R E V I S I O N S

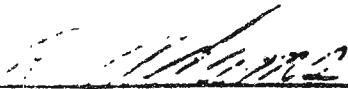| LTR	DESCRIPTION	CHECK	DATE	APPV.
A	E.O. -30738 *GH* PRODUCTION RELEASE			
B	E.O. 30810 *KW* Sh 5, Par 1.1, Line 7 was: B-300 Prod. Spec 247801; Sh. 8, was: Data Strobe; Sh. 10, Par 3.4.2 added: (132), betw char. and have; Added: (or 140) betw. eight and print; Added: 2nd Par. to 3.4.2; Sh. 12, Par 3.4.9 Added: (provided the ptr is <u>not</u> in the fls mode of opn.) betw command and the format; Par 3.4.9, 5th par. Added lines 6,7,8; Par 3.5 3rd Par 2nd sentence was: all data past 126 lines is ignored until next TOF is found; Sh. 15, Par 3.6.4, Added sentence D; Sh 16, Par 3.6.6, 2nd sentence was: This can be done with either the VFU mem loaded, or in a VFU default tab condition; Sheet 16, Added: par 3.11; Sh. 18, Par 3.13.3, Item 16 was: Reserved; Item 24 Added: or 140 consecutive over prints; Item 29 was: DAVFU load error (TOF); Item 31 was: Reserved; Added: Item 32; Sh 19, Item 86 was: Self test, VFU not ready, print inhibit; Item 87 was: Self test, VFU not ready; Item 96 was: on line, VFU not ready, print inhibit; Item 97 was: online VFU not ready; Item 98 was: offline, VFU not ready; Sh. 26, S1-5 was: off; S1-8 was: Off-Parity option disabled; Sh 27, S3-9 was: X.		6-6-79	

₰ Dataproducts

TITLE

B-300 CENTRONICS INTERFACE SPECIFICATION

SIZE	CODE IDENT NO.	DRAWING NO.	REV.
A	19790	252981	B
SCALE		SHEET 1 OF 27	

DPC 421   8-77
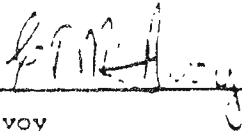
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B-300 CENTRONICS INTERFACE

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TABLES AND FIGURES

1.0 INTRODUCTION

1.1 Scope

This document describes the Centronics-Compatible Interface Option to be available on the B-300 Line Printer.

It contains information on the performance characteristics of the option and a functional description of its features. It should be noted, however, that this spec pertains only to the B-300 Centronics interface features; for a more complete understanding of the B-300 printer, refer to the B-300 Product description.

1.2 General Description

The Centronics-Compatible Interface Option may be configured to be electrically and mechanically compatible with printer controllers designed for a Centronics printer without degrading the superior performance characteristics of the B-300. The interface electronics are contained on one plug-in printed circuit board which is mounted in the printer Electronics Assembly, replacing the standard Interface Module.

Standard ASCII codes are received in bit parallel format and data transfer between the user system and the printer is on a strobe/acknowledge format. This allows the user system to control the data transfer rate at approximately 100 kilobytes per second.

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2.0 PRINTER/USER INTERFACE

The interface lines between the printer and user system are listed in
Table 1.

Interface levels are undefined during "POWER ON" and "POWER OFF" phases.

2.1 Standard Interface Signals

SLCT (SELECT) — A printer generated signal which indicates that the
printer has been selected. When SLCT signal is
active:

   (a) The ALARM light is off.

   (b) The printer operator has depressed the ON LINE
   switch, or an X'11' code has been received via
   the data bus. (See Paragraph 3.2)

   (c) The printer is ready to accept data.

ACK
(ACKNOWLEDGE) — A printer generated signal which acknowledges the
user that the printer has received a data word. If
the data word produces a busy condition the ack-
nowledge signal will not be generated until the busy
condition is reset.

DATA STROBE — A user generated signal which defines when infor-
mation on the data lines is stable and may be stored
in the printer buffer.

BUSY — A printer generated signal that indicates the printer
is unable to receive print or format data. A select
code can be transmitted during a busy condition.
(See paragraph 3.2). See Table 4 for complete list
of BUSY generating codes.

INPUT PRIME — A user generated signal that will clear the printer
buffer and initializes the interface logic. The
input prime signal is asynchronous to the interface
logic. This signal is functionally identical to the
master clear switch, and can be inhibited by means
of an on-board switch. Min. duration of input prime
is 40 msec.

FAULT — A printer generated signal indicating a fault has
occurred in the printer system. The following are
examples of fault generating conditions:

38V fault, 12V fault, -9V fault, VCL fault,
hammer current fault, paper-out fault, paper
motion fault, band speed fault, band drive-
current fault, transducer fault, ribbon motion
fault, VFU load error

+5V   - Regulated five volt supply (±5%)

+0V   - Printer's Logic Ground. If printer's chassis
                      selected as return point, this line will be tied
                      to chassis.

(PE)
 PAPER EMPTY   - A printer generated signal that indicates the
                      printer is Out of Paper.

2.2   Interface Circuits

The Centronics interface is designed to accommodate data transmission
over 15 meters, (49 feet) maximum.

Recommended receiver and transmitter circuits are shown in Figure 1.
Signals between the user and printer should be transmitted over twisted
pair wires (See Figure 1).

The user transmitter circuit must be able to sink and source ten (10)
standard TTL loads. The user receiver circuits must not require more
than 10 standard TTL loads.

A Logic '1'   Must be greater than +2.4 VDC and less than +5.0 VDC.

A Logic '0'   Must be greater than 0.0 VDC and less than +0.4 VDC.

Interface signals are active when in the Logic '1' state.

Exceptions: DATA STROBE, ACK, INPUT PRIME and FAULT are active in the
             logic "0" state.

2.3   Interface Connector

The interface connections are made to the printer through a 36 pin
connector (Amp No. 57-40360 or equivalent) mounted on the exterior
of the printer.

