CONTROL DATA® 1700
COMPUTER SYSTEM

Basic Peripherals
1711-A/B, 1712-A, 1713-A/B,
1721-A/B/C/D, 1722-A/B,
1723-A/B, 1724-A/B, 1729-A/B

DIAGRAMS &
CIRCUIT DESCRIPTION
MAINTENANCE
PARTS LIST
CARD PLACEMENT
WIRE LISTS

CONTROL DATA
CORPORATION

CUSTOMER ENGINEERING MANUAL

RECORD of REVISIONS

REVISION	NOTES
A	Manual released. This edition is correct through the following Product Designations and field
(10-12-66)	change orders. 1711-A02, 1711-B02 (FCO 14116), 1712-A02 (FCO 14116), 1721-A01, 1721-B01,
	1722-A01, 1722-B01, 1723-A04, 1723-B04 (FCO 13441), 1724-A04, 1724-B04 (FCO 13441),
	1729-A02, 1729-B02 (FCO 14012).
(1-20-67)	Field Change Order 14912 (MDR 15) new Product Designations: 1711-A03, 1711-B03, 1712-A03.
(1-20-67)	Field Change Order 14513, new Product Designations: 1721-A02, 1721-B02, 1721-C02, 1721-D02,
	1722-A02, 1722-B02.
B (1-20-67)	Field Change Order 15119, new Product Designations: 1721-A03, 1721-B03. Page 57 revised.
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(1-20-67)	Pages 17 and 2-9 revised.
(1-20-67)	Field Change Order 14869, new Product Designations: 1729-A03, 1729-B03.
D	Publication Change Order 15621. This edition is correct through the above Product Designations
(1-20-67)	and obsoletes all previous editions.
(5-18-67)	Field Change Order 15695, new Product Designation 1729-A04 and 1729-B04. No change to this
	manual.
E	Field Change Order 15477, new Product Designation 1723-A05 and 1723-B05/1724-A05 and
(5-18-67)	1724-B05.
F (5-18-67)	Field Change Order 16107, no Product Designation change.
G	Field Change Order 16086, new Product Designation 1723-A06 and 1723-B06/1724-A07 and
(5-18-67)	1724-B07.
H (5-18-67)	Field Change Order 16043, new Product Designation 1711-A05 and 1711-B05/1712-A05/1713-A03.
J	Publications Change Order 16440, no Product Designation change. This editions obsoletes all
(5-18-67)	previous editions.
K	Field Change Order 16267, new Product Designation 1711-A06 and 1711-B06/1712-A06/ 1713-A04.
(7-12-67)	Pages 13, 15, 17, 19, 23, 25. 1, 25. 4, 25. 5 revised.
L	Field Change Order 16344, new Product Designation 1729-A05 and 1729-B05. Pages 3,
(7-12-67)	37, 39, 41, 47 and 5-1 revised.
M	Field Change Order 16551, new Product Designation 1723-A07 and 1723-B07/1724-A08 and
(10-4-67)	1724-B08. Page 53 revised.
N	Field Change Order 16817, (MDR 23) new Product Designation 1711-A07/B07, 1712-A07 and
(10-4-67)	1713-A05. Pages 3, 17 and 25. 0 revised.
P	Field Change Order 17320 (MDR 24), new Product Designation 1711-A08/B08, 1712-A08 and
(10-4-67)	1713-A06. Pages 5, 19, 23, 25. 0, 25. 1, 33, 37 and 43 revised.
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(1-4-68)	thru 2-33, 3-4 thru 3-10, 4-i and 5-1 revised.
S (3-11-68)	Field Change Order 18120, new Product Designation 1713-A07. Page 25. 5 revised.
T	Publications Change Order 19032, no Product Designation change. Pages 17, 25. 3 and 49. 0
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RECORD of REVISIONS (CONT'D)

REVISION	NOTES
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(6-5-68)	5-1 revised.
V	Publications Change Order 19775, no Product Designation change. Pages 23, 33, 35, 2-10, 2-11,
(6-5-68)	2-12 and 2-13 revised.
W	Manual revised; includes Engineering Change Order 20502, publication change only. Pages
(9-25-68)	revised: Cover, Title Page, iii, 25.5, 2-1, 2-2, 4-i and 4-10.0. Added pages 4-10.1, 4-10.2,
	4-10.3, 4-10.4 and 4-10.5.
Y	Manual revised; includes Field Change Order 20340, equipment level 1729-A06 and 1729-B06.
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Z	Manual revised; includes Engineering Change Order 20956, publications change only. Pages
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FORM CA 230-2

CONTENTS

FIGURES

TABLES

FOREWORD

This manual contains customer engineering information for the basic peripheral devices used with the CONTROL DATA* 1700 Computer System. Wire list information is included on the diagrams.

The basic peripheral package is referred to in this manual as the low speed synchronizer and is always designated as equipment 1 and consists of the following:

1) Common Synchronizer
2) 1711, 1712, or 1713 Teletypewriter (Optional)
3) 1721 or 1722 Paper Tape Reader (Optional)
4) 1723 or 1724 Paper Tape Punch (Optional)
5) 1729 Card Reader (Optional)

The common synchronizer provides the interface logic between the computer A and Q registers and the four peripheral devices. Each peripheral device contains its own controller. The station codes assigned to the common synchronizer and peripheral devices are as follows:

1) Station 0 - Common Synchronizer
2) Station 1 - Teletypewriter
3) Station 2 - Paper Tape Reader
4) Station 4 - Paper Tape Punch
5) Station 6 - Card Reader

The teletypewriter is a self-contained unit which may be located up to 50 feet from the computer. The other three peripheral devices are located in a cabinet mounted on top of the computer. All controllers are located on the computer main frame chassis.

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PART 1

DIAGRAMS

Two signals, a logical "0" and a logical "1", are the possible input or output conditions of a circuit. By convention, "1" is considered "up" and "0" is considered "down" on a timing chart, for example. Detailed descriptions of logic symbols and their associated electronic representations are contained in the Printed Circuits Manual, Vols. 3 and 4.

STANDARD LOGIC SYMBOLS

The 1700 Computer logic is mainly composed of the CONTROL DATA 6000 Series printed circuit modules. Standard logic diagram symbols for this type of printed circuit modules are inverters, test points, flip-flops, and twisted pair line drivers.

INVERTERS

An inverter is a logic element which provides an output that is an inversion of its input. When an inverter receives more than one input, "0's" take precedence over "1's" and 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. Logic diagrams show the basic inverter as an arrow into either a circle or a square (see Figure 1). Both symbols represent the same electronic circuit and have the same logical 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 if each symbol in the chain has only one input.

Acceptable conventions for showing multiple inputs and outputs are given in Figure 2. 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 shows an example of an inverter network. Because multiple outputs are identical, Figure 4 shows only one arrow 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 because B is not the only input to C or D).

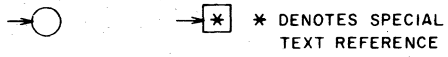


Figure 1. Inverter Symbols

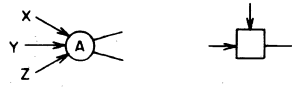


Figure 2. Multiple Inputs/Outputs

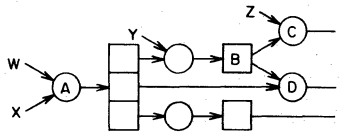


Figure 3. Inverter Networks

TEST POINTS

A test point performs no logic function. Logic diagrams show the test point as a triangle (see Figure 4). Test points are numbered from 1 to 6.

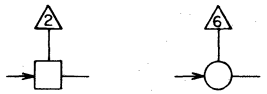


Figure 4. Test Point Symbols

FLIP-FLOPS (FF)

The flip-flop is composed of two inverters and functions as a storage device with two stable states designated as set and clear (see Figure 5). The flip-flop is 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.

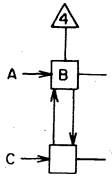


Figure 5. Flip-Flop Symbol

WIRE TAB DESIGNATIONS

Wire tab designations written next to a pin indicate where in the drawings the pin is connected. 3, 5, 7 - C37 - 6 indicates a connection with pin 6 of module C37, found on pages 3, 5, and 7. See Figure 5.1.

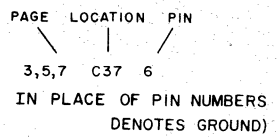


Figure 5.1. Wire Tab Designations

TWISTED PAIR DRIVERS

A Line Driver circuit transmits logic signals from one module to another. Modules are connected by twisted-pair lines. The standard square or circle represents the twisted-pair driver. However, the output of the square or circle connects to a pin of the module. The pin is then wired to a pin on another module (see Figure 6). 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-hand corner.

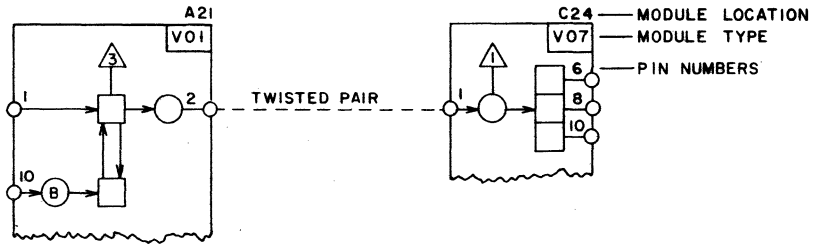


Figure 6. Twisted-Pair Line Driver

RECEIVER/TRANSMITTER CIRCUITS

The Receiver and Transmitter circuits detect and transmit signals from and to I/O interface respectively. The Receiver and Transmitter circuits are modifications of the standard 3000 Series circuits of the same name. These circuits are contained on a printed circuit module along with the standard inverter circuits.

Figures 7 and 8 shows that Receiver and Transmitter circuits are represented by the square symbol with an "R" or "T" respectively. The two inputs to the receiver are each connected to two pins on the module.

In Figure 7, a "1" input to R is inverted, causing a "1" output from pin 6 and a "0" output from pin 13. Thus, with a "1" input, the Receiver circuit produces both True and Not outputs.

The Transmitter circuit receives a "1" input signal from a standard inverter or FF and transmits a "1" output signal to the I/O interface. In Figure 7, a "1" input to pins 7 and 9 causes a "1" output from T and thus to the I/O line.

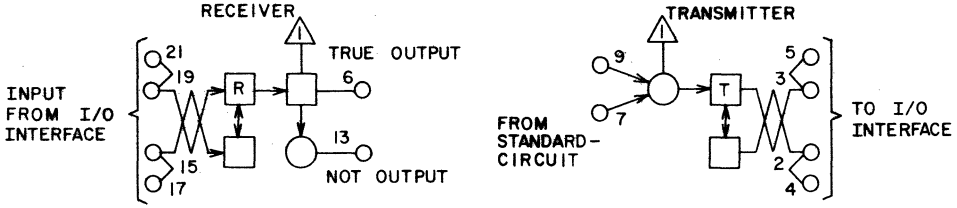


Figure 7. Receiver/Transmitter Circuit Examples

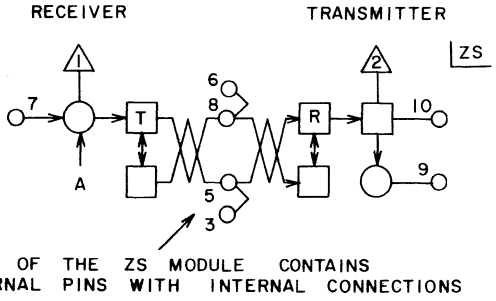


Figure 8. ZS Transmitter/Receiver Module

SPECIAL CIRCUITS

In addition to the standard symbols, the diagrams also use symbols representing special nonstandard circuits. The symbols for these circuits along with a brief description are given below.

Special variations of the standard building block are indicated by the symbols shown on Figure 9. The symbol and schematic for the corresponding special circuit are shown on the applicable logic diagram and also on the module schematic in the Printed Circuits Manual.

Figure 9. Special Circuits

CAPACITIVE DELAY CIRCUITS

Capacitive Delay circuits delay input "1" signals a prescribed time before issuing an output "1" signal. The 1700 uses both fixed and variable delay circuits. Figure 10 shows examples of both types. The delay time of the circuit and capacitor value are listed beside the capacitor symbol. The variable potentiometer enables adjustment of the delay time of the circuit within certain limits.

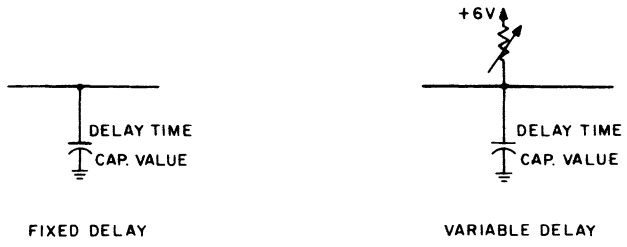
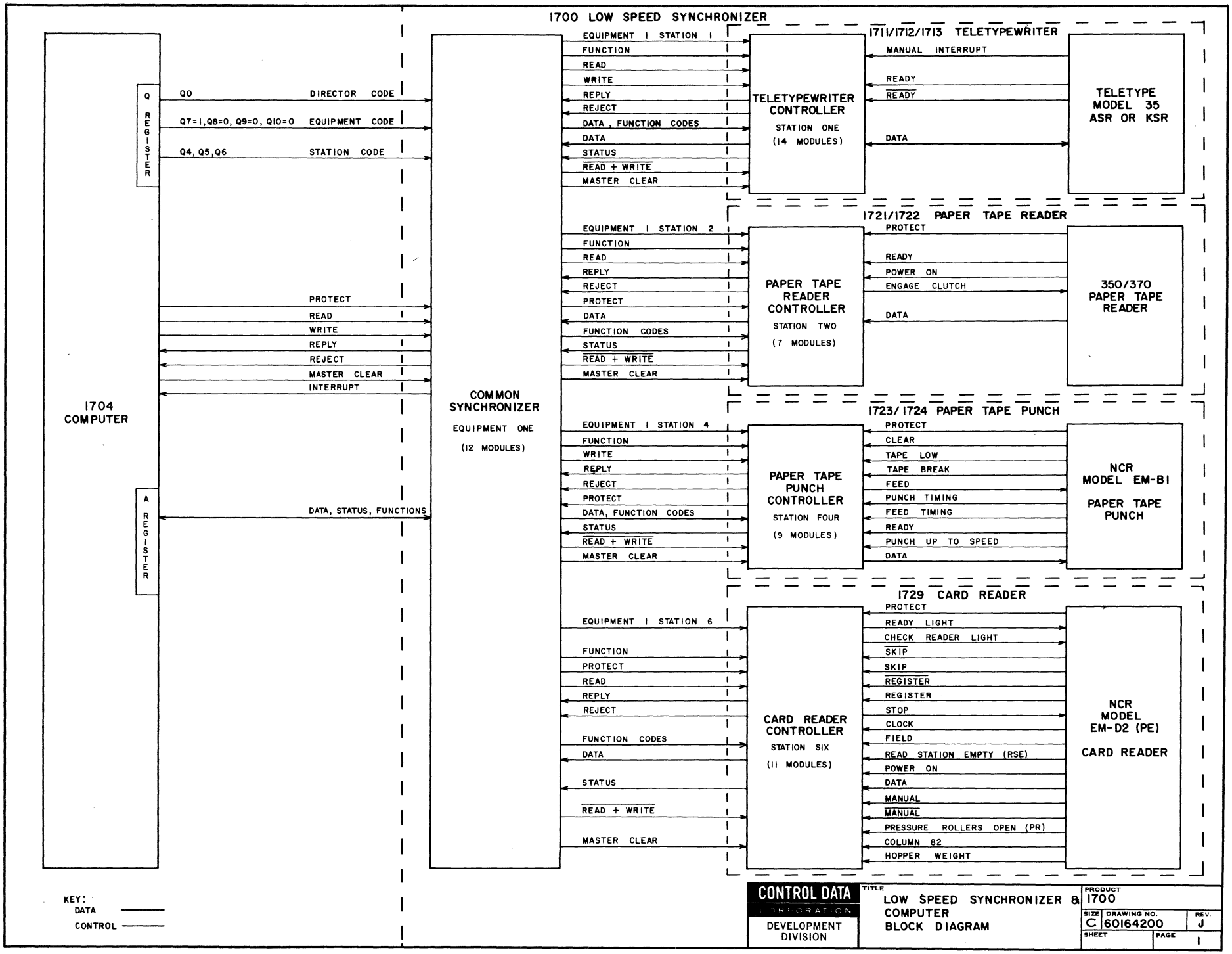
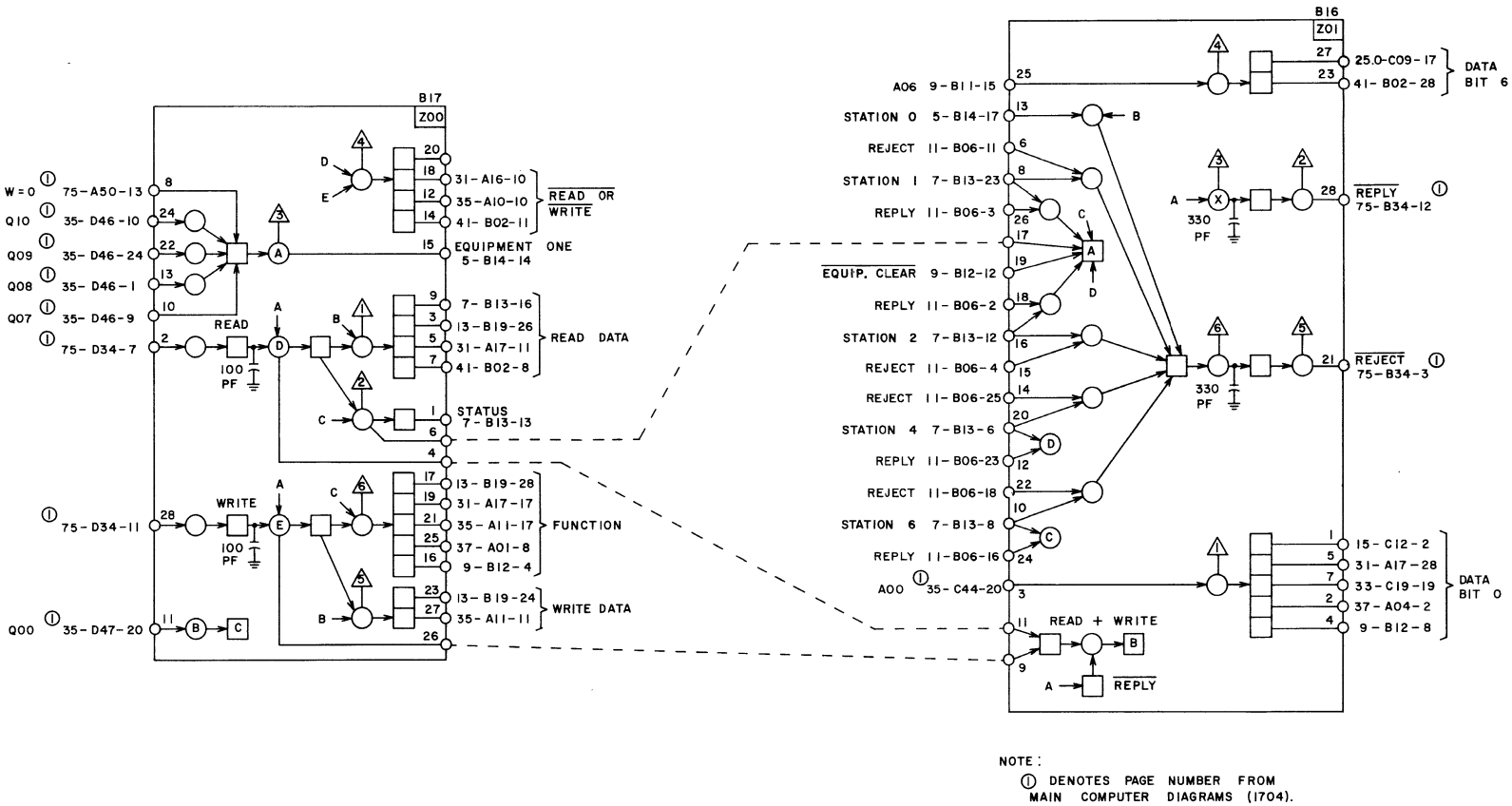


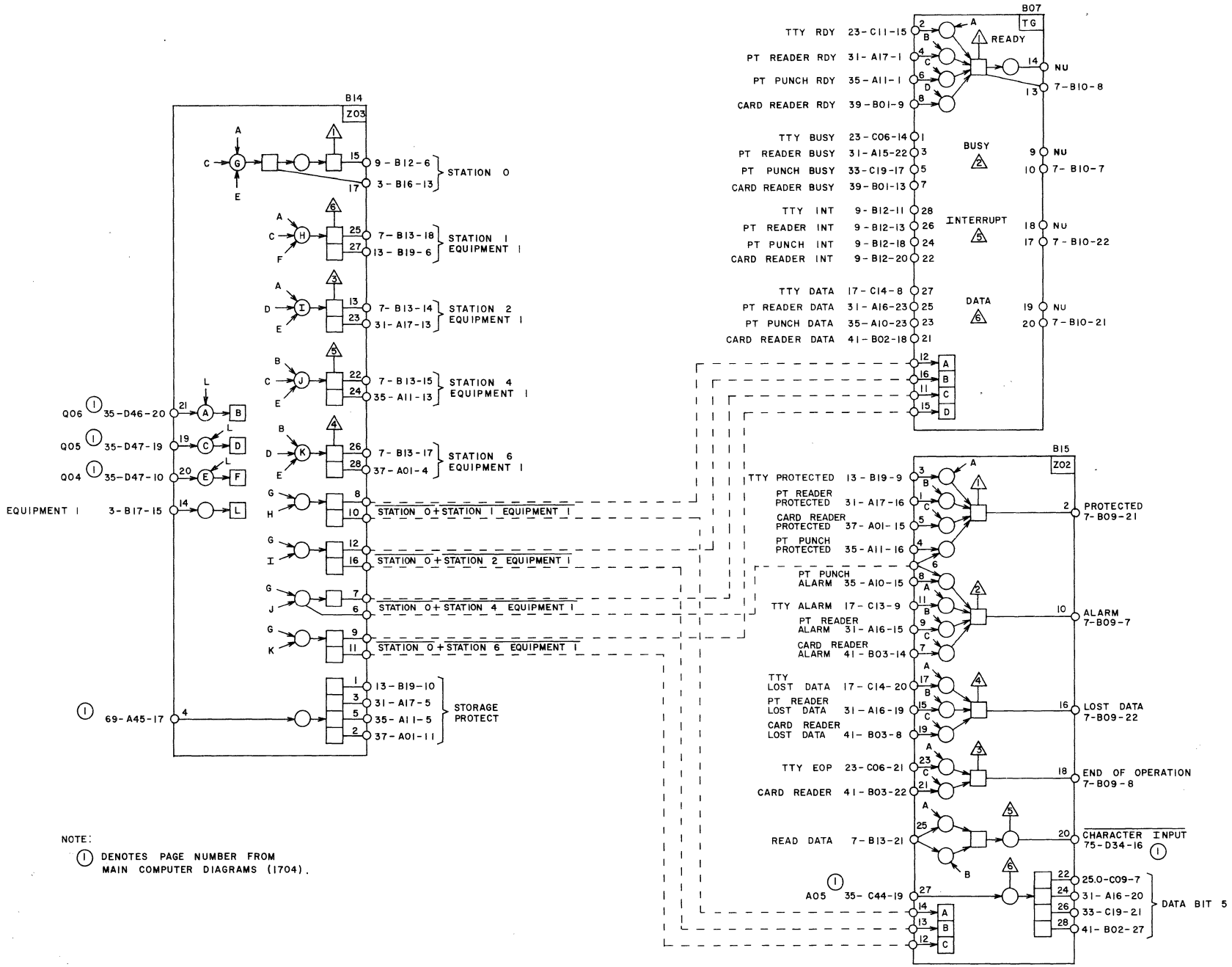
Figure 10. Capacitive Delay Circuits


1700 LOW SPEED SYNCHRONIZER
1704 COMPUTER
Q REGISTER
A REGISTER
Q0 DIRECTOR CODE
Q7=1,Q8=0, Q9=0, Q10=0 EQUIPMENT CODE
Q4, Q5, Q6 STATION CODE
PROTECT
READ
WRITE
REPLY
REJECT
MASTER CLEAR
INTERRUPT
DATA, STATUS, FUNCTIONS
COMMON SYNCHRONIZER
EQUIPMENT ONE
(12 MODULES)
EQUIPMENT 1 STATION 1
FUNCTION
READ
WRITE
REPLY
REJECT
DATA, FUNCTION CODES
DATA
STATUS
READ + WRITE
MASTER CLEAR
TELETYPEWRITER CONTROLLER
STATION ONE
(14 MODULES)
1711/1712/1713 TELETYPEWRITER
MANUAL INTERRUPT
READY
READY
DATA
TELETYPE MODEL 35 ASR OR KSR
EQUIPMENT 1 STATION 2
FUNCTION
READ
REPLY
REJECT
PROTECT
DATA
FUNCTION CODES
STATUS
READ + WRITE
MASTER CLEAR
PAPER TAPE READER CONTROLLER
STATION TWO
(7 MODULES)
1721/1722 PAPER TAPE READER
PROTECT
READY
POWER ON
ENGAGE CLUTCH
DATA
350/370 PAPER TAPE READER
EQUIPMENT 1 STATION 4
FUNCTION
WRITE
REPLY
REJECT
PROTECT
DATA, FUNCTION CODES
STATUS
READ + WRITE
MASTER CLEAR
PAPER TAPE PUNCH CONTROLLER
STATION FOUR
(9 MODULES)
1723/1724 PAPER TAPE PUNCH
PROTECT
CLEAR
TAPE LOW
TAPE BREAK
FEED
PUNCH TIMING
FEED TIMING
READY
PUNCH UP TO SPEED
DATA
NCR MODEL EM-B1 PAPER TAPE PUNCH
EQUIPMENT 1 STATION 6
FUNCTION
PROTECT
READ
REPLY
REJECT
FUNCTION CODES
DATA
STATUS
READ + WRITE
MASTER CLEAR
CARD READER CONTROLLER
STATION SIX
(11 MODULES)
1729 CARD READER
PROTECT
READY LIGHT
CHECK READER LIGHT
SKIP
SKIP
REGISTER
REGISTER
STOP
CLOCK
FIELD
READ STATION EMPTY (RSE)
POWER ON
DATA
MANUAL
MANUAL
PRESSURE ROLLERS OPEN (PR)
COLUMN 82
HOPPER WEIGHT
NCR MODEL EM-D2 (PE) CARD READER
KEY:
DATA
CONTROL
CONTROL DATA CORPORATION
DEVELOPMENT DIVISION
TITLE
LOW SPEED SYNCHRONIZER & COMPUTER BLOCK DIAGRAM
PRODUCT 1700
SIZE C
DRAWING NO. 60164200
REV. J
SHEET
PAGE 1



NOTE:
① DENOTES PAGE NUMBER FROM MAIN COMPUTER DIAGRAMS (1704).

CONTROL DATA CORPORATION	TITLE: LOW SPEED SYNCHRONIZER COMMON SYNCHRONIZER (PART 1)	PRODUCT: 1700	
COMPUTER DIVISION		SIZE: C	DRAWING NO.: 60164200 REV: N
			SHEET: PAGE: 3



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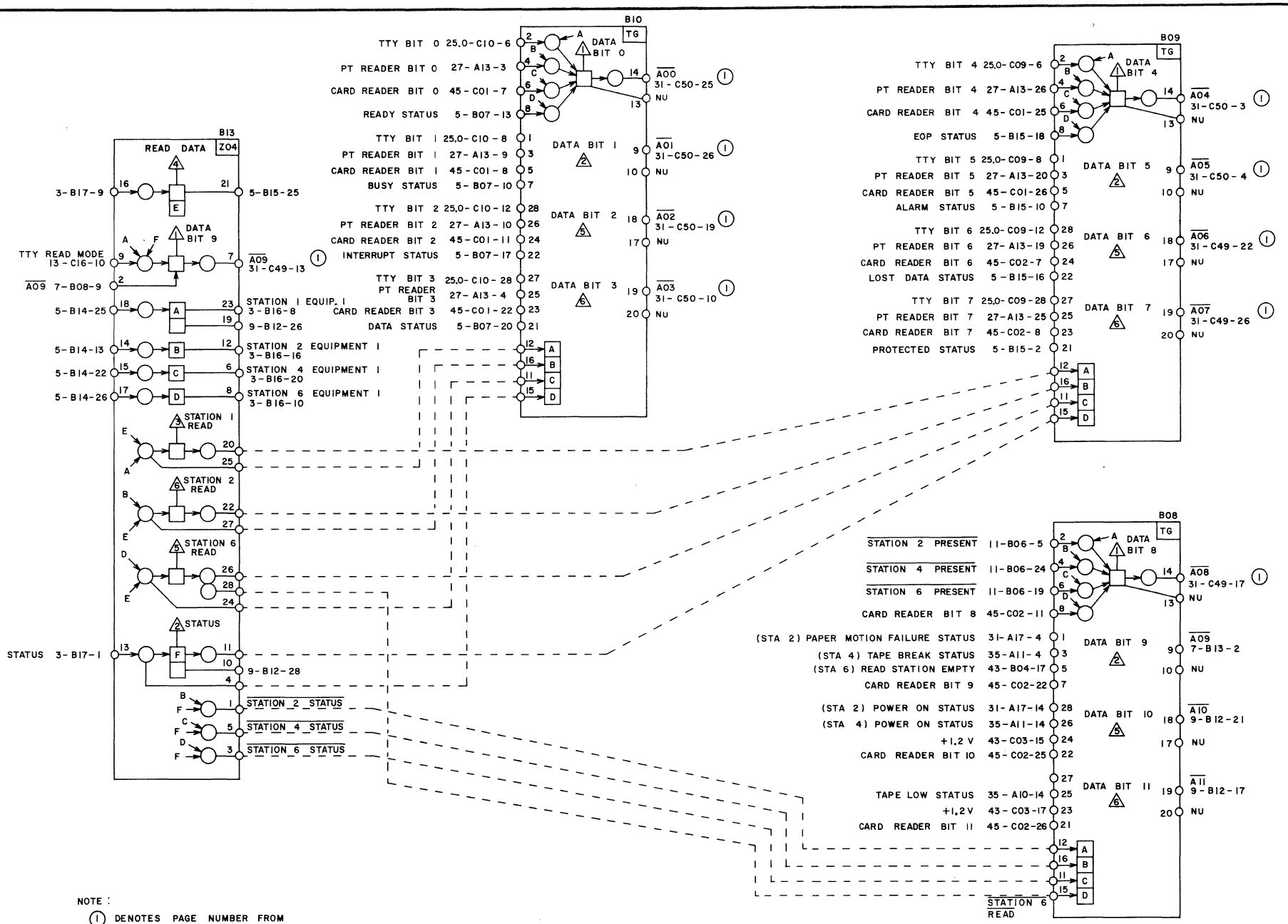
			SHEET: PAGE: 5



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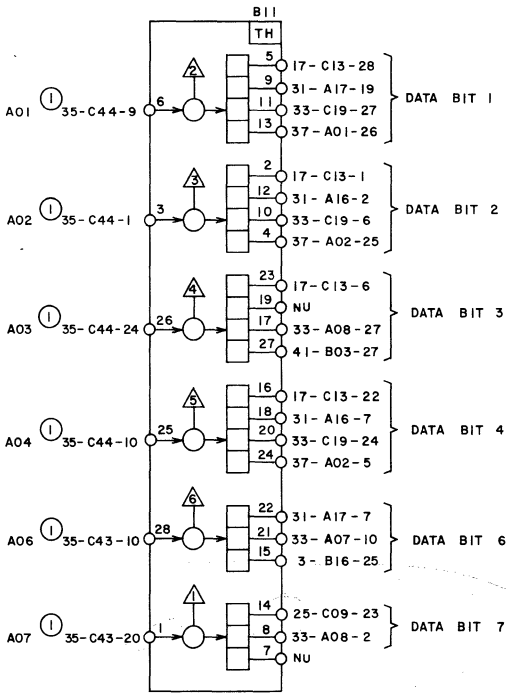
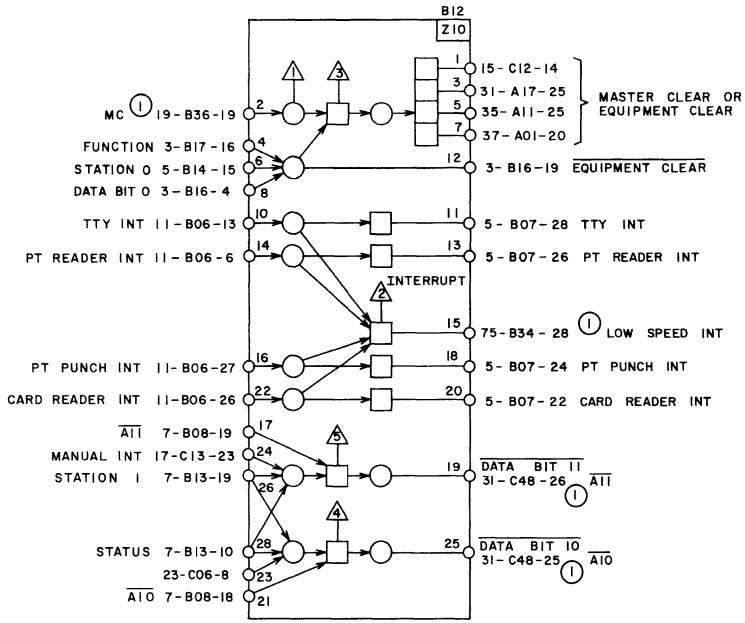
CONTROL DATA CORPORATION	TITLE: LOW SPEED SYNCHRONIZER COMMON SYNCHRONIZER (PART 3)	PRODUCT: 1700	
COMPUTER DIVISION		SIZE: C	DRAWING NO.: 60164200 REV: Z
			SHEET: PAGE: 7





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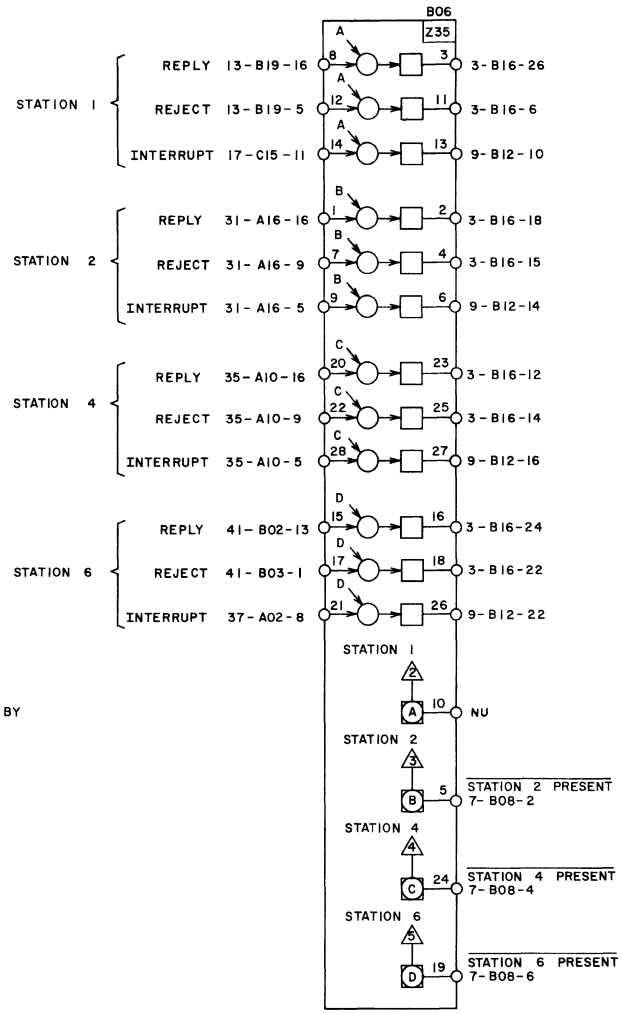
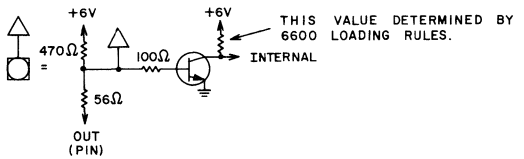
CONTROL DATA CORPORATION COMPUTER DIVISION	TITLE LOW SPEED SYNCHRONIZER COMMON SYNCHRONIZER (PART 4)	PRODUCT 1700 SIZE C · DRAWING NO. 60164200 · REV J SHEET · PAGE 9

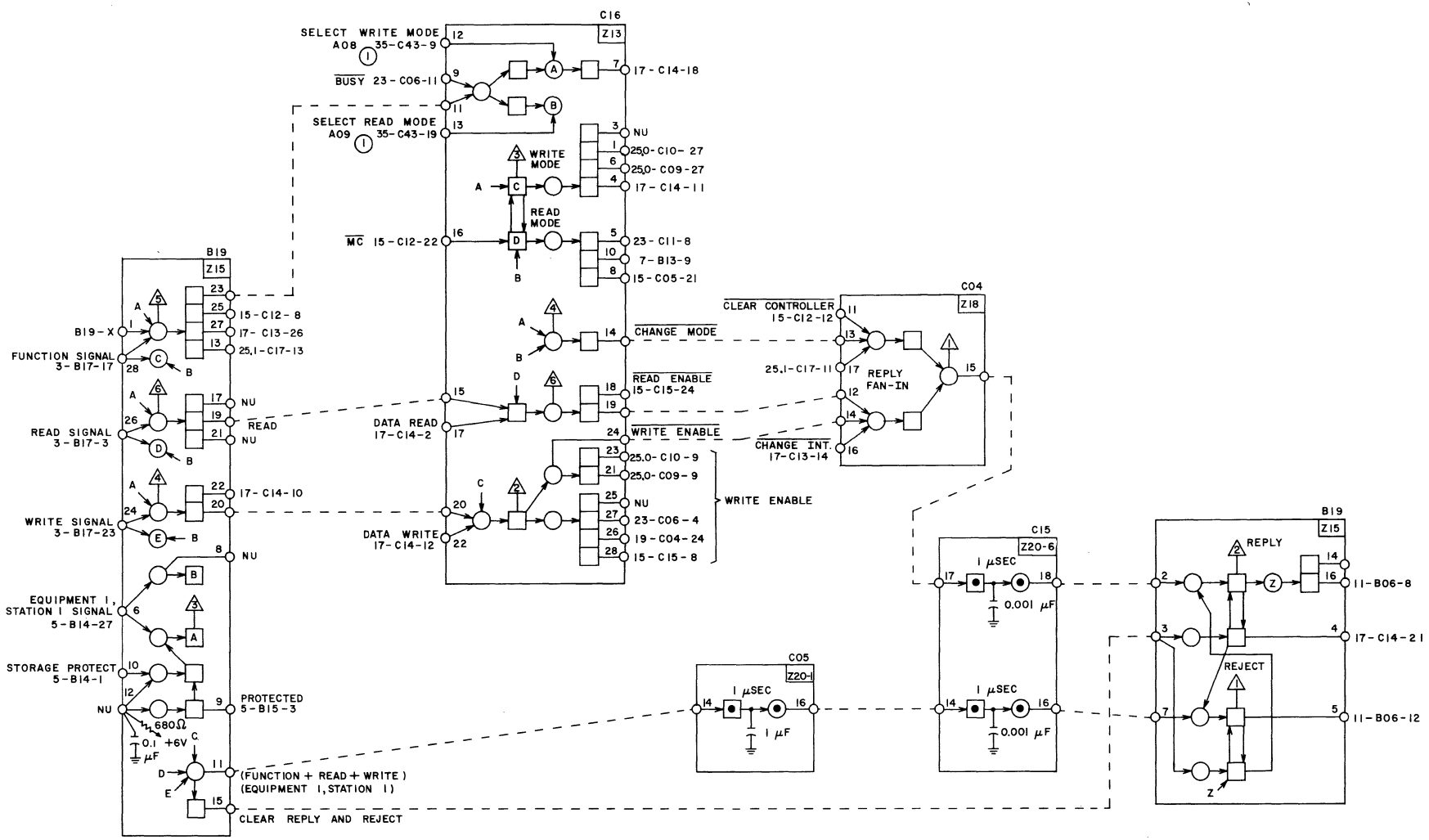




NOTE:

THE RESPECTIVE TEST POINT IS GROUNDED IF THE STATION DOES NOT EXIST.

CONTROL DATA CORPORATION COMPUTER DIVISION	TITLE LOW SPEED SYNCHRONIZER COMMON SYNCHRONIZER (PART 5)	PRODUCT 1700 SIZE C · DRAWING NO. 60164200 · REV J SHEET · PAGE 11	

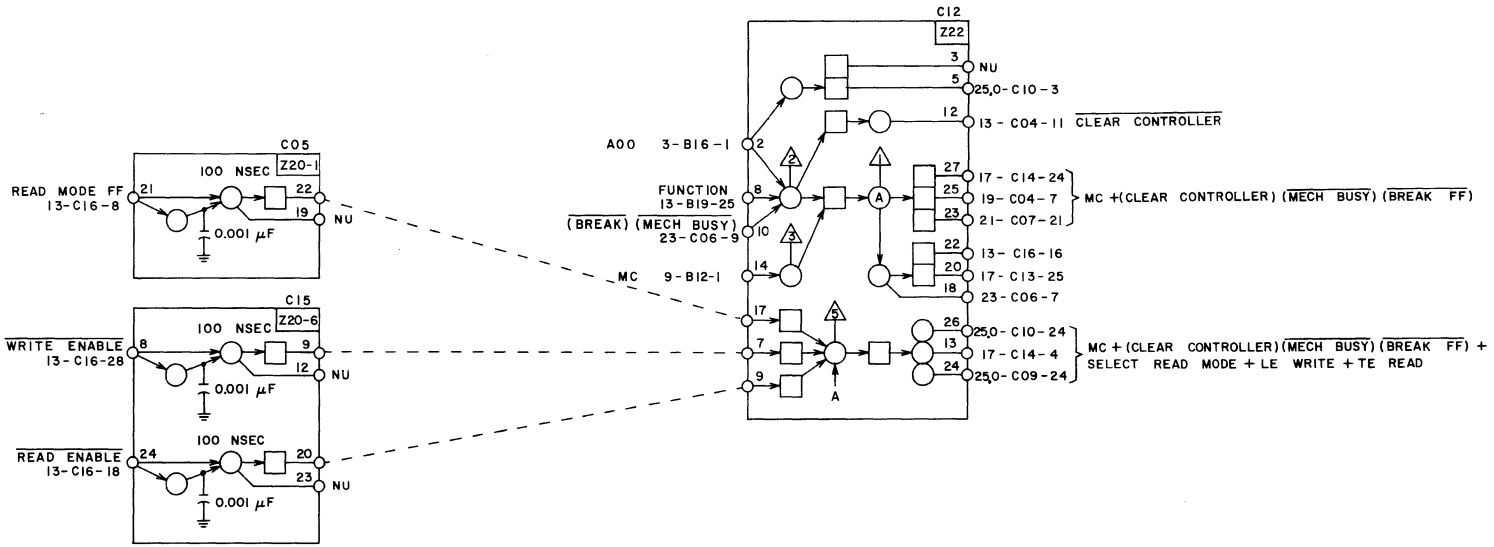


NOTE:

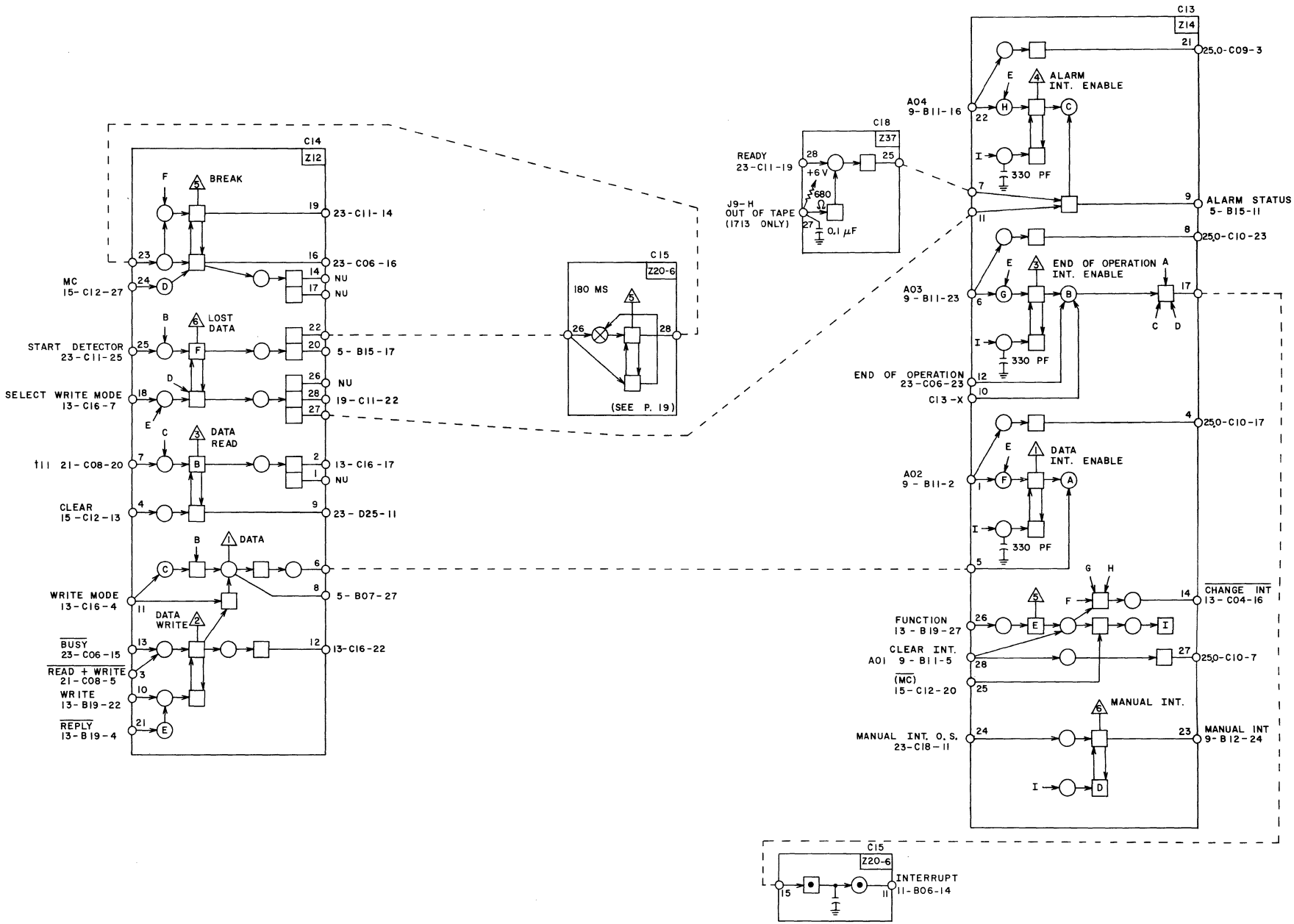
(1) DENOTES PAGE NUMBER FROM MAIN COMPUTER DIAGRAMS (1704).

2. TELETYPE IS ALWAYS NON-PROTECTED.

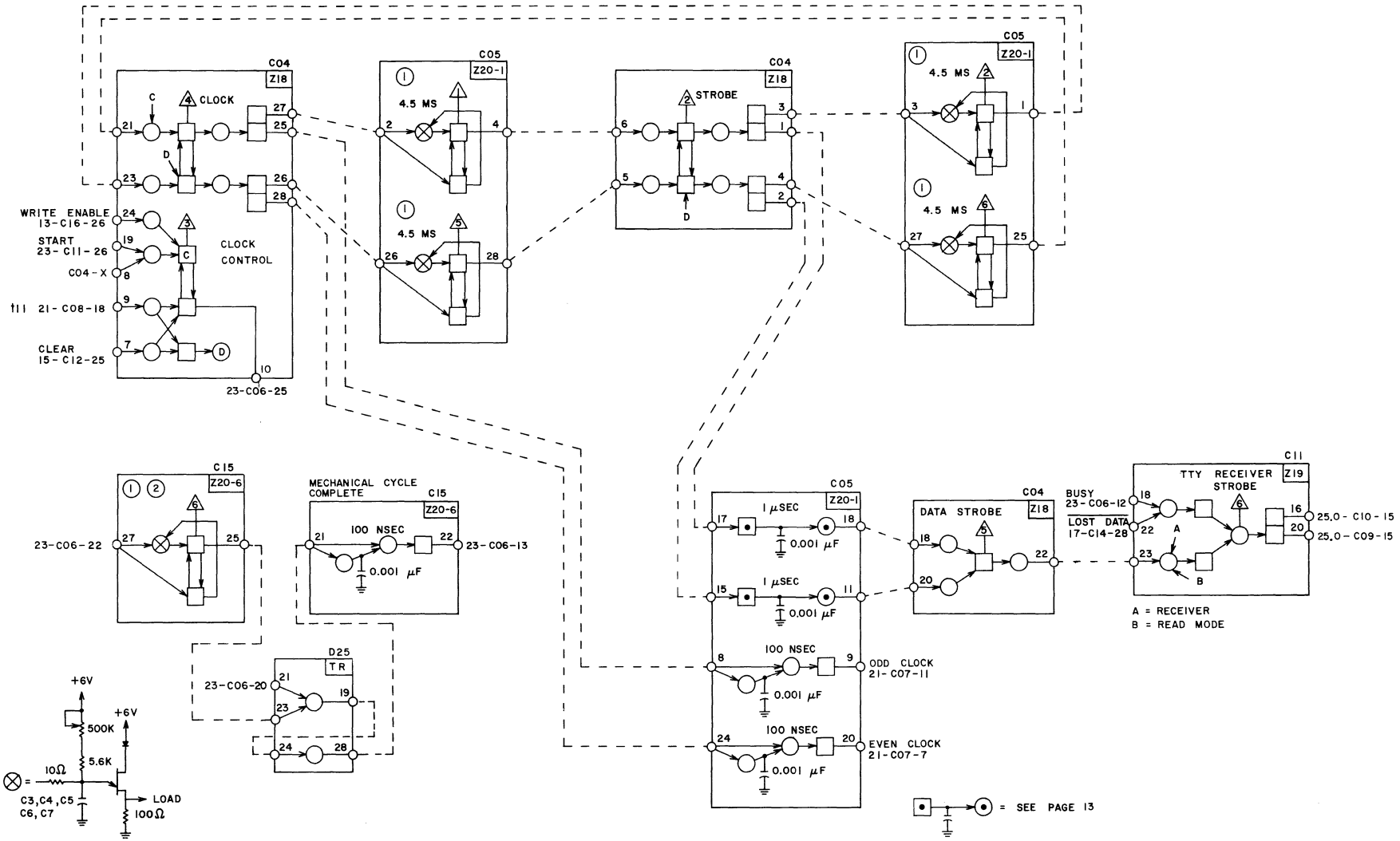
CONTROL DATA CORPORATION	TITLE: LOW SPEED SYNCHRONIZER TELETYPEWRITER COMMUNICATION ENABLES, MODE FF, REPLY & REJECT	PRODUCT: 1711/12/13	
COMPUTER DIVISION		SIZE: C	DRAWING NO.: 60164200
		REV: K	
		SHEET:	PAGE: 13



CONTROL DATA CORPORATION COMPUTER DIVISION	TITLE LOW SPEED SYNCHRONIZER TELETYPEWRITER MASTER CLEAR	PRODUCT 1711/12/13 SIZE C · DRAWING NO. 60164200 · REV K SHEET · PAGE 15



CONTROL DATA CORPORATION COMPUTER DIVISION	TITLE LOW SPEED SYNCHRONIZER TELETYPEWRITER LOST DATA, BREAK, DATA REQUEST, INTERRUPTS	PRODUCT 1711/12/13	
		SIZE C DRAWING NO. 60164200	REV Z
		SHEET PAGE 17	

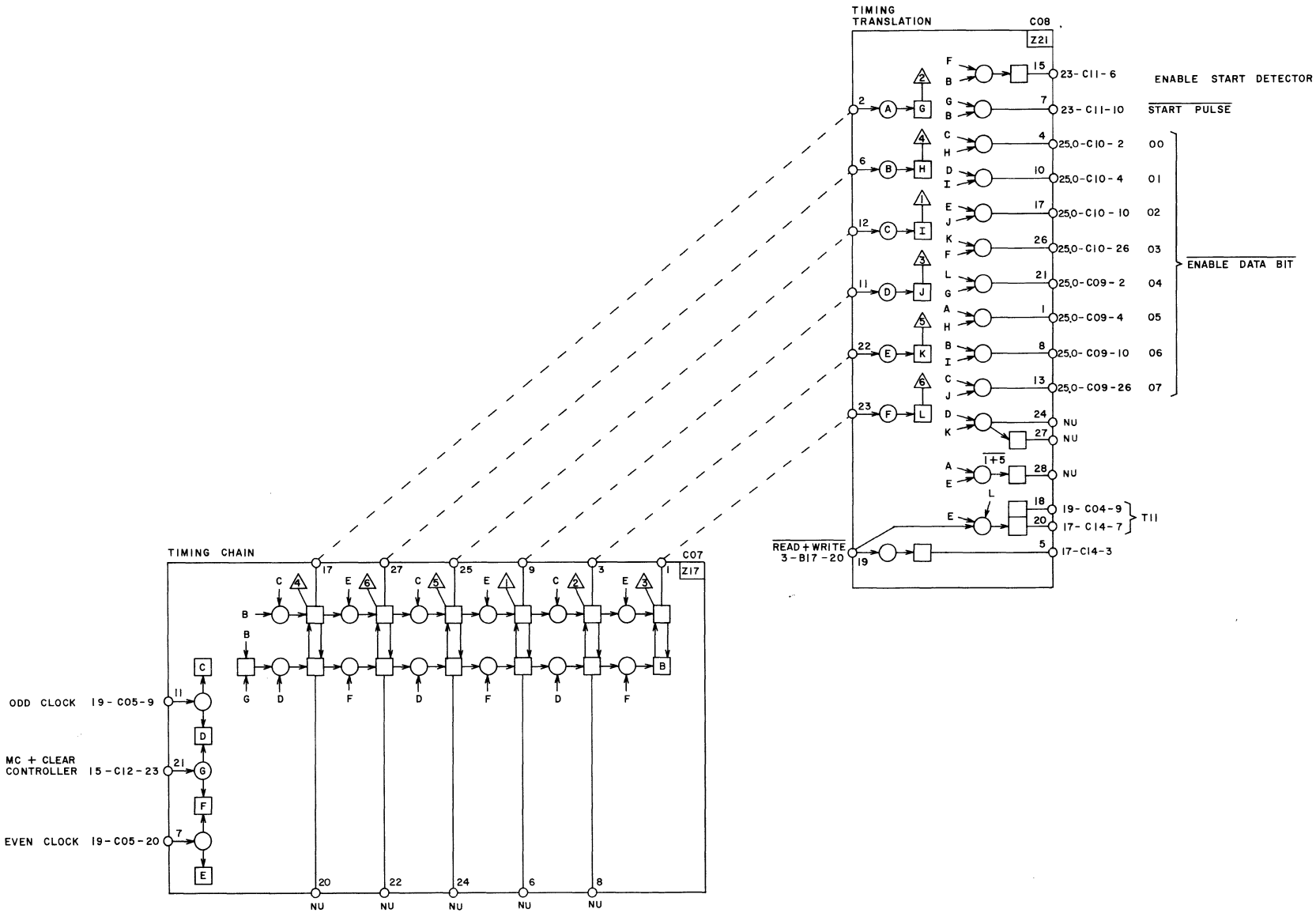


NOTES:

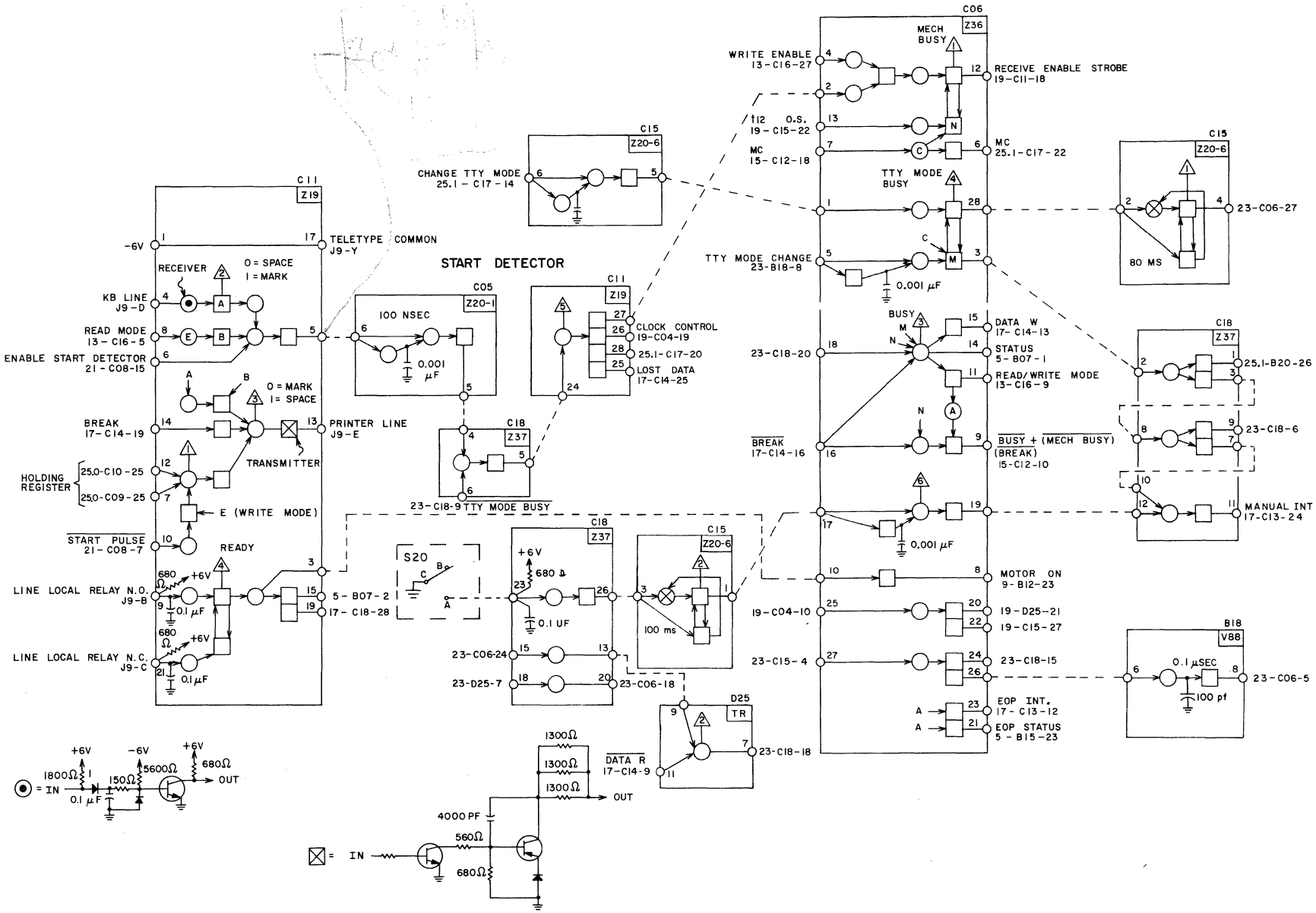
(1) VARIABLE DELAY 100 μSEC TO 1 SECOND DEPENDING ON VALUE OF CAPACITOR.

