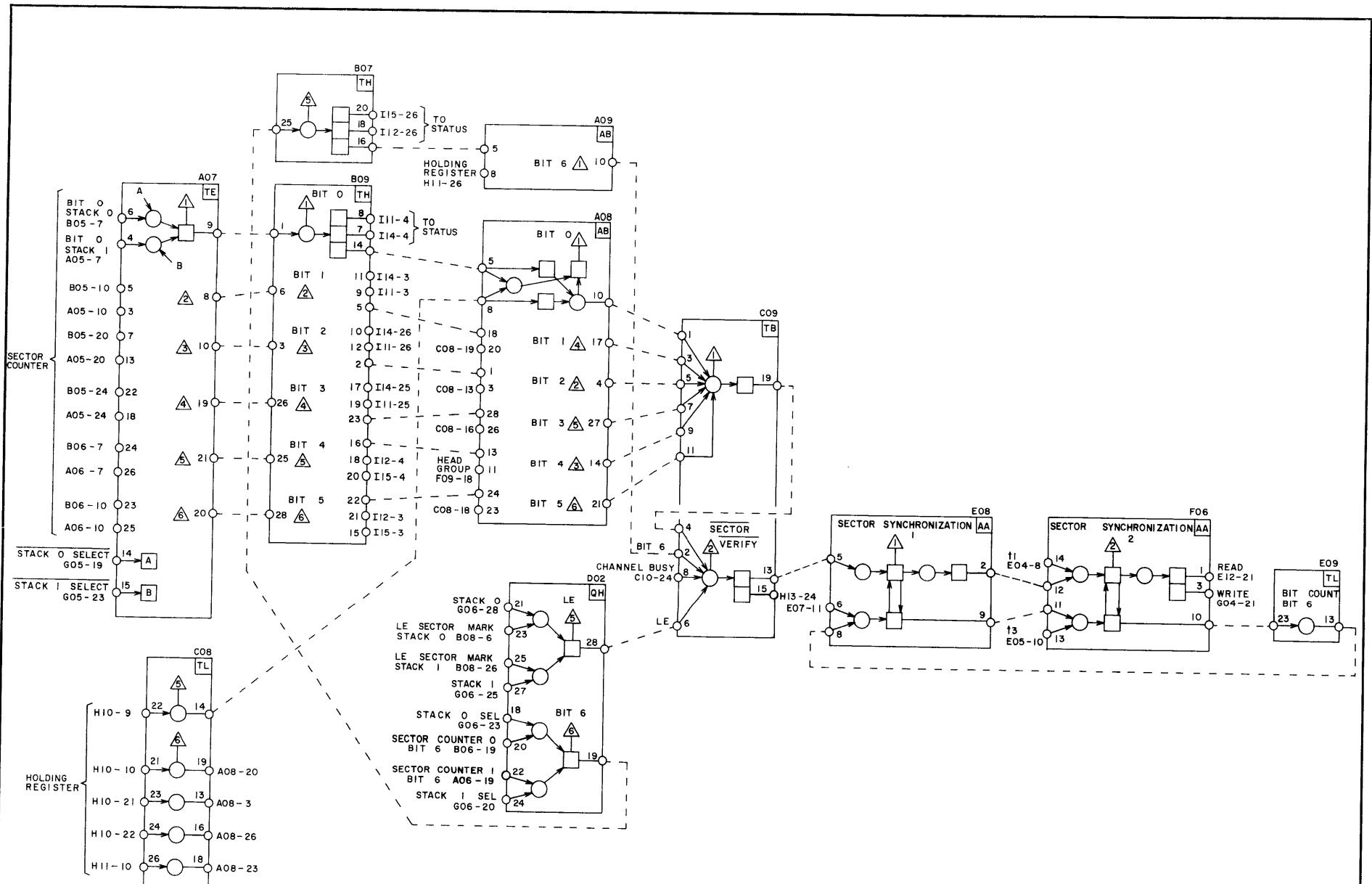
Sector mark pulses received from the disk file are gated to the sector counters for stacks 0 or 1. The leading edge of the sector mark pulse advances the increment count in rank 2, and the trailing edge transfer the count in rank 1. The rank 1 count represents the actual position (plus 1) of the read/write heads.

Since only 100_{10} sectors are used, the counter must be cleared to 0000 when 143_8 (100_{10}) is reached. The sector mark 0 pulse lags the index mark pulse by 20 microseconds, and its duration is wider than the other pulses as shown.





The contents of the sector counter, which reflect the actual position of the read/write heads, are compared against the holding register contents containing the designated sector address. Sector verify occurs when the leading edge pulse of a sector mark for the selected track is present and the contents of the sector counter and holding register are equal.



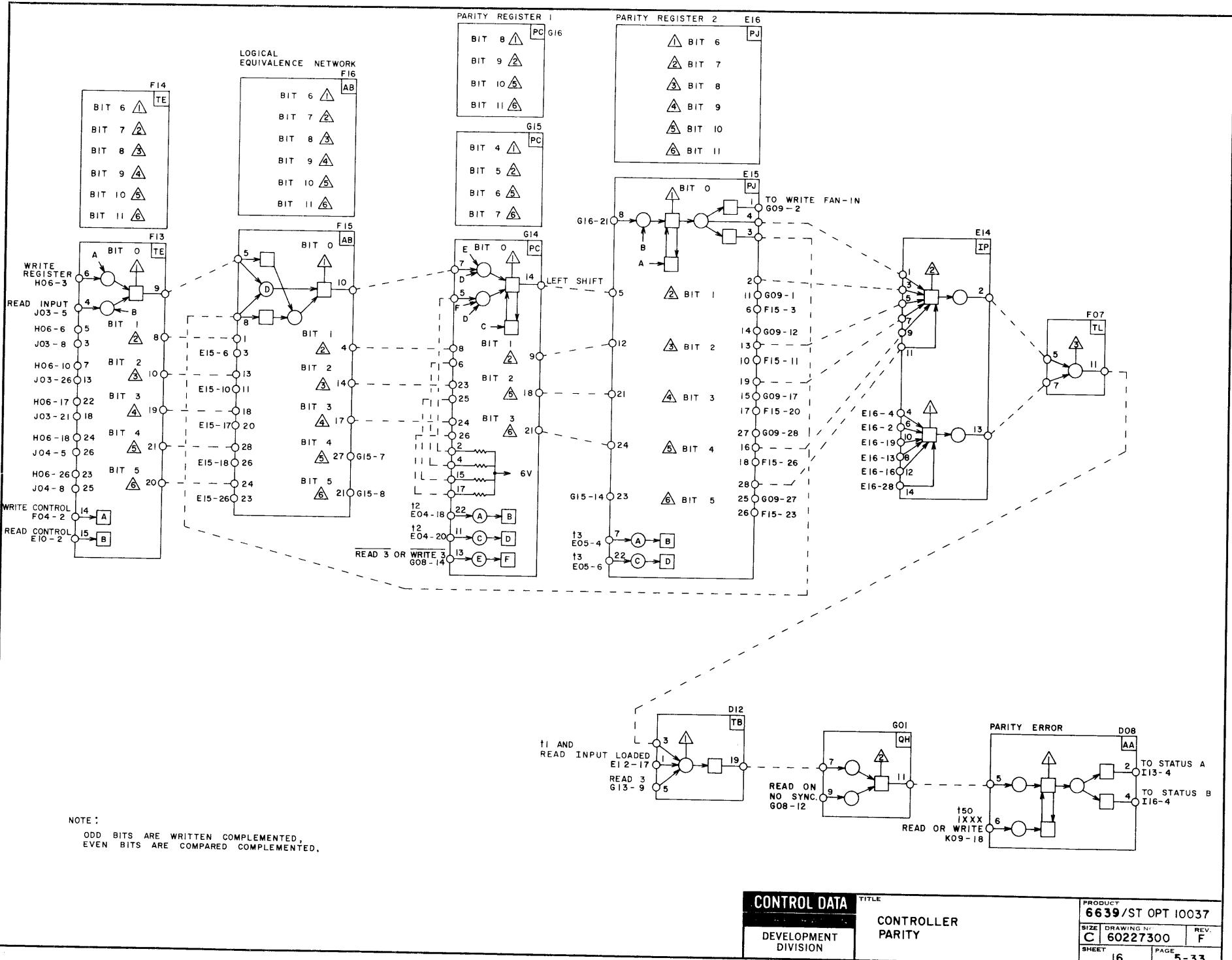
CONTROL DATA	TITLE	PRODUCT
DEVELOPMENT	CONTROLLER SECTOR VERIFY 2	6639/ST OPT 10037
DIVISION		SIZE DRAWING NO. C 60227300 REV. F
	SHEET 15 PAGE 5-31	

A parity byte is generated for each record that is written on the disk. The parity byte is written on the disk at the end of the record. During a read operation, this previously written parity byte is read back and it should be the same as the parity byte generated from the record being read. If not, a parity error is present.

On a write, the contents of parity register 2 (register 2) should be initially all 0's. The contents of register 2 are merged with the first byte of the write word in the logical equivalence network. This forms the logical equivalent which is gated to parity register 1 (register 1). The contents of register 1 are then left-shifted one place (end-around) to register 2. The odd bits (1, 3, 5, etc.) in register 2 are com-

plemented and transferred to the write fan-in gates on each iteration. On the last iteration (at the end of the record), the complemented odd bits together with the uncomplemented even bits of register 2 are written on the disk as the parity byte.

As the record is transferred back during a read, the process is the same as for the write, except that the even bits in register 2 are complemented. Receiving a parity byte should cause a bit pattern of 2525_8 in register 1. The contents of register 1 are then left-shifted into register 2 for a resulting bit pattern of 5252_8 . The even bits of the parity byte are then complemented and all bits compared. This should cause all 1's to be gated out of register 2 which in turn results in no parity error.



CHANNEL BUSY

During initiation of a read or write operation, the channel busy FF sets to indicate an operation is in progress. It provides enables for gating sector verify, full, and empty signals to the data channel and terminating the operation when the right conditions are present. An inactive signal generated by either the data channel or the controller clears the channel busy FF.

INACTIVE

The inactive FF sets to return an inactive signal to the data channel for normal replies to the functions (read, write, position select, or head group select) or when the following abnormal conditons are present: setting of lost data FF; channel busy, active, and not ready; sector of 144₈ or greater selected and read 1 or write 1 FF set.

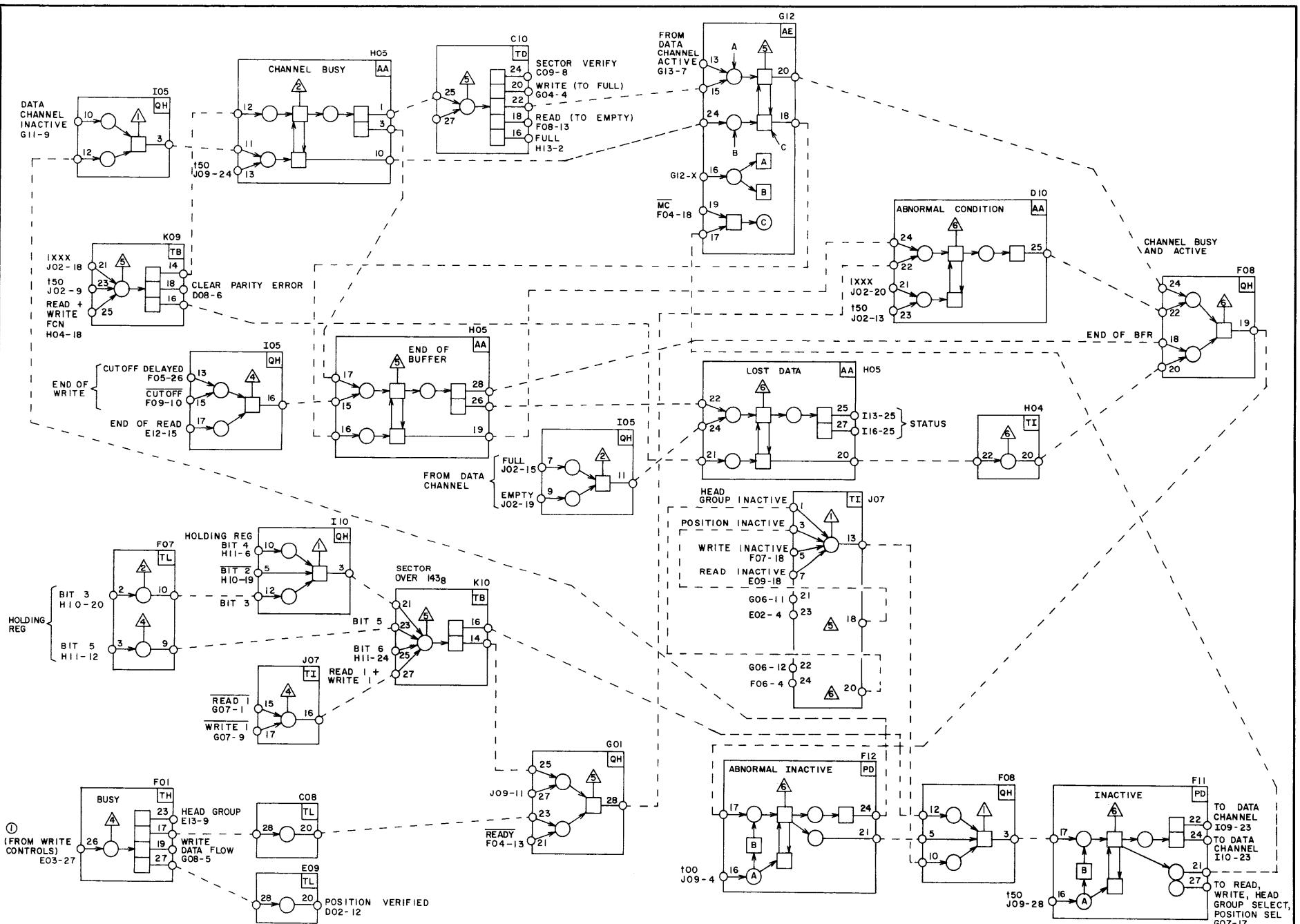
END OF BUFFER

The end of data on a write or the end of a read operation sets the end of buffer FF. This enables the lost data FF to set if a new full or empty signal is seen before an inactive.

LOST DATA

The lost data FF sets for the following conditions.

1. When an input or output buffer follows a read or write function, respectively, by more than 90 microseconds.
2. If program control issues a read or write function which is followed by two consecutive inputs or outputs.
3. If the instantaneous disk file rate exceeds the data channel rate.



NOTES:
 ① (FROM WRITE CONTROLS) E03-27
 ② READ + WRITE ENABLE

CONTROL DATA

DEVELOPMENT DIVISION

TITLE
CONTROLLER CHANNEL BUSY, INACTIVE, END OF BUFFER, AND LOST DATA CONTROLS

PRODUCT
6639/ST OPT 10037

SIZE DRAWING NO.
C 60227300

REV.
F

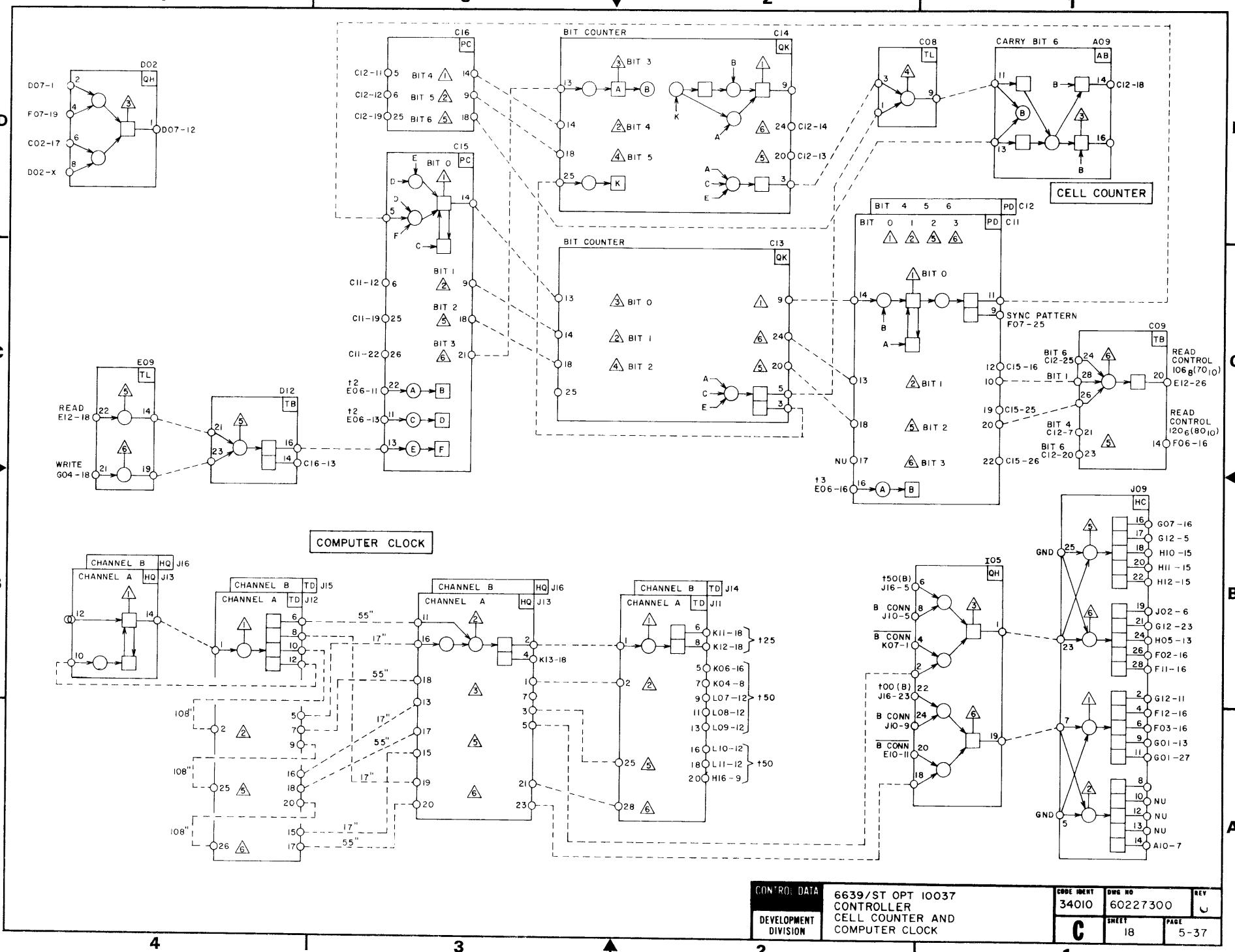
SHEET PAGE
17 5-35

CELL COUNTER

The cell counter counts disk file clock pulses. It is used to count preamble bits for determining the beginning of data during a read or write operation. It provides three bit-count translations. These are 80_{10} (write preamble), 70_{10} (read preamble), and 112_{10} (forces setting of read 2 FF, page 5-25, in the event it is not set at the end of the preamble).

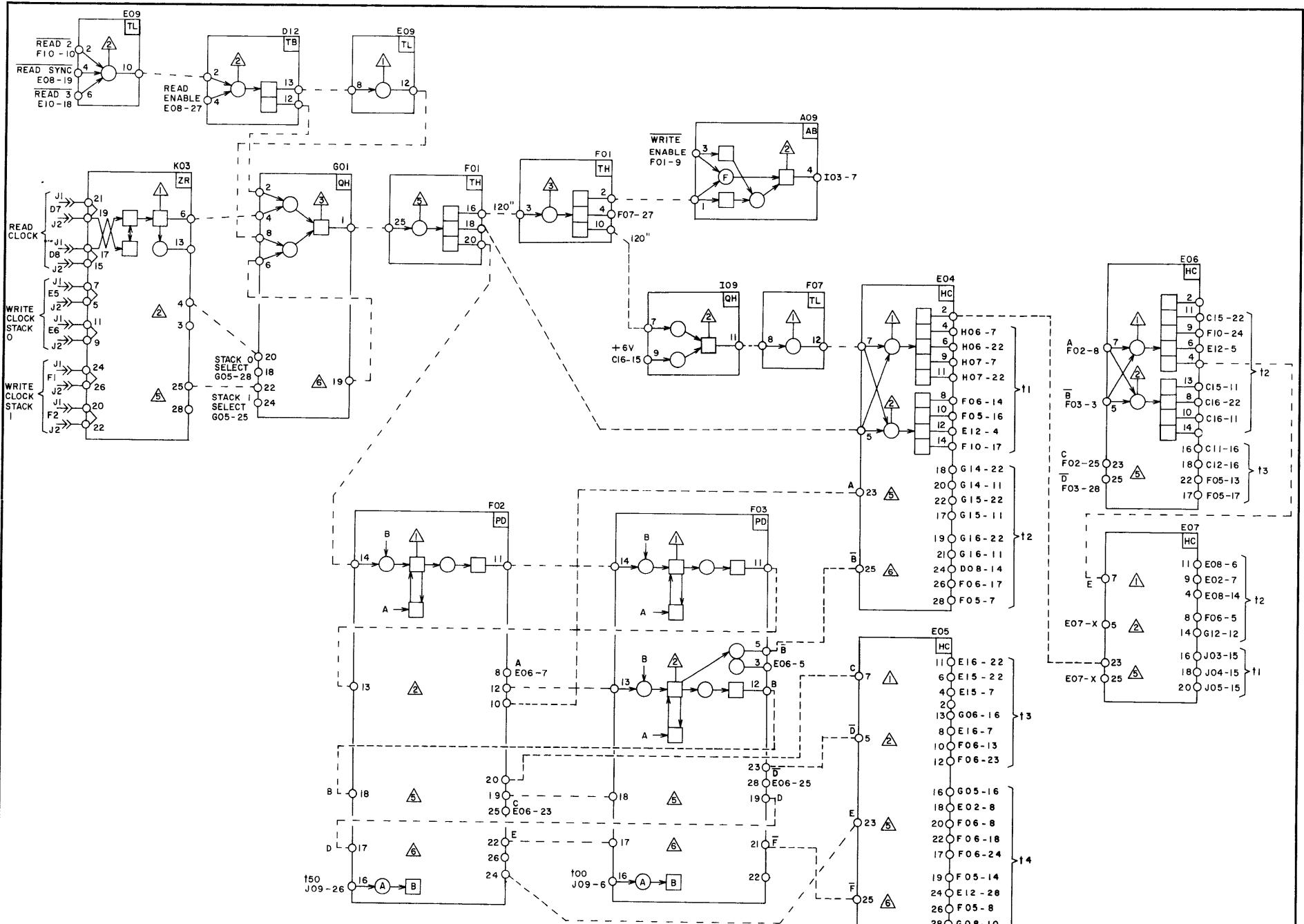
COMPUTER CLOCK

The 10-mHz input from the data channel (computer clocks) is used to provide 25-nanosecond timing pulses for sequencing operations between the computer and the controller.



The file clock logic receives clock pulses from a permanently recorded clock track in the disk file. These clock pulses provide for synchronizing the writing of data in the disk file. Times T1, T2, T3, and T4 come up in 100-nanosecond intervals.

Time T1 is a leading edge pulse formed off the file clock. Times T2, T3, and T4 are synchronized with the computer clock. Provisions are made to use the read self-clock when reading.



CONTROL DATA

DEVELOPMENT DIVISION

TITLE

CONTROLLER
FILE CLOCK

PRODUCT
6639/ST OPT 10037

SIZE DRAWING NO. REF.
C 60227300 G

SHEET PAGE
19 5-39

SECTION 6

MAINTENANCE

MAINTENANCE

INTRODUCTION

Maintenance procedures for the disk file controller follow the same general routines used in other Control Data equipment.

In addition to this manual, the following supporting documents provide information to aid maintenance personnel in servicing the equipment:

CONTROL DATA 6000 Series Input/Output Specifications Manual, (Publication No. 60045100)

CONTROL DATA Peripheral Controller Cabinets Manual (Publication No. 60097300)

CONTROL DATA Cordwood Modules Manual, Volumes 1, 2, and 3 (Publication No. 60042700)

CONTROLLER SPECIFICATIONS

PHYSICAL

Height	56-7/8 (1.44 m)
Width	42 in. (1.07 m)
Depth	20-1/2 in. (0.52 m)
Weight	659 lb (300 kg)
Heat Dissipation	4100 BTU/hr (1032 kg-cal/hr)
Operating Environment	60° to 78°F (15.5° to 25.5°C) temperature 25% to 75% rh

ELECTRICAL

208v, 3-phase, 400 Hz, 2.3 amp

120v, single-phase, 60 Hz, 2.8 amp

TRANSMISSION LINE ASSIGNMENTS

Refer to Tables 6-1 and 6-2 for cable wire assignments between the controller and the data channel and to Table 6-3 for controller-to-disk-file pin assignments.

TABLE 6-1. INPUT CABLE LINE ASSIGNMENTS - CONTROLLER TO DATA CHANNEL

Input to Data Chan A or B From Controller Data Bit or Sig	38W04 to Data Chan A From Controller Card, Pin	38W05 Pass- Back to Controller (Interface A) Card, Pin	38W06 to Data Chan B From Controller Card, Pin	38W07 Pass- Back to Controller (Interface B) Card, Pin	Color Code of Wires Between Controller and Data Channel
0	K11-7	K11-23	K14-7	K14-23	90
1	K11-5	K11-22	K14-5	K14-22	91
2	K11-3	K11-21	K14-3	K14-21	92
3	K11-28	K11-10	K14-28	K14-10	93
4	K11-26	K11-9	K14-26	K14-9	94
5	K11-24	K11-8	K14-24	K14-8	95
6	K12-7	K12-23	K15-7	K15-23	96
7	K12-5	K12-22	K15-5	K15-22	97
8	K12-3	K12-21	K15-3	K15-21	98
9	K12-28	K12-10	K15-28	K15-10	99
10	K12-26	K12-9	K15-26	K15-9	900
11	K12-24	K12-8	K15-24	K15-8	901
Active	K13-7	K13-23	K16-7	K16-23	902
Inactive	K13-5	K13-22	K16-5	K16-22	903
Full	K13-3	K13-21	K16-3	K16-21	904
Empty	K13-28	K13-10	K16-28	K16-10	905
Clock (10 mc)	J13-12	K13-26	J16-12	K16-26	906
Clock (1 mc)	K13-8	K13-24	K16-8	K16-24	907
Not Used					908

TABLE 6-2. OUTPUT CABLE LINE ASSIGNMENTS - DATA CHANNEL TO CONTROLLER

Output From Data Chan A or B to Controller Data Bit or Signal	38W00 From Data Chan A to Controller Card, Pin	38W01 Pass- On From Controller (Interface A) Card, Pin	38W02 From Data Chan B to Controller Card, Pin	38W03 Pass- On From Controller (Interface B) Card, Pin	Color Code of Wires Between Controller and Data Channel
0	L07-3	L07-1	L12-3	L12-1	90
1	L07-13	L07-15	L12-13	L12-15	91
2	L07-16	L07-14	L12-16	L12-14	92
3	L07-26	L07-28	L12-26	L12-28	93
4	L08-3	L08-1	L13-3	L13-1	94
5	L08-13	L08-15	L13-13	L13-15	95
6	L08-16	L08-14	L13-16	L13-14	96
7	L08-26	L08-28	L13-26	L13-28	97
8	L09-3	L09-1	L14-3	L14-1	98
9	L09-13	L09-15	L14-13	L14-15	99
10	L09-16	L09-14	L14-16	L14-14	900
11	L09-26	L09-28	L14-26	L14-28	901
Active	L10-3	L10-1	L15-3	L15-1	902
Inactive	L10-13	L10-15	L15-13	L15-15	903
Full	L10-16	L10-14	L15-16	L15-14	904
Empty	L10-26	L10-28	L15-26	L15-28	905
Function	L11-3	L11-1	L16-3	L16-1	906
Master Clear	L11-13	L11-15	L16-13	L16-15	907
Not Used					908

TABLE 6-3. CONTROLLER TO DISK FILE CABLE PIN ASSIGNMENTS

Pin	Signal	Direction
A1-2	Data Bit 0	Bi-Directional
A3-4	Data Bit 1	Bi-Directional
A5-6	Data Bit 2	Bi-Directional
A7-8	Data Bit 3	Bi-Directional
A9-10	Data Bit 4	Bi-Directional
B1-2	Data Bit 5	Bi-Directional
B3-4	Data Bit 6	Bi-Directional
B5-6	Data Bit 7	Bi-Directional
B7-8	Data Bit 8	Bi-Directional
B9-10	Data Bit 9	Bi-Directional
C1-2	Data Bit 10	Bi-Directional
C3-4	Data Bit 11	Bi-Directional
C5-6	Head Select	To Disk File
C7-8	Position Select	To Disk File
C9-10	On Point	From Disk File
D1-2	Clear File	To Disk File
D3-4	Select File Station	To Disk File
D5-6	Write Enable	To Disk File
D7-8	Read Clock	From Disk File
D9-10	Read Enable	To Disk File
E1-2	Index Mark Stack 0	From Disk File
E3-4	Sector Mark Stack 0	From Disk File
E5-6	Write Clock Stack 0	From Disk File
E7-8	Index Mark Stack 1	From Disk File
E9-10	Sector Mark Stack 1	From Disk File
F1-2	Write Clock Stack 1	From Disk File
F3-4	Ready	From Disk File
F5-6	Disk File Select	To Disk File
F7-8	Disk File Select	To Disk File
F9-10	Terminator Power	*

*Terminator power is provided to the disk file and controller through a separate two-wire power cable.

SECTION 7

MAINTENANCE AIDS

6639/STANDARD OPTION 10037 CARD PLACEMENT

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
A	PC	IPC	QK	QK	PD	PD	TE	AB	AB	AA		I	I	I	I	
	SECTOR COUNTER STACK I				SECTOR VERIFY											
B	PC	IPC	QK	QK	PD	PD	TH	HQ	TH	AA		TL	TQ	TI		
	SECTOR COUNTER STACK O				CONTROL											
C	PC	IPC		PJ	PJ	TE	TL	TB	TD	PD	PD	QK	QK	PC	PC	
	POSITION COUNTER				(I)	CONTROLS								CELL	COUNTER	
D	QH	TB	PJ		AE	AA	XL	OS	AA		TB	QH				
	POSITION VERIFY, NULL DELAY READY				DELAY	UNIT	SELECT			CONTROL						
E	TH	AA	HQ	HC	HC	HC	AA	TL	TH	HC	TB	TB	IP	PJ	PJ	
	POSITION VERIFY		FILE CLOCK				FUNCTIONS & CONTROL							PARITY		
F	TH	PD	PD	TH	AA	AA	TL	QH	TH	AA	PD	PD	TE	TE	AB	AB
	FILE CLOCK	CONTROL		FUNCTIONS & CONTROL											PARITY	
G	QH	TC	TD	TB	PD	PD	AE	TB	TE	TE	CX	AE	TH	PC	PC	PC
	FUNCTIONS & CONTROL						WRITE FAN-IN GATES			CONTROL					PARITY	
H			TI	AA	PJ	PJ	PJ	PJ	PO	PO	PO	QH	IV	KL	PJ	
	CONTROL				WRITE & BUFFER REGISTERS				HOLDING REGISTER					FUNCTION TRANS. & CONTROL		
I	KS	KS	QH	TE	TE	TE	QH	QH	TG	TG	TG	TG	TG	TG	TG	
	PHASE MODULATOR	CONTROL		INTERFACE GATES			UNIT SEL		GATES TO CHANNELS							
J	TH	SB	SB	XL	TI	TH	HC	TH	TD	TD	HQ	TD	TD	HQ		
	CONTROL	READ DATA REGISTER	DELAY		CONTROL				COMPUTER						CLOCK	
K	ZR	ZR	ZR	AA	CX	AE	AE	TD	TB	TB	QJ	QJ	QJ	QJ	QJ	
	SIGNALS FROM DISK FILE			CONNECT & STATUS											DATA & SIGNALS TO CHANNEL	
L	ZS	ZS	ZS	ZT	ZT	QI	QI	QI	QI	QI	QI	QI	QI	QI	QI	
	DATA TO DISK FILE	& FROM		SIGNALS TO FILE											DATA & SIGNALS FROM CHANNEL	

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

P/N 18079700

NOTE

Standard Option 10037-A does not use location CO6.

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SECTION 8

PARTS LIST

PARTS LIST

INTRODUCTION

The parts list provides the identification and ordering data necessary for the replacement of electrical and hardware parts for Control Data Standard Option 10037-A and the 6639 Disk File Controller .

Electrical contents: all chassis and cabinet items are included except jumper wires and bulk wires.

The chassis assembly and associated subassemblies are broken down into individual parts and are listed in alphabetical rather than disassembly order.

The following publications contain information on printed circuit card assemblies, peripheral cabinets, power supplies, and vendor parts lists necessary to complete a total breakdown of the equipment. Order manuals from Literature Distribution Services Catalog.

Ault Power Supply Manual

Control Data Power Supply Manual

Peripheral Controller Cabinets Customer Engineering Instruction Manual
(Includes cabinet parts list and Control Data modifications to vendor power supplies.)

ORDERING OF PARTS

When ordering Control Data parts, include the following information: Control Data drawing number, description, quantity needed, equipment used on. When ordering vendor parts use the procedure indicated by that vendor.

CDC - DRAWING NUMBER	DESCRIPTION	QUANTITY EACH MACHINE
17801900	Bar, Mounting, Card	
18027900	Bar, Mounting, Receptacle	
18082800	Bar, Support	
17944100	Blank Card Cap	
17992900	Bracket, Mounting, Panel, LH	
17993000	Bracket, Mounting, Panel, RH	
18028000	Bus Bar, Horizontal	
17902300	Cabinet Assembly, Peripheral Type B	
18164200	Capacitor, Fixed, Electrolytic, 300UF, 10 VDC	
18079700	Card Placement	
18039400	Chassis Assembly	
17928300	Clamp, Bus Bar	
17900200	Clamp, Bus Bar	
00863707	Clamp, Cable, 0.52 ID	
18240800	Connector Assembly, 61 Socket, J01	
24518103	Connector, Flexible, 3/4 Conduit	
24562500	Connector, Receptacle, 30 Socket	
24532300	Connector, Receptacle, 61 Pin	
30094402	Connector, Receptacle, Red, 10 Socket	
30094406	Connector, Receptacle, Blue, 10 Socket	
30094410	Connector, Receptacle, Black, 10 Socket	
30000901	Connector, Receptacle, 61 Socket	
46910000	Disk File	
00865004	Grommet, Strain Relief	
17912702	Insulator Strip, Bus Bar	
17913800	Member, Frame, Chassis, RH	
18038200	Member, Frame, Chassis, LH	
18076100	Panel, Mounting, Connector	
17941500	Panel, Filler	
17884500	Panel, Filler, Front	
17881400	Power Supply Assembly	
30001201	Resistor-Terminator Assembly	
17805300	Seal, Rubber, Connector	
30000902	Socket for Connector 30000901	

CDC - DRAWING NUMBER	DESCRIPTION	QUANTITY EACH MACHINE
17932700	Strip, Marker, Horizontal, Light Blue, -6	
17932701	Strip, Marker, Horizontal, Light Red, +6	
18228800	Wire List, Logic	

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60227300 F

CDC - DRAWING NUMBER	DESCRIPTION	QUANTITY EACH MACHINE
63040000	Printed Circuit Module Assembly, Type AA	52543600
63040100	Printed Circuit Module Assembly, Type AB	3500
63040400	Printed Circuit Module Assembly, Type AE	3200
63042900	Printed Circuit Module Assembly, Type CX	2600
63044800	Printed Circuit Module Assembly, Type HC	52567500
63046200	Printed Circuit Module Assembly, Type HQ	2100
63048700	Printed Circuit Module Assembly, Type IP	52544200
63049300	Printed Circuit Module Assembly, Type IV	52544500
63051500	Printed Circuit Module Assembly, Type JR	8200
63053200	Printed Circuit Module Assembly, Type KL	
63053800	Printed Circuit Module Assembly, Type KS	
63057800	Printed Circuit Module Assembly, Type PC	
63057900	Printed Circuit Module Assembly, Type PD	
63058400	Printed Circuit Module Assembly, Type PJ	
63058900	Printed Circuit Module Assembly, Type PO	
63060700	Printed Circuit Module Assembly, Type QH	
63060800	Printed Circuit Module Assembly, Type QI	
63060900	Printed Circuit Module Assembly, Type QJ	
63061000	Printed Circuit Module Assembly, Type QK	
63062700	Printed Circuit Module Assembly, Type SB	
63063400	Printed Circuit Module Assembly, Type TB	
63063500	Printed Circuit Module Assembly, Type TC	
63063600	Printed Circuit Module Assembly, Type TD	
63063700	Printed Circuit Module Assembly, Type TE	
63063900	Printed Circuit Module Assembly, Type TG	
63064000	Printed Circuit Module Assembly, Type TH	
63064100	Printed Circuit Module Assembly, Type TI	
63064400	Printed Circuit Module Assembly, Type TL	
63065500	Printed Circuit Module Assembly, Type XL	
17876300	Printed Circuit Module Assembly, Type ZR	
17876100	Printed Circuit Module Assembly, Type ZS	
17876500	Printed Circuit Module Assembly, Type ZT	

SECTION 9

WIRE LISTS

SECTION 10

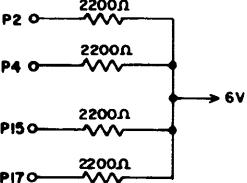
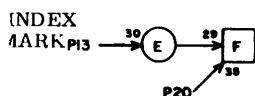
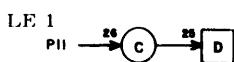
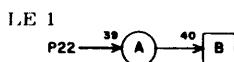
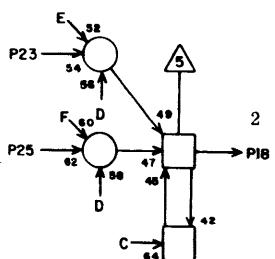
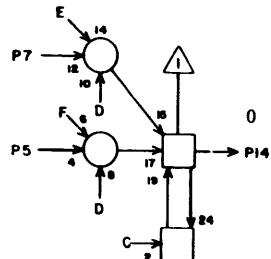
EQUATION SUMMARY

(Not Applicable)

CHASSIS TABS

LS 63057800 C
ASSY REV

SECTOR COUNTER - STACK 1
RANK 2, BITS 0-3



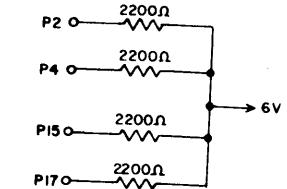
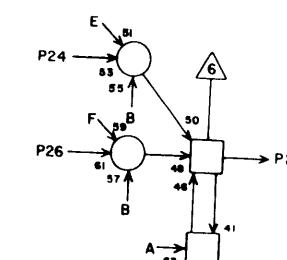
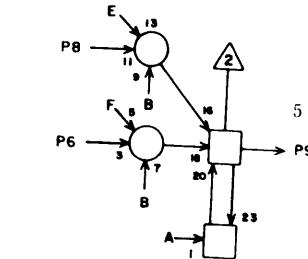
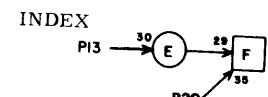
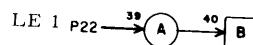
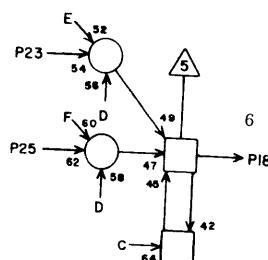
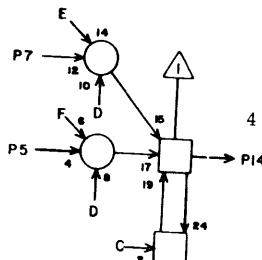
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1	-	
2	A01- 8	3
3	-	
4	A01-23	5
5	A03- 9	5
6	A03-24	7
7	K02-23	37
8	A01- 2	3
9	A05-13	7
10	-	
11	B08-24	13
12	-	
13	D03-20	13
14	A05-14	7
15	A01-24	5
16	-	
17	-	
18	A05-18	7
19	-	
20	A01- X	2
21	A05-17	7
22	B08-22	13
23	A01- 4	5
24	A01-15	5
25	A03-20	5
26	A04- 9	7
27	-	
28	-	

JACK PIN LG
CIRCUIT SPECIFICATION 11627600

60227300 F

LS 63057800 C
ASSY REV

SECTOR COUNTER - STACK 1
RANK 2, BITS 4-6



PC	RV	G	A02
1	-		
2	A02- 7	5	
3	-		
4	A02- 8	3	
5	A04-24	5	
6	A04-20	7	
7	A02- 2	5	
8	A02- 4	3	
9	A06-13	7	
10	-		
11	F01-22	21	
12	-		
13	D03-22	13	
14	A06-14	7	
15	A02-23	5	
16	-		
17	-		
18	A06-18	7	
19	-		
20	-		
21	-		
22	F01-21	19	
23	A02-15	5	
24	-		
25	A09-21	11	
26	-		
27	-		
28	-		

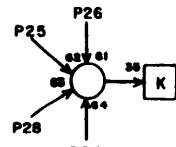
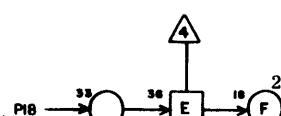
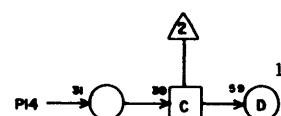
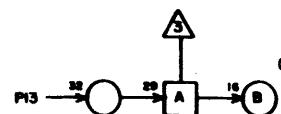
JACK PIN LG
CIRCUIT SPECIFICATION 11627600

60227300 F

LS 63061000
ASSY

3
REV

SECTOR COUNTER - STACK 1
INCREMENTOR, BITS 0-2

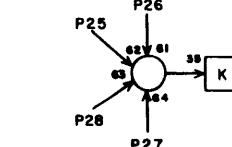
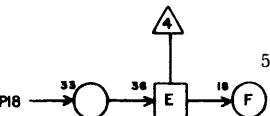
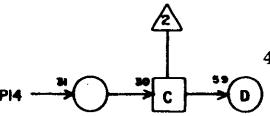
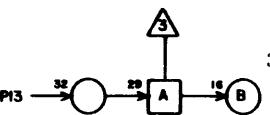


QK
REV
A03

LS 63061000
ASSY

3
REV

SECTOR COUNTER - STACK 1
INCREMENTOR, BITS 3-5



QK
REV
A04

1
2
3 C08- 5 11

4
5
6
7
8
9 A01-26 7

10
11
12
13 A05-22 5

14 A06-11 5
15
16
17
18 A06-12 5

JACK PIN LG

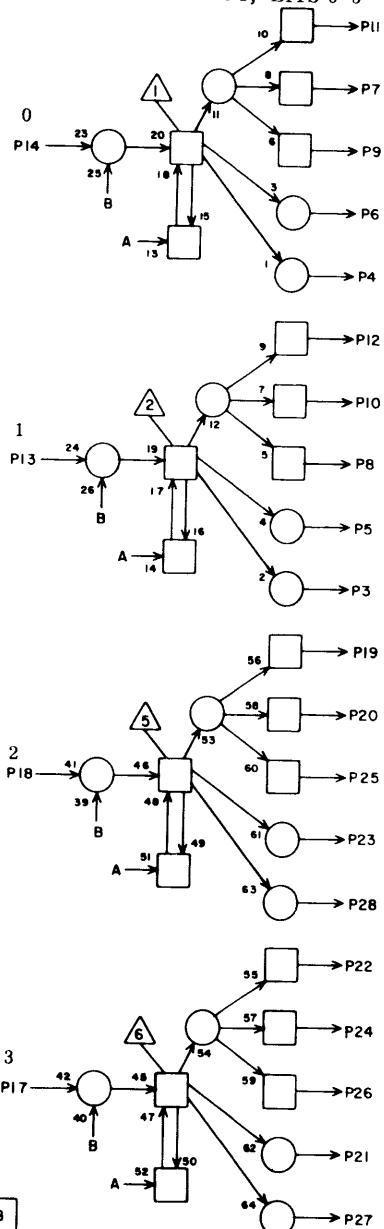
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60227300 F

JACK PIN LG
CIRCUIT SPECIFICATION 1027600

60227300 F

LS 63057900
ASSY REV B

SECTOR COUNTER - STACK 1
RANK 1, BITS 0-3



TE 1 P16 → 43 → A → 44 → B

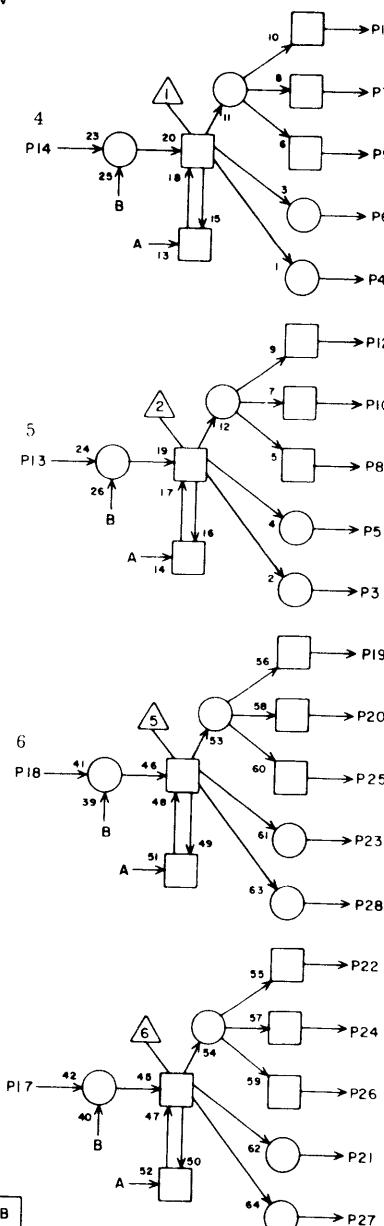
PD

	RV	G	A05
1	-		
2	-		
3	-		
4	-		
5	-		
6	-		
7	A07-4	5	
8	H04-6	27	
9	H04-8	27	
10	A07-3	7	
11	A03-13	5	
12	A03-14	5	
13	A01-9	7	
14	A01-14	7	
15	-		
16	B08-21	9	
17	A01-21	7	
18	A01-18	7	
19	A03-18	5	
20	A07-13	7	
21	-		
22	A04-13	5	
23	-		
24	A07-18	5	
25	-		
26	-		
27	-		
28	-		

JACK PIN LG
CIRCUIT SPECIFICATION 11827600
60227300 F

LS 63057900
ASSY REV B

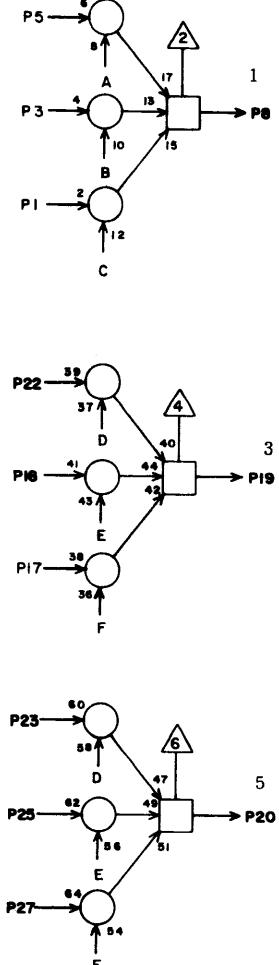
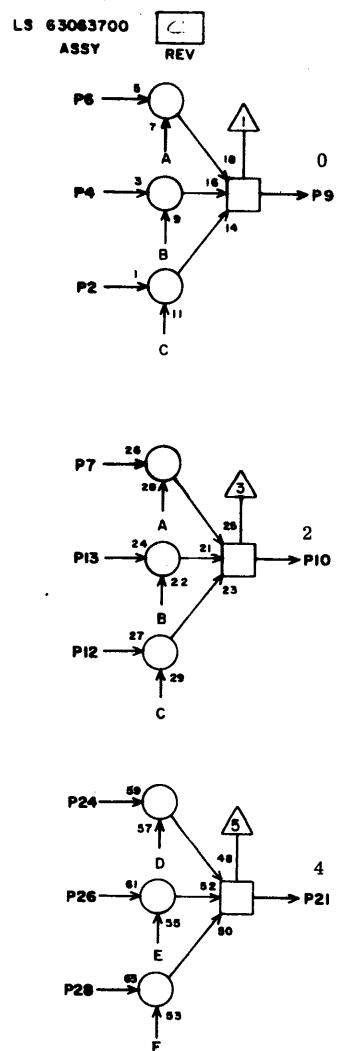
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RANK 1, BITS 4-6



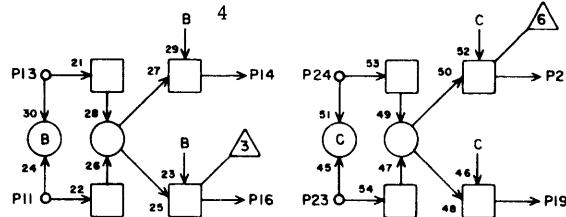
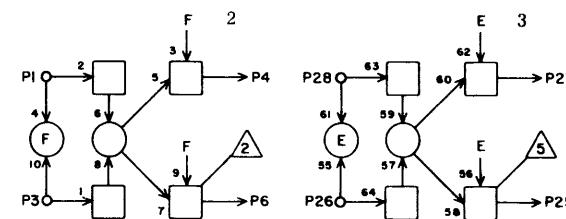
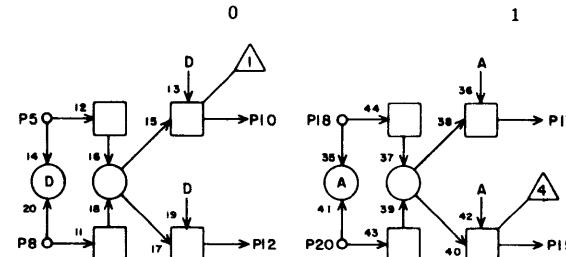
PD

	RV	G	A06
1	-		
2	-		
3	-		
4	-		
5	-		
6	-		
7	A07-26	5	
8	H04-4	27	
9	-		
10	A07-25	5	
11	A04-14	5	
12	A04-18	5	
13	A02-9	7	
14	A02-14	7	
15	-		
16	B08-23	9	
17	-		
18	A02-18	7	
19	D02-22	15	
20	A09-24	7	
21	-		
22	-		
23	-		
24	-		
25	H04-2	25	
26	-		
27	-		
28	-		

