# TELETYPEWRITER
# COMPATIBLE

# dataspeed® 40/2

## TERMINALS

# SERVICE MANUAL

SERVICE MANUAL

FOR

TELETYPEWRITER COMPATIBLE "DATASPEED*" 40/2

For DATASPEED 40 components refer to Service Manual 325-073.

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TELETYPEWRITER COMPATIBLE "DATASPEED*" 40/2

DESCRIPTION AND OPERATION

1. GENERAL

1.01 This practice covers the Teletypewriter Compatible DATASPEED 40 (DATA-SPEED 40/2) Station Arrangements, and provides the information necessary to identify DATA-SPEED 40/2 and associated equipment (supplemental information is referenced and necessary).

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

1.03 Before installation, determine the station configuration.

1.04 When ordering or referring to components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410055).

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2.    SUPPLEMENTAL INFORMATION

BSP Sections

3.    AC POWER AND ENVIRONMENTAL REQUIREMENTS

3.01    Currents and power shown are maximum values based on power company supplied voltages within the limits:

115 ±10% volts ac 60 Hz ±0.45 Hz

3.02    The starting current for the DATASPEED 40/2 is as follows (see Note 1):

KD Terminal     20 amp (see Note 2)
KDP Terminal    25 amp (see Note 2)

*Note 1:*    A single circuit, fused at 10 amps, has been found capable of withstanding the starting load of a KD without data sets.

*Note 2:*    Worst case conditions; for up to 3 cycles.

3.03    The following are the requirements for operating power and heat generation:

|  | Running Current | Watts | BTU |
|---|---|---|---|
| KD Terminal | 2.7 amp | 260 | 885 |
| KDP Terminal — Printer Idle | 2.9 amp | 275 | 940 |
| KDP Terminal — Printer Operating | 4.5 amp | 360 | 1230 |

3.04    Environmental conditions should be maintained within the following limits to avoid damage and provide proper operation.

| ENVIRONMENTAL CONDITION | STORAGE OR TRANSPORTATION | | OPERATION | |
|---|---|---|---|---|
|  | MIN | MAX | MIN | MAX |
| Temperature | -40°F | +150°F | +40°F | +110°F |
| Humidity | 2% | 95% | 2% | 95% |
| Altitude | Sea Level | 50,000 ft | Sea Level | 10,000 ft |

*Note:*    As with any device that can be damaged by water, sudden temperature changes that can cause condensation should be avoided.

Example:    A device stored in subzero temperatures will collect frost when unpacked in a warm humid room.

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4. STATION IDENTIFICATION

4.01 The DATASPEED 40/2 consists of four basic station arrangements:

KD (Keyboard Display)
KDP (Keyboard Display With Printer)
KD-ROP (Keyboard Display With Receive-Only Printer) (See Note 2)
ROP (Receive-Only Printer) (See Note 1)

*Note 1:* The stand-alone ROP used in DATA-SPEED 40/2 applications is the Integrated ROP Station. Information on the Intergrated ROP Station is found in the following BSPs (until these BSPs are available, use FIMP Section 579-505-350):

| | |
|---|---|
| 582-200-104 | General Description |
| 582-200-204 | Installation |
| 582-200-404 | Wiring Diagrams |
| 582-200-504 | Testing and Troubleshooting |

| | |
|---|---|
| 582-200-704 | Component Access and Parts |
| 582-200-754 | Routine Maintenance |
| 999-301-121 | How To Operate Manual (DATA-SPEED 40 Printer) |

*Note 2:* The ROP used in the KD-ROP Station arrangement may be either the Integrated ROP referred to in Note 1, or the ROP equipped with a 40C103/AD or 40C103/AE controller which can only be used at 1200 baud in a DATASPEED 40/2 KD-ROP Station. Information on this ROP can be found in the following BSPs:

| | |
|---|---|
| 579-505-350 | FIMP (DATASPEED 40/1 Terminals) |
| 582-200-100 | General Description |
| 582-200-200 | Installation |
| 582-200-400 | Wiring Diagrams |
| 582-200-500 | Testing and Troubleshooting |
| 582-200-700 | Component Access and Parts |
| 582-200-750 | Routine Maintenance |
| 999-301-121 | How To Operate Manual (DATA-SPEED 40 Printer) |

STATIONS



KD Station

KDP Adjacent Logic

KDP Station

STATIONS (Cont)

40MN101/AA
MONITOR

DATA SET AND
ATTENDANT SET
(See 4.02)

40CAB351/AA
PRINTER CABINET
(See Note 1)

40P151/ZZ
PRINTER
(See Note 1)

401532
TABLE TOP
(29")

401914
TABLE TOP
(24-1/2" Slotted)
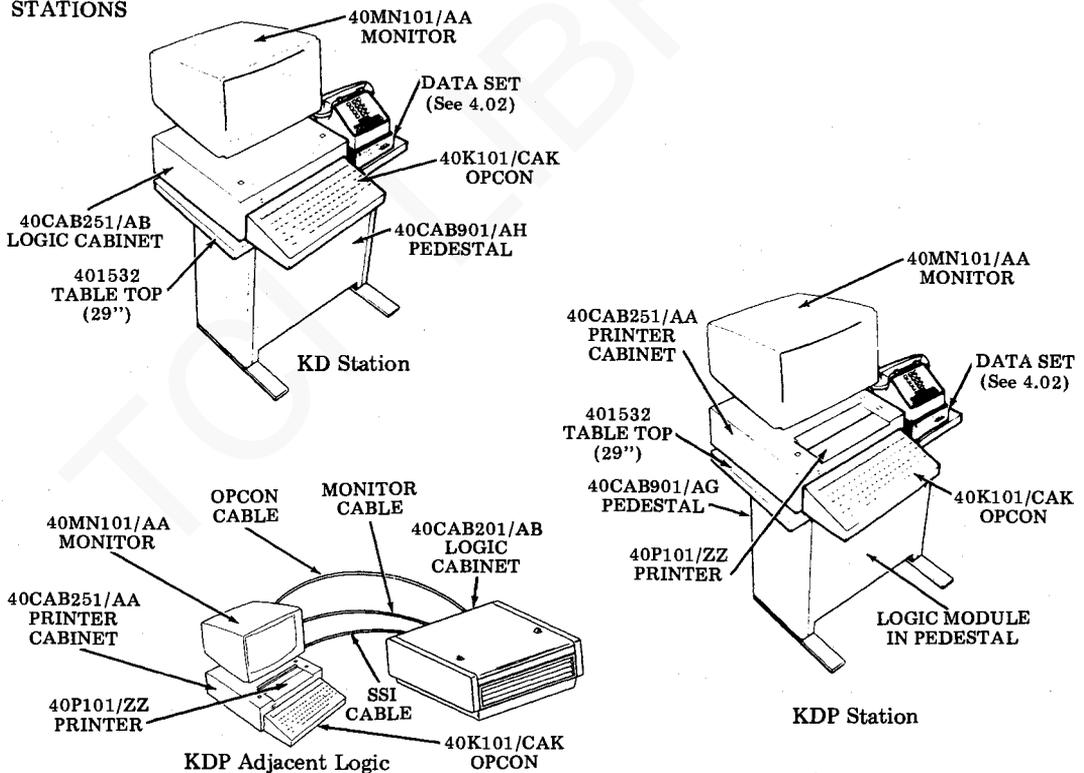
40CAB251/AB
CABINET
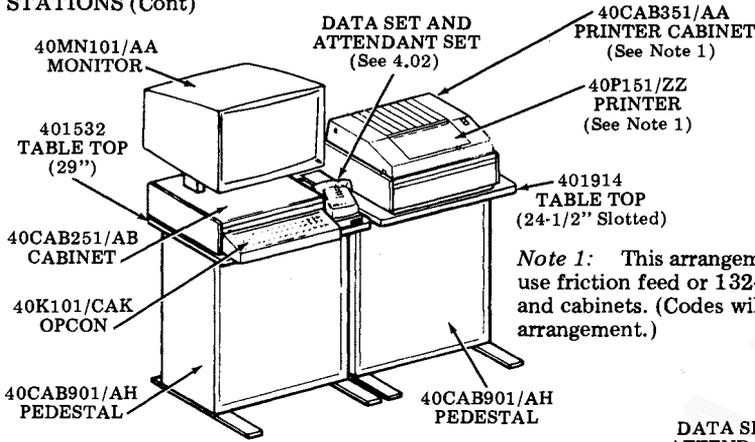
*Note 1:* This arrangement may also
use friction feed or 132-column printer
and cabinets. (Codes will vary for each
arrangement.)

40K101/CAK
OPCON

40CAB901/AH
PEDESTAL

40CAB901/AH
PEDESTAL

KDP Station W/Tractor Printer on Pedestals

40MN101/AA
MONITOR

DATA SET AND
ATTENDANT SET
(See 4.02)

40CAB351/ZZ
PRINTER CABINET
(See Note)

40P151/ZZ
PRINTER
(See Note 1)

401532
TABLE TOP
(29")

401914
TABLE TOP
(24-1/2" Slotted)

40CAB251/AB
CABINET

40K001/AAA
OPCON

40CAB901/AH
PEDESTAL

40CAB901/**
PEDESTAL

PRINTER CABINET
(See Note 1)

40K101/CAK
OPCON

(See Note 2)

ROP

KD
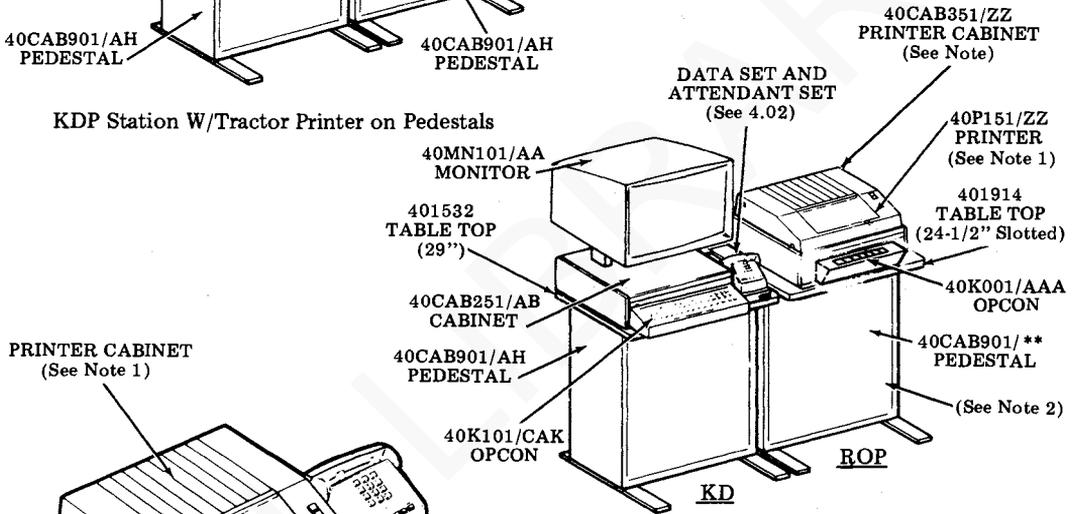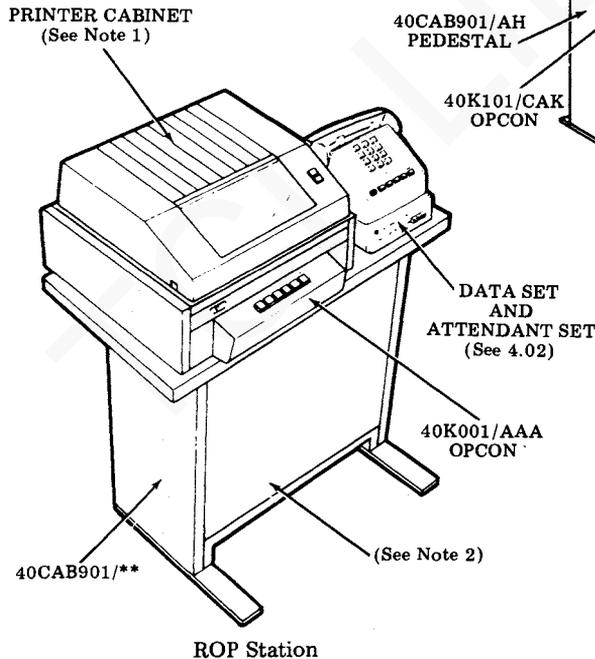
KD-ROP Station

*Note 2:* The controller of an ROP may
be a 40C103/AD, 40C103/AE, or integrated
controller (see Note 2 after 4.01).

DATA SET
AND
ATTENDANT SET
(See 4.02)

40K001/AAA
OPCON

40CAB901/**

(See Note 2)

ROP Station

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## CIRCUIT CARD ARRANGEMENTS

### A. Controller Logic



410672
OPCON
INTERFACE

402176

05
04
03
01 02

| Position Number | KD/KDP Controller Arrangements 40C204/BA | Circuit Card Description |
|---|---|---|
| 01 | 410770** | Printer Access |
| 02 | 410679 | Full Duplex Interface |
| 03 | 410676 | Send Variations |
| 04 | 410675 | Message Control |
| 05 | 410674 | Data Bus and Decode |
| Frame Number | 402176* | |

Full Editing — Teletypewriter Compatible — EIA (Electronic Industries Association)

\*This wired frame together with the proper circuit cards, can be used to make up the controller arrangement for replacement purposes.

\*\*Not present on sets without printer or conversational (S/R) mode. 410770 card is not part of 40C204/BA, but is part of USOC ordering codes for DATASPEED 40/2.
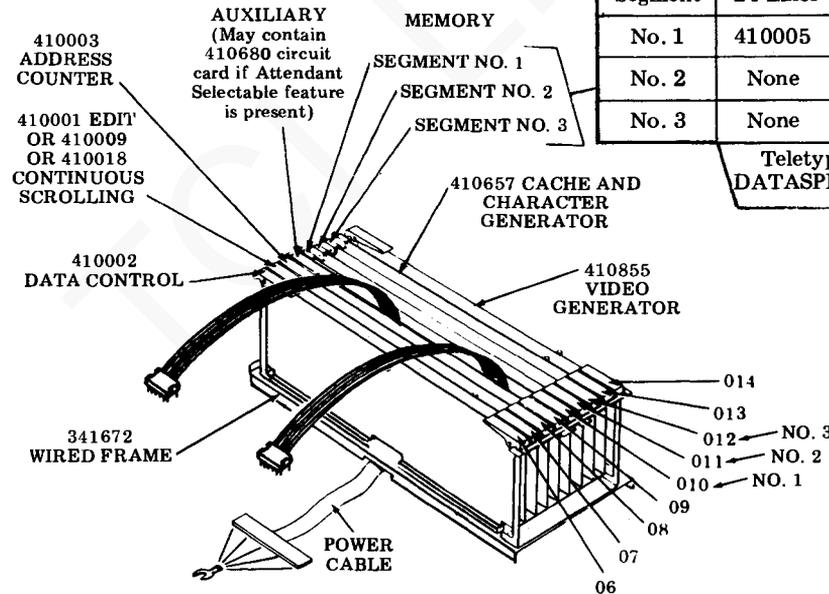
### B. Display Logic

| DISPLAY LOGIC ARRANGEMENTS (40DL291/ZZ) | | | |
|---|---|---|---|
| Memory Segment | Full Edit 24 Lines | Full Edit 48 Lines | Full Edit 72 Lines |
| No. 1 | 410005 | 410005 | 410005 |
| No. 2 | None | 410005 | 410005 |
| No. 3 | None | None | 410005 |

Teletypewriter Compatible
DATASPEED 40/2 (40C204/BA)



410003
ADDRESS
COUNTER

410001 EDIT
OR 410009
OR 410018
CONTINUOUS
SCROLLING

410002
DATA CONTROL

341672
WIRED FRAME

POWER
CABLE

AUXILIARY
(May contain
410680 circuit
card if Attendant
Selectable feature
is present)

MEMORY

SEGMENT NO. 1
SEGMENT NO. 2
SEGMENT NO. 3

410657 CACHE AND
CHARACTER
GENERATOR

410855
VIDEO
GENERATOR

014
013
012 — NO. 3
011 — NO. 2
010 — NO. 1
09
08
07
06

DATA SETS

4.02    The following data sets are used in DATASPEED 40/2 applications.

| DATA SET | MAXIMUM BAUD RATE | HOW TO OPERATE MANUAL |
|---|---|---|
| 103G | 300 | 999-311-121 |
| 103J | 300 | 999-312-121 |
| 103A3 | 300 | 999-313-121 |
| 113A | 300 | 999-314-121 |
| 202C | 1200 | 999-316-121 |
| 202R | 1200 | 999-318-121 |
| 202S | 1200 | 999-319-121 |
| 202T | 1200 | 999-320-121 |
| 201C (See Note) | 2400 | 999-315-121 |
| 208A (See Note) | 4800 | 999-317-121 |

*Note:*   Use of Data Sets 201C and 208A require use of the 402320 modification kit.

5.    DEVICES AND ACCESSORIES

400552
SPINDLE
(Part of 40P101/ZZ)

FULL ROLL
KS-8621 PAPER
(White)

USOC: 4TNOO
405544
OPTIONAL PAPER
ACCUMULATING RACK
FOR 80-COLUMN
PRINTER
(Mounts on floor)

402444 RIBBON
W/2 SPOOLS
(5 Mil, 33 Yards)

USOC: 4T800
401200
COPYHOLDER

USOC: 4T700
40PWU101
PAPER WINDER

ON/OFF SWITCH
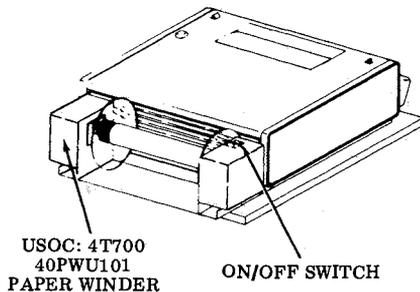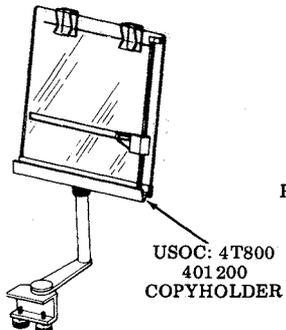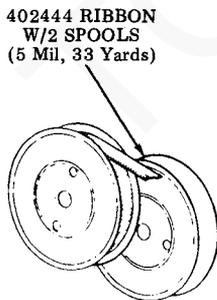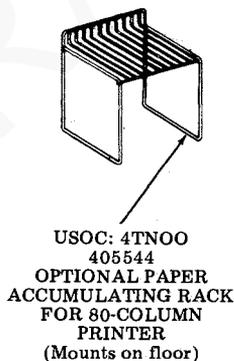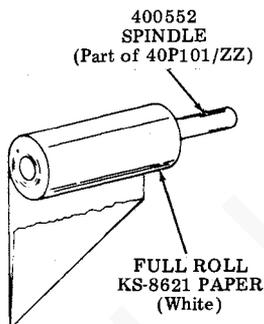
5.01    Modification kits and accessories that may be used with the DATASPEED 40/2 are listed in Table A, along with references to BSPs and 50,000 specifications. The 50,000 specifications are supplied with the modification kit or may be ordered from Teletype Corporation.

TABLE A

MODIFICATION KITS AND ACCESSORIES

| DESCRIPTION | REFERENCE |
|---|---|
| 345630 EIA Switch Assembly | 582-001-100 |
| 402178 Modification Kit — Data Set 113A or 113D Interfacing | 50822S |
| 402180 Modification Kit — 20/60 mA Interface | 50835S |
| 402231 Modification Kit — 115 V Output — 100 V Input | 50837S |
| 402307 Modification Kit — Video Blanking of Control Characters | 50855S |
| 402310 Modification Kit — Preparatory Send Mode and Even Parity Generation/Detection | 50845S |
| 402315 Modification Kit — 410018 Circuit Card Operation With 410001 | 50851S |
| 402316 Modification Kit — 410018 Circuit Card Operation With 410009 | 50851S |
| 402320 Modification Kit — Isochronous Operation With Synchronous Data Sets | 50848S |
| 402325 Modification Kit — Alteration of Line Disconnect, Reverse Channel, and Printer Motor Control Features | 50849S |
| 402850 Modification Kit — Multiple Form Printing Without Ink Ribbon | 50847S |
| 403378 Modification Kit — Connector Adapter for Current Loop Interface | 582-200-402 |
| 403380 Modification Kit — Multicopy or Fanfold Paper (Friction Feed) | 50815S |
| 403399 Modification Kit — Attendant Selectable Features (Pedestal Mount) | 50847S |
| 403400 Modification Kit — Attendant Selectable Options | 50825S |
| 403570 Modification Kit — Lagging Power Factor Correction | 9555WD |
| 407414 Modification Kit — DC1, DC3, and EOT Features (410674 Card) | 50843S |
| 408045 Modification Kit — Cable Mounting and Storage in Cabinet | 50802S |
| 408050 Modification Kit — Beltless Ventilation Assembly | 50820S |
| 40AB101/AA — Answer-Back Unit | 582-001-101 |

## 6. COMPONENT SPACE REQUIREMENTS AND WEIGHTS

MONITOR
38 LBS

CABINET
(With Terminal Logic — 65 Lbs)
(With Printer — 70 Lbs)

16"  15"

19"

17"  17-1/2"

24," 29," 31," or 34"
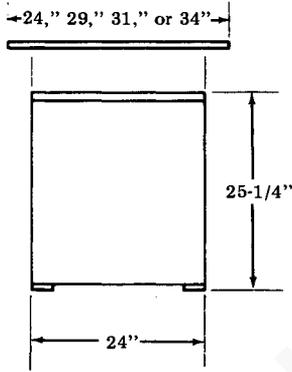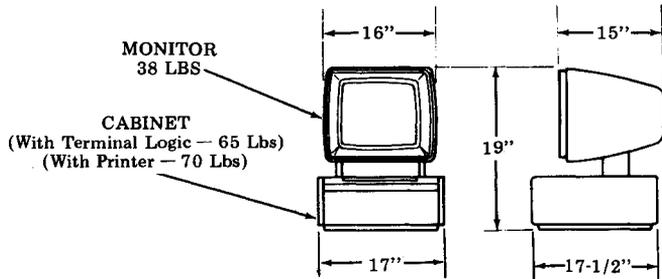
PEDESTAL (No Controller)

WITH 24" TOP — 53 LBS
WITH 29" TOP — 54 LBS
WITH 31" TOP — 54 LBS
WITH 34" TOP — 55 LBS

25-1/4"

PEDESTAL
(With Terminal Logic —
Add 50 Lbs)

24"

COPYHOLDER
2-3/4 LBS

18"

RACK
6-1/2 LBS

12"

12"  13"

13-1/4"

20"
or 27-1/2"

17-3/8"
22"
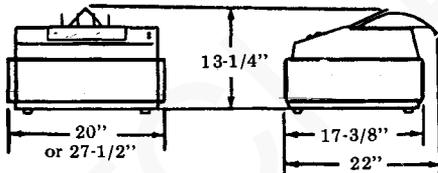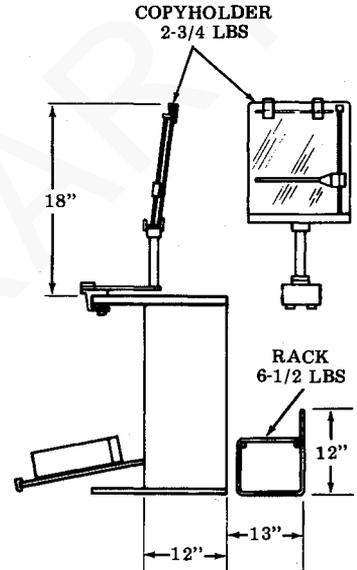
PRINTER IN CABINET
(80- or 132-Column Tractor Feed)
85 LBS OR 108 LBS

PAPER
WINDER
9-1/2 LBS

6-3/4"

17"  17-3/8"

27"
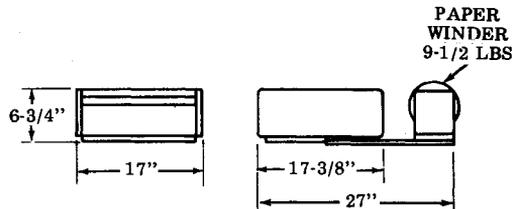
PRINTER IN CABINET
(Friction Feed)
55 LBS

3-1/4"

15"  6"

OPCON
7-1/2 LBS

17"  6-1/2"  17-3/8"
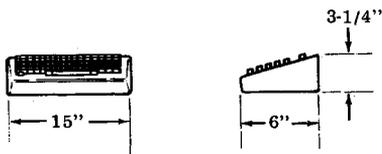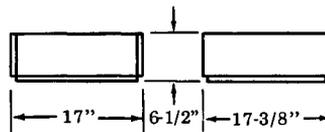
LOGIC (Table Top) — 65 LBS

7. THEORY OF OPERATION

7.01 The DATASPEED 40/2 contains several functional components which combine to form a KD or KDP. The 40C204 controller is the central unit which interfaces with the opcon, display logic, printer and the input/output port (data set or current loop).

CONTROLLER INTERFACES

7.02 The basic function of the controller is to provide the proper interface between the various devices that comprise the terminal and between the terminal and a data set or current loop. Therefore, the following interfaces are supplied by the controller.

A. Data Set Interface

7.03 Two data set interface options are available in the controller. The 202-type data set option interfaces medium and high speed data sets, and is shown in Table B for 202-type data sets and Table C for 201C and 208A Data Sets. The 103-type data set option interfaces with low speed data sets and is shown in Table D for 103-type data sets and Table E for 113-type data sets. Operating speed, however, is independent of the type of data set interface selected, ie, separate options must be selected to establish operating speed and data set signaling protocol.

7.04 The controller interface to a data set is made at connector JC3 on the rear apron of the controller. Interface signaling is compatible with EIA Standard RS-232-C. All output signals in this interface will be +5 V dc to +12 V dc to represent and "on" condition for control signals and a "space" condition for data signals. An "off" condition or a "mark" will be represented by a voltage level of -5 V dc to -12 V dc with respect to signal ground.

7.05 The pin assignment in the data set connector deviates from the RS-232-C standard in that both pin 11 and 19 are tied together within the controller to accommodate data sets equipped with the STD signal on either pin. On pin 23, an additional lead has been added to the interface to provide a control signal to be used when a Teletype Model 4210 Magnetic Tape Terminal is being used with the DATASPEED 40/2.

B. Current Loop Interface

7.06 An interface is provided in the controller to allow the terminal to communicate on a 20 or 60 milliampere current loop circuit (see 5.13). The controller can be optioned to allow the current loop to be the sole interface or to use it in conjunction with the Data Set 103 interface if provision is made to prevent simultaneous transmissions to the terminal. As with the data set interfaces, the current loop interface is independent of operating speed provided the transmission line will not greatly degrade the signal.

7.07 The interface between the controller and a current loop is available at the JC4 connector located at the rear apron of the controller's module.

7.08 Since the keyer circuitry is referenced to the controller's frame ground, it is necessary that both the dc current source and all other devices attached to the loop be isolated from earth ground.

7.09 The current loop interface circuits can be used in loops with potentials up to 125 V dc and currents of up to a maximum of 100 milliamperes.

7.10 If the current loop is not used simultaneously with a data set interface, a 403378 connector adapter plug must be inserted into the JC3 data set connector. (See 5-17.)

| TABLE B | TABLE C |
|---------|---------|
| 202-TYPE DATA SET INTERFACE | 201C AND 208A DATA SET INTERFACE (See Note) |

| Pin No. | Lead Designations | Pin No. | Lead Designations |
|---------|-------------------|---------|-------------------|
| 1 | Protective Ground (AA) | 1 | Protective Ground (AA) |
| 2 | Transmitted Data (BA) | 2 | Transmitted Data (BA) |
| 3 | Receive Data (BB) | 3 | Receive Data (BB) |
| 4 | Request to Send (CA) | 4 | Request to Send (CA) |
| 5 | Clear to Send (CB) | 5 | Clear to Send (CB) |
| 6 | Data Set Ready (CC) | 6 | Data Set Ready (CC) |
| 7 | Signal Ground (AB) | 7 | Signal Ground (AB) |
| 8 | Data Carrier Detector (CF) | 8 | Data Carrier Detector (CF) |
| 9 | Spare | 9 | Spare |
| 10 | Spare | 10 | Spare |
| 11 | Supervisory Transmitted Data (SA)* | 11† | Equalizer Mode (QM) |
| 12 | Supervisory Received Data (SB) | 12 | Spare |
| 13 | Spare | 13 | Spare |
| 14 | Spare | 14 | New Synch (SBA) |
| 15 | Spare | 15 | Transmit Timing (DB) |
| 16 | Spare | 16 | Divided Transmit Timing (DCT) |
| 17 | Spare | 17 | Receive Timing (DD) |
| 18 | Spare | 18 | Divided Receive Timing (SBB) |
| 19 | Spare | 19‡ | Remote Release (RR) |
| 20 | Data Terminal Ready (CD) | 20‡ | Data Terminal Ready (CD) |
| 21 | Spare | 21 | Signal Quality Detector (CQ) |
| 22 | Ring Indicator (CE) | 22 | Ring Indicator (CE) |
| 23 | Spare | 23 | Spare |
| 24 | Spare | 24 | Trans. Timing, External Source (DA) |
| 25 | Spare | 25 | Spare |

*RS-232-C uses pin 19 as STD. Controller internally connects pin 11 and pin 19.

† Not on 201-type data set.
‡ Not on 208-type data set.

*Note:* Requires 402320 modification kit for isochronous operation.

Data and Control Circuits in Accordance With EIA RS-232-C

Data and Control Circuits in Accordance With EIA RS-232-C

| Voltage | Control | Line Signal | Binary State |
|---------|---------|-------------|--------------|
| -5 V to -25 V | Off | Mark | 1 |
| +5 V to +25 V | On | Space | 0 |

| Voltage | Control | Line Signal | Binary State |
|---------|---------|-------------|--------------|
| -5 V to -25 V | Off | Mark | 1 |
| +5 V to +25 V | On | Space | 0 |

TABLE D

103-TYPE DATA SET INTERFACE

| Pin No. | Lead Designations |
|---------|-------------------|
| 1 | Protective Ground (AA) |
| 2 | Transmitted Data (BA) |
| 3 | Receive Data (BB) |
| 4 | Request to Send (CA) |
| 5 | Clear to Send (CB) |
| 6 | Data Set Ready (CC) |
| 7 | Signal Ground (AB) |
| 8 | Data Carrier Detector (CF) |
| 9 | Reserved for Testing |
| 10 | Reserved for Testing |
| 11 | Spare |
| 12 | Spare |
| 13 | Spare |
| 14 | Spare |
| 15 | Spare |
| 16 | Spare |
| 17 | Spare |
| 18 | Spare |
| 19 | Spare |
| 20 | Data Terminal Ready (CD) |
| 21 | Spare |
| 22 | Ring Indicator (CE) |
| 23 | Spare |
| 24 | Spare |
| 25 | Spare |

Data and Control Circuits in Accordance With EIA RS-232-C.

| Voltage | Control | Line Signal | Binary State |
|---------|---------|-------------|--------------|
| –5 V to –25 V | Off | Mark | 1 |
| +5 V to +25 V | On | Space | 0 |

TABLE E

113-TYPE DATA SET INTERFACE

| Pin No. | Lead Designations |
|---------|-------------------|
| 1 | Protective Ground (AA) |
| 2 | Transmitted Data (BA) |
| 3 | Receive Data (BB) |
| 4 | Request to Send (CA) } See Note |
| 5 | Clear to Send (CB) |
| 6 | Data Set Ready (CC) |
| 7 | Signal Ground (AB) |
| 8 | Data Carrier Detector (CF) (Data Set 113A Only) |
| 9 | Not to be Used |
| 10 | Not to be Used |
| 11 | Spare |
| 12 | Spare |
| 13 | Spare |
| 14 | Spare |
| 15 | Spare |
| 16 | Spare |
| 17 | Spare |
| 18 | Spare |
| 19 | Spare |
| 20 | Data Terminal Ready (CD) |
| 21 | Spare |
| 22 | Ring Indicator (CE) |
| 23 | Spare |
| 24 | Spare |
| 25 | Spare |

*Note:* Pins 4 and 5 may be strapped together in data set.

Data and Control Circuits in Accordance With EIA RS-232-C.

| Voltage | Control | Line Signal | Binary State |
|---------|---------|-------------|--------------|
| –5 V to –25 V | Off | Mark | 1 |
| +5 V to +25 V | On | Space | 0 |

The 402178 modification kit must be used with the 113-type data set.

C.   Opcon Interface

7.11   The controller interface with the opcon allows the terminal operator to either enter data locally into the display logic or to type data directly onto the output interface in the S/R mode.

7.12   The interface between the opcon and the controller is in the form of Teletype's Standard Serial Interface (SSI). With this system, all information is transmitted on two pairs of signal leads. The receive pair is designated as INFORMATION TO CONTROLLER, ITC, and its complementary signal INFORMATION TO CONTROLLER, $\overline{ITC}$. Similarly, the send pair is INFORMATION TO DEVICE, ITD, and INFORMATION TO DEVICE, $\overline{ITD}$. All information is transmitted in the form of 18 bit words. Each word consists of a start bit, steering bit, 7 ASCII information bits, a flag bit and a parity bit. The remaining 7 bits that form the word are sent as MARKS.

7.13   The send pair, ITD and $\overline{ITD}$, is constantly transmitting either lamp or status (alarm) information from the CL to the opcon. Again, the information is in the form of an 18 bit word composed of a start bit, steering bit, 6 bits for the lamp address and two bits for the lamp condition (lamp on or off). The remaining bits are transmitted as MARKS.

7.14   As stated above, the serial data information is present on a pair of leads, a true and a complement. Together these leads form a 1 volt P-P signal level between the signal pair. These signals are transformer isolated at each end of the cable. Transmission is at a rate of 56 kilobits/second, resulting in a bit time of 17.9 microseconds and a word time of 321 microseconds. To indicate a SPACE, or ON condition for control bits, the data leads change state during the midpoint of a bit time. The absence of a transition during this time would be interpreted as a MARK for data or an OFF condition for control bits.

D.   Display Logic Interface

7.15   The input/output port and the opcon are interfaced to the Display Logic (DL) through the controller. The display logic functions as a receiver for data from the opcon in the local mode and as a sender or receiver for data in the on-line operating modes.

7.16   The interface between the controller and DL consists of 20 leads. All signals are DTL (Diode Transistor Logic) levels. Data and character control signals are bidirectional while

mode control signals are inputs to the display logic. Signals are transported by a 341740 cable between the 410674 circuit card in the controller and the 410002 circuit card in the display logic.

E.   Printer Interface

7.17   A DATASPEED 40/2 printer may be interfaced to the controller when the optional 410770 independent printer access circuit card is used. Interfacing can be either EIA in a KD-ROP combination or SSI in a KDP arrangement. Use of the EIA interface (KD-ROP) restricts the terminal operating speed to that of the RO printer, whereas the SSI interface allows the full range of operating speeds provided incoming data to the terminal is properly formatted with regard to the printer's line feed rate.

7.18   The controller can interface with a printer using either an SSI interface or an EIA type interface. Either interface is available at the JC4 connector on the rear apron of the controller.

7.19   The SSI interface operates in a manner similar to that described for the opcon interface. Character transfer is on a demand-response basis.

7.20   When the EIA printer interface is used, the controller simulates a data set interface to the printer. The controller would supply the printer with the Data Set Ready, Data Carrier Detect and Receive Data signals while the printer would present the Data Terminal Ready and Supervisory Transmitted Data signals to the controller. Character transfer can be controlled by the printer through the use of the Reverse Channel (STD) lead provided the data input source to the controller is capable of responding to a reverse channel signal. Transmission speed is at the rate selected as the controller's input/output transfer rate. In the print local mode, transfer is at a rate of 1200 baud (see 7.32).

DESCRIPTION OF STATION OPERATING MODES

A.   Local Mode

7.21   In the local mode (Fig. 1), the controller interfaces the opcon to the display logic. This "off-line" mode allows the terminal operator to prepare or edit information to be stored in the display logic and displayed on the monitor prior to transmission to the line or a local printer. The terminal is in the local mode when the lamp is lighted in the LOCAL switch keytop on the opcon. Printer access in the local mode is discussed in 7.32.

| OPERATOR CONSOLE INDICATORS "ON" | | | |
|------|------|-------|-----|
| SEND | REC. | LOCAL | S/R |
| — | — | X | — |
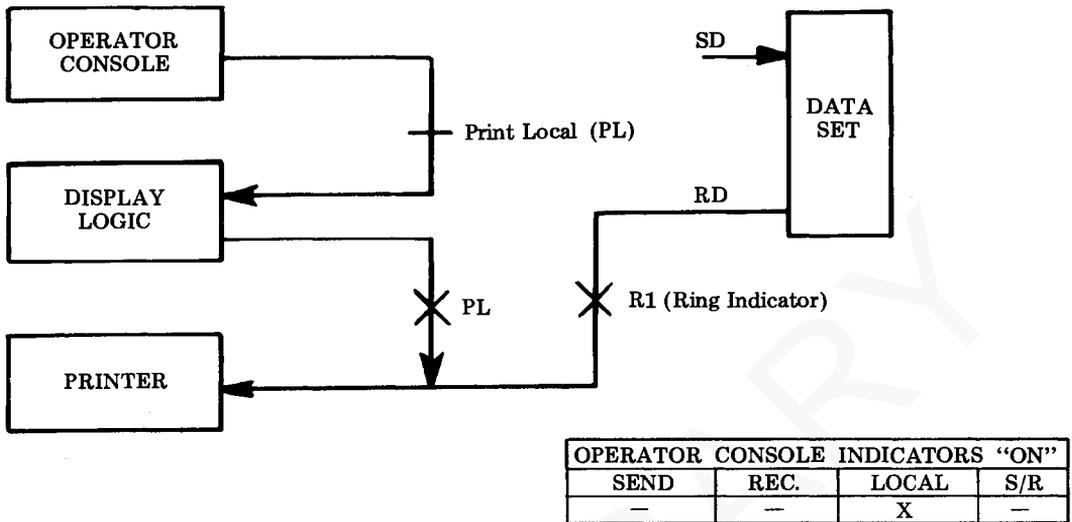
Fig. 1—Local Mode

**B.   Receive Mode**

7.22    In the receive mode (Fig. 2), the control-
ler interfaces the input data line to the
display logic. In this mode, the opcon is blinded
except for the mode select keys. All data received
from the line will appear on the monitor, unless
one of the "Reject" options is being used. See
Section 582-200-202 for descriptions of available
options.

*Note:*   S/R Operation, as described in 7.25, may
allow the opcon to be active even though the
receive mode lamp is on.

**C.   Send Mode**

7.23    The send mode (Fig. 3), allows the infor-
mation stored in the display logic to be
transmitted to the output interface. The control-
ler regulates the transfer of characters out of the
DL to match the transmission rate. Further, data
may be modified enroute to the output interface
to provide optional transmission features, or send
variations, such as special treatment of protected
or highlighted data fields, horizontal tabbing
operation and line ending sequences. (Refer to
Section 582-200-202 for descriptions of control-
ler options.)

**D.   Form Send Mode**

7.24    This mode is similar in operation to the
send mode described above with the
exception that the send variation options are
defeated and all information from the DL is
transmitted as displayed including the field
delimiters. This mode is indicated by the lamp in
the FORM SEND keytop on the opcon. Opera-
tion of the FORM SEND and SEND keyswitches
are required to initiate the form send mode. After
the message has been transmitted, the form send
mode will automatically be terminated when the
terminal is placed into the local mode.

**E.   S/R Mode (Conversational Mode)**

7.25    The S/R mode (Fig. 4) is a send-receive or
conversational mode in that the terminal
operator may communicate, on-line, on a charac-
ter-at-a-time basis rather than in the send mode as
previously described where communication is on
a "batch" basis for mass transmission of previ-
ously prepared data. This mode provides Full
Duplex (simultaneous two way communications)
or Half-Duplex (alternate two-way communi-
cation) operation thereby making the terminal
compatible with most existing teletypewriter sys-
tems. Full or Half-Duplex operation is selectable
as a terminal operation. The S/R mode is selected
either by the terminal operator or by transmission
on-line in the batch send mode of the ASCII
Control Character DC3.

| OPERATOR CONSOLE INDICATORS "ON" | | | |
|---|---|---|---|
| SEND | REC. | LOCAL | S/R |
| — | X | — | — |

Fig. 2—Receive Mode



| OPERATOR CONSOLE INDICATORS "ON" | | | |
|---|---|---|---|
| SEND | REC. | LOCAL | S/R |
| X | — | — | — |

Fig. 3—Send Mode

```
  ┌────────────┐
  │  OPERATOR  │─────────────────────●────────── SD ────────►┌────────┐
  │  CONSOLE   │                     │                       │        │
  └────────────┘                     │                       │  DATA  │
                                    ✕  HDX                    │  SET   │
  ┌────────────┐                     │                       │        │
  │  DISPLAY   │◄────────────────────●────────── RD ──────────│        │
  │   LOGIC    │                     │                       └────────┘
  └────────────┘                     │
                                    ✕  POL
  ┌────────────┐                       DC2, DC4
  │  PRINTER   │◄──────────────────────
  └────────────┘
```
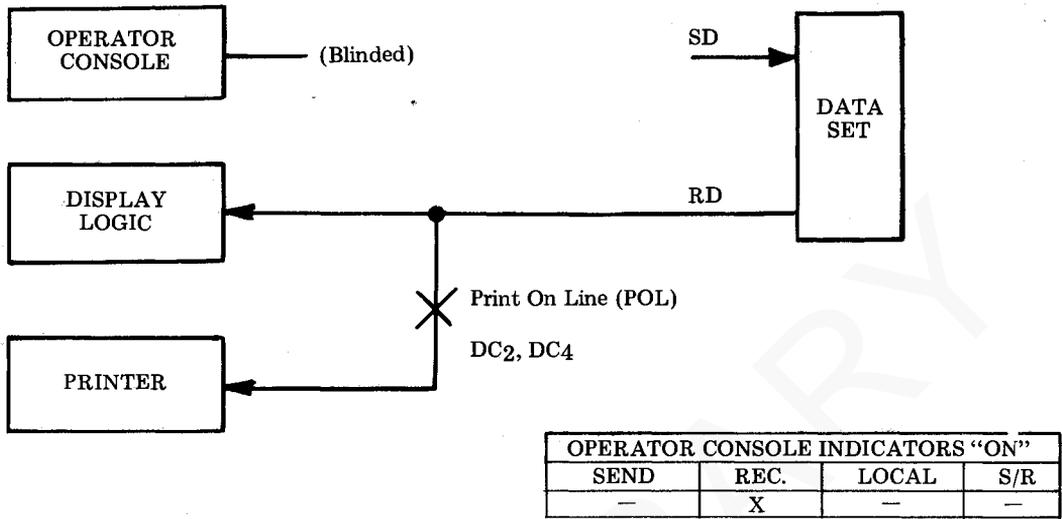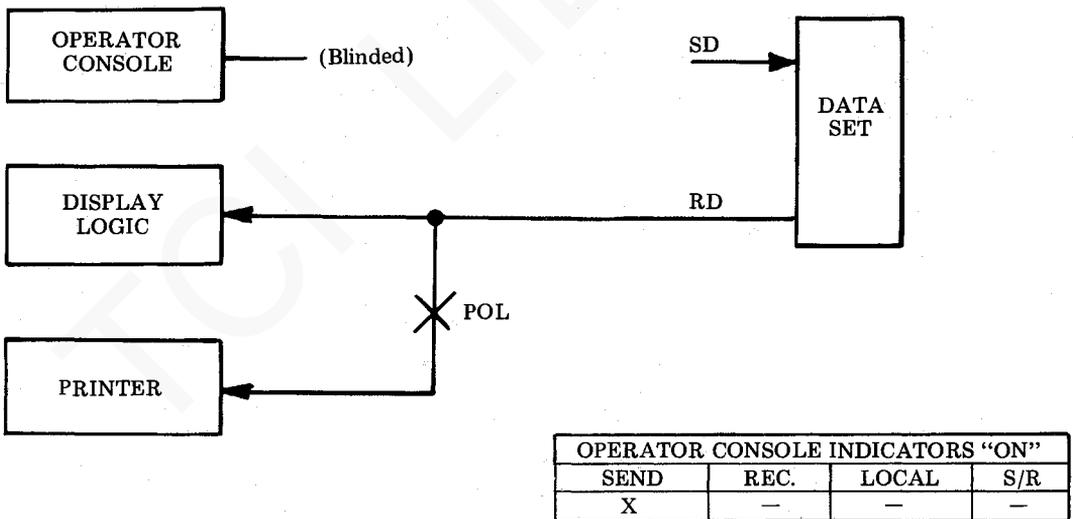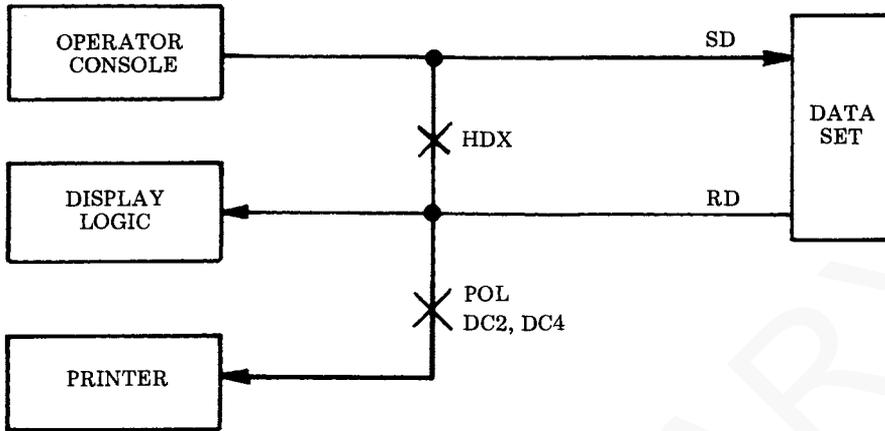
| MODE | OPERATOR CONSOLE INDICATORS "ON" | | | |
|---|---|---|---|---|
|  | SEND | REC. | LOCAL | S/R |
| HDX — 202-TYPE DATA SET | SEND | OR | REC. | — | X |
| HDX — 103-TYPE DATA SET | X | X | — | X |
| FDX — 103-TYPE DATA SET | X | X | — | X |

Fig. 4—S/R (Conversational) Mode

7.26    When the terminal is operated in the S/R mode with the Full Duplex option, the controller is used to interface the received data input line to the display logic while at the same time interfacing the opcon to the send data output line. In this arrangement, the receive portion of the controller performs identically as if the terminal were in the conventional (non S/R) receive mode. All receive data options remain active (ie, reject characters, etc).

7.27    The S/R mode with the Full Duplex option (ie, operation with a Data Set 103 interface) is indicated by the S/R, SEND and RECEIVE keyswitches all being lighted.

7.28    The opcon operation is similar to the operation in the local mode. However, the terminal operator will not see the typed character appear on the monitor, since data is sent only to the output data line. An exception is the case of "Echo" operation which is a Full Duplex System in which the outgoing character is echoed back by the distant end back to the originating terminal. All opcon keyswitches associated with local editing or mode control will not produce a char-

acter on-line as they are suppressed by the controller. The mode control switches will, however, remain active to allow operator control.

7.29    When the terminal is operated in the S/R mode with the Half-Duplex option, the received data input line is interfaced with the display logic during the receive portion of this mode (ie, S/R and receive). This operation is the same as the conventional (non S/R) receive mode. The opcon is blinded and the set will only respond to the mode control keyswitches. The S/R mode with the Half-Duplex option (ie, operation with a Data Set 202 interface) is indicated by the S/R and either the SEND or RECEIVE keyswitches being lighted. (The SEND and RECEIVE indicators are also dependent on the data set interface signal Request To Send.)

7.30    In the send portion of the S/R mode with Half-Duplex, the opcon is interfaced by the controller to the send data output line. In addition, the controller internally wraps the send data output signals back into the received data circuitry resulting in the transmitted character

being entered into the the display logic and presented on the monitor. The local editing keyswitches are blinded, however, it is possible to do editing through the use of escape sequences (eg, if the operator types the sequence ESCAPE H, and the 410674 is optioned to respond to escape sequence, then the cursor will be positioned to the HOME position on the display monitor).

7.31    Mode control keyswitches remain active to allow operator control of the terminal. Beyond this, the mode is controlled by use of the EOT character (ASCII End Of Transmission).

F.    Print Local Mode

7.32    The print local mode is intended to be an off-line operation wherein an operator may obtain a hard copy record of the information present on the display monitor. In this mode, the controller provides an interface between a printer and the display logic. The printer interface is optionally selected as either an SSI or EIA signaling format. Transmission speed is fixed at a transfer rate of 1200 wpm for selected on-line speeds up to 1200 baud (except that the SSI printer interface may reduce the transfer rate in cases where the message format would cause the line rate of the printer to be exceeded). Print local will be at the on-line transmission rate if that rate is in excess of 1200 baud.

G.    Print On Line Mode

7.33    The Print On Line (POL) mode may exist either as a unique on-line mode or in conjunction with one of the other on-line modes. When the opcon and display logic are in the local mode, the POL mode may be used to provide an accessible receiver for input data on the receive line. With the data set disconnected and the terminal in local, a Ring Indicator from the data set would cause a POL and enable the data set interface. In this manner, the terminal operator may prepare and edit information off-line on the display without interruption or being required to take the terminal out of service. The POL mode, when used in conjunction with on-line modes, provides a hard copy record of outgoing and/or incoming data at that terminal. The POL mode and the data set connection can be maintained when switching to local from an on-line mode as follows:

(a)    From send (batch) to local by operating the LOCAL keyswitch.

(b)    From S/R to local by depressing the S/R keyswitch.

(c)    From S/R to local by depressing LOCAL provided carrier is being received.

(d)    From REC to local by depressing LOCAL provided carrier is being received.

All information transmitted to the printer will be at the line transmission rate.

7.34    The POL mode may be selected either by the terminal operator or controlled from the distant end sender by use of the DC2 (POL mode ON) and DC4 (POL mode OFF) ASCII control characters. The PRINT ON LINE keytop is lighted to indicate that the mode has been selected.

CONTROLLER OPTIONS

7.35    A large number of selectable options are available in the 40C204 controller to accommodate the variety of applications in which a terminal of this type may be used. These options are implemented through the selection of the appropriate switches located on the circuit cards located within the controller module. (Refer to Section 582-200-202 for descriptions of options and optioning information.)

THEORY OF STATION OPERATION

7.36    Operating mode diagrams of the DATA-SPEED 40/2 stations are shown in Table F for 103-type data set interface and Table G for 202-type data set interface. The mode diagrams cover operation in the conversational mode (S/R on) and batch mode (S/R off). The following paragraphs provide a further description of the operation shown in Tables F and G.

A.    Initializing

7.37    When power is applied to the 40C204 controller, the LOCAL lamp lights on the opcon. When the display monitor is turned on by rotating the switch on the lower left-hand portion of the monitor, a raster and cursor appear on the monitor, permitting mode selection, and character transfer from the opcon to the controller logic. Character transfer is also allowed between the display logic and the controller logic.

7.38    Turning off the display monitor switch allows all previously lit lamps on the opcon to remain on, but character transfer to the display is suppressed. All previously stored data is retained, however, as the power to the controller logic, display logic, and opcon is maintained.

TABLE F

OPERATING MODES (103-TYPE DATA SET)

CONVERSATIONAL MODE (S/R On)    BATCH MODE (S/R Off)    HDX Only

FDX — HDX with 103-Type Data Set

KD LOCAL
POL On/Off
Data Set S/R

D4
D5,R4,S6

D REC Kbd SEND
POL On/Off
Data Set S/R

D4

Disp REC
POL On/Off
Data Set S/R

D1
D3 or S3
D2
R3
D4
D1 or R5 or R6

Disp SEND
POL On/Off
Data Set S/R

D4
D3△
D2
D3△
D2

KD LOCAL
POL On
Data Set S/R

D1

D4+    S1 or S2* or R2 or    D3☐ or CD    D4 or S5    D6 or CF    RI    R2 or D3 or CD    D2+    S1 or S2    D1+

KD -- LOCAL
POL — On/Off
Data Set — Disconnected

| DEPRESS | | SEND | | RECEIVE | |
|---|---|---|---|---|---|
| D1 | SEND key | S1 | DLE EOT | R1 | DLE EOT |
| D2 | REC key | S2 | EOT | R2 | EOT |
| D3 | LOCAL key | S3 | ETX or GS or FF | R3 | ETX or GS or FF |
| D4 | S/R key (on) | | | R4 | DLE ETX, FF, GS |
| D5 | S/R key (off) | S5 | DC3 | R5 | ESCf (1) |
| D6 | INTRPT key (on) | S6 | DLE ETX, FF, GS | R6 | DC1 (2) |
| | or PRINT ON LINE | | (HDX, or Echoplex Only) | | |
| | key (off) (DC4) | | | | |

Mode of 40 Terminal

PRINT ON LINE key on or off

Mode of Data Set
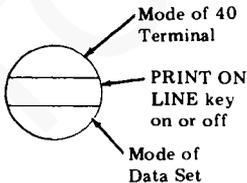
(1) — Applies to Issue 4B and later 410674 Circuit Card.
* — HDX Only
RI — Detection of ring indicator from the data set with PRINT LOCAL off, INTRPT off and KD in LOCAL.
CD — No carrier detected for 45 seconds.
✗ — Change in mode.
+ — Then make connection or auto-answer.
△ — If PRINT ON LINE is on.
☐ — If PRINT ON LINE is off.
CF — Loss of Carrier Detect
(2) — Requires 407414 modification kit.

## TABLE G

## OPERATING MODES (202-TYPE DATA SET)
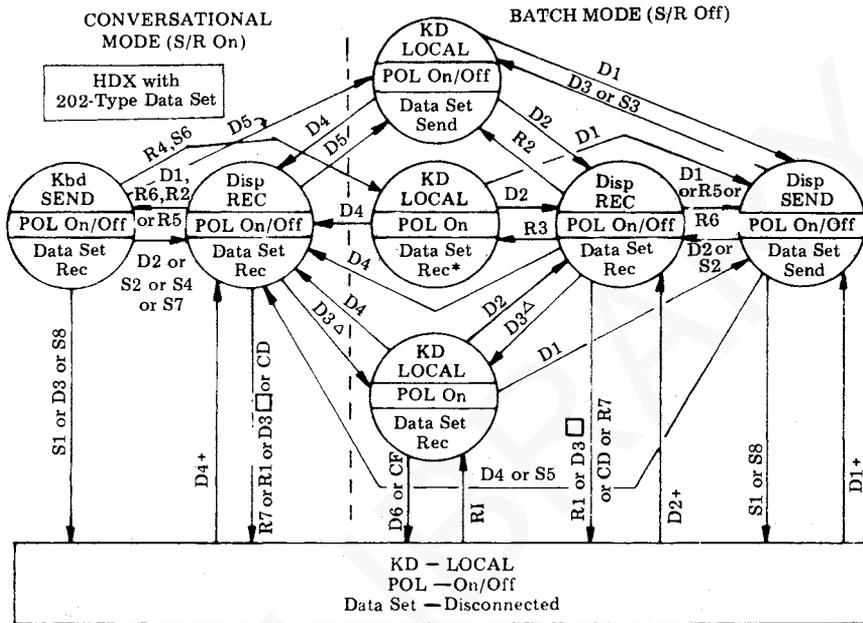
CONVERSATIONAL MODE (S/R On)

BATCH MODE (S/R Off)



HDX with
202-Type Data Set

KD LOCAL
POL On/Off
Data Set Send

Kbd SEND
POL On/Off
Data Set Rec

Disp REC
POL On/Off
Data Set Rec

KD LOCAL
POL On
Data Set Rec*

Disp REC
POL On/Off
Data Set Rec

Disp SEND
POL On/Off
Data Set Send

KD LOCAL
POL On
Data Set Rec

KD — LOCAL
POL —On/Off
Data Set —Disconnected

| DEPRESS | | SEND | | RECEIVE | |
|---|---|---|---|---|---|
| D1 | SEND key | S1 | DLE EOT | R1 | DLE EOT |
| D2 | REC key | S2 | EOT | R2 | EOT |
| D3 | LOCAL key | S3 | ETX or GS or FF | R3 | ETX or GS or FF |
| D4 | S/R key (on) | S4 | DC3 (2) | R4 | DLE ETX, FF, GS |
| D5 | S/R key (off) | S5 | DC3 | R5 | ESCf (1) |
| D6 | INTRPT key (on) | S6 | DLE ETX, GS, FF | R6 | DC1 (2) |
| | or PRINT ON LINE | S7 | RETURN (←) (1) | R7 | EOT (2) |
| | key (off) (DC4) | S8 | EOT (2) | | |

Mode of 40
Terminal

PRINT ON
LINE key
on or off

Mode of
Data Set
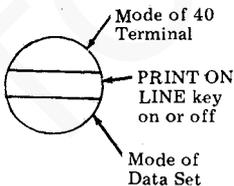
(1) — Applies to Issue 4B and later 410674 circuit card.
* — STD off.
RI — Detection of ring indicator from the data set with PRINT LOCAL off, INTRPT off and KD in LOCAL.
CD — No carrier detected for 45 seconds.
↗ — Change in mode.
+ — Then make connection or auto-answer.
△ — If PRINT ON LINE is on.
□ — If PRINT ON LINE is off.
CF — Loss of Carrier Detect
(2) — Requires 407414 modification kit.

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B.  Local Mode

7.39    When the DATASPEED 40/2 is in the local mode (LOCAL lamp lit), the set control is transferred to the opcon. The operator may enter data on the monitor, select display functions, or change modes from the opcon.

7.40    The local mode can be established by any of the following methods:

(a)  The initializing procedure.

(b)  From Send, Receive, or S/R by means of an end character.

(c)  From the operation of the S/R switch while in the S/R mode, or the LOCAL switch on the opcon.

(d)  From the time-out and disconnect sequence.

C.  Data in the Local Mode

7.41    When in the local mode, depressing a keytop on the opcon allows that character to be displayed on the monitor. If the keytop is not for a character to be displayed, but instead indicates a mode change such as Send, Receive, Print Local, Local, Interrupt, Send/Receive, Print On Line, or Form Send, the information from that keytop to perform the appropriate action is passed to the controller logic, allowing the controller logic to enter the appropriate mode. The form enter and highlight modes are similarly turned on and off by keytops on the opcon.

7.42    If the keytop on the opcon is not a character for which an action is taken by the controller logic, that character will simply be passed on to the display logic to be displayed on the monitor.

D.  Decoded Characters in the Local Mode

7.43    As previously noted, in 7.40, depressing some keytops causes an action to be taken by the controller logic. Depression of these keytops causes an internal character to be generated which is decoded by the controller logic. Of these decoded characters, only Form Enter, Highlight, and Form Send are blinded from operator access when the DATASPEED 40/2 is in the send or receive mode.

7.44    When the FORM ENTER switch on the opcon is operated with the station in the local mode, the FORM ENTER lamp turns on. During the time the FORM ENTER lamp is lit, all characters entered into the display logic will be "protected". A protected character is one which may not be altered, moved, or in any way changed except when in the form enter mode. While in local, the form enter mode may be terminated by again depressing the FORM ENTER switch on the opcon.

7.45    When the HIGHLIGHT switch on the opcon is operated with the station in the local mode, the HIGHLIGHT lamp turns on. During the time the HIGHLIGHT lamp is lit, all characters entered into the display logic will appear highlighted on the display monitor. Highlighted characters appear to blink by changing between half and full intensity at a rate of approximately one cycle per second. Highlighting may be terminated in the local mode by operating the HIGHLIGHT switch again to extinguish the lamp.

7.46    The local mode may be terminated by depressing either the SEND, RECEIVE, SEND/RECEIVE (S/R), or PRINT LOCAL keys on the opcon.

E.  Receive Mode

7.47    The receive mode and S/R-receive mode allows data from an external EIA or current loop sending device to be entered into the set and be displayed on the monitor. Optional features in this mode include the ability to reject characters and perform on-line editing.

7.48    Several methods are available for placing the set into the receive mode:

(a)  Operation of the RECEIVE keyswitch on the opcon (7.49).

(b)  From the send mode to the receive mode on EOT or other ending characters (7.50).

(c)  Receive mode as part of the S/R operation (7.51).

7.49    The operator may place the DATASPEED 40/2 into the receive mode by operating the RECEIVE switch on the opcon. The RECEIVE key lights when the set is in the receive mode.

7.50    An option on the 410675 circuit card allows the terminal to switch from the batch send mode to the receive mode each time an end character is sent. Any or all of the end characters EOT, ETX, FF, and GS may be selected with option switches on the 410674 circuit card.

7.51    The transmitted EOT characters will cause the terminal to go to the receive mode from send, even if the 410675 card is optioned to go to the local mode after send. This will occur only if the EOT character is selected as an ending character on the 410674 circuit card.

7.52    The S/R mode may be established either by operating the S/R keyswitch on the opcon or by sending a DC3 character in the batch send mode. The S/R and RECEIVE lamps both light when the terminal enters the S/R-receive mode. If the terminal is optioned for 103-type modem interface, the SEND key is also lit.

7.53    Once the receive mode has been established, incoming data signals are routed from the data set through the controller logic to the display logic, for display on the monitor.

7.54    As received characters pass through the controller logic, they are decoded. The following characters that are decoded may result in an action performed by the controller:

    (a)    End Characters (see 7.55)

    (b)    Reject Characters (see 7.56)

    (c)    Bell (see 7.57)

    (d)    Escape Sequences (see 7.58)

    (e)    DC2 or DC4 (see 7.59)

7.55    The characters EOT, ETX, FF, or GS will cause the mode to switch from receive to local, if it is optioned to do so. The DLE EOT sequence acts as a disconnect sequence, in addition to changing modes from receive to local.

7.56    The characters Carriage Return, Null, Delete, DC1 and DC3 are rejected by the controller logic if optioned to do so. These characters will not be presented to the display logic if they are rejected by the controller logic.

7.57    In the receive mode, the ASCII character Bell is decoded and causes an audible signal to be generated at the opcon. If there are more than one Bell characters, and they are relatively close together, the audible signal at the opcon will sound like a steady alarm.

7.58    The option for "Escape not displayed, function performed" is similar to the reject characters option mentioned previously. In this case, the ASCII character Escape is decoded and the character Escape and the following character are rejected from data being presented to the display logic. In addition, the function of the two-character Escape sequence is performed. For example, the Escape 3 sequence will cause the HIGHLIGHT lamp to turn on, and all succeeding characters will be highlighted by the display monitor.

7.59    The received characters DC2 and DC4 will cause the PRINT ON LINE function in the KDP to turn on and off, respectively. The PRINT ON LINE lamp on the opcon also turns on with a received DC2 and off with a received DC4.

7.60    A parity detection circuit in the controller logic detects even vertical parity on incoming data, and replaces errored characters with the ASCII character Substitute (displayed on the monitor as $S_B$). An option disables this feature and allows data to enter the display logic as received. In DATASPEED 40/2 operation, this parity detection circuitry is normally disabled.

7.61    The receive mode may be terminated by operation of the LOCAL, S/R, or SEND keyswitches on the opcon, or by detection of an ending character. Operation of the LOCAL keyswitch, or operation of the S/R keyswitch while in the S/R mode causes the receive mode to end and the terminal to go to local.

7.62    The end character option for changing from receive to local is selectable as an option by optioning switches on the 410674 circuit card. One or more of the end characters must be selected by closing switches on the circuit card. After the end character has been accepted by the display logic, the terminal switches from receive to local.

7.63    If the Data Set 202 interface option is used, a received EOT causes a Request to Send signal to be turned on to the data set interface, so the data set interface is not dropped. A received ETX, FF, or GS character will not cause Request to Send to be turned on, therefore, the distant end may time-out and disconnect due to loss of data set carrier.

7.64    If the Data Set 103 interface option is used, a received EOT turns off Data Terminal Ready, which causes a disconnect, in addition to the terminal switching from receive to local. A received ETX, FF, or GS character causes the terminal to go local.

7.65    In the S/R mode, when the Data Set 202 interface option is used, a received EOT causes the terminal to go from S/R-receive to S/R-send. If the Data Set 103 interface option is used, a received EOT causes the terminal to go local and disconnect. Received ETX, FF, or GS characters in the S/R mode have no effect on the mode in either 103-type or 202-type data set operation. However, the sequence DLE ETX, DLE FF, or DLE GS will cause the terminal to go to the local mode if the Data Set 103 option is being used. Reception of a DLE EOT sequence causes the terminal to go local and disconnect if the Data Set 202 option is being used.

F.    Send Mode

7.66    Data may be transmitted from the DATASPEED 40/2 to external receiving equipment in either the batch send mode or the SR-send mode. The S/R-send mode operation consists of transmitting data, on-line one character at-a-time from the opcon. The S/R-send mode operation is described starting with 7.88.

7.67    The batch send mode is used to transmit any data on the monitor, which may have been prepared by the operator while in the local mode, or which may have been received from an external source while in the receive mode.

7.68    The batch send mode is selected by either operating the SEND keyswitch on the opcon or by reception of the sequence "Escape f" (only on Issue 4B and higher of the 410674 circuit card). The SEND lamp on the opcon is lighted whenever the terminal is in the batch send mode. If an "Escape F" sequence is received, an internal signal in the controller logic places the terminal in the send mode and illuminates the SEND keyswitch on the opcon the same as if it had been manually operated.

7.69    Once the send mode has been established, the terminal turns on the Data Terminal Ready signal on the data set interface. The data set responds with a Data Set Ready signal when the data channel is established. The Data Set Ready being on, along with the send mode, causes the terminal to generate the Request to Send signal to the data set. The data set responds to the Request to Send signal by turning on Clear to Send, allowing the terminal to send the message on-line.

7.70    Transmission speed is derived from an internal crystal oscillator located on the 410679 circuit card. The oscillator drives a counter circuit which is preset by the speed select option switches.

7.71    Three options exist for processing the ASCII character Line Feed when sending from the DATASPEED 40/2 to a receiver. The Line Feed may be sent as displayed; it may be preceded by an internally generated Carriage Return, or it may be preceded by two generated Carriage Return characters. If a Line Feed character was not present in the line on the display monitor, the display logic will automatically generate and send a Line Feed at the end of a line.

7.72    The send variations options allow the terminal user to select the format of transmitted messages in the batch send mode that provide the most efficient system operation. All of the options are chosen via option switches on circuit cards within the controller logic module.

7.73    The send variations options consist of the following:

(a)    Disable Sending Highlight Delimiters (see 7.74)

(b)    Send Unprotected Data Only (see 7.75)

(c)    Send Protected Data as Space, Send Protected Data as Delete (see 7.76)

(d)    Send All Data Without Delimiters Except for Highlight (see 7.77)

(e)    Convert $H_T$ to Space (see 7.78)

(f)    $H_T$ and Skip (see 7.79)

7.74    This option to disable sending highlight delimiters is implemented by closing switch 5 on switch pack C12 located on the 410674 circuit card. This option prevents the highlight delimiters from being sent when there is highlighted data on the display monitor.

7.75 In the option to send unprotected data only, all protected characters are removed from the transmitted text. Switches 1 and 3 must be open on switch pack A4 located on the 410676 circuit card. If highlighted characters are within the protected field of characters, they will be transmitted, unless "Disable Sending Highlight Delimiters" (7.74) is utilized.

7.76 Protected Data may be sent as either Space characters or Delete characters. These options are similar to "Send Unprotected Data Only" (7.75), but instead of stripping the protected characters from the text, either Space or Delete characters are transmitted instead. Switches 1, 3, 4, and 6 must be open, and 2 and 7 closed on switch pack A4 on the 410676 circuit card. In addition, the "Delete" option requires that 5 be open, while the "Space" option requires 5 be closed.

7.77 All data can be sent without delimiters except for highlight. All switches must be closed except switch 2 on switch pack A4 on the 410676 circuit card. All data will be sent as displayed on the display monitor, but without delimiters for highlighted and protected data. Horizontal tabs are sent as a space character.

7.78 The "Horizontal Tab to Space" option is obtained by closing switches 7 and 8 on switch pack A4 on the 410676 circuit card. Horizontal tabs that are displayed are transmitted as space characters.

7.79 The "Horizontal Tab and Skip" option is selected by closing switches 2, 4, 5, and 8 on switch pack A4 on the 410676 circuit card. Remaining switches on the pack are open. With this option, protected data is not transmitted, but an $H_T$ character is internally generated and transmitted in its place. When an unprotected $H_T$ appears in the text, it is transmitted, and skip operation begins. Data following an unprotected $H_T$ character is skipped, until a tab mark or unprotected line feed character is encountered. If the skip passes through a protected field, the $H_T$ character is not generated again, and the skip proceeds to the first character after the protected field, where transmission resumes.

7.80 The form send feature overrides any of these send variations that may have been selected. Form send is selected by depressing the FORM SEND keyswitch on the opcon before entering the send mode. When form send is used, all data contained in the display logic memory is transmitted to the external receiver. All delimiters for highlighting, tabs, and protected data are converted to the corresponding two-character escape sequence and transmitted with the message.

7.81 The form send mode is terminated when the terminal switches from send to local. The FORM SEND lamp on the opcon turns off upon entering the local mode.

7.82 The send mode can be terminated in any of the following ways:

(a) Sending an ending character (7.83)

(b) Sending a DC3 character (7.84)

(c) Sending a disconnect sequence (7.85)

(d) Disconnect generation (7.86)

(e) Mode switching from the opcon (7.87).

7.83 If the controller logic is optioned to recognize ETX, FF, or GS as an ending character, the mode switches from send to local. If the controller recognizes EOT as an ending character, the mode switches from send to receive.

7.84 When a DC3 character is sent to the line, the terminal switches from the send mode to the S/R mode. The S/R keyswitch on the opcon lights, along with the RECEIVE keyswitch for Data Set 202 operation, and the SEND and RECEIVE keyswitches for Data Set 103 operation.

7.85 A disconnect to data set interface is generated by the controller logic when a DLE EOT sequence is transmitted with Data Set 202 operation. With Data Set 103 operation, a transmitted EOT character causes a disconnect.

7.86 The send mode may be terminated by generation of a disconnect signal from the 410770 circuit card. This results in a disconnect at the data set interface and the set goes to local. This disconnect is the result of a loss of SSI interface if the Print On Line operation is selected, and the 410770 circuit card is optioned to go local on loss of SSI.

7.87 Operation of the RECEIVE, LOCAL, or S/R keyswitches on the opcon while in the send mode will cause that mode to be terminated and switch the controller to the selected mode.

G. S/R Send Mode

7.88 The S/R mode is established by either operating the S/R keyswitch on the opcon (while not in the S/R mode) or by sending a DC3 character in the batch send mode.

7.89 In Data Set 103 operation, entering the S/R mode also lights the SEND and RECEIVE lamps on the opcon. In Data Set 202 operation, the SEND keyswitch must be depressed after entering the S/R mode.

7.90 The send portion of the S/R mode blinds the send circuitry used in the batch send mode and instead interfaces the opcon to the 410679 circuit card for on-line character-at-a-time transmission from the opcon. If the Reverse Channel option is selected, it is necessary for the Supervisory Received Data signal to be turned on before data may be transmitted.

7.91 Characters are transmitted one-at-a-time, on-line, from the opcon. When the Half-Duplex option is selected, the transmitted data is tied internally to the receiving distributor. The data is then processed by the controller as if that data had been received on-line.

7.92 The send portion of the S/R mode may be terminated in the following ways:

(a) Sending a "turnaround" character (7.93)

(b) Operation of LOCAL keyswitch (7.94)

(c) Operation of S/R keyswitch (7.95)

(d) Sending a Disconnect character or sequence (7.96).

7.93 The controller can be changed from the send to the receive portion of the S/R mode when operating with the Data Set 202 option only, by sending an EOT character or a Carriage Return (Issue 4B or later of 410674 circuit card). The S/R keyswitch remains lighted, SEND turns off, and RECEIVE lights.

7.94 S/R send can be terminated by operating the LOCAL keyswitch. This causes the mode to change to local, and also causes a disconnect if the PRINT ON LINE keyswitch is not lighted.

7.95 Operation of the S/R keyswitch while in the S/R mode causes the mode to change from S/R to local. No disconnect is caused.

7.96 Sending a disconnect character or sequence will cause the terminal to change from S/R-send mode to local, and disconnect. In Data Set 103 operation, EOT causes local and disconnect. In Data Set 202 operation, DLE EOT causes local and disconnect.

H. Printer Operation

7.97 The controller logic in the DATASPEED 40/2 can provide an optional interface to either an SSI or EIA printer by the addition of a 410770 circuit card in module position Z101. This card provides functions for:

(a) Selection of either SSI or EIA interface to a printer.

(b) A disconnect timer.

(c) Options for Print On Line operation.

(d) Inhibiting the character following Escape when generating with an SSI printer.

