"DATASPEED*" 4540 REMOTE CLUSTERED STATION ARRANGEMENTS

INSTALLATION

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1. GENERAL

1.01 This section provides the installation procedures and methods for a DATASPEED 4540 remote clustered station arrangement, hereafter called a 4540 Station. The order of procedures is given in 1.06.

The term "remote" refers to stations connected to a host computer via a serial communications link which typically includes modems (data sets) and a communications processor. A remote station is not directly connected to a parallel I/O channel of a host computer. The term "clustered" refers to stations with a common controller capable of supporting more than one keyboard-display terminal (device).

1.02 This section is reissued to include the 4540 character printer, 45P102 type. The character printer is expected to be available in the second quarter of 1981.

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

1.03 Reference BSP Sections:

Description and Operation	582-300-150
Wiring Diagrams	582-300-400
Testing and Troubleshooting	582-300-500
Disassembly/Reassembly and Parts	582-300-700
Routine Maintenance	582-300-750
HTO, 4540 Typewriter Style Keyboard	999-300-140
HTO, 4540 Internal Numeric Cluster Style Keyboard	999-300-141
HTO, 4540 Line Printer	999-300-142
HTO, 40-Type Line Printer	999-301-121
HTO, 40-Type Forms Access Line Printer	999-305-121
HTO, 4540 Character Printer	999-300-144

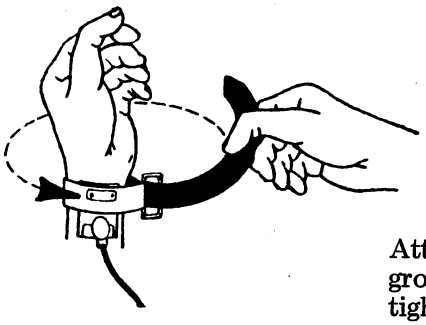
1.04 Abbreviations used in this section are defined in Section 582-300-150.

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

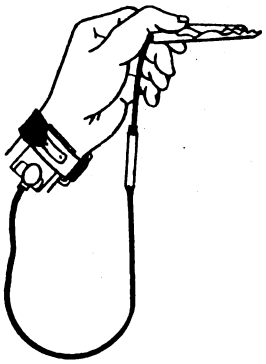
Danger 1: Safety glasses must be worn whenever monitor cover is removed or whenever monitor is replaced.

Danger 2: Turn off 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. See Fig. 1.



Attach static ground strap tightly to wrist.



Attach clip end of static discharge strap to frame ground.

Fig. 1

Warning 2: Place listed printer card in a 406260 static bag (black) or controller card in a Teletype Corporation RM 160083 static bag (pink) 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. See Fig. 2.

Cards List

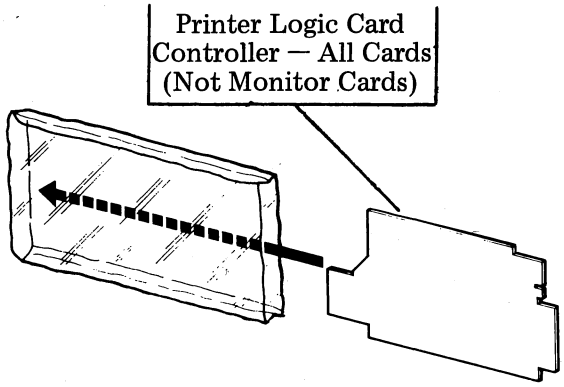


Fig. 2

INSTALLATION OUTLINE

1.06 The order of procedures (also see VARIATIONS 1.08 through 1.11) which are given in Part 3 and Part 4 is given in this paragraph. The order of procedures was developed to minimize installation time.

(a) Unpack controller box and controller cabinet box. Find station configuration worksheet in the controller box. See 3.02 and 3.03.

(b) Place controller near assigned location. Install 45FG110 type circuit card, if not present. See 3.04 and 3.05.

(c) Run controller self-test, See 3.06 through 3.08.

(d) Route SSI cables between controller and device locations. Label the cables. See 3.09 through 3.15.

(e) Assemble the unassembled cables (cables without connectors) at the controller and tag the cables. See 3.16 through 3.22.

Caution: It is expected that displays manufactured after first quarter 1981 will have a terminal block (not a connector) for SSI connections. Therefore, do not prepare KD ends of SSI cable until displays are installed.

(f) Mark the SSI cable tags at the controller end. See 3.11. Connect SSI cables at controller end. See 3.25.

(g) Unpack and option the data set. Do not connect controller to data set. See 3.26 through 3.29. The warning of 3.27 applies. Perform data set analog loopback test of Section 582-300-500, Chart 4.

(h) Unpack option, install, connect and test a line printer after moving all related boxes to the assigned location (if a line printer is part of the station). See 3.30 through 3.40. Also see Part 4.

(i) Repeat (h) for each line printer.

(j) Unpack, install, connect and test a character printer after moving all related boxes to assigned location (if a character printer is part of the station). See 3.41 through 3.50. Also see Part 4.

(k) Repeat (j) for each character printer.

(l) Unpack, install and connect first KD (device 0) including table. See 3.51 through 3.66.

(m) Option controller from first KD. Connect controller to data set. Perform KD/controller local test at first KD. See 3.67 and 3.68. Also see Part 4.

(n) Unpack, install, connect and test another KD after moving all related boxes to the assigned location. See 3.69 and 3.70.

(o) Repeat (n) for each KD.

(p) Install controller in cabinet. See 3.71.

(q) Unpack 4500-type table for controller cabinet (if applies). Install controller cabinet under table (if applies). See 3.54.

(r) Perform end-to-end installation test of Section 582-300-500, Chart 5 and resolve any troubles.

(s) Have customer try out station arrangement. See 4.24.

(t) Resolve any station troubles and complete the installation: See 4.24.

- Give HTO manual(s) to customer.
- Clean area.
- Complete service order.

INSTALLATION VARIATIONS

1.07 It may be desirable to separate the 4540 portion of the installation procedure into two phases:

(a) Routing, installation, and tagging of cables. The caution of 1.06 (e) applies. The maximum diameter of Teletype Corporation SSI cable is 0.250 inches. Refer to 1.08 for ordering information. To permit later identification, always tag an SSI cable before routing another SSI cable. The slack cable that should be available is (measured from floor at rear of controller or device):

- 3 feet for controller
- 5 feet for attached KD
- 3 feet for detached KD
- 3 feet for printer.

- When a KD is mounted on a 4500-type table with the controller under the table, an 8 foot SSI cable is sufficiently long.

(b) Later installation of equipment, connector to cables, and checkout of station.

This deviation from the outline of 1.06 allows for:

- Advance ordering of cables (see 1.08) to permit installation of the cables before other equipment is brought on-site.
- Different groups of employees to perform installation and the later equipment installation.
- Less disruption to the customer during installation.

1.08 To be able to install cables prior to delivery of the controller, cabinets, tables, and devices requires:

- For assembled cables (also called standard length cables) — that the cables be available.
- For unassembled cables (also called special length cables) — that 406318 (500 feet), 406319 (2000 feet), or 406320 (5000 feet) cable be available as required and that 452219 installation kits (one for each 5 KDs) and 452220 installation kits (one for each 2 printers) be available. The installation kits provide all hardware required at both the controller end and the device end.

1.09 It may be desirable to separate the data set and 4540 installation procedures into two phases:

- Optioning of data set, connection of data set to facilities, checkout of facilities and connected data set.
- Installation of 4540 portion of station, including connection of data set.

This deviation from the outline of 1.06 allows for:

- Advance assignment of facilities and advance ordering of data set to permit installation of facilities and data set before other equipment is brought on-site.
- Different groups of employees to perform data set installation (and checkout) and the later 4540 installation.
- Time to check the data set and facilities (and repair or replace them, if required) without affecting the in-service date.

1.10 It may be desired to break up a long cable run to simplify cable pulling. If this is done, it is suggested that the in-line cable connection be made in a 405389 termination box (see Fig. 70). The outside dimensions of the box are: 3 inches wide, 5-3/4 inches long, and 1-1/16 inches high (including cover). Cables enter the box on the 3 inch side. One box can be used to connect two separate controllers to device cable runs when the runs are side by side. In Fig. 70, the cable to the device takes the place of the "stub cable".

1.11 It may be desired to cut standard SSI cable lengths in half, run unterminated SSI cables between devices and controller, and connect the cable pieces in termination boxes (see 1.10). This deviation avoids terminal and connector assembly of unassembled cables.

REQUIREMENTS FOR STATION CONFIGURATION WORKSHEET

1.12 The Station Configuration Worksheet provides the craftsperson with an understanding of the station configuration prior to installation. A blank sample of the six page worksheet is given in Fig. 3 through 8. The worksheets of W-4C800 are the preferred sheets to use. Paragraph 1.15 provides information on how to fill out the worksheets.

1.13 The worksheet sample (Fig. 9, 10 and 11) provides an example of the required information contained on the worksheets to be used during installation.

1.14 A Station Configuration Worksheet should be included as part of every 4540 Station; however, if the worksheet is not included with the station, fill in a copy of the blank samples that follow by using the information included on the USO (Universal Service Order). Refer to 1.16.

SAMPLE BLANK WORKSHEET

REQ. NO.
SHOP ORDER NO.

SHEET INDEX

CONTENTS	SHEET NO.	ISSUE NO. 1	2	3	4	5	6	7	8	9	10
ASSOCIATED M AND A PLANS SHEET INDEX SHEET INDEX NOTES SUPPORTING INFORMATION RECORD CHANGES	A1	1	2	3	4	5	6				
Station Configuration Worksheet - Page 1	A2	1	2	3	4	5	6				
Station Configuration Worksheet - Page 2	A3	1	2	3	4	5	6				
Selection of Controller Options for Station Configuration Worksheet - Page 1	A4	1	2	3	4	5	6				
Selection of Controller Options for Station Configuration Worksheet - Page 2	A5	1	2	3	4	5	6				
Printer Options Record	A6	1	2	3	4	5	6				

ASSOCIATED M & A PLANS

M PLAN	A PLAN
4C8X+, 4C6X+, 4CE	
4KAX+, 4KKK+	
45NX+, 45QX+, 45C	
4KS, 4KF, 45F, 4DL	
4L2X+, 436, 45M, 420	
4CZ through 4CK	

SHEET INDEX NOTES

1. WHEN CHANGES ARE MADE IN THIS DRAWING, ONLY THOSE SHEETS AFFECTED WILL BE REISSUED.
2. THIS SHEET INDEX WILL BE REISSUED AND BROUGHT UP TO DATE EACH TIME ANY SHEET OF THE DRAWING IS REISSUED, OR A NEW SHEET IS ADDED.
3. THE ISSUE NUMBER ASSIGNED TO A CHANGED OR NEW SHEET WILL BE THE SAME ISSUE NUMBER AS THAT OF THE SHEET INDEX.
4. SHEETS THAT ARE NOT CHANGED WILL RETAIN THEIR EXISTING ISSUE NUMBER.
5. THE LAST ISSUE NUMBER OF THE SHEET INDEX IS RECOGNIZED AS THE LATEST ISSUE NUMBER OF THE DRAWING AS A WHOLE.

Installed Modification Kits

SUPPORTING INFORMATION

CATEGORY	ISSUED BY	NO.
BSP	AT&T Co.	582-300-200
BSP	AT&T Co.	582-300-500
W-PLAN	AT&T Co.	W-40PTR

Sample Blank Worksheet, Sheet A1

Fig. 3

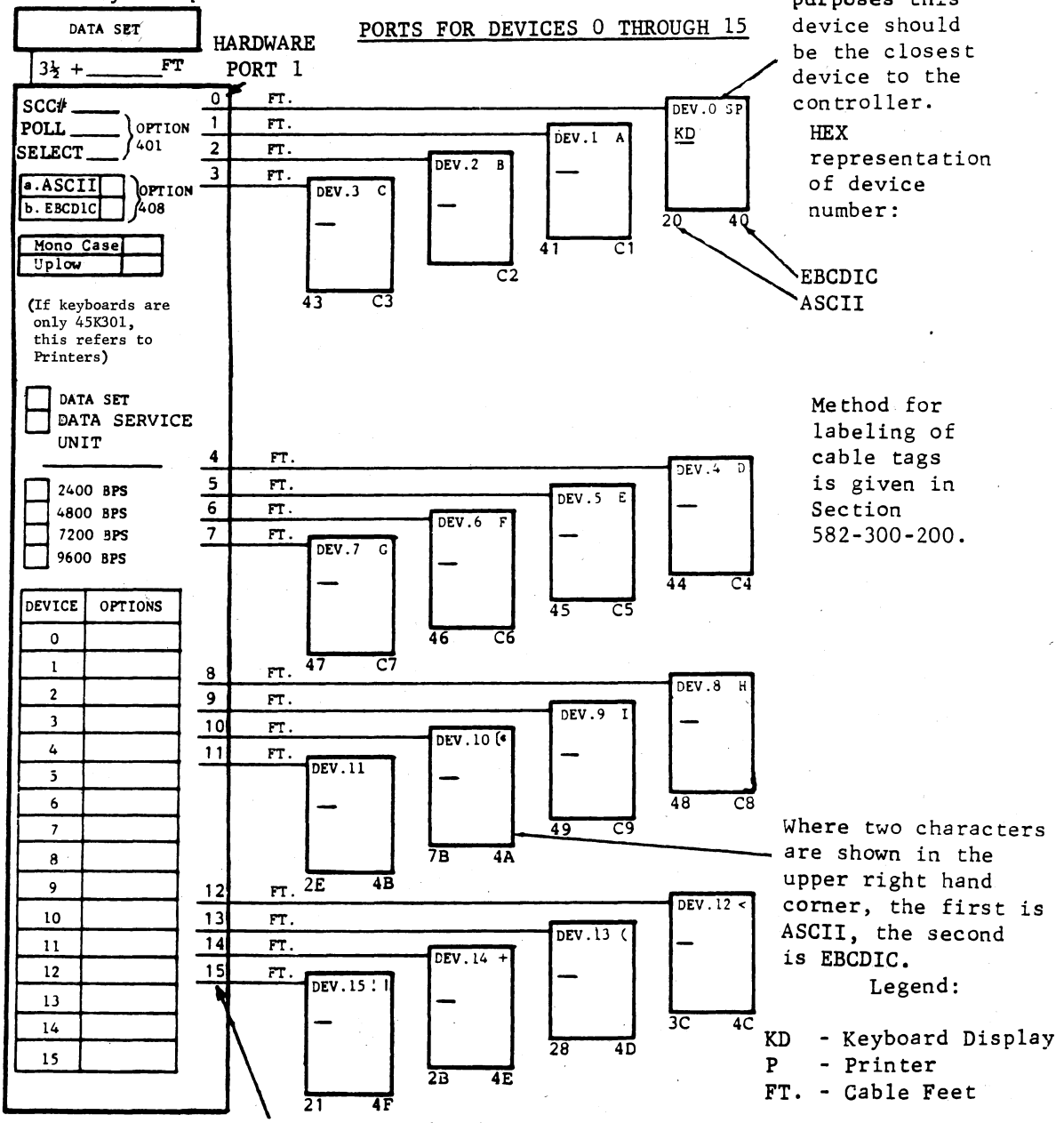
STATION CONFIGURATION WORKSHEET (Page 1)

TELCO _____ TELCO CONTACT _____ TEL. NO. _____

CUSTOMER _____ TELCO REQ. NO. _____

LOCATION _____

Hardware port 1 is associated with System port 0.



For maintenance purposes this device should be the closest device to the controller.

HEX representation of device number:

Method for labeling of cable tags is given in Section 582-300-200.

Where two characters are shown in the upper right hand corner, the first is ASCII, the second is EBCDIC.

Legend:

KD - Keyboard Display
P - Printer
FT. - Cable Feet

Total cable length _____ ft.
(This does not include fixed length cables: 452223-452226)

Sample Blank Worksheet, Sheet A2

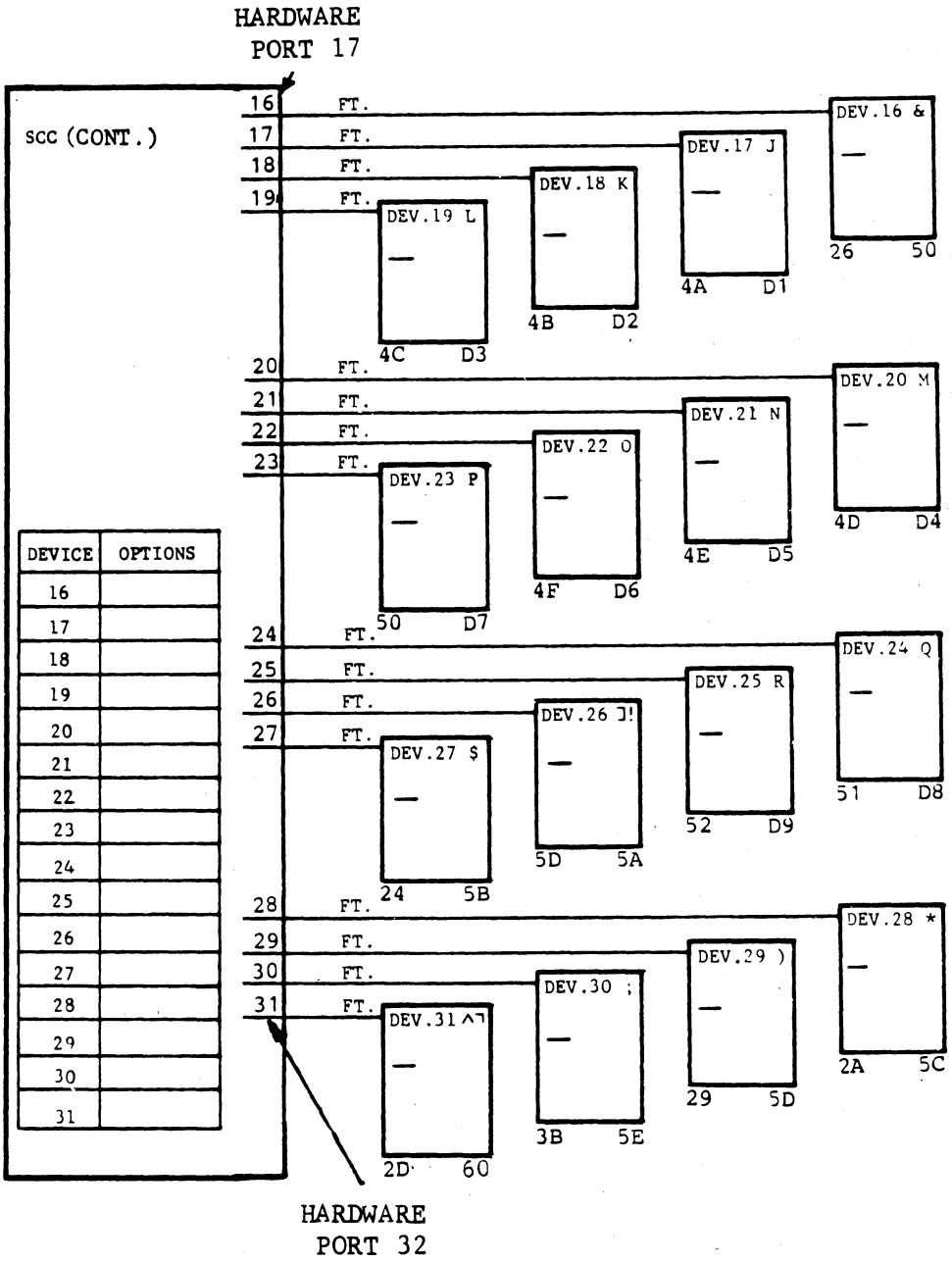
Fig. 4

STATION CONFIGURATION WORKSHEET (Page 2)

TEL. NO. _____ USO _____ CKT. NO. _____ DATE _____

WE REQ. NO. _____ SCHEDULE _____

PORTS FOR DEVICES 16 THROUGH 31



DEVICE	OPTIONS
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	
31	

Sample Blank Worksheet, Sheet A3

Fig. 5

SELECTION OF CONTROLLER OPTIONS FOR STATION CONFIGURATION WORKSHEET

Use sheets A4 and A5 to select Controller options. Enter selected options on Sheet A2 or A3 as applies.

For 45FG110/AC/01 only:

OPTION 401b. Enter 2 characters (example: 54)															
-	10	20	30	40	50	60	70	80	90	AO	BO	CO	DO	EO	FO
01	11	21	31	41	51	61	71	81	91	A1	B1	C1	D1	E1	F1
02	12	22	32	42	52	62	72	82	92	A2	B2	C2	D2	E2	F2
03	13	23	33	43	53	63	73	83	93	A3	B3	C3	D3	E3	F3
04	14	24	34	44	54	64	74	84	94	A4	B4	C4	D4	E4	F4
05	15	25	35	45	55	65	75	85	95	A5	B5	C5	D5	E5	F5
06	16	26	36	46	56	66	76	86	96	A6	B6	C6	D6	E6	F6
07	17	27	37	47	57	67	77	87	97	A7	B7	C7	D7	E7	F7
08	18	28	38	48	58	68	78	88	98	A8	B8	C8	D8	E8	F8
09	19	29	39	49	59	69	79	89	99	A9	B9	C9	D9	E9	F9
0A	1A	2A	3A	4A	5A	6A	7A	8A	9A	AA	BA	CA	DA	EA	FA
0B	1B	2B	3B	4B	5B	6B	7B	8B	9B	AB	BB	CB	DB	EB	FB
0C	1C	2C	3C	4C	5C	6C	7C	8C	9C	AC	BC	CC	DC	EC	FC
0D	1D	2D	3D	4D	5D	6D	7D	8D	9D	AD	BD	CD	DD	ED	FD
0E	1E	2E	3E	4E	5E	6E	7E	8E	9E	AE	BE	CE	DE	EE	FE
0F	1F	2F	3F	4F	5F	6F	7F	8F	9F	AF	BF	CF	DF	EF	

Do not enter 00 or FF. 0 above is zero.

(Also enter station poll and select characters on Sheet A2).

OPTION NUMBER	OPTION DESCRIPTION
Control Unit No.	
401b	Controller Unit No. (Specify No.)
Line Code	
408a ASCII	(Not available for 45FG110/AC/01)
408b EBCDIC	(Required for 45FG110/AC/01)
First Char of Device Option	
416a	No device assigned to the controller port
416b	KD with 40K104 or 40K203 Keyboard
416c	KD with 40K105 Keyboard
416d	KD with 45K301 keyboard
416e	Line Printer
416f	Character Printer

OPTION	ENTER X FOR
408 a	ASCII
408 b	EBCDIC

(For 45FG110/AC/01, EBCDIC is automatically assigned)

OPTION	Enter in 1st position for each device no.
416a	0 (Zero)
416b	1
416c	2
416d	3
416e	F
416f	E

Note: E is not valid for 45FG110/AA or 45FG110/AB type or 45FG110/AC type.

For 45FG110/AA or 45FG110/AB type only:

OPTION 401b		
STATION		Enter Control Unit Number (SCC#)
POLL	SELECT	
SP	-	00(Zero,Zero)
A	/	01
B	S	02
C	T	03
D	U	04
E	V	05
F	W	06
G	X	07
H	Y	08
I	Z	09
[¢	¦	10
.	,	11
<	%	12
(	_	13
+	>	14
! |	?	15
&	0	16
J	1	17
K	2	18
L	3	19
M	4	20
N	5	21
O	6	22
P	7	23
Q	8	24
R	9	25
] !	:	26
$	#	27
*	@	28
)	'	29
;	=	30
^ ¬	"	31

Legend: TTY Style = Typewriter Style Keyboard
INC Style = Internal Numeric Cluster Style Keyboard

40K104 = 40 TTY Style Keyboard
40K203 = 40 (Wide) TTY Style Keyboard
40K105 = 40 INC Style Keyboard
40K301 = 45 (Wide) TTY Style Keyboard

Use Section 582-300-200 to install options and for additional option information.

Sample Blank Worksheet, Sheet A4

Fig. 6

SELECTION OF CONTROLLER OPTIONS FOR STATION CONFIGURATION WORKSHEET

Use sheets A4 and A5 to select Controller options. Enter selected options on Sheet A2 or A3 as applies.

OPTION NUMBER	OPTION DESCRIPTION
Second Char of Device Option	
402a.	Continuous alarm (until local depressed)
402b	Single alarm
403a	Intensified and Blinked fields are intensified.
403b	Intensified and Blinked fields are blinked
403c	Blinked fields are blinked. Intensified fields are intensified. Intensified and blinked fields on same display are blinked.
406a	TTY Style: Numeric field override
406b	TTy Style: No numeric field override
407a	INC Style: Numeric lock special feature (limited to numeric pad)
407b	INC Style: No numeric lock special Feature.
415a	Printer is not PRINT LOCAL.
415b	Printer is PRINT LOCAL to KDs with a lower port number.
Third and Fourth Char of Device Option (Buffer Lock)	
414a	Enabled. Required for 45FG 110/AA versions.
414b	Disabled. Not available for 45FG110/AA version.

DEVICE	OPTIONS			Enter in 2nd position for each device no.
KEYBOARD DISPLAY	402a	403a	406a or 407a	3
	402a	403a	406b or 407b	2
	402a	403b	406a or 407a	7
	402a	403b	406b or 407b	6
	402a	403c	406a or 407a	B
	402a	403c	406b or 407b	A
	402b	403a	406a or 407a	1
	402b	403a	406b or 407b	0 (Zero)
	402b	403b	406a or 407a	5
	402b	403b	406b or 407b	4
	402b	403c	406a or 406a	9
	402b	403c	406b or 407b	8
Printer	415a			0
	415b			8
NONE	416a			0 (Zero)

DEVICE	OPTION	ENTER CHARACTERS in 3rd and 4th positions for each
KEYBOARD DISPLAY	414a (Required for 45FG110/AA)	0 0 (zero, zero)
	414b	0 1
PRINTER	-	0 0
NONE	-	0 0

Sample Blank Worksheet, Sheet A5

Fig. 7

OPTION RECORD FOR PRINTERS

APPLICATION OF OPTIONS

PRINTER OPTIONS	DEVICE NUMBER (Zero is not allowed)								80-Column			132-Column		Additional information for each printer device
									410640 FF or TF	410076 FF or TF	410071 TF only	410729 TF only	410072 TF only	
									40P101 or 40P151	40P101 or 40P102 or 40P151	40P154 or 40P253	40P201	40P201 or 40P202 or 40P204	
Friction Feed (80C-FF)									A (Applies)	A	NA (Not appl.)	NA	NA	Specify one
Tractor Feed 80-Column (80-TF)									A	A	A	NA	NA	
Tractor Feed 132-Column (132C-TF)									NA	NA	NA	A	A	
17a. Col. 1 is left margin									A*	A*	A*	A*	A*	Specify 17a or 17b
17b. Specify left margin (2-13)									NA	A	A	NA	A	
17c. Col. 80 is right margrin (80C ptr only)									A*	A*	A*	NA	NA	Specify for 80c
17d. Specify right margin (36-79)(80C ptr. only)									A (only 73-79)	A	A	NA	NA	
17e. Col. 132 is right margin (132C ptr. only)									NA	NA	NA	A*	A*	Specify one for 132c
17f. Specify right margin (73-131)(132C ptr. only)									NA	NA	NA	A (only 121-131)	A	
18a. No paper feed out on RM loss or ETX									A	A	A	A	A	Choose 18c unless specified
18b. Feed-out on RM loss									A	A	A	A	A	
18c. Feed-out on RM loss or ETX									A*	A*	A*	A*	A*	
19c. No Errored char symbol on parity errror (Req'd)	✓	✓	✓	✓	✓	✓	✓	✓	A*	A*	A*	A*	A*	
19d. Up-Low Printer									A	A	A	A	A	Specify one
19e. Monocase Printer									A	A*	A*	A	A*	
19f. Line-drawing Printer									A	A	A	NA	NA	
20a. Single line feed									A*	A*	A*	A*	A*	Choose 20a unless specified
20b. Double line feed									A	A	A	A	A	
21a. Up-Low printer, no foldover									A*	A*	A*	A*	A*	U/L or line DWG: Choose 21a unless specified
21b. Up-Low printer, foldover									A	A	A	A	A	
22a. Monocase printer, error on lower case									A	A	A	A	A	Mono: Choose 22b unless specified
22b. Monocase printer foldover									A*	A*	A*	A*	A*	
39a. Forms switch "on" (Forms enabled)									A (TF only)	A (TF only)	A	A	A	Choose 39a unless specified
39b. Forms switch "on" (Forms disabled)									A (TF only)*	A (TF only)*	A*	A*	A*	
48a. Paper-out not gated with form-out (TF only)									NA	A (TF only)	A	A	A	Choose 48b unless specified
48b. Paper-out gated with form-out (TF only)									NA	A (TF only)*	A*	A*	A*	
54a. Char after ESC printed (no effect)	✓	✓	✓	✓	✓	✓	✓	✓	NA	A*	A*	NA	A*	
55a. S1/S0 detection not used (no effect)	✓	✓	✓	✓	✓	✓	✓	✓	NA	A*	A*	NA	A*	
56a. Friction Feed, motor on after paper alarm									NA	A (FF only)*	NA	NA	NA	
56b. Tract Feed, motor off after paper alarm									NA	A (TF only)	NA	NA	NA	
57a. SSI interface (Req'd)	✓	✓	✓	✓	✓	✓	✓	✓	NA	A*	A*	NA	A*	
58a. No Idle line motor control (No effect)	✓	✓	✓	✓	✓	✓	✓	✓	NA	A*	A*	NA	A*	
59f. Speed selection, 2400 (no effect)	✓	✓	✓	✓	✓	✓	✓	✓	NA	NA	A*	NA	A*	
60b. Disable aux alarm	✓	✓	✓	✓	✓	✓	✓	✓	NA	NA	A*	NA	A*	
61a. Regulator ground (at printer)(Req'd)	✓	✓	✓	✓	✓	✓	✓	✓	NA	NA	A*	A*	A*	

Fill out this sheet for each printer in the station.

Refer to the station configuration worksheet to find the device numbers that are printers. Enter the printer device numbers in the boxes provided make a check mark or specify column number (as applies) for each option choice.

Where an option is not applicable to the type of circuit card, installer take no action.

*Indicates option as furnished in a printer (without type carrier) form the factory.

40P253 with 406374 modification kit requires Option 48b.

Sample Blank Worksheet, Sheet A6

Fig. 8

PREPARATION OF WORKSHEET

Note: See Examples of Worksheet Preparation if required.

1.15 Instructions for preparing 4540 Configuration Worksheets:

(a) Use a separate six page worksheet for each station ordered.

(b) In the upper right portion of the configuration worksheet (Sheet A2 of W-4C800), include all information as required (ie, Telco requisition number, customer, location, etc).

(c) In the SCC area of the configuration worksheet, list the SPA (Station Poll Address) and SSA (Station Select Address) graphics. Also, make entries in the boxes to indicate controller and device options. List the USOCs which reflect the material found in the SCC area.

(d) In the applicable device areas, list the USOCs which reflect the material found in those areas.

(e) For each applicable device, include the cable length (number of feet) between each device and the SCC.

(f) Along the left side of each applicable area on all worksheets, include the physical location for that area (ie, Building 5, Post L1, etc).

EXAMPLES OF WORKSHEET PREPARATION

1.16 If a station worksheet is not included with station, a worksheet can be prepared from the USO (Universal Service Order). An example of the USO is given below and an example of the worksheets prepared from the sample USO is found in Fig. 9, 10 and 11.

1.17 Example USO — A customer wishes to install one SCC at some location. The SCC will have three KDs and one printer associated with it. The Service and Equipment section of the USO should read as follows:

Note: Necessary details of ordering the tables and data set have been omitted from the USO to make the examples more readily understandable.

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

1 STA A CCA OO LOC BLG 5, Post K1
1 1 4C8
1 1 4KAXG, 4DL R/DEV 00
1 1 4KAXJ, 4DL R/DEV 01
1 1 4L2XG R/DEV 02
1 1 45NXH, 4DL R/DEV 03

RMKR: EBCDIC DEV 00 at Post L1, DEV 01 at Post L2, DEV 02 at Post A10, DEV 03 at Post R20 for further location information.

1.18 Explanation of Example USO:

(a) STA (Station) A is the nomenclature for the SCC at CKL 1.

(b) CCA (Cluster Controller Address) 00 provides the addresses for the customer polling and selecting. Station number corresponds to SPA of SP (space) and SSA of - (minus) in the sample worksheet of Fig. 9.

(c) LOC (Location) Bldg. 5, etc provides location information of the SCC and devices.

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

1.19 An example of the Station Configuration Worksheet (for the station listed in the example USO) is prepared in this manner:

(a) "Bldg. 5, Post K1", the physical location of Station A, is entered along the left side of the SCC.

(b) The entries in the top half of the SCC block are determined from the station options, except for the data set/data service unit which is determined from the order.

(c) The device option entries in the bottom half of the SCC block are also determined from the station options. Refer to Part 4 which includes a cross-reference between 400 series options and the four-digit options.

(d) The USOC entries in the bottom half of the SCC block are:

"4C8" (the SCC), and "420" (A 20 inch wide table).

(e) The three USOCs for the three KDs (IDs 00, 01, and 03) are entered into the blocks labeled Device 00, Device 01, and Device 03, respectively. The abbreviation "KD" is also entered into these blocks.

(f) In the device 0 block: "4KAXG" is a monocase EBCDIC 40K104, "4DL" is a display, and "436" is a 36 inch wide table.

(g) In the device 1 block: "4KAXJ" is a monocase EBCDIC 40K105 and "45M" is a 45 inch wide table.

(h) In the device 3 block: "45NXH" is an up-low EBCDIC 45K301/GAA/02.

(i) The USOC for the printer is entered into the block labeled Device 02. The abbreviation "P" is also entered. "4L2XG" is a monocase EBCDIC 132-column printer in a 4500-style cabinet.

(j) Locations by post number (some other designation could have been used) as listed under retained remarks on the order are entered alongside each device block.

1.20 Cable lengths (not distance between components) are entered for each device. The total cable length entered does not include any fixed length 452223 through 452225 KD cables or 452226 through 452228 printer cables.

STATION CONFIGURATION WORKSHEET (Page 1)

TELCO (Fill in) TELCO CONTACT (Fill in) TEL. NO. (Fill in)

CUSTOMER (Fill in) TELCO REQ. NO. (Fill in)

LOCATION (Fill in)

Hardware port 1 is associated with System port 0.

For maintenance purposes this device should be the closest device to the controller.

HEX representation of device number:

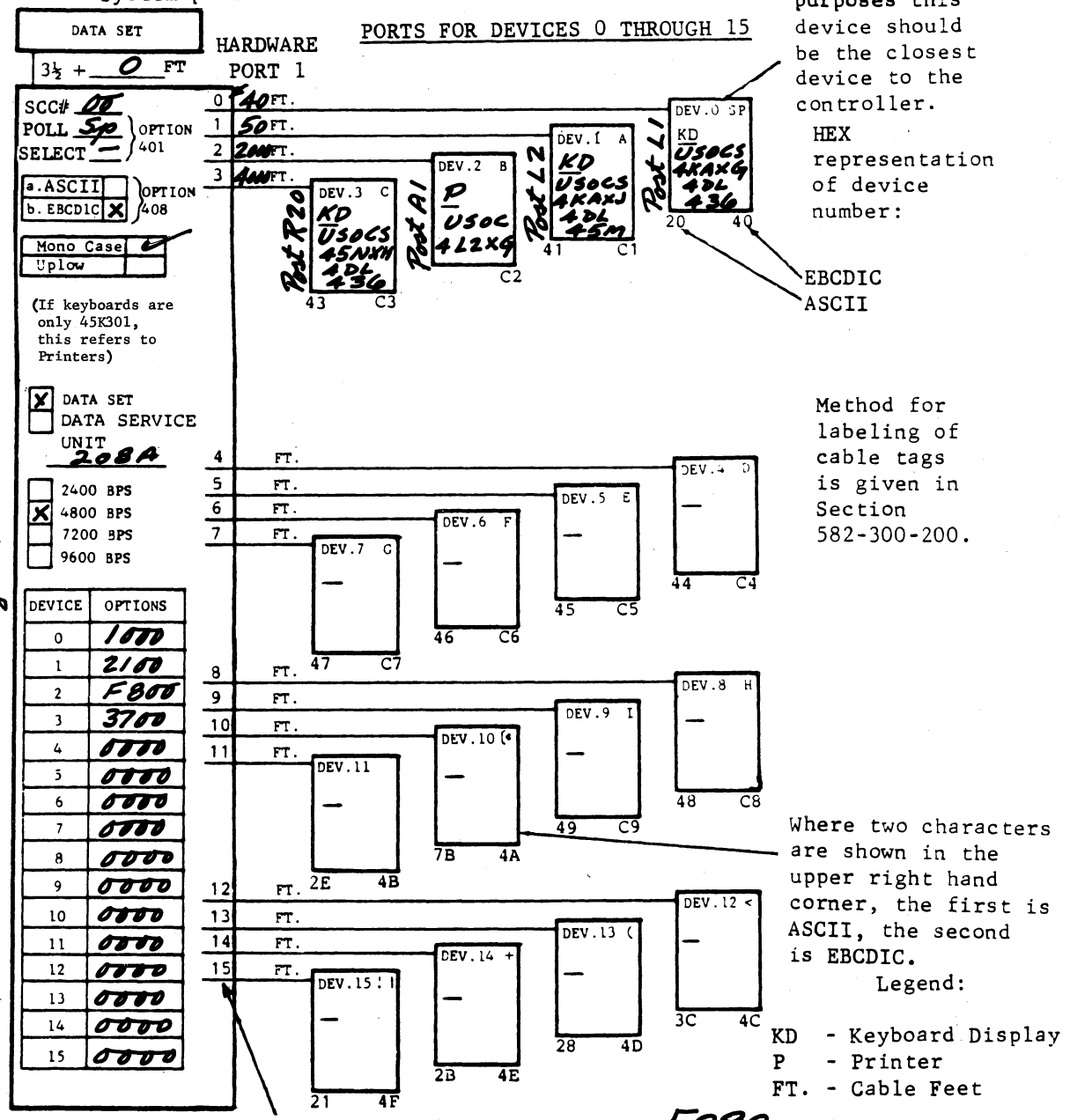
EBCDIC
ASCII

Method for labeling of cable tags is given in Section 582-300-200.

Where two characters are shown in the upper right hand corner, the first is ASCII, the second is EBCDIC.

Legend:

KD - Keyboard Display
P - Printer
FT. - Cable Feet



Total cable length 5090 ft.
(This does not include fixed length cables: 452223-452226).