TABLE 1

Pin to signal relationship shall be shown below:

Signal Name	Signal Pin	Return Pin
Data Strobe	1	19
Data 1 (LSB)	2	20
Data 2	3	21
Data 3	4	22
Data 4	5	23
Data 5	6	24
Data 6	7	25
Data 7	8	26
Data 8 (MSB)	9	27
ACKNLG	10	28
BUSY	11	29
PE	12	
SLCT	13	
+0 V	14, 16	
CHASSIS GND	17	
+5 V	18	
INPUT PRIME	31	30
FAULT	32	33

3.0 INTERFACE OPERATION

3.1 Power Up

When power is applied, all interface signals, except for BUSY, and fault, will be set to their inactive state. The Busy Signal is set active to indicate that the printer is unable to receive data.

3.2 Select

Before the printer can receive print or format data, it must be selected. The printer can be selected by depressing the ON-LINE Switch, (see Figure 2 for timing) or by receiving a SLCT code (X'11') via the data bus, (Figure 3).
When the printer has been selected, an acknowledge pulse will be transmitted to the user after the BUSY Signal goes inactive. The printer can be deselected be again depressing the ON-LINE Switch or by receiving a DESLCT code (X'13') via the Data Bus. The printer will respond to ON-LINE, OFF-LINE, SLCT code or DESLCT code only if:

      1. It is not in a fault condition
      2. It is not in midstream of Data Transfer

NOTE: The printer will not respond to DESLCT code once in the load cycle, and the first character has been loaded.

3.3 Handshaking

The interface handshaking signals operate in a pulse mode rather than in an interlocked handshaking mode. Once the printer has been selected and there is no busy condition, the pulsed handshaking will operate as follows:

(a) The user will transmit a data strobe to the printer.

(b) The printer senses the active data strobe, and stores the data word into memory.

(c) Handshaking without a "BUSY": The printer then senses the inactive data strobe, waits during the acknowledge delay, and then issues an acknowledge pulse. See Figure 4 for timing and restrictions.

Handshaking with a "BUSY": The BUSY signal will go active until the busy condition is reset, then the printer will issue and acknowledge pulse after the BUSY signal goes inactive.
See Figure 6 for timing and restrictions.

(d) The user then senses the active acknowledge pulse, and can then transmit another data strobe to the printer.

3.4 Control Codes

3.4.1 LINE FEED (LF) (X'8A')

If the printer is in the select mode, receipt of the LINE FEED code will cause immediate advance of one line. The printer print buffer remains unaffected.

Example: If the following character string was sent to the line
printer:

X'41' (A)	'A' stored in the line printer buffer
X'ØD' (CR)	Causes 'A' to be printed - resets buffer pointer
X'ØA' (LF)	Advances paper to Line 2
X'42' (B)	'B' stored in the LP buffer
X'43' (C)	'C' stored in the LP buffer
X'ØA' (LF)	Advances paper to Line 3
X'44' (D)	'D' stored in the LP buffer
X'ØD (CR)	Causes 'BCD' to be printer - resets buffer pointer.

The following output would result:

Line 1: A
Line 2:
Line 3: BCD

3.4.2   Carriage Return (CR)

If the printer is in the select mode and printable characters have
been received, receipt of a CR code will cause immediate printing.
A carriage return is not acknowledged when the printer is in the de-
selected mode. If the printer is in the selected mode, data will be
accepted by the printer until the CR code or a full buffer of printable char-
acters and space codes (132) have been received. In either case, the printer
automatically prints the characters received. The printer will enter
a fault state if eight or 140 print operations occur without a paper
motion operation.

The number of print operations before the fault occurs depends on the
setting of S2-8 on the interface board. (Refer to Table 5, sheet 26).

3.4.3   Select (DC1) (X'11)

Receipt of this code will select the printer, placing it ON-LINE, in-
dependent of the operator control panel; this will be the case pro-
vided no printer fault exists and the printer is not in self test.

3.4.4   Deselect (DC3) (X'13')

Receipt of this code will deselect the printer, placing it OFF-LINE,
independent of the operator control panel. As is the case with the
control panel switch ON-LINE/OFF-LINE, the printer will not respond
to DESELECT code once in the load cycle and the first character has
been loaded.

3.4.5   GS (X'1D') - Start load DAVFU
        RS (S'1E') - Stop load DAVFU

Used with the direct loading of VFU (see Section 3.6)

3.4.6 Vertical Tab (VT) (X'ØB')

If the VT code is received by the printer while selected, the code is processed and then acknowledged. The VT code will not be acknowledged or processed while the printer is deselected.

If VFU data is loaded in RAM, receipt of VT code will cause paper to advance to the next punch on channel 2. If no punch is present in channel 2 from the current line to the next TOF, paper motion will stop at TOF. If VFU data is not loaded in RAM, receipt of a VT code will cause paper to advance to a pre-set default vertical tab location. Default vertical tab locations are located in 1 inch increments. Skipover will be performed according to configuration switches, S2-2 & S2-3. (See Table 5).

Example: Assume vertical tabs are set a lines 6 and 12 and the printer is presently at TOF. If the following character string was sent to the line printer:

X'41'	(A)	'A' stored in the LP buffer
X'ØD'	(CR)	Causes 'A' to be printed - resets buffer pointer
X'ØB'	(VT)	Advances paper to next VT location
X'42'	(B)	'B' stored in the LP buffer
X'43'	(C)	'C' stored in the LP buffer
X'ØB'	(VT)	Advances paper to next VT location
X'44'	(D)	'D' stored in the LP buffer
X'ØD'	(CR)	Causes 'BCD' to be printed - resets buffer pointer

The following output would result:

Line 1: A

Line 6:

Line 12: BCD

3.4.7 Form Feed (FF) (X'ØC')

If the FF code is received by the printer while selected, the code is processed and then acknowledged. The FF code will not be acknowledged or processed while the printer is deselected.

