Manual 325-054
March, 1979

dataspeed® 40/4

STATION ARRANGEMENTS

SERVICE MANUAL

SERVICE MANUAL

for

SYNCHRONOUS "DATASPEED*" 40/4 STATION ARRANGEMENTS

This service manual applies to maxi-cluster and mini-cluster station arrangements (M/M). It also applies to single display station (SDS) arrangements.

The manual is reissued to revise information on maxi-cluster and mini-cluster station arrangements and to add information for single display station arrangements and the keyboard disable lock feature for attached KDs.

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SYNCHRONOUS "DATASPEED*" 40/4

MAXI-CLUSTER AND MINI-CLUSTER STATION ARRANGEMENTS

INSTALLATION

CONTENTS PAGE

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Prepared for American Telephone and Telegraph Company by Teletype Corporation

CONTENTS PAGE

1. GENERAL

1.01 This section provides the installation procedures and methods for a DATASPEED 40/4 Station. See 3. INSTALLATION on Page 66 for order of procedures.

1.02 This section is reissued to provide information for:

(a) Placement of 410525 circuit card in EPROM MCC.

(b) 40K203/GAB Opcon.

Note: When ordering replaceable components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410055).

1.03 Reference BSP Sections

Description and Operation	582-200-101
Maintenance Controller Arrangements	582-200-300
Wiring Diagrams	582-200-401
Testing and Troubleshooting	582-200-501
Disassembly/Reassembly and Parts	582-200-701
Routine Maintenance	582-200-751
Keyboard Display Amplifier	582-200-212
KD Security Lock	582-211-210

1.04 Abbreviations used in this section are defined in Section 582-200-101.

1.05 The following warnings are to be used as safety measures for the apparatus and the craftsperson.

Danger 1: Safety glasses must be worn whenever monitor cover is removed or whenever monitor is replaced.

Danger 2: Turn off all the power and signal sources before removing or replacing any component.

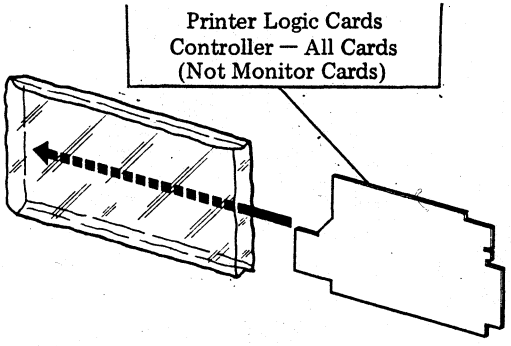
Warning 1: To avoid possible internal damage to circuitry, wear a 346392 static discharge strap connected to ground to allow static discharge before handling circuit cards for removal or replacement. Avoid touching circuit lands or components as much as possible.

Attach static ground strap tightly to wrist.

Attach clip end of static discharge strap to frame ground.

Warning 2: Place listed card in an RM150592 static bag immediately after removal from unit. Do not place any printer paper in the bag with the card. Keep the card in the static bag at all times. Never handle the card outside the bag without wearing a properly grounded 346392 static ground strap.

Cards List



STATION WORKSHEETS

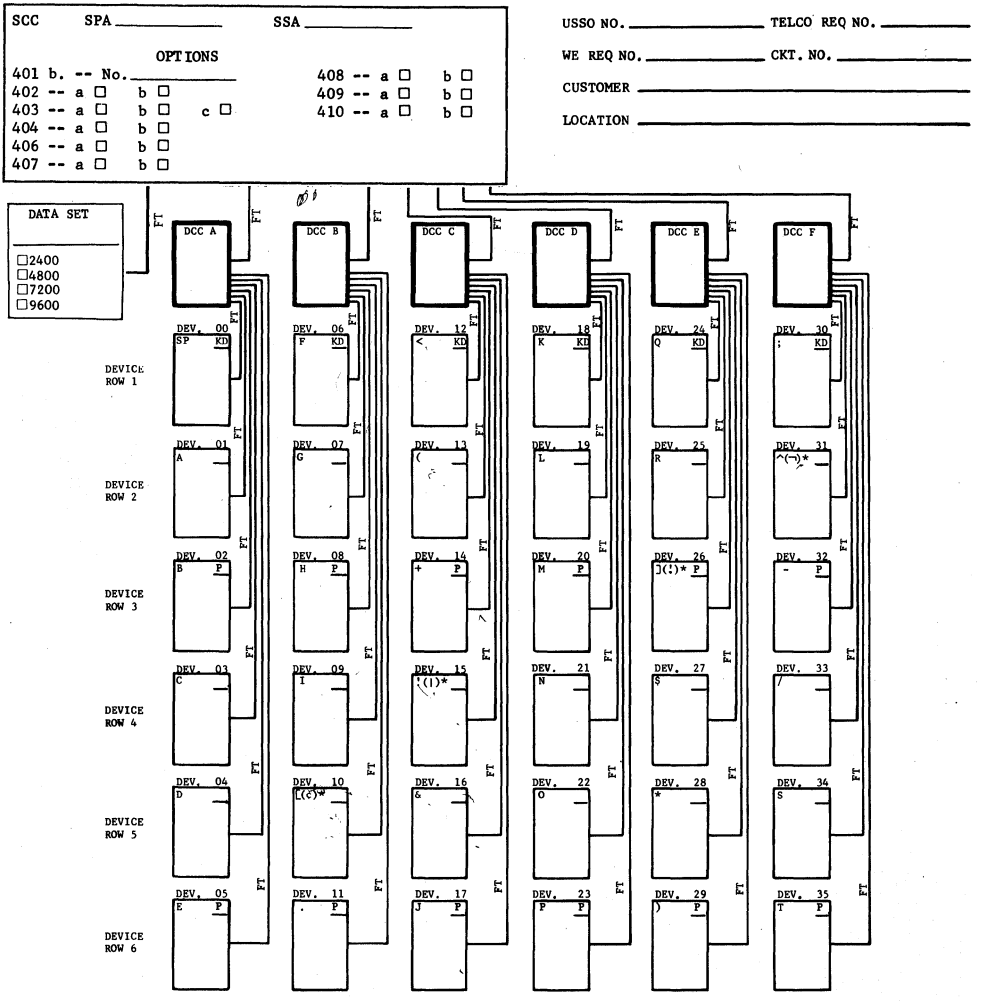
1.06 The Station Configuration Worksheet provides the craftsperson with an understanding of the station configuration prior to installation. Blank samples of the worksheets are given on Pages 3, 4 and 5. When W-4TTOO (SCC/DCC) or W-4TXOO (MCC) is available, their worksheets will be the preferred sheets to use. Paragraph 1.09 provides information on how to fill out the worksheets.

1.07 The worksheet examples (1.15 and 1.16) included in this section provide the required information contained on the worksheets to be used during installation.

1.08 A Station Configuration Worksheet should be included as part of every Synchronous DATASPEED 40 Station; however, if the worksheet is not included with the station, fill in the appropriate blank samples that follow by using the information included on the USSO (Universal System Service Order), refer to 1.10.

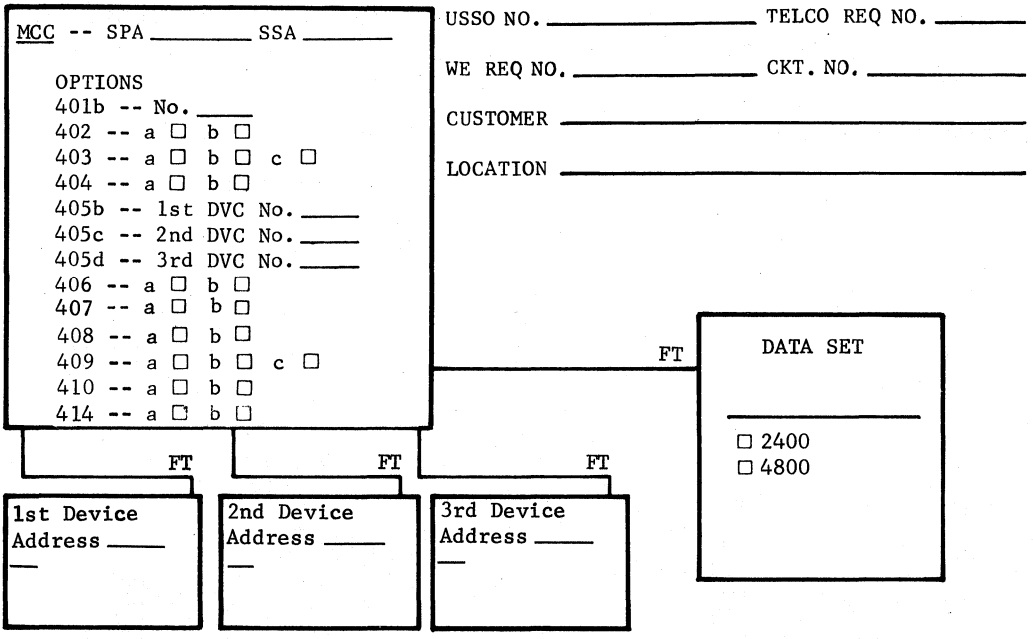
SAMPLE BLANK WORKSHEETS

DATASPEED 40/4 Station Configuration Worksheet — Maxi-Cluster



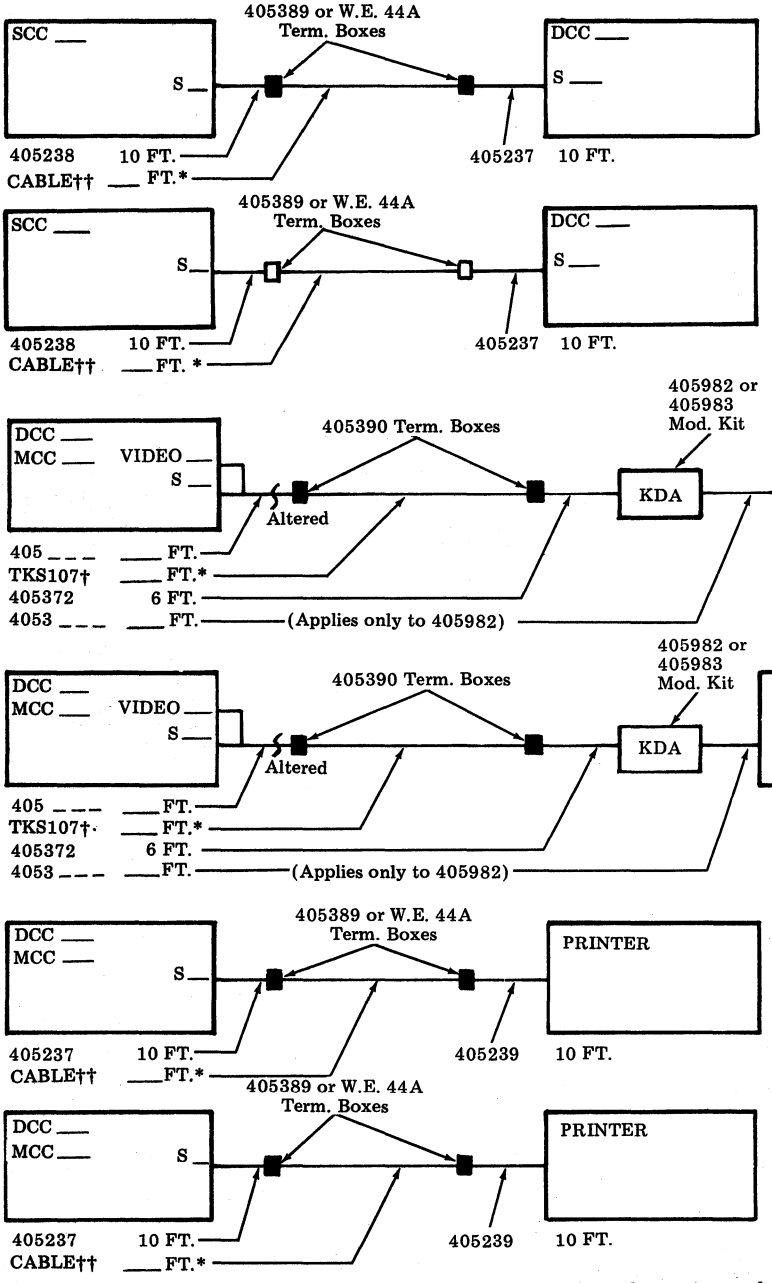
*Characters in parentheses are EBCDIC.

DATASPEED 40/4 Station Configuration Worksheet — Mini-Cluster



Note: 2nd Device is always a printer.
3rd Device is either KD or printer.

DATASPEED 40/4 Cable Worksheet



Caution: Do not attempt connecting wires to terminal boxes unless both wires have terminals or both do not.

(Use additional cable worksheets as required.)

*Approximate length, cables should be cut to proper length at the customer location.

†TKS107 cable can be ordered under COM code 104873419.

††Shielded 4-conductor cable (2 twisted pair) (see 3.31).

PREPARATION OF WORKSHEETS

Note: See "Examples of Worksheet Preparation" if required.

1.09 Instructions for preparing DATASPEED 40/4 Worksheets:

(a) Use a separate worksheet for each station ordered. Select the worksheet(s) to be used.

(b) In the upper right portion of the configuration worksheet, include all information as required (ie, Telco requisition number, customer location, etc).

(c) In the SCC or MCC area of the configuration worksheet, list the SPA (Station Poll Address) and SSA (Station Select Address) graphics. Also, use Xs in the boxes to select controller options. List the USOCs which reflect the material found in the SCC or MCC area.

(d) In the MCC area of the configuration worksheet, list the KD and printer device addresses.

(e) In the applicable DCC and device areas, list the USOCs which reflect the material found in those areas. If the station is a mini-cluster configuration, list the device address in each applicable device area.

(f) For each applicable DCC and device, include the cable length (number of feet) between each DCC and SCC and between each device and the DCC or MCC.

(g) If a KDA is part of the station arrangement, the cable worksheet must also be filled out to specify length of TKS107 cable, whether one or two termination boxes (specify part number) are required, which KDA mounting modification kit is used, the physical location of the KDA and connectors affected at DCC or MCC.

(h) If a DCC is to be connected to an SCC using stub cables, the cable worksheet must also be filled out to indicate the part numbers and length of the stubs, the SCC and DCC identification, the length of cable, part numbers of the termination boxes and connectors affected at SCC and DCC.

(i) If a printer is to be connected to a DCC or MCC using stub cables, the cable worksheet must be filled out to indicate items as in (h) and type of printer used.

(j) Along the left side of each applicable area on all worksheets, include the physical location for that area (ie, post L1, room 205, etc).

EXAMPLES OF WORKSHEET PREPARATION

1.10 If a station worksheet is not included with the station, a worksheet can be prepared from the USSO (Universal System Service Order). An example of the USSO is given below and examples of worksheets prepared from the example USSO are found on Pages 8 and 9.

1.11 Example USSO — Assume that a customer wishes to install one SCC at one location and one MCC at a second location. The SCC will have associated with it one DCC and three KDs. The MCC will have one KD. The Service and Equipment section of the USSO should read as follows.

Note: Necessary details of ordering pedestals, WES codes for cable lengths and data sets have been omitted to make the examples more readily understandable.

```
CKL   1(City, State)
SN    (Service Name)
SA    (Service Address)

I    STA A CCA 00 LOC RM 500
I    1 4TT
I    1 4TV/REF A
I    3 4TOXG/REF A/ DEV 00, 01, 03
```

RMKR: EBCDIC DEV 00 at post L1, DEV 01 at post L2, DEV 03 at post L3, etc, for further location information.

```
CKL   2
SN
SA

I    STA B CCA 06/ LOC RM 3005
I    1 4TX
I    2 4TOXG/DEV 01-DA 04/DEV 03-DA 08
I    1 4TSXG/DEV 02-DA 35
```

RMKR . . . EBCDIC — DEV 01 at post K4, etc.

1.12 Explanation of Example USSO:

STA (Station) A, and B is consistent with current nomenclature for the first station at CKL 1 and the first station at CKL 2.

CCA (Cluster Controller Address) 00 , and 06 provide the addresses for the customers polling and selecting. Note that CCA is used for locations with either a SCC or MCC. Station number corresponds to SPA of SP (space) and SSA of - (minus) in the sample worksheet on the next page.

LOC (Location) RM 500, and RM 3005 provide location information of the station.

REF (Reference) A indicates that the DCC is the first DCC respectively on the SCC. Note that no REF is required with the MCC, since there is no DCC present.

REF A/DEV (Device) 00, 01, 03; indicate with which DCC the KDs are associated and what the device numbers (for the KDs) are for the customers polling and selecting.

RMKR (Retained Remarks) has been used to show additional location information. It can also show the option information.

1.13 Examples of the Station Configuration Worksheets (for both of the stations listed in the example USSO) are included on the following pages. The first worksheet (Station A at CKL 1) on Page 8 is prepared in the following manner:

(a) Room 500, the physical location of Station A, was entered along the left side of the SCC.

(b) 00, the cluster controller address, is entered in the block labeled SCC.

(c) 4TT is a SCC and is also entered in the SCC block.

(d) 4TV is a DCC, and since REF A is listed with it, it is entered in the block labeled DCC A.

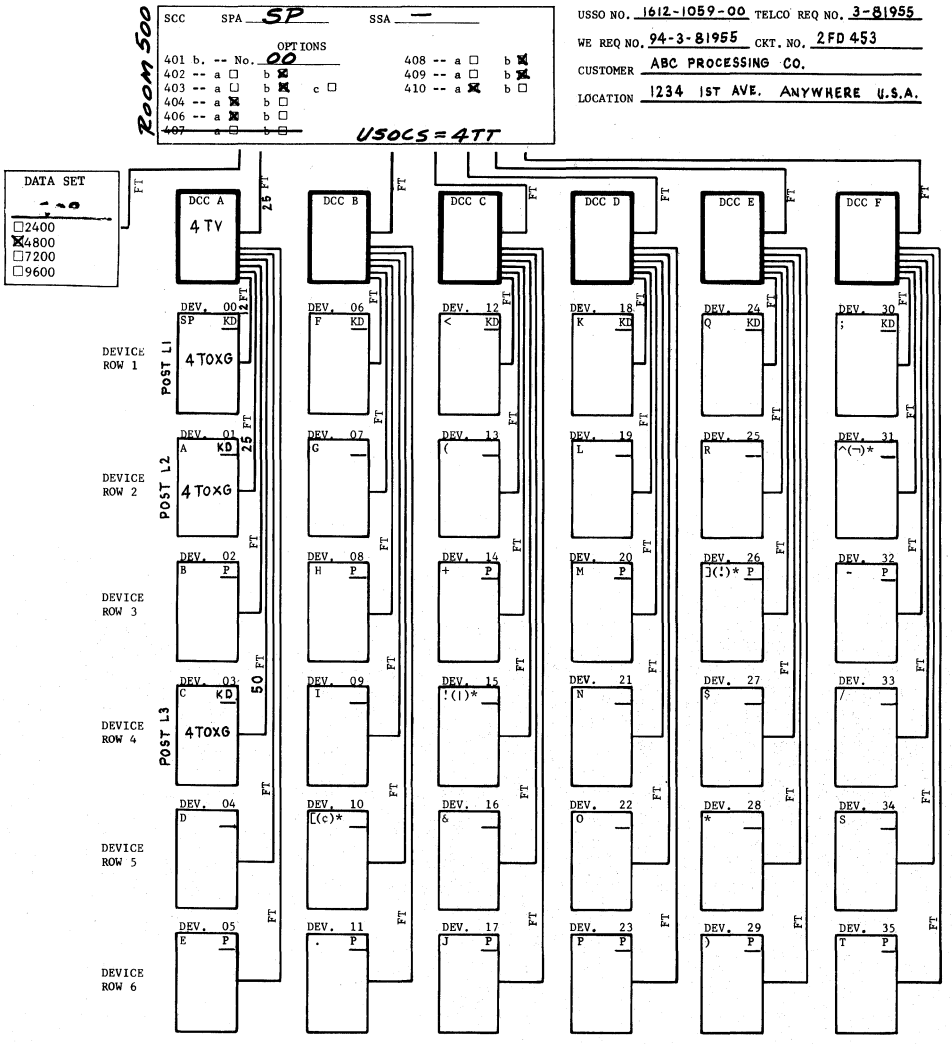
(e) The three 4TOs are attached KDs, and since their IDs are 00, 01 and 03, they are entered into the blocks labeled Device 00, Device 01 and Device 03, respectively. The abbreviation KD is also entered into these blocks.

(f) Locations by post number, as listed under retained remarks, are entered along side of each device block.

1.14 A Station Configuration Worksheet for Station B at CKL 2 (Page 9) is prepared in the same manner as the worksheet for Station A at CKL 1.

1.15 Example 1 (Station A at CKL1 from USSO of 1.10): In example 1, Option 407 was lined out because it did not apply to the order. Cable lengths (not distance between components) is entered. See 1.17 and 1.18 for variations.

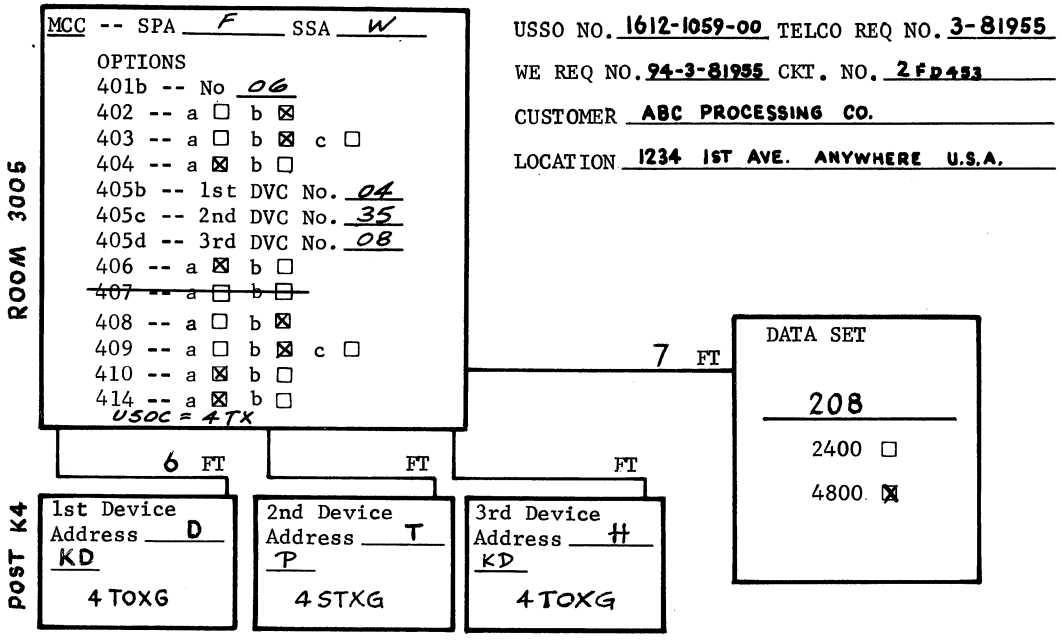
DATASPEED 40/4 Station Configuration Worksheet — Maxi-Cluster



*Characters in parentheses are EBCDIC.

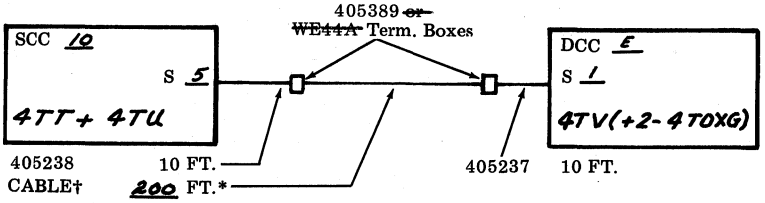
1.16 Example 2 (Station B at CKL2 from USSO of 1.10): In example 2, Option 407 was lined out because it did not apply to the order. Cable lengths (not distance between components) is entered. See 1.17 for variations.

DATASPEED 40/4 Station Configuration Worksheet — Mini-Cluster

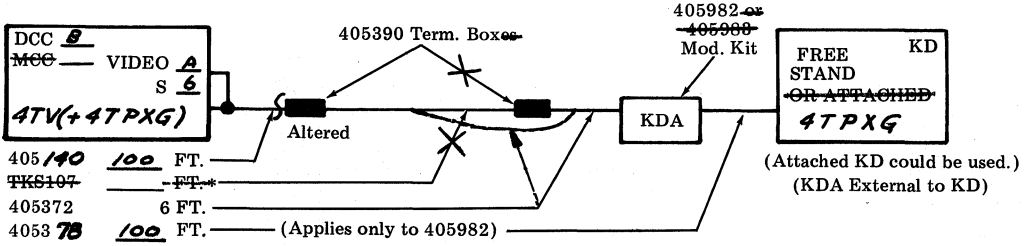


1.17 Example 3 (No relation to USSO of 1.10): Example 3 consists of sample entries on the cable worksheet. The asterisk in the entries refers to approximate cable lengths; such cables should be cut to the proper length at the customer location.

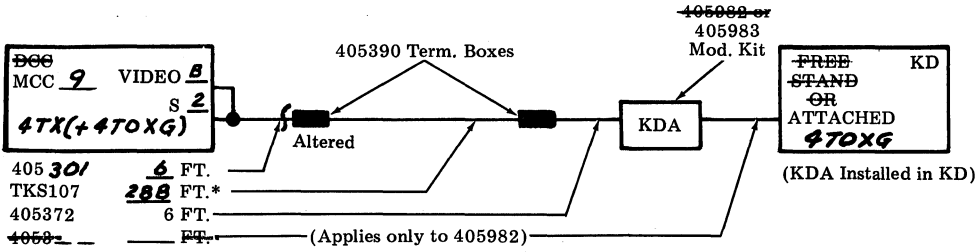
(a) DCC is 200 feet from SCC



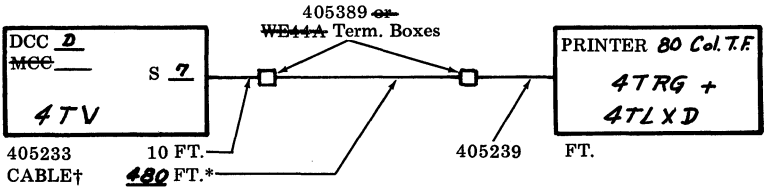
(b) Free-standing KD is 200 feet from SCC, only one termination box is required (two could be used).



(c) Attached KD is 300 feet from MCC. 405982 modification kit could have been used.



(d) Printer is 500 feet from DCC.



†Shielded 4-conductor cable (2 twisted pair) (see 3.31).

2. CONTROLLER ARRANGEMENTS

2.01 Identification of SCC, DCC, and MCC arrangements given in 2. CONTROLLER ARRANGEMENT FORMS are also given and discussed.

2.02 The controller arrangement forms of this part include a duplicate of the form which should be taped to the inside cover of each controller and should be filled out in pencil by the service center and kept current by the installer. A filled-out form is required when performing actions of 3. INSTALLATION. The purpose of the form is to provide:

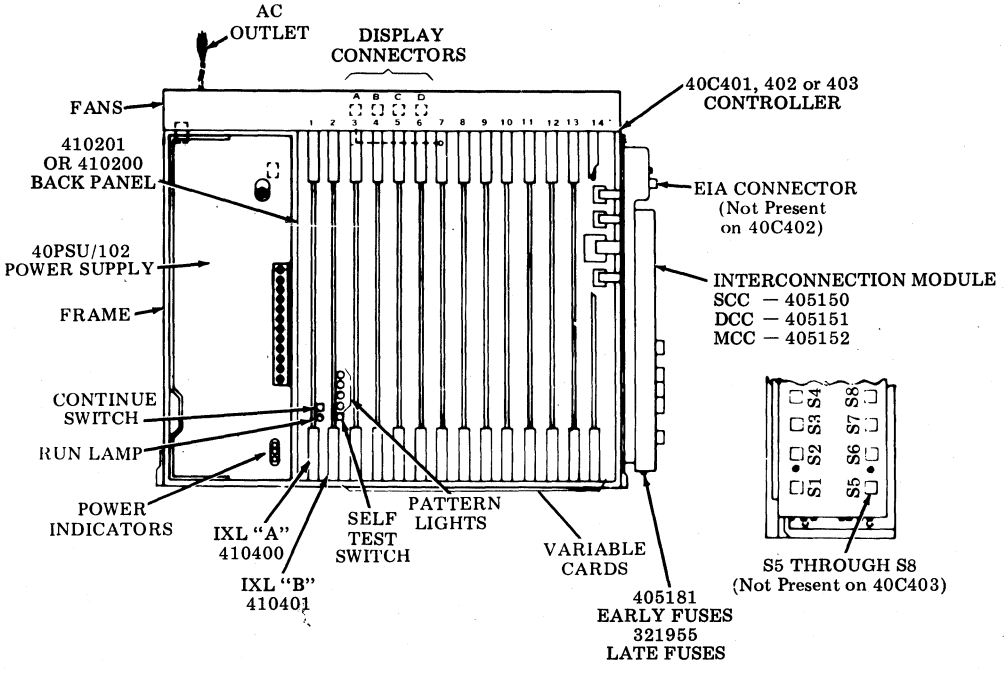
(a) Location and type of circuit cards required

(b) Switch positions (on or off) on circuit cards

(c) Controller and printer options selected

(d) Required cable connections to controller.

CONTROLLER ARRANGEMENTS IDENTIFICATION

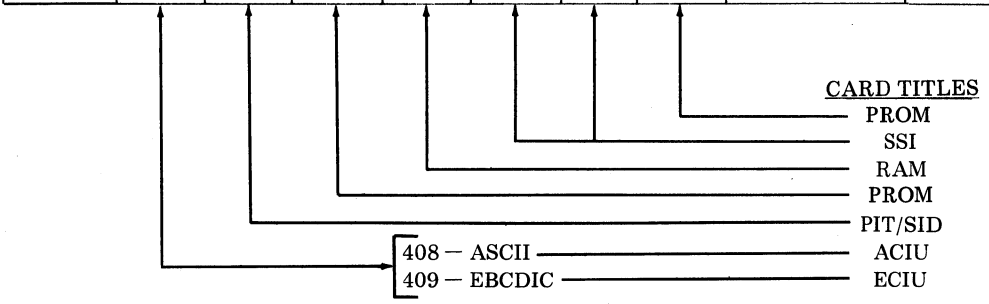


2.03 Station Cluster Controller (SCC) Arrangements — 40C401*

*410400 and 410401 circuit cards are in positions 1 and 2.
All circuit card numbers are preceded by 410.

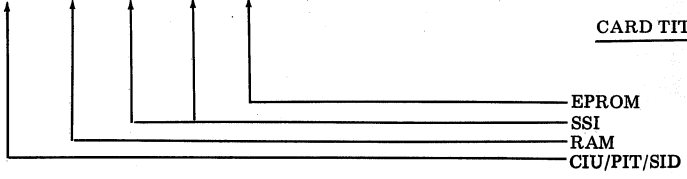
SCCs Equipped With 410804 and 410905 PROM Circuit Cards

HANDLES UP TO	CIRCUIT CARD POSITION								REFERENCE PAGE NO.
	3	4	5	6	7	8	9	10 THRU 14	
4 DCC	40N	403	905	461	406		804	NONE	20
6 DCC	40N	403	905	461	406	406	804	NONE	24



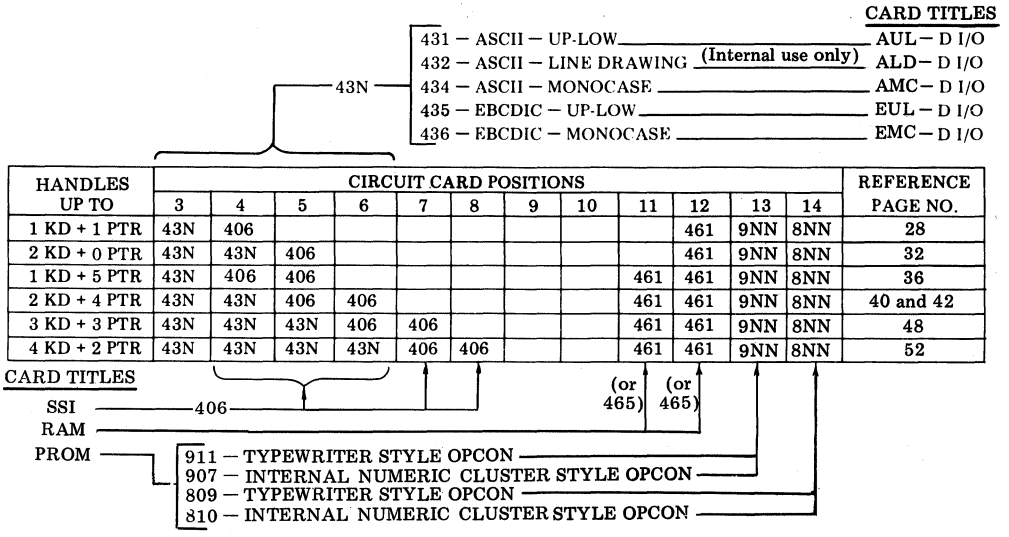
SCCs Equipped With 410508 EPROM Circuit Cards

HANDLES UP TO	CIRCUIT CARD POSITION												REFERENCE PAGE NO.
	3	4	5	6	7	8	9	10	11	12	13	14	
4 DCC	411	465	406		508								22
6 DCC	411	465	406	406	508								26



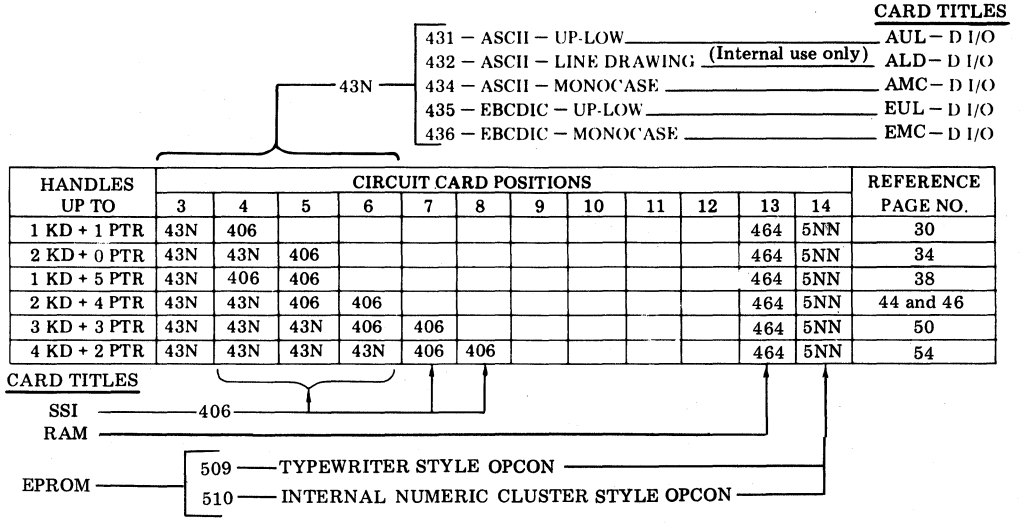
2.04 Device Cluster Controller (DCC) Arrangements — 40C402 (410400 and 410401 circuit cards are in positions 1 and 2. All circuit card numbers are preceded by 410.)

DCCs With 4108NN and 4109NN PROM Circuit Cards



HANDLES UP TO	CIRCUIT CARD POSITIONS 3	4	5	6	7	8	9	10	11	12	13	14	REFERENCE PAGE NO.
1 KD + 1 PTR	43N	406								461	9NN	8NN	28
2 KD + 0 PTR	43N	43N	406							461	9NN	8NN	32
1 KD + 5 PTR	43N	406	406						461	461	9NN	8NN	36
2 KD + 4 PTR	43N	43N	406	406					461	461	9NN	8NN	40 and 42
3 KD + 3 PTR	43N	43N	43N	406	406				461	461	9NN	8NN	48
4 KD + 2 PTR	43N	43N	43N	43N	406	406			461	461	9NN	8NN	52

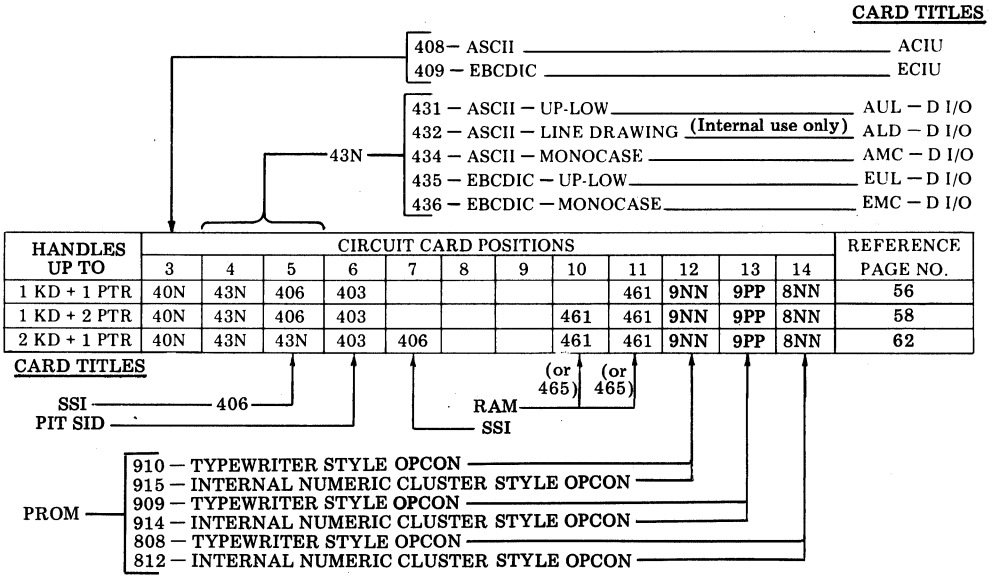
DCCs With 4105NN EPROM Circuit Cards



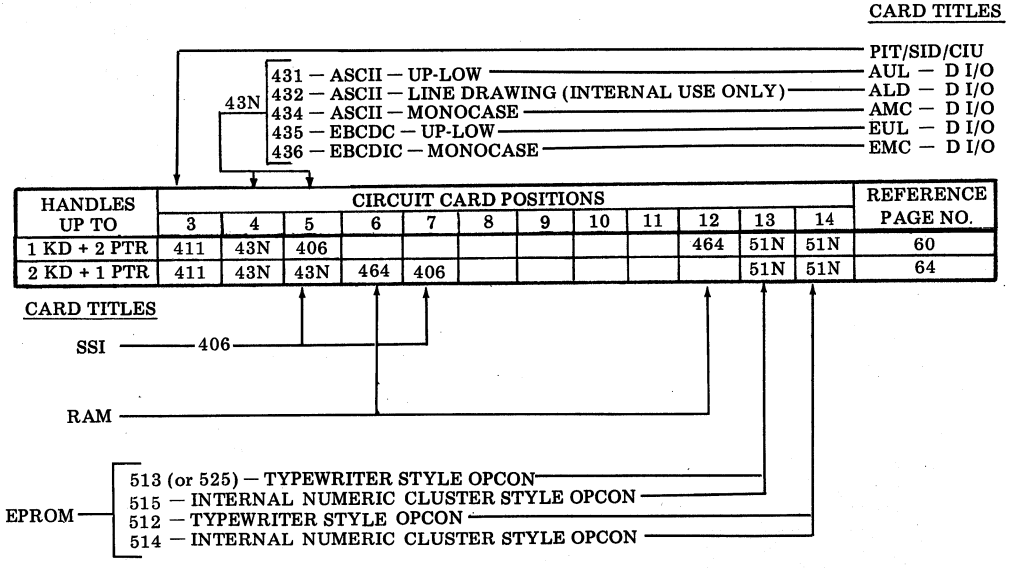
HANDLES UP TO	CIRCUIT CARD POSITIONS 3	4	5	6	7	8	9	10	11	12	13	14	REFERENCE PAGE NO.
1 KD + 1 PTR	43N	406									464	5NN	30
2 KD + 0 PTR	43N	43N	406								464	5NN	34
1 KD + 5 PTR	43N	406	406								464	5NN	38
2 KD + 4 PTR	43N	43N	406	406							464	5NN	44 and 46
3 KD + 3 PTR	43N	43N	43N	406	406						464	5NN	50
4 KD + 2 PTR	43N	43N	43N	43N	406	406					464	5NN	54

2.05 Mini-Cluster Controller (MCC) Arrangements — 40C403 (410400 and 410401 circuit cards are in positions 1 and 2. All circuit card numbers are preceded by 410.)

MCCs Equipped With 4108NN and 4109NN PROM Circuit Cards



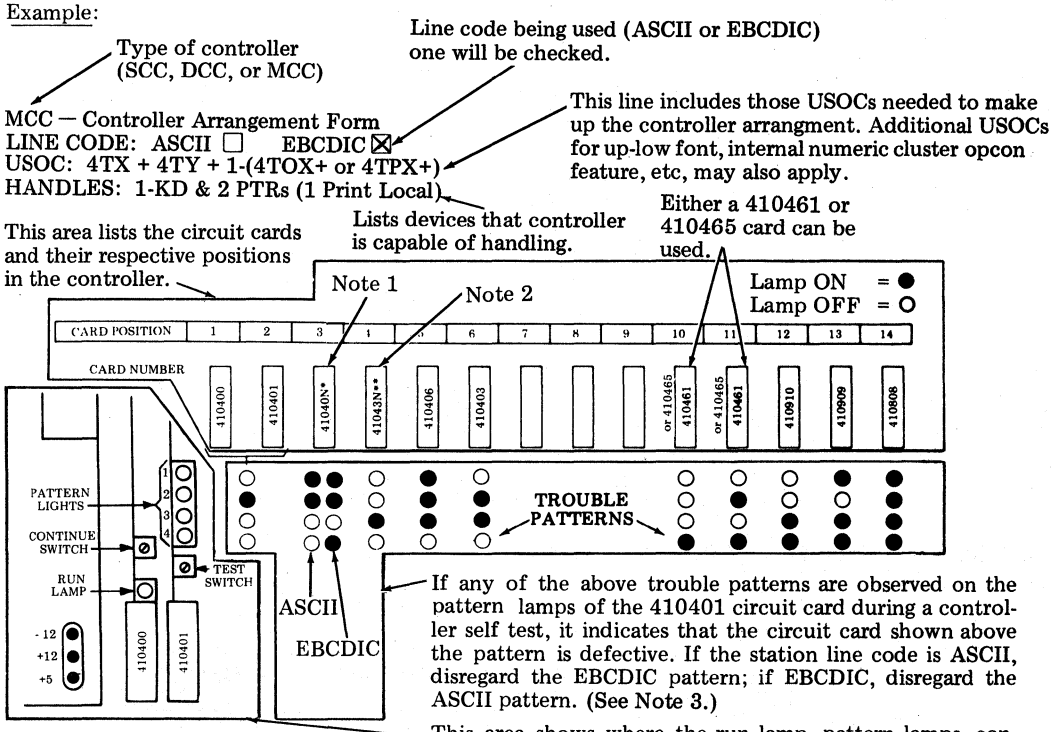
MCCs Equipped With 41051N EPROM Circuit Cards



INTERPRETATION OF CONTROLLER ARRANGEMENT FORMS

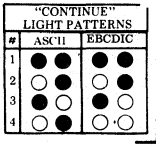
2.06 On this and the following three pages are portions of the controller arrangement forms found on Pages 20 through 65. Various examples are included so that proper interpretation of the forms can be made. The information on the front side of a form includes card positions, trouble patterns, continue patterns, required switch positions, and printer options (if applicable).

Example:



If any of the above trouble patterns are observed on the pattern lamps of the 410401 circuit card during a controller self test, it indicates that the circuit card shown above the pattern is defective. If the station line code is ASCII, disregard the EBCDIC pattern; if EBCDIC, disregard the ASCII pattern. (See Note 3.)

This area shows where the run lamp, pattern lamps, continue switch and test switch are located within the controller. The switches and lamps are used when performing controller self test (see Testing, Section 582-200-501).



This area illustrates those patterns which will appear legitimately during a controller self test. If the line code of the station is ASCII, disregard the EBCDIC portion; if EBCDIC, disregard the ASCII portion. (See Note 3.)

*ASCII — 410408
EBCDIC — 410409

Note 1: In early stations only, if station line code is ASCII, a 410408 circuit card will be found in position 3 of controller; if EBCDIC, a 410409 will be found in position 3. In newer stations, a 410411, which handles ASCII and EBCDIC, will be in position 3.

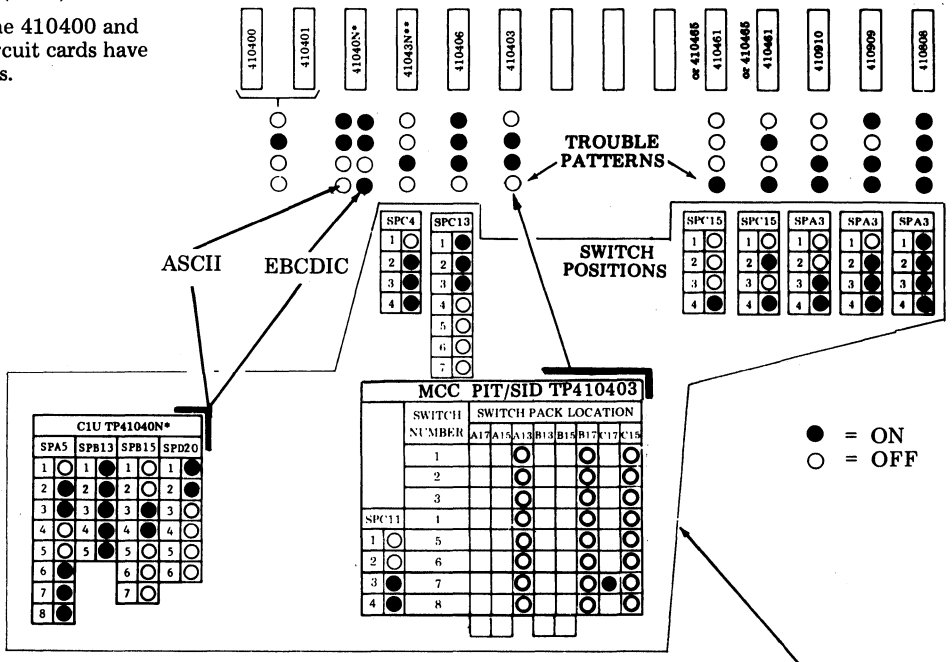
**ANY D I/O CIRCUIT CARD

Note 2: D I/O circuit cards should be of ASCII or EBCDIC types, depending on station line code. (See 2.04 or 2.05 for various D I/O circuit card numbers.)

Note 3: When 410411 circuit card is present, the trouble pattern and continue pattern is the same for both ASCII and EBCDIC.

Example: (Cont)

Note: The 410400 and 410401 circuit cards have no switches.



This area lists the switch packs (SPs and their switch positions) of the circuit cards which are either above them or indicated by arrows.

Those switches which are permanently shown as on or off are required selections.

On those controller arrangement forms for controllers which may have printers connected to them, a printer option record is included.

Example:

Friction feed printer in socket S3 of controller and 132-column printer in socket S4 of controller.

Note: Option selections should be entered in pencil. Option 17. should specify number of columns selected for right-hand margin and, for later printers only, left-hand margin.

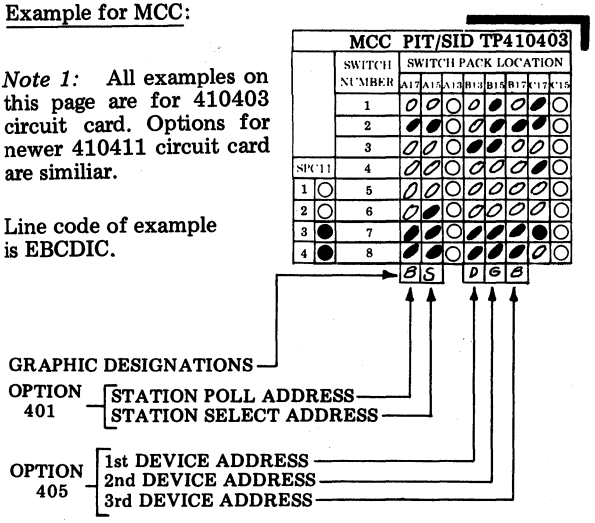
PRINTER OPTIONS		
PRINTER I/O SOCKET	S3	S4
Friction Feed	X	
Tractor Feed 80 Col		
Tractor Feed 132 Col		X
17. Specify Right Margin	80	132
18.a. No Paper Feed Out		
18.b. Paper FO on "RM" Loss		
18.c. Paper FO on "RM" Loss and ETX	X	X
19.c. No Symbol on V.P. Error		
19.d. 96 Character Set		
19.e. 64 Character Set	X	X
19.f. Ext. ASCII Set		
20.a. Single LF	X	X
20.b. Double LF		
21.a. Lower and Upper Case Print		
21.b. Lower Case Prints as Upper Case	X	X
22.a. Lower Case Prints as Error		
22.b. Lower Case Prints as Upper Case		
39.a. Forms on		X
39.b. Forms off		
48.a. Paper Out Not Gated W/FF		X
48.b. Paper Out Gated W/FF		

2.07 The information on the front side of a form also includes controller option switch positions. All controller options will be entered on the 410403 or 410411 circuit cards. The following examples show a filled-out 410403 switch chart. Also see examples of the various options and how they are entered on the controller arrangement form in 2. CONTROLLER ARRANGEMENT FORMS.

Example for MCC:

Note 1: All examples on this page are for 410403 circuit card. Options for newer 410411 circuit card are similiar.

Line code of example is EBCDIC.



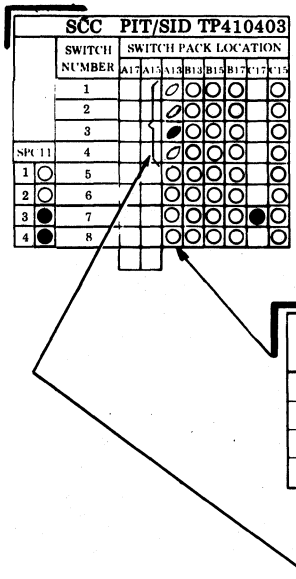
OPTIONS – 410403	
402	SPC17-1
a ☒ Continuous Alarm	●
b ☐ 1-Second Alarm	○
403	SPC17-2-3
a ☐ Intensified Only	○○
b ☒ Blink Only	●○
c ☐ Intensified & Blink	○●
406	SPC17-4
a ☒ Alpha in Num. Fld.	●
b ☐ Alpha Not in Num. Fld.	○
404	SPC17-5
a ☒ Terminate w/ETX	○
b ☐ Terminate w/SUB. ENQ.	●
408	SPC17-6
a ☐ ASCII	●
b ☒ EBCDIC	○
407 (Num Lock S.F.)	SPC17-8
a ☐ Enabled	●
b ☒ Disabled	○

Note 2: Option 405 is used only on an MCC.

Note 3: Option 409 is not an entry; it is determined by the type of D I/O circuit cards present. See 4. OPTIONS.

Note 4: Option 410 is not an entry; it is determined by PROM or EPROM cards and opcon(s) present. See 4. OPTIONS.

Example for SCC:



PER STATION WORK SHEET, HIGHEST DCC CONNECTED TO SCC IS

	A	B	C	D
SPA13-1	●	○	○	○
SPA13-2	○	●	○	○
SPA13-3	○	○	●	○
SPA13-4	○	○	○	●

On a SCC controller arrangement form, the 410403 or 410411 chart will also include a switch pack (A13 for 410403, B3 for 410411) which must show switches selected to reflect the DCC with the highest graphic connected to the SCC.

Example:

If DCC "C" is the highest graphic DCC connected to the SCC then select Column C — (C is a higher graphic than A or B).

2.08 The information on the backside of a form includes connections, associated device addresses and card positions affecting various devices.

Example:

Illustrated below is a DCC. By following the chart we find that a SCC will be connected to I/O socket S5 of the DCC. We also find that the SCC (connected to DCC) will be affected by the circuit card in position 4. Device addresses are also included. For instance, assume the DCC below is DCC B. We then find that the KD connected to DCC B is device address F and the printer is device address G.

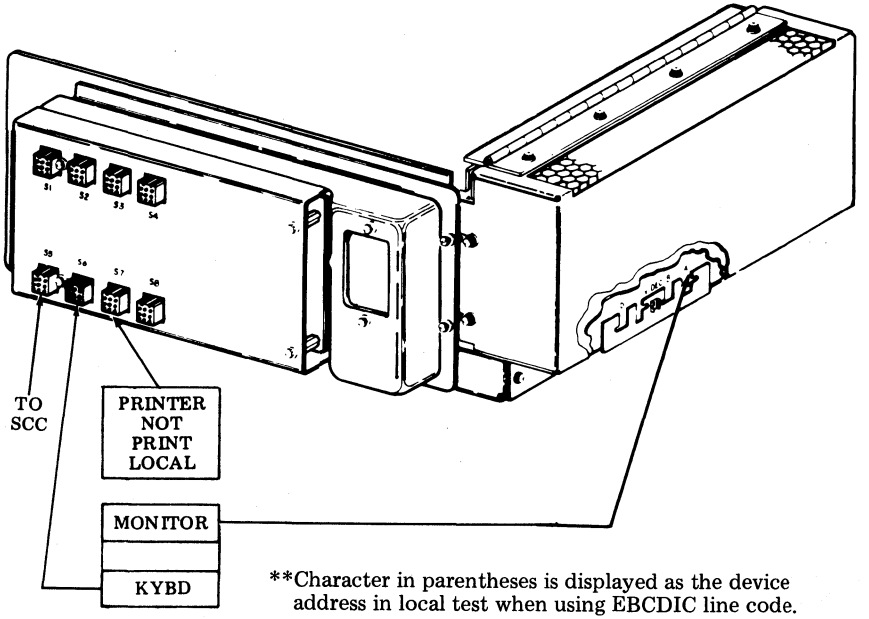
CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
4	S5	STATION C/C (SCC)	DCC ⟶	A	B	C	D	E	F
4 & 3	S6 & A	KEYBOARD/DISPLAY	DEVICE ROW 1	Sp	F	<	K	Q	;
4	S7	PRINTER (N LOC)	DEVICE ROW 2	A	G	(	L	R	^

*ASCII and EBCDIC graphics are the same, except for

ASCII	EBCDIC
^	¬ (¢)**

The drawing below illustrates this column.

Does not apply when DCC is connected to EPROM SCC.

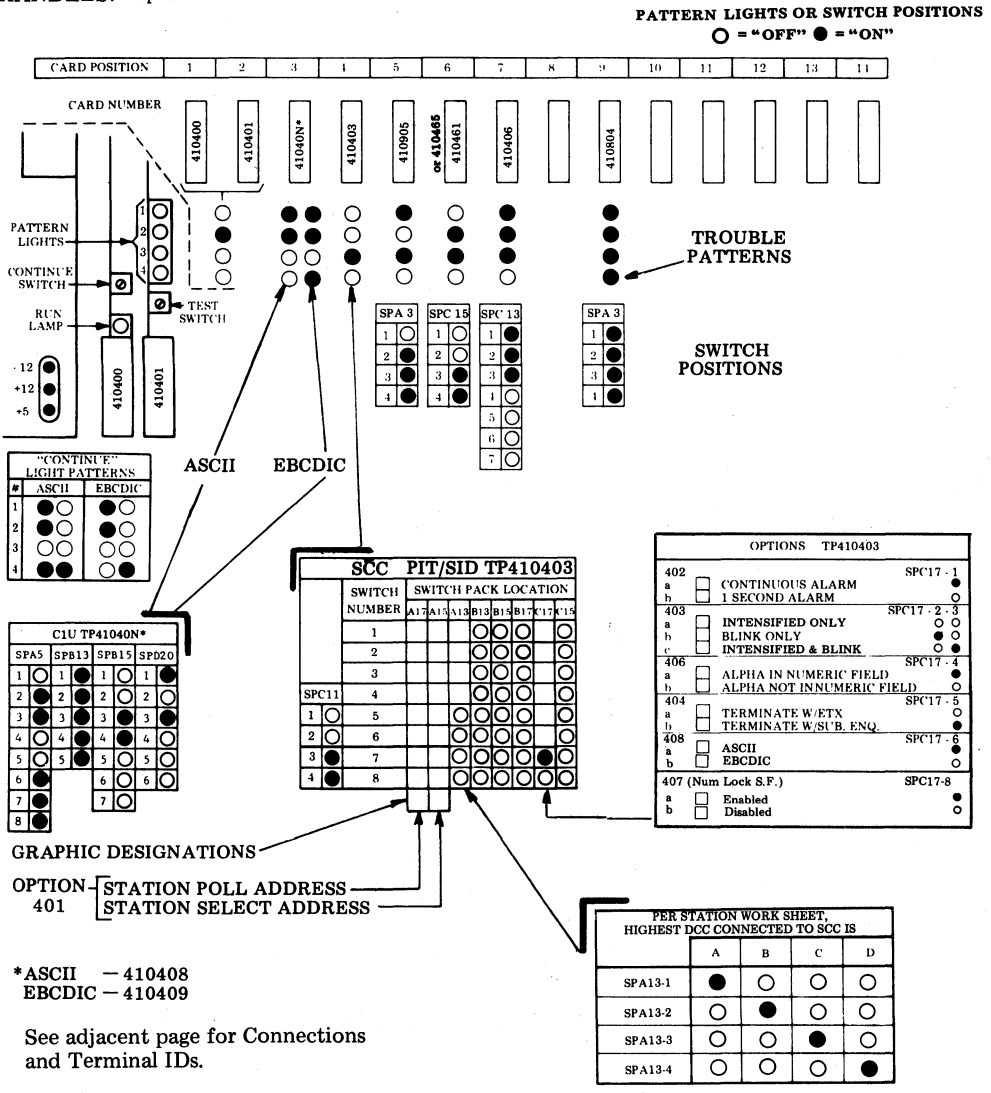


**Character in parentheses is displayed as the device address in local test when using EBCDIC line code.

CONTROLLER ARRANGEMENT FORMS

A. SCC — Station Cluster Controller Arrrangement Forms

SCC (PROM Version) — Controller Arrangement Form
LINE CODE: ASCII ☐ EBCDIC ☐
USOC: 4TT
HANDLES: Up To 4-DCCs



*ASCII — 410408
EBCDIC — 410409

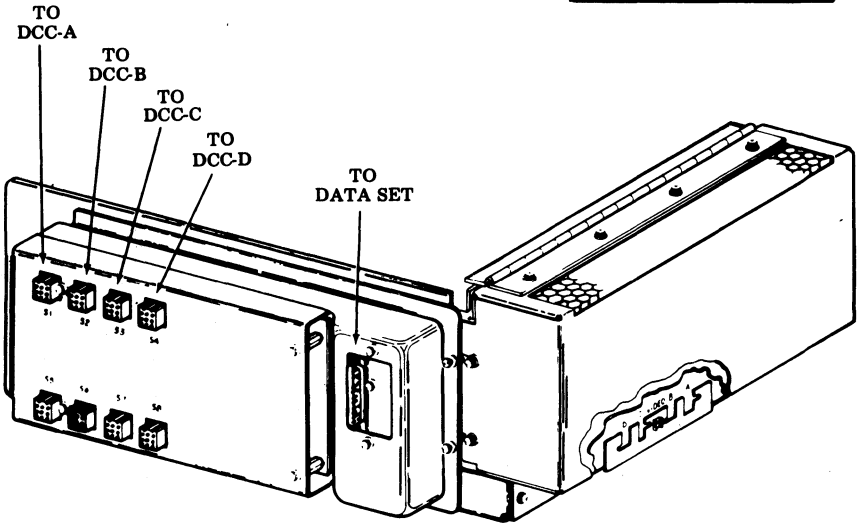
See adjacent page for Connections and Terminal IDs.

SCC (PROM Version) — Controller Arrangement Form
USOC: 4TT
HANDLES: Up To 4-DCCs

CARD POSITION	I/O SOCKET	STATION WORK SHEET	DEVICE ADDRESS *
7	S1	DCC-A	SP A B C D E
7	S2	DCC-B	F G H I [.
7	S3	DCC-C	< (+ ! & J
7	S4	DCC-D	K L M N O P
3	DS	DATA SET	

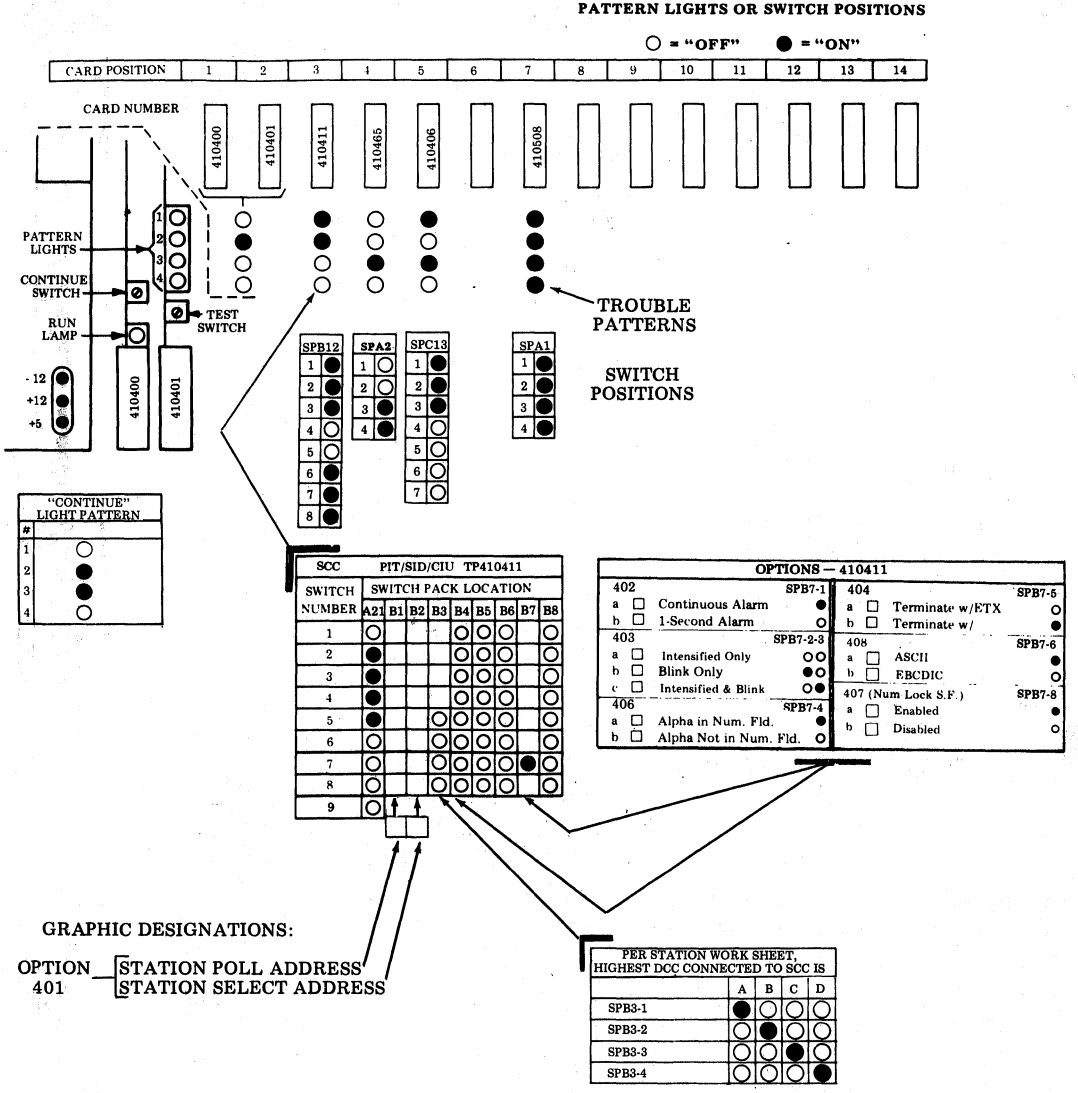
*ASCII and EBCDIC graphics are the same, except for

ASCII	EBCDIC
[	¢ (¬) **
¦	¦ (!)



**Characters in parentheses are displayed as the device addresses in local test when using EBCDIC line code.

SCC (EPROM Version) — Controller Arrangement Form
LINE CODE: ASCII ☐ EBCDIC ☐
USOC: 4TT + XX10
HANDLES: Up to 4-DCCs



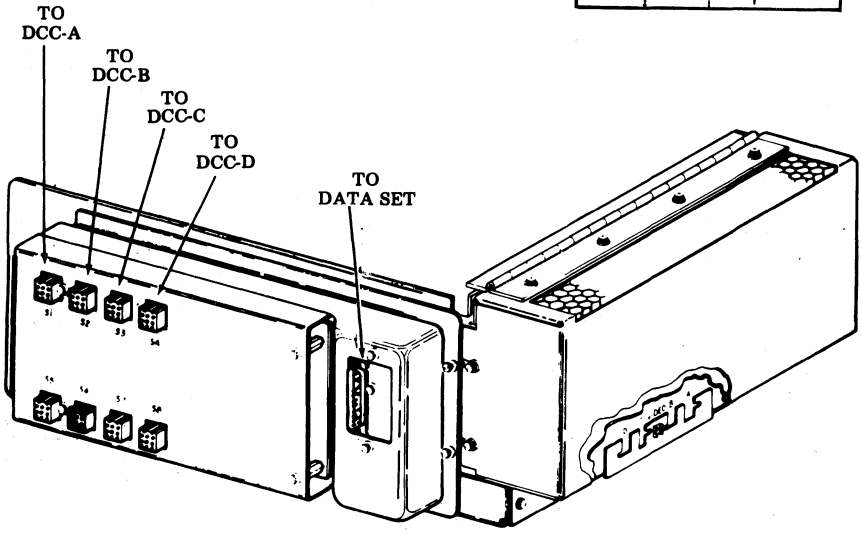
See adjacent page for Connections.

SCC (EPROM Version) — Controller Arrangement Form
USOC: 4TT + XX10
HANDLES: Up To 4-DCCs

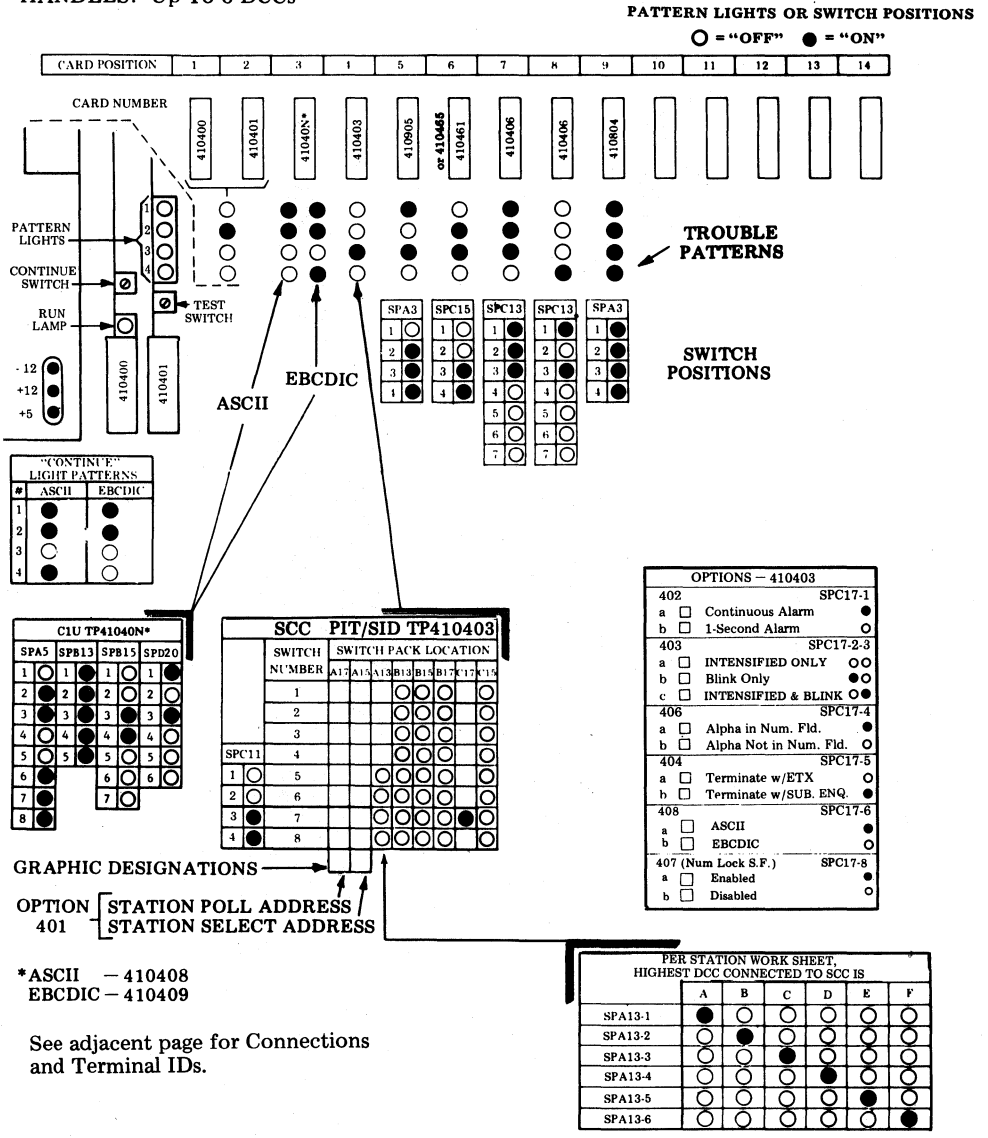
CARD POSITION	I/O SOCKET	STATION WORK SHEET	DEVICE ADDRESS *
5	S1	DCC-A	Sp A B C D E
5	S2	DCC-B	F G H I [•
5	S3	DCC-C	< (+ ! & J
5	S4	DCC-D	K L M N O P
3	DS	DATA SET	

*ASCII and EBCDIC graphics are the same, except for

ASCII	EBCDIC
[	¢
]	!



SCC (PROM Version) — Controller Arrangement Form
LINE CODE: ASCII ☐ EBCDIC ☐
USOC: 4TT + 4TU
HANDLES: Up To 6-DCCs



*ASCII — 410408
EBCDIC — 410409

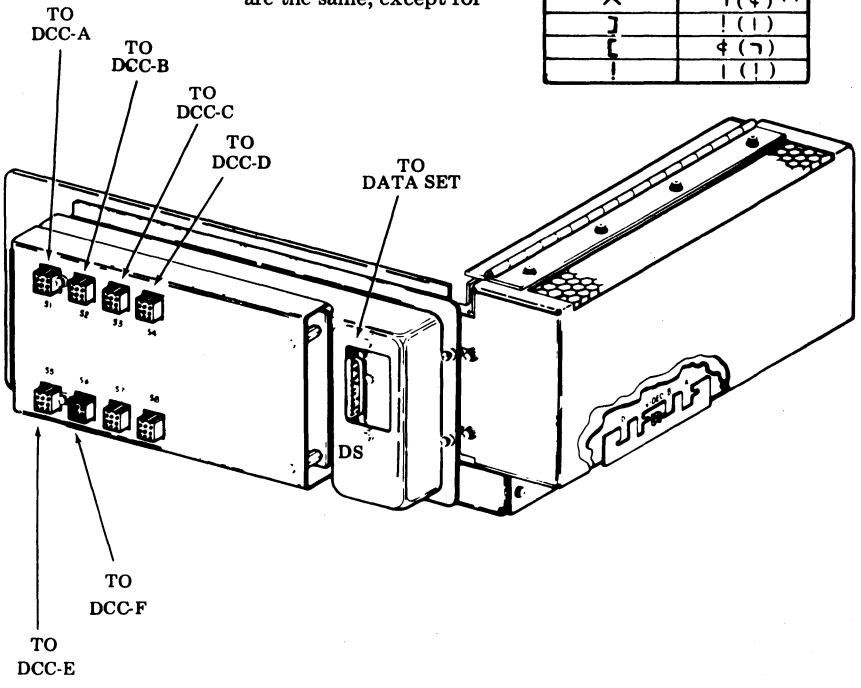
See adjacent page for Connections and Terminal IDs.

SCC (PROM Version) — Controller Arrangement Form
USOC: 4TT + 4TU
HANDLES: Up To 6-DCCs

CARD POSITION	I/O SOCKET	STATION WORK SHEET	DEVICE ADDRESS*
3	DS	DATA SET	
7	S1	DCC-A	SP A B C D E
7	S2	DCC-B	F G H I [.
7	S3	DCC-C	< (+ ! & J
7	S4	DCC-D	K L M N O P
8	S5	DCC-E	Q R] $ *)
8	S6	DCC-F	; ^ - / S T

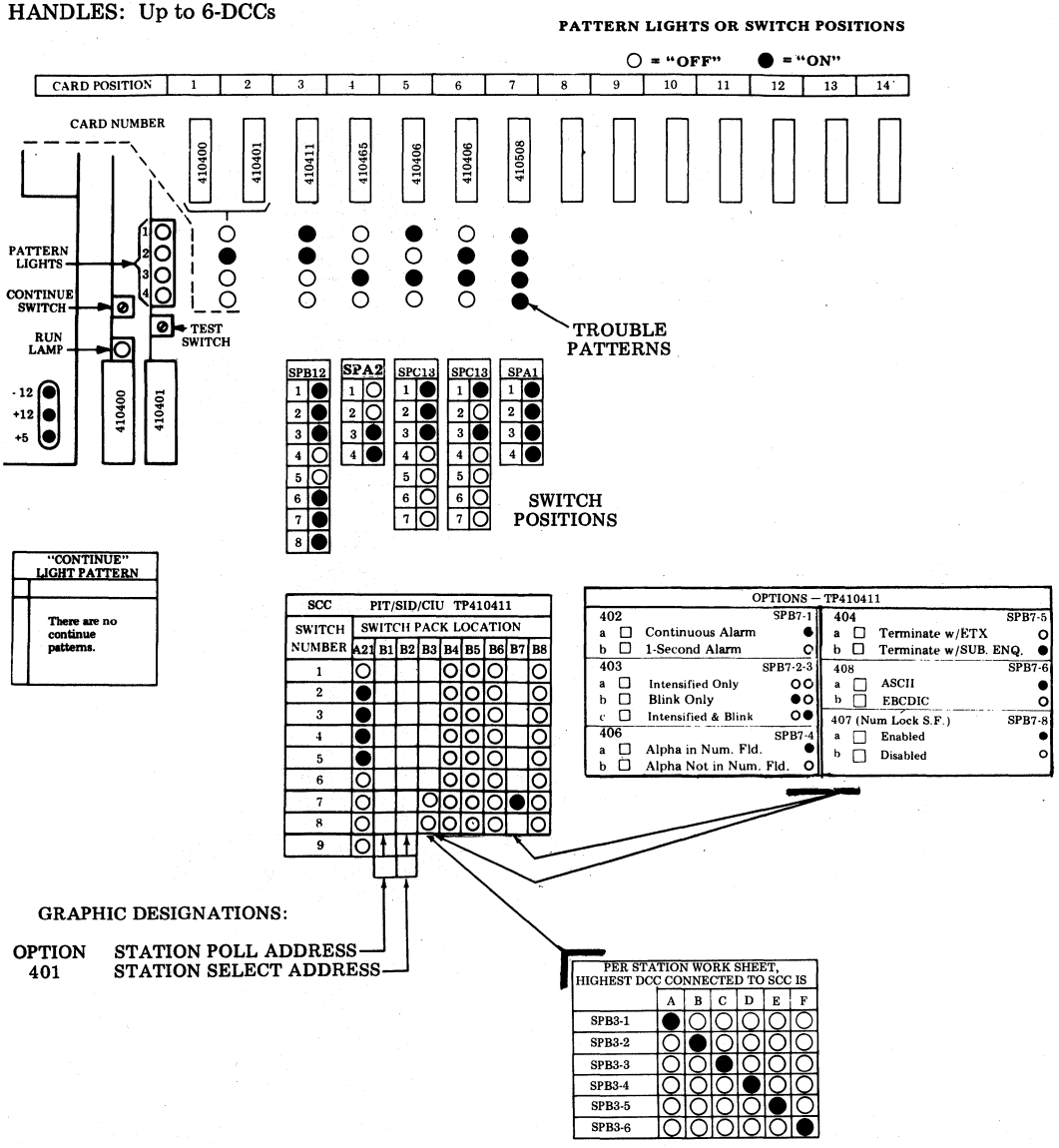
*ASCII and EBCDIC graphics are the same, except for

ASCII	EBCDIC
^	¬ (¢) **
]	! (|)
[	¢ (¬)
!	| (!)



**Characters in parentheses are displayed as the device addresses in local test when using EBCDIC line code.

SCC (EPROM Version) — Controller Arrangement Form
LINE CODE: ASCII ☐ EBCDIC ☐
USOC: 4TT + 4TU + XX10
HANDLES: Up to 6-DCCs



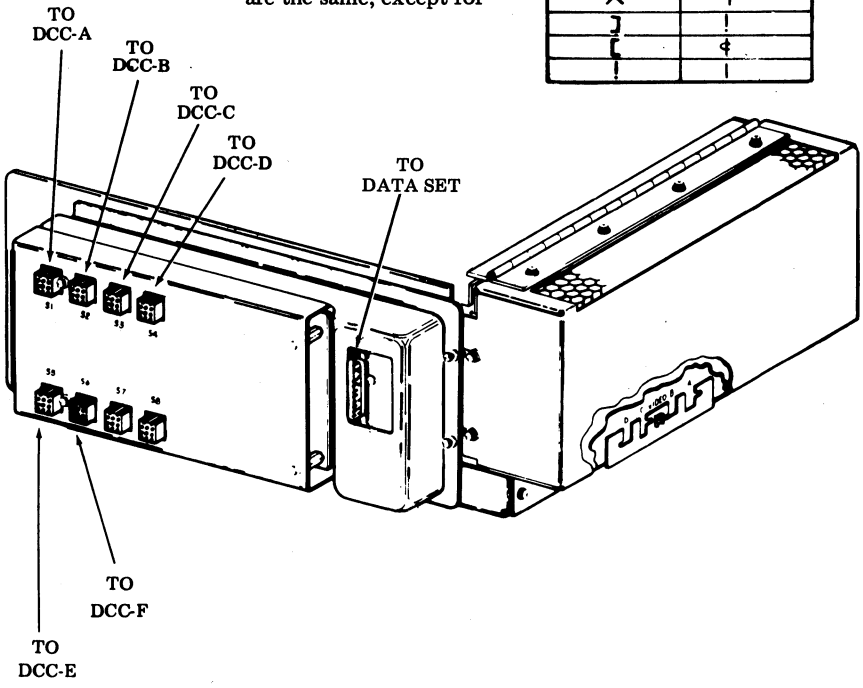
See adjacent page for Connections.

SCC (EPROM Version) — Controller Arrangement Form
USOC: 4TT + 4TU (OR 4TT + 4TU + WES 7E) + XX10
HANDLES: Up to 6-DCCs

CARD POSITION	I/O SOCKET	STATION WORK SHEET	DEVICE ADDRESS *
3	DS	DATA SET	
5	S1	DCC-A	SP A B C D E
5	S2	DCC-B	F G H I [.
5	S3	DCC-C	< (+ ! & J
5	S4	DCC-D	K L M N O P
6	S5	DCC-E	Q R] $ *)
6	S6	DCC-F	; ^ - / S T

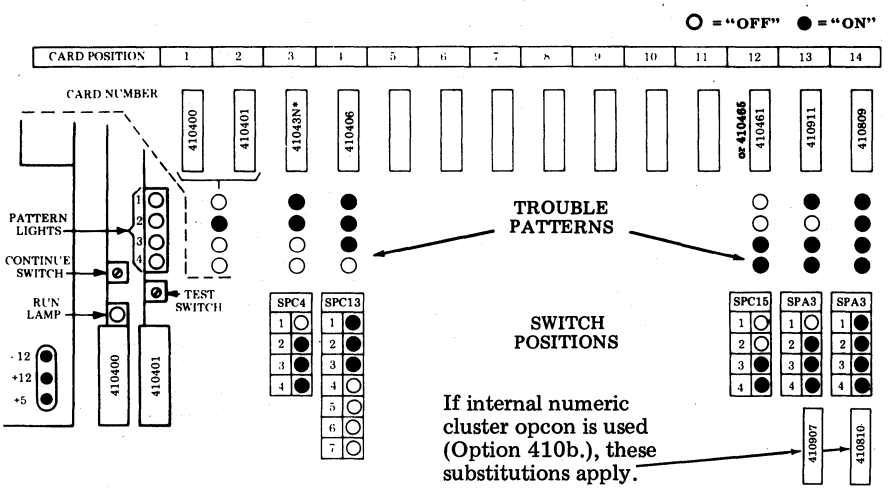
*ASCII and EBCDIC graphics are the same, except for

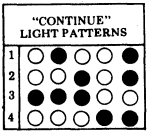
ASCII	EBCDIC
^	¬
]	!
[	¢
!	|



B. DCC — Device Cluster Controller Arrangement Forms

DCC (PROM Version) — Controller Arrangement Form
DCC: A☐ B☐ C☐ D☐ E☐ F☐
USOC: 4TV + (4TOX+ OR 4TPX+)
HANDLES: 1 KD & 1 PTR (Not Print Local)





*41043N — ANY D I/O CIRCUIT CARD

See adjacent page for Connections and Device Addresses.

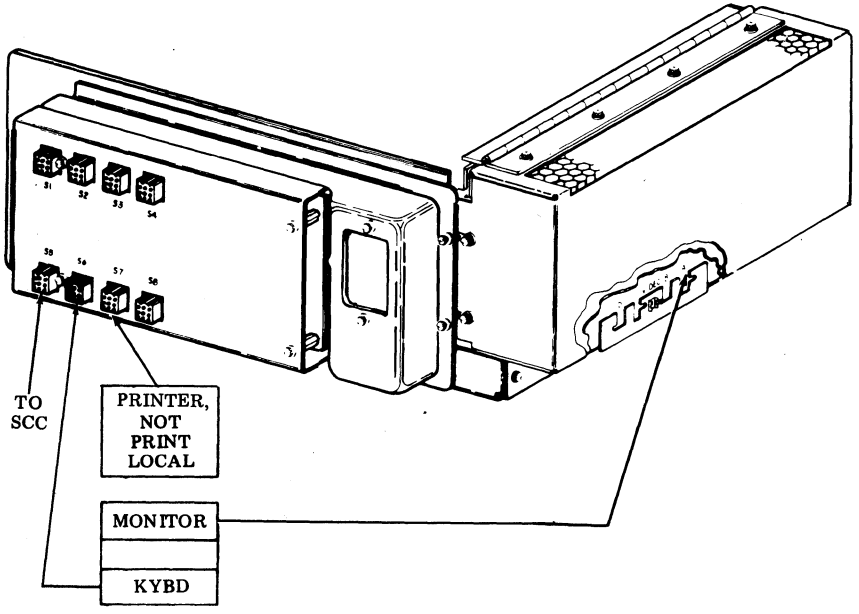
PRINTER OPTIONS	
PRINTER I/O SOCKET	S7
Friction Feed	
Tractor Feed 80 Col	
Tractor Feed 132 Col	
17. Specify Right Margin	
Specify Left Margin	
18.a. No Paper Feed Out	
18.b. Paper FO on "RM" Loss	
18.c. Paper FO on "RM" Loss and ETX	
19.d. 96 Character Set	
19.e. 64 Character Set	
19.f. Ext. ASCII Set	
20.a. Single LF	
20.b. Double LF	
21.a. Lower and Upper Case Print	
21.b. Lower Case Prints as Upper Case	
22.a. Lower Case Prints as Error	
22.b. Lower Case Prints as Upper Case	
39.a. Forms on	
39.b. Forms off	
48.a. Paper Out Not Gated W/FF	
48.b. Paper Out Gated W/FF	

DCC (PROM Version) — Controller Arrangement Form
DCC: A☐ B☐ C☐ D☐ E☐ F☐
USOC: 4TV + (4TOX+ OR 4TPX+)
HANDLES: 1-KD & 1-PTR (Not Print Local)

CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
4	S5	STATION C/C (SCC)	DCC →	A	B	C	D	E	F
4 & 3	S6 & A	KEYBOARD/DISPLAY	DEVICE ROW 1	Sp	F	<	K	Q	;
4	S7	PRINTER (N LOC)	DEVICE ROW 2	A	G	(	L	R	^

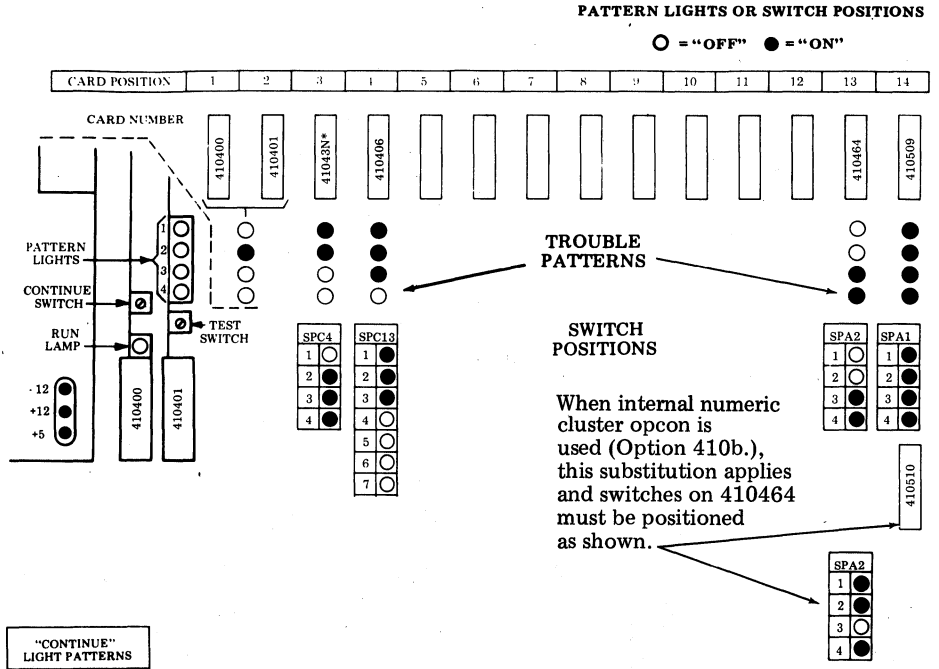
*ASCII and EBCDIC graphics are the same, except for

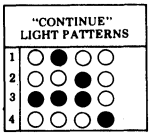
ASCII	EBCDIC
^	¬ (¢)**



**This footnote applies only when this DCC is connected to a PROM SCC. Character in parentheses is displayed as the device address in local test when using EBCDIC line code.

DCC (EPROM Version) — Controller Arrangement Form
DCC: A☐ B☐ C☐ D☐ E☐ F☐
USOC: 4TV + (4TOX+ OR 4TPX+)
HANDLES: 1-KD & Up To 1-PTR (1 Print Local))





*41043N — ANY D I/O CIRCUIT CARD

See adjacent page for Connections and Device Addresses.

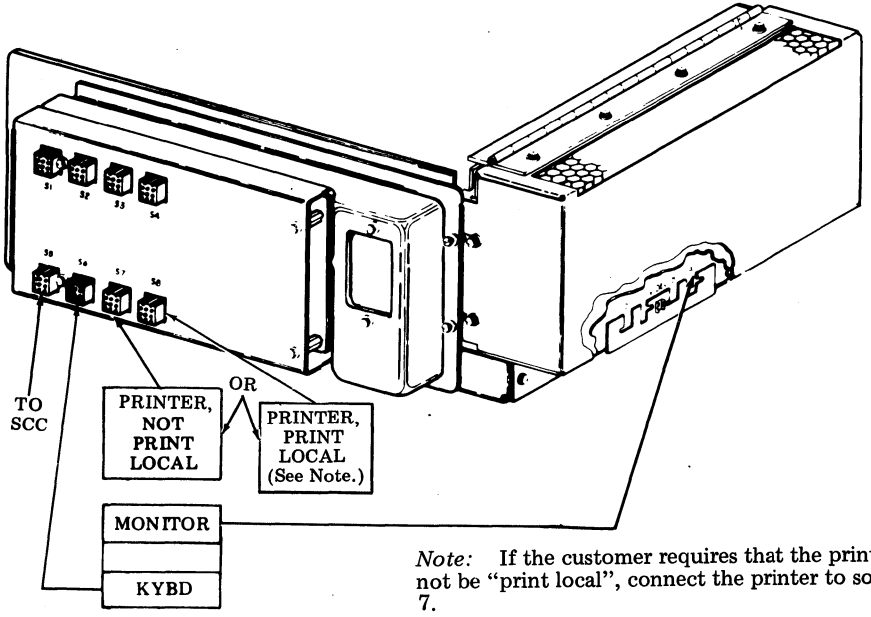
PRINTER OPTIONS	OR S7	OR S8
PRINTER I/O SOCKET		
Friction Feed		
Tractor Feed 80 Col		
Tractor Feed 132 Col		
17. Specify Right Margin		
Specify Left Margin		
18.a. No Paper Feed Out		
18.b. Paper FO on "RM" Loss		
18.c. Paper FO on "RM" Loss and ETX		
19.d. 96 Character Set		
19.e. 64 Character Set		
19.f. Ext. ASCII Set		
20.a. Single LF		
20.b. Double LF		
21.a. Lower and Upper Case Print		
21.b. Lower Case Prints as Upper Case		
22.a. Lower Case Prints as Error		
22.b. Lower Case Prints as Upper Case		
39.a. Forms on		
39.b. Forms off		
48.a. Paper Out Not Gated W/FF		
48.b. Paper Out Gated W/FF		

DCC (EPROM Version) — Controller Arrangement Form
DCC: **A** ☐ **B** ☐ **C** ☐ **D** ☐ **E** ☐ **F** ☐
USOC: 4TV + (4TOX+ OR 4TPX+)
HANDLES: 1-KD & Up To 1-PTR (1 Print Local).

	CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
	4	S5	STATION C/C (SCC)	DCC →	A	B	C	D	E	F
	4 & 3	S6 & A	KEYBOARD/DISPLAY	DEVICE ROW 1	SP	F	<	K	Q	;
OR	4	S7	PRINTER (N LOC)	DEVICE ROW 2	A	G	(	L	R	^
	4	S8	PRINTER (LOC)	DEVICE ROW 3	B	H	+	M	]	–

*ASCII and EBCDIC graphics are the same, except for

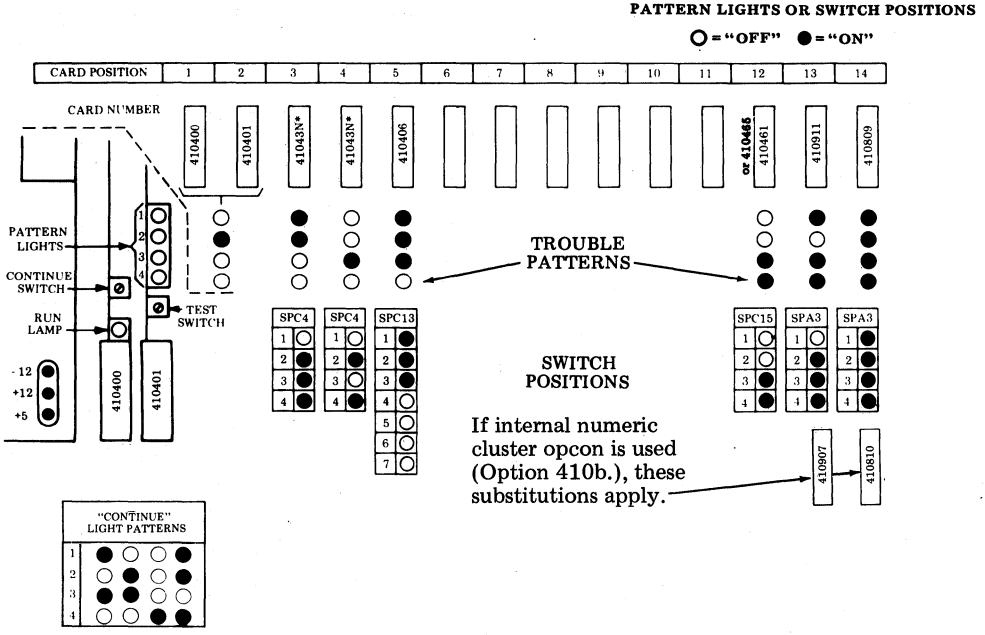
ASCII	EBCDIC
^	¬ (¢)**
]	! (|)



Note: If the customer requires that the printer not be "print local", connect the printer to socket 7.

**This footnote applies only when this DCC is connected to a PROM SCC. Character in parentheses is displayed as the device address in local test when using EBCDIC line code.

DCC (PROM Version) — Controller Arrangement Form
DCC: A☐ B☐ C☐ D☐ E☐ F☐
USOC: 4TV + 2-(4TOX+ OR 4TPX+)
HANDLES: 2-KD & 0-PTR



*41043N — ANY D I/O CIRCUIT CARD

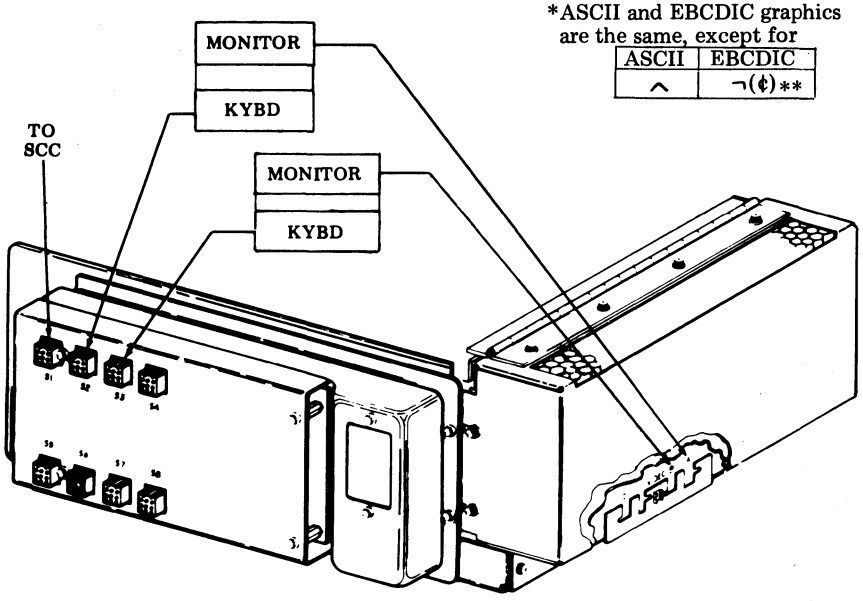
See adjacent page for Connections and Device Addresses.

DCC (PROM Version) — Controller Arrangement Form
DCC: A☐ B☐ C☐ D☐ E☐ F☐
USOC: 4TV + 2-(4TOX+ OR 4TPX+)
HANDLES: 2-KD & 0-PTR

CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
5	S1	STATION C/C (SCC)	DCC ⟶	A	B	C	D	E	F
5 & 3	S2 & A	KEYBOARD/DISPLAY(1)	DEVICE ROW 1	Sp	F	<	K	Q	;
5 & 4	S3 & B	KEYBOARD/DISPLAY(2)	DEVICE ROW 2	A	G	(	L	R	^

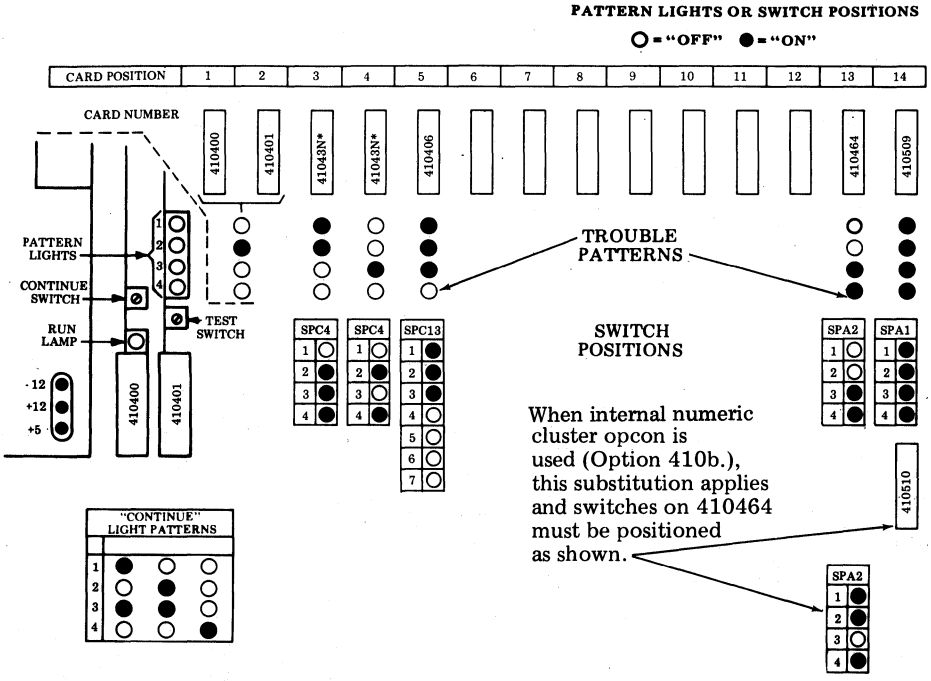
*ASCII and EBCDIC graphics are the same, except for

ASCII	EBCDIC
^	¬(¢)**



**This footnote applies only when this DCC is connected to a PROM SCC. Character in parentheses is displayed as the device address in local test when using EBCDIC line code.

DCC (EPROM Version) — Controller Arrangement Form
DCC: A☐ B☐ C☐ D☐ E☐ F☐
USOC: 4TV + 2-(4TOX+ OR 4TPX+)
HANDLES: 2-KD



*41043N — ANY D I/O CIRCUIT CARD

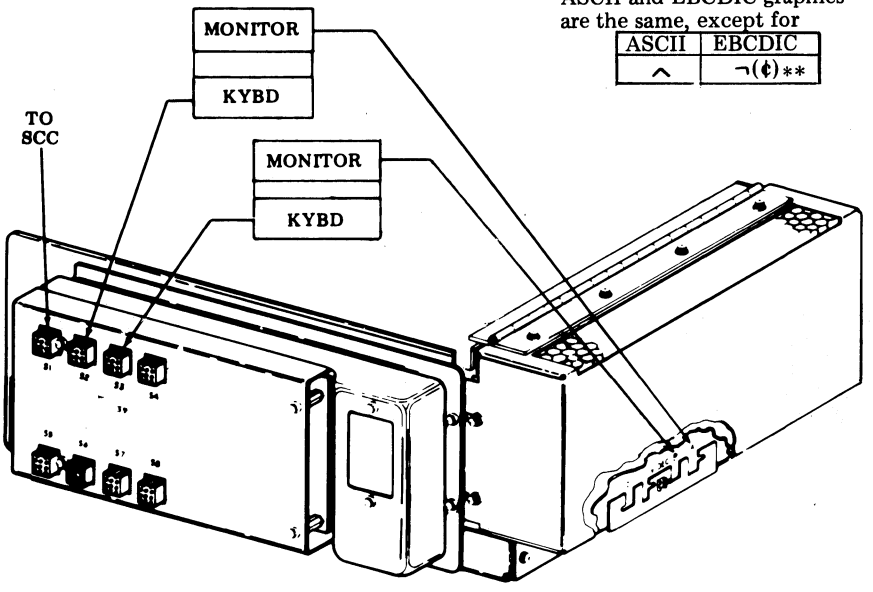
See adjacent page for Connections and Device Addresses.

DCC (EPROM Version) — Controller Arrangement Form
DCC: A☐ B☐ C☐ D☐ E☐ F☐
USOC: 4TV + 2-(4TOX+ OR 4TPX+)
HANDLES: 2-KD

CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
5	S1	STATION C/C (SCC)	DCC ⟶	A	B	C	D	E	F
5 & 3	S2 & A	KEYBOARD/DISPLAY(1)	DEVICE ROW 1	SP	F	<	K	Q	;
5 & 4	S3 & B	KEYBOARD/DISPLAY(2)	DEVICE ROW 2	A	G	(	L	R	^

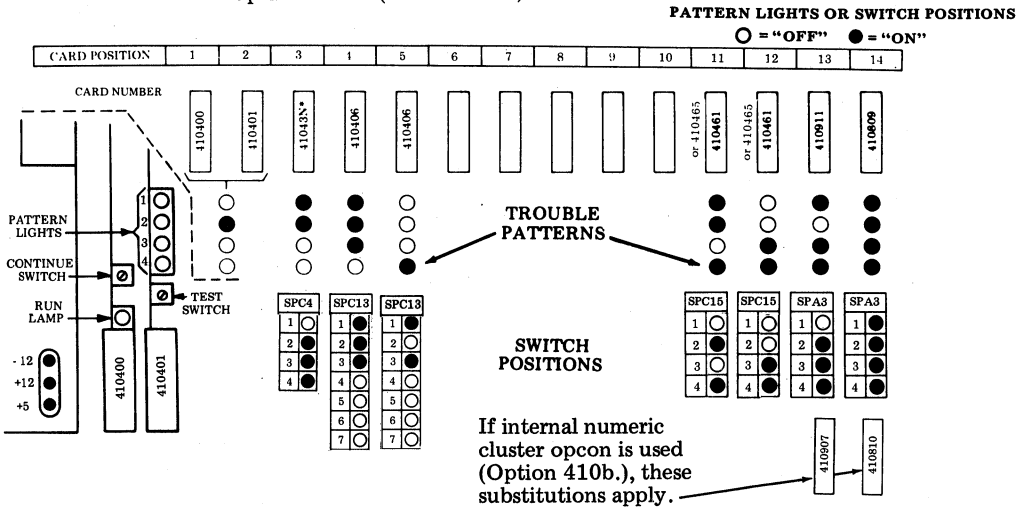
*ASCII and EBCDIC graphics are the same, except for

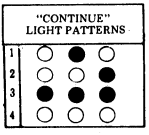
ASCII	EBCDIC
^	¬(¢)**



**This footnote applies only when this DCC is connected to a PROM SCC. Character in parentheses is displayed as the device address in local test when using EBCDIC line code.

DCC (PROM Version) — Controller Arrangement Form
DCC: A☐ B☐ C☐ D☐ E☐ F☐
USOC: 4TV + 4TW + (4TOX+ OR 4TPX+)
HANDLES: 1-KD & Up To 5-PTRs (1 Print Local)





PRINTER OPTIONS					
PRINTER I/O SOCKET	S7	S8	S1	S2	S3
Friction Feed					
Tractor Feed 80 Col					
Tractor Feed 132 Col					
17. Specify Right Margin					
Specify Left Margin					
18.a. No Paper Feed Out					
18.b. Paper FO on "RM" Loss					
18.c. Paper FO on "RM" Loss and ETX					
19.d. 96 Character Set					
19.e. 64 Character Set					
19.f. Ext. ASCII Set					
20.a. Single LF					
20.b. Double LF					
21.a. Lower and Upper Case Print					
21.b. Lower Case Prints as Upper Case					
22.a. Lower Case Prints as Error					
22.b. Lower Case Prints as Upper Case					
39.a. Forms on					
39.b. Forms off					
48.a. Paper Out Not Gated W/FF					
48.b. Paper Out Gated W/FF					

*41043N — ANY D I/O CIRCUIT CARD

See adjacent page for Connections and Device Addresses.

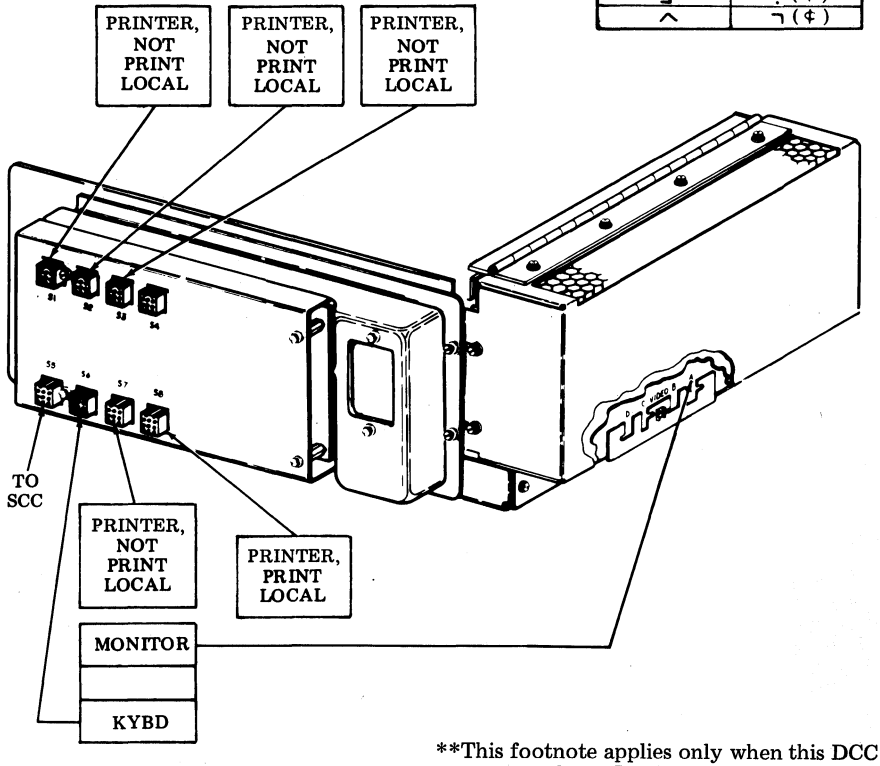
DCC (PROM Version) — Controller Arrangement Form
DCC: A☐ B☐ C☐ D☐ E☐ F☐
USOC: 4TV + 4TW + (4TOX+ OR 4TPX+)
HANDLES: 1-KD & Up To 5-PTRs (1 Print Local)

CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
4	S5	STATION C/C (SCC)	DCC ⟶	A	B	C	D	E	F
4 & 3	S6 & A	KEYBOARD/DISPLAY	DEVICE ROW 1	SP	F	<	K	Q	;
4	S7	PRINTER (N LOC)	DEVICE ROW 2	A	G	(	L	R	^
4	S8	PRINTER (LOC)	DEVICE ROW 3	B	H	+	M	¬	—
5	S1	PRINTER (N LOC)	DEVICE ROW 4	C	I	!	N	$	/
5	S2	PRINTER (N LOC)	DEVICE ROW 5	D	[	&	O	*	S
5	S3	PRINTER (N LOC)	DEVICE ROW 6	E	.	J	P	)	T

Note: If the customer requires that no printer be "print local", place a 340701 blocking key-top over the PRINT LOCAL position of the KD opcon.

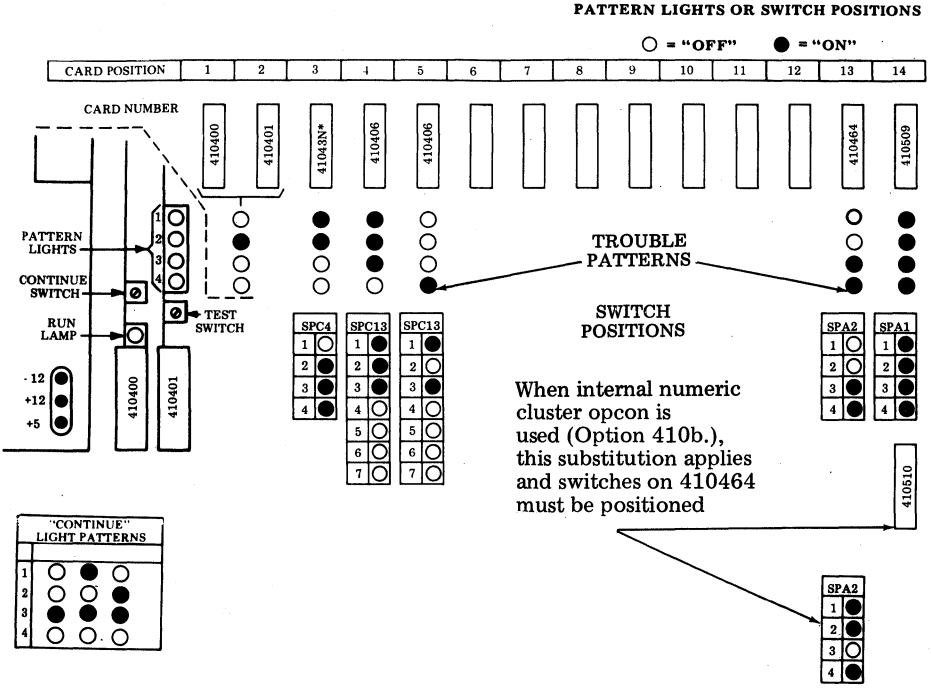
*ASCII and EBCDIC graphics are the same, except for

ASCII	EBCDIC
[	¢ (¬) **
!	| (!)
]	! (|)
^	¬ (¢)



**This footnote applies only when this DCC is connected to a PROM SCC. Character in parentheses is displayed as the device address in local test when using EBCDIC line code.

DCC (EPROM Version) — Controller Arrangement Form
DCC: A☐ B☐ C☐ D☐ E☐ F☐
USOC: 4TV + 4TU + (4TOX+ OR 4TPX+)
HANDLES: 1-KD & Up To 5-PTRs (1 Print Local)



*41043N — ANY D I/O CIRCUIT CARD

PRINTER OPTIONS					
PRINTER I/O SOCKET	S7	S8	S1	S2	S3
Friction Feed					
Tractor Feed 80 Col					
Tractor Feed 132 Col					
17. Specify Right Margin					
Specify Left Margin					
18.a. No Paper Feed Out					
18.b. Paper FO on "RM" Loss					
18.c. Paper FO on "RM" Loss and ETX					
19.d. 96 Character Set					
19.e. 64 Character Set					
19.f. Ext. ASCII Set					
20.a. Single LF					
20.b. Double LF					
21.a. Lower and Upper Case Print					
21.b. Lower Case Prints as Upper Case					
22.a. Lower Case Prints as Error					
22.b. Lower Case Prints as Upper Case					
39.a. Forms on					
39.b. Forms off					
48.a. Paper Out Not Gated W/FF					
48.b. Paper Out Gated W/FF					

See adjacent page for Connections and Device Addresses.

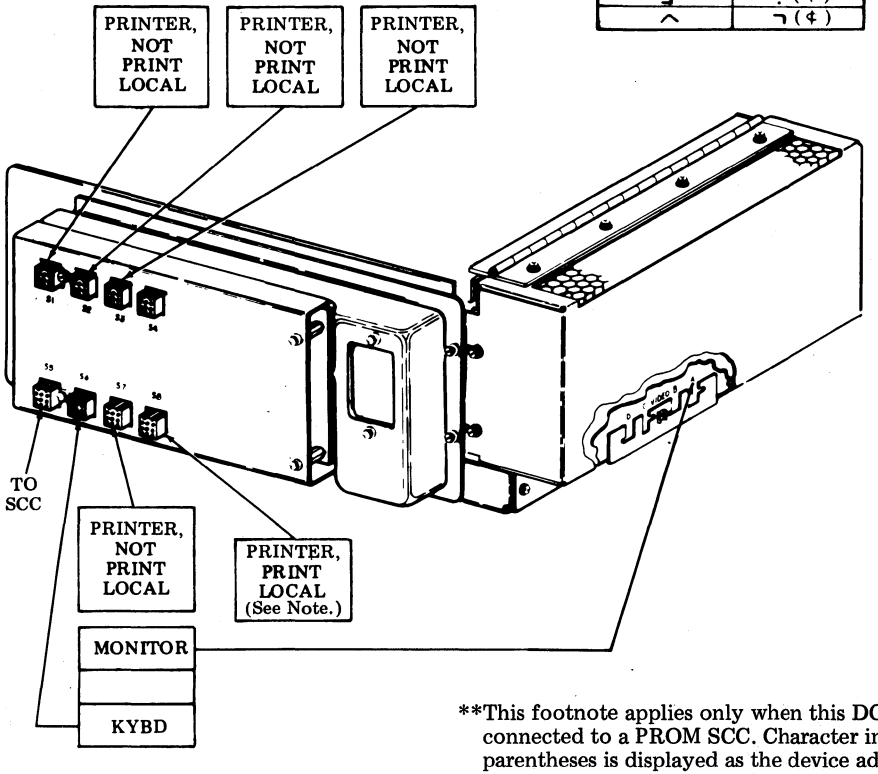
DCC (EPROM Version) — Controller Arrangement Form
DCC: A☐ B☐ C☐ D☐ E☐ F☐
USOC: 4TV + 4TU + (4TOX+ OR 4TPX+)
HANDLES: 1-KD & Up To 5-PTRs (1 Print Local)

CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
4	S5	STATION C/C (SCC)	DCC ⟶	A	B	C	D	E	F
4 & 3	S6 & A	KEYBOARD/DISPLAY	DEVICE ROW 1	SP	F	<	K	Q	;
4	S7	PRINTER (N LOC)	DEVICE ROW 2	A	G	(	L	R	^
4	S8	PRINTER (LOC)	DEVICE ROW 3	B	H	+	M	]	—
5	S1	PRINTER (N LOC)	DEVICE ROW 4	C	I	!	N	$	/
5	S2	PRINTER (N LOC)	DEVICE ROW 5	D	[	&	O	*	S
5	S3	PRINTER (N LOC)	DEVICE ROW 6	E	.	J	P	)	T

Note: If the customer requires that no printer be "print local", place a 340701 blocking key-top over the PRINT LOCAL position of the KD opcon.

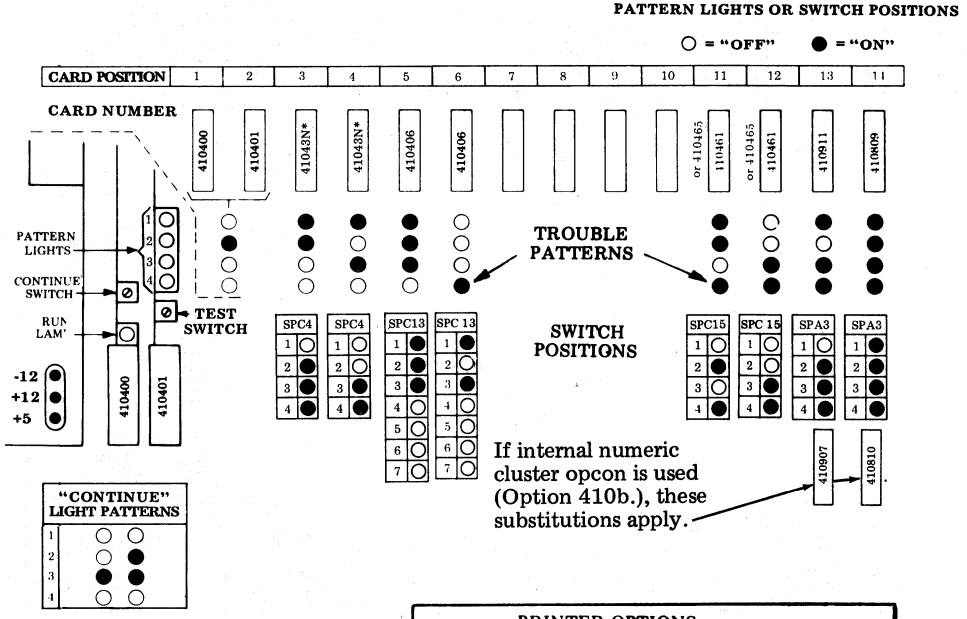
*ASCII and EBCDIC graphics are the same, except for

ASCII	EBCDIC
[	¢ (¬)**
!	| (!)
]	! (|)
^	¬ (¢)



**This footnote applies only when this DCC is connected to a PROM SCC. Character in parentheses is displayed as the device address in local test when using EBCDIC line code.

DCC (PROM Version) — Controller Arrangement Form
DCC: A☐ B☐ C☐ D☐ E☐ F☐
USOC: 4TV + 4TW + 2-(4TOX+ OR 4TPX+)
HANDLES: 2-KDs & Up To 4-PTRs (2 Print Local)



*41043N — ANY D I/O CIRCUIT CARD

Note 1: Printer associated with I/O socket S4 will be print local for KD in I/O socket S2 & A. Printer in I/O socket S7 is print local to KD in I/O socket S5 & B. If no printer is in I/O socket S7, the printer in I/O socket S4 will be print local to both KDs. See Note 2.

See adjacent page for Connections and Device Addresses.

PRINTER OPTIONS				
PRINTER I/O SOCKET	S3	S4	S6	S7
Friction Feed				
Tractor Feed 80 Col				
Tractor Feed 132 Col				
17. Specify Right Margin				
Specify Left Margin				
18.a. No Paper Feed Out				
18.b. Paper FO on "RM" Loss				
18.c. Paper FO on "RM" Loss and ETX				
19.d. 96 Character Set				
19.e. 64 Character Set				
19.f. Ext. ASCII Set				
20.a. Single LF				
20.b. Double LF				
21.a. Lower and Upper Case Print				
21.b. Lower Case Prints as Upper Case				
22.a. Lower Case Prints as Error				
22.b. Lower Case Prints as Upper Case				
39.a. Forms on				
39.b. Forms off				
48.a. Paper Out Not Gated W/FF				
48.b. Paper Out Gated W/FF				

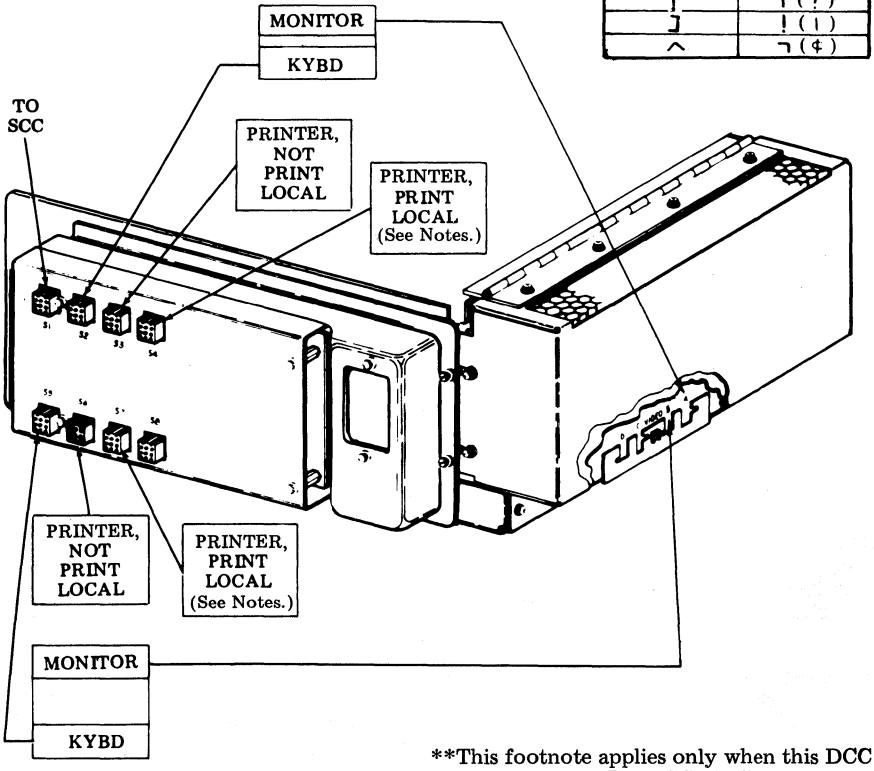
DCC (PROM Version) — Controller Arrangement Form
DCC: A☐ B☐ C☐ D☐ E☐ F☐
USOC: 4TV + 4TW +2-(4TOX+ OR 4TPX+)
HANDLES: 2-KDs & Up To 4-PTRs (2 Print Local)

CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
5	S1	STATION C/C (SCC)	DCC →	A	B	C	D	E	F
5 & 3	S2 & A	KEYBOARD/DISPLAY	DEVICE ROW 1	SP	F	<	K	Q	;
5	S3	PRINTER (N LOC)	DEVICE ROW 2	A	G	(	L	R	^
5	S4	PRINTER (NOTES)	DEVICE ROW 3	B	H	+	M	]	—
6 & 4	S5 & B	KEYBOARD/DISPLAY	DEVICE ROW 4	C	I	|	N	$	/
6	S6	PRINTER (N LOC)	DEVICE ROW 5	D	[	&	O	*	S
6	S7	PRINTER (NOTES)	DEVICE ROW 6	E	.	J	P	)	T

Note 2: If the customer requires that print local operation be prohibited from both KDs or just one KD, place a 340701 blocking keytop over the PRINT LOCAL position of the appropriate KD opcon(s).

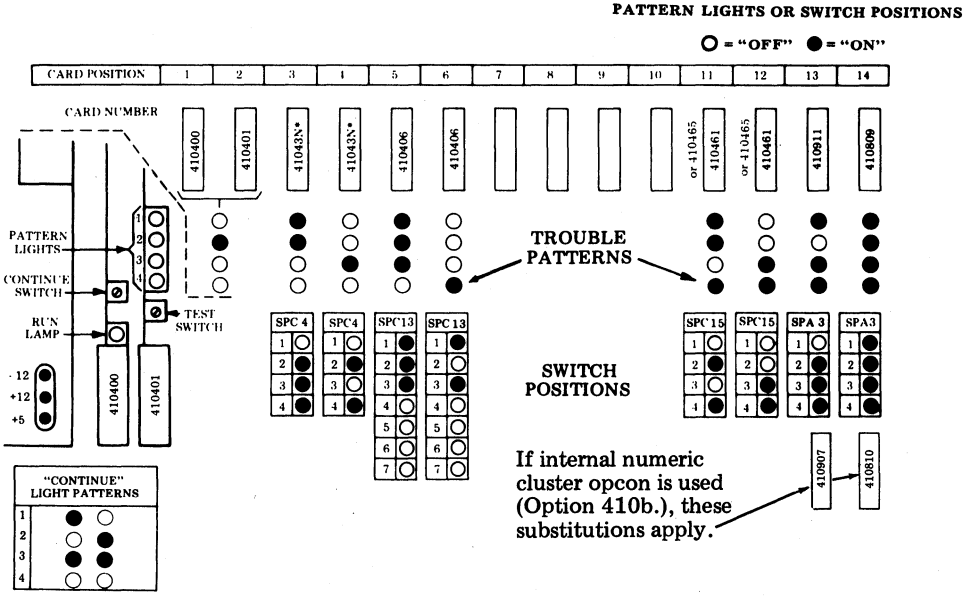
*ASCII and EBCDIC graphics are the same, except for

ASCII	EBCDIC
[	¢ (¬)**
|	! (!)
]	! (¦)
^	¬ (¢)



**This footnote applies only when this DCC is connected to a PROM SCC. Character in parentheses is displayed as the device address in local test when using EBCDIC line code.

DCC (PROM Version) — Controller Arrangement Form
DCC: A☐ B☐ C☐ D☐ E☐ F☐
USOC: 4TV + 4TW + 2-(4TOX+ OR 4TPX+)
HANDLES: 2-KDs + Up To 4-PTRs (1 Print Local)



*41043N — ANY D I/O CIRCUIT CARD

PRINTER OPTIONS				
PRINTER I/O SOCKET	S4	S5	S6	S7
Friction Feed				
Tractor Feed 80 Col				
Tractor Feed 132 Col				
17. Specify Right Margin				
Specify Left Margin				
18.a. No Paper Feed Out				
18.b. Paper FO on "RM" Loss				
18.c. Paper FO on "RM" Loss and ETX				
19.d. 96 Character Set				
19.e. 64 Character Set				
19.f. Ext. ASCII Set				
20.a. Single LF				
20.b. Double LF				
21.a. Lower and Upper Case Print				
21.b. Lower Case Prints as Upper Case				
22.a. Lower Case Prints as Error				
22.b. Lower Case Prints as Upper Case				
39.a. Forms on				
39.b. Forms off				
48.a. Paper Out Not Gated W/FF				
48.b. Paper Out Gated W/FF				

Note 1: Printer associated with I/O socket S4 will be print local for KD in I/O socket S2 & A and S3 & B. See Note 2.

See adjacent page for Connections and Device Addresses.

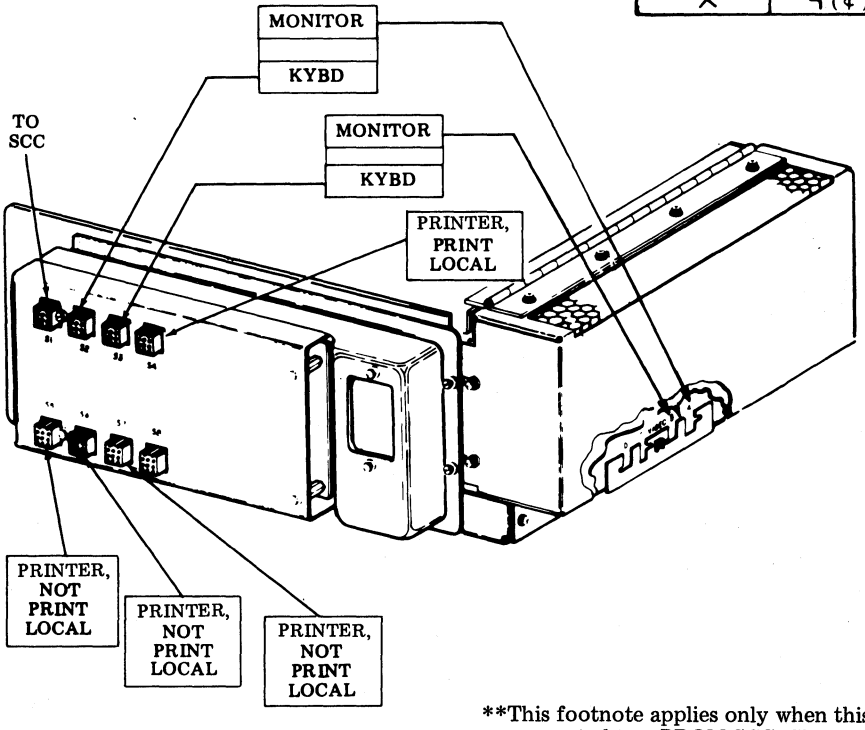
DCC (PROM Version) — Controller Arrangement Form
DCC: A☐ B☐ C☐ D☐ E☐ F☐
USOC: 4TV + 4TW + 2-(4TOX+ OR 4TPX+)
HANDLES: 2-KDs & Up To 4-PTRs (1 Print Local)

CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
				A	B	C	D	E	F
5	S1	STATION C/C (SCC)	DCC→	SP	F	(	K	Q	;
5 & 3	S2 & A	KEYBOARD/DISPLAY	DEVICE ROW 1	A	G	(	L	R	^
5 & 4	S3 & B	KEYBOARD/DISPLAY	DEVICE ROW 2	B	H	+	M	]	-
5	S4	PRINTER (NOTES)	DEVICE ROW 3	C	I	!	N	$	/
6	S5	PRINTER (N LOC)	DEVICE ROW 4	D	[	&	O	*	S
6	S6	PRINTER (N LOC)	DEVICE ROW 5	E	.	J	P	)	T
6	S7	PRINTER (N LOC)	DEVICE ROW 6						

Note 2: If the customer requires that print local operation be prohibited from both KDs or just one KD, place a 340701 blocking keytop over the PRINT LOCAL position of the appropriate KD opcon(s).

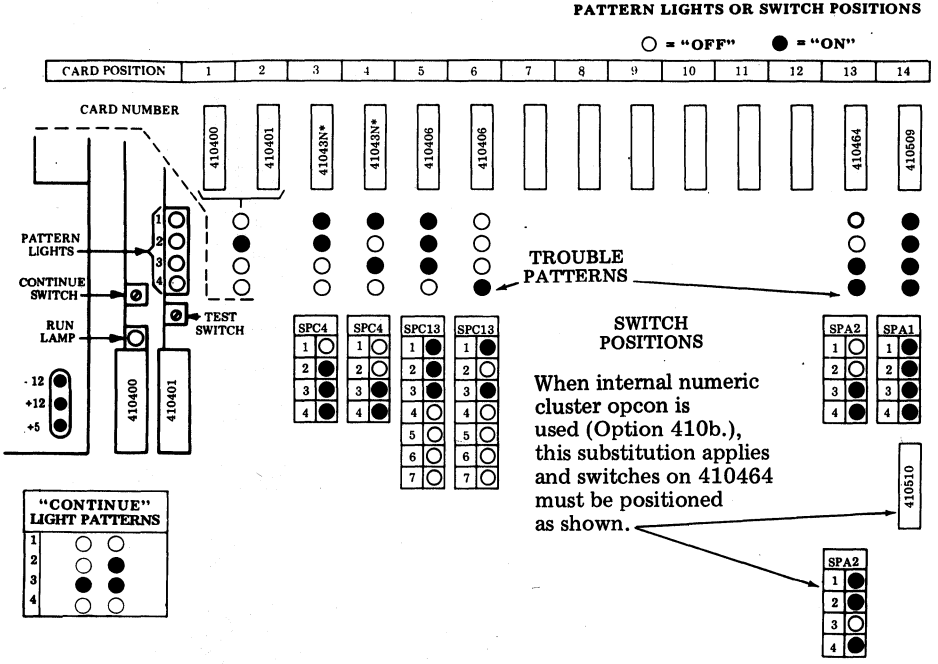
*ASCII and EBCDIC graphics are the same, except for

ASCII	EBCDIC
[	¢ (¬) **
]	! (!)
]	! (|)
^	¬ (¢)



**This footnote applies only when this DCC is connected to a PROM SCC. Character in parentheses is displayed as the device address in local test when using EBCDIC line code.

DCC (EPROM Version) — Controller Arrangement Form
DCC: A☐ B☐ C☐ D☐ E☐ F☐
USOC: 4TV + 4TU + 2-(4TOX+ OR 4TPX+)
HANDLES: 2-KDs & Up To 4-PTRs (2 Print Local)



*41043N — ANY D I/O CIRCUIT CARD

Note 1: Printer associated with I/O socket S4 will be print local for KD in I/O socket S2 & A. Printer in I/O socket S7 is print local to KD in I/O socket S5 & B. If no printer is in I/O socket S7, the printer in I/O socket S4 will be print local to both KDs. See Note 2.

PRINTER OPTIONS				
PRINTER I/O SOCKET	S3	S4	S6	S7
Friction Feed				
Tractor Feed 80 Col				
Tractor Feed 132 Col				
17. Specify Right Margin				
Specify Left Margin				
18.a. No Paper Feed Out				
18.b. Paper FO on "RM" Loss				
18.c. Paper FO on "RM" Loss and ETX				
19.d. 96 Character Set				
19.e. 64 Character Set				
19.f. Ext. ASCII Set				
20.a. Single LF				
20.b. Double LF				
21.a. Lower and Upper Case Print				
21.b. Lower Case Prints as Upper Case				
22.a. Lower Case Prints as Error				
22.b. Lower Case Prints as Upper Case				
39.a. Forms on				
39.b. Forms off				
48.a. Paper Out Not Gated W/FF				
48.b. Paper Out Gated W/FF				

See adjacent page for Connections and Device Addresses.

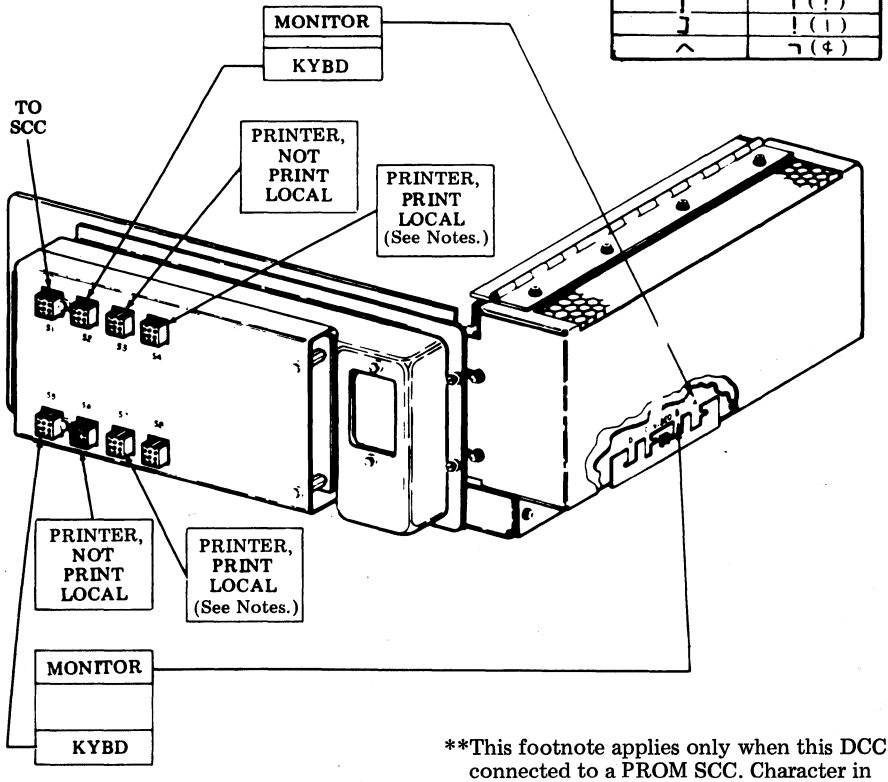
DCC (EPROM Version) — Controller Arrangement Form
DCC: A☐ B☐ C☐ D☐ E☐ F☐
USOC: 4TV + 4TU +2-(4TOX+ OR 4TPX+)
HANDLES: 2-KDs & Up To 4-PTRs (2 Print Local)

CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
5	S1	STATION C/C (SCC)	DCC ⟶	A	B	C	D	E	F
5 & 3	S2 & A	KEYBOARD/DISPLAY	DEVICE ROW 1	Sp	F	<	K	Q	;
5	S3	PRINTER (N LOC)	DEVICE ROW 2	A	G	(	L	R	^
5	S4	PRINTER (NOTES)	DEVICE ROW 3	B	H	+	M	]	—
6 & 4	S5 & B	KEYBOARD/DISPLAY	DEVICE ROW 4	C	I	!	N	$	/
6	S6	PRINTER (N LOC)	DEVICE ROW 5	D	[	&	O	*	9
6	S7	PRINTER(NOTES)	DEVICE ROW 6	E	.	J	P	)	T

Note 2: If the customer requires that print local operation be prohibited from both KDs or just one KD, place a 340701 blocking keytop over the PRINT LOCAL position of the appropriate KD opcon(s).

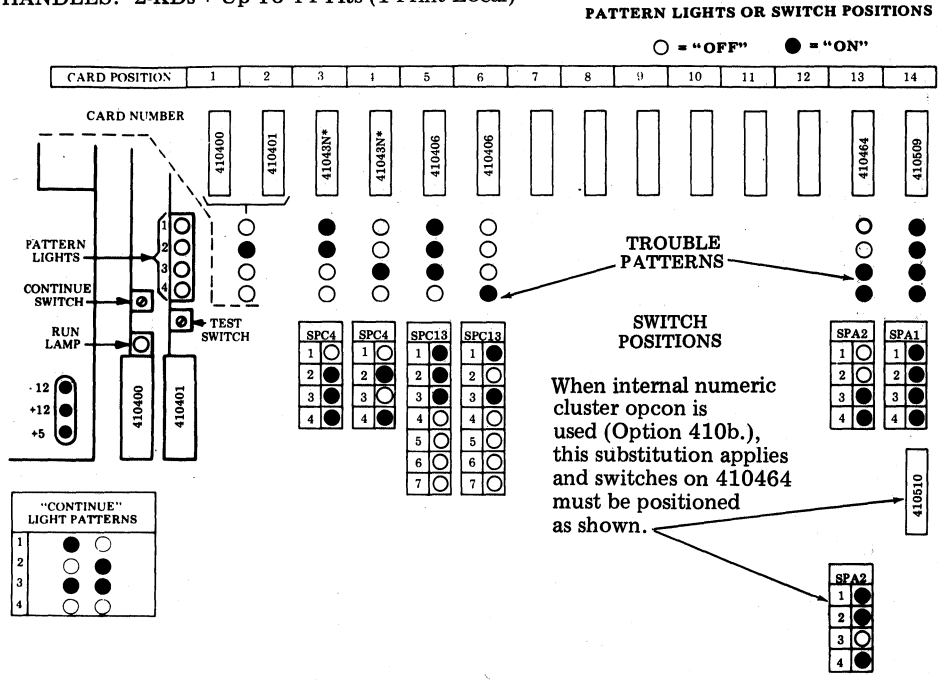
*ASCII and EBCDIC graphics are the same, except for

ASCII	EBCDIC
[	¢ (¬) **
¦	¦ (!)
]	! (¦)
^	¬ (¢)



**This footnote applies only when this DCC is connected to a PROM SCC. Character in parentheses is displayed as the device address in local test when using EBCDIC line code.

DCC (EPROM Version) — Controller Arrangement Form
DCC: A☐ B☐ C☐ D☐ E☐ F☐
USOC: 4TV + 4TU + 2-(4TOX+ OR 4TPX+)
HANDLES: 2-KDs + Up To 4-PTRs (1 Print Local)



*41043N — ANY D I/O CIRCUIT CARD

Note 1: Printer associated with I/O socket S4 will be print local for KD in I/O socket S2 & A and S3 & B. See Note 2.

See adjacent page for Connections and Device Addresses.

PRINTER OPTIONS				
PRINTER I/O SOCKET	S4	S5	S6	S7
Friction Feed				
Tractor Feed 80 Col				
Tractor Feed 132 Col				
17. Specify Right Margin				
Specify Left Margin				
18.a. No Paper Feed Out				
18.b. Paper FO on "RM" Loss				
18.c. Paper FO on "RM" Loss and ETX				
19.d. 96 Character Set				
19.e. 64 Character Set				
19.f. Ext. ASCII Set				
20.a. Single LF				
20.b. Double LF				
21.a. Lower and Upper Case Print				
21.b. Lower Case Prints as Upper Case				
22.a. Lower Case Prints as Error				
22.b. Lower Case Prints as Upper Case				
39.a. Forms on				
39.b. Forms off				
48.a. Paper Out Not Gated W/FF				
48.b. Paper Out Gated W/FF				

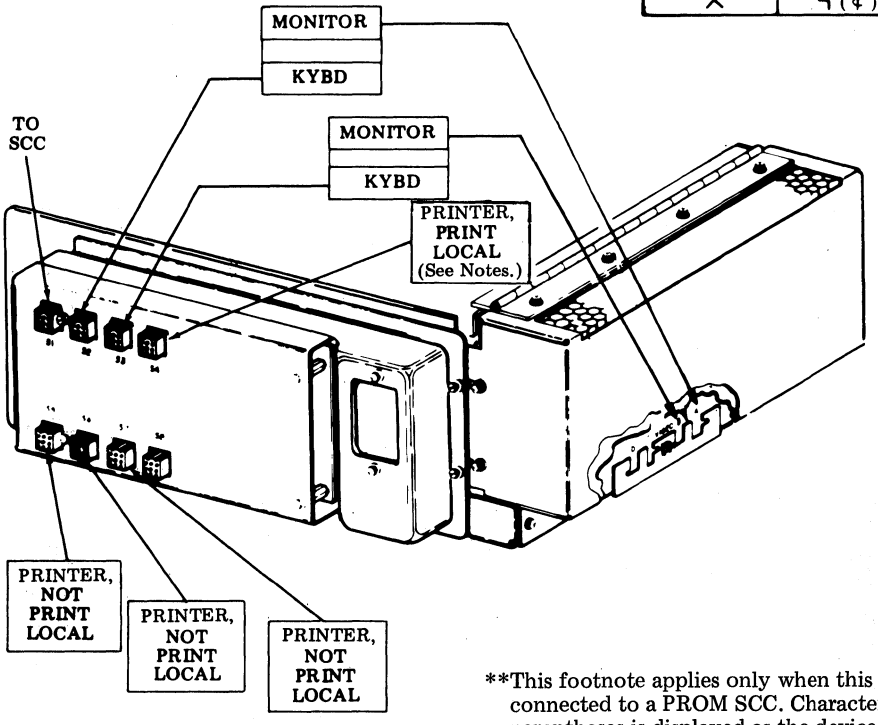
DCC (EPROM Version) — Controller Arrangement Form
DCC: A☐ B☐ C☐ D☐ E☐ F☐
USOC: 4TV + 4TU + 2-(4TOX+ OR 4TPX+)
HANDLES: 2-KDs & Up To 4-PTRs (1 Print Local)

CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
5	S1	STATION C/C (SCC)	DCC→	A	B	C	D	E	F
5 & 3	S2 & A	KEYBOARD/DISPLAY	DEVICE ROW 1	SP	F	<	K	Q	;
5 & 4	S3 & B	KEYBOARD/DISPLAY	DEVICE ROW 2	A	G	(	L	R	^
5	S4	PRINTER (NOTES)	DEVICE ROW 3	B	H	+	M	]	-
6	S5	PRINTER (N LOC)	DEVICE ROW 4	C	I	!	N	$	/
6	S6	PRINTER (N LOC)	DEVICE ROW 5	D	[	"	O	*	S
6	S7	PRINTER (N LOC)	DEVICE ROW 6	E	.	J	P	)	T

Note 2: If the customer requires that print local operation be prohibited from both KDs or just one KD, place a 340701 blocking keytop over the PRINT LOCAL position of the appropriate KD opcon(s).

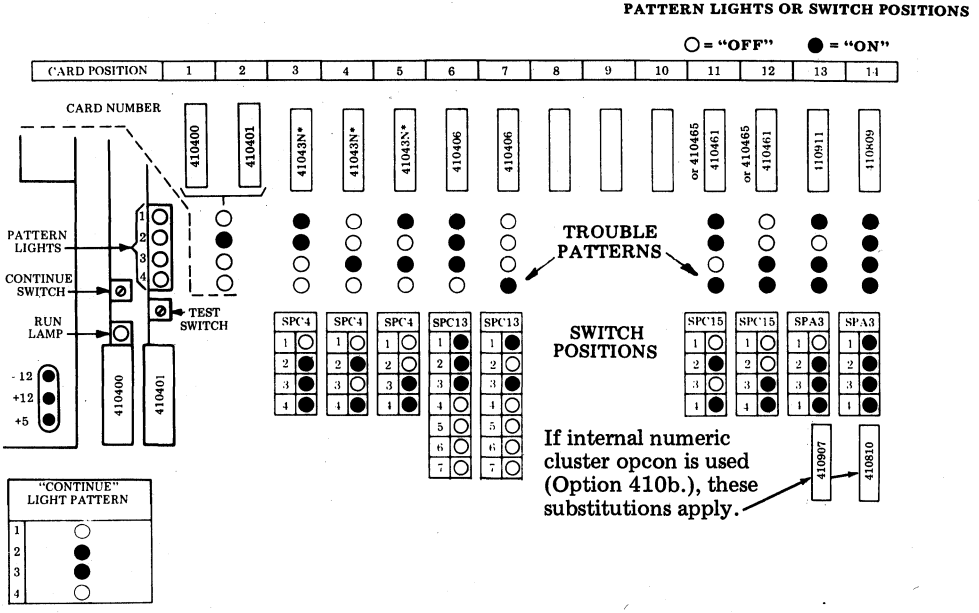
*ASCII and EBCDIC graphics are the same, except for

ASCII	EBCDIC
[	¢ (¬) **
|	! (!)
]	! (|)
^	¬ (¢)



**This footnote applies only when this DCC is connected to a PROM SCC. Character in parentheses is displayed as the device address in local test when using EBCDIC line code.

DCC (PROM Version) — Controller Arrangement Form
DCC: A☐ B☐ C☐ D☐ E☐ F☐
USOC: 4TV + 4TW + 3-(4TOX+ OR 4TPX+)
HANDLES: 3-KDs & Up To 3-PTRs (2 Print Local)



*41043N — ANY D I/O CIRCUIT CARD

Note 1: Printer in I/O socket S8 is print local to KDs in I/O socket S6 & A and S7 & B. Printer in I/O socket S3 is print local to KD in I/O socket S1 & C. If no printer is in I/O socket S3, printer in I/O socket S8 will be print local to all KDs. See Note 2.

See adjacent page for Connections and Device Addresses.

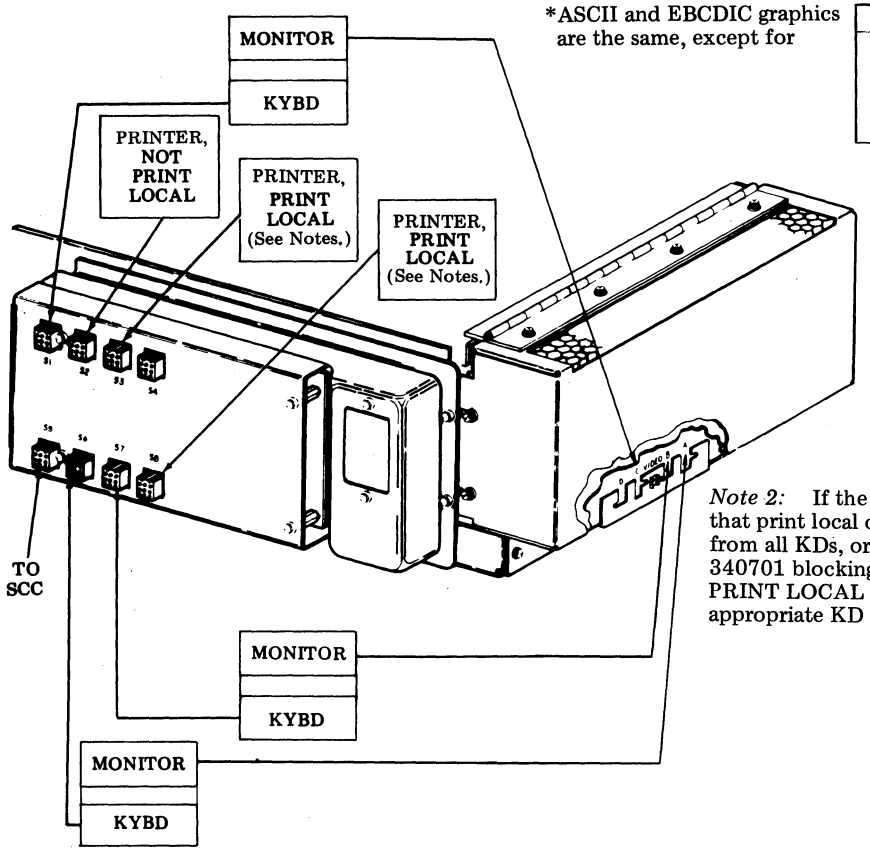
PRINTER OPTIONS			
PRINTER I/O SOCKET	S8	S3	S2
Friction Feed			
Tractor Feed 80 Col			
Tractor Feed 132 Col			
17. Specify Right Margin			
Specify Left Margin			
18.a. No Paper Feed Out			
18.b. Paper FO on "RM" Loss			
18.c. Paper FO on "RM" Loss and ETX			
19.d. 96 Character Set			
19.e. 64 Character Set			
19.f. Ext. ASCII Set			
20.a. Single LF			
20.b. Double LF			
21.a. Lower and Upper Case Print			
21.b. Lower Case Prints as Upper Case			
22.a. Lower Case Prints as Error			
22.b. Lower Case Prints as Upper Case			
39.a. Forms on			
39.b. Forms off			
48.a. Paper Out Not Gated W/FF			
48.b. Paper Out Gated W/FF			

CC (PROM Version) — Controller Arrangement Form
CC: A ☐ B ☐ C ☐ D ☐ E ☐ F ☐
SOC: 4TV + 4TW + 3-(4TOX+ OR 4TPX+)
ANDLES: 3-KDs & Up To 3-PTRs (2 Print Local)

CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
6	S5	STATION C/C (SCC)	DCC ⟶	A	B	C	D	E	F
6 & 3	S6 & A	KEYBOARD DISPLAY	DEVICE ROW 1	Sp	F	<	K	Q	;
6 & 4	S7 & B	KEYBOARD DISPLAY	DEVICE ROW 2	A	G	(	L	R	^
6	S8	PRINTER (NOTES)	DEVICE ROW 3	B	H	+	M	]	—
7 & 5	S1 & C	KEYBOARD DISPLAY	DEVICE ROW 4	C	I	!	N	$	/
7	S2	PRINTER (N LOC)	DEVICE ROW 5	D	[	@	O	*	S
7	S3	PRINTER (NOTES)	DEVICE ROW 6	E	.	J	P	)	T

*ASCII and EBCDIC graphics are the same, except for

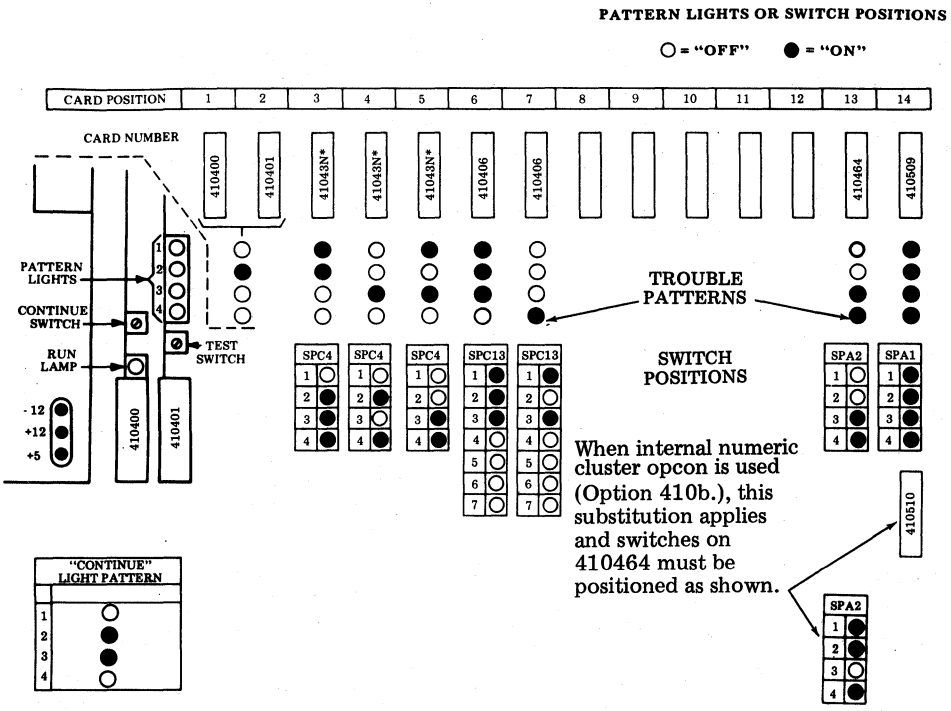
ASCII	EBCDIC
[	¢ (¬)**
!	! (!)
]	! (¦)
^	¬ (¢)



Note 2: If the customer requires that print local operation be prohibited from all KDs, or just one KD, place a 340701 blocking keytop over the PRINT LOCAL position of the appropriate KD opcon(s).

**This footnote applies only when this DCC is connected to a PROM SCC. Character in parentheses is displayed as the device address in local test when using EBCDIC line code.

DCC (EPROM Version) — Controller Arrangement Form
DCC: A☐ B☐ C☐ D☐ E☐ F☐
USOC: 4TV + 4TU + 3-(4TOX+ OR 4TPX+)
HANDLES: 3-KDs & Up To 3-PTRs (2 Print Local)



*41043N – ANY D I/O CIRCUIT CARD

Note 1: Printer in I/O socket S8 is print local to KDs in I/O socket S6 & A and S7 & B. Printer in I/O socket S3 is print local to KD in I/O socket S1 & C. If no printer is in I/O socket S3, printer in I/O socket S8 will be print local to all KDs. See Note 2.

See adjacent page for Connections and Device Addresses.

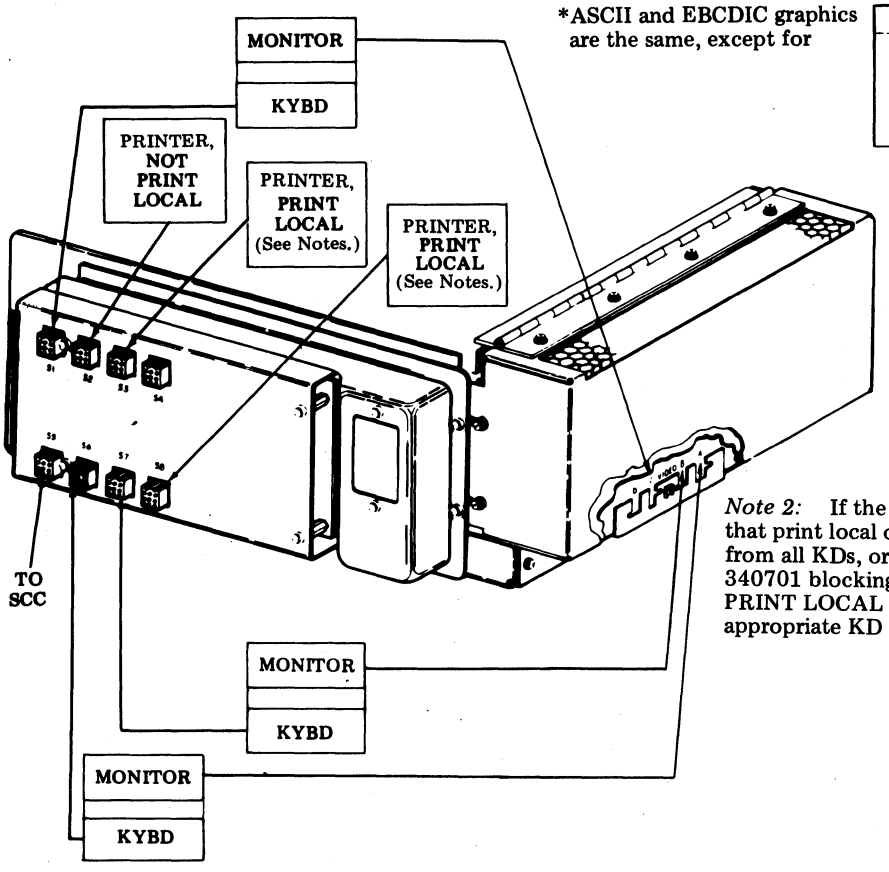
PRINTER OPTIONS			
PRINTER I/O SOCKET	S8	S3	S2
Friction Feed			
Tractor Feed 80 Col			
Tractor Feed 132 Col			
17. Specify Right Margin Specify Left Margin			
18.a. No Paper Feed Out			
18.b. Paper FO on "RM" Loss			
18.c. Paper FO on "RM" Loss and ETX			
19.d. 96 Character Set			
19.e. 64 Character Set			
19.f. Ext. ASCII Set			
20.a. Single LF			
20.b. Double LF			
21.a. Lower and Upper Case Print			
21.b. Lower Case Prints as Upper Case			
22.a. Lower Case Prints as Error			
22.b. Lower Case Prints as Upper Case			
39.a. Forms on			
39.b. Forms off			
48.a. Paper Out Not Gated W/FF			
48.b. Paper Out Gated W/FF			

DCC (EPROM Version) — Controller Arrangement Form
DCC: A ☐ B ☐ C ☐ D ☐ E ☐ F ☐
USOC: 4TV + 4TU + 3-(4TOX+ OR 4TPX+)
HANDLES: 3-KDs & Up To 3-PTRs (2 Print Local)

CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
6	S5	STATION C/C (SCC)	DCC →	A	B	C	D	E	F
6 & 3	S6 & A	KEYBOARD DISPLAY	DEVICE ROW 1	Sp	F	<	K	Q	;
6 & 4	S7 & B	KEYBOARD DISPLAY	DEVICE ROW 2	A	G	(	L	R	^
6	S8	PRINTER (NOTES)	DEVICE ROW 3	B	H	+	M	]	—
7 & 5	S1 & C	KEYBOARD DISPLAY	DEVICE ROW 4	C	I	|	N	$	/
7	S2	PRINTER (N LOC)	DEVICE ROW 5	D	[	@	O	*	S
7	S3	PRINTER (NOTES)	DEVICE ROW 6	E	.	J	P	)	T

*ASCII and EBCDIC graphics are the same, except for

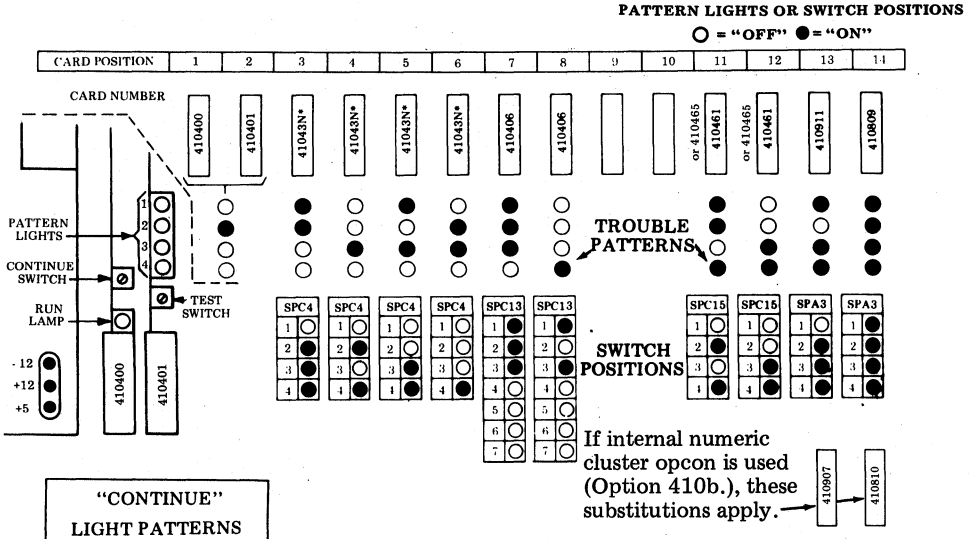
ASCII	EBCDIC
[	¢ (¬)**
|	! (!)
]	! (|)
^	¬ (¢)



Note 2: If the customer requires that print local operation be prohibited from all KDs, or just one KD, place a 340701 blocking keytop over the PRINT LOCAL position of the appropriate KD opcon(s).

**This footnote applies only when this DCC is connected to a PROM SCC. Character in parentheses is displayed as the device address in local test when using EBCDIC line code.

DCC (PROM Version) — Controller Arrangement Form
DCC: A☐ B☐ C☐ D☐ E☐ F☐
USOC: 4TV + 4TW + 4-(4TOX+ OR 4TPX+)
HANDLES: 4-KDs & Up To 2-PTRs (2 Print Local)



"CONTINUE" LIGHT PATTERNS
There are no "CONTINUE" LIGHT PATTERNS

*41043N — ANY D I/O CIRCUIT CARD

Note 1: Printer in I/O socket S4 is print local to KDs in I/O socket S2 & A and S3 & B. Printer in I/O socket S7 is print local to KDs in I/O socket S5 & C and S6 & D. If no printer in I/O socket S7, printer in I/O socket S4 will be print local to all KDs. See Note 2.

See adjacent page for Connections and Device Addresses.

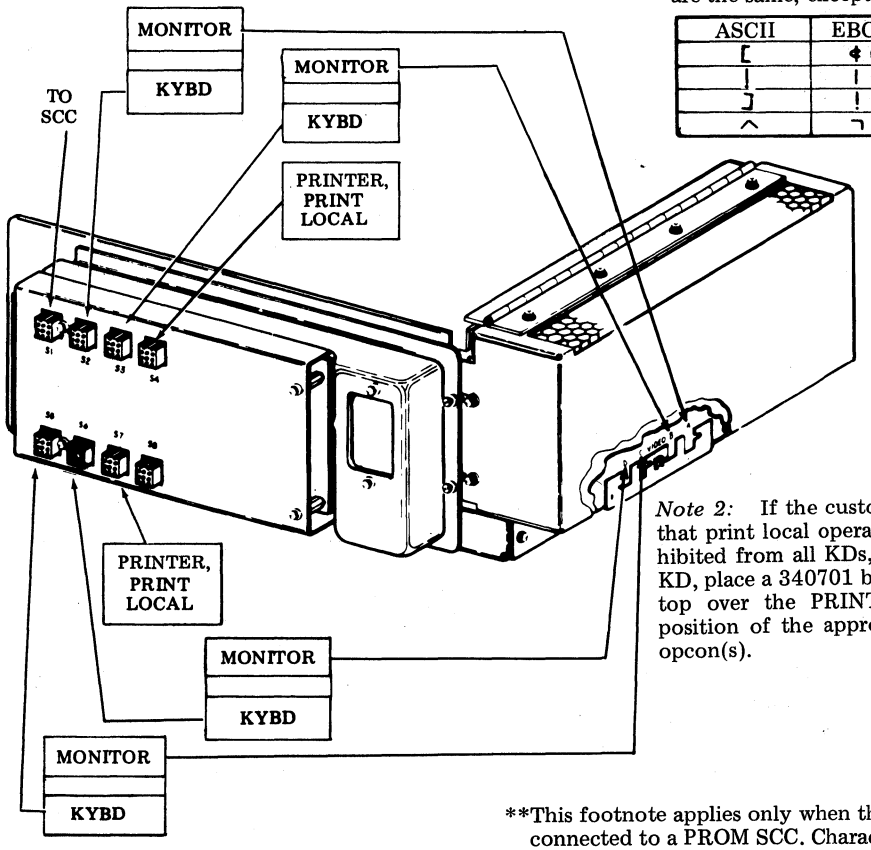
PRINTER OPTIONS		
PRINTER I/O SOCKET	S4	S7
Friction Feed		
Tractor Feed 80 Col		
Tractor Feed 132 Col		
17. Specify Right Margin		
Specify Left Margin		
18.a. No Paper Feed Out		
18.b. Paper FO on "RM" Loss		
18.c. Paper FO on "RM" Loss and ETX		
19.d. 96 Character Set		
19.e. 64 Character Set		
19.f. Ext. ASCII Set		
20.a. Single LF		
20.b. Double LF		
21.a. Lower and Upper Case Print		
21.b. Lower Case Prints as Upper Case		
22.a. Lower Case Prints as Error		
22.b. Lower Case Prints as Upper Case		
39.a. Forms on		
39.b. Forms off		
48.a. Paper Out Not Gated W/FF		
48.b. Paper Out Gated W/FF		

DCC (PROM Version) — Controller Arrangement Form
DCC: A ☐ B ☐ C ☐ D ☐ E ☐ F ☐
USOC: 4TV + 4TW + 4-(4TOX+ OR 4TPX+)
HANDLES: 4-KDs & Up To 2-PTRs (2 Print Local)

CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
7	S1	STATION C/C (SCC'	DCC→	A	B	C	D	E	F
7 & 3	S2 & A	KEYBOARD/DISPLAY	DEVICE ROW 1	Sp	F	(	K	Q	;
7 & 4	S3 & B	KEYBOARD/DISPLAY	DEVICE ROW 2	A	G	(	L	R	^
7	S4	PRINTER (NOTES)	DEVICE ROW 3	B	H	+	M	]	—
8 & 5	S5 & C	KEYBOARD/DISPLAY	DEVICE ROW 4	C	I	!	N	$	/
8 & 6	S6 & D	KEYBOARD/DISPLAY	DEVICE ROW 5	D	[	&	O	*	S
8	S7	PRINTER (NOTES)	DEVICE ROW 6	E	.	J	P	)	T

*ASCII and EBCDIC graphics are the same, except for

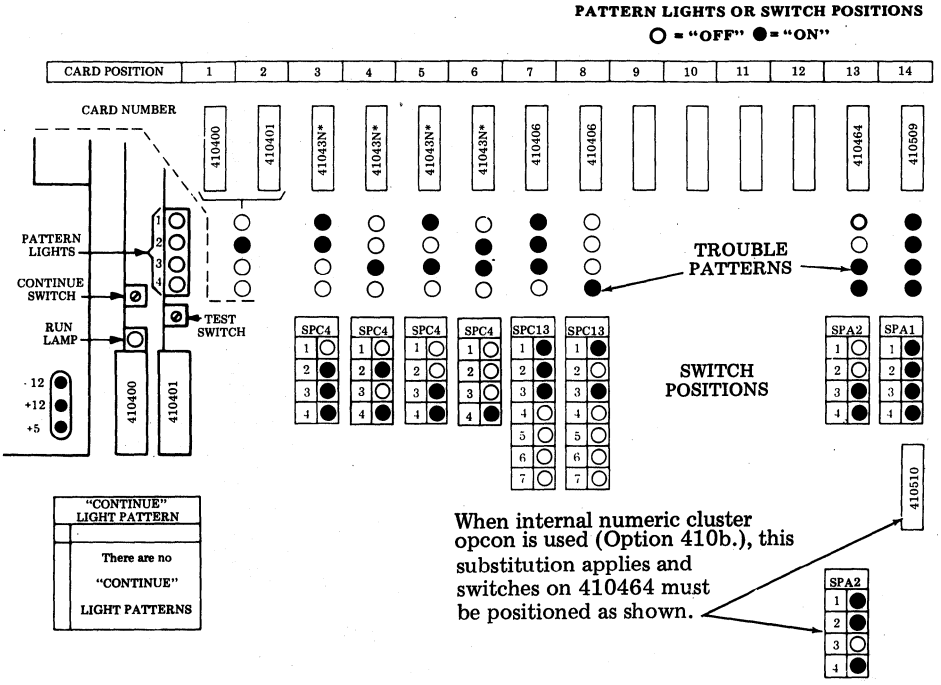
ASCII	EBCDIC
[	¢ (¬) **
]	! (!)
]	! (¦)
^	¬ (¢)



Note 2: If the customer requires that print local operation be prohibited from all KDs, or just one KD, place a 340701 blocking keytop over the PRINT LOCAL position of the appropriate KD opcon(s).

**This footnote applies only when this DCC is connected to a PROM SCC. Character in parentheses is displayed as the device address in local test when using EBCDIC line code.

DCC (EPROM Version) — Controller Arrangement Form
DCC: A☐ B☐ C☐ D☐ E☐ F☐
USOC: 4TV + 4TU + 4-(4TOX+ OR 4TPX+)
HANDLES: 4-KDs & Up To 2-PTRs (2 Print Local)



*41043N — ANY D I/O CIRCUIT CARD

Note 1: Printer in I/O socket S4 is print local to KDs in I/O socket S2 & A and S3 & B. Printer in I/O socket S7 is print local to KDs in I/O socket S5 & C and S6 & D. If no printer in I/O socket S7, printer in I/O socket S4 will be print local to all KDs. See Note 2.

See adjacent page for Connections and Device Addresses.

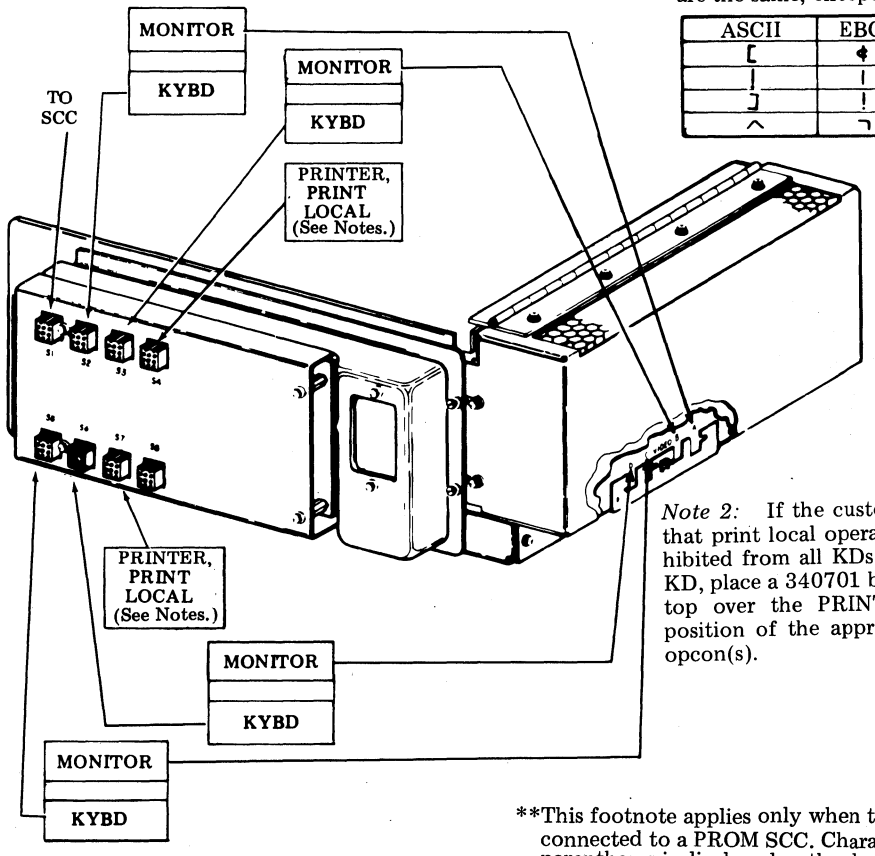
PRINTER OPTIONS		
PRINTER I/O SOCKET	S4	S7
Friction Feed		
Tractor Feed 80 Col		
Tractor Feed 132 Col		
17. Specify Right Margin Specify Left Margin		
18.a. No Paper Feed Out		
18.b. Paper FO on "RM" Loss		
18.c. Paper FO on "RM" Loss and ETX		
19.d. 96 Character Set		
19.e. 64 Character Set		
19.f. Ext. ASCII Set		
20.a. Single LF		
20.b. Double LF		
21.a. Lower and Upper Case Print		
21.b. Lower Case Prints as Upper Case		
22.a. Lower Case Prints as Error		
22.b. Lower Case Prints as Upper Case		
39.a. Forms on		
39.b. Forms off		
48.a. Paper Out Not Gated W/FF		
48.b. Paper Out Gated W/FF		

DCC (EPROM Version) — Controller Arrangement Form
DCC: A ☐ B ☐ C ☐ D ☐ E ☐ F ☐
USOC: 4TV + 4TU + 4-(4TOX+ OR 4TPX+)
HANDLES: 4-KDs & Up To 2-PTRs (2 Print Local)

CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
7	S1	STATION C/C (SCC'	DCC →	A	B	C	D	E	F
7 & 3	S2 & A	KEYBOARD/DISPLAY	DEVICE ROW 1	Sp	F	<	K	Q	;
7 & 4	S3 & B	KEYBOARD/DISPLAY	DEVICE ROW 2	A	G	(	L	R	^
7	S4	PRINTER (NOTES)	DEVICE ROW 3	B	H	+	M	]	—
8 & 5	S5 & C	KEYBOARD/DISPLAY	DEVICE ROW 4	C	I	!	N	$	/
8 & 6	S6 & D	KEYBOARD/DISPLAY	DEVICE ROW 5	D	[	&	O	*	S
8	S7	PRINTER (NOTES)	DEVICE ROW 6	E	.	J	P	)	T

*ASCII and EBCDIC graphics are the same, except for

ASCII	EBCDIC
[	¢ (¬) **
¦	¦ (!)
]	! (¦)
^	¬ (¢)

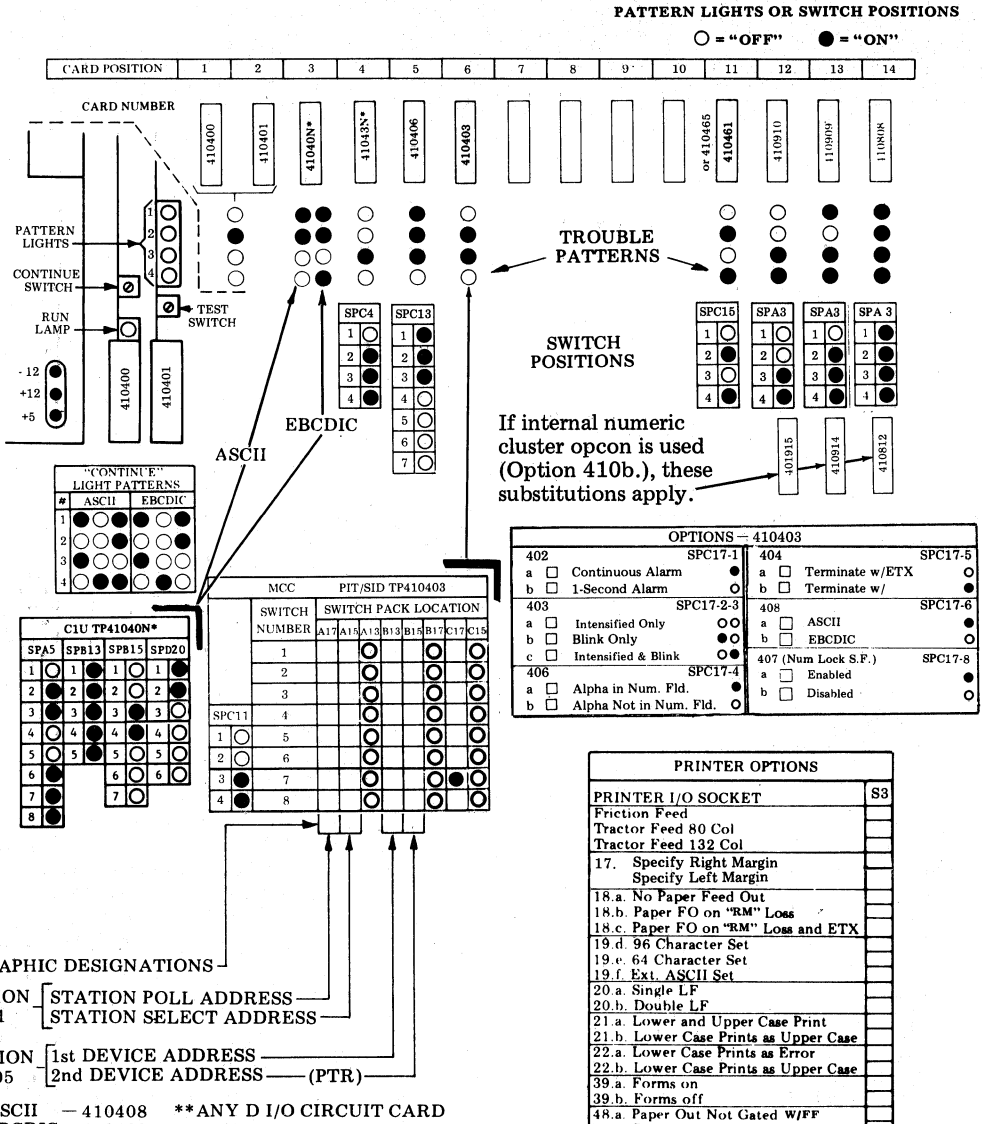


Note 2: If the customer requires that print local operation be prohibited from all KDs, or just one KD, place a 340701 blocking keytop over the PRINT LOCAL position of the appropriate KD opcon(s).

**This footnote applies only when this DCC is connected to a PROM SCC. Character in parentheses is displayed as the device address in local test when using EBCDIC line code.

C. MCC — Mini-Cluster Controller Arrangement Forms

MCC (PROM Version) — Controller Arrangement Form
LINE CODE: ASCII ☐ EBCDIC ☐
USOC: 4TX + (4TOX+ OR 4TPX+)
HANDLES: 1-KD & 1-PTR (Print Local)



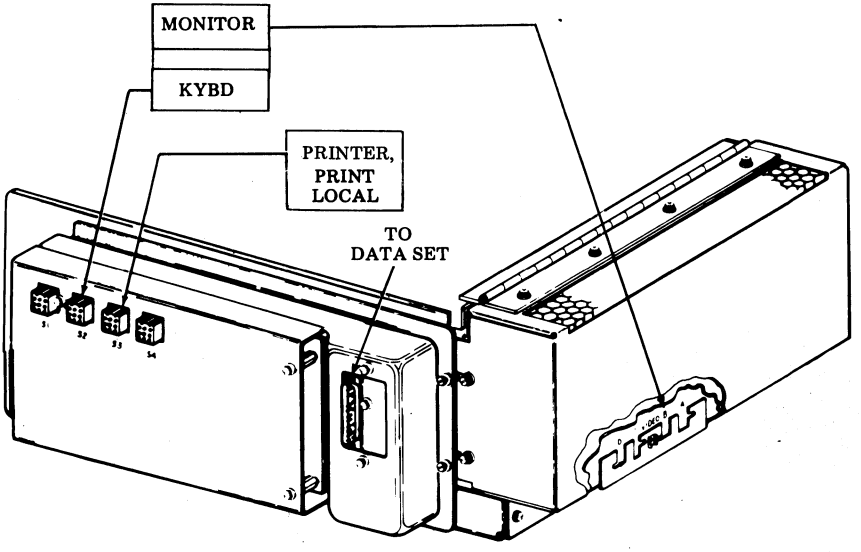
PRINTER OPTIONS

PRINTER I/O SOCKET	S3
Friction Feed	
Tractor Feed 80 Col	
Tractor Feed 132 Col	
17. Specify Right Margin / Specify Left Margin	
18.a. No Paper Feed Out	
18.b. Paper FO on "RM" Loss	
18.c. Paper FO on "RM" Loss and ETX	
19.d. 96 Character Set	
19.e. 64 Character Set	
19.f. Ext. ASCII Set	
20.a. Single LF	
20.b. Double LF	
21.a. Lower and Upper Case Print	
21.b. Lower Case Prints as Upper Case	
22.a. Lower Case Prints as Error	
22.b. Lower Case Prints as Upper Case	
39.a. Forms on	
39.b. Forms off	
48.a. Paper Out Not Gated W/FF	
48.b. Paper Out Gated W/FF	

See adjacent page for Connections.

