

Service Manual 325-059
Issue 1, April 1978

SERVICE MANUAL

dataspeed[®] **40₁**
SETS & STATIONS

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SERVICE MANUAL
for
"DATASPEED*" 40/1 SETS AND STATIONS

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For DATASPEED 40 components (printer, operator console, cabinets, display monitor, and power supply) refer to Service Manual 325-057.

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"DATASPEED*" 40/0 AND 40/1 SETS AND STATIONS

INSTALLATION

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B. Controller Logic (KD-KDP).	10	1.01 This section provides installation infor- mation for DATASPEED 40/0 Parallel Terminal Interface (PTI) and DATASPEED 40/1 Asynchronous Switched Network Station ap- plications. The nomenclature DATASPEED 40 is hereafter referred to as 40 type. Similarly, DATASPEED 40/0 and DATASPEED 40/1 are referred to, respectively, as 40/0 type and 40/1 type.	
5. KEYSWITCH AND KEYTOP IDENTIFICATION	11	1.02 Whenever this section is reissued, the rea- son for reissue will be listed in this para- graph.	
A. Keyboard	11	1.03 When ordering replaceable components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410055).	
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Danger 2: Wear approved safety glasses when the housing of the monitor is removed, as the display tube is fragile in the neck area and is subject to implosion if broken. Be careful not to strike the glass of the tube with tools or components when working in its vicinity.

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



Attach static ground strap tightly to wrist.



Attach clip end of static discharge strap to frame ground.

Fig. 1

1.05 An operational checkout should be performed after installation or on trouble calls. Procedures for checkout and correction of operational difficulties is provided in Section 582-200-500, DATASPEED 40/0 and 40/1 Sets and Stations — Testing and Troubleshooting.

2. IDENTIFICATION

2.01 Knowing what features are provided and how those features are programmed to operate provide the basic understanding necessary for installation, operational checkout, or "in the field" service call routines. Several methods are presented in the following paragraphs for determining terminal features and programming.

2.02 Features included in a terminal can be identified by observing if certain keytops are provided on the operator console, or if a certain type or quantity of printed circuit boards are present in the controller and display logic circuitry.

2.03 Programming on the 40-type terminal should be recorded on the Feature and Option Record (W-Plan, W-4TDXA, a part of Bell System Teletypewriter Standard Equipment Arrangements, BSTSEA, includes the Feature and Option Record and is to be provided with the 40-type terminal). Features, options, special notations, or changes thereof must be recorded by checking ☒ the appropriate square on the record form. The Feature and Option Record should be maintained at the 40-type terminal for future reference.

2.04 TELETYPE® standard Parallel Terminal Interface (PTI) terminals (40/0 type) may also be equipped with the external mode control 410678 circuit card (2 interface cables). A PTI terminal connects directly to a station control device or similar equivalent signaling input/output data processing equipment. Refer to Section 579-505-352, Field Installation Maintenance Practice.

2.05 On switched network stations (40/1 type), the data set shown may be a telephone set with an exclusion key instead of the DATA and TALK keys. The TEST key is located under the pedestal and there is no AUTO answer key.

2.06 References in this section to Teletype Standard Serial Interface (SSI) describe input/output signaling characteristics for devices using high-speed SSI signals.

3. TYPICAL EQUIPMENT CONFIGURATIONS

3.01 Keyboard Display (KD) Set (Fig. 2)

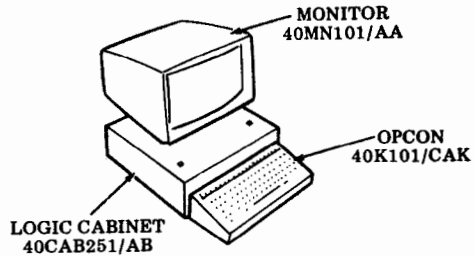


Fig. 2

3.02 Keyboard Display (KD) Station (Fig. 3)

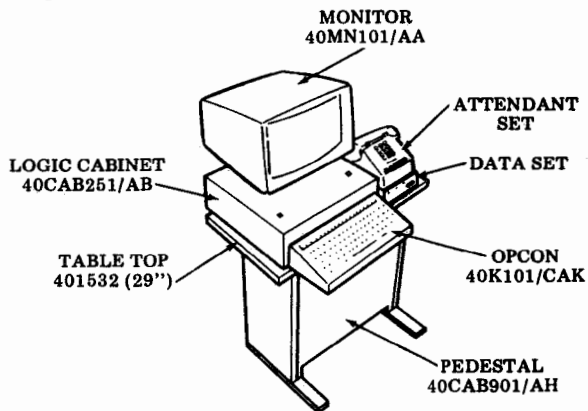


Fig. 3

3.03 Keyboard Display (KD) Set With Pedestal (Fig. 4)

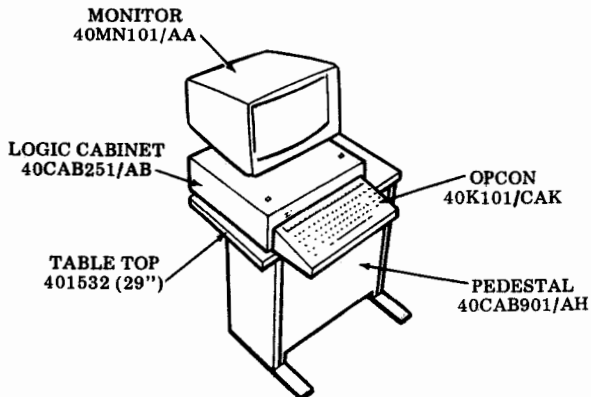


Fig. 4

3.04 Keyboard Display Printer (KDP) With Adjacent Printer (Fig. 5)

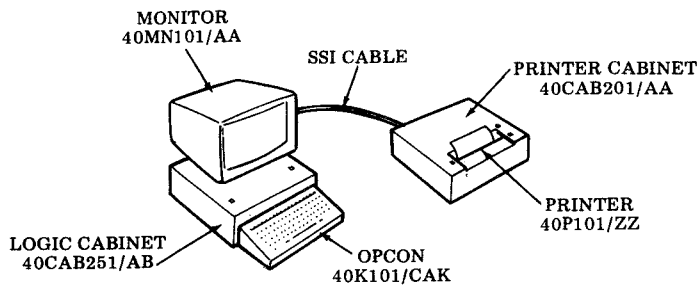


Fig. 5

3.05 Keyboard Display Printer (KDP) With Adjacent Logic (Fig. 6)

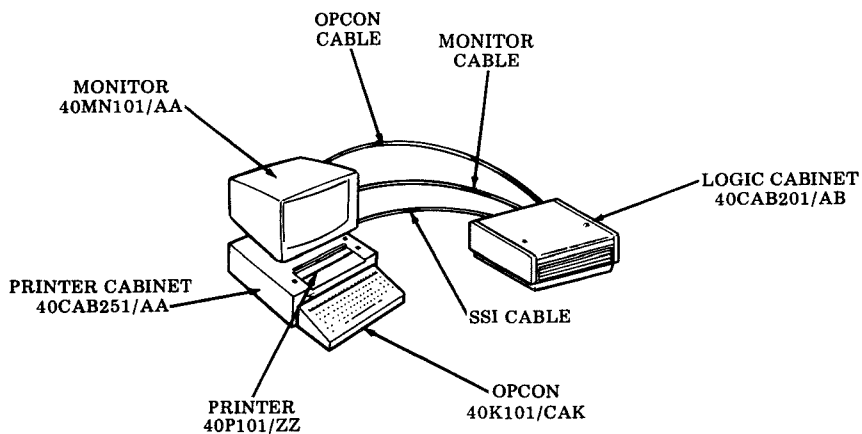


Fig. 6

3.06 Keyboard Display Printer (KDP) Station (Fig. 7)

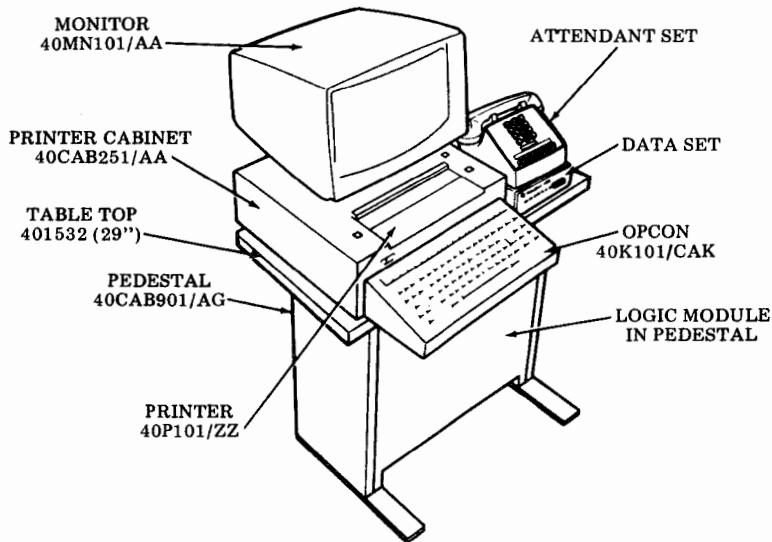


Fig. 7

3.07 Keyboard Display Printer (KDP) Set on Same Top and Pedestal (Fig. 8)

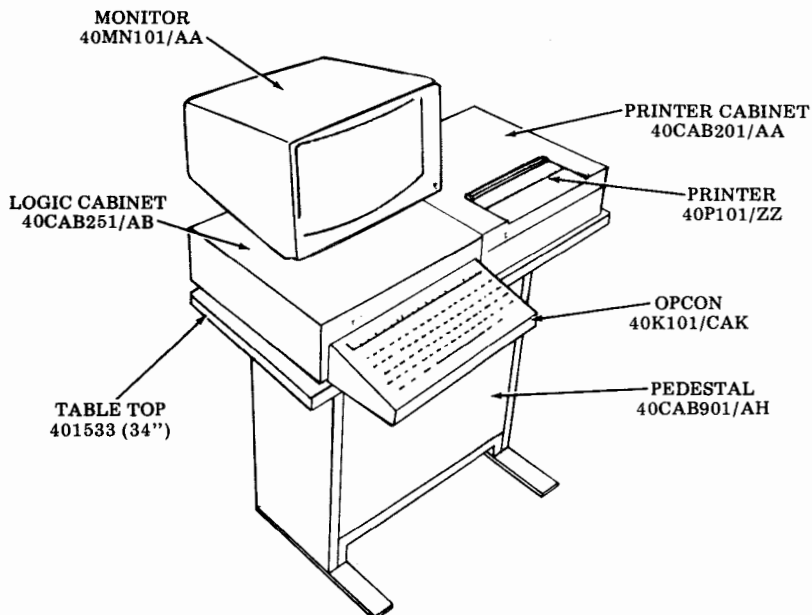


Fig. 8

3.08 Keyboard Display Printer (KDP) Station With Tractor Feed Printer on Its Own Pedestal (Fig. 9)

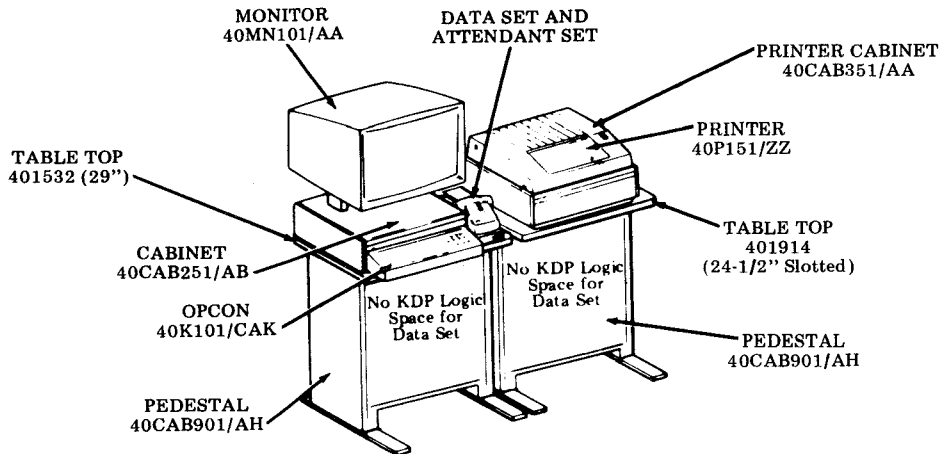


Fig. 9

3.09 Keyboard Display Printer (KDP) Set With Adjacent Tractor Feed Printer — Table Model (Fig. 10)

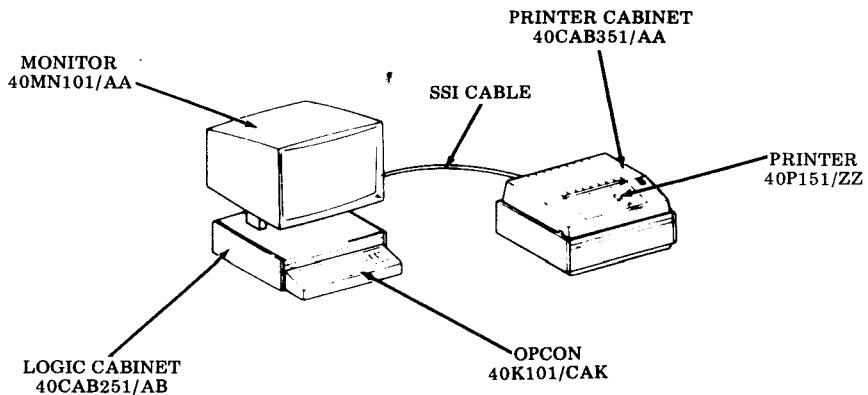


Fig. 10

3.10 Receive-Only Printer (ROP) Station — Friction Feed (Fig. 11)

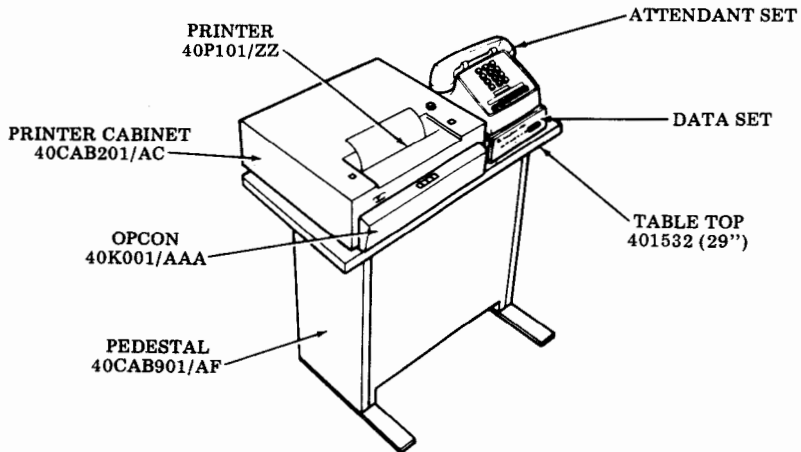


Fig. 11

3.11 Receive-Only Printer (ROP) Station — Tractor Feed (Fig. 12)

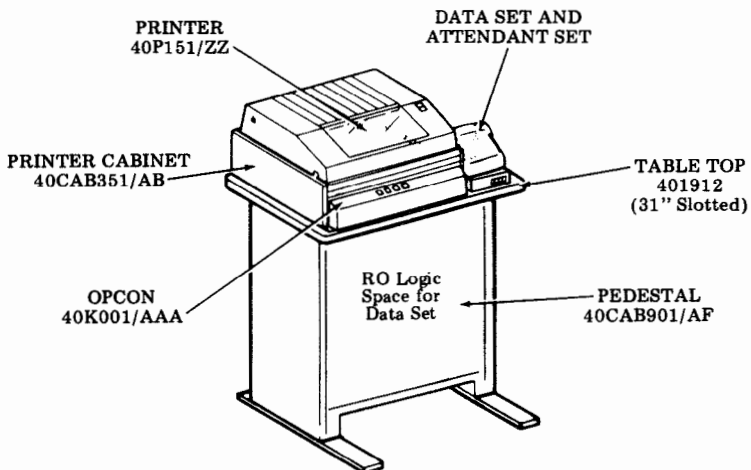


Fig. 12

3.12 Keyboard Display (KD) With Receive-Only 132-Column Tractor Feed Printer (Fig. 13)

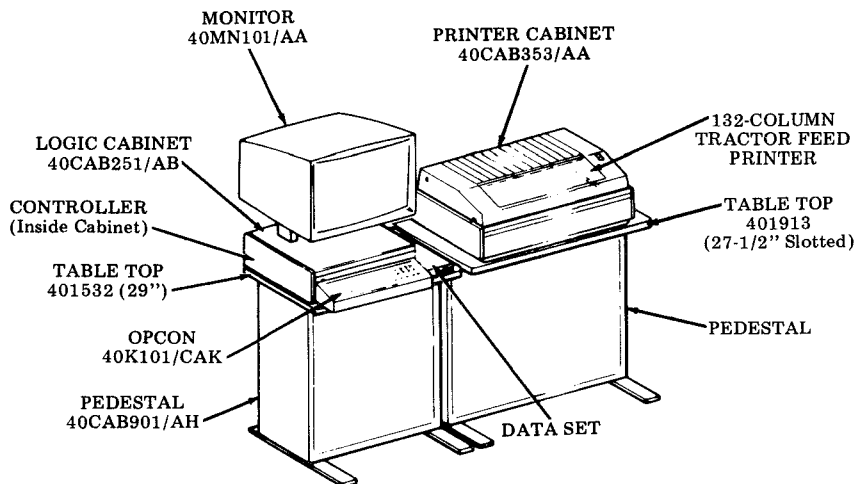


Fig. 13

4. CIRCUIT CARD ARRANGEMENTS

A. Display Logic (Fig. 14)

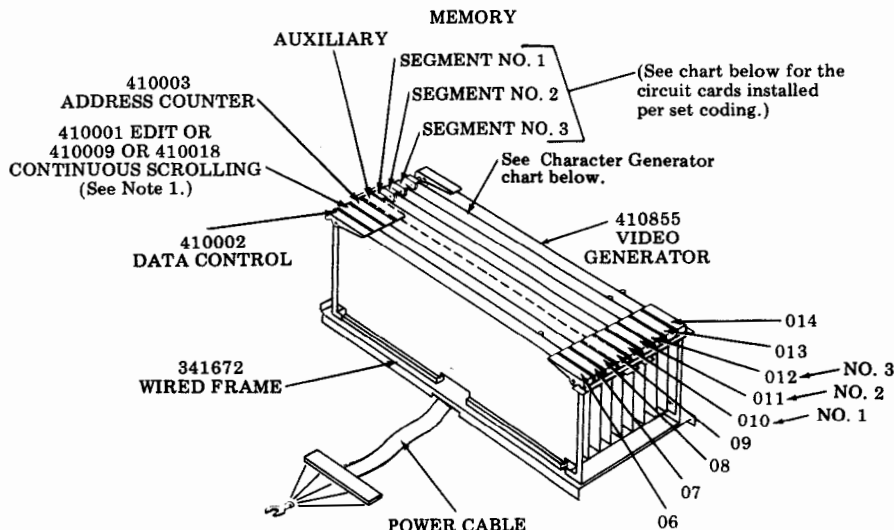


Fig. 14

CHARACTER GENERATOR OPTIONS	
POSITION 013	DISPLAY TYPE
410657	Standard ASCII *
410020	Line Drawing
410021	Fractions
410022	Weather

*Factory Standard in 40DL291/ZZ and 40DL291/BR

MEMORY SEGMENT CARDS FOR DISPLAY LOGIC (40DL291) (See Note 2.)						
Memory Segment	Basic 24 Lines	Basic 48 Lines	Basic 72 Lines	Full Edit 24 Lines	Full Edit 48 Lines	Full Edit 72 Lines
No. 1	410004	410004	410004	410005	410005	410005
No. 2	None	410004	410004	None	410005	410005
No. 3	None	None	410004	None	None	410005
Used With Basic Edit Controller (40C102)				Used With Full Edit Controller (40C201 or 40C202)		

Note 1: The 410001 circuit card is provided in 40DL291/ZZ display logic, and the 410018 circuit card is provided in 40DL291/BR. The 410009 circuit card is manufacture discontinued.

Note 2: The 410004 circuit card is interchangeable with 410014 circuit card and the two cards may be used together in the same display logic. The 410005 circuit card is interchangeable with 410015 circuit card and the two circuit cards may be used together in the same display logic.

B. Controller Logic (KD-KDP) (Fig. 15)

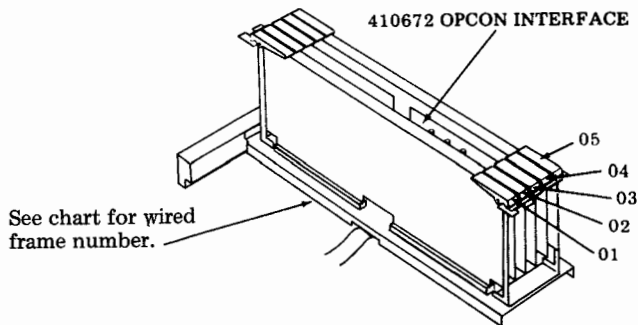


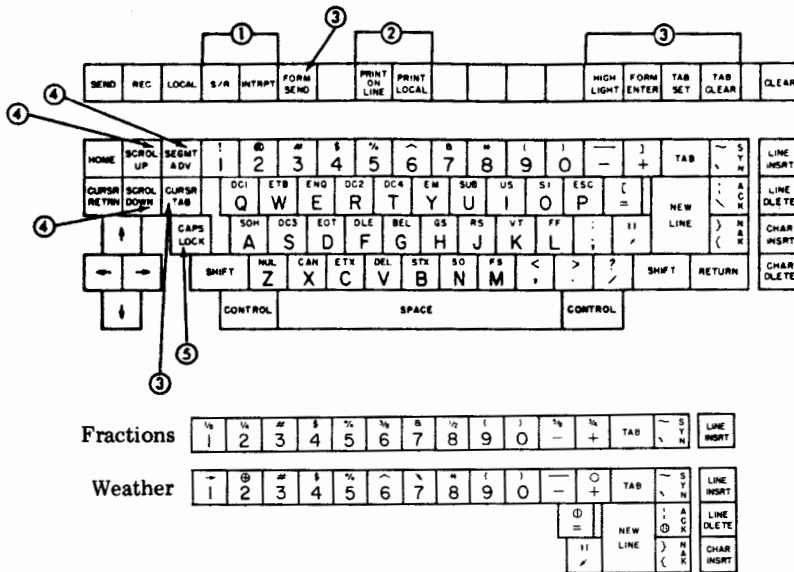
Fig. 15

	BASIC EDIT		FULL EDIT			PTI		
POSITION	40C102/AB	40C102/AC	40C202/BC	40C202/BD	40C202/BG	40C201/BA	40C201/BB	CARD DESCRIPTION
01				410670				S/R and Printer
							410678	External Mode Control
02	410671	410671	410671	410671				EIA Interface
						410677	410677	PTI Interface
03	410672	410672	410672	410672	410672	410672	410672	Opcon Interface
			410676	410676	410676	410676	410676	Send Variations
04	410670							S/R and Printer
			410675	410675	410675	410675	410675	Message Control
05	410669	410669						40-Type Control
			410674	410674	410674	410674	410674	Data Bus and Decode
WIRED FRAME	341907	341907	341909	341909	341909	341908	341908	

Note: 40C202/BG is a basic controller.
Other 40C202 controller codes may be derived by adding appropriate cards to the BG controller.

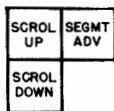
5. KEYSWITCH AND KEYTOP IDENTIFICATION

A. Keyboard (Fig. 16)



B. Add-On Features For 40-Type Terminals or Stations

5.01 Expanded Memory

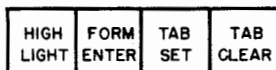


These edit controls are provided when terminal display memory is expanded to either 48 or 72 lines.

48 LINE expanded memory terminals have two 410004 or 410005 circuit cards (in Segment 1 and Segment 2 positions) in the Display Logic Module.

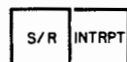
72 LINE expanded memory terminals have three 410004 or 410005 circuit cards (in Segment 1, 2, and 3 positions) in the Display Logic Module.

5.02 Full Edit



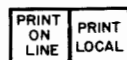
These edit controls are provided when a terminal has a complete edit complement.

5.03 Conversation Mode



Provided on operator console for "Line at a time" or "multiple line" operation.

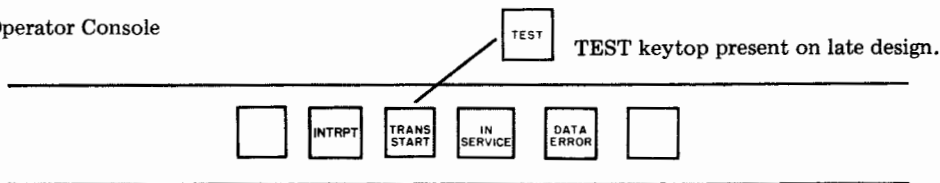
5.04 Page Printer



Provided in operator console arrangement when Model 40 page printer is provided with terminal.

C. Standard Features For 40-Type ROP/Stations

5.05 Operator Console



5.06 ROP stations with a 40C103/AD Controller have a 1000-character storage unit. ROP stations with a 40C103/AE Controller do not have the storage capability.

6. INTERFACING

6.01 Fig. 17 shows the PTI signal leads to the 40/0 type terminal.

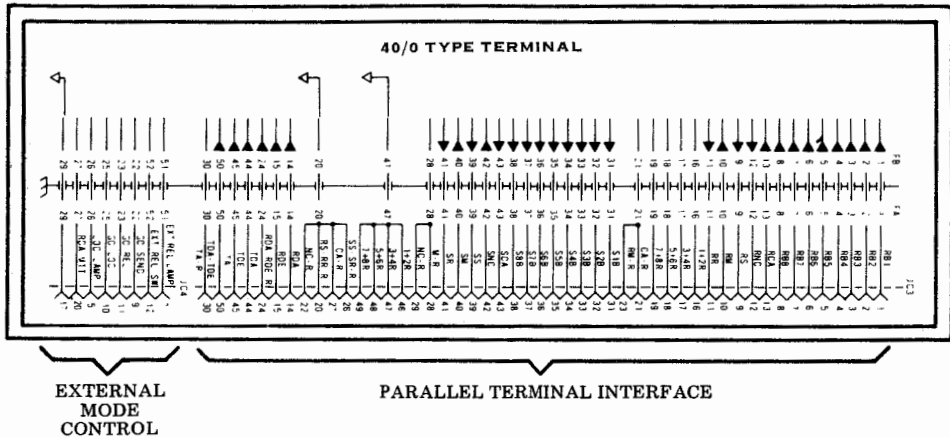


Fig. 17

6.02 Fig. 18 shows the EIA RS-232-C interface signal leads to the 40/1 type terminal.

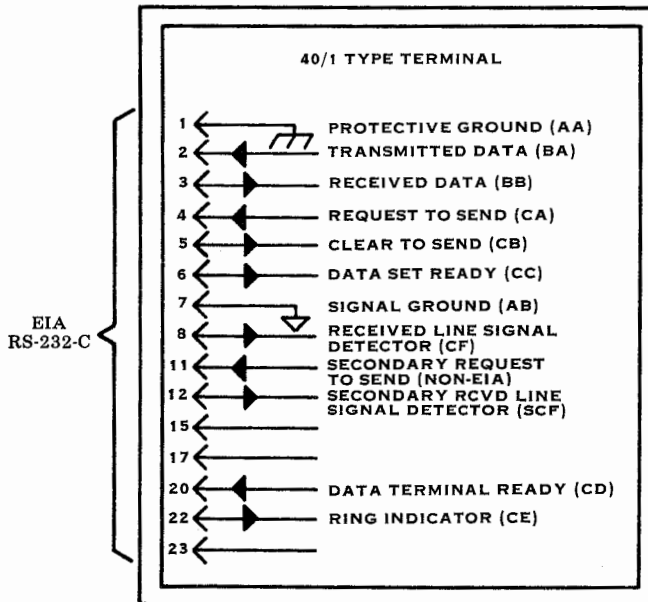


Fig. 18

7. STATION ASSEMBLY

- 7.01 Following are procedures that contain assembly instructions for terminal installation. Select the appropriate procedure(s) depending on the terminal being installed.
- 7.02 Make sure the Feature and Option Record (W-4TDXA) is properly filled out and stored with the terminal at the time of installation.

A. Pedestal Assembly (Fig. 19)

Step 1 — Unpack all cartons following the unpacking instructions on the individual cartons.

Step 2 — Mount pedestal top to pedestal (four screws with lockwashers).

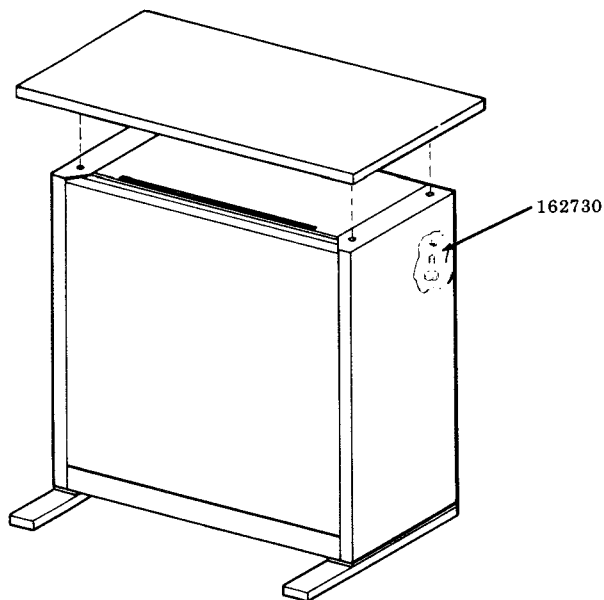


Fig. 19

B. Electronics Package (Under Monitor/Adjacent) — KD and KDP

7.03 If display logic and controller logic are already assembled in the electronics package, proceed with the power supply assembly, Step 19.

Step 1 — Tilt up cabinet or place over edge of table and remove mounting hardware (Fig. 20).

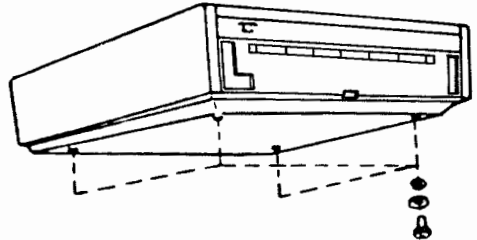


Fig. 20

Step 2 — Open lid.

Step 3 — Insert fingers as shown and lift. Then pull module forward until it engages the stop (Fig. 21).

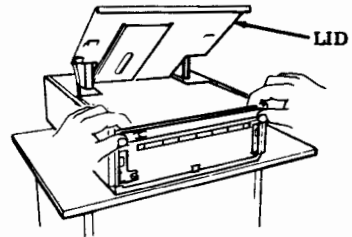


Fig. 21

Step 4 — Insert screwdriver under latch and lift up on latch. Lift up on module and slide forward (Fig. 22).

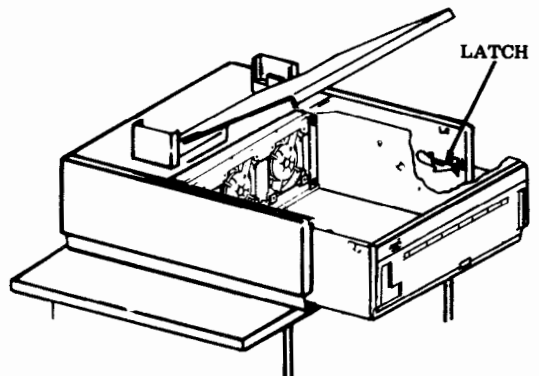


Fig. 22

Step 5 — Reach in and disconnect ac power cable. Slide module completely out of cabinet (Fig. 23).

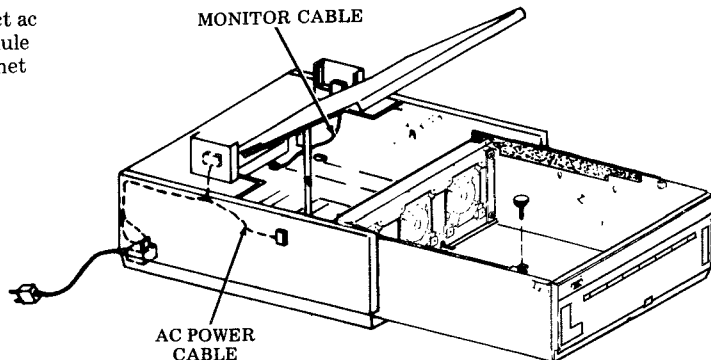


Fig. 23

Step 6 — Remove 408050 ventilation assembly by removing three screws and the flat washer, lockwasher, and nut (Fig. 24).

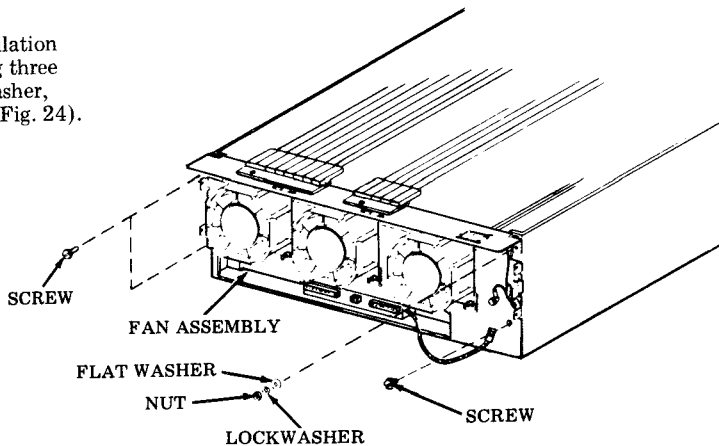


Fig. 24

Step 7 — Check the display logic making sure the cards are seated and properly positioned for called arrangement (Fig. 25). Refer to Fig. 14 for circuit card numbers and their proper locations.

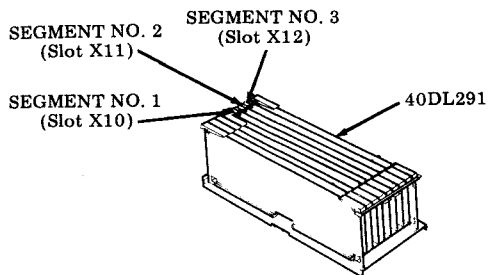


Fig. 25

Step 8 — Remove muslin bag containing the 341819 shoulder screw and 181204 flat washer used to mount the display logic into the frame and retain for later assembly (Fig. 26).

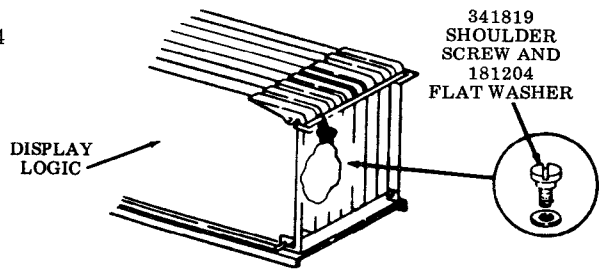


Fig. 26

Step 9 — Install display logic into frame (Fig. 27).

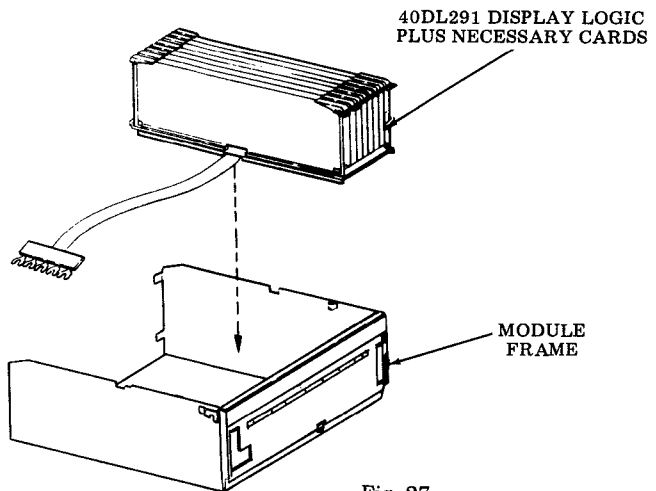


Fig. 27

Step 10 — Position the display logic over the guide in the module frame and route power ribbon cable flat against bottom of module frame to the opposite side (Fig. 28).

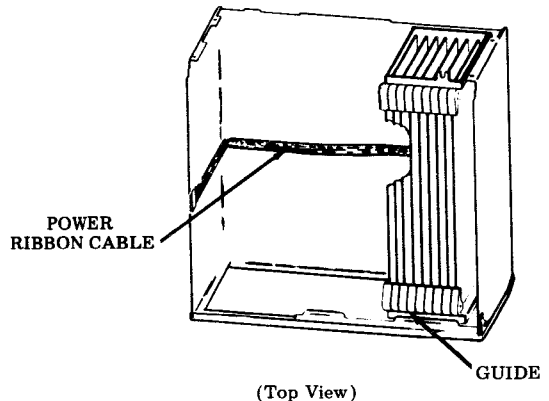


Fig. 28

Step 11 — Remove muslin bag containing 341819 shoulder screw and 181204 flat washer used to mount the controller logic into the frame and retain for later assembly (Fig. 29).

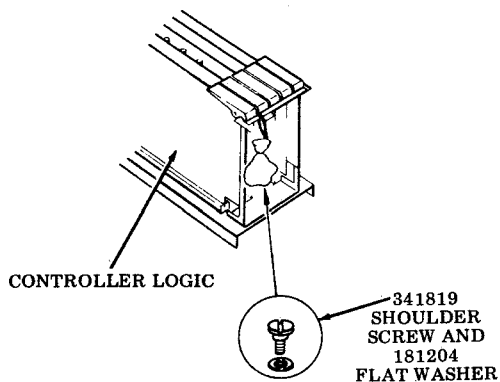


Fig. 29

Step 12 — Install the controller logic into module frame (Fig. 30).

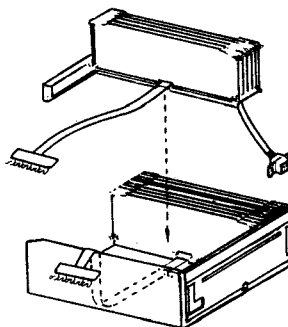
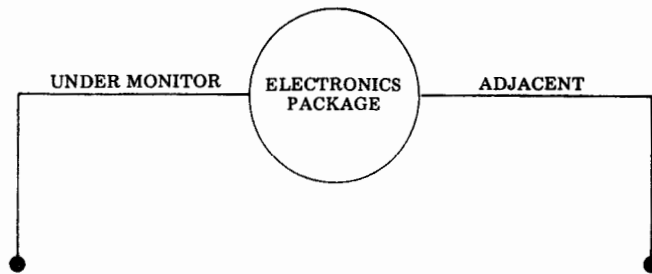


Fig. 30



Step 13 — Position controller bracket over guide in the frame. Route cables as shown (Fig. 31) (flat cable in center and opcon cable near front of cabinet). Slots in controller must fit over ribbon cable from the display logic.

Position controller bracket over guide in the frame. Route flat cable in center as shown (Fig. 32). Slots in controller must fit over ribbon cable from the display logic.

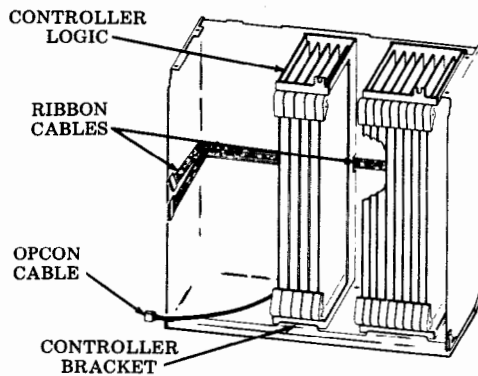


Fig. 31

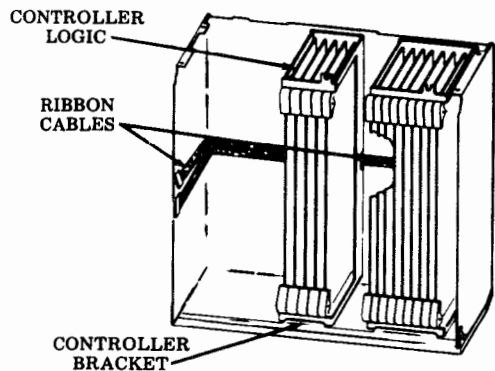


Fig. 32

Step 14 — Install 341740 ribbon cable (Fig. 33).

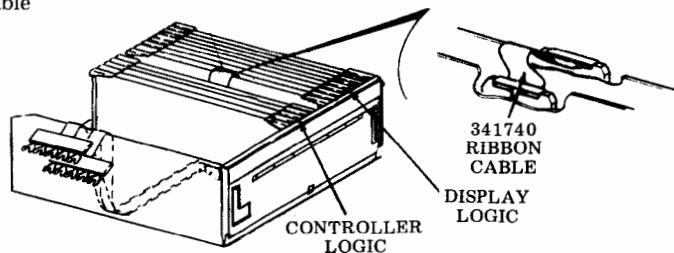
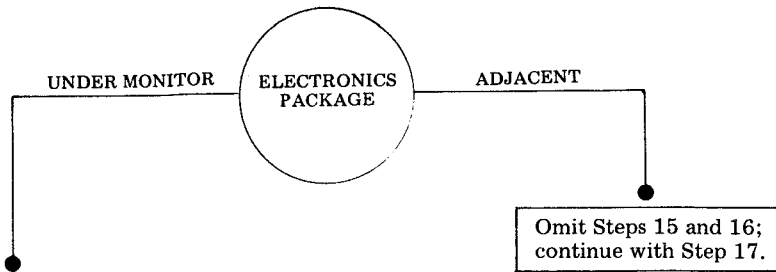
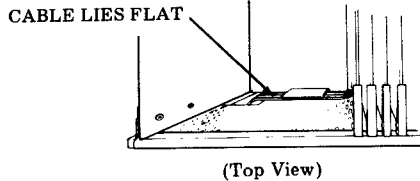


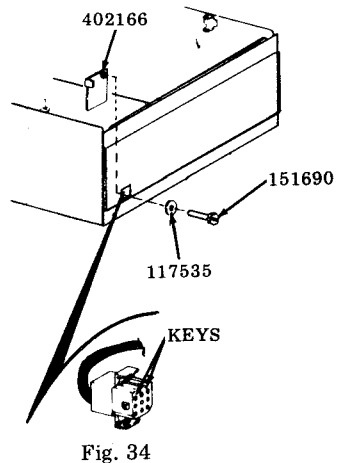
Fig. 33



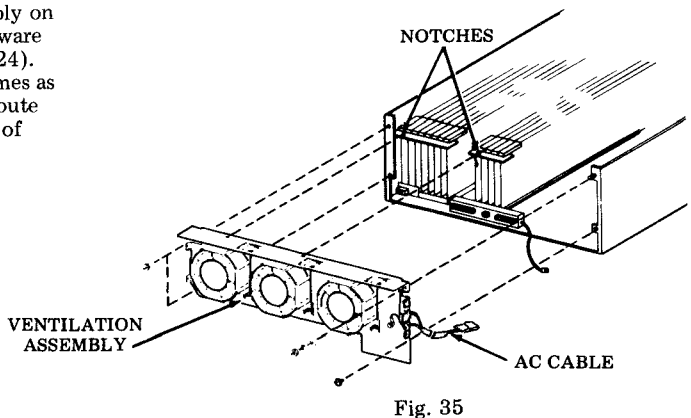
Step 15 — Route opcon cable in the module so that the cable lies flat against front of the module (Fig. 34).



Step 16 -- Insert opcon connector (keys up) into frame. Use retainer plate and hardware (tied in muslin bag to the frame) to clamp opcon cable.



Step 17 — Install ventilation assembly on the frame using the hardware removed in Step 6 (Fig. 24). Use notches on logic frames as a guide for alignment. Route ac cable along the inside of frame (Fig. 35).



Step 18 — Attach the braided ground strap to the slip-on terminal on the ventilation assembly (Fig. 36). Align the controllers and tighten screws and flat washers retained in Steps 8 and 11.

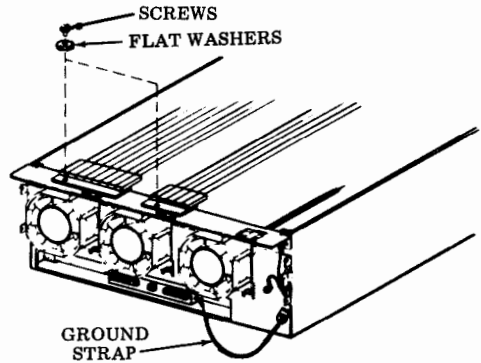


Fig. 36

Step 19 — Mounting the PSU101 Power Supply into module frame (see Note and Fig. 37):

- ① Loosen clamp screw and move clamp aside.
- ② Install power supply through slot and seat onto guide pins.
- ③ Drop handle.
- ④ Connect ac plug from ventilation assembly.
- ⑤ Loosen rear insulator screw and swing insulator aside. Loosen terminal block screws.
- ⑥ Place display logic cable on terminal strip (flat terminals) and then controller cable (formed terminals) on top. Tighten terminal screws.
- ⑦ Replace insulator.
- ⑧ Attach clamp in place over handle and tighten clamp screw.

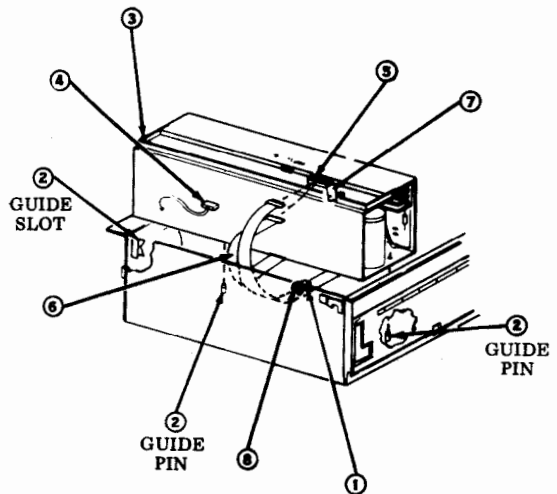
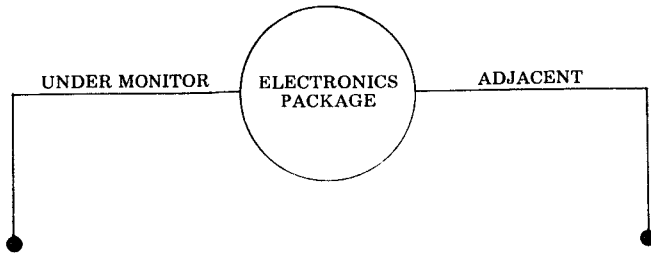


Fig. 37

Note: Frame grounding of circuit common is provided physically in the set power supply for display monitors with serial no. 10,000 and up and in lower serial numbered monitors which have 403594 modification kit installed. Display monitors and 40PSU101 power supplies with serial numbers below 10,000 were originally manufactured to provide frame ground in the display monitor. The two grounding arrangements are not compatible and should not be mixed within a set (reference TCNs 2097 and 2220).



Step 20 — Cable routing and connections (Fig. 38, 39 and 40):

- ① Slide module back into the cabinet far enough to engage the latch on the right side of the cabinet.
- ② Reach in and connect the ac power cable to the base of ventilation assembly.

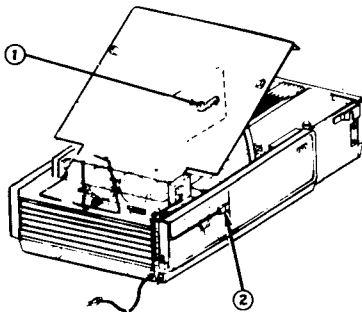


Fig. 38

Slide electronics package halfway into the cabinet. Connect cable from display logic. Connect power cable at rear of the ventilation assembly.

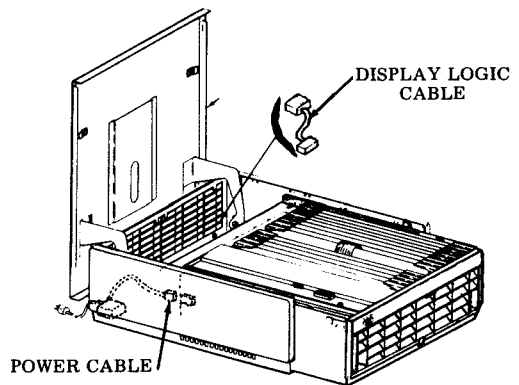


Fig. 39

- ③ Loosen shoulder screw. Slip clip on monitor cable under screw and flat washer and tighten screws.
- ④ Connect monitor cable.

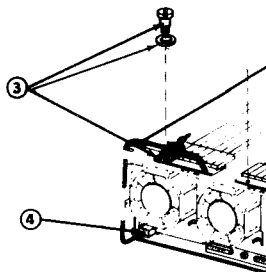


Fig. 40

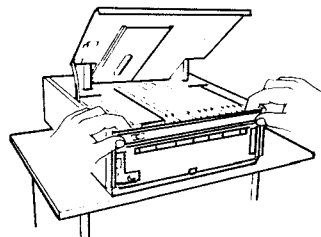


Fig. 41

Step 21 — Slide module back into position. Lift up slightly on module to seat in position (Fig. 41).

C. Electronics Package (In Pedestal) — KD and KDP

7.04 If display logic and controller logic are already installed in the electronics package proceed with the power supply assembly, Step 15.

Step 1 — Slide tabs inward and open panel carefully. Remove two screws and slide module out (Fig. 42).

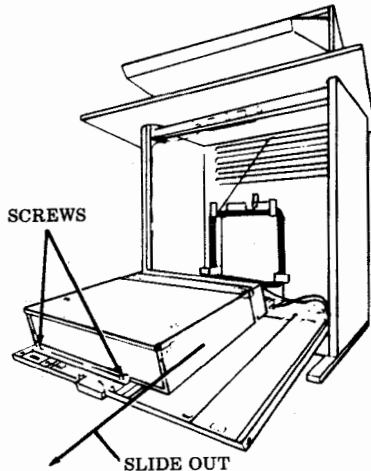


Fig. 42

Step 2 — Remove two captive screws and two rear screws (Fig. 43).

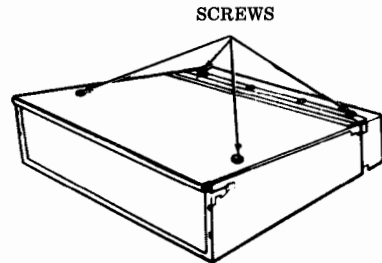


Fig. 43

Step 3 — Remove guard from back of module by removing four screws, flat washers and lockwashers (Fig. 44).

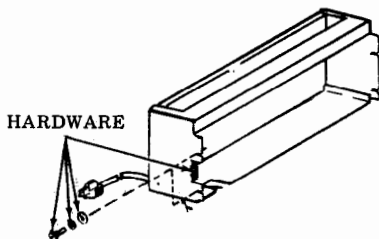


Fig. 44

Step 4 — Remove 408050 ventilation assembly by removing three screws, nut, lockwasher and flat washer (Fig. 45).

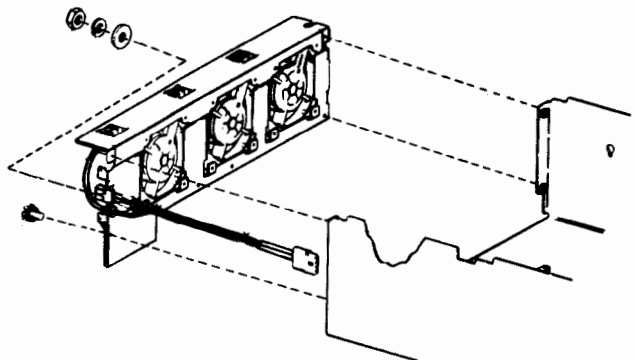


Fig. 45

Step 5 — Check the display logic making sure the cards are seated and properly positioned for called arrangement (Fig. 46). Refer to Fig. 14 for circuit card numbers and their proper location.

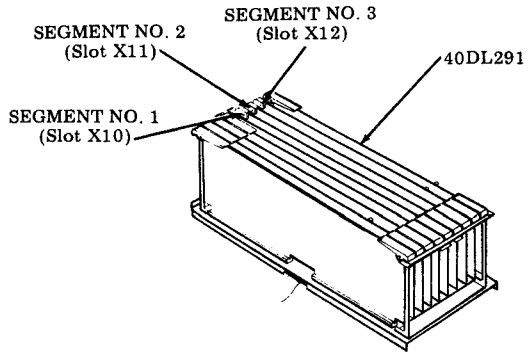


Fig. 46

Step 6 — Remove the muslin bag containing the 341819 shoulder screw and 181204 flat washer used to mount the display logic into frame and retain for later assembly (Fig. 47).