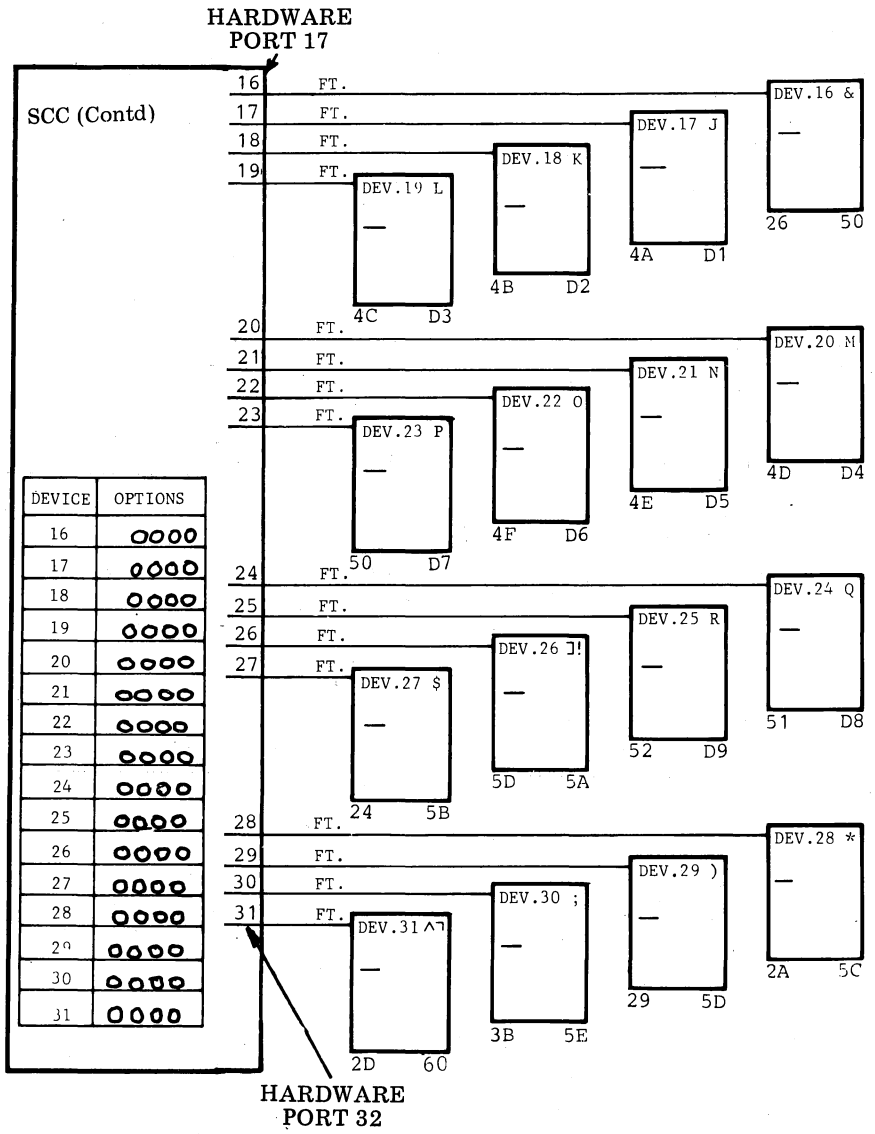
Fig. 9

STATION CONFIGURATION WORKSHEET (Page 2)

TEL. NO. (Fill in) USO (Fill in) CRT. NO. (Fill in) DATE (Fill in)

WE REQ. NO. (Fill in) SCHEDULE (Fill in installation date)

PORTS FOR DEVICES 16 THROUGH 31



DEVICE	OPTIONS
16	0000
17	0000
18	0000
19	0000
20	0000
21	0000
22	0000
23	0000
24	0000
25	0000
26	0000
27	0000
28	0000
29	0000
30	0000
31	0000

Fig. 10

OPTION RECORD FOR PRINTERS

APPLICATION OF OPTIONS

PRINTER OPTIONS	DEVICE NUMBER (Zero is not allowed)								80-Column			132-Column		Additional information for each printer device
									410640 FF or TF	410076 FF or TF	410071 TF only	410729 TF only	410072 TF only	
	2								40P101 or 40P151	40P101 or 40P102 or 40P151	40P154 or 40P253	40P201	40P201 or 40P202 or 40P204	
Friction Feed (80C-FF)									A (Applies)	A	NA (Not appl.)	NA	NA	Specify one
Tractor Feed 80-Column (80-TF)									A	A	A	NA	NA	
Tractor Feed 132-Column (132C-TF)	✓								NA	NA	NA	A	A	
17a. Col. 1 is left margin	✓								A*	A*	A*	A*	A*	Specify 17a or 17b
17b. Specify left margin (2-13)									NA	A	A	NA	A	
17c. Col. 80 is right margrin (80C ptr only)									A*	A*	A*	NA	NA	Specify for 80c
17d. Specify right margin (36-79)(80C ptr. only)									A (only 73-79)	A	A	NA	NA	
17e. Col. 132 is right margin (132C ptr. only)	✓								NA	NA	NA	A*	A*	Specify one for 132c
17f. Specify right margin (73-131)(132C ptr. only)									NA	NA	NA	A (only 121-131)	A	
18a. No paper feed out on RM loss or ETX									A	A	A	A	A	Choose 18c unless specified
18b. Feed-out on RM loss									A	A	A	A	A	
18c. Feed-out on RM loss or ETX	✓								A*	A*	A*	A*	A*	
19c. No Errored char symbol on parity errror (Req'd)	✓	✓	✓	✓	✓	✓	✓	✓	A*	A*	A*	A*	A*	
19d. Up-Low Printer									A	A	A	A	A	Specify one
19e. Monocase Printer	✓								A	A*	A*	A	A*	
19f. Line-drawing Printer									A	A	A	NA	NA	
20a. Single line feed									A*	A*	A*	A*	A*	Choose 20a unless specified
20b. Double line feed									A	A	A	A	A	
21a. Up-Low printer, no foldover									A*	A*	A*	A*	A*	U/L or line DWG: Choose 21a unless specified
21b. Up-Low printer, foldover									A	A	A	A	A	
22a. Monocase printer, error on lower case									A	A	A	A	A	Mono: Choose 22b unless specified
22b. Monocase printer foldover	✓								A*	A*	A*	A*	A*	
39a. Forms switch "on" (Forms enabled)	✓								A (TF only)	A (TF only)	A	A	A	Choose 39a unless specified
39b. Forms switch "on" (Forms disabled)									A (TF only)	A (TF only)*	A*	A*	A*	
48a. Paper-out not gated with form-out (TF only)									NA	A (TF only)	A	A	A	Choose 48b unless specified
48b. Paper-out gated with form-out (TF only)									NA	A (TF only)*	A*	A*	A*	
54a. Char after ESC printed (no effect)	✓	✓	✓	✓	✓	✓	✓	✓	NA	A*	A*	NA	A*	
55a. SI/SO detection not used (no effect)	✓	✓	✓	✓	✓	✓	✓	✓	NA	A*	A*	NA	A*	
56a. Friction Feed, motor on after paper alarm									NA	A (FF only)*	NA	NA	NA	
56b. Tract Feed, motor off after paper alarm	N/A								NA	A (TF only)	NA	NA	NA	
57a. SSI interface (Req'd)	✓	✓	✓	✓	✓	✓	✓	✓	NA	A*	A*	NA	A*	
58a. No Idle line motor control (No effect)	✓	✓	✓	✓	✓	✓	✓	✓	NA	A*	A*	NA	A*	
59f. Speed selection, 2400 (no effect)	✓	✓	✓	✓	✓	✓	✓	✓	NA	NA	A*	NA	A*	
60b. Disable aux alarm	✓	✓	✓	✓	✓	✓	✓	✓	NA	NA	A*	NA	A*	
61a. Regulator ground (at printer) (Req'd)	✓	✓	✓	✓	✓	✓	✓	✓	NA	NA	A*	A*	A*	

Fill out this sheet for each printer in the station.

Refer to the station configuration worksheet to find the device numbers that are printers. Enter the printer device numbers in the boxes provided make a check mark or specify column number (as applies) for each option choice.

Where an option is not applicable to the type of circuit card, installer take no action.

*Indicates option as furnished in a printer (without type carrier) form the factory.

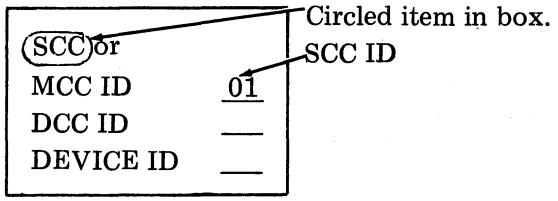
40P253 with 406374 modification kit requires Option 48b.

Fig. 11

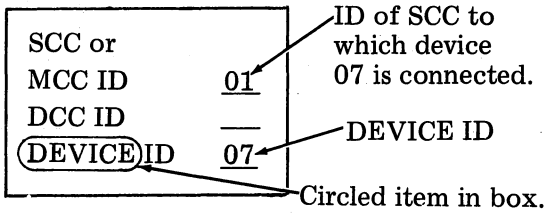
EXAMPLES OF LABELS

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

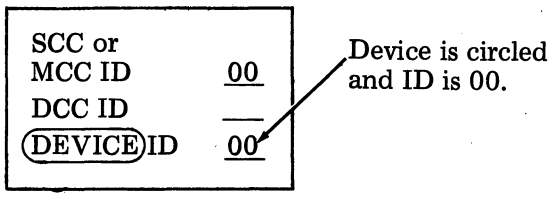
Example 1: ID label on box containing Station Cluster Controller 01



Example 2: ID label on box containing Device 07



1.22 Example of how to determine component placement: Refer again to the Station Configuration Worksheet which includes Station A in Building 5, Post K1. 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:



An ID label will be with the keyboard portion of the device 00. Any display (45D101/XX) can be used with the KD since all displays are identical.

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

LOCATION OF LABELS

1.23 Besides the unpacking instructions labels, ID labels will be affixed to boxes which contain a printer, keyboard, or controller.

Note: Ignore an ID label on a display. Any display can be used for any KD.

1.24 The ID label will identify the component in the box as to whether it is a controller or device. See examples in 1.21.

1.25 ID labels will be on some boxes. ID labels will also be located on the components shown in Fig. 12.

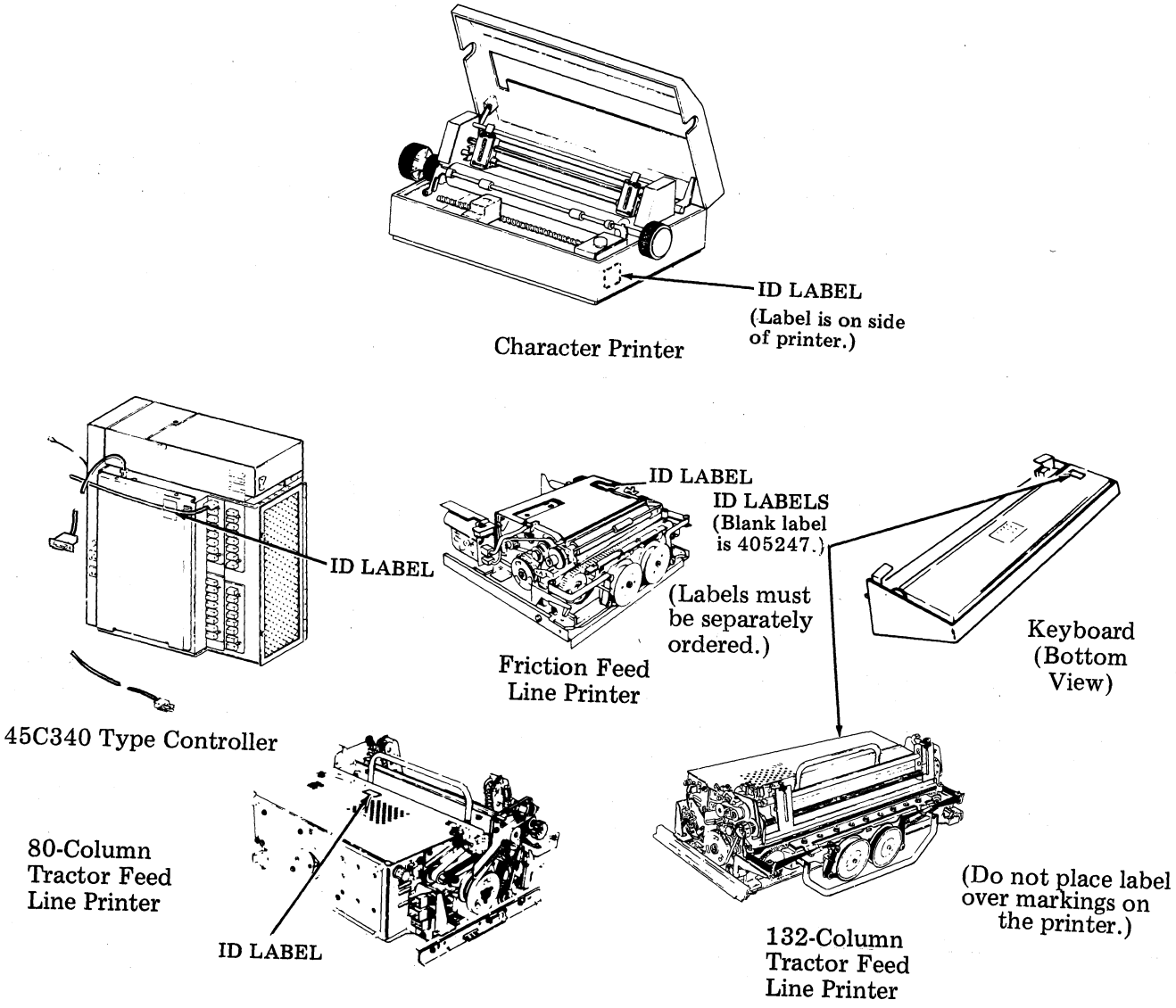

ID LABEL
(Label is on side of printer.)
Character Printer
ID LABEL
ID LABELS
(Blank label is 405247.)
(Labels must be separately ordered.)
Friction Feed Line Printer
Keyboard (Bottom View)
ID LABEL
45C340 Type Controller
80-Column Tractor Feed Line Printer
ID LABEL
132-Column Tractor Feed Line Printer
(Do not place label over markings on the printer.)

Fig. 12

STATION COMPONENT PLACEMENT NOTES

1.26 Referring to the Station Configuration Worksheet and ID labels on boxes, determine the assigned locations for the boxes on customer's premises (ie, post numbers and/or rooms listed on worksheet). Move the boxes when directed by Part 3. A copy of the customer's floor plan (if obtainable) would aid in placing the equipment in the proper location.

1.27 Once it has been determined where the boxes are to be located, they should be moved to their locations when directed by Part 3 (ie, using the example of Part 1, device 00 should be moved to Post L1, device 01 to Post L2, etc).

1.28 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).

45D101/XX	Display (includes monitor)
40BSE201	Keyboard base for 40K104 or 40K105
45BSE301	Keyboard base for 45K301
40BSE202	Keyboard base for 40K203
45CAB701/AAA	4500-style cabinet for 40P204/ZZ printer
45CAB501/AAA	4500-style table (36" wide) for KD
45CAB502/AAA	4500-style table (45" wide) for controller and/or KD
45CAB503/AAA	4500-style table (20" wide) for controller
45CAB603/AAA	4500-style table for character printer
40CAB201	40-cabinet for 40P101/ZZ friction feed printer
40CAB302/AB	Forms access cabinet for forms access 80-column tractor feed printer
40CAB351	40-cabinet for 80-column tractor feed printer
40CAB353	40-cabinet for 132-column tractor feed printer
40CAB371	40-cabinet for 40P102/ZZ friction feed printer
40MN101	Monitor (See 45D101/XX.)
40PWU101	Paper winder
347300	Keyboard lock modification kit (for 45K301) (These may already be installed in keyboards.)
401200	Copyholder
405544	Paper rack
407060	Paper guide (80-column)
407061	Paper guide (132-column)
KS8621	8-1/2" paper, roll

All SSI Cables and related hardware.

Note: The 45CAB401/AAA cabinet for the controller must be moved to the controller location.

1.29 During component placement of Part 3, the following items need not be found since they will be assembled to or installed in their respective components:

- All WES coded parts
- All printer type carriers and form-out belts installed in printers
- All circuit cards installed in the controller
- All sets of parts assembled to respective cabinets
- All 347300 keyboard lock modification kits for 45K301 keyboards (These may not be installed.)

EXAMPLE OF UNPACKING INSTRUCTIONS

1.30 Any special instructions necessary to open a box will be affixed to the top of the box. A sample instructions label is shown in Fig. 13. If no label is on the box, use these procedures when the box is opened in Part 3:

(a) With box in upright position, open top flaps and fold outward. An exception is the 40CAB302 cabinet for a forms access printer.

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

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

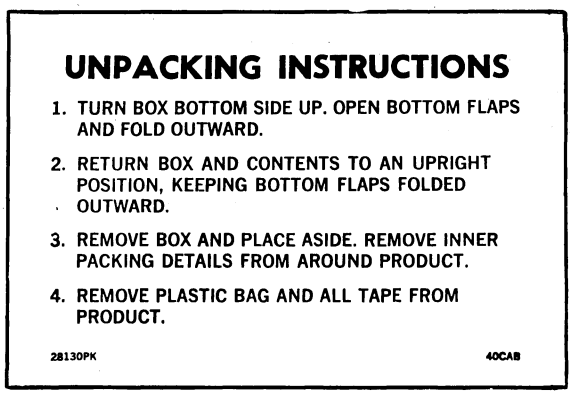


Fig. 13

2. CONTROLLER ARRANGEMENTS

2.01 Fig. 14 shows a 45C340 Controller with all covers in place.

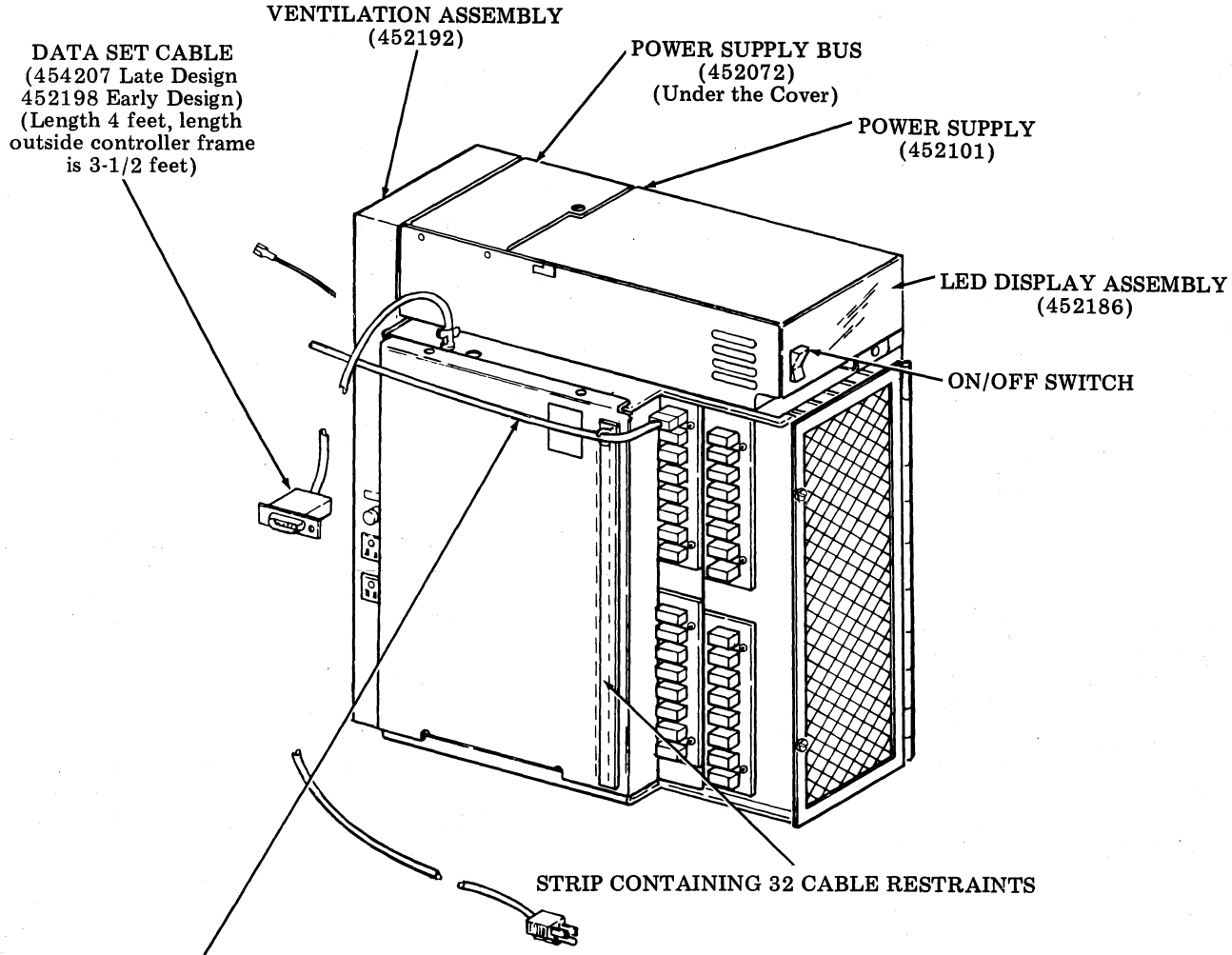


Fig. 14

2.02 Fig. 15 shows a 45C340 Controller with the left side cover removed; not all ribbon cables are shown. Fig. 16 shows the circuit card positions for the basic controller arrangements.

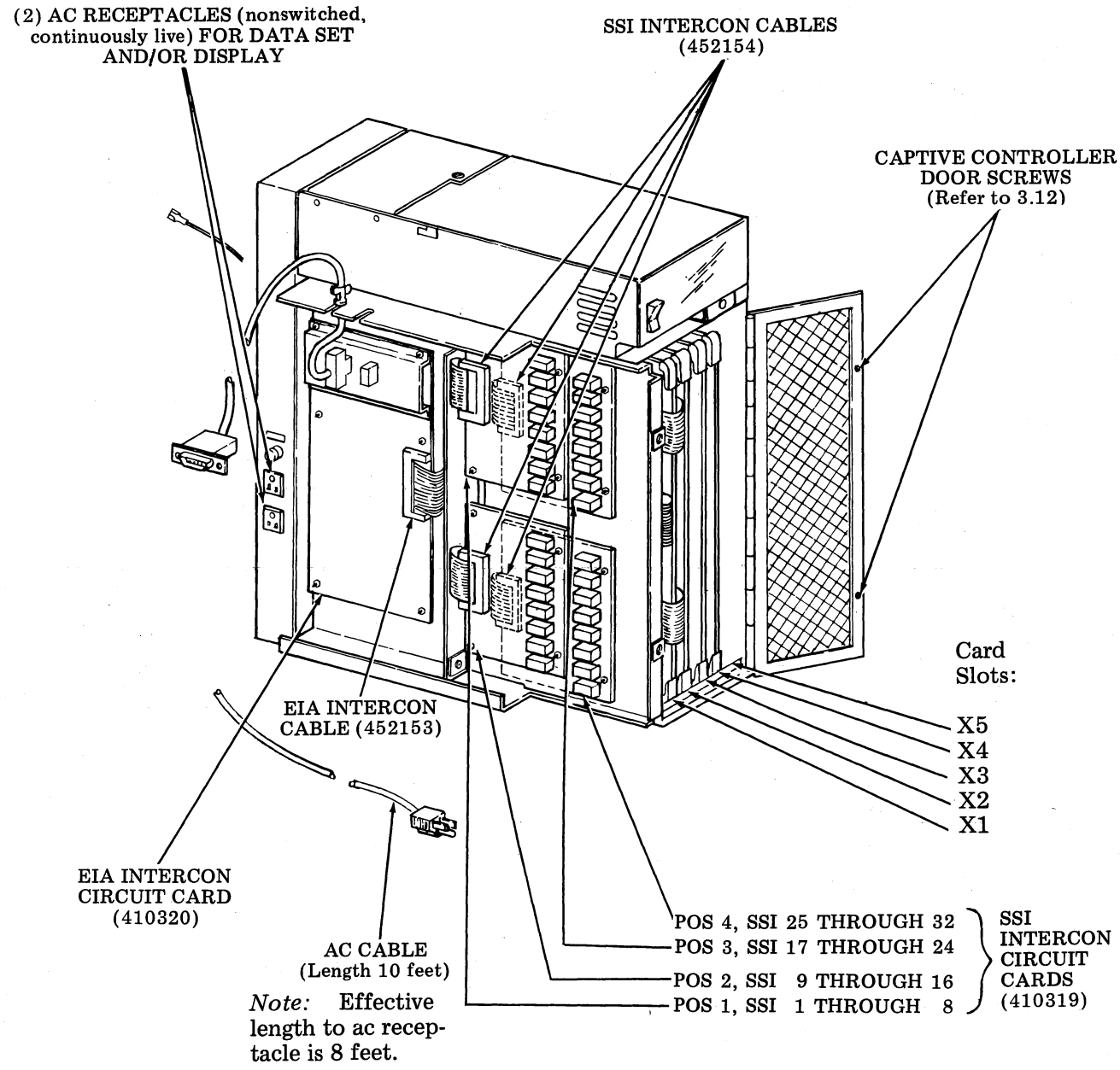


Fig. 15

Basic Controller Arrangements

Handles Up To	Circuit Card Position				
	1	2	3	4	5
8 Devices	410311	410314	45FG110	—	—
16 Devices	410311	410313	45FG110	—	—
32 Devices	410311	410313	410313	45FG110	—

IXL/32K RWM (Read-Write Memory, same as RAM)

(410314) SSI-8

(410313) SSI-16

(45FG110 Type) ROM

Fig. 16

3. INSTALLATION

3.01 An installation outline is given in 1.06, variations are given in 1.07 through 1.11.

Caution: To avoid condensation on the electrical components, the components should be allowed to assume room temperature before unpacking. This is especially important when brought into a warm humid room from outside subzero temperatures.

CONTROLLER UNPACKING

3.02 Unpack controller portion (45C340-type controller) of station. Unpacking includes removing cardboard details on the front, the bottom, and inside the door. The box containing the controller will be identified by its ID label.

OBTAIN STATION CONFIGURATION WORKSHEET

3.03 Obtain the Station Configuration Worksheet from the box containing the controller (SCC). The worksheet is shipped with the SCC. If a worksheet is not present or does not contain required information, obtain the service order, and prepare a worksheet.

CONTROLLER PLACEMENT

3.04 Referring to the Station Configuration Worksheet and the ID label on the box for the controller, move the controller near the assigned location. Unpack controller cabinet (45CAB401/AAA) and place in the desired location. If controller is intended for mounting in a customer provided cabinet, no 45CAB401/AAA will be furnished. If necessary, stabilize 45CAB401/AAA controller cabinet by turning leg levelers. Size of wrench required is 9/16 inch. A minimum of two inches of space is required in back of the controller cabinet. If the 45CAB401/AAA is later to be pushed under a table, further adjustment of the leg levelers may be required.

Danger: Do not mount one controller cabinet on top of another. Even if the cabinets were bolted together and bolted to the floor, removal of the top controller for maintenance could cause personal injury and equipment damage.

CONTROLLER SELF-TEST
(WITHOUT SSI CABLES)

3.05 Prepare controller for self test as follows:

①Remove 45CAB401/AAA controller cabinet front panel by turning the two captive screws (see Fig. 17) 1/4 turn counterclockwise with a screwdriver (screws at bottom of panel). Tilt bottom of panel out just enough to clear the screws from the cabinet holes, then lift the panel up (to clear the cabinet latches) and towards you. Place the panel out of the way.

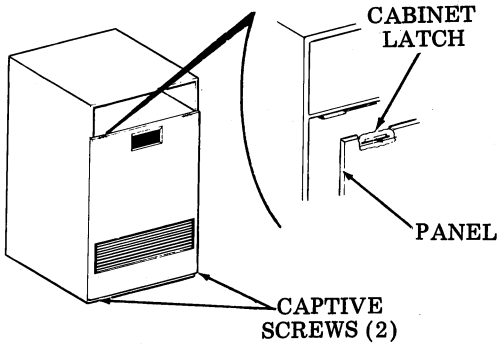


Fig. 17

②Remove and save the keepers (see Fig. 18) from the two strain reliefs on the bottom of the cabinet. Cabinets manufactured before March, 1979 do not have strain reliefs.

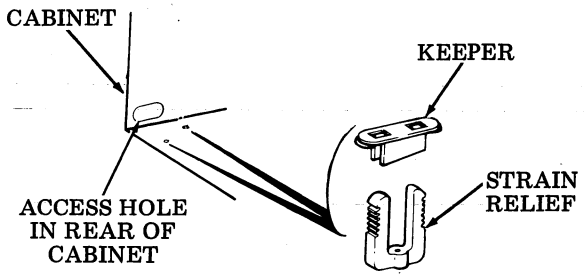


Fig. 18

③With power cord and data set cable uncoiled, place controller in front of cabinet. See Fig. 19. If SCC ac cord exits below SCC, route cable down between the two mounting rails, then to the right side of the cabinet. If SCC ac cord exits on left of SCC, route cord down to the left of the mounting rails and then to the right side of the cabinet. Route ac cord from right side of cabinet to left side, then out access hole in rear of cabinet.The cabinet is furnished with a plastic grommet which must be installed if the knock-out on the left side of the cabinet is removed.

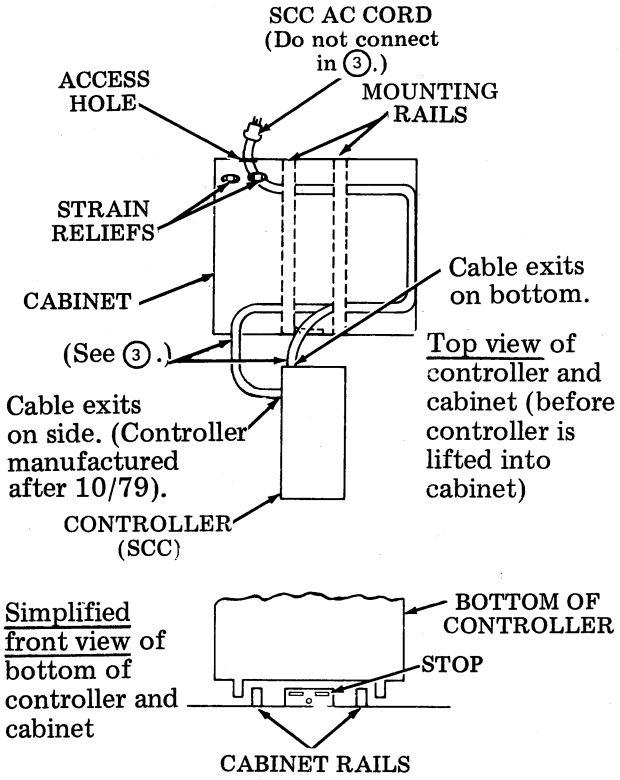


Fig. 19

④Lift rear of SCC into cabinet past stop on cabinet front so that SCC straddles the rails. (See Fig. 19.) Lower SCC to cabinet. Raise front of SCC and push halfway into cabinet.

⑤Refer to Fig. 15. Turn the two captive controller door screws 1/4 turn counterclockwise, then open the door. Check that a 45F110-type card is present in card position 3 (or 4 as applies). If card is not present, insert card. Check seating of all cards inside controller door.

⑥Connect ac cord (see Fig. 19) to 115 Vac source.

3.06 Perform controller self-test given in Chart 1 of Section 582-300-500. If the controller passes the test, proceed to 3.07 below. If the controller fails the test, troubleshoot as given in Section 582-300-500. When the controller will pass the test, proceed to 3.07.

3.07 Close the controller front door (do not tighten the two screws now).

3.08 Leave the controller power on.

SSI CABLE ID TAGS

3.09 Each end of every controller/device cable (SSI cable) in the station requires an ID tag to be attached and marked to aid in determining where the cables are to be connected.

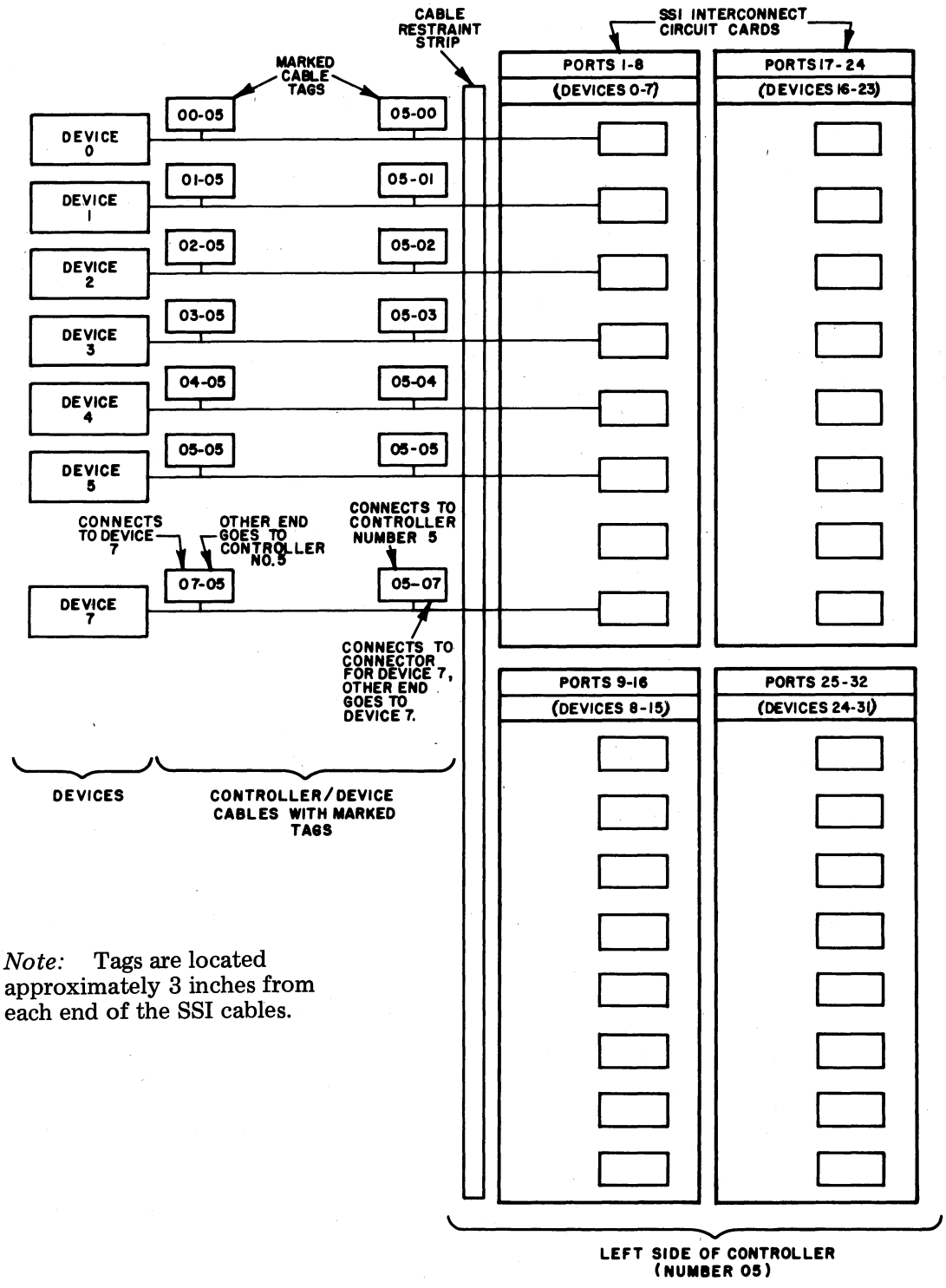
3.10 The ID tags are color coded to define whether the connector is to be connected to the controller or to a device, see Fig. 20. Assembled type SSI cables (3.13) are furnished with tags already installed (the tags should be marked). Unassembled SSI cables (3.14) require separately ordered tags which should be installed after cable routing and connector assembly (3.16).

TAG	ID TAG COLOR	CONNECTED TO
405243	Yellow	Controller
405242	Orange	Device (KD or Printer)

Fig. 20

3.11 Refer to the example in Fig. 21. The marking of the orange label (at the device end) is the device number, then the controller number where the other end is connected. The marking of the yellow label (at the controller end) is the controller number, then the device number. The device number specifies the appropriate controller connector and the device where the other end is connected. Mark the tags for the station using a nonsmearing nylon marking pen. Attach the tags. Pregummed labels can be marked then attached to the tags if desired. The tags for the controller end of the cables must be installed so that they do not interfere with the controller cable restraints shown in Fig. 14.

Caution: If the controller number or any device number is changed, the associated ID tags must be remarked (or replaced and marked) to prevent connection errors.



Note: Tags are located approximately 3 inches from each end of the SSI cables.

EXAMPLE OF MARKING AND INSTALLATION OF CABLE TAGS FOR CONTROLLER (SCC) NUMBER 5 THAT HAS DEVICES 0-5 AND 7.

Fig. 21

SSI CABLE ROUTING

3.12 The two types of cables that are used to interconnect devices and the controller can be called the "assembled type" or "standard length" (example: 452223) and the "unassembled type" or "special length" (example: Length of cable (without connectors) plus 402778 plug, 341648 terminals, 452229 plug, 452230 strain relief, 452231 cover, and 121005 screw). The station configuration worksheet should provide routing and cable identification information for the installation. The maximum diameter of Teletype Corporation SSI cable is 0.250 inches. To permit later identification, always tag an SSI cable before routing another SSI cable. Route cables in accordance with station configuration worksheet.

A. Assembled Type (Standard Length) SSI Cables

3.13 If one of the cables of Fig. 22 must be run through a cable run without space for pulling the cable connectors, extract the terminals at the indicated end with 402840 terminal extractor. Before attempting to push a terminal out of the connector, push the terminal from the wired side while slipping the extractor over the terminal. Wrap the terminals with tape. Pull the cable in the indicated direction. Unwrap the tape and install the extracted terminals in the connector using needle-nose pliers or 452206 insertion tool. Connection details are given later in this section. Route assembled type cables. Check that the tag at each end is marked.

B. Unassembled Type (Special Length) SSI Cables

3.14 An installation kit (452219 for five KDs or 452220, for two printers) and a length of cable (without connectors) can be used to provide cabling instead of the lengths available as assembled cables. Only the cable may be routed through a cable run; do not prepare the ends of the cable (without connectors) for connections until after the cable has been routed. Cable (without connectors) is shielded cable (406318, 406319, or 406320), see Fig. 24. Shielded cable is required to minimize electrical noise problems. The use of other than specified cable may degrade system performance. Teletype Corporation shielded cable consists of two twisted pairs of No. 24 AWG insulated conductors covered with thin film plastic, a drain wire, braided shielding, and the flexible PVC outer jacket. Pair No. 1 consists of twisted red and yellow wires, while pair No. 2 consists of twisted orange and green wires. This cable insures the quality of 4540 system performance by minimizing the effects of radiated and conducted noise.

Warning: Since the cable (without connectors) 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^{o} bends are to be used, a pull box should be inserted.

PART NUMBER(S)	CABLE USE	IF REQUIRED, EXTRACT TERMINALS AT	PULL TOWARD
452223 — 12 Ft 452224 — 25 Ft 452225 — 50 Ft	SCC/KD	KD End	KD End
452226 — 12 Ft 452227 — 25 Ft 452228 — 50 Ft	SCC/ Printer	Printer End	Printer End

Fig. 22

3.15 The length of cable (without connectors) should be determined from the station configuration worksheet; however, the cable can be unwound directly from a spool (see Fig. 23 and 24). Route unassembled type cables; temporarily tag each end using the method of Fig. 21.

PART NUMBER	406318	406319	406320
LENGTH OF CABLE ON SPOOL (feet)	500	2000	5000
FLANGE DIAMETER (inches)	11 ± 2	16 ± 2	22 ± 2
TRAVERSE LENGTH (inches)	8 ± 2	10 ± 2	12 ± 2
CORE DIAMETER (inches)	5 MIN.	8 MIN.	10 MIN.
WEIGHT OF SPOOL WITH WIRE	25 LB MAX.	80 LB MAX.	200 LB MAX.

Note: Weight of cable is approximately 38 pounds per 1000 feet.

Fig. 23

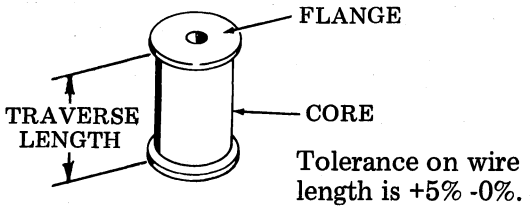


Fig. 24

PREPARATION OF UNASSEMBLED SSI CABLES AT SCC

Caution: The use of a solid wire SSI cable (rather than stranded wire cable) is not recommended because of the probability of breakage in handling during installation or maintenance at the device end or SCC end.

3.16 Assemble the controller end of each cable (without connectors):

① Use cutting pliers (or small knife) to remove plastic outer shield 1-1/2 inches from end (measure with ruler). See Fig. 25.

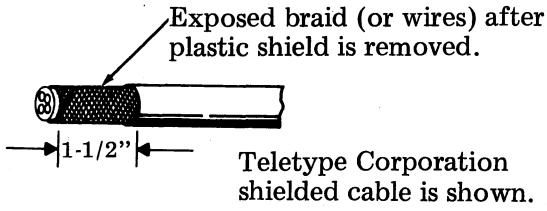


Fig. 25

② Remove most of exposed wire braid (if present) by pinching the exposed braid toward the plastic outer shield and then cutting off the bunched braid with cutting pliers without cutting the wires underneath. See Fig. 26.

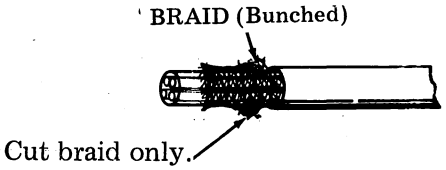


Fig. 26

③ Spread remaining braid back toward plastic shield and cut off braid with cutting pliers to within about 1/8 inch (not critical) of the plastic outer shield. See Fig. 27.

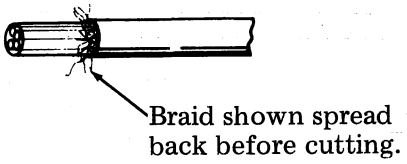


Fig. 27

④ Unwrap the exposed clear thin-film plastic (if present) and cut it off, but be sure to leave about 1/4 inch of the plastic under the braid to protect the wire insulation from the braid strand ends. See Fig. 28

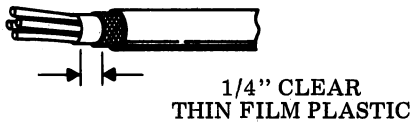


Fig. 28

⑤ Using cutting pliers or equivalent, strip the four insulated wires 5/32 inch from the end (measure with ruler). An acceptable equivalent is an adjustable stripper with cutter. SeeFig. 29.