MCC (PROM Version) — Controller Arrangement Form
USOC: 4TX + (4TOX+ OR 4TPX+)
HANDLES: 1-KD & 1-PTR (Print Local)

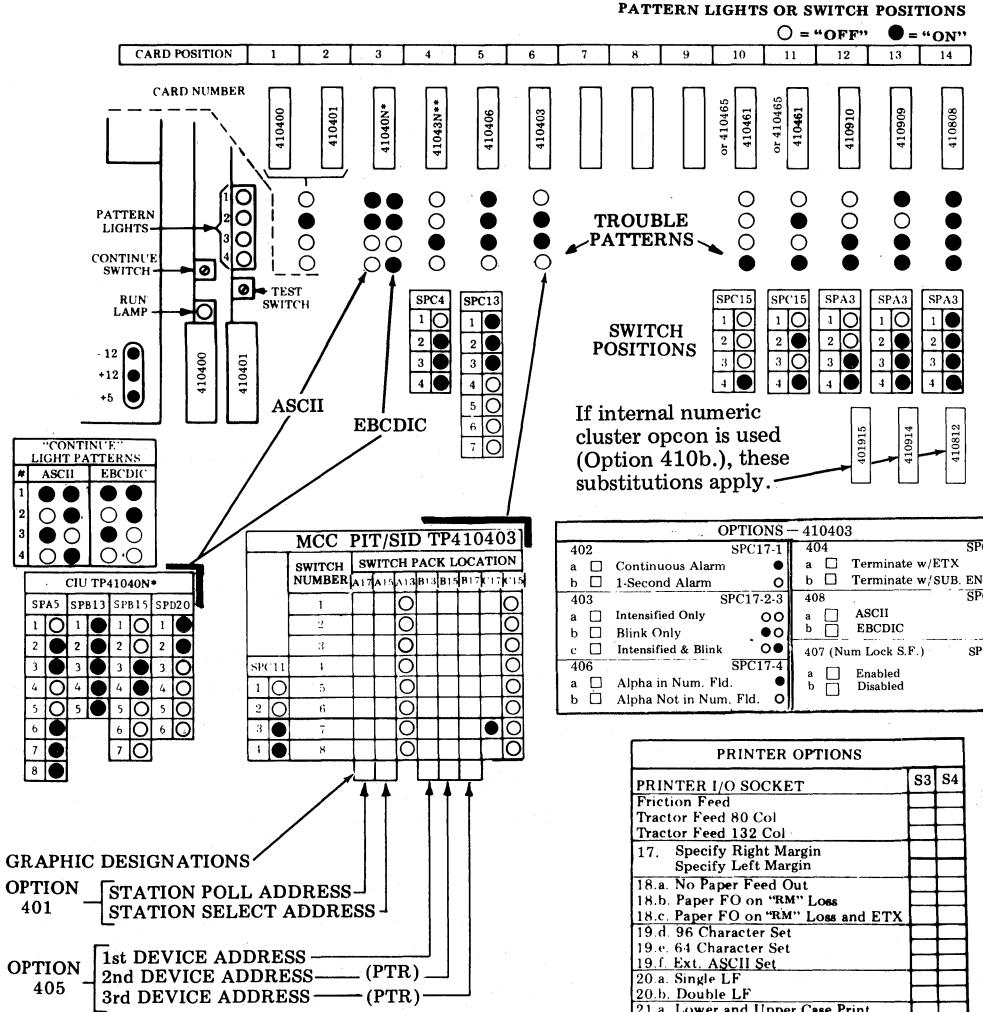
CARD POSITION	I/O SOCKET	STATION WORK SHEET
3	DS	DATA SET
4 & 5	S2-B	KEYBOARD/MON. (1)
5	S3	PRINTER (2)



Note 1: If the customer requires that print local operation be prohibited form the KD, place a 340701 over the PRINT LOCAL position of the KD opcon. Another method is to connect the printer to S4, option 410403 so that the third device address (B17) is the printer address, and turn all B15 switches off.

Note 2: If printer is not part of station, option all B15 switches off.

MCC (PROM Version) — Controller Arrangement Form
LINE CODE: ASCII ☐ EBCDIC ☐
USOC: 4TX + 4TY + (4TOX+ OR 4TPX+)
HANDLES: 1-KD & 2-PTRs (1 Print Local)



OPTIONS — 410403

402		SPC17-1	404		SPC17-5
a ☐	Continuous Alarm	●	a ☐	Terminate w/ETX	○
b ☐	1-Second Alarm	○	b ☐	Terminate w/SUB. ENQ.	●
403		SPC17-2-3	408		SPC17-6
a ☐	Intensified Only	○○	a ☐	ASCII	●
b ☐	Blink Only	●○	b ☐	EBCDIC	○
c ☐	Intensified & Blink	○●	407 (Num Lock S.F.)		SPC17-8
406		SPC17-4	a ☐	Enabled	●
a ☐	Alpha in Num. Fld.	●	b ☐	Disabled	○
b ☐	Alpha Not in Num. Fld.	○			

PRINTER OPTIONS

PRINTER I/O SOCKET	S3	S4
Friction Feed		
Tractor Feed 80 Col		
Tractor Feed 132 Col		
17. Specify Right Margin / Specify Left Margin		
18.a. No Paper Feed Out		
18.b. Paper FO on "RM" Loss		
18.c. Paper FO on "RM" Loss and ETX		
19.d. 96 Character Set		
19.e. 64 Character Set		
19.f. Ext. ASCII Set		
20.a. Single LF		
20.b. Double LF		
21.a. Lower and Upper Case Print		
21.b. Lower Case Prints as Upper Case		
22.a. Lower Case Prints as Error		
22.b. Lower Case Prints as Upper Case		
39.a. Forms on		
39.b. Forms off		
48.a. Paper Out Not Gated W/FF		
48.b. Paper Out Gated W/FF		

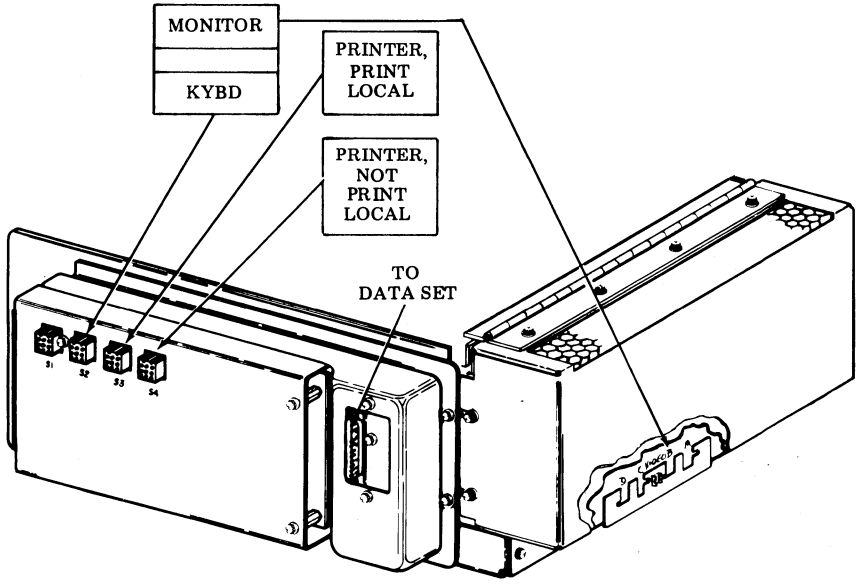
*ASCII — 410408
EBCDIC — 410409

**ANY D I/O CIRCUIT CARD

See adjacent page for Connections.

MCC (PROM Version) — Controller Arrangement Form
USOC: 4TX + 4TY + (4TOX+ OR 4TPX+)
HANDLES: 1-KD & 2-PTRs (1 Print Local)

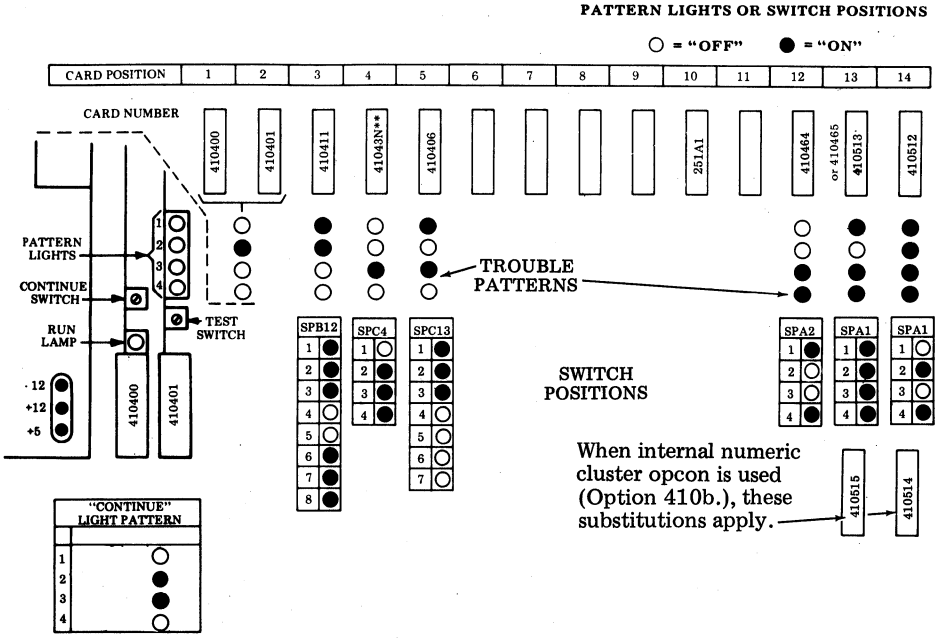
CARD POSITION	I/O SOCKET	DEVICE
3	DS	DATA SET
4 & 5	S2-B	KEYBOARD/MON. (1)
5	S3	PRINTER (2)
5	S4	PRINTER (3)



Note 1: If the customer requires that print local operation be prohibited from the KD, place a 340701 blocking keytop over the PRINT LOCAL position of the KD opcon.

Note 2: If only one printer is part of the order and the customer requires that print local operation be prohibited from the KD, another method can be used: connect printer to S4, option 410403 card for third device address (B17) to be the printer address, and turn all B15 switches off.

MCC (EPROM Version) — Controller Arrangement Form
LINE CODE: ASCII ☐ EBCDIC ☐
USOC: 4TX + XX10 (4TOX+ OR 4TPX+)
HANDLES: 1-KD & Up To 2-PTRs (1 Print Local)



MCC PIT/SID/CIU TP410411									
SWITCH NUMBER	SWITCH PACK LOCATION								
	A21	B1	B2	B3	B4	B5	B6	B7	B8
1	○			○					○
2	○			○					○
3	○			○					○
4	○			○					○
5	○			○					○
6	○			○					○
7	○			○					○
8	○			○					○
9	○								

GRAPHIC DESIGNATIONS:-
OPTION 401 STATION POLL ADDRESS
STATION SELECT ADDRESS
OPTION 405 1st DEVICE ADDRESS
2nd DEVICE ADDRESS (PTR)
3rd DEVICE ADDRESS (PTR)

**ANY D I/O CIRCUIT CARD

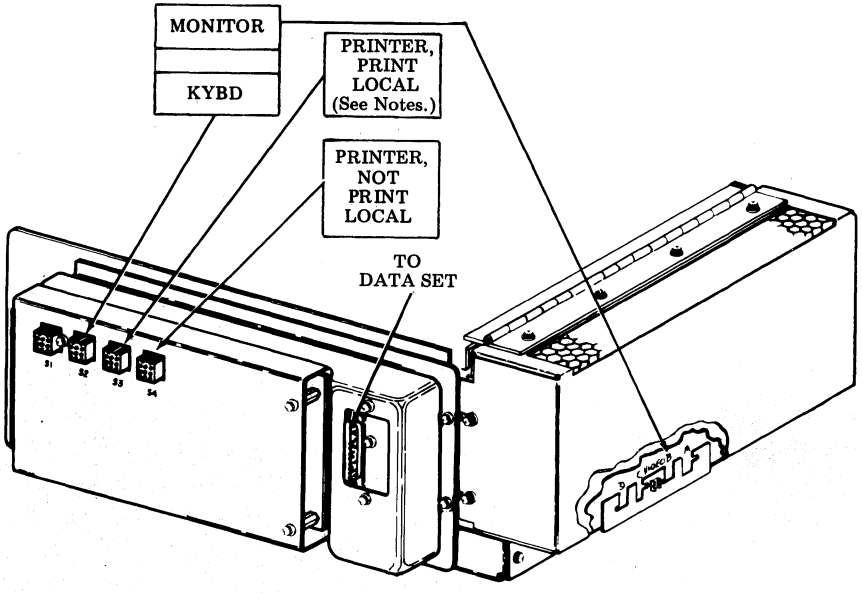
OPTIONS — 410411	
402	SPB7-1
a ☐ Continuous Alarm	●
b ☐ 1-Second Alarm	○
403	SPB7-2-3
a ☐ Intensified Only	○○
b ☐ Blink Only	●○
c ☐ Intensified & Blink	○●
406	SPB7-4
a ☐ Alpha in Num. Fld.	●
b ☐ Alpha Not in Num. Fld.	○
404	SPB7-5
a ☐ Terminate w/ETX	○
b ☐ Terminate w/SUB. ENQ.	●
408	SPB7-6
a ☐ ASCII	●
b ☐ EBCDIC	○
407 (Num Lock S.F.)	SPB7-8
a ☐ Enabled	●
b ☐ Disabled	○
414 Buffer Lock	SPB7-7
a ☐ Enabled	●
b ☐ Disabled (Requires 410525)	○

PRINTER OPTIONS		
PRINTER I/O SOCKET	S3	S4
Friction Feed		
Tractor Feed 80 Col		
Tractor Feed 132 Col		
17. Specify Right Margin Specify Left Margin		
18.a. No Paper Feed Out		
18.b. Paper FO on "RM" Loss		
18.c. Paper FO on "RM" Loss and ETX		
19.d. 96 Character Set		
19.e. 64 Character Set		
19.f. Ext. ASCII Set		
20.a. Single LF		
20.b. Double LF		
21.a. Lower and Upper Case Print		
21.b. Lower Case Prints as Upper Case		
22.a. Lower Case Prints as Error		
22.b. Lower Case Prints as Upper Case		
39.a. Forms on		
39.b. Forms off		
48.a. Paper Out Not Gated W/FF		
48.b. Paper Out Gated W/FF		

See adjacent page for Connections.

MCC (EPROM Version) — Controller Arrangement Form
USOC: 4TX + XX10 + (4TOX + OR 4TPX+)
HANDLES: 1-KD & Up To 2-PTRs (1 Print Local)

CARD POSITION	I/O SOCKET	DEVICE
3	DS	DATA SET
4 & 5	S2-B	KEYBOARD/MON. (1)
5	S3	PRINTER (2)
5	S4	PRINTER (3)

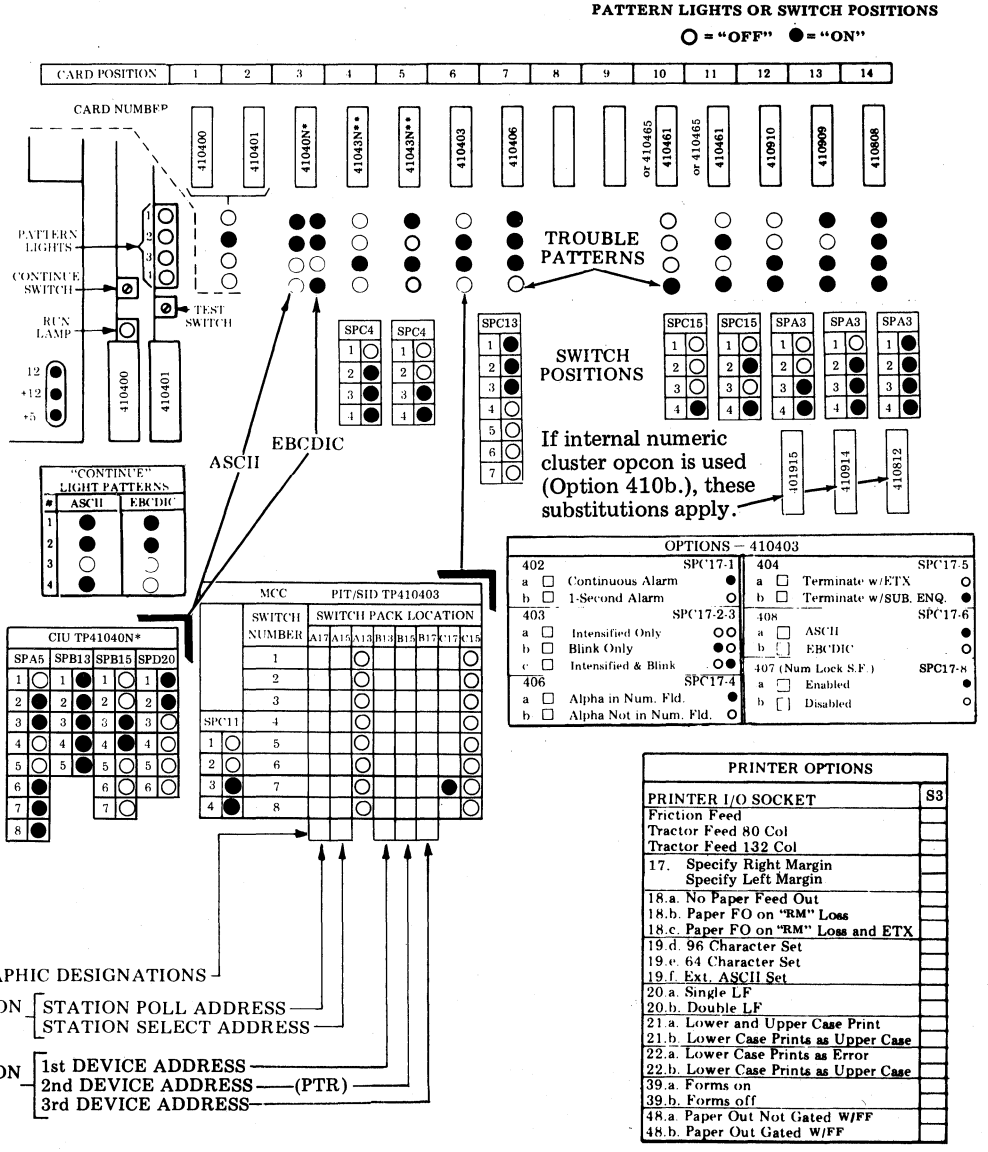


Note 1: If the customer requires that print local operation be prohibited from the KD, place a 340701 blocking keytop over the PRINT LOCAL position of the KD opcon.

Note 2: If only one printer is part of the order and the customer requires that print local operation be prohibited from the KD, another method can be used: connect printer to S4, option 410411 card for third device address (B6) to be the printer address, and turn all B5 switches off.

Note 3: If printers are not part of station, option B5 and B6 switches off on 410411 circuit card.

MCC (PROM Version) — Controller Arrangement Form
LINE CODE: ASCII ☐ EBCDIC ☐
USOC: 4TX + 4TY + 2-(4TOX+ OR 4TPX+)
HANDLES: 2-KDs & 1-PTR (Print Local)



PRINTER OPTIONS

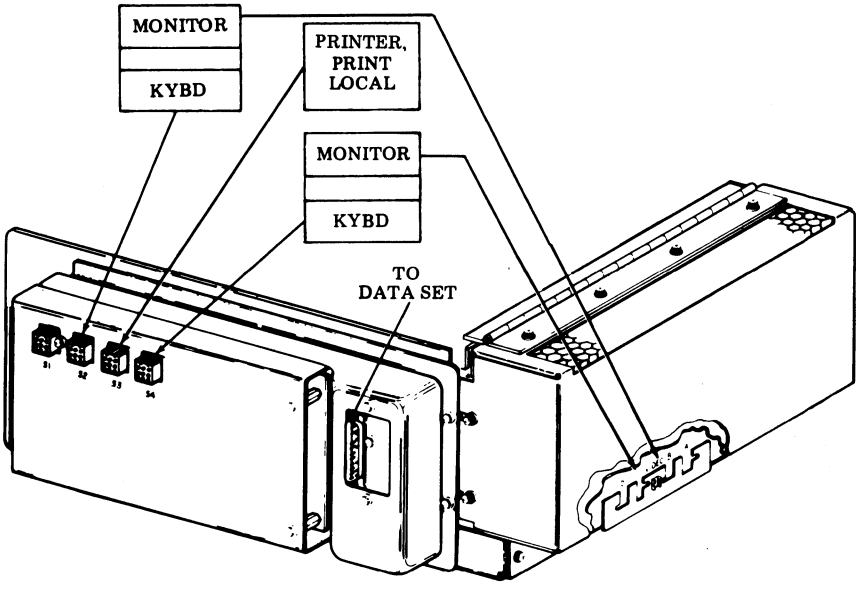
PRINTER I/O SOCKET	S3
Friction Feed	
Tractor Feed 80 Col	
Tractor Feed 132 Col	
17. Specify Right Margin	
Specify Left Margin	
18.a. No Paper Feed Out	
18.b. Paper FO on "RM" Loss	
18.c. Paper FO on "RM" Loss and ETX	
19.d. 96 Character Set	
19.e. 64 Character Set	
19.f. Ext. ASCII Set	
20.a. Single LF	
20.b. Double LF	
21.a. Lower and Upper Case Print	
21.b. Lower Case Prints as Upper Case	
22.a. Lower Case Prints as Error	
22.b. Lower Case Prints as Upper Case	
39.a. Forms on	
39.b. Forms off	
48.a. Paper Out Not Gated W/FF	
48.b. Paper Out Gated W/FF	

*ASCII — 410408 **ANY D I/O CIRCUIT CARD
EBCDIC — 410409

See adjacent page for Connections.

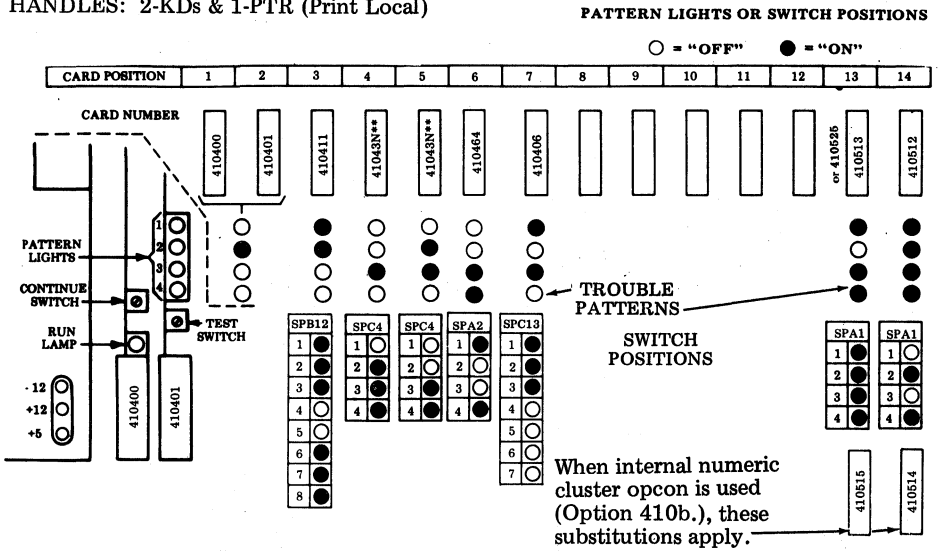
MCC (PROM Version) — Controller Arrangement Form
USOC: 4TX + 4TY + 2-(4TOX+ OR 4TPX+)
HANDLES: 2-KDs & 1-PTR (Print Local)

CARD POSITION	I/O SOCKET	DEVICE
3	DS	DATA SET
4 & 7	S2-B	KEYBOARD/MON. (1)
7	S3	PRINTER (2)
5 & 7	S4-C	KEYBOARD/MON. (3)



Note: If the customer requires that print local operation be prohibited from the KD(s), place 340701 blocking keytop over the PRINT LOCAL position of the KD opcon(s).

MCC (EPROM Version) — Controller Arrangement Form
LINE CODE: ASCII ☐ EBCDIC☐
USOC: 4TX + 4TY + XX10 + 2-(4TOX+ OR 4TPX+)
HANDLES: 2-KDs & 1-PTR (Print Local)



"CONTINUE" LIGHT PATTERN	
	There are no continue patterns.

MCC	PIT/SID/SIU TP410411							
SWITCH NUMBER	SWITCH PACK LOCATION A21	B1	B2	B3	B4	B5	B6	B7	B8
1	○			○					○
2	○			○					○
3	○			○					○
4	○			○					○
5	○			○					○
6	○			○					○
7	○			○				●	○
8	○			○					○
9	○								

GRAPHIC DESIGNATIONS:

OPTION 401 — STATION POLL ADDRESS; STATION SELECT ADDRESS

OPTION 405 — 1st DEVICE ADDRESS; 2nd DEVICE ADDRESS (PTR); 3rd DEVICE ADDRESS

**ANY D I/O CIRCUIT CARD

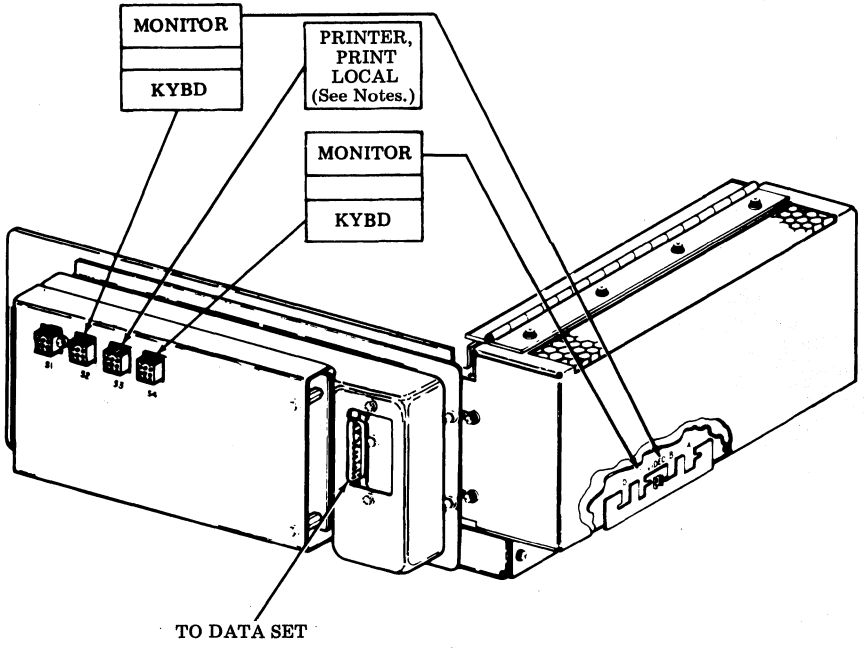
PRINTER OPTIONS	S3
PRINTER I/O SOCKET	
Friction Feed	
Tractor Feed 80 Col	
Tractor Feed 132 Col	
17. Specify Right Margin	
Specify Left Margin	
18.a. No Paper Feed Out	
18.b. Paper FO on "RM" Loss	
18.c. Paper FO on "RM" Loss and ETX	
19.d. 96 Character Set	
19.e. 64 Character Set	
19.f. Ext. ASCII Set	
20.a. Single LF	
20.b. Double LF	
21.a. Lower and Upper Case Print	
21.b. Lower Case Prints as Upper Case	
22.a. Lower Case Prints as Error	
22.b. Lower Case Prints as Upper Case	
39.a. Forms on	
39.b. Forms off	
48.a. Paper Out Not Gated W/FF	
48.b. Paper Out Gated W/FF	

OPTIONS — 410411	
402	SPB7-1
a ☐ Continuous Alarm	●
b ☐ 1-Second Alarm	○
403	SPB7-2-3
a ☐ Intensified Only	○○
b ☐ Blink Only	●○
c ☐ Intensified & Blink	○●
406	SPB7-4
a ☐ Alpha in Num. Fld.	●
b ☐ Alpha Not in Num. Fld.	○
404	SPB7-5
a ☐ Terminate w/ETX	○
b ☐ Terminate w/SUB. ENQ.	●
408	SPB7-6
a ☐ ASCII	●
b ☐ EBCDIC	○
407 (Num Lock S.F.)	SPB7-8
a ☐ Enabled	●
b ☐ Disabled	○
414 Buffer Lock	SPB7-7
a ☐ Enabled	●
b ☐ Disabled (Requires 410525)	○

See adjacent page for Connections.

MCC (EPROM Version) — Controller Arrangement Form
USOC: 4TX + 2-(4TOX + OR 4TPX+)
HANDLES: 2-KDs & 1-PTR (Print Local)

CARD POSITION	I/O SOCKET	DEVICE
3	DS	DATA SET
4 & 7	S2-B	KEYBOARD/MON. (1)
7	S3	PRINTER (2)
5 & 7	S4-C	KEYBOARD/MON. (3)



Note 1: If the customer requires that print local operation be prohibited from the KD(s), place 340701 blocking keytop over the PRINT LOCAL position of the KD opcon(s).

Note 2: If printer is not included as part of configuration, option B5 switches off on 410411 circuit card and option B6 switches for 2nd KD.

3. INSTALLATION

INSTALLATION OUTLINE

- ☐ (1) Review configuration worksheet and cable worksheet, (3.08).
- ☐ (2) Unpack equipment (3.01).
- ☐ (3) Placement of equipment, (3.09).
- ☐ (4) Installation of controllers, preliminary, (3.16).
- ☐ (5) Verify coding and options of 410403 or 410411 SCC/MCC, (3.18, 4.04, 4.05).

(a) 401 b ☐ (Station Number)
(b) 402 a ☐ b ☐
(c) 403 a ☐ b ☐ c ☐
(d) 404 a ☐ b ☐
(e) 405 b ☐ c ☐ d ☐

(Device Numbers)

(f) 406 a ☐ b ☐
(g) 407 a ☐ b ☐
(h) 408 a ☐ b ☐
(i) 409 a ☐ b ☐
(j) 410 a ☐ b ☐
(k) 414 a ☐ b ☐ (MCC only)

- ☐ (6) Self-test controllers without cables, (3.19).
- ☐ (7) Installation of controllers, final, (3.27).
- ☐ (8) Installation of Attached KD, (3.44) or Free-Standing KD (3.47).
- ☐ (9) Install and option printers, (3.52 or 3.53, 4.07 through 4.15).
- ☐ (10) Install and option data set or data service unit, (4.16).
- ☐ (11) Perform operational checkout, refer to Section 582-200-501.

  (a) Self-test controllers with cables,
  (b) Component operational checks,
  (c) Local test,
  (d) Perform on-line tests.

- ☐ (12) Have customer try out station arrangement.
- ☐ (13) Complete the installation:

  (a) Give How to Operate Manual(s) to customer.
  (b) Clean up.
  (c) Complete service order.

UNPACKING INSTRUCTIONS

3.01 Any special instructions necessary to open a box will be affixed to the top of the box. A sample instruction label is shown.

UNPACKING INSTRUCTIONS

1. TURN BOX BOTTOM SIDE UP. OPEN BOTTOM FLAPS AND FOLD OUTWARD.
2. RETURN BOX AND CONTENTS TO AN UPRIGHT POSITION, KEEPING BOTTOM FLAPS FOLDED OUTWARD.
3. REMOVE BOX AND PLACE ASIDE. REMOVE INNER PACKING DETAILS FROM AROUND PRODUCT.
4. REMOVE PLASTIC BAG AND ALL TAPE FROM PRODUCT.

28130PK 40CAB

3.02 If the box has no instruction label, use these procedures:

(a) With box in upright position, open top flaps and fold outward.

(b) Lift contents out of box. Remove inner packing details from around product.

(c) Remove plastic bag and all tape from product.

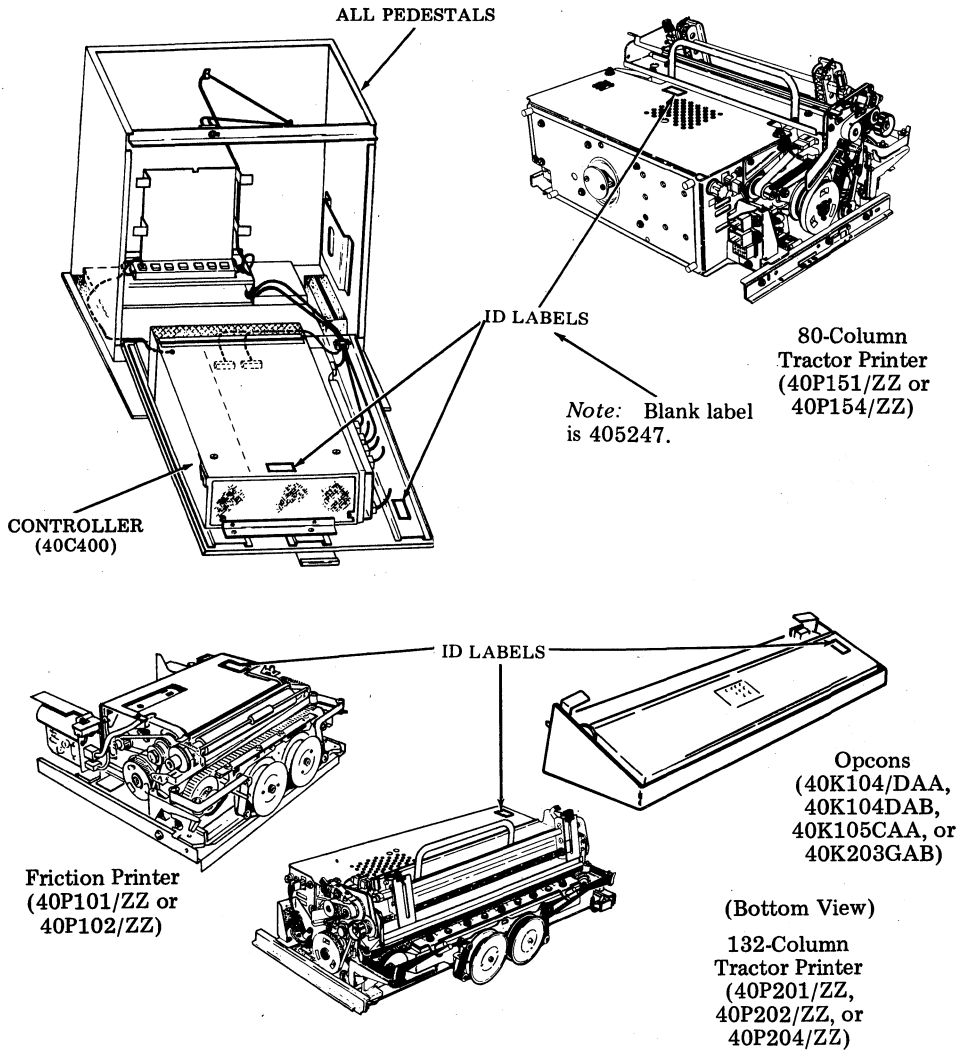
ID LABELS

3.03 Besides the Unpacking Instructions labels, ID labels will be affixed to boxes which contain printers, opcons, pedestals, and controllers.

3.04 The ID label will identify the component in the box as to whether it is a controller or device.

3.05 The ID label on a box also includes the identified controller or device ID and associated component IDs. (See examples in 3.07.)

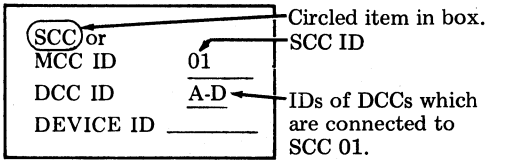
3.06 As given in 3.05, ID labels will be on some boxes, ID labels will also be located on the following components.



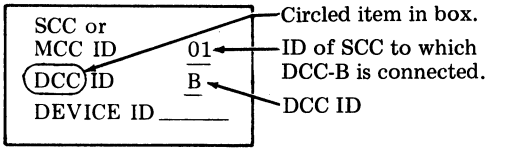
Note: See the following page for examples of information found on ID labels.

3.07 Examples of labels for boxes and components are as follows:

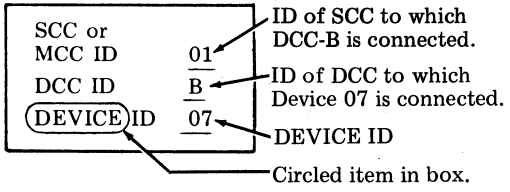
Example 1 — (ID label on box containing Station Cluster Controller 01)



Example 2 — (ID label on box containing Device Cluster Controller B)



Example 3 — (ID label on box containing Device 07)



STATION WORKSHEETS

3.08 Before proceeding any further, obtain the Station Configuration Worksheet and cable worksheet(s) (if present) from the box containing the SCC or MCC. The worksheet(s) are located in the document holder of the SCC or MCC pedestal. See 1.05 for purpose and 1.07 for samples of configuration worksheets. If a worksheet is not present or does not contain required information, obtain the service order (see 1.09).

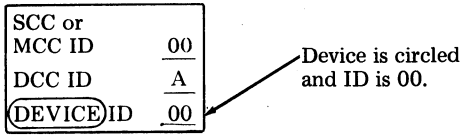
Note: If the SCC or MCC box does not include a pedestal, the Station Configuration Worksheet will be taped to the outside of the cover of the SCC or MCC.

STATION COMPONENT PLACEMENT

3.09 Referring to the Station Configuration Worksheet and the ID labels on the boxes, move the boxes to their exact location on the customer premises (ie, to the rooms and post numbers listed on the worksheet).

Note: A copy of the customer's floor plan (if obtainable) would aid in placing the equipment in the proper location.

3.10 Example of How to Determine Component Placement: Refer again to the Station Configuration Worksheet which includes Station A in Room 500 (1.09). Notice that device 00 has location post L1 written next to it. All that is needed now is to find the box which has the following ID label.



According to the worksheet, device 00 is a 4TOXG (attached KD). An ID label will be with the opcon portion of device 00. The cabinet portion of device 00 will most likely be packed in the same box as the opcon; however, if it is not, then any KD cabinet (40CAB251/ZZ + 405562 SOP) packed separately, can be used with the opcon, since all KD cabinets are identical. If a pedestal (4TM++) had been listed in the device 00 block, its box would also have an ID label with "device" circled and "00" entered as the device ID. Any monitor (40MN101) can be used with the KD since all monitors are identical.

Note: Devices 01 and 03 on the Station Configuration Worksheet are handled in the same manner as Device 00.

3.11 Once it has been determined where the boxes are to be located, they should be moved to their locations (ie, using the above example, device 00 should be moved to post L1, in Room 500, device 01 to post L2 in Room 500, etc).

3.12 If the following items are packed separately, it is not important that they be assigned to a particular location, since each of these items is identical to other items having the same part number (ie, all paper winders (40PWU101) are identical, all monitors (40MN101) are identical, etc).

40CAB251 — KD Cabinet
40CAB201 — Cabinet for Friction Feed Printer (40P101/ZZ)

40CAB351 — Cabinet For Tractor Feed Printer (80-Column)
40CAB353 — Cabinet For Tractor Feed Printer (132-Column)
40CAB371 — Cabinet For Friction Feed Printer (40P102/ZZ)
40MN101 — Monitor
40PWU101 — Paper Winder
40BSE101 — Monitor Base
40BSE201 — Opcon Base
401200 — Copyholder
405544 — Paper Rack
407060 — Paper Guide (80-Column)
407061 — Paper Guide (132-Column)
KS8621 — 8-1/2" Paper, Roll

3.13 During component placement, the following items should not be searched for since they will be assembled to or installed in their respective components.

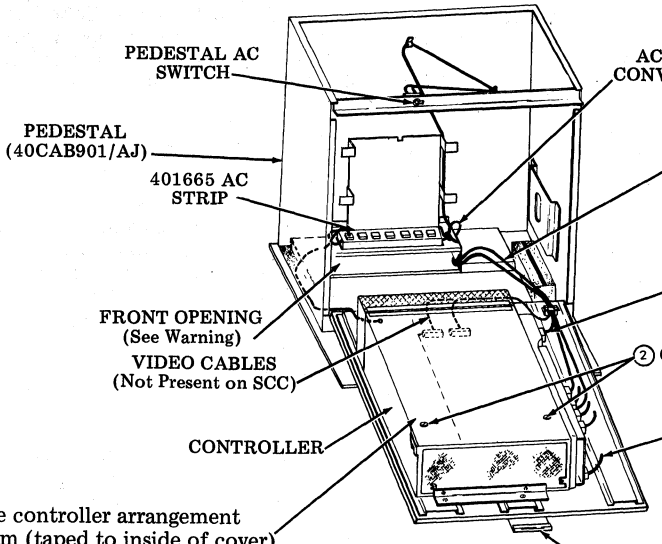
All WES coded parts.
All pedestal tops and feet assembled to pedestals.
All printer type carriers and form-out belts installed in printers.
All circuit cards installed in respective controllers.
All sets of parts assembled to respective cabinets.
All cables connected to respective controllers (except 405239 cable, which is found with the printer).

CONTROLLER INSTALLATION (PRELIMINARY)

3.14 Assuming that all boxes have been moved to their proper locations, the controller portions of the station should now be unpacked. The boxes containing the controllers will be identified by their ID labels. Controllers will already be pedestal mounted and all cables terminating at the controller will be connected. If controller is to be rack mounted, see 3.17.

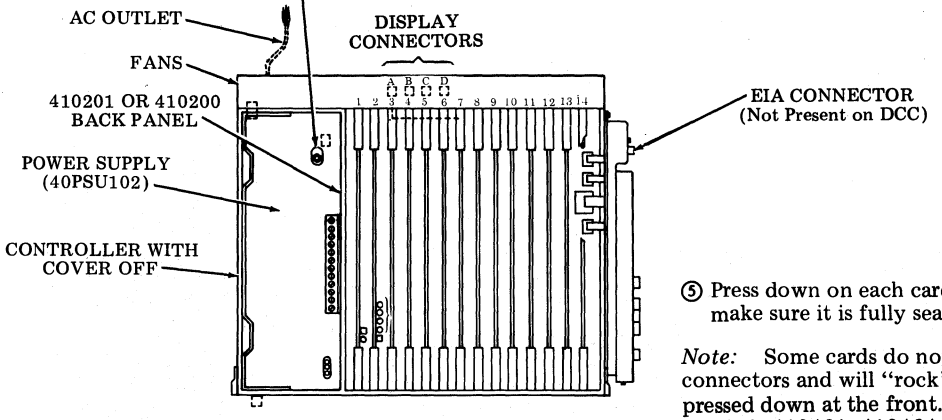
3.15 Whether the controller is pedestal or rack mounted, perform the steps outlined in Paragraph 3.16.

3.16 After installing the controllers at their proper location, the following should be performed for each controller of the station.



④ The above warning applies. Check to see that circuit breaker is in the on position (down, white band not showing).

*Printer and/or opcon cables not present on SCC. Controller SSI cables not present on MCC.



⑤ Press down on each card to make sure it is fully seated.

Note: Some cards do not have rear connectors and will "rock" when pressed down at the front. They are: 410403, 410461, 410464, 410465 and all the 4108NN, 4109NN and 4105NN series cards.

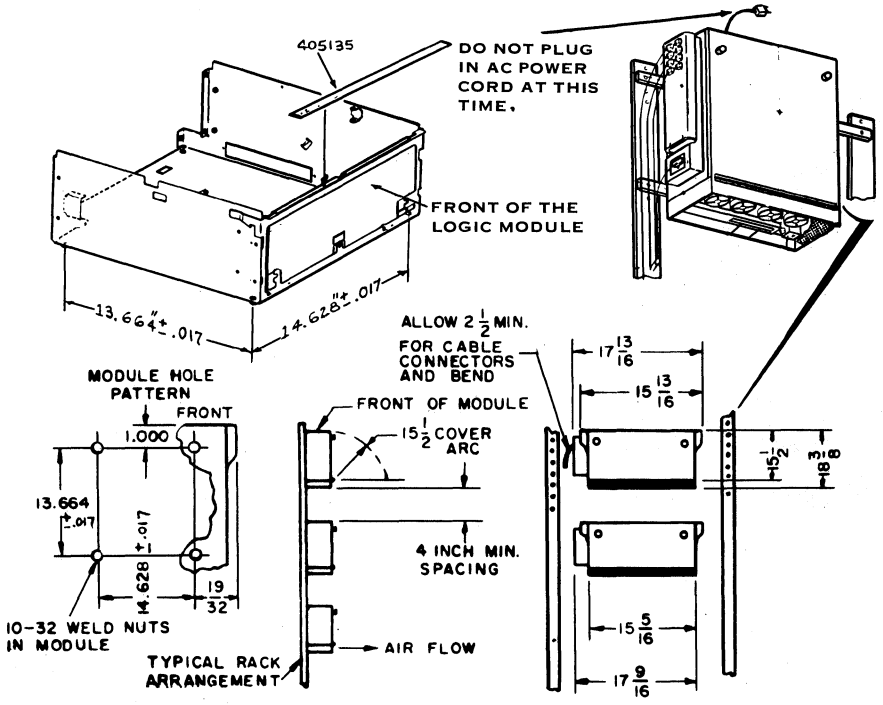
3.17 Installation of controller on a relay rack:

(a) Mounting brackets and hardware to be furnished by customer. Since 10-32 screws are 3/16 inch diameter, holes in rack to mount module should be at least 1/4 inch diameter.

(b) Mount the logic module to relay rack bracketry using 10-32 screws. Mounting nuts are located in each corner of the logic module. To prevent an interference between the tip of the mounting screw and the back panel, the distance from the tip of the screw to the outside surface of the module shall not exceed 0.216 inch.

(c) Install the 405135 card slot identification label to the unpainted formed surface at the front of the module so that XZ1 lines up with the first card slot next to the power supply.

(d) Perform steps outlined in 3.16.



CONTROLLER SELF TEST (WITHOUT CABLES)

3.18 Changing controller options:

(a) Controller options are enabled as received from the Service Center per the service order request and are recorded on the controller arrangement form taped to the inside of each controller cover. Samples of the controller arrangement forms are found on Pages 20 through 65 of this section.

(b) Check the controller arrangement form on the SCC or MCC controller to determine which controller options have been enabled. If any options are to be changed or checked, refer to paragraphs 4.04 through 4.06 for switch programming.

(c) If any options are changed, the controller arrangement form should be changed. If necessary, obtain blank copy of the corresponding form shown in 2. CONTROLLER ARRANGEMENTS.

(d) If any station or device numbers (IDs) are changed, it will be necessary to remark the associated ID labels.

3.19 Perform Steps 1 through 3 of controller self test in Section 582-200-501.

CABLE ID TAGS AND CABLE ROUTING

A. Cable ID Tags

3.20 Each end of every cable in the station, with the exception of the ac cables and data set cable, will have an ID tag attached to aid in determining where the cables are to be connected.

3.21 The ID tags are color coded so that a specific colored tag next to a connector defines where that connector is to be connected. The following color codes are used.

TAG	ID TAG COLOR	CONNECTED TO
405243	Yellow	SCC
405209	White	DCC or MCC
405242	Orange	DEVICES (KD and printers)

3.22 The information entered on the ID tags is defined as follows.

Example 1: (SCC)

S201-DCB ← Yellow ID Tag

The information on the left side of the hyphen (-) always shows where the connector (next to ID tag) is to be connected. The information on the right side of the hyphen shows what component is connected to the other end of the cable. Using Example 1, we find that the connector is to be plugged into S2 socket of SCC 01 and the other end of the cable is connected to DCC-B.

Example 2: (DCC or MCC)

S1B-SC01 ← White ID Tag

In Example 2, the connector would be plugged into S1 socket of DCC-B and the other end of the cable would be connected to SCC-01.

Note: If two 10-foot cables are to be connected between a SCC and DCC, both cables will be tagged at each end. The cable assembled to the SCC will have yellow ID tags at both ends with identical information on each tag, while the tags on the cable assembled to the DCC will be white with identical information.

Example 3: (DEVICE)

D03-MC02 ← Orange ID Tag

In Example 3, the connector would be plugged into device 03 and the other end of the cable would be connected to MCC-02.

Note: If two 10-foot cables are to be connected between the printer and DCC or MCC, the same information (Example 2, Note) would apply except that the ID tags at the printer side would be orange, while those at the DCC or MCC would be white.

B. Cable Routing

3.23 The two types of cables that are used to interconnect devices and controllers (or an SCC to a DCC) can be called the single assembly type (example: 405306) and the stub cable type (example: 405237/CABLE†/405239).

Single Assembly Cables

3.24 If one of the following cables must be run through a cable run without space for pulling the cable connectors, extract the terminals at the indicated end with a 402840 terminal extractor. Wrap the terminals with tape. Pull the cable in the indicated direction. Unwrap and install the extracted terminals in the connector using needle-nose pliers. Connection details are given later in Part 3. INSTALLATION.

Wire color designations are given in Section 582-200-401.

PART NUMBER(S)	CABLE USE	EXTRACT TERMINALS AT	PULL TOWARD
405311 and 405312	SCC/DCC	DCC End	DCC End
405301 Through 405304, 405139 and 405140	DCC or MCC/KD	KD End	KD End
405306 Through 405309	DCC or MCC/Printer	Printer End	Printer End

Stub Cable Assemblies

3.25 A set of stub cables, termination boxes and a length of cable† can be used to provide cabling beyond the lengths available as single cable assemblies. Only the cable† may be routed through a cable run; do not prepare the ends of the cable† for connections until after the cable has been routed. Connection details are given later in Part 3. INSTALLATION.

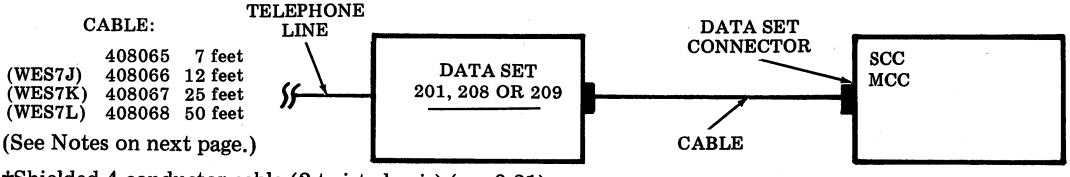
3.26 The station configuration worksheet (and cable worksheet, if required) should provide routing and cable identification information for the installation. The length of cable† should be determined from the station configuration worksheet, however, the cable can be unwound directly from a spool.

CONTROLLER INSTALLATION (FINAL)

3.27 Connect the cables to each controller (SCC, DCC, or MCC) in the station using the information on the ID tags.

SCC (or MCC) to Data Set

3.28 One of four cable lengths may be used between the controller and the data set:



(See Notes on next page.)

†Shielded 4-conductor cable (2 twisted pair) (see 3.31).

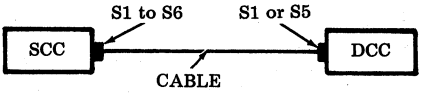
Note: 341896 data set cable (5 foot) may be part of the station.

Controller to Controller

3.29 One of two standard cable lengths may be used between controllers:

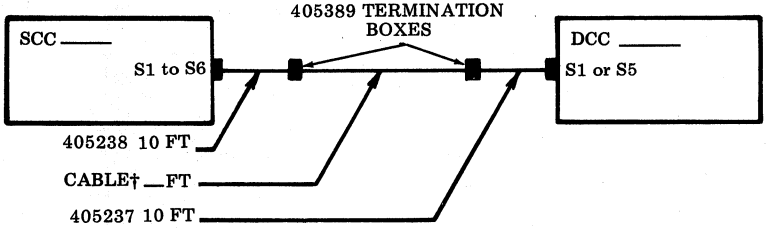
CABLE:

405311 25 feet
405312 50 feet



Note: Determine connections at controller from controller arrangement form (or cable tags).

3.30 For cable (SSI) lengths between controllers of up to 2000 feet, a specially made cable† may be specified. See 3.31 and 3.39 or 3.42 and diagram below.



3.31 Caution — Because of noise problems which are primarily attributed to particular local and plant wiring conditions, the use of cable other than the following specified or equivalent cable may degrade system performance. Shielded cable from 406318 (500 feet), 406319 (2000 feet) or 406320 (5000 feet) is recommended for long SSI runs when unshielded cable does not pass the test of 50859S Issue 2. This shielded cable consists of two twisted pairs of No. 24 AWG conductors covered with tape, braided shielding and the outer jacket. Pair No. 1 consists of twisted red and yellow wires while pair No. 2 consists of twisted orange and green wires. Shielded cable insures the quality of 40/4 system performance by minimizing the effects of radiated and conducted noise.

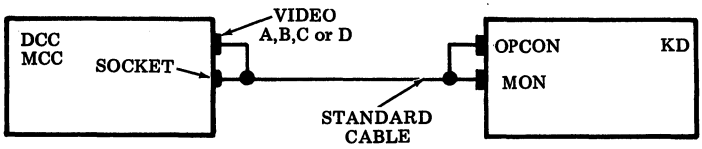
3.32 When a WE44A connector block is substituted for a 405389 termination box, spade terminals must be installed on all cable connectors.

†Shielded 4-conductor cable (2 twisted pair) (see 3.31).

Controller to KD

3.33 One of six standard cable lengths may be used between the controller and a KD (cable installation at controller, see 3.35; at the KD, see 3.44 or 3.47).

CABLE:	
405301	6 feet
405302	12 feet
405303	25 feet
405304	50 feet
405139	75 feet
405140	100 feet



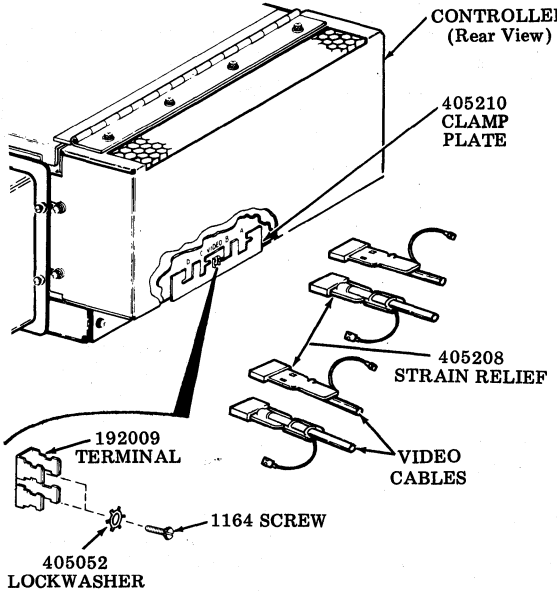
3.34 For cable lengths of 100 to 600 feet, a specially made cable and use of a KDA (Keyboard-Display Amplifier) is required. Refer to Section 582-200-210.

Note: For cable lengths less than 100 feet, a KDA can be used to allow the use of the smaller diameter TKS107† cable in restricted cable runs or to allow DCC(s) to be positioned next to an SCC. The function of the KDA for these short runs is to provide the required dc voltages for the KD (the TKS107† cable does not include dc voltage leads).

†TKS107 can be ordered under COM code 104873419.

Controller to KD

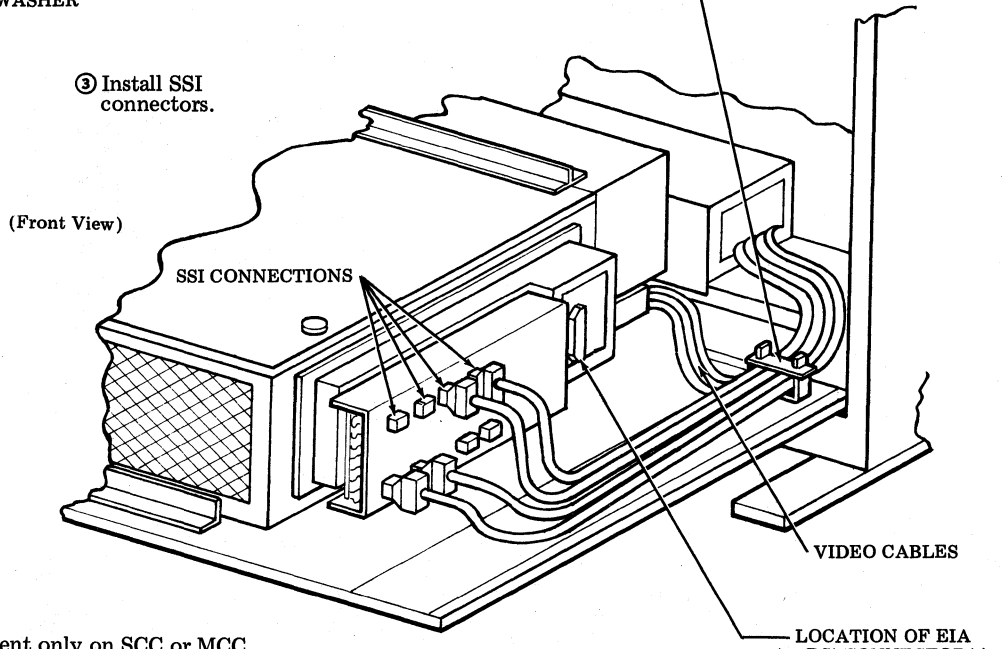
3.35 Video and SSI connections at the controller should be made as shown below; determine which connections to make from the controller arrangement form (or cable tags).



① Install video connectors. Strain reliefs of video connectors A and C must be facing up and B and D must face down as shown. Each green wire terminal must be connected to the 192009 terminal.

② Position clamp plate to hold video connectors and secure by two 198670 screws.

④ Provide some cable slack on door; install strain relief clamp over cables.



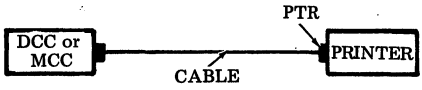
**Present only on SCC or MCC.

Controller to Printer

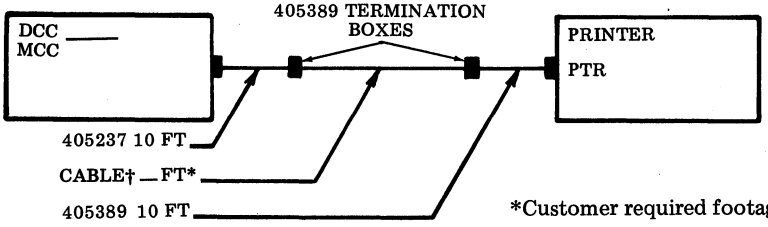
3.36 One of four standard cable lengths may be used between a controller and printer.

CABLES:

405306	6 feet
405307	12 feet
405308	25 feet
405309	50 feet



3.37 For cable (SSI) lengths between controller and printer of up to 2000 feet, a specially made cable† may be specified. See 3.39 or 3.42 and diagram below.



3.38 SSI connections at the controller should be made as shown in the figure following 3.35; determine which connections to make from the controller arrangement form (or cable tags).

Stub Cable Assemblies (Remote SSI Cabling)

3.39 The use of special Teletype Standard Serial Interface (SSI) cables will accommodate distances of up to 2000 feet between a controller and a printer or another controller. Lengths of cable† (ordered by the foot) are used in conjunction with the 405389 termination box or WE44A connector block and the 405237, 405238 and 405239 cables.

Warning: Since the cable† is not intended for rigorous pulling when being run through conduits, for runs in excess of 200 feet, not more than 40 percent of the conduit area should be used. Additionally, if more than two 90° bends are to be used, a pull box should be inserted.

Caution: If one side of either SSI pair is grounded, the noise immunity of this interface will be greatly reduced and while the interface may still appear to be operative, random errors will result.

3.40 At both ends of cable†:

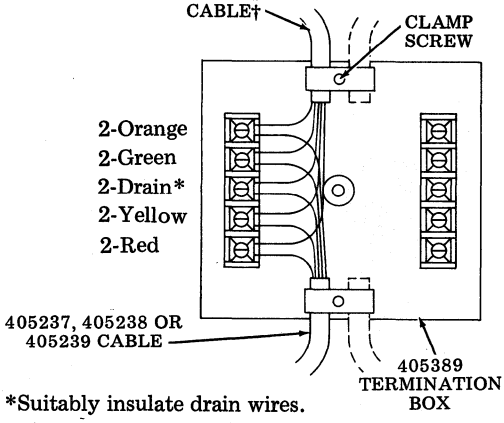
(a) Remove approximately three inches of outer jacket and outer shield.

(b) Cut conductors to length to avoid wire build-up in the termination box.

(c) Skin approximately 1/4 inch of insulation from the wires.

Warning: Do not damage the shield drain wire.

(d) Position wires at terminals. Secure the cable† in the clamp and tighten screw.



†Shielded 4-conductor cable (2 twisted pair) (see 3.31).

*Suitably insulate drain wires.

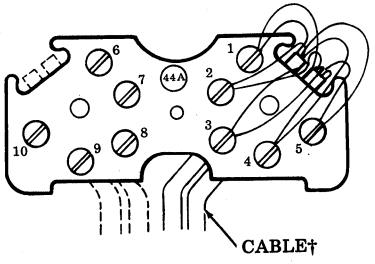
3.41 Installing the mating cable (405237, 405238 or 405239 or equivalent). The terminal blocks in the 405389 termination box are intended for terminating standard wire without spade terminals. If spade terminals are not affixed to the cable† leads, removal of the spade terminals on the mating cable (405237, 405238 or 405239) is necessary. Repeat steps (b), (c) and (d) of 3.40.

Caution: Do not attempt terminating wires with and without spade terminals on the same connector block terminal.

Note: Observe that a single termination box can be used between an SCC and two DCCs (at the SCC end).

3.42 As mentioned in 3.32, a WE44A may be substituted for a 405389 termination box. Thus, the conductors at both ends of the cable run may terminate in WE44A connector blocks. When a WE44A connector block is substituted for a 405389 termination box, spade terminals must be installed on all cable conductors.

WE44A CONNECTOR BLOCK



1-Red
2-Yellow
3-Drain*
4-Green
5-Orange
6-Orange
7-Green
8-Drain*
9-Yellow
10-Red

Note: The WE44A has no means of strain relief.

*Drain wires to be suitably insulated.

3.43 When all connections have been made, recheck all terminals to insure that wire color codes match. In addition, check to insure that all screws are properly tightened and that all wires are solidly clamped.

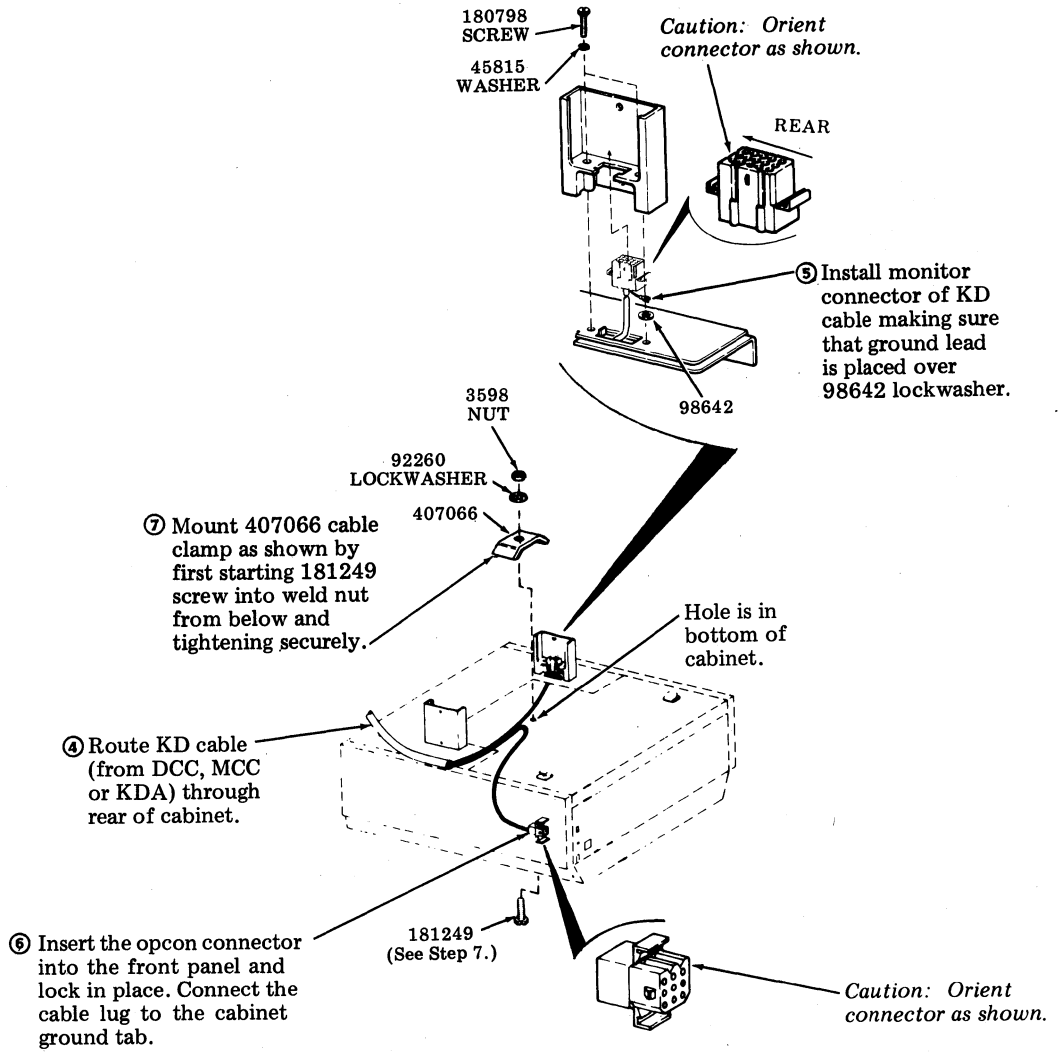
†Shielded 4-conductor cable (2 twisted pair) (see 3.31).

KD (KEYBOARD-DISPLAY) INSTALLATION

3.44 Attached KD (USOC 4TOX+):

① Unpack the attached KD Cabinet (40CAB251).
② Unpack the opcon and lay alongside of cabinet.
③ Route KD cable from controller (or KDA) through rear opening of cabinet. This cable has already been routed to the KD location.

Note: Use ID label on opcon and ID tag on cable to determine which cable is to be connected to each KD (eg, opcon ID label reads DEVICE ID-01, DCC ID-A. Orange ID tag on unconnected end of KD cable at DCC-A should read D01-DCA).



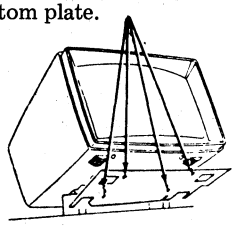
3.45 Monitor (40MN101) Installation to Cabinet (40CAB251)

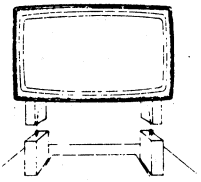
①Unpack monitor. Remove packing detail from tilt lever (only present on monitors with tilt lever).

②Place the monitor on its corresponding posts (there is no locking device associated with the monitor support posts, ie, it can be lifted off without releasing any latches).

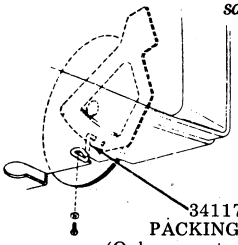
③Tilt the monitor back and remove the 341719 packing clip (if present) from the tube tilt mechanism. Retain the clip for future repacking.

④Install the plastic bottom plate (packed separately) — snaps on with 4 studs that are part of the bottom plate.





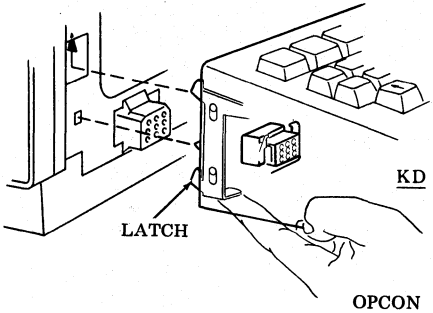
Caution: Wear safety glasses.



341179
PACKING CLIP
(Only present on monitors with tilt wheel.)

3.46 Opcon (40KDA104/DAA, 40K104/DAB, 40K105/CAA or 40K203/GAB) Installation to Cabinet (40CAB251)

①Slide latches downward and position opcon so that connectors are aligned and latches on left and right side are fully engaged.



Note: Remove opcon shipping plates (applies to old style pack).

Details of 40K203/GAB installation to 40CAB251 are given in 50935S.

②Slide latches upward and check that opcon is firmly attached on both sides before releasing.

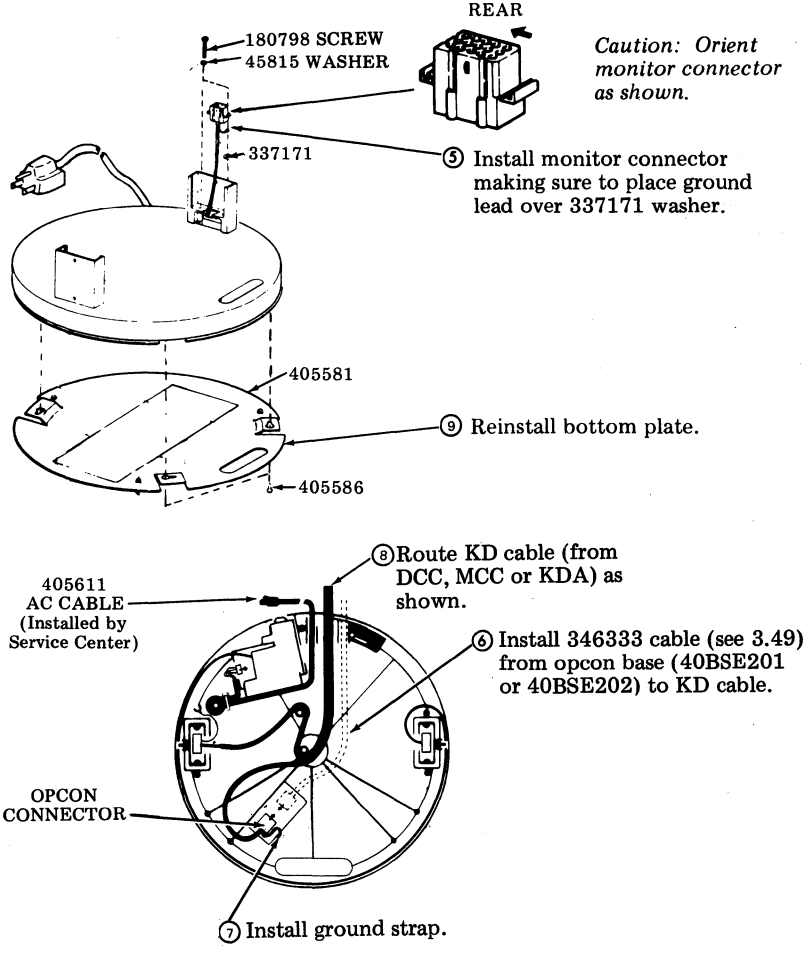
3.47 Free-Standing KD (USOC 4TPX+):

① Unpack the free-standing KD bases (40BSE101 and 40BSE201 or 40BSE101 and 40BSE202).

② Unpack the opcon and lay alongside bases.

③ Loosen three 405586 screws from bottom of base (40BSE101) and remove bottom plate.

④ Route KD cable from controller (or KDA) and install as shown below (see Note in 3.34). This cable has already been routed to the KD location.



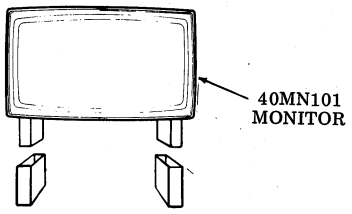
3.48 Install Monitor (40MN101) to Base (40BSE101).

①Unpack monitor. Remove packing detail from tilt lever (only present on monitors with tilt lever).

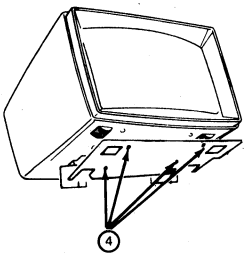
②Place the monitor on its corresponding posts (there is no locking device associated with the monitor support posts, ie, it can be lifted off without releasing any latches).

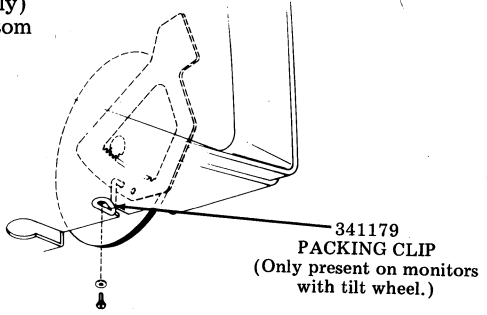
③Tilt the monitor back and remove the 341719 packing clip (if present) from the tube tilt mechanism. Retain the clip for future repacking.

④Install the plastic bottom plate (packed separately) — snaps on with 4 studs that are part of the bottom plate.

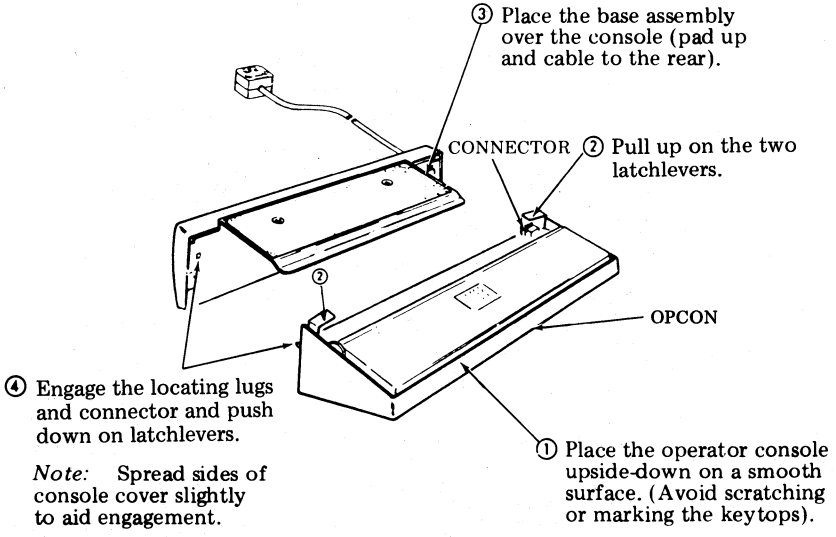


Caution: Wear safety glasses.

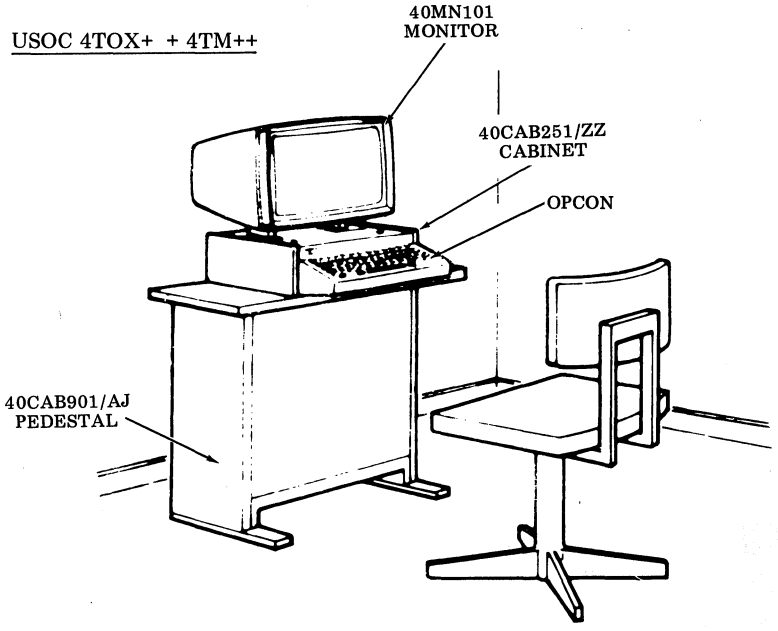




3.49 Install 40K104/DAA, 40K104/DAB, or 40K105/CAA Opcon to 40BSE201 Base, or 40K203/GAB Opcon to 40BSE202 Base. (See 3.51 for permanent mounting.)

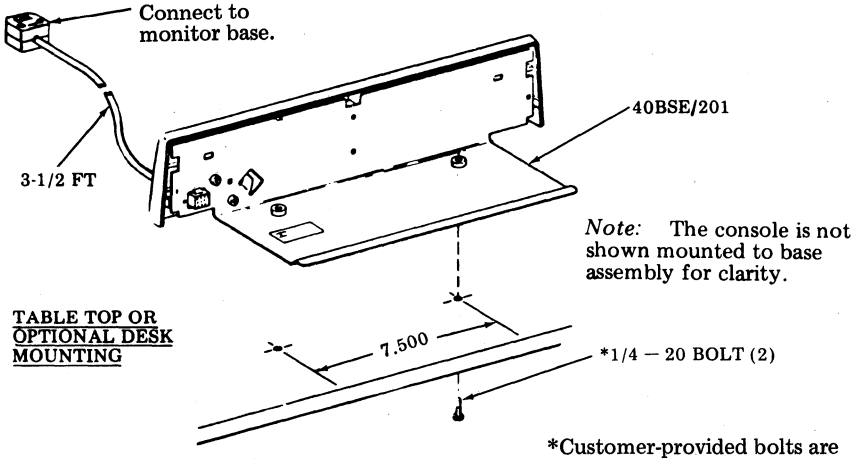


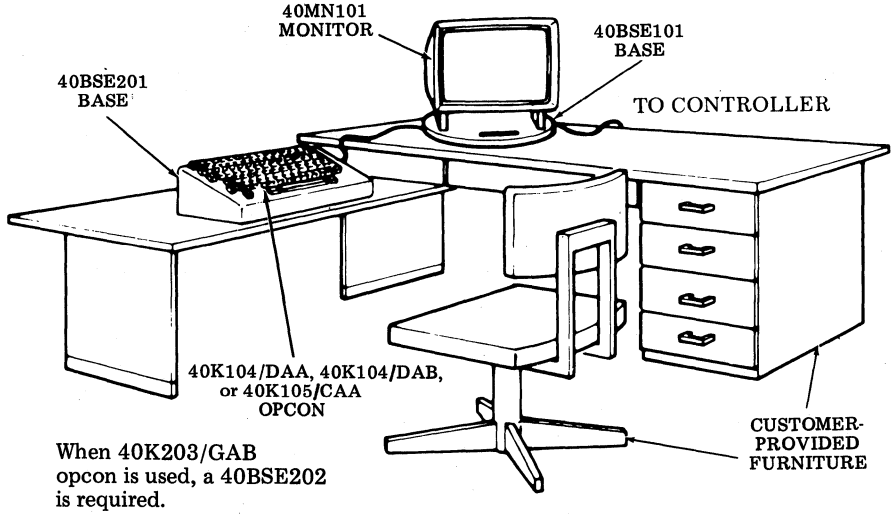
3.50 If attached KD is to be pedestal mounted (per Station Configuration Worksheet), place KD on pedestal and route ac cable from KD into ac convenience strip inside of pedestal. Connect ac cable from pedestal into 115 V ac outlet.



Attached Keyboard Display

3.51 If KD is a free standing (USOC: 4TPX+), permanent mounting (per customer option) of the opcon may be required. Instructions are provided as follows.





PRINTER INSTALLATION

A. Friction Feed

3.52 Friction Feed Printer (40P101/ZZ or 40P102/ZZ)

(a) Unpack printer and cabinet (40CAB201/ZZ or 40CAB371/ZZ).

(b) If four 400409 immobilization screws are present (see 3.53 for approximate location), back them off 7 or 8 turns.

(c) Printer options are installed per Service Order and entered on Controller Arrangement Form attached to controller to which printer is connected. (See 4.07.)

(d) To check or change options, refer to Section 582-210-702 for removal of printer circuit card.

(e) Install printer in cabinet.

(f) If pedestal is provided with the printer (per Station Configuration Worksheet), unpack pedestal, place printer and cabinet on pedestal top, open the pedestal door and route ac cable from printer cabinet into ac convenience strip inside of pedestal.

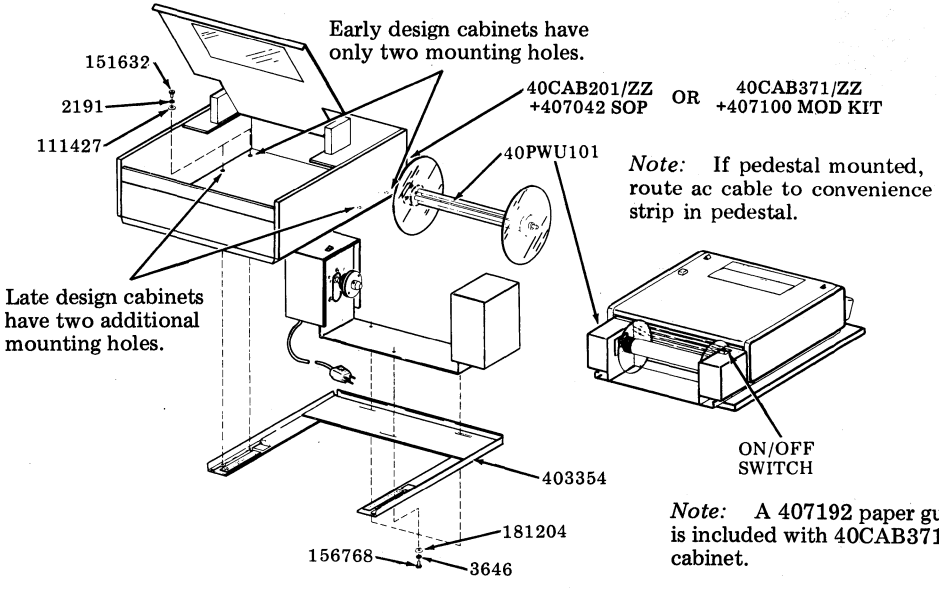
(g) If printer cabinet is not mounted on a pedestal, connect ac cable to an ac outlet.

(h) The controller to printer cable has already been routed to the printer location. Connect the cable to the PTR connector at the rear of the printer. Also connect the separate ground terminal to the cabinet ground lug.

(i) Installation of Paper Winder (40PWU101).

(j) Install paper and ribbon.

(k) Connect ac cable from pedestal (if pedestal mounted) or from printer cabinet and paper winder (if used) to 115 V ac outlet.



B. Tractor Feed

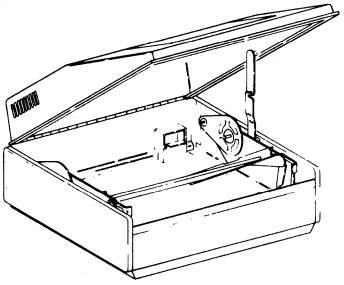
3.53 Tractor Feed Printers (40P151/ZZ or 40P154/ZZ — 80-Column and 40P201/ZZ, 40P202/ZZ or 40P204/ZZ — 132-Column)

(a) Unpack printer, cabinet and pedestal.

(b) Printer options are installed per Service Order and entered on Controller Arrangement Form attached to controller to which printer is connected. (See printer options in 4.08 or 4.10, as applies.)

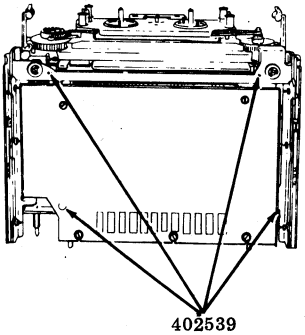
(c) To check or change printer options, refer to Section 582-210-702 for removal of printer circuit card in 80-column printer. (Options for 132-column printers are changed without removing circuit card.)

(d) Install printer into cabinet as follows.

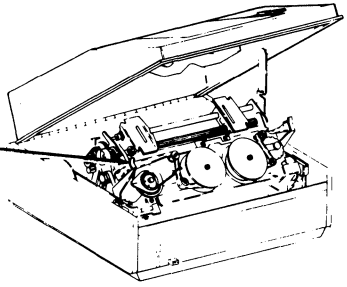


①Back off the four black shock mount immobilizing screws (7-8) turns.

②Place cabinet on pedestal with opening in bottom of cabinet over slot in pedestal. Open lid by depressing latches on either side of lid and then raising it until it locks.



402539
IMMOBILIZATION SCREWS
(4 Places)



(e) Place cabinet on pedestal. Open pedestal door. Connect ac cable at rear of printer cabinet to ac convenience strip inside of pedestal.

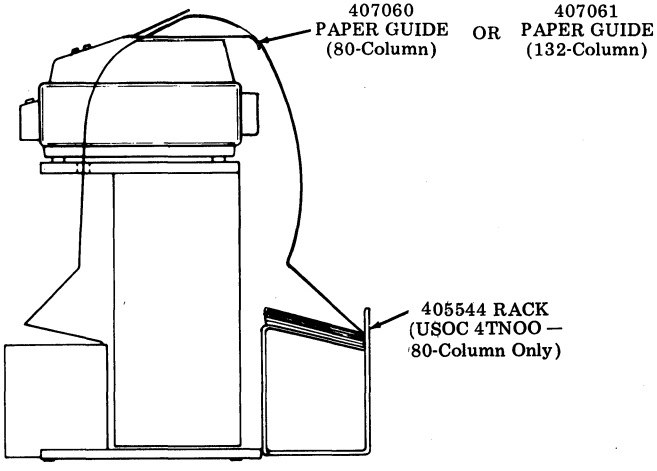
(f) Connect printer cable to printer, see 3.52 (f).

(g) Install paper and ribbon.

(h) If printer cabinet is mounted on a pedestal, connect ac cable from pedestal to 115 V ac outlet.

(i) Assemble paper guide as shown.

(j) If included with order, install 405544 rack as shown.



4. OPTIONS

GENERAL

4.01 This part includes all options that are utilized in the DATASPEED 40/4 station and associated data sets. It also covers handling of circuit cards, location of circuit card switch packs and information on how to activate or change switch positions.

4.02 Controller option switches are enabled per the service order request and should be checked per the Controller Arrangement Form included with each controller. This form will be taped to the inside of each controller cover. Samples of the Controller Arrangement Forms are found in 2. CONTROLLER ARRANGEMENT FORMS of this section.

4.03 If any field options are to be changed, turn off power and remove cards using the following procedures. Check card to see that pins are not bent before reinserting. Examples of the relationship between the controller worksheets and options is given in 2. CONTROLLER ARRANGEMENTS.

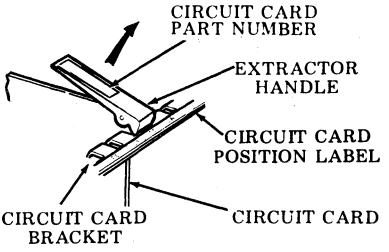
Note: Changing of options without turning off power will not alter options since switches are only sampled during station initialization (power up).

Caution: Wear 346392 ground strap (see Page 2 of this section).

EXTRACTING CIRCUIT CARDS FROM CONTROLLER

(a) Lift up on the extractor handles of the circuit card.

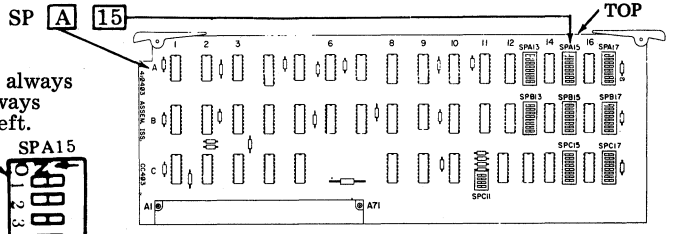
(b) Lift circuit card straight up.



LOCATING SWITCH PACKS ON CIRCUIT CARDS

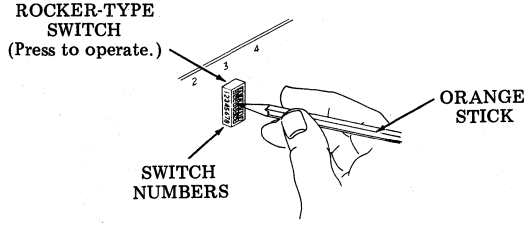
Example: SP A 15

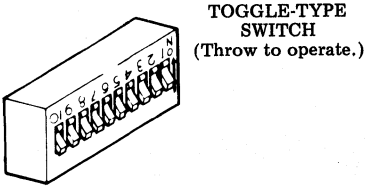
Note: Number "1" is always at the top; "ON" is always switch thrown to the left.



ACTIVATING OPTIONS OR CHANGING SWITCH POSITIONS

Switch OFF (open) = O (Depress right side or throw to right.)
Switch ON (closed) = ● (Depress left side or throw to left.)





CONTROLLER OPTIONS

4.04 Option 401 is determined by the station number entered in the SCC or MCC portion of the Station Configuration Worksheet. Option 401.b. must be selected. Do not choose 401.a.

401 — Station Poll and Select Address		410403 (SPA15, 17) 410411 (SPB1, 2)
a.	None (Does Not Provide Proper Operation)	(See Tables A and B for ASCII and Tables C and D for EBCDIC.)
b.	Station Number (Specify a Station Number From 00 to 31)	

TABLE A

ASCII

OPTION 401 — STATION POLL ADDRESS (SCC or MCC)

STATION NUMBER	STATION POLL ADDRESS		410403 (SPA17) or 410411 (SPB1)							
	CHARACTER	HEX	1	2	3	4	5	6	7	8
00	SPACE	20	○	○	○	○	○	●	○	○
01	A	C1	●	○	○	○	○	○	●	○
02	B	C2	○	●	○	○	○	○	●	○
03	C	43	●	●	○	○	○	○	●	○
04	D	C4	○	○	●	○	○	○	●	○
05	E	45	●	○	●	○	○	○	●	○
06	F	46	○	●	●	○	○	○	●	○
07	G	C7	●	●	●	○	○	○	●	○
08	H	C8	○	○	○	●	○	○	●	○
09	I	49	●	○	○	●	○	○	●	○
10	[	5B	●	●	○	●	●	○	●	○
11	. (PERIOD)	AE	○	●	●	●	○	●	○	○
12	<	BC	○	○	●	●	●	●	○	○
13	(	A8	○	○	○	●	○	●	○	○
14	+	AB	●	●	○	●	○	●	○	○
15	!	A1	●	○	○	○	○	●	○	○
16	&	26	○	●	●	○	○	●	○	○
17	J	4A	○	●	○	●	○	○	●	○
18	K	CB	●	●	○	●	○	○	●	○
19	L	4C	○	○	●	●	○	○	●	○
20	M	CD	●	○	●	●	○	○	●	○
21	N	CE	○	●	●	●	○	○	●	○
22	O	4F	●	●	●	●	○	○	●	○
23	P	D0	○	○	○	○	●	○	●	○
24	Q	51	●	○	○	○	●	○	●	○
25	R	52	○	●	○	○	●	○	●	○
26	]	5D	●	○	●	●	●	○	●	○
27	$	44	○	○	●	○	○	●	○	○
28	*	2A	○	●	○	●	○	●	○	○
29	)	29	●	○	○	●	○	●	○	○
30	;	3B	●	●	○	●	●	●	○	○
31	^	5E	○	●	●	●	●	○	●	○

Note: The "HEX" addresses shown above do not necessarily relate to the setting of the switches.

TABLE B

ASCII

OPTION 401 — STATION SELECT ADDRESS (SCC or MCC)

STATION NUMBER	STATION SELECT ADDRESS		410403 (SPA15) or 410411 (SPB2)								
	CHARACTER	HEX	1	2	3	4	5	6	7	8	
00	- (MINUS)	AD	●	○	●	●	○	●	○	○	
01	/	2F	●	●	●	●	○	●	○	○	
02	S	D3	●	●	○	○	●	○	●	○	
03	T	54	○	○	●	○	●	○	●	○	
04	U	D5	●	○	●	○	●	○	●	○	
05	V	D6	○	●	●	○	●	○	●	○	
06	W	57	●	●	●	○	●	○	●	○	
07	X	58	○	○	○	●	●	○	●	○	
08	Y	D9	●	○	○	●	●	○	●	○	
09	Z	DA	○	●	○	●	●	○	●	○	
10	¦ (VERTICAL LINE)	7C	○	○	●	●	●	●	●	○	Note 2
11	, (COMMA)	2C	○	○	●	●	○	●	○	○	
12	%	25	●	○	●	○	○	●	○	○	
13	_ (UNDERSCORE)	DF	●	●	●	●	●	○	●	○	
14	>	3E	○	●	●	●	●	●	○	○	
15	?	BF	●	●	●	●	●	●	○	○	
16	0 (ZERO)	B0	○	○	○	○	●	●	○	○	
17	1 (ONE)	31	●	○	○	○	●	●	○	○	
18	2	32	○	●	○	○	●	●	○	○	
19	3	B3	●	●	○	○	●	●	○	○	
20	4	34	○	○	●	○	●	●	○	○	
21	5	B5	●	○	●	○	●	●	○	○	
22	6	B6	○	●	●	○	●	●	○	○	
23	7	37	●	●	●	○	●	●	○	○	
24	8	38	○	○	○	●	●	●	○	○	
25	9	B9	●	○	○	●	●	●	○	○	
26	:	BA	○	●	○	●	●	●	○	○	
27	#	23	●	●	○	○	○	●	○	○	
28	@	40	○	○	○	○	○	○	●	○	
29	'	A7	●	●	●	○	○	●	○	○	
30	=	3D	●	○	●	●	●	●	○	○	
31	"	A2	○	●	○	○	○	●	○	○	

Note 1: The "HEX" addresses shown above do not necessarily relate to the setting of the switches.

Note 2: If monocase font is used, " ¦ " will be displayed as " \ " during "LOCAL TEST".

TABLE C

EBCDIC

OPTION 401 — STATION POLL ADDRESS (SCC or MCC)

STATION NUMBER	STATION POLL ADDRESS		410403 (SPA17) or 410411 (SPB1)							
	CHARACTER	HEX	1	2	3	4	5	6	7	8
00	SPACE	40	○	○	○	○	○	○	●	○
01	A	C1	●	○	○	○	○	○	●	●
02	B	C2	○	●	○	○	○	○	●	●
03	C	C3	●	●	○	○	○	○	●	●
04	D	C4	○	○	●	○	○	○	●	●
05	E	C5	●	○	●	○	○	○	●	●
06	F	C6	○	●	●	○	○	○	●	●
07	G	C7	●	●	●	○	○	○	●	●
08	H	C8	○	○	○	●	○	○	●	●
09	I	C9	●	○	○	●	○	○	●	●
10	¢	4A	○	●	○	●	○	○	●	○
11	. (PERIOD)	4B	●	●	○	●	○	○	●	○
12	<	4C	○	○	●	●	○	○	●	○
13	(	4D	●	○	●	●	○	○	●	○
14	+	4E	○	●	●	●	○	○	●	○
15	|	4F	●	●	●	●	○	○	●	○
16	&	50	○	○	○	○	●	○	●	○
17	J	D1	●	○	○	○	●	○	●	●
18	K	D2	○	●	○	○	●	○	●	●
19	L	D3	●	●	○	○	●	○	●	●
20	M	D4	○	○	●	○	●	○	●	●
21	N	D5	●	○	●	○	●	○	●	●
22	O	D6	○	●	●	○	●	○	●	●
23	P	D7	●	●	●	○	●	○	●	●
24	Q	D8	○	○	○	●	●	○	●	●
25	R	D9	●	○	○	●	●	○	●	●
26	!	5A	○	●	○	●	●	○	●	○
27	$	5B	●	●	○	●	●	○	●	○
28	*	5C	○	○	●	●	●	○	●	○
29	)	5D	●	○	●	●	●	○	●	○
30	;	5E	○	●	●	●	●	○	●	○
31	¬	5F	●	●	●	●	●	○	●	○

LEGEND: | is "logical OR" (see Station No. 15).
¬ is "logical NOT" (see Station No. 31).

TABLE D

EBCDIC

OPTION 401 — STATION SELECT ADDRESS (SCC or MCC)

STATION NUMBER	STATION SELECT ADDRESS		410403 (SPA15) or 410411 (SPB2)								
	CHARACTER	HEX	1	2	3	4	5	6	7	8	
00	- (MINUS)	60	O	O	O	O	O	●	●	O	
01	/	61	●	O	O	O	O	●	●	O	
02	S	E2	O	●	O	O	O	●	●	●	
03	T	E3	●	●	O	O	O	●	●	●	
04	U	E4	O	O	●	O	O	●	●	●	
05	V	E5	●	O	●	O	O	●	●	●	
06	W	E6	O	●	●	O	O	●	●	●	
07	X	E7	●	●	●	O	O	●	●	●	
08	Y	E8	O	O	O	●	O	●	●	●	
09	Z	E9	●	O	O	●	O	●	●	●	
10	¦ (VERTICAL LINE)	6A	O	●	O	●	O	●	●	O	Note
11	, (COMMA)	6B	●	●	O	●	O	●	●	O	
12	%	6C	O	O	●	●	O	●	●	O	
13	_ (UNDERSCORE)	6D	●	O	●	●	O	●	●	O	
14	>	6E	O	●	●	●	O	●	●	O	
15	?	6F	●	●	●	●	O	●	●	O	
16	0 (ZERO)	F0	O	O	O	O	●	●	●	●	
17	1 (ONE)	F1	●	O	O	O	●	●	●	●	
18	2	F2	O	●	O	O	●	●	●	●	
19	3	F3	●	●	O	O	●	●	●	●	
20	4	F4	O	O	●	O	●	●	●	●	
21	5	F5	●	O	●	O	●	●	●	●	
22	6	F6	O	●	●	O	●	●	●	●	
23	7	F7	●	●	●	O	●	●	●	●	
24	8	F8	O	O	O	●	●	●	●	●	
25	9	F9	●	O	O	●	●	●	●	●	
26	:	7A	O	●	O	●	●	●	●	O	
27	#	7B	●	●	O	●	●	●	●	O	
28	@	7C	O	O	●	●	●	●	●	O	
29	`	7D	●	O	●	●	●	●	●	O	
30	=	7E	O	●	●	●	●	●	●	O	
31	"	7F	●	●	●	●	●	●	●	O	

Note: If monocase font is used, " ¦ " will be displayed as " \ " during "LOCAL TEST".

4.05 Options 402—411 are determined from the Service Order and Station Configuration Worksheet and apply to either ASCII or EBCDIC Stations. Either 410403 or 410411 will be present.

402 — Type of Alarm on Receipt of Alarm Write Control or Copy Control Character		410403 SPC17-1	410411 SPB7-1	
a.	Continuous — ("Local" Must be Depressed to Stop Alarm)	●	●	
b.	One Second (Alarm Sounds Only Once)	O	O	*

403 — Display Field Intensities		410403		410411		
		SPC17-2	SPC17-3	SPB7-2	SPB7-3	
a.	Intensified and Blink Fields are Intensified	O	O	O	O	*
b.	Intensified and Blink Fields are Blinked	●	O	●	O	
c.	Blink Fields are Blinked. Intensified Fields are Intensified. Mixed Intensified and Blinked Fields on the same Display are Blinked.	O	●	O	●	

404 — Type of Block Abort Procedure Used When Station Abnormally Stops Sending On-Line **		410403 SPC17-5	410411 SPB7-5	
a.	Terminate With ETX	O	O	
b.	Terminate With SUB ENQ and Prime Alarm Flag	●	●	*

405 — Device Addresses (MCC Only)		410403 SPB 13, 15, or 17	410411 SPB4,B5, or B6
a.	None (Does Not Provide Proper Operation)	(See Table E for ASCII and Table F for EBCDIC.)	As for 410403
b.	First Device (Specify Device No.)		
c.	Second Device (Specify Device No.)		
d.	Third Device (Specify Device No.)		

Note: 405.a. must not be selected.

406 — Numeric Field Override (Applies to typewriter style opcons)		410403 SPC17-4	410411 SPB7-4	
a.	Alpha Data Can be Entered in Numeric Field	●	●	
b.	Alpha Data Cannot be Entered in Numeric Field	O	O	*

Note: In Option 406 a. or b.; when entering or trying to enter alpha data in numeric field, alarm will sound.

407 — Numeric Lock Special Feature (Applies to internal numeric cluster style opcons)		410403 SPC17-8	410411 SPB7-8	
a.	Enabled	●	●	
b.	Disabled	O	O	*

● = ON = OFF

*Factory optioned.

**Install Option 404b. unless otherwise specified.

408.	Line Code	(410408 present) 410403 SPC17-6	(410409 present) 410403 SPC17-6	(No 410408 or 410409) 410411 SPB7-6
a.	ASCII	●	N.A.	●
b.	EBCDIC	N.A.	O	O

409.	Up-Low/Monocase Font for KD	Type of D I/O Card Required in DCC or MCC	
		ASCII	EBCDIC
a.	Up-Low	410431	410435
b.	Monocase	410434	410436
c.	Line Drawing (ASCII Only)	410432	N.A.

Note: For printer type font, see Options 19.d and 19.e.

410.	Typewriter/Internal Numeric Cluster Opcon	Cards Required			
		PROM Version		EPROM Version	
		DCC	MCC	DCC	MCC
a.	DCC or MCC Will Accept Typewriter Style Opcon (ASCII or EBCDIC)	410809 410911	410808 410909 410910	410509	410512 410513
b.	DCC or MCC Will Accept Internal Numeric Cluster Style Opcon (EBCDIC Only)	410810 410907	410812 410914 410915	410510	410514 410515

414.	Buffer Lock	(410408 or 410409 present)	(410411 present)
		410403	410411
			SPB7-7
a.	Enabled	(Required, see applicable controller arrangement form.)	●
b.	Disabled (Requires 410525)	(Not Available)	O

● Indicates on.
O Indicates off.
N.A. Indicates option is not available.

TABLE E

ASCII

OPTION 405 — DEVICE ADDRESS (MCC)

DEVICE NUMBER	DEVICE ADDRESS		410403 (SPB13, B15 and B17) or 410411 (SPB4, B5 and B6)							
	CHARACTER	HEX	1	2	3	4	5	6	7	8
00	SPACE	20	O	O	O	O	O	●	O	O
01	A	C1	●	O	O	O	O	O	●	O
02	B	C2	O	●	O	O	O	O	●	O
03	C	43	●	●	O	O	O	O	●	O
04	D	C4	O	O	●	O	O	O	●	O
05	E	45	●	O	●	O	O	O	●	O
06	F	46	O	●	●	O	O	O	●	O
07	G	C7	●	●	●	O	O	O	●	O
08	H	C8	O	O	O	●	O	O	●	O
09	I	49	●	O	O	●	O	O	●	O
10	[	5B	●	●	O	●	●	O	●	O
11	. (PERIOD)	AE	O	●	●	●	O	●	O	O
12	<	BC	O	O	●	●	●	●	O	O
13	(	A8	O	O	O	●	O	●	O	O
14	+	AB	●	●	O	●	O	●	O	O
15	!	A1	●	O	O	O	O	●	O	O
16	&	26	O	●	●	O	O	●	O	O
17	J	4A	O	●	O	●	O	O	●	O
18	K	CB	●	●	O	●	O	O	●	O
19	L	4C	O	O	●	●	O	O	●	O
20	M	CD	●	O	●	●	O	O	●	O
21	N	CE	O	●	●	●	O	O	●	O
22	O	4F	●	●	●	●	O	O	●	O
23	P	D0	O	O	O	O	●	O	●	O
24	Q	51	●	O	O	O	●	O	●	O
25	R	52	O	●	O	O	●	O	●	O
26	]	5D	●	O	●	●	●	O	●	O
27	$	44	O	O	●	O	O	●	O	O
28	*	2A	O	●	O	●	O	●	O	O
29	)	29	●	O	O	●	O	●	O	O
30	;	3B	●	●	O	●	●	●	O	O
31	^	5E	O	●	●	●	●	O	●	O
32	- (MINUS)	AD	●	O	●	●	O	●	O	O
33	/	2F	●	●	●	●	O	●	O	O
34	S	D3	●	●	O	O	●	O	●	O
35	T	54	O	O	●	O	●	O	●	O

Note: The "HEX" addresses shown above may not necessarily reflect the position of the switches.

TABLE F

EBCDIC

OPTION 405 — DEVICE ADDRESS (MCC)

DEVICE NUMBER	DEVICE ADDRESS		410403 (SPB13, B15 and B17) or 410411 (SPB4, B5 and B6)							
	CHARACTER	HEX	1	2	3	4	5	6	7	8
00	SPACE	40	O	O	O	O	O	O	●	O
01	A	C1	●	O	O	O	O	O	●	●
02	B	C2	O	●	O	O	O	O	●	●
03	C	C3	●	●	O	O	O	O	●	●
04	D	C4	O	O	●	O	O	O	●	●
05	E	C5	●	O	●	O	O	O	●	●
06	F	C6	O	●	●	O	O	O	●	●
07	G	C7	●	●	●	O	O	O	●	●
08	H	C8	O	O	O	●	O	O	●	●
09	I	C9	●	O	O	●	O	O	●	●
10	¢	4A	O	●	O	●	O	O	●	O
11	.(PERIOD)	4B	●	●	O	●	O	O	●	O
12	<	4C	O	O	●	●	O	O	●	O
13	(	4D	●	O	●	●	O	O	●	O
14	+	4E	O	●	●	●	O	O	●	O
15	|	4F	●	●	●	●	O	O	●	O
16	&	50	O	O	O	O	●	O	●	O
17	J	D1	●	O	O	O	●	O	●	●
18	K	D2	O	●	O	O	●	O	●	●
19	L	D3	●	●	O	O	●	O	●	●
20	M	D4	O	O	●	O	●	O	●	●
21	N	D5	●	O	●	O	●	O	●	●
22	O	D6	O	●	●	O	●	O	●	●
23	P	D7	●	●	●	O	●	O	●	●
24	Q	D8	O	O	O	●	●	O	●	●
25	R	D9	●	O	O	●	●	O	●	●
26	!	5A	O	●	O	●	●	O	●	O
27	$	5B	●	●	O	●	●	O	●	O
28	*	5C	O	O	●	●	●	O	●	O
29	)	5D	●	O	●	●	●	O	●	O
30	;	5E	O	●	●	●	●	O	●	O
31	¬	5F	●	●	●	●	●	O	●	O
32	- (MINUS)	60	O	O	O	O	O	●	●	O
33	/	61	●	O	O	O	O	●	●	O
34	S	E2	O	●	O	O	O	●	●	●
35	T	E3	●	●	O	O	O	●	●	●

LEGEND: | is "logical OR" (see Device No. 15).
¬ is "logical NOT" (see Device No. 31).

PRINTER OPTIONS

4.06 Refer to 4.07 to determine which paragraphs apply to the printer(s) in a given station.

4.07 Printer Option Reference Guide

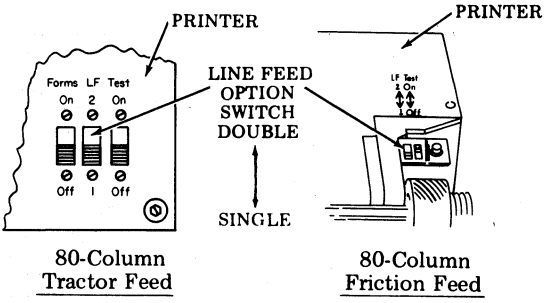
PRINTER CODE	DESCRIPTION	COMPATIBLE PRINTER LOGIC CIRCUIT CARD	FOR OPTIONS, REFER TO THE FOLLOWING PARAGRAPHS
40P101/ZZ	FF 80-COLUMN	410640	4.08 and 4.10
		410076	4.08 and 4.12
40P102/ZZ	FF 80-COLUMN	410076	4.08 and 4.12
40P151/ZZ	TF 80-COLUMN	410640	4.08 and 4.10
		410076	4.08 and 4.12
40P154/ZZ	TF 80-COLUMN	410071	4.08, 4.13 and 4.15
40P201/ZZ	TF 132-COLUMN	410729	4.09, 4.11 and 4.15
		410072*	4.09, 4.14 and 4.15
40P202/ZZ	TF 132-COLUMN	410072	4.09, 4.14 and 4.15

FF — Friction Feed
TF — Tractor Feed

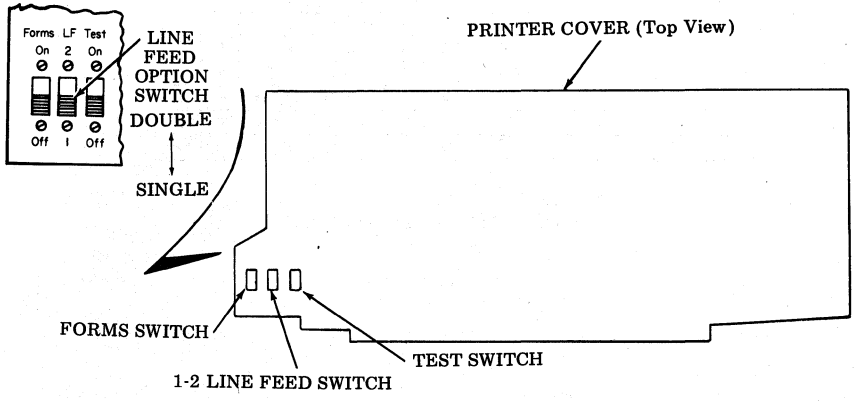
*Use of the 410072 card in a 40P201/ZZ printer requires use of a 402980 lower pan assembly. The 402887 modification kit includes both a 410072 card and a 402980 lower pan assembly. The 402980 lower pan assembly is compatible with either the 410729 or 410072 circuit cards.

Note: Selected printer options must be entered on the Controller Arrangement Form located in the DCC or MCC to which printer is connected.

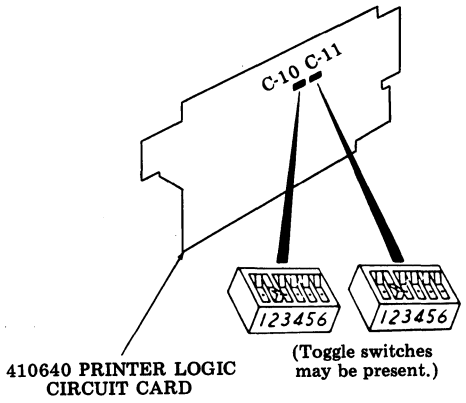
4.08 Location of "Forms" and "LF" Switches on All 80-Column Printers



4.09 Location of "Forms" and "LF" Switches on All 132-Column Printers



4.10 Printer Options For 410640 Circuit Card (See 4.07.)



17. Printer Right Margin and Form Length		C-10						C-11						
		1	2	3	4	5	6	1	2	3	4	5	6	
c.	Last Character on 80th Column	—	—	—	—	—	—	O	●	●	O	—	—	*
d.(X)	Last Character on 79th Column	—	—	—	—	—	—	—	●	●	●	—	—	
	Last Character on 78th Column	—	—	—	—	—	—	●	—	—	●	—	—	
	Last Character on 77th Column	—	—	—	—	—	—	●	—	●	—	—	—	
	Last Character on 76th Column	—	—	—	—	—	—	●	—	●	●	—	—	
	Last Character on 75th Column	—	—	—	—	—	—	●	●	—	●	—	—	
	Last Character on 74th Column	—	—	—	—	—	—	●	●	●	—	—	—	
	Last Character on 73rd Column	—	—	—	—	—	—	●	●	●	●	—	—	

Unless otherwise specified, choose 17.c.

(X) — Indicates desired column number.

Note: If printer right margin specified is 36 through 72, a 410076 circuit card must be used.

18. Printer Paper Feed Out ("RM" is Receive Message)		C-10						C-11						
		1	2	3	4	5	6	1	2	3	4	5	6	
a.	No Paper Feed Out	●	—	—	—	—	—	—	—	—	—	—	O	
b.	Paper Feed Out on "RM" Loss — 16 Lines	O	—	—	—	—	—	—	—	—	—	—	O	
c.	Paper Feed Out on "RM" Loss or ETX	O	—	—	—	—	—	—	—	—	—	—	●	*

Unless otherwise specified, choose 18.c.

● Indicates on.
O Indicates off.
— Position of switch does not affect option.
* Factory optioned.

19. Printer Errored Character Symbol		C-10						C-11					
		1	2	3	4	5	6	1	2	3	4	5	6
c.	Not Printed on Parity Error	—	—	—	●	●	—	—	—	—	—	—	—

Required Selection

19. Character Set		C-10						C-11					
		1	2	3	4	5	6	1	2	3	4	5	6
d.	Printers with 96 Character Set (Up-Low)	—	●	O	—	—	—	—	—	—	—	—	—
e.	Printers with 64 Character Set (Monocase)	—	O	●	—	—	—	—	—	—	—	—	—
f.	Printers with Special Carrier (Line Drawing)	—	O	O	—	—	—	—	—	—	—	—	—

Use of 400629 (A/a) or 400784 (A/M) type carriers require selection of 19.d.
Use of 400645 (A/A) or 400785 (A/a) type carriers require selection of 19.e.
Use of 400775 (A/a) type carrier requires selection of 19.f. (internal use only).

20. Line Feed on Printer		See 4.08.												
a.	Single													*
b.	Double													

Unless otherwise specified, choose 20.a.

21. Foldover on Up-Low Printer		C-10						C-11						
		1	2	3	4	5	6	1	2	3	4	5	6	
a.	Lower Case and Upper Case Print	—	—	—	—	—	—	—	—	—	—	O	—	*
b.	Lower Case Prints as Upper Case	—	—	—	—	—	—	—	—	—	—	●	—	

Consider only with selection of 19.d. or 19.f.

Unless otherwise specified, choose 21.a.

22. Foldover on Monocase Printer		C-10						C-11						
		1	2	3	4	5	6	1	2	3	4	5	6	
a.	Lower Case Not Folded Over	—	—	—	—	—	—	—	—	—	—	O	—	
b.	Lower Case Printed as Upper Case	—	—	—	—	—	—	—	—	—	—	●	—	*

Consider only with selection of 19.e.

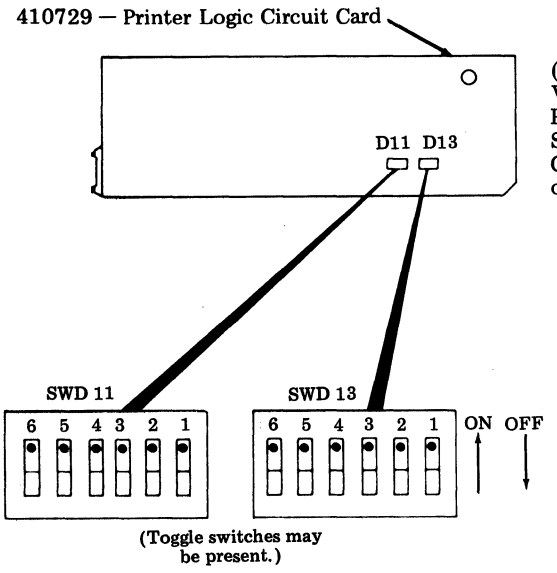
Unless otherwise specified, choose 22.b.

39. Forms (Tractor Printer Only)		See 4.08.												
a.	On													
b.	Off													*

Unless otherwise specified, choose 39.a.

● Indicates on.
O Indicates off.
— Position of switch does not affect option.
* Factory optioned.

4.11 Printer Options For 410729 Circuit Card (See 4.07.)



17.	Printer Right Margin and Form Width	D11 6	5	4	3	2	1	D13 6	5	4	3	2	1	
e.	Last Character on Column 132	—	—	—	—	—	—	O	O	O	●	—	—	*
f.(X)	Last Character on Column 131	—	—	—	—	—	—	O	O	●	O	—	—	
	Last Character on Column 130	—	—	—	—	—	—	O	O	●	●	—	—	
	Last Character on Column 129	—	—	—	—	—	—	O	●	O	●	—	—	
	Last Character on Column 128	—	—	—	—	—	—	O	●	●	O	—	—	
	Last Character on Column 127	—	—	—	—	—	—	O	●	●	●	—	—	
	Last Character on Column 126	—	—	—	—	—	—	●	O	O	●	—	—	
	Last Character on Column 125	—	—	—	—	—	—	●	O	●	O	—	—	
	Last Character on Column 124	—	—	—	—	—	—	●	O	●	●	—	—	
	Last Character on Column 123	—	—	—	—	—	—	●	●	O	●	—	—	
	Last Character on Column 122	—	—	—	—	—	—	●	●	●	O	—	—	
	Last Character on Column 121	—	—	—	—	—	—	●	●	●	●	—	—	

Unless otherwise specified, choose 17.e.

(X) — Indicates desired column number.

Note: If right margin specified is 73 through 120, a 410072 circuit card must be used.

● Indicates on.
O Indicates off.
— Position of switch does not affect option.
* Factory optioned.

18. Printer Paper Feed Out		D11						D13						
		6	5	4	3	2	1	6	5	4	3	2	1	
a.	No Paper Feed Out	–	–	●	–	–	–	–	–	–	–	–	○	
b.	Paper Feed Out on RM Loss – 16 Lines	–	–	○	–	–	–	–	–	–	–	–	○	
c.	Paper Feed Out on RM Loss or ETX	–	–	○	–	–	–	–	–	–	–	–	●	*

Unless otherwise specified, choose 18.c.

19. Printer Errored Character Symbol		D11						D13						
		6	5	4	3	2	1	6	5	4	3	2	1	
c.	Not Printed on Parity Error	–	–	–	●	●	–	–	–	–	–	–	–	*

Required Selection

19. Character Set		D11						D13					
		6	5	4	3	2	1	6	5	4	3	2	1
d.	Printers With 96-Character Set (Up-Low)	●	○	–	–	–	–	–	–	–	–	–	–
e.	Printers With 64-Character Set (Monocase)	○	●	–	–	–	–	–	–	–	–	–	–

Use of 400777 (⇕) or 400783 (⇕) type carriers, require selection of 19.d.
Use of 400780 (⇕) or 400887 (⇕) type carriers, require selection of 19.e.

20. Line Feed on Printer		See 4.09.	
a.	Single		*
b.	Double		

Unless otherwise specified, choose 20.a.

21. Foldover on Up-Low Printer		D11						D13						
		6	5	4	3	2	1	6	5	4	3	2	1	
a.	Lower Case and Upper Case Print	–	–	–	–	–	–	–	–	–	–	○	–	*
b.	Lower Case Prints as Upper Case	–	–	–	–	–	–	–	–	–	–	●	–	

Consider only with selection of 19.d.
Unless otherwise specified, choose 21.a.

● Indicates on.
○ Indicates off.
– Position of switch does not affect option.
* Factory optioned.

	22. Foldover on Monocase Printer	D11 6	5	4	3	2	1	D13 6	5	4	3	2	1	
a.	Lower Case Prints as Error Symbol	—	—	—	—	—	—	—	—	—	—	O	—	
b.	Lower Case Prints as Upper Case	—	—	—	—	—	—	—	—	—	—	●	—	*

Consider only with selection of 19.e.
Unless otherwise specified, choose 22.b.

	39. Forms	Refer to 4.09.											
a.	On												
b.	Off												*

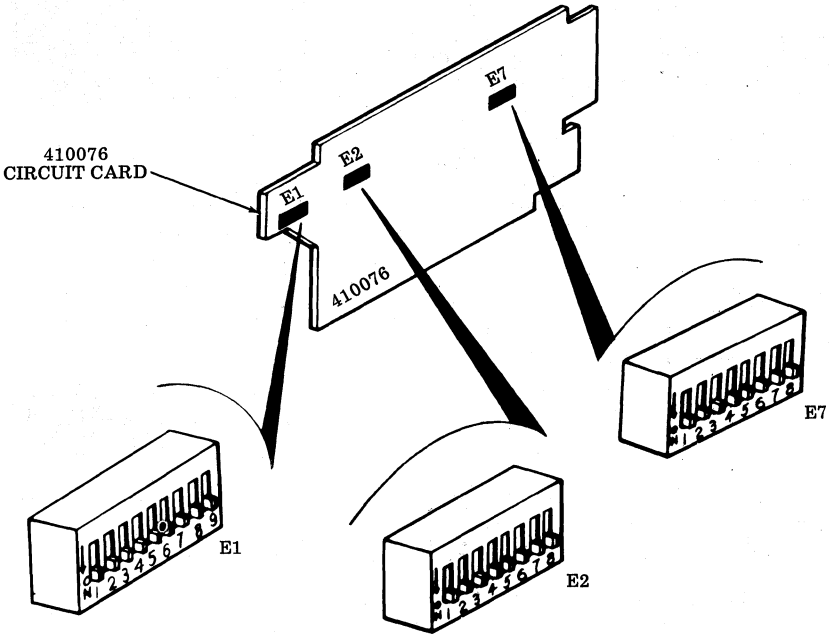
Unless otherwise specified, choose 39.a.

	48. Incomplete Form Suppresses Paper Alarm	D11 6	5	4	3	2	1	D13 6	5	4	3	2	1	
a.	No (Paper Out Not Gated With Form Out)	—	—	—	—	—	●	—	—	—	—	—	—	
b.	Yes (Paper Out Gated With Form Out)	—	—	—	—	—	O	—	—	—	—	—	—	*

Unless otherwise specified, choose 48.b.

● Indicates on.
O Indicates off.
— Position of switch does not affect option.
* Factory optioned.

4.12 Printer Options For 410076 Circuit Card (See 4.07.)



17.	Printer Left Margin and Form Width	E7								
		1	2	3	4	5	6	7	8	
a.	First Printer Column — Column 1	—	—	●	●	●	●	—	—	*
b.(X)	First Printer Column — Column 2	—	—	●	●	○	●	—	—	
	First Printer Column — Column 3	—	—	●	●	○	○	—	—	
	First Printer Column — Column 4	—	—	●	○	○	○	—	—	
	First Printer Column — Column 5	—	—	○	○	●	○	—	—	
	First Printer Column — Column 6	—	—	○	○	○	●	—	—	
	First Printer Column — Column 7	—	—	○	●	○	○	—	—	
	First Printer Column — Column 8	—	—	●	○	●	○	—	—	
	First Printer Column — Column 9	—	—	○	○	●	●	—	—	
	First Printer Column — Column 10	—	—	○	●	○	●	—	—	
	First Printer Column — Column 11	—	—	●	●	●	○	—	—	
	First Printer Column — Column 12	—	—	●	○	○	●	—	—	
	First Printer Column — Column 13	—	—	○	●	●	○	—	—	

Unless otherwise specified, choose 17.a.

(X) — Indicates desired column number.

● Indicates on.
○ Indicates off.
— Position of switch does not affect option.
* Factory optioned.

17.	Printer Right Margin and Form Width	E1									E2								E7								
	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	—	—	—	—	O	●	—	●	O	—	—	—	—	—	—	●	●	●	●	—	—	—	—	—	—	*
d.(X)	73 61 49 37 25	—	—	—	—	●	●	—	●	●	—	—	—	—	—	—	●	●	●	●	—	—	—	—	—	—	
	74 62 50 38 26	—	—	—	—	●	●	—	●	O	—	—	—	—	—	—	●	●	●	●	—	—	—	—	—	—	
	75 63 51 39 27	—	—	—	—	●	●	—	O	●	—	—	—	—	—	—	●	●	●	●	—	—	—	—	—	—	
	76 64 52 40 28	—	—	—	—	●	O	—	●	●	—	—	—	—	—	—	●	●	●	●	—	—	—	—	—	—	
	77 65 53 41 29	—	—	—	—	●	O	—	●	O	—	—	—	—	—	—	●	●	●	●	—	—	—	—	—	—	
	78 66 54 42 30	—	—	—	—	●	O	—	O	●	—	—	—	—	—	—	●	●	●	●	—	—	—	—	—	—	
	79 67 55 43 31	—	—	—	—	O	●	—	●	●	—	—	—	—	—	—	●	●	●	●	—	—	—	—	—	—	
	68 56 44 32	—	—	—	—	O	●	—	●	O	—	—	—	—	—	—	●	●	●	●	—	—	—	—	—	—	
	69 57 45 33	—	—	—	—	O	●	—	O	●	—	—	—	—	—	—	●	●	●	●	—	—	—	—	—	—	
	70 58 46 34	—	—	—	—	O	O	—	●	●	—	—	—	—	—	—	●	●	●	●	—	—	—	—	—	—	
	71 59 47 35	—	—	—	—	O	O	—	●	O	—	—	—	—	—	—	●	●	●	●	—	—	—	—	—	—	
	72 60 48 36	—	—	—	—	O	O	—	O	●	—	—	—	—	—	—	●	●	●	●	—	—	—	—	—	—	

To obtain counts:

73 through 80 program as shown.
61 through 72 program as shown, then operate E7 position 2 to OFF.
49 through 60 program as shown, then operate E7 position 1 to OFF.
37 through 48 program as shown, then operate E2 position 7 to OFF.
25 through 36 program as shown, then operate E2 position 8 to OFF.

Unless otherwise specified, choose 17.c.

X — Indicates desired column number.

18.	Printer Paper Feed Out	E1									E2						
		1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7
a.	No Paper Feed Out	●	—	—	—	—	—	—	—	—	—	—	—	—	—	O	—
b.	Paper Feed Out on DSR or RM Loss — 16 Lines or One Form	O	—	—	—	—	—	—	—	—	—	—	—	—	—	O	—
c.	Paper Feed Out on DSR or RM Loss or ETX — 16 Lines or One Form	O	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—

Unless otherwise specified, choose 18.c.

19.	Printer Errored Character Symbol	E1									
		1	2	3	4	5	6	7	8	9	
c.	Not Printed on Parity Error	—	—	●	●	—	—	—	—	—	*

Required Selection

● Indicates on.
O Indicates off.
— Position of switch does not affect option.
* Factory optioned.

19. Character Set		E2								
		1	2	3	4	5	6	7	8	
d.	Printers With 96-Character Set (Up-Low)	—	—	—	O	●	—	—	—	
e.	Printers With 64-Character Set (Monocase)	—	—	—	●	O	—	—	—	*
f.	Printers With Special Carrier (Line Drawing)	—	—	—	O	O	—	—	—	

Use of 400629 or 400784 type carriers require selection of 19.d.
Use of 400645 or 400785 type carriers require selection of 19.e.
Use of 400775 type carrier requires selection of 19.f. (internal use only).

20. Line Feed on Printer		See 4.08.								
a.	Single									*
b.	Double									

Unless otherwise specified, choose 20.a.

21. Foldover on Up-Low Printer		E2								
		1	2	3	4	5	6	7	8	
a.	Lower Case and Upper Case Print	—	—	O	—	—	—	—	—	
b.	Lower Case Prints as Upper Case	—	—	●	—	—	—	—	—	*

Consider only with selection of 19.d. or 19.f.
Unless otherwise specified, choose 21.a.

22. Foldover on Monocase Printer		E2								
		1	2	3	4	5	6	7	8	
a.	Lower Case Prints as Error Symbol	—	—	O	—	—	—	—	—	
b.	Lower Case Prints as Upper Case	—	—	●	—	—	—	—	—	*

Consider only with selection of 19.c.
Unless otherwise specified, choose 22.b.

39. Forms		Refer to 4.08.								
a.	On									
b.	Off									*

Unless otherwise specified, choose 39.a.

48. Incomplete Form Suppresses Paper Alarm		E2								
		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	—	—	—	—	—	—	*

Position of switch has no effect with Friction Feed Printer.
For Tractor Feed Printer, unless otherwise specified, choose 48.b.

● Indicates on.
O Indicates off.
— Position of switch does not affect option.
* Factory optioned.

54. Printing of Escape Sequences Suppressed		E1									
		1	2	3	4	5	6	7	8	9	
a.	Character After ESC Printed as Received	—	O	—	—	—	—	—	—	—	*
b.	Printing of Character After ESC Suppressed	—	●	—	—	—	—	—	—	—	

→Not Applicable — Position of switch does not affect operation.

55. SI/SO Detection		E1									
		1	2	3	4	5	6	7	8	9	
a.	SI/SO Detection Not Used	—	—	—	—	—	—	O	—	—	*
b.	SI/SO Detection Enables Printing Additional Characters	—	—	—	—	—	—	●	—	—	

→Not Applicable — Position of switch does not affect operation.

56. Friction Feed /Tractor Feed Printer		E2								
		1	2	3	4	5	6	7	8	
a.	Friction Feed Printer — Motor Held on After Paper Alarm	O	—	—	—	—	—	—	—	*
b.	Tractor Feed Printer — Motor Turned Off After Paper Alarm	●	—	—	—	—	—	—	—	

→Friction Feed Printer — Choose 56.a.
Tractor Feed Printer — Choose 56.b.

57. SSI/OEM Interface		E7								
		1	2	3	4	5	6	7	8	
a.	SSI	—	—	—	—	—	—	●	—	*

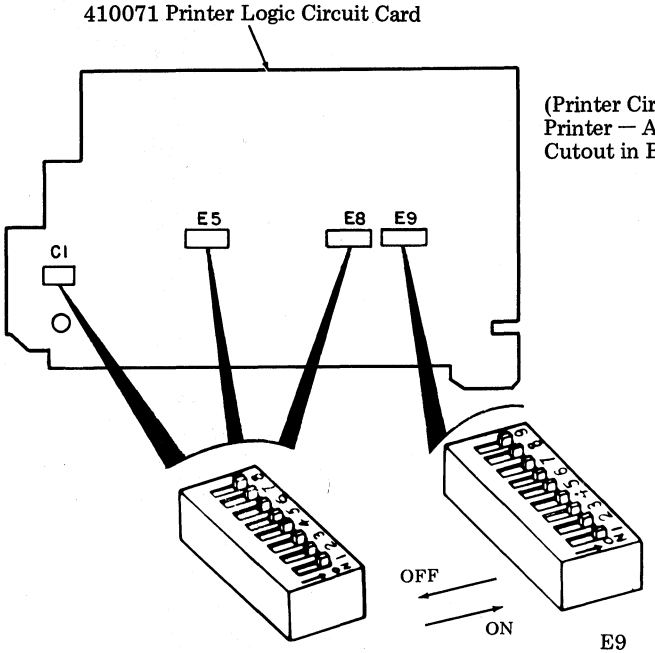
→Required Selection

58. Idle Line Motor Control		E7								
		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	—	—	—	—	—	—	—	●	

Unless otherwise specified, choose 58.b.

● Indicates on.
O Indicates off.
— Position of switch does not affect option.
* Factory optioned.

4.13 Printer Options for 410071 Circuit Card (See 4.07.)



(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	—	—	●	●	●	●	—	—	*
b.(X)	First Printed Column — Column 2	—	—	●	●	O	●	—	—	
	First Printed Column — Column 3	—	—	●	●	O	O	—	—	
	First Printed Column — Column 4	—	—	●	O	O	O	—	—	
	First Printed Column — Column 5	—	—	O	O	●	O	—	—	
	First Printed Column — Column 6	—	—	O	O	O	●	—	—	
	First Printed Column — Column 7	—	—	O	●	O	O	—	—	
	First Printed Column — Column 8	—	—	●	O	●	O	—	—	
	First Printed Column — Column 9	—	—	O	O	●	●	—	—	
	First Printed Column — Column 10	—	—	O	●	O	●	—	—	
	First Printed Column — Column 11	—	—	●	●	●	O	—	—	
	First Printed Column — Column 12	—	—	●	O	O	●	—	—	
	First Printed Column — Column 13	—	—	O	●	●	O	—	—	

Unless otherwise specified, choose 17.a.
(X) — indicates desired column number.

● Indicates on.
O Indicates off.
— Position of switch does not affect option.
* Factory optioned.

17.	Printer Right Margin and Form Width	E9									E5								E8								
	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	O	●	—	●	O	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●	*
d. (X)	73 61 49 37 25	●	●	—	●	●	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●	
	74 62 50 38 26	O	●	—	●	●	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●	
	75 63 51 39 27	●	O	—	●	●	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●	
	76 64 52 40 28	●	●	—	O	●	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●	
	77 65 53 41 29	O	●	—	O	●	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●	
	78 66 54 42 30	●	O	—	O	●	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●	
	79 67 55 43 31	●	●	—	●	O	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●	
	68 56 44 32	O	●	—	●	O	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●	
	69 57 45 33	●	O	—	●	O	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●	
	70 58 46 34	●	●	—	O	O	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●	
	71 59 47 35	O	●	—	O	O	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●	
	72 60 48 36	●	O	—	O	O	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●	

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.

Unless otherwise specified, choose 17.c.
(X) — Indicates desired column number.

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

Unless otherwise specified, choose 18.c.

19.	Printer Errored Character Symbol	E9									
		1	2	3	4	5	6	7	8	9	
c.	Not Printed on Parity Error	—	—	—	—	—	●	●	—	—	

→Required Selection

● Indicates on.
O Indicates off.
— Position of switch does not affect option.
* Factory optioned.

19. Character Set		E8 1	2	3	4	5	6	7	8	
d.	Printers With 96-Character Set (Up-Low)	—	—	—	—	●	O	—	—	
e.	Printers With 64-Character Set (Monocase)	—	—	—	—	O	●	—	—	*
f.	Printers With Special Carrier (Line Drawing)	—	—	—	—	O	O	—	—	

Use of 400629 ( ) or 400784 ( ) type carriers require selection of 19.d.
Use of 400645 ( ) or 400785 ( ) type carriers require selection of 19.e.
Use of 400775 ( ) type carrier requires selection of 19.f. (internal use only).

20. Line Feed on Printer		See 4.08.								
a.	Single									*
b.	Double									

Unless otherwise specified, choose 20.a.

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

→ Consider only with selection of 19.d. or 19.f.

Unless otherwise specified, choose 21.a.

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

→ Consider only with selection of 19.e.

Unless otherwise specified, choose 22.b.

39. Forms (Tractor Printer Only)		See 4.08.								
a.	On									
b.	Off									*

Unless otherwise specified, choose 39.a.

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)	—	—	—	—	—	—	—	—	O	*

Unless otherwise specified, choose 48.b.

● Indicates on.
O Indicates off.
— Position of switch does not affect option.
* Factory optioned.

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

Not Applicable — Position of switch does not affect operation.

55.	SI/SO Detection	E9 1	2	3	4	5	6	7	8	9	
a.	SI/SO Detection Not Used	—	—	O	—	—	—	—	—	—	*
b.	SI/SO Detection Enables Printing Additional Characters	—	—	●	—	—	—	—	—	—	

Not Applicable — Position of switch does not affect operation.

57.	SSI/OEM Interface	E8 1	2	3	4	5	6	7	8	
a.	SSI	—	—	—	—	—	—	●	—	*

Required Selection

58.	Idle Line Motor Control	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				●					

Unless otherwise specified, choose 58.b.

59.	Speed Selection (Applies only if Option 57.b. is selected)	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	

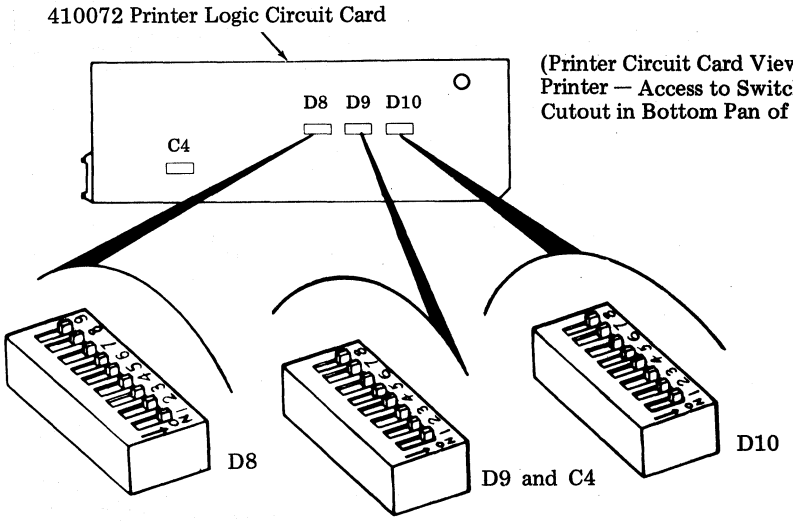
Not Applicable — Position of switches do not affect operation.

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

If 402920 modification kit (paper jam alarm) is installed in printer, choose 60.a. Otherwise 60.b. must be chosen.

● Indicates on.
O Indicates off.
— Position of switch does not affect option.
* Factory optioned.

4.14 Printer Option For 410072 Circuit Card (See 4.07)



17.	Printer Left Margin and Form Width	D8									
		1	2	3	4	5	6	7	8	9	
a.	First Printed Column — Column 1	—	—	●	●	●	●	—	—	—	*
b.(X)	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	—	—	○	○	○	●	—	—	—	
	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	—	—	○	●	●	○	—	—	—	

Unless otherwise specified, choose 17.a.

(X) — Indicates desired column number.

● Indicates on.
○ Indicates off.
— Position of switch does not affect option.
* Factory optioned.

17.	Printer Right Margin and Form Width																									
	Last Char Printed Column Number	D8									D9								D10							
		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
e.	132	—	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●	●	●	○	—	○	○	—	—	—	*
f.(X)	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.

(X) — Indicates desired column number.

Unless otherwise specified, choose 17.e.

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

Unless otherwise specified, choose 18.c.

19.	Printer Errored Character Symbol	D10							
		1	2	3	4	5	6	7	8
c.	Not Printed on Parity Error	—	—	—	—	—	●	●	—

→Required Selection

● Indicates on.
○ Indicates off.
— Position of switch does not affect option.
* Factory optioned.

19. Character Set	D8 1	2	3	4	5	6	7	8	9	
d. Printers With 96-Character Set (Up-Low)	●	O	—	—	—	—	—	—	—	
e. Printers With 64-Character Set (Monocase)	O	●	—	—	—	—	—	—	—	*

Use of 400777 ( ) or 400783 ( )type carriers, require selection of 19.d.
Use of 400780 ( ) or 400887 ( )type carriers, require selection of 19.e.

20. Line Feed on Printer	See 4.09.	
a. Single		*
b. Double		

Unless otherwise specified, choose 20.a.

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

Consider only with selection of 19.d.
Unless otherwise specified, choose 21.a.

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	●	—	—	—	—	—	—	—	*

Consider only with selection of 19.e.
Unless otherwise specified, choose 22.b.

39. Forms (Tractor Printer Only)	See 4.09.	
a. On		
b. Off		*

Unless otherwise specified, choose 39.a.

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	—	—	—	—	*

Unless otherwise specified, choose 48.b.

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

Not Applicable — Position of switch does not affect operation.

● Indicates on.
O Indicates off.
— Position of switch does not affect option.
* Factory optioned.

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

→Not Applicable — Position of switch does not affect operation.

57. SSI/OEM Interface		D8									
		1	2	3	4	5	6	7	8	9	
a.	SSI	—	—	—	—	—	—	—	—	●	*

→Required Selection

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

Unless otherwise specified, choose 58.b.

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	●	

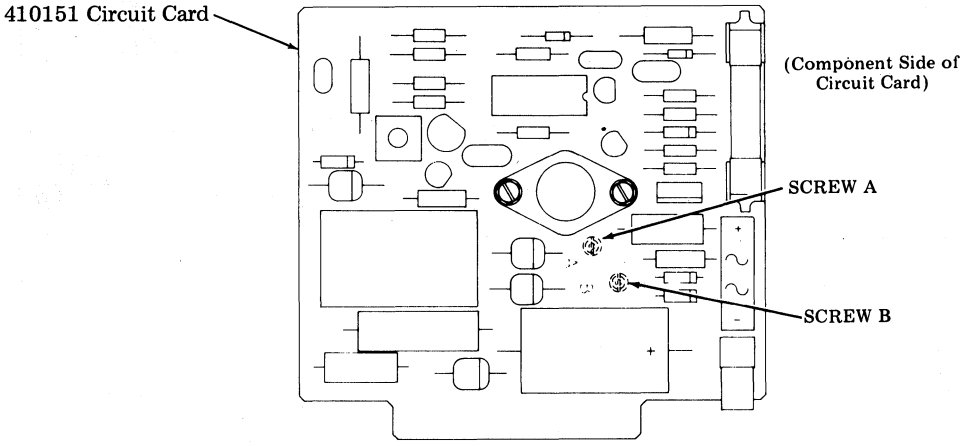
→Not Applicable — Position of switches do not affect operation.

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

→If 402920 modification kit (paper jam alarm) is installed in printer, choose 60.a. Otherwise 60.b. must be chosen.

● Indicates on.
O Indicates off.
— Position of switch does not affect option.
* Factory optioned.

4.15 Printer Options For 410151 Circuit Card (See 4.07.)



61.	Regulator Grounding Circuit Gnd to Frame Gnd)	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	—

Either 61.a. or 61.b. must be chosen for proper operation.

DATA SET, DATA SERVICE UNIT, AND INTERNAL MODEM OPTIONS

4.16 BSP References:

201B Data Set (DS), 2400 BPS — Section 592-011-ZZZ and Tech Ref Pub. 41201. The 201B is manufacture discontinued.

201C Data Set (DS), 2400 BPS — Section 592-029-ZZZ and Tech Ref Pub. 41210.

208A Data Set (DS), 4800 BPS — Section 592-027-ZZZ and Tech Ref Pub. 41209.

209A Data Set (DS), 2400 BPS, 4800 BPS, 7200 BPS, 9600 BPS — Section 592-032-ZZZ.

500A — L1/2 Data Service Unit (DSU), 2400 BPS; 500A — L1/3 Data Service Unit (DSU), 4800 BPS; and 500A — L1/4 Data Service Unit (DSU), 9600 BPS — Section 595-200-ZZZ.

4.17 The three tables that follow list options for DSs and DSUs. The SCC or MCC should be connected to the DS or DSU. After making the connection and checking the options, go to Section 582-200-501.

4.18 A 201B, 201C, 208A or 209A Data Set can be used with the station arrangement provided there is access to a private line system with 2000 or 3002 conditioning (the 208A and 209A require 3002).

201- AND 208-TYPE DATA SETS

	DESCRIPTION OF RECOMMENDED DATA SET OPTIONS	DATA SET AT DATASPEED 40/4 STATION					
		201B-LIST	201-B3	201C-L1	201C-L1D	208A-L1	
	WITHOUT AUX DATA SET 828 OR 829	—	ZJ	YJ	YJ	S3C-DOWN	YJ
	NEW SYNC — NOT USED	ZL	W	YA	YA	S4C-DOWN	YA
	600 or 900 OHM IMPEDANCE	—	Y or X	ZQ or ZR	—	—	—
	4-WIRE SWITCHED CARRIER (Note 1)	B	ZB	XA	XA	S4B-DOWN	XA
	ECHO DELAY	—	T	—	—	—	—
	EIA INTERFACE	ZR-ZT	ZD-ZF	YK,YG,YE	YK	—	—
	XMIT LEVEL (Optional)	—	G,F,E,B,A	ZA---ZP	—	—	—
	REC LEVEL (Optional)	—	S,R,Q,N	ZU	—	—	—
	COMP. EQUALIZER-IN	—	—	ZS	—	—	—
	INTERNAL XMIT TIMING	—	—	YC	YC	S3A-DOWN	YC
	DSR "ON" IN AL-MODE	—	—	—	YM	S1A-UP	YM
	NO COMP. EQUALIZER TEST *	—	—	—	—	S1B-UP	YQ
	RETRAIN AUTOMATICALLY *	—	—	—	—	S3B-UP	YU
	1-SEC. HOLDOVER ENABLED *	—	—	—	—	S4A-DOWN	YX
	EQUALIZER ADJ. (Note 2)	—	—	—	—	S2B-UP S2C-UP	ZS
	SWITCHED RTS (Note 1)	—	—	—	—	S1C-DOWN	YS
	CONT. REC. BIT CLOCK IN	—	—	—	YO	—	—
DATA SET AT CUSTOMER LCU — SAME AS ABOVE, EXCEPT:		201B-LIST	201-B3	201C-L1	201C-L1D	208A-L1	
OMIT	4-WIRE SWITCHED CARRIER	B	ZB	XA	XA	S4B-DOWN	XA
	1-SEC. HOLDOVER ENABLED	—	—	—	—	S4A-DOWN	YX
	NEW SYNC. NOT USED (Note 3)	ZL	W	YA	YA	S4C-DOWN	YA
ADD	CONTINUOUS CARRIER	—	ZA	XB	XB	S4B-UP	XB
	1-SEC. HOLDOVER-DISABLED	—	—	—	—	S4A-UP	YW
	NEW SYNC. USED (See Note 3 if required at Cust. machine)	—	ZK	YB	YB	S4C-UP	YB

*Required for 208A-L1.

Note 1: In a single 40/4 station telephone channel to a customer's equipment station, Continuous Carrier and Continuous RTS options are preferred at the 40/4 station.

Note 2: For switched carrier operation, correct setting of the Compromise Equalizer must be determined using the Compromise Equalizer Test in Section 592-027-500.

Note 3: In multipoint station arrangements, the data set at the customer LCU may use NEW SYNC OPTION to quench timing signals in the data set and condition the receiver for the next message — if required, refer to customer LCU requirements. Not required at LCU for point-to-point station arrangements.

209A DATA SET — RECOMMENDED OPTIONS

DATA SET AT 40/4 STATION			
OPTION		DESCRIPTION OF OPTION	SWITCH AND STRAP
WN		Compromise Equalizer Receiver Phase Out	S1-2
WK		Compromise Equalizer Receive Slope In	S1-4
WS		Compromise Equalizer Transmitter Phase Out	S1-7
WF		Elastic Store Enable 3 Out	S2-4
WH		Elastic Store Enable 4 Out	S2-8
WP		Compromise Equalizer Transmitter Slope In	S3-1
WB		Elastic Store Enable 1 Out	S3-4
WD		Elastic Store Enable 2 Out	S3-6
YJ		828 or 829 DAS Not Used	S3-8
YM		DSR On in AL Mode	S5-1
XF		4-Wire Switched Carrier and Automatic Retrain	S5-3 *
YX		1-Second Foldover In	S5-5
YC		Internal Timing	S6-2
WJ		Slave Out	S6-4
DATA SET AT CUSTOMER LCU — (Same as above except)			
OMIT	XF	4-Wire Switched Carrier and Automatic Retrain	S5-3
	YX	1-Second Holdover In	S5-5
ADD	XG	4-Wire Continuous Carrier and Automatic Retrain	S5-6
	YW	1-Second Holdover Out	S5-4

* For Point-To-Point Operation, option as shown above except:

Omit: XF — 4-wire switched carrier and automatic retrain — S5-3.
Add: XI — Continuous RS and automatic retrain — S5-8.

4.19 A 500A-Type Data Service Unit (DSU) can be used with a station arrangement provided there is access to a synchronous digital data system. The 500A-L1/2 operates at 2400 BPS and uses the HN1 and HP1 circuit cards. The 500A-L1/3 operates a 4800 BPS and uses the HN2 and HP1 circuit cards. The 500A-L1/4 operates at 9600 BPS and uses the HN3 and HP1 circuit cards.

Note 1: Option WV required only under guidelines of Section 886-100-115 when local cable pairs are too short for proper operation of receiver.

Note 2: DSUs are not capable of near-end analog loop-back.

Note 3: Refer to Section 595-200-series for details.

500A-TYPE DSUs

CIRCUIT OPTIONS	OPTION	FEATURE	SWITCH	SWITCH POSITION	CP
	WV	Fixed line build-out network installed (Note 1)	S1A	3	HN1 or HN2 or HN3
			S1B	5	
			S1C	9	
	WW	Fixed line build-out network removed	S1A	2	
			S1B	6	
			S1C	8	
	YK *	Signal ground connected to frame ground	S2	IN	
	YL	Signal ground disconnected from frame ground		OUT	
	YS * *	Continuous request-to-send (permanent RTS)	S3A	2	HP1
	YT *	Switched request-to-send		3	
	YQ	Circuit assurance installed (Note 2)	S3B	6	
	YR *	Circuit assurance removed		5	
	XK	System status installed (Note 2)	S3C	9	
	XL *	System status removed		8	
PHYSICAL OPTIONS	XM	Switch LED assembly installed to rear			HN1 or HN2 or HN3
	XN *	Switch LED assembly installed to front			
	XO *	LL spring clip installed			
	XP	LL spring clip not installed			

*Recommended Options

**(1) In a point-to-point station arrangement, it is recommended that continuous RTS (YS) option be selected instead of switched RTS (YT).

(2) Continuous RTS (YS) option should always be chosen at customer LCU regardless of whether system is in point-to-point or multipoint environment.

5. ADJUSTMENTS

5.01 The only adjustments in the station are in printers and monitors.

5.02 Monitor adjustments are given in Section 582-213-700.

5.03 80-column printer adjustments are given in Section 582-210-700.

5.04 132-column printer adjustments are given in Section 582-210-700.

6. TOOLS AND SUPPLIES (ALL STATIONS)

6.01 The following tools and supplies may be required for installation or servicing of DATASPEED 40 apparatus. Most of these items should normally be present in standard maintenance tool kits.

6.02 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	1/4"	89954
Nut driver	5/16"	89955
Nut driver	1/4"	135677
Nut driver	5/16"	135678
Screwdriver	1/8", 2" blade	95368
Screwdriver	1/4", 6" blade	100982
Screwdriver	(blade less than 5/32")	94647
Allen wrench	0.062	124682
Tweezers		151392
Spring hook (pull)		142554
Spring hook (pull)		75675
Spring hook (push)		75503
Scales, spring (802)		110443
Ruler, 6"		95960
Cleaning brush (type face)		151394
Long-nose pliers		108285
Cutting pliers		108286
Retaining ring pliers		160396
Terminal extractor (data set type connector)		341983
Keyswitch extractor		346257
Keytop extractor		346260
Static ground strap		346392
Gauge (Friction Feed Printer)		400610
Gauge (Tractor Feed Printer)		402617
Cable tag (orange)		405242
Cable tag (yellow)		405243
Blank label		405247
Cable tag (white)		405249
Terminal extractor (40-type connector) (MOLEX HT2285)		402840

6.03 Supplies

All purpose grease — 145867
Oil — KS7470
Thermal compound — 402640
Ribbon — 402444
Paper (friction feed) — standard 8-1/2" wide, 5" dia roll
Paper (tractor feed)
Degreaser (Trichlorotriflorethlyene) — KS20406 L-1

SYNCHRONOUS "DATASPEED*" 40/4

MAXI-CLUSTER AND MINI-CLUSTER STATION ARRANGEMENTS

MAINTENANCE CONTROLLER ARRANGEMENTS

CONTENTS PAGE

1. GENERAL

1.01 This section provides the craftsperson with methods and procedures for maintaining C400 controllers using circuit arrangements which are other than those shown in the controller arrangements of the installation Section 582-200-201.

1.02 This section is reissued to specify that the 410525 circuit card can replace the 410513 card.

Note: When ordering replaceable components unless otherwise specfied, prefix each part number with the letters "TP" (ie, TP410400).

1.03 Whenever a C400 controller has been determined by controller self-diagnosis or other testing to contain a defective circuit card, that circuit card should be replaced with a circuit card having the same TP number. If that circuit card is not available, then this section should be used to determine an equivalent controller arrangement (see 3. MAINTENANCE CONTROLLER ARRANGEMENTS) and circuit cards (if available) contained in that arrangement should be used.

Note: Before replacing PROM or EPROM circuit cards, see 4. CIRCUIT CARD COMPATIBILITY in Section 582-200-501, Issue 3 or later.

1.04 The 410400, 410401, 410406 and all 41043N circuit cards do not have equivalent type circuit card substitutions and, must therefore be replaced with circuit cards having the same TP numbers.

2. CIRCUIT CARD SUBSTITUTIONS

2.01 This paragraph describes which circuit cards can be substituted for those circuit cards which are found to be defective but are not readily available.

2.02 A 410411 circuit card combines the features of the 410409, 410408 and 410403 circuit cards and may be substituted for these circuit cards when they are found to be defective. If a 410411 circuit card is used in a SCC which features the 410804 PROM circuit card or MCC which features the 410808 PROM circuit card, PROMs 450013, 450014, 450015 and 450016 contained on each of these circuit cards must be Issue 3 or later in order to perform a proper controller self-diagnostic test.

2.03 The 410409 (or 410408) and 410403 circuit cards may be substituted for the 410411 circuit card in a "PROM version" controller. Substitution of the 410411 circuit card with 410409 (or 410408) and 410403 circuit cards in a "EPROM version" controller will result in an identical self-test trouble and continue pattern and therefore is not recommended.

2.04 EPROM (4105NN series) circuit cards may be substituted for PROM (4108NN and 4109NN series) circuit cards, however, if present in the defective controller, 410409 (or 410408) and 410403 circuit cards must also be replaced by the 410411 circuit card because of the condition described in 2.03.

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Caution : Since EPROM (4105NN series) circuit cards offer additional features, they should never be replaced by PROM (4108NN and 4109NN series) circuit cards.

2.05 Since EPROM (4105NN series) circuit cards contain the features of the following modification kits (which may be part of the PROM (4108NN and 4109NN) series circuit cards), no special considerations will be necessary when replacing PROM circuit cards (containing the following modification kits) with EPROM circuit cards.

Modification Kits*	Controller Affected	Circuit Card(s) Affected
408788	MCC	410909
408789	MCC	410409 and 410910
408796	SCC	410804 and 410905
408804	MCC	410909 and 410910
408798	SCC	410804 and 410905
408800	MCC	410909 and 410910

*These modification kits only improve system operation.

2.06 All RAM (41046N series) circuit cards are directly interchangeable. The 410461 and 410465 circuit cards are 4K RAM while the 410464 circuit card is an 8K RAM. The 8K RAM (410464) circuit cards should only be used to replace 2-4K RAM circuit cards, however, an 8K RAM may be used to replace 1-4K RAM when the 4K RAM (410641 or 410465) circuit cards are not available. If an 8K RAM circuit card is used to replace a 4K RAM in a controller that contains 2-4K RAM circuit cards, the second 4K RAM should be removed. The use of only 1-4K RAM in a DCC or MCC that employs EPROM circuit cards will result in an identical trouble and continue pattern and no video display patterns during self-test and therefore, 2-4K RAM or 1-8K RAM should always be used in this type of arrangement.

2.07 The following table summarizes the preceding paragraph 2. CIRCUIT CARD SUBSTITUTIONS.

Controller(s) Affected	Circuit Card(s) to be Replaced	Circuit Card Replacement(s)	Comment
SCC or MCC	410409 (or 410408) and 410403	410411	If present, 410804 or 410808 must contain Issue 3 or later of the following PROMS: 450013, 450014, 450015 and 450016.
SCC or MCC	410411	410409 (or 410408) and 410403	Replacement applies only if PROM (4108NN and 4109NN series) cards are part of controller. (See Note 3.)
SCC	410804 and 410905	410508	(See Note 1.)
DCC With Typewriter Style Opcon	410809 and 410911	410509	(See Note 2.)
DCC With Internal Numeric Cluster Opcon	410810 and 410907	410510	(See Note 2.)
MCC With Typewriter Style Opcon	410808, 410909 and 410910	410512 and 410513 (or 410525)	(See Notes 1 and 2.)
MCC With Internal Numeric Cluster Opcon	410812, 410914 and 410915	410514 and 410515	(See Notes 1 and 2.)
SCC, DCC or MCC	1-410461	410465 or 410464	Use 410464 only if 410465 is not available.
DCC or MCC	2-410461	2-410465 or 1-410461 and 1-410465 or 1-410464	
SCC, DCC or MCC	1-410465	410461 or 410464	Use 410464 only if 410461 is not available.
DCC or MCC	2-410465	2-410461 or 1-410465 and 1-410461 or 1-410464	
DCC or MCC	410464	2-410461 or 2-410465 or 1-410461 and 1-410465	

Note 1: If present, the 410409 (or 410408) and 410403 circuit cards must be replaced with the 410411 circuit card.

Note 2: If only 1-4K RAM (410461 or 410465) circuit card is in controller, an additional 4K RAM must be added or; remove the 4K RAM and install an 8K RAM (410464) circuit card.

3. MAINTENANCE CONTROLLER ARRANGEMENTS

3.01 This paragraph includes tables of all the Maintenance Controller Arrangements including those which are of the standard type shown in the installation Section 582-200-201 and those which are of the maintenance type shown in this document.

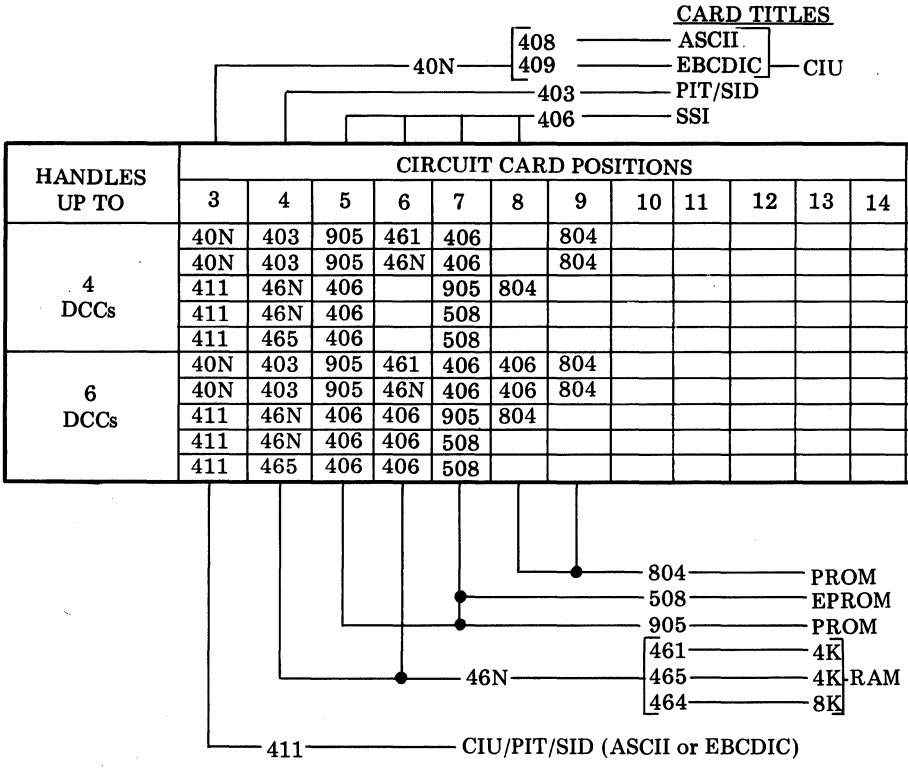
3.02 Finding a Maintenance Controller Arrangement equivalent to the arrangement being worked on can be found by:

(a) Find the type of controller: SCC, DCC or MCC. (Each type includes its own table.)

(b) If SCC type, find number of DDCs handled. If DCC or MCC type, find number of devices handled.

Example: A DCC which handles 1-KD and 1-PTR has a defective 410911 circuit card and no spare is available. By observing the table in 2. CIRCUIT CARD SUBSTITUTIONS it is noted that a 410509 circuit card (which is available) can be substituted for the 410911 and 410809 circuit cards. Scanning downward in the table, we find under "HANDLES" 1-KD and 1-PTR, an arrangement which does include a 4105NN circuit card. This arrangement should then be used. Note also that in this arrangement, a 4K RAM must be added to the controller to avoid an identical trouble and continue pattern.

3.03 Station Cluster Controller (SCC) Arrangements — 40C401*



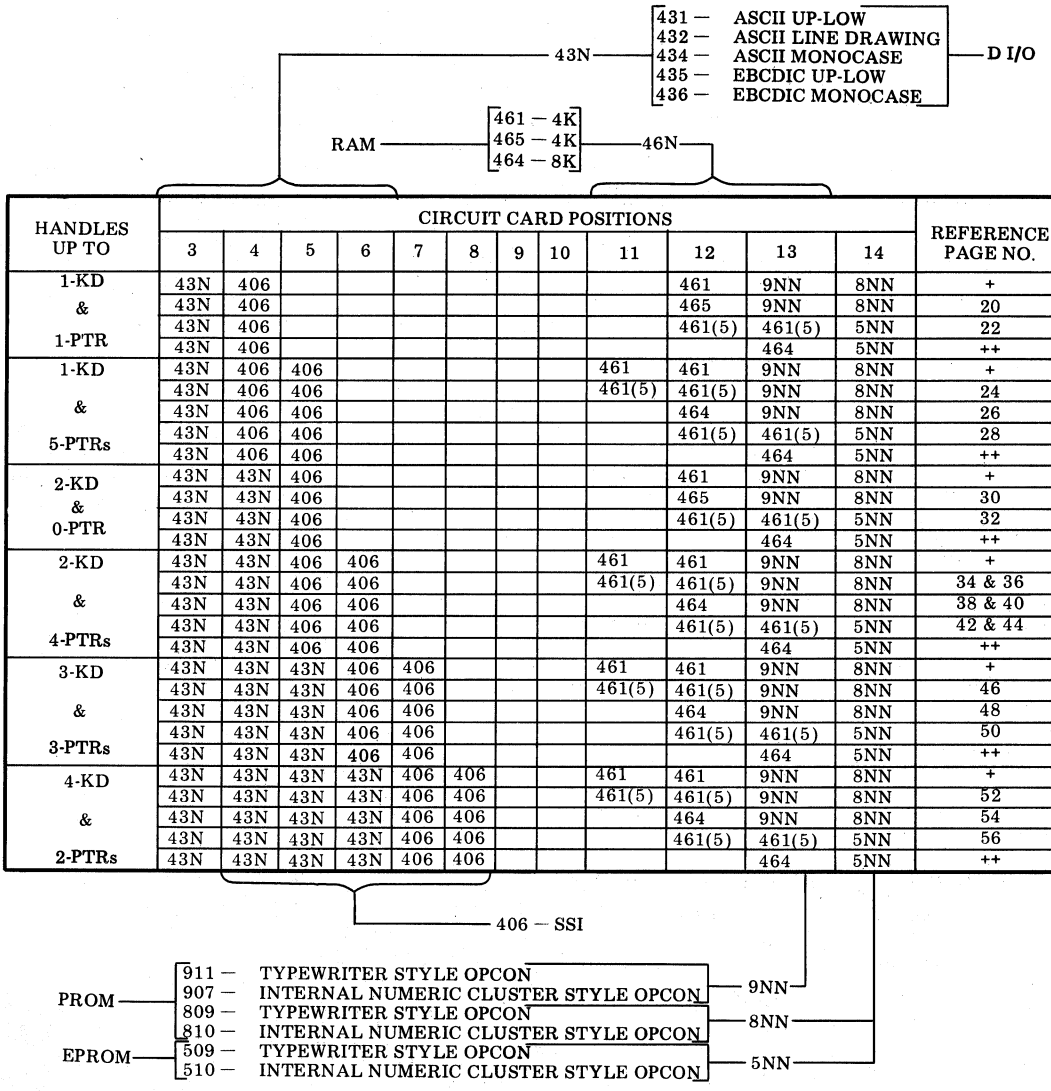
HANDLES UP TO	CIRCUIT CARD POSITIONS												REFERENCE PAGE NO.
	3	4	5	6	7	8	9	10	11	12	13	14	
4 DCCs	40N	403	905	461	406		804						†
	40N	403	905	46N	406		804						8
	411	46N	406		905	804							10
	411	46N	406		508								12
	411	465	406		508								††
6 DCCs	40N	403	905	461	406	406	804						†
	40N	403	905	46N	406	406	804						14
	411	46N	406	406	905	804							16
	411	46N	406	406	508								18
	411	465	406	406	508								††

* — 410400 and 410401 circuit cards are in position 1 and 2.
All circuit card numbers are preceded by 410.

† — Standard PROM version — see Installation Section 582-200-201.

†† — Standard EPROM version — see Installation Section 582-200-201.

3.04 Device Cluster Controller (DCC) Arrangements — 40C402*



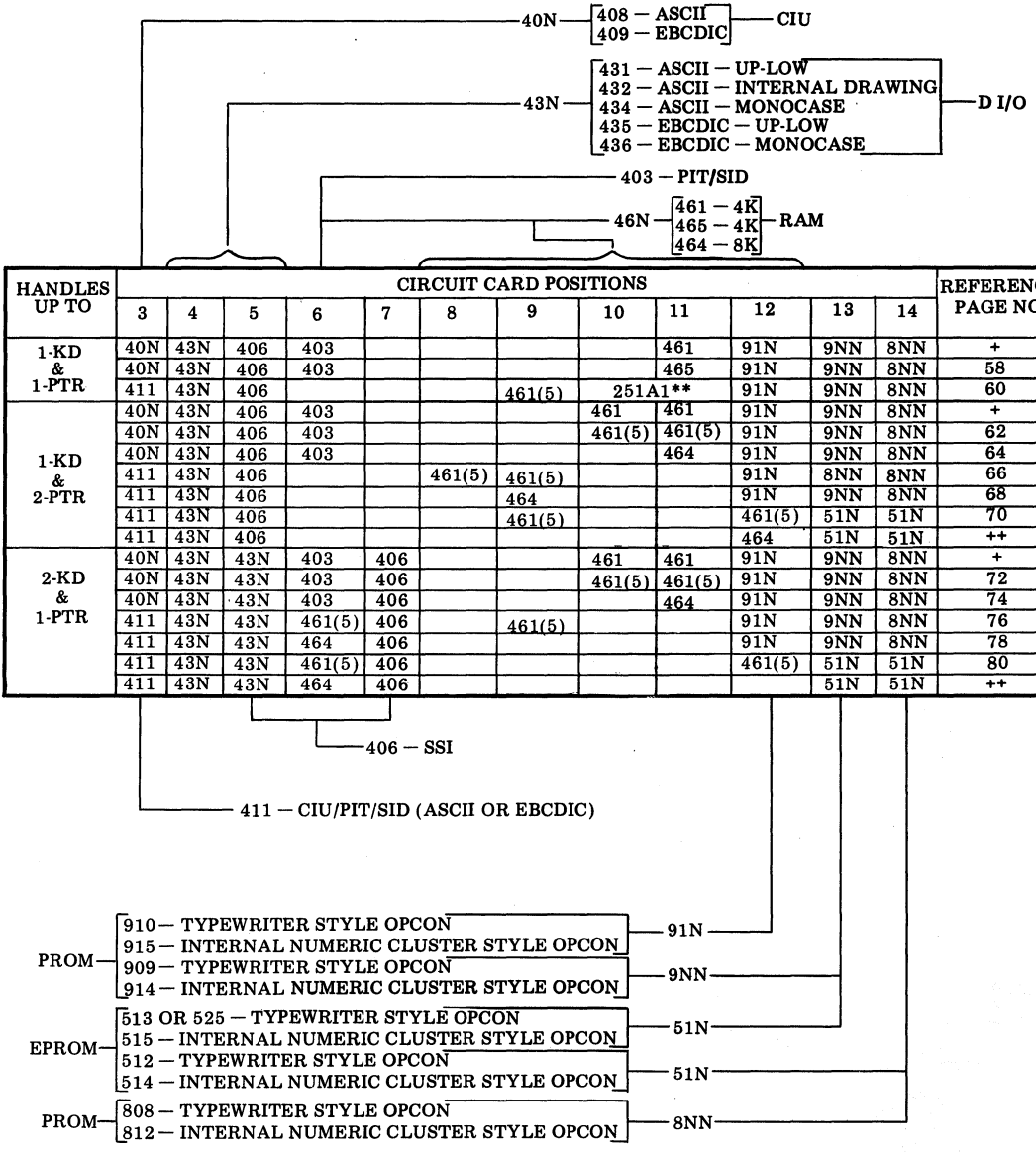
HANDLES UP TO	CIRCUIT CARD POSITIONS												REFERENCE PAGE NO.
	3	4	5	6	7	8	9	10	11	12	13	14	
1-KD	43N	406								461	9NN	8NN	+
&	43N	406								465	9NN	8NN	20
1-PTR	43N	406								461(5)	461(5)	5NN	22
	43N	406									464	5NN	++
1-KD	43N	406	406						461	461	9NN	8NN	+
&	43N	406	406						461(5)	461(5)	9NN	8NN	24
5-PTRs	43N	406	406							464	9NN	8NN	26
	43N	406	406							461(5)	461(5)	5NN	28
	43N	406	406								464	5NN	++
2-KD	43N	43N	406							461	9NN	8NN	+
&	43N	43N	406							465	9NN	8NN	30
0-PTR	43N	43N	406							461(5)	461(5)	5NN	32
	43N	43N	406								464	5NN	++
2-KD	43N	43N	406	406					461	461	9NN	8NN	+
&	43N	43N	406	406					461(5)	461(5)	9NN	8NN	34 & 36
4-PTRs	43N	43N	406	406						464	9NN	8NN	38 & 40
	43N	43N	406	406						461(5)	461(5)	5NN	42 & 44
	43N	43N	406	406							464	5NN	++
3-KD	43N	43N	43N	406	406				461	461	9NN	8NN	+
&	43N	43N	43N	406	406				461(5)	461(5)	9NN	8NN	46
3-PTRs	43N	43N	43N	406	406					464	9NN	8NN	48
	43N	43N	43N	406	406					461(5)	461(5)	5NN	50
	43N	43N	43N	406	406						464	5NN	++
4-KD	43N	43N	43N	43N	406	406			461	461	9NN	8NN	+
&	43N	43N	43N	43N	406	406			461(5)	461(5)	9NN	8NN	52
2-PTRs	43N	43N	43N	43N	406	406				464	9NN	8NN	54
	43N	43N	43N	43N	406	406				461(5)	461(5)	5NN	56
	43N	43N	43N	43N	406	406					464	5NN	++

* — 410400 and 410401 circuit cards are in position 1 and 2.
All circuit card numbers are preceded by 410.

\+ — Standard PROM version — see Installation Section 582-200-201.

++ — Standard EPROM version — see Installation Section 582-200-201.

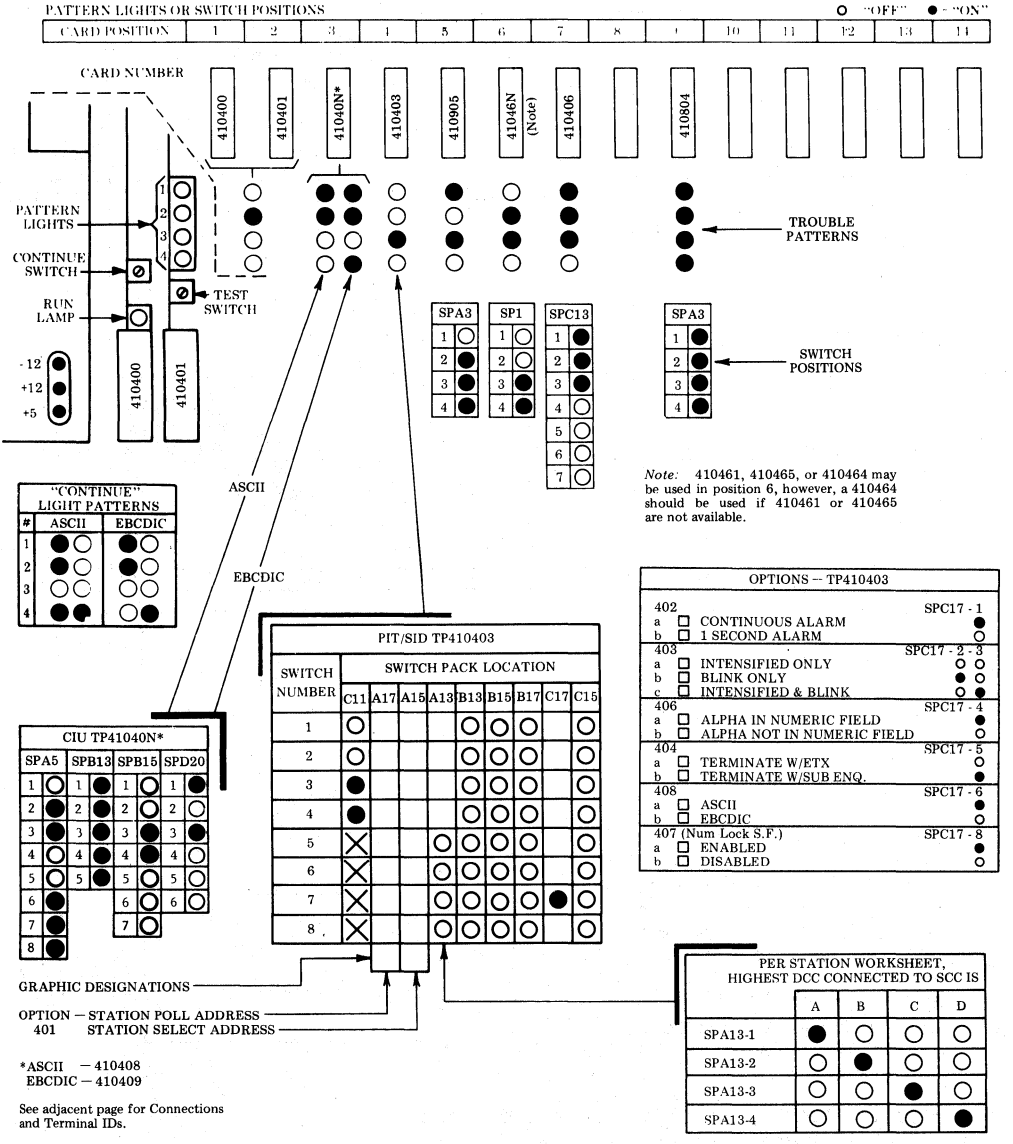
3.05 Mini-Cluster Controller (MCC) Arrangements — 40C403*



HANDLES UP TO	CIRCUIT CARD POSITIONS												REFERENCE PAGE NO.
	3	4	5	6	7	8	9	10	11	12	13	14	
1-KD & 1-PTR	40N	43N	406	403					461	91N	9NN	8NN	+
	40N	43N	406	403					465	91N	9NN	8NN	58
	411	43N	406				461(5)	251A1**		91N	9NN	8NN	60
1-KD & 2-PTR	40N	43N	406	403				461	461	91N	9NN	8NN	+
	40N	43N	406	403				461(5)	461(5)	91N	9NN	8NN	62
	40N	43N	406	403					464	91N	9NN	8NN	64
	411	43N	406			461(5)	461(5)			91N	8NN	8NN	66
	411	43N	406				464			91N	9NN	8NN	68
	411	43N	406				461(5)			461(5)	51N	51N	70
	411	43N	406							464	51N	51N	++
2-KD & 1-PTR	40N	43N	43N	403	406			461	461	91N	9NN	8NN	+
	40N	43N	43N	403	406			461(5)	461(5)	91N	9NN	8NN	72
	40N	43N	43N	403	406				464	91N	9NN	8NN	74
	411	43N	43N	461(5)	406		461(5)			91N	9NN	8NN	76
	411	43N	43N	464	406					91N	9NN	8NN	78
	411	43N	43N	461(5)	406					461(5)	51N	51N	80
	411	43N	43N	464	406						51N	51N	++

* — 410400 and 410401 circuit cards are in position 1 and 2.
All circuit card numbers are preceeded by 410.
\+ — Standard PROM version — see Installation Section 582-200-201.
++ — Standard EPROM version — see Installation Section 582-200-201.

SCC — Controller Arrangement Form
LINE CODE: ASCII ☐ EBCDIC ☐
USOC: 4TT
HANDLES: Up To 4-DCCs

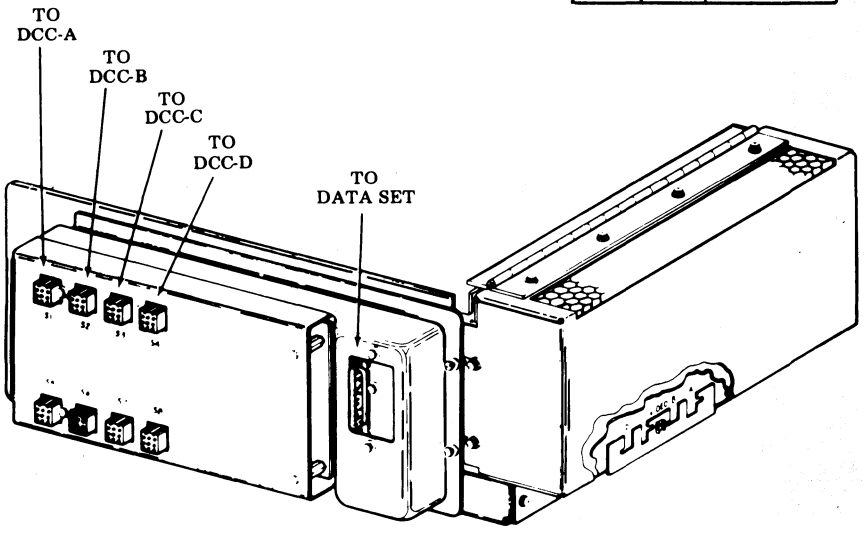


SCC — Controller Arrangement Form
HANDLES: Up To 4-DCCs

CARD POSITION	I/O SOCKET	STATION WORK SHEET	DEVICE ADDRESS *
7	S1	DCC-A	SP A B C D E
7	S2	DCC-B	F G H I [•
7	S3	DCC-C	< (+ ! & J
7	S4	DCC-D	K L M N O P
3	DS	DATA SET	

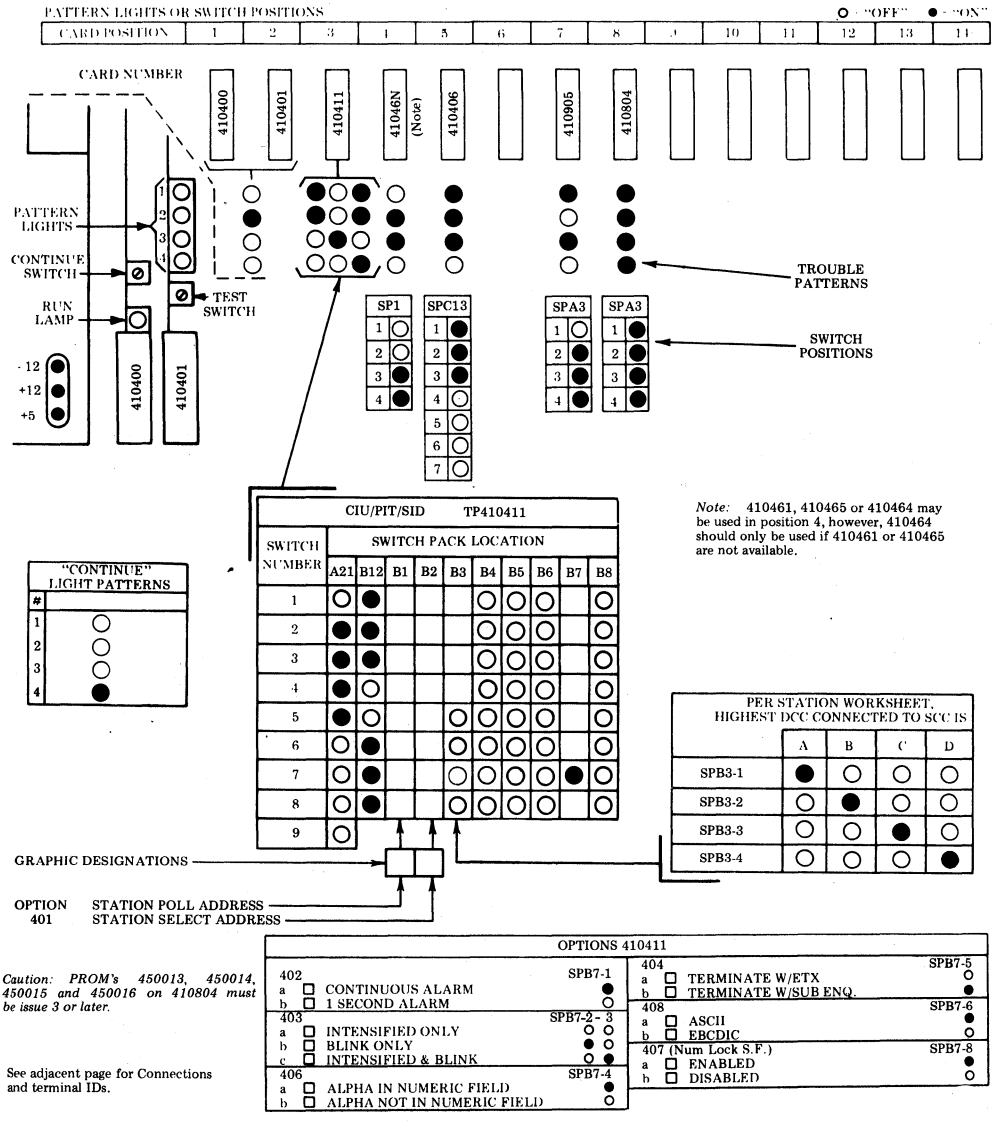
*ASCII and EBCDIC graphics are the same, except for

ASCII	EBCDIC
[	¢ (¬) **
]	! (!)