(e) Circuitry to provide an Interrupt signal.

(f) Circuitry for the Print Local operation.

7.98 When the PRINT LOCAL keyswitch on the opcon is operated, data appearing on the monitor and stored in the display logic is transmitted to the printer without allowing that data to be transmitted to either the data set or current loop interfaces. While transmitting data to the printer in the print local mode, the PRINT LOCAL and SEND keyswitches are lighted on the opcon. When the operation is completed, these lamps turn off and the LOCAL lamp lights.

*Note:* The Print Local operation should only be implemented while the set is in the local mode to avoid unwanted data set turnaround, data set blinding, and in some instances invalid modes.

7.99 The Print On Line operation allows incoming data, outgoing data, or both, to be sent to an associated printer. The print on line mode is established by either operating the PRINT ON LINE keyswitch on the opcon, by reception of a DC2 character from the line, or by "Automatic Answer" of an incoming call.

**7.100** The Automatic Answer operation allows an incoming data call to be completed while the terminal is in the local mode provided a printer is available to accept data. The associated data set responds to an incoming call by applying a pulse to the Ring Indicator EIA interface lead, which turns on the print on line mode, allowing the call to be answered.

*Note:* Some data sets may have an option by which the ring indicator signal remains on constantly during a data connection. This option must not be used or improper controller operation will result.

I.    Interrupt

**7.101** The INTERRUPT keyswitch on the opcon is used to provide a method of signaling back to a distant sender or to inhibit the controller from automatically answering a data call. The use of Interrupt operation to signal a distant sender requires the use of Reverse Channel operation.

TELETYPEWRITER COMPATIBLE "DATASPEED*" 40/2

INSTALLATION

## 1. GENERAL

1.001  This addendum supplements Section 582-200-202, Issue 2. Place this pink sheet ahead of Page 1 of the section.

1.002  This addendum is issued to correct copyright dates.

## 2. CHANGES TO SECTION

2.001  On the bottom of Page 1, change the copyright notice dates to read as follows:

©1973, 1975, 1976, 1977 and 1979 by Teletype Corporation

*Registered Trademark of AT&TCo.

TELETYPEWRITER COMPATIBLE "DATASPEED*" 40/2

INSTALLATION

*Registered Trademark of AT&TCo.

www.telephonecollectors.info

# 1. GENERAL

**1.01** This section provides the installation procedures and methods for a Teletypewriter Compatible DATASPEED 40/2 Station.

**1.02** This section is reissued to include the following:

- Free standing stations
- New printer circuit cards (**410071, 410072 and 410076**)
- Data sets options for 108F and G, 113C and D, 212A, 408B, and all registered sets.
- This is a general revision, arrows ordinarily used to indicate changes have been omitted.

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

**1.03** The following Warnings and Danger are to be used as safety measures for the apparatus and the craftsperson.

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

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



Attach static ground strap tightly to wrist.

Attach clip end of static discharge strap to frame ground.
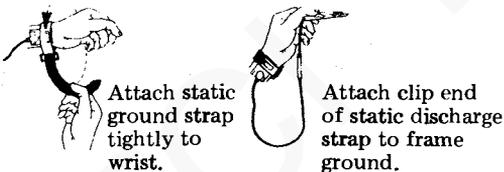
Fig. 1

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

*Warning 3: Place listed card in an RM150592 static bag immediately after removal from unit. <u>Do not</u> place any printer paper in the bag with the card. Keep the card in the static bag at all times. <u>Never</u> handle the card outside the bag without wearing a properly grounded 346392 static ground strap.*

Cards List

Printer (410071, 410072, 410076, 410640 and 410729)
Controller — All Cards
(Not Monitor Cards)



406260
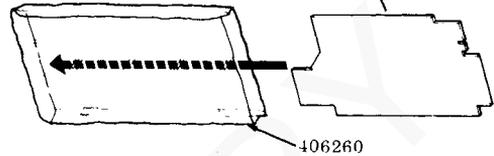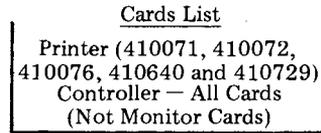
Fig. 2

# 2. IDENTIFICATION

## GENERAL

**2.01** Identification of the DATASPEED 40/2 terminal and its features is important to the Service Center or field craftsperson. 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 optioning.

**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 cards are present in the display controller and display logic circuitry.

**2.03** Service Center optioning or optioning in the field by a craftsperson must be recorded on the Station Features and Options Record W-4DIXB. Features and options must be recorded by checking ⊠ on the variable number (ie, Option 17.d.) in the appropriate square. Features and modifications on the terminal that are not listed on the Station Features and Options Record W-Plan should be written in. This plan should stay with the station.

## KD (Keyboard Display)

**2.04** The KD consists of a keyboard (opcon) and monitor, with the terminal logic mounted under the monitor. The KD may be mounted on a pedestal top or on the customer's own office furniture.

40MN101/AA
MONITOR

ASSOCIATED
TELEPHONE
SET

40CAB251/AB
LOGIC CABINET

DATA SET
(See Note)

401532
TABLE TOP
(29")

40K101/CAK
OPCON

40CAB901/AH
PEDESTAL
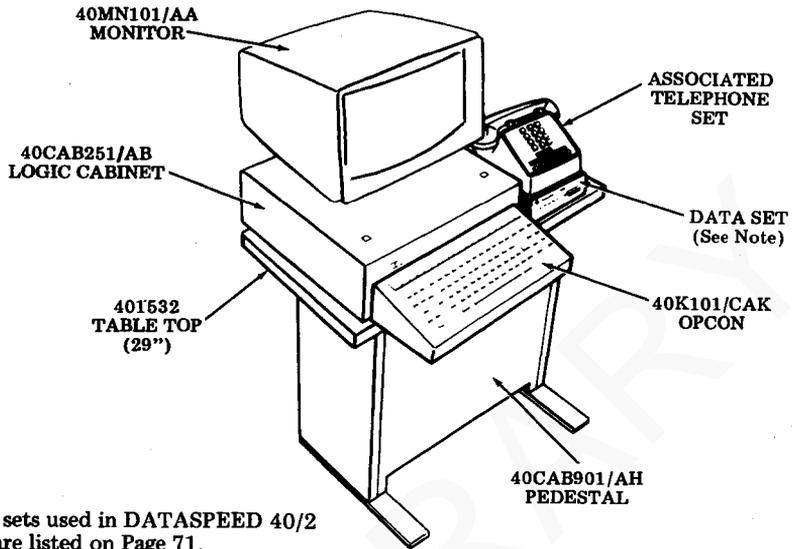
*Note:* Data sets used in DATASPEED 40/2 applications are listed on Page 71.

Fig. 3—KD Station

**KD (Remote Opcon and Monitor) (Ref 50907S)**

2.05 The KD consists of an opcon, opcon base, monitor and monitor base, with the logic module mounted in the pedestal.

40MN101/AA
MONITOR

TABLE TOP
401531 — 24"
401532 — 29"
401533 — 34"

40BSE101
MONITOR BASE

40CAB901/AG
PEDESTAL

40K101/CAK OPCON

40BSE201 OPCON BASE

LOGIC MODULE
IN PEDESTAL
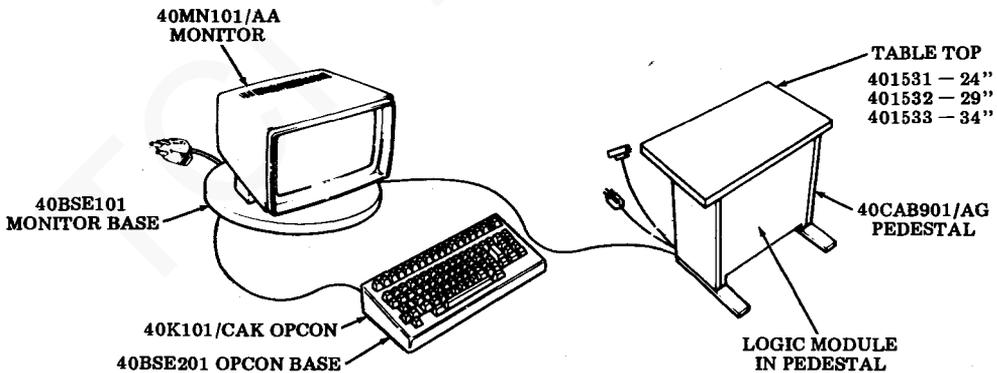
*Note:* Data set is not shown but can be placed on either the pedestal top or the customer provided furniture.

Fig. 4—KD Station (Remote)

KDP (Keyboard Display With Printer)

2.06    The KDP consists of a KD terminal with a printer mounted either under the monitor or adjacent to the KD. The adjacent printer may be either tractor or friction feed. Tractor feed printers may be either 80- or 132-column printers.
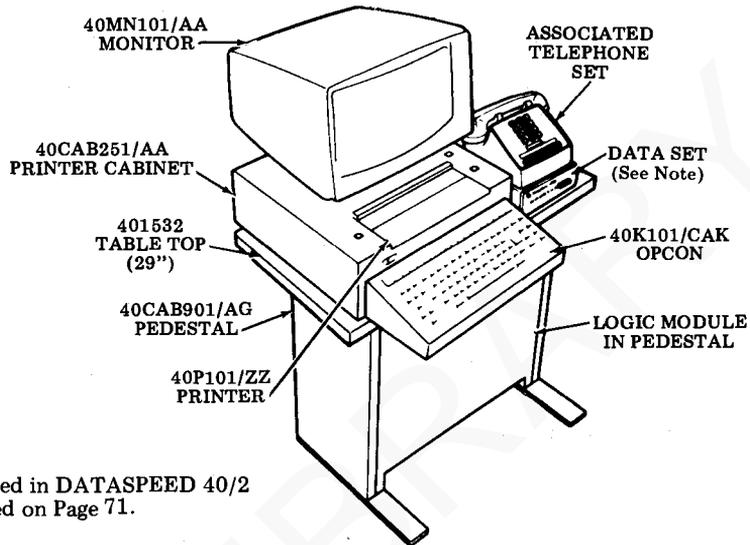


*Note:*    Data sets used in DATASPEED 40/2 applications are listed on Page 71.

Fig. 5—KDP Station (Printer Under Monitor)
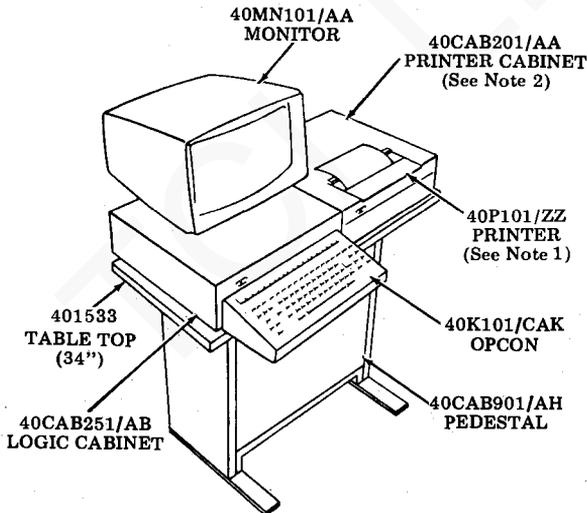


*Note 1:*    When printer is adjacent, may be either friction feed, 80-column tractor feed (40P151/ZZ), or 132-column tractor feed (40P201/ZZ). Tractor feed printers require a separate pedestal.

*Note 2:*    Printer cabinet for 80-column tractor feed is 40CAB351/AA. 132-column tractor feed printer cabinet is 40CAB353/AA.

*Note 3:*    When printer is adjacent, other provisions must be made for mounting data set and attendant set; there is no space allowed on the table top.

Fig. 6—KDP Adjacent Printer on Same Top and Pedestal
(See Note 3)
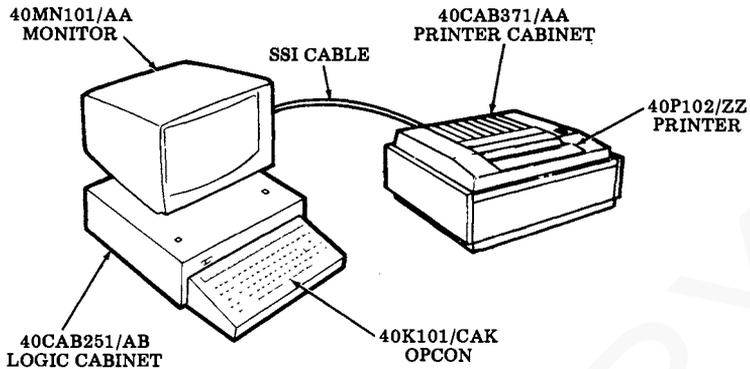
Fig. 7—KDP With Adjacent Noise Reduced Friction Feed Printer

**KDP (Remote Opcon and Monitor With Printer) (Ref 50907S)**

2.07    The KDP consists of a KD terminal (with remote opcon and monitor) and a printer. The printer may be 80-column friction feed or 80- or 132-column tractor feed.
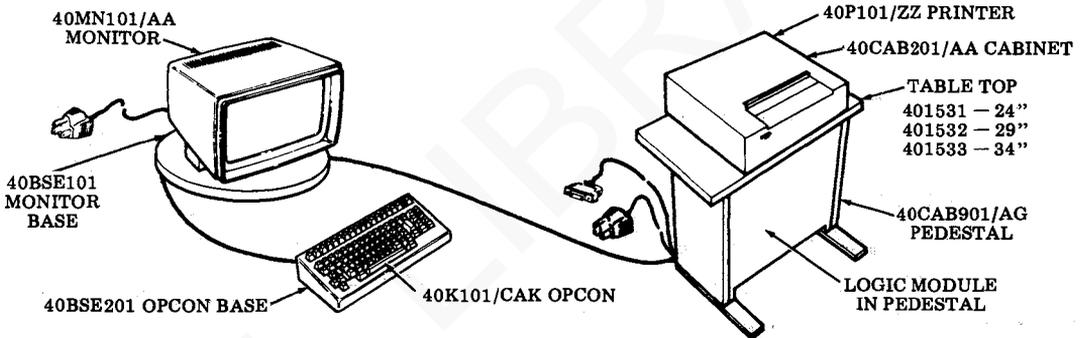
*Note:*    Data set not shown.

Fig. 8—KDP Station (Remote) With 80-Column Friction Feed Printer
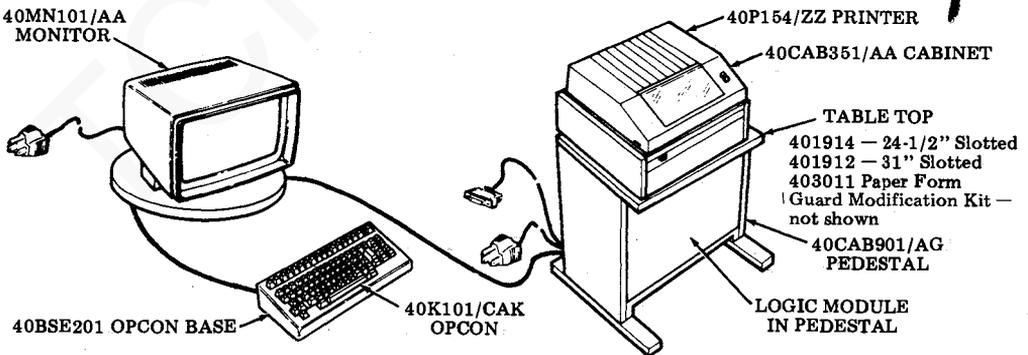
*Note:*    Data set not shown.

Fig. 9—KDP Station (Remote) With 80-Column Tractor Feed Printer

Page 5

40CAB351/AA CABINET

401911
TABLE TOP —
20" SLOTTED

40P154/ZZ PRINTER

40MN101/AA
MONITOR

TABLE TOP
401531 — 24"
401532 — 29"
401533 — 34"

40BSE101
MONITOR
BASE

40BSE201
OPCON BASE

40K101/CAK
OPCON

LOGIC MODULE
IN PEDESTAL

40CAB901/AG

40CAB902/AA
PEDESTAL
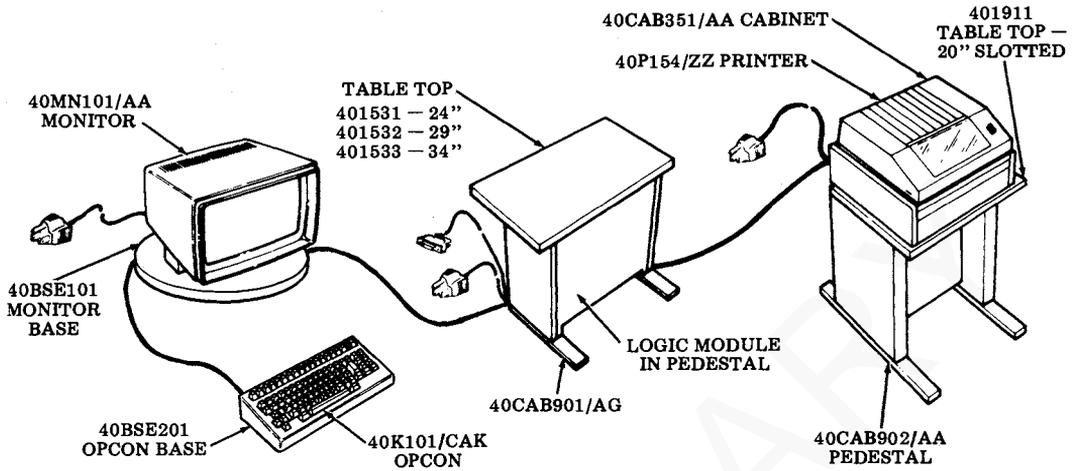
*Note:* Data set not shown.

Fig. 10—KDP Station (Remote) With Pedestal for 80-Column Tractor Feed Printer

40CAB353/AA CABINET

401913
TABLE TOP —
27-1/2"
SLOTTED

40P201/ZZ or
40P202/ZZ

40MN101/AA
MONITOR

TABLE TOP
401531 — 24"
401532 — 29"
401533 — 34"

LOGIC MODULE
IN PEDESTAL

40CAB901/AG

40BSE201
OPCON BASE

40K101/CAK
OPCON

40CAB904/AA
PEDESTAL
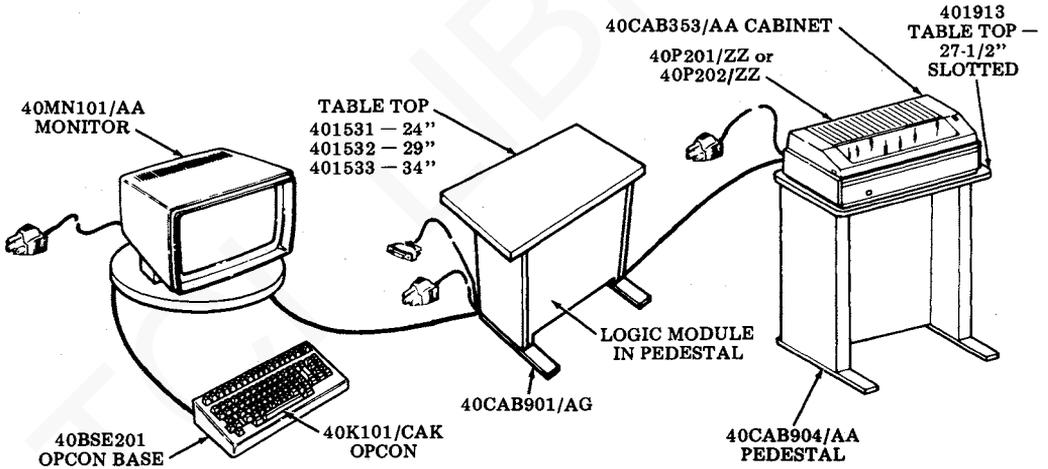
*Note:* Data set not shown.

Fig. 11—KDP Station (Remote) With Pedestal for 132-Column Tractor Feed Printer

KD-ROP (Keyboard Display With Receive-Only Printer)

2.08    The KD-ROP consists of a KD terminal, using a ROP as an adjacent printer. The ROP may be friction feed, tractor feed, or integrated controller. For installation information on ROP terminals, refer to the following:

582-200-200    Installation (DATASPEED 40/1 ROP Used in DATASPEED 40/2 KD-ROP Applications)

582-200-204    Installation (Integrated Controller)



Fig. 12—KD-ROP Station

ROP (Receive-Only Printer)

2.09    The ROP consists of either an 80-column or 132-column printer and either an integrated controller (40C303AA/001) mounted under the printer in the printer cabinet or a 40C103 controller mounted in the pedestal. Information for installing the integrated controller ROP is found in 582-200-204.



Fig. 13—Integrated ROP Station With Friction Feed Printer 40P102 (Noise Reduced)

TRACTOR FEED PRINTER
80-COLUMN — 40P153/ZZ or 40P154/ZZ
132-COLUMN — 40P201/ZZ or 40P202/ZZ

40C303AA/001
CONTROLLER
(In Cabinet)

DATA SET AND/OR
TELEPHONE

TRACTOR FEED CABINET
80-COLUMN — 40CAB351/AC
132-COLUMN — 40CAB353/AB

40K001/AAA
OPCON

PEDESTAL

Table top must have slot to accommodate 80- or 132-column printer.

Fig. 14—Integrated ROP Station With 80- or 132-Column Tractor Feed Printer

40P102/ZZ
PRINTER

PRINTER CABINET
40CAB371/ZZ PLUS
407102 MODIFICATION KIT

DATA SET AND/OR
TELEPHONE

TABLE TOP
401533 (34")

40K001/AAA
OPCON

40CAB901/AF
PEDESTAL

40C103 CONTROLLER
IN PEDESTAL
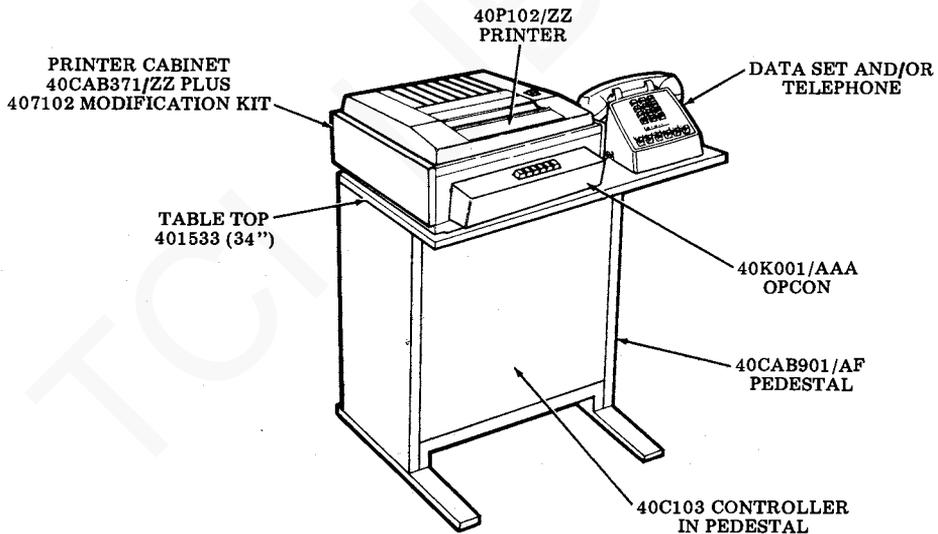
Fig. 15—40P102 Friction Feed Printer (Noise Reduced)
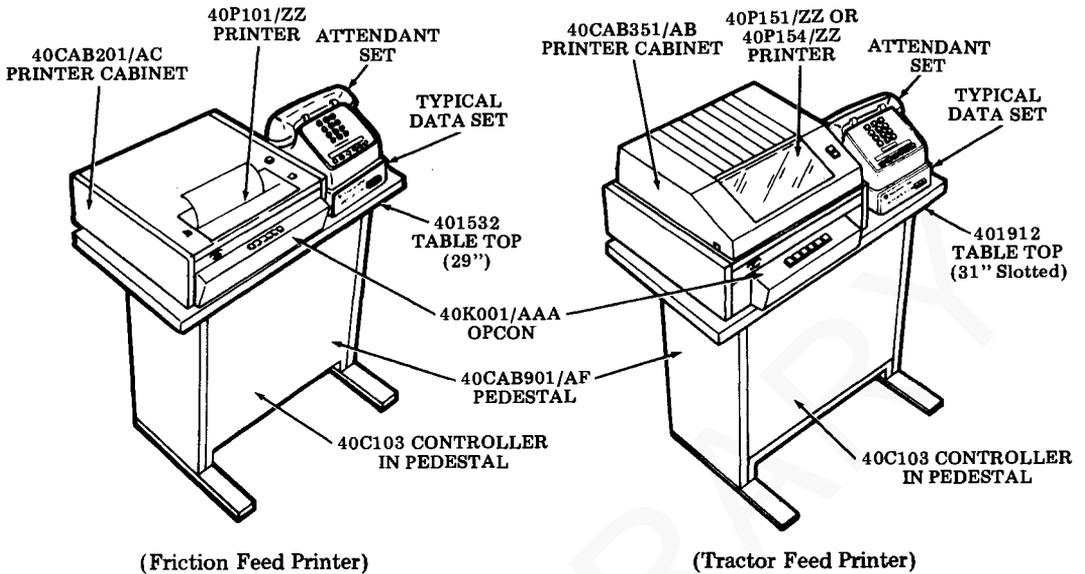
Fig. 16—ROP Station Equipped With 40C103/AD or /AE Controller

## ACCESSORIES

2.10    Section 582-200-102 includes a listing of modification kits and accessories used in DATASPEED 40/2 applications. References are also given where applicable to appropriate 50,000 Specifications and BSPs for installation information.

## CIRCUIT CARD ARRANGEMENTS

A.    Controller Logic

Full Editing — Teletypewriter
Compatible — EIA
(Electronic Industries Association)

KD/KDP
Controller
Arrangements

| Position Number | 40C204/BA | Circuit Card Description |
|---|---|---|
| 01 | 410770† | Printer Access |
| 02 | 410679 | Full Duplex Interface |
| 03 | 410672 | Opcon Interface |
| | 410676 | Send Variations |
| 04 | 410675 | Message Control |
| 05 | 410674 | Data Bus and Decode |
| Frame Number | 402176* | |
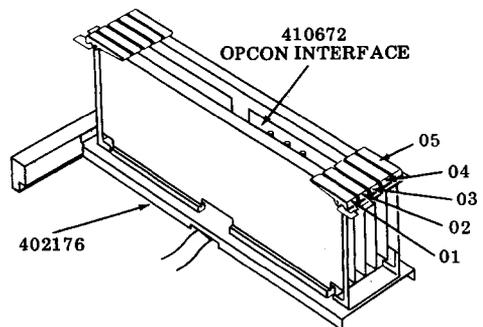


Fig. 17

*This wired frame, together with the proper circuit cards, can be used to make up the controller arrangement for replacement purposes.
†Not present on sets without printer or conversational (S/R) mode. The 410770 card is not part of 40C204/BA but is part of USOC ordering codes for DATASPEED 40/2.

B.  Display Logic

| DISPLAY LOGIC ARRANGEMENTS (40DL291) | | | |
|---|---|---|---|
| Memory Segment | Full Edit 24 Lines | Full Edit 48 Lines | Full Edit 72 Lines |
| No. 1 | 410015 | 410015 | 410015 |
| No. 2 | None | 410015 | 410015 |
| No. 3 | None | None | 410015 |

*Note:* 410005 card (early design) is physically and functionally interchangeable with 410015 card.

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

‡American National Standard Code for Information Interchange

410003 ADDRESS COUNTER

410001 EDIT OR 410009 OR 410018 CONTINUOUS SCROLLING

410002 DATA CONTROL

AUXILIARY (May contain 410680 circuit card if Attendant Selectable feature is present)

MEMORY SEGMENT NO. 1
SEGMENT NO. 2
SEGMENT NO. 3

410855 VIDEO GENERATOR

341672 WIRED FRAME

POWER CABLE

014
013
012 — NO. 3
011 — NO. 2
010 — NO. 1
09
08
07
06
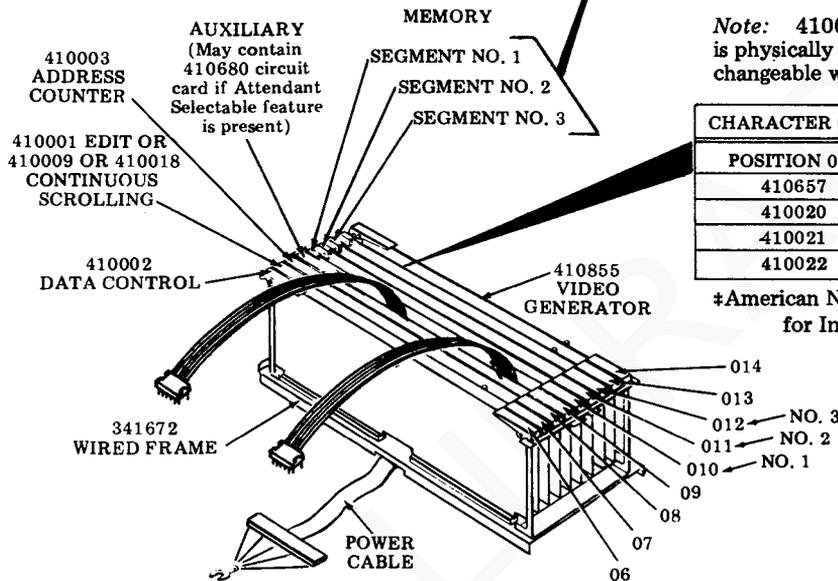
Fig. 18

C.  ROP Controller Logic

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

*Note 2:*  40C103/AE ROP controller does not include a buffer.
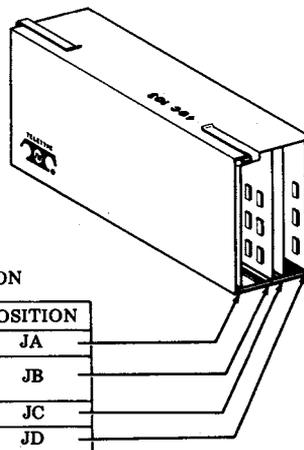
CIRCUIT CARD LOCATION

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

410581 and 410585 are interchangeable.

Fig. 19

## KEYSWITCH AND KEYTOP IDENTIFICATION
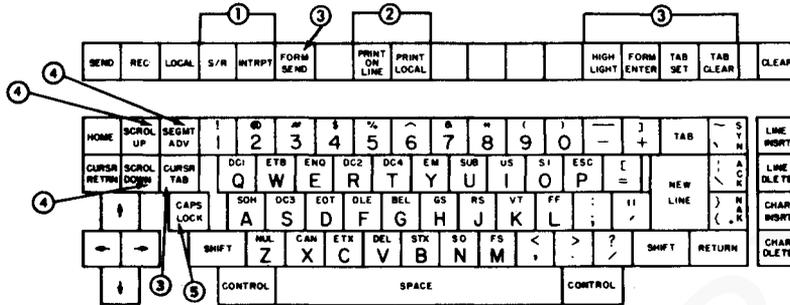
Fig. 20

① Keytops present for S/R (expanded conversation mode).

② Keytops present when terminal is equipped with page printer (see Notes 1 and 2).

③ Keytops are present with full edit feature (see Note 1).

④ Keytops present only if terminal has 48 or 72 line display memory (see Note 1).

⑤ If CAPS LOCK keytop is not present, keyswitch plunger is latched (down) for monocase — all caps — operation; blocking type keytop is installed over switch housing. First depression latches keyswitch (down); second depression unlatches keyswitch (up).

*Warning:* *If keytop is present and removal is required, do not remove keytop from switch shaft unless switch plunger is operated into unlatched up position.*

*Note 1:* If keytop is not provided within console arrangement, a blocking type keytop (unmarked) is installed over housing of keyswitch. Keytops are not present under blocking cap.

*Note 2:* Some console arrangements may have the PRINT ON LINE and PRINT LOCAL keytops replaced by BLOCKING keytops, respectively.

## ADDITIONAL FEATURES

### 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 410014 or 410015 circuit cards (in Segment 1 and Segment 2 positions) in the display logic module.

72 LINE expanded memory terminals have three 410014 or 410015 circuit cards (in Segment 1, 2, and 3 positions) in the display logic module.

*Note:* The 410004 or 410005 circuit card (early design) is physically and functionally interchangeable with the 410014 or 410015 circuit card, respectively.

### Full Edit

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

### Conversation Mode

Provided on operator console for "line-at-a-time" or "multiple line" operation except with 40/2 Stations where S/R operation is a character-at-a-time.

### Page Printer

Provided in operator console arrangement when 40/2 page printer is provided with terminal.

## STANDARD FEATURES FOR 40-TYPE ROP/ STATIONS

Operator Console



TEST keytop present on late design.
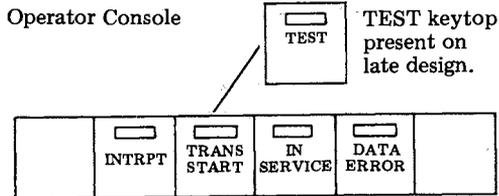
Fig. 21

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. ROP stations with a 40C303AA/001 Integrated Controller have a 825-character storage unit.

## 3. INSTALLATION

### INSTALLATION OUTLINE

☐ Review service order.
☐ Unpack equipment (3.01).
☐ Assemble components for station.
☐ Install options in controller (see 4. OPTIONS).
☐ Install and option printer if KDP.
☐ Install and option data set (or modem).
☐ Perform operational checkout; refer to Section 582-200-502.
☐ Have customer try out station arrangement.
☐ Complete the installation:
    (a) Give How to Operate Manual to customer.
    (b) Clean up.
    (c) Complete service order.

### UNPACKING INSTRUCTIONS

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



### UNPACKING INSTRUCTIONS

1. TURN BOX BOTTOM SIDE UP. OPEN BOTTOM FLAPS AND FOLD OUTWARD.

2. RETURN BOX AND CONTENTS TO AN UPRIGHT POSITION, KEEPING BOTTOM FLAPS FOLDED OUTWARD.

3. REMOVE BOX AND PLACE ASIDE. REMOVE INNER PACKING DETAILS FROM AROUND PRODUCT.

4. REMOVE PLASTIC BAG AND ALL TAPE FROM PRODUCT.

28130PK      40CAB

Fig. 22

3.02 Follow these procedures when unpacking.

(a) Before unpacking the cartons, confirm order with unit codes marked on the cartons.

(b) Select an assembly area to unpack the cartons so that damage to the components will not occur.

(c) When unpacking, be sure to wear approved safety glasses.

(d) Unpack each carton — refer to instructions on the container.

*Note:* Observe all "caution" notes printed on the carton.

(e) The pedestal should be unpacked first so that the printer and operator console can be placed on it.

(f) Suitable quantities of packing containers can be saved and reused for reshipment.

(g) Check option requirements against factory programmed options. If option changes are to be made, refer to the procedures in 4. OPTIONS.

(h) Assembly station or set.

### STATION ASSEMBLY

A. Pedestal Assembly

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

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



2449 LOCKWASHER

162730 SCREW
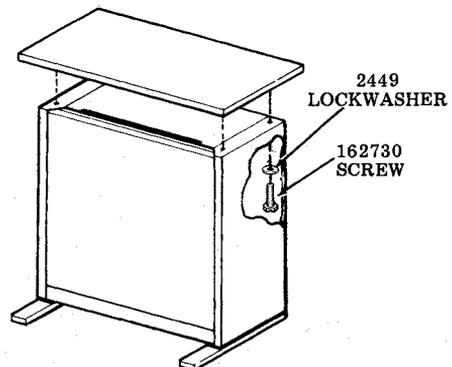
Fig. 23

B. Electronics Package Assembly (Electronics Under Monitor or Adjacent for KD and KDPs)

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.
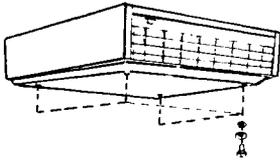
Fig. 24

Step 2. Open lid.

Step 3. Insert fingers as shown and lift. Then pull module forward until it engages the stop.

LID
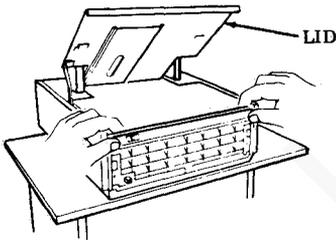
Fig. 25

Step 4. Insert screwdriver under latch and lift up on latch. Lift up on module and slide forward.

LATCH
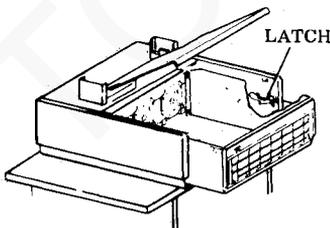
Fig. 26

Step 5. Reach in and disconnect ac power cable. Slide module completely out of cabinet.

MONITOR CABLE

AC POWER CABLE
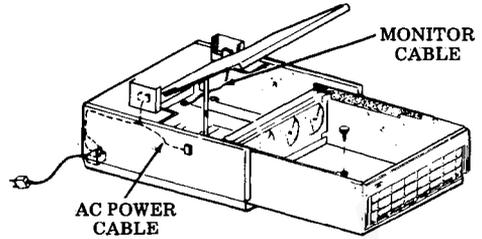
Fig. 27

Step 6. Remove 408050 ventilation assembly by removing three screws and the flat washer, lockwasher, and nut.

SCREW

FAN ASSEMBLY

NUT

LOCKWASHER

FLAT WASHER
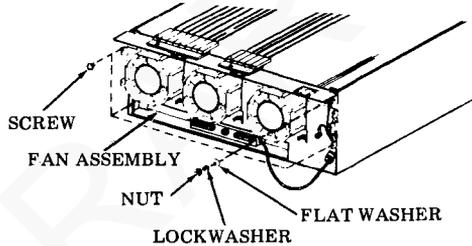
Fig. 28

Step 7. Check the display logic making sure the cards are seated and properly positioned for called arrangement.

| Memory Segment | Full Edit 24 Lines | Full Edit 48 Lines | Full Edit 72 Lines |
|---|---|---|---|
| No. 1 | 410015 | 410015 | 410015 |
| No. 2 | None | 410015 | 410015 |
| No. 3 | None | None | 410015 |

SEGMENT NO. 2 (Slot X11)   SEGMENT NO. 3 (Slot X12)

SEGMENT NO. 1 (Slot X10)

40DL291

Fig. 29

Page 13
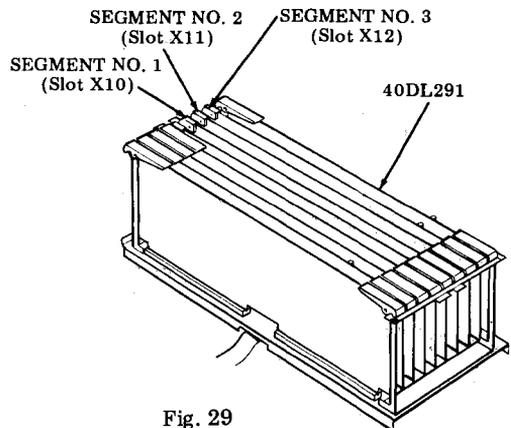
Step 8.  Remove muslin bag containing 341819 shoulder screw and 181204 flat washer used to mount the display logic into the frame and retain for later assembly.

**341819 SHOULDER SCREW AND 181204 FLAT WASHER**
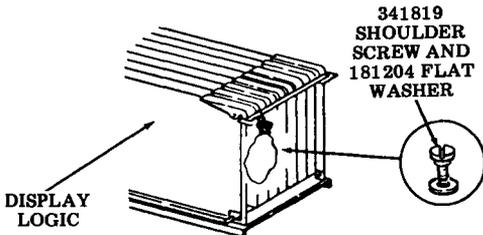
**DISPLAY LOGIC**

Fig. 30

Step 9.  Install display logic into frame.

**40DL291 DISPLAY LOGIC PLUS NECESSARY CARDS**
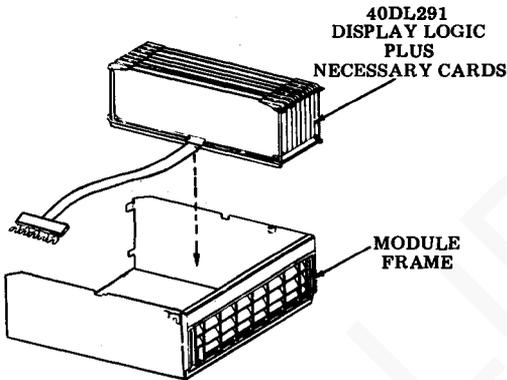
**MODULE FRAME**

Fig. 31

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.

**POWER RIBBON CABLE**

**(Top View)**

**GUIDE**
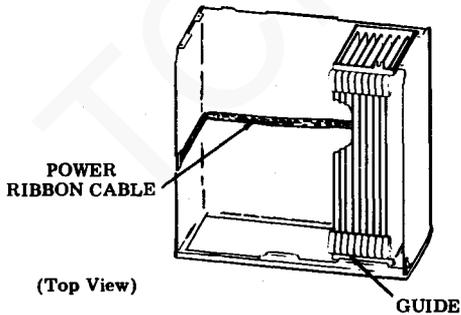
Fig. 32

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.

**CONTROLLER LOGIC**

**341819 SHOULDER SCREW AND 181204 FLAT WASHER**
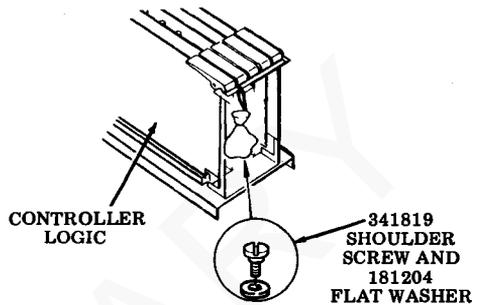
Fig. 33

Step 12.  Install the controller logic into module frame.

*Note:*  In terminals with adjacent logic, make sure unused opcon cable and connector are tied back under wired frame.

**See Note**
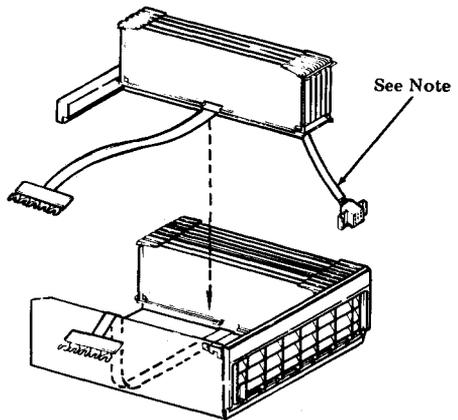
Fig. 34
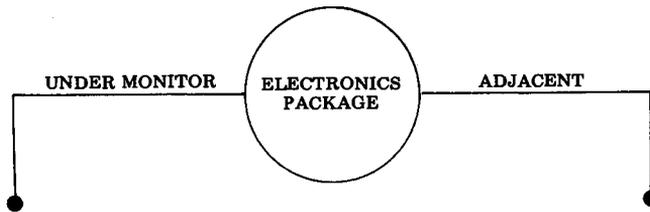
Fig. 35

**Step 13** Position controller bracket over guide in the frame. Route cables as shown (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. Slots in controller must fit over ribbon cable from the display logic.
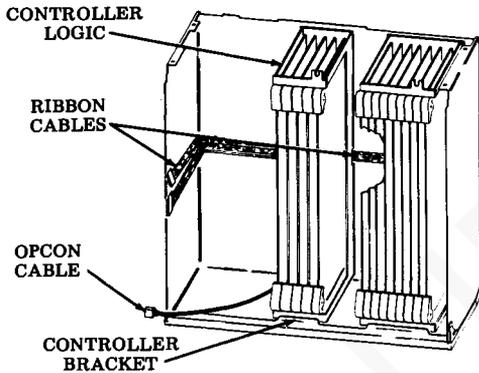


Fig. 36
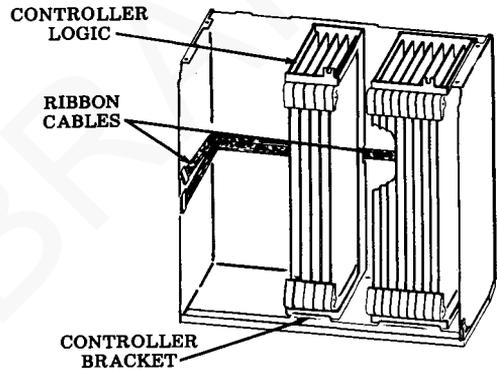


Fig. 37

**Step 14.** Install 341740 ribbon cable.
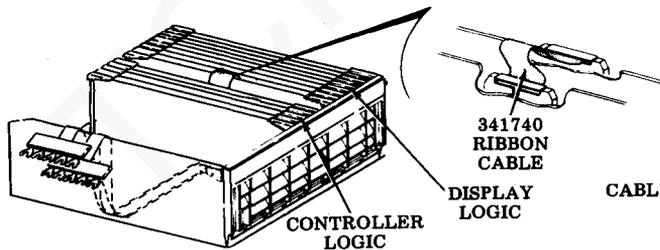


Fig. 38

Omit Steps 15 and 16; continue with Step 17.
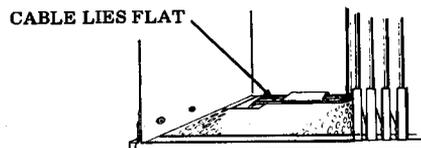


**Step 15.** Route opcon cable in the module so that the cable lies flat against front of the module.

(Top View)

Fig. 39
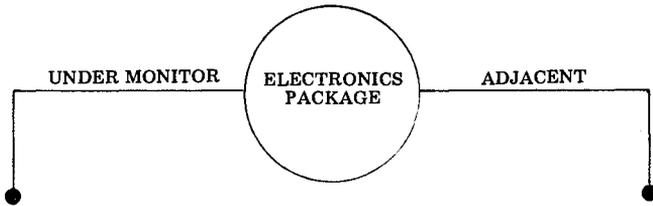
Fig. 40

Step 16a. Remove front panel (A). Insert opcon connector through the frame opening. Attach 402166 retainer plate and hardware (tied in muslin bag to the frame) to clamp opcon cable.

Step 16b. Insert opcon connector (keys up) into the front panel. Install panel back onto frame.
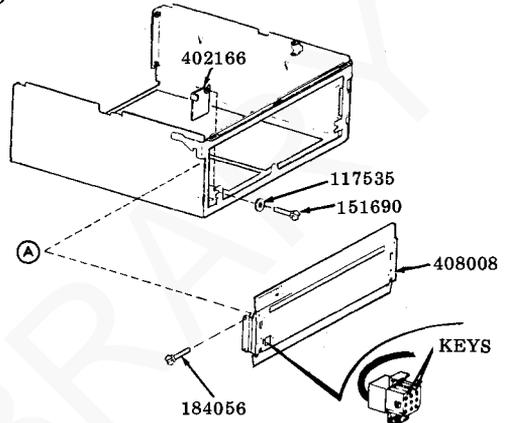


Fig. 41

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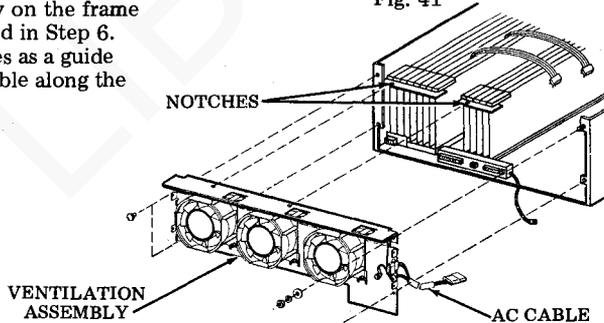


Fig. 42

Step 18. Attach braided ground strap to the slip-on terminal on the ventilation assembly. Align the controllers and tighten screws retained in Steps 8 and 11.
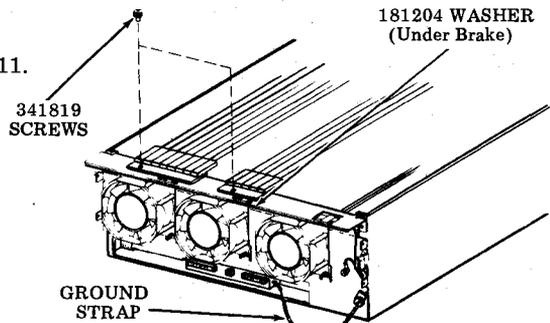


Fig. 43

Step 19. Mounting the PSU101 power supply into module frame:

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.

GUIDE SLOT

GUIDE PIN

GUIDE PIN

Fig. 44

UNDER MONITOR    ELECTRONICS PACKAGE    ADJACENT
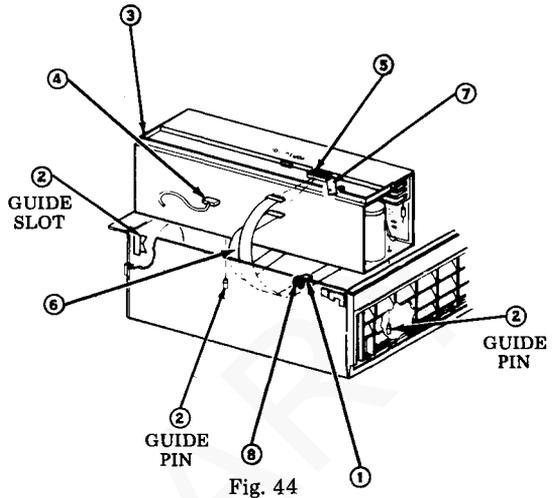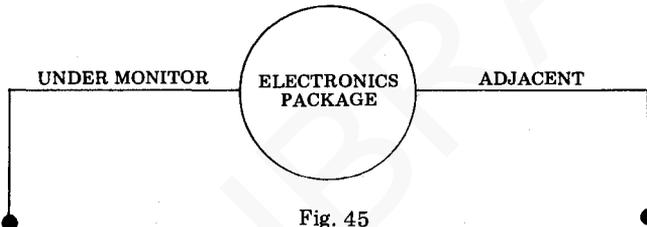
Fig. 45

Step 20.   Cable routing and connections:

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.

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

DISPLAY LOGIC CABLE

POWER CABLE
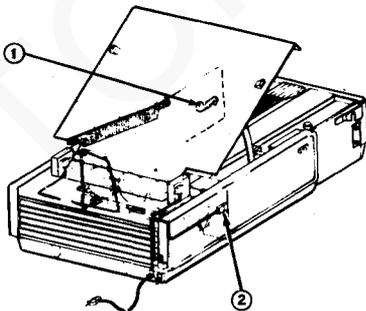
Fig. 46
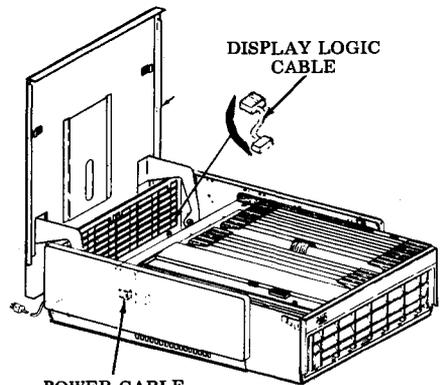
Fig. 47

Loosen shoulder screw. Slip clip on monitor cable under screw and tighten screws.
④ Connect monitor cable.
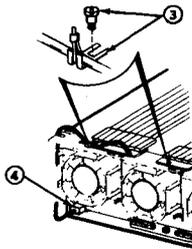


Fig. 48

Step 21.    Slide module back into position. Lift up slightly on module to seat in position.
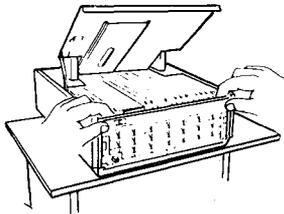


Fig. 49

C.    Electronics Package Assembly (Electronics in Pedestal for KDPs)

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.



SCREWS

SLIDE OUT
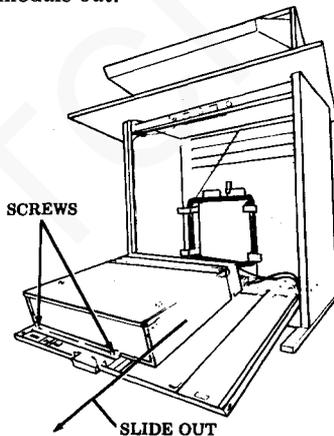
Fig. 50

Step 2.    Loosen two captive screws and remove four rear screws.
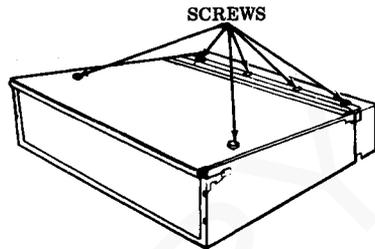


SCREWS

Fig. 51

Step 3.    Remove guard from back of module by removing four screws, flat washers and lockwashers.



HARDWARE
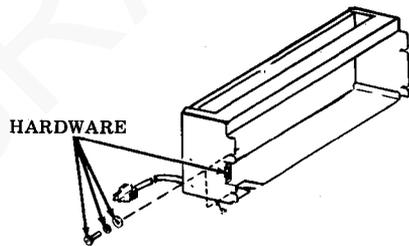
Fig. 52

Step 4.    Remove 408050 ventilation assembly by removing three screws, nut, lock-washer, and flat washer.
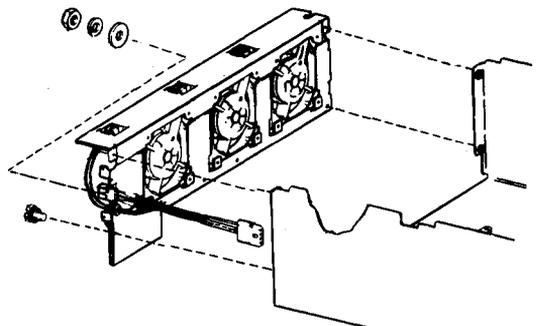


Fig. 53

Step 5. Check the display logic making sure the cards are seated and properly positioned for called arrangement.

| Memory Segment | Full Edit 24 Lines | Full Edit 48 Lines | Full Edit 72 Lines |
|---|---|---|---|
| No. 1 | 410015 | 410015 | 410015 |
| No. 2 | None | 410015 | 410015 |
| No. 3 | None | None | 410015 |
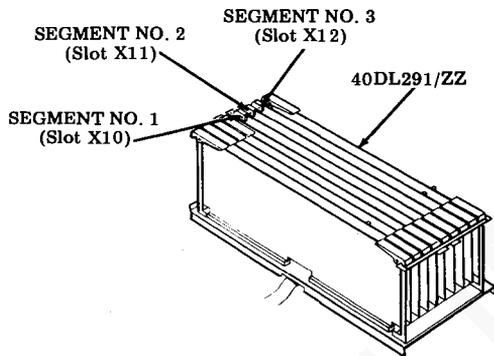


Fig. 54

Step 6. Remove the muslin bag containing the 341819 shoulder screw used to mount the display logic into frame and retain for later assembly.
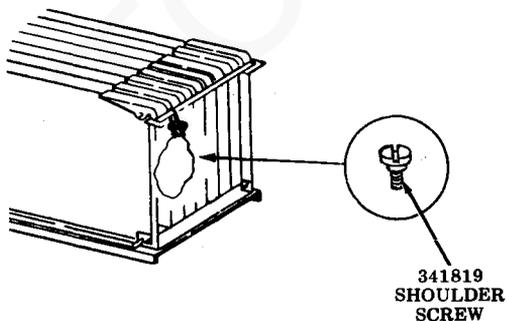


Fig. 55

Step 7. Install display logic into frame.
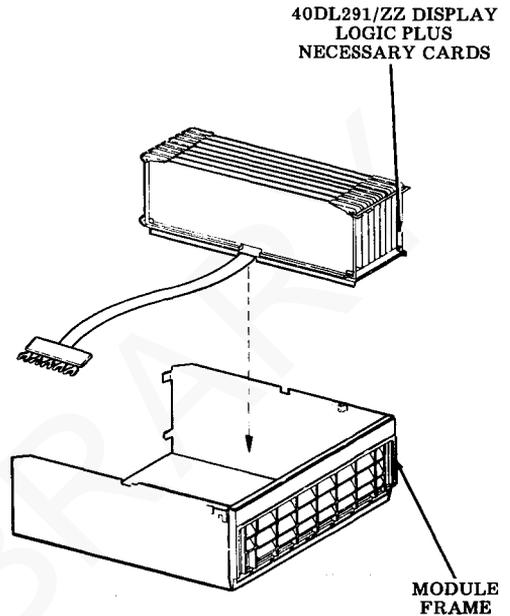


Fig. 56

Step 8. Route power ribbon cable flat against bottom of the module frame to the opposite side.



(Top View)

Fig. 57

Page 19
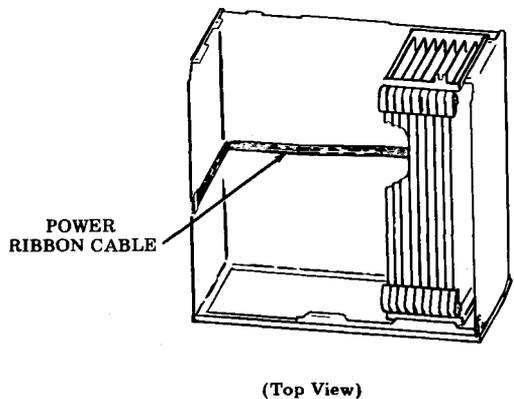
Step 9. Remove muslin bag containing 341819 shoulder screw used to mount the controller logic into frame and retain for later assembly.

341819
SHOULDER
SCREW
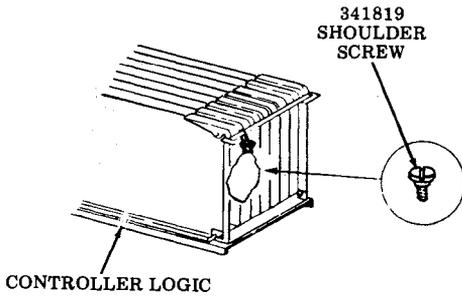
CONTROLLER LOGIC

Fig. 58

Step 10. Install controller logic into module frame.

*Note:* Make sure unused cable and connector at front of controller are tied back under frame.

See Note
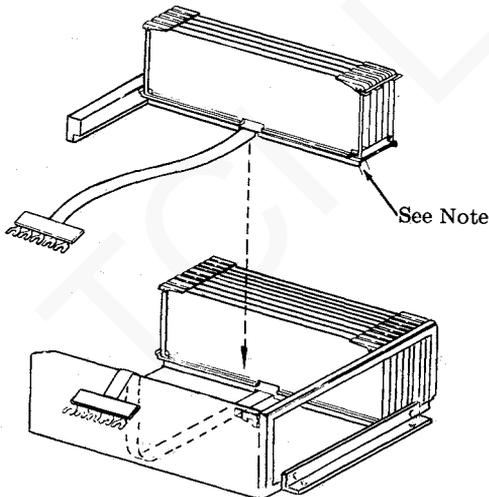
Fig. 59

Step 11. Route cables as shown. Slots in controller must fit over ribbon cable from display logic.

CONTROLLER
LOGIC
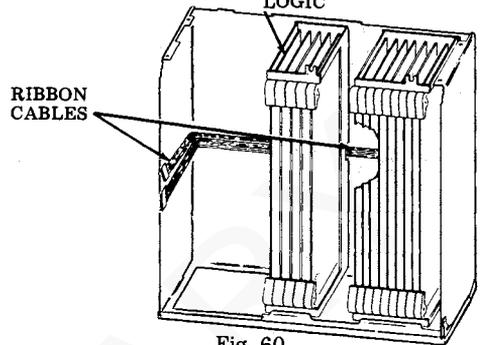
RIBBON
CABLES

Fig. 60

Step 12. Install 341740 ribbon cable.

DISPLAY
LOGIC

CONTROLLER
LOGIC

341740
RIBBON
CABLE

RIBBON
CABLES
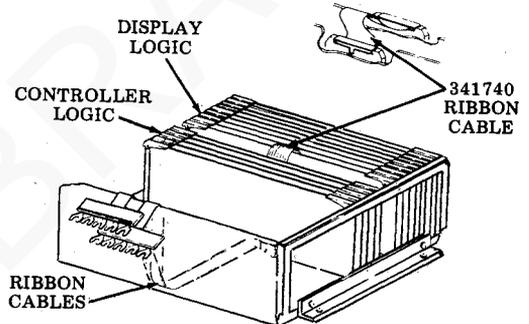
Fig. 61

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.

NOTCHES

VENTILATION
ASSEMBLY

AC CABLE
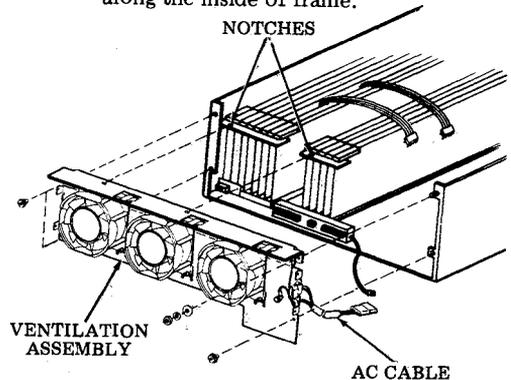
Fig. 62

**Step 14.** Attach the braided ground strap to the slip-on terminal on the ventilation assembly. Align controllers and tighten screws retained in Steps 6 and 9.
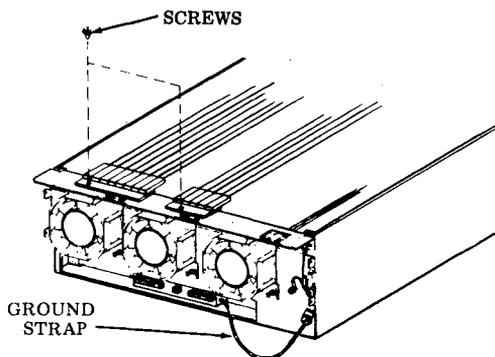


Fig. 63

**Step 15.** Mounting the PSU101 power supply into module frame:

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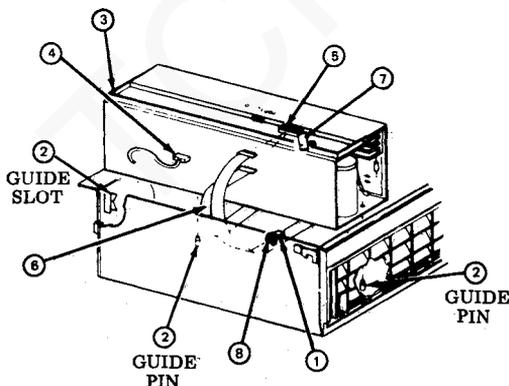


Fig. 64

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

**D. Electronics Package — ROP with 40C103 Controller**

**Step 1.** Slide tabs inward and open panel carefully. Remove two screws and slide module out.
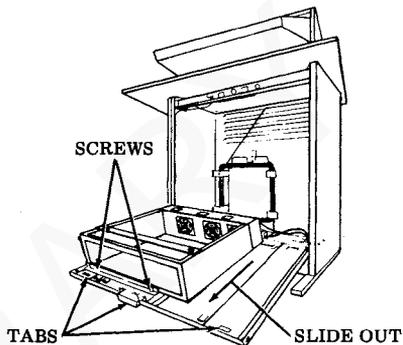


Fig. 65

**Step 2.** Loosen 401676 screw, remove 401688 thumbscrew and swing bar aside out of the way.
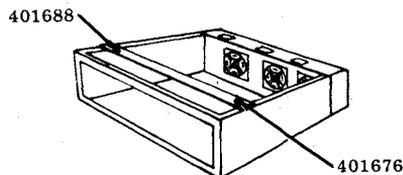


Fig. 66

**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. 67

Page 21
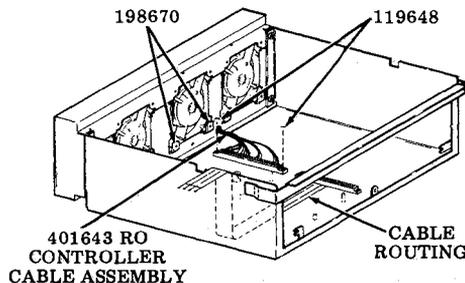
Step 4. Locate the controller logic and power supply over their locator pins and seat. Connect ac plug from ventilation assembly.
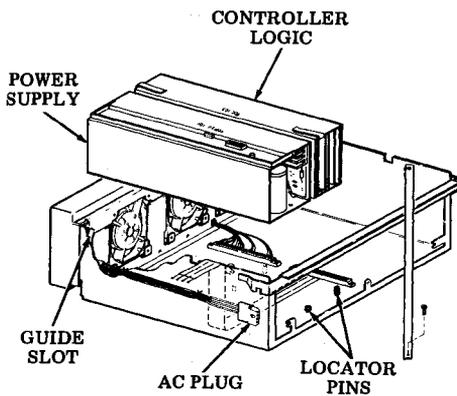


Fig. 68

Step 5. Loosen insulator screw and swing insulator aside. Mount ribbon cables and strap to terminal block. Replace insulator. Tighten screw.
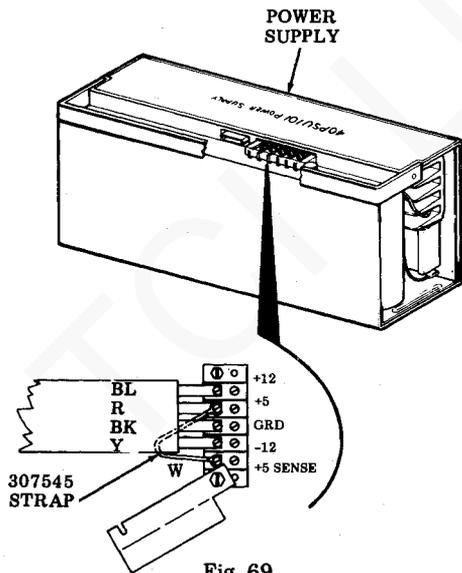


Fig. 69

Step 6. Complete installation by reversing Step 2 and then Step 1.

E. Opcon Assembly

Remove packing clips before assembly.

Step 1. Assembly procedures for RO, KD and KDP opcon are the same:

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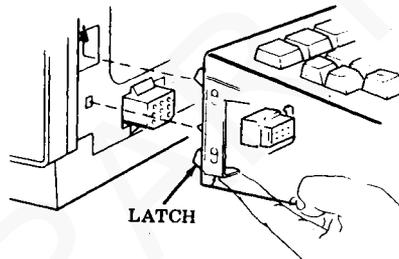


Fig. 70—RO, KD, and KDP Opcon

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 are being used, install CAPS LOCK key.

*Warning: 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 Assembly

*Note:* Frame grounding of circuit common is provided physically in the set power supply for display monitors with serial numbers 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. Refer to Service Manuals 401 and 402 if incompatibility exists.

**Step 1.**

Place monitor upside down. Remove packing clip. (Retain for possible future repacking.)

**Wheel Type Tilt Mechanism**



341719 PACKING CLIP

Fig. 71

Monitors With . . .

Remove corrugated packing detail taped to tilt lever (if present). To disengage the tilt lever immobilization latch spring (if present), slide the spring toward the front of the unit until it clears the tilt lever, and move the tilt lever to the right and up into any detent position beyond the first or second.
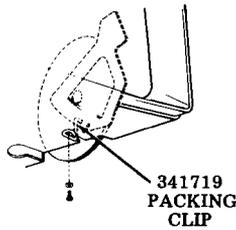
**Lever Type Tilt Mechanism**



406152 LATCH SPRING
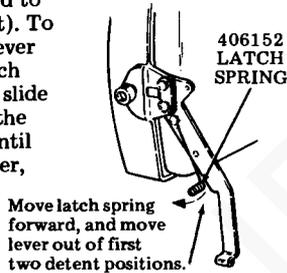
Move latch spring forward, and move lever out of first two detent positions.

Fig. 72

**Step 2.** Install bottom plate to underside of monitor:

• Push studs until they snap into place.
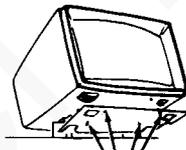


STUDS

Fig. 73

**Step 3.** Grasp monitor securely from the rear and mount it into the two cabinet posts:

• Monitor slides over the posts freely — there is no locking device.

• Make sure connectors inside the posts are positioned fully.
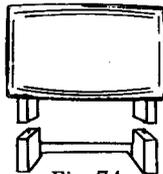


Fig. 74

**G.  Friction Feed Printer Assembly**



Shipping bar is under heavy spring tension.

**RELEASE CAREFULLY**

CAUTION

Fig. 75

**Step 1.** Remove shipping latch and bar. Discard. If printer is to be shipped at a later date, retain bar and latch.



SHIPPING LATCH

BAR
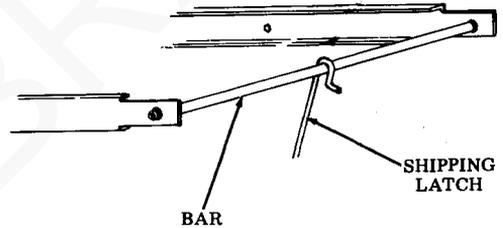
Fig. 76

**Step 2.** Slide printer into track:

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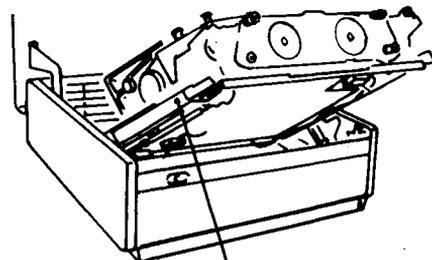


DETENT (Both Sides)

Fig. 77

**Page 23**

**Step 3.** Connect ac power cable and SSI cable.

**Step 4.** Connect interlock cable at right rear corner of cabinet.

**Step 5.** Install carrier.

**Step 6.** Install ribbon.
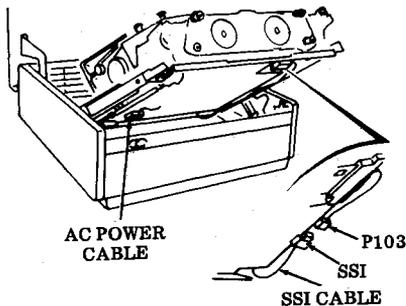


Fig. 78

**Step 7.** Option the 410640 card or 410076 card.

- Remove card.
- 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 410640 circuit card (see Pages 52 and 53) or 410076 card (see Pages 62 and 63).
- Reinstall card.



Attach clip end of static discharge strap to frame ground.
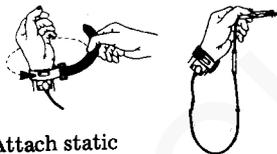
Attach static ground strap tightly to wrist.

Fig. 79

**Step 8.** Lower printer and install paper.

- Before inserting paper in paper chute, make a sharp crease on the paper as shown.
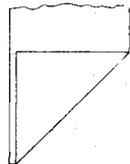


Fig. 80

**H.** Tractor Feed Printer (80- and 132-Column) Assembly

**Step 1.** Loosen four immobilizing screws a minimum of four turns until base rides freely on the shock mounts.
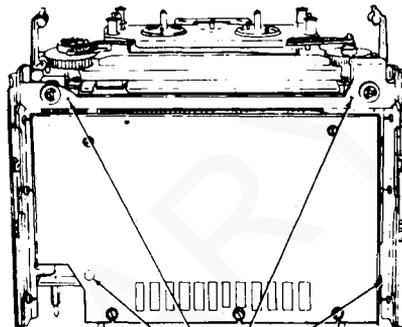


(Bottom View)

IMMOBILIZING SCREWS
(4 Places)

Fig. 81

**Step 2.** Option printer card per system requirements:

80-Column

- Remove card.
- Install ground strap as shown.
- Option 410640 circuit card (see Pages 52 and 53) or 410076 circuit card (see Pages 62 and 63).
- Reinstall card.

132-Column

- Option card by positioning appropriate 410729 circuit card (see Pages 54 and 55) or 410072 circuit card (see Pages 59, 60, and 61.) (It is not necessary to remove 410729 or 410072 card.)



Attach clip end of static discharge strap to frame ground.
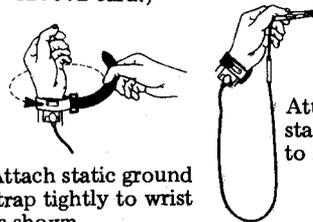
Attach static ground strap tightly to wrist as shown.

Fig. 82

Step 3.    Slide printer in place:

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



CONNECTORS
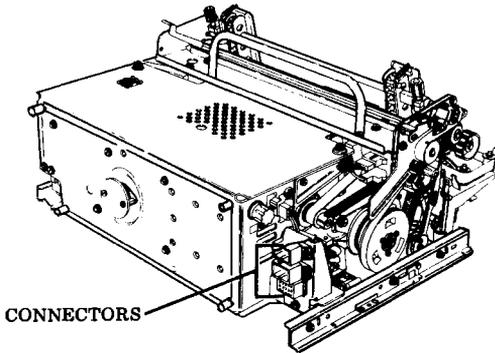
Fig. 83

Step 4.    Install paper forms:

- Make sure forms are loaded in front of mylar strips on both sides.
- 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.