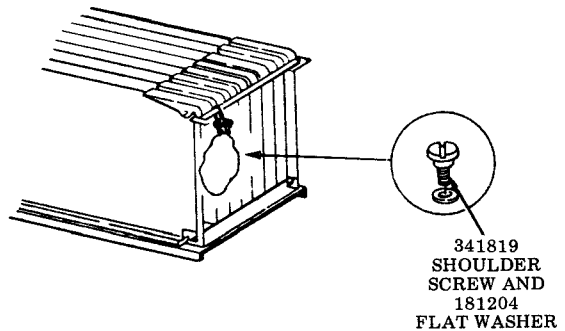


Fig. 47

Step 7 — Install display logic into frame (Fig. 48).

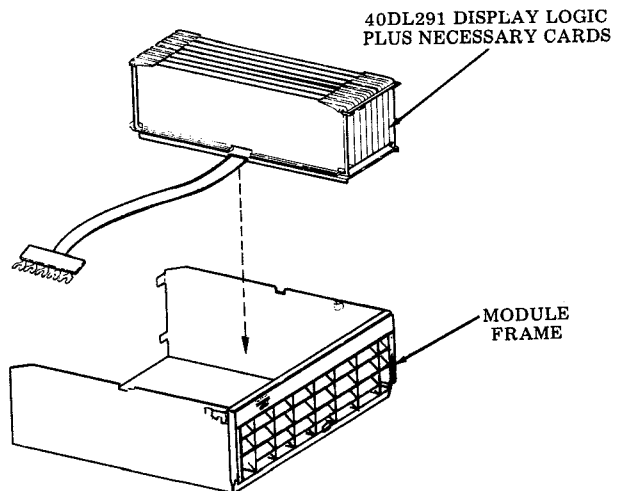
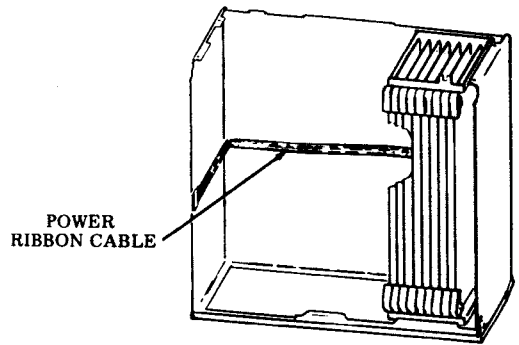


Fig. 48

- Step 8 — Route power ribbon cable flat against bottom of the module frame to the opposite side (Fig. 49).



(Top View)

Fig. 49

- Step 9 — Remove muslin bag containing 341819 shoulder screw and 181204 flat washer used to mount the controller logic into frame and retain for later assembly (Fig. 50).

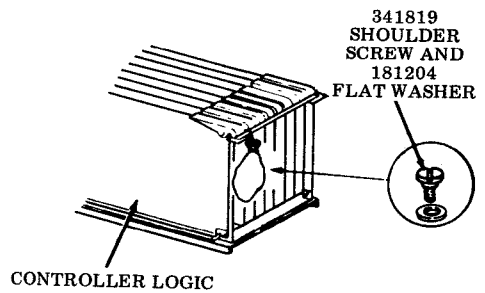


Fig. 50

- Step 10 — Install controller logic into module frame (Fig. 51).

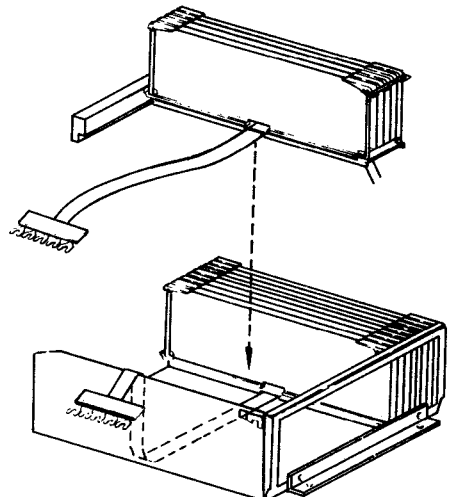


Fig. 51

- Step 11 — Route cables as shown (Fig. 52). Slots in controller must fit over ribbon cable from display logic.

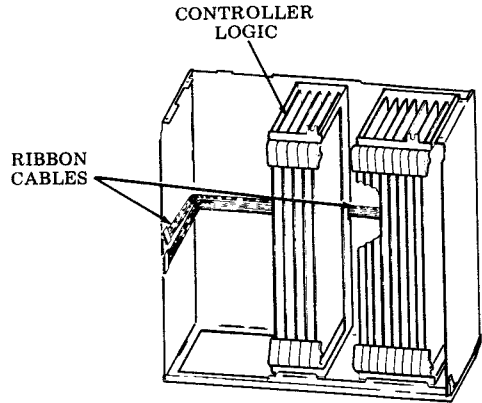


Fig. 52

- Step 12 — Install 341740 ribbon cable (Fig. 53).

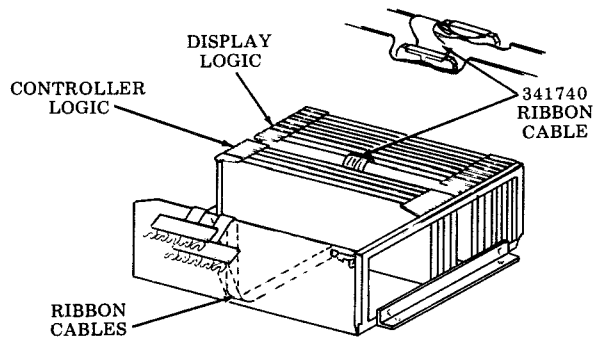


Fig. 53

- Step 13 — Install ventilation assembly on the frame using the hardware removed in Step 4. Use notches on logic frames as a guide for alignment. Route ac cable along the inside of frame (Fig. 54).

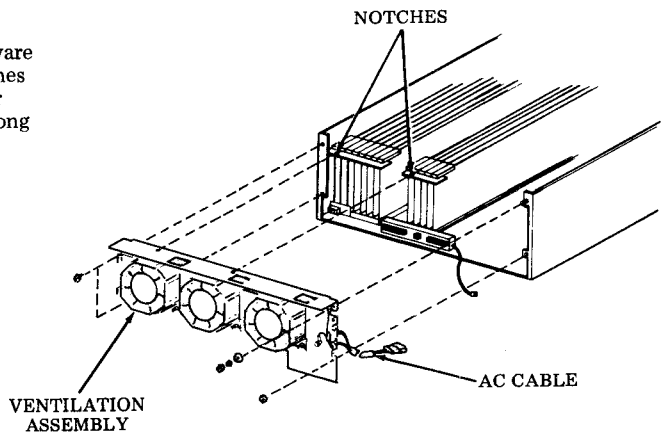


Fig. 54

Step 14 — Attach the braided ground strap to the slip-on terminal on the ventilation assembly (Fig. 55). Align controllers and tighten screws and flat washers retained in Steps 6 and 9.

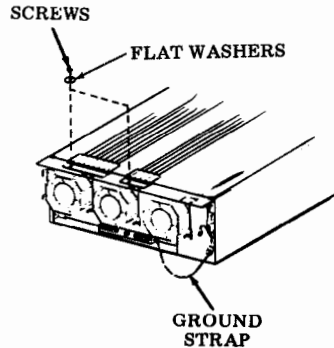


Fig. 55

Step 15 — Mounting the 40PSU101 Power Supply into module frame (see Note and Fig. 56):

- ① Install power supply through slot and seat onto guide pins.
- ② Drop handle.
- ③ Connect plug from ventilation assembly.
- ④ Loosen rear insulator screw and swing insulator aside.
Loosen terminal block screws.
- ⑤ Place display logic on terminal strip (flat terminals) and then controller cable (formed terminals) on top. Tighten terminal screws.
- ⑥ Replace insulator.

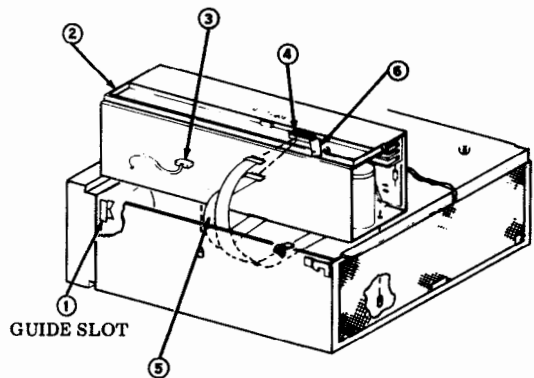


Fig. 56

Note: Frame grounding of circuit common is provided physically in the set power supply for display monitors with serial no. 10,000 and up and in lower serial numbered monitors which have 403594 modification kit installed. Display monitors and 40PSU101 power supplies with serial numbers below 10,000 were originally manufactured to provide frame ground in the display monitor. The two grounding arrangements are not compatible and should not be mixed within a set (reference TCNs 2097 and 2220).

Step 16 — Complete installation by reversing Steps 3, 2 and 1.

D. Electronics Package — ROP

Step 1 — Slide tabs inward and open panel carefully. Remove two screws and slide module out (Fig. 57).

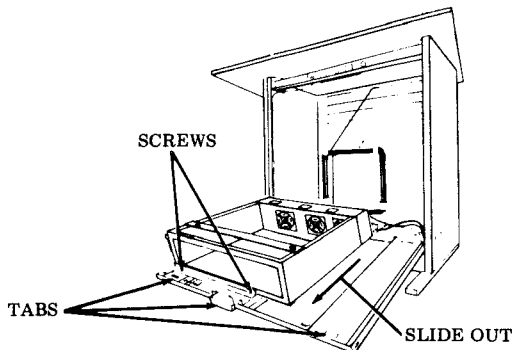


Fig. 57

Step 2 — Loosen 401676 screw, remove 401688 thumbscrew and swing bar aside out of the way (Fig. 58).

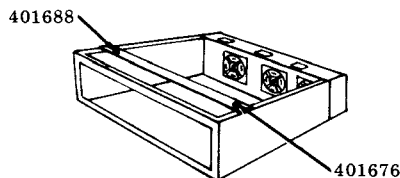


Fig. 58

Step 3 — Install 401643 controller cable to bottom of module using two 119648 retaining rings. Install cable bracket to ventilation assembly with two 198670 screws. Route cables as shown (Fig. 59).

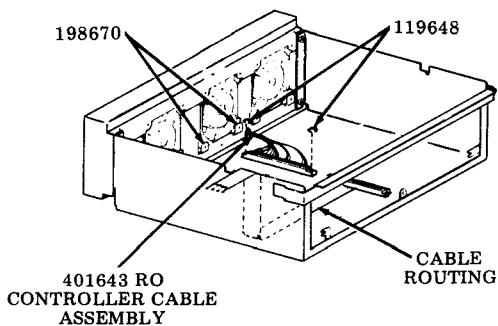


Fig. 59

Step 4 — Locate the controller logic and power supply over their locator pins and seat. Connect ac plug from ventilation assembly (Fig. 60).

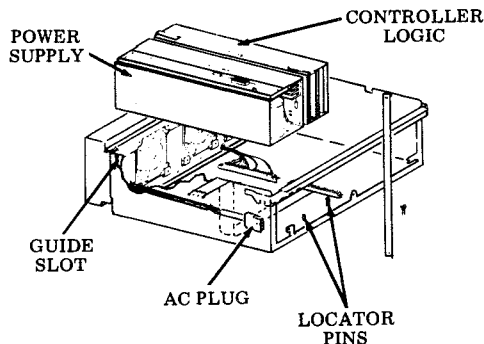


Fig. 60

Step 5 — Loosen insulator screw and swing insulator aside. Mount ribbon cables and strap to terminal block. Replace insulator. Tighten screw (Fig. 61).

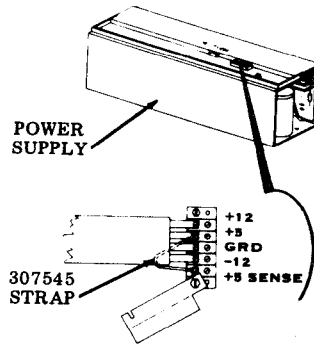


Fig. 61

E. Opcon

Remove packing clips before assembly.

Step 1 — Assembly procedures for RO, KD, and KDP opcon are the same (Fig. 62 and 63):

- Align connectors.
- Engage latches.
- Slide latches all the way up.
- Check that opcon is secure before releasing it.

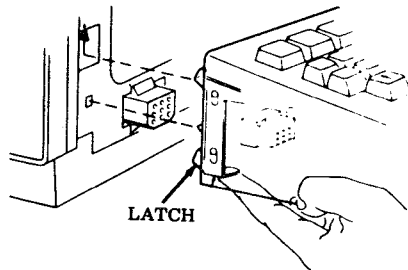


Fig. 62—KD, KDP Opcon

Step 2 — Install CAPS LOCK or the blocking keytop (both provided in plastic bag) on KD or KDP opcon:

- If all caps are required, depress plunger and install blocking keytop.
- If upper and lower case is being used, install CAPS LOCK key.

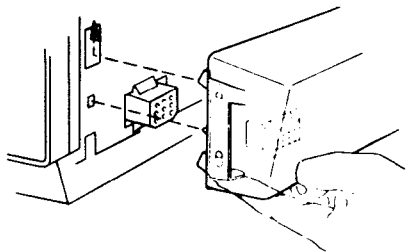


Fig. 63—RO Opcon

Caution: The CAPS LOCK keytop must be in the fully extended, unlatched position before attempting to remove the keytop. Failure to observe this precaution will result in a damaged keyswitch.

F. Monitor

Note: Frame grounding of circuit common is provided physically in the set power supply for display monitors with serial no. 10,000 up and in lower serial numbered monitors which have 403594 modification kit installed. Display monitors and 40PSU101 power supplies with serial numbers below 10,000 were originally manufactured to provide frame ground in the display monitor. The two grounding arrangements are not compatible and should not be mixed within a set (reference TCNs 2097 and 2220).

Step 1 —

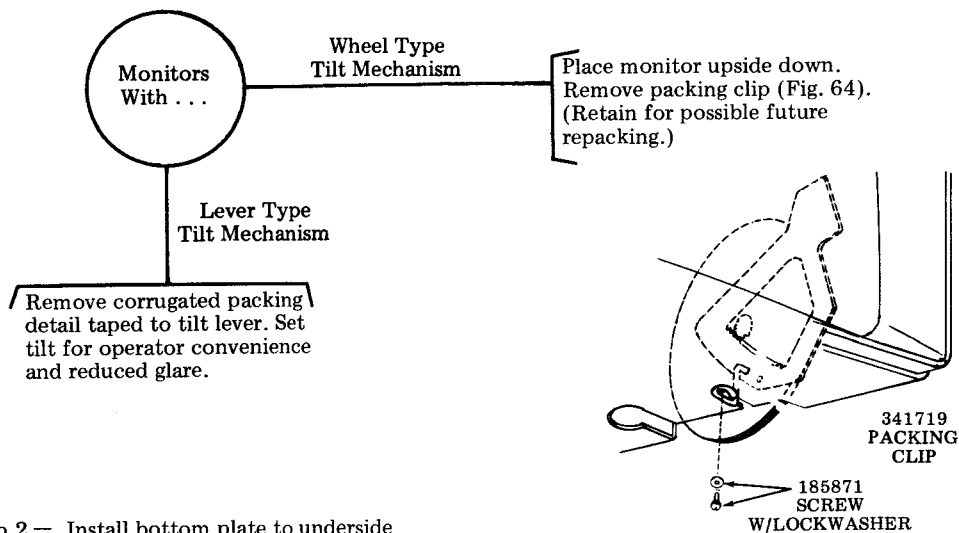


Fig. 64

Step 2 — Install bottom plate to underside of monitor (Fig. 65):

- Push studs until they snap into place.

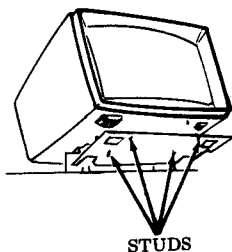


Fig. 65

Step 3 — Grasp monitor securely from the rear and mount it into the two cabinet posts (Fig. 66):

- Monitor slides over the posts freely — there is no locking device.
- Make sure connectors inside the posts are positioned fully.

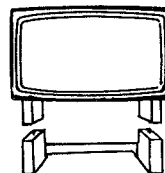
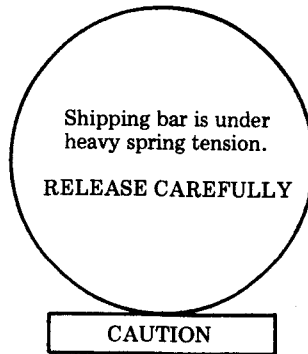


Fig. 66

G. Friction Feed Printer



Step 1 — Remove shipping latch and bar (Fig. 67). Discard. If printer is to be shipped at a later date, retain bar and latch.

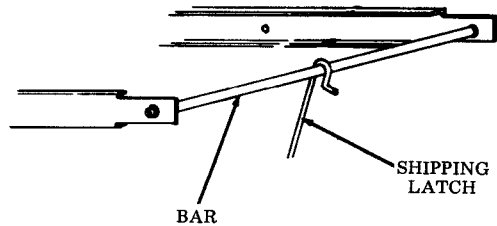


Fig. 67

Step 2 — Slide printer into track (Fig. 68).

- Make sure ac and SSI cables are not pinched.
- Make sure detents snap into place.

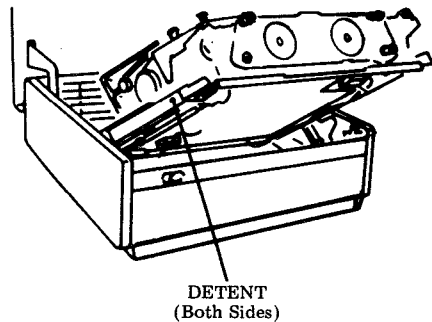


Fig. 68

- Step 3 — Connect ac power cable and SSI cable (Fig. 69).
- Step 4 — Connect interlock cable at right rear corner of cabinet.
- Step 5 — Install carrier.
- Step 6 — Install ribbon.

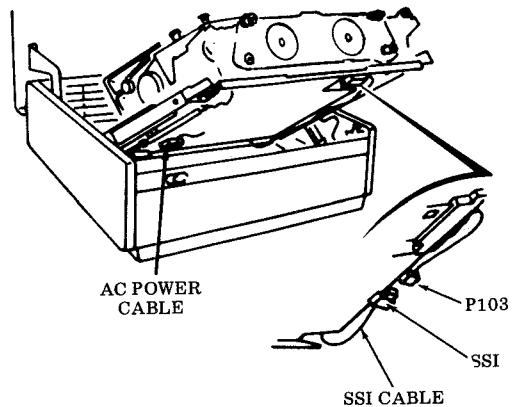
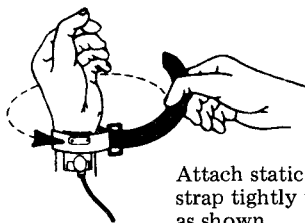


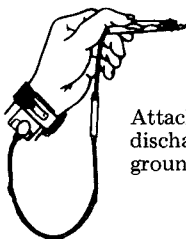
Fig. 69

Step 7 — Option the printer logic circuit card (Fig. 70):

- To avoid damage to the card, wear the approved 346392 static discharge strap before handling it. Avoid touching components on the card as much as possible.
- Option printer logic circuit card per information in 8. ACTIVATING SET OR STATION OPTIONS.
- Reinstall card after optioning.



Attach static ground strap tightly to wrist as shown.



Attach clip end of static discharge strap to frame ground.

Fig. 70

Step 8 — Lower printer and install paper.

- Before inserting paper in paper chute make a sharp crease on the paper as shown (Fig. 71).

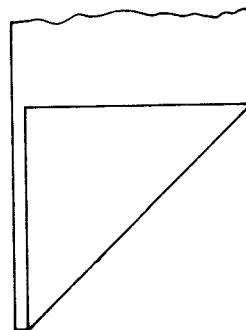


Fig. 71

H. Tractor Feed Printer

Step 1 — Loosen four immobilizing screws a minimum of four turns until base rides freely on the shock mounts (Fig. 72).

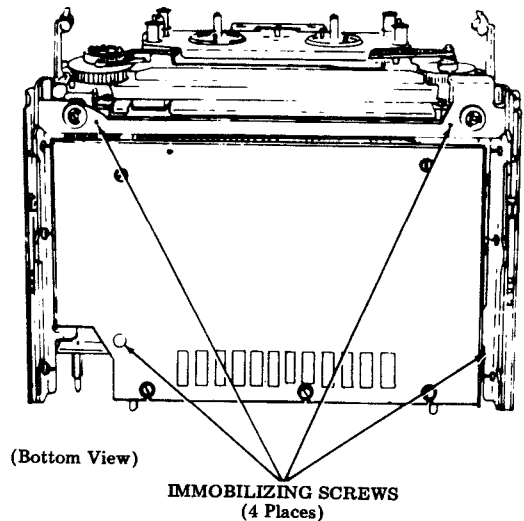


Fig. 72

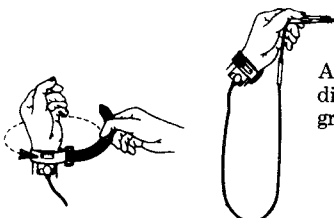
Step 2 — Option printer card per system requirements:

80-Column

132-Column

- Install ground strap as shown (Fig. 73).
- Remove circuit card and option it per information in 8. ACTIVATING SET OR STATION OPTIONS.
- Reinstall card.

- Option card by positioning appropriate switches at bottom of printer. (See 8. ACTIVATING SET OR STATION OPTIONS for option information.) (It is not necessary to remove card from printer.)



Attach clip end of static discharge strap to frame ground.

Attach static ground strap tightly to wrist as shown.

Fig. 73

Step 3 — Slide printer in place (Fig. 74):

- Make sure two latches on either side are fully engaged.
- Make sure three connectors at rear of printer are fully seated.

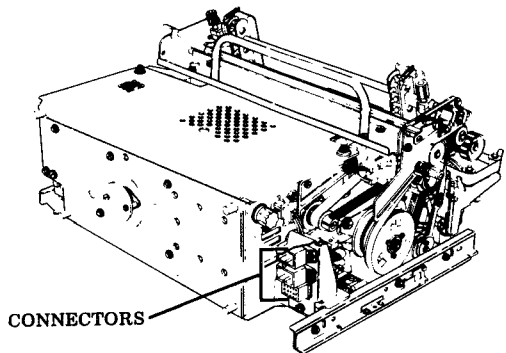


Fig. 74

Step 4 — Install paper forms:

- Make sure forms are loaded in front of the mylar strips on both sides (Fig. 75).
- Position form-out lever for proper form out.
- Do not position the form into the tractors at this point. Ribbon has to be installed first.

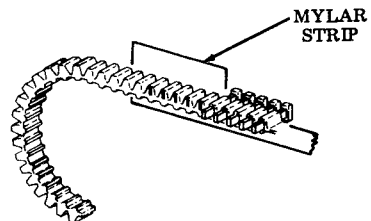


Fig. 75

Step 5 — Install ribbon. See decal on printer cover for proper routing.

I. Data Set Mounting (Fig. 76 and 77)

① Remove data set cover by loosening four screws.

② Separate the pan from the electrical assembly by removing four screws from the bottom (retain screws).

Note 1: The following procedure applies to Data Sets 202D only. Proceed to Step 7 for Data Set 202R.

③ Remove the data set mounting bracket from the pedestal door (four screws). Use a right angle screwdriver to loosen the two screws inside the electronics package enclosure. If necessary, remove one or more circuit cards to create accessibility.

④ Assemble the pan to the mounting bracket so that the connector end of the data set faces the front when the pedestal front panel is opened.

⑤ Reassemble the electrical assembly to the pan (four screws from Step 2 through access openings in bracket).

⑥ Mount the entire assembly to the pedestal door and module frame (four screws) and replace circuit cards (if removed earlier — Step 3).

⑦ Data Set 202R only:
With the cover removed (Step 1), mount the data set to the bracket in the pedestal with four screws so that the connector end of the data set faces the front when the pedestal front panel is opened.

⑧ Reinstall data set cover.

Note 2: WES63 — Mounting Bracket for 202D

WES6X — Mounting Bracket for 202R

WES6Y — Mounting Bracket for 202S

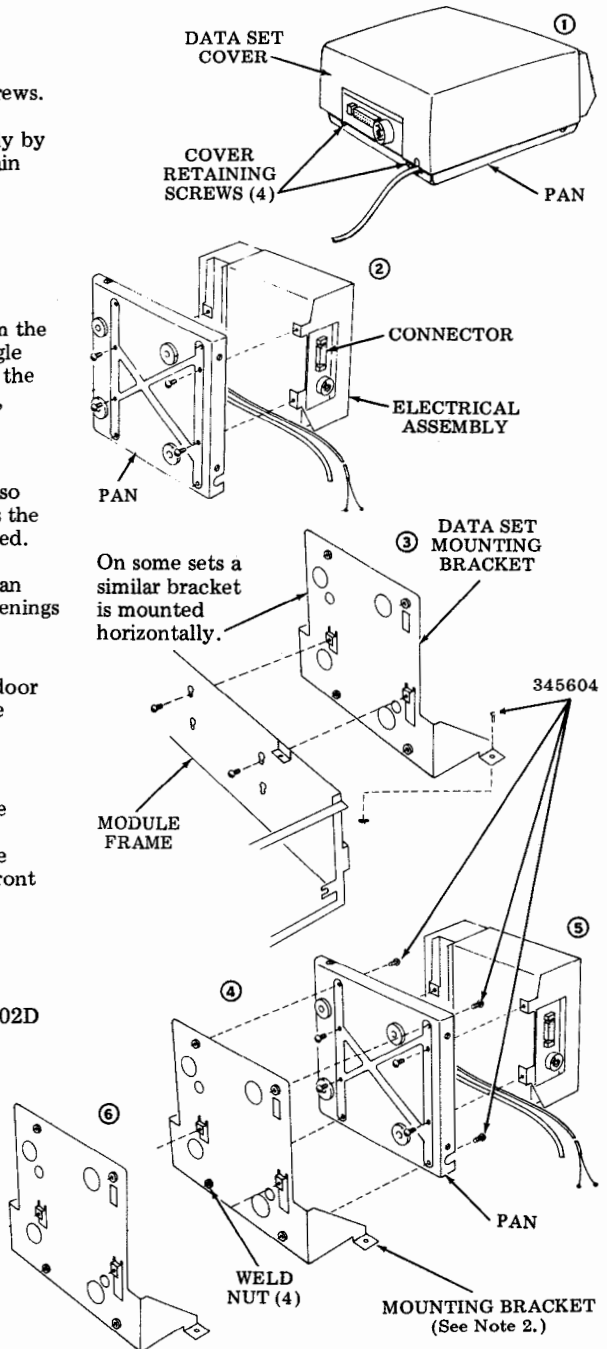


Fig. 76

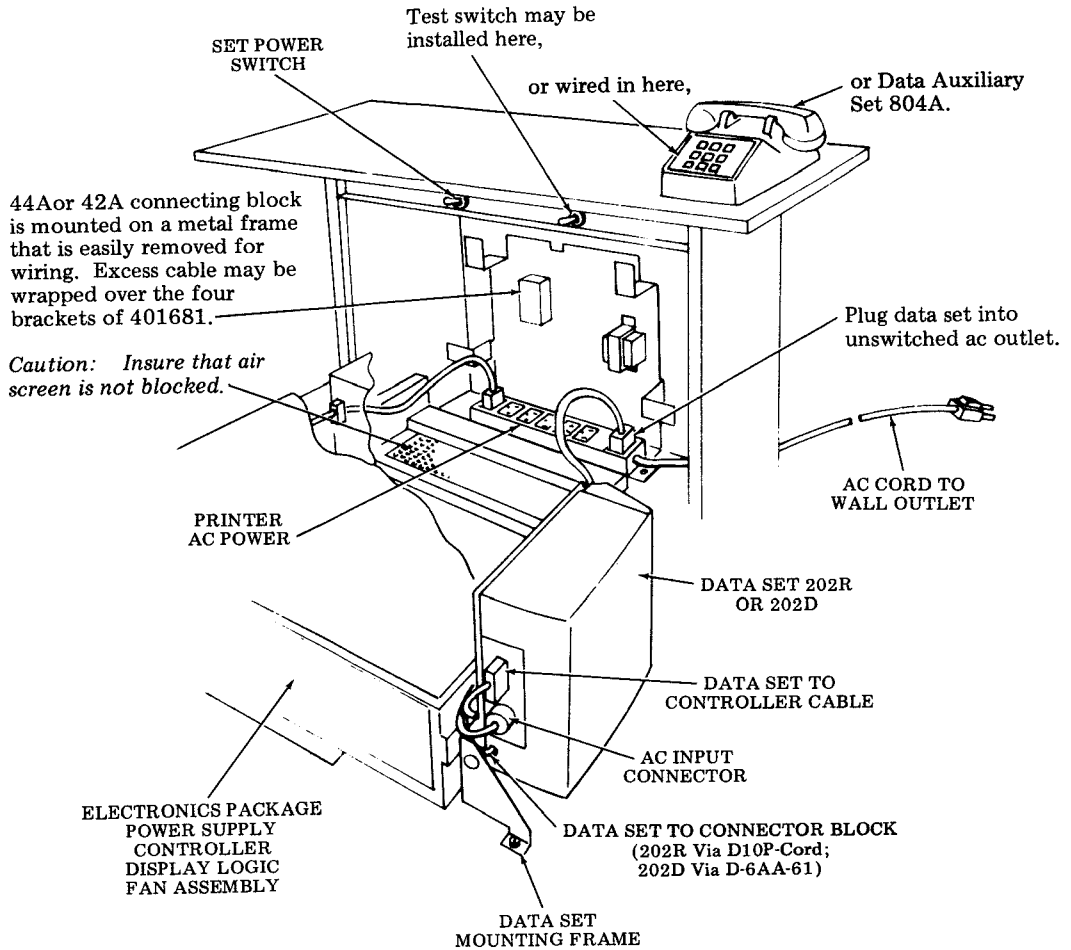


Fig. 77

Note 3: When using a Data Set 202R, refer to appropriate BSP section for wiring of auxiliary handset.

8. ACTIVATING SET OR STATION OPTIONS

A. 40-Type Options

8.01 The following general instructions and procedures are to be applied in implementing the options in the 40-type equipment.

- (a) All numbers associated with the options are assigned and apply only to that option.
- (b) Turn off all power to the station.
- (c) Locate the circuit card that contains the option to be activated. (A complete list of options available can be found on the Station Features and Options Record, W-

4TDXA.) The location of all circuit cards with options can be found in Section 582-200-700.

- (d) Remove circuit card.
- (e) Locate the proper option switch or screw and activate as required.
- (f) Return the circuit card or circuit card book to its proper location.
- (g) When all options have been selected, turn on station power.
- (h) Perform a checkout of the station to verify proper operation of the option.

8.02 Options are presented in a tabular format as illustrated in Fig. 78.

OPTION NO.	OPTION DEFINITION	LOCATION OF SWITCH ON CIRCUIT CARD					INDICATES FACTORY PROGRAMMED OPTION
OPTION CONDITIONS		ROCKER SWITCH NUMBERS (See 8.05.)					
		A-10					
5.		1	2	3	4	5	
a.		●	—	—	—	—	*
b.		○	—	—	—	—	
c.		—	●	—	—	—	*
d.		—	○	—	—	—	
e.		—	—	○	—	—	*
f.		—	—	●	—	—	

Legend:

- Indicates switch ON — dot end of rocker switch depressed.
- Indicates switch OFF — blank end of rocker switch depressed.
- Switch position does not affect option.
- * Factory programmed.

Fig. 78

8.03 Option switches on circuit cards in the controller and display logic are always addressed with the number "1" switch being towards the board top (Fig. 79).



Fig. 79

8.04 Printer card option switches are addressed as in the illustrations accompanying the specific option activation information (Fig. 80).

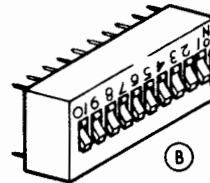
8.05 A number of different switches have been used to option cards. Fig. 80 shows rocker switches (A), and toggle switches (B), and their respective ON/OFF positions.



(A)
ROCKER
SWITCH

Dot End Depressed —
Switch ON

Blank End Depressed —
Switch OFF



(B)
TOGGLE SWITCH

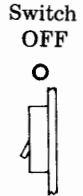
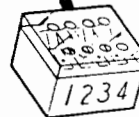
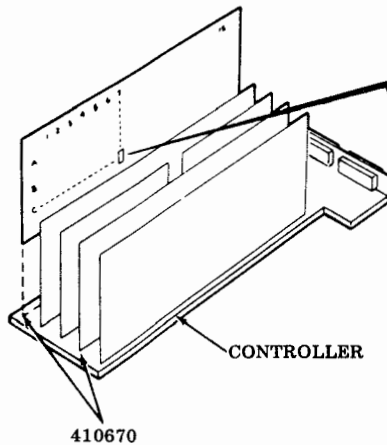


Fig. 80

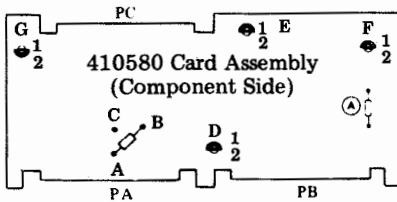


Note: Option 28 also uses this switch.

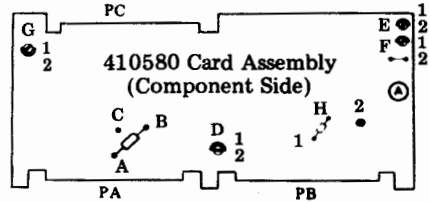
410670 — S/R, PTR and Disconnect Circuit Card Options (40/1)

1. Interface to Printer		C-7			
		1	2	3	4
a.	EIA	○	—	●	—
b.	SSI	●	—	○	—
		*			
2. S/R Send		C-7			
		1	2	3	4
a.	DC2 Sent Auto	—	●	—	—
b.	DC2 Sent W/Message	—	○	—	—
		*			

See Legend in Fig. 78.



Early Issue 7A

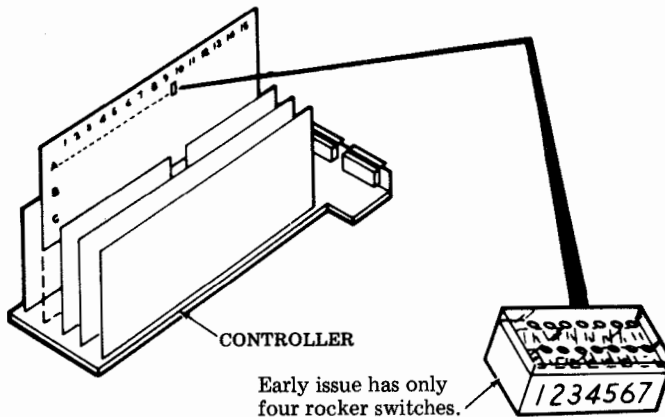


Late Issue 7B

410580 (In ROP Controller 40C103/ — Component Side)

3. EIA/Send/Receive Data Baud Rate		Insulator D Position	Insulator E Position
a.	1050	1	2
b.	1200	1	1

*



410671 (Issue 4A and Higher) — EIA Interface Circuit Card Options (40/1 Only)

3. EIA Send/Receive Data Baud Rate		A-10						
		1	2	3	4	5	6	7
a.	1050	●	○	○	—	—	—	—
b.	1200	○	●	○	—	—	—	—
c.	2400 (See Note)	—	—	—	—	—	—	—

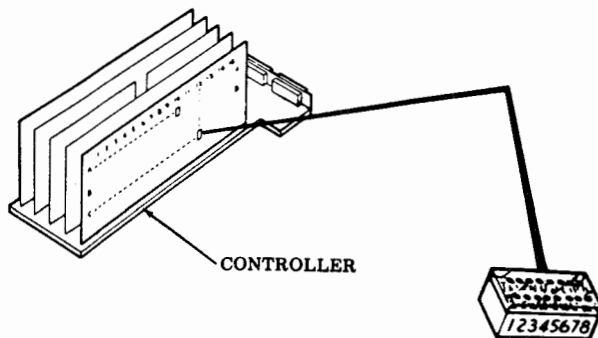
*

Note: 2400 baud operation is reserved for future use.

4. EIA Reverse Channel		A-10						
		1	2	3	4	5	6	7
a.	Reverse Channel Required to Send	—	—	—	●	—	—	—
b.	Reverse Channel Not Required to Send	—	—	—	○	—	—	—

*

See Legend in Fig. 78.



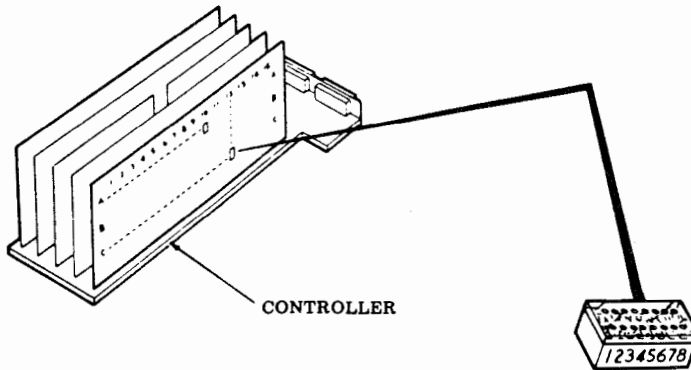
410674 — Data Bus and Decode Circuit Card (40/0 and 40/1)

5. Response to Received Characters		A-10					C-12							
		1	2	3	4	5	1	2	3	4	5	6	7	8
a.	Reject Null	●	—	—	—	—	—	—	—	—	—	—	—	*
b.	Accept Null	○	—	—	—	—	—	—	—	—	—	—	—	
c.	Reject CR	—	●	—	—	—	—	—	—	—	—	—	—	*
d.	Accept CR	—	○	—	—	—	—	—	—	—	—	—	—	
e.	Reject Delete	—	—	●	—	—	—	—	—	—	—	—	—	*
f.	Accept Delete	—	—	○	—	—	—	—	—	—	—	—	—	
g.	Reject DC ₁ (See Note)	—	—	—	—	—	—	—	—	—	—	●	—	*
h.	Accept DC ₁ (See Note)	—	—	—	—	—	—	—	—	—	—	○	—	
i.	Reject DC ₃ (See Note)	—	—	—	—	—	—	—	—	—	—	—	●	*
j.	Accept DC ₃ (See Note)	—	—	—	—	—	—	—	—	—	—	—	○	

Note: Applies to Issues 4B and later of the 410674 circuit card.

6. Functions on Receive		A-10					C-12							
		1	2	3	4	5	—	—	—	—	—	—	—	—
a.	All Escape Sequences Displayed as Received	—	—	—	○	—	—	—	—	—	—	—	—	
b.	All Escape Sequences are Performed as Received but Not Displayed	—	—	—	●	—	—	—	—	—	—	—	—	*

See Legend in Fig. 78.



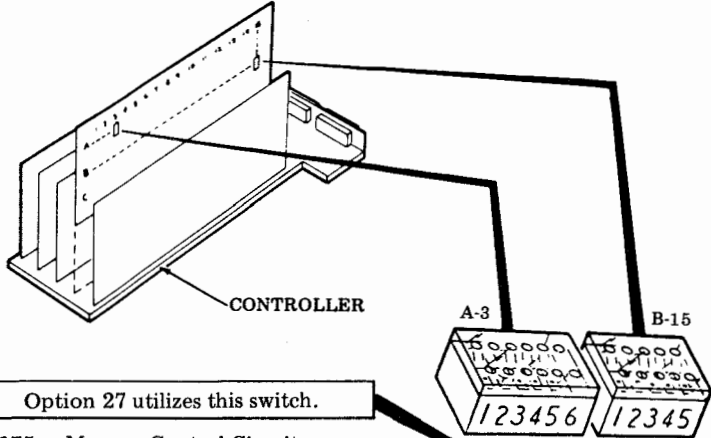
410674 -- Data Bus and Decode Circuit Card (40/0 and 40/1) (Cont)

7. Errored Character on Receive		A-10											
		1	2	3	4	5	—	—	—	—	—	—	—
a.	Not Displayed on Vertical Parity Error	—	—	—	—	●	—	—	—	—	—	—	—
b.	Displayed on Vertical Parity Error	—	—	—	—	○	—	—	—	—	—	—	*

8. Send Message Ending Character		A-5					C-12							
		1	2	3	4	5	1	2	3	4	5	6	7	8
a.	End on FF (Is Not Provided on Basic Model 40)	—	—	—	—	—	—	—	●	—	—	—	—	—
b.	Do Not End on FF	—	—	—	—	—	—	—	○	—	—	—	—	*
c.	End on ETX	—	—	—	—	—	●	—	—	—	—	—	—	*
d.	Do Not End on ETX	—	—	—	—	—	○	—	—	—	—	—	—	*
e.	End on EOT	—	—	—	—	—	—	●	—	—	—	—	—	*
f.	Do Not End on EOT	—	—	—	—	—	—	○	—	—	—	—	—	*
g.	End on GS	—	—	—	—	—	—	—	●	—	—	—	—	*
h.	Do Not End on GS	—	—	—	—	—	—	—	○	—	—	—	—	*

9. Highlight		A-5					C-12							
		1	2	3	4	5	1	2	3	4	5	6	7	8
a.	Delimiters Not Sent (Except in Form Send Mode)	—	—	—	—	—	—	—	—	—	●	—	—	—
b.	Delimiters Sent (Modifies Option 13)	—	—	—	—	—	—	—	—	—	○	—	—	*

See Legend in Fig. 78.



Note: Option 27 utilizes this switch.

410675 — Message Control Circuit
Card Options (40/0 and 40/1)

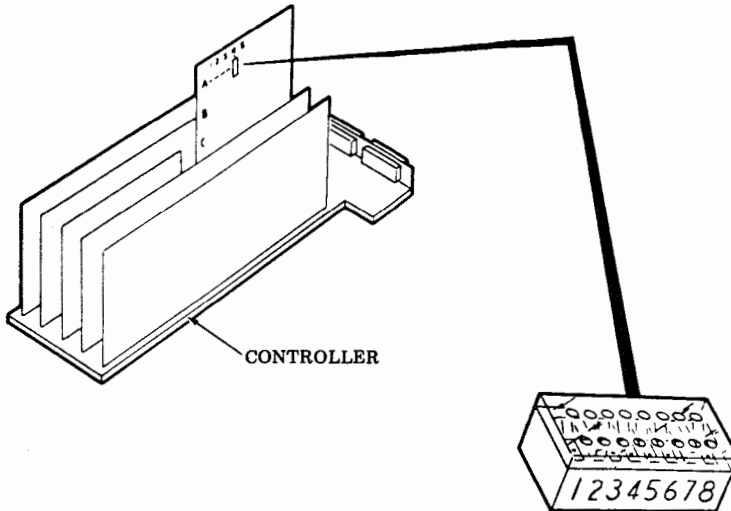
10. Line Ending Sequence		A-3						B-15				
		1	2	3	4	5	6	1	2	3	4	5
a.	CR LF	—	—	—	—	○	—	●	●	○	○	○
b.	CR CR LF	—	—	—	—	○	—	○	○	●	●	●
c.	LF	—	—	—	—	●	—	●	●	○	○	○

11. Mode After Send		A-3						B-15				
		1	2	3	4	5	6	1	2	3	4	5
a.	Local	—	○	●	●	—	—	—	—	—	—	—
b.	†Receive	—	●	○	●	—	—	—	—	—	—	—
c.	External Mode (Not Used in 40/1, 40/2, or 40/3)	—	○	●	○	—	—	—	—	—	—	—

†If DLE EOT is used as a disconnect sequence do not enable 11.b.

12. Form Enter		A-3						B-15				
		1	2	3	4	5	6	1	2	3	4	5
a.	Disabled in Local	●	—	—	—	—	—	—	—	—	—	—
b.	Enabled in Local	○	—	—	—	—	—	—	—	—	—	—

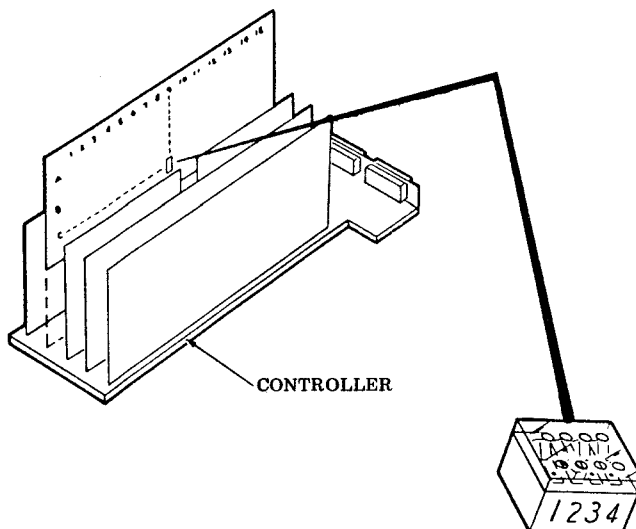
See Legend in Fig. 78.



410676 -- Send Variations Circuit Card Options (40/0 and 40/1)

13. Send Variations (All without delimiters except as modified by Option 9.b.)		A-4							
		1	2	3	4	5	6	7	8
a.	Send All as Displayed	●	○	●	●	●	●	●	○
b.	Send All as Displayed with Unprotected HT Changed to Space	●	○	●	●	●	●	●	● *
c.	Send Protect as Space and Unprotected as Displayed	○	●	○	○	●	○	●	○
d.	Send Protect as Space, Unprotected as Displayed and HT Changed to Space	○	●	○	○	●	○	●	●
e.	Send Protect as Delete, Unprotected as Displayed	○	●	○	○	○	○	●	○
f.	Send Unprotected Only as Displayed	○	●	○	●	●	●	●	○
g.	Send Unprotected Only and HT at End of Field	○	●	○	●	●	○	○	●
h.	Send Unprotected Only with Unprotect HT Changed to Space	○	●	○	●	●	●	●	●

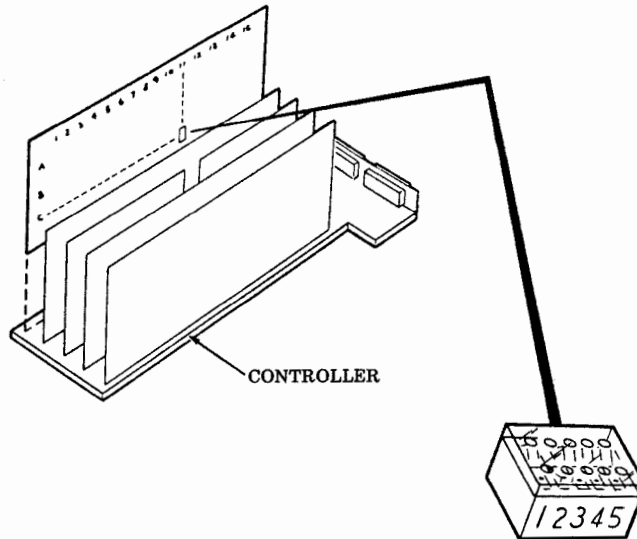
See Legend in Fig. 78.



410677 — PTI Interface Circuit Card Options (40/0 Only)

14. Receive Selectable		C-9			
		1	2	3	4
a.	On	—	—	—	● *
b.	Off	—	—	—	○

See Legend in Fig. 78.



410678 — External Mode Control Circuit Card Options (40/0 Only)

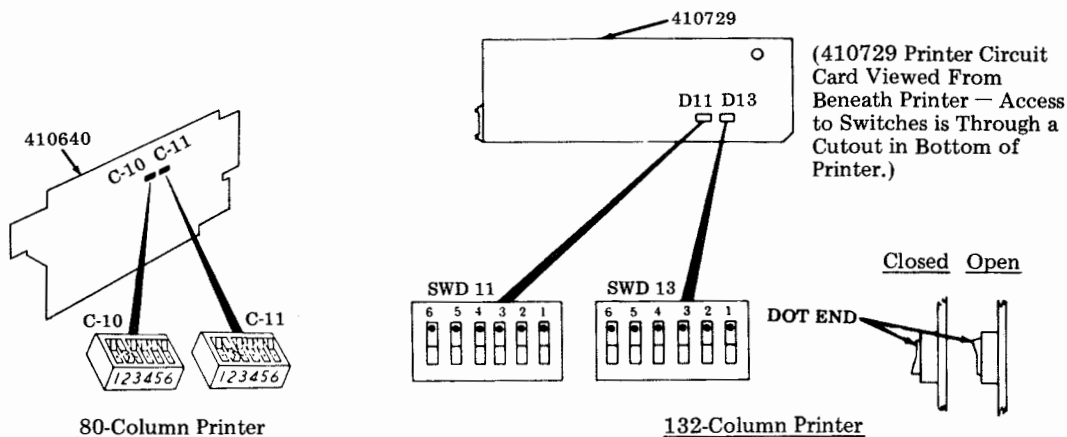
15. Local and Send Mode Override		C-11				
		1	2	3	4	5
a.	Goes from Send or Local to Receive	—	—	—	●	—
b.	Stays in Local or Send	—	—	—	○	—

*

16. Mode After TDA (Option 11.c. must be implemented)		C-11				
		1	2	3	4	5
a.	Goes to Receive	●	○	—	—	—
b.	Goes to Local	○	●	—	—	—
c.	Cursor Goes to Home	—	—	●	—	○
d.	Cursor Stays at Message End	—	—	○	—	●

*

See Legend in Fig. 78.



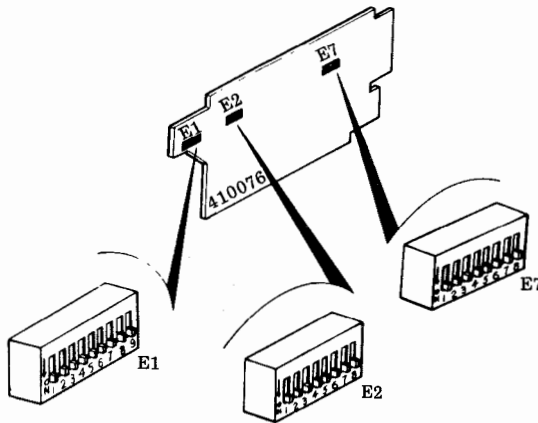
410640 — 80-Column Printer Logic Circuit Card

17. Printer Margin and Form Width		C-10						C-11					
		1	2	3	4	5	6	1	2	3	4	5	6
c.	Last Character on 80th Column	—	—	—	—	—	—	○	●	●	○	—	—
d.79.	Last Character on 79th Column	—	—	—	—	—	—	○	●	●	●	—	—
d.78.	Last Character on 78th Column	—	—	—	—	—	—	●	○	○	—	—	—
d.77.	Last Character on 77th Column	—	—	—	—	—	—	●	○	○	○	—	—
d.76.	Last Character on 76th Column	—	—	—	—	—	—	●	○	●	●	—	—
d.75.	Last Character on 75th Column	—	—	—	—	—	—	●	●	○	●	—	—
d.74.	Last Character on 74th Column	—	—	—	—	—	—	●	●	●	○	—	—
d.73.	Last Character on 73rd Column	—	—	—	—	—	—	●	●	●	●	—	—

410729 — 132-Column Printer Logic Circuit Card

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

See Legend in Fig. 78.



410076 — 80-Column Printer Logic Circuit Card

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

410076 — 80-Column Printer Logic Circuit Card

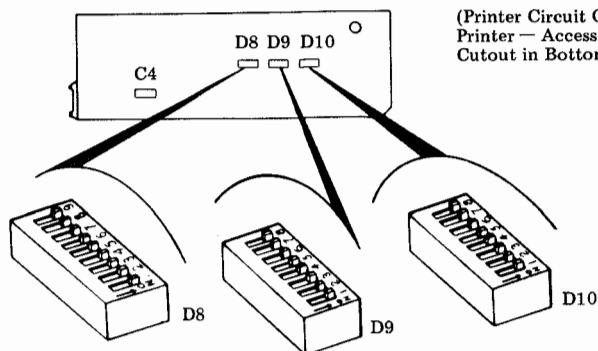
17. Printer Right Margin and From Width		E1									E2								E7							
	Last Char Printed Column Number	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
c.	80						○	●		●	○							●	●	●	●					
d. (X)	73	61	49	37	25													●	●	●	●					
	74	62	50	38	26													●	●	●	●					
	75	63	51	39	27													●	●	●	●					
	76	64	52	40	28													●	●	●	●					
	77	65	53	41	29			○	○	○								●	●	●	●					
	78	66	54	42	30			○	○	○								●	●	●	●					
	79	67	55	43	31			○	○	○								●	●	●	●					
	68	56	44	32			○	○	○	○								●	●	●	●					
	69	57	45	33			○	○	○	○								●	●	●	●					
	70	58	46	34			○	○	○	○								●	●	●	●					
	71	59	47	35			○	○	○	○								●	●	●	●					
	72	60	48	36			○	○	○	○								●	●	●	●					

To obtain counts:

73 through 80 program as shown.
 61 through 72 program as shown, then operate 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.