JACK PIN LG
CIRCUIT SPECIFICATION 11827600
60227300 F



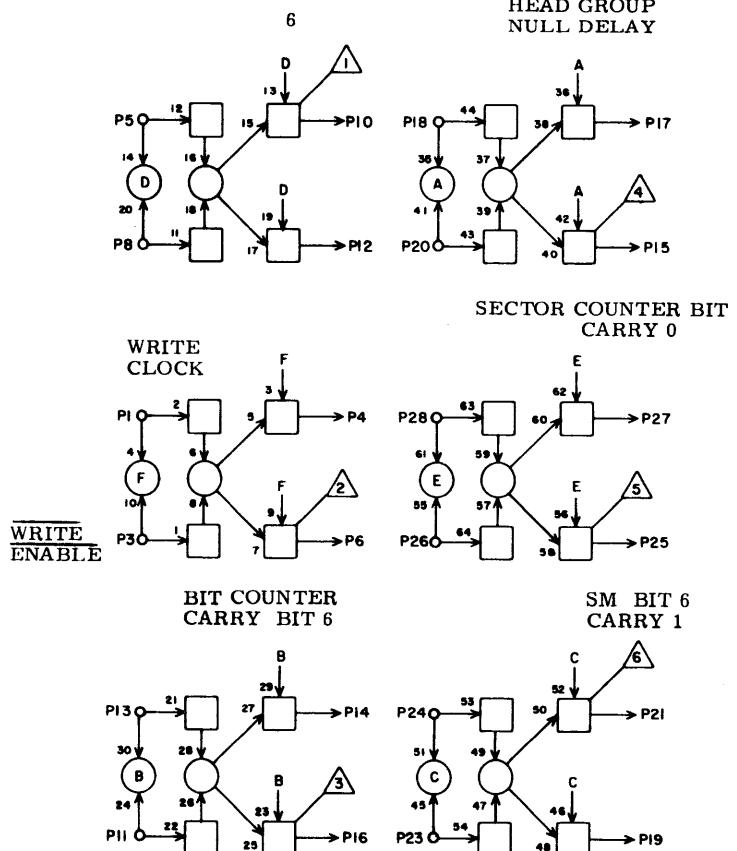
TE	RV	G	A07
	1	-	
	2	-	
	3	A05-10	7
	4	A05- 7	5
	5	B05-10	9
	6	B05- 7	7
	7	B05-20	9
	8	B09- 6	7
	9	B09- 1	7
	10	B09- 3	7
	11	-	
	12	-	
	13	A05-20	7
	14	G05-19	23
	15	G05-23	25
	16	A07- X	2
	17	-	
	18	A05-24	5
	19	B09-26	7
	20	B09-28	9
	21	B09-25	7
	22	B05-24	7
	23	B06-10	7
	24	B06- 7	5
	25	A06-10	5
	26	A06- 7	5
	27	-	



JACK PIN L
CIRCUIT SPECIFICATION 11827600
60227300 F

LS 63040100
ASSY

E
REV

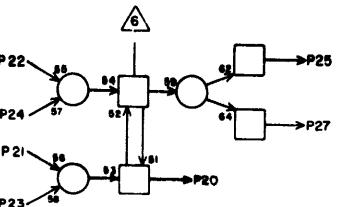
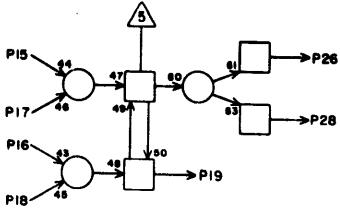
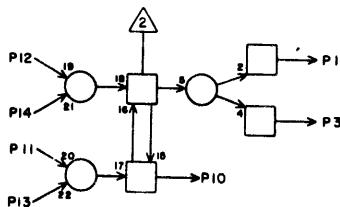
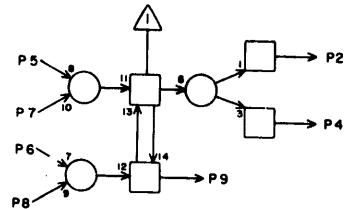


AB	RV	G	A09
1	F01-	2	23
2	-		
3	F01-	9	25
4	I03-	7	31
5	B07-16		9
6	-		
7	-		
8	H11-26		29
9	-		
10	C09-	2	9
11	C08-	9	9
12	-		
13	C16-18		13
14	C12-18		11
15	-		
16	-		
17	A10-	5	5
18	F09-13		19
19	-		
20	C08-15		9
21	A02-25		11
22	-		
23	C08-11		9
24	A06-20		7
25	-		
26	C08-10		9
27	B02-25		11
28	B06-20		7

JACK PIN LG
CIRCUIT SPECIFICATION 11027600
60227300 F

LS 63040100
ASSY

[B]
REV



RA10
RV

1 G06-13 25

2 D02-13 17

3 D02-15 17

4 -

5 A09-17 5

6 G07-27 25

7 J09-14 132

8 -

9 -

10 -

11 G05-8 25

12 E13-19 17

13 -

14 E04-16 19

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19 -

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22 -

23 -

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27 -

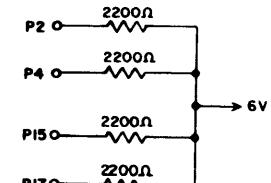
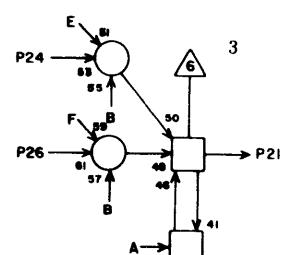
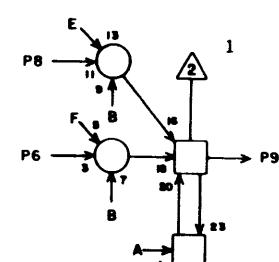
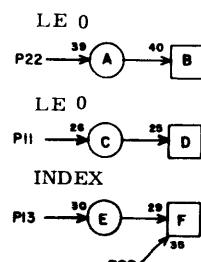
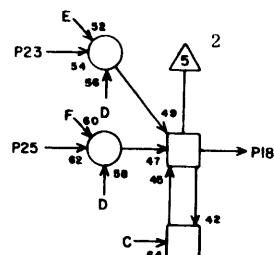
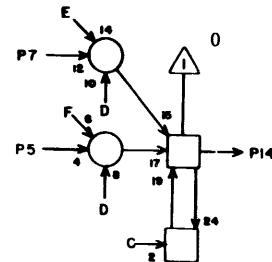
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JACK PIN LG
CIRCUIT SPECIFICATION 11027600

60227300 G

LS 63057800
ASSY C
REV

SECTOR COUNTER - STACK 0
RANK 2, BITS 0-3

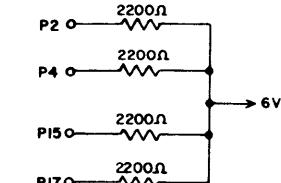
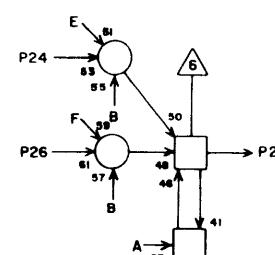
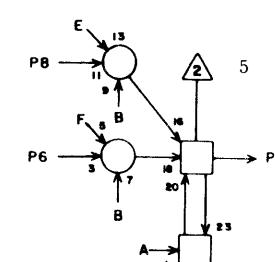
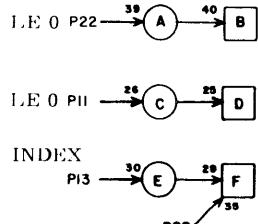
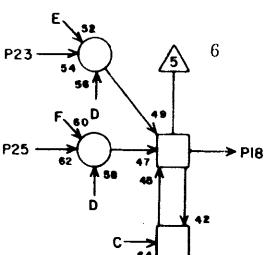
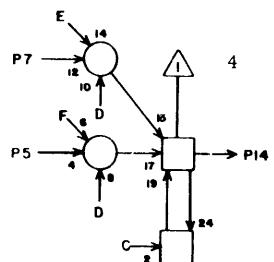


B01

PC	RV	G	LG
1	-		
2	801- 8	3	
3	-		
4	801-23	5	
5	803- 9	5	
6	803-24	7	
7	K02- 4	31	
8	801- 2	3	
9	805-13	7	
10	-		
11	803- 4	11	
12	-		
13	803-14	11	
14	805-14	7	
15	801-24	5	
16	-		
17	-		
18	805-18	7	
19	-		
20	-		
21	805-17	7	
22	808- 2	11	
23	801- 4	5	
24	801-15	5	
25	803-20	5	
26	804- 9	7	
27	-		
28	-		

LS 63057800
ASSY C
REV

SECTOR COUNTER - STACK 0
RANK 2, BITS 4-6



B02

PC	RV	G	LG
1	-		
2	802- 7	5	
3	-		
4	802- 6	3	
5	804-24	5	
6	804-20	7	
7	802- 2	5	
8	802- 4	3	
9	806-13	7	
10	-		
11	F09-19	21	
12	-		
13	D03-16	11	
14	806-14	7	
15	802-23	5	
16	-		
17	-		
18	806-18	7	
19	-		
20	-		
21	-		
22	F09-23	21	
23	802-15	5	
24	-		
25	A09-27	11	
26	-		
27	-		
28	-		

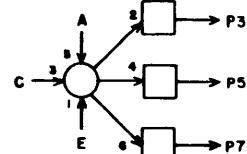
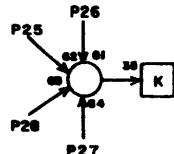
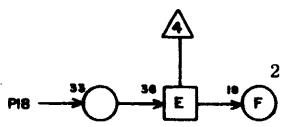
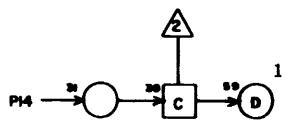
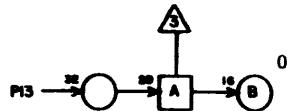
JACK PIN LG
CIRCUIT SPECIFICATION 11627600
60227300 F

JACK PIN LG
CIRCUIT SPECIFICATION 11627600
60227300 F

LS 63061000
ASSY

B
REV

SECTOR COUNTER - STACK 0
INCREMENTOR, BITS 0-2



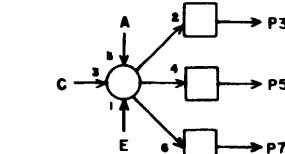
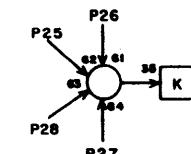
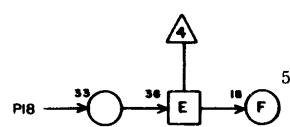
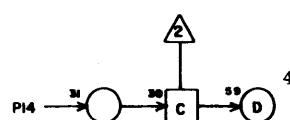
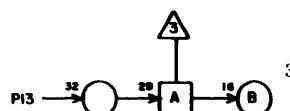
JACK PIN LG
CIRCUIT SPECIFICATION 1627600
60227300 F

B03

LS 63061000
ASSY

B
REV

SECTOR COUNTER - STACK 0
INCREMENTOR, BITS 3-5



B04

LS 63061000
ASSY

B
REV

1 -
2 -

3 C08- 2 9

4 -
5 -
6 -

7 -
8 -

9 B01-26 7

10 -
11 -
12 -

13 B05-22 5

14 B06-11 5

15 -
16 -
17 -

18 B05-12 5

19 -
20 B02- 6 7

21 -
22 -
23 -

24 B02- 5 5

25 B03- 3 5

26 B04- X 2

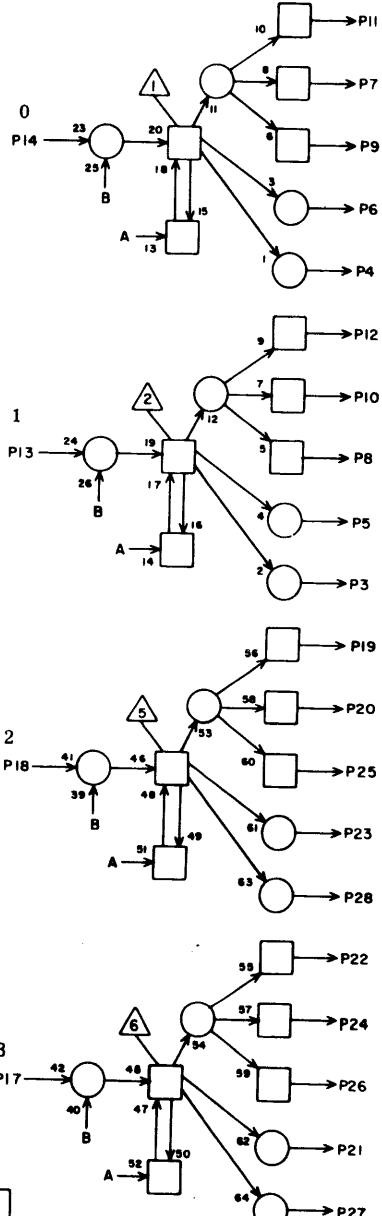
27 B04- X 2

28 B04- X 2

JACK PIN LG
CIRCUIT SPECIFICATION 1627600
60227300 F

LS 63057900
ASSY REV B

SECTOR COUNTER - STACK 0
RANK 1, BITS 0-3



TE 0 PIN 43 → A → B → PIN 44

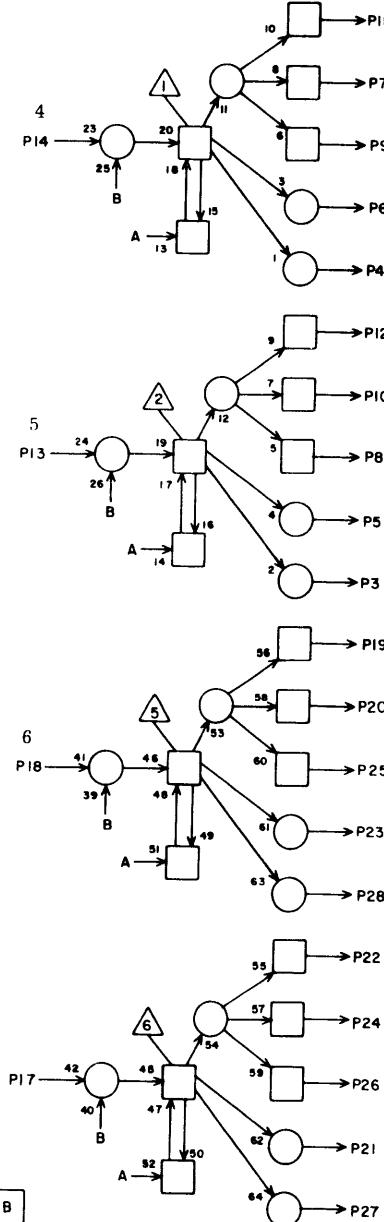
PD RV G 805

1	-	
2	-	
3	-	
4	-	
5	-	
6	-	
7	A07- 6	7
8	H04- 5	23
9	H04- 7	23
10	A07- 5	9
11	B03-13	5
12	B03-14	5
13	B01- 9	7
14	B01-14	7
15	-	
16	B08- 1	7
17	B01-21	7
18	B01-18	7
19	B03-18	5
20	A07- 7	9
21	-	
22	B04-13	5
23	-	
24	A07-22	7
25	-	
26	-	
27	-	
28	-	

JACK PIN LG
CIRCUIT SPECIFICATION 11827600
60227300 F

LS 63057900
ASSY REV B

SECTOR COUNTER - STACK 0
RANK 1, BITS 4-6



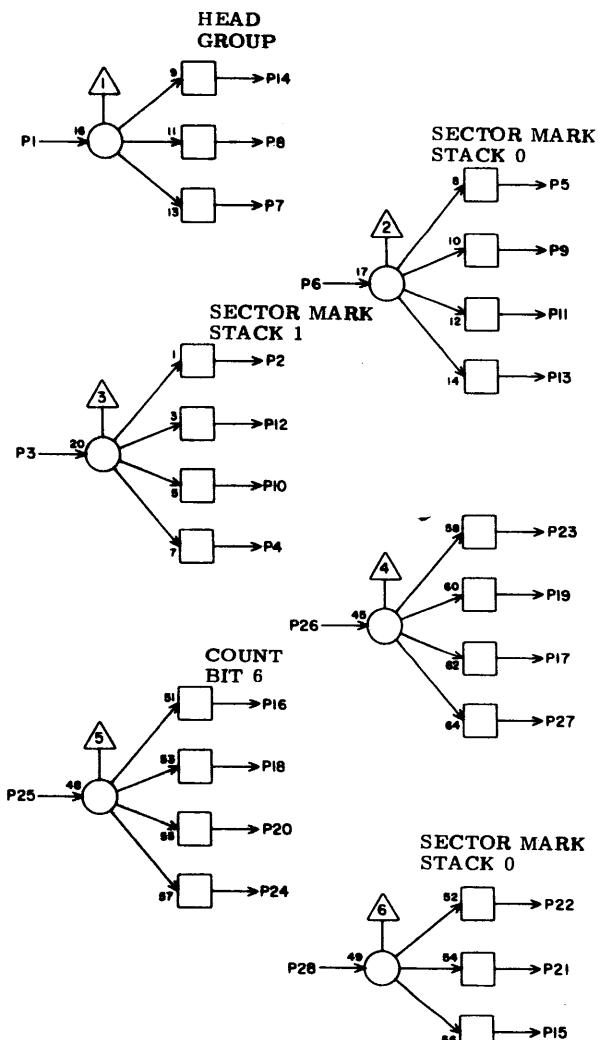
TE 0 PIN 43 → A → B → PIN 44

806

1	-	
2	-	
3	-	
4	-	
5	-	
6	-	
7	A07-24	5
8	H04- 3	23
9	-	
10	A07-23	7
11	B04-14	5
12	B04-18	5
13	B02- 9	7
14	B02-14	7
15	-	
16	B08- 3	7
17	-	
18	B02-18	7
19	D02-20	11
20	A09-28	7
21	-	
22	-	
23	-	
24	-	
25	H04- 1	21
26	-	
27	-	
28	-	

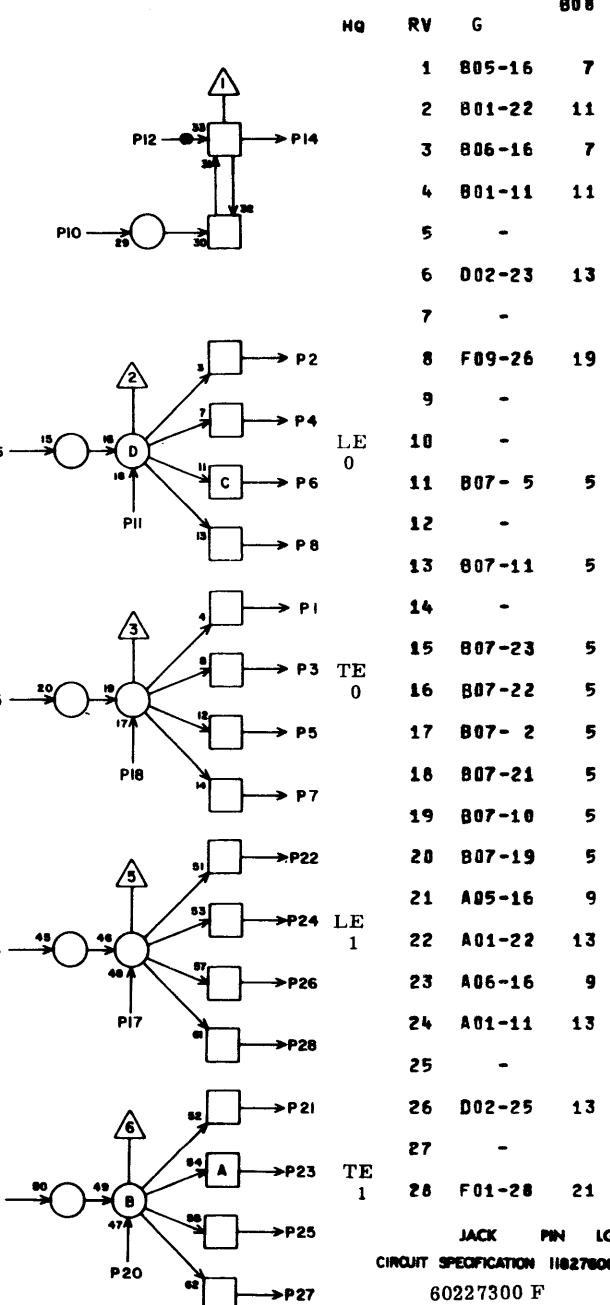
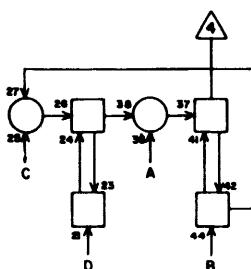
JACK PIN LG
CIRCUIT SPECIFICATION 11827600
60227300 F

LS 63064000
ASBY REV

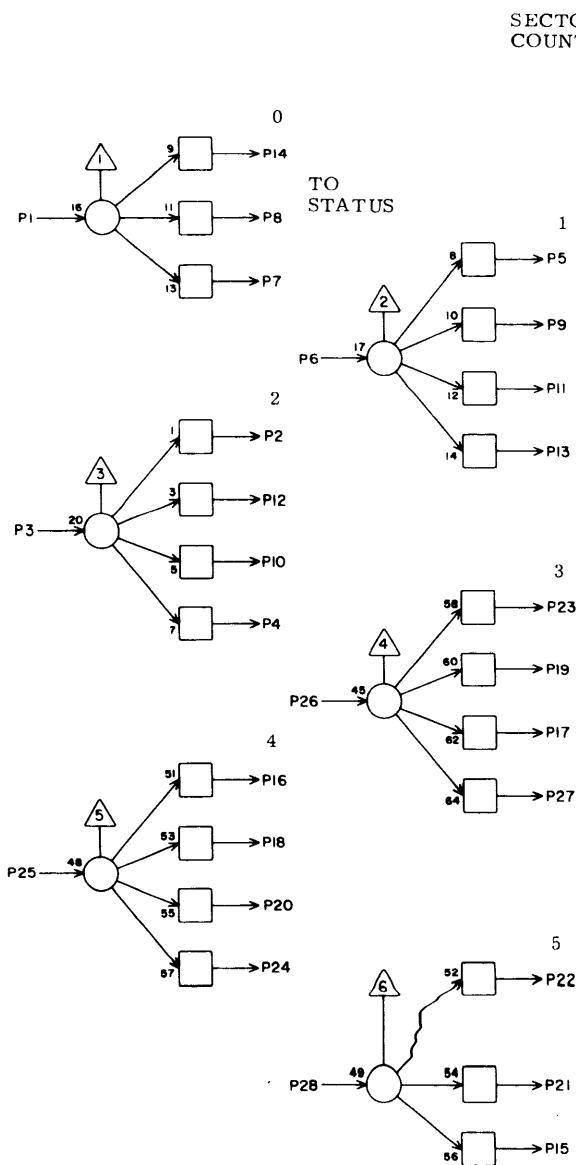


TH	RV	G	B67
	1	G07-25	21
	2	B08-17	5
	3	K02-25	35
	4	-	
	5	B08-11	5
	6	K02- 6	35
	7	G04-24	23
	8	E13-24	17
	9	B07-28	120
	10	B08-19	5
	11	B08-13	5
	12	B07-26	120
	13	-	
	14	E13- 1	15
	15	-	
	16	A09- 5	9
	17	-	
	18	I12-26	29
	19	B08-20	5
	20	I15-26	31
	21	B08-18	5
	22	B08-16	5
	23	B08-15	5
	24	-	
	25	D02-19	11
	26	B07-12	120
	27	-	
	28	B07- 9	120

LS 63064000
ASBY REV



LS 63064000 C
ASSY REV



809

TH	RV	G
1	A07- 9	7
2	A08- 1	7
3	A07-10	7
4	-	
5	A08-18	7
6	A07- 8	7
7	I14- 4	27
8	I11- 4	27
9	I11- 3	27
10	I14-26	29
11	I14- 3	27
12	I11-26	27
13	-	
14	A08- 5	7
15	I15- 3	27
16	A08-13	7
17	I14-25	29
18	I12- 4	27
19	I11-25	27
20	I15- 4	27
21	I12- 3	25
22	A08-24	7
23	A08-28	7
24	-	
25	A07-21	7
26	A07-19	7
27	-	
28	A07-20	9

JACK PIN LG

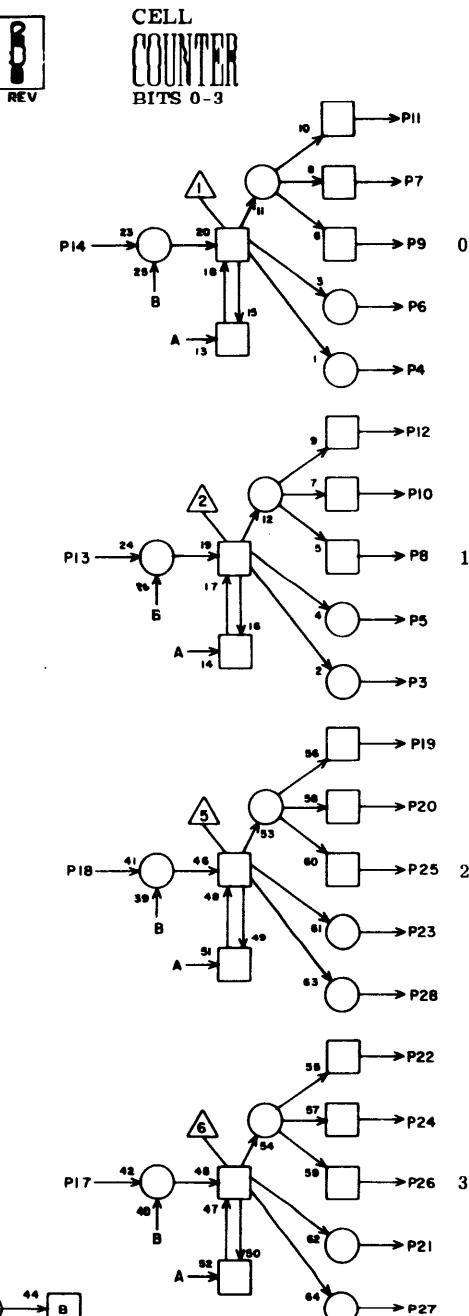
CIRCUIT SPECIFICATION 11827500

60227300 F

LS 63057900



ASSY



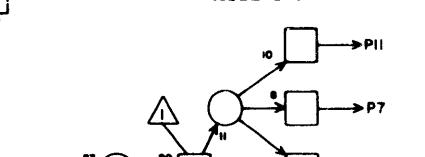
- C11

LS 63057900
ASSYB
REV

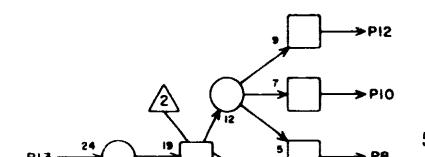
1	-
2	-
3	-
4	-
5	-
6	-
7	-
8	-
9	F07-25 15
10	C09-28 7
11	C15- 5 7
12	C15- 6 7
13	C13-24 5
14	C13- 9 7
15	-
16	E06-16 13
17	C14- 9 7
18	C13-28 5
19	C15-25 7
20	C09-26 5
21	-
22	C15-26 7
23	-
24	-
25	-
26	-
27	-
28	-

JACK PIN LG
CIRCUIT SPECIFICATION 11827600
60227300 F

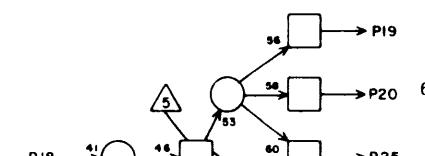
t3 PI6 → 43 → A → 44 → B

CELL COUNTER
BITS 4-7

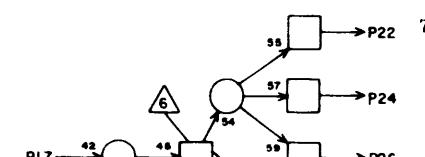
1	-
2	-
3	-
4	-
5	-
6	-
7	C09-21 7
8	G08- 6 17
9	G08- 8 19
10	-
11	C16- 5 7
12	C16- 6 7
13	C14-20 5
14	C14-24 5
15	-
16	E06-18 13
17	-
18	A09-14 11
19	C16-25 7
20	C09-23 7
21	-
22	-
23	E09-24 11
24	-
25	C09-24 7
26	-
27	-
28	-



1	-
2	-
3	-
4	-
5	-
6	-
7	-
8	-
9	-
10	-
11	-
12	-
13	-
14	-
15	-
16	-
17	-
18	-
19	-
20	-
21	-
22	-
23	-
24	-
25	-
26	-
27	-
28	-



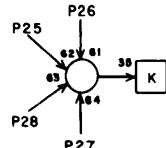
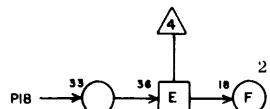
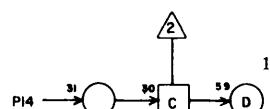
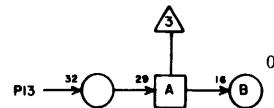
1	-
2	-
3	-
4	-
5	-
6	-
7	-
8	-
9	-
10	-
11	-
12	-
13	-
14	-
15	-
16	-
17	-
18	-
19	-
20	-
21	-
22	-
23	-
24	-
25	-
26	-
27	-
28	-



1	-
2	-
3	-
4	-
5	-
6	-
7	-
8	-
9	-
10	-
11	-
12	-
13	-
14	-
15	-
16	-
17	-
18	-
19	-
20	-
21	-
22	-
23	-
24	-
25	-
26	-
27	-
28	-

C12

LS 63061000
ASSY REV B



CELL COUNTER
(BIT COUNTER)
BITS 0-2

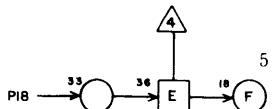
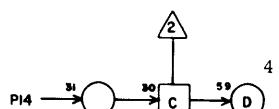
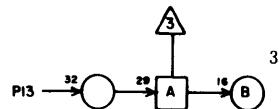
QK RV G C13

1	-	
2	-	
3	C14-25	5
4	-	
5	C08- 1	9
6	-	
7	-	
8	-	
9	C11-14	7
10	-	
11	-	
12	-	
13	C15-14	5
14	C15- 9	7
15	-	
16	-	
17	-	
18	C15-18	5
19	-	
20	C11-18	5
21	-	
22	-	
23	-	
24	C11-13	5
25	C13- X	2
26	C13- X	2
27	C13- X	2
28	C13- X	2

JACK PIN LG
CIRCUIT SPECIFICATION 11827600

60227300 F

LS 63061000
ASSY REV B



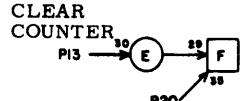
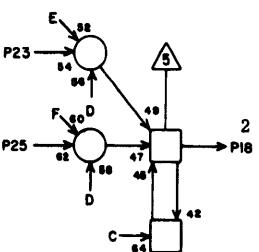
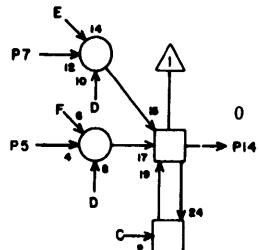
CELL COUNTER
(BIT COUNTER)
BITS 3-5

QK RV G C14

1	-	
2	-	
3	C08- 3	9
4	-	
5	-	
6	-	
7	-	
8	-	
9	C11-17	7
10	-	
11	-	
12	-	
13	C15-21	5
14	C16-14	5
15	-	
16	-	
17	-	
18	C16- 9	7
19	-	
20	C12-13	5
21	-	
22	-	
23	-	
24	C12-14	5
25	C13- 3	5
26	C14- X	2
27	C14- X	2
28	C14- X	2

JACK PIN LG
CIRCUIT SPECIFICATION 11827600
60227300 F

LS 63057800 C
ASSY REV

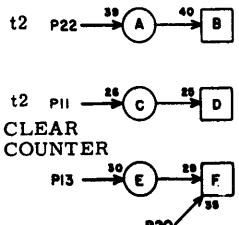
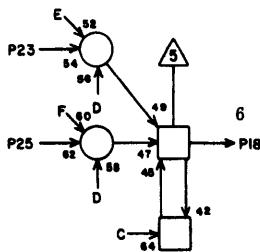
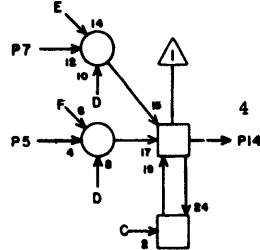


CELL COUNTER
BITS 0-3

PC	RV	G	C15
1	-		
2	I11-12	2F	
3	-		
4	I12-12	25	
5	C11-11	7	
6	C11-12	7	
7	C15- X	?	
8	C15- X	?	
9	C13-14	7	
10	-		
11	E06-13	15	
12	-		
13	D12-16	9	
14	C13-13	5	
15	I13-12	23	
16	-		
17	I14-12	23	
18	C13-18	5	
19	-		
20	C15- X	2	
21	C14-13	5	
22	E06-11	15	
23	C15- X	2	
24	C15- X	2	
25	C11-19	7	
26	C11-22	7	
27	-		
28	-		

JACK PIN LG
CIRCUIT SPECIFICATION 11627600
60227300 F

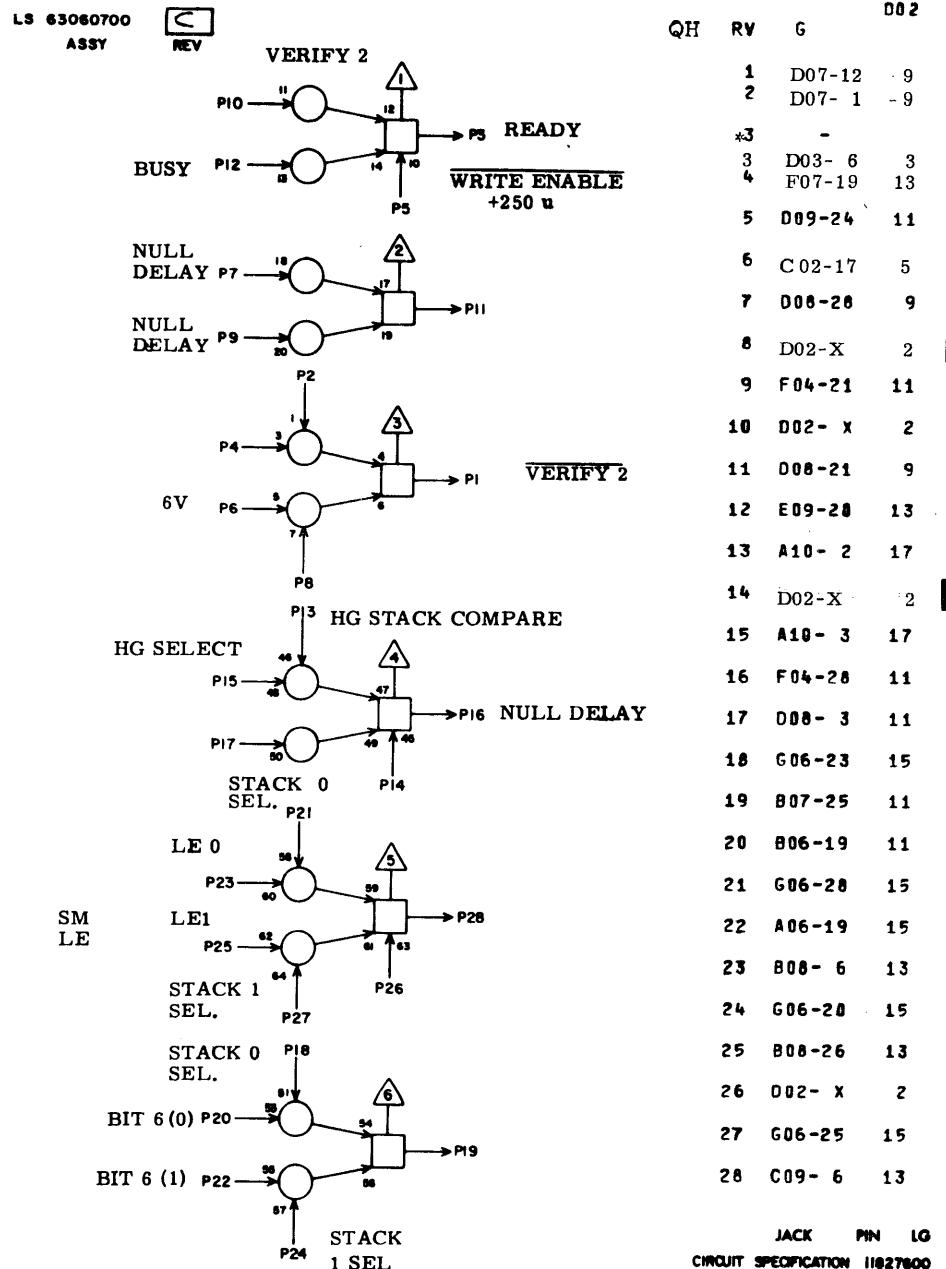
LS 63057800 C
ASSY REV



CELL COUNTER
BITS 4-7

PC	RV	G	C16
1	-		
2	I15-12	23	
3	-		
4	I16-12	23	
5	C12-11	7	
6	C12-12	7	
7	C16- X	2	
8	C16- X	2	
9	C14-18	7	
10	-		
11	E06-10	17	
12	-		
13	D12-14	9	
14	C14-14	5	
15	I09- 9	25	
16	-		
17	H13-22	19	
18	A09-13	13	
19	-		
20	C16- X	2	
21	-		
22	E06- 8	15	
23	C16- X	2	
24	-		
25	C12-19	7	
26	-		
27	-		
28	-		

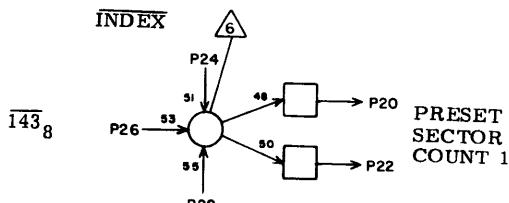
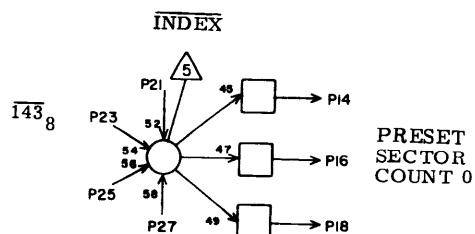
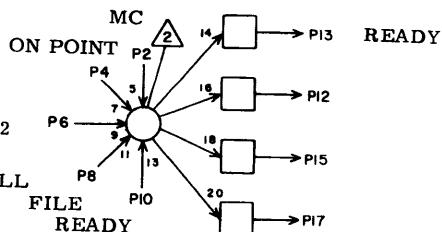
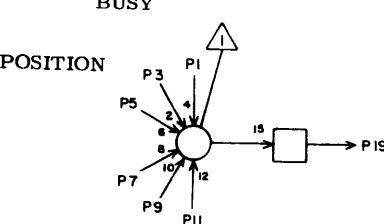
JACK PIN LG
CIRCUIT SPECIFICATION 11627600
60227300 H



*Standard Option 10037

60227300 G

LS 63063400
ASSY REV

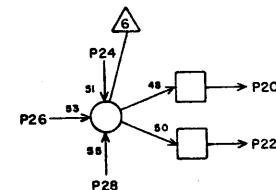
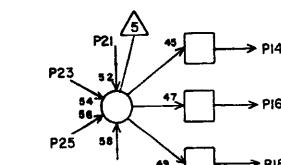
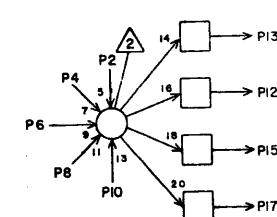
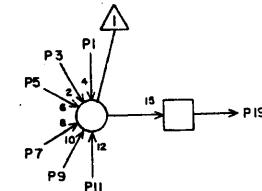


TB V G 003

1	E03-25	9
2	F04-16	11
3	G03- 5	13
4	E01-21	9
5	E01-15	9
*6	J08-27	27
6	D02- 3	3
7	G13-18	19
8	G13-16	19
9	D03- X	2
10	K01- 4	27
11	D03- X	2
12	E12-25	15
13	G04-25	15
14	B01-13	11
15	-	
16	B02-13	11
17	F07-23	13
18	-	
19	D08-12	9
20	A01-13	13
21	K02- 3	25
22	A02-13	13
23	H04-13	15
24	K02-18	25
25	D03- X	2
26	H04- 9	15
27	D03- X	2
28	D03- X	2

JACK PIN LG
CIRCUIT SPECIFICATION 11827600
60227300 G

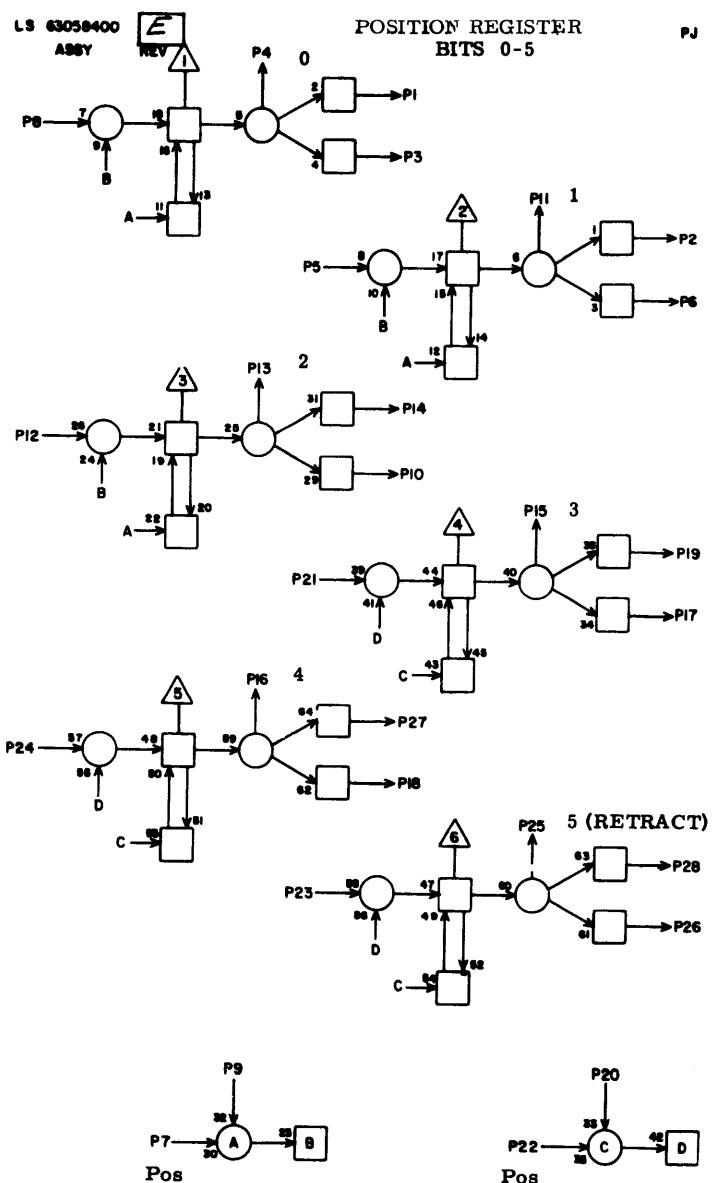
LS 63063400
ASSY REV



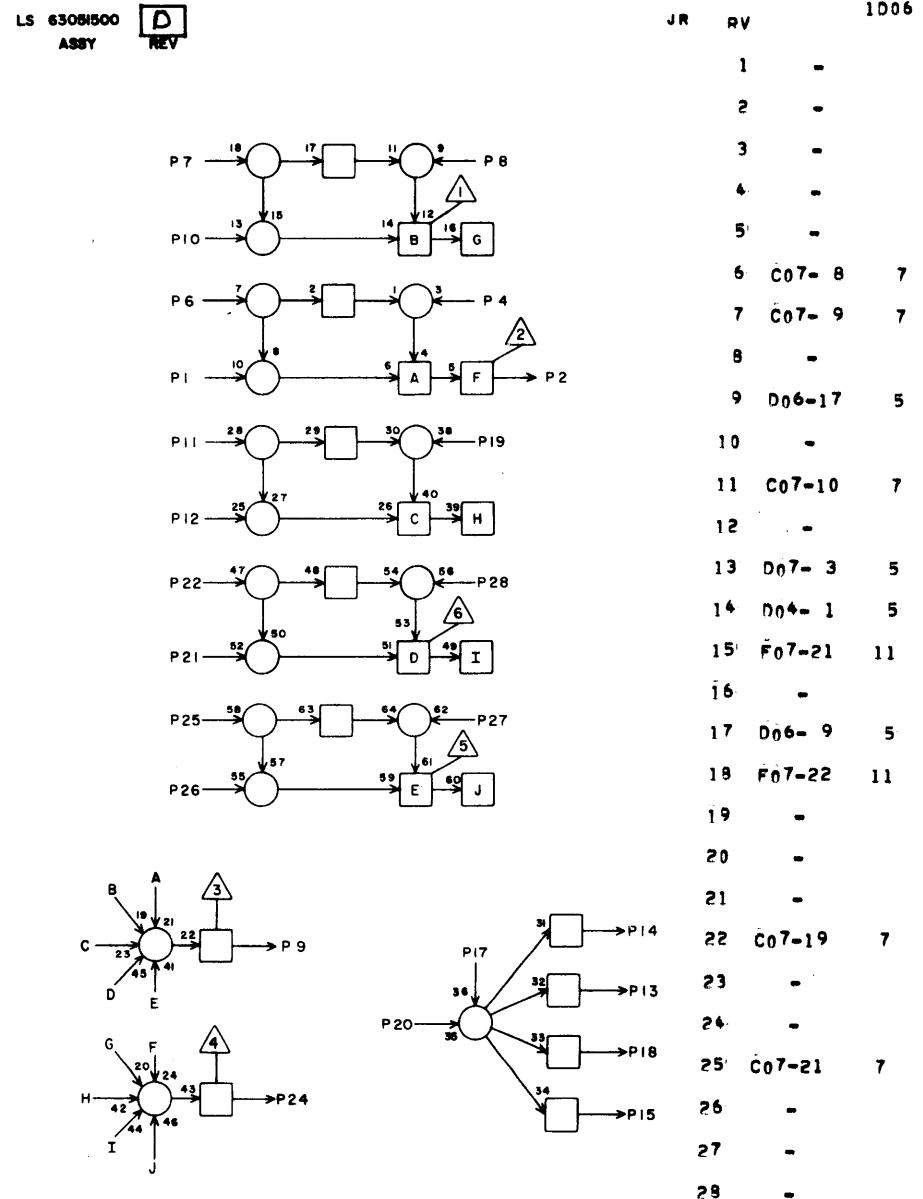
TB RV 1D04

1	D08-14	5
2	E02-10	9
3	D 7- 8	7
4	E01-19	7
5	D04- X	2
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7	D04- X	2
8	E02-28	9
9	D04- X	2
10	D04- X	2
11	D04- X	2
12	E01-25	121
13	E02-16	120
14	C01-13	7
15	D07- 7	7
16	C02-13	7
17	D07-14	7
18	E02-17	120
19	D07-11	7
20	-	
21	E02-19	7
22	-	
23	E03- 6	5
24	E01-11	7
25	E01- 9	7
26	E02-26	7
27	E02- 1	5
28	E03- 5	5

60227300 G

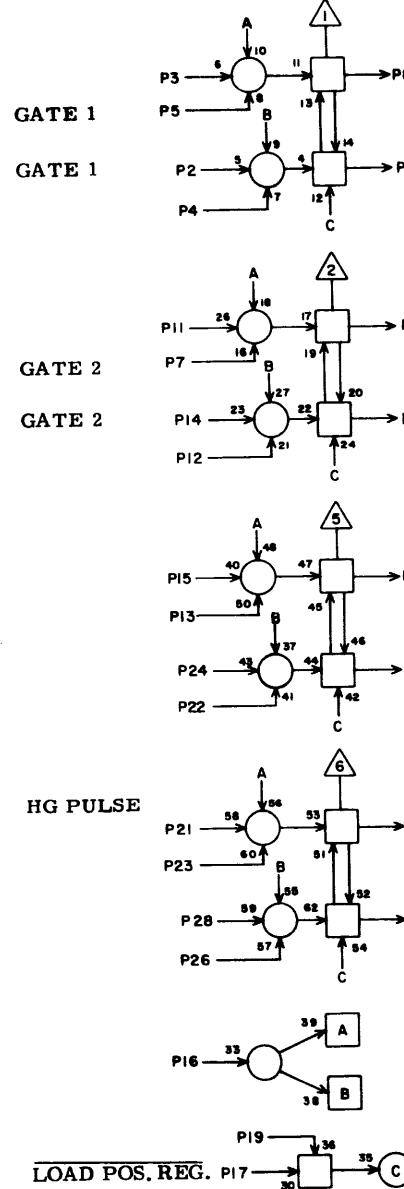


JACK PIN LG
CIRCUIT SPECIFICATION 1627600
60227300 F



LS 63040400
ASSY

C
REV



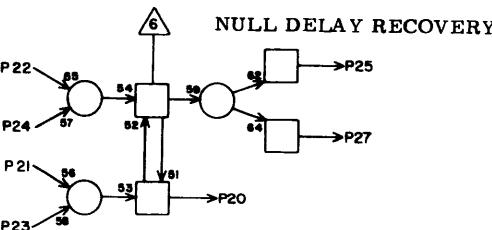
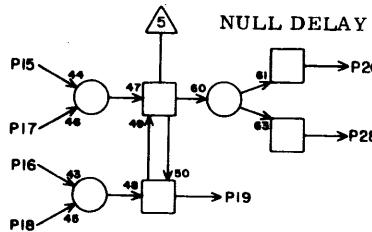
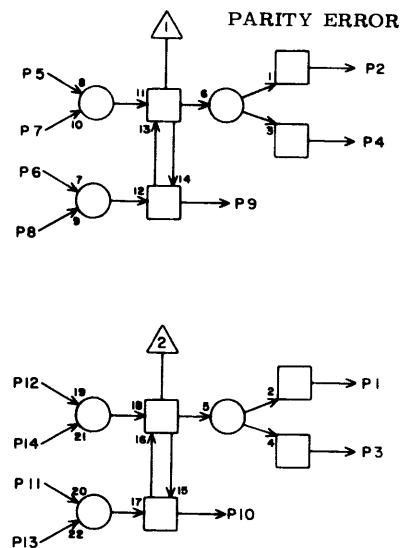
JACK PIN LG
CIRCUIT SPECIFICATION 11827600
60227300 G

AE

1D07
RV LS 63040000
ASSY D
REV

1	D02- 2	9
2	E01-18	121
3	D06-13	5
4	F07-14	11
5	E01-16	121
6	-	
7	D04-15	7
8	D04- 3	7
9	-	
10	-	
11	D04-19	7
12	D02- 1	9
13	-	
14	D04-17	7
15	-	
16	D07- X	2
17	G11-15	15
18	-	
19	D07- X	2
20	-	
21	C08-17	7
22	-	
23	D07- X	2
24	-	
25	D09- 5	7
26	D07- X	2
27	J08-26	23
28	D09-10	7