MYLAR STRIP
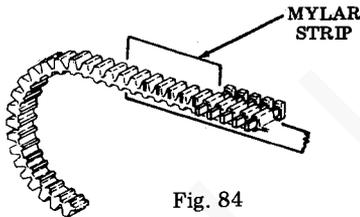
Fig. 84

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

I.    Cabling

INDEX OF FIGURES

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Fig. 86 — KD Remote Opcon and Monitor

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Fig. 91 — KDP Table-Mounted, Adjacent Logic, Friction Feed Printer Under Monitor

Fig. 92 — KDP Table-Mounted, Adjacent Friction Feed Printer

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Fig. 96 — ROP for Stand Alone or KD-ROP (Integrated Controller, 80- or 132-Column Printer)

Fig. 97 — ROP for KD-ROP (40C103/AD or 40C103/AE Controller, Friction Feed or Tractor Feed 80-Column Printer)



AC
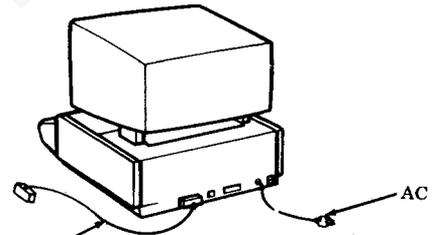
DATA SET CABLE
(See Note)

Fig. 85—KD

*Note:*  The following shielded cables of various lengths are preferred. In certain applications where shielding is not a consideration, the 341896 nonshielded cable (7 ft.) may be used.

| DATA SET INTERFACE | |
|---|---|
| SHIELDED CABLES | |
| CABLE PART NO. | TOTAL CABLE LENGTH |
| 408065 | 7 FT |
| 408066 | 12 FT |
| 408067 | 25 FT |
| 408068 | 50 FT |
| 430569 | 3 FT |

*Note 1:* Monitor cables of various lengths may be used.

| MONITOR CABLES | |
| --- | --- |
| CABLE PART NO. | TOTAL CABLE LENGTH |
| 405373 | 6 FT |
| 405374 | 12 FT |
| 405375 | 25 FT |
| 405376 | 50 FT |
| 405377 | 75 FT |
| 405378 | 100 FT |

*Note 2:*  See Fig. 95 for remote monitor to controller cable connection.

Fig. 86—KD Remote Opcon and Monitor

Fig. 87—KDP Pedestal-Mounted, Friction Feed Printer Under Monitor

PRINTER

LOGIC CABINET

Data Set PTR

PTR

AC CORD

LOGIC TO 341895 PRINTER CABLE

DATA SET CABLE (Note in Fig. 85.)

PRINTER AC CORD

Fig. 88—KDP Pedestal-Mounted, Friction Feed Printer

405611 AC CABLE

MONITOR CABLE (See Note 1 in Fig. 86.)

DATA SET CABLE (See Note in Fig. 85.)

AC POWER CABLE

346333 OPCON CABLE
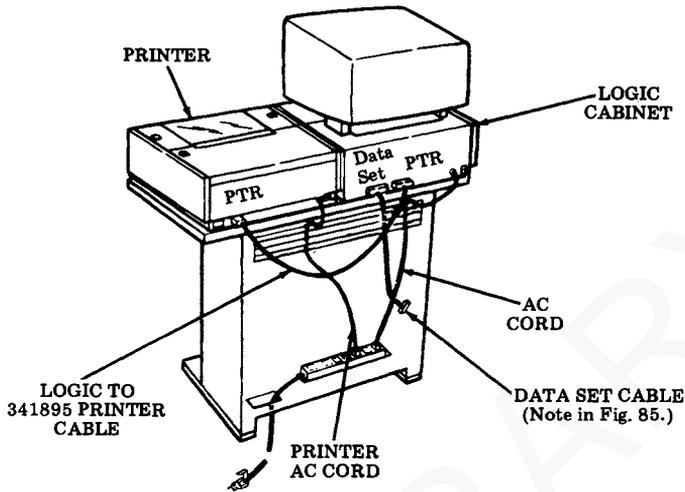
*Note:* See Fig. 95 for remote monitor to controller cable connection.

Fig. 89—KDP Remote Opcon and Monitor 80-Column Friction or Tractor Feed Printer
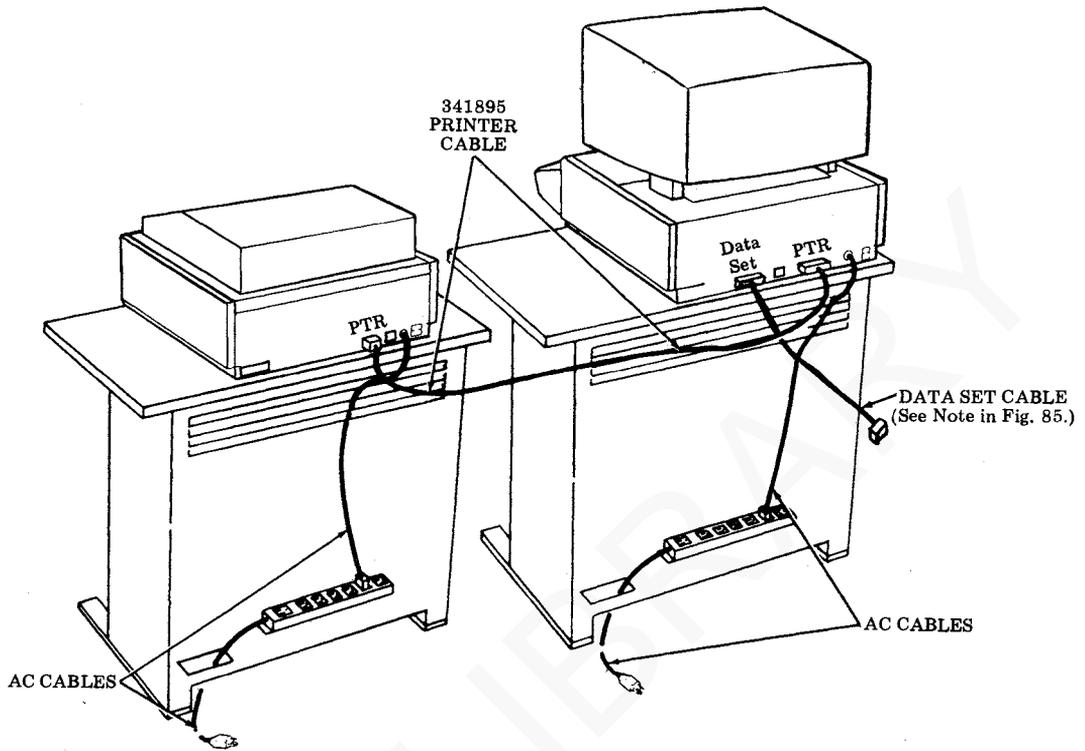
Fig. 90—KDP Pedestal-Mounted, 80-Column or 132-Column Tractor Feed Printer Adjacent
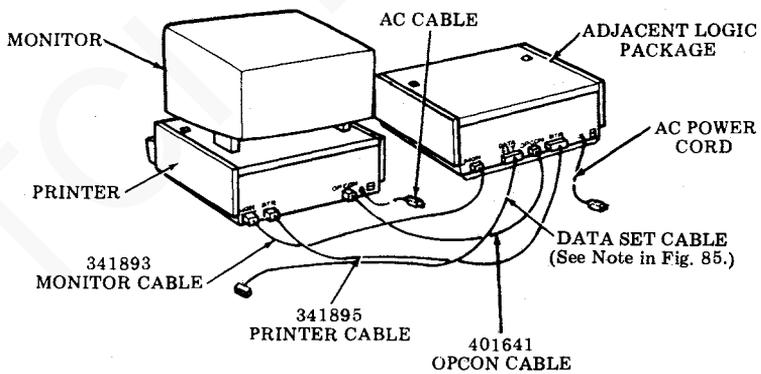


Fig. 91—KDP Table-Mounted, Adjacent Logic, Friction Feed Printer Under Monitor
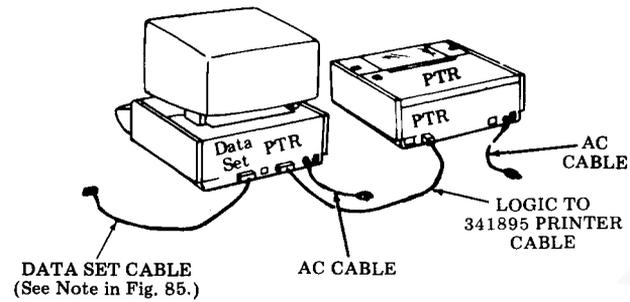
Fig. 92 —KDP Table-Mounted, Adjacent Friction Feed Printer
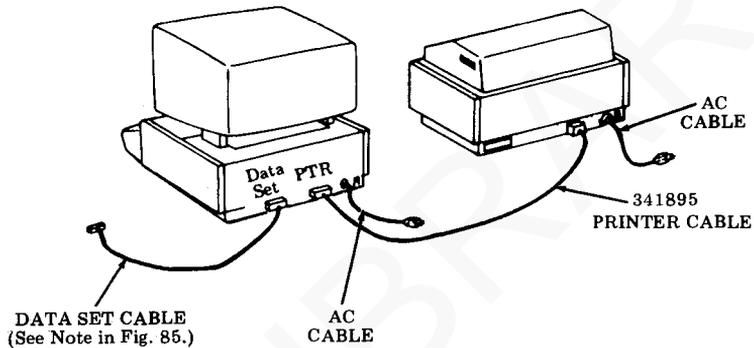


Fig. 93—KDP Table-Mounted, Adjacent Tractor Feed Printer (80-Column or 132-Column)
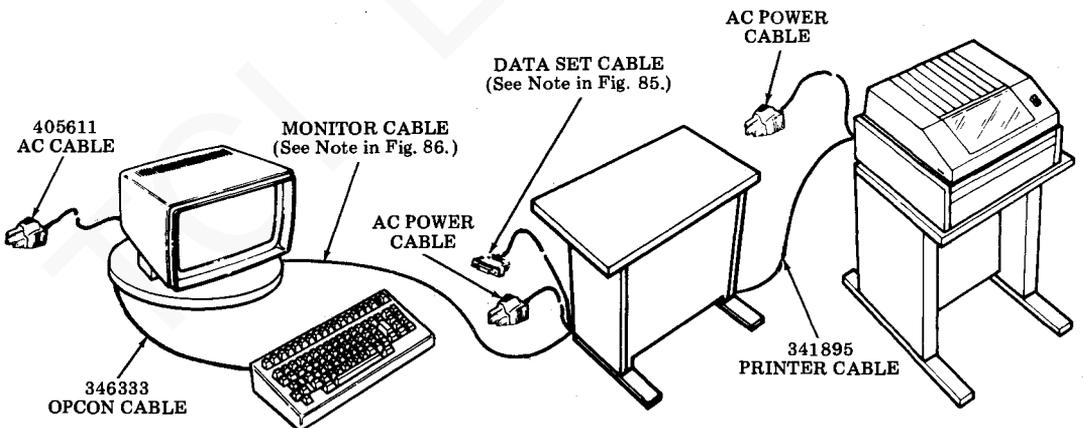


*Note:* See Fig. 95 for remote monitor to controller cable connection.

Fig. 94 —KDP Remote Opcon and Monitor With Pedestal for 80- or 132-Column Tractor Feed Printer

① Mount 408888 (6 inch) adapter cable.

③ Mount monitor connector.

LOGIC PACKAGE

320420

② Mount 405373 through 405378 dual cable.

181392

④ Mount opcon connector.

405611 AC CABLE

⑤ Install 346333 cable from opcon base.

Fig. 95—Remote Monitor to Controller Cable Connection

40C303AA/001 (Installed in Cabinet Under Printer)

PTR

AC POWER CABLE

To data set or to PTR receptacle in KD (Option 1.a.) (see Note in Fig. 85).
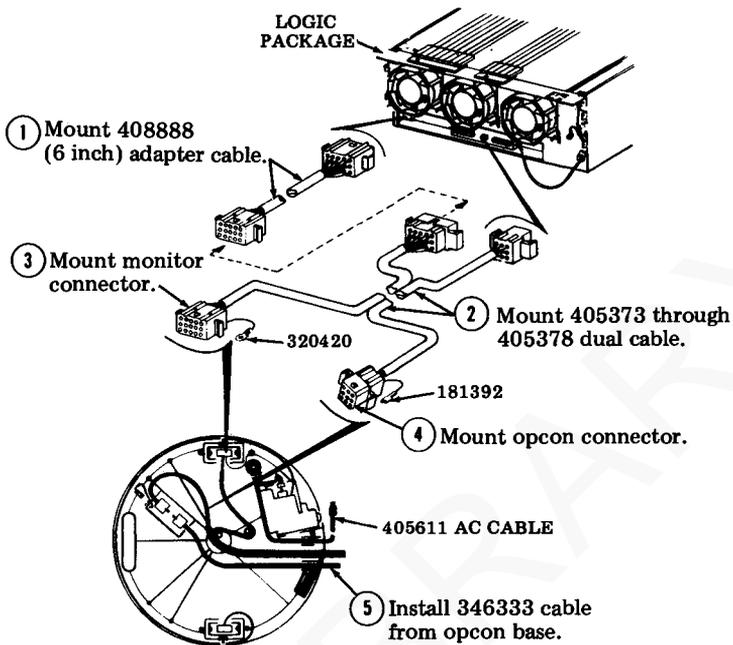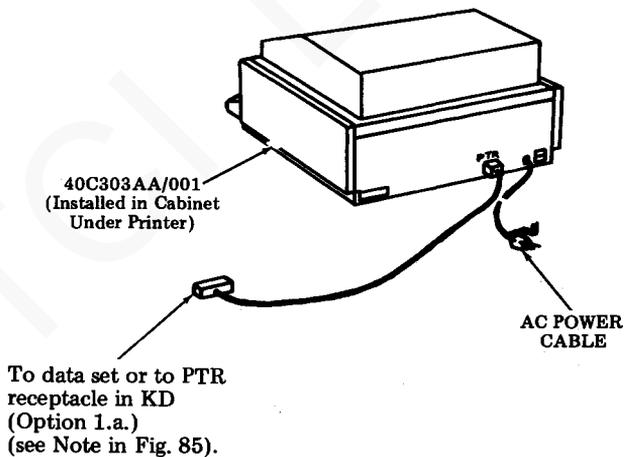
Fig. 96—ROP (40C303AA/001 Integrated Controller, 80- or 132-Column Printer)

FRICTION FEED PRINTER

401640
PRINTER
CABLE

40PSU101
POWER SUPPLY

40C103/AE OR /AD
ROP CONTROLLER

AC

401641
OPCON CABLE

AC

To data set or to PTR
receptacle in KD
(Option 1.a.)(see Note
in Fig. 85).

AC
POWER
CABLE

TRACTOR FEED PRINTER

AC POWER
CABLE

401640
PRINTER
CABLE

401641
OPCON
CABLE
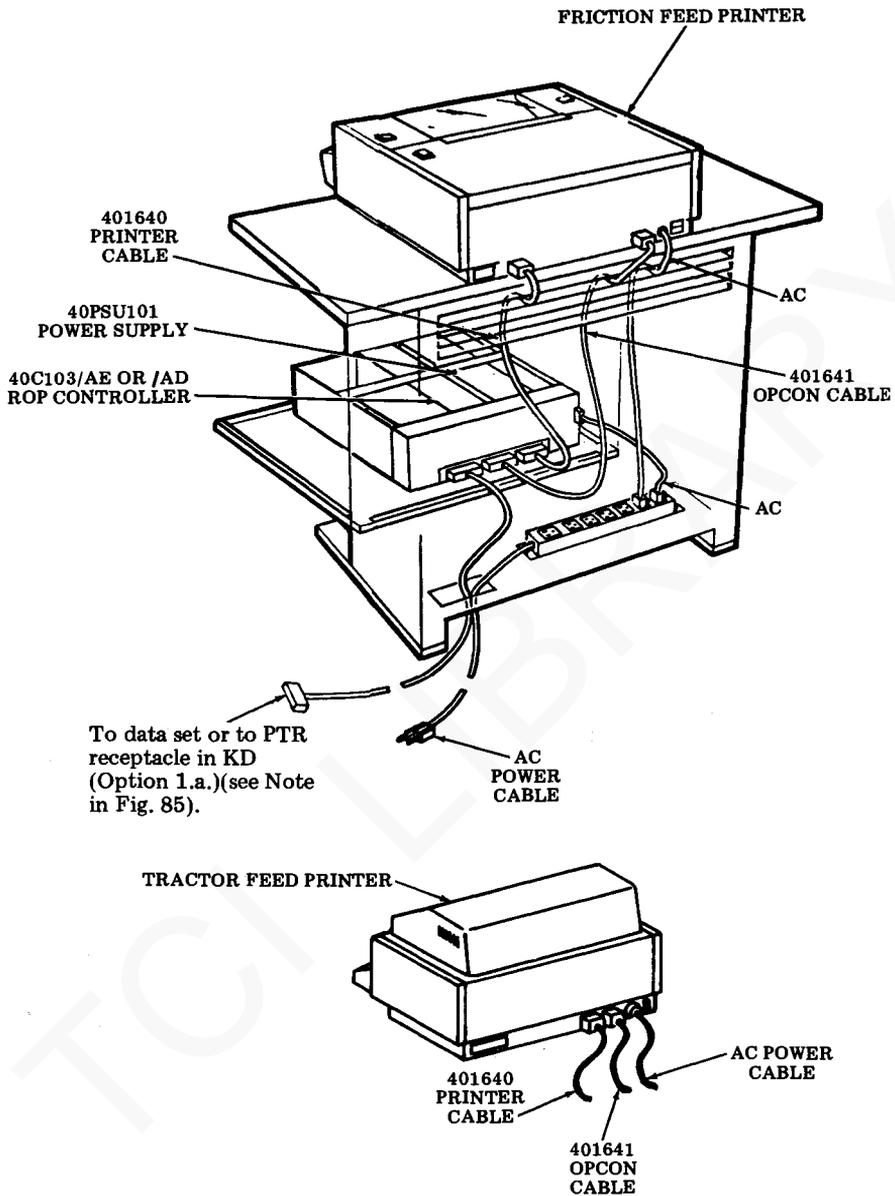
*Note:*   Connection of cables is the same with
tractor feed or friction feed printer.

Fig. 97—ROP for KD-ROP (40C103/AD or 40C103/AE Controller, Friction Feed or Tractor Feed
80-Column Printer)

J.   Data Set Installation

3.03   Option the data set using options given on Pages 71-93. Further information on data set installation may be found in the following BSPs:

Data Set 103G  Installation — Section 591-026-200
Data Set 103J  Installation — Section 591-039-200
Data Set 103JR Installation — Section 591-044-200
Data Set 108F  Installation — Section 591-042-100
Data Set 108G  Installation — Section 591-042-100
Data Set 113A  Installation — Section 591-033-200
Data Set 113C  Installation — Section 591-041-200
Data Set 113CR Installation — Section 591-046-200
Data Set 113D  Installlation — Section 591-040-200
Data Set 113DR Installation — Section 591-047-200
Data Set 201C  Installation — Section 592-029-200

Data Set 201CR Installation — Section 592-036-200
Data Set 202C  Installation — Section 592-015-200
Data Set 202R  Installation — Section 592-025-200
Data Set 202S  Installation — Section 592-028-200
Data Set 202SR Installation — Section 592-037-200
Data Set 202T  Installation — Section 592-031-200
Data Set 208A  Installation — Section 592-027-200
Data Set 208B  Installation — Section 592-030-200
Data Set 208BR Installation — Section 592-038-200
Data Set 212A  Installation — Section 592-034-200
Data Set 212AR Installation — Section 592-039-200

829 Data Auxiliary Set Installation — Section 598-082-200

3.04   Data Set Mounting (202D, 202R, 202S, 202T)

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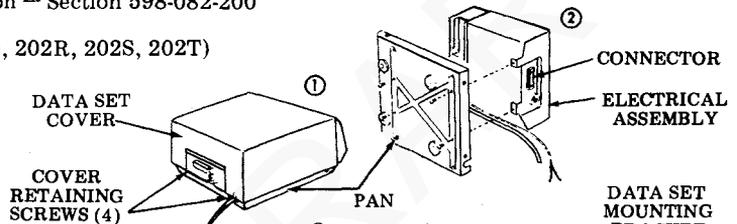
*Note 1:*   The following procedure applies to Data Set 202D only. Proceed to Step 7 for Data Set 202R.

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 electronic 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 (180A bracket)
WES6X — mounting bracket for 202R (401725)
WES64 — mounting bracket for 202S and 202T (345604 set of parts, 193A mounting bracket).

DATA SET COVER

COVER RETAINING SCREWS (4)

PAN

On some sets a similar bracket is mounted horizontally (180A Bracket).

CONNECTOR

ELECTRICAL ASSEMBLY

DATA SET MOUNTING BRACKET (401725 Modification Kit)

345604

MODULE FRAME

WELD NUT (4)

PAN

MOUNTING BRACKET (See Note 2)

Fig. 98

Test switch may be installed here,

44A or 42A connecting block is mounted on a metal frame that is easily removed for wiring. Excess cable may be wrapped over the four brackets of 401666.

SET POWER SWITCH (Old Style)

or wired here,

or Data Auxiliary Set 804A.

SET POWER SWITCH (New Style)

Plug data set into unswitched ac outlet (old style) (any ac outlet on new style).

*Warning: Insure that air screen is not blocked.*

AC CORD TO WALL OUTLET

DATA SET 202R OR 202D

DATA SET TO CONTROLLER CABLE

AC INPUT CONNECTOR

DATA SET TO CONNECTOR BLOCK (202R Via D10P Cord; 202D Via D-6AA-61)

PRINTER AC POWER

ELECTRONICS PACKAGE POWER SUPPLY CONTROLLER DISPLAY LOGIC FAN ASSEMBLY

DATA SET MOUNTING FRAME

Fig. 99

3.05    The following is the EIA interface for the 40/2:

| PIN NO. | EIA LEAD DESIGNATIONS |
|---------|------------------------|
| 1 | Protective Ground (AA) |
| 2 | Transmitted Data (BA) |
| 3 | Received Data (BB) |
| 4 | Request to Send (CA) |
| 5 | Clear to Send (CB) |
| 6 | Data Set Ready (CC) |
| 7 | Signal Ground (AB) |
| 8 | Data Carrier Detector (CF) |
| 11 | Secondary Request to Send (SCA) - See Note 2. |
| 12 | Secondary Received Line Signal Detector (SCF) |
| 20 | Data Terminal Ready (CD) |
| 22 | Ring Indicator (CE) |
| 23 | Alarm (ROP with Integrated Controller) or Speed Selection |

Cinch or Cannon Plug — DB-19604-432

*Note 1:*    On an ROP with an Integrated Controller, the following leads are used for current applications:
Pin 14 — 20/60 mA Transmit+ with respect to pin 7 (lead not present in EIA cable)
Pin 15 — 20/60 mA Receive+
Pin 17 — 20/60 mA Receive-

*Note 2:*    Some customer interfaces use pin 19 as Secondary Request to Send (SCA).

Data and control circuits in accordance with EIA RS-232-C.

| Voltage | Control | Line Signal | Binary State |
|---------|---------|-------------|--------------|
| -5 V to -25 V | Off | Mark | 1 |
| +5 V to +25 V | On | Space | 0 |

K.   Attendant Selectable Features (403400 and 403399 Modification Kits)



COMPONENT SIDE

410679

C17

410680

A5

A16

A2

402187

402186

1A
1B
2A
2B

COMPONENT SIDE

*Note 1:*   410679 circuit card mounts in slot 02 of the 40C204 controller. Switch packs A5 and C17 must be removed to install cables.

*Note 2:*   410680 circuit card mounts in slot 09 of the 40DL291 display logic.

Refer to 50825S for more details.

PEDESTAL MOUNTED LOGIC

BK

RED

G

Y

1A
1B
2A
2B

410680

181104 CLIP

*Note 3:*   403399 modification kit attaches to 410680 circuit card when logic is mounted into pedestal of KDP station.

*Note 4:*   For optioning the circuit card, see Page 70.

403399 MODIFICATION KIT (Switch Mounts on Pedestal Door as Shown)

SWITCH FDX/HDX

SWITCH A/B

Fig. 100

## 4. OPTIONS

### GENERAL

4.01 This part includes all options that are utilized in the DATASPEED 40/2 Station and associated data sets. It also covers handling of circuit cards, location of circuit card switch packs, and information on how to activate or change switch positions.

4.02 The controller and printer option switches are enabled per service order request. The options enabled should be checked on the Station Features and Options Record, W-4DIXB (see 4.26).

4.03 If any field options are to be changed, turn off power and remove cards using the following procedures. Check card to see that pins are not bent before reinserting card.

*Warning: Wear 346392 ground strap. See 1.03 of this section.*

### EXTRACTING CIRCUIT CARDS FROM THE CONTROLLER

4.04 To extract circuit cards from the controller:

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

(b) Lift circuit card straight up.
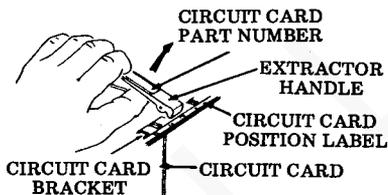
Fig. 101

### EXTRACTING CIRCUIT CARDS FROM THE PRINTER

4.05 Friction Feed Printer
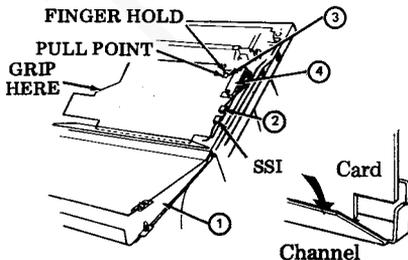
Fig. 102

① With the printer in the "ribbon changing or maintenance position," remove two screws that secure paper chute to bottom of printer and allow the chute to hinge down.

② Disconnect P103 printer cable connector from the 400921 SSI connector.

③ Using finger hold and a firm grip of card edge on opposite side as shown, use an even pulling force and unplug 410640 card from two rows of magnet assembly contacts.

④ Carefully lift bottom edge of card out from metal channel and unplug J3 connector from edge contacts of card. Remove card.

*Note:* During reassembly, make certain that the J3 connector is plugged onto the card and that the card is located within the channel before plugging it into the two rows of magnet assembly contacts. Apply slight pressure at both ends and middle of card to fully seat it on magnet contacts.

4.06 Tractor Feed Printers

① Remove two screws.
② Loosen three screws.
③ Slide plate out.
④ Remove connector from 410640 or 410076 card, and using pull points, pull card down and out.
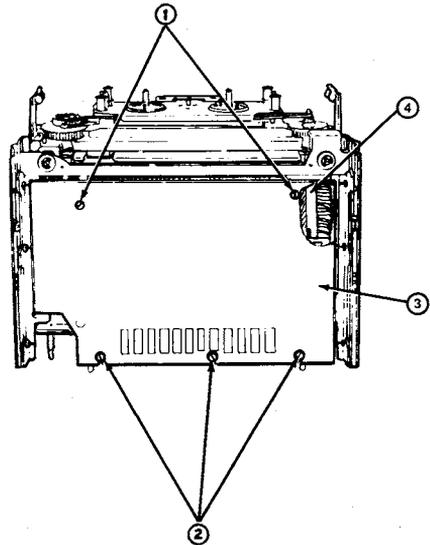
Fig. 103

*Note:* It is not necessary to remove the 410071, 410072, or 410729 card to activate or change switch positions.

ACTIVATING SET OR STATION OPTIONS

4.07    To activate or change options on the 40/2 circuit cards, perform the following procedures.

(a)    Turn off all power to the station.

(b)    Locate the circuit card that contains the option to be activated. (A complete list of options available can be found on Table A.)

(c)    Remove circuit card.

*Warning:    To avoid possible damage to MOS circuitry, attach 346392 static ground strap to wrist and frame ground before handling circuit cards.*

(d)    Locate the proper option switch or screw and activate as required.

(e)    Return the circuit card to its proper location.

(f)    Turn on station power.

(g)    Perform a checkout of the station to verify proper operation of the option.

OPTION DEFINITION

OPTION NO.    OPTION CONDITIONS    ROCKER SWITCH NUMBERS    LOCATION OF SWITCH ON CIRCUIT CARD    INDICATES FACTORY OPTIONED OPTION

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

Legend:
- ● Indicates dot end of rocker switch depressed.
- ○ Indicates blank end of rocker switch depressed.
- — Switch position does not affect option.
- * Factory optioned.

Switch OFF = ○ (Depress or flip right)
Switch ON  = ● (Depress or flip left)

Option switches on circuit cards in the controller and display logic are addressed with the Number "1" switch being towards the board top. Printer card option switches are addressed as in the illustrations accompanying the specific option activation information.

TOP OF CARD

ROCKER-TYPE SWITCH
(Press to operate)

ORANGE STICK

SWITCH NUMBERS

TOGGLE-TYPE SWITCH
(Flip to operate.)
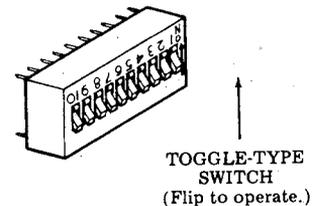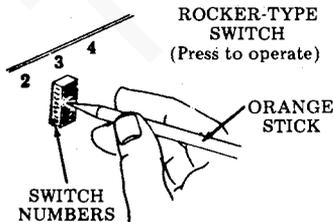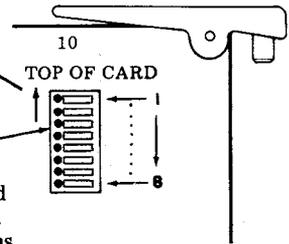
Fig. 104

FIELD OPTIONS AND DESCRIPTIONS

4.08    The options listed below are numbered, and provide brief descriptions to facilitate choices available. A list of suggested data sets and data set options is provided in 4.30.

4.09    Options marked with an asterisk (*) are factory options (shipped with set unless otherwise ordered) for 40/2 Stations.

4.10    The factory options may have been changed by the Service Center according to the service order, and should be entered on the Station Features and Options Record, W-4DIXB.

4.11    Option Listings:

1.    Interface to Printer
      a.    EIA
      b.    SSI*        Choose 1

2.    Not Used on DATASPEED 40/2 Stations

3.    EIA Send/Receive Data Baud Rate

| | (KD) | | (ROP) |
|---|---|---|---|
| a. | 1050 | Not Applicable on DATASPEED 40/2 | a. 1050 |
| b. | 1200* | KD or KDP Stations | b. 1200* |
| c. | 2400 | | |
| d. | 1800 | Not Applicable on DATASPEED 40/2 | |
| e. | 2100 | KD or KDP Stations | |
| f. | 4800 | | |
| g. | 600 | | |
| h. | 300 | | |
| i. | 150 | | |
| j. | 110 | | |

4.    EIA Reverse Channel (see Note 1)
      a.    Reverse Channel Required to Send* (see Note 2)
      b.    Reverse Channel Not Required to Send          Choose 1

*Note 1:*    If using integrated ROP, Option 143.b. must be used to operate in print local mode.

*Note 2:*    Applies to 202-type data set interface only for DATASPEED 40/2 Stations.

5.    Response to Received Characters
      a.    Reject Null*
      b.    Accept Null          Choose 1
      c.    Reject CR*
      d.    Accept CR          Choose 1
      e.    Reject Delete*
      f.    Accept Delete          Choose 1
      g.    Reject DC1*
      h.    Accept DC1          Choose 1
      i.    Reject DC3*          Applies to Issues 4B and later of
      j.    Accept DC3          Choose 1    the 410674 Circuit Card Only

6.    Functions Receive
      a.    All ESC Seq Displayed as Received (Function Not Performed)
      b.    All ESC Seq Are Performed as Received But Not Displayed*          Choose 1

*Factory Installed Option

7. Errored Character on Receive (See Note)
    a.    Not Displayed on Vertical
            Parity Error* — Required for DATASPEED 40/2 Stations
    b.    Displayed on Vertical
            Parity Error — Not Used on DATASPEED 40/2 Stations

*Note:* Controllers used in DATASPEED 40/1 and 40/3 have Option 7.b. factory optioned.

8. Page (Message) Ending Character Functions on Send
    a.    End on FF
    b.    Do Not End on FF*       Choose 1
    c.    End on ETX*
    d.    Do Not End on ETX     Choose 1
    e.    End on EOT* (Required)
    f.    Do Not End on EOT     (Not Optional on DATASPEED 40/2 Stations) (see Note)
    g.    End on GS*
    h.    Do Not End on GS      Choose 1

*Note:* End on EOT must be optioned for DATASPEED 40/2 Stations. In 202-type data set operation, a received EOT causes RTS to turn on even through set is in local. If station is in local with PRINT ON LINE lighted, a received DLE-EOT is not a disconnect sequence. Received carrier must be dropped to cause a disconnect.

9. Highlight
    a.    Delimiters Not Sent (Except in Form Send Mode)
    b.    Delimiters Sent (Modifies 13.)*    Choose 1

10. Line Ending Sequence (Batch mode only)
    a.    CR LF
    b.    CR CR LF*    Choose 1
    c.    LF

11. Mode After Send
    a.    Local*
    b.    Receive    Choose 1
            (See Note)
    c.    EXT Mode — Not Used on DATASPEED 40/2 Stations

*Note:* If DLE-EOT is used as a sent disconnect sequence, Option 11.b. will cause REC to light, DTR stays on, and disconnect will not occur.

12. Form Enter
    a.    Disable in Local
    b.    Enabled in Local*    Choose 1

13. Send Variations (All Without Delimiters Except as Modified by 9.b.). In Form Send, Protect and Unprotect Sent as Displayed With Delimiters.
    a.    Send All as Displayed
    b.    Send All as Displayed With Unprotected HT to Space*
    c.    Send Protect as Space and Unprotected as Displayed
    d.    Send Protect as Space and Unprotected as Displayed, HT to Space
    e.    Send Protect as Delete, Unprotected as Displayed    Choose 1
    f.    Send Unprotected Only as Displayed
    g.    Send Unprotected Only and HT at End of Field
    h.    Send Unprotected Only With Unprotected HT to Space

14. Not Used on DATASPEED 40/2 Stations

*Factory Installed Option

15. Not Used on DATASPEED 40/2 Stations

16. Not Used on DATASPEED 40/2 Stations

17. Printer Margin and Form Width
    c. Last Character on 80th Column*
    d. Last Character on 79th Column
    d. Last Character on 78th Column
    d. Last Character on 77th Column
    d. Last Character on 76th Column        Choose 1
    d. Last Character on 75th Column
    d. Last Character on 74th Column
    d. Last Character on 73rd Column

   *Note:* Options 17.a. and 17.b. are not used on DATASPEED 40/2 Stations.

18. Printer Paper Feed Out
    a. No Paper Feed Out
    b. Paper Feed Out on DSR Loss — 16 Lines     Choose 1
    c. Paper Feed Out on DSR Loss and ETX*

   *Note:* Option 18.c. is not recommended for tractor feed printers.

19. Printer Errored Character Symbol
    a. Printed on Even Parity Error
    b. Printed on Odd Parity Error
    c. Not Printed on Parity Error* — Required for DATASPEED 40/2 Stations
    d. Printers With 96 Character Set
    e. Printers With 64 Character Set        Choose 1 (Must match type
    f. Printers With Extended ASCII Character Set      carrier ordered)

20. Line Feed on Printer
    a. Single*      Choose 1
    b. Double

21. Foldover on Up-Low Printer
    a. Lower Case and Upper Case Print*
    b. Lower Case Prints as Upper Case
                                            Choose 1 (Per type carrier ordered)
22. Foldover on Monocase Printer
    a. Lower Case Prints as Error Symbol
    b. Lower Case Prints as Upper Case*

23. Extended ASCII on Printer (Extended ASCII)
    a. Prints Extended ASCII Characters
    b. Does Not Print Extended ASCII        For future use — do not change.
       (See 19.a., b., or c.).*

24. ROP — Odd/Even Character Parity Check
    a. Even Vertical Parity (Response for Odd Parity)*      Choose 1
    b. Odd Vertical Parity (Response for Even Parity)

25. ROP — Response to Receive Parity Error                    Choose 1
    a. Printer Receives Odd Parity Null
    b. Printer Receives Character Even Though it has Parity Error*
    c. DATA ERROR Key Lights                Choose 1
    d. DATA ERROR Key Does Not Light*

26. Not Used on DATASPEED 40/2 Station.

*Factory Installed Option

27. Message Start
    a.   Home on Transmit (Local Mode Only)
    b.   Send From Cursor*

    ⎤ Choose 1

28. Disconnect on Loss of Carrier
    a.   Disconnect After 45 Seconds*
    b.   Does Not Disconnect — Timer Disabled

    ⎤ Choose 1

29. Printer Message Mode
    a.   When in Print On-Line Mode, Copies Display
         in Send or Copies the Line in Receive or Local*
    b.   Not Used on DATASPEED 40/2 Stations
    c.   Permanent Print On-Line Received Data Only
         (See Note)
    d.   When in Print On-Line Mode, Copies Received
         Data when in Receive or Local (See Note)

    ⎤ Choose 1

    *Note:*   Not recommended for DATASPEED 40/2 applications.

30. Not Used on DATASPEED 40/2 Stations.

31. Not Used on DATASPEED 40/2 Stations.

32. Not Used on DATASPEED 40/2 Stations.

33. Not Used on DATASPEED 40/2 Stations.

34. Not Used on DATASPEED 40/2 Stations.

35. Printer Motor Control
    a.   "Data Set Ready" Controls Printer Motor*
    b.   "Carrier Detect" Controls Printer Motor

    ⎤ Choose 1

36. Printer Paper Alarm
    a.   Paper Alarm Affects DTR at End of Call. DTR Off
         Until Paper is Restored.*
    b.   Paper Alarm Affects DTR Immediately. DTR Off
         Until Paper is Restored.

    ⎤ Choose 1

37. Not Used on DATASPEED 40/2 Stations.

38. Data Stacking
    a.   Enable Data Stacking
    b.   Disable Data Stacking*

    ⎤ Choose 1

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

    ⎤ Choose 1

40. Go Receive on CR, S/R Mode Only (See Note 1)
    a.   Go Receive on Sending CR (See Note 2)
    b.   Do Not Go Receive on Sending of CR*

    ⎤ Choose 1

    *Note 1:*   Applies to Issues 4B and later of the 410674 circuit card only.

    *Note 2:*   Applies to HDX Operation With Data Set 202 on DATASPEED 40/2 Stations Only.

*Factory Installed Option

41. Mode of Operation (See Notes 1 and 2)
    a.   Half-Duplex
    b.   Full Duplex*    ]   Choose 1

*Note 1:*   202-type data sets which have a local copy feature provided, require the full duplex option to be selected for proper operation.

*Note 2:*   If Interrupt is used with 202-type data set, Option 41.a. must be chosen.

42. Parity Generation
    a.   Send Even Parity*
    b.   Send Odd Parity
    c.   Send 8th Bit as Mark    ]  Choose 1
    d.   Send 8th Bit as Space

43. Stop Bit Generation
    a.   Send One Stop Bit*
    b.   Send Two Stop Bits    ]  Choose 1

44. EIA Receive Data
    a.   Enable EIA Receive Data*
    b.   Disable EIA Receive Data    ]  Choose 1

45. Current Loop Data
    a.   Enable Receive Data From Current Loop
    b.   Disable Receive Data From Current Loop*    ]  Choose 1

46. Interface Select (See Note)
    a.   103-Type Data Set Interface
    b.   202-Type Data Set Interface*    ]  Choose 1

*Note:*   If option 46.a. is selected, EOT will cause a disconnect (recommend for low speed station). If option 46.b. is selected, EOT will cause a mode change (recommend for high speed station).

47. Printer Interface (See Note)
    a.   Enable Printer Interface
    b.   Disable Printer Interface*    ]  Choose 1

*Note:*   Option 47 affects operation only when LOCAL is lighted. With 47.a., Ring Indicator automatically turns on PRINT ON LINE, and allows automatic answer of calls. With 47.b., POL turns on but call will not be answered automatically. If REC is lighted, POL turns on with either 47.a. or 47.b., the call is answered, and the printer and display copy.

48. Incomplete Form Suppresses Paper Alarm
    a.   No (Paper Out Not Gated With Form Feed)
    b.   Yes (Paper Out Gated With Form Out)*(See Note)    ]  Choose 1

*Note:*   Option 48.b. delays paper alarm until end of form out.

49. Interrupt Feature (See Note 1)
    a.   Enable Interrupt Feature* (See Note 2)
    b.   Disable Interrupt Feature    ]  Choose 1 for KD Station

*Note 1:*   This option applies to KD sets only. KDP sets with 202-type data sets contain the interrupt feature without enabling an option (providing reverse channel is used).

*Note 2:*   Applies to Issues 2A and later of the 410770 circuit card when used in a KD station arrangement with 202-type data sets.

*Factory Installed Option

50. Action Upon Printer SSI Loss (See Notes 1 and 2)
    a.    Go Local and Hold
    b.    Go Local and Release        Choose 1
    c.    No Mode Change*

*Note 1:* PRINT ON LINE is turned off in Options 50.a., 50.b., or 50.c.

*Note 2:* Card issues before 3A will not change mode if SSI fails, PRINT ON LINE also stays on with card Issue 1 and turns off with card Issue 2.

51. Remote Control (See Note)
    a.    4210 character control*
    b.    Not Used on DATASPEED 40/2        Choose 1
    c.    Data Set 212A Operation (See Note 2)

*Note 1:* Card issues before 3A are permanently equipped with Option 51.a.

*Note 2:* The DATASPEED 40/2 will not control Pin 23 going to the 212A Data Set. The HS button must be operated manually.

52. Print On Line Control (See Note)
    a.    Copy All Sent Data
    b.    Printer Copies as Option 29*    Choose 1

*Note:* PRINT ON LINE is automatically turned on when SEND is lighted for Option 52.a. (either Batch or S/R mode). Card issues before 3A are permanently equipped with Option 52.b. Selection of 52.a. still allows use of DC2 and DC4 printer motor control when the RECEIVE is lighted (either Batch or S/R mode).

53. Printer Motor Hold Timer (See Note 1)
    a.    Enabled (See Note 2)    Choose 1
    b.    Disabled*

*Note 1:* With Option 53.a., printer motor is held on for two minutes following end of message (useful for messages less than 2 minutes apart). Card issues before 3A are permanently equipped with Option 53.b.

*Note 2:* If both 52.a. and 53.a. Options are selected, cut strap A on the 410770 card.

54. Printing of Escape Sequences Suppressed (See Note)
    a.    Not Suppressed (Required)*
    b.    Suppressed    Choose 1

*Note:* Option 54.a. must be used in 40/2 KDP arrangement and Option 54.b. is recommended in 40/2 KD-ROP arrangement.

55. Shift In/Shift Out Detection
    a.    Not used*
    b.    Enables Printing Additional Characters    Choose 1

*Factory Installed Option

56. Friction Feed/Tractor Feed Printers
    a.   Friction — Motor Held On After Paper Alarm* ⎤
    b.   Tractor — Motor Turned Off After Paper Alarm ⎦   Choose 1


57. SSI/OEM Interface
    a.   SSI* ⎤
    b.   OEM — Not Used on DATASPEED 40/2 ⎦   Choose 1


58. Idle Line Motor Control
    a.   Disabled — Motor Held On During Idle Line* ⎤
    b.   Enabled — Motor Turned Off After 40 Second Idle Line ⎦   Choose 1


59. Not Used on DATASPEED 40/2 Stations


60. Aux Alarm
    a.   Enable ⎤
    b.   Disable (or Alarm Mechanism Not Present)* ⎦   Choose 1


61. Regulator Grounding
    a.   SSI (Circuit and Frame Ground at PTR) ⎤
    b.   SSI/OEM (Circuit and Frame Ground at PTR, +12 V)* ⎥   Choose 1
    c.   OEM (Circuit Ground EXT to PTR, +12 V) ⎦


*Factory Installed Option

## TABLE A

## 40/2 OPTION LOCATION

| Option Number | Location | Page No. | Option Number | Location | Page No. |
|---|---|---|---|---|---|
| 1. | 410770 | 45 | 27. | 410675 | 49 |
| 2. | Does Not Apply | — | 28. | 410770 | 45 |
| 3. | 410580 | 68 | 29. | 410770 | 45 |
| | 410679 | 47 | 30. - 34. | Does Not Apply | — |
| | 410680 | 70 | 35. | 410580 | 68 |
| 4. | 410679 | 47 | 36. | 410580 | 69 |
| | 410680 | 70 | 37. | Does Not Apply | — |
| 5. | 410674 | 50 | 38. | 410582 | 69 |
| 6. | 410674 | 50 | 39. | Printer | 67 |
| 7. | 410674 | 50 | 40. | 410674 | 51 |
| 8. | 410674 | 51 | 41. | 410679 | 47 |
| 9. | 410674 | 51 | | 410680 | 70 |
| 10. | 410675 | 49 | 42. | 410679 | 48 |
| 11. | 410675 | 49 | | 410680 | 70 |
| 12. | 410675 | 49 | 43. | 410679 | 48 |
| 13. | 410676 | 48 | | 410680 | 70 |
| 14. - 16. | Does Not Apply | — | 44. | 410679 | 48 |
| 17. | 410640 | 52 | | 410680 | 70 |
| | 410729 | 54 | 45. | 410679 | 48 |
| | 410071 | 56 | | 410680 | 70 |
| | 410072 | 59 | 46. | 410679 | 48 |
| | 410076 | 62 | | 410680 | 70 |
| 18. | 410640 | 52 | 47. | 410679 | 48 |
| | 410729 | 54 | 48. | 410729 | 55 |
| | 410071 | 57 | | 410071 | 57 |
| | 410072 | 60 | | 410072 | 60 |
| | 410076 | 63 | | 410076 | 63 |
| 19. | 410640 | 53 | 49. | 410770 | 46 |
| | 410729 | 55 | 50. | 410770 | 46 |
| | 410071 | 57 | 51. | 410770 | 46 |
| | 410072 | 60 | 52. | 410770 | 46 |
| | 410076 | 63 | 53. | 410770 | 46 |
| 20. | Printer | 66 | 54. | 410071 | 58 |
| 21. | 410640 | 53 | | 410072 | 61 |
| | 410729 | 55 | | 410076 | 64 |
| | 410071 | 57 | 55. | 410071 | 58 |
| | 410072 | 60 | | 410072 | 61 |
| | 410076 | 63 | | 410076 | 64 |
| 22. | 410640 | 53 | 56. | 410076 | 64 |
| | 410729 | 55 | 57. | 410071 | 58 |
| | 410071 | 57 | | 410072 | 61 |
| | 410072 | 60 | | 410076 | 64 |
| | 410076 | 63 | 58. | 410071 | 58 |
| 23. | 410640 | 53 | | 410072 | 61 |
| | 410729 | 55 | | 410076 | 64 |
| | 410071 | 57 | 59. | 410071 | 58 |
| | 410072 | 60 | | 410072 | 61 |
| | 410076 | 63 | | 410085 | 65 |
| 24. | 410580 | 68 | 60. | 410071 | 58 |
| 25. | 410580 | 68 | | 410072 | 61 |
| 26. | Does Not Apply | — | 61. | 410151 | 65 |

## CONTROLLER OPTIONS (KD)

4.12    410770 Circuit Card (Independent Printer Access) — Card Position X101



Fig. 105

CONTROLLER

410770

C-6          C-10
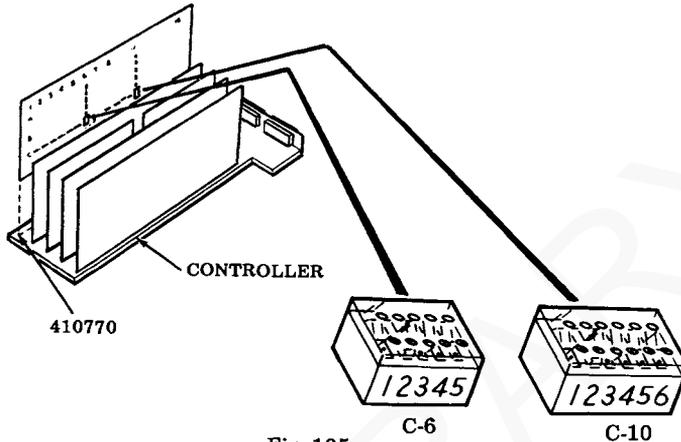
| 1. | Interface to Printer | C-6 (Note 3) | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | |
| a. | EIA (Use for KD-ROP) | O | ● | — | — | — | |
| b. | SSI (Use for KDP or KD) | ● | O | — | — | — | * |

| 28. | Disconnect on Loss of Carrier | C-6 | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | |
| a. | Disconnect After 45 Seconds | — | — | O | — | — | * |
| b. | Does Not Disconnect — Timer Disables | — | — | ● | — | — | |

| 29. | Printer Message Mode | C-6 | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | |
| a. | When in Print On-Line Mode, Copies Display in Send or Copies Line in Receive or Local. | — | — | — | O | ● | * |
| b. | Not used on DATASPEED 40/2 stations | — | — | — | — | — | |
| c. | Permanent Print On-Line, Received Data Only.(See Notes 1&2) | — | — | — | ● | O | |
| d. | When in Print-On-Line, Copies Received Data When in Receive or Local. (See Notes 1&2) | — | — | — | O | O | |

*Note 1:*    Not recommended for DATASPEED 40/2 applications.

*Note 2:*    Applies to 202-type data set operation only.

*Note 3:*    The switch pack shown in position C-6 was in position C-7 on Issue 2A and earlier circuit cards.

(See Legend for ●, O, —, and * on Page 36.)

410770 Circuit Card (Contd)

| 49. | Interrupt Feature (for KD Stations Only) | C-6 | | | | | C-10 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 6 |
| a. | Enable KD Interrupt Feature (See Note) | ● | O | — | — | — | O | O | — | — | — | — |
| b. | To Disable Interrupt Feature on KD or KDP Stations, Place a Blocking Keytop Over the Interrupt Key on the Operator Console | | | | | | | | | | | |

*Note:* Issue 2A or earlier 410770 circuit card assemblies require the circuit path (component side) between MLB6-1 and the plated through hole be cut in addition to optioning C-6 switches. (The C-10 switch pack is not present on Issue 2A or earlier.) Issue 3A and later cards require optioning of C-6 and C-10 option switches only (land cut is not required).

| 50. | Action upon Ptr. SSI Loss (See Note below) (Issue 3A and Later) | C-10 | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 |
| a. | Go Local and hold | ● | O | — | — | — | — |
| b. | Go Local and release | O | ● | — | — | — | — |
| c. | No mode change | O | O | — | — | — | — | * |

*Note:* Print On Line (POL) turned off in 50.a., b., and c. Card Issue 1 will not change mode (and POL stays on) if SSI fails. Card Issue 2 will not change mode (but POL goes off) if SSI fails.

| 51. | Remote Control (See Note below) | C-10 | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 |
| a. | 4210 Character Control | — | — | ● | O | — | — | * |
| b. | Not used on DATASPEED 40/2 | — | — | — | — | — | — |
| c. | Data Set 212A Operation (For Future Use) | — | — | O | O | — | — |

*Note:* Card Issues 1 and 2 are permanently equipped with Option 51.a. Switch pack C-10 is only present on Issue 3A and later.

| 52. | PRINT ON LINE Control (See Note below) | C-10 | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 |
| a. | Copy all sent data | — | — | — | — | ● | — |
| b. | POL as determined by Option 29 | — | — | — | — | O | — | * |

*Note:* POL is automatically turned on when SEND is lighted for Option 52.a. (either Batch or S/R mode). Card Issues 1 and 2 are permanently equipped with Option 52.b. Switch pack C-10 is only present on Issue 3A or later circuit card. Selection of Option 52.a. will allow use of DC2 and DC4 printer motor control when RECEIVE is lighted (either Batch or S/R mode).

| 53. | Ptr. Motor Hold Timer (See Notes below.) | C-10 | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 |
| a. | Enabled | — | — | — | — | — | ● |
| b. | Disabled | — | — | — | — | — | O | * |

*Note 1:* Switch pack C-10 is only present on Issue 3A or later circuit card. If Option 53.a. is selected, printer motor is held on for two minutes following end of message. This is useful if messages are ever less than 2 minutes apart. Card Issue 1 is equipped with Option 53.b. Card Issue 2, labeled "Motor hold option," is equipped with Option 53.a. Card Issue 2 not labeled "Motor hold option" is equipped with Option 53.b.

*Note 2:* If both Options 53.a. and 52.a. are selected, cut strap A (land between coordinates B1 and B2). Otherwise strap A must be left intact on 410770 card.

(See Legend for ●, O, —, and * on Page 36.)

4.13    410679 Circuit Card (Full Duplex Interface) — Card Position X02
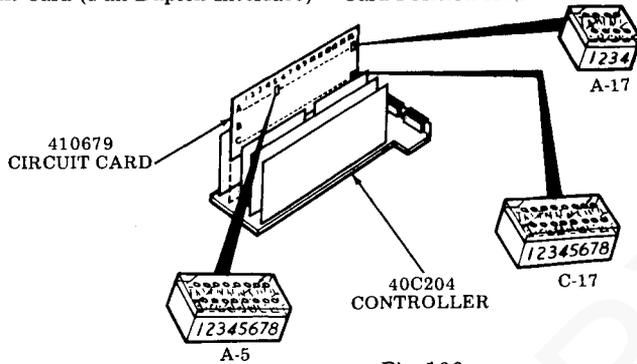


Fig. 106

| 3. | EIA Send/Receive Data Baud Rate | C-17 | | | | | | | | A-17 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 1 | 2 | 3 | 4 | |
| a. | 1050 Baud (Do Not Use) | — | — | — | — | — | — | — | — | — | — | — | — | |
| b. | 1200 Baud | — | ● | ● | ● | ○ | ○ | ○ | ○ | — | — | ● | — | * |
| c. | 2400 Baud | — | ● | ● | ○ | ○ | ○ | ○ | ○ | — | — | ● | — | |
| d. | 1800 (Do Not Use) | — | — | — | — | — | — | — | — | — | — | — | — | |
| e. | 2100 (Do Not Use) | — | — | — | — | — | — | — | — | — | — | — | — | |
| f. | 4800 Baud | — | ● | ○ | ○ | ○ | ○ | ○ | ○ | — | — | ● | — | |
| g. | 600 Baud | — | ● | ● | ● | ● | ○ | ○ | ○ | — | — | ● | — | |
| h. | 300 Baud | — | ● | ● | ● | ● | ○ | ○ | ○ | — | — | ● | — | |
| i. | 150 Baud | — | ● | ● | ● | ● | ● | ○ | ○ | — | — | ● | — | |
| j. | 110 Baud (See Note) | — | ● | ● | ● | ○ | ● | ○ | ● | — | — | ○ | — | |
| k. | 9600 Baud (w/209A) | — | ○ | ○ | ○ | ○ | ○ | ○ | ○ | — | — | ● | — | |

*Note:* Switch A-17 Number 3 is normally open for Option 3.j., except when an ROP is being used in a KD-ROP arrangement EIA, then this switch should be closed.

| 4. | EIA Reverse Channel | A-5 | | | | | | | | C-17 | | | | | | | | A-17 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 1 | 2 | 3 | 4 | |
| a. | Reverse Channel Required to Send (202-Type Data Set) | ● | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | * |
| b. | Reverse Channel Not Required to Send (202, 212, 108 or 103-Type Data Set) | ○ | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | |

| 41. | Mode of Operation | A-5 | | | | | | | | C-17 | | | | | | | | A-17 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 1 | 2 | 3 | 4 | |
| a. | Half-Duplex (See Note) | — | ● | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | |
| b. | Full Duplex | — | ○ | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | | * |

*Note:* Don't use "41.a." and "local copy on primary channel" data set option.

(See Legend for ●, ○, —, and * on Page 36.)

**410679 Circuit Card (Contd)**

| 42. Parity Generation | A-5 | | | | | | | | C-17 | | | | | | | | A-17 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 1 | 2 | 3 | 4 | |
| a. Send Even Parity | — | ○ | ● | | ○ | | — | — | | | | | | | | | | | | | * |
| b. Send Odd Parity | — | ● | ● | | ○ | | — | — | | | | | | | | | | | | | |
| c. Send 8th Bit as Mark | — | ○ | ○ | | ○ | | — | — | | | | | | | | | | | | | |
| d. Send 8th Bit as Space | — | ○ | ○ | | ● | | — | — | | | | | | | | | | | | | |

| 43. Stop Bit Generation | A-5 | | | | | | | | C-17 | | | | | | | | A-17 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 1 | 2 | 3 | 4 | |
| a. Send One Stop Bit | | | | | ● | | | | | | | | | | | | | | | | * |
| b. Send Two Stop Bits | — | — | — | | ○ | | | | | | | | | | | | | | | | |

| 44. EIA Received Data | A-5 | | | | | | | | C-17 | | | | | | | | A-17 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 1 | 2 | 3 | 4 | |
| a. Enable EIA Receive Data | — | — | — | — | | | ● | | | | | | | | | | | | | | * |
| b. Disable EIA Receive Data | — | — | — | — | | | ○ | | | | | | | | | | | | | | |

| 45. Current Loop Data | A-5 | | | | | | | | C-17 | | | | | | | | A-17 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 1 | 2 | 3 | 4 | |
| a. Enable Receive Data From Current Loop | — | — | — | — | — | — | ● | | | | | | | | | | | | | | |
| b. Disable Receive Data From Current Loop | — | — | — | — | — | — | ○ | | | | | | | | | | | | | | * |

| 46. Interface Select | A-5 | | | | | | | | C-17 | | | | | | | | A-17 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 1 | 2 | 3 | 4 | |
| a. 103-Type Modem Interface or 20/60 Milliampere Interface (also 113A) | — | — | — | — | — | — | — | — | ○ | | | | | | | | | | | | |
| b. 202-Type Modem Interface | — | — | — | — | — | — | — | — | ● | | | | | | | | | | | | * |

| 47. Printer Interface (See Note Page 32) | A-5 | | | | | | | | C-17 | | | | | | | | A-17 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 1 | 2 | 3 | 4 | |
| a. Enable Printer Interface | — | — | — | — | — | — | — | — | | | | | | | | | | | ○ | | |
| b. Disable Printer Interface | — | — | — | — | — | — | — | — | | | | | | | | | | | ● | | * |

**4.14 410676 Circuit Card (Send Variations) — Card Position X03**



CONTROLLER

A-4
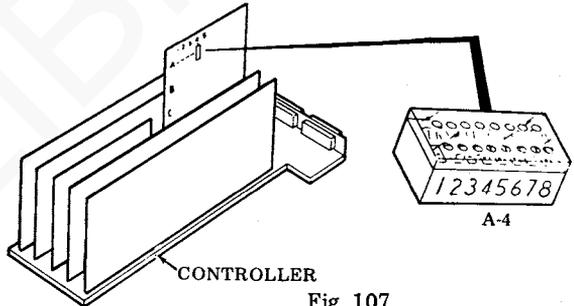
Fig. 107

| 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 to Space | ● | ○ | ● | ● | ● | ● | ● | ● | * |
| c. Send Protect as Space and Unprotected as Displayed | ○ | ● | ○ | ○ | ● | ○ | ● | ○ | |
| d. Send Protect as Space, Unprotected as Displayed and HT 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 to Space | ○ | ● | ○ | ● | ● | ● | ● | ● | |

(See Legend for ●, ○, —, and * on Page 36.)

4.15    410675 Circuit Card (Message Control) — Card Position X04



CONTROLLER        A-3        B-15
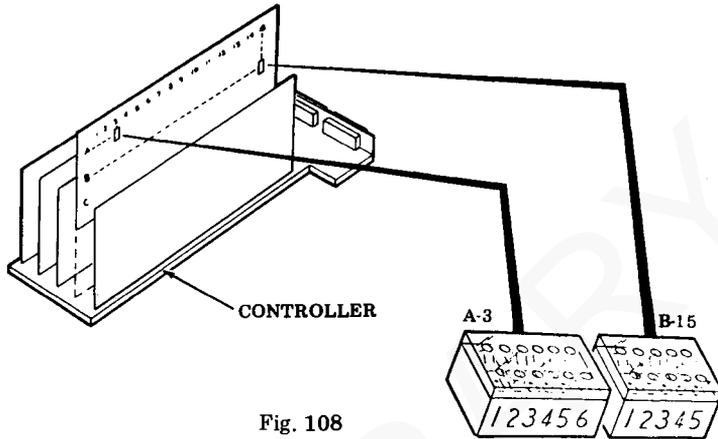
Fig. 108

| 10. Line Ending Sequence (Bath Mode Only) | | A-3 | | | | | | B-15 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 |
| a. | CR LF | — | — | — | — | O | — | ● | ● | O | O | O |
| b. | CR CR LF | — | — | — | — | O | — | O | O | ● | ● | ● * |
| c. | LF | — | — | — | — | ● | — | ● | ● | O | O | O |

| 11. Mode After Send | | A-3 | | | | | | B-15 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 |
| a. | Local (Goes REC on Sent EOT) | — | O | ● | ● | — | — | — | — | — | — | — * |
| b. | Receive (See Note) | — | ● | O | ● | — | — | — | — | — | — | — |
| c. | Not used in DATASPEED 40/2 Stations | — | O | ● | O | — | — | — | — | — | — | — |

*Note:*  If DLE EOT is used as a sent disconnect sequence, Option 11.b. will cause REC to light, DTR stays on, and disconnect will not occur.

| 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 | O | — | — | — | — | — | — | — | — | — | — * |

| 27. Message Start | | A-3 | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 |
| a. | Home on Transmit (Local Mode Only) | — | — | — | — | — | ● |
| b. | Send From Cursor | — | — | — | — | — | O * |

(See Legend for ●, O, —, and * on Page 36.)

4.16    410674 Circuit Card (Data Bus and Decode) — Card Position X05



CONTROLLER

Fig. 109

C-12

A-10
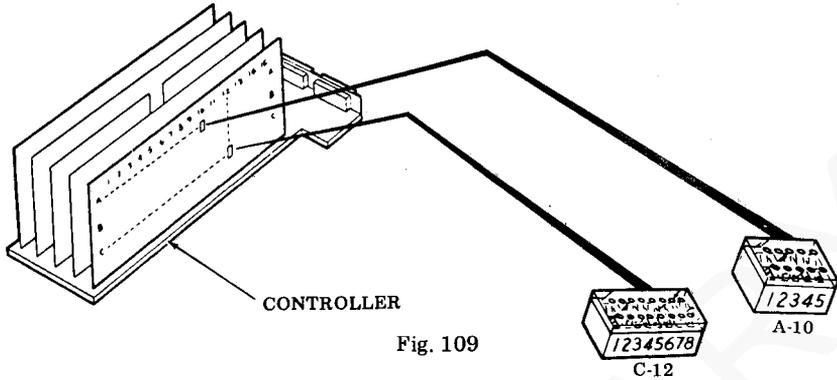
| 5. | Response to Received Characters | A-10 | | | | | C-12 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| a. | Reject Null | ● | — | — | — | — | — | — | — | — | — | — | — | — | * |
| b. | Accept Null | O | — | — | — | — | — | — | — | — | — | — | — | — | |
| c. | Reject CR | — | ● | — | — | — | — | — | — | — | — | — | — | — | * |
| d. | Accept CR | — | O | — | — | — | — | — | — | — | — | — | — | — | |
| e. | Reject Delete | — | — | ● | — | — | — | — | — | — | — | — | — | — | * |
| f. | Accept Delete | — | — | O | — | — | — | — | — | — | — | — | — | — | |
| g. | Reject $DC_1$    (See Note) | — | — | — | — | — | — | — | — | — | — | ● | — | — | * |
| h. | Accept $DC_1$    (See Note) | — | — | — | — | — | — | — | — | — | — | O | — | — | |
| i. | Reject $DC_3$    (See Note) | — | — | — | — | — | — | — | — | — | — | — | ● | — | * |
| j. | Accept $DC_3$    (See Note) | — | — | — | — | — | — | — | — | — | — | — | O | — | |

*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 (Function not Performed) | — | — | — | O | — | — | — | — | — | — | — | — | — | |
| b. | All Escape Sequences are Performed as Received but Not Displayed | — | — | — | ● | — | — | — | — | — | — | — | — | — | * |

| 7. | Errored Character on Receive (See Note) | A-10 | | | | | C-12 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | — | — | — | — | — | — | — | — | |
| a. | Not Displayed on Vertical Parity Error (Required for Standard 40/2) | — | — | — | — | ● | — | — | — | — | — | — | — | — | * |
| b. | Displayed on Vertical Parity Error | — | — | — | — | O | — | — | — | — | — | — | — | — | |

*Note:*    Controllers used in DATASPEED 40/1 and 40/3 have Option 7.b. factory optioned.

(See Legend for ●, O, —, and * on Page 36.)

410674 Circuit Card (Contd)



CONTROLLER

Fig. 110

C-12
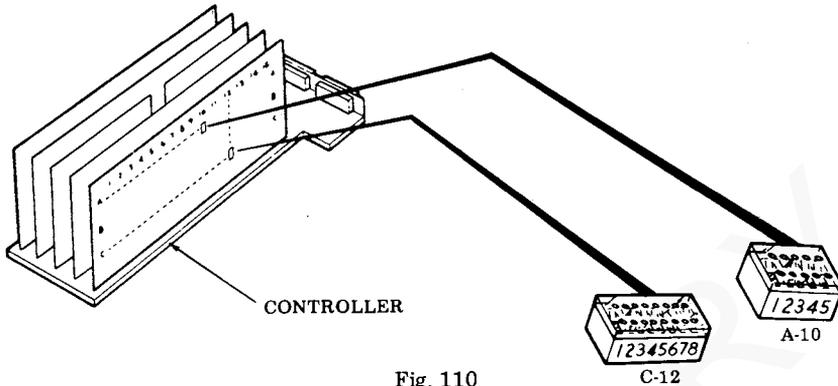
A-10

| 8. Send Message Ending Character | | A-10 | | | | | C-12 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| a. | End on FF | — | — | — | — | — | — | — | ● | — | — | — | — | — | |
| b. | Do Not End on FF | — | — | — | — | — | — | — | O | — | — | — | — | — | * |
| c. | End on ETX | — | — | — | — | — | ● | — | — | — | — | — | — | — | * |
| d. | Do Not End on ETX | — | — | — | — | — | O | — | — | — | — | — | — | — | |
| e. | End on EOT (Required) (See Note) | — | — | — | — | — | — | ● | — | — | — | — | — | — | * |
| f. | Do Not End on EOT | — | — | — | — | — | — | O | — | — | — | — | — | — | |
| g. | End on GS | — | — | — | — | — | — | — | — | ● | — | — | — | — | * |
| h. | Do Not End on GS | — | — | — | — | — | — | — | — | O | — | — | — | — | |

*Note:* In 202-type data set operation, a received EOT causes RTS to turn on even though set is in local. No further messages can then be received even if PRINT ON LINE is on. If station is in local with PRINT ON LINE lighted, a received DLE EOT is not a disconnect sequence. Received carrier must be dropped to cause a disconnect.

| 9. Highlight (See Note) | | A-10 | | | | | 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) | — | — | — | — | — | — | — | — | — | O | — | — | — | * |

*Note:* Highlight delimiters are ESC 3 (on) and ESC 4 (off).

| 40. Go Receive on Sending CR ( ← ) (S/R Mode Only) (See Note) | | C-12 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| a. | Go Receive on Sending CR | — | — | — | — | — | — | — | ● | ++ |
| b. | Do Not Go Receive on Sending CR | — | — | — | — | — | — | — | O | * |

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

(See Legend for ●, O, —, and * on Page 36.)

++Applies to operation with 202-type data set — HDX.

PRINTER OPTIONS

4.17    410640 Circuit Card (Printer Logic)
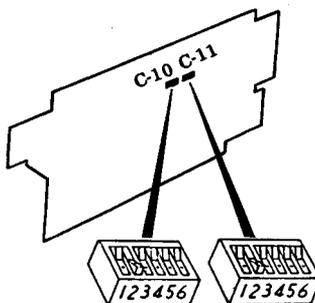


Fig. 111

| 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 | — | — | — | — | — | — | O | ● | ● | O | — | — | * |
| d. | Last Character on 79th Column | — | — | — | — | — | — | O | ● | ● | ● | — | — | |
| d. | Last Character on 78th Column | — | — | — | — | — | — | ● | O | O | ● | — | — | |
| d. | Last Character on 77th Column | — | — | — | — | — | — | ● | O | ● | O | — | — | |
| d. | Last Character on 76th Column | — | — | — | — | — | — | ● | O | ● | ● | — | — | |
| d. | Last Character on 75th Column | — | — | — | — | — | — | ● | ● | O | ● | — | — | |
| d. | Last Character on 74th Column | — | — | — | — | — | — | ● | ● | ● | O | — | — | |
| d. | Last Character on 73rd Column | — | — | — | — | — | — | ● | ● | ● | ● | — | — | |

*Note:*    Option 17.a. and 17.b. are not used on DATASPEED 40/2 Stations.

| 18.  Printer Paper Feed Out | | C-10 | | | | | | C-11 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 | 6 | |
| a. | No Paper Feed Out | ● | — | — | — | — | — | — | — | — | — | — | O | |
| b. | Paper Feed Out on DSR Loss — 16 Lines  (See Note) | O | — | | | | | | | | | — | O | |
| c. | Paper Feed Out on DSR Loss or ETX | O | — | — | — | | | | | | | — | ● | * |

*Note:*    "DSR Loss" assumes that data set operation is used; the actual controlling SSI  signal is loss of Receive Message. The feed out 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.

| 19.  Printer Errored Character Symbol (Option 19.c. is required for Standard 40/2) | | C-10 | | | | | | C-11 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 1 | 2 | 3 | 4 | 5 | 6 | |
| a. | Printed on Even Parity Error | — | — | — | ● | O | — | — | — | — | — | — | — | |
| b. | Printed on Odd Parity Error | — | — | — | O | ● | — | — | — | — | — | — | — | |
| c. | Not Printed on Parity Error | — | — | — | ● | ● | — | — | — | — | — | — | — | * |
| d. | Printers With 96 Character Set | — | ● | O | — | — | — | — | — | — | — | — | — | |
| e. | Printers With 64 Character Set | — | O | ● | — | — | — | — | — | — | — | — | — | |
| f. | Printers With Extended ASCII Character Set | — | O | O | — | — | — | — | — | — | — | — | — | |

(See Legend for ●, O, —, and * on Page 36.)

**410640 Circuit Card (Contd)**
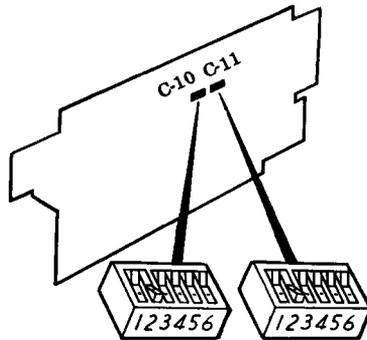


Fig. 112

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

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

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

(See Legend for ●, O, —, and * on Page 36.)

† Option 23.a. requires local engineering.

### 4.18   410729 Circuit Card (Printer Logic)



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

Fig. 113
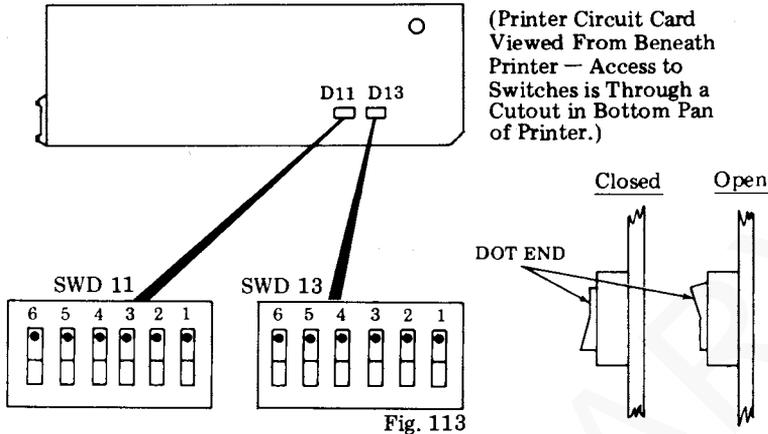
| 17.   Printer Margin and Form Width | D-11 | | | | | | D-13 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 6 | 5 | 4 | 3 | 2 | 1 | 6 | 5 | 4 | 3 | 2 | 1 | |
| e.   Last Character on Column 132 | — | — | — | — | — | — | O | O | O | ● | — | — | * |
| f.   Last Character on Column 131 | — | — | — | — | — | — | O | O | ● | O | — | — | |
| g.   Last Character on Column 130 | — | — | — | — | — | — | O | O | ● | ● | — | — | |
| h.   Last Character on Column 129 | — | — | — | — | — | — | O | ● | O | ● | — | — | |
| i.   Last Character on Column 128 | — | — | — | — | — | — | O | ● | ● | O | — | — | |
| j.   Last Character on Column 127 | — | — | — | — | — | — | O | ● | ● | ● | — | — | |
| k.   Last Character on Column 126 | — | — | — | — | — | — | ● | O | O | ● | — | — | |
| l.   Last Character on Column 125 | — | — | — | — | — | — | ● | O | ● | O | — | — | |
| m.   Last Character on Column 124 | — | — | — | — | — | — | ● | O | ● | ● | — | — | |
| n.   Last Character on Column 123 | — | — | — | — | — | — | ● | ● | O | ● | — | — | |
| o.   Last Character on Column 122 | — | — | — | — | — | — | ● | ● | ● | O | — | — | |
| p.   Last Character on Column 121 | — | — | — | — | — | — | ● | ● | ● | ● | — | — | |

*Note:*   Options 17.a., 17.b., 17.c., and 17.d. are not used.

| 18.   Printer Paper Feed Out | D-11 | | | | | | D-13 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 6 | 5 | 4 | 3 | 2 | 1 | 6 | 5 | 4 | 3 | 2 | 1 | |
| a.   No Paper Feed Out | — | — | ● | — | — | — | — | — | — | — | — | O | |
| b.   Paper Feed Out on DSR Loss — 16 Lines (See Note) | — | — | O | — | — | — | — | — | — | — | — | O | |
| c.   Paper Feed Out on DSR Loss or ETX | — | — | O | — | — | — | — | — | — | — | — | ● | * |

*Note:*   "DSR Loss" assumes that data set operation is used; the actual controlling SSI signal is loss of Receive Message. The feed out 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 for ●, O, —, and * on Page 36.)