If VFU data is loaded in RAM, receipt of FF code will cause paper to advance to the next form feed (top-of-form) location.

If VFU data is not loaded in RAM, receipt of a FF code will cause paper to advance to a pre-set default FF location. Default FF locations can be selected via configuration switch S2-6, at either 11 or 12 inches.

3.4.8   DELete (X'7F') - This is an optional control code - if enabled, (S2-7 ON)
         this code when received will cause the input data buffer(s) to
         be cleared. During response to the code BUSY will be true.
         If DEL is disabled, and received, it will be treated as a NOP
         except busy will be set.

3.4.9   US Sequence (X'1F')

         When the unit is selected and receives the X'1F', the printer will
         use the next character as a VFU skip command provided the printer is
         not in the FLS mode of operation. The format of the VFU command data
         is as follows:

         1. Line Count:
                                    LSB
             8 7 6 5   4 3 2 1

             X X X 1   Line Count

         Note: A line count of zero (X'10) is treated as a NOP with BUSY true.

         Bits 1-4 are the number of lines the unit will skip
         Bit 5 must be a logical one.
         The line count can be implemented with the VFU not loaded
         Note: With the VFU not loaded, the form size is dictated by default,
         form size, skipover is determined by S2-7 and S2-3.

         2   Channel Search:
                                    LSB
             8 7 6 5   4 3 2 1

             X X X 0   Channel Number

         Bits 1-4 are the channel number to which the unit will skip.
         Bit 5 must be a logical zero.
         If the VFU data byte (following a U.S. code) is not a valid code
         (e.g., Channel numbers other than 1-12 being selected for CHANNEL
         SEARCH) the printer will enter VFU error mode (see paragraph
         3.6.5). If the printer is in FLS mode and a U.S. code (X'1F')
         is received, the printer will enter an error state and fault
         number 32 will be displayed on the control panel status indicators.

3.5   Paper Tape VFU - (Optional)

         The tape controlled Vertical format unit consists of format information
         punched into a paper tape (made into a loop), and a paper tape reader.
         The paper tape is 12 channels wide and as long as the forms (length)
         being used, up to a maximum of 126 print lines.

         There are sprocket holes on the tape to physically move the tape and
         define the start of a new line. Channel one on the tape is allocated
         for Top of Form; channel two for Vertical Tabs; Channel One and
         Channel Two, combined, for Bottom of Form.

         Data loading begins with the first Top of Form punch read and ter-
         minates the second Top of Form punch being read. A tape longer than
         126 lines will cause a fault condition.

The tape is read twice. The second read is a check. During the
second time through, the tape information read is compared to
the VFU memory (loaded on the first time through the tape).

If this comparison is not made successfully, a second read and
compare will take place. If the second read and compare fails,
tape motion will cease, and the appropriate fault number will
be displayed on the control panel indicator. After the tape read
is complete, there will be a channel stop at BOF. If the BOF was not
specified, BOF will be made equal to the last line of the form but no
channel stop will be present at this location.

3.5.2   Reload TCVFU

The tape controlled vertical format information can only be reloaded
while the unit is in an off-line condition. If off-line and the
tape read request switch is pressed, the tape will be loaded into
VFU memory over writing that which was previously stored.

3.5.3   TCVFU Load Errors

The following will cause an error during the TCVFU load routine
resulting in a VFU memory not loaded condition:

A.   If the tape reader is jammed (paper tape not moving) during
     power up or a manual tape read request.

B.   If during a tape load the TOF cannot be found on the tape (channel 1
     punched).

C.   If a read/verify cannot be successfully completed.

D.   If the tape is longer than 126 lines.

3.6   DAVFU

The direct access vertical format unit (DAVFU) consists of a format
memory and associated control codes.

3.6.1   DAVFU memory loading

During a printer load cycle, the data lines are monitored for the
receipt of a format control code (see Table 2). When a DAVFU START
code is received, the printer leaves the normal data load routine and
enters a DAVFU load routine. Once in the DAVFU routine, all data
transferred are interpreted as tape channel data to be loaded into the
format memory. The tape channel data load is terminated upon receipt
of a DAVFU STOP code (See Table 3).

FORMAT CONTROL CODE DEFINITIONS - TABLE 2

COMMAND	8	7	6	5	4	3	2	1
TAPE CHANNEL	X	X	X	0	N3	N2	N1	N0
LINE SKIP	X	X	X	1	N3	N2	N1	N0
DAVFU START (X'1D')	0	0	0	1	1	1	0	1
DAVFU STOP (X'1E')	0	0	0	1	1	1	1	0

N3 N2 N1 N0 = 1 to 12 decimal for tape channel

N3 N2 N1 N0 = 0 to 15 decimal for line skip

TABLE 3 - VFU DATA FORMAT

One line of tape channel data (12 bits) requires the transfer
of two bytes of data from the host system. On the first byte trans-
ferred, data bits 1 through 6 represent tape channels 1 through 6.
On the second byte transferred, data bits 1 through 6 represent
tape channels 7 through 12. A one-bit in data 1
through 6 indicates a channel stop at that position (I.E., the
same as a hole being punched in the 12 channel tape).

DATA	8	7	6	5	4	3	2	1
DAVFU START CODE	0	0	0	1	1	1	0	1
FIRST BYTE	X	1	C6	C5	C4	C3	0	1
SECOND BYTE	X	1	C12	C11	C10	C9	C8	C7
FIRST BYTE } Repeated	X	1	C6	C5	C4	C3	C2	0
SECOND BYTE } as required	X	1	C12	C11	C10	C9	C8	C7
SECOND TOP	X	1	0	0	0	0	0	1
LAST BYTE	X	1	0	0	0	0	0	0
DAVFU STOP CODE	0	0	0	1	1	1	1	0

C (N) = Channel 1 through 12

3.6.2 RESTART DAVFU

While in the DAVFU load routine, the receipt of a DAVFU start code
will cause the next byte of data to be loaded into the first
location of the format memory. This gives the host system the
capability to restart the DAVFU load routine from the beginning.

