INTEGRATED SYNCHRONOUS "DATASPEED*" 40
RECEIVE-ONLY PRINTER (ROP) STATION
INSTALLATION

1. GENERAL

1.01 This section contains information for installing the Integrated Synchronous DATASPEED 40 Receive-Only Printer (ROP) Station. The Integrated Synchronous ROP is used in the following services: (2) Switched-Network using Data Set 201C, 208B or 212A, (2) Multipoint Private Line using Data Set 201C, 208A or 209A; and (3) Two-Point Nonselective Private Line (point-to-point private line) using Data Set 201C, 208A or 209A.

1.02 This section is reissued to include Option 179 (WACK/BUFFER Control) and information pertaining to Data Set 212 and forms access arrangements. Since this is a general revision, no revision arrows have been used to denote significant changes.

Note: When ordering tools or replaceable components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP406173).

1.03 Circuit Card Handling Procedures:

Warning: To avoid possible internal damage to the MOS devices, or card with MOS devices, due to electrical static discharge by service personnel, the following should be observed. All personnel handling MOS devices, or circuit cards with MOS devices, must wear a 346392 static discharge strap adjusted to make firm contact with the skin at all times† (Fig. 1).

† Service personnel are <u>never</u> to be connected directly to ground but rather through a high resistance discharge path of a minimum of one megohm where 115 V ac is present. This resistance is built into the 346392 static discharge strap.
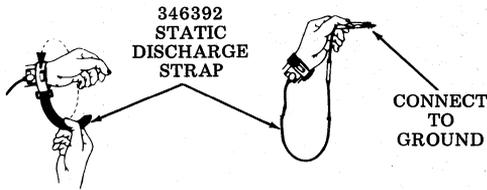
Fig. 1—346392 Static Discharge Strap

1.04 Data set options are given in this section but other information on data set installation (such as connections) must be obtained by reference to the appropriate BSP section, which is referenced for each data set.

1.05 The printer used in the integrated controller station may be an 80- or 132-column printer.

1.06 Tools and Supplies: The following tools and supplies may be required for installation or servicing of DATASPEED 40 ROP with integrated synchronous controller.

(a) Tools

*Wrench	3/16" socket	125752
Wrench, open end	3/8"	125765
Wrench, open end	3/16" and 1/4"	129534
Wrench, open end	5/16" and 3/8"	152835
Wrench, open end	3/4"	129537
Nut driver handle		135676
Nut driver bit	1/4"	135677
Nut driver bit	5/16"	135678
*Screwdriver	1/8", 2" blade	95368
Screwdriver	1/4", 6" blade	100982
Screwdriver	(Blade less than 5/32")	94647
*Wrench, Allen	0.062	124682
*Tweezers		151392
*Spring hook (pull)		142554
*Spring hook (pull)		75765
*Spring hook (push)		75503
*Scale	6"	95960
*Scale, spring	8 oz	110443
*Scale, spring	32 oz	110444
Pliers, long nose		108285
Pliers, retaining ring		160396
Extractor, keyswitch		346257
Extractor, keytop		346260
Extractor, terminal		182697
Extractor, terminal		341983
Extractor, terminal		402840
Gauge adjusting — 80-column printer		402617
Gauge, left — 132-column printer		402716
Gauge, right — 132-column printer		402717
Gauge, backup bar — 80- and 132-column printers		402868
Gauge, type pallet depth — 80- and 132-column printers		402878
Pliers, sidecutters w/insulated handles		408071 (Klein D219-4C or equivalent)
Test Cord — 132-column printer		402779
Printer Test Assembly		408646
Test Cable		408648
Test Cable		408650

*Part of 113778 universal tool kit.

(a)   Tools (Cont)

Interlock Strapping Plug — 80-column printer	402782
Static Ground Strap	346392
Cleaning brush, type face	151394
Power Test Cord	402871
Soldering Iron, Weller Model W-MCP-750 with MP2C Tip or equivalent	
Desoldering Tool EDSYN Model MMS005 Soldapult® or equivalent	
Bag, Anti-Static (Printer Circuit Card)	406260

(b)   Supplies

Grease: 143484 (Mobil No. 2, 1 lb can)
145867 (Mobil No. 2, 4 oz tube)
TKS 103 (Beacon 325, 5 lb can)

Oil: KS-7470

Degreaser: Freon (TF) 337449 (6 oz can)

Ribbon: 402444 or approved equivalent

2.   TECHNICAL DATA

2.01   Power Source Requirements: 115 V ac ± 10% ac at 60 Hz ±0.5 Hz or 50 Hz ±0.5 Hz from an unswitched standard 3-wire grounding type receptacle located within 8 feet of the ROP set location. One additional receptacle is required for data set except when terminal includes pedestal equipped with 7-receptacle convenience strip.

2.02   Maximum In Rush Current: 20 Amp not exceeding 3 cycles at nominal 115 V ac input.

2.03   Operating Power Consumption and Heat Generation at nominal 115 V ac input.

Component	Current	Power	Heat
Integrated Synchronous ROP Set (motor OFF)	1.0 Amp	115 VA	392 BTU
Integrated Synchronous ROP Set (motor ON)	2.0 Amps	230 VA	784 BTU

Note: The ROP power supply was designed to supply power for the set configurations described in this section. Power should not be used for any other purpose without first considering the limitations of the power supply.

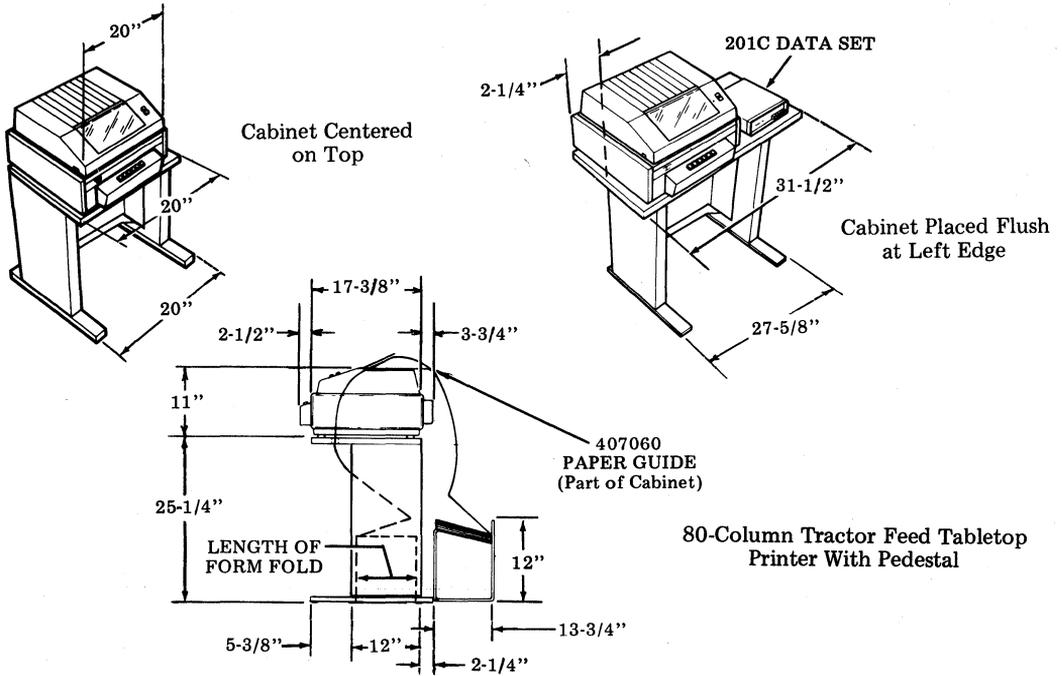2.04   Environmental Restrictions (operating):

Ambient Temperature . . . . +40°F to +110°F
Relative Humidity . . . 2% to 95% (noncondensing)
Altitude . . . . Sea level to 10,000 feet

2.05   Weight (approximate) Unpacked:

80-Column Tractor Feed Printer Unit . . . . . 41 lbs
80-Column Tractor Feed Printer Cabinet . . 43 lbs
132-Column Tractor Feed Printer Unit . . . . 56 lbs
132-Column Tractor Feed
Printer Cabinet . . . . 53 lbs
Forms Access Printer Cabinet . . . . 111 lbs
Pedestal . . . . approximately 56 lbs
Data Set . . . . . Up to 14 lbs (dependent on type)

2. TECHNICAL DATA (Cont)

2.06 Dimensions

20"

Cabinet Centered
on Top

20"

20"

2-1/4"

201C DATA SET

31-1/2"

Cabinet Placed Flush
at Left Edge

27-5/8"

17-3/8"

2-1/2"

3-3/4"

11"

25-1/4"

407060
PAPER GUIDE
(Part of Cabinet)

LENGTH OF
FORM FOLD

12"

5-3/8"

12"

13-3/4"

2-1/4"

80-Column Tractor Feed Tabletop
Printer With Pedestal

Note: The 132-column tractor feed printer dimensions are similar to those for the 80-column tractor feed printer except that the width is 27-5/8 inches instead of 20 inches. A 407061 paper guide is furnished with each cabinet. The pedestals shown are typical. They are not part of the set USOC. Three widths of pedestals are available: 20 inch without door, 27-5/8 inch without door and 24-1/2 inch with door. Tops for the pedestals come in a variety of widths except that the 20 inch pedestal comes with a 20 inch wide top (with 11 inch slot) only.
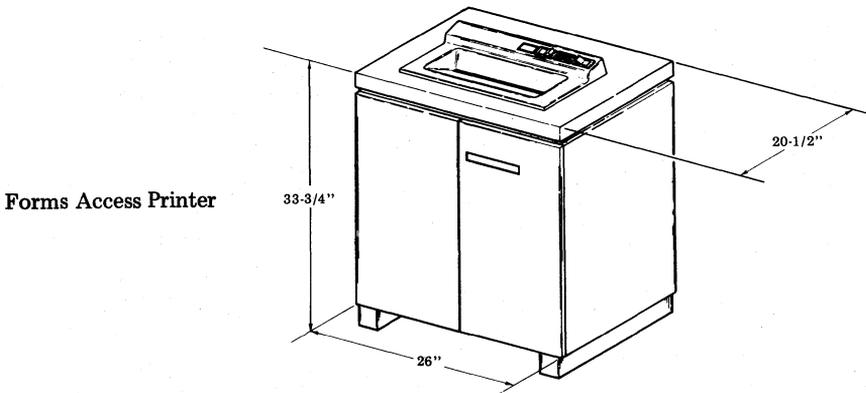
Forms Access Printer

33-3/4"

20-1/2"

26"

Fig. 2—Integrated ROP Station Dimensions

2.07   Customer Provided Tables: When a pedestal with a slotted top is not specified for use with the tabletop tractor feed printer, the following provisions must be observed to allow for paper handling:

(a)   An opening in the printer cabinet mounting surface sufficient to allow the paper to pass up through the printer in the location shown in Fig. 3.

Typical Cutout Location
in Table Top
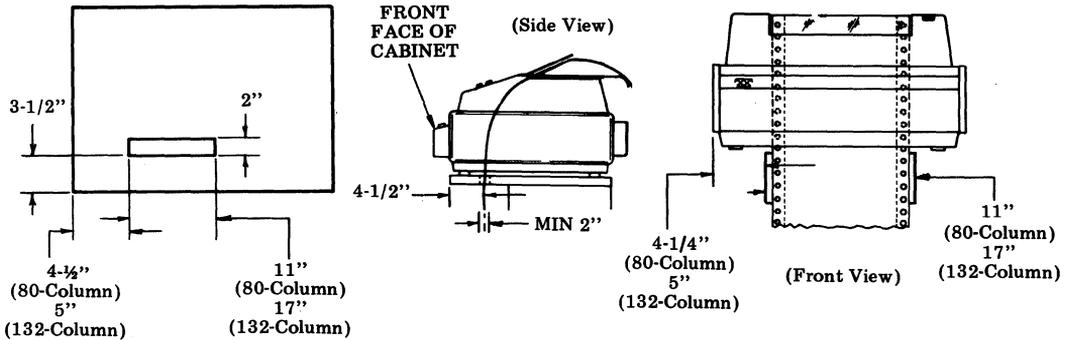
Note: Printer cabinet assumed mounted flush with front and left edge of table top.

Fig. 3--Paper Opening Requirements for Customer-Provided Tables

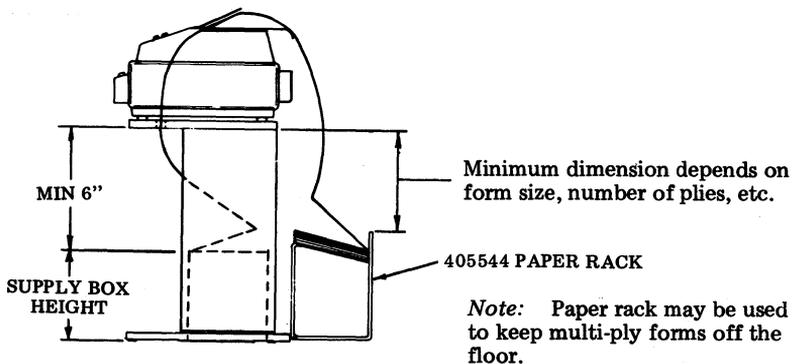(b)   Sufficient height of mounting to allow paper insertion and accumulation (Fig. 4).

Fig. 4—Height Requirements for Customer-Provided Tables

3. UNPACKING

3.01 Before unpacking the cartons, confirm the customer order with the unit codes marked on the cartons.

3.02 Be sure to observe all safety precautions in lifting the cartons, etc. Safety glasses should be worn during installation. Read all unpacking instructions marked on the cartons.

3.03 For field installation, the integrated ROP may be shipped from the Service Center in the original shipping cartons. Units without pedestals are shipped in two cartons, one for the printer and the other for the cabinet (including the controller). For units with pedestals, two additional cartons are shipped, one for the pedestal base and the other for the pedestal top.

3.04 The cabinet should be unpacked before the printer so that the printer can be placed on it.

PEDESTAL

3.05 Carefully trim carton containing pedestal upside down and cut tape. Fold carton flaps out (Fig. 5).
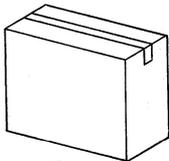

Fig. 5—Pedestal Carton

3.06 Turn carton and its contents upright. Lift carton up and off of pedestal (Fig. 6).
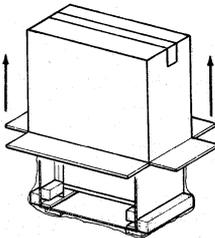

Fig. 6—Pedestal Carton Lifted Up

3.07 Remove tape and packing details (Fig. 7). Place pedestal in position where it is to be located.
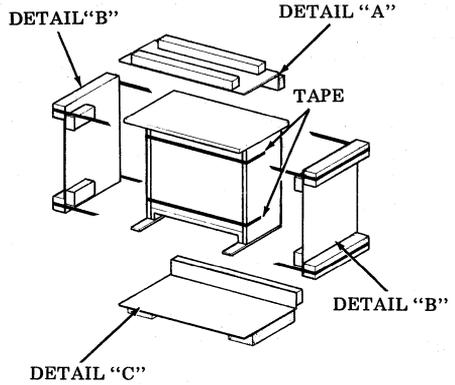

Fig. 7—Typical Packing Details and Pedestal

TRACTOR FEED PRINTER CABINET
(With Opcon)

3.08 Turn carton bottom upside down. Cut tape and open bottom flaps outward. Return box and contents to upright position, keeping bottom flaps folded out (Fig. 8).
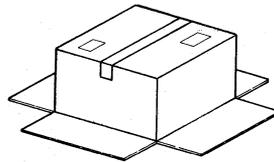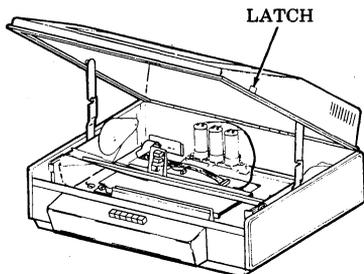

Fig. 8—Printer Carton

3.09 Lift carton off and remove plastic details from around cabinet. Remove bag covering cabinet. Remove bag containing keytops and set aside for possible later use.

3.10   Open printer cabinet by depressing latches on both sides of cover and lifting up (Fig. 9). Remove paper guide stored inside of cabinet.

Note: The integrated synchronous controller mounting hardware and the controller will come assembled in the cabinet.

Fig. 9—Printer Cabinet

3.11   Close cover and snap paper guide into position (Fig. 10).

Fig. 10—Paper Guide

FORMS ACCESS PRINTER CABINET
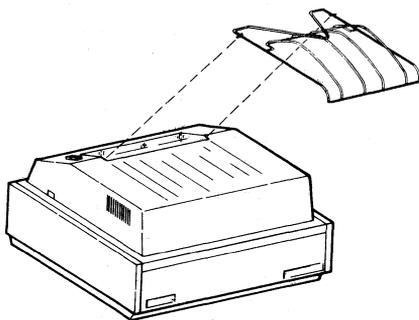
3.12   Remove steel strap from bottom of carton. Fold carton flaps outward (Fig. 11).
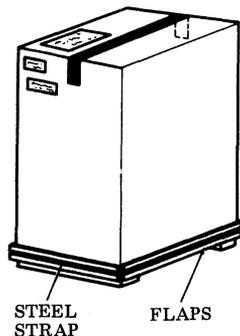

Fig. 11—Forms Access Printer Cabinet Carton

3.13   Lift carton up and off of forms access printer cabinet. Remove plastic bag covering cabinet. Remove tape, packing details A, B, C and D and plastic bag from bottom of cabinet (Fig. 12).
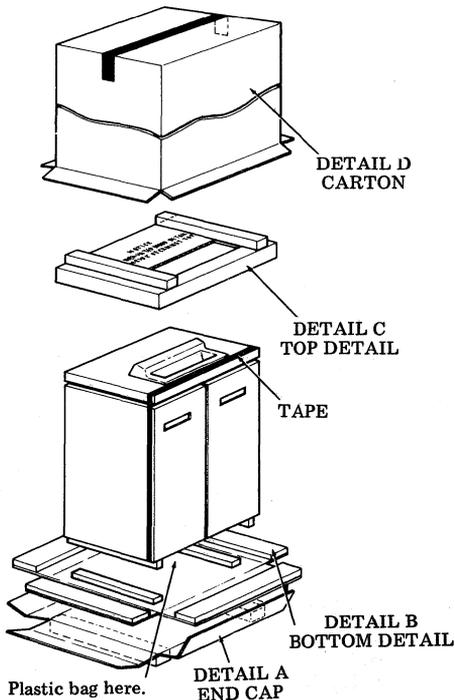

Fig. 12—Forms Access Printer Cabinet Carton Lifted Up

3.14   Open front doors (left first) and depress latch button, open cabinet top and remove two screws and wood detail. (Fig. 13).
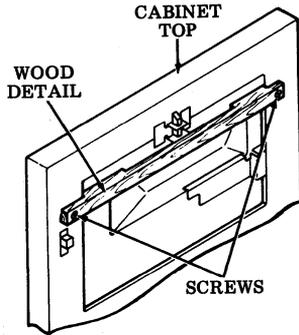

Fig. 13—Forms Access Printer Cabinet Top

PRINTER

3.15   Refer to Section 582-210-200 for unpacking instructions.

4.   PREOPTIONING DISASSEMBLY

4.01   The integrated synchronous ROP should be optioned per the customer order at the Service Center. However, it may be necessary to change options per customer request or because of option incompatibility, at the time of installation.

4.02   The controller is shipped in the printer cabinet and must be removed from the cabinet in order to do any optioning of it.

4.03   To remove controller:

Note: Refer to 1.03 for controller handling procedures.

Tabletop Arrangement

(a)   Loosen nut at each end of paper guide (Fig. 4).

Fig. 14—Controller Removal

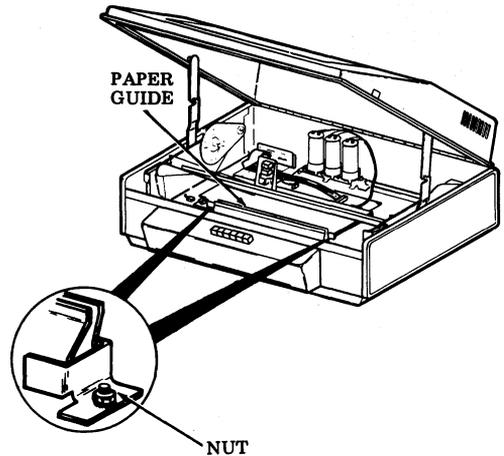(b)   Slide paper guide to left, raising right end to clear the nut; slide paper guide to right and remove.

(c)   Unplug P3, P5, P6 and P21 connectors from the circuit card (Fig. 15).

(d)   Slide controller circuit card forward, tilt up and remove. Use care to avoid snagging circuit components or option switches on the rear edge of the printer cradle.
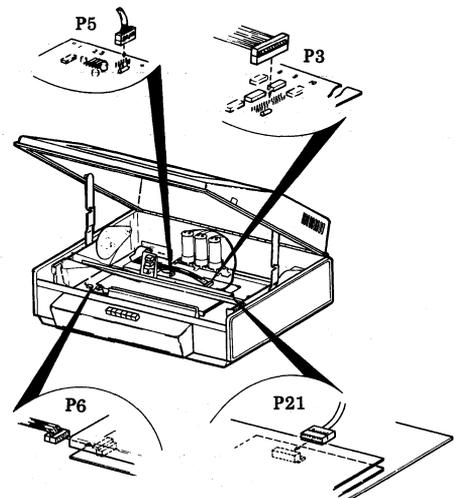

Fig. 15—P3, P5, P6 and P21 Connectors

Forms Access Printer

(a) Loosen four screws securing controller cover to inside of forms access printer cabinet approximately two turns (Fig. 16).
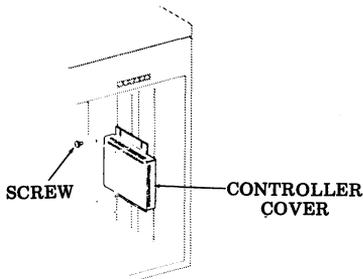
Fig. 16—Controller Removal

(b) Slide controller cover up to limits of upper controller cover slots. Disengage controller cover from lower screws, slide cover down to disengage from upper screws.