## 410729 Circuit Card (Contd)
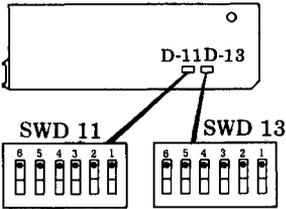
(Printer Circuit Card Viewed From Beneath Printer — Access to Switches is Through a Cutout in Bottom Pan of Printer.)

Closed  Open

DOT END

SWD 11   SWD 13
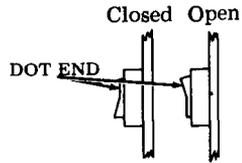
Fig. 114

| 19. Printer Errored Character Symbol (Option 19.c. is Required for Standard 40/2) | | D-11 | | | | | | D-13 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 6 | 5 | 4 | 3 | 2 | 1 | 6 | 5 | 4 | 3 | 2 | 1 | |
| a. | Printed on Even Parity Error | − | − | − | ● | O | − | − | − | − | − | − | − | |
| b. | Printed on Odd Parity Error | − | − | − | O | ● | − | − | − | − | − | − | − | |
| c. | Not Printed on Parity Error | − | − | − | ● | ● | − | − | − | − | − | − | − | * |
| d. | Printers With 96-Character Set | ● | O | − | − | − | − | − | − | − | − | − | − | |
| e. | Printers With 64-Character Set | O | ● | − | − | − | − | − | − | − | − | − | − | |
| f. | Printers With Extended ASCII Character Set | O | O | − | − | − | − | − | − | − | − | − | − | |
| g. | Printers With Longest Character Set Having Less Than 64 Characters | O | ● | − | − | − | − | − | − | − | − | − | − | |

| 21. Foldover on Up-Low Printer | | D-11 | | | | | | D-13 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 6 | 5 | 4 | 3 | 2 | 1 | 6 | 5 | 4 | 3 | 2 | 1 | |
| a. | Lower Case and Upper Case Print | − | − | − | − | − | − | − | − | − | − | O | − | * |
| b. | Lower Case Prints as Upper Case | − | − | − | − | − | − | − | − | − | − | ● | − | |

| 22. Foldover on Monocase Printer | | D-11 | | | | | | D13 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 6 | 5 | 4 | 3 | 2 | 1 | 6 | 5 | 4 | 3 | 2 | 1 | |
| a. | Lower Case Prints as Error Symbol | − | − | − | − | − | − | − | − | − | − | O | − | |
| b. | Lower Case Prints as Upper Case | − | − | − | − | − | − | − | − | − | − | ● | − | * |

| 23. Extended ASCII on Printer (Extended ASCII) | | D-11 | | | | | | D-13 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 6 | 5 | 4 | 3 | 2 | 1 | 6 | 5 | 4 | 3 | 2 | 1 | |
| a. | Prints Extended ASCII Characters (No Parity Check) | − | − | − | O | O | − | − | − | − | − | − | − | |
| b. | Does Not Print Extended ASCII (See 19.a., b., or c.) | − | − | − | (As in 19.) | | − | − | − | − | − | − | | * |

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

(See Legend for ●, O, −, and * on Page 36.)

## 4.19  410071 Circuit Card (Printer Logic)



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

Fig. 115

### 410071 — 80-Column Tractor Feed Printer Logic Circuit Card

| 17. | Printer Left Margin and Form Width | E-5 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 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. | Last Char Printed Column Number | E-9 | | | | | | | | | E-5 | | | | | | | | E-8 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 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 E-8 position 8 to OFF.
49 through 60 program as shown, then operate E-5 position 1 to OFF.
37 through 48 program as shown, then operate E-5 position 7 to OFF.
25 through 36 program as shown, then operate E-5 position 8 to OFF.

(X) Indicates desired column number.
(See Legend for ●, ○, —, and * on Page 36.)

**410071 Circuit Card (Contd)**
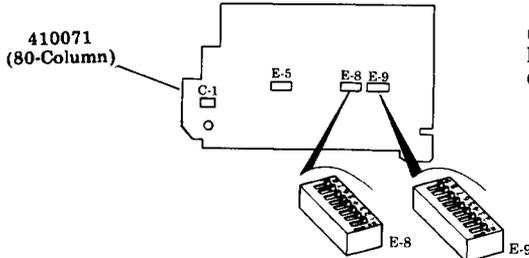


(Printer Circuit Card Viewed From Beneath Printer — Access to Switches is Through a Cutout in Bottom Pan of Printer.)

Fig. 116

| 18. Printer Paper Feedout | | E-8 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 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 | — | ● | ○ | — | — | — | — | — * |

| 19. Printer Errored Character Symbol | | E-9 | | | | | | | | | E-8 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 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 Character Set Having Less Than 64 Characters | — | — | — | — | — | — | — | — | — | — | — | — | — | ○ | ○ | — | — |

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

| 23. Extended ASCII on Printer (Extended ASCII) | | E-9 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 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.) | | — | — | — | — * |

| 48. Incomplete Form Suppresses Paper Alarm | | E-9 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 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 for ●, ○, —, and * on Page 36.)

## 410771 Circuit Card (Contd)
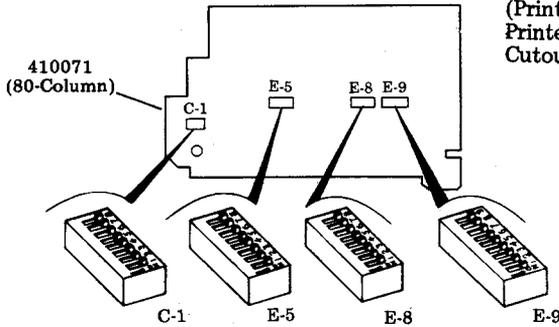


**(Printer Circuit Card Viewed From Beneath Printer — Access to Switches is Through a Cutout in Bottom Pan of Printer.)**

410071 (80-Column)

C-1   E-5   E-8  E-9

Fig. 117

| 54. | Printing of Escape Sequences Suppressed | E-9 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| a. | Character After ESC Printed as Received | — | — | — | — | — | — | — | O | — | * |
| b. | Printing of Character After ESC Suppressed (Not used in 40/2 KDP application.) | — | — | — | — | — | — | — | ● | — | +++ |

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

| 57. | SSI/OEM Interface | E-8 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| a. | SSI | — | — | — | — | — | — | ● | — | * |
| b. | OEM† | — | — | — | — | — | — | O | — | |

†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 | E-8 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| a. | Disabled — Motor Held On Indefinitely During Idle Line | — | — | — | O | — | — | — | — | * |
| b. | Enabled — Motor Turned Off After 40-Second Idle Line | — | — | — | ● | — | — | — | — | |

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

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

*Note:* Switch must be closed when paper jam alarm mechanism is not present. Switch must be opened when 402920 paper jam alarm modification kit is present.

+++ Option 54.b. should not be used on a 40/2 KDP (SSI interface). The character after escape is already suppressed by the KD. This option is recommended on a 40/2 KD-ROP or a ROP (EIA interface).

(See Legend for ●, O, —, and * on Page 36.)

## 4.20 410072 Circuit Card (Printer Logic)
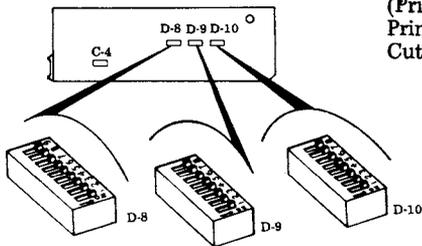


(Printer Circuit Card Viewed From Beneath Printer — Access to Switches is Through a Cutout in Bottom Pan of Printer.)

Fig. 118

### 410072 — 132-Column Printer Logic Circuit Card

| 17. | Printer Left Margin and Form Width | D-8 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 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 | D-8 | | | | | | | | | D-9 | | | | | | | | D-10 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 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 | |
| e. | 132 | — | — | — | — | — | — | ● | ● | — | — | — | — | — | — | — | ● | ● | ● | ○ | — | ○ | ○ | — | — | — | * |
| f.(X) | 121 109 97 85 73 | — | — | — | — | — | — | ● | ● | — | — | — | — | — | — | — | ● | ● | ● | ● | ○ | — | ● | ● | — | — | |
| | 122 110 98 86 74 | — | — | — | — | — | — | ● | ● | — | — | — | — | — | — | — | ● | ● | ● | ○ | ● | — | ● | ● | — | — | |
| | 123 111 99 87 75 | — | — | — | — | — | — | ● | ● | — | — | — | — | — | — | — | ● | ● | ● | ● | ○ | — | ● | ● | — | — | |
| | 124 112 100 88 76 | — | — | — | — | — | — | ● | ● | — | — | — | — | — | — | — | ● | ● | ● | ● | ● | — | ○ | ● | — | — | |
| | 125 113 101 89 77 | — | — | — | — | — | — | ● | ● | — | — | — | — | — | — | — | ● | ● | ● | ○ | ● | — | ○ | ● | — | — | |
| | 126 114 102 90 78 | — | — | — | — | — | — | ● | ● | — | — | — | — | — | — | — | ● | ● | ● | ● | ○ | — | ○ | ● | — | — | |
| | 127 115 103 91 79 | — | — | — | — | — | — | ● | ● | — | — | — | — | — | — | — | ● | ● | ● | ● | ● | — | ● | ○ | — | — | |
| | 128 116 104 92 80 | — | — | — | — | — | — | ● | ● | — | — | — | — | — | — | — | ● | ● | ● | ○ | ● | — | ● | ○ | — | — | |
| | 129 117 105 93 81 | — | — | — | — | — | — | ● | ● | — | — | — | — | — | — | — | ● | ● | ● | ● | ○ | — | ● | ○ | — | — | |
| | 130 118 106 94 82 | — | — | — | — | — | — | ● | ● | — | — | — | — | — | — | — | ● | ● | ● | ● | ● | — | ○ | ○ | — | — | |
| | 131 119 107 95 83 | — | — | — | — | — | — | ● | ● | — | — | — | — | — | — | — | ● | ● | ● | ○ | ● | — | ○ | ○ | — | — | |
| | 120 108 96 84 | — | — | — | — | — | — | ● | ● | — | — | — | — | — | — | — | ● | ● | ● | ○ | ● | — | ○ | ○ | — | — | |

To obtain counts:

121 through 132 program as shown.
109 through 120 program as shown, then operate D-9 position 7 OFF.
97 through 108 program as shown, then operate D-9 position 8 OFF.
85 through 96 program as shown, then operate D-8 position 7 OFF.
73 through 84 program as shown, then operate D-8 position 8 OFF.

( X ) Indicates desired column number.

(See Legend for ●, ○, —, and * on Page 36.)

## 410072 Circuit Card (Contd)



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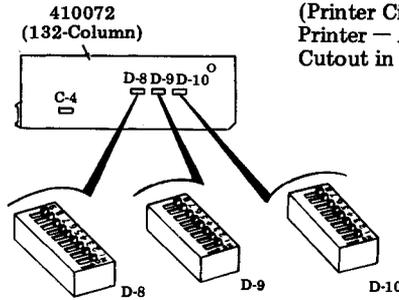
(Printer Circuit Card Viewed From Beneath Printer — Access to Switches is Through a Cutout in Bottom Pan of Printer.)

Fig. 119

| 18. | Printer Paper Feedout | D-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 | — | ● | ○ | — | — | — | — | — | * |

| 19. | Printer Errored Character Symbol | D-10 | | | | | | | | D-8 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| a. | Printed on Even Parity Error | — | — | — | — | — | ○ | ● | — | — | — | — | — | — | — | — | — | — |
| b. | Printed on Odd Parity Error | — | — | — | — | — | ● | ○ | — | — | — | — | — | — | — | — | — | — |
| c. | 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 Character Set Having Less Than 64 Characters | — | — | — | — | — | — | — | — | ○ | ○ | — | — | — | — | — | — | — |

(* to the right of row d.)

| 21. | Foldover on Printers With 96-Character Set | D-9 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 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 | D-9 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| a. | Lower Case Prints as Error Symbol | ○ | — | — | — | — | — | — | — |
| b. | Lower Case Prints as Upper Case | ● | — | — | — | — | — | — | — | * |

| 23. | Extended ASCII on Printer (Extended ASCII) | D-10 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 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.) | | — | — | — | * |

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

(See Legend for ●, ○, —, and * on Page 36.)

**410072 Circuit Card (Contd)**

410072
(132-Column)

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

C-4   D-8 D-9 D-10

C-4      D-8      D-9      D-10
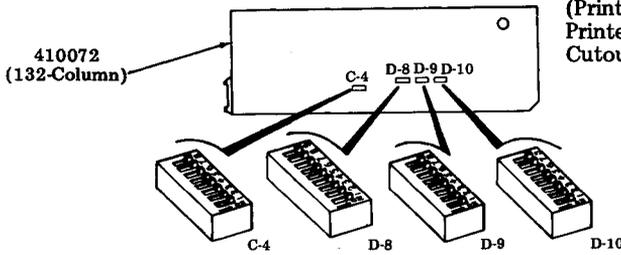
**Fig. 120**

| 54. | Printing of Escape Sequences Suppressed | D-10 | | | | | | | | |
|-----|------------------------------------------|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| a. | Character After ESC Printed as Received | — | — | — | — | — | — | — | O | * |
| b. | Printing of Character After ESC Suppressed (Not used in 40/2 KDP application.) | — | — | — | — | — | — | — | ● | +++ |

| 55. | SI/SO Detection | D-10 | | | | | | | | |
|-----|------------------|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| a. | SI/SO Detection Not Used | — | — | O | — | — | — | — | — | * |
| b. | SI/SO Detection Enables Printing Additional Characters | — | — | ● | — | — | — | — | — | |

| 57. | SSI/OEM Detection | D-8 | | | | | | | | | |
|-----|-------------------|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| a. | SSI | — | — | — | — | — | — | — | — | ● | * |
| b. | OEM † | — | — | — | — | — | — | — | — | O | |

†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 | D-9 | | | | | | | | |
|-----|-------------------------|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| a. | Disabled — Motor Held On Indenfinitely During Idle Line | — | — | — | — | — | O | — | — | * |
| b. | Enabled — Motor Turned Off After 40-Second Idle Line | — | — | — | — | — | ● | — | — | |

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

| 60. | Aux Alarm (See Note) | D-9 | | | | | | | | |
|-----|----------------------|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| a. | Enable | — | — | — | — | O | — | — | — | |
| b. | Disable | — | — | — | — | ● | — | — | — | * |

*Note:* Switch must be closed when paper jam alarm mechanism is not present. Switch must be opened when 402920 paper jam alarm modification kit is present.

+++Option 54.b. should not be used on a 40/2 KDP (SSI interface). The character after escape is already suppressed by the KD. This option is recommended on a 40/2 KD-ROP or a ROP (EIA interface).

(See Legend for ●, O, —, and * on Page 36.)

## 4.21   410076 Circuit Card (Printer Logic)
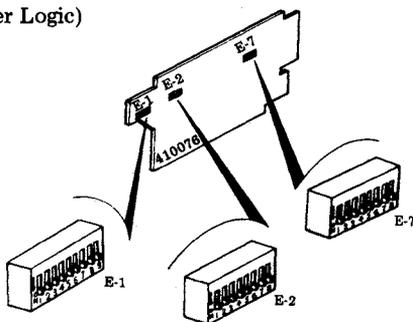


Fig. 121

### 410076 — 80-Column Printer Logic Circuit Card

| 17. | Printer Left Margin and Form Width | E-7 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 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 | — | — | ○ | ● | ● | ○ | — | — | |

### 410076 — 80-Column Printer Logic Circuit Card

| 17. | Printer Right Margin and Form Width | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Last Char Printed Column Number | E-1 | | | | | | | | | E-2 | | | | | | | | E-7 | | | | | | | | |
| | | 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 E-7 position 2 to OFF.
49 through 60 program as shown, then operate E-7 position 1 to OFF.
37 through 48 program as shown, then operate E-2 position 7 to OFF.
25 through 36 program as shown, then operate E-2 position 8 to OFF.

(X) Indicates desired column number.

  (See Legend for ●, ○, —, and * on Page 36.)

## 410076 Circuit Card (Contd)



410076
(80-Column)
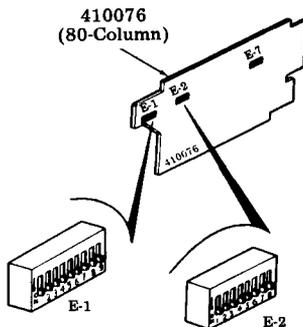
**Fig. 122**

| 18. Printer Paper Feedout | E-1 | | | | | | | | | E-2 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 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 | ○ | — | — | — | — | — | — | — | — | — | — | — | — | — | ● | — | — | * |

| 19. Printer Errored Character Symbol | E-1 | | | | | | | | | E-2 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 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 Character Set Having Less Than 64 Characters | — | — | — | — | — | — | — | — | — | — | — | ○ | ○ | — | — | — | — |

| 21. Foldover on Up-Low Printer | E-2 | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 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 | E-2 | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| a. Lower Case Prints as Error Symbol | — | — | ○ | — | — | — | — | — |
| b. Lower Case Prints as Upper Case | — | — | ● | — | — | — | — | — | * |

| 23. Extended ASCII on Printer (Extended ASCII) | E-1 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 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.) | — | — | — | — | — | * |

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

(See Legend for ●, ○, —, and * on Page 36.)

## 410076 Circuit Card (Contd)
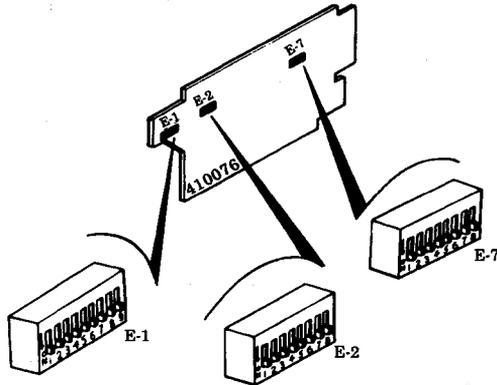


Fig. 123

| 54. | Printing of Escape Sequences Suppressed | E-1 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | |
| a. | Character After ESC Printed as Received | — | O | — | — | — | — | — | — | — | * |
| b. | Printing of Character After ESC Suppressed (Not used in 40/2 KDP application.) | — | ● | — | — | — | — | — | — | — | +++ |

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

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

| 57. | SSI/OEM Interface | E-7 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| a. | SSI | — | — | — | — | — | — | ● | — | * |
| b. | OEM | — | — | — | — | — | — | O | — | ++ |

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

++Requires use of 410085 OEM card and selection of Option 61.b. or 61.c.

+++Option 54.b. should not be used on a 40/2 KDP (SSI interface). The character after escape is already suppressed by the KD. This option is recommended on a 40/2 KD-ROP or a ROP (EIA interface).

(See Legend for ●, O, —, and * on Page 36.)

**4.22    410151 Circuit Card (Located in Printer Module or Power Supply)**



(Component Side of Circuit Card)
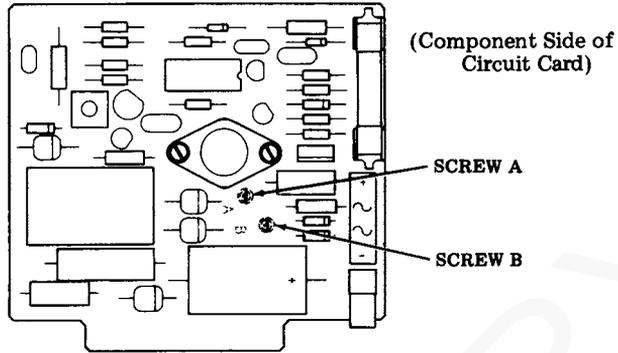
SCREW A

SCREW B

Fig. 124

| 61. | Regulator Grounding | Screw A | | Screw B | |
|---|---|---|---|---|---|
| | | Component | Noncomponent | Component | Noncomponent |
| a. | SSI (CKT and Fr Gnd at PTR) | In | — | — | In |
| b. | SSI/OEM (CKT and Fr Gnd at PTR, +12 V) | In | — | In | — |
| c. | OEM (CKT Gnd EXT to PTR, +12 V) | — | In | In | — |

*(a * marker appears at the right of row b)*

**4.23    410085 Circuit Card (OEM)**



410085
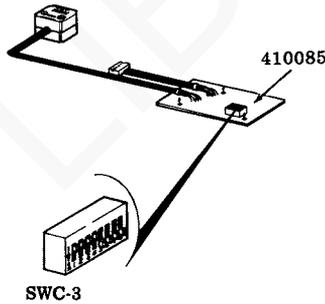
SWC-3

Fig. 125

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

*(a * marker appears at the right of row f)*

*Note:*    The 410085 circuit card (part of 346745 modification kit) is mounted on the 410076 printer logic circuit card in OEM applications. (The installation specification for 346745 modification kit is 50906S.)

(See Legend for ●, ○, —, and * on Page 36.)

4.24    Line Feed Switch (on Printer)

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



80-Column
Tractor Feed

80-Column
Friction Feed
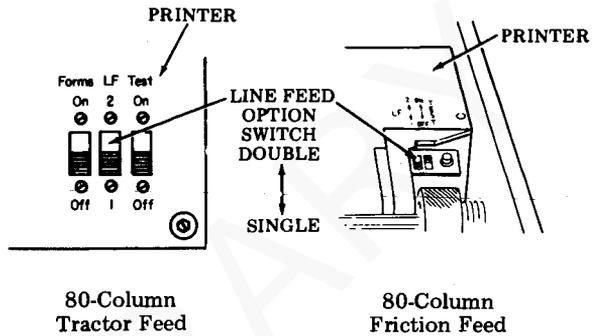
Fig. 126

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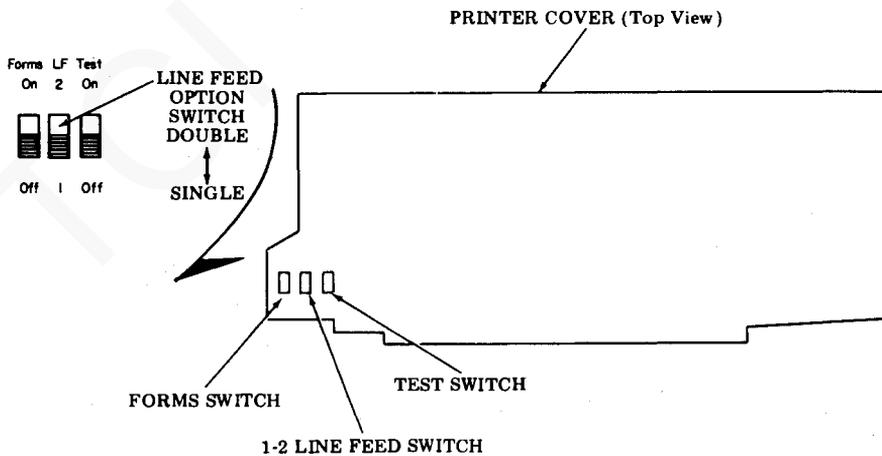


Fig. 127

4.25    Form Switch (on Printer)

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

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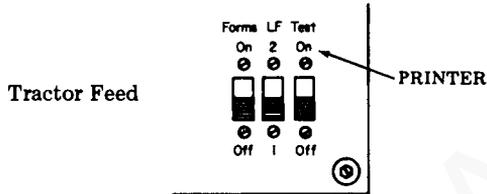


Fig. 128

**Forms Switch (132-Column Printer)**

| 39. | Forms | |
|---|---|---|
| a. | On | |
| b. | Off | * |
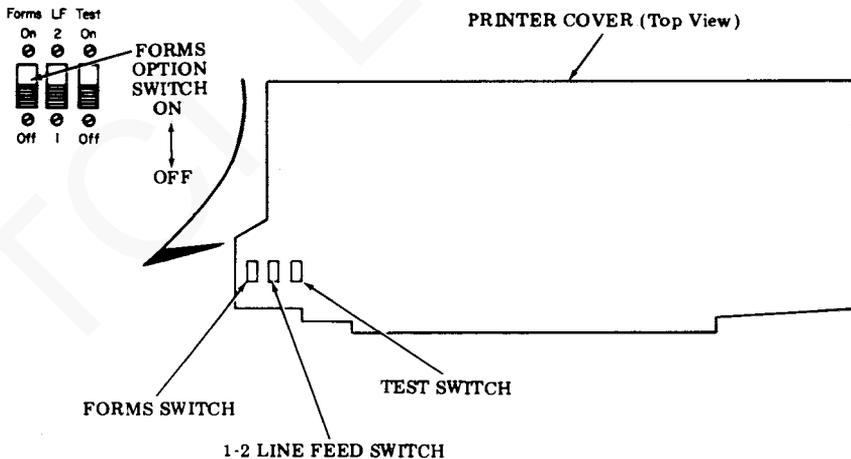


Fig. 129

*Factory Installed Option

### 4.26    Controller Options (ROP)

**410580 Circuit Card (EIA Interface) Card Position JC in ROP 40C103/ — Controller**



Early Issue 7A                          Late Issue 7B
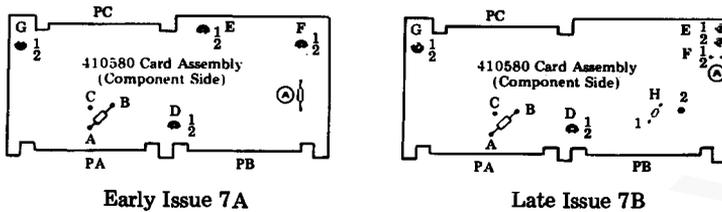
Fig. 130

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

| 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 | |

| 25. | Response to Receiving Parity Error | Insulator F Position | Strap (A) Condition | |
|---|---|---|---|---|
| a. | Printer Receives Odd Parity Null (1-7 Bits Spacing, 8 Bit Marking) | 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 | * |

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

*Note 1:*   H strap location is on component side at coordinates D-11. Strap H position present only on Issue 7B (and higher) 410580 circuit card.

*Note 2:*   Normally used on private line applications.

*Factory Installed Option

410580 Circuit Card (Contd)



Early Issue 7A

Late Issue 7B
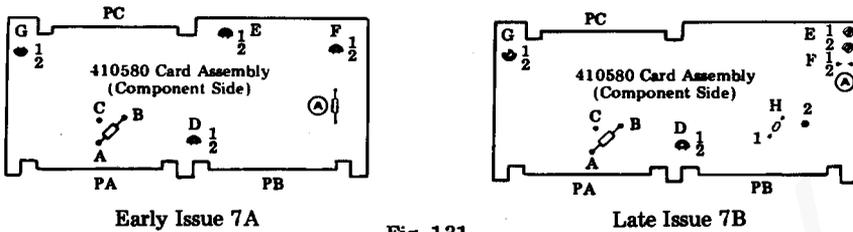
Fig. 131

| 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 | |

4.28    410582 Circuit Card (SSI I/O) — Card Position JA in ROP 40C103/ — Controller



Insulator in down position.
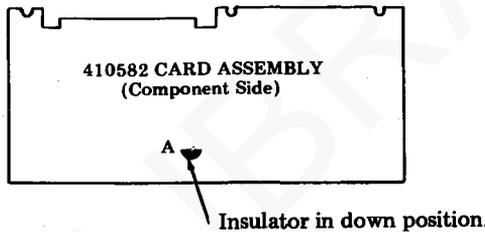
Fig. 132

| 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
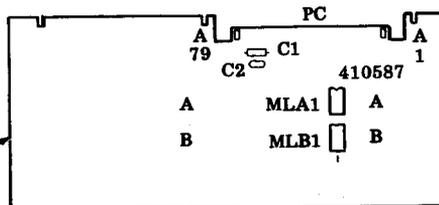
Fig. 133

*Factory Installed Option

## 403400 MODIFICATION KIT OPTIONS (Attendant Selectable Features)



403399 Mounts Here { 1A 1B 2A 2B

B ← A   FDX/HDX
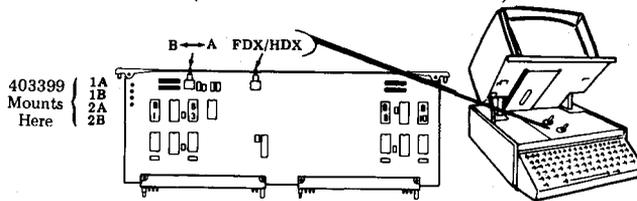
Fig. 134

## 410680 Circuit Card (In Position 09 of Display Logic)

| | | Switch Position "B" | | | | Switch Position "A" | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | B-1 (1 2 3 4 5 6 7 8) | B-8 (1 2 3 4 5 6 7 8) | | | B-3 (1 2 3 4 5 6 7 8) | B-10 (1 2 3 4 5 6 7 8) | | |
| 4. EIA Reverse Channel | 4. | | | | | 4. | | | |
| Requires Reverse Channel to Send (202) | a. | ● | | | | a. | ● | | |
| Ignore Reverse Channel to Send (202 or 103) | b. | ○ | | | | b. | ○ | | * |
| 41. Mode of Operation | 41. | | | | | 41. | | | |
| Half Duplex ⎫ See Notes 1 and 2. | a. | ● | | | | a. | ● | | |
| Full Duplex ⎭ | b. | ○ | | | | b. | ○ | | * |
| 42. Parity Generation | 42. | | | | | 42. | | | |
| Send Even Parity | a. | ○ ● ○ | | | | a. | ○ ● ○ | | * |
| Send Odd Parity | b. | ● ● ○ | | | | b. | ● ● ○ | | |
| Send 8th Bit as Mark | c. | ○ ○ ○ | | | | c. | ○ ○ ○ | | |
| Send 8th Bit as Space | d. | ○ ○ ● | | | | d. | ○ ○ ● | | |
| 43. Stop Bit Generation | 43. | | | | | 43. | | | |
| Send One Stop Bit | a. | ● | | | | a. | ● | | * |
| Send Two Stop Bits | b. | ○ | | | | b. | ○ | | |
| 44. EIA Received Data | 44. | | | | | 44. | | | |
| Enable EIA Receive Data | a. | ● | | | | a. | ● | | * |
| Disable EIA Receive Data | b. | ○ | | | | b. | ○ | | |
| 45. Current Loop Data | 45. | | | | | 45. | | | |
| Enable Receive Data From Current Loop | a. | ● | | | | a. | ● | | |
| Disable Receive Data From Current Loop | b. | ○ | | | | b. | ○ | | * |
| 46. Interface Sheet | 46. | | | | | 46. | | | |
| 103-Type Modem or 20/60 mA Loop | a. | ○ | | | | a. | ○ | | |
| 202-Type Modem Interface | b. | ● | | | | b. | ● | | * |
| 3. EIA S/R Data Baud Rate | 3. | | | | | 3. | | | |
| 110 Baud | j. | ● ● ○ ○ ○ | | | | j. | ● ● ○ ○ ○ | | |
| 150 Baud | i. | ● ● ● ● ○ | | | | i. | ● ● ● ● ○ | | |
| 300 Baud | h. | ● ● ● ● ● | | | | h. | ● ● ● ● ● | | |
| 600 Baud | g. | ● ● ● ○ ○ | | | | g. | ● ● ● ○ ○ | | |
| 1200 Baud | b. | ● ● ○ ○ ○ | | | | b. | ● ● ○ ○ ○ | | * |
| 2400 Baud | c. | ● ○ ○ ○ ○ | | | | c. | ● ○ ○ ○ ○ | | |
| 4800 Baud | f. | ○ ○ ○ ○ ○ | | | | f. | ○ ○ ○ ○ ○ | | |
| 9600 Baud | k. | ○ ○ ○ ○ ○ | | | | k. | ○ ○ ○ ○ ○ | | |

| 410679 Circuit Card of 40C204 Controller | A-17 (1 2 3 4) |
|---|---|
| Clock Divide | — — ● — |

See Note 3.

(See Legend on Page 36.)

*Note 1:* When the 403400 modification kit is used, this option may be optioned one of two ways:
  (a) When the A/B switch is to be used to determine FDX or HDX operation, the attendant selectable FDX/HDX switch must be in "HDX" position.
  (b) When the HDX/FDX switch is to be used to determine FDX or HDX operation, then switch B1-2 and B3-2 must both have the dot end of the rocker switch depressed (closed position).

*Note 2:* When the 403399 and 403400 modification kits are used, the station is optioned as follows:
  (a) When the A/B switch (on pedestal door) is to control half- and full duplex operation, the HDX/FDX switch (on 410680 card) must be permanently positioned to HDX. The H/F switch (on pedestal door) operation is then ignored by the circuit logic (the switch is dead).
  (b) When the H/F switch (on pedestal door) is to control half- and full duplex operation, both miniature switches B1-2 and B3-2 (on 410680 card) must have the dot end of each rocker switch depressed (closed position). The FDX/HDX switch (on 410680 card) must be permanently positioned to FDX.
  (c) The OPTION A/OPTION B switch (on 410680 card) must be permanently positioned to OPTION B.

*Note 3:* To use the 403400 modification kit, the switch (A17-3) on 410679 circuit card must have the dot end of the rocker switch depressed.

## STATION FEATURES AND OPTIONS RECORD

**4.29** The Station Features and Options Record provides a means by which the options and special features in the DATASPEED 40/2 can be recorded and kept with the station for later servicing or maintenance purposes. The Station Features and Options Record is contained in the wiring plan W-4D1XB, and should be left with the station after the options have been recorded in pencil.

## DATA SET OPTIONS

**4.30** The following data sets are used in the DATASPEED 40/2. The Table associated with each data set lists the options for that data set.

| DATA SET | MAXIMUM BAUD RATE | TABLE | PAGE NUMBER |
|----------|-------------------|-------|-------------|
| 103G | 300 | B | 72 |
| 103J | 300 | C | 73 |
| 103JR | 300 | C | 73 |

| DATA SET | MAXIMUM BAUD RATE | TABLE | PAGE NUMBER |
|----------|-------------------|-------|-------------|
| 108F | 300 | D | 74 |
| 108G | 300 | D | 74 |
| 113A | 300 | E | 76 |
| 113C | 300 | F | 78 |
| 113CR | 300 | F | 78 |
| 113D | 300 | G | 79 |
| 113DR | 300 | G | 79 |
| 201C | 2400 | H | 80 |
| 201C-LIC | 2400 | I | 82 |
| 201CR-LIC | 1200 | I | 82 |
| 202C | 1200 | J | 83 |
| 202R | 1200 | K | 85 |
| 202S-LI or LIA | 1200 | L | 86 |
| 202S-LIC | 1200 | M | 88 |
| 202SR-LIC | 1200 | M | 88 |
| 202T-LI | 1800 | N | 89 |
| 202T-LIA | 1800 | O | 90 |
| 208A | 4800 | P | 92 |
| 208B | 4800 | Q | 93 |
| 208BR | 4800 | Q | 93 |
| 212A-LI | 1200 | R | 94 |
| 212A-LIA | 1200 | S | 95 |
| 212AR-LIA | 1200 | S | 95 |

**TABLE B**

**DATA SET 103G OPTIONS**

| FEATURE OR OPTION | | DESIG | CP NO. | SCREW SETTING | |
|---|---|---|---|---|---|
| | | | | LOOSEN | TIGHTEN |
| Answer mode indication | CE ON | X* | CJ9 or CJ14 | 1 | 2 |
| | CE OFF | W† | | 2 | 1 |
| Space disconnect | LONG | V*† | CJ10 | 3 | 8 |
| | SHORT | H | | | 3 and 8 |
| | NONE | W/O V, H | | 3 and 8 | |
| Send disconnect | YES | T* | CJ10 | | 1 |
| | NO | W/O T | | 1 | |
| Loss of carrier disconnect | YES | S | CJ10 | | 4 |
| | NO | W/O S*† | | 4 | |
| Common grounds | YES | Q*† | CJ9 or CJ14 | | 10 |
| | NO | W/O Q | | 10 | |
| Originate only test | YES | G | CJ10 | | 12 |
| | NO | W/O G* | | 12 | |
| ANS/ORG transfer | WITHOUT | N*† | CJ10 | | 10 |
| | WITH | W/O N | | 10 | |
| Answer Control | COMBINED | M*† | CJ9 | | 9 |
| | SEPARATE | W/O M | | 9 | |
| CB and CF indications | COMMON | A† | CJ9 or CJ14 | 5 and 7 | 4 and 6 |
| | SEPARATE | B* | | 4 and 6 | 5 and 7 |
| CC Indication Early | YES | ZD | CJ14 | | 12 |
| | NO | W/O ZD* | | 12 | |

*Factory furnished options.
†Service equivalent to 103A.

TABLE C

DATA SET 103J and 103JR OPTIONS

| FEATURE | | OPTION | FACTORY FURNISHED OPTION | SWITCH SETTING S2 SWITCH ON CM1 CONTACT SETTING | | | | | | |
|---------|---|--------|--------------------------|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Receive Space Disconnect | YES | V | ✓ | — | — | O | — | — | — | — |
| | NO | Y | | — | — | X | — | — | — | — |
| Send Space Disconnect | YES | T | ✓ | X | — | — | — | — | — | — |
| | NO | U | | O | — | — | — | — | — | — |
| Loss of Carrier Disconnect | YES | S | ✓ | — | — | — | O | — | — | — |
| | NO | R | | — | — | — | X | — | — | — |
| CC Indication | EARLY | ZD | ✓ | — | — | — | — | — | — | O |
| | DELAYED | ZC | | — | — | — | — | — | — | X |
| CB and CF Indications | COMMON | A | ✓ | — | X | — | — | — | — | — |
| | SEPARATE | B | | — | O | — | — | — | — | — |
| CC Indication for Analog Loop | ON | ZF | ✓ | — | — | — | — | O | — | — |
| | OFF | ZE | | — | — | — | — | X | — | — |
| Automatic Answer | YES | ZH | ✓ | — | — | — | — | — | O | — |
| | NO | ZG | | — | — | — | — | — | X | — |

| | | | | S3 SWITCH ON CP1 CONTACT SETTING | | | | | | |
|---------|---|--------|--------------------------|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Fail Safe State of CN Circuit | ON | K | | — | X | — | — | — | — | — |
| | OFF | J | ✓ | — | O | — | — | — | — | — |
| Common Ringer | YES | ZB* | | X | — | — | — | — | — | — |
| | NO | ZA† | ✓ | O | — | — | — | — | — | — |
| Tip-Ring Make Busy | YES | F | | — | — | X | — | — | — | — |
| | NO | E | ✓ | — | — | O | — | — | — | — |

| | | | | | | |
|---|---|---|---|---|---|---|
| Contact to Ground Make Busy Floating Contact Make Busy | For use with 40A-type data mounting | | | Not available when option ZB is used | | |
| Common Grounds | YES | Q | ✓ | Close S1 screw switch on 47C1 DM | | |
| | NO | P | | Open S1 screw switch on 47C1 DM | | |

X = Contact closed      O = Contact open      — = Contact not applicable

* Strap C to B on CP1.      † = Strap C to A on CP1.

TABLE D

DATA SET 108F OR G OPTIONS

| FEATURE | | OPTION | SWITCH SETTING (S1- ) | |
|---|---|---|---|---|
| | | | OPEN | CLOSED |
| Facility | 4-Wire | Z | 4 | 3 |
| | 2-Wire | Y* | 3 | 4 |
| Mark or Space Hold | Mark | U* | 2 | 1 |
| | Space | V | 1 | 2 |
| | | | SWITCH SETTING (S2- ) | |
| CB Internally Connected to | None | E | 5,6 | — |
| | RS | W | 6 | 5 |
| | CA | X* | 7 | 6 |
| Carrier Control | Via CA | D | 2,4,6 | 7 |
| | Via RS | T | 2,7 | 4 |
| | Always on in Data Mode | S* | 4,7 | 2 |
| | Always off in Data Mode | H | 2,4,7 | — |
| Remote Test Connection via J1 | Yes | P | — | 1 |
| | No | N* | 1 | — |
| Local Copy in Test Mode | Yes | G | — | 3 |
| | No | F* | 3 | — |
| | | | OPTION STRAP | |
| Receiver dB Gain Reduction | 6 | K* | E2—E3 | |
| | 0 | J | E1—E2 | |
| | | | SCR SWITCH (S4- ) | |
| Ground Wire (GRD) Connected to Signal Ground (SG) | Yes | M* | — | B |
| | No | L | B | — |
| Resistor Bypass for Negative Voltage (-P) on J1 | Yes | R | — | A |
| | No | Q* | A | — |

* Factory furnished option.

**TABLE E**

**DS 108F OR G TRANSMIT LEVEL SETTING**

| TRANSMIT LEVEL (IN dBm) | SWITCH SETTING (S1 —) | |
|---|---|---|
| | OPEN | CLOSED |
| —1 | 5, 6, 7, 8 | — |
| —3 | 5, 7, 8 | 6 |
| —5 | 5, 6, 8 | 7 |
| —7 | 5, 6, 7 | 8 |
| —9* | 6, 7, 8 | 5 |
| —11 | 7, 8 | 5, 6 |
| —13 | 6, 8 | 5, 7 |
| —15 | 6, 7 | 5, 8 |

\* Factory furnished option.

## TABLE F

## WIRE CONNECTIONS TO IMPLEMENT DATA SET 113A — L1(A)/2 OPTIONS

| STEP | COLOR CODE | CONNECT | DISCONNECT | FROM | TO |
|------|-----------|---------|------------|------|-----|
| **Option X — Data Lamp and CD Lead Control (Factory Provided)** | | | | | |
| 1 | Strap | | ✓ | APP Unit — Term. L1 | ER1 CP — Term. E6 |
| 2 | SL | ✓ | | Data Key — Term. 2 | ER1 CP — Term. E6 |
| 3 | R-3W | ✓ | | HH1 CP — Term. 10 | ER1 CP — Term. E6 |
| 4 | BR | ✓ | | Data Key — Term. 1 | APP Unit — Term. L1 |
| 5 | G-3R | ✓ | | HH1 CP — Term. 11 | APP Unit — Term. L1 |
| 6 | Strap | | ✓ | Lamp Strip — Term. HL | HH1 CP — Term. 7 |
| 7 | W | ✓ | | Test Key — Term. 4 | HH1 CP — Term. 7 |
| 8 | 0-3W | ✓ | | ER1 CP — Term. E14 | HH1 CP — Term. 8 |
| 9 | BL-3W | ✓ | | ER1 CP — Term. E1 | HH1 CP — Term. 9 |
| 10 | R (Note 1) | ✓ | | D4BJ-61 Cord | HH1 CP — Term. 1 |
| 11 | Y | ✓ | | D4BJ-61 Cord | One side of 2012B Trans. |
| 12 | BK | ✓ | | D4BJ-61 Cord | Other side of 2012B Trans. |
| **Option V — Data Lamp and Disabled CD Lead Control** | | | | | |
| 1 | Strap | | ✓ | APP Unit — Term. L1 | ER1 CP — Term. E6 |
| 2 | G-3R | ✓ | | HH1 CP — Term. 11 | APP Unit — Term. L1 |
| 3 | BR | ✓ | | Data Key — Term. 1 | APP Unit — Term. L1 |
| 4 | R-3W | ✓ | | HH1 CP — Term. 10 | ER1 CP — Term. E6 |
| 5 | SL | ✓ | | Data Key — Term. 2 | ER1 CP — Term. E6 |
| 6 | W (Note 2) | | ✓ | HH1 CP — Term. 7 | Test Key — Term. 4 |
| 7 | Strap | ✓ | | Lamp Strip — Term. HL | HH1 CP — Term. 7 |
| 8 | 0-3W | ✓ | | ER1 CP — Term. E14 | HH1 CP — Term. 8 |
| 9 | BL-3W | ✓ | | ER1 CP — Term. 1 | HH1 CP — Term. 9 |
| 10 | R (Note 1) | ✓ | | D4BJ-61 Cord | HH1 CP — Term. 1 |

## TABLE F (Contd)

## WIRE CONNECTIONS TO IMPLEMENT DATA SET 113A — L1(A)/2 OPTIONS

| STEP | COLOR CODE | CONNECT | DISCONNECT | FROM | TO |
|------|-----------|---------|------------|------|-----|
| **Option V — Data Lamp and Disabled CD Lead Control (Cont)** | | | | | |
| 11 | Y | √ | | D4BJ-61 Cord | One side of 2012B Trans. |
| 12 | BK | √ | | D4BJ-61 Cord | Other side of 2012B Trans. |
| **Option W — Disabled Data Lamp and Disabled CD Lead Control** | | | | | |
| 1 | Y | | √ | D4BJ-61 Cord | One side of 2012B Trans. |
| 2 | BK | | √ | D4BJ-61 Cord | Other side of 2012B Trans. |
| 3 | G-3R (Note 3) | | √ | APP Unit — Term. L1 | HH1 CP — Term. 11 |
| 4 | BR (Note 3) | | √ | APP Unit — Term. L1 | Data Key — Term. 1 |
| 5 | SL (Note 4) | | √ | ER1 CP — Term. E6 | Data Key — Term. 2 |
| 6 | R-3W (Note 4) | | √ | ER1 CP — Term. E6 | HH1 CP — Term. 10 |
| 7 | R | | √ | D4BJ-61 Cord | HH1 CP — Term. 1 |
| 8 | R | √ | | D4BJ-61 Cord | ER1 CP — Term. E6 |
| 9 | Strap | √ | | APP Unit — Term. L1 | ER1 CP — Term. E6 |
| 10 | 0-3W (Note 5) | | √ | HH1 CP — Term. 8 | ER1 CP — Term. E14 |
| 11 | BL-3W (Note 6) | | √ | HH1 CP — Term. 9 | ER1 CP — Term. E1 |
| 12 | Strap | | √ | Lamp Strip — Term. HL | HH1 CP — Term. 7 |
| 13 | W | √ | | Test Key — Term. 4 | HH1 CP — Term. 7 |

*Note 1:* If Option W is presently in data set, R wire must be disconnected from ER1 CP — Terminal E6.

*Note 2:* Disconnect from HH1 CP — Terminal 7; tape, and store.

*Note 3:* Disconnect from APP Unit — Terminal L1; tape, and store.

*Note 4:* Disconnect from ER1 CP — Terminal E6; tape, and store.

*Note 5:* Disconnect from HH1 CP - Terminal 8; tape, and store.

*Note 6:* Disconnect from HH1 CP — Terminal 9; tape, and store.

TABLE G

DATA SET 113C and 113CR OPTIONS

| FEATURE | | OPTION | FACTORY FURNISHED OPTION | SWITCH SETTING S2 SWITCH ON CM1 CONTACT SETTING | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Receive Space Disconnect | YES | V | √ | — | — | — | — | O | — | — |
| | NO | Y | | — | — | — | — | X | — | — |
| Send Space Disconnect | YES | T | √ | — | — | — | — | — | X | — |
| | NO | U | | — | — | — | — | — | O | — |
| Loss of Carrier Disconnect | YES | S | √ | — | O | — | — | — | — | — |
| | NO | R | | — | X | — | — | — | — | — |
| CC Indication | EARLY | ZD | √ | X | — | — | — | — | — | — |
| | DELAYED | ZC | | O | — | — | — | — | — | — |
| CB and CF Indications | COMMON | A | √ | — | — | — | X | — | — | — |
| | SEPARATE | B | | — | — | — | O | — | — | — |
| CC Indication for Analog Loop | ON | ZF | √ | — | — | O | — | — | — | — |
| | OFF | ZE | | — | — | X | — | — | — | — |
| | | | | | | | | | | |
| Common Grounds | YES | Q | √ | Close S1 screw switch on 47F1 DM | | | | | | |
| | NO | P | | Open S1 screw switch on 47F1 DM | | | | | | |

X = Contact closed        O = Contact open        — = Contact not applicable

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## TABLE H

## DATA SET 113D AND 113DR OPTIONS

| FEATURE | | OPTION | FACTORY FURNISHED OPTION | SWITCH SETTING S2 SWITCH CONTACT SETTING | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Receive Space Disconnect | YES | V | √ | — | — | O | — | — | — | — |
| | NO | Y | | — | — | X | — | — | — | — |
| Send Space Disconnect | YES | T | √ | — | — | — | — | — | — | X |
| | NO | U | | — | — | — | — | — | — | O |
| Loss of Carrier Disconnect | YES | S | √ | — | — | — | — | O | — | — |
| | NO | R | | — | — | — | — | X | — | — |
| CB and CF Indications | COMMON | A | √ | — | X | — | — | — | — | — |
| | SEPARATE | B | | — | O | — | — | — | — | — |
| CC Indication for Analog Loop | ON | ZF | √ | — | — | — | O | — | — | — |
| | OFF | ZE | | — | — | — | X | — | — | — |
| Automatic Answer | YES | ZH | √ | — | — | — | — | — | O | — |
| | NO | ZG | | — | — | — | — | — | X | — |
| Fail Safe State of CN Circuit | ON | K | | X | — | — | — | — | — | — |
| | OFF | J | √ | O | — | — | — | — | — | — |
| | | | | | | | | | | |
| | | | | S3 SWITCH CONTACT SETTING | | | | | | |
| Tip-Ring Make Busy | YES | F | | X | — | | | | | |
| | NO | E | √ | O | — | | | | | |
| Contact to Ground Make Busy Floating Contact Make Busy | For use with 40A-type data mounting | | | Not available when option ZB is used | | | | | | |
| Common Grounds | YES | Q | √ | Close S1 screw switch on 47E1 DM | | | | | | |
| | NO | P | | Open S1 screw switch on 47E1 DM | | | | | | |

X = Contact closed     O = Contact open     — = Contact not applicable

TABLE I

DATA SET 201C-OPTIONS

| FEATURE | OPTION | | | STRAPPING ON ANALOG BOARD (CP JB1) | | STRAPPING ON DIGITAL BOARD (CP JB2) | | PROVIDE |
|---|---|---|---|---|---|---|---|---|
| | | | | INSTALL RED STRAPS | REMOVE RED STRAPS | INSTALL RED STRAPS | REMOVE RED STRAPS | |
| Transmit Line Signal Level | 0 dBm | For Private Line | ZA | 27-28, 29-30, 31-32, 33-34 | 19-20, 21-22, 23-24, 25-26 | | | One Per Set |
| | −1 dBm | For Switched Network | ZB | 19-20, 29-30, 31-32, 33-34 | 27-28, 21-22, 23-24, 25-26 | | | |
| | −2 dBm | | ZC | 27-28, 21-22, 31-32, 33-34 | 19-20, 29-30, 23-24, 25-26 | | | |
| | −3 dBm | | ZD | 19-20, 21-22, 31-32, 33-34 | 27-28, 29-30, 23-24, 25-26 | | | |
| | −4 dBm | | ZE | 27-28, 29-30, 23-24, 33-34 | 19-20, 21-22, 31-32, 25-26 | | | |
| | −5 dBm | | ZF | 19-20, 29-30, 23-24, 33-34 | 27-28, 21-22, 31-32, 25-26 | | | |
| | −6 dBm | | ZG | 27-28, 21-22, 23-24, 33-34 | 19-20, 29-30, 31-32, 25-26 | | | |
| | −7 dBm | | ZH | 19-20, 21-22, 23-24, 33-34 | 27-28, 29-30, 31-32, 25-26 | | | |
| | −8 dBm | | ZI | 27-28, 29-30, 31-32, 25-26 | 19-20, 21-22, 23-24, 33-34 | | | |
| | −9 dBm | | ZJ | 19-20, 29-30, 31-32, 25-26 | 27-28, 21-22, 23-24, 33-34 | | | |
| | −10 dBm | | ZK | 27-28, 21-22, 31-32, 25-26 | 19-20, 29-30, 23-24, 33-34 | | | |
| | −11 dBm | | ZL | 19-20, 21-22, 31-32, 25-26 | 27-28, 29-30, 23-24, 33-34 | | | |
| | −12 dBm | | ZM | 27-28, 29-30, 23-24, 25-26 | 19-20, 21-22, 31-32, 33-34 | | | |
| | −13 dBm | | ZN | 19-20, 29-30, 23-24, 25-26 | 27-28, 21-22, 31-32, 33-34 | | | |
| | −14 dBm | | ZO | 27-28, 21-22, 23-24, 25-26 | 19-20, 29-30, 31-32, 33-34 | | | |
| | −15 dBm | | ZP | 19-20, 21-22, 23-24, 25-26 | 27-28, 29-30, 31-32, 33-34 | | | |
| Line Impedance | 600 ohms | | ZQ | 16-17 | 17-18 | | | One Per Set |
| | 900 ohms | | ZR | 17-18 | 16-17 | | | |
| Compromise Equalizer (Note 2) | In | | ZS | 8-9, 11-12 | 9-10, 12-13 | | | One Per Set |
| | Out | | ZT | 9-10, 12-13 | 8-9, 11-12 | | | |
| Carrier On Sensitivity | −24 dBm for Private Line | | ZU | | 1-2 | | | One Per Set |
| | −44 dBm for Switched Network | | ZV | 1-2 | | | | |
| New Sync | Not Used | | YA | | | 20-21 | 19-20 | One Per Set |
| | Under Customer Control | | YB | | | 19-20 | 20-21 | |
| Transmitter Timing | Internal | | YC | | | | 13-14 | One Per Set |
| | External | | YD | | | 13-14 | | |
| Automatic Answer | Not Provided or Provided Under Control of Customer Interface Circuits RDY and DTR | | YE | | | | 17-18 | One Per Set |
| | Provided Under Control of DTR Only | | YF | | | 17-18 | | |
| Ring Indication on Customer Interface | EIA Interface on Terminal 22 | | YG | | | 22-24 | 22-23 | One Per Set |
| | Contact Interface Between Terminals 22 and 23 | | YH | | | 22-23 | 22-24 | |

TABLE I (Contd)

DATA SET 201C OPTIONS

ISS 2, SECTION 582-200-202

| FEATURE | OPTION | | | STRAPPING ON ANALOG BOARD (CP JB1) | | STRAPPING ON DIGITAL BOARD (CP JB2) | | PROVIDE |
|---|---|---|---|---|---|---|---|---|
| | | | | INSTALL RED STRAPS | REMOVE RED STRAPS | INSTALL RED STRAPS | REMOVE RED STRAPS | |
| External Control of DSR | Yes | | YI | | | | 15-16 | One Per Set |
| | No | | YJ | | | 15-16 | | |
| Grounding | Signal Ground Connected to Frame Ground | | YK | | | 25-26 | | One Per Set |
| | Signal Ground Not Connected to Frame Ground | | YL | | | | 25-26 | |
| Type of Operation and Clear-to-Send Delay | 4-Wire Private Line | Switched Carrier, 7-ms CS Delay | XA | 35-36 | 4-5 | 1-3, 4-6, 28-29, 11-12 | 2-3, 5-6, 27-28, 133-134 | One Per Set |
| | | Continuous Carrier, 7-ms CS Delay | XB | 35-36 | 4-5 | 1-3, 5-6, 28-29, 11-12 | 2-3, 4-6, 27-28, 133-134 | |
| | | Continuous Carrier, 0-ms CS Delay | XC | 35-36 | 4-5 | 2-3, 5-6, 28-29, 11-12 | 1-3, 4-6, 27-28, 133-134 | |
| | 2-Wire Switched Network | Switched Carrier, 150-ms CS Delay | XD | 4-5 | 35-36 | 1-3, 4-6, 27-28 | 2-3, 5-6, 11-12, 28-29, 133-134 | |
| | 2-Wire Private Line | Switched Carrier, 150-ms CS Delay | XE | 4-5, 35-36 | | 1-3, 4-6, 11-12, 133-134 | 2-3, 5-6, 27-28, 28-29 | |

*Note 1:* **DO NOT REMOVE ANY BLACK TEST STRAPS.**

*Note 2:* Use Option ZS for all installations.

## TABLE J
## DATA SET 201C-L1C AND 201CR-L1C OPTIONS

| FEATURE | | OPTION | LINE CONTROL BOARD (TP1) | | PROVIDE |
|---|---|---|---|---|---|
| | | | STRAP IN (VERTICAL) | STRAP OUT (HORIZONTAL) | |
| Transmit Line Signal Level | 0 dBm | ZA | | 1, 2, 4, 8 | One Per Station |
| | −1 dBm | ZB | 1 | 2, 4, 8 | |
| | −2 dBm | ZC | 2 | 1, 4, 8 | |
| | −3 dBm | ZD | 1, 2 | 4, 8 | |
| | −4 dBm | ZE | 4 | 1, 2, 8 | |
| | −5 dBm | ZF | 1, 4 | 2, 8 | |
| | −6 dBm | ZG | 2, 4 | 1, 8 | |
| | −7 dBm | ZH | 1, 2, 4 | 8 | |
| | −8 dBm | ZI | 8 | 1, 2, 4 | |
| | −9 dBm | ZJ* | 1, 8 | 2, 4 | |
| | −10 dBm | ZK | 2, 8 | 1, 4 | |
| | −11 dBm | ZL | 1, 2, 8 | 4 | |
| | −12 dBm | ZM | 4, 8 | 1, 2 | |
| | −13 dBm | ZN | 1, 4, 8 | 2 | |
| | −14 dBm | ZO | 2, 4, 8 | 1 | |
| | −15 dBm | ZP | 1, 2, 4, 8 | | |

| FEATURE | | OPTION | SWITCH SETTING | | | | | | | | DIGITAL BOARD (JB4) | PROVIDE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | |
| Transmitter Timing | INTERNAL | YC* | | | | | X | | | | | One Per Station |
| | EXTERNAL | YD | | | | | O | | | | | |
| Automatic Answer | RDY & DTR CONTROLLED OR NOT PROVIDED | YE | | | | | | | O | | | One Per Station |
| | DTR CONTROLLED ONLY | YF* | | | | | | | | X | | |
| Grounding Option | SIGNAL GRD CONNECTED TO FRAME GRD | YK* | | | | | | | | | Install E1-E1 | |
| | SIGNAL GRD NOT CONNECTED TO FRAME GRD | YL | | | | | | | | | Remove E1-E2 | |
| Function of EIA Interface Pin 18 | INITIATES LOCAL ANALOG LOOPBACK | YS | | | | X | | | | | Install E3-E4 | One Per Station |
| | PROVIDES RECEIVE SYMBOL CLOCK | YT* | | | | O | | | | | Install E4-E5 | |
| Cont Receiver Bit Clock | IN | YO | | | | | | | O | | | One Per Station |
| | OUT | YP* | | | | | | | X | | | |
| Satellite Option | IN | YQ* | | | X | | | | | | | One Per Station |
| | OUT | YR | | | O | | | | | | | |

\* Factory-furnished option

X - Closed

O = Open

TABLE K

DATA SET 202C OPTIONS AND CONNECTIONS

| FEATURE OR OPTION | | | WIRING OPTION | STRAP TERMINALS ON TB2 | PROVIDE |
|---|---|---|---|---|---|
| Automatic Answering Feature | Key Controlled (Voltage Interface) | | ZE | 48-49 | 1 Per Station (Note 1) |
| | Permanent (Voltage Interface) | | Q* | 59-60 | |
| | Key Controlled (Contact Interface) | | ZC | 49-50 | |
| | Permanent (Contact Interface) | | ZD | 50-51 | |
| | Not Provided | | — | Remove ZE, Q, ZC, and ZD wiring. | |
| Bit Rate | 900 or less bps | | ZA | 14-15 | 1 Per Station (Note 2) |
| | Greater than 900 bps | | ZB* | 15-16 | |
| Amplitude Equalizer | | IN | F* | 18-19 | 1 Per Station |
| | | OUT | E | 17-18 | |
| Delay Equalizer | | IN | B* | 61-62, 64-65 | 1 Per Station |
| | | OUT | A | 62-63, 63-64 | |
| Interface | Voltage (EIA) | | N* | 1-2, 4-5, 6-7, 8-9 | 1 Per Station |
| | Contact | | M | 2-3, 5-6, 9-10, 12-13 | |
| Squelch | | IN | R* | 46-47 | 1 Per Station |
| | | OUT | ZM† | 47-55 (Remove R wiring.) | |
| Demodulator Clamp | | ON | V* | 20-21 | 1 Per Station |
| | | OFF | U | 21-22 | |
| 2-Wire Operation | | | Z* | 27-28, 31-32, 33-34, 35-36, 38-39, 41-42, 53-54, 56-57 | 1 Per Station (Note 3) |
| 4-Wire Operation | | | Y | 30-31, 36-37, 37-38, 40-41, 54-55, 57-58 | |
| Termination | 600-ohm | | X | 44-45 | 1 Per Station |
| | 900-ohm | | W* | 43-44 | |
| Data Transmit Levels | 0 dBm | | K | 11-12 | 1 Per Station (Note 4) |
| | −3 dBm | | J | 24-25 | |
| | −6 dBm | | H* | 22-23 | |
| | −9 dBm | | G | 23-24 | |

*Factory-furnished option.
†Wiring furnished by installer.

TABLE K (Contd)

DATA SET 202C OPTIONS AND CONNECTIONS

| FEATURE OR OPTION | | WIRING OPTION | STRAP TERMINALS | | PROVIDE |
|---|---|---|---|---|---|
| | | | TERMINAL NUMBERS | TERMINAL BOARD | |
| Reverse Channel | IN | T | 1-2, 6-7 | TB3 | 1 Per Station (Note 5) |
| | OUT | S | 2-3, 7-8 | | |
| Reverse-Channel Transmit Level | —3 dBm | ZF | White lead to 1 | TB4 | 1 Per Station (Note 4) |
| | —6 dBm | ZG* | White lead to 2 | TB4 | |
| | —9 dBm | ZH | White lead to 3 | TB4 | |
| 801-Type ACU | Provided | ZJ | 19-23 (Note 6) | TB1 | 1 Per Station |
| | Not Provided | — | 17-20 | TB1 | |
| 6017 AP Key | Provided | — | Remove ZV Wiring | | 1 Per Station |
| | Not Provided | ZV* | 7-9 | TB1 | |
| Carrier Soft Turn-Off | IN | ZY* | 1-2 | AS87 CP | 1 Per Station (Note 7) |
| | OUT | ZZ | 3-4 | AS87 CP | |

*Factory-furnished option.
†Wiring furnished by installer.

*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 Option ZC or ZD as required.

*Note 2:* Option ZB must be used for all applications.

*Note 3:* In addition to strapping arrangements on TB2, the following arrangements must be made on telephone circuit (11C apparatus unit):

(a) 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.

(b) 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 4:* Equipped only on early series data sets.

*Note 5:* 202C-1, C-3, C-5, C-7, C-9, C-11 — Factory furnished with Option S. 202C-2, C-4, C-6, C-8, C-10, C-12 — Factory furnished with Option T. Install Option T only if Option Z is used.

*Note 6:* Install Options in DAS 801 as directed in Table B in Section 592-015-200.

*Note 7:* Available only on 202C-5, C-6, C-7, C-8, C-9, C-10, C-11, C-12.

TABLE L

DATA SET 202R OPTIONS

| REQUIRES | OPTION DESIG. | DESCRIPTION OF OPTION | | CLOSE SWITCH | OPEN SWITCH | CIRCUIT PACK |
|---|---|---|---|---|---|---|
| One per station | Z | 2-wire | Jumpers S4 and S5 and slide switch S1 (See *Note*) | S1 to "2-wire" S4, S5 *Note* | — | AR593 |
| | Y | 4-wire | | S1 to "4-wire" | S4, S5 *Note* | |
| One per station | X | Data set carrier under control of customer request-to-send lead | | S3B | S3A | |
| | W | Continuous carrier (4-wire point-to-point or 2-wire transmit-only service) | | S3A | S3B | |
| | V | No carrier (receive-only service) | | — | S3A, S3B | |
| | T | Fast carrier turn-off | | — | S2 | AR591 |
| | S | Soft carrier turn-off | | S2 | — | |
| One per station | R | Squelch of carrier detector | | S3 | — | |
| | Q | No squelch of carrier detector | | — | S3 | |
| One per station | N | 20-ms carrier acquisition timer | | S1 | — | |
| | M | 40-ms carrier acquisition timer | | — | S1 | |
| One per station | K | Carrier detector "OFF" clamps received data lead | | S5 | — | |
| | J | No clamp of received data lead | | — | S5 | |
| One per station | G | 200-ms clear-to-send timer | | — | S4A, S4B | |
| | F | 60-ms clear-to-send timer | | S4A | S4B | |
| | E | 30-ms clear-to-send timer | | S4B | S4A | |

*Note:* AR593 CPs, series 6 and later, contain jumpers which are used as switches S4 and S5. The "open switch" condition is obtained by plugging one end of the jumper into the other end of the same jumper. The "closed switch" condition is obtained by plugging the jumper into two adjacent posts on the circuit board. The "open switch" condition allows digital loop-back test. To perform the "beeper" 4-wire loop-back test, close switches S4 and S5. All data sets with AR593, series 6 and later, are factory furnished in the "open switch" condition.

## TABLE M

## DATA SET 202S — L1 OR L1A OPTIONS

| FEATURE | OPTION | DESCRIPTION | | SWITCH SETTING S3 SWITCH CONTACT SETTING ON TRANSMITTER-RECEIVER | | | | | | | | | | PROVIDE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | WITHOUT REVERSE CHANNEL | WITH REVERSE CHANNEL | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | |
| Transmit Line Signal Level | ZK | 0 | −1 | − | X | − | X | X | X | X | X | X | − | One Per Set |
| | ZL | −1 | −2 | − | X | − | 0 | X | X | X | X | X | − | |
| | ZM | −2 | −3 | − | X | − | X | 0 | X | X | X | X | − | |
| | ZN | −3 | −4 | − | X | − | X | X | 0 | X | X | X | − | |
| | ZO | −4 | −5 | − | X | − | X | X | X | 0 | X | X | − | |
| | ZP | −5 | −6 | − | X | − | X | 0 | X | 0 | X | X | − | |
| | ZQ* | −6 | −7 | − | X | − | 0 | X | 0 | 0 | X | X | − | |
| | ZR | −7 | −8 | − | 0 | − | 0 | X | X | X | 0 | X | − | |
| | ZS | −8 | −9 | − | 0 | − | 0 | X | 0 | X | 0 | X | − | |
| | ZT | −9 | −10 | − | 0 | − | X | X | X | X | X | 0 | − | |
| | ZU | −10 | −11 | − | 0 | − | 0 | X | X | 0 | X | 0 | − | |
| | ZV | −11 | −12 | − | 0 | − | X | 0 | X | X | 0 | 0 | − | |
| | ZW | −12 | −13 | − | 0 | − | 0 | 0 | 0 | 0 | 0 | 0 | − | |
| Reverse Channel† | ZC‡ | In | | 0 | − | 0 | − | − | − | − | − | − | − | One Per Set |
| | ZD* | Out (Remove CP) | | X | − | X | − | − | − | − | − | − | − | |
| Transmit Only | YG | IN | | − | − | − | − | − | − | − | − | − | X | One Per Set** |
| | YH* | OUT | | − | − | − | − | − | − | − | − | − | 0 | |

| FEATURE | OPTION | SOFT TURNOFF | SQUELCH | S2 SWITCH CONTACT SETTING ON TRANSMITTER-RECEIVER | | | | | | | | | | PROVIDE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | |
| Soft Turnoff and Squelch Intervals | Z | 0 | 0 | − | − | 0 | X | − | − | − | − | 0 | X | One Per Set |
| | 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 (7 ms) | | − | − | − | − | 0 | − | − | − | − | − | One Per Set |
| | N* | Out (23 ms) | | − | − | − | − | X | − | − | − | − | − | |

(See Legend on Page 87.)

TABLE M (Contd)

## DATA SET 202S — L1 OR L1A OPTIONS

| FEATURE | | OPTION | OESCRIPTION | SWITCH SETTING | | | | | | | | | | PROVIDE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | S2 SWITCH CONTACT SETTING ON TRANSMITTER-RECEIVER | | | | | | | | | | |
| | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | |
| Clear-to-Send Interval | | M | 8 ms | — | — | — | — | — | 0 | 0 | — | — | — | One Per Set |
| | | K | 30 ms | — | — | — | — | — | 0 | X | — | — | — | |
| | | J | 60 ms | — | — | — | — | — | X | 0 | — | — | — | |
| | | G* | 180 ms | — | — | — | — | — | X | X | — | — | — | |
| Automatic Answer | | B* | In | — | — | — | — | — | — | — | X | — | — | One Per Set |
| | | A | Out | — | — | — | — | — | — | — | 0 | — | — | |
| Local Copy On Primary Channel | 202S-L1 | ZA | In | X | — | — | — | — | — | — | — | — | — | One Per Set |
| | | ZB* | Out | 0 | — | — | — | — | — | — | — | — | — | |
| | 202S-L1A | ZA | In | 0 | — | — | — | — | — | — | — | — | — | |
| | | ZB* | Out | X | — | — | — | — | — | — | — | — | — | |
| Clamp (202S-L1 Only) | | F* | In | — | 0 | — | — | — | — | — | — | — | — | Must be Provided |
| Condition of CC (DSR) During Analog Loop-Back (202S-L1A Only) | | YI | On | — | X | — | — | — | — | — | — | — | — | One Per Set |
| | | YJ* | Off | — | 0 | — | — | — | — | — | — | — | — | |
| Local Copy on Reverse Channel | | | | STRAPPING ON REVERSE CHANNEL | | | | | | | | | | One Per JY1 or JY2 CP† |
| | | ZE | In | Install E21-E22 | | | | | | | | | | |
| | | ZF* | Out | Install E21-E23 | | | | | | | | | | |
| Grounding Option | | | | SCREW SWITCH SETTING ON INTERFACE CIRCUIT | | | | | | | | | | One Per 47A1 Data Mounting |
| | | ZG* | Signal Ground Connected to Frame Ground | Screw Switch S1 Closed | | | | | | | | | | |
| | | ZH | Signal Ground Not Connected to Frame Ground | Screw Switch S1 Open | | | | | | | | | | |

X Rocker down on side adjacent to numbers.
0 Rocker up on side adjacent to numbers.
— Rocker may be in either position.
* Factory Furnished.
† DS 202S-L1A operates with JY2 only.
‡ Factory furnished instead of Option ZD when reversed channel board is installed.
§ Same as carrier acquisition timing in earlier model DS 202-type.
  Note that IN or OUT status of option requires the opposite position for contact 1 of switch S2 between models L1 and L1A.
** The transmit-only out Option (YH) must be selected.
CP Circuit Pack.