The top of form (Ch 1 set) must be in the first byte after the
start load code to ensure proper operation of the DAVFU. Channel 2 must
be low in first byte or a DAVFU load error will occur.

The last byte in the VFU format (the byte just prior to the X'1E'
code) will have the TOF code set but will not be recognized as part
of the VFU format. This makes the down stream loading data format
stimulate the paper tape loading data format. All data received
after this "dummy TOF" will be ignored until the receipt of the
stop (X'1E') code.

Excess data above 126 bytes will be ignored if the "Dummy TOF" was
sent after the 126th tape data word. Sending first byte of the 127th
tape data word without receiving a Dummy TOF will cause a fault condition
which prints any data currently in buffer and deselects the printer.

3.6.3 BUFFER CLEAR (Input Prime)

While in the DAVFU load routine, should the host system send an
INPUT PRIME, all character data stored in the
printer buffer is cleared and the printer will return to the idle
routine. Printer will be Offline and will respond only to
a user SLCT code (or the local ON-LINE/OFF-LINE switch).
In this case the printer will set itself to the VFU default mode.

3.6.4 DAVFU Load Errors

The following will cause an error during the DAVFU load routine,
resulting in a VFU memory not loaded condition; printer goes off-
line FAULT line is set and error status no. displayed on control
panel:

A. The receipt of a DAVFU stop code after the transfer of an odd
    number of format data bytes. If any valid print data has been
    received prior to DAVFU load routine, it will be printed at this
    time

B. An attempt to send more than 126 tape data (252 bytes trans-
    ferred is maximum) words without specifying the end of load by
    sending the "Dummy TOF."

C. TOF (channel one set) was not set in the first byte after the
    start load code.

D. Bit 7 low while loading DAVFU data.

3.6.5 VFU Error Detection

When an error is detected, the appropriate fault status number is
stored and a carriage return is simulated. This causes any data in
the printer buffer to be printed before going off-line. The pending
fault status number will then be displayed on the control panel status
indicator and the printer will be put in an off-line and not ready con-
dition (FAULT and BUSY lines set).

3.6.6   DAVFU STOP code - Special case.

If a stop code is sent during the print data load routine, without
being immediately preceeded by a VFU load routine, the printer will
interpret the STOP code as a reorientation command (i.e., Top of Form
becomes the current line).

3.7   TCFVU DAVFU interaction

3.7.1   Once a TCVFU format is loaded into VFU memory, it can be overwritten
by a DAVFU format. Also, DAVFU format may be overwritten by another
DAVFU format or by a TCVFU format.

3.8   VFU check sum

3.8.1   After completion of a DAVFU or tape load, a check sum word is generated
and stored for later use. During on line paper motion or manual TOF/
step, a check sum word is regenerated and compared with the originally
generated check sum word. This is done for each line moved. If an
error in comparison is detected, the following will occur:

A)   Paper motion will terminate at line error was detected.

B)   The current position will be assigned Line 1.

C)   The form length will be set to 1.

D)   Any data currently stored in printer buffer will be printed and the
printer will go off line, fault, and the appropriate status will be
displayed.

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3.9   Form Length Select Switch (Optional)

3.9.1   When the optional FLS/VFU switch on the control panel is set to FLS the form
length can be selected via FLS switch settings. The following form lengths
are available at 6 or 8 lines per line.

Whole Number	Fraction
3	
4	0
5	
6	1/4
7	
8	3/4
9	
10	1/2
11	
12	2/3
13	
14	3/4

3.9.2   Depending on 6/8 LPI switch, some FLS combinations are illegal. In this con-
dition the printer alarm light will be on, and the appropriate status indica-
tion will be displayed.

3.9.3   The current status of the printer form length will be changed only when
deselected and at TOF. If the FLS switch is changed while at any line other
than TOF, the new form length will not be accepted until the control panel
TOF switch is pressed.

3.10   Self Test Mode

When the printer is placed in the self test mode, interface signals busy and
fault will be in an active state. Once the printer is selected this switch
will have no effect on printer operation. The printer will not respond to
STROBE when in the self test position. There are three self test patterns.
Flipping the self test switch to the left generates an all "H" pattern. While
in self test, flipping the switch to the center position generates a band
image pattern changing the character for each line printed. Flipping the test
switch to the right generates a shifting pattern. To return user control of
the printer, set the test switch to the center position and depress the off
line switch. The printer will again respond to user commands after it has
been selected.

3.11   Single Step Mode

To implement the single step mode of operation, S2-4 on the interface board
must be set for Print to Bottom of Form.

The status display indicator on the control panel will display normal online
status until the paper passes the lower paper out switch. Then the display
will indicate a "16" if the printer is deselected, sent printable data and a
paper move code. The printer will then print, move paper and automatically go
deselected. If printable data without a paper move code or just a paper move
code without printable data is sent the printer will not go automatic deselect,
but stay online and selected. If the printer is left online until the paper-
out condition (print to BOF) is detected without ever going offline, the on-
line status display will not indicate a "16" condition.

3.12   Status Indicator

3.12.1   Digital readouts mounted on the internally accessible control
            panel will indicate which fault occurred when the printer was
            halted.

3.12.2   Certain numbers will indicate faults that can be fixed by the
            operator. The remaining numbers require a field engineer for
            service. A decal on the printer will identify the most common
            operator correctable faults.