(c) Unplug connectors P3, P5, P6 and P21 (Fig. 17).
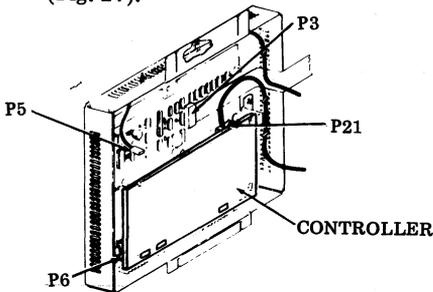
Fig. 17—Controller Connectors

(d) Remove four screws securing the two brackets that hold the controller in place (Fig. 18).
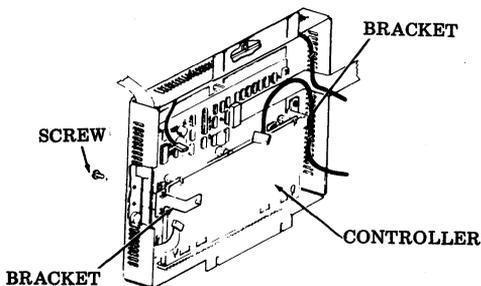
Fig. 18—Removal of Controller

(e) Remove controller from controller cover.

4.04 To option the 410734 diode matrix circuit card (Fig. 20), the card must be separated from the 410733 controller card assembly.

4.05 To remove 410734 diode matrix circuit card:

Reminder: Ground yourself before handling the controller assembly, as discussed in 1.03.

(a) Remove cover plate by loosening four screws (Fig. 19) and sliding cover to clear screws then lift off.
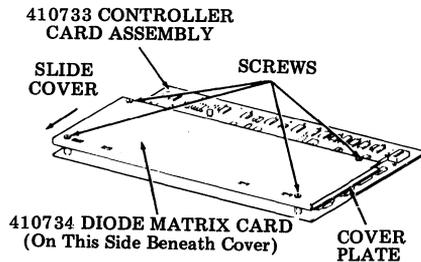
Fig. 19—40C303AC/003 Controller

(b) Remove two screws (loosened in (a)) securing the 410734 diode matrix card (see Fig. 19). Slide card outward until free of center posts. Fold card outward using connecting cable as hinge.

(c) Unplug connector from 410734 diode matrix card (Fig. 20).
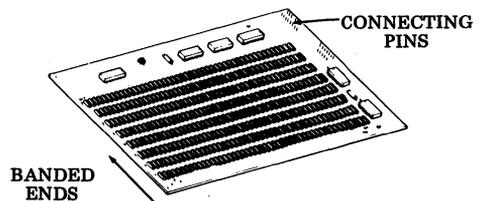
Fig. 20—410734 Diode Matrix Circuit Card

4.06 Printer option switches are accessible through cutouts in the bottom cover of the unit.

5. FIELD OPTIONS AND DESCRIPTIONS

5.01 Certain options are selected by setting miniature rocker/toggle switches on the 410071 or 410072 printer circuit card or on the 410733 circuit card of the 40C303AC/003 controller. Other options are implemented by cutting and removing diodes from the 410734 diode matrix circuit card of the controller.

5.02 Controller options are listed and briefly described on Pages 13 through 21. Options marked with an asterisk (*) are installed at the factory. Data set options are provided on Pages 59 through 63.

5.03 Options other than those shown as factory installed (*) may be specified for a particular installation. The Station Features and Option Record on the W-Plan should accurately reflect Service Center or field selection of options. Instructions for selecting and recording options are contained on Pages 22 through 58.

5.04 Numbers assigned to field options are used consistently in all field publications. Options should always be referred to by these numbers.

PRINTER OPTIONS

OPTION NO.	DESCRIPTION	ACTION

1 through 16 not present.

17. <u>Printer Margin and Form Width</u>

a.*	First Printed Column — Column 1	
b.2.	First Printed Column — Column 2	
b.3.	First Printed Column — Column 3	
b.4.	First Printed Column — Column 4	
b.5.	First Printed Column — Column 5	
b.6.	First Printed Column — Column 6	
b.7.	First Printed Column — Column 7	Choose a.
b.8.	First Printed Column — Column 8	
b.9.	First Printed Column — Column 9	
b.10.	First Printed Column — Column 10	
b.11.	First Printed Column — Column 11	
b.12.	First Printed Column — Column 12	
b.13.	First Printed Column — Column 13	
c.*	Last Character on 80th Column	
d.79.	Last Character on 79th Column	
d.78.	Last Character on 78th Column	
d.77.	Last Character on 77th Column	
	etc.	
d.25.	Last Character on 25th Column	Choose c or e appropriate
e.*	Last Character on 132nd Column	to printer ordered (80- or
f.131.	Last Character on 131st Column	132-column).
f.130.	Last Character on 130th Column	
f.129.	Last Character on 129th Column	
	etc.	
f.73.	Last Character on 73rd Column	

Note: Options c and d79 through d25 apply to 80-column printers only. Options e and f131 through f73 apply to 132-column printers only.

OPTION NO.	DESCRIPTION	ACTION

18.   Printer Paper Feedout

a.   No Paper Feedout
b.   Paper Feedout on Data Set Ready (CC)
       Loss — Up to 16 Lines or Form Feed   Choose a or b.
c.*   Paper Feedout on Both Data Set Ready (CC)
       Loss and ETX — Up to 16 Lines or Form Feed

Note: "Data Set Ready (CC) Loss" assumes that data set operation
is used; the actual controlling SSI signal is loss of Receive Message.
The feedout will be up to 16 lines only if Option 39.b.(Forms Switch
off) is selected; if Option 39.a.(Forms Switch on) is selected, the
printer will feed out paper to the next form feed position. Tractor
feed printers using Option 39.b. should normally use Option 18.a.
since the 16-line feedout will be shortened whenever end of form
occurs before the 16 lines are up.

19.   Printer Errored Character Symbol

a.*   Printed on Even Parity Error   Choose a or c,
b.   Printed on Odd Parity Error   Note 1.
c.   Not Printed on Parity Error
d.   Printers With 96-Character Set
e.   Printers With 64-Character Set   Choose one to
f.   Printers With Extended ASCII Character Set match type
g.   Printers With Longest Character Set Having Less Than   carrier ordered.
       64 Characters

Note 1:   The integrated controller transmits even parity characters
to the printer.

Note 2:   Option switches for Options d, e and g must be set to
reflect longest character set (f is for future use).

20.   Line Feed on Printer

a.*   Single   Choose one.
b.   Double

Note: This option is operator-selectable.

21.   Foldover on Up-Low Printer

a.*   Lower Case and Upper Case Print
b.   Lower Case Prints as Upper Case
                                                   Choose one to
22.   Foldover on Monocase Printer   match type
                                                   carrier ordered.
a.   Lower Case Prints as Error Symbol
b.*   Lower Case Prints as Upper Case

OPTION NO.	DESCRIPTION	ACTION

23. Extended ASCII on Printer (Extended ASCII)

  a.   Prints Extended ASCII Characters (No Parity Checks)   Choose b.
  b.*   Does Not Print Extended ASCII Characters

24. — 38. Not Present

39. Forms

  a.   On   Choose one.
  b.*   Off

  Note: This option is operator-selectable.

40. — 47. Not Present

48. Incomplete Form Suppresses Paper Alarm

  a.   No (Paper-Out Not Gated With Form-Out)   Choose one.
  b.*   Yes (Paper-Out Gated With Form-Out)

49. — 53. Not Present

54. Printing of Escape Sequences Suppressed

  a.*   Character after ESC Printed as Received   See Note.
  b.   Printing of Character After ESC Suppressed

  Note: This option does not apply to the Integrated Synchronous ROP Terminal. Either option may be chosen without affecting operation.

55. Shift-In/Shift-Out (SI/SO) Detection

  a.*   SI/SO Detection Not Used   See Note.
  b.   SI/SO Detection Enables Printing Additional Characters

  Note: This option does not apply to the Integrated Synchronous ROP Terminal. Either option may be chosen without affecting operation.

56. Not Present

57. SSI/OEM Interface

  a.*   SSI   Choose a.
  b.   OEM

OPTION NO.	DESCRIPTION	ACTION

58. Idle Line Motor Control

  a.*   Disabled — Motor Held On Indefinitely During Idle Line
  b.   Enabled — Motor Turned Off After 40-Second Idle Line   Choose a.

59. Does not apply. This option does not affect the operations of the Integrated Synchronous ROP when Option 57.a. is chosen.

60. Auxiliary Alarm

  a.   Enable
  b.*   Disable   Choose b.

Note: Future alarm mechanism. Select Option 60.b. when alarm mechanism is not present.

61. Regulator Grounding (Circuit Ground to Frame Ground)

  a.   SSI
  b.*   (OEM) at Printer   Choose c.
  c.   (OEM) External to Printer

CONTROLLER OPTIONS

101. Not applicable — see Options 189.a. and 190.a.

102.–120. Not Present

121. Left Margin Setting

  a.*   Left Margin at Column 1   Choose one; if b, specify left margin setting required by column number.
  b.   Left Margin Begins at Any Column from 2 Up

122. Horizontal Tabulation Settings

  a.*   No Horizontal Tab Settings   Choose one; if b, specify tab settings required by column numbers.
  b.   Preprogrammed Tab Settings in Any Column From 1-80 (80-column printer) or 1-132 (132-column printer)

Note: If compatibility with on-line tabs is required, the last setting on the line (column 80 or 132, depending on the printer selected) must be specified. This assures that a tab beyond the last enabled tab stop will cause the next character to be printed in the last column position and the character following that to be printed in the first character position of the next line (as selected by the left margin option, if used). (If the last setting on the line is not specified and a tab is received after the last tab stop, the next character received will be printed on the first character position of the next line).

OPTION NO.	DESCRIPTION	ACTION

123.   Vertical Tabulation Settings

    a.   No Vertical Tab Settings
    b.   Not Present
    c.   1st Vertical Tab Line (ESC A)
    d.   2nd Vertical Tab Line (ESC B)
    e.   3rd Vertical Tab Line (ESC C)
    f.   4th Vertical Tab Line (ESC D)
    g.   5th Vertical Tab Line (ESC E)   Choose one.
    h.   6th Vertical Tab Line (ESC F)
    i.   7th Vertical Tab Line (ESC G)
    j.   8th Vertical Tab Line (ESC H)
    k.   9th Vertical Tab Line (ESC I)
    l.   10th Vertical Tab Line (ESC J)
    m.   11th Vertical Tab Line (ESC K)
    n.   12th Vertical Tab Line (ESC L)

Note: Care must be taken not to select vertical tab settings which carry the printer beyond the form feed position. Option 20.b.(double line feed), if selected, will cause all vertical tab settings to be double those shown.

124.   Not Present

125.   Type of Printer Used

    a.*   80-Column Printer   Choose one to
    b.   132-Column Printer   match printer ordered.

126.—130.   Not Present

131.   Left Margin

    a.*   Left Margin Begins at Column 1, Regardless of Programming of Options 121 and 122.   Choose one.
    b.   Left Margin Begins as Programmed in Option 121.

Note: b requires Option 17.c. or .e.

132.—147.   Not Present

148.   Motor Turn Off Delay

    a.*   Minimum Delay — Motor turns off approximately 30 seconds after buffer empties.   Choose one.
    b.   Maximum Delay — Motor turns off approximately 3 minutes after buffer empties.

149.—158.   Not Present

OPTION NO.	DESCRIPTION	ACTION

159.   Variable Characters for System Operation

    a.   Programmable Character 1 (Notes 1, 3, 4)
    b.   Programmable Character 2 (Notes 1, 2, 5)
    c.   Programmable Character 3 (Notes 2, 5, 6, 10)
    d.   Programmable Character 4 (Notes 2, 6, 10)
    e.   Programmable Character 5 (Note 7)
    f.   Programmable Character 6 (Notes 2, 8)
    g.   Programmable Character 7 (Notes 2, 9, 10)
    h.   DLE Character
    i.   ZERO Character
    j.   ONE Character
    k.   EOT Character
    l.   NAK Character
    m.   ENQ Character
    n.   Future Use

Choose a character for each position except as noted (Notes 4, 5, 6, 7, 8 and 9).

Note 1:   The characters encoded for Options 159.a. and .b. to represent the α characters (selections and replies) in Options 171.d. and .g. must be programmed using upper case letters. The equivalent letters when received in lower case will be recognized as part of the selection sequence. When used as upper case they will result in an EOT reply. Use of upper case characters is reserved for future use.

Note 2:   Characters encoded for Options 159.b., .c., .d., .f., and g to represent the # or DC_n characters in Options 171.a., .c., .e., .g. and .h. must be programmed exactly as they will be received. Numeric characters may be used in addition to letters for device selection only.

Note 3:   The character encoded for Option 159.a. to represent the α character in Option 171.c. must be programmed exactly as it will be received.

Note 4:   Option 159.a. must be encoded if Option 171.c., .d., .e., .f., .g., or .h. and should be left uncoded if Option 171.a. or .b. is enabled.

Note 5:   Option 159.b. must be encoded if Option 171.c., .d., .e., .f., .g., or .h. is enabled. Option 159.b. should be left uncoded if Option 171.a. or .b. is enabled. Option 159.b. is normally coded the same as Option 159.a. when Option 171.d., .e., .f., .g. or .h. is enabled.

Note 6:   Options 159.c. and .d. may be left uncoded if Option 171.c. is enabled and must be left uncoded if 171.a., .b., .d., .e., .f. or .g. is enabled. They must be encoded if Option 171.h. is enabled.

Note 7:   Option 159.e. must be encoded if Option 171.h. is enabled and uncoded if Option 171.a., .b., .c., .d., .e., .f. or .g. is enabled.

Note 8:   Option 159.f. must be encoded for Option 171.a., .e., .g. and .h.. It must be uncoded when Option 171.b., .c., .d. or .f. is enabled.

Note 9:   Option 159.g. is for future use. It may be encoded for Option 171.a., .e., .g. and .h. It must be uncoded when Option 171.b., .c., .e. or .f. is enabled.

Note 10:   If characters that may be left uncoded are encoded, per Notes 6 and 9, a character must be chosen that is not used in other selection control functions of the system.

Note 11: Commonly used characters:

	ASCII	EBCDIC
159.h.	DLE (Hex 10)	DLE (Hex 10)
159.i.	0 (Hex 30)	0 (Hex 70)
159.j.	1 (Hex 31)	/ (Hex 61)
159.k.	EOT (Hex 04)	EOT (Hex 37)
159.l.	NAK (Hex 15)	NAK (Hex 3D)
159.m.	ENQ (Hex 05)	ENQ (Hex 2D)

Note 12: Application table for characters 159.a. through 159.g.

The table shows the application of each of the programmable characters of Opt. 159a-g to the related Option 171a-h. Note that some characters may be optionally coded. For these, choose a character which is **not used** in any other poll/select/control functions of the system.

	Option 171 — SELECTION FORMATS							
	a	b	c	d	e	f	g	h
159a- Programmable Character 1 (PC1)			$PC1=A_{U/L}=\alpha_1$	$PC1=A_U=\alpha_1$	$PC1=A_{U/L}=\alpha_1$	$PC=A_{U/L}=\alpha_1$	$PC1=A_U=\alpha_1$	$PC1=A_{U/L}=\alpha_1$
159b- Programmable Character 2 (PC2)			$PC2=DC1=\#$	$PC2='A_U=\alpha_2$	$PC2=A_{U/L}=\alpha_2$	$PC2=A_{U/L}=\alpha_2$	$PC2=A_U=\alpha_2$	$PC2=A_{U/L}=\alpha_2$
159c- Programmable Character 3 (PC3)			$PC3 = \#$ NOTE 14					$PC3=A_{U/L}=A_2$
159d- Programmable Character 4 (PC4)			$PC4 = \#$ NOTE 14					$PC4=A_{U/L}=B_2$
159e- Programmable Character 5 (PC5)								$PC5=A_{U/L}=C_2$
159f- Programmable Character 6 (PC6)	$PC6=DC1=DC_n$ NOTE 16				$PC6=DC1=DC_n$ NOTE 16		$PC6=DC1=\#$	$PC6=DC1=DC_n$ NOTE 16
159g- Programmable Character 7 (PC7)	$PC7=A_{U/L}$ NOTE 15				$PC7=A_{U/L}$ NOTE 15		$PC7=A_{U/L}$ NOTE 13	$PC7=A_{U/L}$ NOTE 15

LEGEND

▓	Must be left uncoded.
xxxxx	Normally left uncoded or may be optionally encoded as indicated.
PC (N)	Programmable character (number), e.g. PC1.
A_U	Upper Case Alphabetic Character Only
$A_{U/L}$	Upper or Lower case Alphabetic Character
DC_1	Most host systems use DC_1 for printer selection. Other characters may be assigned.

Note 13: Option 159.g. is intended for future use. A code sequence corresponding to 159.g. will result in a NAK response.

Note 14: If sequences corresponding to 159.c. or 159.d. are received a NAK or EOT reply will be generated respectively.

Note 15: Option 159.g. is intended for future use. An EOT reply will be generated for a 159.g. sequence.

Note 16: If DC_n is not transmitted the terminal will assume that selection of the printer was intended.

OPTION NO.	DESCRIPTION	ACTION

160.   Communication Code — Line Operation

   a.*   ASCII
   b.   EBCDIC   Choose one.

161.   Future Use

   a.*   All Present Applications
   b.   Possible Future Use   Choose a.

162.   Type Font Length

   a.*   Normal (64 or 96 Characters)
   b.   Short (48 Characters)   Choose one.

163.   Future Use

   a.*   All Present Applications
   b.   Possible Future Use   Choose a.

164.   Block Size

   a.   128 Characters
   b.   256 Characters
   c.*   512 Characters   Choose one.

165.   Future Use

   a.*   All Present Applications
   b.   Possible Future Use   Choose a.

166.   Data Carrier Disconnect

   a.*   Terminal will disconnect if data carrier is lost for 30 seconds or if there is no carrier within 30 seconds after a call connection.
   b.   There is no disconnect due to absence of carrier.   Choose one.

167.   Permanent Request-to-Send

   a.*   RTS On Only when Required for Transmission
   b.   RTS On at All Times that Data Terminal Ready is On   Choose one.

Note: Data Terminal Ready is Off when in the TEST mode or there is a Terminal Alarm condition.

168.   Future Use

   a.*   All Present Applications
   b.   Possible Future Use   Choose a.

169.   Future Use

   a.*   All Present Applications
   b.   Possible Future Use   Choose a.

OPTION NO.	DESCRIPTION	ACTION

170. **Space Extension**

  a.*   Space Character Results in Single Space on Printer
  b.   Space Character Results in Three Spaces on Printer   Choose one.

171. **Selection Formats (PAD and SYN Characters Omitted)**

  a.   Point-to-Point Private Line/Switched-Network Without Terminal Identification Providing Device Selection

$$\begin{matrix} E \\ N \\ Q \end{matrix} \begin{bmatrix} A \\ C\ \emptyset \\ K \end{bmatrix} \begin{matrix} S & D \\ T & C \\ X & n \end{matrix} \qquad \text{Notes: 1, 2, 3, 4 and 5}$$

  b.   Point-to-Point Private Line/Switched-Network Without **Terminal Identification or Device Selection**

$$\begin{matrix} E \\ N \\ Q \end{matrix} \begin{bmatrix} A \\ C\ \emptyset \\ K \end{bmatrix} \begin{matrix} S \\ T \\ X \end{matrix} \qquad \text{Notes: 2, 3 and 4}$$

  c.   Multipoint Private Line Providing Device Selection

$$\propto \quad \# \quad \begin{matrix} E \\ N \\ Q \end{matrix} \begin{bmatrix} A \\ C\ \emptyset \\ K \end{bmatrix} \begin{matrix} S \\ T \\ X \end{matrix} \qquad \text{Notes: 1, 2, 3, 4 and 7}$$

  d.   Multipoint Private Line Without Device Selection

$$\propto_1 \propto_2 \begin{matrix} E \\ N \\ Q \end{matrix} \begin{bmatrix} & A \\ \propto_1 \propto_2 C\ \emptyset \\ & K \end{bmatrix} \begin{matrix} S \\ T \\ X \end{matrix} \qquad \text{Notes: 2, 3, 4, 6 and 11}$$

  e.   Switched-Network With Terminal Identification Providing Device Selection

$$\propto_A \propto_B \begin{matrix} E \\ N \\ Q \end{matrix} \begin{bmatrix} & A \\ \propto_1 \propto_2 C\ \emptyset \\ & K \end{bmatrix} \begin{matrix} S & D \\ T & C \\ X & n \end{matrix} \qquad \text{Notes: 1, 2, 3, 4, 5, and 10}$$

  f.   Switched-Network With Terminal Identification Without Device Selection

$$\propto_A \propto_B \begin{matrix} E \\ N \\ Q \end{matrix} \begin{bmatrix} & A \\ \propto_1 \propto_2 C\ \emptyset \\ & K \end{bmatrix} \begin{matrix} S \\ T \\ X \end{matrix} \qquad \text{Notes: 2, 3, 4 and 10}$$

  g.   Multipoint Private Line With Device Selection

$$\propto_1 \propto_2 \# \begin{matrix} E \\ N \\ Q \end{matrix} \begin{bmatrix} A \\ C\ \emptyset \\ K \end{bmatrix} \begin{matrix} S \\ T \\ X \end{matrix} \qquad \text{Notes: 1, 2, 3, 4, 6, and 8}$$

Choose one.
(Also see next page)

OPTION NO.	DESCRIPTION	ACTION

h.   Switched Network Providing Device Selection
and Security Identification

$$\alpha_A \quad \alpha_B \ A_1 \ B_1 \ C_1 \begin{bmatrix} E \\ N \\ Q \end{bmatrix} \begin{bmatrix} \alpha_1 \alpha_2 & A_2 \ B_2 \ C_2 \begin{matrix} A \\ C \\ K \end{matrix} \emptyset \end{bmatrix} \begin{matrix} S & D \\ T & C \\ X & n \end{matrix}$$ Notes: 1, 2, 3, 4, 5, and 9   Continued from previous page.