**Characters in parentheses are displayed as the device addresses in local test when using EBCDIC line code.

SCC -- Controller Arrangement Form
LINE CODE: ASCII EBCDIC ☐
USOC: 4TT
HANDLES: Up To 4-DCCs



Note: 410461, 410465 or 410464 may be used in position 4, however, 410464 should only be used if 410461 or 410465 are not available.

PER STATION WORKSHEET, HIGHEST DCC CONNECTED TO SCC IS

	A	B	C	D
SPB3-1	●	O	O	O
SPB3-2	O	●	O	O
SPB3-3	O	O	●	O
SPB3-4	O	O	O	●

OPTIONS 410411

402		SPB7-1
a ☐	CONTINUOUS ALARM	●
b ☐	1 SECOND ALARM	O
403		SPB7-2 - 3
a ☐	INTENSIFIED ONLY	O O
b ☐	BLINK ONLY	● O
c ☐	INTENSIFIED & BLINK	O ●
406		SPB7-4
a ☐	ALPHA IN NUMERIC FIELD	●
b ☐	ALPHA NOT IN NUMERIC FIELD	O
404		SPB7-5
a ☐	TERMINATE W/ETX	O
b ☐	TERMINATE W/SUB ENQ.	●
408		SPB7-6
a ☐	ASCII	●
b ☐	EBCDIC	O
407 (Num Lock S.F.)		SPB7-8
a ☐	ENABLED	●
b ☐	DISABLED	O

Caution: PROM's 450013, 450014, 450015 and 450016 on 410804 must be issue 3 or later.

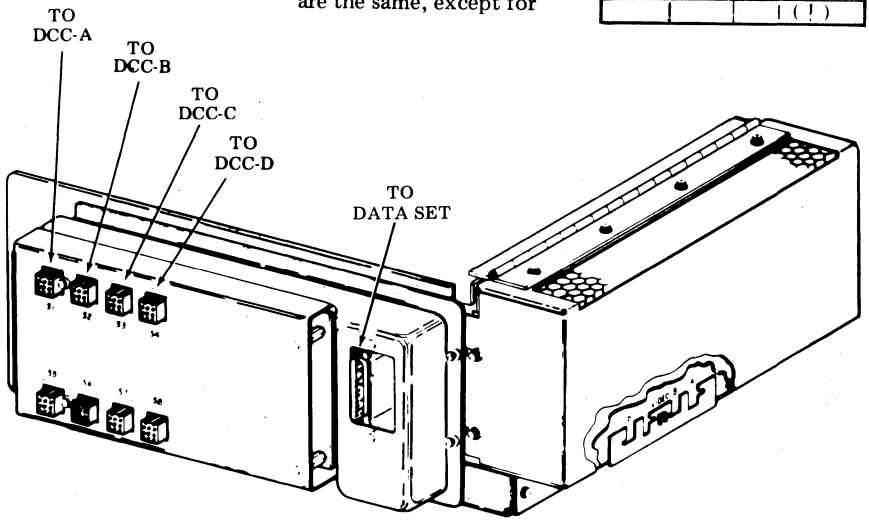
See adjacent page for Connections and terminal IDs.

SCC -- Controller Arrangement Form
HANDLES: Up To 4-DCCs

CARD POSITION	I/O SOCKET	STATION WORK SHEET	DEVICE ADDRESS *
5	S1	DCC-A	Sp A B C D E
5	S2	DCC-B	F G H I [.
5	S3	DCC-C	< (+ ! & J
5	S4	DCC-D	K L M N O P
3	DS	DATA SET	

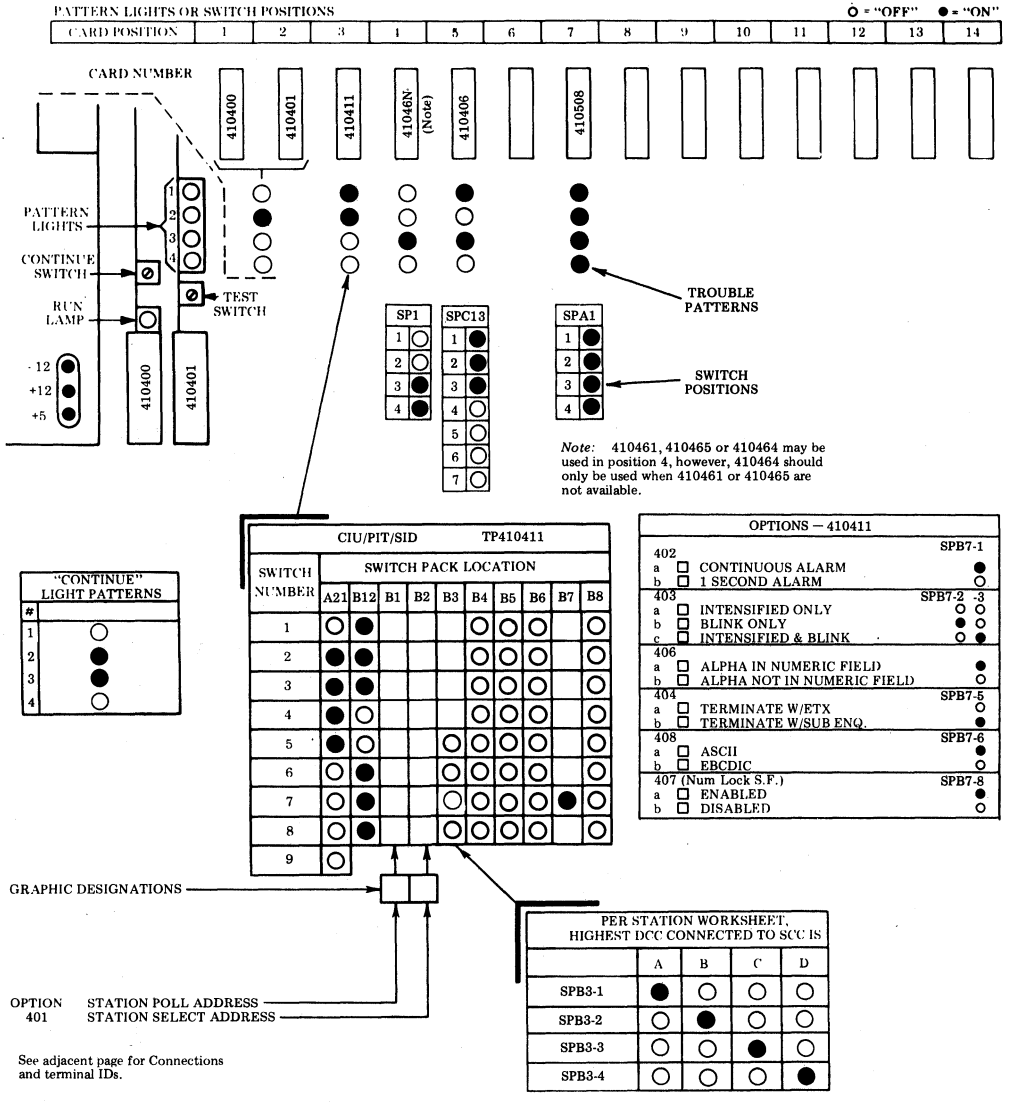
*ASCII and EBCDIC graphics are the same, except for

ASCII	EBCDIC
[	¢ (¬) **
¦	¦ (!)



**Characters in parentheses are displayed as the device addresses in local test when using EBCDIC line code.

SCC -- Controller Arrangement Form
LINE CODE: ASCII EBCDIC☐
USOC: 4TT
HANDLES: Up To 4-DCCs



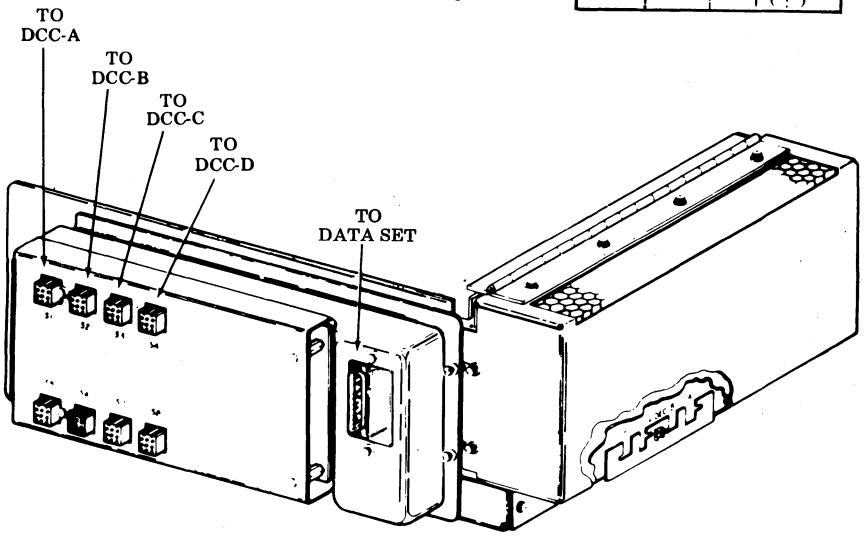
See adjacent page for Connections and terminal IDs.

SCC — Controller Arrangement Form
HANDLES: Up To 4-DCCs

CARD POSITION	I/O SOCKET	STATION WORK SHEET	DEVICE ADDRESS *
5	S1	DCC-A	Sp A B C D E
5	S2	DCC-B	F G H I [•
5	S3	DCC-C	< (+ ! & J
5	S4	DCC-D	K L M N O P
3	DS	DATA SET	

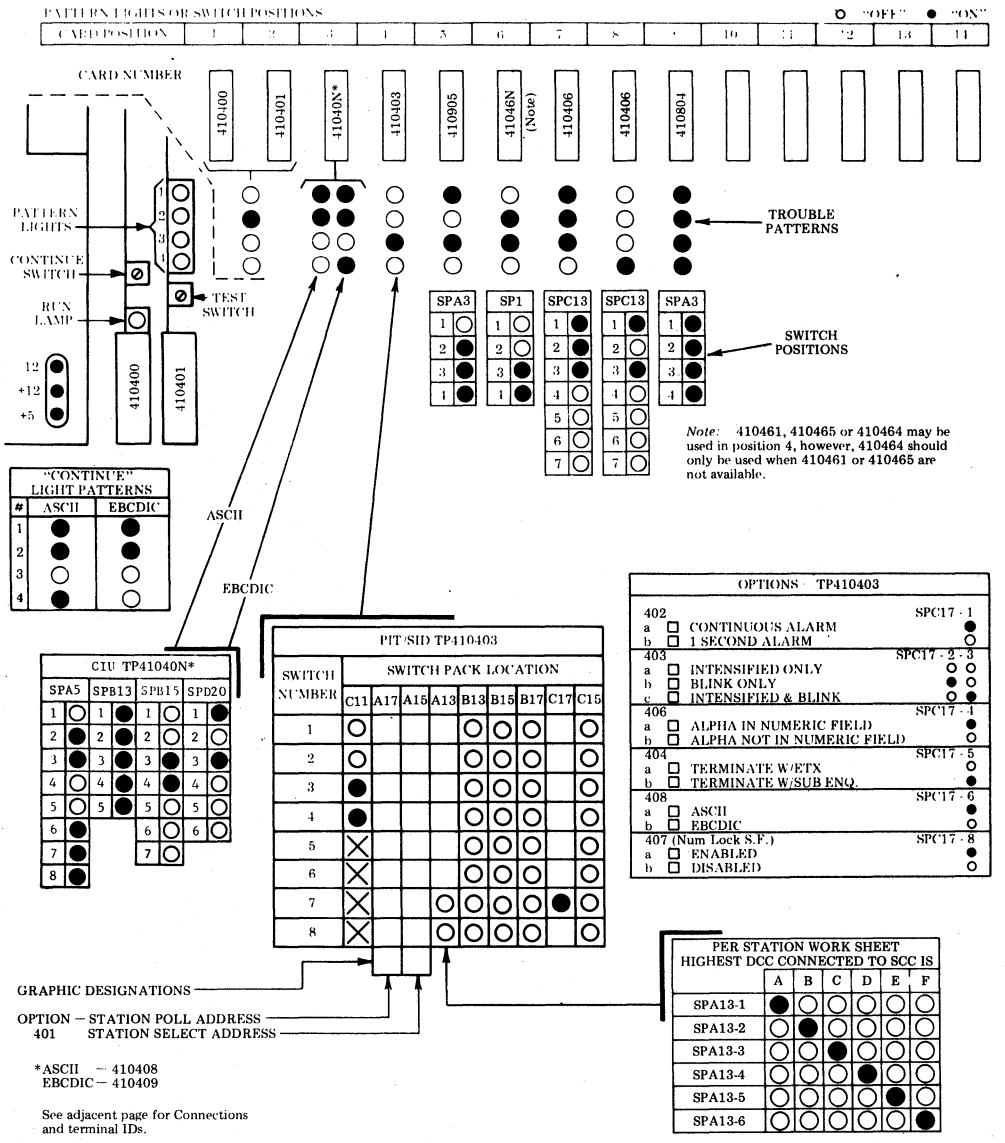
*ASCII and EBCDIC graphics are the same, except for

ASCII	EBCDIC
[	¢ (¬) **
¦	¦ (!)



**Characters in parentheses are displayed as the device addresses in local test when using EBCDIC line code.

SCC — Controller Arrangement Form
LINE CODE: ASCII ☐ EBCDIC ☐
USOC: 4TT
HANDLES: Up To 6-DCCs

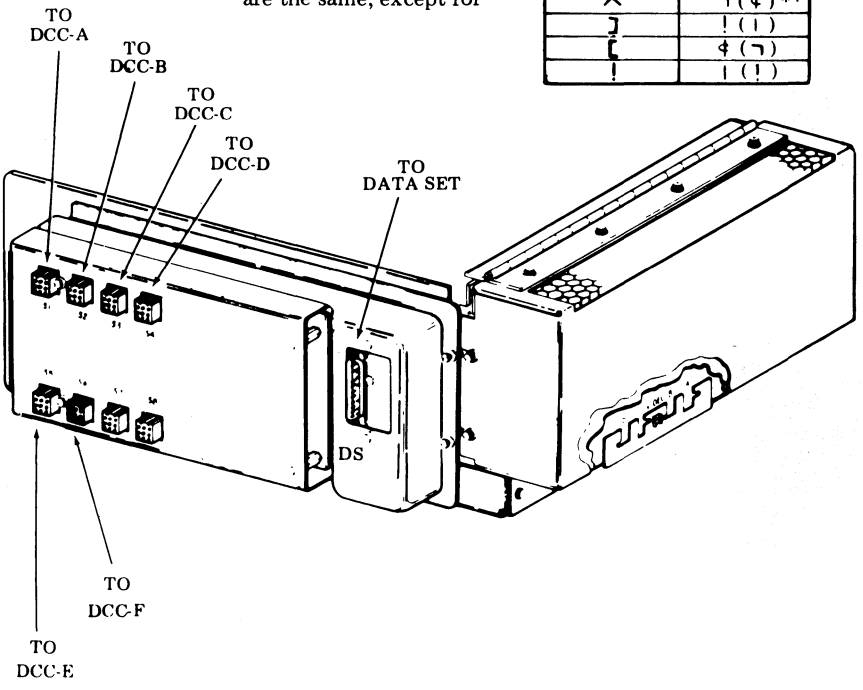


SCC -- Controller Arrangement Form
HANDLES: Up To 6-DCCs

CARD POSITION	I/O SOCKET	STATION WORK SHEET	DEVICE ADDRESS*
3	DS	DATA SET	
7	S1	DCC-A	SP A B C D E
7	S2	DCC-B	F G H I [.
7	S3	DCC-C	< (+ ! & J
7	S4	DCC-D	K L M N O P
8	S5	DCC-E	Q R] $ *)
8	S6	DCC-F	; ^ - / S T

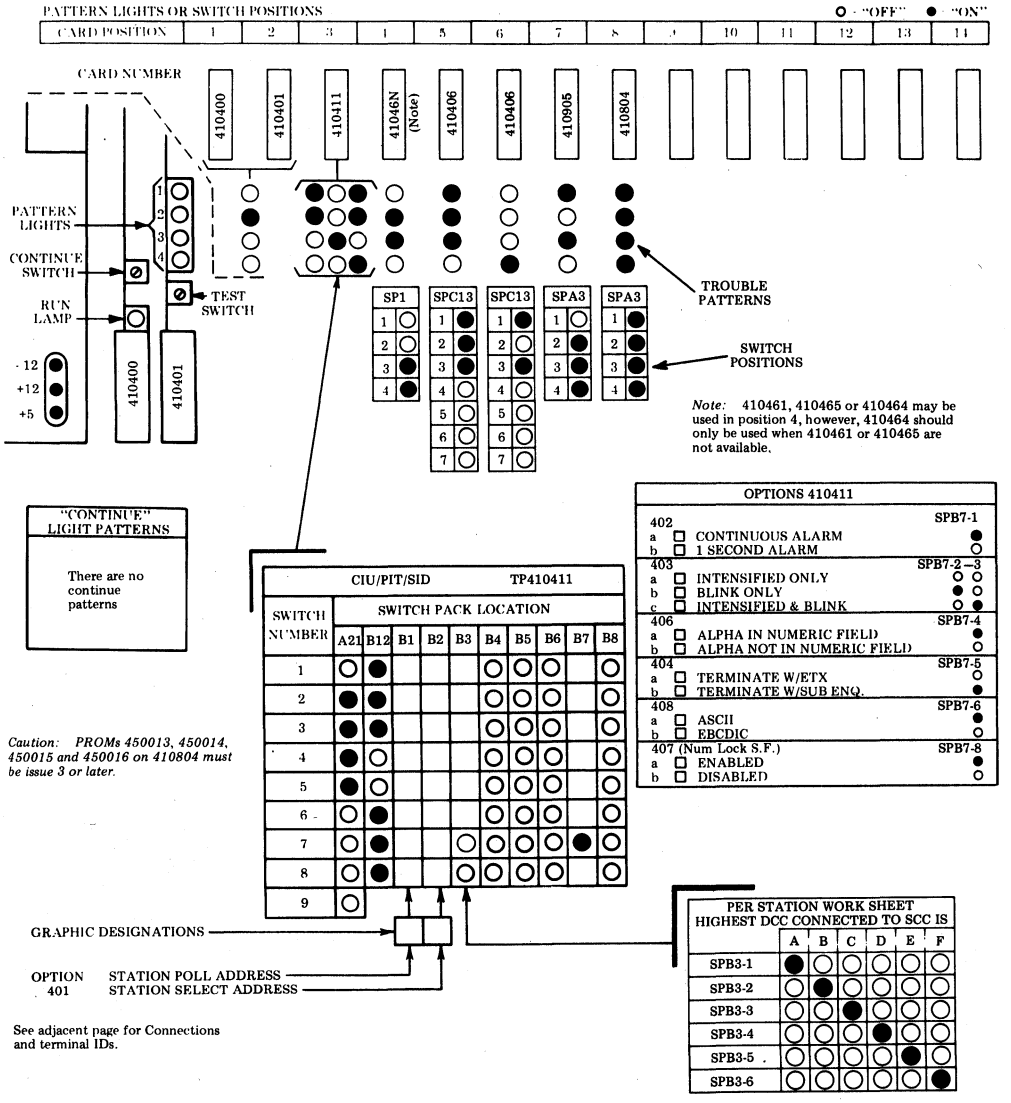
*ASCII and EBCDIC graphics are the same, except for

ASCII	EBCDIC
^	¬ (¢)**
]	! (|)
[	¢ (¬)
!	| (!)



**Characters in parentheses are displayed as the device addresses in local test when using EBCDIC line code.

SCC — Controller Arrangement Form
LINE CODE: ASCII☐ EBCDIC☐
USOC: 4TT
HANDLES: Up To 6-DCCs



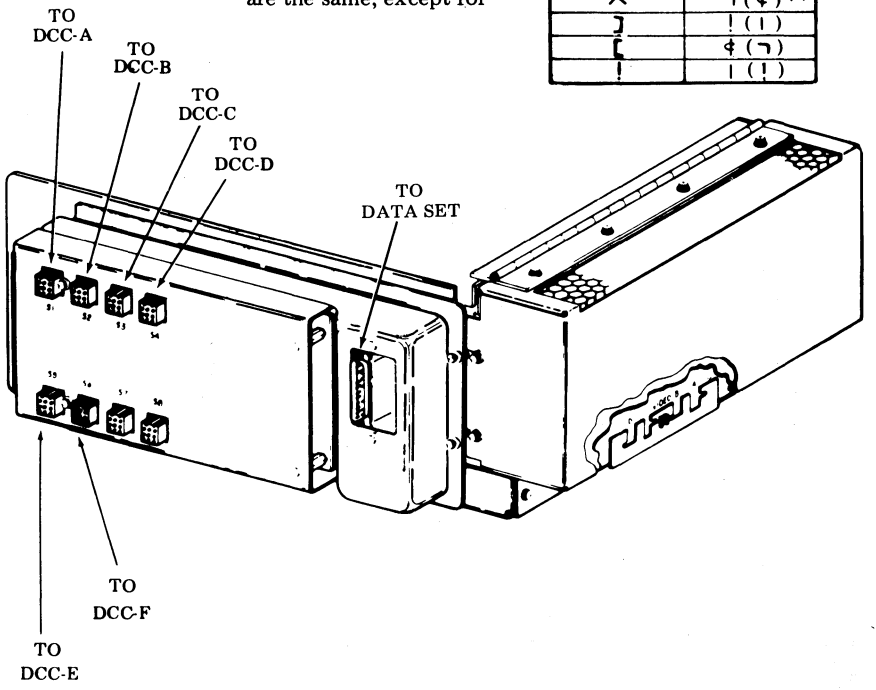
See adjacent page for Connections and terminal IDs.

SCC — Controller Arrangement Form
HANDLES: Up to 6-DCCs

CARD POSITION	I/O SOCKET	STATION WORK SHEET	DEVICE ADDRESS *
3	DS	DATA SET	
5	S1	DCC-A	SP A B C D E
5	S2	DCC-B	F G H I [.
5	S3	DCC-C	< (+ ! & J
5	S4	DCC-D	K L M N O P
6	S5	DCC-E	Q R] $ *)
6	S6	DCC-F	; ^ - / S T

*ASCII and EBCDIC graphics are the same, except for

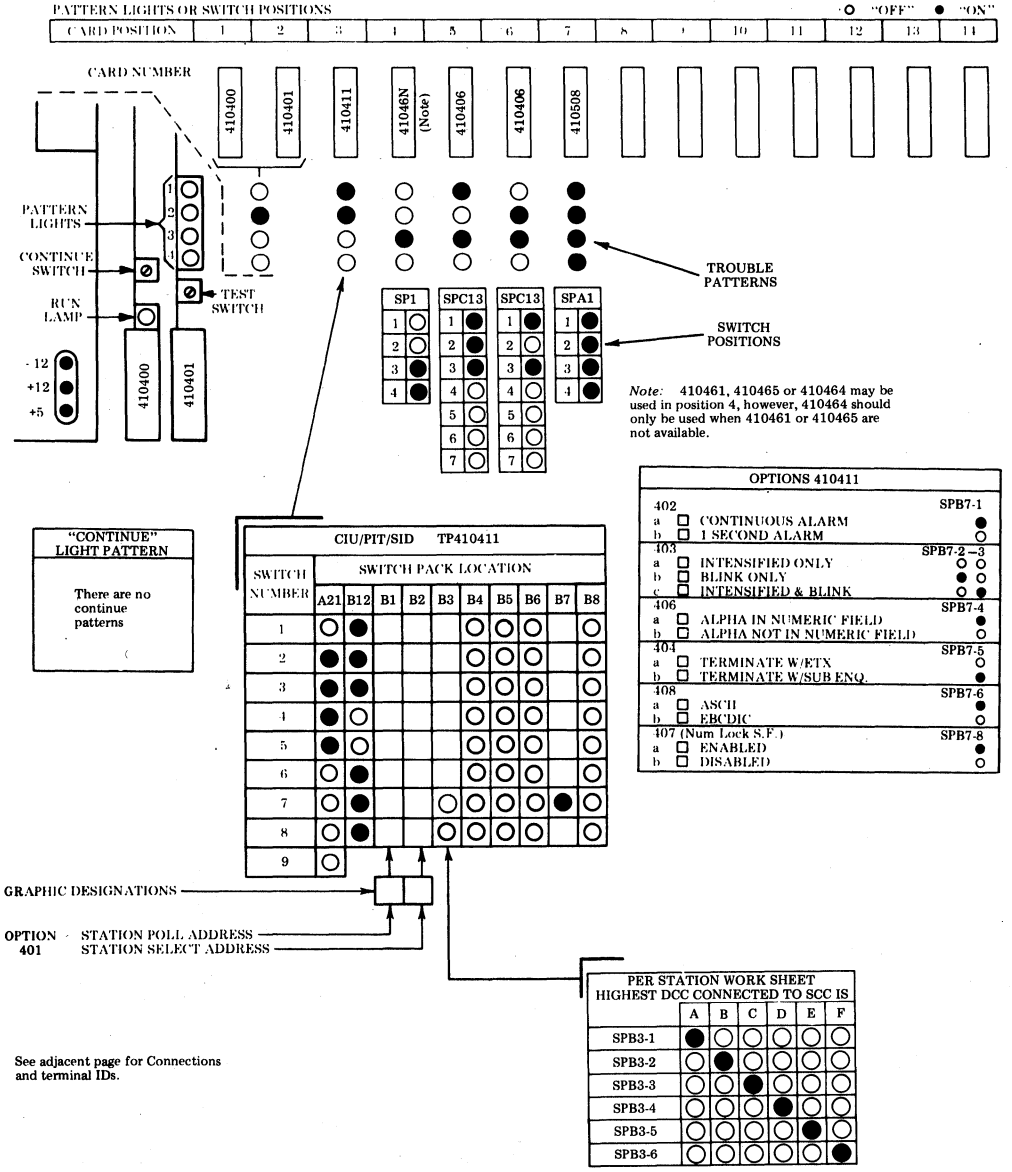
ASCII	EBCDIC
^	¬ (¢)**
]	! (	)
[	¢ (¬)
!		(!)



**Characters in parentheses are displayed as the device addresses in local test when using EBCDIC line code.

SCC — Controller Arrangement Form

LINE CODE: ASCII ☐ EBCDIC ☐
USOC: 4TT
HANDLES: Up To 6-DCCs



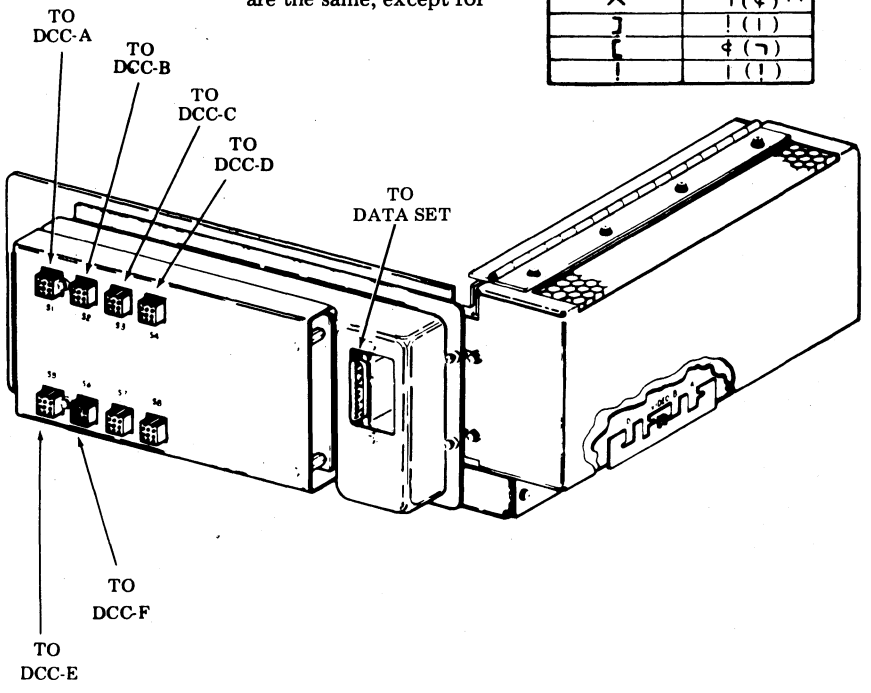
See adjacent page for Connections and terminal IDs.

SCC — Controller Arrangement Form
HANDLES: Up to 6-DCCs

CARD POSITION	I/O SOCKET	STATION WORK SHEET	DEVICE ADDRESS *
3	DS	DATA SET	
5	S1	DCC-A	SP A B C D E
5	S2	DCC-B	F G H I [.
5	S3	DCC-C	< (+ ! & J
5	S4	DCC-D	K L M N O P
6	S5	DCC-E	Q R] $ *)
6	S6	DCC-F	; ^ - / S T

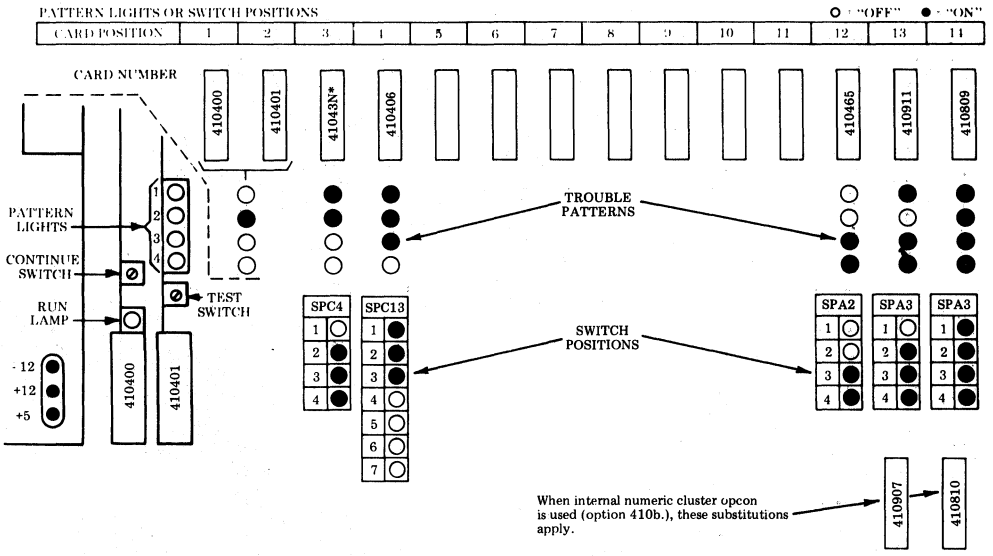
*ASCII and EBCDIC graphics are the same, except for

ASCII	EBCDIC
^	¬ (¢)**
]	! (	)
[	¢ (¬)
!		(!)



**Characters in parentheses are displayed as the device addresses in local test when using EBCDIC line code.

DCC — Controller Arrangement Form
DCC: A ☐ B ☐ C D ☐ E ☐ F ☐
USOC: 4TV + (4TOX+ OR 4TPX+)
HANDLES: 1 KD & 1 PTR (Not Print Local)



"CONTINUE" LIGHT PATTERNS

#	
1	○●○○●
2	○○●○●
3	●●●○○
4	○○○●●

PRINTER OPTIONS	
PRINTER I/O SOCKET	S7
Friction Feed	
Tractor Feed 80 Col	
Tractor Feed 132 Col	
17. Specify Right Margin	
Specify Left Margin	
18.a. No Paper Feed Out	
18.b. Paper FO on "RM" Loss	
18.c. Paper FO on "RM" Loss and ETX	
19.d. 96 Character Set	
19.e. 64 Character Set	
19.f. Ext. ASCII Set	
20.a. Single LF	
20.b. Double LF	
21.a. Lower and Upper Case Print	
21.b. Lower Case Prints as Upper Case	
22.a. Lower Case Prints as Error	
22.b. Lower Case Prints as Upper Case	
39.a. Forms on	
39.b. Forms off	
48.a. Paper Out Not Gated W/FF	
48.b. Paper Out Gated W/FF	

*41043N — Any D I/O circuit card

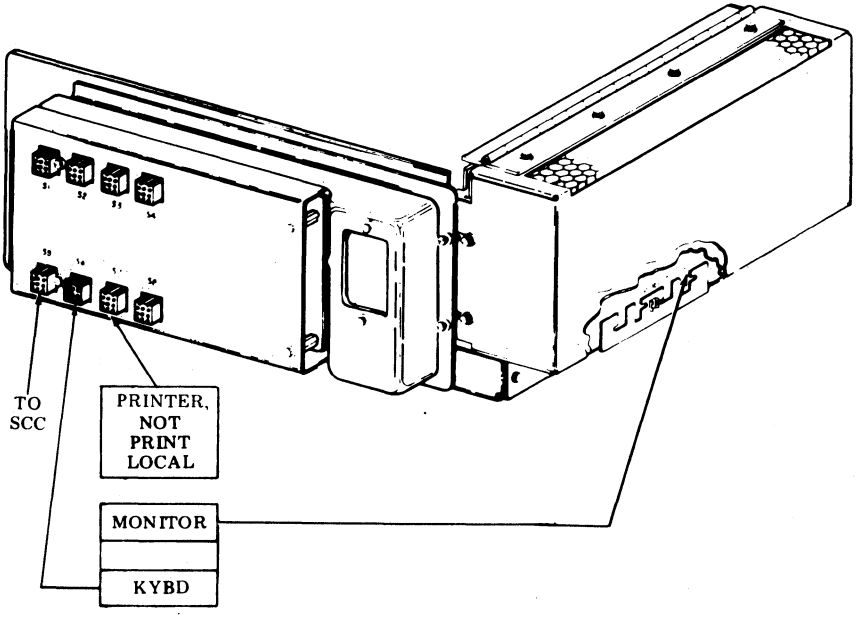
See adjacent page for connections and device addresses.

DCC -- Controller Arrangement Form
HANDLES: 1-KD & 1-PTR (Not Print Local)

CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
4	S5	STATION C/C (SCC)	DCC ⟶	A	B	C	D	E	F
4 & 3	S6 & A	KEYBOARD/DISPLAY	DEVICE ROW 1	Sp	F	<	K	Q	;
4	S7	PRINTER (N LOC)	DEVICE ROW 2	A	G	(	L	R	^

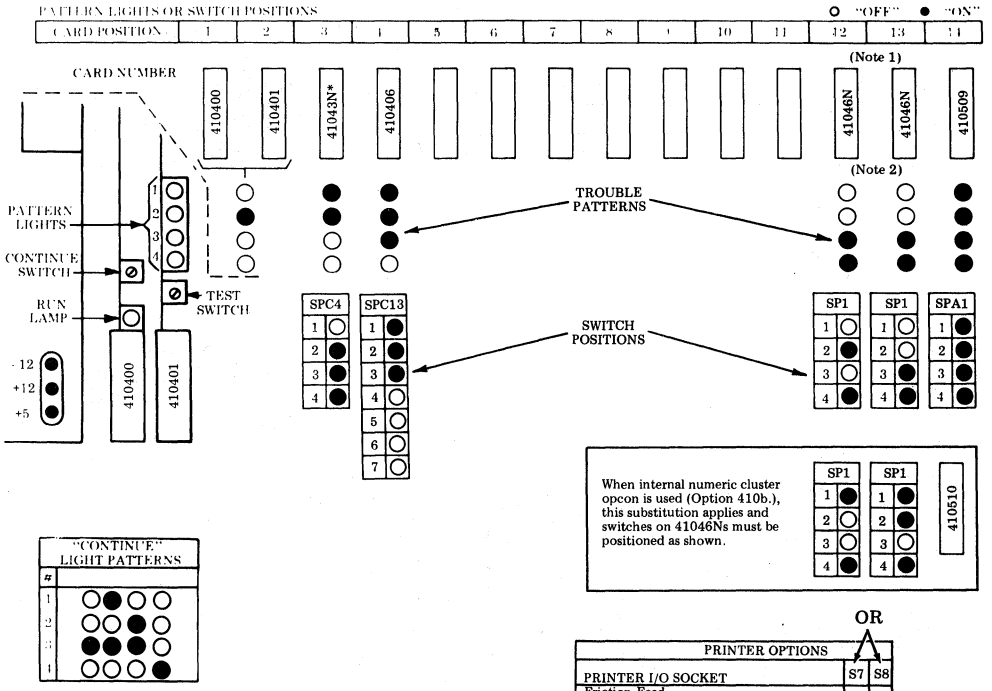
*ASCII and EBCDIC graphics are the same, except for

ASCII	EBCDIC
^	¬ (¢)**



**Character in parentheses is displayed as the device address in local test when using EBCDIC line code.

DCC — Controller Arrangement Form
DCC: A ☐ B ☐ C ☐ D ☐ E ☐ F ☐
USOC: 4TV+ (4TOX+ OR 4TPX+)
HANDLES: 1 KD & Up To 1 PTR (1 Print Local) (See Note.)



"CONTINUE" LIGHT PATTERNS

#	
1	○●○○
2	○○●○
3	●●●○
4	○○○●

OR

PRINTER OPTIONS		
PRINTER I/O SOCKET	S7	S8
Friction Feed		
Tractor Feed 80 Col		
Tractor Feed 132 Col		
17. Specify Right Margin		
Specify Left Margin		
18.a. No Paper Feed Out		
18.b. Paper FO on "RM" Loss		
18.c. Paper FO on "RM" Loss and ETX		
19.d. 96 Character Set		
19.e. 64 Character Set		
19.f. Ext. ASCII Set		
20.a. Single LF		
20.b. Double LF		
21.a. Lower and Upper Case Print		
21.b. Lower Case Prints as Upper Case		
22.a. Lower Case Prints as Error		
22.b. Lower Case Prints as Upper Case		
39.a. Forms on		
39.b. Forms off		
48.a. Paper Out Not Gated W/FF		
48.b. Paper Out Gated W/FF		

Note 1: Positions 12 and 13 may contain 2-410465s or 2-410461s or 1-410465 and 1-410461.

Note 2: Same trouble pattern for both 41046Ns — if pattern occurs, replace 41046Ns one at a time until pattern no longer appears.

*41043N — Any D I/O circuit card

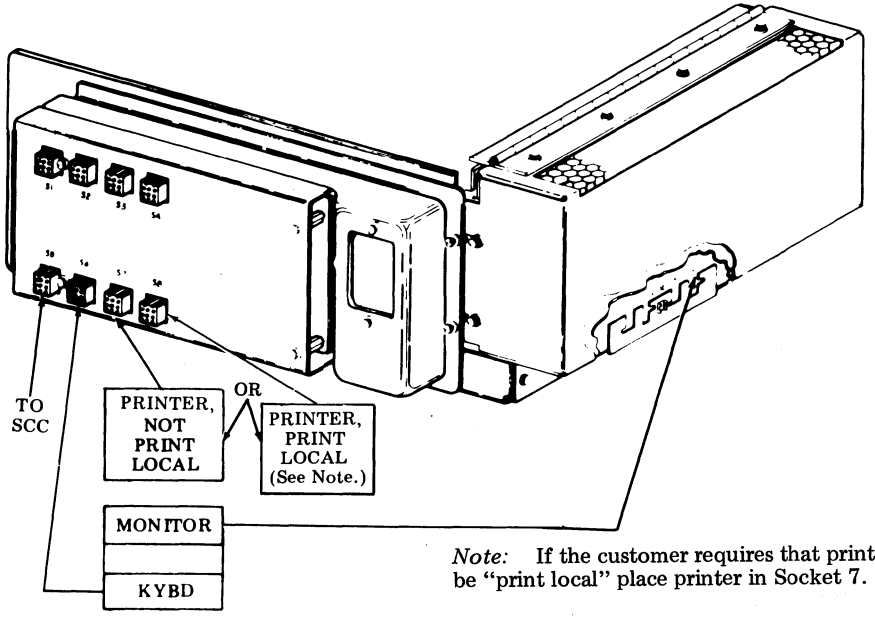
See adjacent page for Connections and device addresses.

DCC — Controller Arrangement Form
HANDLES: 1 KD & Up To 1 PTR (1 Print Local) (See Note.)

CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
4	S5	STATION C/C (SCC)	DCC ⟶	A	B	C	D	E	F
4 & 3	S6 & A	KEYBOARD/DISPLAY	DEVICE ROW 1	SP	F	<	K	Q	;
4	S7	PRINTER (N LOC)	DEVICE ROW 2	A	G	(	L	R	^
4	S8	PRINTER (LOC)	DEVICE ROW 3	B	H	+	M	]	–

*ASCII and EBCDIC graphics are the same, except for

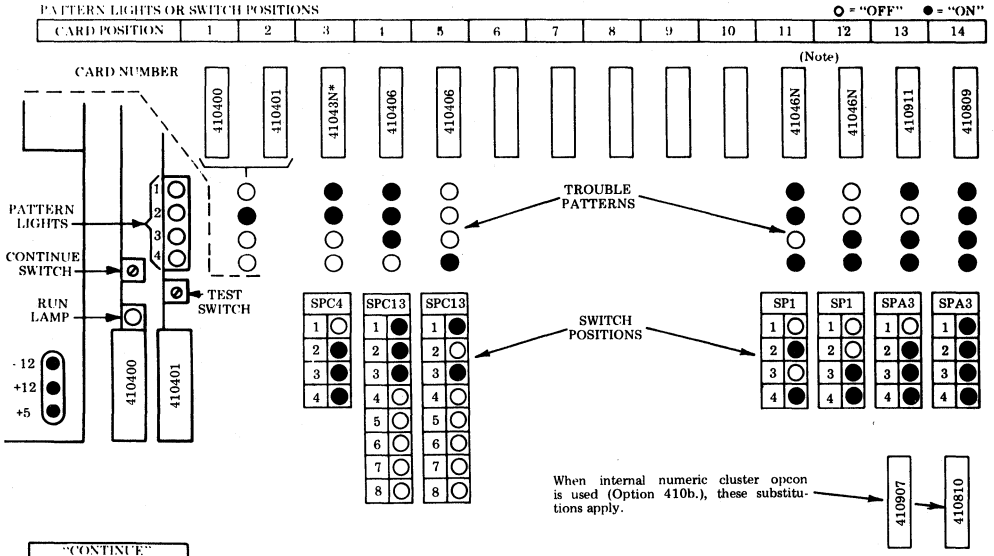
ASCII	EBCDIC
^	¬ (¢)**
]	! (|)

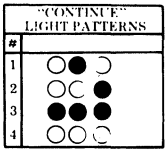


Note: If the customer requires that printer not be "print local" place printer in Socket 7.

**Character in parentheses is displayed as the device address in local test when using EBCDIC line code.

DCC — Controller Arrangement Form
DCC: A ☐ B ☐ C ☐ D ☐ E ☐ F ☐
USOC: 4TV+ (4TOX+ OR 4TPX+)
HANDLES: 1 KD & Up To 5 PTRs (1 Print Local)





Note: Positions 11 and 12 may contain 2 - 410465s or 2 - 410461s or 1 - 410465 and 1 - 410461.

PRINTER OPTIONS					
PRINTER I/O SOCKET	S7	S8	S1	S2	S3
Friction Feed					
Tractor Feed 80 Col					
Tractor Feed 132 Col					
17. Specify Right Margin					
Specify Left Margin					
18.a. No Paper Feed Out					
18.b. Paper FO on "RM" Loss					
18.c. Paper FO on "RM" Loss and ETX					
19.d. 96 Character Set					
19.e. 64 Character Set					
19.f. Ext. ASCII Set					
20.a. Single LF					
20.b. Double LF					
21.a. Lower and Upper Case Print					
21.b. Lower Case Prints as Upper Case					
22.a. Lower Case Prints as Error					
22.b. Lower Case Prints as Upper Case					
39.a. Forms on					
39.b. Forms off					
48.a. Paper Out Not Gated W/FF					
48.b. Paper Out Gated W/FF					

*41043N — any D I/O circuit card

See adjacent page for Connections and device addresses.

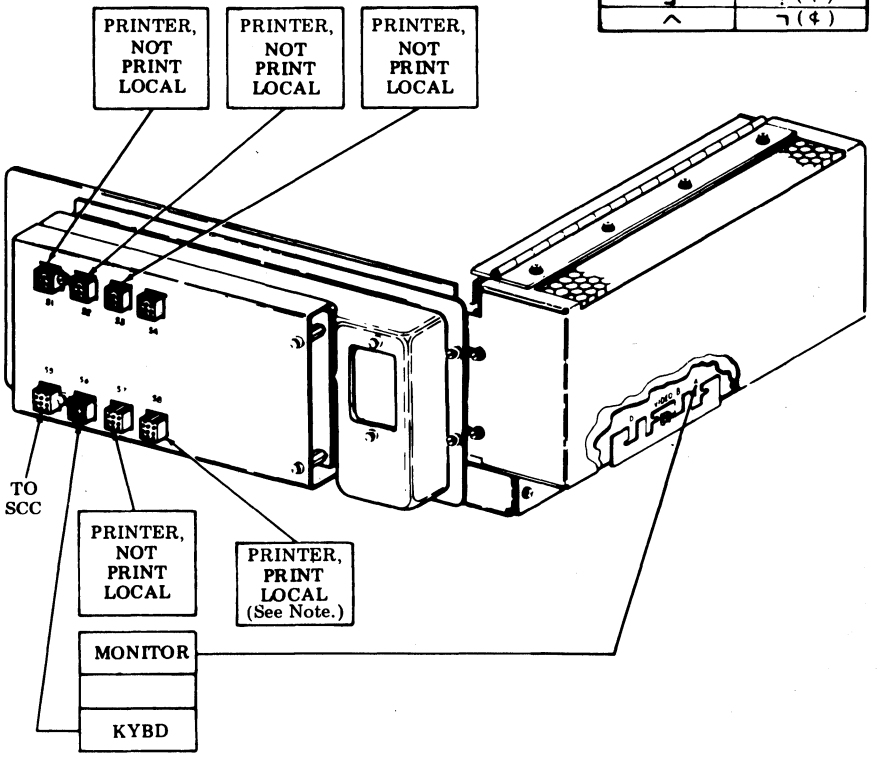
DCC — Controller Arrangement Form
HANDLES: 1-KD & Up To 5-PTRs (1 Print Local)

CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
4	S5	STATION C/C (SCC)	DCC ⟶	A	B	C	D	E	F
4 & 3	S6 & A	KEYBOARD/DISPLAY	DEVICE ROW 1	Sp	F	<	K	Q	;
4	S7	PRINTER (N LOC)	DEVICE ROW 2	A	G	(	L	R	^
4	S8	PRINTER (LOC)	DEVICE ROW 3	B	H	+	M	¬	—
5	S1	PRINTER (N LOC)	DEVICE ROW 4	C	I	!	N	$	/
5	S2	PRINTER (N LOC)	DEVICE ROW 5	D	[	&	O	*	S
5	S3	PRINTER (N LOC)	DEVICE ROW 6	E	.	J	P	)	T

Note: If the customer requires that no printer be "print local", place a 340701 blocking key-top over the PRINT LOCAL position of the KD opcon.

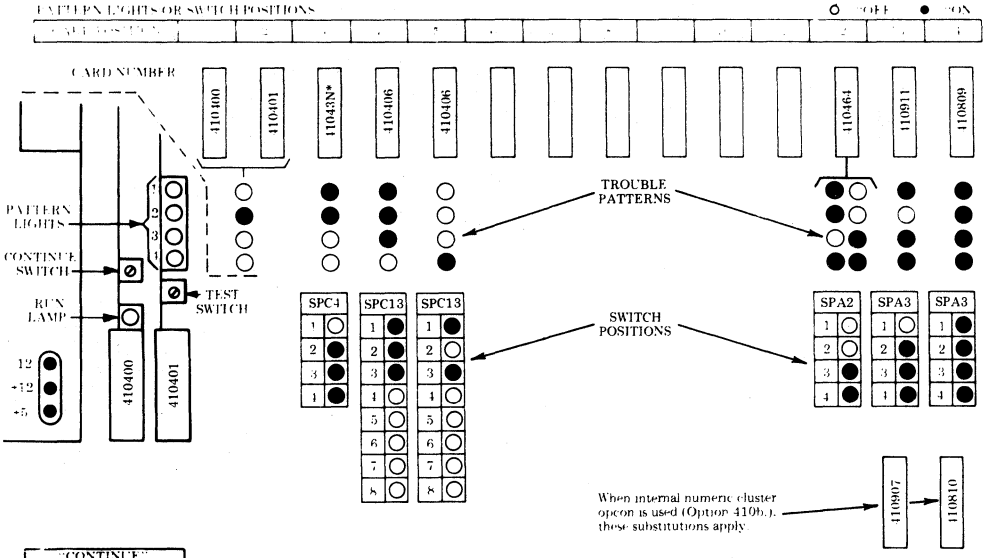
*ASCII and EBCDIC graphics are the same, except for

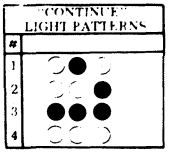
ASCII	EBCDIC
[	¢ (¬) **
!	| (!)
]	! (|)
^	¬ (¢)



**Characters in parentheses are displayed as the device addresses in local test when using EBCDIC line code.

DCC — Controller Arrangement Form
DCC: A B ☐ C ☐ D ☐ E ☐ F ☐
USOC: 4TV + (4TOX+ OR 4TPX+)
HANDLES: 1 KD & Up To 5 PTRs (1 Print Local)





PRINTER OPTIONS						
PRINTER I/O SOCKET		S7	S8	S1	S2	S3
Friction Feed						
Tractor Feed 80 Col						
Tractor Feed 132 Col						
17	Specify Right Margin					
	Specify Left Margin					
18.a.	No Paper Feed Out					
18.b	Paper FO on "RM" Loss					
18.c.	Paper FO on "RM" Loss and ETX					
19.d	96 Character Set					
19.e.	64 Character Set					
19.f.	Ext. ASCII Set					
20.a	Single LF					
20.b.	Double LF					
21.a	Lower and Upper Case Print					
21.b.	Lower Case Prints as Upper Case					
22.a.	Lower Case Prints as Error					
22.b.	Lower Case Prints as Upper Case					
39.a	Forms on					
39.b.	Forms off					
48.a.	Paper Out Not Gated W FF					
48.b	Paper Out Gated W FF					

*41043N — Any D I/O circuit card

See adjacent page for connections and device addresses.

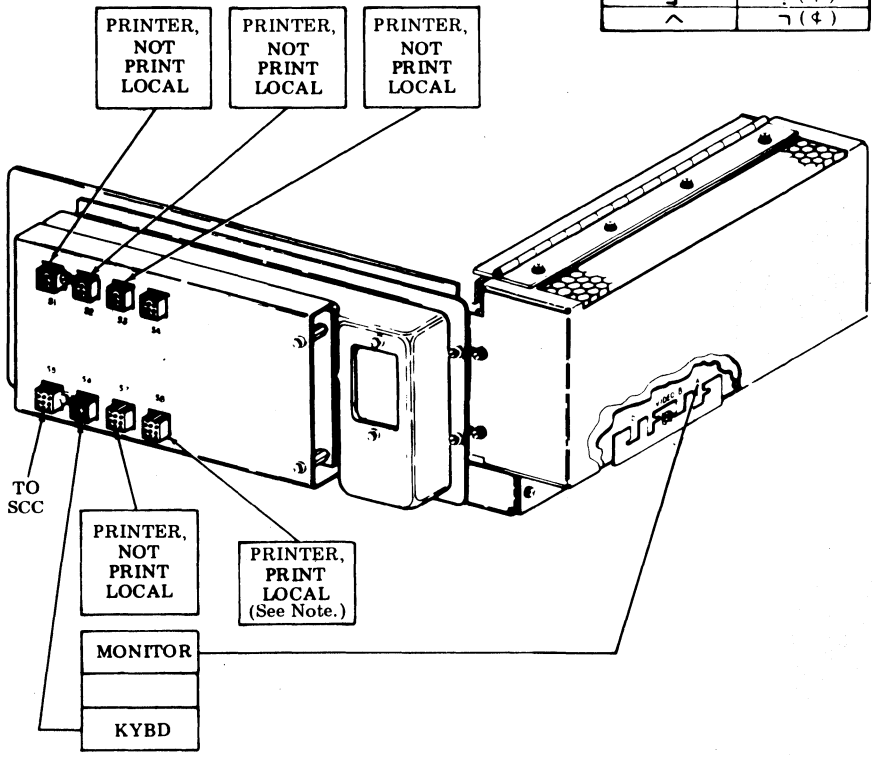
DCC -- Controller Arrangement Form
HANDLES: 1-KD & Up To 5-PTRs (1 Print Local)

CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
4	S5	STATION C/C (SCC)	DCC ⟶	A	B	C	D	E	F
4 & 3	S6 & A	KEYBOARD/DISPLAY	DEVICE ROW 1	SP	F	(	K	Q	;
4	S7	PRINTER (N LOC)	DEVICE ROW 2	A	G	(	L	R	^
4	S8	PRINTER (LOC)	DEVICE ROW 3	B	H	+	M	]	—
5	S1	PRINTER (N LOC)	DEVICE ROW 4	C	I	!	N	$	/
5	S2	PRINTER (N LOC)	DEVICE ROW 5	D	[	&	O	*	S
5	S3	PRINTER (N LOC)	DEVICE ROW 6	E	.	J	P	)	T

Note: If the customer requires that no printer be "print local", place a 340701 blocking key-top over the PRINT LOCAL position of the KD opcon.

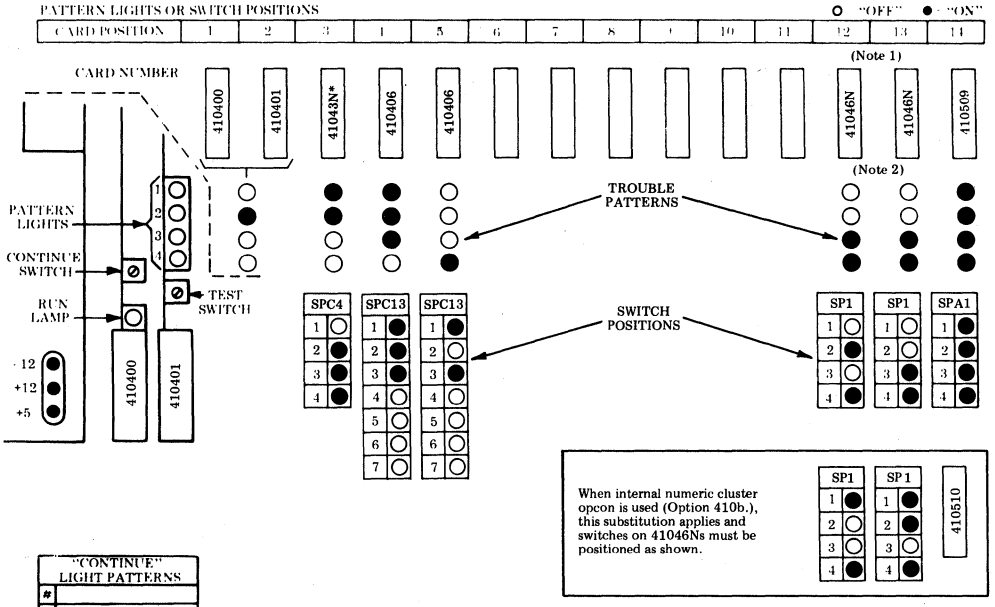
*ASCII and EBCDIC graphics are the same, except for

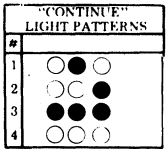
ASCII	EBCDIC
[	¢ (¬) **
!	| (!)
;	! (|)
]	¬ (¢)
^	¬ (¢)



**Characters in parentheses are displayed as the device addresses in local test when using EBCDIC line code.

DCC — Controller Arrangement Form
DCC: A☐ B☐ C☐ D☐ E☐ F☐
USOC: 4TV + (4TOX+ OR 4TPX+)
HANDLES: 1-KD & Up To 5 PTRs (1 Print Local)





Note 1: Positions 12 and 13 may contain 2-410465s or 2-410461s or 1-410465 and 1-410461.

Note 2: Same trouble pattern for both 41046Ns — if pattern occurs, replace 41046Ns one at a time until pattern no longer appears.

*41043N — Any D I/O circuit card

See adjacent page for Connections and device addresses.

PRINTER OPTIONS					
PRINTER I/O SOCKET	S7	S8	S1	S2	S3
Friction Feed					
Tractor Feed 80 Col					
Tractor Feed 132 Col					
17. Specify Right Margin					
Specify Left Margin					
18.a. No Paper Feed Out					
18.b. Paper FO on "RM" Loss					
18.c. Paper FO on "RM" Loss and ETX					
19.d. 96 Character Set					
19.e. 64 Character Set					
19.f. Ext. ASCII Set					
20.a. Single LF					
20.b. Double LF					
21.a. Lower and Upper Case Print					
21.b. Lower Case Prints as Upper Case					
22.a. Lower Case Prints as Error					
22.b. Lower Case Prints as Upper Case					
39.a. Forms on					
39.b. Forms off					
48.a. Paper Out Not Gated W/FF					
48.b. Paper Out Gated W/FF					

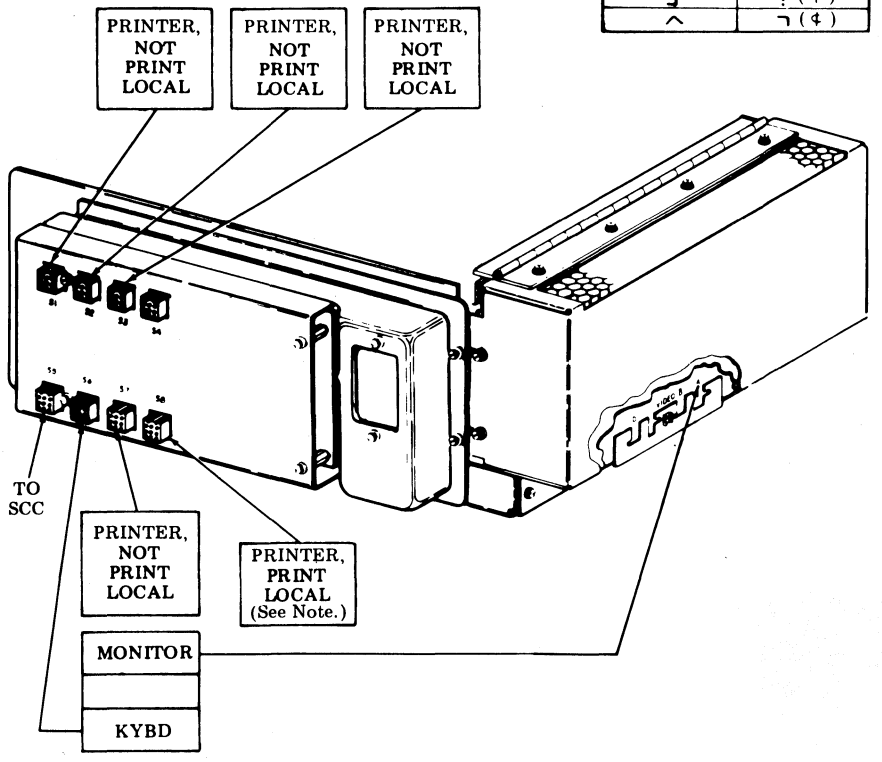
DCC — Controller Arrangement Form
HANDLES: 1-KD & Up To 5-PTRs (1 Print Local)

CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
4	S5	STATION C/C (SCC)	DCC ⟶	A	B	C	D	E	F
4 & 3	S6 & A	KEYBOARD/DISPLAY	DEVICE ROW 1	SP	F	<	K	Q	;
4	S7	PRINTER (N LOC)	DEVICE ROW 2	A	G	(	L	R	^
4	S8	PRINTER (LOC)	DEVICE ROW 3	B	H	+	M	]	—
5	S1	PRINTER (N LOC)	DEVICE ROW 4	C	I	!	N	$	/
5	S2	PRINTER (N LOC)	DEVICE ROW 5	D	[	&	O	*	S
5	S3	PRINTER (N LOC)	DEVICE ROW 6	E	.	J	P	)	T

Note: If the customer requires that no printer be "print local", place a 340701 blocking key-top over the PRINT LOCAL position of the KD opcon.

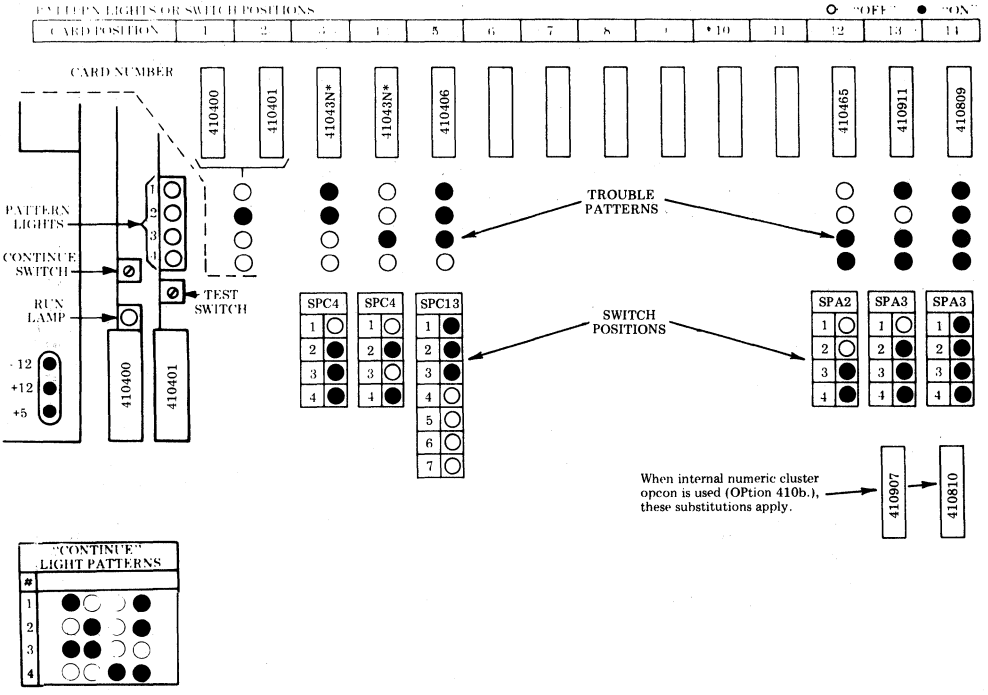
*ASCII and EBCDIC graphics are the same, except for

ASCII	EBCDIC
[	¢ (¬) **
!	| (!)
]	! (|)
^	¬ (¢)



**Characters in parentheses are displayed as the device addresses in local test when using EBCDIC line code.

DCC -- Controller Arrangement Form
DCC: A B ☐ C ☐ D ☐ E ☐ F ☐
USOC: 4TV + 2-(4TOX+ OR 4TPX+)
HANDLES: 2-KDs & 0-PTR



*41043N — Any D I/O circuit card

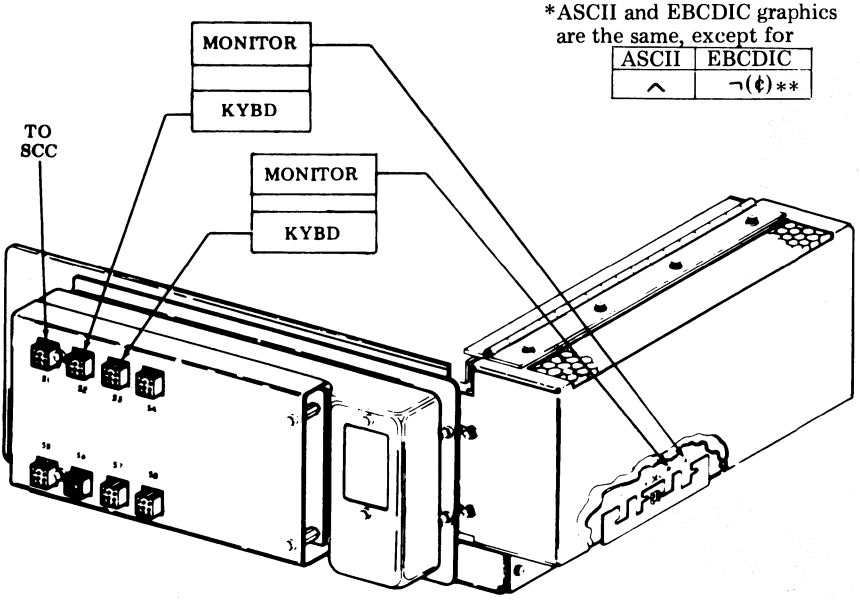
See adjacent page for connections and device addresses.

DCC — Controller Arrangement Form
HANDLES: 2-KD & 0-PTR

CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
5	S1	STATION C/C (SCC)	DCC ⟶	A	B	C	D	E	F
5 & 3	S2 & A	KEYBOARD/DISPLAY(1)	DEVICE ROW 1	Sp	F	<	K	Q	;
5 & 4	S3 & B	KEYBOARD/DISPLAY(2)	DEVICE ROW 2	A	G	(	L	R	^

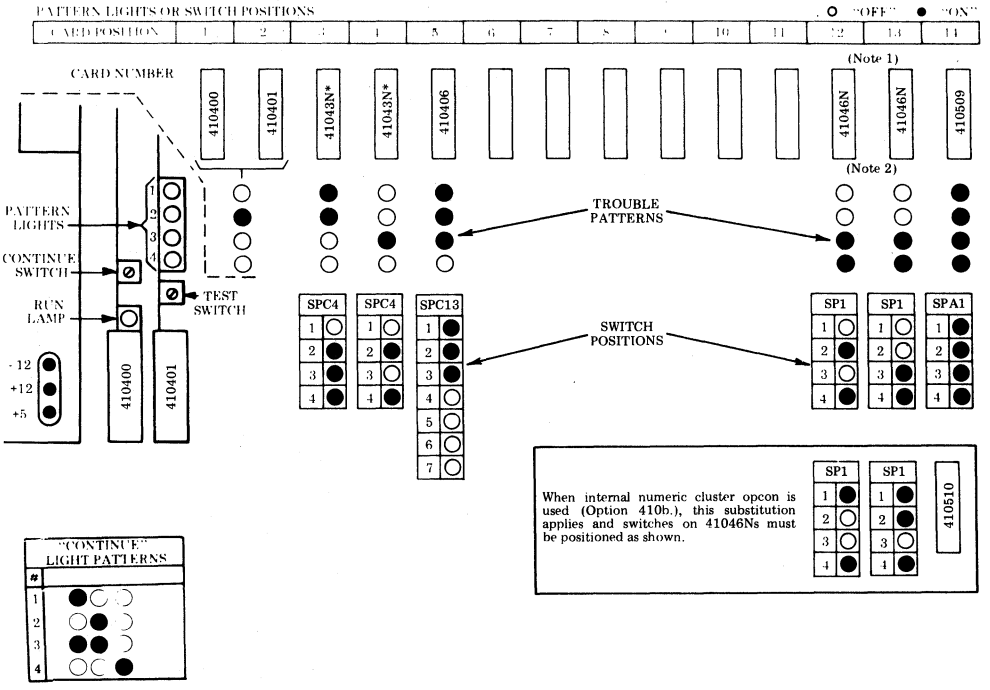
*ASCII and EBCDIC graphics are the same, except for

ASCII	EBCDIC
^	¬(¢)**



**Character in parentheses is displayed as the device address in local test when using EBCDIC line code.

DCC — Controller Arrangement Form
DCC: A ☐ B ☐ C D ☐ E ☐ F ☐
USOC: 4TV + 2-(4TOX+ OR 4TPX+)
HANDLES: 2-KD



Note 1: Positions 12 and 13 may contain 2 - 410465s or 2 - 410461s or 1 - 410465 and 1 - 410461.

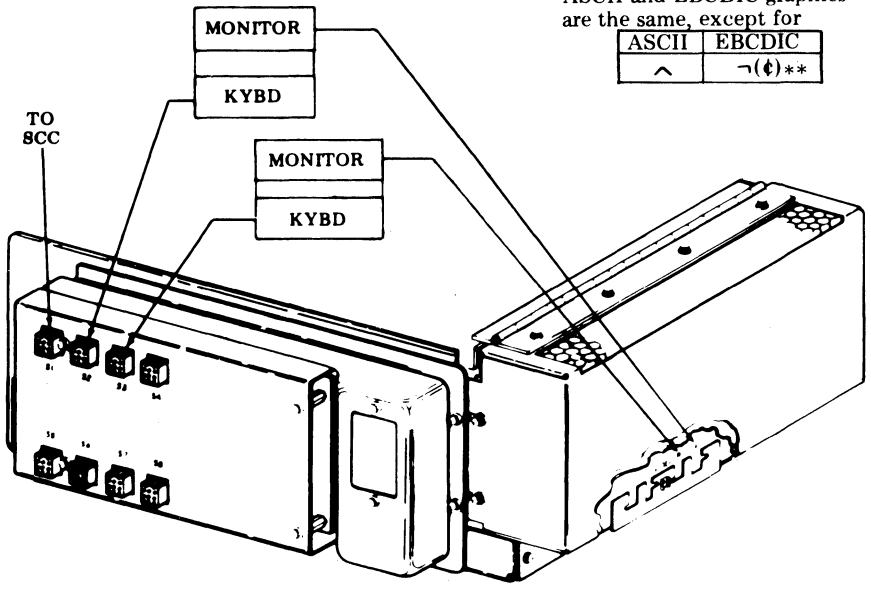
Note 2: Same trouble pattern for both 41046Ns — if pattern occurs, replace 41046Ns one at a time until pattern no longer appears.

*41043N — Any D I/O circuit card

See adjacent page for connections and device addresses.

DCC — Controller Arrangement Form
HANDLES: 2-KD

CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
5	S1	STATION C/C (SCC)	DCC ⟶	A	B	C	D	E	F
5 & 3	S2 & A	KEYBOARD/DISPLAY(1)	DEVICE ROW 1	SP	F	<	K	Q	;
5 & 4	S3 & B	KEYBOARD/DISPLAY(2)	DEVICE ROW 2	A	G	(	L	R	^



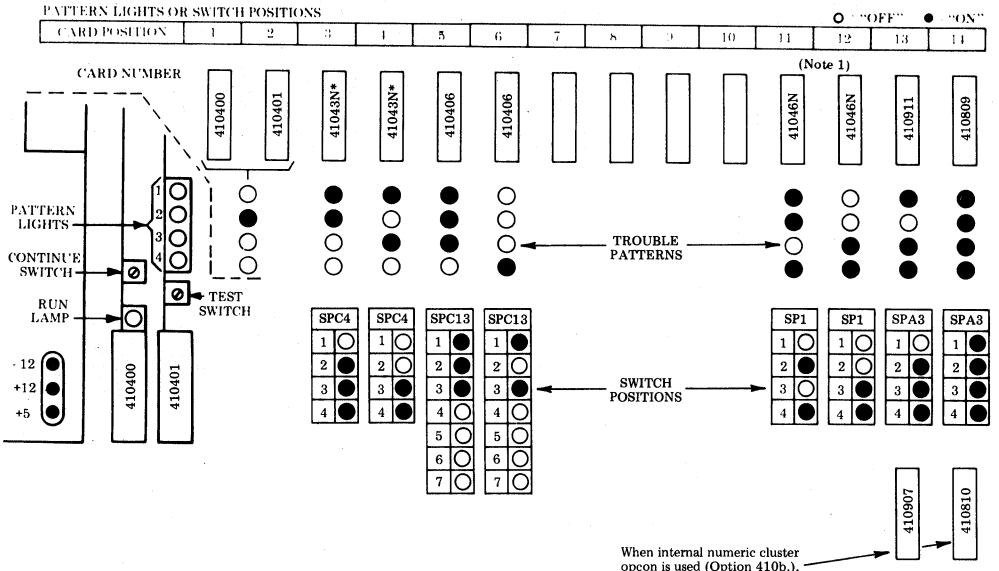
*ASCII and EBCDIC graphics are the same, except for

ASCII	EBCDIC
^	¬(¢)**

**Character in parentheses is displayed as the device address in local test when using EBCDIC line code.

DCC — Controller Arrangement Form

DCC: A B ☐ C ☐ D ☐ E ☐ F ☐
USOC: 4TV + 2-(4TOX+ OR 4TPX+)
HANDLES: 2-KDs & Up To 4-PTRs (2 Print Local)



Note 1: Positions 11 and 12 may contain 2 - 410465s or 2 - 410461s or 1 - 410465 and 1 - 410461.

Note 2: Printer associated with I/O socket S4 will be print local for KD in I/O socket S2 & A. Printer in I/O socket S7 is print local to KD in I/O socket S5 & B. If no printer is in I/O socket S7, the printer in I/O socket S4 will be print local to both KDs. See Note 3.

"CONTINUE" LIGHT PATTERNS	
#	
1	○ ○
2	○ ●
3	● ●
4	○ ○

PRINTER OPTIONS				
PRINTER I/O SOCKET	S3	S4	S6	S7
Friction Feed				
Tractor Feed 80 Col				
Tractor Feed 132 Col				
17. Specify Right Margin				
Specify Left Margin				
18.a. No Paper Feed Out				
18.b. Paper FO on "RM" Loss				
18.c. Paper FO on "RM" Loss and ETX				
19.d. 96 Character Set				
19.e. 64 Character Set				
19.f. Ext. ASCII Set				
20.a. Single LF				
20.b. Double LF				
21.a. Lower and Upper Case Print				
21.b. Lower Case Prints as Upper Case				
22.a. Lower Case Prints as Error				
22.b. Lower Case Prints as Upper Case				
39.a. Forms on				
39.b. Forms off				
48.a. Paper Out Not Gated W/FF				
48.b. Paper Out Gated W/FF				

*41043N — ANY D I/O CIRCUIT CARD

See adjacent page for Connections and Device Addresses.

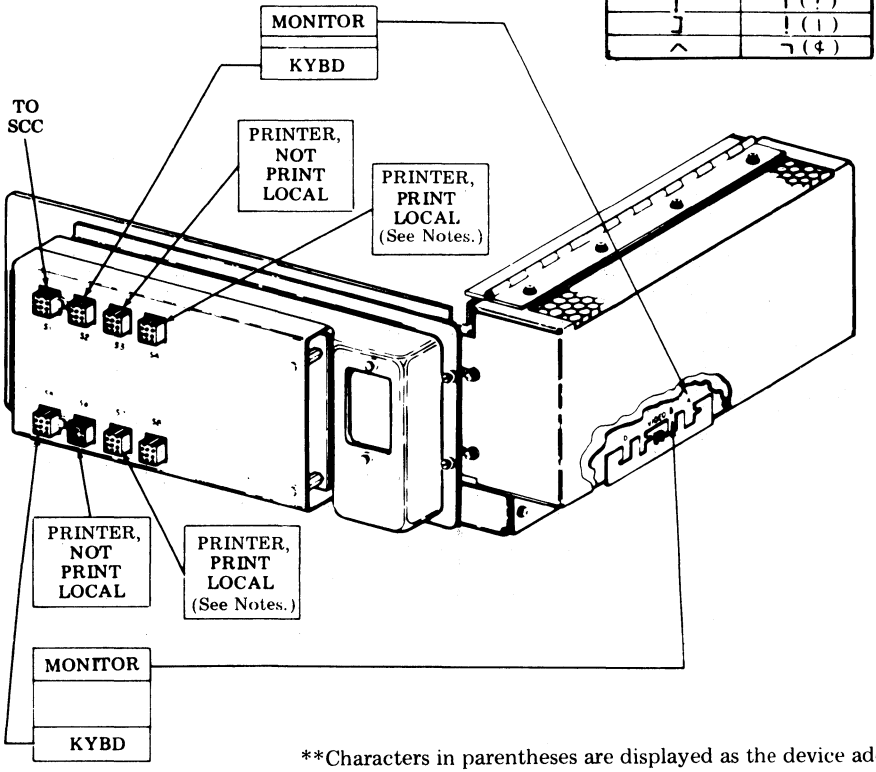
DCC — Controller Arrangement Form
HANDLES: 2-KDs & Up To 4-PTRs (2 Print Local)

CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
5	S1	STATION C/C (SCC)	DCC ⟶	A	B	C	D	E	F
5 & 3	S2 & A	KEYBOARD/DISPLAY	DEVICE ROW 1	Sp	F	<	K	Q	;
5	S3	PRINTER (N LOC)	DEVICE ROW 2	A	G	(	L	R	^
5	S4	PRINTER (NOTES)	DEVICE ROW 3	B	H	+	M	]	—
6 & 4	S5 & B	KEYBOARD/DISPLAY	DEVICE ROW 4	C	I	!	N	$	/
6	S6	PRINTER (N LOC)	DEVICE ROW 5	D	[	&	O	*	S
6	S7	PRINTER (NOTES)	DEVICE ROW 6	E	.	J	P	)	T

Note 3: If the customer requires that print local operation be prohibited from both KDs or just one KD, place a 340701 blocking keytop over the PRINT LOCAL position of the appropriate KD opcon(s).

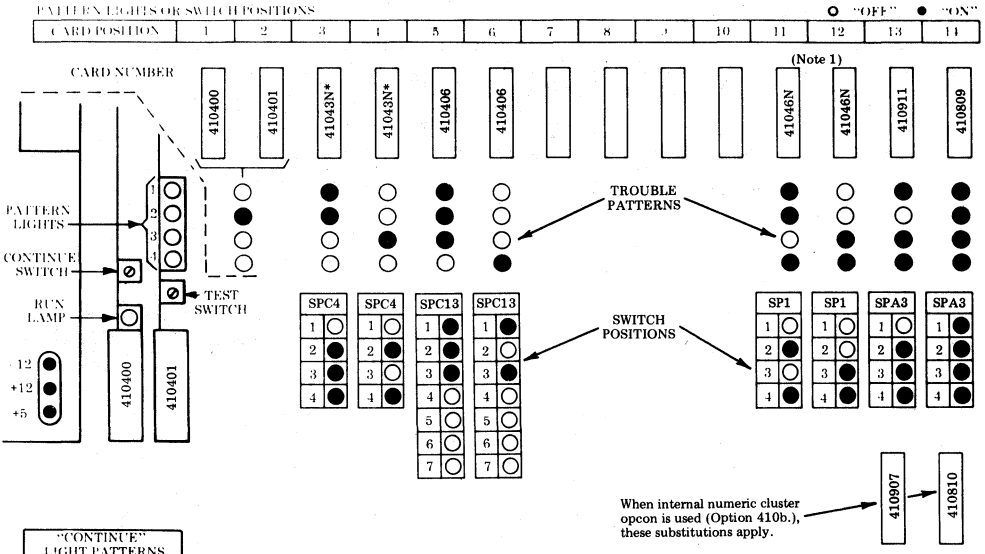
*ASCII and EBCDIC graphics are the same, except for

ASCII	EBCDIC
[	¢ (¬) **
!	| (!)
]	! (|)
^	¬ (¢)



**Characters in parentheses are displayed as the device addresses in local test when using EBCDIC line code.

DCC — Controller Arrangement Form
DCC: A ☐ B ☐ C ☐ D ☐ E ☐ F ☐
USOC: 4TV + 2-(4TOX+ OR 4TPX+)
HANDLES: 2-KDs & Up To 4-PTRs (1 Print Local)



"CONTINUE" LIGHT PATTERNS

#	
1	● ○
2	○ ●
3	● ●
4	○ ○

Note 1: Positions 11 and 12 may contain 2 - 410465s or 2 - 410461s or 1 - 410465 and 1 - 410461.

Note 2: Printer associated with I/O socket S4 will be print local for KD in I/O socket S2 & A and S3 & B. See Note 3.

*41043N — Any D I/O circuit card

See adjacent page for connections and device addresses.

PRINTER OPTIONS				
PRINTER I/O SOCKET	S4	S5	S6	S7
Friction Feed				
Tractor Feed 80 Col				
Tractor Feed 132 Col				
17. Specify Right Margin				
Specify Left Margin				
18.a. No Paper Feed Out				
18.b. Paper FO on "RM" Loss				
18.c. Paper FO on "RM" Loss and ETX				
19.d. 96 Character Set				
19.e. 64 Character Set				
19.f. Ext. ASCII Set				
20.a. Single LF				
20.b. Double LF				
21.a. Lower and Upper Case Print				
21.b. Lower Case Prints as Upper Case				
22.a. Lower Case Prints as Error				
22.b. Lower Case Prints as Upper Case				
39.a. Forms on				
39.b. Forms off				
48.a. Paper Out Not Gated W/FF				
48.b. Paper Out Gated W/FF				

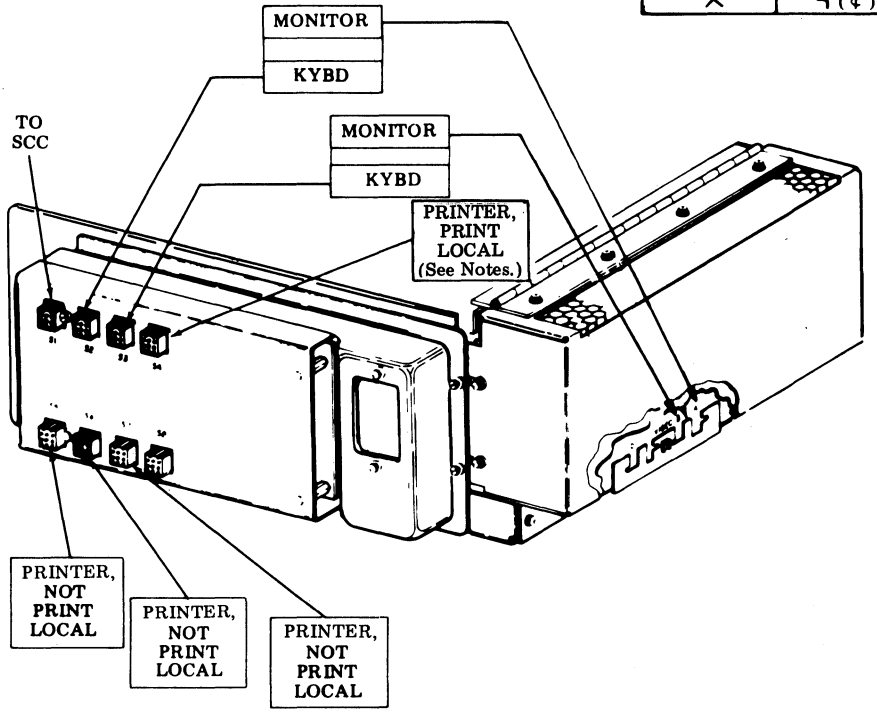
DCC — Controller Arrangement Form
HANDLES: 2-KDs & Up To 4-PTRs (1 Print Local)

CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
5	S1	STATION C/C (SCC)	DCC→	A	B	C	D	E	F
5 & 3	S2 & A	KEYBOARD/DISPLAY	DEVICE ROW 1	$_p$	F	(	K	Q	;
5 & 4	S3 & B	KEYBOARD/DISPLAY	DEVICE ROW 2	A	G	(	L	R	^
5	S4	PRINTER (NOTES)	DEVICE ROW 3	B	H	+	M	]	–
6	S5	PRINTER (N LOC)	DEVICE ROW 4	C	I	!	N	$	/
6	S6	PRINTER (N LOC)	DEVICE ROW 5	D	[	&	O	*	S
6	S7	PRINTER (N LOC)	DEVICE ROW 6	E	.	J	P	)	T

Note 3: If the customer requires that print local operation be prohibited from both KDs or just one KD, place a 340701 blocking keytop over the PRINT LOCAL position of the appropriate KD opcon(s).

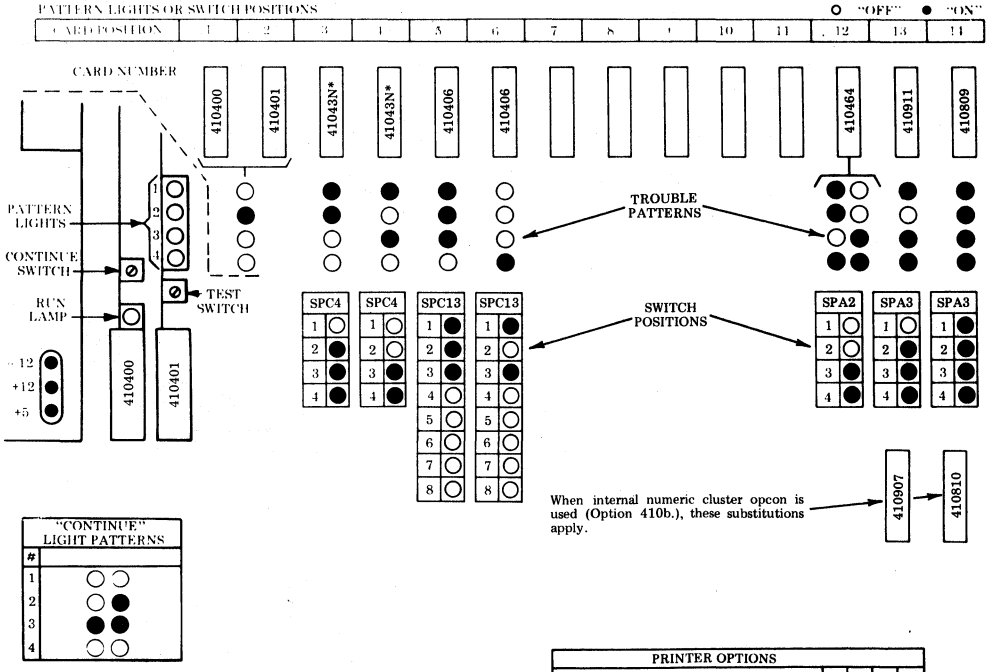
*ASCII and EBCDIC graphics are the same, except for

ASCII	EBCDIC
[	¢ (¬)**
|	| (!)
]	! (|)
^	¬ (¢)



**Characters in parentheses are displayed as the device addresses in local test when using EBCDIC line code.

DCC -- Controller Arrangement Form
DCC: A B ☐ C D ☐ E ☐ F ☐
USOC: 4TV + 2-(4TOX+ OR 4TPX+)
HANDLES: 2-KDs & Up To 4-PTRs (2 Print Local)



"CONTINUE" LIGHT PATTERNS

#	
1	○ ○
2	○ ●
3	● ●
4	○ ○

Note 1: Printer associated with I/O socket S4 will be print local for KD in I/O socket S2 & A. Printer in I/O socket S7 is print local to KD in I/O socket S5 & B. If no printer is in I/O socket S7, the printer in I/O socket S4 will be print local to both KDs. See Note 2.

*41043N -- ANY D I/O CIRCUIT CARD

See Adjacent page for Connections and Device Addresses.

PRINTER OPTIONS				
PRINTER I/O SOCKET	S3	S4	S6	S7
Friction Feed				
Tractor Feed 80 Col				
Tractor Feed 132 Col				
17. Specify Right Margin				
Specify Left Margin				
18.a. No Paper Feed Out				
18.b. Paper FO on "RM" Loss				
18.c. Paper FO on "RM" Loss and ETX				
19.d. 96 Character Set				
19.e. 64 Character Set				
19.f. Ext. ASCII Set				
20.a. Single LF				
20.b. Double LF				
21.a. Lower and Upper Case Print				
21.b. Lower Case Prints as Upper Case				
22.a. Lower Case Prints as Error				
22.b. Lower Case Prints as Upper Case				
39.a. Forms on				
39.b. Forms off				
48.a. Paper Out Not Gated W/FF				
48.b. Paper Out Gated W/FF				

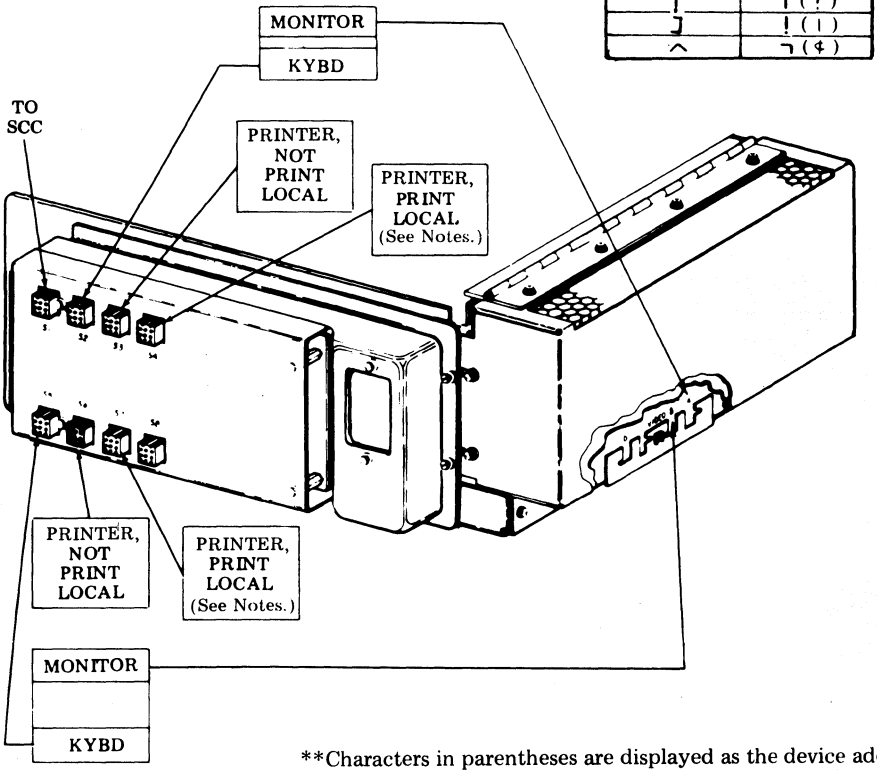
DCC — Controller Arrangement Form
HANDLES: 2-KDs & Up To 4-PTRs (2 Print Local)

CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
5	S1	STATION C/C (SCC)	DCC ⟶	A	B	C	D	E	F
5 & 3	S2 & A	KEYBOARD/DISPLAY	DEVICE ROW 1	Sp	F	<	K	Q	;
5	S3	PRINTER (N LOC)	DEVICE ROW 2	A	G	(	L	R	^
5	S4	PRINTER (NOTES)	DEVICE ROW 3	B	H	+	M	]	—
6 & 4	S5 & B	KEYBOARD/DISPLAY	DEVICE ROW 4	C	I	!	N	$	/
6	S6	PRINTER (N LOC)	DEVICE ROW 5	D	[	&	O	*	S
6	S7	PRINTER (NOTES)	DEVICE ROW 6	E	.	J	P	)	T

Note 2: If the customer requires that print local operation be prohibited from both KDs or just one KD, place a 340701 blocking keytop over the PRINT LOCAL position of the appropriate KD opcon(s).

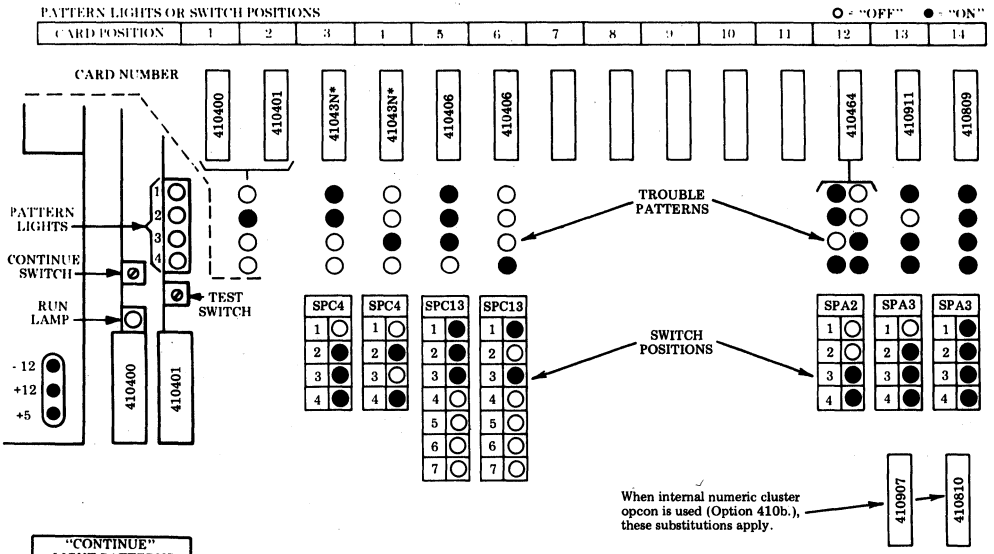
*ASCII and EBCDIC graphics are the same, except for

ASCII	EBCDIC
[	¢ (¬) **
|	| (!)
]	! (|)
^	¬ (¢)



**Characters in parentheses are displayed as the device addresses in local test when using EBCDIC line code.

DCC — Controller Arrangement Form
DCC: A ☐ B ☐ C ☐ D ☐ E ☐ F ☐
USOC: 4TV + 2-(4TOX+ OR 4TPX+)
HANDLES: 2-KDs & Up To 4-PTRs (1 Print Local)



"CONTINUE" LIGHT PATTERNS

#	
1	● ○
2	○ ●
3	● ●
4	○ ○

Note 1: Printer associated with I/O socket S4 will be print local for KD in I/O socket S2 & A and S3 & B. See Note 2.

PRINTER OPTIONS				
PRINTER I/O SOCKET	S4	S5	S6	S7
Friction Feed				
Tractor Feed 80 Col				
Tractor Feed 132 Col				
17. Specify Right Margin				
Specify Left Margin				
18.a. No Paper Feed Out				
18.b. Paper FO on "RM" Loss				
18.c. Paper FO on "RM" Loss and ETX				
19.d. 96 Character Set				
19.e. 64 Character Set				
19.f. Ext. ASCII Set				
20.a. Single LF				
20.b. Double LF				
21.a. Lower and Upper Case Print				
21.b. Lower Case Prints as Upper Case				
22.a. Lower Case Prints as Error				
22.b. Lower Case Prints as Upper Case				
39.a. Forms on				
39.b. Forms off				
48.a. Paper Out Not Gated W/FF				
48.b. Paper Out Gated W/FF				

*41043N — ANY D I/O CIRCUIT CARD

See adjacent page for Connections and Device Addresses.

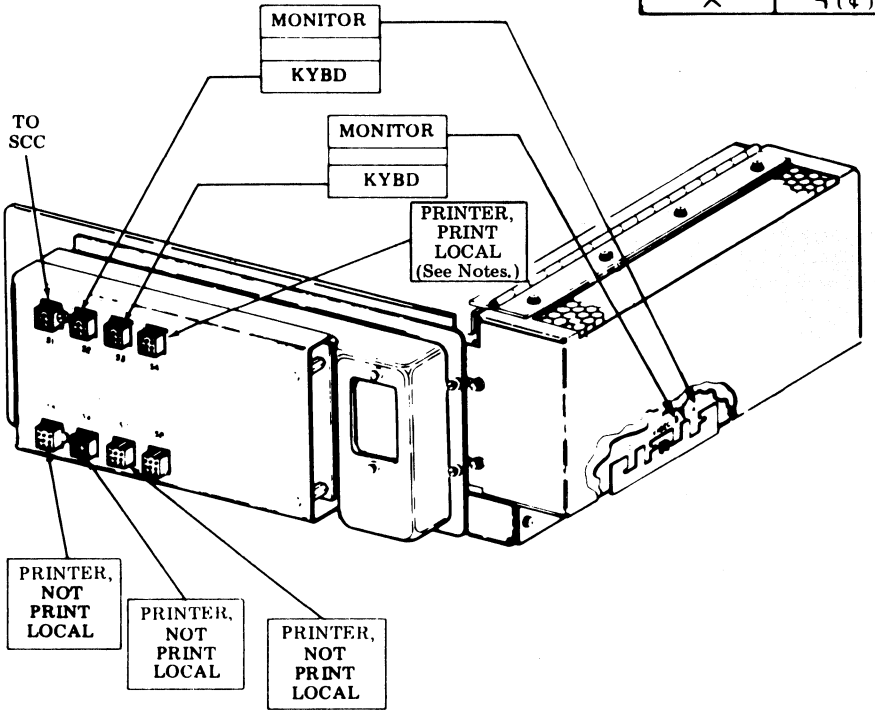
DCC -- Controller Arrangement Form
HANDLES: 2-KDs & Up To 4-PTRs (1 Print Local)

CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
5	S1	STATION C/C (SCC)	DCC →	A	B	C	D	E	F
5 & 3	S2 & A	KEYBOARD/DISPLAY	DEVICE ROW 1	SP	F	<	K	Q	;
5 & 4	S3 & B	KEYBOARD/DISPLAY	DEVICE ROW 2	A	G	(	L	R	^
5	S4	PRINTER (NOTES)	DEVICE ROW 3	B	H	+	M	]	_
6	S5	PRINTER (N LOC)	DEVICE ROW 4	C	I	!	N	$	/
6	S6	PRINTER (N LOC)	DEVICE ROW 5	D	[	&	O	*	S
6	S7	PRINTER (N LOC)	DEVICE ROW 6	E	.	J	P	)	T

Note 2: If the customer requires that print local operation be prohibited from both KDs or just one KD, place a 340701 blocking keytop over the PRINT LOCAL position of the appropriate KD opcon(s).

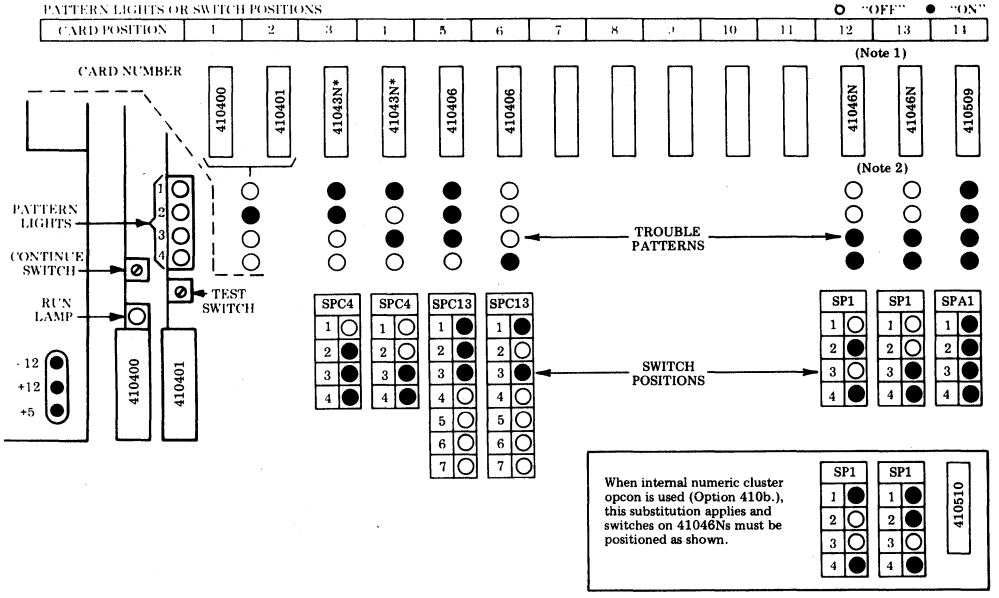
*ASCII and EBCDIC graphics are the same, except for

ASCII	EBCDIC
[	¢ (¬)**
!	| (!)
]	! (|)
^	¬ (¢)



**Characters in parentheses are displayed as the device addresses in local test when using EBCDIC line code.

DCC — Controller Arrangement Form
DCC: A B ☐ C ☐ D ☐ E ☐ F ☐
USOC: 4TV + 2-(4TOX+ OR 4TPX+)
HANDLES: 2-KDs & Up To 4-PTRs (2 Print Local)



"CONTINUE" LIGHT PATTERNS	
#	
1	○ ○
2	○ ●
3	● ●
4	○ ○

Note 1: Positions 12 & 13 may contain 2 - 410465s or 2- 410461s or 1 - 410465 and 1 - 410461.

Note 2: Same trouble pattern for both 41046Ns. If pattern occurs, replace 41046Ns one at a time until pattern no longer appears.

Note 3: Printer associated with I/O socket S4 will be print local for KD in I/O socket S2 & A. Printer in I/O socket S7 is print local to KD in I/O socket S5 & B. If no printer is in I/O socket S7, the printer in I/O socket S4 will be print local to both KDs. See Note 4.

PRINTER OPTIONS				
PRINTER I/O SOCKET	S3	S4	S6	S7
Friction Feed				
Tractor Feed 80 Col				
Tractor Feed 132 Col				
17. Specify Right Margin				
Specify Left Margin				
18.a. No Paper Feed Out				
18.b. Paper FO on "RM" Loss				
18.c. Paper FO on "RM" Loss and ETX				
19.d. 96 Character Set				
19.e. 64 Character Set				
19.f. Ext. ASCII Set				
20.a. Single LF				
20.b. Double LF				
21.a. Lower and Upper Case Print				
21.b. Lower Case Prints as Upper Case				
22.a. Lower Case Prints as Error				
22.b. Lower Case Prints as Upper Case				
39.a. Forms on				
39.b. Forms off				
48.a. Paper Out Not Gated W/FF				
48.b. Paper Out Gated W/FF				

*41043N — ANY D I/O CIRCUIT CARD

See adjacent page for Connections and Device Addresses.

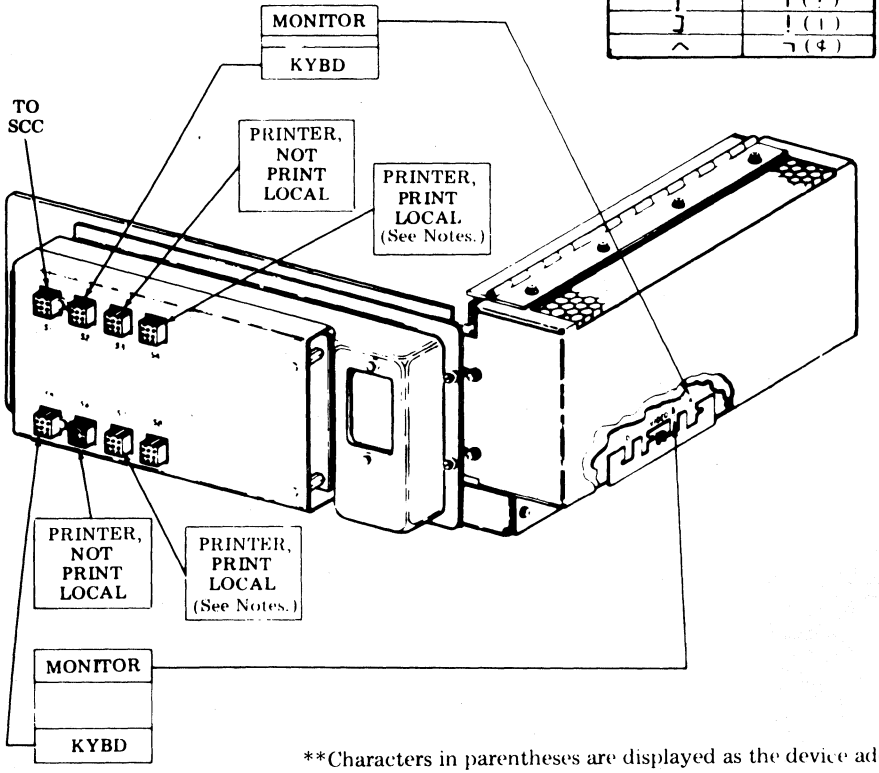
DCC — Controller Arrangement Form
HANDLES: 2-KDs & Up To 4-PTRs (2 Print Local)

CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
5	S1	STATION C/C (SCC)	DCC ⟶	A	B	C	D	E	F
5 & 3	S2 & A	KEYBOARD/DISPLAY	DEVICE ROW 1	SP	F	<	K	Q	;
5	S3	PRINTER (N LOC)	DEVICE ROW 2	A	G	(	L	R	^
5	S4	PRINTER (NOTES)	DEVICE ROW 3	B	H	+	M	]	—
6 & 4	S5 & B	KEYBOARD/DISPLAY	DEVICE ROW 4	C	I	!	N	$	/
6	S6	PRINTER (N LOC)	DEVICE ROW 5	D	[	&	O	*	S
6	S7	PRINTER (NOTES)	DEVICE ROW 6	E	.	J	P	)	T

Note 4: If the customer requires that print local operation be prohibited from both KDs or just one KD, place a 340701 blocking keytop over the PRINT LOCAL position of the appropriate KD opcon(s).

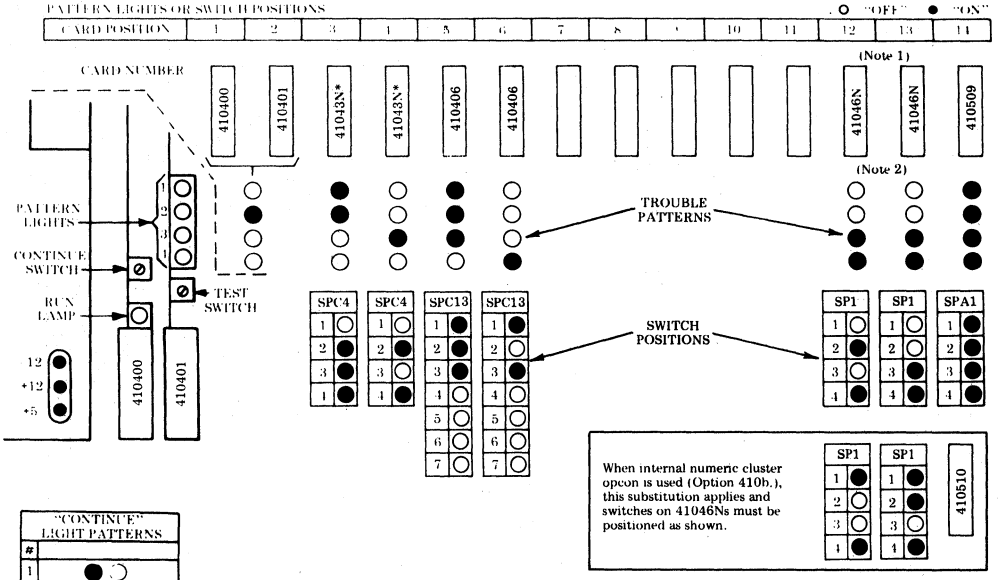
*ASCII and EBCDIC graphics are the same, except for

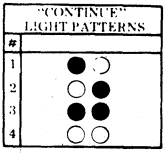
ASCII	EBCDIC
[	¢ (¬) **
|	! (!)
]	! ( )
^	¬ (¢)



**Characters in parentheses are displayed as the device addresses in local test when using EBCDIC line code.

DCC — Controller Arrangement Form
DCC: A B ☐ C ☐ D ☐ E ☐ F ☐
USOC: 4TV + 2-(4TOX+ OR 4TPX+)
HANDLES: 2-KDs & Up To 4-PTRs (1 Print Local)





Note 1 Positions 12 & 13 may contain 2 - 410465s or 2 - 410461s or 1 - 410465 and 1 - 410461.

Note 2 Same trouble pattern for both 41046Ns. If pattern occurs, replace 41046Ns one at a time until pattern no longer appears.

Note 3 Printer associated with I/O socket S4 will be print local for KD in I/O socket S2 & A and S3 & B. See Note 4.

*41043N – ANY D I/O CIRCUIT CARD

See adjacent page for Connections and Device Addresses.

PRINTER OPTIONS				
PRINTER I/O SOCKET	S4	S5	S6	S7
Friction Feed				
Tractor Feed 80 Col				
Tractor Feed 132 Col				
17 Specify Right Margin				
Specify Left Margin				
18 a No Paper Feed Out				
18 b Paper FO on "RM" Loss				
18 c Paper FO on "RM" Loss and ETX				
19 d 96 Character Set				
19 e 64 Character Set				
19 f Ext. ASCII Set				
20 a Single LF				
20 b Double LF				
21 a Lower and Upper Case Print				
21 b Lower Case Prints as Upper Case				
22 a Lower Case Prints as Error				
22 b Lower Case Prints as Upper Case				
39 a Forms on				
39 b Forms off				
18 a Paper Out Not Gated W FF				
18 b Paper Out Gated W FF				

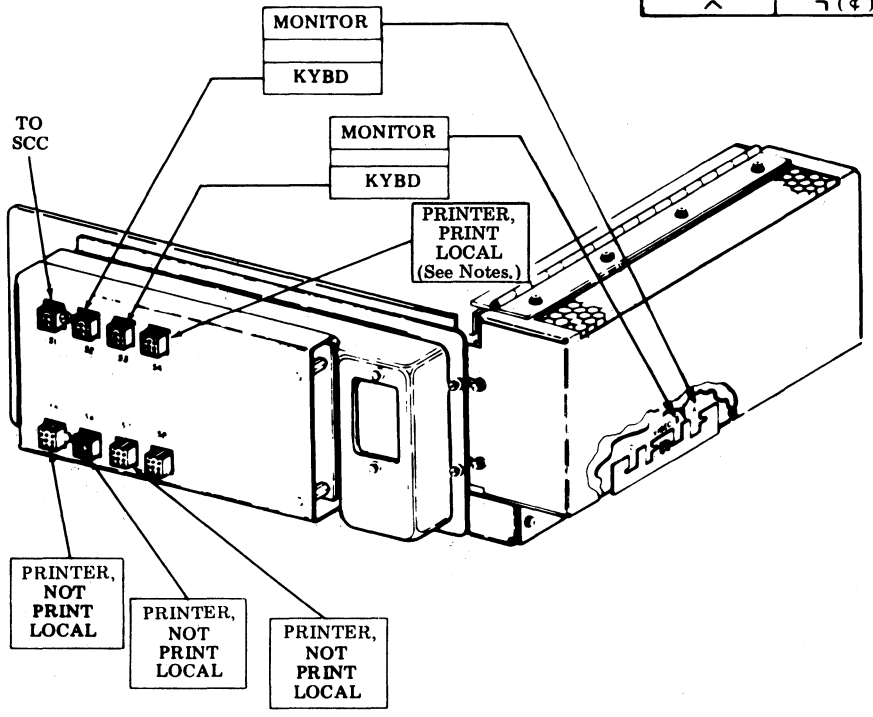
DCC — Controller Arrangement Form
HANDLES: 2-KDs & Up To 4-PTRs (1 Print Local)

CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
5	S1	STATION C/C (SCC)	DCC→	A	B	C	D	E	F
5 & 3	S2 & A	KEYBOARD/DISPLAY	DEVICE ROW 1	$_p	F	<	K	Q	;
5 & 4	S3 & B	KEYBOARD/DISPLAY	DEVICE ROW 2	A	G	(	L	R	^
5	S4	PRINTER (NOTES)	DEVICE ROW 3	B	H	+	M	]	_
6	S5	PRINTER (N LOC)	DEVICE ROW 4	C	I	!	N	$	/
6	S6	PRINTER (N LOC)	DEVICE ROW 5	D	[	&	O	*	S
6	S7	PRINTER (N LOC)	DEVICE ROW 6	E	.	J	P	)	T

Note 4: If the customer requires that print local operation be prohibited from both KDs or just one KD, place a 340701 blocking keytop over the PRINT LOCAL position of the appropriate KD opcon(s).

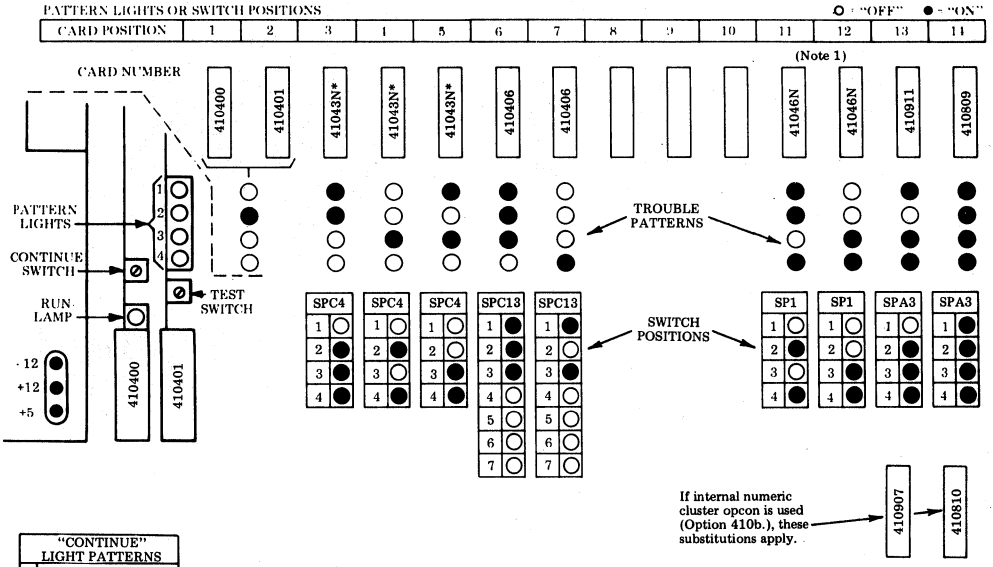
*ASCII and EBCDIC graphics are the same, except for

ASCII	EBCDIC
[	¢ (¬) **
|	! (!)
]	! (|)
^	¬ (¢)



**Characters in parentheses are displayed as the device addresses in local test when using EBCDIC line code.

DCC — Controller Arrangement Form
DCC: A B C ☐ D ☐ E ☐ F ☐
USOC: 4TV + 3-(4TOX+ OR 4TPX+)
HANDLES: 3-KDs & Up To 3-PTRs (2 Print Local)



"CONTINUE" LIGHT PATTERNS	
#	
1	○
2	●
3	●
4	○

Note 1: Positions 11 & 12 may contain 2 - 410465s or 2 - 410461s or 1 - 410465 and 1 - 410461.

Note 2: Printer in I/O socket S8 is print local to KDs in I/O socket S6 & A and S7 & B. Printer in I/O socket S3 is print local to KD in I/O socket S1 & C. If no printer is in I/O socket S3, printer in I/O socket S8 will be print local to all KDs. See Note 3.

PRINTER OPTIONS			
PRINTER I/O SOCKET	S8	S3	S2
Friction Feed			
Tractor Feed 80 Col			
Tractor Feed 132 Col			
17. Specify Right Margin			
Specify Left Margin			
18.a. No Paper Feed Out			
18.b. Paper FO on "RM" Loss			
18.c. Paper FO on "RM" Loss and ETX			
19.d. 96 Character Set			
19.e. 64 Character Set			
19.f. Ext. ASCII Set			
20.a. Single LF			
20.b. Double LF			
21.a. Lower and Upper Case Print			
21.b. Lower Case Prints as Upper Case			
22.a. Lower Case Prints as Error			
22.b. Lower Case Prints as Upper Case			
39.a. Forms on			
39.b. Forms off			
48.a. Paper Out Not Gated W/FF			
48.b. Paper Out Gated W/FF			

*41043N — ANY D I/O CIRCUIT CARD

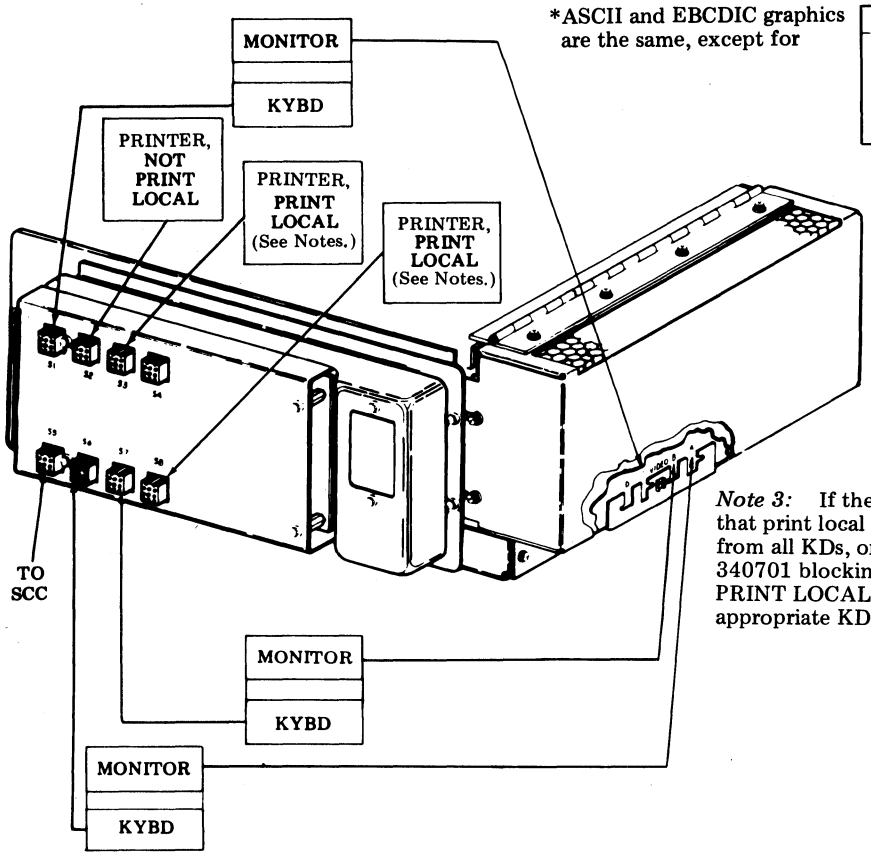
See adjacent page for Connections and Device Addresses.

DCC -- Controller Arrangement Form
HANDLES: 3-KDs & Up To 3-PTRs (2 Print Local)

CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
6	S5	STATION C/C (SCC)	DCC →	A	B	C	D	E	F
6 & 3	S6 & A	KEYBOARD DISPLAY	DEVICE ROW 1	SP	F	<	K	Q	;
6 & 4	S7 & B	KEYBOARD DISPLAY	DEVICE ROW 2	A	G	(	L	R	^
6	S8	PRINTER (NOTES)	DEVICE ROW 3	B	H	+	M	]	—
7 & 5	S1 & C	KEYBOARD DISPLAY	DEVICE ROW 4	C	I	!	N	$	/
7	S2	PRINTER (N LOC)	DEVICE ROW 5	D	[	&	O	*	S
7	S3	PRINTER (NOTES)	DEVICE ROW 6	E	.	J	P	)	T

*ASCII and EBCDIC graphics are the same, except for

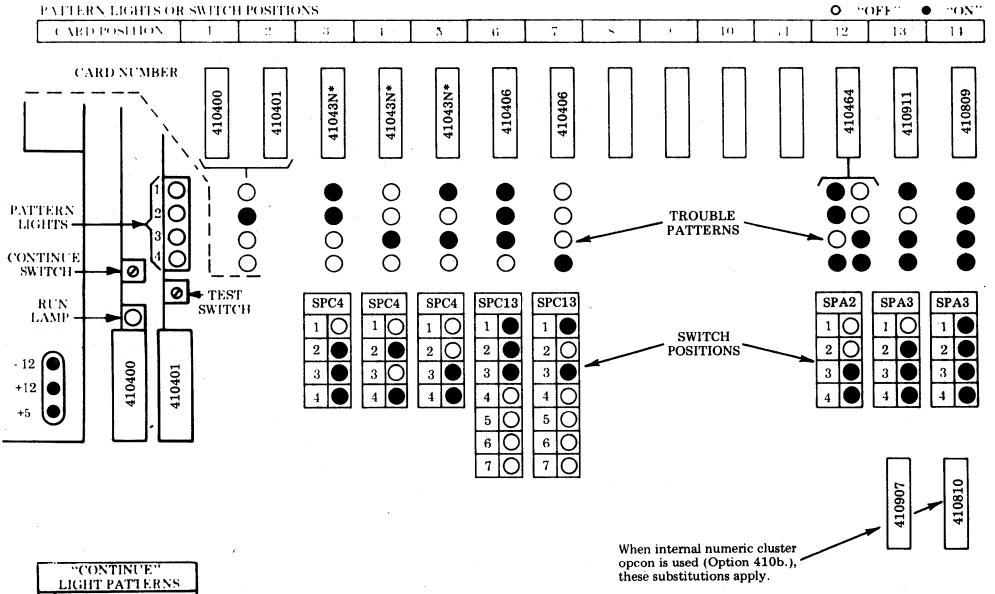
ASCII	EBCDIC
[	¢ (¬)**
]	! (|)
^	¬ (¢)

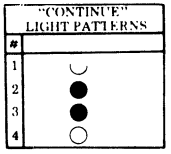


Note 3: If the customer requires that print local operation be prohibited from all KDs, or just one KD, place a 340701 blocking keytop over the PRINT LOCAL position of the appropriate KD opcon(s).

**Characters in parentheses are displayed as the device addresses in local test when using EBCDIC line code.

DCC — Controller Arrangement Form
DCC: A ☐ B ☐ C ☐ D ☐ E ☐ F ☐
USOC: 4TV + 3-(4TOX+ OR 4TPX+)
HANDLES: 3-KDs & Up To 3-PTRs (2 Print Local)





*41043N — ANY D I/O CIRCUIT CARD

See adjacent page of Connections and Device Addresses.

Note 1: Printer in I/O socket S8 is print local to KDs in I/O socket S6 & A and S7 & B. Printer in I/O socket S3 is print local to KD in I/O socket S1 & C. If no printer is in I/O socket S3, printer in I/O socket S8 will be print local to all KDs. See Note 2.

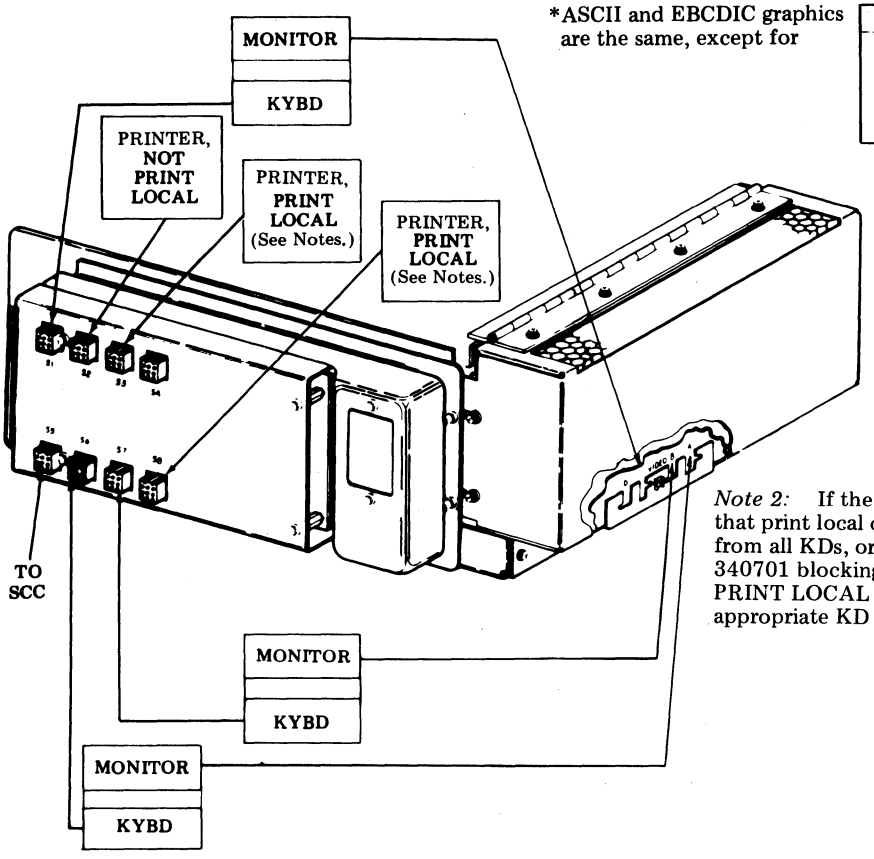
PRINTER OPTIONS			
PRINTER I/O SOCKET	S8	S3	S2
Friction Feed			
Tractor Feed 80 Col			
Tractor Feed 132 Col			
17. Specify Right Margin			
Specify Left Margin			
18.a. No Paper Feed Out			
18.b. Paper FO on "RM" Loss			
18.c. Paper FO on "RM" Loss and ETX			
19.d. 96 Character Set			
19.e. 64 Character Set			
19.f. Ext. ASCII Set			
20.a. Single LF			
20.b. Double LF			
21.a Lower and Upper Case Print			
21.b. Lower Case Prints as Upper Case			
22.a. Lower Case Prints as Error			
22.b. Lower Case Prints as Upper Case			
39.a. Forms on			
39.b. Forms off			
48.a. Paper Out Not Gated W FF			
48.b. Paper Out Gated W FF			

DCC — Controller Arrangement Form
HANDLES: 3-KDs & Up To 3-PTRs (2 Print Local)

CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
6	S5	STATION C/C (SCC)	DCC →	A	B	C	D	E	F
6 & 3	S6 & A	KEYBOARD DISPLAY	DEVICE ROW 1	Sp	F	<	K	Q	;
6 & 4	S7 & B	KEYBOARD DISPLAY	DEVICE ROW 2	A	G	(	L	R	^
6	S8	PRINTER (NOTES)	DEVICE ROW 3	B	H	+	M	[	—
7 & 5	S1 & C	KEYBOARD DISPLAY	DEVICE ROW 4	C	I	!	N	$	/
7	S2	PRINTER (N LOC)	DEVICE ROW 5	D	[	¢	O	*	S
7	S3	PRINTER (NOTES)	DEVICE ROW 6	E	.	J	P	)	T

*ASCII and EBCDIC graphics are the same, except for

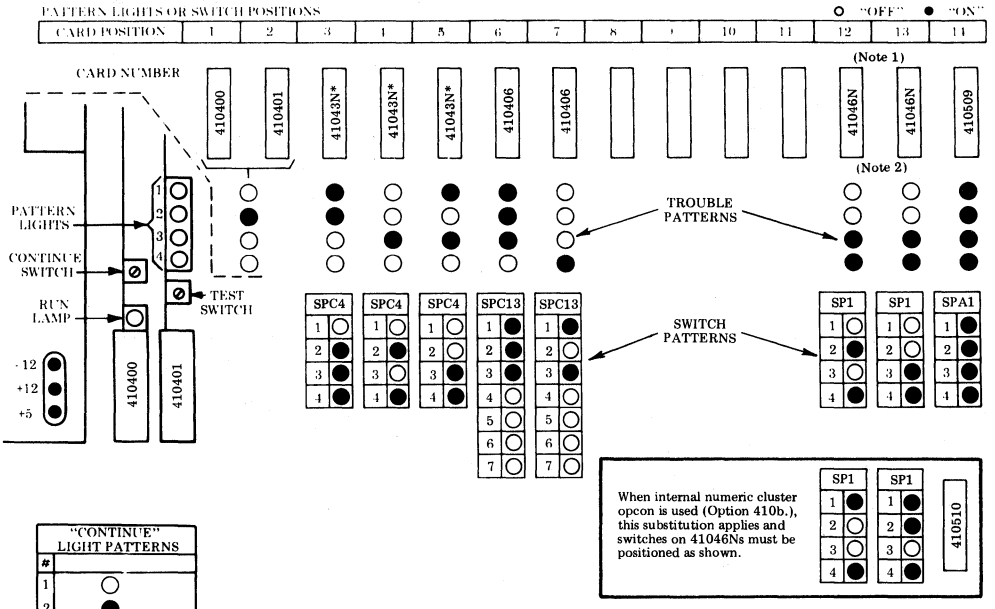
ASCII	EBCDIC
[	¢ (¬)**
|	! (!)
]	! (|)
^	¬ (¢)



Note 2: If the customer requires that print local operation be prohibited from all KDs, or just one KD, place a 340701 blocking keytop over the PRINT LOCAL position of the appropriate KD opcon(s).

**Characters in parentheses are displayed as the device addresses in local test when using EBCDIC line code.

DCC — Controller Arrangement Form
DCC: A☐B☐C☐D☐E☐F☐
USOC: 4TV + 3-(4TOX+ OR 4TPX+)
HANDLES: 3-KDs & Up To 3-PTRs (2 Print Local)



"CONTINUE" LIGHT PATTERNS

#	
1	○
2	●
3	●
4	○

When internal numeric cluster opcon is used (Option 410b.), this substitution applies and switches on 41046Ns must be positioned as shown.

Note 1: Positions 12 & 13 may contain 2 - 410465s or 2 - 410461s or 1 - 410465 and 1 - 410461.

Note 2: Same trouble pattern for both 41046Ns. If pattern occurs, replace 41046Ns one at a time until pattern no longer appears.

Note 3: Printer in I/O socket S8 is print local to KDs in I/O socket S6 & A and S7 & B. Printer in I/O socket S3 is print local to KD in I/O socket S1 & C. If no printer is in I/O socket S3, printer in I/O socket S8 will be print local to all KDs. See Note 4.

PRINTER OPTIONS			
PRINTER I/O SOCKET	S8	S3	S2
Friction Feed			
Tractor Feed 80 Col			
Tractor Feed 132 Col			
17. Specify Right Margin			
Specify Left Margin			
18.a. No Paper Feed Out			
18.b. Paper FO on "RM" Loss			
18.c. Paper FO on "RM" Loss and ETX			
19.d. 96 Character Set			
19.e. 64 Character Set			
19.f. Ext. ASCII Set			
20.a Single LF			
20.b. Double LF			
21.a. Lower and Upper Case Print			
21.b. Lower Case Prints as Upper Case			
22.a Lower Case Prints as Error			
22.b. Lower Case Prints as Upper Case			
39.a. Forms on			
39.b. Forms off			
18.a. Paper Out Not Gated W FF			
18.b. Paper Out Gated W FF			

*41043N — ANY D I/O CIRCUIT CARD

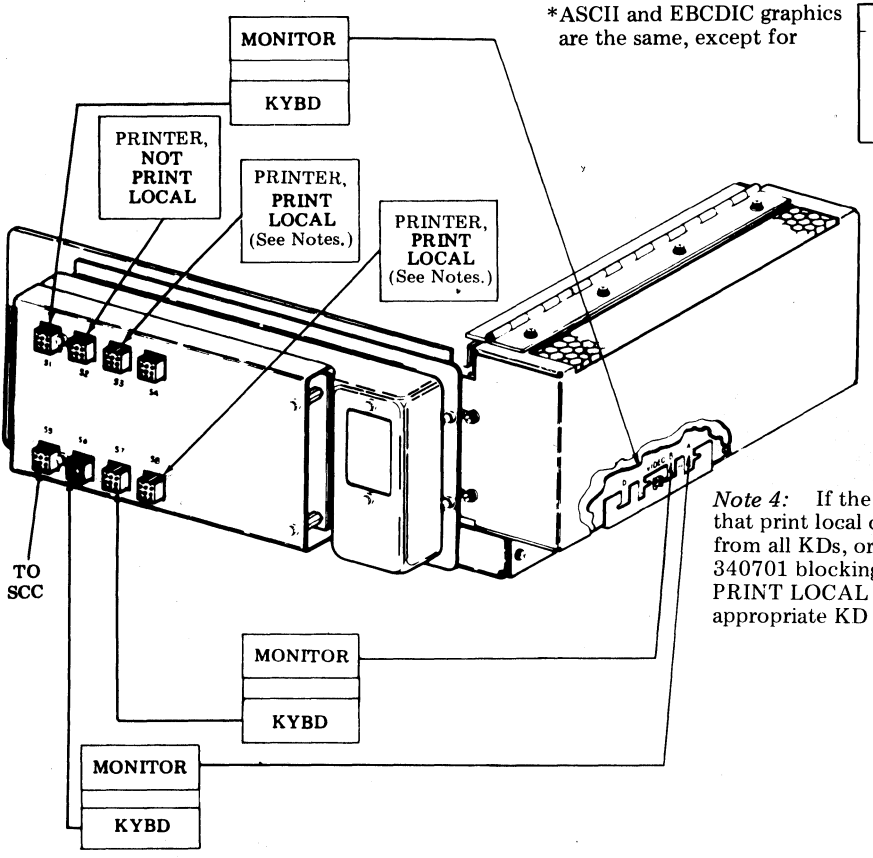
See adjacent page for Connections and Device Addresses.

DCC — Controller Arrangement Form
HANDLES: 3-KDs & Up To 3-PTRs (2 Print Local)

CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
6	S5	STATION C/C (SCC)	DCC →	A	B	C	D	E	F
6 & 3	S6 & A	KEYBOARD DISPLAY	DEVICE ROW 1	SP	F	<	K	Q	;
6 & 4	S7 & B	KEYBOARD DISPLAY	DEVICE ROW 2	A	G	(	L	R	^
6	S8	PRINTER (NOTES)	DEVICE ROW 3	B	H	+	M	]	—
7 & 5	S1 & C	KEYBOARD DISPLAY	DEVICE ROW 4	C	I	|	N	$	/
7	S2	PRINTER (N LOC)	DEVICE ROW 5	D	[	&	O	*	S
7	S3	PRINTER (NOTES)	DEVICE ROW 6	E	.	J	P	)	T

*ASCII and EBCDIC graphics are the same, except for

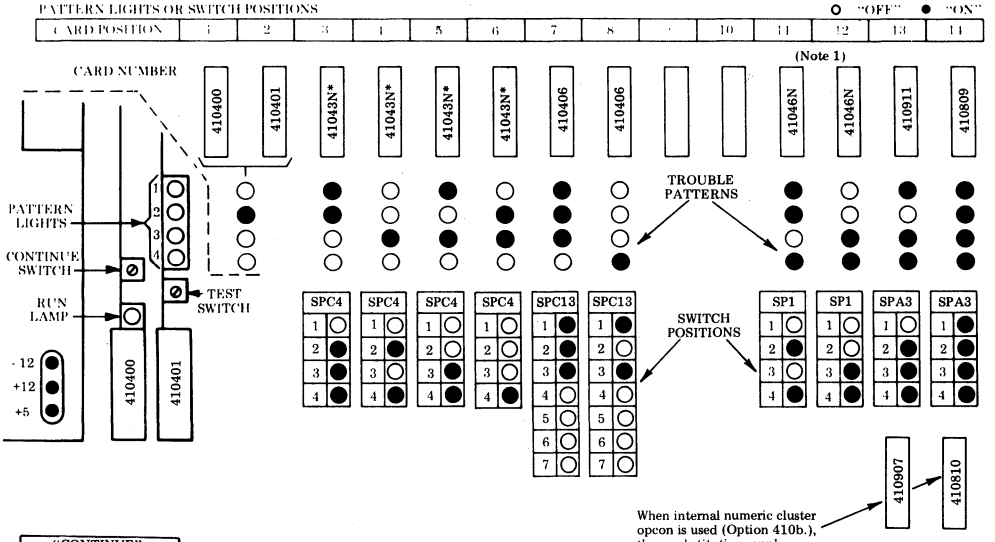
ASCII	EBCDIC
[	¢ (¬)**
|	! (!)
]	! (|)
^	¬ (¢)



Note 4: If the customer requires that print local operation be prohibited from all KDs, or just one KD, place a 340701 blocking keytop over the PRINT LOCAL position of the appropriate KD opcon(s).

**Characters in parentheses are displayed as the device addresses in local test when using EBCDIC line code.

DCC — Controller Arrangement Form
DCC: A B ☐ C ☐ D ☐ E ☐ F ☐
USOC: 4TV + 4-(4TOX+ OR 4TPX+)
HANDLES: 4-KDs & Up To 2-PTRs (2 Print Local)



"CONTINUE" LIGHT PATTERN
There are no continue patterns

Note 1: Positions 11 & 12 may contain 2 - 410465s or 2 - 410461s or 1 - 410465 and 1 - 410461.

Note 2: Printer in I/O socket S4 is print local to KDs in I/O socket S2 & A and S3 & B. Printer in I/O socket S7 is print local to KDs in I/O socket S5 & C and S6 & D. If no printer in I/O socket S7, printer in I/O socket S4 will be print local to all KDs. See Note 3.

PRINTER OPTIONS			
PRINTER I/O SOCKET		S4	S7
Friction Feed			
Tractor Feed 80 Col			
Tractor Feed 132 Col			
17	Specify Right Margin		
	Specify Left Margin		
18.a.	No Paper Feed Out		
18.b.	Paper FO on "RM" Loss		
18.c.	Paper FO on "RM" Loss and ETX		
19.d.	96 Character Set		
19.e.	64 Character Set		
19.f.	Ext. ASCII Set		
20.a.	Single LF		
20.b.	Double LF		
21.a.	Lower and Upper Case Print		
21.b.	Lower Case Prints as Upper Case		
22.a.	Lower Case Prints as Error		
22.b.	Lower Case Prints as Upper Case		
39.a.	Forms on		
39.b.	Forms off		
48.a.	Paper Out Not Gated W/FF		
48.b	Paper Out Gated W/FF		

*41043N — ANY D I/O CIRCUIT CARD

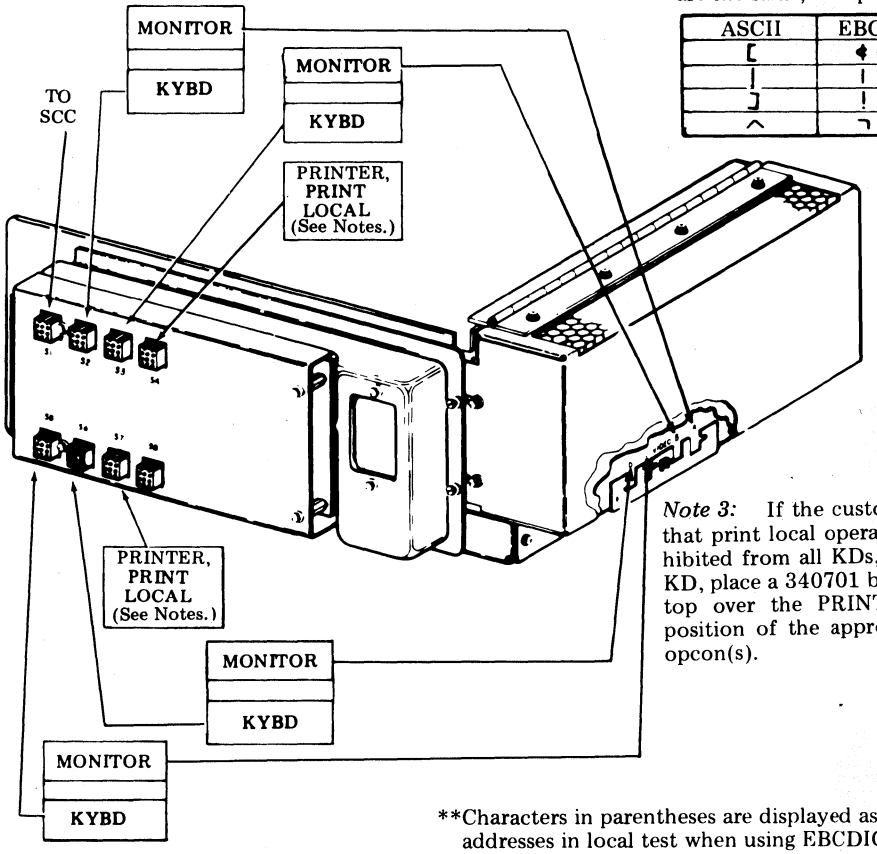
See adjacent page for Connections and Device Addresses.

DCC -- Controller Arrangement Form
HANDLES: 4-KDs & Up To 2-PTRs (2 Print Local)

CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
7	S1	STATION C/C (SCC'	DCC ⟶	A	B	C	D	E	F
7 & 3	S2 & A	KEYBOARD/DISPLAY	DEVICE ROW 1	Sp	F	(	K	Q	;
7 & 4	S3 & B	KEYBOARD/DISPLAY	DEVICE ROW 2	A	G	(	L	R	^
7	S4	PRINTER (NOTES)	DEVICE ROW 3	B	H	+	M	]	—
8 & 5	S5 & C	KEYBOARD/DISPLAY	DEVICE ROW 4	C	I	!	N	$	/
8 & 6	S6 & D	KEYBOARD/DISPLAY	DEVICE ROW 5	D	[	&	O	*	S
8	S7	PRINTER (NOTES)	DEVICE ROW 6	E	.	J	P	)	T

*ASCII and EBCDIC graphics are the same, except for

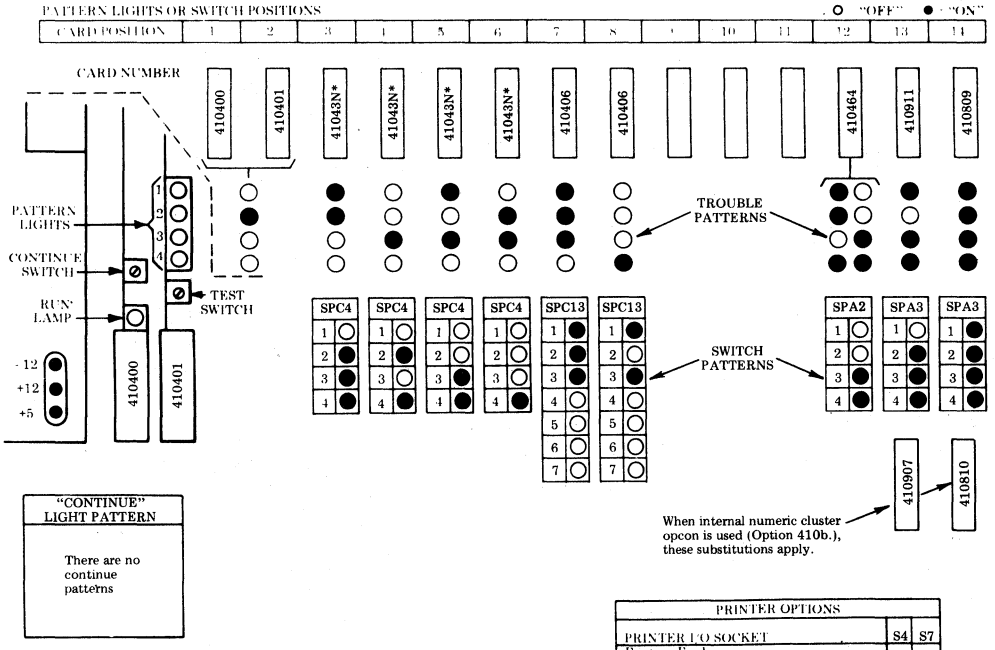
ASCII	EBCDIC
[	¢ (¬) **
!	¦ (!)
]	! (¦)
^	¬ (¢)



Note 3: If the customer requires that print local operation be prohibited from all KDs, or just one KD, place a 340701 blocking keytop over the PRINT LOCAL position of the appropriate KD opcon(s).

**Characters in parentheses are displayed as the device addresses in local test when using EBCDIC line code.

DCC – Controller Arrangement Form
DCC: A B ☐ C ☐ D ☐ E ☐ F ☐
USOC: 4TV + 4-(4TOX+ OR 4TPX+)
HANDLES: 4-KDs & Up To 2-PTRs (2 Print Local)



"CONTINUE" LIGHT PATTERN
There are no continue patterns

*41043N – ANY D I/O CIRCUIT DARD

See adjacent page for Connections and Device Addresses.

Note 1: Printer in I/O socket S4 is print local to KDs in I/O socket S2 & A and S3 & B. Printer in I/O socket S7 is print local to KDs in I/O socket S5 & C and S6 & D. If no printer in I/O socket S7, printer in I/O socket S4 will be print local to all KDs. See Note 2.

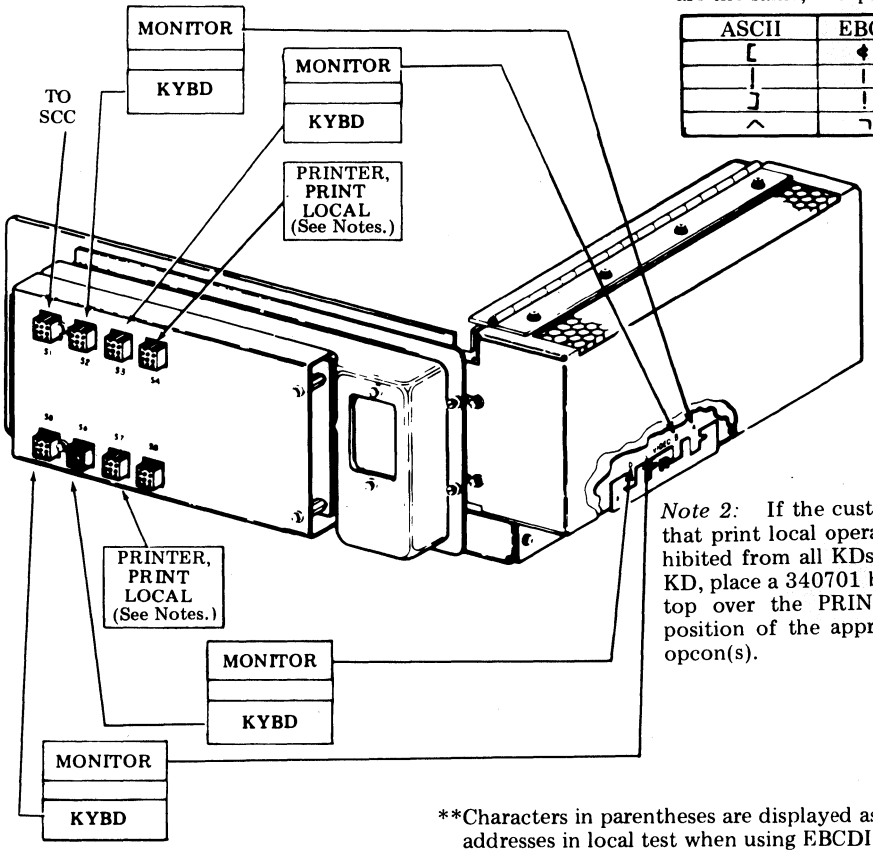
PRINTER OPTIONS		
PRINTER I/O SOCKET	S4	S7
Friction Feed		
Tractor Feed 80 Col		
Tractor Feed 132 Col		
17 Specify Right Margin		
Specify Left Margin		
18.a. No Paper Feed Out		
18.b. Paper FO on "RM" Loss		
18.c. Paper FO on "RM" Loss and ETX		
19.d. 96 Character Set		
19.e 64 Character Set		
19.f. Ext. ASCII Set		
20.a. Single LF		
20.b. Double LF		
21.a. Lower and Upper Case Print		
21.b. Lower Case Prints as Upper Case		
22.a. Lower Case Prints as Error		
22.b. Lower Case Prints as Upper Case		
39.a. Forms on		
39.b. Forms off		
18.a. Paper Out Not Gated W FF		
18.b. Paper Out Gated W FF		

DCC — Controller Arrangement Form
HANDLES: 4-KDs & Up To 2-PTRs (2 Print Local)

CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
7	S1	STATION C/C (SCC'	DCC ⟶	A	B	C	D	E	F
7 & 3	S2 & A	KEYBOARD/DISPLAY	DEVICE ROW 1	SP	F	<	K	Q	;
7 & 4	S3 & B	KEYBOARD/DISPLAY	DEVICE ROW 2	A	G	(	L	R	^
7	S4	PRINTER (NOTES)	DEVICE ROW 3	B	H	+	M	]	—
8 & 5	S5 & C	KEYBOARD/DISPLAY	DEVICE ROW 4	C	I	!	N	$	/
8 & 6	S6 & D	KEYBOARD/DISPLAY	DEVICE ROW 5	D	[	&	O	*	S
8	S7	PRINTER (NOTES)	DEVICE ROW 6	E	.	J	P	)	T

*ASCII and EBCDIC graphics are the same, except for

ASCII	EBCDIC
[	¢ (¬) **
|	¦ (!)
]	! (¦)
^	¬ (¢)

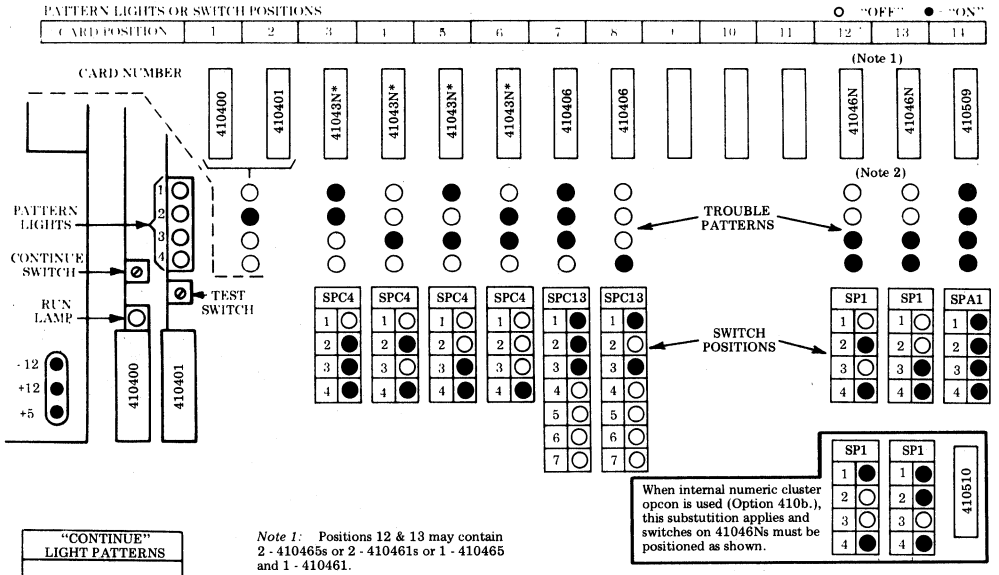


Note 2: If the customer requires that print local operation be prohibited from all KDs, or just one KD, place a 340701 blocking keytop over the PRINT LOCAL position of the appropriate KD opcon(s).

**Characters in parentheses are displayed as the device addresses in local test when using EBCDIC line code.

DCC — Controller Arrangement Form

DCC: A☐ B ☐ C ☐ D☐ E ☐ F ☐
USOC: 4TV + 4-(4TOX+ OR 4TPX+)
HANDLES: 4-KDs & Up To 2-PTRs (2 Print Local)



"CONTINUE" LIGHT PATTERNS
There are no "CONTINUE" LIGHT PATTERNS

Note 1: Positions 12 & 13 may contain 2 - 410465s or 2 - 410461s or 1 - 410465 and 1 - 410461.

Note 2: Same trouble pattern for both 41046Ns. If pattern occurs, replace 41046Ns one at a time until pattern no longer appears.

Note 3: Printer in I/O socket S4 is print local to KDs in I/O socket S2 & A and S3 & B. Printer in I/O socket S7 is print local to KDs in I/O socket S5 & C and S6 & D. If no printer in I/O socket S7, printer in I/O socket S4 will be print local to all KDs. See Note 4.

PRINTER OPTIONS			
PRINTER I/O SOCKET		S4	S7
Friction Feed			
Tractor Feed 80 Col			
Tractor Feed 132 Col			
17	Specify Right Margin		
	Specify Left Margin		
18.a.	No Paper Feed Out		
18.b.	Paper FO on "RM" Loss		
18.c.	Paper FO on "RM" Loss and ETX		
19.d	96 Character Set		
19.e.	64 Character Set		
19.f.	Ext. ASCII Set		
20.a	Single LF		
20.b	Double LF		
21.a.	Lower and Upper Case Print		
21.b.	Lower Case Prints as Upper Case		
22.a	Lower Case Prints as Error		
22.b.	Lower Case Prints as Upper Case		
39.a	Forms on		
39.b.	Forms off		
18.a.	Paper Out Not Gated W/FF		
18.b.	Paper Out Gated W/FF		

*41043N — ANY D I/O CIRCUIT CARD

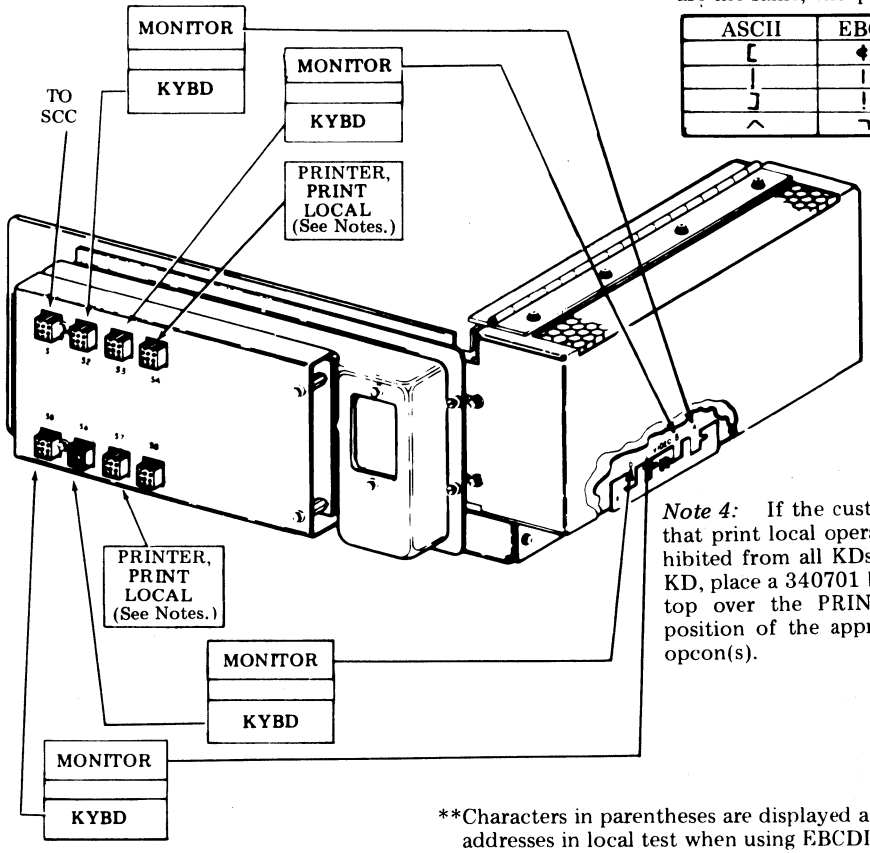
See adjacent page for Connections and Device Addresses.

DCC — Controller Arrangement Form
HANDLES: 4-KDs & Up To 2-PTRs (2 Print Local)

CARD POSITION	I/O SOCKET	DEVICE	STATION WORK SHEET	DEVICE ADDRESS *					
7	S1	STATION C/C (SCC')	DCC ⟶	A	B	C	D	E	F
7 & 3	S2 & A	KEYBOARD/DISPLAY	DEVICE ROW 1	Sp	F	<	K	Q	;
7 & 4	S3 & B	KEYBOARD/DISPLAY	DEVICE ROW 2	A	G	(	L	R	^
7	S4	PRINTER (NOTES)	DEVICE ROW 3	B	H	+	M	]	—
8 & 5	S5 & C	KEYBOARD/DISPLAY	DEVICE ROW 4	C	I	!	N	$	/
8 & 6	S6 & D	KEYBOARD/DISPLAY	DEVICE ROW 5	D	[	&	O	*	S
8	S7	PRINTER (NOTES)	DEVICE ROW 6	E	.	J	P	)	T

*ASCII and EBCDIC graphics are the same, except for

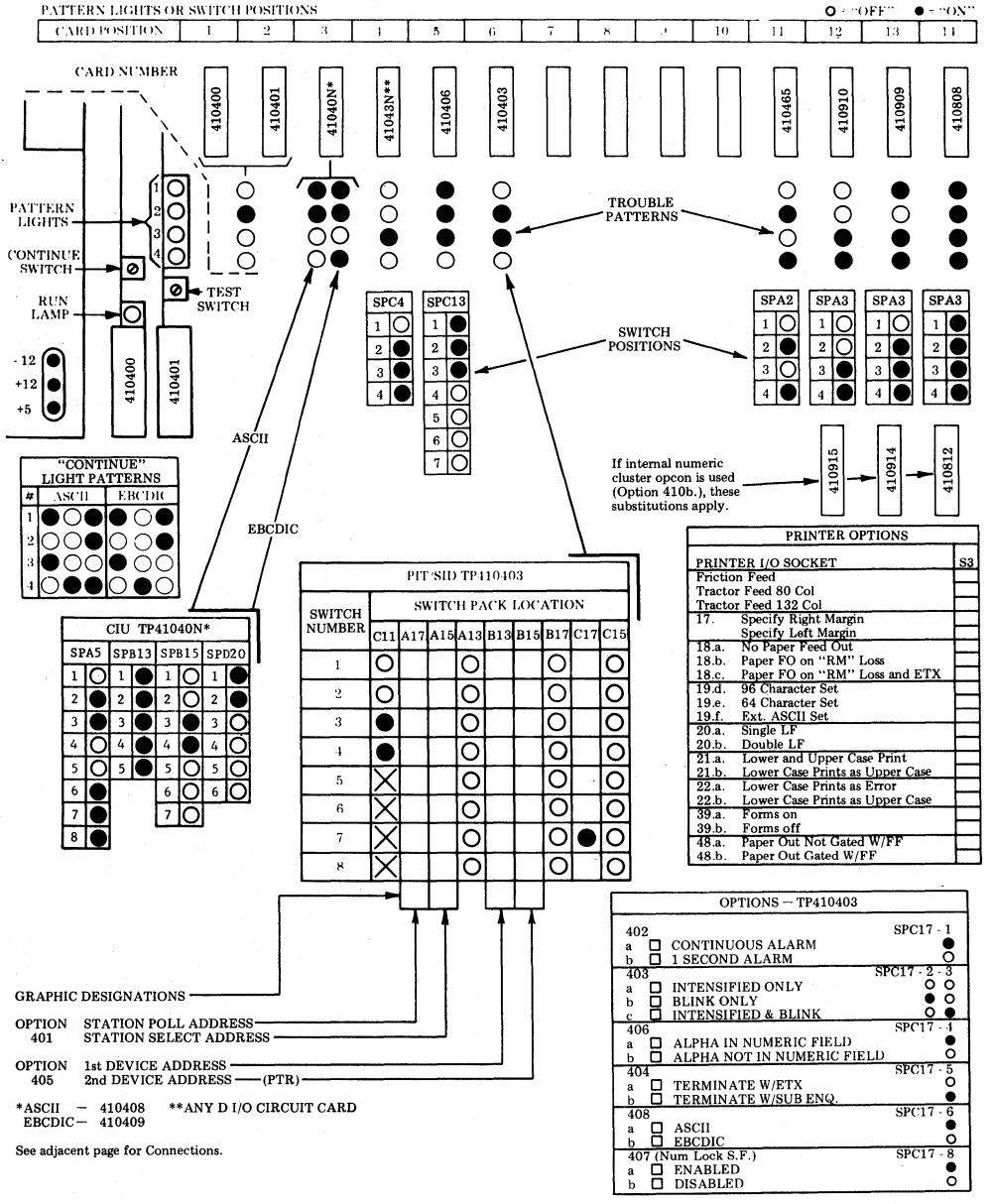
ASCII	EBCDIC
[	¢ (¬) **
!	! (!)
]	! (¦)
^	¬ (¢)



Note 4: If the customer requires that print local operation be prohibited from all KDs, or just one KD, place a 340701 blocking keytop over the PRINT LOCAL position of the appropriate KD opcon(s).

**Characters in parentheses are displayed as the device addresses in local test when using EBCDIC line code.

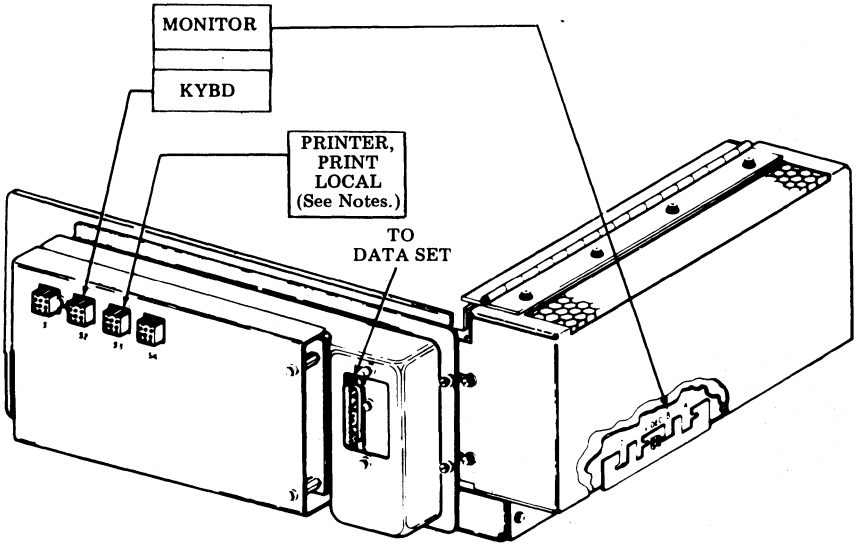
MCC — Controller Arrangement Form
LINE CODE: ASCII ☐ EBCDIC ☐
USOC: 4TX + (4TOX+ OR 4TPX+)
HANDLES: 1-KD & 1-PTR (Print Local)



See adjacent page for Connections.

MCC — Controller Arrangement Form
HANDLES: 1-KD & 1-PTR (Print Local)

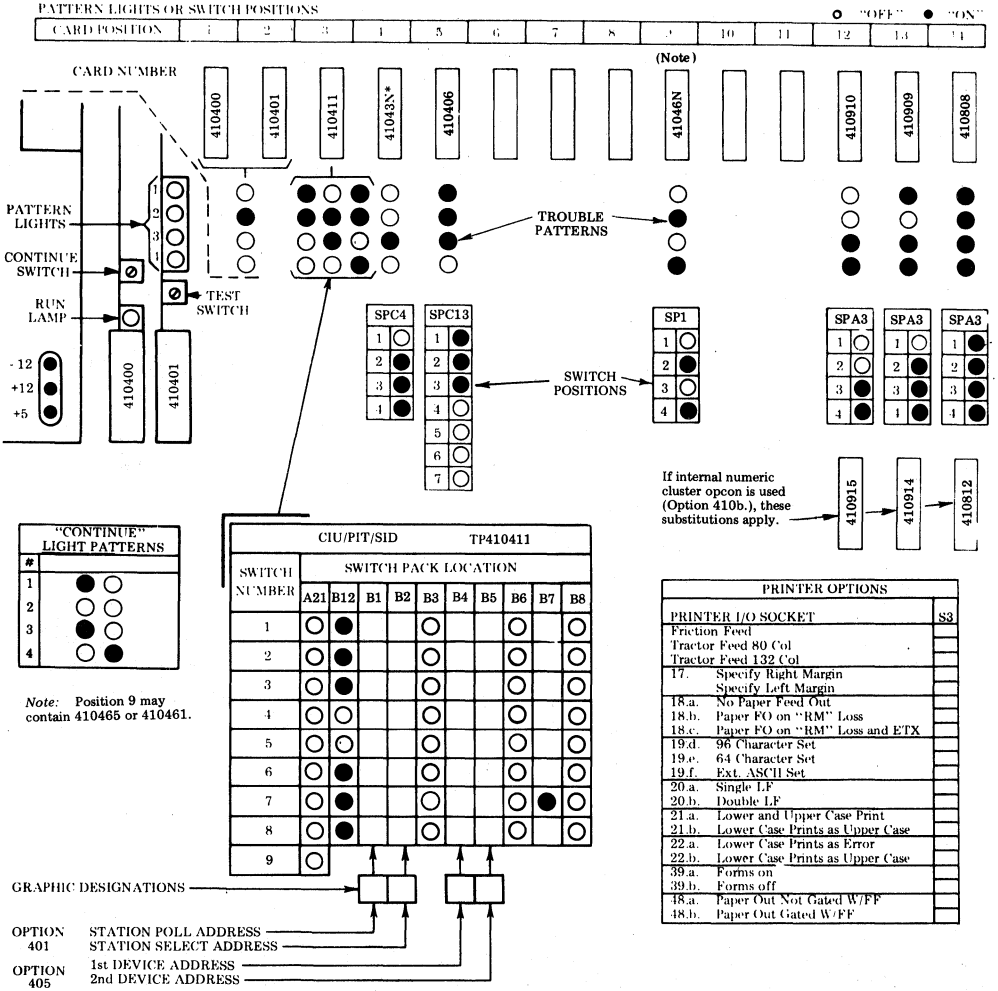
CARD POSITION	I/O SOCKET	STATION WORK SHEET
3	DS	DATA SET
4 & 5	S2-B	KEYBOARD/MON. (1)
5	S3	PRINTER (2)



Note 1: If the customer requires that print local operation be prohibited form the KD, place a 340701 over the PRINT LOCAL position of the KD opcon. Another method is to connect the printer to S4, option 410403 so that the third device address (B17) is the printer address, and turn all B15 switches off.

Note 2: If printer is not part of station, option all B15 switches off.

MCC — Controller Arrangement Form
LINE CODE: ASCII ☐ EBCDIC
USOC: 4TX + (4TOX+ OR 4TPX+)
HANDLES: 1-KD & 1-PTR (Print Local)



"CONTINUE" LIGHT PATTERNS

#	
1	● ○
2	○ ○
3	● ○
4	○ ●

Note: Position 9 may contain 410465 or 410461.

CIU/PIT/SID TP410411

SWITCH NUMBER	SWITCH PACK LOCATION									
	A21	B12	B1	B2	B3	B4	B5	B6	B7	B8
1	○	●			○			○		○
2	○	●			○			○		○
3	○	●			○			○		○
4	○	○			○			○		○
5	○	○			○			○		○
6	○	●			○			○		○
7	○	●			○			○	●	○
8	○	●			○			○		○
9	○									

GRAPHIC DESIGNATIONS

OPTION 401 — STATION POLL ADDRESS, STATION SELECT ADDRESS

OPTION 405 — 1st DEVICE ADDRESS, 2nd DEVICE ADDRESS

PRINTER OPTIONS	
PRINTER I/O SOCKET	S3
Friction Feed	
Tractor Feed 80 Col	
Tractor Feed 132 Col	
17. Specify Right Margin / Specify Left Margin	
18.a. No Paper Feed Out	
18.b. Paper FO on "RM" Loss	
18.c. Paper FO on "RM" Loss and ETX	
19.d. 96 Character Set	
19.e. 64 Character Set	
19.f. Ext. ASCII Set	
20.a. Single LF	
20.b. Double LF	
21.a. Lower and Upper Case Print	
21.b. Lower Case Prints as Upper Case	
22.a. Lower Case Prints as Error	
22.b. Lower Case Prints as Upper Case	
39.a. Forms on	
39.b. Forms off	
48.a. Paper Out Not Gated W/FF	
48.b. Paper Out Gated W/FF	

*ANY D I/O CIRCUIT CARD

Caution: PROMs 450013, 450014, 450015 and 450016 on 410808 (if used) must be issue 3 or later.

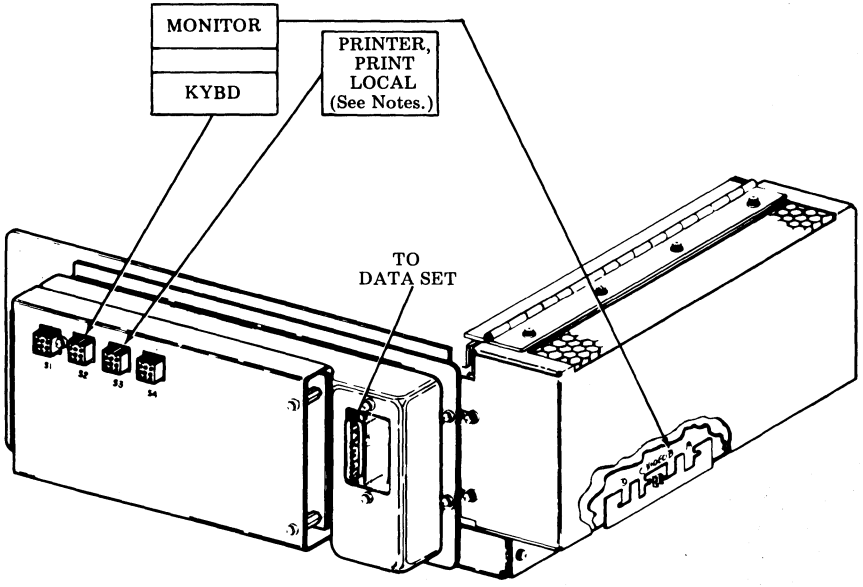
OPTIONS — 410411

402		SPB7-1
a	☐ CONTINUOUS ALARM	●
b	☐ 1 SECOND ALARM	○
403		SPB7-2 –3
a	☐ INTENSIFIED ONLY	○ ○
b	☐ BLINK ONLY	● ○
c	☐ INTENSIFIED & BLINK	○ ●
406		SPB7-4
a	☐ ALPHA IN NUMERIC FIELD	●
b	☐ ALPHA NOT IN NUMERIC FIELD	○
404		SPB7-5
a	☐ TERMINATE W/ETX	○
b	☐ TERMINATE W/SUB ENQ.	●
408		SPB7-6
a	☐ ASCII	●
b	☐ EBCDIC	○
407 (Num Lock S.F.)		SPB7-8
a	☐ ENABLED	●
b	☐ DISABLED	○

See adjacent page for Connections.

MCC — Controller Arrangement Form
HANDLES: 1-KD & Up To 1-PTR (1 Print Local)

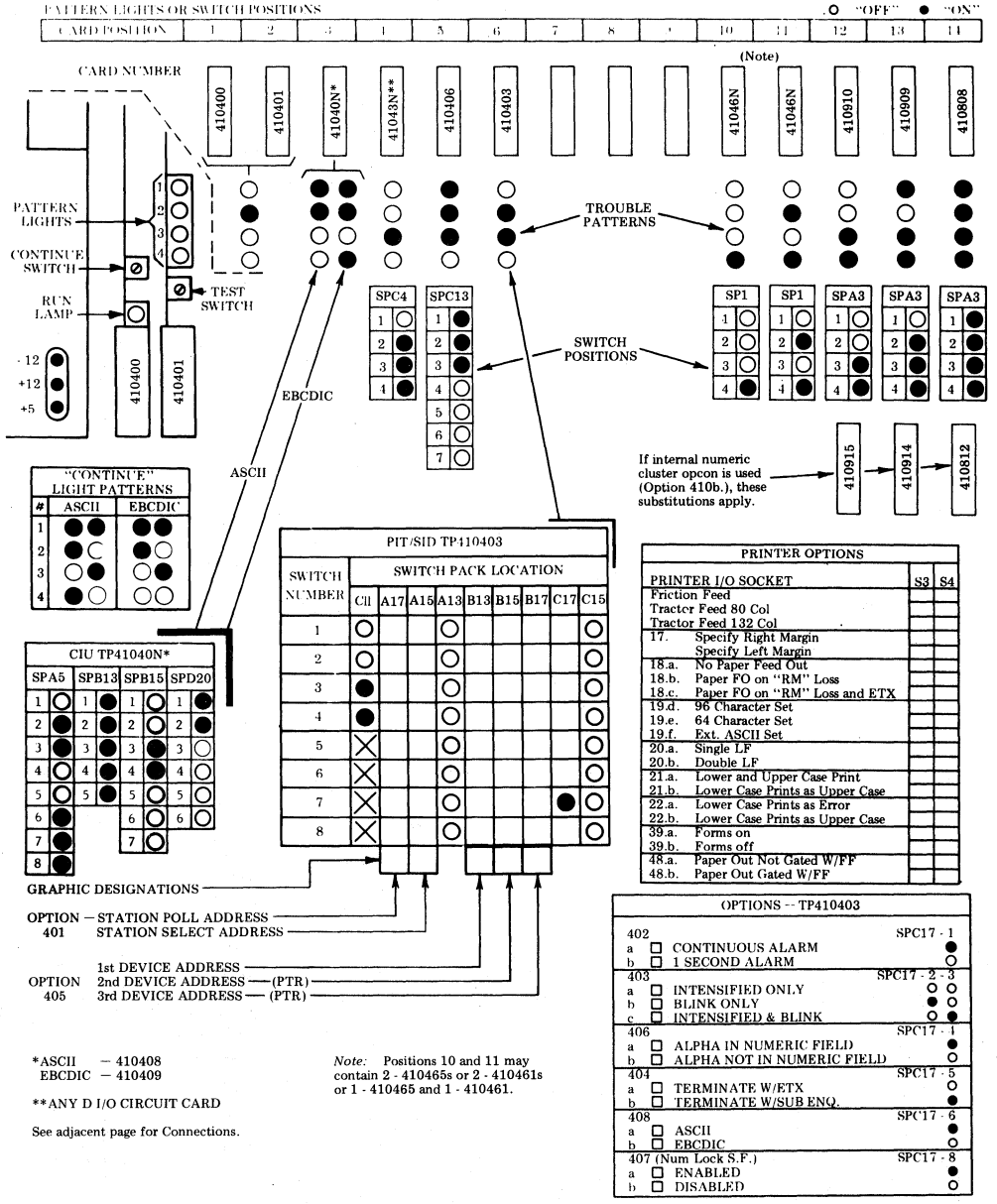
CARD POSITION	I/O SOCKET	DEVICE
3	DS	DATA SET
4 & 5	S2-B	KEYBOARD/MON. (1)
5	S3	PRINTER (2)



Note 1: If the customer requires that print local operation be prohibited from the KD, place a 340701 blocking keytop over the PRINT LOCAL position of the KD opcon. Another method is to connect the printer to S4, option 410411 so that the third device address (B6) is the printer address, and turn all B5 switches off.

Note 2: If printer is not part of station, option B5 switches off on 410411 circuit card.

MCC — Controller Arrangement Form
LINE CODE: ASCII ☐ EBCDIC ☐
USOC: 4TX + (4TOX + OR 4TPX+)
HANDLES: 1-KD & 2 PTRs (1 Print Local)



PRINTER OPTIONS		
PRINTER I/O SOCKET	S3	S4
Friction Feed		
Tractor Feed 80 Col		
Tractor Feed 132 Col		
17. Specify Right Margin		
Specify Left Margin		
18.a. No Paper Feed Out		
18.b. Paper FO on "RM" Loss		
18.c. Paper FO on "RM" Loss and ETX		
19.d. 96 Character Set		
19.e. 64 Character Set		
19.f. Ext. ASCII Set		
20.a. Single LF		
20.b. Double LF		
21.a. Lower and Upper Case Print		
21.b. Lower Case Prints as Upper Case		
22.a. Lower Case Prints as Error		
22.b. Lower Case Prints as Upper Case		
39.a. Forms on		
39.b. Forms off		
48.a. Paper Out Not Gated W/FF		
48.b. Paper Out Gated W/FF		

OPTIONS -- TP410403	
402	SPC17 - 1
a ☐ CONTINUOUS ALARM	●
b ☐ 1 SECOND ALARM	○
403	SPC17 - 2 - 3
a ☐ INTENSIFIED ONLY	○ ○
b ☐ BLINK ONLY	● ○
c ☐ INTENSIFIED & BLINK	○ ●
406	SPC17 - 4
a ☐ ALPHA IN NUMERIC FIELD	●
b ☐ ALPHA NOT IN NUMERIC FIELD	○
404	SPC17 - 5
a ☐ TERMINATE W/ETX	○
b ☐ TERMINATE W/SUB ENQ.	●
408	SPC17 - 6
a ☐ ASCII	●
b ☐ EBCDIC	○
407 (Num Lock S.F.)	SPC17 - 8
a ☐ ENABLED	●
b ☐ DISABLED	○

*ASCII — 410408
EBCDIC — 410409

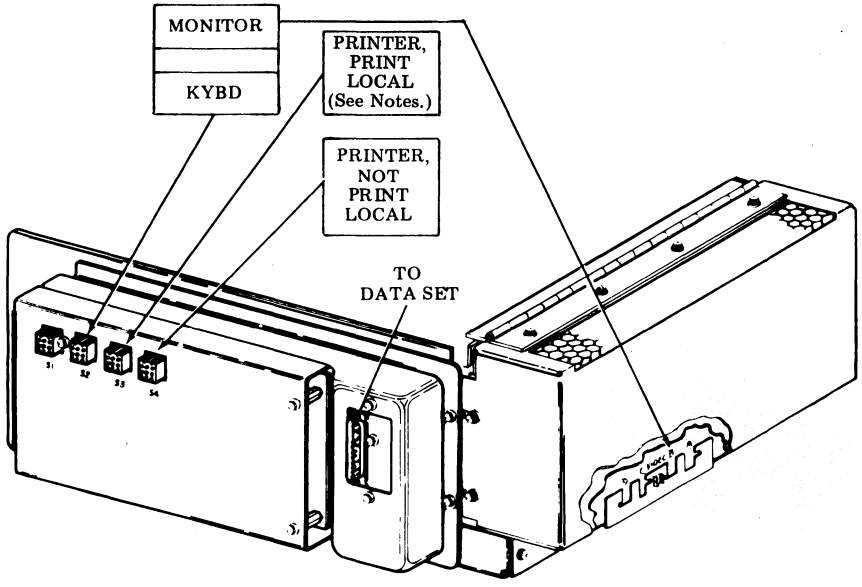
**ANY D I/O CIRCUIT CARD

See adjacent page for Connections.

Note: Positions 10 and 11 may contain 2 - 410465s or 2 - 410461s or 1 - 410465 and 1 - 410461.

MCC — Controller Arrangement Form
HANDLES: 1-KD & 2-PTRs (1 Print Local)

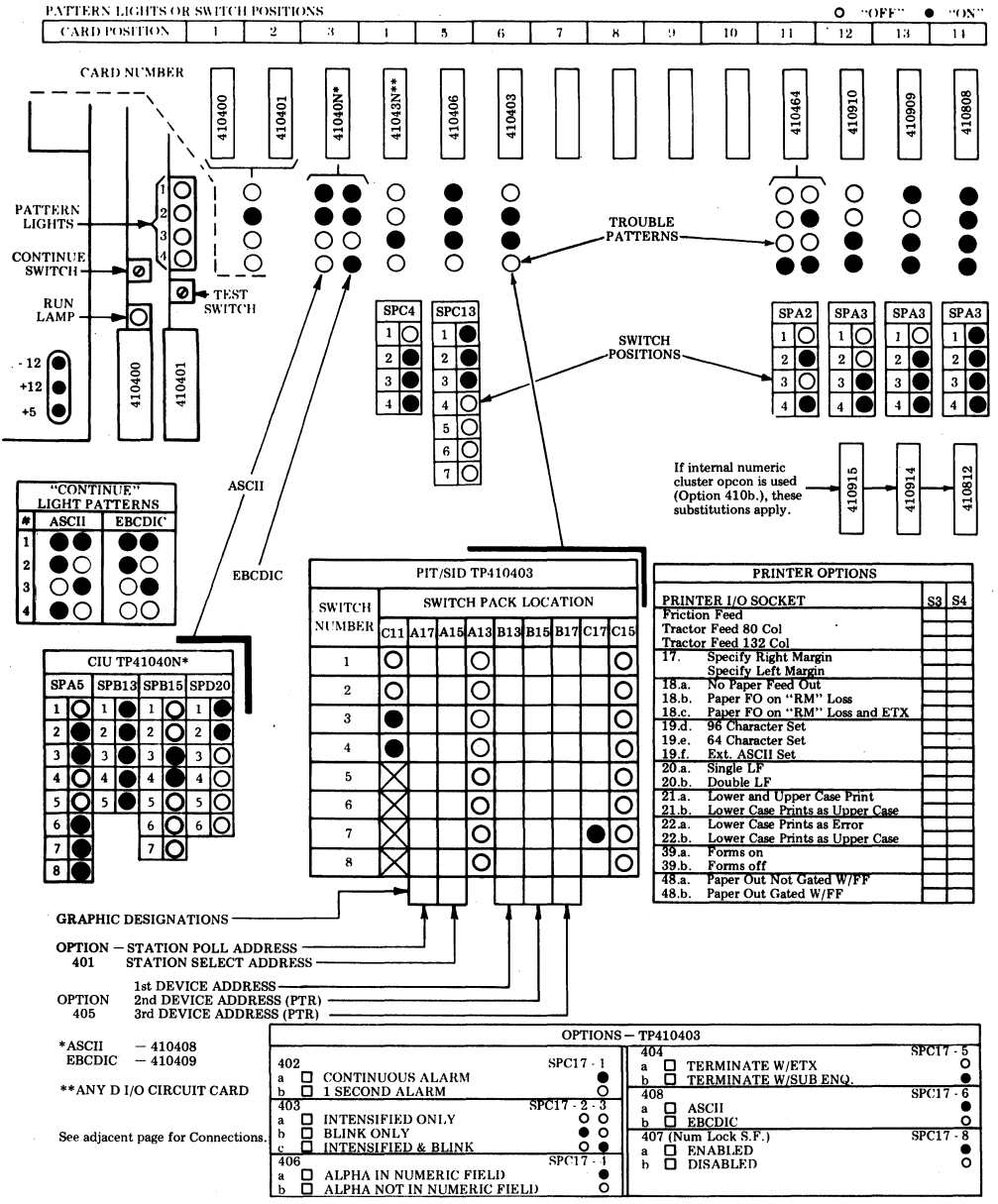
CARD POSITION	I/O SOCKET	DEVICE
3	DS	DATA SET
4 & 5	S2-B	KEYBOARD/MON. (1)
5	S3	PRINTER (2)
5	S4	PRINTER (3)



Note 1: If the customer requires that print local operation be prohibited from the KD, place a 340701 blocking keytop over the PRINT LOCAL position of the KD opcon.