Note: Teletype Corporation shielded cable is shown in Fig. 28 and 29.

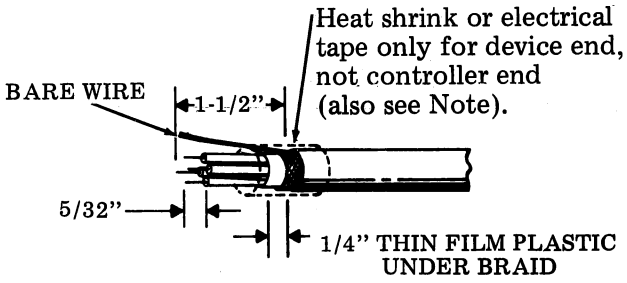


Fig. 29

Note: The device end of the cable requires installing heat shrink tubing (part of 452219 and 452220 installation kits) and shrinking the tubing over the 1/4 inch of thin film plastic (or wrapping electrical tape over the plastic). The controller end of the cable requires that this not be done.

⑥ Read the following warning, then perform the steps of 3.17 on each wire. The hardware required is provided by the separately ordered 452219 (for five KDs) and 452220 (for two printers) installation kits.

Warning: When crimping the bare wire tab and insulator tab of the terminal on a wire, it is essential to not bend the tabs that will hold the terminal in the connector. See Fig. 30.

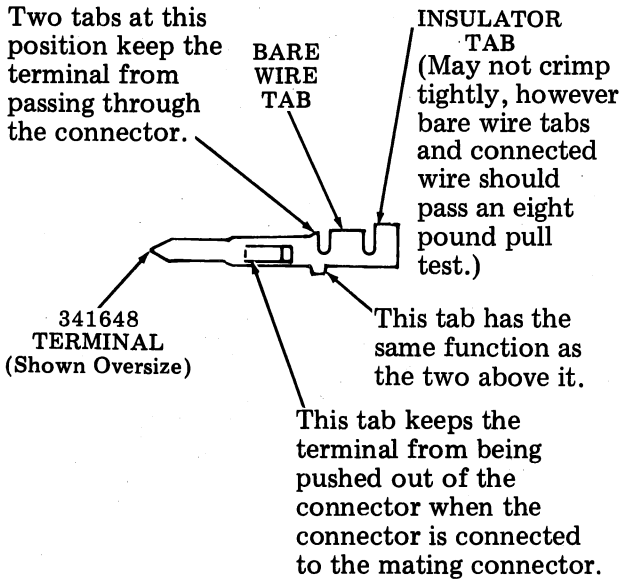


Fig. 30

3.17 Crimping methods are provided in 3.18 through 3.24 for both the 452205 (two-step) crimper and the more expensive 452242 (one-step) crimper. See Fig. 31 and 32.

Warning for 452242: This tool may require resetting the adjustment screw to prevent damage to terminal or to prevent insufficient crimping action. Before first use of tool (to avoid damage to tool), adjust for maximum opening, and make a sample crimp. Terminal and connected wire should withstand an 8 pound pull test. Refine adjustment to meet the 8 pound requirement.

3.18 Hold tool open.

452205: Insert terminal from rear so bare wire tab is on bottom of jaw B.

452242: Insert terminal from rear (front is labeled "wire side") so bare wire tab is on bottom of jaw "20-24". It may be necessary to pre-squeeze the insulator tabs by hand.

3.19 Close tool slightly to hold the terminal in place.

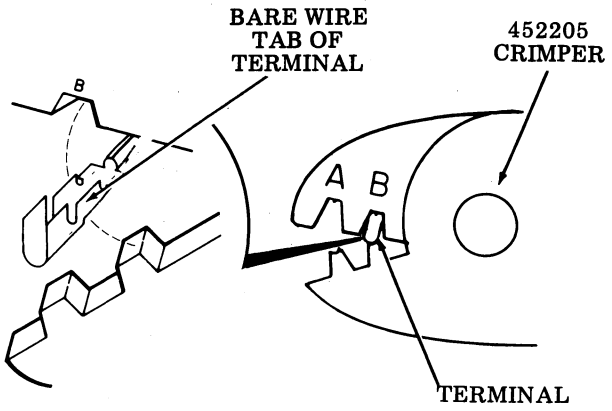


Fig. 31

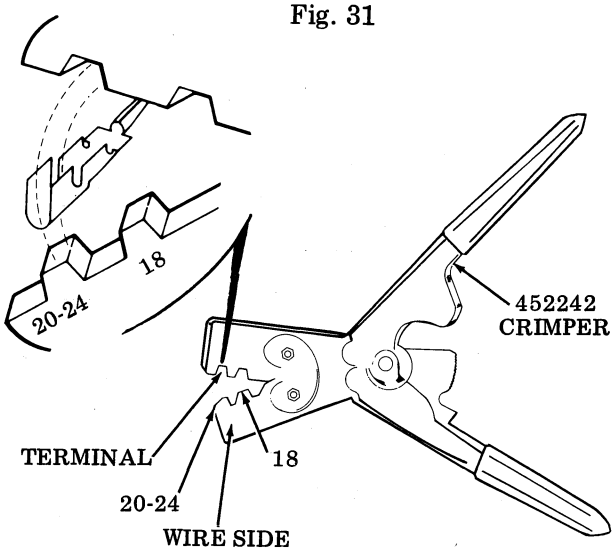


Fig. 32

3.20 Insert wire in the terminal from the front so that the bare wire is inside the bare wire tabs and the wire insulation is stopped by the bare wire tabs. The wire should not extend into the body of the terminal. See Fig. 33.

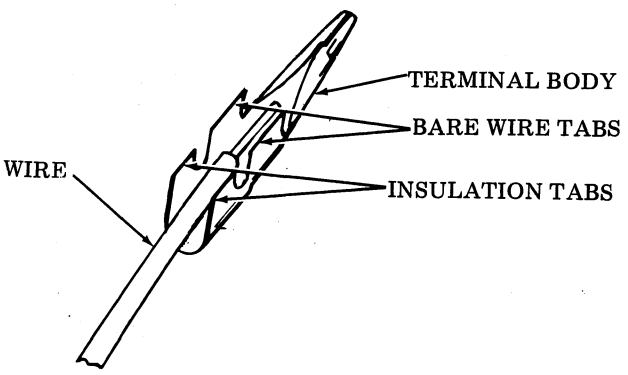


Fig. 33

3.21 Close the tool until the jaws are closed or sufficient crimp is made.

452242: Close tool fully to permit release of tool from terminal. While closed, straighten terminal if required. Remove terminal from opened tool.

452205: Hold wire, open tool, insert insulator tabs in jaw A. Close tool until the jaws are closed or sufficient crimp is made. If crimping bends the terminal, straighten it while it is still in the jaw. Open tool; remove terminal. See Fig. 34.

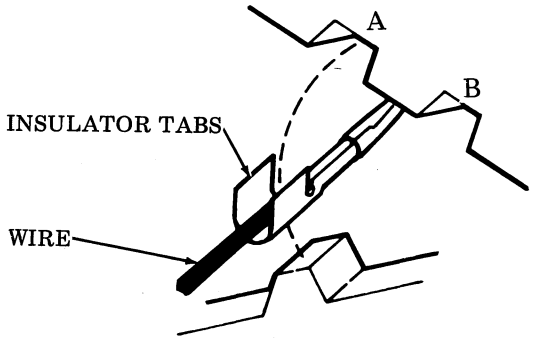
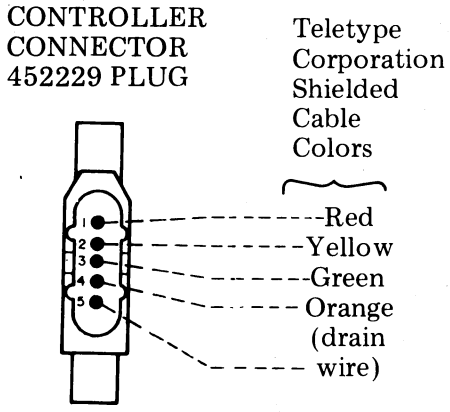


Fig. 34

3.22 Insert the five terminals (see Caution on next page) or four terminals (unshielded cable) into a 452229 plug (with a 452206 insertion tool, if required). See Fig. 35, 36 and 37. Observe the color code. Use a 402840 terminal extractor to correct terminal insertion mistakes. To use the extractor, first push the terminal from the wired side while slipping the extractor over the terminal, then push the terminal out of the connector.



Wired Side of Connector

Fig. 35

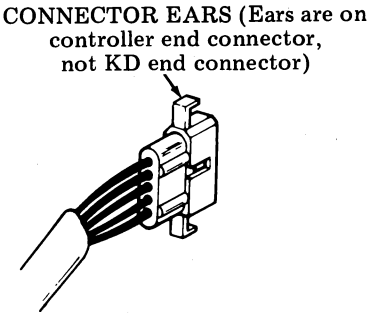


Fig. 36

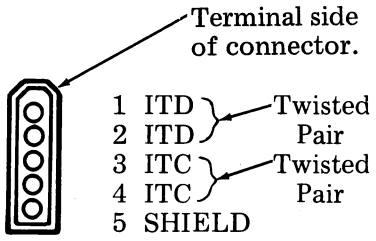


Fig. 37

Caution: When a device is not in the immediate vicinity (and not on the same ground bus strip) as the controller, it is recommended that the SSI cable drain wire be disconnected at the device end. Disconnect by removing drain terminal from connector and tape it back. If problems related to sending or receiving are observed at the device, reconnect the device end cable drain and disconnect the controller end cable drain. Choose end to disconnect based on which provides better operation.

3.23 Controller end connector only: Bend connector ears toward wire end of connector. See Fig. 38. Install 452230 strain relief. Route wire inside strain relief so that outer plastic shield extends beyond all strain relief points. Install 452231 cover on strain relief and secure with 121005 screw. See Fig. 39.

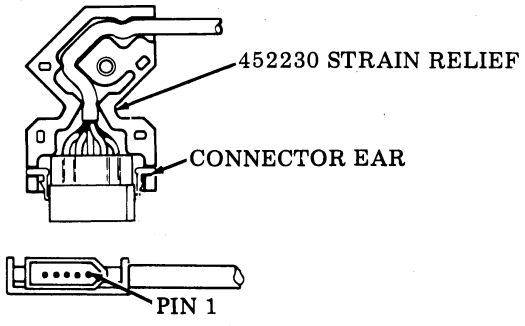


Fig. 38

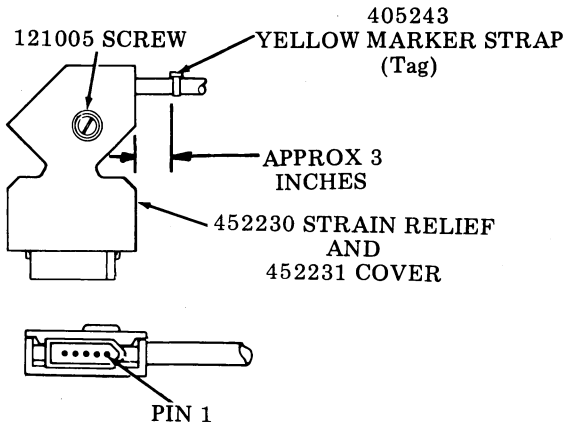


Fig. 39

3.24 Mark a 405243 tag (yellow) for the controller end of each cable, using the method of Fig. 21. Install the yellow tag approximately 3 inches from the strain relief.

CONNECTION OF SSI CABLES AT SCC

3.25 Connect SSI cables at SCC:

① To aid access to cables, slide controller out while supporting front of controller, then lower front of controller to the floor in front of cabinet. Rear of controller is held in cabinet by a latch plate under the controller. See Fig. 40.

② Route all SSI cables through the access hole in the rear of the cabinet, then to the right side of the cabinet and then back to the left side. This routing is similar to the routing of the ac cord shown in Fig. 20.

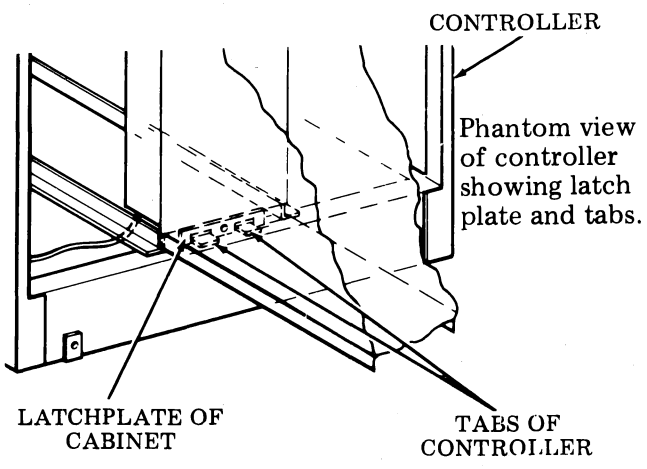


Fig. 40

③ Connect cables to the controller using the markings on the cable tags. Slip each cable into its cable restraint. Teletype Corporation shielded cable should be restrained within the arcs ( ) of the restraint strip as shown in Fig. 41.

④ Place about half the cables in one cabinet strain relief (see Fig. 42) and the other cables in the other cabinet strain relief. (This applies to the ac cord and, if data set is external to cabinet, the data set cable.) Cabinets manufactured before March 1979 are not equipped with strain reliefs. Install keepers (removed earlier) on cabinet strain reliefs.

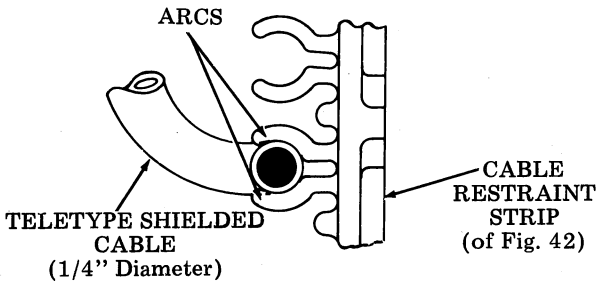
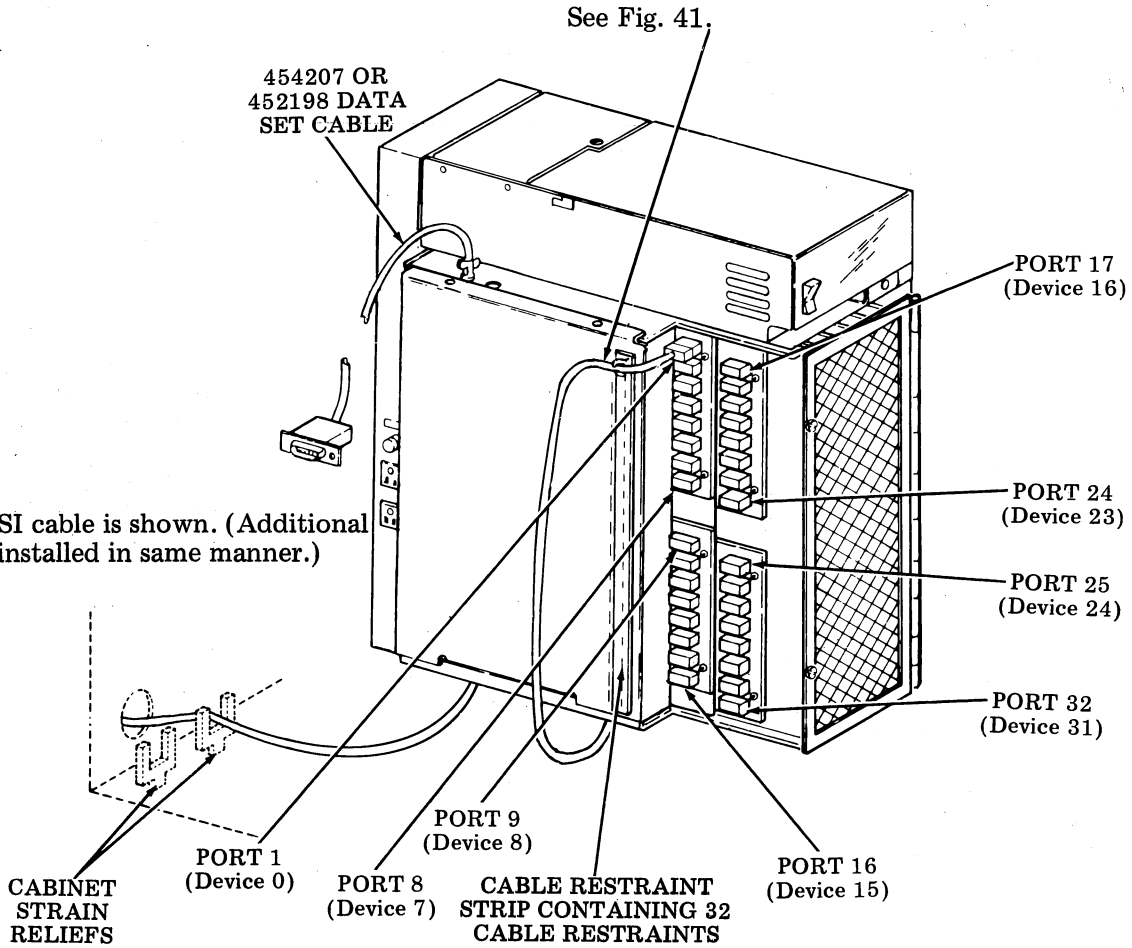


Fig. 41



Note: One SSI cable is shown. (Additional SSI cables are installed in same manner.)

Fig. 42

DATA SET CONNECTIONS

3.26 The 454207 (late design) or 452198 (early design) cable (and perhaps one of four extension cables) may be used between the controller and the data set. When the data set will be mounted on the shelf above the controller, an extension cable is not required. (In all other cases, an extension cable and two 325713 post assemblies of 454207 or 452198 cable assembly are required.)

When the data set is mounted external to controller cabinet, a 454207 or 452198 cable is required plus one of the following:

(WES4U)	408065,	7 feet
(WES87)	408066,	12 feet
(WES88)	408067,	25 feet
(WES89)	408068,	50 feet

3.27 Unpack the data set. Option data set (see Part 4). Place data set near controller.

Warning: To prevent possible heat damage to 208-type data set, do not install it in shelf above controller unless 451340 modification kit (ventilation fan assembly) is installed. Some manufacture's 208 data sets will not fit, see Fig. 44.

Caution: Do not connect controller to data set until 3.67 has been performed. This will prevent interference by this station on an established multipoint line. Connection to 2024A or 2048A or 2096A data set must be via KS-21253, L7 adapter. The adapter permits the 4540 RS232C interface to be connected to the 37 pin RS449 interface of the data set.

3.28 Connect data set to telephone line. Refer to (a) or (b) as appropriate.

(a) Data set to be mounted on shelf: Route data set cable, "telephone line" and data set power cord through access hole in shelf to the data set. (See Fig. 43 and 44). To install a 208-type data set on the shelf, refer to Part 8 (taken from 50983S) for installation details of the required fan assembly. The shelf will accommodate the 201- or 208-types of data sets. It will also accomodate the new 2024A or 2048A or 2096 data set.

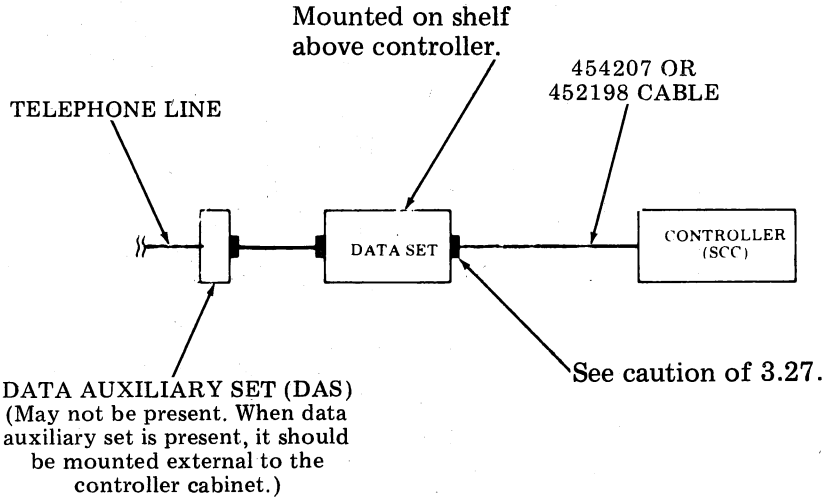


Fig. 43

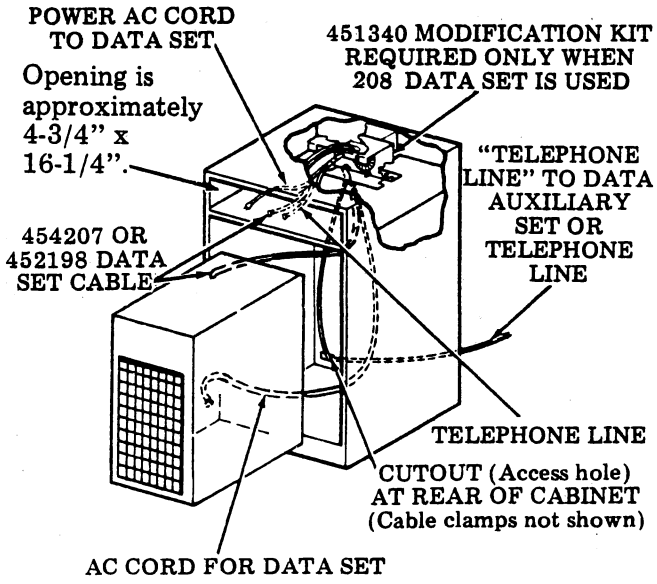


Fig. 44

(b) Data set to be mounted external to controller cabinet: Remove the two 406043 screw kits from 452198 data set cable, install two 325713 post assemblies in place of the kits. Connect the data set cable to an EIA extension cable. (See Fig. 45 and 46.) Use the hardware supplied with the cabinet to secure the cables. Route the extension cable and data set cable through one of the cable clamps at the rear of the cabinet then out the rear access hole.

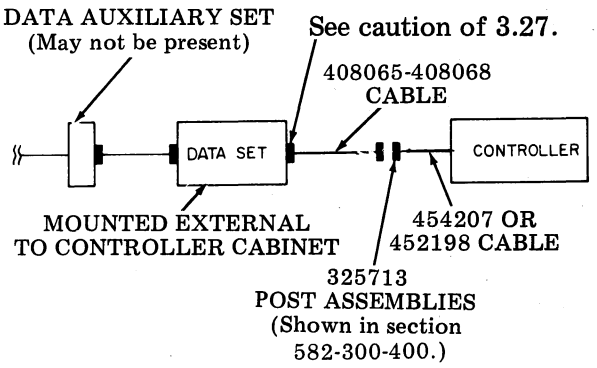


Fig. 45

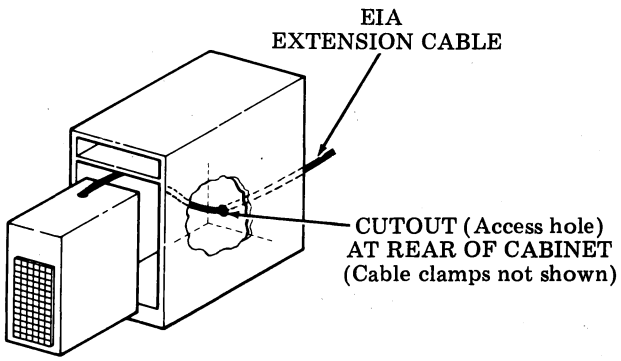


Fig. 46

3.29 Place data set on top of customer provided table or temporarily on top of controller cabinet (as applies). Connect data set power cord to 115 V ac outlet. (The outlet may be one of the outlets on the left side of the controller.) If a data auxiliary set (DAS) is part of the station, connect DAS to data set and connect telephone line to DAS. If DAS is not part of station, connect telephone line to data set. Data sets 2024A, 2048A only: Connect the 9-pin diagnostic channel (if used on extended service). Perform data set analog loopback test of Section 582-300-500, Chart 4.

LINE PRINTER INSTALLATION

3.30 When a line printer is part of the station, use 3.30 through 3.40 (as applies) to completely unpack, install, and test one printer. See Caution below. Perform the same functions for the next line printer, and so forth. When all line printers are installed and tested, proceed to 3.41. Each printer requires a type carrier (see Fig. 47).

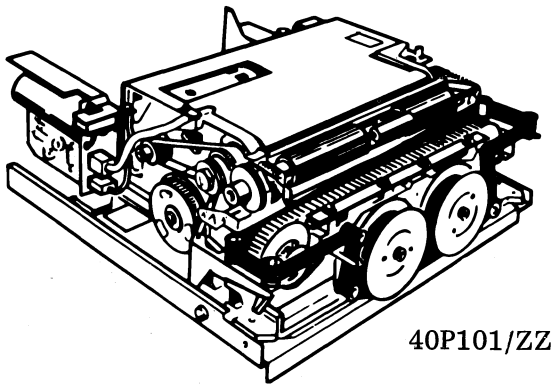
	Type Carrier Part Number and Font ID Symbol			
	132-Column		80-Column	
Carrier Type	ASCII	EBCDIC	ASCII	EBCDIC
Monocase Standard	400780 ΞAΞ ΞJΞ	400887 ΞAΞ ΞSΞ	400645 ΞAΞ ΞAΞ	400785 ΞAΞ ΞQΞ
Up-Low Standard	400777 ΞAΞ ΞDΞ	400783 ΞAΞ ΞMΞ	400629 ΞAΞ Ξ8Ξ	400784 ΞAΞ ΞNΞ
Monocase OCR-B	408393 Ξ8Ξ ΞEΞ	408522 Ξ8Ξ ΞKΞ	408392 Ξ8Ξ ΞDΞ	408524 Ξ8Ξ ΞMΞ
Up-Low OCR-B	408391 Ξ8Ξ ΞCΞ	408523 Ξ8Ξ ΞJΞ	408390 Ξ8Ξ Ξ8Ξ	408525 Ξ8Ξ ΞNΞ
Line Drawing (Graphics with Upper case Alpha)	—	—	400775 ΞAΞ ΞDΞ	—

Fig. 47

Caution: When installing paper on a printer equipped with a paper jam alarm (40P204 has an alarm), a paper alarm exists until the paper jam alarm is reset. Reset by opening the left tractor cover and taking out slack in left wheel by rotating the top of the wheel to the rear until it stops, then depress the small blue lever above the two metal wheels. See printer How to Operate Manual for details.

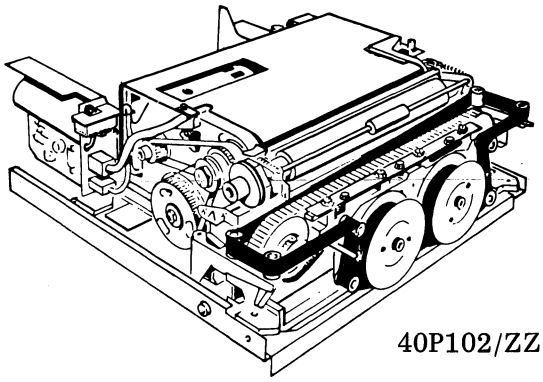
A. Friction Feed

3.31 Friction Feed Printer (40P101/ZZ or 40P102/ZZ). See Fig. 48 and 49.



40P101/ZZ

Fig. 48



40P102/ZZ

Fig. 49

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

(b) If four 400409 immobilization screws are present (see Fig. 51 for approximate location), back them off 7 or 8 turns. Proceed to Part 4 and check the printer options on the service order. Enter the printer options on the station configuration worksheet. Refer to Section 582-210-702 for removal of printer circuit card. Then proceed to (c) below.

(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. If necessary, stabilize pedestal by turning pedestal leg levelers.

(e) Connection of the SSI cable to printer and connection of the printer ac cable is done later in Part 3.

(f) If the printer is pedestal mounted, route ac cord to convenience strip (if present) in pedestal.

(g) 40CAB371/ZZ cabinet only: install the 407192 paper guide (included with 40CAB371/ZZ cabinet).

(h) Install paper winder (40PWU101 or (40PWU102), if part of station (see Fig. 50). Refer to Section 582-002-103 or 50817S, if required.

(i) Install paper and ribbon. Maximum paper width: 8-1/2 inches edge to edge.

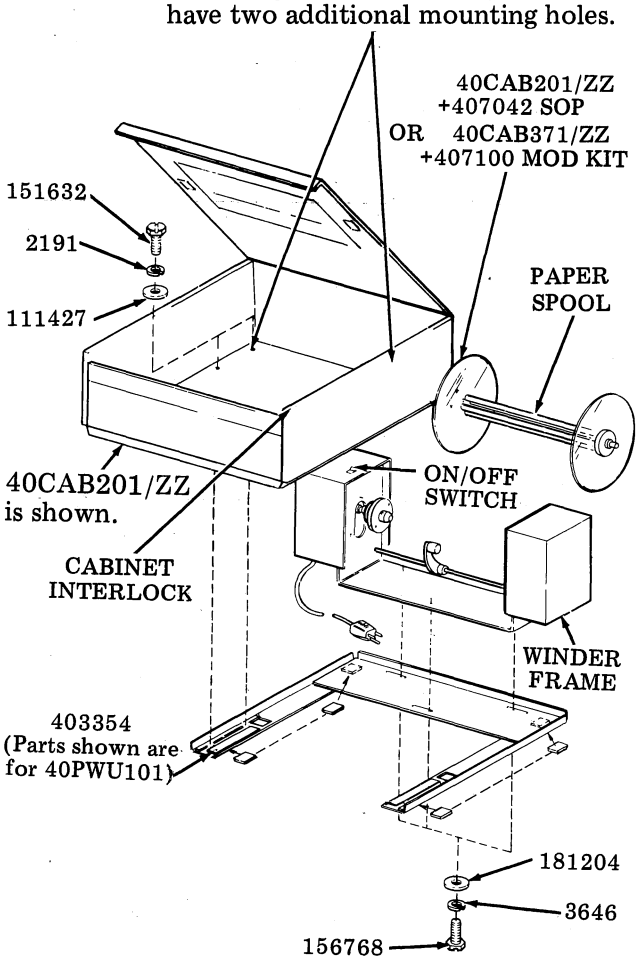


Fig. 50

B. Tractor Feed in 40-Type Cabinet

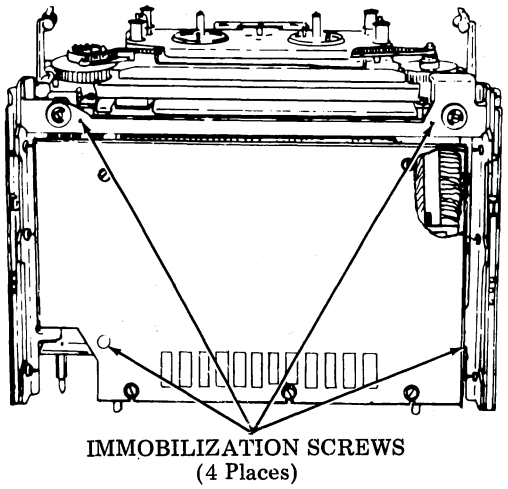
3.32 Tractor feed printers 40P154/ZZ or 40P151/ZZ (80-column) and 40P204/ZZ or 40P202/ZZ or 40P201/ZZ (132-column) and 40P253/ZZ (80-column forms access):

(a) Unpack printer, cabinet and pedestal. To unpack 40CAB302 cabinet for a forms access printer, cut metal band at bottom of box (be careful, band may fly apart when cut), lift off box top from base of box, and lift cabinet off of base. Proceed to Part 4 and check the printer options per the service order. Enter the printer options on the station configuration worksheet. Refer to Section 582-210-702 for removal of an 80-column circuit card (switches on 410071 are accessible without card removal.) Checking options in a 132-column printer does not require circuit card removal. Also, check that proper form belt is installed and form selector is in appropriate setting.

(b) Install printer (other than forms access) into 40-type cabinet as follows:

①Back off the four black shock mount immobolizing screws 7 or 8 turns. See Fig. 51.

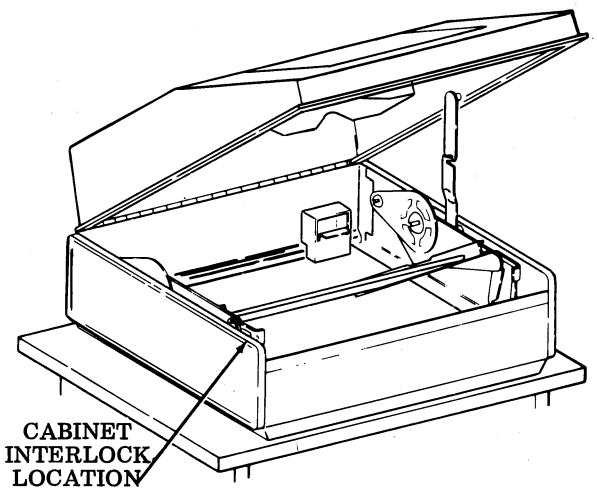
Assembly into 45CAB701/ZZ cabinet is given later in Part 3.



Bottom View of 40P151/ZZ

Fig. 51

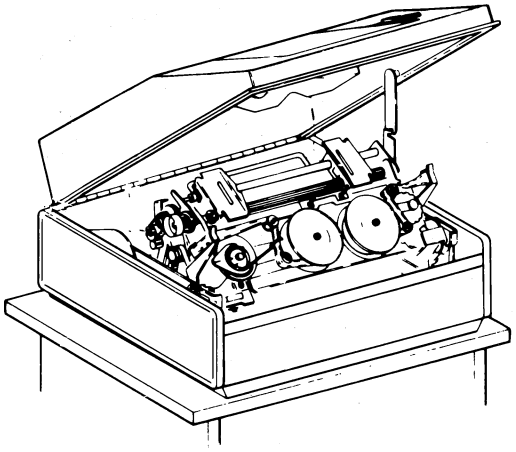
②Place cabinet on pedestal with opening in bottom of cabinet over slot in pedestal. If necessary, stabilize pedestal by turning pedestal leg levelers. Open lid by depressing latches on either side of lid and then raising it until it locks. See Fig. 52.



40-Type Cabinet (Other Than Forms Access)

Fig. 52

③Install printer on tracks (see Fig. 53). Slide printer down tracks until detents are seated. With printer properly seated, all power and SSI connections will be made to the cabinet.



40-Type Cabinet (Other Than Forms Access)

Fig. 53

④ 40-Type pedestal only: Open pedestal door. Connect ac cable at rear of printer cabinet to ac convenience strip inside of pedestal (if pedestal is so equipped).

⑤Install paper and ribbon (refer to printer How to Operate Manual if required). Paper width: 4-1/4 to 9-1/2 inches edge to edge (80-column), 4-1/4 to 15 inches edge to edge (132-column).

⑥Connection of 40-type pedestal ac cord is done in Part 3.

⑦40-Type cabinet only: Assemble paper guide as shown in Fig. 54. If included with order, install 405544 rack.

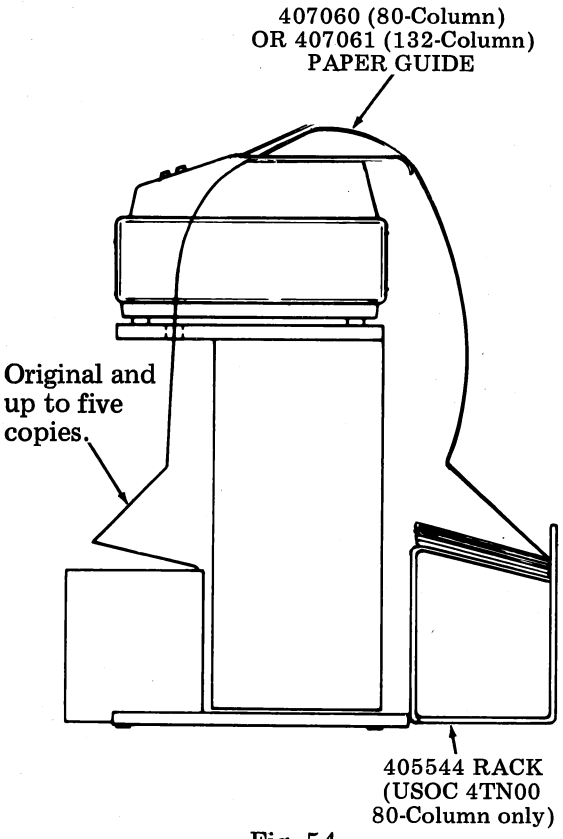
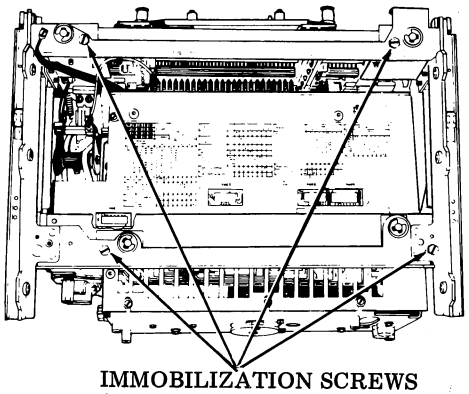


Fig. 54

(c) Install forms access printer into 40-type cabinet as shown on the next page. This application of the 40CAB302 printer cabinet requires an SSI interface on the back of the cabinet. 40CAB302/AB is equipped with an SSI interface. 40CAB302/ZZ requires 406370 modification kit (refer to 50951S, if required). When 406374 Pre-sense paper-out modification kit is required to be installed, refer to 50958S.

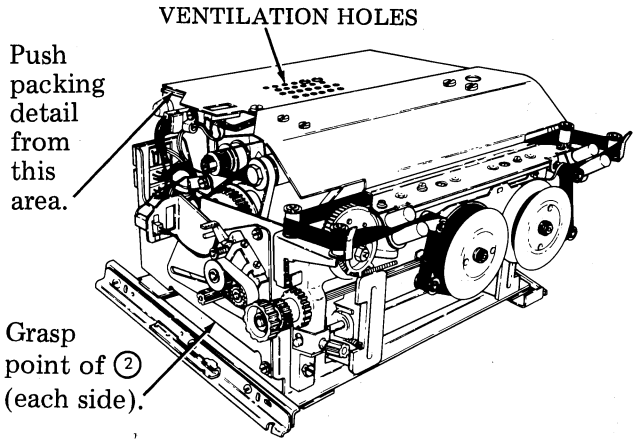
① After performing 3.32(a) (including installing options on 410071 circuit card), with the printer resting on its back side, back off the four black shock mount immobilizing screws 7 or 8 turns as shown in Fig. 55.



Bottom View of
40P253/ZZ

Fig. 55

②Using grasp points (see Fig. 56) lower printer with both hands so that it rests on its bottom. Check for a cardboard packing detail under the top plate. If present, it should be seen through the ventilation holes. Remove the packing detail by pushing from the left of the printer, then pull it out the right side of the printer.

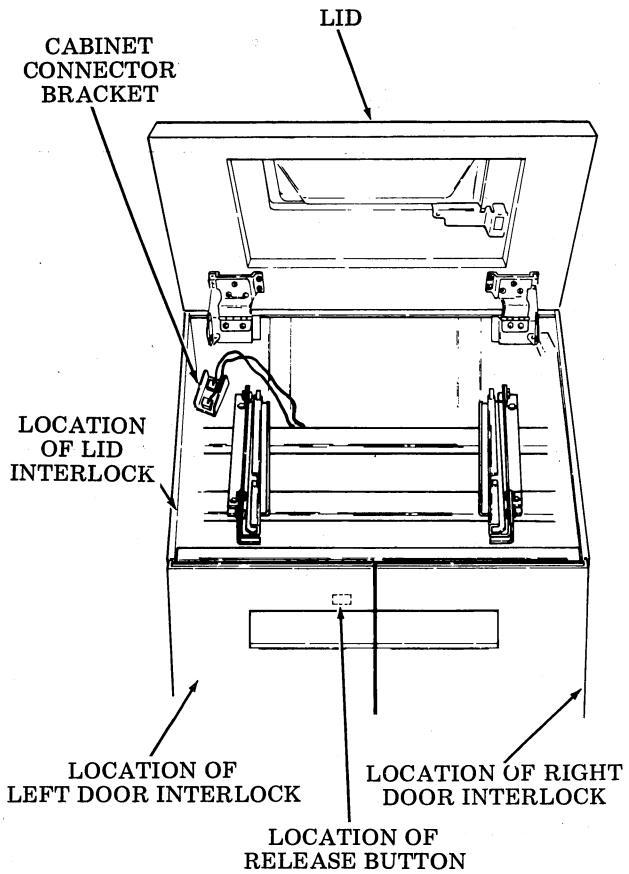


Front and Left Side of 40P253/ZZ
Forms Access Printer

Fig. 56

Warning: Failure to remove the packing detail before turning on the printer could result in damage to the printer.