Note 1:   Device selection is restricted to the printer only at this time.

Note 2:   The character code for ENQ is programmable. See Option 159.m.

Note 3:   The [ ] represents Ready to Receive (ACK$\emptyset$)/Not Ready to Receive (NAK) replies from the ROP terminal. An ACK$\emptyset$ reply is required for the sequence to continue. ACK$\emptyset$ is preceded by $\alpha_1 \alpha_2$ in Options 171.d., e., f. and h..

Note 4:   The sequence starting with STX (optionally SOH) is sent as the initial characters of the first block of a message. In Formats 171.a., e., and h, STX (optionally SOH) is also part of the selection sequence.

Note 5: DC_n must be coded using Option 159.f. The use of Option 159.g. to code DC_n is reserved for future applications and may be left uncoded; however, if Option 159.g. is coded (due to system compatibility) the terminal on receiving a selection sequence containing the character coded by Option 159.g. will respond with an EOT. If the selection sequence fails to include DC_n the terminal will assume that the printer is being addressed. Normally the characters encoded for DC_n are chosen from the DC_1 through DC_4 category.

Note 6:   The $\alpha_1 \ \alpha_2$ are coded using Options 159.a. and 159.b. They represent the station identity. Normally Option 159.b. is coded identically to Option 159.a.

Note 7:   The α in Option 171.c. is the station identity and is coded using Option 159.a. The # is the device select character and is coded using Option 159.b. The use of Options 159.c. or 159.d. is reserved for future applications and may be left uncoded; however, if Option 159.c. or 159.d. are coded (due to system compatibility) the terminal on receiving a selection sequence containing the characters coded by Options 159.c. or 159.d. will respond with a NAK (for 159.c.) or an EOT (for 159.d.).

Note 8:   # must be coded using Option 159.f. The use of Option 159.g. to code # is reserved for future applications and it may be left uncoded; however, if Option 159.g. is coded for system compatibility, the terminal on receiving a selection sequence containing the character coded by Option 159.g. will respond with a NAK.

Note 9: $\alpha_A \ \alpha_B \ A_1 \ B_1 \ C_1$ are the LCU station identification characters and are not checked. The reply is $\alpha_1 \ \alpha_2 \ A_2 \ B_2 \ C_2$ followed by ACK$\emptyset$ or NAK. $\alpha_1 \ \alpha_2 \ A_2 \ B_2 \ C_2$ are part of [ ]. (See Note 3.) $\alpha_1 \ \alpha_2$ in the reply identifies the ROP terminal. $A_2 \ B_2 \ C_2$ represents a security identification sequence encoded by Options 159.c., 159.d., and 159.e. See Note 6 for coding of $\alpha_1 \ \alpha_2$.

Note 10: $\alpha_A \ \alpha_B$ are the LCU station identification characters and are not checked. The reply is $\alpha_1 \ \alpha_2$ followed by the terminal status. $\alpha_1 \ \alpha_2$ are part of [ ]. (See Note 3.) See Note 6 for coding of $\alpha_1 \ \alpha_2$.

Note 11:   ACK$\emptyset$ reply is preceded by $\alpha_1 \ \alpha_2$. $\alpha_1 \ \alpha_2$ are part of [ ]. (See Note 3.) The $\alpha_1 \ \alpha_2$ in the reply identifies the ROP terminal. See Note 6 for coding of $\alpha_1 \ \alpha_2$.

OPTION NO.	DESCRIPTION	ACTION

172. Future Use

  a.*   All Present Applications
  b.   Possible Future Use   Choose a.

173. ETB

  a.*   Block terminator
  b.   Block terminator, executes printing a line, executes vertical tab ESC sequence (or NEW LINE if none) or terminates horizontal tab setting sequence.   Choose one.

174. ETX

  a.*   Block terminator or terminates horizontal tab setting sequence
  b.   Block terminator, terminates horizontal tab setting sequence, executes printing a line or executes vertical tab ESC sequence (or NEW LINE if none).   Choose one.

175. ITB

  a.*   Intermediate block terminator
  b.   Block terminator, executes printing a line, executes vertical tab ESC sequence (or NEW LINE if none) or terminates horizontal tab setting sequence.   Choose one.

176. LINE FEED/NEW LINE

  a.*   Executes printing a line, executes vertical tab ESC sequence (or NEW LINE if none) or terminates horizontal tab setting sequence.
  b.   SPACE only   Choose one.

177. RS or IRS (EBCDIC)

  a.*   Executes printing a line and executes vertical tab ESC sequence (or NEW LINE if none)
  b.   SPACE only   Choose one.

178. Immediate WACK

  a.*   Disabled
  b.   Enabled   Choose one.

179. WACK/BUFFER Control

  a.*   WACK response enabled, multiple block buffer.
  b.   WACK response disabled, single block buffer.   Choose one.

OPTION NO.	DESCRIPTION	ACTION

180.—188.   Future Use

    a.*   All Present Applications
    b.   Possible Future Use   Choose a.

189.   Receiver Clock Control

    a.*   Receiver Clock Obtained From Associated Data Set
    b.   Receiver Clock Generated Internally   Choose a.

190.   Transmitter Clock Control

    a.*   Transmitter Clock Obtained From Associated Data Set
    b.   Transmitter Clock Generated Internally   Choose a.

GROUND OPTION

OPTION NO.	DESCRIPTION	ACTION

    Ground Connection

    a.*   Frame Ground Connected to Signal Ground
    b.   Frame Ground Not Connected to Signal Ground   Choose one.

Note: A connection between frame ground and signal ground is required for proper operation of the internal test message. Most data sets make this connection either permanently or as an option, but a few do not. If a cable longer than the standard (408065) is used to connect the data set to the ROP, it may be necessary to break this connection at either the controller or the data set (but not both) to avoid electrical noise problems (caused by a ground loop).

6. OPTION ACTIVATION

6.01   Connect the static discharge strap to wrist as described in 1.03 before activating the options on
410071 or 410072 printer card.

6.02   The format for showing options (except data set options) is illustrated in Fig. 21.

	A-10					
5.	1	2	3	4	5	
a.	●	—	—	—	—	*
b.	○	—	—	—	—	
c.	—	●	—	—	—	*
d.	—	○	—	—	—	
e.	—	—	○	—	—	*
f.	—	—	●	—	—	

OPTION NO.
OPTION CONDITIONS
OPTION DEFINITION
TOGGLE, SLIDE, OR ROCKER SWITCH NUMBERS
SWITCH DESIGNATION ON CIRCUIT CARD

● Indicates dot end of rocker switch depressed, toggle or slide positioned to ON.
○ Indicates blank end of rocker switch depressed, toggle or slide positioned to OFF.
— Switch position does not affect option.
* Factory installed.

Fig. 21—Option Information Format

6.03   Several styles of option selecting switches may be present on the printer and/or controller circuit
cards (Fig. 22). The option selecting switches are of various sizes, having between four and ten
toggles, slides or rockers, numbered accordingly. On toggle or slide type switches, options are activated by
positioning the toggle or slide toward the ON designation. On rocker type switches, the dotted rocker end
or the rocker end adjacent to a dot are positioned down (depressed) to activate an option. Conversely, to
deactivate or switch OFF an option, position the toggle or slide away from ON or depress the blank end of
the rocker switch.

Note: Switch covers are supplied in a bag for rocker type option switches only. Install covers after
implementing options to prevent accidental change of switch position. Part numbers are as follows:

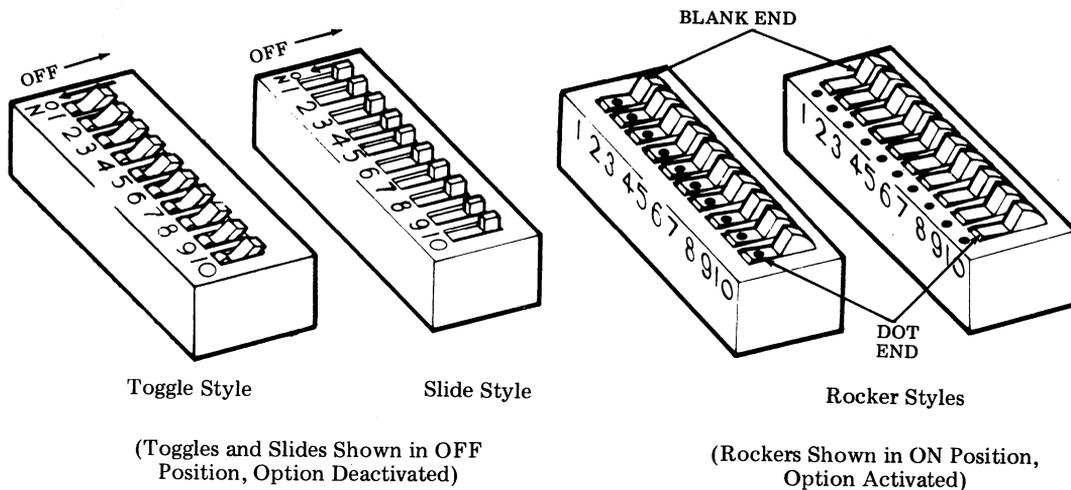|			
four positions	— 341844	eight positions	— 341848
five positions	— 341845	nine positions	— 341849
six positions	— 341846	ten positions	— 341850
seven positions	— 341847		

Fig. 22—Option Switches

6.04 The 410734 diode matrix circuit card is composed of several integrated circuit (IC) packs and 384 407336 diodes arranged in eight columns (bit 0 through bit 7) of 48 diodes each (see Fig. 22). The horizontal rows are designated R1 through R48 and the vertical columns are designated b0 through b7 in all subsequent optioning instructions of this section. Optioning consists of referring to the Station Feature and Option Record on W-Plan W-4RPXA and the service order and cutting and removing those diodes marked X.

Warning: Diodes should be marked (felt tip pen) before cutting to guard against mistakes. Diodes cut in error CANNOT be resoldered in place – the diode must be replaced, using care not to overheat when soldering. Make certain diode is oriented correctly, the same as the other diodes on the card (banded end toward IC packs — Fig. 20). RECHECK BEFORE CUTTING!
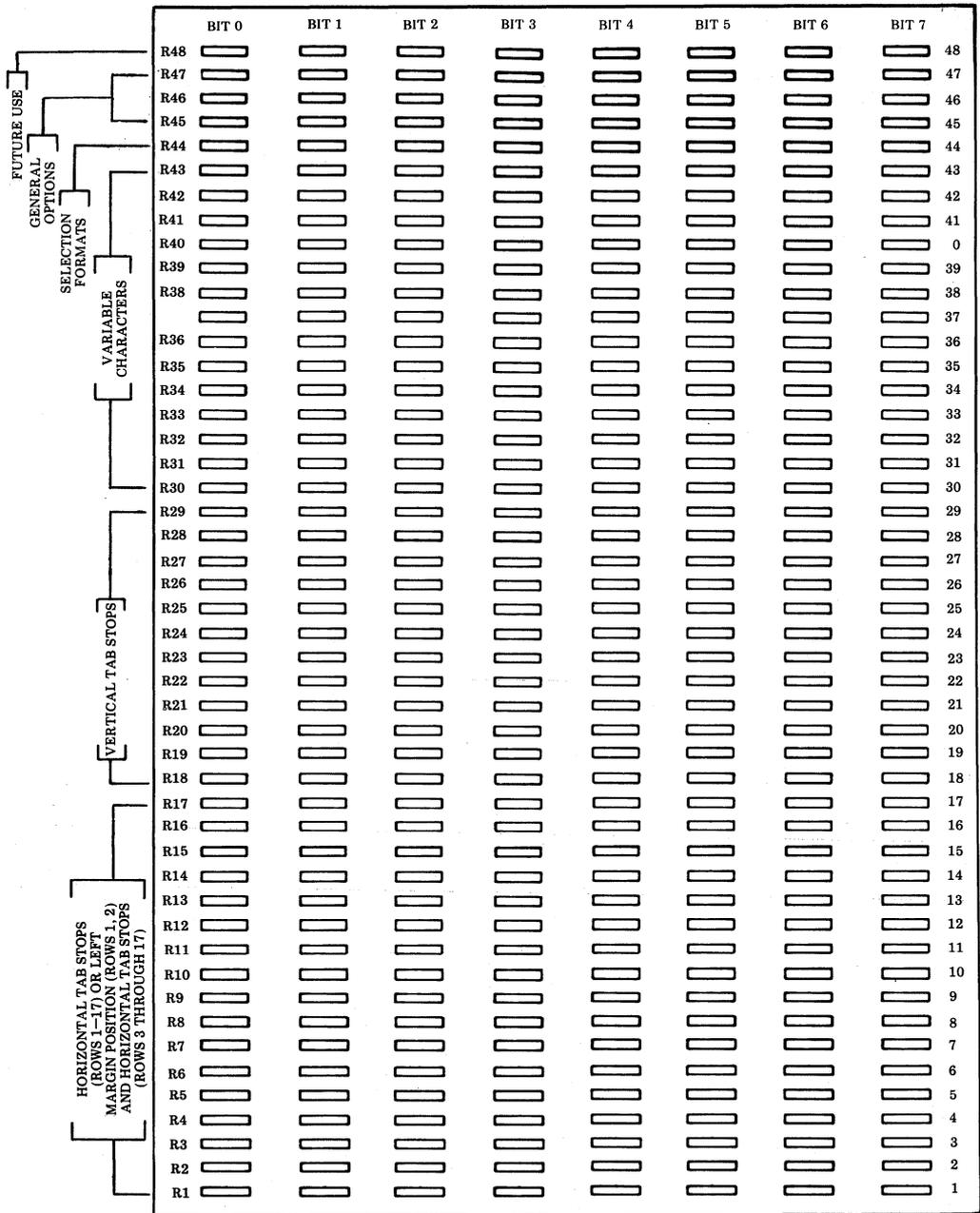
◻ Diode left in.

Fig. 23—410734 Diode Matrix Circuit Card Layout

6.05   Examples of Option Selecting on 410734
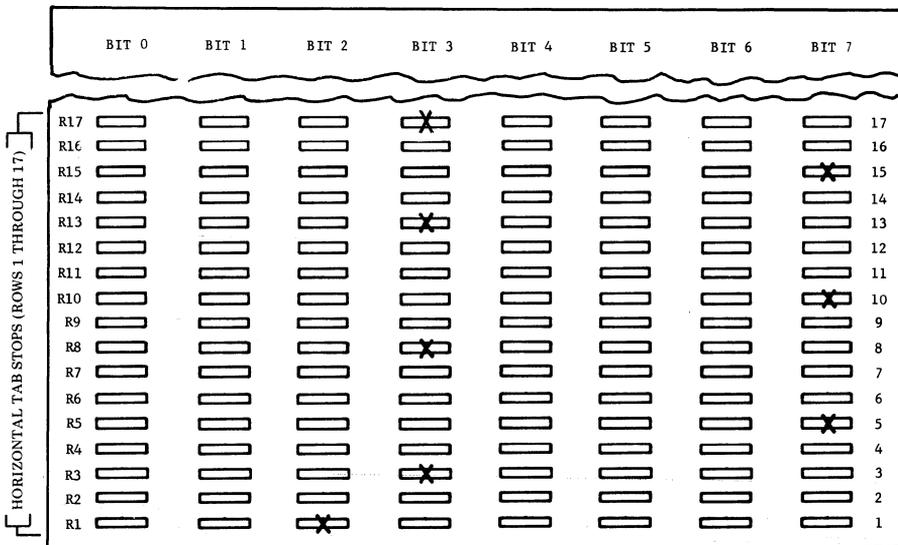Diode Matrix Circuit Card

Example 1:   Rows R1 through R17 (Fig. 24):

Note: Diodes at R17, b4, b5, b6 and b7 are not used.

(a)   Each diode represents one horizontal space or column on the printer, ranging from columns 1, 2 and 3 for R1, b0, b1, b2 in order to columns 130, 131 and 132 for R17, b1, b2 and b3. With all diodes in place the printer left margin is at column 1 and no preset horizontal tab stops are provided. Cutting the appropriate

diode(s) establishes a printer left margin in other than column 1 and provides tab stops for wherever desired on a line, PROVIDED Option 131 is also activated. In addition, the diode representing the right-hand margin as selected by Option 17.c. or 17.e., must be removed. Obviously tab stop settings to the left of the left margin, or to the right of the right margin will not be optioned.

(b)   The example (Fig. 24) represents diode optioning to have a 132-column tractor printer left margin at column 3, with tab stops at columns 20, 40, 60, 80, 100 and 120. See Options 17. and 131.

Diode left in.
Diode cut and removed.

Fig. 24—Example 1: 410734 Diode Matrix Circuit Card Optioning

Example 2:   Rows R18 through R29 (Fig. 25):

(a)   Each row of diodes represents one vertical tab stop in increasing number from Row 18 for the first tab stop to R29 for the twelfth tab stop. Selections must be made in increasing number. When less than 12 tab stops are used the unused positions (starting with the twelfth tab stop position) must have all diodes left in.

(b)   The line number desired is encoded by removing diodes. The binary count of the removed diodes is added together (Bit 0 = 1,

Bit 1 = 2, Bit 2 = 4, Bit 3 = 8, Bit 4 = 16, Bit 5 = 32, Bit 6 = 64 and Bit 7 = 128) to get the line count as indicated below:

For a tab stop at line 5 diodes at the Bit 0 and Bit 2 positions are removed; for a tab stop at line 26 diodes the Bit 1, Bit 3 and Bit 4 positions are removed.

(c)   The example (Fig. 25) represents diode optioning for vertical tab stops at 5, 10, 30, 40, 55 and 70 lines from the start of form.
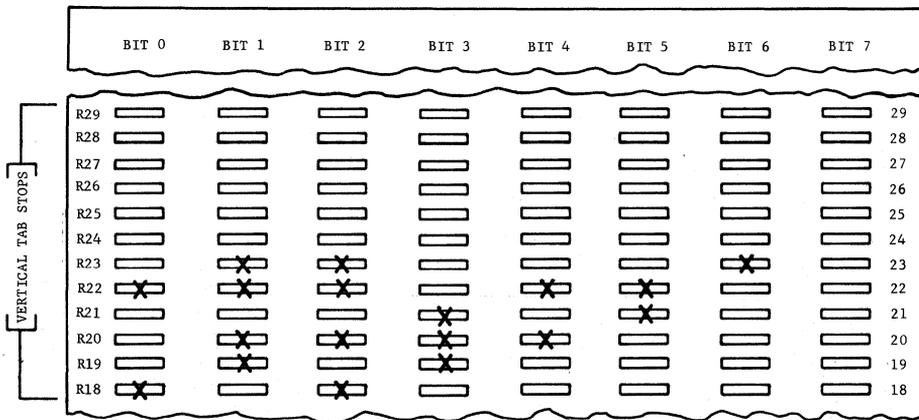
Diode left in.
Diode cut and removed.

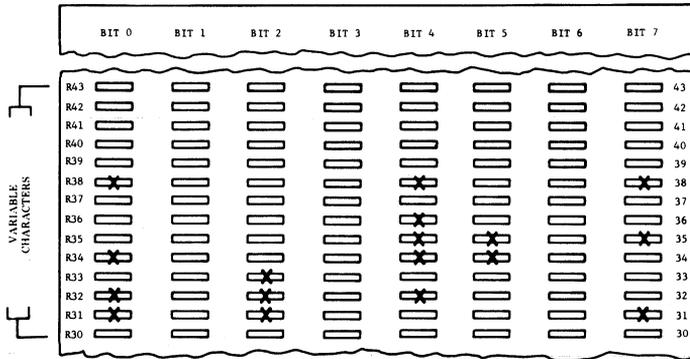Fig. 25—Example 2: 410734 Diode Matrix Circuit Card

Example 3: Rows R30 through R43 (Fig. 26):

Each row of R30 through R43 is used to represent a variable character for system operation (Option 159). Diodes left in place (⬭) represent spacing bits; diodes removed (⊠) represent marking bits. If ASCII characters are used, information bits 1 through 7 are encoded by diodes Bit 0 through Bit 6. The diode in location Bit 7 must be used to provide odd parity for the character. If EBCDIC characters are used, information bits 7 through 0 are encoded by diodes Bit 0 through Bit 7.
In the example, selection format 171.a, (Point-to-Point Private Line) is assumed.