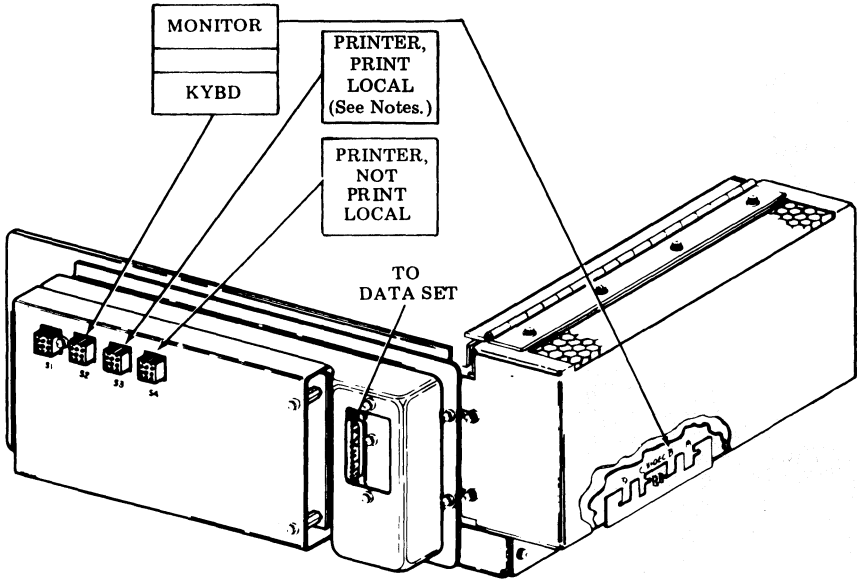
Note 2: If only one printer is part of the order and the customer requires that print local operation be prohibited from the KD, another method can be used: connect printer to S4, option 410403 card for third device address (B17) to be the printer address, and turn all B15 switches off.

MCC — Controller Arrangement Form
LINE CODE: ASCII ☐ EBCDIC ☐
USOC: 4TX + (4TOX+ OR 4TPX+)
HANDLES: 1-KD & 2 PTRs (1 Print Local)



MCC — Controller Arrangement Form
HANDLES: 1-KD & 2-PTRs (1 Print Local)

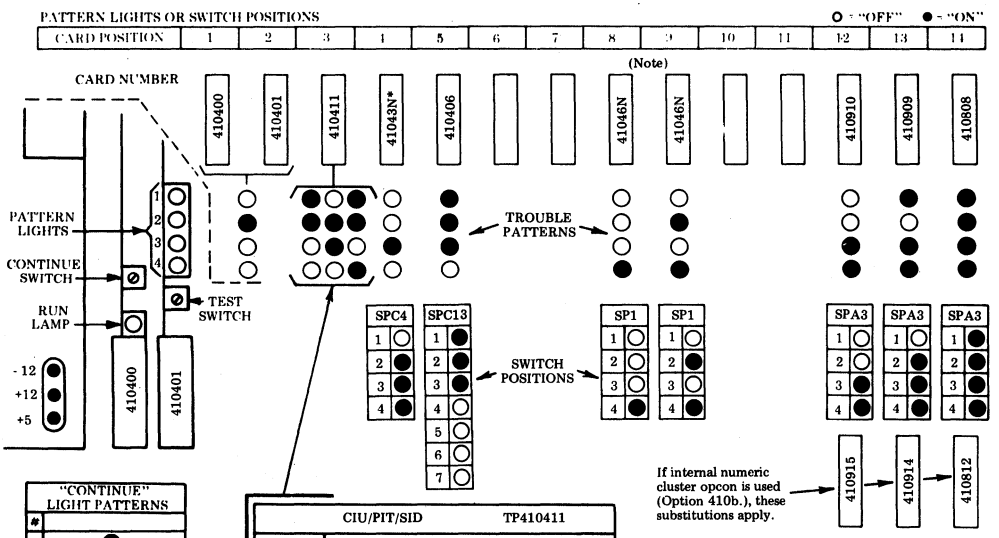
CARD POSITION	I/O SOCKET	DEVICE
3	DS	DATA SET
4 & 5	S2-B	KEYBOARD/MON. (1)
5	S3	PRINTER (2)
5	S4	PRINTER (3)

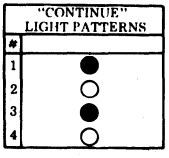


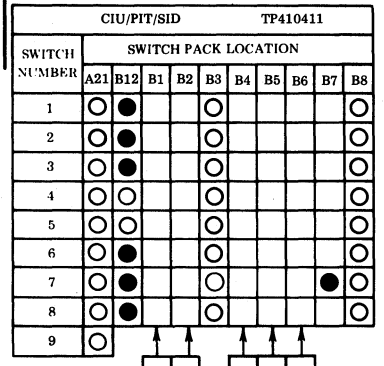
Note 1: If the customer requires that print local operation be prohibited from the KD, place a 340701 blocking keytop over the PRINT LOCAL position of the KD opcon.

Note 2: If only one printer is part of the order and the customer requires that print local operation be prohibited from the KD, another method can be used: connect printer to S4, option 410403 card for third device address (B17) to be the printer address, and turn all B15 switches off.

MCC — Controller Arrangement Form
LINE CODE: ASCII☐ EBCDIC☐
USOC: 4TX + (4TOX+ OR 4TPX+)
HANDLES: 1-KD & 2 PTRs (1 Print Local)







Note: Positions 8 & 9 may contain 2 - 410465s or 2 - 410461s or 1 - 410465 and 1 - 410461.

GRAPHIC DESIGNATIONS

OPTION 401
STATION POLL ADDRESS
STATION SELECT ADDRESS

OPTION 405
1st DEVICE ADDRESS
2nd DEVICE ADDRESS (PTR)
3rd DEVICE ADDRESS (PTR)

PRINTER OPTIONS		
PRINTER I/O SOCKET	S3	S4
Friction Feed		
Tractor Feed 80 Col		
Tractor Feed 132 Col		
17. Specify Right Margin		
Specify Left Margin		
18.a. No Paper Feed Out		
18.b. Paper FO on "RM" Loss		
18.c. Paper FO on "RM" Loss and ETX		
19.d. 96 Character Set		
19.e. 64 Character Set		
19.f. Ext. ASCII Set		
20.a. Single LF		
20.b. Double LF		
21.a. Lower and Upper Case Print		
21.b. Lower Case Prints as Upper Case		
22.a. Lower Case Prints as Error		
22.b. Lower Case Prints as Upper Case		
39.a. Forms on		
39.b. Forms off		
48.a. Paper Out Not Gated W/FF		
48.b. Paper Out Gated W/FF		

*ANY D I/O CIRCUIT CARD

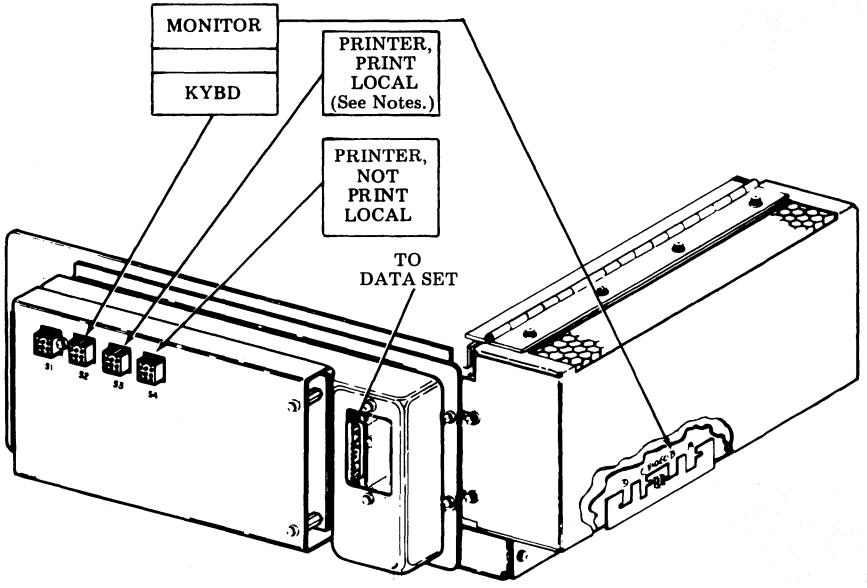
Caution: PROMs 450013, 450014. 450015 & 450016 on 410808 (if used) must be issue 3 or later.

See adjacent page for Connections.

OPTIONS — 410411			
402	SPB7-1	404	SPB7-5
a ☐ CONTINUOUS ALARM	●	a ☐ TERMINATE W/ETX	○
b ☐ 1 SECOND ALARM	○	b ☐ TERMINATE W/SUB ENQ.	●
403	SPB7-2 –3	408	SPB7-6
a ☐ INTENSIFIED ONLY	○ ○	a ☐ ASCII	●
b ☐ BLINK ONLY	● ○	b ☐ EBCDIC	○
c ☐ INTENSIFIED & BLINK	○ ●	407 (Num Lock S.F.)	SPB7-8
406	SPB7-4	a ☐ ENABLED	●
a ☐ ALPHA IN NUMERIC FIELD	●	b ☐ DISABLED	○
b ☐ ALPHA NOT IN NUMERIC FIELD	○		

MCC — Controller Arrangement Form
HANDLES: 1-KD & Up To 2-PTRs (1 Print Local)

CARD POSITION	I/O SOCKET	DEVICE
3	DS	DATA SET
4 & 5	S2-B	KEYBOARD/MON. (1)
5	S3	PRINTER (2)
5	S4	PRINTER (3)

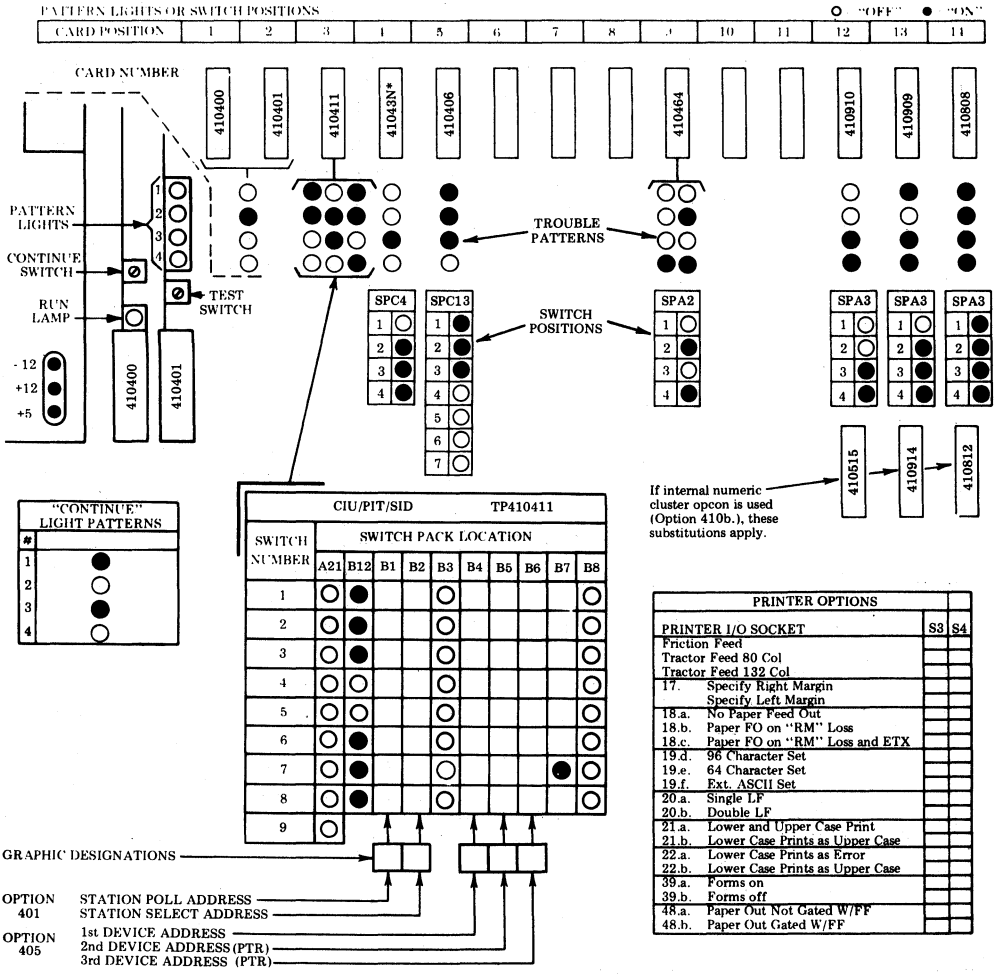


Note 1: If the customer requires that print local operation be prohibited from the KD, place a 340701 blocking keytop over the PRINT LOCAL position of the KD opcon.

Note 2: If only one printer is part of the order and the customer requires that print local operation be prohibited from the KD, another method can be used: connect printer to S4, option 410411 card for third device address (B6) to be the printer address, and turn all B5 switches off.

Note 3: If printers are not part of station, option B5 and B6 switches off on 410411 circuit card.

MCC — Controller Arrangement Form
LINE CODE: ASCII EBCDIC ☐
USOC: 4TX+ (4TOX+ OR 4TPX+)
HANDLES: 1-KD & 2 PTRs (1 Print Local)



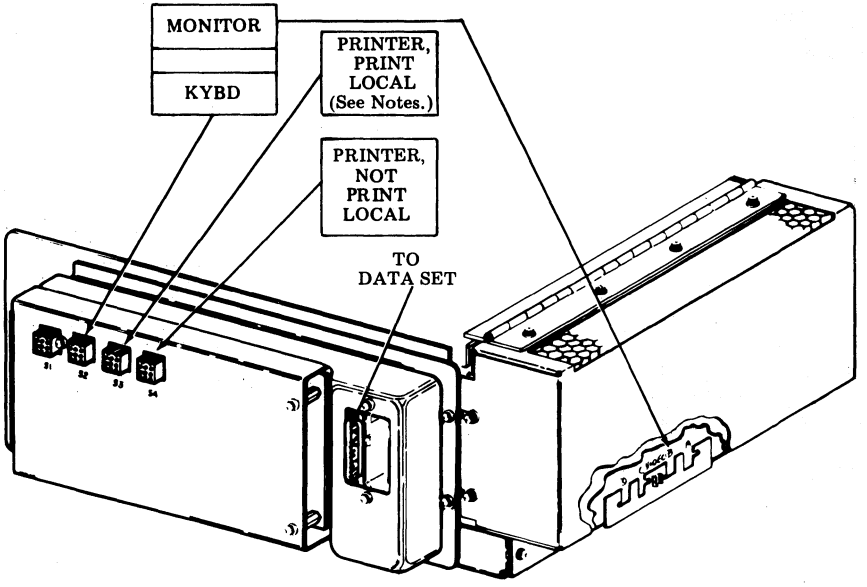
PRINTER OPTIONS		
PRINTER I/O SOCKET	S3	S4
Friction Feed		
Tractor Feed 80 Col		
Tractor Feed 132 Col		
17. Specify Right Margin		
Specify Left Margin		
18.a. No Paper Feed Out		
18.b. Paper FO on "RM" Loss		
18.c. Paper FO on "RM" Loss and ETX		
19.d. 96 Character Set		
19.e. 64 Character Set		
19.f. Ext. ASCII Set		
20.a. Single LF		
20.b. Double LF		
21.a. Lower and Upper Case Print		
21.b. Lower Case Prints as Upper Case		
22.a. Lower Case Prints as Error		
22.b. Lower Case Prints as Upper Case		
39.a. Forms on		
39.b. Forms off		
48.a. Paper Out Not Gated W/FF		
48.b. Paper Out Gated W/FF		

*ANY D I/O CIRCUIT CARD
Caution: PROMs 450013, 450014, 450015 & 450016 on 410808 (if used) must be issue 3 or later.
See adjacent page for Connections.

OPTIONS — 410411				
402		SPB7-1	404	SPB7-5
a ☐	CONTINUOUS ALARM	●	a ☐ TERMINATE W/ETX	○
b ☐	1 SECOND ALARM	○	b ☐ TERMINATE W/SUB ENQ.	●
403		SPB7-2–3	408	SPB7-6
a ☐	INTENSIFIED ONLY	○ ○	a ☐ ASCII	●
b ☐	BLINK ONLY	● ○	b ☐ EBCDIC	○
c ☐	INTENSIFIED & BLINK	○ ●	407 (Num Lock S.F.)	SPB7-8
406		SPB7-4	a ☐ ENABLED	●
a ☐	ALPHA IN NUMERIC FIELD	●	b ☐ DISABLED	○
b ☐	ALPHA NOT IN NUMERIC FIELD	○		

MCC — Controller Arrangement Form
HANDLES: 1-KD & Up To 2-PTRs (1 Print Local)

CARD POSITION	I/O SOCKET	DEVICE
3	DS	DATA SET
4 & 5	S2-B	KEYBOARD/MON. (1)
5	S3	PRINTER (2)
5	S4	PRINTER (3)

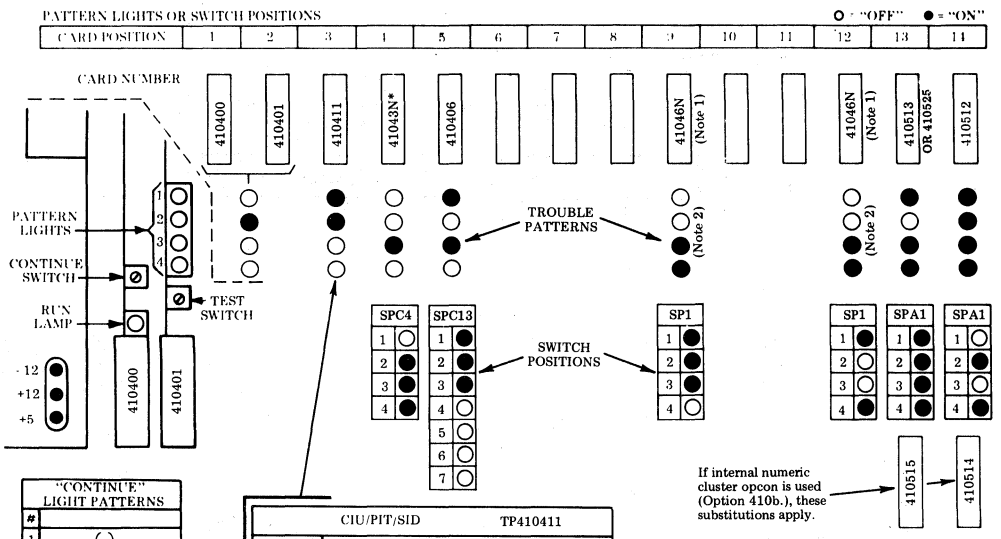


Note 1: If the customer requires that print local operation be prohibited from the KD, place a 340701 blocking keytop over the PRINT LOCAL position of the KD opcon.

Note 2: If only one printer is part of the order and the customer requires that print local operation be prohibited from the KD, another method can be used: connect printer to S4, option 410411 card for third device address (B6) to be the printer address, and turn all B5 switches off.

Note 3: If printers are not part of station, option B5 and B6 switches off on 410411 circuit card.

MCC — Controller Arrangement Form
LINE CODE: ASCII ☐ EBCDIC ☐
USOC: 4TX + (4TOX+ OR 4TPX+)
HANDLES: 1-KD & 2 PTRs (1 Print Local)



"CONTINUE" LIGHT PATTERNS

#	
1	○
2	●
3	●
4	○

Note 1: Positions 9 & 12 may contain 2 - 410465s or 2 - 410461s or 1 - 410465 & 1 - 410461.

Note 2: Same trouble pattern for both 41046Ns. If pattern occurs, replace 41046Ns one at a time until pattern no longer appears.

CIU/PIT/SID TP410411

SWITCH NUMBER	SWITCH PACK LOCATION									
	A21	B12	B1	B2	B3	B4	B5	B6	B7	B8
1	○	●			○					○
2	○	●			○					○
3	○	●			○					○
4	○	○			○					○
5	○	○			○					○
6	○	●			○					○
7	○	●			○					○
8	○	●			○					○
9	○									

GRAPHIC DESIGNATIONS

OPTION 401 — STATION POLL ADDRESS, STATION SELECT ADDRESS

OPTION 405 — 1st DEVICE ADDRESS, 2nd DEVICE ADDRESS (PTR), 3rd DEVICE ADDRESS (PTR)

PRINTER OPTIONS			
PRINTER I/O SOCKET		S3	S4
Friction Feed			
Tractor Feed 80 Col			
Tractor Feed 132 Col			
17.	Specify Right Margin		
	Specify Left Margin		
18.a.	No Paper Feed Out		
18.b.	Paper FO on "RM" Loss		
18.c.	Paper FO on "RM" Loss and ETX		
19.d.	96 Character Set		
19.e.	64 Character Set		
19.f.	Ext. ASCII Set		
20.a.	Single LF		
20.b.	Double LF		
21.a.	Lower and Upper Case Print		
21.b.	Lower Case Prints as Upper Case		
22.a.	Lower Case Prints as Error		
22.b.	Lower Case Prints as Upper Case		
39.a.	Forms on		
39.b.	Forms off		
48.a.	Paper Out Not Gated W/FF		
48.b.	Paper Out Gated W/FF		

OPTIONS — 410411

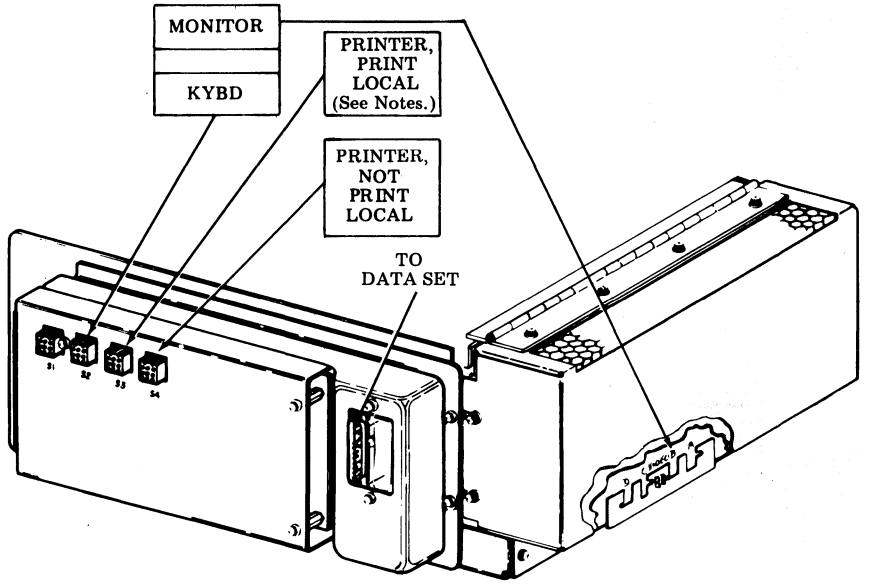
402		SPB7-1
a ☐	CONTINUOUS ALARM	●
b ☐	1 SECOND ALARM	○
403		SPB7-2 -3
a ☐	INTENSIFIED ONLY	○ ○
b ☐	BLINK ONLY	● ○
c ☐	INTENSIFIED & BLINK	○ ●
406		SPB7-4
a ☐	ALPHA IN NUMERIC FIELD	●
b ☐	ALPHA NOT IN NUMERIC FIELD	○
404		SPB7-5
a ☐	TERMINATE W/ETX	○
b ☐	TERMINATE W/SUB ENQ.	●
408		SPB7-6
a ☐	ASCII	●
b ☐	EBCDIC	○
407 (Num Lock S.F.)		SPB7-8
a ☐	ENABLED	●
b ☐	DISABLED	○
414	**BUFFER LOCK**	SPB7-7
a ☐	**ENABLED**	●
b ☐	**DISABLED (REQUIRES 410525)**	○

*ANY D I/O CIRCUIT CARD

See adjacent page for Connections.

MCC — Controller Arrangement Form
HANDLES: 1-KD & Up To 2-PTRs (1 Print Local)

CARD POSITION	I/O SOCKET	DEVICE
3	DS	DATA SET
4 & 5	S2-B	KEYBOARD/MON. (1)
5	S3	PRINTER (2)
5	S4	PRINTER (3)

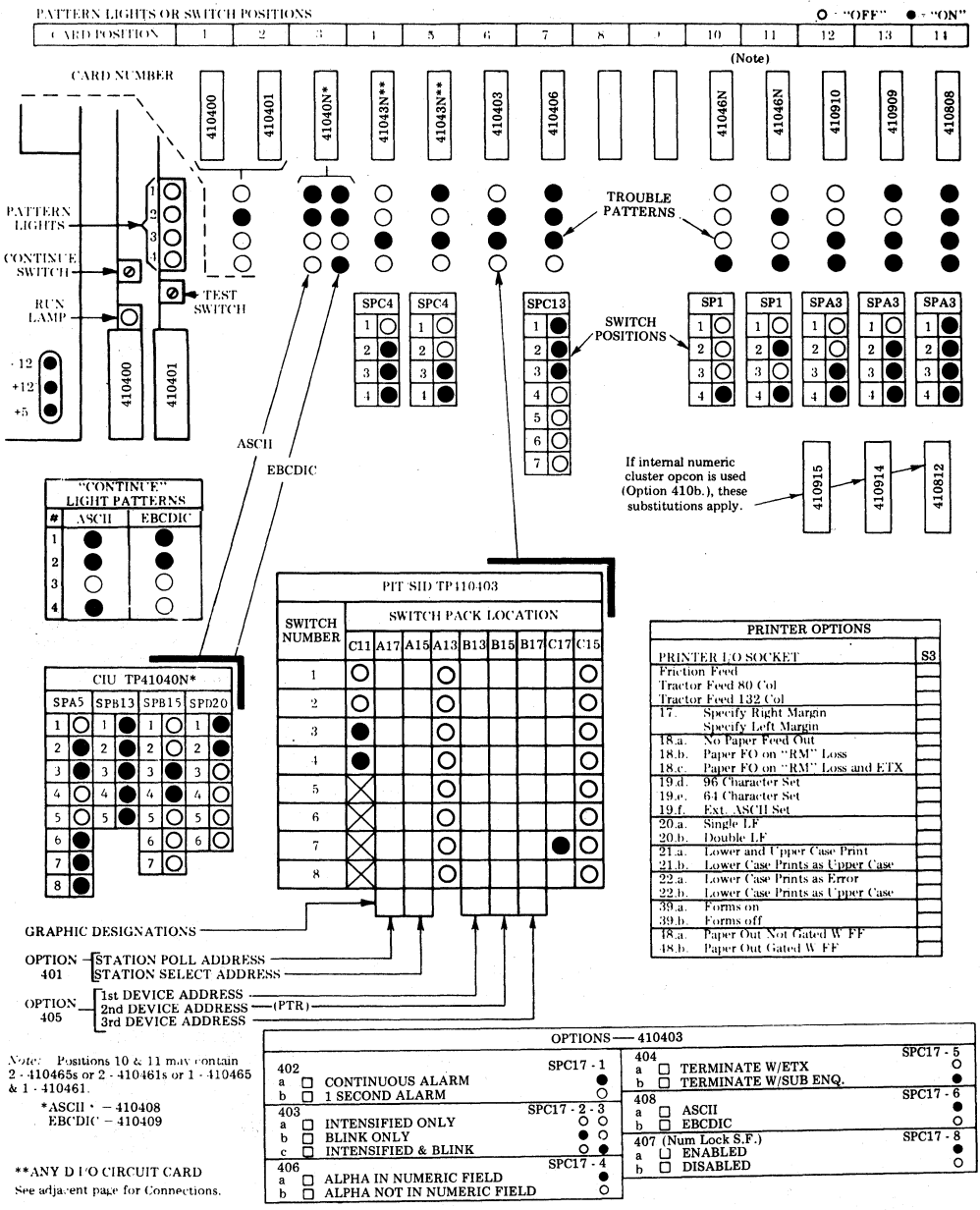


Note 1: If the customer requires that print local operation be prohibited from the KD, place a 340701 blocking keytop over the PRINT LOCAL position of the KD opcon.

Note 2: If only one printer is part of the order and the customer requires that print local operation be prohibited from the KD, another method can be used: connect printer to S4, option 410411 card for third device address (B6) to be the printer address, and turn all B5 switches off.

Note 3: If printers are not part of station, option B5 and B6 switches off on 410411 circuit card.

MCC — Controller Arrangement Form
LINE CODE: ASCII ☐ EBCDIC ☐
USOC: 4TX + 2-(4TOX+ OR 4TPX+)
HANDLES: 2-KDs & 1 PTR (Print Local)



#	ASCII	EBCDIC
1	●	●
2	●	●
3	O	O
4	●	O

PRINTER OPTIONS	
PRINTER I/O SOCKET	S3
Friction Feed	
Tractor Feed 80 Col	
Tractor Feed 132 Col	
17. Specify Right Margin / Specify Left Margin	
18.a. No Paper Feed Out	
18.b. Paper FO on "RM" Loss	
18.c. Paper FO on "RM" Loss and ETX	
19.d. 96 Character Set	
19.e. 64 Character Set	
19.f. Ext. ASCII Set	
20.a. Single LF	
20.b. Double LF	
21.a. Lower and Upper Case Print	
21.b. Lower Case Prints as Upper Case	
22.a. Lower Case Prints as Error	
22.b. Lower Case Prints as Upper Case	
39.a. Forms on	
39.b. Forms off	
48.a. Paper Out Not Gated W FF	
48.b. Paper Out Gated W FF	

OPTIONS — 410403		
402	SPC17 - 1	
a ☐ CONTINUOUS ALARM		●
b ☐ 1 SECOND ALARM		O
403	SPC17 - 2 - 3	
a ☐ INTENSIFIED ONLY		O O
b ☐ BLINK ONLY		● O
c ☐ INTENSIFIED & BLINK		O ●
406	SPC17 - 4	
a ☐ ALPHA IN NUMERIC FIELD		●
b ☐ ALPHA NOT IN NUMERIC FIELD		O
404	SPC17 - 5	
a ☐ TERMINATE W/ETX		O
b ☐ TERMINATE W/SUB ENQ.		●
408	SPC17 - 6	
a ☐ ASCII		●
b ☐ EBCDIC		O
407 (Num Lock S.F.)	SPC17 - 8	
a ☐ ENABLED		●
b ☐ DISABLED		O

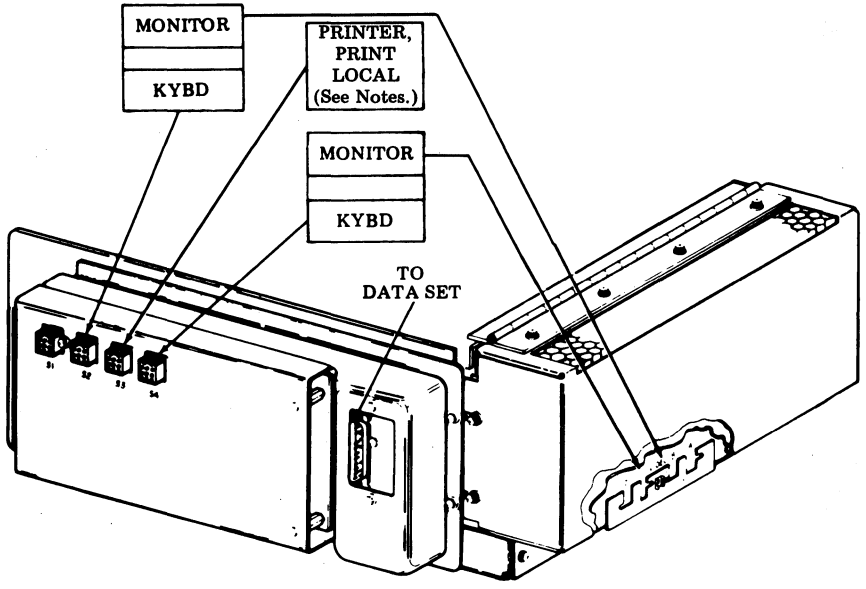
Note: Positions 10 & 11 may contain 2 - 410465s or 2 - 410461s or 1 - 410465 & 1 - 410461.

*ASCII - 410408
EBCDIC - 410409

**ANY D I/O CIRCUIT CARD
See adjacent page for Connections.

MCC — Controller Arrangement Form
HANDLES: 2-KDs & 1-PTR (Print Local)

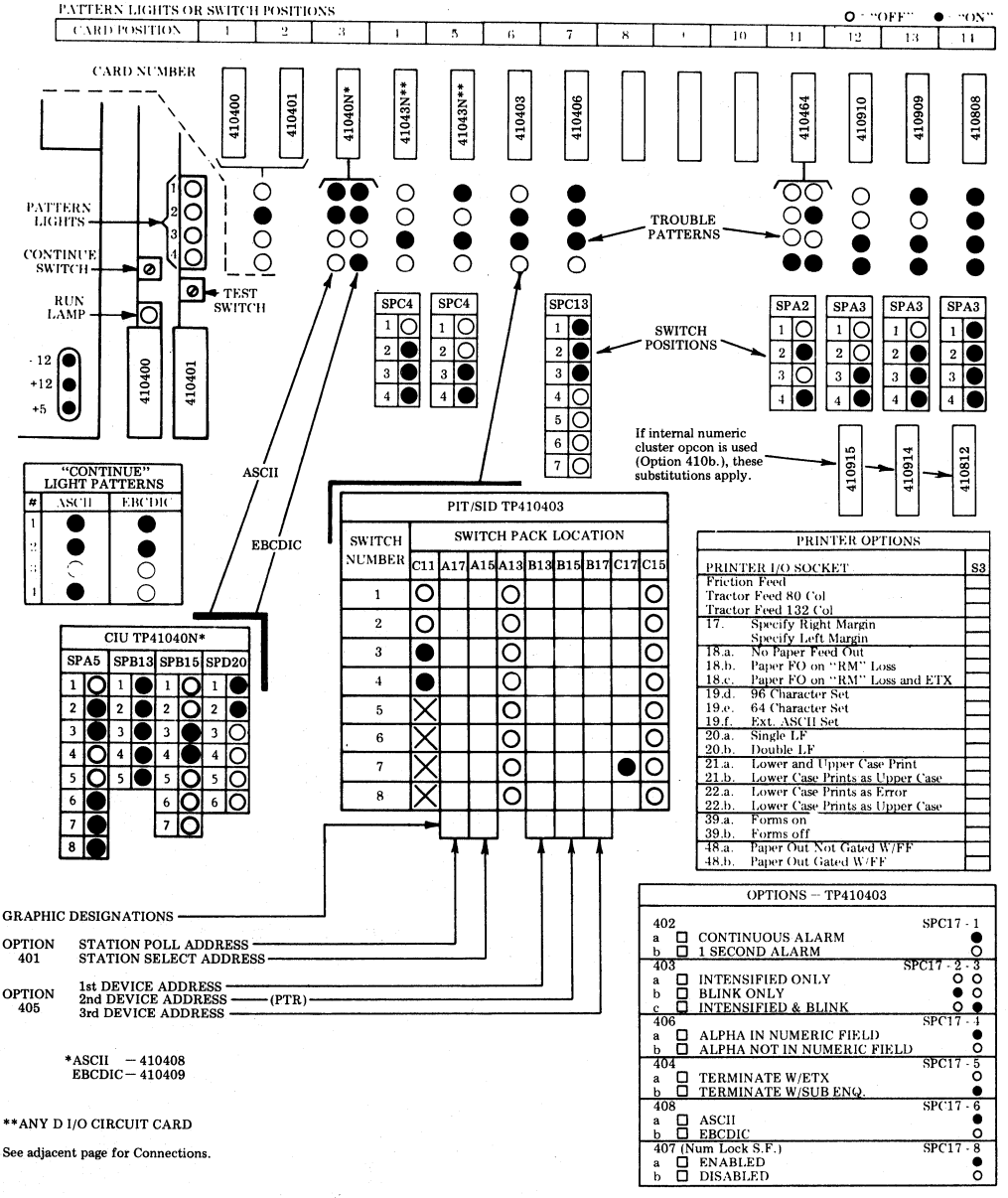
CARD POSITION	I/O SOCKET	DEVICE
3	DS	DATA SET
4 & 7	S2-B	KEYBOARD/MON. (1)
7	S3	PRINTER (2)
5 & 7	S4-C	KEYBOARD/MON. (3)



Note 1: If the customer requires that print local operation be prohibited from the KD(s), place 340701 blocking keytop over the PRINT LOCAL position of the KD opcon(s).

Note 2: If printer is not included as part of configuration, option B15 switches off on 410403 circuit card and option B17 switches for 2nd KD.

MCC — Controller Arrangement Form
LINE CODE: ASCII ☐ EBCDIC ☐
USOC: 4TX + 2-(4TOX+ OR 4TPX+)
HANDLES: 2-KDs & 1-PTR (Print Local)



PRINTER OPTIONS	
PRINTER I/O SOCKET	S3
Friction Feed	
Tractor Feed 80 Col	
Tractor Feed 132 Col	
17. Specify Right Margin	
Specify Left Margin	
18.a. No Paper Feed Out	
18.b. Paper FO on "RM" Loss	
18.c. Paper FO on "RM" Loss and ETX	
19.d. 96 Character Set	
19.e. 64 Character Set	
19.f. Ext. ASCII Set	
20.a. Single LF	
20.b. Double LF	
21.a. Lower and Upper Case Print	
21.b. Lower Case Prints as Upper Case	
22.a. Lower Case Prints as Error	
22.b. Lower Case Prints as Upper Case	
39.a. Forms on	
39.b. Forms off	
48.a. Paper Out Not Gated W/FF	
48.b. Paper Out Gated W/FF	

OPTIONS — TP410403	
402	SPC17 - 1
a ☐ CONTINUOUS ALARM	●
b ☐ 1 SECOND ALARM	○
403	SPC17 - 2 - 3
a ☐ INTENSIFIED ONLY	○ ○
b ☐ BLINK ONLY	● ○
c ☐ INTENSIFIED & BLINK	○ ●
406	SPC17 - 4
a ☐ ALPHA IN NUMERIC FIELD	●
b ☐ ALPHA NOT IN NUMERIC FIELD	○
404	SPC17 - 5
a ☐ TERMINATE W/ETX	○
b ☐ TERMINATE W/SUB ENQ.	●
408	SPC17 - 6
a ☐ ASCII	●
b ☐ EBCDIC	○
407 (Num Lock S.F.)	SPC17 - 8
a ☐ ENABLED	●
b ☐ DISABLED	○

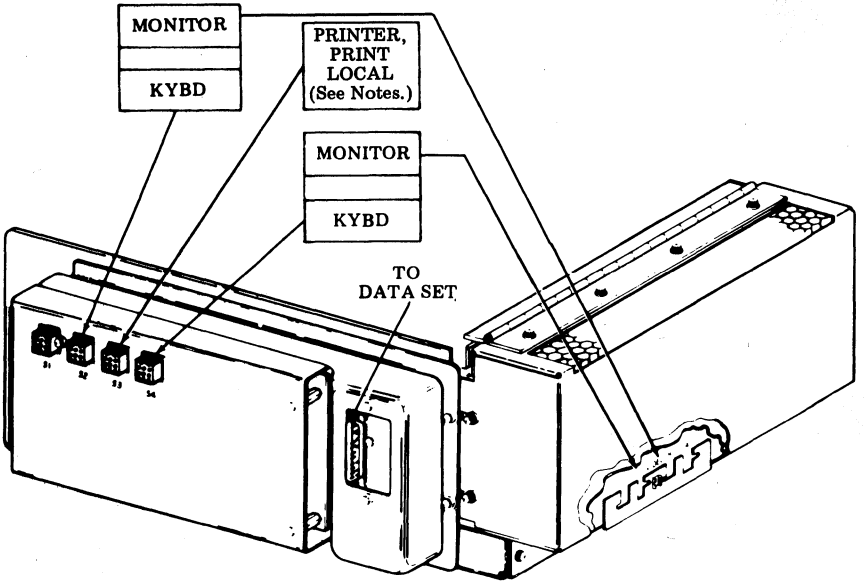
*ASCII — 410408
EBCDIC — 410409

**ANY D I/O CIRCUIT CARD

See adjacent page for Connections.

MCC — Controller Arrangement Form
HANDLES: 2-KDs & 1-PTR (Print Local)

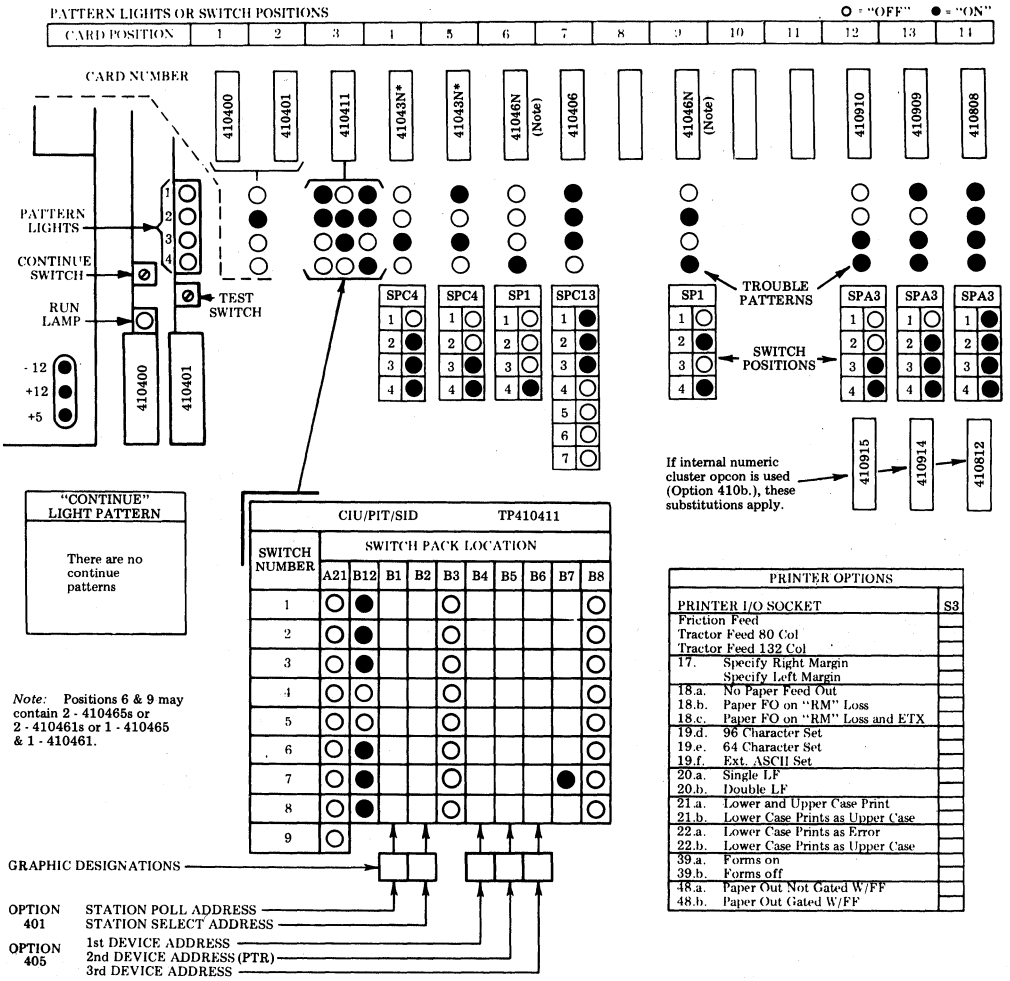
CARD POSITION	I/O SOCKET	DEVICE
3	DS	DATA SET
4 & 7	S2-B	KEYBOARD/MON. (1)
7	S3	PRINTER (2)
5 & 7	S4-C	KEYBOARD/MON. (3)



Note 1: If the customer requires that print local operation be prohibited from the KD(s), place 340701 blocking keytop over the PRINT LOCAL position of the KD opcon(s).

Note 2: If printer is not included as part of configuration, option B15 switches off on 410403 circuit card and option B17 switches for 2nd KD.

MCC — Controller Arrangement Form
LINE CODE: ASCII☐ EBCDIC
USOC: 4TX + 2-(4TOX+ OR 4TPX+)
HANDLES: 2-KDs & 1-PTR (Print Local)



"CONTINUE" LIGHT PATTERN
There are no continue patterns

Note: Positions 6 & 9 may contain 2 - 410465s or 2 - 410461s or 1 - 410465 & 1 - 410461.

CIU/PIT/SID TP410411

SWITCH NUMBER	SWITCH PACK LOCATION									
	A21	B12	B1	B2	B3	B4	B5	B6	B7	B8
1	○	●			○					○
2	○	●			○					○
3	○	●			○					○
4	○	○			○					○
5	○	○			○					○
6	○	●			○					○
7	○	●			○				●	○
8	○	●			○					○
9	○									

GRAPHIC DESIGNATIONS

OPTION 401 — STATION POLL ADDRESS, STATION SELECT ADDRESS

OPTION 405 — 1st DEVICE ADDRESS, 2nd DEVICE ADDRESS (PTR), 3rd DEVICE ADDRESS

PRINTER OPTIONS	
PRINTER I/O SOCKET	S3
Friction Feed	
Tractor Feed 80 Col	
Tractor Feed 132 Col	
17. Specify Right Margin	
Specify Left Margin	
18.a. No Paper Feed Out	
18.b. Paper FO on "RM" Loss	
18.c. Paper FO on "RM" Loss and ETX	
19.d. 96 Character Set	
19.e. 64 Character Set	
19.f. Ext. ASCII Set	
20.a. Single LF	
20.b. Double LF	
21.a. Lower and Upper Case Print	
21.b. Lower Case Prints as Upper Case	
22.a. Lower Case Prints as Error	
22.b. Lower Case Prints as Upper Case	
39.a. Forms on	
39.b. Forms off	
48.a. Paper Out Not Gated W/FF	
48.b. Paper Out Gated W/FF	

*ANY D I/O CIRCUIT CARD

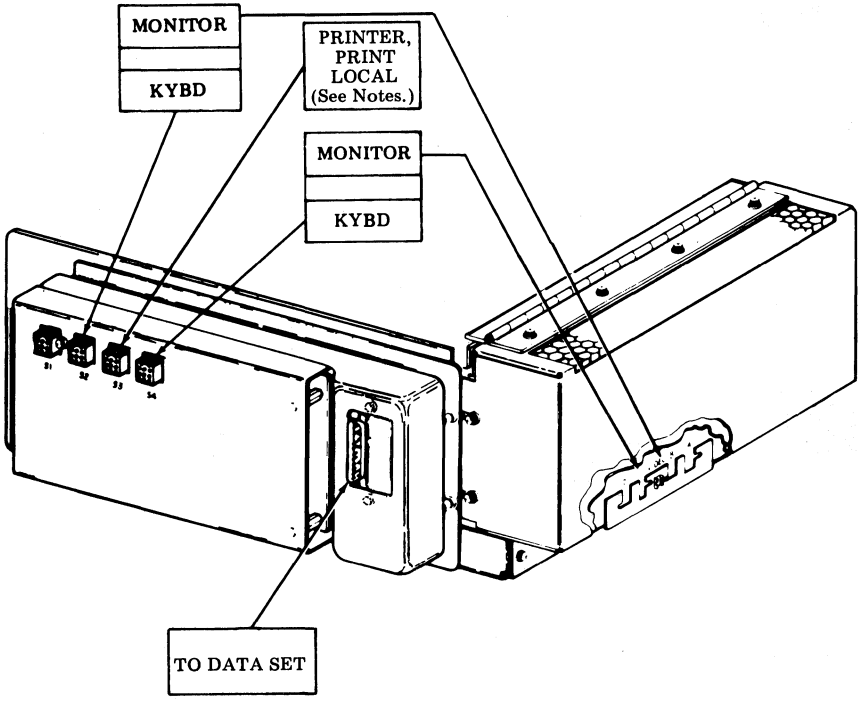
Caution: PROMs 450013, 450014, 450015 & 450016 on 410808 (if used) must be issue 3 or later.

See adjacent page for Connections.

OPTIONS — 410411			
402	SPB7-1	404	SPB7-5
a ☐ CONTINUOUS ALARM	●	a ☐ TERMINATE W/ETX	○
b ☐ 1 SECOND ALARM	○	b ☐ TERMINATE W/SUB ENQ	●
403	SPB7-2 –3	408	SPB7-6
a ☐ INTENSIFIED ONLY	○ ○	a ☐ ASCII	●
b ☐ BLINK ONLY	● ○	b ☐ EBCDIC	○
c ☐ INTENSIFIED & BLINK	○ ●	407 (Num Lock S.F.)	SPB7-8
406	SPB7-4	a ☐ ENABLED	●
a ☐ ALPHA IN NUMERIC FIELD	●	b ☐ DISABLED	○
b ☐ ALPHA NOT IN NUMERIC FIELD	○		

MCC — Controller Arrangement Form
HANDLES: 2-KDs & 1-PTR (Print Local)

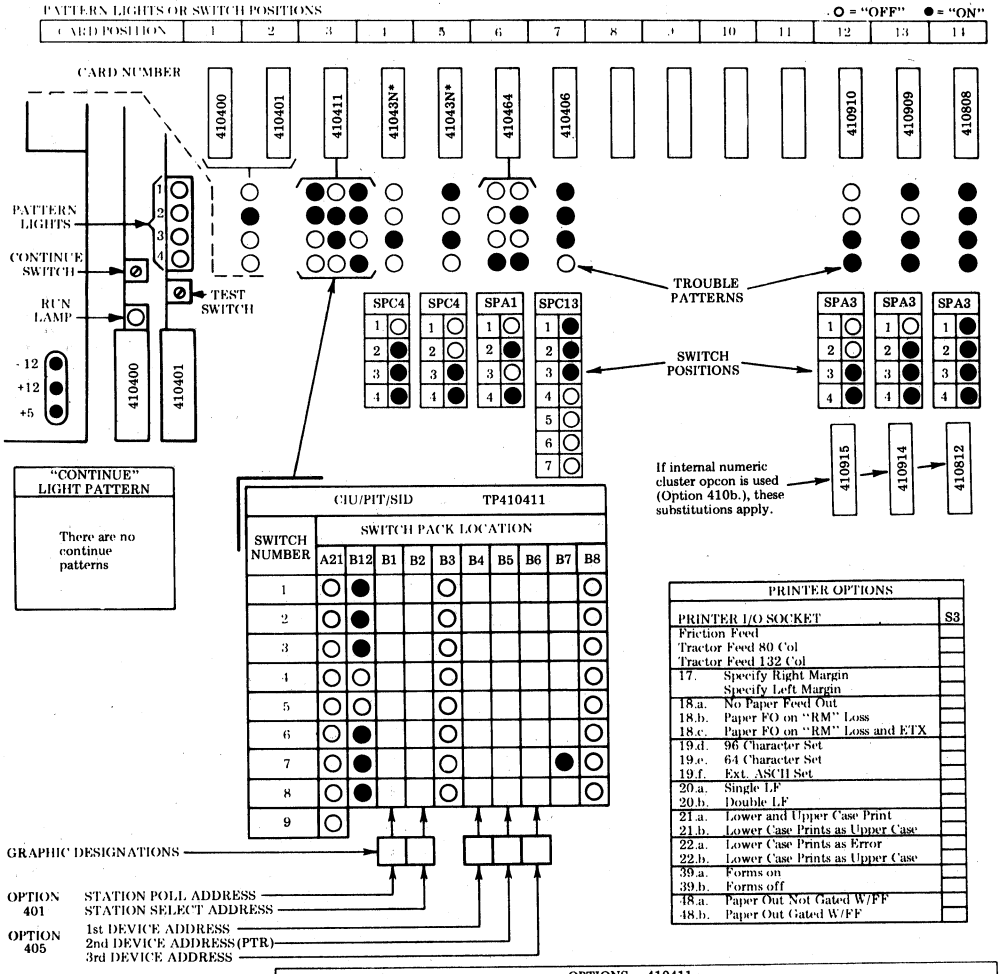
CARD POSITION	I/O SOCKET	DEVICE
3	DS	DATA SET
4 & 7	S2-B	KEYBOARD/MON. (1)
7	S3	PRINTER (2)
5 & 7	S4-C	KEYBOARD/MON. (3)



Note 1: If the customer requires that print local operation be prohibited from the KD(s), place 340701 blocking keytop over the PRINT LOCAL position of the KD opcon(s).

Note 2: If printer is not included as part of configuration, option B5 switches off on 410411 circuit card and option B6 switches for 2nd KD.

MCC — Controller Arrangement Form
LINE CODE: ASCII ☐ EBCDIC ☐
USOC: 4TX + 2-(4TOX+ OR 4TPX+)
HANDLES: 2-KDs & 1-PTR (Print Local)



PRINTER OPTIONS	
PRINTER I/O SOCKET	S3
Friction Feed	
Tractor Feed 80 Col	
Tractor Feed 132 Col	
17. Specify Right Margin	
Specify Left Margin	
18.a. No Paper Feed Out	
18.b. Paper FO on "RM" Loss	
18.c. Paper FO on "RM" Loss and ETX	
19.d. 96 Character Set	
19.e. 64 Character Set	
19.f. Ext. ASCII Set	
20.a. Single LF	
20.b. Double LF	
21.a. Lower and Upper Case Print	
21.b. Lower Case Prints as Upper Case	
22.a. Lower Case Prints as Error	
22.b. Lower Case Prints as Upper Case	
39.a. Forms on	
39.b. Forms off	
48.a. Paper Out Not Gated W/FF	
48.b. Paper Out Gated W/FF	

*ANY D I/O CIRCUIT CARD

Caution: PROMs 450013, 450014, 450015 & 450016 on 410808 (if used) must be issue 3 or later.

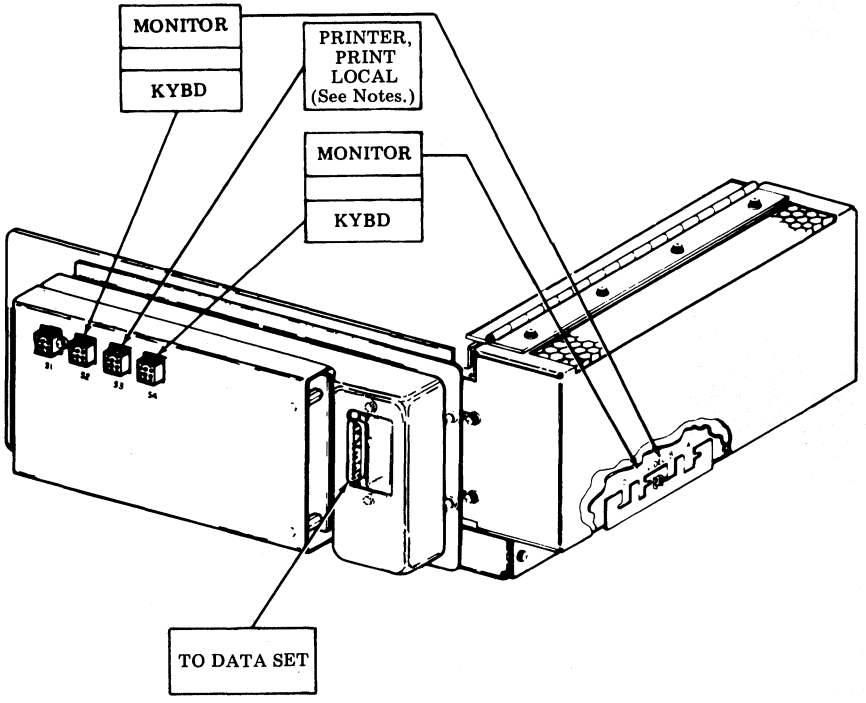
See adjacent page for Connections.

OPTIONS -- 410411

402		SPB7-1
a	☐ CONTINUOUS ALARM	●
b	☐ 1 SECOND ALARM	○
403		SPB7-2 –3
a	☐ INTENSIFIED ONLY	○ ○
b	☐ BLINK ONLY	● ○
c	☐ INTENSIFIED & BLINK	○ ●
406		SPB7-4
a	☐ ALPHA IN NUMERIC FIELD	●
b	☐ ALPHA NOT IN NUMERIC FIELD	○
404		SPB7-5
a	☐ TERMINATE W ETX	○
b	☐ TERMINATE W SUB ENQ.	●
408		SPB7-6
a	☐ ASCII	●
b	☐ EBCDIC	○
407 (Num Lock S.F.)		SPB7-8
a	☐ ENABLED	●
b	☐ DISABLED	○

MCC — Controller Arrangement Form
HANDLES: 2-KDs & 1-PTR (Print Local)

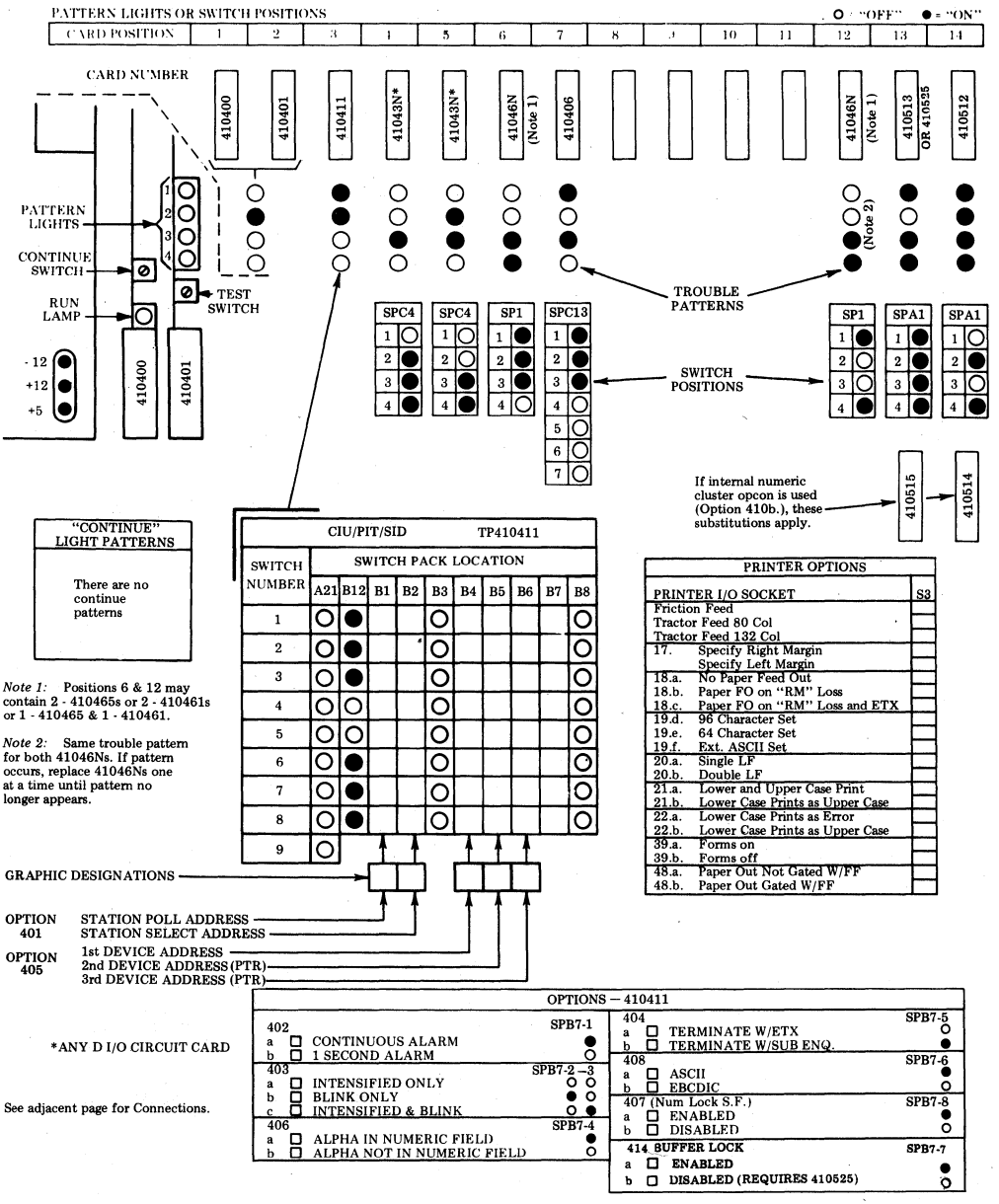
CARD POSITION	I/O SOCKET	DEVICE
3	DS	DATA SET
4 & 7	S2-B	KEYBOARD/MON. (1)
7	S3	PRINTER (2)
5 & 7	S4-C	KEYBOARD/MON. (3)



Note 1: If the customer requires that print local operation be prohibited from the KD(s), place 340701 blocking keytop over the PRINT LOCAL position of the KD opcon(s).

Note 2: If printer is not included as part of configuration, option B5 switches off on 410411 circuit card and option B6 switches for 2nd KD.

MCC — Controller Arrangement Form
LINE CODE: ASCII☐ EBCDIC☐
USOC: 4TX + 2-(4TOX+ OR 4TPX+)
HANDLES: 2-KDs & 1-PTR (Print Local)



Note 1: Positions 6 & 12 may contain 2 - 410465s or 2 - 410461s or 1 - 410465 & 1 - 410461.

Note 2: Same trouble pattern for both 41046Ns. If pattern occurs, replace 41046Ns one at a time until pattern no longer appears.

PRINTER OPTIONS	
PRINTER I/O SOCKET	S3
Friction Feed	
Tractor Feed 80 Col	
Tractor Feed 132 Col	
17. Specify Right Margin	
Specify Left Margin	
18.a. No Paper Feed Out	
18.b. Paper FO on "RM" Loss	
18.c. Paper FO on "RM" Loss and ETX	
19.d. 96 Character Set	
19.e. 64 Character Set	
19.f. Ext. ASCII Set	
20.a. Single LF	
20.b. Double LF	
21.a. Lower and Upper Case Print	
21.b. Lower Case Prints as Upper Case	
22.a. Lower Case Prints as Error	
22.b. Lower Case Prints as Upper Case	
39.a. Forms on	
39.b. Forms off	
48.a. Paper Out Not Gated W/FF	
48.b. Paper Out Gated W/FF	

*ANY D I/O CIRCUIT CARD

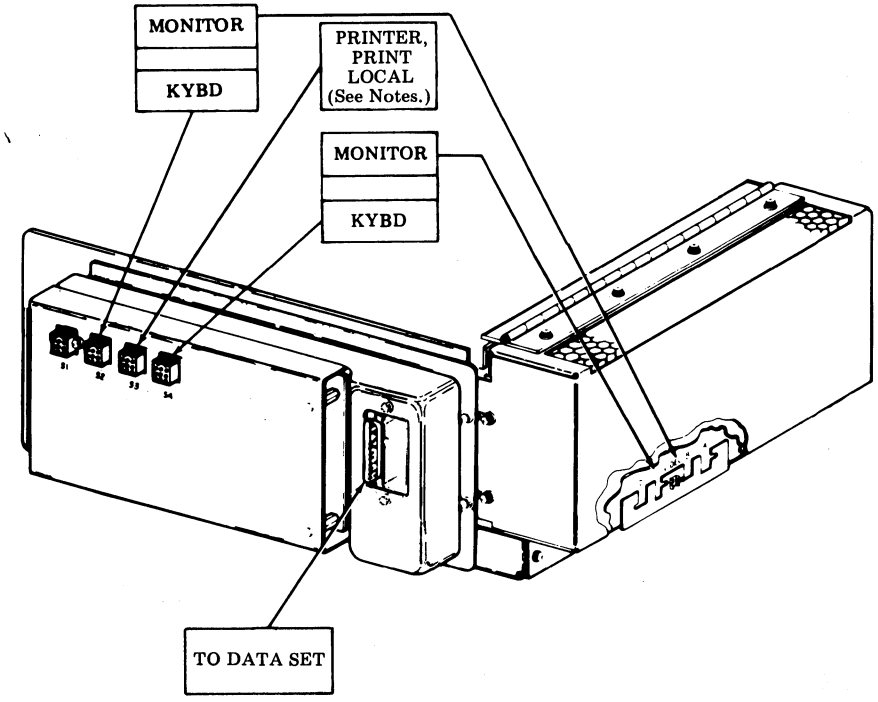
See adjacent page for Connections.

OPTIONS — 410411

402	SPB7-1
a ☐ CONTINUOUS ALARM	●
b ☐ 1 SECOND ALARM	○
403	SPB7-2 –3
a ☐ INTENSIFIED ONLY	○ ○
b ☐ BLINK ONLY	● ○
c ☐ INTENSIFIED & BLINK	○ ●
406	SPB7-4
a ☐ ALPHA IN NUMERIC FIELD	●
b ☐ ALPHA NOT IN NUMERIC FIELD	○
404	SPB7-5
a ☐ TERMINATE W/ETX	○
b ☐ TERMINATE W/SUB ENQ.	●
408	SPB7-6
a ☐ ASCII	●
b ☐ EBCDIC	○
407 (Num Lock S.F.)	SPB7-8
a ☐ ENABLED	●
b ☐ DISABLED	○
414 BUFFER LOCK	SPB7-7
a ☐ ENABLED	●
b ☐ DISABLED (REQUIRES 410525)	○

MCC — Controller Arrangement Form
HANDLES: 2-KDs & 1-PTR (Print Local)

CARD POSITION	I/O SOCKET	DEVICE
3	DS	DATA SET
4 & 7	S2-B	KEYBOARD/MON. (1)
7	S3	PRINTER (2)
5 & 7	S4-C	KEYBOARD/MON. (3)



Note 1: If the customer requires that print local operation be prohibited from the KD(s), place 340701 blocking keytop over the PRINT LOCAL position of the KD opcon(s).

Note 2: If printer is not included as part of configuration, option B5 switches off on 410411 circuit card and option B6 switches for 2nd KD.

4. REFERENCES

4.01 The following list of literature pertains to the DATASPEED 40/4 Maxi- and Mini-Cluster Stations.

BSP Section	Titles
582-200-101	Description and Operation
582-200-201	Installation
582-200-212	Keyboard-Display Amplifier
582-200-401	Wiring Diagrams
582-200-701	Disassembly/Reassembly and Parts
582-200-751	Routine Maintenance
582-200-210	Keyboard Disable Lock

SYNCHRONOUS "DATASPEED*" 40/4

MAXI-CLUSTER AND MINI-CLUSTER STATION ARRANGEMENTS

WIRING DIAGRAMS

CONTENTS PAGE

1. GENERAL

1.01 This section provides wiring diagrams and cable components for the DATASPEED 40/4 equipment with the following exceptions:

1. Monitor, see Section 582-213-400.
2. Monitor Support Cabinet, see Section 582-212-400.
3. Printer Cabinet, see Section 582-210-400.
4. Printer, see Section 582-210-400.
5. 40KDA101 Keyboard Display Amplifier, see Section 582-200-212.
6. Keyboard Disable Lock Feature for Attached KD, see Section 582-211-210.

1.02 This section is reissued to provide coverage for the 40K203/GAB opcon.

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Prepared for American Telephone and Telegraph Company by Teletype Corporation

This section is a general revision, therefore marginal arrows have been omitted.

1.03 Abbreviations in this section are defined in Section 582-200-101.

1.04 This information when used in conjunction with Testing and Troubleshooting Section 582-200-501 will aid in locating cabling faults.

1.05 Voltage levels are provided in power supply diagrams only.

Note: When ordering replaceable components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410055).

2. WIRING DIAGRAMS

MAXI-CLUSTER (SCC/DCC) ARRANGEMENTS

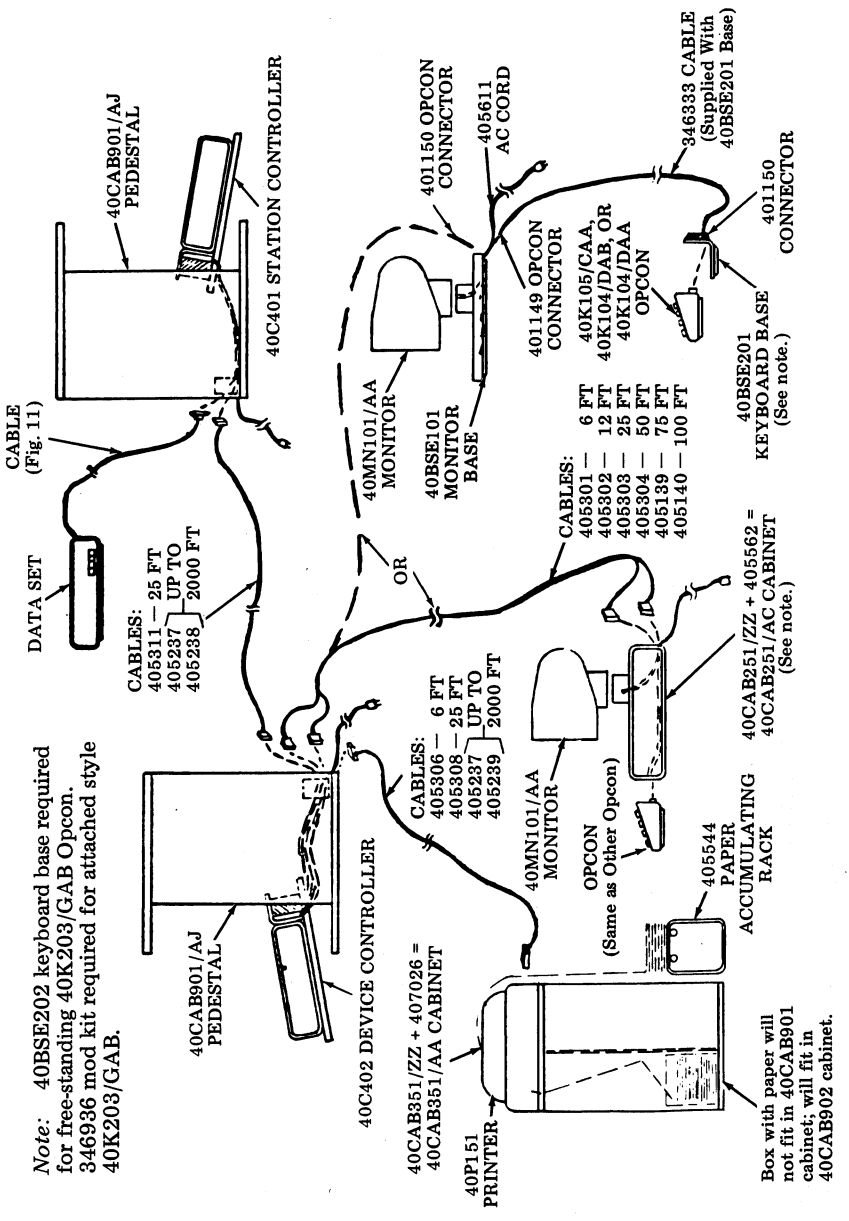


Fig. 1

MINI-CLUSTER (MCC) ARRANGEMENTS

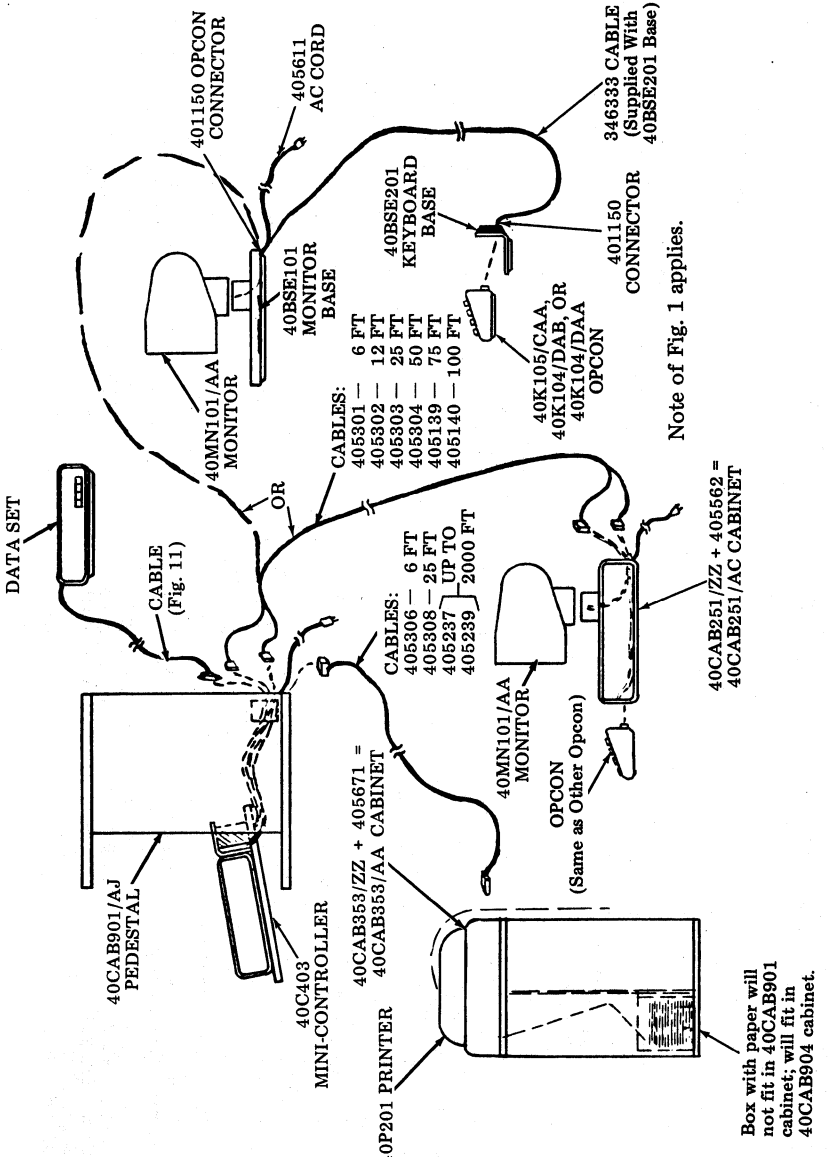


Fig. 2

410200 BACK PANEL (Early Design) — PHYSICAL LAYOUT

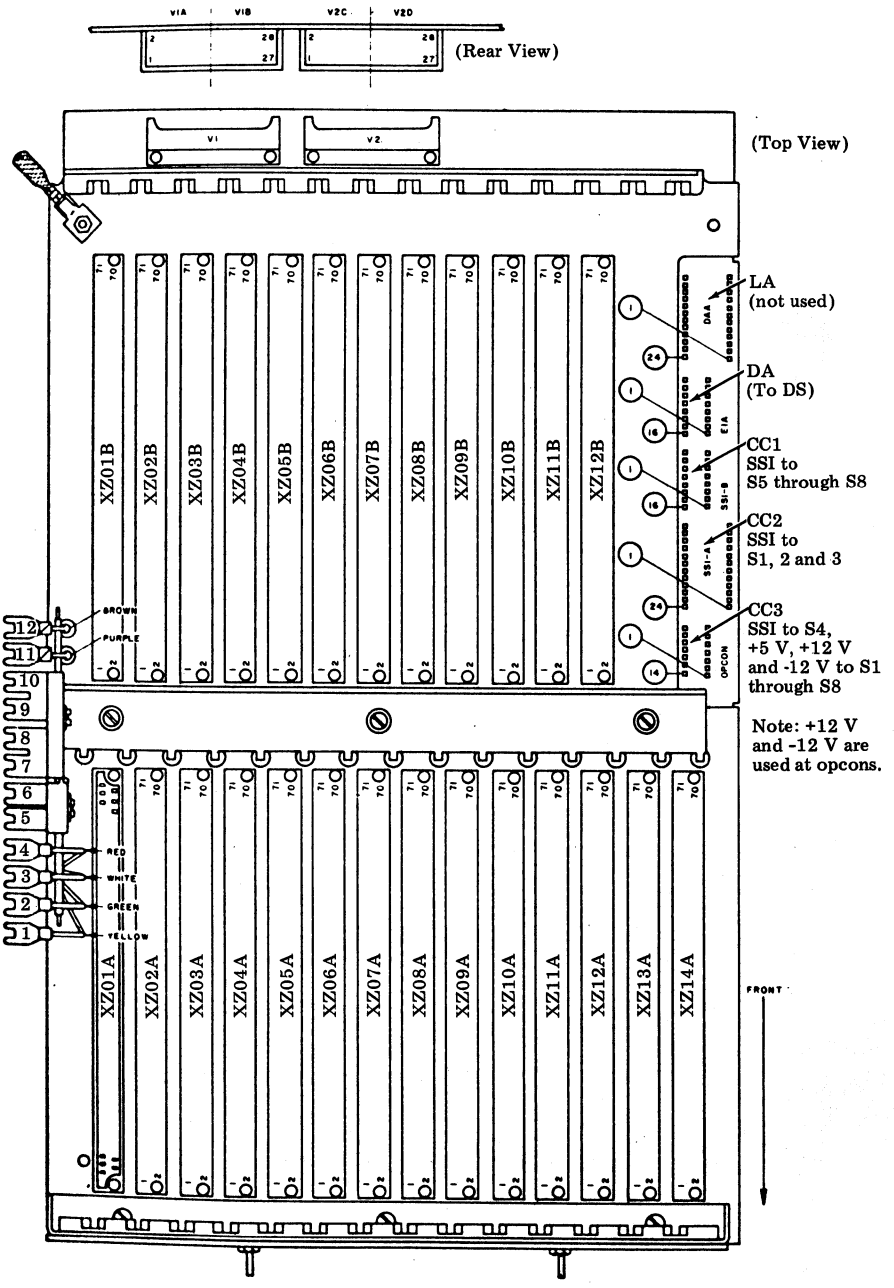


Fig. 3

410201 BACK PANEL (Late Design) — PHYSICAL LAYOUT

Note: The V1 and V2 pin numbers are the same as 410200 back panel (early design).

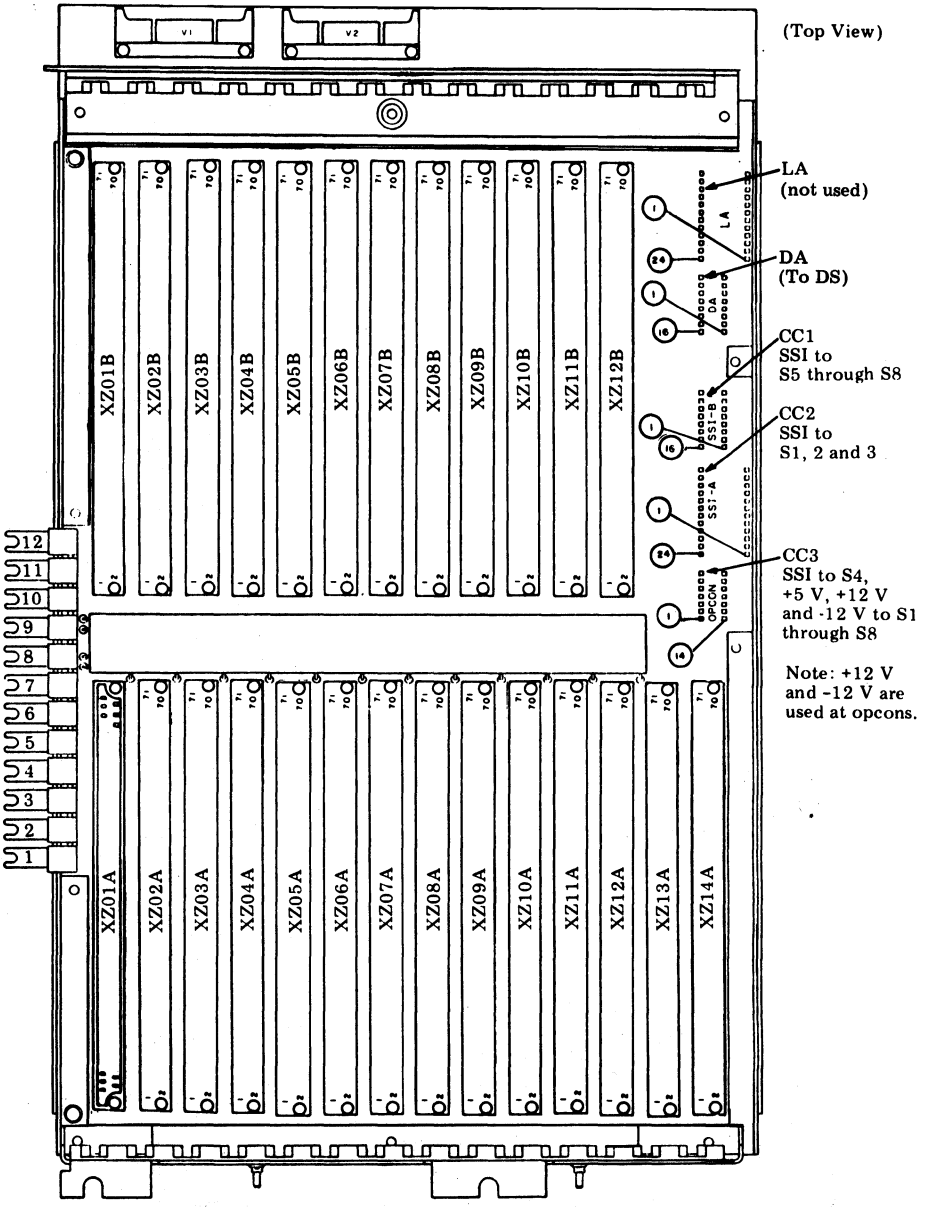


Fig. 4

405150 INTERCONNECTION MODULE — PHYSICAL LAYOUT

Note: A 405150 interconnection module for an SCC is illustrated. Interconnection modules not illustrated are 405151 for a DCC and 405152 for a MCC.

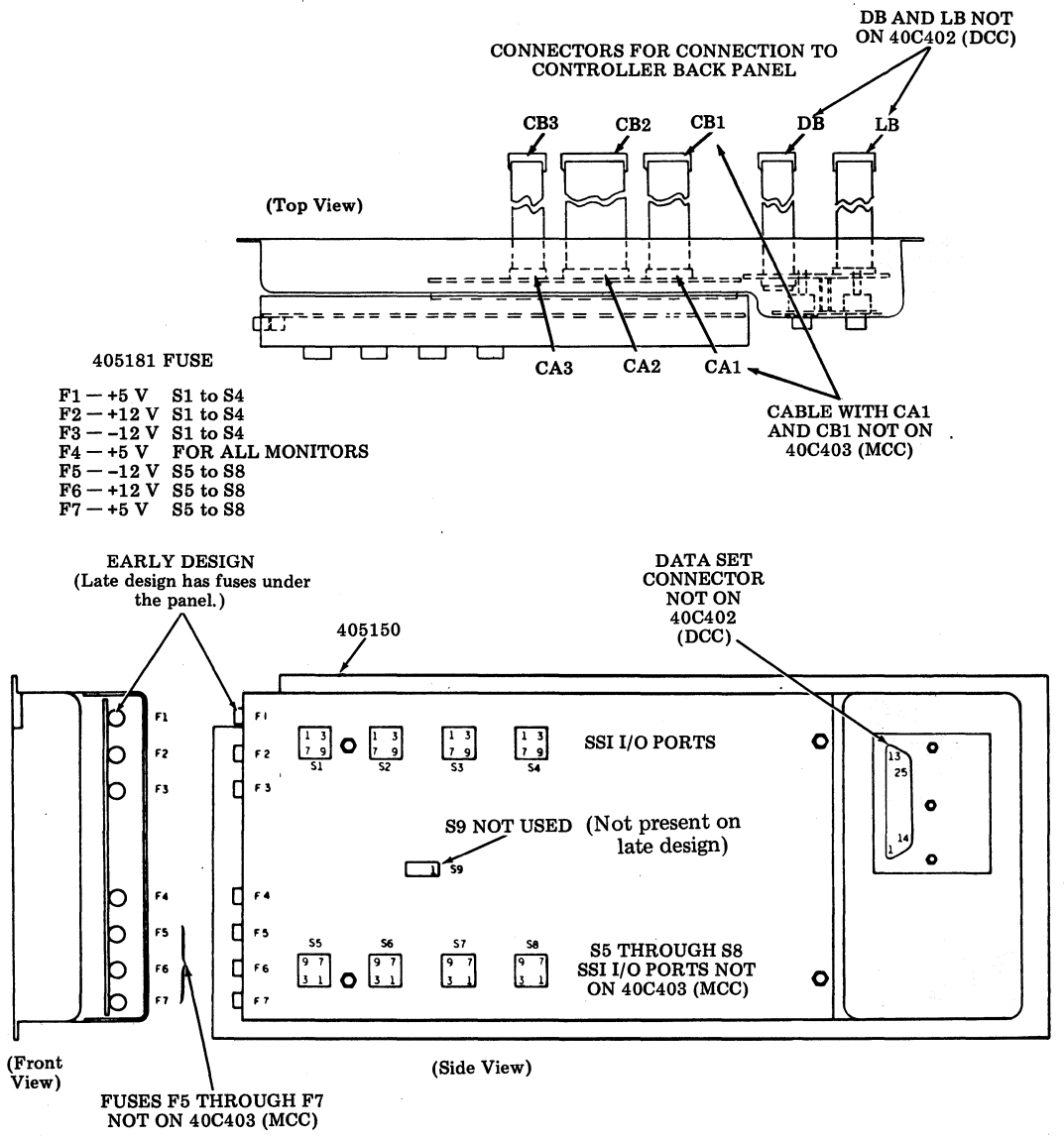


Fig. 5

BACK PANEL AND INTERCONNECTION MODULE WIRING (Continued on Pages 9 through 13)

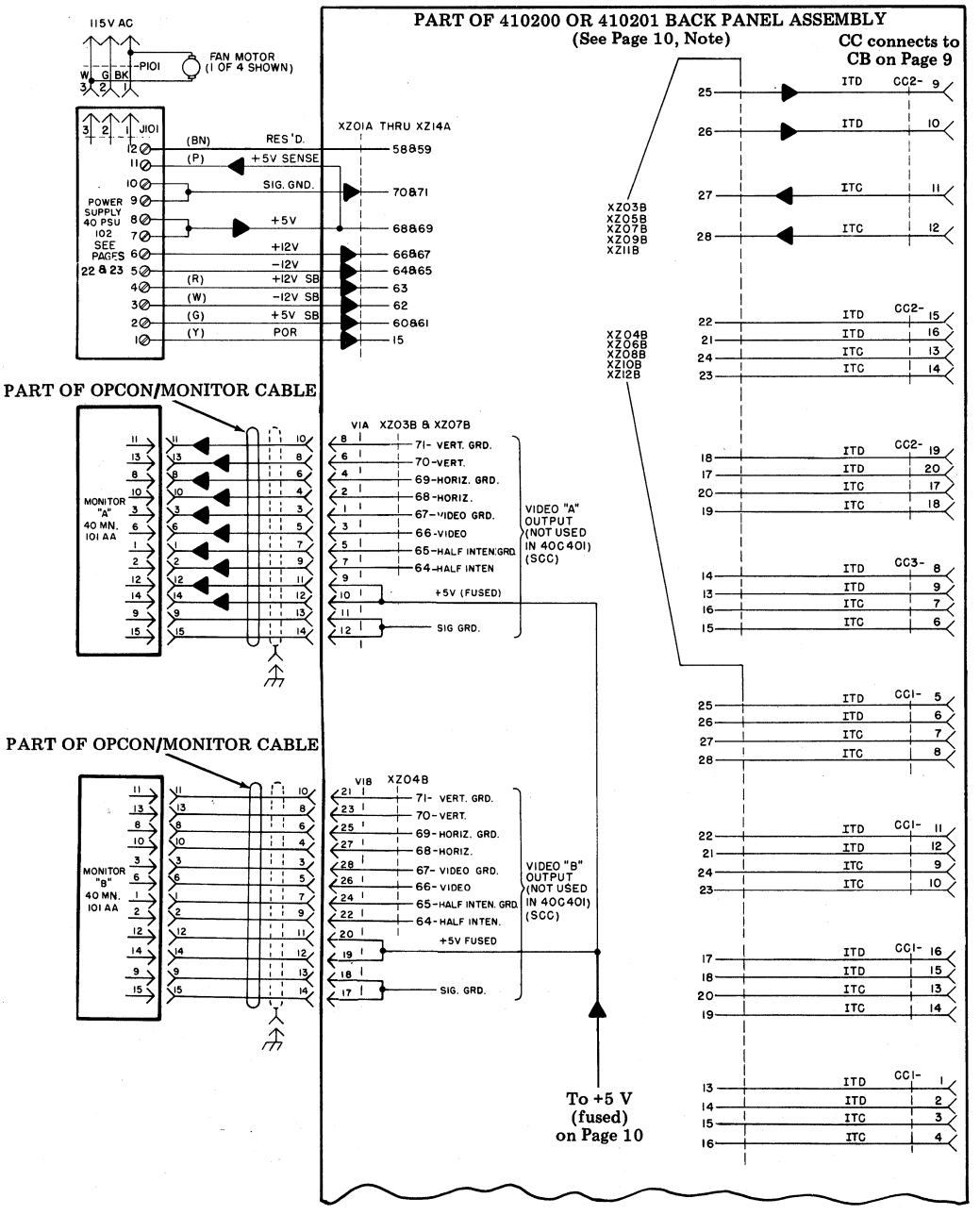


Fig. 6

(Back panel continued on Page 10)

BACK PANEL AND INTERCONNECTION MODULE WIRING (Cont)

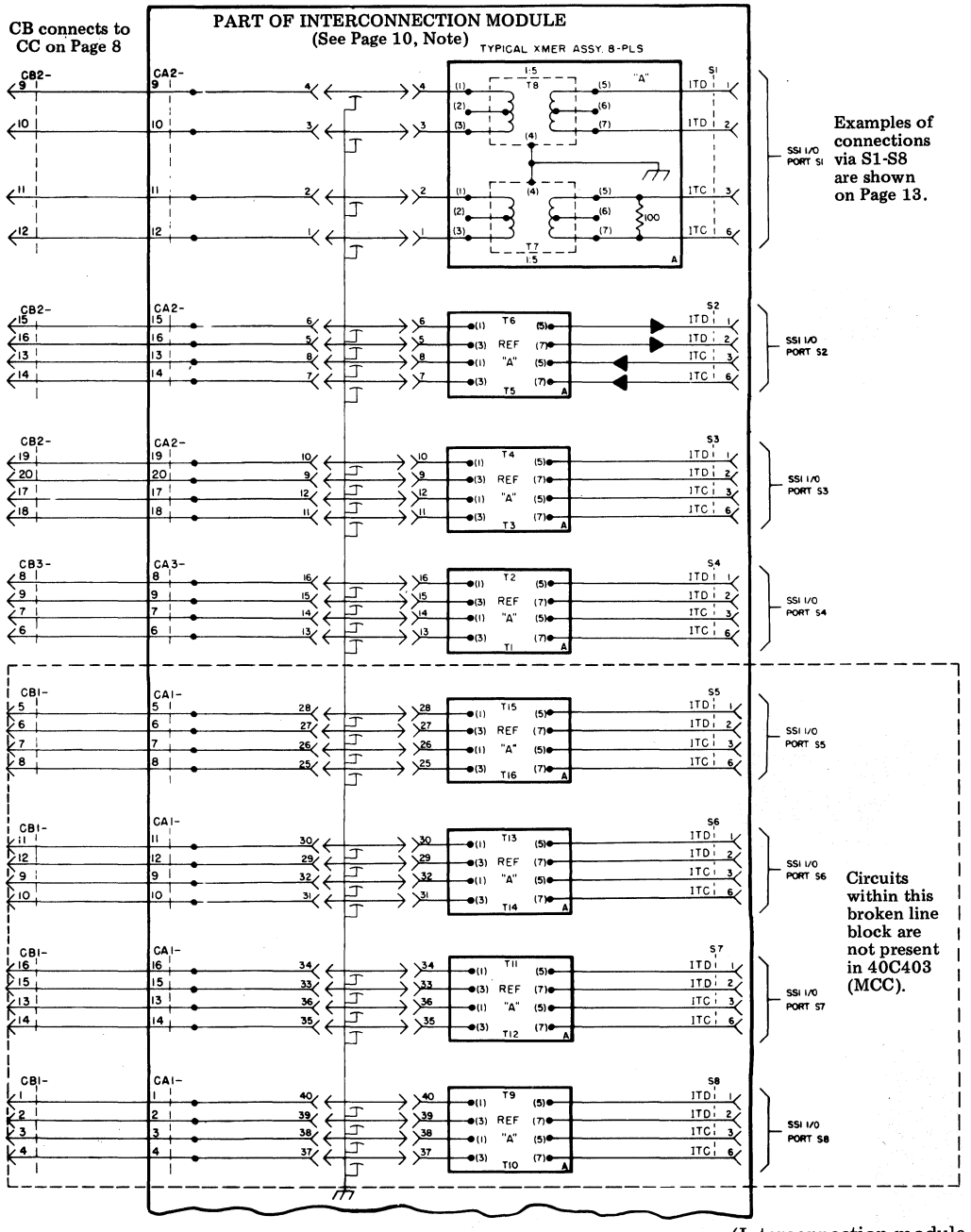
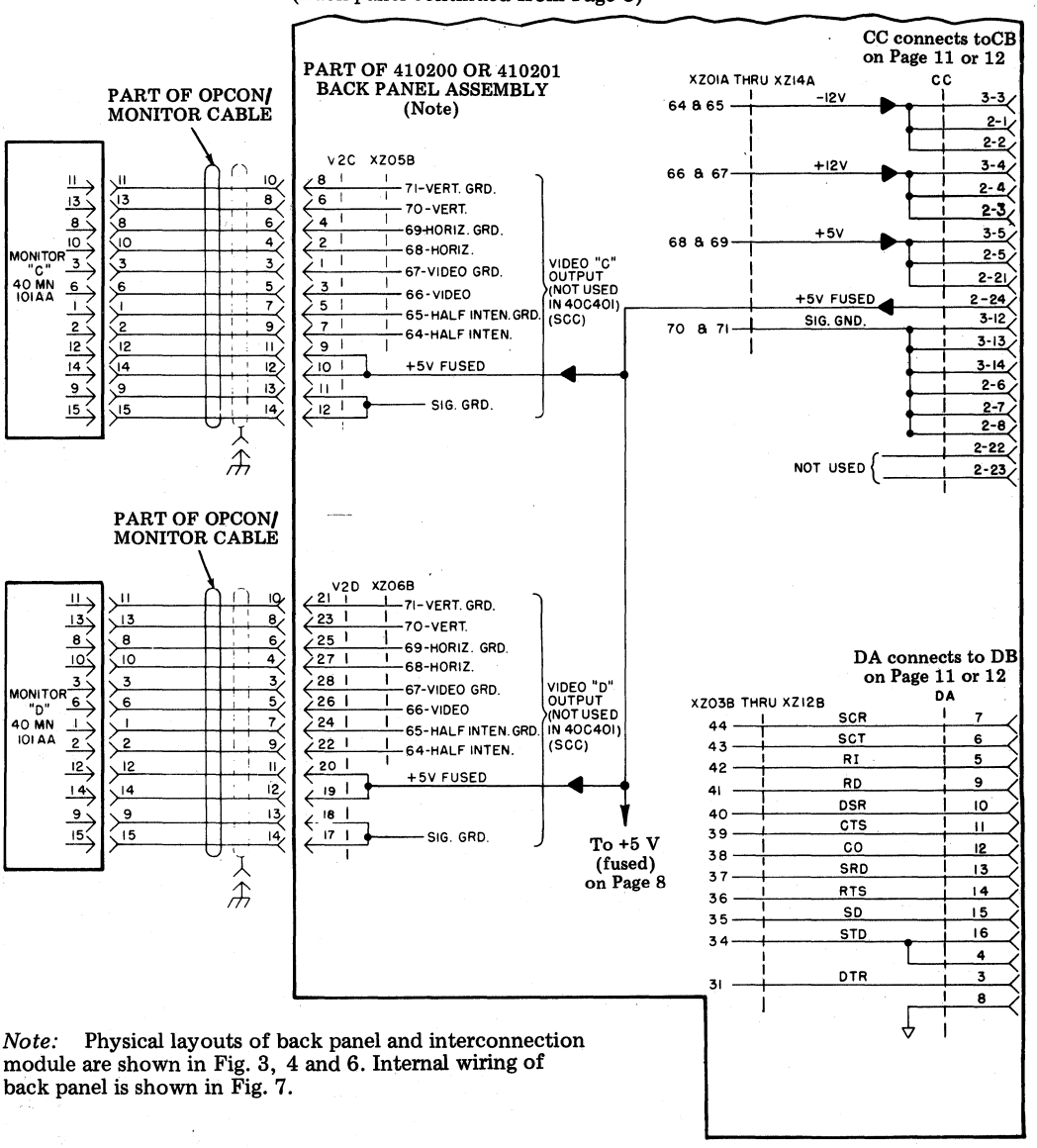


Fig. 6 (Cont)

(Interconnection module continued on Page 11)

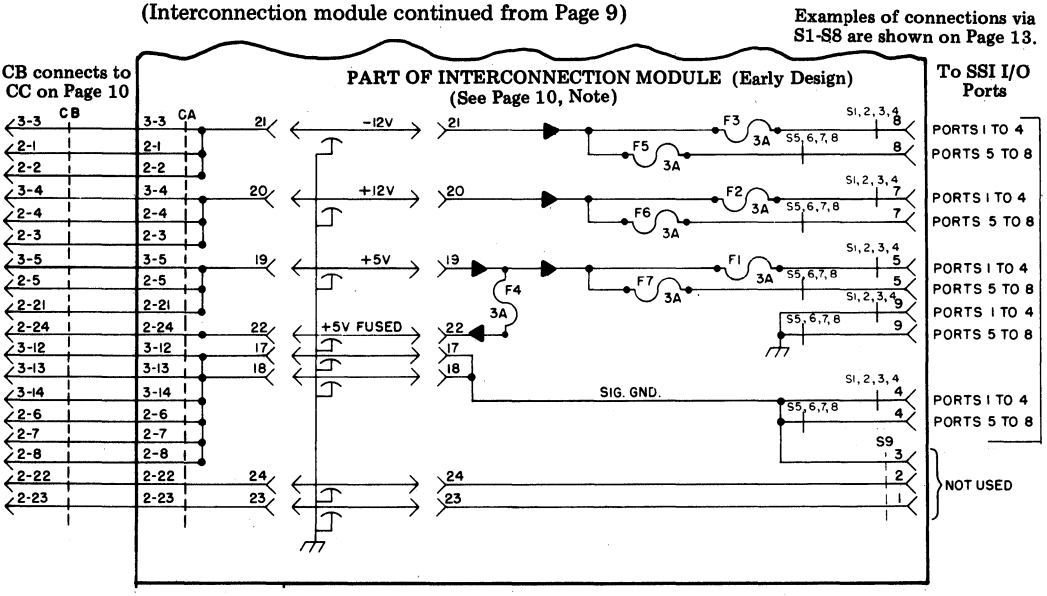
BACK PANEL AND INTERCONNECTION MODULE WIRING (Cont)



Note: Physical layouts of back panel and interconnection module are shown in Fig. 3, 4 and 6. Internal wiring of back panel is shown in Fig. 7.

Fig. 6 (Cont)

BACK PANEL AND INTERCONNECTION MODULE WIRING (Cont)



Page 12 shows the late design interconnection module circuits.

BACK PANEL AND INTERCONNECTION MODULE WIRING (Cont)

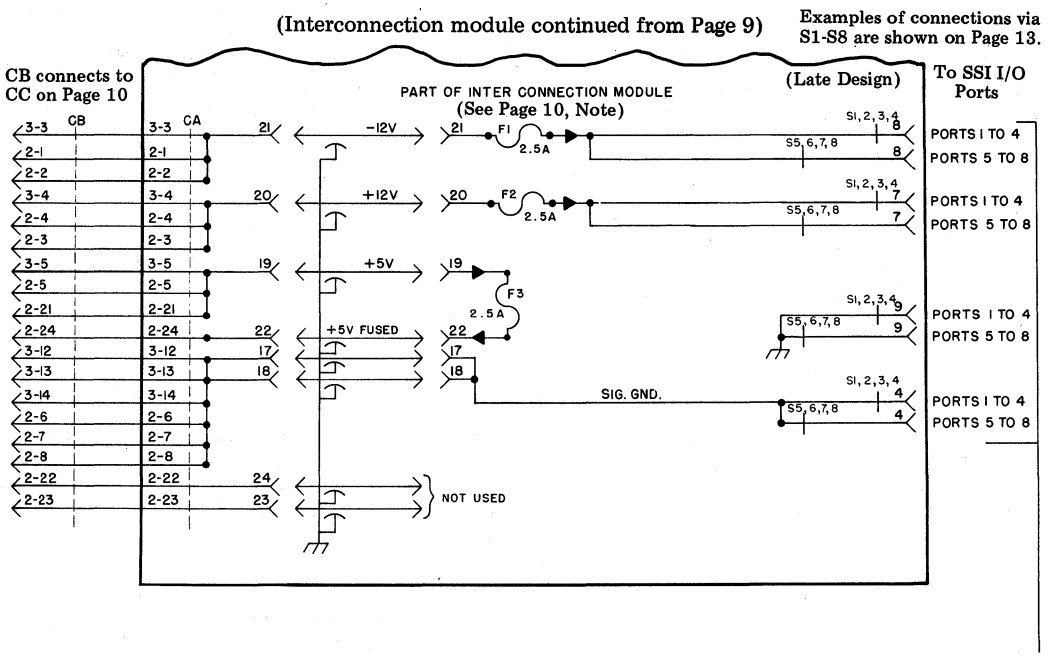


Fig. 6 (Cont)

Page 11 shows the early design interconnection module circuits.

BACK PANEL AND INTERCONNECTION MODULE WIRING (Cont)

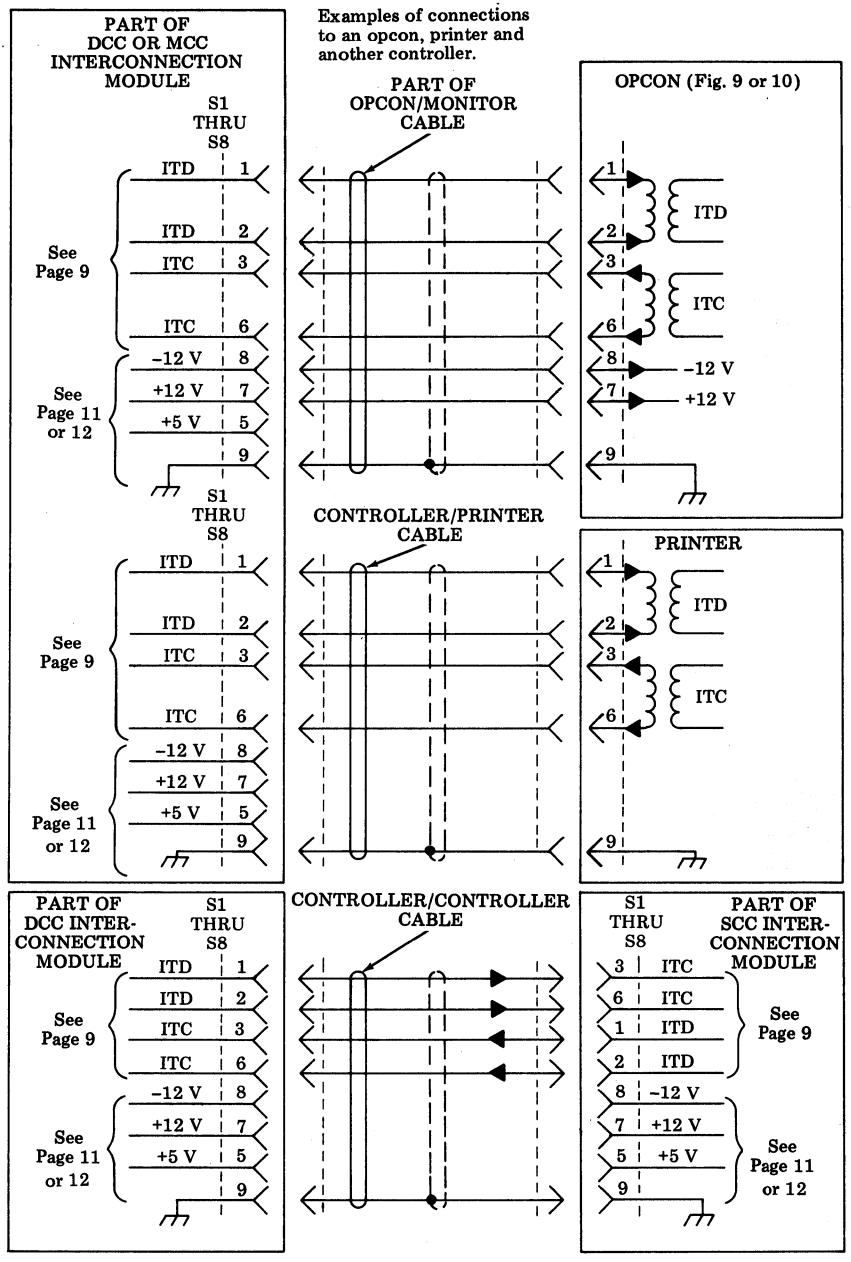
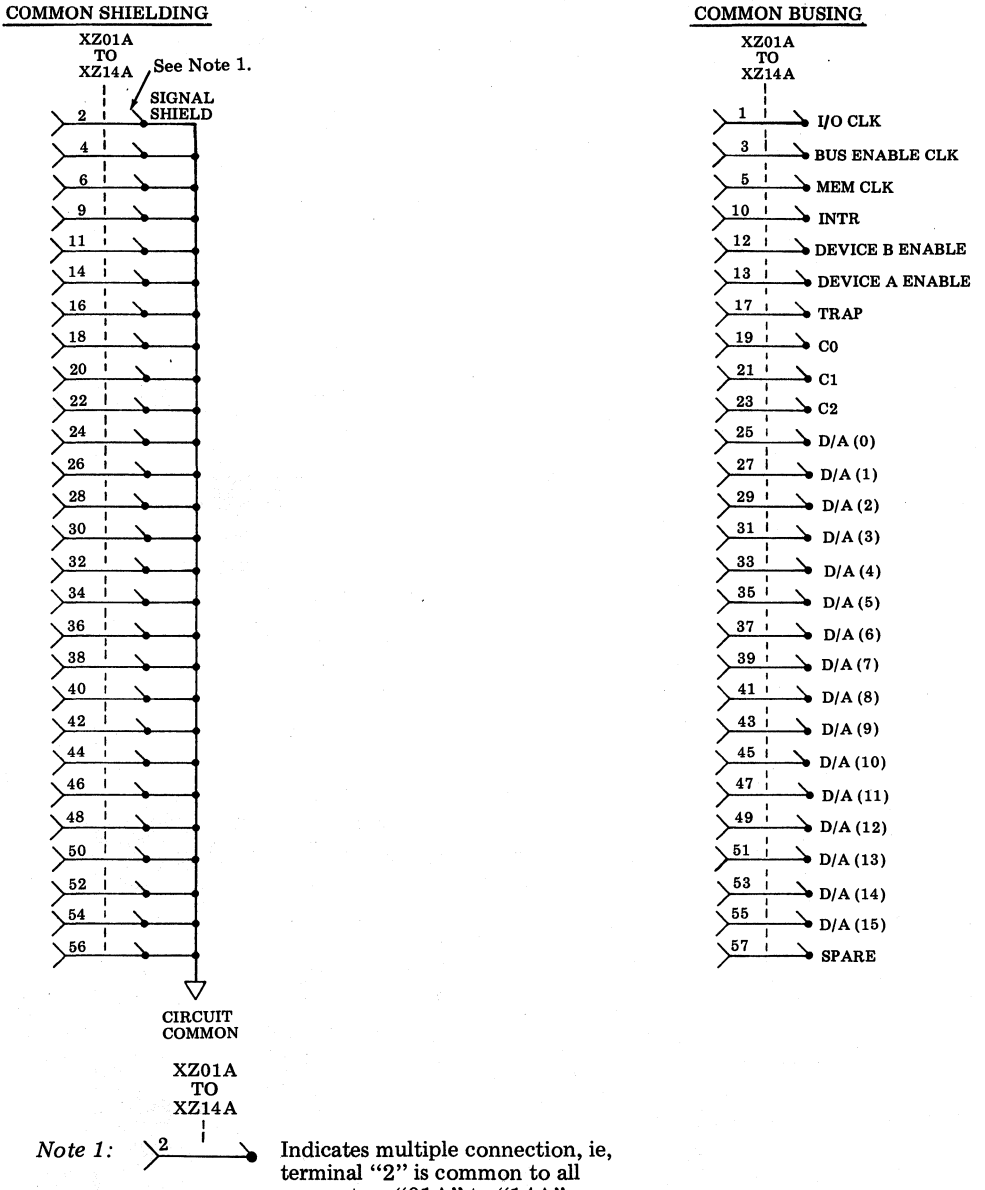


Fig. 6 (Cont)

BACK PANEL INTERNAL WIRING (Continued on Pages 15 through 21)



Note 1: Indicates multiple connection, ie, terminal "2" is common to all connectors "01A" to "14A".

Fig. 7

BACK PANEL INTERNAL WIRING (Cont)

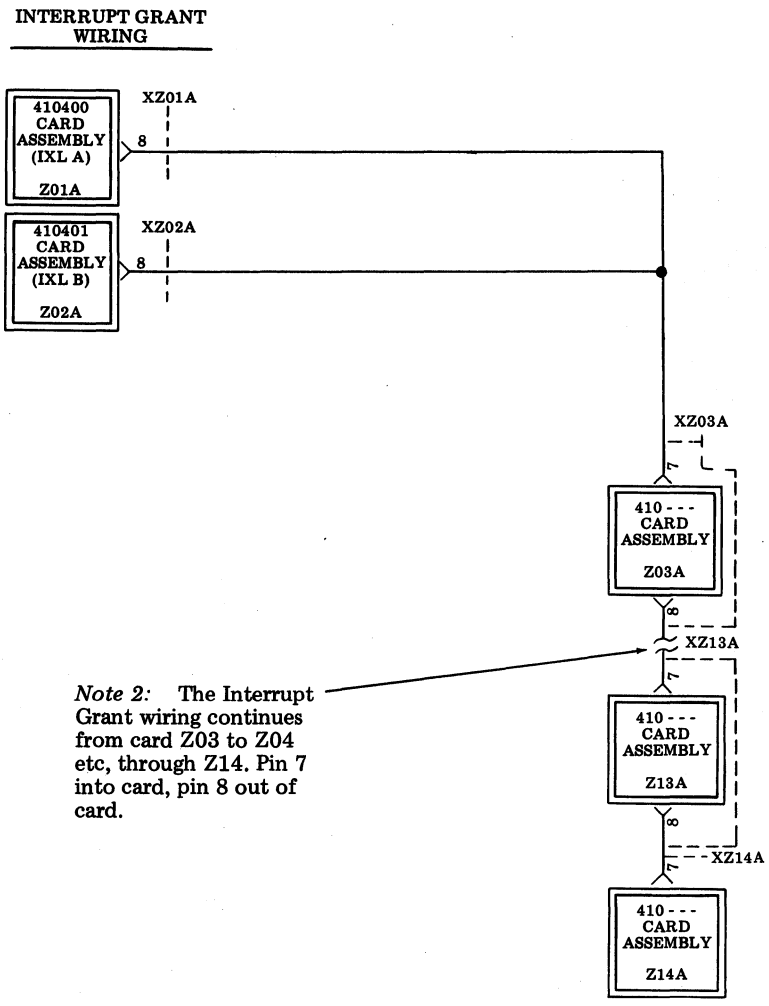
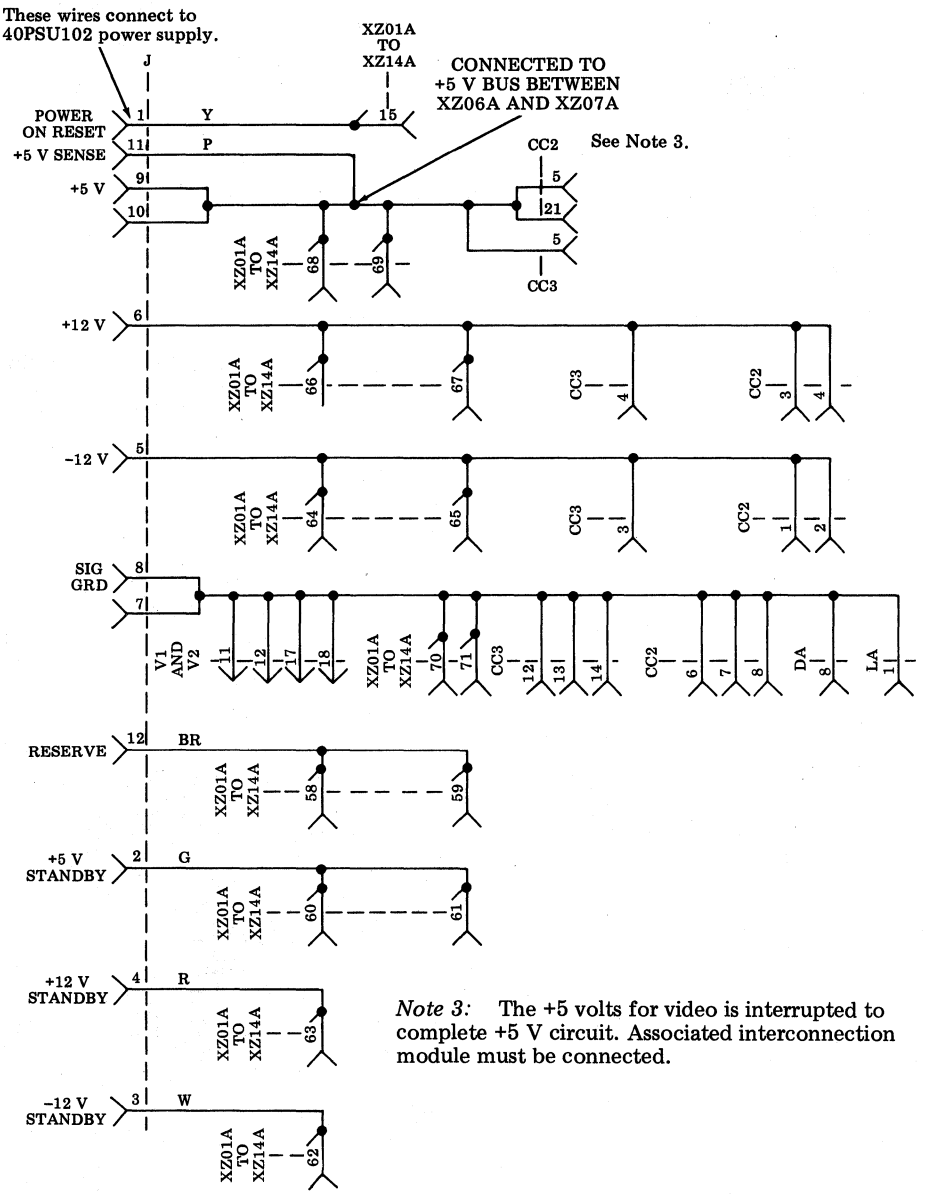


Fig. 7 (Cont)

BACK PANEL INTERNAL WIRING (Cont)

POWER AND MISCELLANEOUS WIRING



Note 3: The +5 volts for video is interrupted to complete +5 V circuit. Associated interconnection module must be connected.

Fig. 7 (Cont)

BACK PANEL INTERNAL WIRING (Cont)

SSI

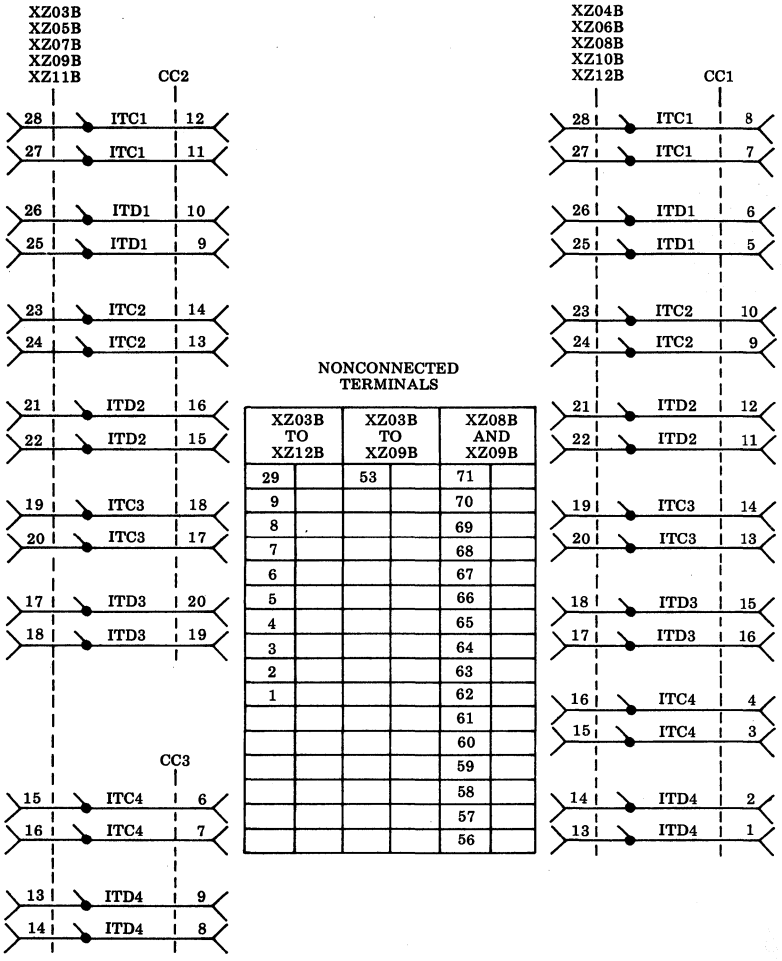


Fig. 7 (Cont)

BACK PANEL INTERNAL WIRING (Cont)

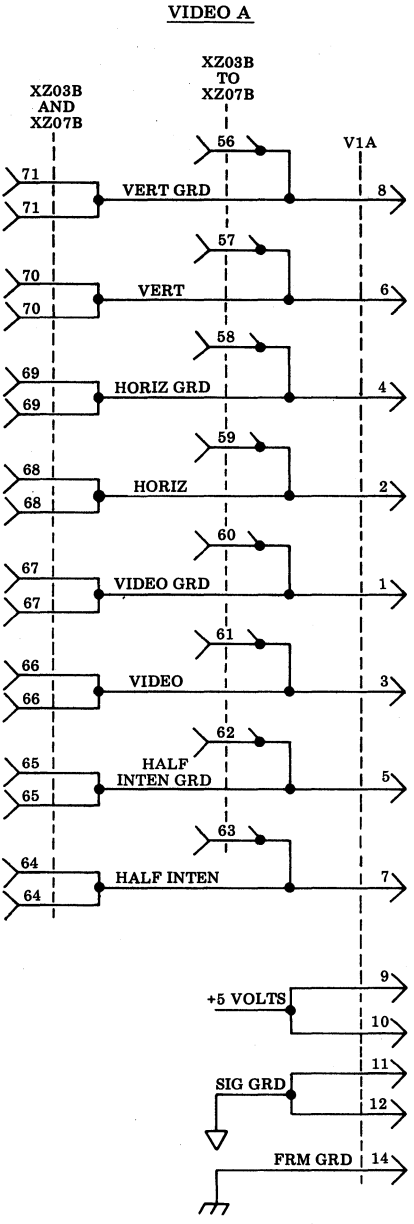


Fig. 7 (Cont)

BACK PANEL INTERNAL WIRING (Cont)

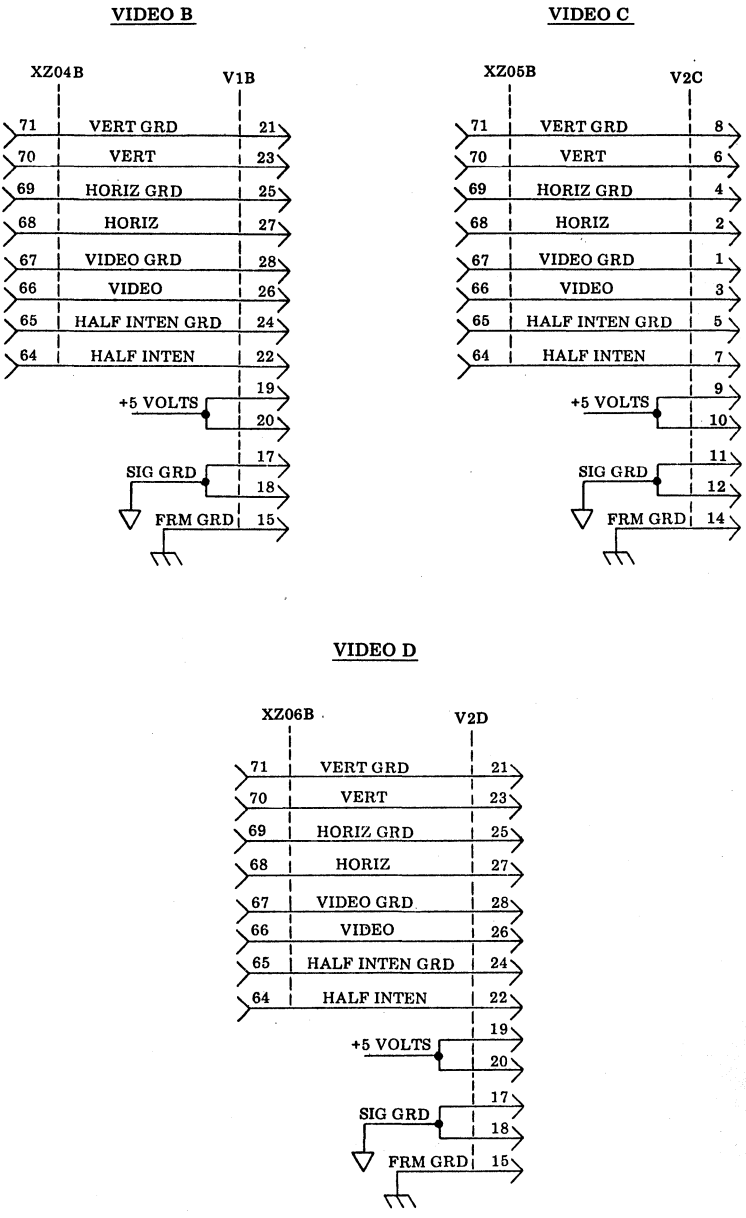


Fig. 7 (Cont)

BACK PANEL INTERNAL WIRING (Cont)

IXL

XZ01B		XZ02B
1	LOAD	1
2	OSC EN	2
3	MUX EN (L)	3
4	R2	4
5	R3	5
6	R1	6
7	R0	7
8	DA ϕ	8
9	BYTE	9
10	DA1	10
11	OUT ENABLE	11
12	DA2	12
13	DA3	13
14	DA4	14
15	DA5	15
16	DA6	16
17	DA7	17
18		18
19		19
20	DA8	20
21		21
22		22
23	WLB	23
24	DA9	24
25	DA10	25
26	DA11	26
27	DA12	27
28	DA13	28
29	DA14	29
30	DA15	30
31	STAT CTRL 3	31
32	STAT CTRL 2	32
33	STAT CTRL 1	33
34	STAT CTRL ϕ	34
35	CNT EN	35

XZ01B		XZ02B
36	CY CTRL 1	36
37	CY CTRL ϕ	37
38	ACC CLK	38
39	SEQ CTRL ϕ	39
40		40
41		41
42		42
43	M	43
44		44
45		45
46		46
47	Z	47
48	P	48
49	C	49
50		50
51		51
52	T	52
53		53
54	INTR	54
56		56
57	N	57
58	MPS ϕ	58
59	MPS 1	59
60	MPS 2	60
61	MPS 3	61
62		62
63	MUX SEL 4	63
64		64
65	MUX SEL 3	65
66		66
67	MUX SEL 2	67
69	MUX SEL 1	69
70	RUN IN	70
71	MUX SEL ϕ	71

See Note 4.

Note 4: Two other circuits exist but are not used. One is XZ01B-55 to XZ02B-55. The other is XZ01B-68 to XZ02B-68.

Fig. 7 (Cont)

BACK PANEL INTERNAL WIRING (Cont)

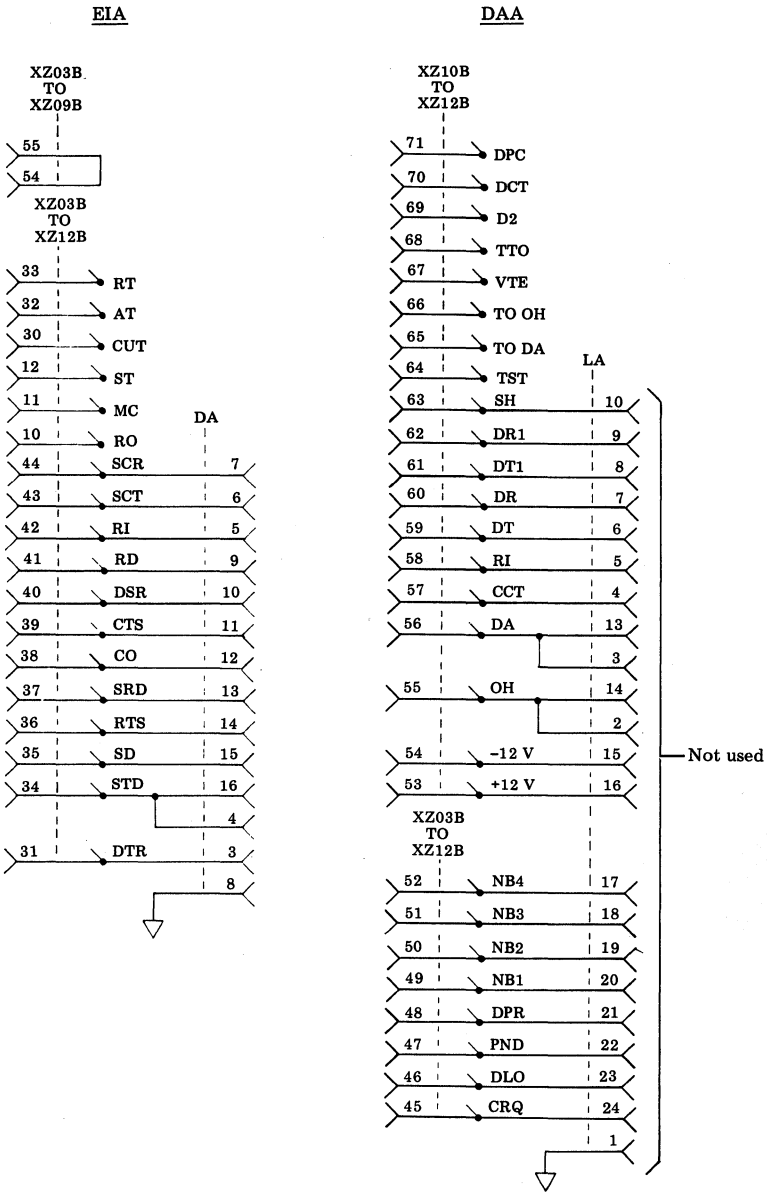
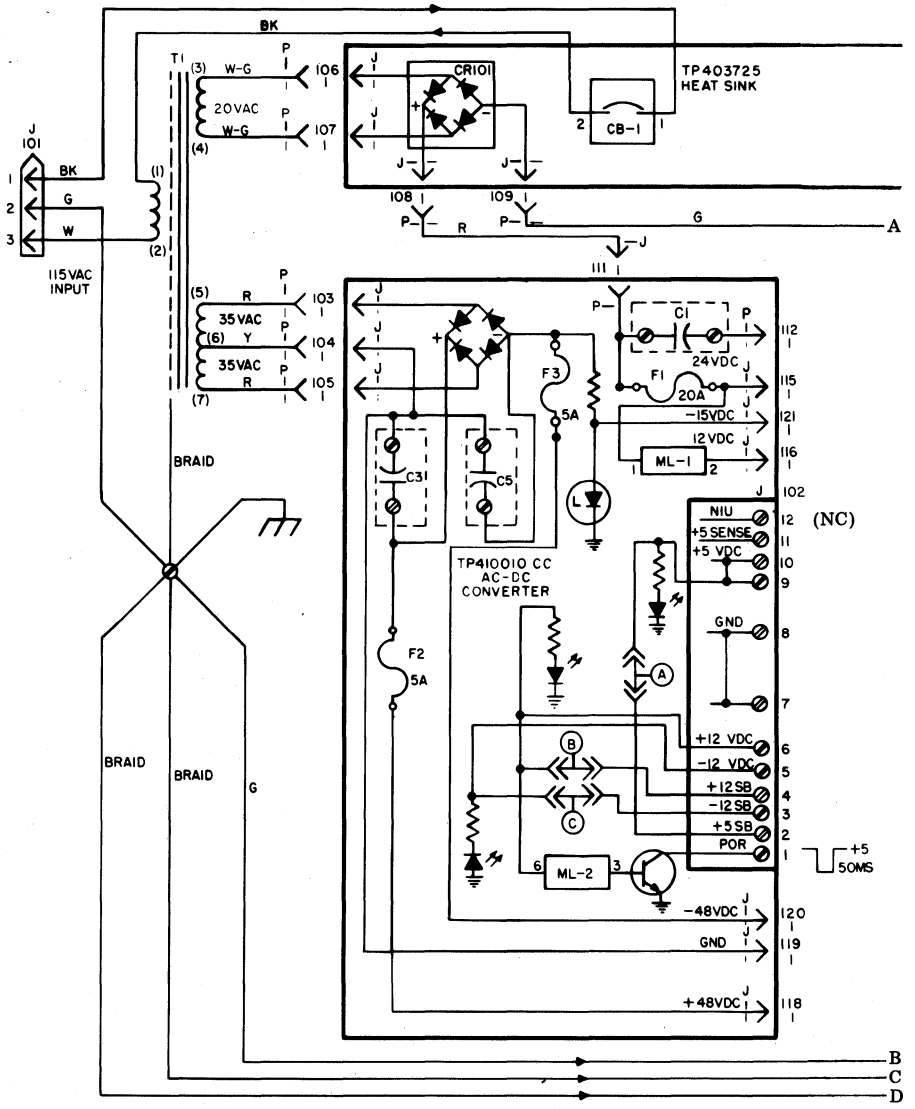


Fig. 7 (Cont)

40PSU102 POWER SUPPLY



Note 1: Straps A, B, and C must be left installed.

Note 2: ML-1 and ML-2 are components on 410010 circuit card.

Fig. 8

40PSU102 POWER SUPPLY (Cont)

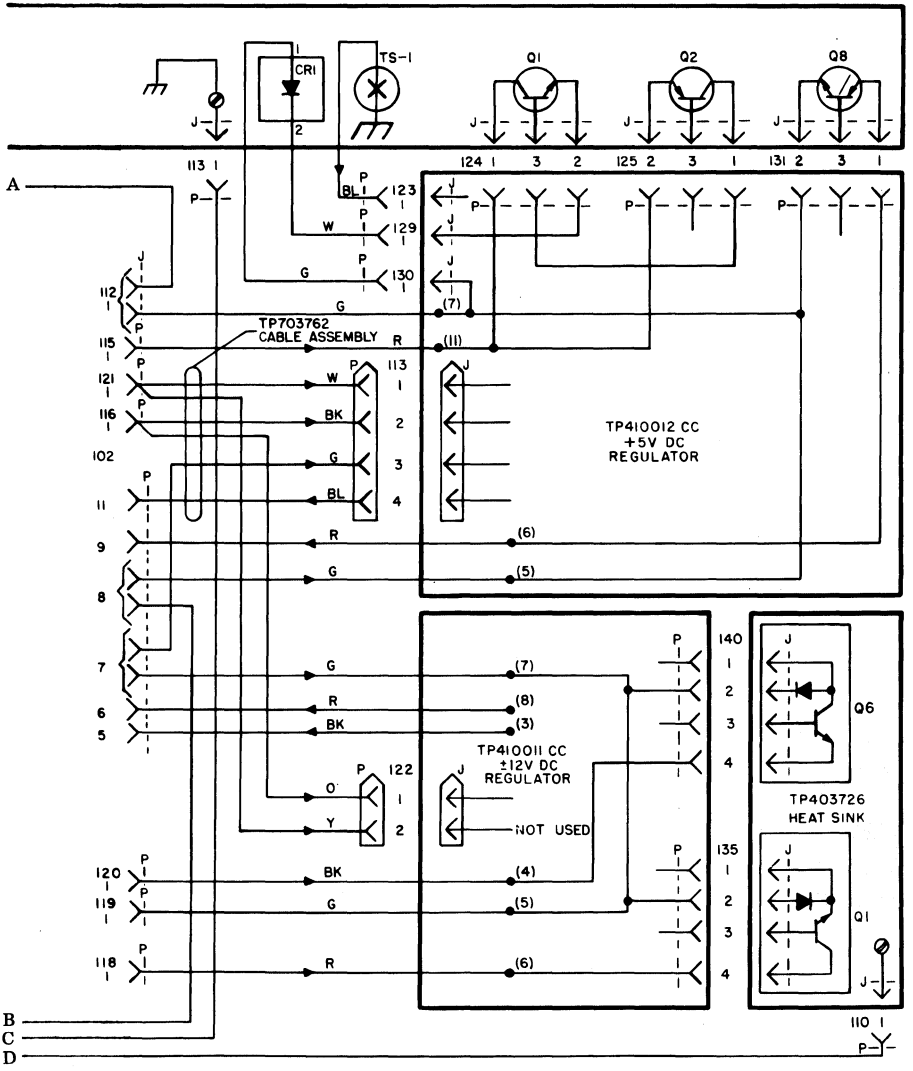


Fig. 8 (Cont)

OPCONS

A. 40K104/DAB (Early Design) Opcon

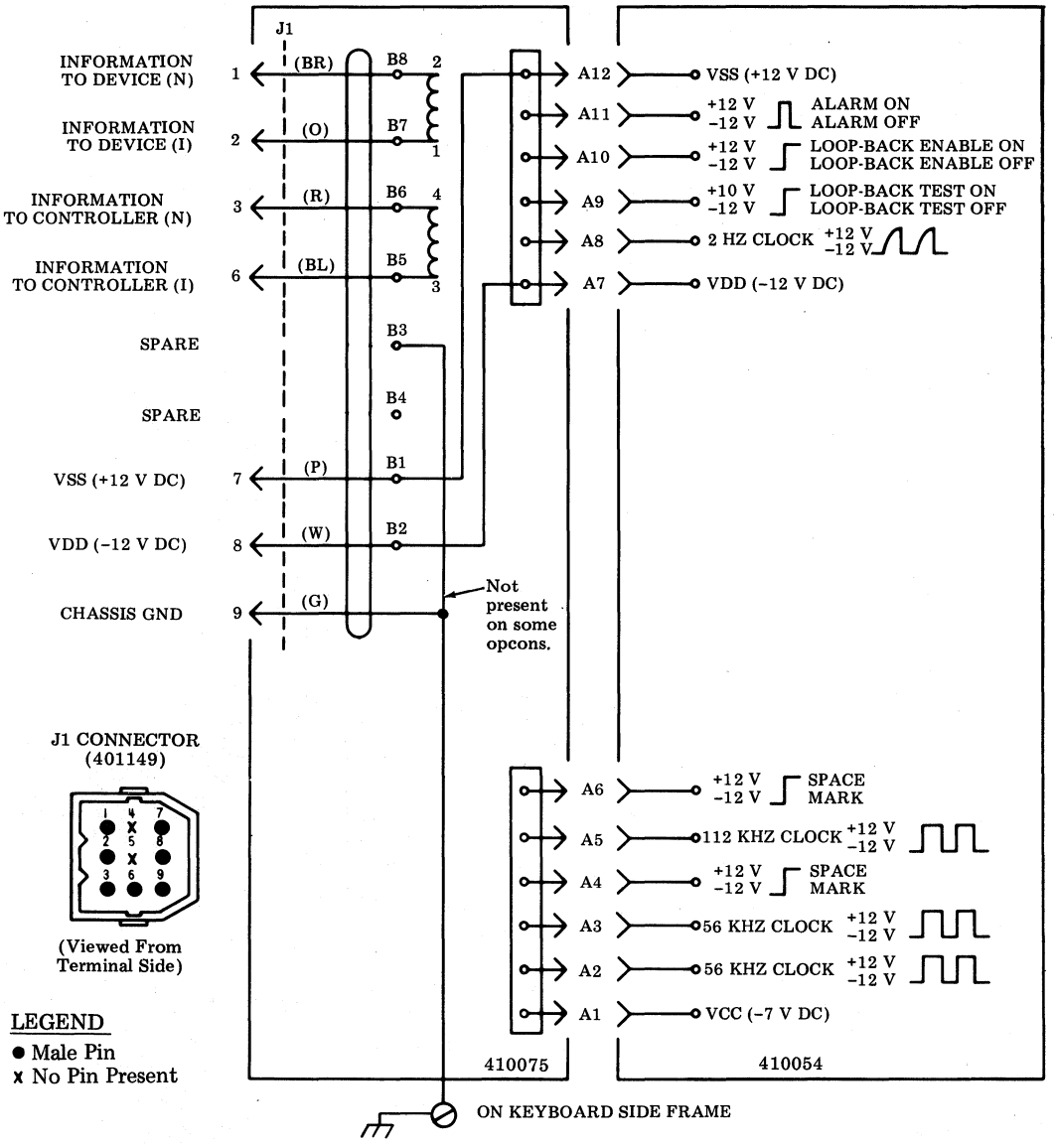


Fig. 9

B. 40K104/DAB (Late Design), 40K105/CAA, or 40K203/GAB Opcons

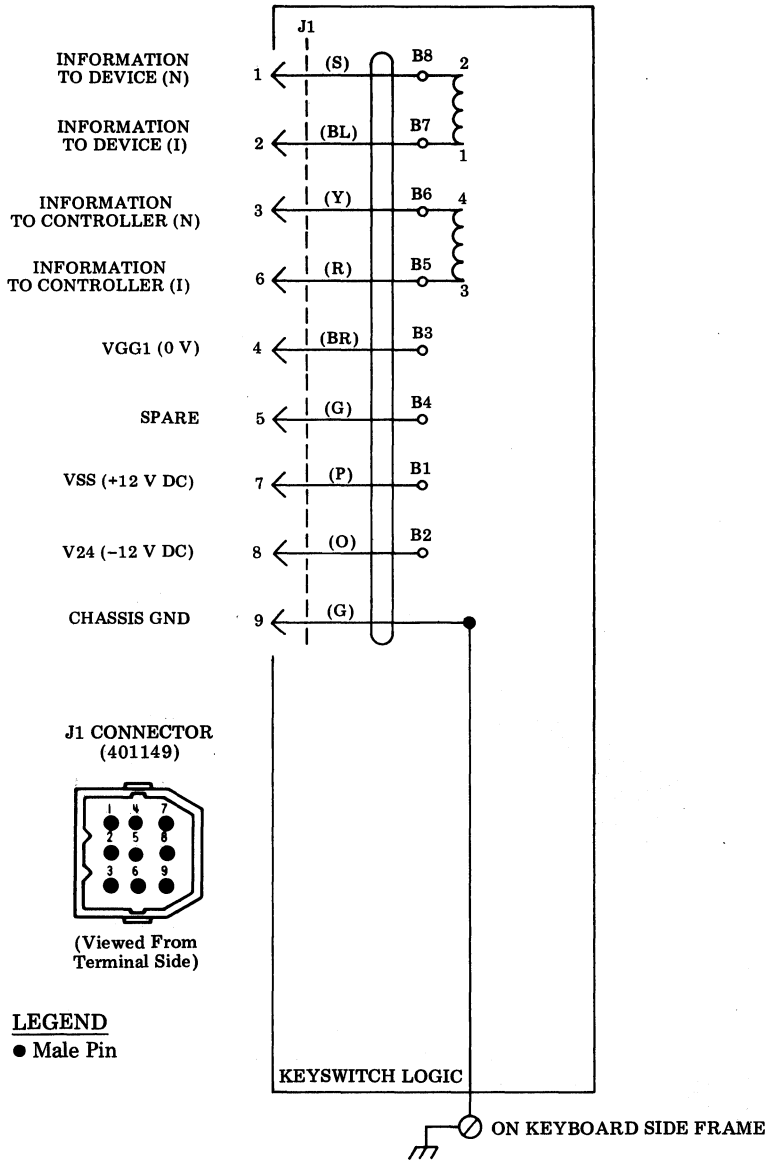


Fig. 10

CABLE ASSEMBLIES

A. Data Set Cable Assemblies — SCC, MCC

PART NUMBER	LENGTH
341896	5 Ft
408065	7 Ft
408066	12 Ft
408067	25 Ft
408068	50 Ft

These cables are shown on following page.

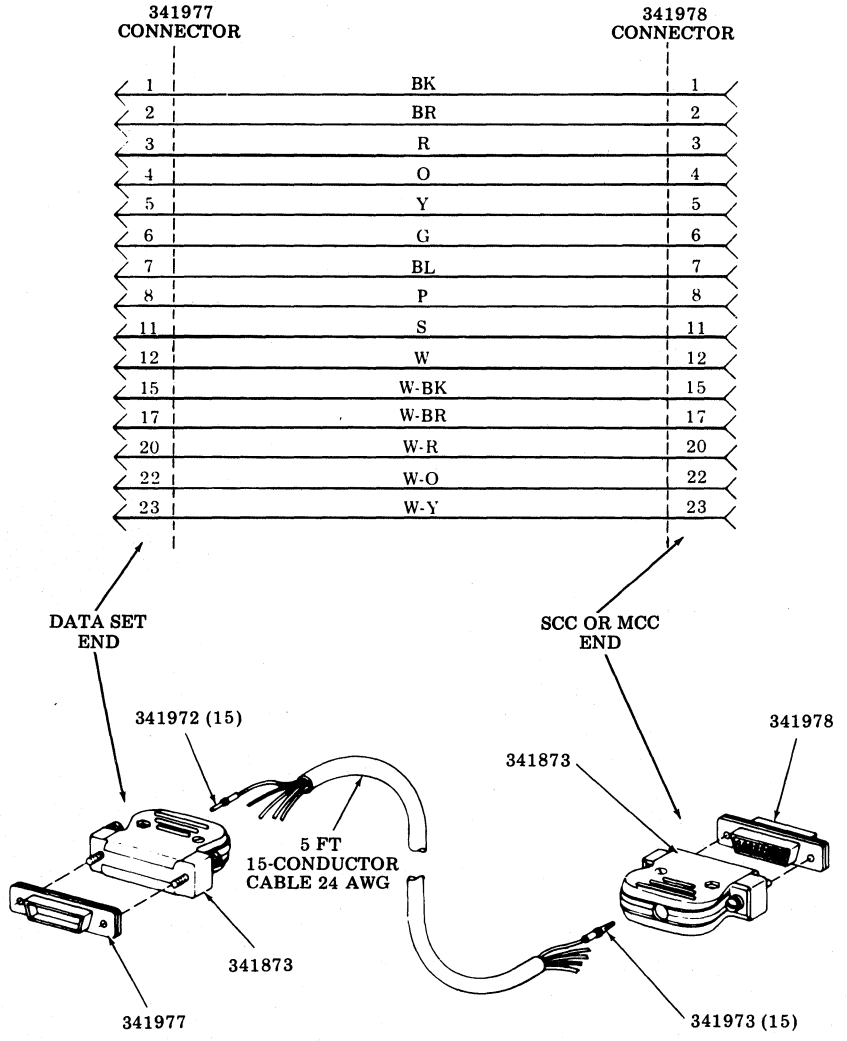


Fig. 11

A. Data Set Cable Assemblies — SCC, MCC (Cont)

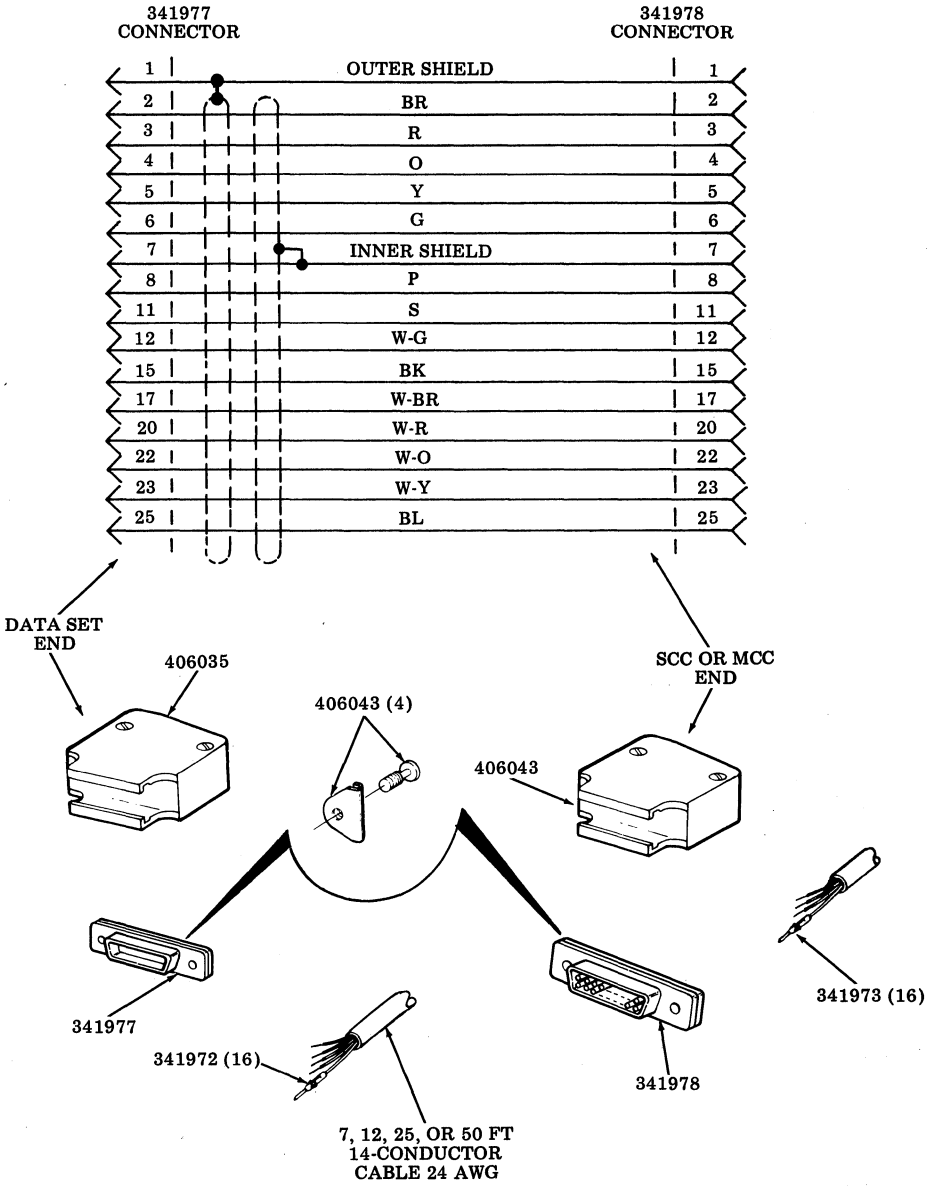
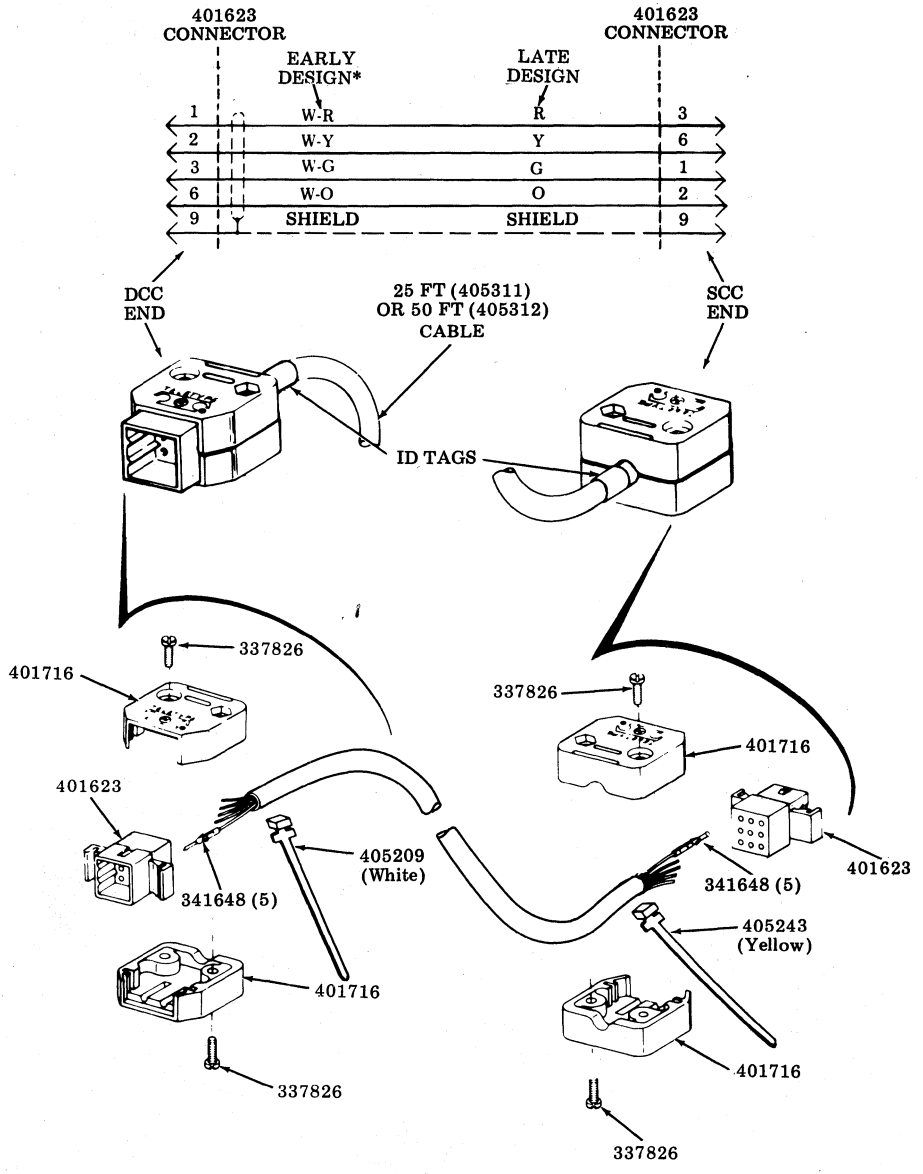


Fig. 11 (Cont)

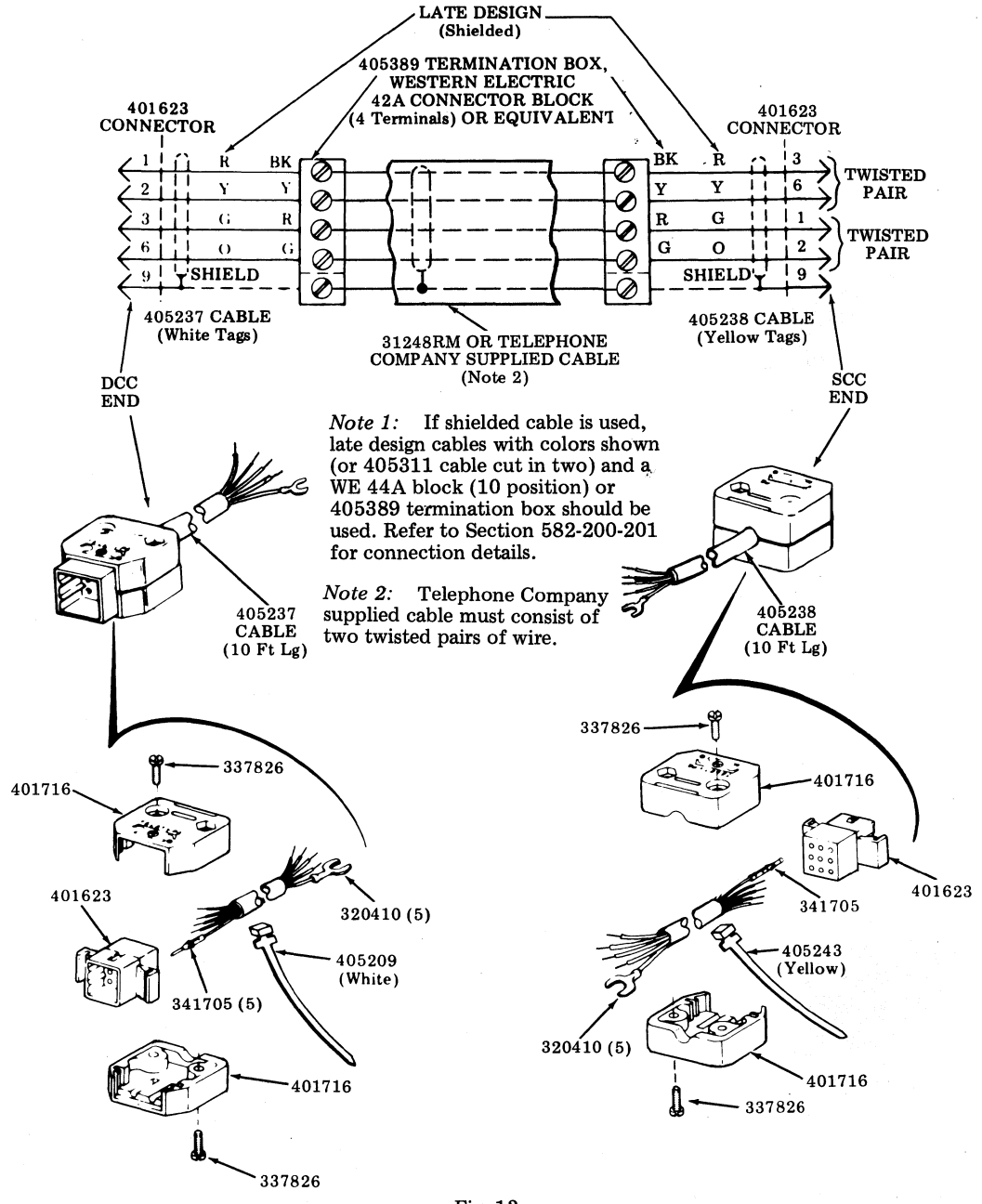
B. 405311 and 405312 Controller/Controller Cable Assemblies — SCC, DCC



*Early design cables contain two unused wires (W-BR and W-BK).

Fig. 12

C. 405237 and 405238 Controller/Controller Cable Assemblies — SCC, DCC



Note 1: If shielded cable is used, late design cables with colors shown (or 405311 cable cut in two) and a WE 44A block (10 position) or 405389 termination box should be used. Refer to Section 582-200-201 for connection details.

Note 2: Telephone Company supplied cable must consist of two twisted pairs of wire.

Fig. 13

D. Controller/Printer Cable Assemblies — DCC, MCC

PART NUMBER	LENGTH
405306	6 Ft
405308	25 Ft

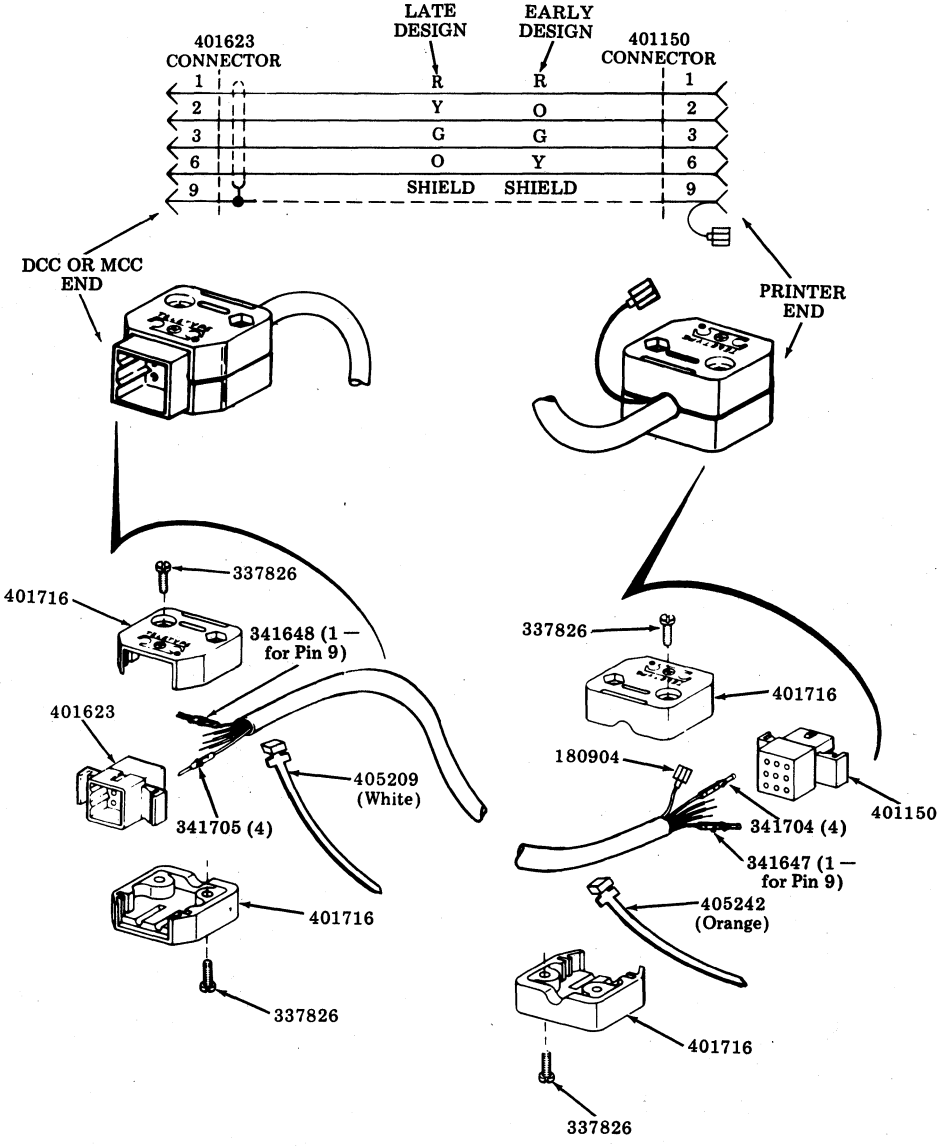
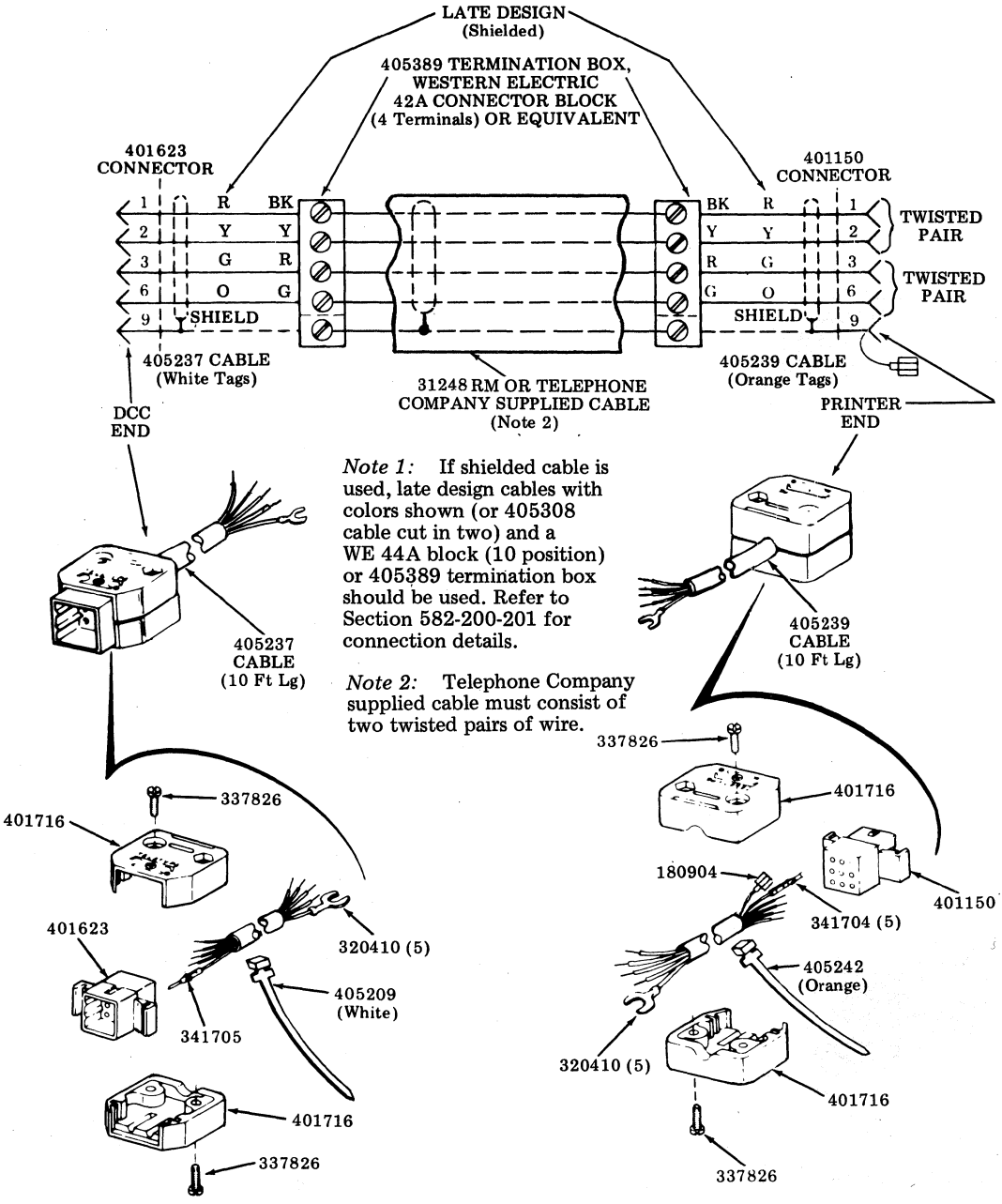


Fig. 14

E. 405237 and 405239 Controller/Printer Cable Assemblies — DCC, MCC



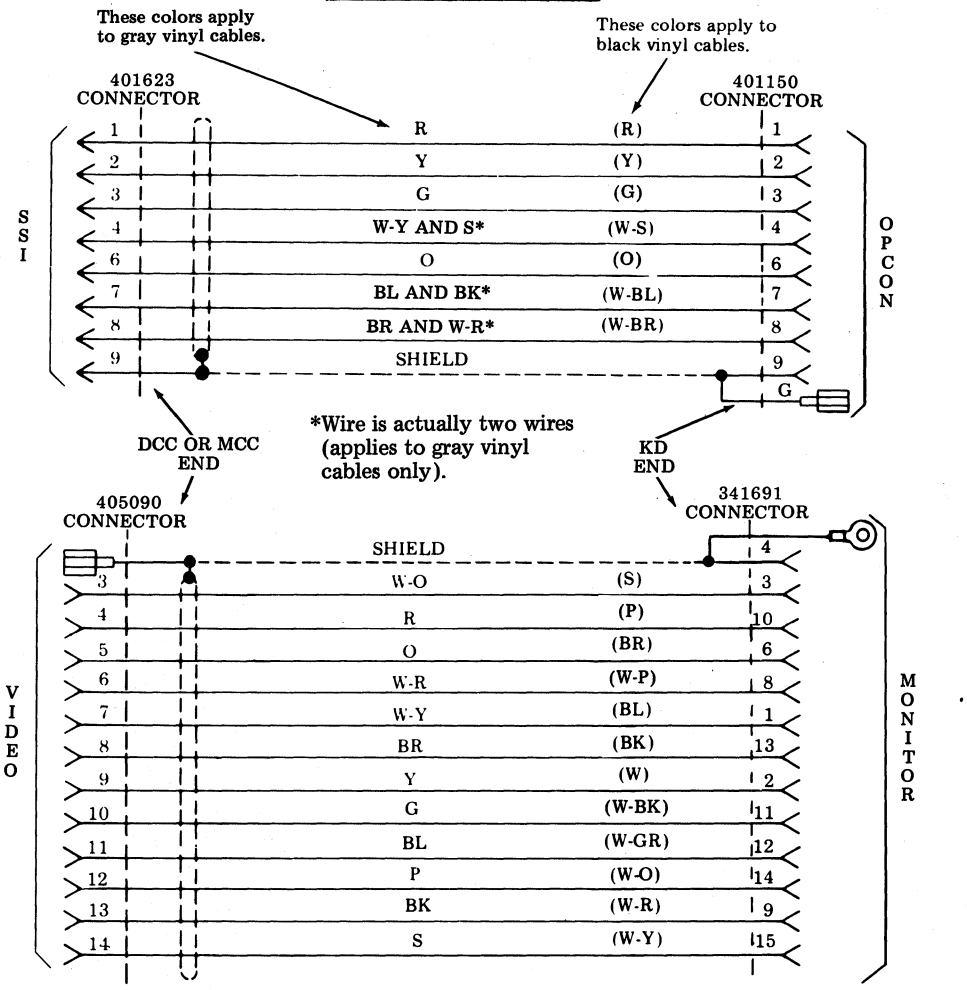
Note 1: If shielded cable is used, late design cables with colors shown (or 405308 cable cut in two) and a WE 44A block (10 position) or 405389 termination box should be used. Refer to Section 582-200-201 for connection details.

Note 2: Telephone Company supplied cable must consist of two twisted pairs of wire.

Fig. 15

F. Opcon/Monitor Cable Assemblies — DCC, MCC (Controller-KD)

PART NUMBER	LENGTH
405301	6 Ft
405302	12 Ft
405303	25 Ft
405304	50 Ft
405139	75 Ft
405140	100 Ft



Note 1: Gray vinyl cables (SSI side) have two spare wires (W-O and P). Refer to Section 582-200-210 for application of an opcon/monitor cable when a KDA is part of the station.

Note 2: See Page 33 for cable parts.

Fig. 16

F. Opcon/Monitor Cable Assemblies — DCC, MCC (Controller-KD) (Cont)

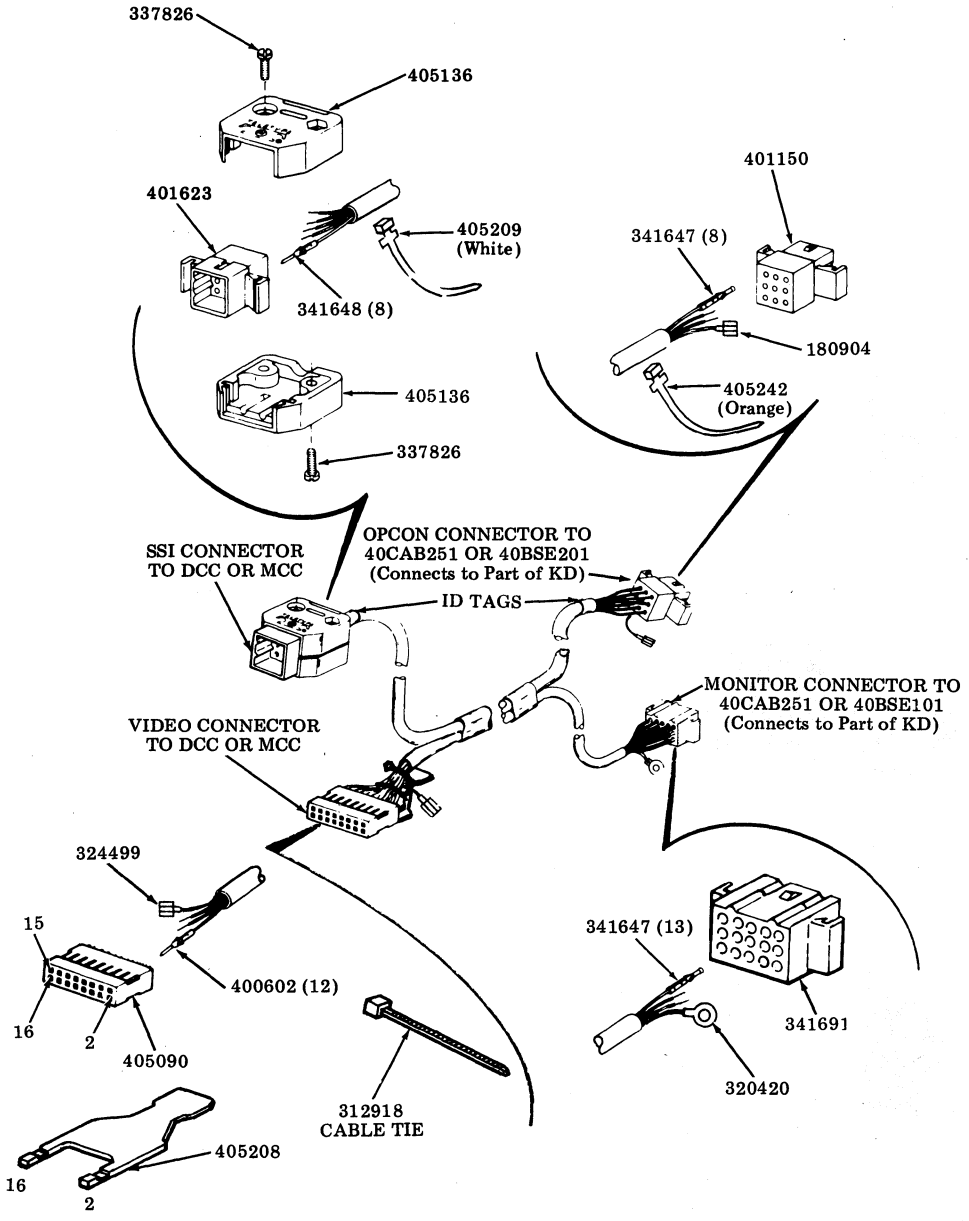
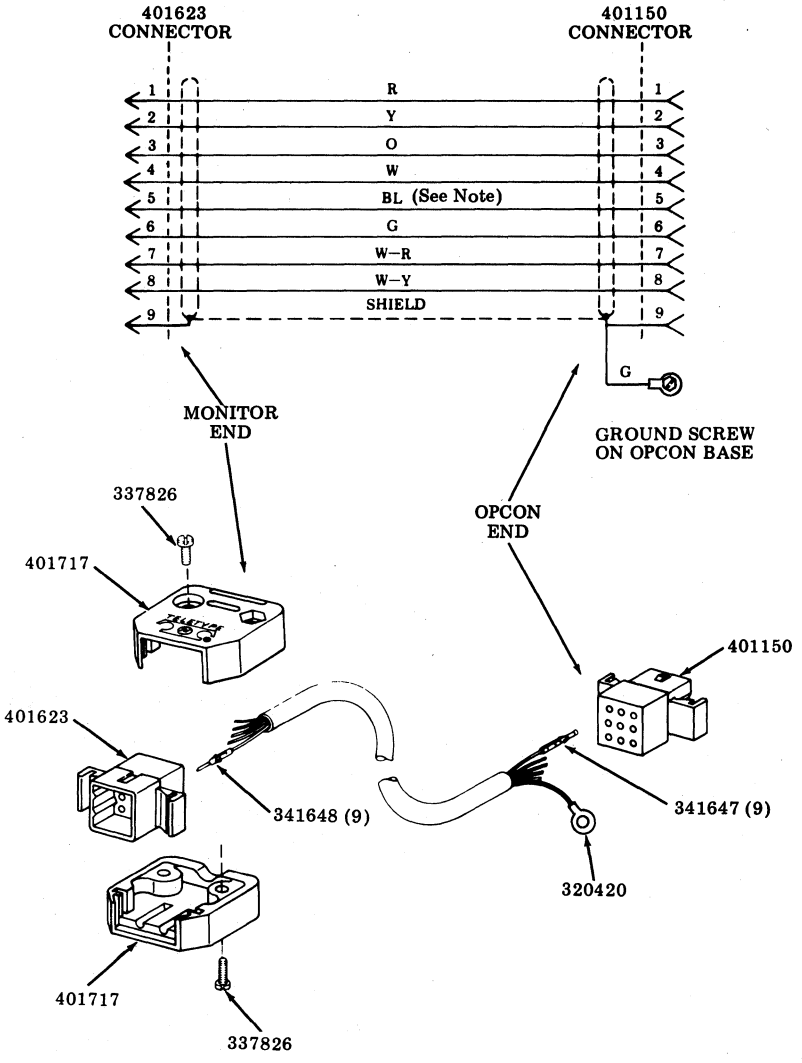


Fig. 16 (Cont)

G. 346333 Opcon Base Cable Assembly — DCC, MCC
(Application: Free-Standing KD)



Note: Late design cables may not have unused blue lead.

Fig. 17

H. 40BSE101 Monitor Base — DCC, MCC
(Application: Free-Standing KD)

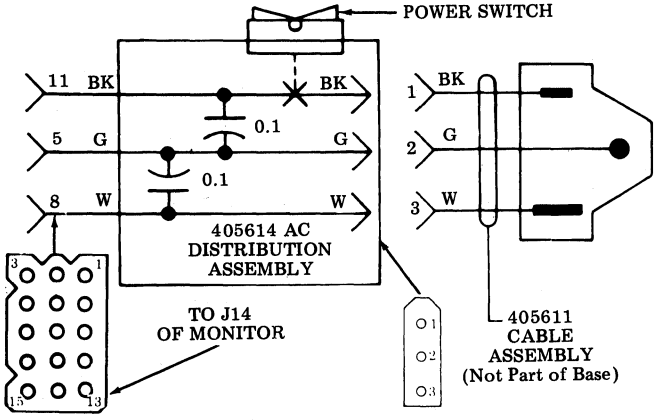


Fig. 18

SYNCHRONOUS "DATASPEED*" 40/4

MAXI-CLUSTER AND MINI-CLUSTER STATION ARRANGEMENTS

TESTING AND TROUBLESHOOTING

CONTENTS PAGE

1. GENERAL

1.01 This section includes all testing of the Synchronous DATASPEED 40/4 maxi-cluster and mini-cluster station arrangements (hereafter referred to as 40/4 type). It also includes trouble analysis.

1.02 The reason for reissue of this section is to delete information for the 251A1 TDU since it will not be offered with these stations.

1.03 Troubles isolated to the data set, telephone lines, or associated systems are not analyzed in this section.

1.04 The correction of troubles in this section is based on replacement of defective major subassemblies (eg, monitor, opcon, printer, power supply, etc). Field level repair of the major subassemblies are given in Service Manual 325-057.

Note: Before replacing PROM or EPROM circuit cards in a controller, see 4. CIRCUIT CARD COMPATIBILITY.

1.05 See Section 582-200-701 for grounding strap locations.

Note: When ordering replaceable parts or components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410055).

1.06 Test switches and indicators are shown in Fig. 1.

Note: The operation of test switches and indicators should be done under the direction of Parts 2. TESTS and 3. TROUBLESHOOTING of this section or referenced sections.

1.07 Reference Sections

582-200-101 — Description and Operation
582-200-201 — Installation
582-200-212 — Keyboard Display Amplifier
582-200-300 — Maintenance Controller Arrangements
582-200-401 — Wiring Diagrams
582-200-701 — Disassembly/Reassembly and Parts
582-200-751 — Routine Maintenance
582-211-210 — Keyboard Disable Lock

1.08 ASCII indicates American National Standard Code for Information Interchange. EBCDIC indicates Extended Binary Coded Decimal Interchange Code.