(X) Indicates desired column number.

See Legend in Fig. 78.



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

410072 — 132-Column Printer Logic Circuit Card

17. Printer Left Margin and Form Width		D8								
		1	2	3	4	5	6	7	8	9
a.	First Printed Column — Column 1	—	—	●	●	●	●	—	—	—
b.2.	First Printed Column — Column 2	—	—	●	●	○	●	—	—	—
b.3.	First Printed Column — Column 3	—	—	●	●	○	○	—	—	—
b.4.	First Printed Column — Column 4	—	—	●	○	○	○	—	—	—
b.5.	First Printed Column — Column 5	—	—	○	○	○	○	—	—	—
b.6.	First Printed Column — Column 6	—	—	○	○	○	●	—	—	—
b.7.	First Printed Column — Column 7	—	—	○	○	○	○	—	—	—
b.8.	First Printed Column — Column 8	—	—	●	○	●	○	—	—	—
b.9.	First Printed Column — Column 9	—	—	○	○	●	○	—	—	—
b.10.	First Printed Column — Column 10	—	—	○	○	○	●	—	—	—
b.11.	First Printed Column — Column 11	—	—	●	●	●	○	—	—	—
b.12.	First Printed Column — Column 12	—	—	●	○	○	○	—	—	—
b.13.	First Printed Column — Column 13	—	—	○	●	●	○	—	—	—

410072 — 132-Column Printer Logic Circuit Card

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

To obtain counts:

121 through 132 program as shown.

109 through 120 program as shown, then operate D9 position 7 OFF.

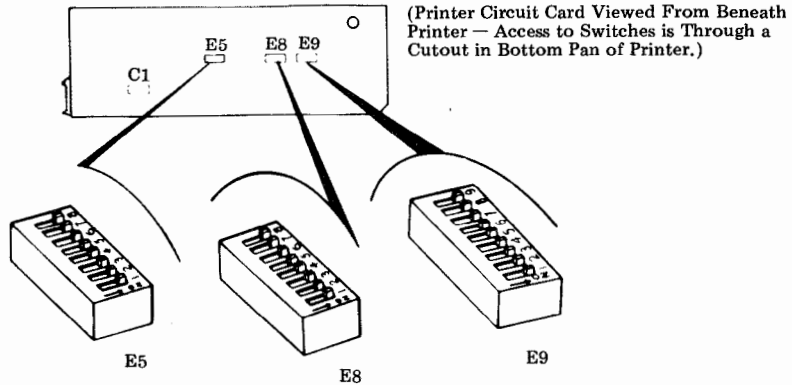
97 through 108 program as shown, then operate D9 position 8 OFF.

85 through 96 program as shown, then operate D8 position 7 OFF.

73 through 84 program as shown, then operate D8 position 8 OFF.

(X) Indicates desired column number.

See Legend in Fig. 78.



410071 — 80-Column Tractor Feed Printer Logic Circuit Card

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

410071 — 80-Column Tractor Feed Printer Logic Circuit Card

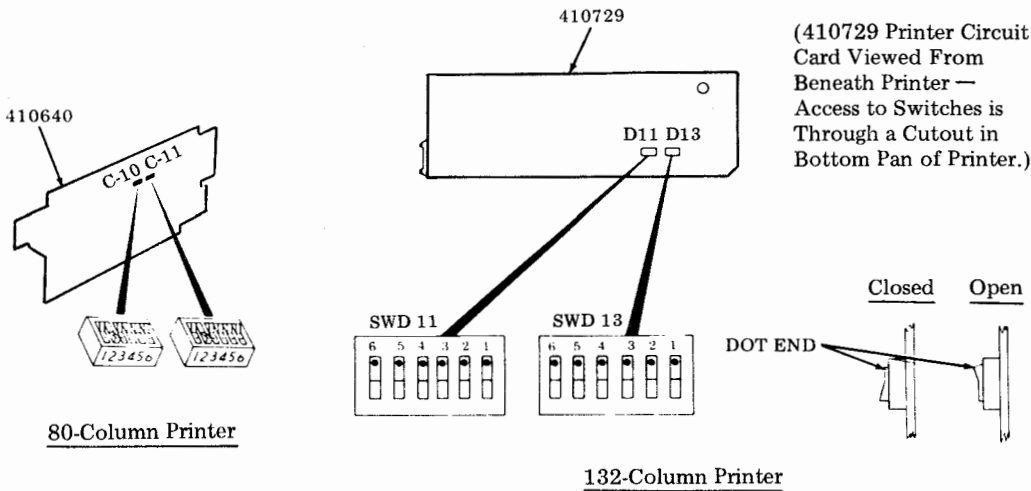
17. Printer Right Margin and Form Width		E9									E5								E8							
Last Char Printed Column Number		1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8
c.	80	○	●	—	○	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
d (X)	73 61 49 37 25	○	●	—	○	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	74 62 50 38 26	○	●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

To obtain counts:

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

(X) Indicates desired column number.

See Legend in Fig. 78.



410640 — 80-Column Printer Logic Circuit Card

18. Printer Paper Feedout		C-10						C-11					
		1	2	3	4	5	6	1	2	3	4	5	6
a.	No Paper Feedout	●	—	—	—	—	—	—	—	—	—	—	○
b.	Paper Feedout on DCD Loss — 16 Lines	○	—	—	—	—	—	—	—	—	—	—	○
c.	Paper Feedout on DCD Loss or ETX	○	—	—	—	—	—	—	—	—	—	—	● *

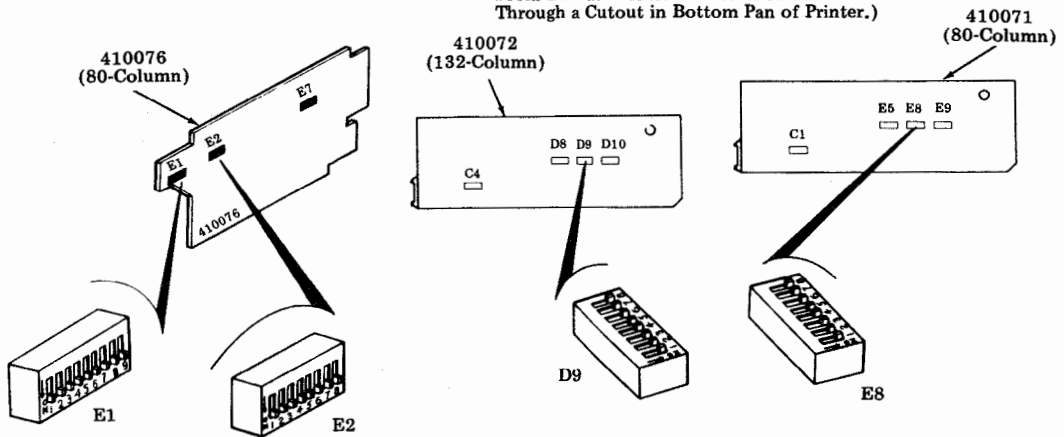
410729 — 132-Column Printer Logic Circuit Card

18. Printer Paper Feedout		D11						D13					
		6	5	4	3	2	1	6	5	4	3	2	1
a.	No Paper Feedout	—	—	●	—	—	—	—	—	—	—	—	○
b.	Paper Feedout on DSR Loss — 16 Lines (See Note.)	—	—	○	—	—	—	—	—	—	—	—	○
c.	Paper Feedout on DSR Loss or ETX	—	—	○	—	—	—	—	—	—	—	—	● *

Note: “DSR Loss” assumes that data set operation is used; the actual controlling SSI signal is loss of receive message. The feedout will be 16 lines, as stated, only if Option 39.b. (Forms switch Off) is selected; if Option 39.a. (Forms switch On) is selected, the printer will feed out paper to the next form feed position.

See Legend in Fig. 78.

(410071 and 410072 Printer Circuit Cards Viewed From Beneath Printer — Access to Switches is Through a Cutout in Bottom Pan of Printer.)



410076 — 80-Column Printer Logic Circuit Card

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

*

*

410072 — 132-Column Printer Logic Circuit Card

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

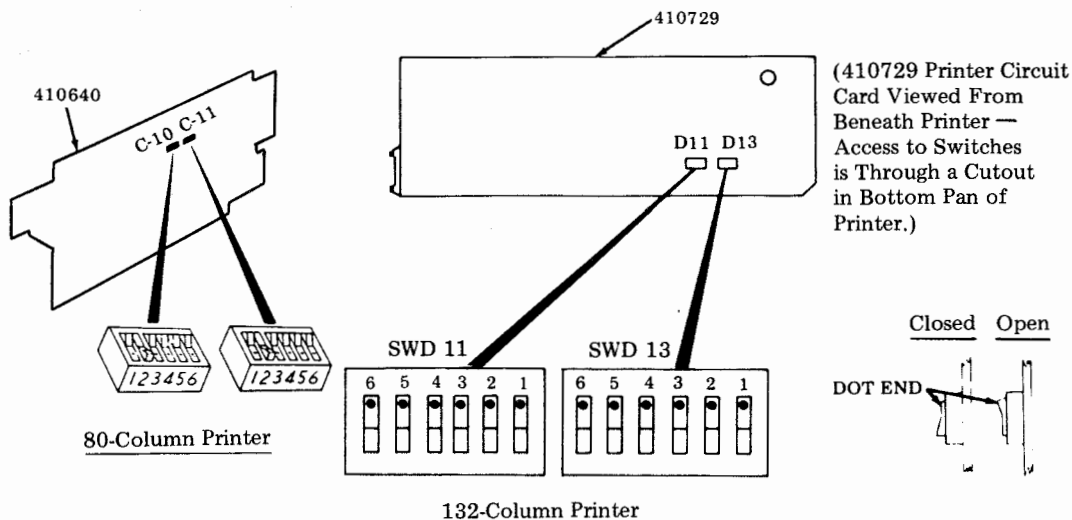
*

410071 — 80-Column Tractor Feed Printer Logic Circuit Card

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

*

See Legend in Fig. 78.



410640 — 80-Column Printer Logic Circuit Card

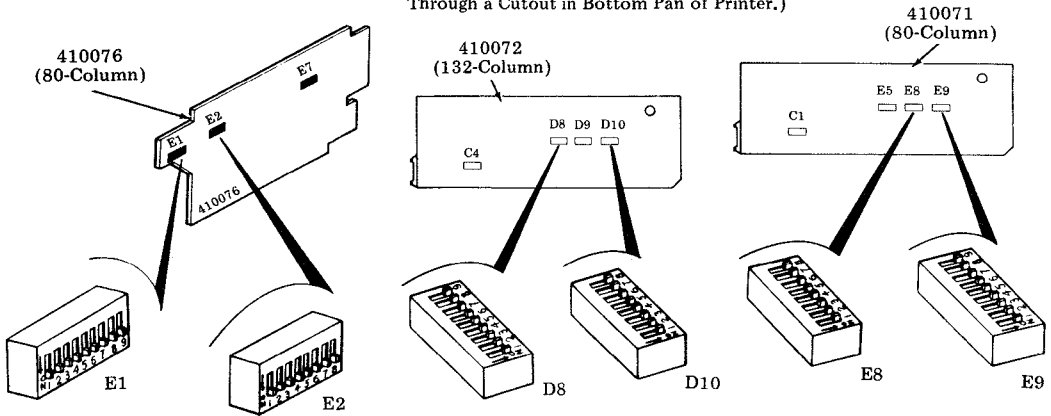
19. Printer Errored Character Symbol		C-10						C-11					
		1	2	3	4	5	6	1	2	3	4	5	6
a.	Printed on Even Parity Error	—	—	—	●	○	—	—	—	—	—	—	*
b.	Printed on Odd Parity Error	—	—	—	○	●	—	—	—	—	—	—	—
c.	Not Printed on Parity Error	—	—	—	●	●	—	—	—	—	—	—	—
d.	Printers With 96-Character Set	—	●	○	—	—	—	—	—	—	—	—	—
e.	Printers With 64-Character Set	—	○	●	—	—	—	—	—	—	—	—	—
f.	Printers With Extended ASCII Character Set	—	○	○	—	—	—	—	—	—	—	—	—

410729 — 132-Column Printer Logic Circuit Card

19. Printer Errored Character Symbol		D11					D13						
		6	5	4	3	2	1	6	5	4	3	2	1
a.	Printed on Even Parity Error	—	—	—	●	○	—	—	—	—	—	—	—
b.	Printed on Odd Parity Error	—	—	—	○	●	—	—	—	—	—	—	—
c.	Not Printed on Parity Error	—	—	—	●	●	—	—	—	—	—	—	—
d.	Printers With 96-Character Set	●	○	—	—	—	—	—	—	—	—	—	—
e.	Printers With 64-Character Set	○	●	—	—	—	—	—	—	—	—	—	—
f.	Printers With Extended ASCII Character Set	○	○	—	—	—	—	—	—	—	—	—	—
g.	Printers With Longest Char. Set Having Less Than 64 Char.	○	●	—	—	—	—	—	—	—	—	—	—

See Legend in Fig. 78.

(410072 and 410071 Printer Circuit Cards Viewed From Beneath Printer — Access to Switches is Through a Cutout in Bottom Pan of Printer.)



410076 — 80-Column Printer Logic Circuit Card

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

19. Character Set		E2							
		1	2	3	4	5	6	7	8
d.	Printers With 96-Character Set	—	—	—	○	●	—	—	—
e.	Printers With 64-Character Set	—	—	—	●	○	—	—	—
f.	Printers With Extended ASCII Character Set	—	—	—	○	○	—	—	—
g.	Printers With Longest Character Set Having Less Than 64 Characters	—	—	—	○	○	—	—	—

410072 — 132-Column Printer Logic Circuit Card

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

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

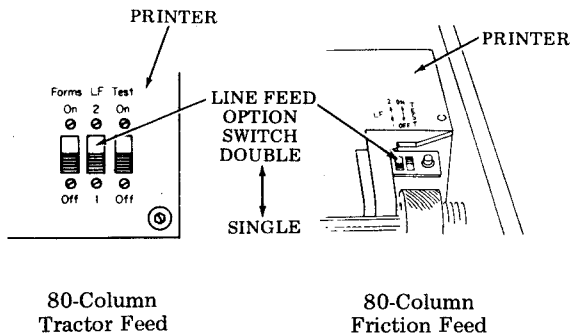
410071 — 80-Column Tractor Feed Printer Logic Circuit Card

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

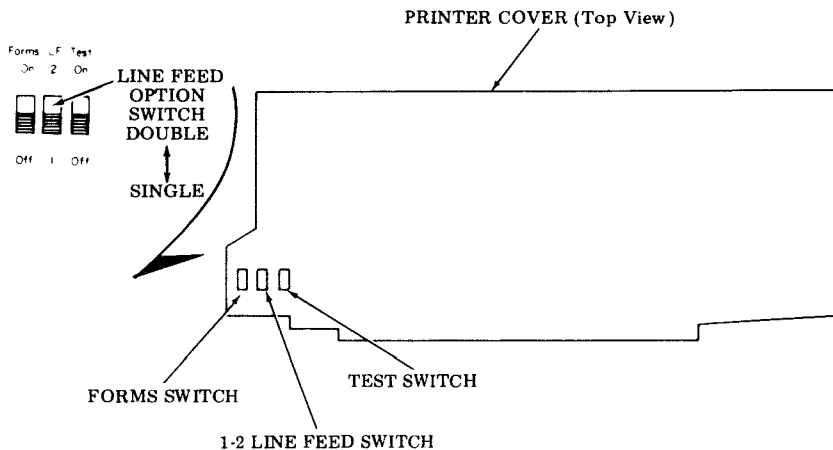
19. Character Set		E8							
		1	2	3	4	5	6	7	8
d.	Printers With 96-Character Set	—	—	—	—	●	○	—	—
e.	Printers With 64-Character Set	—	—	—	—	○	●	—	—
f.	Printers With Extended ASCII Character Set	—	—	—	—	○	○	—	—
g.	Printers With Longest Character Set Having Less Than 64 Characters	—	—	—	—	○	○	—	—

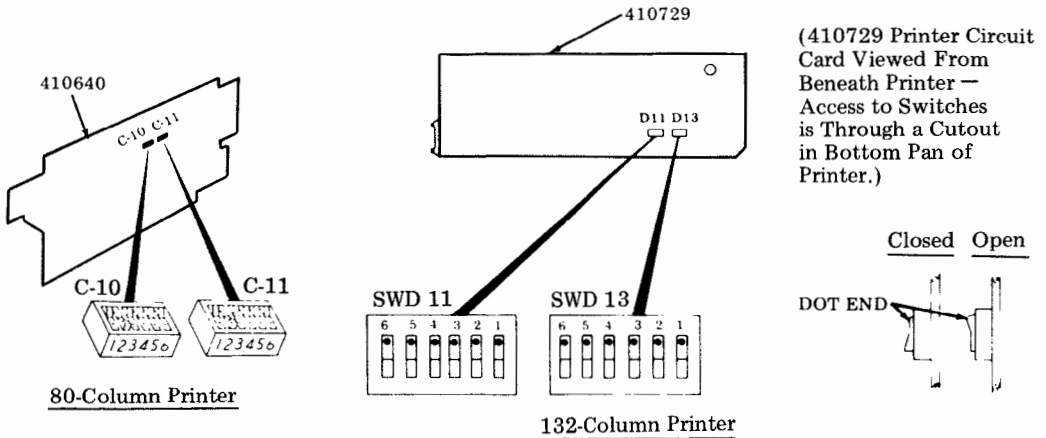
See Legend in Fig. 78.

20. Line Feed on 80-Column Printer (See adjacent figure.)	
a.	Single
b.	Double



20. Line Feed on 132-Column Printer (See figure below.)	
a.	Single
b.	Double





410640 — 80-Column Printer Logic Circuit Card

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	—	—	—	—	—	—	—	—	—	—	●	—

410729 — 132-Column Printer Logic Circuit Card

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	—	—	—	—	—	—	—	—	—	—	●	—

410640 — 80-Column Printer Logic Circuit Card

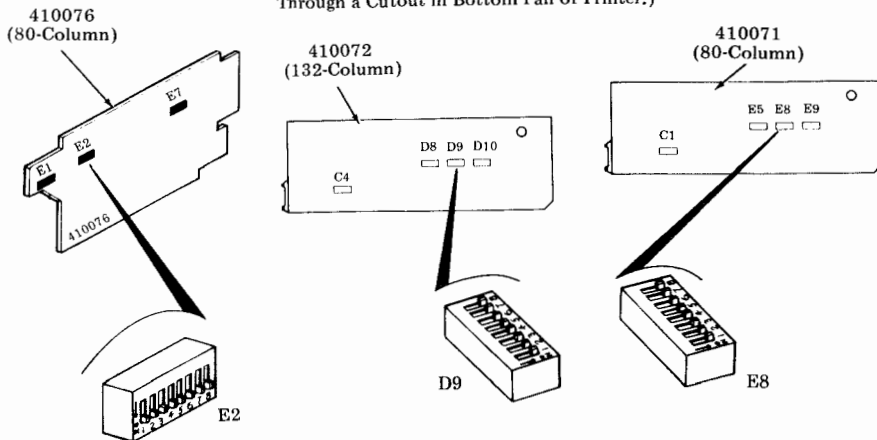
22. Foldover on Monocase Printer		C-10						C-11					
		1	2	3	4	5	6	1	2	3	4	5	6
a.	Lower Case Not Folded Over	—	—	—	—	—	—	—	—	—	—	○	—
b.	Lower Case Printed as Upper Case	—	—	—	—	—	—	—	—	—	—	●	— *

410729 — 132-Column Printer Logic Circuit Card

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	—	—	—	—	—	—	—	—	—	—	●	— *

See Legend in Fig. 78.

(410072 and 410071 Printer Circuit Cards Viewed From Beneath Printer — Access to Switches is Through a Cutout in Bottom Pan of Printer.)



410076 — 80-Column Printer Logic Circuit Card

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

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

410072 — 132-Column Printer Logic Circuit Card

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

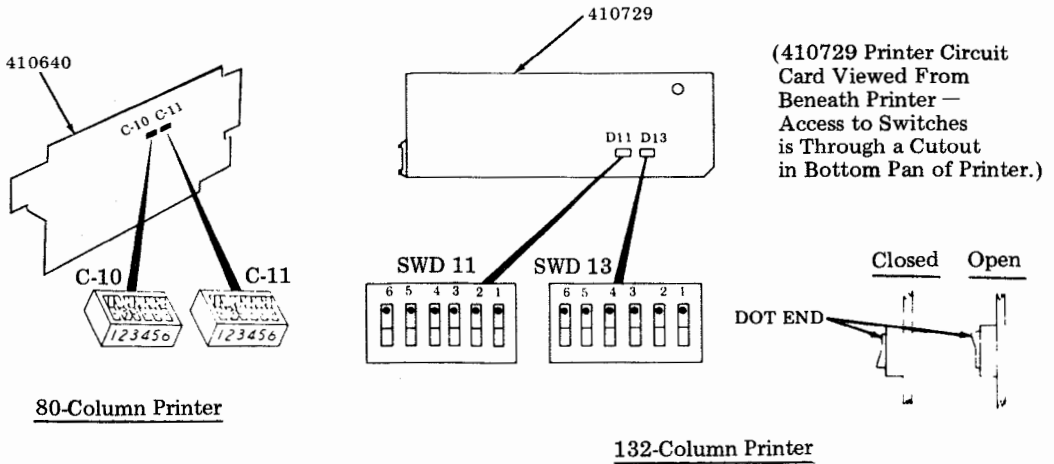
22. Foldover on Printers With 64-Character Set		D9							
		1	2	3	4	5	6	7	8
a.	Lower Case Prints as Error Symbol	○	—	—	—	—	—	—	—
b.	Lower Case Prints as Upper Case	●	—	—	—	—	—	—	—

410071 — 80-Column Tractor Feed Printer Logic Circuit Card

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

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

See Legend in Fig. 78.



410640 — 80-Column Printer Logic Circuit Card

23. Extended ASCII on Printer (Extended ASCII)		C-10						C-11					
		1	2	3	4	5	6	1	2	3	4	5	6
a.	†Prints Extended ASCII Characters (No Parity Check)	—	—	—	○	○	—	—	—	—	—	—	—
b.	Does Not Print Extended Characters (See Option 19.a., b., or c.)	—	—	—	—	—	—	—	—	—	—	—	*

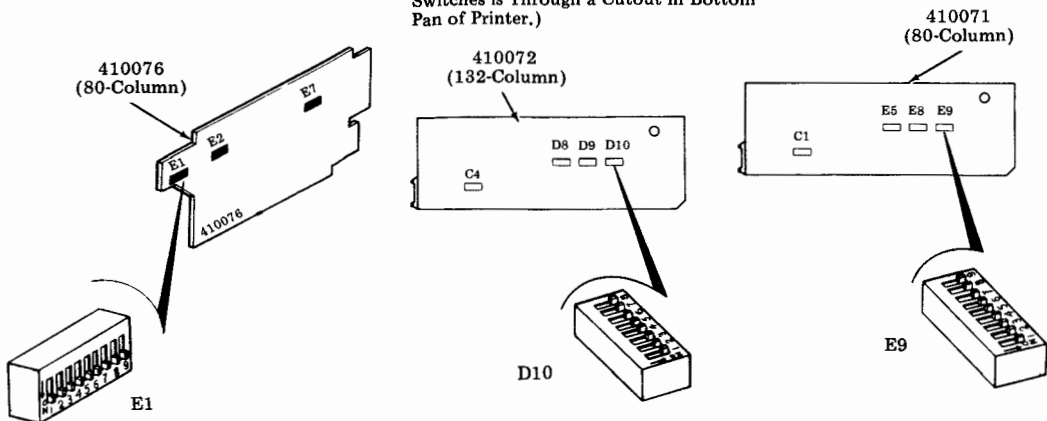
†Option 23.a. requires local engineering.

410729 — 132-Column Printer Logic Circuit Card

23. Extended ASCII on Printer (Extended ASCII)		D11						D13					
		6	5	4	3	2	1	6	5	4	3	2	1
a.	Prints Extended ASCII Characters (No Parity Check)	—	—	—	○	○	—	—	—	—	—	—	—
b.	Does Not Print Extended ASCII (See 19.a., b., or c.)	—	—	—	(As in 19.)	—	—	—	—	—	—	—	*

See Legend in Fig. 78.

(410072 and 410071 Printer Circuit Cards Viewed From Beneath Printer — Access to Switches is Through a Cutout in Bottom Pan of Printer.)



410076 — 80-Column Printer Logic Circuit Card

23. Extended ASCII on Printer (Extended ASCII)		E1								
		1	2	3	4	5	6	7	8	9
a.	Prints Extended ASCII Characters (No Parity Check)	—	—	○	○	—	—	—	—	—
b.	Does Not Print Extended ASCII (See Option 19.a., b. or c.)	—	—	—	(As in 19.)	—	—	—	—	*

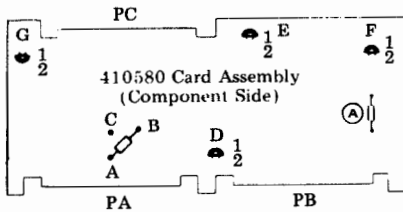
410072 — 132-Column Printer Logic Circuit Card

23. Extended ASCII on Printer (Extended ASCII)		D10							
		1	2	3	4	5	6	7	8
a.	Prints Extended ASCII Characters (No Parity Check)	—	—	—	—	—	○	○	—
b.	Does Not Print Extended ASCII (See Option 19.a., b. or c.)	—	—	—	(As in 19.)	—	—	—	*

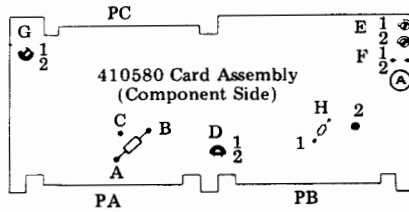
410071 — 80-Column Tractor Feed Printer Logic Circuit Card

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

See Legend in Fig. 78.



Early Issue 7A



Late Issue 7B

410580 In ROP 40C103/ — Controller

24. Odd/Even Character Parity Check		Strap Condition
a.	Even Vertical Parity (Response for Odd Parity)	Strap A to B
b.	Odd Vertical Parity (Response for Even Parity)	Strap A to C

*

410580 In ROP 40C103/ — Controller

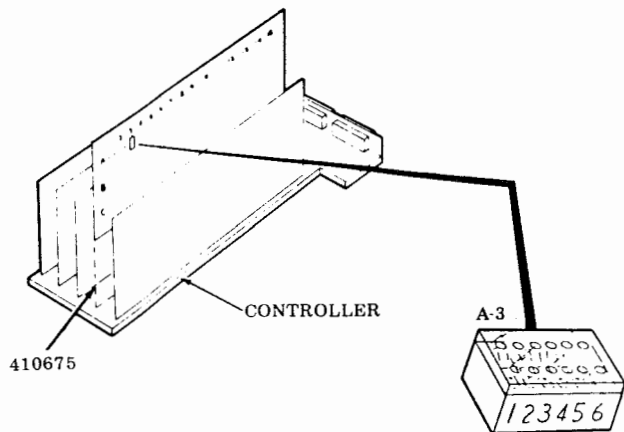
25. Response to Receiving Parity Error		Insulator F Position	Strap ^(A) Condition
a.	Printer Receives Spacing Character With Eighth Bit Mark.	2	—
b.	Printer Receives Character Even Though it has Parity Error.	1	—
c.	DATA ERROR Key Lights.	—	Removed
d.	DATA ERROR Key Does Not Light.	—	Installed

*

*

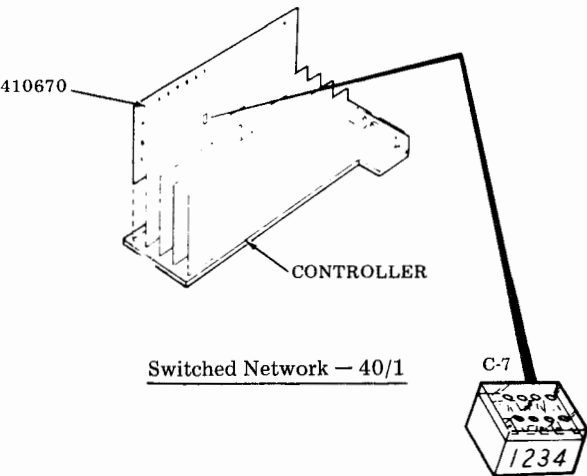
26. Trans Start is always operable off-line (ROP) to generate local test message.

*Factory programmed.



410675 — Message Control Circuit Card Options (40/0 and 40/1)

27. Message Start		A-3					
		1	2	3	4	5	6
a.	Home on Transmit	—	—	—	—	—	●
b.	Send From Cursor	—	—	—	—	—	○ *

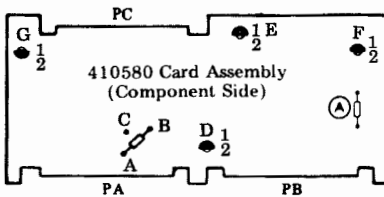


410670 — S/R, PTR, and Disconnect Circuit Card Options (40/1)

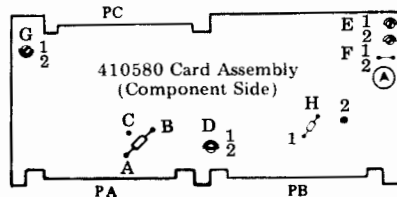
28. Disconnect on Loss of Carrier		C-7			
		1	2	3	4
a.	Disconnect After 45 Seconds	—	—	—	○ *
b.	Does Not Disconnect — Timer Disabled†	—	—	—	●

†Applies to Issue 5A or later of 410670.

See Legend in Fig. 78.



Early Issue 7A

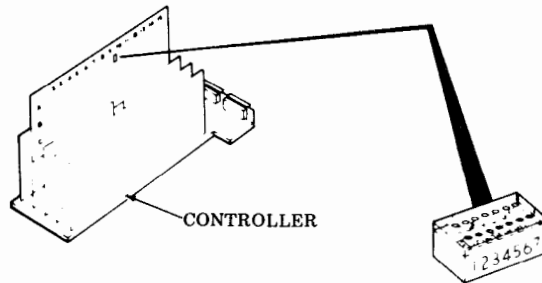


Late Issue 7B

410580 In ROP 40C103/ -- Controller

35. Printer Motor Control (See Note Below)		Strap Condition
a.	"Data Set Ready" Controls Printer Motor	Strap H to 1 *
b.	"Carrier Detect" Controls Printer Motor	Strap H to 2

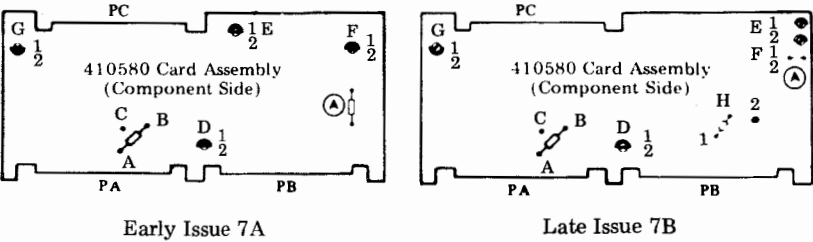
Note: H strap location is on component side at coordinates D11. Strap H position present only on Issue 7B (and higher) 410580 circuit card.



410671 -- KD or KDP Controller (Issue 4A and Higher) (40/1 Only)

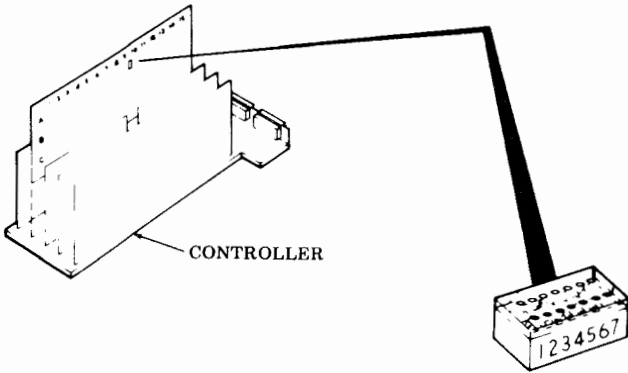
35. Printer Motor Control		A-10						
		1	2	3	4	5	6	7
a.	DSR Controls Printer Motor	—	—	—	—	○	○	— *
b.	Carrier Detect Controls Printer Motor	—	—	—	—	●	○	—

See Legend in Fig. 78.



410580 In ROP 40C103/— Controller

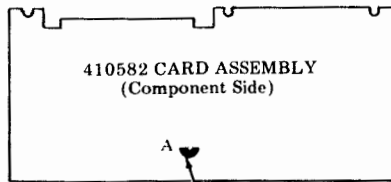
36. Printer Paper Alarm		Insulator G Position
a.	Paper Alarm Affects "Data Terminal Ready" at End of Call. DTR Held Off Until Paper is Restored.	2
b.	Paper Alarm Affects "Data Terminal Ready" Immediately. DTR Held Off Until Paper is Restored.	1



410671 — KD or KDP Controller (Issue 4A and Higher)
(Applies to 40/1 Only)

36. Paper Alarm		A-10						
		1	2	3	4	5	6	7
a.	Low Paper Does Not Affect STD	—	—	—	—	—	—	○
b.	Low Paper Drops STD Immediately	—	—	—	—	—	—	●

See Legend in Fig. 78.



Insulator in down position.

410582 In ROP Controller

38. Data Stacking		Insulator Position
a.	Enable Data Stacking	Insulator Up
b.	Disable Data Stacking	Insulator Down

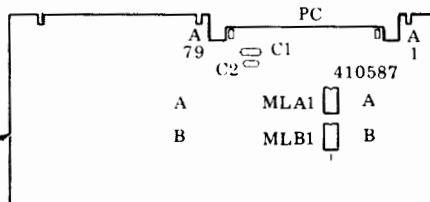
*

Note 1: When using a 40C103/AE ROP controller (without a buffer) Option 38.a. is to be enabled. Select Option 38.b. when using 40C103/AD (with buffer).

Note 2: The following strapping is required on Issue 1 of the 410587 circuit card used in 40C103/AE. Issue 2A of the 410587 circuit card has these straps incorporated in the board layout.

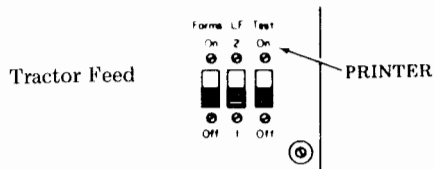
PC — Pin 20 to MLB1 Pin 1
MLB1 Pin 2 to MLB1 Pin 3
MLB1 Pin 4 to MLA1 Pin 2
(Connector PC-22)

410587 CIRCUIT CARD



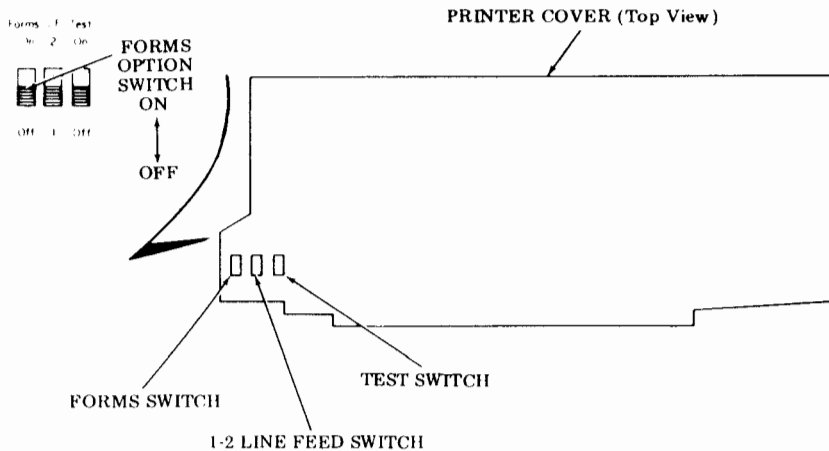
Forms Switch (Under Tractor Feed Printer Cover) (80-Column Printer)

39. Forms (Tractor Feed Printer Only)	
a.	On
b.	Off

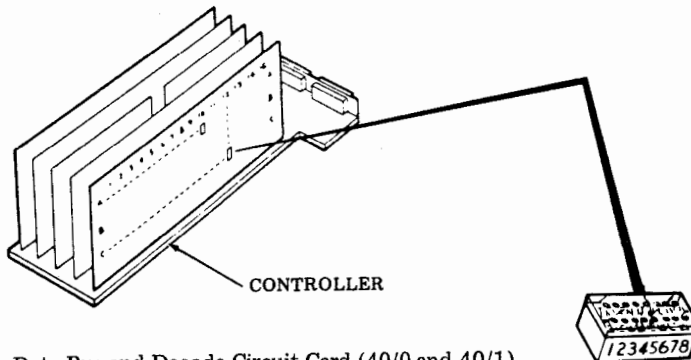


Forms Switch (132-Column Printer)

39. Forms	
a.	On
b.	Off



*Factory programmed.

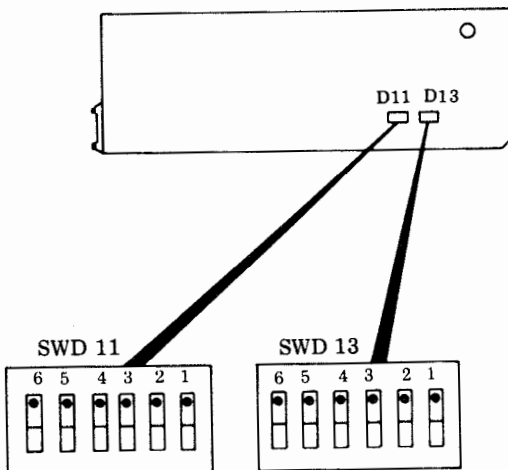


410674 — Data Bus and Decode Circuit Card (40/0 and 40/1)

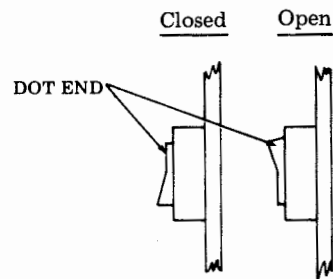
	C-12							
	1	2	3	4	5	6	7	8
40. Go Receive on Sending CR (←) (See Note)								
a. Go Receive on Sending CR	—	—	—	—	—	—	—	● ++
b. Do Not Go Receive on Sending CR	—	—	—	—	—	—	—	○ *

Note: Applies to Issues 4B and later of the 410674 circuit card.

++Do not select Option 40.a. for 40/0 and 40/1 application.



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

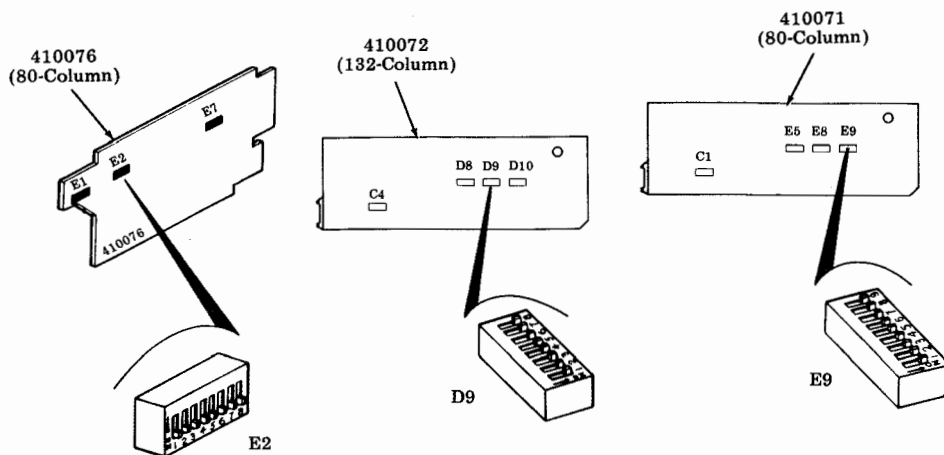


410729 — Printer Logic Circuit Card (132-Column Printer)

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 Formout)	—	—	—	—	—	●	—	—	—	—	—	—
b.	Yes (Paper Out Gated With Formout)	—	—	—	—	—	○	—	—	—	—	—	—

See Legend in Fig. 78.

(410072 and 410071 Printer Circuit Cards Viewed From Beneath Printer — Access to Switches is Through a Cutout in Bottom Pan of Printer.)



410076 — 80-Column Printer Logic Circuit Card

48. Incomplete Form Suppresses Paper Alarm		E2							
		1	2	3	4	5	6	7	8
a.	No (Paper Out Not Gated With Formout)	—	●	—	—	—	—	—	—
b.	Yes (Paper Out Gated With Formout)	—	○	—	—	—	—	—	—

*

410072 — 132-Column Printer Logic Circuit Card

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

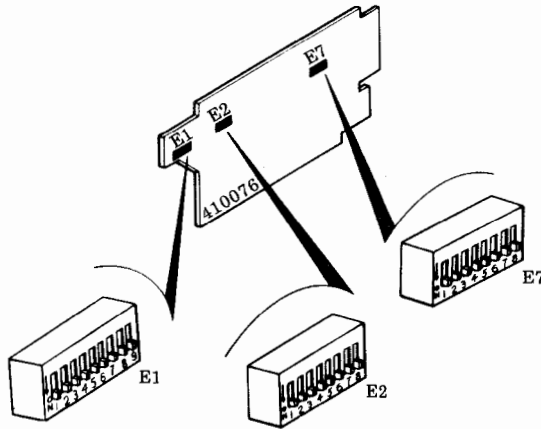
*

410071 — 80-Column Tractor Feed Printer Logic Circuit Card

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

*

See Legend in Fig. 78.



410076 — 80-Column Printer Logic Circuit Card

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

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

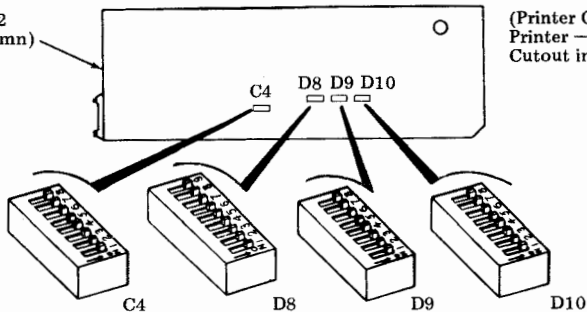
56. Friction Feed/Tractor Feed Printer		E2							
		1	2	3	4	5	6	7	8
a.	Friction Feed Printer — Motor Held On After Paper Alarm	○	—	—	—	—	—	—	*
b.	Tractor Feed Printer — Motor Turned Off After Paper Alarm	●	—	—	—	—	—	—	

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

58. Idle Line Motor Control		E7							
		1	2	3	4	5	6	7	8
a.	Disabled — Motor Held On Indefinitely During Idle Line	—	—	—	—	—	—	○	*
b.	Enabled — Motor Turned Off After 40-Second Idle Line	—	—	—	—	—	—	●	

++Requires use of 410085 OEM Card and Option 61.b. and 61.c.

See Legend in Fig. 78.

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

410072 — 132-Column Printer Logic Circuit Card

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

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

57. SSI/OEM Detection		D8							
a.	SSI	1	2	3	4	5	6	7	8
b.	OEM †	—	—	—	—	—	—	—	○ *

†An option screw change may be required on 410151 circuit card in power module. If Option 57.b. is selected, option screw B on 410151 must be installed from the component side.

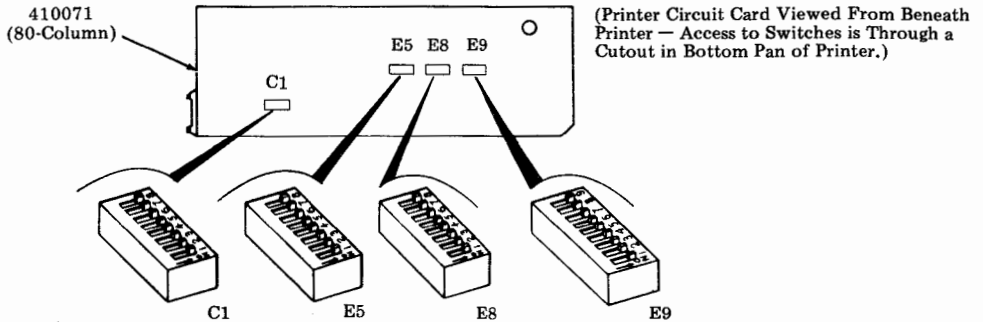
58. Idle Line Motor Control		D9							
a.	Disabled — Motor Held On Indefinitely During Idle Line	1	2	3	4	5	6	7	8
b.	Enabled — Motor Turned Off After 40-Second Idle Line	—	—	—	—	—	○	—	— *

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

60. Aux Alarm (See Note)		D9							
a.	Enable	1	2	3	4	5	6	7	8
b.	Disable	—	—	—	—	○	—	—	— *

Note: Future alarm mechanism. Switch must be closed when alarm mechanism is not present.

See Legend in Fig. 78.



410071 — 80-Column Tractor Feed Printer Logic Circuit Card

54. Printing of Escape Sequences Suppressed		E9								
a.	Character After ESC Printed as Received	—	—	—	—	—	—	—	—	*
b.	Printing of Character After ESC Suppressed	—	—	—	—	—	—	—	●	—

55. SI/SO Detection		E9								
a.	SI/SO Detection Not Used	—	—	○	—	—	—	—	—	*
b.	SI/SO Detection Enables Printing Additional Characters	—	—	●	—	—	—	—	—	—

57. SSI/OEM Interface		E8							
a.	SSI	—	—	—	—	—	—	●	—
b.	OEM†	—	—	—	—	—	—	○	—

†An option screw change may be required on 410151 circuit card in power module. If Option 57.b. is selected, option screw B on 410151 must be installed from the component side.

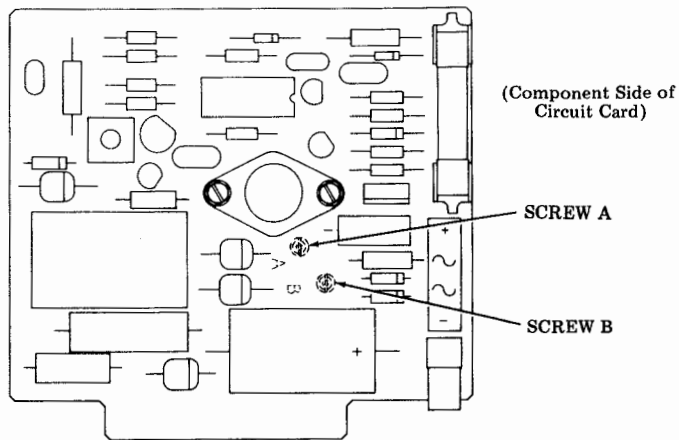
58. Idle Line Motor Control		E8							
a.	Disabled — Motor Held On Indefinitely During Idle Line				○				*
b.	Enabled — Motor Turned Off After 40-Second Idle Line				●				

59. Speed Selection (Applies only if Option 57.b. is selected)		C1							
a.	75 Baud	●	○	○	○	○	○	○	○
b.	150 Baud	○	●	○	○	○	○	○	○
c.	300 Baud	○	○	○	○	○	○	○	●
d.	600 Baud	○	○	●	○	○	○	○	○
e.	1200 Baud	○	○	○	○	○	●	○	○
f.	2400 Baud	○	○	○	●	○	○	○	○
g.	4800 Baud	○	○	○	○	●	○	○	○
h.	9600 Baud	○	○	○	○	○	○	●	○

60. Aux Alarm (See Note)		E5							
a.	Enable	—	○	—	—	—	—	—	—
b.	Disable	—	●	—	—	—	—	—	*

Note: Future alarm mechanism. Switch must be closed when alarm mechanism is not present.

See Legend in Fig. 78.



410151 Circuit Card

61. Regulator Grounding		Screw A		Screw B	
		Component	Noncomponent	Component	Noncomponent
a.	SSI	In	—	—	In
b.	OEM Frame Ground at PTR	In	—	In	—
c.	OEM Frame Ground EXT to PTR	—	In	In	—

*

See Legend in Fig. 78.

B. Data Set Options

8.05 Refer to supplemental BSPs for information on how to wire options.

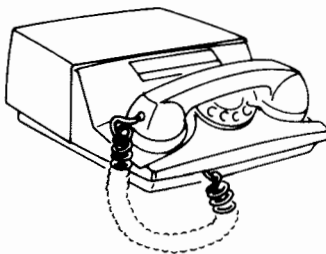
Recommended Data Set Options

202C1, 5 or 9 W/O Reverse Channel Rotary Dial 202C7 or 11W/O Reverse Channel TOUCH-TONE Dial 202C2, 6, or 10 W/Reverse Channel Rotary Dial 202C8 or 12 W/Reverse Channel TOUCH-TONE Dial Recommended Options (unless otherwise specified): ZE, ZB*, N*, ZJ (not provided), F*, B*, R*, V*, Z*, W*, H*, T*, ZG* and ZY*
202D3 W/O Reverse Channel, Use 804A 202D4 W/Reverse Channel, Use 804A Recommended Options (unless otherwise specified): Remove Q*, ZB*, N*, ZJ (as used with 804A except TB1 19-19 of 19-25), Z, W, V*, T* R, N* H* F*, B*, ZF, ZG, ZM*, and ZY*
202R Use With 511F or Rotary Dial Telephone Equipped With Exclusion Key Recommended Options (unless otherwise specified): Z, S, R, M, G, X, J
804A5 W/Rotary Dial, Use With 202D 804A7 W/TOUCH-TONE Dial, Use With 202D Recommended Options: W*, X*, J (1 & 3*), Q*, H, ZA*, B*, G
202S-L1/L2 With 565HK Telephone Set Recommended Options (unless otherwise specified) For Use With DATASPEED 40 Switched Network Set/Station: ZP, ZE, ZA, ZG*, R*, ZC**, N*, G*, B*, and F*.

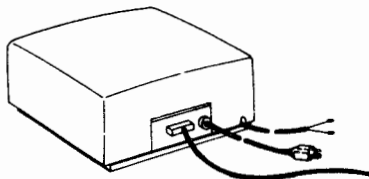
*Factory furnished.

**Factory furnished instead of Option ZD when reverse channel board is installed.

Data Set 202C



Attendant Set 202C

Data Set 202C
(Mounted in Pedestal)

202C OPTIONS

FEATURE OR OPTION			WIRING OPTION	STRAP TERMINALS		PROVIDE
				TERMINAL NUMBERS	TERM. BOARD	
Automatic Answering Feature (Note 1)	Voltage Interface	Key Controlled	ZE	48-49	TB2	One Per Station
		Permanent	Q	59-60	TB2	
	Contact Interface	Key Controlled	ZC	49-50	TB2	
		Permanent	ZD	50-51	TB2	
	Not Provided			Remove ZE, ZC, Q, ZD wiring.		
Bit Rate (Note 4)		900 or less bps	ZA	14-15	TB2	One Per Station
		Greater than 900 bps	ZB	15-16	TB2	
Amplitude Equalizer		IN	F	18-19	TB2	One Per Station
		OUT	E	17-18	TB2	
Delay Equalizer		IN	B	61-62, 64-65	TB2	One Per Station
		OUT	A	62-63, 63-64	TB2	
Interface		Voltage (EIA)	N	1-2,4-5,6-7,8-9	TB2	One Per Station
		Contact	M	2-3, 5-6, 9-10, 12-13	TB2	
Squelch		IN	R	46-47	TB2	One Per Station
		OUT	ZM*	47-55 (Remove R wiring.)	TB2	
Demodulator Clamp		ON	V	20-21	TB2	One Per Station
		OFF	U	21-22	TB2	
2-Wire Operation			Z	27-28, 31-32, 33-34, 35-36, 38-39, 41-42, 53-54, 56-57	TB2	One Per Station (Note 2)
4-Wire Operation			Y	30-31, 36-37, 37-38, 40-51, 54-55, 57-58	TB2	
Termination		600 ohm	X	44-45	TB2	One Per Station
		900 ohm	W	43-44	TB2	

Data Set 202C (Cont)

202C OPTIONS (Cont)

FEATURE OR OPTION		WIRING OPTION	STRAP TERMINALS		PROVIDE
			TERMINAL NUMBERS	TERM. BOARD	
Data Transmit Levels (Note 3)	0 dBm	K	11-12	TB2	One Per Station
	-3 dBm	J	24-25	TB2	
	-6 dBm	H	22-23	TB2	
	-9 dBm	G	23-24	TB2	
Reverse Channel	IN	T	1-2, 6-7	TB3	One Per Station
	OUT	S	2-3, 7-8	TB3	

FEATURE OR OPTION		WIRING OPTION	STRAP TERMINALS		PROVIDE
			TERMINAL NUMBERS	TERM. BOARD	
Reverse Channel Transmit Level	-3 dBm	ZF	White lead to 1	TB4	One Per Station (Note 3)
	-6 dBm	ZG	White lead to 2	TB4	
	-9 dBm	ZH	White lead to 3	TB4	
801-type Automatic Calling Unit	Provided	ZJ	19-20	TB1	One Per Station
	Not Provided		17-20	TB1	
6017AP Key	Provided		Remove ZV Wiring		One Per Station
	Not Provided	ZV	7-9	TB1	
Carrier Soft Turnoff	IN	ZY	1-2	AS39 CP	One Per Station
	OUT	ZZ	3-4	AS39 CP	

Note 1: When automatic answer is specified and data set is wired for voltage interface (option N), provide option ZE or Q as required. If data set is wired for contact interface (option M) and automatic answer is specified, provide ZC or ZD option as required.