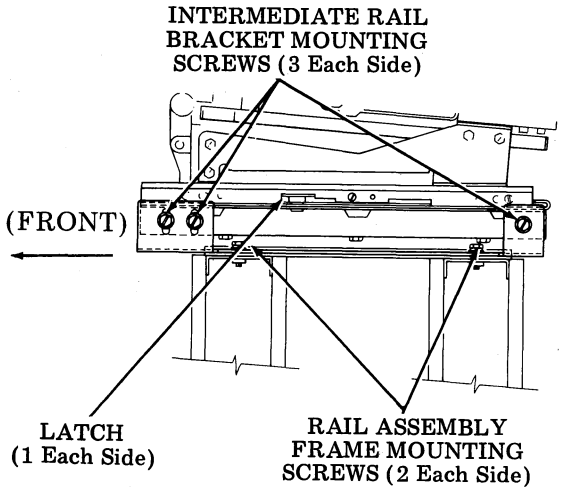
③ Install ribbon (see printer How to Operate Manual if required). If necessary, stabilize cabinet by turning cabinet leg levelers. Open left cabinet door, depress lid release button (see Fig. 57). Raise lid, close door. Grasp printer on the sides just above the side rails (see Fig. 56). Lower printer into cabinet and onto the rail assemblies. slide printer rearward, making sure the latch (of right side) is fully engaged. Connect cabinet connector bracket (left rear) to printer. Three cabinet security features are available, refer to 582-212-700 if required. ④ to ⑥ provides positioning requirements and methods. Perform ④ to ⑥ only if adjustment is required.



40CAB302-Type
Forms Access Cabinet

Fig. 57

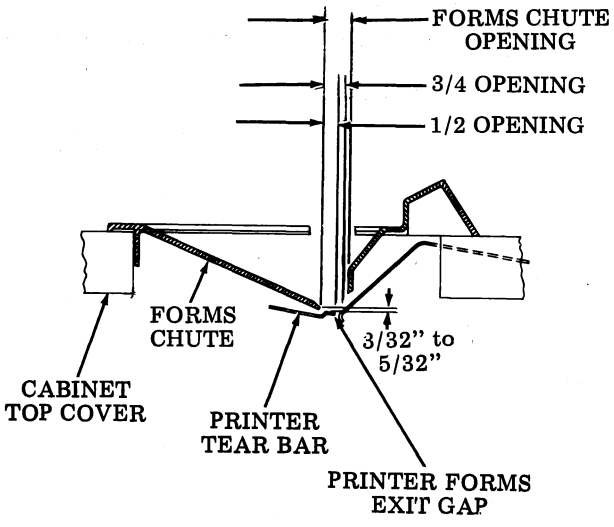
④If adjustment is required to meet the requirements of ⑤ and ⑥, with the printer positioned and latched in its rearmost location on the rail assembly frame, loosen the four rail assembly frame mounting screws friction tight. See Fig. 58.



(Right Side View)

Fig. 58

⑤When adjustment is required, move the printer rail assembly frame forward or rearward so that the printer forms exit gap is located half to three-fourths of the way back in the forms chute opening (as gauged by eye). Tighten the mounting screws of ④. See Fig. 59.



(Right Side View)

Fig. 59

⑥The printer tear bar should be located 3/32 inch to 5/32 inch below the bottom of the cabinet forms chute opening. When adjustment is required, loosen the six intermediate rail bracket mounting screws friction tight. Place the blade of a screwdriver between the frame and the intermediate rail. Pry intermediate rail assembly up at alternate left and right front corners until requirement in ⑥ is met. Tighten the front mounting screws. After making adjustment, tighten remaining screws.

Warning: Do not close cabinet doors unless door interlocks (locations illustrated in Fig. 57) are returned from maintenance position to operating position. Failure to comply can result in damage to doors and interlocks.

⑦Open cabinet doors and install paper (refer to printer How to Operate Manual if required). Paper width: 4-1/4 to 9-1/8 inches edge to edge. Close lid and doors.

Caution: Printer motor will not turn on unless all three interlocks are turned on. Interlock locations are illustrated in Fig. 57.

⑧Connection of cabinet ac cable is done later in Part 3.

C. Tractor Feed in 4500-Type Cabinet

3.33 Tractor Feed Printer (40P204/ZZ only):

(a) To unpack printer and cabinet (45CAB701/AAA):

①Cut nylon or metal band(s) of cabinet box (be careful, band may fly apart when cut).

②Lift off box top (including sides) from base of box. Remove packing details and plastic wrap from the cabinet.

Danger: Where local regulations limit the weight that an installer can lift, follow those regulations. The cabinet weighs 160 pounds.

Warning: Do not attempt to lift cabinet off of the bottom of the box by grasping the bottom of the cabinet.

③ Raise cabinet lid to the fully raised position. The lid is latched in place. Remove packing details from under lid and from door. If the packing material is to be reused, in ④ lift cabinet over styrofoam packing detail behind cabinet. If packing material is to be destroyed after this use, break off styrofoam packing detail behind cabinet (detail not present on all pack styles). See Fig. 60.

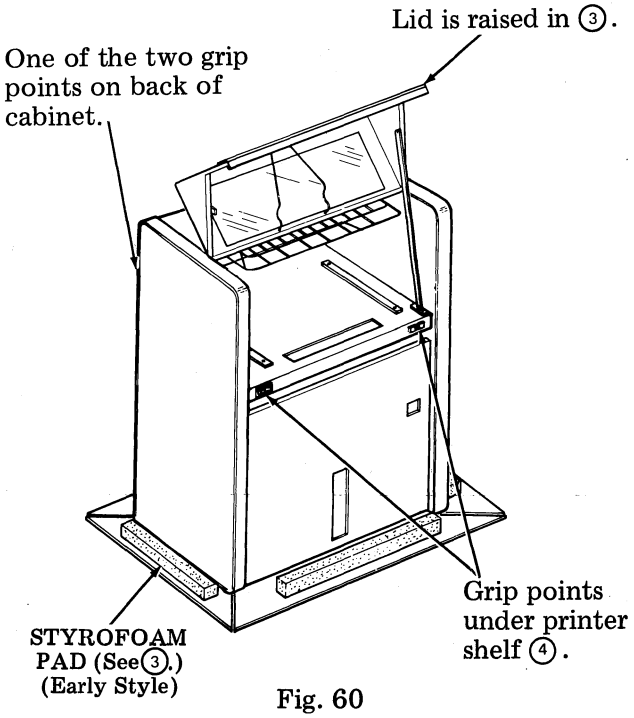


Fig. 60

Warning: To avoid damage to the switches on the printer shelf, do not use any mechanical device on the printer shelf to aid in lifting the cabinet.

④ Use the bottom of the printer shelf as one grip point and the back of the cabinet as the other grip point. Leave bottom door closed. Lift the cabinet and move it to the rear (off the base of the box). Place cabinet in desired location. If necessary, stabilize cabinet by turning leg levelers. Size of wrench required is 9/16 inch.

(b) After printer is unpacked, proceed to Part 4 and check the printer options per the service order. Enter the printer options on the station configuration worksheet. Checking options does not require circuit card removal. Also, check that proper form belt is installed and form selector is in appropriate setting.

(c) See Fig. 64. Install printer into cabinet as follows:

① On the bottom of the printer, back off the four black shock mount immobilizing screws 7 or 8 turns. (See Fig. 51 for locations.)

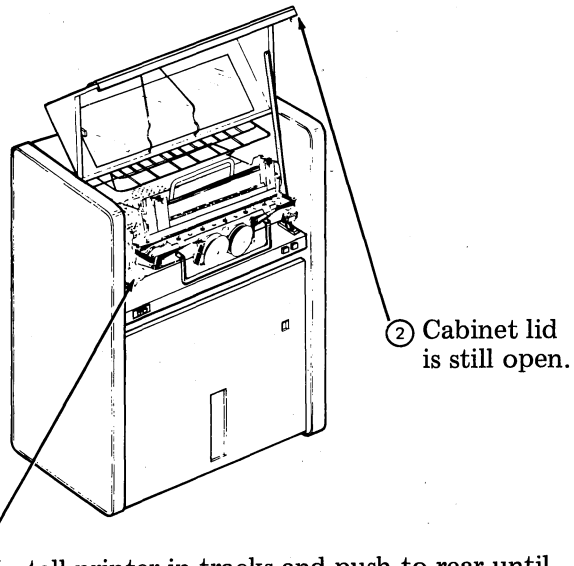


Fig. 61

④ Install ribbon (see printer How to Operate Manual if required). Paper is installed later in Part 3.

Note: With printer properly seated, all power and SSI connections will be made to the cabinet.

(d) Prepare lower cabinet as given in Fig. 62 and 63.

① Slide latch to left and swing open cabinet door (bottom door).

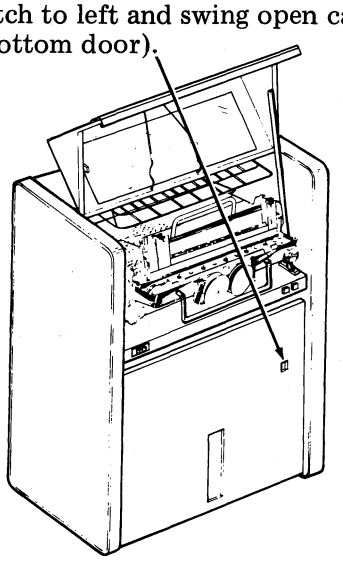
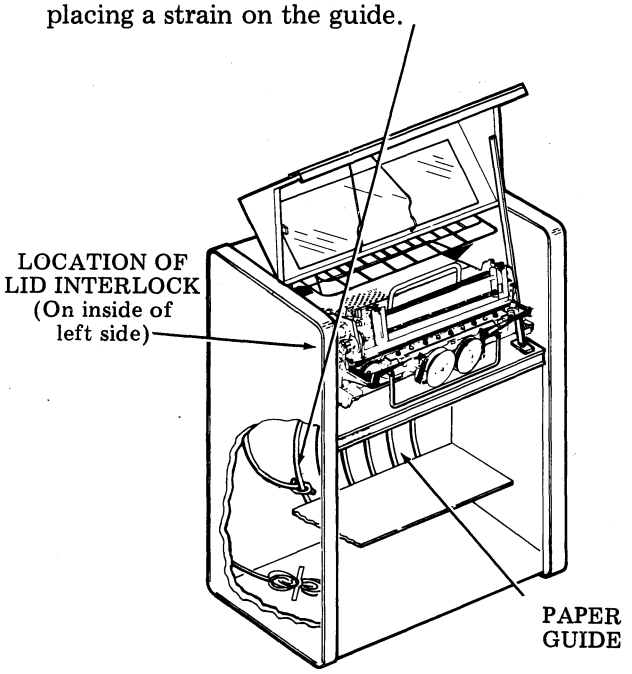


Fig. 62

② When extension cord (always present) for optional 452730 high voltage static neutralizer is packed with the end attached to the paper guide, unwrap the cord without placing a strain on the guide.



(Bottom door not shown for illustrative purposes)

Fig. 63

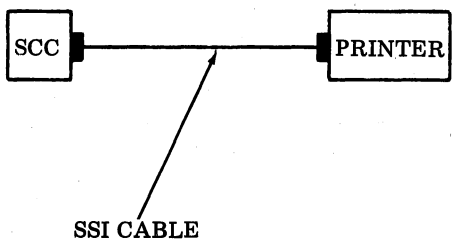
③ Unwrap the ac cord. The cord will be plugged into 115 V ac source later in Part 3.

④ When the 452730 high voltage static neutralizer is required to be installed, refer to Specification 50995S.

D. SSI Cable Connection at Printer End

3.34 One of three standard SSI cable lengths or one special cable length (SCC printer cable length not to exceed 2000 feet) may be used between a controller and a printer. See Fig. 64 and 65. When a standard length cable is to be used, mark the orange cable tag, then go to 3.38. When a special length cable (unassembled cable) is to be used, go to 3.35 (preferred method) or 3.36 (alternate method).

Caution: The caution of 3.22 applies to both the drain wire and separate ground terminal.



Standard Length (Assembled type) SSI Cables:	
452226	(12 feet)
452227	(25 feet)
452228	(50 feet)
Special Length (Unassembled type) SSI Cable:	
Made from 406318 (500 feet), 406319 (2000 feet), or 406320 (5000 feet).	

Fig. 64

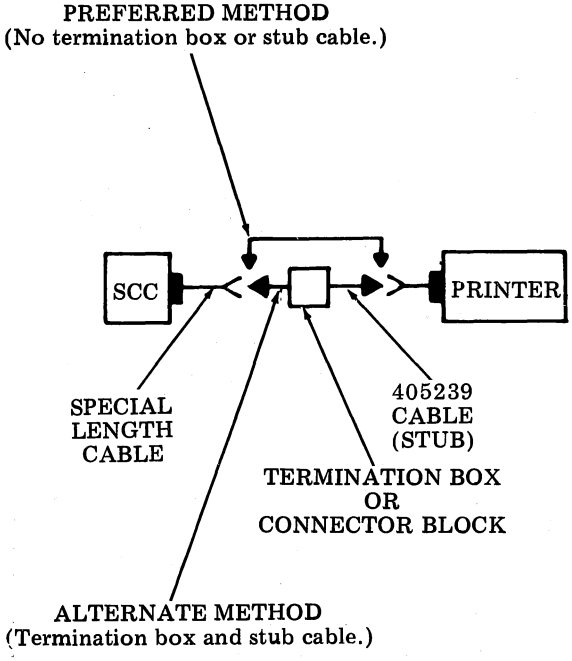


Fig. 65

3.35 Preferred method for special length cable:

(a) Prepare the printer end of the cable using the method of 3.16 and 3.17 but use 341647 terminals and insert the terminals into a 401150 connector, as shown in Fig. 66, 67, and 68. These parts are from a 452220 installation kit (for 2 printers). Observe that the drain may not be present in the cable.

Caution: The caution of 3.22 applies to both the drain wire and separate ground terminal.

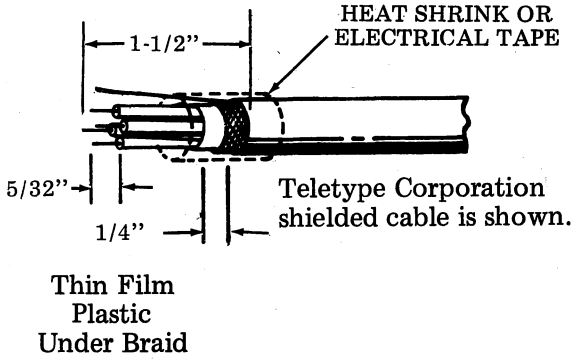


Fig. 66

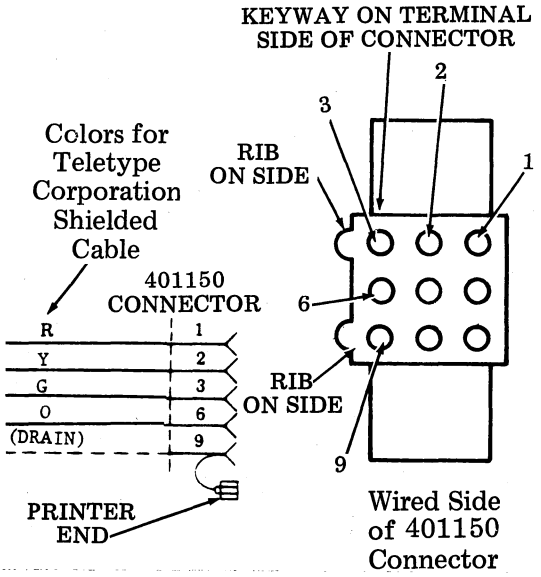


Fig. 67

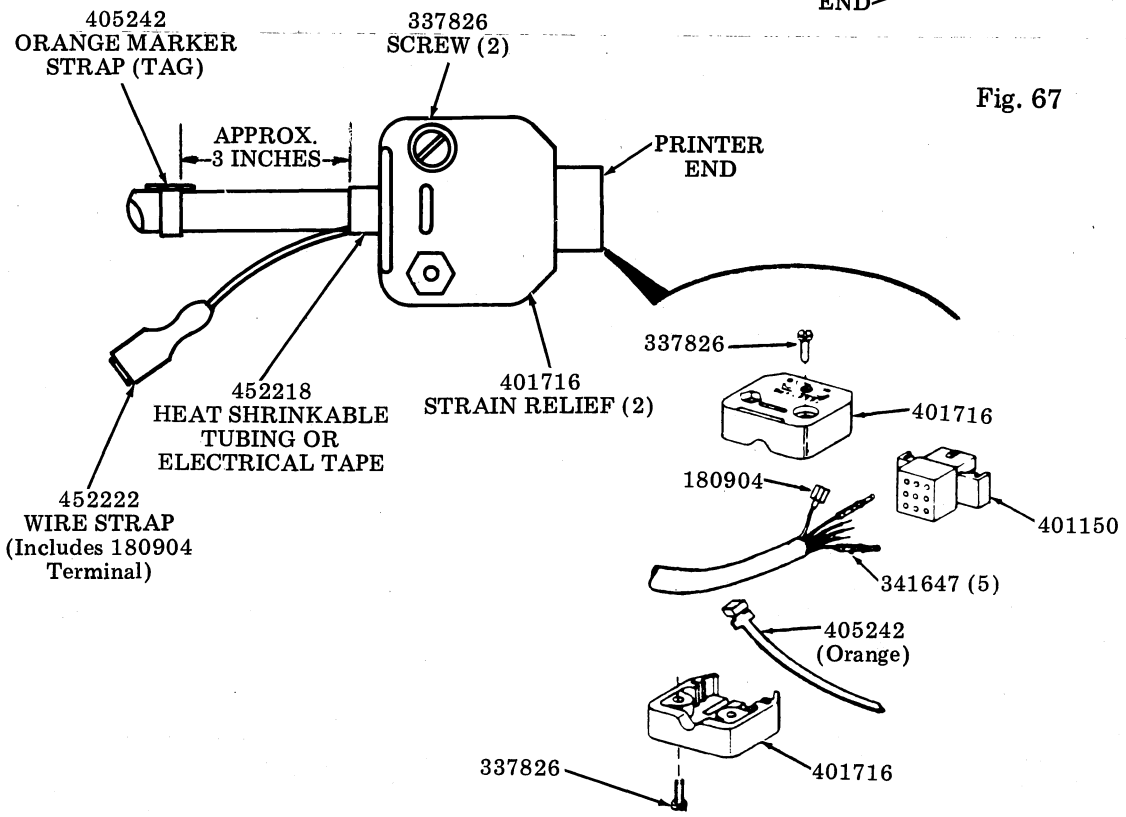


Fig. 68

(b) Mark a 405242 tag (orange) and attach it approximately 3 inches from strain relief (as shown in Fig. 68). Proceed to 3.38.

3.36 Alternate method for special length cable:

(a) Prepare the end of the cable for termination box or connector block:

① Remove approximately three inches of outer jacket and outer shield (if present). See Fig. 69.

Warning: Do not damage drain wire (if present).

② Leave about 1/4 inch of the thin film clear plastic under the braid to protect the wire insulation from the braid ends. Install heat-shrink tubing (part of installation kits), and shrink it over the 1/4 inch of plastic, or wrap electrical tape over the plastic.

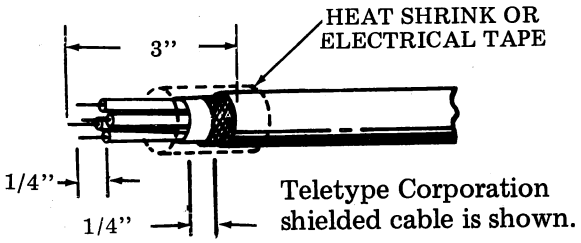


Fig. 69

③ Skin approximately 1/4 inch of insulation from the end of each of the wires.

④ Attach 405242 tag (orange) 3 inches from end of cable and mark tag.

(b) Termination box to be used: proceed to (c). Connector block to be used: proceed to 3.37.

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.

(c) Connect wires as shown in Fig. 70. The terminal blocks in the terminal 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 stub cable is necessary.

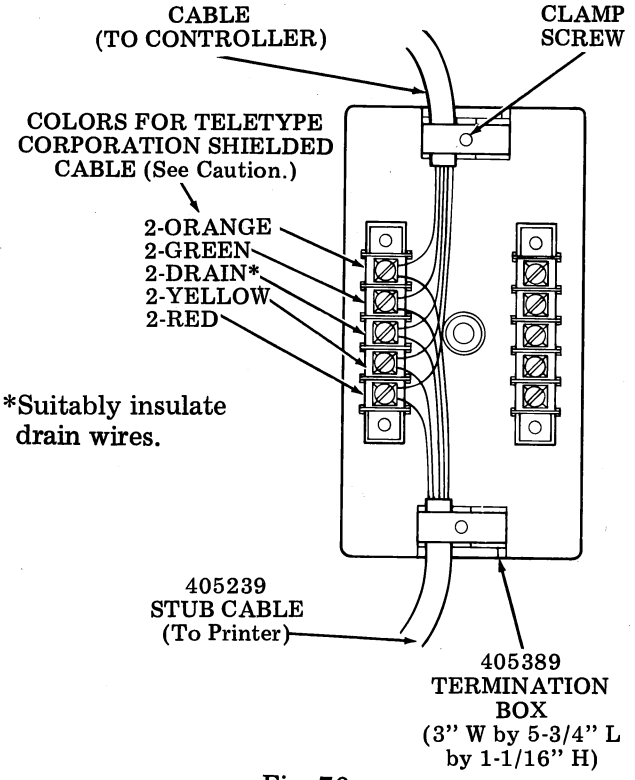


Fig. 70

Caution: Do not attempt terminating wires with and without spade terminals on the same connector block terminal. Caution of 3.22 applies to 405239 cable.

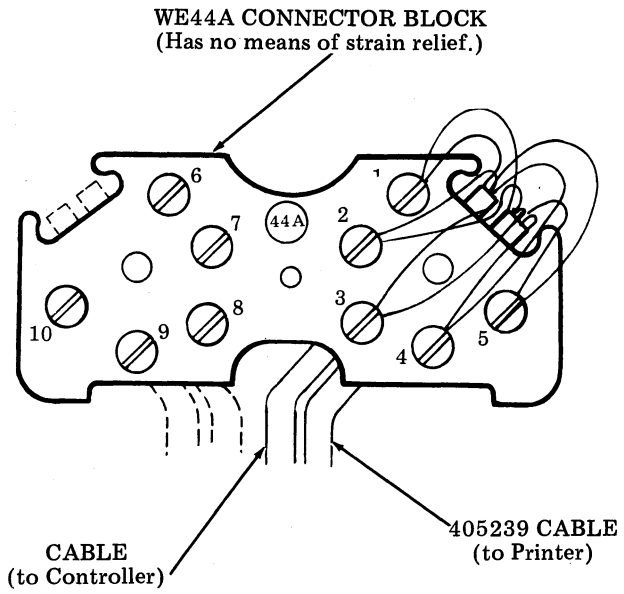
(d) When all connections have been made, recheck all terminals to insure that wire colors match (or correspond). Check that all screws are properly tightened and that all wires are solidly clamped.

(e) Install cover on termination box. Proceed to 3.38.

3.37 Alternate method for special length cable when connecting block is used:

(a) The cable end was prepared in 3.36(a). Connect wires as shown in Fig. 71. Spade terminals must be installed on all cable conductors.

(b) When all connections have been made, recheck all terminals to insure that wire color codes match (or correspond). Check that all screws are properly tightened and that all wires are solidly clamped.



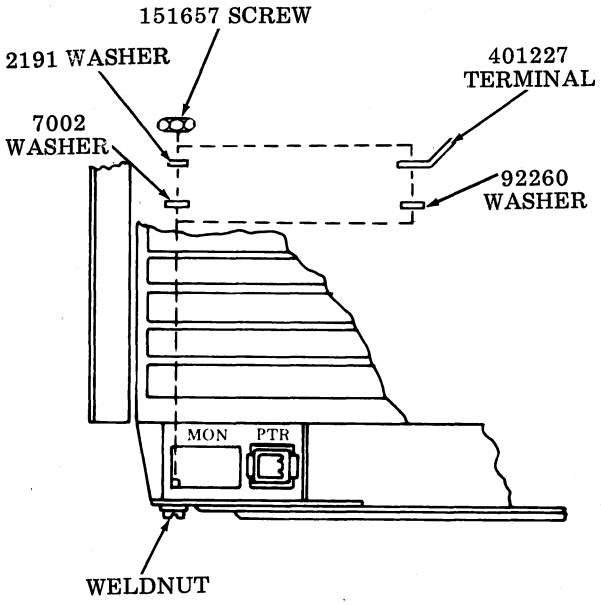
Colors for Teletype Corporation Shielded Cable (See Caution Below)	
1	Red
2	Yellow
3	Drain (Suitably insulated)
4	Green
5	Orange

Fig. 71

Caution: Caution of 3.22 applies to 405239 cable.

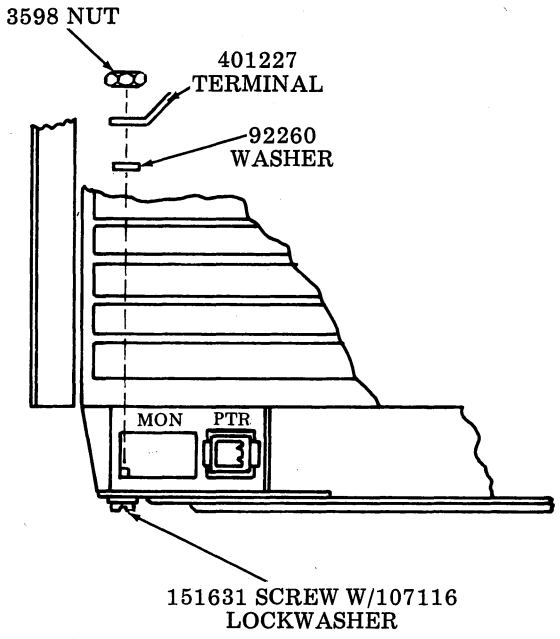
3.38 Printer in 40-Type Cabinet only: Connect printer to controller with SSI cable at printer. If cable is equipped with ground terminal, connect terminal to "ground lug" on cabinet (but see Caution of 3.22 which may apply). "Ground lugs" are part of 452220 installation kit. Refer to Fig. 72, 73 or 74 as applies.

Note: Forms access printer in forms access cabinet: ground lug is on rear of cabinet next to SSI connector.



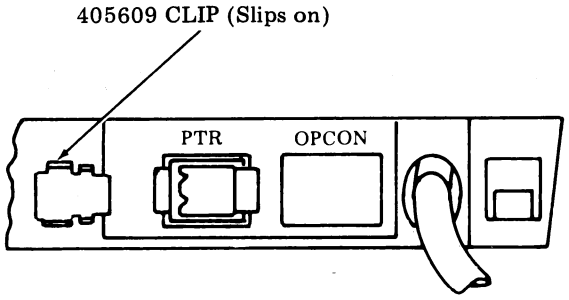
Friction Feed Line Printer in Early Design 40-Type Cabinet

Fig. 72



Friction Feed Line Printer in Late Design 40-Type Cabinet

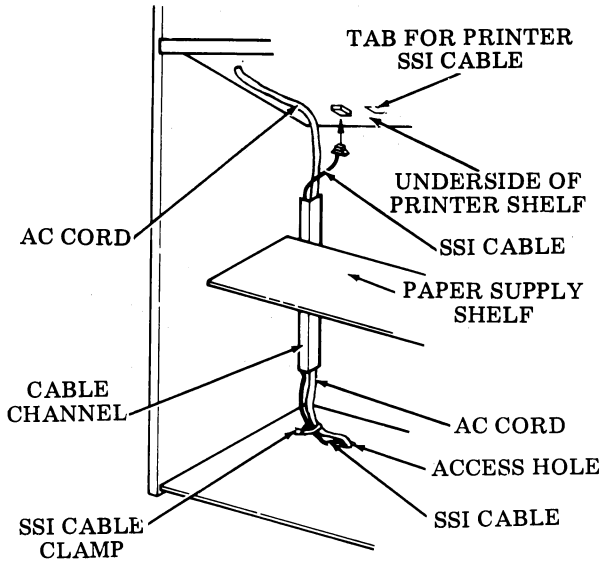
Fig. 73



Tractor Feed Line Printer in 40-Type Cabinet

Fig. 74

3.39 Tractor feed line printer in 4500-type cabinet only: The 45CAB701/AAA cabinet SSI connection is made on bottom of printer shelf. Caution of 3.22 may apply. Route SSI cable into cabinet through access hole (see Fig. 75). Connect SSI cable to connector on underside of shelf. Tuck SSI cable into cable channel. Remove nut that secures SSI cable clamp. Install clamp over cable. Slide clamp on cable so that when clamp is reinstalled on stud, some slack cable is present in cabinet. Secure clamp to stud with nut. Route printer ac cord out of cabinet access hole to rear. Install paper supply (see printer How to Operate, if required). Close cabinet lid (while pulling the latch lever on the right side of lid until past lower latch position). See printer How to Operate if required. Close cabinet door.



Partial Front View of 45CAB701/AA Cabinet (Door not shown)

Fig. 75

3.40 Connect printer or printer pedestal (as applies) ac cord to a 115 V ac outlet. Proceed to Section 582-300-500 and perform the line printer local test given in Chart 2.

CHARACTER PRINTER INSTALLATION

3.41 When a character printer is part of the station, use 3.42 through 3.50 to completely unpack, install, and test one printer. Perform the same functions for the next character printer, and so forth. When all character printers are installed and tested, proceed to 3.51.

3.42 Unpack and assemble printer table (45CAB603AAA), see Fig. 76 through 80. Top is not shown to scale. Place table in assigned location. If necessary, stabilize table by turning the leg levelers. Size of wrench required is 9/16-inch.

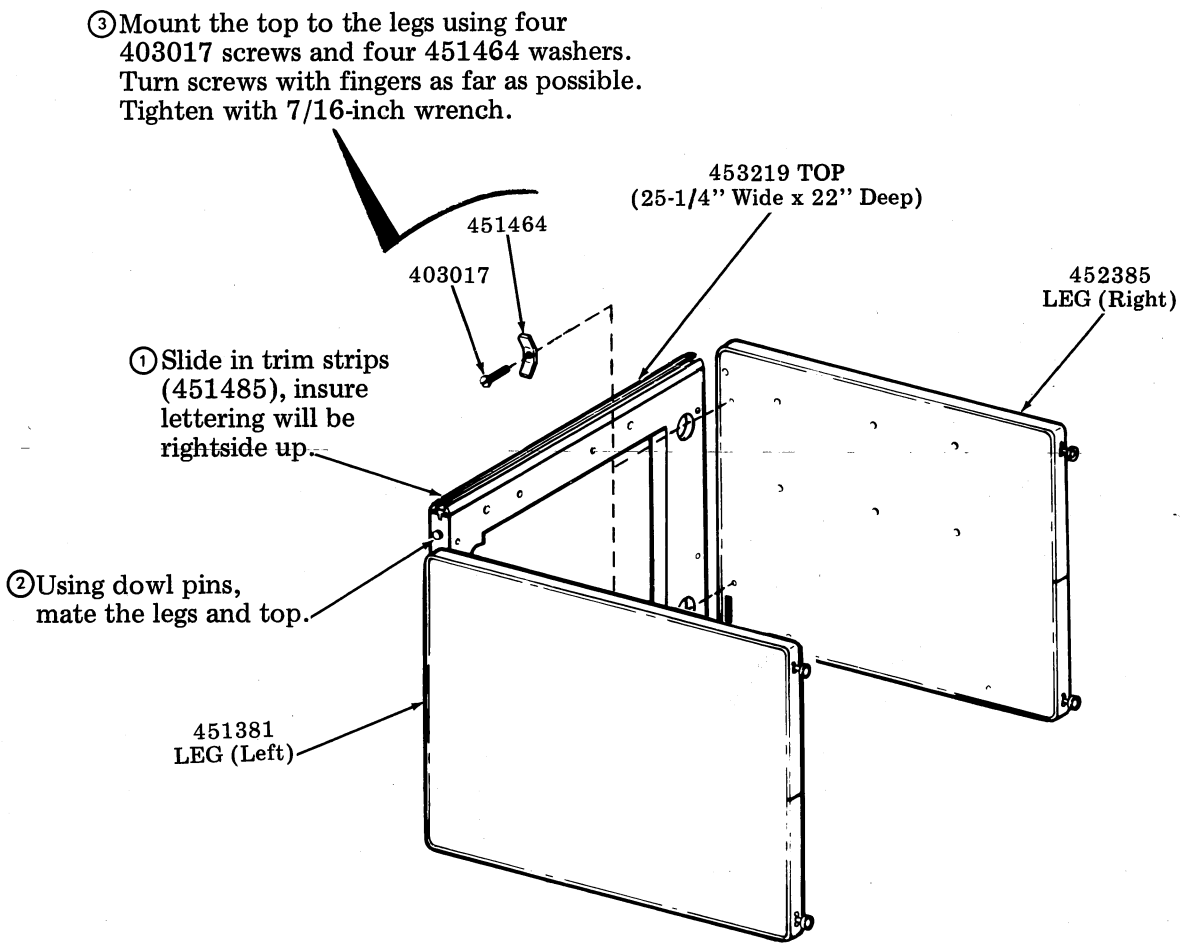
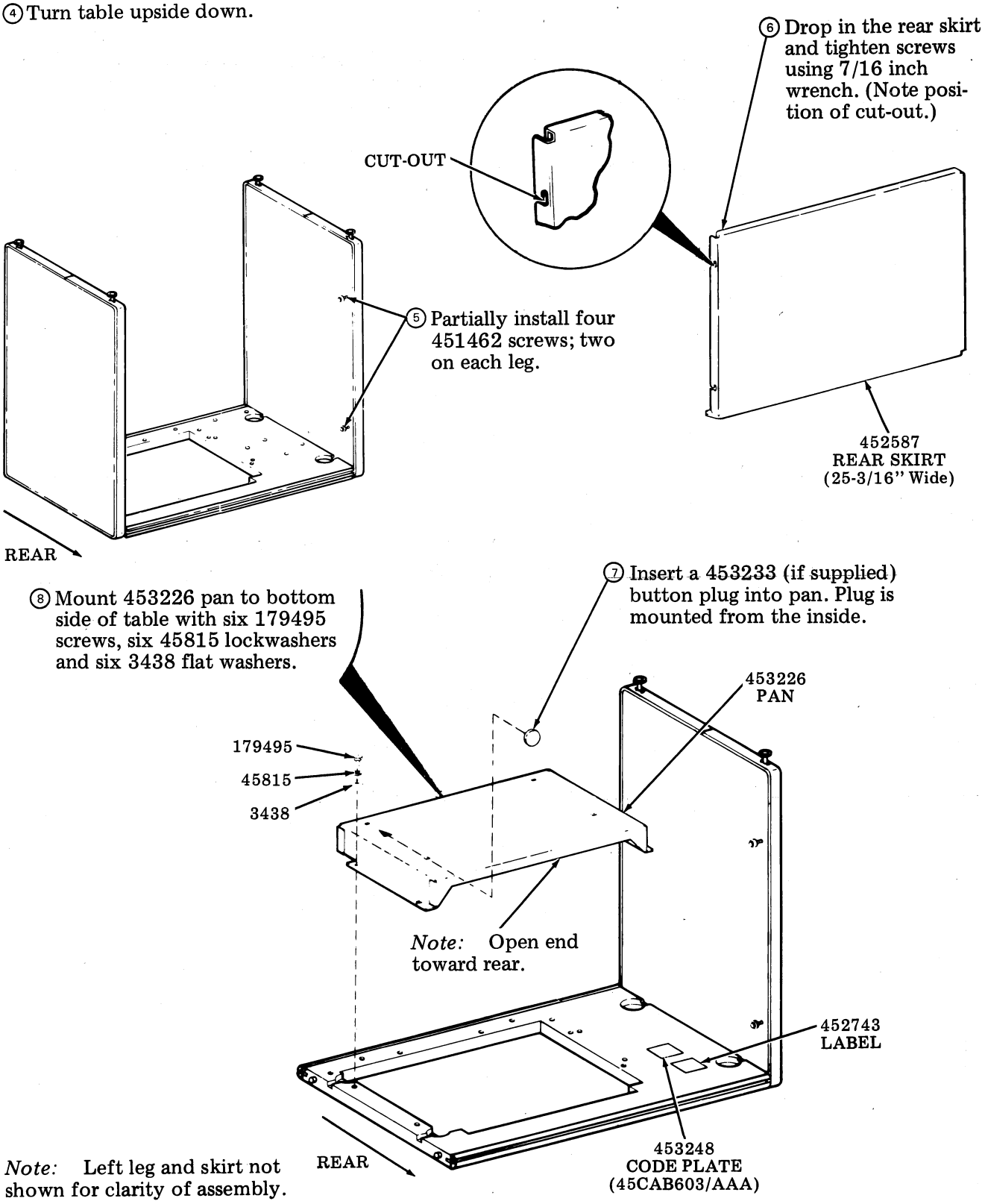


Fig. 76



Note: Left leg and skirt not shown for clarity of assembly.