## TABLE N

## DATA SET 202S-L1C AND 202SR-L1C OPTIONS

**TRANSMIT LINE SIGNAL LEVEL** — S4 SWITCH CONTACT SETTING ON TRANSMITTER-RECEIVER (CPIC)

| FEATURE | OPTIONS | OUTPUT LEVEL | WITHOUT REVERSE CHANNEL | | | | | | | WITH REVERSE CHANNEL | | | | | | | PROVIDE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
| TRANSMIT LINE SIGNAL LEVEL | * ZO | –4 | X | X | X | X | X | X | X | X | X | X | X | X | X | X | ONE PER SET |
| | ZP | –5 | O | X | X | X | X | X | O | X | O | X | X | X | X | X | |
| | ZQ | –6 | X | O | X | X | X | X | X | O | O | X | X | X | X | X | |
| | ZR | –7 | O | O | X | X | X | X | O | X | X | O | X | X | X | O | |
| | ZS | –8 | X | X | O | X | X | X | O | X | O | O | X | X | X | O | |
| | ZT | –9 | X | O | O | X | X | X | O | X | X | O | X | O | X | O | |
| | ZU | –10 | X | X | X | O | X | X | O | O | O | O | X | X | O |  | |
| | ZV | –11 | O | O | X | O | X | X | O | O | O | O | O | O | X | O | |
| | ZW | –12 | O | O | O | O | X | X | O | O | O | O | O | O | O | O | |

**SOFT TURN-OFF AND SQUELCH INTERVALS** — S2 SWITCH CONTACT SETTING ON TRANSMITTER-RECEIVER (CP C)

| FEATURE | OPTIONS | SOFT TURN-OFF | SQUELCH | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | PROVIDE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SOFT TURN-OFF AND SQUELCH INTERVALS | Z | 0 | 0 | — | — | — | — | — | — | — | X | — | X | ONE PER SET |
| | Y | 8 MSEC | 0 | — | — | — | — | — | — | — | — | — | X | |
| | X | 24 MSEC | 0 | — | X | — | — | — | — | — | — | — | X | |
| | W | 0 | 9 MSEC | — | — | — | — | — | — | X | — |  |  | |
| | V | 0 | 156 MSEC | — | X | — | — | — | — | X | — |  |  | |
| | T | 8 MSEC | 9 MSEC | — | — | — | — | — | — | — |  |  |  | |
| | S | 8 MSEC | 156 MSEC | — | X | X | — | — | — | — |  |  |  | |
| | * R | 24 MSEC | 156 MSEC | — | X | X | — | — | — | — |  |  |  | |
| FAST CARRIER DETECTION | Q | IN (7 MSEC) | | — | — | — | — | — | — | — | — | — |  | ONE PER SET |
| | * N | OUT (23 MSEC) | | — | — | — | — | — | — | X | — | — |  | |
| CLEAR TO SEND INTERVAL | M | 8 MSEC | | — | — | — | — | — | — | — |  |  |  | ONE PER SET |
| | K | 30 MSEC | | — | — | — | X | — | — | — |  |  |  | |
| | J | 60 MSEC | | — | — | — | X | — | — | — |  |  |  | |
| | * G | 180 MSEC | | — | — | — | X | X | — | — |  |  |  | |
| AUTOMATIC ANSWER | * B | IN | | X | — | — | — | — | — | — |  |  |  | ONE PER SET |
| | A | OUT | | — | — | — | — | — | — | — |  |  |  | |
| LOCAL COPY ON PRIMARY CHANNEL | ZA | IN | | — | — | — | — | — | — | — | — |  |  | ONE PER SET |
| | * ZB | OUT | | — | — | — | — | — | X | — |  |  |  | |
| CONDITION OF CC (DSR) DURING ANALOG LOOPBACK | YI | ON | | — | — | — | — | — | — | — | X |  |  | ONE PER SET |
| | * YJ | OFF | | — | — | — | — | — | — | — | — |  |  | |

**S3 SWITCH CONTACT SETTING ON TRANSMITTER-RECEIVER (CP1C)**

| FEATURE | OPTIONS | | | 1 | 2 | 3 | 4 | 5 | 6 | PROVIDE |
|---|---|---|---|---|---|---|---|---|---|---|
| REVERSE CHANNEL | ** ZC | IN | | — | — | — | — | — | — | ONE PER SET |
| | ** ZD | OUT | | X | X | — | — | — | — | |
| TRANSMIT ONLY | YG | IN | | — | — | X | — | — | — | ONE PER SET |
| | * YH | OUT | | — | — | — | — | — | — | |
| ECHO SUPPRESSOR ENABLE | YQ | IN | | — | — | — | — | — | — | ONE PER SET |
| | * YR | OUT | | — | — | — | X | — | — | |
| CARRIER CONTROLLED TURNAROUND | * YS | IN | | — | — | — | — | — | — | ONE PER SET |
| | YT | OUT | | — | — | — | — | — | X | |
| EARLY CC (DSR) INDICATION | YU | IN | | — | — | — | — | — | — | ONE PER SET |
| | * YV | OUT | | — | — | — | — | X | — | |

LOCAL COPY ON REVERSE CHANNEL, GROUNDING, AND LINE HUNTING OPTIONS ARE SAME AS FOR 202S-L1 AND 202S-L1A

☒ CONTACT CLOSED
⊟ CONTACT NOT APPLICABLE
Ⓞ CONTACT OPEN

* FACTORY FURNISHED
** FACTORY FURNISHED INSTEAD OF OPTION ZD WHEN REVERSE CHANNEL BOARD IS INSTALLED.

## TABLE O
## DATA SET 202T-L1 OPTIONS

| FEATURE | OPTIONS | DESCRIPTION | | SWITCH SETTING | | | | | | | | | | PROVIDE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | S3 Switch Contact Setting On Transmitter-Receiver | | | | | | | | | | One Per Data Set |
| | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | |
| 4-Wire Operation | ZK* | | | 0 | 0 | X | X | 0 | 0 | 0 | X | X | X | |
| 2-Wire Operation w/o Reverse Channel | ZD | | | X | 0 | X | 0 | 0 | X | X | 0 | 0 | 0 | |
| 2-Wire Operation With Reverse Channel | ZC† | | | X | X | 0 | 0 | X | 0 | X | 0 | 0 | 0 | |
| | | | | S2 Switch Contact Setting On Transmitter-Receiver | | | | | | | | | | One Per Data Set |
| | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | |
| 4-Wire Operation | ZK* | | | X | — | — | — | — | — | — | — | — | — | |
| Local Copy on Primary Channel in 2-Wire | ZA | IN | | X | — | — | — | — | — | — | — | — | — | |
| | ZB† | OUT | | 0 | — | — | — | — | — | — | — | — | — | |
| | | Soft Turnoff | Squelch | | | | | | | | | | | |
| Soft Turnoff and Squelch Intervals | Z | 0 | 0 | — | — | 0 | X | — | — | — | — | 0 | X | One Per Data Set |
| | 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 Data Set |
| | N | OUT | | — | — | — | — | X | — | — | — | — | — | |
| Clear-to-Send Interval | M* | 8 ms | | — | — | — | — | — | 0 | 0 | — | — | — | One Per Data Set |
| | K | 30 ms | | — | — | — | — | — | 0 | X | — | — | — | |
| | J | 60 ms | | — | — | — | — | — | X | 0 | — | — | — | |
| | G | 180 ms | | — | — | — | — | — | X | X | — | — | — | |
| Control by DAS 828- or 829-Type | B* | IN | | — | — | — | — | — | — | — | 0 | — | — | One Per Data Set |
| | A | OUT | | — | — | — | — | — | — | — | X | — | — | |
| Clamp | F* | IN | | — | 0 | — | — | — | — | — | — | — | — | One Per Data Set |
| | E | OUT | | — | X | — | — | — | — | — | — | — | — | |
| | | | | Strapping on Transmitter-Receiver CP | | | | | | | | | | |
| Carrier Detector Reset | ZL | IN | | Install E21-E23 | | | | | | | | | | One Per Data Set |
| | ZM* | OUT | | Install E22-E23 | | | | | | | | | | |
| Continuous Carrier | ZN | IN | | Install E24-E25 | | | | | | | | | | One Per Data Set |
| | ZO* | OUT | | Install E25-E26 | | | | | | | | | | |
| Compromise Equalization | ZU | Maximum | | Install E27 | | | | | | | | | | One Per Data Set |
| | ZV | Minimum | | Install E28 | | | | | | | | | | |
| | | | | Strapping on Reverse Channel CP | | | | | | | | | | One Per Data Set |
| Local Copy on Reverse Channel | ZE | IN | | Install E21-E22 | | | | | | | | | | |
| | ZF* | OUT | | Install E21-E23 | | | | | | | | | | |
| | | | | Screw Switch S1 Setting on Interface Circuit | | | | | | | | | | |
| Grounding Option | ZG* | Signal Ground Connected to Frame Ground | | S1 Closed | | | | | | | | | | One Per Data Set |
| | ZH | Signal Ground Not Connected to Frame Ground | | S1 Open | | | | | | | | | | |

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

\* Factory furnished.
† Factory furnished instead to 4-wire option when reverse channel CP is installed.

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## TABLE P

## DATA SET 202T-L1A OPTIONS

| FEATURE | OPTION | DESCRIPTION | S3 Switch Contact Setting On Transmitter-Receiver | | | | | | | | | | PROVIDE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | |
| 4-Wire Operation | ZK* | | 0 | – | – | 0 | – | X | X | X | X | X | One Per Data Set |
| 2-Wire Operation w/o Reverse Channel | ZD | | X | – | – | X | – | X | 0 | 0 | 0 | 0 | |
| 2-Wire Operation With Reverse Channel | ZC† | | X | – | – | X | – | 0 | 0 | 0 | 0 | 0 | |
| Compromise Delay Equalization | ZV | Minimum | – | X | – | – | – | – | – | – | – | – | One Per Data Set |
| | ZU* | Maximum | – | 0 | – | – | – | – | – | – | – | – | |
| Compromise Amplitude Equalization | ZX | Minimum | – | – | – | – | X | – | – | – | – | – | One Per Data Set |
| | ZW* | Maximum | – | – | – | – | 0 | – | – | – | – | – | |
| Channel Condition | ZZ | C2 | – | – | X | – | – | – | – | – | – | – | One Per Data Set |
| | ZY* | Basic | – | – | 0 | – | – | – | – | – | – | – | |

| FEATURE | OPTION | DESCRIPTION | | S2 Switch Contact Setting On Transmitter-Receiver | | | | | | | | | | PROVIDE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 | |
| 4-Wire Operation | ZK* | | | X | – | – | – | – | – | – | – | – | – | One Per Data Set |
| Local Copy on Primary Channel in 2-Wire | ZA | IN | | X | – | – | – | – | – | – | – | – | – | |
| | ZB† | OUT | | 0 | – | – | – | – | – | – | – | – | – | |
| | | Soft Turnoff | Squelch | | | | | | | | | | | |
| Soft Turnoff and Squelch Intervals | Z | 0 | 0 | – | X | – | – | – | 0 | X | 0 | – | – | One Per Data Set |
| | Y* | 8 ms | 0 | – | X | – | – | – | 0 | 0 | 0 | – | – | |
| | X | 24 ms | 0 | – | X | – | – | – | 0 | 0 | X | – | – | |
| | W | 0 | 9 ms | – | 0 | – | – | – | 0 | X | 0 | – | – | |
| | V | 0 | 156 ms | – | 0 | – | – | – | X | X | 0 | – | – | |
| | T | 8 ms | 9 ms | – | 0 | – | – | – | 0 | 0 | 0 | – | – | |
| | S | 8 ms | 156 ms | – | 0 | – | – | – | X | 0 | 0 | – | – | |
| | R | 24 ms | 156 ms | – | 0 | – | – | – | X | 0 | X | – | – | |
| Fast Carrier Detection | Q* | IN | | – | – | 0 | – | – | – | – | – | – | – | One Per Data Set |
| | N | OUT | | – | – | X | – | – | – | – | – | – | – | |
| Clear-to-Send Interval | M* | 8 ms | | – | – | – | 0 | – | – | – | – | – | 0 | One Per Data Set |
| | K | 30 ms | | – | – | – | 0 | – | – | – | – | – | X | |
| | J | 60 ms | | – | – | – | X | – | – | – | – | – | 0 | |
| | G | 180 ms | | – | – | – | X | – | – | – | – | – | X | |

## TABLE P (Contd)

## DATA SET 202T-L1A OPTIONS

| FEATURE | OPTION | DESCRIPTION | SWITCH SETTING | | | | | | | | | | PROVIDE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| External Control of CC (Data Set Ready) | B* | IN | — | — | — | — | — | — | — | — | 0 | — | One Per Data Set |
| | A | OUT | — | — | — | — | — | — | — | — | x | — | |
| Clamp | F* | IN | — | — | — | — | 0 | — | — | — | — | — | One Per Data Set |
| | E | OUT | — | — | — | — | x | — | — | — | — | — | |

| FEATURE | OPTION | DESCRIPTION | S4 Switch Contact Setting on Transmitter-Receiver | | | PROVIDE |
|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | |
| Carrier Detector Reset | ZL | IN | — | x | — | One Per Data Set |
| | ZM* | OUT | — | 0 | — | |
| Continous Carrier | ZN | IN | x | — | — | One Per Data Set |
| | ZO* | OUT | 0 | — | — | |
| State of CC (Data Set Ready) During Analog Loopback | YB | ON | — | — | x | One Per Data Set |
| | YA* | OFF | — | — | 0 | |

| FEATURE | OPTION | DESCRIPTION | | PROVIDE |
|---|---|---|---|---|
| Local Copy on Reverse Channel | | | Strapping on Reverse Channel CP | One Per Data Set |
| | ZE | IN | Install E21-E22 | |
| | ZF† | OUT | Install E21-E23 | |
| Grounding Option (Data Set) | | | Screw Switch S1 Setting on Interface Circuit | One Per Data Set |
| | ZG* | Signal Ground Connected to Frame Ground | S1 Closed | |
| | ZH | Signal Ground Not Connected to Frame Ground | S1 Open | |
| Grounding Option (Data Mounting) | | | Strapping on 39A1 or 40B1 Data Mounting | |
| | Z1* | ~~Signal Ground Connected to Frame Ground~~ | ~~Wire Strap of Power Supply In~~ | |
| | ZJ | Signal Ground Not Connected to Frame Ground | Wire Strap if Power Supply Out | |

X Rocker down on side adjacent to numbers.
0 Rocker up on side adjacent to numbers.
— Rocker may be in either position.
* Factory furnished.
† Factory furnished instead of 4-wire option when reverse channel CP is installed.

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## TABLE Q

## DATA SET 208A OPTIONS

| SWITCH | SWITCH POSITION | FEATURE |
|---|---|---|
| S1A (SEE NOTE) | UP | DSR ON IN AL MODE |
| | DOWN * | DSR OFF IN AL MODE |
| S1B (SEE NOTE) | UP * | NO COMP EQUALIZER TEST |
| | DOWN | COMP EQUALIZER TEST ENABLED |
| S1C | UP | CONTINUOUS REQUEST-TO-SEND |
| | DOWN * | SWITCHED REQUEST-TO-SEND |
| S3A | UP | XMIT EXTERNALLY TIMED |
| | DOWN * | XMIT INTERNALLY TIMED |
| S3B | UP * | RETRAIN AUTOMATICALLY |
| | DDWN | RETRAIN NOT USED |
| S3C | UP | DATA AUXILIARY SET IS USED |
| | DOWN * | DATA AUXILIARY SET NOT USED |
| S4A | UP * | 1-SEC HOLDOVER DISABLE |
| | DOWN | 1-SEC HOLDOVER |
| S4B | UP | CONTINUOUS CARRIER |
| | DOWN * | SWITCHED CARRIER |
| S4C | UP | NEW SYNCH USED BY CUSTOMER |
| | DOWN * | NEW SYNCH NOT USED BY CUSTOMER |

*Note:* This option available on Data Set 208A-L1A only (CP HG23).

## EQUALIZER ADJUSTMENT

| SWITCH | | | EQUALIZATION PROVIDED |
|---|---|---|---|
| S2A | S2B | S2C | |
| † | † | DOWN | NONE |
| † | UP | UP | AMP AND DELAY (SYM) * |
| UP | DOWN | UP | AMP AND DELAY (HI END) |
| DOWN | DOWN | UP | AMP AND DELAY (SYM + HI END) |

*Factory installed.
†Switch may be in either position.

## TABLE R

## DATA SET 208B-L1, 208B-L1A, 208B-L1B AND 208BR-L1B OPTIONS

**TRANSMIT LEVEL**

| LEVEL (DBM) | SWITCH | | | | OPTION |
|---|---|---|---|---|---|
| | S1A | S1B | S1C | S2A | |
| 0 * | DOWN | UP | DOWN | UP | ZA |
| -1 | DOWN | UP | DOWN | DOWN | ZB |
| -2 | DOWN | UP | UP | UP | ZC |
| -3 | DOWN | UP | UP | DOWN | ZD |
| -4 | DOWN | DOWN | DOWN | UP | ZE |
| -5 | DOWN | DOWN | DOWN | DOWN | ZF |
| -6 | DOWN | DOWN | UP | UP | ZG |
| -7 | DOWN | DOWN | UP | DOWN | ZH |
| -8 | UP | UP | DOWN | UP | ZI |
| -9 | UP | UP | DOWN | DOWN | ZJ |
| -10 | UP | UP | UP | UP | ZK |
| -11 | UP | UP | UP | DOWN | ZL |
| -12 | UP | DOWN | DOWN | UP | ZM |
| -13 | UP | DOWN | DOWN | DOWN | ZN |
| -14 | UP | DOWN | UP | UP | ZO |
| -15 | UP | DOWN | UP | DOWN | ZP |

* FACTORY INSTALLED

### 208B-L1A DATA SET

**208B-L1A DATA SET OPTIONS (HG24)**

| SWITCH | | COMPROMISE EQUALIZER SLOPE | OPTION |
|---|---|---|---|
| S2B | S2C | | |
| § | DOWN | NONE (0DB) | ZT |
| UP | UP | 4DB SLOPE & SYMMETRIC DELAY | WU * |
| DOWN | UP | 8DB SLOPE & SYMMETRIC DELAY | ZS |

OPTIONS FOR S3 AND 50 SWITCHES SAME AS 208B-L1

### 208B-L1 DATA SET

| SWITCH | SWITCH POSITION | FEATURE | OPTION |
|---|---|---|---|
| S2C+ | UP * | COMPROMISE EQUALIZER IN | ZS |
| | DOWN | COMPROMISE EQUALIZER OUT | ZT |
| S3A | UP | CC ON IN ANALOG LOOP MODE | YM |
| | DOWN * | CC OFF IN ANALOG LOOP MODE | YN |
| S3B | UP | MANUAL ANSWER | YO |
| | DOWN * | AUTOMATIC ANSWER | YP |
| S3C | UP | TRANSMITTER EXTERNALLY TIMED | YD |
| | DOWN * | TRANSMITTER INTERNALLY TIMED | YC |
| 50†† | IN | CA-CB INTERVAL OF 50 MSEC | |
| | OUT | CA-CB INTERVAL OF 150 MSEC | |

\* FACTORY INSTALLED
† COMPROMISE EQUALIZER SHOULD ALWAYS BE IN
†† IF NOT SPECIFIED ON SERVICE ORDER, INSTALL 50 INTERVAL
§ SWITCH MAY BE IN EITHER POSITION

### 208B-L1B DATA SET

| SWITCH | OPTION STRAP POSITION | OPTION FEATURE | OPTION DESIGNATION |
|---|---|---|---|
| S2B | † | Compromise Equalizer Out | ZT |
| S2C | Down | | |
| S2B | Up | Compromise Equalizer (4-dB Slope) | WU* |
| S2C | Up | | |
| S2B | Down | Compromise Equalizer (8-dB Slope) | ZS |
| S2C | Up | | |
| S3A | Up | DSR *on* in Analog Loop Mode | YM |
| | Down | DSR *off* in Analog Loop Mode | YN* |
| S3B | Up | Manual Answer | YO |
| | Down | Automatic Answer | YP* |
| S3C | Up | Transmitter Externally Timed | YD |
| | Down | Transmitter Internally Timed | YC* |
| S4A‡ | Up | | |
| | Down* | | |
| S4B‡ | Up | | |
| | Down* | | |
| "50" | In | RS-CS Interval of 50 ms | (Customer Switch) |
| | Out | RS-CS Interval of 150 ms | |

* Factory installed.
† Strap may be up or down.
‡ Down position must be selected.

## TABLE S
## DATA SET 212-L1 OPTIONS

| FEATURE | OPTION | DESCRIPTION | S1 SWITCH CONTACTS 1 | 2 | 3 | 4 | PROVIDE |
|---|---|---|---|---|---|---|---|
| Tip, Ring Make Busy | F | IN | X | — | — | — | One per set |
|  | E* | OUT | O | — | — | — |  |
| CC Indication for Analog Loop | ZF* | ON | — | — | — | X | One per set |
|  | ZE | OFF | — | — | — | O |  |

| FEATURE | OPTION | DESCRIPTION | S2 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | S5 1 | 2 | PROVIDE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CN Circuit | YE | IN | — | O | — | — | — | — | — | — | — |  |  | One per set |
|  | YF* | OUT | — | X | — | — | — | — | — | — | — |  |  |  |
| Transmitter Timing | YC* | INTERNAL | — | — | O | O | — | — | — | — | — |  |  | One per set |
|  | YD | EXTERNAL | — | — | O | X | — | — | — | — | — |  |  |  |
|  | WI | SLAVE | — | — | X | O | — | — | — | — | — |  |  |  |
| 1200-bps Operation | YG* | ASYNC/START-STOP | X | — | — | — | O | — | — | O | O | O | O | One per set |
|  | YH | SYNC | X | — | — | — | X | — | — | O | O | X | X |  |
| Character Length (Use With YG) | YI | 9-BIT | — | — | — | — | — | O | — | — |  |  |  | One per set |
|  | YJ* | 10-BIT | — | — | — | — | — | X | — | — |  |  |  |  |
| Receiver Respond to Digital Loop | YK* | IN | — | — | — | — | — | — | O | — |  |  |  | One per set |
|  | YL | OUT | — | — | — | — | — | — | X | — |  |  |  |  |

| FEATURE | OPTION | DESCRIPTION | S3 SWITCH SETTINGS 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | PROVIDE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Loss of Carrier Disconnect | S* | IN | X | — | — | — | — | — | — | — | One per set |
|  | R | OUT | O | — | — | — | — | — | — | — |  |
| Receive Space Disconnect | V* | IN | — | X | — | — | — | — | — | — | One per set |
|  | Y | OUT | — | O | — | — | — | — | — | — |  |
| CB and CF Indications | A* | COMMON | — | — | X | — | — | — | — | — | One per set |
|  | B | SEPARATE | — | — | O | — | — | — | — | — |  |
| Send Space Disconnect | T* | IN | — | — | — | X | — | — | — | — | One per set |
|  | U | OUT | — | — | — | O | — | — | — | — |  |
| Automatic Answer | ZH* | IN | — | — | — | — | O | — | — | — | One per set |
|  | ZG | OUT | — | — | — | — | X | — | — | — |  |
| Answer Mode Indication | X | ON | — | — | — | — | — | X | — | — | One per set |
|  | W* | OFF | — | — | — | — | — | O | — | — |  |
| Speed Mode | YO | HIGH | — | — | — | — | — | — | X | — | One per set |
|  | YP* | DUAL | — | — | — | — | — | — | O | — |  |
| Interface Speed Indication – CI | YQ | IN | — | — | — | — | — | — | — | X | One per set |
|  | YR* | OUT | — | — | — | — | — | — | — | O |  |
| Signal Ground to Frame Connection | Q* | IN | S1 CLOSED |  |  |  |  |  |  |  | One per 47D1 DM |
|  | P | OUT | S1 OPEN |  |  |  |  |  |  |  |  |

X = Contact Closed   — = Contact Not Applicable   O = Contact Open   * = Factory-Provided

*Note:* Do not use Option X if used with a DATASPEED 40/2 Terminal.

## TABLE T

## DATA SET 212A-L1A AND 212AR-L1A OPTIONS

**SI SWITCH**

| FEATURE | | OPTION | 1 | 2 | 3 | PROVIDE |
|---|---|---|---|---|---|---|
| TIP RING MAKE BUSY | IN | F | X | | | ONE PER SET |
| TIP RING MAKE BUSY | OUT | E | O | | | |
| CC INDICATION FOR ANALOG LOOP | ON | ZF | | X | | ONE PER SET |
| CC INDICATION FOR ANALOG LOOP | OFF | ZE | | O | | |

**S2 SWITCH / S5**

| FEATURE | | OPTION | S2-1 | S2-2 | S2-3 | S2-4 | S2-5 | S2-6 | S2-7 | S2-8 | S2-9 | S5-1 | S5-2 | PROVIDE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SPEED CONTROL | INTERFACE | XJ | O | | | | | | | | X | | | ONE PER SET |
| SPEED CONTROL | HS BUTTON | XK | X | | | | | | | | O | | | |
| INTERFACE CONTROL MB/AL - CN LEAD | IN | YE | | O | | | | | | | | | | ONE PER SET |
| INTERFACE CONTROL MB/AL - CN LEAD | OUT | YF | | X | | | | | | | | | | |
| TRANSMITTER TIMING | INT. | YC | | | O | O | | | | | | | | ONE PER SET |
| TRANSMITTER TIMING | EXT. | YD | | | O | X | | | | | | | | |
| TRANSMITTER TIMING | SLAVE | WI | | | X | O | | | | | | | | |
| 1200 BPS OPERATION | ASYNC / START STOP | YG | | | | | O | | | | | O | O | ONE PER SET |
| 1200 BPS OPERATION | SYNC | YH | | | | | X | | | | | X | X | |
| CHAR. LENGTH (USE WITH YG) | 9 BIT | YI | | | | | | O | | | | | | ONE PER SET |
| CHAR. LENGTH (USE WITH YG) | 10 BIT | YJ | | | | | | X | | | | | | |
| RCVR RESPONDS TO DIGITAL LOOP | IN | YK | | | | | | | O | | | | | ONE PER SET |
| RCVR RESPONDS TO DIGITAL LOOP | OUT | YL | | | | | | | X | | | | | |
| INTERFACE CONTROL RDL LEAD | IN | XL | | | | | | | | X | | | | ONE PER SET |
| INTERFACE CONTROL RDL LEAD | OUT | XM | | | | | | | | O | | | | |

**S3 SWITCH**

| FEATURE | | OPTION | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | PROVIDE |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LOSS OF CARRIER DISCONNECT | IN | S | X | | | | | | | | ONE PER SET |
| LOSS OF CARRIER DISCONNECT | OUT | R | O | | | | | | | | |
| RCV SPACE DISCONNECT | IN | V | | X | | | | | | | ONE PER SET |
| RCV SPACE DISCONNECT | OUT | Y | | O | | | | | | | |
| CB AND CF INDICATIONS | COM | A | | | X | | | | | | ONE PER SET |
| CB AND CF INDICATIONS | SEP | B | | | O | | | | | | |
| SEND SPACE DISCONNECT | IN | T | | | | X | | | | | ONE PER SET |
| SEND SPACE DISCONNECT | OUT | U | | | | O | | | | | |
| AUTOMATIC ANSWER | IN | ZH | | | | | O | | | | ONE PER SET |
| AUTOMATIC ANSWER | OUT | ZG | | | | | X | | | | |
| ANSWER MODE INDICATION | CE ON | X | | | | | | X | | | ONE PER SET |
| ANSWER MODE INDICATION | CE OFF | W | | | | | | O | | | |
| SPEED MODE | HIGH | YO | | | | | | | X | | ONE PER SET |
| SPEED MODE | DUAL | YP | | | | | | | O | | |
| INTERFACE SPEED INDICATION-CI | IN | YQ | | | | | | | | X | ONE PER SET |
| INTERFACE SPEED INDICATION-CI | OUT | YR | | | | | | | | O | |

**STRAP PLUGS**

| FEATURE | | OPTION | STRAP PLUGS | PROVIDE |
|---|---|---|---|---|
| CN AND TM INTERFACE ASSIGNMENT | CN 25, TM NC | XO | E3-E4, E1-E2 | ONE PER SET |
| CN AND TM INTERFACE ASSIGNMENT | CN 18, TM NC | XN | E4-E5, E1-E2 | |
| CN AND TM INTERFACE ASSIGNMENT | CN 18, TM 25 | XR | E4-E5, E2-E3 | |
| SIG. GROUND TO FG. CONNECTION | IN | Q | SI CLOSED | ONE PER 47D MTG. |
| SIG. GROUND TO FG. CONNECTION | OUT | P | SI OPEN | |

X CONTACT CLOSED  FACTORY FURNISHED OPTION

O CONTACT OPEN  CONTACT NOT USED

*Note:* Do not use Option X or XJ if used with a DATASPEED 40/2 Terminal.

## 5. ADJUSTMENTS

**5.01** The only adjustments in the station are in printer and monitor.

**5.02** Monitor adjustments are given in BSP 582-213-700.

**5.03** The printer adjustments are given in BSP 582-210-700.

**6.02** Tools

| | | |
|---|---|---|
| Wrench | 3/16" socket | 125752 |
| Wrench, open end | 3/8" | 125765 |
| Wrench, open end | 3/16" and 1/4" | 129534 |
| Wrench, open end | 5/16" and 3/8" | 152835 |
| Wrench, open end | 3/4" | 129537 |
| Nut driver | Handle | 135676 |
| Nut driver | 1/4" | 89954 |
| Nut driver | 5/16" | 89955 |
| Nut driver | 1/4" | 135677 |
| Nut driver | 5/16" | 135678 |
| Screwdriver | 1/8", 2" blade | 95368 |
| Screwdriver | 1/4", 6" blade | 100982 |
| Screwdriver | (blade less than 5/32") | 94647 |
| Allen wrench | 0.062 | 124682 |
| Tweezers | | 151392 |
| Spring hook (pull) | | 142554 |
| Spring hook (pull) | | 75675 |
| Spring hook (push) | | 75503 |
| Static ground strap | | 346392 |
| Scales, spring (802) | | 110443 |
| Ruler, 6" | | 95960 |
| Cleaning brush (type face) | | 151394 |
| Long-nose pliers | | 108285 |
| Cutting pliers | | 108286 |
| Terminal extractor | | 182697 |
| Retaining ring pliers | | 160396 |
| Terminal extractor | | 341983 |
| Keyswitch extractor | | 346257 |
| Keytop extractor | | 346260 |
| Gauge (80-column friction and tractor feed printer) | | 402617 |
| Gauge (132-column tractor feed printer) | | 402716 |
| Gauge (132-column tractor feed printer) | | 402717 |
| Dynamic backup bar gauge | | 402868 |
| Type carrier alignment gauge | | 402878 |
| Terminal extractor | | 402840 |

## 6. TOOLS AND SUPPLIES

**6.01** The following tools and supplies may be required for installation or servicing of DATASPEED 40/2 apparatus. Most of these items should normally be present in standard maintenance tool kits.

**6.03** Supplies

| | |
|---|---|
| Grease — Mobil No. 2 (1 lb can) | 143484 |
| Grease — Mobile No. 2 (4 oz tube) | 145867 |
| Grease — Beacon 325 (5 lb can) | 195298 |
| Oil — (1 qt can) | 88970 |
| Ribbon | 402444 |
| Paper (friction feed) — standard 8-1/2" wide, 5" dia roll | |
| Paper (tractor feed) | |
| Freon TF Degreaser — (6 oz aerosol can) | 337449 |
| Thermal joint compound (obtained locally) | |

## "DATASPEED*" 40 STATION AND COMPONENT REMOVAL

*Registered Trademark of AT&TCo.
†Issue 1 Did Not Receive Standard Distribution

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## 1. GENERAL

1.01 This section provides station and component removal (station disconnect) information for DATASPEED 40/0, 40/1, 40/2, 40/3, and 40/4. Packing instructions and illustrations are provided to insure proper handling and packing for service disconnects.

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

1.03 Station and component removal should be performed under the direction of a service disconnect order indicating the packing materials required, date, and location.

1.04 Do not pack "used" printer ribbon when printers are removed from service (remove and discard). For reference the appropriate packing procedure is shown in this section for packing new ribbon when printer is packed for shipment to service.

1.05 ALL STATIONS AND COMPONENTS REMOVED SHOULD BE RETURNED TO WESTERN ELECTRIC SERVICE CENTER WITHOUT INCURRING DAMAGE. THE PACKING METHODS SPECIFIED HEREIN REPRESENT ONE WAY TO HELP ASSURE SAFE TRANSPORT. A RETURNED MATERIAL TAG SHOULD BE AFFIXED TO EACH ITEM. (SEE 4. WORKING STATION)

1.06 Pressure sensitive tape, tissue paper, glue, or sealing tape may be obtained locally.

1.07 Factory-type packing may be duplicated by ordering the required PK materials from Teletype Corporation. All other packing materials may be obtained from your local Western Electric Service Center.

## 2. TOOLS REQUIRED

2.01 The tools required for service disconnects of DATASPEED 40 apparatus are standard and should be present in standard maintenance tools kits.

## 3. STATION AND COMPONENT REMOVAL

3.01 Reverse the procedures in Part 2 of 579-505-352 for 40/0, Part 7 of 582-200-200 for 40/0 and 40/1, Part 3 of 582-200-202 for 40/2, Part 3 of 582-200-203 for 40/3, and Part 3 of 582-200-201 for 40/4, to remove the station from service (service disconnect).

3.02 When equipment is removed from service, use suitable quantities of packing containers for reshipment of station arrangements or components.

3.03 The following illustrations show some of the recommended packing procedures for reshipment.



Fig. 1

RS-18238-E and F

KD SET
(1 to 3
Boxes)

40MN101/AA MONITOR
40K101/CAK OPERATOR CONSOLE
40CAB251/AB CABINET
(Contains Logic)

RS-18238-H, J, K
(See Note.)

KD STATION
(2-5
Boxes)

40CAB901/AH PEDESTAL
401532 (29") TABLE TOP
401666 MODIFICATION KIT
(AC Distribution and Bracket Assemblies)

401200
COPY HOLDER
(If Provided)

8814PK

DATA SET

Packing details
provided by WECO.

ATTENDANT SET
(If Provided)

Fig. 2—Typical Packing Details for DATASPEED 40 Station Arrangements

RS-18238-C and D

40P101/ZZ PRINTER (Friction Feed)
or
40P151/ZZ PRINTER (Tractor Feed)
and
40CAB201/AC CABINET
(for Friction Feed Printer)
or
40CAB351/AB CABINET
(for Tractor Feed Printer)
and
40K001/AAA OPERATOR CONSOLE

ROP SET
(2 to 3
Boxes)

RS-18238-H, J, K
(See Note.)

40CAB901/AF PEDESTAL
with
401532 (29") TABLE TOP
(for Friction Feed Printer)
or
401912 (31-1/2") TABLE TOP
(for Tractor Feed Printer)

9644PK

40PWU101
PAPER WINDER
(If Provided)

ROP STATION
(3 to 5
Boxes)

DATA SET

Packing details
provided by WECO.

ATTENDANT SET
(If Provided)

Fig. 3— Typical Packing Details for DATASPEED 40 Station Arrangements (Cont)

*Note:* Use two RS-18238-K blocking details when packing the pedestal (see Fig. 27).

40MN101/AA MONITOR
and
40CAB251/AB CABINET (Logic Under Monitor)
or
40CAB201/AB CABINET (Adjacent Logic)
or
40CAB251/AA CABINET (Printer Under Monitor)
with
40P101/ZZ PRINTER (Friction Feed)
and
40K101/CAK OPERATOR CONSOLE

40CAB201/AA CABINET (Adjacent Printer)
or
40CAB251/AA CABINET (Printer Under Monitor)
or
40CAB351/AA CABINET (Tractor Feed Printer Cabinet)
and
40P101/ZZ PRINTER (Friction Feed)
or
40P151/ZZ PRINTER (Tractor Feed)

RS18238-E and F

KDP SET
(2 to 6 Boxes)

RS18238-C and D

RS18238-H, J, K
(See Note.)

KDP STATION
(3 to 8 Boxes)

8814PK

Packing details provided by WECO.

40CAB901/AC PEDESTAL
or
40CAB901/AH PEDESTAL

W/Table Top

40PWU101
PAPER WINDER
(If Provided)

401200
COPY HOLDER
(If Provided)

DATA SET

ATTENDANT SET
(If Provided)

*Note:* In a KDP w/tractor feed printer on pedestal, two 40CAB901/AH pedestals must be packed.

Fig. 4—Typical Packing Details for DATASPEED 40 Station Arrangements (Cont)

DISPLAY MONITOR



341719
SHIPPING
BRACKET

TUBE TILT
DETENT BRACKET

185871 HEX SCREW
WITH WASHER
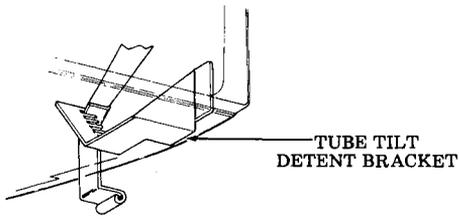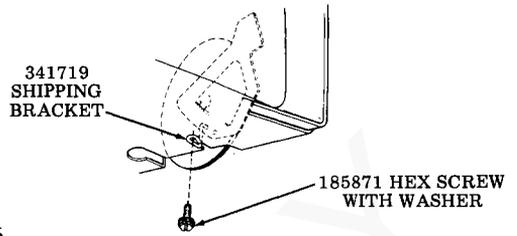
Fig. 5

(Late Design)                                      (Early Design)

Step 1.    Remove the 401108 bottom plate
from monitor.

Step 2.    Move the tilt lever to the front of monitor
and engage the lever in the first or second
detent position.

Step 1.    Remove the 401108 bottom plate
from monitor.

Step 2.    Immobilize tube tilt mechanism with
341719 shipping bracket as illustrated
in Fig. 5.



401108 MONITOR
BOTTOM PLATE

MONITOR
(Place in 23461PK
plastic bag.)

RS-18238-A
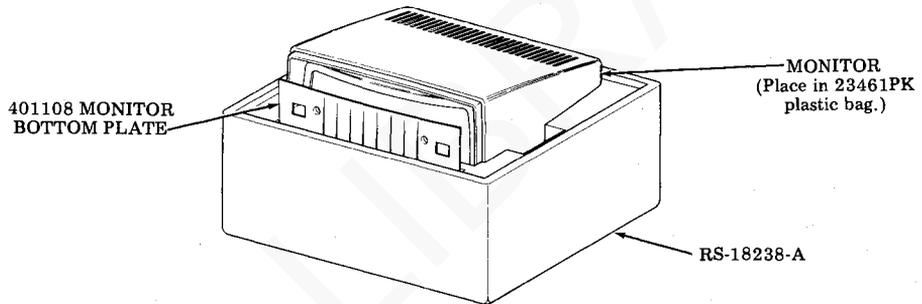
Fig. 6

Step 3.    Position monitor and bottom plate in position shown in Fig. 6. Position cover and secure
with a band of pressure sensitive reinforced tape, as illustrated in Fig. 7.



Affix RS-18238-M
label here.

RS-18238-B

RS-18238-A

MINIMUM 1/2'' WIDE
PRESSURE SENSITIVE
REINFORCED TAPE
21632PK OR EQUIVALENT
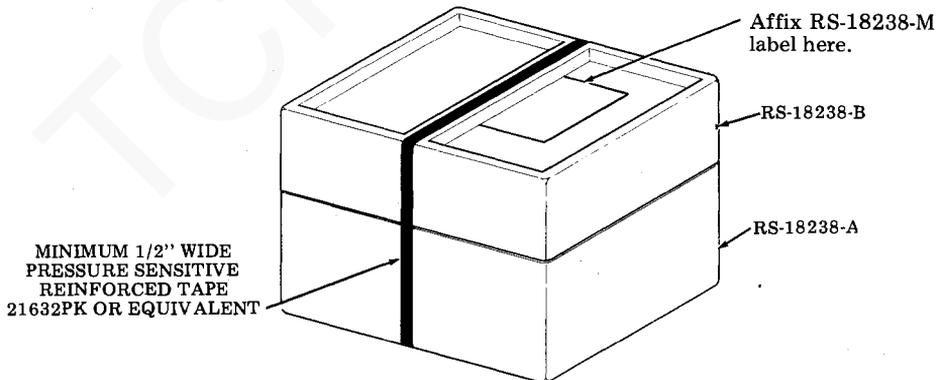
Fig. 7

MONITOR (Alternate Packing Procedure)

Step 1.  Preassemble all parts to bottom of main frame. Mount assembly to a 28381PK pallet with two 28051PK spacers, four 71699RM screws, four 72316RM lock-washers and four 72296RM flat washers. Tighten screws securely. (See Fig. 8.)

Step 2.  Complete assembly of monitor less cover. Invert monitor.

Step 3.  Mount and latch cover. Secure monitor support covers in place with 21632PK tape.

Step 4.  Form 10603PK carton. Close and seal bottom flaps with a strip of 21719PK tape applied along the center seam. The tape should extend approximately three inches down the ends of the carton.

Step 5.  Place unit in carton. Place a 23457PK plastic bag around unit.

Step 6.  Form a 28365PK detail and place in carton at front of unit as illustrated in Fig. 8.

Step 7.  Wrap the bottom plate assembly in a sheet of 21298PK tissue paper. Form a 28364PK detail and secure the wrapped bottom plate to the detail with two bands of 21632PK tape.

Step 8.  Position the detail and bottom plate in the carton.

Step 9.  Close and seal the top flaps of the carton as outlined in Step 4.

Step 10.  Form a 11322PK carton and with bottom flaps down and outward, place around the inner carton.

Step 11.  Position a 27442PK plastic corner on each of the four corners of the inner carton.

Step 12.  Close and seal the top flaps of the carton with 21719PK tape as outlines in Step 4.

Step 13.  Carefully invert carton and contents. Position a 27442PK plastic corner on each of the four corners of the inner carton.

Step 14.  Close and seal bottom flaps of carton as outlined in Step 4. Invert carton.



Secure bottom plate assembly to detail with 21632PK tape.

28365PK DETAIL

28364PK DETAIL

28381PK DETAIL

Secure support covers in place with 21632PK tape.

10603PK CARTON

*Note:*  23457PK Plastic Bag deleted for clarity.

Fig. 8

10603PK

27442PK (TYPICAL 8 CORNERS)

11322PK CARTON
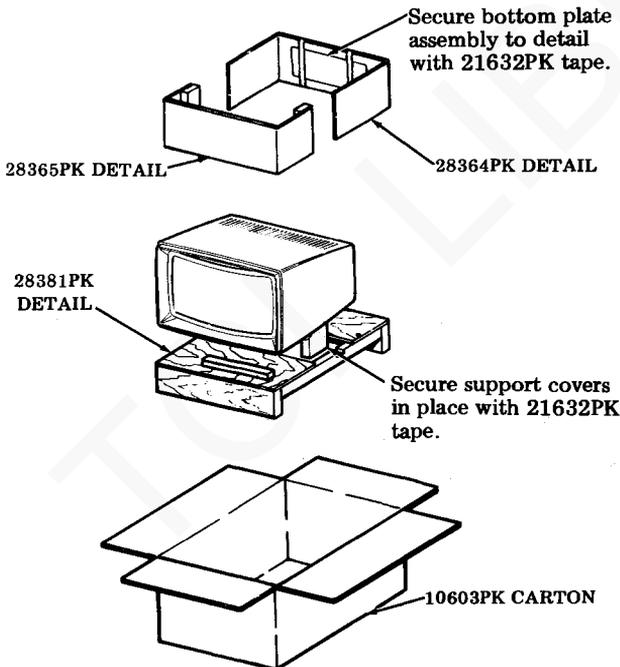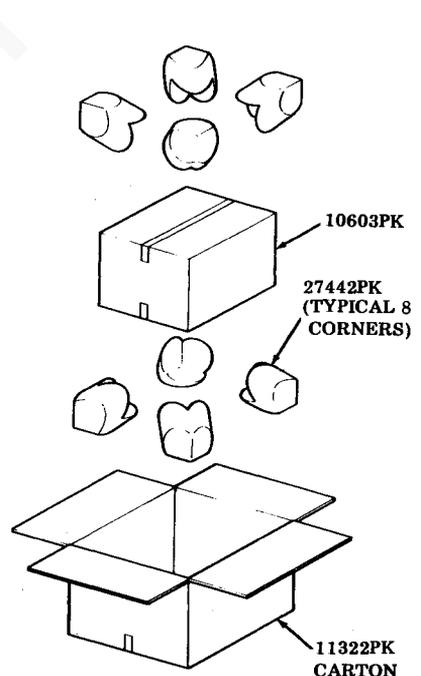
Fig. 9

## LOGIC, PRINTER, AND PRINTER CABINET

Step 1. Position logic or printer cabinet in position shown in Fig. 10.

LOGIC OR PRINTER CABINET (Place in 23461PK plastic bag.)

KEYBOARD (Opcon — Place in 23456PK plastic bag.)
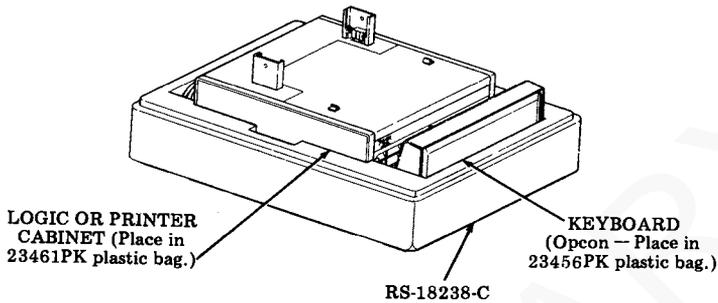
RS-18238-C

Fig. 10

Step 2. Insert keyboard and any loose cables in space provided in the RS-18238-C detail. See Fig. 11.

PRINTER AND PRINTER CABINET 80-COLUMN (Place in 23461PK plastic bag.)

Place any loose cables here.

RS-18238-C

*Note:* When the friction feed printer is shipped inside of the cabinet, the shipping latch and bar are not required.

When equipped, leave RO keyboard assembled.
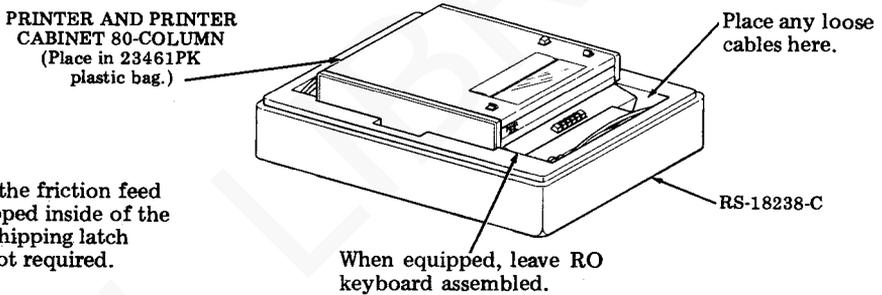
Fig. 11

Step 3. Position cover and secure with two bands of pressure sensitive reinforced tape. See Fig. 12.

Affix RS-18238-N label here.

RS-18238-D

MINIMUM 1/2" WIDE PRESSURE SENSITIVE REINFORCED TAPE 21632PK OR EQUIVALENT
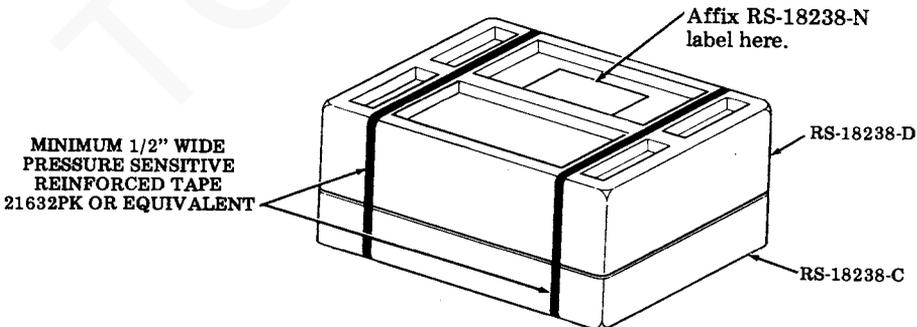
RS-18238-C

Fig. 12

*Note:* When available, use consolidating container body RS-18238-F, container base RS-18238-E, along with 1/2 inch wide steel strapping around the base of container. Nylon tape may be used to secure the container base during removal operation.

CONSOLIDATING
CONTAINER BODY
(RS-18238-F)

PACKAGED MONITOR
(RS-18238-A, B)

PACKAGED LOGIC CABINET
AND KEYBOARD (Opcon —
RS-18238-C, D)

CONTAINER BASE
(RS-18238-E)

CONSOLIDATING
CONTAINER
(RS-18238-F)

MINIMUM 1/2" WIDE
STEEL STRAPPING

CONTAINER BASE
(RS-18238-E)
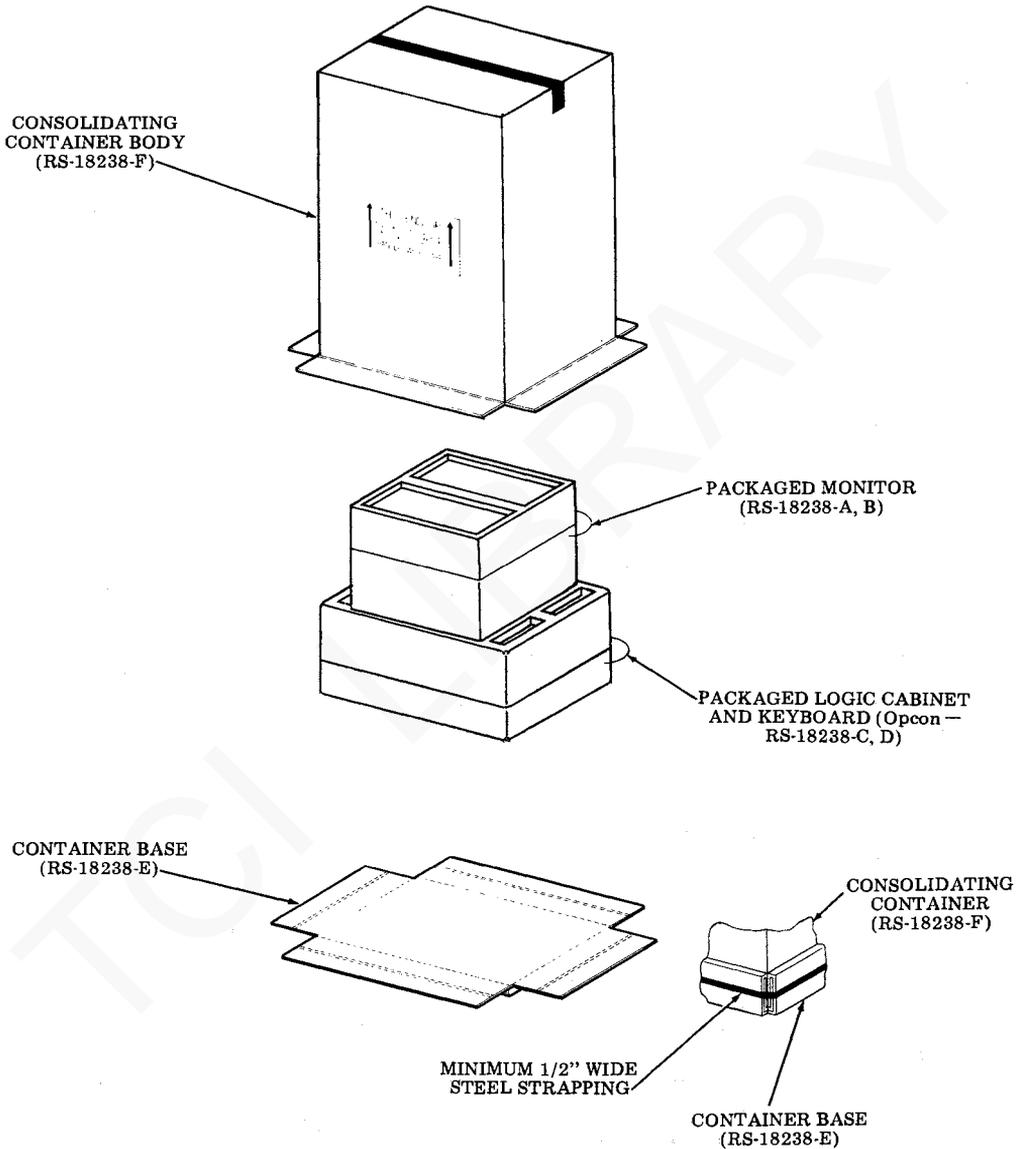
Fig. 13—Packing Logic, Printer, and Printer Cabinet

FRICTION FEED PRINTER (80-COLUMN)

Packing Procedure for 40P101 and 40P102 Printers

Step 1.    Remove printer from printer cabinet.

Step 2.    Remove ribbon spools from printer and discard.

Step 3.    Place paper spindle in position on unit with ribbon spools positioned down.

Step 4.    Form shipping container 10160PK. Close and seal bottom flaps with glue or sealing tape.

Step 5.    Place a plastic detail 28249PK Detail A in the container as illustrated in Fig. 14.

Step 6.    Position unit in plastic base (see Fig. 14).

Step 7.    Position a plastic cover 28249PK Detail B over top of unit (see Fig. 14).

Step 8.    Close and seal top flaps of container as outlined in Step 4.

28249PK
DETAIL B

28249PK
DETAIL A

10160PK
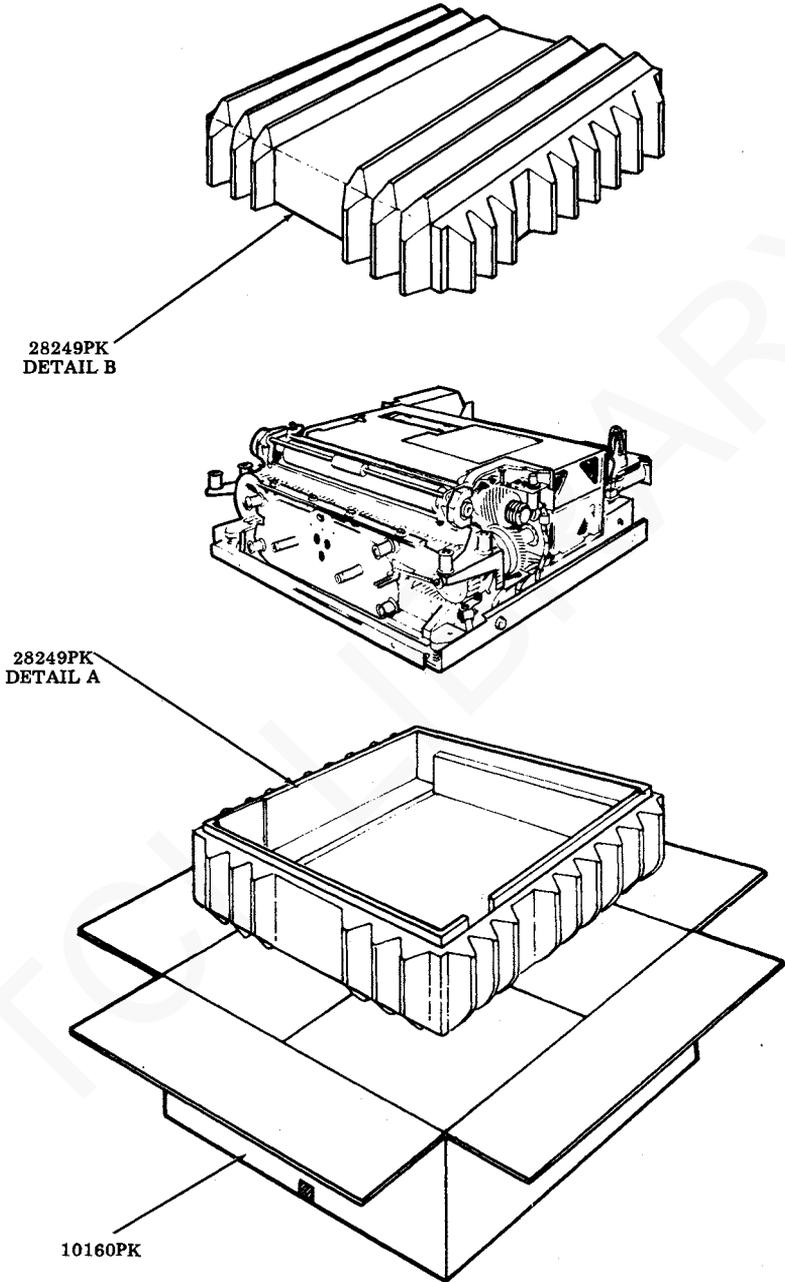
Fig. 14

**TRACTOR FEED PRINTER (80-COLUMN)**

Packing Procedure for 40P150, 40P151, 40P152, 40P153, and 40P154 Printers

Step 1.   Remove printer from printer cabinet.

Step 2.   Position printer on its back. Immobilize unit vibration mounts by tightening the four immobilizing screws. See Fig. 15.

BOTTOM OF
PRINTER
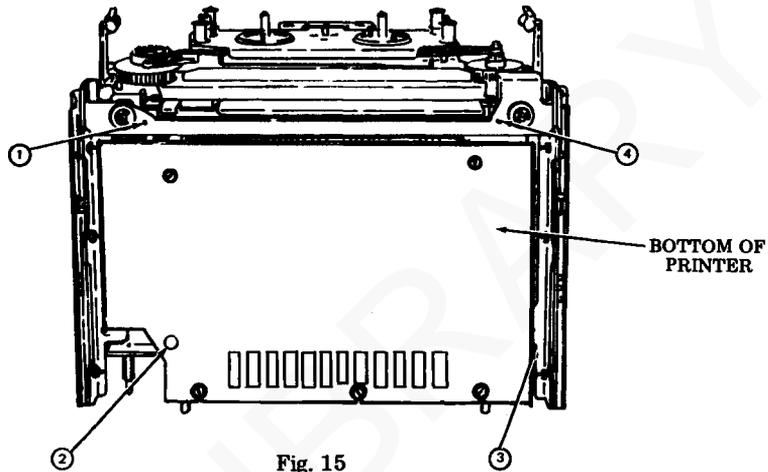
Fig. 15

Step 3.   Set unit upright, secure each of the two ribbon tensioning arms in latched position with 50136PK twist ties as illustrated in Fig. 16.

*Caution:*   *Do not tightly apply twist ties. Damage to tensioning arms may result.*

Step 4.   Place a plastic base (28279PK Detail A) on work bench as illustrated in Fig. 16. Place printer in base.

Step 5.   Position a 28279PK Detail C along the side of mounting rail at left side of printer and a 28279PK Detail D along the side of the mounting rail at right side of printer. See Fig. 16.

Step 6.   Position a plastic cover (28279PK Detail B) over printer as illustrated in Fig. 16.

Step 7.   Secure details A and B together by applying a band of 21632PK tape around the details as shown in Fig. 16.

Step 8.   Form a 10523PK shipping container. Close and seal bottom flaps with glue or sealing tape.

Step 9.   Place prepacked printer in container. Close and seal top flaps of container as outlined in Step 8.

28279PK
DETAIL B

See Step 8.

28279PK
DETAIL D

28279PK
DETAIL A

28279PK
DETAIL C

See Step 4.

10523PK
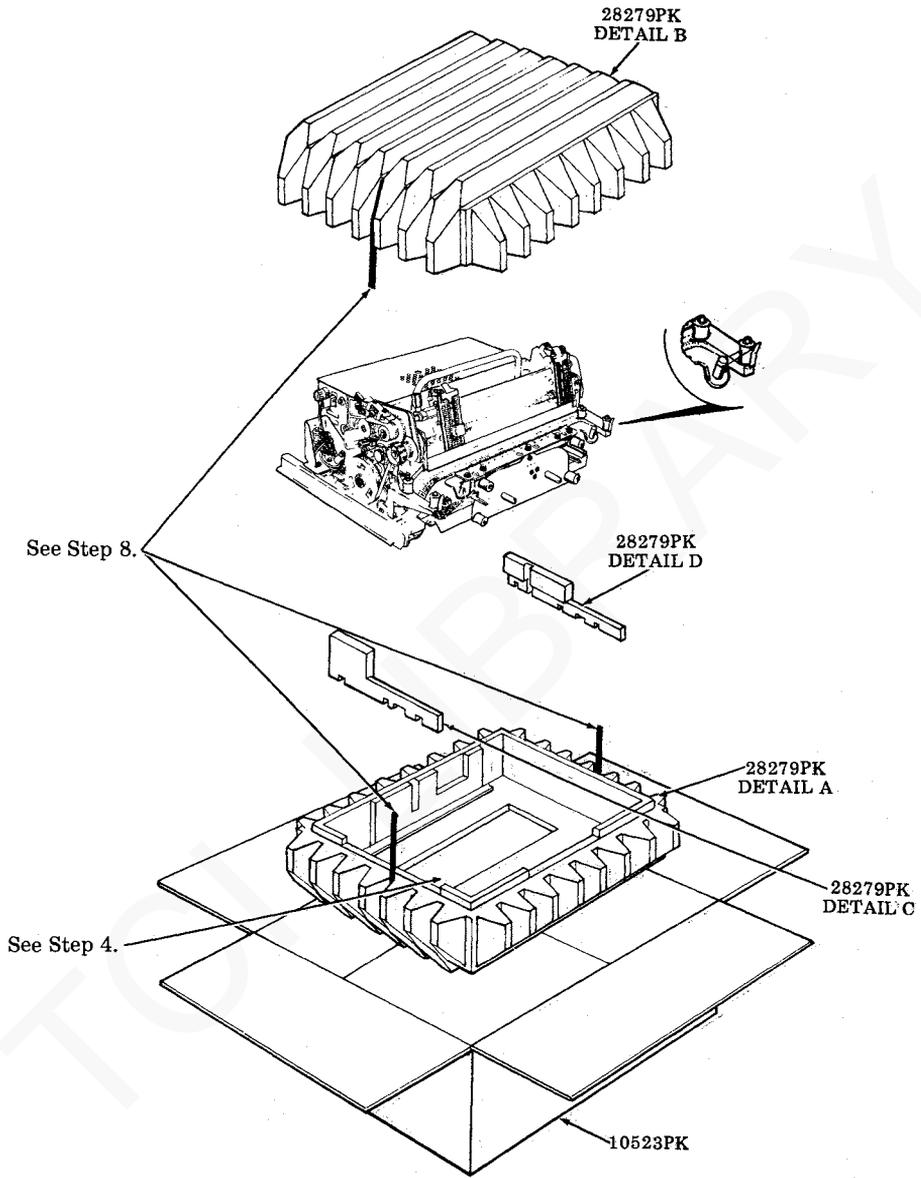
Fig. 16

TRACTOR FEED PRINTER (132-COLUMN)

Packing Procedure for 40P200, 40P201, 40P202, 40P203 and 40P204 Printers

Step 1.    Remove printer from printer cabinet.

Step 2.    Remove ribbon spools from printer and discard.

BOTTOM OF PRINTER
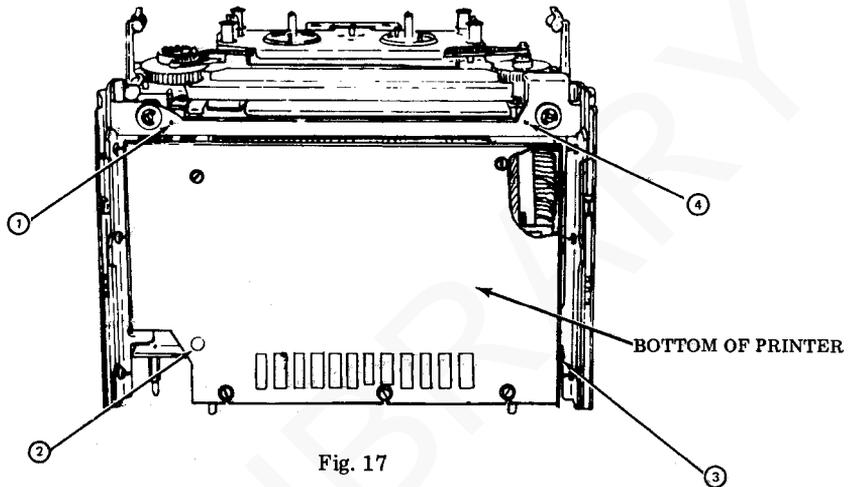
Fig. 17

Step 3.    Position printer on its back. Immobilize unit vibration mounts by tightening the four immobilizing screws. See Fig. 17.

Step 4.    Set unit upright. Secure each of the two ribbon tensioning arms in latched position with 50136PK twist ties.

*Caution: Do not tightly apply twist ties. Damage to tensioning arms may result.*

Step 5.    Position wood details 28250PK A and B against bottom of unit. Secure in place with two bands of tape 21632PK. See Fig. 18.

Step 6.    Form shipping container 10634PK. Close and seal bottom flaps with glue or sealing tape.

Step 7.    Position a plastic corner 27442PK against each of the four corners of the container. See Fig. 18.

Step 8.    Form carton 9902PK. Close and seal bottom flap as outlined in Step 6. Position carton in shipping container so bottom corners of carton fit in the corner details. See Fig. 18.

Step 9.    Carefully position the prepackaged printer in the carton-container assembly. See Fig. 18.

Step 10.   Position a wood top detail 28252PK over top of printer. See Fig. 18.

Step 11.   Close and seal top flaps of carton, as outlined in Step 6.

Step 12.   Position a 27442PK plastic corner on each of the four corners of the carton. See Fig. 18.

Step 13.   Close and seal top flaps of carton as outlined in Step 6.

27442PK
(Typical)

28252PK

See Step 4.

28250PK
DETAIL A

See Step 3.

9902PK

28250PK
DETAIL B

10634PK

Fig. 16

9902 PK

27442PK
(Typical)

10634PK
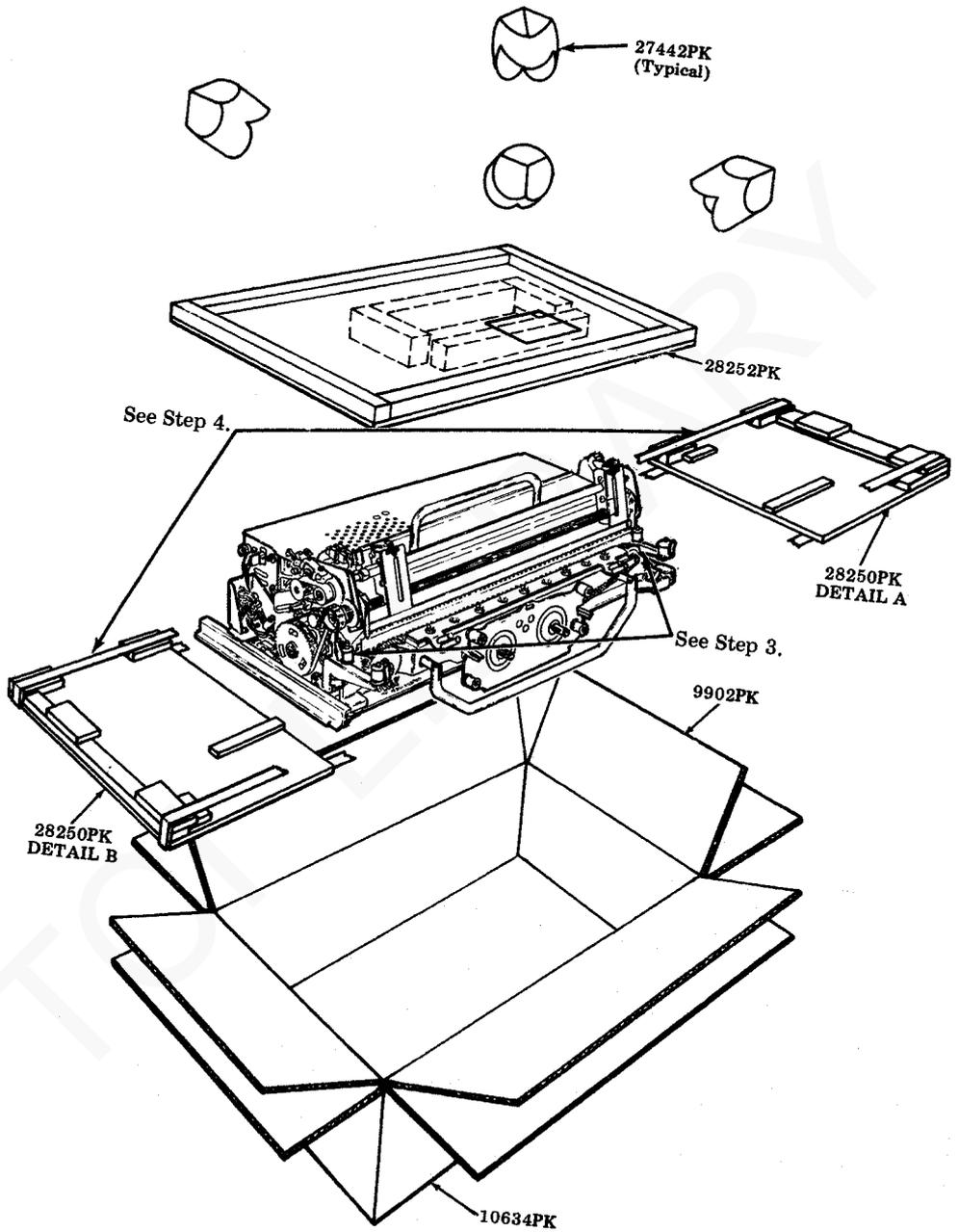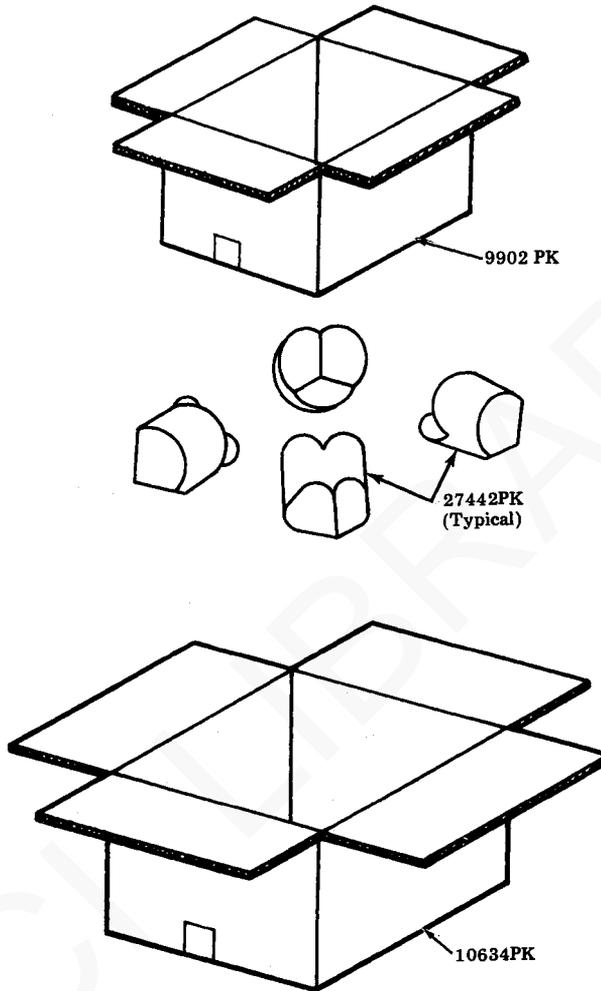
Fig. 19

TRACTOR FEED PRINTER (72-COLUMN)

Packing Procedure for 40P250 (Forms Access) Printer

Step  1.  Remove printer from printer cabinet.

Step 2.  Remove ribbon spools from printer and discard.

Step 3.  Position printer on its back. Immobilize unit vibration mounts by tightening the four immobilizing screws.

Step 4.  Position wood details 28283PK A and B against bottom of unit. Secure in place with two bands of 21632PK tape at front and rear of details.

Step 5.  Form a 10762PK carton. Close bottom flaps and seal center seam with a strip of 21719PK tape. The tape should extend approximately three inches down the ends of the carton.

Step 6.  Place one 27442PK plastic corner in each of the four corners of the bottom of the carton. See Fig. 20.

Step 7.  Form a 10305PK carton. Close and seal bottom flaps as indicated in Step 5.

Step 8.  Carefully place the 10305PK carton in the 10762PK carton so the plastic corners fit in the corners of the 10305PK carton. See Fig. 20.
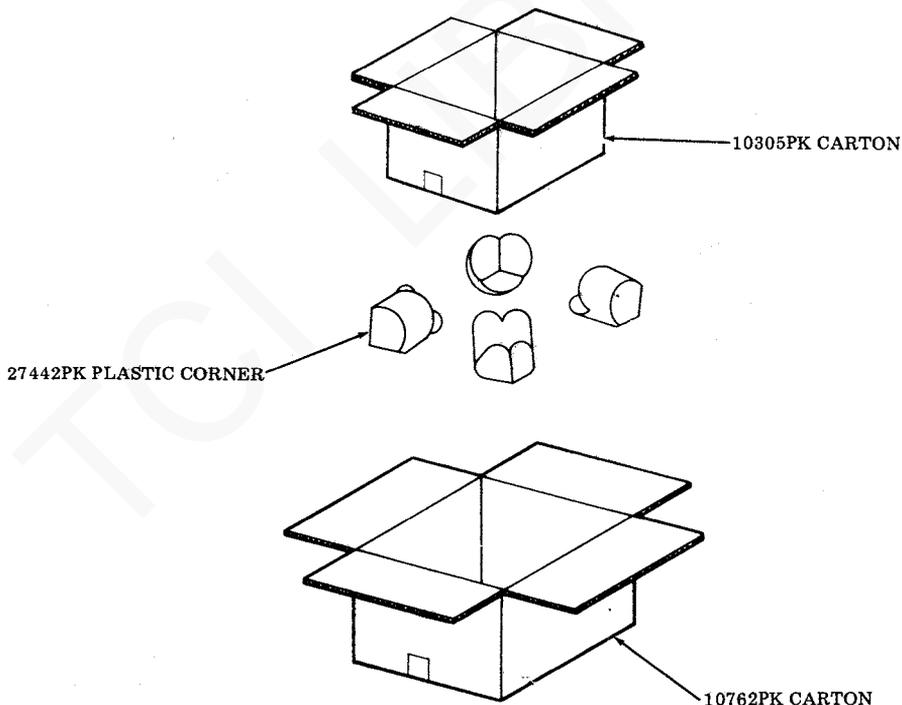
Fig. 20

Step 9. Place the printer with pallets in the inner carton. See Fig. 21.