(2) ADJUST THIS DELAY SO THAT THE MECHANICAL BUSY FLIP FLOP JUST FAILS TO CLEAR WHEN THE KEYBOARD OR TAPE READER IS RUNNING FULL SPEED.

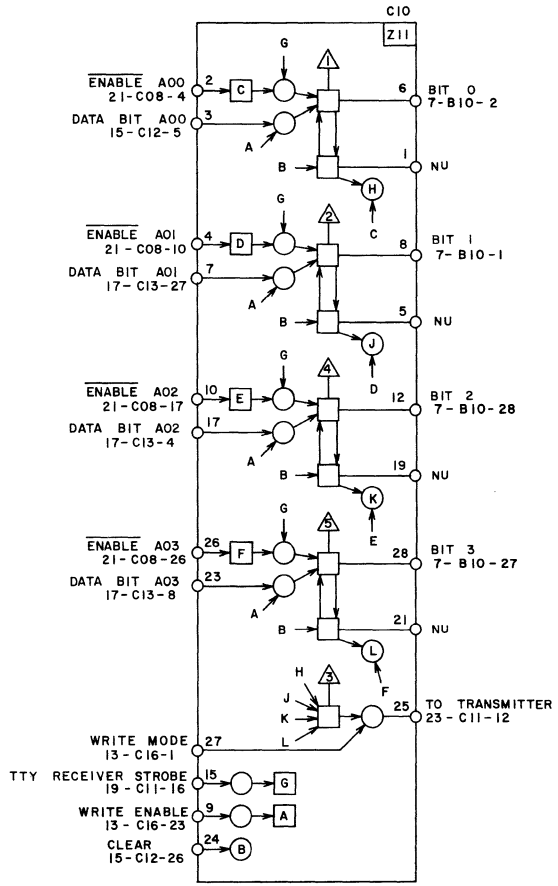
CONTROL DATA CORPORATION COMPUTER DIVISION	TITLE LOW SPEED SYNCHRONIZER TELETYPEWRITER CLOCK, RECEIVE ENABLE STROBE	PRODUCT 1711/12/13 SIZE C · DRAWING NO. 60164200 · REV P SHEET · PAGE 19

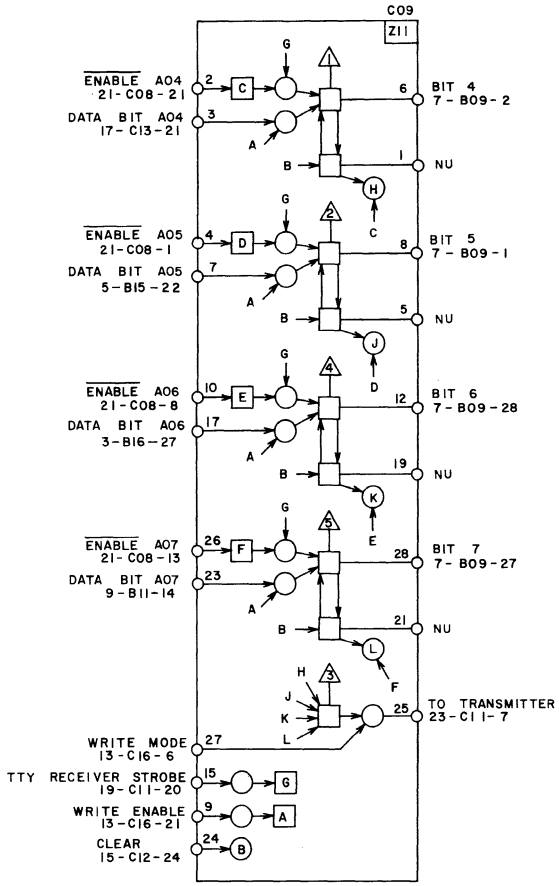


CONTROL DATA CORPORATION	TITLE: LOW SPEED SYNCHRONIZER TELETYPEWRITER TIMING CHAIN, TIMING CHAIN TRANSLATIONS	PRODUCT: 1711/12/13	
COMPUTER DIVISION		SIZE: C · DRAWING NO.: 60164200	REV: J
		SHEET / PAGE: 21	

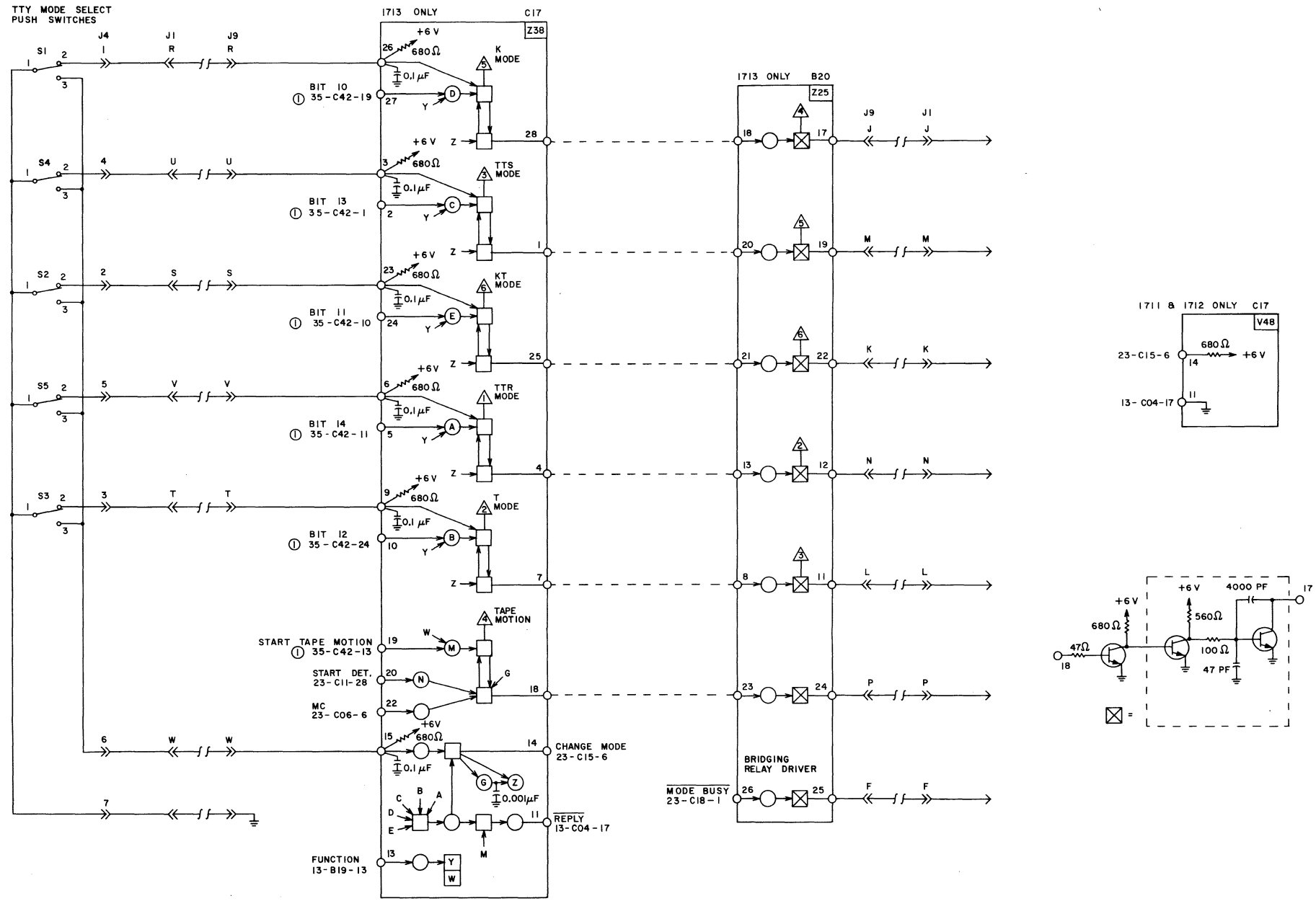


CONTROL DATA CORPORATION COMPUTER DIVISION	TITLE LOW SPEED SYNCHRONIZER TELETYPEWRITER RECEIVER, TRANSMITTER, MOTOR CONTROL, BUSY, END-OF-XMSN FAN-IN	PRODUCT 1711/12/13 SIZE C · DRAWING NO. 60164200 · REV Z SHEET · PAGE 23	





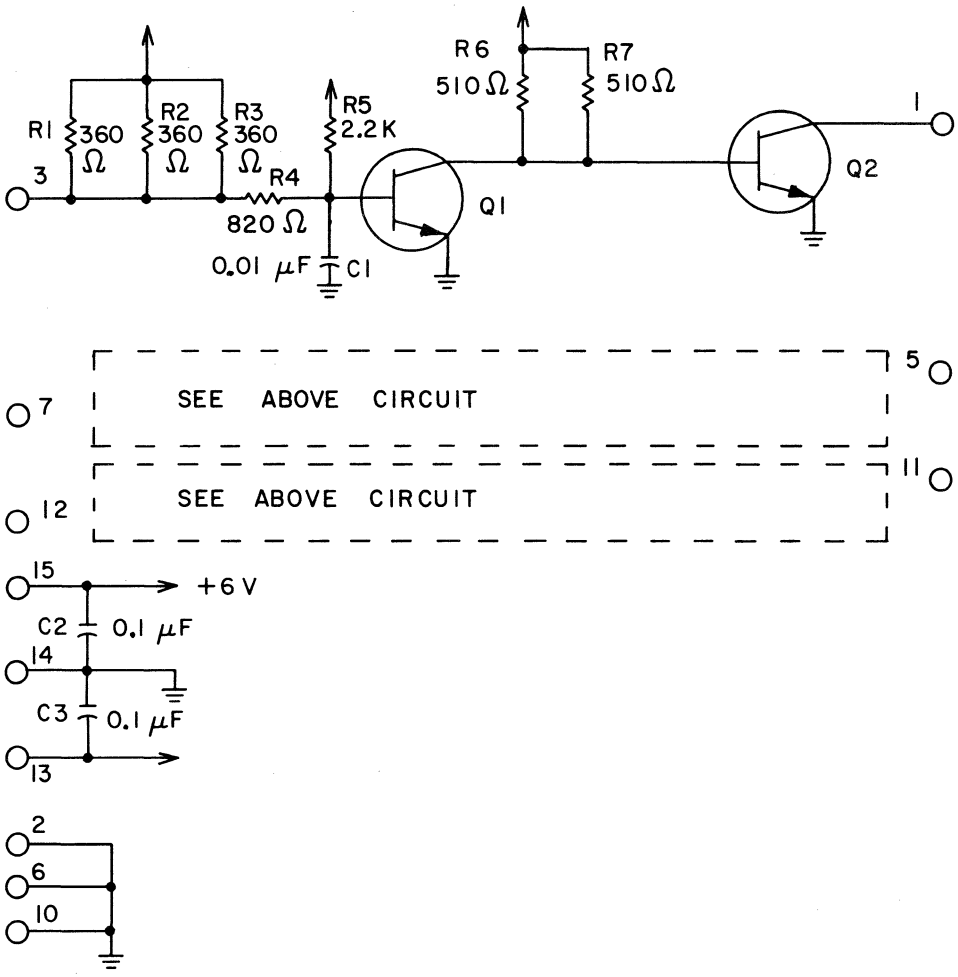
CONTROL DATA CORPORATION COMPUTER DIVISION	TITLE LOW SPEED SYNCHRONIZER TELETYPEWRITER DATA HOLDING REGISTERS	PRODUCT 1711/12/13 SIZE C · DRAWING NO. 60164200 · REV P SHEET · PAGE 25.0



NOTE:

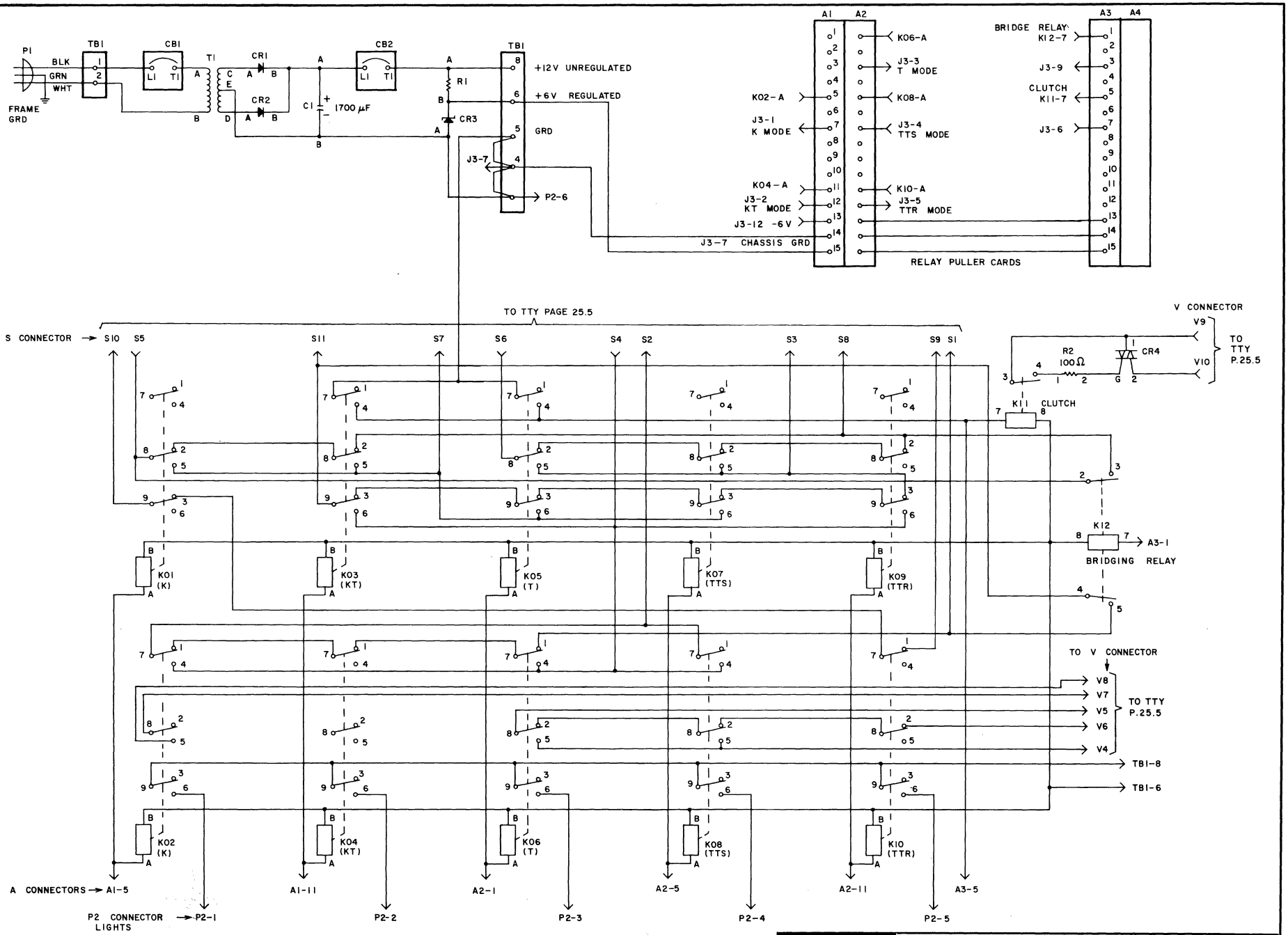
① DENOTES PAGE NUMBER FROM MAIN COMPUTER DIAGRAMS (1704).

CONTROL DATA CORPORATION DEVELOPMENT DIVISION	TITLE TELETYPEWRITER MODE SELECTION	PRODUCT 1711/12/13	
		SIZE C	DRAWING NO. 60164200
		REV. P	
		SHEET	PAGE 25.1



NOTE :

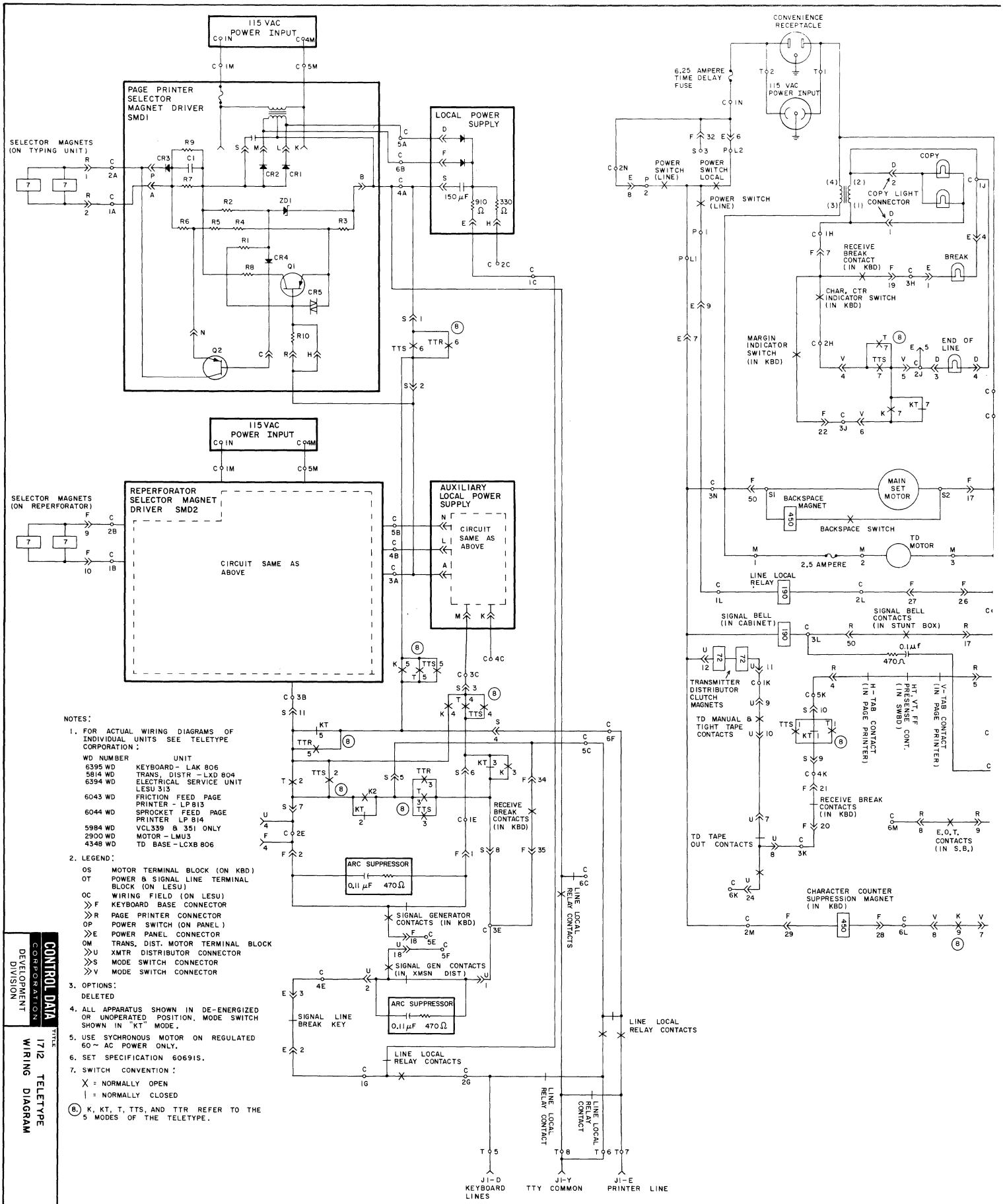
CIRCUIT DIAGRAM FOR A1, A2, AND A3 ON PAGE 25.3 .



CONTROL DATA CORPORATION
DEVELOPMENT DIVISION

TITLE: RELAY CHASSIS ELECTRICAL SCHEMATIC

PRODUCT: 1713 TTY
SIZE: C | DRAWING NO.: 60164200 | REV.: 7
SHEET | PAGE: 25.3



NOTES:

1. FOR ACTUAL WIRING DIAGRAMS OF INDIVIDUAL UNITS SEE TELETYPE CORPORATION:

WD NUMBER	UNIT
6395 WD	KEYBOARD - LAK 806
5814 WD	TRANS. DISTR - LXD 804
6394 WD	ELECTRICAL SERVICE UNIT LESU 313
6043 WD	FRICTION FEED PAGE PRINTER - LP 813
6044 WD	SPROCKET FEED PAGE PRINTER LP 814
5984 WD	VCL 339 & 351 ONLY
2900 WD	MOTOR - LMU3
4348 WD	TD BASE - LCXB 806

2. LEGEND:

OS	MOTOR TERMINAL BLOCK (ON KBD)
OT	POWER & SIGNAL LINE TERMINAL BLOCK (ON LESU)
OC	WIRING FIELD (ON LESU)
»F	KEYBOARD BASE CONNECTOR
»R	PAGE PRINTER CONNECTOR
OP	POWER SWITCH (ON PANEL)
»E	POWER PANEL CONNECTOR
OM	TRANS. DIST. MOTOR TERMINAL BLOCK
»U	XMTR DISTRIBUTOR CONNECTOR
»S	MODE SWITCH CONNECTOR
»V	MODE SWITCH CONNECTOR

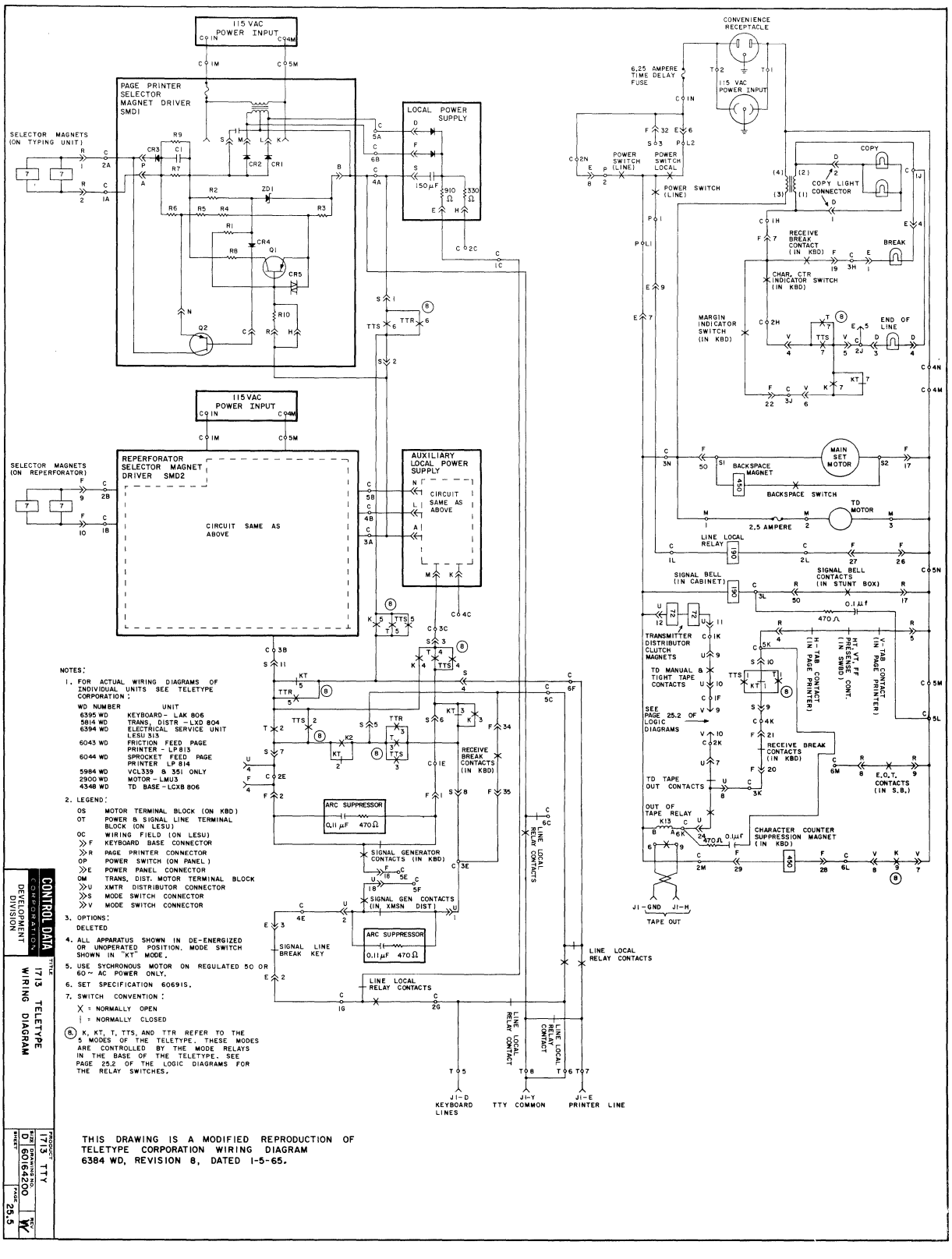
3. OPTIONS:
   DELETED
4. ALL APPARATUS SHOWN IN DE-ENERGIZED OR UNOPERATED POSITION, MODE SWITCH SHOWN IN "KT" MODE.
5. USE SYCHRONOUS MOTOR ON REGULATED 60 ~ AC POWER ONLY.
6. SET SPECIFICATION 6069IS.
7. SWITCH CONVENTION:
   X = NORMALLY OPEN
   | = NORMALLY CLOSED
8. K, KT, T, TTS, AND TTR REFER TO THE 5 MODES OF THE TELETYPE.

THIS DRAWING IS A MODIFIED REPRODUCTION OF TELETYPE CORPORATION WIRING DIAGRAM 6384 WD, REVISION 8, DATED 1-5-65.

CONTROL DATA CORPORATION
DEVELOPMENT DIVISION

TITLE: 1712 TELETYPE WIRING DIAGRAM

PRODUCT: 1712 TTY
SIZE: D
DRAWING NO.: 60164200
REV: K
SHEET
PAGE: 25.4



NOTES:

1. FOR ACTUAL WIRING DIAGRAMS OF INDIVIDUAL UNITS SEE TELETYPE CORPORATION :

WD NUMBER	UNIT
6395 WD	KEYBOARD - LAK 806
5814 WD	TRANS, DISTR - LXD 804
6394 WD	ELECTRICAL SERVICE UNIT LESU 513
6043 WD	FRICTION FEED PAGE PRINTER - LP 813
6044 WD	SPROCKET FEED PAGE PRINTER LP 814
5984 WD	VCL339 & 351 ONLY
2900 WD	MOTOR - LMU3
4348 WD	TD BASE - LCXB 806

2. LEGEND:

OS	MOTOR TERMINAL BLOCK (ON KBD)
OT	POWER & SIGNAL LINE TERMINAL BLOCK (ON LESU)
OC	WIRING FIELD (ON LESU)
>>F	KEYBOARD BASE CONNECTOR
>>R	PAGE PRINTER CONNECTOR
OP	POWER SWITCH (ON PANEL)
>>E	POWER PANEL CONNECTOR
OM	TRANS. DIST. MOTOR TERMINAL BLOCK
>>U	XMTR DISTRIBUTOR CONNECTOR
>>S	MODE SWITCH CONNECTOR
>>V	MODE SWITCH CONNECTOR

3. OPTIONS:
   DELETED
4. ALL APPARATUS SHOWN IN DE-ENERGIZED OR UNOPERATED POSITION. MODE SWITCH SHOWN IN "KT" MODE.
5. USE SYCHRONOUS MOTOR ON REGULATED 50 OR 60 ~ AC POWER ONLY.
6. SET SPECIFICATION 60691S.
7. SWITCH CONVENTION :
   X = NORMALLY OPEN
   | = NORMALLY CLOSED

(8) K, KT, T, TTS, AND TTR REFER TO THE 5 MODES OF THE TELETYPE. THESE MODES ARE CONTROLLED BY THE MODE RELAYS IN THE BASE OF THE TELETYPE. SEE PAGE 25.2 OF THE LOGIC DIAGRAMS FOR THE RELAY SWITCHES.

THIS DRAWING IS A MODIFIED REPRODUCTION OF TELETYPE CORPORATION WIRING DIAGRAM 6384 WD, REVISION 8, DATED 1-5-65.

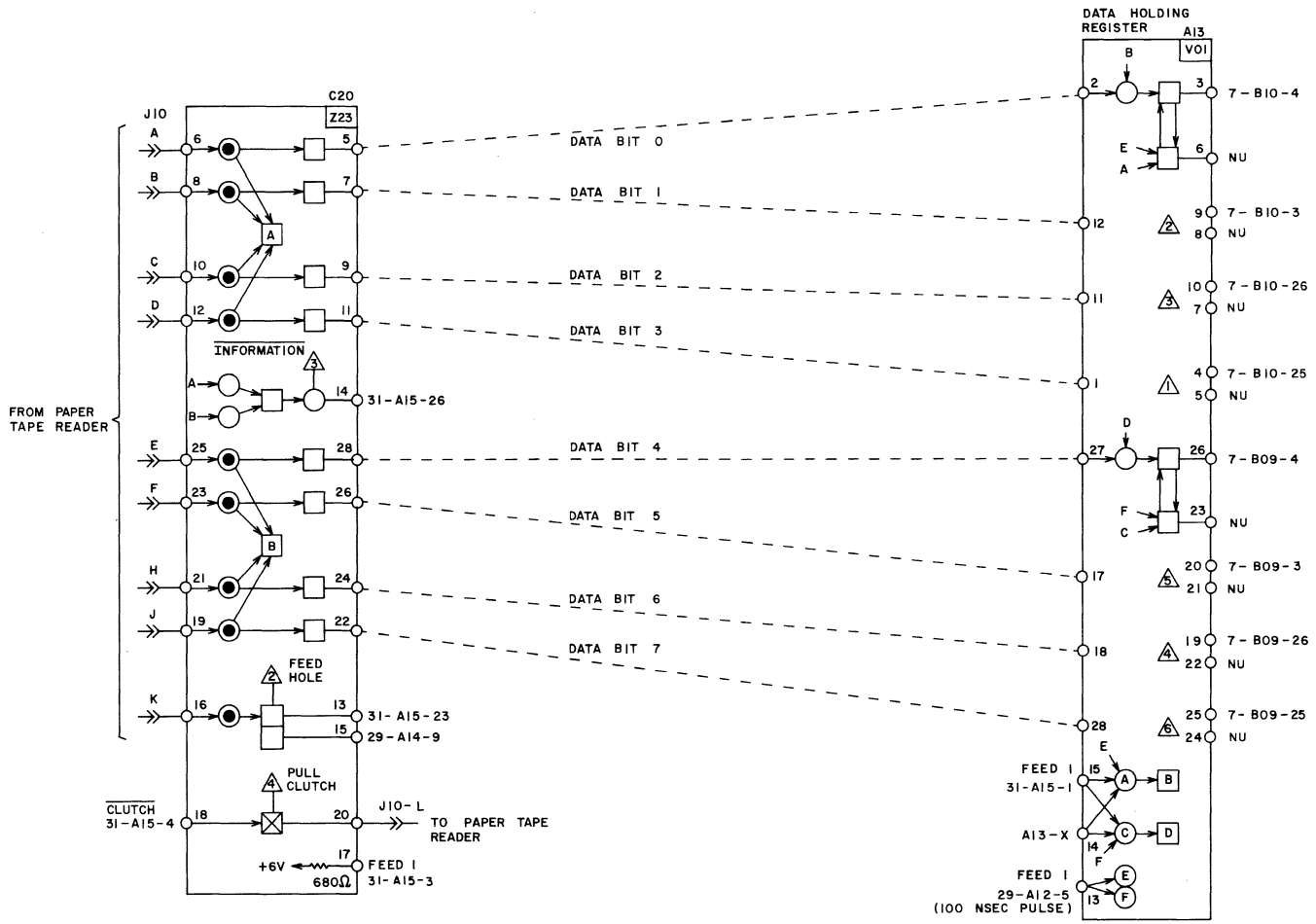
CONTROL DATA CORPORATION
DEVELOPMENT DIVISION

TITLE: 1713 TELETYPE WIRING DIAGRAM

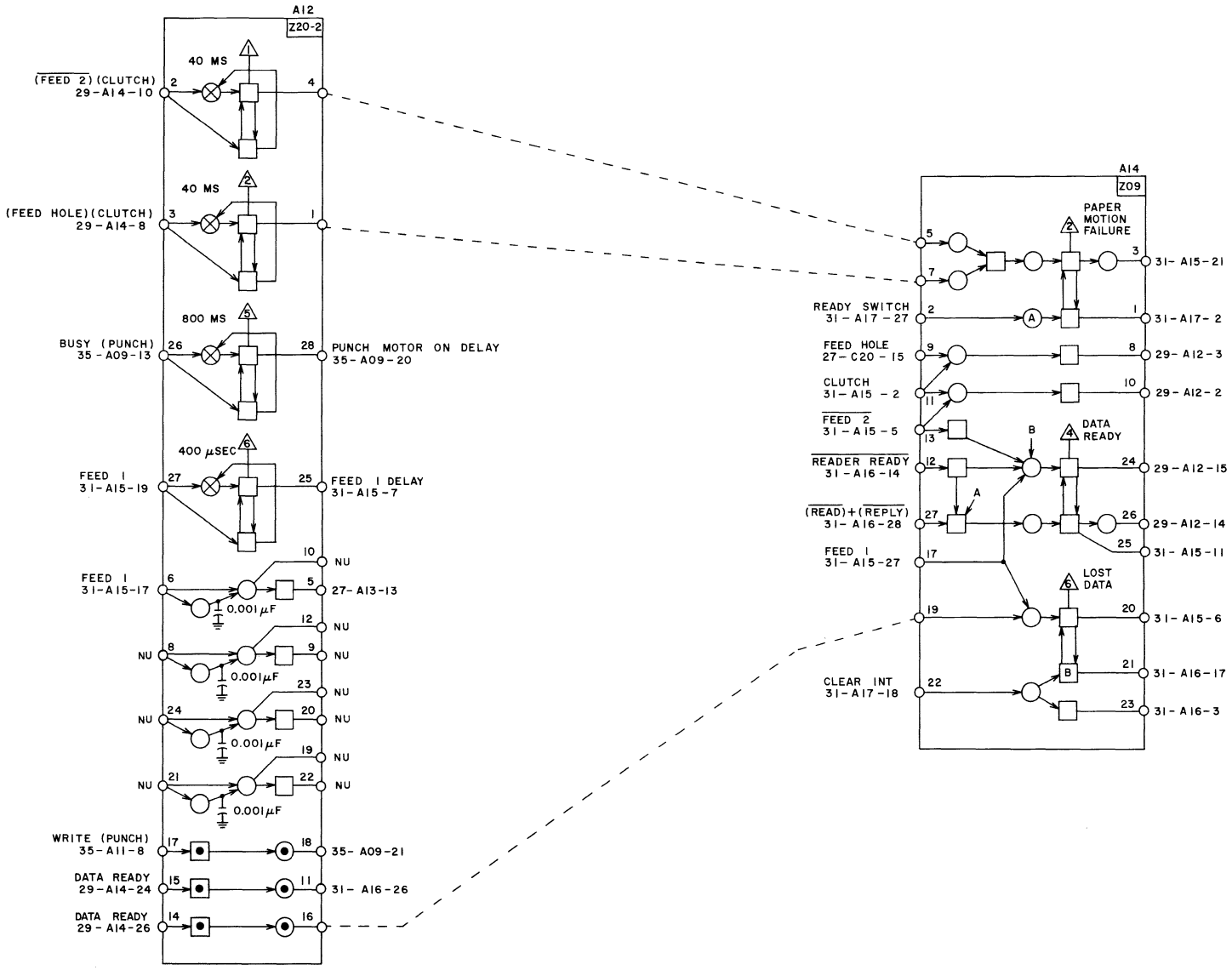
SIZE D | DRAWING NO. 60164200 | REV W

PRODUCT 1713 TTY

SHEET | PAGE 25.5



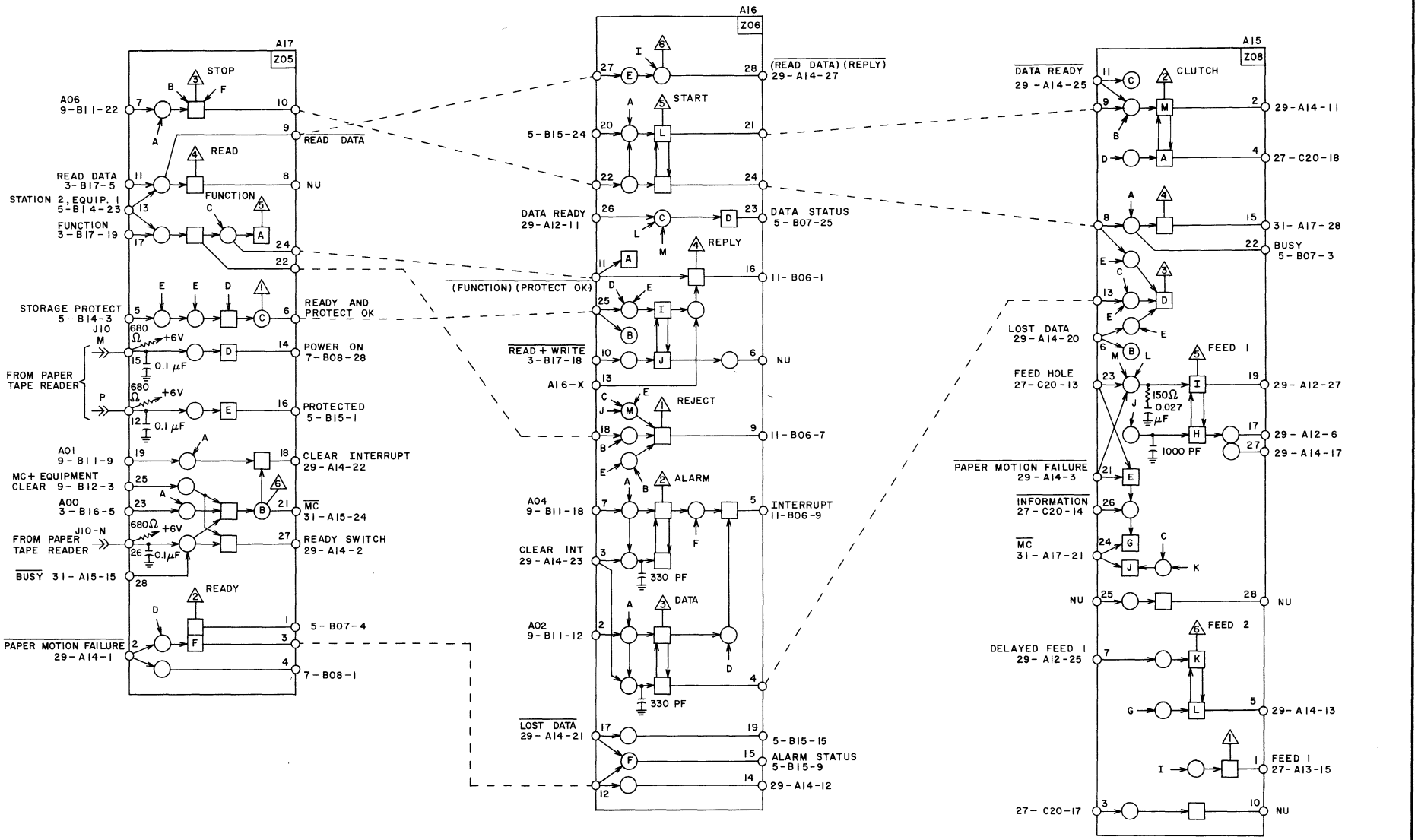
CONTROL DATA CORPORATION	TITLE: LOW SPEED SYNCHRONIZER PAPER TAPE READER (PART 1)	PRODUCT 1721	
COMPUTER DIVISION		SIZE C · DRAWING NO. 60164200 · REV J	
		SHEET · PAGE 27	



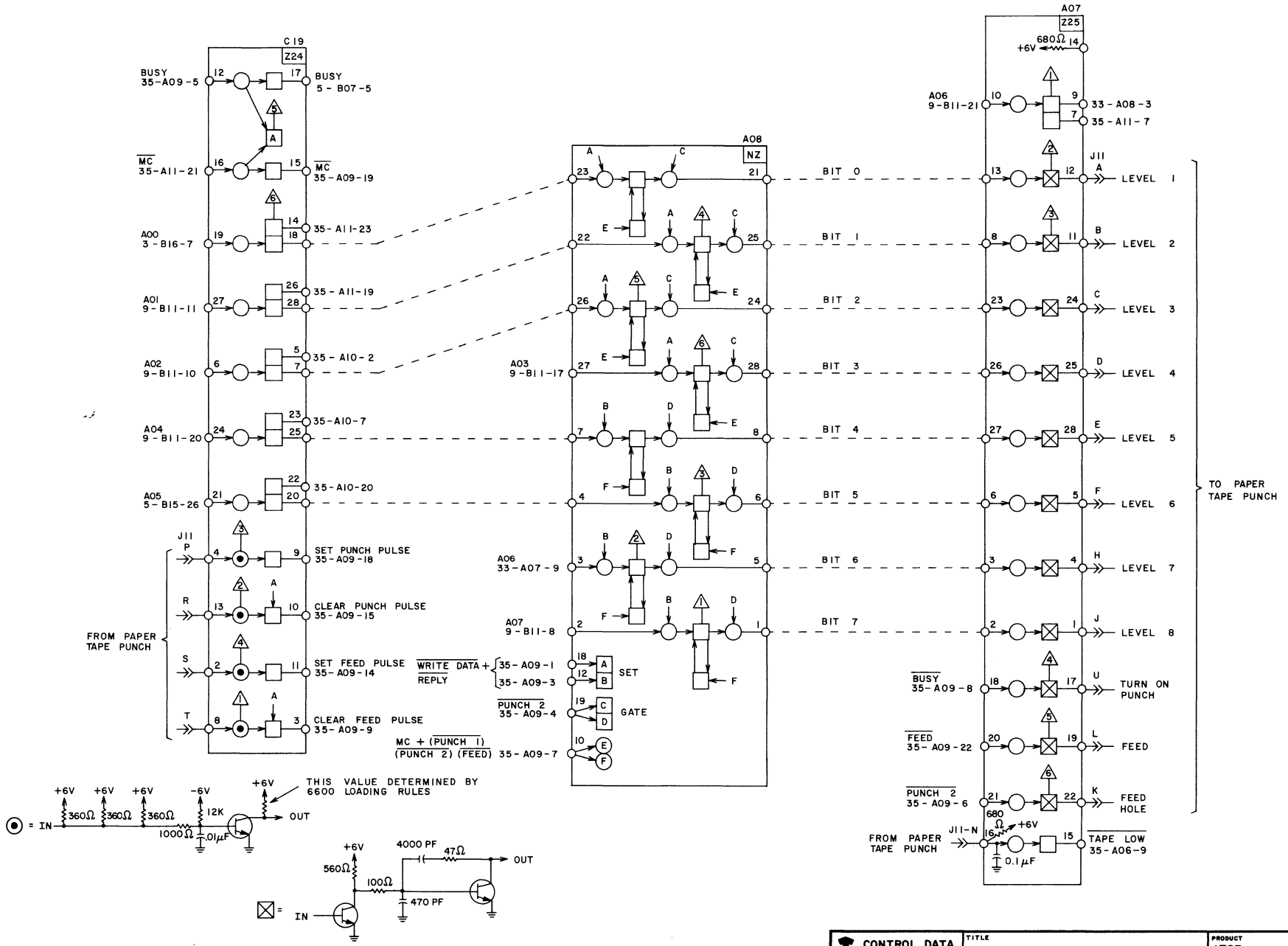
= SEE PAGE 13

= SEE PAGE 19

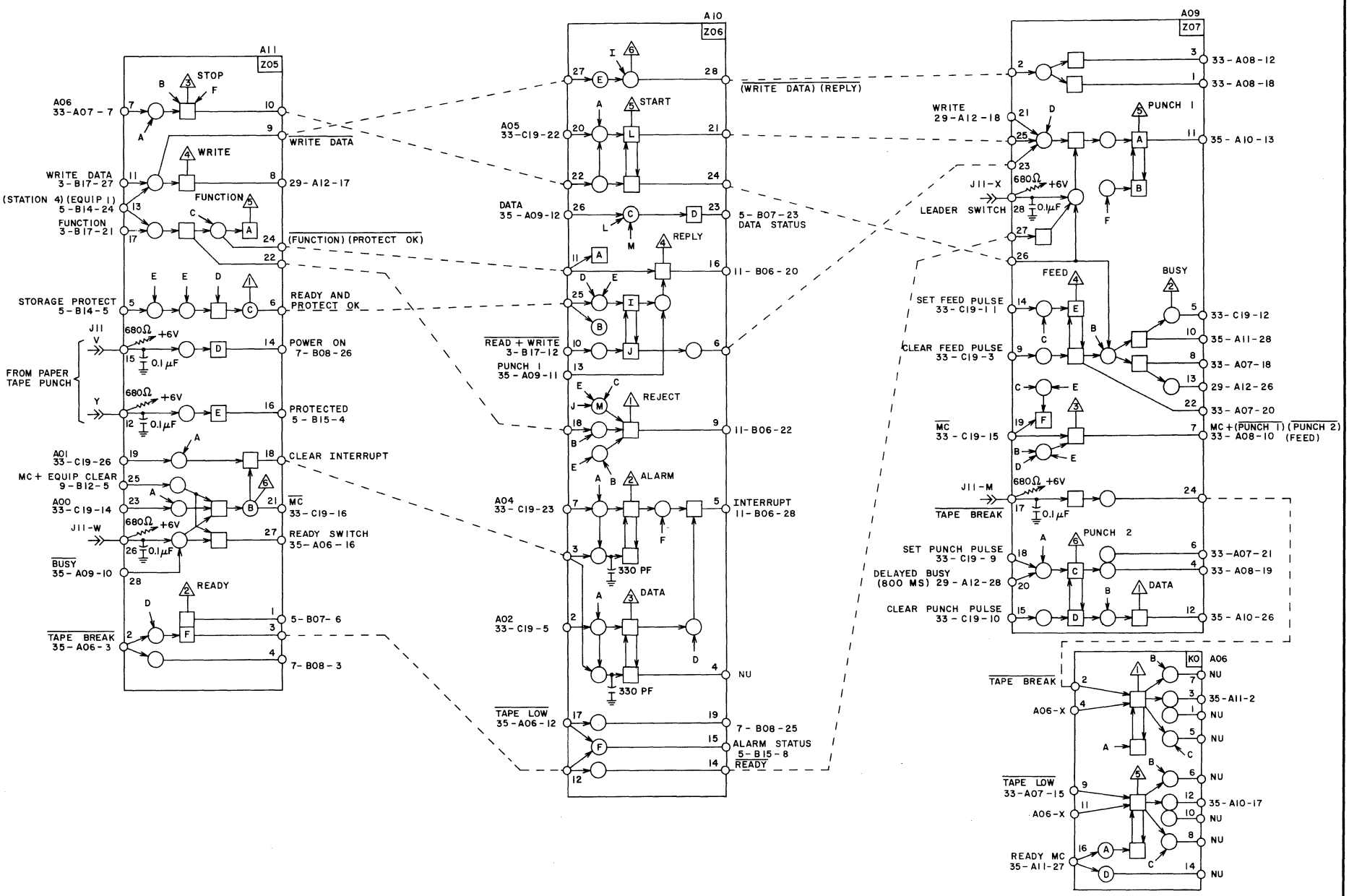
CONTROL DATA CORPORATION	TITLE: LOW SPEED SYNCHRONIZER PAPER TAPE READER (PART 2)	PRODUCT 1721	
COMPUTER DIVISION		SIZE C	DRAWING NO. 60164200 REV J
			SHEET 29