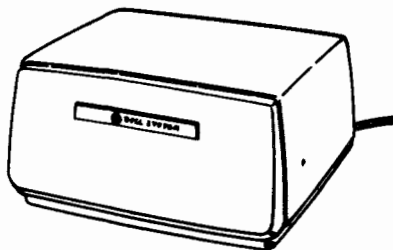
Note 2: In addition to strapping arrangements on TB2, the following arrangements must be made on telephone circuit (11C apparatus unit):

- 2-wire (option Z) — white conductor of handset cord to GN of 4010B network, other white conductor of handset cord to R of 4010B network.
- 4-wire (option Y) — White conductor of handset cord to terminal 1 of TB6, other white conductor of handset cord to terminal 2 of TB6.

Note 3: Equipped on data sets 202C1 and C2 prior to series 10, 202C5, C6, C7, and C8 prior to series 4, 202C9, C10, C11, and C12 prior to series 3. Later series of data sets 202C-type are equipped with an attenuator which will vary the output from 0 to -12 dBm.

Note 4: Option ZB should be provided for all data sets.

Data Set 202D



202D OPTIONS AND CONNECTIONS

NUMBER REQUIRED PER CIRCUIT	DESCRIPTION OF FEATURE OR OPTION		OPTION DESIG	TERMINAL BOARD	CONNECTION	REMARKS
1	2-wire operation 4-wire operation		Z Y	TB2	(61, 62) (64, 65) (62, 63, 64)	
1	600-ohm termination 900-ohm termination		X W		(32, 33) (37, 38) (33, 34) (38, 39)	
1	Clamp on demod output when noise protection is required		V		(20, 21)	
	Clamp on demod output when noise protection is not required		U		(21, 22)	
1	Reverse channel in Reverse channel out		T S	TB3	(1, 2) (6, 7) (2, 3) (7, 8)	Note 4
1	Squelch in Squelch out		R ZL	TB2	(35, 36) (25, 35) or (22, 23)	Remove ZL wiring Notes 2, 3
1	Automatic answering No automatic answering		Q —		(59, 60) —	Remove Q Wiring
1	EIA voltage interface		N		(1, 2) (4, 5) (6, 7) (8, 9) (2, 3) (5, 6) (9, 10)	
	Contact interface		M		(12, 13)	
1	Data Transmit Power Levels	0 dBm	K		(11, 12)	Note 5
		—3 dBm	J		(24, 25)	
		—6 dBm	H		(22, 23)	
		—9 dBm	G		(23, 24)	
1	Equalizers for Switched Network Operation	Amplitude Equalizer In	F		(18, 19)	
		Amplitude Equalizer Out	E		(17, 18)	
1	Network Operation	Delay Equalizer In	B		(27, 28) (30, 31)	
		Delay Equalizer Out	A		(28, 29, 30)	
1	Bit Rate	900 bits per second or less	ZA		(14, 15)	Note 1
		Over 900 bits per second	ZB		(15, 16)	
1	Enables data set TEST key		ZE		(44,45) (47,48) (50,51)	Note 9
	Disables data set TEST key		ZF		(45,46) (48,49) (51,52)	

Data Set 202D (Cont)

202D OPTIONS AND CONNECTIONS (Cont)

NUMBER REQUIRED PER CIRCUIT	DESCRIPTION OF FEATURE OR OPTION	OPTION DESIG	TERMINAL BOARD	CONNECTION	REMARKS
1	2-wire operation without 4-wire backup 2-wire operation with 4-wire backup 4-wire operation without 2-wire backup 4-wire operation with 2-wire backup	ZG — ZH —	TB2	(53, 54) — (54, 55) —	Note 7 Note 6
1	When data set is used with 6017AP key only	—	TB1 TB2	(19, 25) (57, 58) (40, 41)	
1	When data set is not used with DAS 804A or 6017AP key	ZJ	TB1 TB2	(19, 23) (57, 58) (40, 41)	
1	When data set is used with DAS 804A with or without 6017AP key	—	TB1 TB2	(19, 25) (56, 57) (42, 43)	
1	Reverse channel — 3 dBm Transmit — 6 dBm Power level — 9 dBm	ZK ZM ZN	TB2	(W) From 1A1 to TB4-1 (W) From 1A1 to TB4-2 (W) From 1A1 to TB4-3	Notes 4, 5
1	40-millisecond carrier detector timing 20-millisecond carrier detector timing	YM YN	TB2	(24, 25) (25, 26)	Note 10 Note 10
1	200-millisecond clear-to-send timing 60-millisecond clear-to-send timing 30-millisecond clear-to-send timing	YP YR YS	TB4	(2, 3) (1, 2) (3, 4)	Note 10 Note 10 Note 10
1	Carrier Soft IN Turnoff OUT	ZY ZZ	AS39 CP AS39 CP	(1, 2) (3, 4)	Note 8 Note 8

Note 1: Use option ZB for all bit rates.

Note 2: On data sets 202D1, D2, D3, and D4, in order to provide ZL option, a P-43N572 connector lead assembly or equivalent is required to connect terminal 25 to 35.

Note 3: On data sets 202D5 and D6, connection of terminal 22 to 23 provides ZL option.

Note 4: Wiring factory-furnished when reverse channel is specified.

Note 5: Data sets prior to 202D1 and D2, series 10, and 202D3 and D4, series 5 contain discrete level options. Data sets starting with these series numbers and data sets 202D5 and D6 contain potentiometers to vary the transmit level from 0 to -12 dBm.

Note 6: When DAS 804A is used to switch from 4-wire to 2-wire (1 DDD backup line) remove ZH wiring. When DAS 804A is used to switch from 4-wire to 2 DDD backup lines, install ZH wiring.

Note 7: When DAS 804A is used to switch from 2-wire to 4-wire or from 4-wire to 2-wire operation, remove both ZG and ZH wiring.

Note 8: Option is located on transmitter circuit pack AS39, AS77, AS87 and is available in data sets 202D3, D4, D5, and D6.

Note 9: Requires TEST key in DAS 804A.

Note 10: Options contained only in 202D5 and D6.

Data Set 202R and Attendant Set

Data Set 202R
(Mounted in Pedestal)Attendant Set 202R
With Exclusion Key

202R OPTIONS

FEATURE OR OPTION		OPTION DESIG	CLOSE SWITCH	OPEN SWITCH	CIRCUIT PACK
4-Wire	Patch Cords S4 and S5 and Slide Switch S1 on AR593 CP	Y	S1 to 4W	S4, S5 (Note 1)	AR593 CP
2-Wire		Z	S1 to 2W S4, S5 (Note 2)	—	
Data Set Carrier Controlled by Customer Request-to-Send		X	S3B	S3A	
Continuous Carrier (Transmit Only Service		W	S3A	S3B	
No Carrier (Receive Only Service)		V	—	S3A, S3B	AR591 CP
Fast Turnoff of Carrier		T	—	S2B	
Soft Turnoff of Carrier		S	S2	—	
Squelch of Carrier Detector		R	S3	—	
No Squelch of Carrier Detector		Q	—	S3	
20-ms Carrier Acquisition Timer		N	S1	—	
40-ms Carrier Acquisition Timer		M	—	S1	
Carrier Detector OFF Clamps Received Data Lead		K	S5	—	
No Clamp of Received Data Lead		J	—	S5	
200-ms Clear-to-Send Timer		G	—	S4A, S4B	
60-ms Clear-to-Send Timer		F	S4A	S4B	
30-ms Clear-to-Send Timer		E	S4B	S4A	

Note 1: Switches S4 and S5 are provided on AR593 series 6 or later. Patch cords used for S4 and S5 on AR593 are stored by plugging them into themselves to provide an "open switch" condition. The "open switch" condition allows digital loop-back test. To perform the "beeping" 4-wire loop-back test, close switches S4 and S5 (see Note 2). All data sets are factory-furnished in the "open switch" condition.

Note 2: To close switch S4 or S5, the patch cord must interconnect the two posts associated with each switch by plugging one end into each post.

Data Set 202S

Data Set 202S
With Attendant Set

202S OPTIONS

FEATURE	202S OPTIONS	DESCRIPTION		SWITCH SETTING										PROVIDE
Automatic Answer	B	IN		S2 SWITCH CONTACT SETTING ON TRANSMITTER RECEIVER										One Per Station
				1	2	3	4	5	6	7	8	9	0	
	A	OUT		—	—	—	—	—	—	—	X	—	—	
Clamp	F	IN		—	O	—	—	—	—	—	—	—	—	One Per Station
Transmit Line Signal Level	ZK	WITHOUT REVERSE CHANNEL	WITH REVERSE CHANNEL	S3 SWITCH CONTACT SETTING ON TRANSMITTER RECEIVER										One Per Station
				1	2	3	4	5	6	7	8	9		
		0	—1	—	X	—	X	X	X	X	X	X		
		—1	—2	—	X	—	O	X	X	X	X	X		
		—2	—3	—	X	—	X	O	X	X	X	X		
		—3	—4	—	X	—	X	X	O	X	X	X		
		—4	—5	—	X	—	X	X	O	X	X	X		
		—5	—6	—	X	—	X	O	X	O	X	X		
		—6	—7	—	X	—	O	X	O	O	X	X		
		—7	—8	—	O	—	O	X	X	X	O	X		
		—8	—9	—	O	—	O	X	O	X	O	X		
		—9	—10	—	O	—	X	X	X	X	X	O		
		—10	—11	—	O	—	O	X	X	O	X	O		
—11	—12	—	O	—	X	O	X	X	O	O				
—12	—13	—	O	—	O	O	O	O	O	O				
Reverse Channel	ZC	IN		O	—	O	—	—	—	—	—	—	One Per Station	
	ZD	OUT		X	—	X	—	—	—	—	—	—		

X Rocker down on side adjacent to numbers
 O Rocker up on side adjacent to numbers
 — Rocker may be in either position

Data Set 202S (Cont)

202S OPTIONS (Cont)

FEATURE	202S AND 202T OPTIONS	DESCRIPTION	SWITCH SETTING											PROVIDE
Local Copy on Primary Channel (2-Wire)	ZA ZB	IN	S2 SWITCH CONTACT SETTING ON TRANSMITTER RECEIVER											One Per Station
			1	2	3	4	5	6	7	8	9	0		
		OUT	X	—	—	—	—	—	—	—	—	—	—	
Soft Turnoff and Squelch Intervals	Z	SOFT TURN-OFF ()	SQUELCH ()	—	—	0	X	—	—	—	—	0	X	One Per Station
	Y	8 ms	0	—	—	0	X	—	—	—	—	0	0	
	X	24 ms	0	—	—	0	X	—	—	—	—	X	0	
	W	0	9 ms	—	—	0	0	—	—	—	—	0	X	
	V	0	156 ms	—	—	X	0	—	—	—	—	0	X	
	T	8 ms	9 ms	—	—	0	0	—	—	—	—	0	0	
	S	8 ms	156 ms	—	—	X	0	—	—	—	—	0	0	
	R	24 ms	156 ms	—	—	X	0	—	—	—	—	X	0	
Fast Carrier Detection	Q	IN	—	—	—	—	0	—	—	—	—	—	—	One Per Station
	N	OUT	—	—	—	—	X	—	—	—	—	—	—	
Clear-to-Send Interval	M	8 ms	—	—	—	—	—	0	0	—	—	—	—	One Per Station
	K	30 ms	—	—	—	—	—	0	X	—	—	—	—	
	J	60 ms	—	—	—	—	—	X	0	—	—	—	—	
	G	180 ms	—	—	—	—	—	X	X	—	—	—	—	
Local Copy on Reverse Channel	ZE ZF	IN	STRAPPING ON REVERSE CHANNEL											One Per Station
		Install E21-E22												
	Install E21-E23													
Grounding Option	ZG ZH	Signal Ground Connected to Frame Ground	SCREW SWITCH SETTING ON INTERFACE CIRCUIT											One Per Station
		Screw Switch S1 Closed												
	Screw Switch S1 Open													

X Rocker down on side adjacent to numbers
 O Rocker up on side adjacent to numbers
 -- Rocker may be in either position.

9. CABLE CONNECTION

9.01 Fig. 81 through 91 show cable connections and placement of the components in the 40-type sets and stations.

Fig. 81—ROP, Friction Feed — 40/1
Fig. 82—ROP, Tractor Feed (80-Column) — 40/1
Fig. 83—KD
Fig. 84—KDP Pedestal Mounted, Friction Feed Printer Under Monitor — 40/1
Fig. 85—KDP Pedestal Mounted, Friction Feed Printer
Fig. 86—KDP Pedestal Mounted, 80-Column Tractor Feed Printer Adjacent — 40/1
Fig. 87—KDP Table Mounted, Adjacent Logic Friction Feed Printer Under Monitor — 40/1
Fig. 88—KDP Table Mounted, Adjacent Friction Feed Printer — 40/1
Fig. 89—KDP Table Mounted, Adjacent Tractor Feed Printer (80-Column) — 40/1
Fig. 90—KD (PTI) — 40/0
Fig. 91—Data Set Connections 202C or 202S

9.02 Additional wiring and cabling information is provided in Section 582-200-400.

***Note:** The 341896 nonshielded cable may be replaced by the following shielded cables of various lengths, as follows:

SHIELDED CABLES	
CABLE PART NO.	TOTAL CABLE LENGTH
408065	7 FT
408066	12 FT
408067	25 FT
408068	50 FT

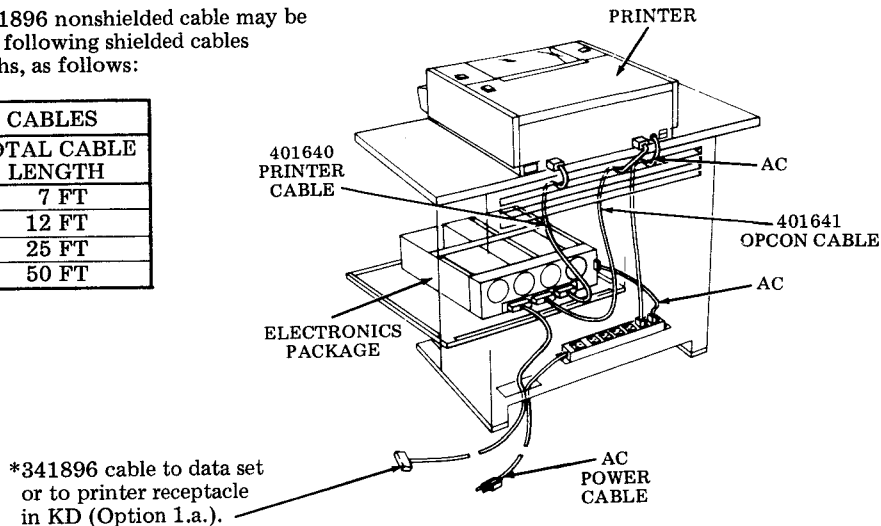


Fig. 81—ROP, Friction Feed — 40/1

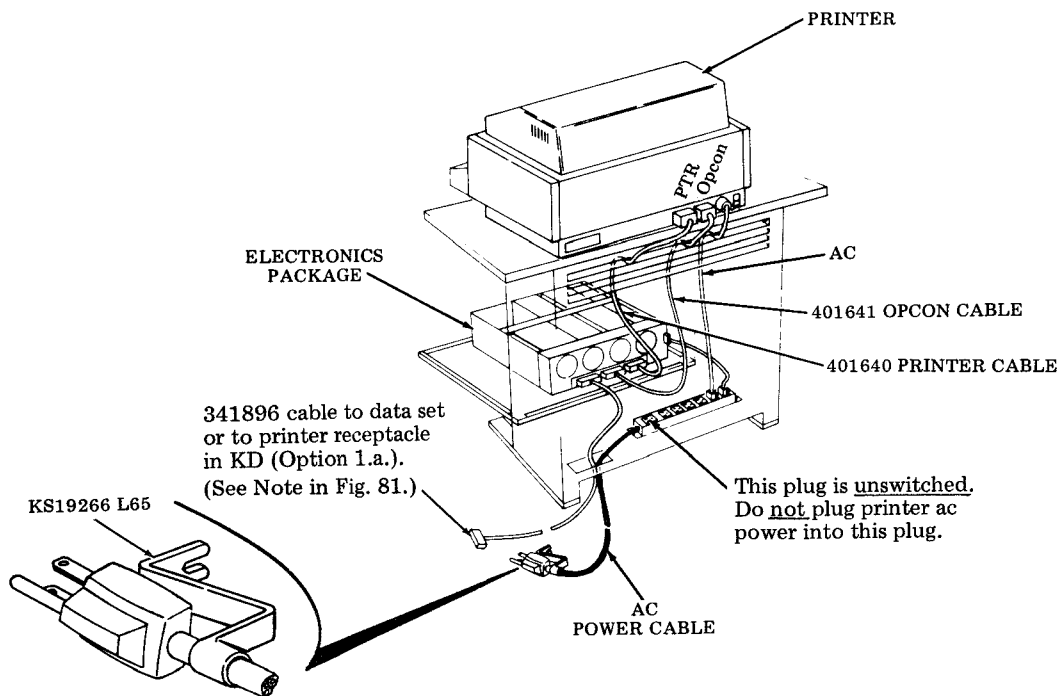


Fig. 82—ROP, Tractor Feed (80-Column) — 40/1

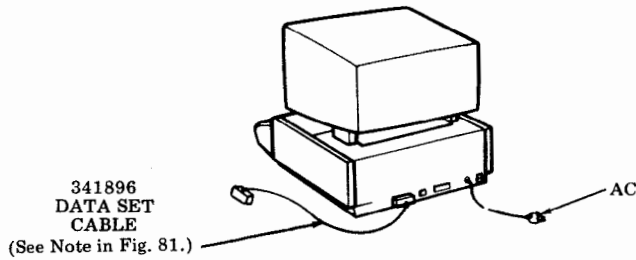


Fig. 83—KD — 40/1

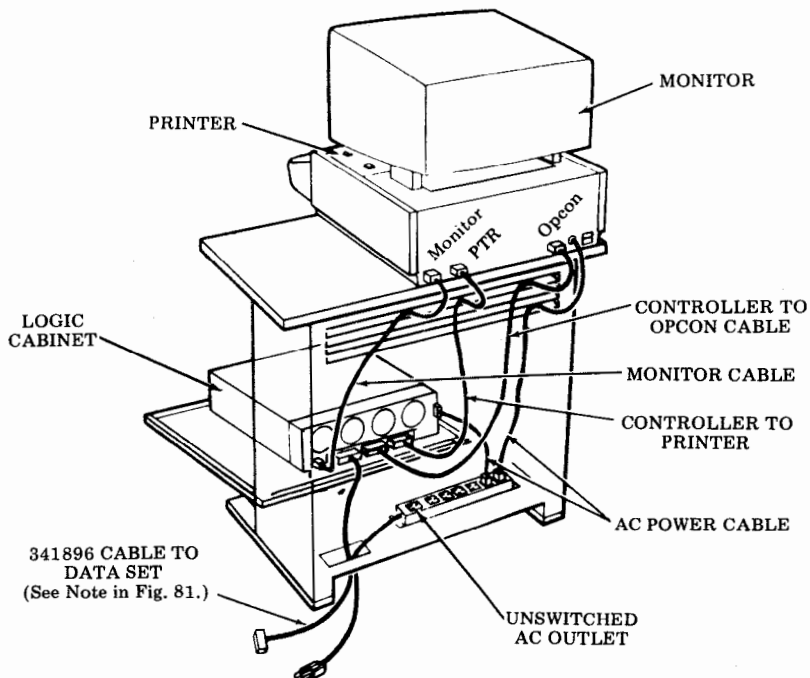


Fig. 84—KDP Pedestal Mounted, Friction Feed Printer Under Monitor — 40/1

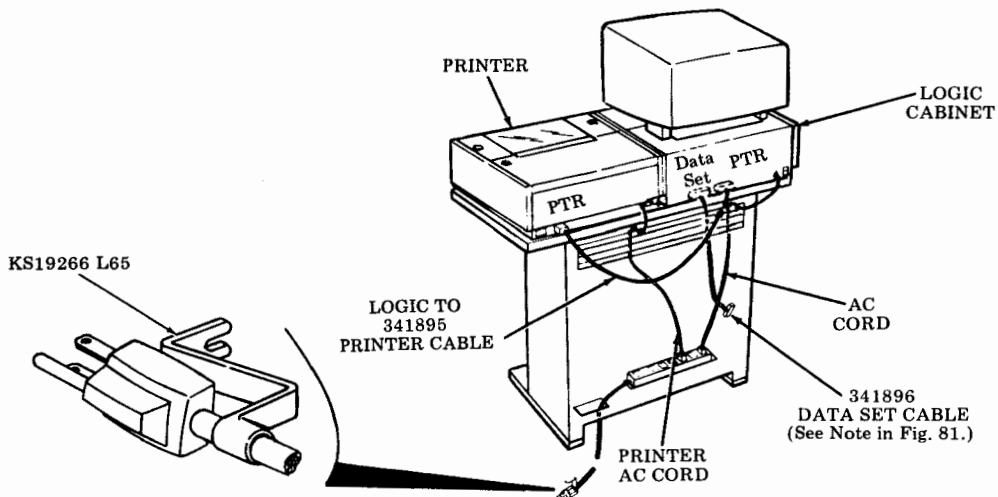


Fig. 85—KDP Pedestal Mounted, Friction Feed Printer — 40/1

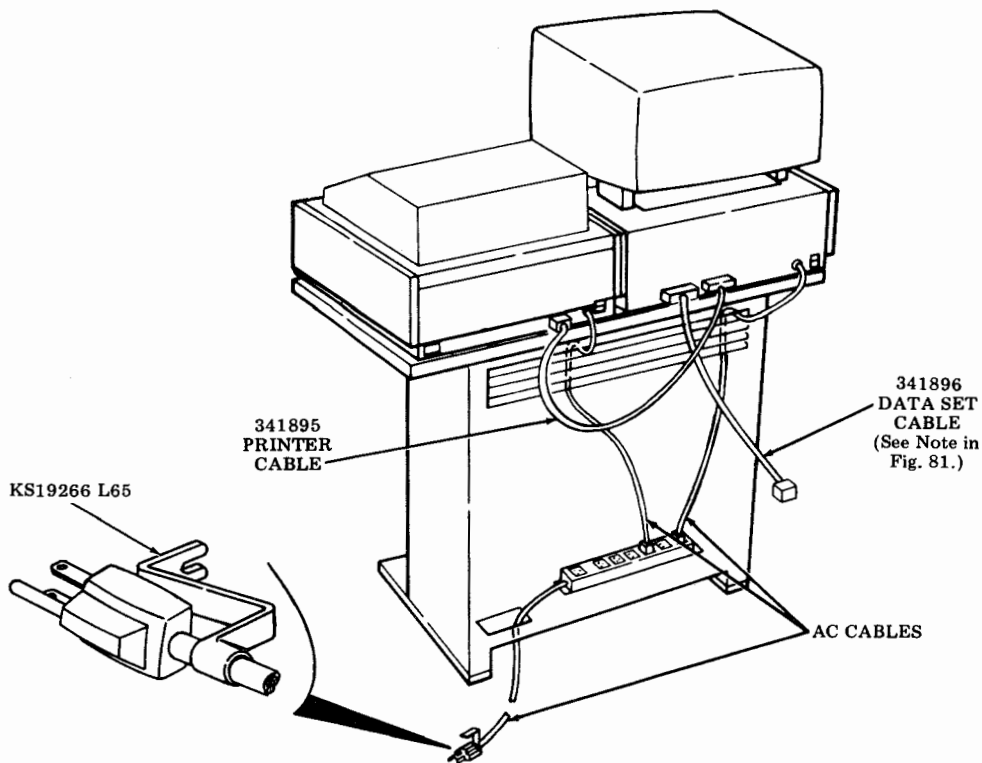


Fig. 86—KDP Pedestal Mounted, 80-Column Tractor Feed Printer Adjacent — 40/1

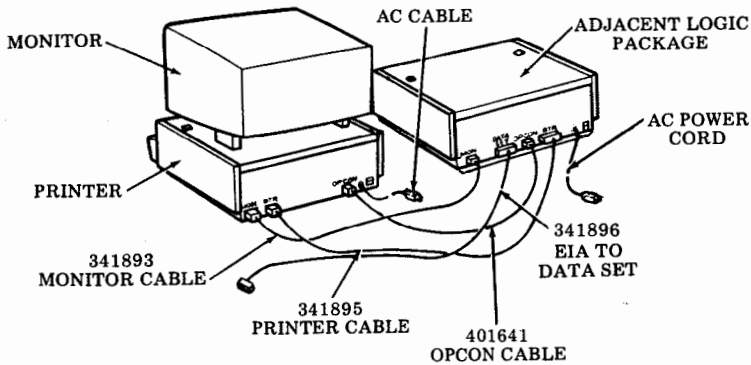


Fig. 87—KDP Table Mounted, Adjacent Logic Friction Feed Printer Under Monitor — 40/1

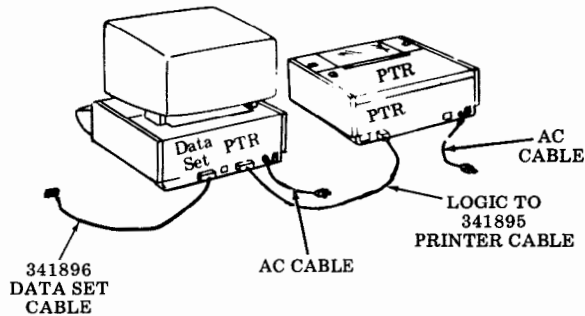


Fig. 88—KDP Table Mounted, Adjacent Friction Feed Printer — 40/1

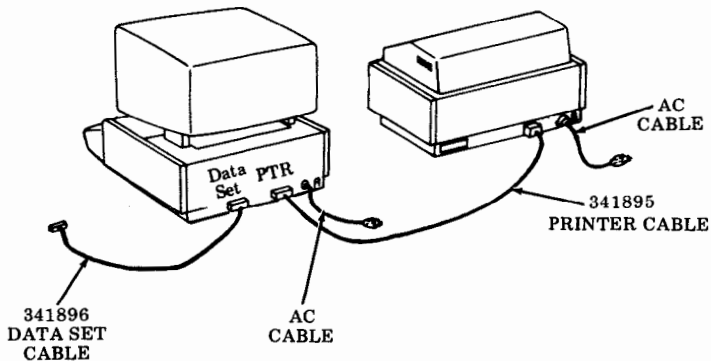
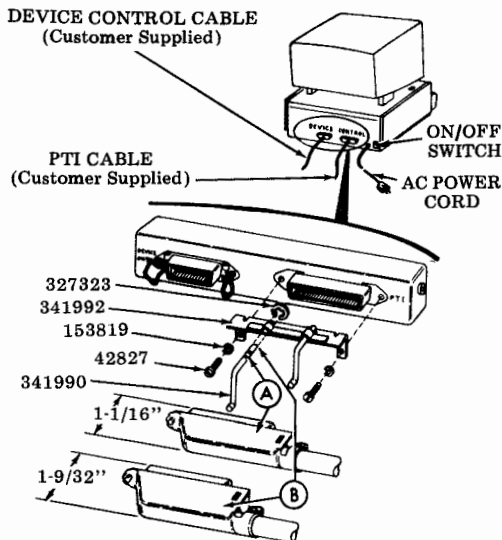
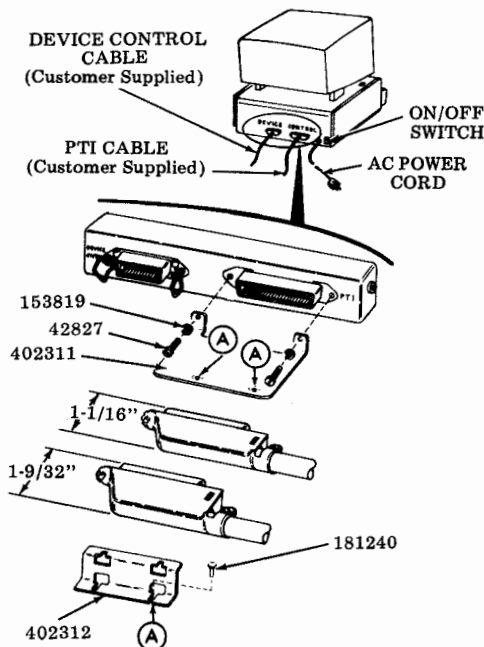


Fig. 89—KDP Table Mounted, Adjacent Tractor Feed Printer (80-Column) — 40/1



Early Design Cable Clamp



Late Design Cable Clamp

Early Design:

- ① Remove two 42827 screws and two 153819 lockwashers and set aside for future use.
- ② Remove 341992 bracket, 341990 clamps and 327323 ring retainers from the bag.
- ③ Determine which of two slots the ring retainers should clamp to.
- ④ If the connector is short (approximately 1.062), use the slot labeled "A".
- ⑤ If the connector is long (approximately 1.281), use the slot labeled "B".
- ⑥ After the ring retainers are installed, place 341992 bracket w/clamps against the "PTI" connector.
- ⑦ Install two 42827 screws and two 153819 lockwashers.

Late Design:

- ① Remove two 42827 screws and two 153819 lockwashers and set aside for future use.
- ② Remove 402311 bracket, 402312 clamp and two 181240 screws from the bag.
- ③ Install 402311 bracket as shown, using screws and lockwashers removed in Step 1.
- ④ Install connector in mating connector as deep as it will go.
- ⑤ If the connector is short (approximately 1.062), place long leg of 402312 clamp over tapped holes of bracket and bias tightly against connector. Clamp tightly with two 181240 screws.
- ⑥ If the connector is long (approximately 1.281), follow Step 5 except use short leg of clamp.

Fig. 90—KD (PTI) — 40/0

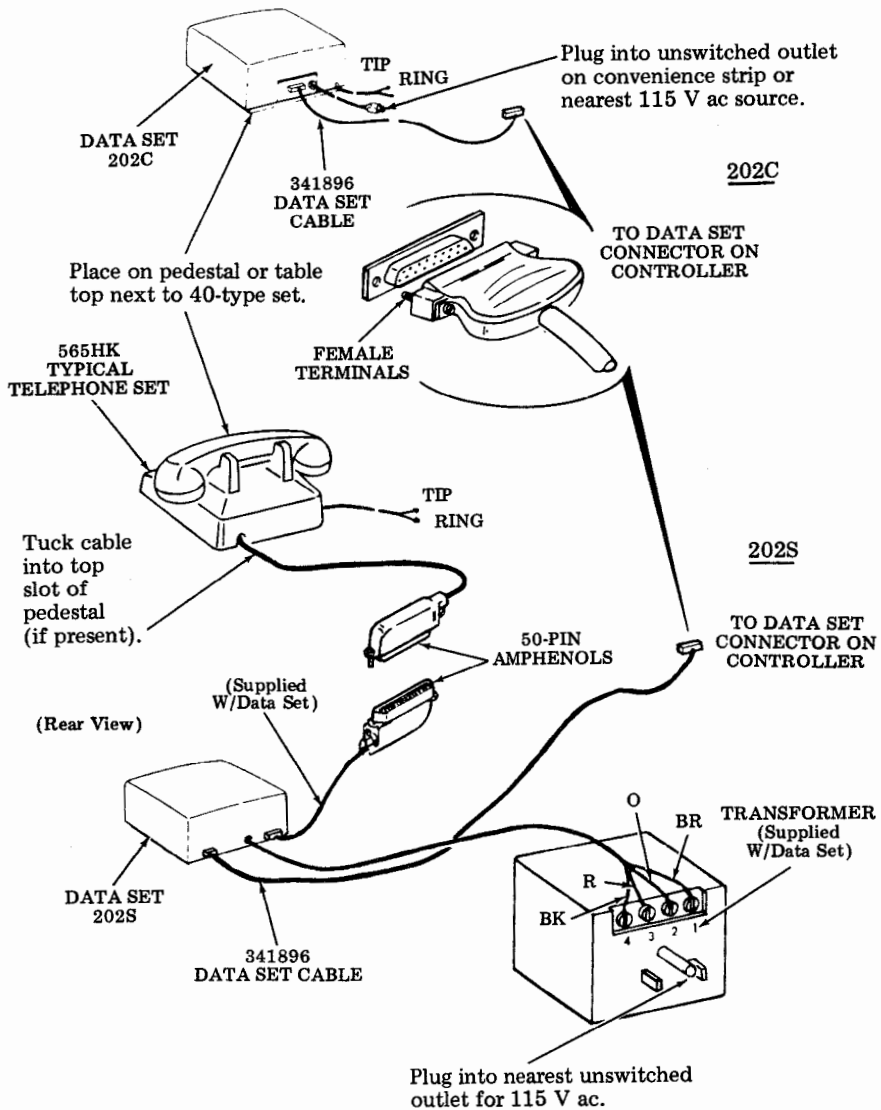


Fig. 91—Data Set Connections 202C or 202S

"DATASPEED*" 40/0 AND 40/1 SETS AND STATIONS

WIRING

CONTENTS	PAGE	
1. GENERAL	1	1.02 Whenever this section is reissued, the reason for reissue will be listed in this paragraph.
2. WIRING DIAGRAMS	3	1.03 The information in this section when used in conjunction with Test and Troubleshooting, Section 582-200-500 will aid in locating cabling faults.
KD Set for PTI (Parallel Terminal Interface) Application (40/0)	3	1.04 When ordering replaceable components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP341893).
KDP Set for Switched-Network Application (40/1)	4	1.05 If a more comprehensive presentation of the wiring information is required, the following wiring diagram packages are available from Teletype Corporation.
ROP Cabinet w/40C103 Controller...	5	
Printer Cabinets.	6	
341893 Monitor Extension Cable Assembly.	7	
341895 Printer Extension Cable Assembly.	7	
341896 Data Set Interface Cable Assembly.	8	
401640 ROP Extension Cable Assembly.	8	
401641 Opcon Extension Cable Assembly.	9	
3. SET AND STATION CABLE ARRANGEMENTS	10	WDP0391 40C102 Controller
ROP Set or Station	10	WDP0392 40C201 Controller
KD Station	11	WDP0393 40C202 Controller
KDP Set — Adjacent Logic	11	WDP0395 KD/KDP With 40C102
KDP Station — Adjacent Printer	12	WDP0396 KD/KDP With 40C202
KDP Set — Adjacent Printer on Pedestal.	12	WDP0397 KD With 40C201
KDP Set — Printer Under Monitor, Logic in Pedestal.	13	WDP0400 40MN101 Display Monitor
		WDP0401 ROP Set
		WDP0402 40C103 ROP Controller
		WDP0403 40K101 Operator Console
		WDP0404 40K001 ROP Opcon
		WDP0405 40PSU101 Power Supply
		WDP0423 40DL291 Display Logic
		WDP0434 40AB101 Answer-Back
		WDP0435 40 Printers
		WDP0441 40 Printer Cabinets
1. GENERAL		
1.01 This section provides the wiring information for DATASPEED 40/0 Parallel Terminal Interface (PTI) and DATASPEED 40/1 Asynchronous Switched-Network station applications.		1.06 Some notes indicating voltage levels have been provided on the wiring diagrams to aid in troubleshooting. The physical location of plugs, cables, or connectors can be found in Section 582-200-700.

*Registered Trademark of AT&TCo.

1.07 The following dangers and warning are to be used as safety measures for the apparatus and the craftsperson.

Danger 1: Turn off all power and signal sources before removing or replacing any component.

Danger 2: Wear approved safety glasses when the housing of the monitor is removed, as the display tube is fragile in the neck area and is subject to implosion if broken. Be careful not to strike the glass of the tube with tools or components when working in its vicinity.

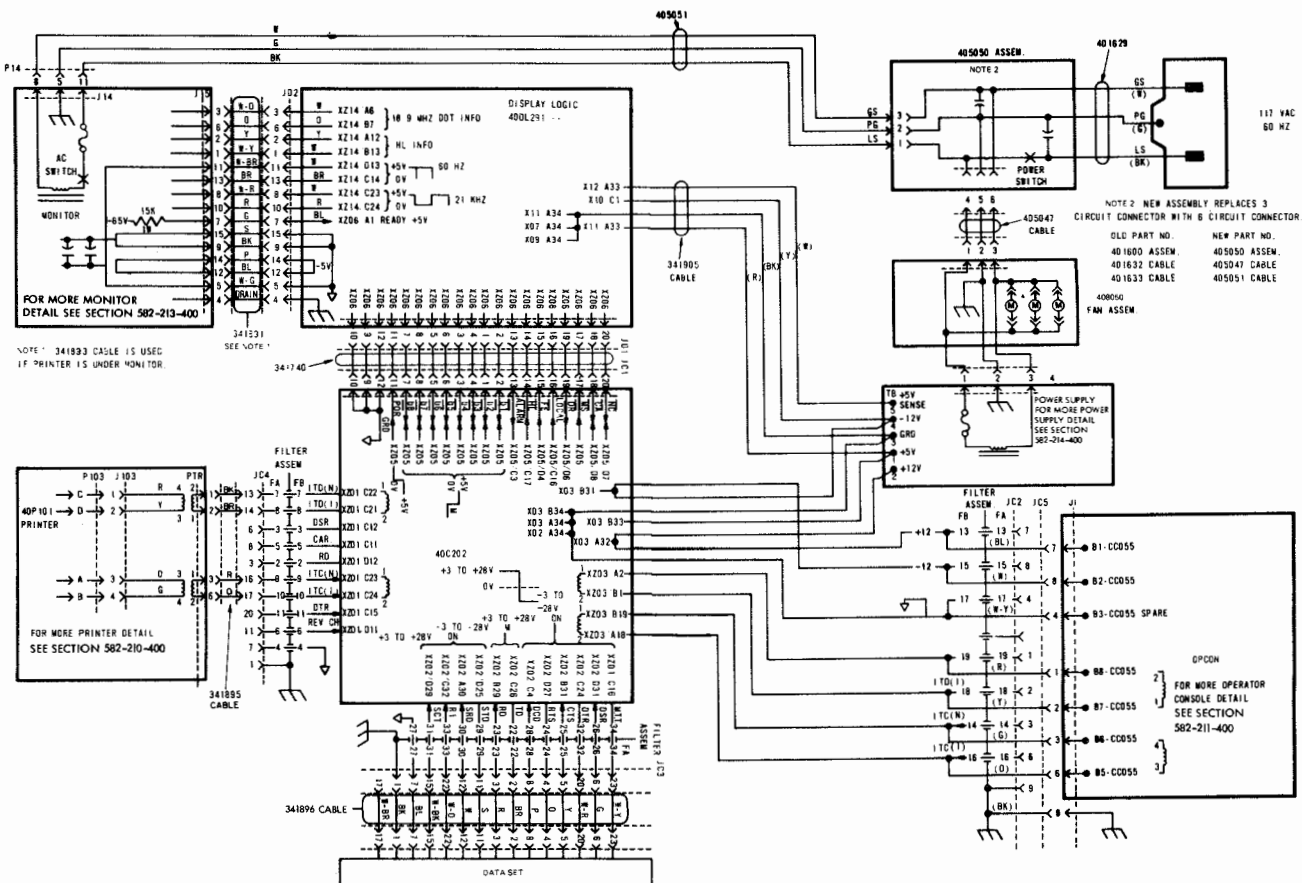
Warning: To avoid possible internal damage to circuitry, wear a 346392 static discharge strap connected to ground to allow static discharge before handling circuit cards for removal or replacement. Avoid touching circuit lands or components as much as possible.



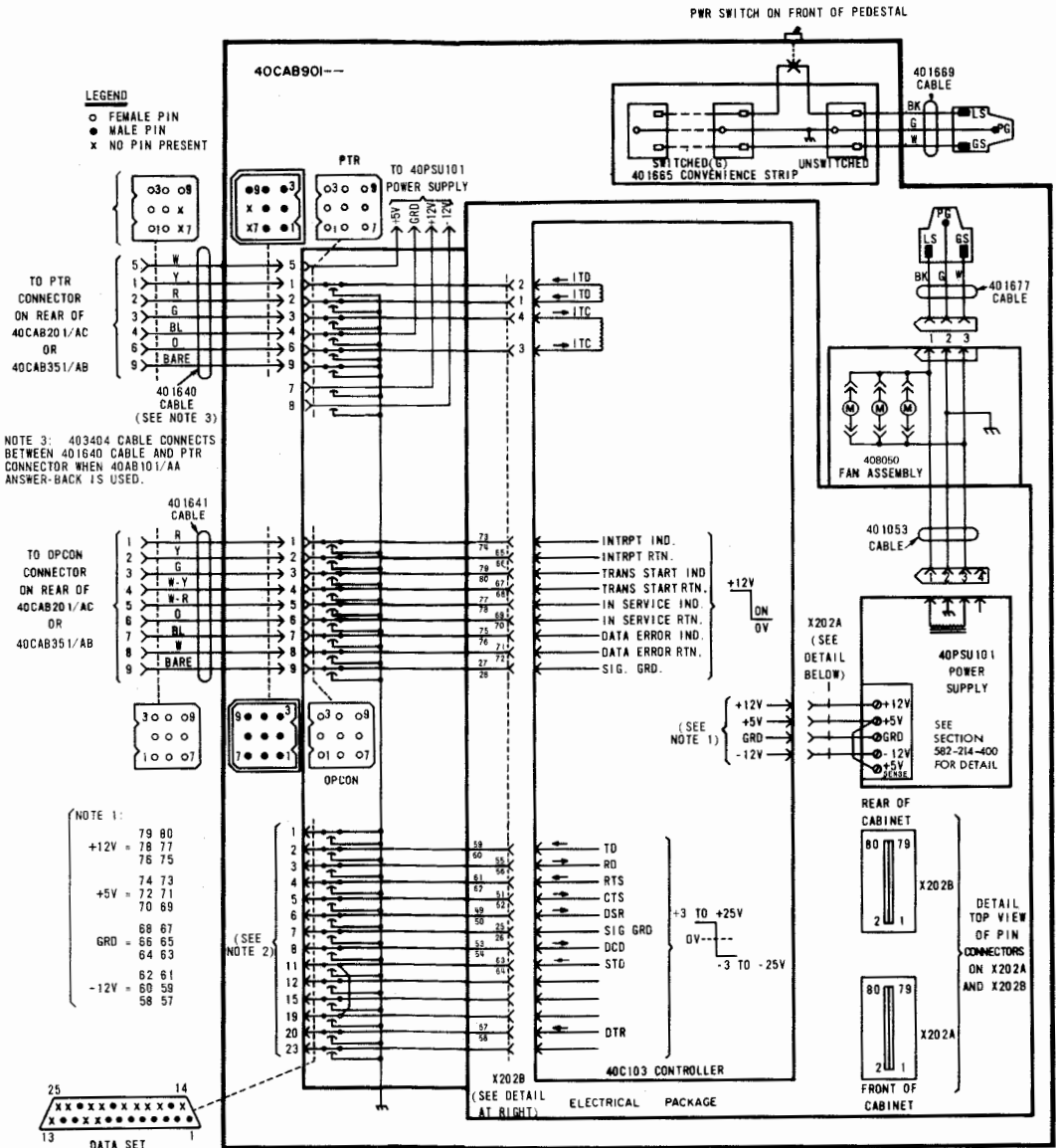
Attach static ground strap tightly to wrist.



Attach clip end of static discharge strap to frame ground.

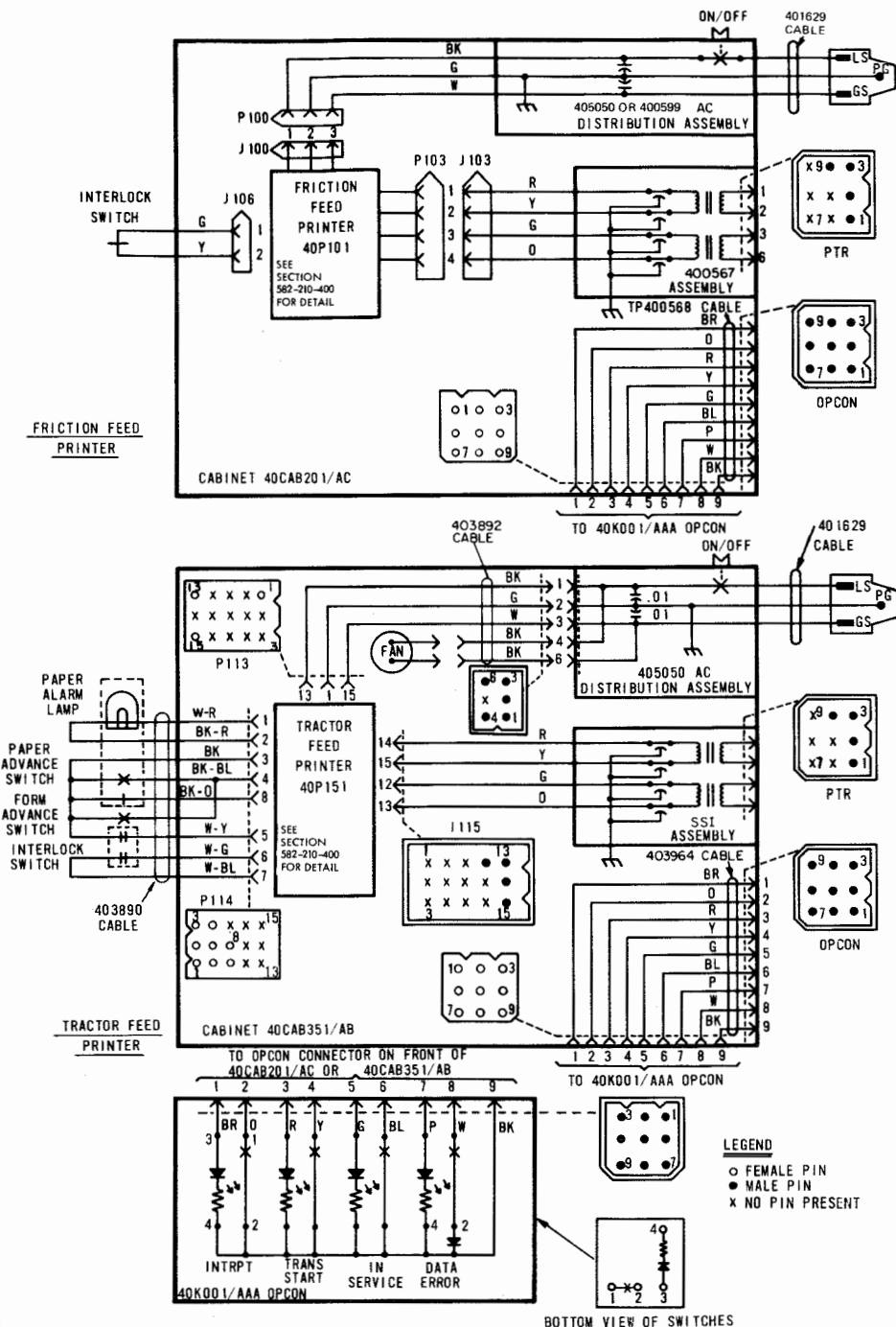


2.03 ROP Cabinet w/40C103 Controller



NOTE 2: TO 341896 INTERFACE CABLE (ROP)
341895 PRINTER CABLE (KD AND ROP), OR
345613 INTERFACE CABLE (KD AND ROP OR
KDP AND ROP).