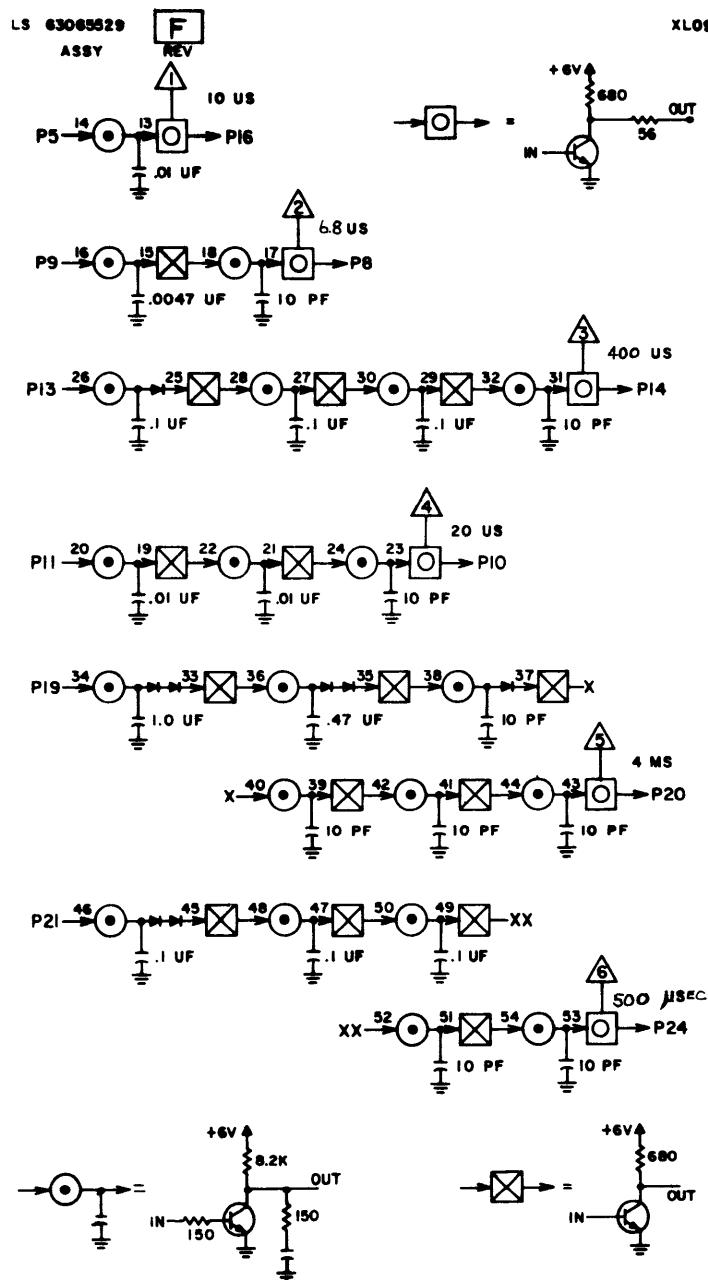
POSITION
POS. SEL



AA

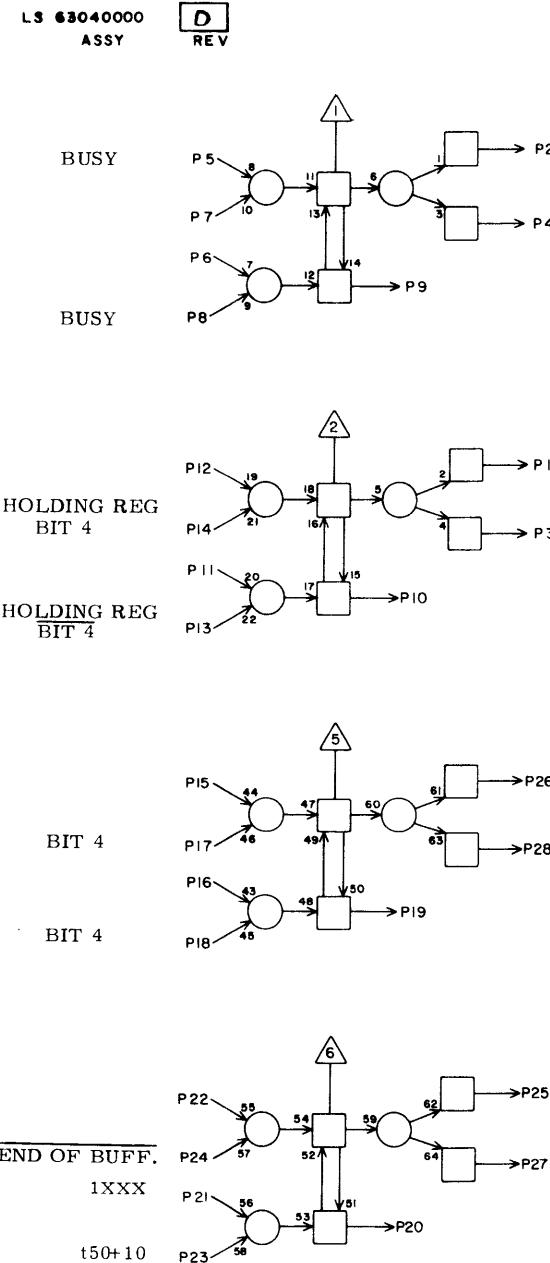
RV	G	D08
1	G06-14	15
2	I13- 4	23
3	002-17	11
4	I16- 4	23
5	G01-11	17
6	K09-18	27
7	D08- X	2
8	D08- X	2
9	-	
10	-	
11	G05- 9	13
12	D03-19	9
13	D08- X	2
14	E04-24	9
15	D09-20	5
16	D08- X	2
17	D08-27	5
18	F04-22	11
19	D08-24	5
20	D09-13	5
21	D02-11	9
22	D09-14	5
23	D08- X	2
24	D08-19	5
25	D09-19	5
26	G13-25	15
27	D08-17	5
28	D02- 7	9

JACK PIN LG
CIRCUIT SPECIFICATION 11827600
60227300 F



RV	G	009
1	-	
2	-	
3	-	
4	-	
5	D07-25	7
6	-	
7	-	
8	D12-26	7
9	F10- 2	9
10	D07-26	7
11	D09-16	5
12	-	
13	D08-20	5
14	D08-22	5
15	-	
16	D09-11	5
17	-	
18	-	
19	D08-25	5
20	D08-15	5
21	F01- 5	13
22	-	
23	-	
24	D02- 5	11
25	-	
26	-	
27	-	
28	-	

JACK PIN LG CIRCUIT SPECIFICATION 11827600
60227300 F



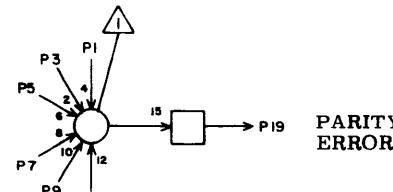
AA	RV	G	D18
1	C07-23	7	
2	C10-26	5	
3	-		
4	-		
5	E03-21	13	
6	I09- 1	19	
7	I18- 1	19	
8	E03-23	13	
9	C10- 1	7	
10	-		
11	E13-22	9	
12	E13-20	9	
13	H11- 9	15	
14	F09-22	11	
15	G04-20	17	
16	G04-22	17	
17	F09-21	11	
18	H11-11	15	
19	-		
20	-		
21	J02-20	27	
22	G01-28	19	
23	J02-13	25	
24	H05-19	19	
25	F08-22	11	
26	C07-25	7	
27	-		
28	-		

JACK PIN LG CIRCUIT SPECIFICATION 11827600
60227300 F

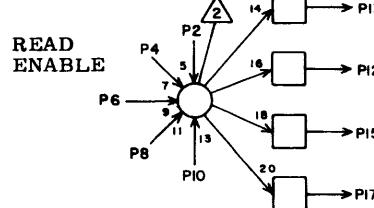
012

LS 63063400
ASSY REV

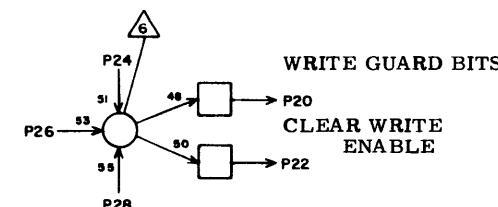
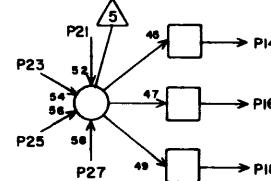
TB	RV	G	
	1	E12-17	7
	2	E09-18	9
	3	F07-11	13
	4	E08-27	11
	5	G13-19	15
	6	D12- X	2
	7	D12- X	2
	8	D12- X	2
	9	D12- X	2
	10	D12- X	2
	11	D12- X	2
	12	G01- 2	19
	13	E09- 8	9
	14	C16-13	9
	15	-	
	16	C15-13	9
	17	-	
	18	-	
	19	G01- 7	19
	20	F10- 6	9
	21	E09-14	9
	22	G01-17	19
	23	E09-19	7
	24	D12- X	2
	25	D12- X	2
	26	D09- 8	7
	27	D12- X	2
	28	F10- 4	128



SELECT READ CLOCK



CLEAR COUNTER

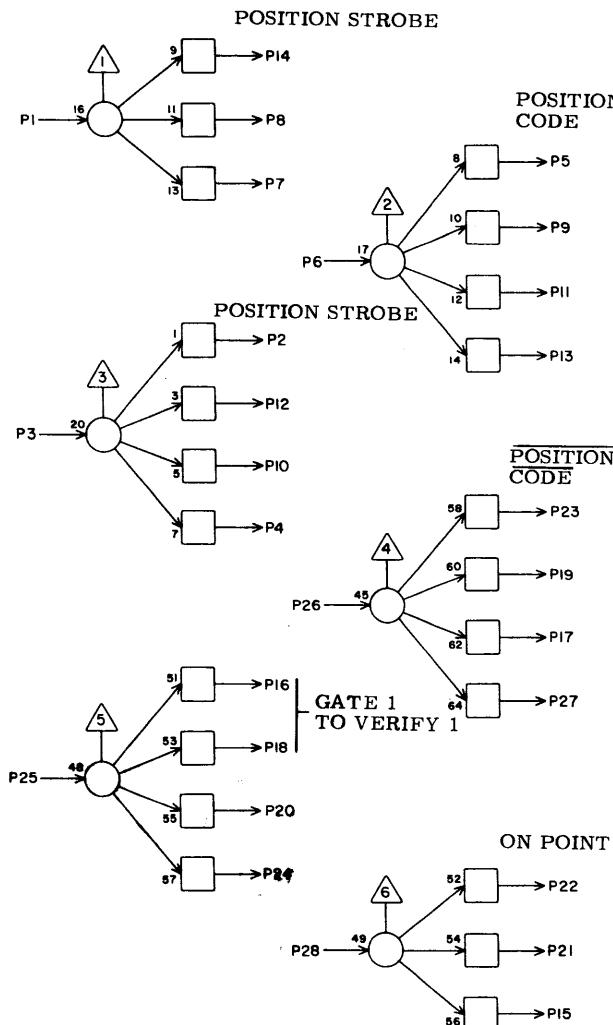


JACK PIN LG
CIRCUIT SPECIFICATION 11627600

60227300 F

S 63064000
ASSY

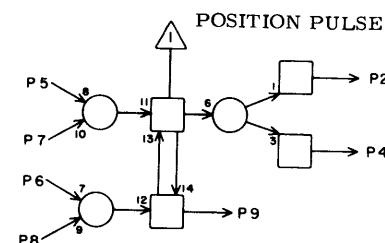
REV



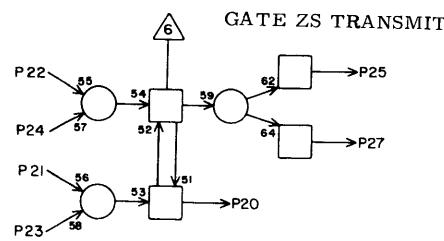
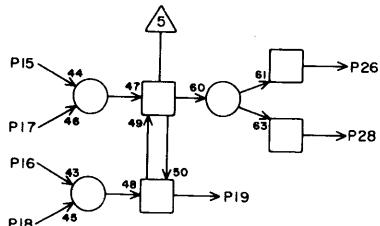
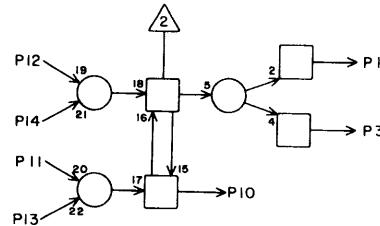
RV	1E01
1	K01-25 23
2	E03-16 7
3	E01- 8 121
4	-
5	E02-14 3
6	K01- 6 23
7	E03-13 5
8	E01- 3 120
9	D04-25 7
10	-
11	D04-24 7
12	E03- 18 5
13	-
14	E03-11 5
15	D03- 5 9
16	D07- 5 120
17	-
18	D07- 2 120
19	D04- 4 9
20	-
21	D03- 4 9
22	E13- 7 17
23	E02-11 5
24	-
25	D04-12 120
26	K01-13 21
27	-
28	K01-23 23

LS 63040000
ASSY

D
REV



POSITION



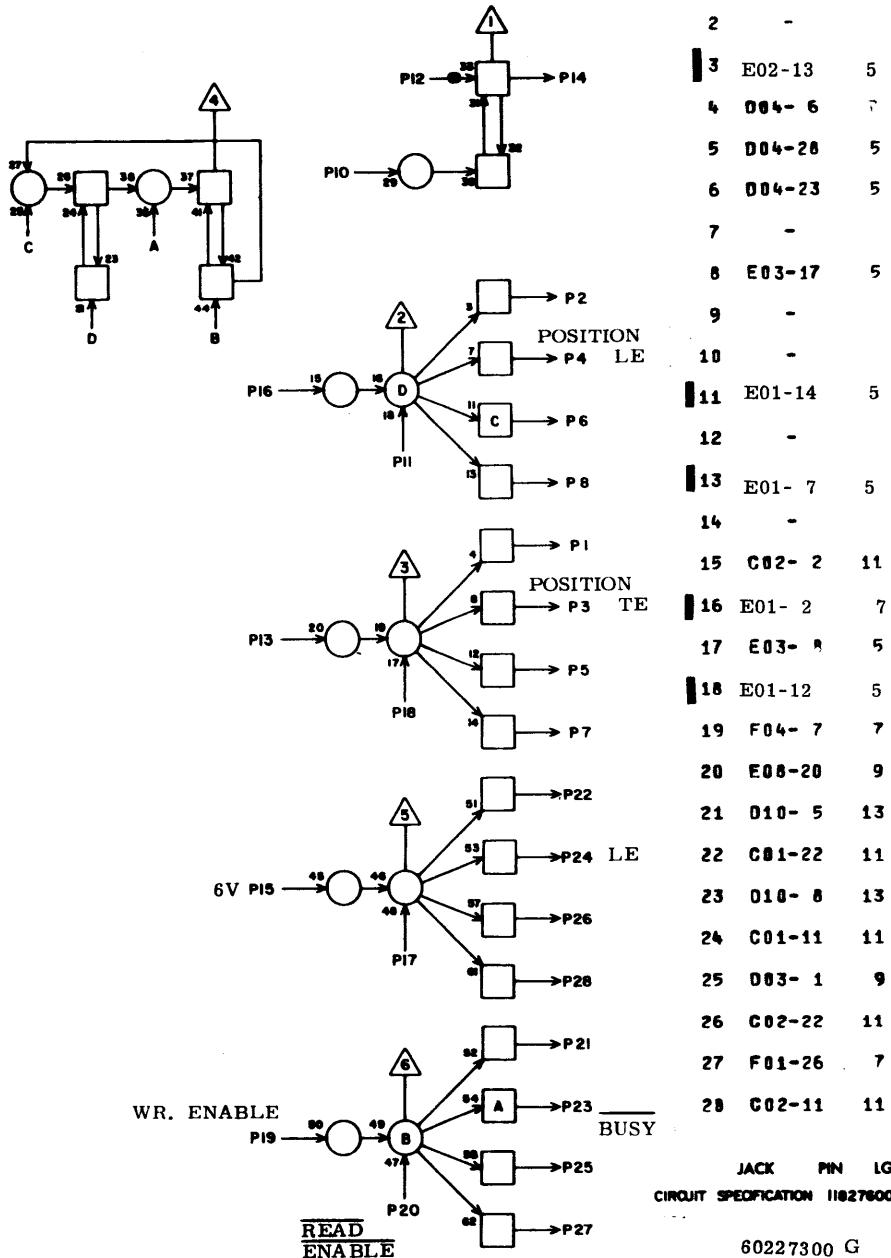
AA
REV
1E02

1	D04-27	7
2	L05- 9	29
3	-	
4	J07-23	23
5	G05-11	11
6	E02- X	2
7	E07- 9	9
8	E05-18	7
9	-	
10	D04- 2	9
11	E01-23	5
12	E03- 1	5
13	E03- 3	5
14	E01- 5	5
15	F01-11	7
16	D04-13	120
17	D04-18	120
18	E02- X	2
19	D04-21	7
20	-	
21	E02- X	2
22	J07- 9	21
23	F07-17	9
24	E02- X	2
25	L01-18	25
26	D04-26	7
27	-	
28	D04- 8	9

JACK PIN LG
CIRCUIT SPECIFICATION 11827600
60227300 G

LS 63046200
ASSY

D
REV



E03

R# G
HQ

LS 63046200
ASSY

B
REV

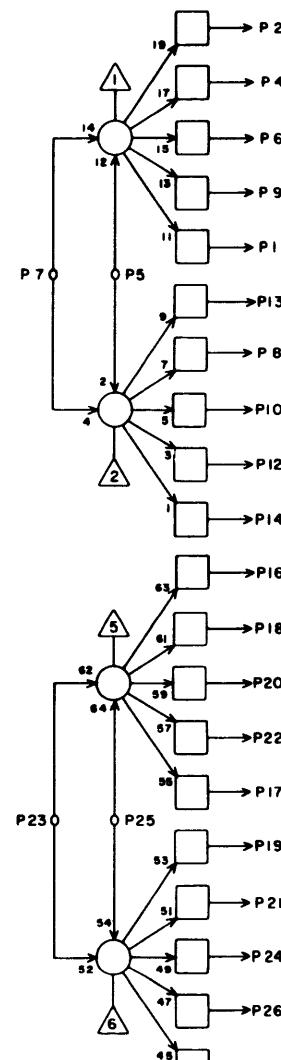
1	E02-12	5
2	-	
3	E02-13	5
4	004- 6	7
5	004-28	5
6	004-23	5
7	-	
8	E03-17	5
9	-	
10	-	
11	E01-14	5
12	-	
13	E01- 7	5
14	-	
15	C02- 2	11
16	E01- 2	7
17	E03- 8	5
18	E01-12	5
19	F04- 7	7
20	E08-20	9
21	D10- 5	13
22	C01-22	11
23	D10- 8	13
24	C01-11	11
25	D03- 1	9
26	C02-22	11
27	F01-26	7
28	C02-11	11

JACK PIN LG
CIRCUIT SPECIFICATION 11027600

60227300 G

E04

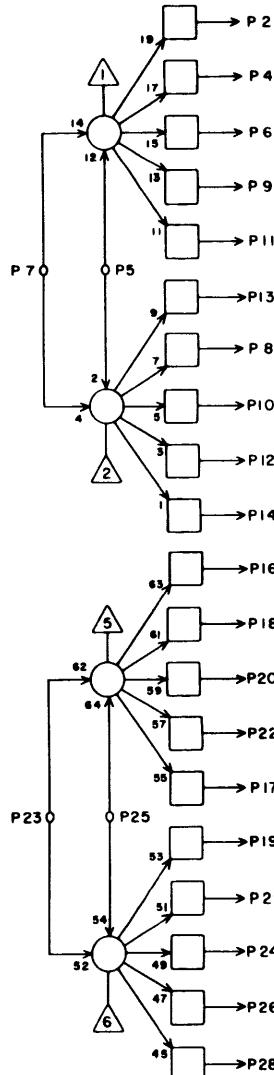
R# G
HC



JACK PIN LG
CIRCUIT SPECIFICATION 11027600
60227300 F

LS 63044800
ASSY

B
REV



HC	RV	G	E05
1	-		
2			
3	-		
4	E15- 7	15	
5	F03-23	9	
6	E15-22	15	
7	F02-20	9	
8	E16- 7	15	
9	-		
10	F06-13	7	
11	E16-22	15	
12	F06-23	9	
13	G06-16	11	
14	-		
15	-		
16	G05-16	9	
17	F06-24	7	
18	E02- 8	7	
19	F05-14	7	
20	F06- 8	7	
21	-		
22	F06-18	7	
23	F02-24	9	
24	E12-28	11	
25	F03-21	7	
26	F05- 8	5	
27	-		
28	G08-10	9	

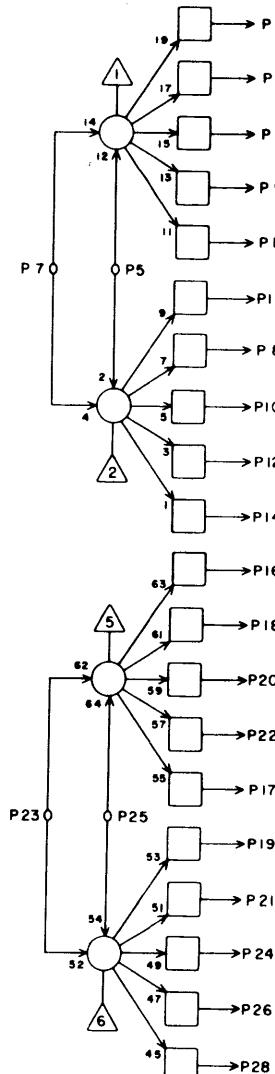
JACK PIN LG

CIRCUIT SPECIFICATION 11827600

60227300 G

LS 63044800
ASSY

B
REV



HC	RV	G	E06
1	-		
2			
3	-		
4	E07- 7	5	
5	F03- 3	7	
6	E12- 5	9	
7	F02- 8	9	
8	C16-22	15	
9	F10-24	9	
10	C16-11	17	
11	C15-22	15	
12	-		
13	C15-11	15	
14	-		
15	-		
16	C11-16	13	
17	F05-17	7	
18	C12-16	13	
19	-		
20	-		
21	-		
22	F05-13	7	
23	F02-25	9	
24	-		
25	F03-28	9	
26	-		
27	-		
28	-		

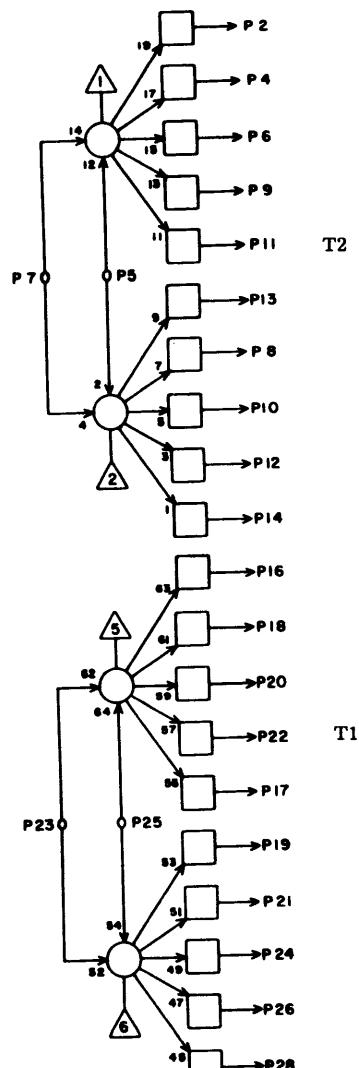
JACK PIN LG

CIRCUIT SPECIFICATION 11827600

60227300 G

LS 63044000
ASSY

B
REV

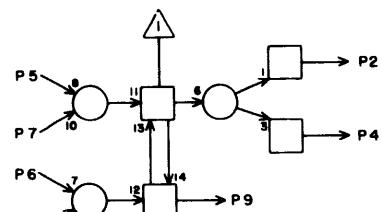


HC	RV	G	E07	LS 63044000 ASSY	D REV
1	-				
2	-				
3	-				
4	E08-14	5			
5	E07-X	2			
6	-		t2		
7	E06-4	5			
8	F06-5	7			
9	E02-7	9			
10	-				
11	E08-6	5			
12	-				
13	-				
14	G12-12	11			
15	-				
16	J03-15	21			
17	-				
18	J84-15	21			
19	-				
20	J05-15	21			
21	-		t4		
22	-				
23	E04-2	7			
24	-				
25	E07-X	2			
26	-				
27	-				
28	-				

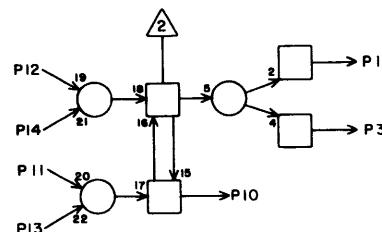
JACK PIN LG
CIRCUIT SPECIFICATION 1102760

60227300 F

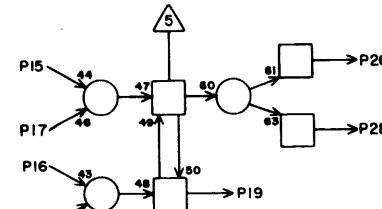
SECTOR SYNC I



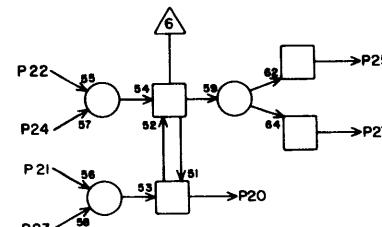
ERASE GAP



READ SYNC



READ ENABLE



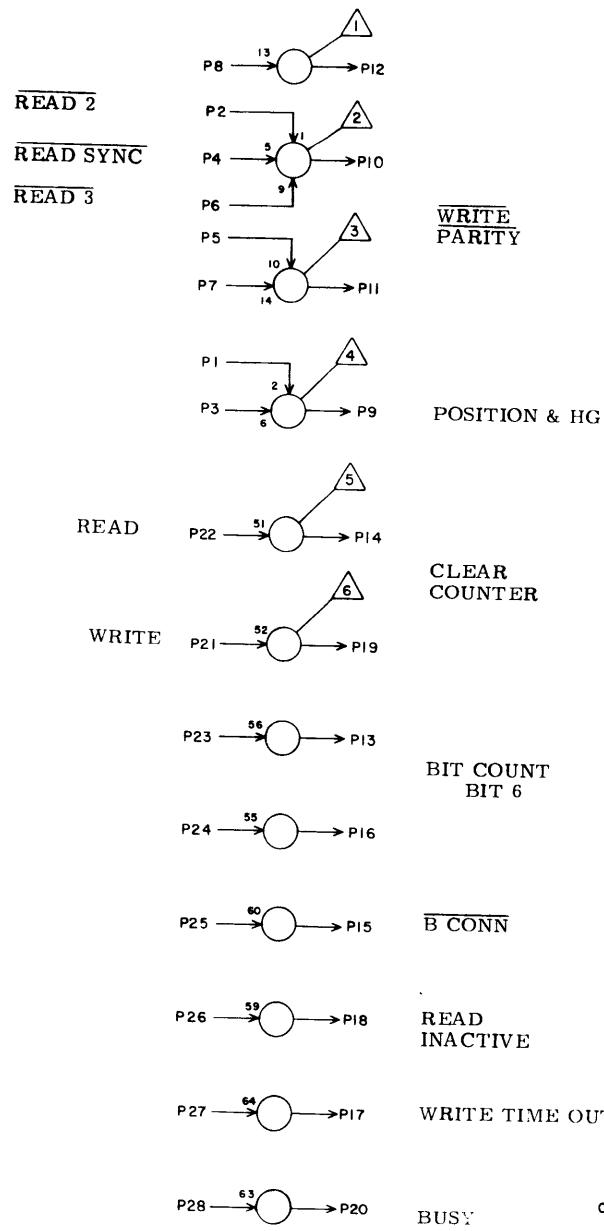
E08
AA
RV G

1	C10-4	11
2	F06-12	9
3	E08-15	5
4	-	
5	C09-13	9
6	E07-11	5
7	E08-X	2
8	E09-13	5
9	F06-11	7
10	-	
11	E08-26	5
12	E12-14	7
13	E08-X	2
14	E07-4	5
15	E08-3	5
16	F08-28	7
17	E12-28	7
18	E08-X	2
19	E09-4	5
20	E03-28	9
21	F08-11	5
22	C10-7	11
23	E08-X	2
24	E08-X	2
25	L05-16	27
26	E08-11	5
27	D12-4	11
28	F01-1	11

JACK PIN

CIRCUIT SPECIFICATION 1102760
60227300 F

LS 63064400
ASSY REV C



TL

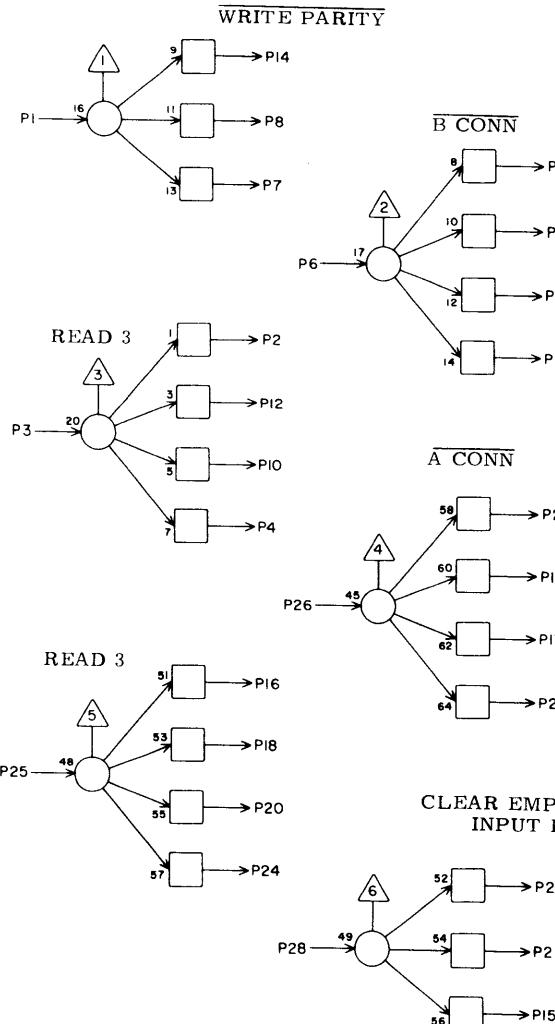
REV	G	E09
1	H14- 2	15
2	F10-10	7
3	H14-17	17
4	E08-19	5
5	F09-14	7
6	E10-18	5
7	F05- 1	9
8	D12-13	9
9	K09- 5	23
10	D12- 2	9
11	E10- 1	5
12	G01- 8	15
13	E08- 8	5
14	D12-21	9
15	E10- 6	5
16	G08- 4	9
17	F10- 5	7
18	J07- 7	19
19	D12-23	7
20	D02-12	13
21	G04-18	11
22	E12-18	7
23	F06-10	7
24	C12-23	11
25	K05-23	25
26	C10-11	11
27	E10-14	5
28	F01-27	13

JACK PIN LG

CIRCUIT SPECIFICATION 11827600

60227300 F

LS 63064000
ASSY REV



TH

REV	G	E10
1	E09-11	5
2	F13-15	9
3	F10-19	7
4	-	
5	I16-26	21
6	E09-15	5
7	G10-16	11
8	G09-16	11
9	K06- 3	120
10	G08-21	11
11	I05-20	19
12	E10-25	5
13	-	
14	E09-27	5
15	-	
16	F14-15	9
17	-	
18	E09- 6	5
19	I13-26	17
20	-	
21	G12-26	11
22	F10-21	7
23	I05-27	19
24	-	
25	E10-12	5
26	J10- 4	17
27	-	
28	F08- 1	5

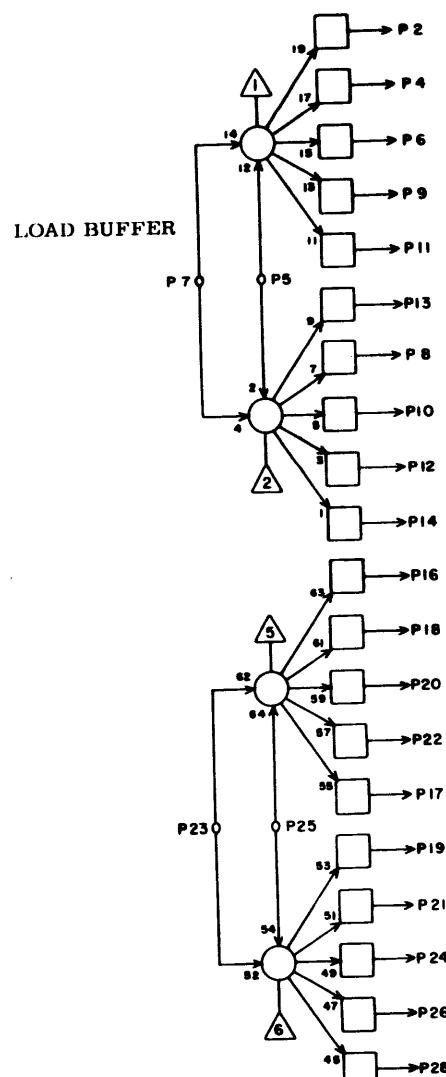
JACK PIN LG

CIRCUIT SPECIFICATION 11827600

60227300 G

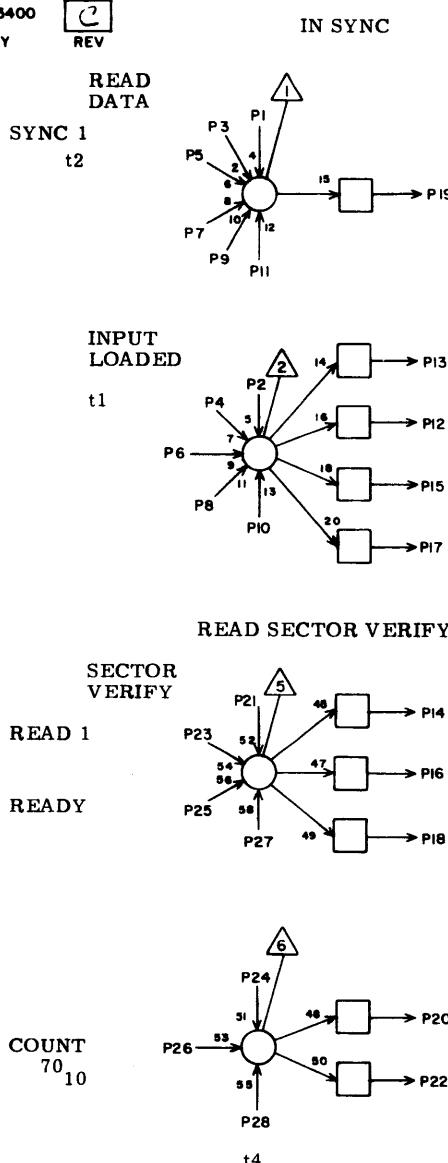
LS 63044800
ASSY

B
REV



HC	RV	1E11	LS 63063400 ASSY	C REV
1	-			
2	H08- 7	15		
3	-			
4	H08-22	15		
5	F12-11	7		
6	H09- 7	13		
7	J02-11	25		
8	G04- 3	13		
9	H09-22	15		
10	E13-26	7		
11	G04-26	15		
12	E12- 2	9		
13	-			
14	H05- 6	15		
15	-			
16	-			
17	-			
18	-			
19	-			
20	-			
21	-			
22	-			
23	-			
24	-			
25	-			
26	-			
27	-			
28	-			

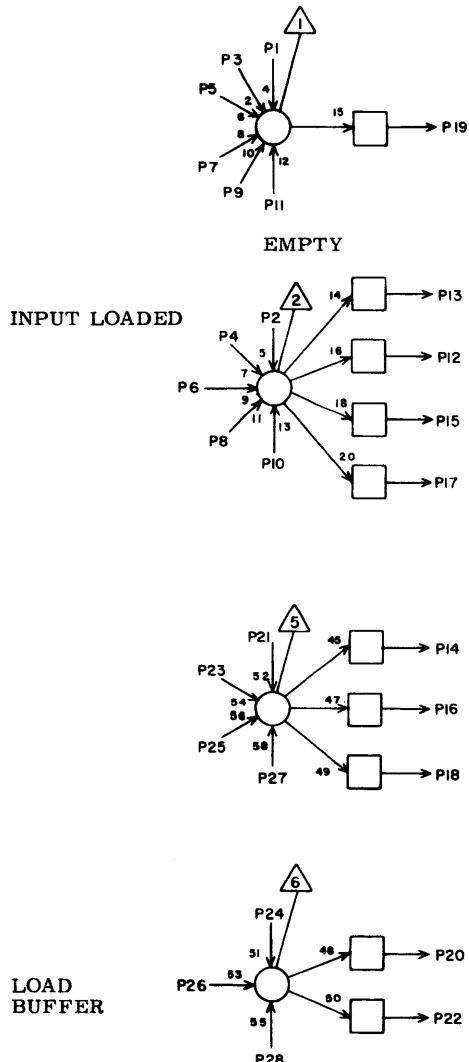
JACK PIN LG
CIRCUIT SPECIFICATION 11027800
60227300 G



TB	RV	1E12
1	E13-14	5
2	F10-25	9
3	G06-22	15
4	E04-12	11
5	E06- 6	9
6	E12- X	2
7	E12- X	2
8	E12- X	2
9	E12- X	2
10	E12- X	2
11	E12- X	2
12	F08- 9	9
13	F10-11	7
14	E08-12	7
15	I05-17	21
16	C10- 2	11
17	D12- 1	7
18	E09-22	7
19	H13-21	13
20	E08-17	7
21	F06- 1	11
22	-	
23	G07- 8	11
24	E12- X	2
25	D03-12	15
26	C09-20	11
27	E12- X	2
28	E05-24	11

JACK PIN LG
CIRCUIT SPECIFICATION 11027800
60227300 F

LS 63063400
ASSY REV



TB

RV G E13

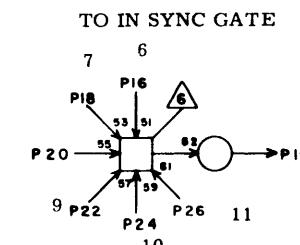
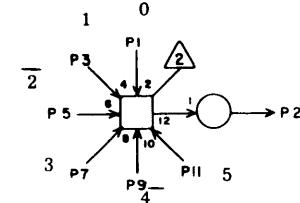
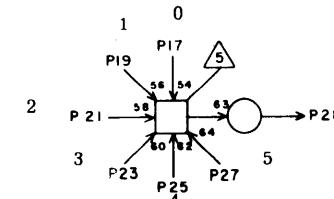
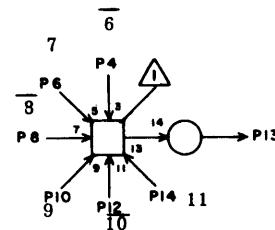
1	B07-14	15
2	G12-25	11
3	J08-17	23
4	F10-27	9
5	G13-20	11
6	F11-23	9
7	E01-22	17
8	E13- X	2
9	F01-23	17
10	E13- X	2
11	E13- X	2
12	-	
13	F12-18	7
14	E12- 1	5
15	-	
16	G06-17	13
17	-	
18	-	
19	A10-12	17
20	D10-12	9
21	F01-14	17
22	B10-11	9
23	E14-28	5
24	B07- 8	17
25	E14-15	5
26	E11-10	7
27	E13- X	2
28	C10-12	13

JACK PIN LG

CIRCUIT SPECIFICATION 11627600

60227300 F

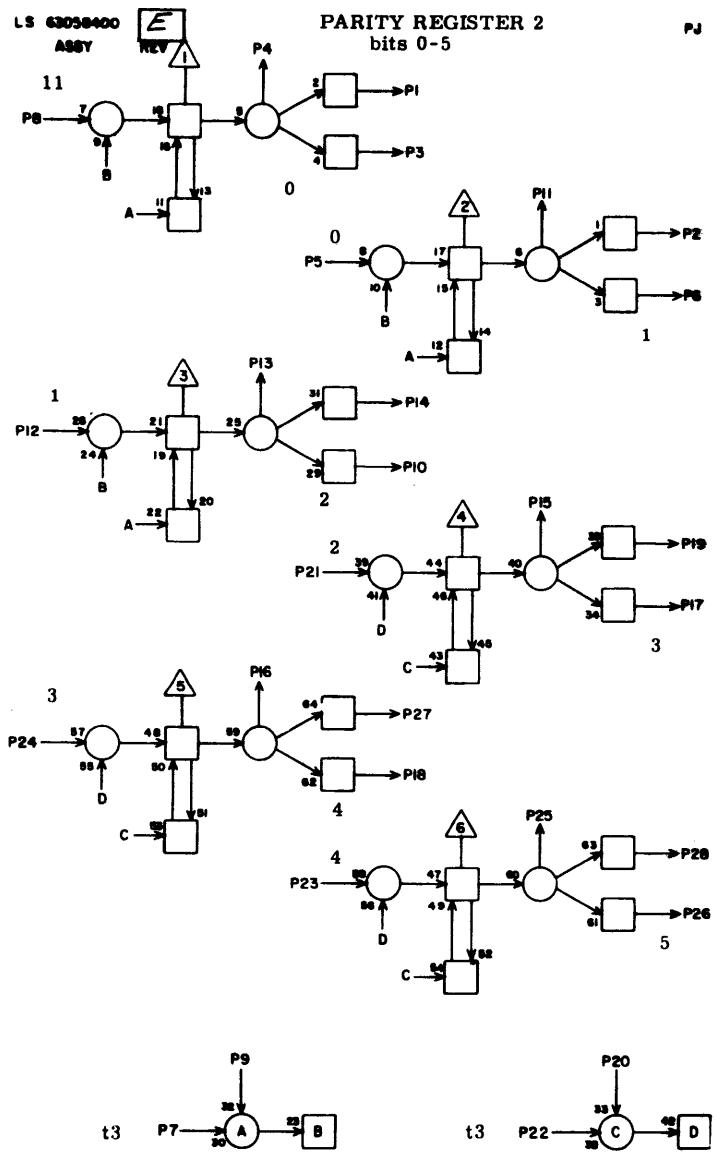
LS 63048700
ASSY REV



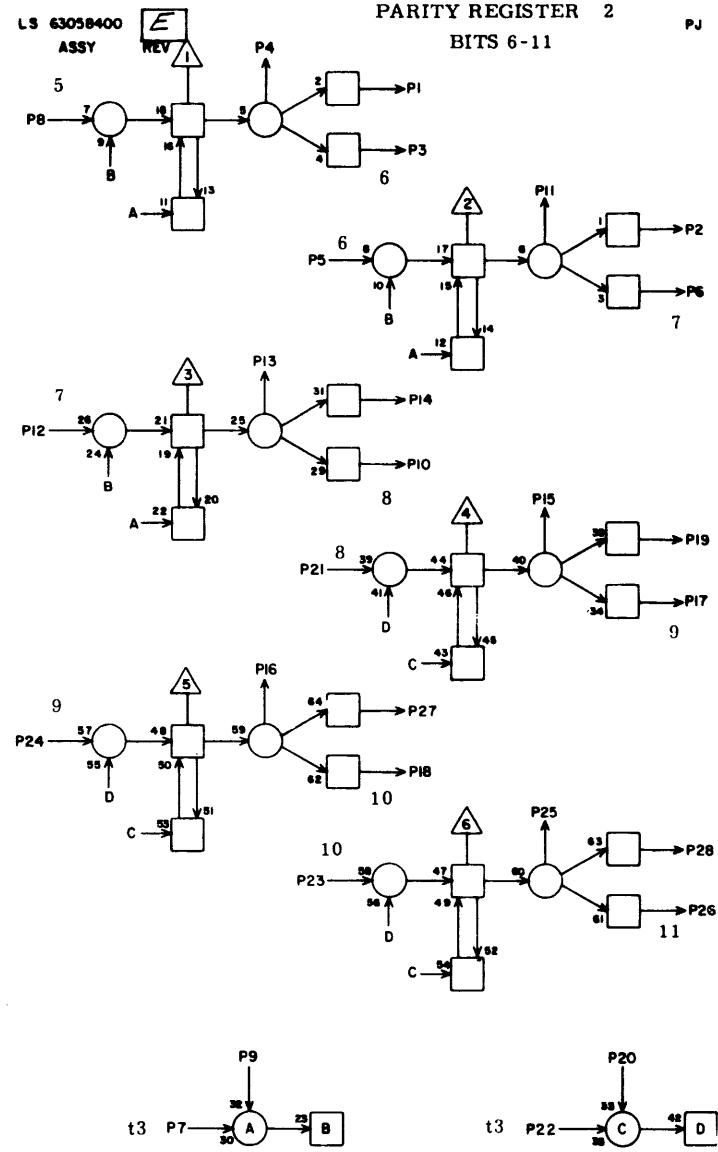
IP RV G E14

1	E15- 4	5
2	F07- 5	11
3	E15- 2	5
4	E16- 4	5
5	E15-13	5
6	E16- 2	5
7	E15-19	5
8	E16-13	7
9	E15-16	5
10	E16-19	7
11	E15-28	5
12	E16-16	5
13	F07- 7	11
14	E16-28	7
15	E13-25	5
16	J04-27	25
17	J03- 6	25
18	J04-20	25
19	J03- 7	25
20	J05- 6	23
21	J03-27	25
22	J05- 7	23
23	J03-20	25
24	J05-27	25
25	J04- 6	23
26	J05-20	23
27	J04- 7	23
28	E13-23	5

JACK PIN LG
CIRCUIT SPECIFICATION 11627600
60227300 F



PJ	V	G	E15
1	G89-	2	13
2	E14-	3	5
3	F15-	8	7
4	E14-	1	5
5	G14-	14	11
6	F15-	3	7
7	E85-	4	15
8	G16-	21	11
9	E15-	X	2
10	F15-	11	7
11	G89-	1	13
12	G14-	9	9
13	E14-	5	5
14	G89-	12	13
15	G89-	17	13
16	E14-	9	5
17	F15-	20	7
18	F15-	26	7
19	E14-	7	5
20	E15-	X	2
21	G14-	18	9
22	E85-	6	15
23	G15-	14	9
24	G14-	21	9
25	G89-	27	13
26	F15-	23	7
27	G89-	28	13
28	E14-	11	5

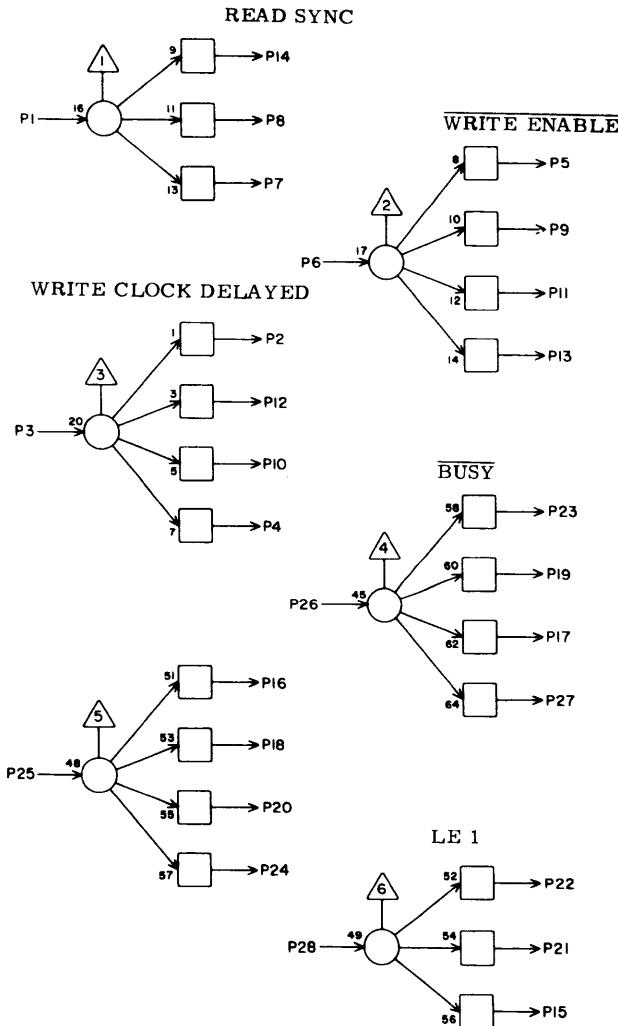


PJ	RV	G	E16
1	G10-	2	13
2	E14-	6	5
3	F16-	8	7
4	E14-	4	5
5	G15-	18	11
6	F16-	3	7
7	E85-	8	15
8	G15-	9	11
9	E16-	X	2
10	F16-	11	7
11	G10-	1	13
12	G15-	21	11
13	E14-	8	7
14	G10-	12	13
15	G10-	17	13
16	E14-	12	5
17	F16-	20	7
18	F16-	26	7
19	E14-	10	7
20	E16-	X	2
21	G16-	14	9
22	E85-	11	15
23	G16-	18	9
24	G16-	9	9
25	G10-	27	13
26	F16-	23	7
27	G10-	28	13
28	E14-	14	7

JACK PIN LG
CIRCUIT SPECIFICATION 11027600
60227300 F

LS 63064000
ASSY

F
REV



TH

RV G F01

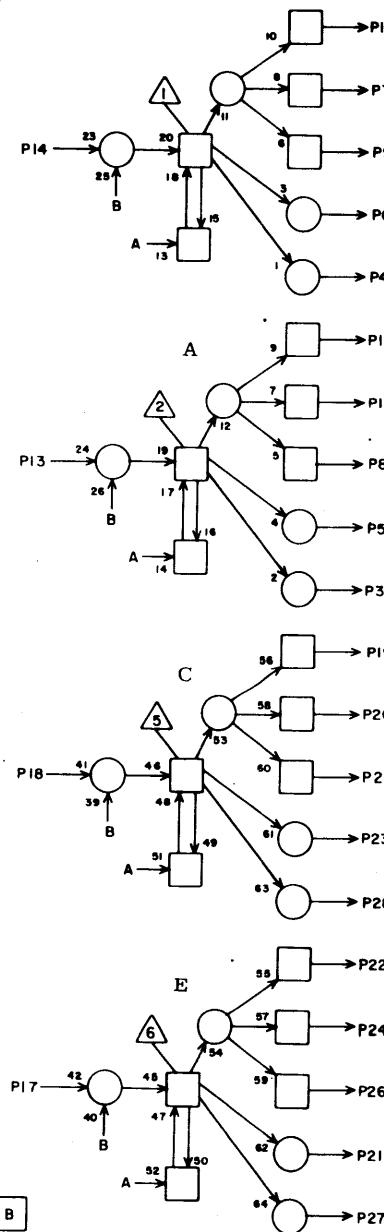
RV	G	F01
1	E08-28	11
2	A09- 1	23
3	F01-16	120
4	F07-27	11
5	D09-21	13
6	F05-20	9
7	-	
8	G08- 2	11
9	A09- 3	25
10	I09- 7	120
11	E02-15	7
12	-	
13	J07- 6	19
14	E13-21	17
15	-	
16	F01- 3	120
17	C08-28	15
18	E04- 5	9
19	G08- 5	11
20	F82-14	5
21	A02-22	19
22	A02-11	21
23	E13- 9	17
24	-	
25	G01- 1	5
26	E03-27	7
27	E09-28	13
28	B08-28	21