            01   Paper Supply Low
            02   Paper Motion Fault
            03   Band or Cover Not Locked
            04   Hammer Bank Not Closed
            05   Undefined Band Loaded
            06   Ribbon Motion Fault
            07   --Reserved--
            08   Undefined Form Length Selected
            09   No Tape in Reader
            10   VFU Memory Not Loaded
            11   Tape Reader Jam
            12   No Top of Form in Tape
            13   Tape Too Long
            14   Channel Not Found
            15   Unable to Read Tape
            16   Single Step Mode
            17   Loss of Print Sync
            18   --Reserved--
            19   --Reserved--
            20   Hung With Unprintable Data
            21   Print. Inhibit
            22   Interlock Verify
            23   --Reserved--
            24   8 Consecutive Overprints or 140 Consecutive Overprints
            25   Format Code Not Recognized
            26   DAVFU Stop Code Error
            27   DAVFU Data Transfer more than 126
            28   VFU Check Sum Error
            29   DAVFU Top of Form Load Error
            30   Bad VFU Memory
            31   DAVFU Data Load Error
            32   US Code Received While in FLS Mode
            33   --Reserved--
            34   --Reserved--
            35   --Reserved--
            36   --Reserved--
            37   --Reserved--
            38   --Reserved--
            39   --Reserved--

        40   Band Speed Fault
        41   Paper Drive System Fault
        42   Odd Hammer System Fault
        43   Even Hammer System Fault (B-600 only)
        44   12 Volt Fault
        45   -9 Volt Fault
        46   VCL Fault
        47   38 Volt Fault
        48   Transducer Fault
        49   Band Current Fault
        50   System Status Fault
        51   --Reserved--

        65   --Reserved--
        66   Self Test Mode, Print Inhibit
        67   Self Test Mode
        68   --Reserved--

        75   --Reserved--
        76   On Line, Print Inhibit
        77   On Line
        78   --Reserved--

        85   --Reserved--
        87   --Reserved--
        88   Off Line
        89   --Reserved--

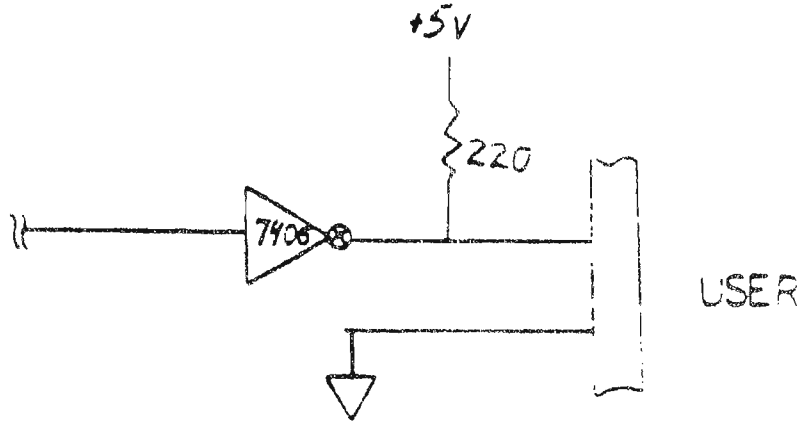   95   --Reserved--
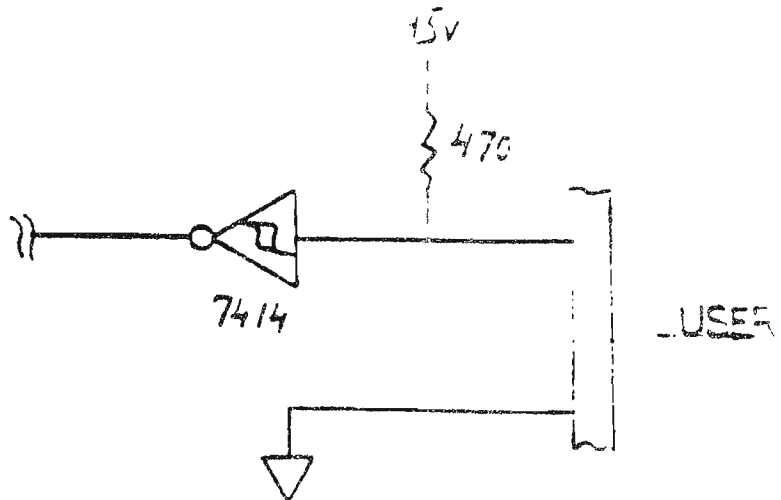   99   --Reserved--

        P   Power Fault

        H   Over Temp.