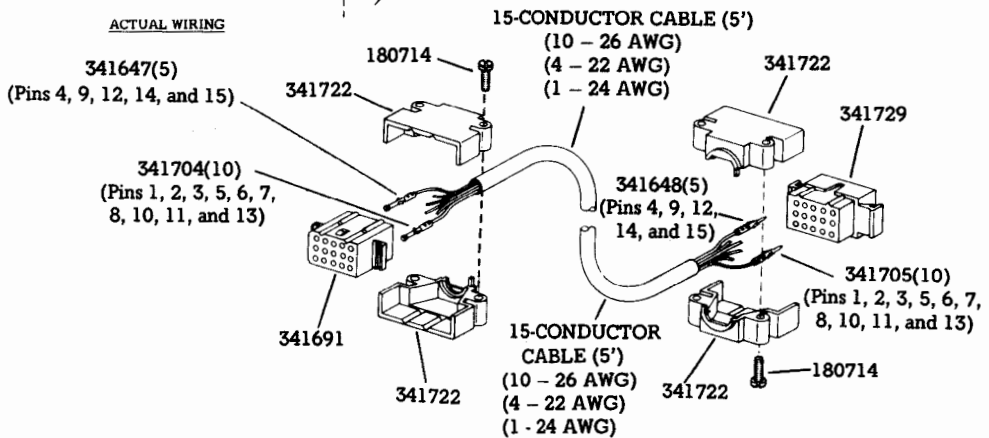
2.04 Printer Cabinets



2.05 341893 Monitor Extension Cable Assembly

341691 CONNECTOR		341729 CONNECTOR
1	W-Y	1
2	Y	2
3	W-O	3
6	O	6
4	DRAIN WIRE	4
5	W-G	5
7	G	7
8	W-R	8
10	R	10
9	BK	9
11	W-BK	11
13	BR	13
12	BL	12
14	P	14
15	S	15

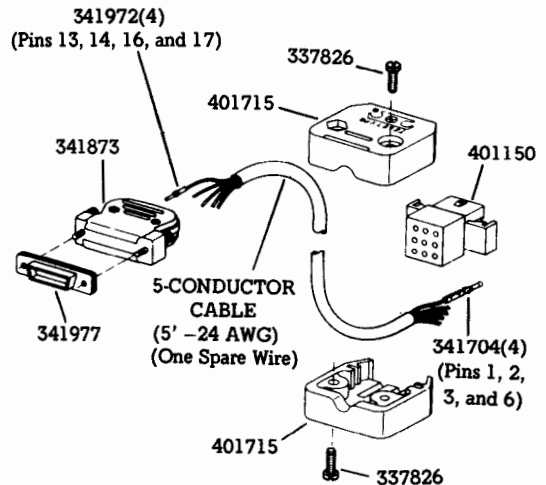
ACTUAL WIRING



2.06 341895 Printer Extension Cable Assembly

341977 CONNECTOR		401150 CONNECTOR
13	BK	1
14	BR	2
16	R	3
17	O	6
	Y (SPARE)	

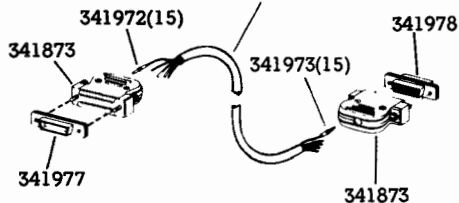
ACTUAL WIRING



2.07 341896 Data Set Interface Cable Assembly

341977 CONNECTOR		341978 CONNECTOR
1	BK	1
2	BR	2
3	R	3
4	O	4
5	Y	5
6	G	6
7	BL	7
8	P	8
11	S	11
12	W	12
15	W-BK	15
17	W-BR	17
20	W-R	20
22	W-O	22
23	W-Y	23

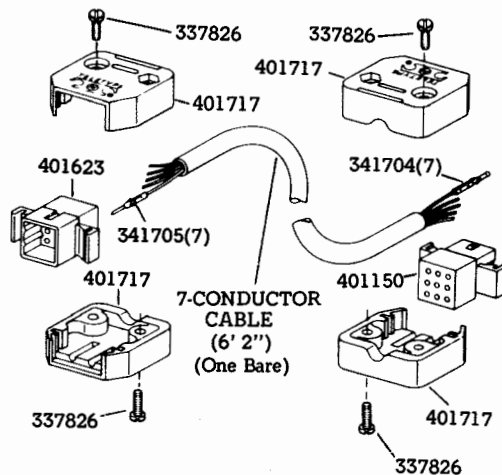
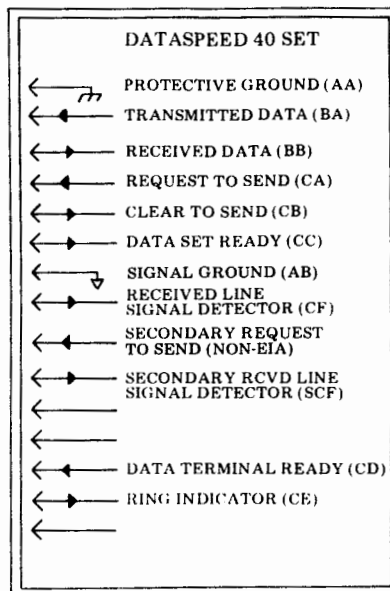
ACTUAL WIRING

15-CONDUCTOR
CABLE
(5' -24 AWG)

2.08 401640 ROP Extension Cable Assembly

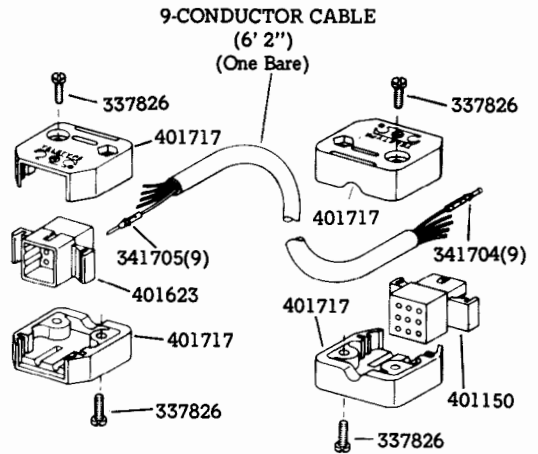
401623 CONNECTOR		401150 CONNECTOR
1	Y	1
2	R	2
3	G	3
4	BL	4
5	W	5
6	O	6
9	BARE	9

ACTUAL WIRING



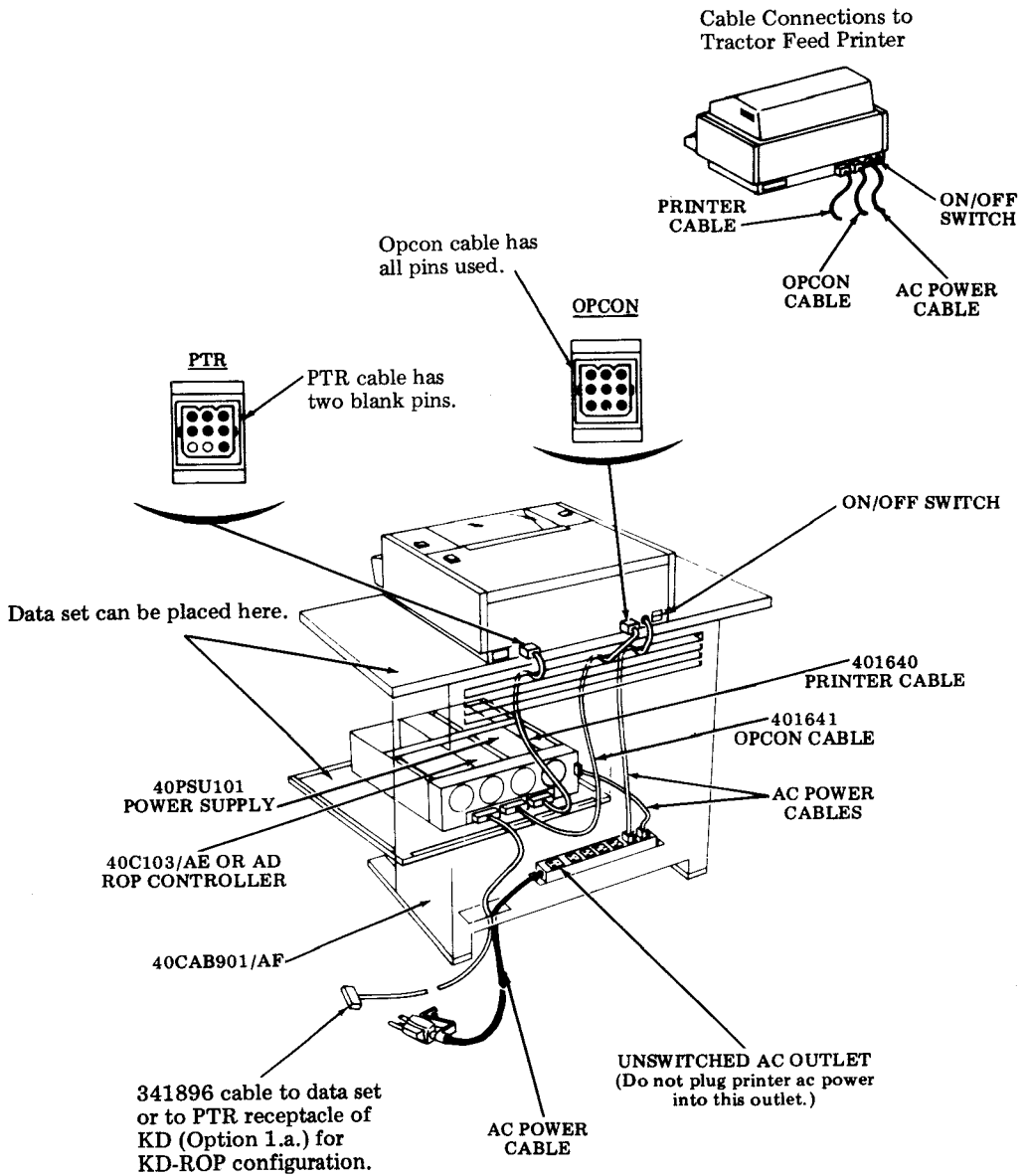
2.09 401641 Opcon Extension Cable Assembly

401623 CONNECTOR		401150 CONNECTOR
1	R	1
2	Y	2
3	G	3
4	W-Y	4
5	W-R	5
6	○	6
7	BL	7
8	W	8
9	BARE	9
<u>ACTUAL WIRING</u>		

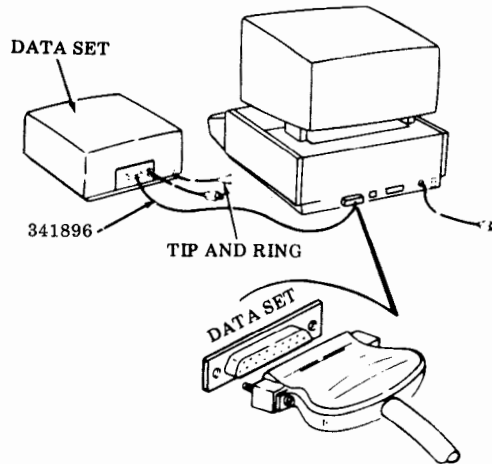


3. SET AND STATION CABLE ARRANGEMENTS

3.01 ROP Set or Station

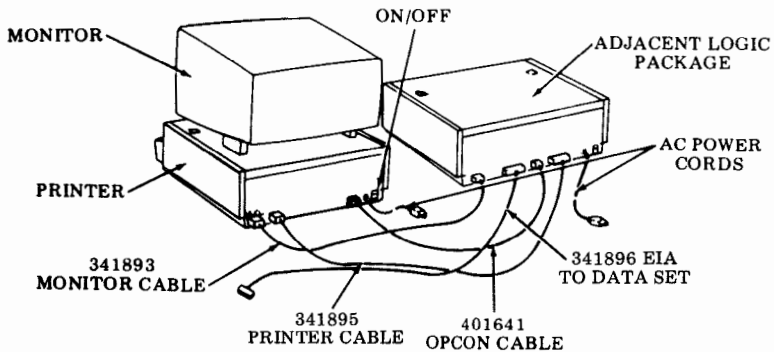


3.02 KD Station

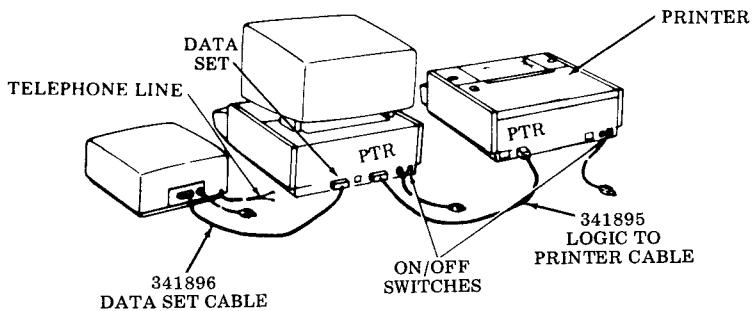


Note: This station arrangement may also use a pedestal, with the data set mounted in the pedestal.

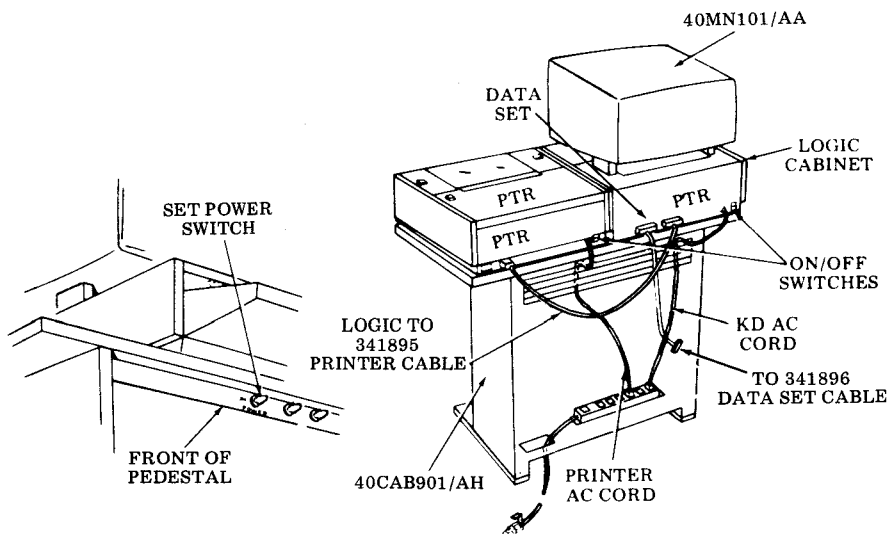
3.03 KDP Set — Adjacent Logic (Printer Under Monitor — Friction Feed Only)



3.04 KDP Station — Adjacent Printer (Friction or Tractor Feed)



3.05 KDP Set — Adjacent Printer on Pedestal (Friction Feed Only)



**"DATASPEED*" 40/0 AND 40/1 SETS AND STATIONS
TESTING AND TROUBLESHOOTING**

CONTENTS	PAGE	
1. GENERAL	1	Similarly, DATASPEED 40/0 and DATASPEED 40/1 are referred to respectively, as 40/0 type and 40/1 type.
2. PRELIMINARY CHECKS.....	1	1.02 Whenever this section is reissued, the reason for reissue will be listed in this paragraph.
3. TESTING	2	1.03 An operational checkout should be performed after installation or on trouble calls. It may be a brief checkout to make sure the station is operable, or a complete checkout to exercise all features and options. Both types of checkout are provided. Since off-line checkout procedures do not check the interface or send and receive capabilities, an on-line checkout is also required to completely test the 40-type equipment.
TABLE A — Brief Off-Line Checkout — KD and KDP Terminals.....	3	
TABLE B — Complete Off-Line Checkout — KD and KDP Terminals..	5	
TABLE C — Off-Line Checkout — ROP Terminals.....	18	
TABLE D — Brief On-Line Checkout — KD and KDP (40/1)	21	
TABLE E — Complete On-Line Checkout — KD and KDP (40/1)...	24	
TABLE F — On-Line Checkout — ROP (40/1).....	41	1.04 Use the brief checkout upon installation if a complete checkout has been performed prior to installation. Continue with a complete checkout, if needed, to check all features and options.
TABLE G — Receive Operation Checkout (40/0)	49	
TABLE H — Send Operation Checkout (40/0)	59	
4. TROUBLESHOOTING.....	70	1.05 On maintenance or trouble calls at a location, confine the checkout to the specified trouble area. Use the brief checkout to isolate poorly defined trouble areas. Perform a complete checkout after an extensive repair.
A. Terminal Analysis	71	
B. Display Logic	78	
C. Controller for 40/1 Applications.....	81	1.06 When ordering replaceable components unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410055).
D. Controller for 40/0 Applications.....	86	
E. 40C103 ROP Controller	88	
F. Data Set and Transmission Lines.....	89	
1. GENERAL		2. PRELIMINARY CHECKS
1.01 This section provides testing and troubleshooting information for DATASPEED 40/0 Parallel Terminal Interface (PTI) and DATASPEED 40/1 Asynchronous Switched Network station applications. The nomenclature DATASPEED 40 is hereafter referred to as 40 type.		2.01 Before turning on any equipment, check the following:
		(a) Is station connected to a properly grounded ac service?
		(b) Are all circuit cards and cable connectors fully seated?
		(c) Are all cabinet lids and pedestal doors closed?
		(d) In KDP and ROP, are printer paper and ribbon properly installed?

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2.02 In addition to the above, check the Station Feature and Option Record, WTDXA, (stored with logic module cabinet or in pedestal) to determine the options and features present in the station. In cases where the results are affected by options, alternate results for each option are provided in the tables.

3. TESTING

3.01 The checkout routines are presented in Tables A through H. Each table is identified as to the type of station under test, and the nature of the checkout procedures.

3.02 If the indicated response is not obtained in any step of a checkout procedure repeat the step to make sure that the procedure has been performed correctly. If the results are still unsatisfactory, perform the indicated trouble analysis. Always perform the checkout in the order given in the table. The trouble analysis steps are based on satisfactory results of all previous steps.

Off-Line Checkout (40/0 or 40/1)

3.03 Off-line checkout provides a check of the operating condition of the 40/0 or 40/1 Terminal. Tables A and B check the operation of KD or KDP terminals. Table C is used for ROP terminal (40/1 only) with 40C103 controller. The off-line checkout should be performed before attempting any on-line procedures.

On-Line Checkout (40/1)

3.04 On-line checkout is performed between the station under test, and a Data Test Center equipped with a DATASPEED 40 Test Set. The Data Test Center operator controls the checkout using standard test messages generated by the test

set. Tables D and E check the operation of 40/1 KD or KDP stations operating on the switched network via a 200-series data set. Table F provides on-line checkout of ROP (with 40C103 controller) stations equipped with 200-series data sets.

3.05 When ready for on-line checkout, contact the Data Test Center serving your area. When calling a Data Test Center, be prepared to furnish any information requested as to options and features (reverse channel characteristics, speed option, etc). To establish a standard line protocol, the Data Test Center will normally request the station under test to hang up and wait for a return call. If a disconnect occurs at any time during test, place data set in talk mode, hang up, and wait for the Data Test Center operator to re-establish the call.

Off-Line Checkout Simulation of On-Line (40/0)

3.06 For 40/0 KD terminals (equipped with PTI), the on-line facilities of the terminal are checked off-line by means of a TSG803 Parallel Signaling Terminal Simulator. Instructions for connecting the TSG803, and setting its controls, are included in the checkout table. Table G checks the receive operation of the terminal and Table H checks the send operation.

3.07 Complete details on the TSG803, including a self-test of the simulator, are provided in Section 107-801-100.

Checkout Procedures For ROP Terminals With Integrated Controller 40C303

3.08 Testing and troubleshooting procedures for ROP terminals with 40C303 integrated controller are provided in Section 582-200-504.

TABLE A
BRIEF OFF-LINE CHECKOUT — KD AND KDP TERMINALS

This table checks the basic operation of 40/0 and 40/1 KD and 40/1 KDP Terminals.

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
1	Turn on power switches.	LOCAL lights. Fans operate.	4. A. Terminal Analysis
2	Turn on power to monitor and set brightness to maximum.	Within 10 seconds raster appears with no. 1 segment marker and cursor (Fig. 1). <i>Note:</i> If random characters appear or if cursor is not at home position, depress HOME and CLEAR.	4. A. Terminal Analysis 40MN101 Display Monitor (Section 582-213-500)
3	Adjust brightness and tube tilt to personal preference.	Cursor and segment marker clearly displayed, with raster barely visible. Glare from external light on screen should be minimal.	40MN101 Display Monitor (Section 582-213-700)
4	Lightly depress cursor right (→), down (↓), left (←), and up (↑), in that order.	Cursor moves one position in the direction indicated for each depression.	4. A. Terminal Analysis
5	Repeat Step 4, but depress cursor controls fully and hold depressed until cursor stops moving.	Cursor traces outer perimeter of display, stopping at each corner, and ends at home position.	4. B. Display Logic
6a	Turn monitor power switch off (under left side of CRT). Keyboard several lines of data. Turn monitor power switch on.	No data shall be entered into display.	Replace 410675 or 410669 circuit card in controller logic.
6b	IF KEYBOARD HAS CAPS LOCK KEYTOP, DEPRESS CAPS LOCK KEY. Enter a line of Es at top and bottom of display, then HOME cursor.	Display appears (Fig. 1) with all requirements as indicated.	4. A. Terminal Analysis Refer to adjustments of monitor to meet requirements (Section 582-213-700).

- Raster aligned vertically and horizontally.
- All Es sharply defined.
- Height and width of display as indicated.
- Es uniform across full width.
- Height of Es same at top and bottom lines.



Fig. 1—Display Requirement

TABLE A (Cont)

BRIEF OFF-LINE CHECKOUT — KD AND KDP TERMINALS

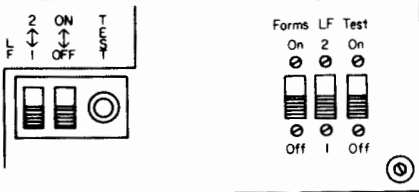
STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
STEPS 7 THROUGH 14 APPLY TO KDP TERMINALS ONLY.			
7	Preliminary requirements of printer: a. Ribbon and paper loaded. b. Switches (top right of printer, cabinet cover raised) set LF-1 Test-Off Forms (Tractor Feed Only) — On. c. Cabinet cover closed.	 FRICITION FEED TRACTOR FEED	
8	Momentarily depress PAPER button (red) on cover of printer cabinet.	Paper feeds out as long as button is depressed.	Printer (Section 582-210-500)
9	TRACTOR FEED PRINTER ONLY Depress and release FORMS ADVANCE button (black) on printer cabinet cover.	Paper feeds out until first line of next form is reached, then stops.	
10	Unlatch and raise printer cabinet cover.		
11	Raise cover interlock switch to maintenance position.		
12a	Set test switch to ON, allow printer to print several lines, then turn test switch OFF.	Printer turns on and prints one of the font identification symbols such as  repeatedly until switch is turned off.	Printer (Section 582-210-500)
12b	Set LF switch to 2. Set test switch to ON, allow printer to print several lines, then turn test switch OFF and return LF switch to 1.	Printer turns ON and prints font identification symbols as above except with double line feed spacing until test switch is turned off.	Printer (Section 582-210-500)
13	FRICITION FEED PRINTER Lift paper roll to simulate a paper alarm. Lower paper roll, guide paper through window, and close cabinet cover. TRACTOR FEED PRINTER Tear off next form under pedestal top, then depress PAPER button on cabinet top until last form passes through printer. Reload forms, guide first form through window, and close cabinet cover.	LOW PAPER indicator lights. LOW PAPER indicator goes out. PAPER indicator lights. PAPER indicator goes out.	Printer (Section 582-210-500)

TABLE A (Cont)

BRIEF OFF-LINE CHECKOUT — KD AND KDP TERMINALS

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
14	Depress PRINT LOCAL, and while cursor is moving through third or fourth line of display, depress LOCAL.  <i>Note:</i> If 410018 card (continuous scrolling) is present in display logic, keyboard in (prior to depressing PRINT LOCAL) one of the following message ending codes (EOT, ETX, FF, GS, DC3, or CR) near the bottom of display.	LOCAL goes out. PRINT LOCAL and SEND light. Cursor moves through line of Es at top of display, returns to left, and moves through lines of spaces (blank lines). Printer prints line of Es. <i>Note:</i> Printing may occur in all 80 character positions or some Es may be carried over to next line, depending on Option 17. Printer line feeds but does not print for each line of spaces. When LOCAL is depressed, SEND and PRINT LOCAL go out and LOCAL lights. Printer turns off. <i>Note:</i> Printer may or may not feed out 16 lines of paper before turning off, depending on Option 18. Tractor printer may form-out depending on Option 18 and Forms switch.	4. A. Terminal Analysis Printer (Section 582-210-500)
This ends BRIEF OFF-LINE CHECKOUT — KD AND KDP TERMINALS.			

TABLE B

COMPLETE OFF-LINE CHECKOUT — KD AND KDP TERMINALS

This table checks all features and options of 40/0 and 40/1 KD and 40/1 KDP terminals in the local mode.

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
1	Power on. Monitor brightness adjusted for desired viewing level. LOCAL depressed. Depress HOME and CLEAR. Put CAPS LOCK in down position.	Cursor goes to home position and all data is cleared from screen.	4. A. Terminal Analysis 4. B. Display Logic.
2	Starting with top row and moving from left to right, depress each unshaded key (Fig. 2).	Characters displayed (Fig. 5).	4. A. Terminal Analysis

TABLE B (Cont)

COMPLETE OFF-LINE CHECKOUT — KD AND KDP TERMINALS

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
2 (Cont)	Depress RETURN and NEW LINE.	Cursor goes to beginning of next line.	
3	If keyboard has CAPS LOCK keytop, depress and release CAPS LOCK key so it returns to upper position, then repeat Step 2.	Characters displayed (Fig. 5). Cursor goes to beginning of next line.	
4	Hold left SHIFT key depressed. Starting with top row and moving from left to right, depress each unshaded key (Fig. 3). Hold right SHIFT key depressed and depress  key. Depress NEW LINE key.	Characters displayed (Fig. 5). Cursor moves to beginning of next line.	
5	Hold left CONTROL key depressed. Depress all unshaded keys (Fig. 4) in sequence shown by numbers.	Characters displayed (Fig. 5). Cursor moves to beginning of next line.	

Fig. 2

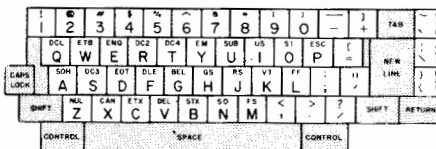


Fig. 3

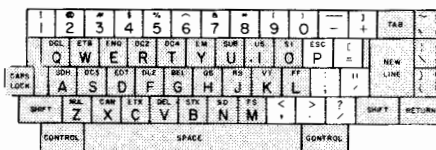


Fig. 4

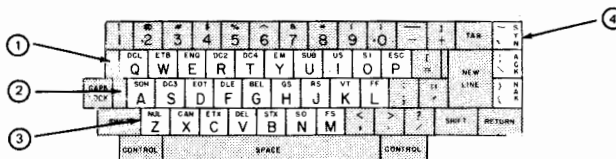
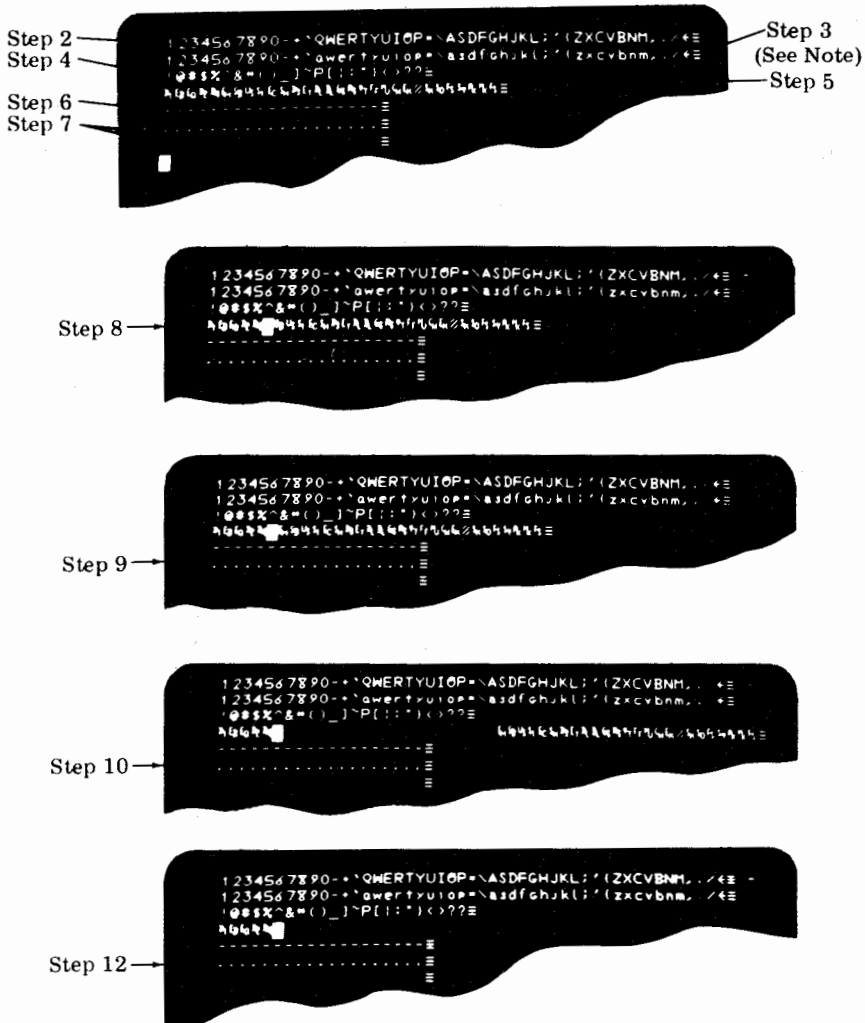


TABLE B (Cont)

COMPLETE OFF-LINE CHECKOUT — KD AND KDP TERMINALS



Note: Step 3 applies only if keyboard has CAPS LOCK key.

Fig. 5

TABLE B (Cont)

COMPLETE OFF-LINE CHECKOUT — KD AND KDP TERMINALS

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
5 (Cont)	Hold right CONTROL key depressed and depress  key. Depress NEW LINE key.		
6	Fully depress and hold  key until about half line of characters are displayed. Depress NEW LINE.	Repeated - characters and  symbol displayed (Fig. 5). Cursor moves to beginning of next line.	4. A. Terminal Analysis Opcon (Section 582-211-500)
7	Repeat Step 6 using  key, and then again using space-bar.	Repeated . characters followed by  symbol, and repeated spaces followed by  symbol, displayed (Fig. 5). Cursor moves to beginning of next line.	4. C. Controller For 40/1 Applications 4. D. Controller For 40/0 Applications
8	Depress cursor keys as necessary to position cursor over E _M character in line of control characters.		
9	Lightly depress CHAR INSRT key.	All characters to right of and including E _M move one position to right (Fig. 5.)	
10	Fully depress and hold CHAR INSRT key until characters stop moving.	All characters to right of and including E _M move right continuously until  symbol reaches right edge (Fig. 5).	
11	Lightly depress CHAR DLETE key.	E _M and all subsequent characters move one position to left.	
12	Fully depress and hold CHAR DLETE key until characters stop moving.	E _M and subsequent characters move left continuously and are deleted from display as they reach cursor position (Fig. 5).	
13	THIS STEP APPLIES ONLY TO KDP WITH TRACTOR FEED PRINTER Hold CONTROL key depressed and depress  key three times. <i>Note:</i> Make sure forms switch of printer is on.	Three F _F characters are entered in display to the right of the D ₄ .	
14	Depress HOME.	Cursor goes to home position.	

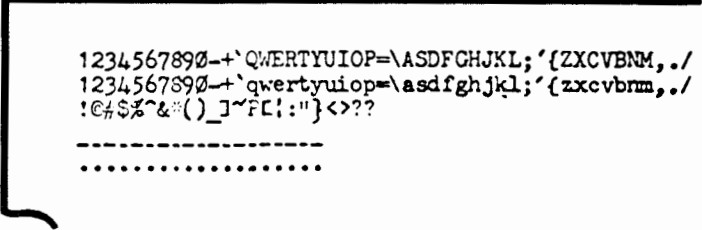
TABLE B (Cont)

COMPLETE OFF-LINE CHECKOUT — KD AND KDP TERMINALS

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
15	KDP ONLY Depress PRINT LOCAL. When complete message on monitor has been sent to printer, depress LOCAL.	LOCAL goes out; PRINT LOCAL and SEND keys light. Cursor moves through display and printer prints according to features and options (Fig. 6). When LOCAL is depressed, SEND and PRINT LOCAL go out, printer turns off, and LOCAL lights. TRACTOR PRINTER Form-out occurs when first F _F character is sent from display. Lines of - and . characters print on next form. (Only one form-out occurs — second and third F _F characters have no effect.) Spacing from first line of first form to line of - characters on next form equals form length selected by form belt and form selector setting.	4.A. Terminal Analysis Printer (Section 582-210-500)
16	Depress HOME, then CLEAR.	Cursor goes to home position and all information is cleared from display.	4. A. Terminal Analysis
17	Enter a line of 80 *s across top of display.	*s are displayed, and cursor remains at right of line.	
18	Depress LINE INSRT, then enter a line of 80 Us across top of display.	Cursor returns to home position and *s move down one line. Us are displayed above *s.	4. B. Display Logic
STEPS 19 THROUGH 22 APPLY ONLY TO TERMINALS WITH ONE SEGMENT. IF TERMINAL IS EQUIPPED WITH TWO OR THREE SEGMENT DISPLAY, GO TO STEP 23.			
19	Repeatedly depress LINE INSRT until *s move to last line of display.	Cursor returns to home position and *s and Us both move down one line each time LINE INSRT is depressed. Movement stops when *s reach bottom of display.	4. A. Terminal Analysis 4. B. Display Logic

TABLE B (Cont)

COMPLETE OFF-LINE CHECKOUT — KD AND KDP TERMINALS

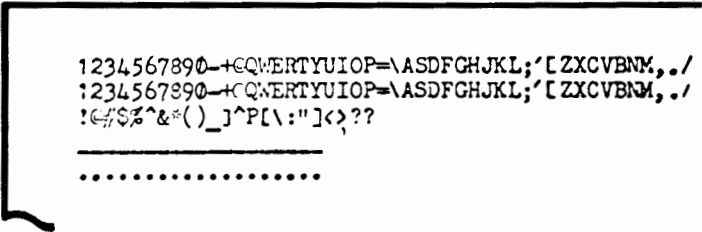


```

1234567890-+\'QWERTYUIOP=\ASDFGHJKL;\'[ZXCVBNM,./
1234567890-+\'qwertyuiop=\asdfghjkl;\'[zxcvbnm,./
!@#$%^&*()_~P[\":'']<>??
-----
.....

```

Up-Low Printer w/o Foldover — Option 21.a.



```

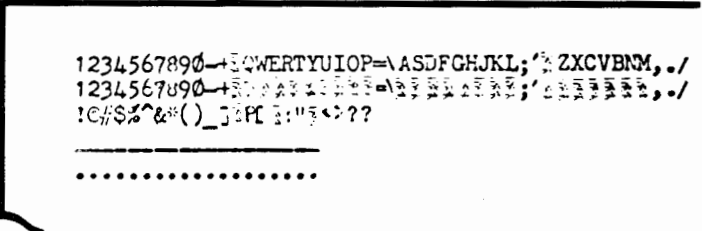
1234567890-+QWERTYUIOP=\ASDFGHJKL;\'[ZXCVBNM,./
1234567890-+QWERTYUIOP=\ASDFGHJKL;\'[ZXCVBNM,./
!@#$%^&*()_~P[\":'']<>??
-----
.....

```

Up-Low Printer w/Foldover — Option 21.b.

or

Monocase Printer — Option 22.b.



```

1234567890-+QWERTYUIOP=\ASDFGHJKL;\'[ZXCVBNM,./
1234567890-+QWERTYUIOP=\ASDFGHJKL;\'[ZXCVBNM,./
!@#$%^&*()_~P[\":'']<>??
-----
.....

```

Monocase Printer w/o Foldover — Option 22.a.

Note 1: Line 2 in all three figures present only if opcon keyboard has CAPS LOCK key.*Note 2:* Characters shown are for basic type carrier.*Note 3:* For tractor feed printers with form-out mechanism, lines of - and . characters appear on next form.

Fig. 6

TABLE B (Cont)

COMPLETE OFF-LINE CHECKOUT -- KD AND KDP TERMINALS

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
20	Depress cursor down (↓) and then cursor right (→) to move cursors to about the middle of the line of Us.		4. A. Terminal Analysis
21	Depress LINE DLETE.	Cursor returns to left margin, and Us are removed. *s move up one line to replace Us.	
22	Depress LINE INSRT several times.	*s move down one line to bottom of display and stop. Cursor does not move.	
STEPS 23 THROUGH 36 APPLY ONLY TO TERMINALS EQUIPPED WITH TWO OR THREE SEGMENT DISPLAY.			
23	Depress HOME.	Cursor goes to home position.	4. A. Terminal Analysis
24	Depress SEGMT ADV twice for terminals with two segments, or three times for terminals with three segments.	Segment marker changes from segment 1 marker (-) to segment 2 (=), and on terminals with three segments to segment 3 marker (≡), and back to segment 1 marker. *s and Us disappear as segment changes, and reappear at top of display when segment 1 marker reappears. Cursor does not move.	
25	Depress SCROL UP one time.	Segment 1 marker and *s disappear from top of display. Us move to top of display, and segment 2 marker appears at bottom left of display. Cursor does not move.	
26	Depress SCROL UP fully.	Segment 2 marker (then 3 marker if terminal has three segments) moves up the display. Us disappear from top of display. Scrolling stops when segment marker of last segment reaches top line of display.	

TABLE B (Cont)

COMPLETE OFF-LINE CHECKOUT — KD AND KDP TERMINALS

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
26 (Cont)	Operation with 410009 or 410018 continuous scrolling circuit card in the display logic.	Cursor does not move. Scrolling will not stop when segment marker of last segment reaches top line of display, but will continue while key is fully depressed.	
27	Depress SCROL DOWN once, then fully. Operation with 410009 or 410018 continuous scrolling circuit card in the display logic.	Segment marker at upper left moves down one line, then moves down continuously and disappears as segment marker of previous segment appears at top left. When segment 1 marker appears at top left of display, scrolling stops. *s and Us reappear in original position at top of display when segment 1 returns to display. Cursor does not move. Scrolling will not stop when segment marker of last segment reaches top line of display, but will continue while key is fully depressed.	4. A. Terminal Analysis 4. B. Display Logic
28	Repeatedly depress LINE INSRT until *s move to last line of segment 1.	*s and Us both move down one line each time LINE INSRT is depressed. Cursor does not move.	4. A. Terminal Analysis 4. B. Display Logic
29	Depress cursor down (↓), and then cursor right (→) to position cursors at about the middle of the line of Us.		
30	Depress LINE DLETE.	Cursor returns to left margin and Us are removed. *s move up one line to replace Us.	
31	Depress LINE INSRT several times.	*s move down one line to bottom of display on first depression, then disappear from display on second depression. Cursor does not move.	
32	Depress SEGMENT ADV.	Segment 2 marker appears at top left of display.	

TABLE B (Cont)

COMPLETE OFF-LINE CHECKOUT — KD AND KDP TERMINALS

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
32 (Cont)		*s appear a few lines down from top in segment 2. Cursor does not move.	4. A. Terminal Analysis
33	Depress HOME and CLEAR.	Cursor goes to home position. Segment 1 is displayed.	
34	Depress SEGMENT ADV to display last segment of page.	Segment marker of last segment appears at upper left of display. *s have been cleared from segment 2. Cursor remains in home position.	
35	Depress cursors down (↓) to position cursor at about next to last line of display, then enter a few Us in this line.		
36	Depress LINE INSERT several times.	Cursor returns to left margin and Us move to bottom of display, then stop.	
IF TERMINAL IS EQUIPPED WITH FULL EDIT FEATURE, GO TO STEP 37. IF NOT, THIS COMPLETES OFF-LINE CHECKOUT.			
37	Depress HOME, then CLEAR.	Cursor goes to home position and display is cleared.	4. A. Terminal Analysis
38	Alternately depress TAB SET and spacebar until cursor reaches end of line.	Column of tab marks is displayed in every character position of page. Alarm sounds at 73rd and 80th character positions. (On terminals with more than one segment, depress SEGMENT ADV as necessary to view tab columns on other segment(s), then return to segment 1.)	4. C. Controller For 40/1 Applications 4. D. Controller For 40/0 Applications 4. B. Display Logic Opcon (Section 582-211-500)
39	Home cursor and depress TAB CLEAR.	All tab marks (on all segments) are cleared.	4. A. Terminal Analysis
40	Depress HIGH LIGHT.	HIGH LIGHT key lights.	
41	Enter a full line of *s at top of display.	*s continuously flash between half and full intensity.	

TABLE B (Cont)

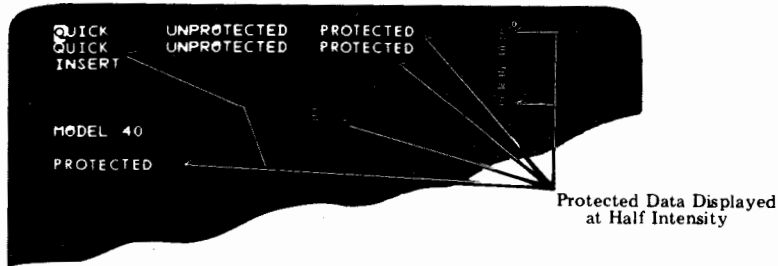
COMPLETE OFF-LINE CHECKOUT -- KD AND KDP TERMINALS

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
41 (Cont)		Alarm sounds at 73rd and 80th character positions. Cursor remains at right end of line.	4. A. Terminal Analysis
42	Depress HIGH LIGHT again.	HIGH LIGHT indicator goes out.	
43	Depress LINE INSRT.	Cursor moves to left margin, and high-lighted *s move down one line.	
IF OPTION 12.a. IS ENABLED ON 410675 CARD (SEE STATION FEATURES AND OPTION RECORD). TEMPORARILY CHANGE TO OPTION 12.b. UNTIL CHECKOUT IS COMPLETE.			
44	Depress FORM ENTER.	FORM ENTER indicator lights.	4. C. Controller For 40/1 Applications
45	Enter a full line of Us at top of display.	Us are displayed at half intensity (protected). Alarm sounds at 73rd and 80th character positions. Cursor remains at right end of line.	4. D. Controller For 40/0 Applications 4. A. Terminal Analysis 4. B. Display Logic
46	Depress LINE INSRT.	Cursor moves to left margin and lines of *s and Us both move down one position. Cursor remains in home position.	
47	Depress CLEAR.	Screen is cleared.	
48	Depress FORM ENTER.	FORM ENTER indicator goes out.	
49	Enter message (Fig. 7) in lines 1 through 9 of display. (Procedure is indicated in Fig. 7.	Message appears (Fig. 7). (To observe protected spaces, increase monitor brightness and note that all protected data has darker background than unprotected data.)	
50	Depress CHAR INSRT fully and hold until movement stops.	Word QUICK in line 1 moves to tab column and stops. No other characters affected.	4. A. Terminal Analysis
51	Depress CHAR DLETE twice.	Word QUICK in line 1 moves two positions left. No other characters affected.	

TABLE B (Cont)

COMPLETE OFF-LINE CHECKOUT – KD AND KDP TERMINALS

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
52	Depress TAB.	Cursor moves to tab column. Tab symbol (►) appears at original position of cursor. All characters passed over by cursor are erased from display.	
53	Depress CHAR INSRT fully and hold until movement stops.	Word UNPROTECTED moves three positions to right, stopping when it reaches word PROTECTED. No other characters affected.	



Note: Depress each key once unless number of depressions is indicated in parentheses.

LINE 1	LINE 2	LINE 3	LINE 4 AND 5
Type QUICK Depress SPACE (5) Depress TAB SET Type UNPROTECTED Depress SPACE (3) Depress FORM ENTER Type PROTECTED Depress FORM ENTER Depress SPACE (8) Depress FORM ENTER Depress NEW LINE	Type QUICK Depress FORM ENTER Depress SPACE (5) Type UNPROTECTED Depress SPACE (3) Depress FORM ENTER Type PROTECTED Depress FORM ENTER Depress SPACE (8) Depress FORM ENTER Depress NEW LINE Depress FORM ENTER	Type INSERT Depress SPACE until cursor is under NEW LINE symbol. Depress FORM ENTER Depress NEW LINE	Depress Cursor Right (→) until cursor is under NEW LINE symbol. Depress NEW LINE (Repeat for Line 5)
LINE 6	LINE 7	LINE 8	LINE 9
Depress Cursor Right (→) until cursor is at about 23rd character position. Depress NEW LINE. Depress FORM ENTER	Type MODEL Depress SPACE Type 40	Depress CURSR RTRN Depress Cursor down (↓) twice	Depress FORM ENTER Type PROTECTED Depress FORM ENTER Depress HOME Depress Cursor

Fig. 7

TABLE B (Cont)

COMPLETE OFF-LINE CHECKOUT — KD AND KDP TERMINALS

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
54	Depress CHAR DLETE fully and hold until movement stops.	Word UNPROTECTED is moved left and completely erased. No other characters affected.	
55	Depress TAB.	Cursor moves to first character position after word PROTECTED. Tab symbol (►) appears at original position of cursor.	
56	Depress spacebar once, then depress it fully.	Alarm sounds once when spacebar is depressed first time. Cursor moves to character position preceding protected new line symbol. Alarm sounds continuously, and cursor does not advance beyond this position.	
57	Depress TAB.	Cursor moves to end of protected word QUICK in line 2.	
58	Depress CURSOR TAB three times.	Cursor moves to tab mark on first depression. Cursor moves to space following word PROTECTED on second depression. Cursor moves to beginning of word INSERT in line 3 on third depression. No characters altered in any way.	4. A. Terminal Analysis Opcon (Section 582-211-500) 4. B. Display Logic
59	Depress LINE INSRT three times.	Word INSERT moves down two lines and stops. Rest of display does not change.	
60	Position cursor over M in word MODEL, then depress LINE INSRT twice.	Words MODEL 40 move down one position and stop.	
61	Move cursor over P at beginning of line 9, and type some miscellaneous characters.	Alarm sounds each time a key is depressed. (No characters can over-write a protected character.)	

TABLE B (Cont)

COMPLETE OFF-LINE CHECKOUT — KD AND KDP TERMINALS

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
62	Depress HOME, CLEAR, then TAB CLEAR.	Cursor goes to home position. All unprotected characters and tab columns are cleared. Protected characters remain on display.	
63	Depress FORM ENTER.	FORM ENTER indicator lights.	
64	Depress CLEAR.	All characters are cleared from display.	
65	Depress FORM ENTER.	FORM ENTER indicator goes out.	
66	If Option 12.a. was originally present on 410675 card, restore this option (unless further check-out is to be performed).	With Option 12.a. selected, FORM ENTER indicator will no longer light when FORM ENTER is depressed in local mode.	
THIS COMPLETES OFF-LINE CHECK OF KD OR KDP.			

TABLE C

OFF-LINE CHECKOUT -- ROP TERMINALS

This table checks the basic operation of 40-type ROP terminals w/40C103 controller.

Note: Checkout procedures for 40-type ROP terminals with 40C303 integrated controller are provided in Section 582-200-504.

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
1	Preliminary requirements: a. Ribbon and paper loaded. b. Switches (top right of printer cabinet, cover raised) set as follows: LF-1 Test-Off Forms (Tractor Feed Only)- On. c. Cabinet cover and pedestal door closed.		
2	Turn on power.	IN SERVICE indicator lights. Fans move air in pedestal. In tractor feed printer, fan in printer cabinet cover also turns on.	4. A. Terminal Analysis 4. E. 40C103 ROP Controller
3	Momentarily depress PAPER button (red) on cover of printer cabinet.	Paper feeds out as long as button is depressed.	Opcon (Section 582-211-500) Printer (Section 582-210-500)
4	TRACTOR FEED PRINTER ONLY Depress and release FORMS ADVANCE button (black) on printer cabinet cover.	Paper feeds out until first line of next form is reached, then stops.	
5	Unlatch and raise printer cabinet cover.	IN SERVICE indicator goes out.	
6	Raise cover interlock to maintenance position.	IN SERVICE indicator lights.	4. A. Terminal Analysis
7	Momentarily set test switch to ON position then return to OFF position.	Font identification symbol ($\frac{FAE}{FAE}$ or $\frac{FAE}{EAE}$) prints repeatedly while switch is on.	4. E. 40C103 ROP Controller
8	FRICTION FEED PRINTER Lift paper roll to simulate a paper alarm.	PAPER indicator lights; IN SERVICE indicator goes out.	Opcon (Section 582-211-500) Printer (Section 582-210-500)

TABLE C (Cont)

OFF-LINE CHECKOUT — ROP TERMINALS

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
8 (Cont)	Lower paper roll. Guide paper through window and close cabinet cover. TRACTOR FEED PRINTER Tear off next form under pedestal top, then depress PAPER button on cabinet top until last form passes through printer. Reload forms and close cabinet cover.	LOW PAPER indicator goes out; IN SERVICE indicator lights. PAPER indicator lights; IN SERVICE indicator goes out. PAPER indicator goes out; IN SERVICE indicator lights.	Printer (Section 582-210-500)
9	Depress TEST (early design designated TRANS START) key (if present) on opcon, then after a few seconds depress again. <i>Note:</i> If keytop is not present on opcon, remove blocking keytop to left of IN SERVICE key. Depress switch once to turn on and second time to turn off.	TEST or TRANS START indicator lights and character set is printed repeatedly (Fig. 8). Indicator goes out and printing stops when depressed second time.	
10	Raise printer cabinet cover and set LF switch to position 2. Close cover and depress TRANS START key. While printer is printing, raise cover.	Repeated character set prints with double line spacing. When cover is raised, printer stops and IN SERVICE indicator goes out.	
11	Restore setting of LF switch (or leave in position 2 if double line spacing is desired). Depress (release) TEST or TRANS START key. If blocking keytop was removed in Step 9, restore keytop to opcon. Close cabinet cover.	IN SERVICE indicator lights.	
THIS COMPLETES OFF-LINE CHECKOUT — ROP TERMINALS.			

TABLE C (Cont)

OFF-LINE CHECKOUT — ROP TERMINALS

```

! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ `
! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ `
! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ `
! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ `
! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ `
! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ `

```

Option 19. a. Enabled

```

! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ `
! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ `
! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ `
! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ `
! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ `
! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ `

```

Line feed detected as errored character; printing continues to end of line.

Option 19. b. Enabled

```

! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ `
! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ `
! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ `
! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ `
! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ `
! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ `

```

Option 19. c. Enabled

```

! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ `
! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ `
! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ `
! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ `
! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ `
! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z [ \ ] ^ _ `

```

The TEST (early design designated TRANS START) character set will print as above if Option 19.c. is enabled and the data stacking Option 38. is enabled in the 40C103/AE RO Controller (410580 circuit card). The locations of the line feeds may vary from the example shown.

Note: Printed characters shown for basic monospace type character (≡≡≡ identification symbol). For other type carriers, substitute characters as necessary.

Fig. 8

TABLE D

BRIEF ON-LINE CHECKOUT — KD AND KDP (40/1)

This table provides a quick check of the ability of a 40/1 KD or KDP to send and receive data via a 200-series data set on the switched network.

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
1	With power ON and local mode selected, depress HOME and CLEAR.	LOCAL lit. Cursor goes home and all data is cleared from screen.	4. A. Terminal Analysis 4. C Controller For 40/1 Applications. Opcon (Section 582-211-500)
2	Depress REC. For KDP, also depress PRINT ON LINE.	REC lights (LOCAL goes out). For KDP, PRINT ON LINE also lights.	
3	Place data set in Talk mode and call Data Test Center to request on-line checkout (see Fig. 11 for data set configurations). <u>202C Data Set</u> Depress TALK key, lift handset, and dial Data Test Center. <u>202R Data Set</u> Lift handset, and dial Data Test Center. <u>202S Data Set</u> Depress appropriate line key, lift handset, and dial Data Test Center.	<i>Note:</i> To establish proper line protocol, Data Test Center will normally request station requesting test to hang up and wait for return call. When Data Test Center calls back, answer call in Talk mode and follow instructions of Data Test Center operator.	
FOX TEST In this test, the Data Test Center will send the FOX test message. Station under test will receive message, then send it back to the Data Test Center for comparison with original. Both operators will go to talk mode for evaluation of test.			

TABLE D (Cont)

BRIEF ON-LINE CHECKOUT — KD AND KDP (40/1)

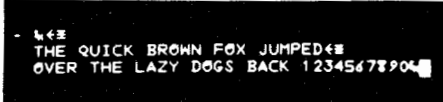
STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
4	When instructed by Data Test Center, go to Data mode per standard procedure for data set used: <u>202C or 202S Data Set</u> Depress DATA key and place handset on switchhook. <u>202R Data Set</u> Lift exclusion key. Do not place handset on switchhook.	FOX message displayed on screen (and printed on printer, if KDP) as below:  <i>Note:</i> One or more CR (Carriage Return) symbols (↵) may appear as above if Option 5.d. enabled. CR rejected if Option 5.c. enabled. THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK 1234567890 For KDP, printer feeds out 16 lines of paper on receipt of ETX if Option 18.c. enabled.	4. C. Controller For 40/1 Applications Opcon (Section 582-211-500) 4. F. Data Set and Transmission Lines
5	TERMINALS WITH FULL EDIT FEATURE ONLY If Option 8.d. is enabled, go to Local mode and change ETX at end of message to EOT.	Display appears as in Step 4, but Ex replaced by Ep.	
6	Home cursor and depress SEND. <i>Note:</i> If Option 27.a. enabled on Full Edit terminal, cursor automatically homes on depressing SEND.	SEND lights (LOCAL goes out). Cursor moves through message and stops after end character. Printer prints message if KDP. Action of terminal upon transmitting end character depends on terminal options and features: BASIC KD/KDP W/O FULL EDIT Revert to Local. KD/KDP W/FULL EDIT, OPTION 8.c. ENABLED Revert to Local (Option 11.a.) or Receive (Option 11.b.).	Opcon (Section 582-211-500) 4. C. Controller For 40/1 Applications 4. B. Display Logic 4. F. Data Set and Transmission Lines

TABLE D (Cont)

BRIEF ON-LINE CHECKOUT — KD AND KDP (40/1)

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
6 (Cont)		KD/KDP W/FULL EDIT, OPTION 8.d. ENABLED Revert to Receive. For KDP, printer feeds out 16 lines of paper if Option 18.c. enabled.	
7	Go to Talk mode and evaluate results of test with Data Test Center operator: <u>202C Data Set</u> Lift handset and depress TALK key. <u>202R Data Set</u> Lower exclusion key to Talk position. Do not depress all the way or call will disconnect. <u>202S Data Set</u> Lift handset and depress appro- priate line key.	Returned message should compare with message transmitted originally by Data Test Center (except for change in end character if Option 8.d. is enabled).	
THIS COMPLETES THE BRIEF ON-LINE CHECKOUT. FOR FURTHER ON-LINE CHECKOUT GO TO TABLE E.			

TABLE E

COMPLETE ON-LINE CHECKOUT — KD AND KDP (40/1)

This table provides a complete checkout of options and variable features of 40/1 KD and KDP stations operating on the switched network via a 200-series data set.