Rows 39 through 43 — Variable characters 159. a. through e. are uncoded.
Row 38 — Variable character 159.f. is coded for DCn: ASCII character DC_1; EBCDIC character DC1
Row 37 — Variable character 159.g. is uncoded.
Row 36 — Variable character 159.h. is coded for DLE: ASCII character DLE; EBCDIC character DLE
Row 35 — Variable character 159.i. is coded for ZERO: ASCII character ZERO; EBCDIC character Hex 70
Row 34 — Variable character 159.j. is coded for ONE: ASCII character ONE; EBCDIC character /
Row 33 — Variable character 159.k. is coded for EOT: ASCII character EOT; EBCDIC character EOT
Row 32 — Variable character 159.l. is coded for NAK: ASCII character NAK; EBCDIC character NAK
Row 31 — Variable character 159.m. is coded for ENQ: ASCII character ENQ; EBCDIC character ENQ
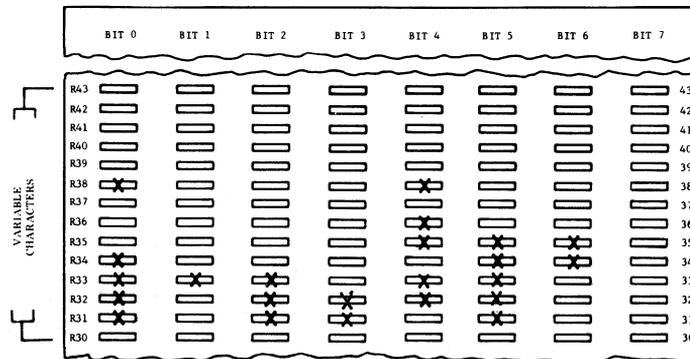Row 30 — Variable character 159.n. is uncoded.

ASCII Version

EBCDIC Version

Fig. 26—Example 3: 410734 Diode Matrix Circuit Card Optioning

⬭ Diode left in.
⊠ Diode cut and removed.

Example 4:   Rows R44 through R48 (Fig. 27):

(a) Row 44 diodes Bit 0 through Bit 7 relate to system protocol and format selections (Option 171). Option 171a (Point-to-Point Private Line) format is illustrated in Fig. 26.

(b) Each diode in Rows 45, 46, and 47 represents a specific selectable feature or is reserved for future use:

OPTION NUMBER	RELATED DIODE LOCATION	OPTION NUMBER	RELATED DIODE LOCATION
125.	R46, BIT 6	170.	R45, BIT 7
131.	R46, BIT 4	173.	R47, BIT 0
148.	R46, BIT 5	174.	R47, BIT 1
160.	R46, BIT 0	175.	R47, BIT 2
162.	R46, BIT 2	176.	R47, BIT 3
164.	R45, BIT 0, BIT 1	177.	R47, BIT 4
166.	R45, BIT 3	178.	R47, BIT 5
167.	R45, BIT 4	179.	R47, BIT 6

The following option numbers and diode locations are reserved for future applications:

OPTION NUMBER	RELATED DIODE LOCATION	OPTION NUMBER	RELATED DIODE LOCATION
161.	R46, BIT 1	168.	R45, BIT 5
163.	R46, BIT 3	169.	R45, BIT 6
165.	R45, BIT 2	172.	R46, BIT 7
		180.	R47, BIT 7

For option titles and descriptions refer to Part 5. FIELD OPTIONS AND DESCRIPTIONS. Refer to ACTIVATING CONTROLLER OPTIONS for activation of specific options.

(c) Diodes in Row 48 reserved for future applications.
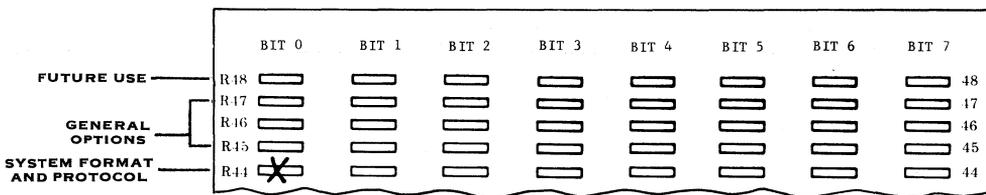
Diode left in.
Diode cut and removed.

Fig. 27—410734 Diode Matrix Circuit Card

TABLE A

ASCII CODE SET

TRANSMITTING CODES

Bits 4	3	2	1	Hex 1	0	1	2	3	4	5	6	7	← Hex 0
					NUL	DLE	SP	0	@	P	`	p	
					SOH	DC1	!	1	A	Q	a	q	
					STX	DC2	''	2	B	R	b	r	
					ETX	DC3	#	3	C	S	c	s	
					EOT	DC4	$	4	D	T	d	t	
					ENQ	NAK	%	5	E	U	e	u	
					ACK	SYN	&	6	F	V	f	v	
					BEL	ETB	'	7	G	W	g	w	
					BS	CAN	(	8	H	X	h	x	
					HT	EM	)	9	I	Y	i	y	
					NL	SUB	*	:	J	Z	j	z	
					VT	ESC	+	;	K	[	k	{	
					FF	FS	,	<	L	\	l	¦	
					CR	GS	-	=	M	]	m	}	
					SO	RS	.	>	N	^	n	~	
					SI	US	/	?	O	_	o	DEL	

Bits 7: 0, 0, 1, 1 — Bits 6: 0, 1, 0, 1 — Bits 5: 0, 1, 0, 1, 0, 1, 0, 1

Hex column values (Hex 1): 0,1,2,3,4,5,6,7,8,9,A,B,C,D,E,F

Note: 1 = Mark   0 = Space

Example: **Bits 1 through 7 of the bit permutation for the character M are 1011001, respectively.**

NUL — Null	DC1 — Device Control 1
SOH — Start of Heading	DC2 — Device Control 2
STX — Start of Text	DC3 — Device Control 3
ETX — End of Text	DC4 — Device Control 4
EOT — End of Transmission	NAK — Negative Acknowledge
ENQ — Enquiry	SYN — Synchronous
ACK — Acknowledge	ETB — End of Transmission Block
BEL — Bell	CAN — Cancel
BS — Back Space	EM — End of Media
HT — Horizontal Tab	SUB — Substitute
NL — New Line	ESC — Escape
VT — Vertical Tab	FS — Field Separator
FF — Form Feed	GS — Group Separator
CR — Carriage Return	RS — Record Separator
SO — Shift-Out	US — Unit Separator
SI — Shift-In	SP — Space
DLE — Data Link Escape	DEL — Delete

TABLE B

EBCDIC CODE SET

Bits 4567 / Hex 1		00				01				10				11				← Bits 01
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	← Bits 23
	Hex 0 →	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	← Hex 0
0000	0	NUL	DLE	DS		SP	&	-						{	}	\	0	
0001	1	SOH	DC1	SOS				/		a	j	~		A	J		1	
0010	2	STX	DC2	FS	SYN					b	k	s		B	K	S	2	
0011	3	ETX	DC3							c	l	t		C	L	T	3	
0100	4	PF	RES	BYP	PN					d	m	u		D	M	U	4	
0101	5	HT	NL	LF	RS					e	n	v		E	N	V	5	
0110	6	LC	BS	ETB	UC					f	o	w		F	O	W	6	
0111	7	DEL	IL	ESC	EOT					g	p	x		G	P	X	7	
1000	8	GE	CAN							h	q	y		H	Q	Y	8	
1001	9	RLF	EM						`	i	r	z		I	R	Z	9	
1010	A	SMM	CC	SM		¢	!	¦	:								LVM	
1011	B	VT	CU1	CU2	CU3	.	$	,	#									
1100	C	FF	IFS		DC4	<	*	%	@									
1101	D	CR	IGS	ENQ	NAK	(	)	_	'									
1110	E	SO	IRS	ACK		+	;	>	=									
1111	F	SI	IUS	BEL	SUB	|	¬	?	"								EO	

Note 1: All blanks will be printed with an error symbol.

Note 2: Hex 0 represents bits 0, 1, 2, 3; Hex 1 represents bit 4, 5, 6, 7. Example: Hex D4 is the character "M".

Note 3: 1 = Mark   0 = Space
Example: Bits 7 through 0 of the bit permutation for the character M are 00101011, respectively.

NUL	— NULL	DC3	— Device Control 3	ESC	— Escape
SOH	— Start of Heading	RES	— Restore	SM	— Set Mode
STX	— Start of Text	NL	— New Line	CU2	— Customer User 2
ETX	— End of Text	BS	— Back Space	ENQ	— Enquire
PF	— Punch Off	IL	— Idle	ACK	— Acknowledge
HT	— Horizontal Tab	CAN	— Cancel	BEL	— Bell
LC	— Lower Case	EM	— End of Media	SYN	— Synchronous
DEL	— Delete	CC	— Cursor Control	PN	— Punch On
GE	— Graphics Escape	CUI	— Customer User 1	RS	— Reader Stop
RLF	— Reverse Line Feed	IFS	— Interchange Field Separator	UC	— Upper Case
SMM	— Start of Manual Message	IGS	— Interchange Group Separator	EOT	— End of Transmission
VT	— Vertical Tab	IRS	— Interchange Record Separator	CU3	— Customer User 3
FF	— Form Feed	IUS	— Interchange Unit Separator	DC4	— Device Control 4
CR	— Carriage Return	DS	— Digit Select	NAK	— Negative Acknowledge
SO	— Shift-Out	SOS	— Start of Significance	SUB	— Substitute
SI	— Shift-In	FS	— Field Separator	SP	— Space
DLE	— Data Link Escape	BYP	— By Pass	LVM	— Long Vertical Mark
DC1	— Device Control 1	LF	— Line Feed	EO	— Eight Ones
DC2	— Device Control 2	ETB	— End of Transmission Block		

TABLE C

48-CHARACTER ASCII CODE SET

					Bits 7 → 0				1			
				Bits 6 →	0		1		0		1	
Bits				Hex 1 / Bits 5 →	0	1	0	1	0	1	0	1
4	3	2	1	↓ / Hex 0 →	0	1	2	3	4	5	6	7
	0	0	0	0 — 0	NUL	DLE	SP	0	@	P	@	P
			1	1	SOH	DC1		1	A	Q	A	Q
	0	1	0	2	STX	DC2		2	B	R	B	R
			1	3	ETX	DC3	#	3	C	S	C	S
0		0	0	4	EOT	DC4	$	4	D	T	D	T
	1		1	5	ENQ	NAK	%	5	E	U	E	U
		1	0	6	ACK	SYN	&	6	F	V	F	V
			1	7	BEL	ETB		7	G	W	G	W
	0	0	0	8	BS	CAN		8	H	X	H	X
			1	9	HT	EM		9	I	Y	I	Y
	0	1	0	A	NL	SUB	*		J	Z	J	Z
			1	B	VT	ESC			K		K	
1		0	0	C	FF	FS	,	⊐	L		L	
	1		1	D	CR	GS	-		M		M	
		1	0	E	SO	RS	.		N		N	
			1	F	SI	US	/		O		O	

Note 1: All blanks will be printed with an error symbol.

Note 2: 1 = Mark   0 = Space

   Example: Bits 1 through 7 of the bit permutation for the character M are 1011001, respectively.

NUL — Null	DLE — Data Link Escape
SOH — Start of Heading	DC1 — Device Control 1
STX — Start of Text	DC2 — Device Control 2
ETX — End of Text	DC3 — Device Control 3
EOT — End of Transmission	DC4 — Device Control 4
ENQ — Enquiry	NAK— Negative Acknowledge
ACK — Acknowledge	SYN — Synchronous
BEL — Bell	ETB — End of Transmission Block
BS — Back Space	CAN— Cancel
HT — Horizontal Tab	EM — End of Media
NL — New Line	SUB — Substitute
VT — Vertical Tab	ESC — Escape
FF — Form Feed	FS — Field Separator
CR — Carriage Return	GS — Group Separator
SO — Shift-Out	RS — Record Separator
SI — Shift-In	US — Unit Separator

TABLE D

48-CHARACTER EBCDIC CODE SET

Bits 4567	Hex 1	00				01				10				11				Bits 01
		00	01	10	11	00	01	10	11	00	01	10	11	00	01	10	11	Bits 23
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	Hex 0
0000	0	NUL	DLE	DS		SP	&	-									0	
0001	1	SOH	DC1	SOS				/		A	J			A	J		1	
0010	2	STX	DC2	FS	SYN					B	K	S		B	K	S	2	
0011	3	ETX	DC3							C	L	T		C	L	T	3	
0100	4	PF	RES	BYP	PN					D	M	U		D	M	U	4	
0101	5	HT	NL	LF	RS					E	N	V		E	N	V	5	
0110	6	LC	BS	ETB	UC					F	O	W		F	O	W	6	
0111	7	DEL	IL	ESC	EOT					G	P	X		G	P	X	7	
1000	8	GE	CAN							H	Q	Y		H	Q	Y	8	
1001	9	RLF	EM							I	R	Z		I	R	Z	9	
1010	A	SMM	CC	SM													LVM	
1011	B	VT	CU1	CU2	CU3	.	$	,	#									
1100	C	FF	IFS		DC4	⋈	*	%	@									
1101	D	CR	IGS	ENQ	NAK													
1110	E	SO	IRS	ACK														
1111	F	SI	IUS	BEL	SUB												EO	

Note 1: All blanks will be printed with an error symbol.

Note 2: Hex 0 represents bits 0, 1, 2, 3; Hex 1 represents bit 4, 5, 6, 7. Example: Hex D4 is the character "M".
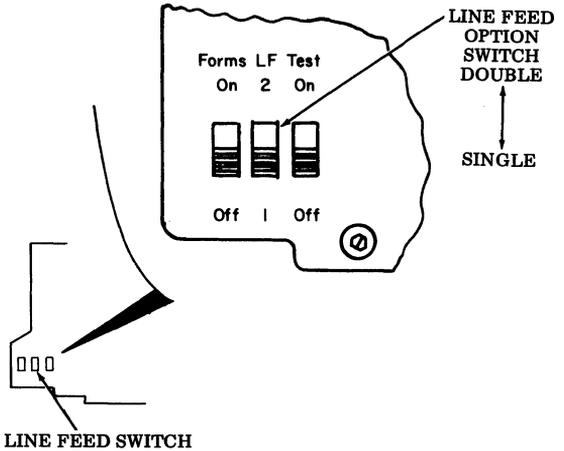
Note 3: 1 = Mark 0 = Space
Example: Bits 7 through 0 of the bit permutation for the character M are 00101011, respectively.

NUL	— NULL	DC3 — Device Control 3	ESC — Escape
SOH	— Start of Heading	RES — Restore	SM — Set Mode
STX	— Start of Text	NL — New Line	CU2 — Customer User 2
ETX	— End of Text	BS — Back Space	ENQ — Enquire
PF	— Punch Off	IL — Idle	ACK — Acknowledge
HT	— Horizontal Tab	CAN — Cancel	BEL — Bell
LC	— Lower Case	EM — End of Media	SYN — Synchronous
DEL	— Delete	CC — Cursor Control	PN — Punch On
GE	— Graphics Escape	CUI — Customer User 1	RS — Reader Stop
RLF	— Reverse Line Feed	IFS — Interchange Field Separator	UC — Upper Case
SMM	— Start of Manual Message	IGS — Interchange Group Separator	EOT — End of Transmission
VT	— Vertical Tab	IRS — Interchange Record Separator	CU3 — Customer User 3
FF	— Form Feed	IUS — Interchange Unit Separator	DC4 — Device Control 4
CR	— Carriage Return	DS — Digit Select	NAK — Negative Acknowledge
SO	— Shift-Out	SOS — Start of Significance	SUB — Substitute
SI	— Shift-In	FS — Field Separator	SP — Space
DLE	— Data Link Escape	BYP — By Pass	LVM — Long Vertical Mark
DC1	— Device Control 1	LF — Line Feed	EO — Eight Ones
DC2	— Device Control 2	ETB — End of Transmission Block	

ACTIVATING PRINTER OPTIONS

Note: Selection of 50 Hz or 60 Hz sprocket for the motor: The printer is shipped with a 60 Hz sprocket; a 50 Hz sprocket is also shipped with the motor and is mounted on a plate at the left side of the unit. If the sprocket is changed for 50 Hz, perform the <u>Impeller Shaft Drive Belt Tension</u> adjustment. Also check the <u>Clutch Drive Belt Tension</u> adjustment. Refer to Section 582-210-700.
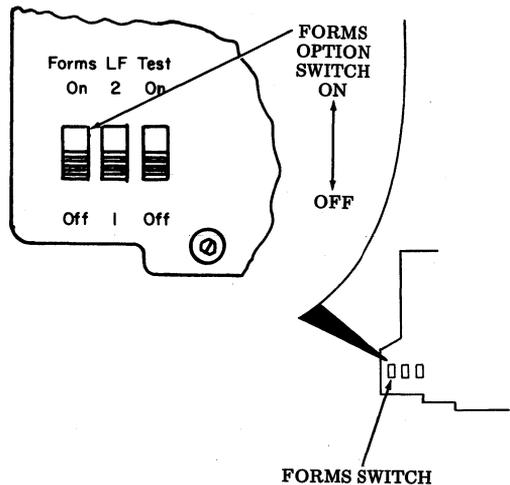
80- or 132-Column Tractor Printer

LINE FEED
OPTION
SWITCH
DOUBLE

Forms LF Test
On   2   On

SINGLE

Off   I   Off

20.	Line Feed on Printer	LF Switch
a.	Single	1
b.	Double	2

*

1-2 LINE FEED SWITCH

80- or 132-Column Tractor Printer

FORMS
OPTION
SWITCH
ON

Forms LF Test
On   2   On

OFF

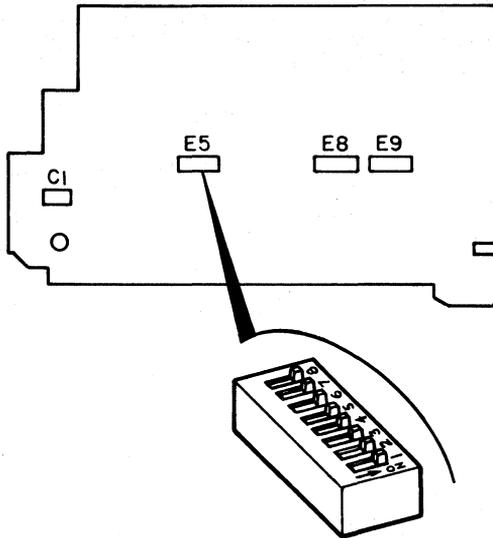Off   I   Off

39.	Forms
a.	On
b.	Off

*

*Factory installed.

FORMS SWITCH

410071 Printer Logic Circuit Card (80-Column Tractor Feed)

(Printer Circuit Card Viewed From Beneath Printer — Access to Switches is Through a Cutout in Bottom Pan of Printer.)

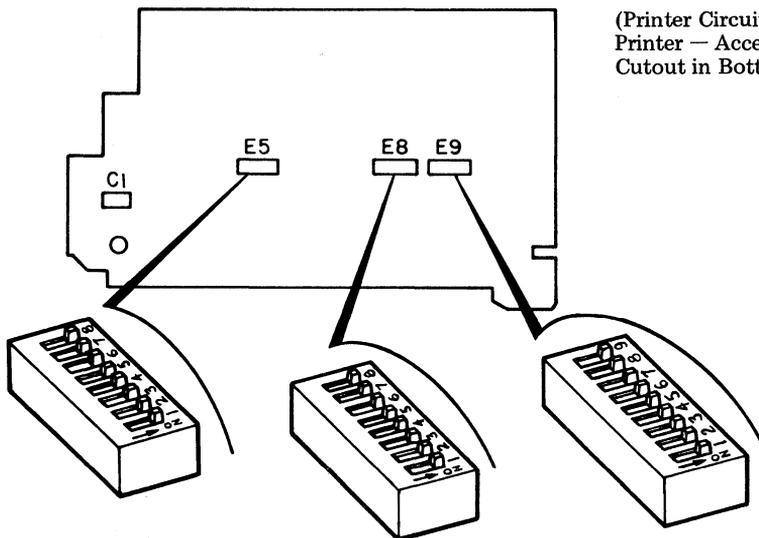| 17.	Printer Left Margin and Form Width	E5								
		1	2	3	4	5	6	7	8	
a.	First Printed Column — Column 1	—	—	●	●	●	●	—	—	*
	First Printed Column — Column 2	—	—	●	●	○	●	—	—	
	First Printed Column — Column 3	—	—	●	●	○	○	—	—	
	First Printed Column — Column 4	—	—	●	○	○	○	—	—	
	First Printed Column — Column 5	—	—	○	○	●	○	—	—	
	First Printed Column — Column 6	—	—	○	○	○	●	—	—	
b.(X)	First Printed Column — Column 7	—	—	○	●	○	○	—	—	
(Note)	First Printed Column — Column 8	—	—	●	○	●	○	—	—	
	First Printed Column — Column 9	—	—	○	○	●	●	—	—	
	First Printed Column — Column 10	—	—	○	●	○	●	—	—	
	First Printed Column — Column 11	—	—	●	●	●	○	—	—	
	First Printed Column — Column 12	—	—	●	○	○	●	—	—	
	First Printed Column — Column 13	—	—	○	●	●	○	—	—	

Note 1: (X) indicates desired column number.

Note 2: Choose Option 17.a.

Legend:

● Indicates dot end of rocker switch depressed, toggle or slide positioned to ON.
○ Indicates blank end of rocker switch depressed, toggle or slide positioned to OFF.
— Position of switch does not affect option.
* Factory installed.