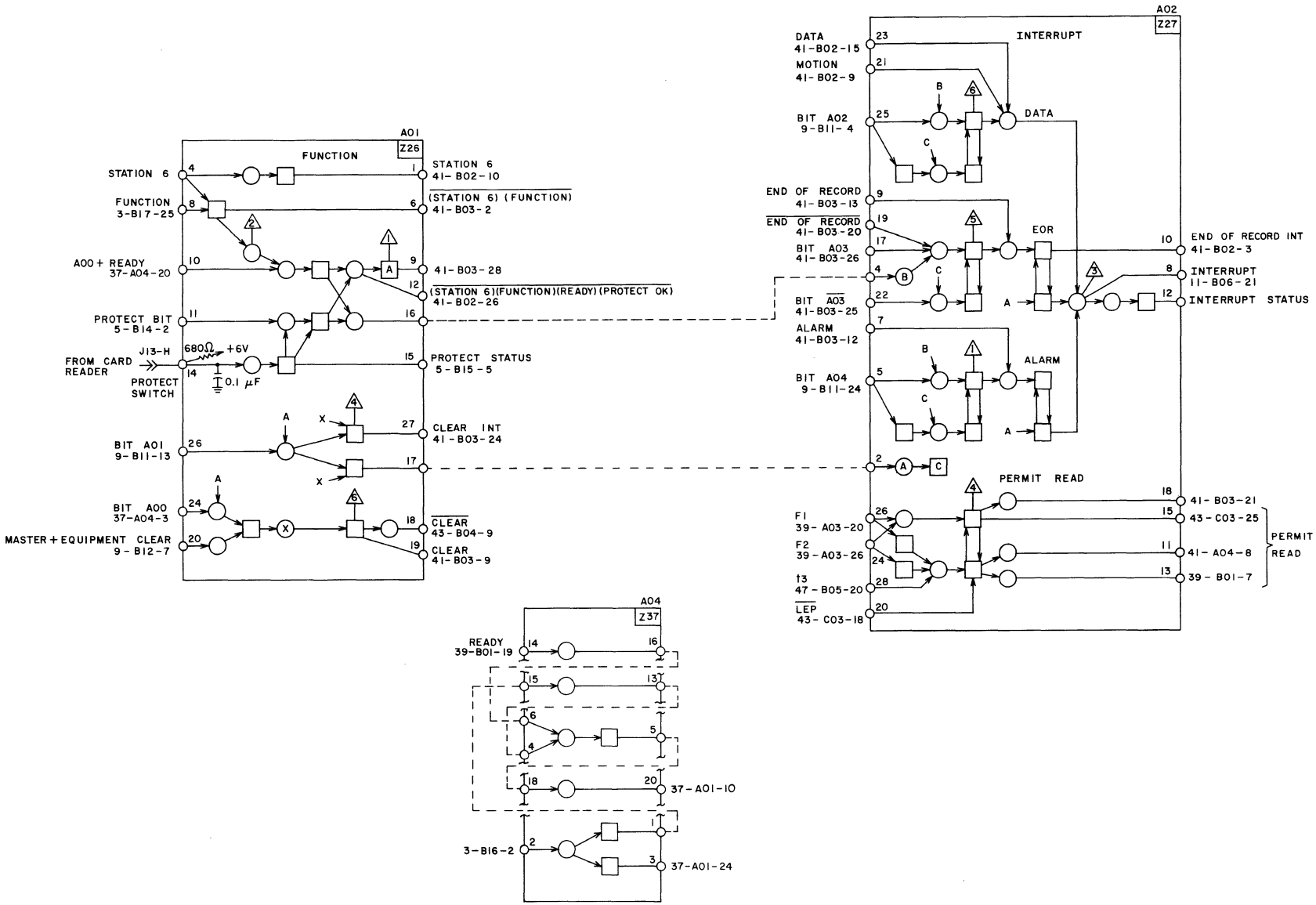
CONTROL DATA CORPORATION COMPUTER DIVISION	TITLE LOW SPEED SYNCHRONIZER PAPER TAPE READER (PART 3)	PRODUCT 1721 SIZE C · DRAWING NO. 60164200 · REV J SHEET 31	



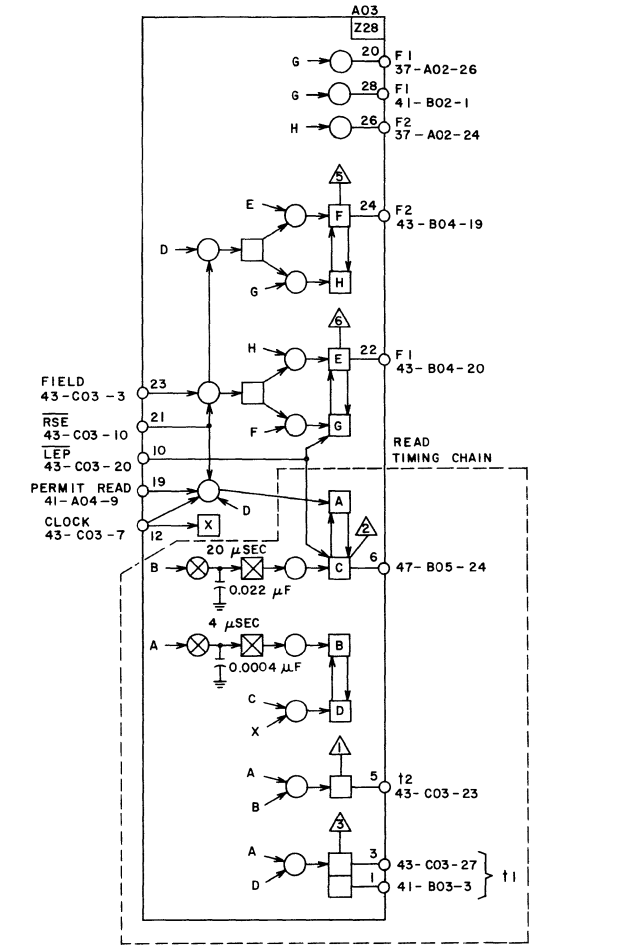
CONTROL DATA CORPORATION	TITLE: LOW SPEED SYNCHRONIZER PAPER TAPE PUNCH (PART 1)	PRODUCT 1723	
COMPUTER DIVISION		SIZE C	DRAWING NO. 60164200 REV V
			SHEET PAGE 33

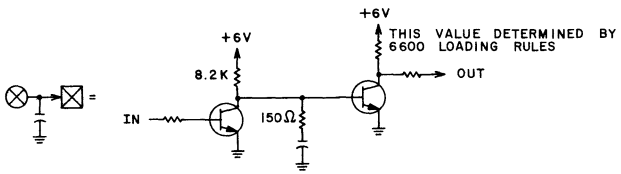


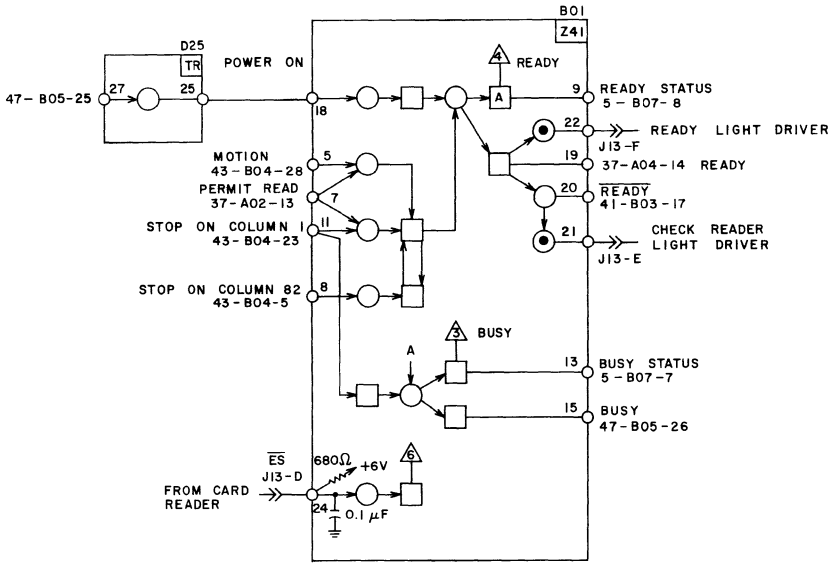
CONTROL DATA CORPORATION COMPUTER DIVISION	TITLE LOW SPEED SYNCHRONIZER PAPER TAPE PUNCH (PART 2)	PRODUCT 1723	
		SIZE C	DRAWING NO. 60164200 REV Z
			SHEET 35

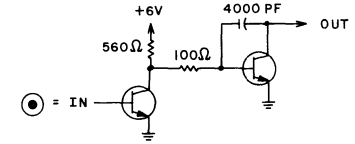


CONTROL DATA CORPORATION	TITLE: LOW SPEED SYNCHRONIZER CARD READER (PART 1)	PRODUCT 1729	
COMPUTER DIVISION		SIZE C	DRAWING NO. 60164200 REV 1
			SHEET PAGE 37

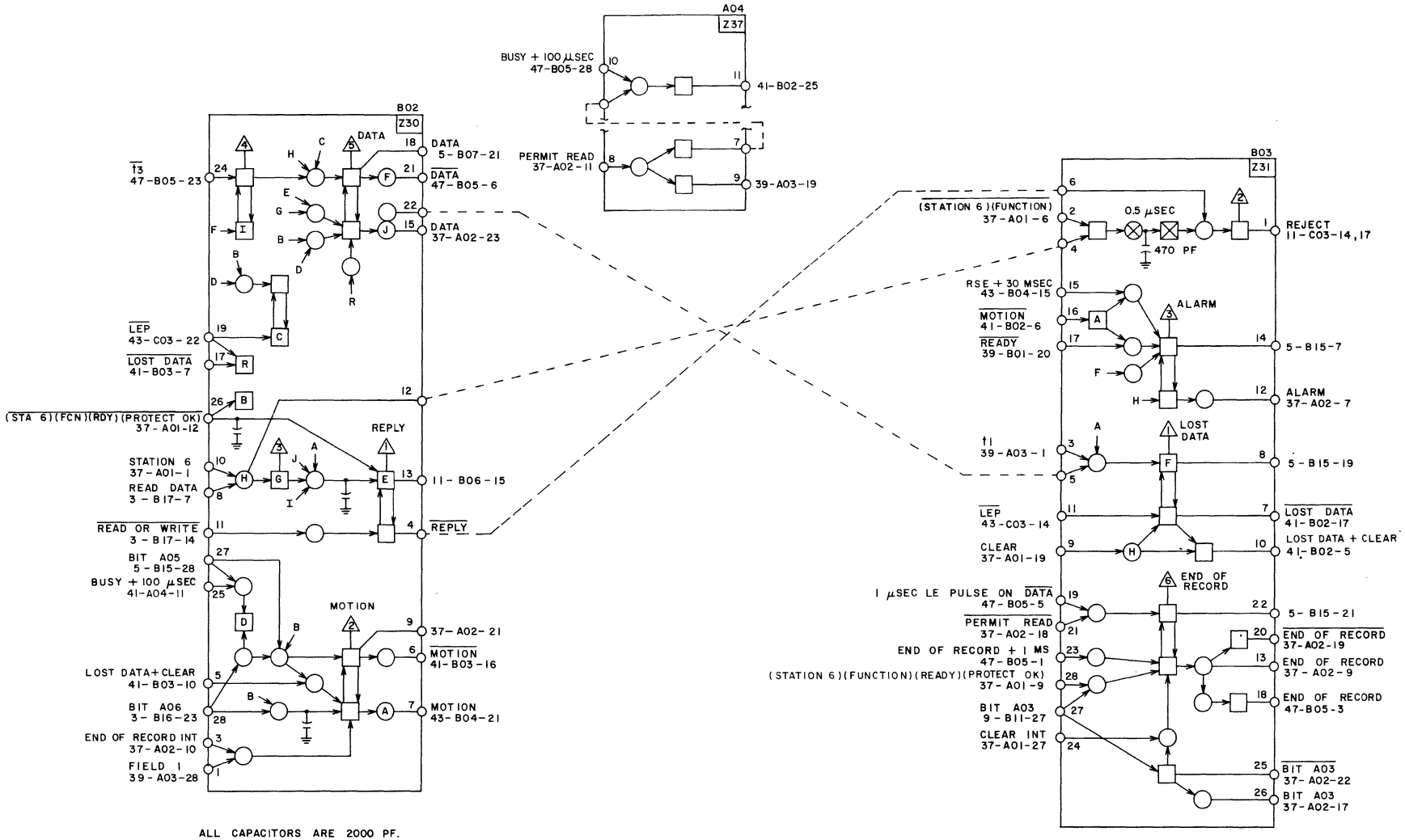




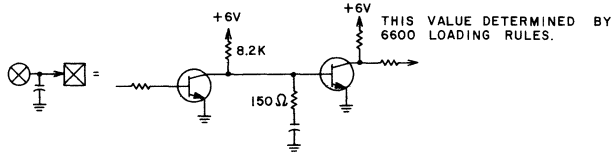




CONTROL DATA CORPORATION COMPUTER DIVISION	TITLE LOW SPEED SYNCHRONIZER CARD READER (PART 2)	PRODUCT 1729	
		SIZE C	DRAWING NO. 60164200
		REV Y	
		SHEET PAGE 39	

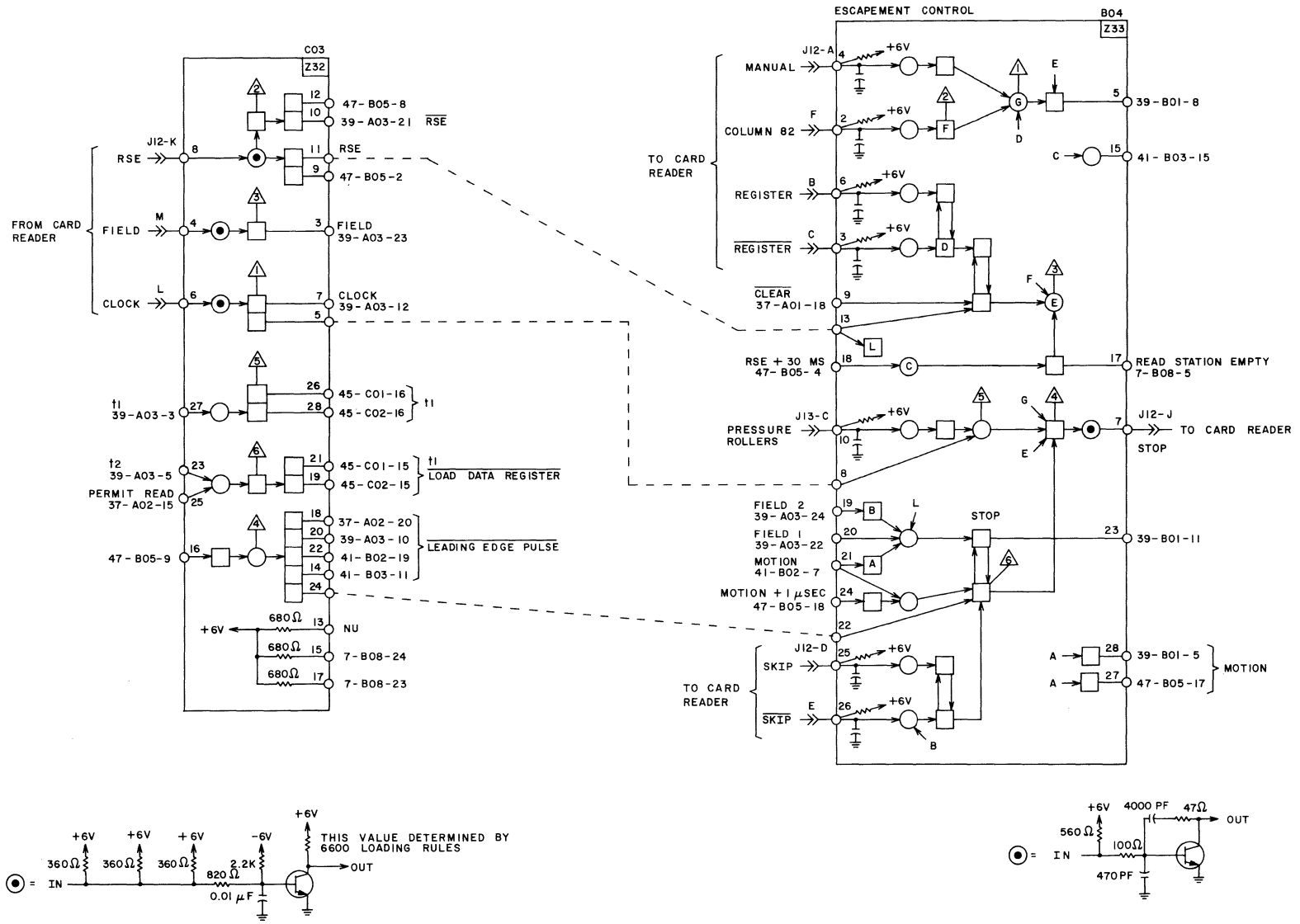


ALL CAPACITORS ARE 2000 PF.
(FOR MODULE Z30 ONLY)

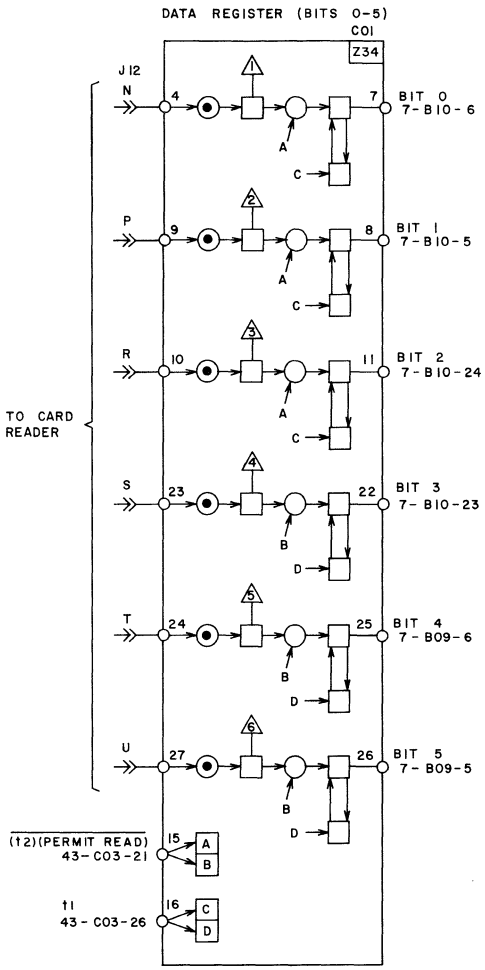


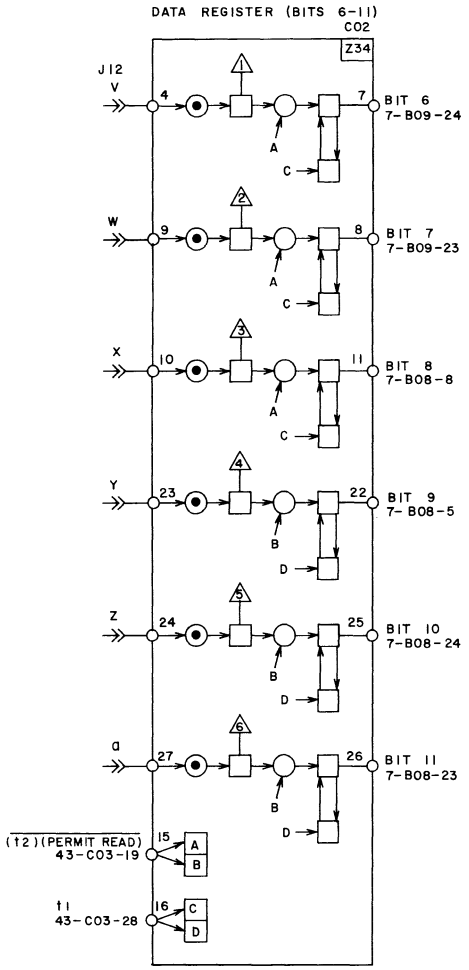
(FOR MODULE Z31 ONLY)

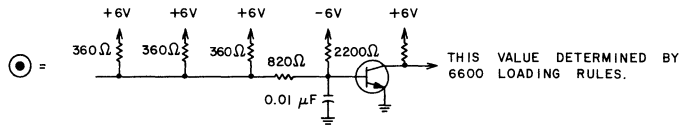
CONTROL DATA CORPORATION	TITLE: LOW SPEED SYNCHRONIZER CARD READER (PART 3)	PRODUCT: 1729	
COMPUTER DIVISION		SIZE: C	DRAWING NO.: 60164200 REV: L
			SHEET: 41



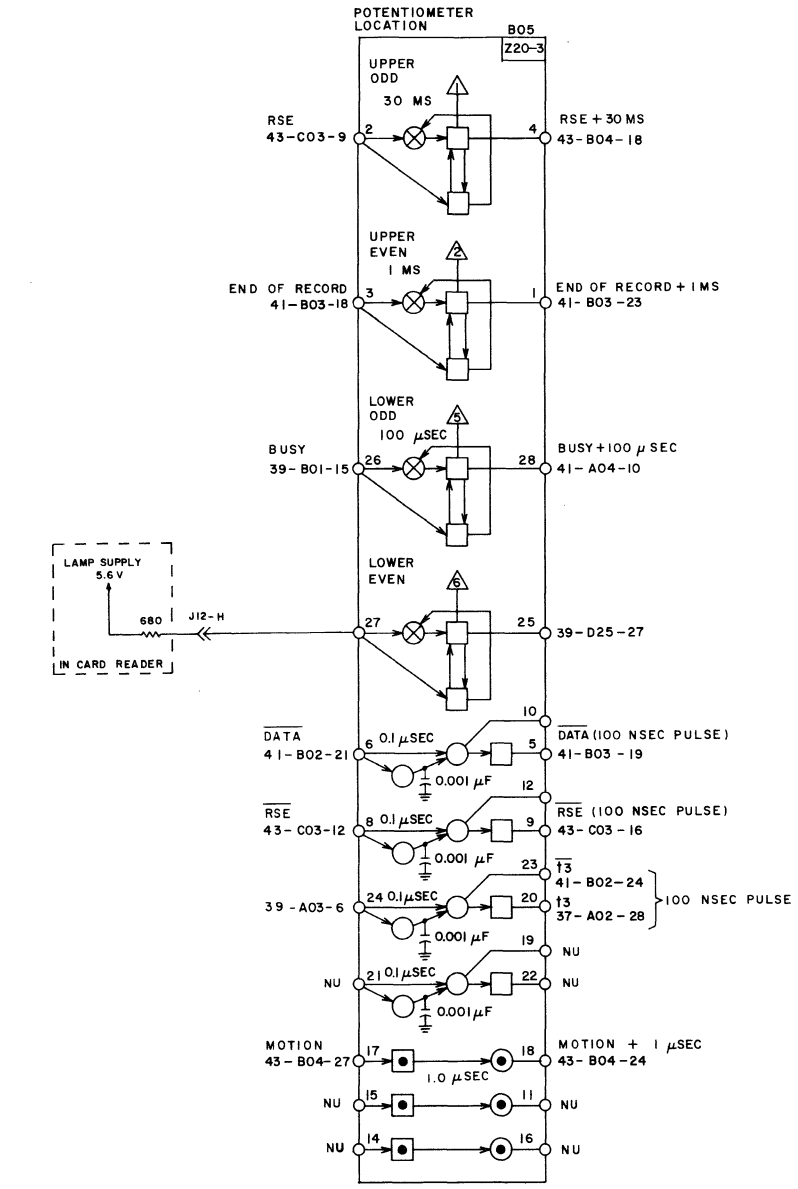
CONTROL DATA CORPORATION	TITLE: LOW SPEED SYNCHRONIZER CARD READER (PART 4)	PRODUCT: 1729	
COMPUTER DIVISION		SIZE: C	DRAWING NO.: 60164200
		REV: F	
		SHEET	PAGE: 43







CONTROL DATA CORPORATION	TITLE: LOW SPEED SYNCHRONIZER CARD READER (PART 5)	PRODUCT 1729	
COMPUTER DIVISION		SIZE C / DRAWING NO. 60164200	REV J
		SHEET / PAGE 45	

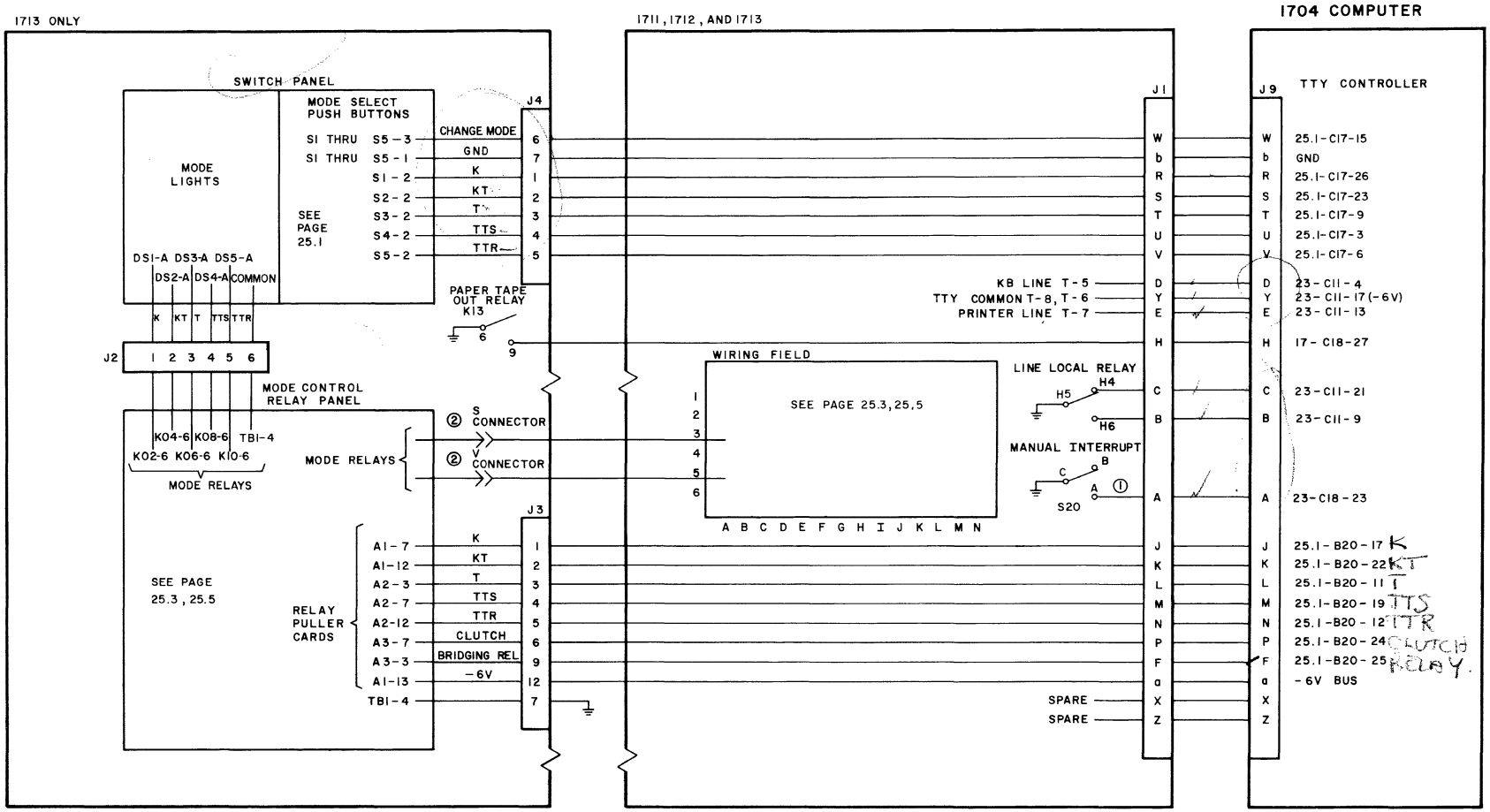


= SEE PAGE 13

= SEE PAGE 19

CONTROL DATA CORPORATION	TITLE: LOW SPEED SYNCHRONIZER CARD READER (PART 6)	PRODUCT 1729	
COMPUTER DIVISION		SIZE C	DRAWING NO. 60164200 REV Y
			SHEET 47

MODEL 35 TELETYPEWRITER

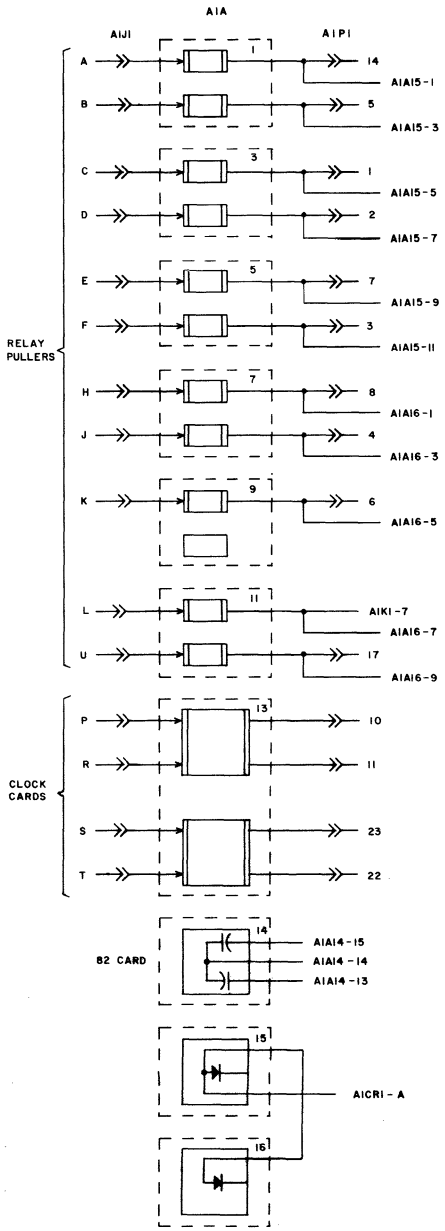


NOTES:

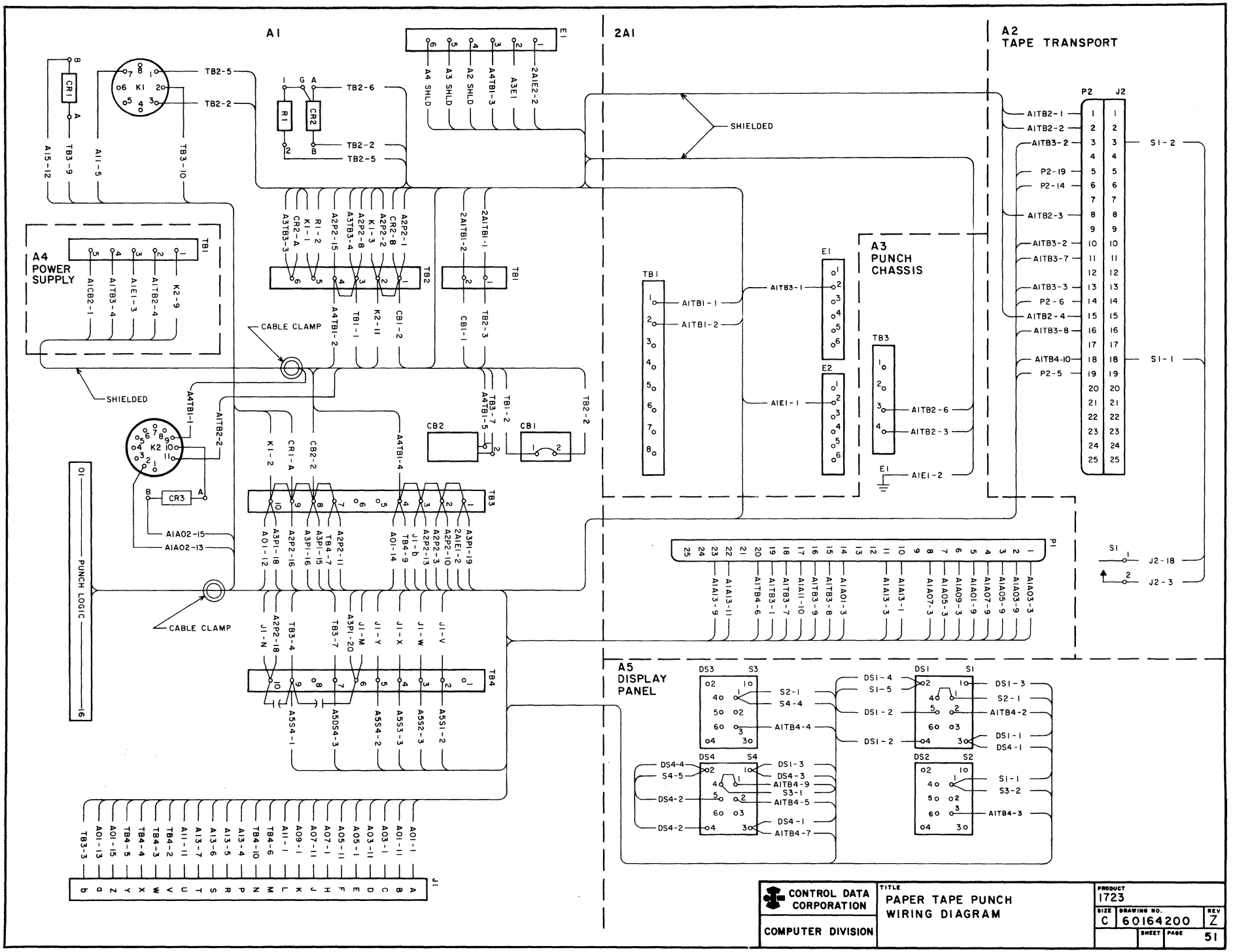
① TWISTED PAIR

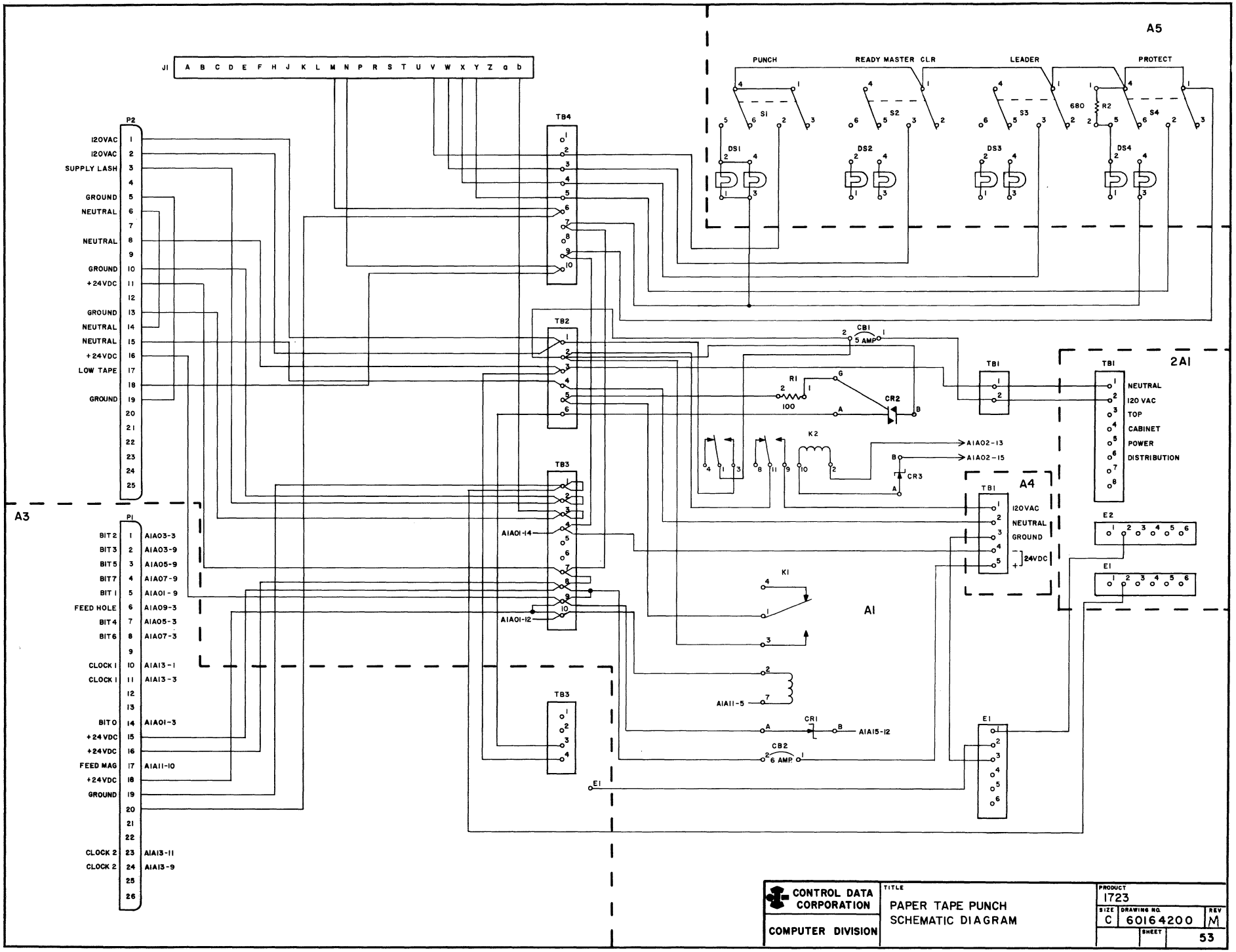
② TELETYPE CORPORATION DESIGNATION

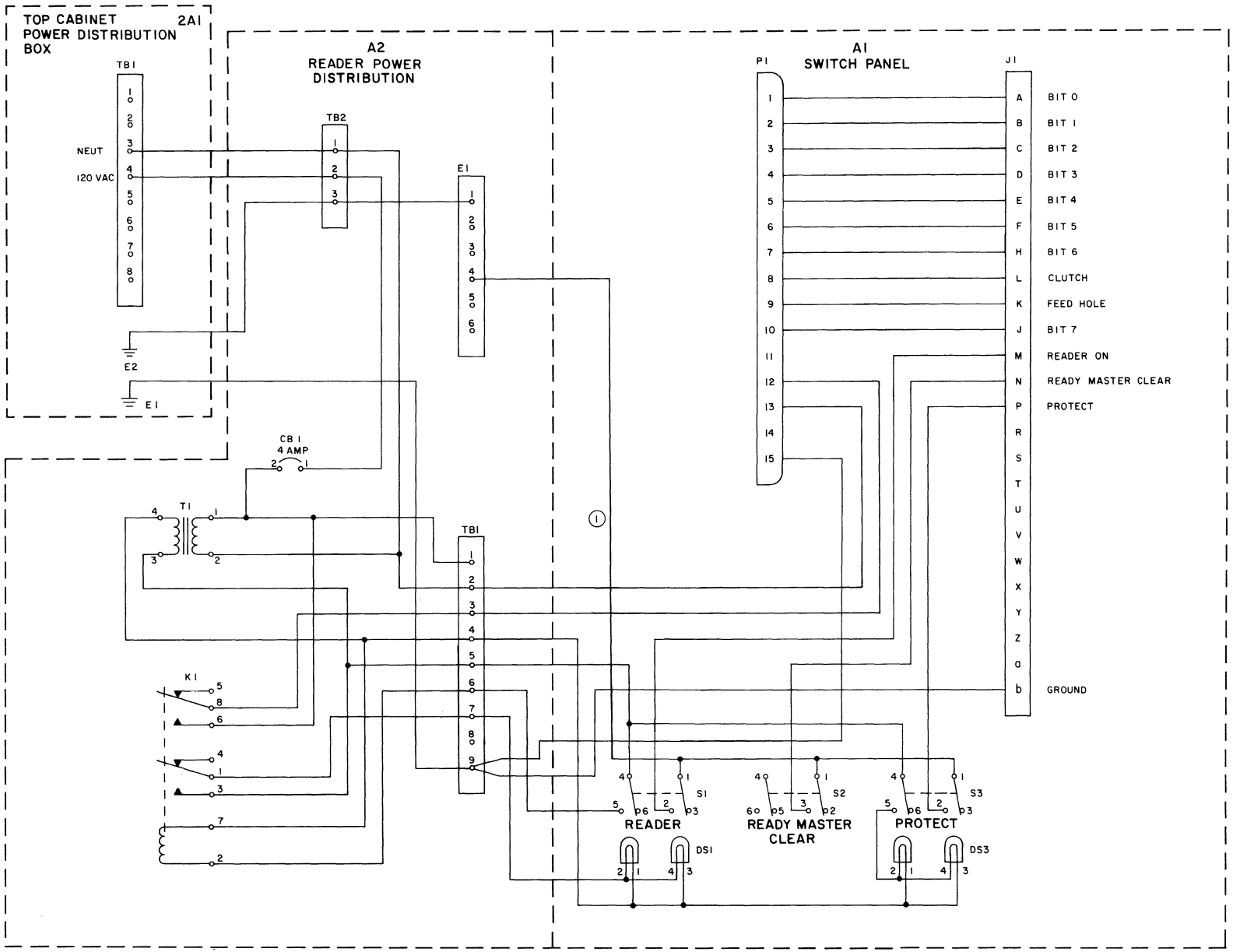
CONTROL DATA CORPORATION DEVELOPMENT DIVISION	TITLE TELETYPEWRITER INTERCONNECTING DIAGRAM	PRODUCT 1711/12/13	
		SIZE C	DRAWING NO. 60164200
		REV. 7	
		SHEET	PAGE 49.0



CONTROL DATA CORPORATION	TITLE: PAPER TAPE PUNCH RELAY PULLERS AND CLOCK CARDS	PRODUCT 1724	
COMPUTER DIVISION		SIZE C · DRAWING NO. 60164200 · REV J	
		SHEET · PAGE 49.1	


A1
2A1
A2
TAPE TRANSPORT
A3
PUNCH
CHASSIS
A4
POWER
SUPPLY
A5
DISPLAY
PANEL
PUNCH LOGIC
CABLE CLAMP
CABLE CLAMP
SHIELDED
SHIELDED
CONTROL DATA
CORPORATION
COMPUTER DIVISION
TITLE
PAPER TAPE PUNCH
WIRING DIAGRAM
PRODUCT
1723
SIZE
C
DRAWING NO.
60164200
REV
Z
SHEET
PAGE
51

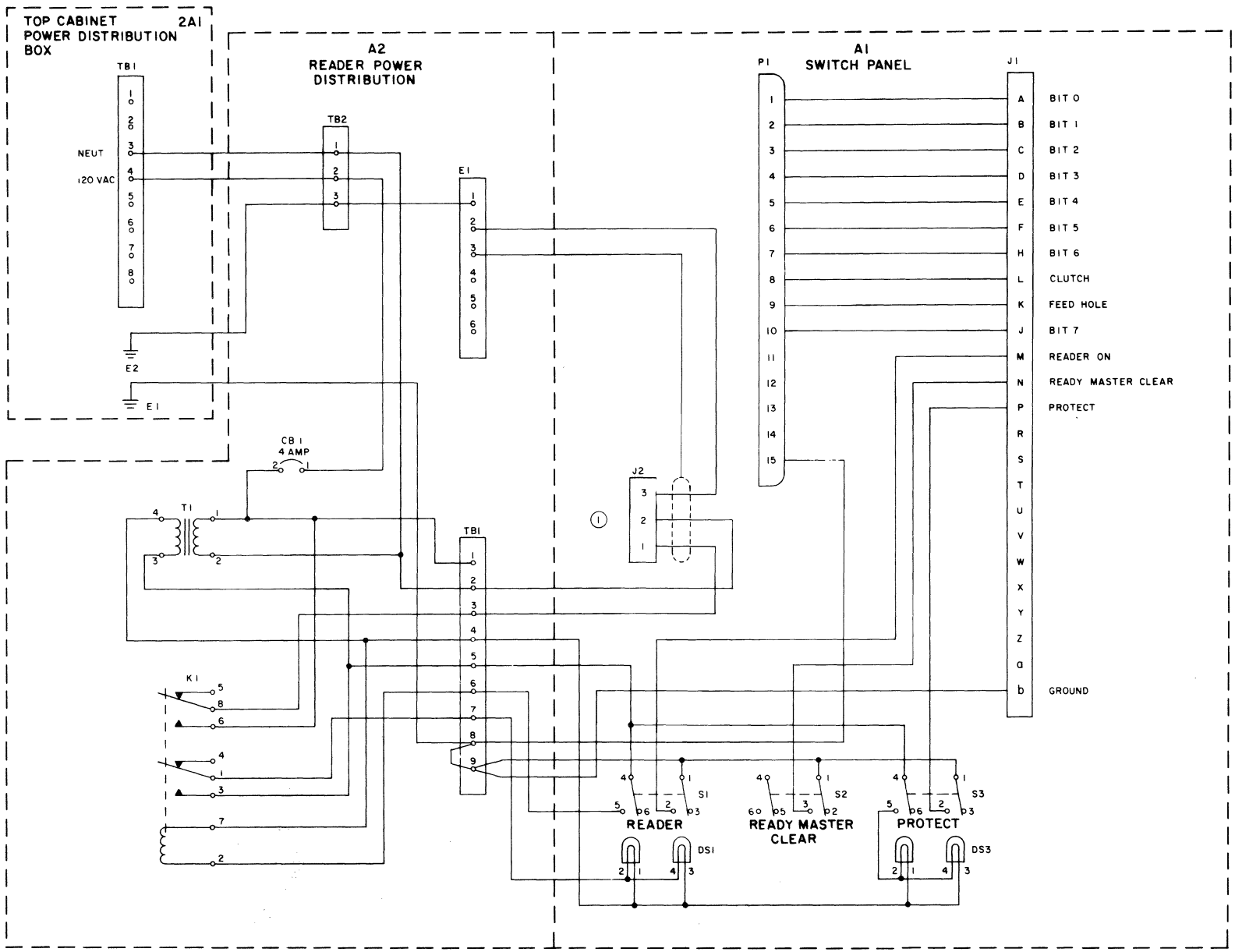

A5
PUNCH
READY MASTER CLR
LEADER
PROTECT
S1
S2
S3
S4
680
R2
DS1
DS2
DS3
DS4
J1
A B C D E F H J K L M N P R S T U V W X Y Z a b
P2
120VAC
120VAC
SUPPLY LASH
GROUND
NEUTRAL
NEUTRAL
GROUND
+24VDC
GROUND
NEUTRAL
NEUTRAL
+24VDC
LOW TAPE
GROUND
TB4
TB2
TB3
CB1
5 AMP
R1
100
CR2
K2
CR3
A1A02-13
A1A02-15
TB1
2A1
NEUTRAL
120 VAC
TOP
CABINET
POWER
DISTRIBUTION
A4
120VAC
NEUTRAL
GROUND
24VDC
E2
E1
K1
A1
A1A01-14
A1A01-12
A1A11-5
CR1
A1A15-12
CB2
6 AMP
A3
P1
BIT 2
BIT 3
BIT 5
BIT 7
BIT 1
FEED HOLE
BIT 4
BIT 6
CLOCK 1
CLOCK 1
BIT 0
+24VDC
+24VDC
FEED MAG
+24VDC
GROUND
CLOCK 2
CLOCK 2
A1A03-3
A1A03-9
A1A05-9
A1A07-9
A1A01-9
A1A09-3
A1A05-3
A1A07-3
A1A13-1
A1A13-3
A1A01-3
A1A11-10
A1A13-11
A1A13-9
CONTROL DATA CORPORATION
COMPUTER DIVISION
TITLE
PAPER TAPE PUNCH
SCHEMATIC DIAGRAM
PRODUCT
1723
SIZE
C
DRAWING NO.
60164200
REV
M
SHEET
53



NOTE:

(1) CONNECTOR J2 IS SHOWN WIRED FOR 60-CPS OPERATION. FOR 50-CPS OPERATION, CONNECT THE LEADWIRES TO PINS 4,5, AND 6 RATHER THAN PINS 1,2, AND 3, RESPECTIVELY.

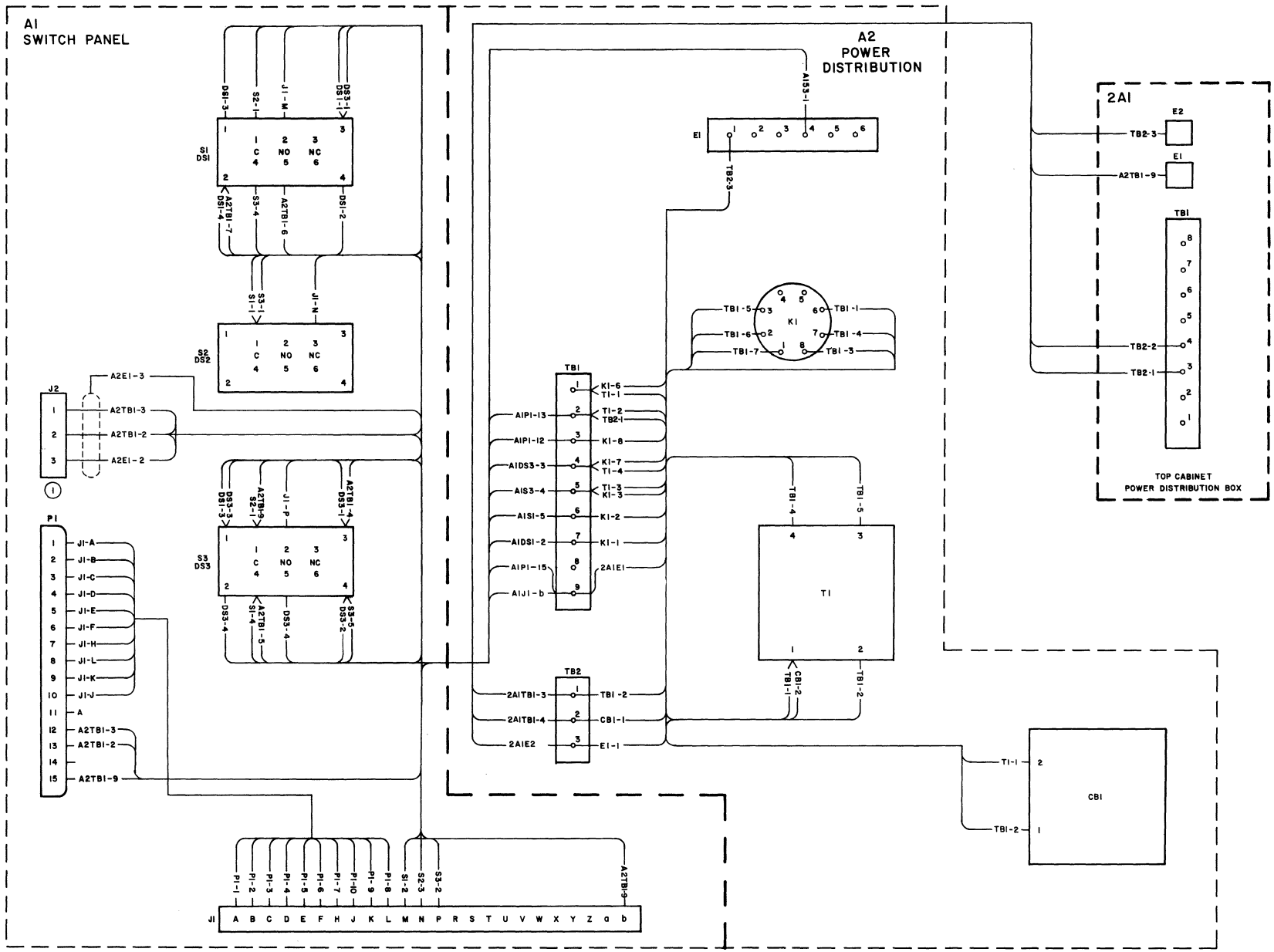
CONTROL DATA CORPORATION	TITLE: PAPER TAPE READER SCHEMATIC DIAGRAM	PRODUCT: 1721 A/B	
COMPUTER DIVISION		SIZE: C	DRAWING NO.: 60164200 REV: J
			SHEET PAGE: 55.0



NOTE:

(1) CONNECTOR J2 IS SHOWN WIRED FOR 60-CPS OPERATION. FOR 50-CPS OPERATION, CONNECT THE LEADWIRES TO PINS 4,5, AND 6 RATHER THAN PINS 1,2, AND 3, RESPECTIVELY.

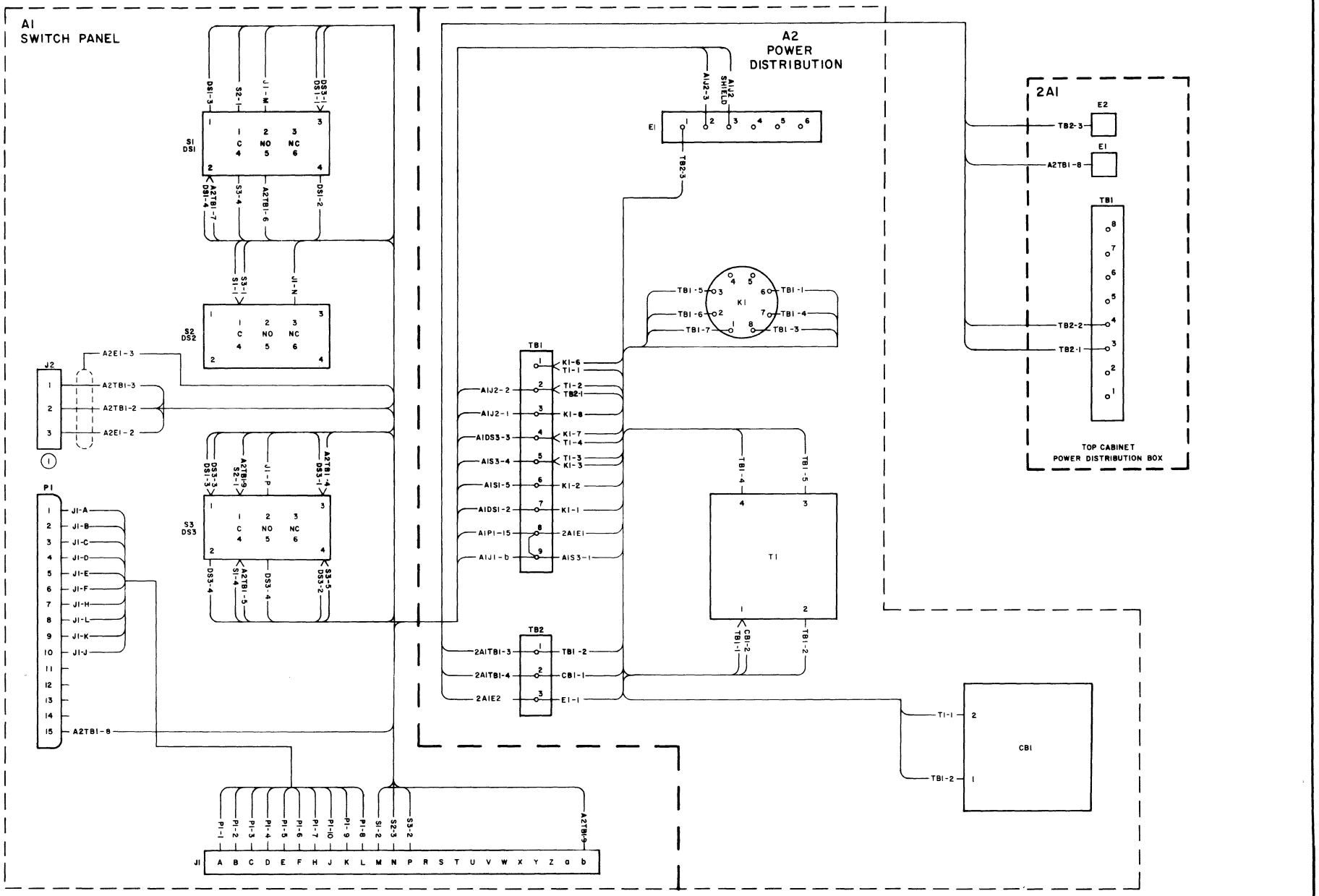
CONTROL DATA CORPORATION	TITLE: PAPER TAPE READER SCHEMATIC DIAGRAM	PRODUCT: 1721 C/D	
COMPUTER DIVISION		SIZE: C	DRAWING NO.: 60164200 REV: J
		SHEET	PAGE: 55.1



NOTE:

(1) CONNECTOR J2 IS SHOWN WIRED FOR 60-CPS OPERATION. FOR 50-CPS OPERATION, CONNECT THE LEADWIRES TO PINS 4,5, AND 6 RATHER THAN PINS 1, 2, AND 3, RESPECTIVELY.