        C   Clock Fault

FIGURE I

PARALLEL INTERFACE HARDWARE - SHORT LINE

TRANSMITTER

RECEIVER

FIGURE 2. SELECT TIMING VIA LOCAL ON LINE SWITCH

-SYS RES

BUSY

SLCT

ACK

STROBE

⟨—— A ——⟩

⟨—— B ——⟩
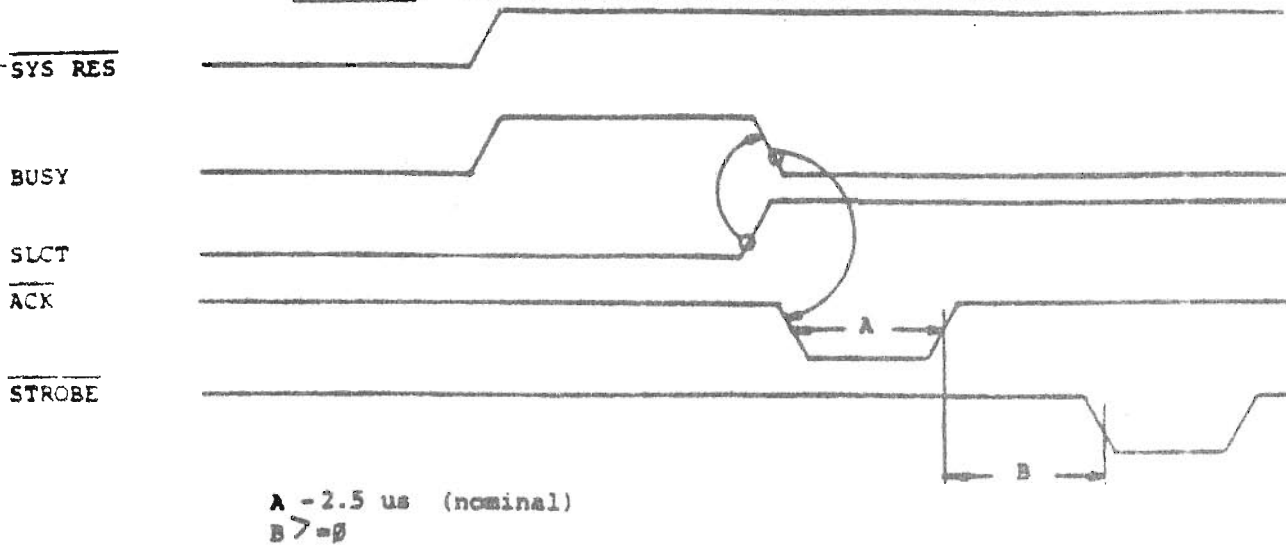
A - 2.5 us (nominal)
B > =∅

FIGURE 3. SELECT TIMING VIA DATA BUS

SYSRES

FAULT

BUSY

SLCT

STROBE

ACK

DATA ∅ - 7

0.5 us min.
1.0 us max

2.5 us

2.5 us

| DATA NOT VALID | SELECT CODE X'11' | DATA NOT VALID |

2.0 us.max
1.5 us.min.
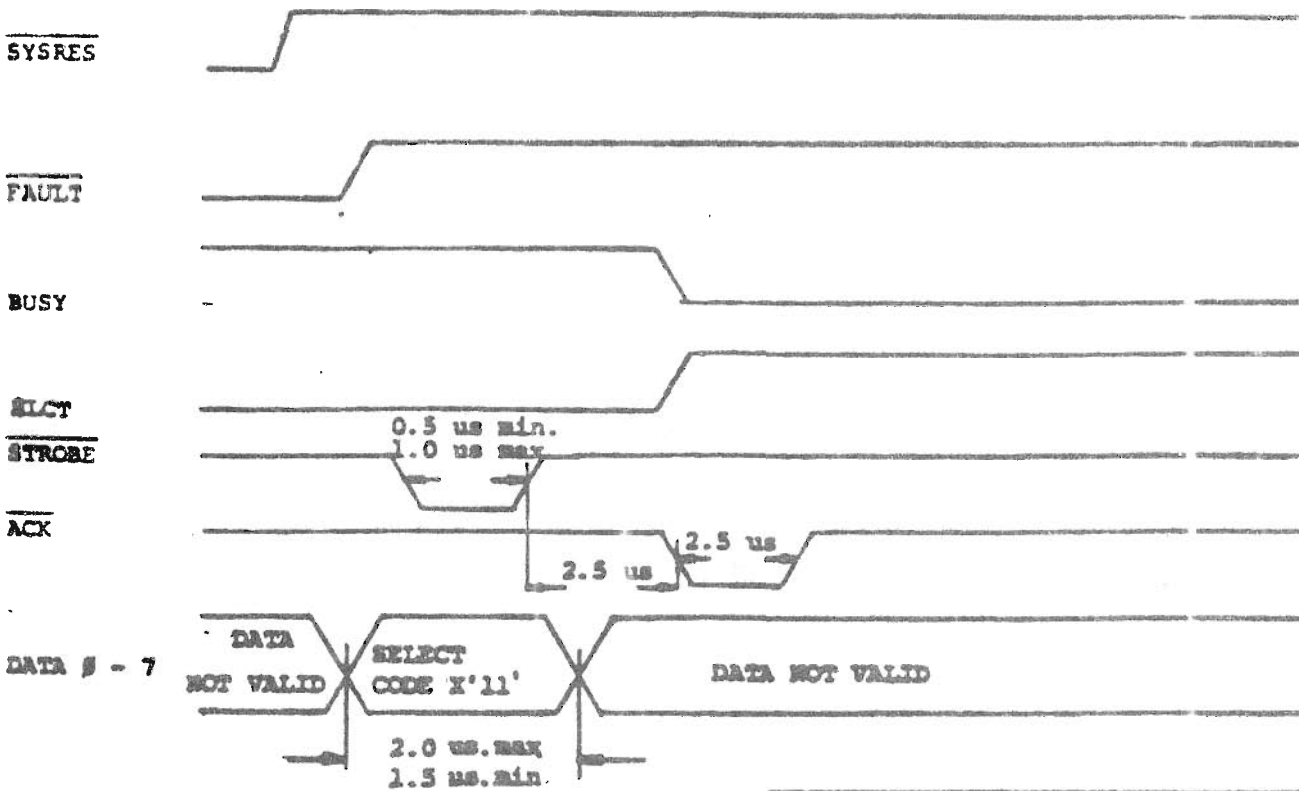
FIGURE 4. DATA TRANSFER TIMING WITHOUT BUSY
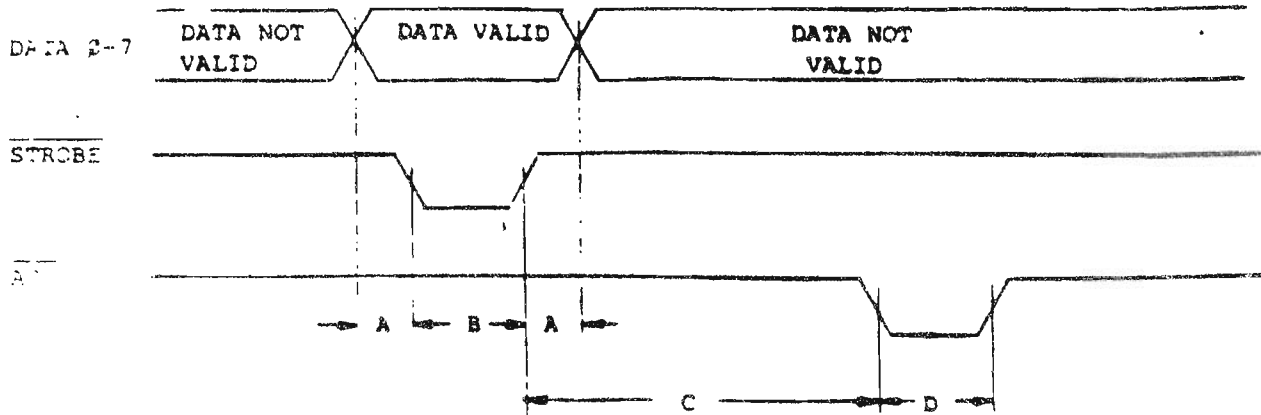
A - Data Setup, Data Hold - 0.5 us. (min)