Step 10. Place one 28284PK wood detail in carton on top of printer. See Fig. 21.

Step 11. Close and seal top flaps of inner carton as indicated in Step 5.

Step 12. Position a 27442PK plastic corner on each of the four corners of the inner carton. See Fig. 21.

Step 13. Close top flaps of outer carton and seal center seam with a strip of 21719PK tape as indicated in Step 5.

27442PK
(4 Top Corners)

28284PK TOP DETAIL

28283PK
DETAIL B

Tape 28283PK details A and B
together with two bands of
21632PK tape.

28283PK
DETAIL A

10305PK CARTON

10762PK CARTON
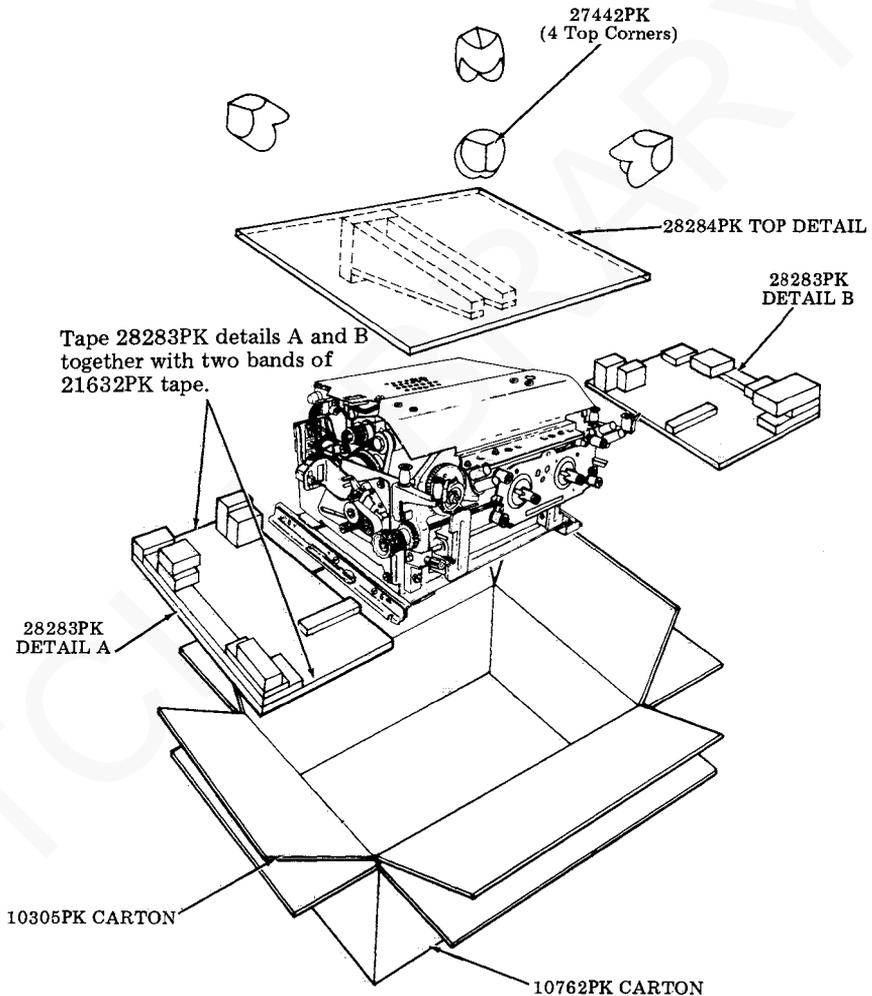
Fig. 21

TRACTOR FEED PRINTER (80-COLUMN, FORMS ACCESS)

Packing Procedure for 40P252, 40P253, and 40P255 (Forms Access) Printers

Step 1.    Remove printer from printer cabinet.

Step 2.    Remove the ribbon spools and discard.

Step 3.    Position printer on its back. Immobilize unit vibration mounts by tightening the four immobilizing screws.

Step 4.    Position wood details 28283PK A and B against bottom of unit. Secure in place with two bands of 21632PK tape at front and rear of details.

Step 5.    Form a 10770PK carton. Close bottom flaps and seal center seam with a strip of 21719PK tape. The tape should extend approximately three inches down the ends of the carton.

Step 6.    Form and place one 28366PK cushion detail in each of two sides of the bottom of the carton. See Fig. 22.

Step 7.    Form a 10305PK carton. Close and seal bottom flaps as indicated in Step 5.

Step 8.    Carefully place the 10305PK carton in the 10770PK carton so the cushion details fit in the corners of the 10305PK carton. See Fig. 22.

Step 9.    Place the printer with pallets in the inner carton.

Step 10.   Place a 28284PK wood detail in carton on top of printer. See Fig. 23.

Step 11.   Close and seal top flaps in inner carton as indicated in Step 5.

Step 12.   Form and place a 28366PK cushion detail on each of two sides of the inner carton. See Fig. 22.

Step 13.   Close top flaps of outer carton and seal center seam with a strip of 21719PK tape as indicated in Step 5.

28366PK CUSHION DETAILS

10305PK
CARTON

10770PK
CARTON

Fig. 22

28284PK
TOP DETAIL

28283PK
DETAIL B

28283PK DETAIL A

*Note:*   Tape 28283PK Details
A and B together with two
bands of 21632PK tape.
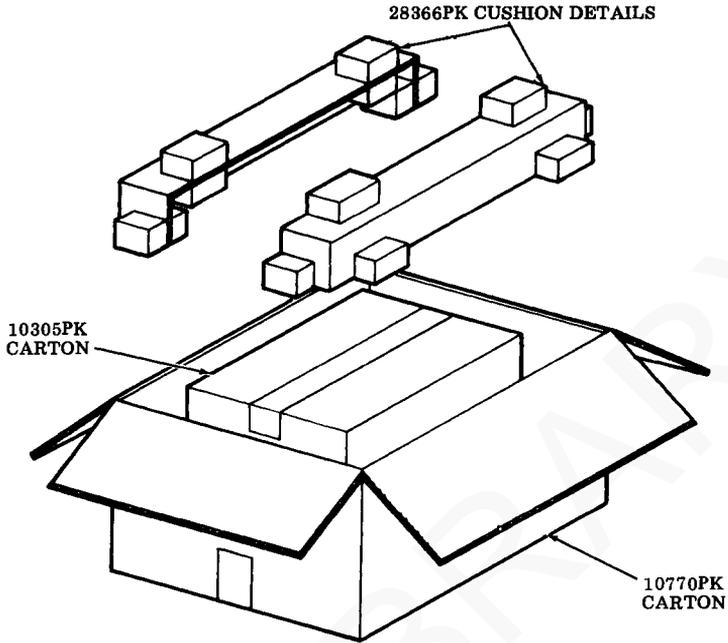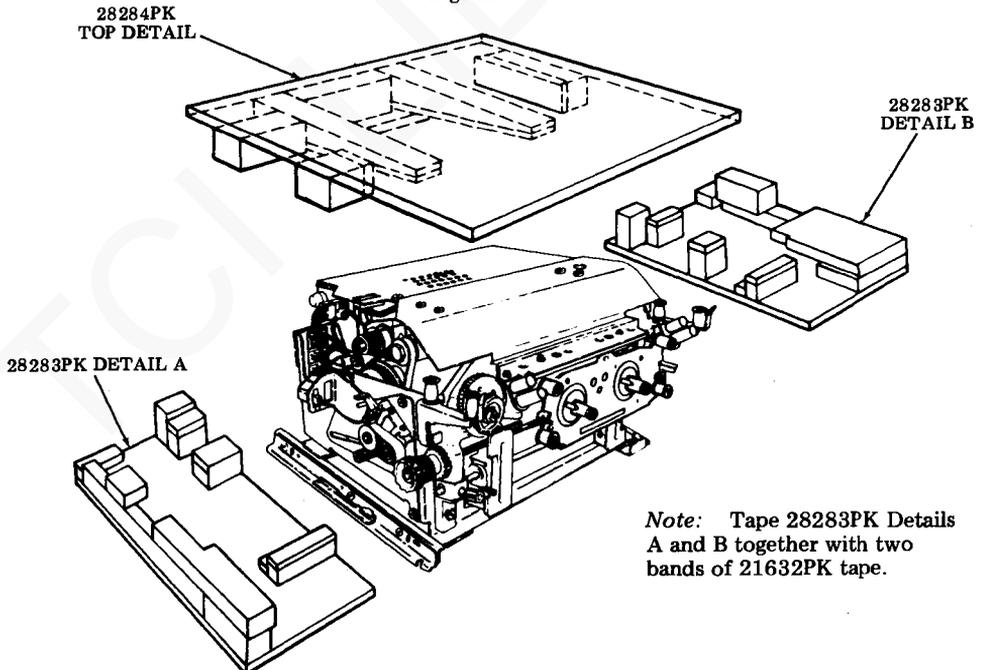
Fig. 23

## 40CAB201 AND 40CAB251 CABINETS

<u>Packing Procedures</u>

Step 1.     Form a 9867PK carton. Close and seal bottom flaps with glue or sealing tape.

Step 2.     Make certain shipping latches and bar on cabinet are properly installed. Cover cabinet with 23457PK plastic bag.

Step 3.     Position a plastic 28218PK Detail A on right side of cabinet. (See Fig. 24).

Step 4.     Position a plastic 28218PK Detail B on left side of cabinet. (See Fig. 24).

Step 5.     Coil cable on top of cabinet and position prepacked cabinet in shipping container. (See Fig. 24).

Step 6.     Close and seal top flaps of shipping container as outlined in Step 1.

*Note:*   40CAB201 series is pictured.

See Step 5.

28218PK
DETAIL A

*Note:*   23457PK plastic bag deleted for clarity.

28218PK
DETAIL B

9867PK
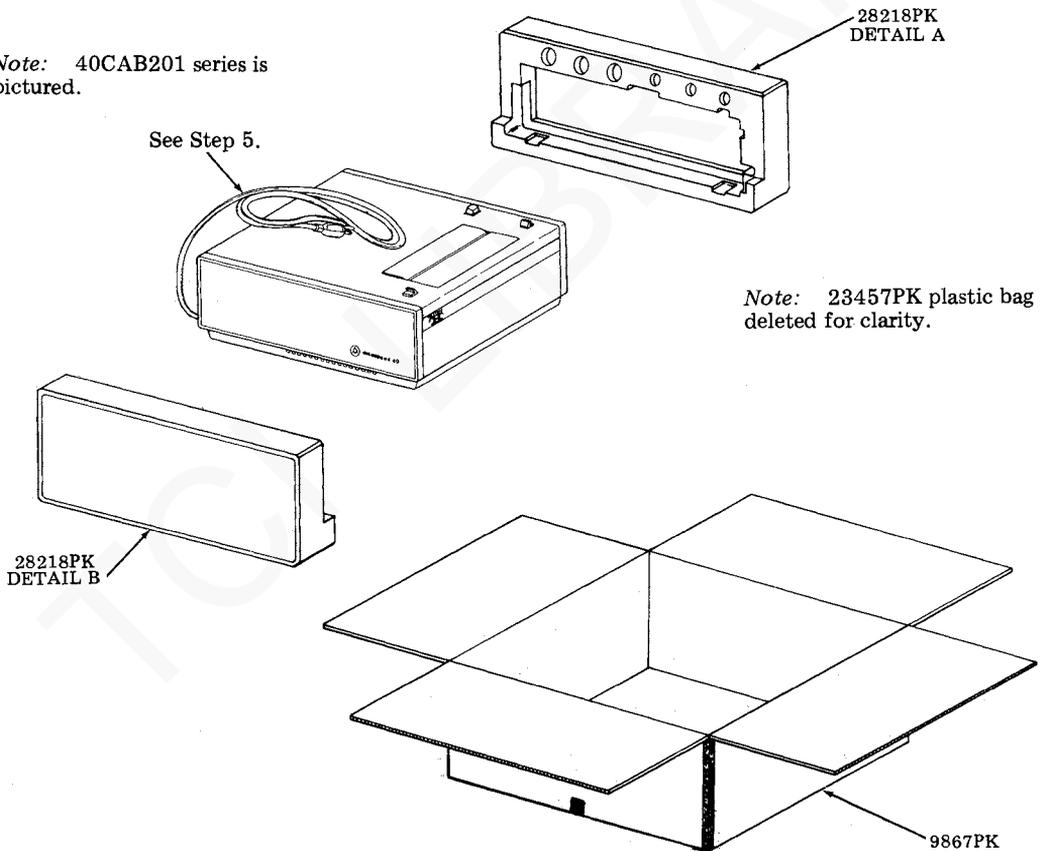
Fig. 24

## 40CAB351 AND 40CAB371 CABINETS

### Packing Procedure for 40CAB351 Cabinet and 40CAB371 Cabinet

Step 1.     Place a 28186PK detail on work bench. Position cabinet on detail as illustrated in Fig. 25. The end of the detail that has the largest blocks must be to the front of the cabinet.

Step 2.     Secure cover of cabinet with two bands of 21632PK tape applied around cover and body of cabinet. See Fig. 25.

Step 3.     Place a 23457PK plastic bag over cabinet. Leave cable extending outside of bag. Place cable on top of cabinet.

Step 4.     Fold flaps on 28186PK detail up against sides of cabinet. Secure in place with a strip of 21480PK tape applied to flaps at diagonally opposite corners.

Step 5.     Form a 10532PK carton. With bottom flaps down and outward, place carton around cabinet and detail. Drape cable outside of carton.

Step 6.     Form a 28187PK detail and place in carton around cabinet dome. See Fig. 25. Coil cable and place between side of carton and 28187PK detail. See Fig. 25.

Step 7.     Place a 28188PK detail in carton as illustrated in Fig. 25.

Step 8.     Close top flaps of carton and seal center seam with 21719PK tape. Invert carton.

Step 9.     Close bottom flaps of carton and seal as outlined in Step 8. Invert carton.

28188PK
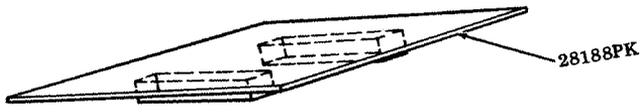
*Note:* 23457PK plastic
bag deleted for clarity.
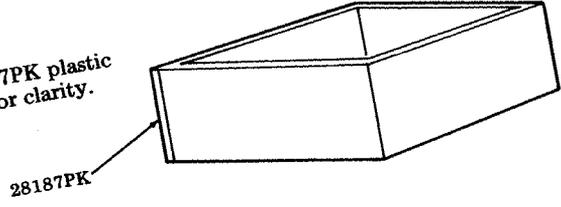
28187PK

Coil cable and
place between
side of 28187PK
detail and carton
wall.
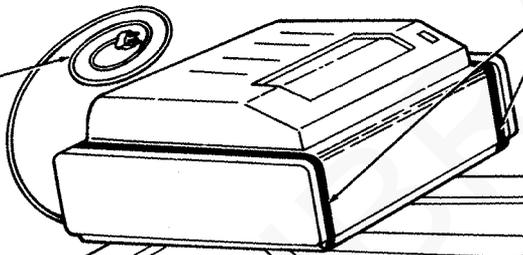
Secure cover
with 2 bands
of 21632PK
tape applied
around cabinet,
as shown.

28186PK

10532PK
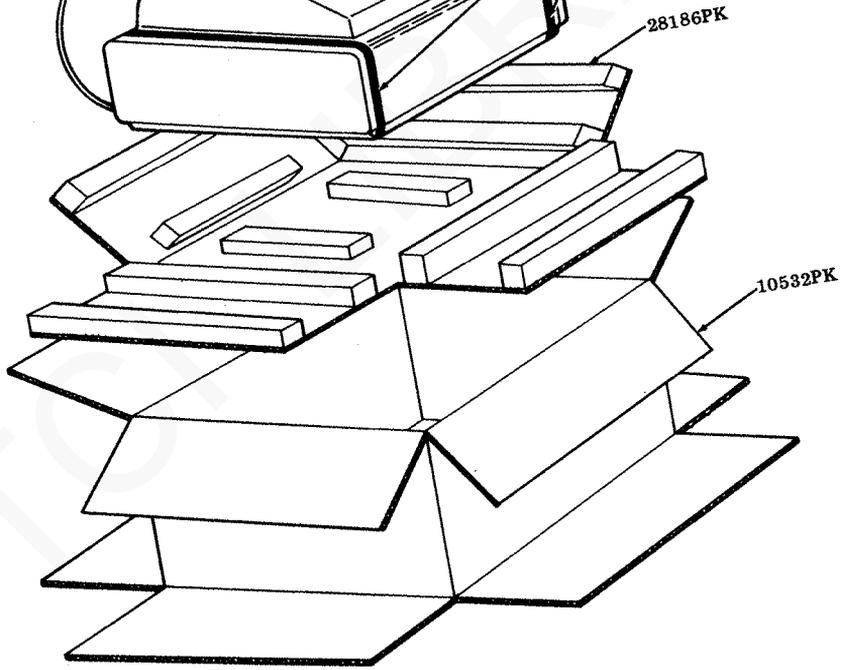
Fig. 25

**40CAB353 CABINET**

Packing Procedure for 40CAB353 Cabinet

Step 1.  Secure cover of cabinet with two strips of 21632PK tape. Follow contour of cabinet. (See Fig. 26).

Step 2.  Place a 23461PK plastic bag over cabinet. Leave cable extending outside of bag. Place cable on top of cabinet.

Step 3.  Form a 10672PK carton. Close and seal bottom flaps with 21719PK tape. Apply one strip on the center seam and a strip on each of the end seams.

Step 4.  Form a 28224PK detail and place in carton. See Fig. 26.

Step 5.  Center cabinet in carton left to right. Butt back of cabinet against the plastic blocks.

Step 6.  Position a 28225PK detail along each side and front of cabinet. See Fig. 26.

Step 7.  Extend cable outside of cabinet. Form and place a 28227PK liner on cabinet dome. See Fig. 26.

Step 8.  Coil cable and place in recess formed by the 28227PK liner and carton wall.

Step 9.  Place a 28226PK detail in carton as illustrated in Fig. 26.

Step 10.  Close and seal top flaps of carton as outlined in Step 3.

*Note:* 23461PK plastic
bag deleted for clarity.

28226PK
DETAIL

28227PK
LINER

Coil cable and place
between back of 28227PK
detail and carton wall.

28225PK DETAIL

28225PK DETAIL

Secure dome with
two strips of
21632PK tape.

28224PK DETAIL

10672PK
CARTON
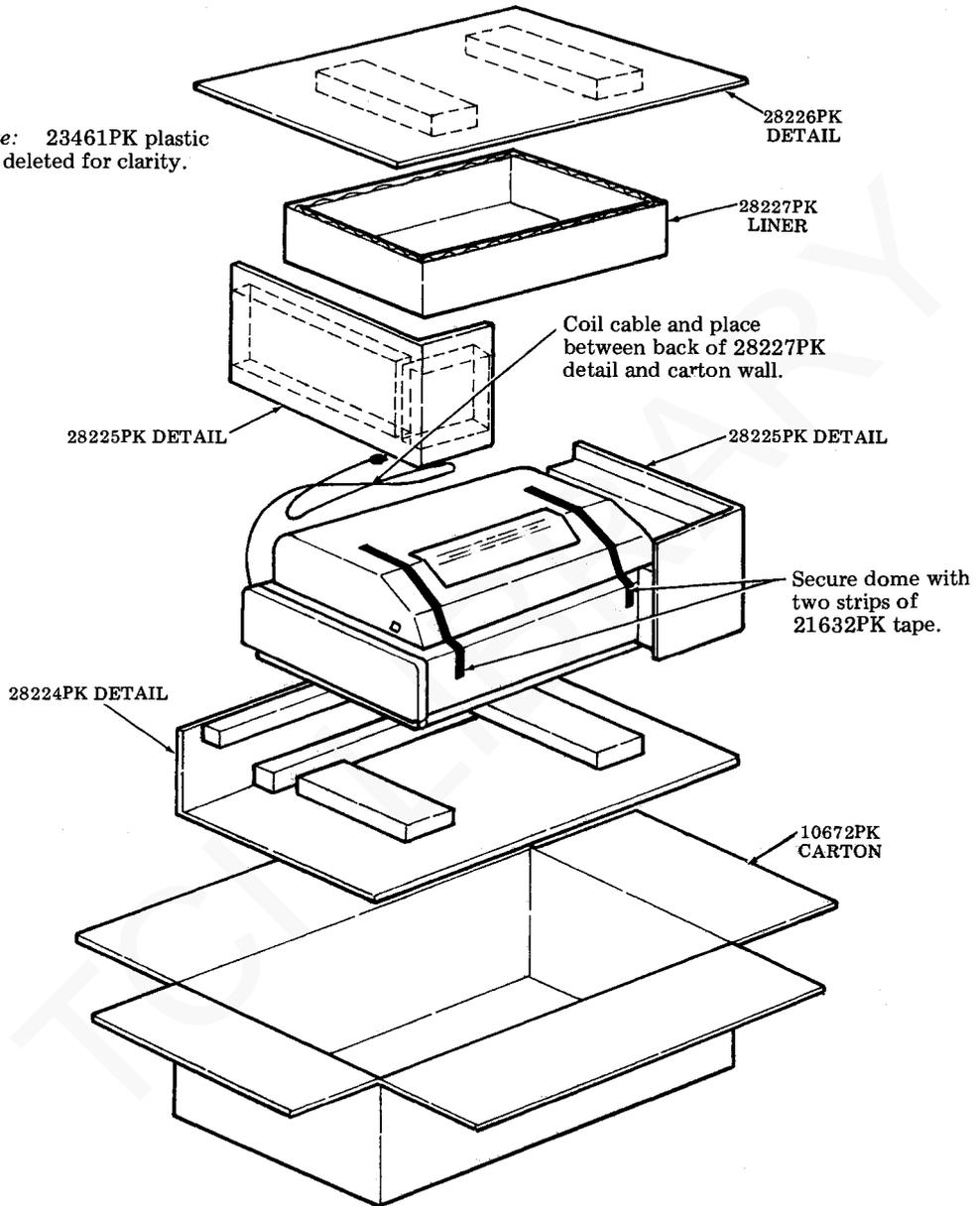
Fig. 26

40CAB901 CABINET

Packing Procedure for 40CAB901 Pedestal With Table Top

Step 1. Open door in bottom of pedestal (when equipped). Secure line cord (if equipped) to line cord holding brackets with 50136PK twist ties. Place cord in bottom of pedestal.

Step 2. Close door. Close latches located at either end on top of door.

Step 3. Place a 23461PK plastic bag around unit.

Step 4. Place container base (RS-18238-J) on floor as shown.

Step 5. Position pedestal in container base cutouts.

Step 6. Form and position side details (RS-18238-K left and right) to pedestal.

Step 7. Form a RS-18238-H container body and position over pedestal. Secure base with nylon reinforced tape. Standard procedure is to apply a band of steel strapping around the base of the container.



CONTAINER BODY
(RS-18238-H)

When equipped with data set and/or switch assembly, slit material at points shown and fold flap down.

DETAIL
(RS-18238-K)

900 SERIES CABINET
(Place in 23461PK plastic bag)

Except pedestal with 39" Tabletop (Refer to packing procedure for 39" Tabletop (401915)).

DETAIL
(RS-18238-K)

MINIMUM 1/2" WIDE STEEL STRAPPING

CUTOUTS

CONTAINER BASE
(RS-18238-J)

CONTAINER BODY
(RS-18238-H)

CONTAINER BASE
(RS-18238-J)

*Note:* Nylon tape may be used to secure the container base during removal operation.

Fig. 27

Packing Procedure for 20 inch Tabletop (401911)

Step 1.    Place tabletop in a 23457PK plastic bag.

Step 2.    Form a 8565PK folder. Center top in folder. Place a 28214 wood detail at either end of top as illustrated.

Step 3.    Fold tabs on inner flaps of folder as illustrated.

Step 4.    Close flaps and seal center seam with 21719PK tape.

*Note:*    Packing procedure and packing materials for 24 inch tabletops (401531 and 401914) are indentical to (401911) except that 28214PK wood details are not required in (401531 and 401914).
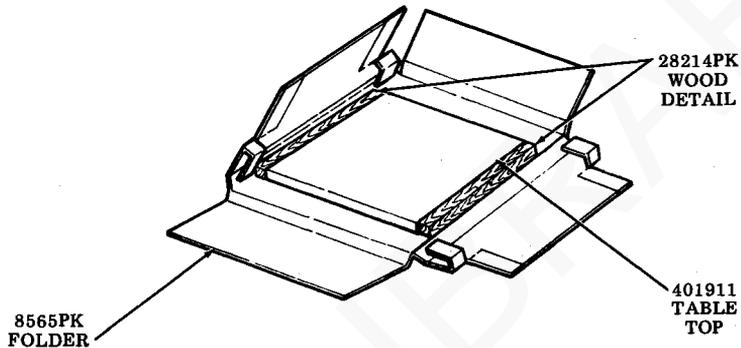
Fig. 28

Packing Procedure for 27 1/2 inch Tabletop (401913)

Step 1.    Place tabletop in a 23451PK plastic bag.

Step 2.    Form a 8564PK folder. Center top and a 28254PK wood detail in folder. Fold tabs on inner flaps of folder as illustrated.

Step 3.    Close flaps and seal center seam with 21719PK tape.
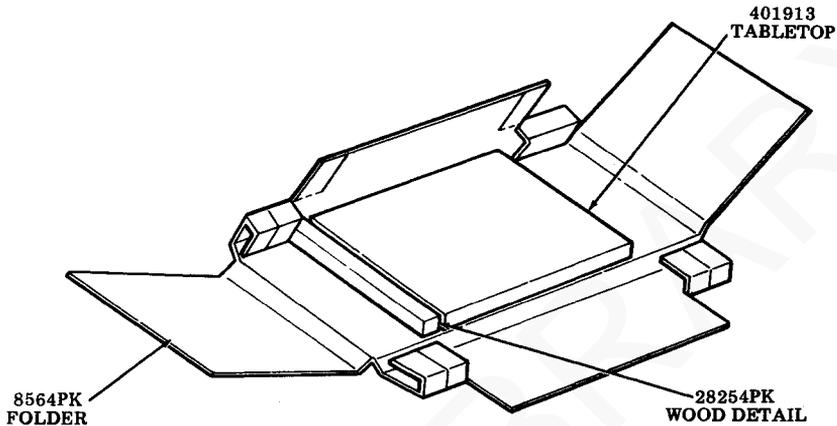
Fig. 29

Packing Procedure for 29 inch Tabletops (401532 and 411035)

Step 1.    Place tabletop in a 23451PK plastic bag.

Step 2.    Form a 8564PK folder. Center top in folder. Fold tabs on inner flaps of folder as illustrated.

Step 3.    Close flaps and seal center seam with 21719PK tape.
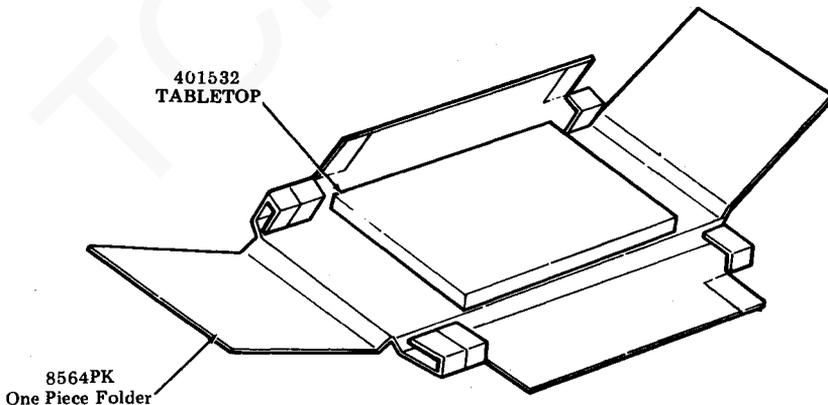
Fig. 30

Packing Procedure for 31 inch Tabletop (401912)

Step 1.   Place tabletop in a 23451PK plastic bag.

Step 2.   Form a 8564PK folder. Position top in folder. Fold tabs on inner flaps of folder as illustrated.

Step 3.   Close flaps and seal center seam with 21719PK tape.

401912
TABLETOP

8564PK
ONE
PIECE
FOLDER
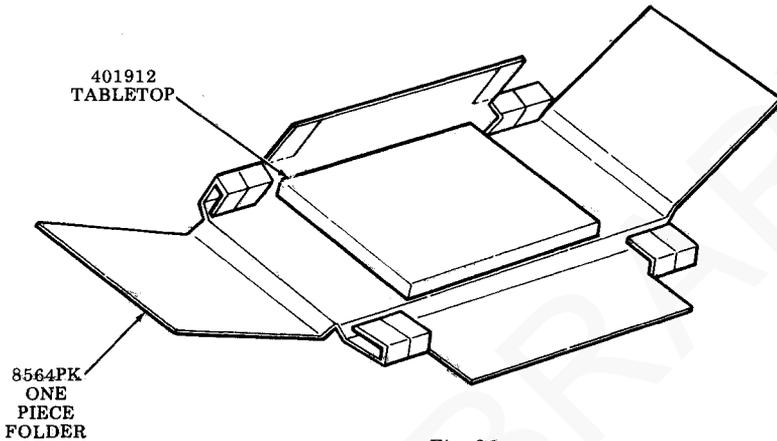
Fig. 31

Packing Procedure for 34 inch Tabletop (401533)

Step 1.   Place tabletop in a 23451PK plastic bag.

Step 2.   Form a 8564PK folder. Center top in folder. Fold tabs on inner flaps of folder as illustrated.

Step 3.   Close flaps and seal center seam with 21719PK tape.

401533
TABLETOP

8564PK
ONE
PIECE
FOLDER
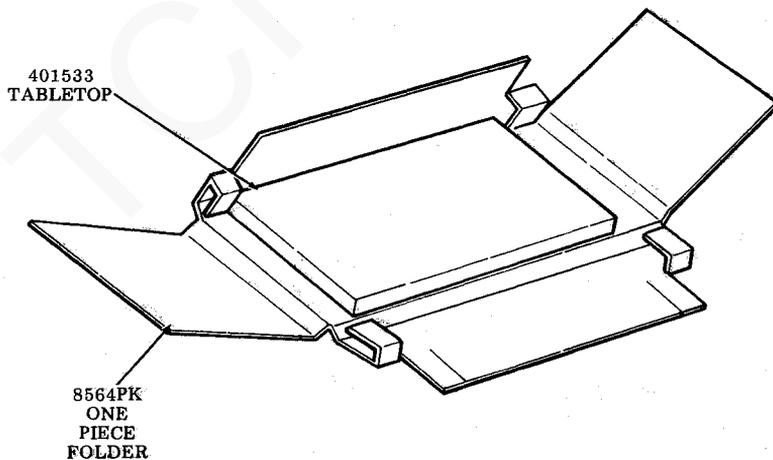
Fig. 32

Packing Procedure for 39 inch Tabletop (401915)

Step 1.    Place tabletop in a 23464PK plastic bag.

Step 2.    Form a 8573PK two piece folder. Center top upside down in folder. Place a 28214PK wood detail at either end of top as illustrated.

Step 3.    Close flaps and seal center seam with 21719PK tape.

28214PK
WOOD
DETAIL

Place 401915 tabletop
face down in folder.

8573PK
DETAIL B

8573PK
DETAIL A
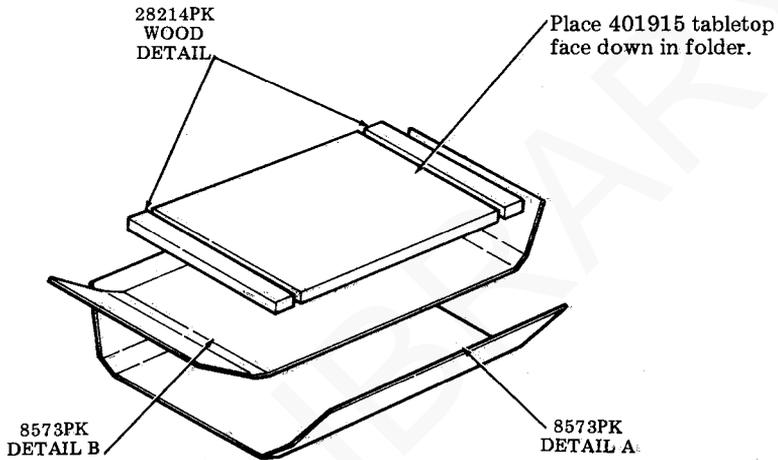
Fig. 33

### Packing Procedure for 40CAB901 Pedestal Without Tabletop

**Step 1.** Open door in bottom of table (when equipped). Secure line cord (if equipped) to line cord holding brackets with 50136PK twist ties.

**Step 2.** Close door. Close latches located at either end at top of door.

**Step 3.** Secure bag of parts in recess at upper right front corner of cabinet with a strip of 21632PK tape. Cover cabinet with a 23461PK plastic bag.

**Step 4.** Place a 70133PK Detail B end cap on floor.

**Step 5.** Position cabinet on top of bottom end cap.

**Step 6.** Lift left side of cabinet and place a 28253PK Detail A onto the left foot. Set cabinet with detail back down on end cap.

**Step 7.** Lift right side of cabinet and place a 28253PK Detail B onto right foot as indicated in Step 6.

**Step 8.** Place a 28253PK Detail C on left top corner of the cabinet. See Fig. 34.

**Step 9.** Place a 28253PK Detail C on right top corner of the cabinet. See Fig. 34.

**Step 10.** Form one 70133PK Detail A and with bottom flanges down and outward, place over top of cabinet and details and slide to bottom.

**Step 11.** Interlock flanges of bottom end cap with corrugated carton flanges. Apply a band of 21207PK strapping around the center of flanges of end cap. Seal strapping with one 21431PK clip seal. The tension of strapping should be sufficiently tight to bite into corners so that strapping will not shift.

**Step 12.** Close top flaps of carton and seal center seam with a strip of 21719PK tape. The tape should extend approximately three inches down the sides of the carton.
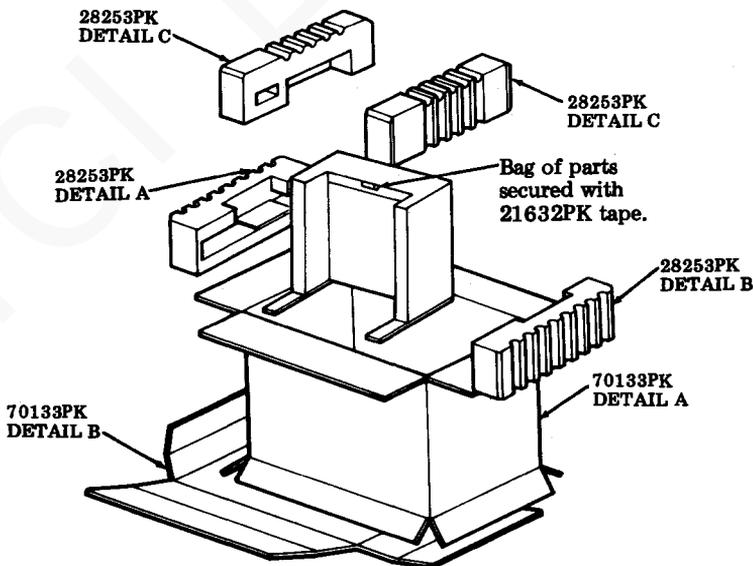


**Fig. 34**

**Packing Procedure for 40CAB901 Pedestal Without Table Top and Feet**

Step 1. Open door in bottom of table (when equipped). Secure line cord (if equipped) to line cord holding brackets with 50136PK twist ties.

Step 2. Close door. Close latches located at either end at top of door.

Step 3. Secure muslin bag of parts to top of cabinet with two strips of 21632PK tape. Cover cabinet with a 23461PK plastic bag.

Step 4. Form a 11946PK carton. With bottom flaps down and outward, place carton around cabinet.

Step 5. Place a 27442PK plastic corner on each of the four corners of the cabinet top. See Fig. 35.

Step 6. Close and seal top flaps of carton. Seal the center seam with a strip of 21719PK tape. The tape should extend approximately three inches down the ends of the carton. Invert carton.

Step 7. Place a 27442PK plastic corner on each of the four corners of the cabinet bottom.

Step 8. Close and seal the bottom flaps of the carton as outlined in Step 6. Invert carton.

*Note:* 23461PK plastic bag deleted for clarity.

27442PK PLASTIC CORNER
(Typical 8 Places)

CABINET

11946PK CARTON
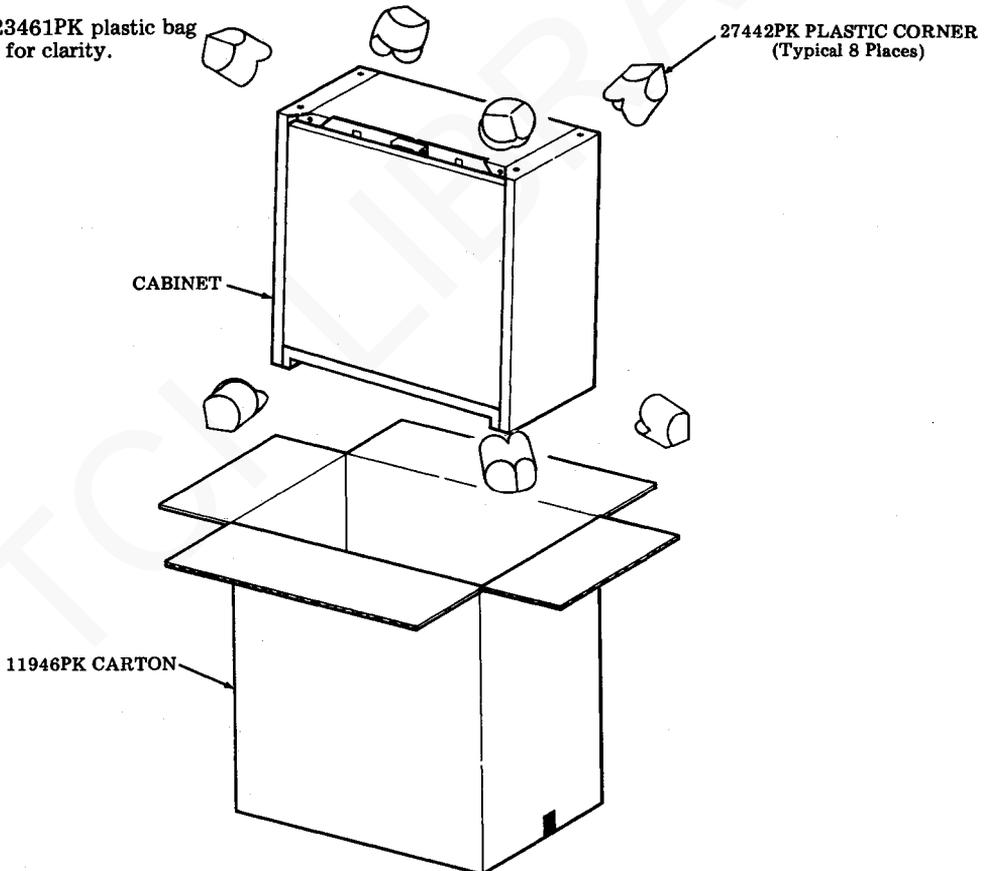
Fig. 35

40CAB902 CABINET

Packing Procedure for 40CAB902 Cabinet

Step  1.  Open door in bottom of table (when equipped). Secure line cord (if equipped) to the line cord holding brackets with 50136PK twist ties. Close door. Close latch located at either end at top of door.

Step  2.  Cover cabinet with a 23461PK plastic bag (not shown).

Step  3.  Place one 70144PK Detail B end cap on floor.

Step  4.  Position cabinet on top of bottom end cap.

Step  5.  Lift left side of cabinet and place a 28253PK Detail A onto the left foot. Set cabinet with detail back down on end cap.

Step  6.  Lift right side of cabinet and place a 28253PK Detail B onto the right foot as indicated in Step 5.

Step  7.  Place a 28253PK detail on left and right top corner of the cabinet. See Fig. 36.

Step  8.  Form a 70144PK carton Detail A and with bottom flanges down and outward, place carton over top of cabinet and details and slide to bottom.

Step  9.  Interlock flanges of bottom end cap with corrugated carton flanges. Standard procedure is to apply a band of 21207PK strapping around center of flanges of end cap. For standard removal, use nylon reinforced tape.

Step 10.  Close top flaps of carton and seal center seam with a strip of 21719PK tape. The tape should extend approximately three inches down the sides of the carton.
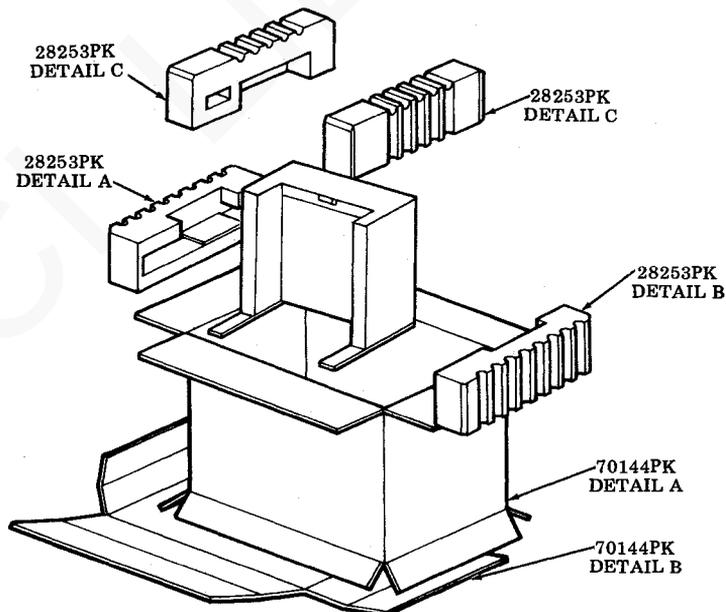
Fig. 36

40CAB904 CABINET

Packing Procedure for 40CAB904 Cabinet

Step  1.  Open door in bottom of pedestal (when equipped). Secure line cord (if equipped) to line cord holding brackets with 50136PK twist ties.

Step  2.  Close door. Close latches located at either end of top of door.

Step  3.  Secure bag of parts in recess at upper right front corner of cabinet with a strip of 21632PK tape (see Fig. 37). Cover cabinet with a 23461PK plastic bag.

Step  4.  Form a 28223PK detail. Tape folds of detail together with two strips of 21719PK tape. Secure to cabinet legs with a strip of 21632PK tape. See Fig. 37.

Step  5.  Position a 28185PK Detail A on left leg and a 28185PK Detail B on right leg of pedestal. See Fig. 37.

Step  6.  Form details against sides and back of pedestal and secure in place with a strip of 21632PK tape. See Fig. 37.

Step  7.  Form a 12005PK carton, and with bottom flaps down and outward, place around cabinet and details.

Step  8.  Form a 28185PK Detail B and place it on left top corner of the cabinet. See Fig. 37.

Step  9.  Form a 28185PK Detail A and place it on right top corner of the cabinet. See Fig. 37.

Step 10.  Close top flaps of carton and seal center seam with a strip of 21719PK tape. The tape should extend approximately three inches down the sides of the carton. Carefully invert carton.

Step 11.  Close bottom flaps of carton and seal as outlined in Step 10. Carefully invert carton.

28185PK
DETAIL B

28185PK
DETAIL A

28185PK
DETAIL A

Secure muslin bag
of parts here.

Secure 28223PK
detail to cabinet
legs with 21632PK
tape.

28185PK
DETAIL B

12005PK
CARTON

Fig. 37

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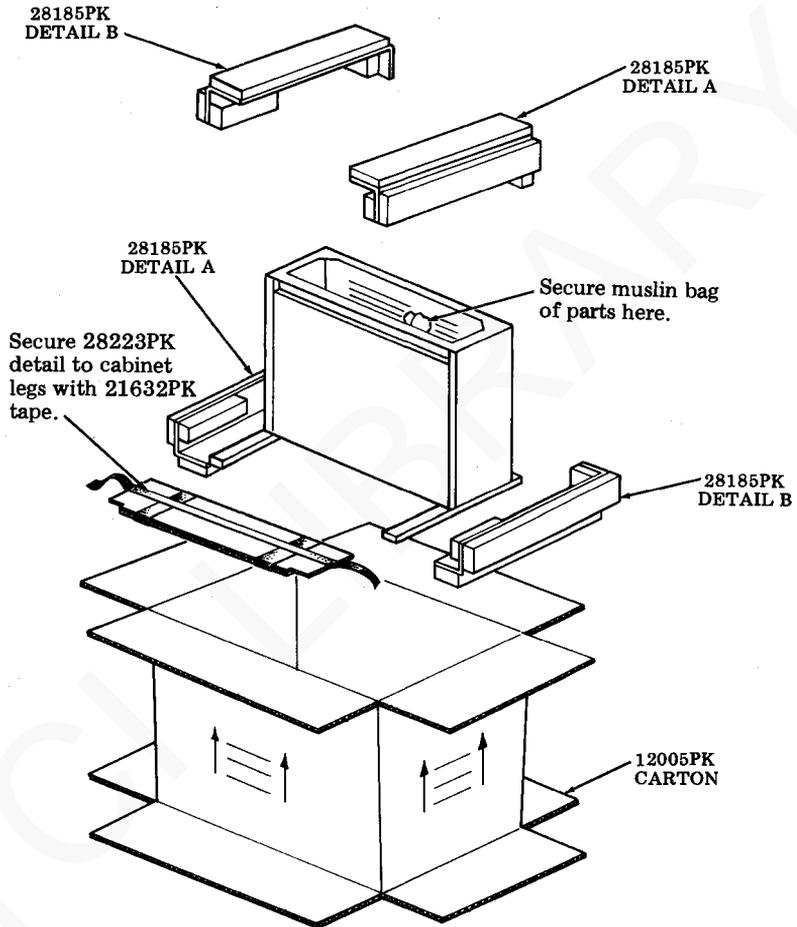
**40CAB302 CABINET**

Packing Procedure for 40CAB302 Cabinet

Step  1.  Place skidded bottom end cap Detail A of 16937PK details on floor. See Fig. 38.

Step  2.  Place and center the bottom cushion cap Detail B of 16937PK details on top of A. See Fig. 38.

Step  3.  Place the cabinet on Detail B with the rear edge of the legs in line with the rear edge of the built up pads.

Step  4.  Place a 23461PK plastic bag over top of cabinet. Cover bottom of cabinet with sheets of 21298PK tissue and tape to cabinet with 21480PK tape.

Step  5.  Coil cable at bottom of cabinet and tape to cabinet with 21632PK tape.

Step  6.  Fold the flaps of the bottom cushion cap Detail B against the plastic enclosed cabinet. Tape the flaps against the cabinet with a complete band of 21632PK tape. Make sure cable is not pinched between flap and cabinet.

Step  7.  Form a 16937PK carton Detail D and with bottom flanges down and outward, place over top of cabinet and detail and slide to bottom. See Fig. 38.

Step  8.  Form and place one top cushion cap Detail C of 16937PK within carton on top of cabinet. The portion of the detail without a corrugated block must be placed to the front of the cabinet. See Fig. 38.

Step  9.  Interlock flanges of bottom end cap with corrugated carton flanges. Standard procedure is to apply a band of 21207PK strapping around center of flanges of end cap. For standard removal, use nylon reinforced tape.

Step 10.  Close top flaps of carton and seal center seam with a strip of 21719PK tape. The tape should extend approximately three inches down the sides of the carton.

16937PK
DETAIL D

16937PK
DETAIL C

23461PK plastic bag
enclosed cabinet.

16937PK
DETAIL B

16937PK
DETAIL A
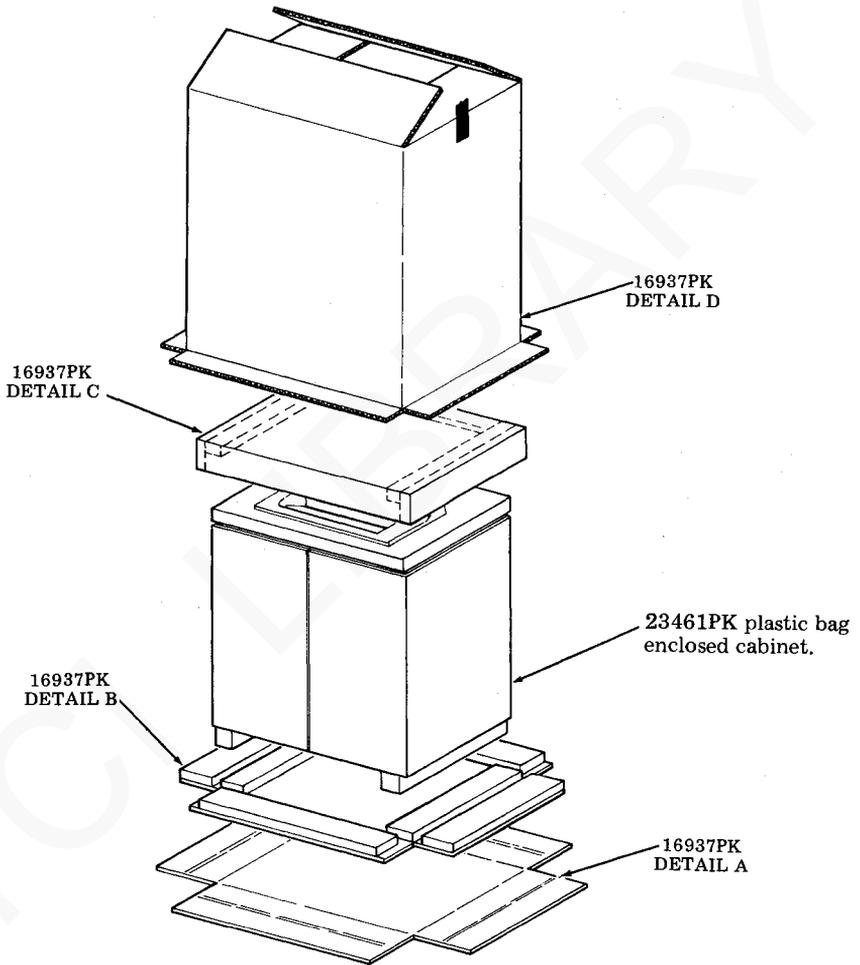
Fig. 38

40AB101 ANSWER-BACK

Packing Procedure for 40AB101 Answer-Back

Step  1.  Remove answer-back from station.

Step  2.  Form a 28203PK corrugated detail and position against answer-back as illustrated in Fig. 39. The tabs on the ends of the detail must be positioned in the slots on either end of the answer-back.

Step  3.  Place answer-back with detail in a 23465PK plastic bag (not shown in illustration).

Step  4.  Form a 9022PK carton. Close bottom flaps and seal with a strip of 21719PK tape applied to the center seam. The tape should extend approximately three inches down the ends of the carton.

Step  5.  Center prepacked answer-back unit in carton as shown.

Step  6.  Form a 28204PK detail and place in carton on top and sides of unit as illustrated.

Step  7.  Coil the cable in the void formed by the 28204PK detail. Fill void space with 21298PK tissue paper (not shown in illustration).

Step  8.  Close and seal top flaps of carton as outlined in Step 4.
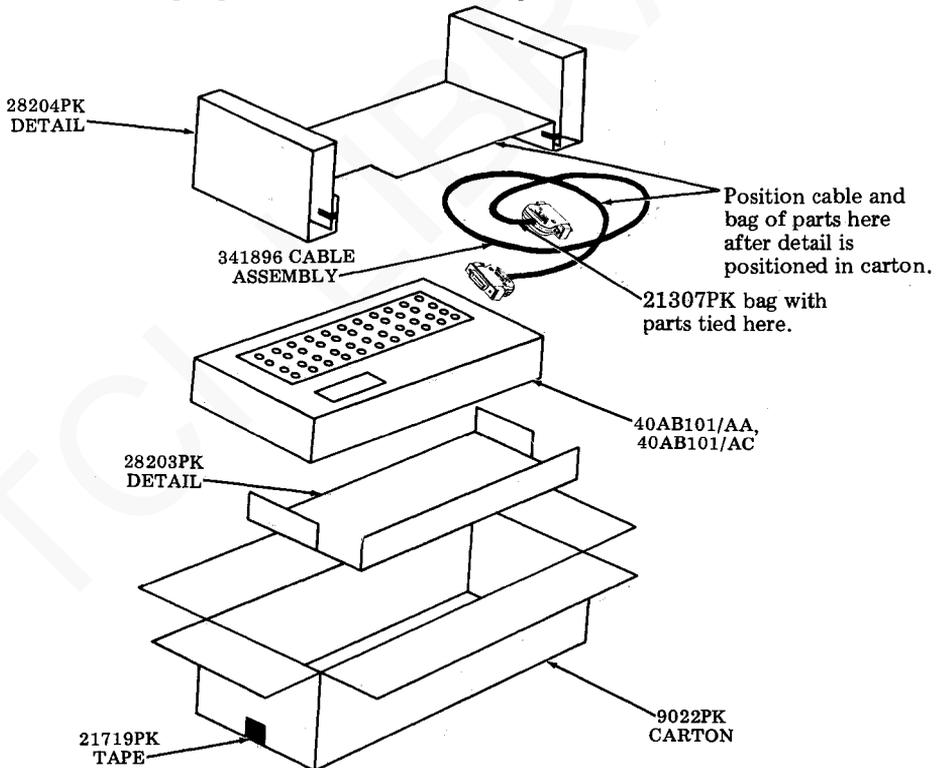
Fig. 39

40BSE101 CIRCULAR BASE

Packing Instructions for 40BSE101 Circular Base

Step 1. Form shipping container 8956PK. Close and seal bottom flaps with glue or 2 inch minimum width sealing tape.

Step 2. Place unit in a 23457PK plastic bag.

Step 3. Form 28206PK detail around unit as illustrated in Fig. 40.

Step 4. Place unit and detail in carton. See Fig. 40.

Step 5. Close and seal top flaps of container as outlined in Step 1.

*Note:* 23457PK plastic bag deleted for clarity.
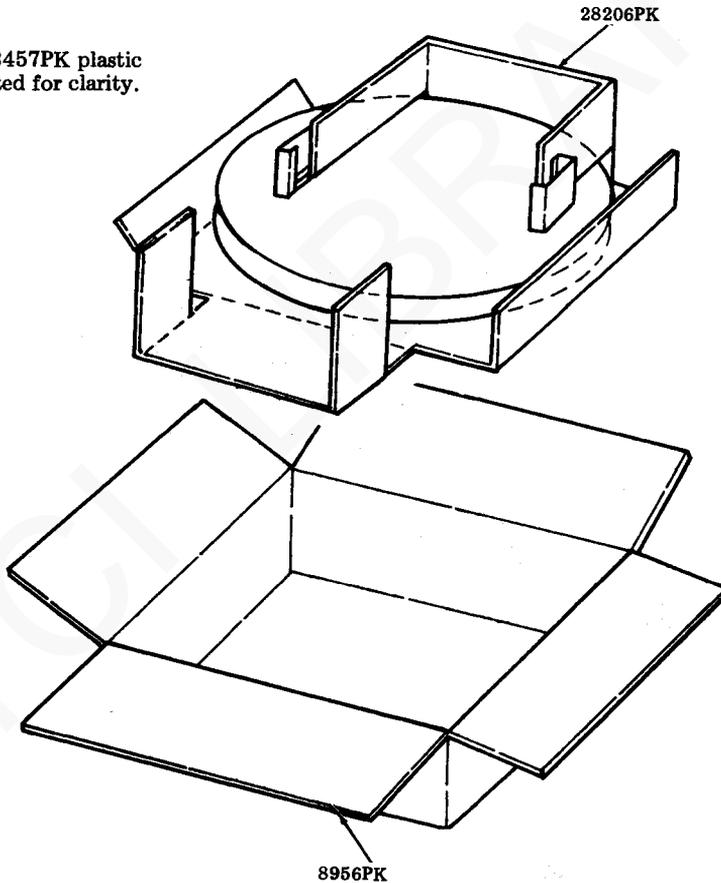
Fig. 40

40BSE201 OPERATOR CONSOLE BASE

Packing Instructions for 40BSE201 Operator Console Base

Step  1.   Form 9022PK shipping container. Close and seal bottom flaps with glue or 2 inch minimum. width sealing tape.

Step  2.   Place unit in a 23456PK plastic bag (not shown).

Step  3.   Form detail 28208PK around unit as illustrated in Fig. 41.

Step  4.   Place unit and detail in carton. See Fig. 41.

Step  5.   Close and seal top flaps of container as outlined in Step 1.
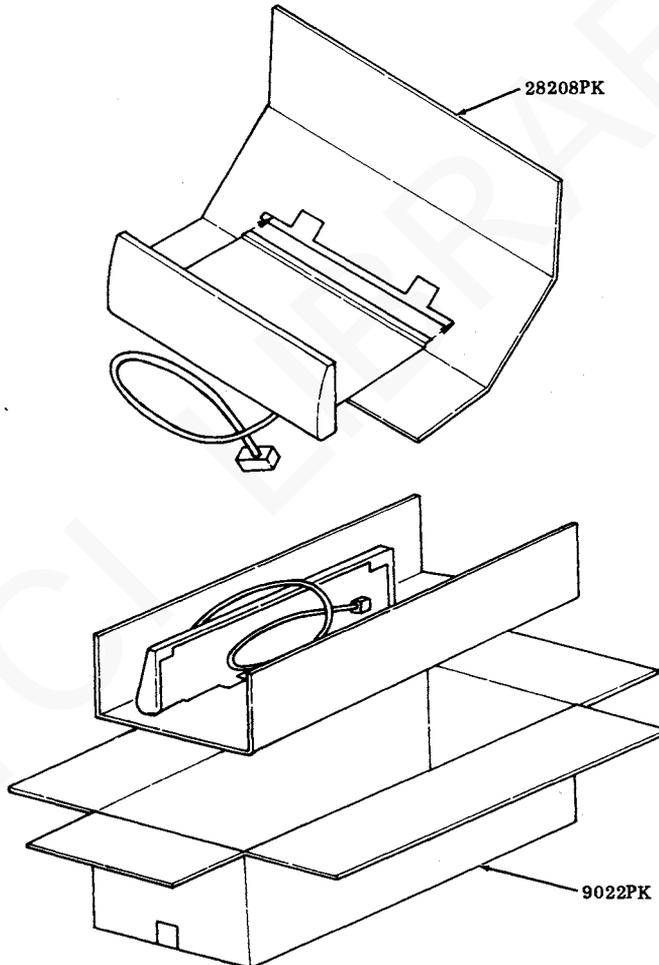
Fig. 41

## 40BSE202 OPERATOR CONSOLE BASE

### Packing Instructions For 40BSE202 Operator Console Base

Step 1.　　Form a 28329PK detail. Slide unit base in slot in detail as illustrated in Fig. 42. Secure base of unit to bottom of detail with two strips of 21632PK tape. Buff tape firmly.

Step 2.　　Form a 9255PK carton. Close and seal bottom flaps with a strip of 21719PK tape. The tape should extend approximately three inches down the ends of the cartons.

Step 3.　　Position unit and detail in carton. Nest cable in 21298PK tissue. Fill all void space with tissue.

Step 4.　　Fold detail over to form tray at top. Wrap cover assembly in 21298PK tissue and place in tray. Fill void space with tissue.

Step 5.　　Close and seal top flaps of carton as outlined in Step 3.
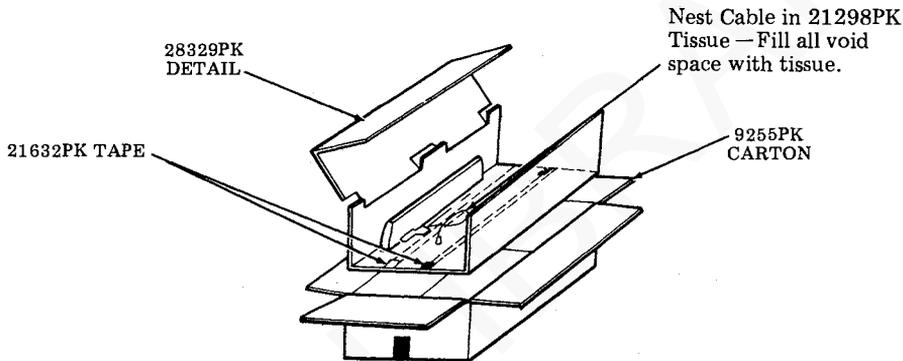
Fig. 42
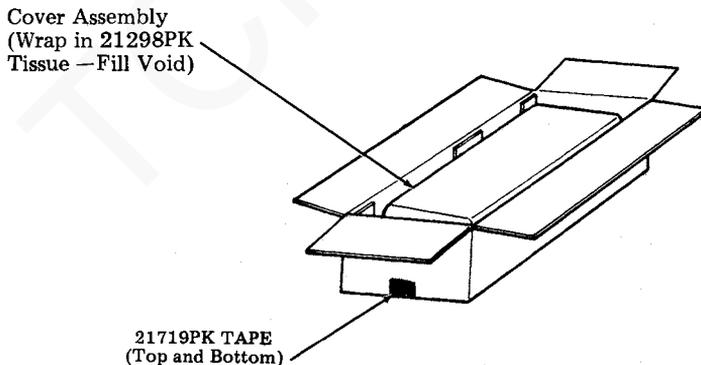
Fig. 43

40/9140 STATION CONTROLLER

Packing Procedure for 9140 Station Controller

Step  1.  Remove 9140 station controller from unit.

Step  2.  Place loose parts in a RM652472 cloth bag. Tie securely.

Step  3.  Position the unit on a 27708PK plywood pallet. Secure unit to pallet with four 28055PK wood screws. (See illustration.)

Step  4.  Coil cable. Place bag of parts in center of coil and secure to end of unit with 21632PK tape.

Step  5.  Form a 9785PK shipping container. Close and seal bottom flaps with glue or sealing tape.

Step  6.  Place a polystyrene 21690PK corner on each of the four corners of the shipping container.

Step  7.  Place a palletized unit in container between the plastic details.

Step  8.  Position a 27711PK liner over the palletized unit.

Step  9.  Form and position a corrugated 28161PK detail in container as illustrated in Fig. 44.

Step 10.  Close and seal top flaps of shipping container as outlined in Step 5.
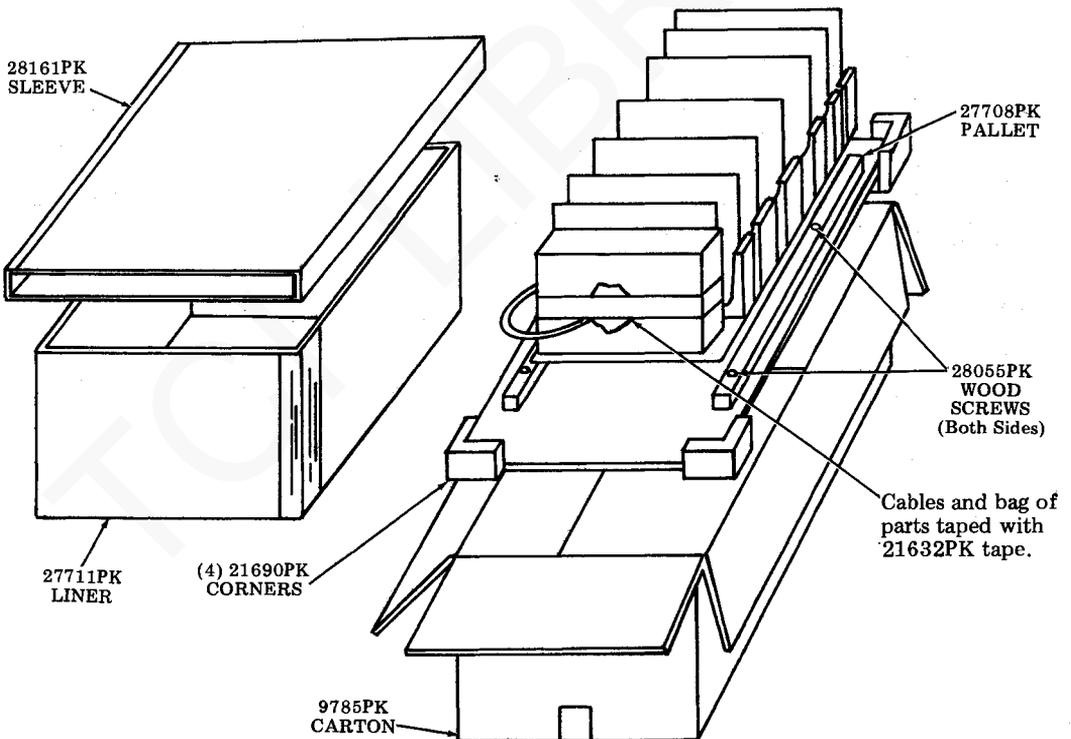


Fig. 44

Packing Procedure for 345605 Mounting Frame

Step 1. Form 9292PK shipping container. Close and seal bottom flaps with glue or sealing tape.

Step 2. Insert a 28158PK detail inside the 9292PK shipping container.

Step 3. Position the mounting frame in the 9292PK shipping container.

Step 4. Form a 28159PK detail and place it over the raised portion of the mounting frame.

Step 5. Form a 28160PK detail and place it in the void area as shown in Fig. 45.

Step 6. Close top flaps of carton and seal center seam with glue or sealing tape.
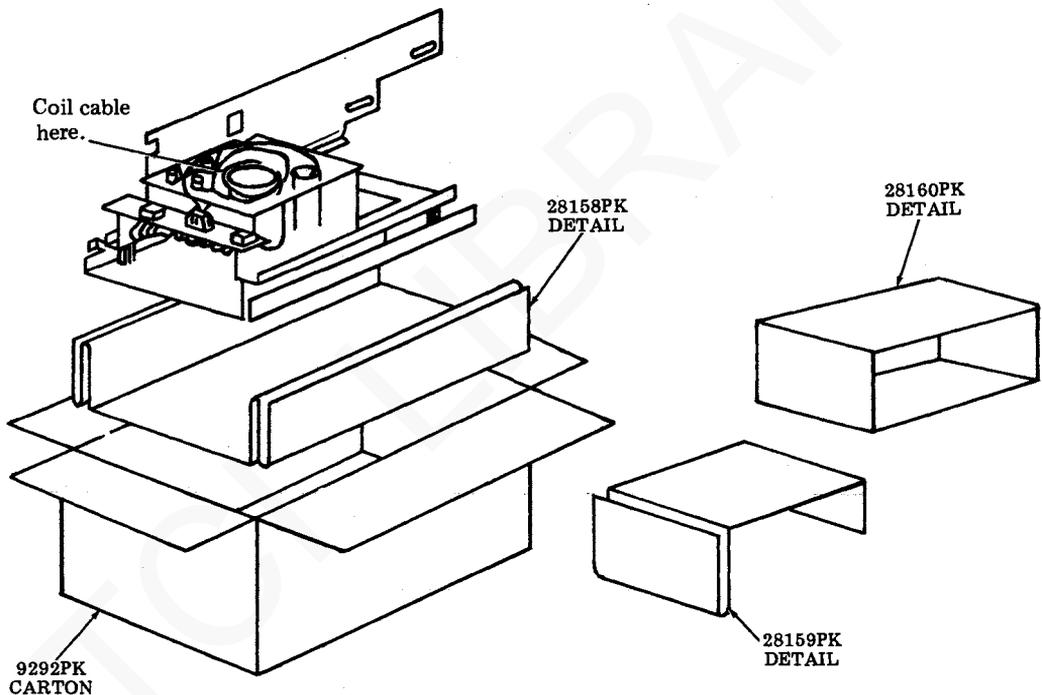


Fig. 45

EIA SWITCH

Packing Procedure for EIA Switch

Step 1.    Immobilize the three switches in the following manner: With the switches in their unoperated
position, apply a piece of 21480PK tape approximately six inches long to the front bottom
half of the buttons and tape to the cover.

Step 2.    Apply a piece of 21480PK tape approximately six inches long to the front upper half of the
buttons and tape to the cover.

Step 3.    Wrap the switch assembly in triple thickness of 21298PK tissue paper.

Step 4.    Coil the 341986 cable assembly and wrap it in a double thickness of 21298PK tissue paper.

Step 5.    Tape the cable assembly to the top of the switch assembly with two wraps of 21480PK tape.

Step 6.    Wrap the switch and cable package in a four or five layer continuous length of 27951PK air
cap packing. The switch front and rear surfaces should be equidistant from the 27951PK air
cap front and rear edges, respectively.

Step 7.    Form 9030PK carton. Close bottom flaps and seal center seam with 21719PK tape. Extend tape
three inches down carton sides.

Step 8.    Fold in open ends of the wrapped package of Step 6 so as to protect the switch front and rear
surfaces. Insert wrapped package into 9030PK carton. The package should fit snuggly in the
carton. If loose, remove package and add additional wrap of 27951PK air cap packing.

Step 9.    Close top flaps of 9030PK carton and seal center seam with 21719PK tape as indicated in
Step 7.
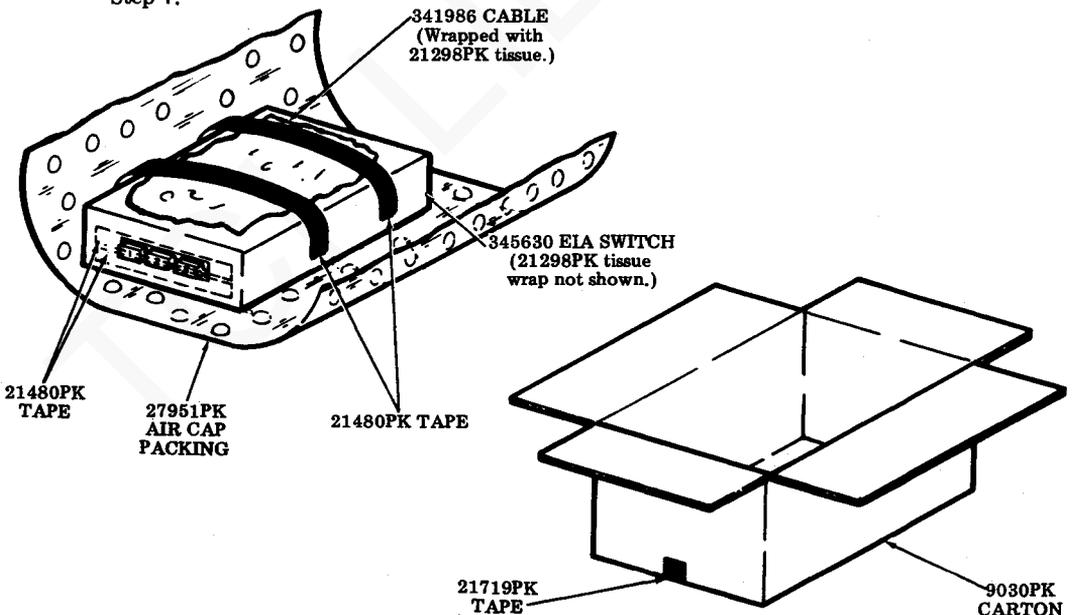


Fig. 46

KEYBOARD DISPLAY AMPLIFIER (KDA)

Packing Procedure for KDA

Step  1.  Place unit in a 23465PK plastic bag (not shown in illustration).

Step  2.  Form a 8889PK carton. Close and seal bottom flaps of carton with a strip of 21719PK tape.

Step  3.  Form a 28258PK detail and place in carton as shown in Fig. 47.

Step  4.  Place unit in carton between folds in detail.

Step  5.  Form a 28257PK detail and place in carton over and against sides of unit.

Step  6.  Close and seal top flaps of carton as outlined in Step 2.

Step  7.  Form a 9064PK carton as shown in Fig. 48. Close and seal bottom flaps as outlined in Step 2.

Step  8.  Place a 28153PK plastic corner in each of the four corners of the carton.

Step  9.  Place prepacked unit inside the plastic corners.

Step 10.  Place a 28153PK plastic corner on each of the four corners of the carton.