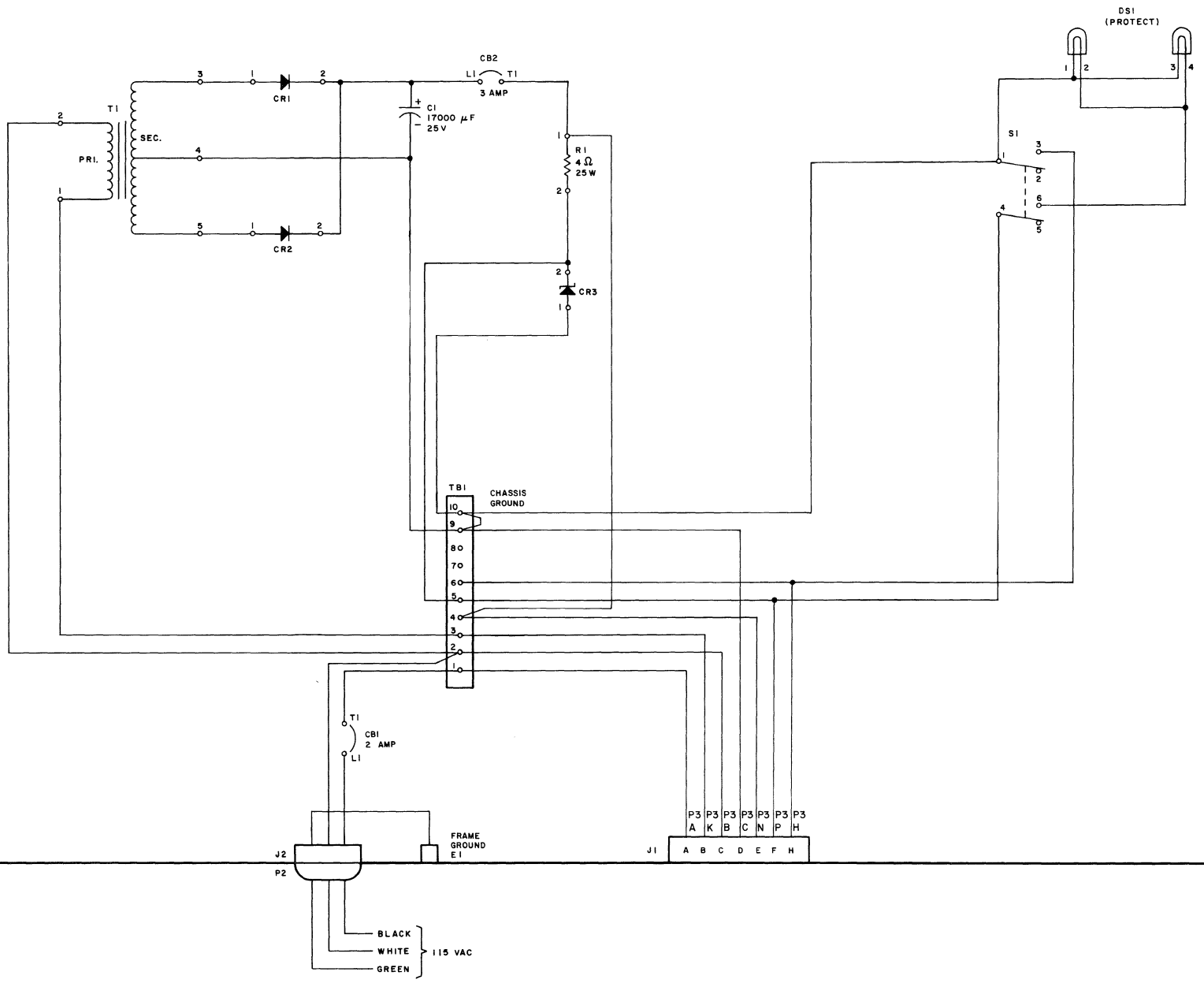
CONTROL DATA CORPORATION	TITLE: PAPER TAPE READER WIRING DIAGRAM	PRODUCT: 1721 A/B	
COMPUTER DIVISION		SIZE: C	DRAWING NO.: 60164200 REV: J
			SHEET PAGE: 57.0



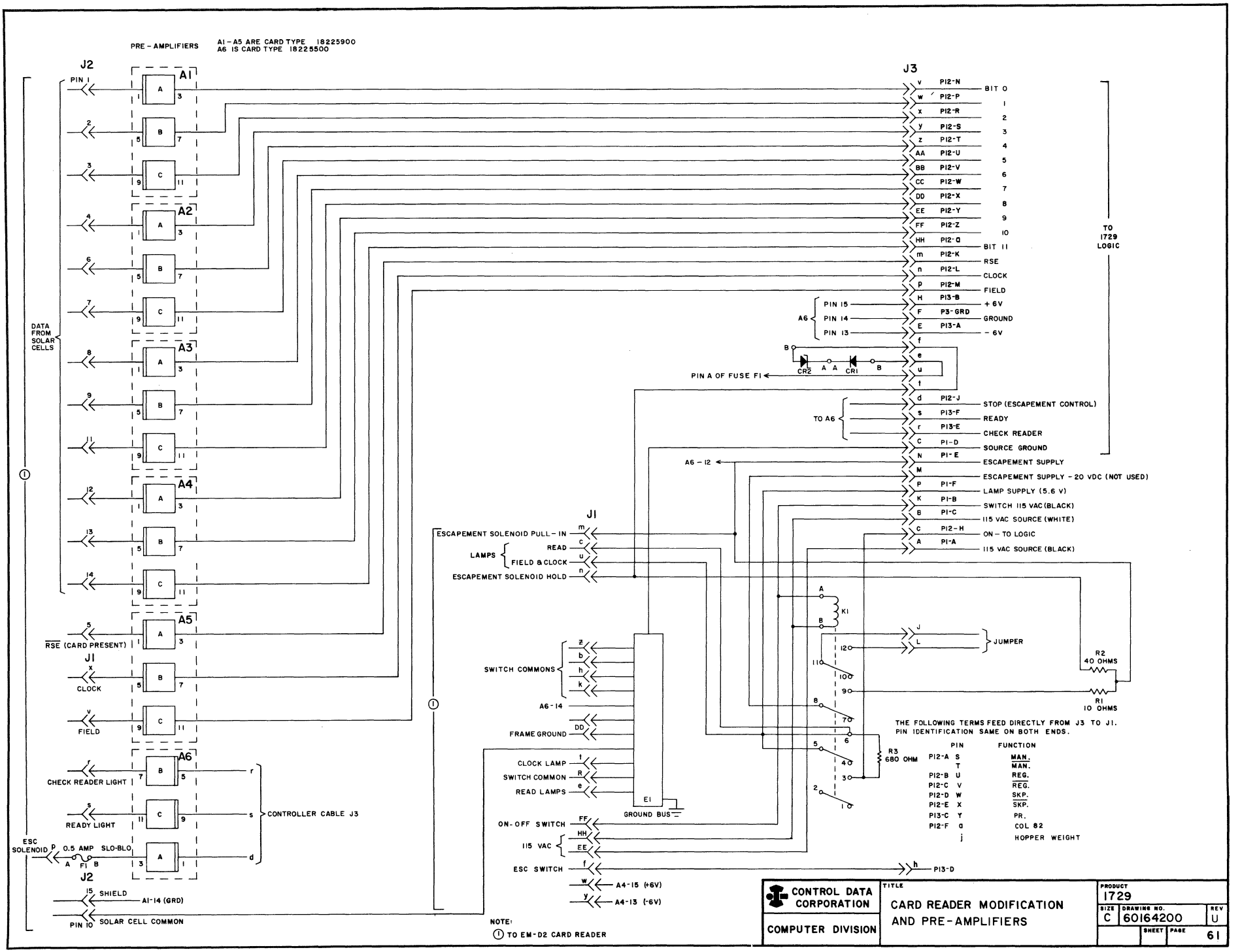
NOTE:

(1) CONNECTOR J2 IS SHOWN WIRED FOR 60-CPS OPERATION. FOR 50-CPS OPERATION, CONNECT THE LEADWIRES TO PINS 4,5, AND 6 RATHER THAN PINS 1,2, AND 3, RESPECTIVELY.

CONTROL DATA CORPORATION	TITLE: PAPER TAPE READER WIRING DIAGRAM	PRODUCT: 1721 C/D	
COMPUTER DIVISION		SIZE: C	DRAWING NO.: 60164200 REV: J
			SHEET: PAGE: 57.1



CONTROL DATA CORPORATION COMPUTER DIVISION	TITLE POWER SUPPLY FOR CARD READER	PRODUCT 1729 SIZE C · DRAWING NO. 60164200 · REV R SHEET · PAGE 59	


PRE - AMPLIFIERS
A1 - A5 ARE CARD TYPE 18225900
A6 IS CARD TYPE 18225500
J2
PIN 1
A1
A2
A3
A4
A5
A6
DATA FROM SOLAR CELLS
RSE (CARD PRESENT)
CLOCK
FIELD
CHECK READER LIGHT
READY LIGHT
CONTROLLER CABLE J3
ESC SOLENOID
0.5 AMP SLO-BLO
F1
SHIELD
A1-14 (GRD)
PIN 10
SOLAR CELL COMMON
J3
BIT 0
BIT 11
RSE
CLOCK
FIELD
+ 6V
GROUND
- 6V
TO 1729 LOGIC
PIN A OF FUSE F1
CR2
CR1
STOP (ESCAPEMENT CONTROL)
READY
CHECK READER
SOURCE GROUND
ESCAPEMENT SUPPLY
ESCAPEMENT SUPPLY - 20 VDC (NOT USED)
LAMP SUPPLY (5.6 V)
SWITCH 115 VAC (BLACK)
115 VAC SOURCE (WHITE)
ON - TO LOGIC
115 VAC SOURCE (BLACK)
A6 - 12
J1
ESCAPEMENT SOLENOID PULL - IN
LAMPS
READ
FIELD & CLOCK
ESCAPEMENT SOLENOID HOLD
K1
JUMPER
R2 40 OHMS
R1 10 OHMS
R3 680 OHM
SWITCH COMMONS
A6-14
FRAME GROUND
CLOCK LAMP
SWITCH COMMON
READ LAMPS
E1
GROUND BUS
ON-OFF SWITCH
115 VAC
ESC SWITCH
A4-15 (+6V)
A4-13 (-6V)
P13-D
THE FOLLOWING TERMS FEED DIRECTLY FROM J3 TO J1.
PIN IDENTIFICATION SAME ON BOTH ENDS.
PIN FUNCTION
PI2-A S MAN.
T MAN.
PI2-B U REG.
PI2-C V REG.
PI2-D W SKP.
PI2-E X SKP.
PI3-C Y PR.
PI2-F a COL 82
j HOPPER WEIGHT
NOTE:
① TO EM-D2 CARD READER
CONTROL DATA CORPORATION
COMPUTER DIVISION
TITLE
CARD READER MODIFICATION AND PRE-AMPLIFIERS
PRODUCT 1729
SIZE C
DRAWING NO. 60164200
REV U
SHEET
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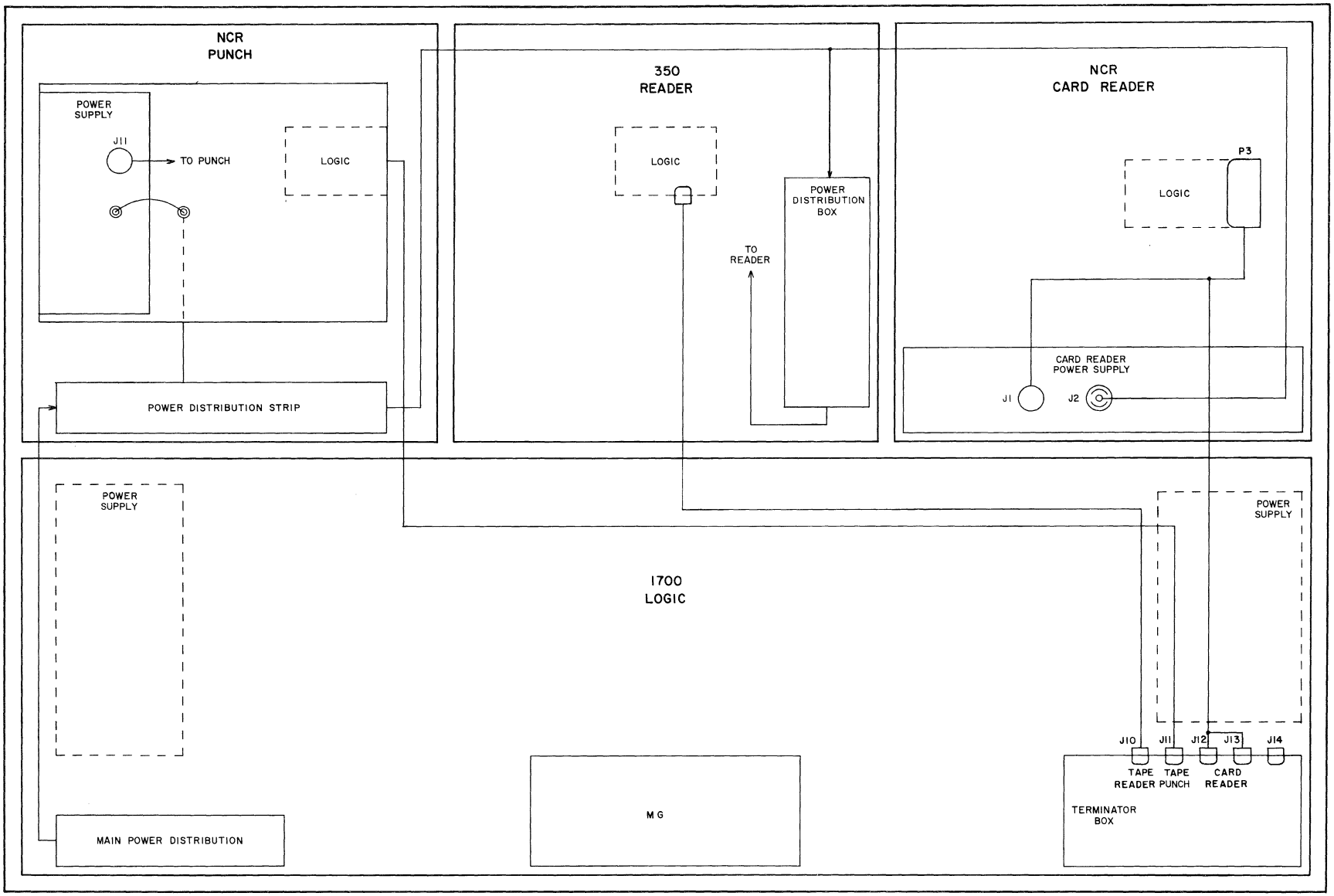

CONTROL DATA CORPORATION	TITLE	PRODUCT	
	POWER DISTRIBUTION	1700	
COMPUTER DIVISION		SIZE C / DRAWING NO. 60164200	REV J
		SHEET	PAGE 63

PART 2

CIRCUIT DESCRIPTION

PART 2

CIRCUIT DESCRIPTION

This part of the manual contains operational descriptions of the teletypewriter, paper tape reader, paper tape punch, and card reader. These descriptions are intended as an aid to the understanding of the logic diagrams contained in Part 1.

PROGRAM PROTECT

The program protect feature of the 1700 Computer System applies to the paper tape reader, the paper tape punch, and the card reader of the low speed synchronizer. Bit 17 of the Director Function code is designated as the protect bit. If the PROGRAM PROTECT switch is on, and the controllers for the paper tape reader, punch, and the card reader are on, only those functions from the computer which have a protect bit of "1" will be accepted by the respective controller. All other instructions will be rejected except for status requests. If the respective controller PROGRAM PROTECT switch is off, all instructions from the computer will be accepted and replied to.

1711-A/B/1712-A/1713-A/B TELETYPEWRITER

INTRODUCTION

The CONTROL DATA 1711-A/B Teletypewriter consists of a model KSR (keyboard send-receive) teletypewriter and its associated controller. The KSR teletypewriter is a basic typewriter consisting of two units, a keyboard and a printer. It provides for transmitting messages by manual operation of the keyboard, and for receiving and printing messages on paper.

The CONTROL DATA 1712-A Teletypewriter consists of a model ASR (automatic send-receive) teletypewriter and its associated controller. The model ASR teletypewriter is the same as the model KSR except that, in addition, it contains a paper tape punch and a paper tape reader. It provides for transmitting messages either by manual operation of the keyboard or by reading punched tape. It provides facilities for recording messages by punching them on paper tape and/or printing them on paper. Information can be

prepunched into tape and the tape can be used to read this information into the system. Also, messages coded in other than ASCII (American Standards Code for Information Interchange) code can be transferred from tape to computer or computer to tape. Interconnection of the various units of the ASR is accomplished via a 5-position rotary switch located on the typewriter.

The CONTROL DATA 1713-A/B Teletypewriter consists of a model ASR teletypewriter with its associated controller. The 1713-A model is the 60Hz version and the 1713-B model is the 50 Hz version. These are the same as the model 1712 ASR Teletypewriter with these execeptions:

1) The 5-position rotary switch is replaced by an Electrical Relay Chassis with relays controlling the five teletype operational modes.
2) It provides facilities for the programmed selection of teletype operational modes in addition to the manually selected modes.

TELETYPEWRITER SYSTEMS

There are two communication systems used with teletypewriter stations and these are termed the full-duplex system and the half-duplex system.

Full-Duplex System

The full-duplex system (Figure 2-1) allows simultaneous, two-way communication between two teletypewriter stations. A current loop between the keyboard of one station and the printer of the other station allows the bits, representing the character selected at the keyboard, to be transferred serially to the printer in the other teletypewriter station.

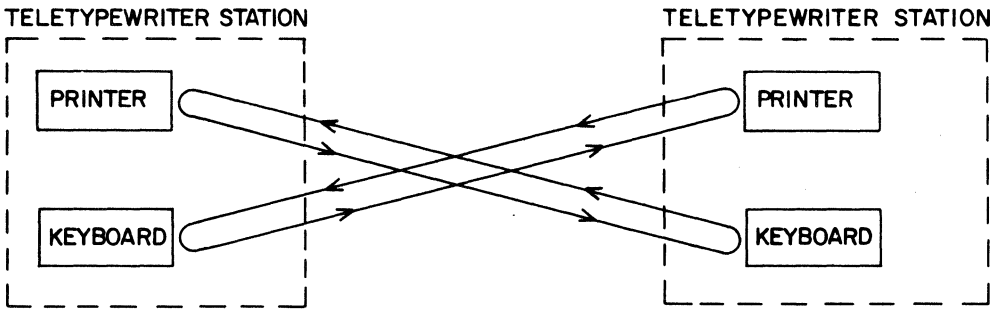

Figure 2-1. Full-Duplex System

Half-Duplex System

The half-duplex system (Figure 2-2) allows communication between two teletypewriter stations in only one direction at a time. A current loop connects the keyboard and printer at both stations. Only one character may be transmitted at a time through the current loop from either station. When a character is selected on either keyboard, both printers print the character. If keys are pressed simultaneously on both keyboards, a garbled character occurs on both printer outputs.

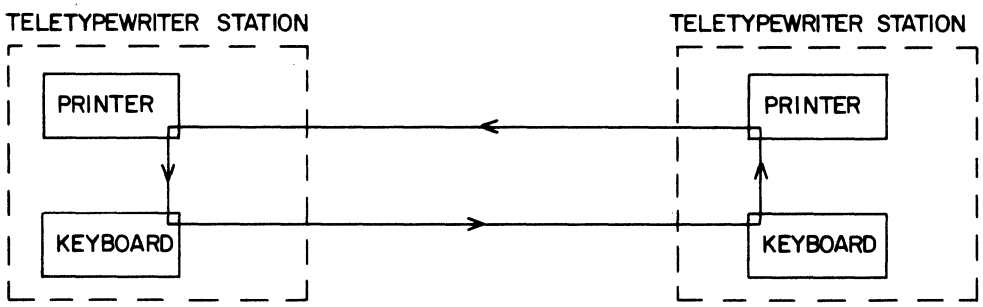

Figure 2-2. Half-Duplex System

1700 TELETYPEWRITER SYSTEM

The 1700 teletypewriter system (Figure 2-3) uses a combination of the full-duplex and the half-duplex systems. The teletypewriter is connected with independent current loops but the controller ties the two current loops together to make the system represent a half-duplex system. In this way, certain control advantages inherent in the full-duplex system are obtained, while the disadvantage of not being able to observe what is being typed from the keyboard is eliminated.

The transfer of data bits representing a character, between the teletypewriter and the controller, is performed serially. The 7 bits of data and 1 bit of parity are enclosed within 3 bits of synchronization to form an 11-bit or unit code for each character or function. When no operation is in progress, the current loop between the teletypewriter and the controller is in a Mark condition (20-milliamperes current flowing in the loop). Refer to Figure 2-4.

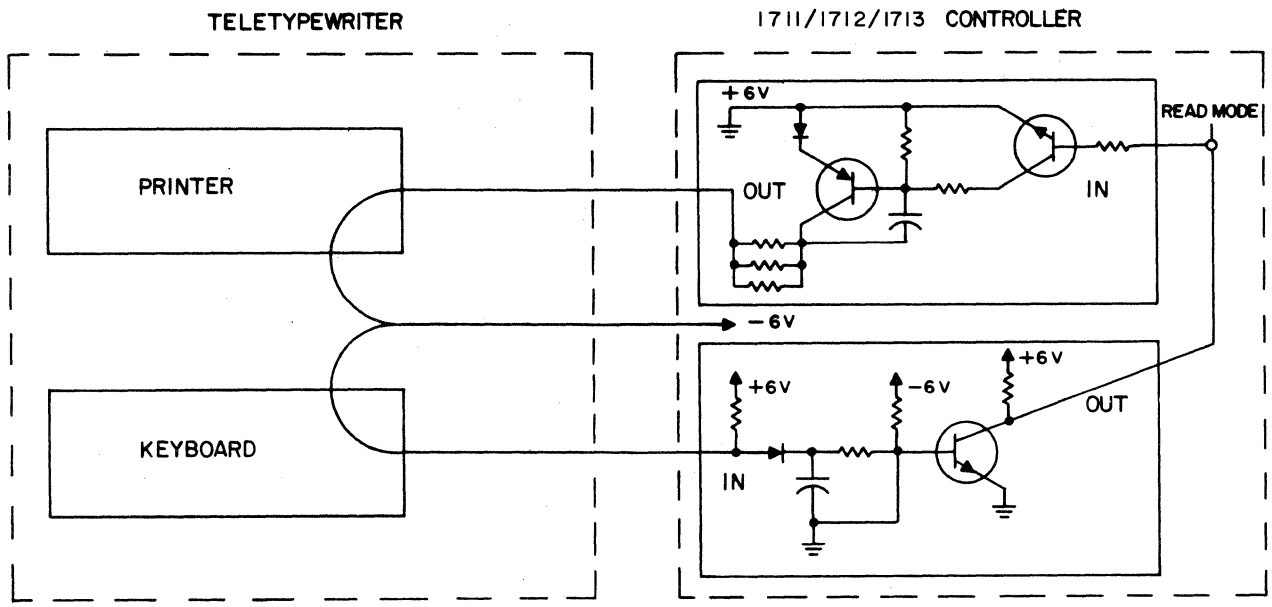

Figure 2-3. The 1700 Teletypewriter System

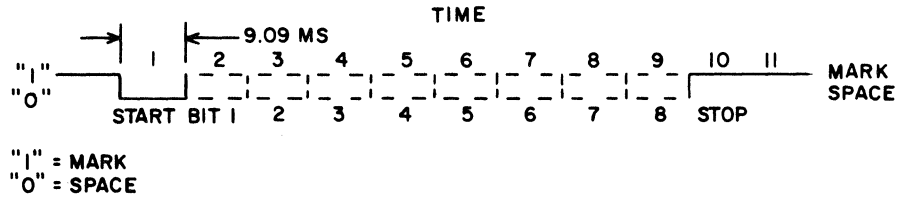

Figure 2-4. Keyboard Line Timing

DATA TRANSFER

Pressing a key on the keyboard sets the code bars in the teletypewriter for the character selected and opens the current loop between the teletypewriter and the controller. The clutch in the teletypewriter engages and rotates a cam containing ten lobes. Eight lobes are used for contacting code bars representing data bits (7 data and 1 even parity bit), one for the code bar representing a Start signal, and one for the code bar representing a Stop signal (the Stop signal lobe is twice as long as the other lobes). A timing chain is used in the controller to simulate the rotating cam in the teletypewriter.

This keeps the proper logic (Holding register, etc.) in the controller synchronized with the teletypewriter.

With an open current loop, the first code bar contacted represents the Start signal. A logical "0" Start signal is sent to the controller, the printer current loop is opened, the clock is started, and the controller and the teletypewriter are synchronized. The second through the ninth lobes contact the code bars representing data bits. If a lobe contacts a code bar, a Mark (indicating a logical "1" condition) is sent to the controller. If a lobe does not contact a code bar, a Space (represented by a logical "0") is sent to the controller. The tenth lobe contacts the code bar representing a Stop signal and initiates a logical "1" Stop signal to the controller. The teletypewriter clutch releases and the cam stops in an off position, waiting for the next character to be selected on the keyboard.

As the Mark and Space signals are received by the controller, they are re-transmitted to the printer. The printer assembles the bits and types the character selected. They are simultaneously sampled and gated to the appropriate Holding register flip-flop within the controller. Each bit transferred, including the Start signal, requires 9.09 milliseconds to transfer one character and Stop requires 100 milliseconds. Data transfer occurs in a similar manner when the model ASR teletypewriter paper tape reader is used instead of the keyboard.

SELECT READ MODE

For a Read operation, the computer issues a Select Read Mode (A09) instruction. This clears the Write Mode FF and sets the Reply FF. A Reply signal is sent to the computer, clearing the Function signal. If the controller is Busy, the Select Read Mode signal is not enabled to the Write Mode FF and the Reject FF sets. A Reject signal is then sent to the computer.

NOTE

Certain functions (Select Read Mode, Select Write Mode, and Clear Controller) will be rejected if the controller is busy. However, since it is possible to transmit several function commands from the computer A register simultaneously, it is possible that a function will be replied to even if the controller is busy, i.e., end of operation interrupt request may be sent along with one of the above functions. In this case, a Reply will be

returned from the controller. The legal function, in this case the end of operation interrupt request, will be performed but the function which would normally have been rejected will not be performed. It is therefore necessary to determine the condition of the controller either before or after issuing such a function. This is done using a status check.

READ

When a key is pressed on the keyboard, the Start signal from the keyboard line sets the Clock Control FF which allows the clock to start running. A 100-nanosecond pulse is sent to the timing chain as Odd Clock at time 1. After a 4.5 millisecond delay, the Strobe FF sets and the Receive Enable Strobe signal is applied to the input of the Holding register. This has no effect on the Holding register at this time.

After another 4.5-millisecond delay, the Clock FF clears. This generates a 100-nanosecond pulse to the timing chain as Even Clock, and advances the timing chain and the timing translator to time 2. The Start detector is disabled for the remainder of the character cycle.

After a 4.5-millisecond delay, the Strobe FF clears and the next Receive Enable Strobe signal is applied to the Holding register. The first bit of data from the teletypewriter is gated into the first FF of the Holding register if the input from the teletypewriter is in a Mark condition ("1"). If the input is in a Space condition ("0"), the FF remains in a Cleared state. (Refer to Figure 2-4.)

After a 4.5-millisecond delay, the Clock FF sets again and another Odd Clock pulse is generated to advance the timing chain and the timing translator to time 3. This sequence repeats until all 8 bits are gated into the Holding register from the teletypewriter at time 9. Time 10 has no effect on the controller. At time 11, the Clock Control FF clears and the Data Read FF is set. At this time, the Data status signal (and Data Interrupt signal if selected) is sent to the computer. The Data Read FF is one of two flip-flops which make up data status. The other flip-flop is Data Write. Either of the two flip-flops are used depending upon whether the controller is in Read or Write mode. The Read Data FF is set in this case, since the controller is in Read mode.

When the Clock Control FF clears, there is a delay of about 10 milliseconds before a 100-nanosecond pulse clears the Mechanical Busy FF. The interval from the end of time 9 through time 11 provides time for internal movements in the teletypewriter to cease prior to the controller going Not Busy and allowing a new operation to start. (The 10-millisecond delay is adjusted so that the Mechanical Busy FF just fails to clear when the teletypewriter is running at full speed, which is 10 characters per second.) For slow-speed operation, this flip-flop should stay set for approximately 100 milliseconds.

The Data status (A03) signal is sent by the Data Read FF to the computer to indicate that data is available at the controller. (If the Data Interrupt FF had been previously set by Function and Select Data Interrupt instructions, the Interrupt signal would also be sent to the computer at this time.) When the computer issues a Read signal, the gate from the Data Read FF is made. After 1 microsecond, the Reply FF sets, clearing the computer Read signal. When the Read signal drops, the Data Read and Reply FFs clear, and the Holding Register FFs clear in preparation for the next data transfer.

LOST DATA

If the computer has not accepted data from the controller by the time the next Start signal from the teletypewriter arrives, the Lost Data and Break FFs set but the valid data in the Controller register is not disturbed. A Lost Data status signal is sent to the computer. Setting the Break FF opens the current loop between the teletypewriter and the controller for 180 milliseconds. This is equivalent to sending two Null codes to the teletypewriter which shuts off any transmission, stops the paper tape reader if it is running, and locks the keyboard. It will be necessary to press the BREAK REL (Break Release) button on the keyboard to resume transmission in a Read operation. However, the computer program may initiate a Write operation to output data or initiate a new function without the keyboard being released. To do this, the valid data being held in the Data register must be read out in order to drop the Data and Busy status before the Function instruction to select the Write operation is sent. If this is not done, the function will be rejected. The Lost Data FF is cleared by a Master Clear or by the computer program initiating a Write mode.

SELECT WRITE MODE

For a Write operation, the computer issues a Function instruction to set the Write Mode FF. Then the Data status signal will immediately be sent to the computer since the controller is requesting data. If the controller is Busy, the Select Write Mode signal (A08) is not enabled to the Write Mode FF and the Reject FF sets. A Reject signal is then sent to the computer. (See Note under Select Read Mode.)

WRITE

When the computer issues a Write signal and the data to be typed, the gate to the Write Enable circuit is made if the Write operation has been previously selected and Data status is present. This allows transfer of 8 bits (7 bits plus 1 parity bit which is ignored by the teletypewriter) of data (one character) from the computer to the Holding Register FFs in the controller and sets the Mechanical Busy FF. After 1 microsecond, the Reply FF sets, clearing the Data Write FF. A Reply signal is sent to the computer, clearing the Write signal. Setting the Mechanical Busy FF causes a Busy status signal to be sent to the computer.

When the gate to the Write Enable circuit is made, the Clock Control FF sets which allows the clock to start. A 100-nanosecond pulse is sent to the timing chain as Odd Clock, and a Start pulse is sent to the teletypewriter. The Start pulse synchronizes the teletypewriter and the controller at time 1.

After a 9-millisecond delay, during which the Strobe FF sets, the Clock FF clears. This generates a 100-nanosecond pulse to the timing chain as Even Clock, and advances the timing chain and the timing translator to time 2. Data bit 00 is transferred to the teletypewriter via the transmitter printer line. After a 9-millisecond delay, the Clock FF sets again and another Odd Clock pulse is generated to advance the timing chain and the timing translator to time 3. This allows the transfer of data bit 01 to the teletypewriter via the Xmtr printer line. This sequence repeats until all 8 bits of data have been transferred to the teletypewriter at time 9. Time 10 has no effect on the controller. At time 11, the Clock Control FF clears. When the Clock Control FF clears, there is a delay of about 10 milliseconds before a 100-nanosecond pulse clears the Mechanical Busy FF. (The 10-millisecond delay is adjusted so that the Mechanical Busy

FF just fails to clear when the teletypewriter is running at full speed, which is 10 characters per second. The Mechanical Busy FF will stay set for approximately 100 microseconds.)

When the next Write signal and data to be typed are received, after the Mechanical Busy FF clears, the Write sequence repeats.

INTERRUPTS

If the MANUAL/INTERRUPT switch on the teletypewriter keyboard is pressed at any time during an operation, the Manual Interrupt FF sets. Both the Interrupt status and the Manual Interrupt status are sent to the computer.

Data interrupt may be selected before or during an operation, which causes the Data Interrupt Enable FF to set. An interrupt will occur if any of the following conditions are present:

1) If the Data Interrupt Enable FF is set upon selection of Write mode,
2) If Write mode is selected and the Data Interrupt Enable FF is not set, upon setting the Data Interrupt Enable FF,
3) If Write mode is selected and the controller is Busy, and the Data Interrupt Enable FF is not set, upon going Not Busy, or
4) If Read mode is selected and the Data Interrupt Enable FF is set, upon setting the Data Read FF.

If the end of operation interrupt is selected before or during an operation, the End of Operation Interrupt Enable FF sets. The Interrupt signal is sent to the computer 12 milliseconds after the timing chain clears at the end of the timing cycle if another Start pulse from the teletypewriter has not been received by the controller. The interrupt is used to inform the computer that the controller may be changed from Read mode to Write mode. The interrupt is not normally used in Write mode because the termination of an operation takes place when a Write signal is not issued by the computer.

If the interrupt on alarm is selected before or during an operation, the Alarm Interrupt FF sets. The Interrupt signal is sent to the computer when the teletypewriter becomes Not Ready, a Lost Data condition occurs, or an Out of Tape condition is present (1713 Teletypewriter only). The Alarm status is available to the computer whenever the teletypewriter is in a Not Ready condition.

TELETYPEWRITER OPERATIONAL MODES

The following five functions are programmable through the 1713 Teletypewriter controller only. They select operational modes in the teletypewriter. The modes are also manually selectable by use of momentary pushbutton switches. Five switches are provided, each switch corresponding to a teletypewriter operational mode. The 1712 Teletypewriter provides for manual mode selection only, by a rotary switch. These modes are not used in the 1711 Teletypewriter.

NOTE

The logic diagrams are referred to by page number, card location number, and card pin number. For example, 25.1-C17-14 refers to logic page 25.1, card location B17, and pin 14. Page numbers in parentheses refer to the 1704 Computer logic diagrams.

Selection of a teletypewriter mode (either by a function or manually) will result in setting one of the corresponding mode FF's. These five FF's are K, KT, T, TTS, and TTR modes located on module Z38 25.1-C17. The sequence for setting each of the FF's is described below. Selection of a mode (and setting a FF) causes a "1" to appear at 25.1-C17-14. This sets the TTY Mode Busy FF, initiating an 80-millisecond time delay. The clear output of the TTY Mode Busy FF is a "0", entering 25.1-B20-26 for transmission to the Electrical Relay Chassis (ERC), energizing the Bridging Relay Driver circuit. At the end of 80 milliseconds, the TTY Mode Busy FF clears "1" at 23-C06-5, deactivating the Bridging Relay Driver circuit. The delay provides time for the selected mode relay (K, KT, T, TTS, or TTR) to complete its switching before the operation continues.

Select Keyboard (K mode)

A teletypewriter select keyboard (K mode) function is indicated by bit A10 of the function code being a "1". This bit enters the controller at 25.1-C17-27. If a function command 13-B19-28 is also present, AND gate D is satisfied and the K Mode FF sets. This transmits a signal from 25.1-B20-17 to the ERC. The K mode relay is energized, causing selection of the corresponding mode in the teletypewriter. A "0" from gate A generates a reply to the computer and causes a "1" to appear at 25.1-C17-14, setting the TTY Mode Busy FF as previously described. This also initiates a one-shot pulse from AND gate Z to clear any previously Set Mode FF's.

Pressing the K mode pushbutton removes a static "1" from the K Mode FF and applies a "0" to set it. It also generates a "1" to set the TTY Mode Busy FF and initiates a one-shot pulse from AND gate Z to clear any previous Set Mode FF's.

When the K mode is selected, the keyboard and printer are connected to the controller, and they act as a send/receive page printer. In this mode, the teletypewriter acts as a KSR Teletypewriter and the paper tape units serve no function.

Select Keyboard-Tape (KT mode)

A teletypewriter select keyboard-tape (KT mode) function is indicated by bit A11 of the function code being a "1". This bit enters the controller at 25.1-C17-24. If a function command 13-B19-28 is also present, AND gate E is satisfied and the K Mode FF sets. This transmits a signal from 25.1-B20-22 to the ERC. The KT mode relay is energized, causing selection of the corresponding mode in the teletypewriter. A "0" from gate B generates a reply to the computer and causes a "1" to appear at 25.1-C17-14, setting the TTY Mode Busy FF as previously described. This also initiates a one-shot pulse from AND gate Z to clear any previous Set Mode FF's.

Pressing the KT mode pushbutton removes a static "1" from the KT Mode FF and applies a "1" to it. It also generates a "1" to set the TTY Mode Busy FF and initiates a one-shot pulse from AND gate Z to clear any previous Set Mode FF's.

This mode connects in series the keyboard, printer, paper tape reader, and punch to the controller. A character struck on the keyboard or sent from the reader is printed, punched on tape, and transmitted. A character transmitted from the controller is printed and punched.

CAUTION

If the paper tape reader is in use, striking a key on the keyboard superimposes the keyboard character over the reader character and results in a garbled character.

Select Tape (T mode)

A teletypewriter select tape (T mode) function is indicated by bit A12 of the function code being a "1". This bit enters the controller at 25.1-C17-10. If a function command 13-B19-28 is also present, AND gate B is satisfied and the K Mode FF sets. This

transmits a signal from 25.1-B20-11 to the ERC. The T mode relay is energized, causing selection of the corresponding mode in the teletypewriter. A "0" from gate C generates a reply to the computer and causes a "1" to appear at 25.1-C17-14, setting the TTY Mode Busy FF as previously described. This also initiates a one-shot pulse from AND gate Z to clear any previous Set Mode FF's.

Pressing the T mode pushbutton removes a static "1" from the T Mode FF and applies a "1" to it. It also generates a "1" to set the TTY Mode Busy FF and initiates a one-shot pulse from AND gate Z to clear any previous Set Mode FF's.

This mode connects the page printer and paper tape reader to the controller. The keyboard and paper tape punch are connected together as an off-line tape preparation device. Read operations transfer information from the paper tape reader to the controller and the page printer. Write operations transfer information from the controller to page printer. Simultaneously, a new tape can be prepared from keyboard entry.

Select Tape-to-Tape Send (TTS mode)

A teletypewriter select tape-to-tape send (TTS mode) function is indicated by bit A13 of the function code being a "1". This bit enters the controller at 25.1-C17-2. If a function command 13-B19-28 is also present, AND gate C is satisfied and the K Mode FF sets. This transmits a signal from 25.1-B20-19 to the ERC. The TTS mode relay is energized, causing selection of the corresponding mode in the teletypewriter. A "0" from AND gate D generates a reply to the computer and causes a "1" to appear at 25.1-C17-14, setting the TTY Mode Busy FF as previously described. This also initiates a one-shot pulse from AND gate Z to clear any previous set Mode FF's.

Pressing the TTS mode pushbutton removes a static "1" from the TTS Mode FF and applies a "1" to it. It also generates a "1" to set the TTY Mode Busy FF and initiates a one-shot pulse from AND gate Z to clear any previous set Mode FF's.

This mode connects only the paper tape reader to the controller. The page printer is disconnected while the keyboard and punch are connected together off line. This mode is provided to allow transmission of tapes coded in other than ASCII codes. The printer and punch are blinded in this mode to prevent their responding to the characters being sent. The TTS mode is the only one that provides for program controlled tape motion. The start tape motion function (bit A05) can be used here to advance the tape in the paper

tape reader by one character and transmit it to the controller. The tape motion stops after one character. The manual tape motion switch must be in the run position to allow tape motion to take place when the start tape motion function is given.

Select Tape-to-Tape Receive (TTR mode)

A teletypewriter select tape-to-tape receive (TTR mode) function is indicated by bit A14 of the function code being a "1". This bit enters the controller at 25.1-C17-5. If a function command 13-B19-28 is also present, AND gate A is satisfied and the K Mode FF sets. This transmits a signal from 25.1-B20-12 to the ERC. The TTR mode relay is energized, causing selection of the corresponding mode in the teletypewriter. A "0" from AND gate E generates a reply to the computer and causes a "1" to appear at 25.1-C17-14, setting the TTY Mode Busy FF as previously described. This also initiates a one-shot pulse from AND gate Z to clear any previous Set Mode FF's.

Pressing the TTR mode pushbutton removes a static "1" from the TTR Mode FF and applies a "1" to it. It also generates a "1" to set the TTY Mode Busy FF and initiates a one-shot pulse from AND gate Z to clear any previous Set Mode FF's.

This mode connects the paper tape punch to the controller. The page printer, keyboard, and paper tape reader are inactive in this mode. This mode allows recording on paper tape of codes foreign to the teletypewriter.

1721/1722 PAPER TAPE READER

INTRODUCTION

Four models of the CONTROL DATA 1721 Paper Tape Reader and two models of the CONTROL DATA 1722 Paper Tape Reader are available for use with the 1700 Computer System. Each of the models contains its own controller and a CONTROL DATA 350 or 370 Paper Tape Reader. The 350 reader reads 5-, 7-, or 8-level tape at a rate of 350 characters per second; the 370 reader reads 5-, 7-, or 8-level tape at a rate of 400 characters per second. The following indicates the contents of the various 1721 and 1722 Paper Tape Reader models:

PAPER TAPE READER	CONSISTS OF
1721-A	Controller and 350 Reader (60-cps input)
1721-B	Controller and 350 Reader (50-cps input)
1721-C	Controller and 370 Reader (60-cps input)
1721-D	Controller and 370 Reader (50-cps input)
1722-A	Controller and 370 Reader (60-cps input and containing a Remex Tape Spooler)
1722-B	Controller and 370 Reader (50-cps input and containing a Remex Tape Spooler)

LOADING

The paper tape reader must be loaded with tape before operation can begin. Refer to the applicable paper tape reader reference manual listed in Part 3 for loading instructions. Press the READER POWER switch. Press the READY/MASTER CLEAR switch on the reader to clear the controller for operation.

READ

When the tape reader is Ready, the controller provides Ready and Power On status signals to the computer. To start the Read operation, the computer issues a Director Function code (with the start bit 05 = "1") which sets the Start FF. If the Data Ready

and Lost Data FFs are clear (no data in the Data register), the Clutch FF sets. The Clutch FF causes the clutch in the reader to engage and start moving the tape.

Setting the Clutch FF initiates a 40-millisecond delay. If a change of state in the feed hole is not sensed before the delay times out, the tape is not moving and the Paper Motion Failure FF sets. This provides a Not Ready status and an Alarm status to the computer and enables the alarm interrupt.

In normal operation, a feed hole will be sensed before the 40-millisecond delay times out and a Feed Hole signal sent to the controller. This Feed Hole signal causes the Feed 1 FF to set, clearing the Data register in the controller. After a 400-microsecond delay which prevents data transfer until the holes in the tape are directly over the photo diodes, the Feed 2 FF sets. The set Feed 2 FF initiates a 40-millisecond delay. If the delay times out due to the tape not moving or feed holes not present in the tape, the Paper Motion Failure FF sets. This provides a Not Ready status and Alarm status to the computer and enables the alarm interrupt.

The Feed 1 and Feed 2 FFs set the Data Ready FF. The Data Ready and Feed 2 FFs clear the Feed 1 FF. If any bits were present in the tape frame containing the first feed hole and were read by the reader, the bits are placed in the Data register after the Feed 1 FF is cleared.

Setting the Data Ready FF provides a signal to the computer indicating that data is available on the data input lines. A computer Read signal then enables transfer of this data to the computer from the controller Data register. The Read signal and the Data Ready FF set the Reply FF. The Reply FF causes the computer Read signal to drop, removes the data from the input lines, and clears the Data Ready FF.

After each frame of tape is read, the feed hole and information signals drop, clearing the Feed 2 FF. The cleared Feed 2 FF provides an input to the Feed 1 FF so that the Feed 1 FF can be set when the next feed hole appears in the tape and the next frame is to be read.

DATA INTERRUPT

When the data interrupt function is selected, the tape reader continues reading the tape until a paper motion failure occurs (end of tape or a torn tape), a Lost Data condition occurs, or until the interrupt function is removed. The Lost Data condition occurs when the last frame of data read was not transferred from the Data register of the controller to the computer (Data Ready FF is still set) by the time the next feed hole appeared. This feed hole provides a signal which sets the Feed 1 FF. Setting the Feed 1 FF sets the Lost Data FF to provide the Lost Data and Alarm status signals to the computer. Also, the Clutch FF clears and the reader clutch is released. Tape motion stops until both the Data Ready FF and the Lost Data FF clear. The Data Ready FF is cleared by a Master Clear or by the computer Read signal which allows the second frame of data to be transferred to the computer. If the Master Clear is used, both frames of data are lost. The Lost Data FF is cleared by a Clear Interrupt Function code.

If the data interrupt was not selected and the computer does not provide a Read signal when data is available on the input lines, the Clutch FF clears and tape motion stops when the Feed Hole signal drops between frames. On receipt of a Read signal from the computer, the data in the Data register is transferred to the computer, the Reply FF sets, and a Reply signal is returned to the computer. The Reply signal clears the Data Ready FF and causes the Read signal to drop. The Clutch FF sets, the reader clutch engages, and the tape moves to the next frame.

ALARM INTERRUPT

When an interrupt on alarm function is selected, the tape reader will stop if any alarm conditions are present: 1) A paper motion failure (end of tape or torn tape), 2) Lost Data, or 3) Power to the tape reader is off. Presence of this interrupt indicates that internal conditions have changed within the tape reader. The interrupt is cleared by a Clear Interrupt Function code.

1723/1724 PAPER TAPE PUNCH

INTRODUCTION

The CONTROL DATA 1723-A/B Paper Tape Punch consists of a controller and a National Cash Register (NCR) EM-B1 Paper Tape Punch. The CONTROL DATA 1724-A/B Paper Tape Punch consists of a controller, an NCR EM-B1 Paper Tape Punch, and a NCR EM-B2 Tape Handler. Each will punch 5-, 7-, or 8-level tape at speeds from 0 to 120 characters per second.

LOADING

The tape must be loaded into the head of the paper tape punch before operation can begin. Refer to the NCR EM-B2 Paper Tape Punch Manual, Pub. No. 60143600, for loading instructions. Press the POWER and READY/MASTER CLEAR switches on the punch. The READY/MASTER CLEAR switch clears the controller for operation.

PUNCHING TAPE

When the paper tape punch is Ready, the controller provides a Ready signal and a Power On status signal to the computer. It also provides a Data status signal indicating that the punch is not presently punching the tape. To start the punching operation, the computer issues a Director Function code (with start bit 05 = "1") to the controller which sets the Start FF. The Start FF starts the motor in the punch and initiates a Busy signal to the computer indicating that the controller is Busy. The punch motor turns a timing disc that generates Set and Clear Punch pulses, and Set and Clear Feed pulses to the controller (Figure 2-5). The Director Function code initiates a Reply signal to the computer causing the start bit of the Director Function code to drop. After the Start FF sets, there is an 800-millisecond delay which permits the punch motor to reach operating speed before pulses from the paper tape punch are accepted by the controller.

When the computer issues a Write signal with the data to be punched, the Reply FF sets. The Reply FF permits setting of the Punch 1 FF which causes a Reply signal to be sent to the computer, dropping the Write signal. The Reply FF also gates the data to be punched into the Holding Register FFs. Setting the Punch 1 FF causes the Data status signal to

the computer to drop. (If the computer issues another Write signal immediately, the signal is rejected until the punch has processed the data presently in the Holding register.) After data is placed in the Holding register, the Set Punch pulse and the output of the set Punch 1 FF sets the Punch 2 FF. This provides a Feed Hole signal to the punch and gates the data from the Holding register to the punch. The data and the feed hold are now punched in one frame of the tape.

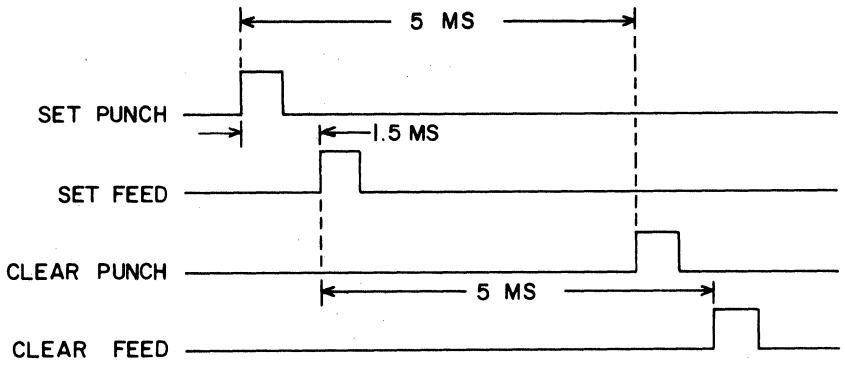

Figure 2-5. Punch Timing

The Set Feed pulse from the punch sets the Feed FF, clearing the Punch 1 FF and instructing the punch to move the tape one frame. The Clear Punch pulse clears the Punch 2 FF which clears the Holding register, preparatory to receiving the next group of data bits. The Data status signal is returned to the computer indicating that the punch is not punching and can receive additional data bits. The Clear Feed pulse from the punch clears the Feed FF and the punch stops moving tape. On receipt of the next Write signal and additional data bits from the computer, the punch cycle repeats.

INTERRUPTS

Two interrupts may be used during operation of the paper tape punch. These are data interrupt request and interrupt on alarm. Either interrupt may be selected with or after the Start instruction is issued.

When the data interrupt request is selected, bit A02 is a "1". The interrupt occurs when the controller Holding register is clear and the punch is ready for additional data bits from the computer. When the interrupt on alarm is selected, bit A04 is a "1". This

interrupt occurs when there is a Low Tape condition in the punch, the tape is torn, or when power to the punch is off.

Interrupt conditions may be sensed by a computer status check whether the interrupts are selected or not.

STOP

Upon completion of punching a frame of data, the punch remains ready to perform another punch operation until the computer issues a Director Function code with stop bit 06 equals "1". The Stop signal clears the Start FF and turns off the punch motor. Also, if there will be no punching within the next 60 seconds, the Stop signal should be issued.

1729-A/B CARD READER

INTRODUCTION

The CONTROL DATA® 1729-A/B Card Reader consists of a controller and a National Cash Register (NCR) EM-D2 (PE) Card Reader. Two models (the 1729-A, 60-Hz input and the 1729-B, 50-Hz input) of the 1729 Card Reader are available for use with the 1700 Computer System. The controller controls card reader operation and receives amplified data read off the cards. Card columns are read by photocells in the read station area of the card reader. The card reader is capable of reading standard 80-column punched cards at a rate of about 100 cards per minute. The input hopper and output stacker of the card reader each hold a maximum of 400 cards.

DIRECTOR FUNCTION AND STATUS CODES

Refer to Table 2-1 for a description of the Director Function and Status codes. The logic diagrams are referred to in the table and descriptions by page number, card location number, and card pin number. For example, 3-B17-8 refers to logic page 3, card location B17, and pin 8.

TABLE 2-1. DIRECTOR FUNCTION AND STATUS CODES

FUNCTION	A REGISTER BIT	LOGIC INPUT	DESCRIPTION
Clear Controller	A00	37-A01-24 (Z26)	Outputs a "1" to 41-B03-9 to clear Lost Data and Alarm FFs. Enables clearing Motion FF (41-B02). Clears Register FF (43-B04). Also clears all interrupt requests, motion requests, errors, and other logic which can be cleared. If this bit is used with other select bits, the other requests are honored following a Clear Controller.
Clear Interrupts	A01	37-A01-26 (Z26)	Outputs a "1" to AND gate A (37-A02) to clear out End of Record and Alarm status signals (37-A02). Clears End of Record FF (41-B03). Clears Data Interrupt FF (37-A02). Clears all interrupt requests and their responses. If this bit is used with select bits A02, A03, or A04, A04, these bits are honored following a Clear Interrupts.
Data Interrupt Request	A02	37-A02-25 (Z27)	If the Protect line is up (AND gate B = "1"), the Data Interrupt Request FF sets. An interrupt is generated when a data transfer can occur. It can occur when the Data FF (41-B02) is set (41-B02-15 = "1") and the Motion FF (41-B02) is set (41-B02-9 = "1"). The interrupt is cleared by a Read operation. Interrupt request is cleared by a Clear Controller or Clear Interrupts (inverter C = "1").
Select Interrupt on End of Record	A03	37-A02-17 (Z27)	If the End of Record FF (41-B03) is clear (41-B03-20 = "1") and the Protect bit is present, the FF at test point 5 (37-A02) will set. If the End of Record FF sets, it will enable setting the EOR FF (37-A02) which provides an interrupt notifying the computer when the last data transfer of a record has occurred, i. e. when the last column of the card has passed the read head.