410071 Printer Logic Circuit Card (80-Column Tractor Feed) (Cont)

(Printer Circuit Card Viewed From Beneath Printer — Access to Switches is Through a Cutout in Bottom Pan of Printer.)

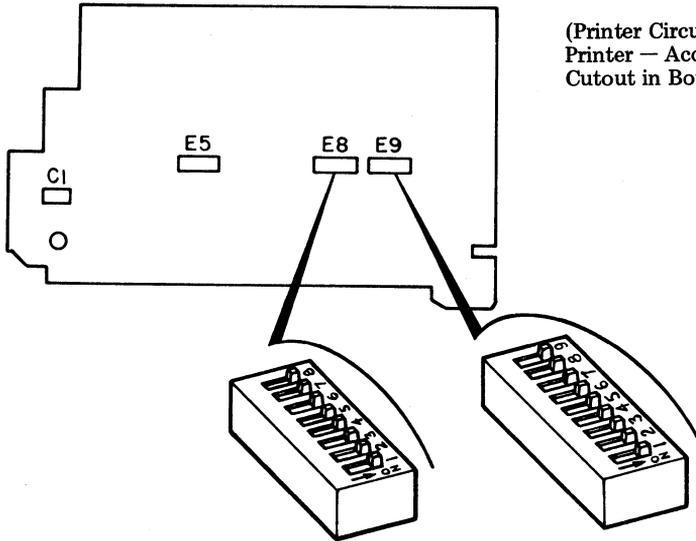| 17.	Printer Right Margin and Form Width	E9									E5								E8							
(Note 1)	Last Char Printed Column Number	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
c.	80	○	●	—	●	○	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	● *
d. (X)	73 61 49 37 25	●	●	—	●	●	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●
(Note 2)	74 62 50 38 26	○	●	—	●	●	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●
	75 63 51 39 27	●	○	—	●	●	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●
	76 64 52 40 28	●	●	—	○	●	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●
	77 65 53 41 29	○	●	—	○	●	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●
	78 66 54 42 30	●	○	—	○	●	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●
	79 67 55 43 31	●	●	—	●	○	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●
	68 56 44 32	○	●	—	●	○	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●
	69 57 45 33	●	○	—	●	○	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●
	70 58 46 34	●	●	—	○	○	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●
	71 59 47 35	○	●	—	○	○	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●
	72 60 48 36	●	○	—	○	○	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●

To obtain counts:

73 through 80 program as shown.
61 through 72 program as shown, then operate E8 position 8 to OFF.
49 through 60 program as shown, then operate E5 position 1 to OFF.
37 through 48 program as shown, then operate E5 position 7 to OFF.
25 through 36 program as shown, then operate E5 position 8 to OFF.

Note 1: For Integrated Synchronous ROP, choose c. The diode representing the last printing column must be removed in Option 122.

Note 2: (X) indicates desired column number; d does not apply to Integrated Synchronous ROP.

(See Legend for ● , ○ , —, and * under Option 17, Page 34.)

410071 Printer Logic Circuit Card (80-Column Tractor Feed) (Cont)

(Printer Circuit Card Viewed From Beneath Printer — Access to Switches is Through a Cutout in Bottom Pan of Printer.)

		E8								
18.	Printer Paper Feedout	1	2	3	4	5	6	7	8	
a.	No Paper Feedout	—	—	●	—	—	—	—	—	
b.	Paper Feedout on DSR or RM Loss — 16 Lines or One Form	—	○	○	—	—	—	—	—	
c.	Paper Feedout on DSR or RM Loss or ETX — 16 Lines or One Form	—	●	○	—	—	—	—	—	*

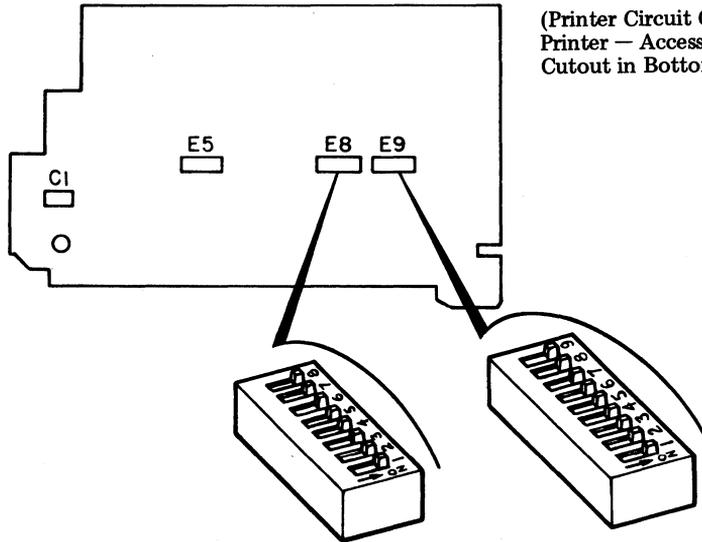|		E9									
19.	Printer Errored Character Symbol (See Note)	1	2	3	4	5	6	7	8	9	
a.	Printed on Even Parity Error	—	—	—	—	—	○	●	—	—	*
b.	Printed on Odd Parity Error	—	—	—	—	—	●	○	—	—	
c.	Not Printed on Parity Error	—	—	—	—	—	●	●	—	—	

Note : Choose 19.a. or .c.

		E8								
19.	Character Set (See Note)	1	2	3	4	5	6	7	8	
d.	Printers With 96-Character Set	—	—	—	—	●	○	—	—	
e.	Printers With 64-Character Set	—	—	—	—	○	●	—	—	*
f.	Printers With Extended ASCII Character Set	—	—	—	—	○	○	—	—	
g.	Printers With Longest Character Set Having Less Than 64 Characters	—	—	—	—	○	○	—	—	

Note: Choose d, e or g to match type carrier.

(See Legend for ●, ○, —, and * under Option 17, Page 34.)

410071 Printer Logic Circuit Card (80-Column Tractor Feed) (Cont)

(Printer Circuit Card Viewed From Beneath Printer — Access to Switches is Through a Cutout in Bottom Pan of Printer.)

E5   E8 E9

CI

| 21.	Foldover on Printers With 96-Character Set	E8								
		1	2	3	4	5	6	7	8	
a.	Lower Case and Upper Case Print	○	—	—	—	—	—	—	—	*
b.	Lower Case Prints as Upper Case	●	—	—	—	—	—	—	—	

22.	Foldover on Printers With 64-Character Set	E8								
		1	2	3	4	5	6	7	8	
a.	Lower Case Prints as Error Symbol	○	—	—	—	—	—	—	—	
b.	Lower Case Prints as Upper Case	●	—	—	—	—	—	—	—	*

23.	Extended ASCII on Printer (Extended ASCII)	E9									
		1	2	3	4	5	6	7	8	9	
a.	Prints Extended ASCII Characters (No Parity Check)	—	—	—	—	—	○	○	—	—	
b.	Does Not Print Extended ASCII (See Option 19a, b, or c.)	—	—	(As in Option 19.)			—	—	—		*

Note: Option 23.a. requires local engineering.

(See Legend for ● , ○ , —, and * under Option 17, Page 34.)

410071 Printer Logic Circuit Card (80-Column Tractor Feed) (Cont)
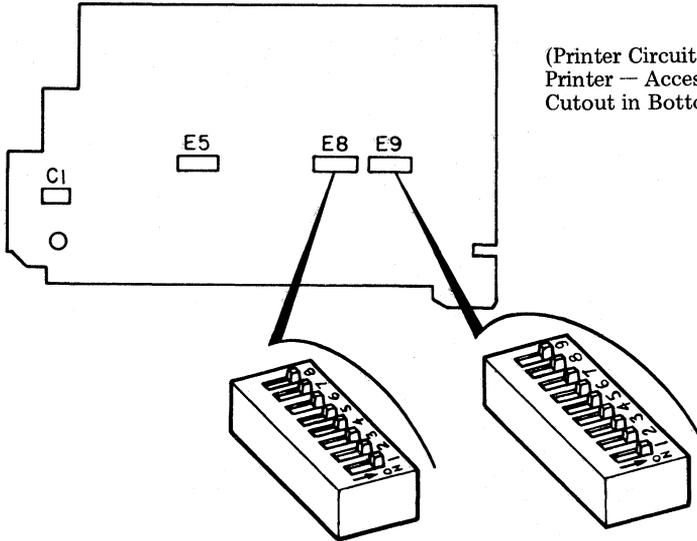
(Printer Circuit Card Viewed From Beneath Printer — Access to Switches is Through a Cutout in Bottom Pan of Printer.)

48.	Incomplete Form Suppresses Paper Alarm	E9									
		1	2	3	4	5	6	7	8	9	
a.	No (Paper-Out Not Gated With Form-Out)	—	—	—	—	—	—	—	—	●	
b.	Yes (Paper-Out Gated With Form-Out)	—	—	—	—	—	—	—	—	○	*

54.	Printing of Escape Sequences Suppressed (See Note)	E9									
		1	2	3	4	5	6	7	8	9	
a.	Character After ESC Printed as Received	—	—	—	—	—	—	—	○	—	*
b.	Printing of Character After ESC Suppressed	—	—	—	—	—	—	—	●	—	

Note: This option does not apply to Integrated Synchronous ROP. Either option may be chosen without affecting operation.

| 55.	SI/SO Detection (See Note)	E9									
		1	2	3	4	5	6	7	8	9	
a.	SI/SO Detection Not Used	—	—	○	—	—	—	—	—	—	*
b.	SI/SO Detection Enables Printing Additional Characters	—	—	●	—	—	—	—	—	—	

Note: This option does not apply to Integrated Synchronous ROP. Either option may be chosen without affecting operation.

57.	SSI/OEM Interface (See Note.)	E8							
		1	2	3	4	5	6	7	8	
a.	SSI	—	—	—	—	—	—	●	—	*
b.	OEM	—	—	—	—	—	—	—	—	

Note: Choose Option 57.a.

(See Legend for ●, ○, —, and * under Option 17, Page 34.)

410071 Printer Logic Circuit Card (80-Column Tractor Feed) (Cont)
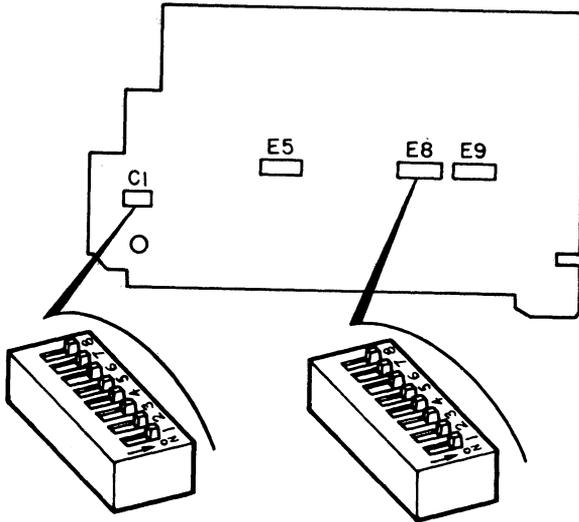
(Printer Circuit Card Viewed From Beneath Printer — Access to Switches is Through a Cutout in Bottom Pan of Printer.)

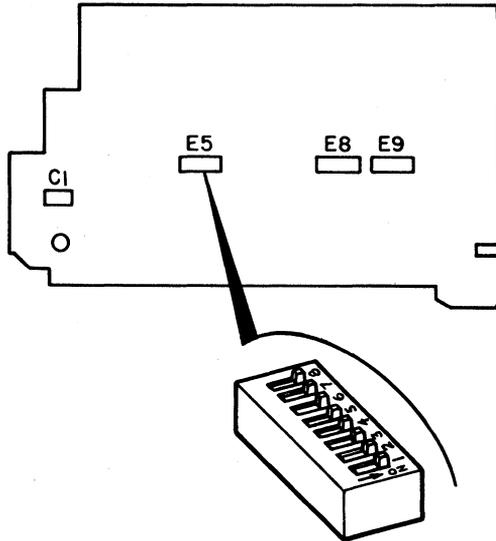| 58. Idle Line Motor Control (See Note)		E8								
		1	2	3	4	5	6	7	8	
a.	Disabled — Motor Held on Indefinitely During Idle Line	—	—	—	O	—	—	—	—	*
b.	Enabled — Motor Turned Off After 40-Second Idle Line	—	—	—	●	—	—	—	—	

Note: Choose Option 58.a.

59. Speed Selection (Applies only if Option 57b is selected) (See Note)		C1								
		1	2	3	4	5	6	7	8	
a.	75 Baud	●	O	O	O	O	O	O	O	
b.	150 Baud	O	●	O	O	O	O	O	O	
c.	300 Baud	O	O	O	O	O	O	O	●	
d.	600 Baud	O	O	●	O	O	O	O	O	
e.	1200 Baud	O	O	O	O	O	●	O	O	
f.	2400 Baud	O	O	O	●	O	O	O	O	*
g.	4800 Baud	O	O	O	O	●	O	O	O	
h.	9600 Baud	O	O	O	O	O	O	●	O	

Note: This option does not apply to Integrated Synchronous ROP. Any option may be chosen without affecting operation.

(See Legend for ●, O, —, and * under Option 17, Page 34.)

410071 Printer Logic Circuit Card (80-Column Tractor Feed) (Cont)

(Printer Circuit Card Viewed From Beneath Printer — Access to Switches is Through a Cutout in Bottom Pan of Printer.)

E5   E8   E9

CI

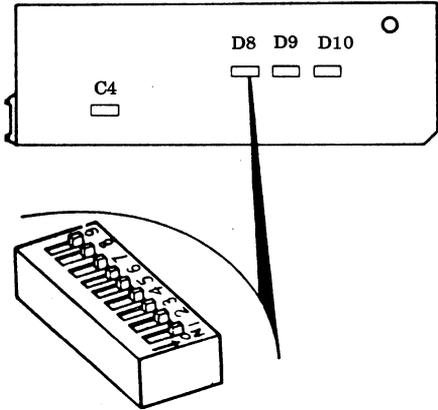| 60. Aux Alarm (See Note)		E5							
		1	2	3	4	5	6	7	8
a.	Enable	—	O	—	—	—	—	—	—
b.	Disable	—	●	—	—	—	—	—	—	*

Note 1: Future alarm mechanism. Switch must be closed when alarm mechanism is not present. Choose Option 60.b. for Integrated Synchronous ROP.

Note 2: Refer to Page 47 for Option 61.

(See Legend for ●, O, —, and * under Option 17, Page 34.)

410072 Printer Logic Circuit Card (132-Column Tractor Feed)

(Printer Circuit Card Viewed From Beneath Printer — Access to Switches is Through a Cutout in Bottom Pan of Printer.)
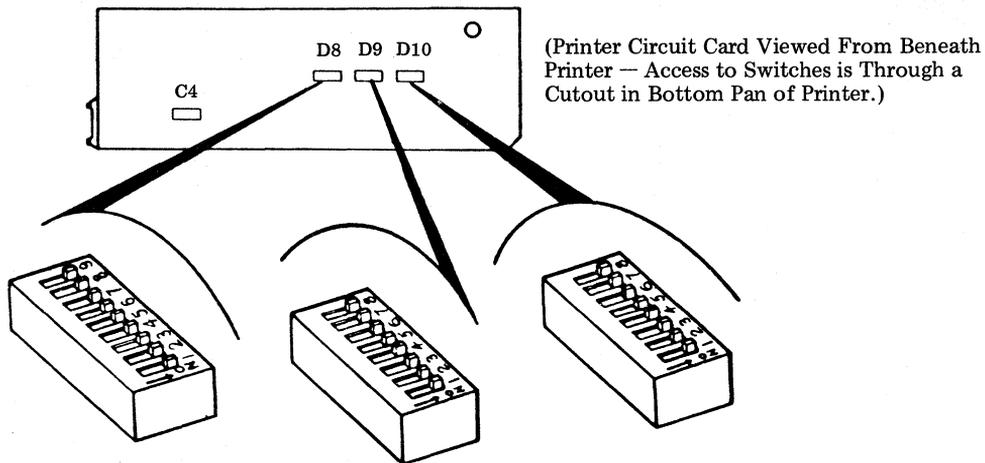
17. Printer Left Margin and Form Width		D8									
		1	2	3	4	5	6	7	8	9	
a.	First Printed Column — Column 1	—	—	●	●	●	●	—	—	—	*
	First Printed Column — Column 2	—	—	●	●	○	●	—	—	—	
	First Printed Column — Column 3	—	—	●	●	○	○	—	—	—	
	First Printed Column — Column 4	—	—	●	○	○	○	—	—	—	
b.(X) (Note)	First Printed Column — Column 5	—	—	○	○	●	○	—	—	—	
	First Printed Column — Column 6	—	—	○	○	○	●	—	—	—	
	First Printed Column — Column 7	—	—	○	●	○	○	—	—	—	
	First Printed Column — Column 8	—	—	●	○	●	○	—	—	—	
	First Printed Column — Column 9	—	—	○	○	●	●	—	—	—	
	First Printed Column — Column 10	—	—	○	●	○	●	—	—	—	
	First Printed Column — Column 11	—	—	●	●	●	○	—	—	—	
	First Printed Column — Column 12	—	—	●	○	○	●	—	—	—	
	First Printed Column — Column 13	—	—	○	●	●	○	—	—	—	

Note 1: (X) indicates desired column number.

Note 2: Choose Option 17.a.

(See Legend for ●, ○, —, and * under Option 17, Page 34.)

410072 Printer Logic Circuit Card (132-Column Tractor Feed) (Cont)

(Printer Circuit Card Viewed From Beneath Printer — Access to Switches is Through a Cutout in Bottom Pan of Printer.)

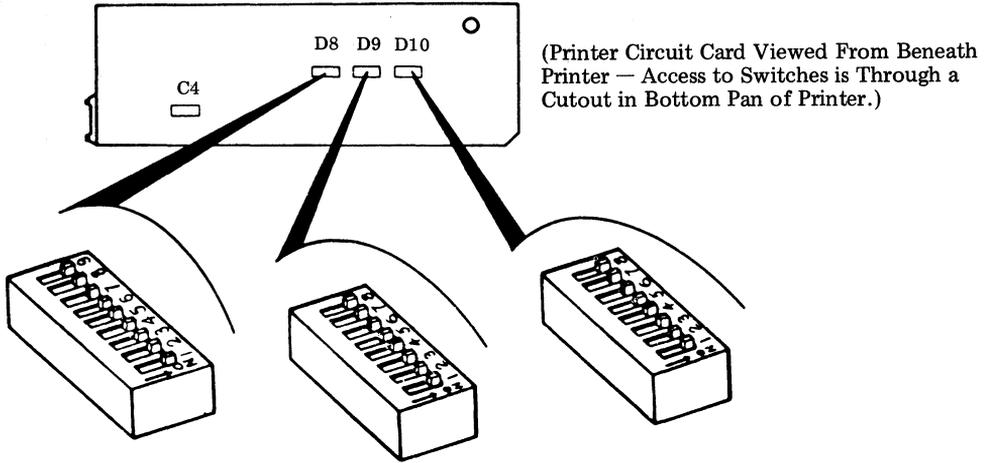| 17.	Printer Right Margin and Form Width																										
(Note 1)	Last Char Printed				D8									D9								D10					
e.	Column Number	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
f.(X)	132	—	—	—	—	—	—	●	●	—	—	—	—	—	—	—	—	—	●	●	●	○	—	○	○	—
(Note 2)	121 109 97 85 73	—	—	—	—	—	—	●	●	—	—	—	—	—	—	—	—	—	●	●	○	●	—	●	●	—
	122 110 98 86 74	—	—	—	—	—	—	●	●	—	—	—	—	—	—	—	—	—	●	●	○	●	—	●	●	—
	123 111 99 87 75	—	—	—	—	—	—	●	●	—	—	—	—	—	—	—	—	—	●	●	●	○	—	●	●	—
	124 112 100 88 76	—	—	—	—	—	—	●	●	—	—	—	—	—	—	—	—	—	●	●	●	●	—	○	●	—
	125 113 101 89 77	—	—	—	—	—	—	●	●	—	—	—	—	—	—	—	—	—	●	●	○	●	—	○	●	—
	126 114 102 90 78	—	—	—	—	—	—	●	●	—	—	—	—	—	—	—	—	—	●	●	●	○	—	○	●	—
	127 115 103 91 79	—	—	—	—	—	—	●	●	—	—	—	—	—	—	—	—	—	●	●	●	●	—	●	○	—
	128 116 104 92 80	—	—	—	—	—	—	●	●	—	—	—	—	—	—	—	—	—	●	●	○	●	—	●	○	—
	129 117 105 93 81	—	—	—	—	—	—	●	●	—	—	—	—	—	—	—	—	—	●	●	○	●	—	●	○	—
	130 118 106 94 82	—	—	—	—	—	—	●	●	—	—	—	—	—	—	—	—	—	●	●	●	○	—	○	○	—
	131 119 107 95 83	—	—	—	—	—	—	●	●	—	—	—	—	—	—	—	—	—	●	●	○	●	—	○	○	—
	120 108 96 84	—	—	—	—	—	—	●	●	—	—	—	—	—	—	—	—	—	●	●	●	○	—	○	○	—

*

To obtain counts:

121 through 132 program as shown.
109 through 120 program as shown, then operate D9 position 7 OFF.
97 through 108 program as shown, then operate D9 position 8 OFF.
85 through 96 program as shown, then operate D8 position 7 OFF.
73 through 84 program as shown, then operate D8 position 8 OFF.