JACK PIN
CIRCUIT SPECIFICATION II627600

LS 63057900
ASSY

B
REV

FILE CLOCK STROBE NETWORK



PD RV G F02

1	-	
2	-	
3	-	
4	-	
5	-	
6	-	
7	-	
8	E06- 7	9
9	-	
10	E04-23	7
11	F03-14	5
12	F03-13	5
13	F03-11	5
14	F01-20	5
15	-	
16	J09-26	21
17	F03-19	5
18	F03-12	5
19	F03-18	5
20	E05- 7	9
21	-	
22	F03-17	5
23	-	
24	E05-23	9
25	E06-23	9
26	-	
27	-	
28	-	

JACK PIN LG
CIRCUIT SPECIFICATION II627600

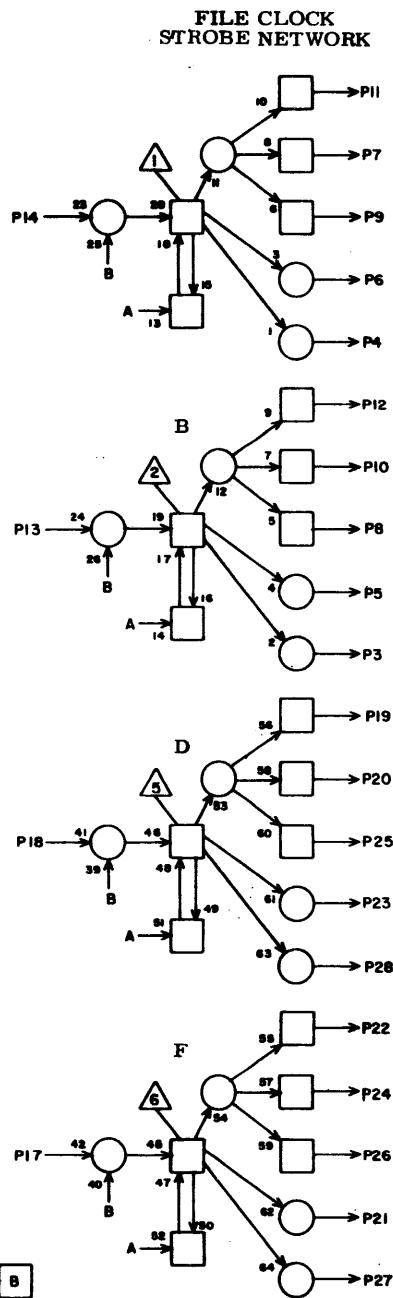
60227300 G

t50 PI6 43 A 44 B

60227300 F

LS 63067900
ASBY

B
REV



P0

RV	G	F03
1	-	
2	-	
3	E86- 5	7
4	-	
5	E84-25	5
6	-	
7	-	
8	-	
9	-	
10	-	
11	F82-13	5
12	F82-18	5
13	F82-12	5
14	F82-11	5
15	-	
16	J09- 6	19
17	F82-22	5
18	F82-19	5
19	F82-17	5
20	-	
21	E85-25	7
22	-	
23	E85- 5	9
24	-	
25	-	
26	-	
27	-	
28	E86-25	9

JACK PIN LG
CIRCUIT SPECIFICATION 11827800
60227300 G

LS 63064000
ASSY

C
REV

TH

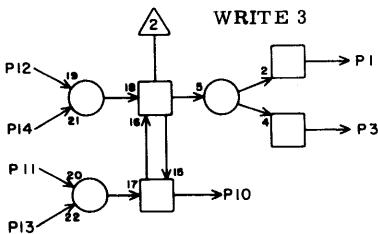
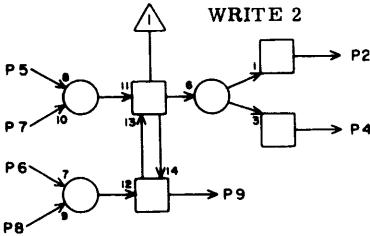
RV	G	F04
1	F05-25	5
2	F13-14	13
3	F05-10	5
4	-	
5	G01-15	9
6	F07-13	7
7	E03-19	7
8	G08-24	9
9	I13- 3	17
10	G08-23	9
11	I16- 3	21
12	F14-14	13
13	G01-21	9
14	-	
15	-	
16	D03- 2	11
17	G03-28	9
18	G12-19	13
19	F08-21	5
20	F08-26	7
21	D02- 9	11
22	D08-18	11
23	G03-25	7
24	I05- 5	11
25	G11- 3	11
26	F06-19	7
27	-	
28	D02-16	11

JACK PIN LG

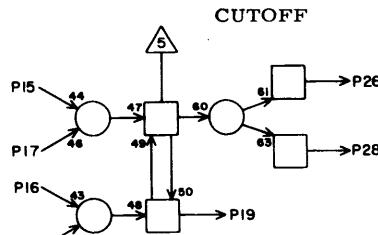
CIRCUIT SPECIFICATION 11827800
60227300 F

LS 63040000
ASSY

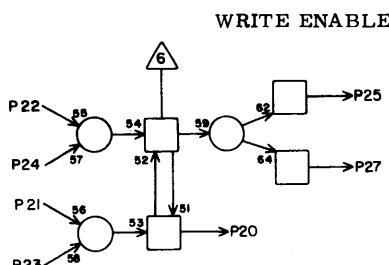
D
REV



WRITE 2



BUFFER
LOADED



F85

AA	RV	G	
1	E89-	7	9
2	F85-12		5
3	-		
4	-		
5	G83-20		9
6	F89-12		7
7	E04-28		5
8	E85-26		5
9	F89- 1		7
10	F04- 3		5
11	F89- 8		7
12	F85- 2		5
13	E06-22		7
14	E85-19		7
15	G03-22		9
16	E04-10		7
17	E86-17		7
18	G13-21		13
19	F89- 3		9
20	F81- 6		9
21	G81-16		9
22	G03-12		7
23	F85- X		2
24	F05- X		2
25	F84- 1		5
26	I05-13		120
27	L05-27		23
28	-		

JACK PIN LG

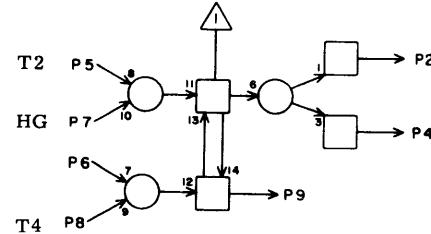
CIRCUIT SPECIFICATION 11827600

60227300 F

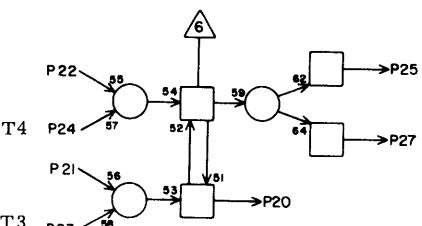
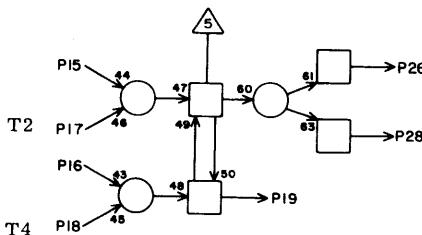
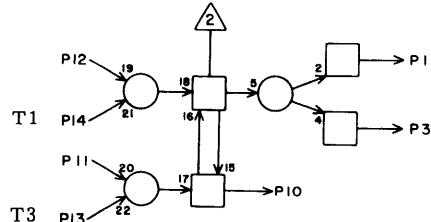
LS 63040000
ASSY

D
REV

HEAD GROUP PULSE



SECTOR SYNCHRONIZATION 2



F86

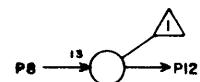
AA	RV	G	
1	E12-21		11
2	L85-12		23
3	G04-21		9
4	J87-24		19
5	E07- 8		7
6	F86- X		2
7	G85-12		7
8	E05-20		7
9	C08-27		13
10	E89-23		7
11	E08- 9		7
12	E08- 2		9
13	E05-10		7
14	E84- 8		7
15	G04-14		7
16	C09-14		15
17	E84-26		7
18	E85-22		7
19	F84-26		7
20	G83-26		9
21	F04-19		5
22	F86-28		3
23	E05-12		9
24	E85-17		7
25	G83-27		9
26	G03- 3		7
27	-		
28	F86-22		3

JACK PIN LG

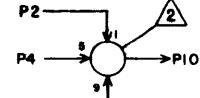
CIRCUIT SPECIFICATION 11827600
60227300 F

LS 63064400
ASSY

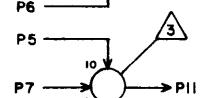
C
REV



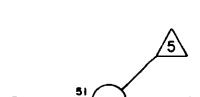
BIT 3 HOLDING REG



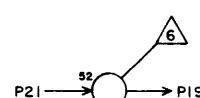
PARITY



BIT 5 HOLDING REG



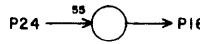
VERIFY



VERIFY



READY



READY



WRITE INACTIVE



WRITE CLOCK



READ 2



READ 2

TL

RV	1F07	
1	F07- x	2
2	H10-20	13
3	H11-12	11
4	F07- x	2
5	E14- 2	11
6	F07- x	2
7	E14-13	11
8	I09-11	15
9	K10-23	23
10	I10-12	15
11	O12- 3	13
12	E04- 7	9
13	F04- 6	7
14	D07- 4	11
15	G02- 5	9
16	G02- 3	9
17	E02-23	9
18	J07- 5	15
19	D02- 4	13
20	F10-16	7
21	D06-15	11
22	D06-18	11
23	D03-17	13
24	G03-24	9
25	C11- 9	15
26	G03-14	9
27	F01- 4	11
28	G13-11	11

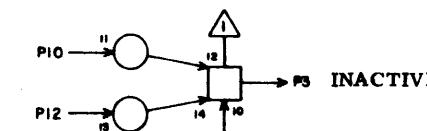
JACK PIN LG

CIRCUIT SPECIFICATION 11827600

60227300 G

LS 63060700
ASSY

C
REV



INACTIVE

T1
INPUT LOADED



CLEAR
READ
ENABLE

FROM DATA CHAN.



INACTIVE
FROM DATA CHAN.



FULL



CHAN.
BUSY

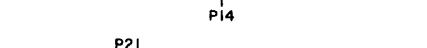
FROM
DATA
CHAN.



ACTIVE



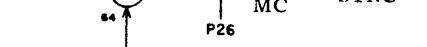
EMPTY



INACTIVE



READ 2



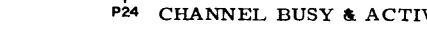
MC



END BUFFER



LOST P20
DATA



READY



CHANNEL BUSY & ACTIVE

QH

RV

1F08

1	E10-28	5
2	G11- 7	9
3	F11-17	7
4	F08- X	2
5	F12-21	9
6	F11-20	7
7	G11-13	9
8	F08- X	2
9	E12-12	9
10	J07-13	17
11	E08-21	5
12	K10-16	21
13	C10-18	13
14	F08- X	2
15	G13- 8	9
16	G12-21	9
17	J02-23	21
18	H05-28	11
19	F12-17	7
20	H04-20	11
21	F08- X	2
22	D10-25	11
23	G11-11	7
24	G12-20	9
25	G13-13	9
26	F04-20	7
27	F08- X	2
28	E08-16	7

JACK

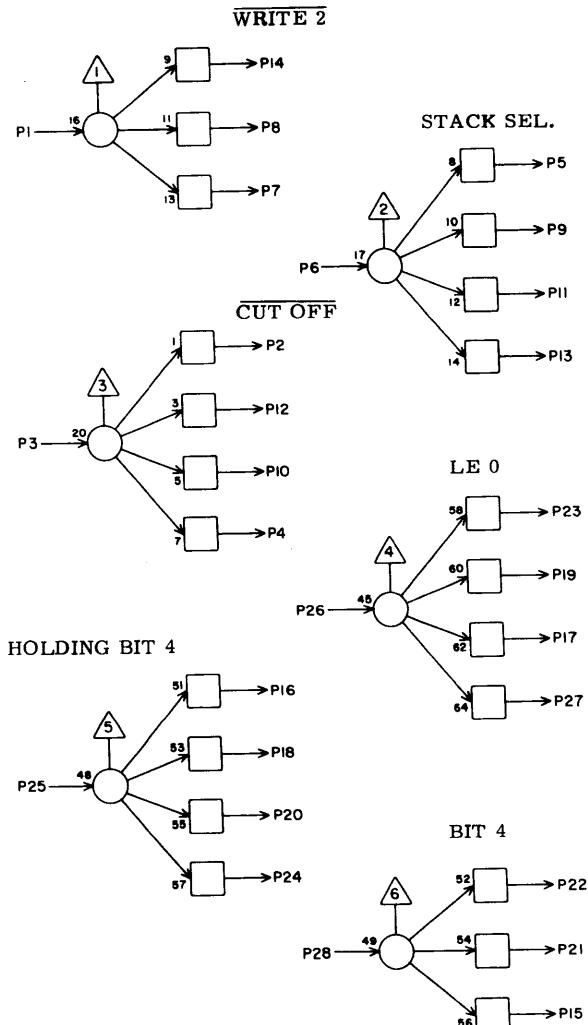
PIN

LG

CIRCUIT SPECIFICATION 11827600		
60227300 F		

LS 63064000
ASSY

A
REV



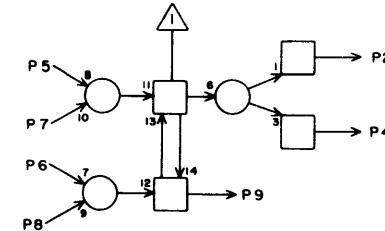
JACK PIN LG
CIRCUIT SPECIFICATION 11827600
60227300 F

TH	RV	G	F09
	1	F05- 9	7
	2	H13- 5	13
	3	F05-19	9
	4	-	
	5	I12-25	15
	6	C07-20	13
	7	-	
	8	F05-11	7
	9	I15-25	17
	10	I05-15	15
	11	G06-18	9
	12	F05- 6	7
	13	A09-18	19
	14	E09- 5	7
	15	C08-25	13
	16	C06-24	13
	17	-	
	18	A08-11	21
	19	B02-11	21
	20	F09-28	5
	21	D10-17	11
	22	D10-14	11
	23	B02-22	21
	24	D05-24	11
	25	H11- 8	9
	26	B08- 8	19
	27	-	
	28	F09-20	5

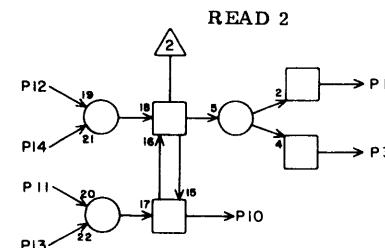
LS 63040000
ASSY

D
REV

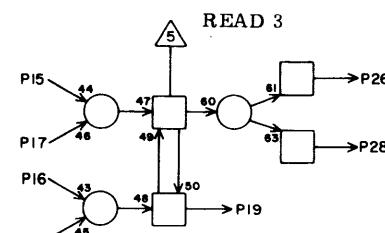
WRITE GUARD BITS TIME OUT



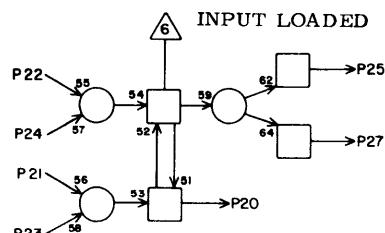
READ 2



READ 3



t2



A
REV

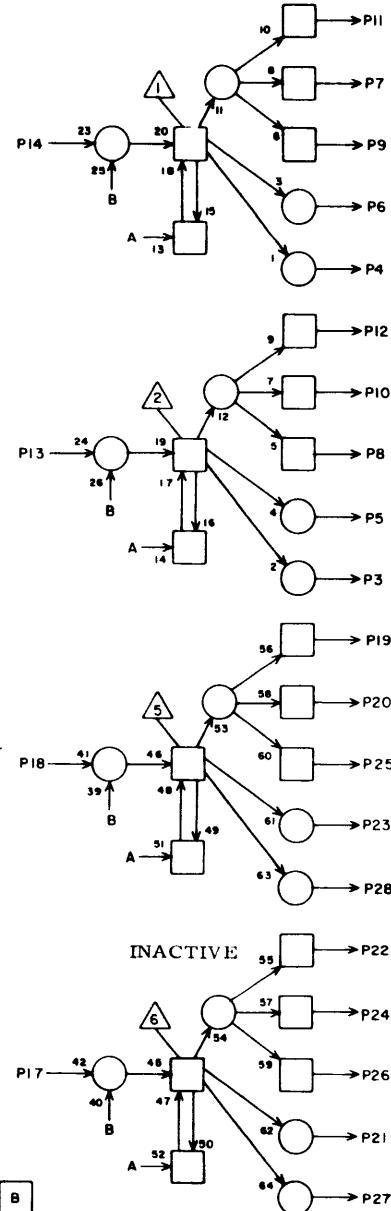
F10

RV	G	F10
1	-	
2	009- 9	9
3	G13- 6	7
4	D12-28	120
5	E09-17	7
6	D12-20	9
7	F10- X	2
8	F10- X	2
9	-	
10	E09- 2	7
11	E12-13	7
12	H13-28	13
13	F10- X	2
14	F10- X	2
15	G13- 5	7
16	F07-20	7
17	E04-14	11
18	F10- X	2
19	E10- 3	7
20	-	
21	E10-22	7
22	G13-23	9
23	F10- X	2
24	E06- 9	9
25	E12- 2	9
26	G13-26	9
27	E13- 4	9
28	-	

JACK PIN LG
CIRCUIT SPECIFICATION 11827600
60227300 F

LS 63057900
ASSY

B
REV

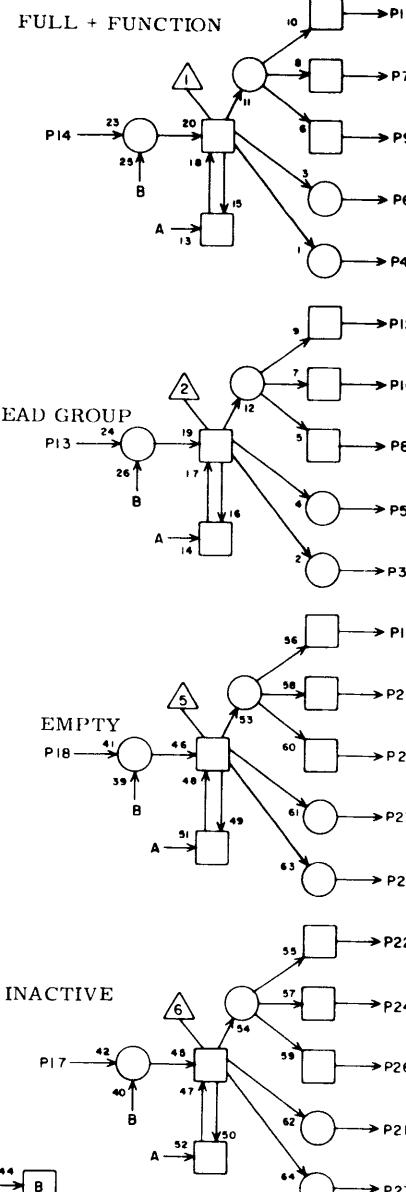


t50 PI6 → A → B

F11		
PD	RV	G
1	-	
2	-	
3	-	
4	-	
5	-	
6	G08- 7	7
7	G08-26	9
8	-	
9	G12- 7	7
10	-	
11	-	
12	-	
13	F12-12	5
14	F12- 7	5
15	-	
16	J09-26	19
17	F08- 3	7
18	F12-20	5
19	H15-14	11
20	F08- 6	7
21	G12-17	7
22	I09-23	13
23	E13- 6	9
24	I10-23	13
25	-	
26	-	
27	G07-17	9
28	-	
JACK PIN LG		
CIRCUIT SPECIFICATION I1827600		
60227300G		

LS 63057900
ASSY

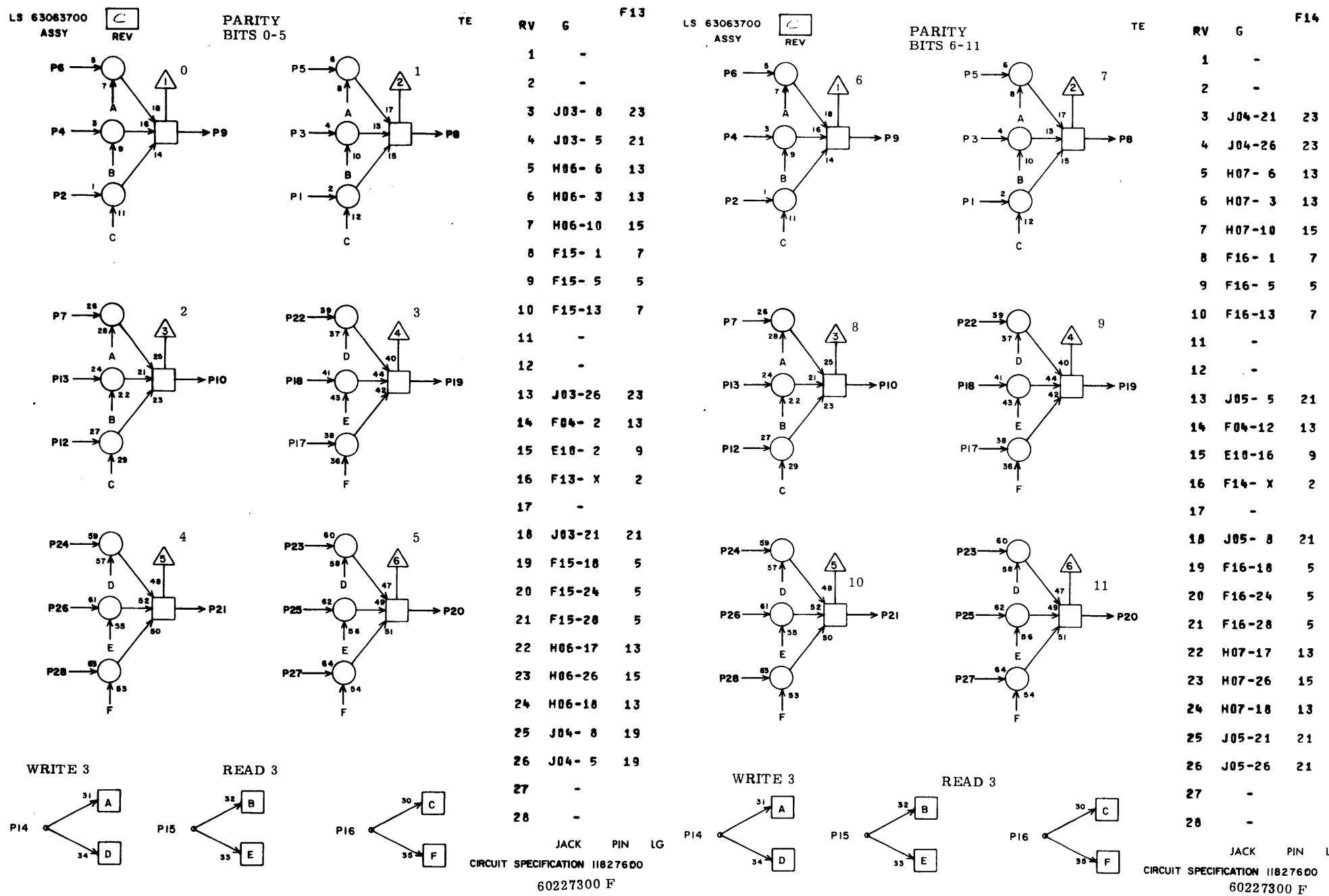
B
REV



too
PI6 → A → B

F12		
PD	RV	G
1	-	
2	-	
3	-	
4	-	
5	-	
6	-	
7	F11-14	5
8	-	
9	-	
10	-	
11	E11- 5	7
12	F11-13	5
13	-	
14	H13-16	11
15	-	
16	J09- 4	17
17	F08-19	7
18	E13-13	7
19	-	
20	F11-18	5
21	F08- 5	9
22	-	
23	-	
24	I05-12	15
25	-	
26	-	
27	-	
28	-	
JACK PIN LG		
CIRCUIT SPECIFICATION I1827600		
60227300G		

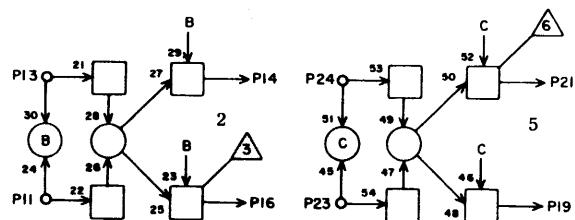
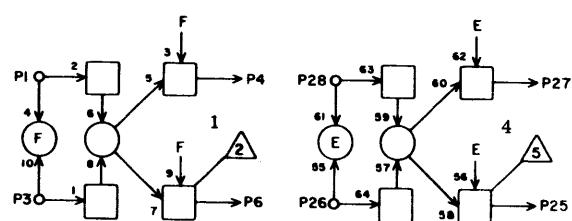
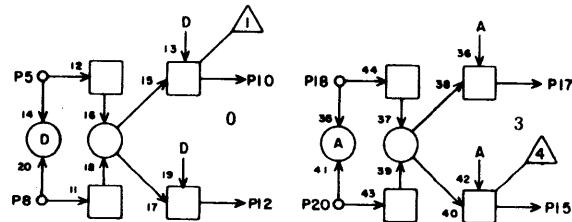
60227300 F



LS 63040100
ASSY

E
REV

LOGICAL EQUIVALENCE
NETWORK - PARITY
BITS 0-5



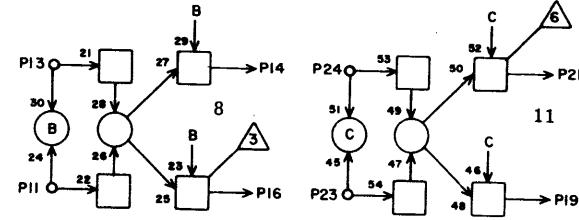
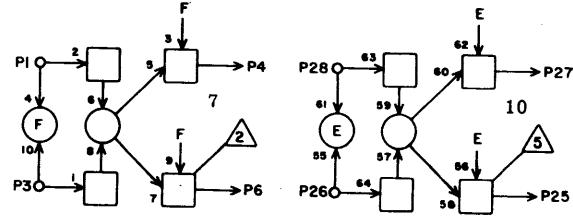
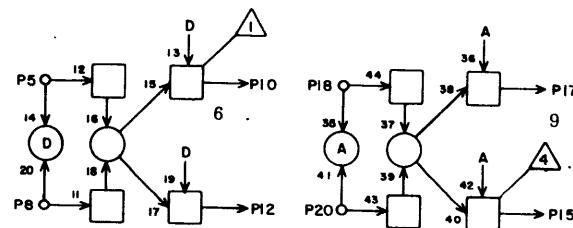
AB	RV	G	F15
1	F13-	8	7
2	-		
3	E15-	6	7
4	G14-	8	7
5	F13-	9	5
6	-		
7	-		
8	E15-	3	7
9	-		
10	G14-	7	7
11	E15-10		7
12	-		
13	F13-10		7
14	G14-23		7
15	-		
16	-		
17	G14-24		7
18	F13-19		5
19	-		
20	E15-17		7
21	G15- 8		5
22	-		
23	E15-26		7
24	F13-20		5
25	-		
26	E15-18		7
27	G15- 7		5
28	F13-21		5

JACK PIN LG
CIRCUIT SPECIFICATION II627600
60227300 F

LS 63040100
ASSY

E
REV

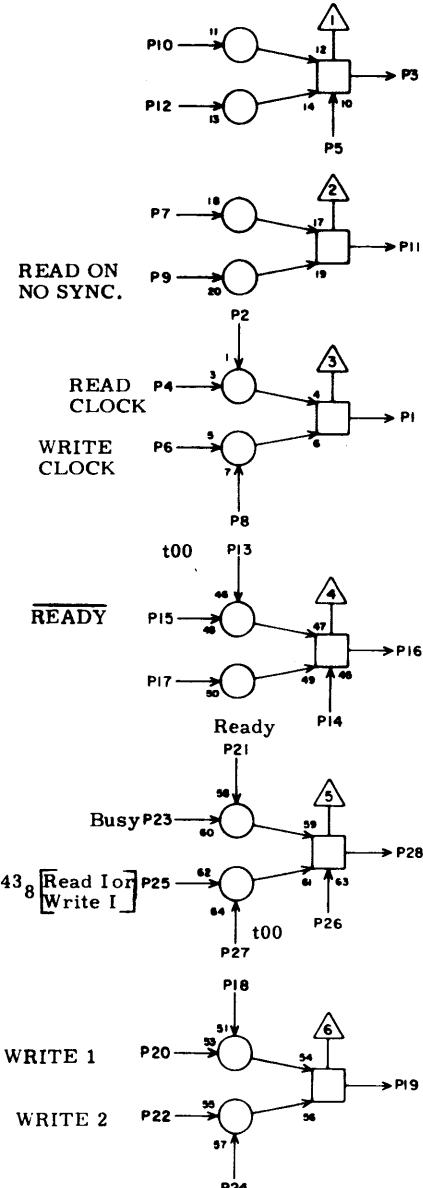
LOGICAL EQUIVALENCE
NETWORK - PARITY
BITS 6-11



AB	RV	G	F16
1	F14-	8	7
2	-		
3	E16- 6		7
4	G15-24		9
5	F14- 9		5
6	-		
7	-		
8	E16- 3		7
9	-		
10	G15-23		7
11	E16-10		7
12	-		
13	F14-10		7
14	G16- 7		7
15	-		
16	-		
17	G16- 8		5
18	F14-19		5
19	-		
20	E16-17		7
21	G16-24		7
22	-		
23	E16-26		7
24	F14-20		5
25	-		
26	E16-18		7
27	G16-23		7
28	F14-21		5

JACK PIN LG
CIRCUIT SPECIFICATION II627600
60227300 F

LS 63060700
ASSY

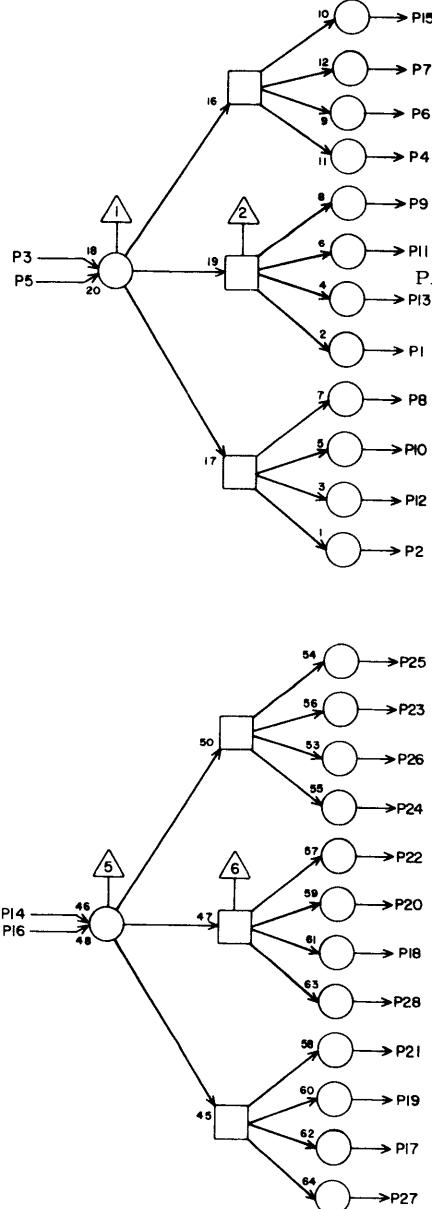


QH G 601

RV	G	601
1	F01-25	5
2	D12-12	19
3	-	
4	K03- 6	17
5	-	
6	G81-19	5
7	D12-19	19
8	E09-12	15
9	G88-12	11
10	-	
11	D88- 5	17
12	-	
13	J09- 9	17
14	G81- X	2
15	F84- 5	9
16	F85-21	9
17	D12-22	19
18	G85-28	7
19	G81- 6	5
20	K03- 4	15
21	F84-13	9
22	K03-25	17
23	C88-20	21
24	G85-25	7
25	K10-14	19
26	G01- X	2
27	J09-11	120
28	D10-22	19

JACK PIN LG
CIRCUIT SPECIFICATION 11827600
60227300 F

LS 63063500
ASSY

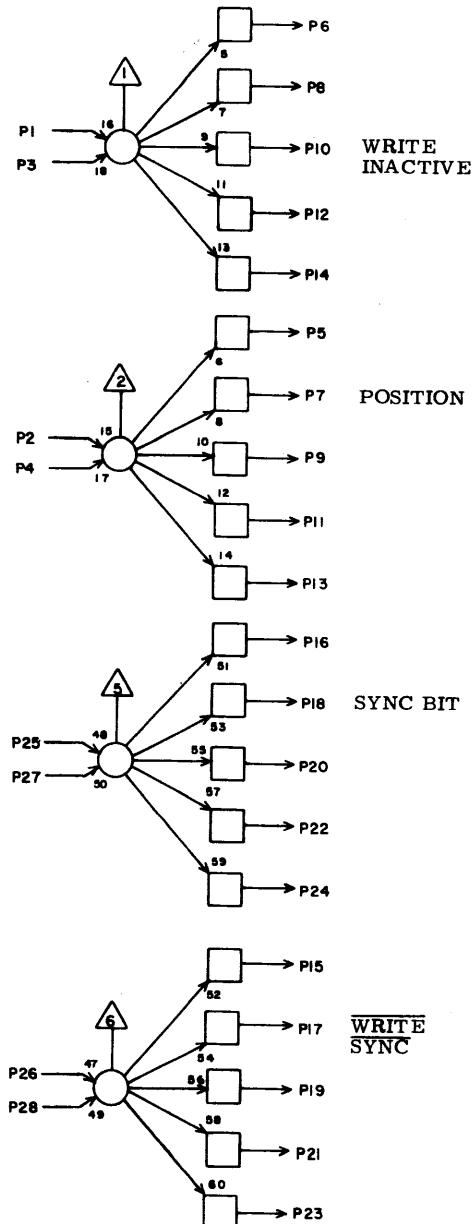


TC G 602

RV	G	602
1	G10- 5	11
2	G10-23	13
3	F87-16	9
4	G09-22	11
5	F07-15	9
6	G09- 7	11
7	G09- 5	11
8	G10- 7	11
9	G09-24	11
10	G10-22	11
11	G09-23	11
12	G10-24	11
13	G10- 6	11
14	-	
15	G09- 6	11
16	-	
17	-	
18	-	
19	-	
20	-	
21	-	
22	-	
23	-	
24	-	
25	-	
26	-	
27	-	
28	-	

JACK PIN LG
CIRCUIT SPECIFICATION 11827600
60227300 F

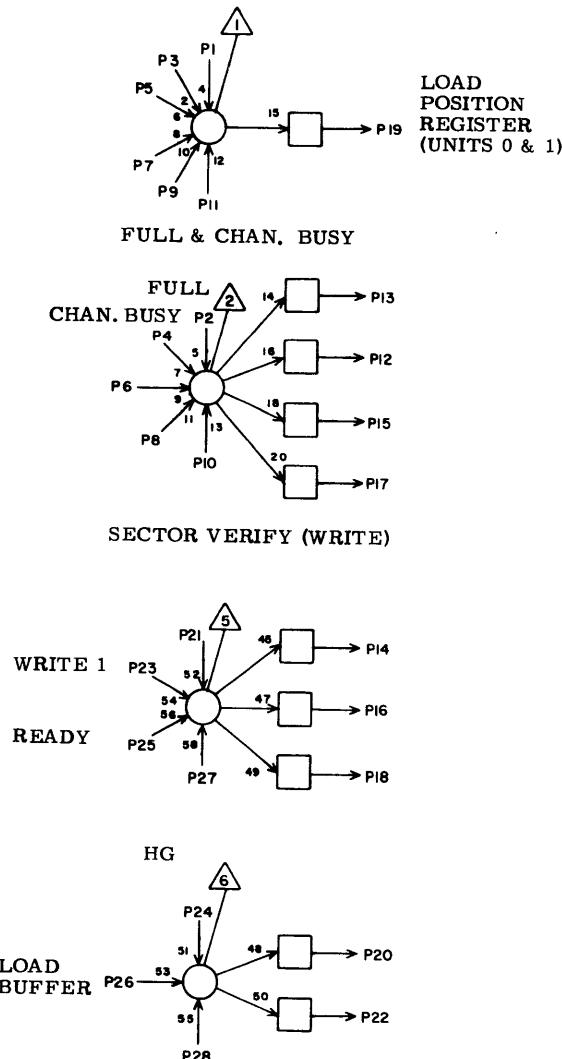
LS 63063600
ASSY REV



JACK PIN LG
CIRCUIT SPECIFICATION II827600
60227300 F

TD	RV	G	683
	1	G04-16	5
	2	G07-20	9
	3	F06-26	7
	4	G03-X	2
	5	D03-3	13
	6	-	
	7	-	
	8	G07-14	7
	9	-	
	10	-	
	11	-	
	12	F05-22	7
	13	G04-1	5
	14	F07-26	9
	15	G09-14	9
	16	-	
	17	G10-14	11
	18	-	
	19	-	
	20	F05-5	9
	21	-	
	22	F05-15	9
	23	-	
	24	F07-24	9
	25	F04-23	7
	26	F06-20	9
	27	F06-25	9
	28	F04-17	9

LS 63063400
ASSY REV

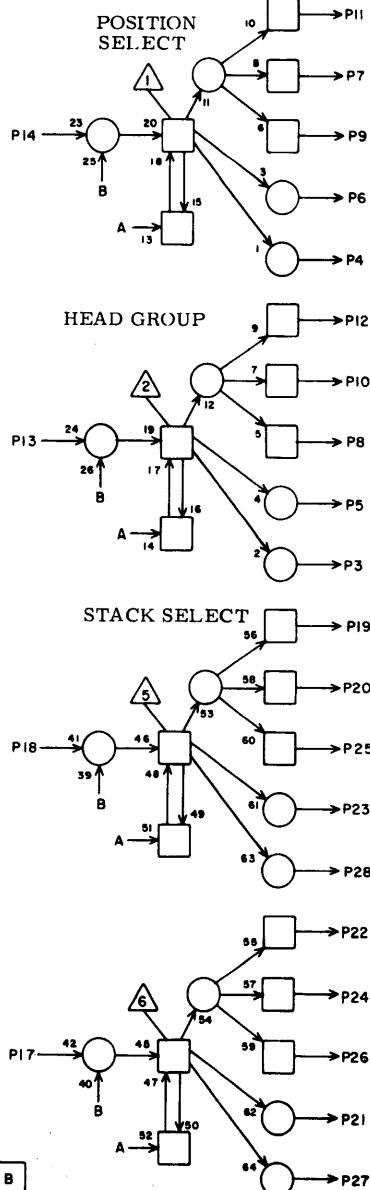


TB	PV	1604-
1	G03-13	5
2	J02-21	15
3	E01-8	13
4	C10-20	17
5	G04-X	2
6	G04-X	2
7	G04-X	2
8	G04-X	2
9	G04-X	2
10	G04-X	2
11	G04-X	2
12	-	
13	G12-3	11
14	F06-15	7
15	-	
16	G03-1	5
17	-	
18	E09-21	11
19	G11-26	11
20	D10-15	17
21	F06-3	9
22	D10-16	17
23	G07-10	7
24	B17-7	23
25	D03-13	15
26	E11-11	15
27	G04-X	2
28	C10-21	21

JACK PIN LG
CIRCUIT SPECIFICATION II827600
60227300 G

LS 63057900
ASSY

B
REV

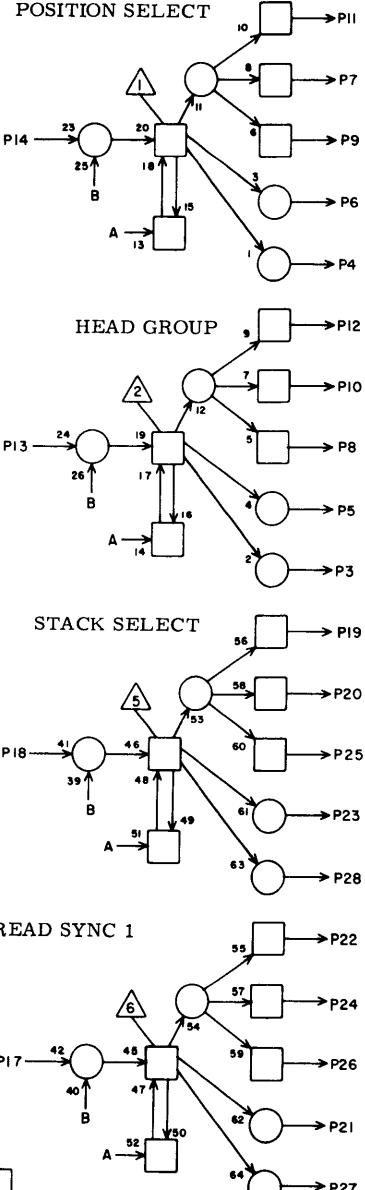


PD	RV	G	G05
	1	-	
	2	-	
	3	-	
	4	G07-24	7
	5	J07- 4	13
	6	J07- 2	13
	7	H13-10	13
	8	A10-11	25
	9	D08-11	13
	10	H13-12	13
	11	E02- 5	11
	12	F06- 7	7
	13	G06-10	5
	14	G06- 7	5
	15	-	
	16	E05-16	9
	17	-	
	18	G06-19	5
	19	A07-14	23
	20	-	
	21	-	
	22	-	
	23	A07-15	25
	24	-	
	25	G01-24	7
	26	-	
	27	-	
	28	G01-18	7
			JACK PIN LG
			CIRCUIT SPECIFICATION IIB27600

60227300 F

LS 63057900
ASSY

B
REV

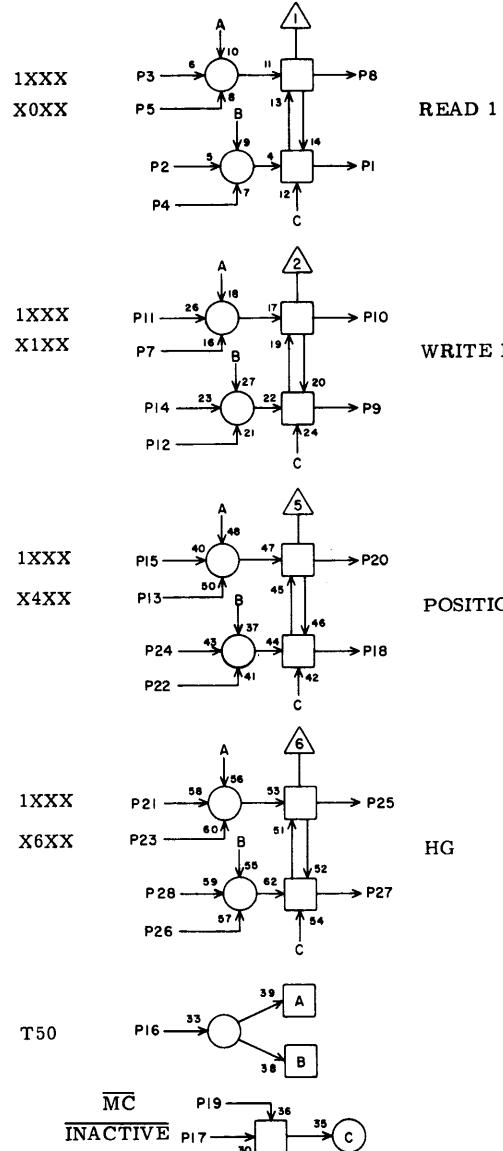


PD	RV	G	G06
	1	-	
	2	-	
	3	-	
	4	-	
	5	-	
	6	-	
	7	G05-14	5
	8	G07-28	5
	9	G07-22	5
	10	G05-13	5
	11	J07-21	13
	12	J07-22	13
	13	A10- 1	25
	14	D08- 1	15
	15	-	
	16	E05-13	11
	17	E13-16	13
	18	F09-11	9
	19	G05-18	5
	20	D02-24	15
	21	-	
	22	E12- 3	15
	23	D02-18	15
	24	-	
	25	D02-27	15
	26	-	
	27	-	
	28	D02-21	15
			JACK PIN LG
			CIRCUIT SPECIFICATION IIB27600

60227300 F

LS 63040400
ASSY

C
REV



AE	RV	G	G07
	1	J07-15	13
	2	C10- 5	17
	3	K08-18	17
	4	G07- X	2
	5	I03-16	13
	6	-	
	7	I04-16	11
	8	E12-23	11
	9	J07-17	13
	10	G04-23	7
	11	K08-20	17
	12	G07- X	2
	13	H14-12	11
	14	G03- 8	7
	15	K08-16	15
	16	J09-16	13
	17	F11-27	9
	18	-	
	19	H13-19	13
	20	G03- 2	9
	21	K08-22	15
	22	G06- 9	5
	23	H14-13	11
	24	G05- 4	7
	25	B07- 1	21
	26	G07- X	2
	27	A10- 6	25
	28	G06- 8	5

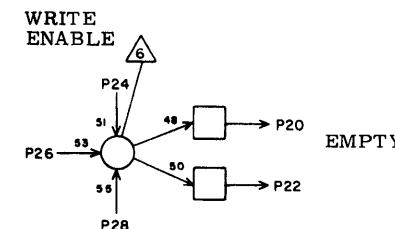
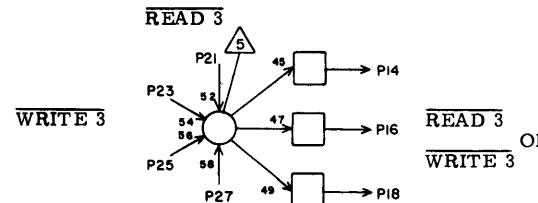
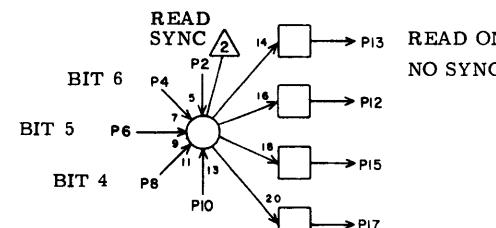
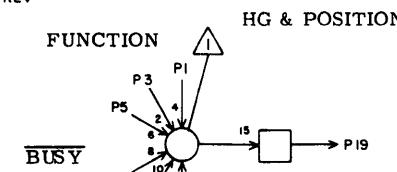
JACK PIN LG