TABLE 2-1. DIRECTOR FUNCTION AND STATUS CODES (Cont'd)

FUNCTION	A REGISTER BIT	LOGIC INPUT	DESCRIPTION
			The interrupt is cleared by Clear Controller or Clear Interrupts. The interrupt must be cleared before the beginning of the next card or the reader will stop until it is cleared (37-A02-10 = "1" clears Motion FF which sets Stop FF at 43-B04).
Select Interrupt on Alarm	A04	37-A02-5 (Z27)	If the Protect bit is present, the FF at test point 1 will set if a "1" is present at 37-A02-5. This enables setting the Alarm Interrupt FF (37-A02) providing an interrupt if an Alarm condition is present. An alarm interrupt indicates that the card reader has reached one or more of the following states which cause the Alarm FF (41-B03) to set: 1. Read Station Empty (RSE) (43-B04-15 = "1"). 2. Lost Data (Lost Data FF set, F = "1"). 3. Card reader becomes Not Ready while reading is in progress (39-B01-20 = "1"). 4. An attempt was made to start motion while the reader was Not Ready (41-B02-6 = "0" and 39-B01-20 = "1"). The interrupt request and response is cleared by a Clear Controller or Clear Interrupts.
Start Motion	A05	41-B02-27 (Z30)	If Station 6 is connected, the controller is doing a function, the reader is ready, and the Protect bit is present, then inverter B outputs a "1". This sets the Motion FF (41-B02) causing AND gate A to output a "1", enabling a Reply to the computer. After a Start Motion function is received, reading can begin. If reading is in progress

TABLE 2-1. DIRECTOR FUNCTION AND STATUS CODES (Cont'd)

FUNCTION	A REGISTER BIT	LOGIC INPUT	DESCRIPTION
			when a Start Motion is received, no further transfer can occur to the computer from that record. Transfer begins again when the following card is in position. Cards continue to be fed until a Stop Motion is received. If the End of Record interrupt is not cleared before the beginning of the next card, the card reader stops. Refer to the Start Card Motion paragraph for a further description of the Start Motion function.
Stop Motion	A06	41-B02-28	This bit directs the card reader to stop the operation. It clears the Motion FF (41-B02) and causes AND gate D to output a "1", clearing the Data FF (41-B02). A stop Motion in the middle of a record locks out any further transfer in that record but the card continues to move to the output stacker. The stop occurs at the beginning of the next record (43-B04-21 = "0", causing AND gate A to output a "1", 43-B04-27 = "0", 47-B05-18 and 43-B04-24 = "0s", causing the Stop FF at 43-B04 to clear after 1 μsec, sending a Stop signal to the card reader). If both A05 and A06 are set, Stop Motion will occur.
STATUS	A REGISTER BIT	LOGIC INPUT	DESCRIPTION
Ready	A00	39-B01-9 (Z29)	The card reader is Ready when the power is on, a card has stopped on column 1 in the read station, and a Permit Read signal is present (39-B01-7 and 11 = "1" to set the associated FF, causing AND gate A to output a "1" Ready Status at 39-B01-9). The card reader becomes Not Ready when RSE or the MAN switch is pressed (43-B04-5 = "1"), or the power is off.

TABLE 2-1. DIRECTOR FUNCTION AND STATUS CODES (Cont'd)

STATUS	A REGISTER BIT	LOGIC OUTPUT	DESCRIPTION
Busy	A01	39-B01-13 (Z29)	The card reader is Busy if card reading is in progress (39-B01-11 = "0" to indicate that the card is moving and inverter A on 39-B01 = "1" to indicate Ready). This outputs a Busy status at 39-B01-13. The reader is Not Busy if no reading is taking place or if the card reader is Not Ready.
Interrupt	A02	37-A02-8 (Z27)	The Interrupt status is available if one or more of the selected interrupt conditions has occurred. Other bits must be monitored to determine the condition causing the interrupt.
Data	A03	41-B02-18 (Z30)	The Data status directly follows the availability of data in the Data register (45-C01 and C02). When 47-B05-23 = "1" (t3), 43-C03-22 = "0" (LEP), and 3-B17-7 = "0" the Data FF (41-B02) sets and data is available to the computer, making this status true. The status drops when the Data register is emptied by transfer to the computer (43-C03-28 = "1" at t1).
End of Record	A04	41-B03-22	This status appears (41-B03-22 = "1") immediately following the last data transfer of a record which sets the End of Record FF (47-B05-5 and 37-A02-18 = "1"). It remains up until one of the following conditions occurs: 1. Clear Interrupts command (37-A01-27 = "1") 2. Select Interrupt on End of Record (9-B11-27 = "1") 3. Elapse of 1 ms (47-B05-1 = "1")

TABLE 2-1. DIRECTOR FUNCTION AND STATUS CODES (Cont'd)

STATUS	A REGISTER BIT	LOGIC OUTPUT	DESCRIPTION
Alarm	A05	41-B03-14 (Z31)	This bit indicates that the Alarm FF (41-B03) has set because of the presence of one of the following conditions: 1. RSE (43-B04-15 = "1"). 2. Data has been lost (Lost Data FF set, F = "1"). 3. Card reader becomes Not Ready while reading was in progress or an attempt was made to start motion while the reader was Not Ready (39-B01-20 = "1"). The Alarm status drops following a Master Clear or Clear Controller command (37-A01-19 = "1").
Lost Data	A06	41-B03-8 (Z31)	If data is not transferred out of the Data register to the computer before the next column of the card appears, data will be lost. The Lost Data FF sets at t1 (39-A03 -1 = "1") if the Data FF stays set (41-B02-22 = "1"). The Data FF will stay set if not cleared by a reply (inverters E and G both = "1", 41-B02). A reply will not be generated if the computed fails to send a Read Data signal (3-B17-14 = "0" instead of "1"). Setting the Lost Data FF generates Lost Data status and no further transfer can occur from the card. Card motion stops at column 1 of the next card unless a Clear Controller and a Start Motion commands are issued (AND gate H on 41-B03 = "0" and inverters D and B = "1s" on 41-B02 to clear the Data FF). The status bit remains set until the Clear Controller instruction is issued.

TABLE 2-1. DIRECTOR FUNCTION AND STATUS CODES (Cont'd)

STATUS	A REGISTER BIT	LOGIC OUTPUT	DESCRIPTION
Protected	A07	37-A01-15 (Z26)	If the PROGRAM PROTECT switch on the card reader is on (37-A01-14 = "1"), the Protect status bit is available, otherwise it is not. See Table 2-3.
Existence Code	A08	11-B06-19 (Z35)	If the card reader is connected, 11-B06-19 = "0", if a "1", the card reader is missing from the particular computer system.
Read Station Empty	A09	43-B04-17 (Z33)	A RSE status is present 30 ms after the read station becomes empty (47-B05-4 = "1"). This may be caused by an empty hopper, a feed failure, or an operator error.

LOADING

The cards to be read should be placed face down in the card reader hopper with row nine at the rear of the stack. Pressing the Register (REG) switch on the card reader will move one card from the hopper to the read station. Arrival of the card will cause the card reader to generate two signals to the controller.

1. One signal indicates that the read station is not empty ($\overline{\text{RSE}}$) and that this signal will remain until the card leaves the read station.
2. The other signal is a Field pulse of 3.5 ms duration. The Field pulse and the $\overline{\text{RSE}}$ signal set the Field 1 and Stop FFs.

The Field 1 FF (39-A03) sets on the leading edge of the Field pulse since the Field 2 FF (39-A03-test point 5) is clear. With the Field 1 FF set, the $\overline{\text{RSE}}$ signal present, and the Motion FF (41-B02) clear, the Stop FF (43-B04) sets. Setting the Stop FF will provide a Not Busy status and enable sending a Stop pulse to the card reader.

The trailing edge of the Field pulse causes the Field 2 FF to set. With both the Field 1 and Field 2 FFs set, the Permit Read FF (37-A02) sets. This sets the Ready FF (39-B01), providing a Ready status and it enables the Read Timing Chain (39-A03). It also disables the set input to the End of Record FF (41-B03) and enables clearing the Data register during t2 of the Read Timing Chain cycle.

READ

Before the Stop command to the Card Reader (43-B07-7) can take effect, card column 1 appears over the read station photocells and a Clock pulse of 3.5 ms enters the controller at 43-C03-6. This pulse enables the AND gate at test point 5 (43-B04), which only controls the escapement between cards. The Clock pulse at 43-C03-7 will cause the timing chain to start.

Read Timing Chain

The Read Timing Chain (39-A03) consists of two FFs. Normally, they are both clear indicating time 0 (t0). Cycling of the Read Timing Chain occurs as follows:

1. t0--Both FFs clear (C and D both equal "1").
2. t1--FF AC is set (A equals "1") and FF BD is clear (D equals "1").
3. t2--Both FFs set (A and B both equal "1").
4. t3--FF AC is clear (C equals "1").

TABLE 2-2. READ TIMING CHAIN

TIME	EVENT ACCOMPLISHED	TIME INTERVAL (MILLISECONDS)	COMMENT
t1	Clear Data register	4	
t2	Transfer data from read station to Data register	20	
t3	Set Data FF	3.25 (Approx)	Time between the end of t2 and trailing edge of Clock pulse.
t0	Enable recycling Read Timing Chain	3.5 (Approx)	Time between trailing edge of one clock pulse and trailing edge of another Clock pulse

Card column 1 is now over the read station, information from that column has transferred to the Data Register, and card motion has stopped. A Ready signal, Data signal, and Not Busy status are being generated, and the controller is in a position to transfer data to the computer.

The computer can transfer the column 1 data only after a Start Motion function command. If it inputs the data before this the controller will send a reject. If card motion is started, a data transfer must occur before another column enters the read station or data will be lost.

Start Card Motion

When the computer sends a Start Motion function to the controller, it causes a "0" to appear at 41-B02-27. This sets the Reply FF (41-B02), sending a reply to the computer, and sets the Motion FF (41-B02). Setting the Motion FF will:

1. Enable generating a data interrupt when data becomes available if a data interrupt has been selected (37-A02).
2. Set the Alarm FF (37-A02) if the read station has been empty for 30 ms or more or if the card reader is not ready.
3. Disable the set input to and clear the Stop FF (43-B04).
4. Enable setting the Ready FF (39-B01).

When column 2 of the card appears over the read station photocells, another 3.5 ms Clock pulse appears at 43-C03-6, causing the timing chain to cycle and the information to transfer to the Data register. This procedure repeats for each column passing the read station.

Read Data Operation

When the computer requests data from the card reader, a Read Data signal ("1") appears at 41-B02-8. This causes the Reply FF to set if the Data and Motion FFs are set. Setting the Reply FF sends a reply to the computer and clears the Data FF (37-A02). When the card is in motion, each card column enters the read station, and another Clock pulse appears at 43-C03-6. The Clock pulse recycles the Read Timing Chain and the Read operation repeats until column 79 enters the read station.

When column 79 enters the read station, the card reader generates a second Field pulse. The leading edge of this pulse comes in at 39-A03-23, clearing the Field 1 FF (39-A03). The Field 2 FF remains set. The column 79 Clock pulse starts the Read Timing Chain, as before, and the information is transferred from column 79 to the Data register. The trailing edge of the second Field pulse clears the Field 2 FF.

Card motion continues until column 80 appears under the photocells in the read station. Column 80 Clock pulse starts the Read Timing Chain and the information is transferred from the card to the Data register, as before. However, at time 3 of the Read Timing Chain, the Permit Read FF (37-A02) is cleared since the Field 1 and Field 2 FFs are already clear. As the information is transferred to the computer, the reply clears the Data FF (41-B02); then the cleared Permit Read FF provides a "1" at 41-B03-21 which sets the End of Record FF (41-B03). This sends an End of Record status to the computer, indicating that all columns have been read and that the reader is at the end of the card. The End of Record FF will clear itself after 1 ms if it has not already been cleared by a Clear Controller function.

When the card leaves the read station, a RSE signal is present at 43-C03-8. This results in "1s" at 43-C03-9 and -11 and "0s" at 43-C03-10 and -12. The "1" at 43-C03-11 enables AND gate E and causes inverter L (43-B04) to output a "0" which disables the set input to the Stop FF.

The "1" from 43-C03-9 initiates a 30 ms time delay in the Upper Odd FF (47-B05). If this delay times out, it indicates the hopper is empty and no more cards are to be read. The "0s" from 43-C03-10 and -12 prevent the controller from reacting to any more Clock pulses, since they are generated until column 82. Timing out of the delay will send an RSE + 30-ms signal to 43-B04-18. This will generate a RSE status (43-B04-17), and satisfy AND gate E which sends a Stop signal to the card reader. It also causes mechanical movement to stop and sets the Alarm FF (41-B03).

If the card leaving the read station is not the last card to be read, another card should enter the read station before 30 ms have elapsed. As a card leaves the read station, the pressure rollers are raised. Raising the pressure rollers cause a ground to appear at 43-B04-10. With the arrival of more Clock pulses (up to column 82), the AND gate at test point 5 (43-B04) is satisfied. This generates a Stop pulse

to the escapement control in the card reader. The Stop pulse stays up until the pressure rollers come down to ensure that the incoming card is positioned correctly in the read station.

As soon as a new card enters the read station, the RSE signal (43-C03-8) drops, causing card movement to continue through the read station. The card columns are read as previously described.

LOST DATA

If the computer does not accept data from the Data register before the next column enters the read station and the Clock pulse is generated, data in the Data register will be lost. At time 1 of the Read timing chain cycle, the Lost Data FF will set if data has been lost causing:

1. The Alarm FF (41-B03) to set, sending an Alarm status and enabling an interrupt on alarm.
2. The Data FF (41-B02) to clear, removing Data status. The clear is held, preventing setting again.
3. The Motion FF (41-B02) to clear so that the next card entering the read station will stop on column 1.

When data is lost, the card continues to move through the card reader but signals from the card reader have no effect on the controller. When the next card enters the read station, the leading edge pulse of the $\overline{\text{RSE}}$ signal clears the Lost Data FF and removes the Lost Data status. This is required to save the information in the first column of the incoming card. The Alarm status remains until cleared by the proper Function code or Master Clear. A normal read can now be performed on the card presently in the read station.

START MOTION DURING CARD READ

If a Start Motion function is requested while a card is moving through the read station, logic gate D (41-B02) outputs a "1". This sets the FF (clear output is C) that disables the set input to the Data FF, preventing a Data status signal. When the next Clock pulse enters the controller and starts the Read Timing Chain, the FF at

test point 4 sets at time 3 but cannot clear, since the Data FF cannot set. The clear output of the FF at test point 4 (logic gate I) disables the Read Data - Reply path so that attempts to read through the remainder of the card will result in rejects to the computer. After this card leaves the read station and a new card arrives, read operations may be resumed. The leading edge pulse of the $\overline{\text{RSE}}$ pulse clears the FF (clear output C) at 41-B02-19.

PROGRAM PROTECT

The 1700 Computer System provides for protection of its programs from error or from interference by other programs. The computer and the card reader both have PROGRAM PROTECT switches. Table 2-3 describes conditions present for the protect switch positions. Status requests will be accepted and replied to regardless of the switch positions.

TABLE 2-3. PROGRAM PROTECT SWITCH POSITIONS

PROGRAM PROTECT SWITCH	ON	OFF
COMPUTER	Only instructions which have a "1" in protect bit (Bit A17) position will cause the protect line to be a "1".	Protect line to controller is always a "1" (37-A01-11). All function codes accepted by the controller.
CARD READER	Only protected instructions will be accepted. Unprotected instructions will be rejected.	All function codes are accepted whether or not computer protect line is "1" or "0".

STOP SIGNAL GENERATION

A Stop signal to the card reader will generated under the following conditions. Refer to logic diagram Z33 (43-B04).

Condition 1

When the MAN/AUTO switch is placed in the MAN (Manual) position, the card reader will not feed cards from the hopper. This places a "1" at 43-B04-4. As the card leaves the read station, column 82 places a "1" at 43-B04-2. With inverter D clear, AND gate G outputs a "0" sending a "1" Stop signal to the card reader.

Condition 2

With the RSE (43-C03-8), pressing the REG switch will allow one card to come into the read station. This places a "1" at 43-B04-6 setting both FFs (D = "0"). This disables AND gate G and causes AND gate E to output a "0", sending a Stop signal to the card reader.

During normal operation, if the card leaving the read station is not the last card to be read, another card should enter the read station within 30 ms. If not, AND gate E will output a "0", causing the card reader to stop.

Condition 3

As a card leaves the read station, the pressure rollers are raised, causing a "1" to appear at 43-B04-10. Since Clock pulses are generated up to column 82, this enables the AND gate at test point 5 to output a "0", sending a Stop pulse to the card reader.

Condition 4

With the Field 1 FF set, the Field 2 FF clear, the Motion FF clear, and a card entering the read station ($\overline{\text{RSE}}$), the Stop FF (43-B04) sets, sending a Stop pulse to the card reader. This stops the card on column 1. The card reader must receive a Start Motion function command at this time to transfer data.

REPLY-REJECT

Functions

When a function code is issued and if other conditions (Station 6, Ready, Protect OK) are present, 37-A01-12 = "0" setting the Reply FF (41-B02). This sends a reply to the computer, indicating that the function code has been accepted.

When station 6 (card reader) is connected, and a function instruction is present, 41-B03-2 = "0". This would cause a "1" output at 41-B03-1 which is a Reject signal. However, the Reply FF normally sets, causing 41-B03-6 to equal "0" preventing a reject since the Enabling signal (41-B03-2 = "0") is delayed by 0.5 microseconds. If the Reply FF does not set, the 41-B03-2 = "0" signal progresses through the chain of inverters causing a Reject signal (41-B03-1 = "1").

Data

The computer sends a request for each column of information it receives off the card. A request places a "1" at 41-B02-8. If station 6 is present (card reader connected), inverter H outputs a "0" to 41-B03-4, starting a 0.5-ms timeout in the reject circuit. Inverter G (41-B02) outputs a "1" and if inverter A = "1" (Motion FF set), inverters I and J = "1" (Data FF set), the AND gate between inverters G and E will output a "0" setting the Reply FF. This causes 41-B02-4 to equal "0", preventing a Reject signal from going out before the 0.5 μsec delay times out.

READY-BUSY

The card reader is Ready when power is on (39-B01-18 = "1"), the card reader has stopped on column 1 (43-B04-11 = "1"), and a Permit Read signal is present (39-B01-7 = "1"). This sets the associated FF on card Z29 (39-B01) enabling a Ready signal and status. A Ready signal is required to enable setting the Motion FF (41-B02). The Motion FF must be set (39-B01-5 = "1" before information in the card columns can be read, and also to enable the Ready condition to stay up (39-B01-5 = "1"). Setting the Motion FF will also clear the Stop FF (43-B04) removing the "1" at 39-B01-1. A function will not be replied to and it will be rejected if the card reader is Not Ready or Busy. The reader becomes Not Ready when the card has stopped on column 82 (RSE), when the MAN switch is pressed, or if the power is off.

The "1" at 39-B01-1 enables a Busy status and signal at 39-B01-13 and 15, respectively. The Busy status stays up as long as Ready is present (inverter A, 39-B01 = "1") and the Stop FF (43-B04) is clear. Clearing the Motion FF will set the Stop FF, dropping the Busy status.

PART 3

MAINTENANCE

PART 3

MAINTENANCE

INTRODUCTION

Maintenance procedures for the 1700 Low Speed Synchronizer follow the same general routines used in other Control Data equipment. Detailed routines regarding specific maintenance problems will be distributed as information is received from maintenance personnel in the field.

A thorough understanding of the low speed synchronizer and its functions is necessary to keep maintenance time to a minimum. This manual and the supporting documents listed below provide a primary source of information to aid personnel in obtaining this understanding. Flow charts, logic interpretation diagrams, and explanation of logical functions have been included to illustrate and emphasize important and/or difficult areas.

MANUAL	PUB. NO.
1700 Computer System Site Preparation and Installation Manual	60158400
1700 Computer System Systems Manual	60152900
1700 Computer Reference Manual	60153100
1700 Computer System Input/Output Specifications Manual	60165800
1700 Computer System Customer Engineering Manual	60152700
Teletype Technical Manual, Volume 1	60155300
Teletype Technical Manual, Volume 2	60164000
350 Paper Tape Reader Reference Manual	40801200
350 Paper Tape Reader Maintenance Manual	40813100
NCR Paper Tape Punch Manual EM-B2	60143600
NCR Card Reader EM-D2 (PE) Customer Engineering Manual	60161300
Control Data Power Supplies Manual	60120700
Remex Tape Spoolers Manual (Remex Pub. No. TSM508A)	

POWER SUPPLIES

The power supplies for the teletypewriter and the paper tape reader are contained within their individual cabinets. Refer to the applicable teletypewriter and paper tape reader manuals listed on page 3-1 for power supply information.

The paper tape punch power supply is manufactured by the Cedar Division of Control Data and is mounted directly behind the punch. Refer to the Control Data Power Supply Manual listed on page 3-1 for information on this power supply.

The card reader power supply is mounted under the reader chassis. Refer to page 59 of Part 1 for a schematic diagram of the card reader power supply.

COOLING

The low speed synchronizer is cooled by fans contained within the computer. The teletypewriter is cooled by ambient air and all other peripheral devices are cooled by fans mounted in their respective cabinets.

CABLING INFORMATION

The peripheral devices are connected by cables to their controllers and the common synchronizer of the low speed synchronizer through a junction box in the computer.

ADJUSTMENT OF TELETYPEWRITER CONTROLLER CLOCK DELAYS

When the controller clock delays are properly adjusted, the clock will be synchronized with the teletypewriter output. To check this, the controller should be in Read mode and the computer should be continuously looping on a Read instruction. The teletypewriter should continuously send a "U" with an oscilloscope, synchronized on the start detector. Refer to Trace 4 in Figure 3-1. The output of the Receiver circuit should be as shown on Trace 1 and the output of the Clock FF should be as shown on Trace 2. Algebraic addition of the two traces should result in what is shown for Trace 3. Adjust the clock delays for minimum spiking.

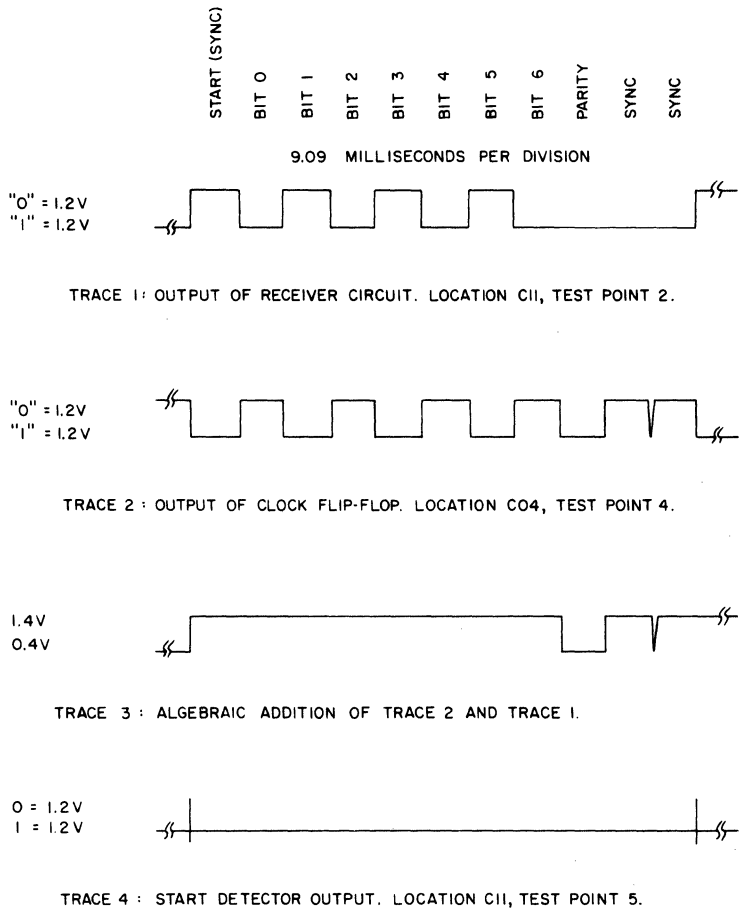

Figure 3-1. Scope Traces Observed While Adjusting Clock Delays

Upon completion of the clock delay adjustment, the sync probe should be moved to the Mechanical Busy FF, location C06, test point 1. The delay at C15, test point 6 should be adjusted so that the Mechanical Busy FF does not clear (the oscilloscope fails to synchronize).

These adjustments should be made at the highest temperature in which the controller will be operated.

ADJUSTMENT OF CARD READER PREAMPLIFIERS

PREPARATION

A test deck of about 400 cards should be punched in binary format so that successive columns contain a 2-5-2-5 pattern, alternating with a 5-2-5-2 pattern. This allows the reader photocells to read a hole in every other column and reverse the pattern for alternate columns. Place the AUTO/MAN switch in the AUTO position. Hold the SKIP pushbutton down to feed cards through the reader for checking. This allows cards to feed through the reader without computer control.

SENSE AMPLIFIER ADJUSTMENT

The output of the preamplifiers should be checked at the test points (TP) on modules C01, C02, and C03. Refer to the logic diagrams on pages 43 and 45 of Part 1. The Clock pulse may be checked at C03-TP1, the RSE pulse at C03-TP2, and the Field pulse at C03-TP3. Data pulses may be found at all test points on modules C01 and C02.

Field pulses occur at columns 79 and 87 as a card is passing through the read station. They are of the same length as the Clock pulses. Data pulses occur for every other column on the card. The RSE pulse occurs at column 81 as the card leaves the read station and remains up until the next card enters the read station.

The lengths of the Clock pulses, Field pulses, and Data pulses are adjusted by variable resistors mounted on the individual cards in the reader. All pulses are checked at the test points on the controller modules. If the pulse lengths vary from the times shown on the timing chart, remove the back cover from the reader to expose the preamplifier cards for adjustment. The preamplifiers are adjusted by rotating the variable resistors mounted on the individual cards. Each card contains three variable resistors, each of which is adjusted for an individual pulse. Refer to the Tape Reader modification and Pre-amplifiers logic diagram for identification of the variable resistors.

SWITCH SC202 ADJUSTMENT

The SC202 switch should not operate in column 80. It should operate on or before column 81 and remain operational in column 82. This can be checked by monitoring the switch with a scope at B04-TP2 (page 43, logic diagrams) while rotating the drive line with a screwdriver. Insert the screwdriver in the hole that is opened by removing the column indicator disk. The position of the escapement wheel can be observed by removing the inspection plate from the bottom of the card reader. Refer to the NCR EM-D2 (PE) Card Reader Manual.

CLOCK AND FIELD PHOTODIODE POSITION

Remove the program disk and position a card on any column between 1 and 80 by operating the Skip switch while the MAN/AUTO switch is in the AUTO position. In this position, both the Clock and Field pulses should be "1's" (Clock, C03-TP1; Field, C03-TP3). These pulses should become "0's" together if the drive line is rotated backwards slightly. The amount of backward rotation corresponds to the 1 millisecond that the Clock and Field pulses need to go to a "1" before the escapement wheel (column position). If adjustment is needed, perform the following procedure. The alternate procedure described in the NCR EM-D2 (PE) Card Reader Manual (Service Data, Photodiodes) may also be used.

1. Draw a line on the program disk to bisect the outer digit 40. Put this disk in place and position the card control line to column 86. Loosen the locking screw and with the use of the adjusting screw, position the field photo diode block until the photo diode is in line with the line on the program disk. The photo diode should be in line with the upper portion of the emulsion stripes on the program disk plate when the reader is resting at columns 1 through 80. This setting ensures that the photodiodes will not be misaligned by one column.
2. Remove the program disk and position the reader on any column between 1 and 80. Observe the Field pulse (C03-TP3) and turn the field photodiode adjusting screw clockwise until the field pulse is a "1".
3. Using the Clock pulse (C03-TP1) for a reference (-), observe the Clock pulse on one trace of the scope and observe the Field pulse on the other trace. With the reader cycling, turn the clock photo diode adjusting screw until the signal relationships shown in Figure 3-2 are obtained.

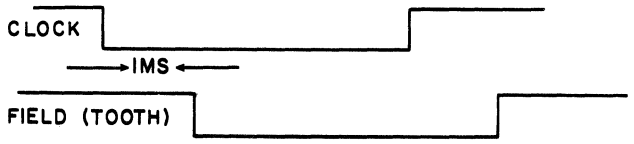

Figure 3-2. Clock and Field Signals

4. Turn the field photo diode adjusting screw until the Field and Clock pulses are synchronized in timing.

TIMING RELATIONSHIPS

The timing relationships shown in Figure 3-3 should exist and be observed by triggering on the column 82 signal (B04-TP2) while feeding cards through the reader.

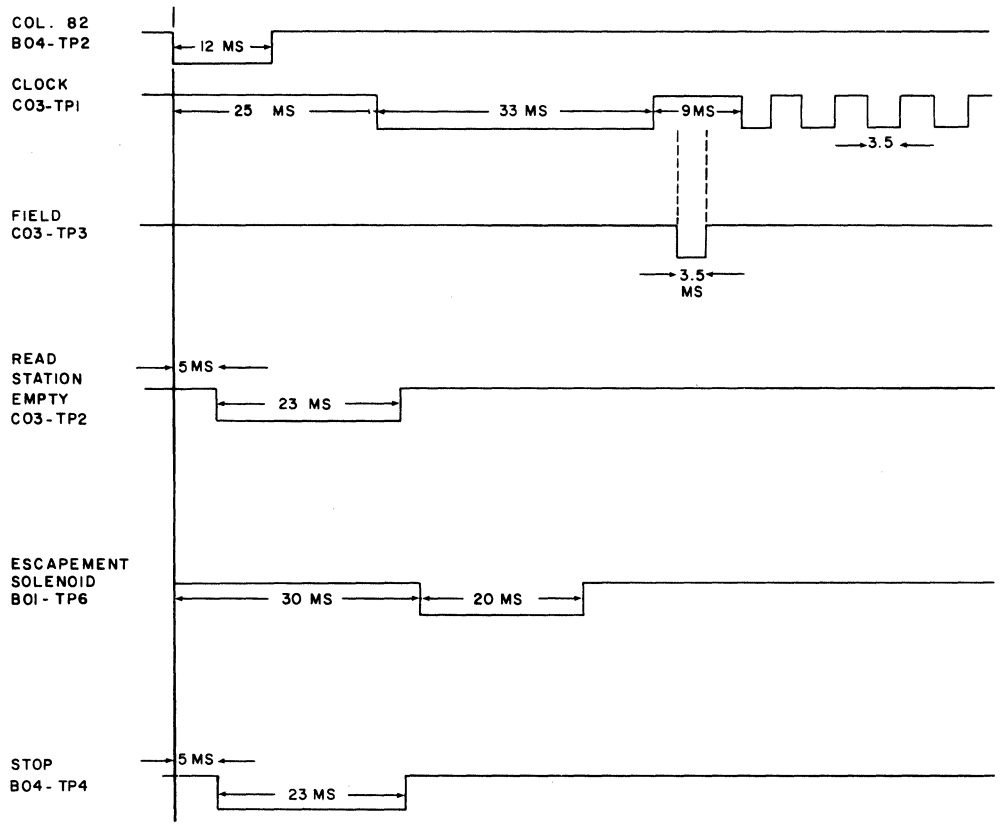

Figure 3-3. Timing Relationships

DATA/CLOCK RELATIONSHIP

The timing relationship shown in Figure 3-4 should be observed by using any one of the 12 data levels for a trigger. If the timing is incorrect, it can be corrected by adjustment of the card pusher arm. Refer to Service Data, Card Pusher Arm of NCR EM-D2 (PE) Card Reader Manual.

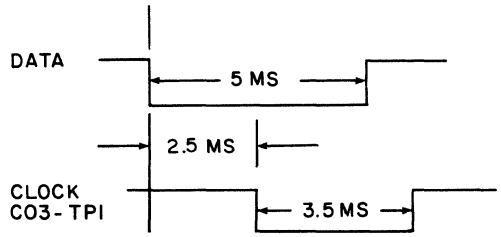

Figure 3-4. Data and Clock Timing

CARD READER TROUBLESHOOTING SUGGESTIONS

This outline lists common card reader malfunctions together with their most probable causes. Titles in parentheses refer to paragraph titles in Section 4 (Service Data) of the NCR EM-D2 (PE) Card Reader Manual.

REGISTRATION

1. Failing to stop in column 86
    a. Bouncing out of column 86
        1) Dirty escapement wheel
        2) Dirty stop pawl
        3) Rounded tooth on escape wheel
        4) Incorrect clutch torque (Friction Clutch)
        5) Incorrect adjustment of escape magnet (Escapement Assembly)
        6) SC 205 problem (Pressure Roll Switch SR 205)

b. Failure to (electrically) de-energize escape magnet

c. Logic failure

2. Failing to escape out of column 86

a. No pulse to escape magnet

1) Pressure Roll switch not making contact (Pressure Roll Switch SR 205)

2) Column 86 switch out of adjustment (Column 86 Switch SC 201)

3) Clutch torque too high (Friction Clutch)

4) Incorrect adjustment of escape magnet (Escapement Assembly)

b. Logic failure

3. Intermittent registration in column 1

a. Failing to eject the previous card into receiving hopper

1) Too much tension on registration fingers (Light Block)

2) Not enough tension on eject roll tension spring (Light Block)

3) Switch cover plate too low (Light Block); caused by bending up on registration fingers

4) Glaze on eject roll

5) Pressure rollers and/or pressure roller solenoid out of adjustment (Pressure Rolls)

b. Registration not deep enough

1) Card pusher arm out of adjustment (Card Pusher Arm)

2) Nylon block on card pusher arm loose (Card Pusher Arm)

3) Too much tension on registration fingers (Light Block)

4) Failure to stop in column 86

5) Card pusher arm dragging on table or capacitor case

6) Loose motor "V" belt (stretched in some cases), (Timing Belt)

7) Too much over-travel of card pusher link (maximum travel is 0.020 inch), (Card Pusher Arm)

c. Registration too deep

1) Card pusher arm out of adjustment (Card Pusher Arm)

2) Not enough tension on registration fingers (Light Block)

4. Buckling of cards in Column 1 (primarily left corner cut cards)

a. Too much tension on registration fingers (Light Block)

b. Incorrect alignment of pressure rollers (Pressure Rolls)

c. Failure to eject the previous card into receiving hopper (Light Block)

d. Adjustment of the switch block

NOTE

This procedure should be followed only as a last resort.

The switch block adjustment can be accomplished by loosening the three securing screws in the bracket and moving the switch block to the left. This adjustment will force a change in the registration (allowing a better grip on the card by the pressure rollers). If this adjustment is made, recheck the clock, field, and photo diodes for proper location.

CARD SKEW

1. Incorrect tension on pressure rollers (Pressure Rolls)
2. Incorrect adjustment of pressure roller eccentric and/or slide (Pressure Rolls)
3. Bind in pressure rollers (Pressure Rolls)
4. Incorrect tracking of pressure rollers with respect to card drive wheels
5. Incorrect adjustment of card register blocks (Card Feed Blocks, Card Gate, and Register Block)
6. Card drive wheels not tracking properly (Pressure Rolls)

INTERMITTENT ESCAPEMENT OF ONE COLUMN OR GOING ONE COLUMN TOO FAR

1. Too much clutch jitter (Friction Clutch)
2. Too slow drop-out time at escape magnet (Escapement Assembly)
   a. Too much tension on switch stack on escapement assembly
   b. Nylon switch operators binding on each other or on stop pawl
   c. Dirty escapement wheel
   d. Worn escapement wheel
   e. Worn stop pawl
   f. Dirty stop pawl
   g. Motor "V" belt too loose or stretched (Motor "V" Belt)

INTERMITTENT READ ERRORS

1. Motor "V" belt too loose or stretched (Motor "V" Belt)
2. Clutch torque incorrect (Friction Clutch)
3. Intermittent clock diode
4. Card skew
5. Incorrect registration

PART 4

PARTS LIST

PART 4
PARTS LIST

The parts list provides the identification and ordering data necessary for the replacement of electrical and hardware parts for this equipment. The equipment designation, final assembly number, and equipment name appear at the top of each page. The list is arranged in disassembly order, using levels of assembly to indicate the relationship of parts.

A typical parts list is shown below:

MAG14-C 18588000 D MAG14C CENTRAL STORAGE MOD

LEVEL*	PART NO	REV	DESCRIPTION	EFFECTIVITY**
1	18515400	B	SYSTEM SUB-ASSY	
2	18074900	J	STOR MODULE ASSY WIRED	IN 7/31/67
3	18074700	G	PL TOP STORAGE MODULE	
3	18074800	H	STACK AND DR DK ASSY WIRED	
4	18075000	G	STACK ASSY WIRED STOR MODULE	
5	63130100	F	PLANE ASSY INNER STOR MODULE	IN 12/ 1/67
6	63702100	J	BOARD BLANK MEMORY PLANE IN	
3	18541302	00	00000000000000000000000000000000 ***	

Refer to the Literature Distribution Center Catalog for related manuals on printed circuit card assemblies, peripheral cabinets, power supplies, and vendor parts lists necessary to complete a total parts breakdown of the equipment.

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*The level of assembly in relation to the final cabinet assembly (2 is the subassembly of level 1, 3 is the subassembly of level 2, etc).

**The date or serial effectivity on which the part is either added (IN) or deleted (OUT) in the equipment.

***If the description column contains all zeros, this means the drawing is not released. Revisions will show corrections.

1711-A	18063000	G	MODEL 1711-A TELETYPEWRITER
LEVEL	PARTNO	REV	
1	18224400	J	TELETYPEWRITER MOD 1711A
2	11827700	D	100 WPM PAGE PRINTER SET
2	18285300	A	PLATE BUTTON IDENT
2	18044700	A	RELAY MOTOR CONTROL
2	18190600	A	BRACKET, CONNECTOR
2	10001800	P	RECEPTACLE 30 SOCKET
2	18190500	A	FASTENER
2	18305300	A	PANEL FILLER
2	18154500	A	BRACKET CONNECTOR
2	18248800	C	1711 TELETYPE MOD WIRE LIST
3	24548301	J	WIRE ELEC STRD INS. UL APPD
3	24548302	J	WIRE ELEC STRD INS. UL APPD
3	24548305	J	WIRE ELEC STRD INS. UL APPD
3	24548306	J	WIRE ELEC STRD INS. UL APPD
3	24548307	J	WIRE ELEC STRD INS. UL APPD
3	24548310	J	WIRE ELEC STRD INS. UL APPD
3	24548313	J	WIRE ELEC STRD INS. UL APPD
3	24548326	J	WIRE ELEC STRD INS. UL APPD
3	17973610	D	TERM CRIMP TYPE INSUL SUPPORT
3	24528648	E	INS SLEEVING, ELEC-BULK
3	24500701	G	PIN TAPER
3	24500801	F	INSULATION SLEEVING ELECT
3	24546501	B	TERMINAL, SPADE, FLARED
2	18216500	C	CABLE ASSY 24 PIN J1
3	24518000	C	CABLE, ELEC 24 TWISTED PR
3	24512001	C	CONN RECEP. 4 HOLE PNL MTG 24
3	24546501	B	TERMINAL, SPADE, FLARED
3	24500707	G	PIN TAPER
3	24500810	F	INSULATION SLEEVING ELECT
3	24500801	F	INSULATION SLEEVING ELECT
2	18249000	C	1711 TTY MOD WIRE DIAGRAM
2	18235400	A	SW PB MOMENTARY CONTACT
2	18220000	A	61 PIN CONN ASSY
3	18211300	A	BD/MA PRINTED CKT 18211300
3	10001900	P	CONN PL ELECT R A 15 PIN CONT
3	17942801	B	TRANSISTOR PNP SILICON
3	17909800	A	RECTIFIER SILICON 1.0 AMP
3	24553500	B	DIODE SILICON PLANAR
3	17707754	C	CAP FIXED ELECTROLYTIC ALUM F
3	24500174	B	RES FXD .50W 3000 OHMS
3	18220100	A	RELAY PULLER MOT CONT SCHEM
1	18162900	D	CARD PLACEMENT TELETYPEWRITER
1	17710800	C	PLATE IDENT ARDEN HILL

1711-B	18197700	E	MODEL 1711-B TELETYPEWRITER
LEVEL	PARTNO	REV	
1	18224401	J	TELETYPEWRITER MOD 1711B
2	11827700	D	100 WPM PAGE PRINTER SET
2	18285300	A	PLATE BUTTON IDENT
2	18054300	B	CONVERSION KIT 60CY-50CY
2	18044700	A	RELAY MOTOR CONTROL
2	18190600	A	BRACKET, CONNECTOR
2	10001800	P	RECEPTACLE 30 SOCKET
2	18190500	A	FASTENER
2	18305300	A	PANEL FILLER
2	18154500	A	BRACKET CONNECTOR
2	18248800	C	1711 TELETYPE MOD WIRE LIST
3	24548301	J	WIRE ELEC STRD INS. UL APPD
3	24548302	J	WIRE ELEC STRD INS. UL APPD
3	24548305	J	WIRE ELEC STRD INS. UL APPD
3	24548306	J	WIRE ELEC STRD INS. UL APPD
3	24548307	J	WIRE ELEC STRD INS. UL APPD
3	24548310	J	WIRE ELEC STRD INS. UL APPD
3	24548313	J	WIRE ELEC STRD INS. UL APPD
3	24548326	J	WIRE ELEC STRD INS. UL APPD
3	17973610	D	TERM CRIMP TYPE INSUL SUPPORT
3	24528648	E	INS SLEEVING, ELEC-BULK
3	24500701	G	PIN TAPER
3	24500801	F	INSULATION SLEEVING ELECT
3	24546501	B	TERMINAL, SPADE, FLARED
2	18216500	C	CABLE ASSY 24 PIN J1
3	24518000	C	CABLE, ELEC 24 TWISTED PR
3	24512001	C	CONN RECEP. 4 HOLE PNL MTG 24
3	24546501	B	TERMINAL, SPADE, FLARED
3	24500707	G	PIN TAPER
3	24500810	F	INSULATION SLEEVING ELECT
3	24500801	F	INSULATION SLEEVING ELECT
2	18249000	C	1711 TTY MOD WIRE DIAGRAM
2	18235400	A	SW PB MOMENTARY CONTACT
2	18220000	A	61 PIN CONN ASSY
3	18211300	A	BD/MA PRINTED CKT 18211300
3	10001900	P	CONN PL ELECT R A 15 PIN CONT
3	17942801	B	TRANSISTOR PNP SILICON
3	17909800	A	RECTIFIER SILICON 1.0 AMP
3	24553500	B	DIODE SILICON PLANAR
3	17707754	C	CAP FIXED ELECTROLYTIC ALUM F
3	24500174	B	RES FXD .50W 3000 OHMS
3	18220100	A	RELAY PULLER MOT CONT SCHEM
1	17710800	C	PLATE IDENT ARDEN HILL
1	18162900	D	CARD PLACEMENT TELETYPEWRITER

1711-B Conversion Kit, 60 Cycle to 50 Cycle for
35AP Teletype Model
Dwg. No. 18054300

PARTS LIST

CDC - DRAWING NUMBER	DESCRIPTION	QUANTITY EACH MACHINE
18054302	Gear Set	
18054301	Motor Unit, 50 Cycle	
18054303	Transformer for SMD	

PRODUCT 1712-A | PLANT 2 | PIF-I

18062900 G MODEL 1712A TELETYPEWRITER

LINE	LEVEL	PARTNO	REV	
1	1	18224402	J	TELETYPEWRITER MOD 1712A
2	2	11825100	E	AUTO SEND-REC PG PRINTER SET
3	2	18285300	A	PLATE BUTTON IDENT
4	2	18044700	A	RELAY MOTOR CONTROL
5	2	18190600	A	BRACKET, CONNECTOR
6	2	10001800	P	RECEPTACLE 30 SOCKET
7	2	18190500	A	FASTENER
8	2	18154400	A	PANEL FILLER
9	2	18154500	A	BRACKET CONNECTOR
10	2	18224000	B	1712 TTY MOD. WIRE LIST
11	3	24548301	J	WIRE ELEC STRD INS. UL APPD
12	3	24548305	J	WIRE ELEC STRD INS. UL APPD
13	3	24548306	J	WIRE ELEC STRD INS. UL APPD
14	3	24548307	J	WIRE ELEC STRD INS. UL APPD
15	3	24548311	J	WIRE ELEC STRD INS. UL APPD
16	3	24548313	J	WIRE ELEC STRD INS. UL APPD
17	3	24548326	J	WIRE ELEC STRD INS. UL APPD
18	3	17973610	D	TERM CRIMP TYPE INSUL SUPPORT
19	3	24528648	E	INS SLEEVING, ELEC-BULK
20	3	24500701	G	PIN TAPER
21	3	24500801	F	INSULATION SLEEVING ELECT
22	3	24546501	B	TERMINAL, SPADE, FLARED
23	2	18216600	C	CABLE ASSY-24 PIN J1
24	3	24518000	C	CABLE, ELEC 24 TWISTED PR
25	3	24512001	C	CONN RECEP. 4 HOLE PNL MTG 24
26	3	24546501	B	TERMINAL, SPADE, FLARED
27	3	24500707	G	PIN TAPER
28	3	24500810	F	INSULATION SLEEVING ELECT
29	3	24500801	F	INSULATION SLEEVING ELECT
30	2	18224100	C	1712 TTY MOD. WIRE DIAGRAM
31	2	18235400	A	SW PB MOMENTARY CONTACT
32	2	18220000	A	61 PIN CONN ASSY
33	3	18211300	A	BD/MA PRINTED CKT 18211300
34	3	10001900	P	CONN PL ELECT R A 15 PIN CONT
35	3	17942801	B	TRANSISTOR PNP SILICON
36	3	17909800	A	RECTIFIER SILICON 1.0 AMP
37	3	24553500	B	DIODE SILICON PLANAR
38	3	17707754	C	CAP FIXED ELECTROLYTIC ALUM F
39	3	24500174	B	RES FXD .50W 3000 OHMS
40	3	18220100	A	RELAY PULLER MOT CONT SCHEM
41	1	18162900	D	CARD PLACEMENT TELETYPEWRITER
511	1	17710800	C	PLATE IDENT ARDEN HILL

1711-A/B, 1712-A Printed Circuit Module

PARTS LIST

CDC - DRAWING NUMBER	DESCRIPTION	QUANTITY EACH MACHINE
18085101	Printed Circuit Module Assembly, Type Z11	
18121401	Printed Circuit Module Assembly, Type Z12	
18121501	Printed Circuit Module Assembly, Type Z13	
18445701	Printed Circuit Module Assembly, Type Z14A	
18121701	Printed Circuit Module Assembly, Type Z15	
18121901	Printed Circuit Module Assembly, Type Z17	
18122001	Printed Circuit Module Assembly, Type Z18	
18122101	Printed Circuit Module Assembly, Type Z19	
18122202	Printed Circuit Module Assembly, Type Z20-1	
18122214	Printed Circuit Module Assembly, Type Z20-5	
18122301	Printed Circuit Module Assembly, Type Z21	
18122401	Printed Circuit Module Assembly, Type Z22	
18294901	Printed Circuit Module Assembly, Type Z36	
17954501	Printed Circuit Module Assembly, Type V48	
18487901	Printed Circuit Module Assembly, Type Z37	

1713-A 18358500 B MOD 1713A TELETYPEWRITER ASSY

LEVEL	PARTNO	REV	
1	18224404	J	TELETYPEWRITER MOD. 1713A
2	11825100	E	AUTO SEND-REC PG PRINTER SET
2	18285300	A	PLATE BUTTON IDENT
2	18154400	A	PANEL FILLER
2	18154500	A	BRACKET CONNECTOR
2	18224100	C	1712 TTY MOD. WIRE DIAGRAM
2	18235400	A	SW PB MOMENTARY CONTACT
2	18335400	C	ASSY RELAY CHASSIS
3	18327200	B	CHASSIS RELAY 1713
3	18361800	B	MTG BKT ASSY
4	18335500	A	BRKT MTG 1713
4	24553200	A	RECTIFIER, BI-DIRECTIONAL SW
4	24500039	C	RES FXD .25W 100 OHMS
4	24554245	E	DIODE ZENER SILICON 10 WATT
4	24553308	A	RES WW 50 WATT 6 OHMS
4	18080700	A	RECT SILICON 3AMP STUD MTD
4	97020601		TERMINAL, STUD, INSULATED
4	17883209	F	BUSHING NYLON FLANGED
3	18076600	A	TRANSFORMER FIL 25.2 VCT 2.0A
3	24544504	00	0000000000000000000000000000000
3	18119602	B	CKT BKR THERMAL PUSH BUTTON
3	18119601	B	CKT BKR THERMAL PUSH BUTTON
3	24547900		SOCKET, TUBE 8 CONTACT, OCTAL
3	18476300	A	CONN RECP(150 GRD) 30 CONT
4	10001800	P	RECEPTACLE 30 SOCKET
3	24501510	A	STRIP TERMINAL
3	18336402	A	RELAY PLUG-IN SQ SOCKET
3	18336401	A	RELAY PLUG-IN SQ SOCKET
3	18394801	B	RELAY REED (OCTAL PLUG-IN)
3	18294600	A	RELAY PULLER TYPE 6ANH ASSY
4	18294400	A	BD/MA PRINTED CKT TYPE 6ANH
4	24562100	B	TSTR SILICON-PLANAR,NPN
4	24561300	A	TRANSISTOR-NPN,SILICON
4	24561312	C	CAPACITOR FIXED CERAMIC 25VDC
4	24561307	C	CAP FIXED CERAMIC 25WVDC
4	24500052	C	RES FXD .25W 360 OHMS
4	24500061	C	RES FXD .25W 820 OHMS
4	24500071	C	RES FXD .25W 2200 OHMS
4	24500056	C	RES FXD .25W 510 OHMS
4	24501801		WIRE ELECT SOLID COPPER 22 GA
4	10001900	P	CONN PL ELECT R A 15 PIN CONT
3	18394802	B	RELAY REED (OCTAL PLUG-IN)
3	18419200	A	BAR, CARD SPACER MODIF
4	45148102	B	BAR,CARD SPACER
3	18361600	A	GUARD
3	00863703	A	CLAMP, CABLE ELECTRICAL
3	00863709	A	CLAMP, CABLE ELECTRICAL
3	34999400		STANDOFF SHIELD-POWER SUPPLY
3	18400009	A	COV TERM STR POSITIONS-10
4	18393300	A	ANGLE PLASTIC EXTRUDED
3	18417400	D	WIRE LIST RELAY CHASSIS
4	17698601	A	WIRE ELEC STRD INS UL APPD

1713-A	18358500	B	MOD 1713A TELETYPEWRITER ASSY
LEVEL	PARTNO	REV	
4	17698603	A	WIRE ELEC STRD INS UL APPD
4	17698606	A	WIRE ELEC STRD INS UL APPD
4	17698607	A	WIRE ELEC STRD INS UL APPD
4	24543801	A	JUMPER, TERMINAL STRIP
4	18401000	A	CABLE POWER 2 COND+GROUND
4	24548357	J	WIRE ELEC STRD INS. UL APPD
4	24548358	J	WIRE ELEC STRD INS. UL APPD
4	24548359	J	WIRE ELEC STRD INS. UL APPD
4	24548360	J	WIRE ELEC STRD INS. UL APPD
4	24548361	J	WIRE ELEC STRD INS. UL APPD
4	24548363	J	WIRE ELEC STRD INS. UL APPD
4	24548362	J	WIRE ELEC STRD INS. UL APPD
4	24548364	J	WIRE ELEC STRD INS. UL APPD
4	24548365	J	WIRE ELEC STRD INS. UL APPD
4	24548366	J	WIRE ELEC STRD INS. UL APPD
4	24548302	J	WIRE ELEC STRD INS. UL APPD
4	24548304	J	WIRE ELEC STRD INS. UL APPD
4	24548305	J	WIRE ELEC STRD INS. UL APPD
4	24548307	J	WIRE ELEC STRD INS. UL APPD
4	24548301	J	WIRE ELEC STRD INS. UL APPD
4	24548306	J	WIRE ELEC STRD INS. UL APPD
4	24548309	J	WIRE ELEC STRD INS. UL APPD
4	24548303	J	WIRE ELEC STRD INS. UL APPD
4	24500810	F	INSULATION SLEEVING ELECT
4	24524805	F	TERMINAL, LUG CRIMP-INSULATED
4	24536105	E	TERMINAL, SOLDERLESS RING
4	24552314	C	INS SLV, 5/8 LG 10 AWG BLK
4	24552316	C	INS SLV, 5/8 LG 8 AWG BLK
4	24552318	C	INS SLV, 5/8 LG 6 AWG BLK
4	18322802	A	CONN RECP PLUG,CONT U/L
4	18322801	A	CONN RECP PLUG,CONT U/L
4	18322805	A	CONN RECP PLUG,CONT U/L
4	18322807	A	CONN RECP PLUG,CONT U/L
4	24500707	G	PIN TAPER
4	24528613	E	INS SLEEVING, ELEC-BULK
2	18363600	B	WL TELETYPEWRITER MODIF.
3	24548329	00	000000000000000000000000000000
3	24546501	B	TERMINAL, SPADE, FLARED
3	17973610	D	TERM CRIMP TYPE INSUL SUPPORT
3	18322806	A	CONN RECP PLUG,CONT U/L
3	24548338	00	000000000000000000000000000000
2	18362000	B	CABLE ASSY 24 PIN (J1)
3	24512001	C	CONN RECEP. 4 HOLE PNL MTG 24
3	24546501	B	TERMINAL, SPADE, FLARED
3	24500810	F	INSULATION SLEEVING ELECT
3	24500801	F	INSULATION SLEEVING ELECT
3	18322803	A	CONN RECP PLUG,CONT U/L
3	18322806	A	CONN RECP PLUG,CONT U/L
3	18322801	A	CONN RECP PLUG,CONT U/L
3	24528613	E	INS SLEEVING, ELEC-BULK
3	24548310	J	WIRE ELEC STRD INS. UL APPD
3	24548301	J	WIRE ELEC STRD INS. UL APPD