Note 1: For Integrated Synchronous ROP, choose e. The diode representing the last printing column must be removed in Option 122.

Note 2: (X) indicates desired column number.

(See Legend for ● , ○ , —, and * under Option 17, Page 34.)

410072 Printer Logic Circuit Card (132-Column Tractor Feed) (Cont)

D8 D9 D10

C4

(Printer Circuit Card Viewed From Beneath Printer — Access to Switches is Through a Cutout in Bottom Pan of Printer.)

		D9							
18.	Printer Paper Feedout	1	2	3	4	5	6	7	8
a.	No Paper Feedout	—	—	●	—	—	—	—	—
b.	Paper Feedout on DSR or RM Loss — 16 Lines or One Form	—	○	○	—	—	—	—	—
c.	Paper Feedout on DSR or RM Loss or ETX — 16 Lines or One Form	—	●	○	—	—	—	—	—	*

|		D10							
19.	Printer Errored Character Symbol (See Note)	1	2	3	4	5	6	7	8
a.	Printed on Even Parity Error	—	—	—	—	—	○	●	—	*
b.	Printed on Odd Parity Error	—	—	—	—	—	●	○	—
c.	Printed on Parity Error	—	—	—	—	—	●	●	—

Note: Choose 19.a. or .c.

		D8								
19.	Character Set (See Note)	1	2	3	4	5	6	7	8	9
d.	Printers With 96-Character Set (Up-Low)	●	○	—	—	—	—	—	—	—
e.	Printers With 64-Character Set (Monocase)	○	●	—	—	—	—	—	—	—	*
f.	Printers With Extended ASCII Character Set	○	○	—	—	—	—	—	—	—
g.	Printers With Longest Character Set Having Less Than 64 Characters	○	○	—	—	—	—	—	—	—

Note: Choose d, e or g to match type carrier.

(See Legend for ●, ○, —, and * under Option 17, Page 34.)

<u>410072 Printer Logic Circuit Card (132-Column Tractor Feed) (Cont)</u>
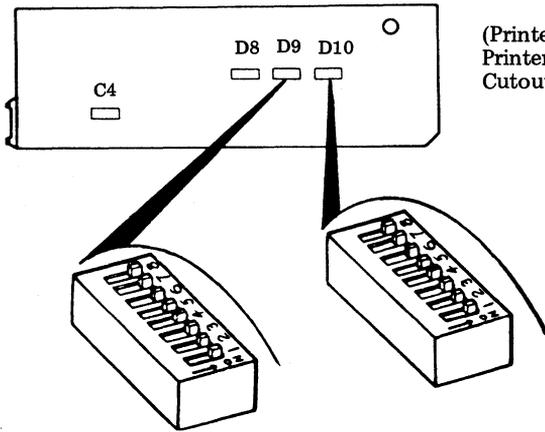
(Printer Circuit Card Viewed From Beneath Printer — Access to Switches is Through a Cutout in Bottom Pan of Printer.)

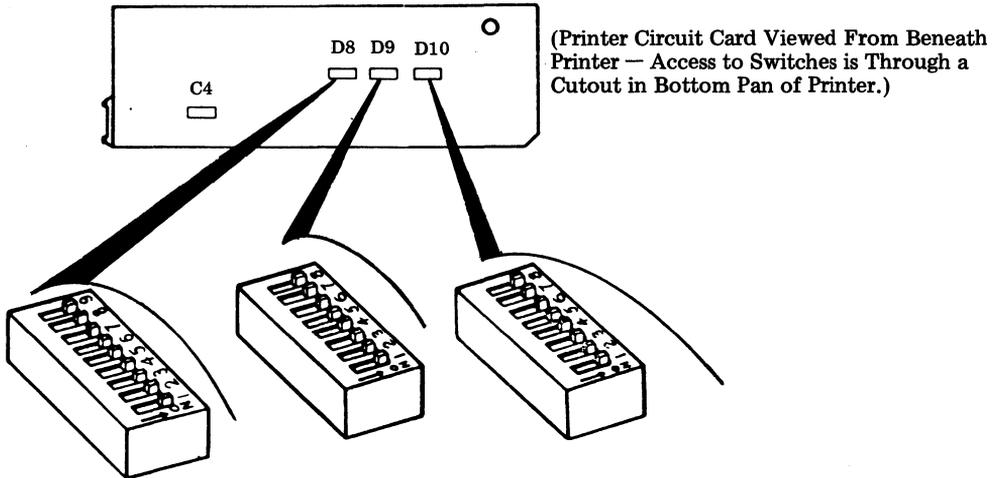| 21.	Foldover on Printers With 96-Character Set	D9							
		1	2	3	4	5	6	7	8
a.	Lower Case and Upper Case Print	O	—	—	—	—	—	—	—	*
b.	Lower Case Prints as Upper Case	●	—	—	—	—	—	—	—

22.	Foldover on Printers With 64-Character Set	D9							
		1	2	3	4	5	6	7	8
a.	Lower Case Prints as Error Symbol	O	—	—	—	—	—	—	—
b.	Lower Case Prints as Upper Case	●	—	—	—	—	—	—	—	*

23.	Extended ASCII on Printer (Extended ASCII)	E1							
		1	2	3	4	5	6	7	8
a.	Prints Extended ASCII Characters (No Parity Check)	—	—	—	—	—			—
b.	Does Not Print Extended ASCII (See Option 19a, b, or c.)	—	—	—	(As in Option 19)		—	—	—	*

Note: Option 23.a. requires local engineering.

(See Legend for ●, O, —, and * under Option 17, Page 34.)

410072 Printer Logic Circuit Card (132-Column Tractor Feed) (Cont)

(Printer Circuit Card Viewed From Beneath Printer — Access to Switches is Through a Cutout in Bottom Pan of Printer.)

48. Incomplete Form Suppresses Paper Alarm	D9								
	1	2	3	4	5	6	7	8	
a. No (Paper-Out Not Gated With Form-Out)	—	—	—	●	—	—	—	—	
b. Yes (Paper-Out Gated With Form-Out)	—	—	—	O	—	—	—	—	*

54. Printing of Escape Sequences Suppressed (See Note)	D10								
	1	2	3	4	5	6	7	8	
a. Character After ESC Printed as Received	—	—	—	—	—	—	—	O	*
b. Printing of Character After ESC Suppressed	—	—	—	—	—	—	—	●	

Note: This option does not apply to Integrated Synchronous ROP. Either option may be chosen without affecting operation.

| 55. SI/SO Detection (See Note)	D10								
	1	2	3	4	5	6	7	8	
a. SI/SO Detection Not Used	—	—	O	—	—	—	—	—	*
b. SI/SO Detection Enables Printing Additional Characters	—	—	●	—	—	—	—	—	

Note: This option does not apply to Integrated Synchronous ROP. Either option may be chosen without affecting operation.

57. SSI/OEM Interface (See Note)	D8									
	1	2	3	4	5	6	7	8	9	
a. SSI	—	—	—	—	—	—	—	—	●	*
b. OEM	—	—	—	—	—	—	—	—	O	

Note: Choose Option 57.a.

(See Legend for ●, O, —, and * under Option 17, Page 34.)

410072 Printer Logic Circuit Card (132-Column Tractor Feed) (Cont)
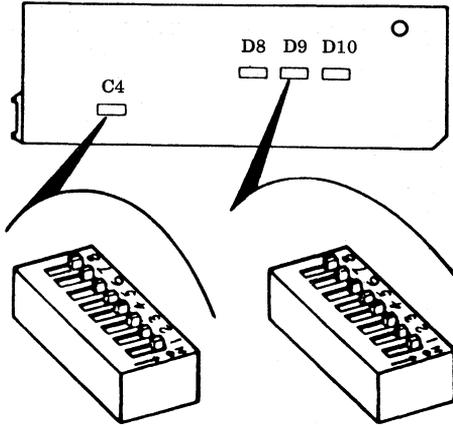
(Printer Circuit Card Viewed From Beneath Printer — Access to Switches is Through a Cutout in Bottom Pan of Printer.)

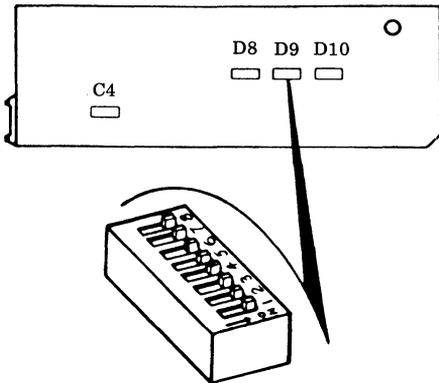| 58.	Idle Line Motor Control (See Note)	D9								
		1	2	3	4	5	6	7	8	
a.	Disabled — Motor Held On Indefinitely During Idle Line	—	—	—	—	—	O	—	—	*
b.	Enabled — Motor Turned Off After 40-Second Idle Line	—	—	—	—	—	●	—	—	

Note: Choose Option 58.a.

59.	Speed Selection (Applies Only if Option 57.b. is Selected)	C4								
		1	2	3	4	5	6	7	8	
a.	75 Baud	●	O	O	O	O	O	O	O	
b.	150 Baud	O	●	O	O	O	O	O	O	
c.	300 Baud	O	O	O	●	O	O	O	O	
d.	600 Baud	O	O	●	O	O	O	O	O	
e.	1200 Baud	O	O	O	O	O	O	●	O	
f.	2400 Baud	O	O	O	O	●	O	O	O	*
g.	4800 Baud	O	O	O	O	O	●	O	O	
h.	9600 Baud	O	O	O	O	O	O	O	●	

Note: This option does not apply to Integrated Synchronous ROP. Any option may be chosen without affecting operation.

(See Legend for ● , O , —, and * under Option 17, Page 34.)

410072 Printer Logic Circuit Card (132-Column Tractor Feed) (Cont)

(Printer Circuit Card Viewed From Beneath Printer — Access to Switches is Through a Cutout in Bottom Pan of Printer.)

60. Aux Alarm		D9							
		1	2	3	4	5	6	7	8
a.	Enable	—	—	—	—	O	—	—	—
b.	Disable	—	—	—	—	●	—	—	—

*

Note: Future alarm mechanism. Switch must be closed when alarm mechanism is not present. Choose Option 60.b. for Integrated Synchronous ROP.

410151 Circuit Card (80- or 132-Column Tractor Feed)

(Component Side of Circuit Card)
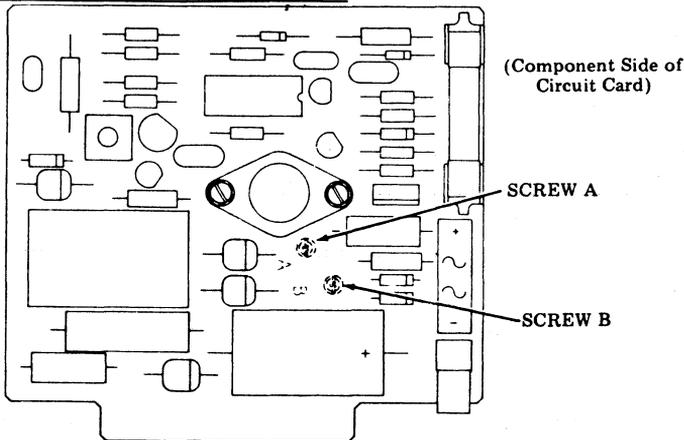
SCREW A

SCREW B

61. Regulator Grounding (Circuit Gnd to Frame Gnd) (See Note)	Screw A		Screw B	
	Component	Noncomponent	Component	Noncomponent
a. SSI	In	—	—	In
b. (OEM) At Printer	In	—	In	—
c. (OEM) Ext to Printer	—	In	In	—

*

Note: Choose Option 61.c. for Integrated Synchronous ROP.

(See Legend for ● , O , —, and * under Option 17, Page 34.)

ACTIVATING CONTROLLER OPTIONS

410734 Diode Matrix Circuit Card

121.	Left Margin Setting	R1, b0 to R2, b7	*
a.	Left Margin at Column 1 (See Note)	▭ All	
b.	Left Margin at Column 2 or Beyond	✕ Table E	

Note: Diode R1 b0 is NOT cut for Option 121a or b.

TABLE E

LEFT MARGIN DIODE LOCATION

COLUMN	DIODE	COLUMN	DIODE
		9	R2, b0
2	R1, b1	10	R2, b1
3	R1, b2	11	R2, b2
4	R1, b3	12	R2, b3
5	R1, b4	13	R2, b4
6	R1, b5	14	R2, b5
7	R1, b6	15	R2, b6
8	R1, b7	16	R2, b7

Cut and remove (✕) only the diode corresponding to the desired left margin position (printer column) as listed in Table E. If the printer left margin is required to be at column 17 or beyond, refer to the table for Option 122 for the diode location. See Note above for exception.

Option 121.a. requires selection of Option 131.a.
Option 121.b. requires selection of Option 131.b.
Example: Option 121.b. shown selected for printer left margin at printer column 4.

BIT 0	BIT 1	BIT 2	BIT 3	BIT 4	BIT 5	BIT 6	BIT 7

R2 ▭ ▭ ▭ ▭ ▭ ▭ ▭ ▭ 2
R1 ▭ ▭ ▭ ✕ ▭ ▭ ▭ ▭ 1
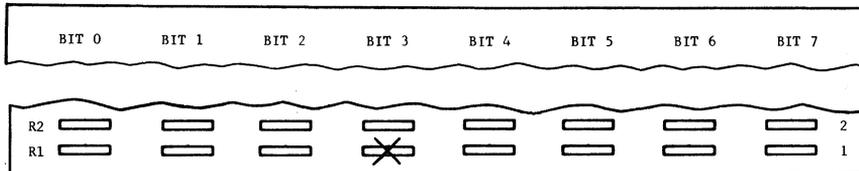
122.	Horizontal Tabulation Settings	R1, b0 to R17, b3	
a.	No Horizontal Tab Settings (See Note)	▭ (ALL)	*
b.	Preselected Horizontal Tab Settings in Any Column Through 80 (80-Column Printer) or Through 132 (132-Column Printer) (See Note)	✕ Table F	

Note: Diode R1, b0 is NOT cut for Option 122a or b.

When selecting horizontal tab settings for a particular customer application, remember that the printer spaces, prints and tabs at 10 character/columns per inch.

Horizontal tab settings to the left of, or the same as the left margin setting of Option 121b should, obviously, be avoided. Cutting and removing a lower numbered diode than chosen for the left margin setting will result in a new left margin at a lower numbered column and the left margin established by Option 121b will become a horizontal tab stop. Similiary, horizontal tab selecting beyond 80 columns must be avoided for 80-column printers.

Cut and remove (✕) the diode(s) corresponding to the desired horizontal tab setting(s), as shown in Table F. Also cut and remove diode at R10, b7 for an 80-Column printer or diode at R17, b3 for a 132-Column printer.

▭ Diode left in.
✕ Diode cut and removed.
  * Factory Installed
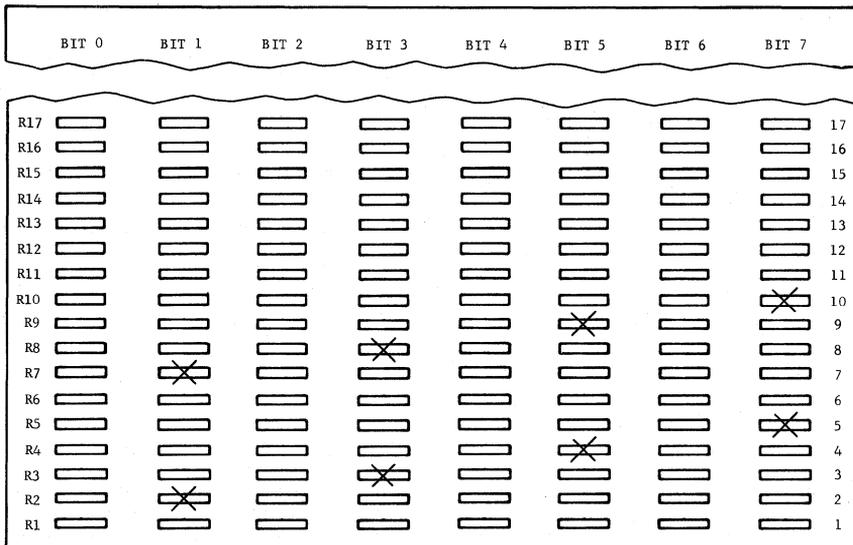
410734 Diode Matrix Circuit Card (Cont)

Diodes R17, b4 through b7 have no present application and should be left in place.

TABLE F

HORIZONTAL TAB SETTING DIODE

TAB COLUMN	TAB DIODE	TAB COLUMN	TAB DIODE	TAB COLUMN	TAB DIODE	TAB COLUMN	TAB DIODE
1	R1,b0	34	R5,b1	67	R9,b2	100	R13,b3
2	R1,b1	35	R5,b2	68	R9,b3	101	R13,b4
3	R1,b2	36	R5,b3	69	R9,b4	102	R13,b5
4	R1,b3	37	R5,b4	70	R9,b5	103	R13,b6
5	R1,b4	38	R5,b5	71	R9,b6	104	R13,b7
6	R1,b5	39	R5,b6	72	R9,b7	105	R14,b0
7	R1,b6	40	R5,b7	73	R10,b0	106	R14,b1
8	R1,b7	41	R6,b0	74	R10,b1	107	R14,b2
9	R2,b0	42	R6,b1	75	R10,b2	108	R14,b3
10	R2,b1	43	R6,b2	76	R10,b3	109	R14,b4
11	R2,b2	44	R6,b3	77	R10,b4	110	R14,b5
12	R2,b3	45	R6,b4	78	R10,b5	111	R14,b6
13	R2,b4	46	R6,b5	79	R10,b6	112	R14,b7
14	R2,b5	47	R6,b6	80	R10,b7	113	R15,b0
15	R2,b6	48	R6,b7	81	R11,b0	114	R15,b1
16	R2,b7	49	R7,b0	82	R11,b1	115	R15,b2
17	R3,b0	50	R7,b1	83	R11,b2	116	R15,b3
18	R3,b1	51	R7,b2	84	R11,b3	117	R15,b4
19	R3,b2	52	R7,b3	85	R11,b4	118	R15,b5
20	R3,b3	53	R7,b4	86	R11,b5	119	R15,b6
21	R3,b4	54	R7,b5	87	R11,b6	120	R15,b7
22	R3,b5	55	R7,b6	88	R11,b7	121	R16,b0
23	R3,b6	56	R7,b7	89	R12,b0	122	R16,b1
24	R3,b7	57	R8,b0	90	R12,b1	123	R16,b2
25	R4,b0	58	R8,b1	91	R12,b2	124	R16,b3
26	R4,b1	59	R8,b2	92	R12,b3	125	R16,b4
27	R4,b2	60	R8,b3	93	R12,b4	126	R16,b5
28	R4,b3	61	R8,b4	94	R12,b5	127	R16,b6
29	R4,b4	62	R8,b5	95	R12,b6	128	R16,b7
30	R4,b5	63	R8,b6	96	R12,b7	129	R17,b0
31	R4,b6	64	R8,b7	97	R13,b0	130	R17,b1
32	R4,b7	65	R9,b0	98	R13,b1	131	R17,b2
33	R5,b0	66	R9,b1	99	R13,b2	132	R17,b3

410734 Diode Matrix Circuit Card (Cont)

Example: Option 122b shown optioned for 80-column printer with tab stops at printer columns 10, 20, 30, 40, 50, 60, 70 and with diode representing 80th column (R10, b7) removed.

	BIT 0	BIT 1	BIT 2	BIT 3	BIT 4	BIT 5	BIT 6	BIT 7	
R17	▭	▭	▭	▭	▭	▭	▭	▭	17
R16	▭	▭	▭	▭	▭	▭	▭	▭	16
R15	▭	▭	▭	▭	▭	▭	▭	▭	15
R14	▭	▭	▭	▭	▭	▭	▭	▭	14
R13	▭	▭	▭	▭	▭	▭	▭	▭	13
R12	▭	▭	▭	▭	▭	▭	▭	▭	12
R11	▭	▭	▭	▭	▭	▭	▭	▭	11
R10	▭	▭	▭	▭	▭	▭	▭	✗	10
R9	▭	▭	▭	▭	▭	✗	▭	▭	9
R8	▭	▭	▭	✗	▭	▭	▭	▭	8
R7	▭	✗	▭	▭	▭	▭	▭	▭	7
R6	▭	▭	▭	▭	▭	▭	▭	▭	6
R5	▭	▭	▭	▭	▭	▭	▭	✗	5
R4	▭	▭	▭	▭	▭	✗	▭	▭	4
R3	▭	▭	▭	✗	▭	▭	▭	▭	3
R2	▭	✗	▭	▭	▭	▭	▭	▭	2
R1	▭	▭	▭	▭	▭	▭	▭	▭	1

123.	Vertical Tab Settings	R18, b0 to R29, b7
a.	No Vertical Tab Settings	▭ (ALL)
c.	1st Vertical Tab Line	✗ R18, TABLE G
d.	2nd Vertical Tab Line	✗ R19, TABLE G
e.	3rd Vertical Tab Line	✗ R20, TABLE G
f.	4th Vertical Tab Line	✗ R21, TABLE G
g.	5th Vertical Tab Line	✗ R22, TABLE G
h.	6th Vertical Tab Line	✗ R23, TABLE G
i.	7th Vertical Tab Line	✗ R24, TABLE G
j.	8th Vertical Tab Line	✗ R25, TABLE G
k.	9th Vertical Tab Line	✗ R26, TABLE G
l.	10th Vertical Tab Line	✗ R27, TABLE G
m.	11th Vertical Tab Line	✗ R28, TABLE G
n.	12th Vertical Tab Line	✗ R29, TABLE G

▭ Diode left in.
✗ Diode cut and removed.