Step 11.  Close and seal top flaps of carton.
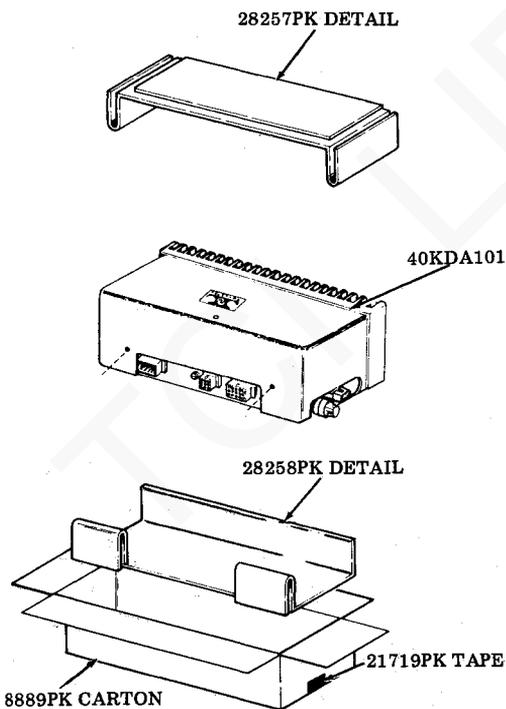


Fig. 47
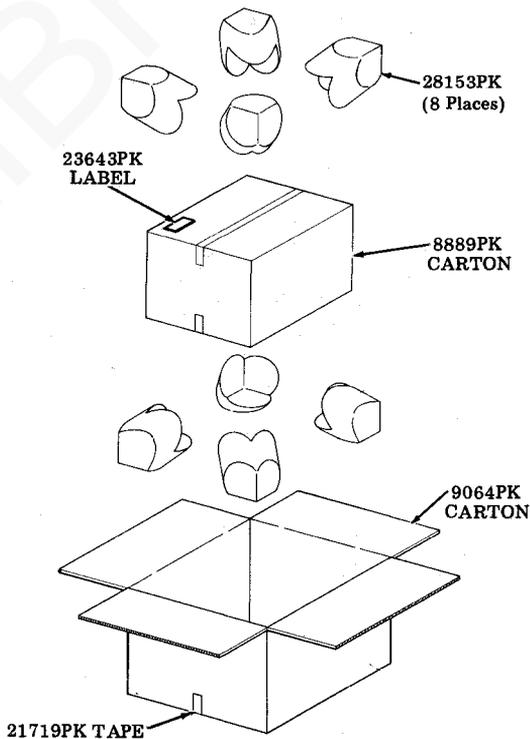
Fig. 48

## 40K00X OPERATOR CONSOLE

### Packing Procedure for ROP Opcon

Step 1.    Form an 8762PK carton. Close and seal bottom flaps with a strip of 21719PK tape applied to the center seam and extending three inches down the ends of the carton.

Step 2.    Place one 28327PK corrugated pad on top of the keytops. Tape securely to keyboard with two pieces of 21632PK tape (one piece across the length and one piece across the width of the pad). (See Fig. 39.)

Step 3.    Cut a seventy six inch long piece of 27952PK air cap and place on bench.

Step 4.    Place unit with open end down lengthwise on center of air cap approximately six inches from the end.

Step 5.    Wrap the unit lengthwise and tape end of air cap with a strip of 21480PK tape.

Step 6.    With manufacturers joint on the carton to the right side, place the unit into the carton with the keytops to the side of the carton. (See Fig. 49).

Step 7.    Close and seal top flaps of carton as indicated in Step 1.

*Note:*   27952PK air cap deleted for clarity.
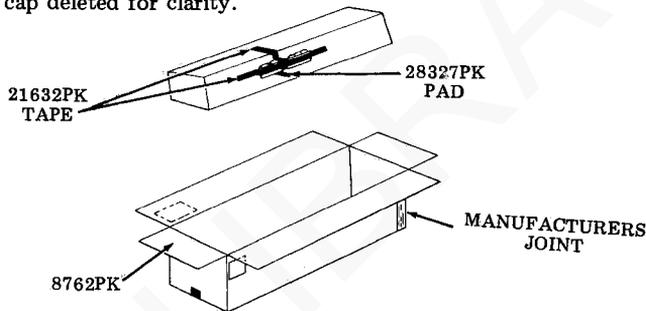


Fig. 49

## 40K100 OPERATOR CONSOLE

### Packing Procedure for Opcon

Step 1.    Place spare keytops in a 21307PK muslin bag and set aside.

Step 2.    Place a 28164PK Detail A base on work bench. Place muslin bag containing keytops in cavity provided.

Step 3.    Remove KD opcon cover; if late design, 2816PK packing details are used.

Step 4.    Place unit in a 23456PK plastic bag. Close open end of bag and secure with a strip of 21480PK tape.

Step 5.    Place a 28164PK Detail B cover over keyboard and place KD opcon cover in cavity provided in late design 28164PK Detail B.

Step 6.    Secure 28164PK Detail A base to Detail B cover with a band of 21632PK tape applied around each end of plastic details.

Step 7.    Form a 9526PK carton. Close bottom flaps and seal center seam with a strip of 21719PK tape. The tape should extend approximately three inches down ends of carton. (See Figs. 50 and 51.)

Step 8.    Place prepacked until in carton. Close top flaps of carton and seal as outlined in Step 7.

28164PK
DETAIL B

9526PK

Place 21307PK muslin bag
containing spare keytops
in cavity shown.

Secure details
together with
21632PK tape.

*Note:*   23456PK plastic bag is not shown.

28164PK
DETAIL A

**Fig. 50—Early Design Packing Detail**

KD OPCON COVER IN
SHIPPING POSITION

KD OPCON

DETAIL B
DETAIL A — 28164PK (Late Design)

KD OPCON

DISPOSABLE
9526PK CARTON
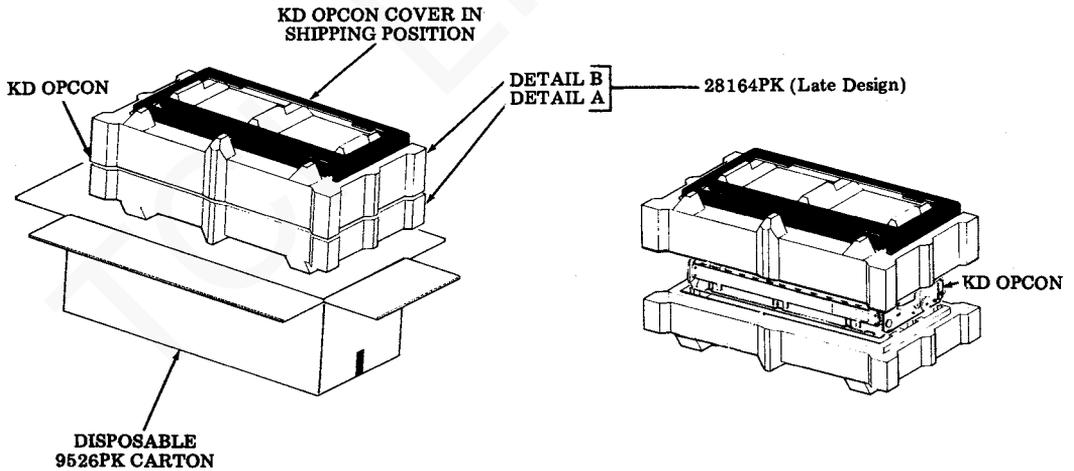
**Fig. 51—Late Design Packing Detail**

**40K200 OPERATOR CONSOLE**

Packing Procedure for Opcon

Step 1. Place spare keytops in a 21307PK muslin bag and secure in cavity of 28335PK Detail B, as shown in Fig. 52.

Step 2. Place a 28335PK Detail A base on work bench.

Step 3. Remove opcon cover and secure in top cavity of 28335 Detail B.

Step 4. Place unit in a 23457PK plastic bag. Plastic bag is deleted from illustration for clarity. Close open end of bag and secure with a strip of 21480PK tape.

Step 5. Place a 28335PK Detail B cover over opcon as shown in Fig. 52.

Step 6. Secure 28335PK Detail A base to Detail B cover with a band of 21632PK tape applied around each end of plastic details.

Step 7. Form a 9403PK carton. Close bottom flaps and seal center seam with a strip of 21719PK tape. The tape should extend approximately three inches down ends of carton.

Step 8. Place prepacked unit in carton. Close top flaps of carton and seal as outlined in Step 7.
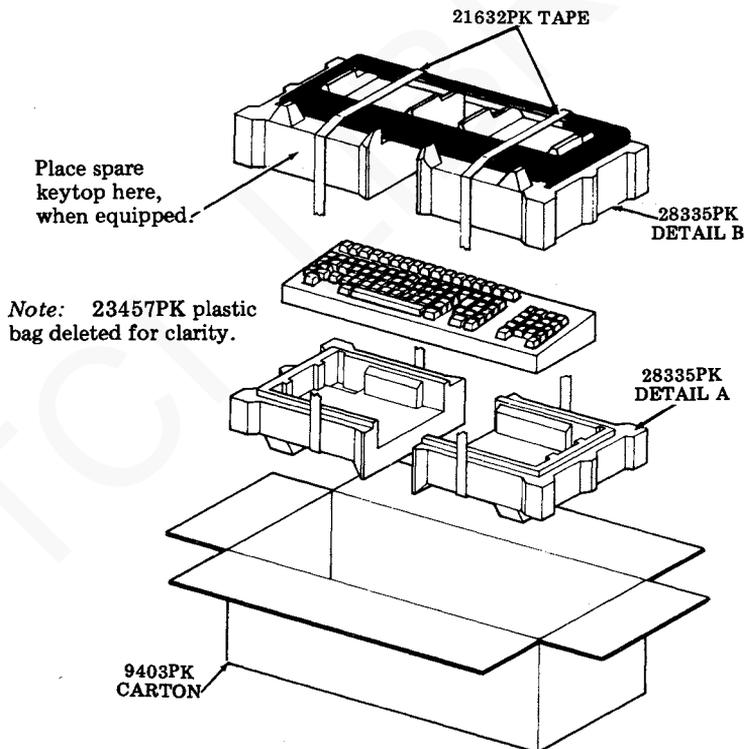
Fig. 52

## 40PSU101 POWER SUPPLY

Packing Procedure for 40PSU101 Power Supply

Step  1.  Form a 28210PK corrugated detail. Position detail in end of unit as illustrated in Fig. 43. The edge on short end of detail must butt against transformer, and the edge on long end of detail must butt against the inside of power supply cover. Secure detail in place with two strips of 21632PK tape as shown in Fig. 53.

Step  2.  Form a 9229PK carton. Close and seal bottom flaps with a strip of 21719PK tape. The tape should extend approximately three inches down ends of carton.

Step  3.  Form a 28211PK Detail A and place in carton as illustrated in Fig. 53. Center detail in carton.

Step  4.  Position a 28211PK Detail B in either end of carton as illustrated in Fig. 53.

Step  5.  Place unit in a 23456PK plastic bag. Position unit in carton as illustrated in Fig. 53.

Step  6.  Fold the 28211PK Detail A flap over top of unit. Close and seal top flaps of carton as outlined in Step 2.

Fig. 53

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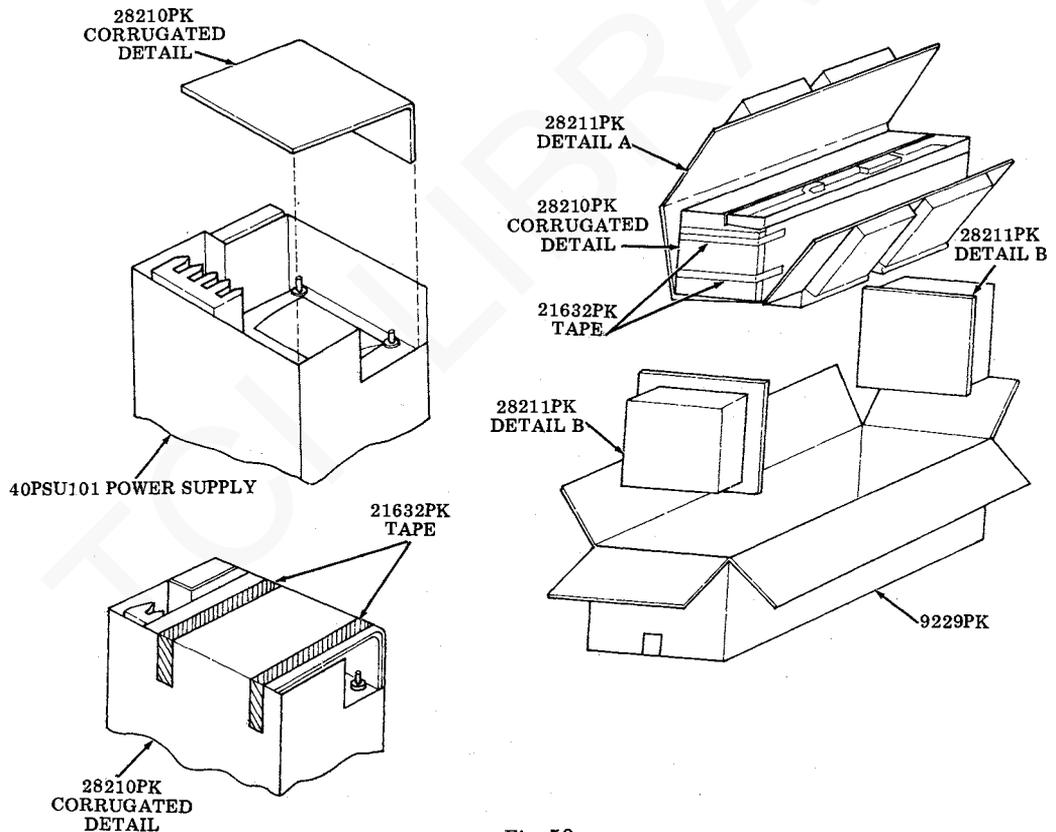
## 40PSU102 POWER SUPPLY

### Packing Procedure for 40PSU102 Power Supply

Step 1. Assemble pallet No. 28212PK to bottom of power supply with one 71692RM screw, one 72295RM flat washer, and one 2669 lockwasher, as illustrated in Fig. 54.

Step 2. Form a 9362PK corrugated detail. Close and seal bottom flaps with a strip of 21719PK tape. The tape should extend approximately three inches down ends of carton.

Step 3. Place palletized unit in carton. Form a 28213PK detail and place in carton as illustrated in Fig. 54.

Step 4. Close and seal top flaps of carton as outlined in Step 2.

Step 5. Form a 9822PK shipping container. Form bottom flaps outward and place over inner container as illustrated in Fig. 55.

Step 6. Position a 28153PK corner detail on each of the four corners of the inner container as illustrated in Fig. 55.
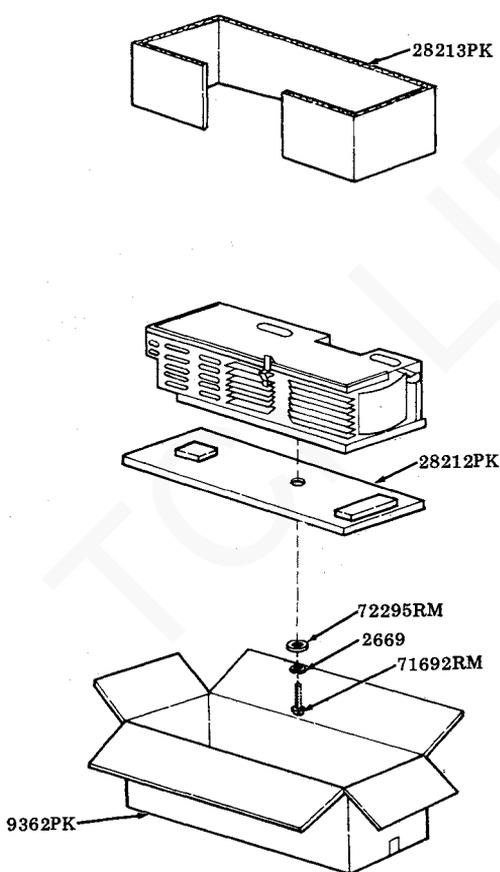
Fig. 54
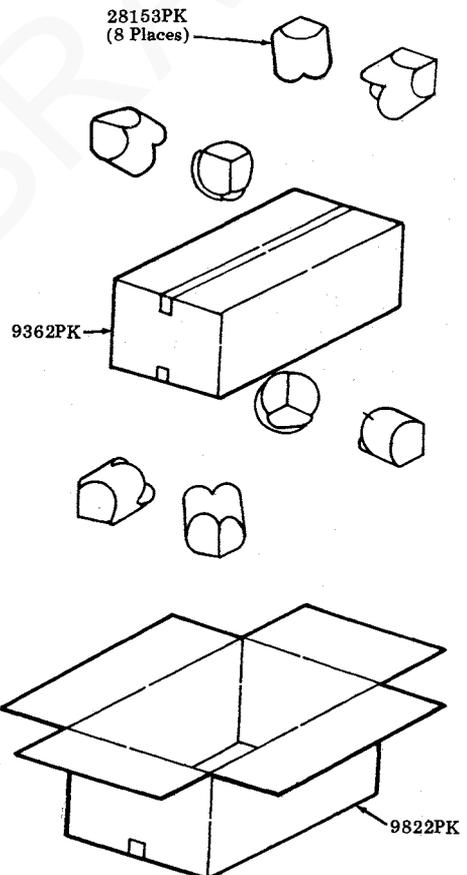
Fig. 55

40DL291 DISPLAY LOGIC

Packing Procedure for 40DL291 Display Logic

Step 1. Form 9504PK carton. Close and seal bottom flaps with glue or 2 inch minimum width sealing tape.

Step 2. Form detail 28141PK and position in carton as illustrated in Fig. 56.

Step 3. Place unit in 23456PK plastic bag. Position unit in carton. Let cable extend outside of carton.

Step 4. Form 28142PK detail and position in carton on top of unit as illustrated in Fig. 56. Position cable in void formed by detail.

Step 5. Close top flaps of carton and seal as outlined in Step 1.

Step 6. Form 10188PK shipping container. Form bottom flaps outward and place over inner container as illustrated in Fig. 56.

Step 7. Position a 21690PK corner detail on each of the four corners of the inner container as illustrated in Fig. 57.

Step 8. Close and seal top flaps as outlined in Step 1. Invert shipping container and contents.

Step 9. Position a 21690PK corner detail on each of the four corners of the inner container as illustrated in Fig. 57.

Step 10. Close and seal bottom flaps as outlined in Step 1. Invert shipping container and contents.



28142PK

*Note:* 23456PK plastic bag deleted for clarity.

28141PK

9504PK

10188PK

9504PK

21690PK
(Typical 8 Places)
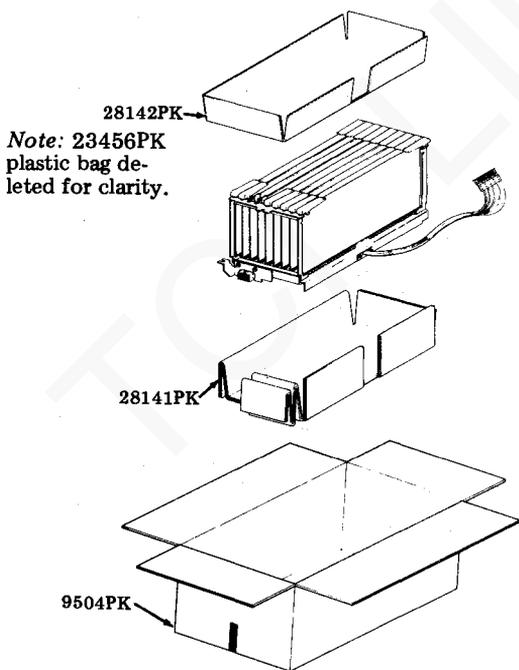
Fig. 56
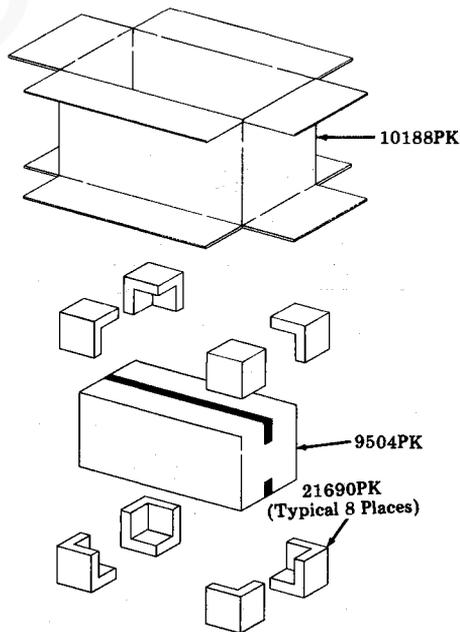
Fig. 57

## 40C101, 40C102, 40C201, 40C202, AND 40C204 CONTROLLERS

Packing Procedure for Controllers

Step    1.    Form a 9039PK carton. Fold bottom flaps closed and seal center seam with 21719PK tape. The tape should extend approximately three inches down the ends at the center seam.

Step    2.    Form a 28144PK detail. Position flap over top of connectors on end of controller and secure at ends with strips of 21632PK tape. See Fig. 58.

28146PK

28145PK

28145PK

Secure flap on detail with
21632PK tape as shown.

28144PK

9039PK
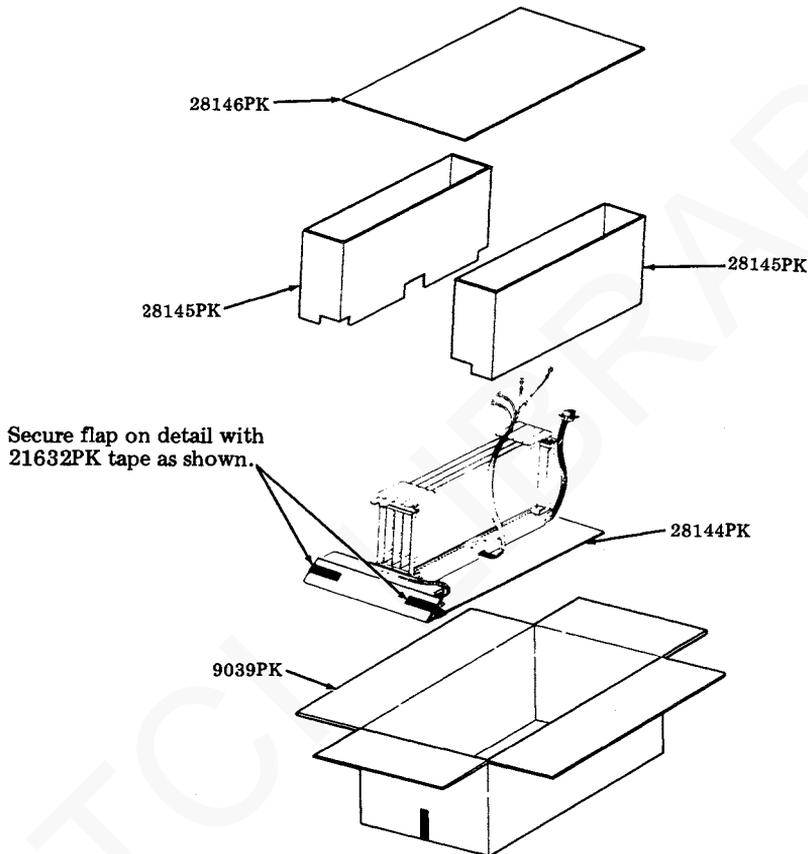
Fig. 58

Step    3.    Place unit and detail in carton.

Step    4.    Form two 28145PK details and position on either side of unit as illustrated in Fig. 58. The cable with connector must be positioned in the void formed by the 28145PK detail. See Fig. 58.

Step    5.    Place a 28146PK pad on top of the unit and details.

Step    6.    Close and seal top flaps of carton as indicated in Step 2.

Step 7. Form a 9640PK carton and with bottom of flaps outward place carton around prepacked unit. See Fig. 59.

9640PK

21690PK
(Typical 4 Places)

9039PK

21690PK
(Typical 4 Places)
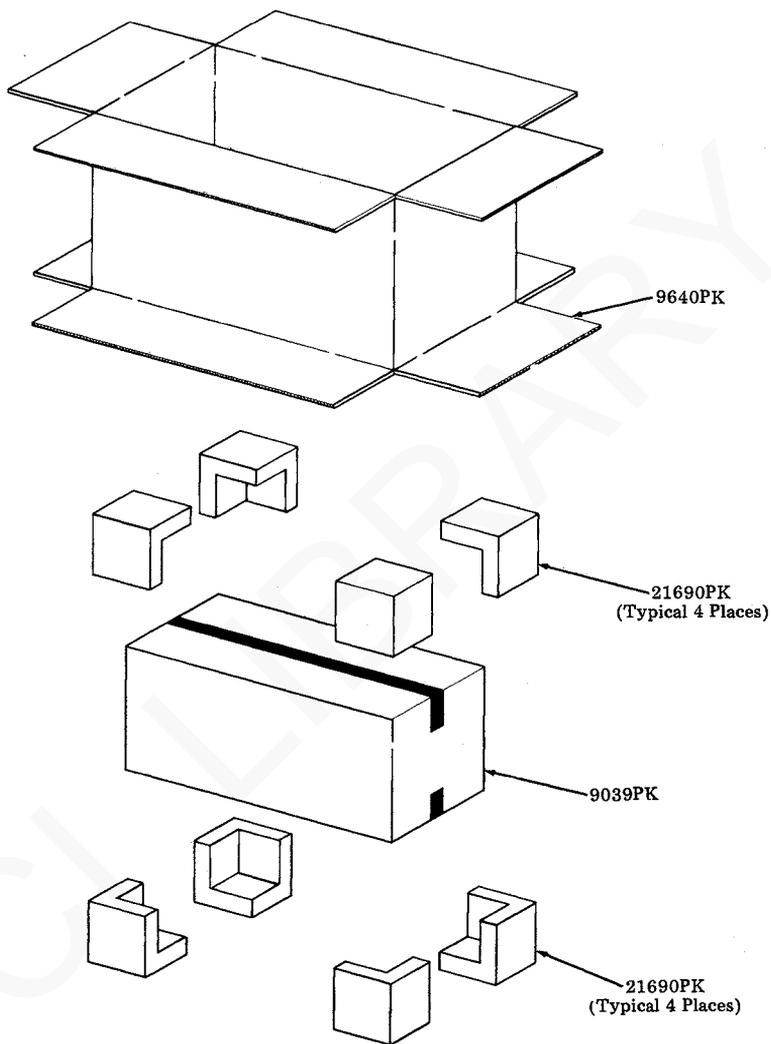
Fig. 59

Step 8. Place a 21690PK plastic corner on each of the four corners of the inner carton. See Fig. 59.

Step 9. Close and seal top flaps of carton as outlined in Step 2. Invert carton and contents.

Step 10. Place a 21690PK plastic corner on each of the four corners of the inner carton. See Fig. 59.

Step 11. Close and seal bottom flaps of carton as outlined in Step 2. Invert carton and contents.

40C103 CONTROLLER

<u>Packing Procedure for Controller</u>

Step 1. Form a 8759PK carton. Close and seal <u>top</u> flaps with 21719PK tape. Apply the tape to the center seam and extend three inches down the ends of the carton.

Step 2. Place two 28147PK details in carton as illustrated in Fig. 60.

Step 3. Place unit in a 23465PK plastic bag.

Step 4. <u>Invert unit</u> and place in carton so handles at top of unit fit in the cutout in the details. (See Fig. 60.)

Step 5. Form a 28148PK detail and position around end of unit as illustrated in Fig. 60.

Step 6. Form a second 28148PK detail and position around other end of unit as illustrated in Fig. 60.

Step 7. Close and seal bottom flaps of carton as outlined in Step 1.

*Note:* 23465PK plastic bag deleted for clarity.

28148PK

28148PK

28147PK

28147PK

TOP OF UNIT

8759PK
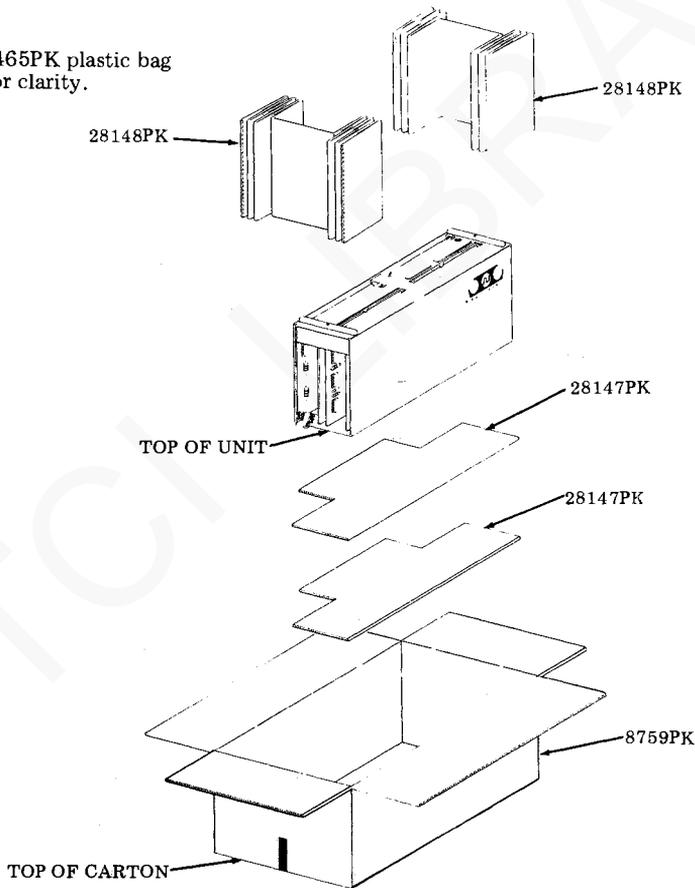
TOP OF CARTON

Fig. 60

Step 8. Form a 9136PK carton. Fold <u>top</u> flaps outward and place around packed unit. See Fig. 61.

Step 9. Place a 21690PK plastic detail on each of the four corners of the inner carton. See Fig. 61.

Step 10. Close and seal bottom of flaps of carton as outlined in Step 1. Invert carton.

Step 11. Place a 21690PK plastic detail on each of the four corners of the inner carton. See Fig. 61.

Step 12. Close top flaps of carton and seal as outlined in Step 1.



**21690PK**
(Typical 4 Places)

**9136PK**

**8759PK**

**21690PK**
(Typical 4 Places)
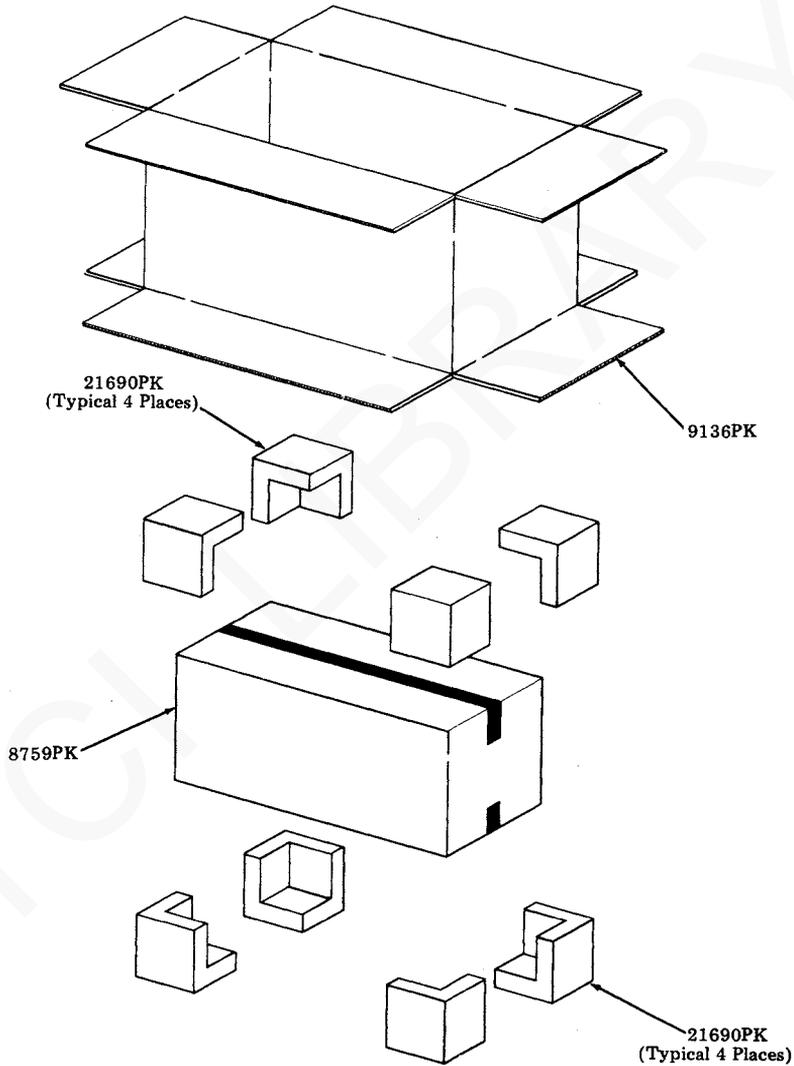
Fig. 61

## 40C400, 40C401, 40C402, AND 40C403 CONTROLLERS

Packing Procedure for Controller

Step 1. Mount unit frame to a 28219PK plywood pallet with four 71676RM screws, four 2669 lock-washers and four 72295RM washers as illustrated in Fig. 62. The large hole in the pallet must be in line with the hole used to mount the PSU in the base.

Step 2. Open cover of unit. Position a 28260PK pad on back surface of circuit cards. Close cover and secure in place. (See Fig. 62.)

Step 3. Form a 9713PK carton. Close and seal bottom flaps with a strip of 21719PK tape. The tape should be applied to the center seam and extend approximately three inches down the ends of the carton.

Step 4. Coil unit cable and secure with a 50136PK twist tie. Place palletized unit in carton. (See Fig. 62.)

Step 5. Form a 28220PK liner and place in carton around unit. (See Fig. 62.)

Step 6. Position cable at back of unit. Fill void space with 21298PK tissue to keep cable from shifting. (See Fig. 62.)

Step 7. Close and seal top flaps of carton as outlined in Step 3.
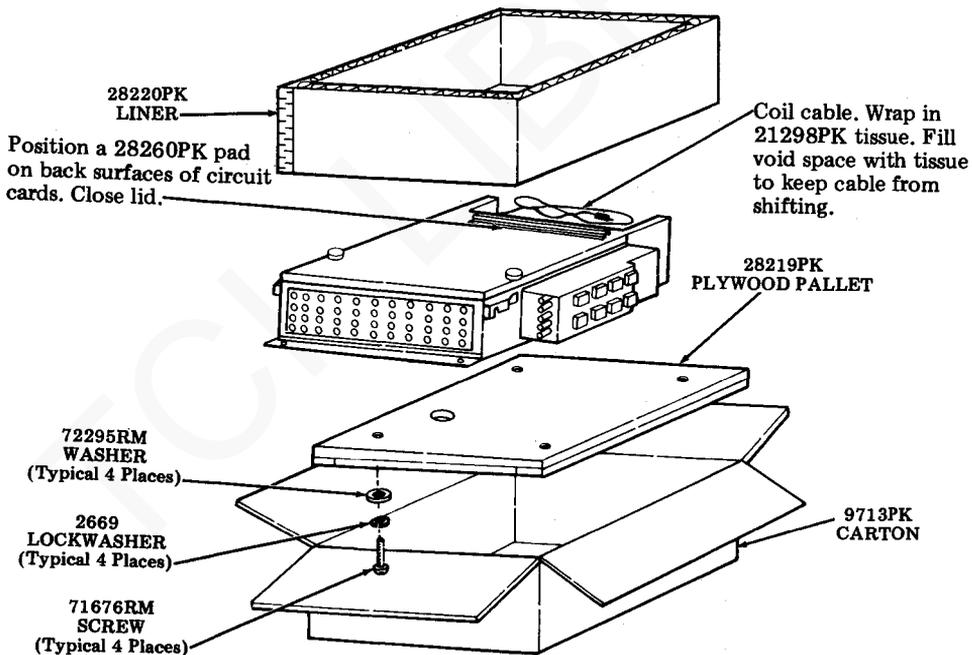
**Fig. 62**

Step 8. Form a 10392PK carton. Fold bottom flaps outward and place around sealed carton. (See Fig. 63.)

Step 9. Position a 27442PK plastic corner on each of the four corners of the inner carton.

Step 10. Close top flaps and seal center seam with 21719PK tape as outlined in Step 3. Carefully invert carton and contents.

Step 11. Position a 27442PK plastic corner on each of the four corners of the inner carton.

Step 12. Close bottom flaps and seal center seam with 21719PK tape as outlined in Step 3. Carefully invert carton and contents.
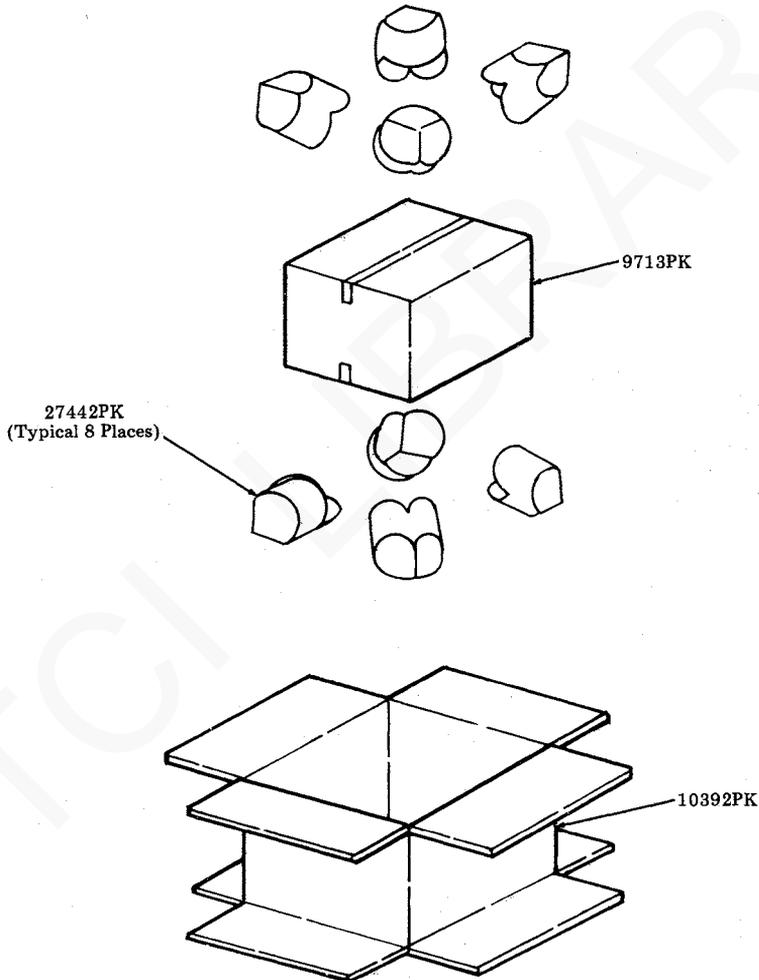
Fig. 63

## 40C430, 40C431, AND 40C432 CONTROLLERS

Packing Procedure for Controller

Step 1. Position a 28235PK plywood detail against each end of controller. Securely tape details to unit with a band of 21632PK tape. See Fig. 64. Drape cables over top of unit.

Step 2. Form a 10392PK carton. Close and seal bottom of flaps with a strip of 21719PK tape.

Step 3. Position a 27442PK plastic corner in each of the four bottom corners of the carton. See Fig. 64.

Step 4. Form a 9713PK carton. Close and seal bottom flaps with a strip of 21719PK tape.

Step 5. Carefully place the 9713PK carton in the four plastic corners positioned in the 10392PK carton. (See Fig. 64.)

Step 6. Place a 28236PK plywood detail in the 9713PK carton. (See Fig. 64.)

Step 7. Grasp the front and rear of the controller and place in carton. (See Fig. 64.)

Step 8. Wrap cables in 21298PK tissue paper. Fill void space with tissue.

Step 9. Position a 28236PK plywood detail in the carton.

Step 10. Close and seal top flaps of the 9713PK carton with a strip of 21719PK tape.

Step 11. Position a 27442PK plastic corner on each of the four corners of the inner carton.

Step 12. Close and seal top flaps of outer carton with a strip of 21719PK tape.
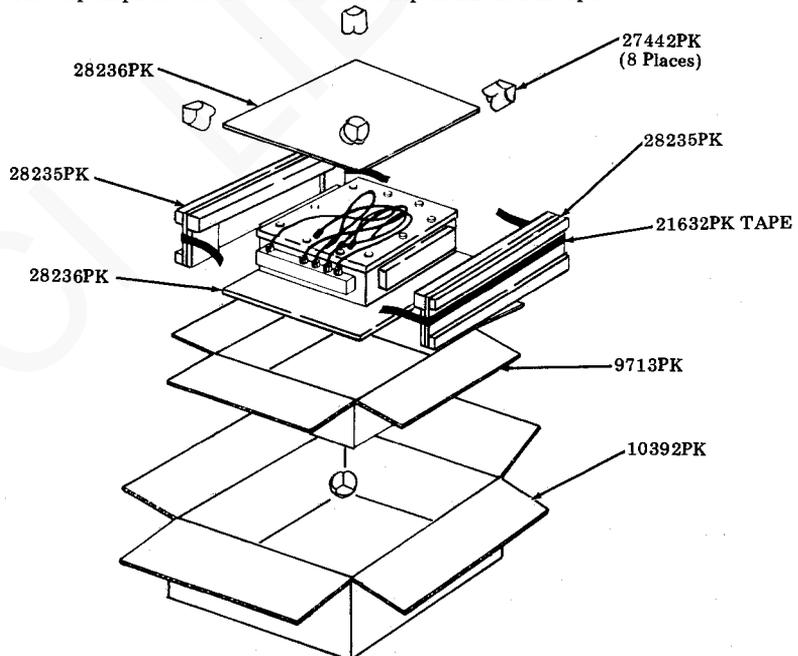


Fig. 64

## 40C303 CONTROLLER

Packing procedure for Controller

*Caution:* *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.*



346392
STATIC
DISCHARGE
STRAP

CONNECT
TO
GROUND
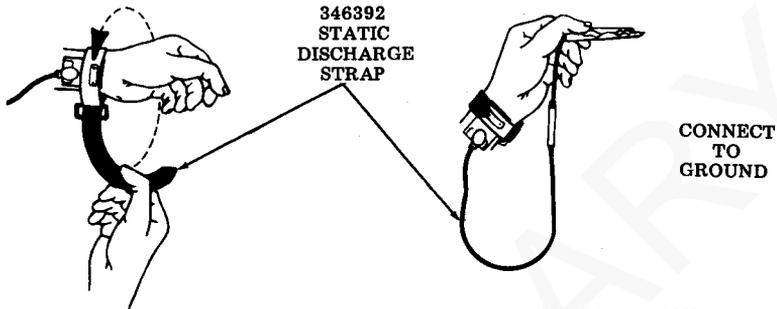
18003PK CARTON

*Note:* 79157RM antistatic
plastic bag deleted for
clarity.

CONTROLLER

24 inches of 27952PK air cap
rolled up (two places).
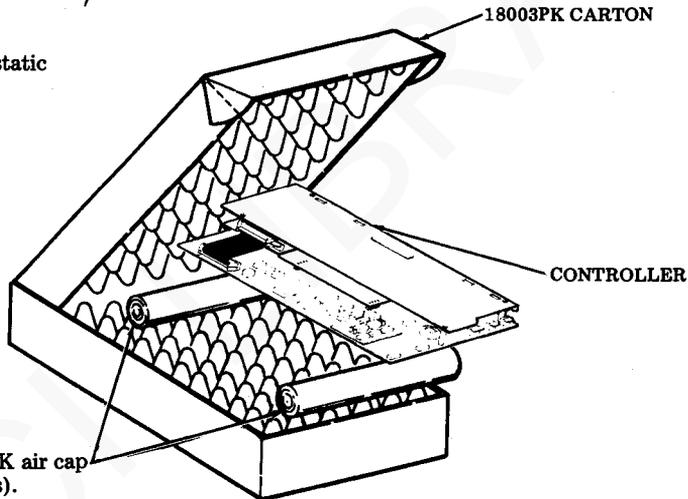
Fig. 65

Step 1.    Place controller in a 79157RM antistatic plastic bag.

Step 2.    Open one 18003PK carton with inserts.

Step 3.    Place the integrated controller into the carton on top of the foam, approximately centrally located. (See Fig. 65.)

Step 4.    Cut two 24 inch lengths of 27952PK air cap. Roll each length into a cylinder, position at either end of controller, and close carton.

Step 5.    Seal the bottom front flap with a strip of 21720PK tape.

## 40C304 AND 40C305 CONTROLLERS

Packing Procedure for Controller

Step 1. Mount unit frame to a 28219PK plywood pallet with four 71676RM screws, four 2669 lockwashers and four 72295RM washers as illustrated in Fig. 55. The large hole in the pallet must be in line with the hole used to mount the PSU in the base. (See Fig. 66.)

Step 2. After unit is completed, position a 28307PK plywood detail on top of the three circuit card grouping. Form and position a 28289PK corrugated detail over circuit cards and plywood detail as illustrated in Fig. 67.

Step 3. Tightly secure the corrugated detail in place with four strips of 21632PK tape tightly applied over top of detail and extending down to bottom of unit at front and rear of unit. Pull tape firmly for good adhesion. (See Fig. 67.)

Step 4. At power supply side of unit, remove front and rear screws holding unit to pallet. Loosen remaining two screws, two turns.

Step 5. Separate unit and pallet on power supply side by wedging a 28308PK plywood detail between unit and pallet.

Step 6. Tightly secure a 28308PK plywood detail to top of power supply with three double bands of 21632PK tape, applied over top of plywood detail and around front, bottom, and rear of unit. Tape should be in approximate position on plywood detail as shown in Fig. 67.

Step 7. Remove 28308PK detail from between unit and pallet. Replace screw, washer, and lockwasher assemblies previously removed. Tighten all screws mounting unit to pallet.

Step 8. Form a 9713PK carton. Close and seal bottom flaps with a strip of 21719PK tape. The tape should be applied to the center seam and extend approximately three inches down the ends of the carton.

Step 9. Coil unit cable (when equipped) and secure to side of unit with 21632PK tape. Place palletized unit in carton. (See Fig. 66.)

Step 10. Form a 28220PK liner and place in carton around unit. (See Fig. 66.)

Note: Special Operations Step 12, 13, and 14 are for 40C305 controller only.

Step 11. Coil the following cables in a circle approximately 14 inches to 15 inches in diameter: two 406073, one 406074, and one 406075.

Step 12. Tape each cable around the connectors with one strip of 21632PK tape.

Step 13. Place cables between controller and 28220PK liner on side adjacent to fans. (See Fig. 66.)

Step 14. Close and seal top flaps of carton as outlined in Step 8.

40C305
CABLES

28220PK LINER

Coil cable (when equipped)
and secure to side of
cabinet with 21632PK tape.

28219PK
PLYWOOD PALLET

72295RM WASHER
(4 Places)

2669
LOCKWASHER
(4 Places)

71676RM SCREW
(4 Places)

9713PK
CARTON

Fig. 66

28289PK
CORRUGATED DETAIL

28307PK
PLYWOOD DETAIL

Secure 28289PK detail in place
with four strips of 21632PK tape.
(See Steps 2 and 3.)

28308PK
PLYWOOD DETAIL

FRONT OF UNIT

Secure 28308PK detail with three double
bands of 21632PK tape. (See Step 6.)

Fig. 67

Step 15.   Form a 10392PK carton. Fold bottom flaps outward and place around sealed carton. (See Fig. 68.)

Step 16.   Position a 27442PK plastic corner on each of the four corners of the inner carton. (See Fig. 68.)

Step 17.   Close top flaps and seal center seam with 21719PK tape as outlined in Step 8. Carefully invert carton and contents.

Step 18.   Position a 27442PK plastic corner on each of the four corners of the inner carton. (See Fig. 68.)

Step 19.   Close bottom flaps and seal center seam with 21719PK tape as outlined in Step 8. Carefully invert carton and contents.
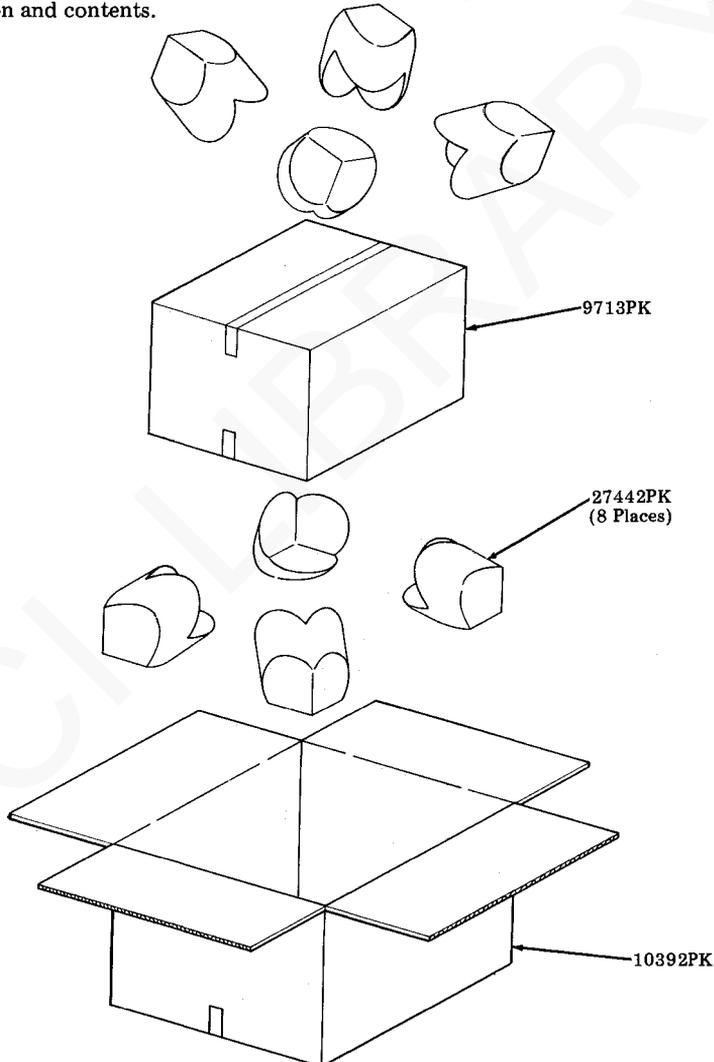
Fig. 68

## 40C434, 40C435, AND 40C436 CONTROLLERS

Packing Procedure for Controller

Step 1. Position a 28293PK Detail A plywood detail against end of controller.

Step 2. Position a 28293PK Detail B against opposite end of controller. See Fig. 69. Drape cables over top of unit.

Step 3. Form a 10392PK carton. Close and seal bottom of flaps with a strip of 21719PK tape.

Step 4. Position a 27442PK plastic corner in each of the four bottom corners of the carton. See Fig. 69.

Step 5. Form a 9713PK carton. Close and seal bottom flaps with a strip of 21719PK tape.

Step 6. Carefully place the 9713PK carton in the four plastic corners positioned in the 10392PK carton. (See Fig. 69.)

Step 7. Place a 28236PK plywood detail in the 9713PK carton (See Fig. 69.)

Step 8. Grasp the front and rear of the controller and place in carton. (See Fig. 69.)

Step 9. Wrap cables in 21298PK tissue paper. Fill void space with tissue.

Step 10. Position a 28236PK plywood detail in the carton.

Step 11. Close and seal top flaps of the 9713PK carton with a strip of 21719PK tape.

Step 12. Position a 27442PK plastic corner on each of the four corners of the inner carton.

Step 13. Close and seal top flaps of outer carton with a strip of 21719PK tape.
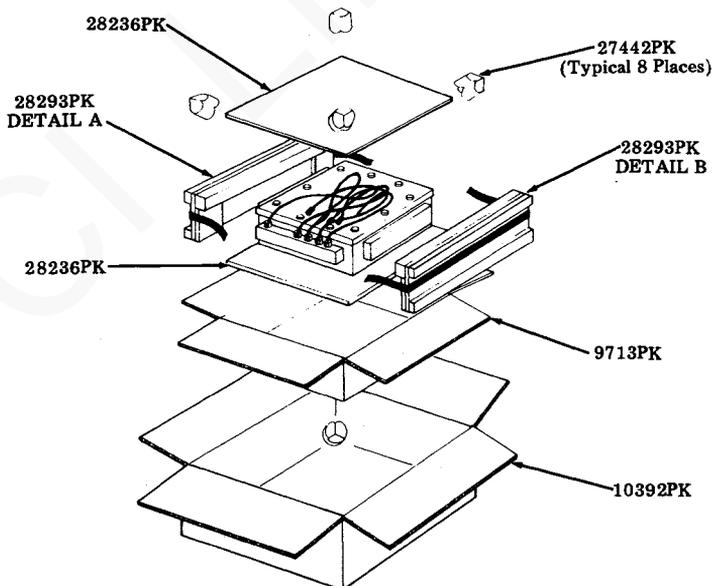


Fig. 69

401200 COPY HOLDER

Packing Procedure for Copy Holder

Step  1.  Form 8814PK shipping container. Close and seal bottom flaps with glue or sealing tape.

Step  2.  Insert copy holder in container, close and seal top flaps with glue or sealing tape.
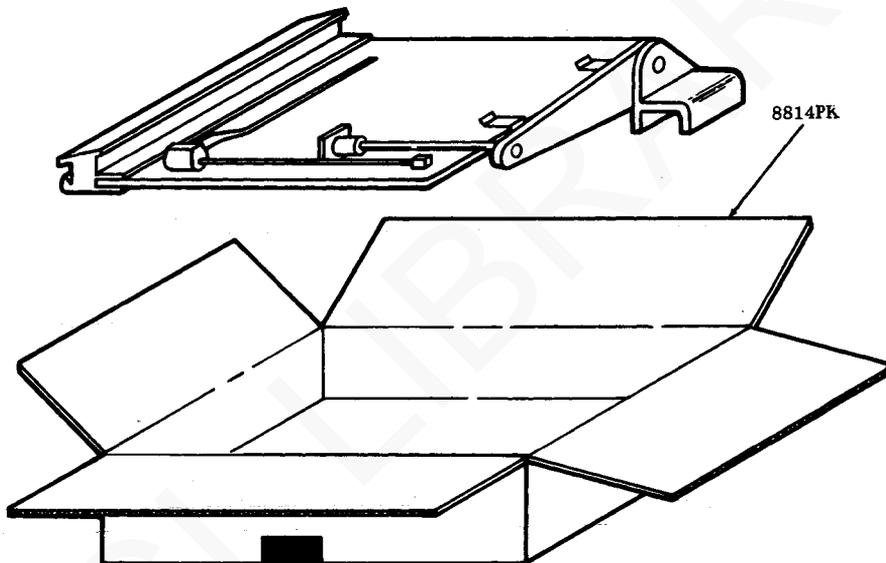


Fig. 70

## 40PWU101 AND 40PWU102 PAPER WINDERS

Packing Procedure for Paper Winders

Step 1. Place loose parts in 652472RM cloth bag. Close bag and tie to hole in base plate as illustrated in Fig. 71.

Step 2. Form 8563PK folder. Wrap base plate in tissue paper and place in folder.

Step 3. Fold flaps of folder closed and seal with glue or sealing tape.

Step 4. Form 9644PK shipping container. Close and seal bottom flaps with glue or sealing tape.

Step 5. Place folder in container. Form 28193PK detail and place in container as illustrated in Fig. 71.

Step 6. Remove paper spindle from unit. Place unit in a 23457PK plastic bag. Let cable extend outside of bag. Position unit in cutouts in detail as shown.

Step 7. Form 28192PK detail. Position reel in detail. Secure flaps of detail in position (as shown in Fig. 71) with four strips of reinforced pressure sensitive tape.

Step 8. Position prepacked reel in container as illustrated.

Step 9. Coil line cord in void space formed by packing detail and the carton.

Step 10. Secure the top of the shipping container (9644PK) with reinforced pressure sensitive tape.
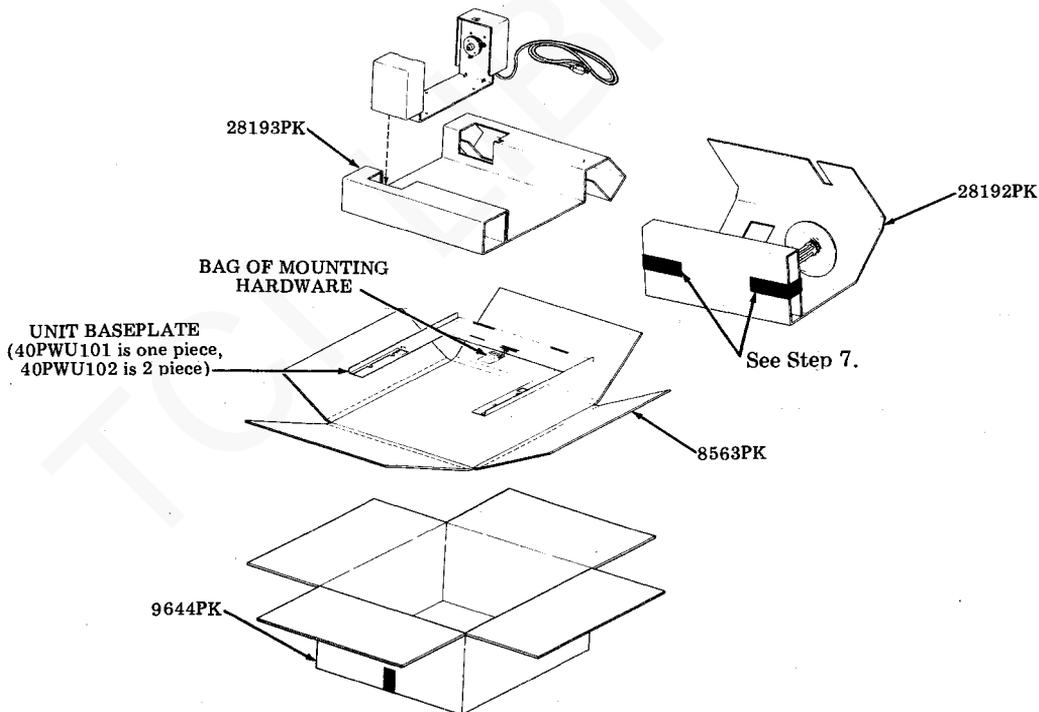


Fig. 71

4. WORKING STATION

4.01 The Working Station (WS) plan should be considered in returning DATASPEED 40 terminal equipment which is functional to Western Electric. Qualified apparatus submitted via the WS plan will result in reduced shop repair costs.

4.02 Criteria for qualification for Working Station (WS) processing are listed below. A Returned Material Tag (see Fig. 72) affixed to each station/terminal/component should be completed to designate (WS) plan if appropriate.

CRITERIA FOR QUALIFICATION

4.03 Apparatus should be completely operable such that it is functionally acceptable as is for reinstallation.

4.04 Apparatus should have had normal routine maintenance throughout service.

4.05 Apparatus returned to service center should meet appearance standards (required minor cleanup permissable).

4.06 Apparatus returned to service center should be undamaged.

4.07 Apparatus returned to service center should have a Returned Material Tag designating Working Station (WS) affixed to each component.

4.08 A material list (or service order or station/apparatus disconnect order) identifying the Working Station components shall be included with the returned equipment.

4.09 Apparatus which is not or cannot be broken down to defined M-List items without adding components or rework does not qualify as a candidate for Working Station processing. Examples of nonqualifying candidates for Working Station processing are as follows: Damaged apparatus, apparatus with missing components or parts, and apparatus modified such that extensive rework is necessary to restore it to conform to defined USOC M-List items as stocked at the Service Centers in repaired class "C" stock.

```
┌─────────────────────────────────────────────┐
│           RETURNED MATERIAL TAG               │
│          Data Sets And Terminals              │
│             CIMS/LV TRACKING                  │
│                                               │
│  Ship To: _____    │
│           _____    │
│           _____    │
│                                               │
│  Date:    _____    │
│                                               │
│  Tag # :_____              │
│                                               │
│           _____            │
│                                               │
│  Returned From: _____     │
│                         (Location)            │
│                                               │
│  Technician's Name: _____     │
│                                               │
│  Supervisor: _____     │
│                                               │
│      Tel. # :_____               │
│                                               │
│  Area:    ____  ____  ____  ____  ____         │
│                                               │
│  Quantity: _____             │
│                                               │
│  Equipment Type: _____     │
│                     (Include Complete List # )│
│                                               │
│  Reason For Return                            │
│            □  │ Service Order Disconnect       │
│      ┌   □  │ Surplus - Good                 │
│   Good│  □  │ Job Cancelled                  │
│      └   □  │ WS (Working Station)           │
│                                               │
│         □  │ Defective On Arrival            │
│   Def│   □  │ Failed In Service              │
│   ective□  │ Pretest Failure                │
│         □  │ Surplus - Defective Or Unknown  │
│                                               │
│  Service Order # _____     │
│                                               │
│  USSO # :_____              │
│                                               │
│  Ckt # :_____              │
│                                               │
└─────────────────────────────────────────────┘
```

Fig. 72—Returned Material Tag (Obtain Locally)

TELETYPEWRITER COMPATIBLE "DATASPEED*" 40/2

WIRING DIAGRAMS

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Prepared for American Telephone and Telegraph Company by Teletype Corporation

www.telephonecollectors.info

1. GENERAL

1.01 This section provides wiring diagrams and cable components referred to in Section 582-200-502.

1.02 The reasons for reissuing this section are:

(1) To add information on wiring diagrams 40P102, 40P153, 40P154, 40P201, 40P202, 40P203, and 40P253 Printers and 401640 Printer Cable Assembly.

(2) To add wiring information on late design 40PSU101 Power Supply.

(3) To correct wiring diagrams on KDP Arrangements.

Since this reissue is a general revision, no revision arrows have been used to denote significant changes.

1.03 The KD and KDP drawings give the complete wiring between the various components. The components are shown as blocks and are labeled accordingly. If it becomes necessary to check the wiring of one of the above listed components, the page number for that drawing will be given in the appropriate block on the station drawing on which it appears. Drawings of the wired frames for the controller(s) and display logic are not given.

1.04 Where possible, small notes indicating voltage levels have been added to aid in trouble locating. The location of any plug or cable can be attained by referring to Section 582-200-702.

*Danger: Whenever work on the monitor is to be done, safety glasses should be worn. Also the high voltage lead to the CRT should never be probed.*

1.05 The wiring of the data set to the phone line (and to the telephone set, if applicable) is not given in this section. Refer to the applicable data set 9-digit sections.

| 103G | — | 591-026-200 |
|------|---|-------------|
| 103J | — | 591-039-200 |
| 103JR | — | 591-044-200 |
| 108F | — | 591-042-100 |
| 108G | — | 591-042-100 |
| 113A | — | 591-033-200 |
| 113C | — | 591-041-200 |
| 113CR | — | 591-046-200 |
| 113D | — | 591-040-200 |
| 113DR | — | 591-047-200 |
| 201C | — | 592-029-200 |
| 201CR | — | 592-036-200 |
| 202C | — | 592-015-200 |
| 202R | — | 592-025-200 |
| 202S | — | 592-028-200 |
| 202SR | — | 592-037-200 |
| 202T | — | 592-031-200 |
| 208A | — | 592-027-200 |
| 208B | — | 592-030-200 |
| 208BR | — | 592-038-200 |
| 209A | — | 592-032-200 |
| 212A | — | 592-034-200 |
| 212AR | — | 592-039-200 |

829 DATA AUXILIARY SET — 598-082-200

1.06 The wiring of ROP set (40C103 type controller) is in Section 582-200-102 references. The integrated ROP wiring (40C303 type controller) is in Section 582-200-404.

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

## 2. WIRING DIAGRAMS



Fig. 1—ROP Cabinet

Fig. 2—KDP Set — Adjacent Printer

Fig. 2 (Cont)

**Fig. 3—KDP Set — Printer Under Monitor**

Fig. 3 (Cont)

Fig. 4—Printer Cabinets

J1

INFORMATION TO DEVICE (M) — 1 (BR) B8 2

INFORMATION TO DEVICE (I) — 2 (O) B7 1

INFORMATION TO CONTROLLER (M) — 3 (R) B6 4

INFORMATION TO CONTROLLER (I) — 6 (BL) B5 3

* SPARE — 4 (Y) B3

* SPARE — 5 (W-G) B4

VSS (+12 VDC) — 7 (P) B1

VDD (-12 VDC) — 8 (W) B2

CHASSIS GND. — 9 (G)

A12 — VSS (+12VDC)

A11 — +12V / -12V — ALARM ON / ALARM OFF

A10 — +12V / -12V — LOOPBACK ENABLE ON / LOOPBACK ENABLE OFF

A9 — +10V / -12V — LOOPBACK TEST ON / LOOPBACK TEST OFF

A8 — 2 HZ CLOCK — +12V / -12V

A7 — VDD (-12 VDC)

0 VDC

J1 CONNECTOR (401149)

(VIEWED FROM TERMINAL SIDE)

1 4 7
2 5 8
3 6 9
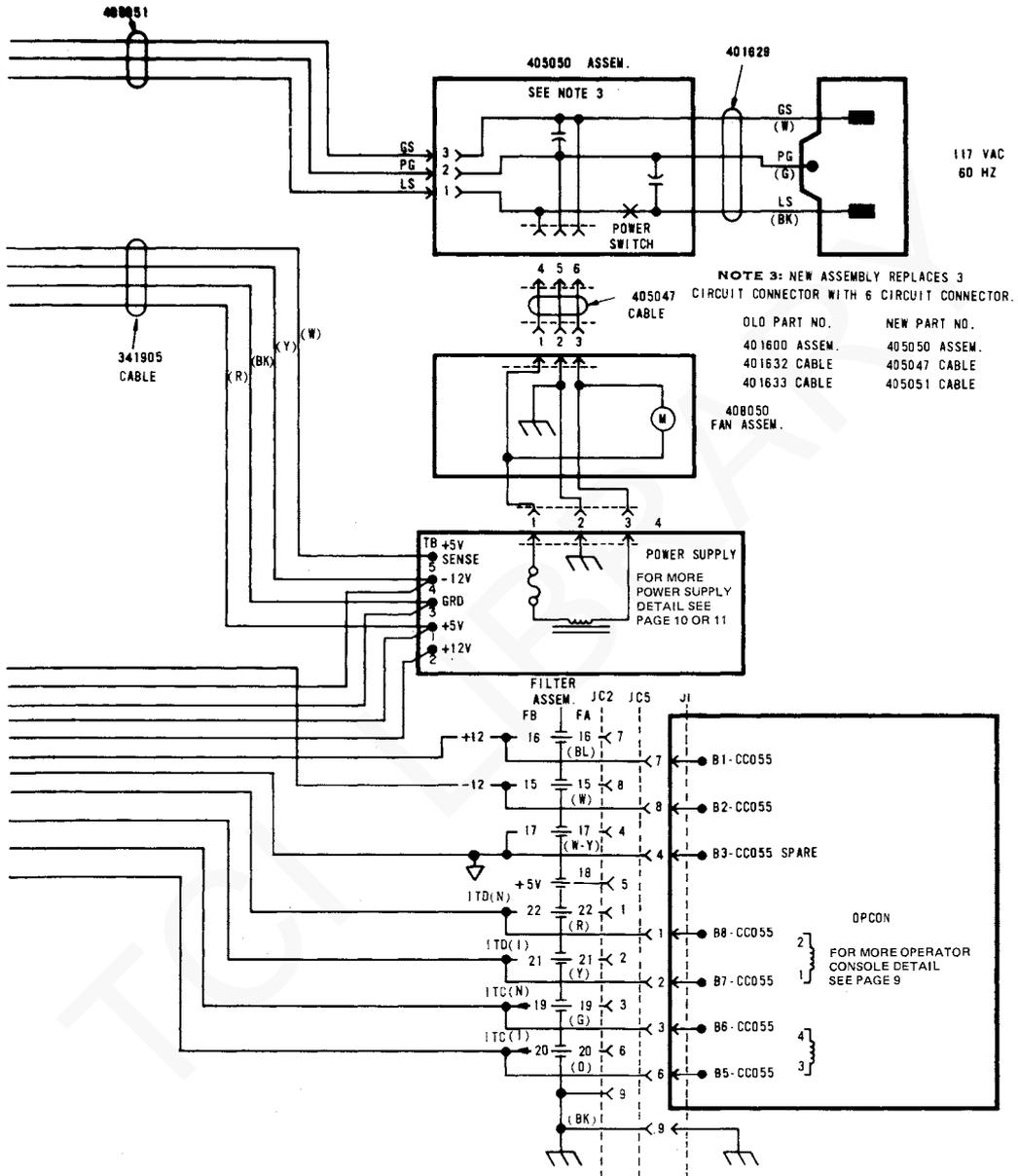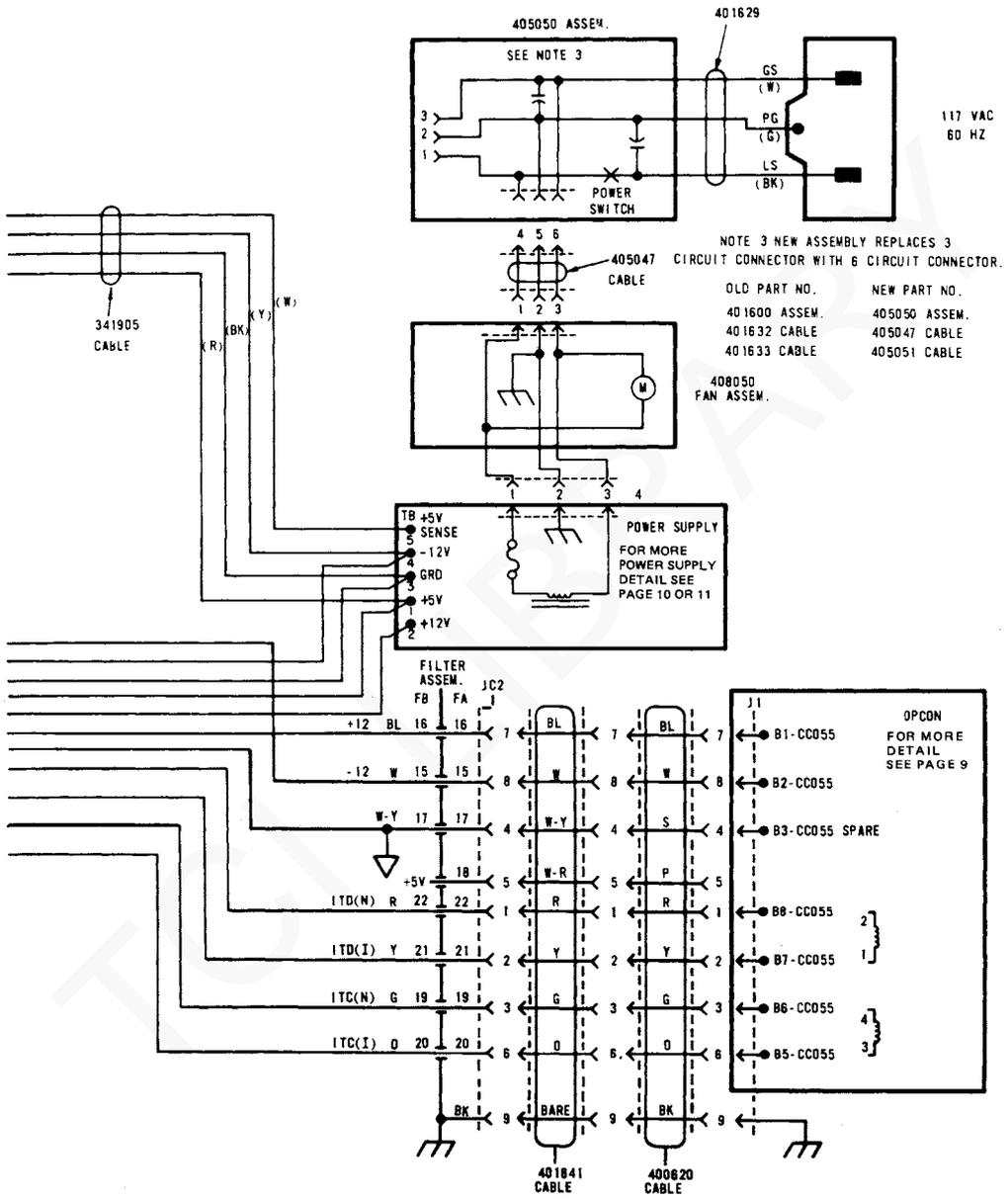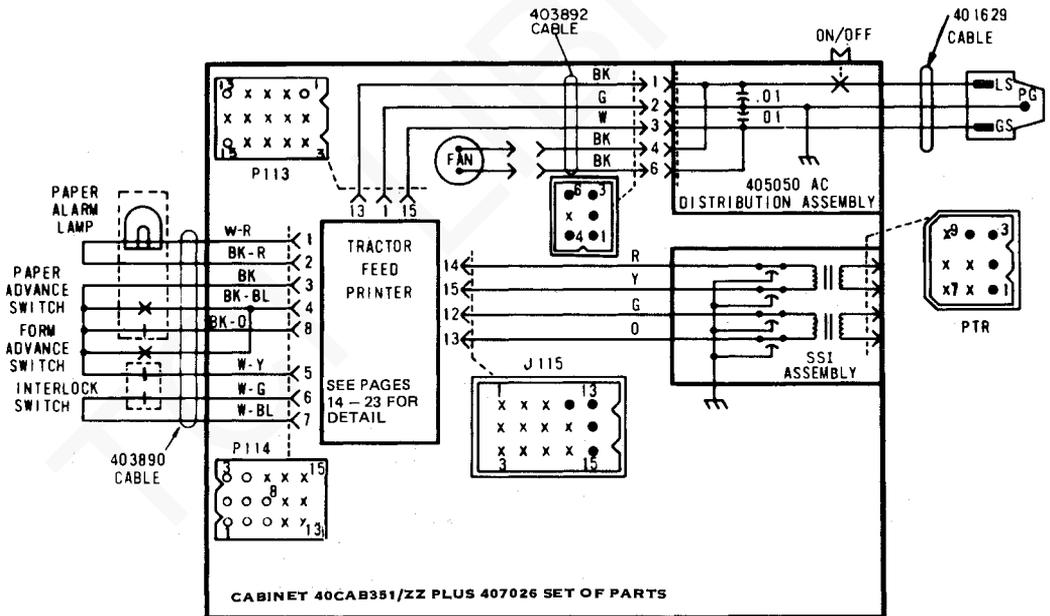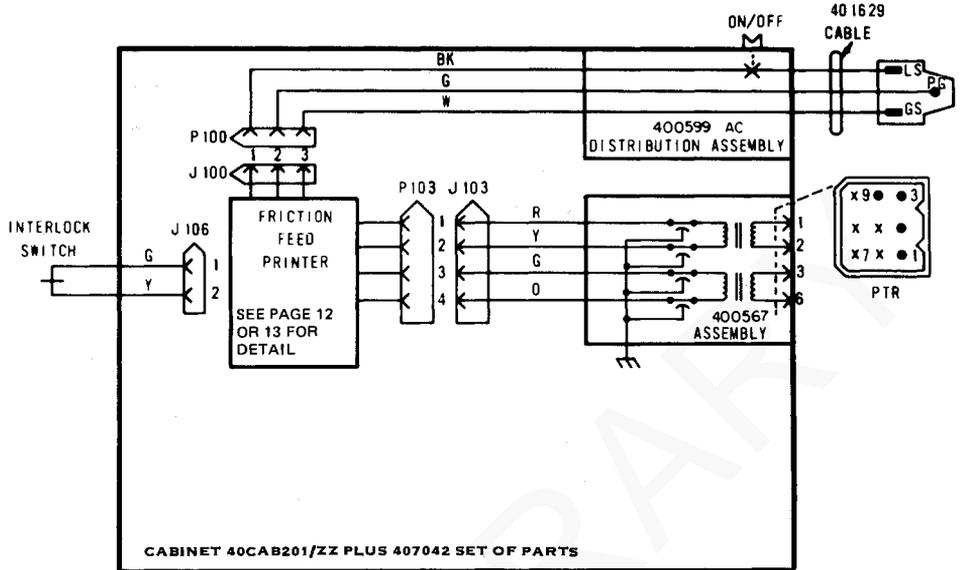
LEGEND

o FEMALE PIN

● MALE PIN

X NO PIN PRESENT

A6 — +12V / -12V — SPACE / MARK

A5 — 112 KHZ CLOCK — +12V / -12V

A4 — +12V / -12V — SPACE / MARK

A3 — 56 KHZ CLOCK — +12V / -12V

A2 — 56 KHZ CLOCK — +12V / -12V

A1 — VCC (-7 VDC)

SEE NOTE

410055* OR 410075*

CONSOLE LOGIC

ON KEYBOARD SIDE FRAME

* PRESENT ONLY ON EARLY UNITS.