1713-A	18358500	B	MOD 1713A TELETYPEWRITER ASSY
LEVEL	PARTNO	REV	
3	24548303	J	WIRE ELEC STRD INS. UL APPD
3	24548305	J	WIRE ELEC STRD INS. UL APPD
3	24548306	J	WIRE ELEC STRD INS. UL APPD
3	24548307	J	WIRE ELEC STRD INS. UL APPD
3	24548311	J	WIRE ELEC STRD INS. UL APPD
3	24548312	J	WIRE ELEC STRD INS. UL APPD
3	24548313	J	WIRE ELEC STRD INS. UL APPD
3	24548314	J	WIRE ELEC STRD INS. UL APPD
3	24548315	J	WIRE ELEC STRD INS. UL APPD
3	24548316	J	WIRE ELEC STRD INS. UL APPD
3	24548317	J	WIRE ELEC STRD INS. UL APPD
3	24548318	J	WIRE ELEC STRD INS. UL APPD
3	24548319	J	WIRE ELEC STRD INS. UL APPD
3	24548320	J	WIRE ELEC STRD INS. UL APPD
3	24548321	J	WIRE ELEC STRD INS. UL APPD
3	24548322	J	WIRE ELEC STRD INS. UL APPD
3	24548323	J	WIRE ELEC STRD INS. UL APPD
3	24548324	J	WIRE ELEC STRD INS. UL APPD
3	24548325	J	WIRE ELEC STRD INS. UL APPD
3	24548326	J	WIRE ELEC STRD INS. UL APPD
3	24548327	J	WIRE ELEC STRD INS. UL APPD
3	24548328	J	WIRE ELEC STRD INS. UL APPD
3	24548300	J	WIRE, ELEC-STRD, INSUL APPD
3	24528640	E	INS SLEEVING, ELEC-BULK
3	17973610	D	TERM CRIMP TYPE INSUL SUPPORT
2	18361900	B	SWITCH PANEL - WIRED
3	18351300	B	BRACKET PUSHBUTTON
3	24512307	G	LAMP, INCONDESCENT
3	18377501	A	SWITCH, PUSH BUTTON ILL
3	18377504	A	SWITCH, PUSH BUTTON ILL
3	18467000	A	WIRE LIST SWITCH PANEL 1713
4	18322802	A	CONN RECP PLUG, CONT U/L
4	18322805	A	CONN RECP PLUG, CONT U/L
4	18322807	A	CONN RECP PLUG, CONT U/L
4	24528617	E	INS SLEEVING, ELEC-BULK
4	24552314	C	INS SLV, 5/8 LG 10 AWG BLK
4	24548357	J	WIRE ELEC STRD INS. UL APPD
4	24548358	J	WIRE ELEC STRD INS. UL APPD
4	24548359	J	WIRE ELEC STRD INS. UL APPD
4	24548360	J	WIRE ELEC STRD INS. UL APPD
4	24548361	J	WIRE ELEC STRD INS. UL APPD
4	24548362	J	WIRE ELEC STRD INS. UL APPD
4	24548363	J	WIRE ELEC STRD INS. UL APPD
3	18370900	A	BRACKET
3	00863703	A	CLAMP, CABLE ELECTRICAL
2	18488600	B	BRKT CONN
2	18190500	A	FASTENER
2	18336401	A	RELAY PLUG-IN SQ SOCKET
2	18336403	A	RELAY PLUG-IN SQ SOCKET
2	10127116		SCR MACH PAN PHL 6-32
2	10127114		SCR MACH PAN PHL 6-32
2	10126103		INTERNAL TOOTH LOCK WASHERS

1713-A	18358500	B	MOD 1713A TELETYPEWRITER ASSY
LEVEL	PARTNO	REV	
2	10125105		HEXAGON MACHINE SCREW NUTS
1	18363700	C	CP 1713A TELETYPEWRITER
1	17710800	C	PLATE IDENT ARDEN HILL

1713-A/B Printed Circuit Module

PARTS LIST

CDC - DRAWING NUMBER	DESCRIPTION	QUANTITY EACH MACHINE
18085101	Printed Circuit Module Assembly, Type Z11	
18121401	Printed Circuit Module Assembly, Type Z12	
18121501	Printed Circuit Module Assembly, Type Z13	
18445701	Printed Circuit Module Assembly, Type Z14	
18121701	Printed Circuit Module Assembly, Type Z15	
18121901	Printed Circuit Module Assembly, Type Z17	
18122001	Printed Circuit Module Assembly, Type Z18	
18122101	Printed Circuit Module Assembly, Type Z19	
18122202	Printed Circuit Module Assembly, Type Z201	
18122214	Printed Circuit Module Assembly, Type Z205	
18122301	Printed Circuit Module Assembly, Type Z21	
18122401	Printed Circuit Module Assembly, Type Z22	
18122701	Printed Circuit Module Assembly, Type Z25	
18294901	Printed Circuit Module Assembly, Type Z36	
18295301	Printed Circuit Module Assembly, Type Z38	
18487901	Printed Circuit Module Assembly, Type Z37	

1713 B 23259100 A MOD 1713B TELETYPEWRITER ASSY.

L E V E L	PART-NO	REV	DESCRIPTION		ECO-NO
1	1771080U	D	PLATE IDENT COMPUTER DEV DIV	IN	
1	18363700	D	CP TELETYPEWRITER	IN	
2	18085101	C	MODULE ASSEMBLY TYPE Z11		
2	18121401	B	MODULE ASSEMBLY TYPE Z12		
2	18121501	B	MODULE ASSEMBLY TYPE Z13		
2	18445701	C	MODULE ASSEMBLY TYPE Z14		
2	18121701	C	MODULE ASSEMBLY TYPE Z15		
2	18121901	C	MODULE ASSEMBLY TYPE Z17		
2	18122001	D	MODULE ASSEMBLY TYPE Z18		
2	18122101	C	MODULE ASSEMBLY TYPE Z19		
2	18122202	H	MODULE ASSEMBLY TYPE Z201		
2	18122217	H	MODULE ASSEMBLY TYPE Z206		
2	18122301	C	MODULE ASSEMBLY TYPE Z21		
2	18122401	B	MODULE ASSEMBLY TYPE Z22		
2	18122701	C	MODULE ASSEMBLY TYPE Z25		
2	18613001	D	MODULE ASSEMBLY TYP E Z36		
2	18295301	C	MODULE ASSEMBLY TYPE Z38		

1713 B 23259100 A MOD 1713B TELETYPEWRITER ASSY.

LEVEL	PART-NO	REV	DESCRIPTION		ECO-NO
1	23259000	00	TELETYPEWRITER MOD. 1713B	IN	
2	10125105	A	HEXAGON MACHINE SCREW NUTS	IN	
2	10126103	A	INTERNAL TOOTH LOCK WASHERS	IN	
2	10127114	A	SCR MACH PAN PHL 6-32	IN	
2	10127116	A	SCR MACH PAN PHL 6-32	IN	
2	18154000	A	PANEL FILLER	IN	
2	18154500	A	BRACKET CONNECTOR	IN	
2	18190500	A	FASTENER	IN	
2	18224100	C	TTY MOD. WIRE DIAGRAM	IN	
2	18235400	A	SW PB MOMENTARY CONTACT	IN	
2	18285300	A	PLATE BUTTON IDENT	IN	
2	18322806	C	CONN RECP PLUG,CONT U/L	IN	
2	18335400	H	ASSY RELAY CHASSIS	IN	
3	00839604	H	GROM RUB 1/16 GROOVE 5/8 ID	IN	016661
3	00863703	A	CLAMP, CABLE ELECTRICAL	IN	
3	00863709	A	CLAMP, CABLE ELECTRICAL	IN	
3	09018304	A	SCR MACH PAN HD PHL NO. 5	IN	016661
3	09018404	C	SCR. MACH PAN HD PHL NO. 6	IN	016661
3	09018504	A	SCR MACH PAN HD PHL NO. 8	IN	016661
3	10125104	A	HEXAGON MACHINE SCREW NUTS	IN	016661
3	10125105	A	HEXAGON MACHINE SCREW NUTS	IN	016661
3	10125106	A	HEXAGON MACHINE SCREW NUTS	IN	016661
3	10125605	A	PLAIN WASHERS	IN	016661
3	10126102	A	INTERNAL TOOTH LOCK WASHERS	IN	016661
3	10126103	A	INTERNAL TOOTH LOCK WASHERS	IN	016661
3	10126104	A	INTERNAL TOOTH LOCK WASHERS	IN	016661
3	10127111	A	SCR MACH PAN PHL 6-32	IN	016661
3	10127112	A	SCR MACH PAN PHL 6-32	IN	016661
3	10127115	A	SCR MACH PAN PHL 6-32	IN	016661
3	10127122	A	SCR MACH PAN PHL 8-32	IN	016661
3	17620300	C	STRAP CABLE ADJUSTABLE	IN	016661
3	18076600	A	TRANSFORMER FIL 25.2 VCT 2.0A	IN	
3	18080700	A	RECT SILICON 3AMP STUD MTD	IN	016661
3	18119601	C	CKT BKR THERMAL PUSH BUTTON	IN	
3	18119602	C	CKT BKR THERMAL PUSH BUTTON	IN	
3	18294600	A	RELAY PULLER TYPE 6ANH ASSY	IN	015189
4	10001900	W	CONN PL ELECT R A 15 PIN CONT	IN	
4	18294400	A	BD/MA PRINTED CKT TYPE 6ANH	IN	
4	24500052	D	RES FXD .25W 360 OHMS	IN	
4	24500056	D	RES FXD .25W 510 OHMS	IN	
4	24500061	D	RES FXD .25W 820 OHMS	IN	
4	24500071	D	RES FXD .25W 2200 OHMS	IN	
4	24501801	B	WIRE ELECT SOLID COPPER 22 GA	IN	
4	24551300	B	TRANSISTOR-NPN,SILICON	IN	
4	24561307	D	CAP FIXED CERAMIC .1UF,25V	IN	

1713 B	23259100	A	MOD 1713B TELETYPEWRITER ASSY.		
LEVEL	PART-NO	REV	DESCRIPTION		ECO-NO
4	24561312	D	CAPACITOR FIXED CERAMIC 25VDC	IN	
4	24562100	D	TSTR SILICON-PLANAR,NPN	IN	
3	18322801	C	CONN RECP PLUG,CONT U/L	IN	018053
3	18322802	C	CONN RECP PLUG,CONT U/L	IN	018053
3	18322805	C	CONN RECP PLUG,CONT U/L	IN	018053
3	18322807	C	CONN RECP PLUG,CONT U/L	IN	018053
3	18327200	B	CHASSIS RELAY 1713	IN	
3	18335500	A	BRKT MTG 1713	IN	016661
3	18336401	B	RELAY PLUG-IN SQ SOCKET	IN	
3	18336402	B	RELAY PLUG-IN SQ SOCKET	IN	
3	18361600	A	GUARD	IN	
3	18394801	B	RELAY REED (OCTAL PLUG-IN)	IN	
3	18394802	B	RELAY REED (OCTAL PLUG-IN)	IN	
3	18400009	A	COV TERM STR POSITIONS-10	IN	
4	18393300	A	ANGLE PLASTIC EXTRUDED	IN	
3	18401001	B	CABLE POWER 2 COND+GROUND	IN	020347
3	18417400	E	WIRE LIST RELAY CHASSIS	IN	
4	18322801	C	CONN RECP PLUG,CONT U/L	IN	
4	18322802	C	CONN RECP PLUG,CONT U/L	IN	
4	18322805	C	CONN RECP PLUG,CONT U/L	IN	015526
4	18322807	C	CONN RECP PLUG,CONT U/L	IN	015526
4	24500707	J	PIN TAPER	IN	015526
4	24500810	H	INSULATION SLEEVING ELECT	IN	015526
4	24524805	N	TERMINAL, LUG CRIMP-INSULATED	IN	015192
4	24528613	F	INS SLEEVING, ELEC-BULK	IN	015526
4	24536105	G	TERMINAL, SOLDERLESS RING	IN	
4	24543801	A	JUMPER, TERMINAL STRIP	IN	
4	24548301	J	WIRE ELECT 24 AWG - 0	IN	
4	24548302	J	WIRE ELECT 24 AWG INSULATED	IN	
4	24548303	J	WIRE ELEC STRD INS, UL APPD	IN	015526
4	24548304	J	WIRE ELEC STRD INS, UL APPD	IN	
4	24548305	J	WIRE ELEC STRD INS, UL APPD	IN	
4	24548306	J	WIRE ELEC STRD INS, UL APPD	IN	
4	24548307	J	WIRE ELEC STRD INS, UL APPD	IN	
4	24548309	J	WIRE ELEC STRD INS, UL APPD	IN	
4	24552314	D	INS SLV, 5/8 LG 10 AWG BLK	IN	
4	24552316	D	INS SLV, 5/8 LG 8 AWG BLK	IN	015526
4	24552318	D	INS SLV, 5/8 LG 6 AWG BLK	IN	
4	93462000	C	WIRE ELECTRICAL 20 AWG -0	IN	015192
4	93462111	C	WIRE ELECTRICAL 20 AWG -1	IN	
4	93462222	C	WIRE ELECTRICAL 20 AWG -2	IN	
4	93462333	C	WIRE ELECTRICAL 20 AWG -3	IN	
4	93462444	C	WIRE ELECTRICAL 20 AWG -4	IN	
4	93462555	C	WIRE ELECTRICAL 20 AWG -5	IN	
4	93462666	C	WIRE ELECTRICAL 20 AWG -6	IN	
4	93462777	C	WIRE ELECTRICAL 20 AWG -7	IN	
4	93462888	C	WIRE ELECTRICAL 20 AWG -8	IN	
4	93462999	C	WIRE ELECTRICAL 20 AWG -9	IN	
4	93463000	D	WIRE ELECTRICAL 18 AWG -0	IN	
4	93463222	D	WIRE ELECTRICAL 18 AWG -2	IN	
4	93463555	D	WIRE ELECTRICAL 18 AWG -5	IN	
4	93463666	D	WIRE ELECTRICAL 18 AWG -6	IN	
3	18419200	A	BAR, CARD SPACER MODIF	IN	

1713 B 23259100 A MOD 1713B TELETYPEWRITER ASSY.

LEVEL	PART-NO	REV	DESCRIPTION		ECO-NO
4	45148102	B	BAR,CARD SPACER	IN	
3	18476300	A	CONN RECP(150 GRD) 30 CONT	IN	015189
4	10001800	T	CONN RECEP 30 SOCKET CONTACT	IN	
3	24500039	D	RES FXD .25W 100 OHMS	IN	016661
3	24501510	A	STRIP TERMINAL	IN	
3	24547900	A	SOCKET, TUBE 8 CONTACT, OCTAL	IN	
3	24553200	A	RECTIFIER, B1-DIRECTIONAL SW	IN	016661
3	24553308	A	RES WW 50 WATT 6 OHMS	IN	016661
3	24554245	G	DIODE ZENER SILICON 10 WATT	IN	016661
3	24554504	C	CAP ELECTROLYTIC 40VDC	IN	016467
3	30092606	A	RETAINER, CAPACITOR (3 FOOT)	IN	016661
3	34999400	A	STANDOFF SHIELD-POWER SUPPLY	IN	
3	97020601	A	TERMINAL, STUD, INSULATED	IN	016661
2	18336401	B	RELAY PLUG-IN SQ SOCKET	IN	
2	18336403	B	RELAY PLUG-IN SQ SOCKET	IN	
2	18361900	B	SWITCH PANEL - WIRED	IN	
3	00863703	A	CLAMP, CABLE ELECTRICAL	IN	
3	18351300	B	BRACKET PUSHBUTTON	IN	
3	18370900	A	BRACKET	IN	
3	18377501	A	SWITCH,PUSH BUTTON 1LL	IN	
3	18377504	A	SWITCH,PUSH BUTTON 1LL	IN	
3	18467000	A	WIRE LIST SWITCH PANEL 1713	IN	015118
4	18322802	C	CONN RECP PLUG,CONT U/L	IN	
4	18322805	C	CONN RECP PLUG,CONT U/L	IN	
4	18322807	C	CONN RECP PLUG,CONT U/L	IN	
4	24528617	F	INS SLEEVING, ELEC-BULK	IN	
4	24552314	D	INS SLV, 5/8 LG 10 AWG BLK	IN	
4	93462000	C	WIRE ELECTRICAL 20 AWG -0	IN	
4	93462111	C	WIRE ELECTRICAL 20 AWG -1	IN	
4	93462222	C	WIRE ELECTRICAL 20 AWG -2	IN	
4	93462333	C	WIRE ELECTRICAL 20 AWG -3	IN	
4	93462444	C	WIRE ELECTRICAL 20 AWG -4	IN	
4	93462555	C	WIRE ELECTRICAL 20 AWG -5	IN	
4	93462666	C	WIRE ELECTRICAL 20 AWG -6	IN	
3	24512307	G	LAMP, INCONDESCENT	IN	
2	18362000	B	CABLE ASSY 24 PIN (J1)	IN	
3	17973610	E	TERM CRIMP TYPE INSUL SUPPORT	IN	015192
3	18322801	C	CONN RECP PLUG,CONT U/L	IN	
3	18322803	C	CONN RECP PLUG,CONT U/L	IN	
3	18322806	C	CONN RECP PLUG,CONT U/L	IN	
3	24500801	H	INSULATION SLEEVING ELECT	IN	
3	24500810	H	INSULATION SLEEVING ELECT	IN	
3	24512001	D	CONN RECEP. 4 HOLE PNL MTG 24	IN	
3	24528613	F	INS SLEEVING, ELEC-BULK	IN	
3	24528640	F	INS SLEEVING, ELEC-BULK	IN	
3	24546501	D	TERMINAL, SPADE, FLARED	IN	
3	24548300	J	WIRE, ELECT, 24 AWG INSUL,U/L	IN	
3	24548301	J	WIRE ELECT 24 AWG - 0	IN	
3	24548303	J	WIRE ELEC STRD INS. UL APPD	IN	
3	24548305	J	WIRE ELEC STRD INS. UL APPD	IN	
3	24548306	J	WIRE ELEC STRD INS. UL APPD	IN	
3	24548307	J	WIRE ELEC STRD INS. UL APPD	IN	
3	24548310	J	WIRE ELEC STRD INS. UL APPD	IN	

1713 B 23259100 A MOD 1713B TELETYPEWRITER ASSY.

LEVEL	PART-NO	REV	DESCRIPTION		ECO-NO
3	24548311	J	WIRE ELEC STRD INS, UL APPD	IN	
3	24548312	J	WIRE ELEC STRD INS, UL APPD	IN	
3	24548313	J	WIRE ELEC STRD INS, UL APPD	IN	
3	24548314	J	WIRE ELEC STRD INS, UL APPD	IN	
3	24548315	J	WIRE ELEC STRD INS, UL APPD	IN	
3	24548316	J	WIRE ELEC STRD INS, UL APPD	IN	
3	24548317	J	WIRE ELEC STRD INS, UL APPD	IN	
3	24548318	J	WIRE ELEC STRD INS, UL APPD	IN	
3	24548319	J	WIRE ELEC STRD INS, UL APPD	IN	
3	24548320	J	WIRE ELEC STRD INS, UL APPD	IN	
3	24548321	J	WIRE ELEC STRD INS, UL APPD	IN	
3	24548322	J	WIRE ELEC STRD INS, UL APPD	IN	
3	24548323	J	WIRE ELEC STRD INS, UL APPD	IN	
3	24548324	J	WIRE ELEC STRD INS, UL APPD	IN	
3	24548325	J	WIRE ELEC STRD INS, UL APPD	IN	
3	24548326	J	WIRE ELEC STRD INS, UL APPD	IN	
3	24548327	J	WIRE ELEC STRD INS, UL APPD	IN	
3	24548328	J	WIRE ELEC STRD INS, UL APPD	IN	
2	18363600	F	WL TELETYPEWRITER MODIF.	IN	
3	17973610	E	TERM CRIMP TYPE INSUL SUPPORT	IN	015192
3	18322806	C	CONN RECP PLUG,CONT U/L	IN	
3	18587600	B	NOISE SUPPRESSION ASSY/INSTAL	IN	018637
4	00863710	A	CLAMP, CABLE ELECTRICAL	IN	
4	17973610	E	TERM CRIMP TYPE INSUL SUPPORT	IN	
4	18585600	C	CAPACITOR FXD-MOLDED TUBULAR	IN	
4	24500055	D	RES FXD .25W 470 OHMS	IN	
4	24528613	F	INS SLEEVING, ELEC-BULK	IN	
4	93462000	C	WIRE ELECTRICAL 20 AWG -0	IN	
3	24546501	D	TERMINAL, SPADE, FLARED	IN	
3	24548329	J	WIRE ELEC STRD INS, UL APPD	IN	015192
3	24548338	J	WIRE ELEC STRD INS, UL APPD	IN	015192
2	18488600	B	BRKT CONN	IN	
2	18587600	B	NOISE SUPPRESSION ASSY/INSTAL	IN	
3	00863710	A	CLAMP, CABLE ELECTRICAL	IN	
3	17973610	E	TERM CRIMP TYPE INSUL SUPPORT	IN	
3	18585600	C	CAPACITOR FXD-MOLDED TUBULAR	IN	
3	24500055	D	RES FXD .25W 470 OHMS	IN	
3	24528613	F	INS SLEEVING, ELEC-BULK	IN	
3	93462000	C	WIRE ELECTRICAL 20 AWG -0	IN	
2	52412100	A	100 WD PM AUTO SEND-RECEIVE	IN	

1721-A	17845300	E	MOD 1721-A PAPER TAPE INPUT
LEVEL	PARTNO	REV	
1	40600008	A	PAPER TAPE READER ASSY 60 CY
1	40587000	A	PANEL ASSY SUPPLY
1	18190300	B	SW PNL ASSY PAPER TAPE READER
2	40587100	A	PANEL ASSY READER
2	18145500	B	BRACKET 24 PIN CONNECTOR
2	24509000	B	SWITCH PUSH-MOMENTARY 2 PDT
2	24521300	D	SWITCH PUSH -ALTERNATE, 2 PDT
2	24511504	D	LAMP HOLDER PUSH-BUT.
2	24511770	L	LENS, IND. LIGHT
2	24511794	L	LENS, IND. LIGHT
2	17981102	F	LENS INDICATOR COPORATE SW
2	24512001	C	CONN RECEP. 4 HOLE PNL MTG 24
2	24514701	B	CONN RACK AND PNL SOC CONT
2	24514501	B	CLAMP, CONN RACK AND PNL
2	18190400	B	WIRE LIST SWITCH PANEL
3	24548360	J	WIRE ELEC STRD INS. UL APPD
3	24548358	J	WIRE ELEC STRD INS. UL APPD
3	24548364	J	WIRE ELEC STRD INS. UL APPD
3	17698606	A	WIRE ELEC STRD INS UL APPD
3	24548366	J	WIRE ELEC STRD INS. UL APPD
3	24548303	J	WIRE ELEC STRD INS. UL APPD
3	24548308	J	WIRE ELEC STRD INS. UL APPD
3	24548309	J	WIRE ELEC STRD INS. UL APPD
3	24548301	J	WIRE ELEC STRD INS. UL APPD
3	24548305	J	WIRE ELEC STRD INS. UL APPD
3	24548311	J	WIRE ELEC STRD INS. UL APPD
3	24548312	J	WIRE ELEC STRD INS. UL APPD
3	24548313	J	WIRE ELEC STRD INS. UL APPD
3	24548314	J	WIRE ELEC STRD INS. UL APPD
3	24548315	J	WIRE ELEC STRD INS. UL APPD
3	24548316	J	WIRE ELEC STRD INS. UL APPD
3	24548317	J	WIRE ELEC STRD INS. UL APPD
3	17698601	A	WIRE ELEC STRD INS UL APPD
3	17698610	A	WIRE ELEC STRD INS UL APPD
3	24524805	F	TERMINAL, LUG CRIMP-INSULATED
3	24552333	C	INS SLV, 5/8 LG 12.5 AWG CLR
3	24552338	C	INS SLV, 5/8 LG 8 AWG CLR
3	24536112	E	TERMINAL, SOLDERLESS RING
3	24552336	C	INS SLV, 5/8 LG 10 AWG CLR
3	24528638	E	INS SLEEVING, ELEC-BULK
3	24528636	E	INS SLEEVING, ELEC-BULK
2	24516803	A	LAMP, INCANDESCENT SLIDE TYPE
1	40588200	A	COVER PANEL
1	40587200	A	PANEL ASSY, UPPER
1	18153600	A	DISTRIBUTION BOX ASSY READER
2	18141200	B	BOX DISTR PAPER TAPE READER
2	18133700	A	COVER DISTRIBUTION BOX
2	24550604	D	CKT BRK SP 115V 60 CPS
2	24501209		STRIP TERMINAL
2	25169501	B	BUSS BAR DISTRIBUTION BOX
2	00838200	F	NUT U TYPE NO. 6-32NC
2	18128300	A	BRACKET RELAY

1721-A	17845300	E	MOD 1721-A PAPER TAPE INPUT
LEVEL	PARTNO	REV	
2	24547900		SOCKET, TUBE 8 CONTACT, OCTAL
2	24550801	F	RELAY, OCTAL SOCKET
2	24518101	D	CONN FLEX, CND AND CABLE
2	24550700	B	TRANSFORMER 24 VOLT
2	24501602	G	BLOCK, TERMINAL
2	18190200	C	WIRE LIST PWR DIST BOX
3	17698629	A	WIRE ELEC STRD INS UL APPD
3	17698638	A	WIRE ELEC STRD INS UL APPD
3	17698634	A	WIRE ELEC STRD INS UL APPD
3	24548357	J	WIRE ELEC STRD INS. UL APPD
3	24548364	J	WIRE ELEC STRD INS. UL APPD
3	24548360	J	WIRE ELEC STRD INS. UL APPD
3	24524804	F	TERMINAL, LUG CRIMP-INSULATED
3	24528638	E	INS SLEEVING, ELEC-BULK
3	24524805	F	TERMINAL, LUG CRIMP-INSULATED
3	24536112	E	TERMINAL, SOLDERLESS RING
3	24552338	C	INS SLV, 5/8 LG # AWG CLR
1	00860814	D	TRACK SLIDING TELESCOPE
1	18178900	A	BRACKET,PANEL LH
1	18178800	A	BRACKET,PANEL-RH
1	18182500	A	CHANNEL,SUPPORT
1	10028619	S	CABLE ASSY ELEC 2 24 P CONN
2	24513904	E	CONNECTOR PLUG 24 PIN
2	46161701	A	SHELL CLAMP
2	09022204		NO.1/4 SCR SET CUPPED PT SCH
2	46161502	A	INSERT CLAMP FULL
2	24518000	C	CABLE, ELEC 24 TWISTED PR
2	24559305		SLV ELEC HT SHRINKABLE U/L
2	24515730	A	BAND MARKER CABLE
2	24501808		WIRE ELECT SOLID COPPER 20 GA
2	24500801	F	INSULATION SLEEVING ELECT
2	17944001	A	LABEL CABLE LENGTH MARKING
1	18183800	A	PANEL LATCH ASSEMBLY
2	18178400	A	BOLT, LATCH
2	18178500	A	GUIDE LATCH
2	00856805		BRG SLV-FLG NYLON .251
2	00843513	D	RING, RETAINING
2	00859227		SPG COMPR .360 OD 1 1/2L
2	00856000		KNOB
1	18178700	A	STRIKER,PANEL LH
1	18178600	A	STRIKER,PANEL RH
1	18178300	A	STOP, PANEL
1	00863707	A	CLAMP, CABLE ELECTRICAL
1	18190100	C	CARD PLACEMENT PAPER TAPE IP

1721-B	17845301	E	1721B PAPER TAPE INPUT 50CY
LEVEL	PARTNO	REV	
1	40600009	A	PAPER TAPE READER ASSY 50 CY
1	40587000	A	PANEL ASSY SUPPLY
1	18190300	B	SW PNL ASSY PAPER TAPE READER
2	40587100	A	PANEL ASSY READER
2	18145500	B	BRACKET 24 PIN CONNECTOR
2	24509000	B	SWITCH PUSH-MOMENTARY 2 PDT
2	24521300	D	SWITCH PUSH -ALTERNATE, 2 PDT
2	24511504	D	LAMP HOLDER PUSH-BUT.
2	24511770	L	LENS, IND. LIGHT
2	24511794	L	LENS, IND. LIGHT
2	17981102	F	LENS INDICATOR COPORATE SW
2	24512001	C	CONN RECEP. 4 HOLE PNL MTG 24
2	24514701	B	CONN RACK AND PNL SOC CONT
2	24514501	B	CLAMP, CONN RACK AND PNL
2	18190400	B	WIRE LIST SWITCH PANEL
3	24548360	J	WIRE ELEC STRD INS. UL APPD
3	24548358	J	WIRE ELEC STRD INS. UL APPD
3	24548364	J	WIRE ELEC STRD INS. UL APPD
3	17698606	A	WIRE ELEC STRD INS UL APPD
3	24548366	J	WIRE ELEC STRD INS. UL APPD
3	24548303	J	WIRE ELEC STRD INS. UL APPD
3	24548308	J	WIRE ELEC STRD INS. UL APPD
3	24548309	J	WIRE ELEC STRD INS. UL APPD
3	24548301	J	WIRE ELEC STRD INS. UL APPD
3	24548305	J	WIRE ELEC STRD INS. UL APPD
3	24548311	J	WIRE ELEC STRD INS. UL APPD
3	24548312	J	WIRE ELEC STRD INS. UL APPD
3	24548313	J	WIRE ELEC STRD INS. UL APPD
3	24548314	J	WIRE ELEC STRD INS. UL APPD
3	24548315	J	WIRE ELEC STRD INS. UL APPD
3	24548316	J	WIRE ELEC STRD INS. UL APPD
3	24548317	J	WIRE ELEC STRD INS. UL APPD
3	17698601	A	WIRE ELEC STRD INS UL APPD
3	17698610	A	WIRE ELEC STRD INS UL APPD
3	24524805	F	TERMINAL, LUG CRIMP-INSULATED
3	24552333	C	INS SLV, 5/8 LG 12.5 AWG CLR
3	24552338	C	INS SLV, 5/8 LG 8 AWG CLR
3	24536112	E	TERMINAL, SOLDERLESS RING
3	24552336	C	INS SLV, 5/8 LG 10 AWG CLR
3	24528638	E	INS SLEEVING, ELEC-BULK
3	24528636	E	INS SLEEVING, ELEC-BULK
2	24516803	A	LAMP, INCANDESCENT SLIDE TYPE
1	40588200	A	COVER PANEL
1	40587200	A	PANEL ASSY, UPPER
1	18153600	A	DISTRIBUTION BOX ASSY READER
2	18141200	B	BOX DISTR PAPER TAPE READER
2	18133700	A	COVER DISTRIBUTION BOX
2	24550604	D	CKT BRK SP 115V 60 CPS
2	24501209		STRIP TERMINAL
2	25169501	B	BUSS BAR DISTRIBUTION BOX
2	00838200	F	NUT U TYPE NO. 6-32NC
2	18128300	A	BRACKET RELAY

1721-B 17845301 E 1721B PAPER TAPE INPUT 50CY

LEVEL	PARTNO	REV	
2	24547900		SOCKET, TUBE 8 CONTACT, OCTAL
2	24550801	F	RELAY, OCTAL SOCKET
2	24518101	D	CONN FLEX, CND AND CABLE
2	24550700	B	TRANSFORMER 24 VOLT
2	24501602	G	BLOCK, TERMINAL
2	18190200	C	WIRE LIST PWR DIST BOX
3	17698629	A	WIRE ELEC STRD INS UL APPD
3	17698638	A	WIRE ELEC STRD INS UL APPD
3	17698634	A	WIRE ELEC STRD INS UL APPD
3	24548357	J	WIRE ELEC STRD INS. UL APPD
3	24548364	J	WIRE ELEC STRD INS. UL APPD
3	24548360	J	WIRE ELEC STRD INS. UL APPD
3	24524804	F	TERMINAL, LUG CRIMP-INSULATED
3	24528638	F	INS SLEEVING, ELEC-BULK
3	24524805	F	TERMINAL, LUG CRIMP-INSULATED
3	24536112	F	TERMINAL, SOLDERLESS RING
3	2455233_8	C	INS SLV, 5/8 LG 8 AWG CLR
1	00860814	D	TRACK SLIDING TELESCOPE
1	18178900	A	BRACKET,PANEL LH
1	18178800	A	BRACKET,PANEL-RH
1	18182500	A	CHANNEL,SUPPORT
1	10028619	S	CABLE ASSY ELEC 2 24 P CONN
2	24513904	E	CONNECTOR PLUG 24 PIN
2	46161701	A	SHELL CLAMP
2	09022204		NO.1/4 SCR SET CUPPED PT SCH
2	46161502	A	INSERT CLAMP FULL
2	24518000	C	CABLE, ELEC 24 TWISTED PR
2	24559305		SLV ELEC HT SHRINKABLE U/L
2	24515730	A	BAND MARKER CABLE
2	24501808		WIRE ELECT SOLID COPPER 20 GA
2	24500801	F	INSULATION SLEEVING ELECT
2	17944001	A	LABEL CABLE LENGTH MARKING
1	18183800	A	PANEL LATCH ASSEMBLY
2	18178400	A	BOLT, LATCH
2	18178500	A	GUIDE LATCH
2	00856805		BRG SLV-FLG NYLON .251
2	00843513	D	RING, RETAINING
2	00859227		SPG COMPR .360 OD 1 1/2L
2	00856900		KNOB
1	18178700	A	STRIKER,PANEL LH
1	18178600	A	STRIKER,PANEL RH
1	18178300	A	STOP, PANEL
1	00863707	A	CLAMP, CABLE ELECTRICAL
1	18190100	C	CARD PLACEMENT PAPER TAPE IP

1721-A/B Panel Assembly,
Tape Spool, C C Dwg. No.
40587000

PARTS LIST

CDC - DRAWING NUMBER	DESCRIPTION	QUANTITY EACH MACHINE
40587500	Armature	
40588000	Bearing, Flanged	
40589000	Door Assembly	
40587300	Door, Panel	
40587600	Hinge, Door	
40588500	Panel, Blank, Tape Spool	
92033038	Ring, Retaining	
40588100	Roller	
40588400	Seat, Magnetic, Door	
40587700	Shaft, Hub	
40587900	Shaft, Roller	
40587800	Sleeve, Hub	
40588900	Spacer, Hub	
40587400	Spool, Tape	
94196402	Strip, Magnetic, Door	

1721-C	18352000	B	MOD 1721C P TAPE INPUT 60 CY
LEVEL	PARTNO	REV	
1	40612500	A	PAPER TAPE READER ASSY
1	18352500	C	PNL P SUPPLY ASSY 1721C,1721D
2	18382400	A	BRACKET 1721C,1721D
2	18352100	A	PANEL SUPPLY 1721C - 1721D
2	18382500	A	GUIDE 1721C,1721D
2	18356300	A	PIN 1721C 1721D
2	18377600	B	DOOR PAPER TAPE SUPPLY
2	18341200	B	SPOOL PAPER SUPPLY
2	18358700	A	BEARING FLANGED
2	18358800	A	SHAFT HUB
2	18358900	A	ROLLER 1721C,1721D
2	18359000	A	SLEEVE HUB 1721C,1721D
2	18359100	A	SHAFT ROLLER 1721C,1721D
2	00854049	A	NUT SPEED PUSH-ON
2	09018505	A	SCR MACH PAN HD PHL NO. 8
2	00843513	D	RING, RETAINING
2	18377700	A	RETAINER PAPER TAPE SUPPLY
3	18063100	A	PLEXI-GLASS 1/8 THICK- BLUE
2	09018503	A	SCR MACH PAN HD PHL NO. 8
2	09018403	C	SCR. MACH PAN HD PHL NO. 6
2	09018631	B	SCR MACH PAN HD PHL NO. 10
2	09027007		LOCKWASHER, INTERNAL TOOTH
2	09027006		LOCKWASHER, INTERNAL TOOTH
2	09027005		LOCKWASHER, INTERNAL TOOTH
2	09027507		WASHER, PLAIN FLAT
2	09027506		WASHER, PLAIN FLAT
2	09027505		WASHER, PLAIN FLAT
2	09026006		NUT, HEXAGON
2	09027814	00	00000000000000000000000000000000
1	18352300	C	SWITCH PNL ASSY P TAPE READER
2	18351800	C	PANEL BOTTOM
2	24509000	B	SWITCH PUSH-MOMENTARY 2 PDT
2	24521300	D	SWITCH PUSH -ALTERNATE, 2 PDT
2	24511504	D	LAMP HOLDER PUSH-BUT.
2	24511770	L	LENS, IND. LIGHT
2	24511794	L	LENS, IND. LIGHT
2	17981102	F	LENS INDICATOR COPORATE SW
2	24512001	C	CONN RECEP. 4 HOLE PNL MTG 24
2	24514701	B	CONN RACK AND PNL SUC CONT
2	24514501	B	CLAMP, CONN RACK AND PNL
2	18364900	A	WL SWITCH PANEL,P TAPE RD
3	24548360	J	WIRE ELEC STRD INS. UL APPD
3	24548358	J	WIRE ELEC STRD INS. UL APPD
3	24548364	J	WIRE ELEC STRD INS. UL APPD
3	17698606	A	WIRE ELEC STRD INS UL APPD
3	24548366	J	WIRE ELEC STRD INS. UL APPD
3	24548303	J	WIRE ELEC STRD INS. UL APPD
3	24548308	J	WIRE ELEC STRD INS. UL APPD
3	24548309	J	WIRE ELEC STRD INS. UL APPD
3	24548301	J	WIRE ELEC STRD INS. UL APPD
3	24548305	J	WIRE ELEC STRD INS. UL APPD
3	24548307	J	WIRE ELEC STRD INS. UL APPD

1721-C	18352000	B	MOD 1721C P TAPE INPUT 60 CY
LEVEL	PARTNO	REV	
3	24548311	J	WIRE ELEC STRD INS. UL APPD
3	24548312	J	WIRE ELEC STRD INS. UL APPD
3	24548313	J	WIRE ELEC STRD INS. UL APPD
3	24548314	J	WIRE ELEC STRD INS. UL APPD
3	24548315	J	WIRE ELEC STRD INS. UL APPD
3	24548316	J	WIRE ELEC STRD INS. UL APPD
3	24548317	J	WIRE ELEC STRD INS. UL APPD
3	24524805	F	TERMINAL, LUG CRIMP-INSULATED
3	24552333	C	INS SLV, 5/8 LG 12.5 AWG CLR
3	24552338	C	INS SLV, 5/8 LG 8 AWG CLR
3	24536112	E	TERMINAL, SOLDERLESS RING
3	24552336	C	INS SLV, 5/8 LG 10 AWG CLR
3	24528638	E	INS SLEEVING, ELEC-BULK
3	24514701	B	CONN RACK AND PNL SOC CONT
3	24514501	B	CLAMP, CONN RACK AND PNL
2	24516803	A	LAMP, INCANDESCENT SLIDE TYPE
2	18178400	A	BOLT, LATCH
2	18145500	B	BRACKET 24 PIN CONNECTOR
2	18178500	A	GUIDE LATCH
2	00856805		BRG SLV-FLG NYLON .251
2	00843513	D	RING, RETAINING
2	00859227		SPG COMPR .360 OD 1 1/2L
2	00856000		KNOB
2	09027505		WASHER, PLAIN FLAT
2	00863703	A	CLAMP, CABLE ELECTRICAL
2	09018404	C	SCR. MACH PAN HD PHL NO. 6
2	09018503	A	SCR MACH PAN HD PHL NO. 8
2	09018303		SCR MACH PAN HD PHL NO. 5
2	09018402	C	SCR. MACH PAN HD PHL NO. 6
2	09027006		LOCKWASHER, INTERNAL TOOTH
2	09027005		LOCKWASHER, INTERNAL TOOTH
2	09027004		LOCKWASHER, INTERNAL TOOTH
2	09026004		NUT, HEXAGON
2	09026006		NUT, HEXAGON
2	09026005		NUT, HEXAGON
1	18361700	E	DISTRIBUTION BOX ASSY READER
2	18141200	B	BOX DISTR PAPER TAPE READER
2	18133700	A	COVER DISTRIBUTION BOX
2	24550603	D	CKT BRK SP 115V 60 CPS
2	24501209		STRIP TERMINAL
2	25169501	B	BUSS BAR DISTRIBUTION BOX
2	00838200	F	NUT U TYPE NO. 6-32NC
2	18128300	A	BRACKET RELAY
2	24547900		SOCKET, TUBE 8 CONTACT, OCTAL
2	24550801	F	RELAY, OCTAL SOCKET
2	24518101	D	CONN FLEX. CND AND CABLE
2	24550700	B	TRANSFORMER 24 VOLT
2	24501602	G	BLOCK, TERMINAL
2	18364700	C	READER PWR CABLE P2
3	17698629	A	WIRE ELEC STRD INS UL APPD
3	17698638	A	WIRE ELEC STRD INS UL APPD
3	17698634	A	WIRE ELEC STRD INS UL APPD

1721-C	18352000	B	MOD 1721C P TAPE INPUT 60 CY
LEVEL	PARTNO	REV	
3	17698662	A	WIRE ELEC STRD INS UL APPD
3	24528637	E	INS SLEEVING, ELEC-BULK
3	24524804	F	TERMINAL, LUG CRIMP-INSULATED
3	24552338	C	INS SLV, 5/8 LG 8 AWG CLR
3	24536112	E	TERMINAL, SOLDERLESS RING
3	18322804	A	CONN RECP PLUG,CONT U/L
3	943351O4	A	CONNECTOR 6PIN PLUG RECEPTACL
3	24534805	A	SHIELD, ELECT, BRAIDED-BULK
2	18364800	A	WL POWER DISTRIBUTION BOX,A2
3	17698629	A	WIRE ELEC STRD INS UL APPD
3	17698638	A	WIRE ELEC STRD INS UL APPD
3	17698634	A	WIRE ELEC STRD INS UL APPD
3	24548357	J	WIRE ELEC STRD INS. UL APPD
3	24548364	J	WIRE ELEC STRD INS. UL APPD
3	24548360	J	WIRE ELEC STRD INS. UL APPD
3	24524804	F	TERMINAL, LUG CRIMP-INSULATED
3	176986662	A	WIRE ELEC STRD INS UL APPD
3	24524805	F	TERMINAL, LUG CRIMP-INSULATED
3	24528637	E	INS SLEEVING, ELEC-BULK
3	24528659	E	INS, SLV, ELEC-BULK
3	24528638	E	INS SLEEVING, ELEC-BULK
2	24547501	B	PLATE WARNING
2	24502209	B	STRIP MARKER 1 THRU 9
2	090184O1	C	SCR. MACH PAN HD PHL NO. 6
2	09018402	C	SCR. MACH PAN HD PHL NO. 6
2	09018403	C	SCR. MACH PAN HD PHL NO. 6
2	09018405	C	SCR. MACH PAN HD PHL NO. 6
2	09018406	C	SCR. MACH PAN HD PHL NO. 6
2	09027005		LOCKWASHER, INTERNAL TOOTH
2	09027505		WASHER, PLAIN FLAT
2	09026005		NUT, HEXAGON
1	00860814	D	TRACK SLIDING TELESCOPE
1	18353900	A	BRACKET PANEL LH
1	18353800	A	BRACKET PANEL RH
1	18182500	A	CHANNEL,SUPPORT
1	10028619	S	CABLE ASSY ELEC 2 24 P CONN
2	24513904	E	CONNECTOR PLUG 24 PIN
2	46161701	A	SHELL CLAMP
2	09022204		NO.1/4 SCR SEI CUPPED PT SCH
2	46161502	A	INSERT CLAMP FULL
2	24518000	C	CABLE, ELEC 24 TWISTED PR
2	24559305		SLV ELEC HT SHRINKABLE U/L
2	24515730	A	BAND MARKER CABLE
2	24501808		WIRE ELECT SOLID COPPER 20 GA
2	2450080 1	F	INSULATION SLEEVING ELECT
2	17944001	A	LABEL CABLE LENGTH MARKING
1	18354000	A	STRIKER PANEL LH
1	18353700	A	STRIKER PANEL RH
1	18178300	A	STOP, PANEL
1	00863707	A	CLAMP, CABLE ELECTRICAL
1	18190100	C	CARD PLACEMENT PAPER TAPE IP
1	18354100	A	BRACKET STRIKER

1721-D	18352001	B	MOD 1721D P TAPE INPUT 50 CY
LEVEL	PARTNO	REV	
1	18352500	C	PNL P SUPPLY ASSY 1721C,1721D
2	18382400	A	BRACKET 1721C,1721D
2	18352100	A	PANEL SUPPLY 1721C - 1721D
2	18382500	A	GUIDE 1721C,1721D
2	18356300	A	PIN 1721C 1721D
2	18377600	B	DOOR PAPER TAPE SUPPLY
2	18341200	B	SPOOL PAPER SUPPLY
2	18358700	A	BEARING FLANGED
2	18358800	A	SHAFT HUB
2	18358900	A	ROLLER 1721C,1721D
2	18359000	A	SLEEVE HUB 1721C,1721D
2	18359100	A	SHAFT ROLLER 1721C,1721D
2	00854049	A	NUT SPEED PUSH-ON
2	09018505	A	SCR MACH PAN HD PHL NO. 8
2	00843513	D	RING, RETAINING
2	18377700	A	RETAINER PAPER TAPE SUPPLY
3	18063100	A	PLEXI-GLASS 1/8 THICK- BLUE
2	09018503	A	SCR MACH PAN HD PHL NO. 8
2	09018403	C	SCR. MACH PAN HD PHL NO. 6
2	09018631	B	SCR MACH PAN HD PHL NO. 10
2	09027007		LOCKWASHER, INTERNAL TOOTH
2	09027006		LOCKWASHER, INTERNAL TOOTH
2	09027005		LOCKWASHER, INTERNAL TOOTH
2	09027507		WASHER, PLAIN FLAT
2	09027506		WASHER, PLAIN FLAT
2	09027505		WASHER, PLAIN FLAT
2	09026006		NUT, HEXAGON
2	09027814	00	00000000000000000000000000000000
1	18352300	C	SWITCH PNL ASSY P TAPE READER
2	18351800	C	PANEL BOTTOM
2	24509000	B	SWITCH PUSH-MOMENTARY 2 PDT
2	24521300	D	SWITCH PUSH -ALTERNATE, 2 PDT
2	24511504	D	LAMP HOLDER PUSH-BUT.
2	24511770	L	LENS, IND. LIGHT
2	24511794	L	LENS, IND. LIGHT
2	17981102	F	LENS INDICATOR COPORATE SW
2	24512001	C	CONN RECEP. 4 HOLE PNL MTG 24
2	24514701	B	CONN RACK AND PNL SOC CONT
2	24514501	B	CLAMP, CONN RACK AND PNL
2	18364900	A	WL SWITCH PANEL,P TAPE RD
3	24548360	J	WIRE ELEC STRD INS. UL APPD
3	24548358	J	WIRE ELEC STRD INS. UL APPD
3	24548364	J	WIRE ELEC STRD INS. UL APPD
3	17698606	A	WIRE ELEC STRD INS UL APPD
3	24548366	J	WIRE ELEC STRD INS. UL APPD
3	24548303	J	WIRE ELEC STRD INS. UL APPD
3	24548308	J	WIRE ELEC STRD INS. UL APPD
3	24548309	J	WIRE ELEC STRD INS. UL APPD
3	24548301	J	WIRE ELEC STRD INS. UL APPD
3	24548305	J	WIRE ELEC STRD INS. UL APPD
3	24548307	J	WIRE ELEC STRD INS. UL APPD
3	24548311	J	WIRE ELEC STRD INS. UL APPD

1721-D	18352001	B	MOD 1721D P TAPE INPUT 50 CY
LEVEL	PARTNO	REV	
3	24548312	J	WIRE ELEC STRD INS. UL APPD
3	24548313	J	WIRE ELEC STRD INS. UL APPD
3	24548314	J	WIRE ELEC STRD INS. UL APPD
3	24548315	J	WIRE ELEC STRD INS. UL APPD
3	24548316	J	WIRE ELEC STRD INS. UL APPD
3	24548317	J	WIRE ELEC STRD INS. UL APPD
3	24524805	F	TERMINAL, LUG CRIMP-INSULATED
3	24552333	C	INS SLV, 5/8 LG 12.5 AWG CLR
3	24552338	C	INS SLV, 5/8 LG 8 AWG CLR
3	24536112	E	TERMINAL, SOLDERLESS RING
3	24552336	C	INS SLV, 5/8 LG 10 AWG CLR
3	24528638	E	INS SLEEVING, ELEC-BULK
3	24514701	B	CONN RACK AND PNL SOC CONT
3	24514501	B	CLAMP, CONN RACK AND PNL
2	24516803	A	LAMP, INCANDESCENT SLIDE TYPE
2	18178400	A	BOLT, LATCH
2	18145500	B	BRACKET 24 PIN CONNECTOR
2	18178500	A	GUIDE LATCH
2	00856805		BRG SLV-FLG NYLON .251
2	00843513	D	RING, RETAINING
2	00859227		SPG COMPR .360 OD 1 1/2L
2	00856000		KNOB
2	09027505		WASHER, PLAIN FLAT
2	00863703	A	CLAMP, CABLE ELECTRICAL
2	09018404	C	SCR. MACH PAN HD PHL NO. 6
2	09018503	A	SCR MACH PAN HD PHL NO. 8
2	09018303		SCR MACH PAN HD PHL NO. 5
2	09018402	C	SCR. MACH PAN HD PHL NO. 6
2	09027006		LOCKWASHER, INTERNAL TOOTH
2	09027005		LOCKWASHER, INTERNAL TOOTH
2	09027004		LOCKWASHER, INTERNAL TOOTH
2	09026004		NUT, HEXAGON
2	09026006		NUT, HEXAGON
2	09026005		NUT, HEXAGON
1	18361700	E	DISTRIBUTION BOX ASSY READER
2	18141200	B	BOX DISTR PAPER TAPE READER
2	18133700	A	COVER DISTRIBUTION BOX
2	24550603	D	CKT BRK SP 115V 60 CPS
2	24501209		STRIP TERMINAL
2	25169501	B	BUSS BAR DISTRIBUTION BOX
2	00838200	F	NUT U TYPE NO. 6-32NC
2	18128300	A	BRACKET RELAY
2	24547900		SOCKET, TUBE 8 CONTACT, OCTAL
2	24550801	F	RELAY, OCTAL SOCKET
2	24518101	D	CONN FLEX. CND AND CABLE
2	24550700	B	TRANSFORMER 24 VOLT
2	24501602	G	BLOCK, TERMINAL
2	18364700	C	READER PWR CABLE P2
3	17698629	A	WIRE ELEC STRD INS UL APPD
3	17698638	A	WIRE ELEC STRD INS UL APPD
3	17698634	A	WIRE ELEC STRD INS UL APPD
3	17698662	A	WIRE ELEC STRD INS UL APPD

1721-D	18352001	B	MOD 1721D P TAPE INPUT 50 CY
LEVEL	PARTNO	REV	
3	24528637	E	INS SLEEVING, ELEC-BULK
3	24524804	F	TERMINAL, LUG CRIMP-INSULATED
3	24552338	C	INS SLV, 5/8 LG 8 AWG CLR
3	24536112	E	TERMINAL, SOLDERLESS RING
3	18322804	A	CONN RECP PLUG,CONT U/L
3	94335104	A	CONNECTOR 6PIN PLUG RECEPTACL
3	24534805	A	SHIELD, ELECT, BRAIDED-BULK
2	18364800	A	WL POWER DISTRIBUTION BOX,A2
3	17698629	A	WIRE ELEC STRD INS UL APPD
3	17698638	A	WIRE ELEC STRD INS UL APPD
3	17698634	A	WIRE ELEC STRD INS UL APPD
3	24548357	J	WIRE ELEC STRD INS. UL APPD
3	24548364	J	WIRE ELEC STRD INS. UL APPD
3	24548360	J	WIRE ELEC STRD INS. UL APPD
3	24524804	F	TERMINAL, LUG CRIMP-INSULATED
3	17698662	A	WIRE ELEC STRD INS UL APPD
3	24524805	F	TERMINAL, LUG CRIMP-INSULATED
3	24528637	E	INS SLEEVING, ELEC-BULK
3	24528659	E	INS, SLV, ELEC-BULK
3	24528638	E	INS SLEEVING, ELEC-BULK
2	24547501	B	PLATE WARNING
2	24502209	B	STRIP MARKER 1 THRU 9
2	09018401	C	SCR. MACH PAN HD PHL NO. 6
2	09018402	C	SCR. MACH PAN HD PHL NO. 6
2	09018403	C	SCR. MACH PAN HD PHL NO. 6
2	09018405	C	SCR. MACH PAN HD PHL NO. 6
2	09018406	C	SCR. MACH PAN HD PHL NO. 6
2	09027005		LOCKWASHER, INTERNAL TOOTH
2	09027505		WASHER, PLAIN FLAT
2	09026005		NUT, HEXAGON
1	00860814	D	TRACK SLIDING TELESCOPE
1	18353900	A	BRACKET PANEL LH
1	18353800	A	BRACKET PANEL RH
1	18182500	A	CHANNEL,SUPPORT
1	10028619	S	CABLE ASSY ELEC 2 24 P CONN
2	24513904	E	CONNECTOR PLUG 24 PIN
2	46161701	A	SHELL CLAMP
2	09022204		NO.1/4 SCR SET CUPPED PT SCH
2	46161502	A	INSERT CLAMP FULL
2	24518000	C	CABLE, ELEC 24 TWISTED PR
2	24559305		SLV ELEC HT SHRINKABLE U/L
2	24515730	A	BAND MARKER CABLE
2	24501808		WIRE ELECT SOLID COPPER 20 GA
2	24500801	F	INSULATION SLEEVING ELECT
2	17944001	A	LABEL CABLE LENGTH MARKING
1	18354000	A	STRIKER PANEL LH
1	18353700	A	STRIKER PANEL RH
1	18178300	A	STOP, PANEL
1	00863707	A	CLAMP, CABLE ELECTRICAL
1	18190100	C	CARD PLACEMENT PAPER TAPE IP
1	18354100	A	BRACKET STRIKER
1	40612501	A	PAPER TAPE READER ASSY