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Prepared for American Telephone and Telegraph Company by Teletype Corporation

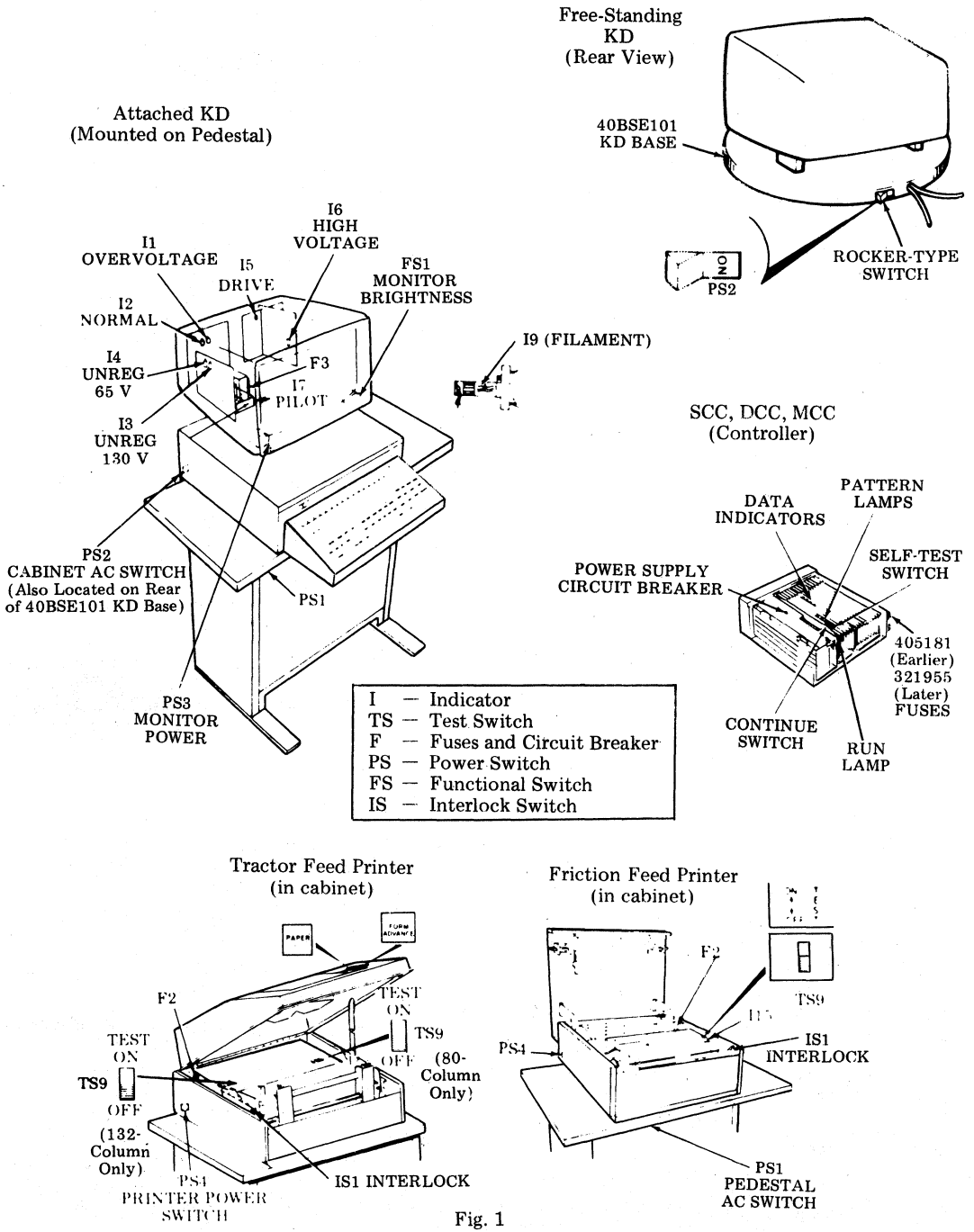

Free-Standing
KD
(Rear View)
40BSE101
KD BASE
ON
PS2
ROCKER-TYPE
SWITCH
Attached KD
(Mounted on Pedestal)
I6
HIGH
VOLTAGE
I1
OVERVOLTAGE
I5
DRIVE
FS1
MONITOR
BRIGHTNESS
I2
NORMAL
I4
UNREG
65 V
F3
I7
PILOT
I3
UNREG
130 V
I9 (FILAMENT)
PS2
CABINET AC SWITCH
(Also Located on Rear
of 40BSE101 KD Base)
PS1
PS3
MONITOR
POWER
SCC, DCC, MCC
(Controller)
PATTERN
LAMPS
DATA
INDICATORS
SELF-TEST
SWITCH
POWER SUPPLY
CIRCUIT BREAKER
405181
(Earlier)
321955
(Later)
FUSES
CONTINUE
SWITCH
RUN
LAMP
I — Indicator
TS — Test Switch
F — Fuses and Circuit Breaker
PS — Power Switch
FS — Functional Switch
IS — Interlock Switch
Tractor Feed Printer
(in cabinet)
PAPER
F2
TEST
ON
TS9
OFF
(80-
Column
Only)
TEST
ON
TS9
OFF
(132-
Column
Only)
PS4
PRINTER POWER
SWITCH
IS1 INTERLOCK
Friction Feed Printer
(in cabinet)
F2
TS9
IS1
INTERLOCK
PS4
PS1
PEDESTAL
AC SWITCH

Fig. 1

2. TESTS

CONTROLLER SELF-TEST

2.01 The Controller Self-Test should be performed on each controller in the station. This test requires the use of the Controller Arrangement Form which is taped to the inside cover of the controller.

2.02 If during a controller self-test, a circuit card is indicated to be defective per the self-test trouble pattern, perform the following before replacing the card:

(a) Remove card and check for bent connector pins.
(b) If circuit card contains sockets, make sure all IC packs are firmly seated.
(c) Reinstall circuit card and make sure card is firmly seated in connector.
(d) Perform the self-test again.

If the circuit card is still indicated as defective, then replace the card.

2.03 Chart 1 is divided into two parts; Steps 1 through 4 and Steps 5 through 7. In the first part, each controller is checked before cabling is connected to other controllers or devices. In the second part, the controller cabling is connected to other controllers or devices.

Warning: The ac power must be OFF before removing or replacing a circuit card.

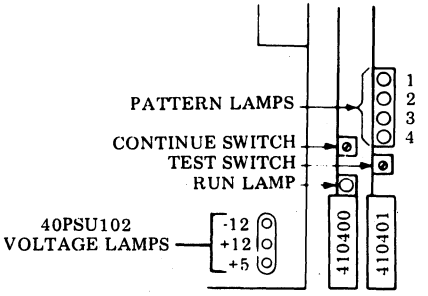


Fig. 2

CHART 1

CONTROLLER SELF-TEST PROCEDURES

STEP	PROCEDURE	CORRECT RESPONSE	ANALYSIS
1	Connect ac cable from pedestal to power source. Turn on pedestal ac switch. (On rack mount, plug in controller ac power cord to 115 V ac.) *Note:* Be sure that power supply circuit breaker is on (down).	All power supply voltage lamps lit.	Perform 40PSU102 power supply analysis.
2	Observe	Run lamp lit on 410400. 1st pattern lamp (toward rear of controller) on 410401 is dimly lit. *Note:* If run lamp is blinking, go to Chart 7.	a. Check switches on all circuit cards per Controller Arrangement Form. b. Perform power supply analysis (even if all lamps are lit). c. Remove all circuit cards except 410400, 410401, 4108XX and 4109XX (PROM version), or 4105XX (EPROM version). If two 41046X cards are present, remove only the one closest to the power supply. (Continued on Page 4)

CHART 1 (Cont)

CONTROLLER SELF-TEST PROCEDURES

STEP	PROCEDURE	CORRECT RESPONSE	ANALYSIS
2 (Cont)			If run lamp is still off but correct power supply voltages are measured, one of cards present (or back panel) is at fault. If lamp is on, replace removed cards one at a time until lamp goes off. Card causing lamp to go off is at fault.
3	Depress and hold TEST switch (Fig. 2).	All pattern lamps on 410401 circuit card light.	a. 410401, 410400. b. Perform power supply analysis.
4	Release self-test switch.	All pattern lamps go off. Pattern and run lamps may flicker during test. While observing light patterns, disregard the display on monitor(s) connected to a DCC or MCC. *Note 1:* Disregard lamps on 410408, 410409 or 410411 circuit card during test. After 1 to 2 minutes, the pattern lamps should blink sequentially for about 15 seconds; however, if a continue pattern appears during test (refer to applicable Controller Arrangement Form); depress the continue switch. The pattern lamps will again go off and test will resume. *Note 2:* There may be more than one continue pattern. Each time a continue pattern occurs, depress the continue switch. Run lamp extinguishes when continue pattern appears and blinks during sequential sequence. After sequential blink pattern on pattern lamps, run lamp should light indicating test in completed.	If trouble pattern appears on pattern lamps, match the pattern against those shown under the circuit cards on Controller Arrangement Form; replace circuit card to which the pattern relates. *Note:* If trouble pattern that appears is shown under two circuit cards, replace cards one at a time. Card replaced prior to trouble pattern not showing up is at fault.

If testing a SCC, test is complete at this point. If testing a DCC or MCC, proceed to Step 5.

CHART 1 (Cont)

CONTROLLER SELF-TEST PROCEDURES

<table>
<tr><th>STEP</th><th>PROCEDURE</th><th>CORRECT RESPONSE</th><th>ANALYSIS</th></tr>
<tr><td>5</td><td>If performing the first part of Chart 1, Steps 1 through 4 (cabling not connected to other controllers or devices), the self-test is completed; turn off power to controller.

If performing the second part of Chart 1, Steps 5 through 7 (cabling connected to other controllers or devices), check the pattern on the monitor and continue with Steps 5 through 7.</td><td>The display pattern appears corresponding to the 41043N circuit card used. Sample displays follow (Fig. 3). Check that cursor moves through all positions on display.</td><td>• Monitor support cabinet or support base ac switch off.
• Monitor power switch off (turn counterclockwise for on).
• Monitor brightness low (turn counterclockwise for high).
• 41043N circuit card associated with monitor.
<table><tr><th>41043N IN CARD POS.</th><th>ASSOCIATED MONITOR CONNECTED TO VIDEO CONNECTOR</th></tr><tr><td>3</td><td>A</td></tr><tr><td>4</td><td>B</td></tr><tr><td>5</td><td>C</td></tr><tr><td>6</td><td>D</td></tr></table>• Monitor fuse on interconnection module.
• Cable (KD).</td></tr>
<tr><td>6</td><td>If there is more than one monitor, depress continue switch† and check monitor 2. Repeat this step for all monitors associated with the DCC or MCC.</td><td>Same as Step 4.</td><td>Same as Step 4.</td></tr>
<tr><td>7</td><td>To return controller to normal operating mode, push continue switch. Proceed to Chart 2, KD/Controller Local Test Procedures.</td><td>Opcons are enabled (local light(s) on). Cursor in home position on all monitors. Run lamp ON. 1st pattern lamp (toward rear of controller) is dimly lit.</td><td>If local lamps on opcons do not light, determine which SSI sockets the opcons are connected to and check the associated 410406 circuit card and fuses per the following:
<table><tr><th rowspan="2">OPCONS CONNECTED TO SSI PORTS</th><th rowspan="2">ASSOCIATED 410406 CIRCUIT CARD IN CARD POS.</th><th colspan="2">ASSOCIATED INTERCONNECT MODULE FUSES</th></tr><tr><th>EARLY VERSION (Note 2)</th><th>LATE VERSION</th></tr><tr><td>1 THROUGH 4</td><td>5 OR 7</td><td>F2 AND F3</td><td rowspan="2">F1 (+12 Volt) and F2 (-12 Volt)</td></tr><tr><td>5 THROUGH 7</td><td>4 OR 6 OR 8</td><td>F5 AND F6</td></tr></table></td></tr>
</table>

†If the continue switch is not depressed, the display pattern will remain on monitor for approximately five minutes. The pattern will then automatically switch to the next monitor. This is especially useful when monitors are located in different rooms. Disregard the display on other monitors connected to a DCC or MCC while checking a monitor.

Note 1: After performing the first or second part of Chart 1, it may be necessary to turn the ac power off, then on. If this action is not performed, the Chart 2, KD/Controller Local Test Procedures may be prevented from operating when LCL/TST key is depressed.

Note 2: Early version interconnects module fuses F1 on DCC or MCC, F7 on DCC, and F1 through F7 on SCC are not used at this time and may be used as spares.

CHART 1 (Cont)

CONTROLLER SELF-TEST PROCEDURES

Display Pattern for a 410431 D I/O Circuit Card — ASCII — Up-Low

*NORMAL S_H S_X E_X E_T E_Q A_K B_L B_S ▶ ≡ V_T F_F ← S_O S_I D_L D_1 D_2 D_3 D_4 N_K S_Y E_B C_N E_M S_B E_C F_S G_S P_S U_S

UNDERLINED ! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ?

HALF @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [\ ] ^ _

INTENSIFIED ` a b c d e f g h i j k l m n o p q r s t u v w x y z { | } ~ ▨

Display Pattern for a 410432 D I/O Circuit Card — ASCII — Line Drawing

*NORMAL S_H S_X E_X E_T E_Q A_K B_L B_S ▶ ≡ V_T F_F ← S_O S_I D_L D_1 D_2 D_3 D_4 N_K S_Y E_B C_N E_M S_B E_C F_S G_S P_S U_S

UNDERLINED ! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ?

HALF @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [\ ] ^ _

INTENSIFIED ┌ ┐ └ ┘ ■ ▄ ▌ ▐ ▀ \ / ─ ─ ┼ ┼ \ / / \ · . . ' - ┴ ┬ ┼ │ ├ ┤ ▨

Display Pattern for a 410434 D I/O Circuit Card — ASCII — Monocase

*NORMAL ! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ?

UNDERLINED ! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ?

HALF @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [\ ] ^ _

INTENSIFIED ` A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [\ ] ^ _

Display Pattern for a 410435 D I/O Circuit Card — EBCDIC — Up-Low

*NORMAL S_H S_X E_X E_T E_Q A_K B_L B_S ▶ ≡ V_T F_F ← S_O S_I D_L D_1 D_2 D_3 D_4 N_K S_Y E_B C_N E_M S_B E_C F_S G_S P_S U_S

UNDERLINED ! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ?

HALF @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z ¬ \ ¦ ¢ _

INTENSIFIED ` a b c d e f g h i j k l m n o p q r s t u v w x y z { | } ~ ▨

Display Pattern for a 410436 D I/O Circuit Card — EBCDIC — Monocase

*NORMAL ! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ?

UNDERLINED ! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ?

HALF @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z ¬ \ ¦ ¢ _

INTENSIFIED @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z ¬ \ ¦ ¢ _

Fig. 3

LOCAL TESTS

A. KD/Controller Local Test

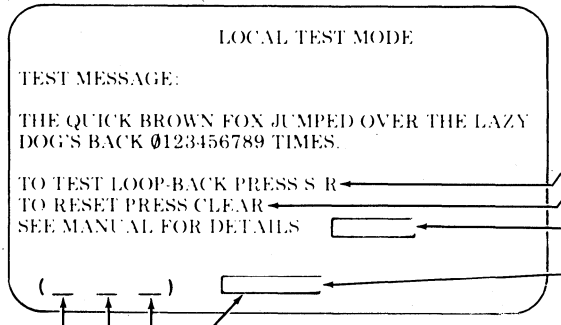
2.04 Chart 2 procedures should be performed on each KD device in the station. After successful completion of the chart for all KDs, proceed to Chart 3, Printer Local Test Procedures. If printer is not part of station, proceed to Chart 4, KD Local Test Procedures. If this test is performed during customer operations of the other KD devices (if present), SEND operation will be momentarily interrupted during the test.

Note: If maxi-cluster station is EBCDIC but SCC is not EPROM version, the following four characters: ¬ , ! , | , and ¢ will be displayed in place of the ¢ , | , ! , and ¬ device addresses, respectively. This only pertains to local test, refer to Fig. 4.

CHART 2

KD/CONTROLLER LOCAL TEST PROCEDURES

STEP	PROCEDURE	CORRECT RESONSE	LOCAL TEST ANALYSIS
1	*Note:* Start with Step 1 if KD has a typewriter style opcon. Start with Step 7 if KD has an internal numeric cluster style opcon. Depress LOCAL if the key is not lit. Request a local test by depressing the L/TST key while CONTROL key is held down.	The following message is displayed on the monitor.	•If Step 1 is attempted following a controller self test, it may be required to turn ac power off then on to allow operation. •Check cabling. •Check fuses on interconnect module.



See Note 5.

See Note 3.

If the word BAD appears in this area, replace the D I/O circuit card (41043N) for device being tested. (See Chart 1, Step 5.)

If the wrong line code appears, check SPC17-6 of 410403 or SPB7-6 of 410411 circuit card. Switch ON = ASCII Switch OFF = EBCDIC

If addresses are incorrect per customer order and Fig. 4, check switches selected on 410403 or 410411 circuit card and all controller and device connections per Controller Arrangement Form.

Note 1: If the above message is not responded to within 20 seconds, the display will clear and the test will be automatically canceled.

Note 2: The QUICK BROWN FOX . . . message may be changed provided that the first character remains a "T". If "T" is changed to any other character, the display will clear and the test will be canceled when S/R is depressed.

(Notes 3, 4 and 5 on Page 8.)

CHART 2 (Cont)

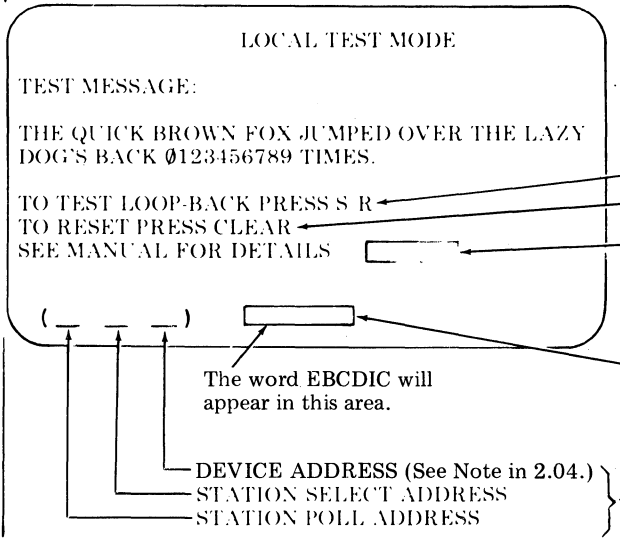
KD/CONTROLLER LOCAL TEST PROCEDURES

STEP	PROCEDURE	CORRECT RESPONSE	LOCAL TEST ANALYSIS
	Note 3: Besides CLEAR key, depression of any PA or PF key will clear display and cancel test. MCC only: Test should be run to completion (Step 2), failure to do so will cause Print Local operation to fail; to correct, perform Steps 1 and 2. *Note 4:* Three address characters will be present within the parentheses. If an address character(s) is not displayed, it is assumed that the address character(s) is SPACE. *Note 5:* For EPROM version SCC, the words "OR ENTER" will appear after "S/R". For EPROM version MCC with Internal Numeric Cluster Opcon, the word "ENTER" will appear in place of "S/R".		
2	Depress S/R key. THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG'S BACK Ø123456789 TIMES. *Note:* If any characters in the QUICK BROWN FOX . . . message were changed before depressing S/R indicator, those characters will appear in the above message.	If received without error, the following message will appear on the monitor. If optioned for 1-second alarm, alarm will sound once and LOCAL indicator should light. If optioned for continuous alarm, alarm will sound repeatedly until LOCAL key is manually depressed.	• If S/R indicator is flashing, go to Step 4, Local Test Analysis. • If "test failed" message is received, go to Step 4, Procedure.
3	Depress CLEAR key. Depress LOCAL key if station is not connected to LCU.	Test is completed. Display is cleared. Proceed to Step 6.	
4	If message is received with an error, the following message will be displayed on the monitor. **TEST FAILED** TEST MESSAGE THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG'S BACK Ø123456789 TIMES. RE-TEST LOOP-BACK, PRESS S/R TO RESET PRESS CLEAR SEE MANUAL FOR DETAILS (__ __ __) [ ] See Note 5 of Step 1.	Go to Step 5.	Symptom — Flashing S/R Indicator • Normal Local Test: Replace 410408 (or 410409 or 410411) or check cable between SCC and DCC. • Analog Loopback Test: Check data set or data set cable. Replace 410408 (or 410409 or 410411). Replace controller back panel or interconnection module. (Data set DSR not "on" in AL mode can cause this failure.) • Far-End Digital Loopback Test: Check far-end data set or check facilities between data sets. *Note 1:* Local test is canceled by symptom. *Note 2:* Depress LOCAL key to stop flashing S/R indicator.

CHART 2 (Cont)

KD/CONTROLLER LOCAL TEST PROCEDURES

STEP	PROCEDURE	CORRECT REPONSE	LOCAL TEST ANALYSIS
5	Depress LOCAL key if station is not connected to LCU. Retry Steps 1 and 2 once, then cancel test by depressing CLEAR key.		If test still fails, run controller self-tests. Replace associated 410406 circuit card (see Chart 1, Step 7). Replace 410408 or 410409 or 410411 circuit card.
6	If local test of all KD devices is successfully completed, continue to Chart 3 and Chart 4.		
7	INTERNAL NUMERIC CLUSTER STYLE OPCON (Steps 7 through 15) Request a local test by depressing the L/TST key and the ALPHA key simultaneously.	The following message is displayed on the monitor.	•If Step 7 is attempted following a controller self test, it may be required to turn ac power off, then on again to allow operation. •Check cabling. •Check fuses on interconnect module.



See Note 5 of Step 1.

See Note 3.

If the word BAD appears in this area, replace the D I/O 41043N circuit card for device being tested. (See Chart 1, Step 5.)

If the wrong line code appears, check SPC17-6 of 410403 or SPB7-6 of 410411 circuit card. Switch OFF = EBCDIC.

If addresses are incorrect per customer order and Fig. 4, check switches selected on 410403 or 410411 circuit card and all controller and device connections per Controller Arrangement Form.

Note 1: If the above message is not responded to within 20 seconds, the display will clear and the test will be canceled.

Note 2: The QUICK BROWN FOX. . . message may be changed provided that the first character remains a "T". If "T" is changed to any other character, the display will clear and the test will be canceled when ENTER key is depressed.

Note 3: Besides CLEAR key, depression of any PA or PF key will clear display and cancel test. MCC only: Test should be run to completion (Step 8), failure to do so will cause Print Local operation to fail; to correct, perform Steps 7 and 8.

See Note 4 of Step 1

CHART 2 (Cont)

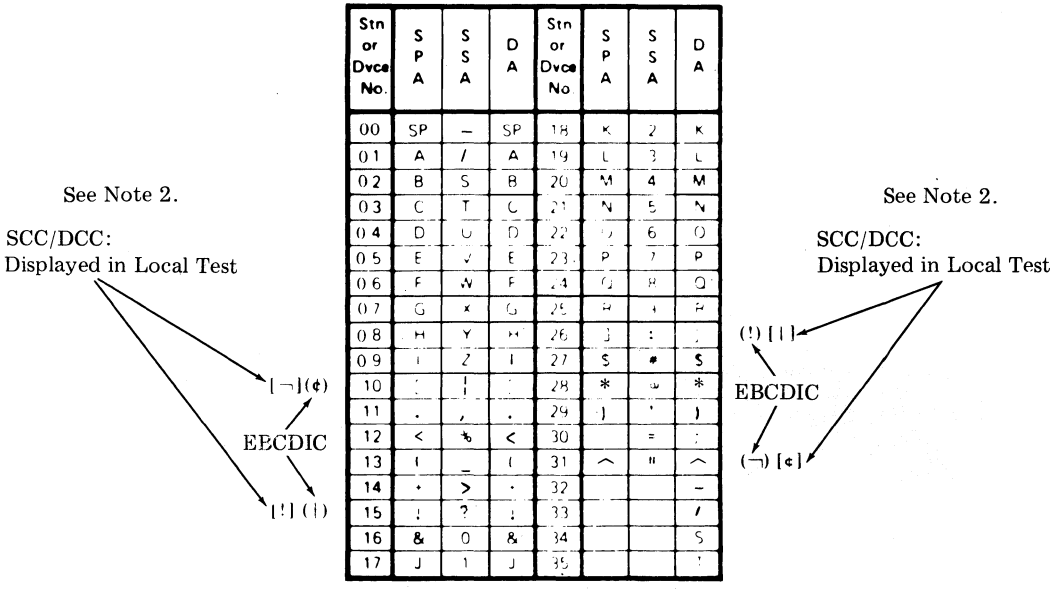
KD/CONTROLLER LOCAL TEST PROCEDURES

STEP	PROCEDURE	CORRECT RESPONSE	LOCAL TEST ANALYSIS
8	Depress ENTER key.	If received without error, the following message will appear on the monitor. If optioned for 1-second alarm, alarm will sound once and LOCAL indicator should light. If optioned for continuous alarm, alarm will sound repeatedly until RESET key is manually depressed. THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG'S BACK Ø123456789 TIMES. *Note:* If any characters in the QUICK BROWN FOX. . . message were changed before depressing ENTER key, those characters will appear in the above message.	• If S/R indicator is flashing, go to Step 4, Local Test Analysis. • If "test failed", message is received, go to Step 13, Procedure.
9	Depress CLEAR key and then RESET key.	Display is cleared.	
10	Request a local test by depressing the L/TST key and the NUMERIC key simultaneously.	The message of Step 7 is displayed.	Replace opcon.
11	Depress ENTER key.	(As given in Step 8.)	(As given in Step 8.)
12	Depress CLEAR key.	Test is completed. Display is cleared. Proceed to Step 15.	
13	If message is received with an error, the following message will be displayed on the monitor. **TEST FAILED** TEST MESSAGE: THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG'S BACK Ø123456789 TIMES. RE-TEST LOOP-BACK, PRESS S/R TO RESET PRESS CLEAR SEE MANUAL FOR DETAILS (_ _ _) [ ]	See Note 5 of Step 1. Go to Step 14.	(As given in Step 4.)

CHART 2 (Cont)

KD/CONTROLLER LOCAL TEST PROCEDURES

STEP	PROCEDURE	CORRECT RESPONSE	LOCAL TEST ANALYSIS
14	Depress RESET key if station is not connected to LCU. Retry Steps 7 and 8 once then cancel test (depress CLEAR key).		If test still fails, run controller self-tests of Chart 1. Replace associated 410406 circuit card (see Chart 1, Step 7). Replace 410408, 410409 or 410411 circuit card.
15	If local test of all KD devices is successfully completed, proceed to Chart 3.		



Stn or Dvce No.	SPA	SSA	DA	Stn or Dvce No.	SPA	SSA	DA
00	SP	–	SP	18	K	2	K
01	A	/	A	19	L	3	L
02	B	S	B	20	M	4	M
03	C	T	C	21	N	5	N
04	D	U	D	22	O	6	O
05	E	V	E	23	P	7	P
06	F	W	F	24	Q	8	Q
07	G	X	G	25	R	9	R
08	H	Y	H	26	S	:	S
09	I	Z	I	27	T	#	T
10	[	¦	[	28	*	@	*
11	.	,	.	29	)	'	)
12	<	%	<	30		=	;
13	(	_	(	31	^	"	^
14	+	>	+	32			–
15	!	?	!	33			/
16	&	0	&	34			S
17	J	1	J	35			T

Note 1: This figure is used with Steps 1 and 7 of Chart 2. This figure indicates all station and device identification for ASCII or EBCDIC coded stations except where noted otherwise, see Note 2.

Note 2: SPA and DA characters for EBCDIC coded stations at 10, 15, 26, and 31 are located within the parentheses. The graphic character displayed on the screen during local test is enclosed within the brackets (SCC/DCC) or is within the parentheses (MCC).

Note 3: In local test only, a monocase D I/O 410434 or 410436 circuit card will cause fold-over of the SSA of Station No.10 from ¦ to \ (" \ " will be displayed instead of " ¦ ").

Fig. 4—ASCII or EBCDIC Station and Device Identification

B. Printer Local Tests

CHART 3

PRINTER LOCAL TEST PROCEDURES

Note: If a printer is not part of the station, proceed to Chart 4.

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
1	Preliminary requirements of printer: a. Ribbon and paper loaded. b. Switches (top right or left of printer, cabinet cover raised). LF-1 Test-Off Forms (Tractor Feed Only) — On c. Cabinet cover closed and ac power switched ON.	Printer motor is off. *Note:* Fan in tractor feed printer cabinet must be ON (air flows).	Refer to Section 582-210-700 of Service Manual 325-057 or FIMP 579-505-350.
2	Momentarily depress PAPER button (red) on cover of printer cabinet.	Paper feeds out as long as button is depressed.	•Check for: a. Printer cable not connected. b. Printer cable defective or miswired. c. Defective 410406 circuit card (DCC, MCC). Refer to Section 582-210-700 of Service Manual 325-057 or FIMP 579-505-350. *Note:* Continuous feedout will occur if form selector lever not fully seated in slot 1, 2, 3, or 4.
3	TRACTOR FEED PRINTER ONLY: Depress and release FORMS ADVANCE button (black) on printer cabinet cover. (See Note in Trouble Analysis column.)	Paper feeds out until first line of next form is reached, then stops. *Note:* See chart on top of printer to determine the correct form-out selection.	
4	Unlatch and raise printer cabinet cover.	None	
5	Raise cover interlock switch to maintenance position.	None	
6	Set test switch to ON, allow printer to print several lines, then turn test switch OFF. *Note:* On printers which have later version 410071, 410072 and 410076 circuit cards, the font identification symbol will not be printed in the columns margined per Option 17.	Printer turns on and prints font identification symbol repeatedly in all columns until switch is turned off. (See Note.) See Section 582-200-101 for font ID symbols.	Refer to Section 582-210-700 of Service Manual 325-057 or FIMP 579-505-350.

CHART 3 (Cont)

PRINTER LOCAL TEST PROCEDURES

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
7	FRICTION FEED PRINTER: Lift paper roll to simulate a paper alarm. Lower paper roll, guide paper through window, and close cabinet cover. TRACTOR FEED PRINTER: Tear off next form at perforations under pedestal top, then depress PAPER button on cabinet top until last form passes through printer. Reload forms, guide first form through window, and close cabinet cover.	PAPER indicator lights. PAPER indicator goes out. 80-Column Printer With 410640 Circuit Card — PAPER indicator lights and printer motor turns off. 80-Column Printers With 410076 or 410071 Circuit Cards And All 132-Column Printers — If Option 48a is selected, PAPER indicator lights and printer motor turns off when last form is partly through printer. If Option 48b is selected, PAPER indicator does not light and printer motor does not turn off until form is completely out of printer and end of form contact is sensed. PAPER indicator goes out.	Refer to Section 582-210-700 of Service Manual 325-057 or FIMP 579-505-350.
8	Type some text on the display (lower case and capitals if possible) and then depress PRINT LOCAL key.	LOCAL indicator extinguishes and PRINT LOCAL indicator lights and then goes off when printer buffer receives the message; LOCAL indicator lights. Printer copies entire display (24 lines): Monocase Printer — All display characters print as capitals. See Note following Step 5 of Chart 4. Up-Low Printer — All display characters are copied as displayed. (Continued on Page 14)	• Flashing PRINT LOCAL indicator indicates: a. Printer cabinet lid open. b. Form or paper-out condition. c. Printer ac power is off. d. Printer is not print local to the KD. e. Printer cable defective or miswired. Refer to Section 582-210-700 of Service Manual 325-057 or FIMP 579-505-350.

CHART 3 (Cont)

PRINTER LOCAL TEST PROCEDURES

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
8 (Cont)		*Note 1:* Friction feed printer may or may not feed out 16 lines of paper before turning off, depending on Option 18. Tractor feed printer may or may not form feed before turning off depending on Options 18 and 39. *Note 2:* After printer is finished copying, the motor will remain on for approximately 10 seconds before turning off. Later version printer circuit cards will allow printer motor to remain on for 40 seconds or indefinitely, depending on Option 58.	• Option 18c not installed in monocase printer. • Character set of type carrier in printer does not match Option 19. • Option 19c not installed in printer. Refer to Section 582-210-700 of Service Manual 325-057 or FIMP 579-505-350.

C. KD Local Test

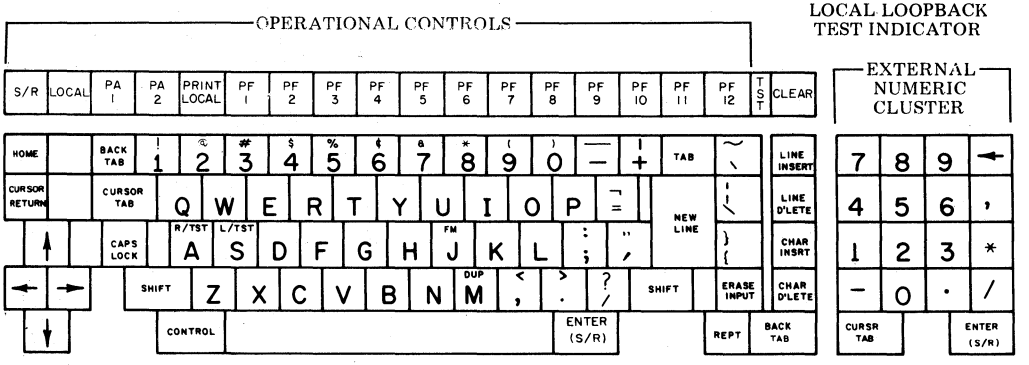
2.05 Each KD in the station must be checked using the procedure given in 2.06 and Chart 4. Locations of various control and data keys referred to in the chart are given in Fig. 5.

2.06 Follow these instructions before beginning Chart 4:

(a) Turn on power to the set or station (LOCAL indicator lights on each opcon).

(b) Turn on power to the display and adjust brightness.

(c) Perform Steps 1 through 42 of Chart 4, KD Local Test Procedures.

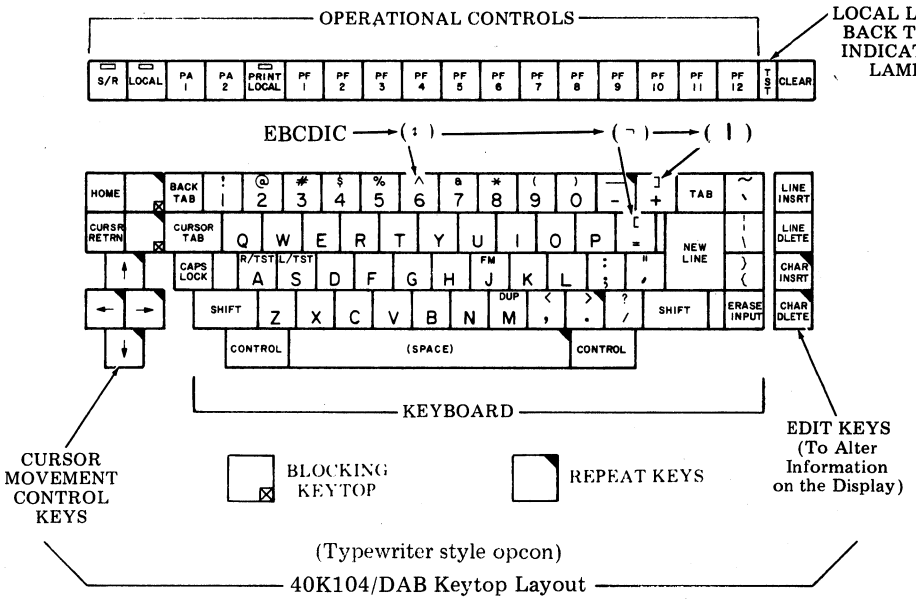


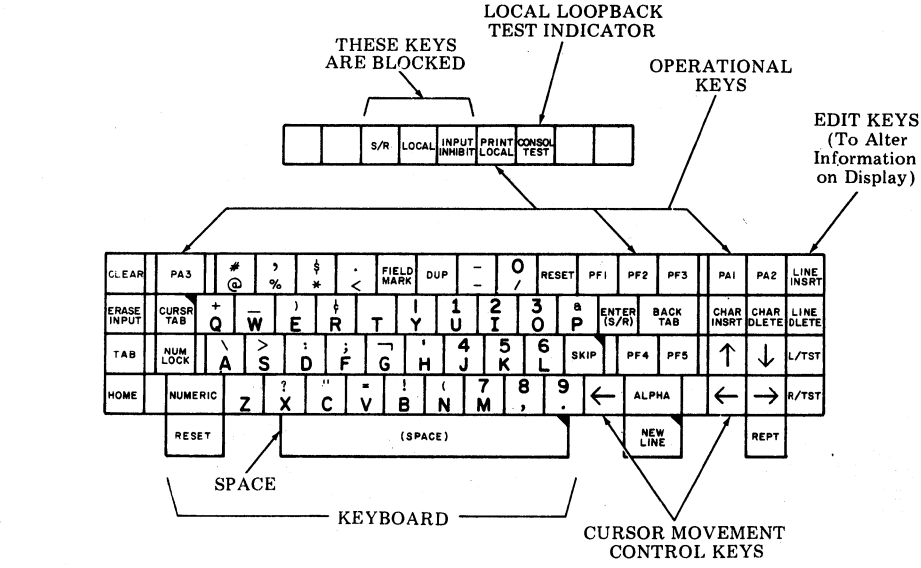
Note: The , (comma), *, and / keys located within the External Numeric Cluster are not functional with DCCs or MCCs which employ PROM version circuit cards and, therefore, may be covered with blocking keys.

40K203/GAB Keytop Layout

(External numeric cluster style opcon — In test procedures, treat as typewriter style opcon.)

Fig. 5—Opcon Keytop Layouts





Note: The only locking keytop is NUM LOCK, depress to set (lights), depress to release (light goes out).

(Internal numeric cluster style opcon)

40K105/CAA Keytop Layout

Fig. 5 (Cont)

CHART 4

KD LOCAL TEST PROCEDURES

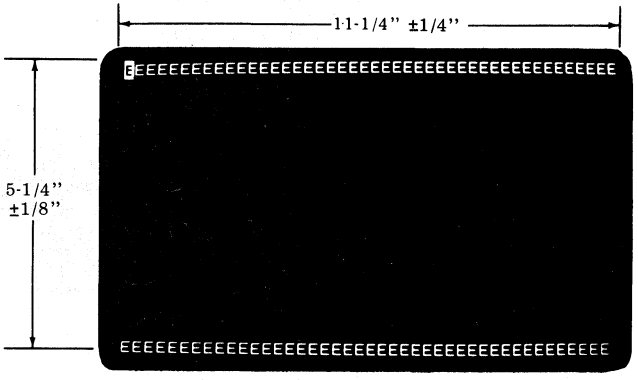
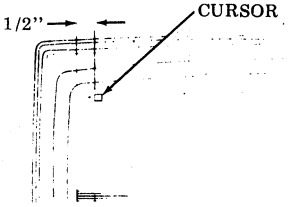
STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
Note: Start with Step 1 if any KD of the station has typewriter style opcon (typewriter style includes external numeric cluster style). Start with Step 21 if KD has an internal numeric cluster style opcon.			
1	a. Place typewriter style opcon into the caps mode by depressing and latching the CAPS LOCK key. (Opcons with no CAPS LOCK key require no action.) b. At each KD: • Observe that the raster is barely present when brightness control is turned up fully. • When cursor is in home position, it is approximately 1/2 inch from left side of display. • Enter a line of Es at top and bottom of display, then HOME cursor. Requirements are met.  Requirements: • Raster aligned vertically and horizontally. • All Es sharply defined. • Height and width of display as indicated. • Es uniform across full width. • Height of Es same at top and bottom lines.	 	• If raster is not present, go to Chart 8. • If a requirement is not met, refer to adjustments of monitor in Section 582-213-700 of 325-057 Service Manual or FIMP 579-505-350 to meet requirement. • If E cannot be entered, go to Chart 9.

CHART 4 (Cont)

KD LOCAL TEST PROCEDURES

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
2	Home the cursor and depress a few keys on the keyboard portion of the opcon.	*Note:* Each keytop need not be checked except for a trouble call. Each keytop shall function each time it is depressed.	
3	Disengage the CAPS LOCK key by depressing it again momentarily. Again depress a couple of keys on the keyboard portion of the opcon. (Opcons with no CAPS LOCK key require no action; go to Step 4.)	The alpha characters described in Step 2 are displayed in lower case (ie, abcdef, etc).	

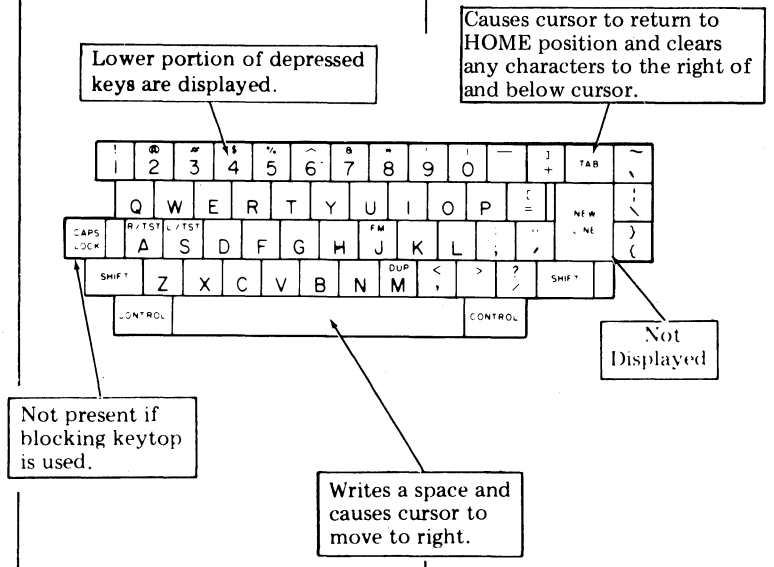


CHART 4 (Cont)

KD LOCAL TEST PROCEDURES

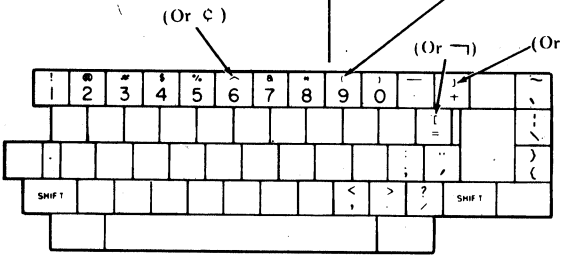
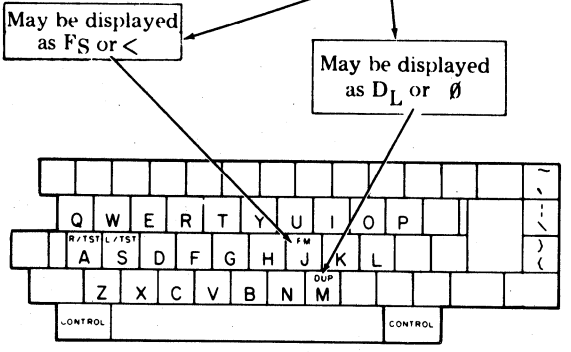
STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
4	Depress the left then the right [SHIFT] key while depressing and checking operation of one of the following alpha keys (ie, !@#$, etc).	Upper portion of the depressed keys are displayed.  See Note following Step 5.	
5	Depress the [CONTROL] key together with the [FM J] key; then depress the [CONTROL] key together with the [DUP M] key.	See Note following Step 5. 	

CHART 4 (Cont)

KD LOCAL TEST PROCEDURES

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS

Note: Some characters may not be displayed or may be displayed as a character other than the character received on-line or entered from the opcon. See the table below which also provides printer actions for applicable characters.

Type of 40K104 Opcon or 40K203 Opcon		ASCII or EBCDIC					ASCII			EBCDIC			ASCII or EBCDIC	
Character Received From LCU or Entered on 40K104 or 40K203 Type Opcon		' '	\	¦	{	}	^	]	[	¢	¦	¬	DUP	FM
Character Displayed Using D I/O:	410431 ASCII UP-LO	~	\	¦	{	}	^	]	[	^	]	[	DL	FS
	410434 ASCII MONO	^	a	\	|	|	^	]	[	^	]	[	Ø	<
	410435 EBCDIC UP-LO	~	\	¦	{	}	¢	¦	¬	¢	¦	¬	DL	FS
	410436 EBCDIC MONO	¢	a	\	¬	|	¢	¦	¬	¢	¦	¬	Ø	<
	410432 ASCII LINE-DRAW	┤	┌	|	┼	├	^	]	[	^	]	[	DL	FS
Character Printed Using Type Carrier:	400629 80C ASCII UP LO	~	\	¦	{	}	^	]	[	^	]	[	SP	SP
	400645 80C ASCII MONO	^	a		[	]	^	]	[	^	]	[	SP	SP
	400775 80C ASCII LINE DRAW	┤	┌	|	+	├	^	]	[	^	]	[	SP	SP
	400777 132C ASCII UP-LO	~	\	¦	{	}	^	]	[	^	]	[	SP	SP
	400780 132C ASCII MONO	^	a	\	[	]	^	]	[	^	]	[	SP	SP
	400783 132C EBCDIC UP-LO	~	\	¦	{	}	‡	¦	¬	¢	¦	¬	SP	SP
	400784 80C EBCDIC UP-LO	~	\	¦	{	}	‡	¦	¬	¢	¦	¬	SP	SP
	400785 80C EBCDIC MONO	¢	a		¬	|	‡	¦	¬	¢	¦	¬	SP	SP
	400887 132C EBCDIC MONO	‡	a		¬	|	‡	¦	¬	¢	¦	¬	SP	SP

LEGEND:

☐ Will print with fold-over option in printer enabled. Error symbol will print if fold-over option is not enabled.

Note: Ø is displayed as 0 but printed as Ø.

CHART 4 (Cont)

KD LOCAL TEST PROCEDURES

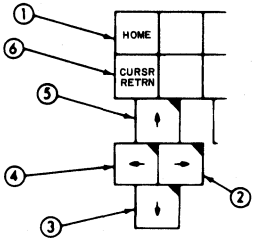
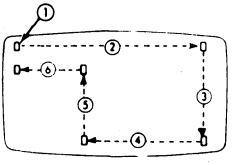
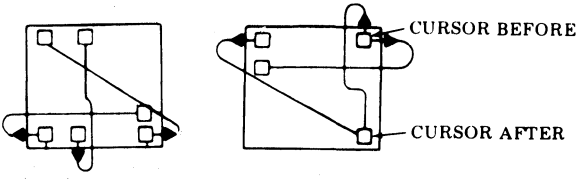
STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
6	Depress one of the following keys with additional force, [- _] [> .] [(SPACE)] .	---------- . . . . . . The space key repeatedly moves the cursor.	
7	Depress the [HOME] key. Then in sequence depress momentarily with more force than normally required, each cursor movement key shown. 	 *Note:* In local opcon operation, attempts to move the cursor off the display will result as shown: 	
8	Depress ERASE INPUT key.	Display clears and cursor goes to home position. LOCAL indicator remains lit.	
9	Type the alpha characters A through J on the display. Place the cursor over the character E and depress the [CHAR INSRT] key once, then depress it fully — releasing it after the characters move to the next line.	① ABCD[E]FGHIJ ② ABCD[ ]EFGHIJ ③ ABCD[ ] EFGHIJ *Note:* CHAR INSRT and CHAR DLETE affect all 24 lines on a DCC KD. CHAR INSRT and CHAR DLETE affect only 4 lines including the line with the cursor on MCC KD. Characters move slowly.	

CHART 4 (Cont)

KD LOCAL TEST PROCEDURES

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
10	Depress the CHAR DLETE key momentarily, then depress it fully.	ABCD □ EFGHIJ ABCD E FGHIJ Characters delete one at a time or repeatedly when key is held depressed. See Note in Step 9.	
11	Depress the LINE INSRT key three times.	The cursor remains at its present location, and the line of data moves down three lines.	
12	Depress the LINE DLETE key once, then depress it fully.	The line of data moves up one line, then stops on the first line.	
13	Depress PRINT LOCAL key, (if printer is not provided, go to Step 14).	LOCAL indicator extinguishes, PRINT LOCAL indicator lights and then goes off when printer buffer receives the message; LOCAL indicator lights. Printer copies entire display (24 lines):	• Flashing PRINT LOCAL indicator indicates printer: a. is not print local to the KD. b. cabinet lid is open. c. is in form-out or paper-out condition. d. ac power is off. e. defective printer cable.
14	Place the cursor away from home position and depress the CURSOR TAB key.	The cursor returns to home position. *Note:* Displayed data is not affected by CURSOR TAB and BACK TAB keys.	
15	Place the cursor away from home position and depress the BACK TAB key.	The cursor returns to home position.	
16	Place the cursor away from home position and depress the TAB key.	Cursor returns to home position. Any characters to the right of and below cursor will be cleared.	

CHART 4 (Cont)

KD LOCAL TEST PROCEDURES

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
17	Type some text on the opcon and then depress [S/R] Attempt to type some text on the opcon.	Text is displayed. LOCAL indicator extinguishes when S/R is depressed. Attention bell sounds each time a key is depressed.	
18	Alternately depress LOCAL then depress [PA 1] key, then [LOCAL] key and [PF 2], [PF 1], [PF 2] through [PF 12], [R/TST] and [CLEAR] keys in the same manner.	[LOCAL] is lit and extinguishes when a key is depressed (same for each key). Data on display remains unchanged, except when CLEAR key is depressed; all data clears from display and cursor goes to home position.	
19	This step applies only to monocase opcons (blocking keytop over CAPS LOCK position). a. Depress ERASE INPUT and QUOTES keys together with additional force. b. Depress A (do not depress SHIFT). c. Depress ERASE INPUT and P keys together with additional force.	 TST indicator lights and remains lit. S/R key lights. TST indicator light goes out.	 Chart 9 •Remove blocking keytop, check that plunger is in lower position. •Replace opcon. Chart 9
20	When all typewriter style opcons have successfully passed these tests: a. Go to Step 21 if an internal numeric cluster style opcon is part of the station. b. Go to Chart 5 if no internal numeric cluster style opcon is part of the station.		
21	INTERNAL NUMERIC CLUSTER STYLE OPCON (Steps 21 through 42) a. Perform Step 1b. b. Place internal numeric cluster style opcon into the NUM LOCK mode by depressing and latching the NUM LOCK key.	 Results and Trouble Analysis of 1b apply. The indicator lights.	

CHART 4 (Cont)

KD LOCAL TEST PROCEDURES

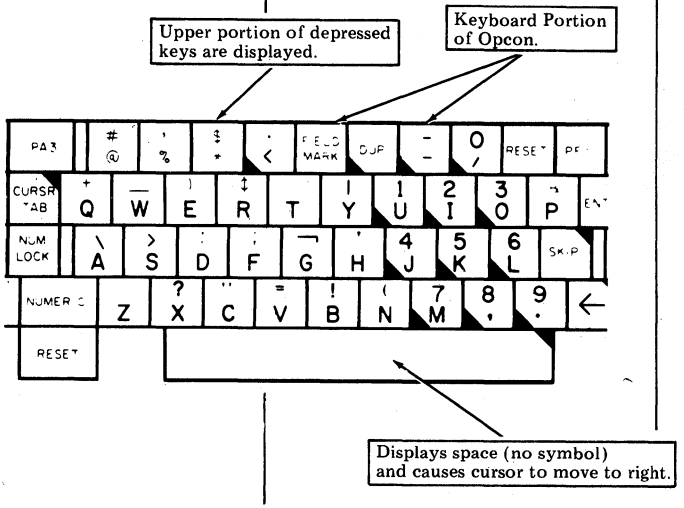
STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
22	Home the cursor and depress a few keys on the keyboard portion of the opcon.  *Note 1:* Each key need not be checked except for a trouble call. Each should function each time it is depressed. Depressing [Z] or [T] will display space (no symbol) and cause cursor to move to right. *Note 2:* TAB causes cursor to move to home position. *Note 3:* If Option 407a is installed in SCC (or MCC), NUMERIC key must be depressed (or NUM LOCK indicator lit) to enter characters outside the numeric cluster (keys in cluster are marked: [ ]).		
23	Hold down the [ALPHA] key while depressing an alphanumeric key (ie, A, B, C, etc).	The corresponding alpha character (ie, A, B, C, etc) is displayed.	
24	Disengage the [NUM LOCK] key by depressing it again momentarily. The indicator light goes out. Depress a couple of keys (ie, A, B, C, D, etc) on the keyboard portion of the opcon.	The alpha characters shown in the figure of Step 22 (lower portion of keytops) are displayed (ie, A, B, C, D, etc).	

CHART 4 (Cont)

KD LOCAL TEST PROCEDURES

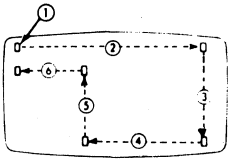
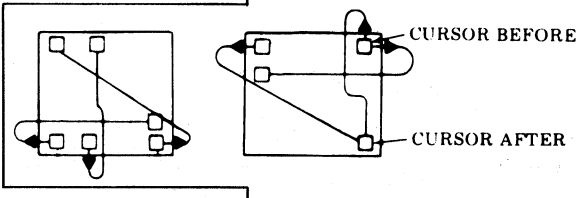
STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
25	Hold down the NUMERIC key while depressing and checking operation of one of the following alpha keys: (#, +, \, etc.).	Upper portion of depressed keys are displayed.	
26	Depress the FIELD MARK key, then depress the DUP key.	FIELD MARK is displayed as < . DUP is displayed as ∅.	
27	Fully depress the (SPACE) key.	The space key repeatedly moves the cursor.	
28	Hold down the REPT key while depressing any alphanumeric key.	The alphanumeric character is repeated.	
29	① Depress HOME key. ② Depress ‡ → key. ③ Depress ‡ ↓ key. ④ and ⑥ Depress ‡ ← key. (Try both ← keys.) ⑤ Depress ‡ ↑ key. ‡ With more force than normally required. *Note:* There is no CURSR RTRN key on this opcon.	 *Note:* In local opcon operation, attempts to move the cursor off the display will result as shown: 	

CHART 4 (Cont)

KD LOCAL TEST PROCEDURES

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
30	Depress ERASE INPUT key.	Display clears and cursor goes to home position. LOCAL indicator remains lit.	
31	Type the alpha characters A through J on the display. Place the cursor over the character E and depress the CHAR INSRT key once, then also depress REPT key — releasing both after the characters move to the next line.	① ABCD[E]FGHIJ ② ABCD[ ]EFGHIJ ③ ABCD[ ] EFGHIJ *Note:* CHAR INSRT and CHAR DLETE affect all 24 lines on a DCC KD. CHAR INSRT and CHAR DLETE affect only 4 lines including the line with the cursor on MCC KD. Characters move slowly.	
32	Depress the CHAR DLETE key momentarily.	ABCD [ ] EFGHIJ ABCD [ ] EFGHIJ Characters EFGHIJ move one position to the left as shown.	
33	Depress the LINE INSRT key three times.	The cursor remains at its present location, and the line of data moves down three lines.	
34	Depress the LINE DLETE key once.	The line of data moves up one line.	
35	Depress PRINT LOCAL key, (if printer is not provided, go to Step 36).	LOCAL indicator extinguishes, PRINT LOCAL indicator lights and then goes off when printer buffer receives the message; LOCAL indicator lights. Printer copies entire display (24 lines).	• Flashing PRINT LOCAL indicator indicates printer: a. is not print local. b. cabinet lid is open. c. is in form-out or paper-out condition. d. ac power is off. e. defective or miswired cable.
36	Place the cursor away from home position and depress the CURSR TAB key. Repeat Step 36 but depress the SKIP key.	The cursor returns to home position. *Note:* Displayed data is not affected by CURSOR TAB, SKIP and BACK TAB keys.	

CHART 4 (Cont)

KD LOCAL TEST PROCEDURES

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
37	Place the cursor away from home position and depress the [BACK TAB] key.	The cursor returns to home position.	
38	Place the cursor away from home position and depress the [TAB] key.	Cursor returns to home position. Any characters to the right of and below cursor will be cleared.	
39	Type some text on the opcon and then depress [ENTER (S/R)]	Text is displayed. When ENTER key is depressed, LOCAL indicator extinguishes, INPUT INHIBIT indicator lights.	
40	Type some text on the keyboard portion of the opcon.	Attention bell sounds each time a key is depressed. No more text is displayed. *Note:* The audible alarm control on the opcon should be adjusted to allow bell to be heard.	
41	Alternately depress [RESET] (next to PF1) then depress [PA 1] key, then [RESET] key and [PA 2], [PF 3], [PF 1] through [PF 5] and [CLEAR] keys in the same manner. Depress [RESET] key, then depress [ALPHA] key at the same time as [R/TST] key. Depress [RESET] key (next to NUMERIC key). *Note:* The PF6 through PF12 are not present on this opcon.	[LOCAL] is lit and extinguishes when PA1 key is depressed (same for each key). Data on display remains unchanged, except when CLEAR key is depressed; all data clears from display and cursor goes to home position.	

When all KDs in the station have successfully completed these tests, proceed to Chart 5.

D. Data Set Analog Loopback Self-Test

CHART 5

DATA SET ANALOG LOOPBACK SELF-TEST PROCEDURES

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
Note: If Station has a Data Set 201B or a 500A-Type Data Service Unit (DSU), go to Step 3. If a Data Set 208A or 209A is used, go to Step 2.			
1	Data Set 201C L1 and 201C L1D:		
	Apply ac power to data set.	ON, TR, MR, and MC are lit.	
	Perform Analog Loopback Self-Test as follows:		
	• Depress AL button.	AL button latches, TM lights and MR goes off. *Note:* MR stays on if 201C L1D is used.	
	• Depress ST button.	All lamps except MC should be ON.	
	• Observe MC lamp for 30 seconds.	MC lamp should not blink on.	
	• Depress RO button.	RS, CS, and CO lamps should be off; MC lamp should be on.	•If MC and CO lamps are on, check that data set has switched carrier option (multipoint, private line).
	• Release RO, ST, and AL buttons.	TM lamp should be off. This completes the data set self-test; go to Step 3.	*Note:* If station is operated on a nonshared private line, it is recommended that continuous carrier option be used; see Section 582-200-201, Data Set Options.

CHART 5 (Cont)

DATA SET ANALOG LOOPBACK SELF-TEST PROCEDURES

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
2	Data Set 208A and 209A: Apply ac power to data set. Perform Status Lamp Check and Analog Loopback Self-Test as follows: Status Lamp Check		
	• Depress LP nonlocking button.	All the lamps on the data set should be lighted.	•If ON lamp is off, check that ac voltage to data set is between 105 to 130 volts. *Note:* The ON lamp will go off if the output voltage of the power supply becomes excessive. The power cord must be unplugged and plugged in again after correcting the overvoltage to make the lamp light again.
	• Depress AL button.		
	• Depress ST button.	ON, RS, CS, TM (209A only) and CO lamps should be lighted. MR and ER lamps should be off.	
	• Observe ER lamp for 30 seconds.	If ER lamp is on or blinks, this indicates that the data set has failed the Analog Loopback Self-Test.	
	• Depress AL and ST buttons.	The data set is returned to normal operating condition. This completes the data set self-test; go to Step 3.	

CHART 5 (Cont)

DATA SET ANALOG LOOPBACK SELF-TEST PROCEDURES

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
3	201C, 208, 209A and 500 only: With all equipment power switches on and conditioned for operation (paper installed in printer; cabinet lid closed, etc), check for the correct data set indicator lights.	Data Set 201B3 None Data Set 201C ON — Lighted TR — Lighted MR — Lighted RS — Off CS — Off CO — Off MC — Lighted } (See Note) TM — Off Data Set 208A or 209A ON — Lighted MR — Lighted RS — Off CS — Off CO — Off ER — Lighted } (See Note) TM — Off (209A Only) 500A DSU PWR — On NS — Off LL — Off RT — Off Go to 2.08 on next page.	

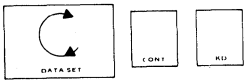
Note: CO should be lit (MC not lit on Data Set 201C, or ER not lit on Data Set 208A or 209A) when the distant end (CPE) is providing carrier-on condition. Before beginning on-line test with STC/DTC, notify customer of intended test and the 40/4 Station test will take approximately 5 minutes per device.

ON-LINE TESTS

A Preliminary On-Line Testing

2.07 Preliminary Requirements — The data set must pass the requirements of Chart 5. Chart 5 makes this test:

209, 208 or 201C



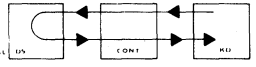
B. On-Line Test Methods

2.08 On-Line tests require access to a Data Test Center (DTC) by way of a Servicing Test Center (STC). Hereafter, the DTC is called the Test Center. Access to the Test Center may require a four-wire DDD backup connection at the STC or installation site. This connection is beyond the scope of this section (refer to Section 598-082-201, if required).

On-Line Testing is divided into three parts as follows:

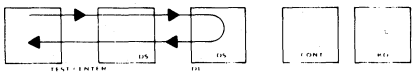
① Near-End Analog Loopback Test

208, 209 or 201C-L1D



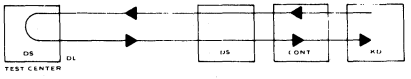
② Far-End Digital Loopback Test to 40/4 From Test Center

209, 500A, 208 or 201C



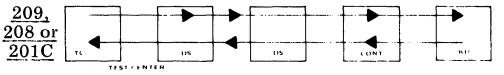
If ②cannot be performed, a Far-End Digital Loopback Test to Test Center from 40/4 may be performed.

209, 208 or 201C



③ End-to-End Installation Test — Performed with assistance of DATASPEED Test Center

209, 208 or 201C



Near-End Analog Loopback Test

2.09 This test provides a craftsperson with a local test method to check station and data set operation prior to requesting an End-to-End Installation Test from Test Center or prior to doing "in service operation acceptance" test with customer's equipment. This test must be performed, if possible, one time before continuing testing. Stations equipped with a Data Set 201C-L1 (or 500A-Type DSU) cannot perform this test. This test must be performed only after successfully performing KD/Controller Local Test of Chart 2 and Data Set Analog Loopback Test of Chart 5.

2.10 This step applies only to Data Sets 208A, 209A, and 201C-L1D. If another type of data set is present, go to 2.11.

(a) For Data Sets 208A, 209A and 201C-L1D only: Depress AL button (locking) on the data set (all other buttons released).

(b) For Data Sets 208A, 209A and 201C-L1D only: Turn off ac power to the SCC or MCC controller.

(c) For Data Sets 208A, 209A and 201C-L1D only: Remove the 410403 or 410411 circuit card from the SCC or MCC controller of the station. At coordinates A13 on the 410403 circuit card, place switches 7 and 8 to the ON position. At B3 on the 410411 circuit card, place switches 7 and 8 to the ON position.

(d) For Data Sets 208A, 209A and 201C-L1D only: Reinstall the 410403 or 410411 circuit card into the controller.

(e) For Data Sets 208A, 209A and 201C-L1D only: Turn all ac power to ON position.

(f) For Data Sets 208A, 209A, and 201C-L1D: Perform local tests using the same test routine given in Chart 2, KD/Controller Local Test Procedures. The test occurs when S/R or ENTER key is depressed. Perform test on one KD only.

(g) If test is not successfully completed, the 410408, 410409, or 410411 circuit card, data set or data set cable is at fault. If test is successfully completed, perform the digital loopback test as instructed in 2.11, 2.12, or 2.13. See Note following 2.13.

Caution 1: Do not release AL button (208, 209, or 201C-L1D only) during or after this test. If AL is released while switches A13-7 and A13-8 of 410403 (or B3-7 and B3-8 of 410411) are in ON position, data sent by S/R or ENTER key depression can be sent into the customer's data system during the test; any data operations occurring at that time would be scrambled.

Far-End Digital Loopback Test to 40/4

Caution 2: Do not perform the digital loopback test if the customer data channel is on the same circuit with other stations which are actively sending or receiving data. If this test is performed on an active circuit, data transmissions on that circuit will be scrambled and possibly halt the data system operation. BEFORE TESTING, REQUEST PERMISSION FROM CUSTOMER AND DATA TRANSMISSION CENTER FOR TIME AND COOPERATION TO TEST

2.11 Release AL button (Data Sets 208, 209 or 201C-L1D only). If permission to perform this test is not granted, see Note following 2.13. If permission to perform the test is granted:

Data Sets 201C, 208 or 209 only: Depress the data set DL key (locking) when directed by the attendant at the far end. When the test is complete, the attendant at the far end will tell you to release the DL key to the released position.

500A only: When directed by far-end attendant, place DSU into RT (see Section 595-200-200).

Far-End Digital Loopback Test to Test Center

Note: If far-end digital loopback test to 40/4 has been performed, do not perform 2.12, go to 2.13.

Caution: Caution 2 following 2.10 applies.

2.12 If permission to perform this test is not granted, see Note following 2.13. If a multistation arrangement shares the same data communications circuit, all communications on that circuit must cease during the test period. This test can be performed with the assistance of the DATASPEED Test Center (ie, similar type of data set patched into customer circuit to facilitate the test). If permission to perform the test is granted and a 201C, 208, or 209-Type Data Set is part of the station, perform 2.12 (a) and (b).

(a) Have far-end attendant depress DL.

(b) Perform steps (b) through (f) of 2.10 at the near end (AL at the near end must be released during this test). Checking at one KD is sufficient. See Note following 2.13. If not successful, trouble is in 410408, 410409 or 410411 circuit card, transmission lines, far-end data set or near-end data set. If successful after performing 2.10 (f), go to 2.13 and inform far-end attendant to release DL.

2.13 This test must be requested from a local area DATASPEED Test Center. In situations where access to a Test Center is not provided for in the customer's system, or where an EBCDIC testing capability is not provided at the Test Center, the required End-to-End Installation Test can be omitted if correct in-service operation testing with the customer equipment or system can be verified by the craftsperson and customer accepted. If trouble does occur in an in-service operation test, refer to trouble analysis or request a Data Test Center to perform line monitor test. If an End-to-End Installation Test is necessary for testing an EBCDIC station, it will be necessary to reprogram the station for ASCII for the test (see 2.15).

Note: Before attempting End-to-End Installation Test or restoring the station to service, follow (a) through (d) below.

(a) Turn off ac power to SCC or MCC controller.

(b) For Data Sets 201C, 208 and 209 only: Remove 410403 (or 410411) circuit card from MCC or SCC controller. Place switches A13-7 and A13-8 (or B3-7 and B3-8) to OFF position.

(c) (Omitted this issue.)

(d) Inform far-end attendant to release DL button (if not already released).

(e) For Data Sets 208, 201C-L1D and 209 only: If the AL button is not released, depress AL.

End-to-End Installation Test

2.14 If the station uses ASCII line code, proceed to Chart 6, End-to-End Installation Test Procedures.

2.15 If the station uses EBCDIC line code, check if the DTC has EBCDIC test capability. If it does not, the station must be converted to ASCII to make the End-to-End Installation Test by the following procedures:

(a) Turn off ac power on SCC or MCC controller.

(b) Remove the 410409 (EBCDIC) circuit card. If the 410411 circuit card is present, go to (d).

(c) Install 410408 (ASCII) CIU circuit card into position formerly occupied by 410409 circuit card.

(d) Remove 410403 (or 410411) circuit card:

(1) Reprogram SPA and SSA using Tables A and B given in Section 582-200-201. Reprogram SPC17-6 (or SPB7-6) to ON position. Reprogram DA (MCC only) using Table E given in Section 582-200-201.

(2) Reinstall 410403 (or 410411) circuit card.

(e) Turn on ac power on SCC or MCC controller.

(f) Repeat Chart 2, KD/Controller Local Test Procedures (to Step 5 only).

(g) Perform tests in Chart 6, End-to-End Installation Test Procedures.

CHART 6

END-TO-END INSTALLATION TEST PROCEDURES

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
1	Depress LOCAL (or RESET) and ERASE INPUT keys on KD device.	LOCAL lights. Cursor returns to row 1 and column 1. Display is cleared of all data.	Go to Chart 7.

CHART 6 (Cont)

END-TO-END INSTALLATION TEST PROCEDURES

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
2	Depress PA1 key on the KD device.	LOCAL indicator extinguishes. (Also see Notes 1 and 2 following Chart 6.) Internal Numeric Cluster Opcon: INPUT INHIBIT indicator lights.	Go to Chart 7.
3	Repeat Steps 1 and 2 on all KD devices.	See Steps 1 and 2.	Go to Chart 7.
4	Go to location of station data set in building. Contact DATASPEED Test Center and request End-to-End Installation Test. • Establish line connections per DTC instructions, then observe carrier on indicators indicating line established to DTC.	201C: MC — Goes off; CO — Lights 208A or 209: ER — Goes off; CO — Lights 251A1 TDU: No indication	Go to Chart 5.
5	For DTC only.	Proceed to Step 6.	
6	If talk line to the DTC is not available after test is requested, verify that the test has started by observing the RTS/CTS LEDs on the front of the data set.	RTS/CTS lights on the front of the data set should flash ON then OFF during testing. *Note:* If RTS/CTS are on constantly (data set has continuous carrier option) or 251A1 is part of station, go to station SCC or MCC and observe LEDs on 410408 (or 410409 or 410411) circuit card. RS and SD "M" and "S" LEDs flash indicating data was received and response was sent. Proceed to Step 7.	Inform DTC of problem. Go to Chart 7.
7	The DTC will perform the remainder of the test. Proceed to devices and check for correct test results; Fig. 6 and 7.	DTC will inform of test acceptance or trouble. Call DTC back, if required. See Note 3 on following page. Proceed to 2.16.	

Note 1: If a KD device is observed during this test, the S/R key must operate as follows:
S/R indicator flashing continuously (aborted condition) should be reported to the Test Center.
S/R indicator flashes once when KD has sent data.
S/R indicator lights when KD is selected to receive data.

Note 2: If tractor feed printers are part of station, check that the forms switch of each is in ON position.

Note 3: If you are not in "talk" communication with the Test Center during this test, be sure to "call back" Test Center for verification of correct operation. After verification of correct operation using this test procedure (including Test Center approval), depress LOCAL (or RESET) then CLEAR keys on all KDs to normalize station. Verify correct operation in customer system before leaving site. EBCDIC stations can be tested as EBCDIC if Test Center is so equipped.

C. Checkout of Received Printer Message

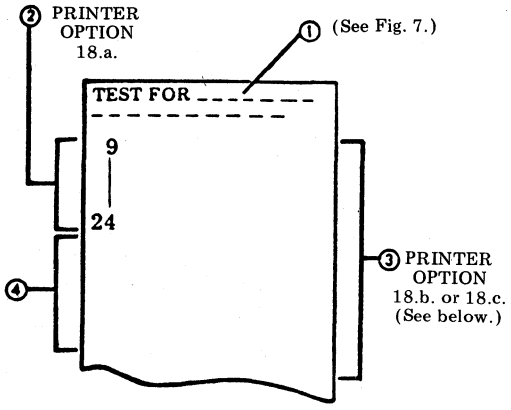


Fig. 6—Printed Test Message

2.16 If a printer is part of the station, check for correctness of printed test message, see above. If printer is not part of station, proceed to 2.20.

2.17 The printer motor will remain on for approximately 5 to 10 seconds after the test message is received. Later version printers will keep motors on for 40 seconds or indefinitely. (See Option 58.)

Note: Paragraphs 2.18 and 2.19 check the options that are located on the printer circuit card.

2.18 Option 18a (No Feedout) — The blank lines ② are determined only by message length and column format sent to the printer. This test uses an 80-column format, therefore, lines 9 through 24 feed out (total of 1920 characters).

2.19 Options 18b or 18c (16-line feed out on RM loss or 16-line feed out on RM loss or ETX). This option illustrated as , operates the same as for Option 18a with the exception that after the blank lines 9 through 24 a 16-line feed out (friction feed printer only) will occur. If Option 39a is installed, tractor feed printer will form feed out to the length of ④, if the printer forms switch is ON. Refer to the Form Selector Pointer Setting and the Belt and Form Length table on the printer to determine proper forms operation.

D. Checkout of Received KD Message

Note: A KD device having D I/O 410434 or 410436 circuit cards (monocase display) will display an asterisk (*) in place of the NEW LINE symbol (≡).

2.20 Check for correctness of display and station options (Fig. 7):

Option 402a — Continuous attention (the opcon bell repeatedly sounds if volume is turned up) until
or LOCAL key is depressed; depress LOCAL key.
Bell silences.

Option 402b — One second attention (the opcon bell sounds if volume is turned up) and LOCAL indicator lights.

Option 406a (or 407a or 407b) — Alpha characters can be typed over periods in the numeric field (bell sounds for 406 only) — line 5. (407 only: Hold down ALPHA key.)
or
Option 406b — Bell sounds when alpha is typed over numeric field; only numeric data can be entered into field — line 5.

Line 1 is copied as shown (Fig. 7).
Line 2, the word PROTECTED begins in the fifth character position and is followed by the word INTENSIFIED (which is brighter than normal for Option 403a or 403c; or blinks for Option 403b). Lines 3 through 8 are as shown in Fig. 7; the cursor must be positioned over "C" on line 8. Automatic "upshift" (to numeric) occurs on line 5 for 40K105 opcon only.

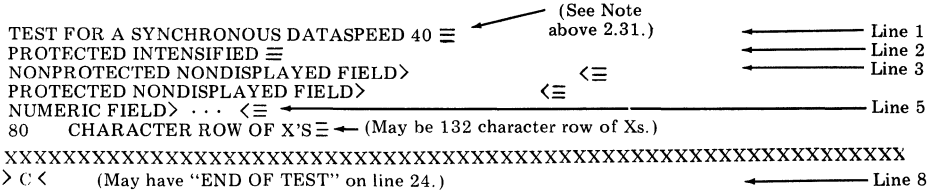


Fig. 7—SYNC 40 Test Message

2.21 If the station is to remain ASCII, all testing is complete at this point. Confirm system operation with customer's equipment.

2.22 If the station is to be converted back to EBCDIC, go to E. Completion of End-to-End Installation Test.

E. Completion of End-to-End Installation Test

2.23 Requirements after successful completion of End-to-End Installation Test of converted EBCDIC to ASCII station:

(a) Turn off ac power on SCC or MCC controller.

(b) Remove 410408 (or 410411) circuit card.

(c) If applies, install original 410409 circuit card into position formerly occupied by 410408 circuit card.

(d) Remove 410403 circuit card. (If a 410411 circuit card is present, it was removed in (b).)

(1) Reprogram SPA and SSA using EBCDIC Tables C and D given in Section 582-200-201.

(2) Reprogram SPC17-6 (or SPB7-6) to OFF position.

(3) Reinstall 410403 (or 410411) circuit card.

(e) Turn on ac power on SCC or MCC controller.

(f) Repeat Chart 2, KD/Controller Local Test. Perform test on one KD only.

(g) Verify correct in-service station operation with customer's equipment or system.

(h) All testing is completed.

2.24 If an ASCII station successfully completed the End-to-End Installation Test, all testing is complete.

3. TROUBLESHOOTING

3.01 The troubleshooting procedures for the mini-cluster controller, station cluster controller, and device cluster controller are included in the controller self-test procedures (Chart 1).

3.02 A brief troubleshooting reminder on the monitor is provided in Chart 8. For detailed analysis, refer to Section 582-213-200 of Service Manual 325-057 or FIMP 579-505-350.

3.03 Limited troubleshooting for the opcon is provided in Chart 9. For detailed analysis, refer to Section 582-211-500 of Service Manual 325-057.

3.04 Trouble analysis for the printer is not provided in this section. Refer to Section 582-210-500 of Service Manual 325-057 for printers. Until Service Manual 325-057 is available, refer to FIMP 579-505-350 (80 column) or Section 582-200-250 (132 column).

3.05 The use of Controller Arrangement Forms (Section 582-200-201) is necessary to troubleshoot using self-test.

3.06 For detailed analysis of the power supply, refer to Section 582-214-500 of Service Manual 325-057.

CHART 7

STATION ANALYSIS

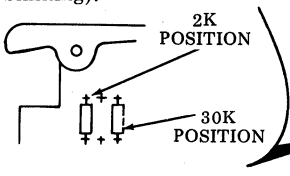
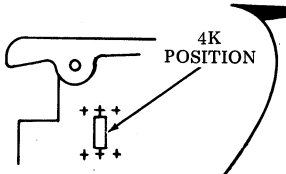
ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
1. Are all power supply voltage indicators lit?	Go to 2.	Go to Chart 10, 40PSU102 Power Supply Analysis.
2. Is run lamp on or blinking and 1st pattern lamp (toward rear of controller) on 410401 circuit card dimly lit when controller is <u>not</u> in test mode?	Go to 3 (if run lamp is blinking).  4108NN CARD  4109NN CARD	Perform steps below one at a time until problem is corrected. a. 40PSU102 Power Supply Analysis beginning at Step 2. b. If used: Check 4108NN circuit card(s) in controller for required strap positions "2K" and "30K". Strap can be 22 AWG wire. c. If used: Check 4109NN circuit card(s) in controller for required strap in position "4K". Strap can be 22 AWG wire. d. Use (c) in analysis column of Step 2 in Chart 1.
3. Is run lamp blinking when controller is <u>not</u> in test mode?	Go to 4 (if run lamp is steadily on). *Note:* If removal of SSI cable to another controller corrects the problem, that controller may be at fault.	Perform steps below one at a time until problem is corrected. a. Remove SSI cables to opcons and other controller(s) one at a time (connectors at right side of controller). (See Note.) b. Replace 410406 circuit card. c. Replace 410200 or 410201 back panel.
4. Depress and hold test switch. Do all pattern lamps light?	Go to 5.	Replace in order: 410401 circuit card, repeat Step 4. 410400 circuit card, repeat Step 4. 4108NN or 4105NN circuit card(s), repeat Step 4. All other circuit cards until defective circuit card is found.

CHART 7 (Cont)

STATION ANALYSIS

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
5. Release test switch. Does controller pass self-test of Chart 1? This includes display patterns when checking DCC or MCC.	Go to 6. *Note:* If display pattern appears with errors or is distorted, replace associated D I/O 41043N circuit card.	Replace circuit card indicated by pattern lamps, however, if more than one trouble pattern appears, replace card indicated by last trouble pattern first. Repeat Step 5.
6. Does the local test work? (CTRL (or ALPHA) and L/TST keys on opcon.)	Go to 8.	Go to 7.
7. Depress the LOCAL (or RESET) key on the opcon. Is the LOCAL indicator lit?	Check the cabling from the opcon to DCC, the DCC to SCC, and the DCC to monitor (or opcon to MCC) as applies. Refer to Section 582-200-201.	Go to Chart 9, Opcon Analysis.
8. In the local mode, do all keys on the opcon function properly? Refer to KD Local Test, 2.05.	Go to 9.	Replace opcon. Replace 410406 circuit card interfacing opcon in trouble.
9. Input data on the monitor. Depress PRINT LOCAL key? Does the print local printer print the data properly?	Go to 10.	Check cables. Replace printer. Replace associated SSI 410406 circuit card.
10. Does the station pass the on-line checkout?	Place in service.	Go to 11.
11. Do RD lamps flash on 410408, 410409, or 410411 circuit card during polling or selecting?	Go to 12.	Check data set options. Check data set and data set cable (EIA pin 3).
12. Does RS lamp light on data set after polling or selecting?	Go to 13.	• Check data set cable (EIA pin 4). • Replace 410408, 410409, or 410411 circuit card (as applies).
13. Does CS lamp light on data set after polling or selecting?	Go to 14.	Check data set or data set options.

OPCON OR PRINTER CONNECTED TO SSI	ASSOCIATED 410406
PORTS 1 THROUGH 4	IN CARD POS. 5 OR 7
PORTS 5 THROUGH 8	IN CARD POS. 4 OR 6 OR 8

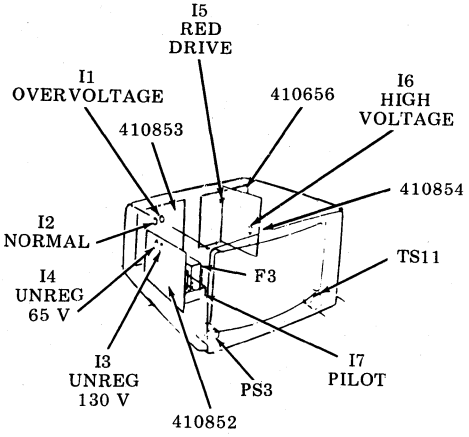
CHART 7 (Cont)

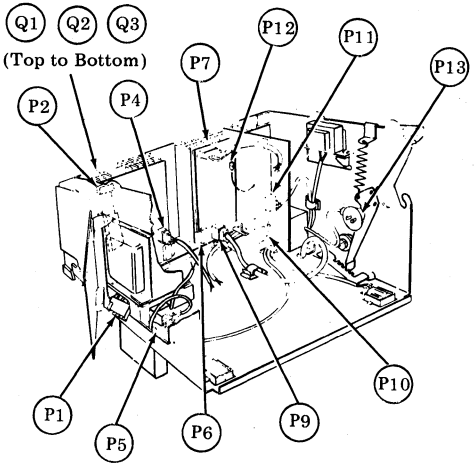
STATION ANALYSIS

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
14. Do SD lamps flash on 410408, 410409 or 410411 circuit card after polling or selecting?	a. Check data set. b. Check data set cable (EIA pin 2). c. Replace 410408, 410409 or 410411 circuit card (as applies).	• Check data set cable (EIA pin 5). • Replace 410408, 410409, or 410411 circuit card (as applies).

CHART 8

40MN101 MONITOR ANALYSIS





ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
1. Is red drive lamp 15 lit?	Go to 2.	• Check cables. • DCC, MCC: Check 405181 fuse, F4 (early version) or 321955 video fuse (late version) on interconnection module. • DCC, MCC: D I/O (41043N)¶. • 410656 in monitor.

¶ 41043N — Any D I/O circuit card.

CHART 8 (Cont)

40MN101 MONITOR ANALYSIS

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
2. With PS1 and PS2 on, is pilot I7 lit?	Go to 3.	Check 341578 fuse F3 (1.4 SL-BL), cables.
3. Are I4 and I3 lit?	Go to 4.	Replace 410852 circuit card.
4. Is I2 lit?	Go to 5.	• Replace 410853 circuit card. • Replace Q1.
5. Is I1 lit?	410853	Go to 6.
6. Is I6 lit?	See Note below.	• Replace 410854 circuit card. • Replace 410656 circuit card.

Note: If I9 (CRT filament) is not lit or if problem still exists in the monitor, go to Section 582-213-200 of Service Manual 325-057 or Part 4 of FIMP 579-505-350 for a detailed trouble analysis.

CHART 9

OPCON ANALYSIS

Note: Start with Question 1 if KD has typewriter style opcon. Start with Question 4 if KD has internal numeric cluster style opcon.

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
1. Depress ERASE INPUT and QUOTES keys together with additional force. Does TST indicator remain lit when keys are released?	Go to 2. *Note:* If lamps flash or the alarm sounds clear by depressing ERASE INPUT and P keys, then repeat Question 1.	• DCC, MCC: Check 405181 fuse (early version) (F2 or F3 for S1-S4 or F5 or F6 for S5-S8) or 321955 video fuse (late version) on interconnection module. • Check for +12 V and -12 V to opcon. Refer to Section 582-200-401. • Replace opcon.

CHART 9 (Cont)

OPCON ANALYSIS

<table>
<tr><th>ANALYSIS QUESTION</th><th>"YES" RESPONSE DIRECTIVE</th><th>"NO" RESPONSE DIRECTIVE</th></tr>
<tr><td>2. Do the following:
(See Note below.)
<table>
<tr><th colspan="2" rowspan="2">Depress Keys</th><th colspan="2">Indicator</th></tr>
<tr><th>Key</th><th>Condition</th></tr>
<tr><td>SHIFT</td><td>A</td><td rowspan="2">S/R</td><td>ON</td></tr>
<tr><td>CTRL</td><td>R/TST</td><td>OFF</td></tr>
<tr><td>SHIFT</td><td>C</td><td rowspan="2">LOCAL</td><td>ON</td></tr>
<tr><td>CTRL</td><td>C</td><td>OFF</td></tr>
<tr><td>SHIFT</td><td>F</td><td>PRINT</td><td>ON</td></tr>
<tr><td>CTRL</td><td>\</td><td>LOCAL</td><td>OFF</td></tr>
<tr><td></td><td>→</td><td rowspan="2">LOCAL</td><td>FLASH</td></tr>
<tr><td>CTRL</td><td>C</td><td>OFF</td></tr>
</table></td><td></td><td></td></tr>
<tr><td>a. Do all indicators operate as described?

Note: If opcon has CAPS key when depressing A, C or F, CAPS key must be in latched position (ON) or SHIFT key must be depressed. If opcon has no CAPS key, do not depress SHIFT key.</td><td>Depress ERASE INPUT and P keys together with additional force to terminate test. TST indicator light goes out.
Go to 2b.</td><td>Replace opcon.</td></tr>
<tr><td>b. Is the 40K104 opcon a late design or is 40K203 opcon present?</td><td>Interface/bell card not present.</td><td>Interface/bell card present.</td></tr>
<tr><td>Note 1: Late design opcons are sometimes called OPCON II and have a single card of new design. Early design opcons (interface/bell card present) will not cause alarm to ring when ERASE INPUT key is depressed.

Note 2: To check the vintage of an opcon, it is sufficient to remove opcon from cabinet (or base) and look through the slot at the rear for the interface/bell card.</td><td>Go to 2c.</td><td>Go to 3.</td></tr>
</table>

CHART 9 (Cont)

OPCON ANALYSIS

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
c. On late design 40K104 opcon (interface/bell card not present) or 40K203 opcon, fully depress ERASE INPUT key. Does the alarm sound repeatedly as long as the key is depressed? *Note:* The alarm loudness control may require adjustment to hear the tone.	Go to 3.	Replace opcon.
3. Does the opcon fail to generate proper characters?	Replace opcon.	Opcon OK.
INTERNAL NUMERIC CLUSTER OPCON ANALYSIS		
4. Depress CONSOL TEST and LINE INSERT** keys together. Does CONSOL TEST indicator remain lit when keys are released? **Fully depress LINE INSERT key.	Opcon is in loopback mode. Go to 5. *Note:* If lamps flash or the alarm sounds more than once or continuously, clear by depressing CONSOL TEST and RESET keys, then repeat Question 4. (Use RESET key adjacent to PF1 key.)	• Check 405181 fuse (early version) (F2 or F3 for S1-S4 or F5 or F6 for S5-S8) or 321955 video fuse (late version) on interconnection module. • Check for +12 V and -12 V to opcon. Refer to Section 582-200-401. • Replace opcon.
5. Do the following in the order given:		

Depress key(s)	Indicator		Notes
	Key	Condition	
A	S/R	On	
C	LOCAL	On	If entered loopback mode from LOCAL, LOCAL indicator is already on.
M	INPUT INHIBIT	On	
F	PRINT LOCAL	On	(Question 5, continued on Page 42)

CHART 9 (Cont)

OPCON ANALYSIS

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
5. (Cont)		

Depress key(s)	Indicator		Notes
	Key	Condition	
I	NUM LOCK	On	
R/TST	S/R	Flashing On & Off	Depress only R/TST key.
(Cursor right) →	LOCAL	Flashing On & Off	
LINE DLETE	INPUT INHIBIT	Flashing On & Off	
L/TST	PRINT LOCAL	Flashing On & Off	Depress only L/TST key.
NUM LOCK	NUM LOCK	Flashing On & Off	
ALPHA & A	S/R	On (no flash)	
ALPHA & C	LOCAL	On (no flash)	
ALPHA & M	INPUT INHIBIT	On (no flash)	
ALPHA & F	PRINT LOCAL	On (no flash)	
ALPHA & I	NUM LOCK	On (no flash)	
NUM & R/TST	S/R	Off	LOCAL indicator cannot be turned off while in loopback mode.
ERASE INPUT	INPUT INHIBIT	Off	PRINT LOCAL indicator cannot be turned off while in loopback mode.
TAB	NUM LOCK	Off	Depress TAB key not CURSR TAB key.
R/TST	S/R	Flashing On & Off	Depress only R/TST key.
ALPHA & R/TST	S/R	Off	(Question 5, continued on Page 43)

CHART 9 (Cont)

OPCON ANALYSIS

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
5. (Cont)		
Depress key(s): CONSOL TEST Indicator — Key: (See note to the right); Condition: Notes: Opcon attention bell sounds repeatedly as long as key is depressed.		
Do all indicators and bell operate as described?	Depress CONSOL TEST and RESET (adjacent to PF1) keys to terminate test. Go to 6.	Replace opcon.
6. Does the following occur? a. CONSOL TEST indicator goes out, b. PRINT LOCAL indicator goes out, c. LOCAL indicator stays on.	All three conditions are met. Go to 7.	Replace opcon.
7. Does the opcon fail to generate proper characters?	Replace opcon.	Opcon is OK.

CHART 10

40PSU102 POWER SUPPLY ANALYSIS

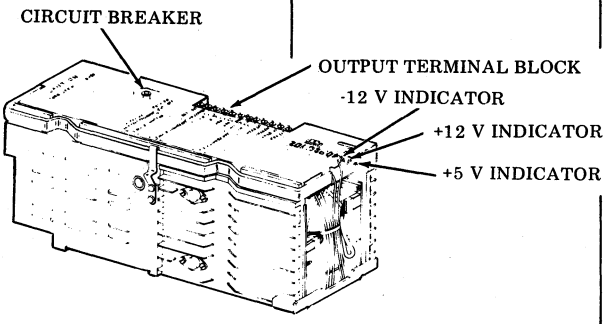
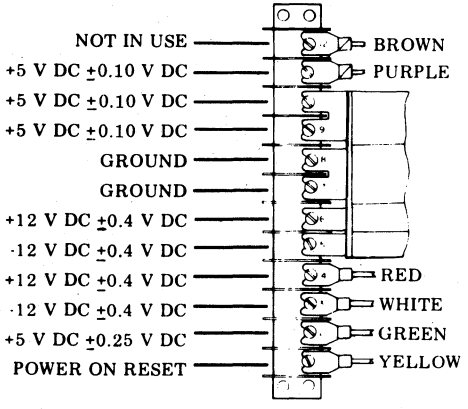
ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
1. With the set plugged in and power on, are all LED indicators on? 	Go to 2.	Go to 5.
2. Are all voltages correct at the output terminal block? Check voltage using voltmeter having 20,000 ohms/volt sensitivity.  Output Terminal Block	Turn power off and back on again. Go to 3.	Turn off power. Remove all connections from back panel to power supply. Retighten all power supply connector screws. Turn on power. Go to 14.
3. a. If power supply is part of SCC (Station Cluster Controller): (Continued on Page 45)		

CHART 10 (Cont)

40PSU102 POWER SUPPLY ANALYSIS

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
3. (Cont) Does run lamp light? b. If power supply is part of DCC (Device Cluster Controller) or MCC (Mini-Cluster Controller): Does run lamp light? Is cursor in home position on KDs connected to DCC or MCC? Is local lamp of opcons connected to DCC or MCC lit? *Note:* Local lamp may flash ON/OFF, etc.	Put power supply in service.	Momentarily jump terminal 7 (Ground) of the output terminal strip to terminal 1 (POR) of the output terminal strip. Go to 4.
4. Repeat Question 3.	Replace power supply.	Trouble is in logic module. See Chart 7, Station Analysis.
5. Are <u>all</u> LED indicators off?	Go to 6.	Go to 11.
6. Is circuit breaker in ON position? (Down-white band not showing.)	Go to 7.	Depress circuit breaker. Go to 10.
7. Is ac power connector at rear of power supply connected? *Note:* Power supply mounting screw must be removed and the power supply slightly raised to check power connection.	Go to 8.	Connect ac connector. Go to 1.
8. Is there 115 V ac at power supply connector?	Go to 9.	Check main power input switches, cabinet wiring, and connectors, etc, per Section 582-200-401. Correct problem. Go to 1.

CHART 10 (Cont)

40PSU102 POWER SUPPLY ANALYSIS

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
9. Are fans at rear of logic module operable?	Turn off power. Remove cables from logic package to power supply terminal block. Retighten all screws. Turn on power. Go to 13.	Correct problem in fan assembly. Go to 1.
10. Did circuit breaker pop back to OFF position?	Replace power supply.	Go to 1.
11. Is the +5 V dc LED indicator the only indicator off?	Turn off power. Wait approximately 30 seconds. Turn power back on. Go to 12.	Turn off power. Remove cables from logic package to power supply. Retighten all screws. Turn on power. Go to 13.
12. Did the +5 V dc LED indicator come on?	Go to 2.	Turn off power. Remove cables from logic package to power supply. Retighten all screws. Turn on power. Go to 13.
13. Are all LED (3) indicators on?	Go to 14.	Replace power supply.
14. Are all voltages correct at the output terminal block? *Note:* See Question 2 for values.	Turn off power. Reconnect all leads. Remove one (any) logic card from controller. Turn power on. Go to 15.	Replace power supply.
15. Are all voltages at the output terminal block now correct?	Turn off power. Replace logic card that was removed. Power supply OK.	Continue removing logic circuit cards (see Caution below) until voltages are correct at output terminal block. Circuit card removed prior to voltages being corrected at output terminal block should be replaced.

Caution: The ac power must be OFF, before removing or replacing a circuit card.

4. CIRCUIT CARD COMPATIBILITY

4.01 The following paragraphs contain information pertaining to PROM and EPROM circuit card compatibility. When replacing a PROM or EPROM circuit card, always replace that circuit card with another having the same or a higher issue number. Failure to do so may result in an operational failure which may not be immediately apparent.

Note: If PROM or EPROM circuit card contains a modification kit, the replacement circuit card must also contain the same modification kit.

4.02 The following PROM (or EPROM) circuit cards must be treated as unique sets and cannot be intermixed with PROM (or EPROM) circuit cards of other sets in the same C400 controller.

(a) 410801 PROM Circuit Card
410901 PROM Circuit Card
— MARK I — SCC

(b) 410802 PROM Circuit Card
410902 PROM Circuit Card
— MARK I — DCC

(c) 410803 PROM Circuit Card
410903 PROM Circuit Card
410904 PROM Circuit Card
— MARK I — MCC

(d) 410804 PROM Circuit Card
410905 PROM Circuit Card
— MARK II — SCC

(e) 410809 PROM Circuit Card
410911 PROM Circuit Card
— MARK II — DCC With Typewriter Style Opcon

(f) 410808 PROM Circuit Card
410909 PROM Circuit Card
410910 PROM Circuit Card
— MARK II — MCC With Typewriter Style Opcon

(g) 410810 PROM Circuit Card
410907 PROM Circuit Card
— MARK II — DCC With Internal Numeric Cluster Style Opcon

(h) 410812 PROM Circuit Card
410914 PROM Circuit Card
410915 PROM Circuit Card
— MARK II — MCC With Internal Numeric Cluster Style Opcon

(i) 410508 EPROM Circuit Card — EPROM Version SCC

(j) 410509 EPROM Circuit Card — EPROM Version DCC With Typewriter Style Opcon

(k) 410512 EPROM Circuit Card
410513 or 410525 EPROM Circuit Card
— EPROM Version MCC With Typewriter Style Opcon

(l) 410510 EPROM Circuit Card — EPROM Version DCC With Internal Numeric Cluster Style Opcon

(m) 410514 EPROM Circuit Card
410515 EPROM Circuit Card
— EPROM Version MCC With Internal Numeric Cluster Style Opcon

4.03 The following PROM or EPROM circuit cards of each set are only compatible with each other when matched by the issue numbers as shown. The issue of each circuit card is found at the top of the circuit card.

(a) 410801 and 410901 Circuit Cards
410801 — Issue 4A or Lower
w/410901 — Issue 3A or Lower
OR
410801 — Issue 5A Through 7A
w/410901 — Issue 4A Through 5B

(b) 410802 and 410902 Circuit Cards
410802 — Issue 3A or Lower
w/410902 — Issue 3A or Lower
OR
410802 — Issue 4A Through 7A
w/410902 — Issue 4A Through 5B

(c) 410803, 410903 and 410904 Circuit Cards
410803 — Issue 3A or Lower
w/410903 — Issue 2A or Lower
and 410904 — Issue 2A or Lower
OR
410803 — Issue 4A Through 7A
w/410903 — Issue 3A Through 4B
and 410904 — Issue 3A Through 4B

(d) 410804 and 410905 Circuit Cards
410804 — Issue 3A or Lower
w/410905 — Issue 2B or Lower
OR
410804 — Issue 4A
w/410905 — Issue 3A
OR
410804 — Issue 5A and 6A
w/410905 — Issue 4A
OR
410804 — Issue 7A
w/410905 — Issue 5A

Note: The 410804, Issue 4A or higher and 410905, Issue 3A or higher are also referred to as MARK II — Issue 2.

(e) 410808, 410909 and 410910 Circuit Cards
410808 — Issue 1A Through 6A
w/410909 — Issue 1A Through 3A
and 410910 — Issue 1A Through 3A

Note: The 410910, Issue 3A is also referred to as MARK II — Issue 2.

(f) 410809 and 410911 Circuit Cards
410809 — Issue 1A Through 3A
w/410911 — Issue 1A Through 2B

(g) 410810 and 410907 Circuit Cards
410810 — Issue 2A or Lower
w/410907 — Issue 1A

(h) 410812, 410914 and 410915 Circuit Cards
410812 — Issue 1A Through 3A
w/410914 — Issue 1A and 2A
and 410915 — Issue 1A

(i) 410508 Circuit Card
410508 — (See Note below.)

(j) 410509 Circuit Card
410509 — (See Note below.)

(k) 410512 and 410513 Circuit Cards
410512 — Issue 1A
410513 — Issue 2A†† and 3A
(or 410525)

(l) 410510 Circuit Card
410510 — (See Note below.)

(m) 410514 and 410515 Circuit Cards
410514 — Issue 1A
410515 — Issue 2A††

†† No earlier issues shipped.

Note: Since 410508, 410509 and 410510 circuit cards are not part of a set of EPROM circuit cards, there are no compatibility considerations.

SYNCHRONOUS "DATASPEED*" 40/4

MAXI-CLUSTER AND MINI-CLUSTER STATION ARRANGEMENTS

DISASSEMBLY/REASSEMBLY AND PARTS

CONTENTS PAGE

1. GENERAL

1.01 This section contains all necessary information on the removal and replacement of various components of DATASPEED 40/4 Stations. This section also includes locations of test switches and indicators used in trouble analysis and testing of the station.

1.02 This section is reissued to add coverage for removal and replacement of components in station cluster controllers (SCCs), device cluster controllers (DCCs) and mini-cluster controllers (MCCs). This issue also adds coverage for the 40K203/GAB opcon. This section is a general revision, therefore marginal arrows have been omitted.

1.03 Information on the 40KDA101 keyboard display amplifier is given in Section 582-200-212.

1.04 Abbreviations used in this section are defined in Section 582-200-101.

1.05 To disassemble or reassemble parts (or units) of this section, the following tools (or equivalents) are required:

Screwdriver, 1/8" blade
Screwdriver, 1/4" blade
Socket wrench, 1/4"
Socket wrench, 5/16"
Open-end wrench, 1/4"
Static ground strap, 346392 (required only if circuit cards are handled)
Terminal extractor, 402840

Note: When ordering replaceable components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410055).

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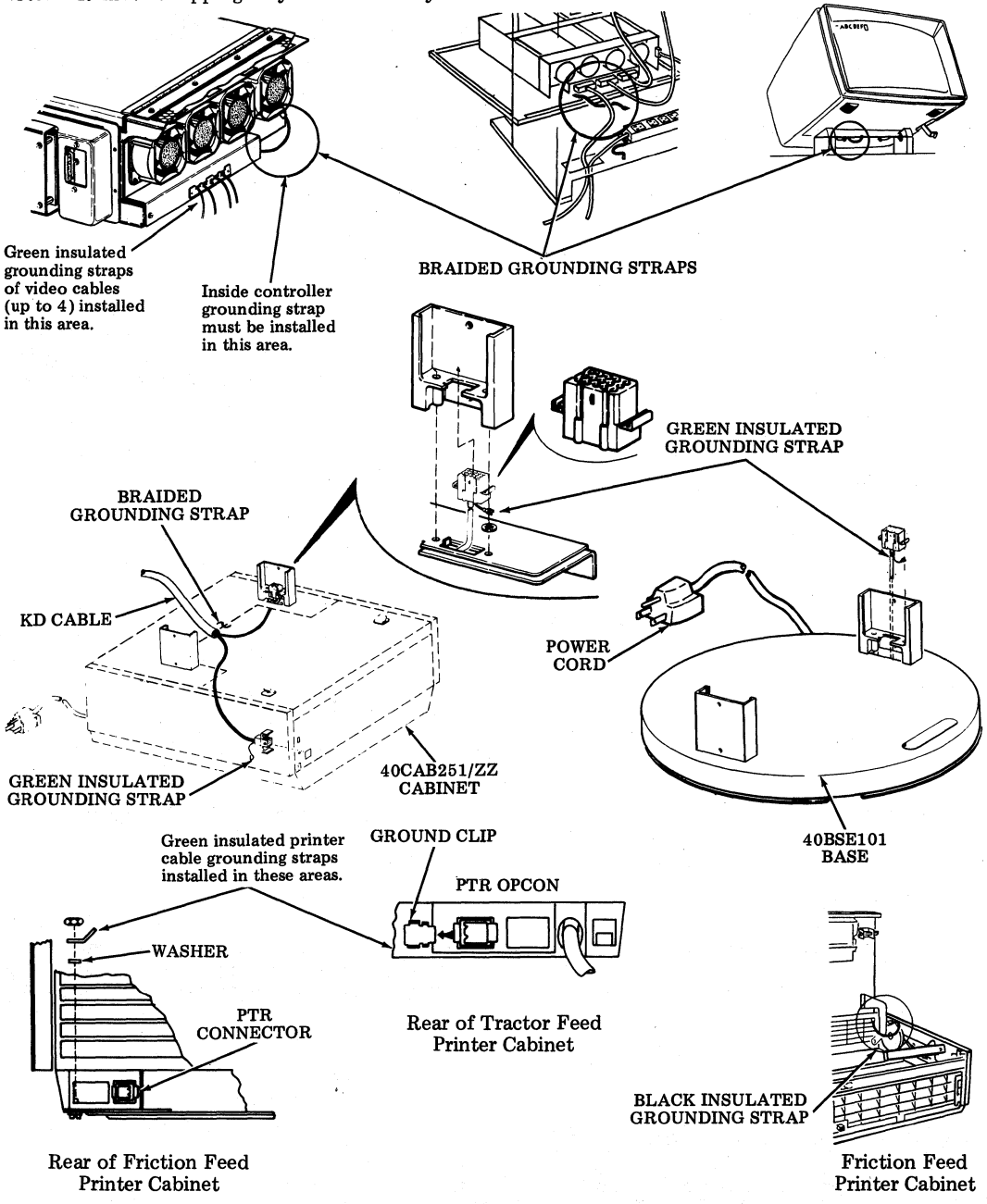
Prepared for American Telephone and Telegraph Company by Teletype Corporation

1.06 Grounding Strap Locations

Note: Remove strapping only when necessary.



2. DISASSEMBLY/REASSEMBLY

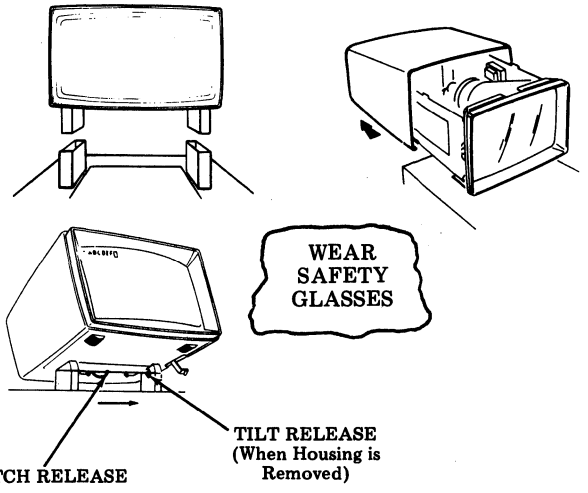
Caution: Remove all power from the set before performing any component replacement or conversions. This does not apply to cover removal for access to test switches, or to power on adjustments of the monitor.

MONITOR

2.01 To remove the monitor: See ①. To remove only the monitor housing, see ②.

① Removal of entire monitor unit from set: Grasp monitor by sides near supports and simply lift up. Electrical cable connectors are part of support assembly.

② Removal of monitor housing: Tilt monitor back and disengage latch. Slide housing back partially. Position monitor to its normal position making sure it locks in that position. Remove housing completely.



2.02 To replace the monitor, reverse the removal procedures of 2.01. For further disassembly of the monitor, refer to Section 582-213-701.

OPCON

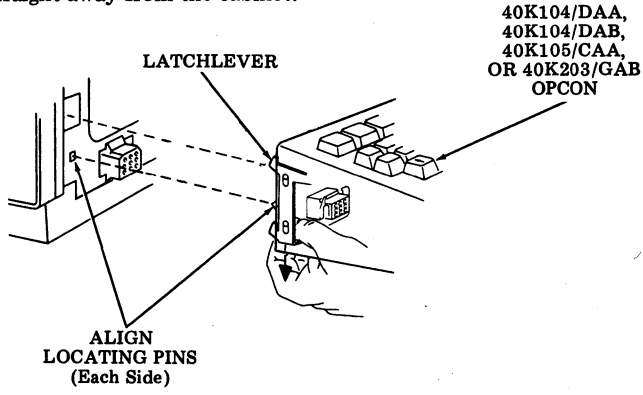
2.03 To remove the opcon use the appropriate steps given below or on following page:

Attached KD

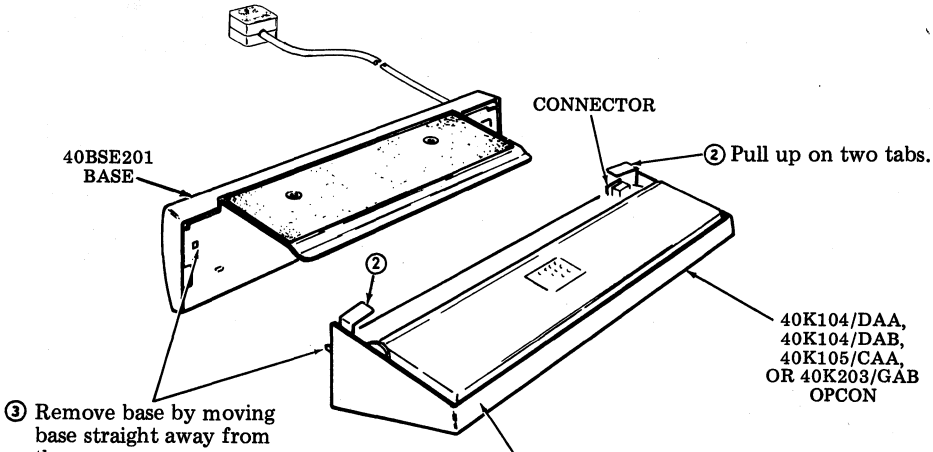
① Place thumb on inward tab of opcon (both sides).

② Press downward into unlatched position (each side).

③ Remove opcon by pulling straight away from the cabinet.



Free-Standing KD



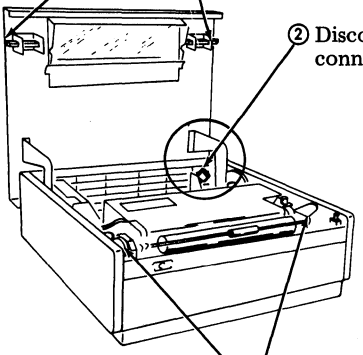
2.04 To replace the opcon, reverse the removal procedures of 2.03. When replacing opcon, make sure locating pins are fully engaged before pushing latchlevers into locked position. For further disassembly of opcon, refer to Section 582-213-701.

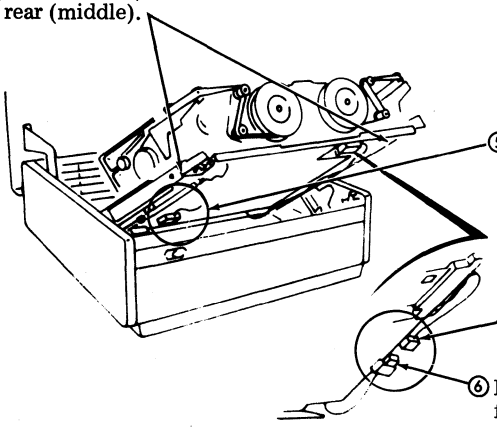
PRINTERS

A. Friction Feed Printer

2.05 To remove the entire printer assembly:

Note: The circuit card can be removed after Step 4 of disassembly. If printer is not being removed omit Steps 2 and 3.

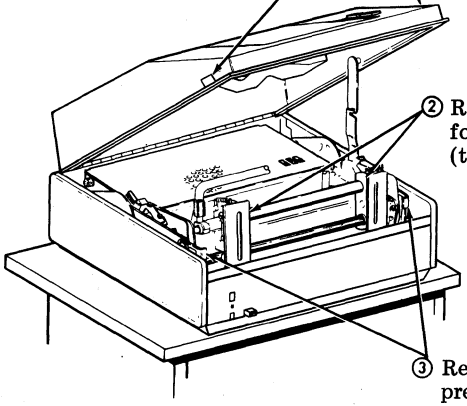


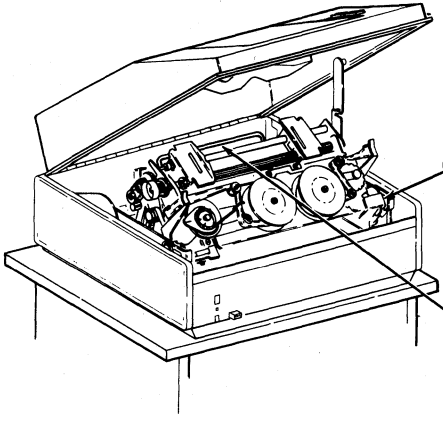


2.06 To replace the printer, reverse the removal procedures of 2.05. For further disassembly of printer and printer cabinet, refer to Section 582-210-702.

B. Tractor Feed Printer (80 or 132 Column)

2.07 To remove the entire printer assembly:





2.08 To replace the printer, reverse the removal procedures of 2.07. For further disassembly, refer to Section 582-210-702 for printers and Section 582-212-700 for cabinets.

PEDESTALS AND CABINETS

2.09 Refer to Section 582-212-700 or FIMP 579-505-350 for assembly or disassembly of a pedestal or cabinet.

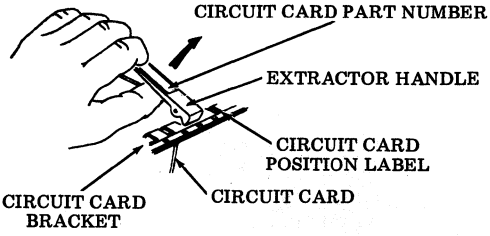
CIRCUIT CARDS

Note: The required circuit cards and their options and locations are given in Section 582-200-201.

2.10 To remove the controller circuit card:

Lift up on extractor handles and lift straight up.

Caution: Wear 346392 static discharge strap when removing circuit cards. See Section 582-200-201, 1.04 Warnings 1, 2 and 3.



2.11 To replace the controller circuit card:

①Check that card is proper for location (see Note above).

②Check that pins on card are straight (not bent) by sighting down the two rows of pins.

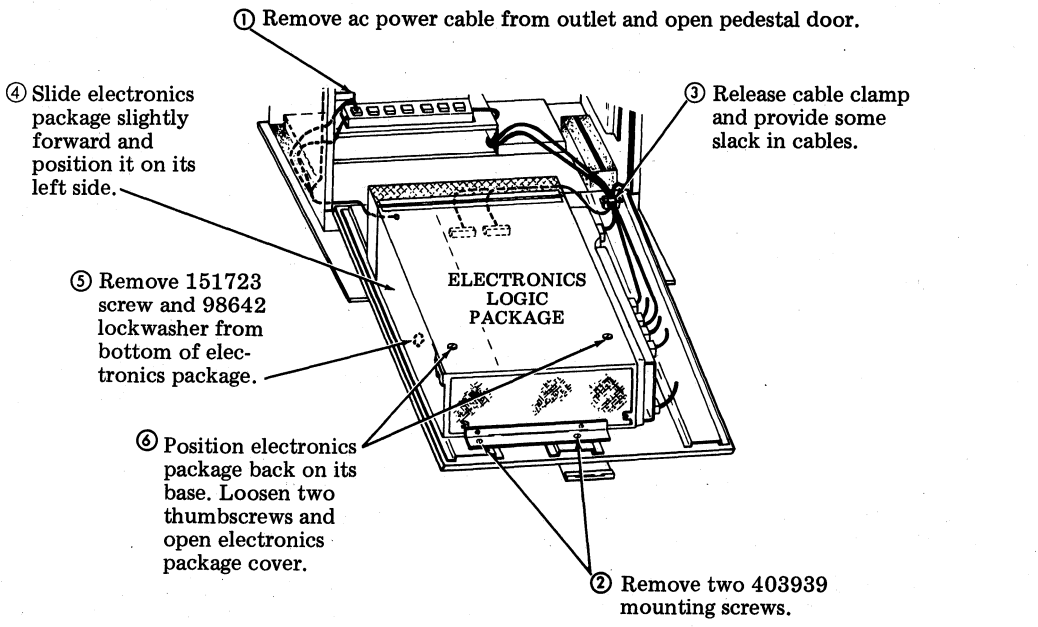
Warning: Attempting to insert a card with bent pins into the 410200 or 410201 back panel may result in damaging the back panel or the card.

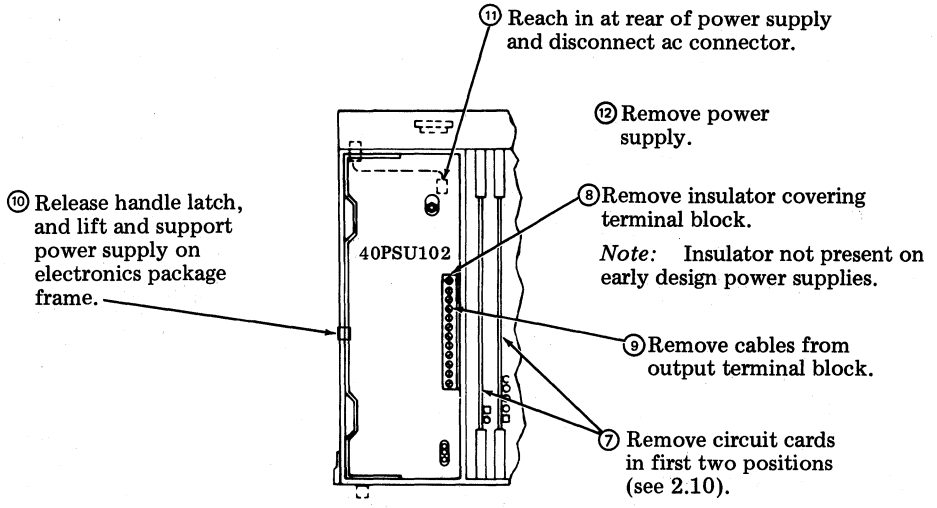
③Check that the option switches are set to the correct setting (refer to the Controller Arrangement Form on the underside of the controller cover — should be present before installation). Refer to the above Note.

④ Place card in slot, then depress until card is fully seated.

40PSU102 POWER SUPPLY

2.12 To remove the power supply:



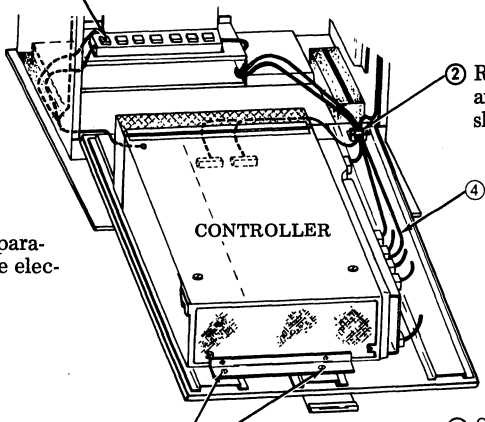


2.13 To replace the power supply, reverse the removal procedures of 2.12.

CONTROLLER

2.14 To remove the controller (see Note 1):

① Turn off pedestal power switch, open pedestal door, and unplug controller ac power cord from ac outlet.



② Release cable clamp and provide some slack in cables.

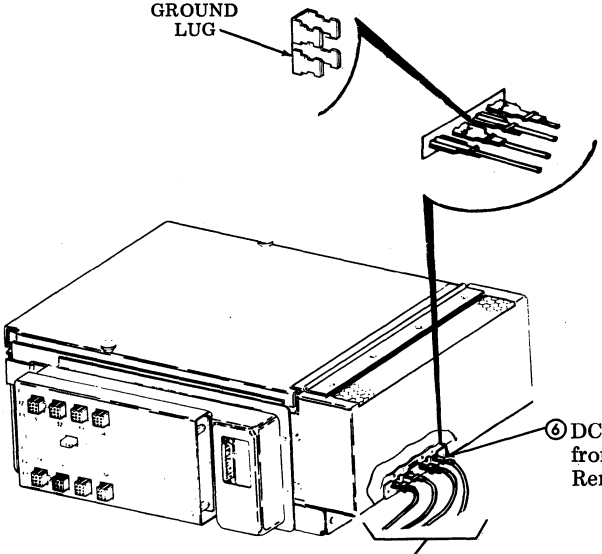
④ Insure that all cables are properly marked then disconnect SSI cable(s) and data set or data auxiliary set cable if present.

Note 1: "Controller" in this paragraph is used to mean the entire electronics package.

⑤ Slide controller slightly forward to disengage rear mounting tabs and turn controller (90°) for access to rear.

③ Remove two 403939 mounting screws from door.

192009 GROUND LUG



Note 2: During reassembly, strain reliefs of video connectors to A and C must be facing up and reliefs to B and D must be facing down. Connectors of green wires must be connected to a terminal on the ground lugs. (See Section 582-200-201 to select which controller connector(s) to use.)

⑥ DCC, MCC: Remove connectors of green wires from ground lugs. Remove two 198670 screws. Remove 405210 plate and D I/O cable(s).

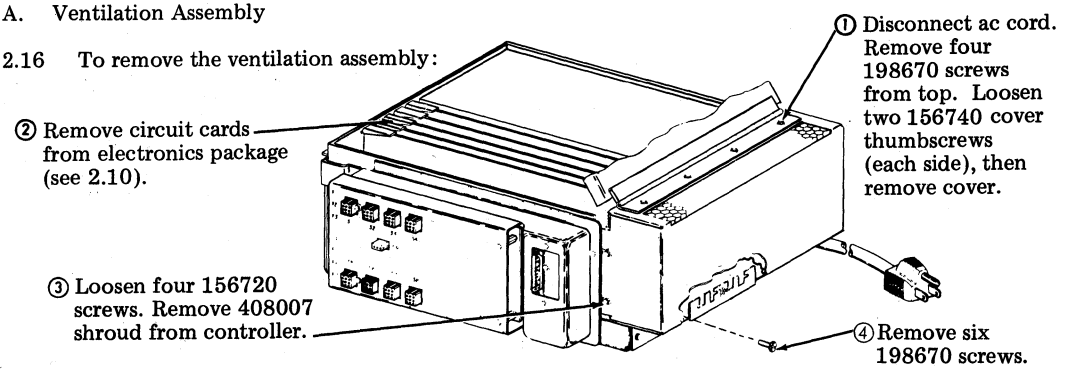
⑦ Remove controller from pedestal.

Note 3: A green wire is part of each D I/O cable.

2.15 To replace the controller, reverse the removal procedures of 2.14. See Note 1.

A. Ventilation Assembly

2.16 To remove the ventilation assembly:

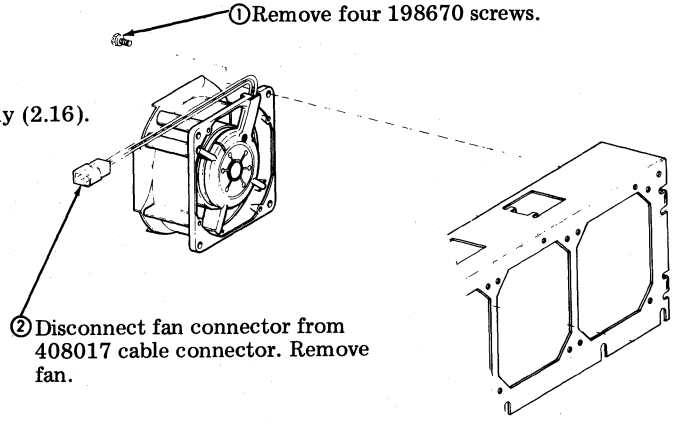


2.17 To replace the ventilation assembly, reverse the removal procedures of 2.16.

408015 Fan

2.18 To remove a fan:

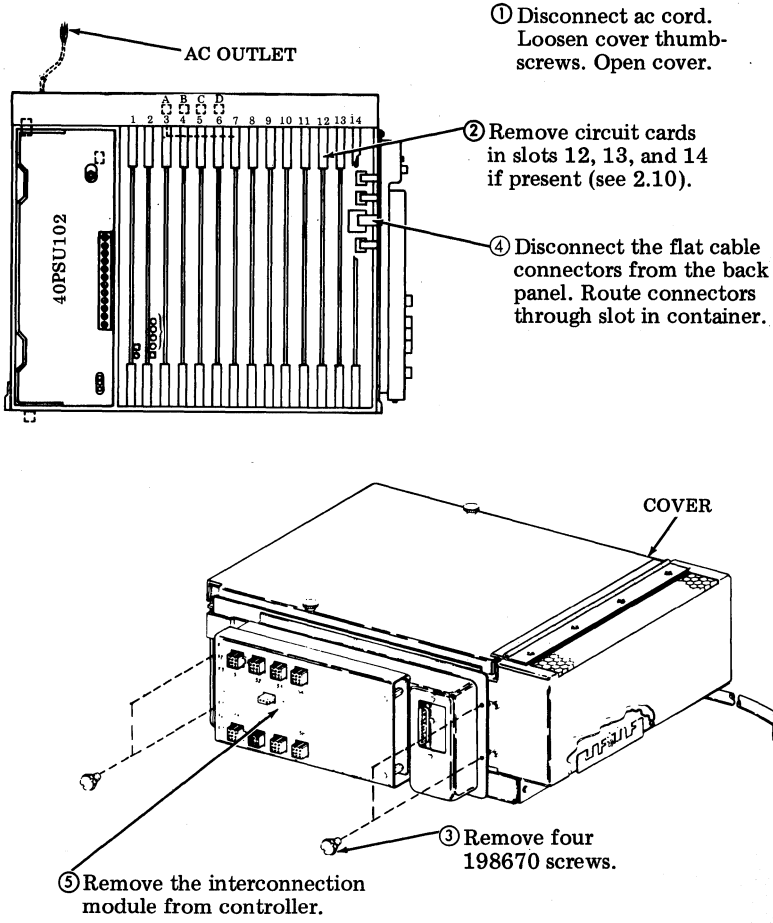
- Remove ventilation assembly (2.16).



2.19 To install a fan, reverse the removal procedures of 2.18.

B. Interconnection Module

2.20 To remove the interconnection module:



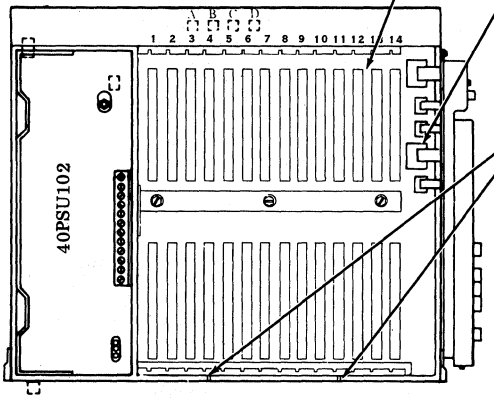
APPLICATION	INTERCONNECTION MODULE
SCC	405150
DCC	405151
MCC	405152

2.21 To replace the interconnection module, reverse the removal procedures of 2.20.

C. Back Panel

2.22 To remove the back panel:

- Remove all circuit cards (2.10).
- Remove ventilation assembly (2.16).
- Remove power supply (2.12).



① Disconnect the flat cable connectors from the back panel.

② Slide back panel rearward so that the two locating pins on the front panel are clear of the front of the container.

③ Lift back panel out of controller container. Leave the insulator on the container floor in place.

2.23 To replace the back panel, reverse the removal procedures of 2.22.

D. Cables

DCC, MCC — Opcon/Monitor (Controller-KD) Cables:

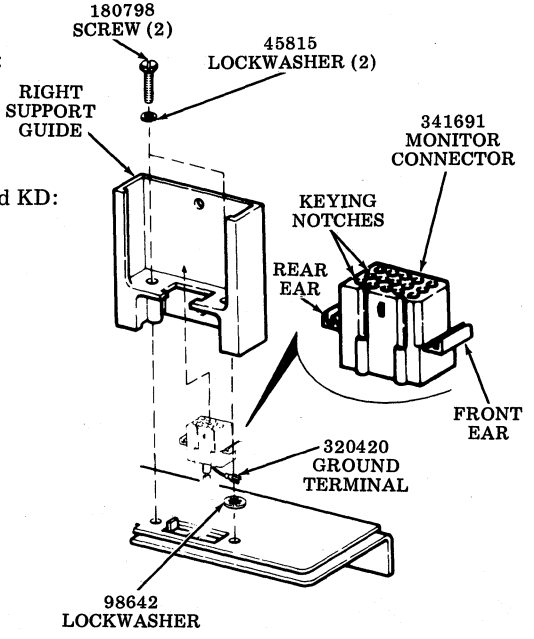
405301	6 ft	405304	50 ft
405302	12 ft	405139	75 ft
405303	25 ft	405140	100 ft

2.24 To remove opcon/monitor cable from attached KD:

① Remove monitor. Use flat blade of screwdriver against 341691 monitor connector front ear and use screwdriver shank against right support guide to hold ear in. With your other hand push down on front of connector to drop ear below mounting slot. Hold rear ear in and push down on connector.

② Remove two 180798 screws and 45815 lockwashers from right support guide.

③ Raise lid. Push connector down through hole in cover. Notice that the connector keying notches face the rear of the unit and that a 98642 lockwasher is positioned under the 320420 connector ground terminal on the front panel.



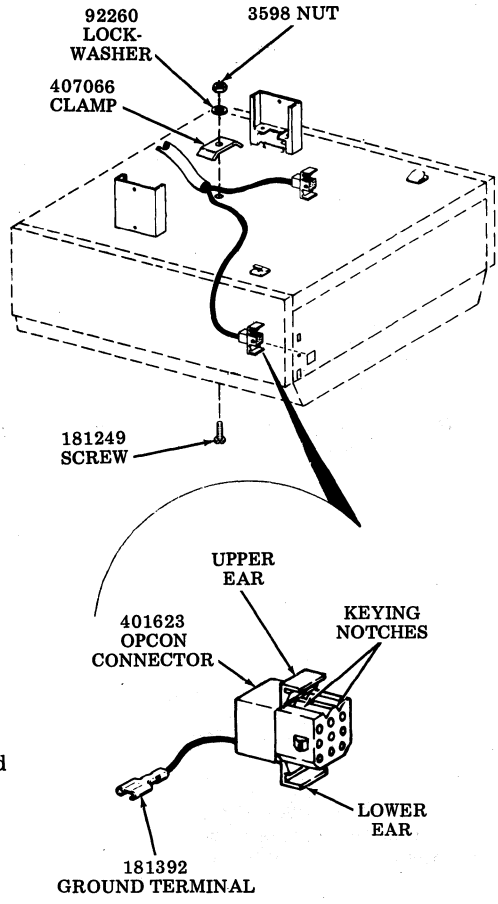
Proceed to Step 4 on following page.

④ Remove opcon. Use flat blade of screwdriver against upper ear of 401623 opcon connector. With your other hand rock connector toward inside of cabinet. Push up on lower ear of connector and remove connector from front panel toward inside of cabinet.

⑤ Disconnect 181392 ground terminal of the cable from cabinet ground lug.

⑥ Remove 3598 nut, 92260 lockwasher, 407066 clamp and 181249 screw.

⑦ Remove cable from cabinet through opening at rear.



2.25 To install opcon/monitor cable to attached KD, either reverse the removal procedures of 2.24 or use Section 582-200-201. Observe an orange identification tag is on the KD end of the cable. A 312918 nylon strap (not supplied) is required.

2.26 To remove opcon/monitor cable from free-standing KD:

①Remove monitor base bottom plate (see Section 582-200-201).

②Perform Steps 1, 2, and 3 of 2.24.

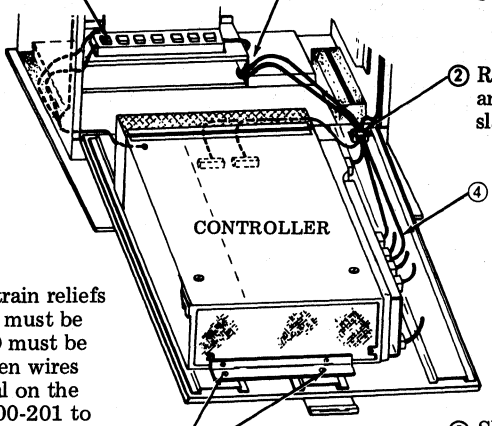
③Remove opcon from opcon base assembly (see Section 582-200-201).

④Remove cable including ground terminal from opcon base assembly (see 2.24, Steps 4 and 5).

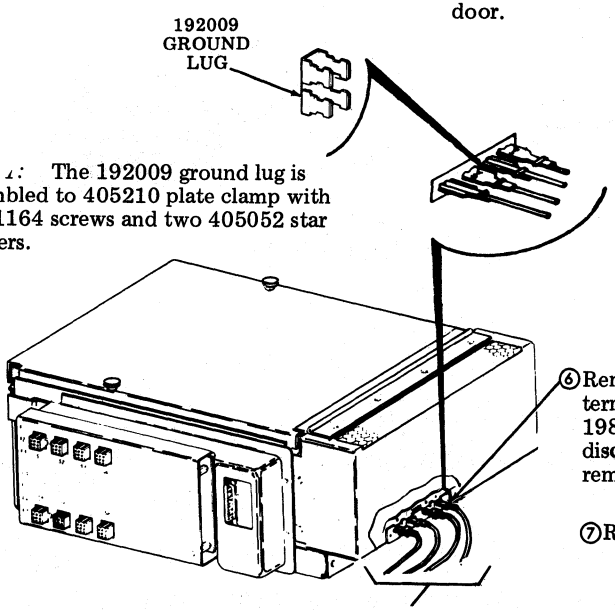
2.27 To install opcon/monitor cable to free-standing KD, either reverse the removal procedures of 2.26 or use Section 582-200-201. Observe an orange identification tag is on the KD end of cable.

2.28 To remove opcon/monitor cable from controller:

① Turn off pedestal power switch, open pedestal door, and unplug controller ac power cord from ac outlet.



Note 2: During reassembly, strain reliefs of video connectors to A and C must be facing up and reliefs to B and D must be facing down. Connectors of green wires must be connected to a terminal on the ground lug. (See Section 582-200-201 to select which controller connector to use.)



Note 1: The 192009 ground lug is assembled to 405210 plate clamp with two 1164 screws and two 405052 star washers.

Note 3: A green ground wire is part of each cable.

2.29 To install opcon/monitor cable to controller, reverse the removal procedures of 2.28.

SCC, MCC — Data Set Cables:

341896	5 ft	408067	25 ft
408065	7 ft	408068	50 ft
408066	12 ft		

2.30 To remove data set cable:

① Turn off pedestal power switch, open pedestal door, release cable clamp. See 2.28 for part locations.

② Disconnect cable connector from controller. Remove cable from pedestal to the rear.

③ Disconnect cable connector from data set.

2.31 To install data set cable, reverse removal procedures of 2.30.

DCC, MCC — Controller/Printer Cables:

405306	6 ft	405309	50 ft
405307	12 ft	405237 (10 ft stub to MCC or DCC)	
405308	25 ft	405239 (10 ft stub to printer)	

2.32 To remove controller/printer cable:

① Turn off pedestal power switch, open pedestal door, release cable clamp. See 2.28 for part locations.

② Disconnect cable connector from controller.

③ Disconnect cable connector from printer. Disconnect ground terminal of cable from rear of printer (see 1.06 for part location).

2.33 To install controller/printer cable, reverse the removal procedures of 2.32.

3. PARTS

3.01 For parts information on interconnect cables of the DATASPEED 40/4, refer to Section 582-200-401.

3.02 Parts information for individual components (printer, monitor, etc) are not illustrated in this section. Refer to appropriate BSP section.

3.03 Field replaceable components of controllers are listed in the index which follows the parts illustrations, see 3.04.

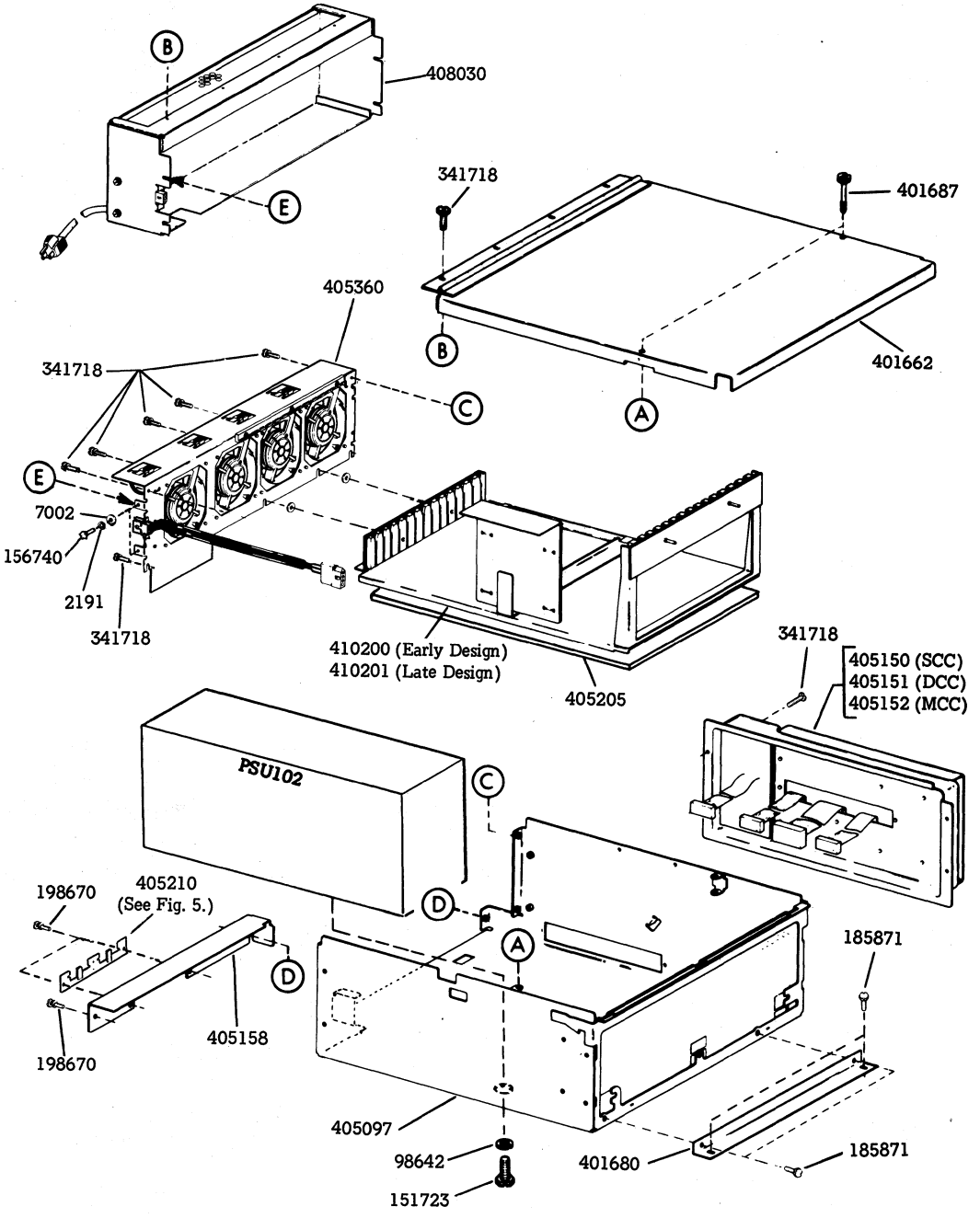


Fig. 1–Overview of Controller Components

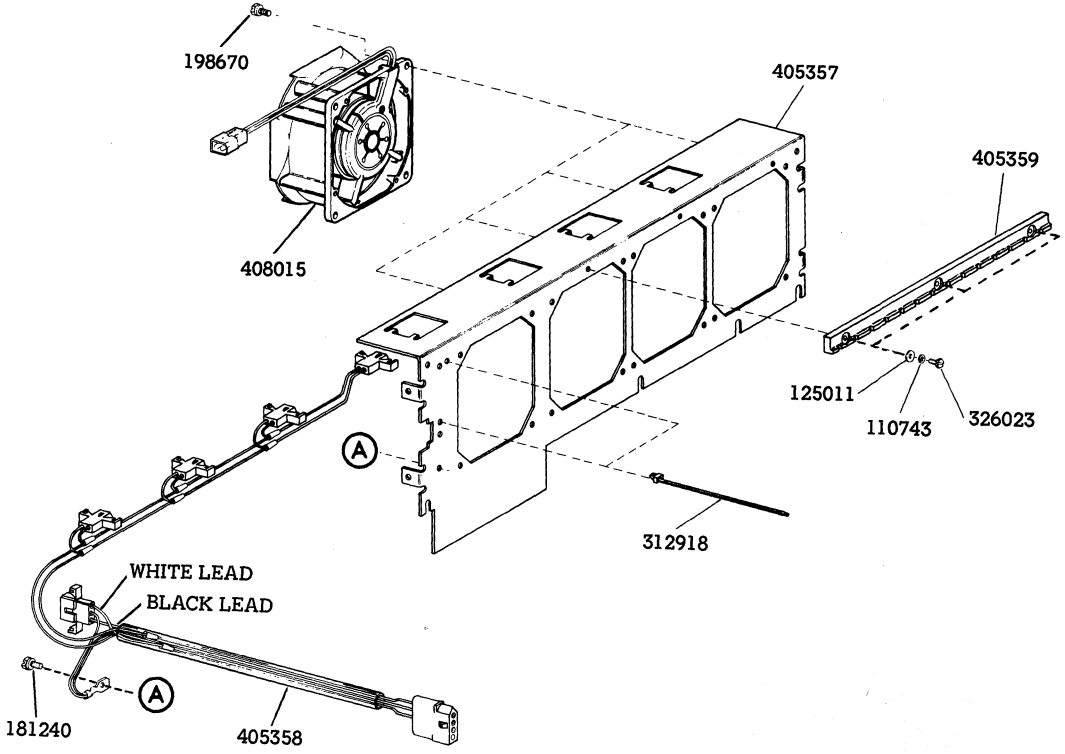


Fig. 2 – 405360 Ventilation Assembly Components

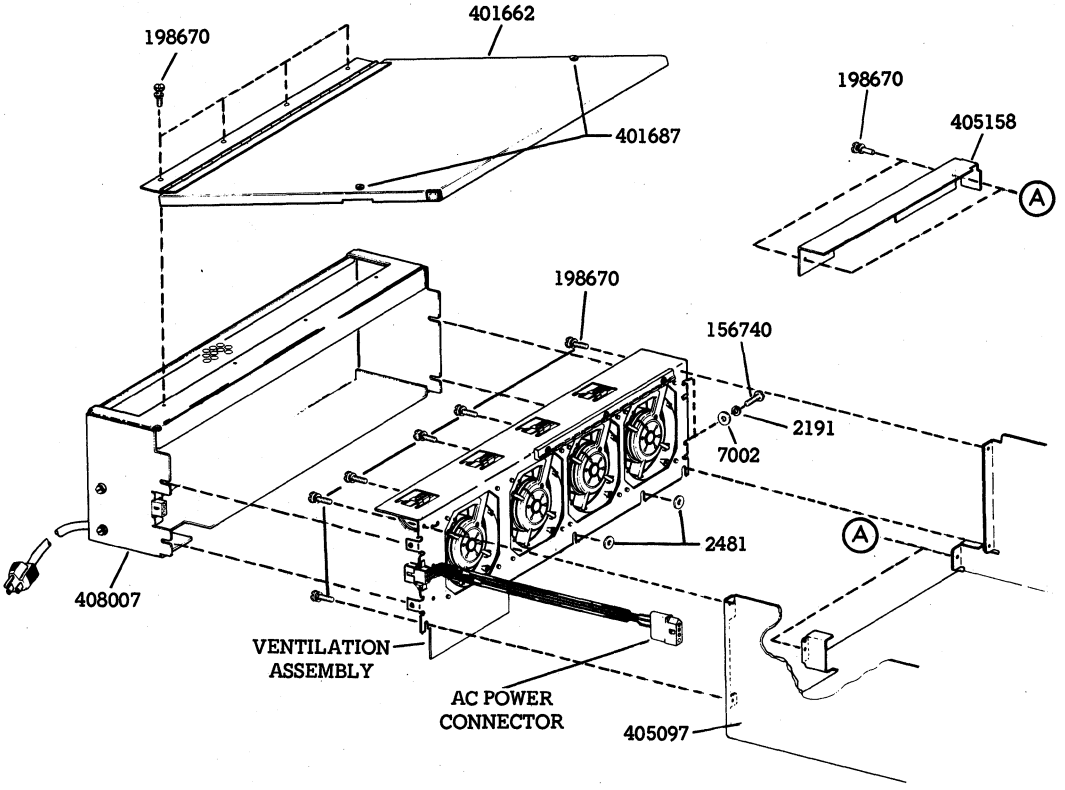


Fig. 3–Mounting Hardware for Fan Guard, Ventilation Assembly, and Cover

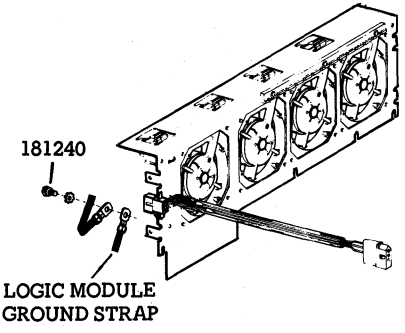


Fig. 4–Ventilation Assembly Detail

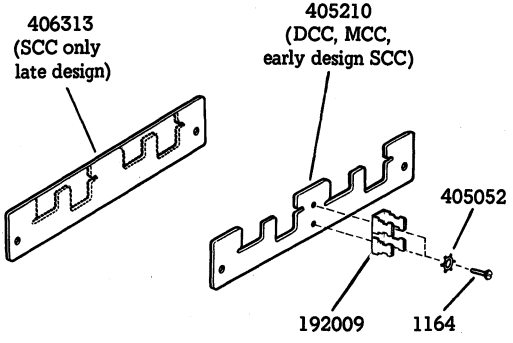


Fig. 5 – Clamp Plate Components (At Rear of Controller)

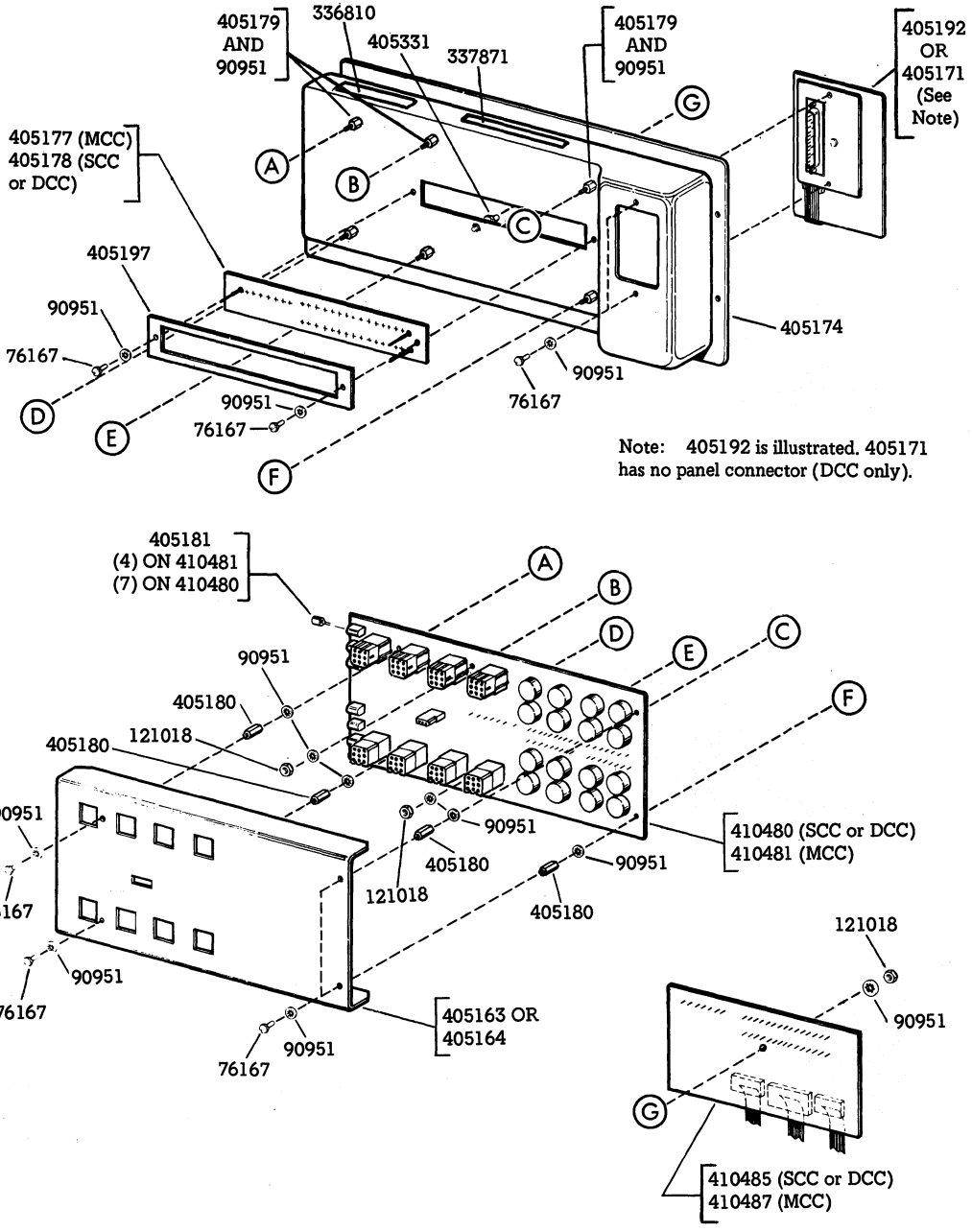


Fig. 6–405150, 405151, and 405152 Interconnection Modules

INDEX OF REPLACEABLE PARTS

3.04 The index below contains field replaceable parts. The index shows the section or page number of this section on which access is provided.

Note: When ordering replaceable components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410055).

APPLICATION	PART NO.	DESCRIPTION	SECTION OR PAGE NO.
Monitor	40MN101/AA 341578	Monitor Fuse, 1.4 Amp	3 582-200-751
Opcon	40K104/DAA 40K104/DAB 40K105/CAA 40K203/GAB	Opcon (ASCII, Typewriter Style) Opcon (EBCDIC, Typewriter Style) Opcon (EBCDIC, Internal Numeric Style) Opcon (EBCDIC, External Numeric Cluster Style)	3, 4 3, 4 3, 4 3, 4
Free-Standing KD	40BSE101 40BSE201 40BSE202 346333	Base (Monitor) Base (Opcon, narrow) Base (Opcon, wide) Opcon Base Cable	582-200-201 582-200-201 582-200-201 582-200-201
Printer	40P101/ZZ, 40P102/ZZ 40P151/ZZ, 40P154/ZZ 40P201/ZZ, 40P202/ZZ 143306	Printer, Friction Feed Printer, Tractor Feed — 80 Column Printer, Tractor Feed — 132 Column Fuse, 1 Amp SL-BL MDL-1	5 6 6 582-200-751
Controller	40C401/type 40C402/type 40C403/type 40PSU102 405150 405151 405152 405181 405360 408015 410200 (Early Design) 410201 (Late Design) Various Numbers Various Codes and Numbers	Controller (SCC) Controller (DCC) Controller (MCC) Power Supply Interconnect Module (SCC) Interconnect Module (DCC) Interconnect Module (MCC) Fuse, 3 Amp Ventilation Assembly Fan Back Panel Back Panel Circuit Cards Cabinets and Pedestals	9 9 9 8 11, 16, 19 11, 16, 19 11, 16, 19 582-200-751 10, 16 17 12 12 7 (Locations Given in 582-200-201) 582-212-700
Cable	405301-405304, 405139, 405140 341896, 408065-408068 405306-405309, 405237, 405239 405311, 405312, 405237, 405238	Opcon/Monitor Cable Data Set Cable Controller/Printer Cable Controller/Controller Cable	12 15 15 582-200-201

SYNCHRONOUS "DATASPEED*" 40/4
ROUTINE MAINTENANCE

CONTENTS PAGE

1. GENERAL

1.01 This section provides the routine maintenance procedures and methods for a DATASPEED 40/4 Station, hereafter referred to as 40/4 type.

1.02 This section is reissued to provide coverage for Single Display Stations (SDS).

1.03 Abbreviations used in this section are defined in Section 582-200-101.

Note: When ordering replaceable components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410055).

1.04 The following dangers and warning are to be used as safety measures for the apparatus and the craftsperson.

Danger 1: Turn off all power and signal sources before removing or replacing any component.

Danger 2: Wear approved safety glasses when the housing of the monitor is removed, as the display tube is fragile in the neck area and is subject to implosion if broken. Be careful not to strike the glass of the tube with tools or components when working in its vicinity (Fig. 1).

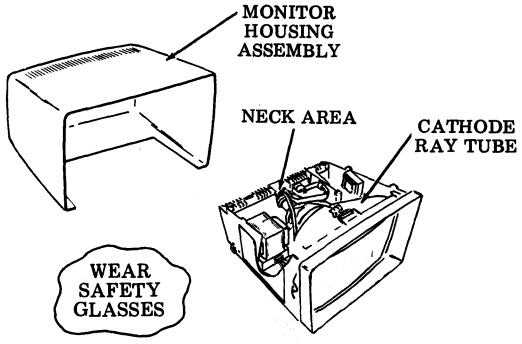


Fig. 1

Warning: To avoid possible internal damage to circuitry, wear a 346392 static discharge strap connected to ground to allow static discharge before handling circuit cards for removal or replacement. Avoid touching circuit lands or components as much as possible (Fig. 2).

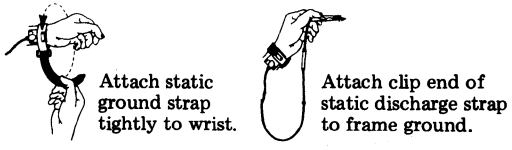


Fig. 2

1.05 Perform the routine maintenance at the customer's convenience. Consider any special maintenance or corrective action requested by the customer or operator.

1.06 This routine is for field use only. Do not attempt repairs without notifying the customer and your supervisor.

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2. TOOLS AND SUPPLIES

2.01 Tools required for routine maintenance:

- Static discharge strap (346392)
- Safety glasses or goggles (approved)
- Soft bristled brush (1/2 inch collar)
- Vacuum, hand-held (battery or ac type).

2.02 Supplies required for routine maintenance:

- Soft wiping cloths (lint-free)
- Mild detergent (household)
- Container for detergent solution.

3. ROUTINE MAINTENANCE

3.01 The routine required is primarily for the mechanical facilities of each device. This routine is to be performed on each device of a station arrangement, after one year or 2000 hours of service by the station arrangement (whichever occurs first). Routine intervals should be shorter in dirty or corrosive environments.

3.02 Obtain a station release from attendant, test board, or customer's communication center (give the approximate length of time the station will be out of service). Turn off all power.

3.03 Cleaning routine

Note: On customer location, avoid cleaning methods that spread dust and debris to surrounding areas.

Cabinets, Pedestals and Opcon

(a) Clean all ventilating screens; use a soft bristled brush to remove debris, while vacuuming, see Fig. 3.

(b) Clean exterior surfaces:

(1) Wash with mild detergent solution.

(2) Rinse with damp cloth.

(3) Buff dry with soft cloth.

Monitor

(a) Clean all ventilating slots (top, bottom and rear).

(b) Clean exterior surfaces — wash, rinse and buff.

Warning: Do not use sharp objects, harsh abrasive cleaning agents or solvents which could scratch or damage plastic surfaces.

(c) Interior — brush and vacuum. (See 3.06 for fuse check.)

Note: Dismantling for cleaning shall be kept to a minimum. For monitor disassembly/reassembly procedures, refer to Section 582-213-701.

Fan Assembly — brush and vacuum.

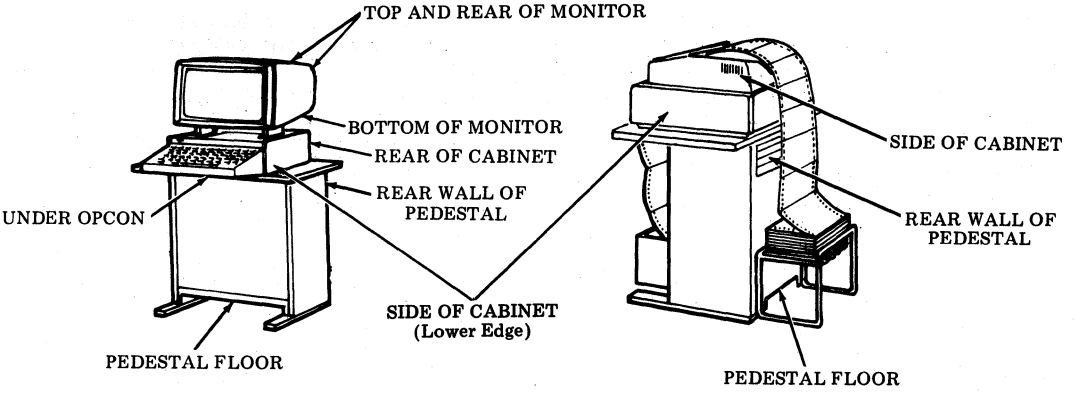


Fig. 3—Ventilating Screen Locations

3.04 Cabinet, pedestals, monitors and opcons do not require routine lubrication.

3.05 Check for and correct any defects in the general appearance of the station:

- All connectors are seated properly and securely.
- Look for pinched or crimped wires or cables.
- Doors and panels open and close properly.
- Latches open easily and close securely.
- Covers are secure.
- Grounding straps.

During servicing or prior to operational checkout, make sure all grounding straps are connected. For ground strap locations, see Section 582-200-701, (1.04).

3.06 Check fuses, condition and ratings (fuse ratings are critical, no higher rating than specified shall be used). Refer to Fig. 4 for locations:

Printer = 1 Amp SL-BL MDL-1 (143306)
Controller = 40C400 type only
Early Design — 3 Amp (405181)
Late Design — 2.5 Amp (321955)
Power Supply = 40PSU101 (Used in 40C304 Controller only)
5 Amp SL-BL (129920)
Monitor = 1.4 Amp (Special fuse must be marked number 341578).

3.07 For printer maintenance routine, see Section 582-210-750.

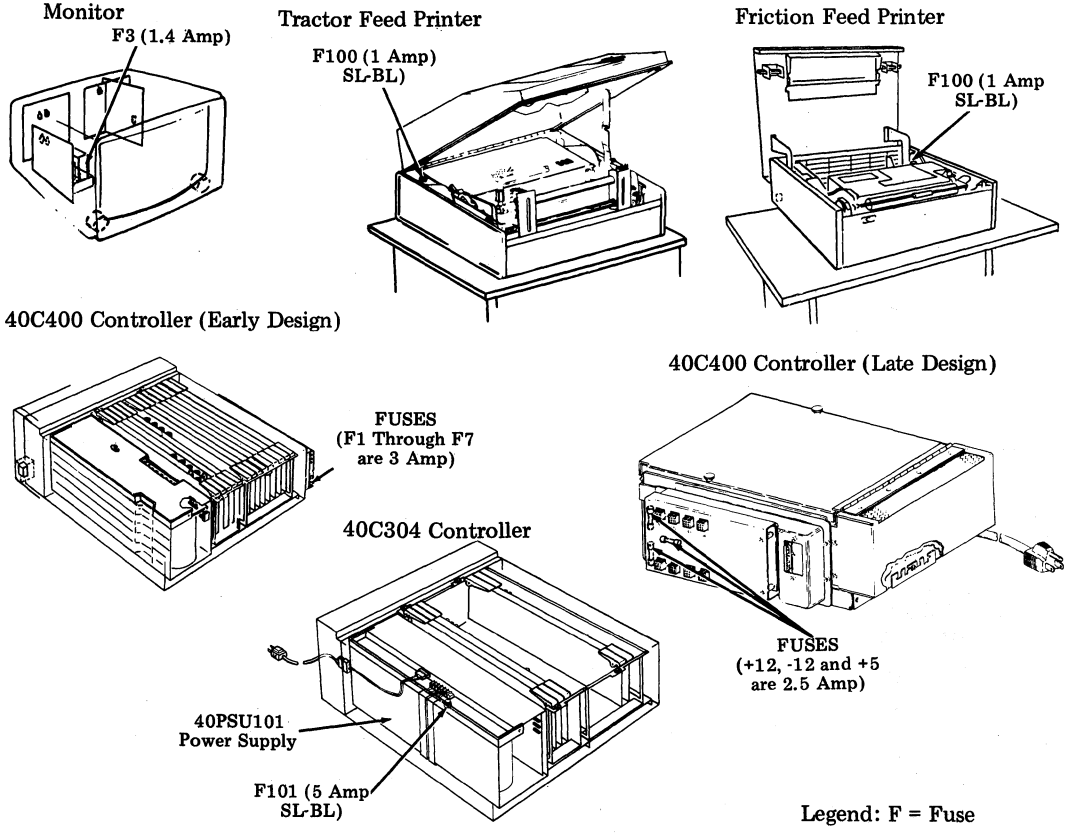


Fig. 4—Fuse Locations

4. OPERATIONAL CHECKOUT

4.01 Perform the KD/Controller Check:

For typewriter style opcon: (See Fig. 5.)

- Depress LOCAL key, if the key is not lit.
- Request a local test by depressing the L/TST key while CONTROL key is held down.

For internal numeric cluster style opcon: (See Fig. 5.)

- Depress RESET key, if the LOCAL key is not lit (INPUT INHIBIT key is lit).
- Request a local test by depressing the L/TST key while ALPHA key is held down.

4.02 Check the monitor display for:

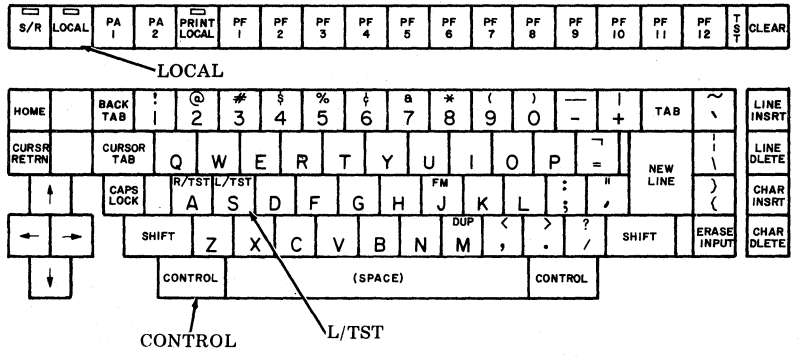
- Brightness
- Size
- Distortion
- Proper message.

Note: For monitor adjustments, see Section 582-213-700.

4.03 Checkouts for printers are covered in Section 582-210-750.

4.04 If checkout was successful, routine is complete. If the checkout responses indicate a need for more testing, refer to Section 582-200-501 (Maxi- or Mini-Cluster Stations) or Section 582-200-505 (Single Display Station).

Typewriter Style Opcon



Internal Numeric Cluster Style Opcon

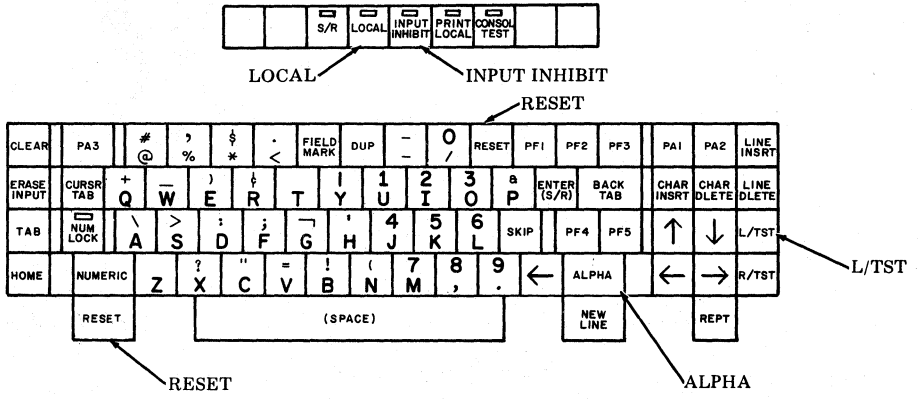


Fig. 5—Opcon Key Locations

SYNCHRONOUS "DATASPEED*" 40/4

SINGLE DISPLAY STATION ARRANGEMENTS

INSTALLATION

CONTENTS PAGE

CONTENTS PAGE

1. GENERAL

1.01 This section provides installation information for all units and components contained in a DATASPEED 40/4 Single Display Station hereafter referred to as 40/4-Type (SDS) equipped with a 40C304/AA/001 Single Display Controller (SCD).

1.02 The reason for reissue of this section is to add installation information for the Single Display Station Dial-up version.

Note: When ordering replaceable parts or components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410055).

1.03 Abbreviations used in this section are defined in Section 582-200-101.

1.04 The following warnings and danger are to be followed as safety measures for the apparatus and the craftsperson.

Warning 1: Turn off all the power and signal sources before removing or replacing any component.

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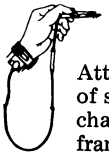
Prepared for American Telephone and Telegraph Company by Teletype Corporation

Warning 2: To avoid possible internal damage to circuitry, wear a 346392 static discharge strap connected to ground to allow static discharge before handling circuit cards for removal or replacement. Avoid touching circuit lands or components as much as possible.

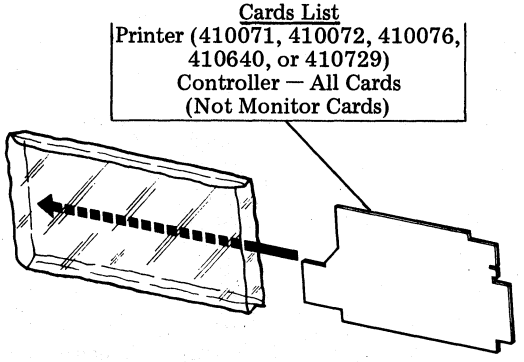
Attach static ground strap tightly to wrist.



Attach clip end of static discharge strap to frame ground.

Warning 3: Place listed card in an RM150592 static bag immediately after removal from unit. Do not place any printer paper in the bag with the card. Keep the card in the static bag at all times. Never handle the card outside the bag without wearing a properly grounded 346392 static ground strap.

Danger: Safety glasses must be worn whenever monitor cover is removed or whenever monitor is replaced.



STATION WORKSHEET

1.05 The Station Configuration Worksheet provides the craftsperson with an understanding of the station configuration prior to installation. A blank sample of the worksheet is given on the following page. When the W-Plan for SDS (W-4ECXG) is available, its worksheet will be the preferred sheet to use.

PREPARATION OF STATION WORKSHEET

1.06 Instructions for preparing 40/4-Type SDS worksheet. (See examples on Pages 4 and 5).

(a) Use a separate worksheet for each station ordered.

(b) In the upper portion of the configuration worksheet, include all information as required.

(c) In the SDC area of the configuration worksheet, list the Station Poll Address (SPA) and Station Select Address (SSA) graphics for Private Line Version or The Station Identification Graphics For Dial-Up Version. Also, use Xs in boxes following the option numbers to show the selected option.

(d) Private Line Version Only: Option 405b is the KD device number; fill in the line in the SDC box and list the KD device address in the box marked OPCON.

(e) Private Line Version Only: Option 405c is the PTR device number; fill in the line in the SDC box and list the printer device address in the box marked PRINTER.

(f) List the printer code on the line provided in the box marked PRINTER.

(g) Options 408, 409 and 410 grouped by the controller as OPT4; mark the proper box with an X for station configuration purposes.

(h) In the DATA SET/DATA AUX SET box, mark an X for either DATA SET or DATA AUX SET and transmission rate (1200, 2400, or 4800). List the proper code on the line provided.

(i) On the line between the SDC box and DATA SET/DATA AUX SET box, line out the unused connecting cable number.

Note 1: In the example worksheet, entries that are not used are lined out.

Note 2: Entering the character that should be displayed for each "OPT" number (when in the OPT mode) on the worksheet will be helpful to the installer.

40/4-Type Station Configuration Worksheet - Single Display Station (SDS)

STATION CONFIGURATION WORKSHEET
SINGLE DISPLAY STATION

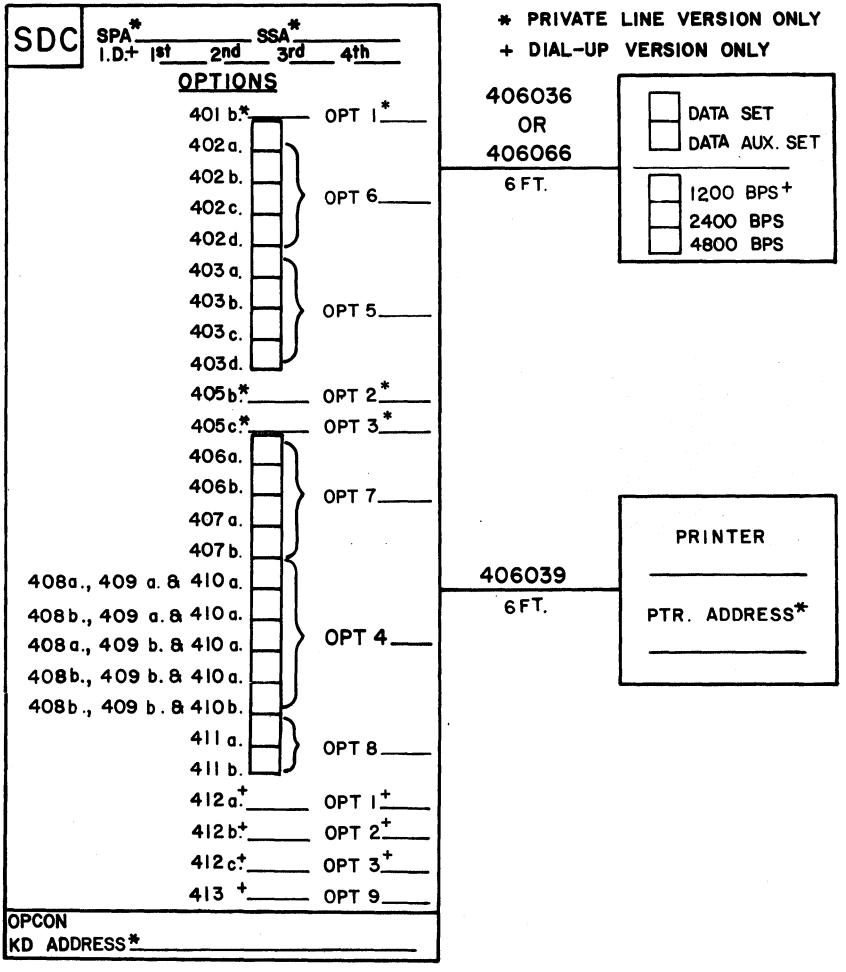
DATE _____

TELCO _____ CUSTOMER _____

TELCO CONTACT _____ TEL. NO. _____

USSO _____ CKT. NO. _____ TELCO REQ. NO. _____

WE REQ. NO. _____ SCHEDULE _____



Example Worksheet — Private Line Version

STATION CONFIGURATION WORKSHEET
SINGLE DISPLAY STATION

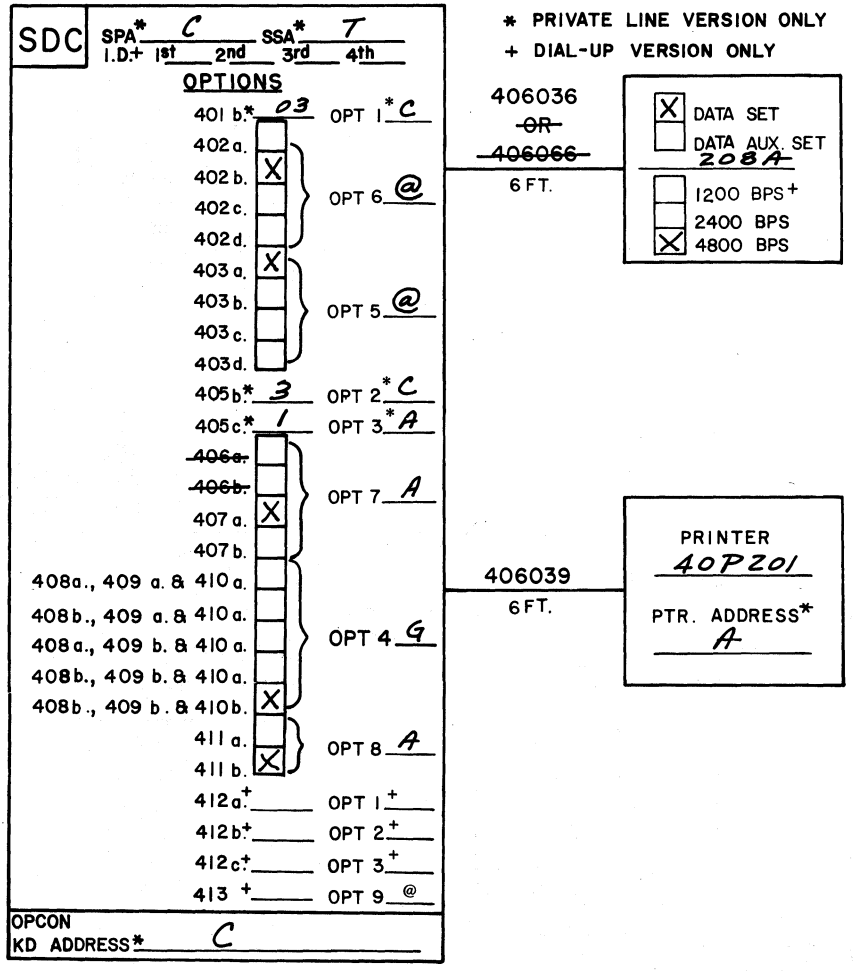
DATE 5-6-78

TELCO BELL CUSTOMER BCA Processing Co.

TELCO CONTACT Joe Smith TEL. NO. 123-456-7890

USSO 2161-9501-00 CKT. NO. 3FD254 TELCO REQ. NO. 5-59183

WE REQ. NO. 49-3-55914 SCHEDULE 8-8-78



Example Worksheet — Dial-Up Version

STATION CONFIGURATION WORKSHEET
SINGLE DISPLAY STATION

DATE 5-6-78

TELCO BELL CUSTOMER BAC Processing Co.

TELCO CONTACT Jane Smith TEL. NO. 321-654-0987

USSO 2781-9432-00 CKT. NO. 5FD206 TELCO REQ. NO. 6-60294

WE REQ. NO. 61-3-60294 SCHEDULE 8-8-78

SDC SPA* SSA*
I.D.+ 1st F 2nd 2 3rd B 4th W

OPTIONS

401 b.*		OPT 1*
402 a.		OPT 6 A
402 b.		
402 c.		
402 d.	X	
403 a.		OPT 5 B
403 b.		
403 c.	X	
403 d.		
405 b.*		OPT 2*
405 c.*		OPT 3*
406 a.	X	OPT 7 @
406 b.		
~~407 a.~~		
~~407 b.~~		
408 a., 409 a. & 410 a.		OPT 4 C
408 b., 409 a. & 410 a.		
408 a., 409 b. & 410 a.		
408 b., 409 b. & 410 a.	X	
408 b., 409 b. & 410 b.		
411 a.	X	OPT 8 @
411 b.		
412 a.+ 2		OPT 1+ 2
412 b.+ B		OPT 2+ B
412 c.+ W		OPT 3+ W
413 + 7		OPT 9 G

OPCON
KD ADDRESS*

* PRIVATE LINE VERSION ONLY
\+ DIAL-UP VERSION ONLY

406036
~~OR~~
~~406066~~
6 FT.

- [X] DATA SET
- [ ] DATA AUX. SET 212A

- [X] 1200 BPS+
- [ ] 2400 BPS
- [ ] 4800 BPS

406039
6 FT.

PRINTER 40P202

PTR. ADDRESS*

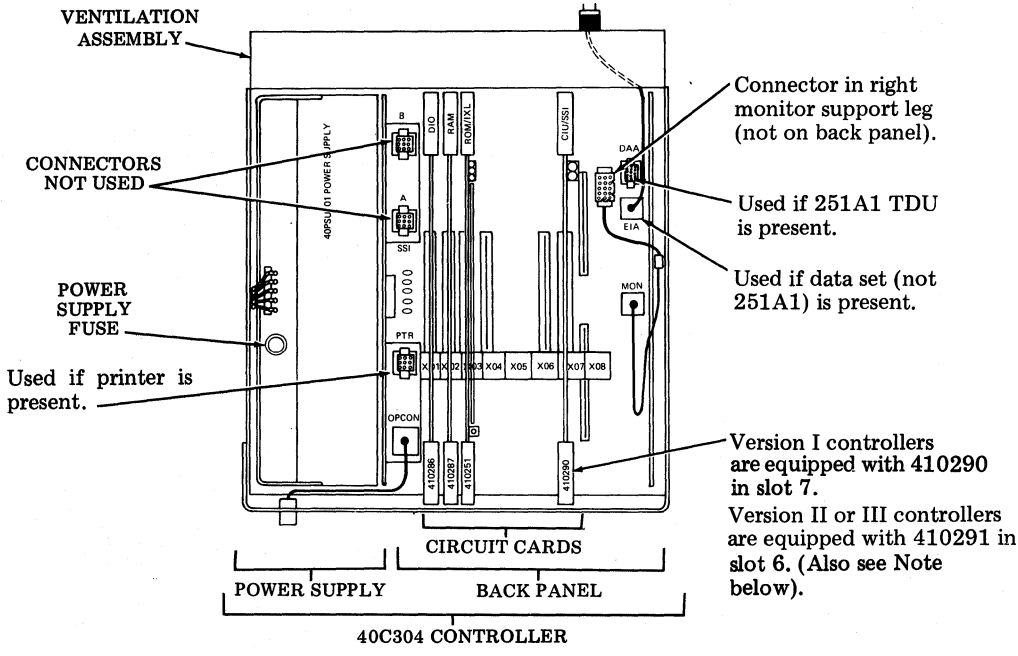
2. CONTROLLER ARRANGEMENT FORMS

2.01 Identification of SDC arrangements are provided in this part. Controller Arrangement Forms are also provided and discussed.

2.02 The Controller Arrangement Forms of this part include a duplicate of the form which should be kept with the Single Display Station (SDS). The form should be filled out in pencil by the service center and kept current by the craftsperson. A filled out form is required when performing the actions of Part 3. INSTALLATION. The purpose of the form is to provide: Location and type of circuit cards required, controller and printer options selected, and required cable connections to controller.

CONTROLLER ARRANGEMENT IDENTIFICATION

2.03 Single Display Controller (SDC) Arrangements:



Note: This section uses the term "Version I controller" to mean a controller equipped with a 410276 back panel, 410290 circuit card, and a 410261 Issue 3A (or earlier) circuit card. A Version II controller is equipped with a 410277 back panel, 410291 circuit card, 410261 Issue 4A (or later) circuit card. A Version III controller is equipped with 410277 back panel, 410291 circuit card and a 410262 (dial-up) or 410264 (private line) circuit card. The controller arrangement forms provide conversion and compatibility information.

APPLICATION			CIRCUIT CARD POSITION (All card numbers preceded by 410)									REFERENCE PAGE NO.
			1	2	3†	4	5	6	7	8	9	
PRIVATE LINE	No 251A1	Version I	286	287	251	—	—	—	290	—	NA	14
		Version II or III	286	287	251	—	—	291	—	—	—	10
	251A1	Version I	286	287	251	—	—	—	290	251A1	NA	16
		Version II or III	286	287	251	—	—	291	—	—	251A1	12
DIAL-UP			286	287	251	—	—	291	—	—	—	10

INTERNAL MODEM
CIU/SSI
ROM/IXL
RAM
D I/O

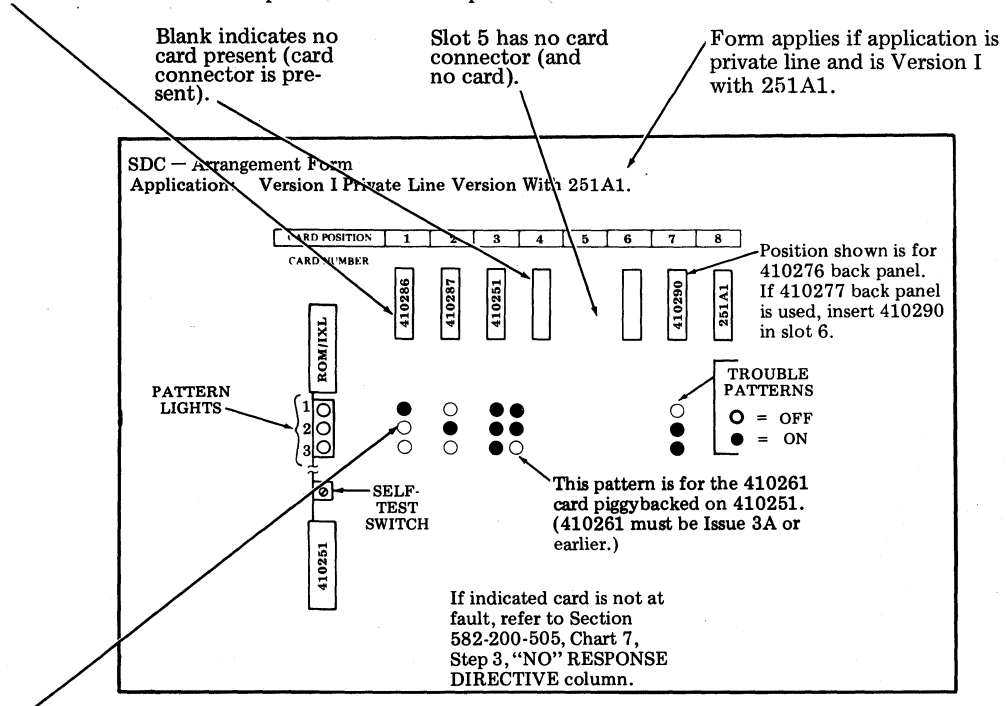
†The 41026N ROM circuit card is always piggybacked to the 410251 circuit card in Position 3.

INTERPRETATION OF CONTROLLER ARRANGEMENT FORMS

2.04 This paragraph consists of examples of how a Controller Arrangement Form for the Private Line Version (early design) controller can be filled out (a form for the late design Private Line or Dial-Up Version can be filled out in a similar manner).