B - Strobe Duration - 1 us. (max), 0.5 us. (min)

C - Acknowledge Delay - 2.5 us. (nominal)
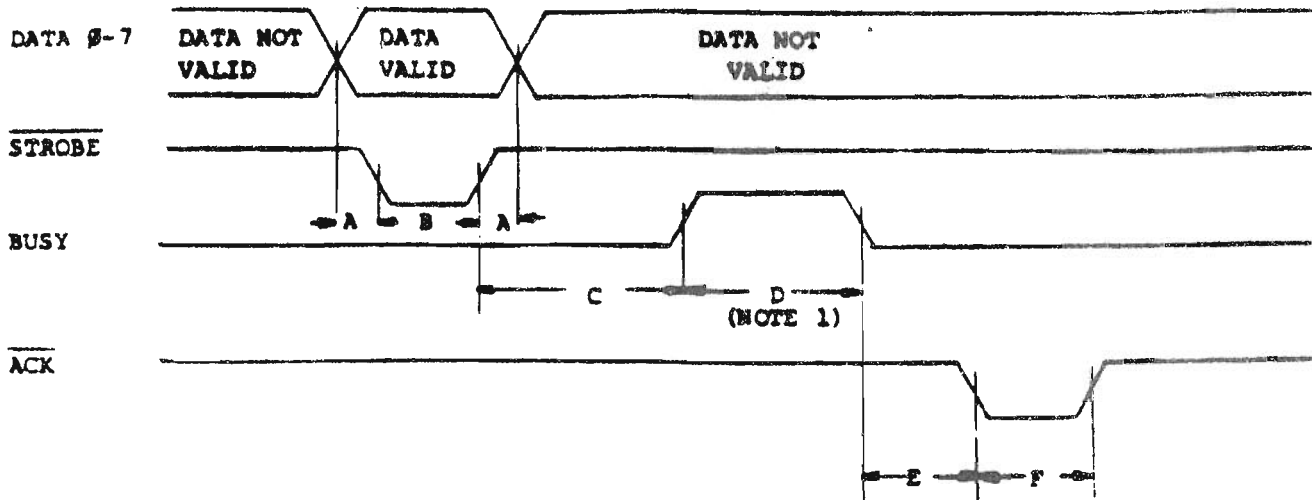
D - Acknowledge Duration - 2.5 us. (nominal)

FIGURE 5. DESELECT TIMING VIA LOCAL ON/OFF LINE SWITCH
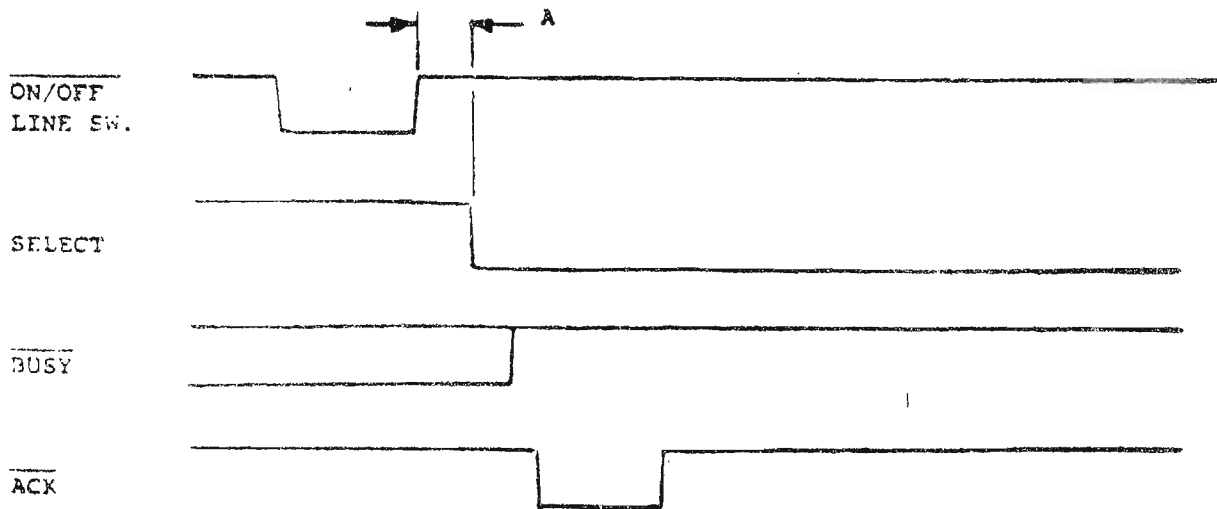
A. May include print and/or paper motion time.

Figure 6. Data Transfer Timing with Busy


A - Data Setup, Data Hold 0.5 us. (min)

B - Strobe Duration - 1 us.(Max.) 0.5 us.(Min)

C - Strobe False to Busy True - 0-100 ns.

D - Busy Duration - Dependent on Function performed

E - Busy False to Acknowledge True - 0-350 ns.