CIRCUIT SPECIFICATION 11827600

60227300 H

LS 63063400
ASSY

C
REV



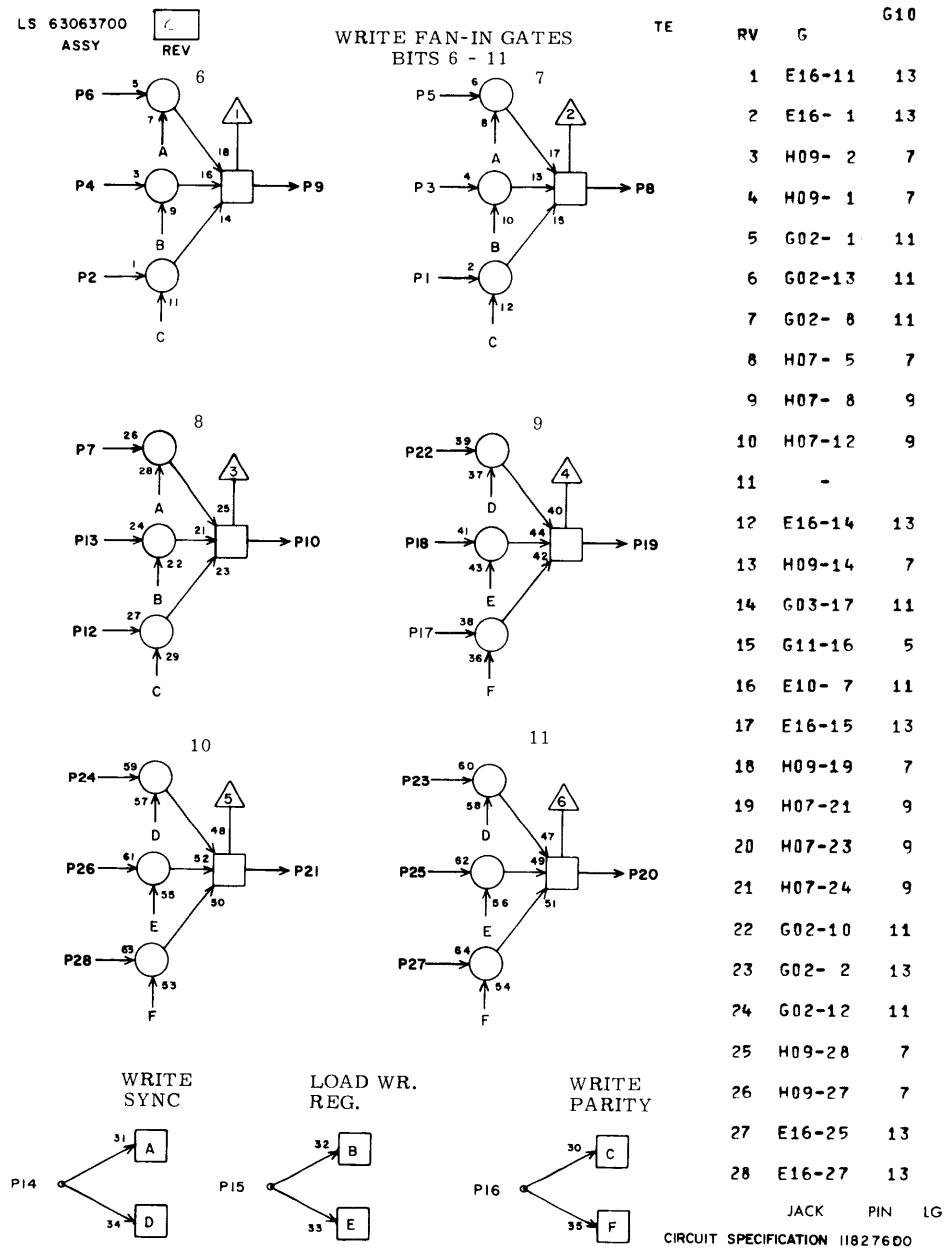
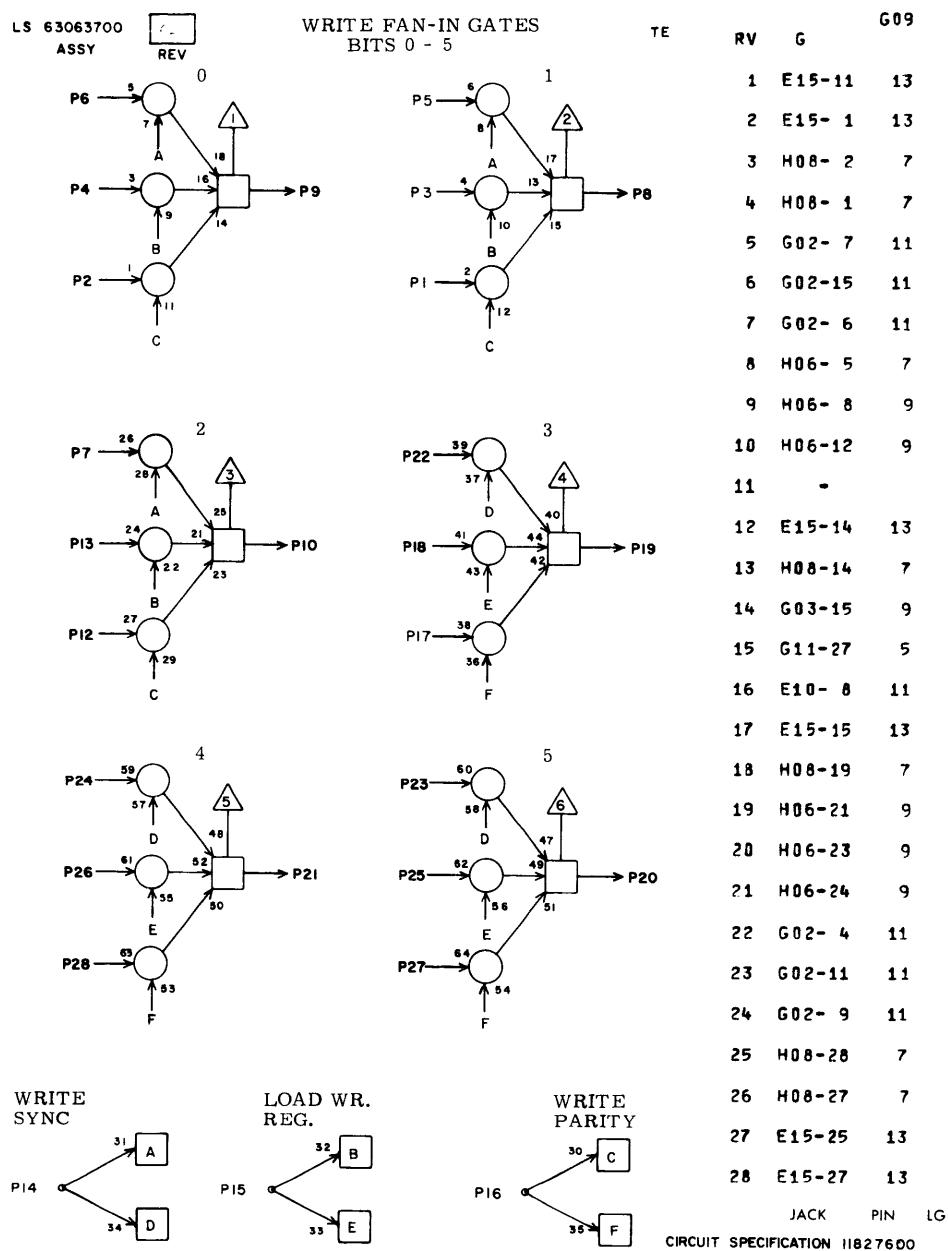
TB
RV G
G08

1	H05- 2	9
2	F01- 8	11
3	G08-X	2
4	E09-16	9
5	F01-19	11
6	C12- 8	17
7	F11- 6	7
8	C12- 9	19
9	G08- X	2
10	F05-28	9
11	G08- X	2
12	G01- 9	11
13	H13-27	11
14	G14-13	9
15	-	
16	G15-13	11
17	-	
18	G16-13	13
19	H13-17	9
20	I09-20	11
21	E10-10	11
22	I10-20	11
23	F04-10	9
24	F04- 8	9
25	G08- X	2
26	F11- 7	9
27	G08- X	2
28	G08- X	2

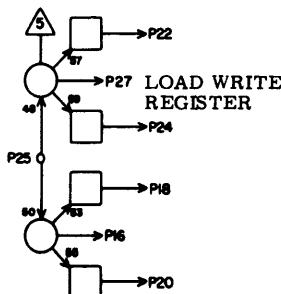
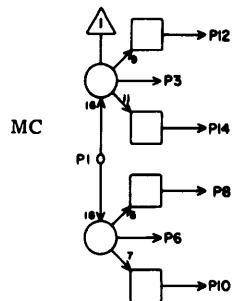
JACK PIN LG

CIRCUIT SPECIFICATION 11827600

60227300 H



LS 63042900 B
ASSY REV

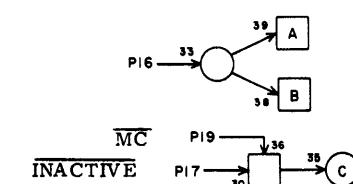
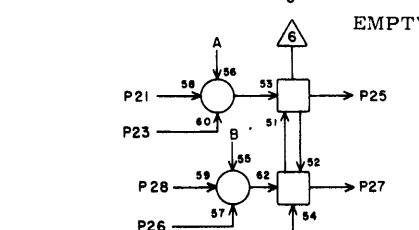
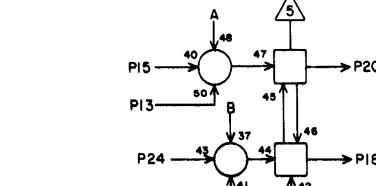
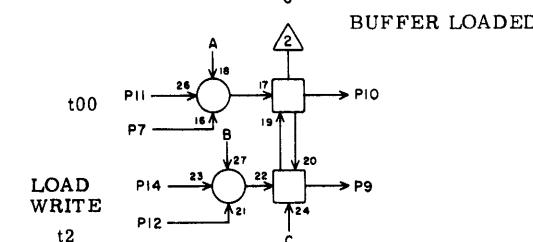
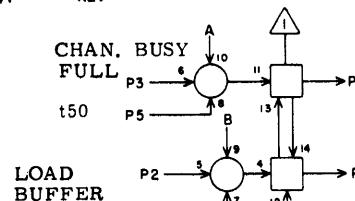


1G11		
CX	PV	
1	I^5-28	15
2	I^6-21	13
3	F^4-25	11
4	-	
5	H13-20	11
6	H13-18	11
7	F^R- 2	9
8		
9	I^5-10	13
10		
11	F^R-23	7
12	-	
13	F^R- 7	9
14	-	
15	D^7-17	15
16	G10-15	5
17	D^5- 7	17
18	-	
19	D^5-22	15
20	-	
21	C16- 7	21
22	G12-14	5
23	C^6-22	19
24	-	
25	H13- 3	7
26	G^4-19	11
27	Gn9-15	5
28	-	

JACK PIN LG
CIRCUIT SPECIFICATION 11827600

60227300 H

LS 63040400 C
ASSY REV

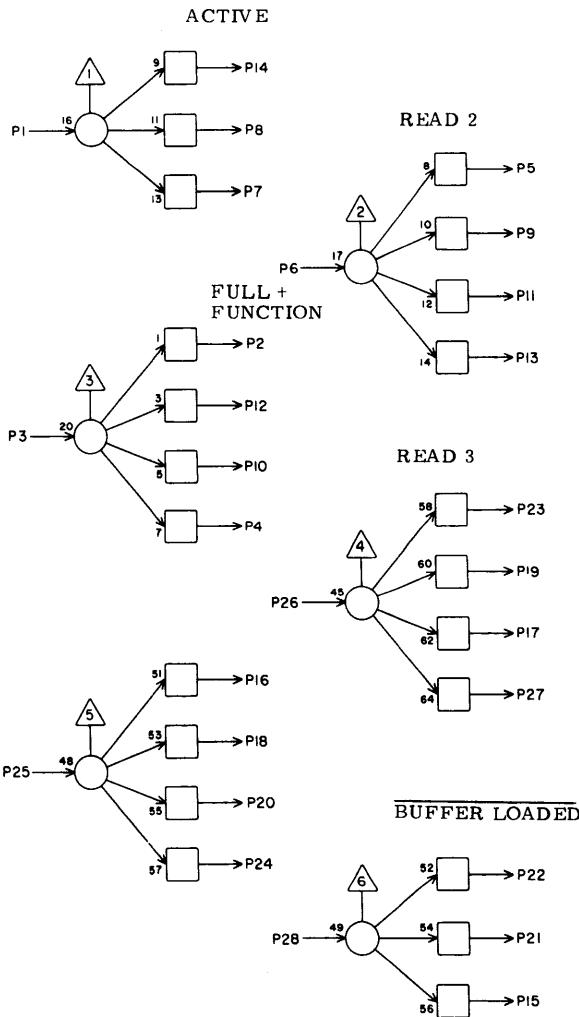


1G12		
AE	PV	
1	-	
2	E11-12	9
3	Gn4-13	11
4	G12- X	2
5	Jn9-17	15
6	-	
7	F11- 9	7
8	H13-13	7
9	G13-28	5
10	-	
11	Jn9- 2	13
12	E07-14	11
13	G13- 7	5
14	G11-22	5
15	C10-22	17
16	G12- X	2
17	F11-21	7
18	H05-16	11
19	F04-18	13
20	F08-24	9
21	F08-16	9
22	G12- X	2
23	Jn9-21	13
24	H05-10	11
25	E13- 2	11
26	F10-21	11
27	-	
28	G12- X	2

JACK PIN LG
CIRCUIT SPECIFICATION 11827600 F

60227300 F

LS 63064000
ASSY REV



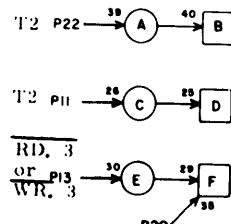
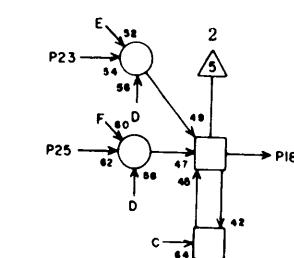
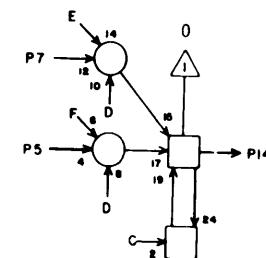
TH	REV	1613
1	I05 = 8	15
2	H10 = 16	9
3	H13 = 1	7
4	=	
5	F10 = 15	7
6	F10 = 3	7
7	G12 = 13	5
8	F03 = 15	9
9	=	
10	H12 = 16	7
11	F07 = 28	11
12	H11 = 16	7
13	F09 = 25	9
14		
15	H13 = 15	7
16	D03 = 2	19
17	=	
18	D03 = 7	19
19	D12 = 5	15
20	F13 = 5	11
21	F05 = 18	13
22		
23	F10 = 22	9
24	=	
25	Dn9 = 26	15
26	F10 = 26	9
27	=	
28	G12 = 9	5

JACK PIN LG

CIRCUIT SPECIFICATION 11827600

60227300 H

LS 63057800
ASSY REV

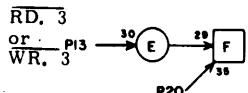
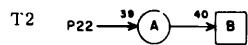
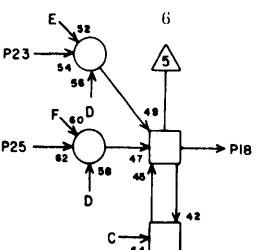
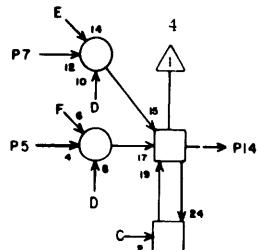


PARITY REGISTER 1
BITS 0 - 3

P	RV	1614
1	-	
2	G14 = 5	5
3	-	
4	G14 = 6	3
5	G14 = 2	5
6	G14 = 4	3
7	F15 = 10	7
8	F15 = 4	7
9	E15 = 12	9
10	-	
11	E04 = 20	17
12	-	
13	G08 = 14	9
14	E15 = 5	11
15	G14 = 25	5
16	-	
17	G14 = 26	5
18	E15 = 21	9
19	-	
20	G14 = X	2
21	E15 = 24	9
22	E04 = 18	17
23	F15 = 14	7
24	F15 = 17	7
25	G14 = 15	5
26	G14 = 17	5
27	-	
28	-	

JACK PIN LG
CIRCUIT SPECIFICATION 11827600
60227300 F

LS 63057800 C
ASSY REV



PARTITY REGISTER 1
BITS 4-7

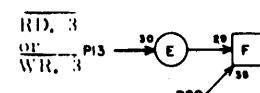
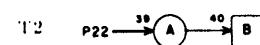
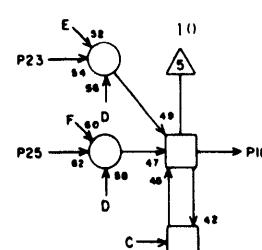
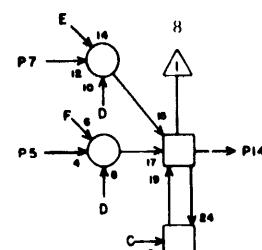
PC RV 1G15

1	-	
2	G15- 5	5
3	-	
4	G15- 6	3
5	G15- 2	5
6	G15- 4	3
7	F15-27	5
8	F15-21	5
9	E16- 8	11
10	-	
11	E04-17	17
12	-	
13	Gn8-16	11
14	E15-23	9
15	G15-25	5
16	-	
17	G15-26	5
18	E16- 5	11
19	-	
20	G15- X	2
21	E16-12	11
22	E04-22	19
23	F16-10	7
24	F16- 4	9
25	G15-15	5
26	G15-17	5
27	-	
28	-	

JACK PIN LG
CIRCUIT SPECIFICATION 11827800

60227300 F

LS 63057800 C
ASSY REV



PARTITY REGISTER 1
BITS 8-11

PC DV 1G16

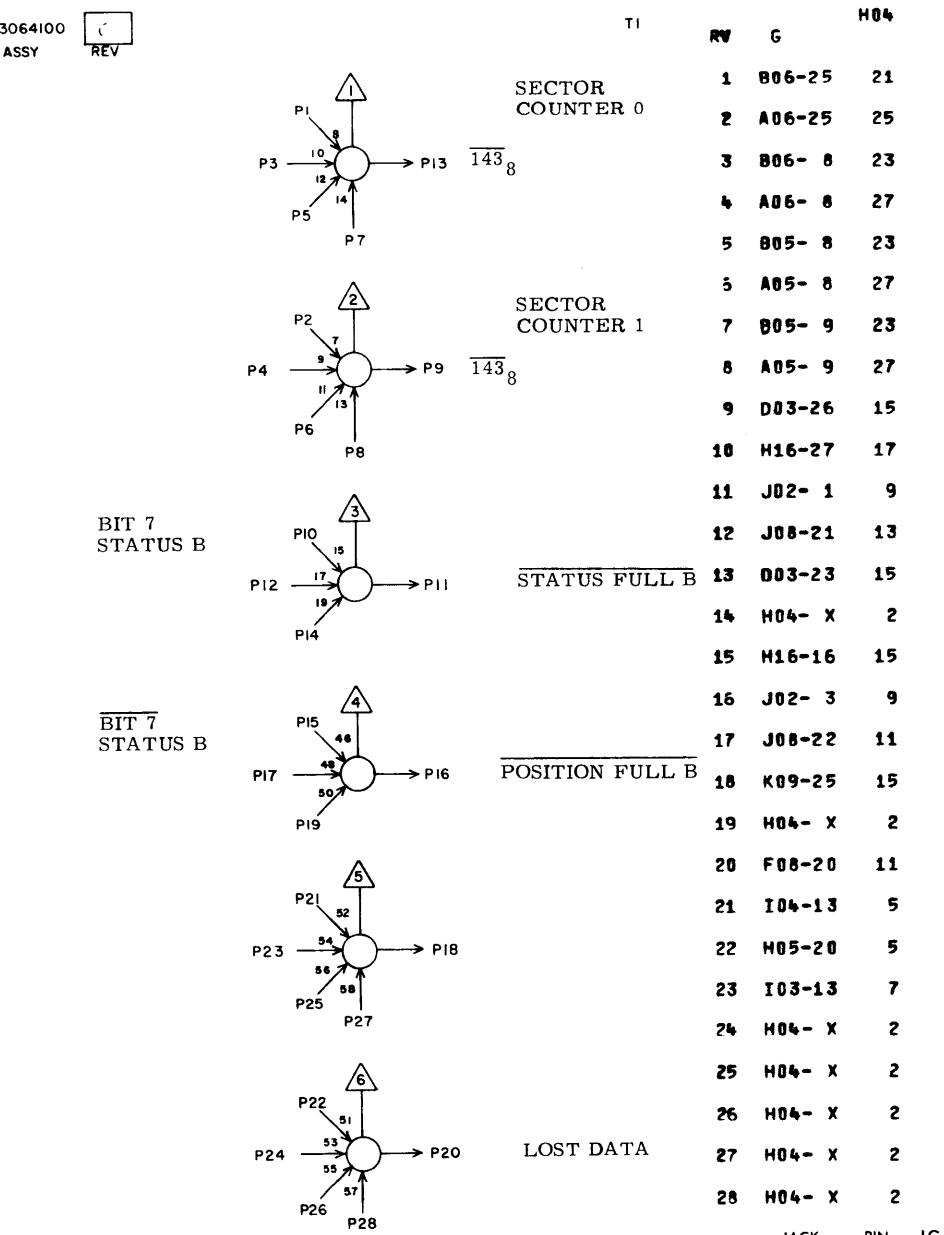
1	-	
2	G16- 5	5
3	-	
4	G16- 6	3
5	G16- 2	5
6	G16- 4	3
7	F16-14	7
8	F16-17	5
9	E16-24	9
10	-	
11	E04-21	19
12	-	
13	G08-18	13
14	E16-21	9
15	G16-25	5
16	-	
17	G16-26	5
18	E16-23	9
19	-	
20	G16- X	2
21	E15- 8	11
22	E04-19	19
23	F16-27	7
24	F16-21	7
25	G16-15	5
26	G16-17	5
27	-	
28	-	

JACK PIN LG
CIRCUIT SPECIFICATION 11827800

60227300 F

LS 63064100
ASSY REV C

H04

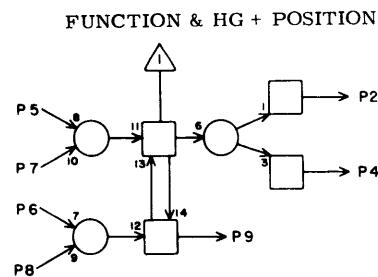


CIRCUIT SPECIFICATION 11827600

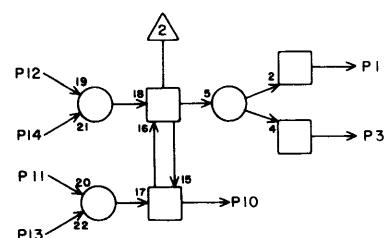
60227300 F

LS 63040000
ASSY

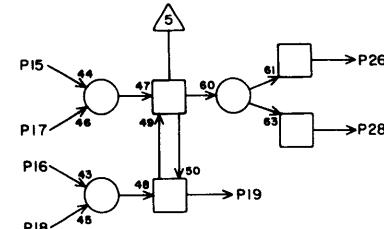
D
REV



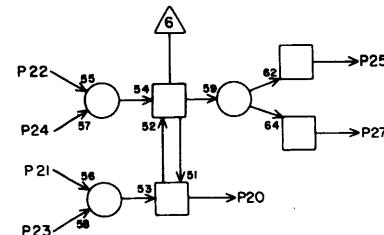
CHANNEL BUSY



END OF BUFFER



LOST DATA

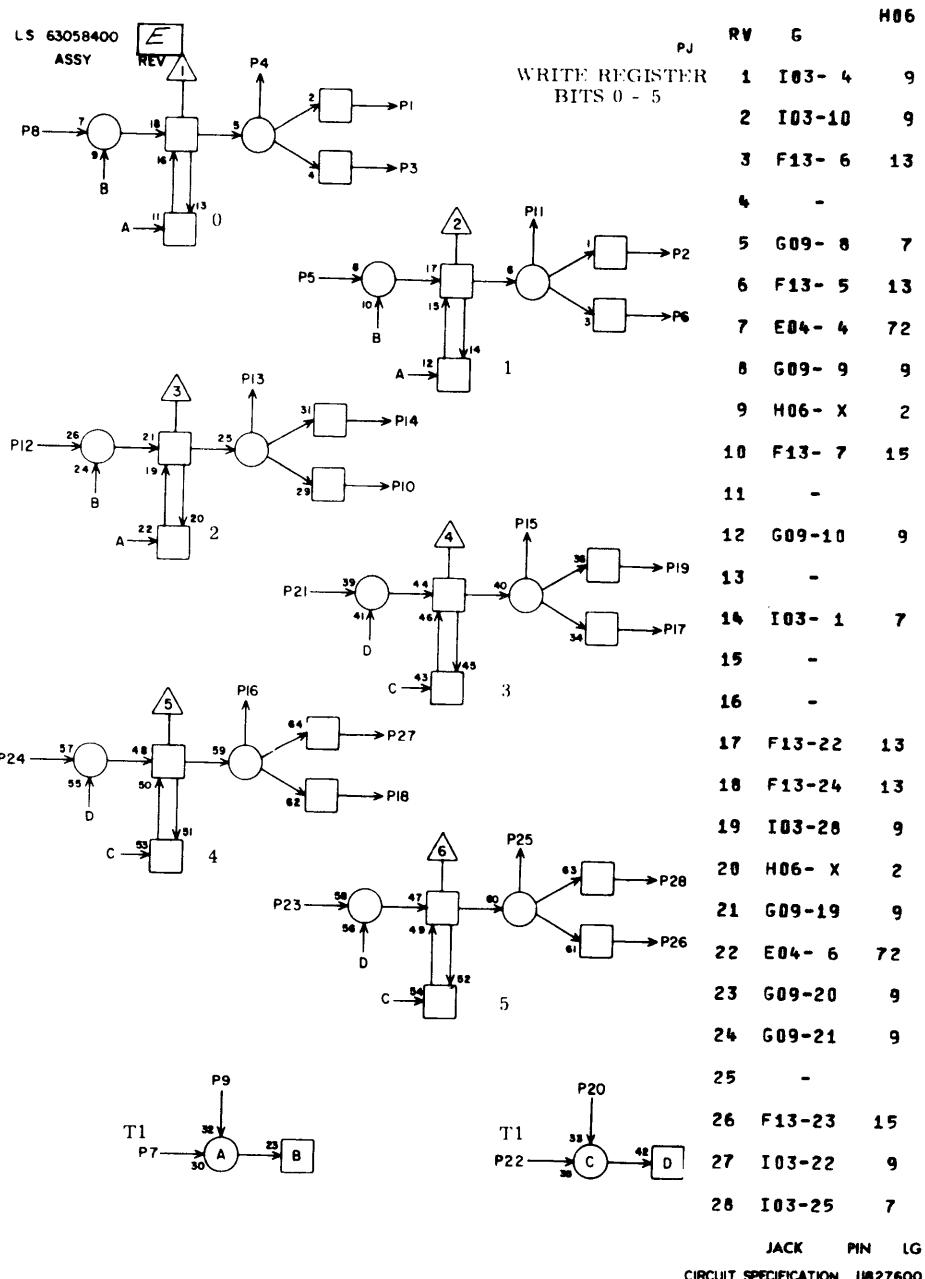


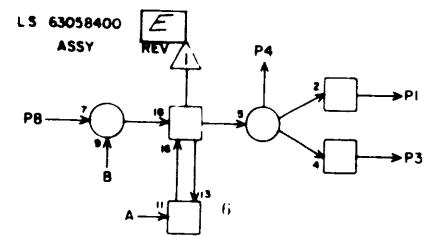
AA	RW	G	H05
	1	C10-25	21
	2	G08- 1	9
	3	H05-17	5
	4	-	
	5	K09-19	15
	6	E11-14	15
	7	H05- X	2
	8	H05- X	2
	9	-	
	10	G12-24	11
	11	I05- 3	5
	12	K09-14	15
	13	J09-24	13
	14	H05- X	2
	15	I05-16	7
	16	G12-18	11
	17	H05- 3	5
	18	H05- X	2
	19	D10-24	19
	20	H05-22	5
	21	K09-16	13
	22	H05-26	3
	23	H05- X	2
	24	I05-11	5
	25	I13-25	13
	26	H05-22	3
	27	I16-25	15
	28	F08-18	11

JACK PIN LG

CIRCUIT SPECIFICATION 11827600

60227300 F



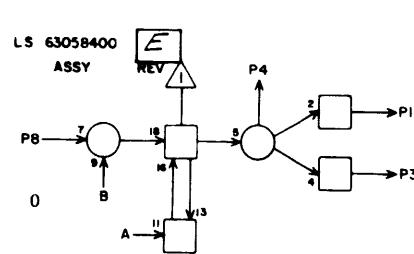


WRITE REGISTER
BITS 6-11

PJ	RV	G	H07
1	I04- 4	9	
2	I04-10	9	
3	F14- 6	13	
4	-		
5	G10- 8	7	
6	F14- 5	13	
7	E04- 9	72	
8	G10- 9	9	
9	H07- X	2	
10	F14- 7	15	
11	-		
12	G10-18	9	
13	-		
14	I04- 1	7	
15	-		
16	-		
17	F14-22	13	
18	F14-24	13	
19	I04-28	9	
20	H07- X	2	
21	G10-19	9	
22	E04-11	72	
23	G10-20	9	
24	G10-21	9	
25	-		
26	F14-23	15	
27	I04-22	9	
28	I04-25	7	

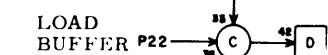
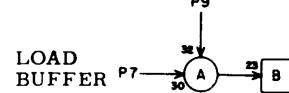
JACK PIN LG
CIRCUIT SPECIFICATION 11027600

60227300 F



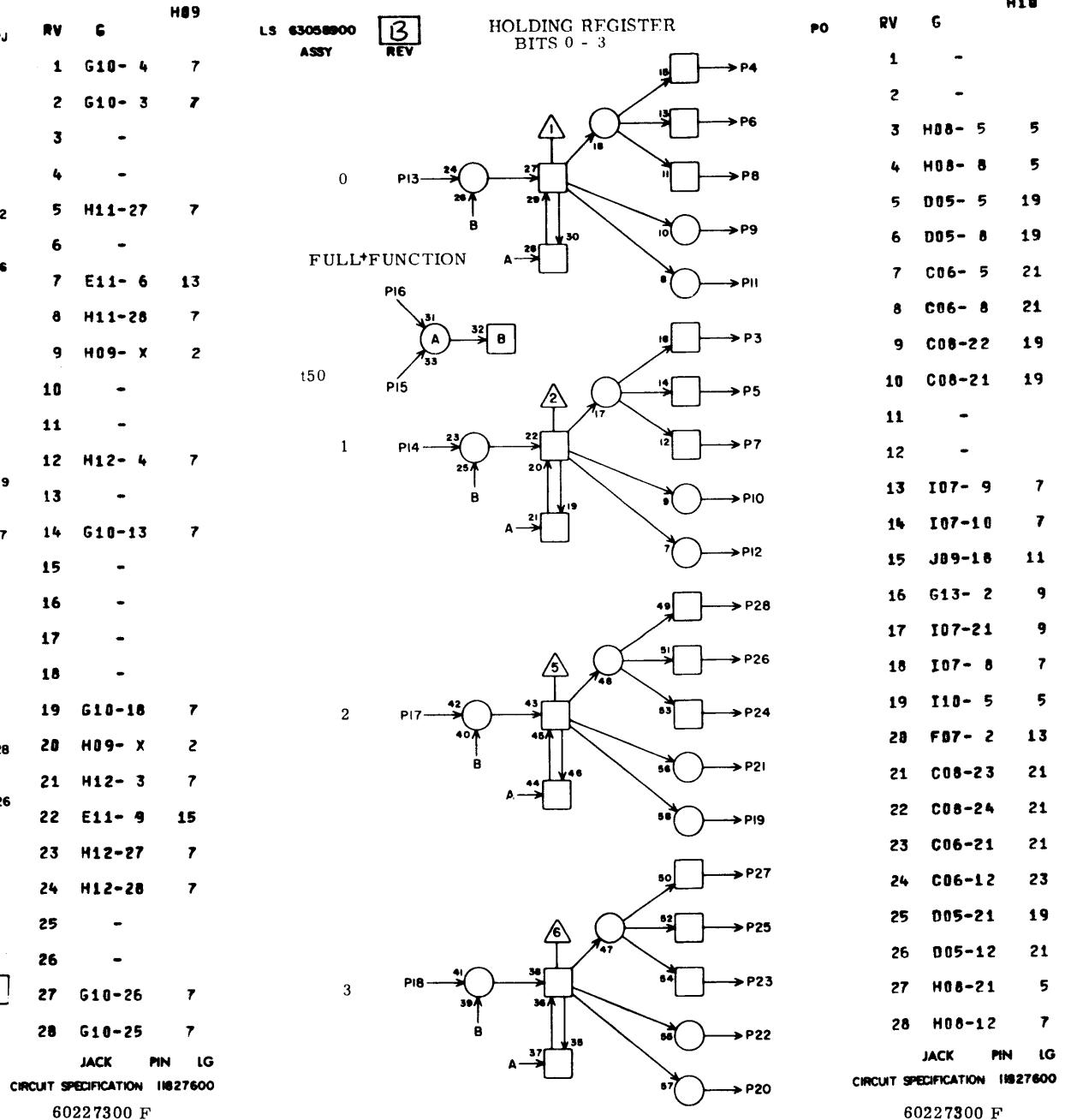
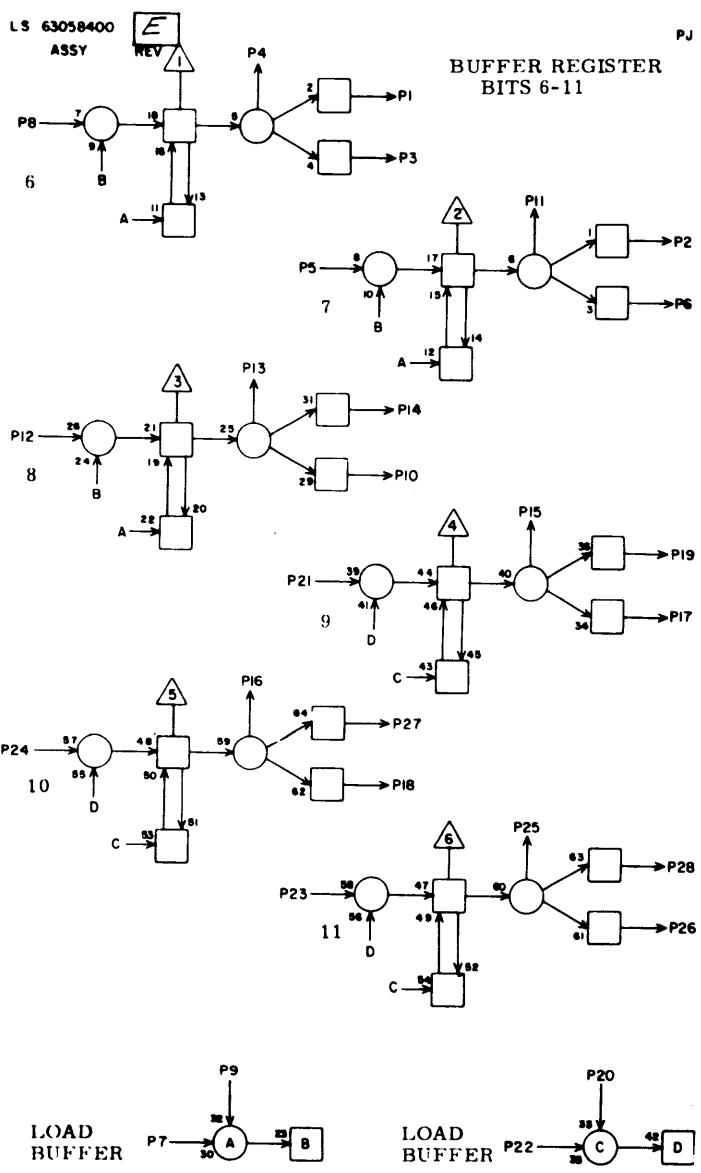
BUFFER REGISTER
BITS 0 - 5

PJ	RV	G	H08
1	G09- 4	7	
2	G09- 3	7	
3	-		
4	-		
5	H10- 3	5	
6	-		
7	E11- 2	15	
8	H10- 4	5	
9	H08- X	2	
10	-		
11	-		
12	H10-28	7	
13	-		
14	G09-13	7	
15	-		
16	-		
17	-		
18	-		
19	G09-18	7	
20	H08- X	2	
21	H10-27	5	
22	E11- 4	15	
23	H11- 3	7	
24	H11- 4	7	
25	-		
26	-		
27	G09-26	7	
28	G09-25	7	



JACK PIN LG
CIRCUIT SPECIFICATION 11027600

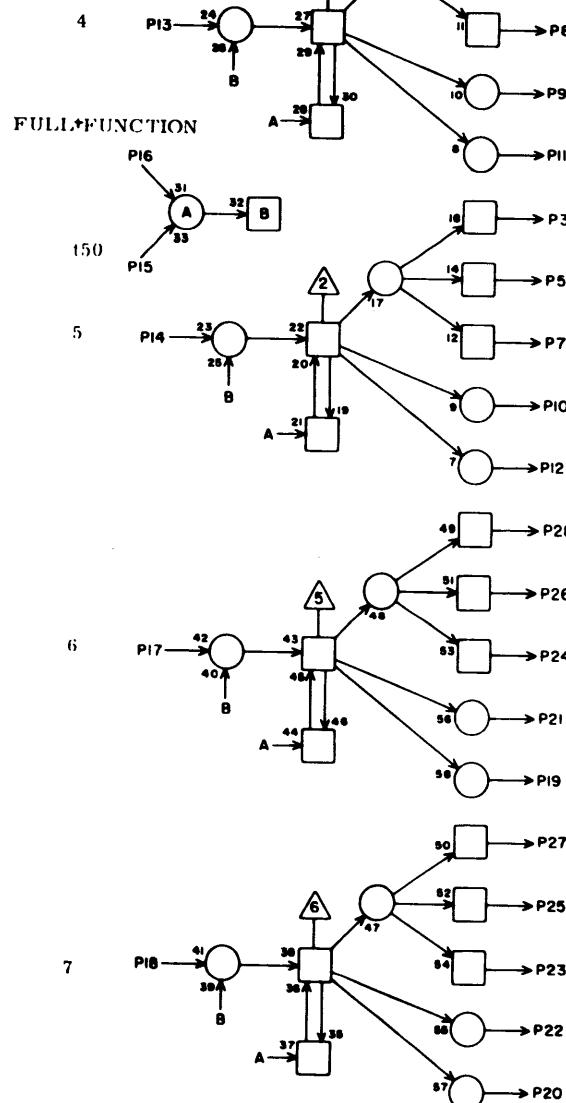
60227300 F



LS 6305800
ASSY

B
REV

HOLDING REGISTER
BITS 4 - 7

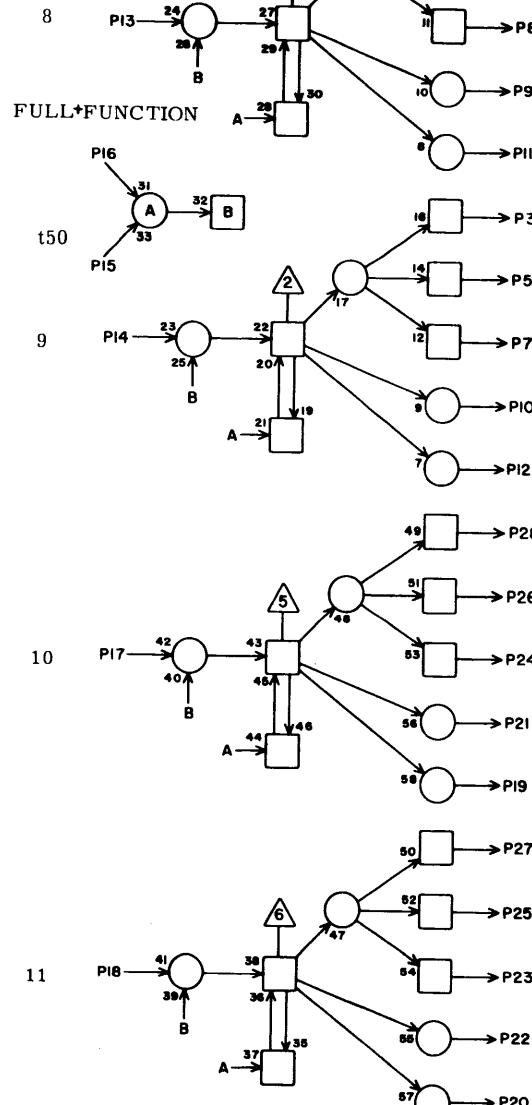


1H11

LS 6305800
ASSY

B
REV

HOLDING REGISTER
BITS 8 - 11



1H12

JACK PIN LG

CIRCUIT SPECIFICATION 11027600

60227300 G

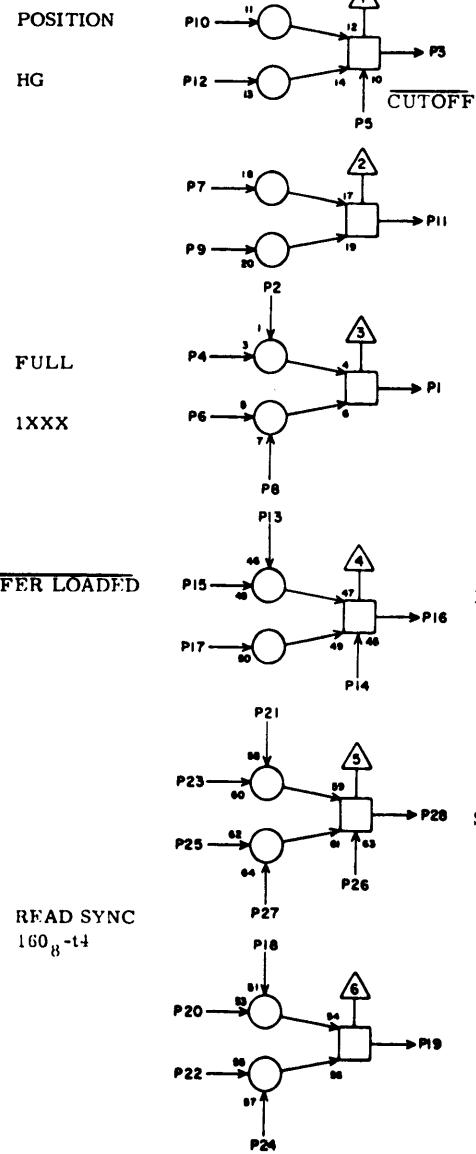
JACK PIN LG

CIRCUIT SPECIFICATION 11027600

60227300 F

LS 63060700
ASSY

C
REV



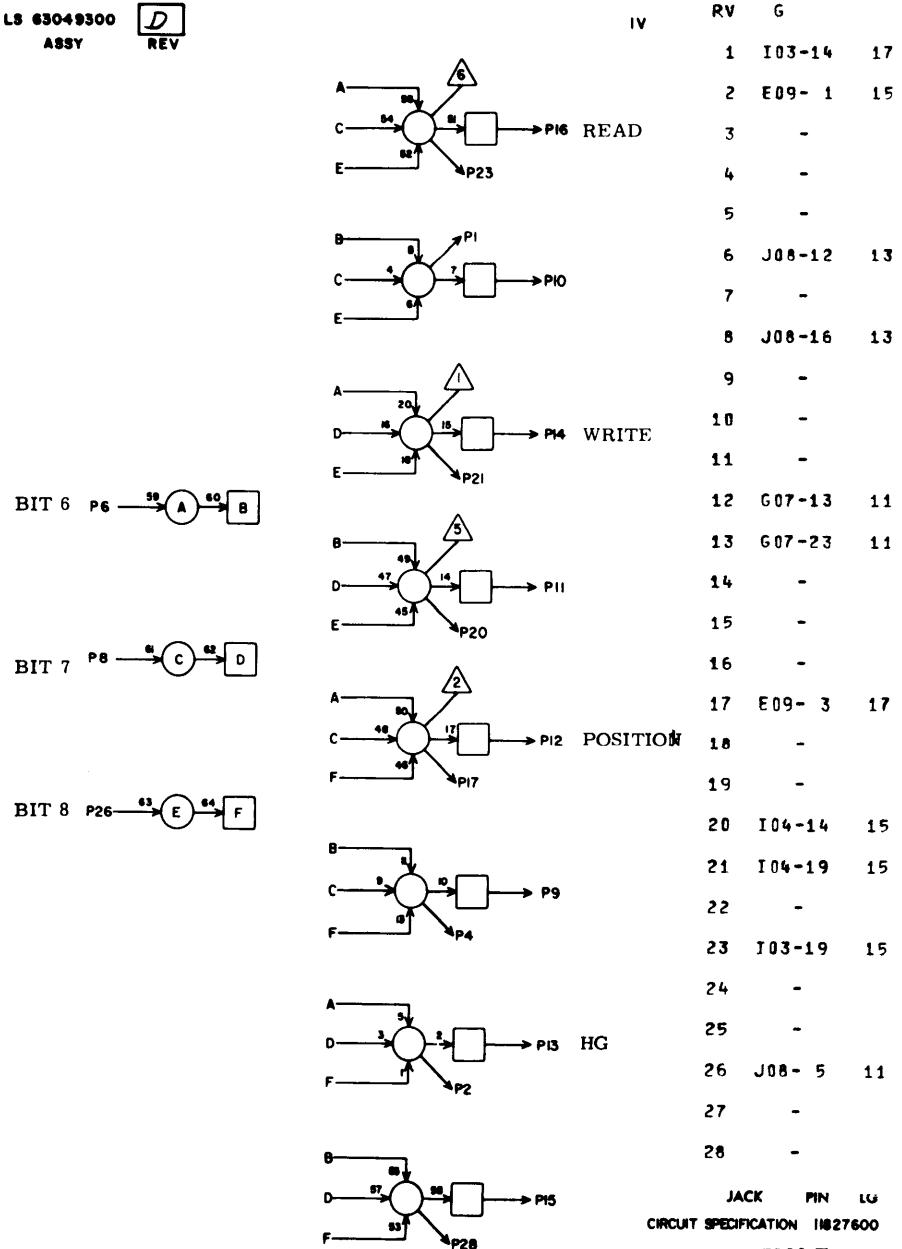
	QN	RV	G	H13
	1	G13-	3	7
	2	C10-16		21
	3	G11-25		7
	4	J02-22		19
	5	F09-	2	13
	6	I06-20		13
	7	-		
	8	H13-	X	2
	9	-		
	10	G05-	7	13
	11	-		
	12	G05-10		13
	13	G12-	8	7
	14	H13-	X	2
	15	G13-15		7
	16	F12-14		11
	17	G08-19		9
	18	G11-6		11
	19	G07-19		13
	20	G11-5		11
	21	E12-19		13
	22	C16-17		19
	23	H13-	X	2
	24	-		
	25	H13-	X	2
	26	H13-	X	2
	27	G08-13		11
	28	F10-12		13

JACK PIN LG
CIRCUIT SPECIFICATION 11027600

60227300 H

LS 63049300
ASSY

D
REV

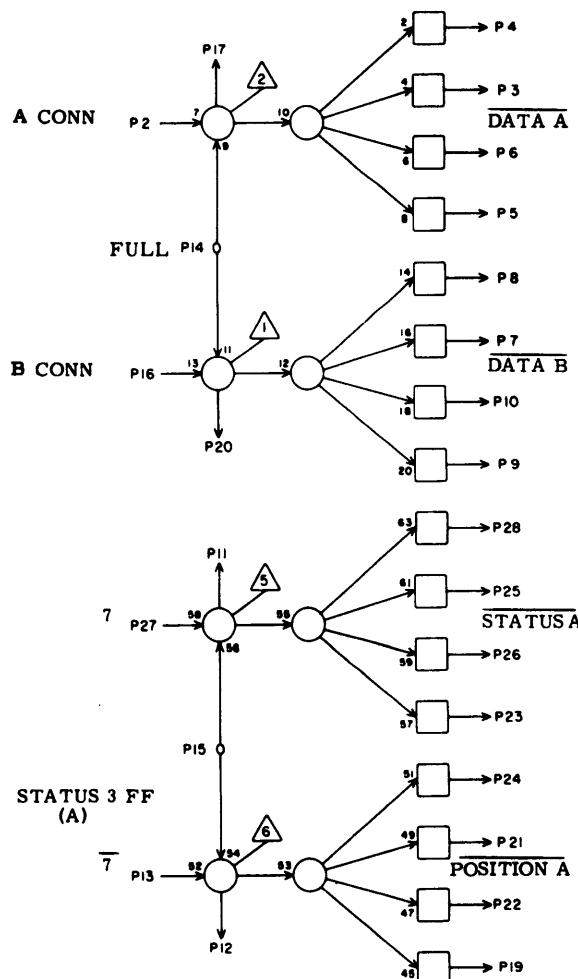


JACK PIN LG
CIRCUIT SPECIFICATION 11027600

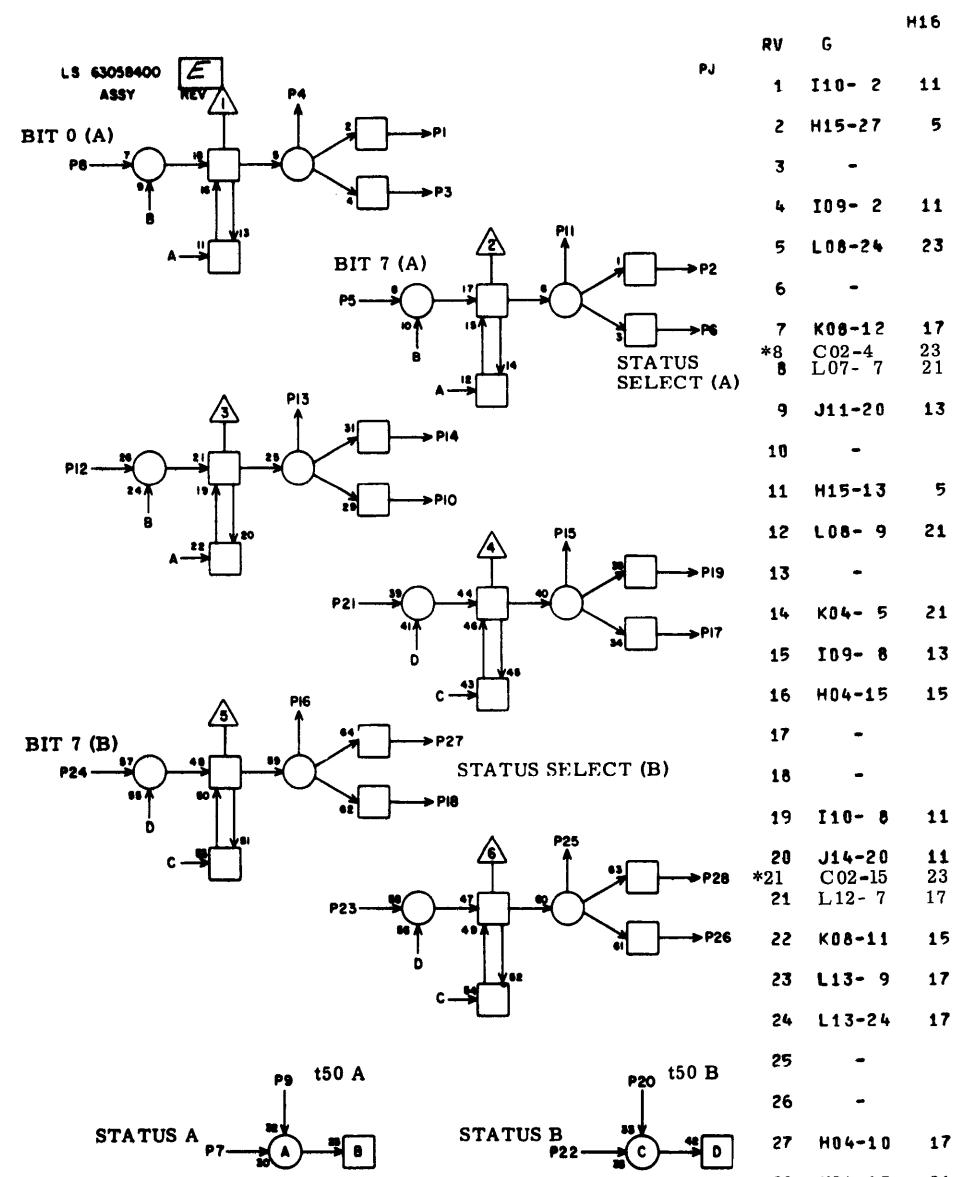
60227300 F

LS 630532
ASSY

6
REV



KL	RV	G	H15
1	-		
2	J10-18	13	
3	I12-11	9	
4	I11-11	9	
5	I13-11	7	
6	I09-14	11	
7	I15-11	7	
8	I14-11	7	
9	I16-11	7	
10	I10-14	11	
11	-		
12	-		
13	H16-11	5	
14	F11-19	11	
15	J08- 8	13	
16	J10-11	11	
17	-		
18	-		
19	-		
20	-		
21	I12-15	7	
*22	I13 - 15	7	
23	-		
24	I11-15	9	
25	I12-16	9	
26	I13-16	7	
27	H16- 2	5	
28	I11-16	9	