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
1	With power on and local mode selected, depress HOME and CLEAR.	LOCAL lit. Cursor goes home and all data is cleared from screen.	4. A. Terminal Analysis
2	Depress REC for KDP, also depress PRINT ON LINE.	REC lights (LOCAL goes out). For KDP, PRINT ON LINE also lights.	4. C. Controller For 40/1 Applications Opcon (Section 582-211-500)
3	If call is not already established as a result of Brief On-Line Checkout (Table D), call Data Test Center in talk mode and request complete on-line checkout: <u>202C DATA SET</u> Depress TALK key, lift handset and dial Data Test Center. <u>202R DATA SET</u> Lift handset and dial Data Test Center. <u>202S DATA SET</u> Depress appropriate Line key, lift handset, and dial Data Test Center.	<i>Note:</i> If this is original call, Data Test Center will normally request station requesting test to hang up and wait for return call. When Data Test Center calls back answer call in Talk mode and follow instructions of Data Test Center operator.	
<u>REPEATED FOX TEST</u> In this test, Data Test Center will send a repeating FOX message. Station under test will receive message, then send it back to Data Test Center for comparison with original message. If station under test has Conversational mode feature, operation of INTRPT key will be checked during reception of message. Both operators will go to Talk mode for evaluation of test.			
4	When instructed by Data Test Center operator, go to Data mode per standard procedure for data set used:	Repeated FOX message displayed on screen (and printed on printer, if KDP) as below:	4. F. Data Set and Transmission Lines 4. A. Terminal Analysis

TABLE E (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP (40/1)

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
4 (Cont)	<u>202C or 202S DATA SET</u> Depress DATA key and place handset on switchhook. <u>202R DATA SET</u> Lift exclusion key. Do not place handset on switchhook. If terminal is equipped for Conversational mode, depress INTRPT key while message is being received, then depress again to release.	THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK 1234567890 THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK 1234567890 <i>Note:</i> One or more CR (Carriage Return) symbols (↵) may appear as above if Option 5.d. enabled. CR rejected if Option 5.c. enabled. THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK 1234567890 THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK 1234567890 If terminal is equipped for Conversational mode, reception will stop when INTRPT key is depressed first time (indicator lights), and will resume when key is depressed second time (indicator goes out). Response to ETX at end of message depends on options and variable features: <u>BASIC KD/KDP W/O FULL EDIT</u> Revert to Local. <u>KD/KDP W/FULL EDIT, OPTION 8.c. ENABLED</u> Revert to Local. <u>KD/KDP W/FULL EDIT OPTION 8.d. ENABLED</u> Remain in Receive. For KDP, printer feeds out 16 lines of paper on receipt of ETX if Option 18.c. enabled.	Opcon (Section 582-211-500) 4.C. Controller For 40/1 Applications 4. A. Terminal Analysis

TABLE E (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP (40/1)

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
5	<u>TERMINALS WITH FULL EDIT FEATURE ONLY</u> If Option 8.d. is enabled, go to Local mode and change ETX to EOT.	Display appears as in Step 4, but Ex is replaced by Et.	
6	Home cursor and depress SEND. If KDP, also depress PRINT ON LINE. <i>Note:</i> If Option 27.a. is enabled on Full-Edit terminal, cursor automatically homes on depressing SEND.	SEND lights (LOCAL goes out). Cursor moves through message. Printer prints message, if KDP. If reverse channel option (Option 4.a.) enabled, Data Test Center may produce interrupt during message transfer, causing transmission to pause, then resume. Action of terminal upon transmitting and character depends on options and features: <u>BASIC KD/KDP W/O FULL EDIT</u> Revert to Local. <u>KD/KDP W/FULL EDIT, OPTION 8.c. ENABLED</u> Revert to Local (Option 11.a.) or Receive (Option 11.b.). <u>KD/KDP W/FULL EDIT, OPTION 8.d. ENABLED</u> Revert to Receive.	Opcon (Section 582-211-500) 4. C. Controller For 40/1 Applications
7	Go to Talk mode per standard procedure for data set used and evaluate results of test with Data Test Center operator: <u>202C DATA SET</u> Lift handset and depress TALK key.		

TABLE E (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP (40/1)

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
7 (Cont)	<u>202R DATA SET</u> Lower exclusion key to talk position. Do not depress all the way or call will disconnect. <u>202S DATA SET</u> Lift handset and depress appropriate line key.		
8	If results of test are satisfactory, home cursor and clear screen (Local mode), then depress REC.		
<u>MODIFIED FOX TEST</u> In this test, the Data Test Center will send FOX message again, this time with Form Feed (FF) as the ending character. Both operators will go to Talk mode for evaluation of test.			
9	For KDP with tractor feed printer, make sure the Forms switch on the printer is ON.		
10	When instructed by Data Test Center operator, go to Data mode per standard procedure for data set used.	FOX message displayed on screen (and printed, if KDP) as below: SX≡ THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK 1234567890 FF <i>Note:</i> One or more CR (Carriage Return) symbols (↵) may precede New Line symbol (≡) if Option 5.d. enabled. CR rejected if Option 5.c. enabled. THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK 1234567890 If KDP has tractor feed printer, form out occurs on receipt of FF at end of message (Form switch on). Check for proper form out length. Upon receipt of FF at end of message, terminal reverts to Local (Option 8.a. enabled) or remains in Receive (Option 8.b. enabled).	4. A. Terminal Analysis 4.C. Controller for 40/1 Applications Printer (Section 582-210-500) 4. C. Controller For 40/1 Applications

TABLE E (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP (40/1)

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
11	Go to Talk mode per standard procedure for data set used and evaluate results of test with Data Test Center operator.		
12	If results of test are satisfactory, home cursor and clear screen.		

MODIFIED FOX TEST

In this test, Data Test Center will send FOX message again, this time with (G_S) Group Separator as the ending character. Both operators will go to Talk mode for evaluation of test.

13	When instructed by Data Test Center operator go to Data mode per standard procedure for data set used.	FOX message is received and displayed on screen with (G_S) Group Separator as end character. <i>Note:</i> One or more CR (←) symbols may be displayed preceding New Line Symbol (≡) if Option 5.d. enabled. CR (←) rejected if Option 5.c. enabled. If Option 8.g. enabled, terminal reverts to Local on receipt of (G_S). Printer stops. If Option 8.h. enabled, terminal remains in Receive.	4. A. Terminal Analysis 4. C. Controller For 40/1 Applications
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MODIFIED FOX TEST

In this test, Data Test Center will send FOX message again, this time with DLE-EOT sequence at end of message. If data set has auto-answer capability, the auto-answer operation will be checked during this test.

14	If data set is arranged for auto-answer, hang up to disconnect call and set station for auto-answer per standard procedure for data set used: <u>202C DATA SET</u> Depress AUTO key on data set. Place handset on switchhook. Depress REC on KD, or PRINT ON LINE on KDP (indicator lights).	For auto-answer operation (202C or 202S Data Set equipped with auto-answer), DATA button or indicator lights automatically when Data Test Center call station. KDP goes to receive automatically and copies message. KD copies message. Characters (D_L) and (E_T) are not displayed on printer at station under test.	4. A. Terminal Analysis 4. C. Controller For 40/1 Applications
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TABLE E (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP (40/1)

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
14 (Cont)	<u>202S DATA SET</u> Depress appropriate Line key. Place handset on switchhook. Depress REC on KD, or PRINT ON LINE on KDP (indicator lights). <u>202R DATA SET</u> Auto-answer not available. If not equipped for auto-answer, depress REC on terminal, and go to Data mode manually when instructed by Data Test Center operator.	THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK 12345678990 Station will disconnect on receipt of DLE-EOT. Terminal goes to Local mode.(202C or 202S Data Set drops out of Data mode and disconnects from line. On 202R Data Set, handset must be placed on switchhook.)	
15	Call Data Test Center in Talk mode and evaluate results of test.		
16	If results are satisfactory, home cursor and clear screen. Depress REC.		
<u>FULL ASCII TEST</u> In this test, Data Test Center will send a test message containing all ASCII code characters. Station under test will receive message, then send it back to Data Test Center for comparison with original message. Both operators will go to Talk mode for evaluation of test.			
17	For KDP with tractor feed printer, set Forms switch on printer to OFF.		
18	When instructed by Data Test Center operator, go to Data mode.	Full ASCII message displayed on screen (and printed, if KDP) as follows: 	4. A. Terminal Analysis 4. C. Controller For 40/1 Applications

TABLE E (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP (40/1)

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
18 (Cont)		<i>Note:</i> CR symbols (←) appear if Option 5.d. enabled; do not appear if Option 5.c. enabled. NULL symbols (NU) appear if Option 5.b. enabled; do not appear if Option 5.a. enabled. DEL symbols (//) appear if Option 5.f. enabled; do not appear if Option 5.e. enabled. <pre> ! " # \$ % & ' () * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? ! " # \$ % & ' () * + , - . / 0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ ABCDEFGHIJKLMNOPQRSTUVWXYZ[\] ^ @ ABCDEFGHIJKLMNOPQRSTUVWXYZ[\] ^ @ ABCDEFGHIJKLMNOPQRSTUVWXYZ[\] ^ @ ABCDEFGHIJKLMNOPQRSTUVWXYZ[\] ^ </pre> <i>Note:</i> Illustration shows print-out for up-low printer with Option 21.b. enabled or monospace printer with Option 22.b. enabled. For up-low printer with Option 21.a. enabled, last two lines will print lower case. For monospace printer with Option 22.a. enabled, last two lines will print as errored character symbols (␣␣). Upon receipt of EOT at end of message, terminal reverts to Local mode.	
19	Home cursor, depress PRINT ON-LINE for KDP, and depress SEND. <i>Note:</i> If Option 27.a. is enabled on Full-Edit terminal, cursor automatically homes on depressing SEND.	Cursor moves through message. Printer prints message if KDP. Transmission stops and terminal reverts to Receive mode upon sending EOT.	Printer (Section 582-210-500)
20	Go to Talk mode and evaluate results of test with Data Test Center operator. If results are satisfactory, home cursor and clear screen (Local mode), then depress REC.		

TABLE E (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP (40/1)

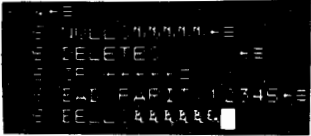
STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
STEPS 21 THROUGH 45 APPLY ONLY TO KD OR KDP WITH FULL-EDIT FEATURE. IF TERMINAL DOES NOT HAVE FULL-EDIT CAPABILITY, DISREGARD THESE STEPS. GO TO STEP 46.			
OPTIONS TEST			
In this test, Data Test Center will send a test message to check the on-line options in the terminal under test. Station under test will receive message, then send it back to Data Test Center for comparison with original message. Both operators will go to Talk mode for evaluation of test.			
21	When instructed by Data Test Center operator, go to Data mode.	Options test message displayed on screen (and printer, if KDP) as follows: Bell tone should sound for incorrect parity character and for each BEL character (B_L) in message.  Display shows factory enabled options — Reject NULs (Option 5.a.) DEL (Option 5.e.), and CR (Option 5.c.), and display substitute character (S_B) in place of errored character (Option 7.a.).  Exceptions to factory enabled options — NUL displayed as N_U (Option 5.b.), DEL displayed as // (Option 5.f.), and CR displayed as ← (Option 5.d.). Errored characters (1-5) displayed as received. 5 NULLS 5 DELETES 5 CR's 5 BAD PARITY 12345 5 BELLS	4. C. Controller For 40/1 Applications Opcon (Section 582-211-500)

TABLE E (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP (40/1)

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
21 (Cont)		Printout shown for Option 19.c. If Option 19.a. enabled, 12345 replaced by errored character symbol ($\overline{\text{A}}$ or). Upon receipt of ETX at end of message, terminal will go to Local mode (Option 8.c. enabled) or remain in Receive mode (Option 8.d. enabled). For KDP, printer feeds out 16 lines of paper (friction feed printer) on receipt of ETX if Option 18.c. is enabled. <i>Note:</i> Option 18.c. should not be used with tractor feed printers.	Printer (Section 582-210-500)
22	If Option 8.d. is enabled, place terminal in Local mode and change ETX to EOT at end of message.		
23	Home cursor and depress SEND. <i>Note:</i> If Option 27.a. is enabled, cursor automatically homes on depressing SEND.	SEND lights and cursor moves through message. Printer prints if KDP. Action of terminal upon transmitting end character depends on options: <u>OPTION 8.c. ENABLED:</u> Revert to Local (Option 11.a.) or Receive (Option 11.b.). <u>OPTION 8.d. ENABLED:</u> Revert to Receive.	4. C. Controller For 40/1 Applications Opcon (Section 582-211-500)
24	Go to Talk mode and evaluate results of test with Data Test Center operator. If results are satisfactory, home cursor and clear screen (Local mode), then depress REC.		
<u>STEPS 25 THROUGH 33 APPLY ONLY TO FULL-EDIT OR KDP WITH OPTION 6.b. ENABLED. FOR FULL-EDIT TERMINALS WITH OPTION 6.a. ENABLED, GO TO STEP 34.</u>			

TABLE E (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP (40/1)

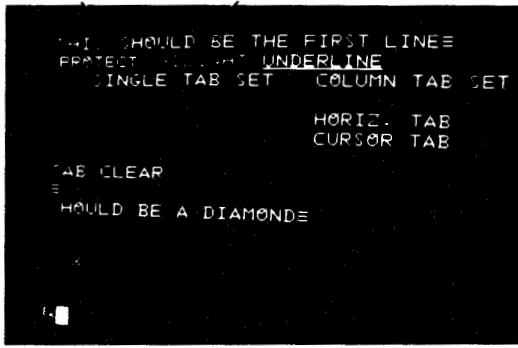
STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
EDIT TEST			
In this test, Data Test Center will send a test message to check the response to escape sequences of the terminal under test. Station under test will receive message, then send it back to Data Test Center for comparison with original message. Both operators will go to Talk mode for evaluation of test.			
25	When instructed by Data Test Center operator, go to Data mode. Half Intensity	Edit test message displayed on screen (and printed, if KDP) as below: Flashing 	
R THIS SHOULD BE THE FIRST LINE WPROTECTX 3 HIGHLIGHT UNDERLINE RIZ. TAB@CURSOR TAB@2TAB CLEAR@G SHOULD BE A DIAMOND BBXCTXBBXB SHOULD NOT REMAIN ON DISPLAYGJBM			
Note: Printed message contains suffixes of escape sequences sent by Data Test Center unless option 54.b. is enabled.			
		Upon receipt of ETX at end of message, terminal will go to Local mode (Option 8.c. enabled) or remain in Receive mode (Option 8.d. enabled). For KDP, printer feeds out 16 lines of paper on receipt of ETX if Option 18.c. is enabled. Note: Option 18.c. should not be used with tractor feed printers.	4. A. Terminal Analysis 4. C. Controller For 40/1 Applications Printer (Section 582-210-500)

TABLE E (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP (40/1)

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
26	If Option 8.d. is enabled, set terminal to Local and change to ETX to EOT at end of message.		
27	Depress PRINT ON-LINE if KDP, then depress FORM SEND.	FORM SEND key lights.	
28	Home cursor and depress SEND. <i>Note:</i> If Option 27.a. is enabled, cursor automatically homes on depressing SEND.	SEND lights and cursor moves through message. Printer prints if KDP. Action of terminal upon transmitting end character depends on options: <u>OPTION 8.c. ENABLED:</u> Revert to Local (Option 11.a.) or Receive (Option 11.b.) <u>OPTION 8.d. ENABLED:</u> Revert to Receive. FORM SEND goes out if terminal reverts to Local.	Opcon (Section 582-211-500) 4. C. Controller For 40/1 Applications
29	Go to Talk mode and evaluate results of test with Data Test Center operator. <u>Do not home cursor or clear screen.</u> Make sure REC and FORM SEND are lit. If not, depress.		
30	When instructed by Data Test Center operator, go to Data mode.	Cursor automatically goes home and screen is cleared. Edit test message is displayed (and printed, if KDP) as before. Upon receipt of ETX at end of message, terminal will go to Local mode (Option 8.c. enabled) or remain in Receive mode (Option 8.d. enabled). For KDP, friction feed printer feeds out 16 lines of paper on receipt of ETX if Option 18.c. is enabled. <i>Note:</i> Option 18.c. should not be used with tractor feed printers.	4. C. Controller For 40/1 Applications

TABLE E (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP (40/1)

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
31	If Option 18.d. is enabled, go to Local mode and change ETX to EOT at end of message. Depress PRINT ON-LINE if KDP.		
32	Home cursor and depress SEND. <i>Note:</i> If Option 27.a. is enabled, cursor automatically homes on depressing SEND.	SEND lights and cursor moves through message. Printer prints if KDP. Action of terminal upon transmitting end character depends on options: <u>OPTION 8.c. ENABLED:</u> Revert to Local (Option 11.a.) or Receive (Option 11.b.) <u>OPTION 8.d. ENABLED:</u> Revert to Receive.	Opcon (Section 582-211-500) 4. C. Controller For 40/1 Applications
33	Go to Talk mode and evaluate results of test with Data Test Center operator. If results are satisfactory, home cursor (Local mode) and depress FORM ENTER, TAB CLEAR, and CLEAR, then depress FORM ENTER again to turn off. <i>Note:</i> Option 12.b. must be enabled to clear or change protected data.		

STEPS 34 THROUGH 45 APPLY ONLY TO FULL-EDIT KD OR KDP WITH OPTION 6.a. ENABLED. FOR FULL-EDIT TERMINALS WITH OPTION 6.b. ENABLED, GO BACK TO STEP 25.

EDIT TEST

In this test, Data Test Center will send a test message to check the response to escape sequences of the terminal under test. Both operators will go to Talk mode for evaluation of test. Stations will then disconnect while message is prepared manually on terminal under test. Station under test will call Data Test Center and send prepared message. Both operators will go to Talk mode to evaluate results.

TABLE E (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP (40/1)

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
34	When instructed by Data Test Center operator, depress PRINT ON LINE of KDP, depress REC, go to Data mode.	Edit test message displayed on screen (and printed, if KDP) as below:	4. A. Terminal Analysis
	<pre> 4. A. THIS SHOULD BE THE FIRST LINE 4. B. PROTECT & HIGHLIGHT UNDERLINE 4. C. SINGLE TAB SET 4. D. COLUMN TAB SET 4. E. 12. TAB CURSOR TAB CLEAR 4. F. SHOULD BE A DIAMOND 4. G. XXXX SHOULD NOT REMAIN ON DISPLAY </pre>		
		Upon receipt of ETX at end of message, terminal will go to Local mode (Option 8.c. enabled) or remain in Receive mode (Option 8.d. enabled). For KDP, friction feed printer feeds out 16 lines of paper on receipt of ETX if Option 18.c. is enabled. Note: Option 18.c. should not be used with tractor feed printers.	4. C. Controller For 40/1 Applications Printer (Section 582-210-500)
35	Go to Talk mode and evaluate results of test with Data Test Center operator.		
36	When instructed by Data Test Center operator, hang up to disconnect call.		
37	With terminal in Local mode, enter following message on display: (Procedure is indicated in message.)		4. A. Terminal Analysis

TABLE E (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP (40/1)

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
37 (Cont)	 ① - FORM ENTER on ② - FORM ENTER off; HIGHLIGHT on, one space ③ - HIGHLIGHT off, then Depress spacebar three times Depress TAB SET Depress cursor left (←) once Depress TAB Depress spacebar once Depress CONTROL and EOT Home cursor, depress FORM SEND, depress PRINT ON LINE if KDP, depress REC.		
38	Place call to Data Test Center in Talk mode and advise operator that message has been prepared for transmission.		
39	When instructed by Data Test Center operator, go to Data mode, and depress SEND.	SEND lights and cursor moves through message. Printer prints if KDP. Transmission stops and terminal reverts to Receive mode upon transmitting EOT at end of message.	4. C. Controller For 40/1 Applications Opcon (Section 582-211-500)
40	Go to Talk mode and evaluate results of test with Data Test Center operator.		
41	Depress LOCAL and HOME.	LOCAL lights. FORM SEND goes out. Cursor goes home.	4. A. Terminal Analysis 4. C. Controller For 40/1 Applications Opcon (Section 582-211-500)

TABLE E (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP (40/1)

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
42	Depress PRINT ON LINE if KDP, depress REC.	PRINT ON LINE lights. LOCAL goes out and REC lights.	
43	When instructed by Data Test Center operator, go to Data mode, then depress SEND.	SEND lights and cursor moves through message as before. Printer prints if KDP. Transmission stops and terminal reverts to Receive mode upon transmission of EOT at end of message.	
44	Go to Talk mode and evaluate results of test with Data Test Center operator.		
45	Depress LOCAL, HOME, then TAB CLEAR. Depress FORM ENTER, then CLEAR. Depress FORM ENTER.	LOCAL lights, cursor goes home, and tab marks are cleared. FORM ENTER lights, and all data is cleared from screen. FORM ENTER goes out.	4. A. Terminal Analysis 4. C. Controller For 40/1 Applications Opcon (Section 582-211-500)
<u>STEPS 46 THROUGH 58 APPLY ONLY TO KD AND KDP TERMINALS EQUIPPED WITH CONVERSATIONAL MODE (S/R MODE). IF NOT SO EQUIPPED, DISREGARD THESE STEPS.</u>			
<u>S/R TEST</u>			
In this test, the terminal under test will enter a single line test message in the Receive mode, automatically send this message to the Data Test Center, then automatically revert to the Receive mode. Data Test Center will return message to station under test. Station under test will then send a multiple line test message and automatically revert to Receive.			
46	Depress S/R key, then depress HOME and CLEAR.	S/R and REC indicators light. LOCAL goes out (if originally lit). Cursor goes home and screen is cleared of any data.	4.C. Controller for 40/1 Applications Opcon (Section 582-211-500)

TABLE E (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP (40/1)

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
47	With call established to Data Test Center in Talk mode, wait for instruction from Data Test Center operator and then go to Data mode.		4. F. Data Set and Transmission Lines
48	Enter a single line test message ending with Return (↵) as below: - SINGLE LINE TEST ENDING WITH↵	When ← symbol is displayed, SEND indicator lights and REC indicator goes out. Cursor goes to beginning of line, then moves through the single line message, which is sent to Data Test Center. Cursor stops after ← symbol, and terminal reverts to Receive. Depress NEW LINE (≡).	4. C. Controller For 40/1 Applications Opcon (Section 582-211-500) 4. F. Data Set and Transmission Lines
49	Data Test Center returns message to station under test.	Returned message is displayed under original message as below: - SINGLE LINE TEST ENDING WITH↵ SINGLE LINE TEST ENDING WITH↵	
50	Go to Talk mode and evaluate results of test with Data Test Center operator.		
51	Home cursor and clear screen.		
52	When instructed by Data Test Center operator, go to Data mode.		
53	Enter DC2 from keyboard.	If Option 2.a. enabled, cursor backspaces and DC2 is sent automatically. (SEND indicator quickly flashes on, then off, and cursor stops after D ₂ .) If Option 2.b. enabled, D ₂ is entered (not sent) and cursor rests after D ₂ .	Opcon (Section 582-211-500) 4. C. Controller For 40/1 Applications

TABLE E (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP (40/1)

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
54	Enter a few short lines of data (as shown below). Each line except the last line should end with RETURN (←) and NEW LINE (≡). Last line ends with DC4. <pre> - MULTIPLE LINE TEST←≡ EACH LINE ENDING WITH ← AND ≡ LAST LINE ENDING WITH </pre>		
55	If Option 2.a. enabled, position cursor at first character position after D₂. If Option 2.b. enabled, home cursor.		
56	Depress SEND.	SEND lights and message is sent to Data Test Center. Terminal reverts to Receive.	Opcon (Section 582-211-500) 4. C. Controller For 40/1 Applications
57	Go to Talk mode and evaluate results of test with Data Test Center operator.		
58	Depress LOCAL key.	S/R indicator goes out. LOCAL indicator goes on.	
THIS COMPLETES THE ON-LINE CHECKOUT OF KD OR KDP.			

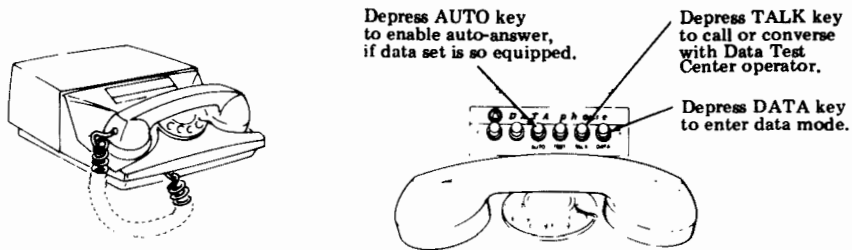
TABLE F
ON-LINE CHECKOUT — ROP (40/1)

This table checks the operation of an ROP station with 40C103 controller operating on the switched network via a 200-series data set.

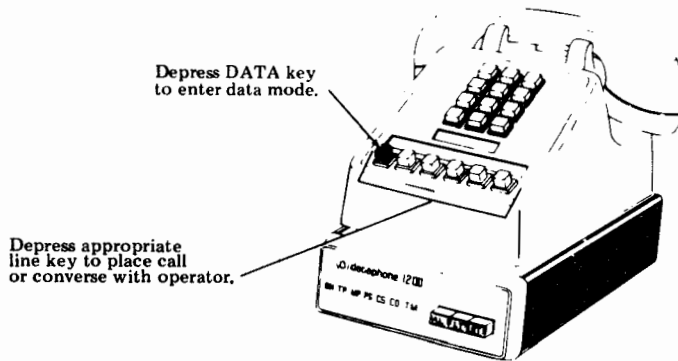
Note: Checkout procedures for 40-type ROP Terminals with 40C303 integrated controller are provided in Section 582-200-504.

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
1	Preliminary requirements: (a) Ribbon and paper properly loaded. (b) Switches at top right of printer (cabinet cover raised) set as follows: LF-1 Test-Off Forms (tractor feed only) — On. (c) Cabinet cover and pedestal door closed.		
2	Turn on power.	IN SERVICE indicator lights. Fans move air in pedestal. In tractor feed printer, fan in printer cabinet cover also turns on.	4. A. Terminal Analysis Printer (Section 582-210-500)
3	Place data set in Talk mode and ask Data Test Center to request on-line checkout (see Fig. 9 for data set configurations). <u>202C Data Set</u> Depress TALK key, lift handset, and dial Data Test Center. <u>202R Data Set</u> Lift handset and dial Data Test Center. <u>202S Data Set</u> Depress appropriate line key, lift handset, and dial Data Test Center.	<i>Note:</i> To establish proper line protocol, Data Test Center operator will normally request station requesting test to hang up and wait for return call. When Data Test Center calls back, answer call in Talk mode and follow instructions of Data Test Center operator.	4. F. Data Set and Transmission lines

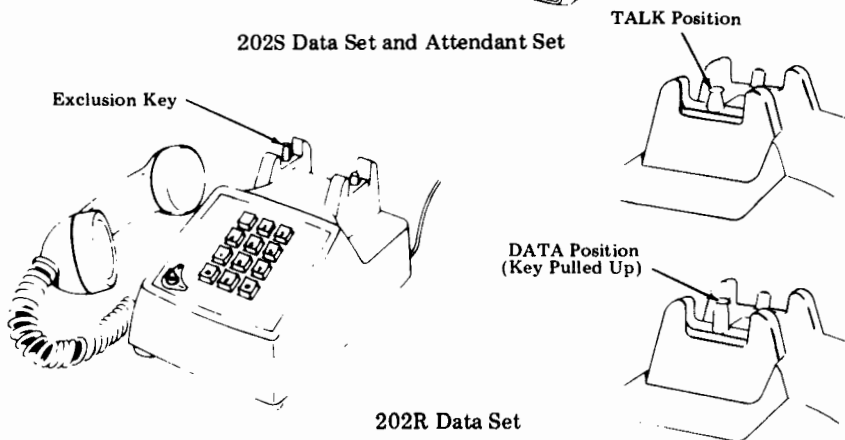
TABLE F (Cont)
ON-LINE CHECKOUT — ROP (40/1)



202C Data Set



202S Data Set and Attendant Set



202R Data Set

Fig. 9

TABLE F (Cont)
ON-LINE CHECKOUT -- ROP (40/1)

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
FOX TEST			
In this test, Data Test Center will send single FOX test message, then repeating FOX message. ROP will receive and print message, and check ability to interrupt transmission. Both operators will go to Talk mode to evaluate results.			
4	When instructed by Data Test Center operator, go to Data mode per standard procedure for data set used: <u>202C or 202S Data Set</u> Depress DATA key (red key on 202S) and place handset on switch-hook. <u>202R Data Set</u> Lift exclusion key. Do not place handset on switchhook.	Printer prints single FOX message: THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK 1234567890 Printer feeds out 16 line of paper at end of message if Option 18.c. enabled. Option 18.c. should not be used with tractor feed printers.	4. E. 40C103 ROP Controller Printer (Section 582-210-500)
5	Go to Talk mode and evaluate results with Data Test Center operator: <u>202C Data Set</u> Lift handset and depress TALK key. <u>202R Data Set</u> Lower exclusion key to talk position. Do not depress all the way or call will disconnect. <u>202S Data Set</u> Lift handset and depress appropriate line key.		
6	When instructed by Data Test Center operator, go to Data mode per standard procedure for data set used. While message is being received, depress INTRPT key on opcon; then depress key a second time to release.	Printer prints repeating FOX message: THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK 1234567890 THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK 1234567890	4. A. Terminal Analysis 4. E. 40C103 ROP Controller Printer (Section 582-210-500)

TABLE F (Cont)

ON-LINE CHECKOUT — ROP (40/1)

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
6 (Cont)		THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK 1234567890 THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK 1234567890 THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK 1234567890 THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK 1234567890 THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK 1234567890 THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK 1234567890 THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK 1234567890 THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK 1234567890 INTRPT indicator lights, and printer stops when INTRPT key is depressed. Printing resumes, and indicator goes out when INTRPT key is depressed a second time. Printer feeds out 16 lines of paper at end of message if Option 18.c. enabled. Option 18.c. should not be used with tractor feed printers.	
7	Go to Talk mode and evaluate results of test with Data Test Center operator.		

MODIFIED FOX TEST

The following test will check the ability of the ROP station to disconnect on receipt of DLE-EOT sequence. If data set is equipped for auto-answer, the auto-answer feature will also be checked.

TABLE F (Cont)
ON-LINE CHECKOUT — ROP (40/1)

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
8	If data set is arranged for auto-answer, hang up to disconnect call and set station for auto-answer per standard procedure for data set used: <u>202C Data Set</u> Depress AUTO key and place handset on switchhook. <u>202S Data Set</u> Depress appropriate line key. Place handset on switchhook. <u>202R Data Set</u> Auto-answer not available. If not equipped for auto-answer, go to Data mode manually when instructed by Data Test Center operator.	For auto-answer operation (202C or 202S Data Set equipped for auto-answer only), DATA key lights automatically when Data Test Center calls station. FOX message printed when Data mode established (auto. or manual). Station will disconnect on receipt of DLE-EOT at end of message. On 202R Data Set, handset must be placed on switchhook. Printer feeds out 16 lines of paper unless Option 18.a. is enabled.	4. F. Data Set and Transmission Lines 4. A. Terminal Analysis 4. E. 40C103 ROP Controller
9	Call Data Test Center in Talk mode and evaluate results with Data Test Center operator.		
<u>ROP TEST</u> This test will check the data stacking feature of an ROP with and without a 1000 character buffer.			
10	When instructed by the Data Test Center operator, go to Data mode.	Printer prints message according to options and features as below: 1 2345678901 23456789012 3456789012 345678901 2345678901 234567890 CCCCCCCCCCCCCCCC CCCCCCCCCCCCCCCC CCCCCCCCCCCCCCCC CCCCCCCCCCCCCCCC CCCCCCCCCCCCCCCC	4. A. Terminal Analysis

TABLE F (Cont)

ON-LINE CHECKOUT — ROP (40/1)

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
10 (Cont)		ROP W/O Buffer — Lines of single characters are stacked approximately as shown. If Option 17.d. enabled, lines of Cs will be alternately filled and stacked according to the line length enabled (column 73 through 79). <pre> 8 9 0 1 2 3 4 5 6 7 CCCCCCCCCCCCCCCC CCCCCCCCCCCCCCCC CCCCCCCCCCCCCCCC CCCCCCCCCCCCCCCC CCCCCCCCCCCCCCCC CCCCCCCCCCCCCCCC CCCCCCCCCCCCCCCC ROP W/Buffer — Lines of single characters should be printed (no stacking). If Option 17.d. enabled, the first line of Cs and every other line thereafter will end with the 73rd through 79th character, depending on which is enabled. The difference between 80 and the selected "last column" will print on the second line and every other line thereafter. Printer feeds out 16 lines of paper when end of message is reached if Option 18.c. enabled.</pre>	
11	Go to Talk mode and evaluate results of test with Data Test Center operator.		

TABLE F (Cont)
ON-LINE CHECKOUT — ROP (40/1)

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
OPTIONS TEST			
This test will check the error checking capability and remaining options at the ROP station. Both operators will go to Talk mode to evaluate the results of the test. The F _P character should be removed from the start of the message and placed as the last character of the message.			
12	When instructed by Data Test Center operator, go to Data mode.	Printer prints message according to options and features as below: 5 NULLS 5 DELETES 5 CRS 5 BAD PARITY AAAAA 5 BELLS AAAAA <i>Note:</i> Errored character symbol ( monospace or  up-low) prints as shown if Option 19.a. enabled. Received characters (12345) will print if Option 19.c. enabled. If Option 25.c. is enabled, DATA ERROR indicator on opcon lights upon receipt of parity error characters. Key must be depressed to extinguish indicator. Printer feeds out 16 lines of paper when end of message is reached if Option 18.c. enabled.	4. A. Terminal Analysis Printer (Section 582-210-500)
13	Go to Talk mode and evaluate results of test with Data Test Center operator.		
FULL ASCII TEST			
This test will check the response of the ROP station to all characters of the ASCII code. Both operators will go to Talk mode to evaluate results of test. The F _P character should be removed from the start of the message and placed as the last character of the message.			
14	When instructed by Data Test Center operator, go to Data mode.	Printer prints message as below: !"#\$%&'()*+,-./0123456789:;<=>? !"#\$%&'()*+,-./0123456789:;<=>? @ABCDEFGHIJKLMNOPQRSTUVWXYZ[\] ^ _ @ABCDEFGHIJKLMNOPQRSTUVWXYZ[\] ^ _ @ABCDEFGHIJKLMNOPQRSTUVWXYZ[\] ^ _ @ABCDEFGHIJKLMNOPQRSTUVWXYZ[\] ^ _	4. A. Terminal Analysis

TABLE F (Cont)

ON-LINE CHECKOUT — ROP (40/1)

STEP	PROCEDURE	RESULTS	TROUBLE ANALYSIS
14 (Cont)		<i>Note 1:</i> Illustration shows printout for up-low printer with Option 21.b. enabled or monospace printer with Option 22.b. enabled. For up-low printer with Option 21.a. enabled, last two lines will print lower case. For monospace printer with Option 22.a. enabled, last two lines will print as errored character symbols (Ξ $\overline{\text{A}}$ Ξ). <i>Note 2:</i> For tractor feed printer, form-out should occur after last printed line due to receive of form-feed character in ASCII test message. Printer feeds out 16 lines of paper when end of message is reached if Option 18.c. is enabled. Option 18.c. not used with tractor feed printers.	
15	Go to Talk mode and evaluate results of test with Data Test Center operator.	Tractor feed printer executes a form-out (form switch on) check for proper form feed-out length.	
THIS COMPLETES THE ON-LINE CHECKOUT OF ROP.			

TABLE G

RECEIVE OPERATION CHECKOUT (40/0)

This table checks the receive operation of DATASPEED 40/0 KD Terminals equipped with PTI interface. Checkout is performed with a TSG803 Parallel Signaling Terminal Simulator.

STEP	PROCEDURE		RESULTS		TROUBLE ANALYSIS
	PTI TERMINAL	TSG803	PTI TERMINAL	TSG803	
1	Connect to TSG803 as in Fig. 10.	Set controls on TRANSMIT side of panel as shown in Fig. 11. TSG803 will be used as a transmitter to check receive operation of KD.			4. A. Terminal Analysis
2	Turn on power and allow warmup. Depress HOME and CLEAR.	Turn on power and allow warmup.			
3	Depress REC.		REC indicator lights.	READY and NC light.	4. D. Controller For 40/0 Applications Opcon (Section 582-211-500) Display Monitor (Section 582-213-500)
4		Depress CA STEP repeatedly.	Alternate U and * appear on screen for each two depressions of CA STEP.	CA and NC alternately light for each depression.	
5		Depress 1200 wpm until two or three lines of U* appear on screen.	Alternate U and * appear at 1200 wpm rate.	CA and NC appear to glow steadily because of high repetition rate.	
6		Depress FREE RUN.	Segments are rapidly filled with U*.	CA and NC appear to glow steadily (until transmission ends) because of high repetition rate.	
7	Depress LOCAL. Depress HOME and CLEAR. Depress REC.	Depress SINGLE STEP. Set DATA SELECT to SWITCH.			4. D. Controller For 40/0 Applications 4. B. Display Logic

DATASPEED 40/0 KD (PTI) Terminal

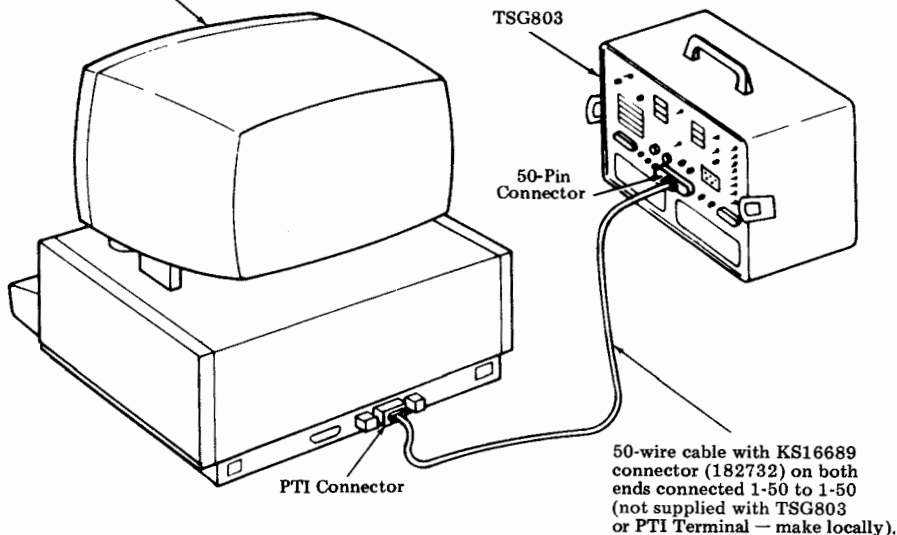


Fig. 10

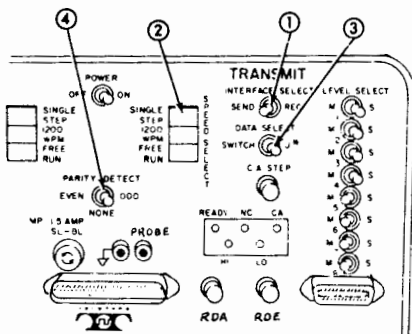
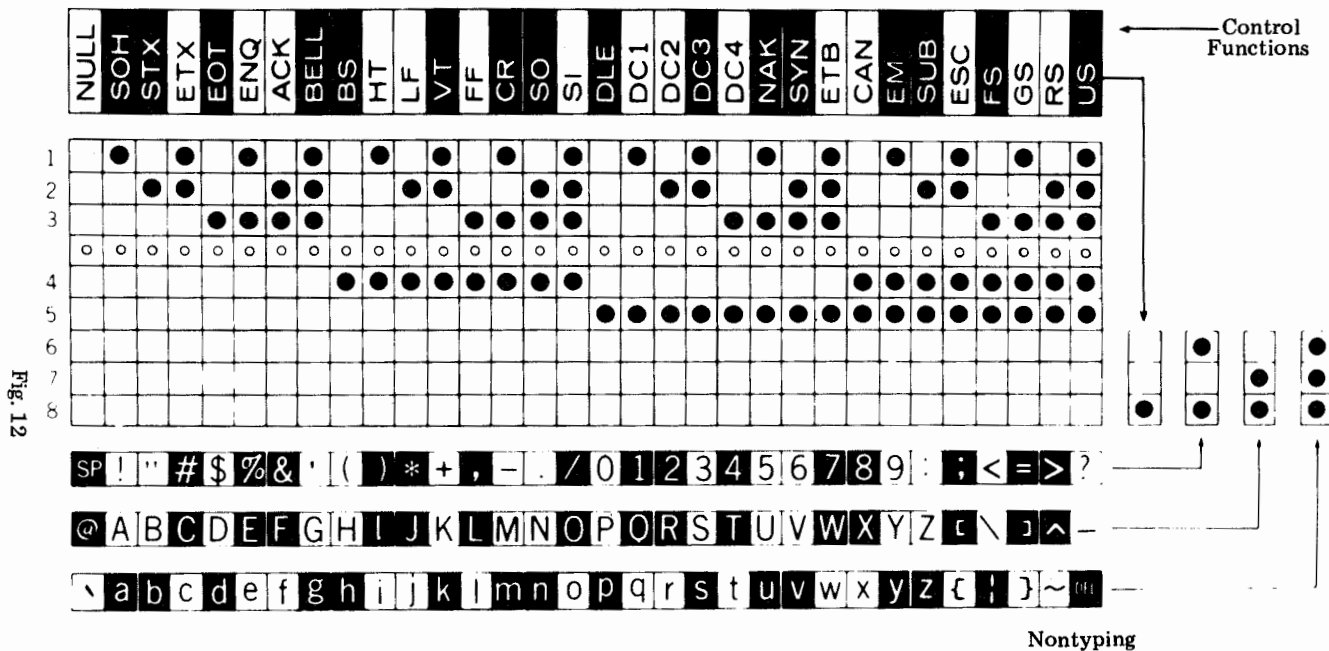


Fig. 11

CHART 1

CHARACTER	LEVEL SELECT SWITCH IN M POSITION	RESULTS
NULL	None	N _U displayed if Option 5.b. is enabled on 410674 Card.
CR	1348	← is displayed if Option 5.d. is enabled on 410674 Card.
DEL	All	// displayed if Option 5.f. is enabled on 410674 Card.
*	246 <i>Note:</i> This character deliberately set up with odd parity to check error response.	* displayed if Option 7.a. is enabled on 410674 Card. S _b displayed if Option 7.b. is enabled on 410674 Card.



- Mark To obtain even parity, the characters and functions shown with shaded backgrounds have 8th bit marking.

Upon receiving code combinations for ` through ~, monospace equipment displays respective characters @ through ^.

For nonstandard character complement, replace characters as necessary (ie, for fraction characters, replace * with 1/2).

TABLE G (Cont)

RECEIVE OPERATION CHECKOUT (40/0)

STEP	PROCEDURE		RESULTS		TROUBLE ANALYSIS
	PTI TERMINAL	TSG803	PTI TERMINAL	TSG803	
7 (cont)		Set up characters of Chart 1 on LEVEL SELECT switches. (ASCII Code illustrated in Fig. 12 for convenience in setting up code characters.) Depress CA STEP twice to send each character.	Characters displayed (or not displayed) as indicated in Chart 1.	CA and NC alternately light for each depression.	
8	(Perform this step only if Option 6.b. is enabled on 410674 circuit card.)	Set up characters on LEVEL SELECT switches in order shown in Chart 2. Depress CA STEP twice to send each character. Example: To send ESC3 sequence, set up ESC character on LEVEL SELECT switches (1245). Depress CA twice. Set up 3 character (1256). Depress CA STEP twice.	Control functions performed or characters displayed as in Chart 2.	CA and NC alternately light for each depression.	4. D. Controller For 40/0 Applications 4. B. Display Logic
9	(Perform this step only on PTI terminal without external mode control.)	Set up message ending characters on LEVEL SELECT switches in order shown in Chart 3.			4. D. Controller For 40/0 Applications

CHART 2

CHARACTER	LEVEL SELECT SWITCH IN M POSITION	RESULTS
ESC 3	1245 1256	HIGH LIGHT lights on opcon.
U	1357	Highlighted U displayed.
ESC 4	1245 3568	HIGH LIGHT off on opcon.
ESC W	1245 123578	FORM ENTER lights.
*	2468	Protected * displayed.
ESC X	1245 4578	FORM ENTER off on opcon.
*	2468	Unprotected * displayed.
ESC 1	1245 1568	Tab column displayed.
ESC 2	1245 2568	Tab column clears.
ESC 0	1245 56	Single tab displayed in cursor.
ESC B	1245 27	Cursor moves down.
ESC C	1245 1278	Cursor moves right.
ESC 7	1245 123568	Cursor moves up.
BS	48	Cursor moves left.
ESC G	1245 1237	Cursor goes to first character position of line.
ESC @	1245 78	Cursor moves to first space after protected * if checkout sequence is followed. Otherwise cursor moves to next tab mark or space after protected data or begin- ning of next line if unprotected.

CHART 2 (Cont)

CHARACTER	LEVEL SELECT SWITCH IN M POSITION	RESULTS
HT	14	HT mark ► displayed. Cursor moves to next tab mark or space after protected data or beginning of next line if protected.
ESC H	1245 47	Cursor goes home.
ESC J	1245 2478	Clears all unprotected data below and to the right of cursor.
ESC R	1245 2578	Clears all.
BELL	1238	BL displayed; bell sounds.

CHART 3

CHARACTER	LEVEL SELECT SWITCH IN M POSITION	RESULTS
FF	34	REC off; LOCAL on.
ETX	12	REC off; LOCAL on.
GS	1345	REC off; LOCAL on.
EOT	38	REC off; LOCAL on.

TABLE G (Cont)
RECEIVE OPERATION CHECKOUT (40/0)

STEP	PROCEDURE		RESULTS		TROUBLE ANALYSIS
	PTI TERMINAL	TSG803	PTI TERMINAL	TSG803	
9 (cont)		Depress CA STEP twice to send each character.	REC goes out and LOCAL lights (PTI terminal reverts to local mode) for each character (factory-furnished options). <i>Note:</i> Reset PTI terminal to REC after each character.	CA and NC alternately light.	
PERFORM STEPS 10 THROUGH 21 ONLY ON PTI TERMINALS WITH EXTERNAL MODE CONTROL (Card TP410678 in Position 01 of Controller)					
10	Depress LOCAL.	Set INTERFACE SELECT to SEND.	LOCAL on; REC off.		Opcon (Section 582-211-500) 4. D. Controller For 40/0 Applications
11	Depress HOME and CLEAR. Enter a message with protected and unprotected data on monitor.		Message displayed.		
12	Depress REC.		REC on; LOCAL off.		
13		Depress RDE.	REC remains on. Cursor goes home.	READY remains lit.	
14		Place INTERFACE SELECT in REC; then back in SEND.	All unprotected data is cleared.		

TABLE G (Cont)

RECEIVE OPERATION CHECKOUT (40/0)

STEP	PROCEDURE		RESULTS		TROUBLE ANALYSIS
	PTI TERMINAL	TSG803	PTI TERMINAL	TSG803	
15	Depress LOCAL; then re-enter message as in Step 11.		Message displayed on monitor.		40MN101 Display Monitor(Section 582-213-500)
16	Position cursor away from home position, but ahead of protected data. Depress REC.				
17		Set up ETX (1, 2 marking) on LEVEL SELECT switches. Depress CA STEP twice to send ETX.	Ex displayed on monitor.		4. D. Controller For 40/0 Applications
18		Depress RDA.	REC goes out. All unprotected data after cursor is cleared. LOCAL lights. Cursor does not move.	READY goes out.	
19		Place INTERFACE SELECT in REC; then back in SEND.	LOCAL goes out. REC lights (mode does not change if Option 15.b. is present).		
20	Depress SEND.		REC goes out. SEND lights.		4. D. Controller For 40/0 Applications
21		Place INTERFACE SELECT in REC; then back in SEND.	SEND goes out. REC lights (mode does not change if Option 15.b. is present).		
THIS ENDS THE CHECKOUT OF THE RECEIVE OPERATION OF THE PTI TERMINAL. TO CHECK THE SEND OPERATION, GO TO TABLE H.					

DATASPEED 40 KD (PTI) Terminal

TSG803

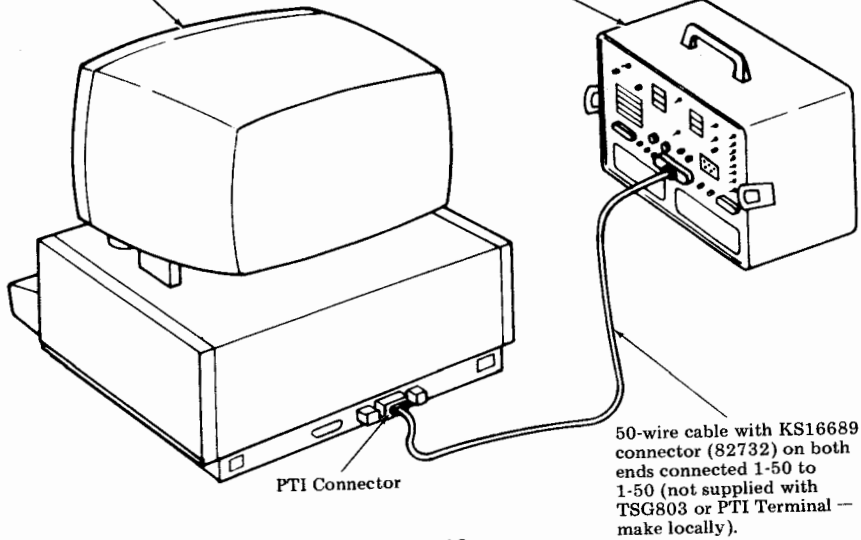
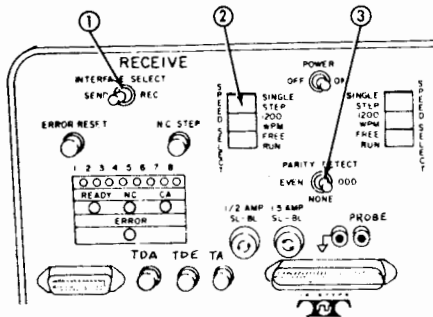


Fig. 13



- ① REC
- ② SINGLE STEP
- ③ ODD

Fig. 14

TABLE H

SEND OPERATION CHECKOUT (40/0)

This table checks the send operation of DATASPEED 40/0 Terminal equipped with PTI interface. Checkout is performed with a TSG803 Parallel Signaling Terminal Simulator.

STEP	PROCEDURE		RESULTS		TROUBLE ANALYSIS
	PTI TERMINAL	TSG803	PTI TERMINAL	TSG803	
1	Connect to TSG803 as in Fig. 13.	Set controls on RECEIVE side of panel as shown in Fig. 14. Simulator will be used as a receiver to check send operation of KD.			
2	Turn on power and allow warmup. Depress HOME and CLEAR if necessary.	Turn on power and allow warmup.			
3	With PTI terminal in LOCAL, enter a full line of alternate U and * across top of screen. Depress HOME.		Characters appear on monitor.		Opcon (Section 582-211-500) 4. D. Controller For 40/0 Applications 4. B. Display Logic
4	Depress SEND.		SEND indicator lights.	READY lights. 1-8 indicators are all lit (all levels marking).	
5		Depress NC STEP.		NC and CA light. Marking bits representing U (1357) are displayed on 1-8 indicators.	4. D. Controller For 40/0 Applications 4. B. Display Logic

TABLE H (Cont)

SEND OPERATION CHECKOUT (40/0)

STEP	PROCEDURE		RESULTS		TROUBLE ANALYSIS
	PTI TERMINAL	TSG803	PTI TERMINAL	TSG803	
6		Depress NC STEP.	Cursor moves to next character position.	NC and CA go out. 1-8 indicators all light.	4. D. Controller For 40/0 Applications 4. B. Display Logic Opcon (Section 582-211-500)
7		Depress NC STEP.		NC and CA light. Marking bits representing * (2468) are displayed on 1-8 indicators.	
8		Depress NC STEP repeatedly.	Cursor moves to next character position for every other depression.	NC and CA light and go out for every other depression. U and * marking bits are displayed for each two depressions separated by mark hold (1-8 indicators all lit).	
9	With PTI Terminal in LOCAL, depress HOME and CLEAR. Enter a protected U, a highlighted *, and a tab column from opcon.		Cursor goes home and display is cleared. Display appears on monitor.		
10	If Option 27.b. is present on TP410675 card, depress HOME. Depress FORM SEND.		Cursor goes home. FORM SEND lights.		

CHART 4

MONITOR DISPLAY	CHARACTERS SENT	MARKING BITS ON TSG803 INDICATORS
Protected U	ESC	1245
	W	123578
	U	1357
	ESC	1245
	X	4578
Highlighted *	ESC	1245
	3	1256
	*	2468
	ESC	1245
	4	3568
Tab Mark (set)	ESC	1245
	0	56

TABLE H (Cont)
SEND OPERATION CHECKOUT (40/0)

STEP	PROCEDURE		RESULTS		TROUBLE ANALYSIS
	PTI TERMINAL	RS-18127	PTI TERMINAL	RS-18127	
10 (cont)	Depress SEND.		SEND lights. If Option 27.a. is present (410675 card), cursor automatically goes home.		
11		Depress NC STEP 24 times.	Cursor moves through character positions.	NC and CA light alternately. Marking bits are displayed for escape sequences and characters as shown in Chart 4.	4. D. Controller For 40/0 Applications 4. B. Display Logic Opcon (Section 582-211-500)
12	Depress LOCAL. Depress HOME (if Option 27.b. is present). Depress (release) FORM SEND. Depress SEND.		LOCAL lights. Cursor goes home. FORM SEND goes out. SEND lights.		
13		Depress NC STEP repeatedly.	Cursor moves through character positions.	NC and CA light alternately. Characters sent (displayed on TSG803 indicators) depend on options of PTI terminal. Only the U and * should be sent if Option 13.a. or 13.b. are present on 410676 card. U will be sent as SPACE for Option 13.c. or 13.d., and as DELETE for 13.e.	