F - Acknowledge Duration - 2.5 us. (nominal)

Note 1. For print and paper-handling specifications
consult B-300 Field Maintenance Guide

DRAWING NO.	REV.
251981	B
SHEET 23 OF 27 SHEETS	

FIGURE 7. INPUT PRINT TIMING
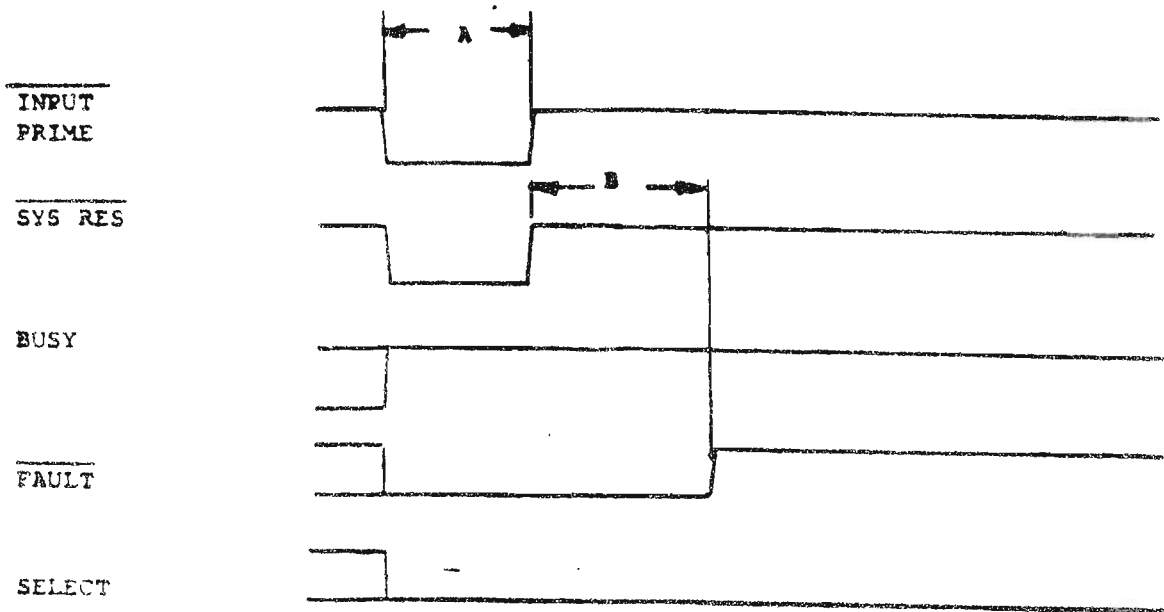
A. $\Rightarrow$ 40 msec

B. Printer initialize $\approx$ 2 sec.

TABLE 4 - VALID INPUT DATA, B-300

HEX CODE	FUNCTION	CAUSES BUSY	DESCRIPTION
OA	LF	YES	-Paper advances one line (line-feed)
OB	VT	YES	-Skip to Channel 2 (vertical Sub)
OC	FF	YES	-Skip to Channel 1 - Top of Form
OD	CR	YES	-End line of data - initiate print cycle (carriage return)
11	(DC1)	NO	-Remote select printer
13	(DC3)	YES	-Remote deselect printer
1D	GS	YES	-Start load DAVFU
1E	RS	YES	-Stop load DAVFU
1F	US	YES	-Indicates VFU data will follow
20 ↓ 7E	USASCII	NO (Unless input buffer full	-ASCII will be printed if within the legal character-set of the currently loaded band, otherwise a space will replace the illegal code.
7F	DEL	YES	-Clears print buffer

NOTE: Any code received by the printer that is <u>not</u> in this table will be be treated as a NOP, i.e. - will be acknowledged but will not initiate any function or a busy condition (will not move print buffer pointer).

TABLE 5 - CENTRONIC SWITCH CONFIGURATION

Interpret: X - Don't care (not used)

On - Switch closed

Off - switch opened

The B-300 Interface Board includes 4 8-switch configurators. Table 5 describes the mandatory and optional switch settings within the context of the Centronics Interface.

S1-1   X

S1-2   X

S1-3   On- Data 8 disable (7 line interface)

Off - Data 8 enable (8 line interface)

S1-4   On - INPUT PRIME enabled

Off - INPUT PRIME inhibit

S1-5   X

S1-6   X

S1-7   X

S1-8   X

S2-3	S2-2	Skip No. of Lines
Off	Off	3 lines skipover
Off	On	0 lines skipover
On	Off	6 lines skipover
On	On	4 lines skipover

S2-1   On - CR code treated as a line-feed but allows printing.

Off - CR code treated as a "normal" carriage-return.

S2-2   — Default Skip Over 2^0

S2-3   — Default Skip Over 2^1

S2-4   On - Stop printing on Paper-Out switch.

Off - Print to bottom of form ① after detection of Paper-Out switch then stop printing.

S2-5   On - Line feed on full buffer

Off - No line feed on full buffer

S2-6   On - Default to 12 inch form

Off - Default to 11 inch form

S2-7   On - DELete enabled

Off - DELete disabled

S2-8   On - Enable 140 C.R. Count

Off - Enable 8 C.R. count

① See page 27 for definition of bottom of form.

TABLE 5 (continued)

S3-1   On - VFU Skipover enabled ②

       Off - VFU Skipover disabled ②

S3-2   On - Print on paper feed (LF, FF, VT) command

       Off - No print on P.F. command

S3-3   On - Enable double space on L.F. or step switch

       Off - disable double space on L.F. or step switch

S3-4   X

S3-5   On - Tape read available

       Off - Tape read not available

S3-6   X

S3-7   X

S3-8   X

S4-1   X

S4-2   X

S4-3   X

S4-4   X

S4-5   On - Step-count Truncate enabled

       Off - Step-count Truncate disabled

S4-6   X

S4-7   X

S4-8   X

② The definition of bottom of form for the Centronics interface is different than that of the standard B-300 operation and affects Print to Bottom of Form and Skipover options. For the Centronics interface, bottom of form is defined as the line following the last printable line of the page. Thus, no printing on this line will occur.