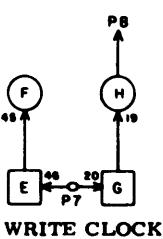
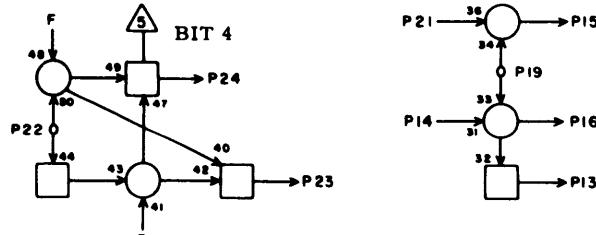
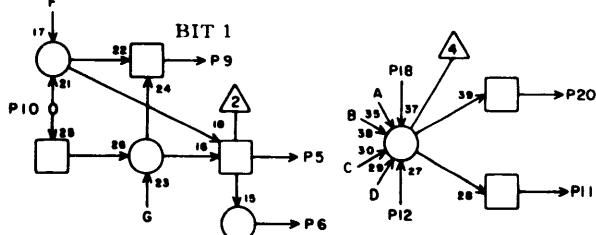
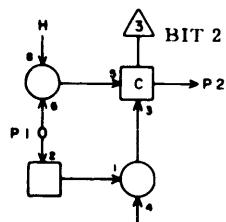
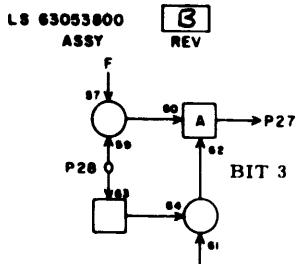


* Standard Option 10037

JACK PIN LG
CIRCUIT SPECIFICATION 11627600
60227300 G

* Standard Option 10037

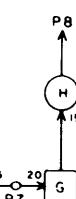
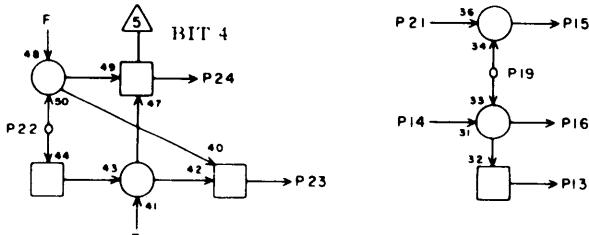
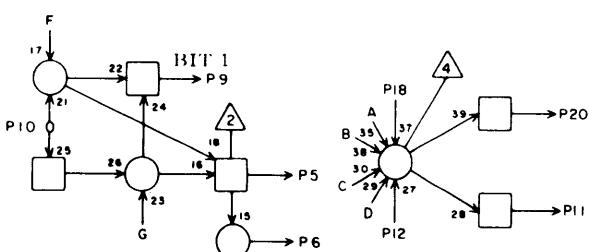
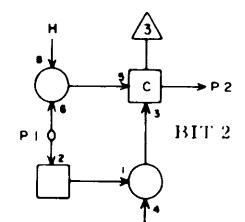
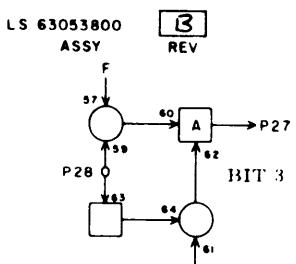
JACK PIN LG
CIRCUIT SPECIFICATION 11627600
60227300 F



JACK PIN LG
CIRCUIT SPECIFICATION I1027600
60227300 F

I03

KS	RV	G
1	H06-14	7
2	L01-24	15
3	L01- 7	13
4	H06- 1	9
5	-	
6	-	
7	A09- 4	31
8	I04- 7	5
9	L01-17	15
10	H06- 2	9
11	-	
12	-	
13	H04-23	7
14	H14- 1	17
15	-	
16	G07- 5	13
17	-	
18	-	
19	H14-23	15
20	-	
21	-	
22	H06-27	9
23	-	
24	L02-17	13
25	H06-28	7
26	L02-24	13
27	L02- 7	11
28	H06-19	9

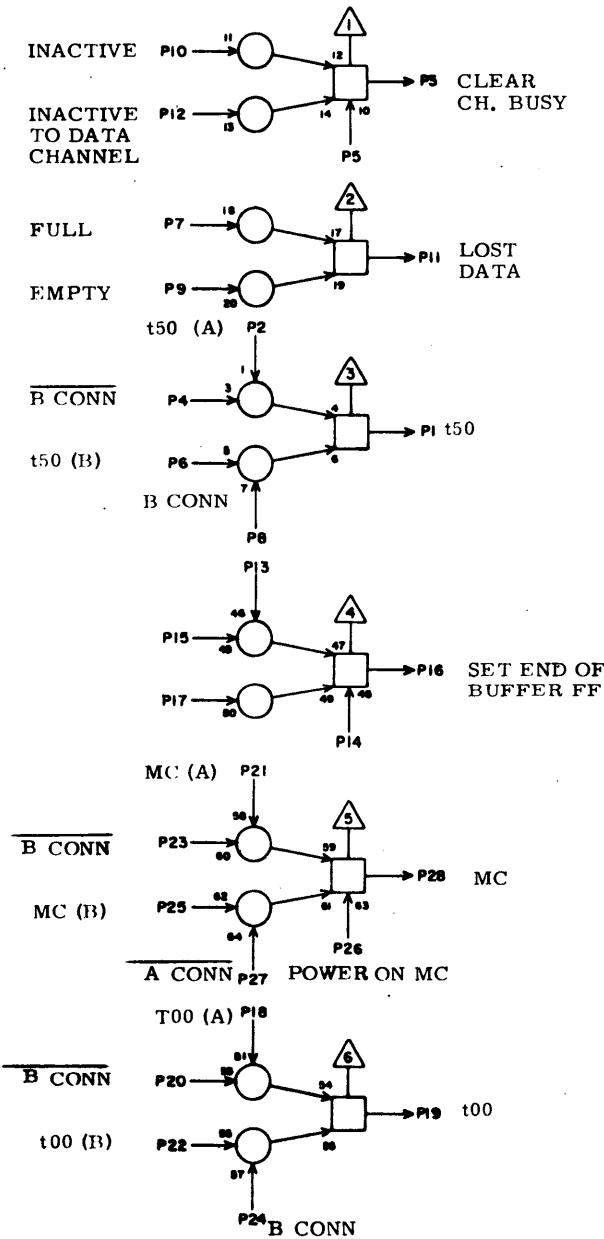


I04

KS	RV	G
1	H07-14	7
2	L03-24	15
3	L03- 7	13
4	H07- 1	9
5	-	
6	-	
7	I03- 8	5
8	-	
9	L03-17	13
10	H07- 2	9
11	-	
12	-	
13	H04-21	5
14	H14-20	15
15	-	
16	G07- 7	11
17	-	
18	-	
19	H14-21	15
20	-	
21	-	
22	H07-27	9
23	-	
24	L04-17	13
25	H07-28	7
26	L04-24	13
27	L04- 7	11
28	H07-19	9

JACK PIN LG
CIRCUIT SPECIFICATION I1027600
60227300 F

LS 63060700 ASSY REV C



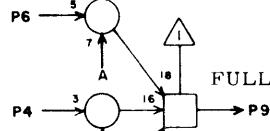
QH

I05

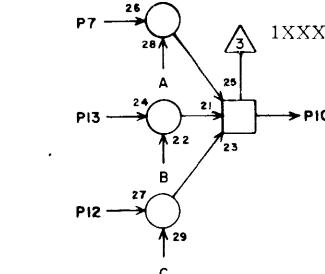
- | RV | G | |
|----|--------|-----|
| 1 | J09-23 | 11 |
| 2 | J13- 5 | 13 |
| 3 | H05-11 | 5 |
| 4 | K07- 1 | 11 |
| 5 | F04-24 | 11 |
| 6 | J16- 5 | 17 |
| 7 | J02-15 | 9 |
| 8 | J10- 5 | 11 |
| 9 | J02-19 | 9 |
| 10 | G11- 9 | 13 |
| 11 | H05-24 | 5 |
| 12 | F12-24 | 15 |
| 13 | F05-26 | 120 |
| 14 | I05- X | 2 |
| 15 | F09-10 | 15 |
| 16 | H05-15 | 7 |
| 17 | E12-15 | 21 |
| 18 | J13-23 | 13 |
| 19 | J09- 7 | 9 |
| 20 | E10-11 | 19 |
| 21 | L11-11 | 15 |
| 22 | J16-23 | 17 |
| 23 | K05-28 | 11 |
| 24 | J10- 9 | 9 |
| 25 | L16-11 | 19 |
| 26 | K08-15 | 11 |
| 27 | E10-23 | 19 |
| 28 | G11- 1 | 15 |

JACK PIN LG
CIRCUIT SPECIFICATION 11827600
60227300 F

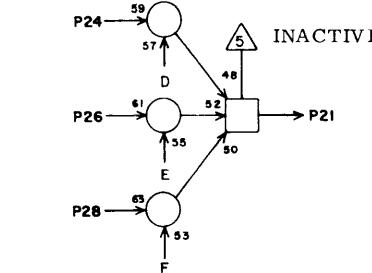
LS 63063700 ASSY REV C



C

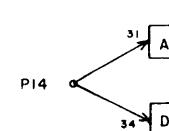


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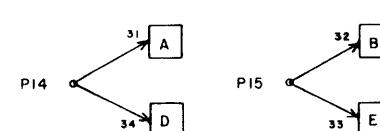


F

A CONN

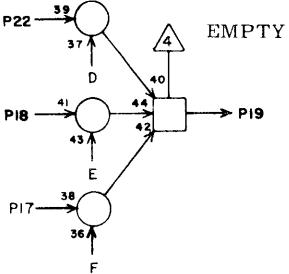
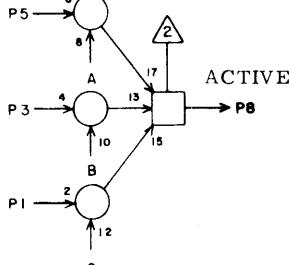


B CONN

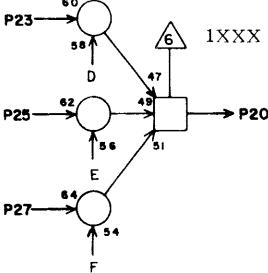


E

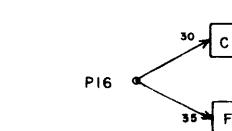
JACK PIN LG
CIRCUIT SPECIFICATION 11827600
60227300 F



F



F

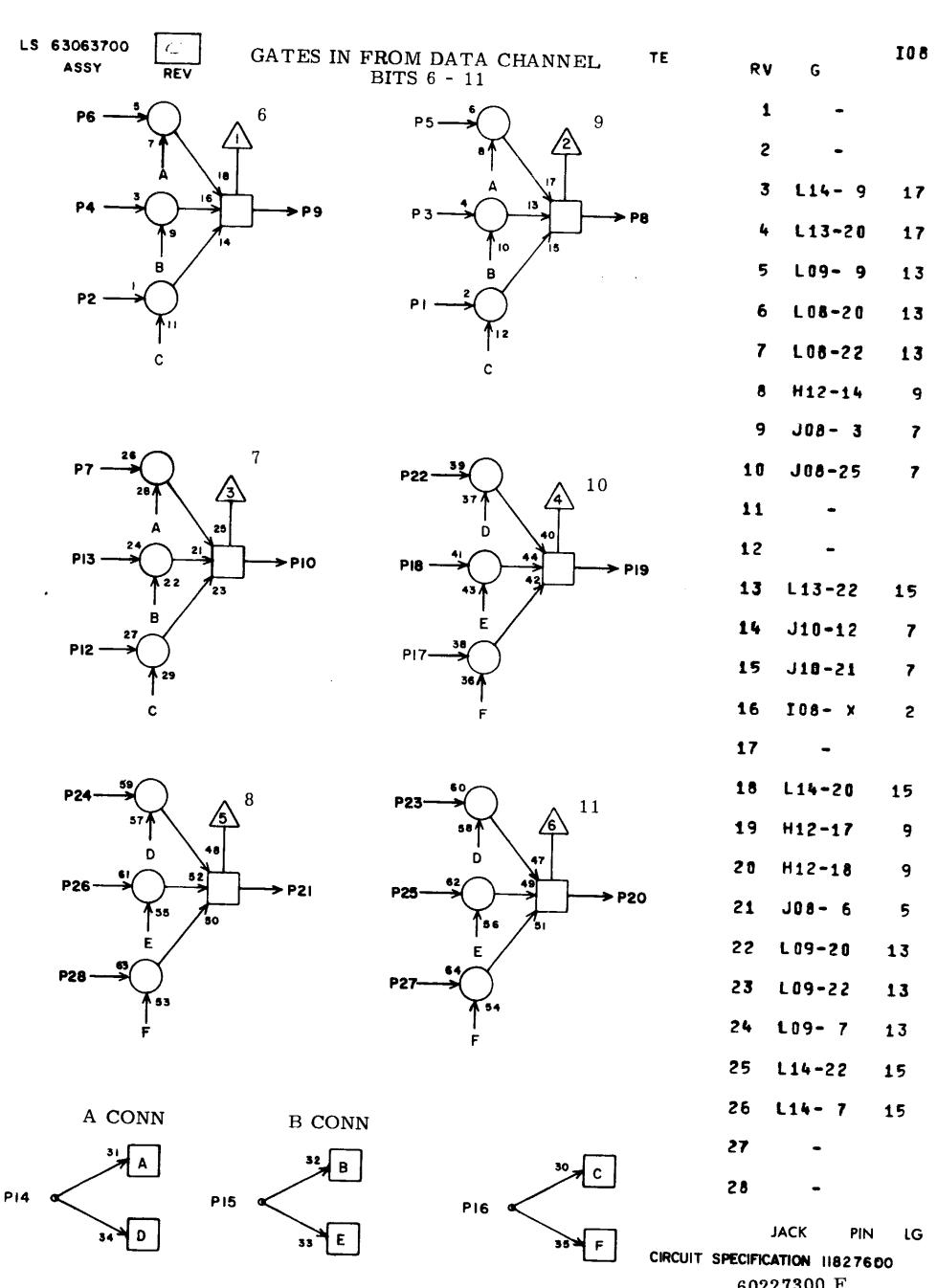
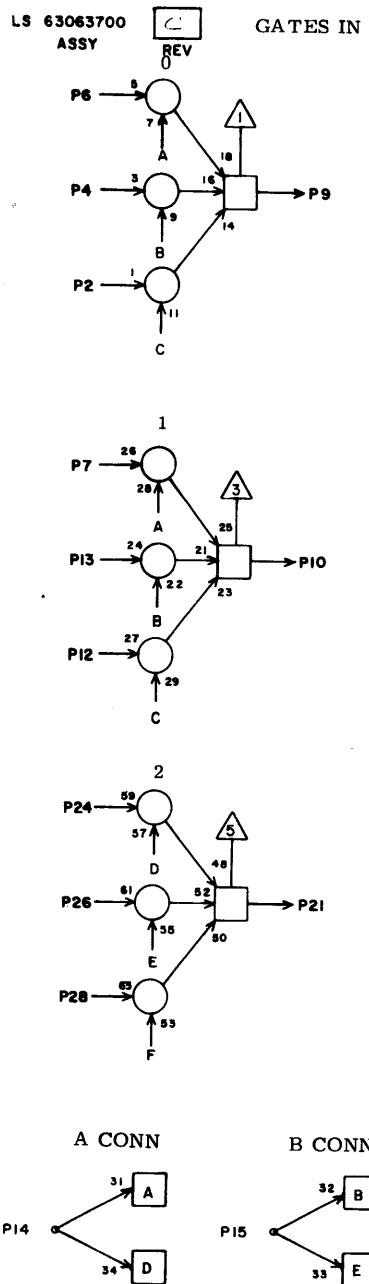


F

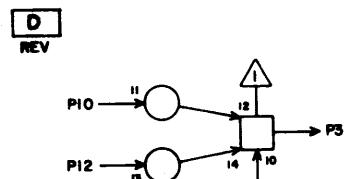
I06

- | TE | RV | G |
|----|--------|----|
| 1 | - | - |
| 2 | - | - |
| 3 | L15- 7 | 17 |
| 4 | L15-18 | 19 |
| 5 | L10- 7 | 15 |
| 6 | L10-18 | 15 |
| 7 | K09-15 | 11 |
| 8 | G13- 1 | 15 |
| 9 | J02-28 | 11 |
| 10 | K08-25 | 13 |
| 11 | - | - |
| 12 | - | - |
| 13 | K10-15 | 11 |
| 14 | J10-10 | 9 |
| 15 | J10-15 | 9 |
| 16 | I06- X | 2 |
| 17 | - | - |
| 18 | L15-22 | 17 |
| 19 | J02-26 | 9 |
| 20 | H13- 6 | 13 |
| 21 | G11- 2 | 13 |
| 22 | L10-22 | 15 |
| 23 | K09-17 | 11 |
| 24 | L18- 9 | 13 |
| 25 | K10-17 | 11 |
| 26 | L15- 9 | 17 |
| 27 | - | - |
| 28 | - | - |

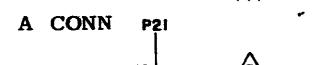
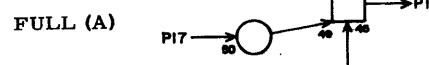
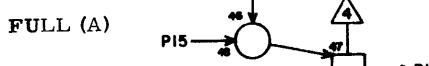
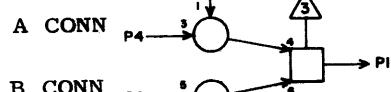
JACK PIN LG
CIRCUIT SPECIFICATION 11827600
60227300 F



LS 63060700
ASSY



WRITE CLOCK
DELAYED



QH RV G I09

1 D10- 6 19

2 H16- 4 11

3 -

4 J10-16 7

5 -

6 J10-23 9

7 F01-10 120

8 H16-15 13

9 C16-15 25

10 -

11 F07- 8 15

12 -

13 I09- X 2

14 H15- 6 11

15 J08-14 7

16 K13- 4 11

17 K13-15 11

18 J10-24 7

19 K13-27 13

20 G08-20 11

21 J10-20 7

22 K13-16 11

23 F11-22 13

24 I09- X 2

25 K13-17 11

26 K06- 9 9

27 I09- X 2

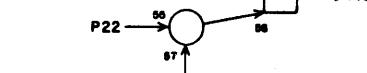
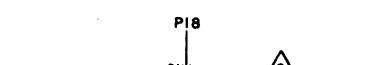
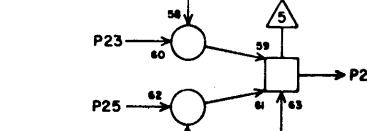
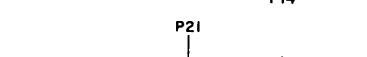
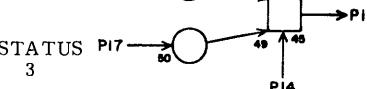
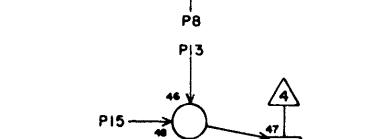
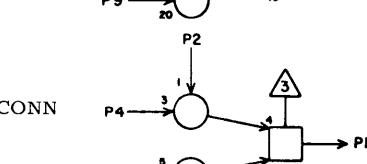
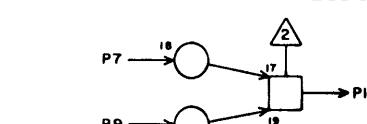
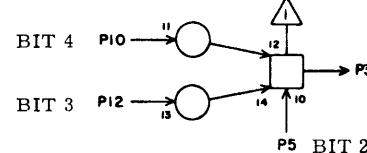
28 K13- 6 9

JACK PIN LG

CIRCUIT SPECIFICATION II827600
60227300 F

LS 63060700
ASSY

C
REV



QH RV G I10

1 D10- 7 19

2 H16- 1 11

3 K10-21 11

4 J10- 7 7

5 H10-19 5

6 J10-19 7

7 -

8 H16-19 11

9 -

10 H11- 6 7

11 -

12 F07-10 15

13 I10- X 2

14 H15-10 11

15 K16-15 13

16 K16- 4 13

17 J08-15 7

18 J10-27 7

19 K16-27 13

20 G08-22 11

21 J10-17 7

22 K16-16 13

23 F11-24 13

24 I10- X 2

25 K16-17 13

26 K07- 9 9

27 I10- X 2

28 K16- 6 11

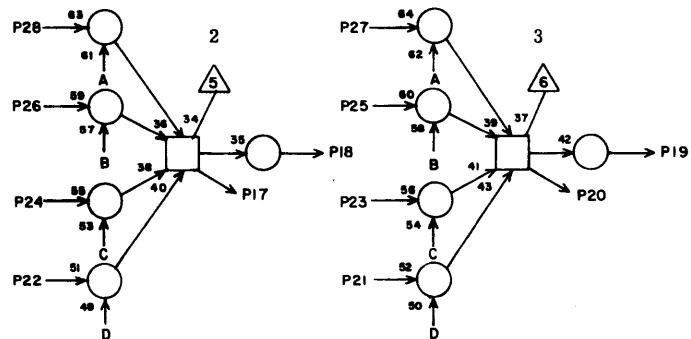
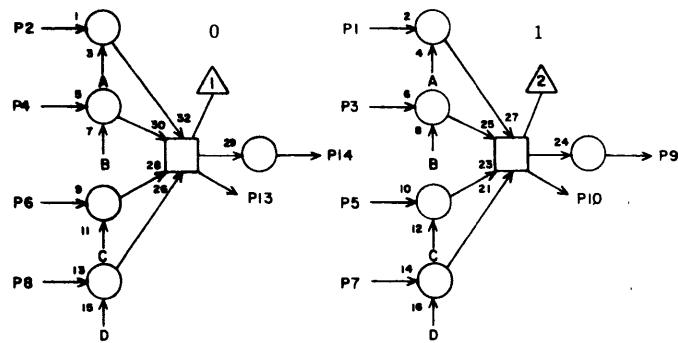
JACK PIN LG

CIRCUIT SPECIFICATION II827600
60227300 F

LS 63063900
ASSY

G
REV

INTERFACE A
BITS 0-3



+6V

P12 → **A** PASSBACK

P16 → **B** STATUS A

P11 → **C** DATA A

P15 → **D** POSITION A

TG

RV

I11

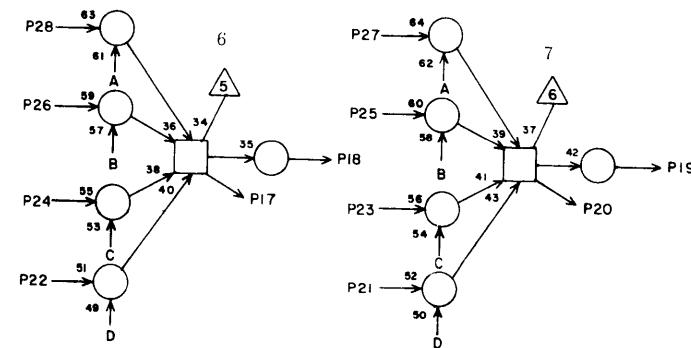
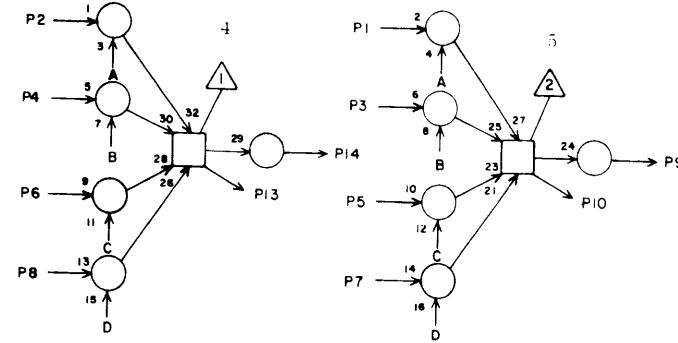
1	K11-17	11
2	K11-19	11
3	809- 9	27
4	809- 8	27
5	J03-10	13
6	J03- 3	13
7	D05- 2	23
8	D05- 1	23
9	-	
10	K11- 6	9
11	H15- 4	9
12	C15- 2	25
13	K11-11	9
14	-	
15	H15-24	9
16	H15-28	9
17	K11- 4	9
18	-	
19	-	
20	K11-27	11
21	D05-19	23
22	D05-14	23
23	J03-23	13
24	J03-24	13
25	809-19	27
26	809-12	27
27	K11-16	9
28	K11-15	9

JACK PIN LG
CIRCUIT SPECIFICATION II827600
60227300 F

LS 63063900
ASSY

G
REV

INTERFACE
BITS 4-7



+ 6V P12 → **A** PASS BACK

P16 → **B** STATUS A

P11 → **C** DATA A

P15 → **D** POSITION A

* Standard Option 10037

TG

RV

I12

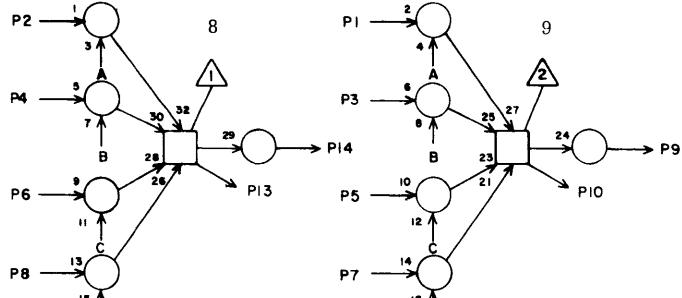
1	K11-12	11
2	K11-14	11
3	809-21	25
4	809-18	27
5	J04-10	13
6	J04- 3	13
7	D05-28	21
8	D05-27	21
9	-	
10	K11-20	11
11	H15- 3	9
12	C15- 4	25
13	K11-25	11
14	-	
15	H15-21	7
16	H15-25	9
17	K12-11	9
18	-	
19	-	
20	K12- 6	9
*21	C01- 2	25
21	C06- 2	27
*22	C01- 4	25
22	C06- 1	27
23	J04-23	13
24	J04-24	13
25	F09- 5	15
26	B07-18	29
27	K12-17	9
28	K12-19	9

JACK PIN LG
CIRCUIT SPECIFICATION II827600
60227300 F

60227300 F

LS 63063900 **G**
ASSY REV

INTERFACE A
BITS 8-11



+ 6V PI2 → **A** PASS BACK

PI6 → **B** STATUS A

PI11 → **C** DATA A

PI5 → **D** POSITION A

TG

RV	G	I13
1	K12-16	11
2	K12-15	11
3	F04- 9	17
4	D08- 2	23
5	J05-10	13
6	J05- 3	13
7	C06-19	25
8	C06-14	25
9	-	
10	K12-27	11
11	H15- 5	7
12	C15-15	23
13	K12- 4	9
14	-	
*15	II3-X	2
15	H15-22	7
16	H15-26	7
17	K12-25	11
18	-	
19	-	
20	K12-20	11
21	C06-28	25
22	C06-27	25
23	J05-23	13
24	J05-24	13
25	H05-25	13
26	E10-19	17
27	K12-12	9
28	K12-14	9

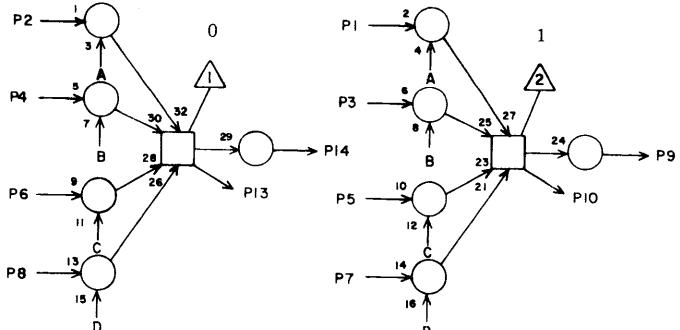
JACK PIN LG
CIRCUIT SPECIFICATION II827600

60227300 F

* Standard Option 10037

LS 63063900 **G**
ASSY REV

INTERFACE B
BITS 0-3



TG

RV	G	I14
1	K14-17	11
2	K14-19	11
3	B09-11	27
4	B09- 7	27
5	J03- 9	17
6	J03- 4	15
7	D05- 6	25
8	D05- 3	25
9	-	
10	K14- 6	9
11	H15- 8	7
12	C15-17	23
13	K14-11	9
14	-	
15	J02- 2	17
16	J02-14	17
17	K14- 4	9
18	-	
19	-	
20	K14-27	11
21	D05-17	25
22	D05-10	25
23	J03-22	17
24	J03-25	15
25	B09-17	29
26	B09-10	29
27	K14-16	9
28	K14-15	9

JACK PIN LG
CIRCUIT SPECIFICATION II827600

60227300 F

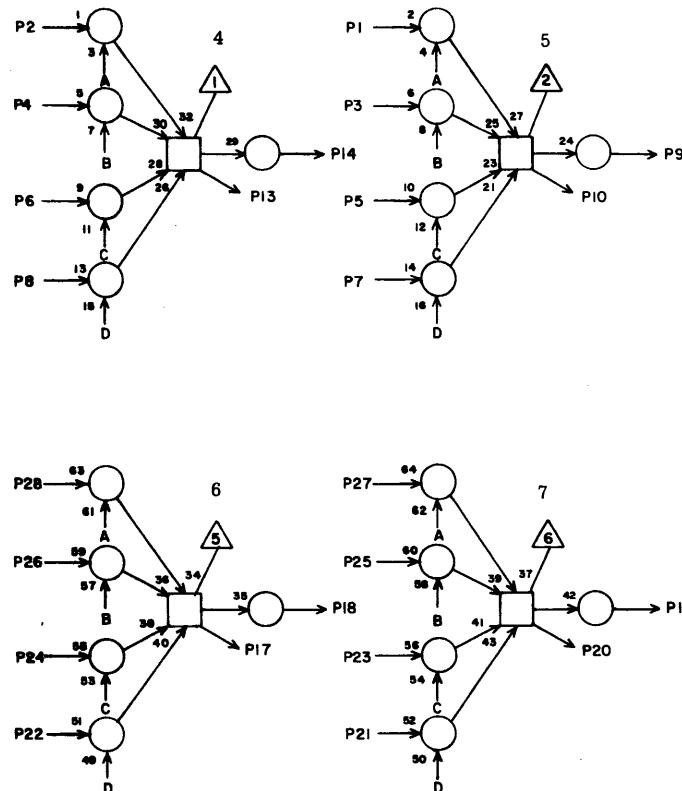
LS 63063900
ASSY

G
REV

INTERFACE B
BITS 4-7

TG

RW G I15



+ 6v PI2 → **A** PASS BACK

PI6 → **B** STATUS B

PI1 → **C** DATA B

PI5 → **D** POSITION B

* Standard Option 10037

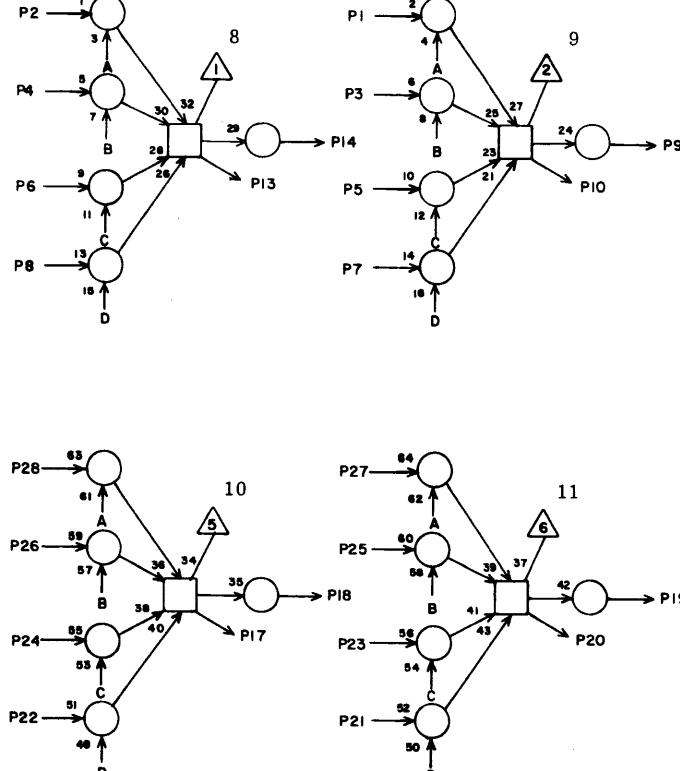
LS 63063900
ASSY

G
REV

INTERFACE B
BITS 8-11

TG

RW G I16



+ 6v PI2 → **A** PASS BACK

PI6 → **B** STATUS B

PI1 → **C** DATA B

PI5 → **D** POSITION B

* Standard Option 10037

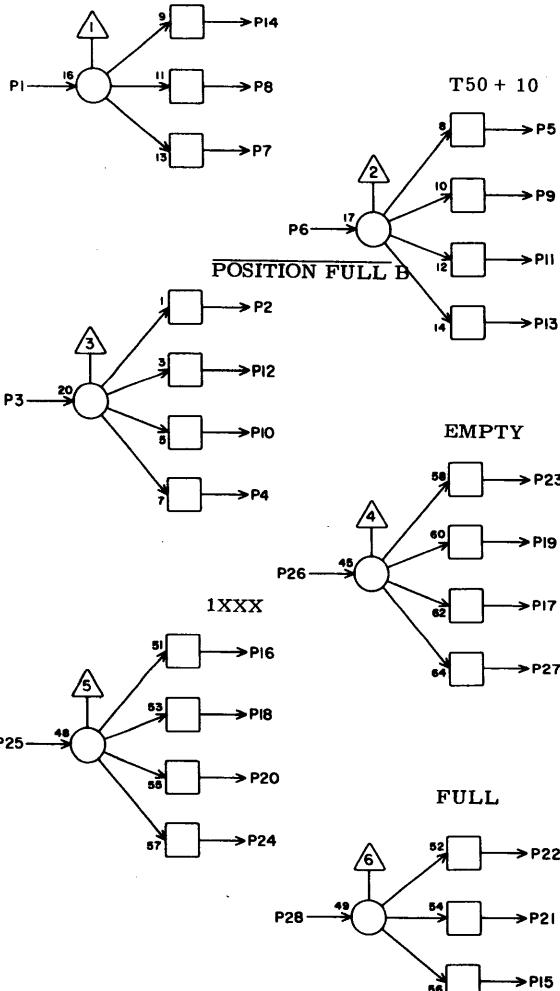
60227300 F

JACK PIN LG
CIRCUIT SPECIFICATION II827600

JACK PIN LG
CIRCUIT SPECIFICATION II827600

60227300 F

RV	G	
1	H04-11	9
2	I14-15	17
3	H04-16	9
4	-	
5	K09- 3	11
6	J09-19	11
7	I16-16	19
8	I15-16	19
9	K09-23	13
*10	I16- 15	21
11	E11- 7	25
12	I15-15	19
13	D18-23	25
14	I14-16	17
15	I05- 7	9
16	K09- 1	11
17	-	
18	K09-21	13
19	I05- 9	9
20	D10-21	27
21	G04- 2	15
22	H13- 4	19
23	F08-17	21
24	-	
25	K08-24	11
26	I06-19	9
27	-	
28	I06- 9	11

STATUS FULL B

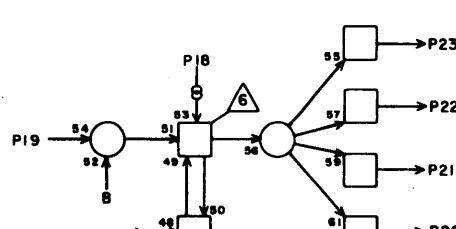
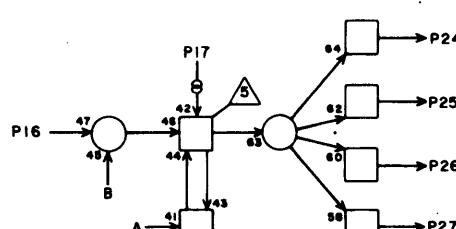
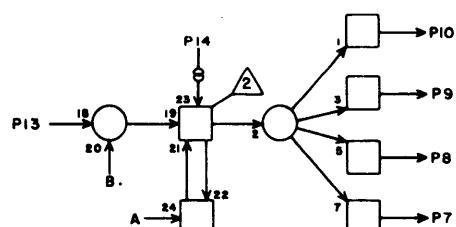
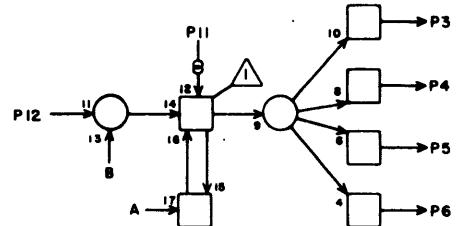
* Standard Option 10037

CIRCUIT SPECIFICATION 11827500

LS 63062700
ASSY

D
REV

READ DATA REGISTER
BITS 0-3



T1 PIN 39 A 40 B

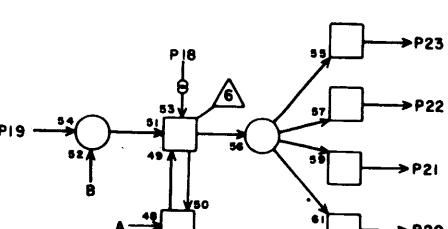
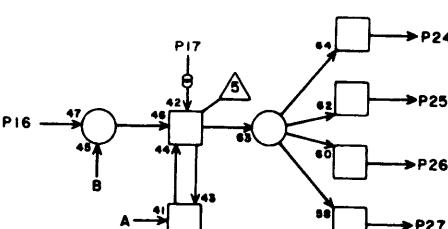
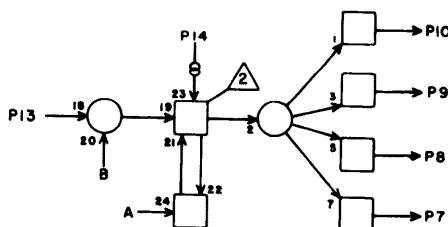
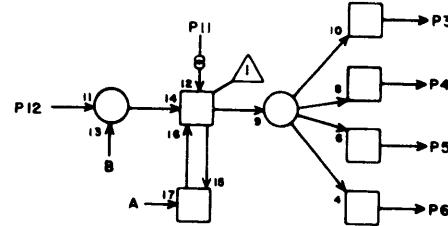
SB	RV	G	J03
0	1	-	
	2	-	
	3	I11- 6	13
	4	I14- 6	15
	5	F13- 4	21
	6	E14-17	25
	7	E14-19	25
	8	F13- 3	23
1	9	I14- 5	17
	10	I11- 5	13
	11	J03- X	2
	12	L01-10	11
	13	L01-12	11
	14	J03- X	2
	15	E07-16	21
	16	L01-22	11
2	17	J03- X	2
	18	J03- X	2
	19	L02-10	9
	20	E14-23	25
	21	F13-18	21
	22	I14-23	17
	23	I11-23	13
3	24	I11-24	13
	25	I14-24	15
	26	F13-13	23
	27	E14-21	25
	28	-	

JACK PIN LG
CIRCUIT SPECIFICATION 11027600
60227300 F

LS 63062700
ASSY

D
REV

READ DATA REGISTER
BITS 4-7



T1 PIN 39 A 40 B

SB	RV	G	J04
4	1	-	
	2	-	
	3	I12- 6	13
	4	I15- 6	15
	5	F13-26	19
	6	E14-25	23
	7	E14-27	23
	8	F13-25	19
	9	I15- 5	17
5	10	I12- 5	13
	11	J04- X	2
	12	L02-12	11
	13	L02-22	11
	14	J04- X	2
	15	E07-18	21
	16	L03-10	9
	17	J04- X	2
	18	J04- X	2
	19	L03-12	9
	20	E14-18	25
	21	F14- 3	23
	22	I15-23	17
	23	I12-23	13
	24	I12-24	13
	25	I15-24	15
	26	F14- 4	23
	27	E14-16	25
	28	-	

JACK PIN LG
CIRCUIT SPECIFICATION 11027600
60227300 F

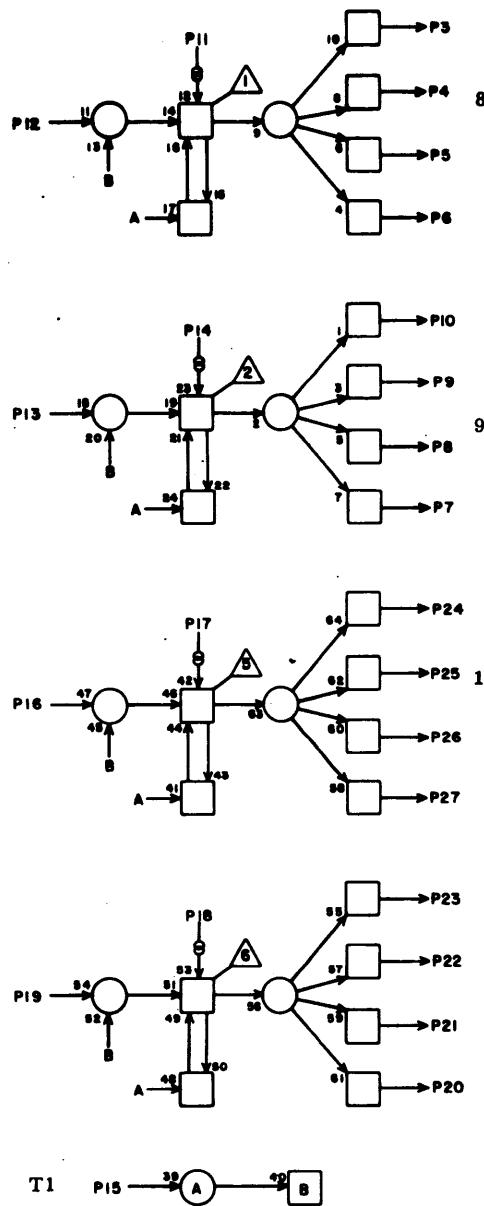
LS 63062700
ASSY

D
REV

READ DATA REGISTER
BITS 8-11

SB

J05



JACK PIN LG
CIRCUIT SPECIFICATION 11827600

60227300 F

RV	G	
1	-	
2	-	
3	I13- 6	13
4	I16- 6	15
5	F14-13	21
6	E14-20	23
7	E14-22	23
8	F14-18	21
9	I16- 5	17
10	I13- 5	13
11	J05- X	2
12	L03-22	11
13	L04-10	9
14	J05- X	2
15	E07-20	21
16	L04-12	9
17	J05- X	2
18	J05- X	2
19	L04-22	11
20	E14-26	23
21	F14-25	21
22	I16-23	17
23	I13-23	13
24	I13-24	13
25	I16-24	15
26	F14-26	21
27	E14-24	25
28	-	

LS 63065532
ASSY

F
REV

P5 14 13 PI6

P9 16 15 18 17 PI8

P13 26 25 28 27 30 29 32 31 PI4

P11 20 19 22 21 24 23 PI0

P19 34 33 36 35 38 37 X
1.0 UF 1.0 UF 1.0 UF 1.0 MS

P21 46 45 48 47 50 49 XX

XX 52 51 54 53 P24
10 PF 10 PF 2.3 US

+6V
IN 150 8.2K 150 OUT

+6V
IN 680 OUT

J06

RV G

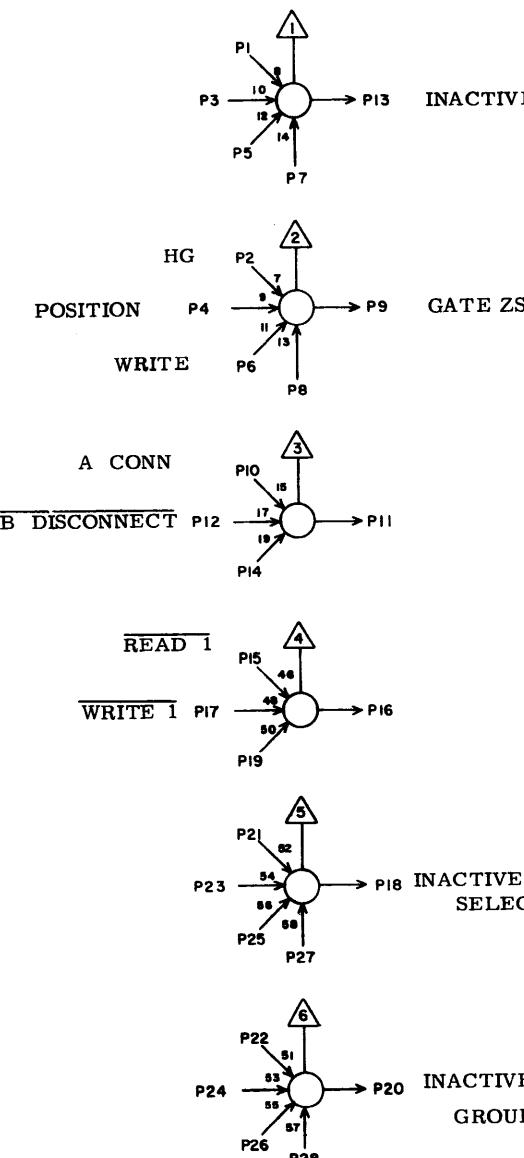
1	-	
2	-	
3	-	
4	-	
5	-	
6	-	
7	-	
8	-	
9	-	
10	-	
11	-	
12	-	
13	K04- 2	7
14	K04-14	7
15	-	
16	-	
17	-	
18	-	
19	J06- X	2
20	K08-26	7
21	K04-26	9
22	-	
23	-	
24	K04-24	7
25	-	
26	-	
27	-	
28	-	

JACK PIN LG
CIRCUIT SPECIFICATION 11827600

60227300 F

63064100
ASSY

C
REV



TI

RV	G	J07
1	J07-20	5
2	G05- 6	13
3	J07-18	5
4	G05- 5	13
5	F07-18	15
6	F01-13	19
7	E09-18	19
8	J07- X	2
9	E02-22	21
10	K05-16	7
11	K07- 2	5
12	K04-20	9
13	F08-10	17
14	J07- X	2
15	G07- 1	13
16	K10-27	9
17	G07- 9	13
18	J07- 3	5
19	J07- X	2
20	J07- 1	5
21	G06-11	13
22	G06-12	13
23	E02- 4	23
24	F06- 4	19
25	J07- X	2
26	J07- X	2
27	J07- X	2
28	J07- X	2

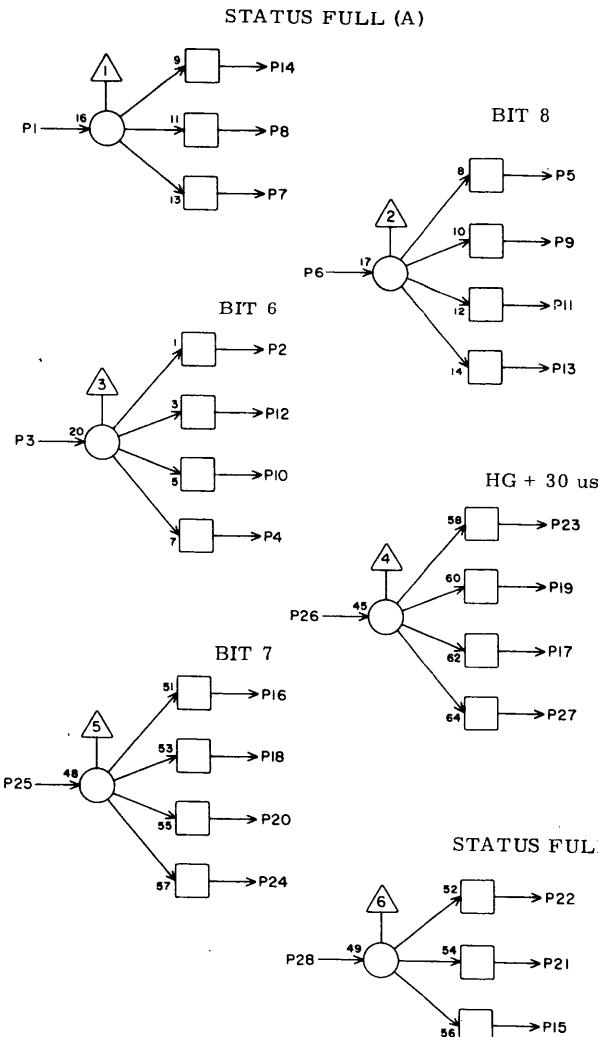
JACK PIN LG

CIRCUIT SPECIFICATION 11827600
60227300 G

LS 63064000
ASSY

C
REV

TH



RV	G	J08
1	K06-25	9
2	-	
3	I08- 9	7
4	-	
5	H14-26	11
6	I08-21	5
7	-	
8	H15-15	13
9	H12-13	11
10	H11-17	11
11	-	
12	H14- 6	13
13	-	
14	I09-15	7
15	I10-17	7
16	H14- 8	13
17	E13- 3	23
18	H11-18	11
19	L05-18	11
20	-	
21	H04-12	13
22	H04-17	11
23	L05-25	11
24	-	
25	I08-10	7
26	D07-27	23
27	D03- 6	27
28	K07-25	7