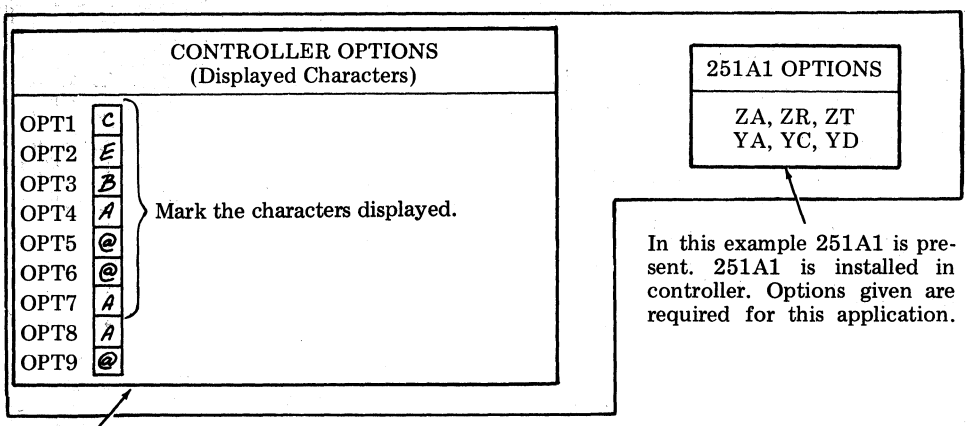
EXAMPLE:

This area lists circuit cards present and their respective locations in the controller.



The area below the circuit card listing shows the trouble patterns that may occut in the pattern lights at the rear of the 410251 card.

Example: (Cont)



This area indicates the character displayed when the corresponding customer desired options are installed. References to 4. OPTIONS will show that: the station number is 3; the KD is device 5; the printer is device 2; EBCDIC line code is used; the opcon is typewriter style; the display font is up-low; Options 403a, 402b, 406b and 411b are installed and the required OPT9 selection is made.

If a printer is present, the printer option record (part of a controller arrangement form) must be filled out; this example is for an up-low 80-column tractor feed printer.

Option 22 applies only to monocase.

Option 48 applies only to 132-column tractor feed printer.

Option 60 applies only if 402902 Modification Kit is used.

PRINTER OPTIONS		
Friction Feed		
Tractor Feed 80 Col		X
Tractor Feed 132 Col		
17.	Specify Right Margin	80
	Specify Left Margin	1
18a.	No Paper Feed Out	
18b.	Paper FO on "RM" Loss	
18c.	Paper FO on "RM" Loss and ETX	X
19d.	96 Character Set	X
19e.	64 Character Set	
19f.	Ext ASCII Set	
20a.	Single LF	X
20b.	Double LF	
21a.	Lower and Upper Case Print	X
21b.	Lower Case Prints as Upper Case	
22a.	Lower Case Prints as Error	
22b.	Lower Case Prints as Upper Case	
39a.	Forms on	X
39b.	Forms off	
48a.	Paper Out Not Gated W/FF	
48b.	Paper Out Gated W/FF	
60a.	Aux. Alarm enabled	
60b.	Aux. Alarm Disenabled	X

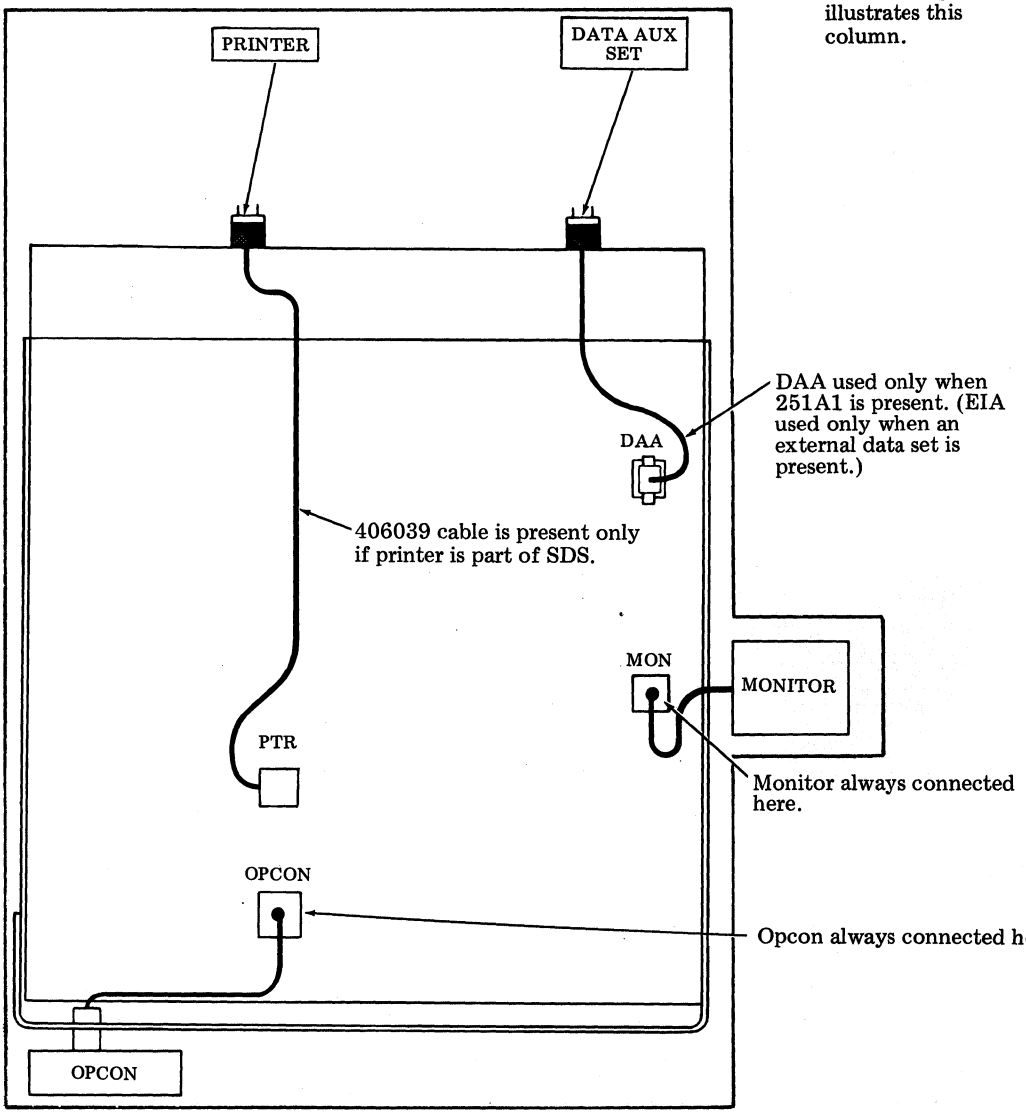
Example: (Cont)

CARD POSITION	I/O SOCKET	STATION WORKSHEET
7	OPCON,	OPCON/
1	MON	MON (1)
7	PTR	PTR (2)
8	DAA	DATA AUX SET

(1) is Device No. 1

(2) is Device No. 2

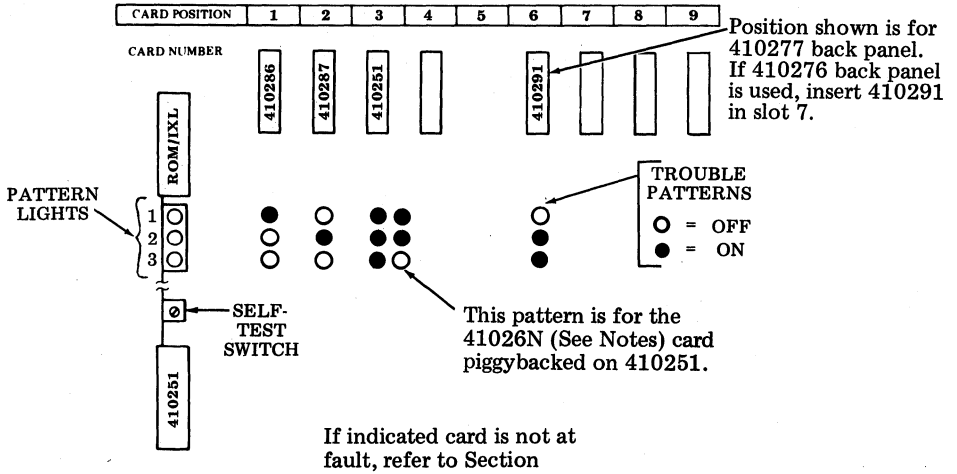
The drawing below illustrates this column.



Single Display Controller (SDC) Arrangement Forms

SDC — Arrangement Form

Application: Private Line (Version II or III Without 251A1) or Dial-Up Version.



If indicated card is not at fault, refer to Section 582-200-505, Chart 7, Step 3, "NO" RESPONSE DIRECTIVE column.

Note 1: 410261 — Private Line — Version II
410264 — Private Line — Version III
410262 — Dial-Up

Note 2: If 410261 is used, it must be Issue 4A or later.

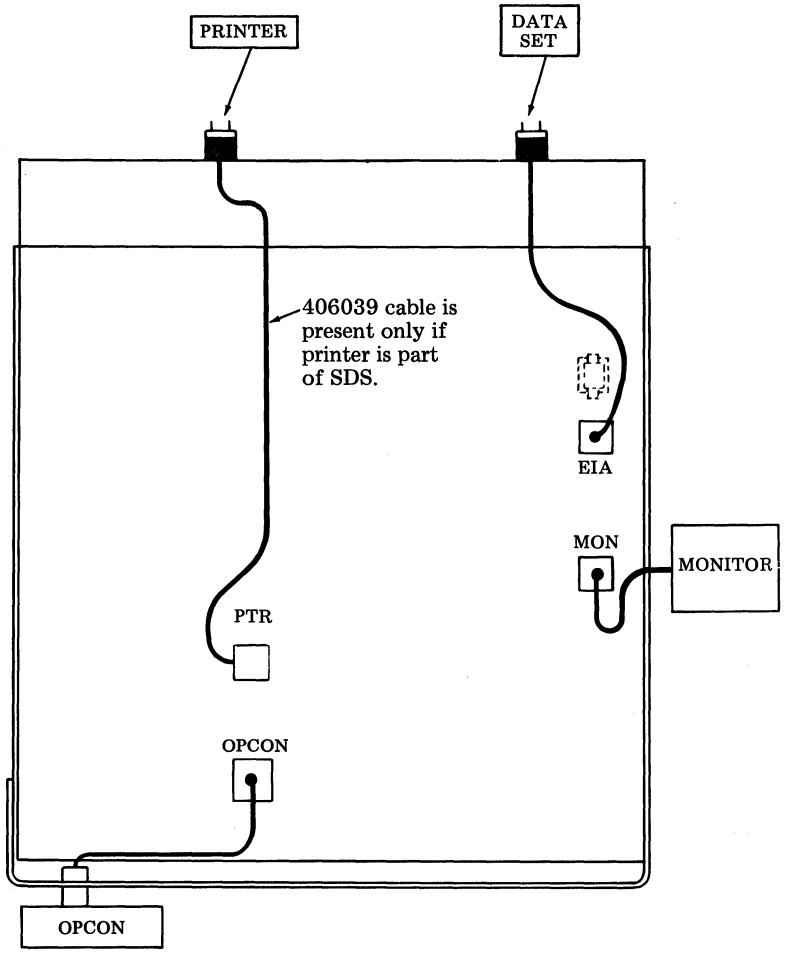
CONTROLLER OPTIONS (Displayed Characters)	
OPT1	
OPT2	
OPT3	
OPT4	
OPT5	
OPT6	
OPT7	
OPT8	@
OPT9	

Mark the Characters displayed.

PRINTER OPTIONS		
Friction Feed		
Tractor Feed 80 Col		
Tractor Feed 132 Col		
17.	Specify Right Margin	
	Specify Left Margin	
18a.	No Paper Feed Out	
18b.	Paper FO on "RM" Loss	
18c.	Paper FO on "RM" Loss and ETX	
19d.	96 Character Set	
19e.	64 Character Set	
19f.	Ext ASCII Set	
20a.	Single LF	
20b.	Double LF	
21a.	Lower and Upper Case Print	
21b.	Lower Case Prints as Upper Case	
22a.	Lower Case Prints as Error	
22b.	Lower Case Prints as Upper Case	
39a.	Forms on	
39b.	Forms off	
48a.	Paper Out Not Gated W/FF	
48b.	Paper Out Gated W/FF	
60a.	Aux. Alarm enabled	
60b.	Aux. Alarm Disenabled	

See adjacent page for connections.

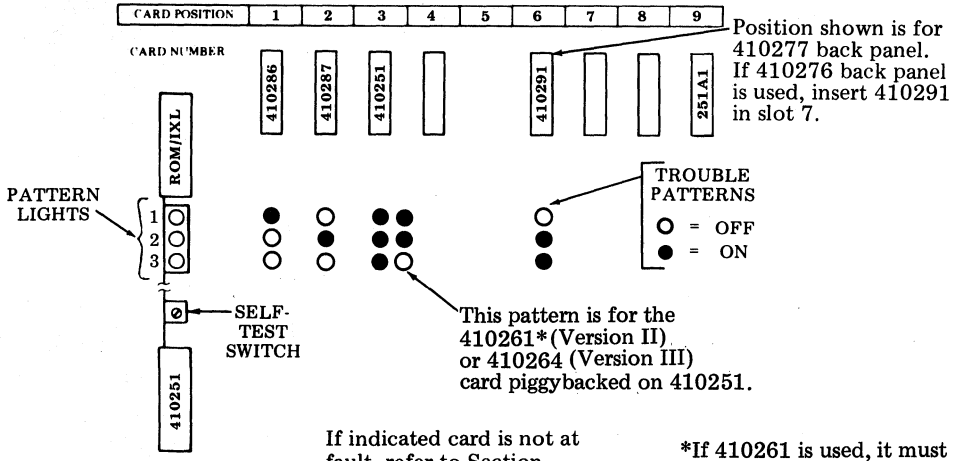
CARD POSITION	I/O SOCKET	STATION WORKSHEET
7	OPCON,	OPCON/
1	MON	MON (1)
7	PTR	PTR (2)
7	EIA	DATA SET



Note: If customer requires that print local operation be prohibited from the opcon, place a 340701 over the PRINT LOCAL position.

SDC — Arrangement Form

Application: Private Line Version II or III With 251A1



If indicated card is not at fault, refer to Section 582-200-505, Chart 7, Step 3, "NO" RESPONSE DIRECTIVE column.

*If 410261 is used, it must be issue 4A or later.

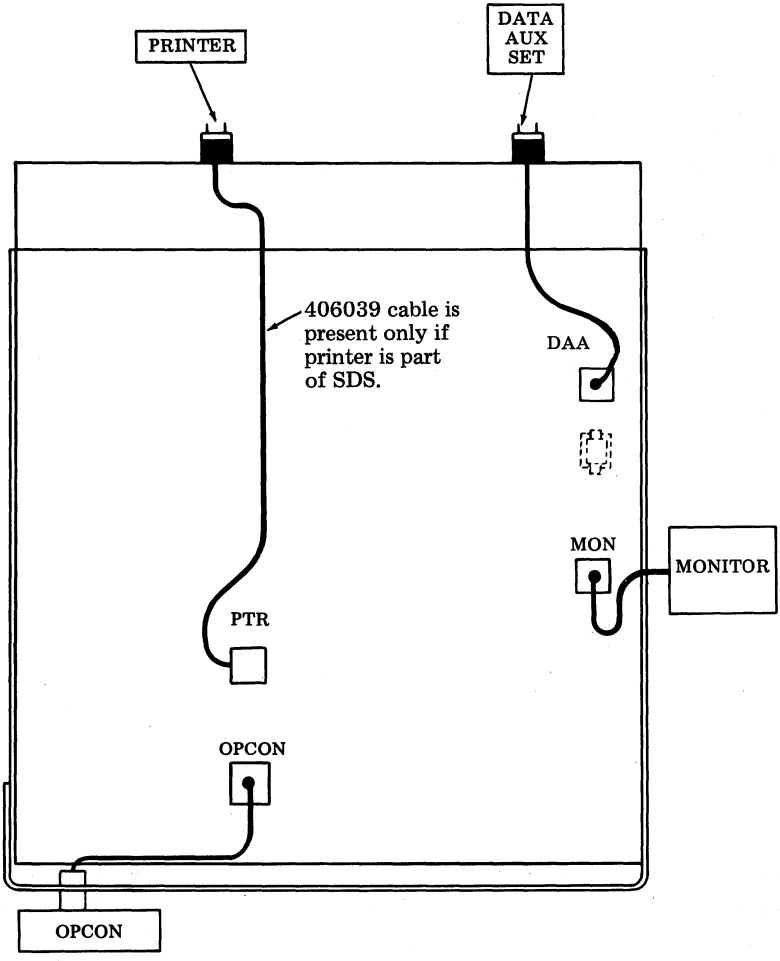
251A1 OPTIONS
ZA, ZR, ZT YA, YC, YD

CONTROLLER OPTIONS (Displayed Characters)	
OPT1	
OPT2	
OPT3	
OPT4	Mark the characters displayed.
OPT5	
OPT6	
OPT7	
OPT8	A
OPT9	@

PRINTER OPTIONS	
Friction Feed	
Tractor Feed 80 Col	
Tractor Feed 132 Col	
17. Specify Right Margin	
Specify Left Margin	
18a. No Paper Feed Out	
18b. Paper FO on "RM" Loss	
18c. Paper FO on "RM" Loss and ETX	
19d. 96 Character Set	
19e. 64 Character Set	
19f. Ext ASCII Set	
20a. Single LF	
20b. Double LF	
21a. Lower and Upper Case Print	
21b. Lower Case Prints as Upper Case	
22a. Lower Case Prints as Error	
22b. Lower Case Prints as Upper Case	
39a. Forms on	
39b. Forms off	
48a. Paper Out Not Gated W/FF	
48b. Paper Out Gated W/FF	
60a. Aux. Alarm enabled	
60b. Aux. Alarm Disenabled	

See adjacent page for connections.

CARD POSITION	I/O SOCKET	STATION WORKSHEET
7	OPCON,	OPCON/
1	MON	MON (1)
7	PTR	PTR (2)
9	DAA	DATA AUX SET

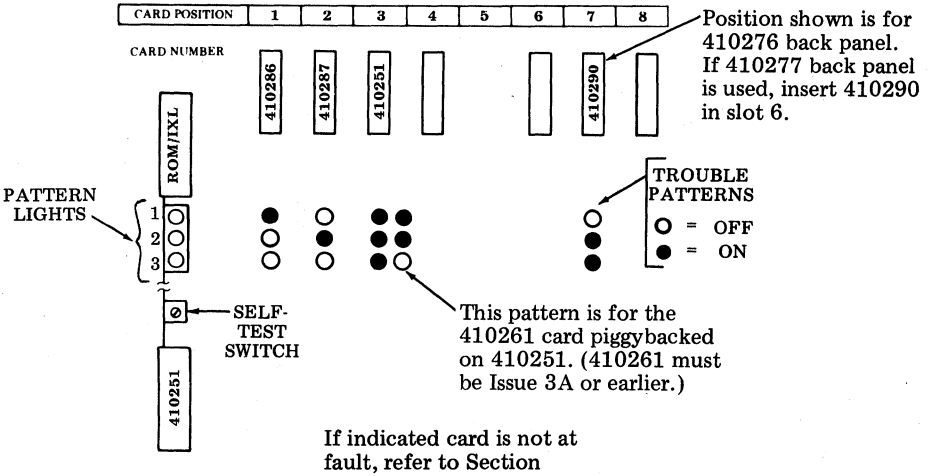


Note: If customer requires that print local operation be prohibited from the opcon, place a 340701 over the PRINT LOCAL position.

Single Display Controller (SDC) Arrangement Forms

SDC — Arrangement Form

Application: Private Line Version I Without 251A1



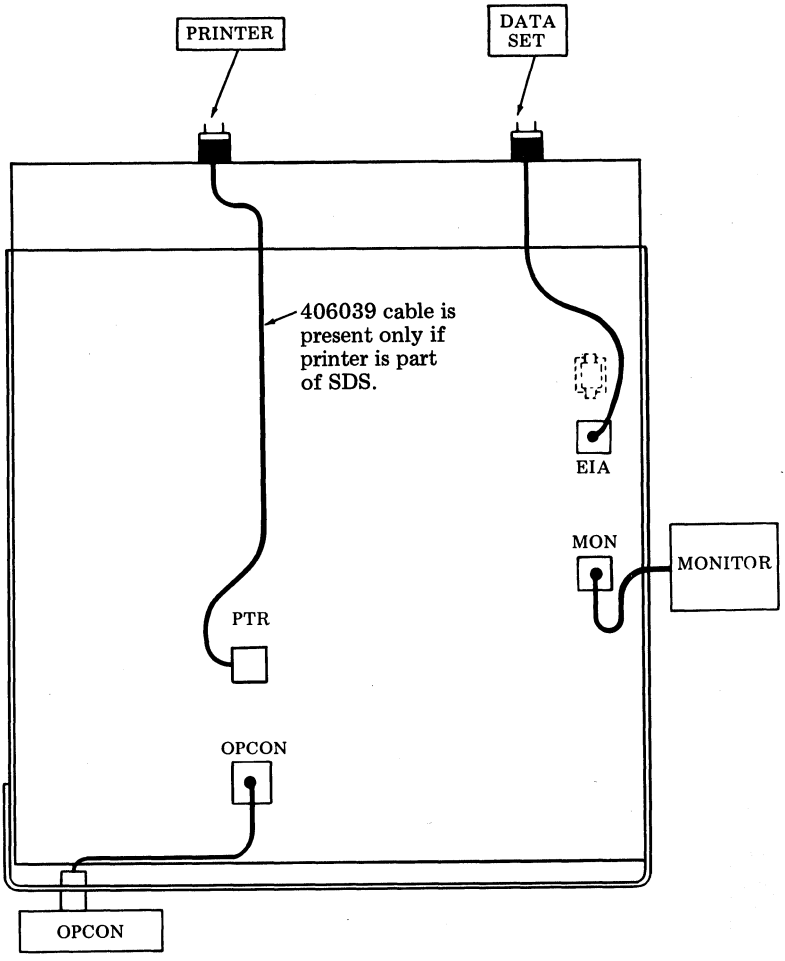
If indicated card is not at fault, refer to Section 582-200-505, Chart 7, Step 3, "NO" RESPONSE DIRECTIVE column.

CONTROLLER OPTIONS (Displayed Characters)	
OPT1	
OPT2	
OPT3	
OPT4	Mark the characters displayed.
OPT5	
OPT6	
OPT7	
OPT8	@
OPT9	@

PRINTER OPTIONS		
Friction Feed		
Tractor Feed 80 Col		
Tractor Feed 132 Col		
17.	Specify Right Margin	
	Specify Left Margin	
18a.	No Paper Feed Out	
18b.	Paper FO on "RM" Loss	
18c.	Paper FO on "RM" Loss and ETX	
19d.	96 Character Set	
19e.	64 Character Set	
19f.	Ext ASCII Set	
20a.	Single LF	
20b.	Double LF	
21a.	Lower and Upper Case Print	
21b.	Lower Case Prints as Upper Case	
22a.	Lower Case Prints as Error	
22b.	Lower Case Prints as Upper Case	
39a.	Forms on	
39b.	Forms off	
48a.	Paper Out Not Gated W/FF	
48b.	Paper Out Gated W/FF	
60a.	Aux. Alarm enabled	
60b.	Aux. Alarm Disenabled	

See adjacent page for connections.

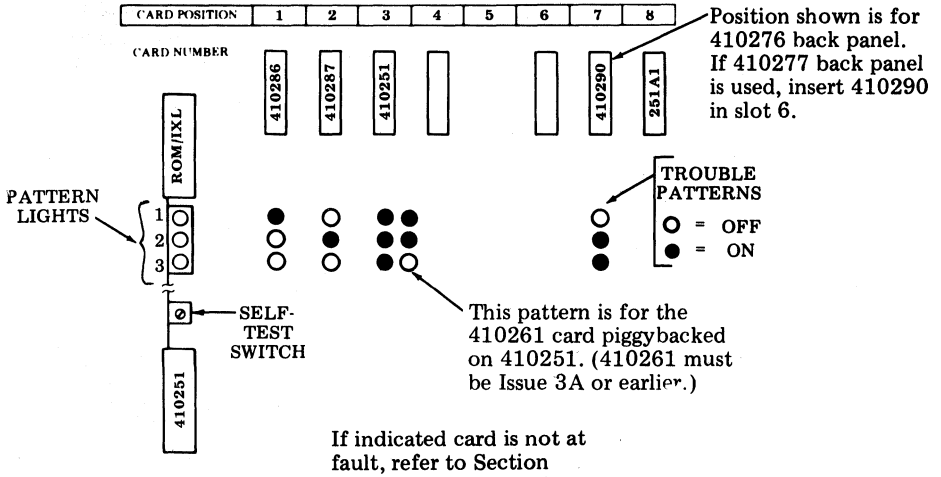
CARD POSITION	I/O SOCKET	STATION WORKSHEET
7 1	OPCON, MON	OPCON/ MON (1)
7	PTR	PTR (2)
7	EIA	DATA SET



Note: If customer requires that print local operation be prohibited from the opcon, place a 340701 over the PRINT LOCAL position.

SDC — Arrangement Form

Application: Private Line Version I With 251A1



If indicated card is not at fault, refer to Section 582-200-505, Chart 7, Step 3, "NO" RESPONSE DIRECTIVE column.

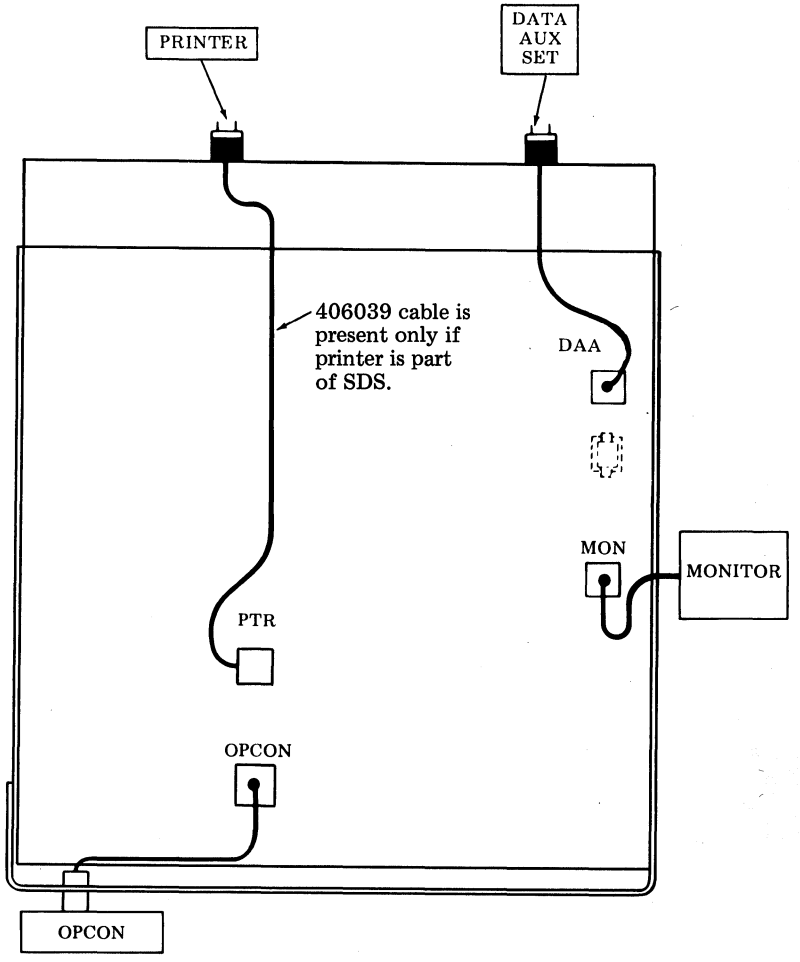
251A1 OPTIONS
ZA, ZR, ZT YA, YC, YD

CONTROLLER OPTIONS (Displayed Characters)	
OPT1	
OPT2	
OPT3	
OPT4	Mark the characters displayed.
OPT5	
OPT6	
OPT7	
OPT8	A
OPT9	@

PRINTER OPTIONS	
Friction Feed	
Tractor Feed 80 Col	
Tractor Feed 132 Col	
17. Specify Right Margin	
Specify Left Margin	
18a. No Paper Feed Out	
18b. Paper FO on "RM" Loss	
18c. Paper FO on "RM" Loss and ETX	
19d. 96 Character Set	
19e. 64 Character Set	
19f. Ext ASCII Set	
20a. Single LF	
20b. Double LF	
21a. Lower and Upper Case Print	
21b. Lower Case Prints as Upper Case	
22a. Lower Case Prints as Error	
22b. Lower Case Prints as Upper Case	
39a. Forms on	
39b. Forms off	
48a. Paper Out Not Gated W/FF	
48b. Paper Out Gated W/FF	
60a. Aux. Alarm enabled	
60b. Aux. Alarm Disenabled	

See adjacent page for connections.

CARD POSITION	I/O SOCKET	STATION WORKSHEET
7	OPCON,	OPCON/
1	MON	MON (1)
7	PTR	PTR (2)
9	DAA	DATA AUX SET



Note: If customer requires that print local operation be prohibited from the opcon, place a 340701 over the PRINT LOCAL position.

3. INSTALLATION

INSTALLATION OUTLINE

- ☐ (1) Review Service Order and Configuration Worksheet.
- ☐ (2) Unpack equipment (3.02 — 3.07).
- ☐ (3) Placement of equipment (3.08 — 3.09).
- ☐ (4) Installation of equipment (3.10 — 3.16).
- ☐ (5) Verify and install controller options (4.01 — 4.16).
- ☐ (6) Check options in printer (4.17, 4.19 — 4.22).
- ☐ (7) Check options in data set or internal modem (4.23 — 4.28).
- ☐ (8) Perform operational checkout (4.18), refer to Section 582-200-505.

  (a) Self test with all cables installed,
  (b) Component operational checks,
  (c) Local test,
  (d) On-line tests.

- ☐ (9) Have customer try out station.
- ☐ (10) Complete the installation:

  (a) Give How To Operate manual(s) to customer.
  (b) Clean up.
  (c) Complete service order.

STATION CONFIGURATION WORKSHEET

3.01 Obtain the Station Configuration Worksheet. See 1.05 for purpose and examples of a worksheet. If a worksheet is not present or does not contain required information, obtain the service order.

Note: ID labels are not used; placement of equipment is done from the configuration worksheet.

UNPACKING INSTRUCTIONS

3.02 Any special instructions necessary to open a box will be affixed to the top of the box. A sample instructions label is shown. If there is no label on the box, use these procedures:

(a) With box in upright position, open top flaps and fold outward.

(b) Lift contents out of box. Remove inner packing details from around product.

(c) Remove plastic bag and all tape from product.

UNPACKING INSTRUCTIONS

1. TURN BOX BOTTOM SIDE UP. OPEN BOTTOM FLAPS AND FOLD OUTWARD.
2. RETURN BOX AND CONTENTS TO AN UPRIGHT POSITION, KEEPING BOTTOM FLAPS FOLDED OUTWARD.
3. REMOVE BOX AND PLACE ASIDE. REMOVE INNER PACKING DETAILS FROM AROUND PRODUCT.
4. REMOVE PLASTIC BAG AND ALL TAPE FROM PRODUCT.

28130PK 40CAB

UNPACKING EQUIPMENT

3.03 The following KD and controller components are packed separately:

40CAB251/ZZ + Related Parts	KD Cabinet (Includes 40C304 Controller and a 406047 Cabinet Modification Kit) and All Set Cables
40MN101	Monitor
40K104/DAB, 40K105/CAA OR 40K203/GAB*	Opcon

*If 40K203GAB Opcon is featured, Modification Kit 346936 will be attached to 40CAB251 Cabinet.

3.04 If a friction feed printer is part of the station, the following components are packed separately:

40P101/ZZ + Type Carrier or 40P102/ZZ + Type Carrier	Friction Feed Printer (Includes Type Carrier)
40CAB201/ZZ + Related Parts or 40CAB371/ZZ + Related Parts	Friction Feed Printer Cabinet
40PWU101 (If Present)	Paper Winder For 40CAB201/ZZ
40PWU102 (If Present)	Paper Winder For 40CAB201/ZZ or 40CAB371/ZZ

3.05 If an 80-column tractor feed printer is part of the station, the following components are packed separately:

40P151/ZZ + Type Carrier or 40P154/ZZ + Type Carrier	80-Column Tractor Feed Printer (Includes Type Carrier)
40CAB351/ZZ + Related Parts	80-Column Tractor Feed Printer Cabinet
407060	Paper Guide
405544 (If Present)	Paper Rack

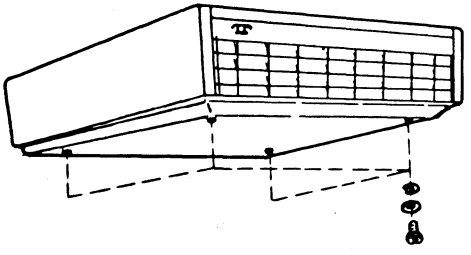
3.06 If a 132-column tractor feed printer is part of the station, the following components are packed separately:

40P201/ZZ + Type Carrier or 40P202/ZZ + Type Carrier	132-Column Tractor Feed Printer (Includes Type Carrier)
40CAB353/ZZ + Related Parts	132-Column Tractor Feed Printer Cabinet
407061	Paper Guide

3.07 Unpack all boxes.

PLACEMENT OF EQUIPMENT

3.08 Place the monitor support cabinet on a flat surface near the desired installation location. With the cabinet on its side, remove the mounting hardware (four places) from the cabinet bottom.



3.09 Place the cabinet on the customer provided table or desk (a pedestal may be used). Access to an ac outlet is required.

MONITOR INSTALLATION

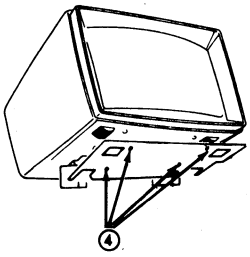
3.10 40MN101 Monitor Installation to 40CAB251 Cabinet

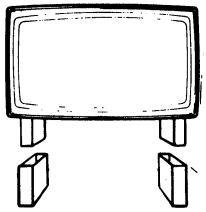
① Unpack monitor.

② Place the monitor on its corresponding posts (there is no locking device associated with the monitor support posts, ie, it can be lifted off without releasing any latches).

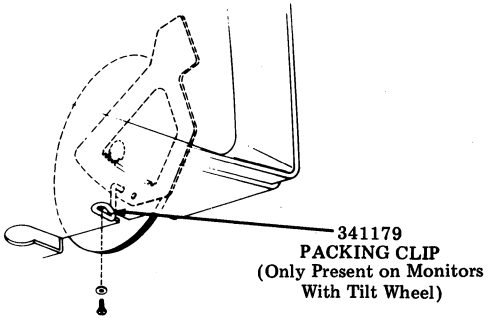
③ Tilt the monitor back and remove the 341719 packing clip (if present) from the tube tilt mechanism. Retain the clip for future repacking.

④ Install the plastic bottom plate (packed separately) — snaps on with 4 studs that are part of the bottom plate.





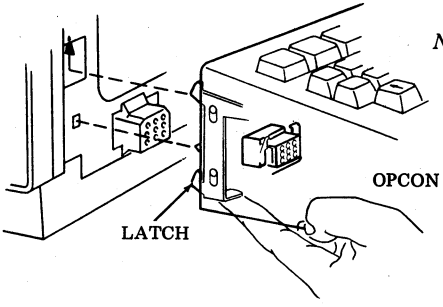
Caution: Wear safety glasses.



OPCON INSTALLATION

3.11 40K104/DAB, 40K105/CAA or 40K203/GAB Opcon Installation to 40CAB251 Cabinet

① Slide latches downward and position opcon so that connectors are aligned and latches on left and right side are fully engaged.



Note: Remove shipping plates.

② Slide latches upward and check that opcon is firmly attached on both sides before releasing.

PRINTER INSTALLATION

3.12 If a printer is part of the station, install as applies — A. Friction Feed or B. Tractor Feed.

A. Friction Feed

3.13 40P101/ZZ or 40P102/ZZ Friction Feed Printer

(a) Unpack printer and 40CAB201/ZZ or 40CAB371/ZZ cabinet.

(b) If four 400409 immobilization screws are present (see 3.14 for approximate location), back them off 7 or 8 turns.

(c) Install printer in cabinet.

(d) If pedestal is provided with the printer (per Station Configuration Worksheet), unpack pedestal, place printer and cabinet on pedestal top, open the pedestal door and route ac cable from printer cabinet into ac convenience strip inside of pedestal.

(e) If printer is not mounted on a pedestal, connect ac cable to an ac outlet.

(f) The controller to printer cable has already been routed to the printer location. Connect the cable to the PTR connector the separate ground terminal to the cabinet ground lug.

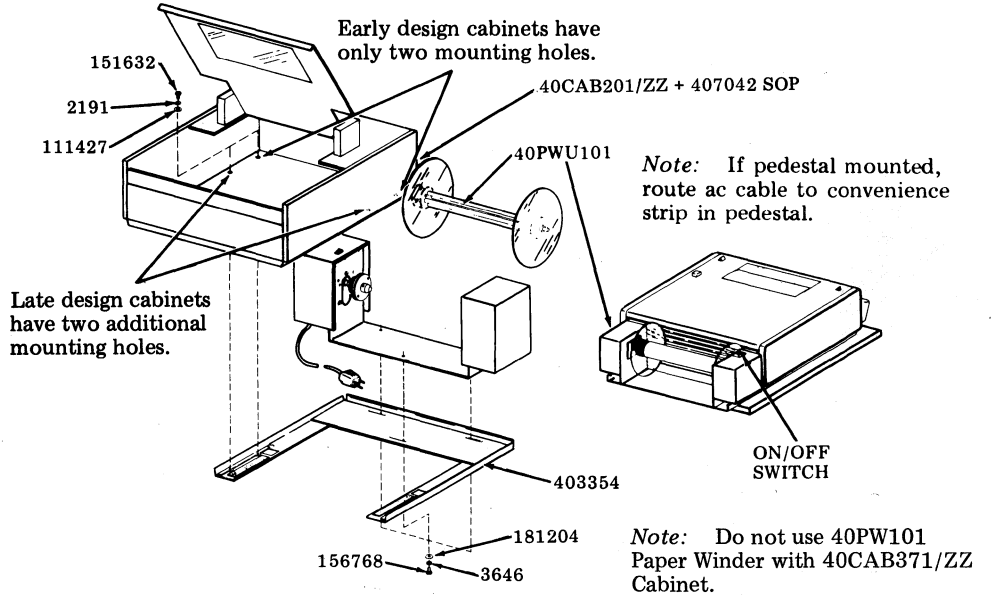
(g) Installation of 40PWU101 Paper Winder —(If Supplied)

(h) Install paper and ribbon.

(i) Printer options are installed per Service Order and entered on Controller Arrangement Form attached to controller to which printer is connected. (See 4.19.)

(j) If it becomes necessary to check or change options, refer to Section 582-210-705 or FIMP 579-505-350, Component Access for removal of printer circuit card.

(k) Connect ac cable from pedestal (if pedestal mounted) or from printer cabinet and paper winder (if used) to 115 V ac outlet.



Note: Do not use 40PW101 Paper Winder with 40CAB371/ZZ Cabinet.

B. Tractor Feed

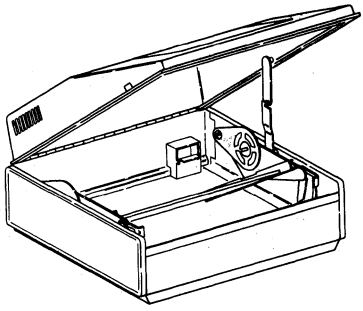
3.14 40P151/ZZ or 40P154/ZZ — 80-Column and 40P201/ZZ or 40P202/ZZ — 132-Column Tractor Feed Printer

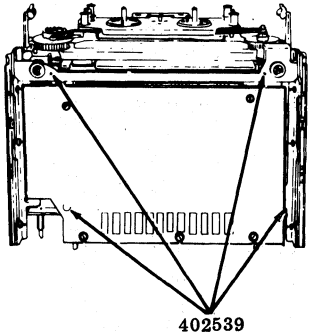
(a) Unpack printer, cabinet and pedestal.

(b) Install printer into cabinet as follows.

① Back off the four black shock mount immobilizing screws 7 or 8 turns.

② Place cabinet on pedestal with opening in bottom of cabinet over slot in pedestal. Open lid by depressing latches on either side of lid and then raising it until it locks.



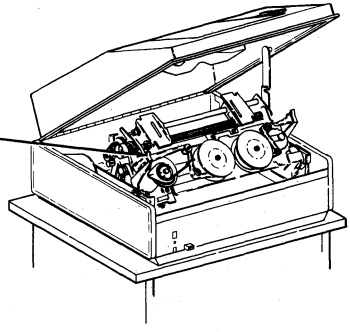


402539
IMMOBILIZATION SCREWS
(4 Places)

40P151/ZZ is shown.

③ Install printer in tracks until detents are seated.

Note: With printer properly seated, all power and SSI connections will be made.



(c) Place cabinet on pedestal. Open pedestal door. Connect ac cable at rear of printer cabinet to ac convenience strip inside of pedestal.

(d) Connect printer cable to printer as in 3.15.

(e) Install paper and ribbon.

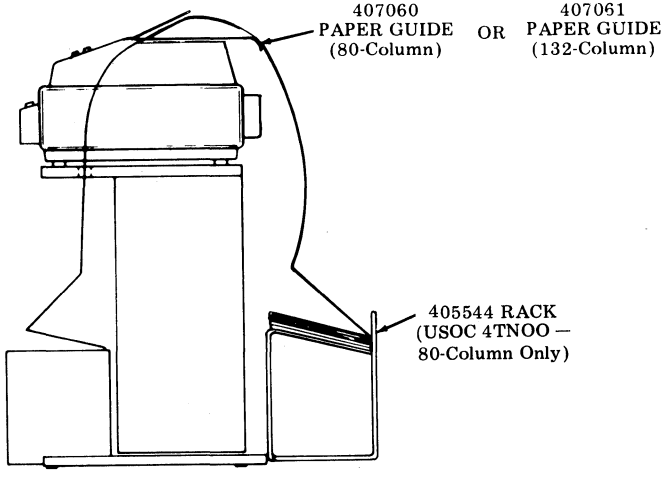
(f) Printer options are installed per Service Order and entered on Controller Arrangement Form attached to controller to which printer is connected. (See printer options in 4.20 or 4.22, as applies.)

(g) If it becomes necessary to check or change printer options, refer to Section 582-210-705 or FIMP 579-505-350, Component Access, for removal of printer circuit card in 80-column printer. (Options for 132-column printers are changed without removing circuit card.)

(h) If printer cabinet is mounted on a pedestal, connect ac cable from pedestal to 115 V ac outlet.

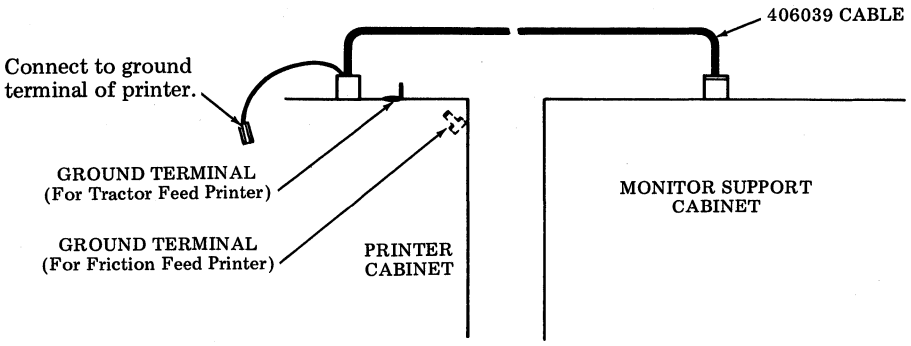
(i) Assemble paper guide as shown.

(j) If included with order, install 405544 rack as shown.



CABLE INSTALLATION

3.15 If a printer is present, connect the 406039 cable to the printer. The connection includes attaching the cable ground connector to the printer cabinet frame terminal.



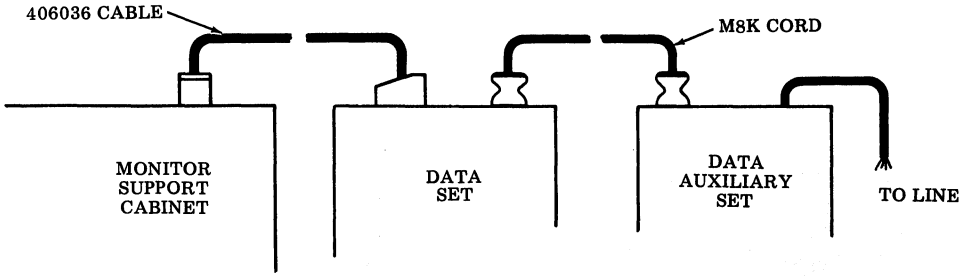
(Top View)

Note: Printer distance can be extended up to a maximum of 50 feet by connecting one of the following cables in between the 406039 printer cable and the printer cabinet.

Cable	Length
405306	6 Feet
405307	12 Feet
405308	25 Feet
405309	50 Feet

3.16 Either a data set or internal modem will be part of the station, see (a) or (b) as applies.

(a) Data Set: Connect 406036 cable to data set; connect data set to data auxiliary set; connect data auxiliary set to line. See Note.



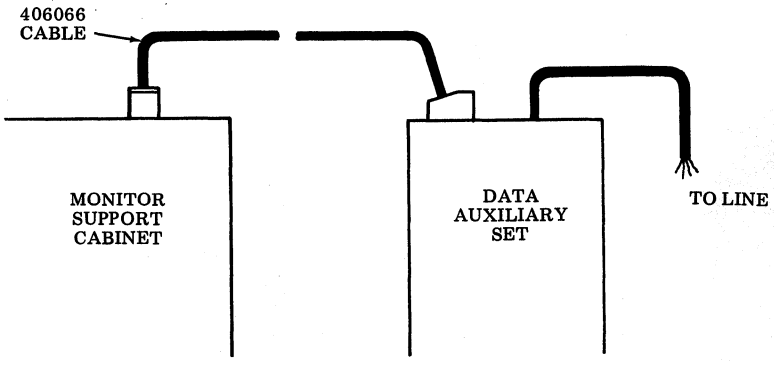
(Top View)

Note 1: Data Set distance can be extended up to 25 feet by connecting one of the following cables between the 406036 EIA Cable and the data set. These cables are connected to the EIA cable by using the two 325713 post assemblies which are in a muslin bag attached to the EIA cable.

Cable	Length
408065	7 Feet
408066	12 Feet
408067	25 Feet

Note 2: In some applications, the data set is connected directly to the line and a data auxiliary set is not present.

(b) Internal Modem: Connect 406066 cable to data auxiliary set; connect data auxiliary set to line.



(Top View)

4. OPTIONS

CONTROLLER

4.01 All controller optioning is done from the opcon in the "OPT" mode by depressing appropriate keytops while an option listing (see 4.03) is displayed on the monitor. All controller cards are left in place. To determine what options to enter in the controller, read the filled out Station Worksheet (and the following cross reference tables, if required) before attempting to enter the "OPT" mode.

Note: To insure the nickel-cadmium battery on the 410251 circuit card is fully charged, ac power must be applied to the controller for approximately 20 hours. The battery charge should be sufficient to hold the option selections without ac power being applied to the controller for several weeks. It may be assumed by the TELCO installer that the WECO tester has sufficiently charged the battery when the 410251 is furnished in the controller.

OPTION CROSS REFERENCE TABLE A

OPTION	CORRESPONDING DISPLAYED OPT
401b*	OPT1 (followed by char.)
402a	OPT6 H
402b	OPT6 @
402c	OPT6 I
402d	OPT6A
403a	OPT5 @
403b	OPT5 A
403c	OPT5 B
403d	OPT5 D
404	(does not apply)
405b*	OPT2 (followed by char.)
405c*	OPT3 (followed by char.)
406a	OPT7 @
406b	OPT7 A
407a	OPT7 A
407b	OPT7 @

OPTION	CORRESPONDING DISPLAYED OPT
408a	OPT4 @ (or B)
408b	OPT4 A (or C or G)
409a	OPT4 @ (or A)
409b	OPT4 B (or C or G)
409c	(does not apply)
410a	OPT4 @ (or A, or B, or C)
410b	OPT4 G
411a	OPT8 @
411b	OPT8 A
— *	OPT9 @ (required)
412a +	OPT1 (followed by char.)
412b +	OPT2 (followed by char.)
412c +	OPT3 (followed by char.)
413 +	OPT9 (followed by char.)

OPTION CROSS REFERENCE TABLE B

DISPLAYED OPT	CORRESPONDING OPTION
OPT1 (followed by char.)	401b* OR 412a+
OPT2 (followed by char.)	405b* OR 412b+
OPT3 (followed by char.)	405c* OR 412c+
OPT4 @	408a, 409a, 410a
OPT4 A	408b, 409a, 410a
OPT4 B	408a, 409b, 410a
OPT4 C	408b, 409b, 410a
OPT4 G	408b, 409b, 410b

*Private Line Version
+Dial-Up Verson

DISPLAYED OPT	CORRESPONDING OPTION
OPT5 @	403.a.
OPT5 A	403.b.
OPT5 B	403.c.
OPT5 D	403.d.
OPT6 H	402.a.
OPT6 @	402.b.
OPT6 I	402.c.
OPT6 A	402.d.
OPT7 @	406.a. or 407.b.
OPT7 A	406.b. or 407.a.
OPT8 @	411.a.
OPT8 A	411.b.
OPT9 @	Required*
OPT9 (Followed by Char.)	413+

4.02 To enter or change any option:

(a) Turn on power to the station.

(b) Check brightness control level (under monitor).

(c) Tilt the monitor up.

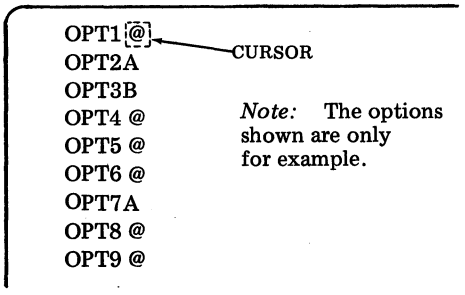
(d) Unlatch and open the cabinet cover.

(e) Depress the SELF-TEST switch near the front of the 410251 circuit card for about one second.

Note: If the SELF-TEST switch is depressed for more than six seconds, the controller will enter the self-test mode. If this happens, make sure the switch is in the raised position to allow the controller to return to the operating mode in about one minute.

4.03 The option listing is now displayed on the monitor. Each option (identified by "OPT1", etc) is followed by a graphic character which represents the presently selected option.

4.04 The cursor is over the OPT1 graphic character.



Note: Cursor movement to the graphic character for the next option is done by depressing the CURSOR TAB key. Thus, if only one option is to be changed, just use CURSOR TAB to position the cursor to the graphic character to be changed. There is a slight delay of cursor movement in this mode. If the cursor is below the character to be changed, CURSOR TAB will cause the cursor to wraparound (go from OPT9 back to OPT1).

Caution: Changing options by the entry of an alpha character requires the character to be upper case.

4.05 Private Line Version Only: (See 4.06 for Dial-Up Version) To enter the station poll and select addresses and device addresses, perform the following:

(a) Find the desired station number or poll address in the OPT1 List on the next page. OPT1 corresponds to Option 401b. Depress the corresponding key on the opcon. Check the OPT1 character column to assure that the proper character is now displayed.

(b) Depress CURSOR TAB key. OPT2 corresponds to Option 405b. Find the proper device number for the KD in the OPT2 and OPT3 List. Depress the corresponding key on the opcon. Check the OPT2 or OPT3 character column to assure the proper character is now displayed after OPT2.

(c) Depress CURSOR TAB key. OPT3 corresponds to Option 405c. If printer is part of the station, a printer device number is required. Use the OPT2 and OPT3 List. Depress the corresponding key for the device number. Check the OPT2 and OPT3 character column to assure the proper character is now displayed. If no printer is present, proceed to to 4.07.

Note: The printer device number must be different from the KD device number (example: 1 and 5, or 10 and 3 — not 1 and 1).

OPT2 AND OPT3 LIST
(Private Line Version Only)

402 or 403 Device Number	(Depress/Display) OPT2 or OPT3 Character	Corresponding Device Address
0	@	SPACE
1	A	A
2	B	B
3	C	C
4	D	D
5	E	E
6	F	F
7	G	G
8	H	H
9	I	I
10	J	[(¢)
11	K	PERIOD
12	L	<
13	M	(
14	N	+
15	O	! (|)

Characters in parentheses appear on EBCDIC opcons.

! is "logic OR" (see Device No. 15).

OPT1 LIST (Private Line Version Only)

OPTION 401 STATION NUMBER	DEPRESS/DISPLAY OPT1 CHARACTER			CORRESPONDING STATION	
				POLL ADDRESS	STATION SELECT ADDRESS
00	@			SPACE	- MINUS
01	A			A	/
02	B			B	S
03	C			C	T
04	D			D	U
05	E			E	V
06	F			F	W
07	G			G	X
08	H			H	Y
09	I			I	Z
10	J			[(¢)	¦ VERTICAL LINE
11	K			. PERIOD	, COMMA
12	L			<	%
13	M			(	_ UNDERSCORE
14	N			+	>
15	O			! (¦)	?
16	P			&	0 ZERO
17	Q			J	1 ONE
18	R			K	2
19	S			L	3
20	T			M	4
21	U			N	5
22	V			O	6
23	W			P	7
24	X			Q	8
25	Y			R	9
26	Z			] (!)	:
		EBCDIC§			
	ASCII‡	DEPRESS	DISPLAY		
27	[	¬	¢	$	#
28	\	\	\	*	@
29	]	¦	¦	)	'
30	^	¢	¬	;	=
31	_	_	_	^(¬)	"

Characters in parentheses appear on EBCDIC opcons.
¦ is "logical OR" (see Station No. 15).
¬ is "logical NOT" (see Station No. 31).

‡ ASCII indicates American National Standard Code for Information Interchange.
§ EBCDIC indicates Extended Binary Coded Decimal Interchange Code.

4.06 Dial-Up Version Only: To enter the station ID sequence, perform the following: (See Note)

(a) Find the desired 2nd character of the station ID sequence in the OPT1, OPT2 and OPT3 List below. OPT1 corresponds to Option 412a. Depress the corresponding key on the opcon. Check the OPT1 character to assure that the proper character is now displayed.

(b) Depress the Cursor Tab key. OPT2 corresponds to Option 412b. Find the desired 3rd character of the station ID sequence in the OPT1, OPT2, and OPT3 List. Depress the corresponding key on the opcon. Check the OPT2 character to assure that the proper character is now displayed.

(c) Depress the Cursor Tab key. OPT3 corresponds to Option 412c. Find the desired 4th character of the station ID sequence in the OPT1, OPT2 and OPT3 List. Depress the corresponding key on the opcon. Check the OPT3 character to assure that the proper character is now displayed.

OPT1, OPT2 AND OPT3 LIST (Dial-Up Version Only)

412. STATION IDENTIFICATION SEQUENCE							
SP	(	0	8	@	H	P	X
!(|)	)	1	9	A	I	Q	Y
"	*	2	:	B	J	R	Z
#	+	3	;	C	K	S	[(¢)
$	,	4	<	D	L	T	\
%	—	5	=	E	M	U	](!)
&	.	6	>	F	N	V	^(¬)
'	/	7	?	G	O	W	_

Characters in parenthesis appear on EBCDIC opcons.

Note: The SDS ID sequence consists of 4 characters. The first character is preset (when option 408-ASCII or EBCDIC is chosen) to "F" when the ASCII line code is chosen or "f" when the EBCDIC line code is chosen. This first character is not displayed after OPT1, OPT2 or OPT3.

4.07 Depress CURSOR TAB key. Choose the desired operation from the OPT4 list for type of opcon, display font and line code (408). Only one keytop is depressed to select all three options. Depress the required keytop on the opcon. Check the OPT4 character column to assure that the proper character is now displayed.

OPT4 LIST

Option 410 Opcon	Option 409 Display Font	Option 408 Line Code	(Depress/Display) OPT4 Character
a. Typewriter	a. Up-Low	a. ASCII	@
a. Typewriter	a. Up-Low	b. EBCDIC	A
a. Typewriter	b. Monocase	a. ASCII	B
a. Typewriter	b. Monocase	b. EBCDIC	C ¶
b. Internal Num Cluster	b. Monocase	b. EBCDIC	G

¶ Factory optioned (for SDC, refers to selection that provides corresponding operation for a SCC/DCC or MCC).

4.08 Depress CURSOR TAB key. Choose the proper character from the OPT5 List. Depress the required keytop on the opcon for the option selected. Check the OPT5 character column to assure that the proper character is now displayed.

OPT5 LIST

403. Display Field Intensities		(Depress/Display) OPT5 Character
a.	Intensified and Blink Fields are Intensified	@ ¶
b.	Intensified and Blink Fields are Blinked	A
c.	Blink Fields are Blinked, Intensified Fields are Intensified. Mixed Intensified and Blinked Fields on the same Display are Blinked.	B
d.	Blink Special Intensified Fields All fields marked as intensified, protected and alpha-numeric will be blinked.	D

4.09 Depress CURSOR TAB key. Choose from OPT6 List and proceed as for OPT5.

OPT6 LIST

402. Type of Alarm on Receipt of Alarm, Write Control, or Copy Control Character and Action Upon Opcon Entry of TAB		(Depress/Display) OPT6 Character
a.	Continuous Alarm TAB key erases field (inserts nulls) and moves cursor to first character of next unprotected field.	H
b.	Single Alarm TAB key erases field (inserts nulls) and moves cursor to first character of the next unprotected field.	@ ¶
c.	Continuous Alarm TAB key erases field (inserts nulls), no cursor movement.	I
d.	Single Alarm TAB key erases field (inserts nulls), no cursor movement.	A

Note: A continuous alarm causes the opcon bell to ring repeatedly. Alarm and TAB have been grouped into OPT6 for convenience. There is no relationship between TAB and alarm.

¶Factory optioned (for SDC, refers to selection that provides corresponding operation for a SCC/DCC or MCC).

4.10 Depress CURSOR TAB key. The style of the opcon determines whether Option 406 or 407 applies. Use the OPT7 List and depress key required for the option selected. Check the OPT7 character column to assure that the proper character is now displayed.

OPT7 LIST

406. Numeric Field Override (Used With Typewriter Style Opcon — 40K104)		(Depress/Display) OPT7 Character
a.	Alpha Data Can be Entered in Numeric Field (Bell Will Sound)	@
b.	Alpha Data Cannot be Entered in Numeric Field (Bell Will Sound)	A ¶

407. Numeric Lock Special Feature (Used With Data Entry Style Opcon — 40K105)		(Depress/Display) OPT 7 Character
a.	Enabled — Only Digits 0 to 9, Minus, DUP, Period Can be Entered Into a Numeric Field. (These are in the numeric cluster — see Note below.)	A
b.	Disabled — In a Numeric Field, Entry of Unshifted Characters Causes Unshifted Characters to be Displayed.	@ ¶

Note: In operation, the numeric lock special feature can be temporarily overridden by simultaneously depressing NUMERIC or ALPHA and a character key.

4.11 Depress CURSOR TAB key. Use OPT8 List. Depress required key. Check displayed character.

OPT8 LIST

411. External Data Set/Internal Modem Loopback Testing (See Caution Below.)		(Depress/Display) OPT8 Character
a.	External Data Set	@ ¶
b.	Internal Modem	A
c.	Loopback Testing Only (See Section 582-200-505 for testing procedures.)	C

Caution: Option 411a or 411b (For Private Line Version) or 411a only (For Dial-Up Version) is required to provide customer operation. Option 411c is only used during installation or maintenance. As explained in Section 582-200-505, operation with Option 411c on the customer data channel can cause transmissions to be scrambled and possibly halt all system operation.

¶ Factory optioned (for SDC, refers to selection that provides corresponding operation for a SCC/DCC or MCC).

4.12 Private Line Version Only: Depress CURSOR TAB key. Use the OPT9 List. Depress SPACE key. Check that the @ character is now displayed.

OPT9 LIST (Private-Line Version Only)

Reserved for Future Use	Depress Key	(Depress/Display) OPT9 Character
Proper Station Operation (required)	SPACE	@ ¶

¶ Factory optioned (for SDC, refers to selection that provides corresponding operation for a SCC/DCC or MCC).

4.13 Dial-Up Version Only: Depress Cursor Tab key. Use the OPT9 List below. Depress required key on the opcon for the option selected. Check the OPT9 character column to assure that the proper character is now displayed.

OPT9 LIST (Dial-Up Version Only)

413. Automatic Disconnect Timer (1 to 15 minutes)			
Time-out	Depress/Display OPT9 Character	Time-out	Depress/Display OPT9 Character
1 Min.	A	9 Min.	I
2 Min.	B	10 Min.	J
3 Min.	C	11 Min.	K
4 Min.	D	12 Min.	L
5 Min.	E	13 Min.	M
6 Min.	F	14 Min.	N
7 Min.	G	15 Min.	O
8 Min.	H		

4.14 Again check all options to make sure that displayed characters match these entered on Station Configuration Worksheet supplied with station.

4.15 Option 404 is not used in a single display station because it does not apply. Option 404 is type of block abort procedure used when station abnormally stops sending on-line.

4.16 Depress LOCAL or RESET key on opcon to exit the "OPT" mode. The controller will exit; go through a power-up routine and begin normal operation. Lower and latch cabinet cover. Tilt monitor forward to the operating position.

4.17 To check printer and data set (or internal modem) options, turn off all power and proceed to (4.19 through 4.28) for printer options and (4.29 through 4.37) for the data set (or internal modem).

4.18 To perform an operational checkout, refer to Section 582-200-505.

PRINTER — 80-COLUMN

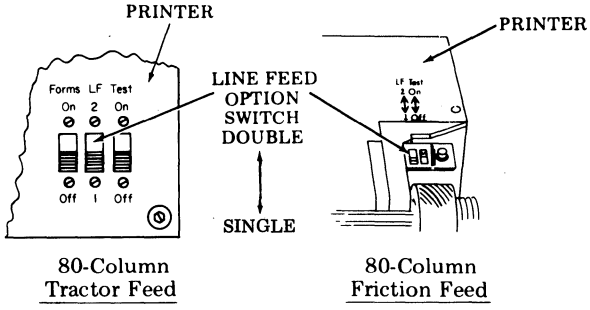
4.19 For options, refer to:

PRINTER CODE	DESCRIPTION	COMPATIBLE PRINTER LOGIC CIRCUIT CARD	REFERENCE PARAGRAPHS
40P101/ZZ	Friction Feed	410640 410076	4.20 and 4.21 4.20 and 4.22
40P102/ZZ	Friction Feed	410076	4.20 and 4.22
40P151/ZZ	Tractor Feed	410640 410076	4.20 and 4.21 4.20 and 4.22
40P154/ZZ	Tractor Feed	410071	4.20, 4.23 and 4.28

Note 1: Selected printer options must be entered on the Controller Arrangement Form.

Note 2: Refer to 4.24 for 132-column printer options.

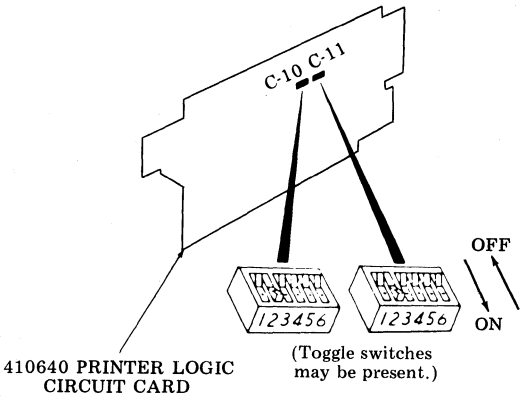
4.20 Location of "Forms" and "LF" switches on all 80-column printers.



80-Column
Tractor Feed

80-Column
Friction Feed

4.21 Printer options for 410640 circuit card.



17. Printer Margin and Form Width		C10						C11						
		1	2	3	4	5	6	1	2	3	4	5	6	
c.	Last Character on 80th Column	—	—	—	—	—	—	○	●	●	○	—	—	**
	Last Character on 79th Column	—	—	—	—	—	—	○	●	●	●	—	—	
	Last Character on 78th Column	—	—	—	—	—	—	●	○	○	●	—	—	
d.(X)	Last Character on 77th Column	—	—	—	—	—	—	●	○	●	○	—	—	
	Last Character on 76th Column	—	—	—	—	—	—	●	○	●	●	—	—	
	Last Character on 75th Column	—	—	—	—	—	—	●	●	○	●	—	—	
	Last Character on 74th Column	—	—	—	—	—	—	●	●	●	○	—	—	
	Last Character on 73rd Column	—	—	—	—	—	—	●	●	●	●	—	—	

Unless otherwise specified, choose 17c.

Note: If right margin specified is 36 through 72, a 410076 circuit card must be used.

18. Printer Paper Feed Out		C-10						C-11						
		1	2	3	4	5	6	1	2	3	4	5	6	
a.	No Paper Feed Out	●	—	—	—	—	—	—	—	—	—	—	○	
b.	Paper Feed Out on "RM" Loss — 16 Lines	○	—	—	—	—	—	—	—	—	—	—	○	
c.	Paper Feed Out on "RM" Loss or ETX	○	—	—	—	—	—	—	—	—	—	—	●	**

Unless otherwise specified, choose 18c.

● Indicates on.
○ Indicates off.
— Position of switch does not affect option.
** Factory optioned.
(X) Indicates desired column number.

19. Printer Errored Character Symbol		C10						C11					
		1	2	3	4	5	6	1	2	3	4	5	6
c.	Not Printed on Parity Error	–	–	–	●	●	–	–	–	–	–	–	–

→ Required Selection

19. Printer Errored Character Symbol		C10						C11					
		1	2	3	4	5	6	1	2	3	4	5	6
d.	Printers With 96 Character Set	–	●	O	–	–	–	–	–	–	–	–	–
e.	Printers With 64 Character Set	–	O	●	–	–	–	–	–	–	–	–	–
f.	Printers With Extended ASCII Character Set	–	O	O	–	–	–	–	–	–	–	–	–

Use of 400629 (▲) or 400784 (▲) type carriers require selection of 19d.
Use of 400645 (▲) or 400785 (▲) type carriers require selection of 19e.
Use of 400775 (▲) type carrier requires selection of 19f (internal use only).

20. Line Feed on Printer		See 4.20.												
a.	Single													**
b.	Double													

Unless otherwise specified, choose 20a.

21. Foldover on Up-Low Printer		C-10						C-11						
		1	2	3	4	5	6	1	2	3	4	5	6	
a.	Lower Case and Upper Case Print	–	–	–	–	–	–	–	–	–	–	O	–	**
b.	Lower Case Prints as Upper Case	–	–	–	–	–	–	–	–	–	–	●	–	

→ Consider only with selection of 19d or 19f.
Unless otherwise specified, choose 21a.

22. Foldover on Mono Case Printer		C-10						C-11						
		1	2	3	4	5	6	1	2	3	4	5	6	
a.	Lower Case Not Folded Over	–	–	–	–	–	–	–	–	–	–	O	–	
b.	Lower Case Printed as Upper Case	–	–	–	–	–	–	–	–	–	–	●	–	**

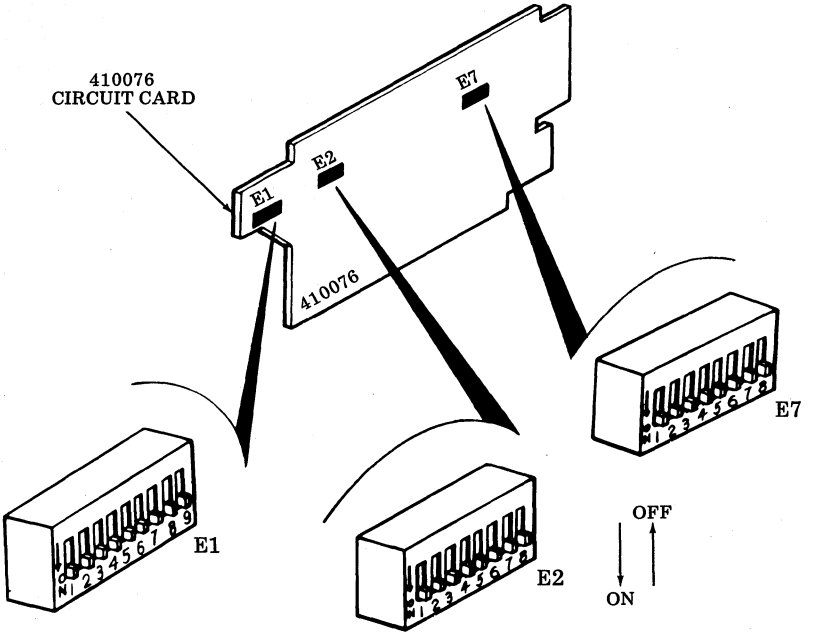
→ Consider only with selection of 19e.
Unless otherwise specified, choose 22b.

39. Forms (Tractor Printer Only)		See 4.20.												
a.	On													
b.	Off													**

Unless otherwise specified, choose 39a.

● Indicates on.
O Indicates off.
– Position of switch does not affect option.
** Factory optioned.

4.22 Printer options for 410076 circuit card.



17. Printer Left Margin and Form Width		E7							
		1	2	3	4	5	6	7	8
a.	First Printed Column - - Column 1	—	—	●	●	●	●	—	—
b.(X)	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	—	—	○	○	○	●	—	—
	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	—	—	○	●	●	○	—	—

**

Unless otherwise specified, choose 17a.

● Indicates on.
○ Indicates off.
— Position of switch does not affect option.
**Factory optioned.
(X) Indicates desired column number.

17.	Printer Right Margin and Form Width	E1									E2								E7								
	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	—	—	—	—	O	●	—	●	O	—	—	—	—	—	—	●	●	●	●	—	—	—	—	—	—	**
d.(X)	73 61 49 37 25	—	—	—	—	●	●	—	●	●	—	—	—	—	—	—	●	●	●	●	—	—	—	—	—	—	
	74 62 50 38 26	—	—	—	—	●	●	—	●	O	—	—	—	—	—	—	●	●	●	●	—	—	—	—	—	—	
	75 63 51 39 27	—	—	—	—	●	●	—	O	●	—	—	—	—	—	—	●	●	●	●	—	—	—	—	—	—	
	76 64 52 40 28	—	—	—	—	●	O	—	●	●	—	—	—	—	—	—	●	●	●	●	—	—	—	—	—	—	
	77 65 53 41 29	—	—	—	—	●	O	—	●	O	—	—	—	—	—	—	●	●	●	●	—	—	—	—	—	—	
	78 66 54 42 30	—	—	—	—	●	O	—	O	●	—	—	—	—	—	—	●	●	●	●	—	—	—	—	—	—	
	79 67 55 43 31	—	—	—	—	O	●	—	●	●	—	—	—	—	—	—	●	●	●	●	—	—	—	—	—	—	
	68 56 44 32	—	—	—	—	O	●	—	●	O	—	—	—	—	—	—	●	●	●	●	—	—	—	—	—	—	
	69 57 45 33	—	—	—	—	O	●	—	O	●	—	—	—	—	—	—	●	●	●	●	—	—	—	—	—	—	
	70 58 46 34	—	—	—	—	O	O	—	●	●	—	—	—	—	—	—	●	●	●	●	—	—	—	—	—	—	
	71 59 47 35	—	—	—	—	O	O	—	●	O	—	—	—	—	—	—	●	●	●	●	—	—	—	—	—	—	
	72 60 48 36	—	—	—	—	O	O	—	O	●	—	—	—	—	—	—	●	●	●	●	—	—	—	—	—	—	

To obtain counts:

73 through 80 operate switches as shown.
61 through 72 operate switches as shown, then operate E7 position 2 to OFF.
49 through 60 operate switches as shown, then operate E7 position 1 to OFF.
37 through 48 operate switches as shown, then operate E2 position 7 to OFF.
25 through 36 operate switches as shown, then operate E2 position 8 to OFF.

Unless otherwise specified, choose 17c.

18. Printer Paper Feed Out		E1									E2							
		1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8
a.	No Paper Feed Out Out	●	—	—	—	—	—	—	—	—	—	—	—	—	—	O	—	—
b.	Paper Feed Out on DSR or RM Loss - - 16 Lines or One Form	O	—	—	—	—	—	—	—	—	—	—	—	—	—	O	—	—
c.	Paper Feed Out on DSR or RM Loss or ETX - - 16 Lines or One Form	O	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—	—

Unless otherwise specified, choose 18c.

19. Printer Errored Character Symbol		E1								
		1	2	3	4	5	6	7	8	9
c.	Not Printed on Parity Error	—	—	●	●	—	—	—	—	—

→ Required Selection

● Indicates on.
O Indicates off.
— Position of switch does not affect option.
** Factory optioned.
(X) Indicates desired column number.

19	Character Set	E2 1	2	3	4	5	6	7	8	
d.	Printers With 96-Character Set (Up-Low)	—	—	—	O	●	—	—	—	
e.	Printers With 64-Character Set (Monocase)	—	—	—	●	O	—	—	—	**
f.	Printers With Special Carrier (Line Drawing)	—	—	—	O	O	—	—	—	

Use of 400629 (▲) or 400784 (▲) type carriers require selection of 19d.
Use of 400645 ( ) or 400785 (▲) type carriers require selection of 19e.
Use of 400775 (▲) type carrier requires selection of 19f (internal use only).

20.	Line Feed on Printer	See 4.20.	
a.	Single		**
b.	Double		

Unless otherwise specified, choose 20a.

21.	Foldover on Up-Low Printer	E2 1	2	3	4	5	6	7	8	
a.	Lower Case and Upper Case Print	—	—	O	—	—	—	—	—	
b.	Lower Case Prints as Upper Case	—	—	●	—	—	—	—	—	**

Consider only with selection of 19d or 19f.

Unless otherwise specified, choose 21a.

22.	Foldover on Monocase Printer	E2 1	2	3	4	5	6	7	8	
a.	Lower Case Prints as Error Symbol	—	—	O	—	—	—	—	—	
b.	Lower Case Prints as Upper Case	—	—	●	—	—	—	—	—	**

Consider only with selection of 19e.

Unless otherwise specified, choose 22b.

39.	Forms	See 4.20.	
a.	On		
b.	Off		**

Unless otherwise specified, choose 39a.

48.	Incomplete Form Suppresses Paper Alarm	E2 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	—	—	—	—	—	—	**

Position of switch has no effect with friction feed printer.

For tractor feed printer, unless otherwise specified, choose 48b.

● Indicates on.
O Indicates off.
— Position of switch does not affect option.
** Factory optioned.

54.	Printing of Escape Sequences Suppressed	E1									
		1	2	3	4	5	6	7	8	9	
a.	Character After ESC Printed as Received	—	O	—	—	—	—	—	—	—	**
b.	Printing of Character After ESC Suppressed	—	●	—	—	—	—	—	—	—	

→ Not Applicable — Position of switch does not affect operation.

55.	SI/SO Detection	E1									
		1	2	3	4	5	6	7	8	9	
a.	SI/SO Detection Not Used	—	—	—	—	—	—	O	—	—	**
b.	SI/SO Detection Enables Printing Additional Characters	—	—	—	—	—	—	●	—	—	

→ Not Applicable — Position of switch does not affect operation.

56.	Friction Feed/Tractor Feed Printer	E2								
		1	2	3	4	5	6	7	8	
a.	Friction Feed Printer — Motor Held On After Paper Alarm	O	—	—	—	—	—	—	—	**
b.	Tractor Feed Printer — Motor Turned Off After Paper Alarm	●	—	—	—	—	—	—	—	

For friction feed printer, choose 56a.
For tractor feed printer, choose 56b.

57.	SSI/OEM Interface	E7								
		1	2	3	4	5	6	7	8	
a.	SSI	—	—	—	—	—	—	●	—	**

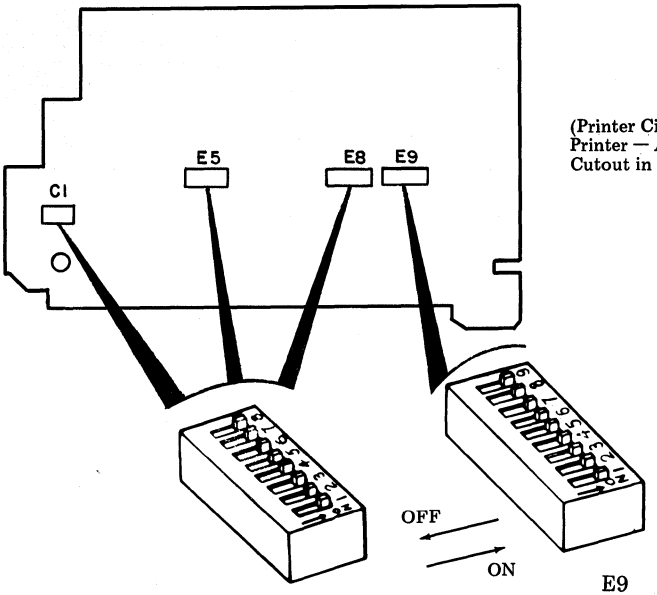
→ Required Selection

58.	Idle Line Motor Control	E7								
		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-Seconds Idle Line	—	—	—	—	—	—	—	●	

Unless otherwise specified, choose 58b.

● Indicates on.
O Indicates off.
— Position of switch does not affect option.
**Factory optioned.

4.23 Printer options for 410071 circuit card.



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

C1, E5 AND E8 E9

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

Unless otherwise specified, choose 17a.

● Indicates on.
○ Indicates off.
— Position of switch does not affect option.
** Factory optioned.
(X) Indicates desired column number.

17.	Printer Right Margin and Form Width	E9									E5								E8								
	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	O	●	—	●	O	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●	**
d. (X)	73 61 49 37 25	●	●	—	●	●	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●	
	74 62 50 38 26	O	●	—	●	●	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●	
	75 63 51 39 27	●	O	—	●	●	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●	
	76 64 52 40 28	●	●	—	O	●	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●	
	77 65 53 41 29	O	●	—	O	●	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●	
	78 66 54 42 30	●	O	—	O	●	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●	
	79 67 55 43 31	●	●	—	●	O	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●	
	68 56 44 32	O	●	—	●	O	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●	
	69 57 45 33	●	O	—	●	O	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●	
	70 58 46 34	●	●	—	O	O	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●	
	71 59 47 35	O	●	—	O	O	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●	
	72 60 48 36	●	O	—	O	O	—	—	—	—	●	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●	

To obtain counts:

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

Unless otherwise specified, choose 17c.

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

Unless otherwise specified, choose 18c.

19.	Printer Errored Character Symbol	E9								
		1	2	3	4	5	6	7	8	9
c.	Not Printed on Parity Error	—	—	—	—	—	●	●	—	—

Required Selection

● Indicates on.
O Indicates off.
— Position of switch does not affect option.
** Factory optioned.
(X) Indicates desired column number.

19. Character Set		E8 1	2	3	4	5	6	7	8	
d.	Printers With 96-Character Set (Up-Low)	—	—	—	—	●	○	—	—	
e.	Printers With 64-Character Set (Monocase)	—	—	—	—	○	●	—	—	**
f.	Printers With Special Carrier (Line Drawing)	—	—	—	—	○	○	—	—	

Use of 400629 (↕) or 400784 (↕) type carriers require selection of 19d.
Use of 400645 (↕) or 400785 (↕) type carriers require selection of 19e.
Use of 400775 (↕) type carrier requires selection of 19f (internal use only).

20. Line Feed on Printer		See 4.20.											
a.	Single												**
b.	Double												

Unless otherwise specified, choose 20a.

21. Foldover on Up-Low Printer		E8 1	2	3	4	5	6	7	8	
a.	Lower Case and Upper Case Print	○	—	—	—	—	—	—	—	
b.	Lower Case Prints as Upper Case	●	—	—	—	—	—	—	—	**

→ Consider only with selection of 19d or 19f.

Unless otherwise specified, choose 21a.

22. Foldover on Monocase Printer		E8 1	2	3	4	5	6	7	8	
a.	Lower Case Prints as Error Symbol	○	—	—	—	—	—	—	—	
b.	Lower Case Prints as Upper Case	●	—	—	—	—	—	—	—	**

→ Consider only with selection of 19e.

Unless otherwise specified, choose 22b.

39. Forms		See 4.20.											
a.	On												
b.	Off												**

Unless otherwise specified, choose 39a.

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)	—	—	—	—	—	—	—	—	○	**

Unless otherwise specified, choose 48b.

● Indicates on.
○ Indicates off.
— Position of switch does not affect option.
** Factory optioned.

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

→Not Applicable — Position of switch does not affect operation.

55.	SI/SO Detection	E9 1	2	3	4	5	6	7	8	9	
a.	SI/SO Detection Not Used	—	—	O	—	—	—	—	—	—	**
b.	SI/SO Detection Enables Printing Additional Characters	—	—	●	—	—	—	—	—	—	

→Not Applicable — Position of switches does not affect operation.

57.	SSI/OEM Interface	E8 1	2	3	4	5	6	7	8	
a.	SSI	—	—	—	—	—	—	●	—	**

→Required Selection

58.	Idle Line Motor Control	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	—	—	—	●	—	—	—	—	

Unless otherwise specified, choose 58b.

59.	Speed Selection (Applies Only if Option 57b is Selected)	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	

→Not Applicable — Position of switches does not affect operation.

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

→*Note:* If 402920 modification kit (paper jam alarm) is installed in printer, choose 60a. Otherwise, 60b must be chosen.

● Indicates on.
O Indicates off.
— Position of switch does not affect option.
**Factory optioned.

PRINTER — 132-COLUMN

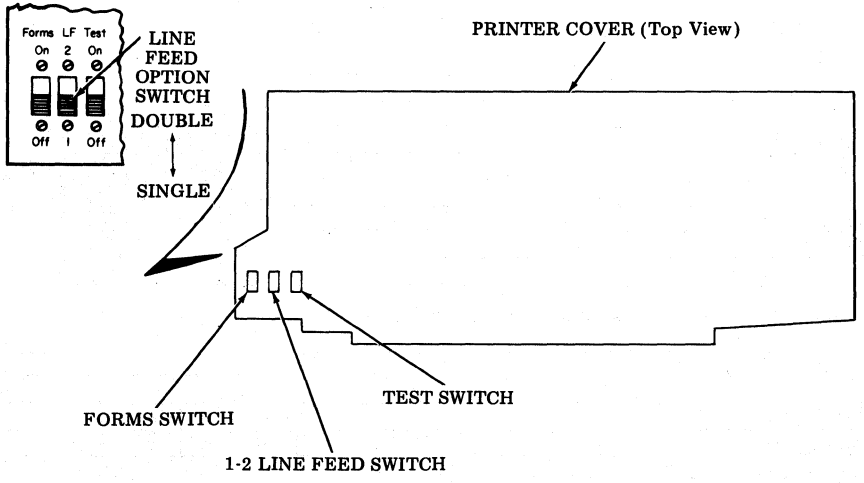
4.24 For options, refer to:

PRINTER CODE	DESCRIPTION	COMPATIBLE PRINTER LOGIC CIRCUIT CARD	SEE THESE PARAGRAPHS
40P201/ZZ	TRACTOR FEED	410729 410072 ‡‡	4.25, 4.26 and 4.28 4.25, 4.27 and 4.28
40P202/ZZ	TRACTOR FEED	410072	4.25, 4.27 and 4.28

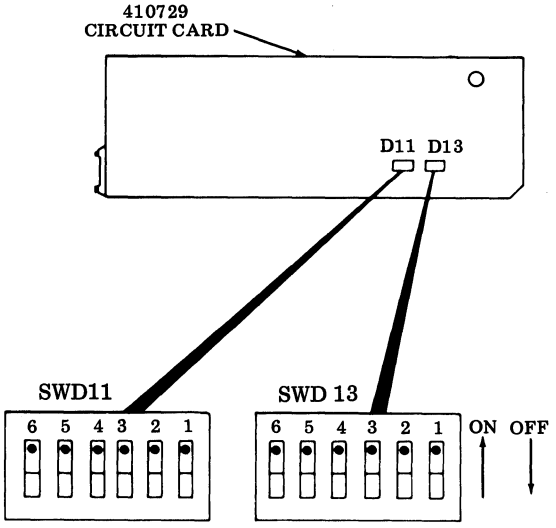
‡‡ Use of the 410072 card in a 40P201/ZZ printer requires use of a 402980 lower pan assembly. The 402887 modification kit includes both a 410072 card and a 402980 lower pan assembly. The 402980 lower pan assembly is compatible with either the 410729 or 410072 cards.

Note: Selected printer options must be entered on the Controller Arrangement Form.

4.25 Location of "Forms" and "LF" switches on 132-column printers.



4.26 Printer options for 410729 circuit card.



(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		D11						D13						
		6	5	4	3	2	1	6	5	4	3	2	1	
e.	Last Character on Column 132	—	—	—	—	—	—	○	○	○	●	—	—	**
f.(X)	Last Character on Column 131	—	—	—	—	—	—	○	○	●	○	—	—	
	Last Character on Column 130	—	—	—	—	—	—	○	○	●	●	—	—	
	Last Character on Column 129	—	—	—	—	—	—	○	●	○	●	—	—	
	Last Character on Column 128	—	—	—	—	—	—	○	●	●	○	—	—	
	Last Character on Column 127	—	—	—	—	—	—	○	●	●	●	—	—	
	Last Character on Column 126	—	—	—	—	—	—	●	○	○	●	—	—	
	Last Character on Column 125	—	—	—	—	—	—	●	○	●	○	—	—	
	Last Character on Column 124	—	—	—	—	—	—	●	○	●	●	—	—	
	Last Character on Column 123	—	—	—	—	—	—	●	●	○	●	—	—	
	Last Character on Column 122	—	—	—	—	—	—	●	●	●	○	—	—	
	Last Character on Column 121	—	—	—	—	—	—	●	●	●	●	—	—	

Unless otherwise specified, choose 17e.

Note: If right margin specified is 73 through 120, a 410072 card must be used.

● Indicates on.
○ Indicates off.
— Position of switch does not affect option.
** Factory optioned.
(X) Indicates desired column number.

18. Printer Paper Feed Out		D11						D13						
		6	5	4	3	2	1	6	5	4	3	2	1	
a.	No Paper Feed Out	–	–	●	–	–	–	–	–	–	–	–	○	
b.	Paper Feed Out on RM Loss – 16 Lines	–	–	○	–	–	–	–	–	–	–	–	○	
c.	Paper Feed Out on RM Loss or ETX	–	–	○	–	–	–	–	–	–	–	–	●	**

Unless otherwise specified, choose 18c.

19. Printer Errored Character Symbol		D11						D13						
		6	5	4	3	2	1	6	5	4	3	2	1	
c.	Not Printed on Parity Error	–	–	–	●	●	–	–	–	–	–	–	–	**

→ Required Selection

19. Printer Errored Character Symbol		D11						D13						
		6	5	4	3	2	1	6	5	4	3	2	1	
d.	Printers With 96 Character Set (Up-Low)	●	○	–	–	–	–	–	–	–	–	–	–	
e.	Printers With 64 Character Set (Monocase)	○	●	–	–	–	–	–	–	–	–	–	–	

Use of 400777 ( ) or 400783 ( ) type carriers, require selection of 19d.
Use of 400780 ( ) or 400887 ( ) type carriers, require selection of 19e.

20. Line Feed on Printer		See 4.20.												
a.	Single													**
b.	Double													

Unless otherwise specified, choose 20a.

● Indicates on.
○ Indicates off.
– Position of switch does not affect option.
** Factory optioned.

21. Foldover on Up-Low Printer		D11						D13						
		6	5	4	3	2	1	6	5	4	3	2	1	
a.	Lower Case and Upper Case Print	—	—	—	—	—	—	—	—	—	—	O	—	**
b.	Lower Case Prints as Upper Case	—	—	—	—	—	—	—	—	—	—	●	—	

Consider only with selection of 19d.
Unless otherwise specified, choose 21a.

22. Foldover on Monocase Printer		D11						D13						
		6	5	4	3	2	1	6	5	4	3	2	1	
a.	Lower Case Prints as Error Symbol	—	—	—	—	—	—	—	—	—	—	O	—	
b.	Lower Case Prints as Upper Case	—	—	—	—	—	—	—	—	—	—	●	—	**

Consider only with selection of 19e.
Unless otherwise specified, choose 22b.

39. Forms		Refer to 4.20.												
a.	On													
b.	Off													**

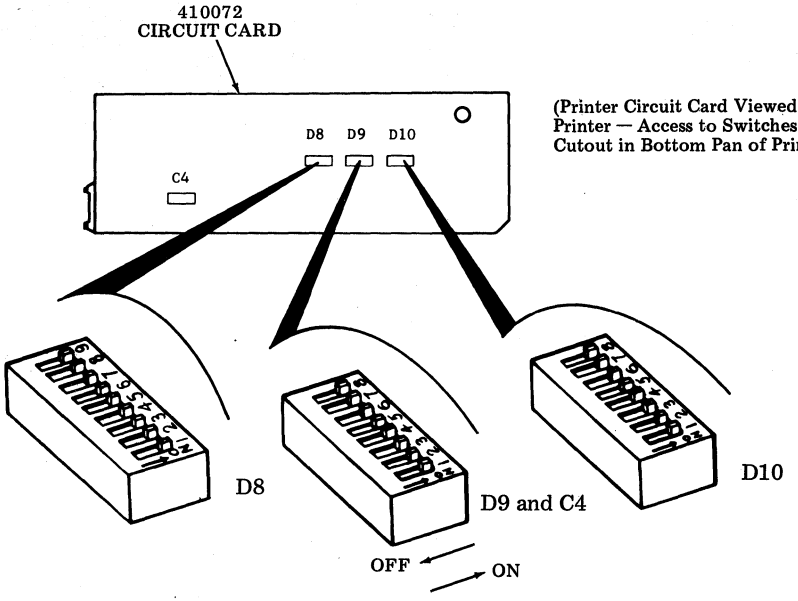
Unless otherwise specified, choose 39a.

48. Incomplete Form Suppresses Paper Alarm		D11						D13						
		6	5	4	3	2	1	6	5	4	3	2	1	
a.	No (Paper-Out Not Gated With Form-Out)	—	—	—	—	—	●	—	—	—	—	—	—	
b.	Yes (Paper-Out Gated With Form-Out)	—	—	—	—	—	O	—	—	—	—	—	—	**

Unless otherwise specified, choose 48b.

● Indicates on.
O Indicates off.
— Position of switch does not affect option.
**Factory optioned.

4.27 Printer options for 410072 circuit card.



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

Unless otherwise specified, choose 17a.

● Indicates on.
O Indicates off.
— Position of switch does not affect option.
** Factory optioned.
(X) Indicates desired column number.

17.	Printer Right Margin and Form Width																										
	Last Char Printed Column Number	D8									D9								D10								
		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	
e.	132	—	—	—	—	—	—	●	●	—	—	—	—	—	—	—	●	●	●	○	—	○	○	—	—	—	**
f. (X)	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 operate switches as shown.
109 through 120 operate switches as shown, then operate D9 position 7 to OFF.
97 through 108 operate switches as shown, then operate D9 position 8 to OFF.
85 through 96 operate switches as shown, then operate D8 position 7 to OFF.
73 through 84 operate switches as shown, then operate D8 position 8 to OFF.

Unless otherwise specified, choose 17e.

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

Unless otherwise specified, choose 18c.

19.	Printer Errored Character Symbol	D10								
		1	2	3	4	5	6	7	8	
c.	Not Printed on Parity Error	—	—	—	—	—	●	●	—	

→ Required Selection

● Indicates on.
○ Indicates off.
— Position of switch does not affect option.
** Factory optioned.
(X) Indicates desired column number.

19. Character Set		D8 1	2	3	4	5	6	7	8	9	
d.	Printers With 96-Character Set (Up-Low)	●	O	—	—	—	—	—	—	—	**
e.	Printers With 64-Character Set (Monocase)	O	●	—	—	—	—	—	—	—	**

Use of 400777 (▲) or 400783 (▲) type carriers require selection of 19d.
Use of 400780 (▲) or 400887 (▲) type carriers require selection of 19e.

20. Line Feed on Printer		See 4.20.											
a.	Single												**
b.	Double												

Unless otherwise specified, choose 20a.

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	●	—	—	—	—	—	—	—

Consider only with selection of 19d.

Unless otherwise specified, choose 21a.

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	●	—	—	—	—	—	—	—	**

Consider only with selection of 19e.

Unless otherwise specified, choose 22b.

39. Forms (Tractor Printer Only)		See 4.20.											
a.	On												
b.	Off												**

Unless otherwise specified, choose 39a.

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	—	—	—	—	**

Unless otherwise specified, choose 48b.

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

Not Applicable — Position of switch does not affect operation.

● Indicates on.
O Indicates off.
— Position of switch does not affect option.
** Factory optioned.

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

→Not Applicable — Position of switch does not affect operation.

57.	SSI/OEM Interface	D8 1	2	3	4	5	6	7	8	9	
a.	SSI	—	—	—	—	—	—	—	—	●	**

→Required Selection

58.	Idle Line Motor Control	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	—	—	—	—	—	●	—	—	

Unless otherwise specified, choose 58b.

5[illegible]	Speed Selection (Applies Only if Option 57b 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	●	

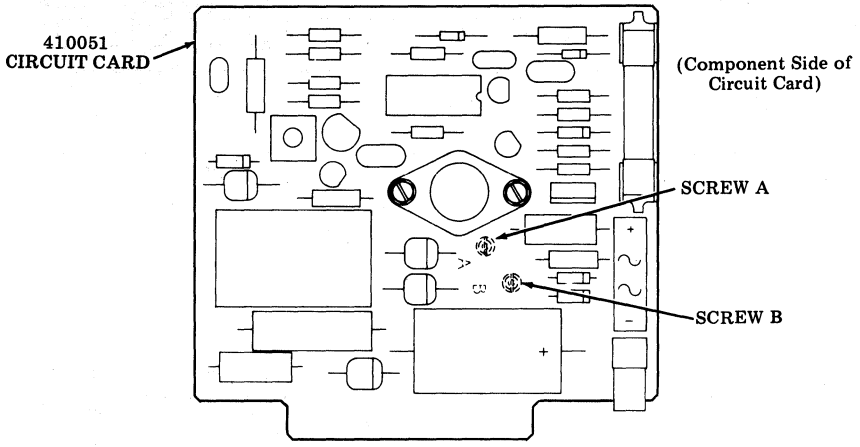
→Not Applicable — Position of switch does not affect operation.

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

→*Note:* If 402920 modification kit (paper jam alarm) is installed in printer, choose 60a. Otherwise, 60b must be chosen.

● Indicates on.
O Indicates off.
— Position of switch does not affect option.
**Factory optioned.

4.28 Printer options for 410151 circuit card.



61	Regulator Grounding (Circuit Gnd to Frame Gnd)	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	—

Either 61a or 61b must be chosen for proper operation.

DATA SET, DATA SERVICE UNIT, INTERNAL MODEM, AUTOMATIC CALLING UNIT, AND TELEPHONE SET

4.29 Section references:

Data Set 201B (DS), 2400 BPS — Section 592-011-Series and Tech. Ref. Pub. 41201. The 201B is manufacture discontinued.

Data Set 201C (DS), 2400 BPS — Section 592-029-Series and Tech. Ref. Pub. 41210.

Data Set 208A (DS), 4800 BPS — Section 592-027-Series and Tech. Ref. Pub. 41209.

Data Set 208B (DS) 4800 BPS-Section 592-030 Series.

Data Set 212A (DS), 1200 BPS-Section 592-034 Series.

500A-L1/2 Data Service Unit (DSU), 2400 BPS and 500A-L1/3 Data Service Unit (DSU), 4800 BPS — Section 595-200-Series.

251A1 Terminal Data Unit (TDU), 2400 BPS — (No section released). This TDU is an internal modem.

Automatic Calling Unit-801 type (DAS)-Section 592-010 and 592-012 Series.

Telephone Set 2565 HK-Section 502-543-405.

4.30 The three tables that follow list options for DSs, DSUs and the TDU. The SDS should be connected to the DS, DSU or TDU. After making the connection and checking the options, go to Section 582-200-505.

4.31 Private Line Version Only: A Data Set 201B, 201C or 208A can be used with the station arrangement provided there is access to a private line system with 2000 or 3002 conditioning (the Data Set 208A requires 3002).

4.32 201- and 208- Type Data Sets (Private Line Version Only)

		DATA SET AT DATASPEED 40/4 STATION				
	DESCRIPTION OF RECOMMENDED DATA SET OPTIONS	201B-LIST	201-B3	201C-L1A	208A-L1A	
	WITHOUT AUX DATA SET	–	ZJ	YJ	S3C-DOWN	YJ
	NEW SYNC – NOT USED	ZL	W	YA	S4C-DOWN	YA
	600 or 900 OHM IMPEDANCE	–	Y or X	ZQ or ZR	–	–
	4-WIRE SWITCHED CARRIER (Note 1)	B	ZB	XA	S4B-DOWN	XA
	ECHO DELAY	–	T	–	–	–
	EIA INTERFACE	ZR-ZT	ZD-ZF	YK,YG,YE	–	–
	XMIT LEVEL (Optional)	–	G,F,E,B,A	ZA---ZP	–	–
	REC LEVEL (Optional)	–	S,R,Q,N	ZU	–	–
	COMP. EQUALIZER- IN	–	–	ZS	–	–
	INTERNAL XMIT TIMING	–	–	YC	S3A-DOWN	YC
	DSR "ON" IN AL-MODE	–	–	–	S1A-UP	YM
	NO COMP. EQUALIZER TEST ‡‡	–	–	–	S1B-UP	YQ
	RETRAIN AUTOMATICALLY ‡‡	–	–	–	S3B-UP	YU
	1-SEC. HOLDOVER ENABLED ‡‡	–	–	–	S4A-DOWN	YX
	EQUALIZER ADJ. (Note 2)	–	–	–	S2B-UP S2C-UP	ZS
	SWITCHED RTS				S1C-DOWN	YT
DATA SET AT CUSTOMER LCU – SAME AS ABOVE, EXCEPT:		201B-LIST	201-B3	201C-L1A	208A-L1A	
OMIT	4-WIRE SWITCHED CARRIER	B	ZB	XA	S4B-DOWN	XA
OMIT	1-SEC. HOLDOVER ENABLED	–	–	–	S4A-DOWN	YX
OMIT	NEW SYNC. NOT USED (Note 3)	ZL	W	YA	S4C-DOWN	YA
ADD	CONTINUOUS CARRIER	–	ZA	XB	S4B-UP	XB
ADD	1-SEC. HOLDOVER-DISABLED	–	–	–	S4A-UP	YW
ADD	NEW SYNC. USED (See Note 3) if required at Cust. machine)	–	ZK	YB	S4C-UP	YB

‡‡Required for 208A-L1A.

Note 1: In a single 40/4 station telephone channel to a customer's equipment station, the continuous carrier option is preferred at the 40/4 station.

Note 2: For switched carrier operation, correct setting of the Compromise Equalizer must be determined using the Compromise Equalizer Test in Section 592-027-500.

Note 3: In multipoint station arrangements, the data set at the customer LCU may use NEW SYNC OPTION to quench timing signals in the data set and condition the receiver for the next message — if required, refer to customer LCU requirements.

4.33 Private Line Version Only: A 500A-Type Data Service Unit (DSU) can be used with a station arrangement provided there is access to a synchronous digital data system. The 500A-L1/2 operates at 2400 BPS and uses the NH1 and HP1 circuit cards. The 500A-L1/3 operates at 4800 BPS and uses the HN2 and HP1 circuit cards.

Note 1: Option WV required only under guidelines of Section 886-100-115 when local cable pairs are too short for proper operation of receiver.

Note 2: Options YQ and XK should not be installed except as required in other installation practices.

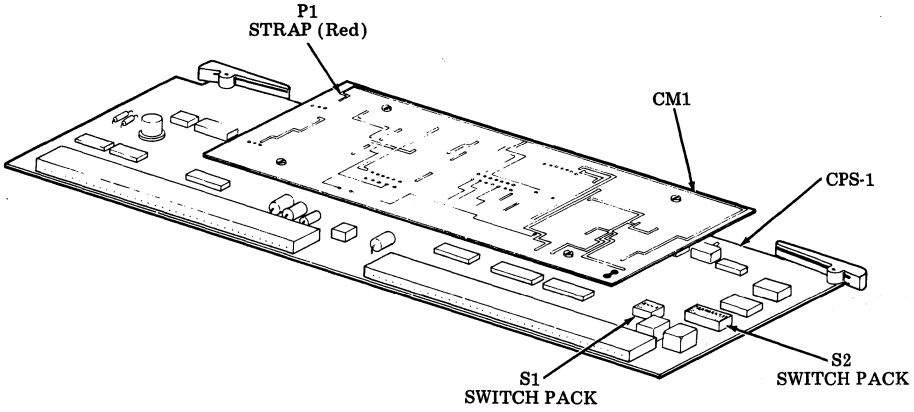
Note 3: DSUs are not capable of near-end analog loopback.

Note 4: Refer to Section 595-200-Series for details.

500A-TYPE DSUs

OPTION	FEATURE	SWITCH	SWITCH POSITION	CP
WV	Fixed line build-out network installed (Note 1)	S1A	3	HN1 or HN2
		S1B	5	
		S1C	9	
WW	Fixed line build-out network removed	S1A	2	
		S1B	6	
		S1C	8	
YK	Signal ground connected to frame ground	S2	IN	
YL	Signal ground disconnected from frame ground		OUT	
YS	Continuous request-to-send (permanent RTS)	S3A	2	HP1
YT	Switched request-to-send		3	
YQ	Circuit assurance installed (Note 2)	S3B	6	
YR	Circuit assurance removed		5	
XK	System status installed (Note 2)	S3C	9	
XL	System status removed		8	
XM	Switch LED assembly installed to rear			HN1 or HN2
XN	Switch LED assembly installed to front			
XO	LL spring clip installed			
XP	LL spring clip not installed			

4.34 Private Line Version Only: 251A1 TDU can be used in place of a Data Set 201B or a 201C provided the required station arrangement hardware is present. An 828 or 829 Data Auxiliary Set is also required.



251 TDU

OPTION	DESCRIPTION	SWITCH PACKS ON CPS-1	STRAPPING ON CM1
ZA	0 -DB For Transmit Line Signal Level (Required for Private Line Application)	Close S2-3,5,6,10 Open S2-2,4,7,8	—
ZR	-24 DB For Carrier On Sensitivity (Required For Private Line Application)	—	Remove P1 Strap
ZT	4-Wire Private Line Operation With 7 Millisecond CTS Delay	Open S1-4	—
YA	851A1 TAU Auto Dialer Out	Close S1-5	—
YC	DSR on in Private Line Service	Close S2-9 S1-3	—
YD	4-Wire Private Line	Close S1-1 S2-1 Open S1-2	—

4.35 212A-Type Data Set (Dial-Up Version Only)

DATA SET 212A-L1 AND 212A-L1A OPTIONS

FEATURE			OPTION	SWITCH SETTINGS											
				S1 SWITCH											
				1	2	3	4	212A-L1A only							
Tip Ring Make Busy		IN	F	X				212A-L1 only							
		OUT	E*	O				(S1 of 212A-L1A							
CC Indication (DSR on) for Analog Loop		ON	ZF*			X	X	has only 3							
		OFF	ZE			O	O	switches).							
				S2 SWITCH									S5		
				1	2	3	4	5	6	7	8	9	1	2	
Speed Control (212A-L1A only)	Interface		XJ	O								X			
	HS Button		XK*	X								O			
Speed Control (212A-L1 only)	HS Button (XJ not available, see L1 entries YG and YH)		XK*	X								O			
Interface Control MB/AL via CN Lead (See Options XO, XN, XR)		IN	YE		O										
		OUT	YF*		X										
Transmitter Timing		INT.	YC*			O	O								
		EXT.	YD			O	X								
		Slave	WI			X	O								
1200 BPS Operation	Async/Start-Stop		YG*					O					O	O	
	Sync		YH					X					X	X	
1200 BPS Operation (212A-L1 only)	Async/Start-Stop		YG*	X				O			O	O	O	O	
	Sync		YH	X				X			O	O	X	X	
Character Length (Use with YG)	9 Bit		YI						O						
	10 Bit		YJ*						X						
RCVR responds to Digital Loop (In HS mode only)		IN	YK*							O					
		OUT	YL							X					
Interface Control RDL Lead (212A-L1A only)		IN	XL								X				
		OUT	XM*								O				
Interface Control RDL Lead (212A-L1 only) (See L1 entries YG and YH)		OUT	XM*								O				

See Note

(Continued on next page)

Note: RDL (Remote Digital Loopback) can be used when both the near-end and far-end data sets are 212A type. Depressing the RDL key on the near-end data set causes the far-end data set to go into the DL mode. When the RDL key is depressed again (to release RDL) or the on-line connection is broken, the far-end is restored to the normal operating mode.

DATA SET 212A-L1 AND 212A-L1A OPTIONS
(Dial-Up Version Only)

FEATURE		OPTION	SWITCH SETTINGS S3 SWITCH 1	2	3	4	5	6	7	8
Loss of Carrier causes Disconnect	IN	S*	X							
	OUT	R	O							
Received Space causes Disconnect	IN	V*		X						
	OUT	Y		O						
CB (CTS) and CF (DCD) Indications	COM	A*			X					
	SEP	B			O					
Send Space then Disconnect on loss of DTR	IN	T*				X				
	OUT	U				O				
Automatic Answer	IN	ZH*					O			
	OUT	ZG					X			
Answer Mode Indication on CE (RI) (Option W is required)	CE ON	X						X		
	CE OFF	W*						O		
Speed Mode	HIGH	YO							X	
	DUAL	YP*							O	
Interface Speed Indication-CI (Pin 12, on for HS)	IN	YQ								X
	OUT	YR*								O
CN and TM Interface Pin Assignments (212A-L1A only)	CN is 25. TM (No Connection)	XO*	Strap Plugs E3-E4, E1-E2							
	CN is 18. TM (No Connection)	XN	Strap Plugs E4-E5, E1-E2							
	CN is 18. TM is 25.	XR	Strap Plugs E4-E5, E2-E3							
CN and TM Interface Pin Assignments (212A-L1 only)	CN is 25. TM (No Connection)	XO*	(No Switch Settings or Plugs)							
Signal Ground to Frame Connection (on 47D Mounting)	IN	Q*	S1 Closed							
	OUT	P	S1 Open							

X Switch closed. — Switch does not affect option.
O Switch open. * Factory furnished option.

Recommended options for 212A-L1 (unless otherwise specified) for 2-wire switched network: E, ZF, XK, YF, YC, YH, YJ, YK, XM, R, Y, B, U, ZH, W, YO, YR, XO, Q. Options YK and XM are furnished by Option YG (or YH).

Recommended options for 212A-L1A (unless otherwise specified) for 2-wire switched network: E, ZF, XK, YF, YC, YH, YJ, YK, XM, R, Y, B, U, ZH, W, YO, YR, XO, Q.

4.36 201C-L1A Type Data Set (Dial-Up Version Only)

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
Transmit Line Signal Level	0 dBm	ZA	27-28, 29-30, 31-32, 33-34		ZP
	− 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
	900 Ω	ZR	17-18		ZQ
Compromise† Equalizer	IN	ZS	8-9, 11-12		ZT
	OUT	ZT	9-10, 12-13		ZS
Carrier ON Sensitivity	−24 for PL	ZU			ZV
	−44 for DDD	ZV	1-2		

Choose One

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
New Sync	Not Used	YA		20-21	YB
	Customer-Controlled	YB		19-20	YA
Transmitter Timing	INT	YC			YD
	EXT	YD		13-14	
Automatic Answer	RDY and DTR Control or Not Provided	YE			YF
	DTR Control Only	YF		17-18	
Ring Indication On Customer Interface	EIA	YG		22-24	YH
	Contact	YH		22-23	YG
Use With DAS 828-Type	Yes	YI			YJ
	No	YJ		15-16	
Grounding Option	Common	YK		25-26	
	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
		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

Recommended Options YJ, YA, ZQ or ZR, XD, ZS, ZV, YC, YF, YG, and YK.

4.37 201C —L1C type Data Set (Dial-Up Version Only)

DATA SET 201C—L1C OPTIONS

FEATURE	OPTION	LINE CONTROL BOARD (TP1) STRAP IN	LINE CONTROL BOARD (TP1) STRAP OUT	PROVIDE
0dB	ZA		1, 2, 4, 8	ONE PER OPTION
1dB	ZB	1	2, 4, 8	
2dB	ZC	2	1, 4, 8	
3dB	ZD	1, 2	4, 8	
4dB	ZE	4	1, 2, 8	
5dB	ZF	1, 4	2, 8	
6dB	ZG	2, 4	1, 8	
7dB	ZH	1, 2, 4	8	
8dB	ZI	8	1, 2, 4	
9dB	ZJ	1, 8	2, 4	
10dB	ZK	2, 8	1, 4	
11dB	ZL	1, 2, 8	4	
12dB	ZM	4, 8	1, 2	
13dB	ZN	1, 4, 8	2	
14dB	ZO	2, 4, 8	2	
15dB	ZP	1, 2, 4, 8	1	

FEATURE		OPTION	DIGITAL BOARD (J84)		SWITCH SETTING 1	2	3	4	5	6	7	8
TRANSMITTER TIMING	INTERNAL	YC		YC					X			
	EXTERNAL	YD		YD					O			
AUTOMATIC ANSWER	ROY & DTR CONTROLLED OR NOT PROVIDED	YE		YE								O
	DTR CONTROLLED ONLY	YF		YF								X
GROUNDING OPTION	SIGNAL GROUND CONNECTED TO FRAME GROUND	YK	INSTALL E1-E2									
	SIGNAL GROUND NOT CONNECTED TO FRAME GROUND	YL	REMOVE E1-E2									
FUNCTION OF EIA INTERFACE PIN 18	INITIATES LOCAL ANALOG LOOPBACK	YS	INSTALL E3-E4	YS				X				
	PROVIDES RECEIVE SYMBOL CLOCK	YT	INSTALL E4-E5	YT				O				
CONTINUOUS RECEIVER BIT CLOCK	IN	YO		YO							O	
	OUT	YP		YP							X	
SATELLITE OPTION	IN	YQ		YQ			X					
	OUT	YR		YR			O					

Factory Furnished Option ▱

Recommended Options YC, YF, YK, YS, YO and YR

4.38 208B Type Data Set (Dial-Up Version Only)

208B DATA SET OPTIONS

SWITCH	SWITCH POSITION	FEATURE	OPTION
S2C†	UP *	COMPROMISE EQUALIZER IN	ZS
	DOWN	COMPROMISE EQUALIZER OUT	ZT
S3A	UP	DSR ON IN ANALOG LOOP MODE	YM
	DOWN *	DSR OFF IN ANALOG LOOP MODE	YN
S3B	UP	MANUAL ANSWER	YO
	DOWN *	AUTOMATIC ANSWER	YP
S3C	UP	TRANSMITTER EXTERNALLY TIMED	YD
	DOWN *	TRANSMITTER INTERNALLY TIMED	YC
50††	IN	RS-CS INTERVAL OF 50 MSEC	
	OUT	RS-CS INTERVAL OF 150 MSEC	

* FACTORY INSTALLED

† COMPROMISE EQUALIZER SHOULD ALWAYS BE IN

†† IF NOT SPECIFIED ON SERVICE ORDER, INSTALL 50 INTERVAL

TRANSMIT LEVEL

LEVEL (DB)	SWITCH S1A	S1B	S1C	S2A	OPTION
0 *	DOWN	UP	DOWN	UP	ZA
-1	DOWN	UP	DOWN	DOWN	ZB
-2	DOWN	UP	UP	UP	ZC
-3	DOWN	UP	UP	DOWN	ZD
-4	DOWN	DOWN	DOWN	UP	ZE
-5	DOWN	DOWN	DOWN	DOWN	ZF
-6	DOWN	DOWN	UP	UP	ZG
-7	DOWN	DOWN	UP	DOWN	ZH
-8	UP	UP	DOWN	UP	ZI
-9	UP	UP	DOWN	DOWN	ZJ
-10	UP	UP	UP	UP	ZK
-11	UP	UP	UP	DOWN	ZL
-12	UP	DOWN	DOWN	UP	ZM
-13	UP	DOWN	DOWN	DOWN	ZN
-14	UP	DOWN	UP	UP	ZO
-15	UP	DOWN	UP	DOWN	ZP

* FACTORY INSTALLED

Recommended Options ZS, YM, YP and YC.

5. TOOLS AND SUPPLIES

5.01 The following tools and supplies may be required for installation or servicing of DATASPEED 40 apparatus. Most of these items should normally be present in standard maintenance tool kits. (Reference Section 570-005-800)

5.02 Tools

Cleaning Brush (Type Face)		151394
Cutting Pliers		108286
Gauge (Friction Feed Printer)		400610
Gauge (Tractor Feed Printer)		402617
Keyswitch Extractor		346257
Keytop Extractor		346260
Long-nose Pliers		108285
Nut Driver	Handle	135676
Nut Driver	1/4"	89954
Nut Driver	5/16"	89955
Nut Driver	1/4"	135677
Nut Driver	5/16"	135678
Retaining Ring Pliers		160396
Ruler, 6"		95960
Scales, Spring (802)		110443
Screwdriver	1/8", 2" Blade	95368
Screwdriver	1/4", 6" Blade	100982
Screwdriver	(Blade Less Than 5/32")	94647
Spring Hook (Pull)		142554
Spring Hook (Pull)		75675
Spring Hook (Push)		75503
Static Ground Strap		346392
Terminal Extractor (Data Set)		341983
Terminal Extractor (40/4)	(MOLEX HT2285)	402840
Tweezers		151392
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
Wrench, Open End	1/2" and 7/16"	129536

5.03 Supplies

All purpose grease — 145867, 4 oz tube or 143484, 1 lb can
Oil — KS7470
Thermal compound — 402640
Ribbon — 402444
Paper (friction feed) — standard 8-1/2" wide, 5" dia. roll
Paper (tractor feed)
Degreaser (trichlorotriflorethlyene) — KS20406 L-1

6. ADJUSTMENTS

6.01 The only adjustments in the station are in printers and monitors.

6.02 Monitor adjustments are give in BSP Section 582-213-XXX series or FIMP 579-505-350.

6.03 The 80-column printer adjustments are given in BSP Section 582-210-XXX series or FIMP 579-505-350.

6.04 The 132-column printer adjustments are given in BSP Section 582-210-XXX series.

SYNCHRONOUS "DATASPEED*" 40/4

SINGLE-DISPLAY STATION ARRANGEMENTS

WIRING DIAGRAMS

CONTENTS PAGE

1. GENERAL

1.01 This section provides wiring diagrams and cable components for DATASPEED 40/4 Single-Display Station (SDS) equipment (DATASPEED 40 hereafter will be referred to as 40-type or 40-type equipment) with the following exceptions.

(a) Monitor, see Section 582-213-400.

(b) Monitor support cabinet, see Section 582-212-400.

(c) Printer, see Section 582-210-400.

(d) Printer cabinet, see Section 582-210-400.

1.02 This section is reissued to include the 40K203 opcon.

1.03 Abbreviations in this section are defined in Section 582-200-101.

1.04 This information, when used in conjunction with Test and Troubleshooting Section 582-200-505, will aid in locating cabling faults.

1.05 Voltage levels are provided in power supply diagrams only.

Note: When ordering replaceable parts or components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410055).

2. WIRING DIAGRAMS

2.01 The following wiring diagrams provide coverage for the Single-Display Station (SDS) equipped with a 40C304-type Single-Display Controller (SDS).

*Registered Trademark of AT&TCo.

Prepared for American Telephone and Telegraph Company by Teletype Corporation

SINGLE DISPLAY ARRANGEMENTS

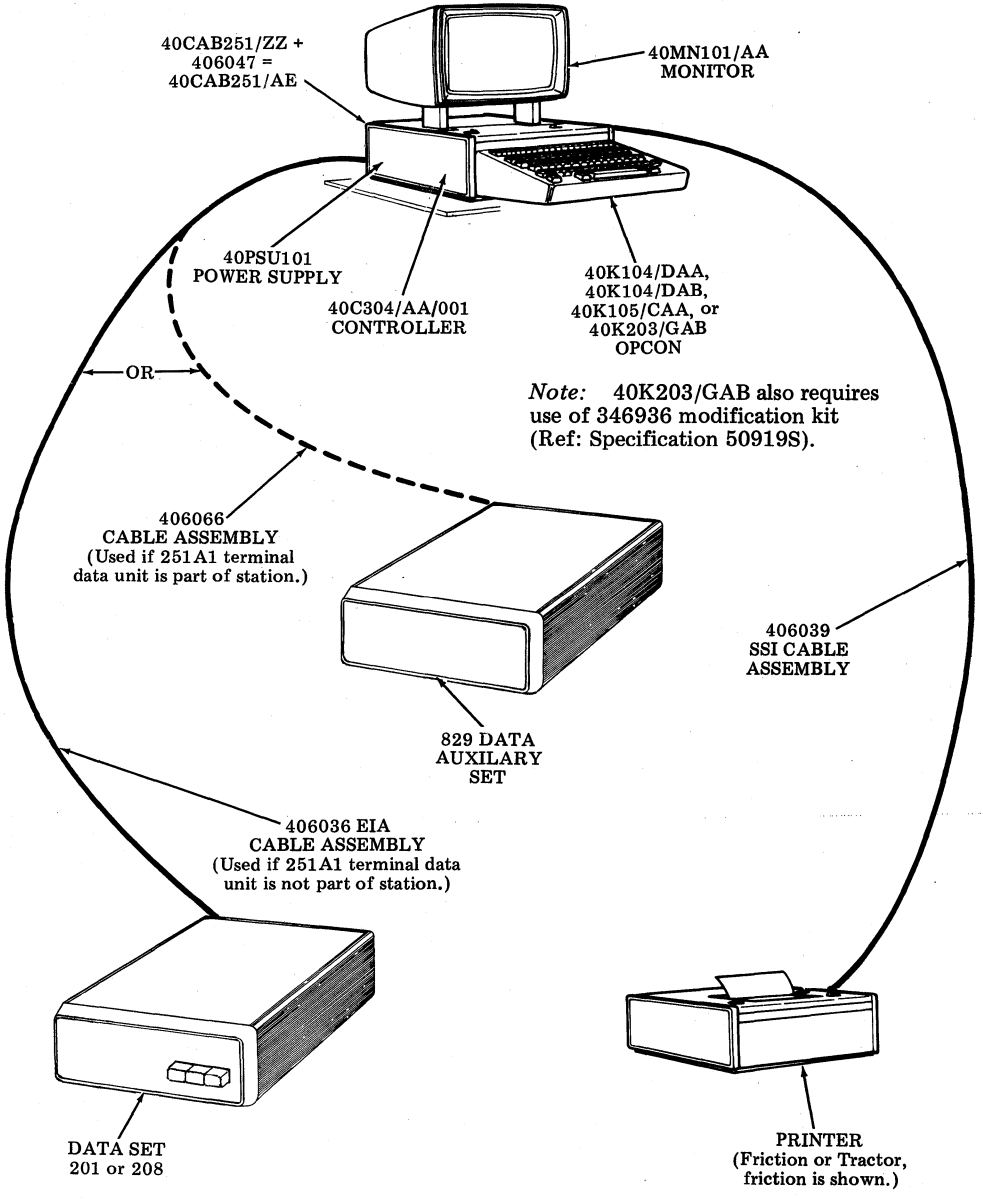


Fig. 1

410277 BACK PANEL ASSEMBLY PHYSICAL LAYOUT

Note: Fig. 2 shows the 410277 back panel (late design). Fig. 3 shows the 410276 back panel (early design).

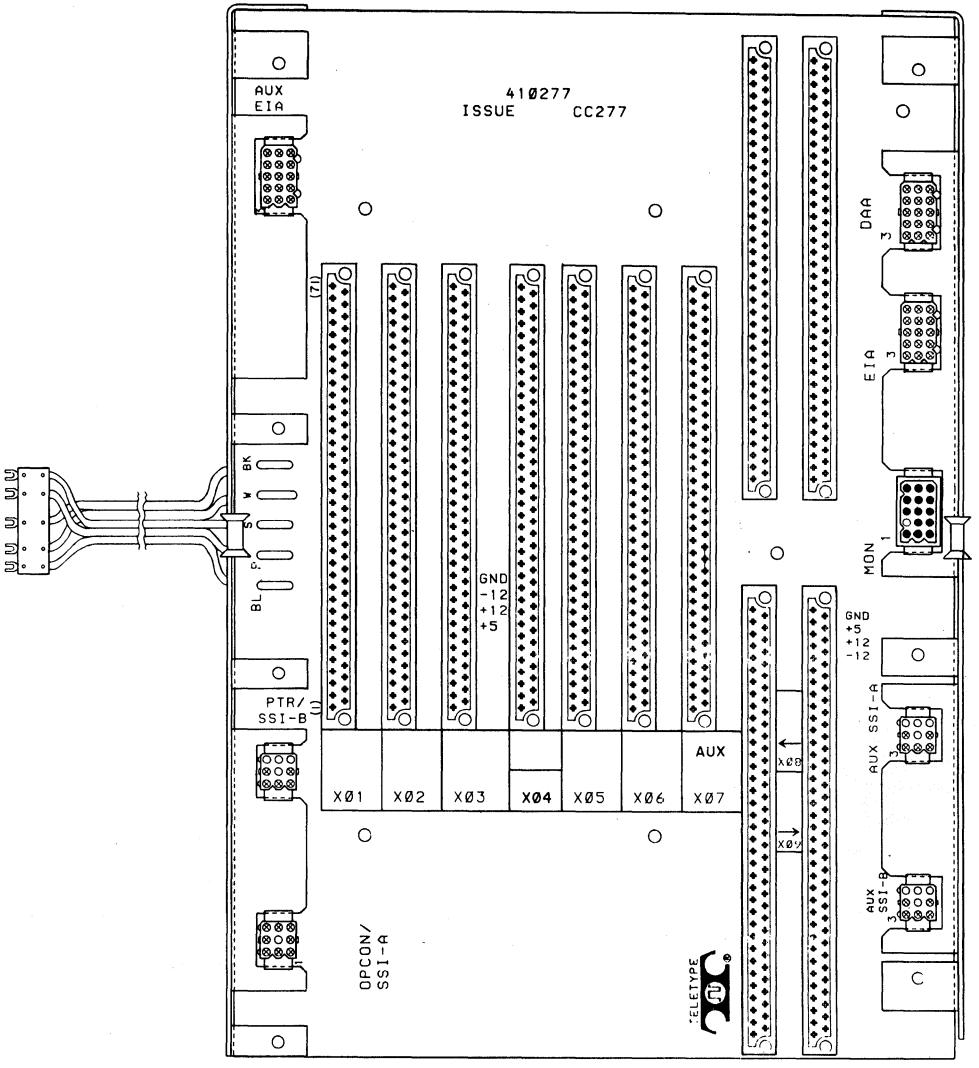


Fig. 2

410276 BACK PANEL ASSEMBLY PHYSICAL LAYOUT

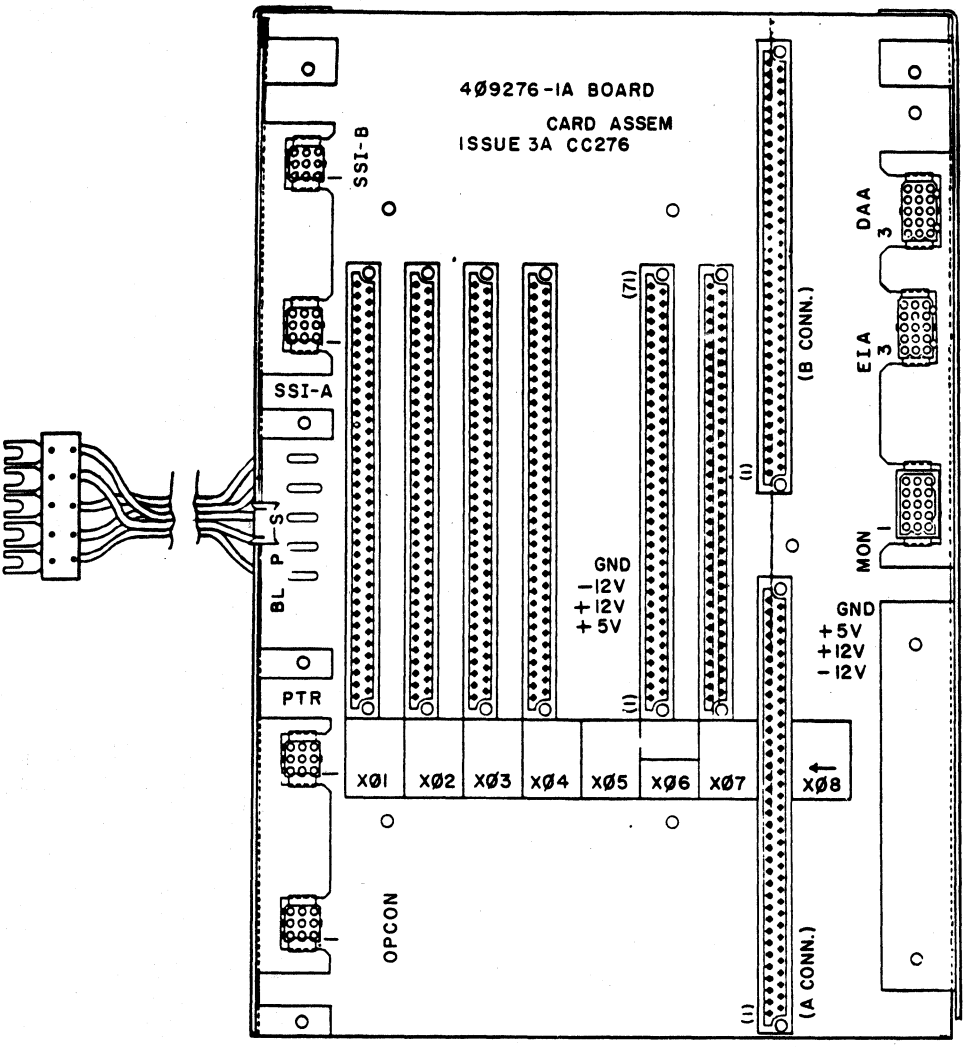


Fig. 3

BACK PANEL ASSEMBLY WIRING

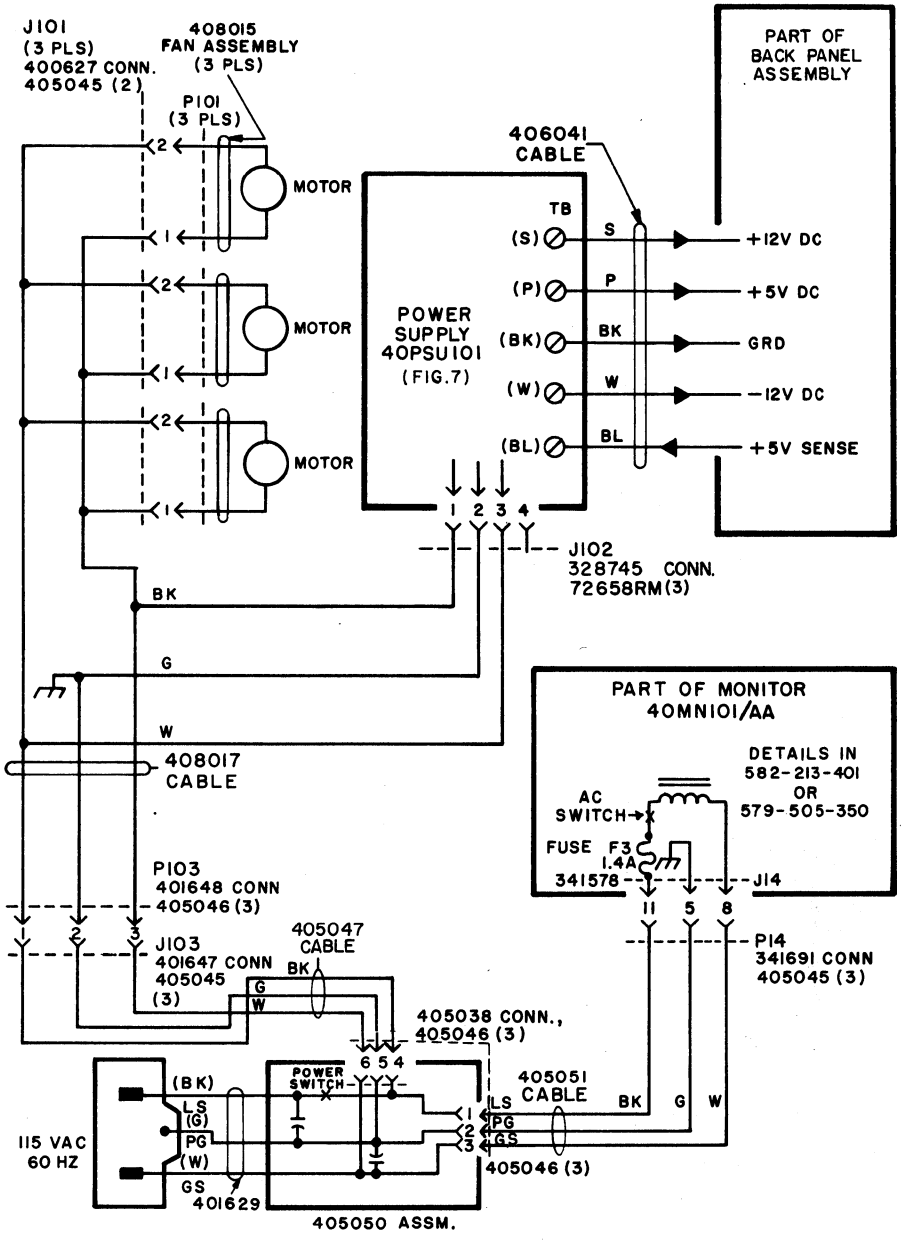


Fig. 4

BACK PANEL ASSEMBLY WIRING (Cont)

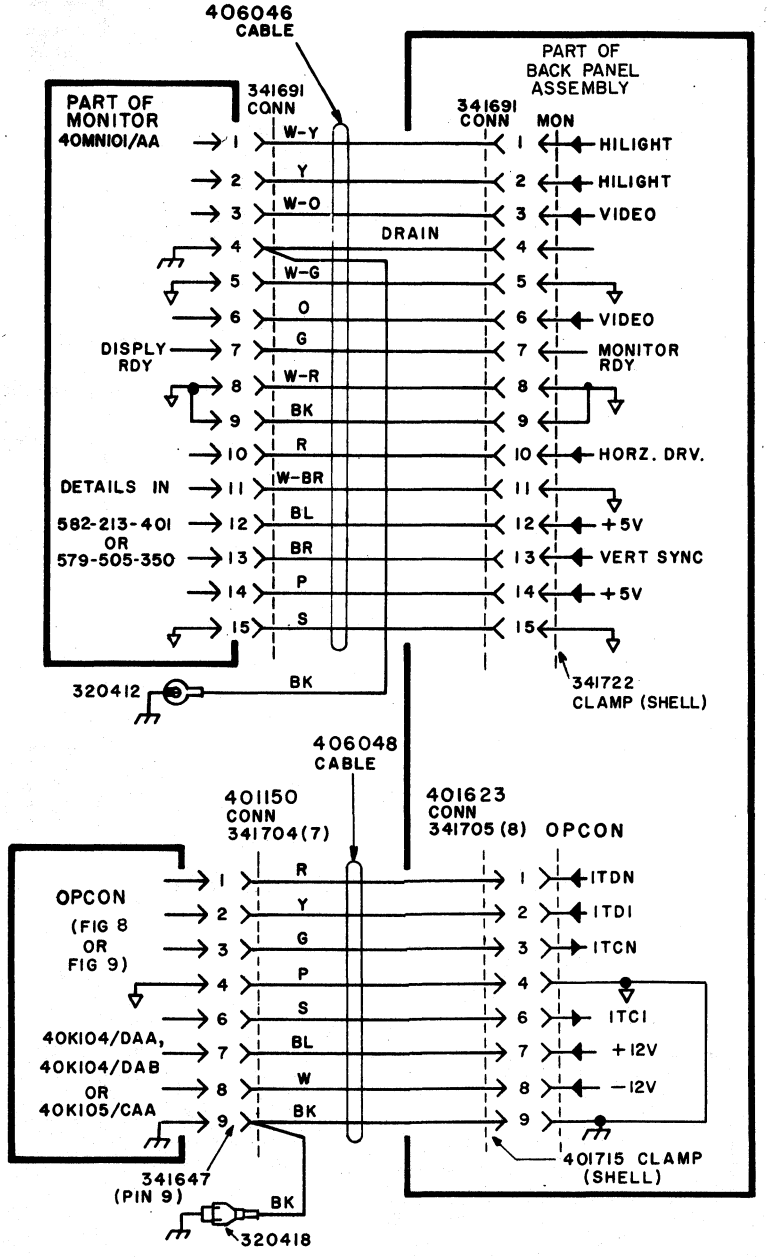


Fig. 4 (Cont)

BACK PANEL ASSEMBLY WIRING (Cont)

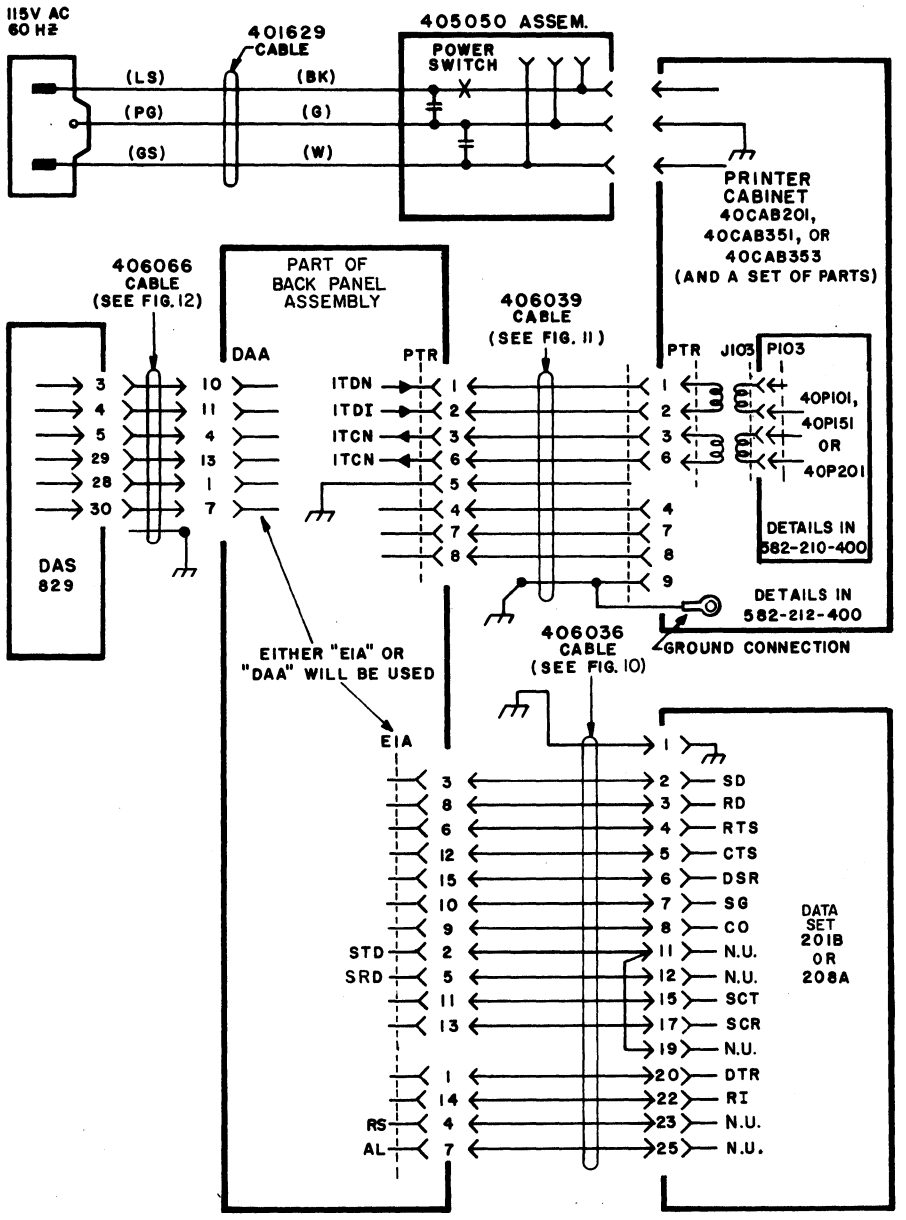
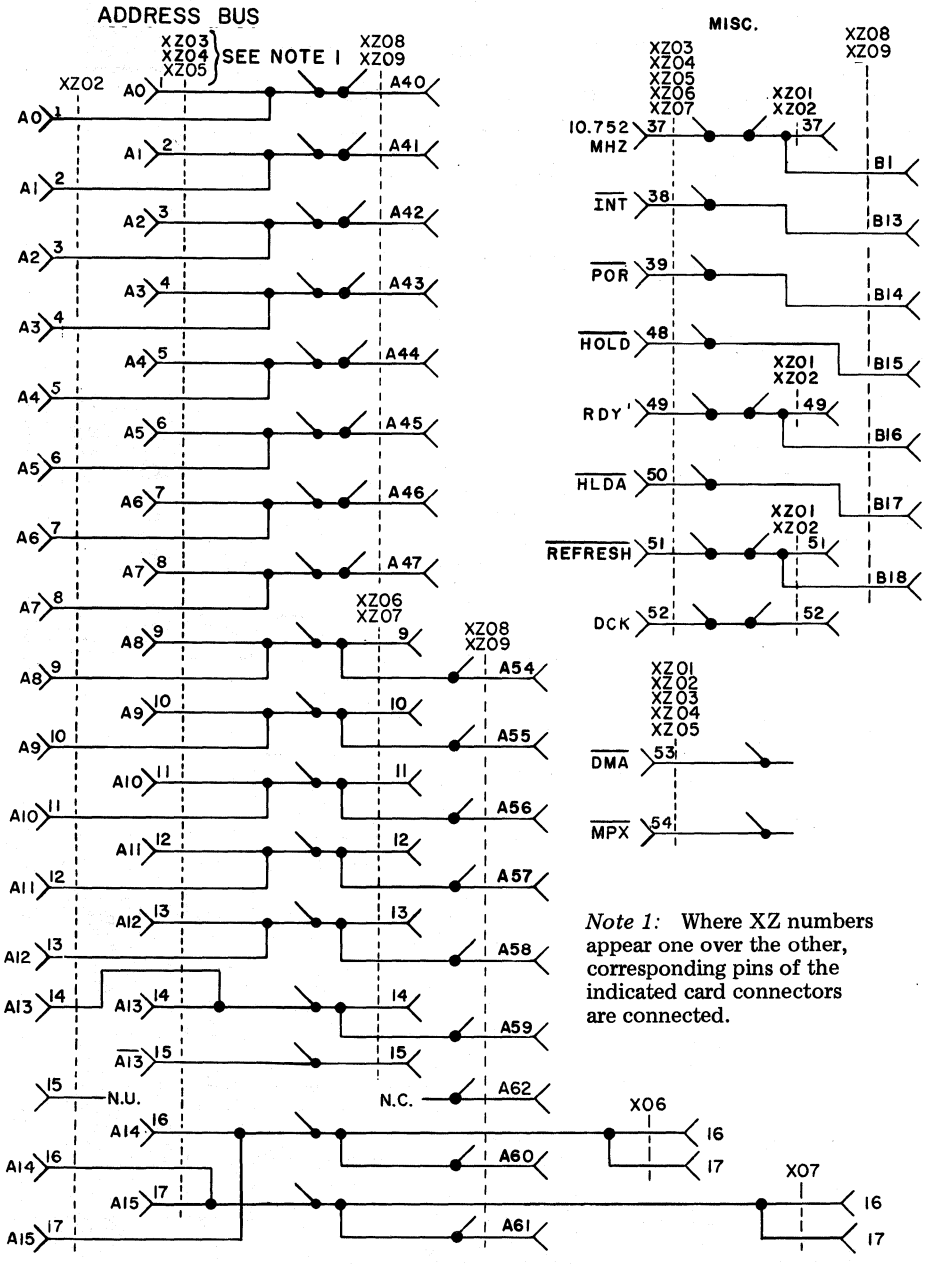


Fig. 4 (Cont)

410277 INTERNAL WIRING



Note 1: Where XZ numbers appear one over the other, corresponding pins of the indicated card connectors are connected.

Fig. 5

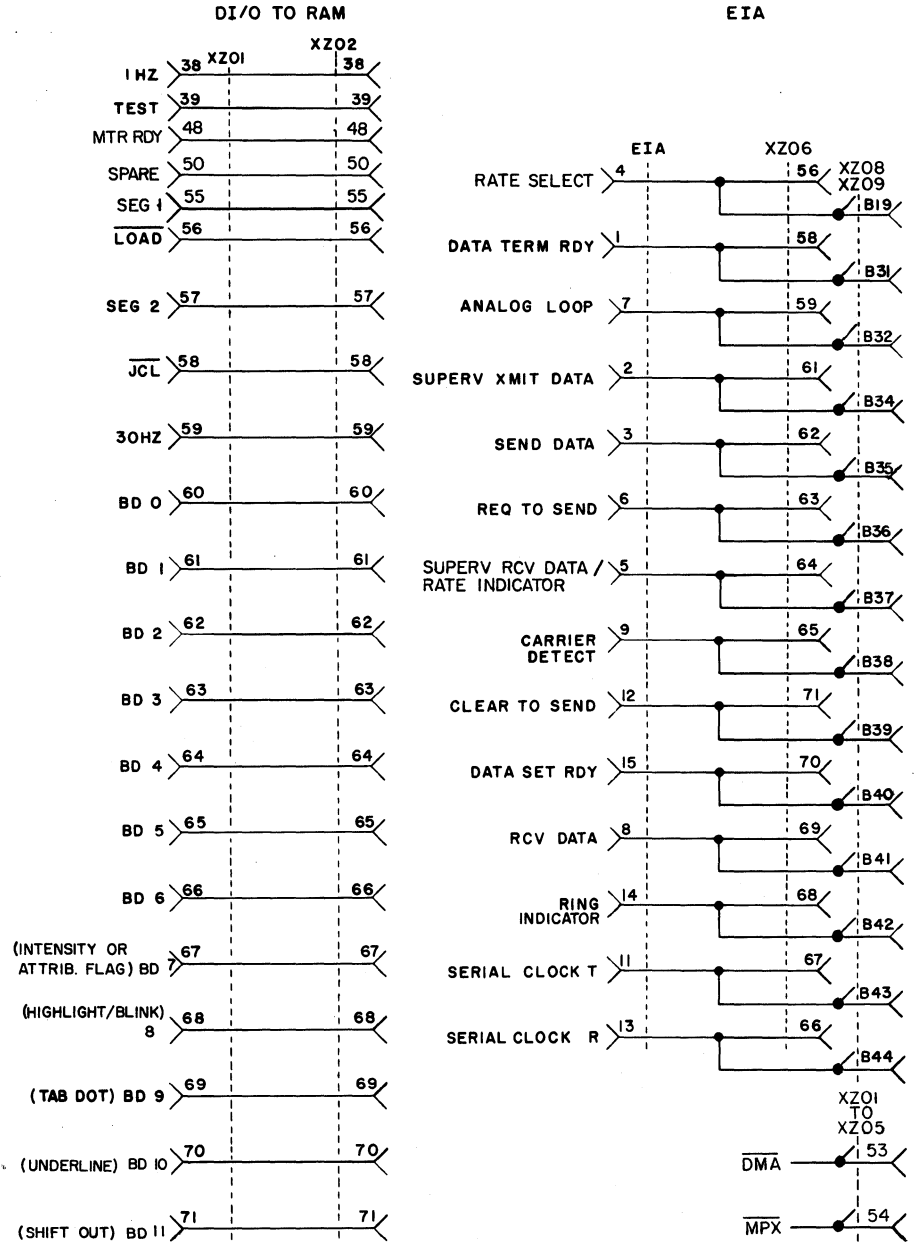
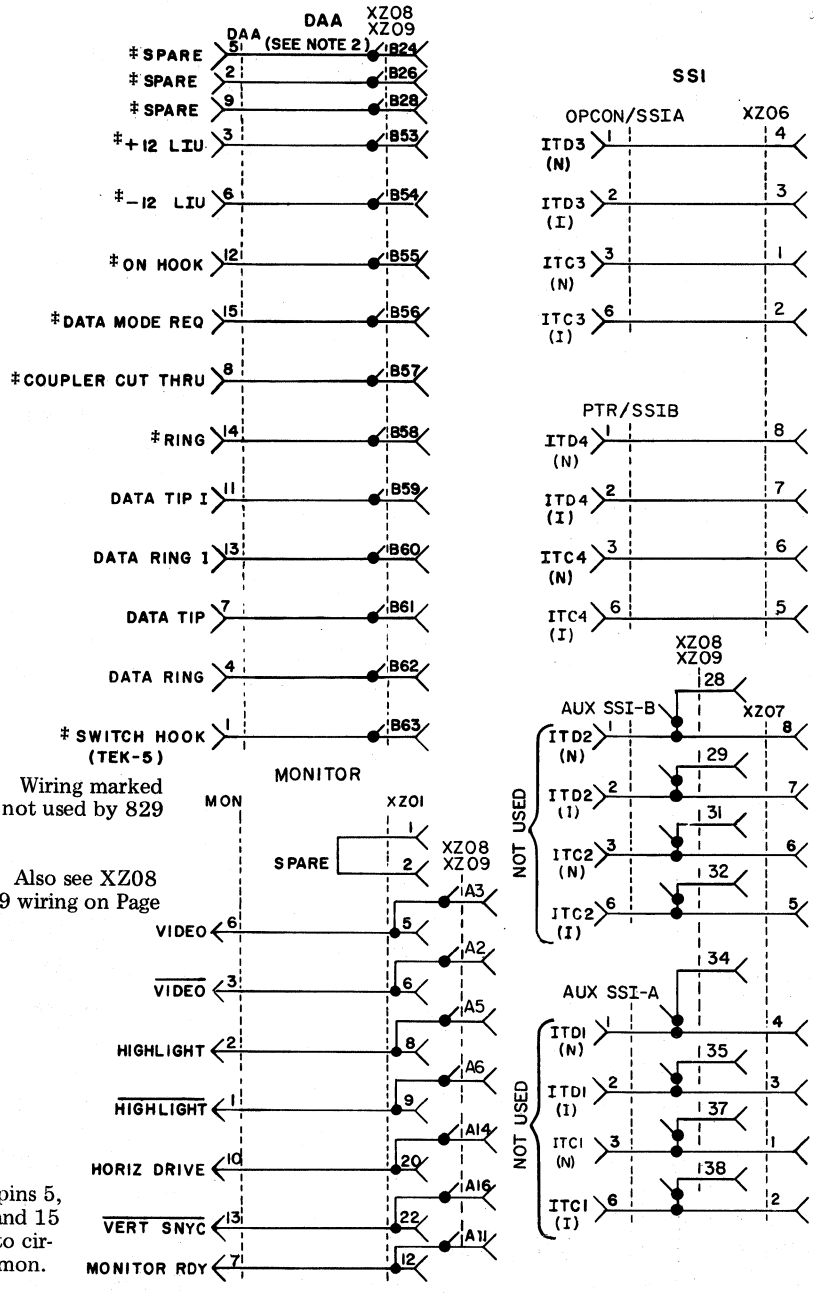

DI/O TO RAM
XZ01
XZ02
1 HZ
38
38
TEST
39
39
MTR RDY
48
48
SPARE
50
50
SEG 1
55
55
LOAD
56
56
SEG 2
57
57
JCL
58
58
30HZ
59
59
BD 0
60
60
BD 1
61
61
BD 2
62
62
BD 3
63
63
BD 4
64
64
BD 5
65
65
BD 6
66
66
(INTENSITY OR ATTRIB. FLAG) BD 7
67
67
(HIGHLIGHT/BLINK) 8
68
68
(TAB DOT) BD 9
69
69
(UNDERLINE) BD 10
70
70
(SHIFT OUT) BD 11
71
71
EIA
EIA
XZ06
XZ08
XZ09
RATE SELECT
4
56
B19
DATA TERM RDY
1
58
B31
ANALOG LOOP
7
59
B32
SUPERV XMIT DATA
2
61
B34
SEND DATA
3
62
B35
REQ TO SEND
6
63
B36
SUPERV RCV DATA / RATE INDICATOR
5
64
B37
CARRIER DETECT
9
65
B38
CLEAR TO SEND
12
71
B39
DATA SET RDY
15
70
B40
RCV DATA
8
69
B41
RING INDICATOR
14
68
B42
SERIAL CLOCK T
11
67
B43
SERIAL CLOCK R
13
66
B44
XZ01 TO XZ05
DMA
53
MPX
54

Fig. 5 (Cont)

410277 INTERNAL WIRING (Cont)



Note 2: Wiring marked with ‡ is not used by 829 DAS.

Note 3: Also see XZ08 and XZ09 wiring on Page 12.

Monitor pins 5, 8, 9, 11 and 15 connect to circuit common.

Fig. 5 (Cont)

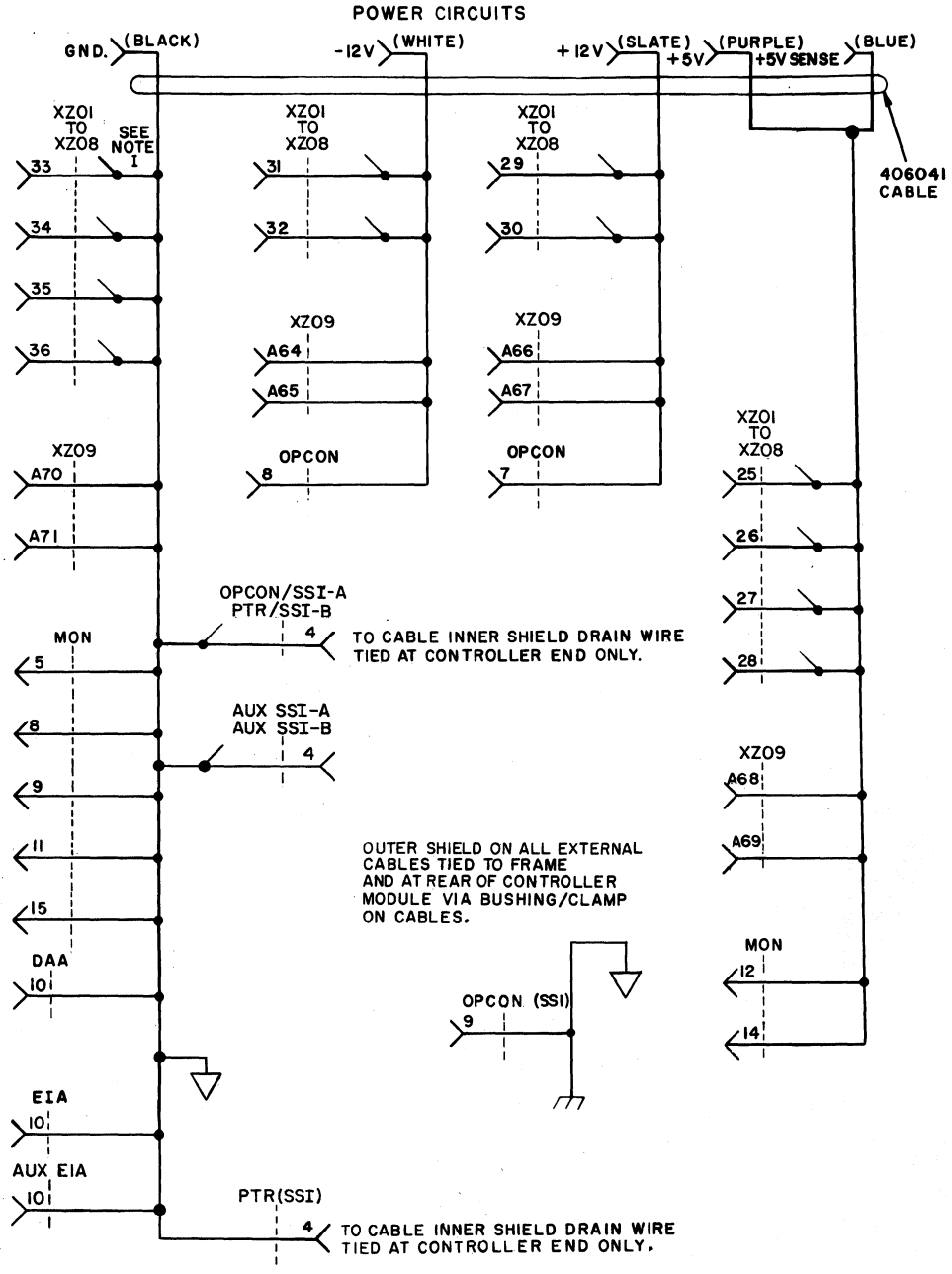

POWER CIRCUITS
GND. (BLACK)
-12V (WHITE)
+12V (SLATE)
+5V (PURPLE)
+5V SENSE (BLUE)
406041 CABLE
XZ01 TO XZ08
SEE NOTE 1
33
34
35
36
31
32
29
30
XZ09
A64
A65
A66
A67
OPCON
8
7
A70
A71
25
26
27
28
OPCON/SSI-A
PTR/SSI-B
4
TO CABLE INNER SHIELD DRAIN WIRE TIED AT CONTROLLER END ONLY.
MON
5
AUX SSI-A
AUX SSI-B
8
9
11
15
A68
A69
OUTER SHIELD ON ALL EXTERNAL CABLES TIED TO FRAME AND AT REAR OF CONTROLLER MODULE VIA BUSHING/CLAMP ON CABLES.
DAA
10
OPCON (SSI)
9
12
14
EIA
AUX EIA
PTR(SSI)

Fig. 5 (Cont)

410277 INTERNAL WIRING (Cont)

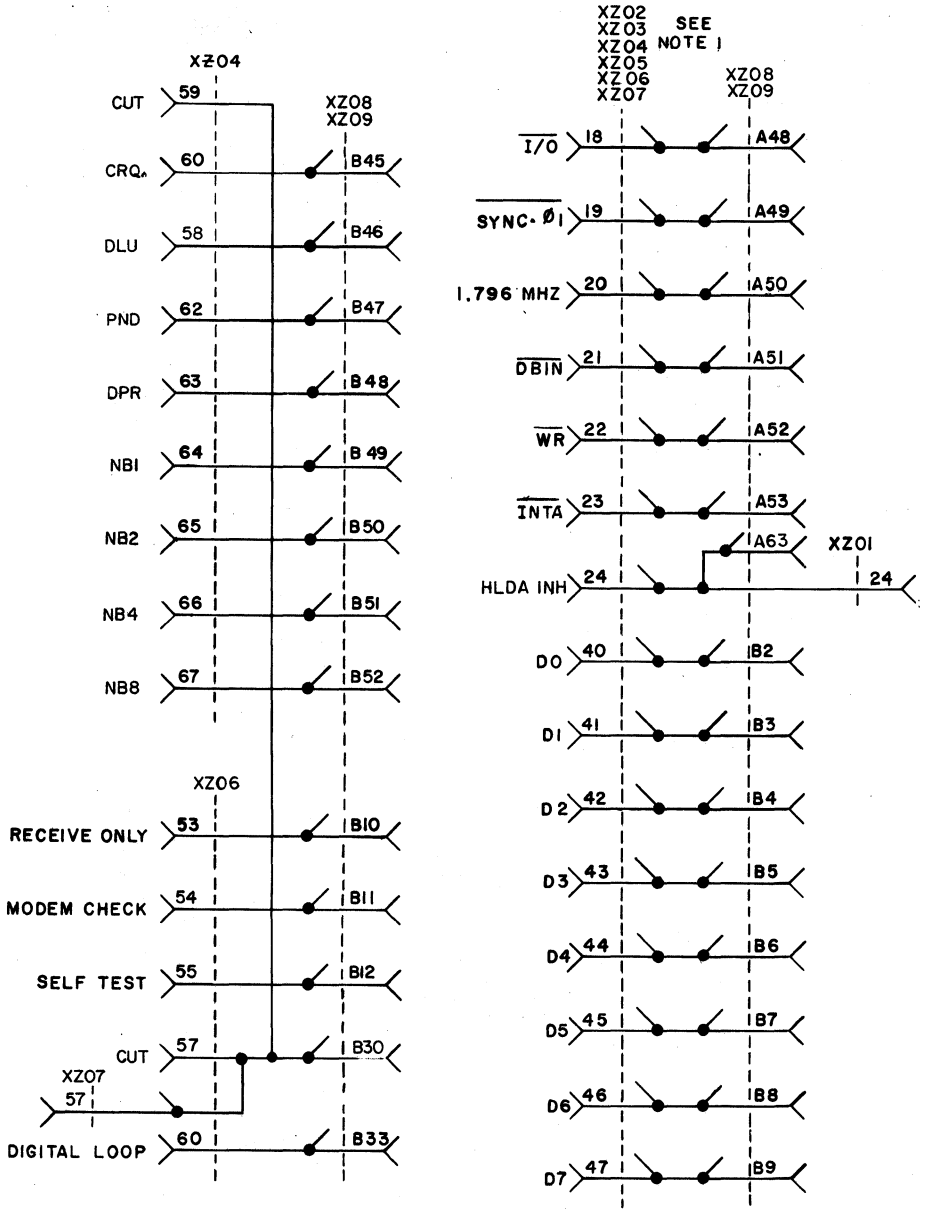


Fig. 5 (Cont)

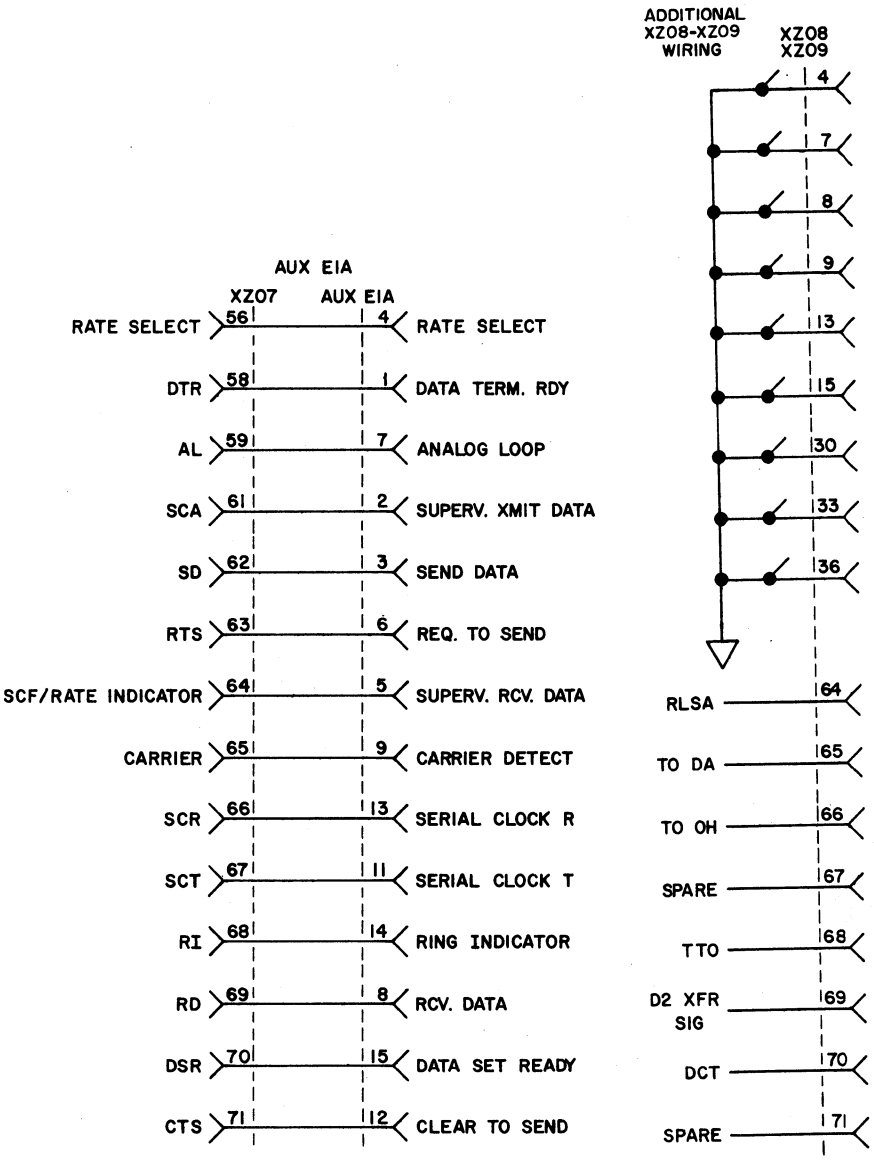
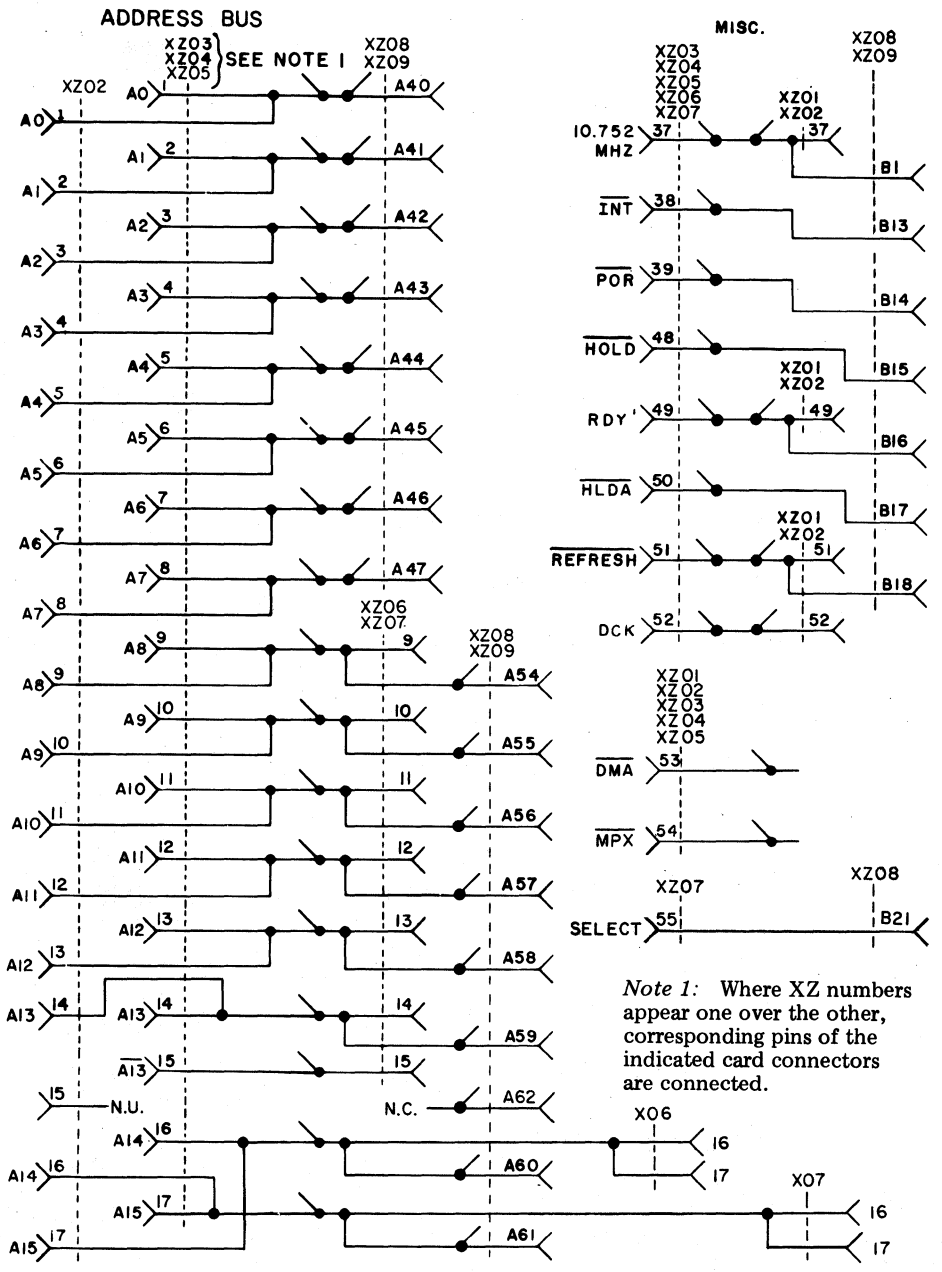

AUX EIA
XZ07
AUX EIA
RATE SELECT
56
4
RATE SELECT
DTR
58
1
DATA TERM. RDY
AL
59
7
ANALOG LOOP
SCA
61
2
SUPERV. XMIT DATA
SD
62
3
SEND DATA
RTS
63
6
REQ. TO SEND
SCF/RATE INDICATOR
64
5
SUPERV. RCV. DATA
CARRIER
65
9
CARRIER DETECT
SCR
66
13
SERIAL CLOCK R
SCT
67
11
SERIAL CLOCK T
RI
68
14
RING INDICATOR
RD
69
8
RCV. DATA
DSR
70
15
DATA SET READY
CTS
71
12
CLEAR TO SEND
ADDITIONAL
XZ08-XZ09
WIRING
XZ08
XZ09
4
7
8
9
13
15
30
33
36
RLSA
64
TO DA
65
TO OH
66
SPARE
67
TTO
68
D2 XFR
SIG
69
DCT
70
SPARE
71

Fig. 5 (Cont)

410276 INTERNAL WIRING



Note 1: Where XZ numbers appear one over the other, corresponding pins of the indicated card connectors are connected.

Fig. 6

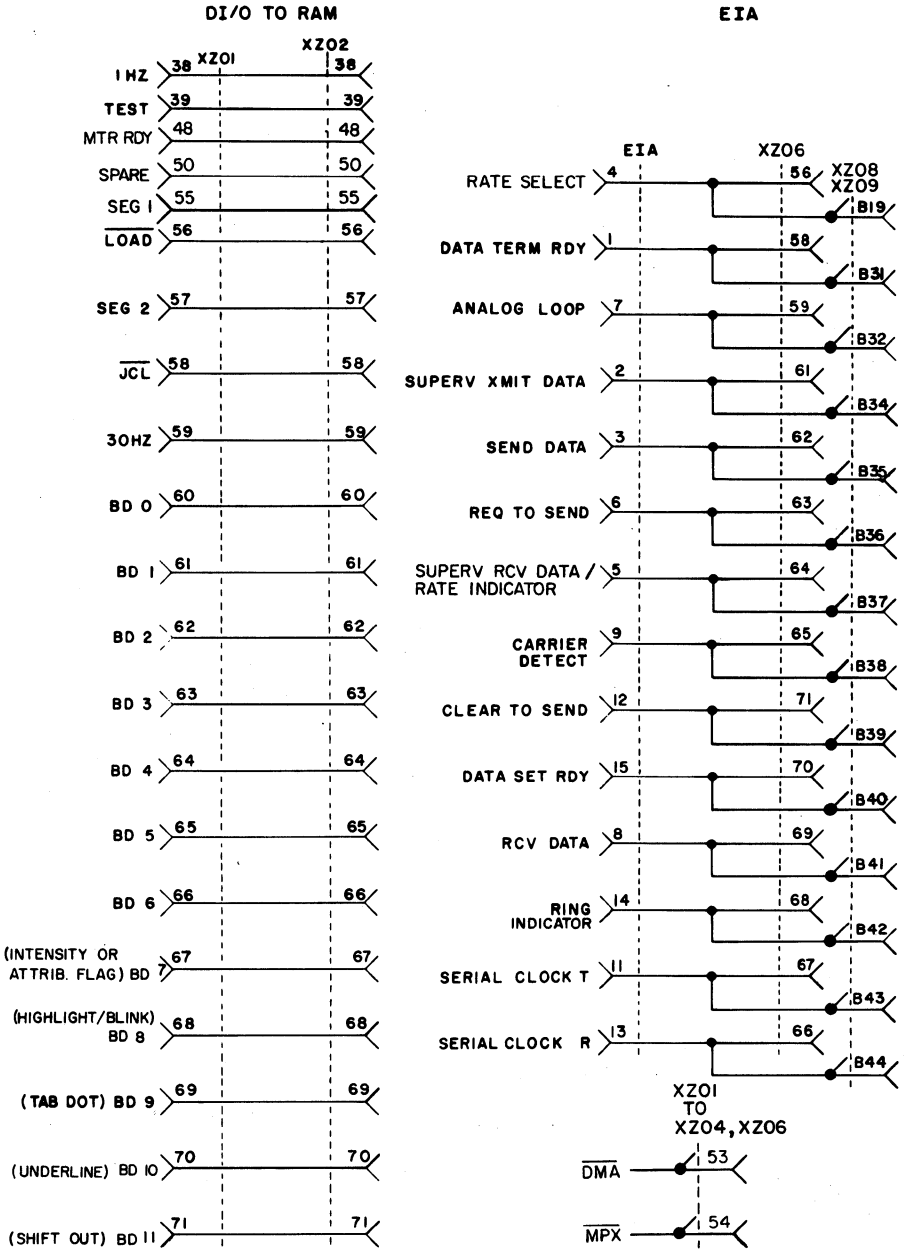

DI/O TO RAM
XZ01
XZ02
1 HZ
38
38
TEST
39
39
MTR RDY
48
48
SPARE
50
50
SEG 1
55
55
LOAD
56
56
SEG 2
57
57
JCL
58
58
30HZ
59
59
BD 0
60
60
BD 1
61
61
BD 2
62
62
BD 3
63
63
BD 4
64
64
BD 5
65
65
BD 6
66
66
(INTENSITY OR ATTRIB. FLAG) BD 7
67
67
(HIGHLIGHT/BLINK) BD 8
68
68
(TAB DOT) BD 9
69
69
(UNDERLINE) BD 10
70
70
(SHIFT OUT) BD 11
71
71
EIA
EIA
XZ06
XZ08
XZ09
RATE SELECT
4
56
B19
DATA TERM RDY
1
58
B31
ANALOG LOOP
7
59
B32
SUPERV XMIT DATA
2
61
B34
SEND DATA
3
62
B35
REQ TO SEND
6
63
B36
SUPERV RCV DATA / RATE INDICATOR
5
64
B37
CARRIER DETECT
9
65
B38
CLEAR TO SEND
12
71
B39
DATA SET RDY
15
70
B40
RCV DATA
8
69
B41
RING INDICATOR
14
68
B42
SERIAL CLOCK T
11
67
B43
SERIAL CLOCK R
13
66
B44
XZ01 TO XZ04, XZ06
DMA
53
MPX
54

Fig. 6 (Cont)

410276 INTERNAL WIRING (Cont)

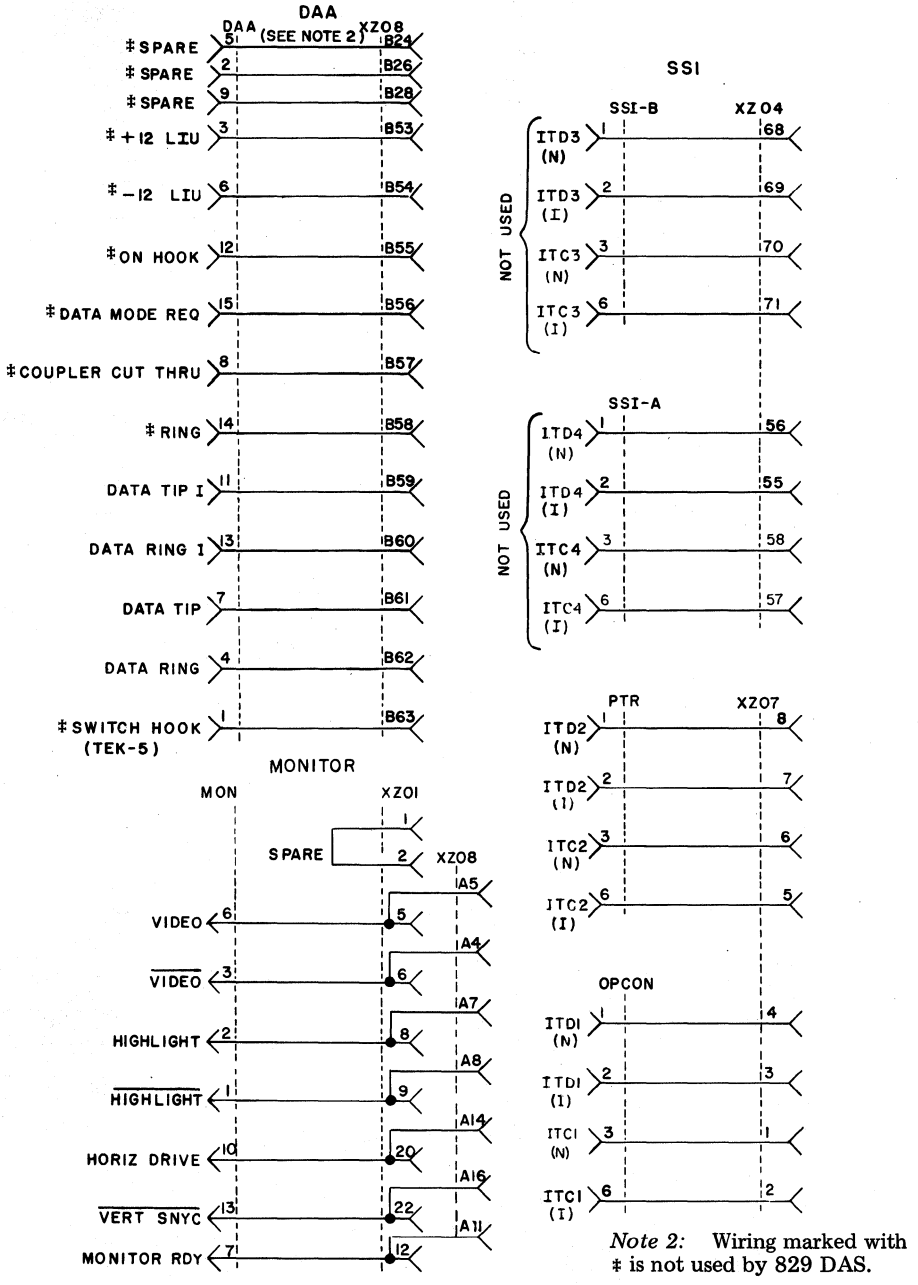


Fig. 6 (Cont)

Note 2: Wiring marked with ‡ is not used by 829 DAS.

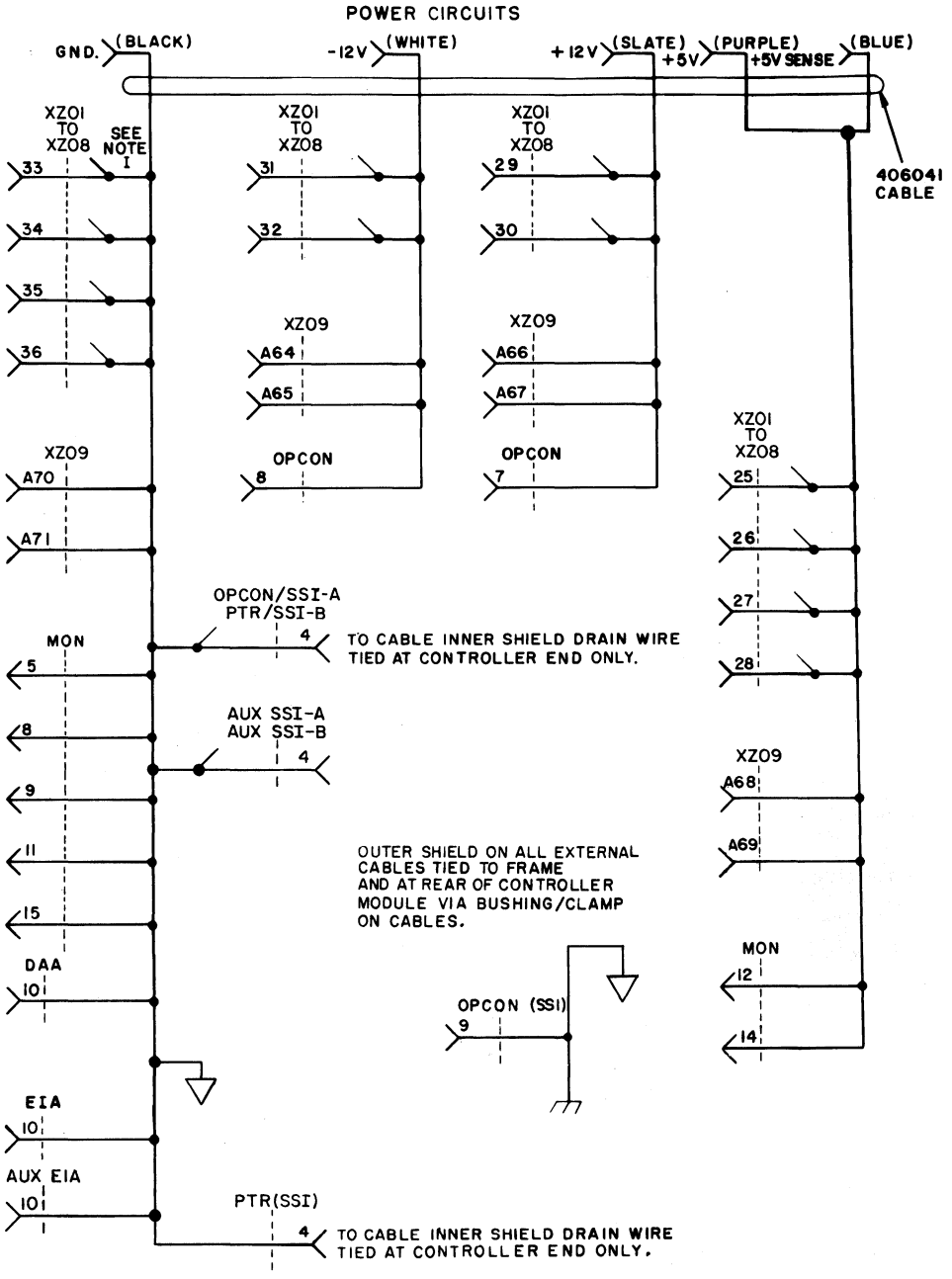

POWER CIRCUITS
GND. (BLACK)
-12V (WHITE)
+12V (SLATE)
+5V (PURPLE)
+5V SENSE (BLUE)
406041 CABLE
XZ01 TO XZ08
SEE NOTE 1
33
34
35
36
XZ01 TO XZ08
31
32
XZ01 TO XZ08
29
30
XZ09
A64
A65
XZ09
A66
A67
XZ09
A70
A71
OPCON
8
OPCON
7
XZ01 TO XZ08
25
26
27
28
OPCON/SSI-A
PTR/SSI-B
4
TO CABLE INNER SHIELD DRAIN WIRE TIED AT CONTROLLER END ONLY.
MON
5
AUX SSI-A
AUX SSI-B
4
8
9
11
15
DAA
10
XZ09
A68
A69
OUTER SHIELD ON ALL EXTERNAL CABLES TIED TO FRAME AND AT REAR OF CONTROLLER MODULE VIA BUSHING/CLAMP ON CABLES.
MON
12
14
OPCON (SSI)
9
EIA
10
AUX EIA
10
PTR(SSI)
4
TO CABLE INNER SHIELD DRAIN WIRE TIED AT CONTROLLER END ONLY.