Fig. 77

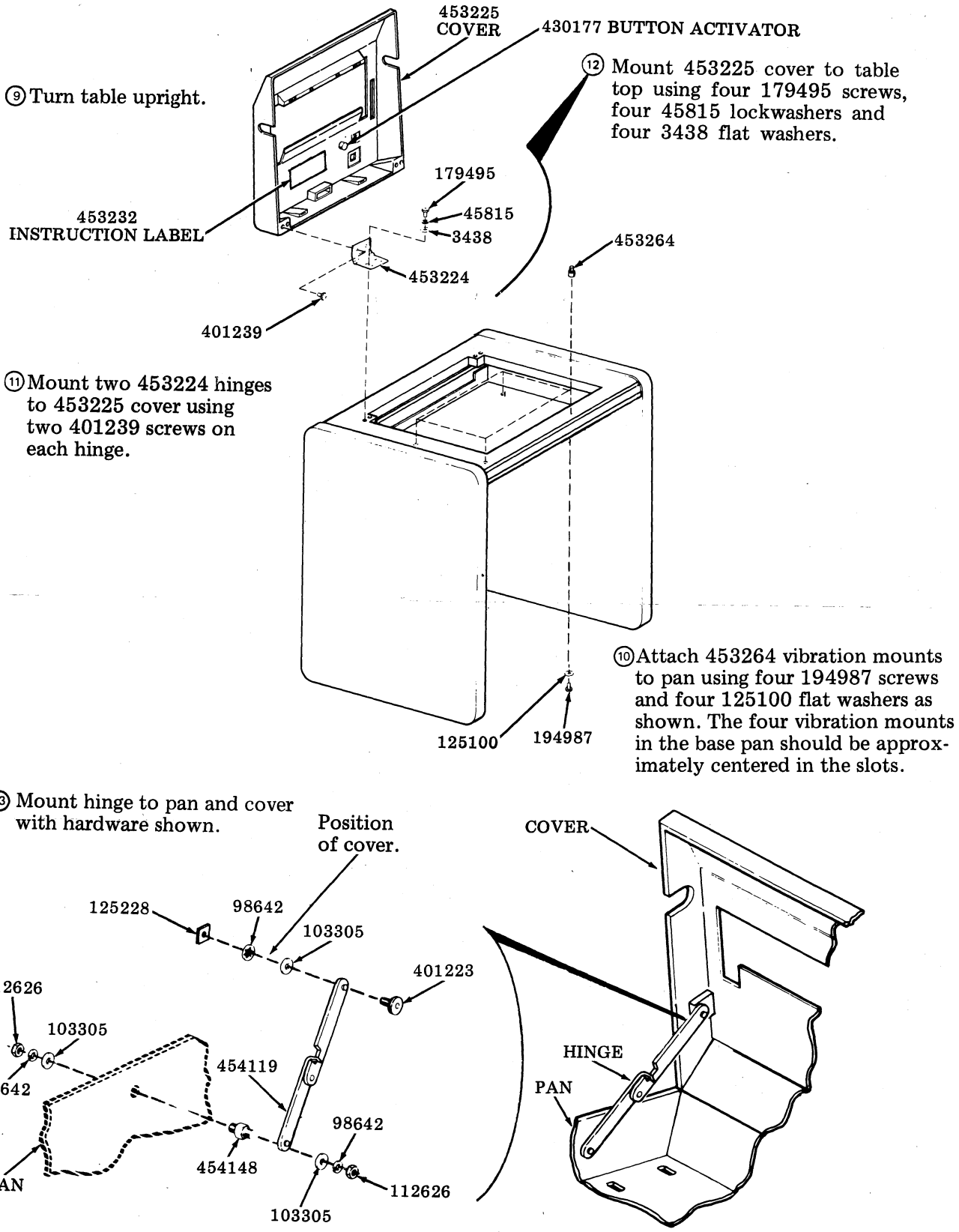
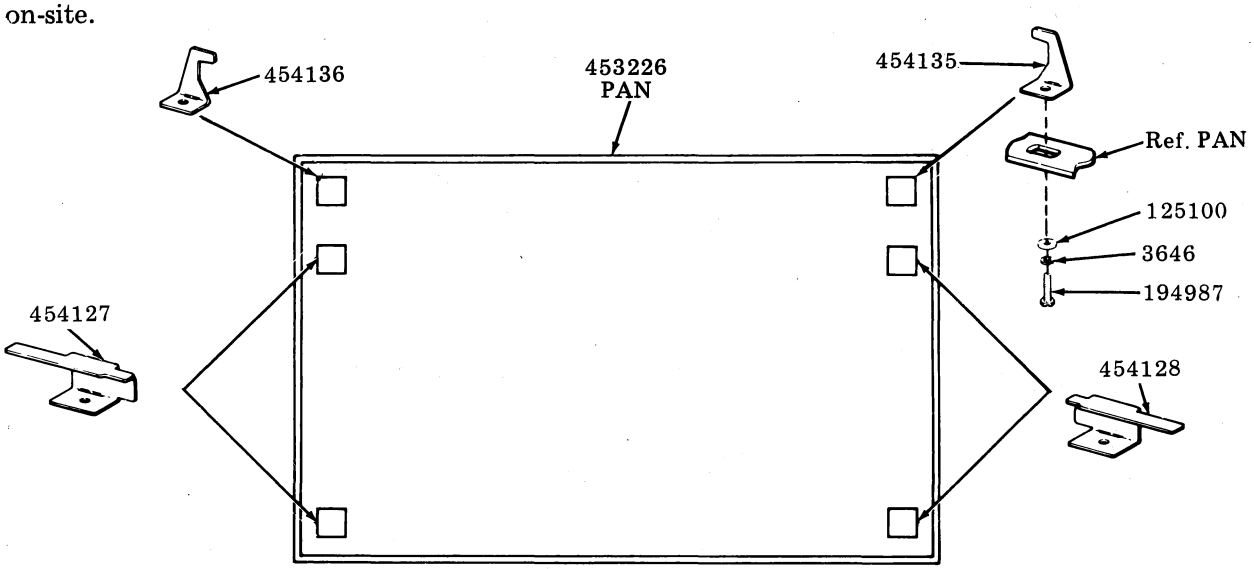

⑨Turn table upright.
453225 COVER
430177 BUTTON ACTIVATOR
⑫ Mount 453225 cover to table top using four 179495 screws, four 45815 lockwashers and four 3438 flat washers.
179495
45815
3438
453232 INSTRUCTION LABEL
453224
453264
401239
⑪Mount two 453224 hinges to 453225 cover using two 401239 screws on each hinge.
⑩Attach 453264 vibration mounts to pan using four 194987 screws and four 125100 flat washers as shown. The four vibration mounts in the base pan should be approximately centered in the slots.
125100
194987
⑬ Mount hinge to pan and cover with hardware shown.
Position of cover.
125228
98642
103305
401223
112626
103305
98642
454119
454148
98642
112626
103305
PAN
COVER
HINGE
PAN

Fig. 78

⑭ Mount the two rear clamps and four side clamps with the hardware shown. The hardware mounts from the bottom and the clamps mount on the top of the pan. Mount hardware in slots away from the center of the pan so that the printer can be installed. The clamps and brackets are provided for retaining the printer during shipment or movement on-site.



Pull center of hinge towards you. Close cover.
Fit the 453230 paper accumulator into the two slots in the back of 453225 cover.

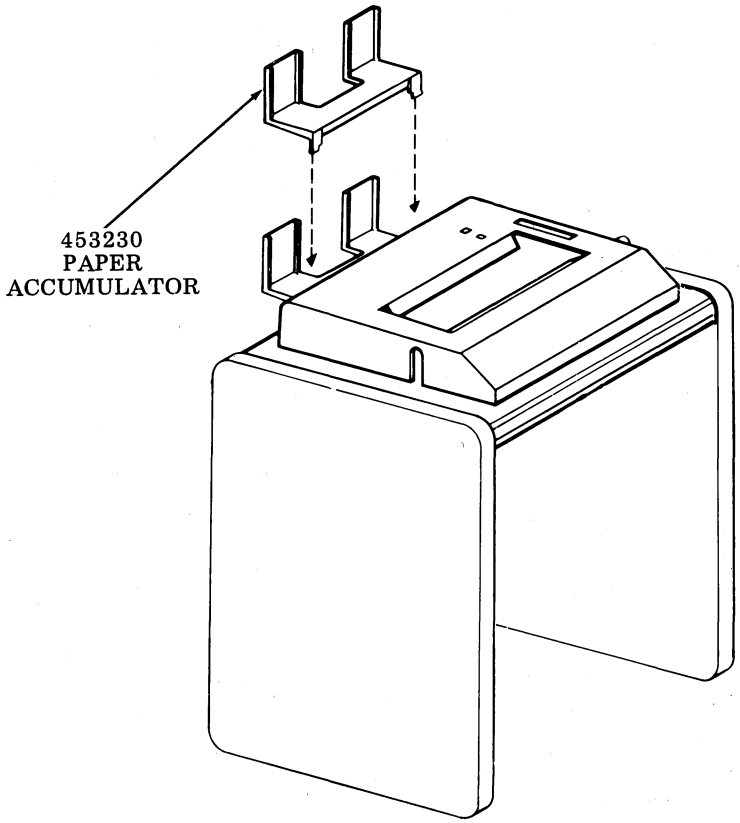
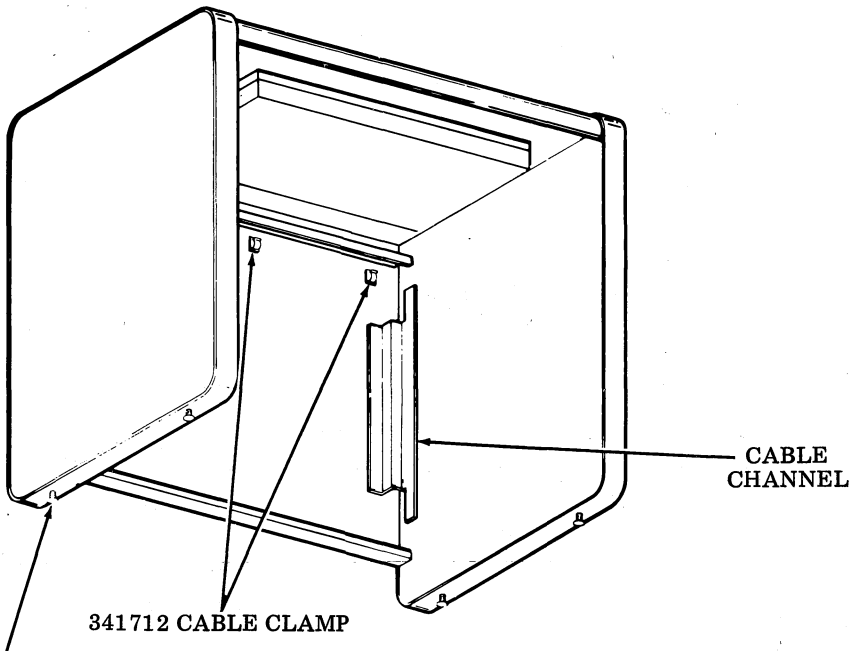


Fig. 79

⑯ Mount three 341712 cable clamps in approximately the positions shown. Do not install the 182531 clip (which is only used on a 45CAB502 table when an SCC is mounted under the table).

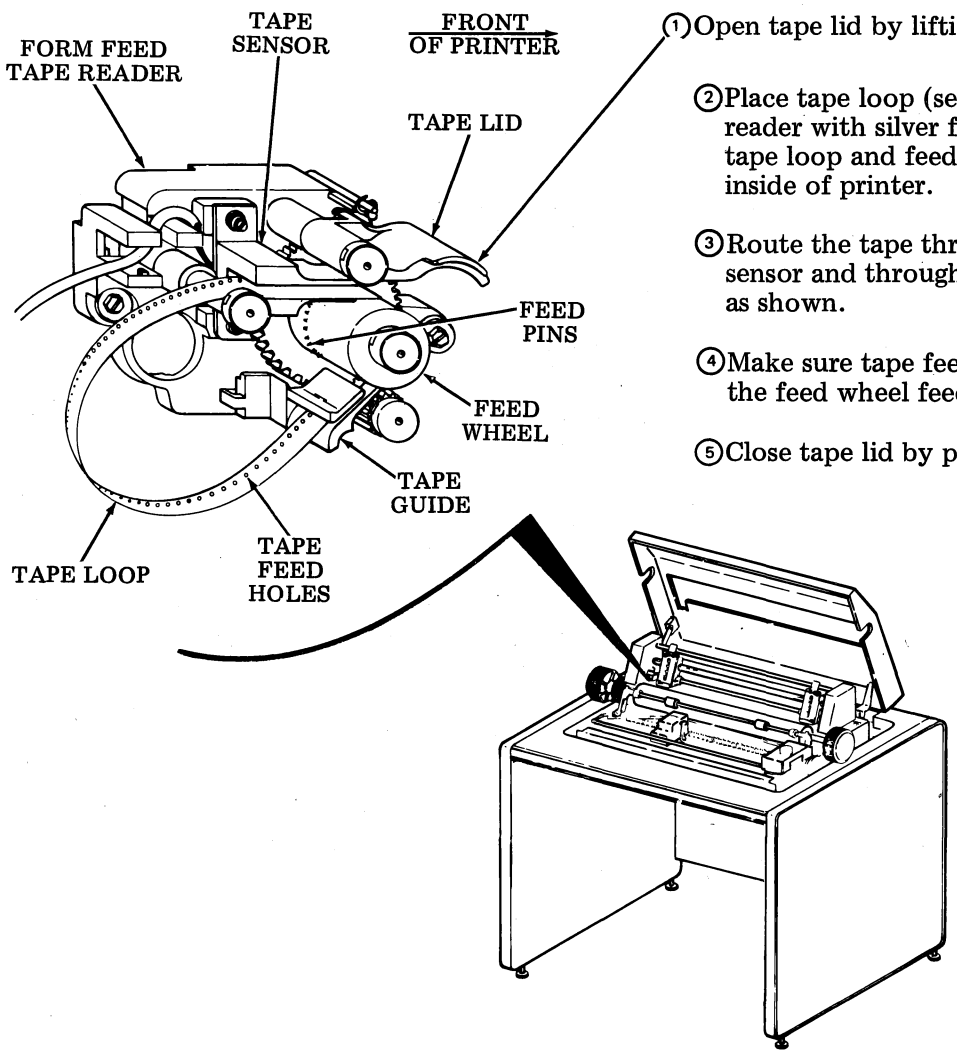


⑰ If necessary, stabilize table by turning 451376 leg levelers not reaching the floor. Size of wrench required is 9/16-inch.

Fig. 80

3.43 Unpack printer. Proceed to Part 4 and check printer options per service order. Since there are only printer options requirements for this application, no record of character printer options is required.

3.44 Check that proper top-of-form tape loop is installed in the form feed tape reader. The procedure for installing a tape loop is given in Fig. 81.



① Open tape lid by lifting up.

② Place tape loop (see list below) in reader with silver foil on inside of tape loop and feed holes facing inside of printer.

③ Route the tape through the tape sensor and through the tape guide as shown.

④ Make sure tape feed holes are over the feed wheel feed pins.

⑤ Close tape lid by pushing down.

FORM OUT LENGTH (Inches)	PART NUMBER	FORM OUT LENGTH (Inches)	PART NUMBER
2-1/3	453049	6-1/2	453060
3	453050	7	453061
3-1/3	453051	7-1/2	453062
3-1/2	453052	8	453063
3-2/3	453053	8-1/2	453064
4	453054	9	453065
4-1/3	453055	10	453066
4-2/3	453056	11	453067
5	453057	12	453068
5-1/2	453058	13	453069
6	453059	14	453070

Fig. 81

3.45 Raise printer cover and open latch. Install printer on the four 453264 vibration mounts shown in Fig. 78.

3.46 Install paper and ribbon (refer to label on inside of cover). Maximum paper width: 15 inches edge to edge.

3.47 If one of the assembled type SSI cables of Fig. 66 will be used to connect to the printer, proceed to 3.48. If an SSI connector is not on the printer end of the SSI cable, follow the instructions of 3.34 through 3.37, as applies, and prepare the cable end, then proceed to 3.48.

3.48 Route SSI cable up through cable channel and across through cable clips (Fig. 80). Connect cable to rear of printer.

3.49 Route printer ac cord from rear of printer across through cable clamps and down through cable channel. Connect cord to 115 Vac outlet.

3.50 Proceed to Section 582-300-500 and perform the character printer local test given in Chart 2.

Note: To register forms, depress PAPER/FORM key (printer form feeds), push in on left platen knob and rotate knob to intended first print line position, then release knob.

UNPACKING FIRST KD (DEVICE 0)

3.51 Move boxes related to first KD to assigned location of first KD. For maintenance purposes, the first KD should be the closest device to the controller.

3.52 Unpack boxes for first KD.

ASSEMBLY OF 4500-TYPE TABLE

3.53 If a table is part of the first KD, proceed to 3.54. Otherwise proceed to 3.55.

3.54 Unpack and assemble the table. See Fig. 82 through 84.

Note 1: There are six anchor nuts located here on 451431 and 451432 tops; but none on 451433 top.

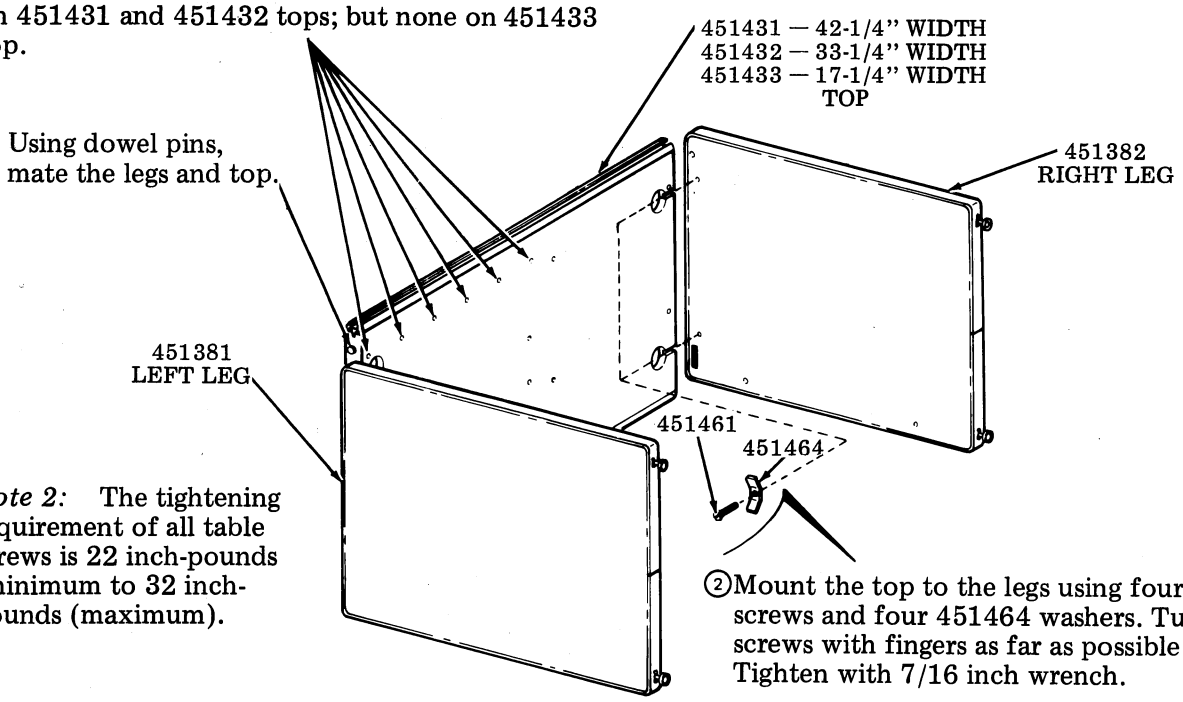


Fig. 82

③Turn table upside down.

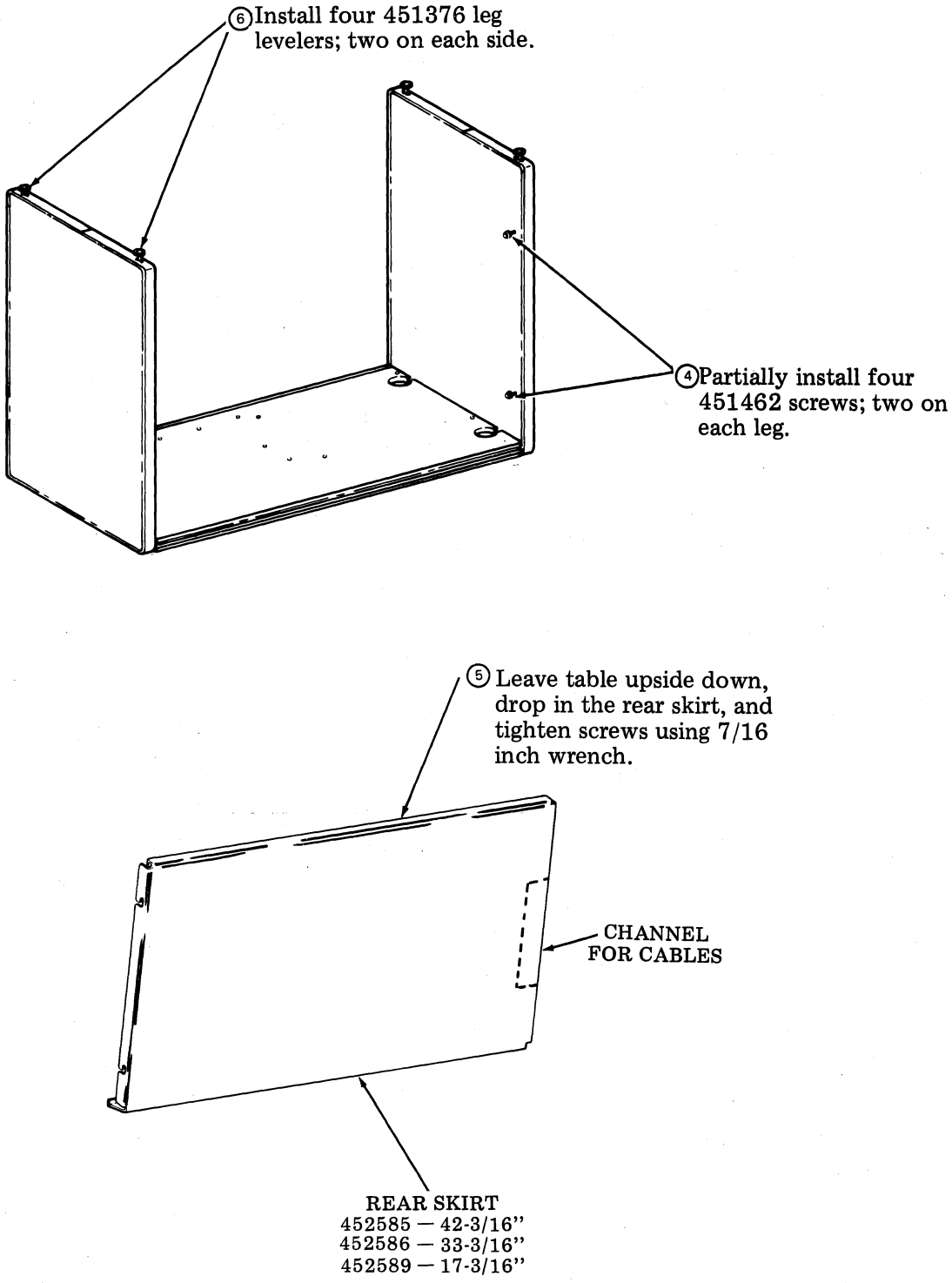


Fig. 83

⑦ 45CAB501/AAA and 45CAB502/AAA Tables (Only): Mount keyboard brackets to bridging bracket, and mount to table.

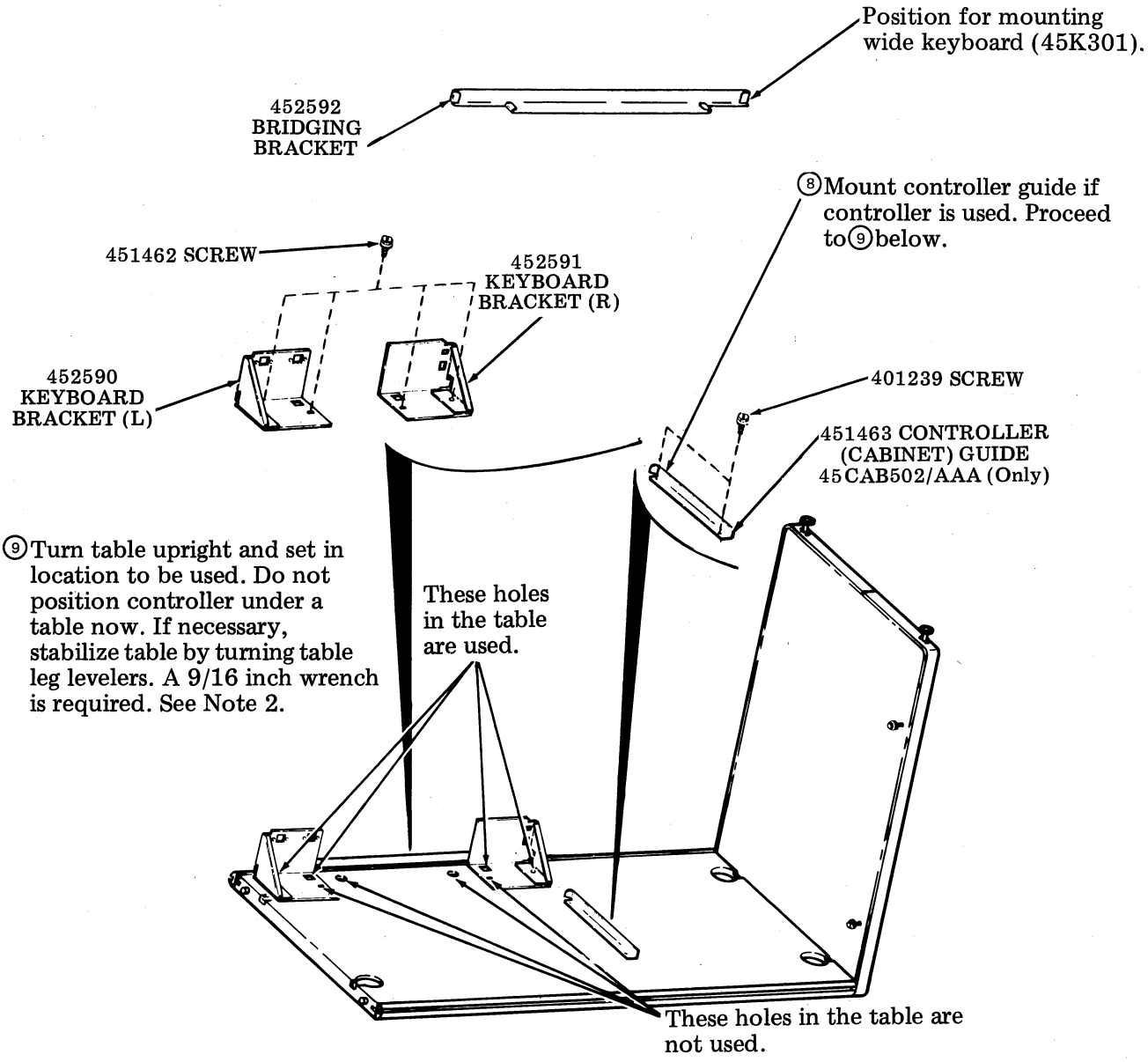


Fig. 84

Note 1: Left leg and skirt not shown in Fig. 84 for clarity of assembly.

Note 2: You may choose to attach the 452015 cable (part of the display) to the table before performing ⑨, provided the display has been unpacked and the 452015 cable is disconnected from the display. See Fig. 85.

ASSEMBLY OF DISPLAY

3.55 Unpack the display as described below. The display has several designations:

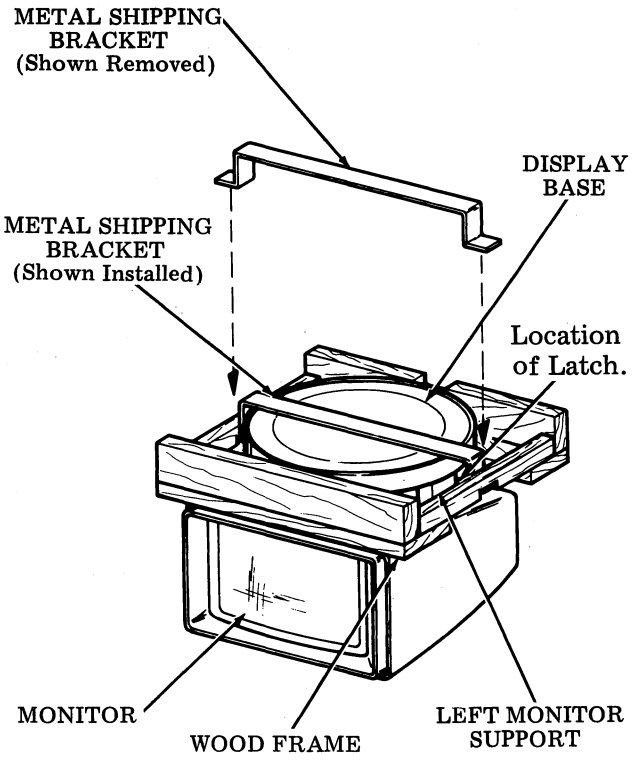
- 45D101/XX
- 45D102/XX
- 45C310/XXX/999 (includes 452015 cable but not monitor)

(452005 base assembly is not available, order 45C310/XXX/999 if spare is required.)

Caution: A 40MN101/AA is generally used; however, a 40MN201/AA may be required to avoid "waviness" of displayed data when the 60 hertz voltage varies by more than 0.1% for an extended time. The 40MN201/AA can operate over a range of 48 hertz to 62 hertz. A 45D102/XX is identical to a 45D101/XX except the 102 has a 40MN201/AA instead of a 40MN101/AA.

Warning 1: If the left leg does not seat, remove monitor and check that the cable in the left leg of the monitor is dressed to the rear. It may be necessary to squeeze the monitor legs towards each other to install the monitor.

Warning 2: A monitor manufactured before June 1979 can be lifted off without releasing any latches, however, a small metal latch on the top of the rear of the left leg of monitors manufactured after May 1979 must be released (pushed forward) to be able to lift off the monitor. See Fig. 86.



Late Design Pack

Fig. 85

Late design pack (steps 1 through 15):

① Open top of outside box.

② Remove the four corner pads.

③ Open top of inner box.

④ Remove rear detail (with plastic bottom plate) and front detail.

⑤ Lift out display (grasp under monitor and lift out display).

⑥ Leave clear plastic cover over display, turn display upside down.

⑦ With display upside down (see Fig. 85), push in on one side of the metal shipping bracket so that it clears side of wood frame, and move bracket clear of frame.

⑧ Remove bracket. If cable is attached to base, uncoil cable.

⑨ Release latch on left monitor support (use screwdriver) and lift off display base. Turn display base right side up.

⑩ Peel off any protective plastic film from top of display base. Remove any adhesive remaining on the base.

⑪ Remove the four screws (not shown) that secure wood frame to monitor.

⑫ Remove wood frame and two metal shipping details from monitor. Remove shipping tape from the monitor supports (legs).

⑬ Reassemble display base to monitor. (Observe arrow on base indicating front).

⑭ Connect cable to display base (if not already connected). Refer to Fig. 86.

⑮ Turn monitor and display base right side up. Remove clear plastic cover from monitor. Proceed to 3.56 (3).

Early design pack (Steps 16 through 23)
(Manufactured before December 1979)

⑯ Open top of outside box, remove the four corner pads.

⑰ Open top of inner box, then open top on innermost box.

⑱ Unpack the display base, peel off any protective plastic film from top of display base. Remove any adhesive remaining on the base.

⑲ Remove innermost box, open top of box underneath.

⑳ Remove packing details from box. Find plastic bottom plate (Fig. 89).

㉑ Place monitor upside down and remove packing details. Remove shipping tape from monitor supports (legs).

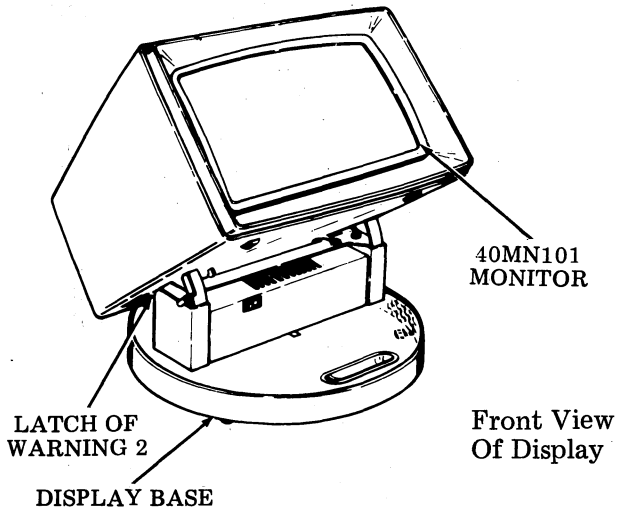
㉒ If 452015 cable is furnished separately from display base, turn display base upside down and remove the 451331 screw. See Fig. 86. Connect cable to display, install and tighten the 451331 screw. Turn display base right side up.

Danger: When installing monitor, keep your hands clear of the bottom of the monitor posts to avoid injury. Wear safety glasses.

㉓ Place monitor on display base posts, the tube face must face the front of the display base.

3.56 Prepare display for operation:

① Place display on assigned table.



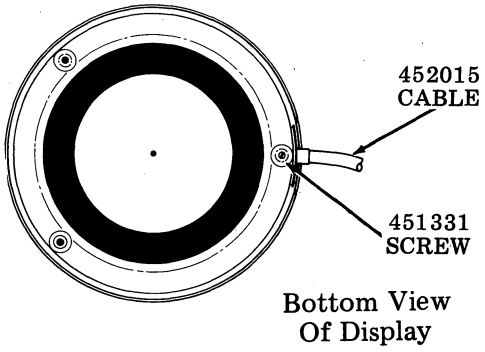


Fig. 86

② Tilt the Monitor back and:

Later Tilt Lever Style — Reach in on right side by the tilt lever and push the end of the 406152 latch spring to the front. With 406152 held to the front, pull tilt lever to right and move lever to rear. Release the latch spring. See Fig. 87.

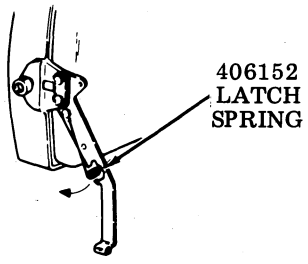


Fig. 87

Early Tilt Lever Style — Remove PK material from tube tilt mechanism.

Tilt Wheel Style — Remove 341719 and packing clip from tube tilt mechanism. Retain clip for future repacking. See Fig. 88.

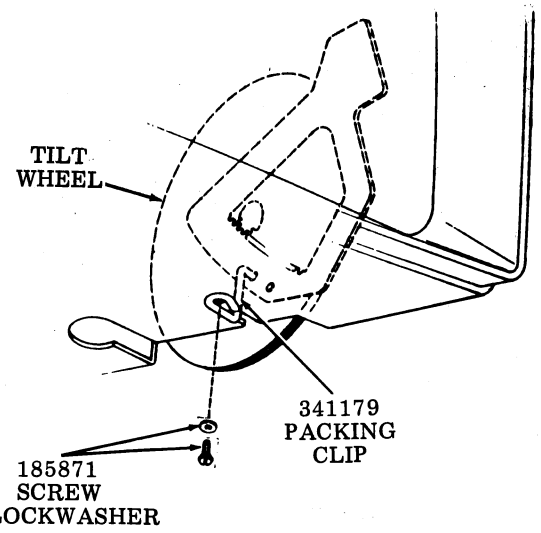


Fig. 88

③ Install the plastic bottom plate (packed separately). It snaps on with four studs that are part of the bottom plate. See Fig. 89.

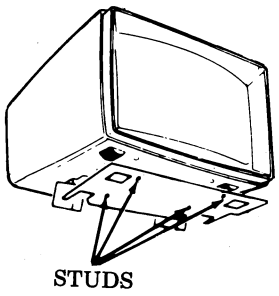


Fig. 89

Note: Later Tilt Lever Style — The bottom plate prevents the latch spring from being accidentally engaged in the shipping position.

④ The SSI cable from the controller is connected at the KD later. Proceed to 3.57 for KD on 4500-type table or 3.59 for KD on customer table.

DISPLAY CABLE ROUTING FOR KD ON 4500-TYPE TABLE

Danger: Keep your head clear of the keyboard brackets.

3.57 Each 4500-type table that will be used to mount a KD must have the junction box of the 452015 cable (part of 45D101/XX) mounted under the table. See Fig. 90.

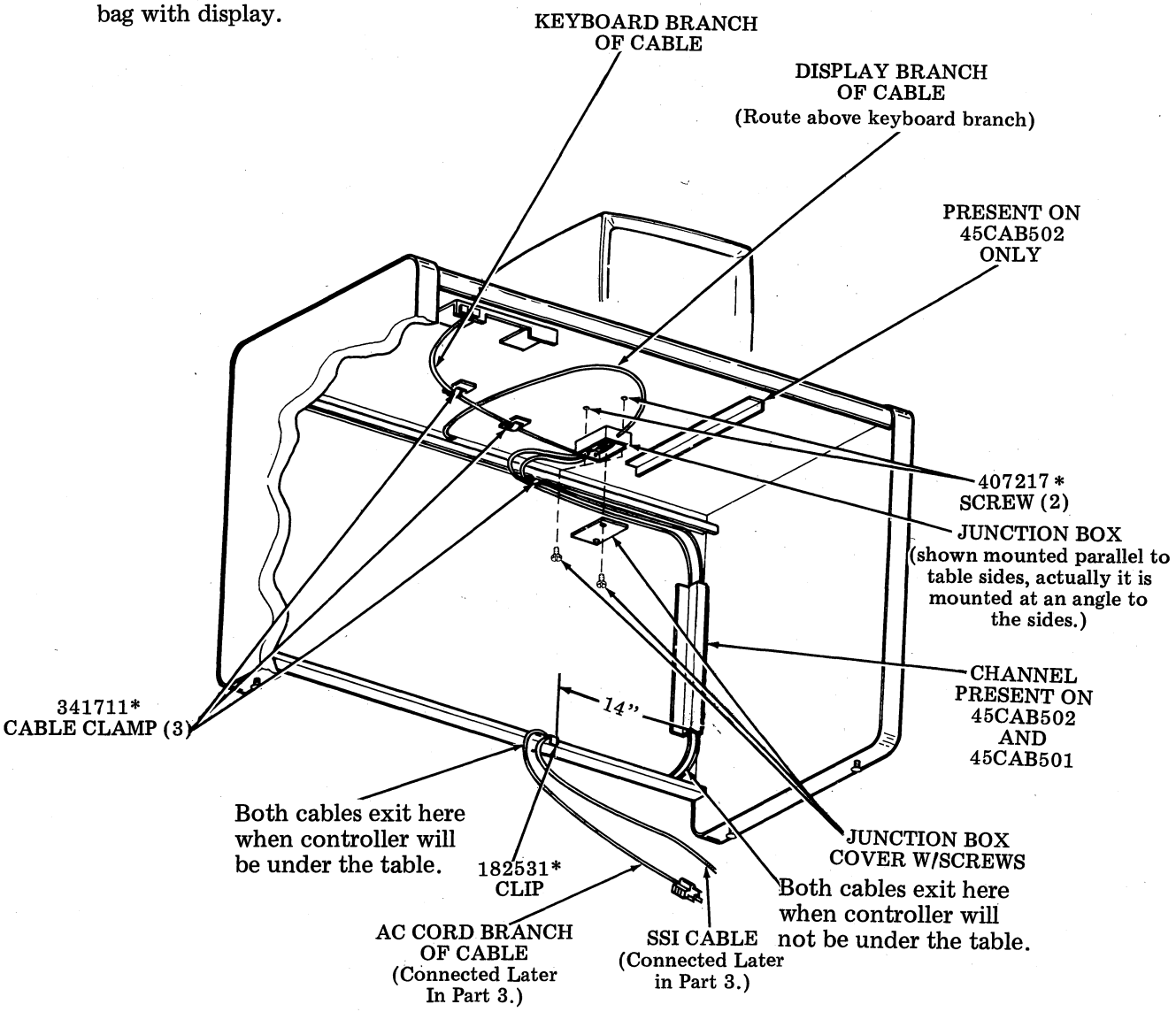
① Route the display base cable from the display to the underside of the table through the slot between the rear skirt and the table top. Avoid unnatural twisting or capturing of the display branch so that smooth travel of the cable will occur when the display is slid on the table.

② See Fig. 91. Remove the two 451329 screws and the cover from the junction box, (Fig. 90). Assemble the junction box (observe orientation of cables) to the underside of the table top, using two 407217 screws.

③ 45K301 only: Route the 9-pin connector branch of the cable from the junction box to the right-hand hole in the keyboard bracket and insert the connector (keyway up). The 9-pin connector branch of the cable should be under the display branch.

④ Install two 341711 cable clamps for the 9-pin connector branch of the cable to the underside of the table top and slip the cable into the clamps.

*Hardware marked with an asterisk is furnished in a bag with display.



Underside of 45CAB502 table is shown.

Cable Routing

Fig. 90

⑤ Route the ac cord from the junction box to the lower edge of the rear skirt through the channel as shown in Fig. 90. Mount a 341711 cable clamp on the top edge of the rear skirt (to the rear of the junction box). Slip the ac cable into the clamp.

⑥ If the controller will be mounted under the table, install a 182531 clip on the bottom of the rear skirt as shown in Fig. 90. Route the ac cord through the clip and tuck the cable into the lower channel of the rear skirt. Do not apply power to the cord now.

⑦ If the controller will not be mounted under the table, do not install a 182531 speed clip on the bottom of the rear skirt. Route the ac cable out of the table at the corner, as shown in Fig. 90. Do not apply power to the cable now.

3.58 The SSI cable from the controller to the KD is connected to KD inside the junction box later in 3. After the connection is made, the cover is installed on the junction box and secured with the two 451329 screws.

DISPLAY CABLE ROUTING FOR KD ON CUSTOMER TABLE

3.59 Each customer table that will be used to mount a KD must have the 452015 cable (part of 45D101/XX) routed.

① Remove two 451329 screws (early design cable), four 451329 screws (late design cable) and the cover from the junction box, which is part of the 452015 cable. Retain the cover and screws. See Fig. 91.

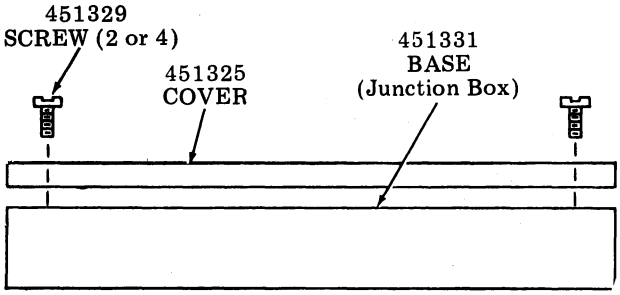


Fig. 91

② Route the display branch of the cable to the rear of the table and down the rear skirt of the table. Avoid unnatural twisting or capturing of the branch so that smooth travel of the cable will occur when the display is slid on the table.

③ Choose a position for the junction box on the rear skirt so that the monitor and keyboard can be placed on the table top as desired by the customer.

④ Attach the junction box to the rear skirt with adhesive-backed tape (furnished in bag with display) or locally provided hardware, using the two junction box mounting holes shown in Fig. 99.

3.60 The SSI cable from the controller to the KD is connected to the KD inside the junction box later in Part 3. After the connection is made, the cover is installed on the junction box and secured with the two 451329 screws.