JACK PIN LG

CIRCUIT SPECIFICATION 11827600
60227300 F

S 63044800
ASSY

B
REV

HC

J09

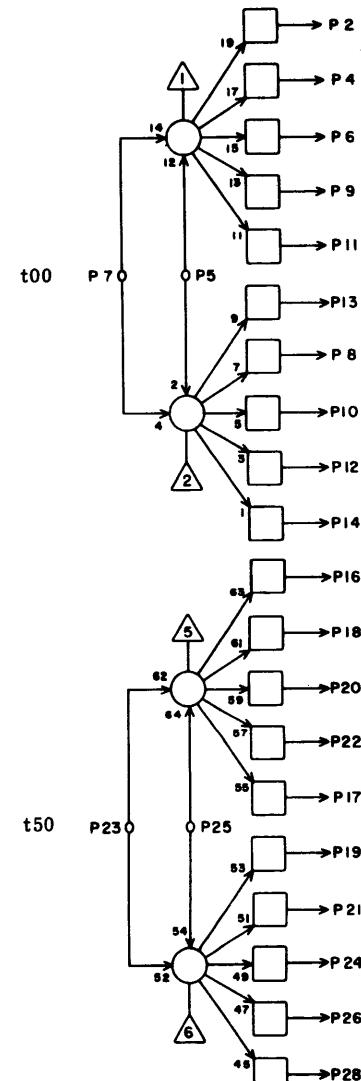
LS 63064000
ASSY

REV

TH

J10

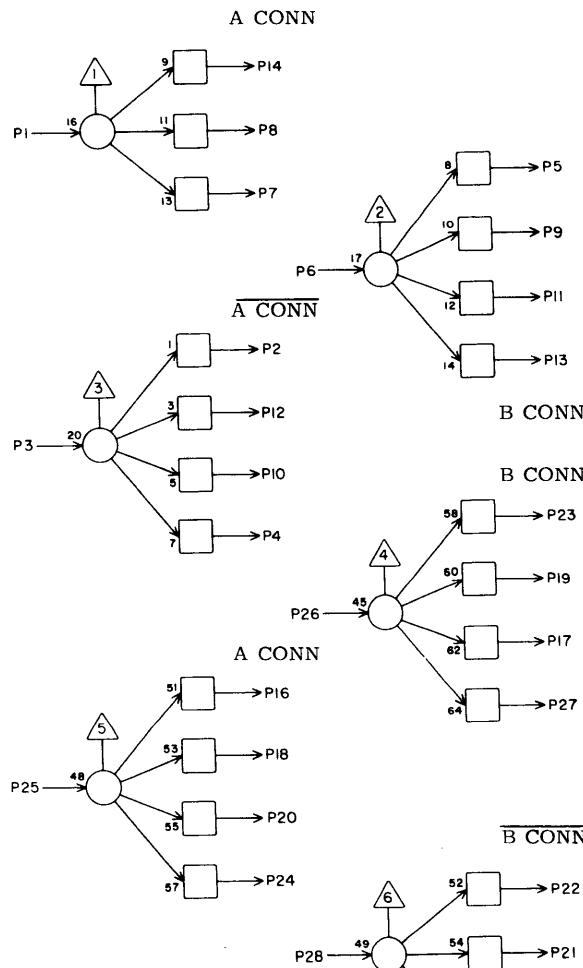
RV	G	
1	K05-22	11
2	I07-14	7
3	K05-27	11
4	E10-26	17
5	I05- 8	11
6	K05-17	11
7	I10- 4	7
8	I05-24	9
9	I06-14	9
10	H15-16	11
11	I08-14	7
12	I06-15	9
13	I09- 4	7
14	I10-21	7
15	H15- 2	13
16	I10- 6	7
17	I09-21	7
18	I08-15	7
19	I07-15	9
20	I09- 6	9
21	I09-18	7
22	K05-24	11
23	K05-19	9
24	K05-15	9



JACK PIN LG

CIRCUIT SPECIFICATION I1827600

60227300 G

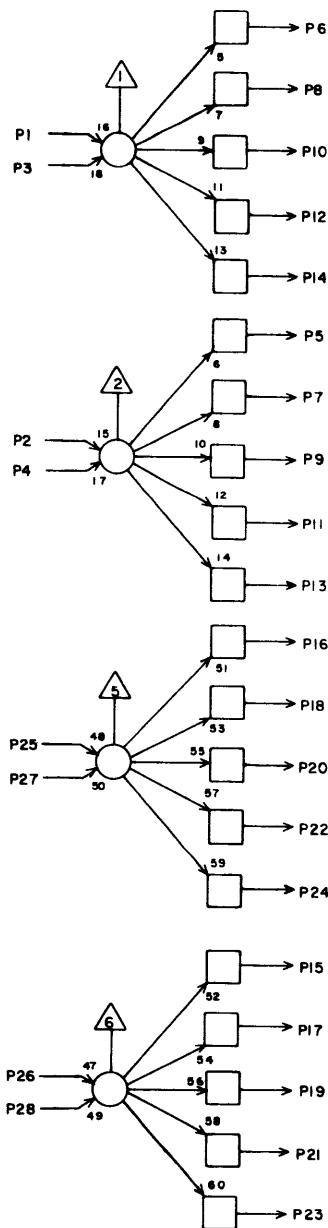


JACK PIN LG

CIRCUIT SPECIFICATION I1827600

60227300 G

S 63063600
ASSY REV



TD

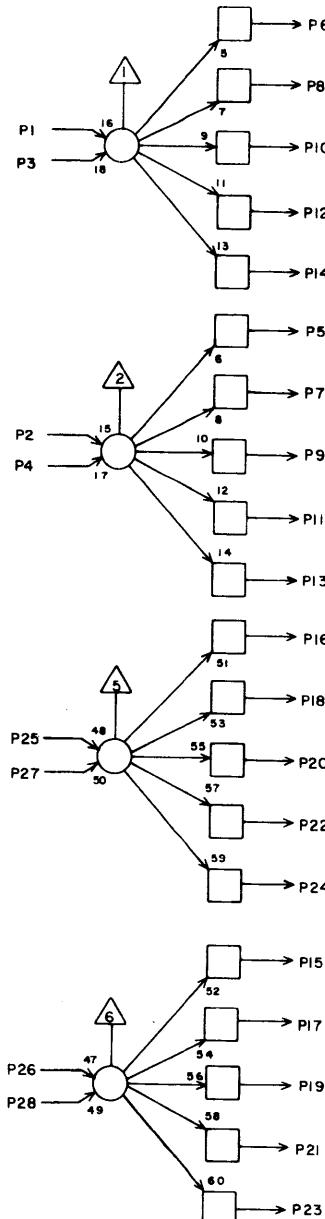
J11

RV	G	
1	J13- 2	5
2	J13- 1	5
3	J11- X	2
4	J11- X	2
5	K06-16	11
6	K11-18	41
7	K04- 8	13
8	K12-18	41
9	L07-12	11
10	-	
11	L08-12	11
12	-	
13	L09-12	11
14	-	
15	K04- 7	11
16	L10-12	9
17	-	
18	L11-12	9
19	-	
20	H16- 9	13
21	-	
22	-	
23	-	
24	-	
25	J13- 3	7
26	J13-21	7
27	J11- X	2
28	J11- X	2

JACK PIN LG
CIRCUIT SPECIFICATION IIB27600
60227300 F

LS 63063600
ASSY REV

CHANNEL A CLOCK STROBE NETWORK



TD

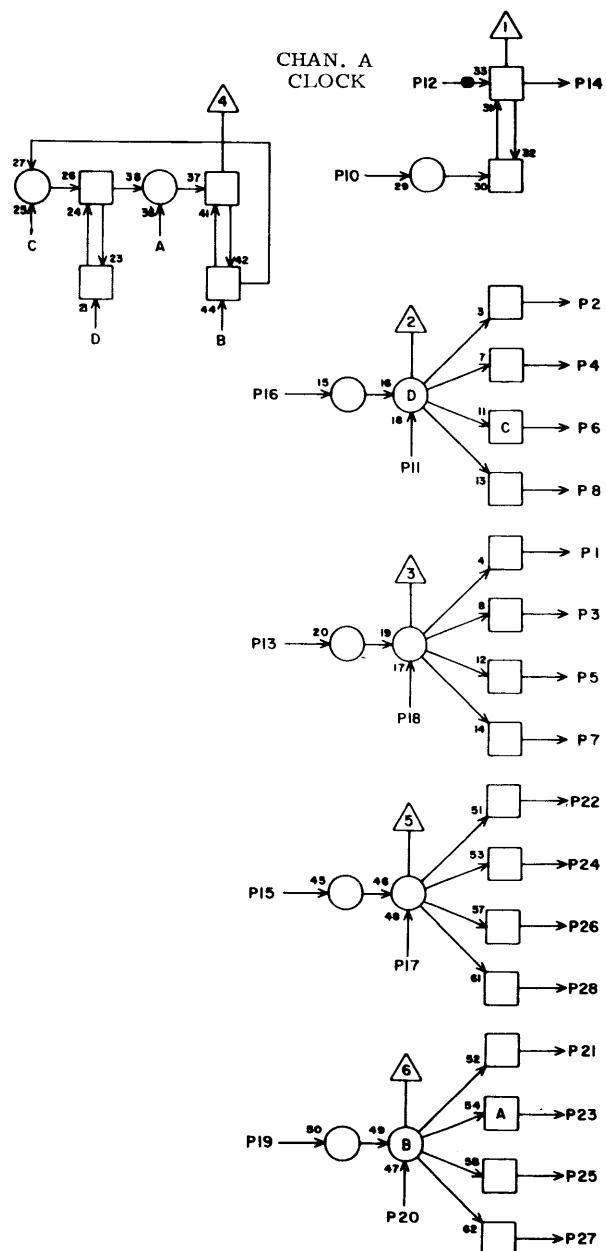
J12

RV	G	
1	J13-14	132
2	J12-10	108
3	J12- X	2
4	J12- X	2
5	J13-16	17
6	J13-11	55
7	J13-18	55
8	J13-19	17
9	J12-25	108
10	J12- 2	108
11	-	
12	J13-10	45
13	-	
14	-	
15	J13-15	17
16	J13-13	17
17	J13-20	55
18	J13-17	55
19	-	
20	J12-26	108
21	-	
22	-	
23	-	
24	-	
25	J12- 9	108
26	J12-20	108
27	J12- X	2
28	J12- X	2

JACK PIN LG
CIRCUIT SPECIFICATION IIB27600
60227300 F

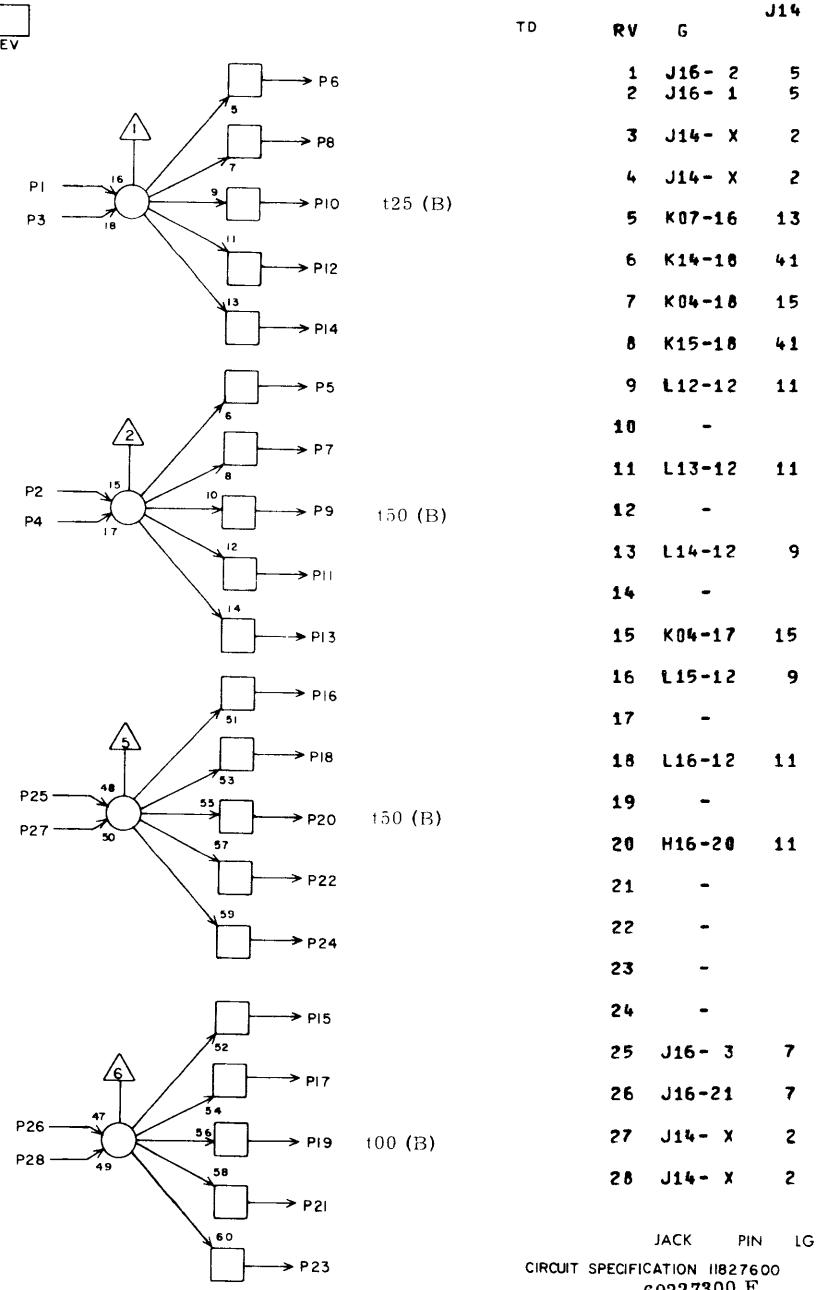
LS 63046200
ASSY

D
REV



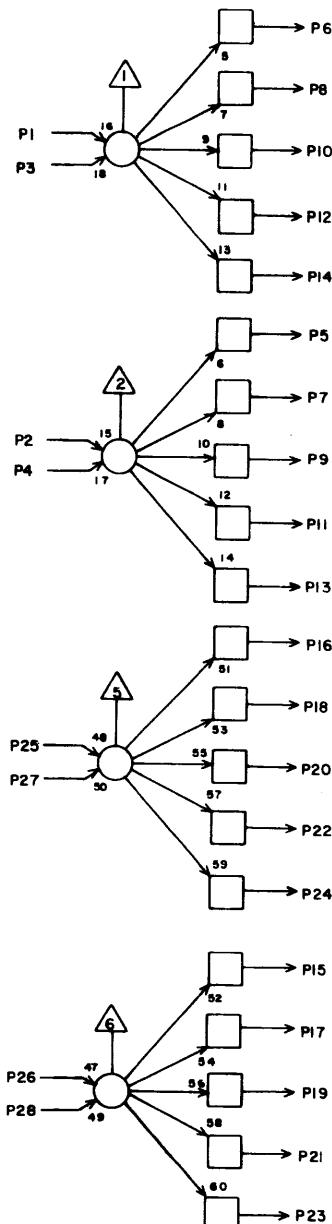
HQ	RV	G	J13	LS 63063600	REV
1	J11-	2	5		
2	J11-	1	5		
3	J11-25		7		
4	K13-18		7		
5	I05- 2	13			
6	-				
7	-				
8	-				
9	-				
10	J12-12	45			
11	J12- 6	55			
12	-				
13	J12-16	17			
14	J12- 1	132			
15	J12-15	17			
16	J12- 5	17			
17	J12-18	55			
18	J12- 7	55			
19	J12- 8	17			
20	J12-17	55			
21	J11-26	7			
22	-				
23	I05-18	13			
24	-				
25	-				
26	-				
27	-				
100	28	-			

JACK PIN LG
CIRCUIT SPECIFICATION 11827600
60227300 G



LS 63063600
ASSY REV

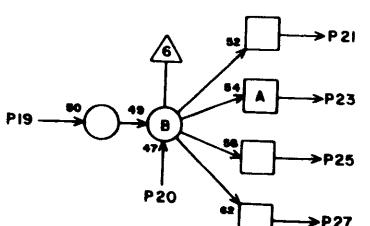
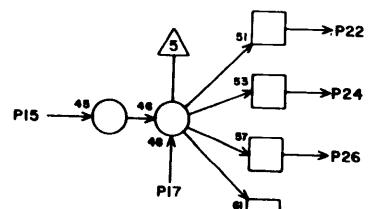
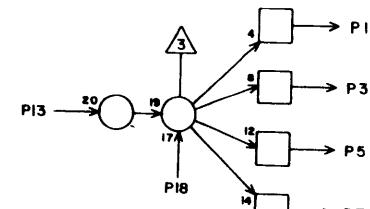
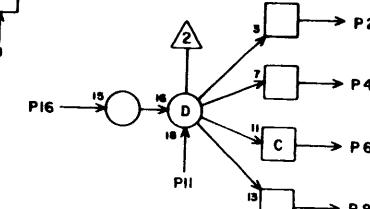
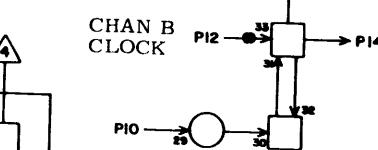
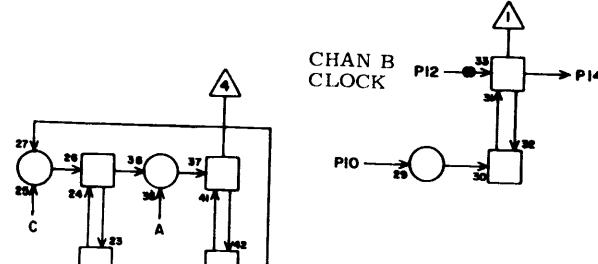
CHANNEL B CLOCK
STROBE NETWORK



TD	RV	G	J15
	1	J16-14	132
	2	J15-10	108
	3	J15- X	2
	4	J15- X	2
	5	J16-16	17
	6	J16-11	55
	7	J16-18	55
	8	J16-19	17
	9	J15-25	108
	10	J15- 2	108
	11	-	
	12	J16-10	45
	13	-	
	14	-	
	15	J16-15	17
	16	J16-13	17
	17	J16-20	55
	18	J16-17	55
	19	-	
	20	J15-26	108
	21	-	
	22	-	
	23	-	
	24	-	
	25	J15- 9	108
	26	J15-20	108
	27	J15- X	2
	28	J15- X	2

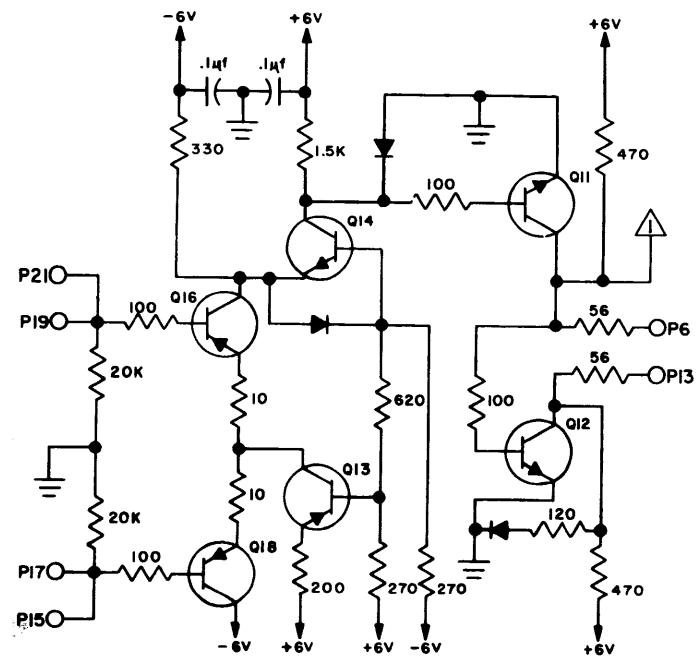
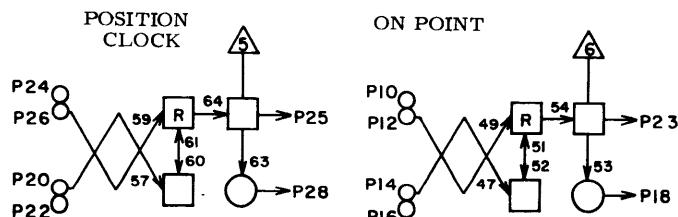
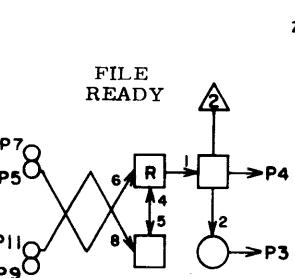
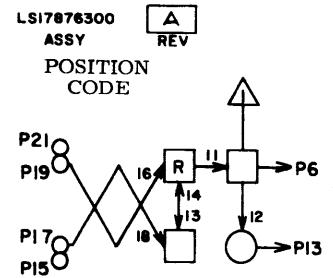
JACK PIN LG
CIRCUIT SPECIFICATION II827600
60227300 F

LS 63046200
ASSY REV



HQ	RV	G	J16
	1	J14- 2	5
	2	J14- 1	5
	3	J14-25	7
	4	K16-18	7
	5	I05- 6	17
	6	-	
	7	-	
	8	-	
	9	-	
	10	J15-12	45
	11	J15- 6	55
	12	-	
	13	J15-16	17
	14	J15- 1	132
	15	J15-15	17
	16	J15- 5	17
	17	J15-18	55
	18	J15- 7	55
	19	J15- 8	17
	20	J15-17	55
	21	J14-26	7
	22	-	
	23	I05-22	17
	24	-	
	25	-	
	26	-	
	27	-	
	28	-	

JACK PIN LG
CIRCUIT SPECIFICATION II827600
60227300 G

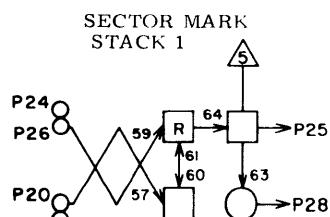
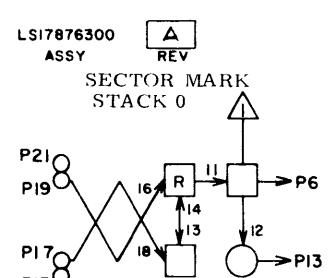


ZR K01

RV	G
7	-
8	-
9	-
10	-
11	-
12	-
13	E01-26 21
14	-
15	-
16	-
17	-
18	-
19	-
20	-
21	-
22	-
23	E01-28 23
24	-
25	E01- 1 25
26	-
27	-
28	-

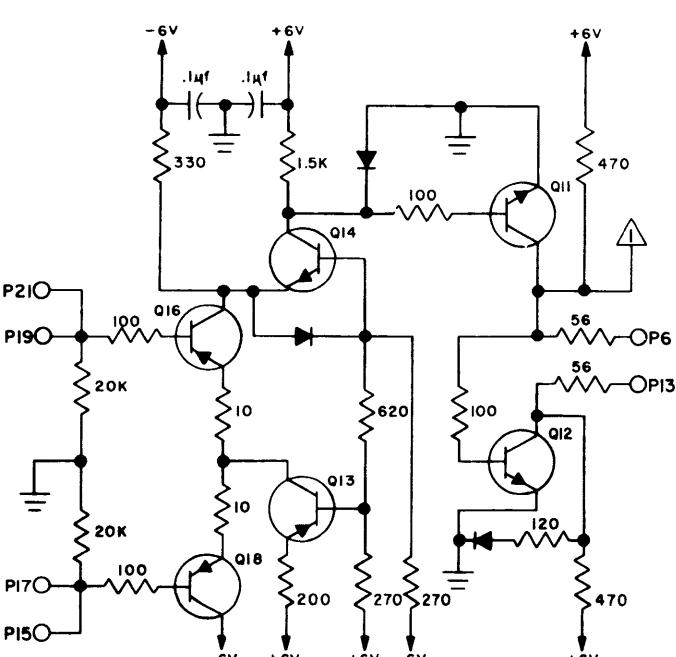
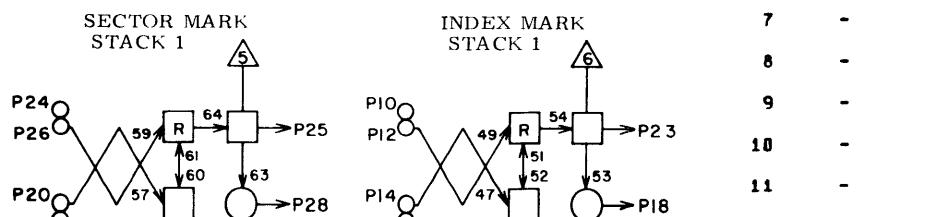
JACK PIN LG

60227300 G



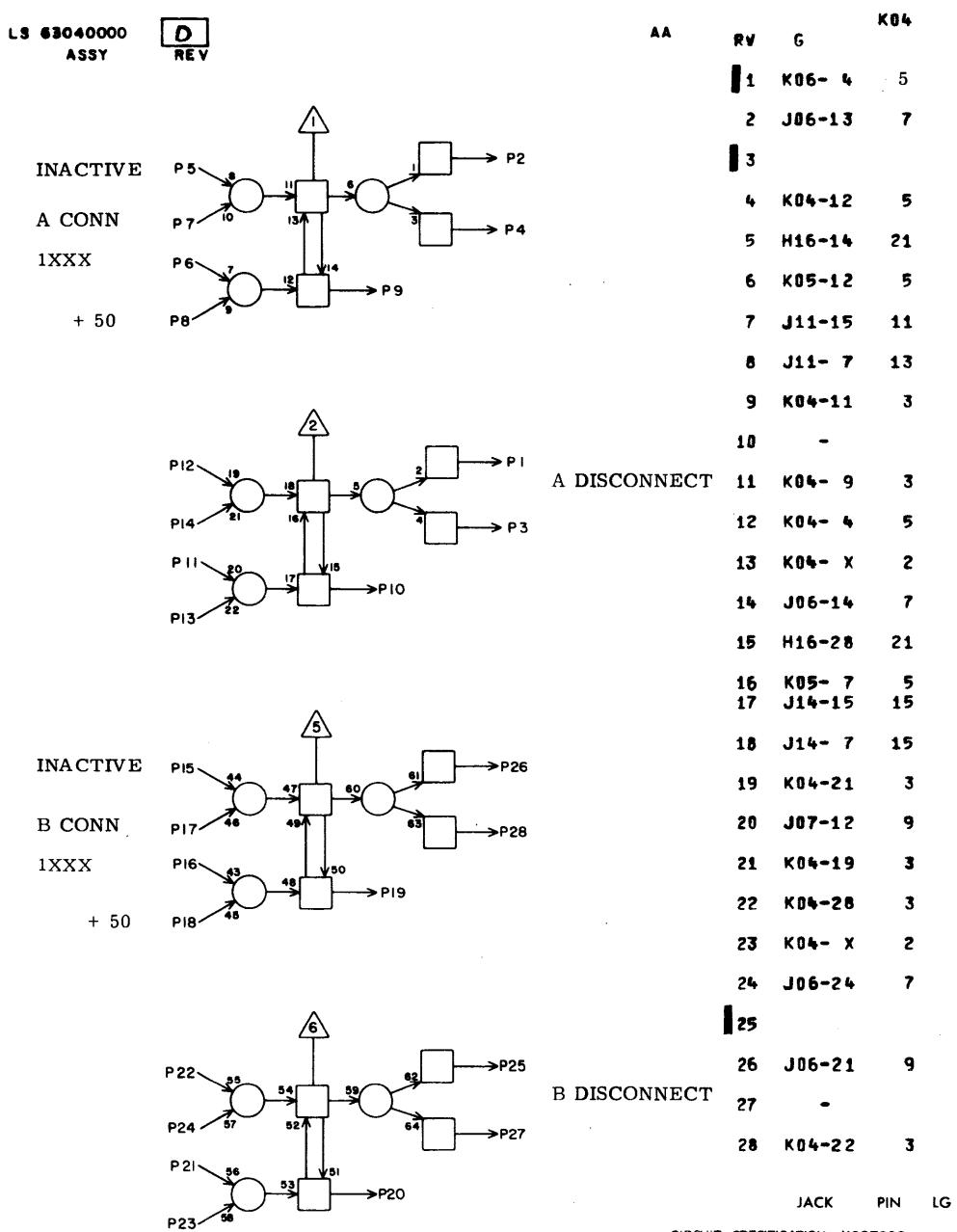
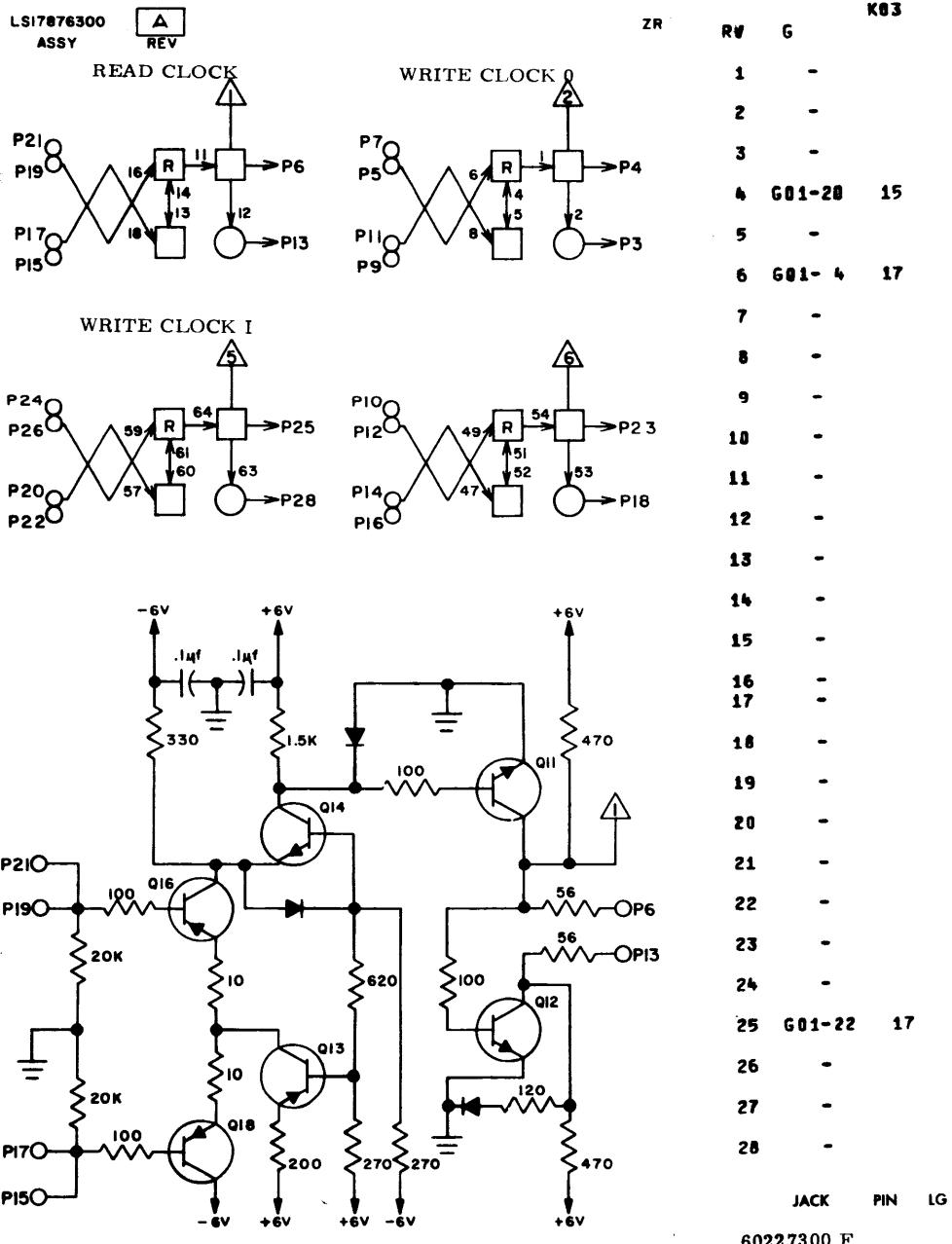
ZR K02

RV	G
1	-
2	-
3	D03-21 25
4	B01- 7 31
5	-
6	B07- 6 35
7	-
8	-
9	-
10	-
11	-
12	-
13	-
14	-
15	-
16	-
17	-
18	D03-24 25
19	-
20	-
21	-
22	-
23	A01- 7 37
24	-
25	B07- 3 35
26	-
27	-
28	-

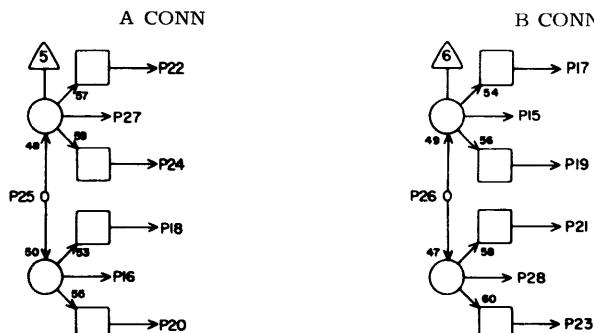
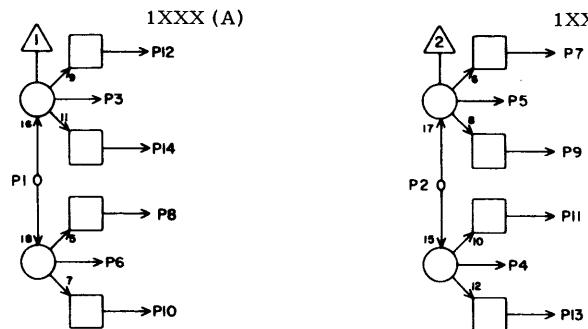


JACK PIN LG

60227300 F



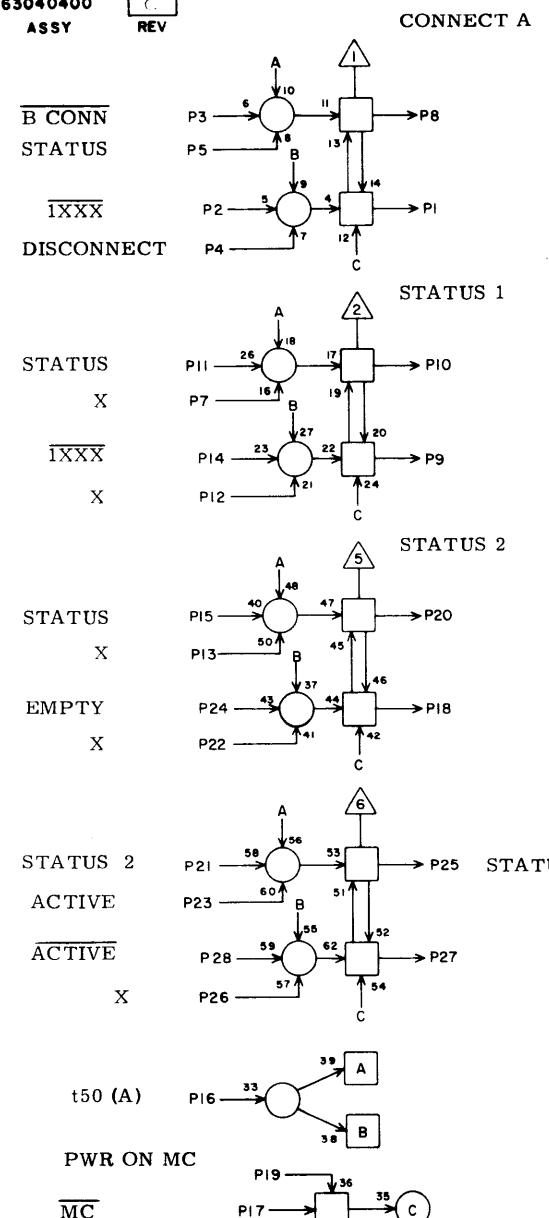
LS 63042900 B
ASSY REV



CX	RV	G	K05
	1	K09-13	7
	2	K10-13	9
	3	K06- 2	5
	4	K07-14	5
	5	K07- 4	5
	6	K06-14	5
	7	K04-16	5
	8	-	
	9	-	
	10	-	
	11	-	
	12	K04- 6	5
	13	-	
	14	-	
	15	J10-28	9
	16	J07-10	7
	17	J10- 6	11
	18	-	
	19	J10-26	9
	20	-	
	21	-	
	22	J10- 1	11
	23	E09-25	25
	24	J10-25	11
	25	K06- 8	5
	26	K07- 8	7
	27	J10- 3	11
	28	I05-23	11

JACK PIN LG
CIRCUIT SPECIFICATION II827600
60227300 G

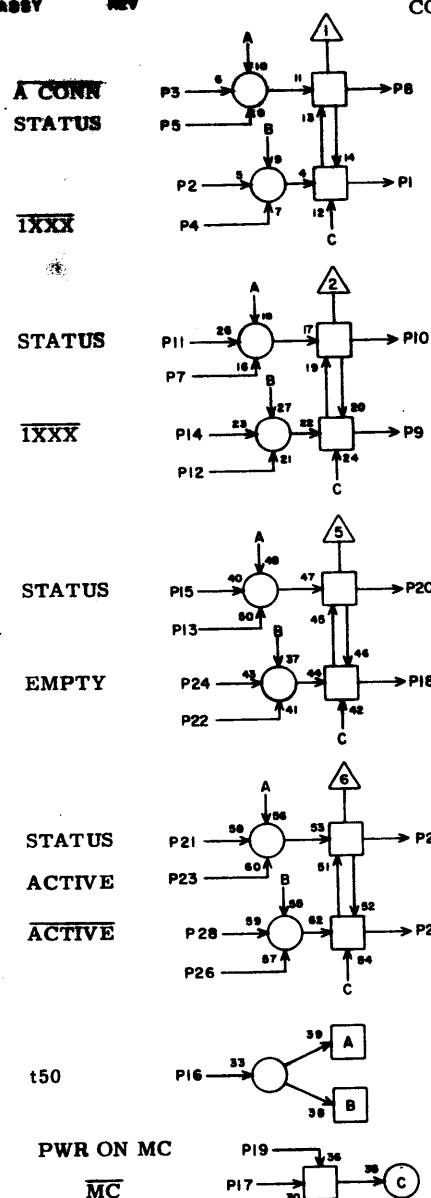
LS 63040400 C
ASSY REV



AE	RV	G	K06
	1	K07- 3	5
	2	K05- 3	5
	3	E10- 9	120
	4	K04- 1	5
	5	K08- 6	5
	6	-	
	7	K06- X	2
	8	K05-25	5
	9	I09-26	9
	10	-	
	11	K08- 8	5
	12	K06- X	2
	13	L08- 8	7
	14	K05- 6	5
	15	K08-10	5
	16	J11- 5	11
	17	L11- 8	9
	18	-	
	19	K08-17	5
	20	K06-21	3
	21	K06-20	3
	22	K06- X	2
	23	L10- 5	9
	24	L10-24	9
	25	J08- 1	9
	26	K06- X	2
	27	-	
	28	L10- 6	9

JACK PIN LG
CIRCUIT SPECIFICATION II827600
60227300 G

3 63063600
ASSY REV



AE	RV	G	K07
	1	I85- 4	11
	2	J07-11	5
	3	K06- 1	5
	4	K05- 5	5
	5	K08- 5	5
	6	-	
	7	K07- X	2
	8	K05-26	7
	9	I10-26	9
	10	-	
	11	K08- 7	5
	12	K07- X	2
	13	L13- 8	11
	14	K05- 4	5
	15	K08- 9	5
	16	J14- 5	13
	17	L16- 8	13
	18	-	
	19	K08-19	5
	20	K07-21	3
	21	K07-20	3
	22	K07- X	2
	23	L15- 5	13
	24	L15-24	13
	25	J08-26	7
	26	K07- X	2
	27	-	
	28	L15- 6	13

JACK PIN LG

CIRCUIT SPECIFICATION I1827600

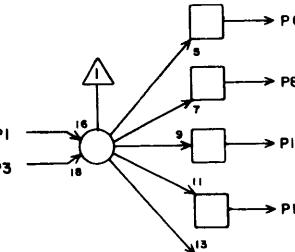
60227300 G

LS 63063600
ASSY REV

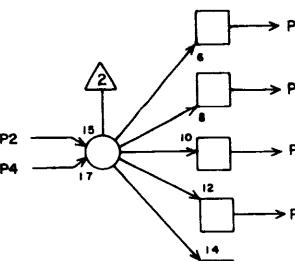
1XXX
X7XX

1XXX
X7XX

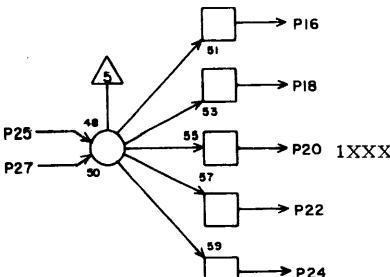
1XXX



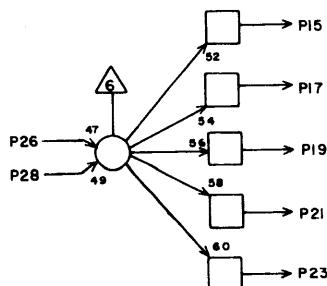
STATUS A



STATUS B



POWER ON MC



TD	RV	G	K08
	1	K09-12	5
	2	K10-12	5
	3	K09-20	5
	4	K10-20	7
	5	K07- 5	5
	6	K06- 5	5
	7	K07-11	5
	8	K06-11	5
	9	K07-15	5
	10	K06-15	5
	11	H16-22	15
	12	H16- 7	17
	13	-	
	14	-	
	15	I05-26	11
	16	G07-15	15
	17	K06-19	5
	18	G07- 3	17
	19	K07-19	5
	20	G07-11	17
	21	-	
	22	G07-21	15
	23	-	
	24	J02-25	11
	25	I06-10	13
	26	J06-20	7
	27	K08- X	2
	28	K08- X	2

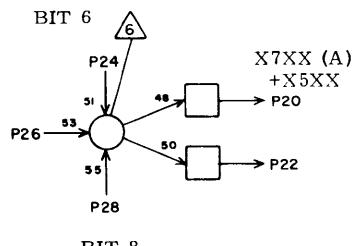
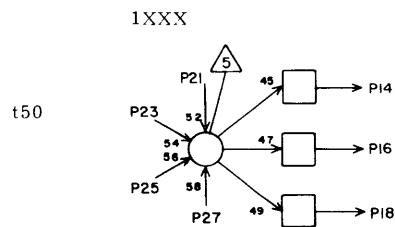
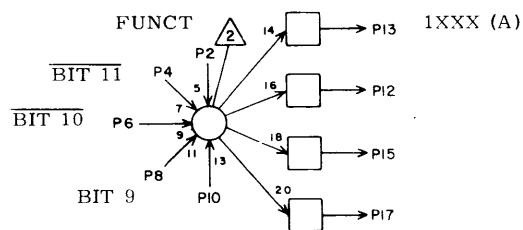
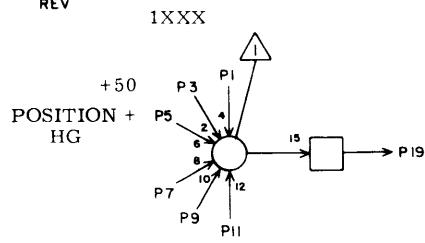
JACK PIN LG

CIRCUIT SPECIFICATION I1827600

60227300 G

LS 63063400
ASSY

(C)
REV



K09		
TB	RV	G
	1	J02-16 11
	2	L11- 7 9
	3	J02- 5 11
	4	L09-25 9
	5	E09- 9 23
	6	L09-23 9
	7	K09- X 2
	8	L09-11 7
	9	K09- X 2
	10	K09- X 2
	11	K09- X 2
	12	K08- 1 5
	13	K05- 1 7
	14	H05-12 15
	15	I06- 7 11
	16	H05-21 13
	17	I06-23 11
	18	D08- 6 27
	19	H05- 5 15
	20	K08- 3 5
	21	J02-18 13
	22	-
	23	J02- 9 13
	24	L08-18 7
	25	H04-18 15
	26	K09- X 2
	27	K09- X 2
	28	L09- 5 5

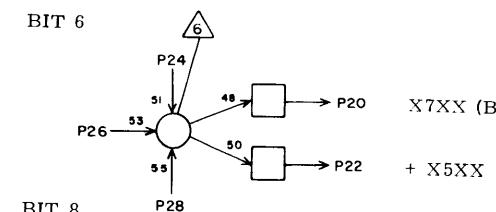
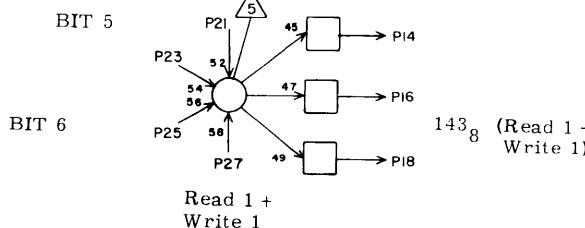
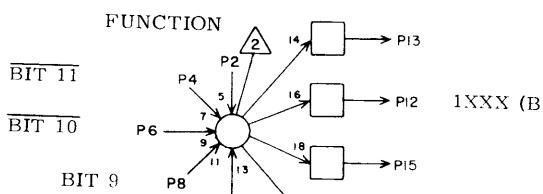
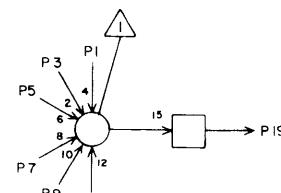
JACK PIN LG

CIRCUIT SPECIFICATION 11827600

60227300 F

LS 63063400
ASSY

(C)
REV

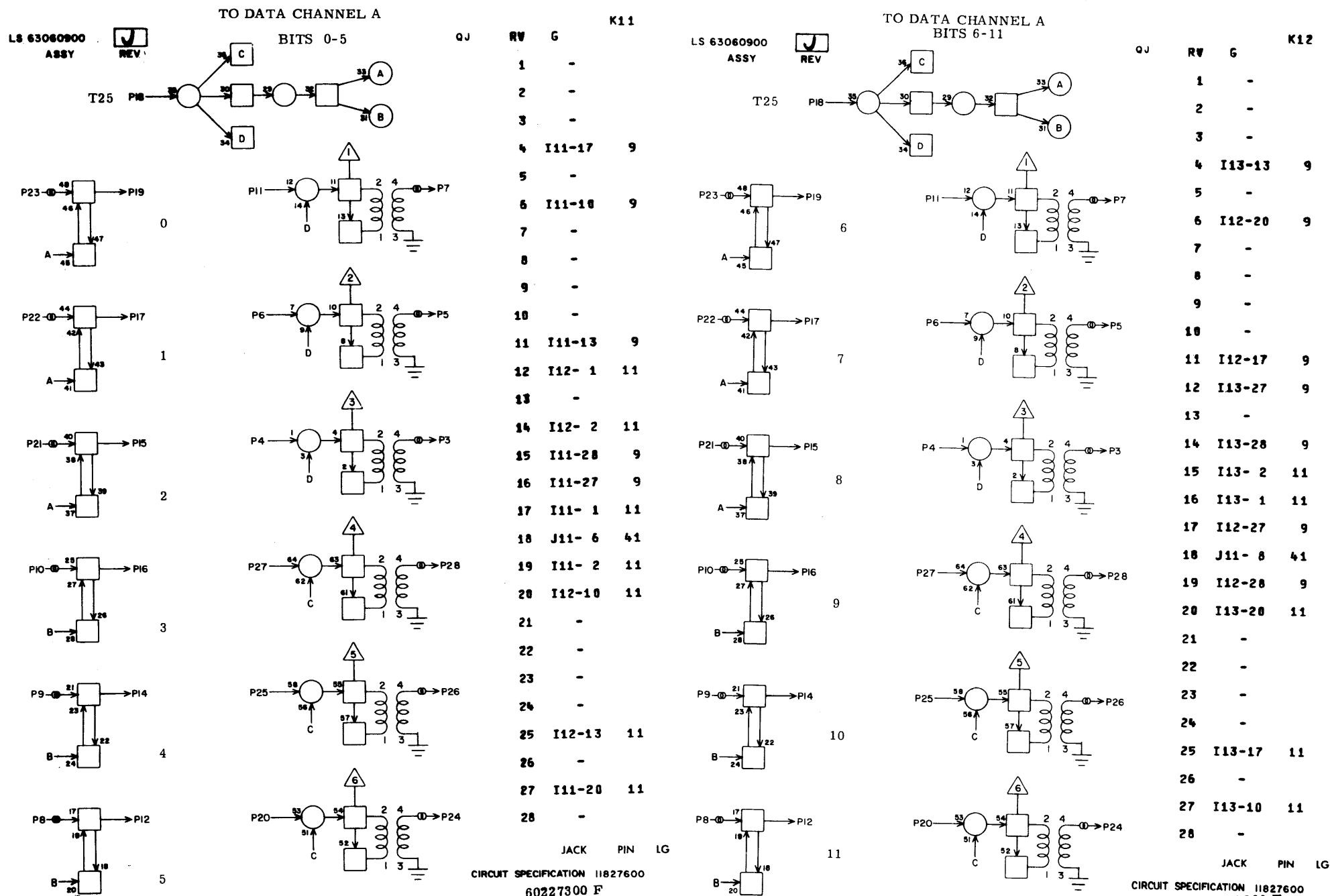


K10		
TB	RV	G
	1	-
	2	L16- 7 11
	3	-
	4	L14-25 11
	5	-
	6	L14-23 11
	7	-
	8	L14-11 9
	9	-
	10	K10- X 2
	11	-
	12	K08- 2 5
	13	K05- 2 9
	14	G01-25 19
	15	I06-13 11
	16	F08-12 21
	17	I06-25 11
	18	-
	19	-
	20	K08- 4 7
	21	I10- 3 11
	22	-
	23	F07- 9 23
	24	L13-18 7
	25	H11-24 13
	26	K10- X 2
	27	J07-16 9
	28	L14- 5 9