TABLE H (Cont)

SEND OPERATION CHECKOUT (40/0)

STEP	PROCEDURE		RESULTS		TROUBLE ANALYSIS
	PTI TERMINAL	TSG803	PTI TERMINAL	TSG803	
13 (cont)				U will not be sent if Option 13.f., g., or h. is present. ESC3 and ESC4 will be sent with * if Option 9.b. is present on 410674 card.	
14	With PTI terminal in local, depress HOME, TAB CLEAR, and CLEAR. (Clear protected U with FORM ENTER on.) Enter the following on the monitor: NEW LINE, FF, ETX, EOT, GS, and TAB (►).		Cursor goes home and display is cleared. Display appears on monitor.		4. D. Controller For 40/0 Applications 4. B. Display Logic
15	Depress HOME (if Option 27.b. is present). Depress SEND.		Cursor goes home. SEND lights.		
16		Depress NC STEP repeatedly.	Cursor moves through character positions. Mode is changed on message ending characters per selected options as in Chart 5.	NC and CA both light alternately. Characters sent (displayed on TSG803 indicators) as in Chart 5.	

CHART 5

MONITOR DISPLAY	CHARACTER SENT	MARKING BITS ON TSG803 INDICATORS	NOTES
≡	CR CR LF	1348 1348 24	New line sequence sent determined by Option 10 on 410675 Card: 10.a. sends CRLF 10.b. sends CRCRLF 10.c. sends LF.
FF	FF	34	Effect of message ending characters determined by Options on 410674 Card: Drop out of SEND on FF (Option 8.a.), ETX (8.c.), EOT (8.e.), or GS (8.g.). Do not drop SEND on FF (8.b.), ETX (8.d.), EOT (8.f.), or GS (8.h.) (see Note).
EX	ETX	12	
ET	EOT	38	
GS	GS	1345	
►	HT or Space	HT = 14 Space = 68	HT sent as HT if Options 13.a., 13.c., 13.e., 13.f., or 13.g. are programmed on 410676 Card. Sent as space if Options 13.b., 13.d., or 13.h. are enabled.
Note: If any message ending options are enabled, CA on TSG803 will not light when NC STEP is depressed after message ending character is sent. Go to LOCAL (if not already in LOCAL due to terminal action), delete message ending character from monitor display, go to SEND, and NC STEP to next character. Repeat as necessary for each message ending character that terminates transmission. PTI terminals without external mode control (no 410678 card) will go to LOCAL (Option 11.a.) or REC (Option 11.b.) after sending an enabled message ending character. Operation of terminals with external mode control (Option 11.c. present) will be checked later.			

TABLE H (Cont)

SEND OPERATION CHECKOUT (40/0)

STEP	PROCEDURE		RESULTS		TROUBLE ANALYSIS
	PTI TERMINAL	TSG803	PTI TERMINAL	TSG803	
PERFORM STEPS 17 THROUGH 31 ONLY ON PTI TERMINALS WITH EXTERNAL MODE CONTROL (Card TP410678 in Position 01 of Controller)					
17	With PTI terminal in LOCAL, enter a 10-character message ending in ETX. Depress SEND.		Characters displayed on monitor. SEND lights.		Display Monitor (Section 582-213-500) Opcon (Section 582-211-500)
18		Depress NC STEP until ETX is displayed on indicators.		ETX displayed as 1, 2 marking.	4. D. Controller For 40/0 Applications
19		Depress TDE momentarily.	SEND stays lit. Cursor goes home.	READY stays lit.	4. D. Controller For 40/0 Applications Opcon (Section 582-211-500)
20	PTI terminal still in SEND.	Depress NC STEP until ETX is displayed on indicators.		ETX displayed as 1, 2 marking.	
21		Depress TDA momentarily.	SEND goes out. REC lights if Option 16.a. present on 410678 card; LOCAL lights if Option 16.b. present. Cursor goes home if Option 16.c. present on 410678 card; cursor stays at end of message if Option 16.d. present.	READY goes out.	

TABLE H (Cont)

SEND OPERATION CHECKOUT (40/0)

STEP	PROCEDURE		RESULTS		TROUBLE ANALYSIS
	PTI TERMINAL	TSG803	PTI TERMINAL	TSG803	
22	With cursor HOME depress SEND.	Depress NC STEP until ETX is displayed.		READY lights. ETX displayed as 1, 2 marking.	4. D. Controller For 40/0 Applications
23		Depress TA momentarily.	SEND goes out. LOCAL indicator flashes until reset by depressing LOCAL key.	READY goes out.	Opcon (Section 582-211-500)
24	If REC TAPE keytop is not present (ninth position from left on control strip of operator console), remove blank keytop from this position. (Restore when test is completed.) Connect 337683 cable (supplied with TSG803) to 24-pin connector at rear of PTI terminal (Fig. 15). Connectors at free end of cable will be used as test points for the following steps.	Insert test leads in probe and ϕ jacks on TSG803 panel (Fig. 15). These leads will be used to check Device Control interface of PTI terminal.			4. D. Controller For 40/0 Applications Opcon (Section 582-211-500)
25	Alternately depress LOCAL and REC or SEND.	Connect probe lead of TSG803 to pin 5 of cable.		HI indicator should light when terminal is in SEND or REC. LO indicator should light when in LOCAL.	

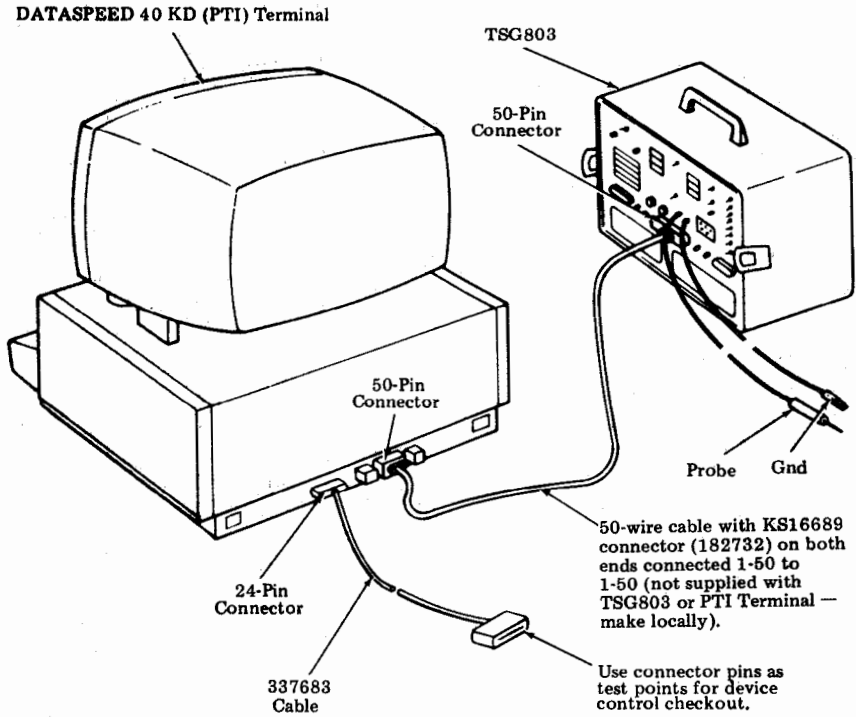


Fig. 15

TABLE H (Cont)
SEND OPERATION CHECKOUT (40/0)

STEP	PROCEDURE		RESULTS		TROUBLE ANALYSIS
	PTI TERMINAL	TSG803	PTI TERMINAL	TSG803	
26		Connect $\sqrt{}$ lead of TSG803 to pin 7 of cable.	Indicator in ninth position from left (REC TAPE, if present) should light.		4. D. Controller For 40/0 Applications Opcon (Section 582-211-500)
27	Depress REC. Touch a jumper wire between pins 5 and 9 of cable.		REC should light. REC goes out. SEND should light.		
28	Depress SEND. Touch jumper wire between pins 5 and 10 of cable.		SEND should light. SEND goes out. LOCAL should light.		
29	Depress SEND. Touch jumper wire between pins 5 and 11 of cable.		SEND should light. SEND goes out. REC should light.		
30	Depress LOCAL. Depress switch in ninth position from left (REC TAPE, if present).	Connect probe lead of TSG803 to pin 12 of cable.		HI indicator lights briefly.	

TABLE H (Cont)
SEND OPERATION CHECKOUT (40/0)

STEP	PROCEDURE		RESULTS		TROUBLE ANALYSIS
	PTI TERMINAL	TSG803	PTI TERMINAL	TSG803	
31	Depress REC.	Set TRANSMIT section of TSG803 to send ETX (1, 2M on LEVEL SELECT switches) to PTI terminal. Depress CA STEP twice to send character. Touch ∇ lead momentarily to pin 20 of cable.	EX displayed on monitor. LOCAL should light.	CA lights; then goes out.	4. D. Controller For 40/0 Applications Opcon (Section 582-211-500)
THIS ENDS THE CHECKOUT OF THE SEND OPERATION OF THE PTI TERMINAL.					

4. TROUBLESHOOTING

4.01 To use the troubleshooting information, always start with Analysis Question 1 of 4.A. Terminal Analysis and follow the indicated procedure to the directive which specifies proceeding to the component analysis section. Then follow the specific component analysis indicated (ie, power supply, display monitor, opcon, etc) starting with Analysis Question 1 to isolate and correct the trouble by replacing the indicated defective component.

4.02 If replacement of the part or subcomponent indicated in the component analysis section does not correct the trouble, replace the next higher order of component (ie, fuse, power distribution assembly, display monitor, or entire terminal).

4.03 When installing a replacement component, make certain that all options (if present) in this component are implemented for proper set operation.

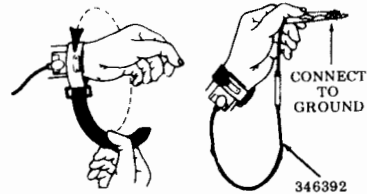
4.04 Where more than one component is specified for replacement, they should be substituted one at a time in the order specified. The original component should be replaced if the trouble is not corrected before making the next indicated substitution.

4.05 Once the trouble has been corrected, the terminal should be checked out to be sure that it is performing properly per the operational checkout procedures in Paragraph 3 — TESTING.

4.06 The following procedures must be observed when troubleshooting the 40-type equipment.

Danger 1: Turn off all power or signal sources before removing or replacing any component.

Danger 2: Personnel working with the 40-type must wear a static protection ground strap when handling circuit cards with MOS devices. The strap must be worn so as to make firm contact with the skin at all times.



Note: Service personnel are never to be connected directly to ground but rather through a high resistance discharge path of a minimum of one megohm where 115 V ac is present.

4.07 To locate test switches and indicator lamps, refer to Fig. 16. To locate components, circuit cards, connectors, and other elements indicated in the troubleshooting information, refer to Section 582-200-700. For wire color codes, cable, connector, and other wiring indicated for continuity checks etc in troubleshooting, refer to Section 582-200-400.

4. A. Terminal Analysis

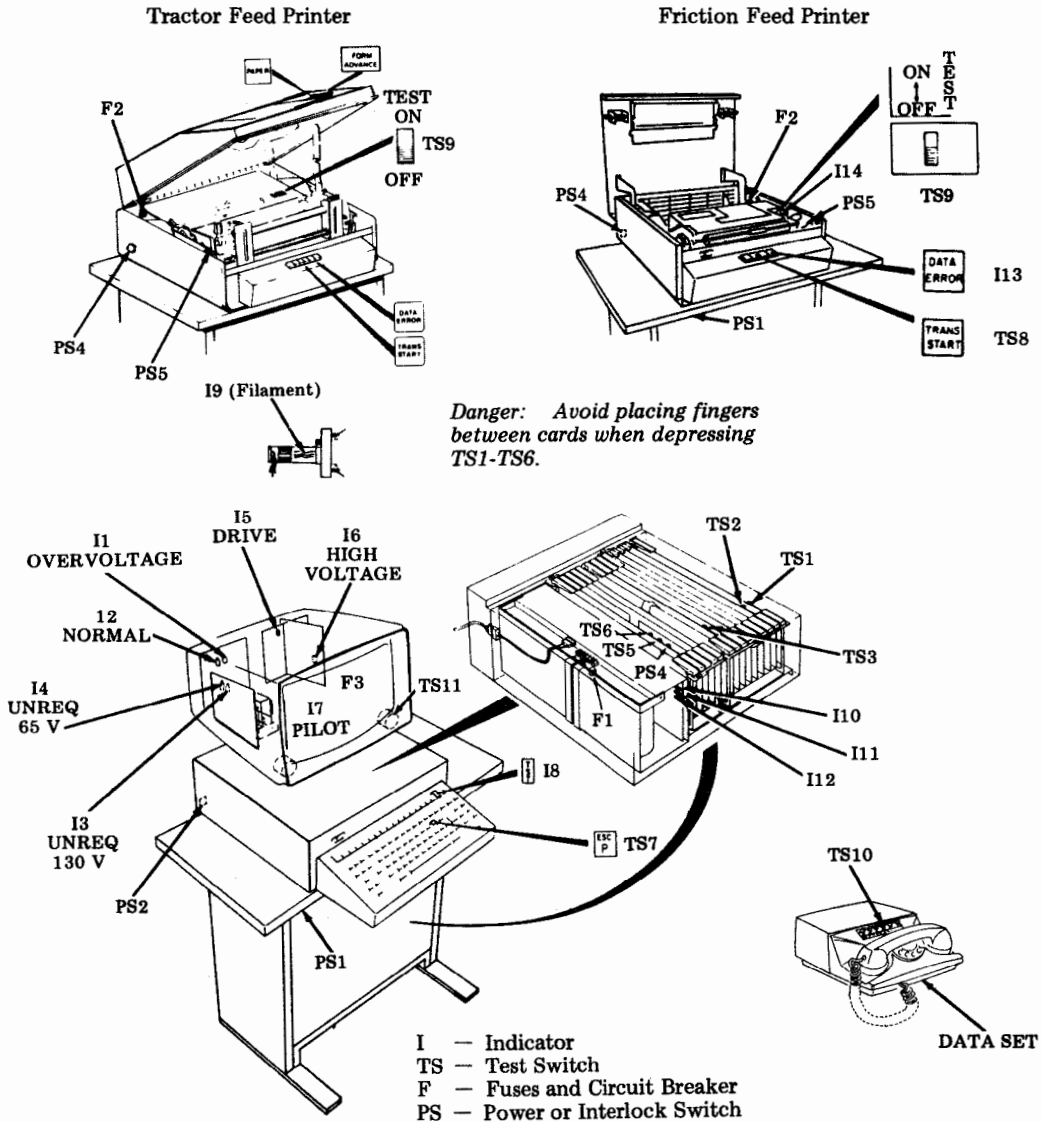


Fig. 16—Test Switches and Indicators

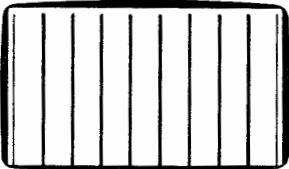
4. A. Terminal Analysis

Note 1: Always start with ANALYSIS QUESTION 1.

Note 2: Answer analysis questions and follow appropriate response directive.

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
1. Is the set a KD or KDP? (KD: Keyboard Display) (KDP: KD + Printer)	Go to 2.	Go to 19.
2. Do the fans turn when power is ON?	Go to 3.	Check ac to fan. Ref: Section 582-200-400 Section 582-200-700 Fan cable connected. Power switch(es) ON. AC present at fan assembly connector.
3. Does the LOCAL lamp on the opcon turn ON when power is turned ON?	Go to 5.	Go to 4.
4. Are all three LED indicators in the power supply ON?	Go to Section 582-211-500. (Troubleshooting) Go to 4. C. Controller for 40/1 Applications or 4. D. Controller for 40/0 Applications.	Go to Section 582-214-400 (40PSU101 Power Supply, Troubleshooting)
5. Is the red drive lamp I5 (in display monitor) ON?	Go to 6.	Go to 4. B. Display Logic. Go to Section 582-213-500 (40MN101 Display Monitor, Troubleshooting).
6. Is the red pilot lamp I7 (next to fuse on power distribution assembly in display monitor) ON?	Go to 7.	Go to Section 582-213-500 (40MN101 Display Monitor, Troubleshooting).
7. With the monitor OFF/ON control switch ON (CCW) and the operator brightness control to full intensity (CCW), is the raster visible?	Go to 9.	Go to 8.

4.A. Terminal Analysis (Cont)

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
8. Is the I6 high voltage lamp in the display monitor ON?	Check MASTER BRIGHTNESS adjustment (Section 582-213-700). Go to 9.	Go to Section 582-213-500 (40MN101 Display Monitor, Troubleshooting).
9. Is the cursor displayed on the monitor?	Go to 11.	Go to 10.
10. Turn operator brightness to full intensity (CCW). Depress test switch no. 1 (TS1) in display logic. Does a flashing vertical black bar pattern appear in the raster with no white pattern? 	Go to Section 582-213-500 (40MN101 Display Monitor, Troubleshooting). Go to 4. B. Display Logic	Go to 4. B. Display Logic.
11. In the local mode, can all data (including editing functions) be input from the opcon to the display monitor on all segments?	Go to 12.	Go to Section 582-211-500 (Opcon, Troubleshooting). Go to 4. B. Display Logic. Go to 4. C. Controller for 40/1 Applications or 4. D. Controller for 40/0 Applications.
12. Are the characters displayed on the display monitor distorted?	Go to Section 582-213-500 (40MN101 Display Monitor, Troubleshooting) Go to 4. B. Display Logic.	Go to 13.
13. Do characters displayed on the display monitor correspond to those generated from the opcon?	Go to 15.	Go to 4. B. Display Logic. Go to 4. C. Controller for 40/1 Applications or 4. D. Controller for 40/0 Applications. Go to Section 582-211-500 (Opcon, Troubleshooting).

4.A. Terminal Analysis (Cont)

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
14. Does the terminal have a printer?	Go to 15.	Go to 17.
15. Does the printer respond properly when the PRINT LOCAL key on the opcon is depressed?	Go to 17.	Go to 16.
16. Does the PRINT LOCAL key on the opcon light?	Go to 17.	Go to Local Loop-Back Tests in Section 582-211-500 (Opcon, Troubleshooting). If PRINT LOCAL lamp fails test, replace opcon. If PRINT LOCAL lamp passes test, remove opcon from loop-back mode and go to 17.
17. Does the type carrier symbol ($\Xi A \Xi$ or $\Xi A \Xi$) print in every column when the printer TEST switch TS9 is ON and the printer cover is closed or the interlock switch is in the maintenance up position?	Go to 18.	Go to Section 582-210-500 (Printer, Troubleshooting).
18. Does the station perform on-line tests properly?	Place in service.	Go to 4. C. Controller for 40/1 Applications or 4. D. Controller for 40/0 Applications.
19. Does the IN SERVICE lamp on the opcon in the ROP turn ON when power is turned ON?	Go to 20.	Go to 24.
20. In an off-line mode, does the TEST (early design designated TRANS START) lamp turn ON when key is depressed? (The key lights when depressed and stays ON until depressed again to stop the test.)	Go to 21.	Go to Section 582-211-500 (Opcon, Troubleshooting). Go to 4. E. 40C103 ROP Controller.
21. In an off-line mode, is the test pattern printed properly with no errors when the TEST or TRANS START key is depressed?	Go to 26.	Go to 22.

4.A. Terminal Analysis (Cont)

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
22. Does the printer turn ON or run at all when the TEST or TRANS START key is depressed.	Go to Section 582-210-500 (Printer, Troubleshooting). Go to 4. E. 40C103 ROP Controller.	Go to 23.
23. Does paper advance when the red PAPER key is depressed?	Go to 4. E. 40C103 ROP Controller	Check continuity: 80-Column Printers — Terminals A to B, C to D on J3 connector, 132-Column Printers — Terminals 37 to 38, 39 to 40 on P109 connector; on both 80- and 132-column, check continuity between terminals 1 to 2 and 3 to 6 on printer connector at rear of cabinet. Go to Section 582-214-500 (40PSU101 Power Supply, Troubleshooting). If printer is tractor feed, check continuity of paper advance contact (connector P114, terminals 3 to 4) when switch is depressed. Go to Section 582-210-500 (Printer, Troubleshooting). Go to 4. E. 40C103 ROP Controller.
24. Does paper advance when the red PAPER key is depressed?	Go to 25.	Check interlock switch PS5 for continuity when switch activator is down and in maintenance up positions. Friction Feed: connector J106, terminals 1 to 2. Tractor Feed: connector P114, terminals 6 to 7 and 3 to 5. Check continuity: 80-Column Printers — Terminals A to B, C to D, on J3 connector, 132-Column Printers — Terminals 37 to 38, 39 to 40 on P109 connector; on both 80- and 132-column printers, check continuity between terminals 1 to 2 and 3 to 6 on printer connector at rear of cabinet.

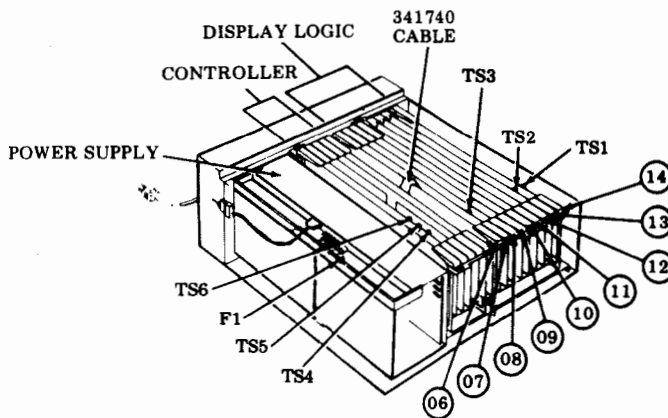
4.A. Terminal Analysis (Cont)

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
24 (Cont)		If printer is tractor feed, check continuity of paper advance contact (connector P114, terminals 3 to 4) when switch is depressed. Go to Section 582-210-500 (Printer, Troubleshooting). Go to 4. E. 40C103 ROP Controller.
25. Does the type carrier symbol ( or ) print in every column when the printer TEST switch TS9 is ON and the printer cover is closed, or the interlock switch PS5 is in the maintenance up position?	Check SSI cable and feed through for continuity at terminals A to B and C to D connector J3 to printer circuit card, and terminals 1 to 2 and 3 to 6 on printer connector at rear of cabinet. Go to Section 582-211-500 (Opcon, Troubleshooting).	Go to Section 582-210-500 (Printer, Troubleshooting).
26. Does paper advance when the red PAPER key is depressed?	Go to 27.	If printer is tractor feed, check continuity of paper advance contact (connector P114, terminals 3 to 4) when switch is depressed. Go to Section 582-210-500 (Printer, Troubleshooting).
27. Does the printer have tractor feed paper drive?	Go to 28.	Go to 29.
28. When the black FORM ADVANCE key is depressed, does the paper advance one form (printer FORM switch ON) or advance continuously (printer FORM switch OFF)?	Go to 29.	Check FORM ADVANCE switch for continuity when depressed (connector P114, terminals 3 to 4 and 3 to 5). Go to Section 582-210-500 (Printer, Troubleshooting). Check Form-Out Contact Gap Adjustment — Section 582-210-700
29. Does the type carrier symbol ( or ) print in every column when the printer TEST switch TS9 is ON and the printer cover is closed, or the interlock switch PS5 is in the maintenance up position?	Go to 30.	Go to Section 582-210-500 (Printer, Troubleshooting).

4.A. Terminal Analysis (Cont)

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
30. Does the station perform on-line tests properly?	Place in service.	Go to Section 582-210-500 (Printer, Troubleshooting). Go to 4. E. 40C103 ROP Controller.

4.B. Display Logic



Display Logic Circuit Cards

Pos.	
06	410002
07	410001 or 410009 or 410018
08	410003
09	AUX
10	Segment No. 1 (See Note 1.)
11	Segment No. 2 (See Note 1.)
12	Segment No. 3 (See Note 1.)
13	410657, 410020, 410021, 410022
14	410855
Wired Frame	341672 (See Note 2.)

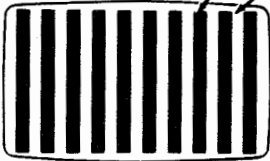
Note 1: Sets with full editing features, use 410005 or 410015 circuit card. Sets without full editing features, use 410004 or 410014 circuit card. For 1 segment (24 lines) card is in position 10. For 2 segments (48 lines) cards are in positions 10 and 11. For 3 segments (72 lines) cards are in positions 10, 11, and 12.

Note 2: If trouble is not cleared after replacing all components listed, check or replace wired frame.

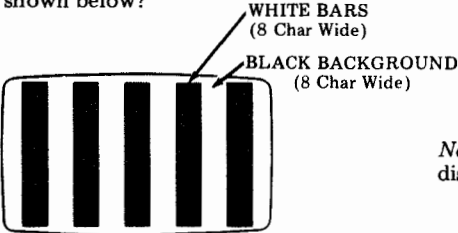
4.B. Display Logic

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
1. Depress TS1 test switch on 410855 circuit card. Is the following pattern generated on the display? Are all of the elements shown in enlarged view I II present?	Go to 2.	Replace 410855 circuit card.
2. Depress TS2 test switch on 410657, 410020, 410021 or 410022 circuit card. Is the U* (or *U) pattern, with protected and highlighted elements as indicated below, generated across all lines of the display? TS2 Test Pattern (Generated across all lines of the display.)	Go to 3.	Replace 410657, 410020, 410021, or 410022 circuit card.
3. Depress and hold down TS3 test switch on 410001 (or 410009 or 410018 circuit card. Is the * character generated across all lines of the display in all character positions? Also check segments 2 and 3 (if present) by scrolling.	If data appears on screen that is not sent from Opcon: Replace 410004, 410014, 410005 or 410015 circuit card for segment affected. Replace 410002 circuit card. Go to 8.	Go to 4.

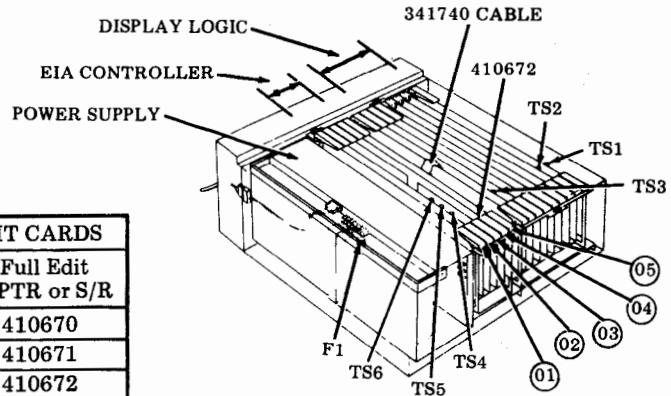
4. B. Display Logic (Cont)

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
4. With TS3 depressed is a black and white bar pattern generated on the display with bars that are 4 character positions wide as shown below?  WHITE BARS (4 Char Wide) BLACK BACKGROUND (4 Char Wide) TS3 Test Pattern <i>Note: Pattern is not necessarily centered on the display as illustrated.</i>	Go to 5.	Go to 6.
5. Remove 341740 cable. Depress TS3. Is the test pattern from Question 4 still generated on the display?	Replace 410002 circuit card.	Trouble is in controller. Go to 4. C. Controller for 40/1 Applications or 4. D. Controllers for 40/0 Applications.
6. With TS3 depressed, is a black and white bar pattern generated on the display with white bars 4 character positions wide and black bars 12 character positions wide as shown below?  SEGMENT MARKER WHITE BARS (4 Char Wide) BLACK BACKGROUND (12 Char Wide) TS3 Test Pattern <i>Note: Pattern is not necessarily centered on the display as illustrated.</i>	Replace 410004, 410014, 410005 or 410015 circuit card for the segment indicated by the segment marker displayed in the test pattern.	Go to 7.

4.B. Display Logic (Cont)

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
7. With TS3 depressed, is a black and white bar pattern generated on the display with bars that are 8 character positions wide as shown below?  TS3 Test Pattern	Replace 410003 circuit card. <i>Note: Pattern is not necessarily centered on the display as illustrated.</i>	Replace 410001 (or 410009 or 410018) circuit card.
8. With TS3 depressed, do the cursor and first segment marker come to rest in a stationary condition at the HOME position?	Display logic is good. Trouble is elsewhere.	Replace 410003 circuit card.

4.C. Controller For 40/1 Applications



EIA CONTROLLER CIRCUIT CARDS		
Pos	Basic Edit W/PTR or S/R	Full Edit W/PTR or S/R
01		410670
02	410671	410671
03	410672	410672
03		410676
04	410670	410675
05	410669	410674
Wired Frame	341907	341909

Note: If trouble is not cleared after replacing all components listed, check or replace wired frame.

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
1. Does the terminal have a Basic Edit EIA controller?	Go to 2. (Basic Edit)	Go to 14. (Full Edit)
2. Can anything be entered from the opcon onto the display?	Go to 4.	Go to 3.
3. Depress TS4 test switch on 410671 circuit card. Are any characters generated on the display?	Go to 4.	Replace 410669 circuit card. Replace 410671 circuit card. Check 341740 cable (controller/display logic).
4. Can characters be entered from the opcon and displayed properly (local mode)?	Go to 5.	Replace 410672 circuit card. Replace 410669 circuit card. Go to Section 582-211-500 (Opcon, Troubleshooting).
5. Do mode selection and editing features operate properly?	Go to 6.	Replace 410669 circuit card. Replace 410672 circuit card. Go to Section 582-211-500 (Opcon, Troubleshooting).

4.C. Controller For 40/1 Applications (Cont)

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
6. Can the terminal send and receive properly on-line?	Go to 11.	Go to 7.
7. Enter U*U* pattern across the first line of display. Home the cursor, depress the REC key on the opcon and place the data set in the data mode. Depress TS5 test switch on 410671 circuit card. Does the cursor move across the line?	Go to 9.	Go to 8.
8. Enter U*U* pattern across the first line of display. Home the cursor and depress the REC key on the opcon. Depress TS6 test switch on 410671 circuit card. Are the *s changed to Us as the cursor moves across the line?	Check data set and interface cable (341896).	Replace 410671 circuit card. Replace 410669 circuit card.
9. Were the *s changed to Us as the cursor moved across the line?	Go to 10.	Replace 410671 circuit card. Replace 410669 circuit card.
10. Enter *U*U pattern across the first line of display. Home the cursor, depress the REC key on the opcon, and place the data set in the data mode. Depress TS5 test switch on 410671 circuit card. Are the Us changed to *s as the cursor moves across the line?	Check data set and transmission lines.	Replace 410671 circuit card. Replace 410669 circuit card.
11. Does the terminal have a printer?	Go to 12.	Go to 13.

4. C. Controller For 40/1 Applications (Cont)

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
12. Does the printer receive properly in response to PRINT LOCAL and PRINT ON-LINE?	Go to 13.	Replace 410670 circuit card. Go to 4. E. 40C103 ROP Controller. Go to Section 582-210-500 (Printer, Troubleshooting).
13. Does the send/receive mode operate properly?	Controller is good. Trouble is elsewhere.	Replace 410670 circuit card. Replace 410669 circuit card.
14. Can anything be entered from the opcon onto the display?	Go to 16.	Go to 15.
15. Depress TS4 test switch on 410671. Is a ? or S _B character generated on the display?	Replace 410672 circuit card. Replace 410675 circuit card. Go to Section 582-211-500 (Opcon, Troubleshooting).	Replace 410675 circuit card. Replace 410674 circuit card. Replace 410002 circuit card in the display logic. Replace 341740 cable (controller/display logic).
16. Can characters be entered from the opcon and displayed properly (local mode)?	Go to 17.	Replace 410672 circuit card. Replace 410674 circuit card. Replace 410002 circuit card in the display logic. Replace 341740 cable (controller/display logic). Go to Section 582-211-500 (Opcon, Troubleshooting).
17. Do mode selection, editing and alarm features operate properly?	Go to 18.	Replace 410675 circuit card. Replace 410672 circuit card. Replace 410674 circuit card. Replace 410002 circuit card in the display logic. Replace 341740 cable (controller/display logic).

4. C. Controller For 40/1 Applications (Cont)

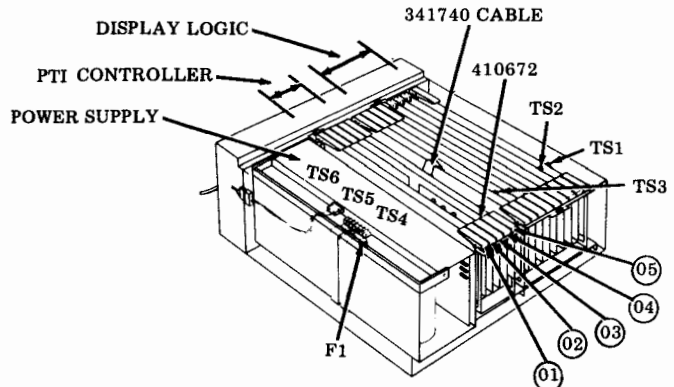
ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
17 (Cont)		Go to Section 582-211-500 (Opcon, Troubleshooting).
18. Can the terminal send and receive properly on line?	Go to 23.	Go to 19.
19. Enter U*U* pattern across the first line of display. Home the cursor, depress the REC key on the opcon, and place the data set in the data mode. Depress TS5 test switch on 410671 circuit card. Does the cursor move across the line?	Go to 21.	Go to 20.
20. Enter U*U* pattern across the first line of display. Home the cursor and depress the REC key on the opcon. Depress TS6 test switch on the 410671 circuit card. Are the *s changed to Us as the cursor moves across the line?	Check data set and interface cable (341896).	Replace 410671 circuit card. Replace 410674 circuit card. Replace 410675 circuit card.
21. Were the *s changed to Us as the cursor moved across the line?	Go to 22.	Replace 410671 circuit card. Replace 410674 circuit card.
22. Enter *U*U pattern across the first line of display. Home the cursor, depress the REC key on the opcon, and place the data set in the data mode. Depress TS5 test switch on 410671 circuit card. Are the Us changed to *s as the cursor moves across the line?	Check data set and transmission lines.	Replace 410671 circuit card. Replace 410674 circuit card.
23. Does the set respond properly to control characters and sequences?	Go to 24.	Replace 410674 circuit card. Replace 410675 circuit card. Replace 410670 circuit card (if equipped).

4. C. Controller For 40/1 Applications (Cont)

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
24. Are proper escape sequences sent on line?	Go to 25.	Replace 410676 circuit card. Replace 410675 circuit card. Replace 410674 circuit card. Replace 410002 circuit card in the display logic.
25. Are the proper line ending sequences (LF, CR LF, or CR CR LF) sent on line?	Go to 26.	Replace 410675 circuit card. Replace 410674 circuit card.
26. Does the send/receive mode operate properly.	Go to 27.	Replace 410670 circuit card. Replace 410674 circuit card.
27. Does the printer receive properly in response to PRINT LOCAL and PRINT ON LINE?	EIA controller is good. Trouble is elsewhere.	Replace 410670 circuit card. Replace 410674 circuit card. Go to 4. E. 40C103 ROP Controller. Go to Section 582-210-500 (Printer, Troubleshooting).

4.D. Controller For 40/0 Applications

PTI Controller Circuit Cards	
Pos	Full Edit
01	410678
02	410677
03	410672
03	410676
04	410674
Wired Frame	341908



Note: If trouble is not cleared after replacing all components listed, check or replace wired frame.

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
1. Can anything be entered from the opcon onto the display?	Go to 3.	Go to 2.
2. Depress TS6 test switch on 410677 circuit card. Are any characters generated on the display? Does the LOCAL lamp go OFF while TS6 is depressed?	Go to 3.	Replace 410675 circuit card. Replace 410674 circuit card.
3. Can characters be entered from the opcon and displayed properly?	Go to 4.	Replace 410672 circuit card. Go to Section 582-211-500 (Opcon, Troubleshooting). Replace 410674 circuit card. Replace 410002 circuit card in the display logic.
4. Do mode selection, editing and alarm features operate properly?	Go to 5.	Replace 410675 circuit card. Replace 410672 circuit card. Go to Section 582-211-500 (Opcon, Troubleshooting). Replace 410002 circuit card in the display logic.

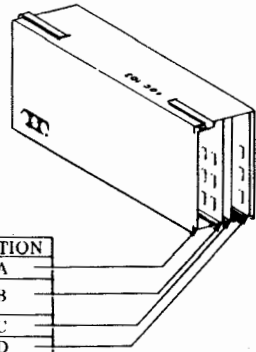
4. D. Controller For 40/0 Applications (Cont)

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
5. Depress TS5 test switch on 410677 circuit card. Is any character generated on the display?	Go to 6.	Replace 410675 circuit card. Check 341740 cable (controller/display logic). Replace 410677 circuit card.
6. Can characters be received properly? (Use TSG803 Test Set if available.)	Go to 7.	Replace 410677 circuit card. Replace 410674 circuit card.
7. Does the set respond properly to control characters and sequences?	Go to 8.	Replace 410674 circuit card. Replace 410675 circuit card. Replace 410678 circuit card (if equipped).
8. Depress TS4 test switch on 410677 circuit card. Does the cursor step when TS4 is depressed?	Go to 9.	Replace 410676 circuit card. Replace 410675 circuit card.
9. Can characters be sent properly? (Use TSG803 Test Set if available.)	Go to 10.	Replace 410677 circuit card.
10. Are the proper escape sequences generated when sending?	Go to 11.	Replace 410676 circuit card. Replace 410674 circuit card. Check 341740 cable.
11. Are the proper line ending sequences (LF, CR LF, or CR CR LF) sent? Does the set return to the proper mode after message ending character?	PTI controller is good. Trouble is elsewhere.	Replace 410675 circuit card. Replace 410678 circuit card (if equipped).

Note 1: 40C103/AD ROP controller includes a buffer (character storage).

Note 2: 40C103/AE ROP controller does not include a buffer.

Note 3: Troubleshooting for 40C303 integrated controller is provided in Section 582-200-504.



CIRCUIT CARD LOCATION

40C103/AD	40C103/AE	POSITION
410582	410582	JA
410581 or 410585	410587	JB
410580	410580	JC
410583	410583	JD

410581 and 410585 are interchangeable.

4.E. 40C103 ROP Controller

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
1. Does IN SERVICE lamp on ROP opcon fail to light?	Replace 410580 circuit card.	Go to 2.
2. Is the correct test message printed when the TEST (early design designated TRANS START) key on the ROP opcon is depressed, and does the TEST or TRANS START lamp turn ON?	Go to 3.	Replace 410583 circuit card. Replace 410582 circuit card. Replace 410580 circuit card.
3. Are messages received on-line? (Are reverse channel and the interrupt feature operating properly?)	Go to 4.	Check data set and transmission line facilities. Replace 410580 circuit card. Replace 410582 circuit card.
4. Do messages received on-line contain errors? (Does the DATA ERROR lamp, if used, remain OFF when errors are received, or turn ON when errors are not received?)	Replace 410580 circuit card. Replace 410582 circuit card. Replace 410584 circuit card (interconnecting).	If controller code is 40C103/AE, go to 5. If controller code is 40C103/AD, go to 6.
5. Does data stacking feature operate properly — no loss of characters (40C103/AE)? <i>Note:</i> Data stacking prevents data loss by placing more characters on printed lines (no buffer).	ROP controller is OK. Trouble is elsewhere.	Check to see that controller has a 410587 circuit card in position JB, Issue 2 or later. Check to see that Option 38.a. on 410582 is enabled. Replace 410582 circuit card.

4.E. 40C103 ROP Controller (Cont)

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
6. Is the buffer (character storage) operating properly — no lost characters or blocks of characters, no erroneous message termination, etc?	ROP controller is OK. Trouble is elsewhere.	Replace 410581 or 410585 circuit card. <i>Note:</i> These two cards are interchangeable. Replace 410580 circuit card. Replace 410582 circuit card.

4.F. Data Set and Transmission Lines

ANALYSIS QUESTION	"YES" RESPONSE DIRECTIVE	"NO" RESPONSE DIRECTIVE
1. Can phone connection be originated and answered in the Talk mode following standard procedures (normal voice clarity and volume).	Go to 2.	Check handset portion of data set. Check phone line connection to central office.
2. Is the TALK lamp on the data set ON when calls are answered manually in the Talk mode?	Go to 3.	Data set problem. Check ac to data set.
3. Does the station answer calls automatically in the Data mode when the AUTO key is locked down (POL lamp ON if present, or set in the receive mode)?	Go to 4.	Check data set. Check EIA controller in set.
4. Can Data mode be established with the Data Test Center in the Send, Receive, and Send/Receive modes?	Go to 5.	Check data set. Check EIA or RO controller in set.
5. Perform the loop back test with the Data Test Center. (Operate TS10 TEST key on the data set in the Talk mode and hang up.) Is the test good?	Go to 6.	Check or replace data set.
6. Can extended messages be sent to or received from any remote data station without error on repeated calls?	Place in service.	Check transmission facilities.

"DATASPEED*" 40/0 and 40/1 SETS AND STATIONS

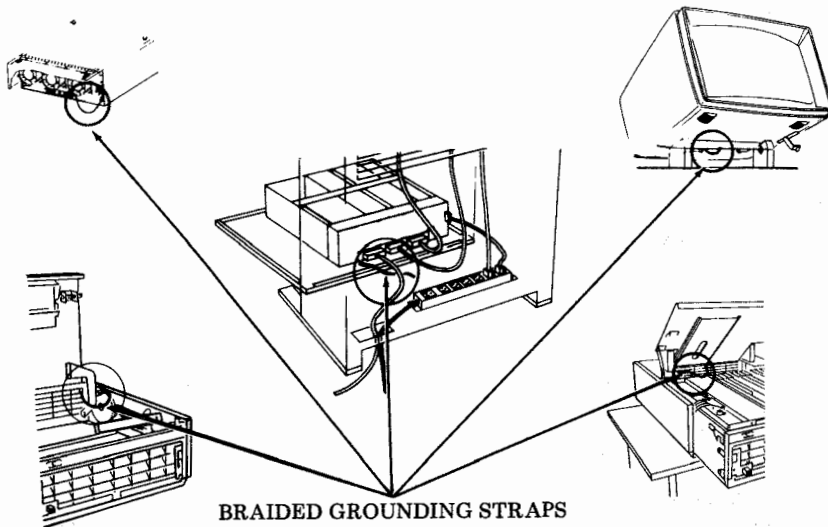
DISASSEMBLY/REASSEMBLY AND PARTS

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MONITOR	4	1.01 This section contains all necessary information on the removal and replacement of various components of the DATASPEED 40/0 Parallel Terminal Interface (PTI) and DATASPEED 40/1 Asynchronous Switched Network sets and stations. The nomenclature DATASPEED 40 is hereafter referred to as 40 type. Similarly, DATASPEED 40/0 and DATASPEED 40/1 are referred to respectively, as 40/0 type and 40/1 type. This section also includes component access information and locations of test switches and indicators used in trouble analysis and testing.	
OPCON	4	1.02 Whenever this section is reissued, the reason for reissue will be listed in this paragraph.	
PRINTER	5	<i>Note:</i> When ordering replaceable components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410055).	
A. ROP or KDP (Adjacent Printer)	5	1.03 For further disassembly procedures of the DATASPEED 40 components beyond disassembly from the set or station refer to the appropriate BSP section in Service Manual 325-057.	
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1.04 Grounding Strap Locations

Note: Remove strapping only when necessary.



1.05 The following caution procedures must be observed during disassembly/reassembly.

Caution 1: Turn off all power or signal sources before removing or replacing any component.

Caution 2: To avoid possible internal damage to circuitry, wear a 346392 static discharge strap connected to ground to allow static discharge before handling circuit cards for removal or replacement. Avoid touching circuit lands and card components as much as possible.



Attach static ground strap tightly to wrist.

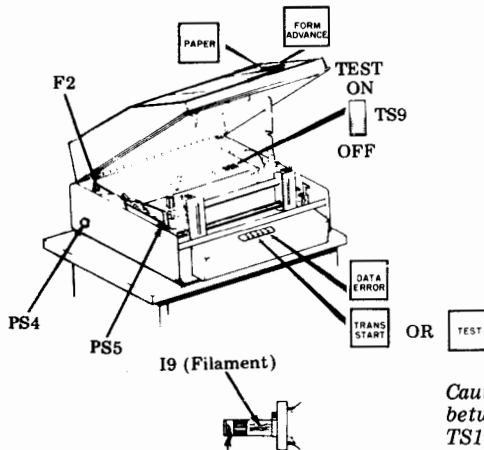


Attach clip end of static discharge strap to frame ground.

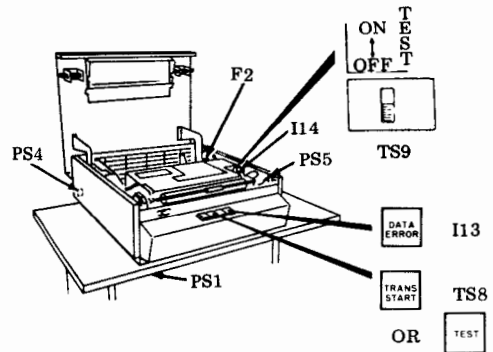
1.06 Test Switches and Indicators

Note: The operation of test switches and use of indicators should be done under the direction of the Troubleshooting analysis procedures.

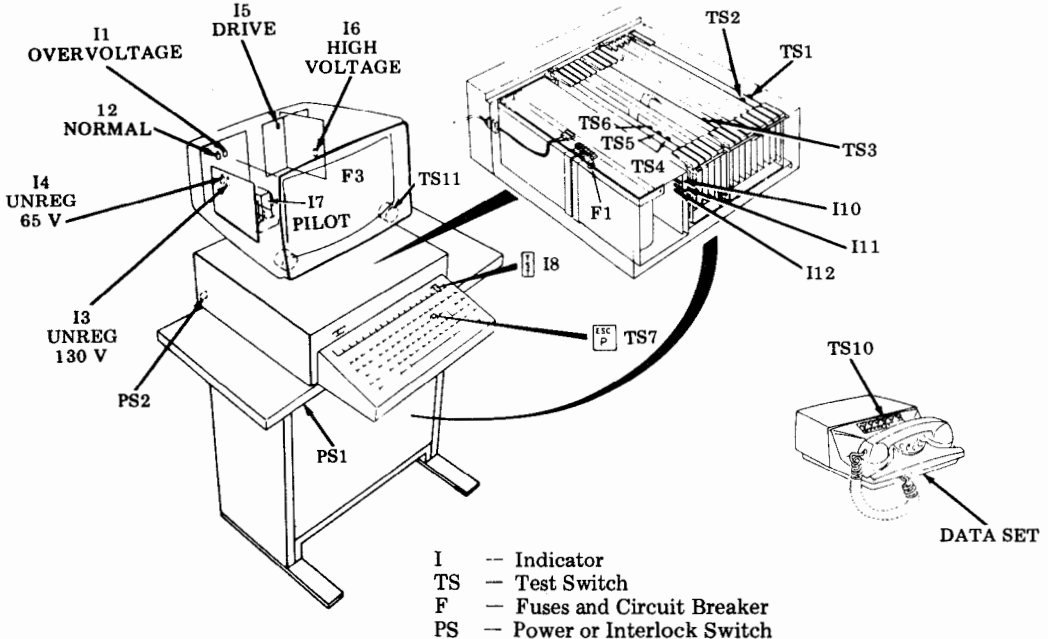
Tractor Feed Printer



Friction Feed Printer



Caution: Avoid placing fingers between cards when depressing TS1-TS6.



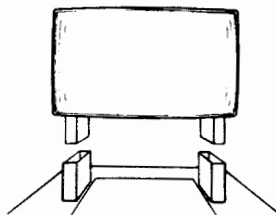
2. DISASSEMBLY/REASSEMBLY

Caution: Remove all power from the set before performing any component replacement or conversions. This does not apply to cover removal for access to test switches, or to power on adjustments of the monitor.

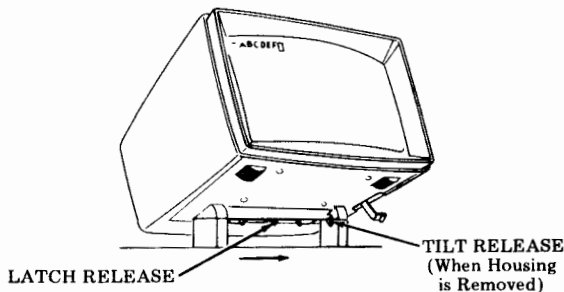
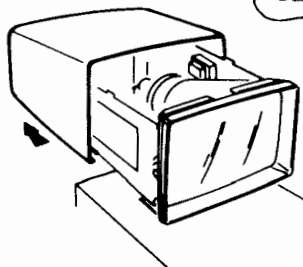
MONITOR

2.01 To remove the monitor, perform Steps 1 and 2.

- ① Removal of entire monitor unit from set: Grasp monitor by sides near supports and simply lift up. Electrical cable connectors are part of support assembly.
- ② Removal of monitor housing: Tilt monitor back and disengage latch. Slide housing back partially. Position monitor to its normal position making sure it locks in that position. Remove housing completely.



WEAR
SAFETY
GLASSES

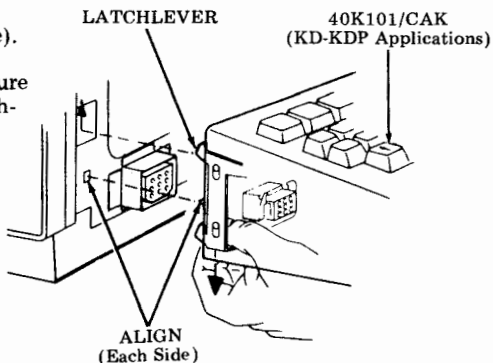


OPCON

2.02 To remove the opcon, perform Steps 1, 2 and 3.

- ① Place thumb on inward tab of console (both sides).
- ② Press downward into unlatched position (each side).
- ③ Remove console. (When replacing console, make sure locating pins are fully engaged before pushing latch-levers upward into locked position.)

Note: The 40K001/AAA used in ROP applications is removed in similar manner.



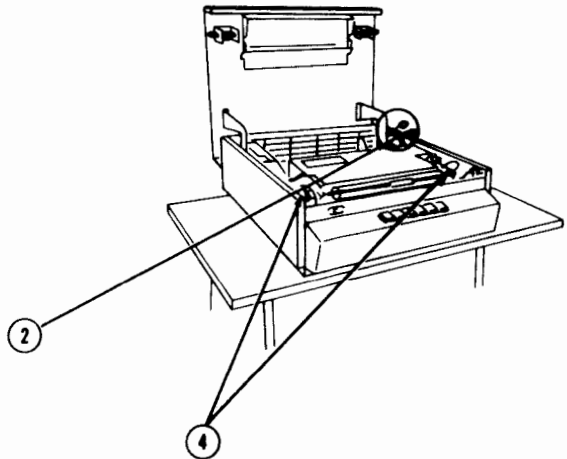
PRINTER

A. ROP or KDP (Adjacent Printer)

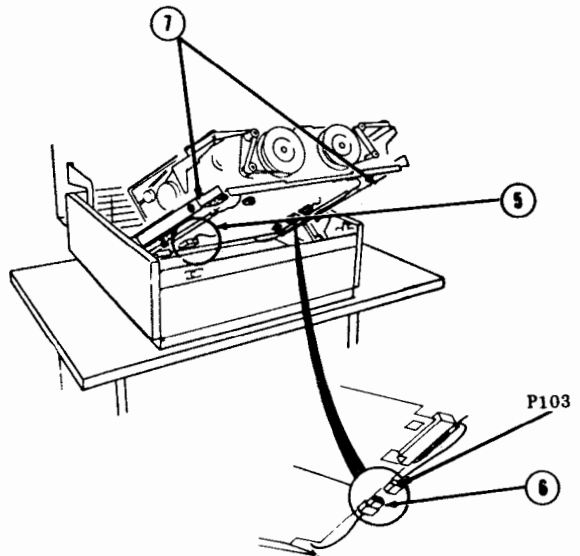
2.03 To remove the friction feed printer, perform Steps 1, 2, 3, 4, 5, 6 and 7.

Note: The printer logic circuit card can be removed after Step 4 of disassembly. If printer is not being removed omit Steps 2 and 3.