INSTALLATION OF KEYBOARD

3.61 If the service order calls for some KD not to have print local capability, a separately ordered blocking keytop (340701) can be installed in the print local position. Install such blocking keytops before the keyboard is installed. Present factory pack for keyboards requires installing the keyboard cover on the keyboard with the latches on the side frames. The exception is the 45K301-type keyboard which is shipped with the cover assembled to the keyboard. Keyboard layouts are shown in Section 582-300-500, Part 2. Typewriter style ASCII keyboards should be equipped with these keytops:

340826 ($\hat{6}$), 340890 ($\underline{=}$), 340889 ($\underline{+}$).

Typewriter-style EBCDIC keyboards should be equipped with these keytops:

341027 ($\underset{6}{¢}$), 341029 ($\underline{=}$), 341028 ($\underline{+}$).

All keyboards (except 45K301-type) are furnished from the factory with a CAPS LOCK keytop (340894) and a blocking keytop (340714) for the CAPS LOCK location. Check that the appropriate keytop is installed.

Caution 1: Before installing keyboard, check that power is off at associated display base to avoid possible clamp-down of display base power supply voltages. Section 582-300-500 provides a recovery method.

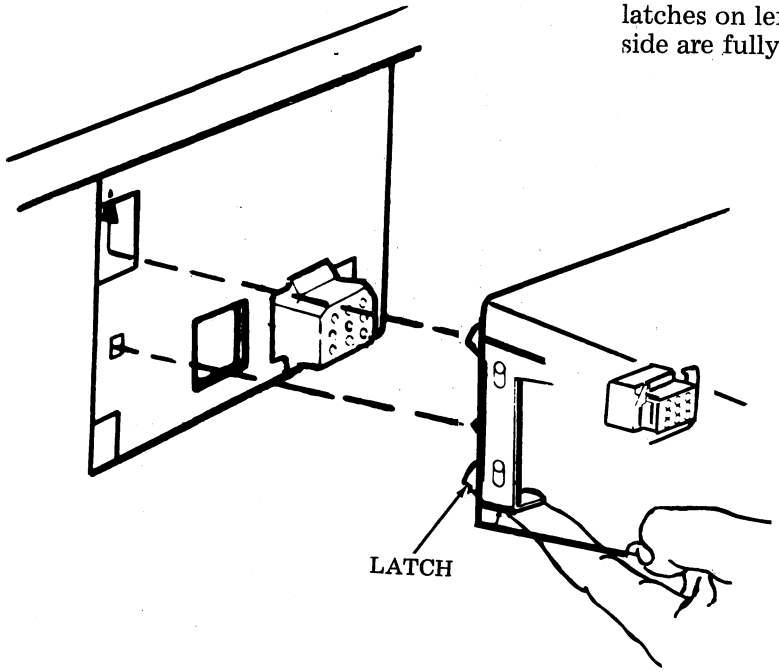
Caution 2: The keyboard lock modification kits used on 40/4 cannot be used on 4540. A new modification kit (347300) is required when a keyboard lock is desired. This 347300 modification kit applies only to 45K301-type keyboards.

A. Attached Style Keyboard

3.62 Install keyboard on table as shown in Fig. 92.

Caution: The only keyboard which can be attached is the 45K301-type. If another type of keyboard is attached, improper operation may result.

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



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

Fig. 92

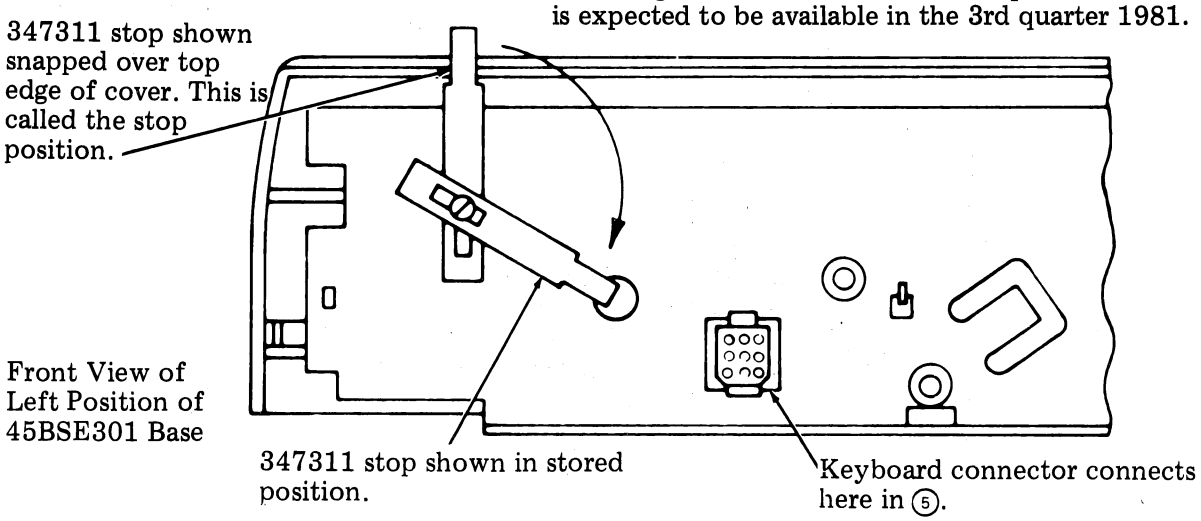
B. Free-Standing Style Keyboard

3.63 Use 40BSE201 base for 40K104/DAB or 40K105/CAA keyboard. Use 40BSE202 base for 40K203/GAB keyboard. Use 45BSE301 base for 45K301/GAA/XX keyboard. "XX" is "02" for Magnetic Strip Reader (MSR). "XX" is "03" if there is no magnetic strip reader.

Assemble the keyboard to the keyboard base. See Fig. 93, 94 and 95.

①(Step 1 applies only to 45BSE301.) When keyboard is an early design 45K301/GAA/02 (see Note), disengage the stop and rotate it to the stop position. For 45K301/GAA/03 or late design 45K301/GAA/02, raise the stop out of the notch in the base and rotate it to the stored position.

Note: The early design 02 has an MSR with no stop. The late design 02 has an MSR with a stop. The late design 02 is expected to be available in the 3rd quarter 1981.



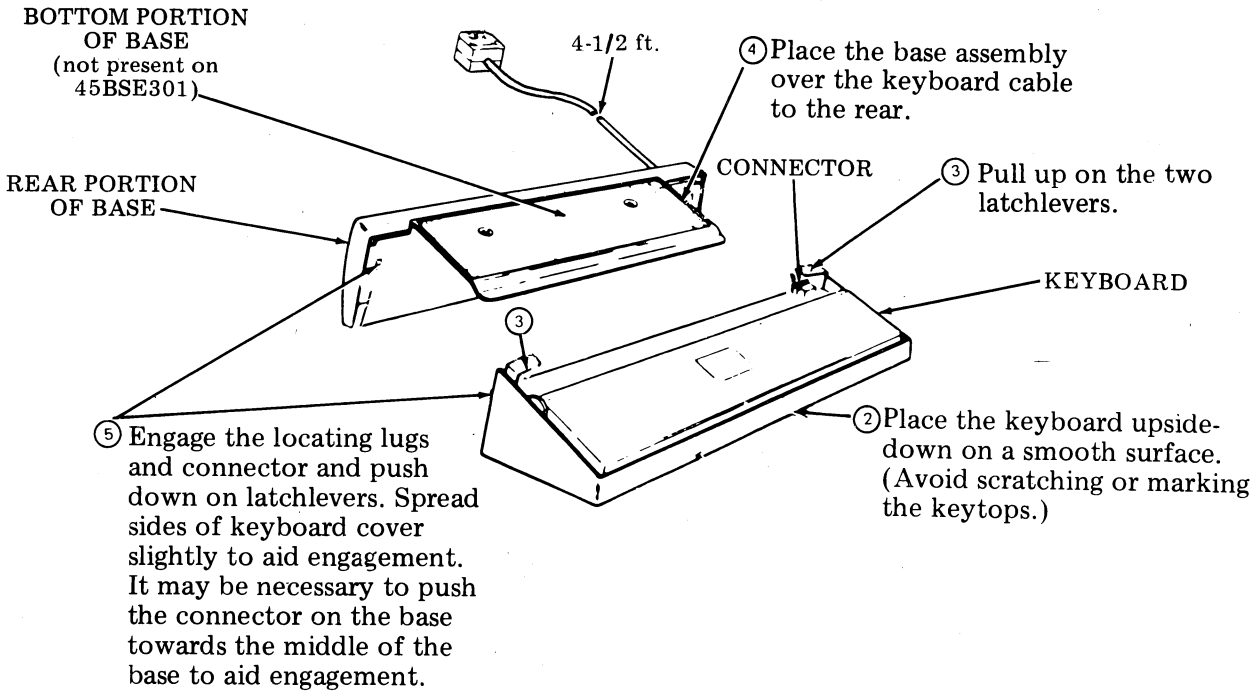
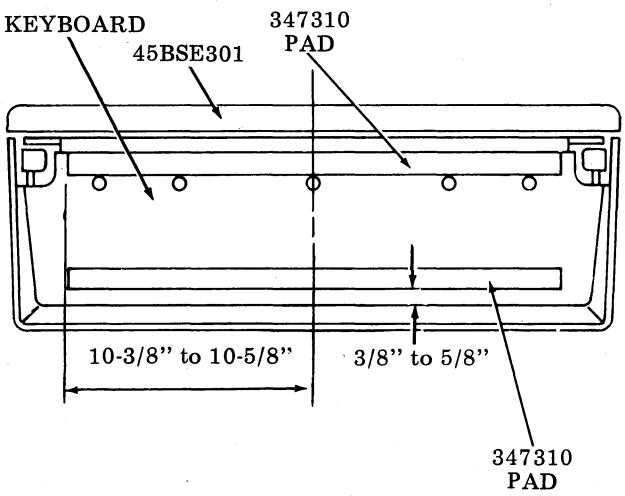


Fig. 93

⑥(Not applicable to 45BSE301.) Install bottom cover with pad by following instructions furnished with base (408894 for 40BSE201, 346921 for 40BSE202). Installation of drive fasteners may require more than finger pressure. (If a replacement fastener is required, order by this part number: 453959.)



Bottom View of 45BSE301

Fig. 94

⑦ 45BSE301 only: If pads are not installed on bottom of keyboard, check that bottom is clean, remove paper backing from pads furnished with base (handling pads by edges), locate pads as shown, and apply firm pressure over length of each pad.

⑧ Place keyboard right-side-up on customer table.

⑨Remove the two 401716 strain reliefs and two 337826 screws (these are the two short screws — 1/2 inches long) from the bag furnished with the display. Install this hardware on "keyboard end" of display cable. Start by bending the ears toward the wired end and insert the ears in the slots of one strain relief.

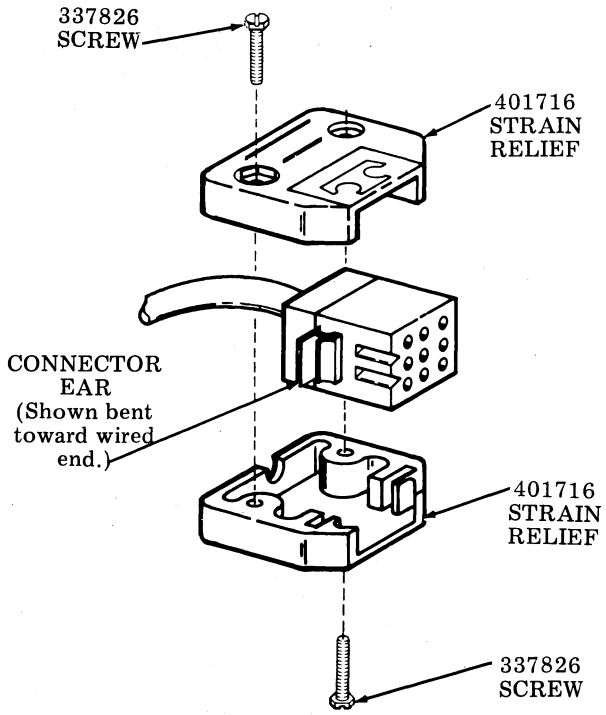
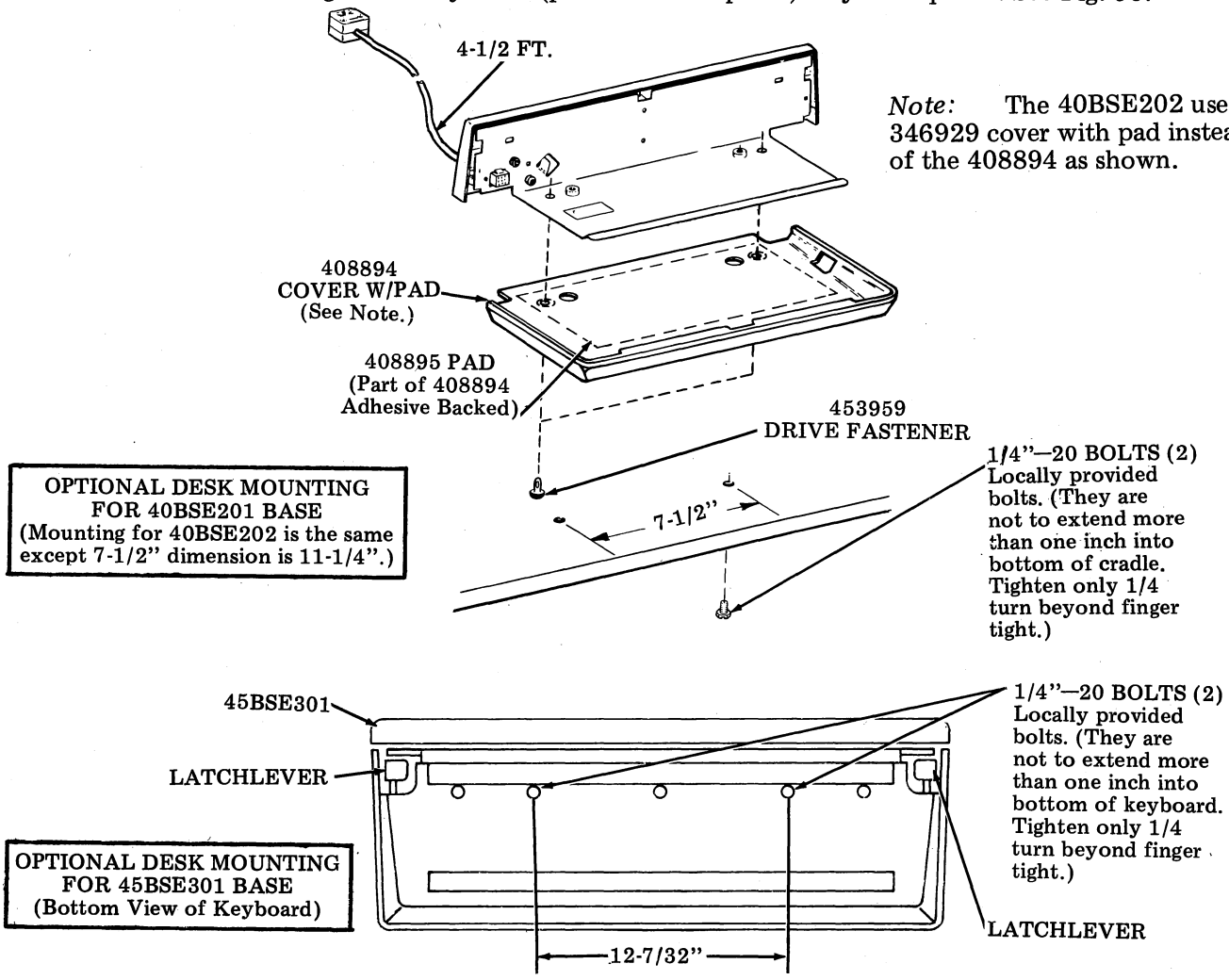


Fig. 95

⑩Connect base cable (part of keyboard base) to the keyboard branch of the 452015 cable (part of 45D101/XX). Route both cables to avoid unnatural twisting or capturing of the cables so that smooth travel of the cables will occur when the keyboard is slid on the table.

3.64 Permanent mounting of the keyboard (per customer option) may be required. See Fig. 96.



Note: The 40BSE202 uses a 346929 cover with pad instead of the 408894 as shown.

Fig. 96

SSI CABLE CONNECTION AT KD

3.65 One of three standard SSI cable lengths, or one special cable length (SCC to KD cable length not to exceed 5000 feet) may be used between the controller and a KD. See Fig. 97.

Standard length
(Assembled Type)
Cable:

452223 (12 feet)
452224 (25 feet)
452225 (50 feet)

Special length
(Unassembled Type) Cable:

Made from 406318 (500 feet), 406319 (2000 feet), or 406320 (5000 feet). A 452219 installation kit is also required.

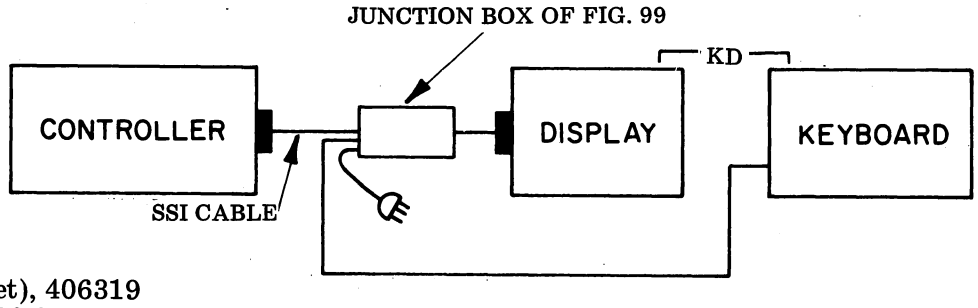


Fig. 97

(a) Assembled type cable only: Mark tag at the KD end of cable. If terminals were removed from connector to facilitate cable pulling, insert terminals in connector (see Fig. 98).

(b) Unassembled type cable only: Remove required parts from a 452219 installation kit (for 5 KDs). The remainder of this step depends on which design of the 452015 cable (part of display base) is furnished. See Fig. 99 for identification of the designs of the cable.

"Method A" for early design 452015 is described in 3.16 and 3.17 and Fig. 98.

"Method B" for late design 452015 is described in Fig. 98.

Prepare cable end as shown in Fig. 98, which shows Teletype Corporation cable. The caution of 3.22 applies. Mark the 405242 cable tag (orange). Attach the tag 3 inches from the tubing (or tape).

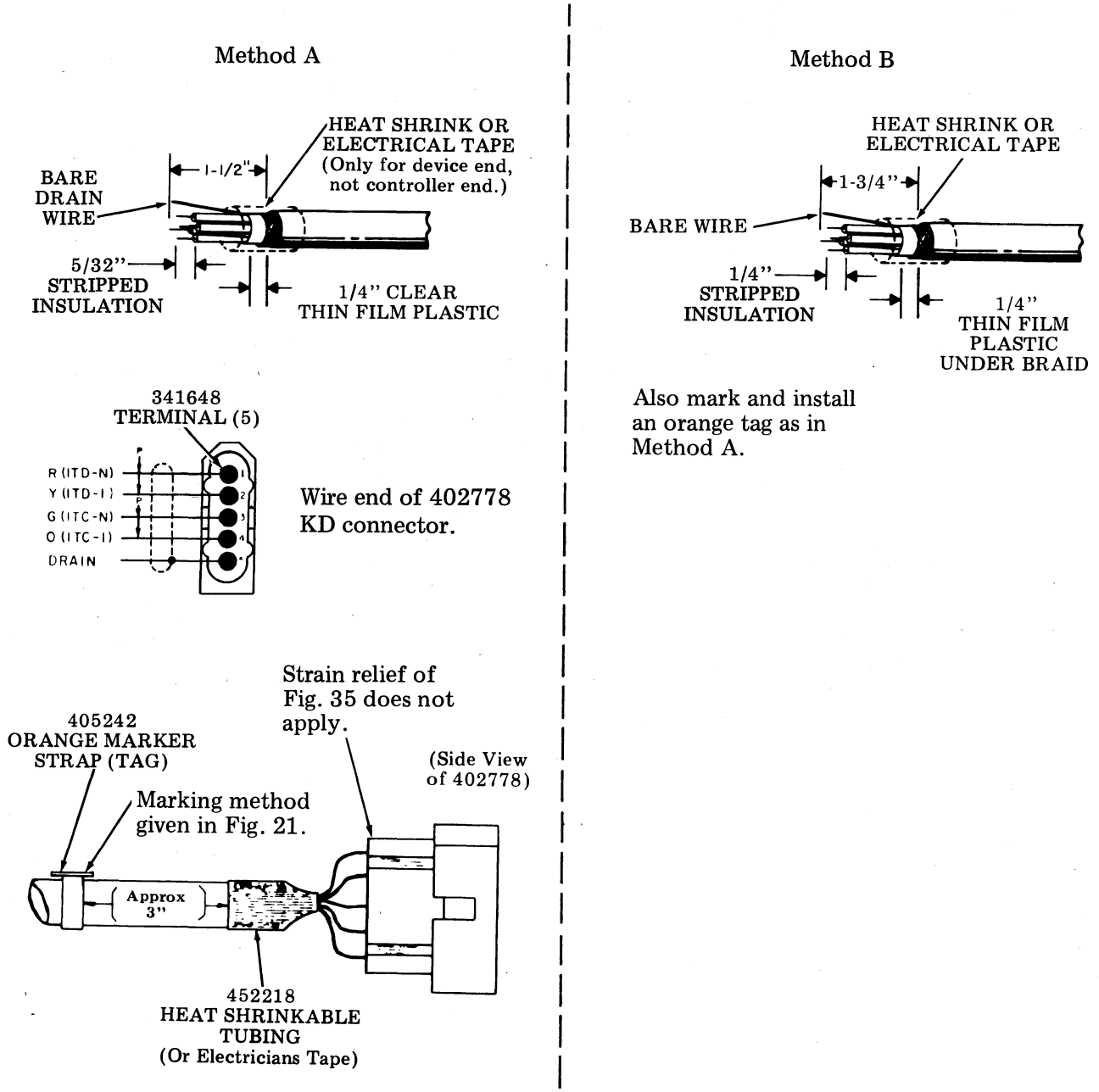


Fig. 98

3.66 Connect each KD to the controller at the KD end as given in (a) or (b) as applies.

(a) KD mounted on 4500-type table:

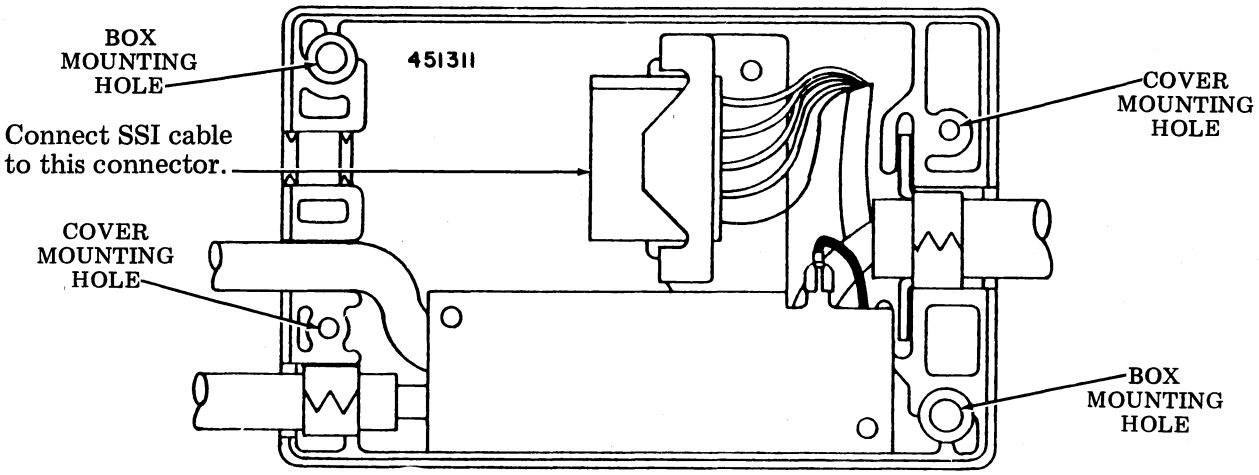
①Route SSI cable through table alongside the ac cord to the junction box and connect the cable in the junction box. When the late design 452015 cable is used, route cable under clamp and secure clamp. See Fig. 99.

②Check the underside of the cover. Because of the cable cutouts, there is one correct way to install it. Install the cover on the junction box. Secure the cover with the 451329 screws. The KD ac cord is connected to the 115 Vac outlet later.

(b) KD mounted on customer table:

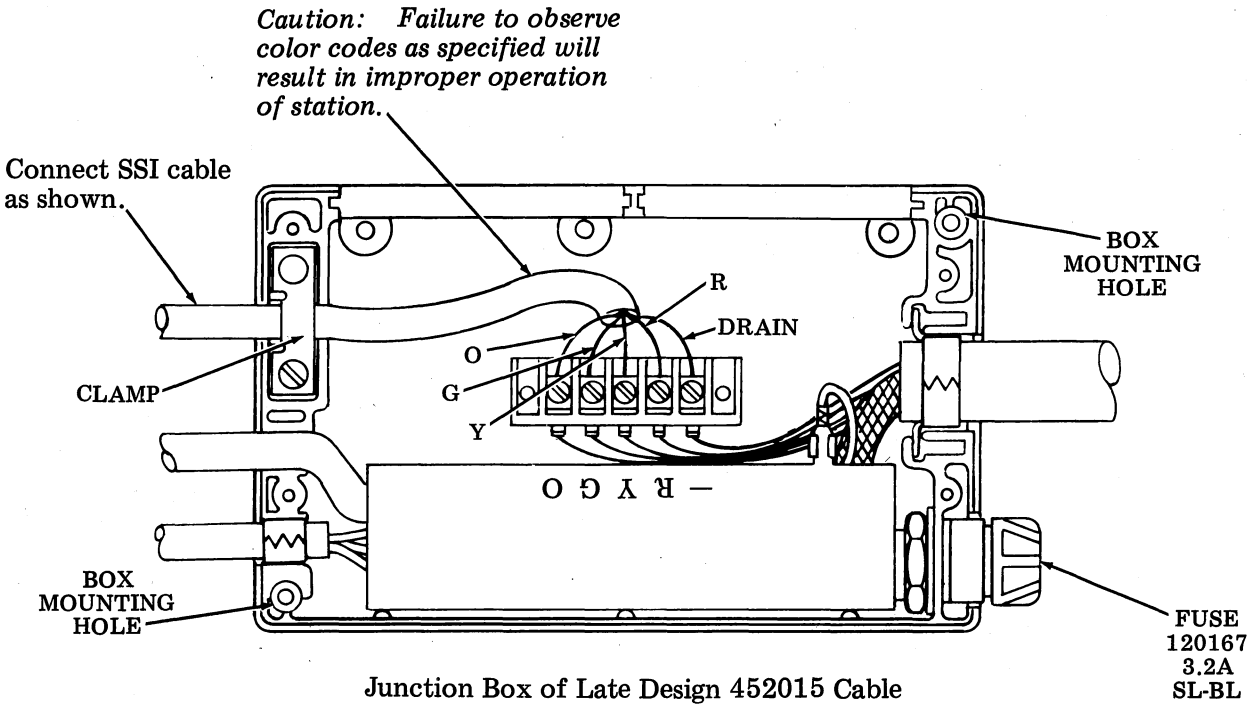
①Route SSI cable to the junction box and connect the cable in the junction box. When the late design 452015 cable is used, route cable under clamp and secure clamp. See Fig. 99.

②Install the cover on the junction box. Secure the cover with the 451329 screws.



Junction Box of Early Design 452015 Cable

Fig. 99



Junction Box of Late Design 452015 Cable

Fig. 99 (Contd)

OPTIONING CONTROLLER FROM FIRST KD

3.67 Connect display base ac power cord to a 115 Vac outlet. Turn on display base power switch. Turn on monitor off-on control and turn up brightness. Proceed to Part 4 and option the controller. (If instructions of Part 4 cannot be followed because of an equipment problem, troubleshoot using Section 582-300-500.) When controller is optioned, then connect controller to data set (see 3.28 if required).

KD DEVICE NUMBER CHECK AND LOCAL TEST

3.68 Proceed to Chart 3 of Section 582-300-500 and perform the KD/controller local test. Check the displayed poll, select, and device addresses.

INSTALLATION OF OTHER KDS

3.69 Install other KDs using the methods for the first KD. After a KD is installed, connect the ac power cord to a 115 Vac outlet. Turn on display base power switch. Turn on monitor off-on control and turn up brightness. Only one KD is allowed to be connected to the ac outlets on the controller.

3.70 After 3.69 is performed for a KD, proceed to Chart 3 of Section 582-300-500 and perform the KD/controller local test.

CONTROLLER INSTALLATION (FINAL)

3.71 Perform the following steps, then proceed to 4.24:

① Assemble the controller into the controller cabinet. Comply with the cable routing shown in Fig. 19 to avoid cable damage. To fully seat the controller, it may be necessary to lift the front and push it.

② Tighten the 407279 captive mounting screw and 2669 lockwasher on the bottom of the front of the controller.

③ When controller cabinet is to be mounted under a 4500-type table:

- and a KD is mounted on the table, proceed to ④.
- and no KD is on the table (table is 45CAB503/AAA), unpack and assemble table (see 3.54), then proceed to ④.

④ Move the controller cabinet under the appropriate table (if the cabinet is to be mounted under a table). When the cabinet (45CAB401/AAA) will be used under a 45CAB502/AAA or similar table, adjust the cabinet leg levelers to align the cabinet to the table (if required).

⑤ Proceed to Section 582-300-500 and perform the end-to-end installation test of Chart 5. Proceed to 4.24.

4. OPTIONS

4.01 This part provides information so that controller options, printer options, and data set options can be installed. It also covers handling of circuit cards, location of printer (and data set) circuit card switch packs. If the instructions of Part 4 cannot be followed because of an equipment problem, troubleshoot using Section 582-300-500.

CONTROLLER OPTIONS

4.02 Controller configuration and controller options are selected from the keyboard of device 00 (first KD) with reference to the service order request and should be entered on the station configuration worksheet. The first KD should be the closest KD to the SCC (for maintenance purposes). A sample of a station configuration worksheet can be found in Part 1. There are no option switches in the controller circuit cards.

4.03 Because of the importance of the first KD, it is desirable to mark it for easy identification.

4.04 The preferred method of identification is to use a 407215 lable inserted into a 407216 label holder (15/16 inches wide by 5-3/8 inches long). Then use the adhesive back to attach to the top of the keyboard away from the attendant. The labels are packaged as 25 label cards (2 labels each). Quantity one of 407215 provides 25 label cards. The label holders are packaged as 25 holders. Quantity one of 407216 provides 25 holders. If the keyboard is replaced, remove the holder and identify the new keyboard.

4.05 Another way to identify the first KD is to install a cable clamp on the right monitor leg, or install a cable ID tag on the monitor tilt lever. If the monitor is replaced, remove the clamp or tag on the old monitor and identify the new monitor.

4.06 To check or change controller options, power must be applied to the controller and to the device 00 KD. Also, the KD must be connected via an SSI cable to the controller.

4.07 Some controller options and features depend on the version of the feature group circuit card used:

VERSION OF FEATURE GROUP CIRCUIT CARD	AVAILABILITY	OPTIONS AND FEATURES
45FG110/AA	Manufacture discontinued.	Basic options and features available. Operation of 45K301 with 347300 keyboard lock in off position allows host to send data to display. Will not support 45K301/GAA/02 (mag stripe reader). Line protocol is BSC (Binary Synchronous Communications).
45FG110/AB/01	Now	As for "AA" but adds option for locked buffer override. Adds capability for 45K301/GAA/02. Adds capability to download all KDs from first KD by depressing PF1. Also adds the maintenance feature of flashing status LED indicator No. 2 of SCC once for each time the SCC downloads a display. Operation of 45K301 with 347300 keyboard lock in off position prohibits host from sending data to display.
45FG110/AB/02	Now	As for "AB/01" except ENQ for request to repeat last reply forever. Example of Application: US Steel.
45FG110/AB/03	Now	As for "AB/01" except provides line drawing font. Example of Application: Internal in SARTS and CMS systems.
45FG110/AC/01	Now	As for "AB/01" except line protocol is ADCCP (Advanced Data Communications Control Procedures) rather than BSC.
45FG110/AE/01	Now	As for AB/01 except provides character printer support and resets S&S of types not sent to general poll when EOT general poll is received.
45FG110/AF/01	Est. 2nd quarter of 1981	As for AC/01 except provides character printer support.

4.08 If option information has not been previously stored in controller CMOS RAM, or the information contains an error, the following default message will appear on the display:

> System options defaulted, press control/numeric "T" to continue.
> When cursor appears, press control/numeric "T" to set options.

4.09 If default message is displayed, depress CONTROL (or NUMERIC, as applies) and T together on keyboard of device 00. This causes SCC to download the appropriate KD application program into the first device, store this device type in the configuration information, and default the line code to EBCDIC and the control unit number to 0 (zero). Proceed to 4.12.

4.10 If RAM data was without error, SCC will download KD with an applications program dependent on the keyboard style stored in RAM. If this style agrees with the keyboard style actually at the first device, depression of a keytop will display the symbol shown on the keytop so that additional devices may be configured per 4.12.

4.11 If keyboard does not produce correct results on display, keyboard style previously set in RAM does not correspond to keyboard in use. Correct this condition by doing the following:

(a) Perform self-test on SCC (see Section 582-300-500).

(b) When test stops at the last pattern, depress test switch for at least 30 seconds. (This manually clears the RAM.) Clearing the RAM causes the SCC to send the default message.

(c) Release test switch. Proceed to 4.09.

4.12 Once the first KD has been loaded with the correct application program, depress CONTROL and T together (or NUMERIC and T together) to obtain format (example shown in Fig. 100). Format can then be filled out with desired configuration and option data for entire clustered arrangement. Use CURSOR TAB or cursor positioning controls to move cursor to entries to be changed. Do not use TAB key.

Note: When format (options menu) is displayed and station is connected to host (after installation), if first KD is selected by host, KD may receive a message (if capable) from host.

4.13 Options may be viewed at any time by depressing CONTROL and T together (or NUMERIC and T together) on keyboard of the first KD. However, setting options will disconnect the SCC from the line for a period of time while programs are being loaded and, therefore, should only be done when the host is inactive. If a printer is print-local to the first KD, PRINT LOCAL can be depressed to obtain a hard copy of the installed options. The first KD can be returned to the operating mode by:

- Depressing CLEAR. This does not affect any devices and does not store options.
- Depressing S/R. This affects only devices whose options have been changed by actions of 4.14 through 4.20 (it stores options).
- Depressing PF1 (does not apply to 45FG110/AA version). This affects all connected devices (it downloads all displays and stores options).

Caution: Depress S/R or PF1 only if you have changed an option (and the station is not communicating with the host). Caution following 4.20 also applies.

SYSTEM CONFIGURATION OPTIONS

LINE CODE: EBCDIC CONTROL UNIT NO. 01

DEVICE NO.	OPTION	DEVICE NO.	OPTION
0	1000	1	1000
2	F800	3	2100
4	2100	5	3100
6	F000	7	1200
8	F800	9	3A00
10	0000	11	0000
12	0000	13	0000
14	0000	15	0000
16	0000	17	0000
18	0000	19	0000
20	0000	21	0000
22	0000	23	0000
24	0000	25	0000
26	0000	27	0000
28	0000	29	0000
30	0000	31	0000

Example of Displayed Format

Fig. 100

4.14 LINE CODE field—Enter ASCII or EBCDIC (A or E is sufficient) into this field to set the line code desired. Any other information is invalid.

OPTION	LINE CODE
408a	ASCII
408b	EBCDIC

Note 1: EBCDIC required for 40K105 keyboard.

Note 2: LINE CODE is automatically assigned as EBCDIC for ADCCP type 45FG110. CURSOR TAB does not even allow cursor to go to LINE CODE field.

4.15 Control Unit Number Field

- For BSC type 45FG110 versions, enter a number between and including 00 to 31 to set the station poll and select (see Table A). The device number (0-31) relationship to device address is given in Table A.
- For ADCCP type 45FG110 versions, enter a hexadecimal number between and including 01 to FE to set the station address (see Table B).
- For any version, device addresses are determined by the controller ports (1-32) selected for use.

TABLE A

CONTROL UNIT NUMBERS FOR BSC TYPE 45FG110

CONTROL UNIT (Also Device Number)	CORRESPONDING POLL ADDRESS (Also Corresponding Device Address)			CORRESPONDING SELECT ADDRESS		
	CHAR-ACTER	ASCII, HEX (Odd Parity)	EBCDIC, HEX	CHARACTER	ASCII, HEX (Odd Parity)	EBCDIC, HEX
00	SPACE	20	40	MINUS	AD	60
01	A	C1	C1	/	2F	61
02	B	C2	C2	S	D3	E2
03	C	43	C3	T	54	E3
04	D	C4	C4	U	D5	E4
05	E	45	C5	V	D6	E5
06	F	46	C6	W	57	E6
07	G	C7	C7	X	58	E7
08	H	C8	C8	Y	D9	E8
09	I	49	C9	Z	DA	E9
10	[¢	5B	4A	¦	7C	6A
11	PERIOD	AE	4B	COMMA	2C	6B
12	<	BC	4C	%	25	6C
13	(	A8	4D	UNDERSCORE	DF	6D
14	+	AB	4E	>	3E	6E
15	! |	A1	4F	?	BF	6F
16	&	26	50	ZERO	BO	FO
17	J	4A	D1	1	31	F1
18	K	CB	D2	2	32	F2
19	L	4C	D3	3	B3	F3
20	M	CD	D4	4	34	F4
21	N	CE	D5	5	B5	F5
22	O	4F	D6	6	B6	F6
23	P	DO	D7	7	37	F7
24	Q	51	D8	8	38	F8
25	R	52	D9	9	B9	F9
26	]!	5D	5A	:	BA	7A
27	$	44	5B	#	23	7B
28	*	2A	5C	@	40	7C
29	)	29	5D	'	A7	7D
30	;	3B	5E	=	3D	7E
31	^ ¬	5E	5F	"	A2	7F

When two symbols are given, the first is ASCII, the second is EBCDIC.

LEGEND: ¦ is "vertical line" (see Station No. 10).
| is "logical OR" (see Station No. 15).
¬ is "logical NOT" (see Station No. 31).

TABLE B

CONTROL UNIT NUMBERS FOR ADCCP TYPE 45FG110

OPTION 401b. Enter 2 characters (example: 54)															
-	10	20	30	40	50	60	70	80	90	AO	BO	CO	DO	EO	FO
01	11	21	31	41	51	61	71	81	91	A1	B1	C1	D1	E1	F1
02	12	22	32	42	52	62	72	82	92	A2	B2	C2	D2	E2	F2
03	13	23	33	43	53	63	73	83	93	A3	B3	C3	D3	E3	F3
04	14	24	34	44	54	64	74	84	94	A4	B4	C4	D4	E4	F4
05	15	25	35	45	55	65	75	85	95	A5	B5	C5	D5	E5	F5
06	16	26	36	46	56	66	76	86	96	A6	B6	C6	D6	E6	F6
07	17	27	37	47	57	67	77	87	97	A7	B7	C7	D7	E7	F7
08	18	28	38	48	58	68	78	88	98	A8	B8	C8	D8	E8	F8
09	19	29	39	49	59	69	79	89	99	A9	B9	C9	D9	E9	F9
0A	1A	2A	3A	4A	5A	6A	7A	8A	9A	AA	BA	CA	DA	EA	FA
0B	1B	2B	3B	4B	5B	6B	7B	8B	9B	AB	BB	CB	DB	EB	FB
0C	1C	2C	3C	4C	5C	6C	7C	8C	9C	AC	BC	CC	DC	EC	FC
0D	1D	2D	3D	4D	5D	6D	7D	8D	9D	AD	BD	CD	DD	ED	FD
0E	1E	2E	3E	4E	5E	6E	7E	8E	9E	AE	BE	CE	DE	EE	FE
0F	1F	2F	3F	4F	5F	6F	7F	8F	9F	AF	BF	CF	DF	EF	

Do not enter 00 or FF. 0 above is zero.

OPTION	CONTROL UNIT NUMBER (For BSC, corresponds to Station Poll and Select Address)
401a	None (does not provide proper operation)
401b	CONTROL UNIT (Station) number specified

4.16 Device Number Fields — Each device field describes the device type and options for the associated device. Only the first two character positions are used in the 45FG110/AA version; however, the last two characters must not be cleared to NULLs when filling in the field. Except as given in 4.19, use zero in the last two positions. This controller will not permit entry into device fields beyond the capability of the SSI interconnect circuit cards (ie, 8, 16, or 32 devices). Complete the configuration and option data for each device to be connected to the SCC.