Fig. 6 (Cont)

410276 INTERNAL WIRING (Cont)

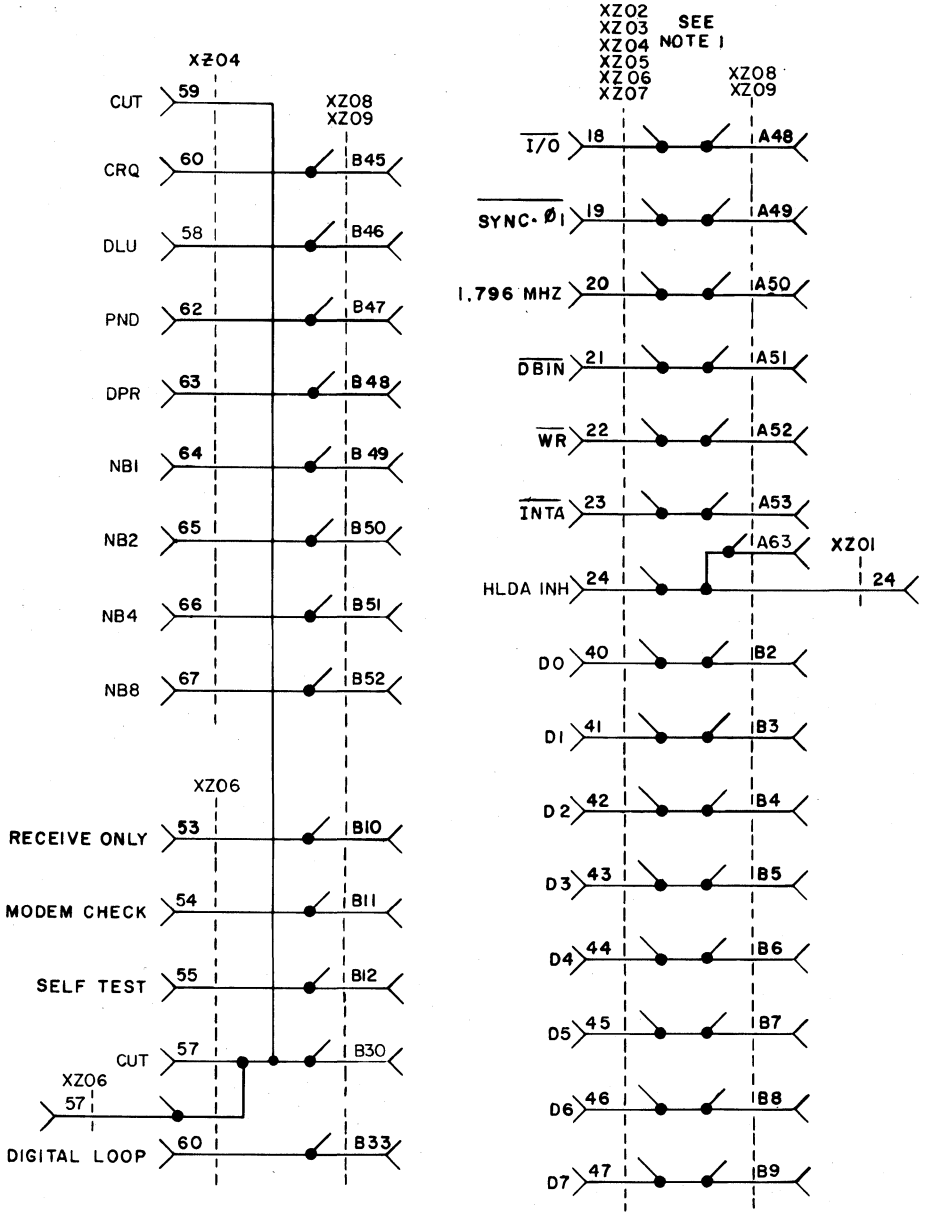


Fig. 6 (Cont)

40PSU101 POWER SUPPLY

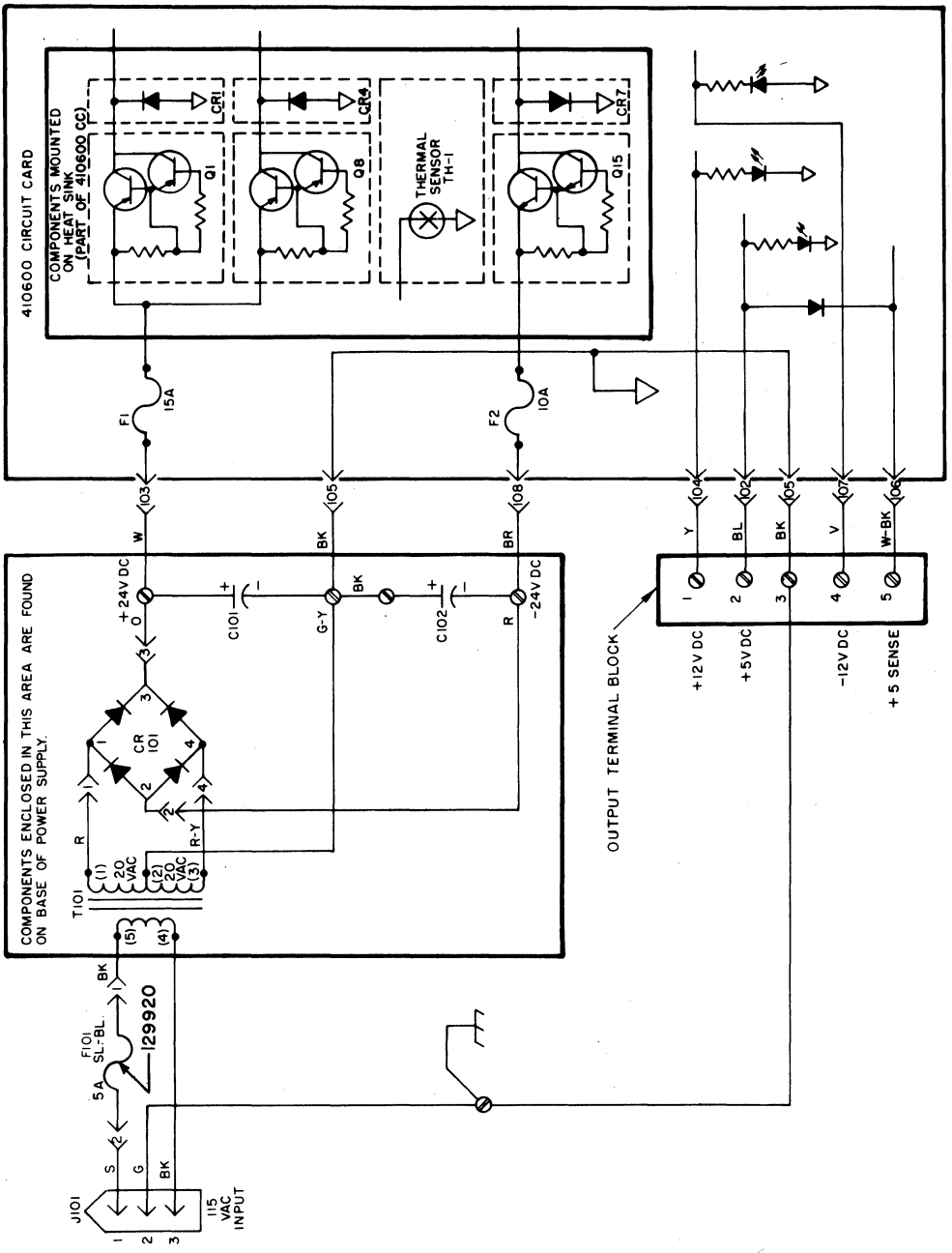


Fig. 7

OPCONS

A. 40K104/DAB (Early Design)

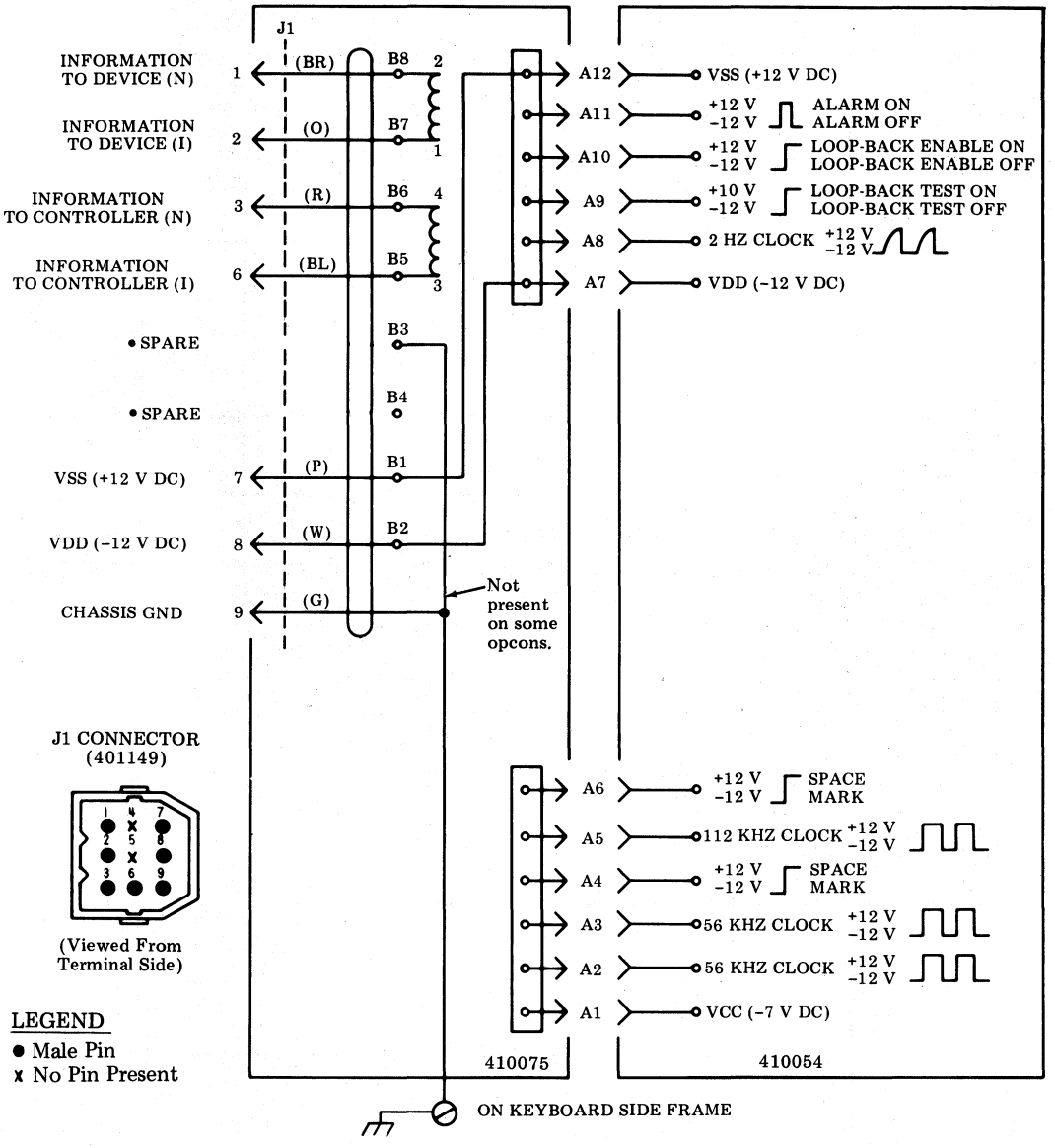


Fig. 8

B. 40K105/CAA, 40K203/GAB, and 40K104/DAB (Late Design)

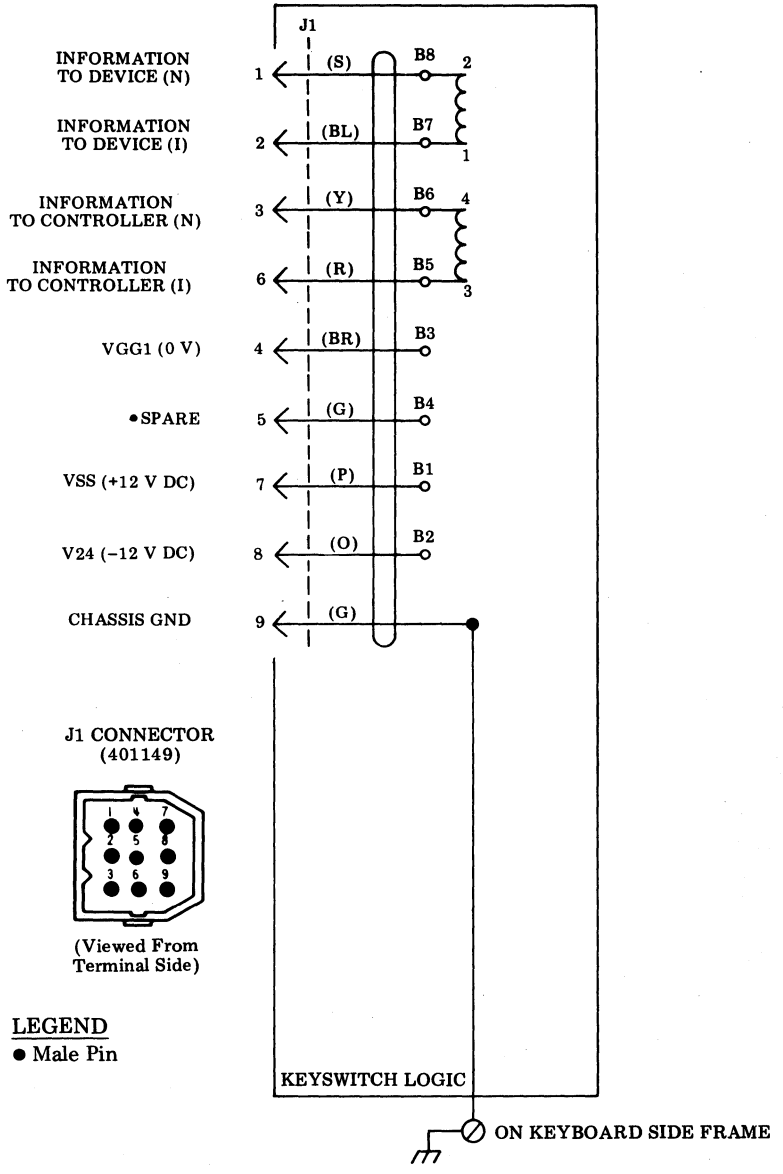


Fig. 9

CABLE ASSEMBLIES

A. 406036 EIA Cable Assembly and Extension Cables (See Note.)

Note: An EIA extension cable can be connected to 406036. The extension cable can be 408065 (7 feet), 408066 (12 feet), or 408067 (25 feet). The wiring of these cables is provided in Section 582-200-400.

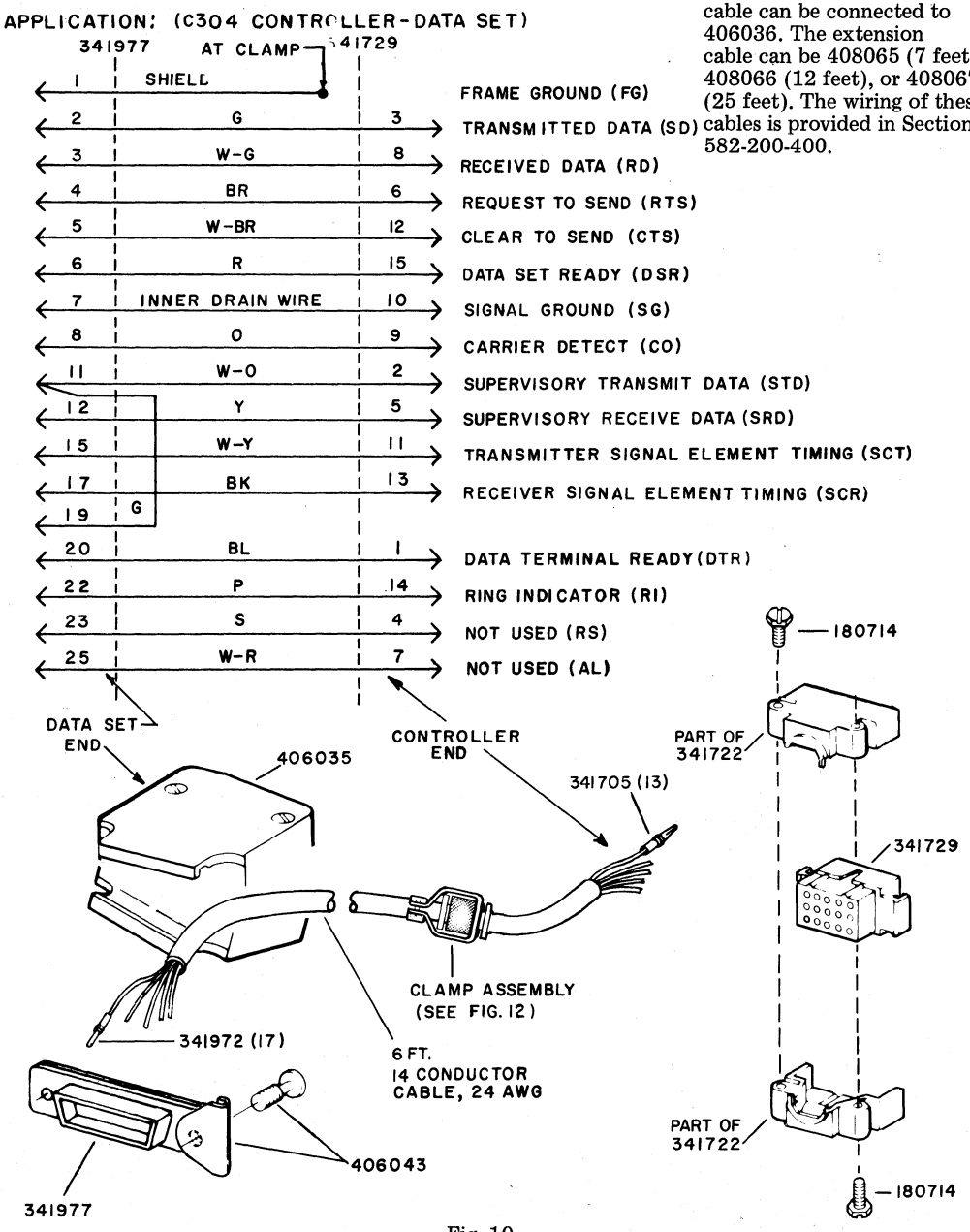
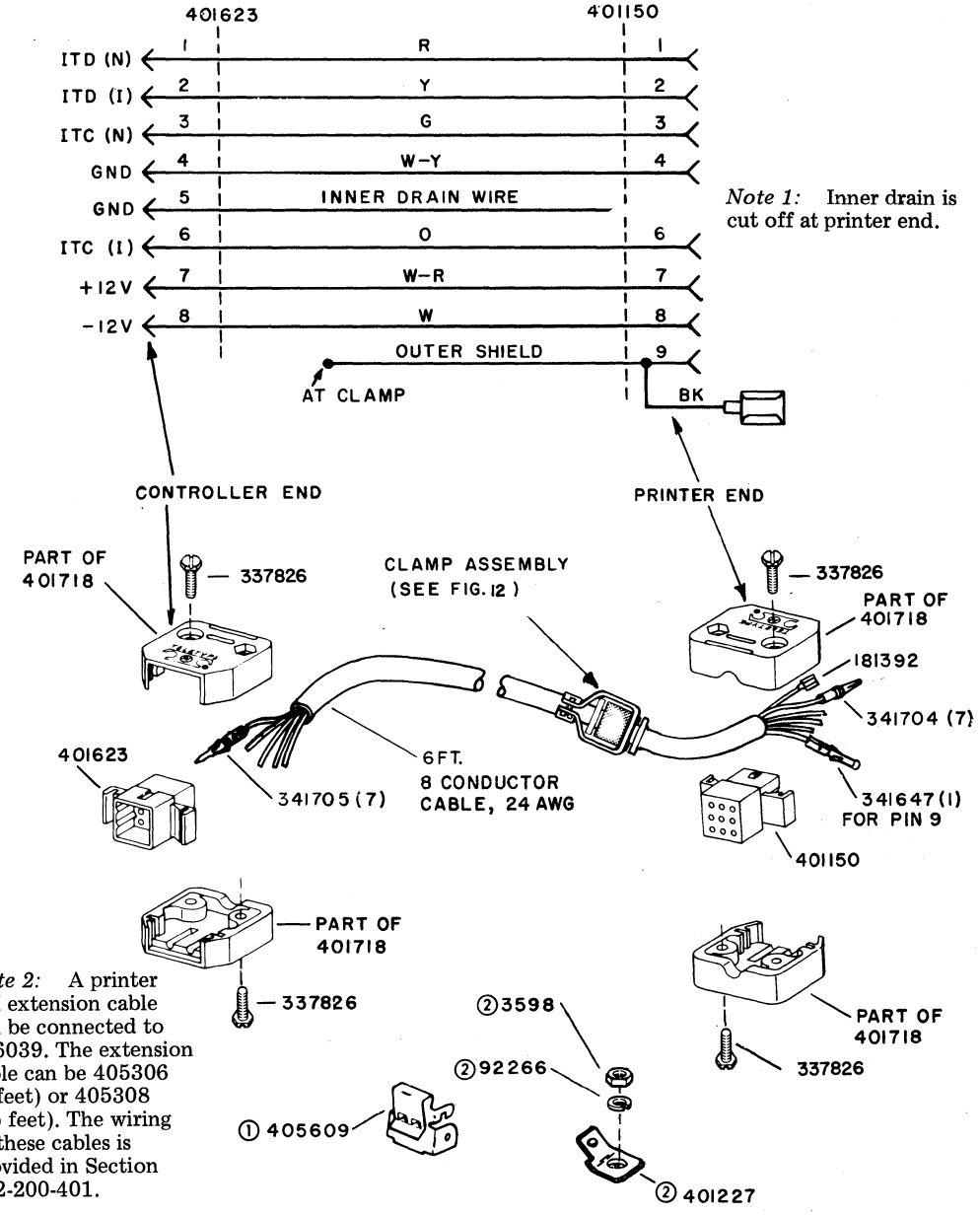


Fig. 10

B. 406039 SSI Cable Assembly and Extension Cables (See Note 2.)



Note 1: Inner drain is cut off at printer end.

Note 2: A printer SSI extension cable can be connected to 406039. The extension cable can be 405306 (6 feet) or 405308 (25 feet). The wiring of these cables is provided in Section 582-200-401.

① Supplied with cable, used on tractor feed printer cabinet.

② Supplied with cable, used on friction feed printer cabinet.

Fig. 11

C. 406066 Private Line Interface Unit Cable Assembly

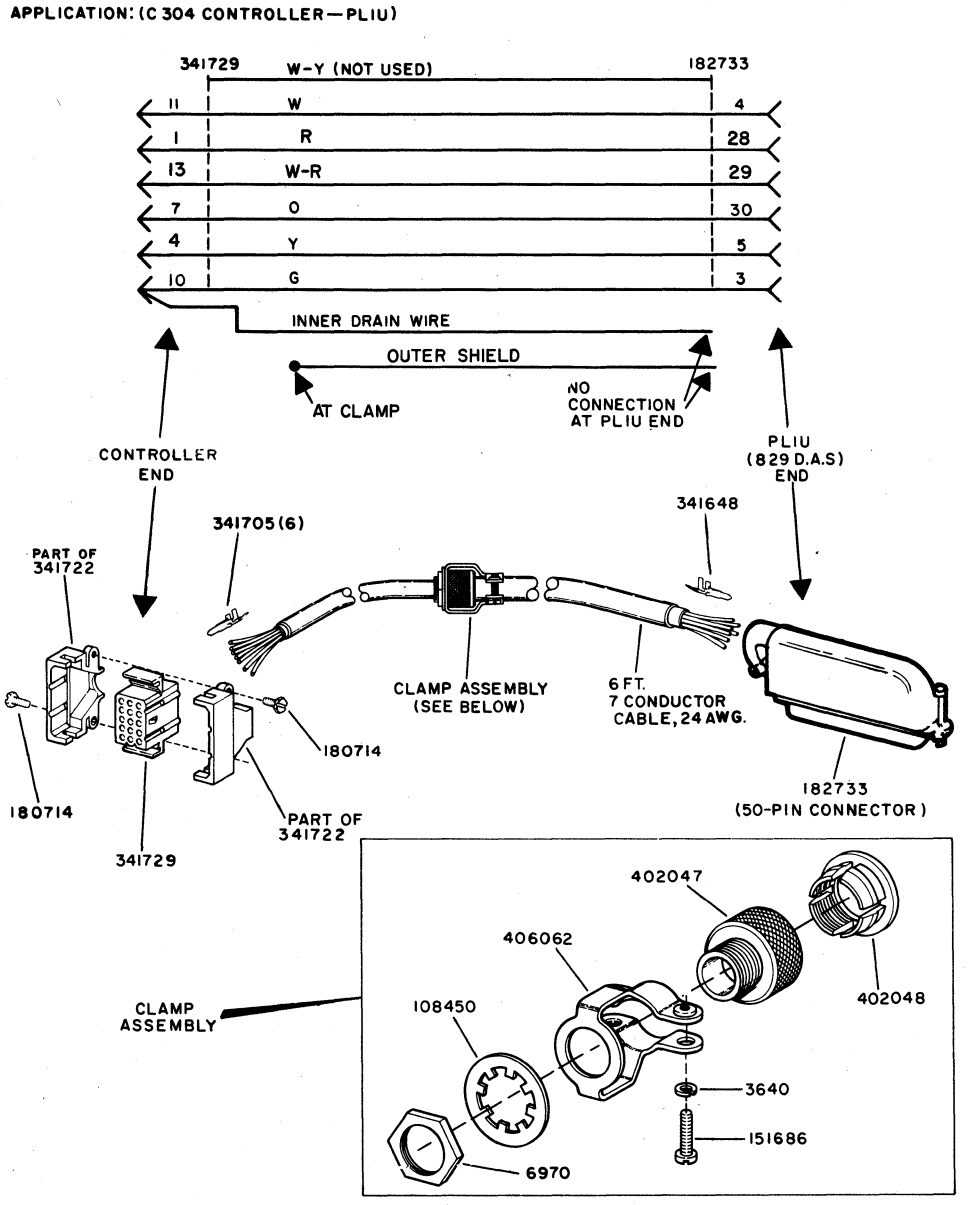


Fig. 12

SYNCHRONOUS "DATASPEED*" 40/4

SINGLE DISPLAY STATION ARRANGEMENTS

TESTING AND TROUBLESHOOTING

CONTENTS PAGE

1. GENERAL

1.01 This section includes all testing of the DATASPEED 40/4 Single Display Station (hereafter referred to as 40/4 type). It also includes trouble analysis.

1.02 This section is being reissued to provide information on the Single Display Station with a dial-up feature.

1.03 Troubles isolated to the data set, telephone lines, or associated systems are not analyzed in this section.

1.04 The correction of troubles in this section is based on replacement of defective major subassemblies (eg, monitor, opcon, printer, power supply, etc). Field level repair of the major subassemblies are given in component BSPs as follows:

582-210-XXX Printers
582-211-XXX Opcons
582-213-XXX Monitor
582-214-XXX Power Supply

1.05 See Section 582-200-705 for grounding strap locations.

Note: When ordering replaceable parts or components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410055).

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Prepared for American Telephone and Telegraph Company by Teletype Corporation

1.06 Test switches and indicators are shown in Fig. 1 and 2.

Note: The operation of test switches and indicators should be done under the direction of parts 2. TESTS and 3. TROUBLESHOOTING of this section or referenced sections.

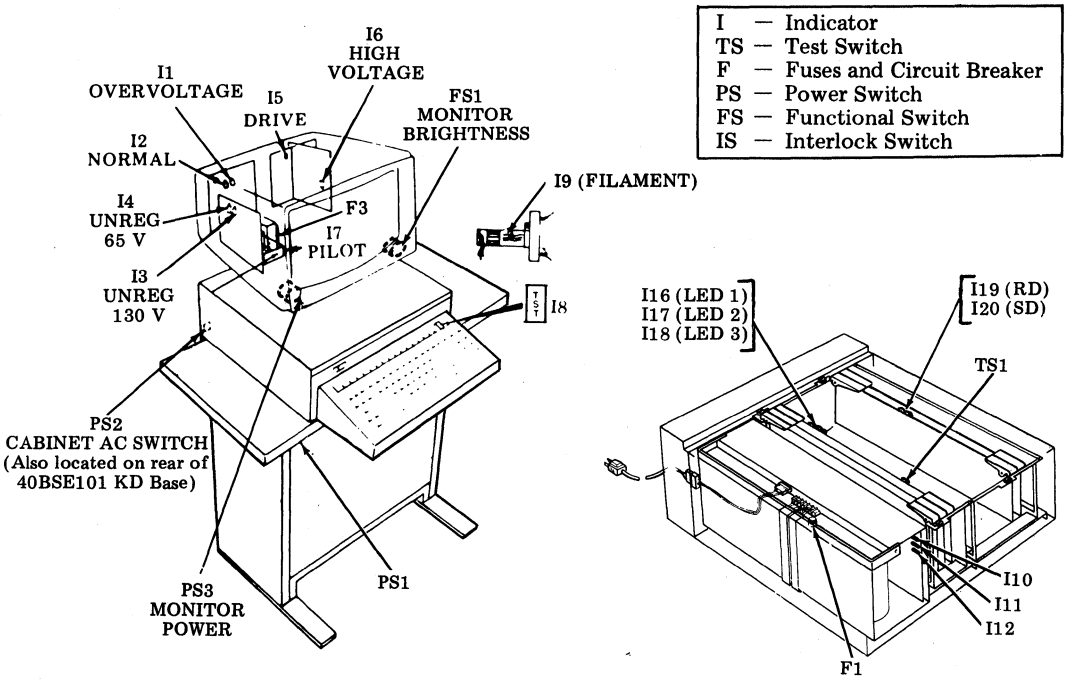
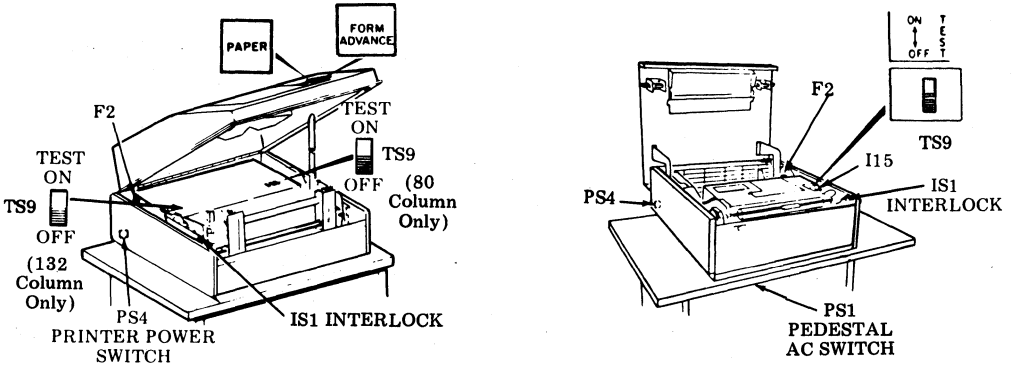


Fig. 1—Test Switches and Indicators (Controller and KD)



Tractor Feed Printer

Friction Feed Printer

Fig. 2—Test Switches and Indicators (Printer)

2. TESTS

SELF-TEST

Controller Self-Test

2.01 The Controller Self-Test should be performed. The test requires the use of the appropriate Controller Arrangement Form (copies are shown in Section 582-200-205).

2.02 If during a controller self-test, a circuit card is indicated to be defective per the self-test trouble pattern, perform the following before replacing the circuit card:

(a) Remove card and check for bent connector pins.
(b) If circuit card contains sockets, make sure all I. C. packs are firmly seated.
(c) Reinstall circuit card and make sure card is firmly seated in connector.
(d) Re-perform the self-test.

If the circuit card is still indicated as defective, then replace.

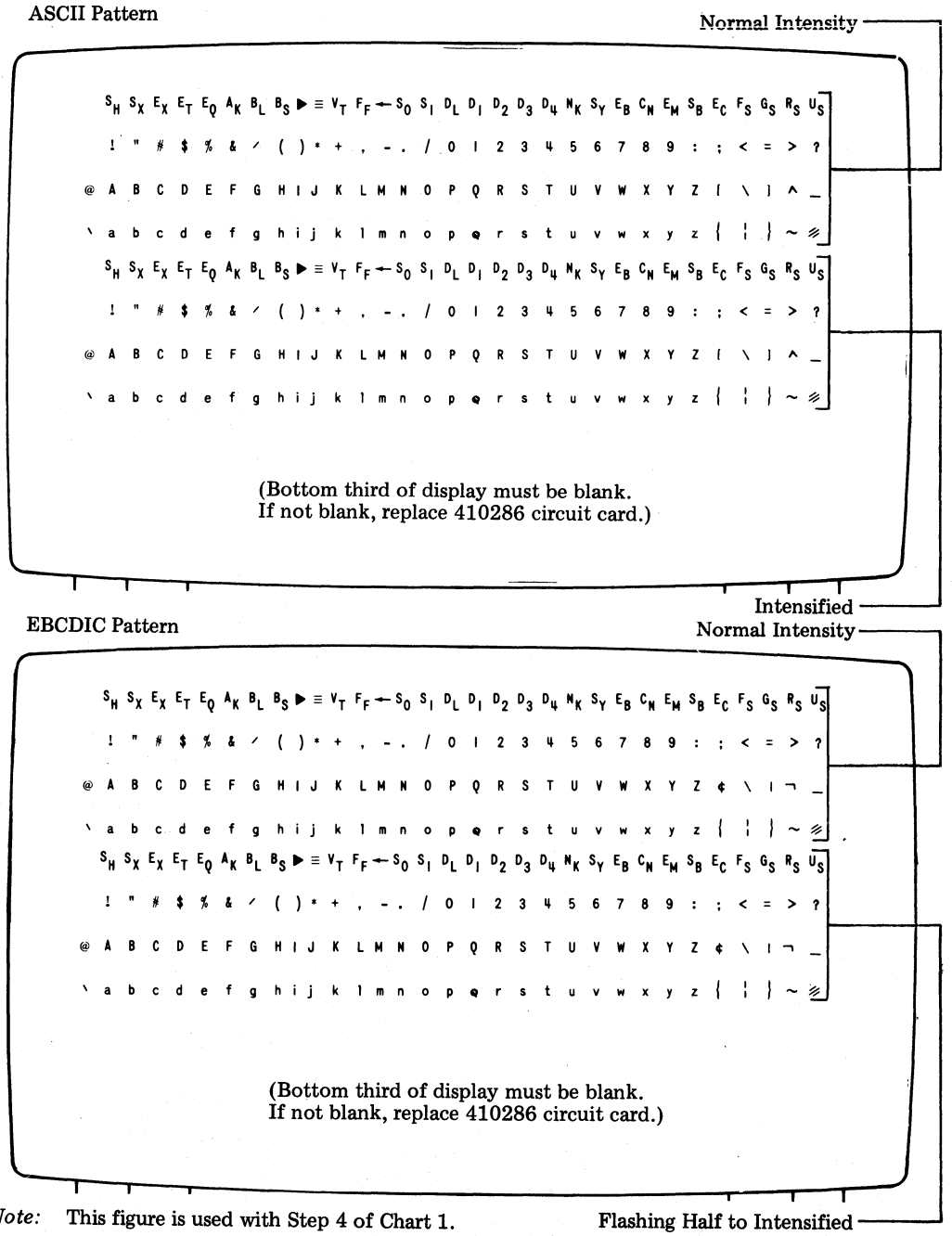
Warning: The ac power must be OFF before removing or replacing a circuit card.

CHART 1

CONTROLLER SELF-TEST PROCEDURES

STEP	PROCEDURE	CORRECT RESPONSE	ANALYSIS
1	Connect ac cable(s) from cabinet(s) to power source. Turn on cabinet power switch(es).	All power supply votage lamps light.	40PSU101, see Chart 10.
2	Depress and hold down on SELF-TEST switch on 410251 circuit card for at least four seconds or until one lamp goes out. (TS1 on Fig. 1)	All three indicators (pattern lamps) on 410251 circuit card light while switch is depressed.	• 40PSU101, see Chart 10. • 410251. • 410261 or 410264 (Private Line Version.) • 410262 (Dial Up Version) • Refer to Chart 7, Step 2.
3	Release SELF-TEST switch.	Pattern lamps may flicker during this step. After a short time, the pattern lamps should blink sequentially. *Note:* If switch is not held down long enough, the option menu will appear. Reset by depressing LOCAL or RESET and repeat Step 2.	If a light pattern (shown on controller arrangement form) appears and remains; power down, replace indicated card, power up and retest. If the indicated card is replaced and the problem remains; refer to Chart 7, Step 3.
4	When the pattern lamps blink sequentially, check the display on the monitor. Also, check that the cursor moves through the whole display.	See Fig. 3. The ASCII* pattern is displayed for about 30 seconds, then the EBCDIC† pattern is displayed for about 30 seconds, then the controller will return to the normal operating mode. *Note:* Depress switch and rotate it 1/4 turn clockwise to retain the Fig. 3 display (actually the self-test runs and the display cycles through ASCII followed by EBCDIC repeatedly). Depress switch and rotate it 1/4 turn counterclockwise to end test. Normal operation returns after the EBCDIC display.	• Monitor support cabinet ac switch off. • Monitor power switch off (turn counterclockwise for on). • Monitor brightness low (turn counterclockwise for on). • 410286 circuit card. • 410287 circuit card. • Monitor cable.

*American National Standard Code for Information Interchange.
†Extended Binary Coded Decimal Interchange Code.



Note: This figure is used with Step 4 of Chart 1.

Fig. 3—Self-Test Mode Displays

LOCAL TESTS

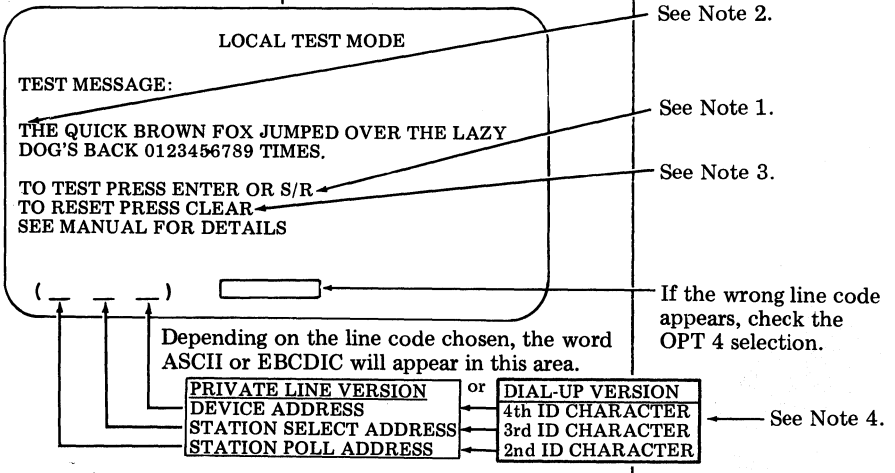
A. KD/Controller Local Test

2.03 Perform the Chart 2 procedures on the KD opcon.

CHART 2

KD/CONTROLLER LOCAL TEST PROCEDURES

STEP	PROCEDURE	CORRECT RESPONSE	LOCAL TEST ANALYSIS
Note: Start with Step 1 if the KD has a typewriter style opcon, start with Step 7 if the KD has a internal numeric cluster style opcon (see Fig. 5. if required).			
	TYPEWRITER STYLE OPCON (Steps 1-6)		
1	Depress LOCAL if the key is not lighted. Request a local test by depressing the L/TST key while CONTROL key is held down.	The following message is displayed on the monitor.	• Cable to opcon. • Opcon. • Refer to Chart 7, Step 4.



Note 1: If the message is not responded to within 20 seconds; the display will clear, the test will be automatically canceled, and S/R will flash repeatedly. Depress LOCAL to stop S/R from flashing.

Note 2: The QUICK BROWN FOX . . . message may be changed provided that the first character remains a "T". If "T" is changed to any other character, the display will clear and the test will be canceled when S/R is depressed.

Note 3: Besides CLEAR, depression of any PA or PF key will clear display and cancel test.

Note 4: When the SPACE character is selected, it is represented by a blank space. If characters are incorrect per customer order and Fig. 4, check OPT 1 selection for station poll address and select address or OPT 2 selection for KD device address (Private Line Version) or Check OPT 1, OPT 2 or OPT 3 selection for 2nd, 3rd or 4th character of ID sequence respectively (dial-up version).

CHART 2 (Cont)

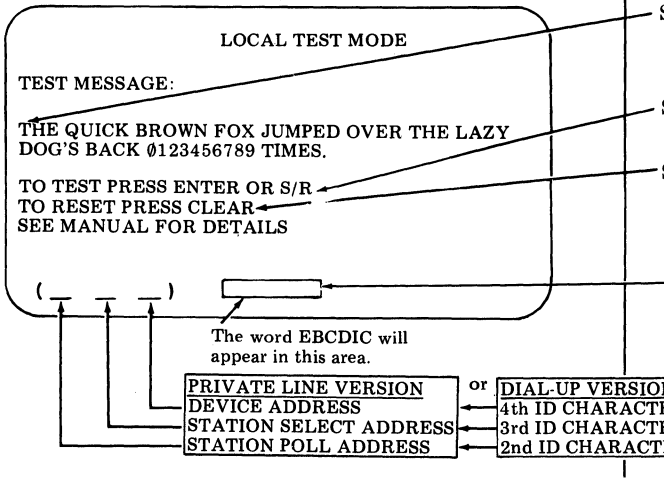
KD/CONTROLLER LOCAL TEST PROCEDURES

STEP	PROCEDURE	CORRECT RESPONSE	LOCAL TEST ANALYSIS
2	Depress S/R. THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG'S BACK 0123456789 TIMES. *Note:* If any characters in the QUICK BROWN FOX . . . message were changed before depressing S/R, those characters will appear in the above message.	If received without error, the following message will appear on the monitor.	• If S/R is flashing, go to Step 4, Local Test Analysis. • If "test failed" message is received, go to Step 4, Procedure.
3	Depress CLEAR. Depress LOCAL if station is not connected to LCU.	Test is completed. Display is cleared. Proceed to Step 6.	
4	If message is received with an error in Step 2, the following message will be displayed on the monitor. **TEST FAILED** TEST MESSAGE: THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG'S BACK 0123456789 TIMES' RETEST PRESS ENTER OR S/R TO RESET PRESS CLEAR SEE MANUAL FOR DETAILS (__ __ __) [ ]	Go to Step 5.	• Normal Local Test: Replace 410290 or 410291. • Analog Loopback Test: Check data set or data set cable. Replace controller back panel. (Data set DSR not "on" in AL mode can cause this failure.) • Far-End Digital Loopback Test: Check far-end data set or check facilities between data sets. *Note 1:* Local test is canceled by symptom. *Note 2:* Depress LOCAL to to stop flashing S/R.
5	Depress LOCAL if station is not connected to LCU. Retry Steps 1 and 2 once then cancel test by depressing CLEAR key.		If test still fails, run controller self-tests.
6	If the local test of the KD is successfully completed, go to Chart 3 and 4.		

CHART 2 (Cont)

KD/CONTROLLER LOCAL TEST PROCEDURES

STEP	PROCEDURE	CORRECT REPONSE	LOCAL TEST ANALYSIS
	INTERNAL NUMERIC CLUSTER STYLE OPCON (Steps 7 through 15)		
7	Request a local test by depressing the L/TST key and the ALPHA key simultaneously.	The following message is displayed on the monitor.	• Cable to opcon. • Opcon. • Refer to Chart 7, Step 4.



Note 1: If the message is not responded to within 20 seconds; the display will clear, the test will be automatically canceled, and S/R will flash repeatedly. Depress LOCAL to stop S/R from flashing.

Note 2: The QUICK BROWN FOX . . . message may be changed provided that the first character remains a "T". If "T" is changed to any other character, the display will clear and the test will be canceled when S/R is depressed.

Note 3: Besides CLEAR, depression of any PA or PF key will clear display and cancel test.

Note 4: When the SPACE character is selected, it is represented by a blank space. If characters are incorrect per customer order and Fig. 4, Check OPT 1 selection for station poll address or OPT 2 selection for KD device address (Private Line Version) or check OPT 1, OPT 2, or OPT 3 selections for 2nd, 3rd or 4th characters of ID sequence respectively (dial-up version).

CHART 2 (Cont)

KD/CONTROLLER LOCAL TEST PROCEDURES

STEP	PROCEDURE	CORRECT RESPONSE	LOCAL TEST ANALYSIS
8	Depress ENTER. THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG'S BACK Ø123456789 TIMES. *Note:* If any characters in the QUICK BROWN FOX. . . message were changed before depressing ENTER, those characters will appear in the above message.	If received without error, the following message will appear on the monitor.	•If S/R is flashing, go to Step 13, Local Test Analysis. •If "test failed", message is received, go to Step 13, Procedure.
9	Depress CLEAR.	Display is cleared.	
10	Request a local test by depressing the L/TST key and the NUMERIC key simultaneously.	The message of Step 7 is displayed.	Replace opcon.
11	Depress ENTER.	As given in Step 8.	As given in Step 8.
12	Depress CLEAR.	Test is completed. Display is cleared. Proceed to Step 15.	
13	If message is received with an error, the following message will be displayed on the monitor. **TEST FAILED** TEST MESSAGE: THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG'S BACK Ø123456789 TIMES. RETEST PRESS ENTER OR S/R TO RESET, PRESS CLEAR SEE MANUAL FOR DETAILS (_ . _ _) [ ]	Go to Step 14.	Symptom — Flashing S/R. Step 4 "Local Test Analysis" applies.
14	Depress RESET if station is not connected to LCU. Retry Steps 7 and 8 once then cancel test (depress CLEAR key).		If test still fails, run controller self tests of Chart 1.
15	If local test of KD device is successfully completed, proceed to Chart 3.		

Stn or Dvce No.	SPA	SSA	DA	Stn No.	SPA	SSA
00	SP	—	SP	18	K	2
01	A	/	A	19	L	3
02	B	S	B	20	M	4
03	C	T	C	21	N	5
04	D	U	D	22	0	6
05	E	V	E	23	P	7
06	F	W	F	24	Q	8
07	G	X	G	25	R	9
08	H	Y	H	26	](!)	:
09	I	Z	I	27	$	#
10	[(¢)	¦	[(¢)	28	*	@
11	.	,	.	29	)	'
12	<	%	<	30	;	=
13	(	_	(	31	^(¬)	"
14	+	>	+			
15	!(|)	'	!(|)			
16	&	0				
17	J	1				

(Private Line Version Only)

Note: This figure is used with Step 1 or Step 7 of Chart 2. The figure indicates all station and device identification for ASCII or EBCDIC coded stations. EBCDIC characters are shown in parentheses. Device numbers 00 through 15 can apply.

Fig. 4—ASCII or EBCDIC Station and Device Identification (Private Line Version)

B. Printer Local Tests

2.04 If a printer is not part of the station, proceed to 2.05. If a printer is part of the station, perform the Chart 3 procedures.

CHART 3

PRINTER LOCAL TEST PROCEDURES

Note: If a printer is not part of the station, proceed to Chart 4.

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
1	Preliminary requirements of printer: a. Ribbon and paper loaded. b. Switches (top right or left of printer, cabinet cover raised). LF-1 Test-Off Forms (Tractor Feed Only) — On c. Cabinet cover closed and ac power switched ON.	 Printer motor is off. *Note:* Fan in tractor feed printer cabinet must be ON (air flows).	Refer to Section 582-210-500.

CHART 3 (Cont)

PRINTER LOCAL TEST PROCEDURES

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
2	Momentarily depress PAPER button (red) on cover of printer cabinet.	Paper feeds out as long as button is depressed.	•Check for: a. Printer cable not connected. b. Printer cable defective. c. Defective 410290 circuit card. Refer to Section 582-210-500.
3	TRACTOR FEED PRINTER ONLY: Depress and release FORMS ADVANCE button (black) on printer cabinet cover. (See Note in Trouble Analysis column.)	Paper feeds out until first line of next form is reached, then stops. *Note:* See chart on top of printer to determine the correct form out selection.	
4	Unlatch and raise printer cabinet cover.	None	*Note:* Continuous feedout will occur if form selector lever not fully seated in slot 1, 2, 3, or 4.
5	Raise cover interlock switch to maintenance position.	None	
6	Set test switch to ON, allow printer to print several lines, then turn test switch OFF. *Note:* On printers which have later version 410071, 410072 and 410076 circuit cards, the font identification symbol will be printed in the columns margined per Option 17.	Printer turns on and prints font identification symbol repeatedly in all columns until switch is turned off. (See Note) See Section 582-200-101 for font ID symbols.	Refer to Section 582-210-500.
7	FRICTION FEED PRINTER: Lift paper roll to simulate a a paper alarm. Lower paper roll, guide paper through window, and close cabinet cover.	Paper indicator lights. Paper indicator goes out.	Refer to Section 582-210-500.

CHART 3 (Cont)

PRINTER LOCAL TEST PROCEDURES

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
7 (Cont)	TRACTOR FEED PRINTER: Tear off next form at perforations under pedestal top, then depress PAPER button on cabinet top until last form passes through printer. Reload forms, guide first form through window, and close cabinet cover.	80-Column Printer With 410640 Circuit Card — PAPER indicator lights and printer motor turns off. 80-Column Printers With 410076 or 410071 Circuit Cards And All 132-Column Printers -- If Option 48a is selected, PAPER indicator lights and printer motor turns off when last form is partly through printer. If Option 48b is selected, PAPER indicator does not light and printer motor does not turn off until form is completely out of printer and end of form contact is sensed. PAPER indicator goes out.	
8	Type some text on the display (lower case and capitals if possible) and then depress PRINT LOCAL key.	LOCAL indicator extinguishes and PRINT LOCAL indicator lights and then goes off when printer buffer receives the message; LOCAL indicator lights. Printer copies entire display (24 lines): Monocase Printer — All display characters print as capitals. See Note following Step 5 of Chart 4. Up-Low Printer — All display characters are copied as displayed. (Continued on next page)	Flashing PRINT LOCAL indicator indicates: a. Printer cabinet lid open. b. Form or paper-out condition. c. Printer ac power is off. d. Printer is not print local to the KD. e. Printer cable defective or miswired. Refer to Section 582-210-700

CHART 3 (Cont)

PRINTER LOCAL TEST PROCEDURES

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
8 (Cont)		*Note 1:* Friction feed printer may or may not feed out 16 lines of paper before turning off, depending on Option 18. Tractor feed printer may or may not form feed before turning off depending on Options 18 and 39. *Note 2:* After printer is finished copying, the motor will remain on for approximately 10 seconds before turning off. Later version printer circuit cards will allow printer motor to remain on for 40 seconds or indefinitely, depending on Option 58.	Option 18c not installed in monocase printer. Character set of type carrier in printer does not match Option 19. Option 19c not installed in printer. Refer to Section 582-210-700.

C. KD Local Test

2.05 Check the KD using the procedure given in 2.06 and Chart 4. The locations of tne various control and data keys referred to in Chart 4 are given in Fig. 5. The SDS has only one KD and therefore, only one opcon and one monitor.

2.06 Follow these instructions before beginning Chart 4:

(a) Turn on power to the set or station (LOCAL indicator lights on the opcon).

(b) Turn on power to the display and adjust brightness.

(c) Perform Steps 1 through 41 of Chart 4, KD Local Test Procedures.

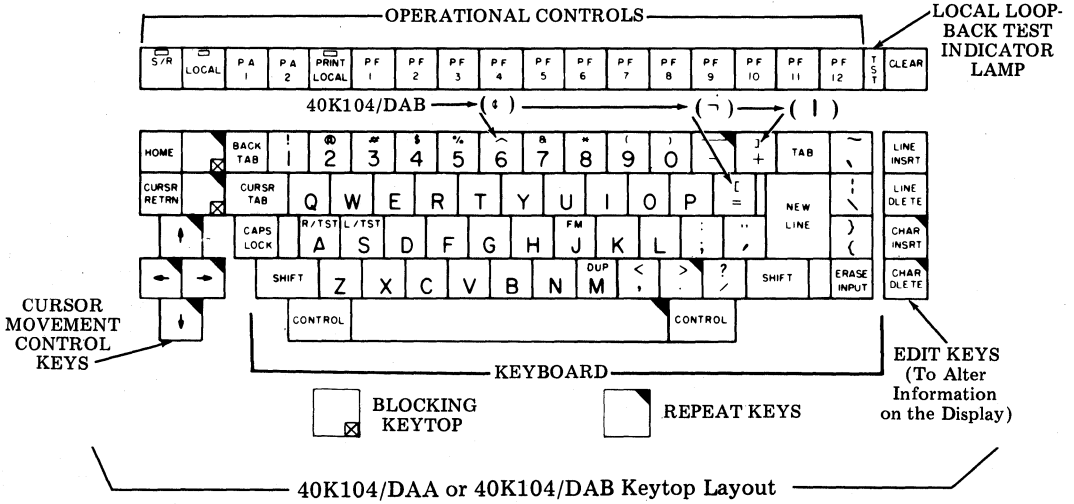
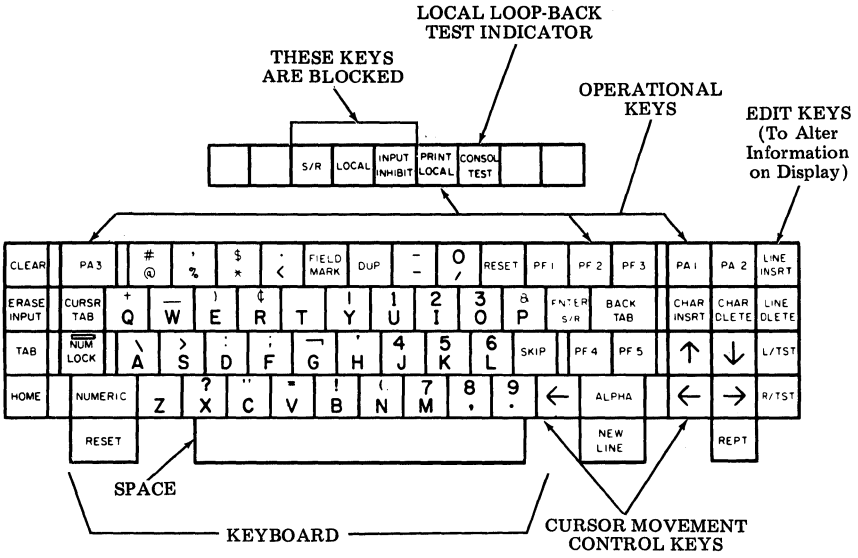


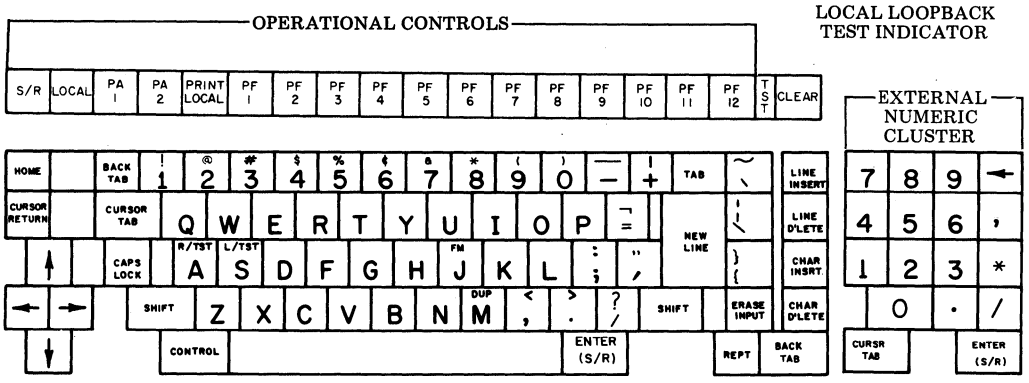
Fig. 5—Opcon Keytop Layouts



Note: The only locking keytop is NUM LOCK, depress to set (lights), depress to release (light goes out).

40K105/CAA Keytop Layout

Fig. 5—Opcon Keytop Layouts (Cont)



Note: The, (comma), *, and / keys located within the External Numeric Cluster are not functional with SDCs (Private Line Version Only) which employ the 410261 circuit card and, therefore may be covered with blocking keys.

40K203/GAB Keytop Layout

Fig. 5—Opcon Keytop Layouts (Cont)

CHART 4

KD LOCAL TEST PROCEDURES

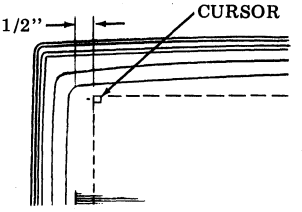
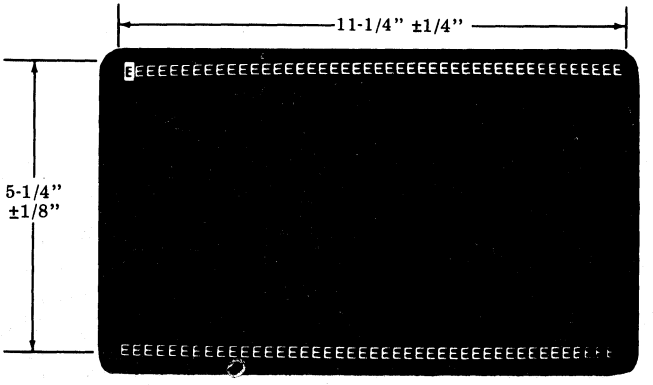
STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
	Note: Start with Step 1 if KD of the station has typewriter style opcon. Start with Step 21 if KD has a internal numeric cluster style opcon.		
1	a. Place typewriter style opcon into the caps mode by depressing and latching the CAPS LOCK key. (Opcons with no CAPS LOCK key require no action.)		
	b. On the monitor: • Observe that the raster is barely present when brightness control is turned up fully. • When cursor is in home position, it is approximately 1/2" from left side of display. • Enter a line of Es at top and bottom of display, then HOME cursor. Requirements are met.		• If raster is not present go to Chart 8. • If a requirement is not met, refer to adjustments of monitor in Section 582-213-700 to meet requirement. • If E cannot be entered, go to Chart 9.
			
		Requirements: • Raster aligned vertically and horizontally. • All Es sharply defined. • Height and width of display as indicated. • Es uniform across full width. • Height of Es same at top and bottom lines.	

CHART 4 (Cont)

KD LOCAL TEST PROCEDURES

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
2	Home the cursor and depress a few keys on the keyboard portion of the opcon.	Upper case alpha characters and numeric characters can be displayed. *Note:* Each keytop need not be checked except for a trouble call. Each keytop shall function each time it is depressed.	
3	Disengage the CAPS LOCK key by depressing it again momentarily. Again depress a couple of keys on the keyboard portion of the opcon. (Opcons with no CAPS LOCK key require no action; go to Step 4.)	The alpha characters described in Step 2 are displayed in lower case (ie, abcdef, etc).	

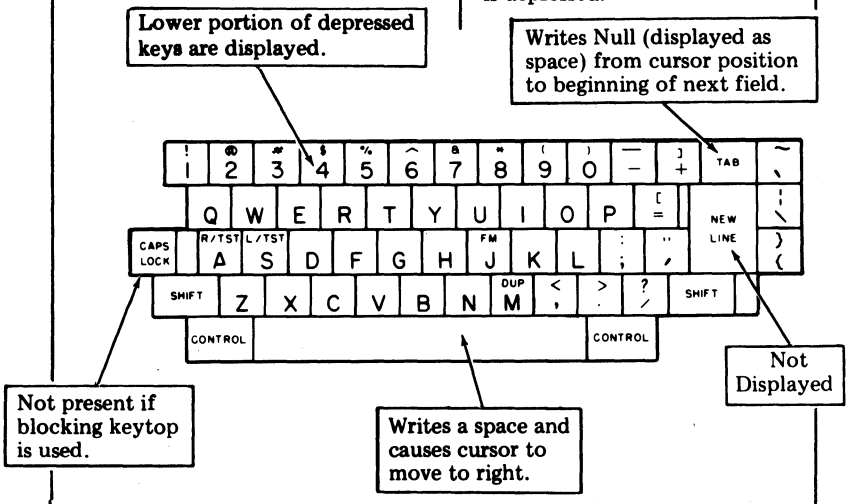


CHART 4 (Cont)

KD LOCAL TEST PROCEDURES

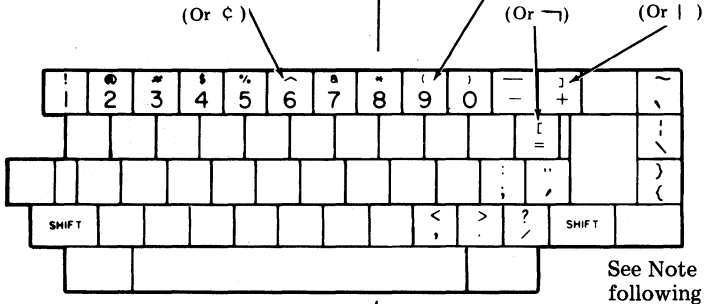
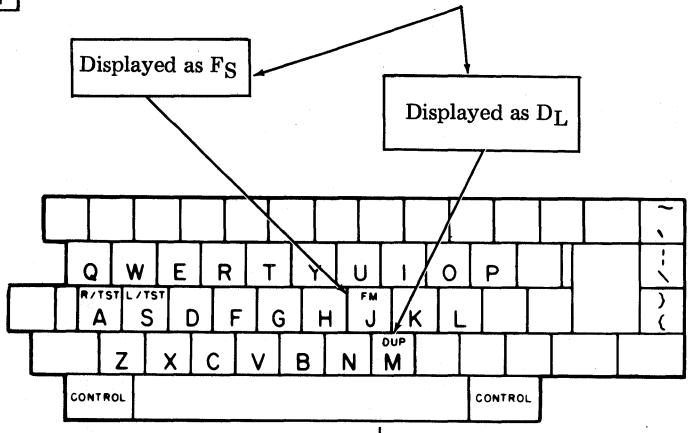
STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
4	Depress the left then the right SHIFT key while depressing and checking operation of one of the following alpha keys (ie, !@#$, etc).	Upper portion of the depressed keys are displayed.  See Note following Step 5.	
5	Depress the left CONTROL key together with the FM J key; then depress the right CONTROL key together with the DUP M key.	See Note following Step 5. 	

CHART 4 (Cont)

KD LOCAL TEST PROCEDURES

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS

Note: Some characters may be displayed as a character other than the character received on-line or entered from the opcon. See the table below which also provides printer actions for applicable characters.

Application of Type of 40K104 Opcon		'/DAA or '/DAB					'/DAA			'/DAB			'/DAA or '/DAB	
Character Received From LCU or Entered on 40K104 Type Opcon		~	`	¦	{	}	^	]	[	¢	!	¬	DUp	FM
Character Displayed Using:	ASCII UP-LO	~	`	¦	{	}	^	]	[	^	]	[	DL	FS
	ASCII MONO	^	@	\	[	]	^	]	[	^	]	[	DL	FS
	EBCDIC UP-LO	~	`	¦	{	}	¢	!	¬	¢	!	¬	DL	FS
	EBCDIC MONO	¬	@	\	¢	!	¢	!	¬	¢	!	¬	DL	FS
Character Printed Using Type Carrier:	400629 80C ASCII UP-LO	~	`	¦	{	}	^	]	[	^	]	[	SP	SP
	400645 80C ASCII MONO	^	@	\	[	]	^	]	[	^	]	[	SP	SP
	400777 132C ASCII UP-LO	~	`	¦	{	}	^	]	[	^	]	[	SP	SP
	400780 132C ASCII MONO	^	@	\	[	]	^	]	[	^	]	[	SP	SP
	400783 132C EBCDIC UP-LO	~	`	¦	{	}	¢	!	¬	¢	!	¬	SP	SP
	400784 80C EBCDIC UP-LO	~	`	¦	{	}	¢	!	¬	¢	!	¬	SP	SP
	400785 80C EBCDIC MONO	¢	@	\	¬	!	¢	!	¬	¢	!	¬	SP	SP
	400887 132C EBCDIC MONO	¢	@	\	¬	!	¢	!	¬	¢	!	¬	SP	SP

LEGEND:

Will print with fold-over option in printer enabled. Error symbol will print if fold-over option is not enabled.

CHART 4 (Cont)

KD LOCAL TEST PROCEDURES

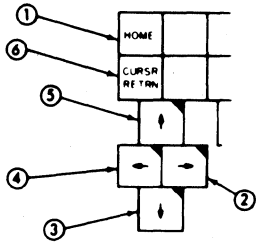
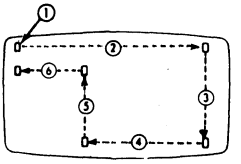
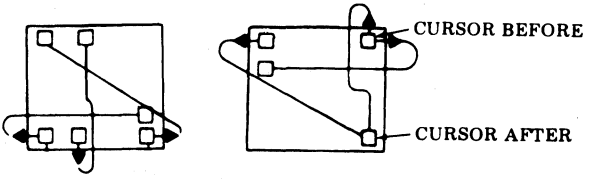
STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
6	Depress one of the following keys with additional force, [-] [> .] [SPACE] .	---------- . . . . . The space key repeatedly moves the cursor.	
7	Depress the [HOME] key. Then in sequence depress momentarily with more force than normally required, each cursor movement key shown. 	 *Note:* In local opcon operation, attempts to move the cursor off the display will result as shown: 	
8	Depress ERASE INPUT key.	Display clears and cursor goes to home position. LOCAL key remains lighted.	
9	Type the alpha characters A through J on the display. Place the cursor over the character E and depress the [CHAR INSRT] key once, then depress it fully — releasing it after the characters move to the next line.	① ABCD[E]FGHIJ ② ABCD[ ]EFGHIJ ③ ABCD[ ] EFGHIJ *Note:* CHAR INSRT and CHAR DLETE affect all 24 lines.	

CHART 4 (Cont)

KD LOCAL TEST PROCEDURES

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
10	Depress the CHAR DLETE key momentarily, then depress it fully.	ABCD ▯ EFGHIJ ABCD E FGHIJ Characters delete one at a time or repeatedly when key is held depressed.	
11	Depress the LINE INSRT key three times.	The cursor moves to start of present line, and the line of data moves down three lines.	
12	Depress the LINE DLETE key three times.	The line of data moves up one line, then stops on the first line.	
13	Depress PRINT LOCAL key, (if printer is not provided, go to Step 14).	LOCAL indicator extinguishes, PRINT LOCAL indicator lights and then goes off when printer buffer receives the message; LOCAL indicator lights. Printer copies entire display (24 lines): Monocase Printer — All display characters print as capitals. Up-Low Printer — All characters are copied as displayed.	•Flashing PRINT LOCAL indicates printer: a. Cabinet lid is open. b. Is in form-out or paper-out condition. c. The ac power is off. d. Printer SSI connection is not made. *Note:* Depress LOCAL to clear flashing PRINT LOCAL.
14	Place the cursor away from home position and depress the CURSR TAB key.	The cursor returns to home position. *Note:* Displayed data is not affected by CURSOR TAB and BACK TAB keys.	
15	Place the cursor away from home position and depress the BACK TAB key.	The cursor returns to home position.	
16	Place the cursor away from home position and depress the TAB key.	Cursor returns to home position. Any characters below cursor will be cleared. *Note 1:* Null displayed as space. *Note 2:* Cursor will not move if option 402c or d is chosen.	

CHART 4 (Cont)

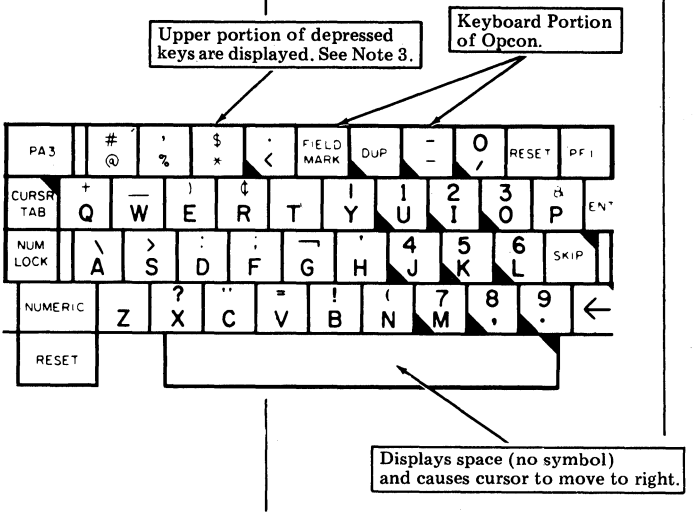
KD LOCAL TEST PROCEDURES

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
17	Type some text on the opcon and then depress S/R. Attempt to type some text on the opcon.	Text is displayed. LOCAL indicator extinguishes when S/R is depressed. Attention bell sounds each time a key is depressed (provided typing rate does not exceed maximum repeat bell rate).	
18	Alternately depress LOCAL then depress PA 1 key, then LOCAL key and PA 2, PF 1, PF 2 through PF 12, R/TST and CLEAR keys in the same manner.	LOCAL is lit and extinguishes when a key is depressed (same for each key). Data on display remains unchanged, except when CLEAR is depressed; all data clears from display and cursor goes to home position.	
19	This step applies only to monocase opcons (blocking keytop over CAPS LOCK position). a. Depress ERASE INPUT and QUOTES keys together with additional force. b. Depress A (do not depress SHIFT). c. Depress ERASE INPUT and P keys together with additional force.	 TST indicator lights and remains lighted. S/R key lights. If S/R key does not light, see Trouble Analysis column entry. TST indicator light goes out.	 Chart 9 •Remove blocking keytop, check that plunger is in lower position. •Replace opcon. Chart 9
20	When typewriter style opcon has successfully passed Steps 1 through 19, go to Chart 5.		
	INTERNAL NUMERIC CLUSTER STYLE OPCON (Steps 21 through 41)		
21	a. Place internal numeric cluster style opcon into the NUM LOCK mode by depressing and latching the NUM LOCK key. b. Perform Step 1b.	The indicator lights. Results and Trouble Analysis of 1b apply.	

CHART 4 (Cont)

KD LOCAL TEST PROCEDURES

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
22	Home the cursor and depress a few keys on the keyboard portion of the opcon.	Upper case alpha characters and numeric characters can be displayed.	



Note 1: Each key need not be checked except for a trouble call. Each shall function each time it is depressed. Depressing [Z] or [T] will display space (no symbol) and cause cursor to move to right.

Note 2: TAB writes Nulls (displayed as space) from cursor position to beginning of next field. NEW LINE is not displayed.

Note 3: If Option 407a is installed (Numeric Lock Special Feature enabled) in the SDC, NUMERIC must be depressed (or NUM LOCK key lighted) to enter characters outside the numeric cluster (keys in cluster are marked: [ ]).

23	Hold down the [ALPHA] key while depressing an alphanumeric key (ie, A, B, C, etc).	The corresponding alpha character (ie, A, B, C, etc) is displayed.	
24	Disengage the [NUM LOCK] key by depressing it again momentarily. The indicator light goes out. Depress a couple of keys (ie, A, B, C, D, etc) on the keyboard portion of the opcon.	The alpha characters shown in the figure of Step 2 (lower portion of keytops) are displayed (ie, A, B, C, D, etc).	

CHART 4 (Cont)

KD LOCAL TEST PROCEDURES

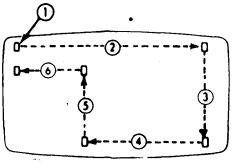
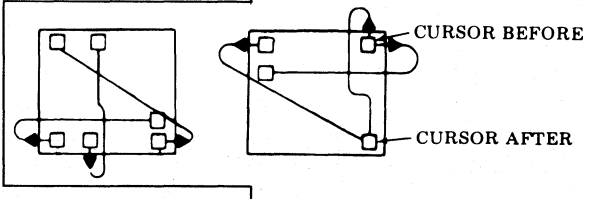
STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
25	Hold down the NUMERIC key while depressing and checking operation of one of the following alpha keys: (#, +, \, etc.).	Upper portion of depressed keys are displayed.	
26	Depress the FIELD MARK key, then depress the DUP key.	FIELD MARK is displayed as FS. DUP is displayed as DL.	
27	Fully depress the SPACE key.	The space key repeatedly moves the cursor.	
28	Hold down the REPT key while depressing any alphanumeric key.	The alphanumeric character is repeated.	
29	① Depress HOME key. ② Depress ‡ → key. ③ Depress ‡ ↓ key. ④ Depress ‡ ← key. (Try both ← keys.) ⑤ Depress ‡ ↑ key. ‡With more force than normally required. *Note:* There is no CURSR RTRN key on this opcon.	 *Note:* In local opcon operation, attempts to move the cursor off the display will result as shown: 	

CHART 4 (Cont)

KD LOCAL TEST PROCEDURES

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
30	Depress ERASE INPUT key.	Display clears and cursor goes to home position. LOCAL key remains lighted.	
31	Type the alpha characters A through J on the display. Place the cursor over the character E and depress the CHAR INSRT key once, then also depress REPT -- releasing both after the characters move to the next line.	① ABCD[E]FGHIJ ② ABCD[ ]EFGHIJ ③ ABCD[ ] EFGHIJ *Note:* CHAR INSRT and CHAR DLETE affect all 24 lines. Characters move slowly.	
32	Depress the CHAR DLETE key momentarily.	ABCD [ ] EFGHIJ ABCD [ ] EFGHIJ Characters EFGHIJ move one position to the left as shown.	
33	Depress the LINE INSRT key three times.	The cursor remains at its present location, and the line of data moves down three lines.	
34	Depress the LINE DLETE key once.	The line of data moves up one line.	
35	Depress PRINT LOCAL key, (if printer is not provided, go to Step 36).	LOCAL extinguishes, PRINT LOCAL key lights and then goes off when printer buffer receives the message; LOCAL lights. Printer copies entire display (24 lines).	•Flashing PRINT LOCAL indicates printer: a. Cabinet lid is open. b. Is in form-out or paper-out condition. c. Ac power is off. d. Printer SSI connection is not made. *Note:* Depress RESET to clear flashing PRINT LOCAL.
36	Place the cursor away from home position and depress the CURSR TAB key. Repeat Step 36 but depress the SKIP key.	The cursor returns to home position. *Note:* Displayed data is not affected by CURSOR TAB, SKIP and BACK TAB keys.	

CHART 4 (Cont)

KD LOCAL TEST PROCEDURES

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
37	Place the cursor away from home position and depress the [BACK TAB] key.	The cursor returns to home position.	
38	Place the cursor away from home position and depress the [TAB] key.	Cursor returns to home position. Any characters below cursor will be cleared. *Note 1:* Null displayed as space. *Note 2:* When OPT6 is "I" or "A", cursor will not move.	
39	Type some text on the opcon and then depress [ENTER (S/R)] .	Text is displayed when ENTER key is depressed, LOCAL indicator extinguishes, INPUT INHIBIT indicator lights.	
40	Type some text on the keyboard portion of the opcon.	Attention bell sounds each time a key is depressed. No more text is displayed. *Note:* The audible alarm control on the opcon should be adjusted to allow bell to be heard.	
41	Alternately depress [RESET] (next to PF1) then depress [PA 1] key, then [RESET] key and [PA 2] , [PF 3] , [PF 1] through [PF 5] and [CLEAR] keys in the same manner. Depress [RESET] , then depress [ALPHA] at the same time as [R/TST] . Depress [RESET] (next to NUMERIC). *Note:* The PF6 through PF12 are not present on this opcon.	[LOCAL] is lit and extinguishes when PA1 key is depressed (same for each key). Data on display remains unchanged, except when CLEAR key is depressed; all data clears from display and cursor goes to home position.	

When the KD has successfully completed these tests, proceed to Chart 5.

D. Data Set Analog Loop-Back Self Test

2.07 Check the data set using Chart 5.

CHART 5

DATA SET ANALOG LOOP-BACK SELF-TEST PROCEDURES

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
Note: If Station has a Data Set 208A or 208B, go to Step 2. If a Data Set 212A is used, go to Step 3. If a 251A1TDU is used, go to Step 4. If a 500A Type DSU is used, go to Step 5.			
1	Data Set 201C		
	Apply ac power to data set.	ON, MR, and MC are lit.	
	Perform Analog Loopback Self-Test as follows:	*Note:* TR lamp may or may not be on depending on the state of the stations DTR lead.	
	• Depress AL button.	AL button latches, TM lights and MR goes off.	
	• Depress ST button.	All lamps except MC should be ON.	
	• Observe MC lamp for 30 seconds.	MC lamp should not blink on.	
	• Depress RO button.	RS, and CS lamps should be off; MC lamp should be on. CO lamp extinguishes if switched carrier option is used and lights if continuous carrier option is used.	•Check Data Set Options. Replace Data Set.
	• Release RO, ST, and AL buttons.	TM lamp should be off. This completes the data set self-test; go to Step 5.	

CHART 5 (Cont)

DATA SET ANALOG LOOP-BACK SELF-TEST PROCEDURES

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
2	Data Set 208A or 208B Apply ac power to data set. Perform Status Lamp Check and Analog Loopback Self-Test as follows: Status Lamp Check		
	• Depress LP nonlocking button.	All the lamps on the data set should be lighted.	•If ON lamp is off, check that ac voltage to data set is between 105 to 130 volts. *Note:* The ON lamp will go off if the output voltage of the power supply becomes excessive. the power cord must be unplugged and plugged in again after correcting the overvoltage to make the lamp light again.
	• Depress AL button. • Depress ST button.	ON, RS, CS, and CO lamps should be lighted. MR and ER lamps should be off.	*Note:* (208B Only) TR lamp may or may not be on depending on the state of the stations DTR lead.
	• Observe ER lamp for 30 seconds.	If ER lamp is on or blinks, this indicates that the data set has failed the Analog Loopback Self Test.	
	• Depress AL and ST buttons.	The data set is returned to normal operating condition. This completes the data set self-test; go to Step 5.	Replace Data Set.

CHART 5 (Cont)

DATA SET ANALOG LOOPBACK SELF-TEST PROCEDURES

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
3	Data Set 212A: Apply ac power to data set. Perform the Analog Loopback Self-Test as follows: *Note:* HS button should be in depressed position. • Depress AL and ST buttons. • Observe the MC indicator for one minute. • Release AL and ST buttons.	 The MB, HS, MR and TM indicators should be lit. The MC indicator light goes off after SD and RD indicators light. See Section 582-201-200 for data set optioning. *Note:* The TR indicator may or may not be on depending on the state of the stations DTR lead. MC indicator does not blink on. MB, TM, SD and RD indicators go out, MC will light if no carrier is being received. Go to Step 5.	 Replace Data Set.
4	Internal Modem 251A1 TDU. Depress and hold down the switch on the 251A1 for 5 seconds.	MC lamp on 251A1 flashes once immediately and then remains off. Go to 2.08.	Replace 251A1.
5	Data Sets 201C, 208A or B, or 212A or 500 Only. With all equipment power switches on and conditioned for operation (paper installed in printer; cabinet lid closed, etc), check for the correct data set indicator lights. *Note:* CO should be lit (MC not lit on 201C, ER not lit on 208) when the distant end (CPE) is providing carrier on condition. Before beginning on-line test with STC/DTC notify customer of intended	 Data Set 201B3 None Data Set 201C ON — Lighted TR — Lighted MR — Lighted RS — Off CS — Off CO — Off (See Note) MC — Lighted TM — Off	

CHART 5 (Cont)

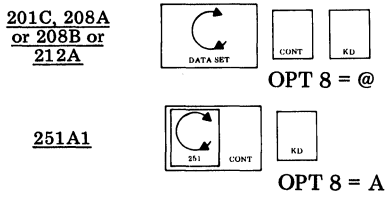
DATA SET ANALOG LOOPBACK SELF-TEST PROCEDURES

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
5 (Cont)	test and that 40 type station test will take approximately 5 minutes per device.	Data Set 208 ON — Lighted TR — Lighted (208B Only) MR — Lighted RS — Off CS — Off CO — Off ER — Lighted } (See Note) Data Set 212A MB — Off TR — Lighted MR — Lighted SD — Off RD — Off HS — Off MC — Lighted TM — Off Data Service Unit 500A PWR— Lighted NS — Off LL — Off RT — Off Go to 2.08.	

ON-LINE TESTS

A. Preliminary On-Line Testing

2.08 Preliminary Requirements — the data set must pass the requirements of Chart 5. Chart 5 makes this test:



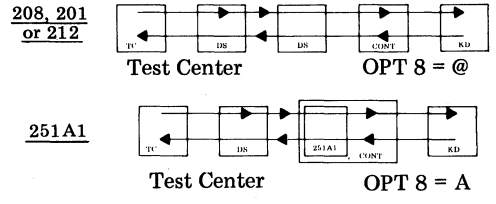
B. On-Line Test Methods

2.09 On-Line tests require access to a Data Test Center (DTC) by way of a Servicing Test Center (STC). Hereafter, the DTC is called the Test Center in Private Line Applications. Access to the Test Center may require a four-wire DDD backup connection at the STC or installation site. This connection is beyond the scope of this section (refer to Section 598-082-201, if required).

Note: All on-line tests require that the KD/Controller Local Test of Chart 2, and Data Set Analog Loopback Test of Chart 5 have been successfully performed first.

2.10 On-line testing requires that the End-to-End Installation Test of 2.11 be performed first. If this test is performed satisfactorily, the station should be put into service. If this test cannot be performed because of failures in being able to gain access to the DTC, then the Near-End Analog Loopback and/or Far-End Digital Loopback Tests of 2.12 and/or 2.13 or 2.14 should be performed.

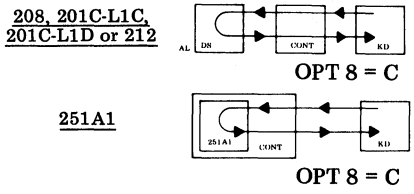
2.11 An End-to-End Installation Test is performed with the assistance of the DATASPEED Test Center.



This test must be requested from a local area DATASPEED Test Center. In situations where access to a Test Center is not provided for in the customer's system, the required End-to-End Installation Test can be omitted if correct in-service operation testing with the customer equipment or system can be verified by the craftsperson and is customer accepted. If trouble does occur in an in-service operation test, refer to trouble analysis or request a Test Center to perform a line monitor test.

Perform the tests in Chart 6, End-to-End Installation Test Procedures.

2.12 The Near-End Analog Loopback Test as follows:



This test provides a craftsperson with a local test method to check station and local data set operation when access to the DTC cannot be attained. This test cannot be performed if station is equipped with a Data Set 201C-L1 or 500A-Type DSU.

This test applies only to Data Sets 201C-L1C, 201C-L1D, 212A, 208, and 251A1 TDU. If another type of data set is present, go to 2.13. If a 251A1 is present, go to 2.12 (b).

(a) For 208, 201C-L1C, 201C-L1D or 212A Only: Depress AL button (locking) on the data set (all other buttons released).

(b) Enter the "OPT" mode by depressing the controller SELF-TEST switch for one to two seconds.

(c) Move the cursor to the character following "OPT 8" by depressing CURSR TAB repeatedly.

(d) Depress "C".

(e) Return to operating mode by depressing LOCAL (or RESET).

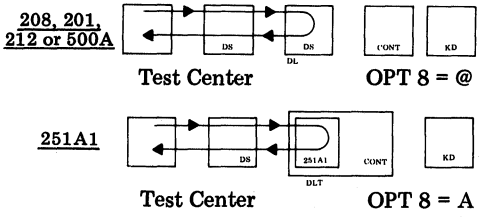
(f) Perform Local Tests using the same test routine given in Chart 2, KD/Controller Local Test Procedures (up to Step 5 only). The test occurs when S/R key is depressed.

(g) If test is not successfully completed, the controller or data set is at fault. If test is successfully completed, perform (b) and (c) above, then: (208, 201C-L1C, 201C-L1D or 212A only) depress @, or (251A1 only) depress A.

(h) Release AL button on data set.

Caution 1: Do not release AL button (208, 201C-L1C, 201C-L1D or 212A only) during this test. If AL is released while OPT 8C is installed, data sent by S/R key depression can be sent into the customer's data system during the test; any data operation occurring at that time would be scrambled.

2.13 A Far-End Digital Loopback Test is performed as follows:



Caution 2: Do not perform the digital loopback test if the customer data channel is on the same circuit with other stations which are actively sending or receiving data. If this test is performed on an active circuit, data transmissions on that circuit will be scrambled and possibly halt the data system operation. BEFORE TESTING, REQUEST PERMISSION FROM CUSTOMER AND DATA TRANSMISSION CENTER FOR TIME AND COOPERATION TO TEST.

If station is dial-up version, establish line connection first. For 201, 212, and 208 only: Depress the data set DL key (locking) when directed by the attendant at the far end. When the test is complete, the attendant at the far end will tell you to release the DL key to the released position.

Note: (212A Data Set only) If station Data Set 212A is optioned for automatic answer, the DTC may force the station data set into DL by depressing RDL on the 212A Data Set at the DTC.

For 500A only: When directed by the far-end attendant, place the DSU into DL (see Section 595-200-200).

For 251A1 TDU only: When directed to go into "DL" by the far-end attendant, perform the following:

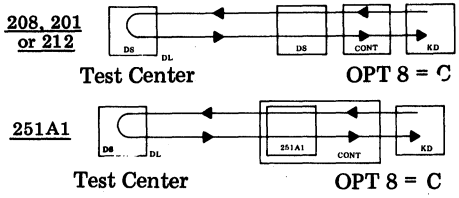
(a) Depress CONTRL and L/TST (or ALPHA and L/TST as applies) at a KD.

(b) Type "DLT" over the "THE" in the test message. Depress S/R. "DTL MODEM IN DIGITAL LOOPBACK TO RESET PRESS CLEAR" will be displayed.

(c) The 251A1 is now in "DL". Each minute, depress S/R to keep the 251A1 in loopback. The 251A1 will automatically come out of loop-back in approximately 2 minutes if S/R is not depressed.

(d) When directed to terminate "DL", depress CLEAR.

2.14 A Far-End Digital Loopback Test is performed as follows:



Note: This test should only be performed when the Digital Loopback test of 2.13 cannot be performed.

Caution: Caution 2 of 2.13 applies.

If a multistation arrangement shares the same data communications circuit, all communications on that circuit must cease during the test period. This test can be performed with the assistance of the DATASPEED Test Center (ie, similar type of data set patched into customer circuit to facilitate the test). If station is a dial-up version, establish line connection first.

(a) Have the far-end attendant depress DL.

Note: If far-end data set is 212A and optioned for automatic answer, far-end data set can be forced into DL by depressing RDL at station Data Set 212A.

(b) Perform Steps 2.12 (b) through (f).

(c) If the test is not successfully completed, trouble is in transmission lines, far-end data set or near-end data set. If the test is successfully completed, then after performing 2.12 (f), (201, 208 or 212A only) depress @, (or 251A1 only) depress A.

CHART 6

END-TO-END INSTALLATION TEST PROCEDURES

STEP	PROCEDURE	RESULT	TROUBLE ANALYSIS
1	Depress LOCAL (or RESET) and ERASE INPUT keys on the opcon.	LOCAL lights. Cursor returns to row 1 and column 1. Display is cleared of all data.	Go to Chart 2.
2	Depress PA1 key on the opcon.	LOCAL key lamp extinguishes. (Also, see Notes 1 and 2 following Chart 6.) Internal Numeric Cluater Opcon: INPUT INHIBIT lights.	Go to Chart 2.
3	Contact the Test Center and request End-to-End Installation Test. • Establish line connections per Test Center instructions, then observe carrier on indicators indicating line established to the Test Center.	201C: MC — Goes off; CO — Lights 208: ER — Goes off; CO — Lights 251A1 TDU: no indication 212A: MC — Goes off	Go to Chart 5. Perform Near-End Analog Loopback Test of 2.12. Perform Far-End Digital Loopback Test of 2.13 or 2.14.
4	For Test Center only.	Proceed to Step 5. (Also see 2.17.)	
5	If talk line to the Test Center is not available after test is requested, verify that the test has started by observing the RS/CS LEDs on the front of a 201 or 208 Data Set or the SD/RD LEDs on the front of 212 Data Set. *Note:* For 251A1, see Note in result column.	RS/CS or RD/SD lights, on the front of the data set should flash ON then OFF during testing. *Note:* If RS and CS or RD and SD are on constantly, observe the LEDs on 410290 or 410291 circuit card. The RD and SD LEDs are normally off, indicating a mark. They turn on for space. Flashing of RD indicates received data. Flashing of SD indicates sent data. Go to Step 6.	Inform Test Center of problem.
6	The Test Center will perform the remainder of the test. Proceed to devices and check for correct test results; Fig. 6. and 7.	Test Center will inform of test acceptance or trouble. Call Test Center back if required. See Note 3 following Chart 6. Proceed to 2.15.	

Note 1: If the KD device is observed during this test, the S/R key must operate as follows:

S/R key flashing continuously (aborted condition) should be reported to the Test Center.
S/R key flashes once when KD has sent data.
S/R key lights when KD is selected to receive data.

Note 2: If a tractor feed printer is part of station, check that the forms switch is in ON position.

Note 3: If you are not in "talk" communication with the test center during this test, be sure to "call back" test center for verification of correct operation. After verification of correct operation using this test procedure (including test center approval), depress LOCAL (or RESET) then CLEAR keys on all KDs to normalize station. Verify correct operation in customer system before leaving site.

C. Checkout of Received Printer Message

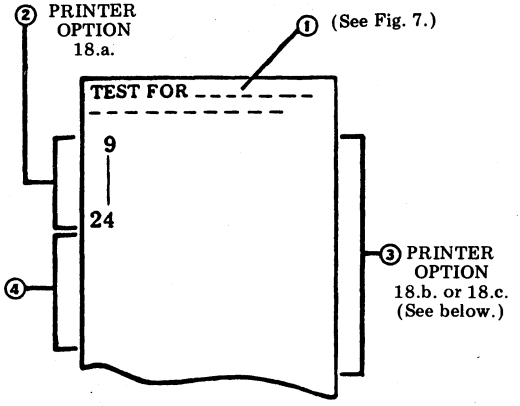


Fig. 6—Printed Test Message

2.15 If a printer is part of the station, check for correctness of printed test message, see ① above. If printer is not part of station, proceed to 2.19.

2.16 The printer motor will remain on for approximately 5 to 40 seconds after the test message is received.

Note: Paragraphs 2.17 and 2.18 check the options that are located on the printer circuit card.

2.17 Option 18a (No Feedout) — The blank lines ② are determined only by message length and column format sent to the printer. This test uses an 80-column format, therefore, lines 9 through 24 feed out (total of 1920 characters).

2.18 Options 18b or 18c (16-line feedout on RM loss or 16-line feedout on RM loss or ETX). This option illustrated as ③, operates the same as for Option 18a with the exception that after the blank lines 9 through 24 a 16-line feed out (friction feed printer only) will occur. If Option 39a is installed, tractor feed printer will form feed out to the length of ④, if the printer forms switch is ON. Refer to the Form Selector Pointer Setting and the Belt and Form Length table on the printer to determine proper forms operation.

D. Checkout of Received KD Message

2.19 Check for correctness of display and station options (Fig. 7):

Option 402.a. (OPT 6H Displayed) or Option 402.b. (OPT 6@ Displayed) — Continuous attention (the opcon bell repeatedly sounds if volume is turned up) until LOCAL is depressed; depress LOCAL. Bell silences. / One second attention (the opcon bell sounds if volume is turned up) and LOCAL key lights.

Option 406.a. (OPT 7@ Displayed) — Alpha characters can be typed over periods in the numeric field (bell sounds) — line 5. This entry applies if OPT 4G is displayed (hold down ALPHA key while type characters).

Option 406.b. (OPT 4@ Through OPT 4C and OPT 7A Displayed) — Bell sounds when alpha is typed over numeric field; only numeric data can be entered into field — line 5.

Line 1 is copied as shown (Fig. 7).
Line 2, the word PROTECTED begins in the fifth character position and is followed by the word INTENSIFIED. INTENSIFIED is brighter than normal for Option 403a (OPT 5@ displayed) or Option 403c (OPT 5B displayed). INTENSIFIED blinks for Option 403b (OPT 5A displayed) or Option 403d (OPT 5D displayed). Lines 3 through 8 are as shown below; the cursor must be positioned over "C" on line 8.

```
TEST FOR A SYNCHRONOUS DATASPEED 40 ≡                          ← Line 1
PROTECTED INTENSIFIED ≡                                        ← Line 2
NONPROTECTED NONDISPLAYED FIELD>          <≡                   ← Line 3
PROTECTED NONDISPLAYED FIELD>             <≡
NUMERIC FIELD> . . . <≡ ←                                      ← Line 5
80    CHARACTER ROW OF X'S≡ ← (May be 132 character row of Xs.)
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
> C <      (May have "END OF TEST" on line 24.)                 ← Line 8
```

Fig. 7—SYNC 40 Test Message

3. TROUBLESHOOTING

3.01 The troubleshooting procedures for the controller are included in the controller self-test procedure.

3.02 A brief troubleshooting reminder on the monitor is provided in Chart 8. For detailed analysis, refer to Section 582-213-500.

3.03 Limited troubleshooting for the opcon is provided in Chart 9. For detailed analysis, refer to Section 582-211-500.

3.04 Trouble analysis for the printer is not given in this section. Refer to Section 582-210-500.

3.05 The use of a controller arrangement form (Section 582-200-205) is necessary to troubleshoot using the controller self-test.

CHART 7

STATION ANALYSIS

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
1. Are all power supply voltage indicators lit?	Go to 2.	Go to Chart 10, 40PSU101 Power Supply Analysis.
2. Depress and hold SELF-TEST switch. Do all three pattern lamps (LEDs) on 410251 light?	Go to 3.	40PSU101, see Chart 10. If power supply voltages are correct with all controller cards installed, replace 410251 circuit card. If problem remains, replace controller cards one at a time and repeat Step 2 until defective card is found. If all replacement cards together do not allow LEDs to light, disconnect opcon, monitor, data set (or data auxiliary set), and printer cables from back panel. then repeat Step 2. If disconnecting a cable corrects problem, cable or device at other end is at fault. If LEDs still do not light, replace 410276 (early version) or 410277 (later version) back panel. See Note 2 in Step 3.

CHART 7 (Cont)

STATION ANALYSIS

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
3. Release SELF-TEST switch. Does controller pass self-test? (See Note below.) This includes display patterns of Fig. 3 (see Note in "Yes" column. *Note 1:* Trouble patterns of controller arrangement forms are given in Section 582-200-205. When the card indicated by the trouble pattern in Section 582-200-205 is replaced, but the trouble remains, then the patterns given in the "NO" RESPONSIVE DIRECTIVE column of this question apply. *Note 2:* Whenever it becomes necessary to replace a 410276 back panel with a 410277 back panel, or a 410290 circuit card with a 410291 circuit card or a 410261 circuit card with a 410264 circuit card, it may be necessary to also consult Section 582-200-205, Controller Arrangements for other affected circuit card positions.	Go to 4. *Note:* If display pattern appears with errors or is distorted, replace 410286 circuit card and repeat Steps 2 and 3. If 410286 circuit card does not correct a display pattern, replace 410287 circuit card and repeat Steps 2 and 3. Legend for trouble patterns: ● LED 1 ● LED 2 ● LED 3 Front of 410251 circuit card	Replace circuit card indicated by trouble pattern of applicable controller arrangement form. If more than one trouble pattern appears, replace card indicated by last trouble pattern first. Repeat Steps 2 and 3. If indicated card does not pass, repeat Steps 2 and 3, then follow applicable procedure below: a. Replace 41026N* circuit card, repeat Steps 2 and 3. b. Remove all circuit cards, except 410251 and 41026N*. repeat Steps 2 and 3. If only middle LED is lit, then replace 410251 and 41026N* circuit card, otherwise replace back panel. a. Replace 410251 circuit card, repeat Steps 2 and 3. b. Follow b. entry of ● ● ●. a. Replace 410251 circuit card, repeat Steps 2 and 3. b. Replace back panel. a. Replace 410251 circuit card, repeat Steps 2 and 3. b. Replace back panel. *See Note 2. a. Replace 410287 circuit card, repeat Steps 2 and 3. b. Replace back panel.

CHART 7 (Cont)

STATION ANALYSIS

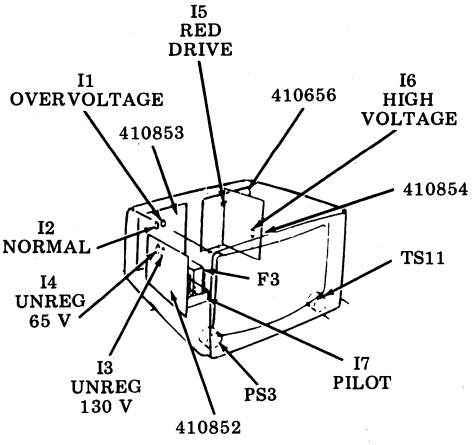
ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
4. Does the local test work? (CTRL and S keys or L/TST and ALPHA).	Go to 6.	Go to 5.
5. Depress the LOCAL key on the opcon. Is the local lamp lit?	Check the cable between the controller and opcon. Refer to Section 582-200-205.	Go to Chart 9, Opcon Analysis.
6. In the local mode, do all keys on the opcon function properly? Refer to C. KD Local Tests,(2.05).	Go to 7.	Replace opcon. Replace 41029N* circuit card.
7. Input data on the monitor. Depress PRINT LOCAL. Does the print local printer print data properly?	Go to 8.	Check cable between the controller and printer. Replace printer. Replace 41029N* circuit card. Also see Step 8 of Chart 3.
8. Does the station pass the on-line checkout?	Place in service.	Go to 9.
9. Does RD LED on 41029N circuit card flash during polling or selecting?	Go to 10.	Check data set (or 251A1) options. Check data set cable (EIA pin 3¶) or data auxiliary set cable. Replace data set (or 251A1).
10. Does RS LED (201 or 208) or SD LED (212) on data set light after polling or selecting?	Go to 11.	Check data set cable (EIA pin 4¶) or data auxiliary set cable. Replace 41029N* circuit card.
11. Does CS LED (201 or 208) on data set light after polling or selecting?	Go to 12.	Check data set (or 251A1) options. Replace data set (or 251A1).
12. Does SD LED on 41029N circuit card flash after polling or selecting?	a. Check data set or 251A1. b. Check data set cable (EIA pin 2¶) or data auxiliary set cable. c. Replace 41029N* circuit card.	Check data set cable (EIA pin 5¶) or data auxiliary set cable. Replace 41029N* circuit card.

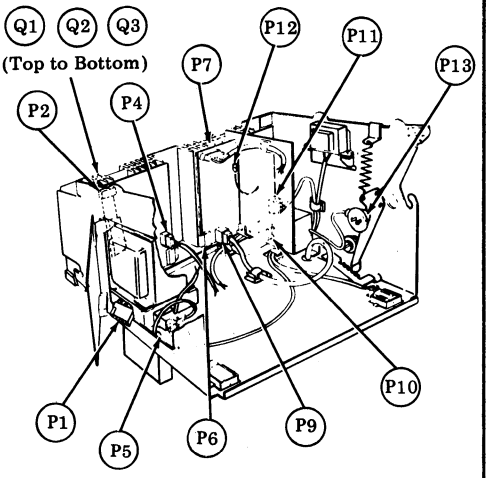
¶EIA pin number applies to the data set end.

*See Note 2 in Step 3.

CHART 8

40MN101 MONITOR ANALYSIS





ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
1. Is red drive lamp I5 lit?	Go to 2.	Check cable between controller and monitor. 410286 circuit card in controller. 410656 circuit card in monitor.
2. With PS1 and PS2 (see Fig. 1) on, is pilot I7 lit?	Go to 3.	Check 341578 fuse, F3 (1.4 SL-BL) and cables.
3. Are I4 and I3 lit?	Go to 4.	Replace 410852 circuit card.
4. Is I2 lit?	Go to 5.	Replace 410853 circuit card. Replace Q1.
5. Is I1 lit?	410853	Go to 6.
6 Is I6 lit?	See Note below.	Replace 410854 circuit card. Replace 410656 circuit card.

Note: If I9 (CRT filament) is not lighted or if problem still exists in the monitor, go to Section 582-213-500 for detailed trouble analysis.

CHART 9

OPCON ANALYSIS

Note: Start with Question 1, if typewriter style opcon is present. Start with Question 4 if internal numeric cluster style opcon is present.

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
TYPEWRITER STYLE OPCON		
1. Depress ERASE INPUT and QUOTES keys together (see above Note). Does TST indicator remain lit when keys are released?	Go to 2. *Note:* If lamps flash, clear by depressing ERASE INPUT T and P keys, then repeat no. 1.	Check for +12 V and -12 V to opcon. Refer to Section 582-200-405. Replace opcon.
2. Do the following: (See Note 1 at right.) (See Note 2 at right.)		

Depress Keys		Indicator	
		Key	Condition
SHIFT	A	S/R	ON
CTRL	R/TST		OFF
SHIFT	C	LOCAL	ON
CTRL	C		OFF
SHIFT	F	PRINT	ON
CTRL	\	LOCAL	OFF
	→	LOCAL	FLASH
CTRL	C		OFF

Note 1: Ignore any characters that may be displayed during this test.

Note 2: If opcon has CAPS LOCK key, when depressing A, C or F, CAPS LOCK key must be in latched position (ON) or SHIFT must be depressed. If opcon has no CAPS LOCK key, do not depress SHIFT.

a. Is the opcon a late design 40K104 or a 40K203?	Interface/bell card not present on 40K104, or 40K203 present. Go to 2b.	Interface/bell card present on 40K104. Go to 2c.

Note: Late design 40K104 opcons are sometimes called OPCON II and have a single card of new design. To check the vintage of an opcon, it is sufficient to remove opcon from cabinet (or base) and look through the slot at the rear for the interface/bell card.

CHART 9 (Cont)

OPCON ANALYSIS

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
2. (Cont)		
b. On late design 40K104 opcon (interface/bell card not present) or 40K203 opcon, fully depress ERASE INPUT. Does the alarm sound repeatedly as long as the key is depressed? *Note:* The alarm loudness control may require adjustment to hear the tone.	Go to 3.	Replace opcon.
c. Do all indicators operate as described?	Depress ERASE INPUT and P keys together to terminate test. TST indicator light goes out.	Replace opcon.
3. Does the opcon fail to generate proper characters?	Replace opcon.	Opcon OK.
INTERNAL NUMERIC CLUSTER STYLE OPCON		
4. Depress CONSOL TEST and LINE INSERT keys (fully depress LINE INSERT) together. Does CONSOL TEST indicator remain lit when keys are released?	Opcon is in loopback mode. Go to 5.	Check for +12 V and –12 V to opcon. Refer to Section 582-200-405. Replace opcon.
	Note: If lamps flash or the alarm sounds more than once or continuously, clear by depressing CONSOL TEST and RESET keys, then repeat Question 4 (use RESET adjacent to PF1).	
5. Do the following in the order given.		

Depress key(s)	Indicator		Notes
	Key	Condition	
A	S/R	On	
C	LOCAL	On	If entered loopback mode from LOCAL, LOCAL is already on.
M	INPUT INHIBIT	On	
F	PRINT LOCAL	On	(Question 5, continued on Page 38)

CHART 9 (Cont)

OPCON ANALYSIS

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
5. (Cont)		

Depress key(s)	Indicator		Notes
	Key	Condition	
I	NUM LOCK	On	
R/TST	S/R	Flashing On & Off	Depress only R/TST.
(Cursor right) →	LOCAL	Flashing On & Off	
LINE DLETE	INPUT INHIBIT	Flashing On & Off	
L/TST	PRINT LOCAL	Flashing On & Off	Depress only L/TST.
NUM LOCK	NUM LOCK	Flashing On & Off	
ALPHA & A	S/R	On (no flash)	
ALPHA & C	LOCAL	On (no flash)	
ALPHA & M	INPUT INHIBIT	On (no flash)	
ALPHA & F	PRINT LOCAL	On (no flash)	
ALPHA & I	NUM LOCK	On (no flash)	
NUM & R/TST	S/R	Off	LOCAL cannot be turned off while in loopback mode.
ERASE INPUT	INPUT INHIBIT	Off	PRINT LOCAL cannot be turned off while in loopback mode.
TAB	NUM LOCK	Off	Depress TAB not CURSR TAB.
R/TST	S/R	Flashing On & Off	Depress only R/TST.
ALPHA & R/TST	S/R	Off	(Question 5, continued on Page 40)

CHART 9 (Cont)

OPCON ANALYSIS

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
5. (Cont)		

Depress key(s)	Indicator		Notes
	Key	Condition	
CONSOL TEST	(See note to the right)		Opcon attention bell sounds repeatedly as long as key is depressed.

Do all indicators and bell operate as described?	Depress CONSOL TEST and RESET (adjacent to PF1) keys together to terminate test. CONSOL TEST indicator goes out. Go to 6.	Replace opcon.
6. Does the following occur? a. CONSOL TEST indicator goes out, b. PRINT LOCAL indicator goes out, c. LOCAL indicator stays on.	All three conditions are met. Go to 7.	Replace opcon.
7. Does the opcon fail to generate proper characters?	Replace opcon.	Opcon is OK.

CHART 10

40PSU101 POWER SUPPLY ANALYSIS

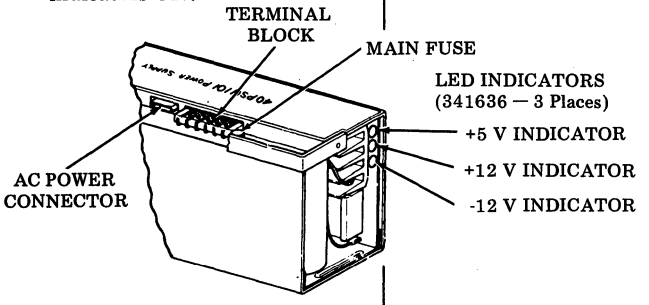
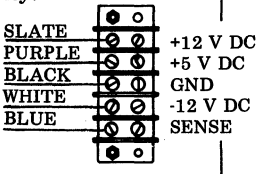
ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
1. With the set plugged in and power ON, are all LED indicators ON?  	All LEDs are on. Go to 2.	At least one LED is off. Go to 3.
2. Are all voltages correct at the output terminal block? Check voltage using a voltmeter having 20,000 ohms volt sensitivity.  	The power supply is OK.	Turn off all power. Remove all connections from back panel. Retighten all power supply connector screws (back panel is not connected to power supply now). Turn on power. Go to 6. *Warning: Wire colors of cable connecting to block are different from the wire colors of cable used in 40/1, 40/2, and 40/3 type.*
3. Are the ventilation fans in the electronics module moving air?	Go to 4.	Check ac power input power switch(es), cabinet ac wiring and ac connectors.
4. Turn off power. Is main fuse on the power supply blown?	Replace fuse, turn on power and go to 5. (129920 fuse, 5 amp SL-BL)	Replace power supply. If not on customer premises, go to Note following chart.
5. Turn off power. Did main fuse blow again?	Disconnect cable from back panel. Replace fuse, turn on power, and check output voltages. (Continued on next page.)	Replace power supply. If not on customer premises, go to Note following chart.

CHART 10 (Cont)

40PSU101 POWER SUPPLY ANALYSIS

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
5. (Cont)	If no output voltages are present and fuse blows again, replace power supply. If not on customer premises, go to Note following chart. If output voltages are present (power supply OK), go to 6.	
6. Are all voltages correct at the output terminal block? *Note:* See Question 2 for values.	Turn off power. Reconnect all leads from back panel. Remove all circuit cards from back panel. Turn power on. Go to 7.	Replace power supply. If not on customer premises, go to Note following chart.
7. Are all voltages at output terminal block now correct?	Turn off power. Reinstall one circuit card that was removed in 6. Turn on power. Repeat 7 until voltage not correct. Card causing problem is at fault.	Replace back panel. Replace power supply. If not on customer premises, go to Note following chart.

Note: When the power supply is shown to be at fault, refer to Sections 582-214-400, 582-214-500 or 582-200-405 as required.

SYNCHRONOUS "DATASPEED*" 40/4

SINGLE DISPLAY STATION ARRANGEMENTS

DISASSEMBLY/REASSEMBLY AND PARTS

CONTENTS

1. GENERAL

1.01 This section contains all necessary information on the removal and replacement of various components of DATASPEED 40/4 Single Display Station Arrangements. This section also includes locations of test switches and indicators used in trouble analysis and testing of the station.

1.02 Whenever this section is reissued, the reason for reissue will be listed in this paragraph.

1.03 Abbreviations used in this section are defined in Section 582-200-101.

1.04 To disassemble or reassemble parts (or units) of this section, the following tools (or equivalents) are required:

Screwdriver, 1/8 inch blade
Screwdriver, 1/4 inch blade
Socket wrench, 1/4 inch
Socket wrench, 5/16 inch
Open-end wrench, 1/4 inch
Open-end wrench, 1/2 inch
Static ground strap, 346392 (required only if circuit cards are handled)
Terminal extractor, 402840

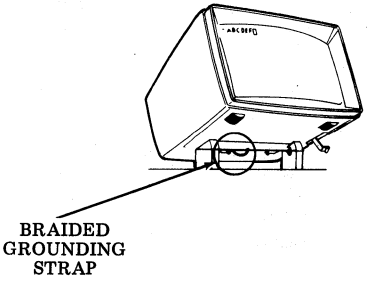
Note: When ordering replaceable components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410055).

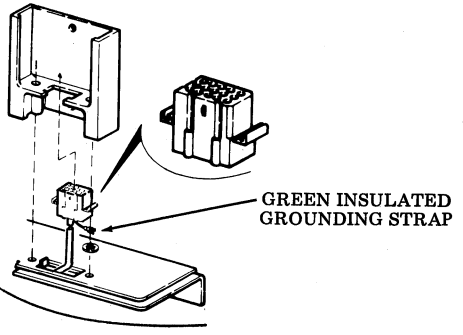
*Registered Trademark of AT&TCo.

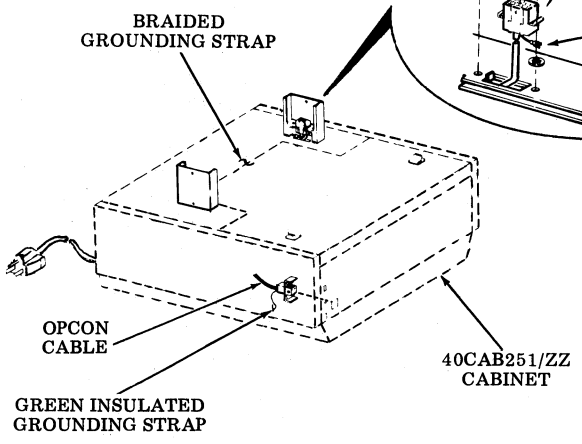
Prepared for American Telephone and Telegraph Company by Teletype Corporation

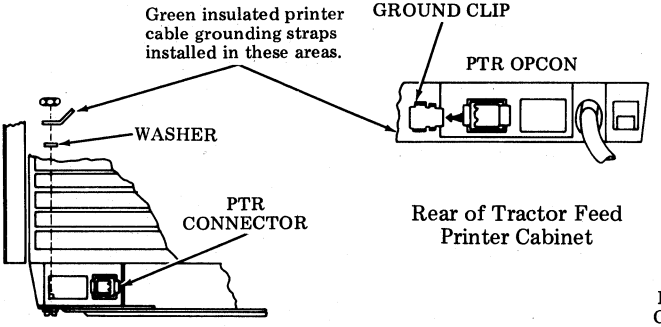
1.05 Grounding Strap Locations

Note: Remove strapping only when necessary.



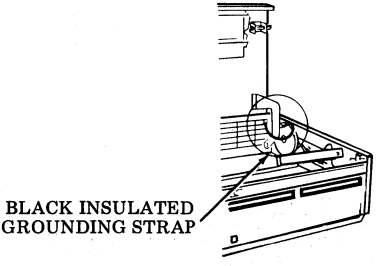






Rear of Friction Feed
Printer Cabinet

Rear of Tractor Feed
Printer Cabinet



Friction Feed
Printer Cabinet

2. DISASSEMBLY/REASSEMBLY

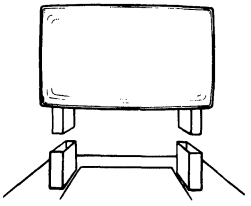
Caution: Remove all power from the set before performing any component replacement or conversions. This does not apply to cover removal for access to test switches, or to power on adjustments of the monitor.

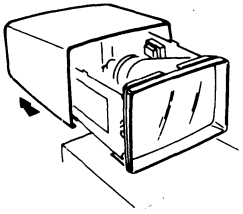
MONITOR

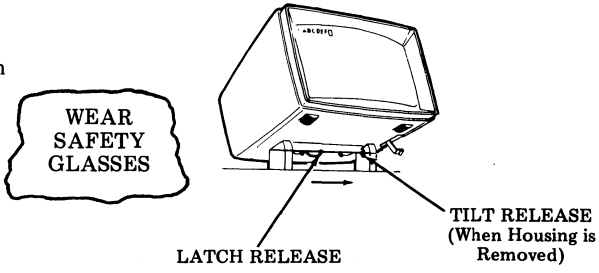
2.01 To remove the monitor:

① Removal of entire monitor unit from set: Grasp monitor by sides near supports and simply lift up. Electrical cable connectors are part of support assembly.

② Removal of monitor housing: Tilt monitor back and disengage latch. Slide housing back partially. Position monitor to its normal position making sure it locks in that position. Remove housing completely.







2.02 To replace the monitor, reverse the removal procedures of 2.01. For further disassembly of the monitor, refer to Section 582-213-701 or FIMP 579-505-350 (Part 7).

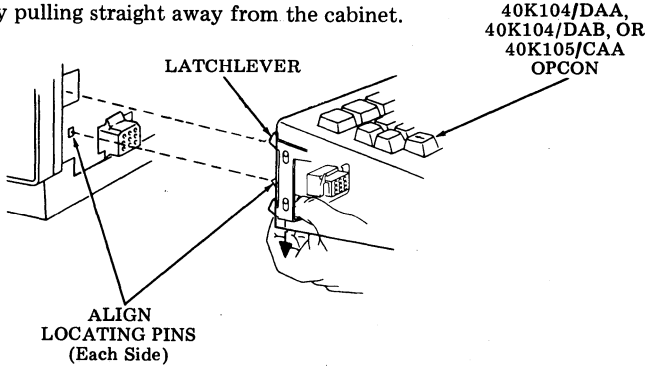
OPCON

2.03 To remove the opcon:

① Place thumb on inward tab of opcon (both sides).

② Press downward into unlatched position (each side).

③ Remove opcon by pulling straight away from the cabinet.



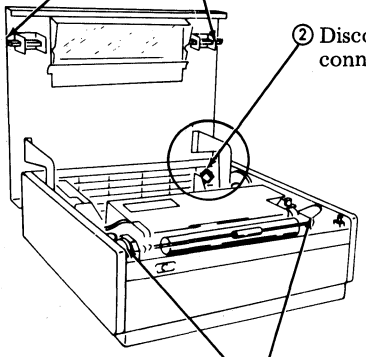
2.04 To replace the opcon, reverse the removal procedures of 2.03. When replacing opcon, make sure locating pins are fully engaged before pushing latchlevers upward into locked position. For further disassembly of opcon, refer to Section 582-211-700 or FIMP 579-505-350 (Part 7).

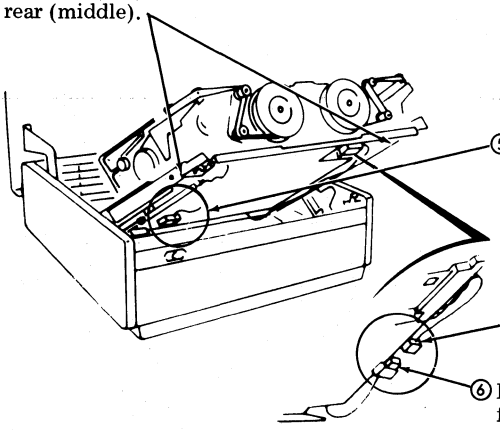
PRINTERS

A. Friction Feed Printer

2.05 To remove the entire printer assembly:

Note: The circuit card can be removed after Step 4 of disassembly. If printer is not being removed omit Steps 2 and 3.

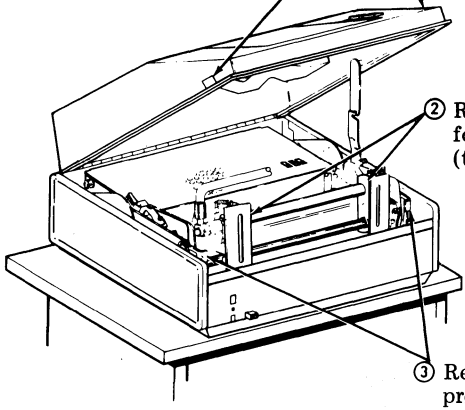


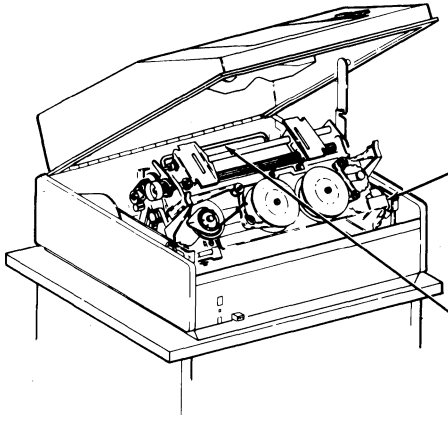


2.06 To replace the printer, reverse the removal procedures of 2.05. For further disassembly of printer and printer cabinet, refer to Section 582-210-702 or FIMP 579-505-350 (Part 7).

B. Tractor Feed Printer (80 or 132 Column)

2.07 To remove the entire printer assembly:





2.08 To replace the printer, reverse the removal procedures of 2.07. For further disassembly, refer to Section 582-210-702 or FIMP 579-505-350 (Part 7) for printers and Section 582-212-700 for cabinets.

PEDESTALS AND CABINETS

2.09 Refer to Section 582-212-700 or FIMP 579-505-350 for assembly or disassembly of a pedestal or cabinet.

40PSU101 POWER SUPPLY

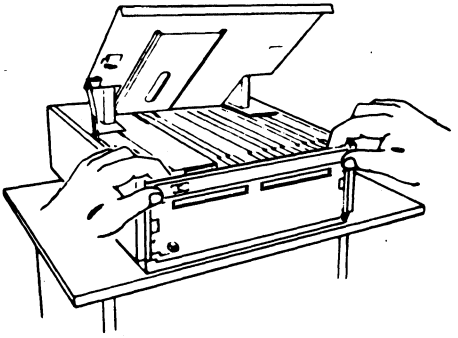
2.10 To remove 40PSU101 power supply, follow Steps 1 through 8 (also see Warning following Step 8).

① Release lid latches and open lid.

② Insert fingers as shown and lift then pull module forward.

Note 1: Do not attempt to lift at opcon (if present).

③ Move module forward until blocked by latch.



(Monitor and opcon not shown.)

⑧ Use handle to lift out power supply.

Warning: Do not attempt to force power supply up. Late design power supplies are secured with hardware from the bottom. (See Note 2.)

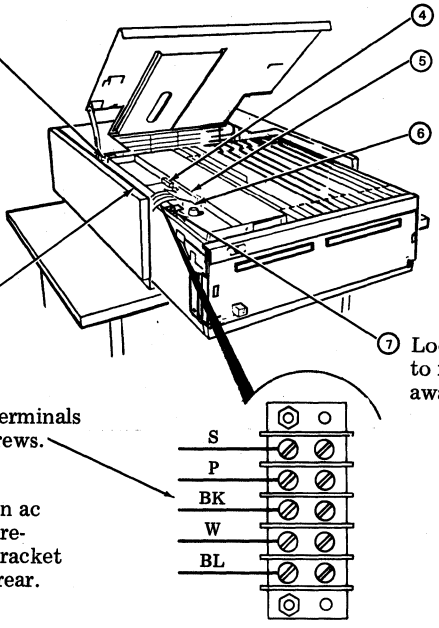
⑨ Replace power supply making sure to seat on locating pins.

④ Disconnect ac power cord.

⑤ Remove screws that secure insulator; remove insulator.

⑥ Loosen five screws from terminal strip; remove cable terminals from terminal strip.

⑦ Loosen bracket screw sufficient to raise and turn retainer bracket away from handle.



⑩ Slip on cable terminals and tighten screws.

⑪ Replace insulator. Plug in ac power cord. Reposition retainer bracket; tighten bracket screw. Move module to rear. Lower and latch lid.

Note 2: If the Warning applies, complete removal of power supply by:

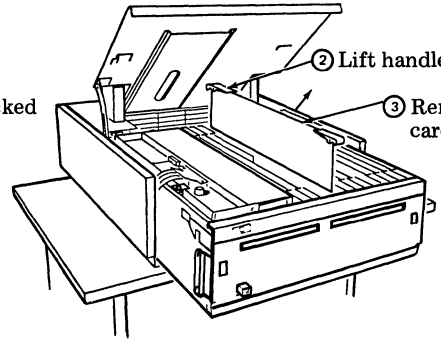
- Removing 406046 monitor cable, but only from retainer and back panel (2.16),
- Removing 406036 or 406066 cable, but only from data set or data auxiliary set — as applies (2.20).
- Removing 406039 printer cable, but only from printer (2.22).
- Removing logic package from cabinet (Steps 1, 2, and 3 of 2.24).
- Turning logic package so that it rests on the left side, removing power supply mounting hardware from bottom of logic package. Remove power supply.

2.11 To replace 40PSU101 power supply, follow Steps 9 through 11.

CONTROLLER

- Perform Steps 1 and 2 of 2.10.

Move module forward until blocked by latch to provide sufficient clearance for card removal.



② Lift handle(s) carefully.

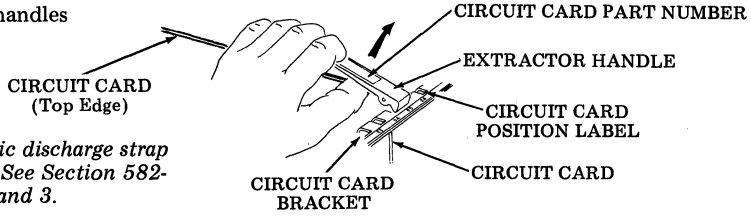
③ Remove controller circuit card (see 2.12 and 2.13).

A. Circuit Cards

Note: The required circuit cards and their locations are given in Section 582-200-205.

2.12 To remove a controller circuit card (see 2.13 for 410261 circuit card removal):

Lift up on extractor handles and lift straight up.



Warning: Wear 346392 static discharge strap when removing circuit cards. See Section 582-200-205, 1.04 Warnings 1, 2 and 3.

2.13 To remove 410261 circuit card:

① Remove 410251 circuit card; observe black plastic retainer near top edge of card.

② Collapse tab of retainer and lift the 410261 circuit card.

③ Work the top edge over the tab, then even up the rear edge; remove 410261 circuit card.

2.14 To replace a controller circuit card (see 2.15 for 410261 circuit card replacement):

① Check that card is proper for location (see Note above).

Check that pins on card are straight (not bent) by sighting down the two rows of pins.

Warning: Attempting to insert a card with bent pins into the back panel may result in damaging the back panel or the card.

③ Place card in slot, then depress gently but firmly until card is fully seated.

2.15 To replace 410261 circuit card:

Remove 410251 circuit card (if not already removed).

② Check that mating pins on 410261 circuit card are straight.

③ Place 410261 circuit card (component side up) over 410251 circuit card (component side up); mount the 410261 circuit card. The tab of the black plastic retainer near the top edge of 410251 circuit card will secure the 410261 circuit card.

B. Cables

406046 Monitor Cable

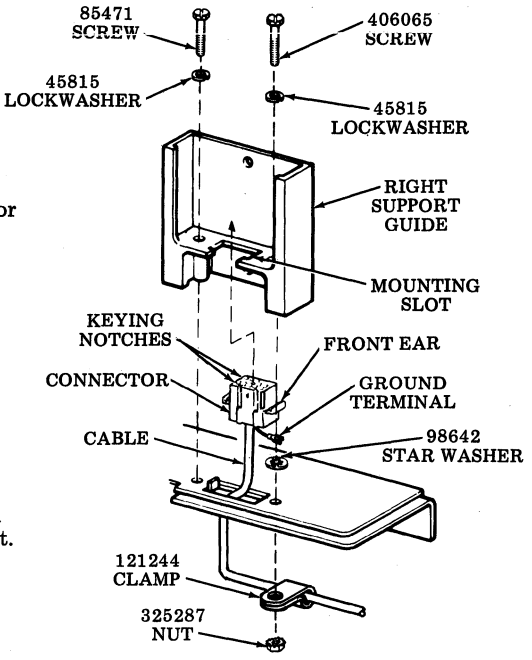
2.16 To remove 406046 monitor cable:

- Remove monitor (2.01).

① Use flat blade of screwdriver against connector front ear and use screwdriver shank against right support guide to hold ear in. With your other hand push down on front of connector to drop ear below mounting slot. Hold rear ear in and push down on connector.

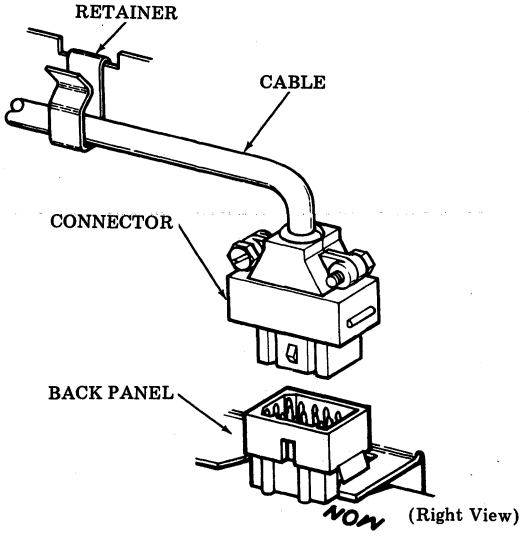
② Remove two screws and lockwashers from right support guide (retain nut when 406065 screw is removed).

③ Push connector down through hole in cover. Notice that connector keying notches face rear of unit and that star washer is positioned under connector ground terminal on the front.



④ Perform Steps 1, 2 and 3 of 2.10.

⑤ Remove cable from retainer by opening retainer and lifting cable out. Disconnect connector from back panel by pulling up while rocking connector back and forth.



(Right View)

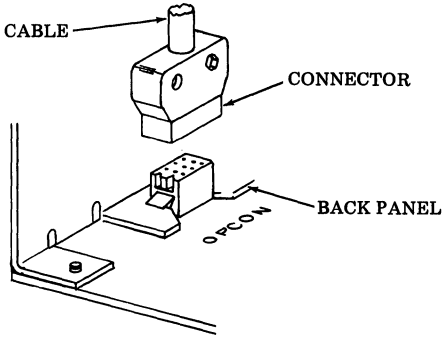
2.17 To install 406046 monitor cable, reverse the removal procedures of 2.16. At right support guide end, route cable to just below mounting slot. Install right support guide on cover (insure that the ground terminal and starwasher are in place). Push one ear into mounting slot, rock connector back and forth to engage other ear (keying notches to rear).

406048 Opcon Cable

2.18 To remove 406048 opcon cable:

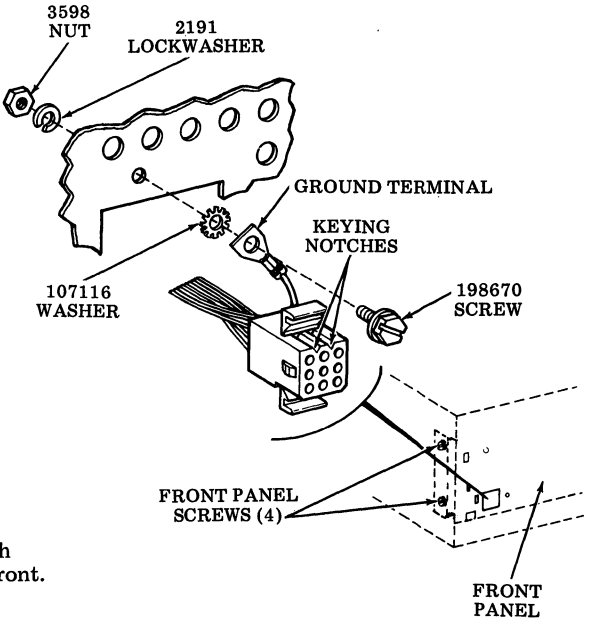
- Remove opcon (2.03).
- Remove 40PSU101 power supply (2.10).

(Disconnect connector from back panel.



(Left View)

② While holding one connector ear down, ease connector from the mounting slot toward inside of frame.



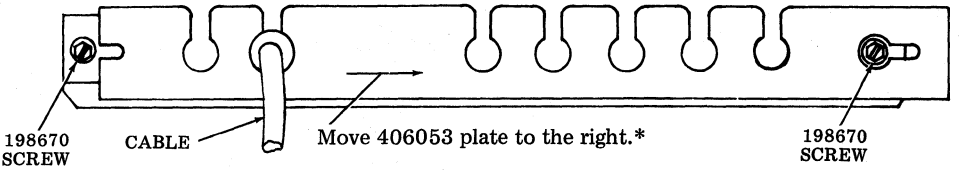
③ Remove four front panel screws (two on each side). Remove front panel and cable to the front.

④ Remove ground terminal screw and washer from front panel and a lockwasher and nut from inside the front panel.

2.19 To install 406048 opcon cable, reverse removal procedures of 2.18.

406036 EIA Cable or 406066 Private Line Interface Cable

2.20 To remove 406036 or 406066 cable:

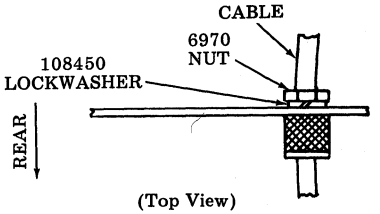


(Rear View of Controller)

*Directions are given as from rear of station.

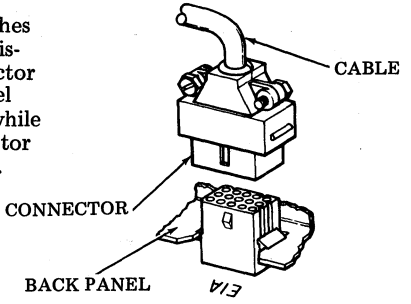
At the rear of controller, loosen two plate mounting screws (do not remove). Move plate to the right (as shown in illustration).

② Loosen nut and lockwasher that retains cable. Slide cable up from slot in plate.



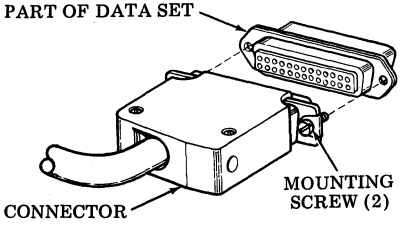
(Top View)

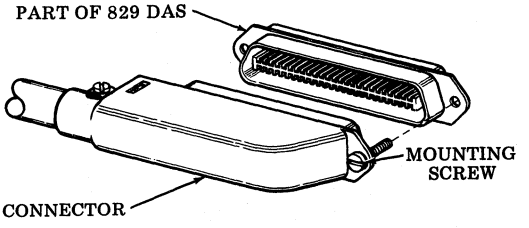
③ Release lid latches and raise lid. Disconnect connector from back panel by pulling up while rocking connector back and forth.



(Right View)

406036 only: At data set end, loosen two connector mounting screws. Disconnect connector.
406066 only: At 829 DAS end, loosen one connector mounting screw. Disconnect connector.





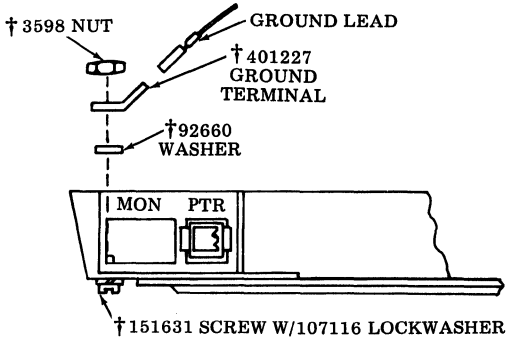
2.21 To install 406036 or 406066 cable, reverse removal procedures of 2.20.

406039 Printer Cable

2.22 To remove 406039 printer cable:

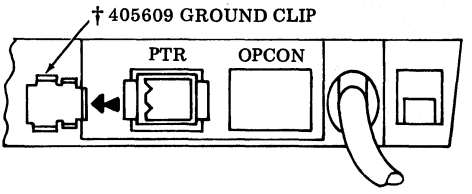
① Disconnect connector from rear of printer cabinet.

Remove ground lead from cabinet ground terminal (friction feed) or cabinet ground clip (tractor feed).



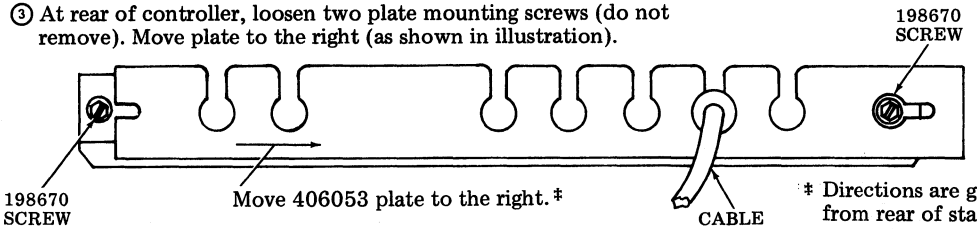
(Rear View of Friction Feed Printer Cabinet)

† Hardware supplied with 406039 printer cable. Do not remove hardware when removing ground lead.



(Rear View of Tractor Feed Printer Cabinet)

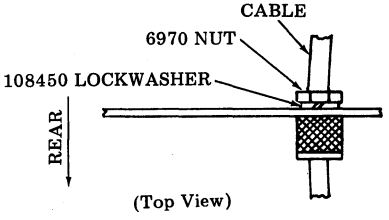
③ At rear of controller, loosen two plate mounting screws (do not remove). Move plate to the right (as shown in illustration).



(Rear View of Controller)

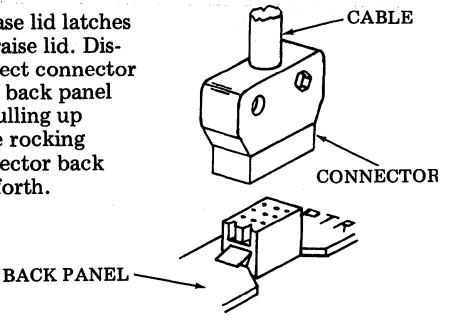
‡ Directions are given as from rear of station.

④ Loosen nut and lockwasher that retains cable. Slide cable up from its slot in the plate.



(Top View)

⑤ Release lid latches and raise lid. Disconnect connector from back panel by pulling up while rocking connector back and forth.



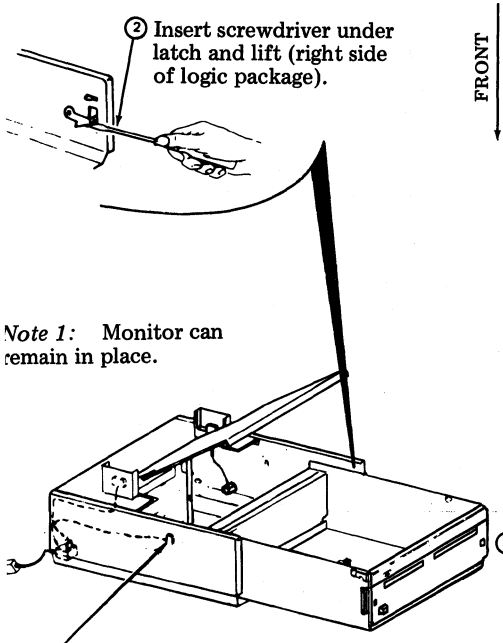
(Left View)

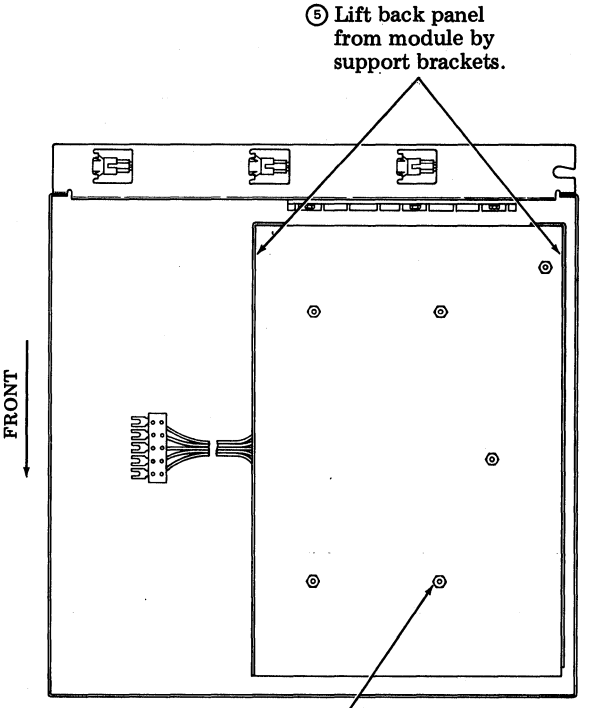
2.23 To install 406039 printer cable, reverse removal procedures of 2.22.

C. Back Panel

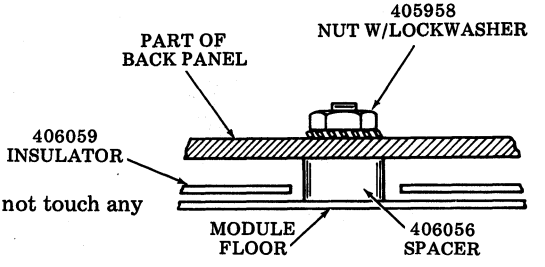
2.24 To remove 410276 (early design) or 410277 (late design) back panel:

- Remove 40PSU101 power supply (2.10).
- Remove controller circuit cards (2.12 and 2.13).
- Remove 406046 monitor cable from controller (Step 5 of 2.16).
- Remove opcon (2.03) and disconnect 406048 opcon cable from controller.
- Remove 406036 EIA cable or 406066 private line interface cable from controller — as applies (Steps 1 and 3 of 2.20).
- Remove 406039 printer cable from controller — if present (Steps 3 and 5 of 2.22).





③ Slide logic package forward and out of cabinet.



Note 2: The insulator should not touch any spacers.

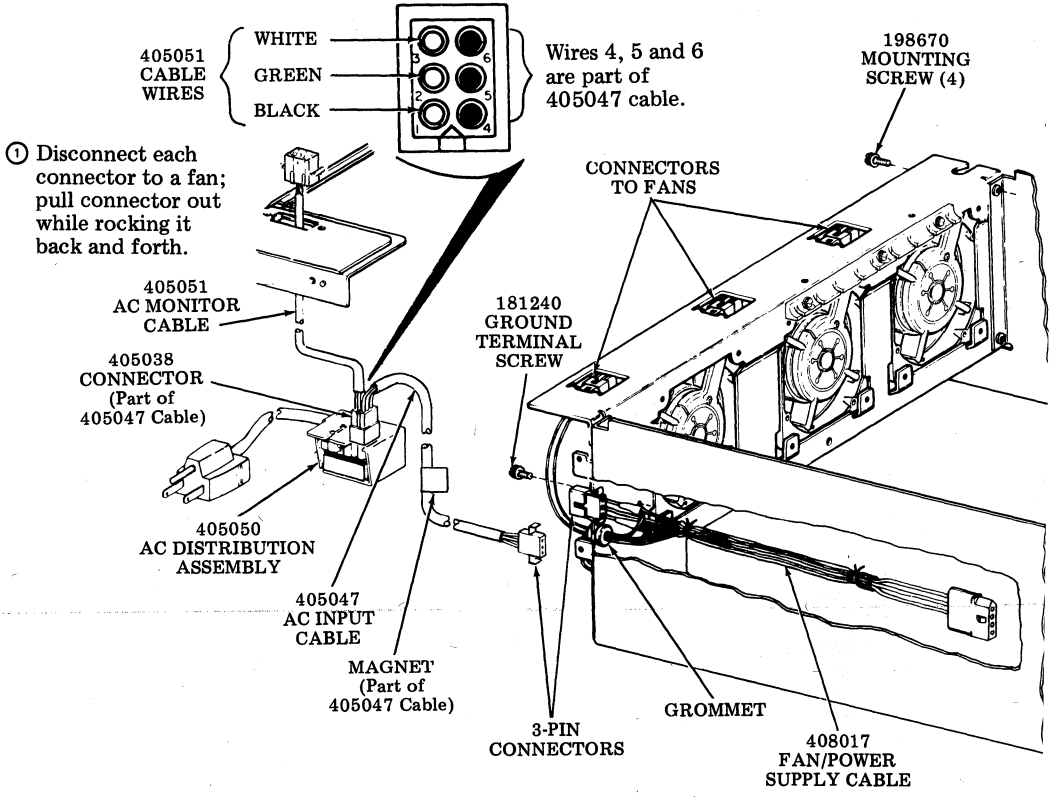
2.25 To install back panel, reverse removal procedures of 2.24.

D. Ventilation Assembly

408017 Fan/Power Supply Cable

2.26 To remove 408017 fan/power supply cable:

- Remove 40PSU101 power supply (2.10).
- Remove controller circuit cards (2.12 and 2.13).
- Remove 406046 monitor cable from controller (Step 5 of 2.16).
- Remove opcon (2.03).
- Remove 406036 EIA cable or 406066 private line interface cable from controller — as applies (Steps 1 and 3 of 2.20).
- Remove 406039 printer cable from controller — if present (Steps 3 and 5 of 2.22).
- Perform Steps 1, 2, and 3 of 2.24.



② Remove ground terminal screw. Remove ring terminals of cable from screw.

③ Perform Steps 1 and 2 of 2.28.

④ Slide grommet and 3-pin connector of 408017 fan/power supply cable off ventilation assembly.

2.27 To install 408017 fan/power supply cable, reverse removal procedures of 2.26.

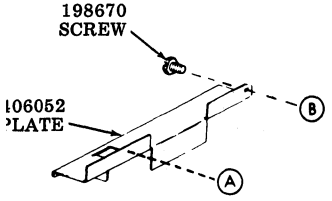
408050 Ventilation Assembly

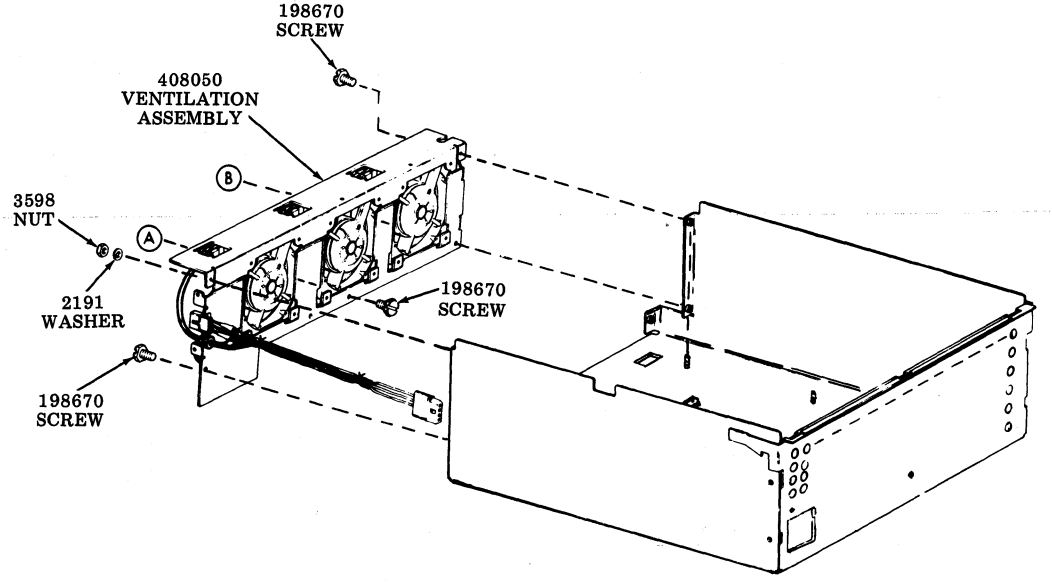
2.28 To remove 408050 ventilation assembly:

- Remove 40PSU101 power supply (2.10).
- Remove controller circuit cards (2.12 and 2.13).
- Remove 406046 monitor cable from controller (Step 5 of 2.16).
- Remove opcon (2.03).
- Remove 406036 EIA cable or 406066 private line interface cable from controller — as applies (Steps 1 and 3 of 2.20).
- Remove 406039 printer cable from controller — if present (Steps 3 and 5 of 2.22).
- Perform Steps 1, 2, and 3 of 2.24.

① Remove two screws that secure 406052 plate. Remove plate.

② Remove two remaining screws, 3598 nut, and 2191 lockwasher. Remove ventilation assembly.





29 To install ventilation assembly, reverse removal procedures of 2.28.

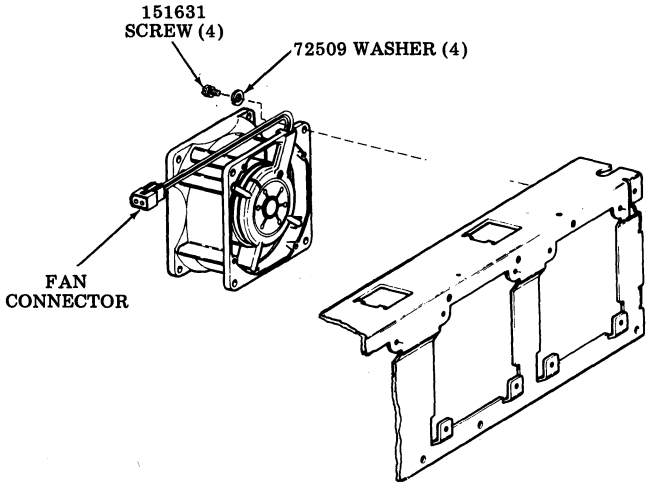
408015 Fan

2.30 To remove a 408015 fan:

- Remove 40PSU101 power supply (2.10).
- Remove controller circuit cards (2.12 and 2.13).
- Remove 406046 monitor cable from controller (Step 5 of 2.16).
- Remove opcon (2.03).
- Remove 406036 EIA cable or 406066 private line interface cable from controller — as applies (Steps 1 and 3 of 2.20).
- Remove 406039 printer cable from controller — if present (Steps 3 and 5 of 2.22).
- Perform Steps 1, 2, and 3 of 2.24.

① Remove four screws and washers that secure fan.

Disconnect fan connector from 408017 fan/power supply cable connector. Remove fan.



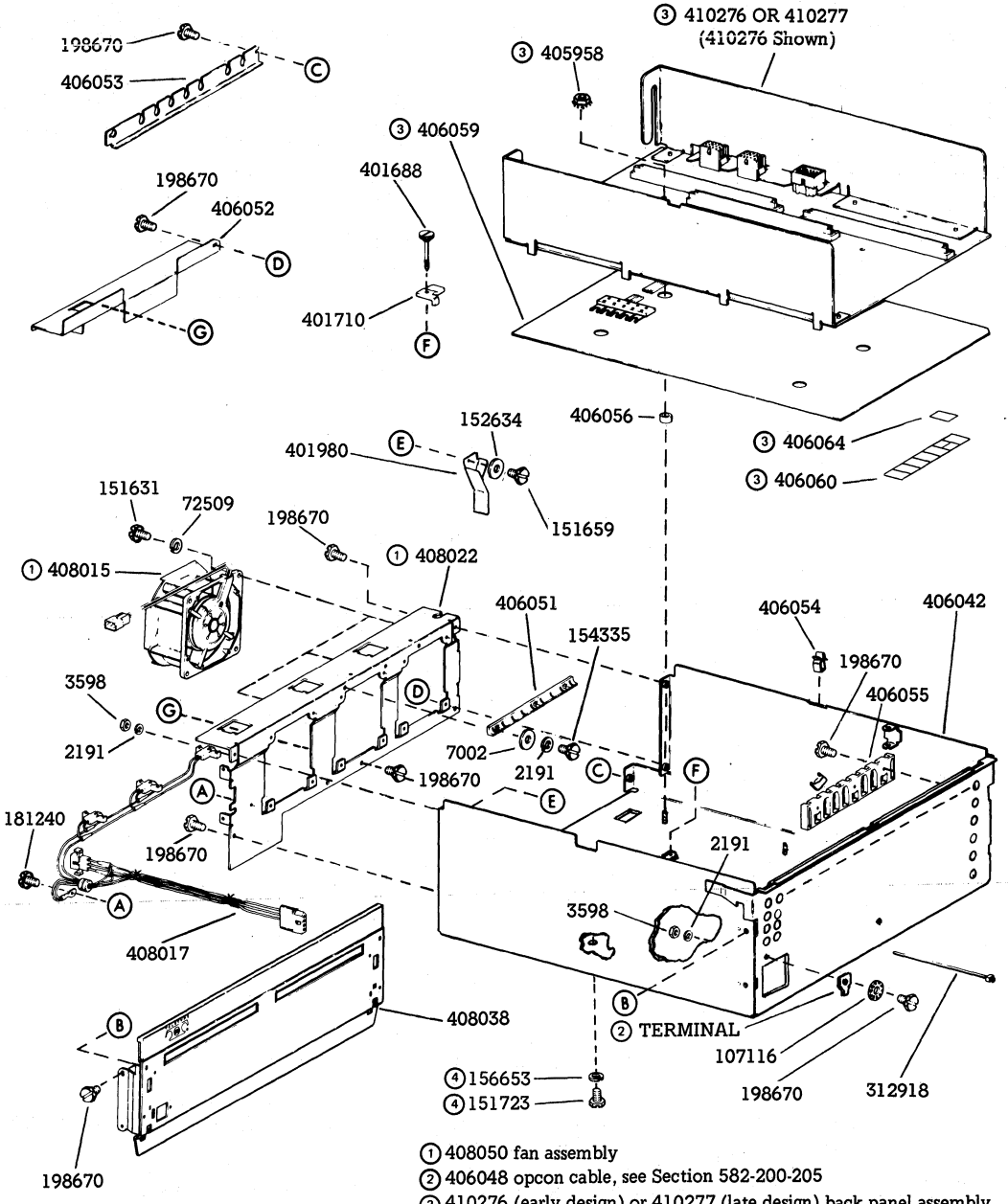
2.31 To install a 408015 fan, reverse removal procedures of 2.30.

3. PARTS

3.01 For parts information on interconnect cables of the DATASPEED 40/4, refer to Section 582-200 405.

3.02 Parts information for individual components (printer, monitor, etc) are not illustrated in this sec tion. Refer to appropriate BSP section.

3.03 Field replaceable components of controllers are listed in the index which follows the parts illustra tion, see 3.04.



1 408050 fan assembly
2 406048 opcon cable, see Section 582-200-205
3 410276 (early design) or 410277 (late design) back panel assembly
4 Present only on 406042 logic module (late design); used only for 40PSU101 power supply (late design)

40C304 Controller

INDEX OF REPLACEABLE PARTS

3.04 The index below contains field replaceable parts. The index shows the section or page number of this section on which access is provided.

Note: When ordering replaceable components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410055).

APPLICATION	PART NO.	DESCRIPTION	SECTION OR PAGE NO.
Monitor	40MN101/AA	Monitor	3
	341578	Fuse, 1.4 Amp	582-200-751
Opcon	40K104/DAA	Opcon (ASCII, Typewriter Style)	3
	40K104/DAB	Opcon (EBCDIC, Typewriter Style)	3
	40K105/CAA	Opcon (EBCDIC, Data Entry Style)	3
Printer	40P101/ZZ	Printer, Friction Feed	4
	40P151/ZZ	Printer, Tractor Feed — 80 Column	5
	40P201/ZZ	Printer, Tractor Feed — 132 Column	5
	143306	Fuse, 1 Amp SL-BL MDL-1	582-200-751
Controller	40C304/AA/001	Controller (SDC)	7
	40PSU101	Power Supply	6
	129920	Fuse, 5 Amp SL-BL (for 40PSU101)	582-200-751
	408015	Fan	15
	408050	Ventilation Assembly	14
	410276 (Early Design)	Back Panel	12
	410277 (Late Design)	Back Panel	12
	Various Numbers	Circuit Cards	7 (Locations Given in 582-200-205)
	Various Numbers	Cabinets and Pedestals	582-212-700
Cable	406036	EIA Cable	10
	406039	Printer Cable	11
	406046	Monitor Cable	8
	406048	Opcon Cable	9
	406066	Private Line Interface Cable	10
	408017	Fan/Power Supply Cable	13

"DATASPEED"* 40 KEYBOARD-DISPLAY AMPLIFIER (KDA) FEATURE

CONTENTS PAGE

1. GENERAL

1.01 This section provides general description, installation information, testing, trouble isolation procedures, disassembly/reassembly and parts identification for the 40KDA101 Keyboard-Display Amplifier (Fig. 1).

1.02 This section is reissued, to add C18 to Fig. 10 and specify TKS107 in place of 31246RM.

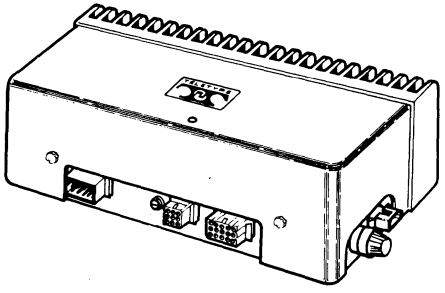


Fig. 1—40KDA101 Keyboard-Display Amplifier

Note: When ordering replaceable components, prefix each part number with the letters "TP" (ie, TP405372), unless specified otherwise.

1.03 Two types of KDA installations, (Fig. 2) are described in this section:

(a) Free-standing units requiring a 405982 modification kit.

(b) KDA units mounted in a 40CAB251/AC cabinet requiring a 405983 modification kit. Support components for use with the KDA in a DATASPEED 40/4 system are also described.

2. DESCRIPTION

2.01 The KDA allows for the extension of a KD (Keyboard Display) device in an already installed system or may be used to plan new station layouts with a greater KD location flexibility. It is only required when a KD is to be more than 100 feet away from its controller (up to 600 feet). However if desired, the KDA can also be used when a KD is less than 100 feet from a controller.

2.02 The KDA may be used in maxi-cluster station arrangements where it is desired to place the Device Cluster Controllers (DCC) adjacent to the Station Cluster Controller (SCC) to more closely resemble the station arrangement that this station is replacing and thus use similar cable runs to the devices. The use of the KDA in such a case allows the smaller diameter cable to be used. Similarly, when the station includes a Mini-Cluster Controller (MCC), the use of this smaller diameter cable may be advantageous.

2.03 The keyboard-display amplifier accepts the low video and half-intensity signals from the 40C400 type controller. These signals are driven into an Emitter Coupled Logic (ECL) line receiver by the discrete differential amplifiers. The outputs are standard ECL differential signals of 1.6 volts.

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Prepared for American Telephone and Telegraph Company by Teletype Corporation

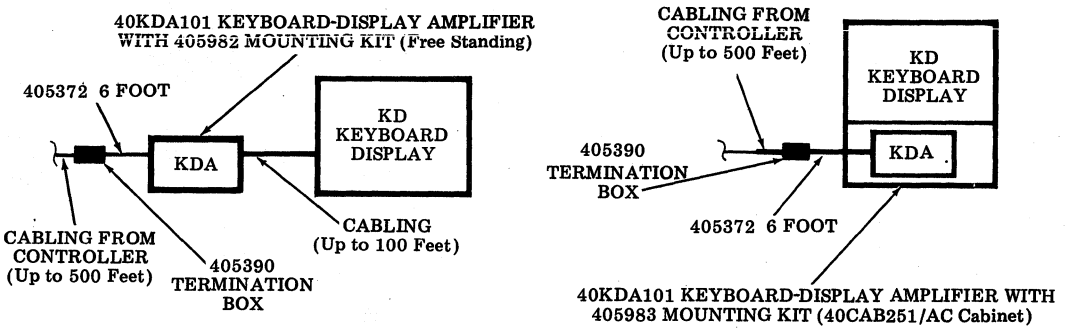


Fig. 2—KDA Installations

2.04 Both the video and the half-intensity channels are amplified in the same manner. Fig. 3 shows the video amplification circuit.

2.05 The received video line signal is developed across the R1 resistor. The speed-up networks of CR1-R2 and CR2-R3 apply voltages at the base of the Q1 and Q2 transistors. The emitter coupling of transistors Q1 and Q2 make up a differential amplifier. Transistor Q3 is biased by a constant current source of approximately 22 ma through resistors R10, R11 and R12. With Q3 coupled to Q1 and Q2, the outputs of the quiescent coupled collectors to receiver ML1 produces voltages in the ECL signal voltage range for the monitor.

2.06 The horizontal drive input signals (Fig. 4) from the controller (a 5 ma current loop) terminate at R15, a pull-up resistor coupled to a DCC or MCC +5 V supply. The input is applied to the cathode (pin 3) of the optical isolator ML2. The anode (pin 2) of ML2 is driven by a speed-up network of R16-C10 from the DCC or MCC +5 V supply. A local +5 V supply is present at ML2 (pin 8). The output of ML2 (pin 6) is buffered by ML4 and given to the KD display monitor at connector P2 (pin 10) as Transistor Transistor Logic (TTL) signals to drive a KD display monitor.

2.07 A trouble analysis lamp (L1) is coupled to buffer ML4. This lamp is on when the +5 V local supply and the ac voltage supply are on. Absence of either the +5 V or 117 V ac supply extinguishes the lamp.

2.08 The vertical synchronization channel signals (20 ma current loop) to the cathode (pin 2) of optical isolator ML3 (Fig. 5). The controller +5 V supply is applied to the anode (pin 1) of ML3 through resistor R17. The output of isolator ML3 coupled to the base of transistor Q7 allows a TTL signal of sufficient power to drive the remote KD display monitor.

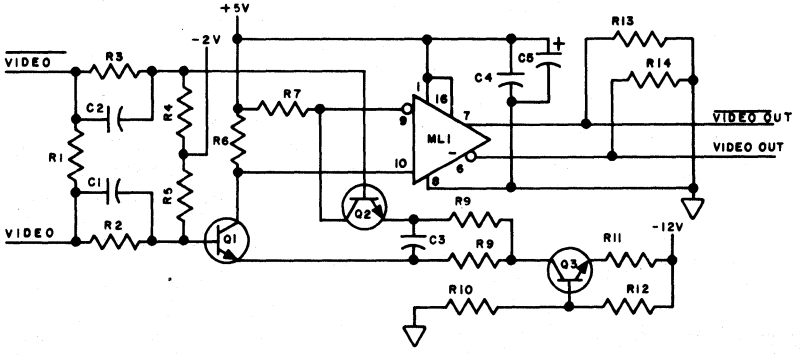


Fig. 3—Video Amplification

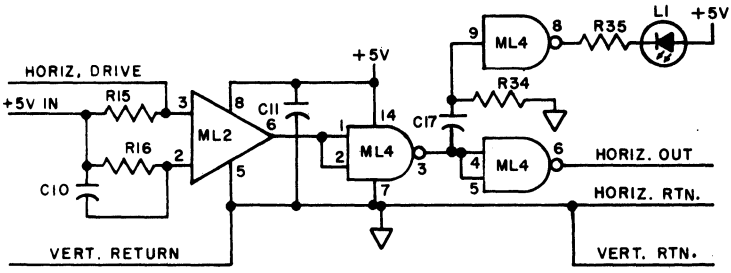


Fig. 4—Horizontal Drive Input

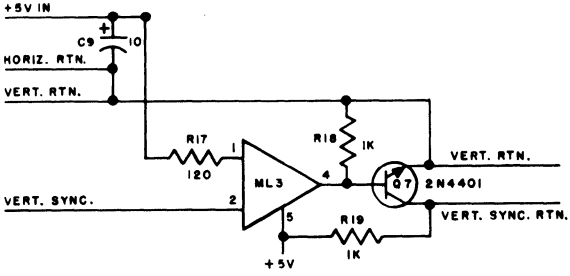


Fig. 5—Vertical Channel Signals

2.09 The keyboard-display amplifier allows the SSI (Standard Serial Interface) transmission signals (Fig. 6) to pass through untreated from connector P1 (pins 9, 12, 14 and 15) to connector P3 (pins 1, 2, 3 and 6).

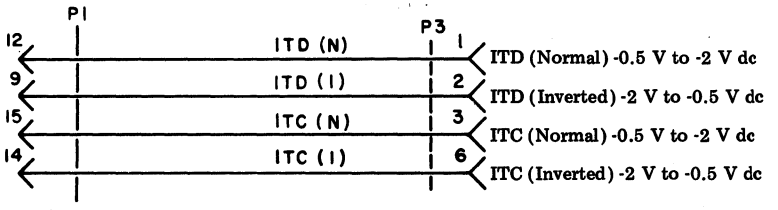
2.10 The power supply (Fig. 7) consists of a center-tapped transformer (T1) feeding a full-wave bridge rectifier (D1-D4) with filtering being done by capacitors C12 and C13. The three voltage regulators ML5, ML6 and ML7 provide all required voltages. Diodes D5 and D6 are provided to prevent regulator latch-up while supplying a common lead. Connector outputs of P3 (pin 4, GRD), (pin 7, +12 V), (pin 8, -12 V) and (pin 9, frame ground) are used by the opcon.

2.11 Technical Data

Height	3-1/2 inches
Width	11-1/2 inches
Depth	5-1/2 inches
Weight	6-1/2 lbs
Power Requirement	103-127 V ac 50/60 Hz at 0.4 ampere

Operating characteristics are:

Temperature	40° to 110° F
Humidity	2% to 95% noncondensing



Legend: ITD — Information to Device
ITC — Information to Controller

Fig. 6—SSI Transmission

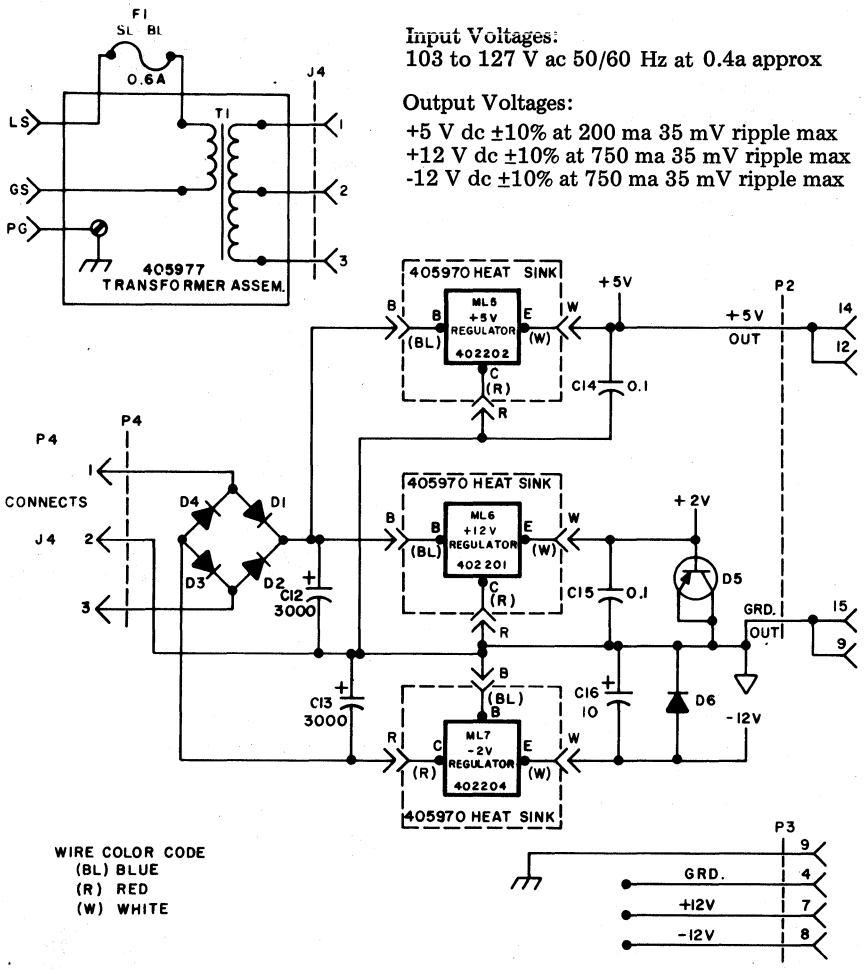


Fig. 7—Power Supply

3. INSTALLATION

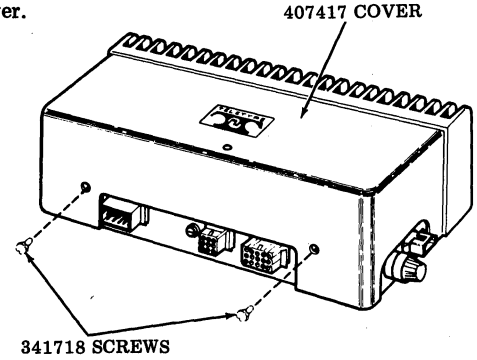
3.01 The procedures for installing the KDA on an in-line run are given as 405982 modification kit installation, see 3.03. Installing a KDA in a 40CAB251/AC cabinet is given as 405983 modification kit installation, see 3.04 through 3.07. Retain the carton and packing materials until a complete operational test has been performed, and the unit is found to be satisfactory.

3.02 The 405982 modification kit consists of the following:

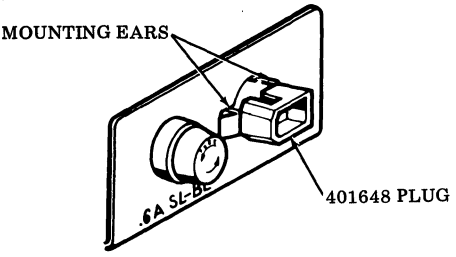
Qty	Part No.	Description
1	401628	Strain, relief bushing
1	405967	AC cable assembly

3.03 The 405982 modification kit installation on the KDA requires the following steps:

① Remove two 341718 screws and 407417 cover.

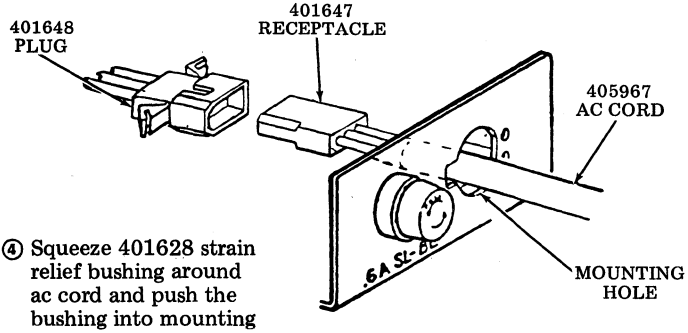


② Remove 401648 plug from mounting hole by compressing its mounting ears while pushing it inward.



③ Feed 401647 receptacle of 405967 ac cord through mounting hole. Connect 401648 plug to 401647 receptacle.

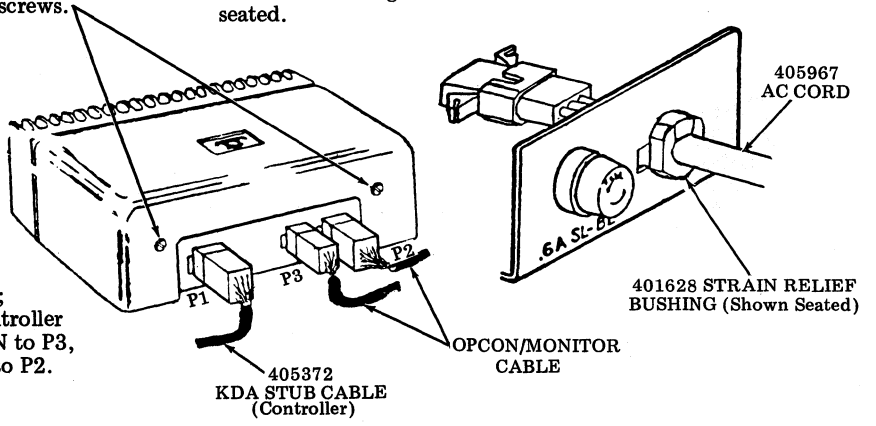
Caution: Do not plug ac cord to 115 volt source until all other connections are made.



④ Squeeze 401628 strain relief bushing around ac cord and push the bushing into mounting hole until bushing is seated.

⑤ Remount 407417 cover with 341718 screws.

⑥ Plug in cables; video/SSI controller to P1, OPCON to P3, and monitor to P2.



⑦ Refer to 3.08, for connections at controller, and 3.09 or 3.10 for opcon/monitor.

3.04 The 405983 modification kit provides all the hardware and cables to mount and operate the 40KDA101 in an empty 40CAB251/AC KD cabinet. The 405983 modification kit consists of the following:

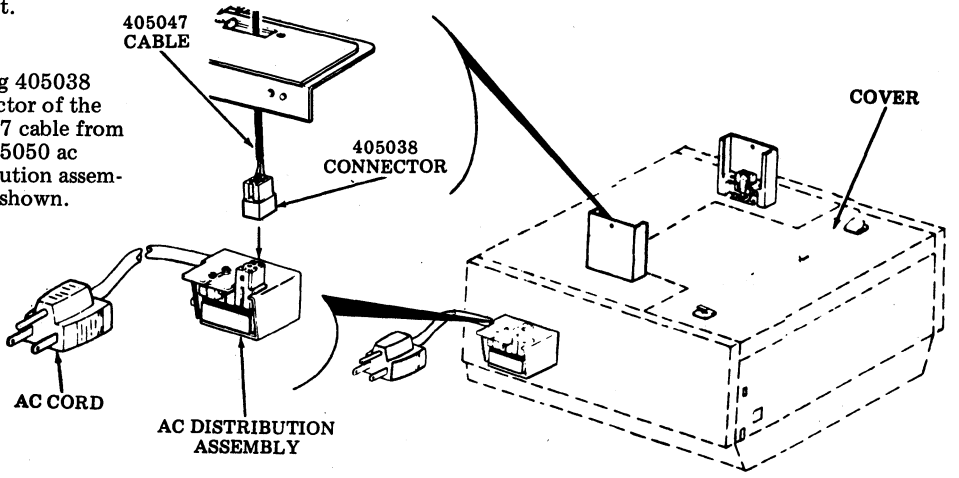
Qty	Part No.	Description
2	401582	Nut w/lockwasher
1	405961	AC cable assembly
1	405969	Opcon cable assembly (12" long)
1	405975	Monitor cable assembly (25" long)
2	407418	Bracket w/stud

3.05 Installation of the 405961 ac cable assembly of the 405983 modification kit requires the following steps:

① Remove the monitor. Unlatch and open the cover of the 40CAB251/AC cabinet.

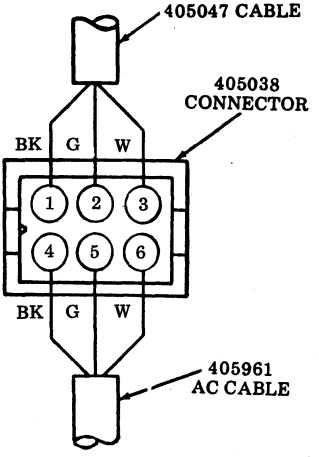
Caution: Unplug ac cord from wall receptacle.

② Unplug 405038 connector of the 405047 cable from the 405050 ac distribution assembly as shown.



③ Needle-nosed pliers should be used to insert the three pins of the 405961 ac cable into the 405038 connector of the 405047 cable.
Insert wires as shown;
Black to 4
Green to 5
White to 6
Check that pins are fully seated.

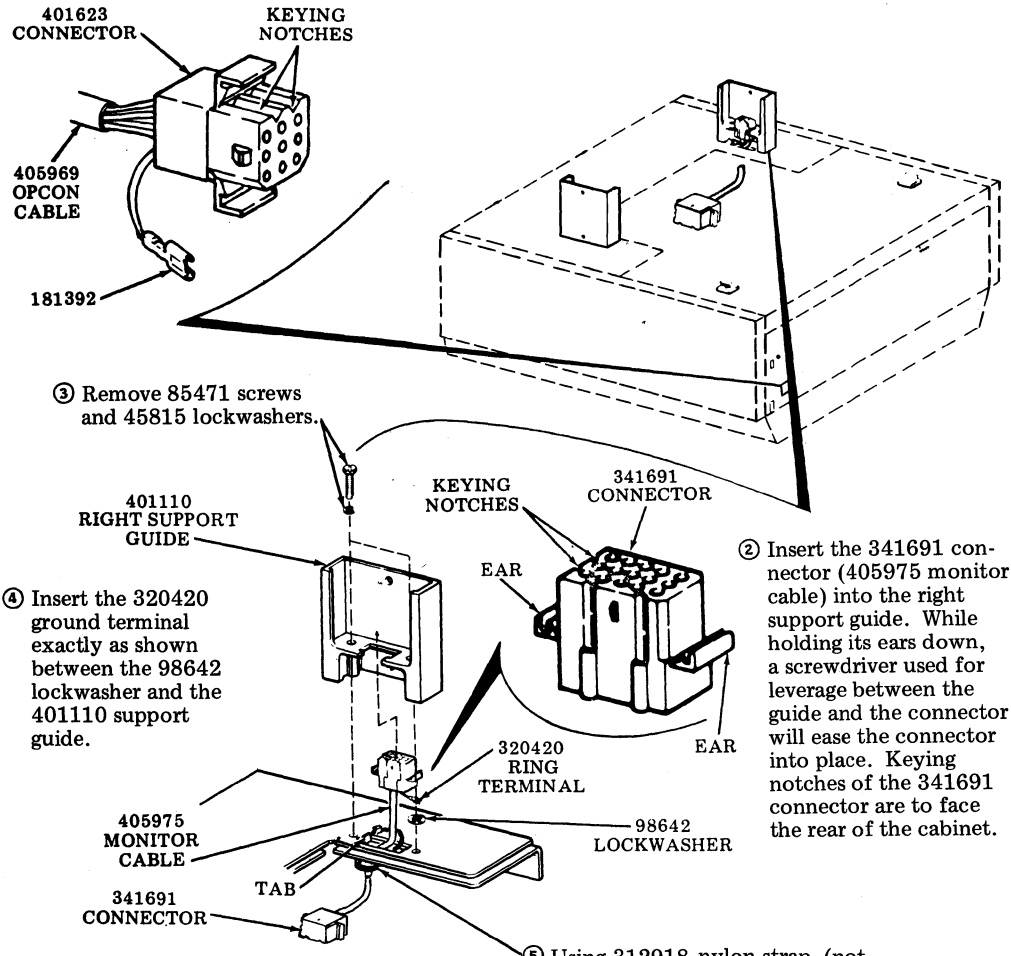
Note: The 6 hole 405038 connector is not numbered, numbers are given as references.



Wire Side of Plug

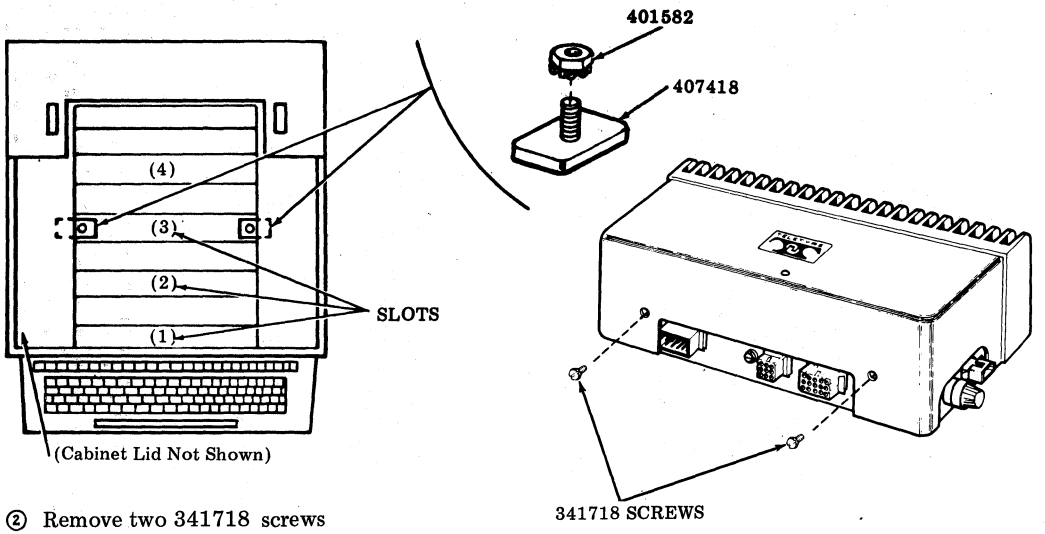
3.06 Installation of the 405969 (opcon) and 405975 (monitor) cable assemblies of the 405983 modification kit requires the following steps:

① Install 405969 opcon cable assembly in the front panel of the cabinet with the keying notches in the 401623 connector facing upward. Be sure to attach the 181392 ground strap terminal to the spade terminal in the side of the cabinet.



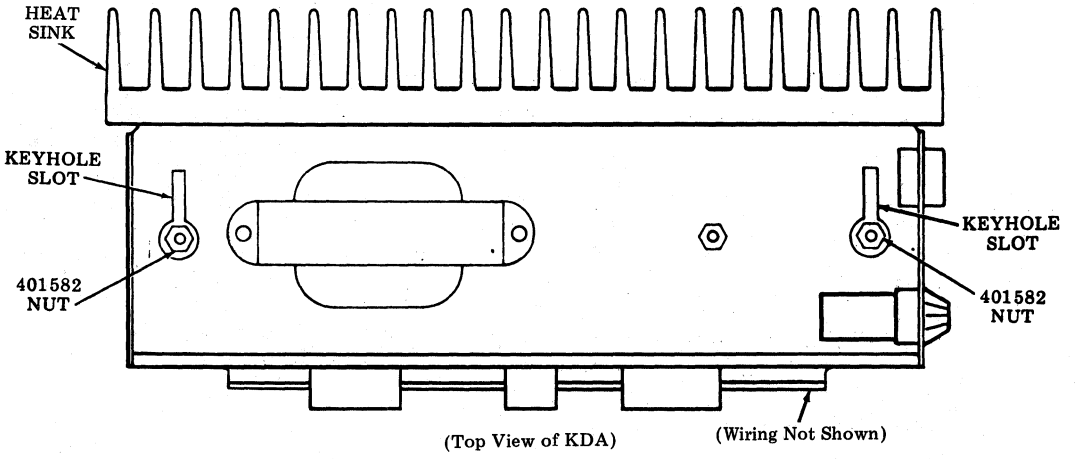
3.07 Mounting the KDA with the 405983 modification kit hardware requires the following steps:

① Place two 407418 brackets with the 401582 nuts loosely in place in the third or fourth slot, from the front, in the cabinet floor by sliding the brackets under the skirt.