410734 Diode Matrix Circuit Card (Cont)

When selecting vertical tab settings for a particular customer application, remember that the printer line feeds and tabs vertically at 6 lines per inch. Also, Option 20b (double line feed) will, if selected, cause the vertical tab settings to be double the length shown in Table G.

Vertical tab settings that would tab the printer into the next form should obviously be avoided. For example, an 11-inch form would not have a tab setting optioned beyond line 65 of the form.

Selections must be made in increasing line number from 1st vertical tab through 12th vertical tab line. When less than 12 vertical tabs are required, the unused positions (starting with the "12th" vertical tab line) must have all diodes left in.

TABLE G

VERTICAL TAB SETTING DIODE

TAB LINE	DIODE POSITION**	TAB LINE	DIODE POSITION**	TAB LINE	DIODE POSITION**	TAB LINE	DIODE POSITION**	TAB LINE	DIODE POSITION**
1	0	28	2,3,4	55	0,1,2,4,5	82	1,4,6	109	0,2,3,5,6
2	1	29	0,2,3,4	56	3,4,5	83	0,1,4,6	110	1,2,3,5,6
3	0,1	30	1,2,3,4	57	0,3,4,5	84	2,4,6	111	0,1,2,3,5,6
4	2	31	0,1,2,3,4	58	1,3,4,5	85	0,2,4,6	112	4,5,6
5	0,2	32	5	59	0,1,3,4,5	86	1,2,4,6	113	0,4,5,6
6	1,2	33	0,5	60	2,3,4,5	87	0,1,2,4,6	114	1,4,5,6
7	0,1,2	34	1,5	61	0,2,3,4,5	88	3,4,6	115	0,1,4,5,6
8	3	35	0,1,5	62	1,2,3,4,5	89	0,3,4,6	116	2,4,5,6
9	0,3	36	2,5	63	0,1,2,3,4,5	90	1,3,4,6	117	0,2,4,5,6
10	1,3	37	0,2,5	64	6	91	0,1,3,4,6	118	1,2,4,5,6
11	0,1,3	38	1,2,5	65	0,6	92	2,3,4,6	119	0,1,2,4,5,6
12	2,3	39	0,1,2,5	66	1,6	93	0,2,3,4,6	120	3,4,5,6
13	0,2,3	40	3,5	67	0,1,6	94	1,2,3,4,6	121	0,3,4,5,6
14	1,2,3	41	0,3,5	68	2,6	95	0,1,2,3,4,6	122	1,3,4,5,6
15	0,1,2,3	42	1,3,5	69	0,2,6	96	5,6	123	0,1,3,4,5,6
16	4	43	0,1,3,5	70	1,2,6	97	0,5,6	124	2,3,4,5,6
17	0,4	44	2,3,5	71	0,1,2,6	98	1,5,6	125	0,2,3,4,5,6
18	1,4	45	0,2,3,5	72	3,6	99	0,1,5,6	126	1,2,3,4,5,6
19	0,1,4	46	1,2,3,5	73	0,3,6	100	2,5,6	127	0,1,2,3,4,5,6
20	2,4	47	0,1,2,3,5	74	1,3,6	101	0,2,5,6	128	7
21	0,2,4	48	4,5	75	0,1,3,6	102	1,2,5,6	129	0,7
22	1,2,4	49	0,4,5	76	2,3,6	103	0,1,2,5,6	130	1,7
23	0,1,2,4	50	1,4,5	77	0,2,3,6	104	3,5,6	131	0,1,7
24	3,4	51	0,1,4,5	78	1,2,3,6	105	0,3,5,6	132	2,7
25	0,3,4	52	2,4,5	79	0,1,2,3,6	106	1,3,5,6		
26	1,3,4	53	0,2,4,5	80	4,6	107	0,1,3,5,6		
27	0,1,3,4	54	1,2,4,5	81	0,4,6	108	2,3,5,6		

** Diode position is preceded by "b".
Diodes indicated by diode position number must be cut and removed.

410734 Diode Matrix Circuit Card (Cont)

Example: Option 123. shown selected to accommodate an 11-inch form with vertical tab stop settings at 10, 20, 30, 45, and 60 lines.

	BIT 0	BIT 1	BIT 2	BIT 3	BIT 4	BIT 5	BIT 6	BIT 7	
R29	▭	▭	▭	▭	▭	▭	▭	▭	29
R28	▭	▭	▭	▭	▭	▭	▭	▭	28
R27	▭	▭	▭	▭	▭	▭	▭	▭	27
R26	▭	▭	▭	▭	▭	▭	▭	▭	26
R25	▭	▭	▭	▭	▭	▭	▭	▭	25
R24	▭	▭	▭	▭	▭	▭	▭	▭	24
R23	▭	▭	▭	▭	▭	▭	▭	▭	23
R22	▭	▭	✖	✖	✖	✖	▭	▭	22
R21	✖	▭	✖	▭	▭	✖	▭	▭	21
R20	▭	✖	✖	✖	✖	▭	▭	▭	20
R19	▭	▭	✖	▭	✖	▭	▭	▭	19
R18	▭	✖	▭	✖	▭	▭	▭	▭	18
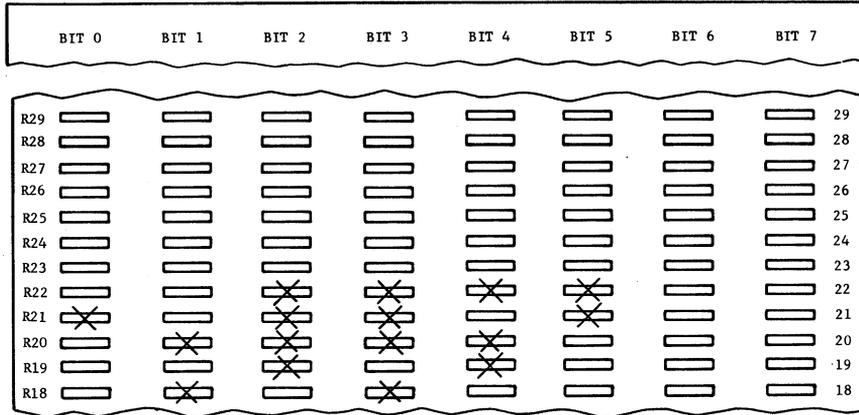
124.   Not Present

125.	Type of Printer Used	R46, b6	
a.	80-Column Printer	▭	*
b.	132-Column Printer	✖	

Note: Option 125 will be factory installed to match the printer used.

126.—130.   Not Present

131.	Left Margin	R46, b4	
a.	Left Margin Begins at Column 1 Regardless of Selection of Options 121. and 122.	▭	*
b.	Left Margin Begins as Selected in Option 121.	✖	

132.—147.   Not Present

148.	Motor Turn-Off Delay	R46, b5	
a.	Minimum Delay — Motor Turns Off Approximately 30 Seconds After Buffer Empties	▭	*
b.	Maximum Delay — Motor Turn Off Delayed Approximately 3 Minutes After Buffer Empties	✖	

149.—158.   Not Present

▭ Diode left in.
✖ Diode cut and removed.
 *Factory installed.

410734 Diode Matrix Circuit Card (Cont)

159.	Variable Characters for System Operation (Notes 1, 2, 3)	DIODE ASSIGNMENT		
			COLUMN	
		ROW	ASCII	EBCDIC
a.	Programmable Character 1	R43	b0-b6	b0-b7
b.	Programmable Character 2	R42	b0-b6	b0-b7
c.	Programmable Character 3	R41	b0-b6	b0-b7
d.	Programmable Character 4	R40	b0-b6	b0-b7
e.	Programmable Character 5	R39	b0-b6	b0-b7
f.	Programmable Character 6	R38	b0-b6	b0-b7
g.	Programmable Character 7	R37	b0-b6	b0-b7
h.	Programmable Character 8 (DLE)	R36	b0-b6	b0-b7
i.	Programmable Character 9 (ZERO)	R35	b0-b6	b0-b7
j.	Programmable Character 10 (ONE)	R34	b0-b6	b0-b7
k.	Programmable Character 11 (EOT)	R33	b0-b6	b0-b7
l.	Programmable Character 12 (NAK)	R32	b0-b6	b0-b7
m.	Programmable Character 13 (ENQ)	R31	b0-b6	b0-b7
n.	Programmable Character 14	R30	b0-b6	b0-b7

Note 1: Program a character for each position except as noted. Remove a diode to encode a mark, retain the diode to encode a space.

Note 2: If Option 160.a. (ASCII) is used (see Table A or C) data bits 1 through 7 are encoded by diodes b0 through b6 respectively, (ie, for marking bit 1 remove diode b0, for marking bit 2 remove diode b1, for marking bit 3 remove diode b2 etc). Diode b7 must be encoded to provide odd parity for the character.

Note 3: If Option 160.b. (EBCDIC) is used, data bits 7 through 0 are encoded by diodes b0 through b7 respectively, (ie, for marking bit 0 remove diode b7, for marking bit 1 remove diode b6, for marking bit 2 remove diode b5 etc).

Note 4: See Paragraph 5. FIELD OPTIONS AND DESCRIPTIONS, Pages 15 and 16 Option 159. for notes.

410734 Diode Matrix Circuit Card (Cont)

160.	Communication Code-Line Operation	R46, b0	
a.	ASCII	▭	*
b.	EBCDIC	⊠	

161.	Future Use	R46, b1	
a.	All Present Applications	▭	*
b.	Possible Future Use	⊠	

162.	Type Font Length	R46, b2	
a.	64 or 96 Characters	▭	*
b.	48 Characters	⊠	

163.	Future Use	R46, b3	
a.	All Present Applications	▭	*
b.	Possible Future Use	⊠	

164.	Block Size	R45, b0	R45, b1	
a.	128 Characters	▭	⊠	
b.	256 Characters	⊠	▭	
c.	512 Characters	▭	▭	*

165.	Future Use	R45, b2	
a.	All Present Applications	▭	*
b.	Possible Future Use	⊠	

166.	Data Carrier Disconnect	R45, b3	
a.	Disconnect if Carrier is Lost for 30 Seconds or No Carrier Within 30 Seconds After Call Connection	▭	*
b.	No Disconnect on Absence of Carrier	⊠	

167.	Permanent Request-to-Send (RTS)	R45, b4	
a.	RTS ON Only When Required For Transmission	▭	*
b.	RTS ON at All Times That DTR is ON	⊠	

▭ Diode left in.
⊠ Diode cut and removed.
*Factory installed.

410734 Diode Matrix Circuit Card (Cont)

168.	Future Use	R45, b5	
a.	All Present Applications	Diode left in	*
b.	Possible Future Use	Diode cut and removed	

169.	Future Use	R45, b6	
a.	All Present Applications	Diode left in	*
b.	Possible Future Use	Diode cut and removed	

170.	Space Extension	R45, b7	
a.	Single Space on Space Character	Diode left in	*
b.	Three Spaces on Space Characters	Diode cut and removed	

171.	Selection Formats (PAD and SYN Characters Omitted)	R44, b0-b7
a.	Point-to-Point Private Line/Switched-Network Without Terminal Identification Providing Device Selection — $\begin{matrix} & & E & A & S & D \\ N & [C & \emptyset] & T & C \\ Q & K & X & n \end{matrix}$ (Notes 1, 2, 3, 4, 5)	Diode cut and removed, b0
b.	Point-to-Point Private Line/Switched-Network Without Terminal Identification or Device Selection — $\begin{matrix} E & A & S \\ N & [C & \emptyset] & T \\ Q & K & X \end{matrix}$ (Notes 2, 3, 4)	Diode cut and removed, b1
c.	Multipoint Private Line Providing Device Selection — $\propto \# \begin{matrix} E & A & S \\ N & [C & \emptyset] & T \\ Q & K & X \end{matrix}$ (Notes 1, 2, 3, 4, 7)	Diode cut and removed, b2
d.	Multipoint Private Line Without Device Selection — $\propto_1 \propto_2 \begin{matrix} E & A & S \\ N & [\alpha_1 \alpha_2 C & \emptyset] & T \\ Q & K & X \end{matrix}$ (Notes 2, 3, 4, 6, 11)	Diode cut and removed, b3
e.	Switched-Network With Terminal Identification — Providing Device Selection — $\propto_A \propto_B \begin{matrix} E & A & S & D \\ N & [\alpha_1 \alpha_2 C & \emptyset] & T & C \\ Q & K & X & n \end{matrix}$ (Notes 1, 2, 3, 4, 5, 10)	Diode cut and removed, b4
f.	Switched-Network With Terminal Identification; Without Device Selection — $\propto_A \propto_B \begin{matrix} E & A & S \\ N & [\alpha_1 \alpha_2 C & \emptyset] & T \\ Q & K & X \end{matrix}$ (Notes 2, 3, 4, 10)	Diode cut and removed, b5
g.	Multipoint Private Line With Device Selection — $\propto_1 \propto_2 \# \begin{matrix} E & A & S \\ N & [C & \emptyset] & T \\ Q & K & X \end{matrix}$ (Notes 1, 2, 3, 4, 6, 8)	Diode cut and removed, b6
h.	Switched-Network Providing Device Selection and Security Identification — $\propto_A \propto_B \; A_1 B_1 C_1 \begin{matrix} E & & A & S & D \\ N & [\alpha_1 \alpha_2 \; A_2 B_2 C_2 C & \emptyset] & T & C \\ Q & & K & X & n \end{matrix}$ (Notes 1, 2, 3, 4, 5, 9)	Diode cut and removed, b7

See Paragraph 5. FIELD OPTIONS AND DESCRIPTIONS, Pages 18 and 19, Option 171 for Notes.

Diode left in.
Diode cut and removed.
*Factory installed.

410734 Diode Matrix Circuit Card (Cont)

172.	Future Use	R46, b7	
a.	All Present Applications	⊏⊐	*
b.	Possible Future Use	⊗	

173.	ETB	R47, b0	
a.	Block Terminator	⊏⊐	*
b.	Block Terminator, Executes Printing a Line, Executes Vertical Tab ESC Sequence (or NL if None) or Terminates a Horizontal Tab Setting Sequence.	⊗	

174.	ETX	R47, b1	
a.	Block Terminator or Terminates Horizontal Tab Setting Sequence	⊏⊐	*
b.	Block Terminator, Terminates Horizontal Tab Sequence, Executes Printing a Line or Executes Vertical Tab ESC Sequence (or NL if None).	⊗	

175.	ITB	R47, b2	
a.	Intermediate Block Terminator	⊏⊐	*
b.	Block Terminator, Executes Printing a Line, Executes Vertical Tab ESC Sequence (or NL if None) or Terminates Horizontal Tab Setting Sequence.	⊗	

176.	LINE FEED/NEW LINE	R47, b3	
a.	Executes Printing a Line, Executes Vertical Tab ESC Sequence (or NL if None) or Terminates Horizontal Tab Setting Sequence.	⊏⊐	*
b.	SPACE Only	⊗	

177.	RS or IRS (EBCDIC)	R47, b4	
a.	Executes Printing a Line and Executes Vertical Tab ESC Sequence (or NL if None)	⊏⊐	*
b.	SPACE Only	⊗	

178.	Immediate WACK	R47, b5	
a.	Disabled	⊏⊐	*
b.	Enabled	⊗	

179.	WACK/Buffer Control	R47, b6	
a.	WACK Response Enabled, Multiple Block Buffer	⊏⊐	*
b.	WACK Response Disabled, Single Block Buffer	⊗	

⊏⊐ Diode left in.
⊗ Diode cut and removed.
 *Factory installed.

410734 Diode Matrix Circuit Card (Cont)

180.	Future Use	R47, b7	
a.	All Present Applications	⬭	*
b.	Possible Future Use	⌐⊠	

181.	Future Use	R48, b0	
a.	All Present Applications	⬭	*
b.	Possible Future Use	⌐⊠	

182.	Future Use	R48, b1	
a.	All Present Applications	⬭	*
b.	Possible Future Use	⌐⊠	

183.	Future Use	R48, b2	
a.	All Present Applications	⬭	*
b.	Possible Future Use	⌐⊠	

184.	Future Use	R48, b3	
a.	All Present Applications	⬭	*
b.	Possible Future Use	⌐⊠	

185.	Future Use	R48, b4	
a.	All Present Applications	⬭	*
b.	Possible Future Use	⌐⊠	

186.	Future Use	R48, b5	
a.	All Present Applications	⬭	*
b.	Possible Future Use	⌐⊠	

187.	Future Use	R48, b6	
a.	All Present Applications	⬭	*
b.	Possible Future Use	⌐⊠	

188.	Future Use	R48, b7	
a.	All Present Applications	⬭	*
b.	Possible Future Use	⌐⊠	

⬭ Diode left in.
⌐⊠ Diode cut and removed.
*Factory installed.

410733 Controller Circuit Card

Note: SW2 along with SW3 and SW4 are reserved for future use.
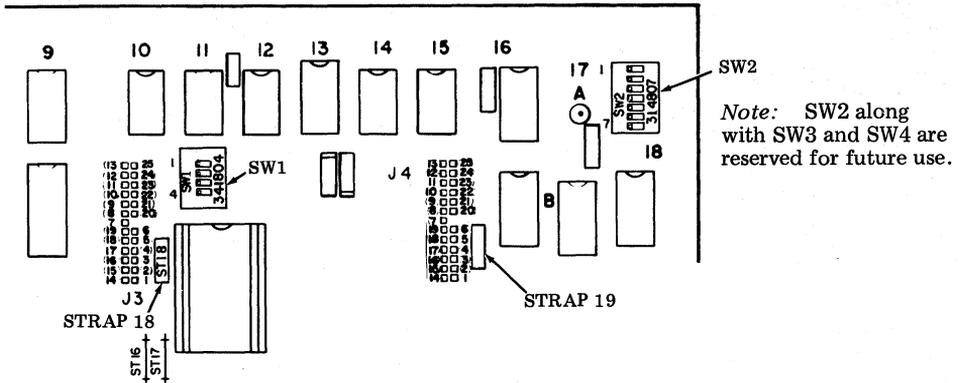
			SW1			
		1	2	3	4	
189.	Receiver Clock Control					
a.	Rec. Clock from Associated Data Set	—	—	O	●	*
b.	Rec. Clock Generated Internally	—	—	●	O	

			SW1			
		1	2	3	4	
190.	Transmitter Clock Control					
a.	Trans. Clock from Associated Data Set	O	●	—	—	*
b.	Trans. Clock Generated Internally	●	O	—	—	

|		CUT STRAP		
	Ground Connection	18	19	
a.	Frame Ground Connected to Signal Ground	NO	NO	*
b.	Frame Ground Not Connected to Signal Ground	YES	YES	

Note: Where a longer than normal 408065 cable for connecting ROP and data set is used, and when electrical noise is a problem, the frame ground to signal ground connection may be broken at the ROP (Option b) and tied together at another point (as at the data set).

See Legend for ● , O , —, and * under Option 17, Page 34.)

ACTIVATING DATA SET OPTIONS (Refer to the following tables for the applicable data set options.)

ASSOCIATED TELEPHONE
(When Required)
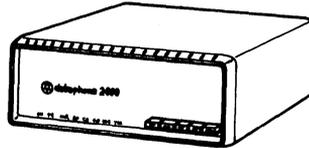
DATA SET 201C

TABLE H

DATA SET 201C OPTIONS*

FEATURE		OPTION	STRAPPING ON ANALOG BOARD (JB1 CP) INSTALL RED STRAPS	STRAPPING ON DIGITAL BOARD (JB2 CP) INSTALL RED STRAPS	REMOVE RED STRAPS FOR OPTION	PROVIDE
Transmit Line Signal Level	0 dBm	ZA	27-28, 29-30, 31-32, 33-34		ZP	One Per Station
	− 1 dBm	ZB	19-20, 29-30, 31-32, 33-34		ZO	
	− 2 dBm	ZC	27-28, 21-22, 31-32, 33-34		ZN	
	− 3 dBm	ZD	19-20, 21-22, 31-32, 33-34		ZM	
	− 4 dBm	ZE	27-28, 29-30, 23-24, 33-34		ZL	
	− 5 dBm	ZF	19-20, 29-30, 23-24, 33-34		ZK	
	− 6 dBm	ZG	27-28, 21-22, 23-24, 33-34		ZJ	
	− 7 dBm	ZH	19-20, 21-22, 23-24, 33-34		ZI	
	− 8 dBm	ZI	27-28, 29-30, 31-32, 25-26		ZH	
	− 9 dBm	ZJ	19-20, 29-30, 31-32, 25-26		ZG	
	−10 dBm	ZK	27-28, 21-22, 31-32, 25-26		ZF	
	−11 dBm	ZL	19-20, 21-22, 31-32, 25-26		ZE	
	−12 dBm	ZM	27-28, 29-30, 23-24, 25-26		ZD	
	−13 dBm	ZN	19-20, 29-30, 23-24, 25-26		ZC	
	−14 dBm	ZO	27-28, 21-22, 23-24, 25-26		ZB	
	−15 dBm	ZP	19-20, 21-22, 23-24, 25-26		ZA	
Line Impedance	600 Ω	ZQ	16-17		ZR	One Per Station
	900 Ω	ZR	17-18		ZQ	
Compromise† Equalizer	IN	ZS	8-9, 11-12		ZT	One Per Station
	OUT	ZT	9-10, 12-13		ZS	
Carrier ON Sensitivity	−24 for PL	ZU			ZV	One Per Station
	−44 for DDD	ZV	1-2			

TABLE H (Cont)

DATA SET 201C OPTIONS*

FEATURE			OPTION	STRAPPING ON ANALOG BOARD (JB1 CP) INSTALL RED STRAPS	STRAPPING ON DIGITAL BOARD (JB2 CP) INSTALL RED STRAPS	REMOVE RED STRAPS FOR OPTION	PROVIDE
New Sync		Not Used	YA		20-21	YB	One Per Station
		Customer-Controlled	YB		19-20	YA	
Transmitter Timing		INT	YC			YD	One Per Station
		EXT	YD		13-14		
Automatic Answer	RDY and DTR Control or Not Provided		YE			YF	One Per Station
	DTR Control Only		YF		17-18		
Ring Indication On Customer Interface		EIA	YG		22-24	YH	One Per Station
		Contact	YH		22-23	YG	
Use With DAS 828-Type		Yes	YI			YJ	One Per Station
		No	YJ		15-16		
Grounding Option	Common		YK		25-26		One Per Station
	Not Common		YL			YK	
Type of Operation and Clear-to-Send Delay	4-Wire PL		XA	35-36	1-3, 4-6, 28-29, 11-12	Note 1	One Per Station
			XB	35-36	1-3, 5-6, 28-29, 11-12	Note 2	
			XC	35-36	2-3, 5-6, 28-29, 11-12	Note 3	
	2-Wire DDD		XD	4-5	1-3, 4-6, 27-28	Note 4	
	2-Wire PL		XE	4-5, 35-36	1-3, 4-6, 133-134, 11-12	Note 5	

* DO NOT REMOVE ANY BLACK TEST STRAPS.　　　　　　　　　　　† Use option ZS for all installations.