4.17 First position (left-hand position) of DEVICE NO. field — Enter a valid character to specify the type of device. A KD must be assigned to controller port number 1 which corresponds to Device 0 (zero). Device numbers higher than the capability of the controller are not valid (over seven for 8-device controller, over fifteen for 16-device controller, etc). Lower device numbers need not be used to use higher device numbers. Keyboard styles can be mixed. The 45FG110/AE type and 45FG110/AF type versions will support both line printers and character printers, earlier versions will only support line printers. The valid entries for the first position of DEVICE NO. field are shown in Table C.

TABLE C

TYPE OF DEVICE — FIRST POSITION

CHARACTER IN FIRST POSITION	DEVICE TYPE (Keyboard Layouts Shown in Fig. 8 of Section 582-300-500)
0	No device assigned. (The other three positions in the field should also be zero.)
1	KD with 40-type typewriter style keyboard (40K104 or 40K203).
2	KD with 40-type internal numeric cluster keyboard (40K105). Requires EBCDIC line code.
3	KD with 4500-type wide typewriter style (45K301).
E	Auxiliary character printer (see Note).
F	Auxiliary line printer (see Note).

Note: A maximum of eight printers can be specified; however, in the 8-device controller arrangement, only seven printers can be specified. Refer to Part 2 for controller identification.

OPTION	DEVICE TYPE
416a	No device assigned to the controller port
416b	KD with 40K104 or 40K203 keyboard
416c	KD with 40K105 keyboard
416d	KD with 45K301 keyboard
416e	Character Printer
416f	Line Printer

Caution: Earlier documents defined 416e as line printer. Option 416e has been redefined to minimize confusion.

4.18 Second position of DEVICE NO. field — For each KD, enter a character from Table D to provide the desired options. For each printer, enter a character from Table E to enable or disable the printer as a candidate for the print local feature.

TABLE D

KD OPTIONS — SECOND POSITION

CHARACTER IN SECOND POSITION	NUMERIC OVERRIDE (TTY STYLE) OR NUMERIC SPECIAL FEATURE (INTERNAL NUMERIC STYLE)	SOUND CONTINUOUS ALARM	BLINK HIGH-LIGHTED FIELDS	BLINK FLAGGED HIGH-LIGHTED FIELDS
0(zero)	(406b or 407b)	(402b)	(403a)	
1	X (406a or 407a)	(402b)	(403a)	
2	(406b or 407b)	X (402a)	(403a)	
3	X (406a or 407a)	X (402a)	(403a)	
4	(406b or 407b)	(402b)	X (403b)	
5	X (406a or 407a)	(402b)	X (403b)	
6	(406b or 407b)	X (402a)	X (403b)	
7	X (406a or 407a)	X (402a)	X (403b)	
8	(406b or 407b)	(402b)		X (403c)
9	X (406a or 407a)	(402b)		X (403c)
A	(406b or 407b)	X (402a)		X (403c)
B	X (406a or 407a)	X (402a)		X (403c)

These options apply to host defined numeric fields, not to unformatted displays.

OPTION	NUMERIC OVERRIDE (Typewriter style keyboard — 40K104, 40K203, 45K301)
406a	Enabled. (Characters 1, 3, 5, 7, 9, B of Table D)
406b	Disabled; alpha data cannot be entered in a numeric field. (Characters 0, 2, 4, 6, 8, A of Table D)

OPTION	NUMERIC SPECIAL FEATURE (Internal Numeric Cluster Keyboard — 40K105)
407a	Enabled; automatic upshift to numeric is limited to the numeric pad. Other keys merely cause bell to sound. (Characters 1, 3, 5, 7, 9, B of Table D)
407b	Disabled; automatic upshift to numeric is not limited to the pad. (Characters 0, 2, 4, 6, 8, A of Table D)

This option applies to alarm due to host command to restore keyboard.

OPTION	SOUND CONTINUOUS ALARM
402a	Enabled; alarm repeats until LOCAL is depressed. (Characters 2, 3, 6, 7, A, B of Table D)
402b	Disabled; alarm sounds once (Characters 0, 1, 4, 5, 8, 9 of Table D)

These options apply to fields designated by host as highlighted.

OPTION	BLINK HIGHLIGHTED FIELDS
403a	Disabled; highlighted fields (defined by host) are displayed as intensified. (Characters 0—3 of Table D)
403b	Enabled; highlighted fields are displayed as blinked. (Characters 4—7 of Table D)

OPTION	BLINK FLAGGED HIGHLIGHTED FIELDS
403c	Enabled; highlighted fields with attribute bits 4, 5, 6 of 1, 0, 1 are blinked; attribute example is "$". Highlighted fields with attribute bits 4, 5, 6 of 1, 0, 0 are intensified; attribute example is "H". When these two types of highlighted fields are on the same display, they are blinked. (Characters 8—B of Table D)
403(x)	Disabled; Option 403a or 403b applies.

TABLE E

PRINTER OPTIONS — SECOND POSITION

CHARACTER IN SECOND POSITION	PRINT LOCAL
0(zero)	Disabled
8	Enabled

Note 1: Candidate printers for the on-line copy command are determined solely by the host and have no restrictions other than that the "copy from" and "copy to" devices must be part of the same station. When printer is out of paper, controller will not "search" to next printer for print local or copy command.

OPTION	PRINTER "PRINT LOCAL" CAPABILITY
415a	Disabled.
415b (See Note 2)	Enabled; KDs with port numbers lower than this printer port are print-local to the printer unless there is a printer with a lower port number and Option 415b. Do not assign Option 415b to two adjacent printer ports since proper operation would never permit the higher numbered port to ever be print-local. Example of adjacent ports: ports 3 and 4. The print local capability of a KD can be disabled by installing a blocking keytop in the PRINT LOCAL position of the KD.

Note 2: For character printer, print-local takes approximately 60 seconds (minimum) to complete. For BSC, during the print-local, if the host selects the printer, there is no response. Within the retry period of 21 seconds (system dependant), the host may treat final "no response" as a malfunction and cease to communicate with the printer. To avoid this problem use Copy Command to obtain a printout, and select Option 415b.

4.19 Third and fourth positions of DEVICE NO. field — 45FG110/AA version: These positions are not used; however, they must not be cleared to NULLs (no character displayed) when filling in the field. Enter 0 (zero) in these positions.

4.20 Third and fourth positions of DEVICE NO. field — Other than 45FG110/AA version: These positions are used. They must not be cleared to NULLs when filling in the field. The valid entries for the third and fourth positions of the DEVICE NO. field for KDs are given in Table F. Enter 00 for printers.

TABLE F

KD OPTIONS — THIRD AND FOURTH POSITIONS

CHARACTERS IN THIRD AND FOURTH POSITIONS	BUFFER LOCK
00 (zero, zero)	Buffer lock enabled. (Required for 45FG110/AA.)
01	Buffer lock disabled. Not available for 45FG110/AA. Print local of locked buffer allowed.

TABLE F (Contd)

KD OPTIONS — THIRD AND FOURTH POSITIONS

This option applies when host sent attribute character that specifies field as protected alphanumeric is in first buffer location (0,0).

OPTION	BUFFER LOCK
414a	Enabled (Buffer lock override disabled).
414b	Disabled. Print local is allowed, even though a protected alphanumeric attribute is in the home position. 45FG110/AA and 45FG110/AB type versions only: copy of locked buffer of another device is also allowed via copy command from host, but this is not a requirement.

STORING CONTROLLER OPTIONS

Caution: When the station is connected to the host (after installation), obtain a release of the station before attempting to store options. To insure proper terminal operation, it is imperative that no poll, select, or data transfer sequences from the host are sent when options are modified.

4.21 When the entire format is complete, store the options by the applicable method indicated below:

Time	45FG110 Version	Depress	Devices that are downloaded	Comments
At initial installation	AA type	S/R	All connected KDs	—
	Other than AA	PF1	All connected KDs	PF1 is a good engineering practice. It insures that if a KD was downloaded, but the 45FG110 card is changed, the new options will be downloaded.
After initial installation, changing one option or device	AA type	S/R	KD that is changed or whose option(s) is (are) changed.	Depressing S/R avoids disturbing devices that are not affected. Remember, KDs that get downloaded will lose all data on display.
	Other than AA	S/R	KD that is changed or whose option(s) is (are) changed.	
After installation, changing 45FG110 card	AA type	S/R	KDs whose options are changed from how new card was optioned.	See Note 3 following 4.22.
	Other than AA	PF1	All connected KDs.	

4.22 When the options are stored in accordance with 4.21 and all of the data is valid, the SCC will send an "OPTIONS STORED" message back to the first KD and store the new option/configuration data in SCC RAM. If any options were changed on the first KD, the message will be automatically cleared, otherwise depress CLEAR, wait for LOCAL to light, depress CLEAR again, and the depress LOCAL (or RESET) to clear the first KD display.

Caution: A rechargeable battery on the 45FG110 circuit card, when fully charged, will retain controller options in CMOS RAM (Complementary Metal Oxide Semiconductor Random Access Memory) for an ac line power loss of 17 days. The battery is charged when controller power is applied. To insure that the battery is fully charged after installation, controller power should not be turned off for 48 hours.

INITIALIZATION OF STATION

Note 1: When devices are to be added later, option controller for those devices at initial installation, this will minimize interference with customer operations when devices are actually added. It is recommended that those devices not be recognized by the host until they are actually connected.

Note 2: When options are changed and S/R is depressed to load the options, only affected KDs are reloaded from the SCC. To reload an unaffected KD (required only due to malfunction): turn off KD, wait 15 seconds, then turn on KD. To insure all KDs are reloaded, see Note 3.

Note 3: When a new 45FG110 type circuit card is installed, all connected KDs must be reloaded by following one of the following procedures:

For 45FG110AA:

- Change the line code, store options with S/R, change line code back to desired code, and then store options again. (This procedure will not work when a 40K105 keyboard is part of the station.)
- Use the procedure of Note 2 on all connected KDs. (This is not recommended for large clusters.)
- Use the procedure of 4.11. (This is not recommended for small clusters.)

For Other Versions: Store the options with PF1 (not S/R).

4.23 If one of the following errors is made in choosing options, this paragraph provides the recovery routine, if an attempt is made to store the options:

(a) When editing (changing) the options format, if any field is blanked out with NULLs so that insufficient data is sent to the SCC during the store options function, the error message "operation error, aborted" will be displayed and no options will be updated. Depress CONTROL/NUMERIC and "T" to recover.

(b) When editing the options format, if an undefined line code, control unit number, or device type is entered, the store options function will return the format to the device with the errored field highlighted (intensified or blinked). No options will be updated.

(c) When more than eight printer devices are entered into the options format, the store options function will return the format to the device with the option field of the excess printer devices highlighted. No options will be updated.

(d) If to store options, any PA or PF key (other than PF1, if not 45FG110/AA) is depressed, the error message "INVALID BID KEY" will be sent the device. No options will be updated. Depress CONTROL/NUMERIC and "T" to recover.

(e) When the CLEAR key is depressed while the options format is displayed, a cleared and protected screen message will be sent to the first KD. To continue, depress CLEAR again, thus notifying the host of the cleared condition of the first KD. If the host is not connected to the station, LOCAL or RESET must be depressed to recover.

4.24 When station installation is performed, and all KDs and printers have been assembled and connected to the controller, and all local on-line tests have been made, then when the applicable tests of 582-300-500 are complete:

- Tighten the two controller door captive screws (1/4 turn).
- Install the controller cabinet front panel by pushing the panel into place (panel slots accept cabinet latches), lowering the panel (panel rests on latches), and tightening the two captive panel screws (1/4 turn).
- Have the customer try the station arrangement on-line.
- Resolve any station troubles.
- Give the HTO manual(s) to the customer. It is recommended that the appropriate KD HTO be left by each KD, and that the appropriate printer HTO be left by each printer.
- Clean area.
- Complete the service order.

LINE PRINTER OPTIONS

4.25 To find listings of the printer options so that options can be installed, see below.

PRINTER CODE	DESCRIPTION	COMPATIBLE PRINTER LOGIC CIRCUIT CARD	FOR OPTIONS,REFER TO PARAGRAPH
40P101/ZZ	FF 80-COLUMN	‡ 410640	4.29
		‡ 410076	4.31
40P102/ZZ	FF 80-COLUMN	‡ 410076	4.31
40P151/ZZ	TF 80-COLUMN	‡ 410640	4.29
		‡ 410076	4.31
40P154/ZZ or 40P253/ZZ	TF 80-COLUMN TF 80-COLUMN (Forms Access)	410071	4.32
40P201/ZZ	TF 132-COLUMN	410729	4.30
		†410072	4.33
40P202/ZZ or 40P204/ZZ	TF 132-COLUMN	410072	4.33

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.

‡Circuit card must be removed to check options.

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

4.26 Type carrier font symbol, use of type carrier and part numbers of type carriers are described in Fig. 101.

	Type Carrier Part Number and Font ID Symbol			
	132-Column		80-Column	
Carrier Type	ASCII	EBCDIC	ASCII	EBCDIC
Monocase Standard	400780	400887	400645	400785
Up-Low Standard	400777	400783	400629	400784
Monocase OCR-B	408393	408522	408392	408524
Up-Low OCR-B	408391	408523	408390	408525
Line Drawing, (Requires 45FG110/ AB/03, provides Graphics and Upper Case Alpha)	—	—	400775	—

Fig. 101

4.27 For location of "Forms" and "LF" switches on all 80-column printers, see Fig. 102.

Note: 40P154/ZZ tractor feed printer and 40P253/ZZ forms access printer are the exceptions; the switches are on the left side.

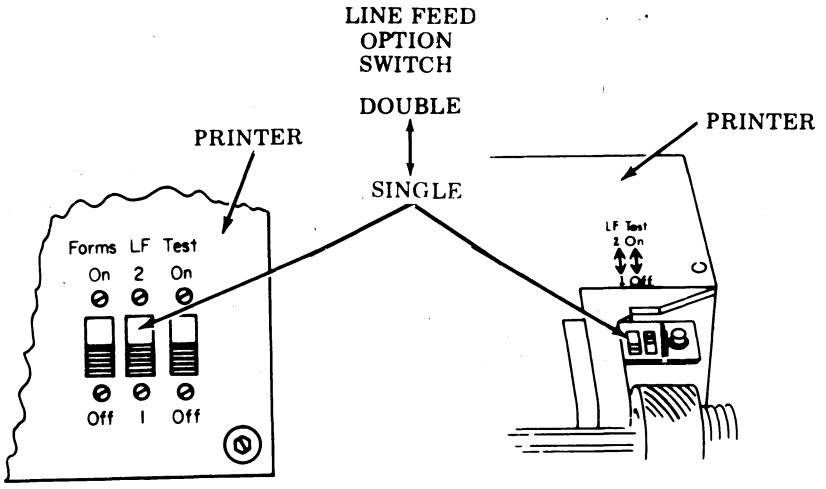


Fig. 102

4.28 For location of "Forms" and "LF" switches on all 132-column printers, see Fig. 103.

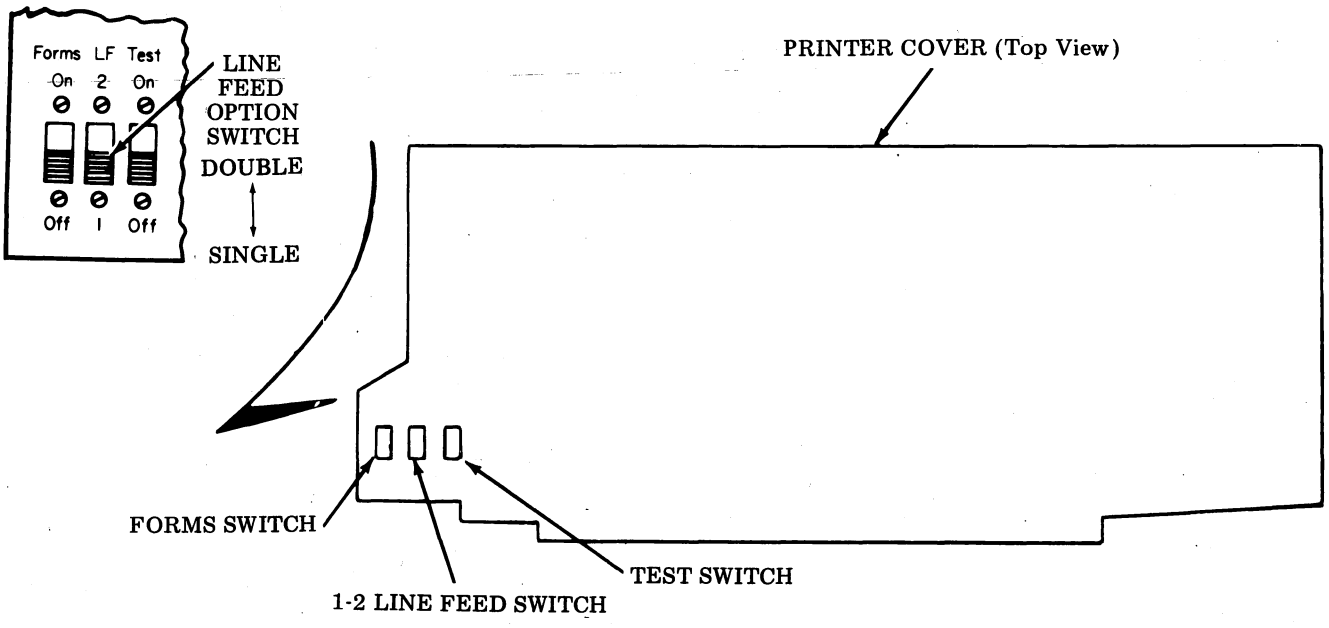


Fig. 103

4.29 Printer Options for 410640 Circuit Card. See Fig. 104.

For
80-Column
Applications

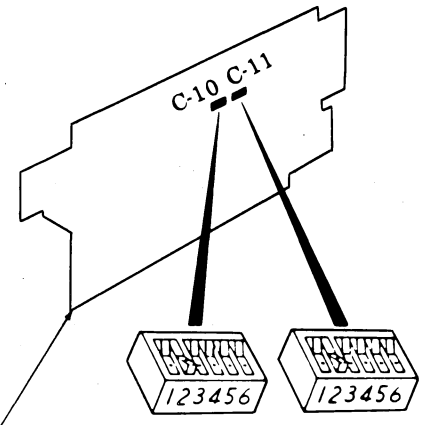


Fig. 104

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 17c.

(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		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 18a. Printer motor turns off approximately 6 seconds after print out unless printing of next message begins.

● 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)	—	●	○	—	—	—	—	—	—	—	—	—	
e.	Printers with 64 Character Set (Monocase)	—	○	●	—	—	—	—	—	—	—	—	—	*
f.	Printers with Special Carrier (Line Drawing)	—	○	○	—	—	—	—	—	—	—	—	—	

Use of 400775 (A/G) type carrier requires selection of 19f.
Use of 400629 (A/B), 400784 (A/N), 408390 (B/B), or 408525 (B/N) type carriers requires selection of 19d.
Use of 400645 (A/A), 400785 (A/D), 408392 (B/D), or 408524 (B/M) type carriers requires selection of 19e.

(Type carriers are discussed in 4.26.)

20. Line Feed on Printer		See 4.27.												
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	—	—	—	—	—	—	—	—	—	—	○	—	
b.	Lower Case Prints as Upper Case	—	—	—	—	—	—	—	—	—	—	●	—	*

Consider only with selection of 19d or 19f.

Unless otherwise specified, choose 21a. Line drawing with 19f requires 21a to print line drawing characters in place of lower case characters.

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	—	—	—	—	—	—	—	—	—	—	○	—	
b.	Lower Case Printed as Upper Case	—	—	—	—	—	—	—	—	—	—	●	—	*

Consider only with selection of 19e.

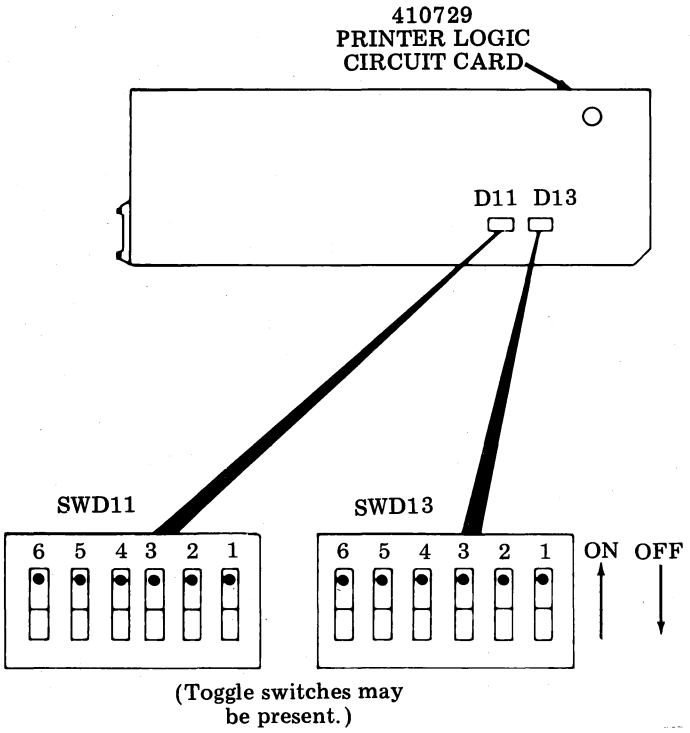
Unless otherwise specified, choose 22b.

39. Forms (Tractor Printer Only)		See 4.27.												
a.	On													
b.	Off													*

Unless otherwise specified, choose 39a.

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

4.30 Printer Options for 410729 Circuit Card. See Fig. 105. (Also see 4.34.)



For 132-Column Applications

(Printer circuit card viewed from beneath printer — Access to switches is through a cutout in bottom pan of printer.)

Fig. 105

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	—	—	—	—	—	—	○	○	○	●	—	—	*
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.

(X) — Indicates desired column number.

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

● Indicates on.
○ 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 18a. Printer motor turns off approximately 6 seconds after print out unless printing of next message begins.

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 (⬆5), 400783 (⬆M), 408391 (⬇5), or 408523 (⬇J) type carriers requires selection of 19d.
Use of 400780 (⬆J), 400887 (⬆2), 408393 (⬇3), or 408522 (⬇K) type carriers, requires selection of 19e.

(Type carriers are discussed in 4.26.)

20. Line Feed on Printer		See 4.28.												
a.	Single													*
b.	Double													

Unless otherwise specified, choose 20a.

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 19d.
Unless otherwise specified, choose 21a.

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

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	—	—	—	—	—	—	—	—	—	—	○	—	
b.	Lower Case Prints as Upper Case	—	—	—	—	—	—	—	—	—	—	●	—	*

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

39. Forms		Refer to 4.28.												
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)	—	—	—	—	—	○	—	—	—	—	—	—	*

Unless otherwise specified, choose 48b.

Also see 4.34 for other printer options.

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

4.31 Printer Options for 410076 Circuit Card. See Fig. 106.

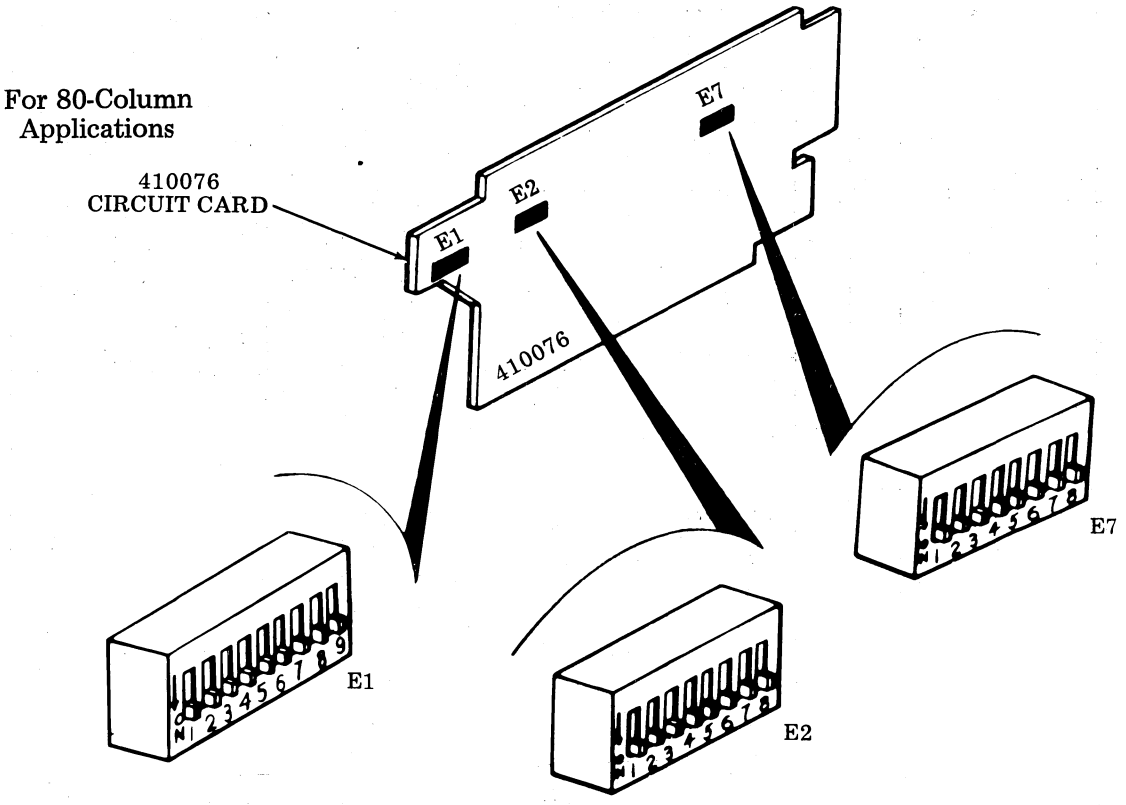


Fig. 106

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 17a.

(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	E1									E2								E7								
		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 17c.

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 RM Loss — 16 Lines or One Form	O	—	—	—	—	—	—	—	—	—	—	—	—	—	O	—	
c.	Paper Feed Out on RM Loss or ETX — 16 Lines or One Form	O	—	—	—	—	—	—	—	—	—	—	—	—	—	●	—	*

Unless otherwise specified, choose 18a. See Option 58.

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 400775 (A/a) type carrier requires selection of 19f.
Use of 400629 (A/a), 400784 (A/a), 408390 (a/a) or 408525 (a/a) type carriers requires selection of 19d.
Use of 400645 (A/A), 400785 (A/A), 408392 (a/a) or 408524 (a/A) type carriers requires selection of 19e.

(Type carriers are discussed in 4.26.)

20. Line Feed on Printer		See 4.27.								
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. Line drawing with 19f requires 21a to print line drawing characters in place of lower case characters.

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 19c.
Unless otherwise specified, choose 22b.

39. Forms		Refer to 4.27.								
a.	On									
b.	Off									*

Unless otherwise specified, choose 39a.

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

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.

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 56a.
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-Second Idle Line	—	—	—	—	—	—	—	●	

→ Not applicable. Printer motor turns off approximately 20 seconds after print out unless printing of next message begins — Position of switch does not affect operation.

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

4.32 The available 80-column printer options for the 410071 circuit card for this application are listed below. Refer to the label on the lower pan assembly of the printer to install the selected options.

Option No.	Description
17.	Left-Hand Margin
a.	Column 1*
b(X).	Column X (X = 2 through 13)
17.	Right-Hand Margin (Last Character Prints in Column)
c.	Column 80*
d(X).	Column X (X = 73 through 36)
18.	Paper Feedout
a.	None (Switch 3 on), unless otherwise specified, choose 18.a.
b.	On loss of Rec. Mess (Switches 2 and 3 off)
c.	On loss of Rec. Mess. or ETX (Switch 2 on, 3 off)*
19.	Errored Character Symbol
c.	Not printed on parity error (No parity check)*
19.	Character Set
d.	96 Character Set (Up-low)
e.	64 Character Set (Monocase)*
f.	Special carrier, line drawing (Switches 5 and 6 open)
20.	Line Feed on Printer (See 4.27)
a.	Single*
b.	Double
21.	Lower Case Foldover on Printers With 96 Character Set
a.	No (Unless otherwise specified, choose 21.a.)
b.	Yes*
22.	Lower Case Foldover on Printers With 64 Character Set
a.	No (Lower case prints as error symbol)
b.	Yes (Unless otherwise specified, choose 22.b.)*
39.	Forms
a.	On (Unless otherwise specified, choose 39.a.)
b.	Off*
48.	Paper-Out Gated With Form-Out
a.	No (Immediate paper-out indication)
b.	Yes (Unless otherwise specified, choose 48.b.* 40P253 equipped with 406374 paper-out modification kit requires 48.b.)
54.	Escape Character Recognition (Switch has no effect)
55.	Shift Out Character Recognition (Switch has no effect)

*Factory optioned.

Option No.	Description
57.	SSI/OEM Interface
a.	SSI Operation*
58.	Time Out (Idle Line) (Switch has no effect. Motor will turn off about 20 seconds after print out unless next message begins.)
59.	OEM Data Rate (Switches have no effect)
60.	Aux. Alarm
b.	No (Required selection, even for paper jam alarm)*

See 4.34 for other printer options.

4.33 The available 132-column printer options for the 410072 circuit card for this application are listed below. Refer to the label on the lower pan assembly of the printer to install the selected options.

Option No.	Description
17.	Left-Hand Margin
a.	Column 1*
b(X).	Column X (X = 2 through 13)
17.	Right-Hand Margin (Last Character Prints in Column)
e.	Column 132*
f(X).	Column X (X = 121 through 84)
18.	Paper Feedout
a.	None (Switch 3 on), unless otherwise specified, choose 18.a.
b.	On loss of Rec. Mess. (Switches 3 and 4 off)
c.	On loss of Rec. Mess. or ETX (Switch 3 on, 4 off)*
19.	Errored Character Symbol
c.	Not printed on parity error (No parity check)*
19.	Character Set
d.	96 Character Set (Up-low)
e.	64 Character Set (Monocase)*
20.	Line Feed on Printer (See 4.28)
a.	Single*
b.	Double
21.	Lower Case Foldover on Printer With 96 Character Set
a.	No (Unless otherwise specified, choose 21.a.)
b.	Yes*
22.	Lower Case Foldover on Printer With 64 Character Set
a.	No (Lower case prints as error symbol)
b.	Yes (Unless otherwise specified, choose 22.b.)*

*Factory optioned.

Option No.	Description
39.	Forms
a.	On (Unless otherwise specified, choose 39.a.)
b.	Off*
48.	Paper-Out Gated With Form-Out
a.	No (Immediate paper-out indication)
b.	Yes (Unless otherwise specified, choose 48.b.)*
54.	Escape Character Recognition (Switch has no effect)
55.	Shift Out Character Recognition (Switch has no effect)
57.	SSI/OEM Interface
a.	SSI Operation (Required selection)*
58.	Time Out (Idle Line) (Switch has no effect. Motor will turn off in about 20 seconds after print out unless next message begins.)
59.	OEM Data Rate (Switches have no effect)
60.	Aux. Alarm
b.	No (Required selection, even for paper jam alarm)*

See 4.34 for other printer options.

*Factory optioned.

4.34 Printer options for 410151 circuit card. This paragraph applies only when one of these circuit cards is in a printer: 410071, 410072, or 410729. See Fig. 107.

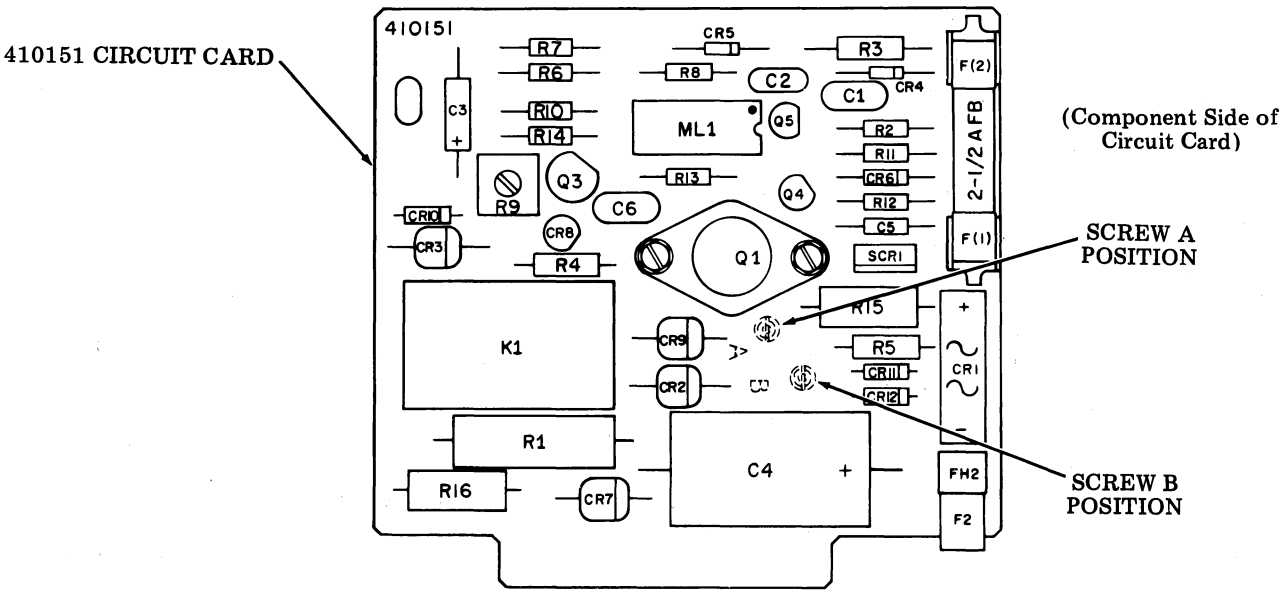


Fig. 107

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

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

*Factory optioned.

CHARACTER PRINTER OPTIONS

4.35 Printer options for 410743 and 410715 circuit cards. See Fig. 108.

Note: Observe that there are no choices. Factory options apply.

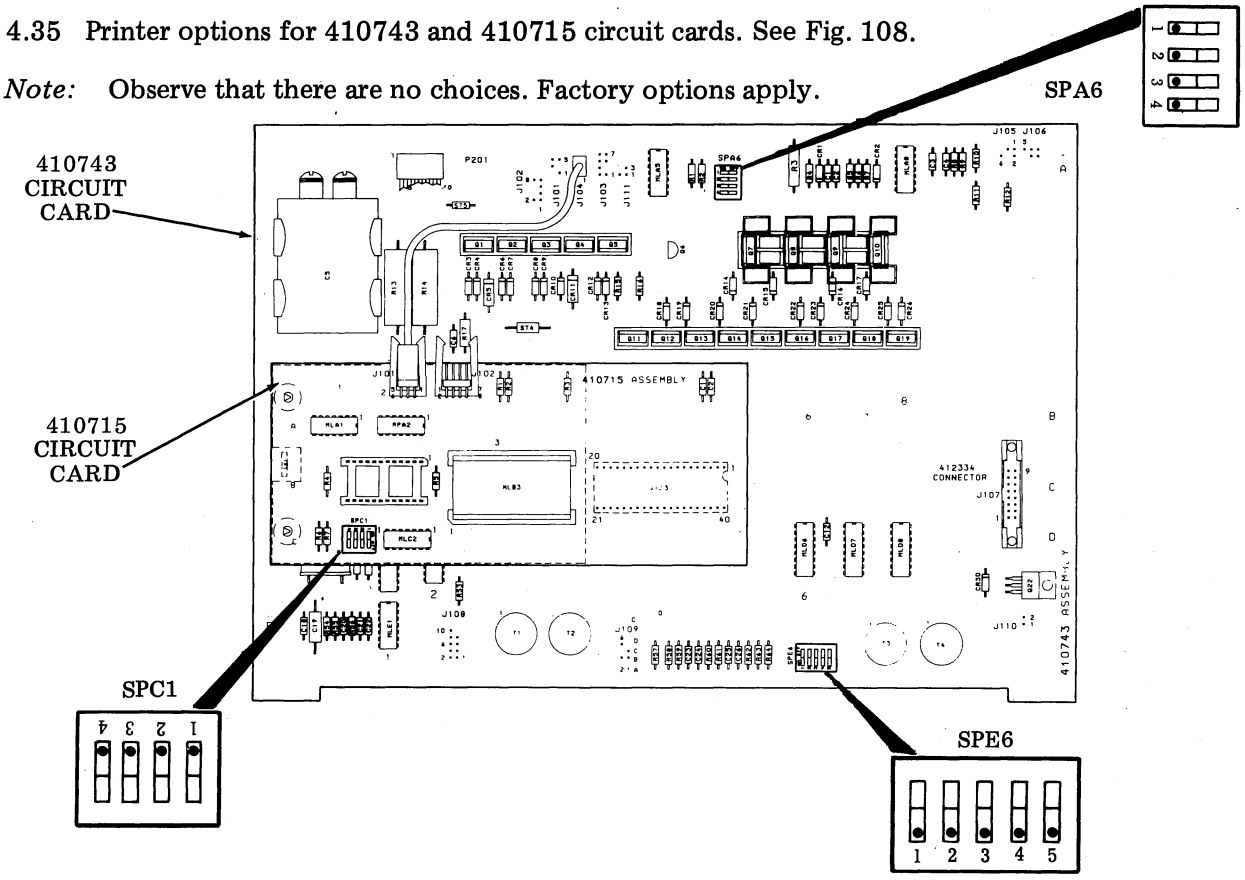


Fig. 108

470. Top of Form Signal to Controller	SPA6 1	2	3	4	
a. Yes	—	●	—	—	*
b. No	—	○	—	—	

Not applicable — Position of switch does not affect operation.

471. Form Feed Signal to Controller	SPA6 1	2	3	4	
a. Yes	—	—	●	—	*
b. No	—	—	○	—	

Not applicable — Position of switch does not affect operation.

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

	SPA6				
	1	2	3	4	
Switches Must be Set as Shown	○	—	—	○	*

	SPE6					
	1	2	3	4	5	
Switches Must be Set as Shown	—	○	○	—	—	*

431. Type Font Arrangement	SPE6					
	1	2	3	4	5	
e. Font Controlled by 410715	—	—	—	○	○	*

→Required Selection

	SPE6					
	1	2	3	4	5	
Switches Must be Set as Shown	○	—	—	—	—	*

472. Font Control	SPC1				
	1	2	3	4	
a. Internal and Alternate Font Via Shift In — Shift Out (Internal Provides Narrow 0 for Zero, Wide O for Alpha Letter O)	○	—	—	—	*
b. Alternate Font Only (MLB2)	●	—	—	—	

→Required selection

	SPC1				
	1	2	3	4	
Switches Must be Set as Shown	—	○	●	○	*

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

DATA SET AND DATA SERVICE UNIT OPTIONS

4.36 BSP References:

- 201C Data Set (DS), 2400 BPS — Section 592-029-ZZZ and Technical Reference Publication 41210
- 208A Data Set (DS), 4800 BPS — Section 592-027-ZZZ and Technical Reference Publication 41209
- 209A Data Set (DS), 2400 BPS, 4800 BPS, 7200 BPS, 9600 BPS — Section 592-032-ZZZ
- 500A — 1/2 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
- 48230 Local Area Data Set (LADS), 2400 or 4800 or 9600 BPS — Section 592-035 — Series and EL 5504
- 2024A or 2048A or 2096A Data Set (DS), 2400 or 4800 or 9600 BPS (respectively) — Section 592-040-720 (or PUB 41901 or PUB 41910)

4.37 Tables G, H, I, J and K list options for DSs and DSUs. The data sets of 4.36 (or an equivalent of these types of modems) can be used with the station arrangement provided there is access to private line facilities with basic 3002 conditioning. The 209A and 2096 also requires D-conditioning. The referenced DSU (or equivalent) can be used as described in 4.38. The referenced LADS (or equivalent) can be used as described in 4.39.