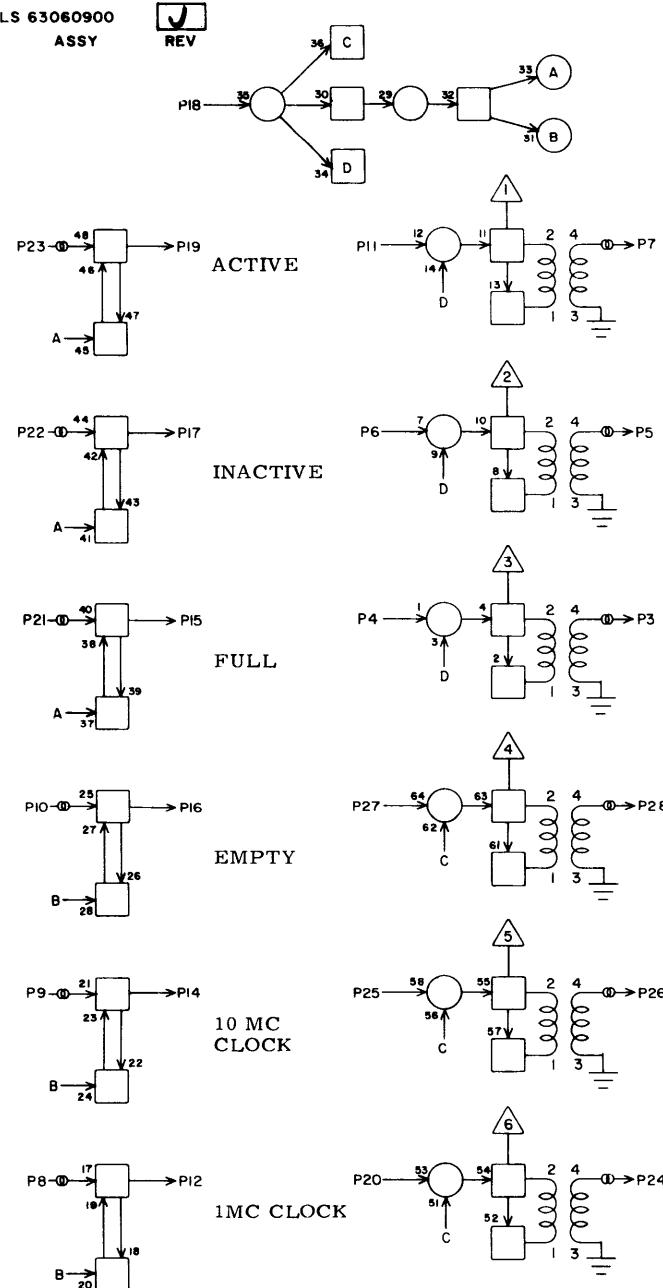
JACK PIN LG

CIRCUIT SPECIFICATION 11827600

60227300 F



TO DATA CHANNEL A
SIGNALS

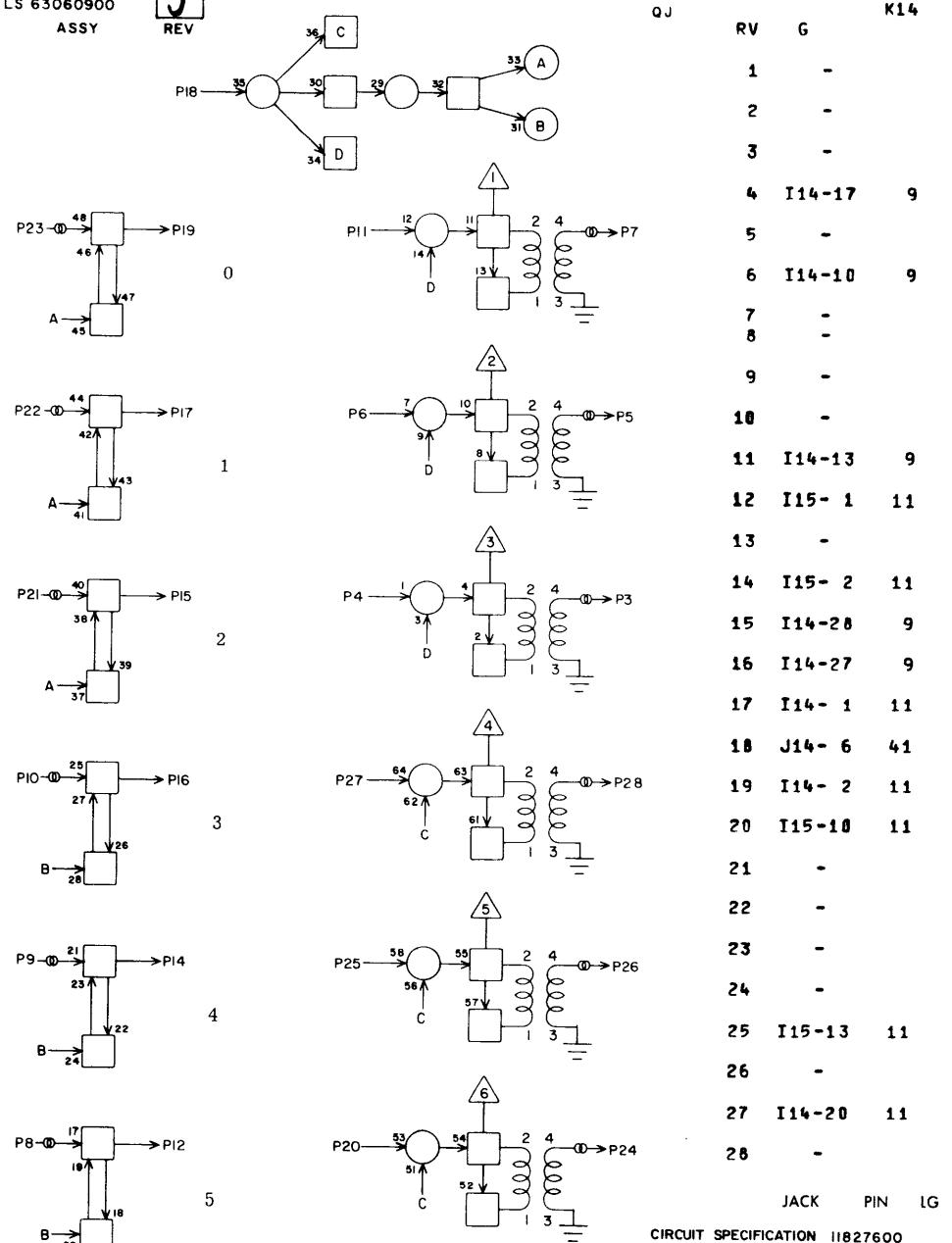


K13

RV	G	K13
1	-	
2	-	
3	-	
4	I09-16	11
5	-	
6	I09-28	9
7	-	
8	-	
9	-	
10	-	
11	K13-19	5
12	K13-20	5
13	-	
14	-	
15	I09-17	11
16	I09-22	11
17	I09-25	11
18	J13- 4	7
19	K13-11	5
20	K13-12	5
21	-	
22	-	
23	-	
24	-	
25	K13- X	2
26	-	
27	I09-19	13
28	-	

JACK PIN LG

TO DATA CHANNEL B
BITS 0-5



K14

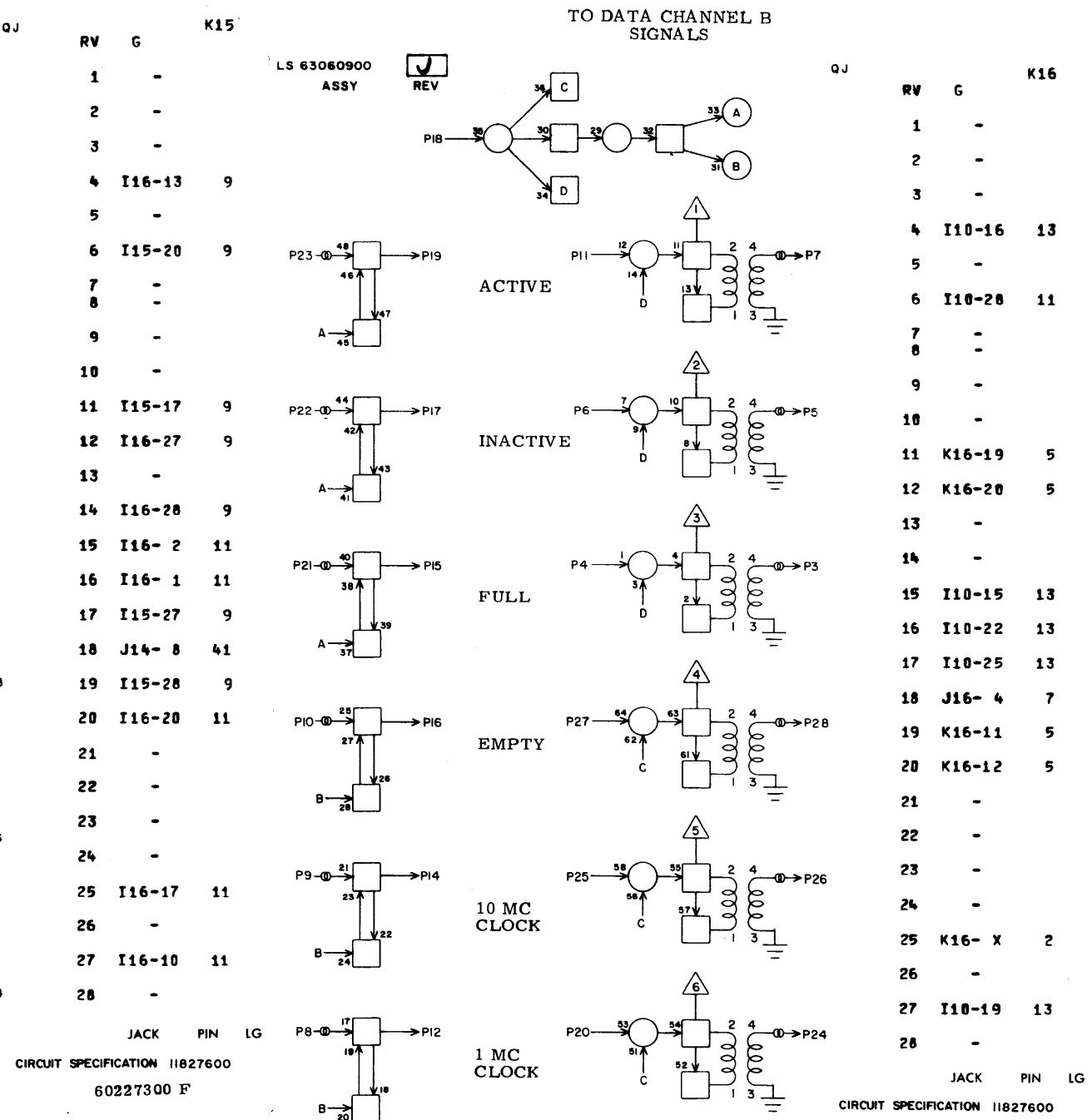
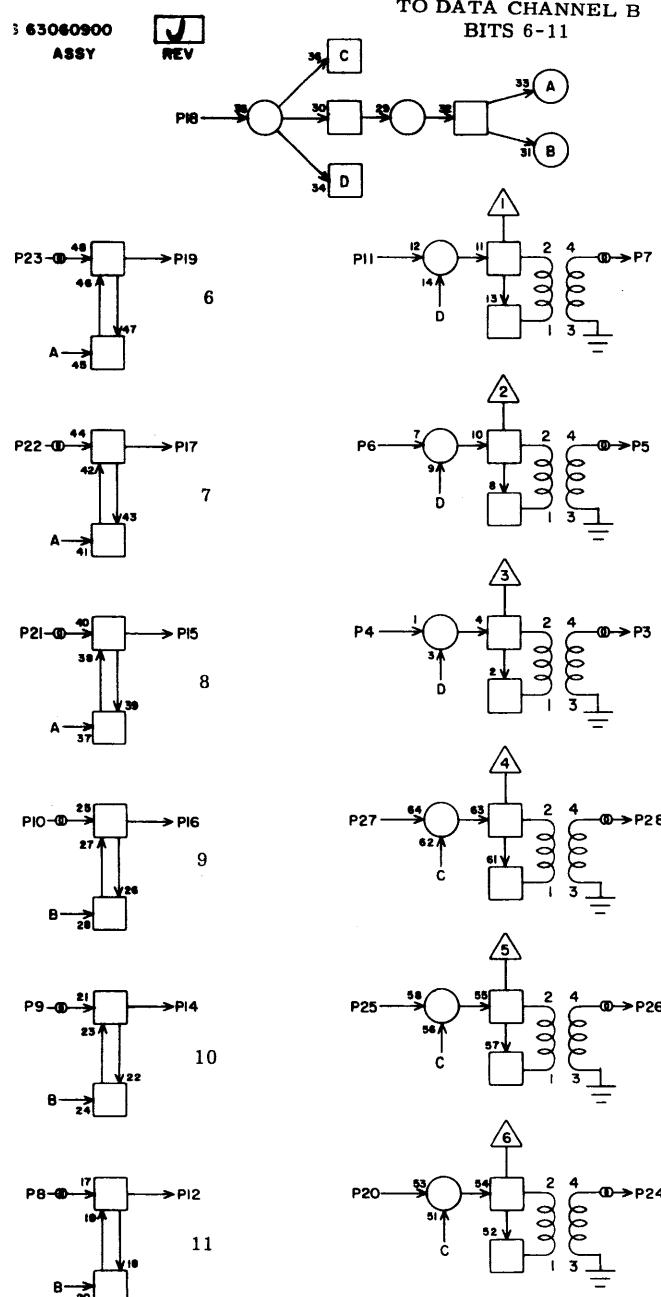
RV	G	K14
1	-	
2	-	
3	-	
4	I14-17	9
5	-	
6	I14-10	9
7	-	
8	-	
9	-	
10	-	
11	I14-13	9
12	I15- 1	11
13	-	
14	I15- 2	11
15	I14-28	9
16	I14-27	9
17	I14- 1	11
18	J14- 6	41
19	I14- 2	11
20	I15-10	11
21	-	
22	-	
23	-	
24	-	
25	I15-13	11
26	-	
27	I14-20	11
28	-	

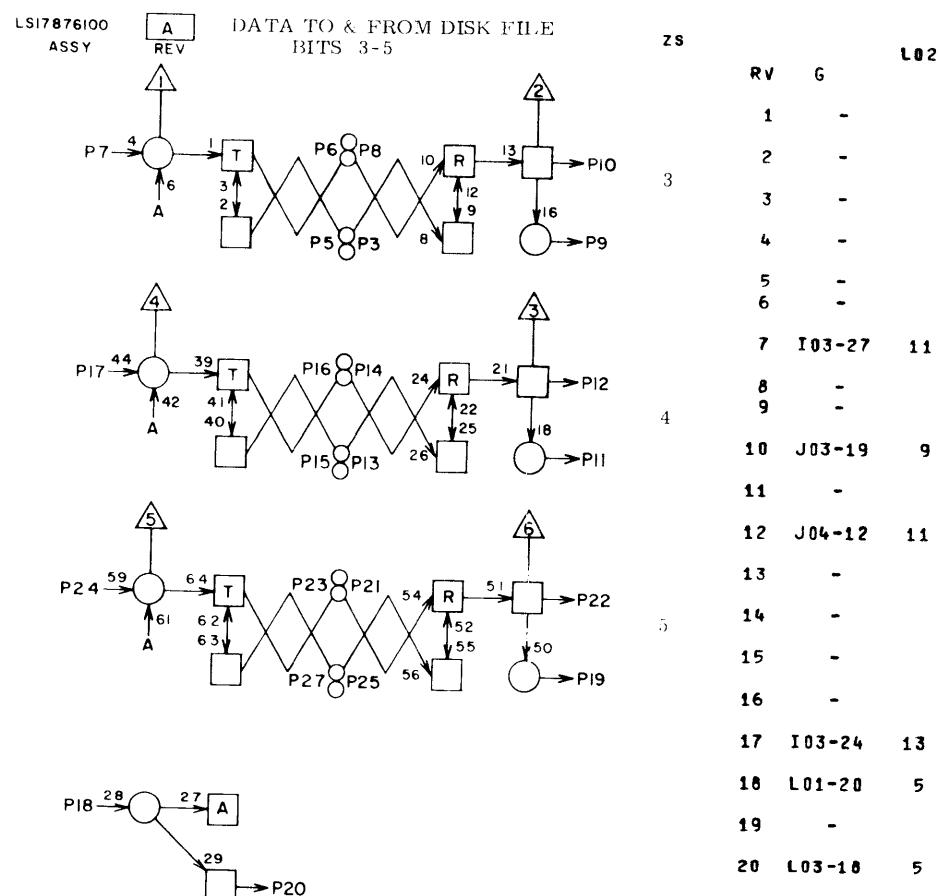
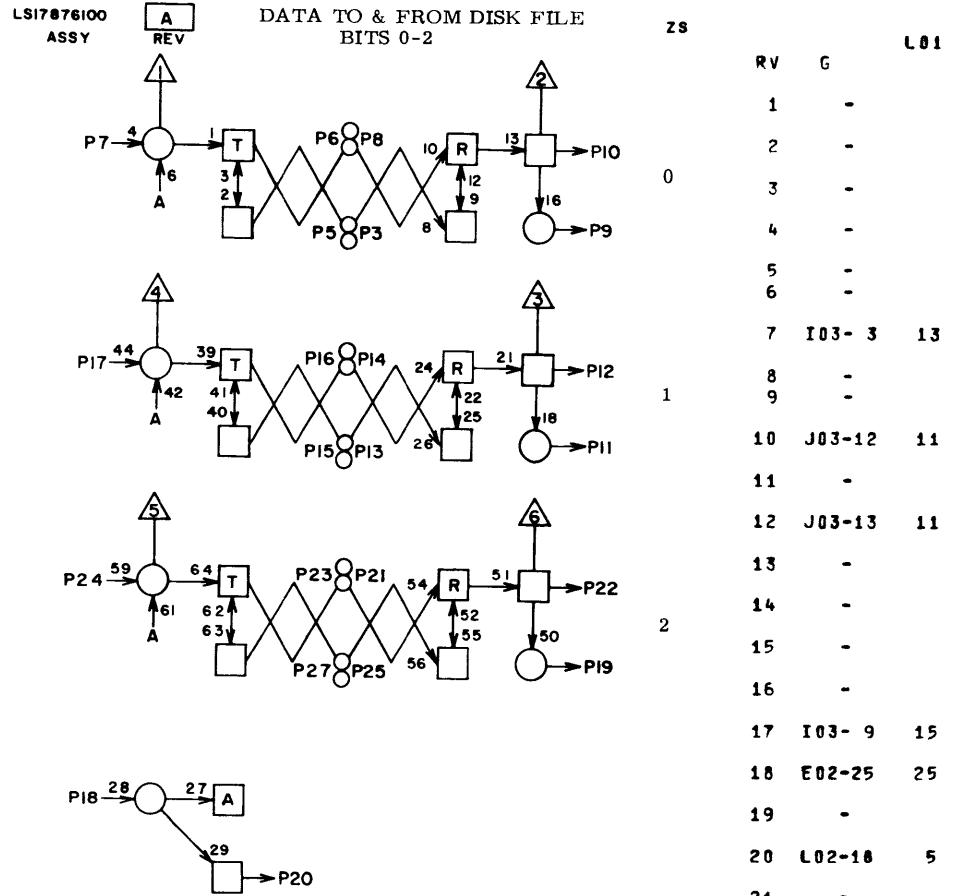
JACK PIN LG

CIRCUIT SPECIFICATION 11827600

60227300 F

60227300 F





NOTES:

1. REFERENCE DRAWINGS:
I7876500 LOGIC SCHEMATIC ZT
I7876300 LOGIC SCHEMATIC ZR
2. THIS CIRCUIT IS A COMBINATION OF CIRCUITS ZR & ZT.
3. THE BASE RESISTORS ON TRANSISTOR 6, 42, & 61 ARE 150 OHMS.
4. THERE ARE ONLY TWO FILTER CAPACITORS. ONE BETWEEN +6V AND GROUND AND ONE BETWEEN -6V AND GROUND.

NOTES:

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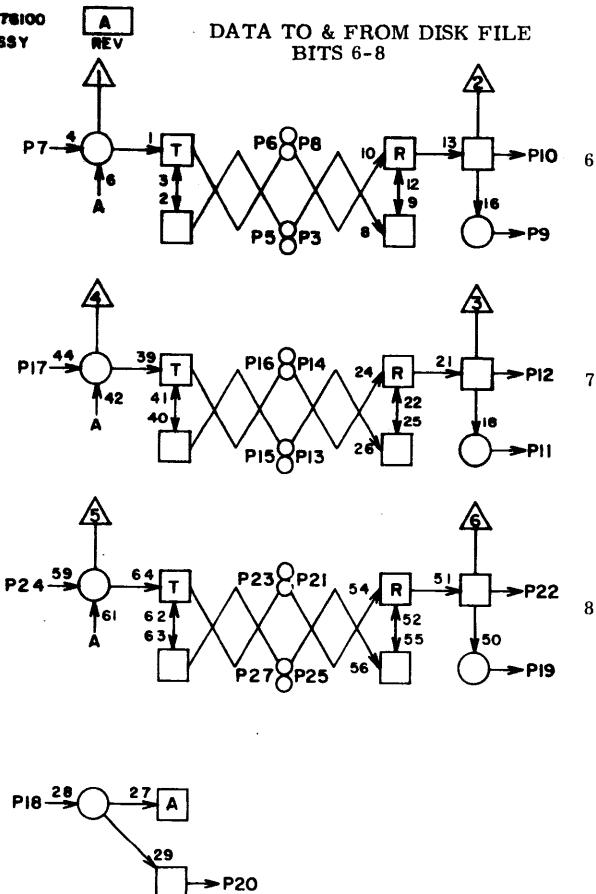
60227300 F

60227300 F

LSI7876100
ASSY

A
REV
DATA TO & FROM DISK FILE
BITS 6-8

ZS

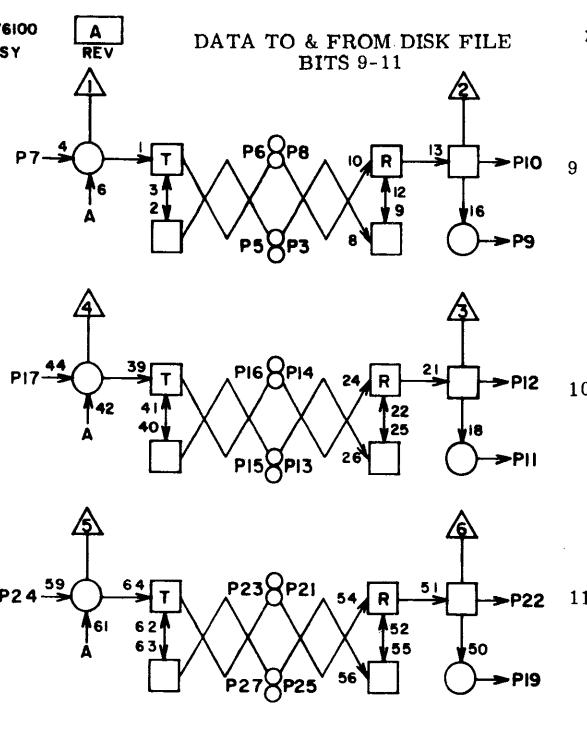


L03

LSI7876100
ASSY

A
REV
DATA TO & FROM DISK FILE
BITS 9-11

ZS



L04

RV

1

2

3

4

5

6

7 I04-27 11

8

9

10 J05-13 9

11

12 J05-16 9

13

14

15

16

17 I04-24 13

18 L03-20 5

19

20

21

22 J05-19 11

23

24 I04-26 13

25

26

27

28

JACK PIN LG

NOTES:

1. REFERENCE DRAWINGS:
17876500 LOGIC SCHEMATIC ZT
17876300 LOGIC SCHEMATIC ZR
2. THIS CIRCUIT IS A COMBINATION OF CIRCUITS ZR & ZT.
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NOTES:

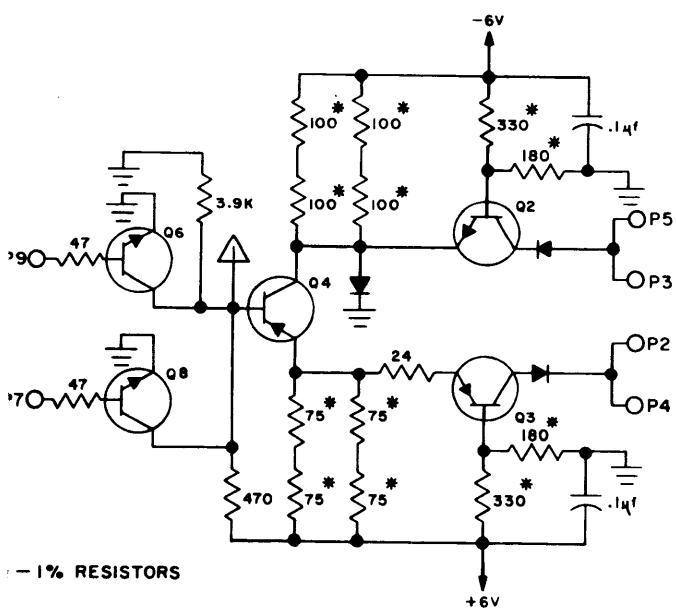
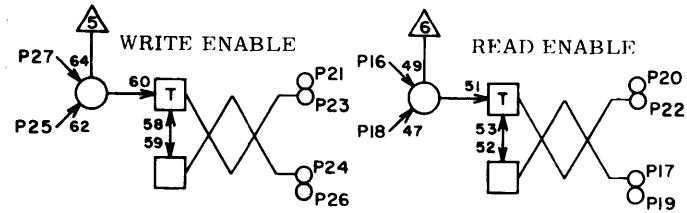
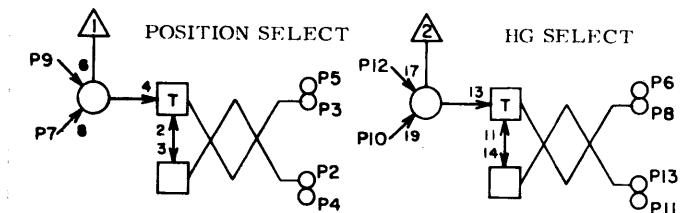
1. REFERENCE DRAWINGS:
17876500 LOGIC SCHEMATIC ZT
17876300 LOGIC SCHEMATIC ZR
2. THIS CIRCUIT IS A COMBINATION OF CIRCUITS ZR & ZT.
3. THE BASE RESISTORS ON TRANSISTOR 6, 42, & 61 ARE 150 OHMS.
4. THERE ARE ONLY TWO FILTER CAPACITORS. ONE BETWEEN +6V AND GROUND AND ONE BETWEEN -6V AND GROUND.

60227300 F

60227300 F

LSI7876500
ASSY

A
REV



ZT

L05

LSI7876500
ASSY

A
REV

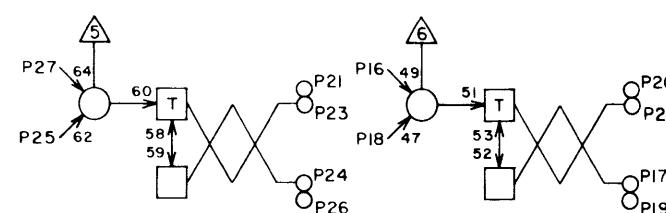
RV G

1	-
2	-
3	-
4	-
5	-
6	-
7	L05-X 2
8	-
9	E02-1 27
10	L05-X 2
11	-
12	F06-2 23
13	-
14	-
15	-
16	E08-25 27
17	-
18	J08-19 11
19	-
20	-
21	-
22	-
23	-
24	-
25	J08-23 11
26	-
27	F05-27 23
28	-

JACK PIN LG

60227300 F

* Standard Option 10037



ZT

L06

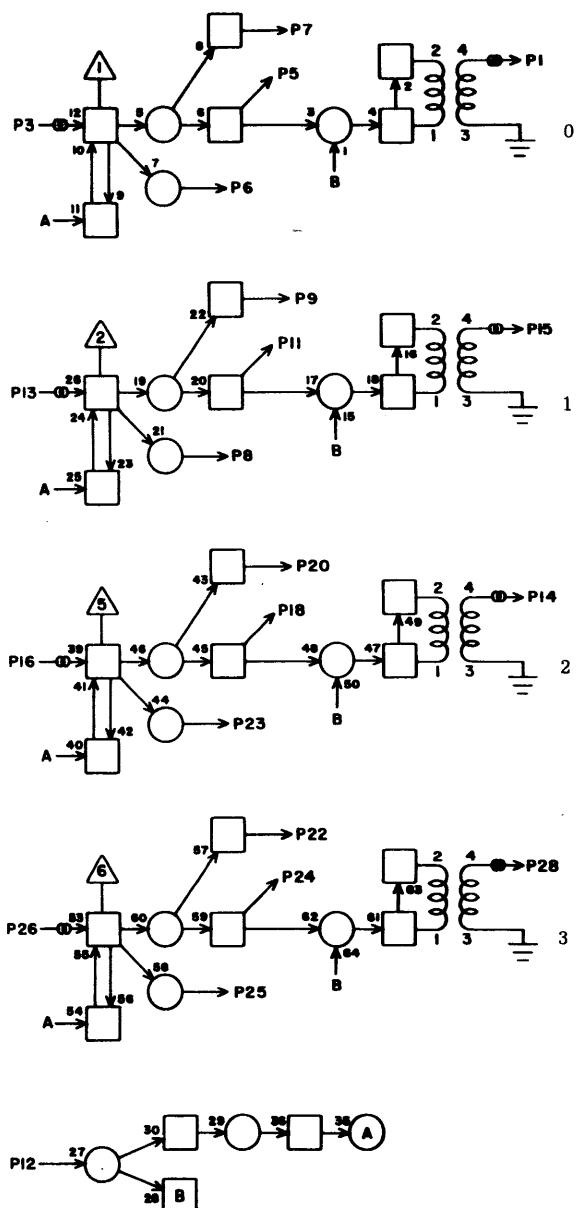
1	-
2	-
3	-
4	-
5	-
6	-
7	L06-X 2
8	* L06-X 23
9	C10-23 33
10	L06-X 2
11	-
12	* L06-X 2
13	C10-14 33
14	-
15	-
16	-
17	-
18	-
19	-
20	-
21	-
22	-
23	-
24	-
25	-
26	-
27	-
28	-

JACK PIN LG

60227300 G

LS 63060800
ASSY

DATA FROM CHANNEL A
BITS 0 - 3



* Standard Option 10037

QI RV G L07

LS 63060800
ASSY

F
REV

DATA FROM CHANNEL A

QI	RV	G	L07
1	-		
2	-		
3	-		
4	-		
5	I07- 6	13	
6	-		
7	H16- 8	21	
8	-		
9	-		
10	-		
11	I07- 7	13	
12	J11- 9	11	
13	-		
14	-		
15	-		
16	-		
17	-		
18	I07-24	13	
19	-		
20	-		
21	-		
22	-		
23	-		
24	I07- 5	15	
25	-		
26	-		
27	-		
28	-		

JACK PIN LG
CIRCUIT SPECIFICATION 11827600

60227300 G

LS 63060800
ASSY

F
REV

DATA FROM CHANNEL A

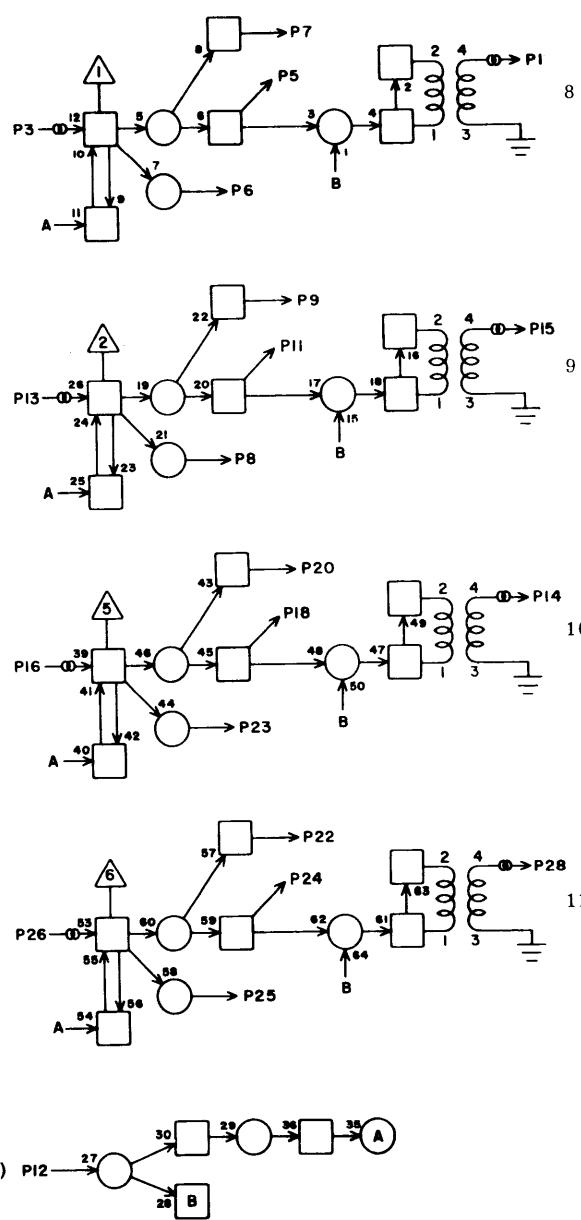
QI	RV	G	L08
1	-		
2	-		
3	-		
4	-		
5	I07-22	13	
6	-		
7	-		
8	K06-13	7	
9	H16-12	21	
10	-		
11	I07-23	13	
12	J11-11	11	
13	-		
14	-		
15	-		
16	-		
17	-		
18	K09-24	7	
19	-		
20	I08- 6	13	
21	-		
22	I08- 7	13	
23	-		
24	H16- 5	23	
25	-		
26	-		
27	-		
28	-		

JACK PIN LG
CIRCUIT SPECIFICATION 11827600

60227300 G

LS 63060800
ASSY

DATA FROM CHANNEL A



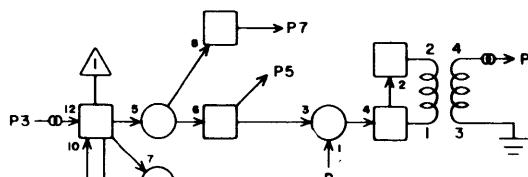
L09

Q1	RV	G
1	-	
2	-	
3	-	
4	-	
5	K09-28	5
6	-	
7	I08-24	13
8	-	
9	I08- 5	13
10	-	
11	K09- 8	7
12	J11-13	11
13	-	
14	-	
15	-	
16	-	
17	-	
18	-	
19	-	
20	I08-22	13
21	-	
22	I08-23	13
23	K09- 6	9
24	-	
25	K09- 4	9
26	-	
27	-	
28	-	

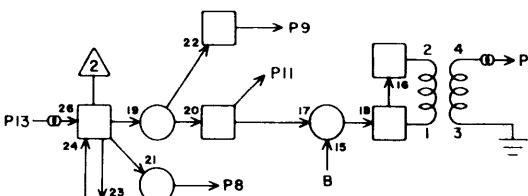
JACK PIN LG
CIRCUIT SPECIFICATION I1627600
60227300 F

LS 63060800
ASSY

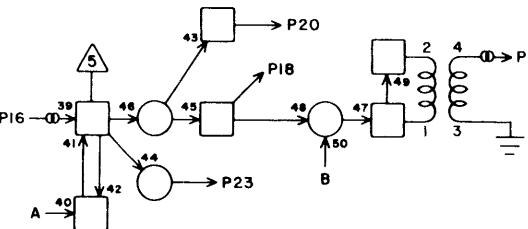
SIGNALS FROM CHANNEL A



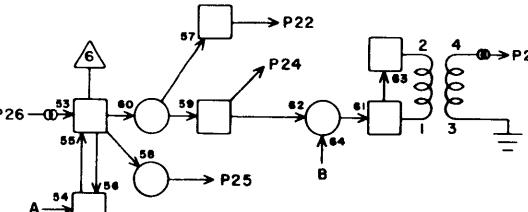
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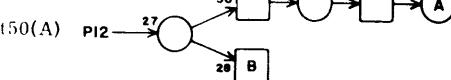
INACTIVE



FULL



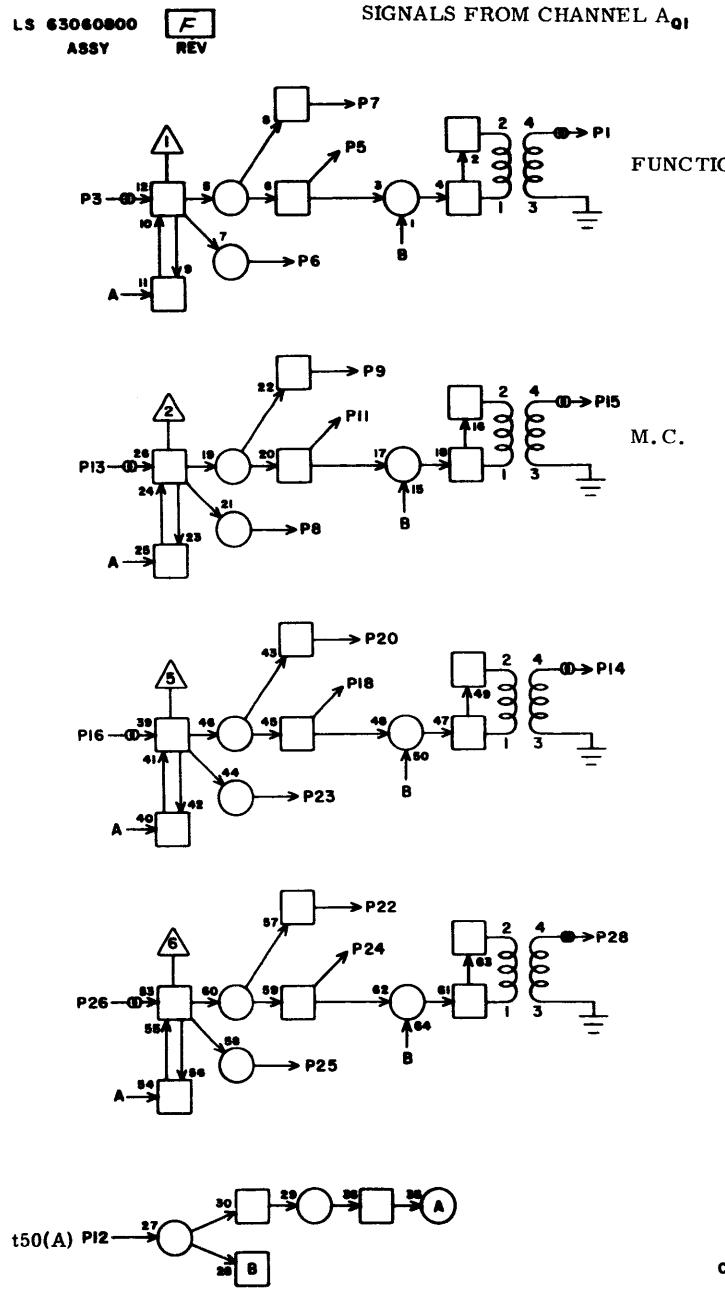
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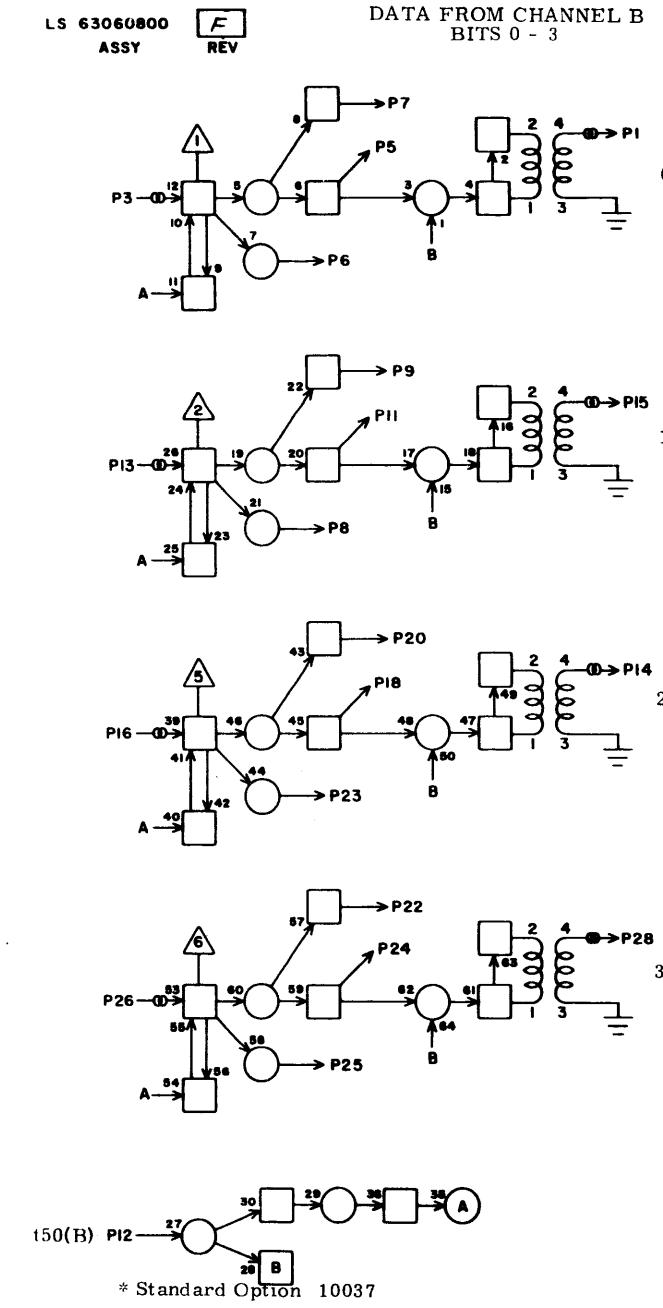
L10

Q1	RV	G
1	-	
2	-	
3	-	
4	-	
5	K06-23	9
6	K06-28	9
7	I06- 5	15
8	-	
9	I06-24	13
10	-	
11	-	
12	J11-16	9
13	-	
14	-	
15	-	
16	-	
17	-	
18	I06- 6	15
19	-	
20	-	
21	-	
22	I06-22	15
23	-	
24	K06-24	9
25	-	
26	-	
27	-	
28	-	

JACK PIN LG
CIRCUIT SPECIFICATION I1627600
60227300 F

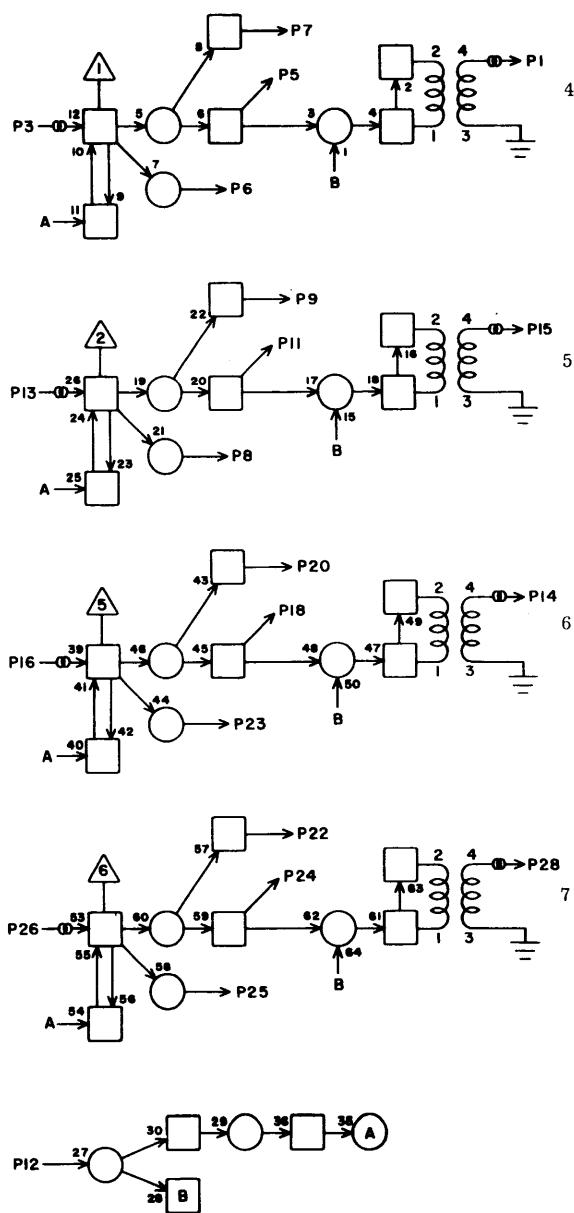


R#	G	L11
1	-	
2	-	
3	-	
4	-	
5	-	
6	-	
7	K09- 2	9
8	K06-17	9
9	-	
10	-	
11	I05-21	15
12	J11-13	9
13	-	
14	-	
15	-	
16	-	
17	-	
18	-	
19	-	
20	-	
21	-	
22	-	
23	-	
24	-	
25	-	
26	-	
27	-	
28	-	



LS 63060800
ASSY

DATA FROM CHANNEL B
BITS 4-7



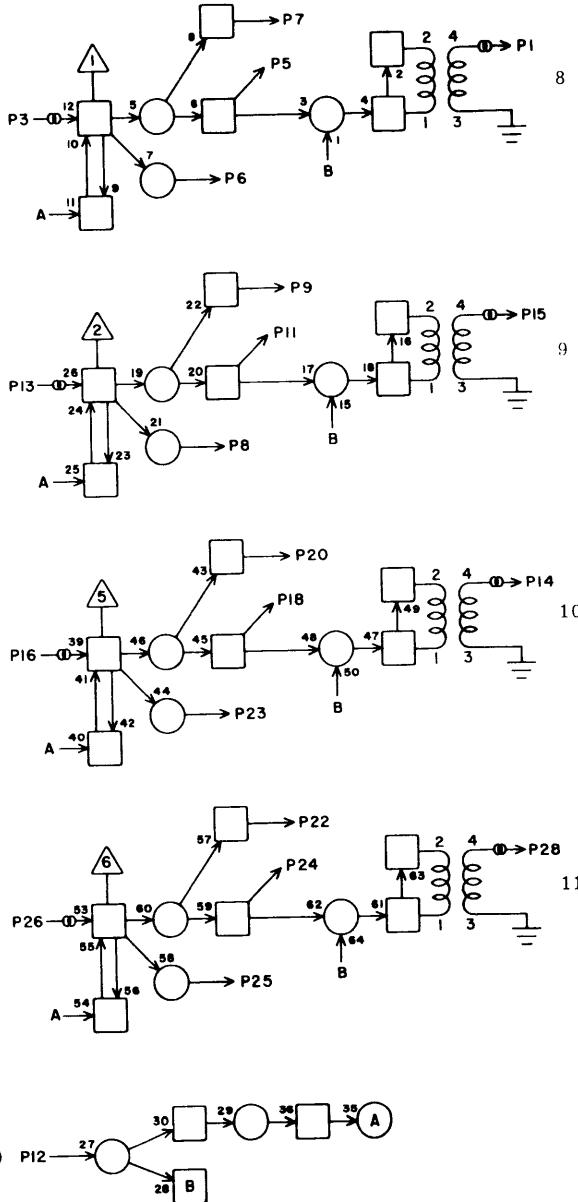
JACK PIN LG
CIRCUIT SPECIFICATION II827600
60227300 G

L13

Q1	RV	G
1	-	
2	-	
3	-	
4	-	
5	I07-18	15
6		
7		
8	K07-13	11
9	H16-23	17
10	-	
11	I07-25	15
12	J14-11	11
13	-	
14	-	
15	-	
16	-	
17	-	
18	K10-24	7
19	-	
20	I08- 4	17
21	-	
22	I08-13	15
23	-	
24	H16-24	17
25	-	
26	-	
27	-	
28	-	

LS 63060800
ASSY

DATA FROM CHANNEL B
BITS 8-11



L14

Q1	RV	G
1	-	
2	-	
3	-	
4	-	
5	K10-28	9
6	-	
7	I08-26	15
8	-	
9	I08- 3	17
10	-	
11	K10- 8	9
12	J14-13	9
13	-	
14	-	
15	-	
16	-	
17	-	
18	-	
19	-	
20	I08-18	15
21	-	
22	I08-25	15
23	K10- 6	11
24	-	
25	K10- 4	11
26	-	
27	-	
28	-	

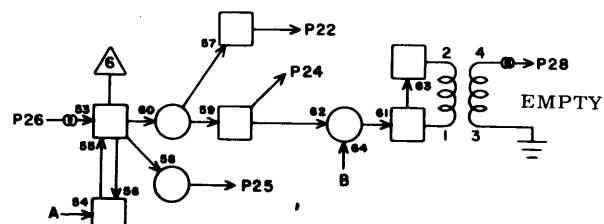
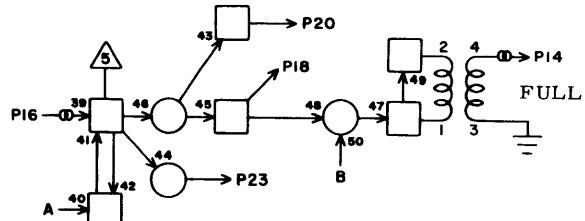
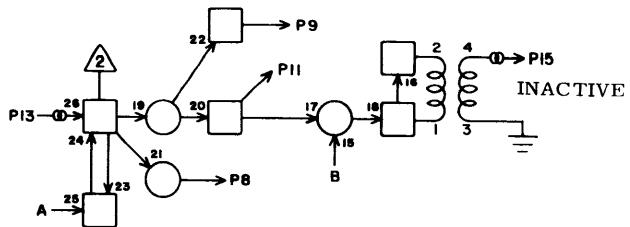
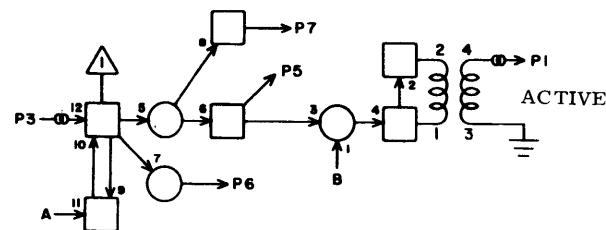
JACK PIN LG
CIRCUIT SPECIFICATION II827600
60227300 F

LS 63060800 ASSY REV F

SIGNALS FROM CHANNEL B

Q1

L15



JACK PIN LG
CIRCUIT SPECIFICATION 11627600

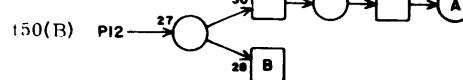
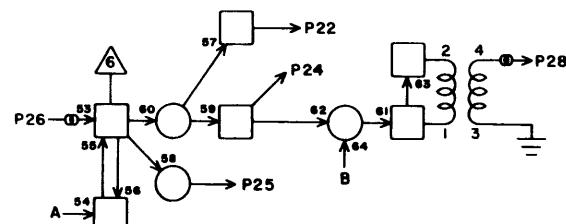
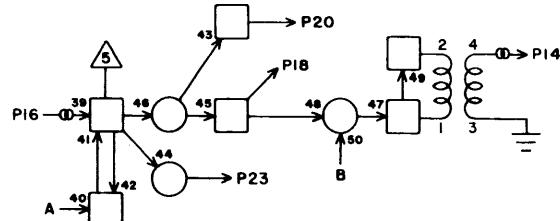
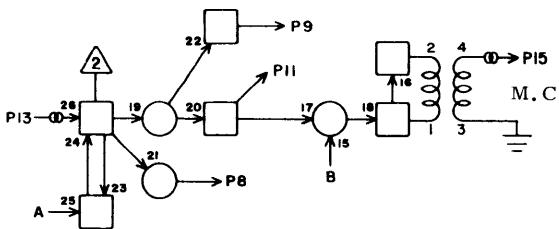
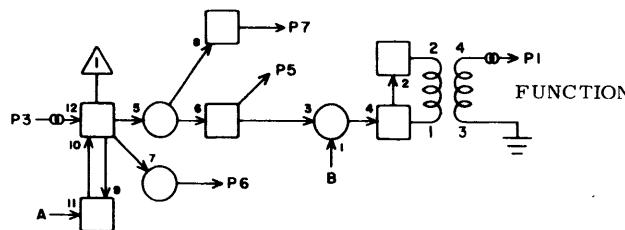
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LS 63060800 ASSY REV F

SIGNALS FROM CHANNEL B

Q1

L16



JACK PIN LG
CIRCUIT SPECIFICATION 11627600

60227300 F

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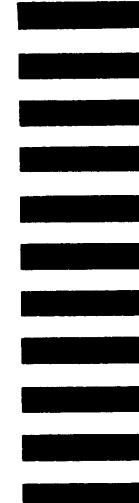
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