Note 1: Remove red straps: 4-5 on JB1 CP; 2-3, 5-6, 27-28, 133-134 on JB2 CP
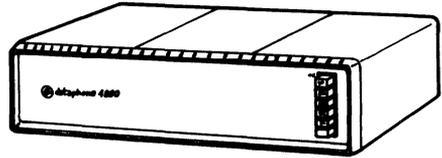*Note 2:* Remove red straps: 4-5 on JB1 CP; 2-3, 4-6, 27-28, 133-134 on JB2 CP
Note 3: Remove red straps: 4-5 on JB1 CP; 1-3, 4-6, 27-28, 133-134 on JB2 CP
Note 4: Remove red straps: 35-36 on JB1 CP; 2-3, 5-6, 28-29, 11-12, 133, 134 on JB2 CP
Note 5: Remove red straps: 2-3, 5-6, 27-28, 28-29 on JB2 CP

ASSOCIATED TELEPHONE
(When Required)
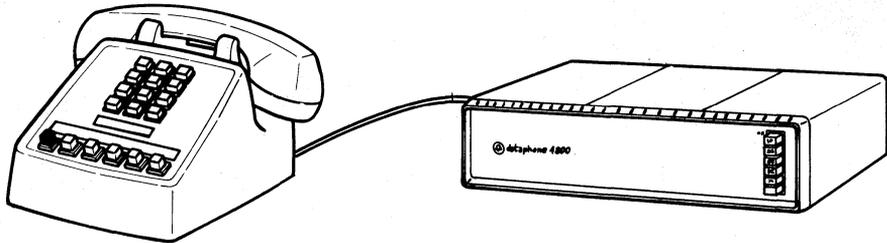
DATA SET 208A-L1A

TABLE I

DATA SET 208A-TYPE OPTIONS

FEATURE OR OPTION		SWITCH*	SWITCH POSITION	OPTION DESIG.
DSR ON in AL Mode		S1A (See Note)	Up	YM
DSR OFF in AL Mode			Down	YN
No Comp Equalizer Test		S1B (See Note)	Up	YQ
Comp Equalizer Test Enabled			Down	YR
Continuous Request-to-Send		S1C	Up	YS
Switched Request-to-Send			Down	YT
EQUALIZATION	No Equalization	S2A† S2B† S2C	Down	ZT
	Amp and Delay (Sym) ‡	S2A† S2B S2C	Up Up	ZS
	Amp and Delay (Hi End)	S2A S2B S2C	Up Down Up	ZU
	Amp and Delay (Sym + Hi End)	S2A S2B S2C	Down Down Up	ZV
Transmit Externally Timed		S3A	Up	YD
Transmit Internally Timed			Down	YC
Retrain Automatically §		S3B	Up	YU
Retrain Not Used			Down	YV
DAS is Used		S3C	Up	YI
DAS Not Used			Down	YJ
1-Sec Holdover Disable		S4A	Up	YW
1-Sec Holdover			Down	YX
Continuous Carrier		S4B	Up	XB
Switched Carrier			Down	XA
New Sync Used by Customer		S4C	Up	YB
New Sync Not Used by Customer			Down	YA

† Switch may be in either position.
‡ Always use when optioned for continuous carrier operation (S4B up).
§ This option must always be installed.
Note: **This option is not available on DS 208A-L1.**

ASSOCIATED TELEPHONE   DATA SET 208B-L1

TABLE J

DATA SET 208B-TYPE OPTIONS

FEATURE		OPTION	SWITCH								"50" BUTTON
			S1A	S1B	S1C	S2A	S2C	S3A	S3B	S3C	
Transmit Line Signal Level	0 dBm	ZA*	Down	Up	Down	Up	—	—	—	—	—
	-1 dBm	ZB	Down	Up	Down	Down	—	—	—	—	—
	-2 dBm	ZC	Down	Up	Up	Up	—	—	—	—	—
	-3 dBm	ZD	Down	Up	Up	Down	—	—	—	—	—
	-4 dBm	ZE	Down	Down	Down	Up	—	—	—	—	—
	-5 dBm	ZF	Down	Down	Down	Down	—	—	—	—	—
	-6 dBm	ZG	Down	Down	Up	Up	—	—	—	—	—
	-7 dBm	ZH	Down	Down	Up	Down	—	—	—	—	—
	-8 dBm	ZI	Up	Up	Down	Up	—	—	—	—	—
	-9 dBm	ZJ	Up	Up	Down	Down	—	—	—	—	—
	-10 dBm	ZK	Up	Up	Up	Up	—	—	—	—	—
	-11 dBm	ZL	Up	Up	Up	Down	—	—	—	—	—
	-12 dBm	ZM	Up	Down	Down	Up	—	—	—	—	—
	-13 dBm	ZN	Up	Down	Down	Down	—	—	—	—	—
	-14 dBm	ZO	Up	Down	Up	Up	—	—	—	—	—
	-15 dBm	ZP	Up	Down	Up	Down	—	—	—	—	—
Compromise Equalizer †	IN	ZS*	—	—	—	—	Up	—	—	—	—
	OUT	ZT	—	—	—	—	Down	—	—	—	—
DSR in Analog Loop Mode	ON	YM	—	—	—	—	—	Up	—	—	—
	OFF	YN*	—	—	—	—	—	Down	—	—	—
Answer	MAN.	YO	—	—	—	—	—	—	Up	—	—
	AUTO	YP*	—	—	—	—	—	—	Down	—	—
Transmitter Timed	EXT.	YD	—	—	—	—	—	—	—	Up	—
	INT.	YC*	—	—	—	—	—	—	—	Down	—
RS-CS Interval++	50 MS		—	—	—	—	—	—	—	—	Depressed
	150 MS		—	—	—	—	—	—	—	—	Released

*Factory installed.
†Compromise Equalizer should always be in.
++ If not specified on service order; install 50 msec. interval.
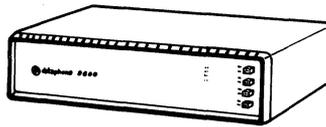
DATA SET 209A-L1

TABLE K

DATA SET 209A-L1 OPTIONS

OPTION†	REMOVE SWITCH	JACK POSITION	INSTALL SWITCH	JACK POSITION	FEATURE	PROVIDE
WA	S3	4	S2	1	Elastic Store Enable 1 IN	One Per Station
WB*	S2	1	S3	4	Elastic Store Enable 1 OUT	
WC	S3	6	S2	3	Elastic Store Enable 2 IN	One Per Station
WD*	S2	3	S3	6	Elastic Store Enable 2 OUT	
WE	S2	4	S2	5	Elastic Store Enable 3 IN	One Per Station
WF*	S2	5	S2	4	Elastic Store Enable 3 OUT	
WG	S2	8	S2	7	Elastic Store Enable 4 IN	One Per Station
WH	S2	7	S2	8	Elastic Store Enable 4 OUT	
WI	S6	4	S6	5	Slave IN	One Per Station
WJ*	S6	5	S6	4	Slave OUT	
WK*	S1	5	S1	4	Compromise Equalizer Receive Slope IN	One Per Station
WL	S1	4	S1	5	Compromise Equalizer Receive Slope OUT	
WM	S1	2 or 3	S1	1	Compromise Equalizer Receive Phase HI	One Per Station
WN*	S1	1 or 3	S1	2	Compromise Equalizer Receive Phase OUT	
WO	S1	1 or 2	S1	3	Compromise Equalizer Receive Phase LO	
WP*	S3	3	S3	1	Compromise Equalizer Trmtr Slope IN	One Per Station
WQ	S3	1	S3	3	Compromise Equalizer Trmtr Slope OUT	
WR	S1	7 or 8	S1	6	Compromise Equalizer Trmtr Phase HI	One Per Station
WS*	S1	6 or 8	S1	7	Compromise Equalizer Trmtr Phase OUT	
WT	S1	6 or 7	S1	8	Compromise Equalizer Trmtr Phase LO	
XF	S5	6 or 7 or 8	S5	3	4W Switched Carrier and Auto Retrain	One Per Station
XG*	S5	3 or 7 or 8	S5	6	4W Continuous Carrier and Auto Retrain	
XH	S5	3 or 6 or 8	S5	7	4W Switched Carrier and No Auto Retrain	
XI	S5	3 or 6 or 7	S5	8	4W Continuous RS and Auto Retrain	
YC*	S6	3	S6	2	Internal Timing	One Per Station
YD	S6	2	S6	3	External Timing	
YI*	S3	8	S6	6	DAS 828- or 829-type Used	One Per Station
YJ	S6	6	S3	8	DAS 828- or 829-type Not Used	
YM	S6	8	S5	1	DSR ON in Analog Loop Mode	One Per Station
YN*	S5	1	S6	8	DSR OFF in Analog Loop Mode	
YW	S5	5	S5	4	1-Second Holdover OUT	One Per Station
YX*	S5	4	S5	5	1-Second Holdover IN	

* Factory installed.

† If this data set is the first data set 209A-L1 to be installed in the system, options WK, WN, WP, and WS must be installed.

7. FINAL ASSEMBLY

7.01   Opcon Assembly for Tabletop Arrangements (Fig. 28):

(a)   Plug connector P40 (406192 cable assembly) into 40K003/AAB Opcon.

(b)   Push opcon ground strap terminal onto cabinet terminal tab.

(c)   Slide left or right latches down.

(d)   Engage left and right guides into slots.

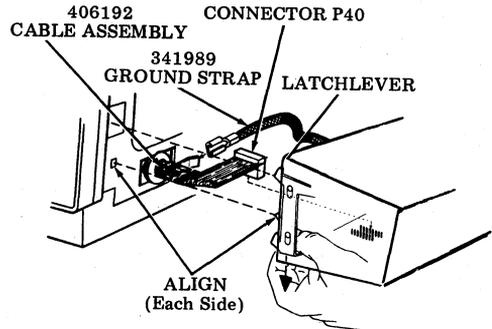(e)   Slide left and right latches upward into latched position.

Warning: Check that opcon is firmly attached on both sides before releasing hold.

Note: The opcon for the forms access arrangements is mounted on the front panel of the cabinet.

Fig. 28—Opcon Assembly

7.02   Controller Assembly (Fig. 29) (if controller is removed for reoptioning):

Warning: Take the proper ground precautions when handling the integrated controller, as discussed in 1.03.

(a)   Remount the 410734 diode matrix circuit card.

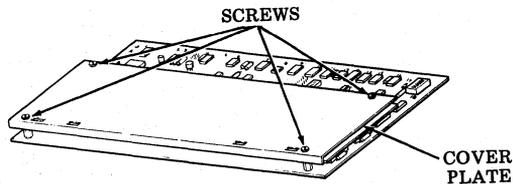(b)   Replace cover plate with four screws.

Fig. 29—40C303AC/003 Controller Assembly

7.03   Assembly of Controller Into Cabinet

<u>Table Mounted Cabinet</u>

(a)   Located controller in bottom of cabinet. Use EIA cable connector as a reference.

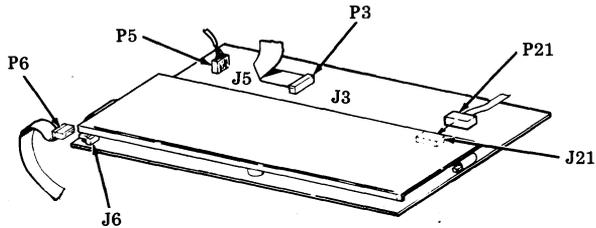(b)   Plug in P3 (EIA), P5 (SSI), P21 (Power) and P6 (Opcon) connectors.

Fig. 30—40C303AC/003 Cable Connections

(c)   Push controller against capacitor bracket so that rubber isolators prevent controller from moving freely. Rubber isolators must not be pushed out of position and the metal around the isolators must not touch the circuit card.

(d)   Replace paper chute. Tighten two nuts securing paper chute.

Forms Access Cabinet

(a) Locate 40C303AC/003 controller in controller cover. Remount two brackets; secure brackets with four screws (Fig. 31).
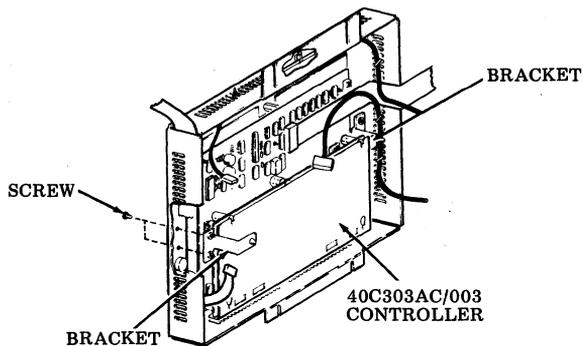

Fig. 31—Assembly of 40C303AC/003 Controller

(b) Plug in P3 (EIA), P5 (SSI), P6 (Opcon) and P21 (Power) connectors (Fig. 32).
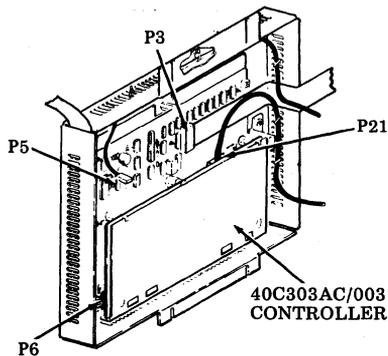

Fig. 32—Controller Connectors

(c) To assemble controller cover with controller to forms access cabinet engage upper mounting screws of cabinet in upper (longer) slots of cover; slide cover up to limits of slots and engage lower slots with mounting screws, slide cover down. Tighten four screws (Fig. 33).
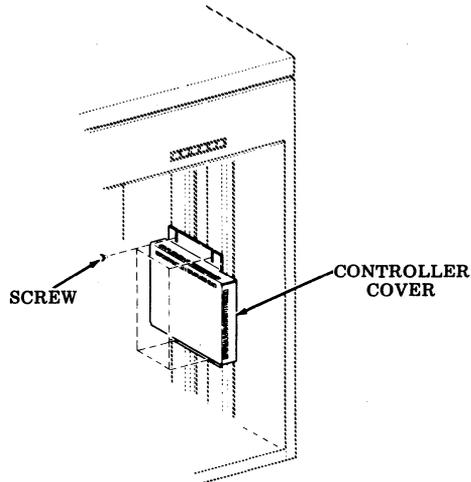

Fig. 33—Controller Assembly

7.04   For installation of printer into printer cabinet refer to Section 582-210-200, Issue 3, (plus addendum) or later.

7.05   Data Set Connection: After the data set has been optioned, connect to the Integrated ROP Set (Fig. 34, 35, 36).
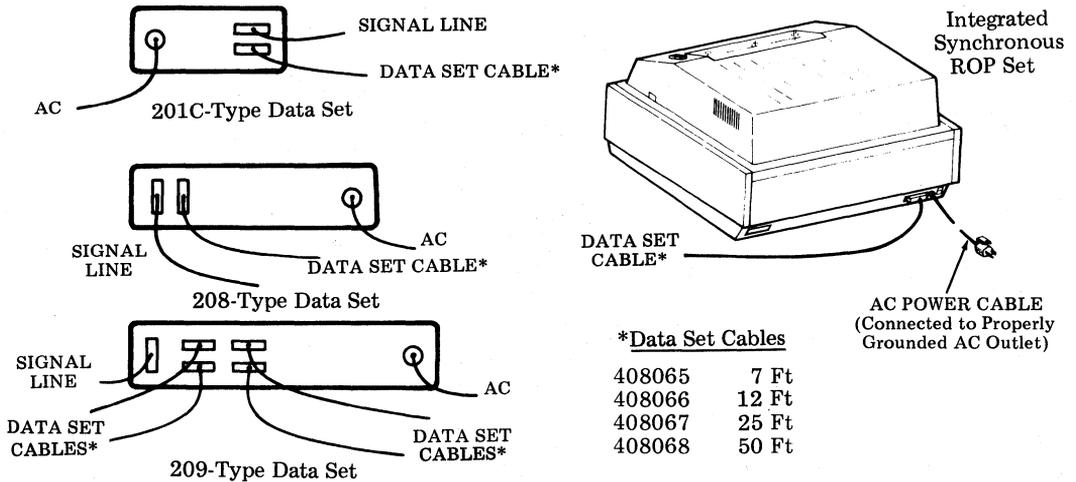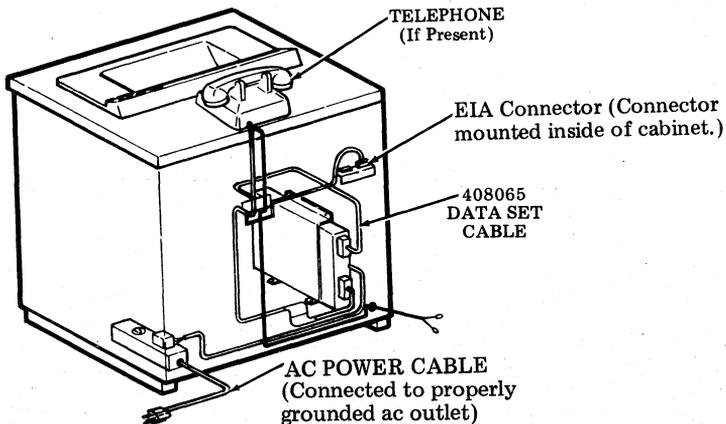
Fig. 34—Data Set Connection — Tabletop Cabinet

Fig. 35—Data Set Connection — Forms Access Printer
Cabinet (Data Set Internally Mounted)

TELEPHONE
(If Present)

Data set may be mounted
up to 50 feet away.

Data Set Cables

408065	7 Ft
408066	12 Ft
408067	25 Ft
408068	50 Ft

EIA Connector (Connector
mounted inside of cabinet.)

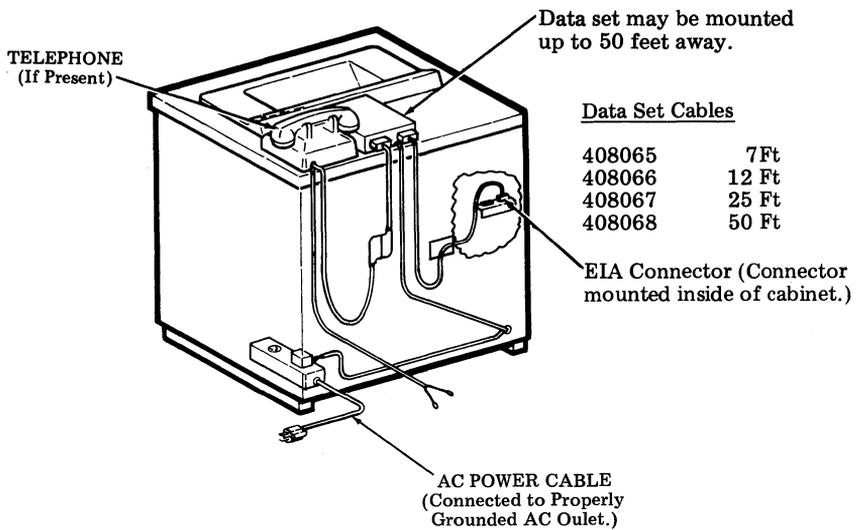AC POWER CABLE
(Connected to Properly
Grounded AC Oulet.)

Fig. 36—Data Set Connections — Forms Access Printer
Cabinet (Data Set Externally Mounted)

7.06   Station Feature and Option Record: A record should be made of all ROP station options installed
        on BSTSEA W-Plans, W-4OPTR and W-4RPXA. For recording data set options refer to the appro-
priate data set BSP section. The option record should be associated with the station. It may be placed
inside the pedestal if one is present.

7.07   Install ribbon and paper following instructions in Section 582-210-200. Make any adjustments for
        number of plies of paper used, form out belt settings, etc. at this time.

7.08   Test the station off-line and on-line per Section 582-202-500.