TABLE G

201 AND 208-TYPE DATA SETS

	RECOMMENDATIONS FOR DATA SET AT 4540 STATION			
	OPTION	201C-L1	201C-L1D	208A-L1 (Note 5)
	W/OUT AUX DATA SET 828 OR 829 (Note 4)	YJ	YJ	S3C-DOWN
	NEW SYNC — NOT USED (Note 3)	YA	YA	S4C-DOWN
	600 or 900 OHM IMPEDANCE	ZQ or ZR	—	—
	4-WIRE SWITCHED CARRIER (Note 1)	XA	XA	S4B-DOWN
	EIA INTERFACE	YK, YG, YE	YK	—
	XMIT LEVEL (Optional)	ZA—ZP	—	—
	REC LEVEL (Optional)	ZU	—	—
	COMP EQUALIZER IN	ZS	—	—
	INTERNAL XMIT TIMING	YC	YC	S3A-DOWN
	DSR "ON" IN AL-MODE	—	YM	S1A-UP
	NO COMP EQUALIZER TEST ¶ (LP button will not short line signal)	—	—	S1B-UP
	RETRAIN EQUALIZER AUTOMATICALLY ¶ (Automatic check and adjustment of equalization upon receive)	—	—	S3B-UP
	1-SEC HOLDOVER ENABLED ¶ (Maintain sync during line dropouts up to 1 second)	—	—	S4A-DOWN
	EQUALIZER ADJ (Note 2) (Symetrical amplification and delay)	—	—	S2B-UP S2C-UP
	SWITCHED RTS (Note 1)	—	—	S1C-DOWN
	CONT REC BIT CLOCK IN	—	YO	—
	RECOMMENDATIONS FOR DATA SET AT CUSTOMER LCU — SAME AS ABOVE EXCEPT:			
OMIT	4-WIRE SWITCHED CARRIER	XA	XA	S4B-DOWN
OMIT	1-SEC HOLDOVER ENABLED	—	—	S4A-DOWN
OMIT	NEW SYNC NOT USED (Note 3)	YA	YA	S4C-DOWN
ADD	CONTINUOUS CARRIER	XB	XB	S4B-UP
ADD	1-SEC HOLDOVER-DISABLED	—	—	S4A-UP
ADD	NEW SYNC USED (Note 3) (If required at customer machine, insures fast reset upon incoming messages)	YB	YB	S4C-UP

¶ Required for 208A-L1.

Note 1: In a single 4540 Station telephone channel to a customer's equipment station, continuous carrier and continuous RTS options are preferred at the station. For 208 with switched carrier, RTS to CTS delay is 48.5 ms and carrier turns off within 2 ms after RTS goes off. For 208 with constant carrier but switched RTS, RTS to CTS delay is approximately 8 ms.

(other notes on next page)

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.

Note 4: When 828 or 829 is used, option YI should be installed. (For 208A-L1: S3C-UP.)

Note 5: The 208 will be equipped with switches or push-on straps. Strap positions correspond to switch positions:

1A	3A
1B	3B
1C	3C
2A	4A
2B	4B
2C	4C

TABLE H

209A DATA SET

RECOMMENDATIONS FOR DATA SET AT 4540 STATION			
OPTION		DESCRIPTION OF OPTION	INSTALL SWITCH OR 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
XI		4-Wire Continuous Carrier (Continuous RS) and Automatic Retrain	S5-8
YX		1-Second Holdover In	S5-5
YC		Internal Timing	S6-2
WJ		Slave Out	S6-4
RECOMMENDATIONS FOR DATA SET AT CUSTOMER LCU — SAME AS ABOVE EXCEPT:			
OMIT	XI	4-Wire Continuous Carrier (Continuous RS) and Automatic Retrain	S5-8
	YX	1-Second Holdover In	S5-5
ADD	XG	4-Wire Continuous Carrier (Switched RS) and Automatic Retrain	S5-6
	YW	1-Second Holdover Out	S5-4

4.38 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 at 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 loopback.

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

TABLE I

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.

4.39 A 48230 LADS can be used provided there is access to a nonloaded-type 83 local area data channel. Such a channel uses metallic facilities and is intended for point-to-point transmission.

TABLE J

48230 LADS

OPTION DESCRIPTION (Customer options)	AVAILABLE CHOICES	
Transmit Timing (XMT TMG)	Internal (INTL) (Required)	*
	No option	
	External (EXT)	
	Loop	
Clear to Send Delay (CA/CB DELAY)	0 ms (Use for point to point)	
	8 ms	*
Baud Rate (DATA RATE) (Choose 2400, 4800, or 9600)	2400 bps	
	No option	
	4800 bps	*
	9600 bps	
Signal Ground and Frame Ground (On power supply card)	Connected	*
	Not connected	

(Table continued on next page.)

*Factory optioned.

TABLE J (Cont)

48230 LADS

OPTION DESCRIPTION (Engineering Options)	AVAILABLE CHOICES	
Carrier Detect Delay (CF DELAY)	40 ms	*
	5 ms (Use)	
Mode (DX MODE)	Full (Use)	*
	Half	
Carrier Control (CARR CONT)	On	*
	Off (Use for point to point)	
Receiver Hold (RCV HOLD)	Mark (Use)	*
	Space (SP)	
Receive Clock (RCV CLK)	Normal (NORM) (Use)	*
	Inverted (INVT)	
Transmit Clock (XMIT CLK)	Normal (NORM) (Use)	*
	Inverted (INVT)	
Range (Selects appropriate equalizer setting)	Long (4800 bps, > 4.5 m to 6 m) (9600 bps, >2.25 m to 3 m)	
	Normal (2400 bps, 500 ft to 8 m) (4800 bps, 500 ft to 4.5 m) (9600 bps, 500 ft to 2.25 m)	*
	Short (Less than 500 ft)	
Output Level (Requirements)	0 dbm (2400 bps) -6 dbm (4800 bps) -16 dbm (9600 bps)	
Transmit Impedance (XMT IMP)	Low	
	150 (Use)	*
4-Wire or 2-Wire (2/4 WIRE)	Four (Required)	*
	Two	
Receiver Impedance (RCV IMPD)	150 (Use)	*
	High	

*Factory optioned

4.40 A 2024A, 2048A, or 2096A data set can be used provided there is access to private line facilities with basic 3002 conditioning. The 2096A also requires D-conditioning. A KS21253-L7 interface adapter is required between the data set 37-pin RS-449 interface and the 4540 25-pin RS-232C. Refer to Section 592-040-720 (or PUB 41901 or 41910) for details.

TABLE K

2024A, 2048A AND 2096A DATA SETS

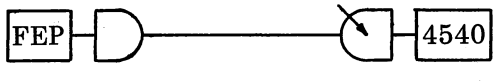
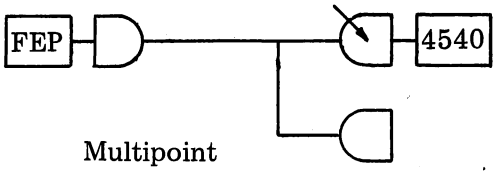
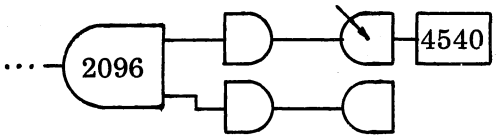
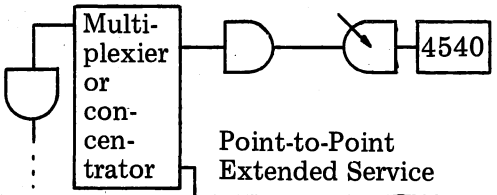
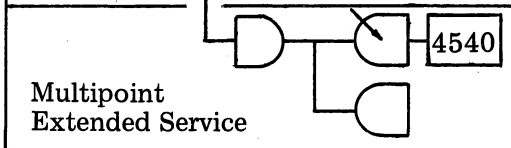
DESCRIPTION OF RECOMMENDED DATA SET OPTIONS		DATA SET AT 4540 STATION		
		2024A	2048A	2096A
Circuit configuration (Arrow indicates station data set.)	 Point-to-Point	A2	A2	A2
	 Multipoint	A4	A4	Not applicable (Do not use A4.)
	 Extended Service	A2	A2	Not applicable. (Do not use A2.)
	 Point-to-Point Extended Service	A2	A2	A2
	 Multipoint Extended Service	A4	A4	Not applicable. (Do not use A4).
Internal transmitter timing		B1	B1	B1
Carrier control	Continuous Carrier Continuous RS (RTS)	C5 (Use if A2 installed.)	C5 (Use if A2 installed.)	C5
	Switched Carrier Switched RS	C6 (Use if A4 installed.)	C6 (Use if A4 installed.)	Not applicable. (Do not use C6.)

TABLE K (Cont)
2024A, 2048A AND 2096A DATA SETS (Cont)

DESCRIPTION OF RECOMMENDED DATA SET OPTIONS (See Notes 5, 6, 7, 9, 10)		DATA SET AT 4540 STATION		
		2024A	2048A	2096A
Anti-stream timer (Notes 1-4)	Disabled (Use when A2 is installed)	Not D4, D5, or D6	Not D4, D5, or D6	Not D4, D5 or D6
	Enabled (9 seconds) (Use when A4 is installed)	D5	D5	Not applicable (Do not use D1)
Quick Start-up	Enabled (2048A only: 2048C must be used at remote end which has Option E1.)	Not applicable (Do not use E1.)	E1	Not applicable (Do not use E1.)
	Disabled (2048A only: if 2048C is at remote end and option E1 is not installed.)	No selection required.	Not E1	No selection required.
One second holdover out	Disabled (Receiver will momentarily bridge loss of line signal.) *CAUTION: This option "Not E2", provides one second holdover.*	Not E2	Not E2	Not E2
Transmit soft turn off	Enabled (Use when A4 installed provided A3 installed in receiving data set)	E3	E3	Not applicable (Do not use E3.)
	Disabled (Use when A2 is installed)	Not E3	Not E3	Not E3
Receive soft turn off	Disabled (Carrier always on from remote end.)	Not E4	Not E4	Not E4
Maximum Address - 16 or 32	Disabled (Tributary data set does not issue Acquire Poll List command.)	Not E5 or E6	Not E5 or E6	Not E5 or E6

TABLE K (Cont)

2024A, 2048A AND 2096A DATA SETS

DESCRIPTION OF REOMMENDED DATA SET OPTIONS (See Notes 5, 6, 7, 9, 10)			DATA SET AT 4540 STATION		
			2024A	2048A	2096A
Diagnostic Channel	Disabled. (Must be used if non-DATAPHONE*** II data sets are on circuit.)		E7	E7	E7
	Enabled. (Recommended if all data sets on circuit are DATAPHONE II.)		Not E7	Not E7	Not E7
RSL (Receive Signal Level)	Enabled (For facility health monitor)		Not E8	Not E8	Not E8
Rise time (Options shown correspond to factory installed option) (See Note 8)	For use with RS-232C (fast rise time)	2096, port 1 or 2046 or 2024	SA	SA	SA
		2096, port 2	Not applicable	Not applicable	SB
		2096, port 3	Not applicable	Not applicable	SC
		2096, port 4	Not applicable	Not applicable	SD
Local Address (must be unique). Three digits assigned from 256 available. Installed via DIP switch on mounting.			Required *Note:* Generally the first two digits (01-32) specifies group, last digit specifies position in group (1 through 8).	Required	Required
Network Address (must be unique). Two digits (01 through 80) must be assigned. Set via command list.			Required	Required	Required

***Registered Service mark of AT&TCo.

Note 1: Do not specify Option D1 since DM off (DSR off for RS-232C) will have no effect on 4540.

Note 2: Do not specify option D2 since 4540 can not monitor data set when data set is in test mode.

Note 3: Do not specify Option D3, it only applies to 2096 applications other than 4540 station applications.

Note 4: Do not specify Option D8 unless error rate is acceptable to customer although fault indication is caused due to poor receive signal quality.

Note 5: The 4540 station data set options should exclude category G options and J options.

Note 6: Options H and I (available only on 2096A) do not apply to 4540 station data set.

Note 7: Options A, B, C, D, E and the network address can be changed from the front panel (via the command list).

Note 8: Options LA-LD and SA-SD must be installed or removed via a 4-position dual in-line package switch on the data set circuit board. LA-LD do not apply to 4540.

Note 9: Default options are listed in PUB 41901.

Note 10: A DCD address (Diagnostic Control Device) does not apply to a 4540 station data set.

5. CONTROLLER CONVERSIONS

5.01 It is expected that controllers will be furnished as 8-device, 16-device, or 32-device controllers. The purpose of Part 5 is to allow field conversion from one type to another. See Table L. Explicit conversion methods are given for converting a 16-device controller to a 32-device controller, but implicit methods are given for other conversions because such conversions are much less likely to be required.

- A larger capacity controller can be used in place of a smaller capacity controller to provide service.
- The material required for a conversion must be separately ordered. The material removed and no longer required on a controller may be saved for use in other conversion or used for spares.

5.02 Detailed disassembly/reassembly methods are given in Section 582-300-700.

CONVERSION FROM 16-DEVICE CONTROLLER TO 32-DEVICE CONTROLLER

5.03 Material Required:

(1) 16-Device Controller
(1) 410313 Circuit Card
(2) 410319 Circuit Cards
(4) 451365 Spacers (white plastic washers)
(4) 430732 Nuts with Lockwashers
(2) 452154 Cables
(1) 452157 Decal
(1) 452213 ID Label
(1) 452214 ID Label

5.04 Material removed and no longer required on controller:

(1) 452156 Decal
(1) 452244 Plate

TABLE L

TO CONVERT	TO	PROCEED TO
16-Device Controller	32-Device Controller	5.03
32-Device Controller	16-Device Controller	5.06
8-Device Controller	16-Device Controller	5.09
16-Device Controller	8-Device Controller	5.12
8-Device Controller	32-Device Controller	5.15
32-Device Controller	8-Device Controller	5.18

Note: The controller should be self-tested before conversion. Generally it is better to correct faults before converting a controller.

5.05 Conversion method to convert 16-device controllers to 32-device controllers is detailed in the following Chart.

CHART

STEP	PROCEDURE
1	Turn off all power. Remove controller cabinet front panel. Remove controller to maintenance position. Loosen two captive 1/4-turn screws and remove left-side cover from controller. Loosen two captive 1/4-turn screws and open controller door. See Fig. 109.
2	Disconnect all 4-cable connectors from the 410313 and 410311 circuit cards. Remove 410311 card.
3	On the left side of the controller, disconnect the two 452154 cables from the 410319 SSI interconnect cards.
4	Loosen two 1/4-turn screws. Remove bracket that mounts the two 410319 cards. (Bracket and cards are reinstalled in Step 9.)

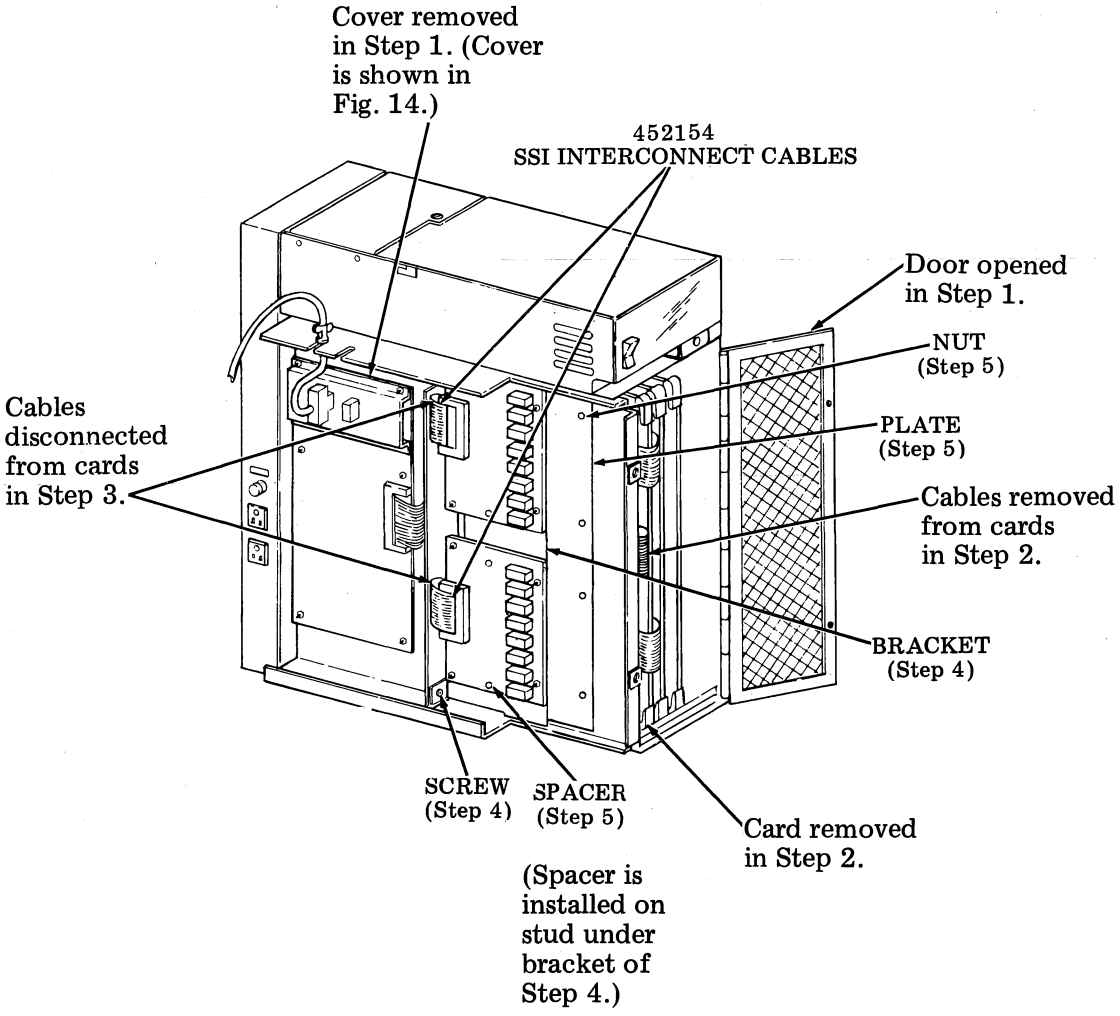


Fig. 109

CHART (Contd)

STEP	PROCEDURE
5	Remove (and save) the four 430732 nuts with lockwashers from the studs that secure the 452244 plate. Remove plate from studs. Install (twist on) a 451365 spacer on each of the four rear mounting studs on the left side of the controller. Leave spacers on the four front studs.
6	Install a 410319 card on the upper studs of Step 5. Secure the card with four 430732 nuts with lockwashers (two 430732 nuts with lockwashers saved from Step 5). Install the 452213 ID label (Ports 16—24) above the top SSI connector. See Fig. 110.
7	Install a 410319 card on the lower four mounting studs. Secure the card with four 430732 nuts with lockwashers. Install the 452214 ID label (Ports 25—32) above the top SSI connector.
8	Through the controller door, route one 452154 interconnect cable over the existing upper cable. Also route another 452154 cable over the existing lower cable. Be sure to route the cables through the metal guides on the inside of the left side of the frame as the existing cables are routed. On the left side of the controller, connect the forward two existing cables to the new 410319 cards.

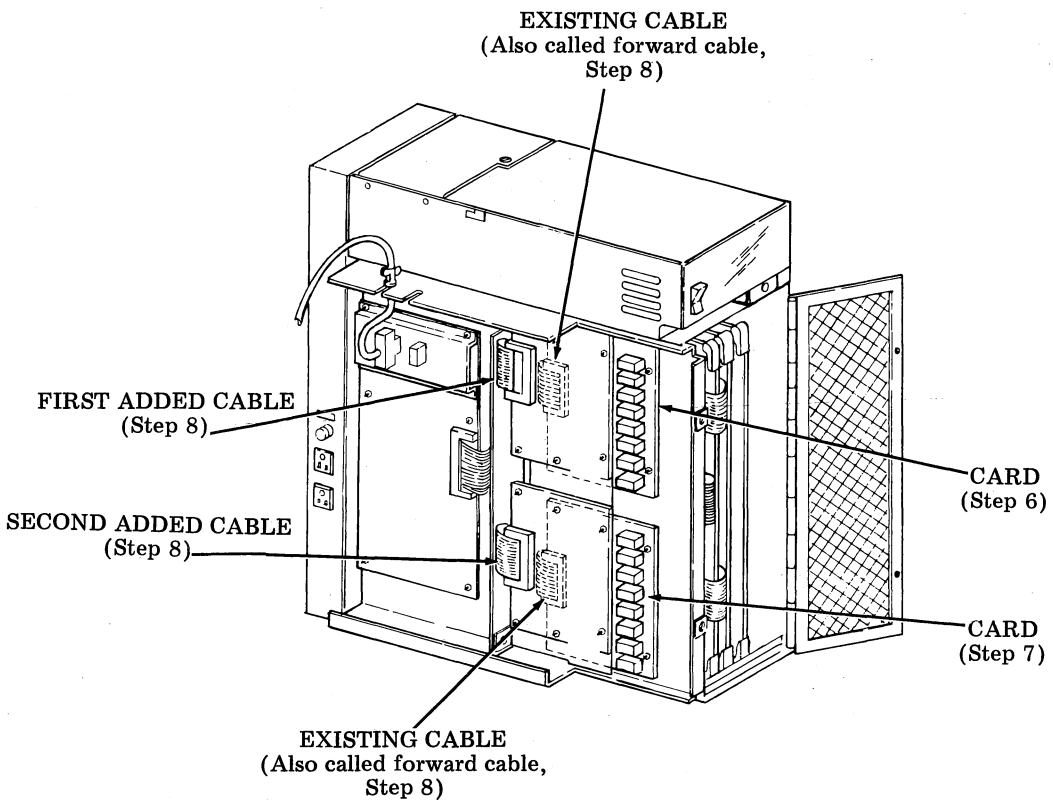


Fig. 110

CHART (Contd)

STEP	PROCEDURE
9	Install the bracket of Step 4 on the controller. Secure the bracket with the two 1/4-turn screws. See Fig. 111.
10	Connect the added cables of Step 8 to the 410319 cards of Step 3.
11	Remove 45FG110 card from position 3. Install it in position 4.
12	Install a new 410313 card in position 3. The existing 410313 card remains in position 3.
13	Install 410311 card of Step 2 back in position 1.
14	Connect two cables (EIA interconnect and LED display) to the 410311 card. Connect the two right SSI interconnect cables to the 410313 card in position 2. Connect the two remaining SSI interconnect cables to the 410313 card in position 3.
15	Remove 452156 decal, and install 452157 decal in its place. Install 452213 ID label on card of Step 6. Install 452214 ID label of Step 7. Reinstall left-side cover which was removed in Step 1. Do not change controller code plate.
16	Turn on controller power and perform controller self-test of Section 582-300-500 according to the decal of Step 15.
17	When controller passes test of Step 16, install device SSI cables on controller in accordance with the order. The SSI cables should be marked in accordance with Fig. 21.

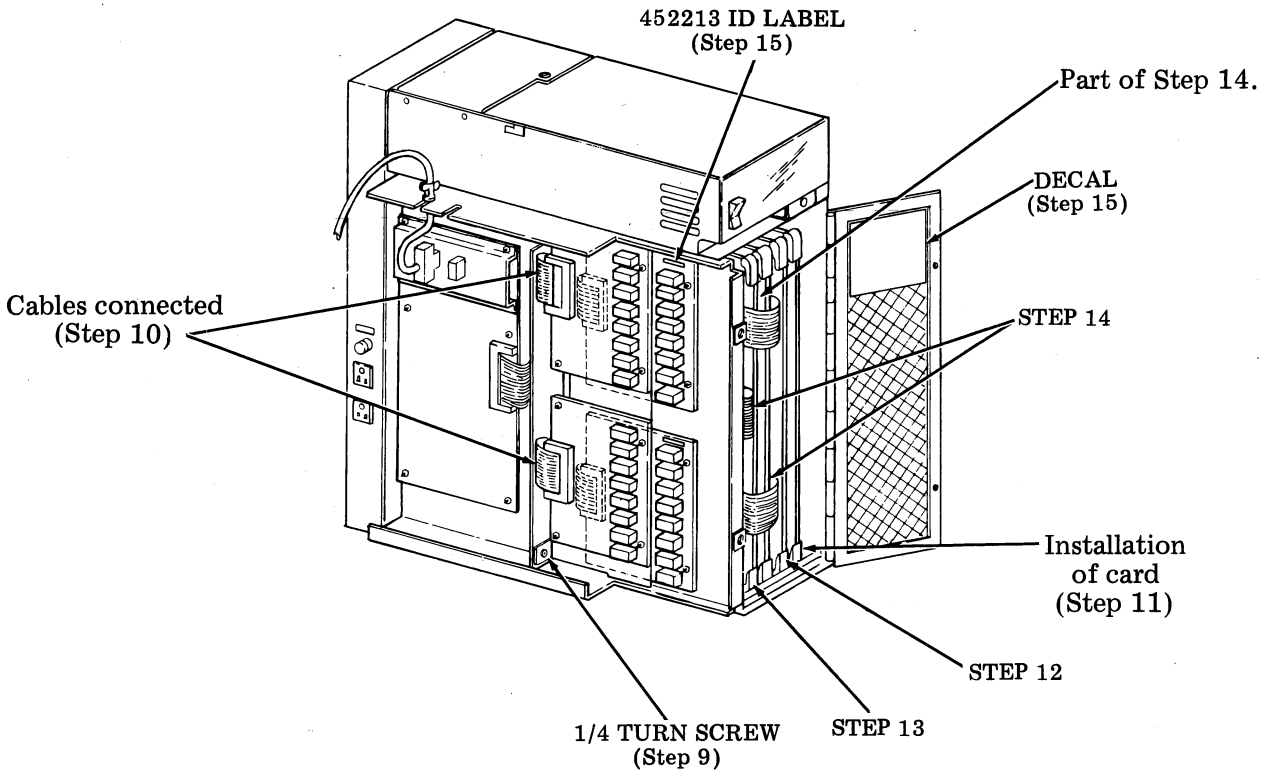


Fig. 111

CHART (Contd)

STEP	PROCEDURE
18	Route device cables to devices and install devices in accordance with the order.
19	Check out devices using the procedures of Section 582-300-500.
20	Install and secure controller in cabinet. Dress cables as required to avoid cable damage. Install controller cabinet front panel.
END OF PROCEDURE	

CONVERSION FROM 32-DEVICE CONTROLLER TO 16-DEVICE CONTROLLER

5.06 Material required:

(1) 32-device Controller
(1) 452156 Decal
(1) 452244 Plate

5.07 Material removed and no longer required on controller:

(1) 410313 Circuit Card
(2) 410319 Circuit Cards
(2) 452154 Cables
(1) 442157 Decal

Leave the four rear existing 451365 spacers installed. Reinstall the four 430732 nuts with lockwashers over the rear spacers. Leave the ID labels on the removed 410319 cards.

5.08 Conversion method is similar to the method given in 5.05. When the conversion is complete:

- The 45FG110 circuit card will be in position 3.
- Only two 410319 circuit cards and two 452154 cables will be present.
- The 452156 decal will be installed in place of the 452157 decal.
- The 452244 plate (Fig. 109) will be installed.
- Before returning the controller to service, the controller and attached devices must pass the applicable tests of Section 582-300-500.

CONVERSION FROM 8-DEVICE CONTROLLER TO 16-DEVICE CONTROLLER

5.09 Material required:

(1) 8-Device Controller
(1) 410313 Circuit Card
(1) 410319 Circuit Card
(1) 452154 Cable
(2) 451365 Spacers
(2) 430732 Nuts with Lockwashers
(1) 452156 Decal
(1) 452212 ID Label

5.10 Material removed and no longer required on controller:

(1) 410314 Circuit Card
(1) 452155 Decal
(1) 452243 Plate

5.11 Conversion method is similar to the method given in 5.05. When the conversion is complete:

- The 410313 circuit card will be in position 2.
- The 410319 circuit card will be installed below the existing 410319.
- The 452212 ID label will be installed on the new 410319 above the top SSI connecter.
- The 452154 cable will be connected. The 452156 decal will be installed in place of the 452155 decal.
- Before returning the controller to service, the controller and attached devices must pass the applicable tests of Section 582-300-500.

CONVERSION FROM 16-DEVICE CONTROLLER TO 8-DEVICE CONTROLLER

5.12 Material required:

(1) 16-Device Controller
(1) 410314 Circuit Card
(1) 452155 Decal
(1) 452243 Plate

5.13 Material removed and no longer required on controller:

(1) 410313 Circuit Card
(1) 410319 Circuit Card
(1) 452154 Cable
(1) 452156 Decal

Leave the two rear existing 451365 spacers installed. Reinstall the two 430732 nuts with lockwashers over rear spacers. Leave the ID label on the removed 410319 card.

5.14 Conversion method is similar to the method given in 5.05. When the conversion is complete:

- The 410314 circuit card will be in position 2.
- Only the upper 410319 circuit card will be present.
- The 452155 decal will be installed in place of the 452156 decal.
- The 452243 plate will be installed in the position of the lower 410319 of Fig. 109.
- Before returning the controller to service, the controller and attached devices must pass the applicable tests of Section 582-300-500.

CONVERSION FROM 8-DEVICE CONTROLLER TO 32-DEVICE CONTROLLER

5.15 Material required:

(1) 8-Device Controller
(2) 410313 Circuit Cards
(3) 410319 Circuit Cards
(3) 452154 Cables
(6) 451365 Spacers
(6) 430732 Nuts With Lockwashers
(1) 452157 Decal
(1) 452212 ID Label
(1) 452213 ID Label
(1) 452214 ID Label

5.16 Material removed and no longer required on controller:

(1) 410314 Circuit Card
(1) 452155 Decal
(1) 452243 Plate
(1) 452244 Plate

5.17 Conversion method is similar to the method given in 5.05. When the conversion is complete:

- The 410313 circuit cards will be in positions 2 and 3.
- The 45FG110 type circuit card will be in position 4.
  There will be four 410319 circuit cards on the left side.
- The 452212 ID label will be installed on the new 410319 (below the existing 410319) above the top SSI connector.
- There will be four 452154 cables connected between 410319 cards and 410313 cards.
- The 452213 ID label will be installed on the new 410319 (in front of the exisiting 410319) above the top SSI connector.
- The 452214 ID label will be installed on the new 410319 (in front but lower than the existing 410319) above the top SSI connector.
- The 452157 decal will be installed in place of the 452155 decal.
- Before returning the controller to service, the controller and attached devices must pass the applicable tests of Section 582-300-500.

CONVERSION FROM 32-DEVICE CONTROLLER TO 8-DEVICE CONTROLLER

5.18 Material required:

(1) 32-Device Controller
(1) 410314 Circuit Card
(1) 452155 Decal
(1) 452243 Plate
(1) 452244 Plate

5.19 Material removed and no longer required on controller:

(2) 410313 Circuit Cards
(3) 410319 Circuit Cards
(3) 452154 Cables
(1) 452157 Decal

Leave the six rear existing 451365 spacers installed. Reinstall the two 430732 nuts with lockwashers over rear spacers. Leave the ID label on the removed 410319 card.

5.20 Conversion method is similar to the method given in 5.05. When conversion is complete:

- The 410314 circuit card will be in position 2.
- The 45FG110 circuit card will be in position 3.
- Only the upper 410319 card (Fig. 109) will be present.
- The 452155 decal will be installed in place of the 452157 decal.
- The 452243 plate will be installed in the position of the lower 410319 card of Fig. 109.
- The 452244 plate will be installed in the positions of the 410319 cards of ports 17 through 32.
- Before returning the controller to service, the controller and attached devices must pass the applicable tests of Section 582-300-500.

6. ADJUSTMENTS

6.01 The only adjustments in the station are in printers, printer cabinets, the SCC and monitors.

6.02 Line printer adjustments are given in Section 582-210-250. Line printer cabinet adjustments are given in Section 582-212-700. Character printer adjustments are given in Section 582-310-700 (estimated availibility, 2nd quarter 1981).

6.03 The SCC may require this adjustment for the door so that the captive 1/4-turn screws on the door, refer to Fig. 15, line up with the speed nuts on the module:

- With door open, loosen the three 430732 nuts with lockwashers (friction tight).
- Close door and align the 1/4-turn screws with the speed nuts.
- Open door and tighten the three nuts.

MONITOR ADJUSTMENTS

6.04 Make monitor adjustments during station installation only when one of the conditions exists when the attendant brightness is fully turned up and characters are displayed (you may have to enter characters from the keyboard):

- Raster is too bright or not visible at all.
- Characters are not in focus.
- Characters not of uniform size as gauged by eye.
- A line of characters is not parallel to the top and bottom of the tube face as gauged by eye.
- After a three minute warm-up, 80 columns by 24 lines is displayed as 11-1/4 inches ±1/4 inch by 5 -1/4 inches ±1/8 inch as gauged by eye.

Danger: Wear safety glasses when the monitor housing is removed, and observe all safety precautions to avoid accidental electrical shock or breakage of the cathode ray tube. Insure that nothing can fall out of your pocket and strike the tube.

6.05 Make adjustments by following the procedures of Section 582-213-700.

7. TOOLS AND SUPPLIES

7.01 The following tools and supplies or equivalent may be required for installation or servicing of 4540 stations. Most of these items should normally be present in standard maintenance tool kits. Items not marked with * are also required for 40/4 stations.

Tools

151394	Brush, Type Cleaning
452205	*Crimping Tool (for SSI cable — two steps per terminal)(Molex HT1921)
452242	*Crimping Tool (for SSI cable — one step per terminal)(Molex HTR1719C)
108286	Pliers, Cutting
400610	Gauge (Friction Feed Printer)
402617	Gauge (Tractor Feed Printer)
452206	*Insertion Tool (for SSI Cable)
346257	Extractor, Keyswitch
346260	Extractor, Keytop
405247	Label, Blank
108285	Pliers, Long Nose
135676	Handle, Nut Driver
135677	Bit, 1/4" Socket
135678	Bit, 5/16" Socket
160396	Pliers, Retaining Ring
95960	Gauge, Tape (To use as 6" ruler)
95368	Screwdriver, 1/8", 2" Blade
100982	Screwdriver, 1/4", 6" Blade
94647	Screwdriver, 1/4", 3-1/2" Blade
142554	Hook, Pull Spring
75765	Hook, Pull Spring
75503	Hook, Push Spring
346392	Strap, Static Discharge (Required only if circuit cards are handled)
341983	Extractor, Terminal (for data set connector)
402840	Extractor, Terminal (for 40-type connectors including SSI cables)(Molex HT2285)
406303	*Test Card (for 45K301/GAA/002 Keyboard)
151392	Tweezers
125752	Wrench, 3/16" Socket
125765	Wrench, 3/8" Open End
129534	Wrench, 3/16" and 1/4" Open End
152835	Wrench, 5/16" and 3/8" Open End
129537	Wrench, 3/4" and 9/16" Open End
129536	Wrench, 7/16" Open End

Supplies

145867	Grease, All Purpose
KS7470	Oil
402640	Compound, Thermal
402444	Ribbon w/Twin Spools
—	Paper (friction feed) standard 8-1/2" wide, 5" dia roll
—	Paper (tractor feed)
KS20406	L-1 Degreaser (trichlorotriflorethlyene)

8. PREPACK (REQUIRED PREPARATION OF COMPONENTS PRIOR TO SHIPMENT)

8.01 In general, packing should be in original factory cartons, if possible, or locally provided equivalent packing (when available). References in Part 8 to paragraph numbers apply to this section; however, reference can be made to Section 582-300-700 if required.

Controller (SCC)

8.02 Disconnect all cables to controller. Remove controller from 45CAB401/AAA cabinet. The cabinet is not designed to support the controller in shipment. Leave the 45FG110-type card in the controller (See Part 3.)

Circuit Cards

8.03 When a loose circuit card is to be shipped, place in an antistatic bag. Do not place paper in the bag. Monitor circuit cards are the exception; they do not require this protection. (See Section 582-300-700.)

Data Set

8.04 If data set is installed in 45CAB401/AAA cabinet, disconnect data set from controller and remove data set from cabinet. Keep the data set power cord with the data set.

KDs

8.05 Disconnect SSI cable to SCC and disconnect power cord from outlet. Separate monitor from display base. Disconnect keyboard. Attached style KD: Remove keyboard cable from table bracket and remove termination box from table. Free-standing style KD: Remove termination box from customer table. (See Fig. 90 and 99.)

8.06 Monitor: Remove plastic bottom plate (snap panel) of monitor and pull tilt lever forward to storage position (late tilt lever style), insert PK material for tilt lever (early tilt lever style), or install packing clip (tilt wheel style). Keep snap panel with monitor. (See Fig. 89.)

8.07 Display Bases: Remove cable to display base for separate packing; reinstall cable retaining screw in base. If locally provided packing permits, keep base and cable together. (See Fig. 86.

8.08 Free-Standing Keyboard: Unless locally provided packing permits packing keyboard and keyboard base together, disconnect keyboard from base. (See Fig. 93.)

8.09 Remove keyboard top cover by releasing the two latches with a screwdriver for separate packing. The exception is 45K301-type keyboards which can be shipped with cover installed.

Tables

8.10 4540-Style tables should be disassembled before shipment unless packing material is not available. (See 3.54.)

Printers and Printer Cabinets

8.11 Remove printers from cabinets so that they can be shipped separately. The one exception is a 40P101/ZZ printer in a 40CAB201 cabinet. Leave type carrier, ribbon, formout belt (tractor feed), and paper spindle (friction feed) on the printer.

40-Style Pedestals

8.12 Leave tops on pedestals unless pack will not allow.

Cables

8.13 Cables other than SSI cables (controller/device) should be packed separately. The controller data set cable and keyboard base cables should be left connected to the controller and keyboard base respectively.

8.14 Assembled-type SSI cables should be packed separately.

8.15 The decision to ship unassembled-type SSI cables is subject to local consideration. SSI termination boxes require a separate decision. If shipped, these items should be shipped separately.

Packing Material

8.16 When available, the original container should be used. For components common to 40/4, see Section 582-200-290. The following specifications apply:

- 45C340 Controller — PS28031
- Monitor (See Section 582-200-290.)
- 45D101/XX Display — PS28030

- 40K104 or 40K105 Keyboard — PS28001
- 40K203 Keyboard — PS28028
- 45K301 Keyboard — PS28029
- 40BSE101 Keyboard Base — PS28008
- 40BSE201 Keyboard Base — PS28032
- 45BSE301 Keyboard Base — PS28033
- 80-Column Friction Feed Printer — PS28011
- 80-Column Tractor Feed Printer — PS28024
- 132-Column Tractor Feed Printer — PS28020
- 40CAB351 80-Column Tractor Feed Printer Cabinet (40-Style) — PS27997
- 40CAB353 132-Column Tractor Feed Printer Cabinet (40-Style) — PS28007
- 40CAB201 80-Column Friction Feed Printer Cabinet (40-Style) — PS27986
- 40CAB371 Noise Reduced 80-Column Friction Feed Printer Cabinet — PS27997
- 45CAB701 132-Column Tractor Feed Printer Cabinet (4500-Style) — Not Available.

9. WORKING STATION CONSIDERATIONS

9.01 This part applies when complete stations, sets, or components are returned from service to WECO with Returned Material tags designating "Working Station" (WS).

9.02 Cables can also be sent to WECO. 452223 through 452228 SSI cables and unassembled SSI cables are excluded from this requirement except by local deviation.

9.03 Part 8 applies to all stations, including "working stations".

9.04 If any "WS" part fails at WECO, the entire component reverts to unrepaired C stock.

9.05 The requirements given in the following paragraphs are included to demonstrate the criteria of a working station. It can be assumed that a station that has recently been providing service needs no further checking other than for obvious damage. It is the intention of "WS" to have WECO return the units of the station to Telco substantially as received from Telco.

Mechanical Requirements

9.06 The tube tilt mechanism on the monitor should operate freely. The display tube should remain in position when the tilt control is released. When the monitor cover is removed, the monitor should automatically latch to prevent movement.

9.07 The 40-style printer cabinet cover should latch in the closed position. The printer, when in the cabinet, should latch securely in the operating position (all printers) and the maintenance position (except forms access). When the cover is closed, the printer should be able to operate.

9.08 The 4500-style printer cabinet cover should latch in two open positions. When the cover is closed, the printer should be able to operate.

Operating Requirements

9.09 The station should be capable of being operated on a 4-wire half-duplex communication link as specified in Section 582-300-500.

9.10 The appropriate character should be displayed or function performed for each keystroke of every nonblocked keyswitch on each keyboard.

9.11 Each monitor should be able to clearly display characters. When the monitor brightness control is turned to full intensity, the raster should be barely visible. A character (such as E) should be approximately equal in horizontal and vertical size in the four corners of the display. The display should be centered on the screen and should not be noticeably tilted. After a three minute warm-up period, overall size of the full data display area should be 11-1/4 (± 1/4) inches wide and 5-1/4 (±1/8) inches high.

9.12 The controller ventilating fan should circulate air when power to the electronics package is turned on. When a printer cabinet is equipped with a ventilating fan, the fan should circulate air when power is applied to the printer.

9.13 Each printer should be able to print characters.

9.14 Paper winders should take up slack paper at the maximum printing line-feed rate and should not affect the uniform line spacing on printed copy.

Mandatory Requirements

9.15 The properly rated fuses, as given in Section 582-300-750, should be present.

9.16 If the printer cabinet lid is opened when the printer motor is running, the motor should stop.