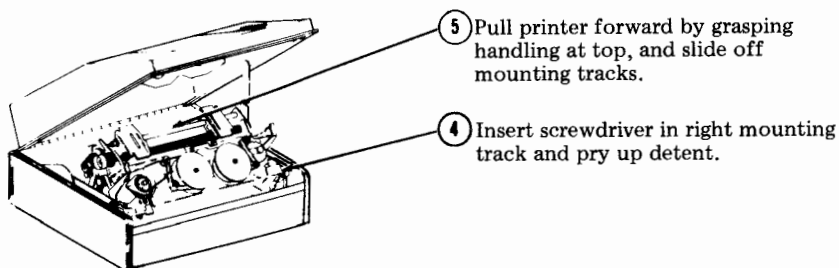
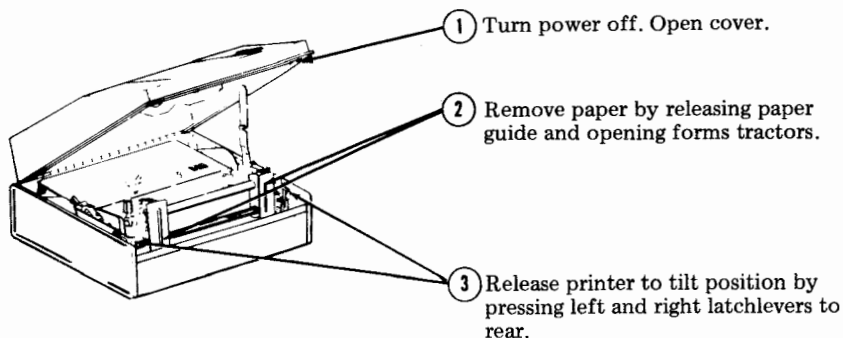
- ① Turn power off. Open cover.
- ② Disconnect the interlock cable (P106) connector.
- ③ Remove paper roll.
- ④ Release printer and raise to the tilt position by depressing the left and right release levers and lifting printer.



- ⑤ Disconnect the 115 V ac connector.
- ⑥ Disconnect SSI cable (P103) from printer cable.
- ⑦ Release (push in) the printer slide detents and pull the printer out by grasping it by the frame (front bottom).

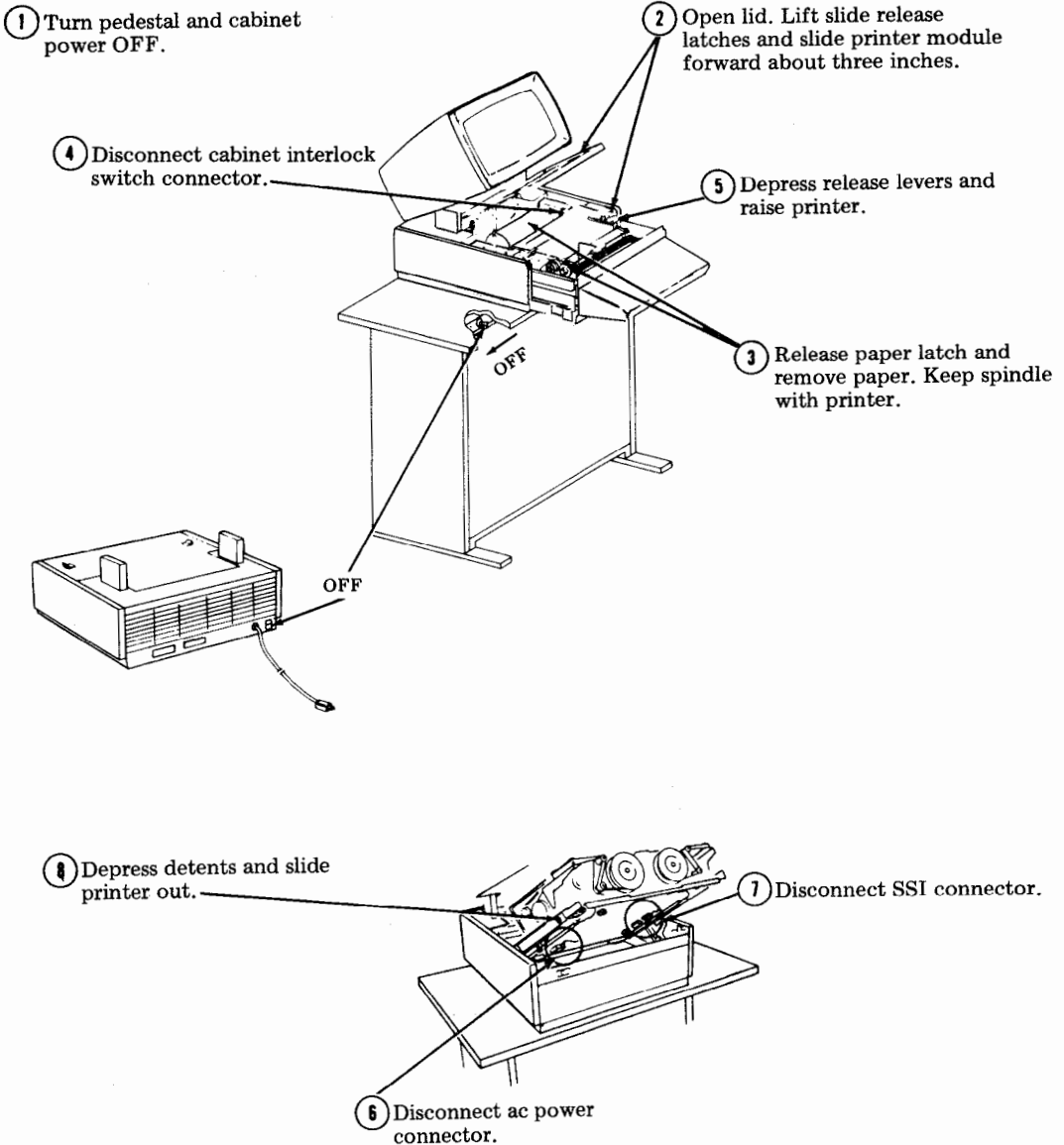


- 2.04 To remove the tractor feed printer, 80- and 132-column printers (printer shown is 80-column), perform Steps 1, 2, 3, 4 and 5. In reassembly make sure connectors at rear are fully connected.



B. KDP (Printer Under Monitor)

2.05 To remove the friction feed printer, perform Steps 1, 2, 3, 4, 5, 6, 7 and 8.



ELECTRONICS PACKAGE

A. KD-KDP (Logic Under Monitor)

2.06 To access the logic, perform Steps 1, 2 and 3.

- ① Open lid.
- ② Insert fingers as shown and lift then pull module forward.

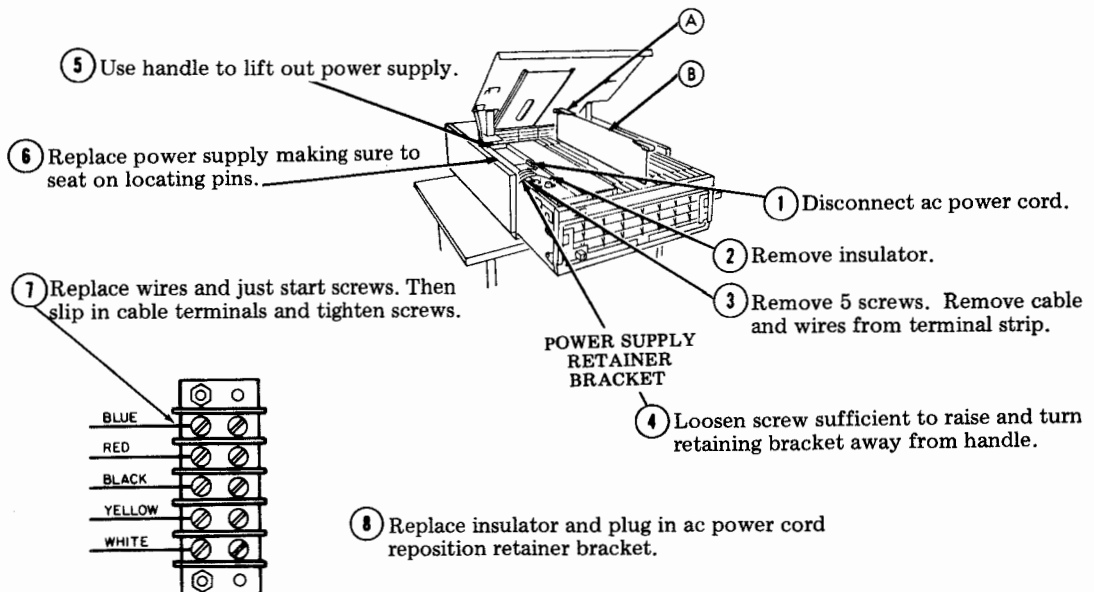
Note: Do not attempt to lift at opcon (if present).

- ③ Move module forward until blocked by latch to provide sufficient clearance for card removal.

2.07 To remove circuit cards (Steps A and B):

- A. Lift extractor handle(s) carefully.
- B. Remove circuit card.

2.08 To remove and replace power supply (Steps 1 through 8):

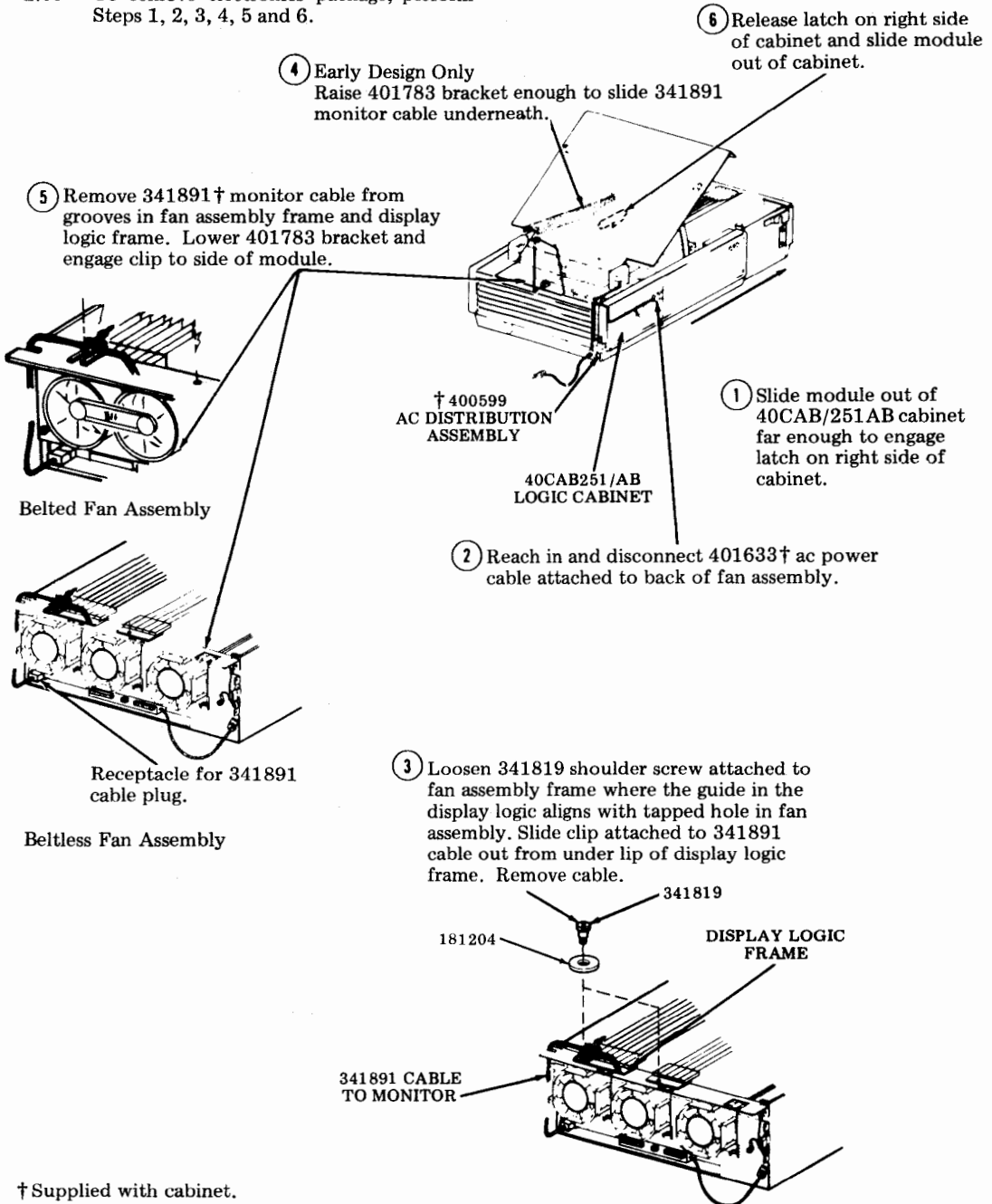


- ⑤ Use handle to lift out power supply.
- ⑥ Replace power supply making sure to seat on locating pins.
- ⑦ Replace wires and just start screws. Then slip in cable terminals and tighten screws.
- ① Disconnect ac power cord.
- ② Remove insulator.
- ③ Remove 5 screws. Remove cable and wires from terminal strip.
- ④ Loosen screw sufficient to raise and turn retaining bracket away from handle.
- ⑧ Replace insulator and plug in ac power cord reposition retainer bracket.

POWER SUPPLY RETAINER BRACKET

BLUE
RED
BLACK
YELLOW
WHITE

2.09 To remove electronics package, perform Steps 1, 2, 3, 4, 5 and 6.



† Supplied with cabinet.

B. KDP (Logic in Pedestal)

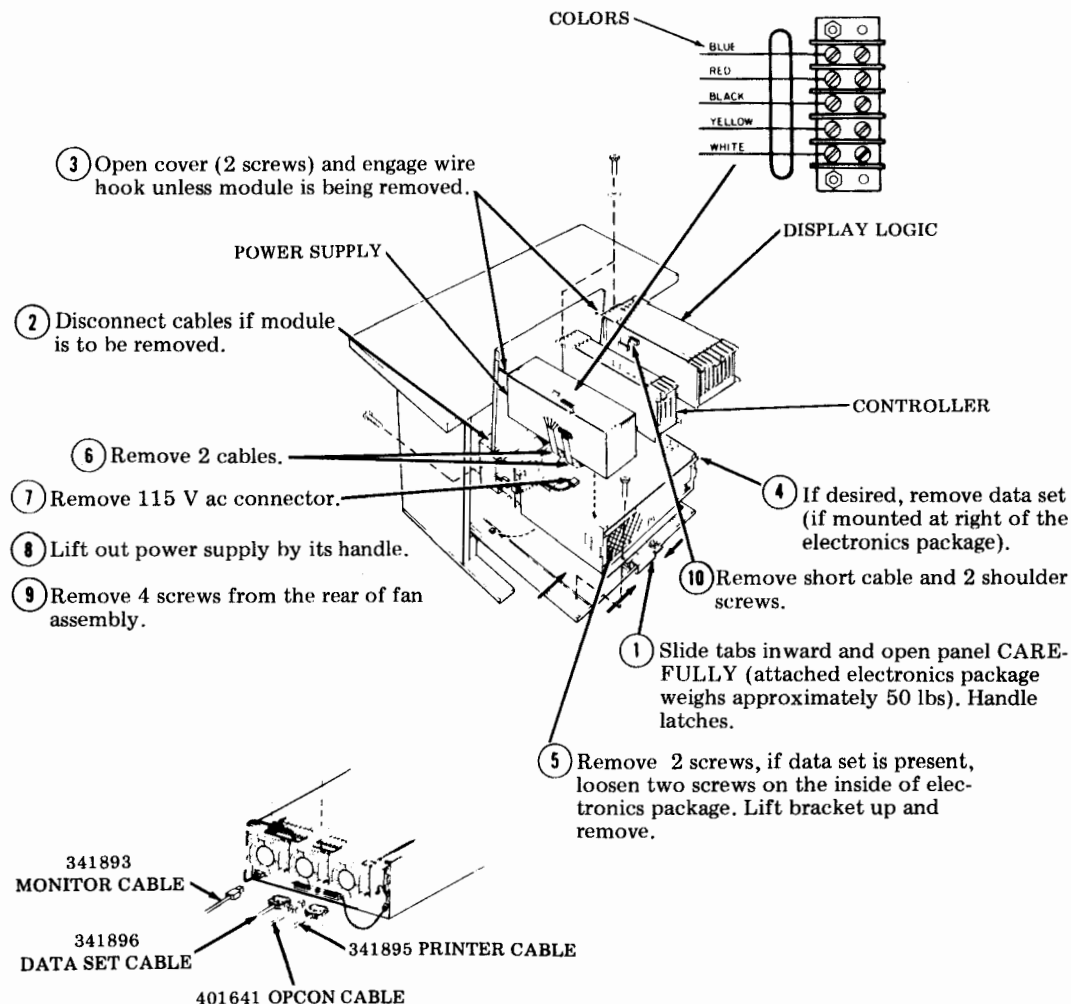
2.10 To remove power supply, perform Steps 1, 3, 6, 7 and 8. To reinstall power supply, seat it on locating pins in the base of the enclosure. Cables are routed over handle.

2.11 To remove fan assembly, perform Steps 1, 2, 3, 7 and 9.

2.12 To remove controller, perform Steps 1, 2, 3, 6, 7, 8, 9 and 10.

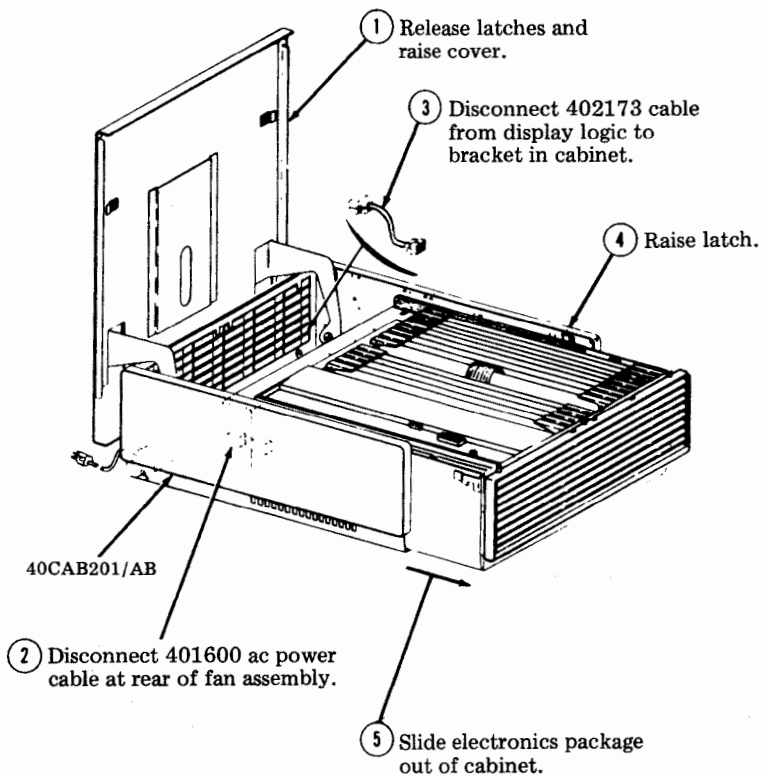
2.13 To remove display logic, perform Steps 1, 2, 3, 6, 7, 8, 9 and 10. (see WIRED FRAME REMOVAL).

2.14 To remove electronics package enclosure, perform Steps 1, 2, 3, 4 and 5.



C. KDP (Logic in Adjacent Cabinet)

2.15 To remove electronics package, perform Steps 1, 2, 3, 4 and 5.



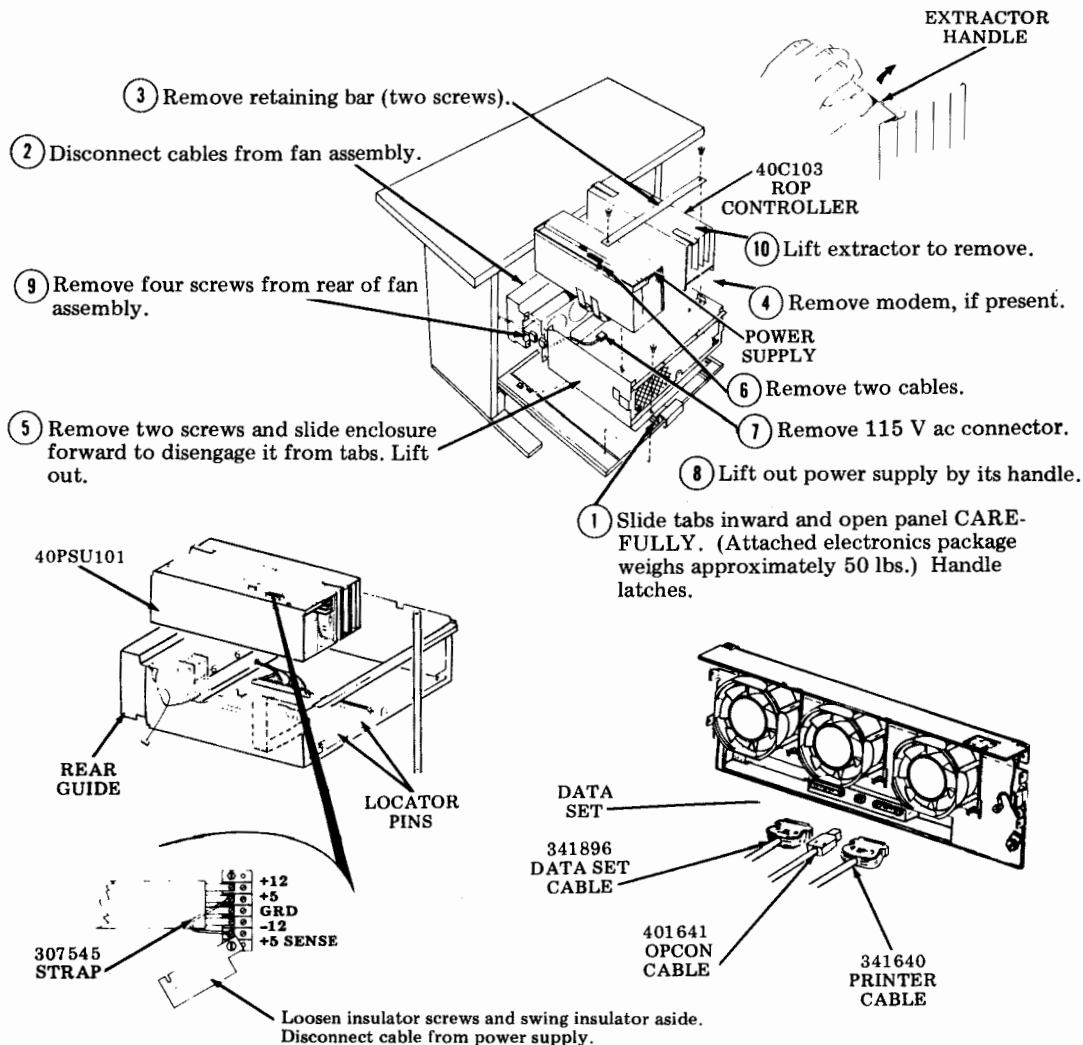
D. ROP Electronics Package Removal

2.16 To remove power supply, perform Steps 1, 3, 6, 7 and 8.

2.17 To remove controller, perform Steps 1, 3 and 10.

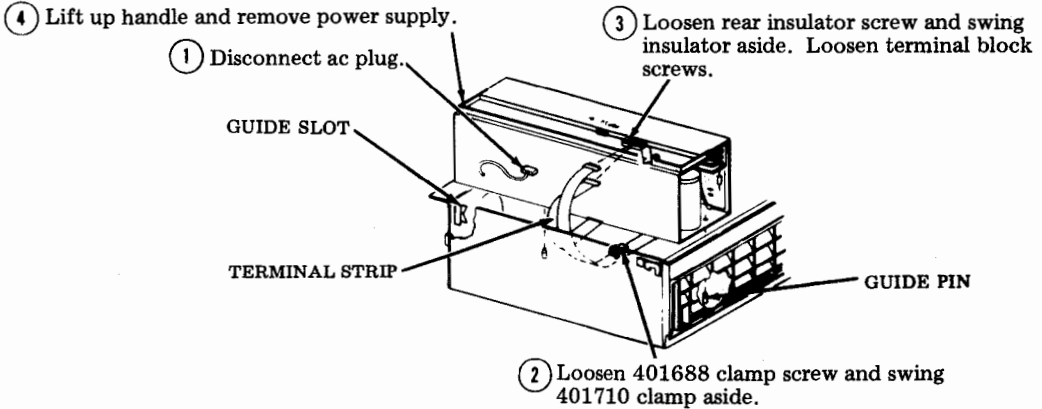
2.18 To remove fan assembly, perform Steps 1, 2, 7 and 9.

2.19 To remove electronics package enclosure, perform Steps 1, 2, 4 and 5.



Note: To reinstall power supply, seat it on the locating pins in the base of the enclosure. The cables are routed over the handle.

2.20 To remove power supply, perform Steps 1, 2, 3 and 4. To replace power supply, place display logic cable on terminal strip (flat terminals) and then controller cable (formed terminals) on top, and tighten screws.



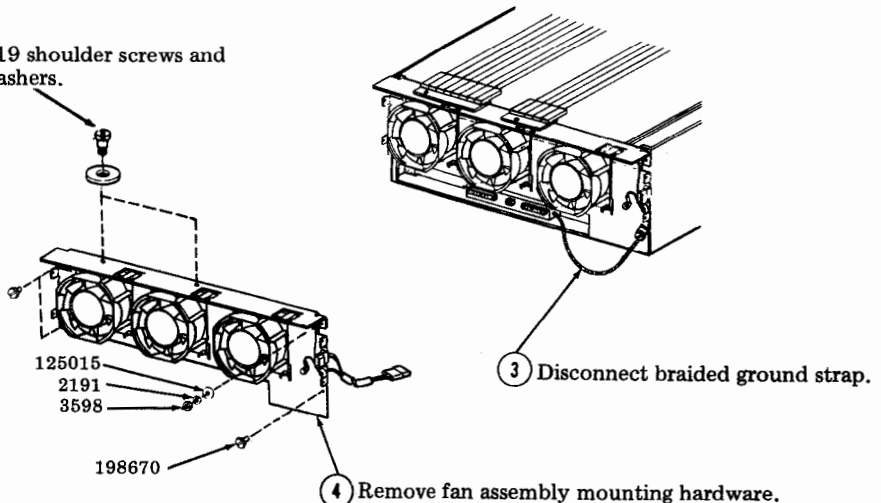
WIRED FRAME REMOVAL

A. KD-KDP (Logic Under Monitor or Adjacent Logic)

2.21 To remove controller and display logic wired frame, perform Steps 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10.

① Remove power supply as in paragraph 2.20.

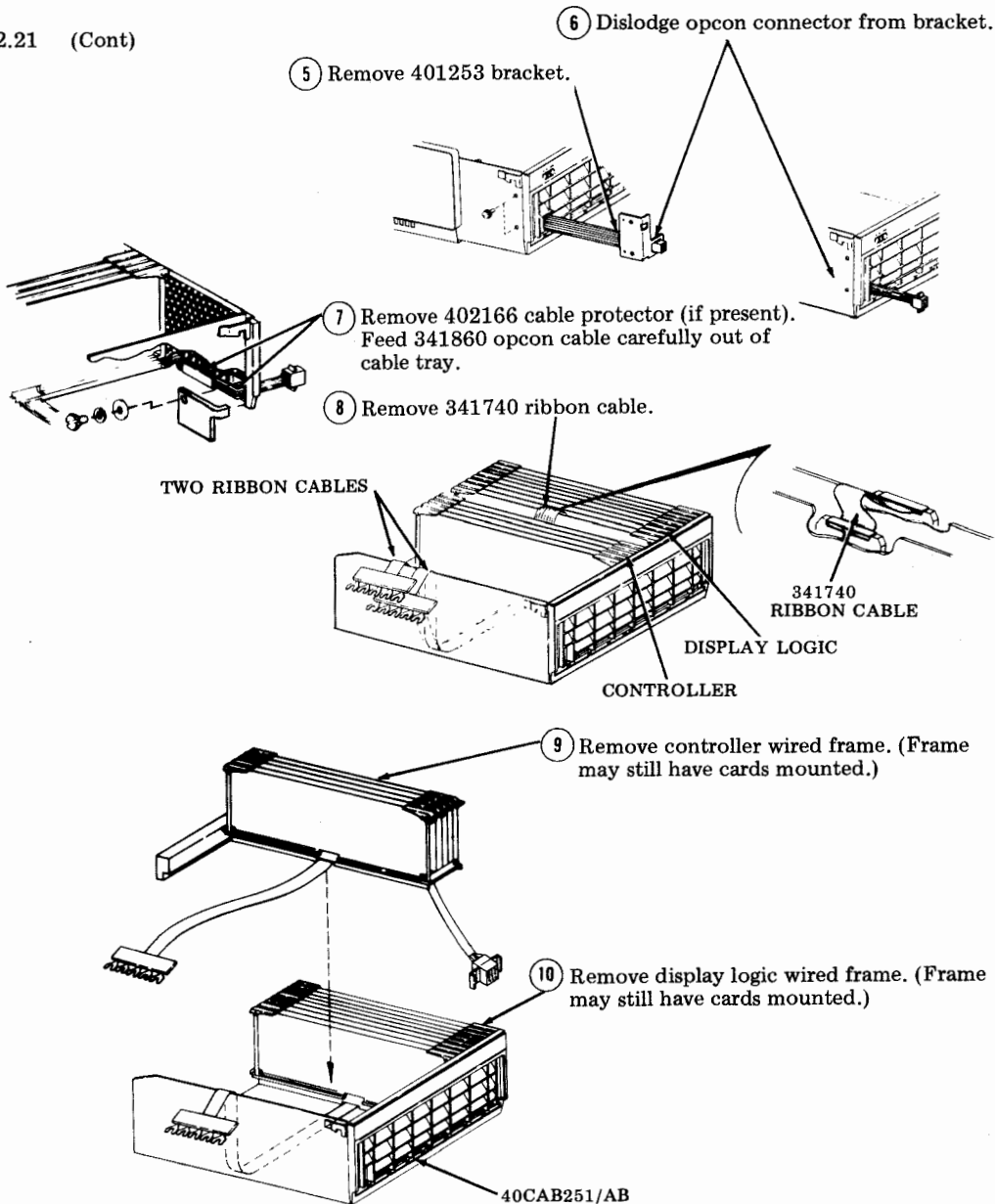
② Remove 341819 shoulder screws and 181204 flat washers.



WIRED FRAME REMOVAL (Cont)

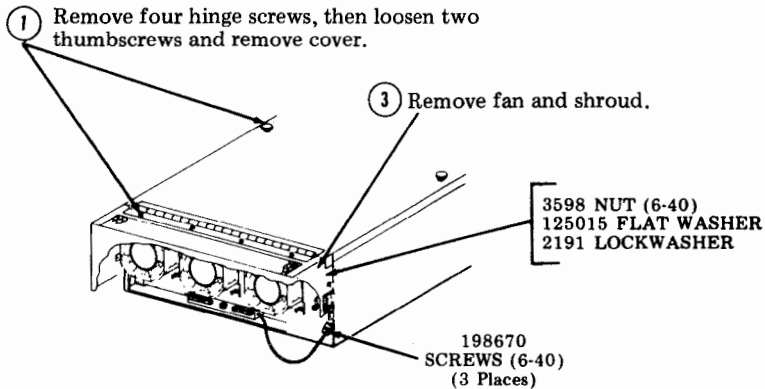
A. KD-KDP (Logic Under Monitor or Adjacent Logic) (Cont)

2.21 (Cont)

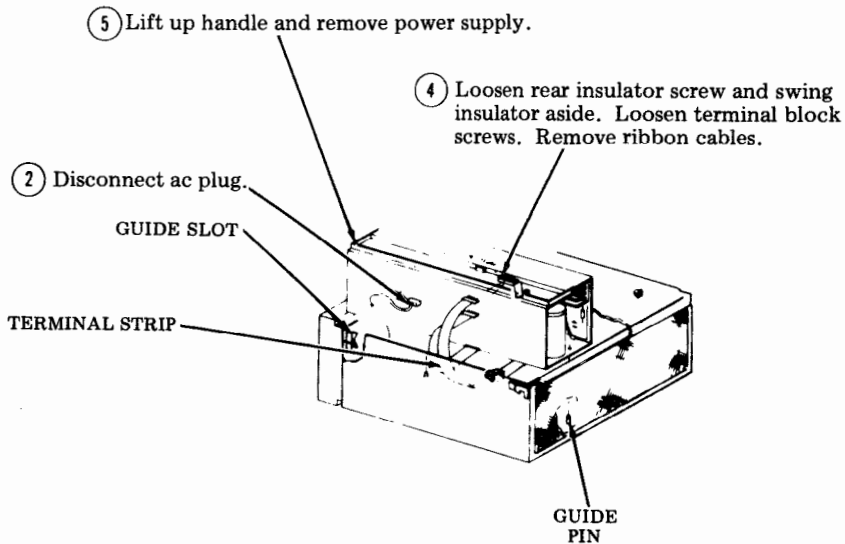


B. KD-KDP (Logic in Pedestal)

2.22 To remove controller and display logic wired frames, perform Steps 1, 2, 3, 4 and 5. To replace power supply, place display logic cable on terminal strip (flat terminals) and then controller cable (formed terminals) on top, and tighten screws.



(Rear of Fan Assembly)

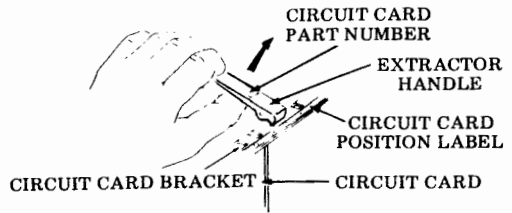


CIRCUIT CARD REMOVAL

2.23 To remove KD-KDP controller or display logic circuit card, perform Steps 1 and 2.

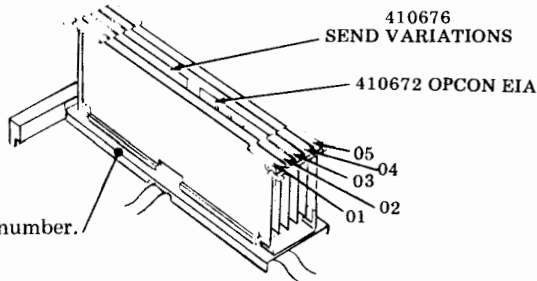
- ① Lift up on extractor handle and lift straight up.

Caution: Wear 346392 static discharge strap when removing circuit cards. See 1.05 Cautions 1 and 2.



- ② To replace the controller circuit card, place card in slot, then depress gently but firmly until card is fully seated.

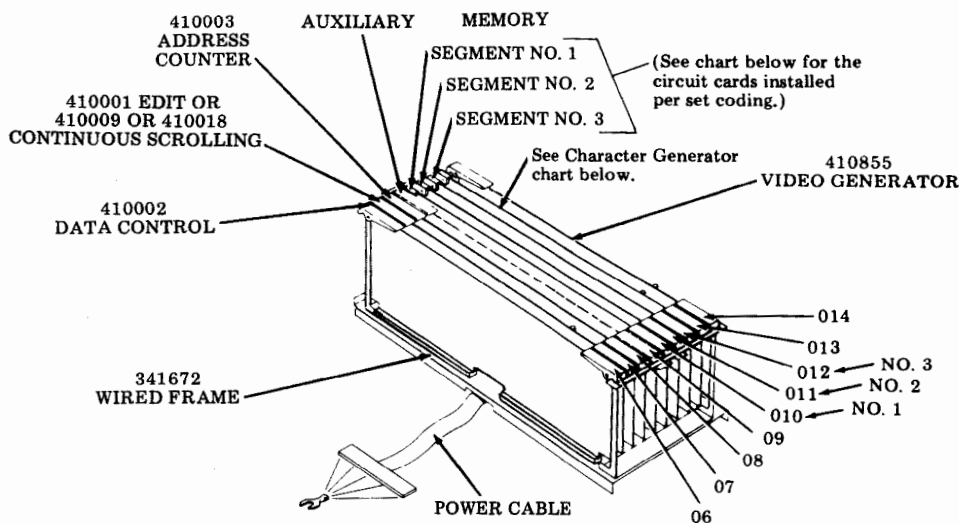
A. KD-KDP Controller



See chart for wired frame number.

Position	Basic Edit		Full Edit			PTI		Card Description
	40C102/AB	40C102/AC	40C202/BC	40C202/BD	40C202/BG	40C204/BA	40C204/BB	
01				410670				S/R and Printer
							410678	External Mode Control
02	410671	410671	410671	410671				EIA Interface
						410677	410677	PTI Interface
03	410672	410672	410672	410672	410672	410672	410672	Opcon Interface
			410676	410676	410676	410676	410676	Send Variations
04	410670							S/R and Printer
			410675	410675	410675	410675	410675	Message Control
05	410669	410669						40-Type Control
			410674	410674	410674	410674	410674	Data Bus and Decode
Wired Frame	341907	341907	341909	341909	341909	341908	341908	

B. Display Logic



POSITION NUMBER	40DL291/ZZ	40DL291/BR	40DL291/BS	CIRCUIT CARD DESCRIPTION
06	410002	410002	410002	Data Control
07	410001	410018	‡	Edit
08	410003	410003	410003	Address Counter
09	—	—	—	—
010	—	—	—	Memory Segment No. 1 §
011	—	—	—	Memory Segment No. 2 §
012	—	—	—	Memory Segment No. 3 §
013	410657	410657	410657	Cache and Character Generator
014	410855	410855	410855	Video Generator
Wired Frame	341672	341672	341672	—

§ Memory circuit cards (410014 or 410004 — basic edit, 410015 or 410005 — full edit) are ordered separately. The 410014 and 410004 circuit cards are physically and functionally interchangeable, and similarly 410015 and 410005 are physically and functionally interchangeable.

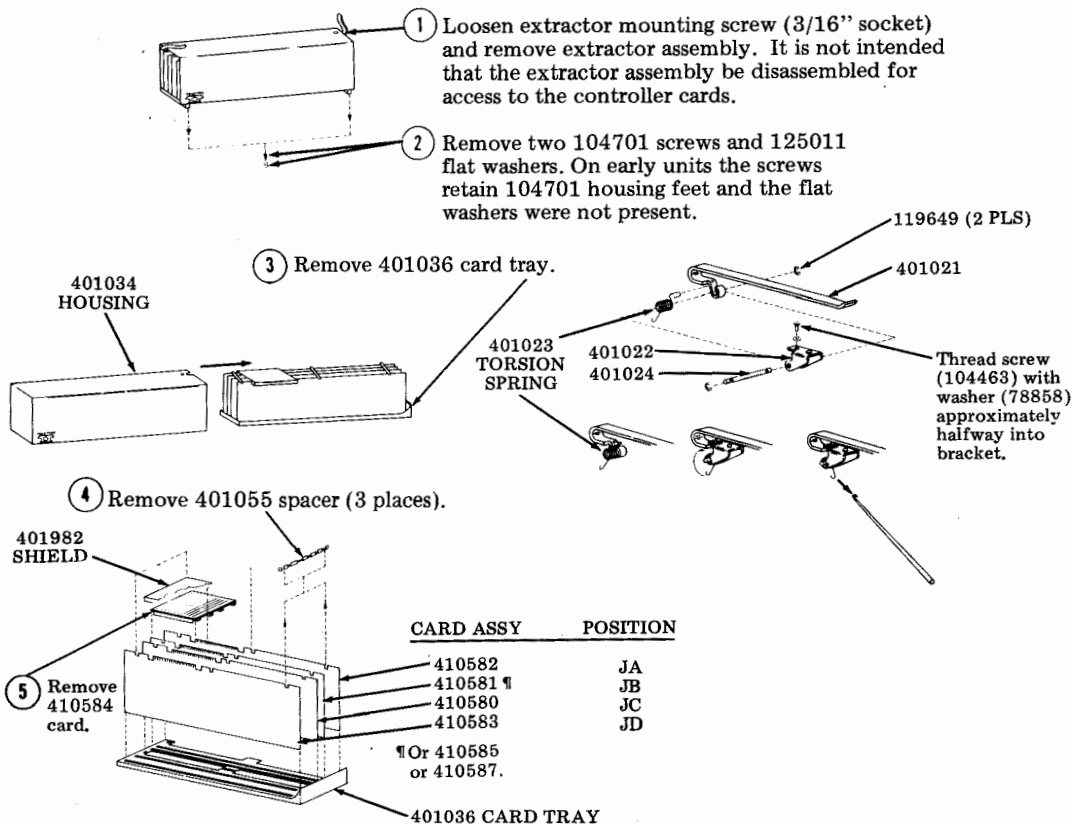
‡ Edit circuit cards (410001 or 410018 which also provides continuous scrolling features) are ordered separately for 40DL291/BS display logic. The 410009 circuit card is manufacture discontinued.

Various cache and character generator circuit cards are available as indicated in the following chart.

CHARACTER GENERATOR OPTIONS	
POSITION 013	DISPLAY TYPE
410657	Standard ASCII
410020	Line Drawing
410021	Fractions
410022	Weather

C. ROP Controller (40C103)

2.24 To disassemble the controller, perform Steps 1, 2, 3, 4 and 5.



¶ Note 1: 410581 and 410585 are interchangeable and are used in 40C103/AD. 410587 used in 40C103/AE.

Note 2: • Issue 1 through 4A of 410580 are compatible only with Issue 1 of 410584.
 • Issue 5A and later of 410580 are compatible only with Issue 2A and later of 410584.
 • Issue 3A and later of 410587 are compatible only with Issue 3A and later of 410584.

3. PARTS

3.01 For parts information on interconnect cables of the DATASPEED 40/0 or DATASPEED 40/1, refer to Section 582-200-400.

3.02 Parts information for individual components (printer, monitor, etc.) are not illustrated in this section. Refer to appropriate BSP Section in Service Manual 325-057.

"DATASPEED*" 40/0 AND 40/1 SETS AND STATIONS

ROUTINE MAINTENANCE

CONTENTS	PAGE
1. GENERAL	1
2. TOOLS AND SUPPLIES	2
3. ROUTINE MAINTENANCE	2
4. OPERATIONAL CHECKOUT	4

1. GENERAL

1.01 This section provides routine maintenance information for DATASPEED 40/0 Parallel Terminal Interface (PTI) and DATASPEED 40/1 Asynchronous Switched Network station applications.

1.02 Whenever this section is reissued, the reason for reissue will be listed in this paragraph.

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

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

Danger 1: Turn off all power and signal sources before removing or replacing any component.

Danger 2: Wear approved safety glasses when the housing of the monitor is removed, as the display tube is fragile in the neck area and is subject to implosion if broken. Be careful not to strike the glass of the tube with tools or components when working in its vicinity (Fig. 1).

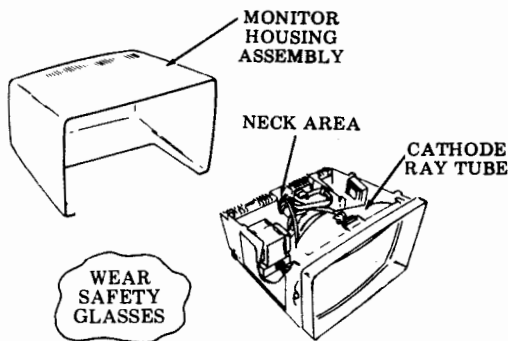


Fig. 1

Warning: To avoid possible internal damage to circuitry, wear a 346392 static discharge strap connected to ground to allow static discharge before handling circuit cards for removal or replacement. Avoid touching circuit lands or components as much as possible (Fig. 2).

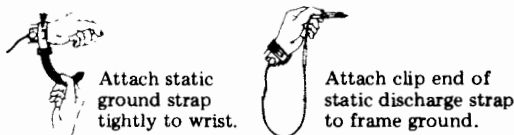


Fig. 2

1.05 Perform the routine maintenance at the customer's convenience. Consider any special maintenance or corrective action requested by the customer or operator.

1.06 This routine is for field use only. Do not attempt repairs without notifying the customer and your supervisor.

*Registered Trademark of AT&TCo.

2. TOOLS AND SUPPLIES

2.01 Tools required for routine maintenance:

- Static discharge strap (346392)
- Safety glasses or goggles (approved)
- Soft bristled brush (1/2 inch collar)
- Vacuum, hand-held (battery or ac type).

2.02 Supplies required for routine maintenance:

- Soft wiping cloths (lint-free)
- Mild detergent (household)
- Container for detergent solution.

3. ROUTINE MAINTENANCE

3.01 The routine required is primarily for the mechanical facilities of each device. This routine is to be performed on each device of a station arrangement, after one year or 2000 hours of service by the station arrangement (whichever occurs first). Routine intervals should be even shorter in dirty or corrosive environments.

3.02 Obtain a station release from attendant, test board, or customer's communication center (give the approximate length of time the station will be out of service). Turn off all power.

3.03 Cleaning routine

Note: On customer location, avoid cleaning methods that spread dust and debris to surrounding areas.

Cabinets, Pedestals and OPCON

(a) Clean all ventilating screens; use a soft bristled brush to remove debris, while vacuuming, see Fig. 3.

(b) Clean exterior surfaces:

(1) Wash with mild detergent solution.

(2) Rinse with damp cloth.

(3) Buff dry with soft cloth.

Monitor

(a) Clean all ventilating slots (top, bottom and sides).

(b) Clean exterior surfaces — wash, rinse and buff.

Warning: Do not use sharp objects, harsh abrasive cleaning agents or solvents which could scratch or damage plastic surfaces.

(c) Interior — brush and vacuum. (See 3.06 for fuse check.)

Note: Dismantling for cleaning shall be kept to a minimum. For monitor disassembly/reassembly procedures, refer to Section 582-213-701.

Fan Assembly — brush and vacuum.

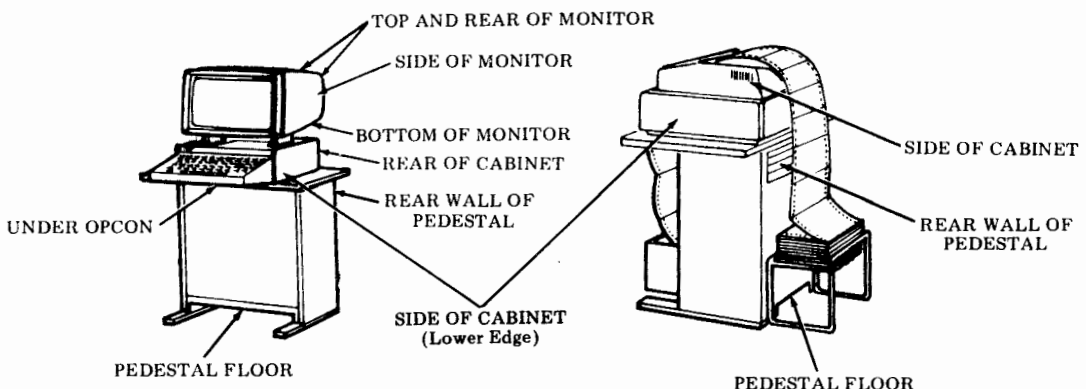
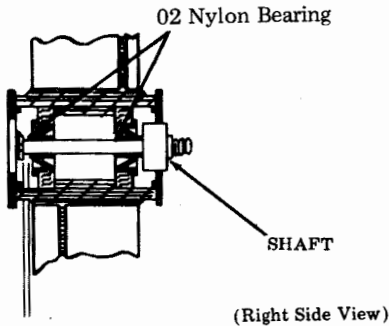


Fig. 3—Ventilating Screen Locations

3.04 Cabinet, pedestals, monitors and OPCONs do not require routine lubrication except for required lubrication of early design belted-type fan assemblies associated with controller logic assemblies. See Fig. 4.

Apply a thin film of grease to the teeth of the 401048 fan belts and 401049 motor belt, using a brush. Manually rotate fan while applying grease. After ventilation assembly has been run briefly, excess grease should be removed from fans.

- O Oil KS-7470
- G Grease KS-7471 (thin film)



Oil (2 drops) to be applied to nylon bearings of the fan blade assemblies only if disassembled.

Note: The 408050 beltless fan assembly does not require routine lubrication.

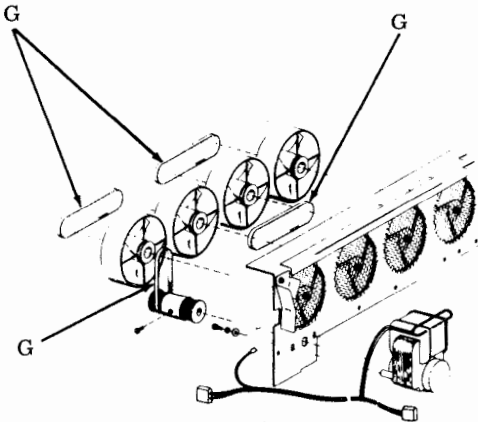


Fig. 4—Lubrication of 401040 Belted-Type Fan Assembly

3.05 Check for and correct any defects in the general appearance of the station:

- All connectors are seated properly and securely.
- Look for pinched or crimped wires or cables.
- Doors and panels open and close properly.
- Latches open easily and close securely.
- Covers are secure.
- Grounding straps.

During servicing or prior to operational checkout, make sure all grounding straps are connected. For ground strap locations, see Fig. 5.

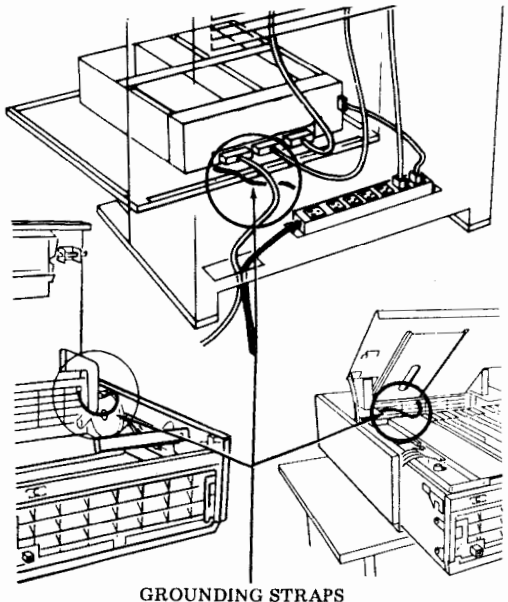
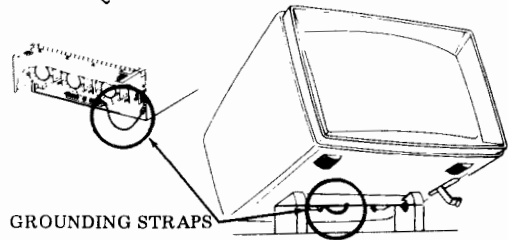


Fig. 5—Grounding Strap Locations

3.06 Check fuses, condition and ratings (fuse ratings are critical, no higher rating than specified shall be used). Refer to Fig. 6 for locations:

Printer = 1 Amp SL-BL MDL-1 (143306)
Power Supply = 5 Amp SL-BL (129920)
Monitor = 1.4 Amp (Special fuse must be marked number 341578).

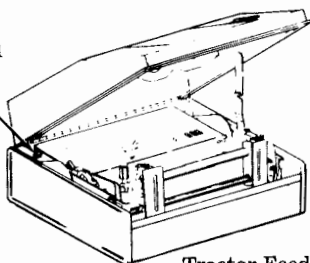
3.07 For printer maintenance routine, see Section 582-210-750.

4. OPERATIONAL CHECKOUT

4.01 After performing routine maintenance, a brief off-line operational checkout should be performed to assure that a working station is being returned to service. Refer to Section 582-200-500 for checkout procedures. Each component of the station (opcon, display monitor, printer, etc) should be subjected to a brief operational checkout.

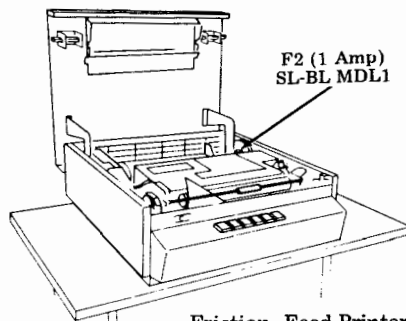
4.02 If checkout was successful, routine is complete. If checkout responses indicate a need for more testing, refer to Section 582-200-500.

F2 (1 Amp)
SL-BL MDL1



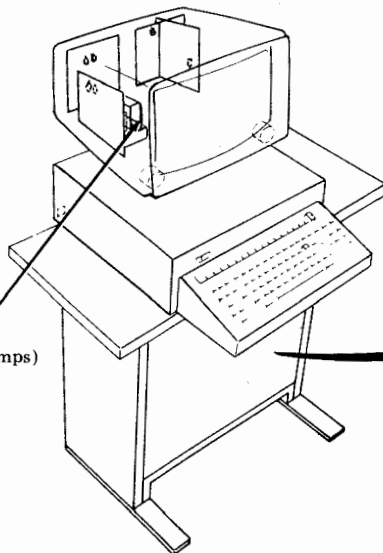
Tractor Feed Printer

F2 (1 Amp)
SL-BL MDL1



Friction Feed Printer

F3 (1.4 Amps)



F1 (5 Amps)

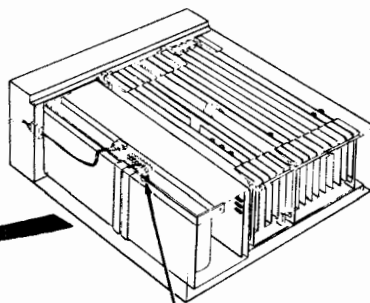


Fig. 6—Fuse Locations