1722-A 17998200 F 1722A PAPER TAPE INPUT 60 CY

LEVEL	PARTNO	REV	
1	40612500	A	PAPER TAPE READER ASSY
1	64025100	A	PERF TAPE HDL SPOOLER
1	18352300	C	SWITCH PNL ASSY P TAPE READER
2	18351800	C	PANEL BOTTOM
2	24509000	B	SWITCH PUSH-MOMENTARY 2 PDT
2	24521300	D	SWITCH PUSH -ALTERNATE, 2 PDT
2	24511504	D	LAMP HOLDER PUSH-BUT.
2	24511770	L	LENS, IND. LIGHT
2	24511794	L	LENS, IND. LIGHT
2	17981102	F	LENS INDICATOR COPORATE SW
2	24512001	C	CONN RECEP. 4 HOLE PNL MTG 24
2	24514701	B	CONN RACK AND PNL SOC CONT
2	24514501	B	CLAMP, CONN RACK AND PNL
2	18364900	A	WL SWITCH PANEL,P TAPE RD
3	24548360	J	WIRE ELEC STRD INS. UL APPD
3	24548358	J	WIRE ELEC STRD INS. UL APPD
3	24548364	J	WIRE ELEC STRD INS. UL APPD
3	17698606	A	WIRE ELEC STRD INS UL APPD
3	24548366	J	WIRE ELEC STRD INS. UL APPD
3	24548303	J	WIRE ELEC STRD INS. UL APPD
3	24548308	J	WIRE ELEC STRD INS. UL APPD
3	24548309	J	WIRE ELEC STRD INS. UL APPD
3	24548301	J	WIRE ELEC STRD INS. UL APPD
3	24548305	J	WIRE ELEC STRD INS. UL APPD
3	24548307	J	WIRE ELEC STRD INS. UL APPD
3	24548311	J	WIRE ELEC STRD INS. UL APPD
3	24548312	J	WIRE ELEC STRD INS. UL APPD
3	24548313	J	WIRE ELEC STRD INS. UL APPD
3	24548314	J	WIRE ELEC STRD INS. UL APPD
3	24548315	J	WIRE ELEC STRD INS. UL APPD
3	24548316	J	WIRE ELEC STRD INS. UL APPD
3	24548317	J	WIRE ELEC STRD INS. UL APPD
3	24524805	F	TERMINAL, LUG CRIMP-INSULATED
3	24552333	C	INS SLV, 5/8 LG 12.5 AWG CLR
3	24552338	C	INS SLV, 5/8 LG 8 AWG CLR
3	24536112	E	TERMINAL, SOLDERLESS RING
3	24552336	C	INS SLV, 5/8 LG 10 AWG CLR
3	24528638	E	INS SLEEVING, ELEC-BULK
3	24514701	B	CONN RACK AND PNL SOC CONT
3	24514501	B	CLAMP, CONN RACK AND PNL
2	24516803	A	LAMP, INCANDESCENT SLIDE TYPE
2	18178400	A	BOLT, LATCH
2	18145500	B	BRACKET 24 PIN CONNECTOR
2	18178500	A	GUIDE LATCH
2	00856805		BRG SLV-FLG NYLON .251
2	00843513	D	RING, RETAINING
2	00859227		SPG COMPR .360 OD 1 1/2L
2	00856000		KNOB
2	09027505		WASHER, PLAIN FLAT
2	00863703	A	CLAMP, CABLE ELECTRICAL
2	09018404	C	SCR. MACH PAN HD PHL NO. 6
2	09018503	A	SCR MACH PAN HD PHL NO. 8

1722-A 17998200 F 1722A PAPER TAPE INPUT 60 CY

LEVEL	PARTNO	REV	
2	09018303		SCR MACH PAN HD PHL NO. 5
2	09018402	C	SCR. MACH PAN HD PHL NO. 6
2	09027006		LOCKWASHER, INTERNAL TOOTH
2	09027005		LOCKWASHER, INTERNAL TOOTH
2	09027004		LOCKWASHER, INTERNAL TOOTH
2	09026004		NUT, HEXAGON
2	09026006		NUT, HEXAGON
2	09026005		NUT, HEXAGON
1	18354100	A	BRACKET STRIKER
1	18363400	E	DB ASSY READER
2	18141200	B	BOX DISTR PAPER TAPE READER
2	18133700	A	COVER DISTRIBUTION BOX
2	24550604	D	CKT BRK SP 115V 60 CPS
2	24501209		STRIP TERMINAL
2	25169501	B	BUSS BAR DISTRIBUTION BOX
2	00838200	F	NUT U TYPE NO. 6-32NC
2	18128300	A	BRACKET RELAY
2	24547900		SOCKET, TUBE 8 CONTACT, OCTAL
2	24550801	F	RELAY, OCTAL SOCKET
2	24518101	D	CONN FLEX. CND AND CABLE
2	24550700	B	TRANSFORMER 24 VOLT
2	24501602	G	BLOCK, TERMINAL
2	18364700	C	READER PWR CABLE P2
3	17698629	A	WIRE ELEC STRD INS UL APPD
3	17698638	A	WIRE ELEC STRD INS UL APPD
3	17698634	A	WIRE ELEC STRD INS UL APPD
3	17698662	A	WIRE ELEC STRD INS UL APPD
3	24528637	E	INS SLEEVING, ELEC-BULK
3	24524804	F	TERMINAL, LUG CRIMP-INSULATED
3	24552338	C	INS SLV, 5/8 LG 8 AWG CLR
3	24536112	E	TERMINAL, SOLDERLESS RING
3	18322804	A	CONN RECP PLUG,CONT U/L
3	94335104	A	CONNECTOR 6PIN PLUG RECEPTACL
3	24534805	A	SHIELD, ELECT, BRAIDED-BULK
2	18364800	A	WL POWER DISTRIBUTION BOX,A2
3	17698629	A	WIRE ELEC STRD INS UL APPD
3	17698638	A	WIRE ELEC STRD INS UL APPD
3	17698634	A	WIRE ELEC STRD INS UL APPD
3	24548357	J	WIRE ELEC STRD INS. UL APPD
3	24548364	J	WIRE ELEC STRD INS. UL APPD
3	24548360	J	WIRE ELEC STRD INS. UL APPD
3	24524804	F	TERMINAL, LUG CRIMP-INSULATED
3	17698662	A	WIRE ELEC STRD INS UL APPD
3	24524805	F	TERMINAL, LUG CRIMP-INSULATED
3	24528637	E	INS SLEEVING, ELEC-BULK
3	24528659	E	INS, SLV, ELEC-BULK
3	24528638	E	INS SLEEVING, ELEC-BULK
2	24547501	B	PLATE WARNING
2	24502209	B	STRIP MARKER 1 THRU 9
2	09018401	C	SCR. MACH PAN HD PHL NO. 6
2	09018402	C	SCR. MACH PAN HD PHL NO. 6
2	09018403	C	SCR. MACH PAN HD PHL NO. 6

1722-A 17998200 F 1722A PAPER TAPE INPUT 60 CY

LEVEL	PARTNO	REV	
2	09018405	C	SCR. MACH PAN HD PHL NO. 6
2	09018406	C	SCR. MACH PAN HD PHL NO. 6
2	09027005		LOCKWASHER, INTERNAL TOOTH
2	09027505		WASHER, PLAIN FLAT
2	09026005		NUT, HEXAGON
1	00860814	D	TRACK SLIDING TELESCOPE
1	18353900	A	BRACKET PANEL LH
1	18353800	A	BRACKET PANEL RH
1	18182500	A	CHANNEL,SUPPORT
1	10028619	S	CABLE ASSY ELEC 2 24 P CONN
2	24513904	E	CONNECTOR PLUG 24 PIN
2	46161701	A	SHELL CLAMP
2	09022204		NO.1/4 SCR SET CUPPED PT SCH
2	46161502	A	INSERT CLAMP FULL
2	24518000	C	CABLE, ELEC 24 TWISTED PR
2	24559305		SLV ELEC HT SHRINKABLE U/L
2	24515730	A	BAND MARKER CABLE
2	24501808		WIRE ELECT SOLID COPPER 20 GA
2	24500801	F	INSULATION SLEEVING ELECT
2	17944001	A	LABEL CABLE LENGTH MARKING
1	18354000	A	STRIKER PANEL LH
1	18353700	A	STRIKER PANEL RH
1	18178300	A	STOP, PANEL
1	00863707	A	CLAMP, CABLE ELECTRICAL
1	18190100	C	CARD PLACEMENT PAPER TAPE IP
1	45873800	A	CABLE ASSY

1722-B	1799820 1	F	1722B PAPER TAPE INPUT 50CY
LEVEL	PARTNO	REV	
1	40612501	A	PAPER TAPE READER ASSY
1	64025100	A	PERF TAPE HDL SPOOLER
1	18352300	C	SWITCH PNL ASSY P TAPE READER
2	18351800	C	PANEL BOTTOM
2	24509000	B	SWITCH PUSH-MOMENTARY 2 PDT
2	24521300	D	SWITCH PUSH -ALTERNATE, 2 PDT
2	24511504	D	LAMP HOLDER PUSH-BUT.
2	24511770	L	LENS, IND. LIGHT
2	24511794	L	LENS, IND. LIGHT
2	17981102	F	LENS INDICATOR COPORATE SW
2	24512001	C	CONN RECEP. 4 HOLE PNL MTG 24
2	24514701	B	CONN RACK AND PNL SOC CONT
2	24514501	B	CLAMP, CONN RACK AND PNL
2	18364900	A	WL SWITCH PANEL,P TAPE RD
3	24548360	J	WIRE ELEC STRD INS. UL APPD
3	24548358	J	WIRE ELEC STRD INS. UL APPD
3	24548364	J	WIRE ELEC STRD INS. UL APPD
3	17698606	A	WIRE ELEC STRD INS UL APPD
3	24548366	J	WIRE ELEC STRD INS. UL APPD
3	24548303	J	WIRE ELEC STRD INS. UL APPD
3	24548308	J	WIRE ELEC STRD INS. UL APPD
3	24548309	J	WIRE ELEC STRD INS. UL APPD
3	24548301	J	WIRE ELEC STRD INS. UL APPD
3	24548305	J	WIRE ELEC STRD INS. UL APPD
3	24548307	J	WIRE ELEC STRD INS. UL APPD
3	24548311	J	WIRE ELEC STRD INS. UL APPD
3	24548312	J	WIRE ELEC STRD INS. UL APPD
3	24548313	J	WIRE ELEC STRD INS. UL APPD
3	24548314	J	WIRE ELEC STRD INS. UL APPD
3	24548315	J	WIRE ELEC STRD INS. UL APPD
3	24548316	J	WIRE ELEC STRD INS. UL APPD
3	24548317	J	WIRE ELEC STRD INS. UL APPD
3	24524805	F	TERMINAL, LUG CRIMP-INSULATED
3	24552333	C	INS SLV, 5/8 LG 12.5 AWG CLR
3	24552338	C	INS SLV, 5/8 LG 8 AWG CLR
3	24536112	E	TERMINAL, SOLDERLESS RING
3	24552336	C	INS SLV, 5/8 LG 10 AWG CLR
3	24528638	E	INS SLEEVING, ELEC-BULK
3	24514701	B	CONN RACK AND PNL SOC CONT
3	24514501	B	CLAMP, CONN RACK AND PNL
2	24516803	A	LAMP, INCANDESCENT SLIDE TYPE
2	18178400	A	BOLT, LATCH
2	18145500	B	BRACKET 24 PIN CONNECTOR
2	18178500	A	GUIDE LATCH
2	00856805		BRG SLV-FLG NYLON .251
2	00843513	D	RING, RETAINING
2	00859227		SPG COMPR .360 OD 1 1/2L
2	00856000		KNOB
2	09027505		WASHER, PLAIN FLAT
2	00863703	A	CLAMP, CABLE ELECTRICAL
2	09018404	C	SCR. MACH PAN HD PHL NO. 6
2	09018503	A	SCR MACH PAN HD PHL NO. 8

1722-B 17998201 F 1722B PAPER TAPE INPUT 50CY

LEVEL	PARTNO	REV	
2	09018303		SCR MACH PAN HD PHL NO. 5
2	09018402	C	SCR, MACH PAN HD PHL NO. 6
2	09027006		LOCKWASHER, INTERNAL TOOTH
2	09027005		LOCKWASHER, INTERNAL TOOTH
2	09027004		LOCKWASHER, INTERNAL TOOTH
2	09026004		NUT, HEXAGON
2	09026006		NUT, HEXAGON
2	09026005		NUT, HEXAGON
1	18354100	A	BRACKET STRIKER
1	18363400	E	DB ASSY READER
2	18141200	B	BOX DISTR PAPER TAPE READER
2	18133700	A	COVER DISTRIBUTION BOX
2	24550604	D	CKT BRK SP 115V 60 CPS
2	24501209		STRIP TERMINAL
2	25169501	B	BUSS BAR DISTRIBUTION BOX
2	00838200	F	NUT U TYPE NO. 6-32NC
2	18128300	A	BRACKET RELAY
2	24547900		SOCKET, TUBE 8 CONTACT, OCTAL
2	24550801	F	RELAY, OCTAL SOCKET
2	24518101	D	CONN FLEX, CND AND CABLE
2	24550700	B	TRANSFORMER 24 VOLT
2	24501602	G	BLOCK, TERMINAL
2	18364700	C	READER PWR CABLE P2
3	17698629	A	WIRE ELEC STRD INS UL APPD
3	17698638	A	WIRE ELEC STRD INS UL APPD
3	17698634	A	WIRE ELEC STRD INS UL APPD
3	17698662	A	WIRE ELEC STRD INS UL APPD
3	24528637	E	INS SLEEVING, ELEC-BULK
3	24524804	F	TERMINAL, LUG CRIMP-INSULATED
3	24552338	C	INS SLV, 5/8 LG 8 AWG CLR
3	24536112	E	TERMINAL, SOLDERLESS RING
3	18322804	A	CONN RECP PLUG,CONT U/L
3	94335104	A	CONNECTOR 6PIN PLUG RECEPTACL
3	24534805	A	SHIELD, ELECT, BRAIDED-BULK
2	18364800	A	WL POWER DISTRIBUTION BOX,A2
3	17698629	A	WIRE ELEC STRD INS UL APPD
3	17698638	A	WIRE ELEC STRD INS UL APPD
3	17698634	A	WIRE ELEC STRD INS UL APPD
3	24548357	J	WIRE ELEC STRD INS. UL APPD
3	24548364	J	WIRE ELEC STRD INS. UL APPD
3	24548360	J	WIRE ELEC STRD INS. UL APPD
3	24524804	F	TERMINAL, LUG CRIMP-INSULATED
3	17698662	A	WIRE ELEC STRD INS UL APPD
3	24524805	F	TERMINAL, LUG CRIMP-INSULATED
3	24528637	E	INS SLEEVING, ELEC-BULK
3	24528659	E	INS, SLV, ELEC-BULK
3	24528638	E	INS SLEEVING, ELEC-BULK
2	24547501	B	PLATE WARNING
2	24502209	B	STRIP MARKER 1 THRU 9
2	09018401	C	SCR. MACH PAN HD PHL NO. 6
2	09018402	C	SCR. MACH PAN HD PHL NO. 6
2	09018403	C	SCR. MACH PAN HD PHL NO. 6

1722_B	17998201	F	1722B PAPER TAPE INPUT 50Cy
LEVEL	PARTNO	REV	
2	09018405	C	SCR. MACH PAN HD PHL NO. 6
2	09018406	C	SCR. MACH PAN HD PHL NO. 6
2	09027005		LOCKWASHER, INTERNAL TOOTH
2	09027505		WASHER, PLAIN FLAT
2	09026005		NUT, HEXAGON
1	00860814	D	TRACK SLIDING TELESCOPE
1	18353900	A	BRACKET PANEL LH
1	18353800	A	BRACKET PANEL RH
1	18182500	A	CHANNEL, SUPPORT
1	10028619	S	CABLE ASSY ELEC 2 24 P CONN
2	24513904	E	CONNECTOR PLUG 24 PIN
2	46161701	A	SHELL CLAMP
2	09022204		NO.1/4 SCR SET CUPPED PT SCH
2	46161502	A	INSERT CLAMP FULL
2	24518000	C	CABLE, ELEC 24 IWISTED PR
2	24559305		SLV ELEC HT SHRINKABLE U/L
2	24515730	A	BAND MARKER CABLE
2	24501808		WIRE ELECT SOLID COPPER 20 GA
2	24500801	F	INSULATION SLEEVING ELECT
2	17944001	A	LABEL CABLE LENGTH MARKING
1	18354000	A	STRIKER PANEL LH
1	18353700	A	STRIKER PANEL RH
1	18178300	A	STOP, PANEL
1	00863707	A	CLAMP, CABLE ELECTRICAL
1	18190100	C	CARD PLACEMENT PAPER TAPE IP
1	45873800	A	CABLE ASSY

1721-A/B/C/D, 1722-A/B Printed Circuit Module Assembly, Dwg. No. 18190100 **PARTS LIST**

CDC - DRAWING NUMBER	DESCRIPTION	QUANTITY EACH MACHINE
17945201	Printed Circuit Module Assembly, Type V01	
18120801	Printed Circuit Module Assembly, Type Z05	
18120901	Printed Circuit Module Assembly, Type Z06	
18439001	Printed Circuit Module Assembly, Type Z08	
18121201	Printed Circuit Module Assembly, Type Z09	
18122205	Printed Circuit Module Assembly, Type Z20-2	
18122501	Printed Circuit Module Assembly, Type Z23	

1723-A	17845200	L	MOD 1723-A PAPER TAPE OUTPUT
LEVEL	PARTNO	REV	
1	18161700	H	PAPER TAPE PUNCH ASSY 60 CY
2	18336300	A	PAPER PUNCH HD MODIFICATION
3	11816401	L	PAPER TAPE PUNCH 60 CYCLE
3	17852500	A	ADJUST TAPE GUIDE ASSY
4	18203900	A	HOUSING TAPE GUIDE
4	18203800	A	GUIDE TAPE
4	18203700	A	RETAINER BLOCK BALL PLUNGER
4	00865415		BALL PLUNGER THD CAD FIN
4	09018203		SCR. MACH PAN HD PHL NO. 4
4	09027503		WASHER, PLAIN FLAT
4	09027003		LOCKWASHER, INTERNAL TOOTH
2	18162600	A	BRACKET, SHOCK MOUNT
2	18165800	A	BRACKET 25 PIN CONNECTOR
2	18128600	B	PLATE MTG PAPER TAPE PUNCH
2	18135100	B	ACTUATOR SPRING
2	18134100	A	BRACKET SPRING
2	18276900	A	BOLT, SPADE
2	18134000	A	ROLLER
2	18133900	A	SHAFT ROLLER
2	18133800	A	SHAFT ROLLER
2	18134300	C	HOLDER SWITCH
2	18133400	B	ARM INDICATOR
2	18135800	B	PLATE PAPER RETAINER
2	18134400	B	KNOB
2	18187800	B	HUB,PAPER SUPPLY
2	18187900	A	SHAFT,PAPER SUPPLY
2	18161400	A	HOLDER PLATE
2	18161600	A	DRUM BRAKE
2	24560501	A	SWITCH MERCURY
2	18135700	A	ARM ROLLER
2	18134900	A	SHOE BRAKE
2	18205901	A	SPRING EXTENSION 1/4 O.D.
2	00865420		BALL PLUNGER THD BLK FIN
2	24560502	A	SWITCH MERCURY
2	09035303	B	ROLLPIN 1/8D X 3/8L
2	00843513	D	RING, RETAINING
2	24549706	C	CONN SUB-MINAT RECTANGULAR
2	00869403	A	BRG BALL MED LOAD 1/2
2	18191800	A	TAPE TRANSPORT PANEL-A2
3	24548306	J	WIRE ELEC STRD INS. UL APPD
3	24548308	J	WIRE ELEC STRD INS. UL APPD
3	24528613	E	INS SLEEVING, ELEC-BULK
3	24500810	F	INSULATION SLEEVING ELECT
2	00843518	D	RING RETAINING
2	00855119	A	BRG SLV FLG .500
2	00863704	A	CLAMP, CABLE ELECTRICAL
2	18116301	B	COVER PUNCH
2	18116302	B	SCR THUMB
2	18116303	B	HANGER COVER
2	18116304	B	BLOCK COVER LATCH
2	17973801	C	PUNCH SHOCK MOUNT.
2	17973802	C	MULTIPLANE MOUNT C-97

1723-A 17845200 L MOD 1723-A PAPER TAPE OUTPUT

LEVEL	PARTNO	REV	
2	17973803	C	PUNCH SUPPORT BRACKET
2	17973804	C	SCR 1/4-20X11/2 HEX HD C-97
2	09018503	A	SCR MACH PAN HD PHL NO. 8
2	09018402	C	SCR. MACH PAN HD PHL NO. 6
2	09018406	C	SCR. MACH PAN HD PHL NO. 6
2	09004903	B	SCR MACH FH SLOT NO. 6
2	09018202		SCR. MACH PAN HD PHL NO. 4
2	09004701	A	SCR MACH FH SLOT NO.4
2	09018205		SCR. MACH PAN HD PHL NO. 4
2	09018633	B	SCR MACH PAN HD PHL NO. 10
2	09018631	B	SCR MACH PAN HD PHL NO. 10
2	09027003		LOCKWASHER, INTERNAL TOOTH
2	09027005		LOCKWASHER, INTERNAL TOOTH
2	09027007		LOCKWASHER, INTERNAL TOOTH
2	09026005		NUT, HEXAGON
2	09027503		WASHER, PLAIN FLAT
2	09027506		WASHER, PLAIN FLAT
2	00843514	D	RING RETAINING
2	09027006		LOCKWASHER, INTERNAL TOOTH
1	18153300	F	DISTRIBUTION PANEL ASSY
2	18127900	C	PLATE-MOUNTING POWER SUPPLY
2	18128000	A	FRAME, CHASSIS RIGHT
2	18128200	B	FRAME,CHASSIS-LEFT
2	18318700	A	BRACKET
2	18128400	A	COVER DISTRIBUTION BOX
2	18128700	A	BRACKET MOUNTING
2	18152100	A	BRACKET CABLE CLAMP
2	18168700	A	BRACKET
2	18170900	C	BAR,COVER-CARD SPACER
2	00841102	C	FASTENER, SCREW TYPE
2	18191900	D	PUNCH DIST BOX - LOGIC CHAS
3	24511402	F	LEAD,ELECTRICAL, 2 INCH.
3	24511403	F	LEAD,ELECTRICAL, 3 INCH.
3	24511404	F	LEAD,ELECTRICAL, 4 INCH.
3	24511405	F	LEAD,ELECTRICAL, 5 INCH.
3	24511406	F	LEAD,ELECTRICAL, 6 INCH.
3	24511407	F	LEAD,ELECTRICAL, 7 INCH.
3	24511408	F	LEAD,ELECTRICAL, 8 INCH.
3	17698629	A	WIRE ELEC STRD INS UL APPD
3	17698638	A	WIRE ELEC STRD INS UL APPD
3	24548360	J	WIRE ELEC STRD INS. UL APPD
3	24548366	J	WIRE ELEC STRD INS. UL APPD
3	17698604	A	WIRE ELEC STRD INS UL APPD
3	17698608	A	WIRE ELEC STRD INS UL APPD
3	17698606	A	WIRE ELEC STRD INS UL APPD
3	24543801	A	JUMPER, TERMINAL STRIP
3	17698634	A	WIRE ELEC STRD INS UL APPD
3	17698662	A	WIRE ELEC STRD INS UL APPD
3	24548364	J	WIRE ELEC STRD INS. UL APPD
3	17698632	A	WIRE ELEC STRD INS UL APPD
3	24528638	E	INS SLEEVING, ELEC-BULK
3	24534806	A	SHIELD, ELECT, BRAIDED-BULK

1723-A	17845200	L	MOD 1723-A PAPER TAPE OUTPUT
LEVEL	PARTNO	REV	
3	24524805	F	TERMINAL, LUG CRIMP-INSULATED
3	24524804	F	TERMINAL, LUG CRIMP-INSULATED
3	24536112	E	TERMINAL, SOLDERLESS RING
3	24552338	C	INS SLV, 5/8 LG 8 AWG CLR
3	24500706	G	PIN TAPER
3	24500702	G	PIN TAPER
3	24500810	F	INSULATION SLEEVING ELECT
3	24552336	C	INS SLV, 5/8 LG 10 AWG CLR
3	24500808	F	INSULATION SLEEVING ELECT
3	24500707	G	PIN TAPER
3	24548301	J	WIRE ELEC STRD INS. UL APPD
3	24548305	J	WIRE ELEC STRD INS. UL APPD
3	24548306	J	WIRE ELEC STRD INS. UL APPD
3	24548308	J	WIRE ELEC STRD INS. UL APPD
3	24548309	J	WIRE ELEC STRD INS. UL APPD
3	24548311	J	WIRE ELEC STRD INS. UL APPD
3	24548312	J	WIRE ELEC STRD INS. UL APPD
3	24548313	J	WIRE ELEC STRD INS. UL APPD
3	24548314	J	WIRE ELEC STRD INS. UL APPD
3	24548315	J	WIRE ELEC STRD INS. UL APPD
3	24548316	J	WIRE ELEC STRD INS. UL APPD
3	24548317	J	WIRE ELEC STRD INS. UL APPD
3	24548318	J	WIRE ELEC STRD INS. UL APPD
3	24548319	J	WIRE ELEC STRD INS. UL APPD
3	24548320	J	WIRE ELEC STRD INS. UL APPD
3	24548321	J	WIRE ELEC STRD INS. UL APPD
3	24548322	J	WIRE ELEC STRD INS. UL APPD
3	24548323	J	WIRE ELEC STRD INS. UL APPD
3	24548324	J	WIRE ELEC STRD INS. UL APPD
3	24548325	J	WIRE ELEC STRD INS. UL APPD
3	24548326	J	WIRE ELEC STRD INS. UL APPD
3	24548359	J	WIRE ELEC STRD INS. UL APPD
3	24548363	J	WIRE ELEC STRD INS. UL APPD
3	24511440	F	LEAD ELECT 2.25 IN. SOLID BLK
3	24511441	F	LEAD ELECT 2.25 IN. SOLID RED
3	24511442	F	LEAD ELECT 2.25 IN. SOLID BLU
3	17698603	A	WIRE ELEC STRD INS UL APPD
3	17698607	A	WIRE ELEC STRD INS UL APPD
3	24536105	E	TERMINAL, SOLDERLESS RING
3	24552314	C	INS SLV, 5/8 LG 10 AWG BLK
2	18163100	B	HINGE
3	00845408	M	HINGE, CONTINUOUS
2	24512001	C	CONN RECEP. 4 HOLE PNL MTG 24
2	18141300	A	STRIP MARKER HARROW 01 - 16
3	10057600	A	EXTRUSION NARROW MARKER STRIP
2	30013802	B	SPACER
2	30104600	B	SUPPORT CONN, ASSY
2	00857102	B	BRG SLV_FLG NYLON 1/4
2	47055700	B	POWER SUPPLY 60 CYCLE
2	25169501	B	BUSS BAR DISTRIBUTION BOX
2	24501210		STRIP TERMINAL
2	24501206		STRIP TERMINAL

1723-A 17845200 L MOD 1723-A PAPER TAPE OUTPUT

LEVEL	PARTNO	REV	
2	24501602	G	BLOCK, TERMINAL
2	18133600	A	BAR MOUNTING CONNECTOR 8
3	00820500	A	EXTRUSION MTG BAR
2	10001800	P	RECEPTACLE 30 SOCKET
2	24554202	E	DIODE, ZENER, SILICON 10W
2	24550802	F	RELAY, OCTAL SOCKET
2	24547900		SOCKET, TUBE 8 CONTACT, OCTAL
2	24518101	D	CONN FLEX. CND AND CABLE
2	24549705	C	CONN SUB-MINAT RECTANGULAR
2	24550605	D	CKT BRK SP 115V 60CPS
2	18119607	B	CKT BKR THERMAL PUSH BUTTON
2	24559103	C	CLAMP, CABLE, RACK AND PNL
2	17883206	F	BUSHING NYLON FLANGED
2	24500039	C	RES FXD .25W 100 OHMS
2	24553200	A	RECTIFIER, BI-DIRECTIONAL SW
2	97020601		TERMINAL, STUD, INSULATED
2	25160500	B	BLOCK CABLE RETAINER DOOR
2	11554202	A	RETAINER CABLE
2	11554302	A	CLAMP, CABLE
2	09040700		CABLE,WIRE,COATED
2	24502210	B	STRIP MARKER 1 THRU 10
2	24502206	B	STRIP MARKER 1 THRU 6
2	18223700	A	TAPE TRANSPORT CABLE A2P2
3	17698601	A	WIRE ELEC STRD INS UL APPD
3	17698604	A	WIRE ELEC STRD INS UL APPD
3	17698606	A	WIRE ELEC STRD INS UL APPD
3	17698610	A	WIRE ELEC STRD INS UL APPD
3	24548306	J	WIRE ELEC STRD INS. UL APPD
3	24548308	J	WIRE ELEC STRD INS. UL APPD
3	24536103	E	TERMINAL, SOLDERLESS RING
3	24549706	C	CONN SUB-MINAT RECTANGULAR
3	24528636	E	INS SLEEVING, ELEC-BULK
3	24559103	C	CLAMP, CABLE, RACK AND PNL
3	24534806	A	SHIELD, ELECT, BRAIDED-BULK
3	24552316	C	INS SLV, 5/8 LG 8 AWG BLK
3	24500810	F	INSULATION SLEEVING ELECT
3	17698662	A	WIRE ELEC STRD INS UL APPD
2	18223800	A	PUNCH CABLE ASSY A3P1
3	17698604	A	WIRE ELEC STRD INS UL APPD
3	17698608	A	WIRE ELEC STRD INS UL APPD
3	24552900	A	CABLE, 2 COND. TWISTED PR.
3	24528638	E	INS SLEEVING, ELEC-BULK
3	24548305	J	WIRE ELEC STRD INS. UL APPD
3	24548306	J	WIRE ELEC STRD INS. UL APPD
3	24548311	J	WIRE ELEC STRD INS. UL APPD
3	24548312	J	WIRE ELEC STRD INS. UL APPD
3	24548313	J	WIRE ELEC STRD INS. UL APPD
3	24548314	J	WIRE ELEC STRD INS. UL APPD
3	24548315	J	WIRE ELEC STRD INS. UL APPD
3	24548316	J	WIRE ELEC STRD INS. UL APPD
3	24548317	J	WIRE ELEC STRD INS. UL APPD
3	24548318	J	WIRE ELEC STRD INS. UL APPD

1723-A	17845200	L	MOD 1723-A PAPER TAPE OUTPUT
LEVEL	PARTNO	REV	
3	24548319	J	WIRE ELEC STRD INS. UL APPD
3	24536103	E	TERMINAL, SOLDERLESS RING
3	24500707	G	PIN TAPER
3	24500706	G	PIN TAPER
3	24549706	C	CONN SUB-MINAT RECTANGULAR
3	24559103	C	CLAMP, CABLE, RACK AND PNL
3	24500810	F	INSULATION SLEEVING ELECT
2	17837904	C	RELAY PLUG -IN- 11 CONTACT
2	97034700	A	SOCKET, TUBE
2	24554244	E	DIODE ZENER SILICON 10 WATT
2	24504337	C	CAP FIXED SOLID TANTALUN
1	18142800	B	ANGLE MOUNTING PUNCH
2	18141101	A	ANGLE MOUNTING ADJUSTABLE
1	18142500	A	COVER PLATE SIDE
1	18154900	C	PANEL ASSY-BOTTOM
2	18135200	B	COVER PLATE BOTTOM
2	24509000	B	SWITCH PUSH-MOMENTARY 2 PDT
2	24521300	D	SWITCH PUSH -ALTERNATE, 2 PDT
2	24511504	D	LAMP HOLDER PUSH-BUT.
2	24511794	L	LENS, IND. LIGHT
2	24511769	L	LENS, IND. LIGHT
2	24511772	L	LENS, IND. LIGHT
2	17981102	F	LENS INDICATOR CORPORATE SW
2	18191400	B	W/L PANEL ASSY-BOTTOM
3	24548360	J	WIRE ELEC STRD INS. UL APPD
3	24548362	J	WIRE ELEC STRD INS. UL APPD
3	24548357	J	WIRE ELEC STRD INS. UL APPD
3	24548323	J	WIRE ELEC STRD INS. UL APPD
3	24548324	J	WIRE ELEC STRD INS. UL APPD
3	24548325	J	WIRE ELEC STRD INS. UL APPD
3	24548326	J	WIRE ELEC STRD INS. UL APPD
3	24528636	E	INS SLEEVING, ELEC-BULK
3	24552338	C	INS SLV, 5/8 LG 8 AWG CLR
3	24524805	F	TERMINAL, LUG CRIMP-INSULATED
3	24507159	C	RES FXD COMP 1W,680 OHMS
2	24516803	A	LAMP, INCANDESCENT SLIDE TYPE
1	10028619	S	CABLE ASSY ELEC 2 24 P CONN
2	24513904	E	CONNECTOR PLUG 24 PIN
2	46161701	A	SHELL CLAMP
2	09022204		NO.1/4 SCR SET CUPPED PT SCH
2	46161502	A	INSERT CLAMP FULL
2	24518000	C	CABLE, ELEC 24 TWISTED PR
2	24559305		SLV ELEC HT SHRINKABLE U/L
2	24515730	A	BAND MARKER CABLE
2	24501808		WIRE ELECT SOLID COPPER 20 GA
2	24500801	F	INSULATION SLEEVING ELECT
2	17944001	A	LABEL CABLE LENGTH MARKING
1	31648200		BOX CHAD
1	18183500	A	GUIDE, TAPE
1	18183900	B	COVER PLATE-SIDE
1	18191700	D	CP PAPER TAPE OUTPUT
1	18171400	A	RETAINER, NUT SPEED
1	31648300		WINDOW CHAD BOX
1	00812000		BUMPER STEM

1723-B	17845201	L	MOD 1723-B PAPER TAPE OUTPUT
LEVEL	PARTNO	REV	
1	18161701	H	PAPER TAPE PUNCH ASSY 60 CY
2	18336301	A	PAPER PUNCH HD MODIFICATION
3	11816403	L	PAPER TAPE PUNCH 50 CYCLE
3	17852500	A	ADJUST TAPE GUIDE ASSY
4	18203900	A	HOUSING TAPE GUIDE
4	18203800	A	GUIDE TAPE
4	18203700	A	RETAINER BLOCK BALL PLUNGER
4	00865415		BALL PLUNGER THD CAD FIN
4	09018203		SCR, MACH PAN HD PHL NO. 4
4	09027503		WASHER, PLAIN FLAT
4	09027003		LOCKWASHER, INTERNAL TOOTH
2	18162600	A	BRACKET, SHOCK MOUNT
2	18165800	A	BRACKET 25 PIN CONNECTOR
2	18128600	B	PLATE MTG PAPER TAPE PUNCH
2	18135100	B	ACTUATOR SPRING
2	18134100	A	BRACKET SPRING
2	18276700	A	BOLT, SPADE
2	18134000	A	ROLLER
2	18133900	A	SHAFT ROLLER
2	18133800	A	SHAFT ROLLER
2	18134300	C	HOLDER SWITCH
2	18133400	B	ARM INDICATOR
2	18135800	B	PLATE PAPER RETAINER
2	18134400	B	KNOB
2	18187800	B	HUB, PAPER SUPPLY
2	18187900	A	SHAFT, PAPER SUPPLY
2	18161400	A	HOLDER PLATE
2	18161600	A	DRUM BRAKE
2	24560501	A	SWITCH MERCURY
2	18135700	A	ARM ROLLER
2	18134900	A	SHOE BRAKE
2	18205901	A	SPRING EXTENSION 1/4 O.D.
2	00865420		BALL PLUNGER THD BLK FIN
2	24560502	A	SWITCH MERCURY
2	09035303	B	ROLLPIN 1/8D X 3/8L
2	00843513	D	RING, RETAINING
2	24549706	C	CONN SUB-MINIAT RECTANGULAR
2	00869403	A	BRG BALL MED LOAD 1/2
2	18191600	A	TAPE TRANSPORT PANEL-A2
3	24548306	J	WIRE ELEC STRD INS. UL APPD
3	24548308	J	WIRE ELEC STRD INS. UL APPD
3	24528613	E	INS SLEEVING, ELEC-BULK
3	24500810	F	INSULATION SLEEVING ELECT
2	00843518	D	RING RETAINING
2	00855119	A	BRG SLV FLG .500
2	00863704	A	CLAMP, CABLE ELECTRICAL
2	18116301	B	COVER PUNCH
2	18116302	B	SCR THUMB
2	18116303	B	HANGER COVER
2	18116304	B	BLOCK COVER LATCH
2	17973801	C	PUNCH SHOCK MOUNT.
2	17973802	C	MULTIPLANE MOUNT C-97

1723-B 17845201 L MOD 1723-B PAPER TAPE OUTPUT

LEVEL	PARTNO	REV	
2	17973803	C	PUNCH SUPPORT BRACKET
2	17973804	C	SCR 1/4-20X11/2 HEX HD C-97
2	09018503	A	SCR MACH PAN HD PHL NO. 8
2	09018402	C	SCR. MACH PAN HD PHL NO. 6
2	09018406	C	SCR. MACH PAN HD PHL NO. 6
2	09004903	B	SCR MACH FH SLOT NO. 6
2	09018202		SCR. MACH PAN HD PHL NO. 4
2	09004701	A	SCR MACH FH SLOT NO.4
2	09018205		SCR. MACH PAN HD PHL NO. 4
2	09018633	B	SCR MACH PAN HD PHL NO. 10
2	09018631	B	SCR MACH PAN HD PHL NO. 10
2	09027003		LOCKWASHER, INTERNAL TOOTH
2	09027005		LOCKWASHER, INTERNAL TOOTH
2	09027007		LOCKWASHER, INTERNAL TOOTH
2	09026005		NUT, HEXAGON
2	09027503		WASHER, PLAIN FLAT
2	09027506		WASHER, PLAIN FLAT
2	00843514	D	RING RETAINING
2	09027006		LOCKWASHER, INTERNAL TOOTH
1	18153301	F	DISTRIBUTION PANEL ASSY
2	18127900	C	PLATE-MOUNTING POWER SUPPLY
2	18128000	A	FRAME, CHASSIS RIGHT
2	18128200	B	FRAME, CHASSIS-LEFT
2	18318700	A	BRACKET
2	18128400	A	COVER DISTRIBUTION BOX
2	18128700	A	BRACKET MOUNTING
2	18152100	A	BRACKET CABLE CLAMP
2	18168700	A	BRACKET
2	18170900	C	BAR, COVER-CARD SPACER
2	00841102	C	FASTENER, SCREW TYPE
2	18191900	D	PUNCH DIST BOX - LOGIC CHAS
3	24511402	F	LEAD, ELECTRICAL, 2 INCH.
3	24511403	F	LEAD, ELECTRICAL, 3 INCH.
3	24511404	F	LEAD, ELECTRICAL, 4 INCH.
3	24511405	F	LEAD, ELECTRICAL, 5 INCH.
3	24511406	F	LEAD, ELECTRICAL, 6 INCH.
3	24511407	F	LEAD, ELECTRICAL, 7 INCH.
3	24511408	F	LEAD, ELECTRICAL, 8 INCH.
3	17698629	A	WIRE ELEC STRD INS UL APPD
3	17698638	A	WIRE ELEC STRD INS UL APPD
3	24548360	J	WIRE ELEC STRD INS. UL APPD
3	24548366	J	WIRE ELEC STRD INS. UL APPD
3	17698604	A	WIRE ELEC STRD INS UL APPD
3	17698608	A	WIRE ELEC STRD INS UL APPD
3	17698606	A	WIRE ELEC STRD INS UL APPD
3	24543801	A	JUMPER, TERMINAL STRIP
3	17698634	A	WIRE ELEC STRD INS UL APPD
3	17698662	A	WIRE ELEC STRD INS UL APPD
3	24548364	J	WIRE ELEC STRD INS. UL APPD
3	17698632	A	WIRE ELEC STRD INS UL APPD
3	24528638	E	INS SLEEVING, ELEC-BULK
3	24534806	A	SHIELD, ELECT, BRAIDED-BULK

1723-B 17845201 L MOD 1723-B PAPER TAPE OUTPUT

LEVEL	PARTNO	REV	
3	24524805	F	TERMINAL, LUG CRIMP-INSULATED
3	24524804	F	TERMINAL, LUG CRIMP-INSULATED
3	24536112	E	TERMINAL, SOLDERLESS RING
3	24552338	C	INS SLV, 5/8 LG X AWG CLR
3	24500706	G	PIN TAPER
3	24500702	G	PIN TAPER
3	24500810	F	INSULATION SLEEVING ELECT
3	24552336	C	INS SLV, 5/8 LG 10 AWG CLR
3	24500808	F	INSULATION SLEEVING ELECT
3	24500707	G	PIN TAPER
3	24548301	J	WIRE ELEC STRD INS. UL APPD
3	24548305	J	WIRE ELEC STRD INS. UL APPD
3	24548306	J	WIRE ELEC STRD INS. UL APPD
3	24548308	J	WIRE ELEC STRD INS. UL APPD
3	24548309	J	WIRE ELEC STRD INS. UL APPD
3	24548311	J	WIRE ELEC STRD INS. UL APPD
3	24548312	J	WIRE ELEC STRD INS. UL APPD
3	24548313	J	WIRE ELEC STRD INS. UL APPD
3	24548314	J	WIRE ELEC STRD INS. UL APPD
3	24548315	J	WIRE ELEC STRD INS. UL APPD
3	24548316	J	WIRE ELEC STRD INS. UL APPD
3	24548317	J	WIRE ELEC STRD INS. UL APPD
3	24548318	J	WIRE ELEC STRD INS. UL APPD
3	24548319	J	WIRE ELEC STRD INS. UL APPD
3	24548320	J	WIRE ELEC STRD INS. UL APPD
3	24548321	J	WIRE ELEC STRD INS. UL APPD
3	24548322	J	WIRE ELEC STRD INS. UL APPD
3	24548323	J	WIRE ELEC STRD INS. UL APPD
3	24548324	J	WIRE ELEC STRD INS. UL APPD
3	24548325	J	WIRE ELEC STRD INS. UL APPD
3	24548326	J	WIRE ELEC STRD INS. UL APPD
3	24548359	J	WIRE ELEC STRD INS. UL APPD
3	24548363	J	WIRE ELEC STRD INS. UL APPD
3	24511440	F	LEAD ELECT 2.25 IN. SOLID BLK
3	24511441	F	LEAD ELECT 2.25 IN. SOLID RED
3	24511442	F	LEAD ELECT 2.25 IN. SOLID BLU
3	17698603	A	WIRE ELEC STRD INS UL APPD
3	17698607	A	WIRE ELEC STRD INS UL APPD
3	24536105	E	TERMINAL, SOLDERLESS RING
3	24552314	C	INS SLV, 5/8 LG 10 AWG BLK
2	18163100	B	HINGE
3	00845408	M	HINGE, CONTINUOUS
2	24512001	C	CONN RECEP. 4 HOLE PNL MTG 24
2	18141300	A	STRIP MARKER HARROW 01 - 16
3	10057600	A	EXTRUSION NARROW MARKER STRIP
2	30013802	B	SPACER
2	30104600	B	SUPPORT CONN, ASSY
2	00857102	B	BRG SLV-FLG NYLON 1/4
2	47055701	B	POWER SUPPLY 50 CYCLE
2	25169501	B	BUSS BAR DISTRIBUTION BOX
2	24501210		STRIP TERMINAL
2	24501206		STRIP TERMINAL

1723-B	17845201	L	MOD 1723-B PAPER TAPE OUTPUT
LEVEL	PARTNO	REV	
2	24501602	G	BLOCK, TERMINAL
2	18133600	A	BAR MOUNTING CONNECTOR 8
3	00820500	A	EXTRUSION MTG BAR
2	10001800	P	RECEPTACLE 30 SOCKET
2	24554202	E	DIODE, ZENER, SILICON 10W
2	24550802	F	RELAY, OCTAL SOCKET
2	24547900		SOCKET, TUBE 8 CONTACT, OCTAL
2	24518101	D	CONN FLEX. CND AND CABLE
2	24549705	C	CONN SUB-MINAT RECTANGULAR
2	24550605	D	CKT BRK SP 115V 60CPS
2	18119607	B	CKT BKR THERMAL PUSH BUTTON
2	24559103	C	CLAMP, CABLE, RACK AND PNL
2	17883206	F	BUSHING NYLON FLANGED
2	24500039	C	RES FXD .25W 100 OHMS
2	24553200	A	RECTIFIER, BI-DIRECTIONAL SW
2	97020601		TERMINAL, STUD, INSULATED
2	25160500	B	BLOCK CABLE RETAINER DOOR
2	11554202	A	RETAINER CABLE
2	11554302	A	CLAMP, CABLE
2	09040700		CABLE,WIRE,COATED
2	24502210	B	STRIP MARKER 1 THRU 10
2	24502206	B	STRIP MARKER 1 THRU 6
2	97034700	A	SOCKET, TUBE
2	24554244	E	DIODE ZENER SILICON 10 WATT
2	17837904	C	RELAY PLUG -IN- 11 CONTACT
2	18223700	A	TAPE TRANSPORT CABLE A2P2
3	17698601	A	WIRE ELEC STRD INS UL APPD
3	17698604	A	WIRE ELEC STRD INS UL APPD
3	17698606	A	WIRE ELEC STRD INS UL APPD
3	17698610	A	WIRE ELEC STRD INS UL APPD
3	24548306	J	WIRE ELEC STRD INS. UL APPD
3	24548308	J	WIRE ELEC STRD INS. UL APPD
3	24536103	E	TERMINAL, SOLDERLESS RING
3	24549706	C	CONN SUB-MINAT RECTANGULAR
3	24528636	E	INS SLEEVING, ELEC-BULK
3	24559103	C	CLAMP, CABLE, RACK AND PNL
3	24534806	A	SHIELD, ELECT, BRAIDED-BULK
3	24552316	C	INS SLV, 5/8 LG 8 AWG BLK
3	24500810	F	INSULATION SLEEVING ELECT
3	17698662	A	WIRE ELEC STRD INS UL APPD
2	18223800	A	PUNCH CABLE ASSY A3P1
3	17698604	A	WIRE ELEC STRD INS UL APPD
3	17698608	A	WIRE ELEC STRD INS UL APPD
3	24552900	A	CABLE, 2 COND. TWISTED PR.
3	24528638	E	INS SLEEVING, ELEC-BULK
3	24548305	J	WIRE ELEC STRD INS. UL APPD
3	24548306	J	WIRE ELEC STRD INS. UL APPD
3	24548311	J	WIRE ELEC STRD INS. UL APPD
3	24548312	J	WIRE ELEC STRD INS. UL APPD
3	24548313	J	WIRE ELEC STRD INS. UL APPD
3	24548314	J	WIRE ELEC STRD INS. UL APPD
3	24548315	J	WIRE ELEC STRD INS. UL APPD

1723-B	17845201	L	MOD 1723-B PAPER TAPE OUTPUT
LEVEL	PARTNO	REV	
3	24548316	J	WIRE ELEC STRD INS. UL APPD
3	24548317	J	WIRE ELEC STRD INS. UL APPD
3	24548318	J	WIRE ELEC STRD INS. UL APPD
3	24548319	J	WIRE ELEC STRD INS. UL APPD
3	24536103	E	TERMINAL, SOLDERLESS RING
3	24500707	G	PIN TAPER
3	24500706	G	PIN TAPER
3	24549706	C	CONN SUB-MINAT RECTANGULAR
3	24559103	C	CLAMP, CABLE, RACK AND PNL
3	24500810	F	INSULATION SLEEVING ELECT
1	18142800	B	ANGLE MOUNTING PUNCH
2	18141101	A	ANGLE MOUNTING ADJUSTABLE
1	18142500	A	COVER PLATE SIDE
1	18154900	C	PANEL ASSY-BOTTOM
2	18135200	B	COVER PLATE BOTTOM
2	24509000	B	SWITCH PUSH-MOMENTARY 2 PDT
2	24521300	D	SWITCH PUSH -ALTERNATE, 2 PDT
2	24511504	D	LAMP HOLDER PUSH-BUT.
2	24511794	L	LENS, IND. LIGHT
2	24511769	L	LENS, IND. LIGHT
2	24511772	L	LENS, IND. LIGHT
2	17981102	F	LENS INDICATOR COPORATE SW
2	18191400	B	W/L PANEL ASSY-BOTTOM
3	24548360	J	WIRE ELEC STRD INS. UL APPD
3	24548362	J	WIRE ELEC STRD INS. UL APPD
3	24548357	J	WIRE ELEC STRD INS. UL APPD
3	24548323	J	WIRE ELEC STRD INS. UL APPD
3	24548324	J	WIRE ELEC STRD INS. UL APPD
3	24548325	J	WIRE ELEC STRD INS. UL APPD
3	24548326	J	WIRE ELEC STRD INS. UL APPD
3	24528636	E	INS SLEEVING, ELEC-BULK
3	24552338	C	INS SLV, 5/8 LG 8 AWG CLR
3	24524805	F	TERMINAL, LUG CRIMP-INSULATED
3	24507159	C	RES FXD COMP 1W,680 OHMS
2	2451680 3	A	LAMP, INCANDESCENT SLIDE TYPE
1	10028619	S	CABLE ASSY ELEC 2 24 P CONN
2	24513904	E	CONNECTOR PLUG 24 PIN
2	46161701	A	SHELL CLAMP
2	09022204		NO.1/4 SCR SET CUPPED PT SCH
2	46161502	A	INSERT CLAMP FULL
2	24518000	C	CABLE, ELEC 24 TWISTED PR
2	24559305		SLV ELEC HT SHRINKABLE U/L
2	24515730	A	BAND MARKER CABLE
2	24501808		WIRE ELECT SOLID COPPER 20 GA
2	24500801	F	INSULAIION SLEEVING ELECT
2	17944001	A	LABEL CABLE LENGTH MARKING
1	31648200		BOX CHAD
1	18183500	A	GUIDE, TAPE
1	18183900	B	COVER PLATE-SIDE
1	18191700	D	CP PAPER TAPE OUTPUT
1	18171400	A	RETAINER, NUT SPEED
1	31648300		WINDOW CHAD BOX
1	00812000		BUMPER STEM

1724-A	18024700	R	1724-A PAPER TAPE PUNCH 60CY
LEVEL	PARTNO	REV	
1	31654904	B	PAPER TAPE PUNCH MODIFIED
2	11816404	L	PAPER TAPE PUNCH 60 CYCLE
1	18153300	F	DISTRIBUTION PANEL ASSY
2	18127900	C	PLATE-MOUNTING POWER SUPPLY
2	18128000	A	FRAME, CHASSIS RIGHT
2	18128200	B	FRAME,CHASSIS-LEFT
2	18318700	A	BRACKET
2	18128400	A	COVER DISTRIBUTION BOX
2	18128700	A	BRACKET MOUNTING
2	18152100	A	BRACKET CABLE CLAMP
2	18168700	A	BRACKET
2	18170900	C	BAR,COVER-CARD SPACER
2	00841102	C	FASTENER, SCREW TYPE
2	18191900	D	PUNCH DIST BOX - LOGIC CHAS
3	24511402	F	LEAD,ELECTRICAL, 2 INCH.
3	24511403	F	LEAD,ELECTRICAL, 3 INCH.
3	24511404	F	LEAD,ELECTRICAL, 4 INCH.
3	24511405	F	LEAD,ELECTRICAL, 5 INCH.
3	24511406	F	LEAD,ELECTRICAL, 6 INCH.
3	24511407	F	LEAD,ELECTRICAL, 7 INCH.
3	24511408	F	LEAD,ELECTRICAL, 8 INCH.
3	17698629	A	WIRE ELEC STRD INS UL APPD
3	17698638	A	WIRE ELEC STRD INS UL APPD
3	24548360	J	WIRE ELEC STRD INS. UL APPD
3	24548366	J	WIRE ELEC STRD INS. UL APPD
3	17698604	A	WIRE ELEC STRD INS UL APPD
3	17698608	A	WIRE ELEC STRD INS UL APPD
3	17698606	A	WIRE ELEC STRD INS UL APPD
3	24543801	A	JUMPER, TERMINAL STRIP
3	17698634	A	WIRE ELEC STRD INS UL APPD
3	17698662	A	WIRE ELEC STRD INS UL APPD
3	24548364	J	WIRE ELEC STRD INS. UL APPD
3	17698632	A	WIRE ELEC STRD INS UL APPD
3	24528638	E	INS SLEEVING, ELEC-BULK
3	24534806	A	SHIELD, ELECT, BRAIDED-BULK
3	24524805	F	TERMINAL, LUG CRIMP-INSULATED
3	24524804	F	TERMINAL, LUG CRIMP-INSULATED
3	24536112	E	TERMINAL, SOLDERLESS RING
3	24552338	C	INS SLV, 5/8 LG 8 AWG CLR
3	24500706	G	PIN TAPER
3	24500702	G	PIN TAPER
3	24500810	F	INSULATION SLEEVING ELECT
3	24552336	C	INS SLV, 5/8 LG 10 AWG CLR
3	24500808	F	INSULATION SLEEVING ELECT
3	24500707	G	PIN TAPER
3	24548301	J	WIRE ELEC STRD INS. UL APPD
3	24548305	J	WIRE ELEC STRD INS. UL APPD
3	24548306	J	WIRE ELEC STRD INS. UL APPD
3	24548308	J	WIRE ELEC STRD INS. UL APPD
3	24548309	J	WIRE ELEC STRD INS. UL APPD
3	24548311	J	WIRE ELEC STRD INS. UL APPD
3	24548312	J	WIRE ELEC STRD INS. UL APPD