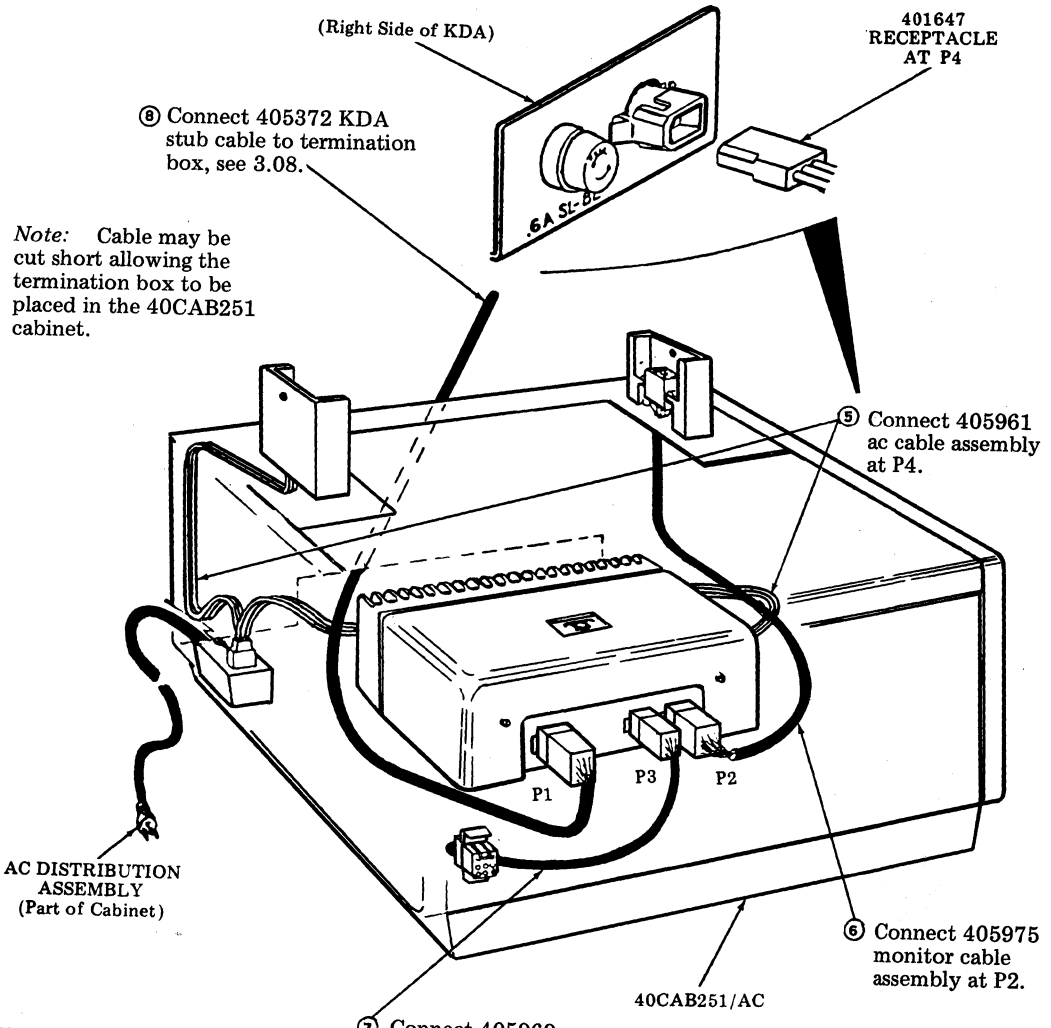
② Remove two 341718 screws and 407417 cover.

③ With the KDA heat sink facing the rear of the cabinet, lower the KDA into cabinet, position bracket studs (with 401582 nuts) either left or right until the 401582 nuts protrude from the keyhole slots. Move KDA forward until studs touch the rear of the slots. Tighten both nuts.

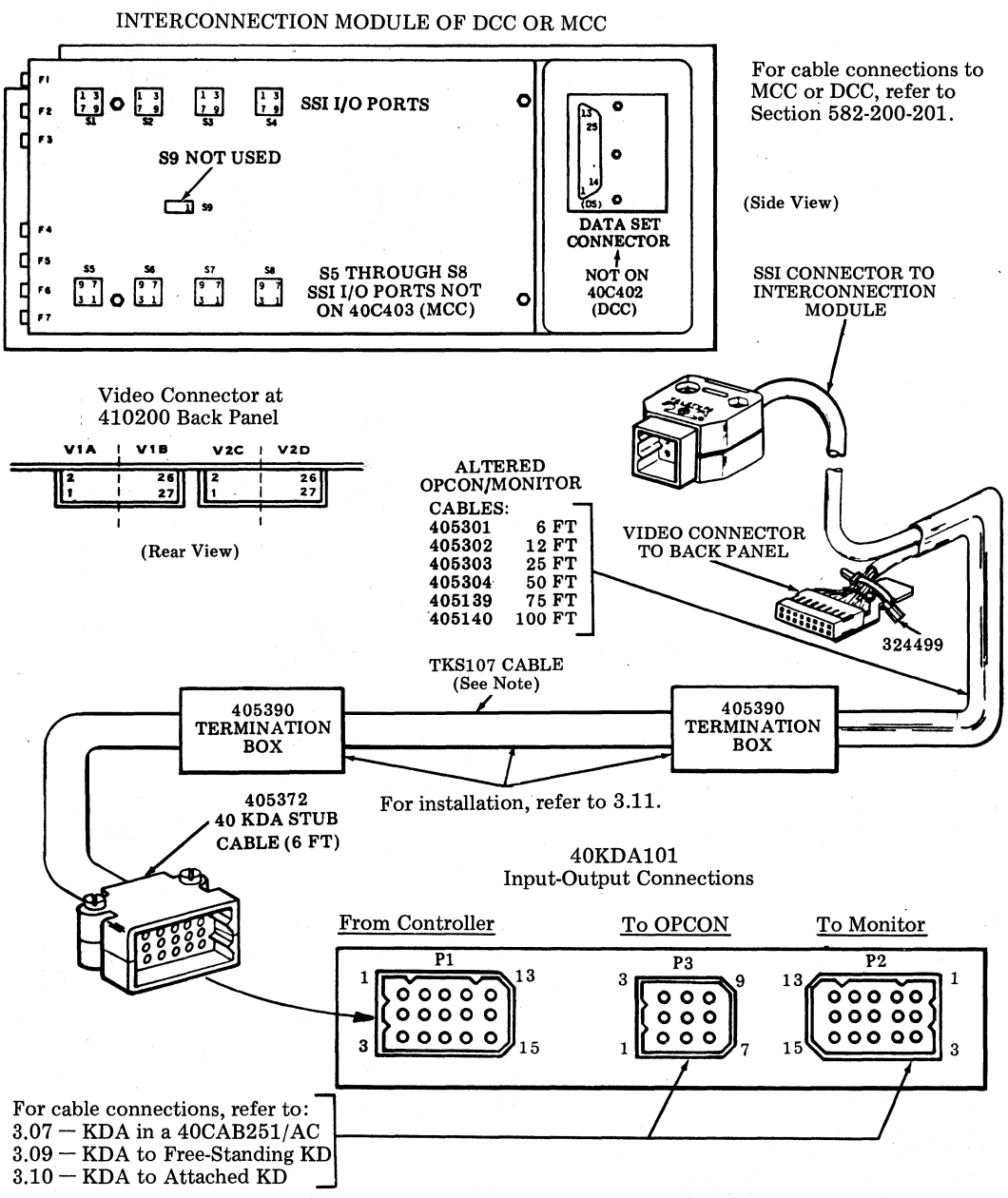


④ Remount 407417 cover with 341718 screws.

Steps ⑤ through ⑧ are on next page.

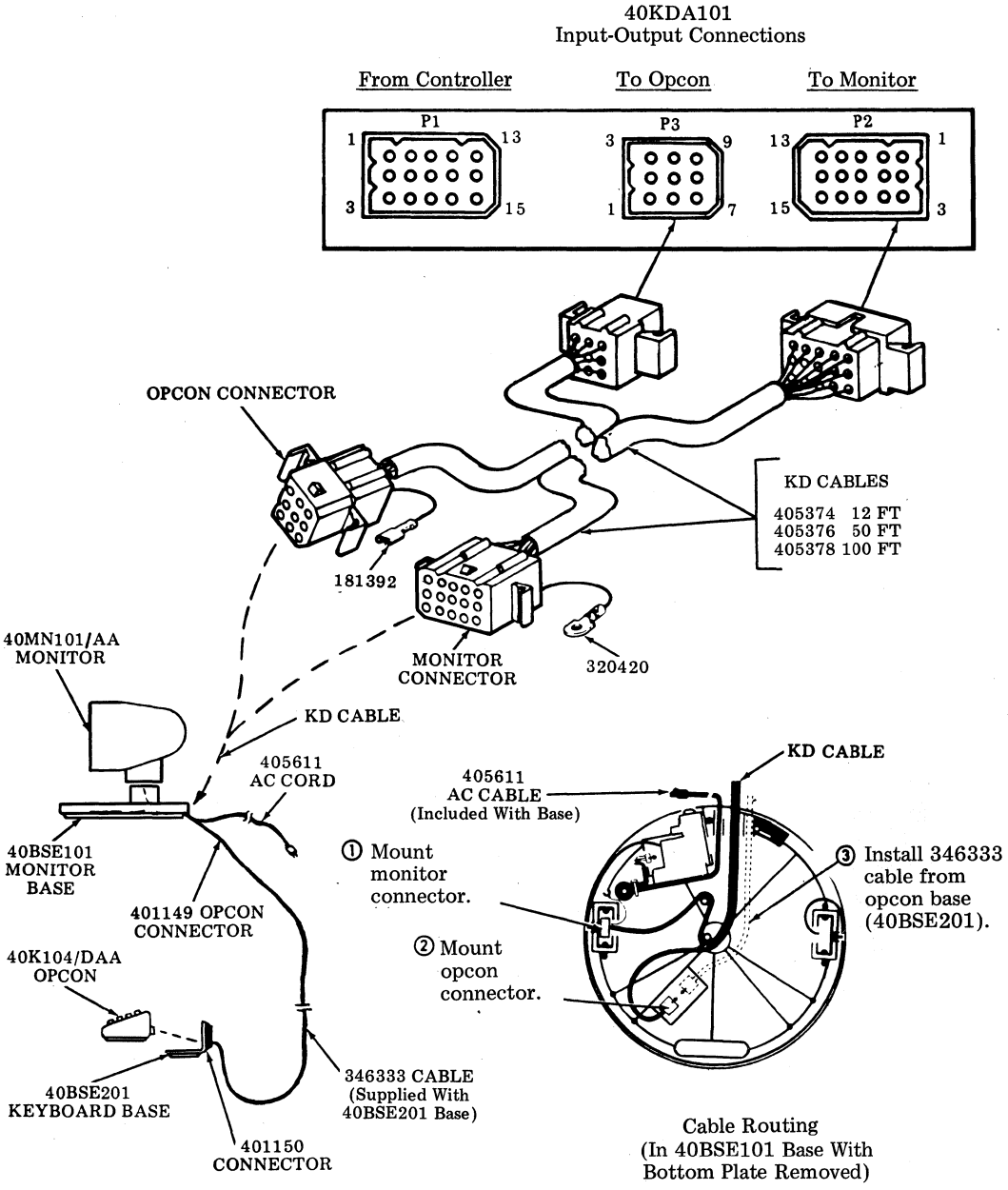

(Right Side of KDA)
401647
RECEPTACLE
AT P4
⑧ Connect 405372 KDA stub cable to termination box, see 3.08.
Note: Cable may be cut short allowing the termination box to be placed in the 40CAB251 cabinet.
⑤ Connect 405961 ac cable assembly at P4.
P1
P3
P2
AC DISTRIBUTION ASSEMBLY (Part of Cabinet)
⑥ Connect 405975 monitor cable assembly at P2.
40CAB251/AC
⑦ Connect 405969 opcon cable assembly at P3.
Warning: Make ac cord connections (115 V ac) after all controller connections.

3.08 Interconnection of 40KDA101 to MCC or DCC Controller

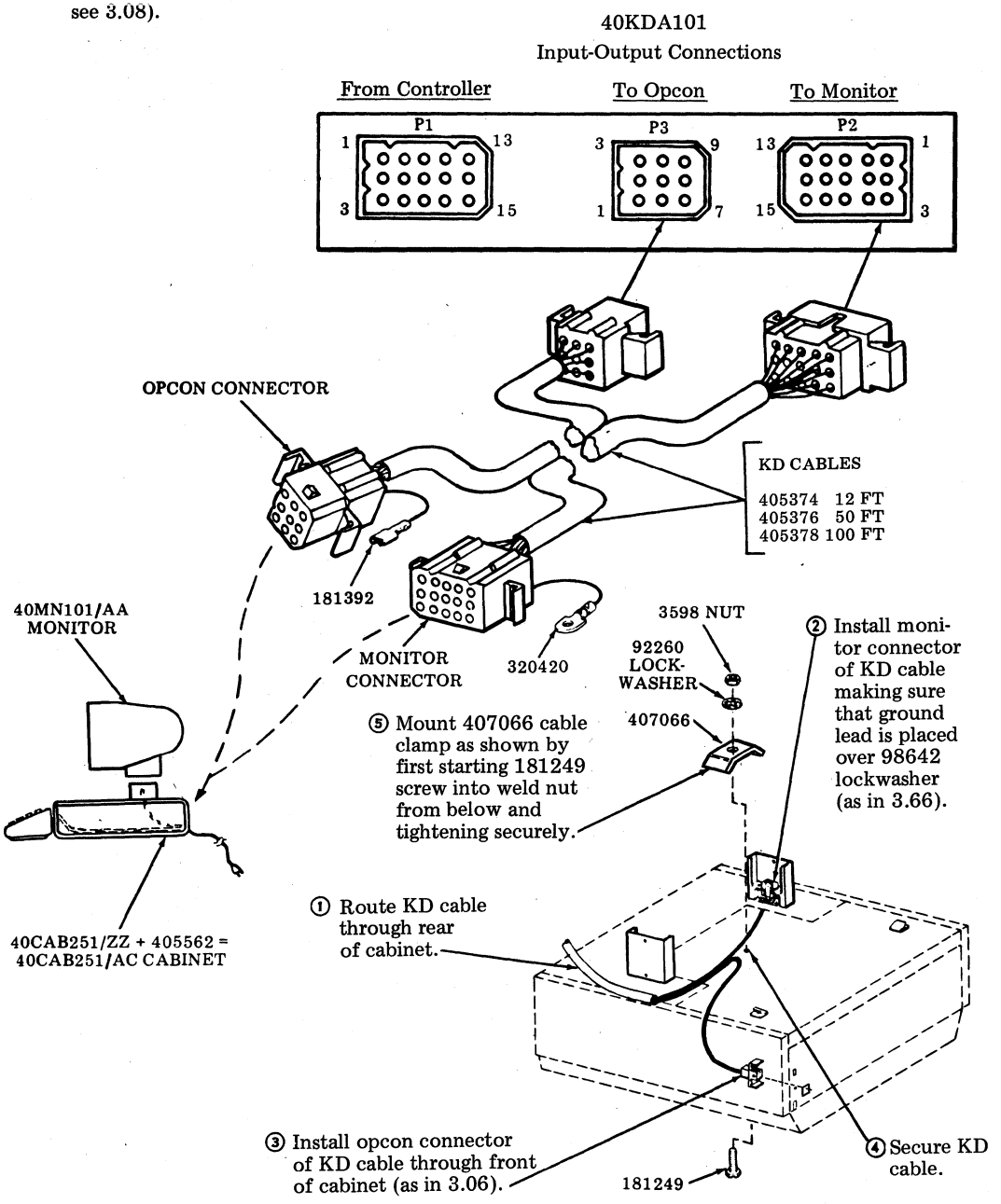


Note: The length of the TKS107 cable plus the altered opcon/monitor cable and a 40KDA stub cable is not to exceed 500 feet.

3.09 Interconnection of 40KDA101 to a Free-Standing KD (for connections 40KDA101 to controller, see 3.08).

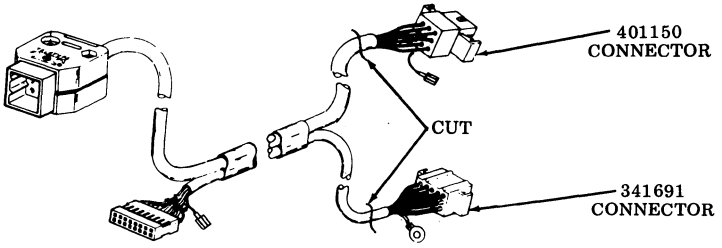


3.10 Interconnection of 40KDA101 to Attached KD (for connections 40KDA101 to controller, see 3.08).



3.11 Connection from the 40C400 controller to the 405390 termination box is accomplished using a standard controller to opcon/monitor cable (Fig. 17 through 20). Customer removal of the opcon and monitor connectors is required. Between termination boxes, a length of TKS107 is used. This cable is ordered by the foot. A maximum of 500 feet is allowed (600 feet where slight display degradation is permissible) between termination boxes providing that the cable between the controller and termination box is 12 feet or less in length. Longer cables may be used, however, their length must be subtracted from the maximum allowable length of 500 feet between termination boxes. Connection from the termination box to the 40KDA101 is made using the 405372 cable stub. This 6 foot cable assembly has a connector at one end and is suitably prepared for insertion (requiring only skinning) into a termination box at the other end.

① Cut off the 401150 and 341691 connectors from the dual cable (opcon/monitor).

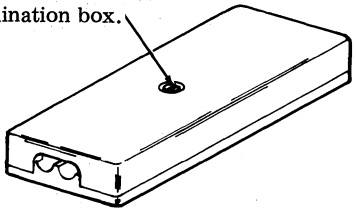


② Slit and remove four to five inches of both the outer jacket and shields. Also, remove the two foil shields of the video cable.

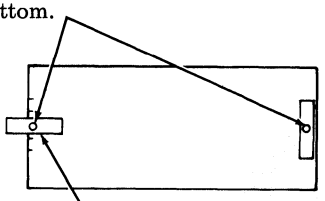
Caution: Care must be used to prevent cutting the outer shield drain wires.

③ Prepare one end of the TKS107 cable (up to 500 feet) in the same manner as in step ②.

④ Remove 195272 screw to remove the cover of the 405390 termination box.

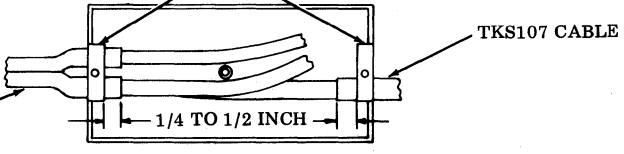


⑤ Loosen the two 1291 clamp screws on bottom.



⑥ Turn clamps 90°.

⑧ Draw clamps tight with 1291 screws.



⑦ Insert opcon/monitor cable and TKS107 cable; allow 1/4 to 1/2 inch of the outer jackets to extend past the clamps.

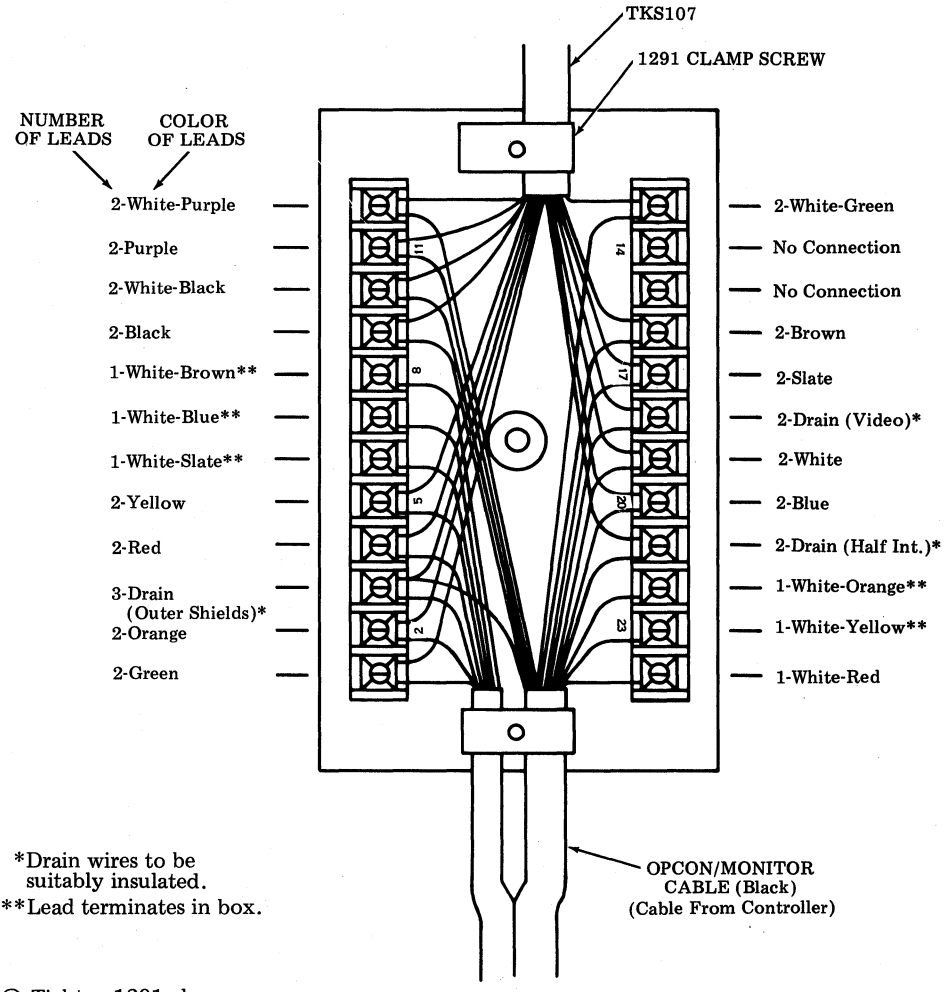
Steps ⑨ through ⑭ are on the following pages.

⑨ Each conductor lead must be cut to length and 1/4 inch of insulation skinned off.

Note: Conductors must not be solder tinned.

⑩ Loosen all terminal screws (keepers raise with screws). Insert proper lead(s) to terminal(s) and tighten screws.

For BLACK opcon/monitor cable (see Page 15 for grey opcon/monitor cable).

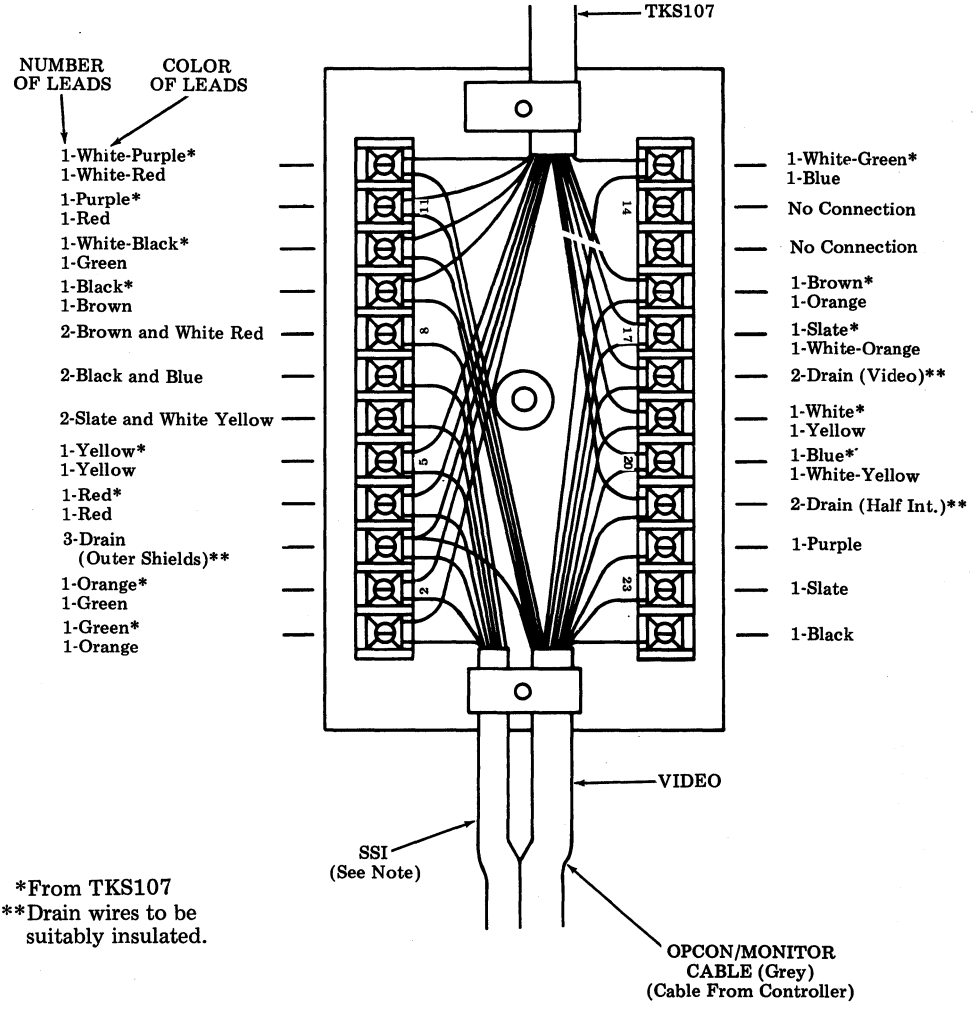


*Drain wires to be suitably insulated.

**Lead terminates in box.

⑪ Tighten 1291 clamp screws. Remount and fasten cover.

For GREY opcon/monitor cable, follow steps ⑩ and ⑪.
(See Page 14 for black opcon/monitor cable.)

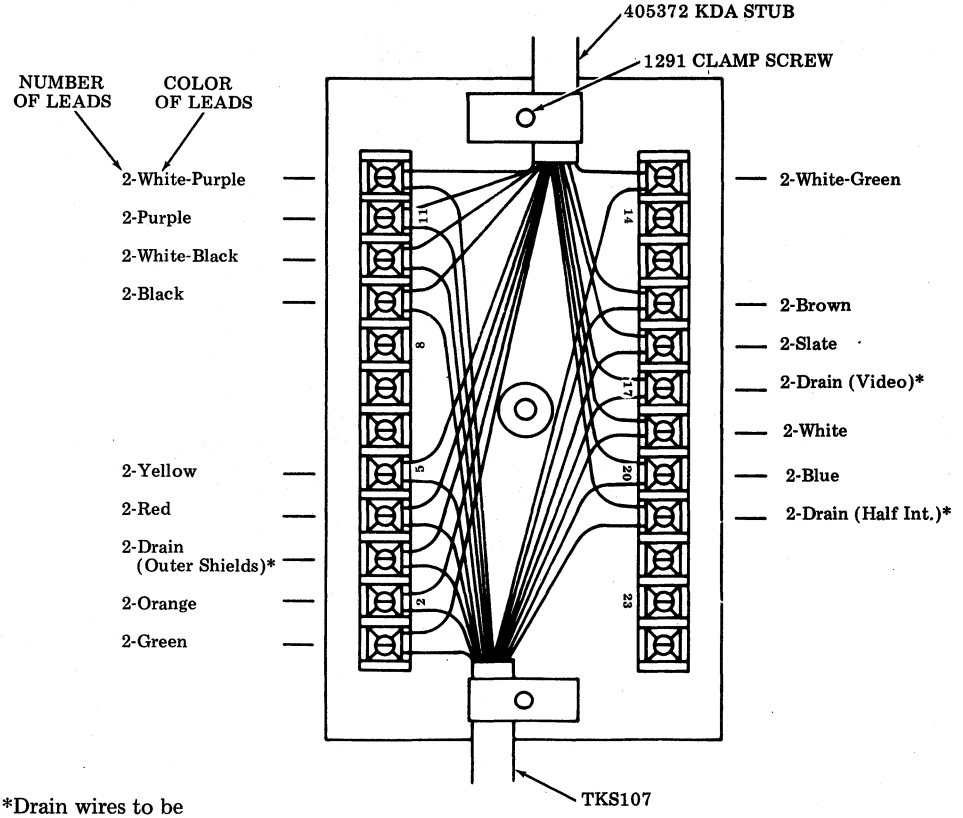


*From TKS107
**Drain wires to be suitably insulated.

Note: Tie off W-O and P wires of SSI leg.

⑫ Install the TKS107 cable (long run). This cable is not intended for rigorous pulling through conduit. Due to inner shielding isolation requirements and the very fragile wire used in the video and half-intensity pairs, it is recommended that for conduit runs over 100 feet, not more than 25 percent of the conduit area should be used. In addition, if more than one 90 degree bend is encountered in the conduit run a pull box should be inserted.

⑬ The 405372 stub cable and the TKS107 cable are then installed in the second termination box, go back and follow steps ③ through ⑩.



*Drain wires to be suitably insulated.

⑭ Tighten 1291 clamp screws. Remount cover and tighten 195272 screw. (See 3.11, step ④.)

4. OPERATIONAL TEST

4.01 Before any testing is started on the KDA, inspect the unit for loose wires, badly worn connector pins, visual damage, etc.

4.02 At this time take proper action to obtain a release of the station from service. The station that has the keyboard-display amplifier must be isolated from the rest of the system before testing to avoid disrupting system operation.

Testing

4.03 Testing of the 40KDA is mainly a check of the KD performance. The testing is referenced to the Trouble Analysis (5.07) by trouble number.

4.04 The power check for the 40KDA is as follows:

(a) Plug in KDA ac cord at proper receptacle (turn on set power, monitor power and controller power).

(b) Check that drive lamps (red indicators — top of KDA and inside monitor) are lighted. Trouble No. 1 and (5.07).

(c) Adjust monitor brightness control to desired level and check cursor (Fig. 8). Troubles No. 2, 3 and 4 (5.07).

4.05 Perform testing, from Section 582-200-501:

(a) CHART 1 — Controller Self-Test Procedures — Trouble No. 5 (5.07)

(b) CHART 2 — KD/Controller Local Test Procedures — Trouble No. 6 (5.07).

(c) CHART 4 — KD Local Test Procedures

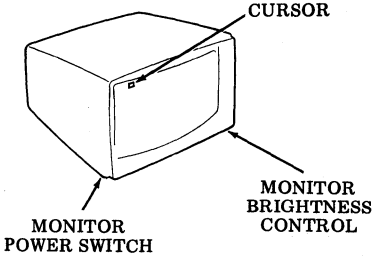


Fig. 8

5. TROUBLE ISOLATION

5.01 Before attempting to troubleshoot the Keyboard-Display Amplifier (KDA), make sure the trouble is not caused by interconnected equipment (monitor, opcon or 40C400 type controller). This can be done by making the self test of the controller or by replacing the monitor or opcon as required. If you have never observed that the system (with the KD) operates correctly (and a cable check is indicated), also check wire colors.

5.02 To isolate a trouble to a specific component in the KDA, start with the testing procedures of Part 4. If the monitor or opcon does not perform the required responses, read the list of troubles in Trouble Analysis of 5.07. If any of the trouble conditions match the units symptoms, follow the Trouble Analysis Procedures step by step until the trouble condition is eliminated.

Caution: Do not insert, remove, connect, or disconnect any cabling while ac power is applied.

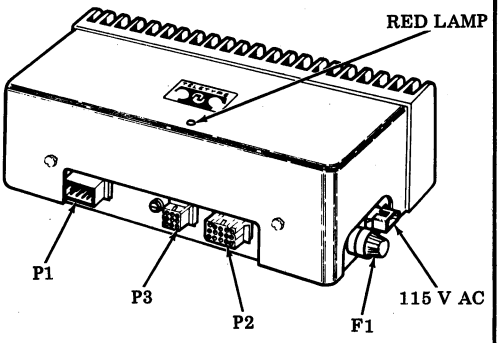
5.03 Repair of the KDA on customer location should be confined to the replacement of cables, fuses or circuit cards. Troubles that are difficult to analyze may require replacement of the entire KDA with a known good unit.

5.04 If a trouble is isolated to the 410575 card of the KDA, the trouble analysis will recommend that the card be replaced.

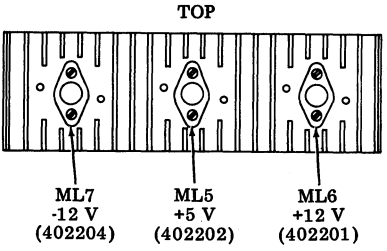
5.05 There are some volt-ohmmeter checks required in the Trouble Analysis Procedures. A volt-ohmmeter having 20,000 ohms per volt sensitivity is recommended (KS-14510 volt-ohmmeter or its equivalent). The volt-ohmmeter must be set to the appropriate scale by the user, before any measurement is attempted. Standard maintenance tools (screwdriver, needle-nose pliers and 1/4 inch or 5/16 inch nut drivers), as in Section 570-005-800, are required.

5.06 Maintenance of the KDA is aided by a red indicator lamp at the top of its cover. This lamp is lit when the KDA is in operation (producing a +5 V dc voltage and receiving a horizontal drive signal from the controller).

TROUBLE ANALYSIS CHART

NO.	TROUBLE	TROUBLE ANALYSIS PROCEDURES
1	Red indicator lamp (L1) is not on, with power applied.	a. Check 143307 fuse (F1) 0.6 amp SL-BL if blown.  *Note:* If fuse blows again, disconnect J4-P4 connectors. Replace the fuse. If fuse blows again, replace 405977 transformer. If the fuse blows after the power is restored, replace the entire KDA. b. Check ac cord continuity: (1) In-line installations (405967 cable), disconnect 401648 plug from 401647 receptacle (inside KDA) and remove the ac plug from the wall receptacle. (2) Cabinet installations (405961 cable), disconnect 401647 receptacle from 401648 plug (side of KDA). Remove the ac plug from the wall receptacle. Check continuity from ac plug to terminals of 401647 receptacle (see Fig. 22). After checks are complete, remount the ac cord. c. Check ac voltage at 401647 connector. Pin 1 (black wire) to pin 2 (white wire) = 103-127 V ac (power on). If not present, replace ac cord or check ac wall receptacle. Restore 401647 connection. d. Check ac voltages at J4 connector (unplug J4 from P4, "No Load Condition Check", with power on); pin 1 to pin 2 = 21 V ac (approx), pin 2 to pin 3 = 21 V ac (approx), and pin 1 to pin 3 = 43 V ac (approx). If any voltage is not present, replace the 405977 transformer assembly.

TROUBLE ANALYSIS CHART

NO.	TROUBLE	TROUBLE ANALYSIS PROCEDURES
1 (Cont)		e. Remove monitor cable from P2, connect J4 to P4, (see Fig. 22). Check voltage between P2 pin 12 (or 14) and pin 9 (or 15), if +5 volts is not present; check 402202 regulator (ML5) white lead to red lead (GRD) for +5 volts.  If voltage is not correct, check blue to red leads for a voltage of greater than +5 volts. If the blue lead voltage is not greater than +5 volts, install a new 410575 card. If blue lead voltage is correct but the white lead voltage is not correct, replace the ML5 regulator (402202).
2	Dark screen at monitor, no raster present (with monitor brightness turned on full).	a. If red indicator lamp (L1) is not on, go to Trouble No. 1. If KDA passes all checks of Trouble No. 1, replace 410575 card. b. If red indicator lamp (L1) is lighted, but the drive lamp (I5) of the monitor is not lighted, replace 410575 card. c. Recheck monitor. d. Recheck cables. Ref: Horizontal Drive, P2 pins 8 and 10 (Fig. 10).
3	No cursor present and/or, no characters displayed (raster present).	a. Replace 410575 card. b. Recheck monitor. c. Recheck cables. Ref: Video Channel, P2 pins 3 and 6 (Fig. 10).

TROUBLE ANALYSIS CHART

NO.	TROUBLE	TROUBLE ANALYSIS PROCEDURES
4	Display roll over on screen, continual.	a. Replace 410575 card. b. Recheck monitor. c. Recheck cables. Ref: Vertical Sync Channel, P2 pins 11 and 13 (Fig. 10).
5	Half-intensity or protected data is displayed at full intensity, all the time.	a. Replace 410575 card. b. Recheck monitor. c. Recheck cables. Ref: Half-Intensity Channel, P2 pins 1 and 2 (Fig. 10).
6	Any problem related to opcon operation.	a. Replace opcon. b. Remove opcon cable from P3 at KDA. Check for +12 V dc between P3-7 and P3-4 (grd). Check for -12 V dc between P3-8 and P3-4 (grd). If voltages are correct, go to Trouble No. 6c. If +12 V is bad, replace ML6 regulator (402201) or the 410575 card. If -12 V is bad, replace ML7 regulator (402204) or the 410575 card. *Note:* Before making any continuity checks, observe all cables for proper wiring. c. Check SSI cable continuity between KDA and opcon. d. Check SSI cable continuity between KDA and controller. e. Remove all cables from KDA. Check for continuity between the following pins of the 410575 card: Connector P1 to Connector P3 (Fig. 23) Pin 12 . . . . . .Pin 1 Pin 9 . . . . . .Pin 2 Pin 15 . . . . . .Pin 3 Pin 14 . . . . . .Pin 6 If no continuity is found, replace 410575 card.
7	Red indicator lamp of KDA is on; but drive lamp of KD monitor is off.	a. Recheck cables. b. See Trouble No. 1d. and e. c. Recheck monitor (if convenient, replace monitor).

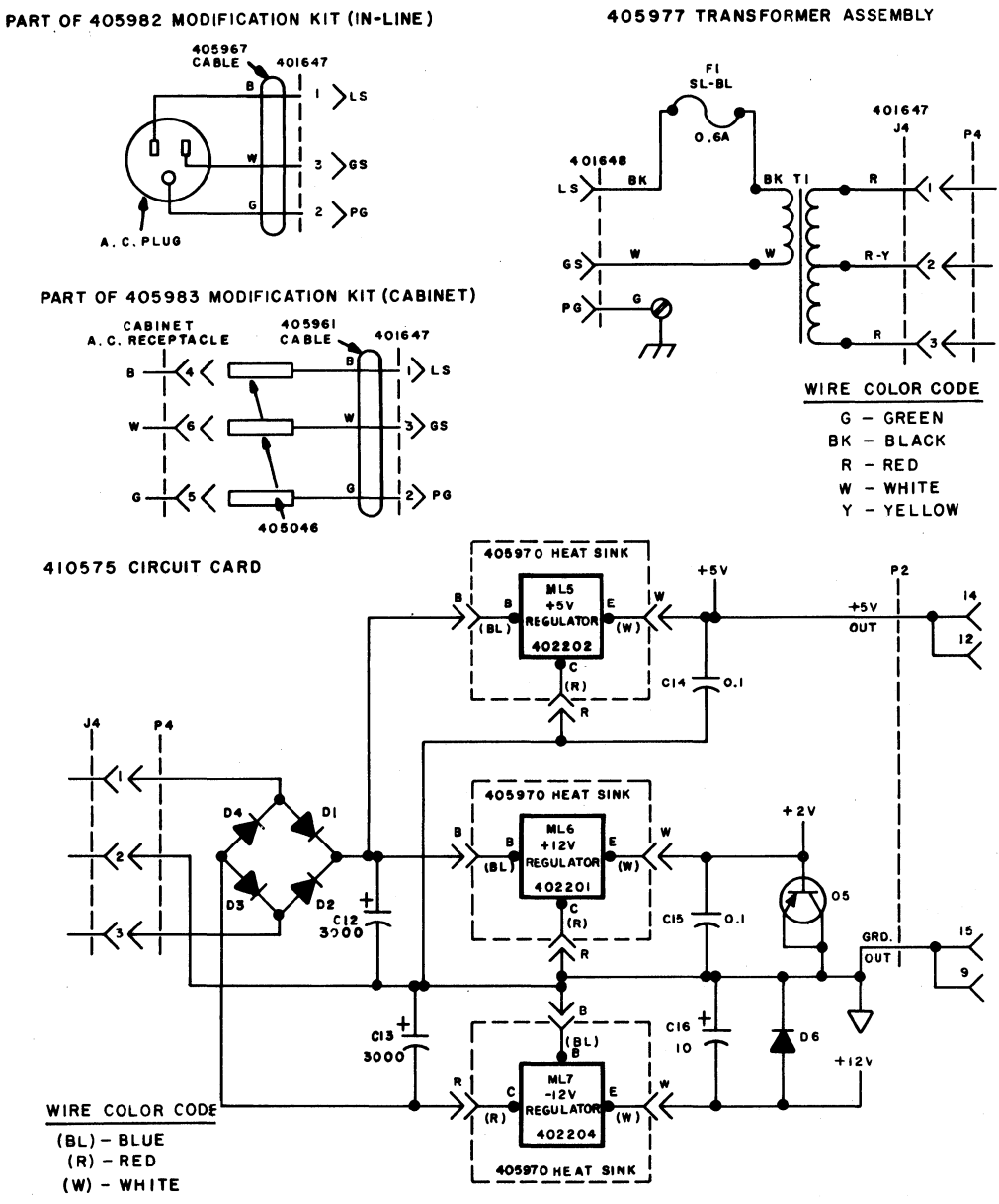


Fig. 9—Power Diagram

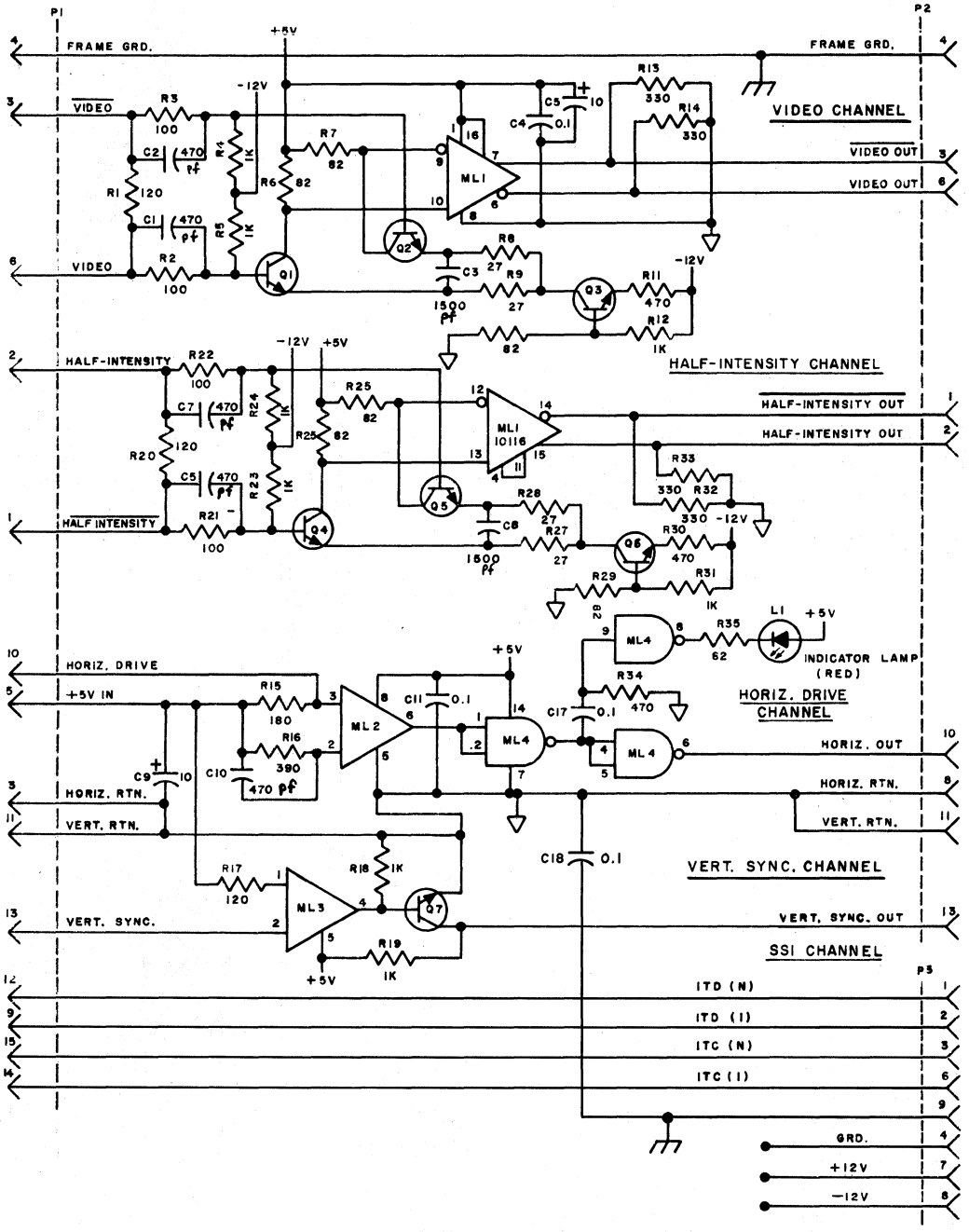


Fig. 10—KDA Receiver Circuits

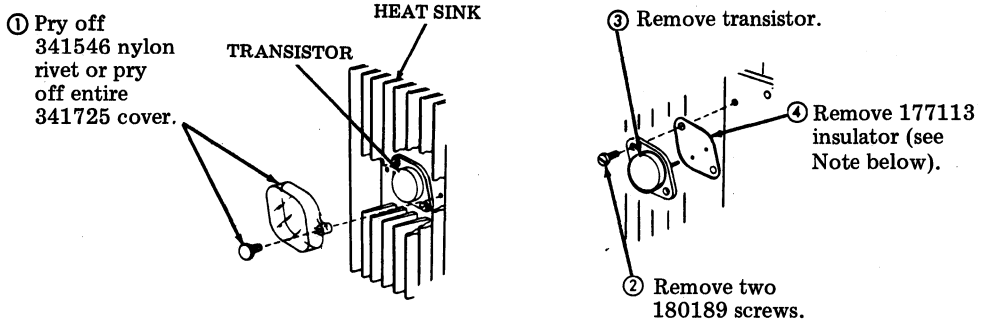
6. DISASSEMBLY/REASSEMBLY

6.01 Disassembly of the KDA is very apparent after the 407417 cover assembly has been removed. The single exception to the "apparent" procedures is in the removal of the 177113 transistor insulator, as in Fig. 11. The use of Fig. 12, 13 and 14 is advised as a means of familiarization with the unit.

6.02 The reassembly of a keyboard-display amplifier is very apparent. The exceptions to this follow:

(a) Replacement of the 401648 plug (applies to in-line mounting), refer to 2.04.

(b) Replacement of the 405960 heat sink; do not overtighten the 341657 self-tapping nuts used to mount the heat sink, refer to Fig. 12.



Note: Do not wipe off 402640 heat conducting paste from the 177113 insulator (orange color).

Fig. 11—Transistor Insulator

7. PARTS

7.01 Parts replacement information for the 40KDA101 Keyboard-Display Amplifier is given in the index on Page 29.

7.02 Parts for the two mounting kits used in mounting the 40KDA101 are described in Part 3. INSTALLATION and are shown in exploded view in Fig. 12 and 13.

7.03 The following list of cable assemblies are associated with the 40KDA101 installations:

Part No.	Description	Fig. No.	
405372	Cable, Stub	28	
405374	Cable — 12 ft	29	KDA TO KD CABLE ASSEMBLIES
405376	Cable — 50 ft	29	
405378	Cable — 100 ft	29	

7.04 The 405390 cable termination box (24 position) is also associated with the 40KDA101 installation and is shown in Fig. 16.

7.05 The two mounting kits used in mounting the 40KDA101 are described in Part 3. INSTALLATION and are shown in exploded views in Fig. 12 and 13.

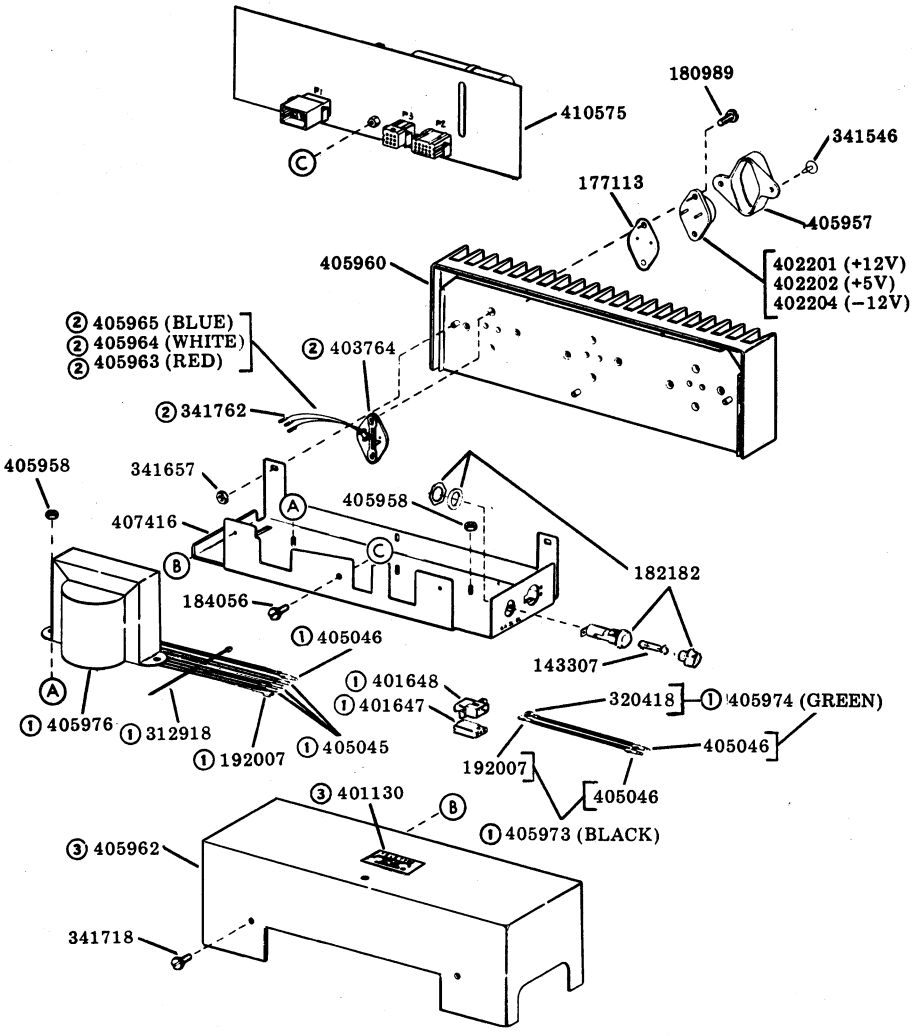
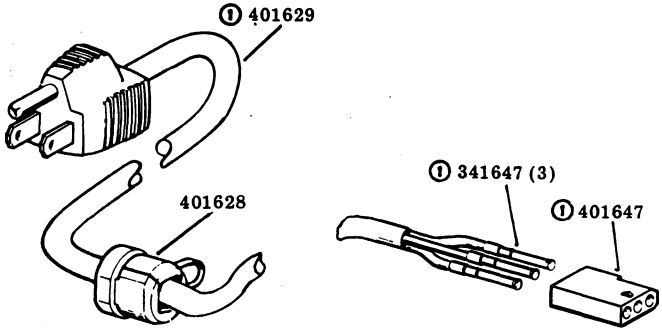
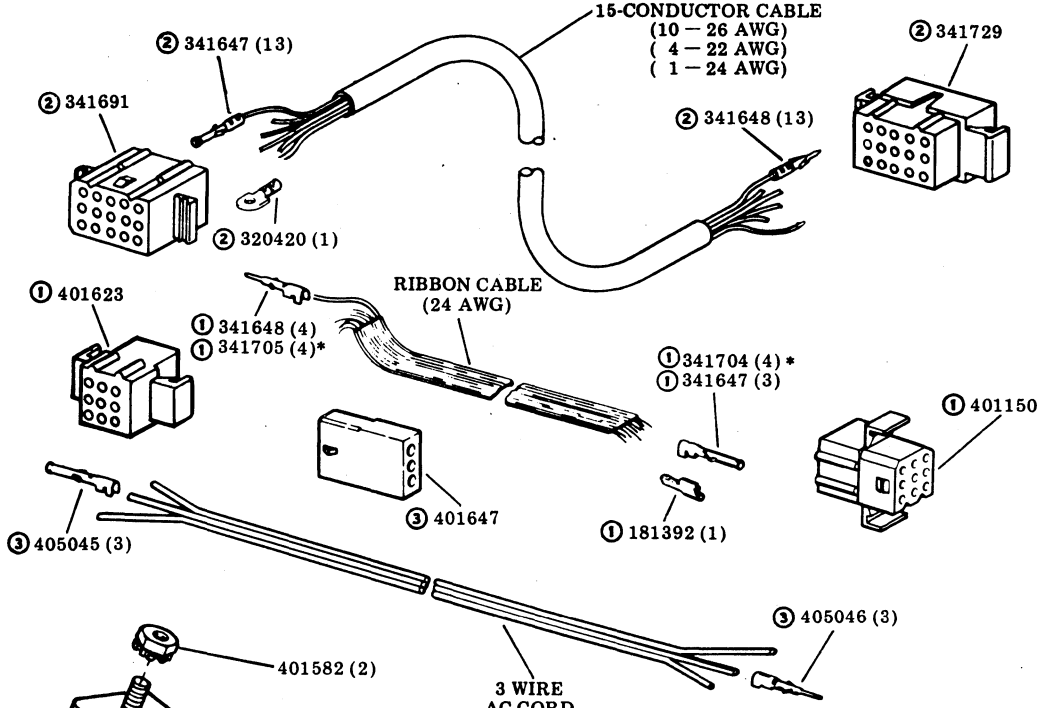


Fig. 12—KDA Parts Information



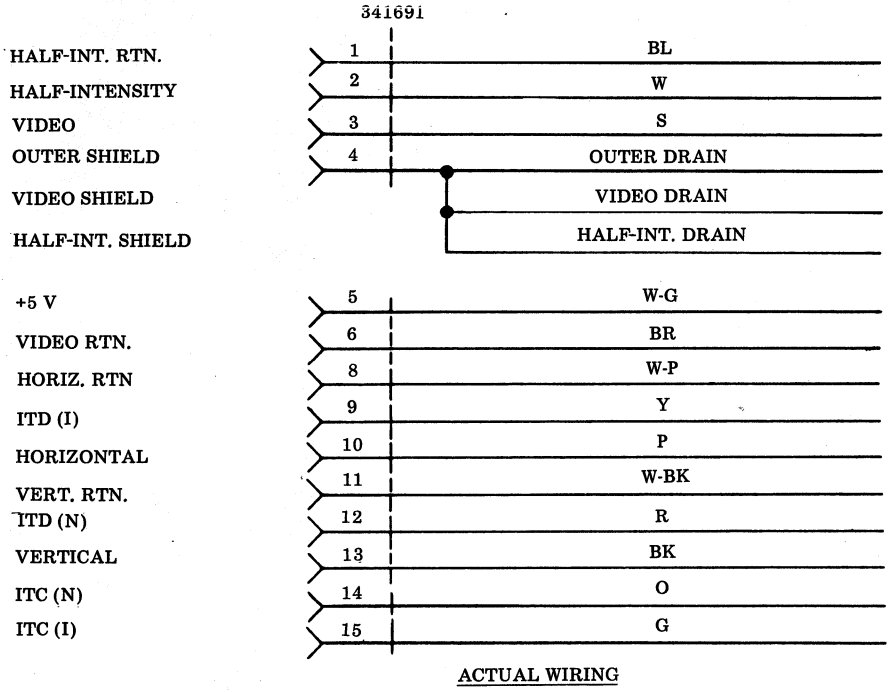
① 405967 AC Cord Assembly

Fig. 13—405982 Modification Kit (In-Line Mounting)



①405969 Keyboard Cable Assembly
②405975 Monitor Cable Assembly
③405961 AC Cable Assembly
*Used on R, Y, G, and O Wires.

Fig. 14—405983 Modification Kit (Cabinet Mounting)



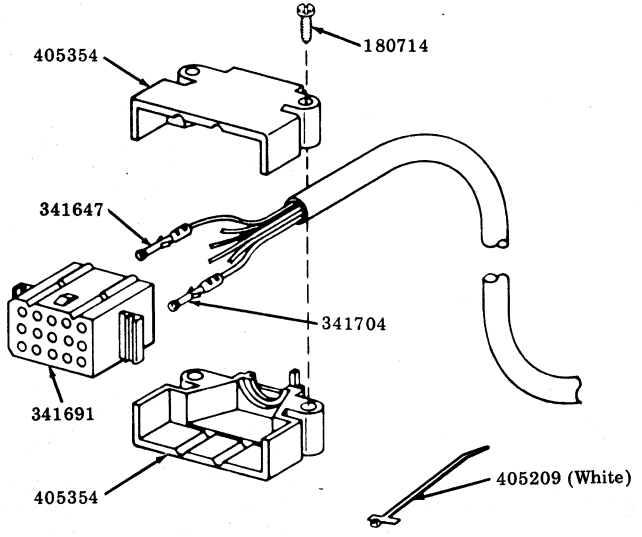


Fig. 15—405372 40KDA Stub Cable Assembly

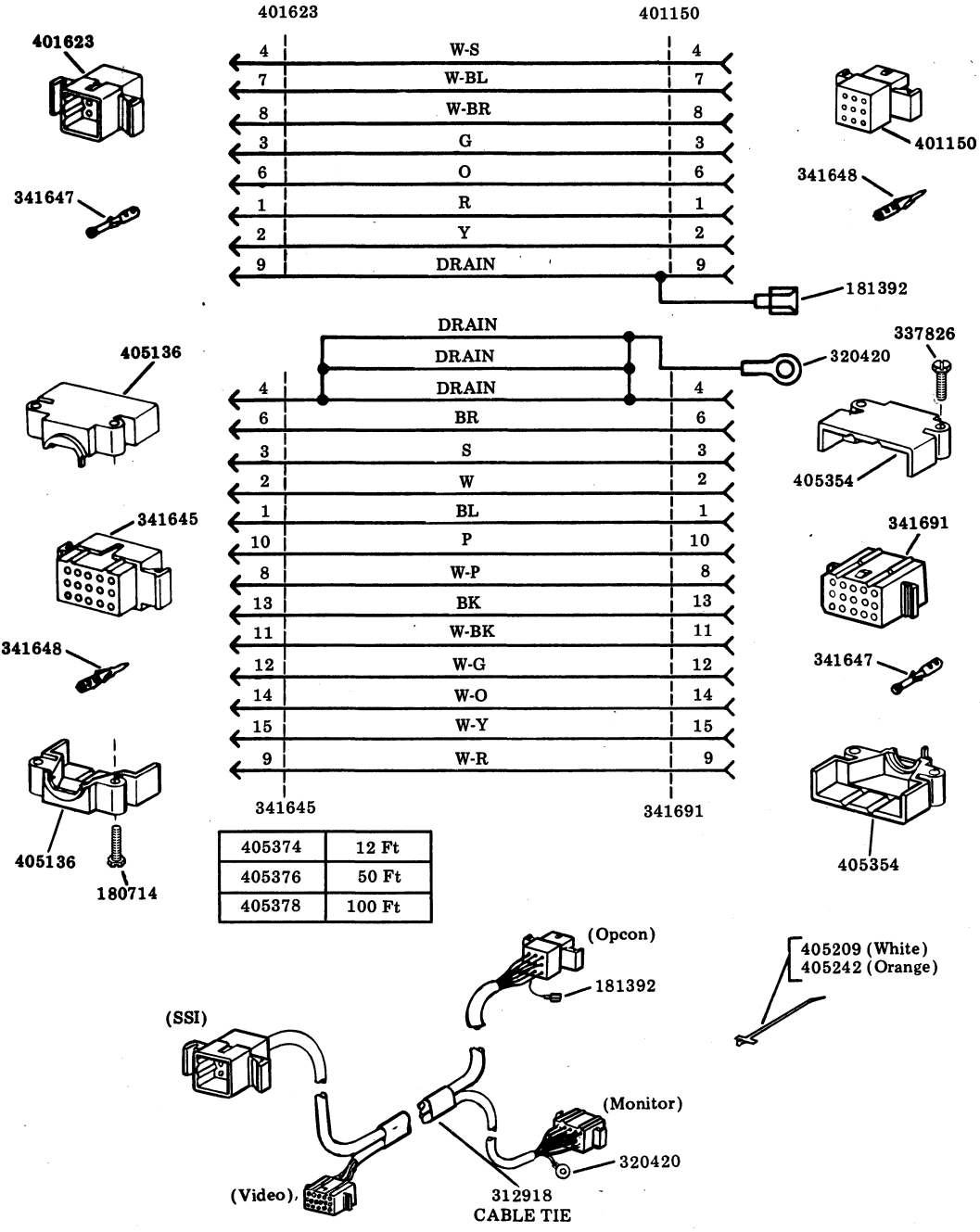


Fig. 16—40KDA to KD Cable Assemblies

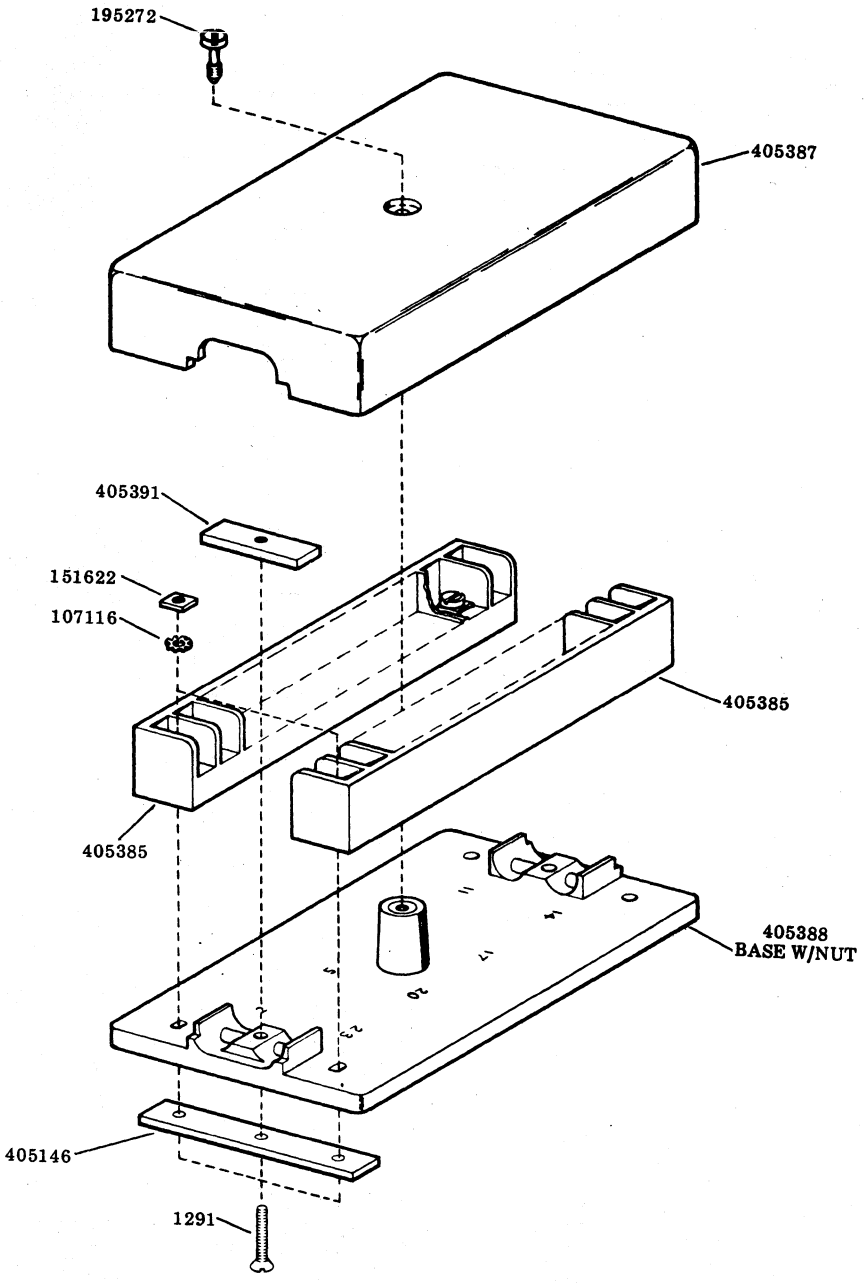


Fig. 17—405390 Cable Termination Box (24 Position)

7.06 NUMERICAL INDEX

Note: When ordering these parts, prefix each number with the letters "TP".

PART NO.	DESCRIPTION	PAGE NO.
1291	Screw, 6-32 x 1/4 Flat	28
107116	Lockwasher	28
143307	Fuse, 0.6 Amp	24
151622	Nut, 6-32 Sq	28
177113	Insulator	24
180714	Screw, No. 6 Self-Tapping	26,27
180989	Screw, Self-Tapping	24
181392	Terminal, Receptacle Type	25,27
182182	Holder, Fuse	24
184056	Screw w/Lockwasher, 6-40 x 1/4 Hex	24
192007	Terminal, Tab Type	24
195272	Screw, 6-40 Spl	28
312918	Strap, Cable	24,27
320418	Terminal, Ring Type	24
320420	Terminal, Ring Type	25,27
337826	Screw, 1/2" Pan Head	27
341546	Fastener	24
341645	Connector, 15 Pt Receptacle	27
341647	Terminal, Receptacle Type	25,26,27
341648	Terminal, Receptacle Type	25,27
341657	Nut, Self-Tapping	24
341691	Connector, 15 Pt Receptacle	25,26,27
341704	Terminal, Receptacle Type	25,26
341705	Terminal, Plug Type	25
341718	Screw w/Lockwasher 6-40 x 5/16 Hex	24
341729	Plug, 15 Pt	25
341762	Terminal, Receptacle Type	24
401130	Plate	24
401150	Connector, 9 pt Receptacle	25,27
401582	Nut w/Lockwasher	25
401623	Connector, 9 pt Plug	25,27
401628	Bushing	25
401629	Cord w/Plug	25
401647	Connector, 3 pt Receptacle	24,25
401648	Connector 3 pt Plug	24
402201	Regulator, +12 V	24
402202	Regulator, +5 V	24
402204	Regulator, -12 V	24
403764	Socket, Transistor	24
405045	Terminal, Receptacle Type	24,25
405046	Terminal, Plug Type	24,25
405136	Relief, Strain	27
405146	Stiffener	28
405209	Strap, Marker	26,27
405242	Strap, Marker	27
405354	Relief, Strain	26,27
405372	Cable Assembly	23
405374	Cable Assembly	27
405376	Cable Assembly	27
405378	Cable Assembly	27
405385	Block, Terminal	28
405387	Cover	28
405388	Base w/Nut	27
405391	Clamp	27
405957	Cover, Transistor	24
405958	Nut w/Lockwasher, 6-32	24
405960	Sink, Heat	24
405961	Cable Assembly	25
405962	Cover	24
405963	Lead, Red	24
405964	Lead, White	24
405965	Lead, Blue	24
405966	Socket Assembly	24
405967	Card Assembly	25
405969	Cable Assembly	25
405973	Lead w/Terminal, Black	24
405974	Lead w/Terminal, Green	24
405975	Cable Assembly	25
405976	Transformer	24
405977	Transformer Assembly	21,24
405982	Modification Kit	21
405983	Modification Kit	21
407416	Frame w/Studs	24
407417	Cover	24
407418	Bracket w/Stud	25
410575	Circuit Card	24

KEYBOARD DISABLE LOCK FEATURE FOR "DATASPEED*" 40/4

ATTACHED KEYBOARD DISPLAY

CONTENTS PAGE

1. GENERAL

1.01 The 407400 modification kit provides a bracket-mounted, key-locking switch and cabling for installation in a DATASPEED 40CAB251/ZZ Monitor/Opcon Support Cabinet equipped with a 405562 modification kit.

Note: DATASPEED 40CAB251/ZZ cabinet equipped with a 405562 modification kit is identical to a DATASPEED 40CAB251/AC Cabinet.

1.02 Whenever this section is reissued, the reason for reissue will be listed in this paragraph.

Note: Prefix Teletype Corporation part numbers with TP (ie, TP407400).

1.03 Without power, there is no SSI clock from the opcon to the controller. Absence of SSI clock causes the controller to set the IR (Intervention Required) bit in a status and sense message which will be sent to the CPU (Central Processor Unit), if the station receives a specific poll. It is interpreted by the CPU as device unavailable or not ready. On most software systems, this requires manual intervention at the CPU to reinstate the terminal. Therefore, to enable the keyboard, the user is required to: (1) rotate the keylocking switch to its clockwise position to restore power to the opcon and; (2) make a call to the CPU and request that the terminal be activated. The terminal will respond to a specific or general poll by sending a "Device No Longer Busy" alarm flag (status and sense) after power is restored. The locking key is removable in the counterclockwise position only. Two keys are provided with each switch. Note that lock configuration cannot be controlled; therefore, successive locks may be different or identical.

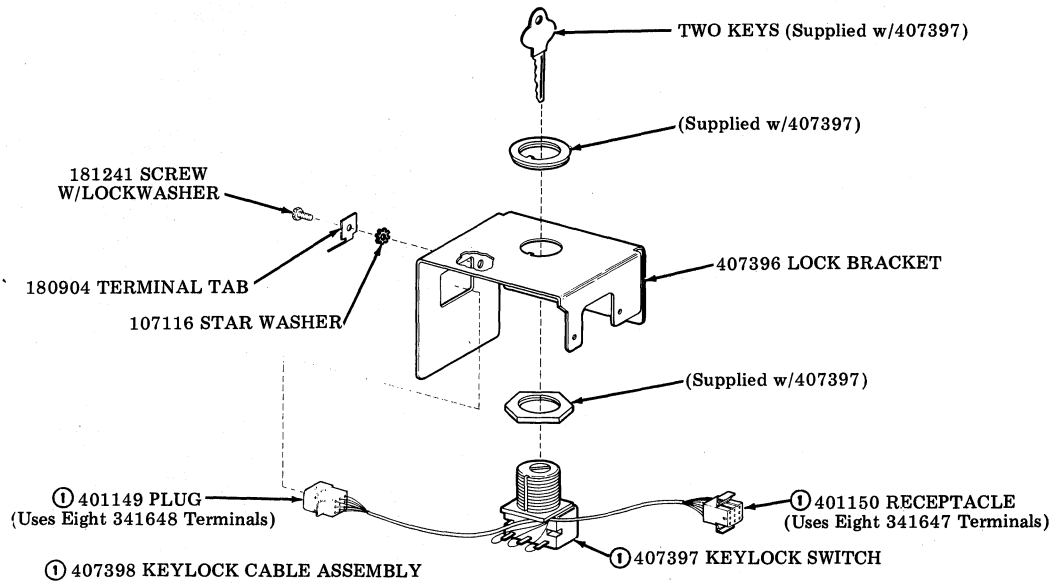
1.04 The 407400 modification kit consists of:

Qty.	Part No.	Description
2	125011	Washer, flat
4	155861	Washer, star
2	326023	Screw, 4-40 by 0.281 hex
1	407399	Switch assembly, keylock

*Registered Trademark of AT&TCo.

Prepared for American Telephone and Telegraph Company by Teletype Corporation

1.05 The 407399 keylock switch assembly consists of:

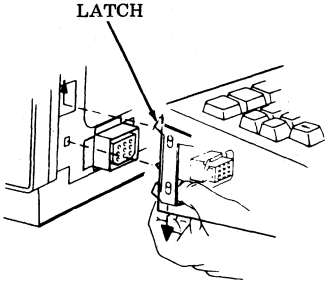


1.06 Refer to Bell System Practice 579-505-354, Field Installation and Maintenance Practice or 582-200-252, Synchronous DATASPEED 40 Station — Service Manual (40/4), for technical data concerning Synchronous DATASPEED 40/4.

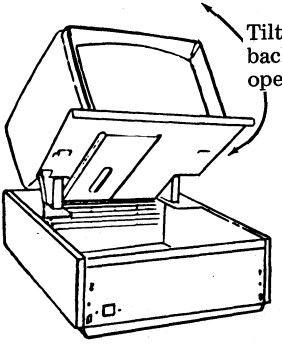
2. INSTALLATION

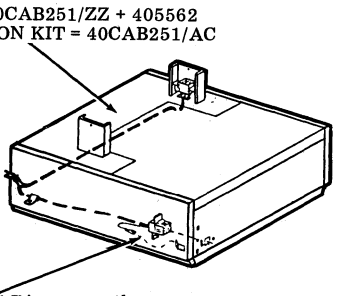
2.01 Installation of 407400 modification kit into a DATASPEED 40CAB251/ZZ cabinet equipped with a 405562 modification kit requires the following steps:

① Remove opcon from set and move monitor out of the way

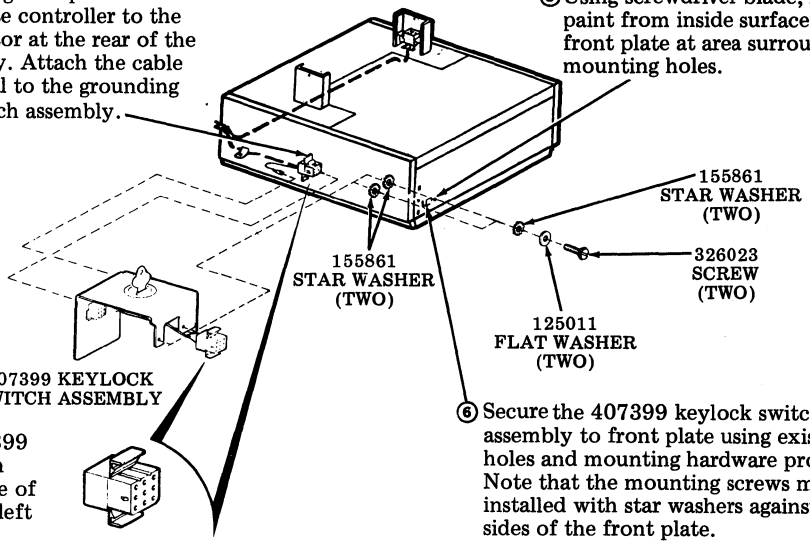


Press downward on left and right tabs while holding opcon and disengage from cabinet.





② Disengage the opcon connector from the front plate and detach the associated cable ground terminal from the ground tab.



Warning: Orient connectors as shown.

⑤Orient the switch assembly unmounted connector as shown and snap connector into the cabinet front plate.

⑧ Reinstall opcon to cabinet. Using key provided with switch assembly, rotate switch to its clockwise position and restore power to the opcon. Close lid and return the monitor to its normal viewing position.

3. TESTING

3.01 With the opcon enabled (keylock switch in its clockwise position), make a call to the CPU and request that the terminal be reinstated. The local key indicator on the opcon should be lighted, depress key if not lighted.

3.02 If the local key indicator does not light or local operation of the terminal cannot be performed:

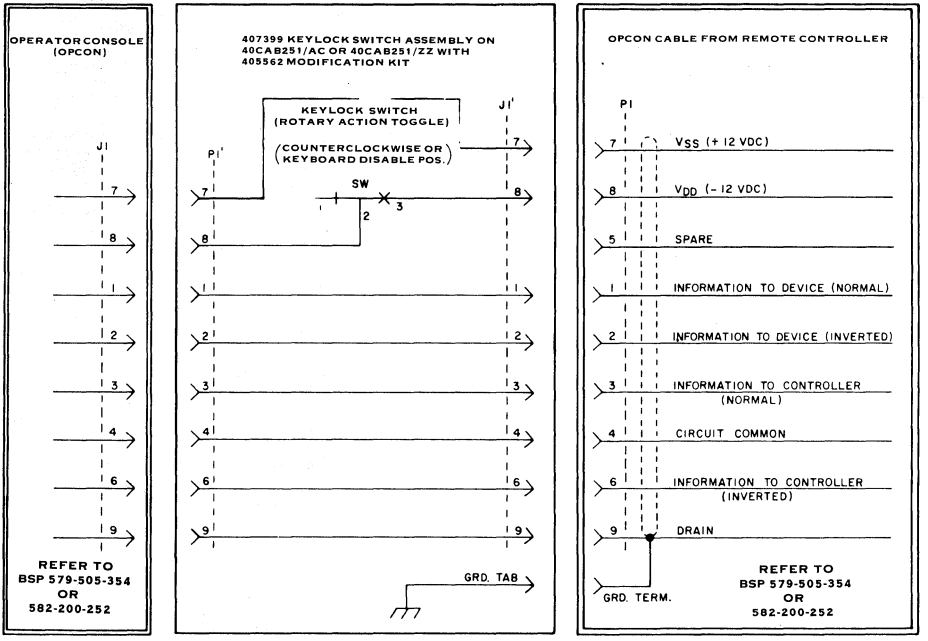
(a) Check to see that the SSI connector from the remote controller is properly seated at rear of the 407399 keylock switch assembly.

(b) Check for dirty or broken pins at SSI connector.

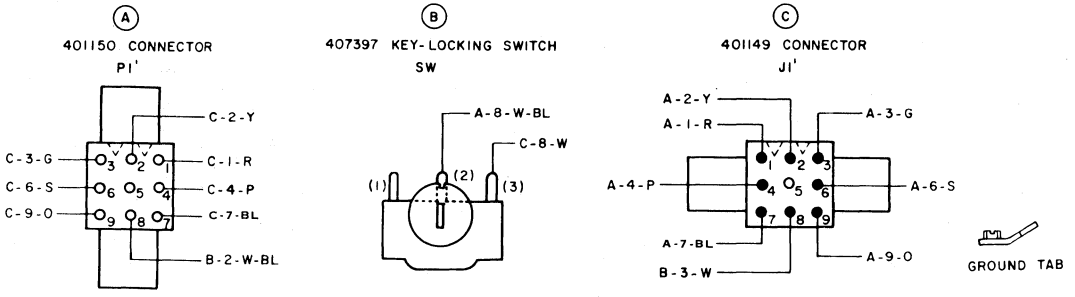
(c) Check to see that proper voltage is present at pins 7 and 8 of the SSI connector. Refer to schematic diagram (3.03).

(d) Refer to Station Troubleshooting in Bell System Practice 579-505-354 or 582-200-252.

3.03 SCHEMATIC DIAGRAM OF KEYLOCK SWITCH ASSEMBLY



3.04 ACTUAL WIRING DIAGRAM OF KEYLOCK SWITCH ASSEMBLY



All wires 24 AWG. Terminals enclosed in parentheses are for reference and not marked on component. Connectors shown from wired side.

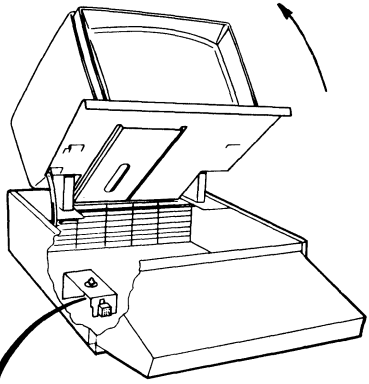
CUT ON DASHED LINES.

PLACE IN ATTENDANT'S HOW TO OPERATE MANUAL.

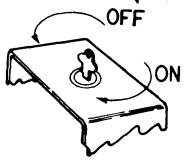
Operator Console Security Lock Feature

The security lock feature will allow the attendant to disable the associated operator console in the Synchronous 40/4 attached keyboard/display device. A keylock switch located inside the cabinet can disable the operator console by rotating key counterclockwise. To reinstall or restore power to the operator console, the attendant is required to (1) rotate keylock switch clockwise (2) make a call to the CPU (Central Process Unit) and request that the terminal be reinstated.

Tilt monitor back and open lid.



Key is removable in the counterclockwise (off) position only.



INSTRUCTIONS FOR INSTALLING THE 346990 MODIFICATION KIT TO PROVIDE A KEYBOARD DISABLE LOCK ON A SYNCHRONOUS MODEL 40/4 DETACHED KEYBOARD

1. GENERAL

1.01 The 346990 Modification Kit provides necessary parts for installation of a keylocking switch assembly into a 40BSE201 Opertor Console Base.

1.02 When the keylocking switch is operated in its clockwise position (all positions viewed from the front of the keyboard), the operator console (opcon) is disabled by disconnecting it from the VDD power source. The key is removable in the clockwise (12 O'Clock) position only. To enable the opcon, the user is required to insert the key and rotate the keylocking switch to its counterclockwise position and thus restore power to the opcon. An extraneous character may appear on the monitor when opcon power is restored. On most software systems when power has been disconnected from the opcon, the CPU (Central Processor Unit) will interpret it as device unavailable or not ready. Therefore, it will be necessary to make a call to the CPU and request that the terminal be reinstated.

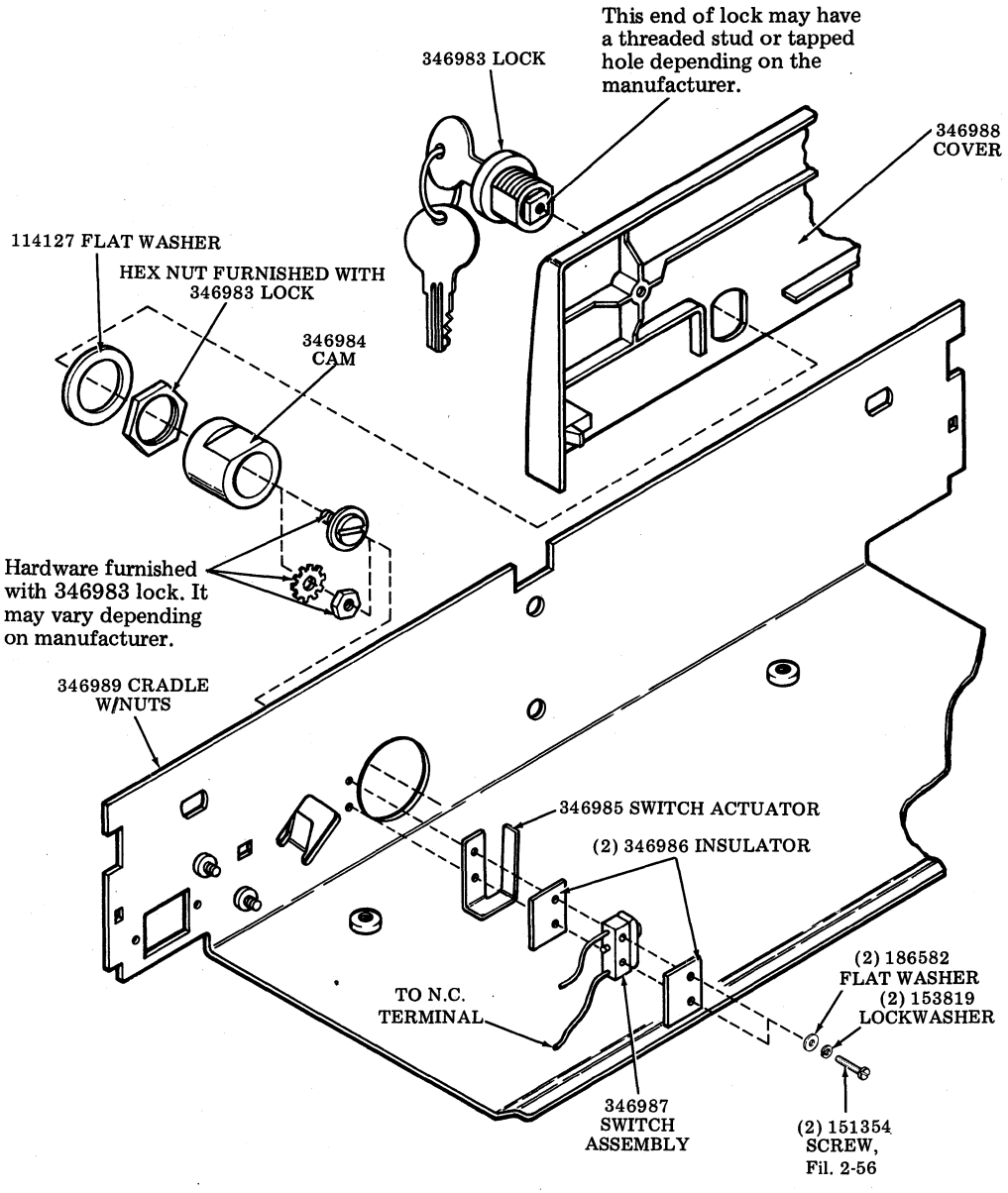
1.03 The 346990 Modification Kit consists of the following parts:

Qty	Part No.	Description
1	114127	Flat Washer
2	151354	Screw, Fil. 2-56
2	153819	Lockwasher
2	186582	Flatwasher
1	346983	Lock
1	346984	Cam
1	346985	Actuator, Switch
2	346986	Insulator
1	346987	Switch Assembly
1	346988	Cover
1	346989	Cradle w/nuts

Note: Although not included with the modification kit, a trademark nameplate is also required (choose one):

Qty	Part No.	Description	Customer Marking Code
1	346335	Blank	WS
1	346337	Bell System	BA
1	346338	Teletype	TA

1.04 A parts diagram of the keylock switch assembly follows:



2. INSTALLATION

2.01 The installation procedure for mounting a 346990 Modification Kit into a 40BSE201 Operator Console Base is given below.

2.02 Remove ac power to the associated controller.

2.03 Lift monitor off base and put aside. See Fig. 1.

2.04 Loosen three 405586 screws from base and remove bottom plate. See Fig. 1.

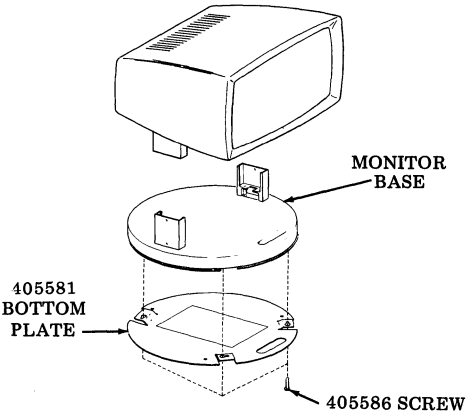


Fig 1.—Monitor Base Removal

2.05 Remove opcon cable from opcon connector located in monitor base. See Fig. 2.

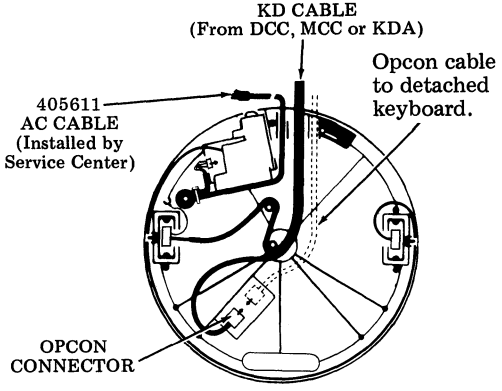


Fig. 2—Removal of Opcon Cable

2.06 Place the keyboard (opcon) with the base upside down on a smooth surface (cable to the rear). Care should be taken to avoid scratching or marking the keytops. See Fig. 3.

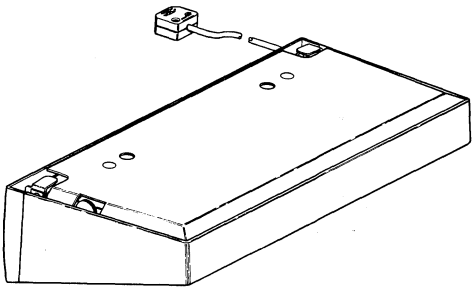


Fig. 3—Keyboard with 40BSE201 Opcon Base Shown Upside Down.

2.07 Remove the 408894 cover assembly (if base is so equipped) by prying between the base and cover until the two 341545 Drive Fasteners are free from the base. After the cover assembly has been removed, pull up on the two latch levers and move the base to the rear until it is free of the keyboard. A screwdriver or similar tool may be used to aid in the separation of the base and cover. Set the cover assembly and keyboard aside. See Fig. 4.

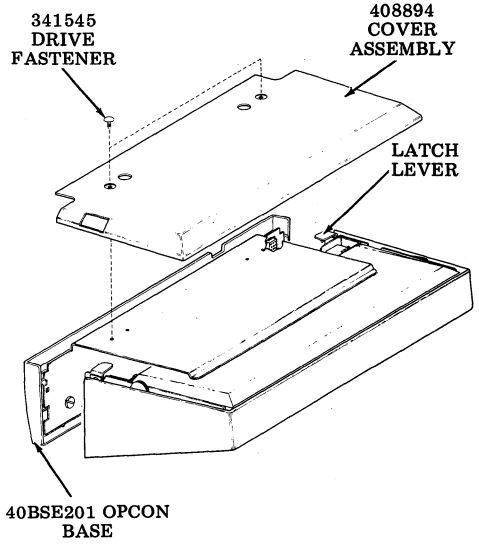


Fig. 4--408894 Cover and Opcon Base Removal

2. INSTALLATION (Cont)

2.08 Disassemble the 346331 cover from the 346327 cradle by removing the four (4) 346334 shoulder screws. Discard the cover but retain the shoulder screws. See Fig. 5.

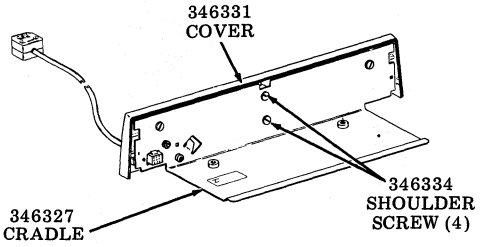


Fig. 5—40BSE201 Disassembly

2.09 Disassemble the 346333 cable from the cradle. Discard the cradle but retain cable, cable clamp and associated hardware. See Fig. 6.

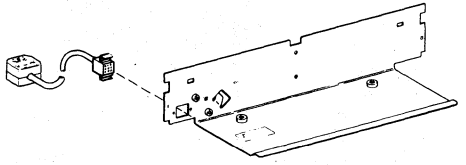


Fig. 6—Disconnection of Cable

2.10 Assemble the 346983 lock to the 346988 cover using the 114127 flat washer and hex nut furnished with the lock. Assemble the 346984 cam with the flat facing the top of the cover when the key is in the 12:00 o'clock position. Fasten the cam to the lock with the hardware furnished with the lock. See Fig. 7.

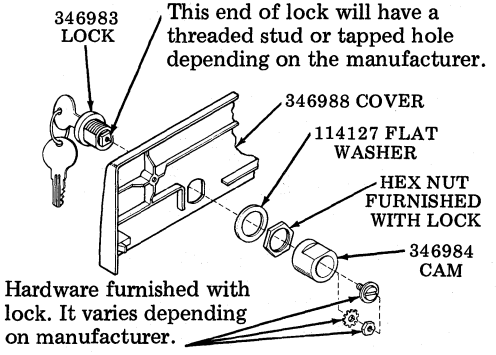


Fig. 7—Lock Cover Assembly

2.11 Reassemble the 346333 cable and its ground strap to the 346989 cradle with the retained cable clamp and hardware. Use a terminal extractor to remove the terminal from in position eight (8) of the connector.

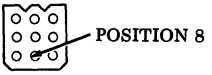


Fig. 8—Connector of 346333 Cable Assembly

2.12 With the 346987 switch assembly on the side of the cradle opposite the cable (see Fig. 9), feed the two (2) switch leads through the square cutout in the cradle between the connector cutout and the lock cutout. Connect one lead to the removed terminal and the other lead to position eight (8) in the connector. See Fig. 9.

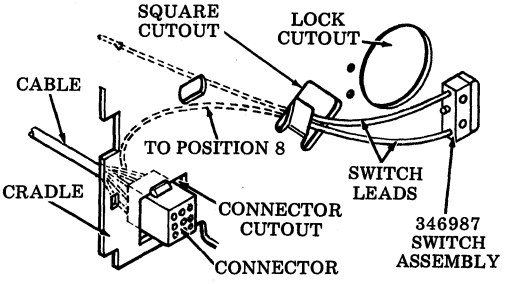


Fig. 9—Installation of Switch

2.13 Assemble the 346985 switch actuator, the two (2) 346986 insulators and the 346987 switch assembly to the cradle using two (2) 186582 flat washers, two (2) 153819 lockwashers and two (2) 151354 fillister screws. Do not fully tighten screws at this time. See Fig. 10.

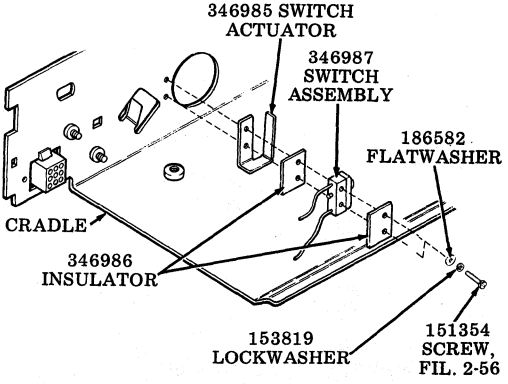


Fig. 10—Installation of Switch Actuator

2. INSTALLATION (Cont)

2.14 Assemble the 346988 cover to the cradle by carefully inserting the cam through the opening in the cradle and then fasten the cover to the cradle with the four (4) shoulder screws (retained from 2.08). The cam should be positioned with flat to the left as viewed from keyboard front. This position is also the keyboard "ON" position see Fig. 11.

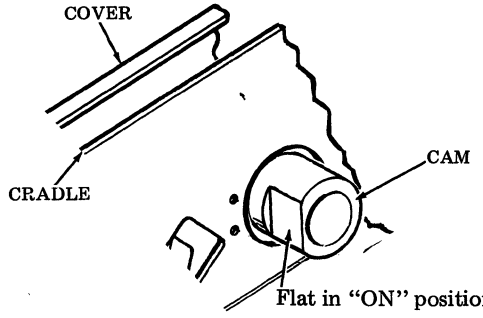
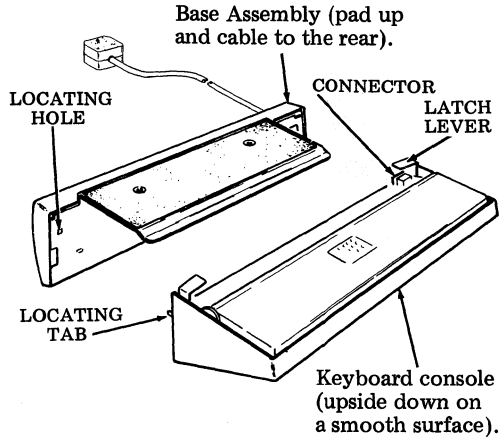


Fig.11—Direction of Cam When Inserted in Cradle

2.15 With the flat of the cam located in the upward position (keyboard "OFF" position), fully tighten the two (2) 151354 fillister screws. See Fig. 10.

2.16 Place the keyboard upside down on a smooth surface with the front of the keyboard towards you. See Fig. 12.

2.17 Place the base assembly over the keyboard (cable to the rear). Pull up on the two latch levers, bring the base forward to engage locating tabs and push down on latch levers to engage. If the 408894 cover assembly (see Fig. 4) was removed in 2.07, install it to the base. The lip on the cover assembly must latch over the metal plate on the bottom of the keyboard then the cover is fastened to the base with two (2) drive fasteners.



Note: Spread sides of console cover slightly to aid engagement.

Fig. 12—Installation of Opcon to Modified Base

2.18 Turn keyboard and connected base assembly right side up. The trademark nameplate should be fastened in the approximate center of the rectangular area of the 346988 cover. To assure proper bonding, the cover must be clean. Remove the paper backing (handle the plate by the edges to avoid touching the adhesive), locate the plate over the cover, apply firm pressure over the entire plate, then remove the protective plastic covering from the plate.

2.19 Connect the opcon cable to the monitor base. Restore ac power to the associated controllers.

3. TESTING

3.01 With the opcon enabled, (key-locking switch in its counterclockwise position) make a phone call to the CPU and request that the terminal be reinstated. The local key indicator on the opcon should be lighted, depress key if not lighted.

3.02 If the local key indicator does not light, or local operation of the terminal cannot be performed:

(a) Check to see that the SSI connector is properly seated in the opcon base and check the connection in the monitor base.

(b) Check for dirty or broken pins at the SSI connector in the opcon base.

(c) Check to see that 24 volts are present between pins 7 and 8 of the SSI connector. Refer to Fig. 13.

(d) Refer to troubleshooting procedures in Bell System Practice 582-200-501 or Manual 351 (or Manual 384).

3.03 SCHEMATIC DIAGRAM OF KEY LOCKING SWITCH ASSEMBLY

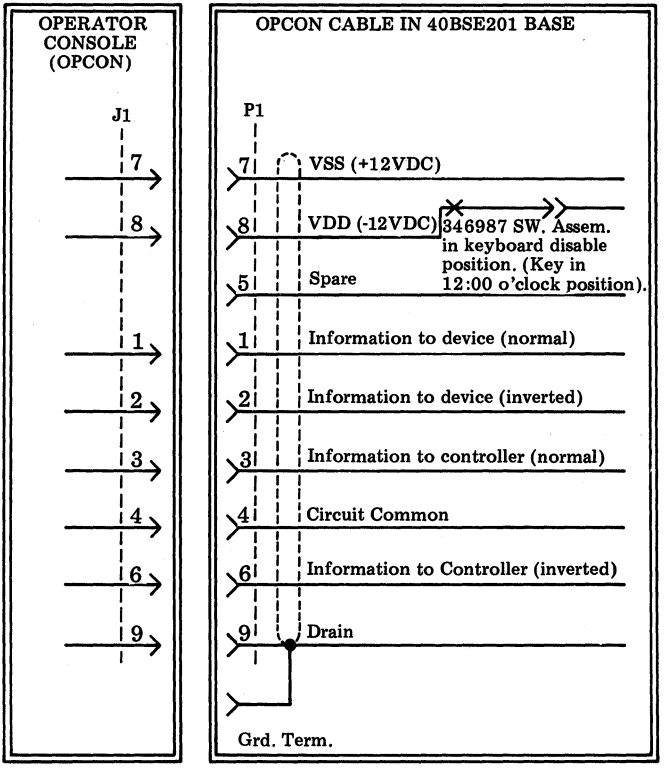
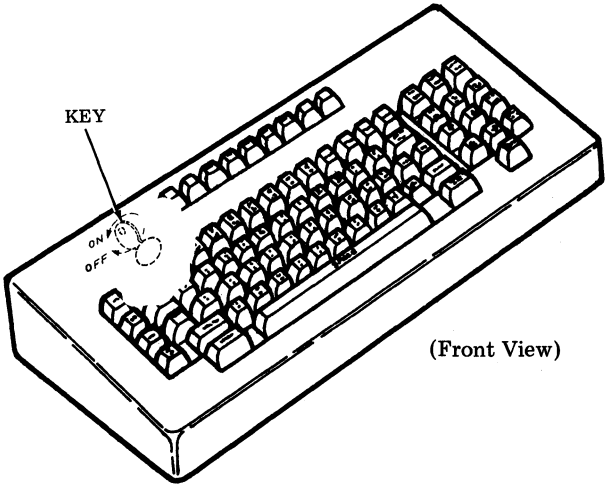


Fig. 13

CUT ON DASHED LINES
PLACE IN ATTENDANT'S HOW TO OPERATE MANUAL

Operator Console Security Lock Feature

The security lock feature will allow the attendant to disable the associated keyboard in the Synchronous 40/4 detached KD. A key-locking switch located towards the left of the rear side (see below) can disable the keyboard by rotating the key clockwise (all positions viewed from front of keyboard). To enable the keyboard, the attendant is required to (1) ins the key, (2) rotate key switch counterclockw (3) make a call to the CPU (Central Processor U and request that the terminal be reinstated. When keyboard is enabled, an extraneous character n appear on the monitor. The key can be removed o when the lock is turned to the OFF position.



(Front View)

Location of Keyboard Lock

SYNCHRONOUS MODEL 40/4 MINI-CLUSTER AND MAXI-CLUSTER STATION CABLING

CONTENTS PAGE

1. GENERAL

1.01 This specification provides description, installation and parts information for the cables and support accessories of Model 40/4 Mini-Cluster and Maxi-Cluster station arrangements. (Fig 1, 2 and 3).

1.02 Due to the varied location of devices on the customer premises, controller to controller and controller to device cabling of many types are allowed with the use of the cables and accessories described in this specification.

1.03 All cables to and from a pedestal mounted controller go through the cable duct at the lower rear of the 40CAB901/AJ pedestal. All cable lengths within the pedestal should be kept to a minimum. When ordering cables, careful calculation of the length required is necessary to prevent coiling and storing large excesses of cable within the pedestal. All cables to and from the controller must be routed through the strain relief clamp located on the door. See Fig. 7.

1.04 Interoffice cables shall be routed in such a manner as to prevent a hazard to personnel and cable damage.

1.05 After initial installation, no routine maintenance is needed with the exception of occasional inspections of the cable outer jacket.

1.06 Cable assemblies supplied with marker straps should be labeled to provide identification. These marker straps are labeled according to system configuration (refer to 4. INSTALLATION).

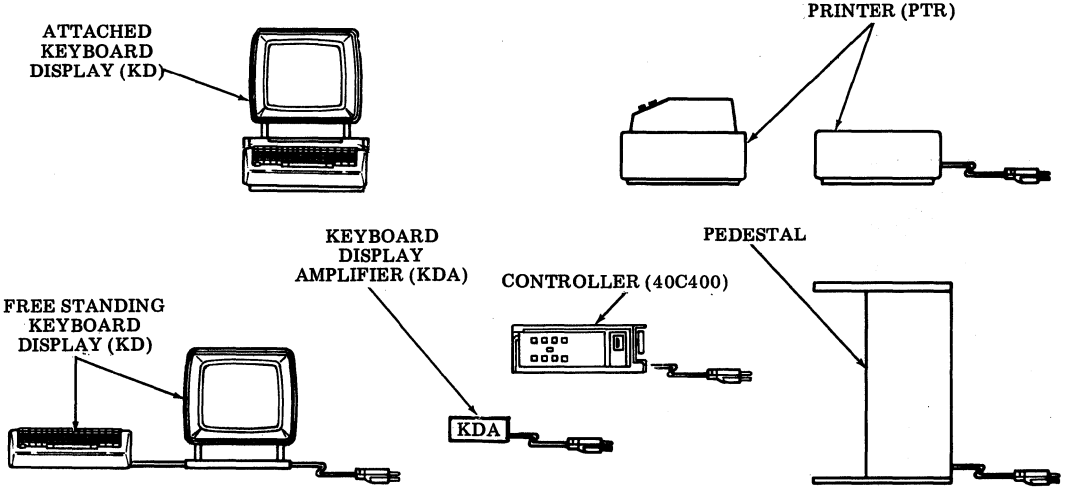
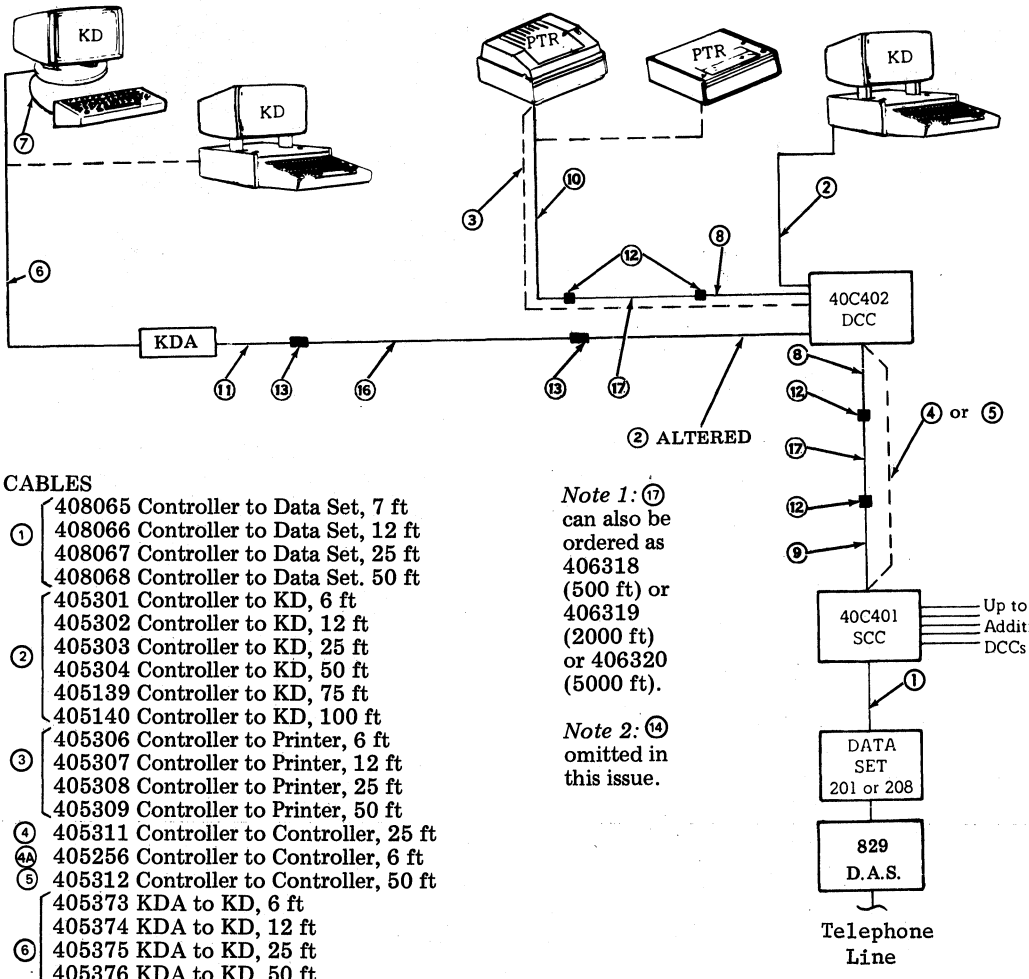


Fig. 1—Model 40/4 Station Equipment

1.07 A maxi-cluster configuration (Fig. 2) consists of one SCC and from one to six DCCs. Each DCC is capable of handling from one to six devices (KDs and PTRs). At least one of the devices should be a KD. A DCC can handle a maximum of four KDs.



CABLES

① 408065 Controller to Data Set, 7 ft
408066 Controller to Data Set, 12 ft
408067 Controller to Data Set, 25 ft
408068 Controller to Data Set. 50 ft

② 405301 Controller to KD, 6 ft
405302 Controller to KD, 12 ft
405303 Controller to KD, 25 ft
405304 Controller to KD, 50 ft
405139 Controller to KD, 75 ft
405140 Controller to KD, 100 ft

③ 405306 Controller to Printer, 6 ft
405307 Controller to Printer, 12 ft
405308 Controller to Printer, 25 ft
405309 Controller to Printer, 50 ft

④ 405311 Controller to Controller, 25 ft

④A 405256 Controller to Controller, 6 ft

⑤ 405312 Controller to Controller, 50 ft

⑥ 405373 KDA to KD, 6 ft
405374 KDA to KD, 12 ft
405375 KDA to KD, 25 ft
405376 KDA to KD, 50 ft
405377 KDA to KD, 75 ft
405378 KDA to KD, 100 ft

⑦ 346333 40BSE101 to 40BSE201, 4-1/2 ft

⑧ 405237 Controller to Termination Box, 10 ft

⑨ 405238 Termination Box to Controller, 10 ft

⑩ 405239 Termination Box to Printer, 10 ft

⑪ 405372 Termination Box to KDA, 6 ft

⑫ 405389 Termination Box (10 Position) or
405390 Termination Box (24 Position)

⑮ 44A WE Connector Block (10 Position) or

⑯ 31246RM* KDA Cable (ordered by the foot) (Can also be ordered as a 500 foot reel, part number 405370)

⑰ 31248RM SSI Cable (ordered by the foot) (See note above).

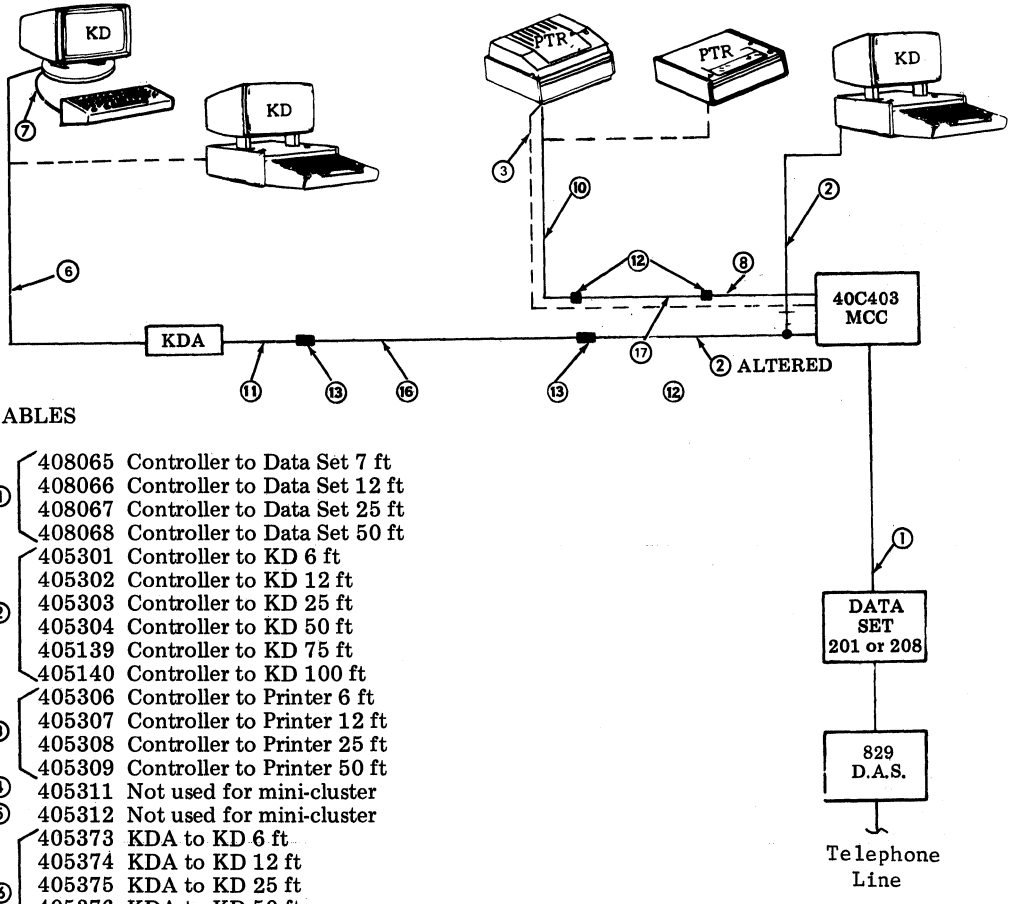
*Bell System users should specify the equivalent TKS107.

Note 1: ⑰ can also be ordered as 406318 (500 ft) or 406319 (2000 ft) or 406320 (5000 ft).

Note 2: ⑭ omitted in this issue.

Fig. 2—Maxi-Cluster Configuration

1.08 A mini-cluster configuration (Fig. 3) consists of one MCC which is capable of handling from one to three devices (KDs and PTRs). At least one of the devices should be a KD. A MCC can handle a maximum of two KDs.



CABLES

① 408065 Controller to Data Set 7 ft
408066 Controller to Data Set 12 ft
408067 Controller to Data Set 25 ft
408068 Controller to Data Set 50 ft

② 405301 Controller to KD 6 ft
405302 Controller to KD 12 ft
405303 Controller to KD 25 ft
405304 Controller to KD 50 ft
405139 Controller to KD 75 ft
405140 Controller to KD 100 ft

③ 405306 Controller to Printer 6 ft
405307 Controller to Printer 12 ft
405308 Controller to Printer 25 ft
405309 Controller to Printer 50 ft

④ 405311 Not used for mini-cluster

⑤ 405312 Not used for mini-cluster

⑥ 405373 KDA to KD 6 ft
405374 KDA to KD 12 ft
405375 KDA to KD 25 ft
405376 KDA to KD 50 ft
405377 KDA to KD 75 ft
405378 KDA to KD 100 ft

⑦ 346333 40BSE101 to 40BSE201 4-1/2 ft

⑧ 405237 Controller to Termination Box 10 ft

⑨ 405238 Not used for mini-cluster

⑩ 405239 Termination Box to Printer 10 ft

⑪ 405372 Termination Box to KDA 6 ft

⑫ 405389 Termination Box (10 Position) or ⑮

⑬ 405390 Termination Box (24 Position)

⑭ Omitted in this Issue.

⑮ 44A W.E. Connector Block (10 Position) or ⑫

⑯ 31246RM* KDA Cable (ordered by the foot) (can also be ordered as a 500 foot reel, part number 405370).

⑰ 31248RM SSI Cable (ordered by the foot) (See Note 1 on Fig. 2)

*Bell System should order the equivalent TKS107.

Fig. 3—Mini-Cluster Configuration

2. TECHNICAL DATA

2.01 All cables currently manufactured by Teletype Corporation for use in Model 40/4 stations are shielded to minimize noise. These cables are designed to insure performance characteristics not generally available in "off the shelf" cables.

Note: Unshielded SSI cable or other non-Teletype Corporation cable can be used if cable passes tests described in Part 7 of this specification.

Note: For installations requiring large quantities of 31246RM or 31248RM cable, contact the Teletype Corporation sales organization for availability. See Fig. 2 for alternatives to 31248RM.

2.02 To provide standardization for cabling, all signal leads between the controller and associated devices (not data sets) have been assigned a color code. This color coding, in all cables, is helpful in installation and servicing. Refer to Fig. 4 for controller to device wire colors.

2.03 The color code for data set cables is different from the code given in Fig. 4. A particular color always appears on the same pin or terminal number, although the signal at that terminal may differ when interfacing various data sets and communication interface units.

2.04 Due to changes in cable requirements, the color, etc, of both early and current style cable assemblies are included in this document.

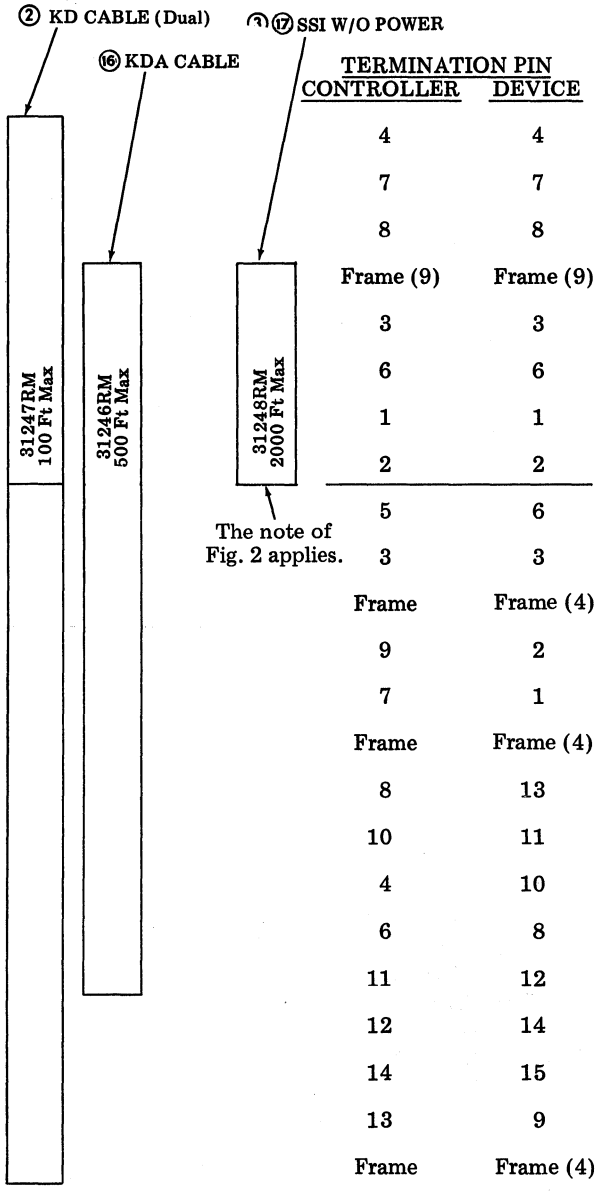
2.05 Currents and power are maximum values based on power company supplied voltages within the limits: 115 V ac $\pm$ 10 percent and 60 Hz $\pm$ 0.1 percent.

2.06 Environmental conditions should be maintained within the following limits to avoid damage and provide proper operation.

ENVIRONMENTAL CONDITION	STORAGE OR TRANSPORTATION		OPERATION	
	MIN	MAX	MIN	MAX
Temperature	-40°F	+150°F	+40°F	+110°F
Humidity	2%	95%	2%	95%
Altitude	Sea Level	50,000 ft	Sea Level	10,000 ft

Note: As with any device that can be damaged by water, sudden temperature changes that can cause condensation should be avoided.

Example: A cable stored in subzero temperatures will collect frost when unpacked in a warm humid room.



LEAD DEFINITION	COLOR	TERMINATION PIN CONTROLLER	TERMINATION PIN DEVICE
Signal GRD	W-S	4	4
+12 V	W-BL	7	7
-12 V	W-BR	8	8
Outer Shield	DRAIN	Frame (9)	Frame (9)
ITC-N	G	3	3
ITC-I	O	6	6
ITD-N	R	1	1
ITD-I	Y	2	2
Video	BR	5	6
Video RTN	S	3	3
Video Shield	DRAIN	Frame	Frame (4)
Half Int	W	9	2
Half Int RTN	BL	7	1
Half Int Shield	DRAIN	Frame	Frame (4)
Vert Drive	BK	8	13
Vert RTN	W-BK	10	11
Horiz Drive	P	4	10
Horiz RTN	W-P	6	8
+5 V	W-G	11	12
+5 V	W-O	12	14
Signal GRD	W-Y	14	15
Signal GRD	W-R	13	9
Outer Shield	DRAIN	Frame	Frame (4)

( ) Common Pin for GRD.

Fig. 4—Controller to Device Wire Colors

3. DESCRIPTION

3.01 The following information describes all cable assemblies and accessories (shown in Fig. 2 and 3) used in conjunction with the 40C400 series of controllers.

Controller to Data Set Cables ①

3.02 The 408065 through 408068 series of cables are used to connect the controller to the data set. These cables are double shielded (outer shield connected to protective ground, inner shield connected to signal ground). This series has lengths from 7 to 50 feet and may be used for signaling rates through 9600 Baud. The EIA standard RS-232-C is used to various Communication Interface Units (CIU — circuit cards) in the controller by the 408065 through 408068 series cables.

Controller to KD Cables ②

3.03 The 405301 through 405304, 405319 and 405140 cables are used to connect the controller to a KD. These cables are a dual cable molded together and have lengths from 6 to 100 feet. One half of the cable is for video information and display synchronization, the other half is for SSI information. Both halves of this cable are individually shielded.

3.04 Early 405301 through 405304 cables used two adjacent lengths of (gray vinyl) cable clamped together. Refer to Manual 351 or Section 582-200-401 for wiring information and new- and old-style color codes.

Controller to Printer Cables ③

3.05 The 405306 through 405309 cables provide direct connection between a controller and a printer. These cables have lengths from 6 to 50 feet. Distances up to 2000 feet are permitted between controller and printer. See 3.10 for method of implementation.

Controller to Controller Cables ④ ④A and ⑤

3.06 The 406256 (6 feet), the 405311 (25 feet), and 405312 (50 feet) cables are used to connect a controller to controller. These cables differ from all other SSI cables in that the ITD and ITC signal pairs are exchanged at the SCC end. Later style cables may be identified by a blue 405383 connector at the SCC end.

3.07 Early version cables were made from different stock than current cables. Refer to Manual 351 or Section 582-200-401 for wiring information and color code changes. Distances of up to 2000 feet are permitted between controllers. See 3.10 for method of implementation.

40BSE101 to 40BSE201 Cable ⑦

3.08 SSI connections between the 40BSE101 (monitor base) and the 40BSE201 or 40BSE202 (opcon base) are made using the 346333 cable.

3.09 This cable is part of the opcon base and cannot be ordered separately.

Remote SSI Cabling ⑫ ⑮ ⑰

3.10 Any printer or controller located more than 50 feet from the controller requires two 405389 termination boxes ⑫ . These termination boxes consist of two 5-position terminal blocks with wire clamps. The 405389 termination boxes can accommodate two separate SSI interconnections. The Western Electric 44A connector block may be substituted for the 405389 termination box, however, there are no means to strain relief the connections. Fig. 2 and 3 show examples of remote SSI configurations.

3.11 Connections from the controller to the 405389 termination box are made with the 405237 cable ⑧ or 405238 ⑨ . This cable is 10 feet in length and has a connector at one end. When cables are connected in a termination box, they must both have spade terminals or both have bare wire ends. Do not mix bare wire ends with spade terminals on the same connector block terminal.

3.12 Cabling between 405389 termination boxes is 31248RM. A maximum of 2000 feet is permitted between the printer and the controller or between SCC and DCC.

Note: Solder tinning of stranded wire in preparation for clamping is not permitted. Terminals are not required on conductors in this termination box.

3.13 Connections from the printer or SCC to the 405389 termination box are made via the 405239 ⑩ or 405238 ⑨ cable assemblies (respectively).

3.14 The 405238 cable is used in termination box to SCC applications. This cable is ten feet in length. A blue connector at the SCC end allows for identification due to the swapped ITC and ITD pairs. The other end of this cable has spade terminals which must be removed if terminals are not affixed to the SSI cable between termination boxes.

3.15 The 405239 cable provides connection between a 405389 termination box and a printer.

Note: SSI applications requiring the use of 405237 ⑧ , 238 ⑨ or 239 ⑩ cables may substitute the standard controller to controller, or controller to device cables (as applies). Cutting such a cable in half results in a 405237 and 405238 combination (or a 405237 and 405239 combination as applies) without spade terminals. This also allows customer control over stub cable length.

Remote KD Cabling

3.16 A KD can be located up to 100 feet from a controller using standard cables. In applications requiring distances in excess of 100 feet, a KDA must be used to provide the amplification to drive the monitor.

KDA Interconnection

3.17 The 40KDA101 keyboard display amplifier is a self contained unit. The KDA accepts low level signals from the controller located up to five hundred feet away and provides the amplification necessary to drive up to another one hundred foot length of cable. SSI information is passed untreated through the KDA. The unit supplies the power required to operate the remote opcon. Refer to Specification 50853S for detailed information on the 40KDA101. The KDA must be ordered with either the 405982 or 405983 mounting kit. Installation of the KDA and the mounting kits are also shown in Specification 50853S.

3.18 The 405982 mounting kit provides an ac line cord and a strain relief bushing. This mounting kit is ordered when the free standing KD is to be used or when the KDA is to be mounted away from the KD.

3.19 The 405983 mounting kit is used when the KDA is to be installed inside the 40CAB-251/AC cabinet of an attached style KD. The mounting kit provides the 405969 opcon cable (12 inches) the 405975 monitor cable (25 inches) and the necessary mounting brackets and hardware, as well as an ac line cord.

3.20 The 405390 termination box ⑬ is used in conjunction with the 40KDA101. This box contains two 12 position terminal blocks.

Note: Solder tinning of stranded wire in preparation for clamping is not permitted. Terminals are not required on conductors in this termination box.

3.21 Connection from the controller to the 405390 termination box uses an altered controller to KD cable ② . Customer removal of the opcon and monitor connectors is required (see 4.04). Between termination boxes, a length of 31246RM ⑯ is used. A longer cable may be used between the controller and termination box, however, the length must be subtracted from the maximum 500 foot length.

3.22 Connection from the termination box to the KDA is made using the 405372 cable stub ⑪. This 6-foot cable has a connector at one end and is inserted (requiring only skinning) into a termination box at the other end.

3.23 Cabling from the KDA to the KD when a 405982 mounting kit is required, uses one of the 405373 through 405378 cables ⑥ . These cables provide lengths from 60 to 100 feet.

4. INSTALLATION

4.01 A Station Configuration Worksheet must be completed prior to station installation. In addition, a cable worksheet may also be required. Refer to Manual 351 or BSP Section 582-200-201. When completed, the cable worksheet will list the following:

(a) Added cable equipment examples: (40KDA101, termination boxes, mounting, modification kit number, and altered controller to KD cable).
(b) Cable lengths shown in feet.
(c) Cabling required (part number or RM number).

4.02 Cable worksheets (more than one may be required) are to be marked as the example in Fig. 5. A blank cable worksheet is shown in Fig. 6. By using the station configuration worksheet, the cable worksheets can be filled in as in Fig. 5.

Note: Approximate RM cable lengths may be entered; but it is suggested that RM cable be cut to proper length at the customer location.

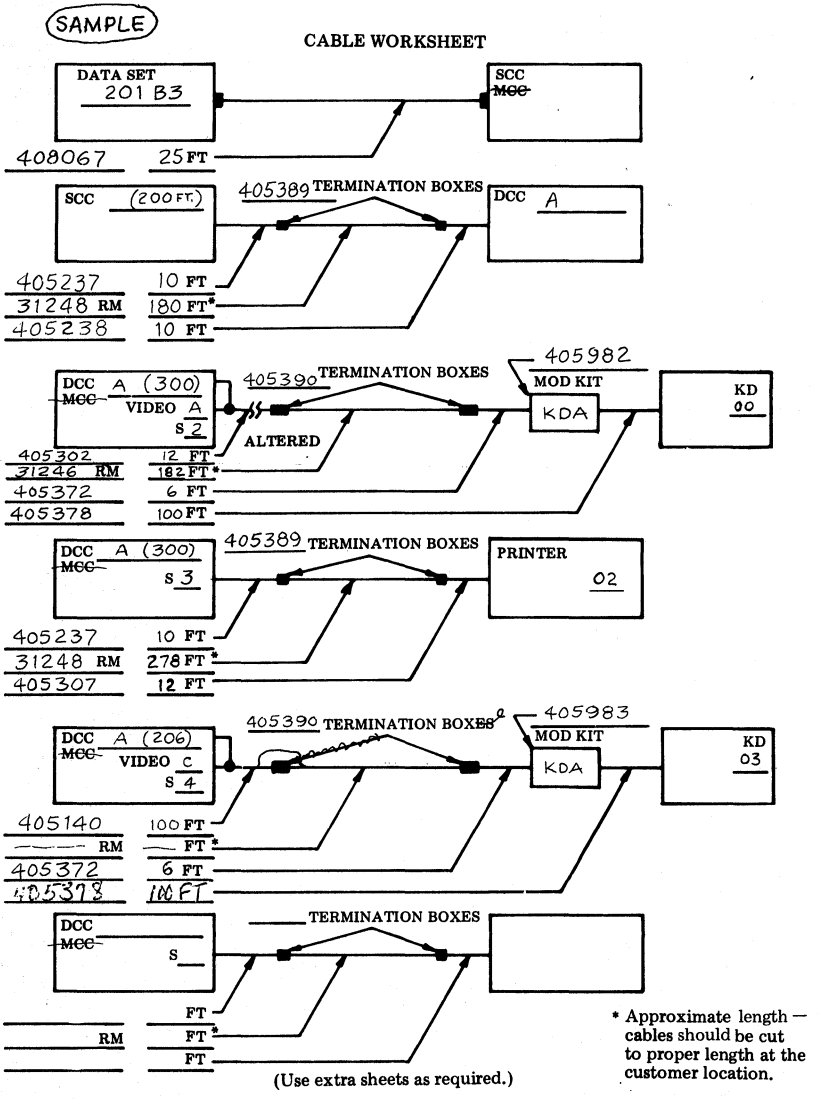
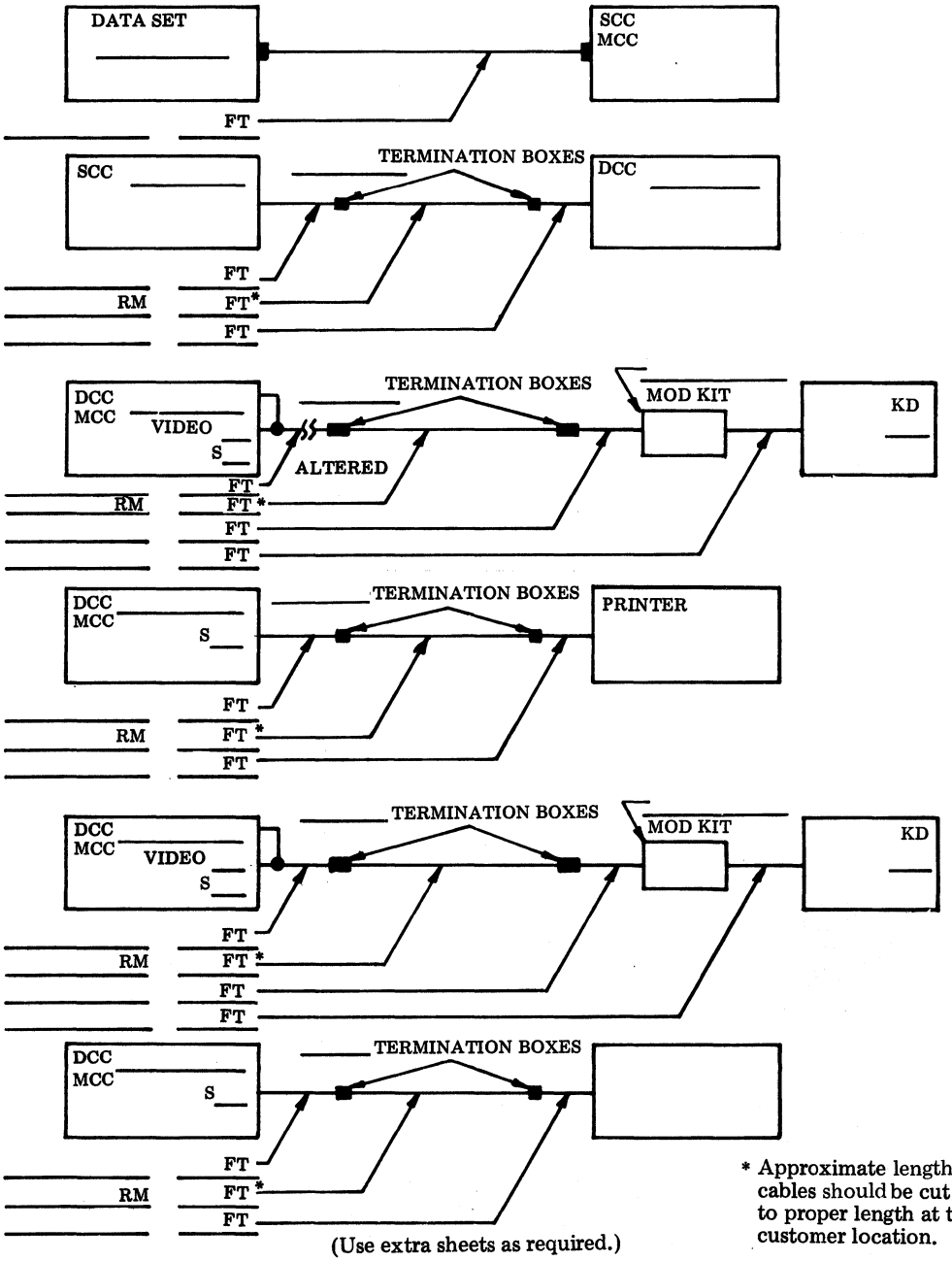


Fig. 5—Sample Cable Worksheet

CABLE WORKSHEET



(Use extra sheets as required.)

* Approximate length — cables should be cut to proper length at the customer location.

Fig. 6—Blank Cable Worksheet

Controller to KD Cabling ②, ⑬, ⑯, ⑪, ⑥, ⑦

4.03 Video and SSI connections at the controller (Fig 7) are as follows:

Ⓐ Remove 405210 clamp plate and two 198670 screws.

Ⓑ Examine video connectors, strain relief (paddle) is inserted so only six connector holes are open. Check marking on paddle. Check that pin and holes align before connectors are fitted together. At connectors A and C, the paddle faces up and at B and D the paddle faces down.

Ⓒ Remount the 405210 clamp plate, as shown, and secure with 198670 screws.

Note: If clamp plate does not align with mounting holes; check connector positioning and pin condition.

Ⓓ Connect each green wire terminal to the ground terminal.

Ⓔ Provide some cable slack on door, install strain relief clamp.

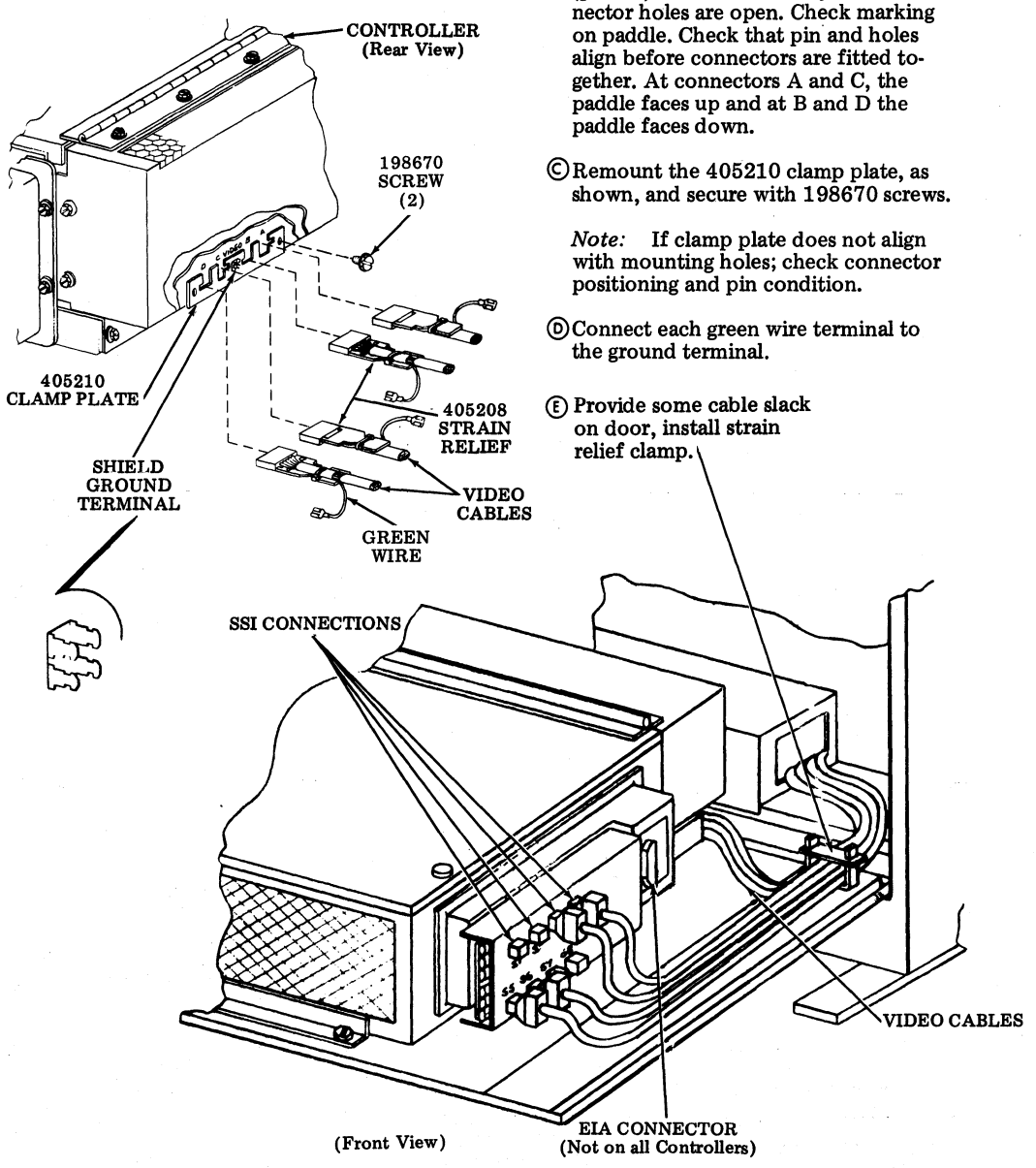


Fig. 7—Typical Controller Interconnection

KDA Cabling ② ⑥ ⑪ ⑬ ⑯

4.04 When a KDA is to be used, alter the controller to KD cable by cutting off the 401140 and 341691 connectors (Fig. 8).

4.05 Slit and remove four to five inches of both outer jackets and shields (Fig. 9). Care must be exercised to prevent cutting of the outer shield drain wires. The two foil shields in the video cable must also be removed and again, caution must be exercised to prevent cutting their drain wires. All drain wires must be suitably insulated.

4.06 Prepare one end of the KDA cable ⑯ used in the cable or conduit run in the same manner, as in 4.05. (Read 4.09 and Note.)

4.07 Prepare a 405390 termination box ⑬ as in Fig. 10.

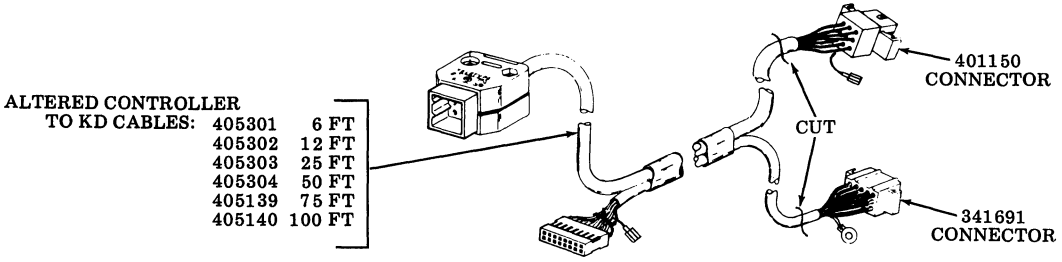


Fig. 8— Controller to KD Cable Alteration

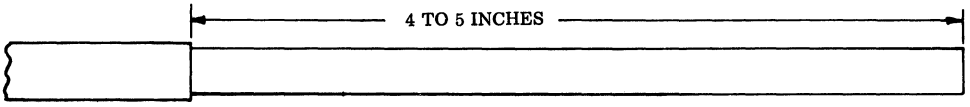


Fig. 9— Jacket and Shield Removal of an Outer Jacket

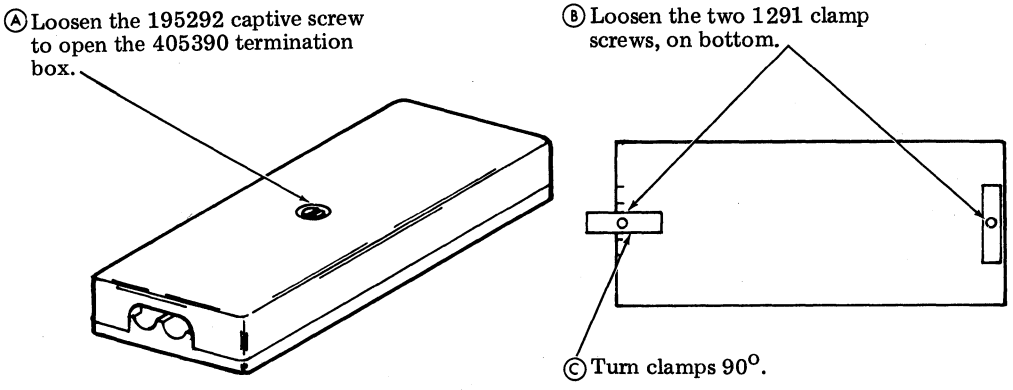


Fig. 10— 405390 Termination Box Preparation

4.08 Insert both the cables from the controller and the KDA cable or 405372 cable (see 4.09 and Note below 4.09) into the termination box and clamp securely allowing at least 1/4 to 1/2 inch of the outer jackets to extend beyond the clamps. Each conductor must then be cut to length and skinned approximately 1/4 inch. Conductors must not be solder tinned. Insert wires into the appropriate terminal block as illustrated in Fig. 13 and tighten 1291 screws. After making checks of 4.17, remount cover and tighten 195292 screw.

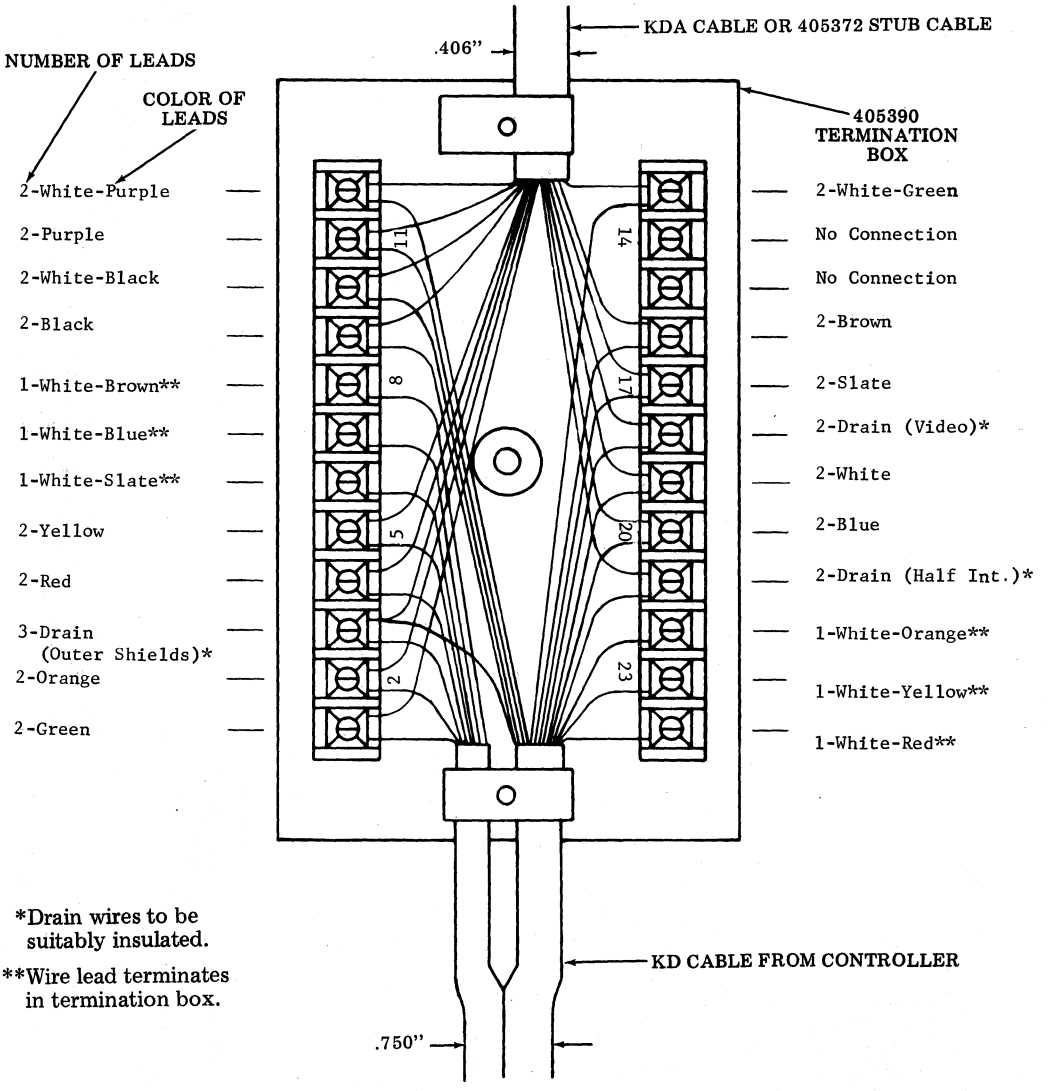


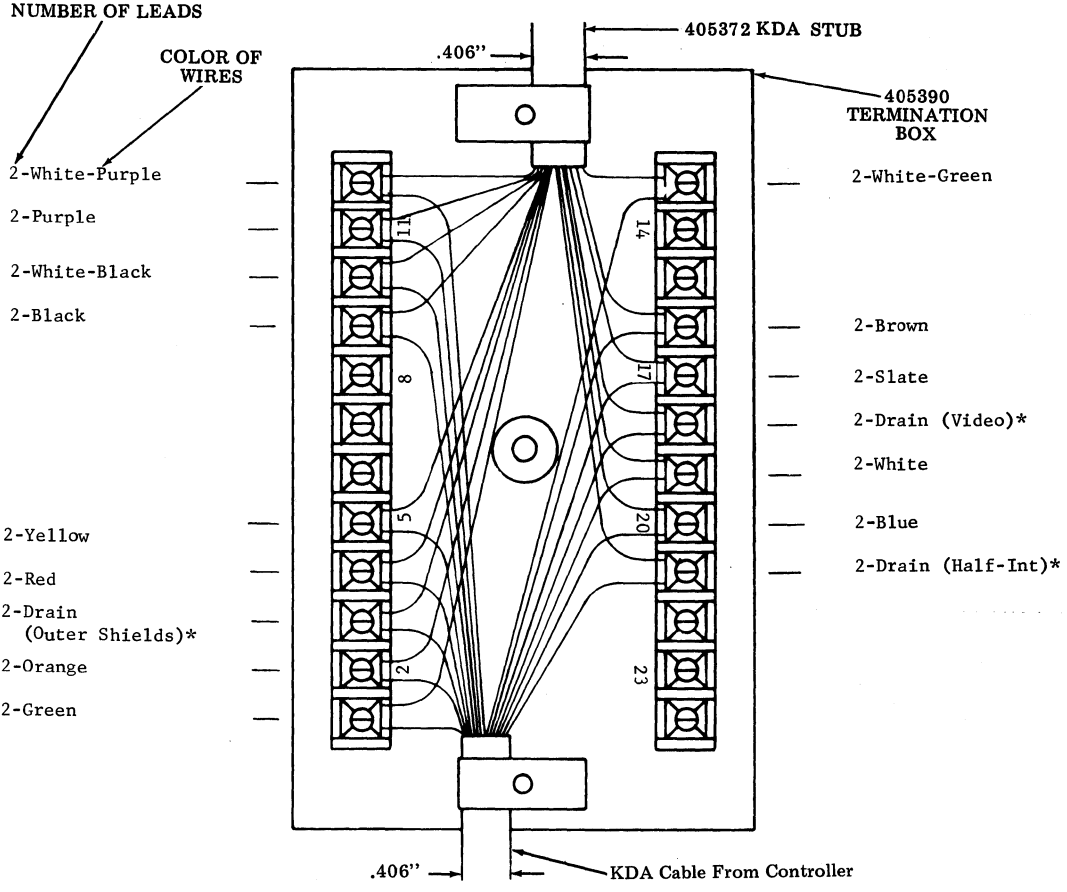
Fig. 11—405390 Termination Box Wiring (Controller End)

4.09 Install the KDA cable ⑯ at KDA end of cable.

Note: KDA cable is not intended for rigorous pulling through conduit. Due to inner shielding isolation requirements and the very fragile wire used in the Video and Half Intensity pairs, it is recommended that for conduit runs over 100 feet, not more than 25 percent of the conduit area should be used. If more than one 90 degree bend is encountered in the conduit run, a pull box should be inserted.

4.10 The 405372 stub cable ⑪ and KDA cable are then installed in the termination box at the KDA end (Fig. 12), follow the cable preparation given in 4.06 and 4.08.

4.11 After making checks of 4.17, remount cover and tighten 195292 screw.



*Drain wires to be Suitably insulated.

Fig. 12—405390 Termination Box Wiring (KDA End)

4.12 Connection of the KDA outside the monitor support cabinet of an attached KD (Fig. 13); plug the 405372 stub cable ⑪ directly to P1 of the KDA. Plug the two connectors of the KDA to KD cable ⑥ to P2 and P3 of the KDA. Follow steps Ⓐ through Ⓓ for cable mounting at the attached KD. Connection of the KDA inside the monitor support cabinet is described in Specification 50853S.

4.13 Connection of the KDA to a free-standing KD (with 40BSE101 Base) (Fig. 14); plug the 405372 stub cable ⑪ directly to P1 of the KDA. Plug two connectors of the KDA to KD cable ⑥ to P2 and P3 of the KDA. Follow steps Ⓐ through Ⓔ for cable mounting at free standing KD.

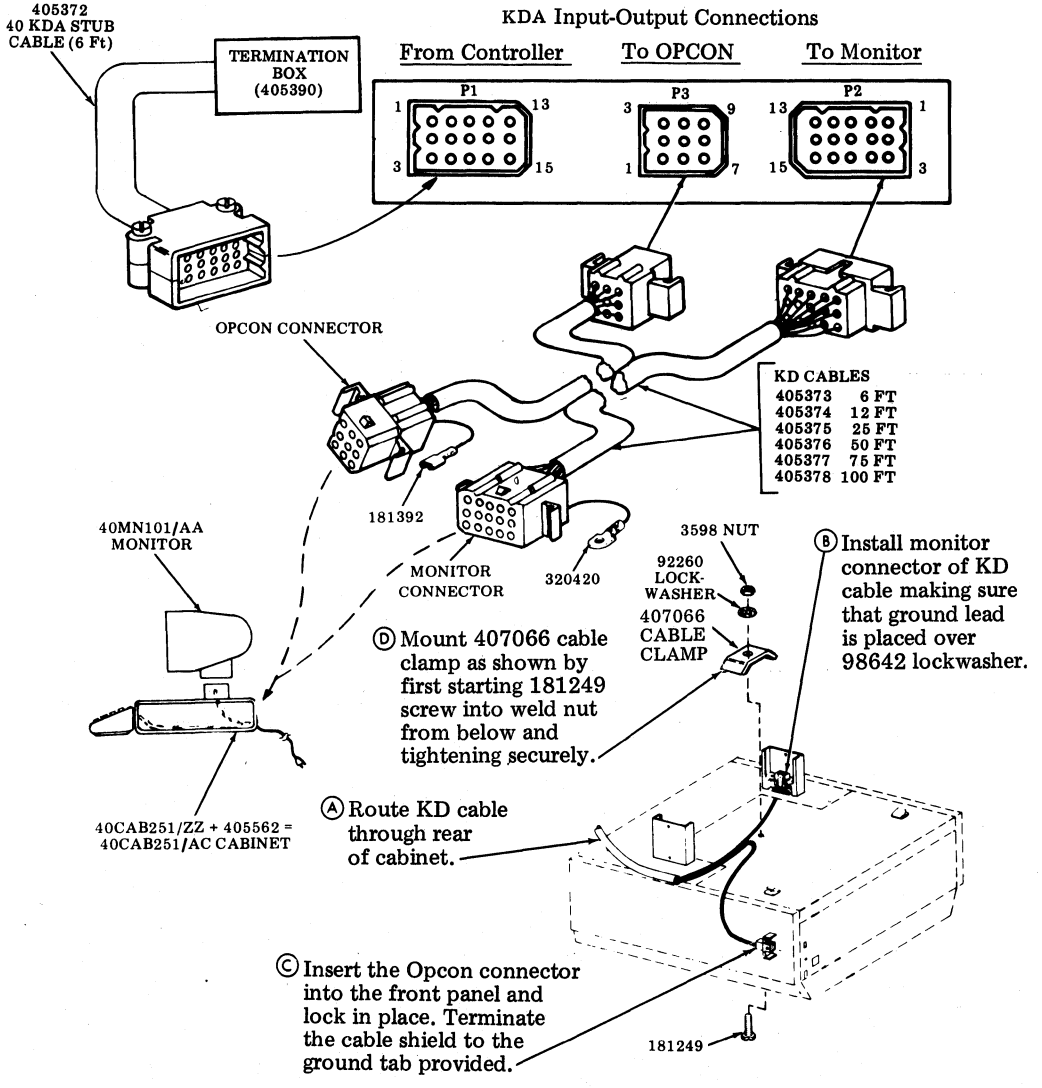


Fig. 13—Example of KDA Connection For Attached Style KD

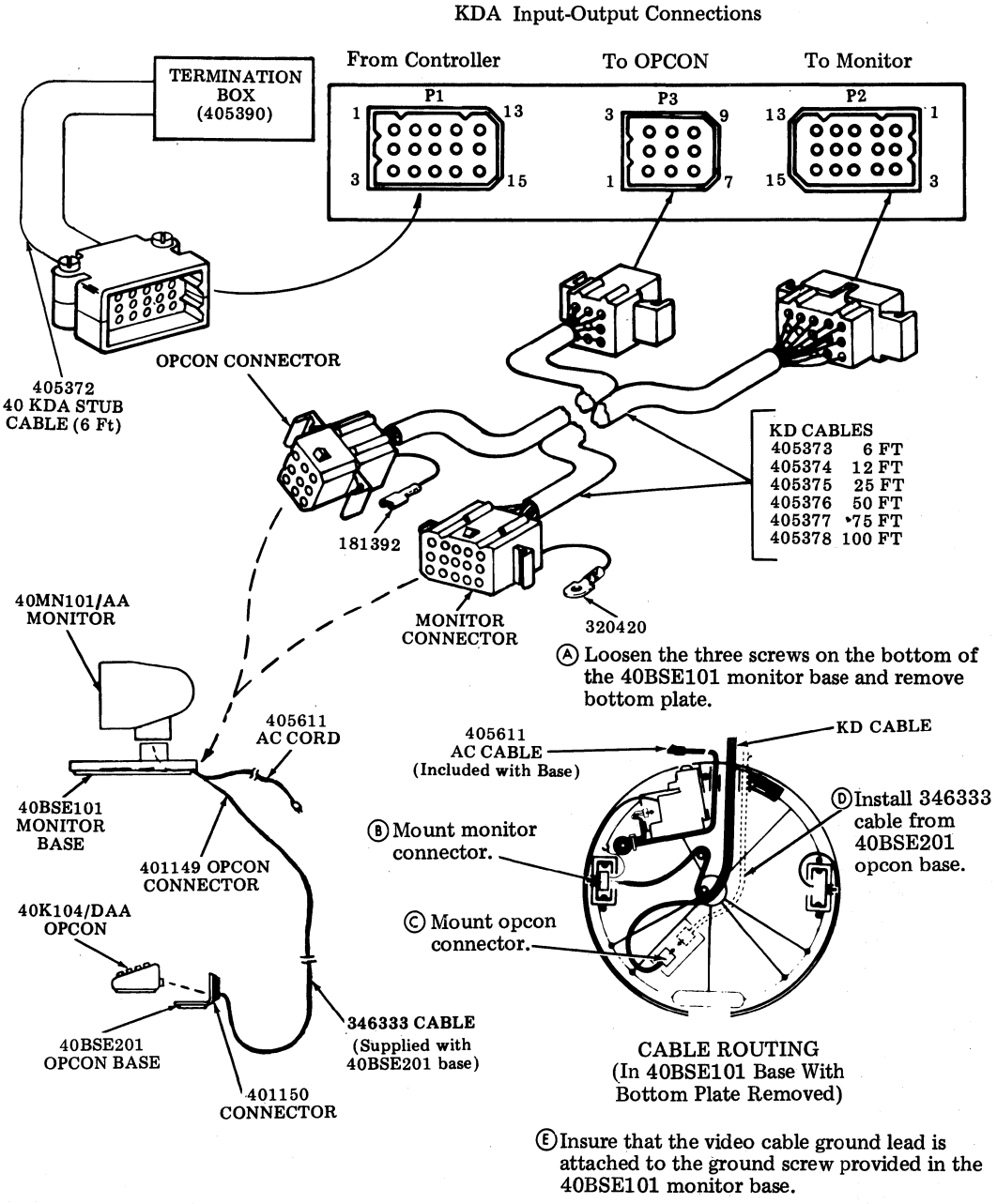


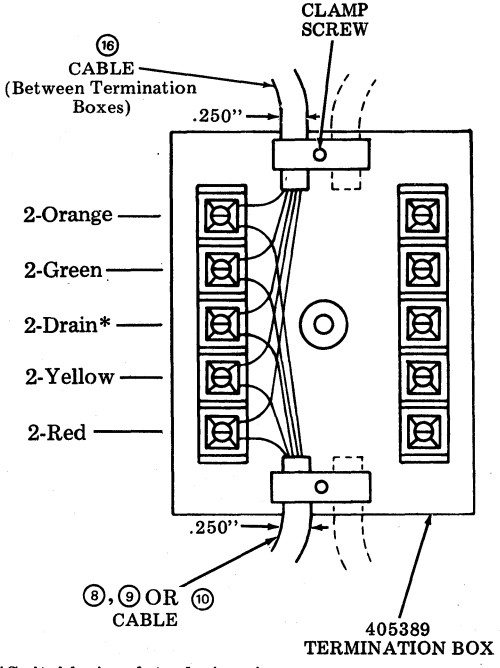
Fig. 14—Example of KDA Connection For Free-Standing KD

Remote SSI Cabling

4.14 The Teletype Standard Serial Interface (SSI) cables are designed to accommodate distances of up to 2000 feet between a controller and a device or another controller. Lengths of the cable are used in conjunction with the 405389 termination box (Fig. 15) or WE44A connector block (Fig. 16) and the 405237 ⑧ , 405238 ⑨ and 405239 ⑩ cables.

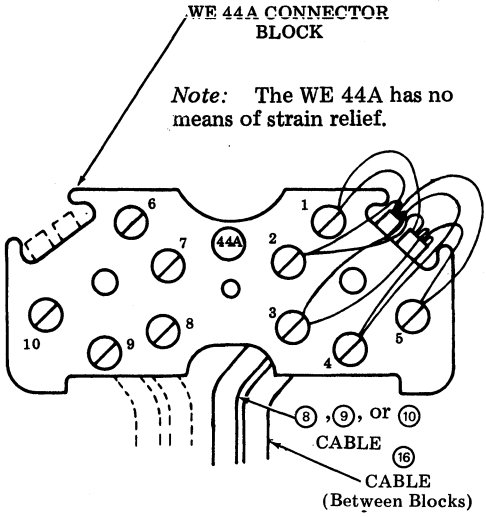
Note: Since ⑯ cable is not intended for rigorous pulling when being run through conduits not more than 40 percent of the conduit area should be used when runs are in excess of 200 feet. Additionally, if more than two 90 degree bends are to be used, a pull box should be inserted.

Caution: When one side of either SSI pair is grounded, the noise immunity of this interface will be greatly reduced and while the interface may still appear to be operative, random errors will result.



*Suitably insulate drain wire.

Fig. 15—405389 Termination Box ⑫ Wiring



1-Red
2-Yellow
3-Drain*
4-Green
5-Orange

*Drain wires to be suitably insulated.

Fig. 16—WES 44A Connector Block Wiring ⑮

4.15 At both ends of ⑯ cable;

(a) Remove approximately three inches of outer jacket and shield.

(b) Cut conductors to length to avoid wire build-up in the termination box.

(c) Skin approximately 1/4 inch of insulation from the wires. (See Note on next page.)

Warning: Do not damage the shield drain wire.

(d) Position wires per Fig. 15 or 16 (as applies). Secure the ⑯ cable in the clamp and tighten screw.

4.16 The terminal blocks in the 405389 termination box are intended for terminating standard wire without spade terminals. If spade terminals are affixed to the cable leads, removal of the spade terminals on the mating ⑧, ⑨, or ⑩ cable is necessary.

Caution: When cables are connected, both must have spade terminals or both have bare wire. Do not mix bare wire with spade terminals on the same connector block terminal.

Note: When a Western Electric 44A connector block is substituted for the 405389 termination box, spade terminals must be affixed to all conductors.

4.17 When all connections have been made, recheck all terminals to insure that wire color codes match. In addition, check to insure that all screws are properly tightened and that all wires are solidly clamped.

4.18 When all connections have been made, recheck all terminals to insure that wire color codes match. In addition, check to insure that all screws are properly tightened and that all wires are solidly clamped.

5. TROUBLESHOOTING

5.01 When it is suspected that cabling between the controller and data set or device may be a cause of trouble, standard troubleshooting procedures may be used for short cable lengths.

(a) Any cable exhibiting outer jacket damage (shield visible while flexing) should be replaced and the cause of the damage corrected.

(b) Check crimping of terminals to conductors, the lower crimp point must tightly grip the the conductor and the upper crimp point must tightly grip the conductor insulation. Shielded cables have mylar tape wrapped around the conductor bundle under the shield. When the outer shield is removed in preparation for affixing terminals and connectors, the mylar tape must extend approximately 1/4 inch beyond the point of shield removal in order to prevent frayed shield ends from piercing conductor insulation.

(c) Check of connector; disassemble and visually inspect each pin.

(d) When continuity testing is warranted, standard continuity testers (lamp or buzzer type or ohmmeter) may be used, when troubleshooting cable lengths up to 100 feet.

Warning: Before continuity testing is started, unplug all ac cords (KDA, data set, KD, PTR, controller, and pedestal). The cable under test must be disconnected from the controller and the device (or other controller).

5.02 For long cable runs, standard troubleshooting methods may not be applicable since long cable lengths may preclude the use of standard continuity testers (due to increased resistance). When troubleshooting these configurations, standard techniques may be employed only in testing the cables between the controller and the termination box, and between the remote device and the termination box. In order to test the length of cable between termination boxes, the following is one method which may be employed.

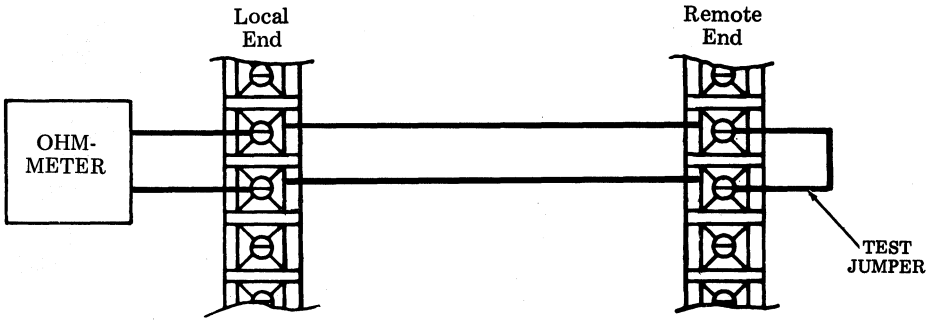
(a) Unplug the cable under test from both the controller and the remote device.

(b) Using an ohmmeter (VOM) on the RX10 or RX100 range, measure conductor to conductor for shorts.

Note: Cables containing more than one shield ie, ⑯ will indicate continuity when measuring between drain wires.

(c) When it is determined that the cable is free from internal shorts, conductor continuity should be tested. At one termination box; short two terminals together with a jumper wire or test lead (Fig. 17). Using a VOM on the appropriate ohms range at the other termination box, measure across the two terminals with corresponding color codes.

Note: In order to expedite troubleshooting, it is suggested that before continuity testing is started, try to determine the signal or signals that are missing or questionable. This will reduce the number of conductors requiring testing.



WIRE GAUGE	OHMS FOR 100 FT.*
18	0.6 Ohm *
22	1.5 Ohms *
24	2.5 Ohms *
26	4 Ohms *

* Typical

Example: In using this method, if the two wires under test are 26 gauge (see Fig. 4) and 500 feet in length, the length under test is 1000 feet. Consequently, the ohmmeter should indicate approximately 40 ohms (1000 times 4/100). If the two wires under test were 24 gauge and 2000 feet in length, total length would be 4000 feet. Therefore, the ohmmeter should read approximately 100 ohms (4000 times 2.5/100).

Fig. 17—Long Wire Continuity Test

6. WIRING DIAGRAMS AND PARTS

6.01 Wiring diagrams and illustrations of cable parts are given in Manual 351 and Section 582-200-401.

7. TESTING UNSHIELDED SSI CABLE FOR 40/4 APPLICATIONS

7.01 When using SSI cable other than specified by Teletype Corporation, the cable must be tested as outlined in Part 7. The system with cable that passed the tests will operate with an error rate of less than 2 errors in 10^8 bits under normal conditions.

Caution: There is only limited protection against high energy discharges when using unshielded cable. Impulse noise may result in temporary system malfunction.

7.02 When supplied cable has different color wires than Teletype Corporation cable, pay careful attention when interconnecting cables.

7.03 The following test equipment and materials are required for testing cable:

1 — Simpson 260 Volt-Ohm-Meter (VOM)
2 — 6 inch jumper cables with insulated alligator clips.
2 — 135-ohm ±10 percent, 1/4 watt resistors.
1 — HP 3550B Communication Test Set
1 — 6F (J94006F) Voiceband Noise Measuring Set with 50KHZ network.

Equivalent test equipment such as Wilcom T194B Transmission and Noise Test Set may also be used.

7.04 The dc tests of Part 7 consist of measuring foreign voltages, insulation resistances, and loop resistances. The ac tests of Part 7 con-

sist of measuring crosstalk, loop loss, background circuit noise, and impulse noise. The tables in Part 7 can be copied to provide separate records for different cables.

DC TESTS

7.05 The foreign voltage tests require a Simpson 260 VOM or equivalent. See Fig. 18 or 19 (as applies). Perform the tests in Table A.

Table A - Foreign Voltage Tests		
Cable being tested: _____		
Disconnect both ends of cable being tested before making tests.		
Measure the voltage between the following leads:		Measured Voltages (See Note)
1. ITD(N) to ITD(I)		_____ VDC
2. ITC(N) to ITC(I)		_____ VDC
3. ITC(N) to ground		_____ VDC
4. ITC(I) to ground		_____ VDC
5. ITD(N) to ground		_____ VDC
6. ITD(I) to ground		_____ VDC
This cable: (see note)	passed ☐	failed ☐

Note: The cable passes foreign voltage tests if all Measured Voltages are less than 0.1 volt dc.

7.06 The Insulation Resistance tests require a Simpson 260 VOM or equivalent. See Fig. 18 or 19 (as applies) for test arrangement. Perform the tests in Table B.

Table B - Insulation Resistance Test		
Cable being tested: _____		
Disconnect both ends of cable being tested before making tests.		
Measure the resistance between the following leads:		Measured Resistance (See Note)
1. ITD(N) to ITD(I)		_____ Kohms
2. ITD(N) to ITC(N)		_____ Kohms
3. ITD(N) to ITC(I)		_____ Kohms
4. ITD(I) to ITC(I)		_____ Kohms
5. ITD(I) to ITC(N)		_____ Kohms
6. ITC(N) to ITC(I)		_____ Kohms
7. ITD(N) to ground		_____ Kohms
8. ITD(I) to ground		_____ Kohms
9. ITC(N) to ground		_____ Kohms
10. ITC(I) to ground		_____ Kohms
This cable: (See note)	passed ☐	failed ☐

Note: The cable passes Insulation Resistance Tests if all measured resistances are greater than 300Kohms (300,000 ohms).

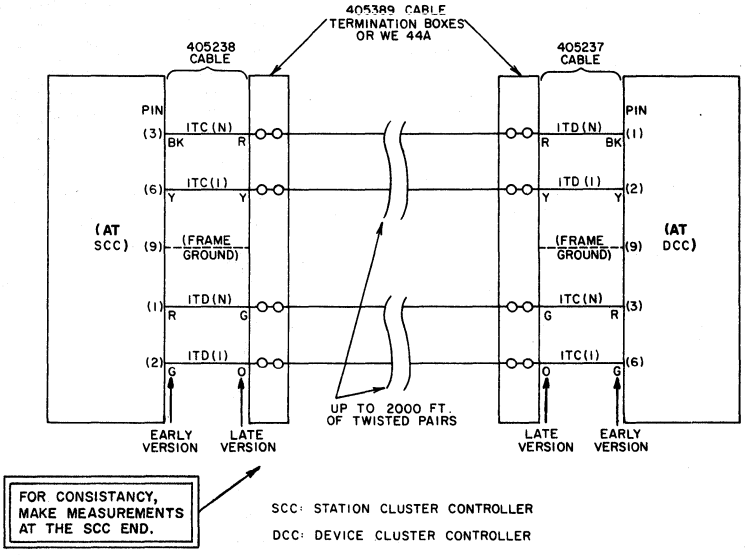


Fig. 18—DC Tests On Cable Pairs Between SCC & DCC

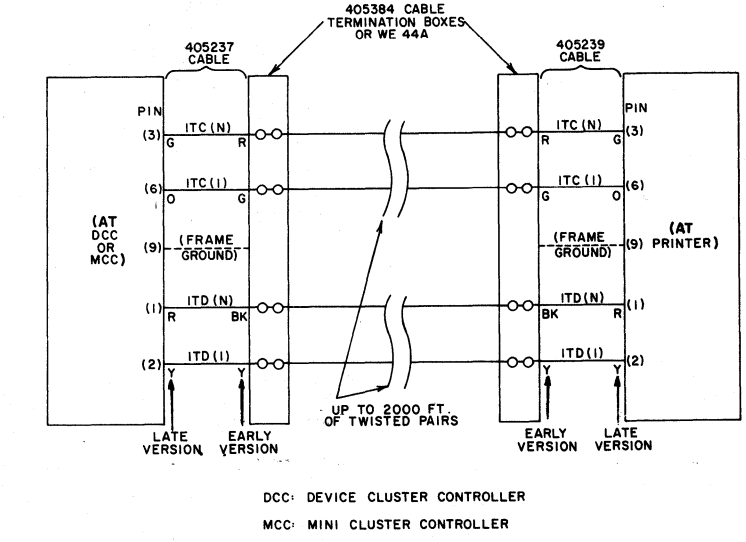


Fig. 19—DC Tests On Cable Pairs Between DCC (Or MCC) & Printer

7.07 The Loop Resistance tests require a Simpson 260 VOM and a jumper. See Fig. 18 or 19 (as applies) for test arrangement. Perform the tests in Table C (check the range setting on the VOM).

Table C — Loop Resistance Tests	
Cable being tested: _____	
(Cables are still disconnected) Measure the resistances between the following leads with the conditions given:	Measured Resistances (See Note)
1. Short ITD(N) and ITD(I) with a jumper at the DCC (or printer) end of cable. Measure the resistance at the SCC (DCC or MCC for printer cable) end.	1. _____ ohms
2. Remove jumper from ITC pair and place jumper across ITC pair at the SCC (DCC or MCC for printer cable) end of cable. Measure the resistance at the DCC (printer for printer cable)	2. _____ ohms
The cable: (See Note) Passed ☐ Failed ☐	

Note: The cable passes Loop-back Resistance tests if all measured values are less than 140 ohms.

AC TESTS

7.08 The Cross-talk Tests require a HP-3550B Communication Test Set or equivalent and two 135 ohm resistors. Connect the test set and resistors as shown in Fig. 20. Perform the tests in Table D.

Table D—Cross-talk Tests	
Cable being tested: _____	
1. Set up the HP-3550B to the following conditions: (a) Connect the voltmeter common input (black) to the voltmeter ground terminal. (b) Connect the output & input center tap (CT) to voltmeter ground terminal. (c) Input & output impedance to 135 ohms. (d) Set frequency to > 5 Kc (greater than 5 Kc). (e) Set patch panel dB control to 0. (f) Set patch panel MEAS-CAL switch to CAL position, adjust the oscillator amplitude control to obtain a 0-dBm reading on the voltmeter.	
2. Set the MEAS-CAL switch to MEAS position.	
Measure the cross-talk at the following frequencies:	Measured Cross-talk
1. 10 KHz	1. _____ dBm
2. 50 KHz	2. _____ dBm
3. 100 KHz	3. _____ dBm
The cable: (See Note) Passed ☐ Failed ☐	

Note: The cable passes the Cross-talk Tests if all measured values are lower than —48 dBm. As an example, —50 dBm would pass this test.

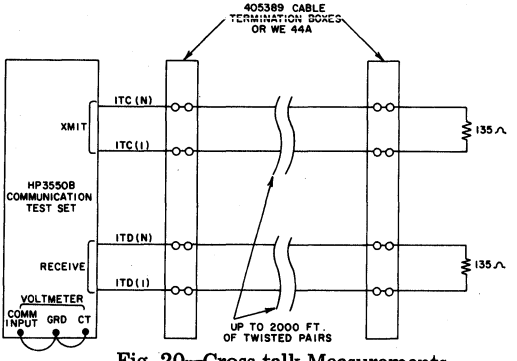


Fig. 20—Cross-talk Measurements

7.09 The Loop-Loss Tests require a HP-3550B Communication Test Set and two jumpers. Connect the test set as shown in Fig. 21. Perform the tests in Table E.

Table E — Loop-loss Test

Cable being tested: _____

1. With the test set connected as given in Fig. 21, set up the HP-3550B as instructed in Table D.
2. Set the MEAS-CAL switch to MEAS position.

Measure the loop-loss at the following frequencies:	Measured Loop-loss	Maximum Loop-loss allowed
1. 28 KHz	1. _____ dBm	7.5 dB
2. 56 KHz	2. _____ dBm	10.5 dB
3. 84 KHz	3. _____ dBm	12.5 dB

The cable: (See Note) Passed ☐ Failed ☐

Note: The cable passes Loop-loss Tests if all measured values are less than maximum allowed values given in Table E.

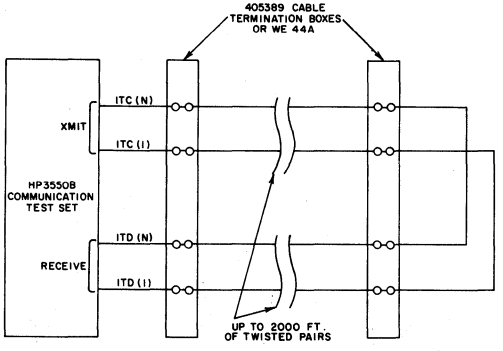


Fig. 21—Loop-loss Measurements

7.10 The Background Noise Tests require a 6F Voice-band Noise Measuring set (or equivalent) and 2-135 ohm resistors. Connect the test set as shown in "Test 1" of Fig. 22 or 23 (as applies). Perform the tests in Table F.

Table F — Background Circuit Noise Tests

Cable being tested: _____

1. Plug in the 50 KHz weighting network on 6F Voice band Noise Measuring Test Set and calibrate as follows:

   (a) Set the Counter Separation switch to the 2 dB position.

   (b) Set the Function switch to CAL-CTR-BAT and turn the power switch on.

   (c) Verify that the meter indicates in the BAT GOOD area. Replace batteries that do not have good indication.

   (d) Adjust the Counter 1 CAL control until the associated counter just counts (the count will be erratic when properly adjusted).

   (e) Adjust the Counter 2, 3, and 4 controls by depressing the associated push button switch and adjusting the CAL control until the counter just counts as in Step (d). During calibration, only one counter will operate at a time.

   (f) Set the function switch to CAL-MTR and adjust the meter CAL control for a meter indication at the CAL marking.

2. Set the function switch to 600 ohm bridging. Adjust the DBRN dial to obtain a meter reading in the upper half of the meter scale.

3. The background noise level is the sum of the DBRN dial setting and the meter reading.

4. Connect the test set and resistors as shown in "Test 2" of Fig. 22 or 23 (as applies). Make the reading.

   "Test 1" Background noise level _____ DBRN
   "Test 2" Background noise level _____ DBRN

The cable: (See Note) Passed ☐ Failed ☐

Note: The cable passes the Background Noise Level Tests if both the DBRN reading are lower than 49 DBRN which corresponds to 7 millivolts rms.

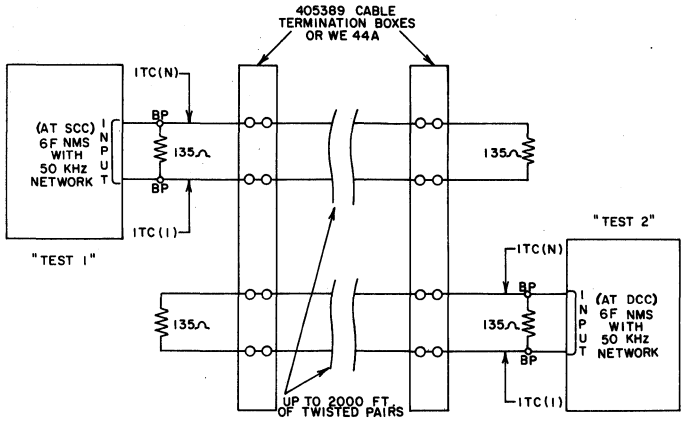


Fig. 22—Noise Measurements

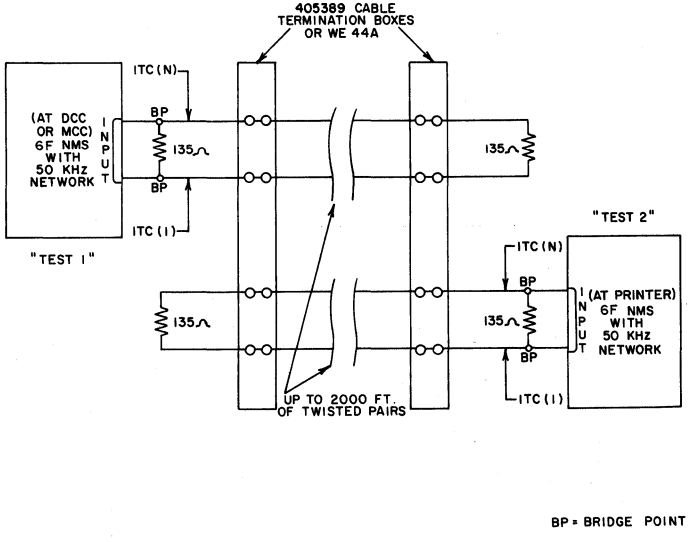


Fig. 23—Noise Measurements

7.11 The Impulse Noise Tests requires a 6F Voice Band Noise Measuring Set and two 135 ohm resistors. Connect the test set as shown in "Test 1" of Fig. 22 or 23 as applies. Perform the tests in Table G. Test 1 and Test 2 can be done simultaneously with two test sets and four resistors.

Table G — Impulse Noise Tests

Cable being tested: _____

1. Set up and calibrate the 6F Voice Band Noise Measuring Set as instructed in Step 1 of Table F.
2. Set the function switch to 600 ohm bridging. Adjust the impulse noise threshold to 65 DBRN by setting DBRN dial to 35. Reset the counter to 00.
3. After resetting the counter, run the test for 30 minutes and take a reading.
4. Connect the test set and resistors as shown in "Test 2" of Fig. 22 or 23 as applies. Run test as directed in Steps 1-3.

"Test 1" count _____ "Test 2" count _____

The cable: (See Note) Passed ☐ Failed ☐

Note: The cable passes the tests if a count of 1 or less is recorded for both Test 1 and Test 2.

7.12 The cable is considered suitable for use if it passes the tests of Tables A through G.


Bell System