1724-A 18024700 R 1724-A PAPER TAPE PUNCH 60CY

LEVEL	PARTNO	REV	
3	24548313	J	WIRE ELEC STRD INS. UL APPD
3	24548314	J	WIRE ELEC STRD INS. UL APPD
3	24548315	J	WIRE ELEC STRD INS. UL APPD
3	24548316	J	WIRE ELEC STRD INS. UL APPD
3	24548317	J	WIRE ELEC STRD INS. UL APPD
3	24548318	J	WIRE ELEC STRD INS. UL APPD
3	24548319	J	WIRE ELEC STRD INS. UL APPD
3	24548320	J	WIRE ELEC STRD INS. UL APPD
3	24548321	J	WIRE ELEC STRD INS. UL APPD
3	24548322	J	WIRE ELEC STRD INS. UL APPD
3	24548323	J	WIRE ELEC STRD INS. UL APPD
3	24548324	J	WIRE ELEC STRD INS. UL APPD
3	24548325	J	WIRE ELEC STRD INS. UL APPD
3	24548326	J	WIRE ELEC STRD INS. UL APPD
3	24548359	J	WIRE ELEC STRD INS. UL APPD
3	24548363	J	WIRE ELEC STRD INS. UL APPD
3	24511440	F	LEAD ELECT 2.25 IN. SOLID BLK
3	24511441	F	LEAD ELECT 2.25 IN. SOLID RED
3	24511442	F	LEAD ELECT 2.25 IN. SOLID BLU
3	17698603	A	WIRE ELEC STRD INS UL APPD
3	17698607	A	WIRE ELEC STRD INS UL APPD
3	24536105	E	TERMINAL, SOLDERLESS RING
3	24552314	C	INS SLV, 5/8 LG 10 AWG BLK
2	18163100	B	HINGE
3	00845408	M	HINGE, CONTINUOUS
2	24512001	C	CONN RECEP. 4 HOLE PNL MTG 24
2	18141300	A	STRIP MARKER HARROW 01 - 16
3	10057600	A	EXTRUSION NARROW MARKER STRIP
2	30013802	B	SPACER
2	30104600	B	SUPPORT CONN, ASSY
2	00857102	B	BRG SLV-FLG NYLON 1/4
2	47055700	B	POWER SUPPLY 60 CYCLE
2	25169501	B	BUSS BAR DISTRIBUTION BOX
2	24501210		STRIP TERMINAL
2	24501206		STRIP TERMINAL
2	24501602	G	BLOCK, TERMINAL
2	18133600	A	BAR MOUNTING CONNECTOR 8
3	00820500	A	EXTRUSION MTG BAR
2	10001800	P	RECEPTACLE 30 SOCKET
2	24554202	E	DIODE, ZENER, SILICON 1oW
2	24550802	F	RELAY, OCTAL SOCKET
2	24547900		SOCKET, TUBE 8 CONTACT, OCTAL
2	24518101	D	CONN FLEX. CND AND CABLE
2	24549705	C	CONN SUB-MINAT RECTANGULAR
2	24550605	D	CKT BRK SP 115V 60CPS
2	18119607	B	CKT BKR THERMAL PUSH BUTTON
2	24559103	C	CLAMP, CABLE, RACK AND PNL
2	17883206	F	BUSHING NYLON FLANGED
2	24500039	C	RES FXD .25W 100 OHMS
2	24553200	A	RECTIFIER, BI-DIRECTIONAL SW
2	97020601		TERMINAL, STUD, INSULATED
2	25160500	B	BLOCK CABLE RETAINER DOOR

1724-A 1802470O R 1724-A PAPER TAPE PUNCH 60CY

LEVEL	PARTNO	REV	
2	11554202	A	RETAINER CABLE
2	11554302	A	CLAMP, CABLE
2	09040700		CABLE,WIRE,COATED
2	24502210	B	STRIP MARKER 1 THRU 10
2	24502206	B	STRIP MARKER 1 THRU 6
2	18223700	A	TAPE TRANSPORT CABLE A2P2
3	17698601	A	WIRE ELEC STRD INS UL APPD
3	17698604	A	WIRE ELEC STRD INS UL APPD
3	17698606	A	WIRE ELEC STRD INS UL APPD
3	17698610	A	WIRE ELEC STRD INS UL APPD
3	24548306	J	WIRE ELEC STRD INS. UL APPD
3	24548308	J	WIRE ELEC STRD INS. UL APPD
3	24536103	E	TERMINAL, SOLDERLESS RING
3	24549706	C	CONN SUB-MINAT RECTANGULAR
3	24528636	E	INS SLEEVING, ELEC-BULK
3	24559103	C	CLAMP, CABLE, RACK AND PNL
3	24534806	A	SHIELD, ELECT, BRAIDED-BULK
3	24552316	C	INS SLV, 5/8 LG 8 AWG BLK
3	24500810	F	INSULATION SLEEVING ELECT
3	17698662	A	WIRE ELEC STRD INS UL APPD
2	18223800	A	PUNCH CABLE ASSY A3P1
3	17698604	A	WIRE ELEC STRD INS UL APPD
3	17698608	A	WIRE ELEC STRD INS UL APPD
3	24552900	A	CABLE, 2 COND. TWISTED PR.
3	24528638	E	INS SLEEVING, ELEC-BULK
3	24548305	J	WIRE ELEC STRD INS. UL APPD
3	24548306	J	WIRE ELEC STRD INS. UL APPD
3	24548311	J	WIRE ELEC STRD INS. UL APPD
3	24548312	J	WIRE ELEC STRD INS. UL APPD
3	24548313	J	WIRE ELEC STRD INS. UL APPD
3	24548314	J	WIRE ELEC STRD INS. UL APPD
3	24548315	J	WIRE ELEC STRD INS. UL APPD
3	24548316	J	WIRE ELEC STRD INS. UL APPD
3	24548317	J	WIRE ELEC STRD INS. UL APPD
3	24548318	J	WIRE ELEC STRD INS. UL APPD
3	24548319	J	WIRE ELEC STRD INS. UL APPD
3	24536103	E	TERMINAL, SOLDERLESS RING
3	24500707	G	PIN TAPER
3	24500706	G	PIN TAPER
3	24549706	C	CONN SUB-MINAT RECTANGULAR
3	24559103	C	CLAMP, CABLE, RACK AND PNL
3	24500810	F	INSULATION SLEEVING ELECT
2	17837904	C	RELAY PLUG -IN- 11 CONTACT
2	97034700	A	SOCKET, TUBE
2	24554244	E	DIODE ZENER SILICON 10 WATT
2	24504337	C	CAP FIXED SOLID TANTALUN
1	18142800	B	ANGLE MOUNTING PUNCH
2	18141101	A	ANGLE MOUNTING ADJUSTABLE
1	18142500	A	COVER PLATE SIDE
1	18154900	C	PANEL ASSY-BOTTOM
2	18135200	B	COVER PLATE BOTTOM
2	24509000	B	SWITCH PUSH-MOMENTARY 2 PDT

1724-A	18024700	R	1724-A PAPER TAPE PUNCH 60CY
LEVEL	PARTNO	REV	
2	24521300	D	SWITCH PUSH -ALTERNATE, 2 PDT
2	24511504	D	LAMP HOLDER PUSH-BUT.
2	24511794	L	LENS, IND. LIGHT
2	24511769	L	LENS, IND. LIGHT
2	24511772	L	LENS, IND. LIGHT
2	17981102	F	LENS INDICATOR COPORATE SW
2	18191400	B	W/L PANEL ASSY-BOTTOM
3	24548360	J	WIRE ELEC STRD INS. UL APPD
3	24548362	J	WIRE ELEC STRD INS. UL APPD
3	24548357	J	WIRE ELEC STRD INS. UL APPD
3	24548323	J	WIRE ELEC STRD INS. UL APPD
3	24548324	J	WIRE ELEC STRD INS. UL APPD
3	24548325	J	WIRE ELEC STRD INS. UL APPD
3	24548326	J	WIRE ELEC STRD INS. UL APPD
3	24528636	E	INS SLEEVING, ELEC-BULK
3	24552338	C	INS SLV, 5/8 LG 8 AWG CLR
3	24524805	F	TERMINAL, LUG CRIMP-INSULATED
3	24507159	C	RES FXD COMP 1W,680 OHMS
2	24516803	A	LAMP, INCANDESCENT SLIDE TYPE
1	10028619	S	CABLE ASSY ELEC 2 24 P CONN
2	24513904	E	CONNECTOR PLUG 24 PIN
2	46161701	A	SHELL CLAMP
2	09022204		NO 1/4 SCR SET CUPPED PT SCH
2	46161502	A	INSERT CLAMP FULL
2	24518000	C	CABLE, ELEC 24 TWISTED PR
2	24559305		SLV ELEC HT SHRINKABLE U/L
2	24515730	A	BAND MARKER CABLE
2	24501808		WIRE ELECT SOLID COPPER 20 GA
2	24500801	F	INSULATION SLEEVING ELECT
2	17944001	A	LABEL CABLE LENGTH MARKING
1	31648200		BOX CHAD
1	18139100	A	SPACER
1	18183500	A	GUIDE, TAPE
1	18183900	B	COVER PLATE-SIDE
1	18171400	A	RETAINER, NUI SPEED
1	18191700	D	CP PAPER TAPE OUTPUT
1	31648300		WINDOW CHAD BOX
1	00812000		BUMPER STEM
1	18336300	A	PAPER PUNCH HD MODIFICATION
2	11816401	L	PAPER TAPE PUNCH 60 CYCLE
2	17852500	A	ADJUST TAPE GUIDE ASSY
3	18203900	A	HOUSING TAPE GUIDE
3	18203800	A	GUIDE TAPE
3	18203700	A	RETAINER BLOCK BALL PLUNGER
3	00865415		BALL PLUNGER THD CAD FIN
3	09018203		SCR. MACH PAN HD PHL NO. 4
3	09027503		WASHER, PLAIN FLAT
3	09027003		LOCKWASHER, INTERNAL TOOTH
1	18310301	A	REEL 8 INCH TAPE
1	18310302	A	REEL 8 INCH TAPE
1	18310303	A	REEL 8 INCH TAPE
1	18310304	A	REEL 8 INCH TAPE

1724-B	18024701	R	1724B PAPER TAPE PUNCH 50CY
LEVEL	PARTNO	REV	
1	18153301	F	DISTRIBUTION PANEL ASSY
2	18127900	C	PLATE-MOUNTING POWER SUPPLY
2	18128000	A	FRAME, CHASSIS RIGHT
2	18128200	B	FRAME,CHASSIS-LEFT
2	18318700	A	BRACKET
2	18128400	A	COVER DISTRIBUTION BOX
2	18128700	A	BRACKET MOUNTING
2	18152100	A	BRACKET CABLE CLAMP
2	18168700	A	BRACKET
2	18170900	C	BAR,COVER-CARD SPACER
2	00841102	C	FASTENER, SCREW TYPE
2	18191900	D	PUNCH DIST BOX - LOGIC CHAS
3	24511402	F	LEAD,ELECTRICAL, 2 INCH.
3	24511403	F	LEAD,ELECTRICAL, 3 INCH.
3	24511404	F	LEAD,ELECTRICAL, 4 INCH.
3	24511405	F	LEAD,ELECTRICAL, 5 INCH.
3	24511406	F	LEAD,ELECTRICAL, 6 INCH.
3	24511407	F	LEAD,ELECTRICAL, 7 INCH.
3	24511408	F	LEAD,ELECTRICAL, 8 INCH.
3	17698629	A	WIRE ELEC STRD INS UL APPD
3	17698638	A	WIRE ELEC STRD INS UL APPD
3	24548360	J	WIRE ELEC STRD INS. UL APPD
3	24548366	J	WIRE ELEC STRD INS. UL APPD
3	17698604	A	WIRE ELEC STRD INS UL APPD
3	17698608	A	WIRE ELEC STRD INS UL APPD
3	17698606	A	WIRE ELEC STRD INS UL APPD
3	24543801	A	JUMPER, TERMINAL STRIP
3	17698634	A	WIRE ELEC STRD INS UL APPD
3	17698662	A	WIRE ELEC STRD INS UL APPD
3	24548364	J	WIRE ELEC STRD INS. UL APPD
3	17698632	A	WIRE ELEC STRD INS UL APPD
3	24528638	E	INS SLEEVING, ELEC-BULK
3	24534806	A	SHIELD, ELECT, BRAIDED-BULK
3	24524805	F	TERMINAL, LUG CRIMP-INSULATED
3	24524804	F	TERMINAL, LUG CRIMP-INSULATED
3	24536112	E	TERMINAL, SOLDERLESS RING
3	24552338	C	INS SLV, 5/8 LG 8 AWG CLR
3	24500706	G	PIN TAPER
3	24500702	G	PIN TAPER
3	24500810	F	INSULATION SLEEVING ELECT
3	24552336	C	INS SLV, 5/8 LG 10 AWG CLR
3	24500808	F	INSULATION SLEEVING ELECT
3	24500707	G	PIN TAPER
3	24548301	J	WIRE ELEC STRD INS. UL APPD
3	24548305	J	WIRE ELEC STRD INS. UL APPD
3	24548306	J	WIRE ELEC STRD INS. UL APPD
3	24548308	J	WIRE ELEC STRD INS. UL APPD
3	24548309	J	WIRE ELEC STRD INS. UL APPD
3	24548311	J	WIRE ELEC STRD INS. UL APPD
3	24548312	J	WIRE ELEC STRD INS. UL APPD
3	24548313	J	WIRE ELEC STRD INS. UL APPD
3	24548314	J	WIRE ELEC STRD INS. UL APPD

1724-B 18024701 R 1724B PAPER TAPE PUNCH 50CY

LEVEL	PARTNO	REV	
3	24548315	J	WIRE ELEC STRD INS. UL APPD
3	24548316	J	WIRE ELEC STRD INS. UL APPD
3	24548317	J	WIRE ELEC STRD INS. UL APPD
3	24548318	J	WIRE ELEC STRD INS. UL APPD
3	24548319	J	WIRE ELEC STRD INS. UL APPD
3	24548320	J	WIRE ELEC STRD INS. UL APPD
3	24548321	J	WIRE ELEC STRD INS. UL APPD
3	24548322	J	WIRE ELEC STRD INS. UL APPD
3	24548323	J	WIRE ELEC STRD INS. UL APPD
3	24548324	J	WIRE ELEC STRD INS. UL APPD
3	24548325	J	WIRE ELEC STRD INS. UL APPD
3	24548326	J	WIRE ELEC STRD INS. UL APPD
3	24548359	J	WIRE ELEC STRD INS. UL APPD
3	24548363	J	WIRE ELEC STRD INS. UL APPD
3	24511440	F	LEAD ELECT 2.25 IN. SOLID BLK
3	24511441	F	LEAD ELECT 2.25 IN. SOLID RED
3	24511442	F	LEAD ELECT 2.25 IN. SOLID BLU
3	17698603	A	WIRE ELEC STRD INS UL APPD
3	17698607	A	WIRE ELEC STRD INS UL APPD
3	24536105	E	TERMINAL, SOLDERLESS RING
3	24552314	C	INS SLV, 5/8 LG 10 AWG BLK
2	18163100	B	HINGE
3	00845408	M	HINGE, CONTINUOUS
2	24512001	C	CONN RECEP. 4 HOLE PNL MTG 24
2	18141300	A	STRIP MARKER HARROW 01 - 16
3	10057600	A	EXTRUSION NARROW MARKER STRIP
2	30013802	B	SPACER
2	30104600	B	SUPPORT CONN, ASSY
2	00857102	B	BRG SLV_FLG NYLON 1/4
2	47055701	B	POWER SUPPLY 50 CYCLE
2	25169501	B	BUSS BAR DISTRIBUTION BOX
2	24501210		STRIP TERMINAL
2	24501206		STRIP TERMINAL
2	24501602	G	BLOCK, TERMINAL
2	18133600	A	BAR MOUNTING CONNECTOR 8
3	00820500	A	EXTRUSION MTG BAR
2	10001800	P	RECEPTACLE 30 SOCKET
2	24554202	E	DIODE, ZENER, SILICON 10W
2	24550802	F	RELAY, OCTAL SOCKET
2	24547900		SOCKET, TUBE 8 CONTACT, OCTAL
2	24518101	D	CONN FLEX. CND AND CABLE
2	24549705	C	CONN SUB-MINAT RECTANGULAR
2	24550605	D	CKT BRK SP 115V 60CPS
2	18119607	B	CKT BKR THERMAL PUSH BUTTON
2	24559103	C	CLAMP, CABLE, RACK AND PNL
2	17883206	F	BUSHING NYLON FLANGED
2	24500039	C	RES FXD .25W 100 OHMS
2	24553200	A	RECTIFIER, BI-DIRECTIONAL SW
2	97020601		TERMINAL, STUD, INSULATED
2	25160500	B	BLOCK CABLE RETAINER DOOR
2	11554202	A	RETAINER CABLE
2	11554302	A	CLAMP, CABLE

1724-B	18024701	R	1724B PAPER TAPE PUNCH 50CY
LEVEL	PARTNO	REV	
2	09040700		CABLE,WIRE,COATED
2	24502210	B	STRIP MARKER 1 THRU 10
2	24502206	B	STRIP MARKER 1 THRU 6
2	97034700	A	SOCKET, TUBE
2	24554244	E	DIODE ZENER SILICON 10 WATT
2	17837904	C	RELAY PLUG -IN- 11 CONTACT
2	18223700	A	TAPE TRANSPORT CABLE A2P2
3	17698601	A	WIRE ELEC STRD INS UL APPD
3	17698604	A	WIRE ELEC STRD INS UL APPD
3	17698606	A	WIRE ELEC STRD INS UL APPD
3	17698610	A	WIRE ELEC STRD INS UL APPD
3	24548306	J	WIRE ELEC STRD INS. UL APPD
3	24548308	J	WIRE ELEC STRD INS. UL APPD
3	24536103	E	TERMINAL, SOLDERLESS RING
3	24549706	C	CONN SUB-MINAT RECTANGULAR
3	24528636	E	INS SLEEVING, ELEC-BULK
3	24559103	C	CLAMP, CABLE, RACK AND PNL
3	24534806	A	SHIELD, ELECT, BRAIDED-BULK
3	24552316	C	INS SLV, 5/8 LG 8 AWG BLK
3	24500810	F	INSULATION SLEEVING ELECT
3	17698662	A	WIRE ELEC STRD INS UL APPD
2	18223800	A	PUNCH CABLE ASSY A3P1
3	17698604	A	WIRE ELEC STRD INS UL APPD
3	17698608	A	WIRE ELEC STRD INS UL APPD
3	24552900	A	CABLE, 2 COND. TWISTED PR.
3	24528638	E	INS SLEEVING, ELEC-BULK
3	24548305	J	WIRE ELEC STRD INS. UL APPD
3	24548306	J	WIRE ELEC STRD INS. UL APPD
3	24548311	J	WIRE ELEC STRD INS. UL APPD
3	24548312	J	WIRE ELEC STRD INS. UL APPD
3	24548313	J	WIRE ELEC STRD INS. UL APPD
3	24548314	J	WIRE ELEC STRD INS. UL APPD
3	24548315	J	WIRE ELEC STRD INS. UL APPD
3	24548316	J	WIRE ELEC STRD INS. UL APPD
3	24548317	J	WIRE ELEC STRD INS. UL APPD
3	24548318	J	WIRE ELEC STRD INS. UL APPD
3	24548319	J	WIRE ELEC STRD INS. UL APPD
3	24536103	E	TERMINAL, SOLDERLESS RING
3	24500707	G	PIN TAPER
3	24500706	G	PIN TAPER
3	24549706	C	CONN SUB-MINAT RECTANGULAR
3	24559103	C	CLAMP, CABLE, RACK AND PNL
3	24500810	F	INSULATION SLEEVING ELECT
1	18142800	B	ANGLE MOUNTING PUNCH
2	18141101	A	ANGLE MOUNTING ADJUSTABLE
1	18142500	A	COVER PLATE SIDE
1	18154900	C	PANEL ASSY-BOTTOM
2	18135200	B	COVER PLATE BOTTOM
2	24509000	B	SWITCH PUSH-MOMENTARY 2 PDT
2	24521300	D	SWITCH PUSH -ALTERNATE, 2 PDT
2	24511504	D	LAMP HOLDER PUSH-BUT.
2	24511794	L	LENS, IND. LIGHT

1724-B	18024701	R	1724B PAPER TAPE PUNCH 50CY	
LEVEL	PARTNO	REV		1
2	24511769	L	LENS, IND. LIGHT	
2	24511772	L	LENS, IND. LIGHT	
2	17981102	F	LENS INDICATOR COPORATE SW	
2	18191400	R	W/L PANEL ASSY-BOTTOM	
3	24548360	J	WIRE ELEC STRD INS. UL APPD	
3	24548362	J	WIRE ELEC STRD INS. UL APPD	
3	24548357	J	WIRE ELEC STRD INS. UL APPD	
3	24548323	J	WIRE ELEC STRD INS. UL APPD	
3	24548324	J	WIRE ELEC STRD INS. UL APPD	
3	24548325	J	WIRE ELEC STRD INS. UL APPD	
3	24548326	J	WIRE ELEC STRD INS. UL APPD	
3	24528636	E	INS SLEEVING, ELEC-BULK	
3	24552338	C	INS SLV, 5/8 LG 8 AWG CLR	
3	24524805	F	TERMINAL, LUG CRIMP-INSULATED	
3	24507159	C	RES FXD COMP 1W,680 OHMS	
2	24516803	A	LAMP, INCANDESCENT SLIDE TYPE	
1	10028619	S	CABLE ASSY ELEC 2 24 P CONN	
2	24513904	E	CONNECTOR PLUG 24 PIN	
2	46161701	A	SHELL CLAMP	
2	09022204		NO.1/4 SCR SET CUPPED PT SCH	
2	46161502	A	INSERT CLAMP FULL	
2	24518000	C	CABLE, ELEC 24 TWISTED PR	
2	24559305		SLV ELEC HT SHRINKABLE U/L	
2	24515730	A	BAND MARKER CABLE	
2	24501808		WIRE ELECT SOLID COPPER 20 GA	
2	24500801	F	INSULATION SLEEVING ELECT	
2	17944001	A	LABEL CABLE LENGTH MARKING	
1	31648200		BOX CHAD	
1	31654905	B	PAPER TAPE PUNCH MODIFIED	
2	11816405	L.	PAPER TAPE PUNCH 50 CYCLE	
1	18139100	A	SPACER	
1	18183500	A	GUIDE, TAPE	
1	18183900	B	COVER PLATE-SIDE	
1	18171400	A	RETAINER, NUT SPEED	
1	18191700	D	CP PAPER TAPE OUTPUT	
1	31648300		WINDOW CHAD BOX	
1	00812000		BUMPER STEM	
1	18336301	A	PAPER PUNCH HD MODIFICATION	
2	11816403	L	PAPER TAPE PUNCH 50 CYCLE	
2	17852500	A	ADJUST TAPE GUIDE ASSY	
3	18203900	A	HOUSING TAPE GUIDE	
3	18203800	A	GUIDE TAPE	
3	18203700	A	RETAINER BLOCK BALL PLUNGER	
3	00865415		BALL PLUNGER THD CAD FIN	
3	09018203		SCR, MACH PAN HD PHL NO. 4	
3	09027503		WASHER, PLAIN FLAT	
3	09027003		LOCKWASHER, INTERNAL TOOTH	
1	18310301	A	REEL 8 INCH TAPE	
1	18310302	A	REEL 8 INCH TAPE	
1	18310303	A	REEL 8 INCH TAPE	
1	18310304	A	REEL 8 INCH TAPE	

1723-A/B, 1724-A/B Card Placement,
CDC Dwg. No. 18191700

PARTS LIST

CDC - DRAWING NUMBER	DESCRIPTION	QUANTITY EACH MACHINE
10211301	Printed Circuit Card Assembly, Type 82	
24410601	Printed Circuit Card Assembly, Type 244106	
63068101	Printed Circuit Module Assembly, Type NZ	
18120801	Printed Circuit Module Assembly, Type Z05	
18120901	Printed Circuit Module Assembly, Type Z06	
18121001	Printed Circuit Module Assembly, Type Z07A	
18122205	Printed Circuit Module Assembly, Type Z20-2	
18122601	Printed Circuit Module Assembly, Type Z24	
18122701	Printed Circuit Module Assembly, Type Z25	
18226200	Printed Circuit Module Assembly, Relay Puller	
18225600	Printed Circuit Module Assembly, Relay Puller	
18226000	Printed Circuit Module Assembly, Sense Ampl	
63053401	Printed Circuit Module Assembly,	

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1723-A/B, 1724-A/B Power Supply, Paper Tape Punch
Dwg. No. 47055700, 60 Cycle
Dwg. No. 47055701, 50 Cycle

PARTS LIST

CDC - DRAWING NUMBER	DESCRIPTION	QUANTITY EACH MACHINE
44464303	Bracket, Heat Sink	
95642301	Capacitor, Fixed, Electrolytic, 24K UF, 30 WVDC	
95642103	Capacitor, Fixed, Electrolytic, 15 UF, 370 VAC	
47047302	Chassis, Frame	
95643601	Clamp, Capacitor 95642103	
47019000	Clamp, Capacitor 95642301	
47047601	Cover	
95636800	Fastener, Receptacle	
95635711	Fastener, Stud	
95644000	Jack, Banana, Red	
95644003	Jack, Banana, Blue	
95653100	Lable, High Voltage, Capacitor	
95634823	Nut, Speed, U-Type #6	
95634871	Nut, Speed, U-Type, #10	
95634824	Nut, Speed, U-Type, #6	
95634421	Plate, Identification, Serial	
95642602	Rectifier, Silicon, 12 amp (1N1200A)	
95644507	Resistor, Fixed, 50 Ohm, 20W	
95635600	Retainer, Split Ring	
44464200	Schematic	
24502205	Strip, Marker, 1 thru 5 Character	
95639504	Strip, Terminal, 5 Contact	
47047400	Transformer, 130 VA, 60 cy	
44465400	Transformer, Buck Boost, 25 VA	
95642501	Transformer, Variable	
95653200	Tubing, Rubber	

1729-A	17845000	J	1729-A CARD READER 60 CYCLE
LEVEL	PARTNO	REV	
1	18388600	D	POWER SUPPLY ASSEMBLY 1729
2	09018402	C	SCR. MACH PAN HD PHL NO. 6
2	09018406	C	SCR. MACH PAN HD PHL NO. 6
2	09018205		SCR. MACH PAN HD PHL NO. 4
2	09027003		LOCKWASHER, INTERNAL TOOTH
2	09026003		NUT, HEXAGON
2	24556501	B	CONN 3 WIRE FLG MT TWIST LK
2	24531801	A	CONN RECEP 4 HOLE PNLMT 14 SO
2	09018303		SCR MACH PAN HD PHL NO. 5
2	09018403	C	SCR. MACH PAN HD PHL NO. 6
2	09018503	A	SCR MACH PAN HD PHL NO. 8
2	09018505	A	SCR MACH PAN HD PHL NO. 8
2	09026004		NUT, HEXAGON
2	09026005		NUT, HEXAGON
2	09026006		NUT, HEXAGON
2	09027004		LOCKWASHER, INTERNAL TOOTH
2	09027005		LOCKWASHER, INTERNAL TOOTH
2	09027006		LOCKWASHER, INTERNAL TOOTH
2	09027505		WASHER, PLAIN FLAT
2	09027506		WASHER, PLAIN FLAT
2	17981102	F	LENS INDICATOR CORPORATE SW
2	18076600	A	TRANSFORMER FIL 25.2 VCT 2.0A
2	18080700	A	RECT SILICON 3AMP STUD MTD
2	18081900	A	COVER POWER SUPPLY
2	18082000	A	BRACKET SUPPORT LH
2	18082100	A	BRACKET SUPPORT RH
2	18082200	A	BRACKET CONNECTOR
2	18082500	A	CLAMP CAPACITOR
2	18082600	A	BRACKET DIODE
2	18082700	B	BASE MOUNTING CARD READER
2	18119602	B	CKT BKR THERMAL PUSH BUTTON
2	18119603	B	CKT BKR THERMAL PUSH BUTTON
2	18146500	B	WIRE LIST POWER SUPPLY
3	17698610	A	WIRE ELEC STRD INS UL APPD
3	17698601	A	WIRE ELEC STRD INS UL APPD
3	17698606	A	WIRE ELEC STRD INS UL APPD
3	17698605	A	WIRE ELEC STRD INS UL APPD
3	17698604	A	WIRE ELEC STRD INS UL APPD
3	24524805	F	TERMINAL, LUG CRIMP-INSULATED
3	24552336	C	INS SLV, 5/8 LG 10 AWG CLR
3	24536111	E	TERMINAL, SOLDERLESS RING
3	24552338	C	INS SLV, 5/8 LG 8 AWG CLR
3	24536112	E	TERMINAL, SOLDERLESS RING
3	24543801	A	JUMPER, TERMINAL STRIP
3	24548360	J	WIRE ELEC STRD INS. UL APPD
3	24548362	J	WIRE ELEC STRD INS. UL APPD
3	24552340	C	INS SLV, 5/8 LG 6 AWG CLR
3	24528635	E	INS SLEEVING, ELEC-BULK
2	18186600	A	BRACKET, HOLD DOWN
2	24501210		STRIP TERMINAL
2	24502210	B	STRIP MARKER 1 THRU 10
2	24511501	D	LAMP HOLDER PUSH-BUT.

1729-A	17845000	J	1729-A CARD READER 60 CYCLE
LEVEL	PARTNO	REV	
2	18080100	A	BAR CARD ALIGNMENT
2	24515802	A	LAMP INCANDESCENT
2	18080101	A	BAR CARD ALIGNMENT
2	24521300	D	SWITCH PUSH -ALTERNATE, 2 PDT
2	24528504		RES WW 25W 4 OHMS
2	24554243	E	DIODE ZENER SILICON 10 WATT
2	24544504	00	00000000000000000000000000000000
1	18055500	F	CARD READER MODIFICATION
2	24502500	A	STUD GUIDE PIN CONNECTOR
2	18333500	A	LABEL WARNING
2	00819400		BUMPER RECESS
2	11820100	C	LOW SPEED CARD READER
2	18092100	E	ELECTRONIC COMPONENT ASSEMBLY
3	18128800	C	WIRE LIST ELEC COMP ASSY
4	24551508	E	CONN PLUG 104 PIN HOOD
4	24551507	E	CONN PLUG 104 PIN HOOD
4	24551607	E	CONNECTOR RECEPTACLE 104 SOC
4	24551608	E	CONNECTOR RECEPTACLE 104 SOC
4	24500706	G	PIN TAPER
4	24500707	G	PIN TAPER
4	24514701	B	CONN BACK AND PNL SOC CONT
4	17698601	A	WIRE ELEC STRD INS UL APPD
4	17698610	A	WIRE ELEC STRD INS UL APPD
4	17698606	A	WIRE ELEC STRD INS UL APPD
4	17698607	A	WIRE ELEC STRD INS UL APPD
4	17698603	A	WIRE ELEC STRD INS UL APPD
4	17698605	A	WIRE ELEC STRD INS UL APPD
4	24548361	J	WIRE ELEC STRD INS. UL APPD
4	24548301	J	WIRE ELEC STRD INS. UL APPD
4	24548302	J	WIRE ELEC STRD INS. UL APPD
4	24548303	J	WIRE ELEC STRD INS. UL APPD
4	24548304	J	WIRE ELEC STRD INS. UL APPD
4	24548305	J	WIRE ELEC STRD INS. UL APPD
4	24548306	J	WIRE ELEC STRD INS. UL APPD
4	24548307	J	WIRE ELEC STRD INS. UL APPD
4	24548308	J	WIRE ELEC STRD INS. UL APPD
4	24548309	J	WIRE ELEC STRD INS. UL APPD
4	24548310	J	WIRE ELEC STRD INS. UL APPD
4	24548311	J	WIRE ELEC STRD INS. UL APPD
4	24548312	J	WIRE ELEC STRD INS. UL APPD
4	24548313	J	WIRE ELEC STRD INS. UL APPD
4	24548316	J	WIRE ELEC STRD INS. UL APPD
4	24548362	J	WIRE ELEC STRD INS. UL APPD
4	24500810	F	INSULATION SLEEVING ELECT
4	24500840	F	INSULATION SLEEVING ELECT
4	24534806	A	SHIELD, ELECT, BRAIDED-BULK
4	24500804	F	INSULATION SLEEVING ELECT
4	24511440	F	LEAD ELECT 2.25 IN. SOLID BLK
4	24511441	F	LEAD ELECT 2.25 IN. SOLID RED
4	24511442	F	LEAD ELECT 2.25 IN. SOLID BLU
4	17620300	B	STRAP CABLE ADJUSTABLE
3	09018407	C	SCR. MACH PAN HD PHL NO. 6

1729-A 17845000 J 1729-A CARD READER 60 CYCLE

LEVEL	PARTNO	REV	
3	09018305		SCR MACH PAN HD PHL NO. 5
3	09027005		LOCKWASHER, INTERNAL TOOTH
3	09026005		NUT, HEXAGON
3	09005004		SCR MACH FH SLOT NO. 8
3	09027503		WASHER, PLAIN FLAT
3	09027003		LOCKWASHER, INTERNAL TOOTH
3	09018205		SCR. MACH PAN HD PHL NO. 4
3	24514501	B	CLAMP, CONN RACK AND PNL
3	09018209		SCR. MACH PAN HD PHL NO. 4
3	09018103		SCR MACH PAN HD PHL NO. 3
3	09027002		LOCKWASHER, INTERNAL TOOTH
3	09026002		NUT, HEXAGON
3	17937600	E	BRACKET-CARD MOUNTING
3	18054800	A	INSULATOR COMPONENT BOARD
3	18054900	A	BOARD COMPONENT MOUNTING
3	17994700	A	SPACER CARD
3	10001800	P	RECEPTACLE 30 SOCKET
3	30094410		CONN RECEPT 10 CONTACT (BLACK
3	24532901	B	RELAY, 5 AMP 115 VAC 4 PDT
3	24521701	B	FUSE, SLO BLO -.01 -30 AMP
3	24513500	B	FUSEHOLDER-1/4 X 1-1/4 FUSE
3	24538208		RES FXD WW 3W 10 OHMS
3	24545913		RES WW 10W 40 OHMS
3	24538500		DIODE SI DIFFUSED HIGH PWR
3	24510300	A	DIODE - SILICON ZENER 6.8V
3	24514701	B	CONN RACK AND PNL SOC CONT
3	24502303	B	CONN RECP ELEC 50 PIN
3	24502500	A	STUD GUIDE PIN CONNECTOR
3	24502600	A	SOCKET GUIDE PIN - CONNECTOR
3	18080303	B	JACKSCREW CONNECTOR
3	18080304	B	JACKSCREW CONNECTOR
3	24502301	B	CONN RECP ELEC 50 PIN
3	24502601	A	SOCKET GUIDE RECTANG CONN
3	24502501	A	STUD GUIDE PIN CONNECTOR
2	09018631	B	SCR MACH PAN HD PHL NO. 10
2	09027007		LOCKWASHER, INTERNAL TOOTH
1	18146100	C	CABLE ASSY LOGIC
2	24551606	E	CONNECTOR RECEPTACLE 104 SOC
2	24500801	F	INSULATION SLEEVING ELECT
2	24551605	E	CONNECTOR RECEPTACLE 104 SOC
2	24518000	C	CABLE, ELEC 24 TWISTED PR
2	24500808	F	INSULATION SLEEVING ELECT
2	24548360	J	WIRE ELEC STRD INS. UL APPD
2	17698601	A	WIRE ELEC STRD INS UL APPD
2	17698605	A	WIRE ELEC STRD INS UL APPD
2	17698610	A	WIRE ELEC STRD INS UL APPD
2	17698606	A	WIRE ELEC STRD INS UL APPD
2	17698607	A	WIRE ELEC STRD INS UL APPD
2	17698604	A	WIRE ELEC STRD INS UL APPD
2	24513904	E	CONNECTOR PLUG 24 PIN
2	24531701	C	CONN PLUG ELEC 14 PIN
2	24502301	B	CONN RECP ELEC 50 PIN

1729-A	17845000	J	1729-A CARD READER 60 CYCLE
LEVEL	PARTNO	REV	
2	24502801	B	SHIELD ELECT CONN 50 PIN
2	18080302	B	JACKSCREW CONNECTOR
2	18080301	B	JACKSCREW CONNECTOR
2	24502900	A	STUD GUIDE PIN CONNECTOR
2	24502800	A	SOCKET GUIDE PIN - CONNECTOR
2	24548362	J	WIRE ELEC STRD INS. UL APPD
2	17698603	A	WIRE ELEC STRD INS UL APPD
2	24528636	E	INS SLEEVING, ELEC-BULK
2	24528638	E	INS SLEEVING, ELEC-BULK
2	24528640	E	INS SLEEVING, ELEC-BULK
2	24548301	J	WIRE ELEC STRD INS. UL APPD
2	24548303	J	WIRE ELEC STRD INS. UL APPD
2	24548305	J	WIRE ELEC STRD INS. UL APPD
2	24548306	J	WIRE ELEC STRD INS. UL APPD
2	24548307	J	WIRE ELEC STRD INS. UL APPD
2	24548310	J	WIRE ELEC STRD INS. UL APPD
2	46161504	A	INSERT CLAMP FULL
2	46161701	A	SHELL CLAMP
2	09022203		NO.1/4 SCR SET CUPPED PT SCH
1	18146200	B	POWER CABLE ASSY-P2
2	24514300	A	CONN PLUG ELEC FEMALE
2	24528636	E	INS SLEEVING, ELEC-BULK
2	17698601	A	WIRE ELEC STRD INS UL APPD
2	17698610	A	WIRE ELEC STRD INS UL APPD
2	17698606	A	WIRE ELEC STRD INS UL APPD
1	18146400	D	1729 CARD READER

1729-B	18197600	G	1729-B CARD READER 50 CYCLE
LEVEL	PARTNO	REV	
1	18388600	D	POWER SUPPLY ASSEMBLY 1729
2	09018402	C	SCR. MACH PAN HD PHL NO. 6
2	09018406	C	SCR. MACH PAN HD PHL NO. 6
2	09018205		SCR. MACH PAN HD PHL NO. 4
2	09027003		LOCKWASHER, INTERNAL TOOTH
2	09026003		NUT, HEXAGON
2	24556501	B	CONN 3 WIRE FLG MT TWIST LK
2	24531001	A	CONN RECEP 4 HOLE PNLMT 14 SO
2	09018303		SCR MACH PAN HD PHL NO. 5
2	09018403	C	SCR. MACH PAN HD PHL NO. 6
2	09018503	A	SCR MACH PAN HD PHL NO. 8
2	09018505	A	SCR MACH PAN HD PHL NO. 8
2	09026004		NUT, HEXAGON
2	09026005		NUT, HEXAGON
2	09026006		NUT, HEXAGON
2	09027004		LOCKWASHER, INTERNAL TOOTH
2	09027005		LOCKWASHER, INTERNAL TOOTH
2	09027006		LOCKWASHER, INTERNAL TOOTH
2	09027505		WASHER, PLAIN FLAT
2	09027506		WASHER, PLAIN FLAT
2	17981102	F	LENS INDICATOR COPORATE SW
2	18076600	A	TRANSFORMER FIL 25.2 VCT 2.0A
2	18080700	A	RECT SILICON 3AMP STUD MTD
2	18081900	A	COVER POWER SUPPLY
2	18082000	A	BRACKET SUPPORT LH
2	18082100	A	BRACKET SUPPORT RH
2	18082200	A	BRACKET CONNECTOR
2	18082500	A	CLAMP CAPACITOR
2	18082600	A	BRACKET DIODE
2	18082700	B	BASE MOUNTING CARD READER
2	18119602	B	CKT BKR THERMAL PUSH BUTTON
2	18119603	B	CKT BKR THERMAL PUSH BUTTON
2	18146500	B	WIRE LIST POWER SUPPLY
3	17698610	A	WIRE ELEC STRD INS UL APPD
3	17698601	A	WIRE ELEC STRD INS UL APPD
3	17698606	A	WIRE ELEC STRD INS UL APPD
3	17698605	A	WIRE ELEC STRD INS UL APPD
3	17698604	A	WIRE ELEC STRD INS UL APPD
3	24524805	F	TERMINAL, LUG CRIMP-INSULATED
3	24552336	C	INS SLV, 5/8 LG 10 AWG CLR
3	24536111	E	TERMINAL, SOLDERLESS RING
3	24552338	C	INS SLV, 5/8 LG 8 AWG CLR
3	24536112	E	TERMINAL, SOLDERLESS RING
3	24543801	A	JUMPER, TERMINAL STRIP
3	24548360	J	WIRE ELEC STRD INS. UL APPD
3	24548362	J	WIRE ELEC STRD INS. UL APPD
3	24552340	C	INS SLV, 5/8 LG 6 AWG CLR
3	24528635	E	INS SLEEVING, ELEC-BULK
2	18186600	A	BRACKET, HOLD DOWN
2	24501210		STRIP TERMINAL
2	24502210	B	STRIP MARKER 1 THRU 10
2	24511501	D	LAMP HOLDER PUSH-BUT.

1729-B	18197600	G	1729-B CARD READER 50 CYCLE
LEVEL	PARTNO	REV	1
2	18080100	A	BAR CARD ALIGNMENT
2	24515802	A	LAMP INCANDESCENT
2	18080101	A	BAR CARD ALIGNMENT
2	24521300	D	SWITCH PUSH -ALTERNATE, 2 PDT
2	24528504		RES WW 25W 4 OHMS
2	24554243	E	DIODE ZENER SILICON 10 WATT
2	24544504	00	000000000000000000000000000000000
1	18117000	C	CARD READER MOD - 50 CYCLE
2	18333500	A	LABEL WARNING
2	00819400		BUMPER RECESS
2	11820101	C	LOW SP CARDREADER 100 CARD
2	09018631	B	SCR MACH PAN HD PHL NO. 10
2	09027007		LOCKWASHER, INTERNAL TOOTH
2	18092100	E	ELECTRONIC COMPONENT ASSEMBLY
3	18128800	C	WIRE LIST ELEC COMP ASSY
4	24551508	E	CONN PLUG 104 PIN HOOD
4	24551507	E	CONN PLUG 104 PIN HOOD
4	24551607	E	CONNECTOR RECEPTACLE 104 SOC
4	24551608	E	CONNECTOR RECEPTACLE 104 SOC
4	24500706	G	PIN TAPER
4	24500707	G	PIN TAPER
4	24514701	B	CONN RACK AND PNL SOC CONT
4	17698601	A	WIRE ELEC STRD INS UL APPD
4	17698610	A	WIRE ELEC STRD INS UL APPD
4	17698606	A	WIRE ELEC STRD INS UL APPD
4	17698607	A	WIRE ELEC STRD INS UL APPD
4	17698603	A	WIRE ELEC STRD INS UL APPD
4	17698605	A	WIRE ELEC STRD INS UL APPD
4	24548361	J	WIRE ELEC STRD INS. UL APPD
4	24548301	J	WIRE ELEC STRD INS. UL APPD
4	24548302	J	WIRE ELEC STRD INS. UL APPD
4	24548303	J	WIRE ELEC STRD INS. UL APPD
4	24548304	J	WIRE ELEC STRD INS. UL APPD
4	24548305	J	WIRE ELEC STRD INS. UL APPD
4	24548306	J	WIRE ELEC STRD INS. UL APPD
4	24548307	J	WIRE ELEC STRD INS. UL APPD
4	24548308	J	WIRE ELEC STRD INS. UL APPD
4	24548309	J	WIRE ELEC STRD INS. UL APPD
4	24548310	J	WIRE ELEC STRD INS. UL APPD
4	24548311	J	WIRE ELEC STRD INS. UL APPD
4	24548312	J	WIRE ELEC STRD INS. UL APPD
4	24548313	J	WIRE ELEC STRD INS. UL APPD
4	24548316	J	WIRE ELEC STRD INS. UL APPD
4	24548362	J	WIRE ELEC STRD INS. UL APPD
4	24500810	F	INSULATION SLEEVING ELECT
4	24500840	F	INSULATION SLEEVING ELECT
4	24534806	A	SHIELD, ELECT, BRAIDED-BULK
4	24500804	F	INSULATION SLEEVING ELECT
4	24511440	F	LEAD ELECT 2.25 IN. SOLID BLK
4	24511441	F	LEAD ELECT 2.25 IN. SOLID RED
4	24511442	F	LEAD ELECT 2.25 IN. SOLID BLU
4	17620300	B	STRAP CABLE ADJUSTABLE

1729-B	18197600	G	1729-B CARD READER 50 CYCLE
LEVEL	PARTNO	REV	
3	09018407	C	SCR. MACH PAN HD PHL NO. 6
3	09018305		SCR MACH PAN HD PHL NO. 5
3	09027005		LOCKWASHER, INTERNAL TOOTH
3	09026005		NUT, HEXAGON
3	09005004		SCR MACH FH SLOT NO. 8
3	09027503		WASHER, PLAIN FLAT
3	09027003		LOCKWASHER, INTERNAL TOOTH
3	09018205		SCR. MACH PAN HD PHL NO. 4
3	24514501	B	CLAMP, CONN RACK AND PNL
3	09018209		SCR. MACH PAN HD PHL NO. 4
3	09018103		SCR MACH PAN HD PHL NO. 3
3	09027002		LOCKWASHER, INTERNAL TOOTH
3	09026002		NUT, HEXAGON
3	17937600	E	BRACKET-CARD MOUNTING
3	18054800	A	INSULATOR COMPONENT BOARD
3	18054900	A	BOARD COMPONENT MOUNTING
3	17994700	A	SPACER CARD
3	10001800	P	RECEPTACLE 30 SOCKET
3	30094410		CONN RECEPT 10 CONTACT (BLACK
3	24532901	B	RELAY, 5 AMP 115 VAC 4 PDT
3	24521701	B	FUSE, SLO BLO -.01 -30 AMP
3	24513500	B	FUSEHOLDER-1/4 X 1-1/4 FUSE
3	24538208		RES FXD WW 3W 10 OHMS
3	24545913		RES WW 10W 40 OHMS
3	24538500		DIODE SI DIFFUSED HIGH PWR
3	24510300	A	DIODE - SILICON ZENER 6.8V
3	24514701	B	CONN RACK AND PNL SOC CONT
3	24502303	B	CONN RECP ELEC 50 PIN
3	24502500	A	STUD GUIDE PIN CONNECTOR
3	24502600	A	SOCKET GUIDE PIN - CONNECTOR
3	18080303	B	JACKSCREW CONNECTOR
3	18080304	B	JACKSCREW CONNECTOR
3	24502301	B	CONN RECP ELEC 50 PIN
3	24502601	A	SOCKET GUIDE RECTANG CONN
3	24502501	A	STUD GUIDE PIN CONNECTOR
2	24502501	A	STUD GUIDE PIN CONNECTOR
1	18146100	C	CABLE ASSY LOGIC
2	24551606	E	CONNECTOR RECEPTACLE 104 SOC
2	24500801	F	INSULATION SLEEVING ELECT
2	24551605	E	CONNECTOR RECEPTACLE 104 SOC
2	24518000	C	CABLE, ELEC 24 TWISTED PR
2	24500808	F	INSULATION SLEEVING ELECT
2	24548360	J	WIRE ELEC STRD INS. UL APPD
2	17698601	A	WIRE ELEC STRD INS UL APPD
2	17698605	A	WIRE ELEC STRD INS UL APPD
2	17698610	A	WIRE ELEC STRD INS UL APPD
2	17698606	A	WIRE ELEC STRD INS UL APPD
2	17698607	A	WIRE ELEC STRD INS UL APPD
2	17698604	A	WIRE ELEC STRD INS UL APPD
2	24513904	E	CONNECTOR PLUG 24 PIN
2	24531701	C	CONN PLUG ELEC 14 PIN
2	24502301	B	CONN RECP ELEC 50 PIN

1729-B	18197600	G	1729-B CARD READER 50 CYCLE
LEVEL	PARTNO	REV	
2	24502801	B	SHIELD ELECT CONN 50 PIN
2	18080302	B	JACKSCREW CONNECTOR
2	18080301	B	JACKSCREW CONNECTOR
2	24502500	A	STUD GUIDE PIN CONNECTOR
2	24502600	A	SOCKET GUIDE PIN - CONNECTOR
2	24548362	J	WIRE ELEC STRD INS. UL APPD
2	17698603	A	WIRE ELEC STRD INS UL APPD
2	24528636	E	INS SLEEVING, ELEC-BULK
2	24528638	E	INS SLEEVING, ELEC-BULK
2	24528640	F	INS SLEEVING, ELEC-BULK
2	24548301	J	WIRE ELEC STRD INS. UL APPD
2	24548303	J	WIRE ELEC STRD INS. UL APPD
2	24548305	J	WIRE ELEC STRD INS. UL APPD
2	24548306	J	WIRE ELEC STRD INS. UL APPD
2	24548307	J	WIRE ELEC STRD INS. UL APPD
2	24548310	J	WIRE ELEC STRD INS. UL APPD
2	46161504	A	INSERT CLAMP FULL
2	46161701	A	SHELL CLAMP
2	09022203		NO.1/4 SCR SET CUPPED PT SCH
1	18146200	B	POWER CABLE ASSY-P2
2	24514300	A	CONN PLUG ELEC FEMALE
2	24528636	E	INS SLEEVING, ELEC-BULK
2	17698601	A	WIRE ELEC STRD INS UL APPD
2	17698610	A	WIRE ELEC STRD INS UL APPD
2	17698606	A	WIRE ELEC STRD INS UL APPD
1	18146400	D	1729 CARD READER

1729-A/B Printed Circuit Module, Dwg. No. 18146400

PARTS LIST

CDC - DRAWING NUMBER	DESCRIPTION	QUANTITY EACH MACHINE
18225900	Printed Circuit Module Assembly, Type 18112400	
18225500	Printed Circuit Module Assembly, Type 18112500	
18122208	Printed Circuit Module Assembly, Type Z20,	
18122801	Printed Circuit Module Assembly, Type Z26	
18122901	Printed Circuit Module Assembly, Type Z27	
18123001	Printed Circuit Module Assembly, Type Z28	
18123101	Printed Circuit Module Assembly, Type Z29	
18123201	Printed Circuit Module Assembly, Type Z30	
18123301	Printed Circuit Module Assembly, Type Z31	
18123401	Printed Circuit Module Assembly, Type Z32	
18123501	Printed Circuit Module Assembly, Type Z33	
18123601	Printed Circuit Module Assembly, Type Z34	
18494000	Printed Circuit Module Assembly, Type 6AXH	

1729-A/B Mounting Kit, Card Reader
Dwg. No. 18115800

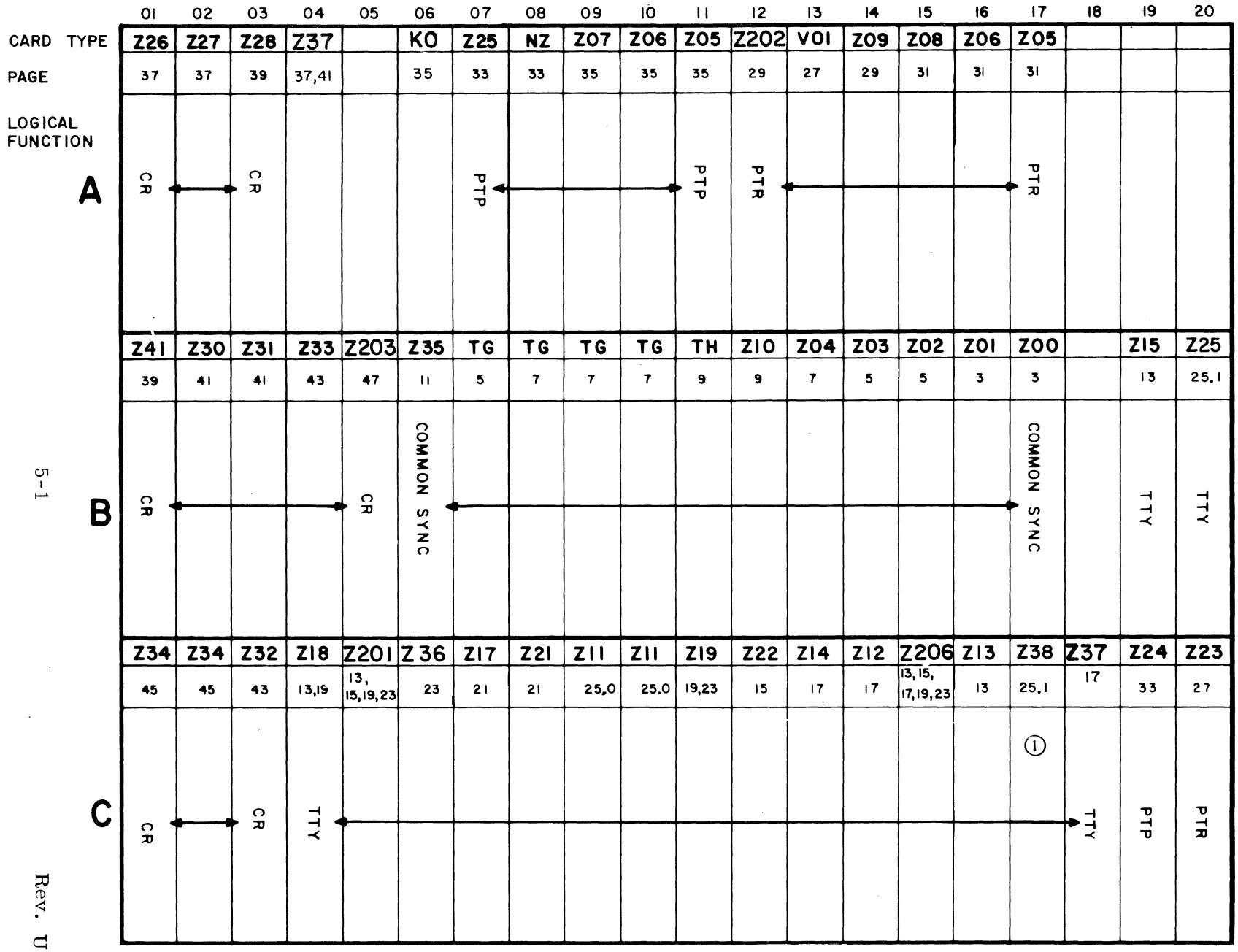
PARTS LIST

CDC - DRAWING NUMBER	DESCRIPTION	QUANTITY EACH MACHINE
18168500	Bracket	
00822400	Bumper, Rubber, 1-3/32 OD	
18168400	Cover,	
00859300	Catch, Friction	
18186100	Catch, Lock	
00863710	Clamp, Cable, Nylon, 0.75 ID	
18082300	Cover, Base	
18171700	Cover, Cable Access	
18082400	Cover, Slide	
18079900	Panel, Blank	
18084801	Slide, Self-contained with Positive Stop	
18186000		

PART 5

CARD PLACEMENT

The controllers for the 1700 low speed synchronizer are located in the main frame of the 1700 computer. The chassis map on the following page illustrates that portion of the main-frame chassis which contains the low speed synchronizer controllers.



① REPLACED BY A V48 MODULE IF TELETYPE IS 1711 OR 1712

PART 6

WIRE LISTS

Wire list information is included on the diagrams in Part 1.

COMMENT SHEET

MANUAL TITLE CONTROL DATA 1700 COMPUTER SYSTEM

Basic Peripherals Customer Engineering Manual

PUBLICATION NO. 60164200 REVISION _____

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