*Note:* Connector A1 is present only on early units.

Fig. 5—40K101/CAK Operator Console
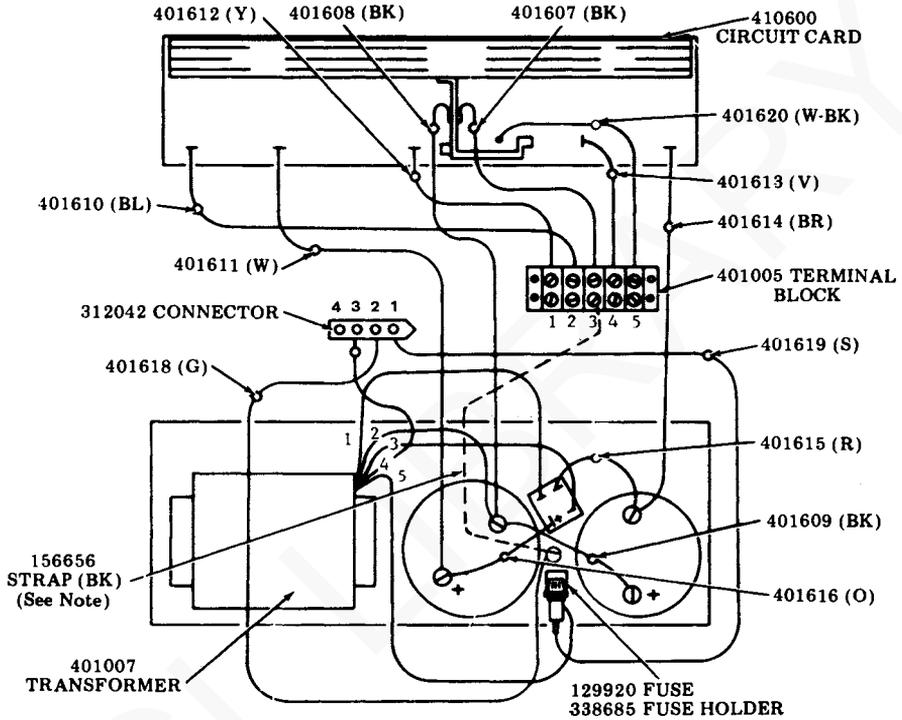
Fig. 6—40PSU101 Power Supply (Early Design)

410600 CIRCUIT CARD

408078 (BK)

401620 (W-BK)

408976 (Y)

401613 (V)

401614 (BR)

401611 (W)

401005 TERMINAL BLOCK

312042 CONNECTOR

4 3 2 1

408079 (BK)

401619 (S)

401618 (G)

401615 (R)

1 2 3 4 5

401609 (BK)

401616 (O)

129920 FUSE
338685 FUSE HOLDER

401007 TRANSFORMER
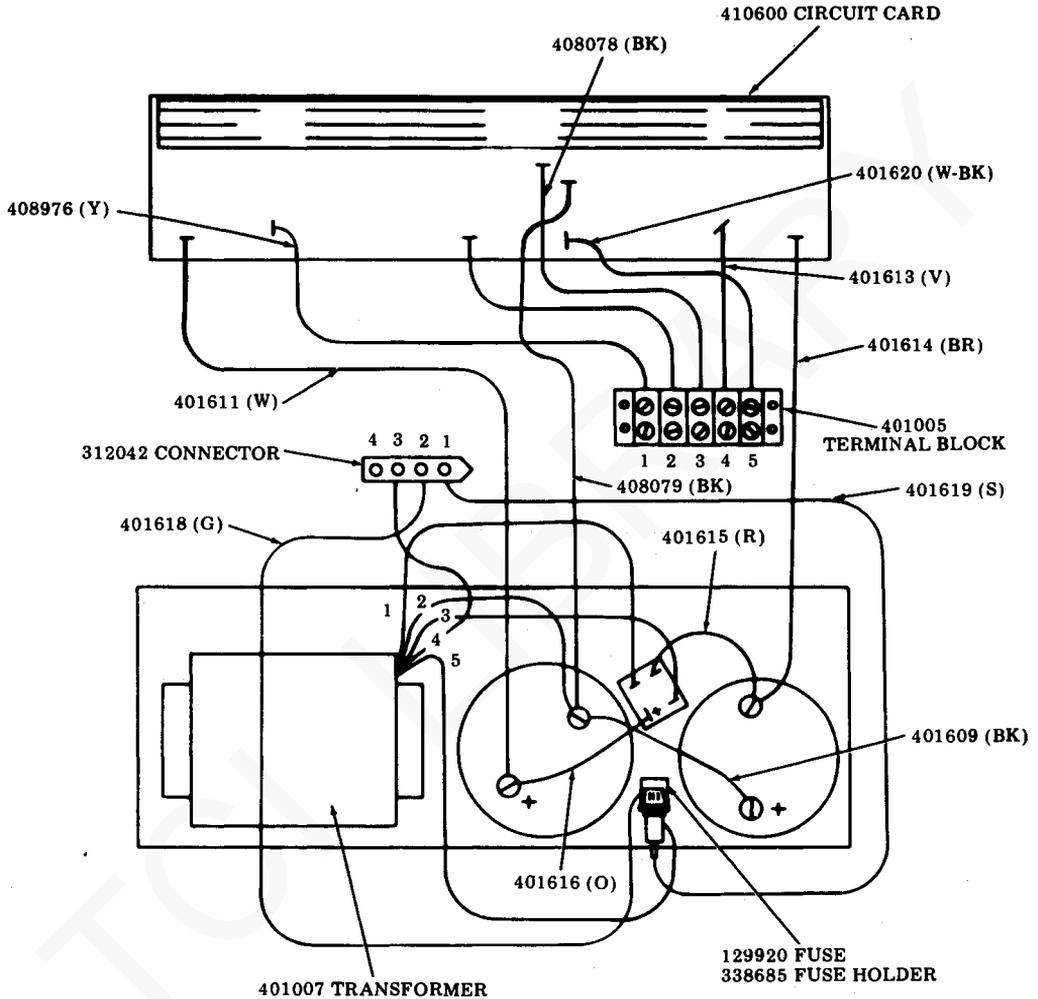
Fig. 6—40PSU101 Power Supply (Late Design) (Cont)
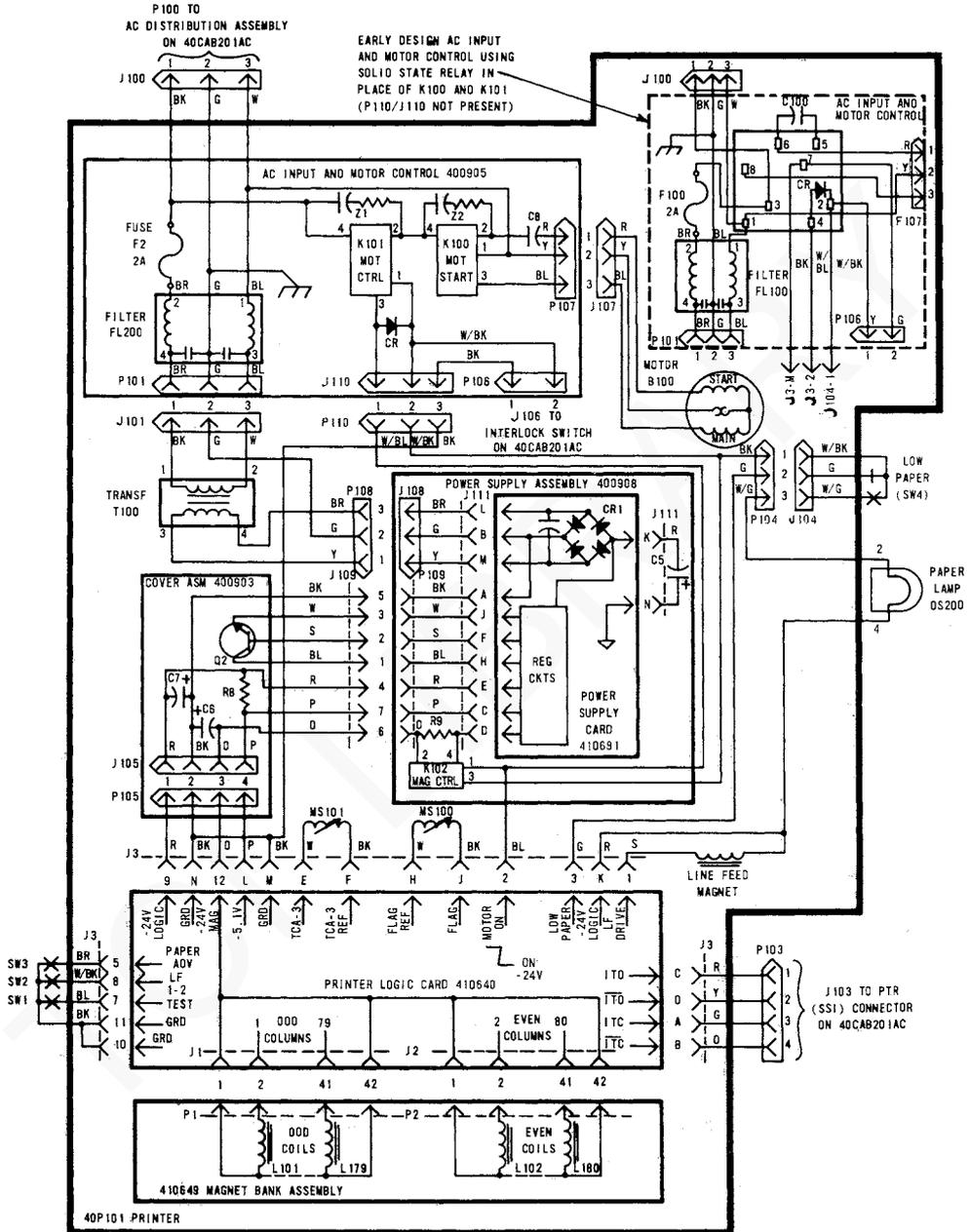
Fig. 7—40P101/ZZ Friction Feed Printer
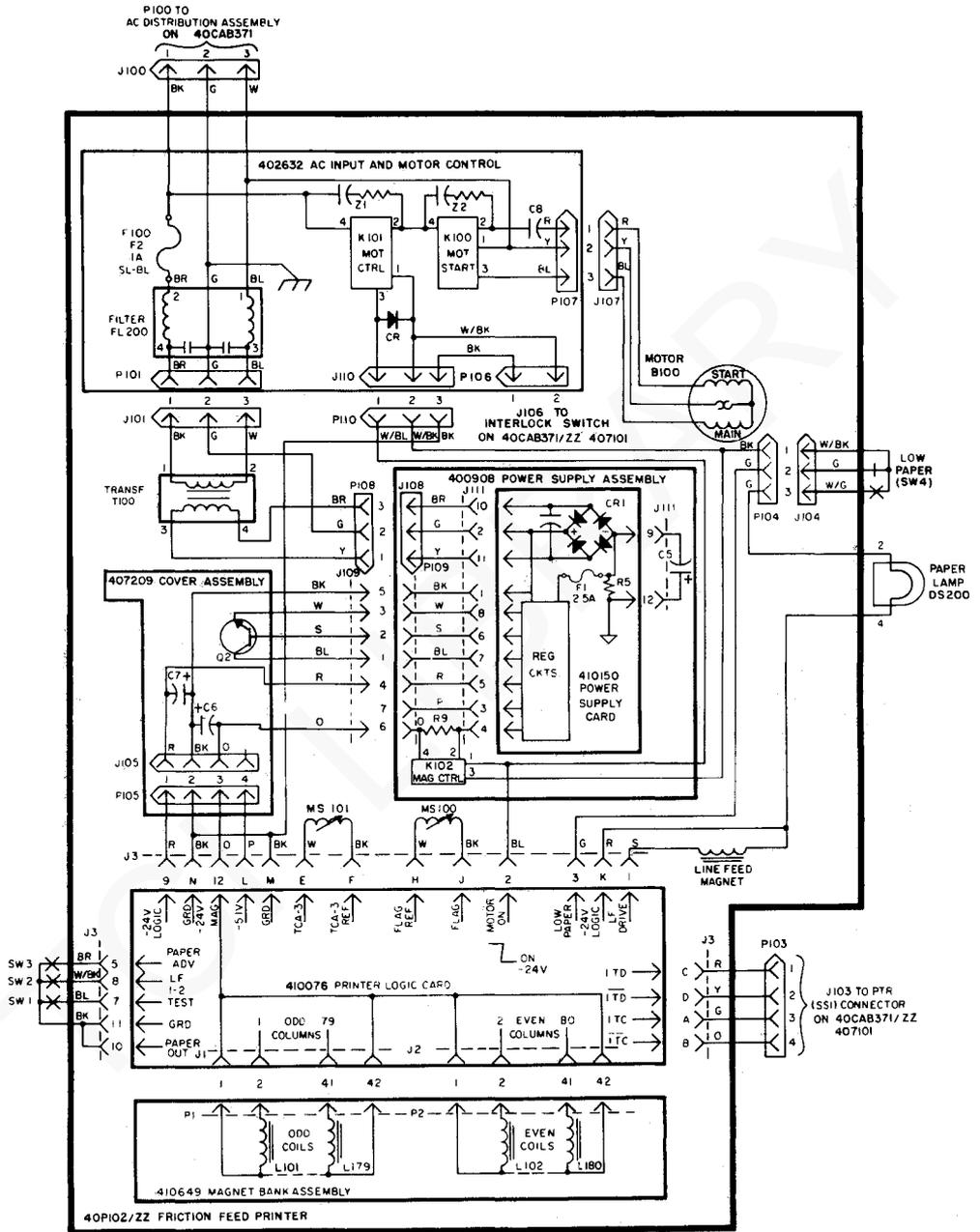
Fig. 8—40P102/ZZ Friction Feed Printer
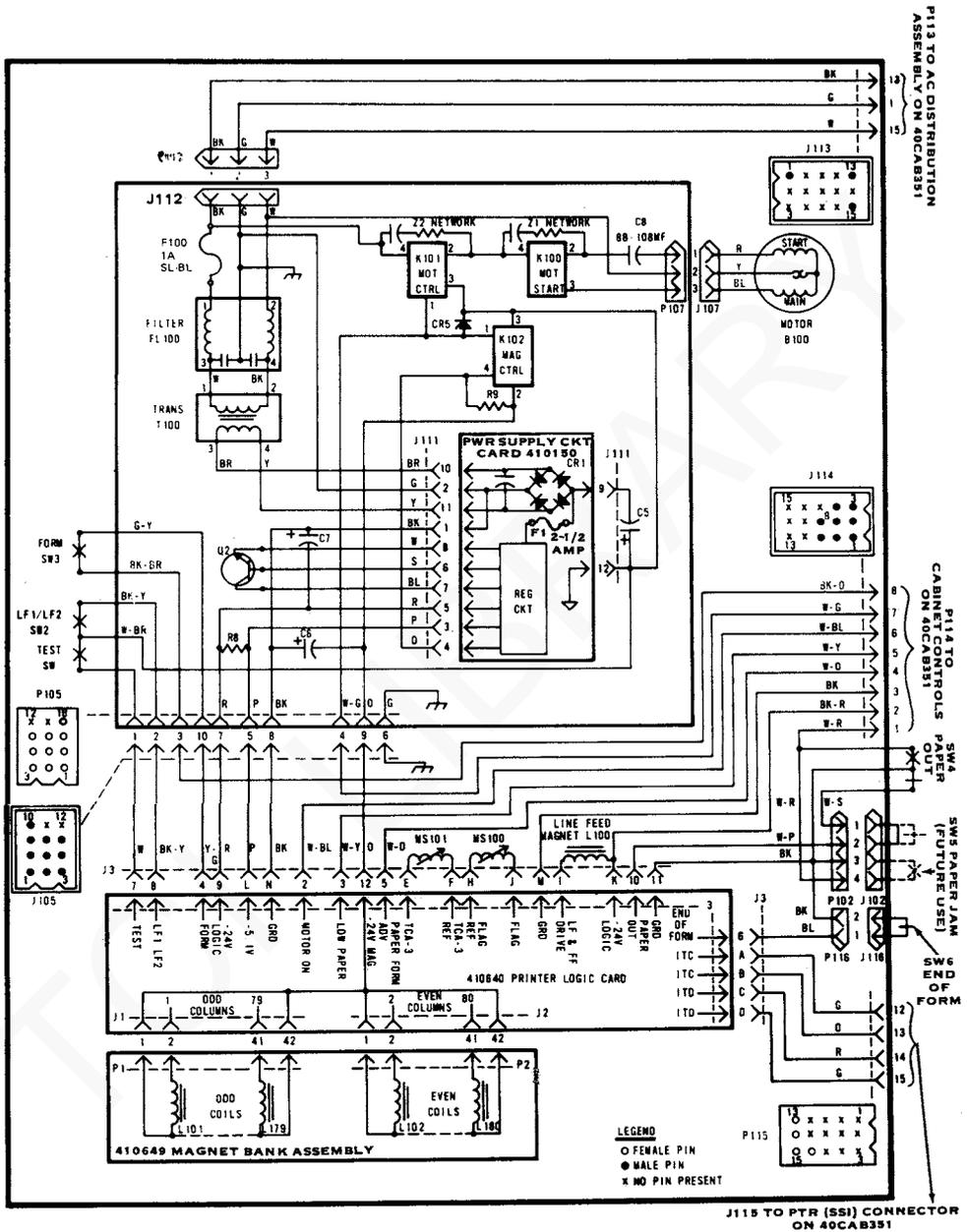
**Fig. 9—40P151/ZZ 80-Column Tractor Feed Printer**
**(Without 410082 Circuit Card)**
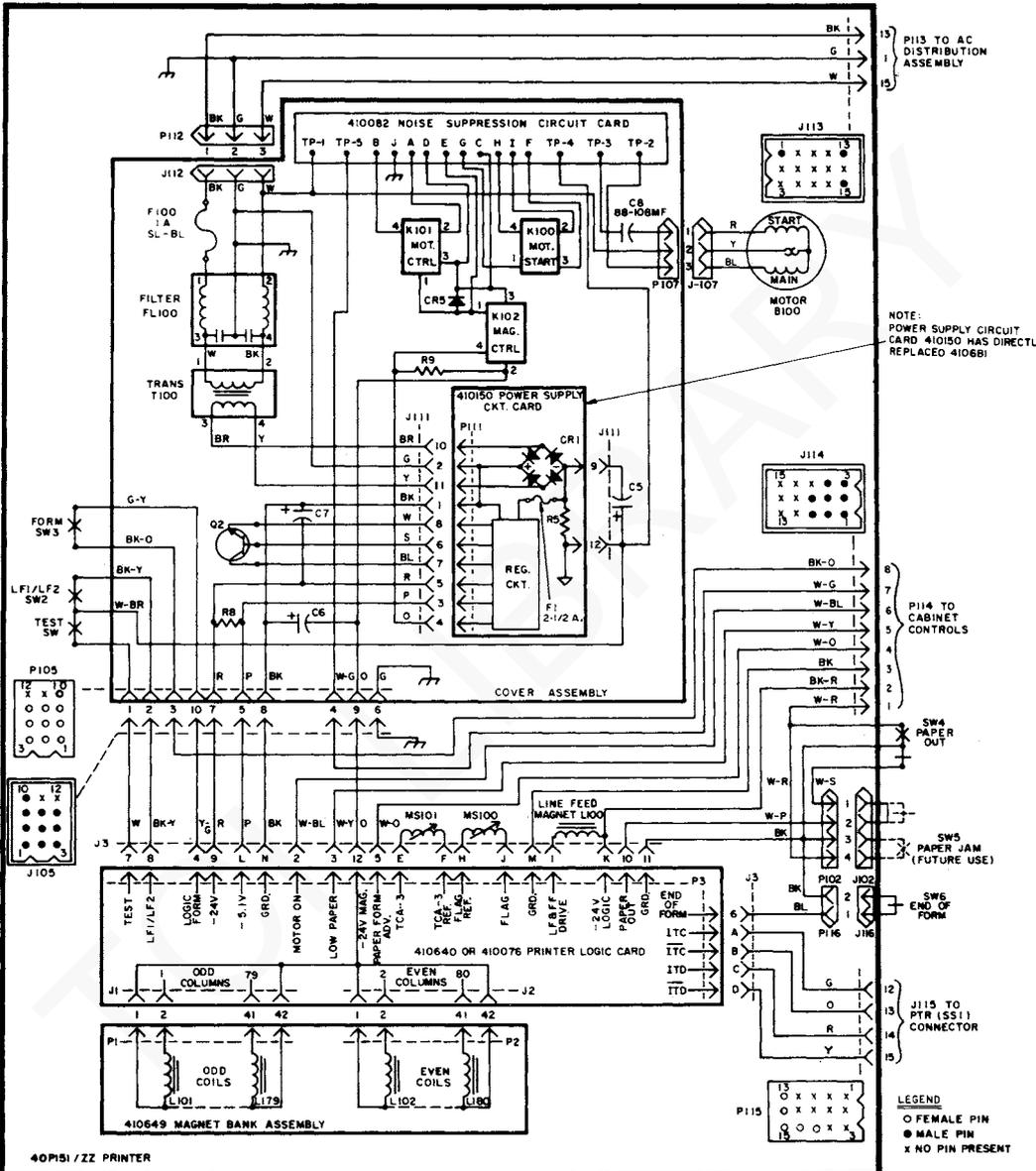
Fig. 10—40P151/ZZ 80-Column Tractor Feed Printer
(With 410082 Circuit Card)

Fig. 11—40P153 Tractor Feed Printer
(Without Circuit Card 410082)
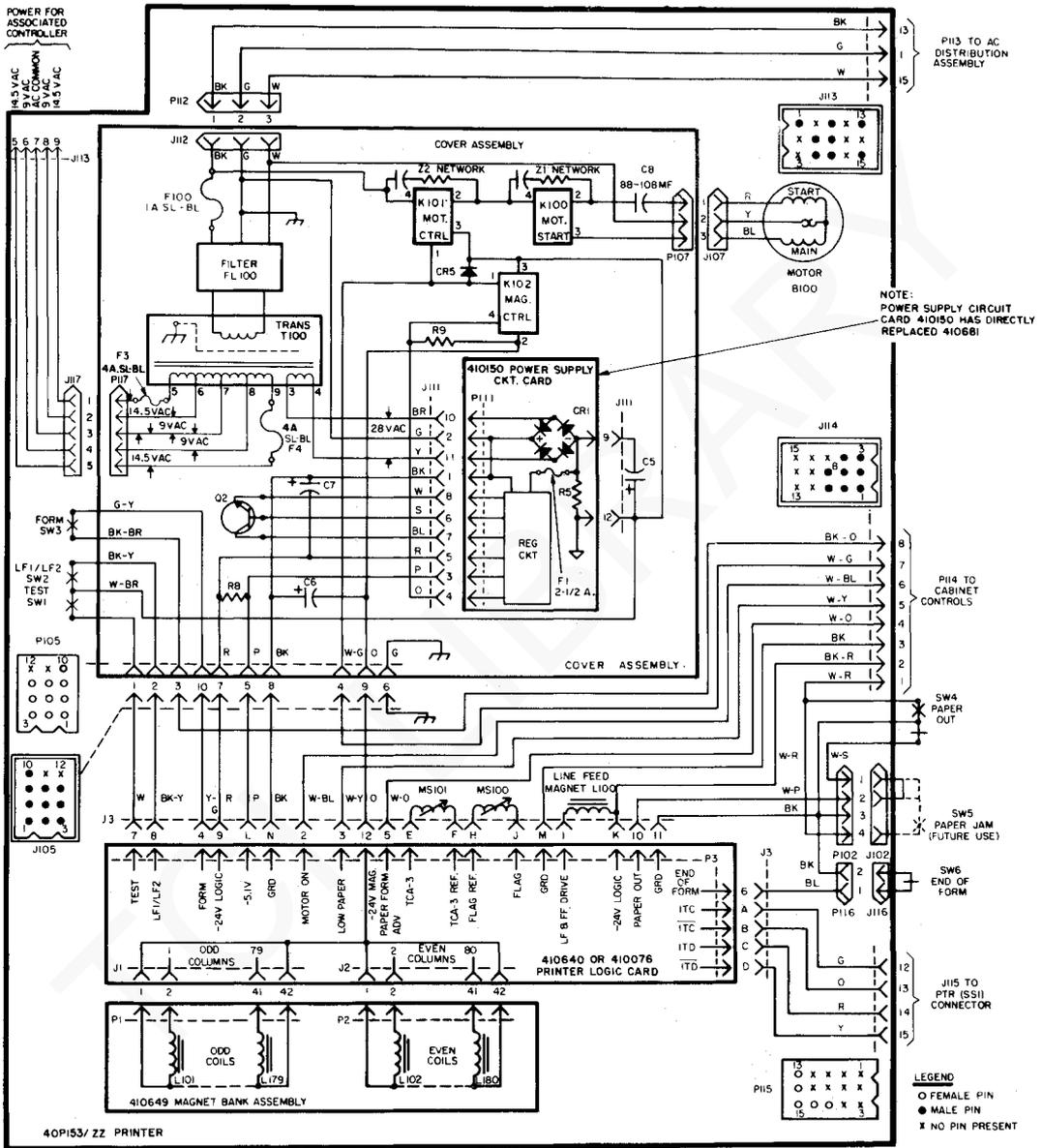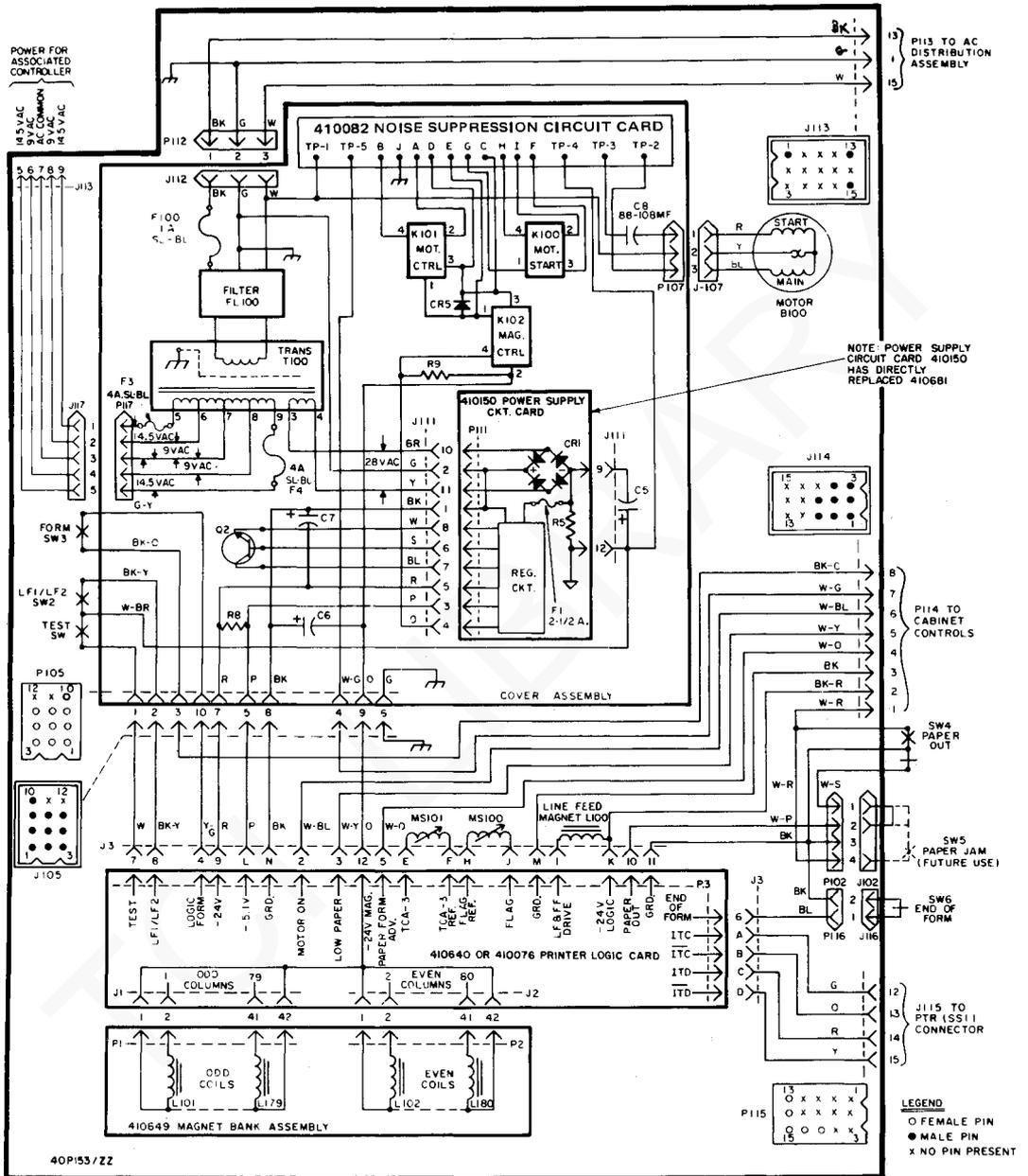
Fig. 12—40P153 Tractor Feed Printer
(With Circuit Card 410082)

*Note:* Grounding Option — Inserting Option Screw A on component side of 410151 circuit card connects -24 V dc circuit common to chassis. Inserting Option Screw B on component side of 410151 circuit card connects -24 V dc circuit common to +11.3 V dc circuit common. Inserting Option Screw A or B into noncomponent side of card leaves connection open. Refer to Option 61.
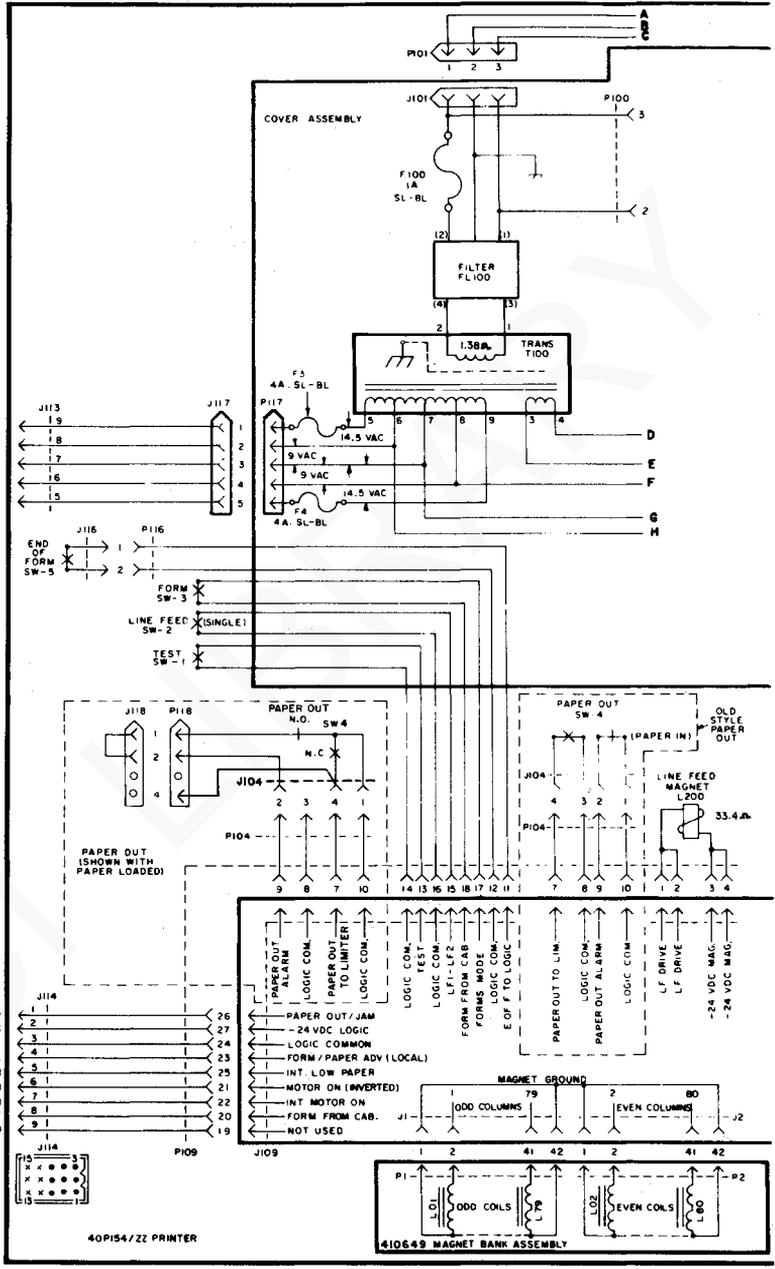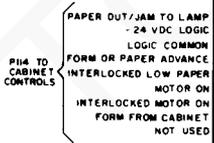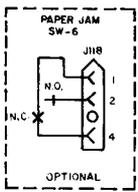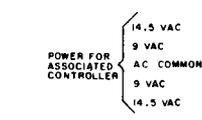


Fig. 13—40P154 Tractor Feed Printer
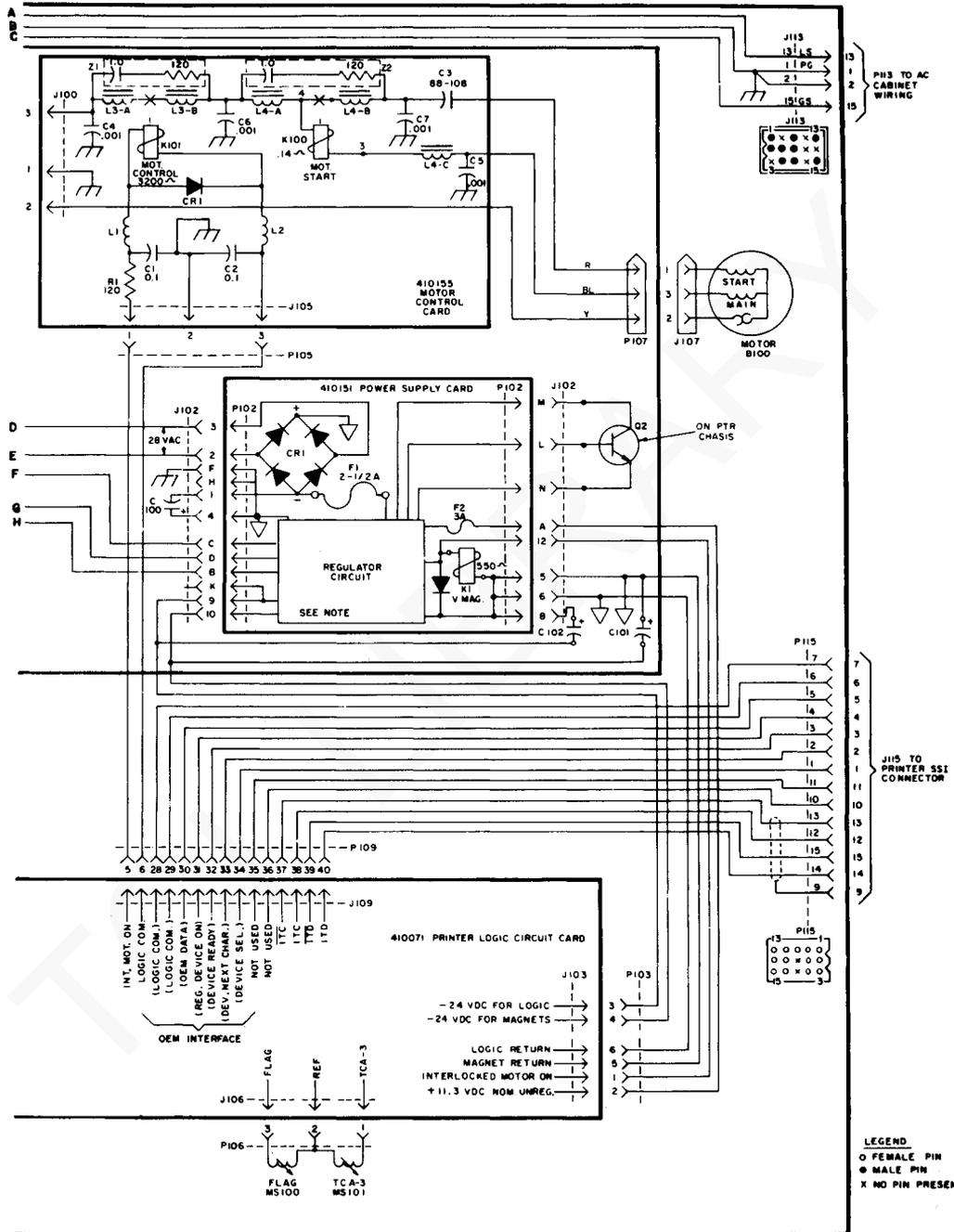
Fig. 13 (Cont)
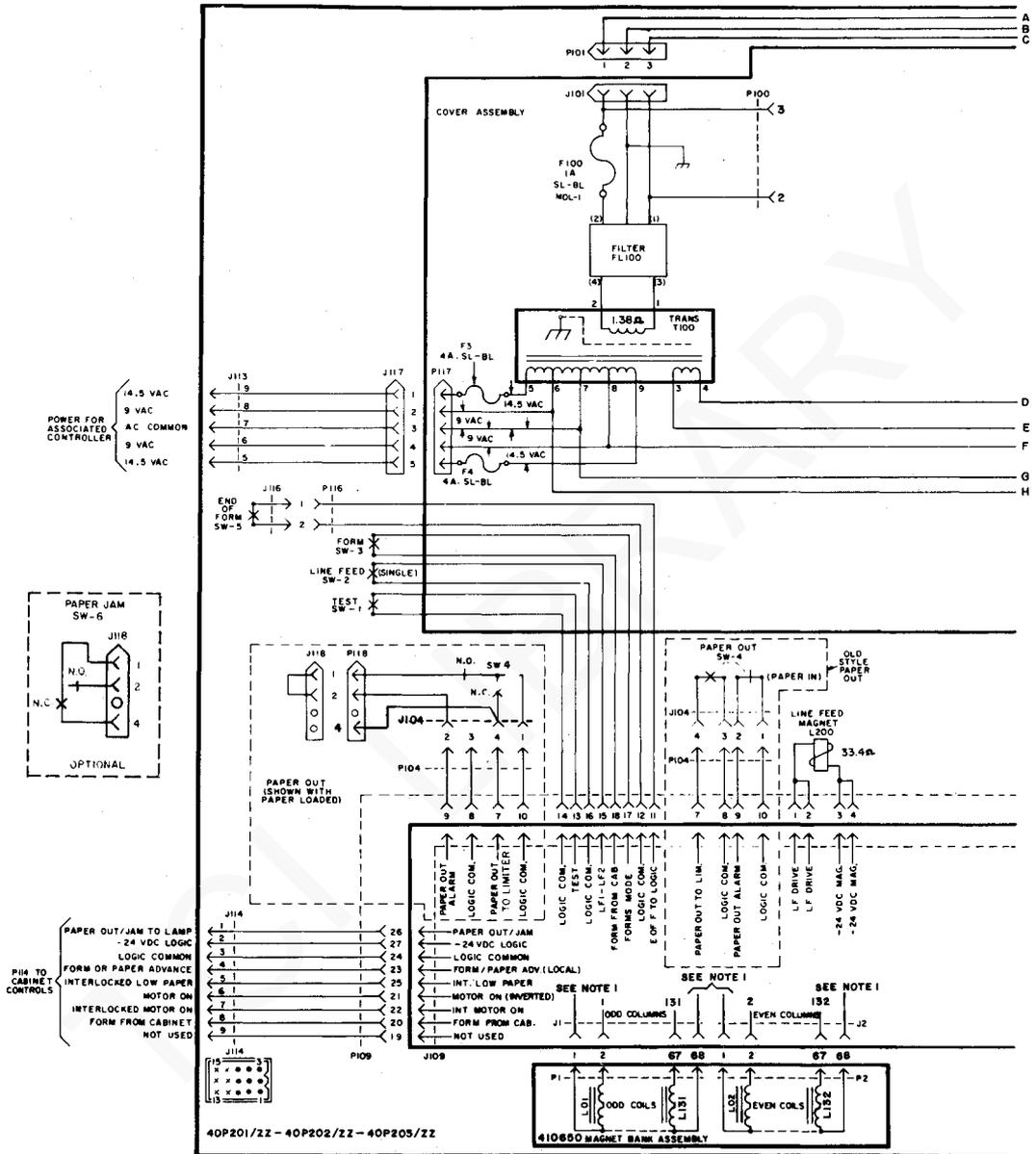
Fig. 14—40P201, 40P202 and 40P203 Tractor Feed Printers

*Note 1:* If the printer is equipped with a 410729 logic card, pins 1 and 68 of the 410650 magnet bank assemblies will be connected to the -24 V magnet supply voltage. If the printer is equipped with a 410072 logic card, pins 1 and 68 of the 410650 magnet bank assemblies will be connected to magnet ground.
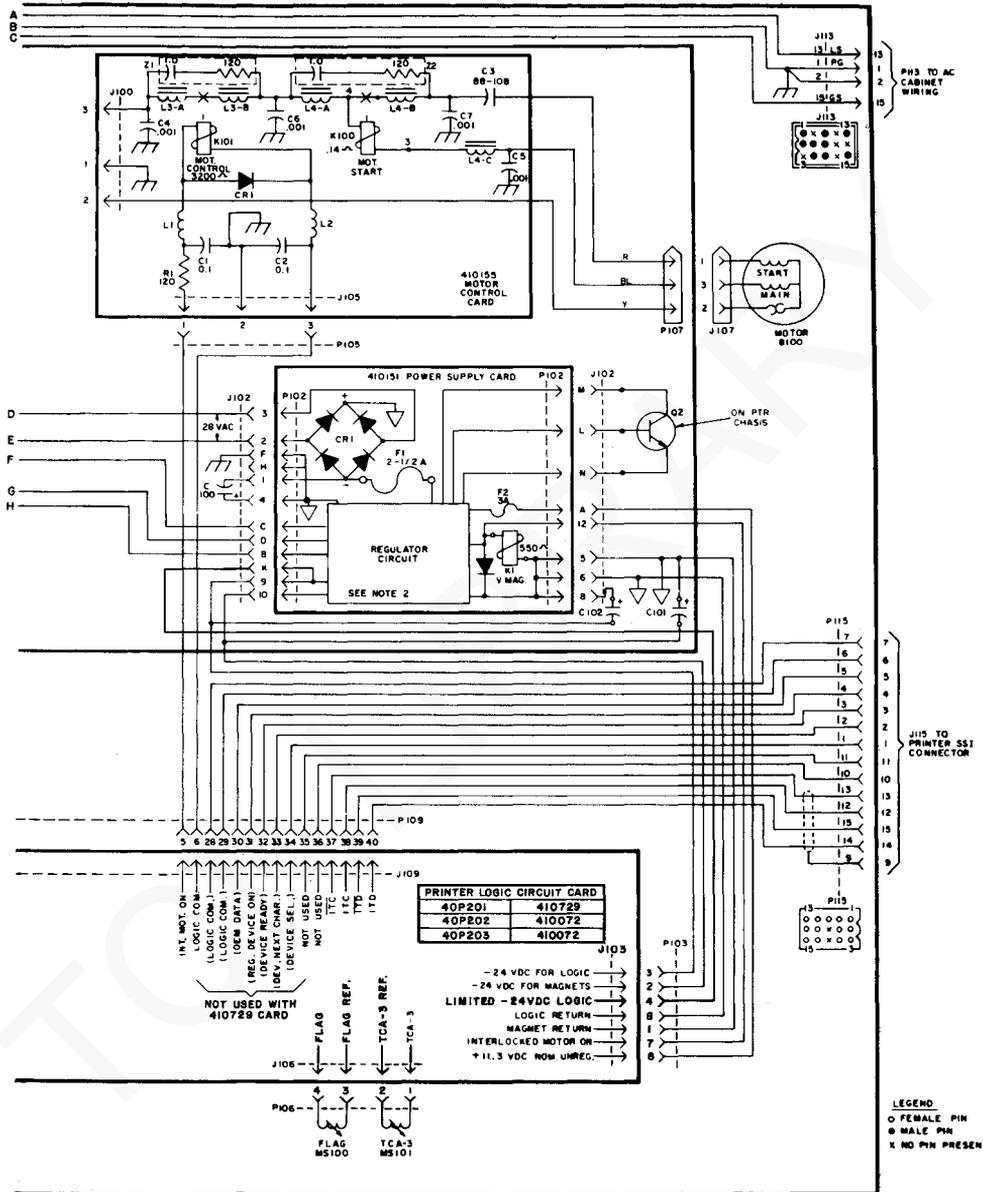
Fig. 14 (Cont)

*Note 2:*  Grounding Option — Inserting Option Screw A on component side of 410151 circuit card connects -24 V dc circuit common to chassis. Inserting Option Screw B on component side of 410151 circuit card connects -24 V dc circuit common to +11.3 V dc circuit common. Inserting either screw into noncomponent side of card leaves connection open.
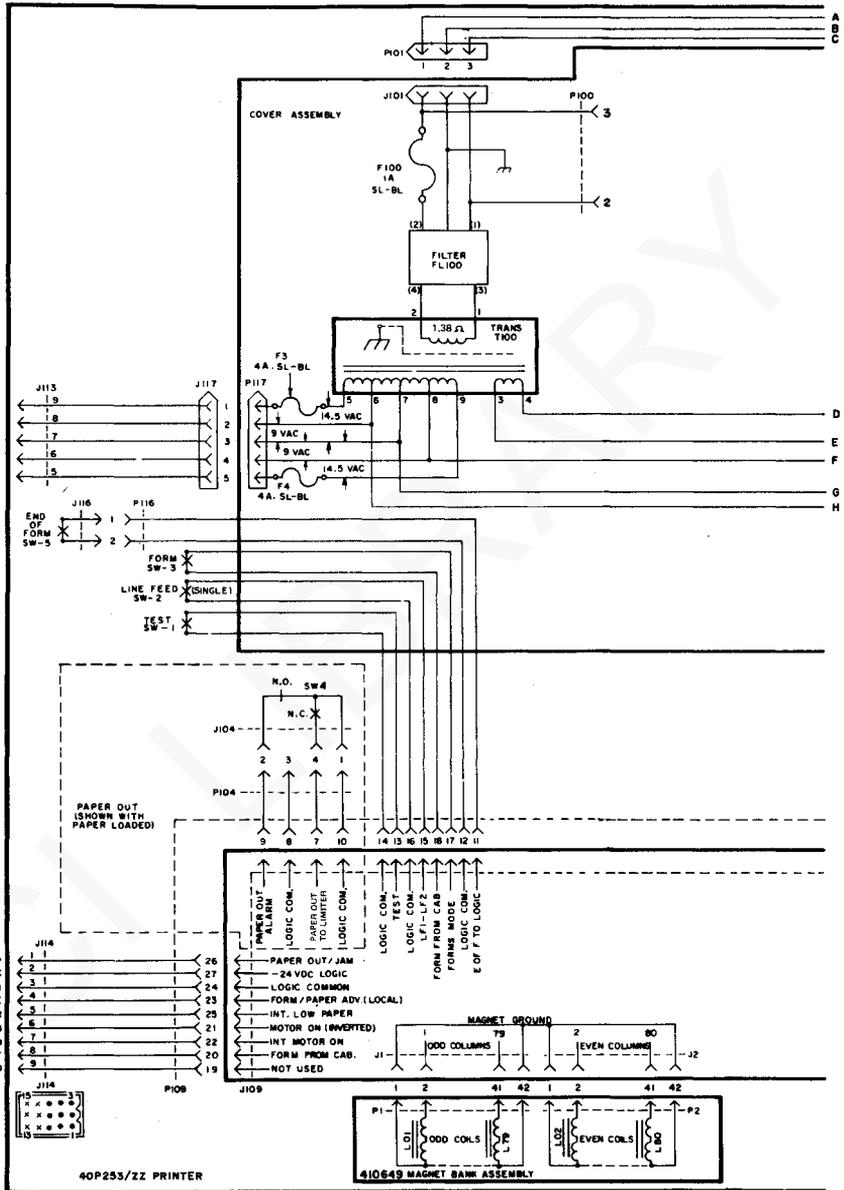
Fig. 15—40P253 Forms Access Tractor Feed Printer

*Note:*  Grounding Option — Inserting Option Screw A on component side of 410151 circuit card connects -24 V dc circuit common to chassis. Inserting Option Screw B on component side of 410151 circuit card connects -24 V dc circuit common to +11.3 V dc circuit common. Inserting Option Screw A or B into noncomponent side of card leaves connection open. Refer to Option 61.
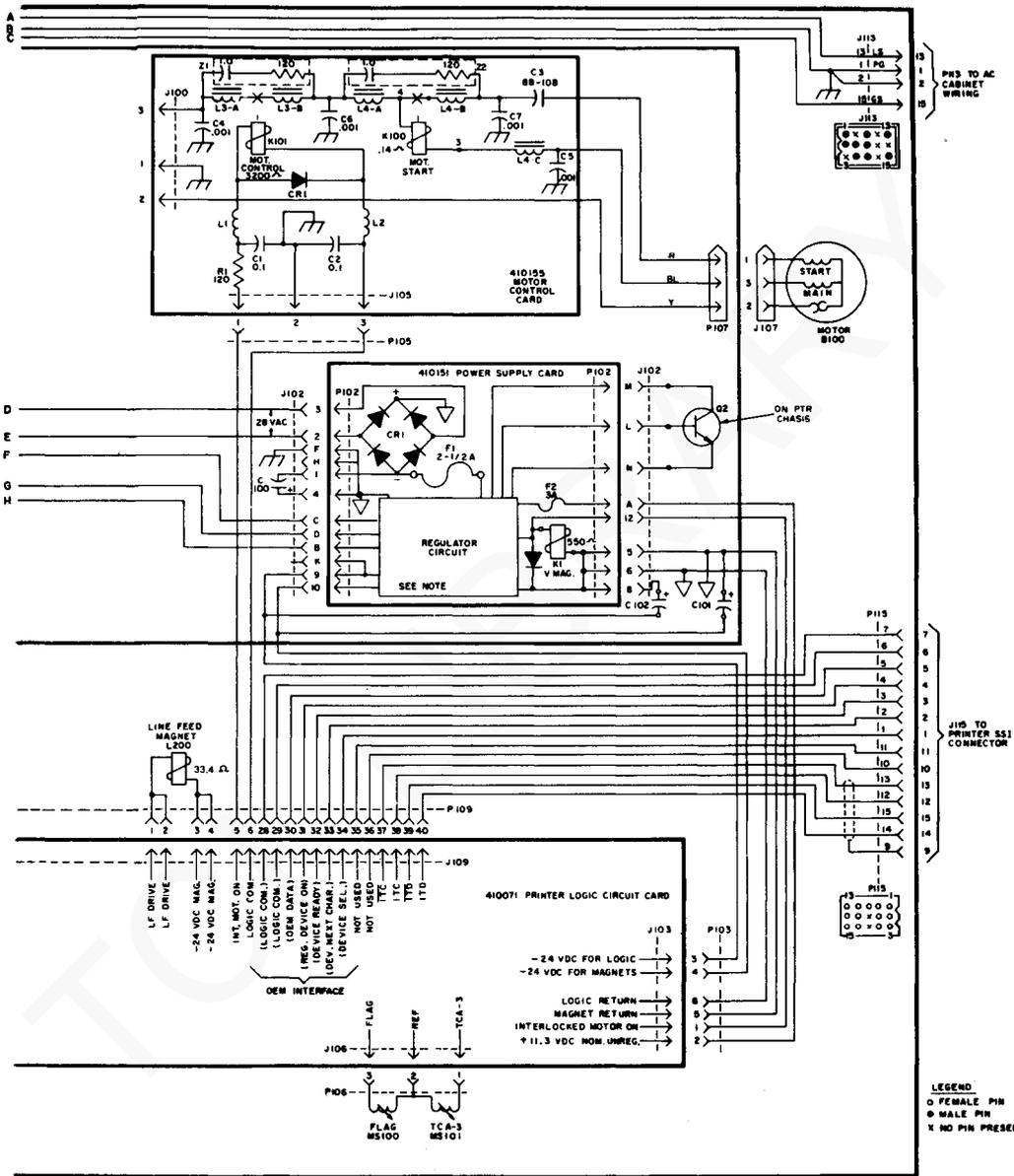
**Fig. 15 (Cont)**
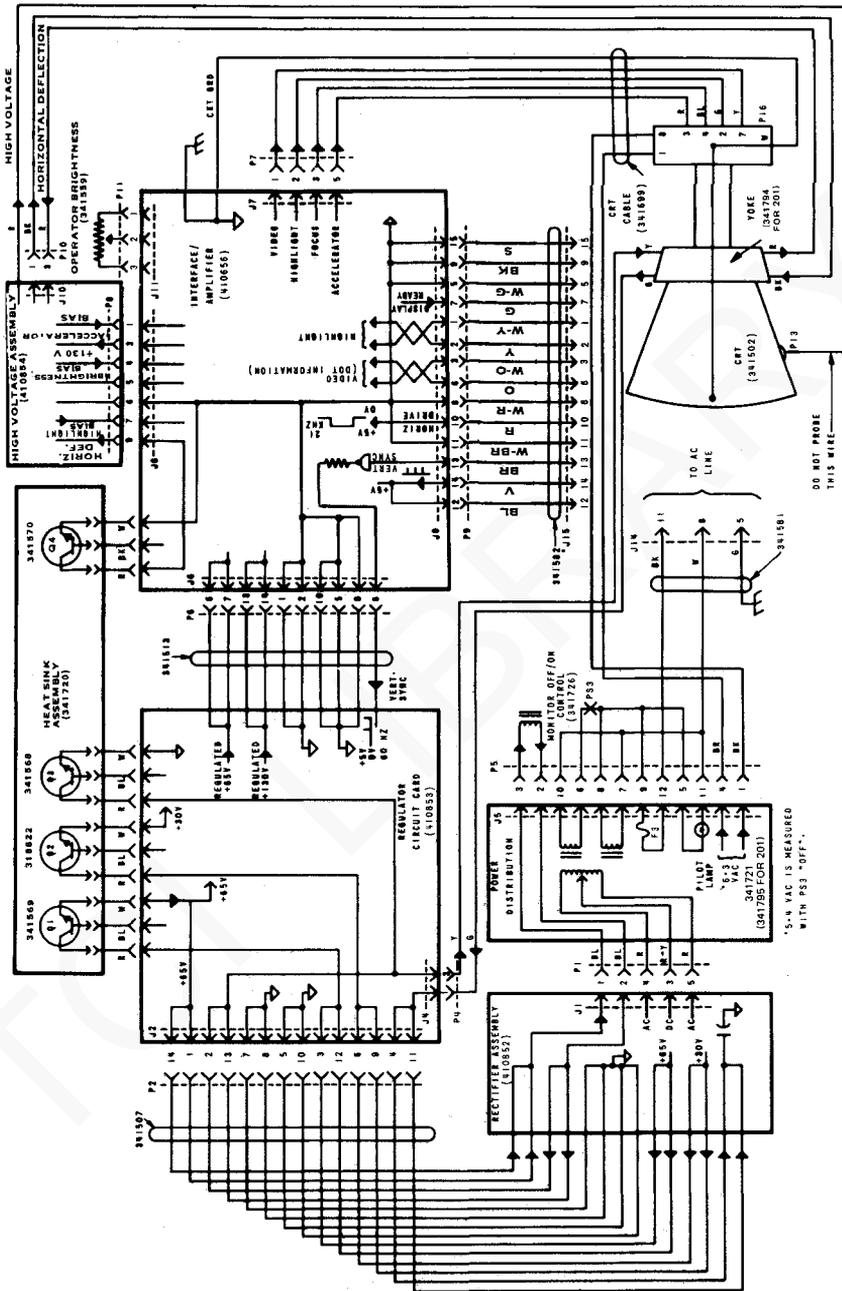
Fig. 16—40MN101 and 40MN201 Display Monitors

341691
Connector

341729
Connector

KD
Controller
End

| 1 | W-Y | 1 | } Twisted |
| 2 | Y | 2 | |
| 3 | W-O | 3 | } Twisted |
| 6 | O | 6 | |
| 4 | DRAIN WIRE | 4 | |
| 5 | W-G | 5 | } Twisted |
| 7 | G | 7 | |
| 8 | W-R | 8 | } Twisted |
| 10 | R | 10 | |
| 9 | BK | 9 | |
| 11 | W-BR | 11 | } Twisted |
| 13 | BR | 13 | |
| 12 | BL | 12 | |
| 14 | P | 14 | Monitor |
| 15 | S | 15 | support cabinet end. |

ACTUAL WIRING

341722

121005 (2)

341722

341729

341647 (5)
PINS 4,9,12,14,15

341648 (5)
PINS 4,9,12,14,15

341704 (10)
PINS 1,2,3,5,6,
7,8,10,11,13

341705 (10)
PINS 1,2,3,5,6,
7,8,10,11,13

341691

341722

5'
15-CONDUCTOR CABLE
(10 — 26 AWG)
(4 — 22 AWG)
(1 — 24 AWG)

341722

121005 (2)
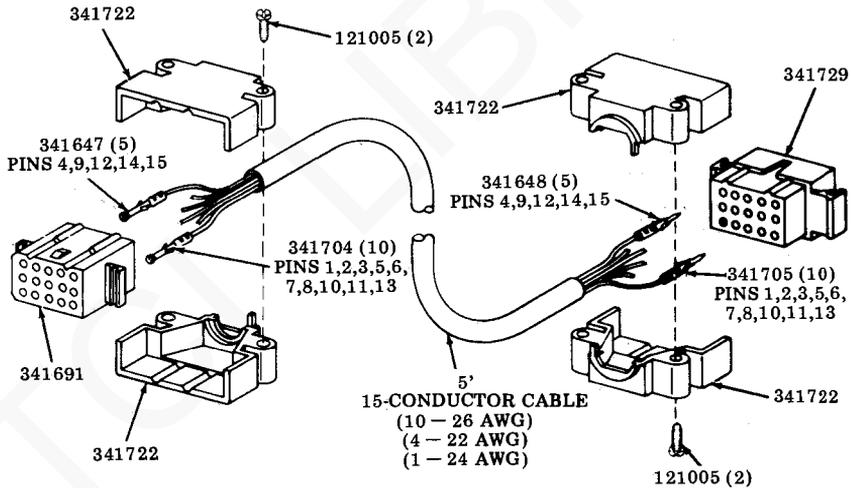
Fig. 17—341893 Monitor Extension Cable Assembly
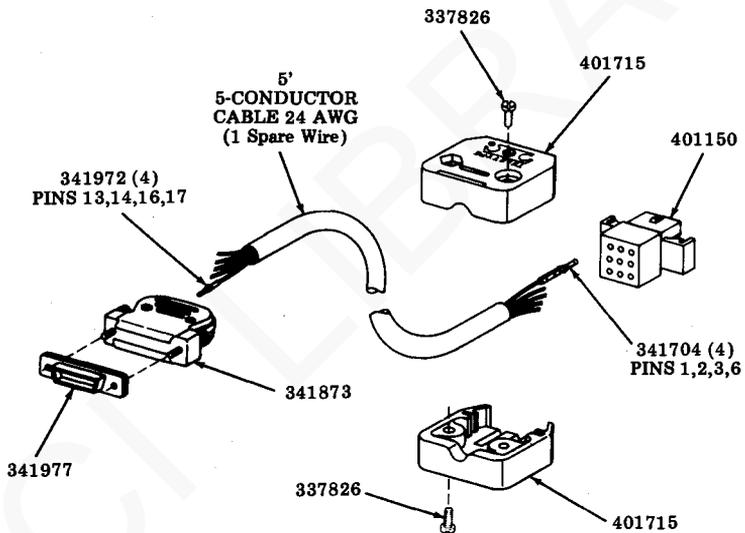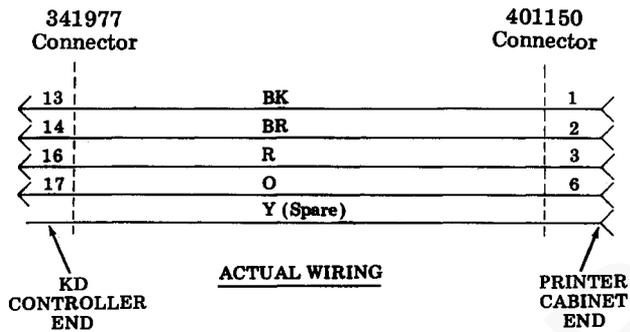
Fig. 18—341895 Printer Extension Cable Assembly (SSI)

341977
Connector

341978
Connector

Data Set End
(See Note 1)

*Note 1:*  ROP end in
KD-ROP applications.

Mates
to
KD

| | | | |
|---|---|---|---|
| 1 | OUTER DRAIN | 1 | |
| 2 | BR | 2 | |
| 3 | R | 3 | |
| 4 | O | 4 | |
| 5 | Y | 5 | |
| 6 | G | 6 | |
| 7 | INNER DRAIN | 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 | |
| 25 | BL | 25 | |

ACTUAL WIRING

406035
CONNECTOR HOOD

(2) 406043
SCREW RETAINER KIT
(See Note 2)

406035
CONNECTOR HOOD

14-CONDUCTOR
DOUBLE SHIELDED
CABLE 24 AWG

CABLE MARKER ON
EACH END IDENTIFIES
NUMBER OF CABLE
AND SHIELDED EIA.

341977
CONNECTOR

341972
CONTACT PIN (16)

341978
CONNECTOR

341973
CONTACT SOCKET (16)

| CABLE | LENGTH |
|---|---|
| 408065 | 7 FT |
| 408066 | 12 FT |
| 408067 | 25 FT |
| 408068 | 50 FT |
| 430569 | 3 FT |

*Note 2:*  Each 406043 screw retainer kit contains (2) screws and (2) retainers.

*Note 3:*  The 341896 cable assembly is replaced by the 408065 shielded cable assembly in the 40/2 KD, KDP, and KD-ROP.

Fig. 19—430569, 408065, 408066, 408067, or 408068 EIA Data Set Cable Assembly

341977
Connector

341978
Connector

Mates
to
Data Set
or
ROP

| 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 |

Mates
to
KD

ACTUAL WIRING
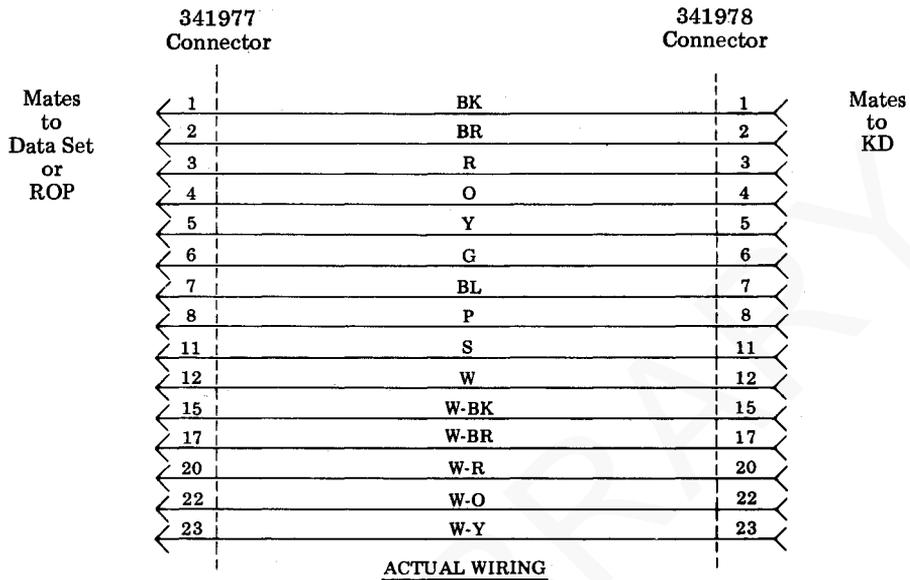
*Note 1:* 341896 cable is
replaced by 408065 shielded
cable assembly in 40/2.

*Note 2:* 341896 cable is
also used in KD-ROP to
connect KD to ROP.

341972 (15)

341978

341873

5'
15-CONDUCTOR
CABLE 24 AWG

341873

341977

341973 (15)
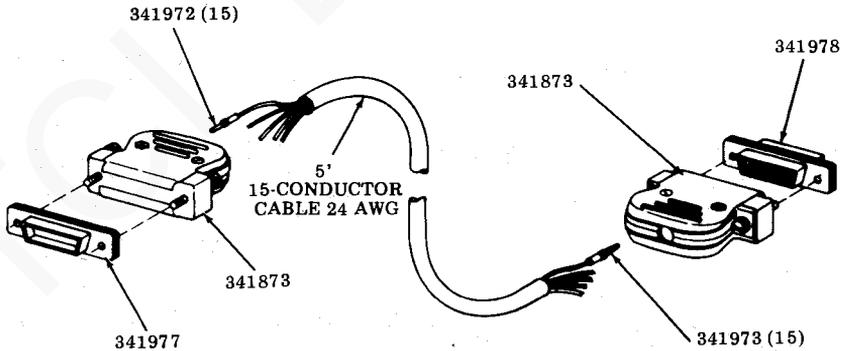
Fig. 20—341896 Data Set Cable Assembly

401623 Connector

401150 Connector

Printer Cabinet End

| 1 | R | 1 |
| 2 | Y | 2 |
| 3 | G | 3 |
| 4 | W-Y | 4 |
| 5 | W-R | 5 |
| 6 | O | 6 |
| 7 | BL | 7 |
| 8 | W | 8 |
| 9 | BARE | 9 |

ACTUAL WIRING

GROUND CONNECTOR
(New Style Only)

401717    337826
401717    337826

6'-2"
9-CONDUCTOR CABLE
(1 Bare)

401150

401623

341705 (9)    341704 (9)

401717

337826    401717    337826

401717
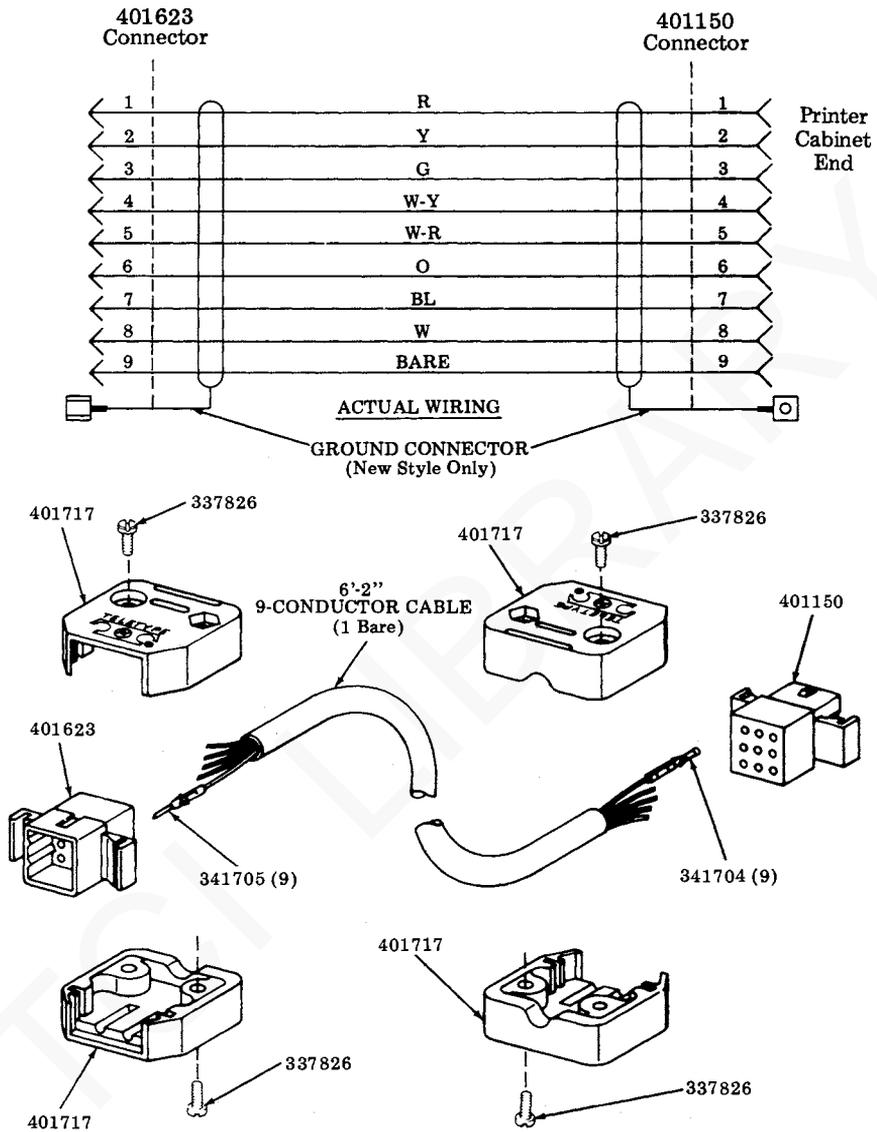
Fig. 21—401641 Opcon Extension Cable Assembly
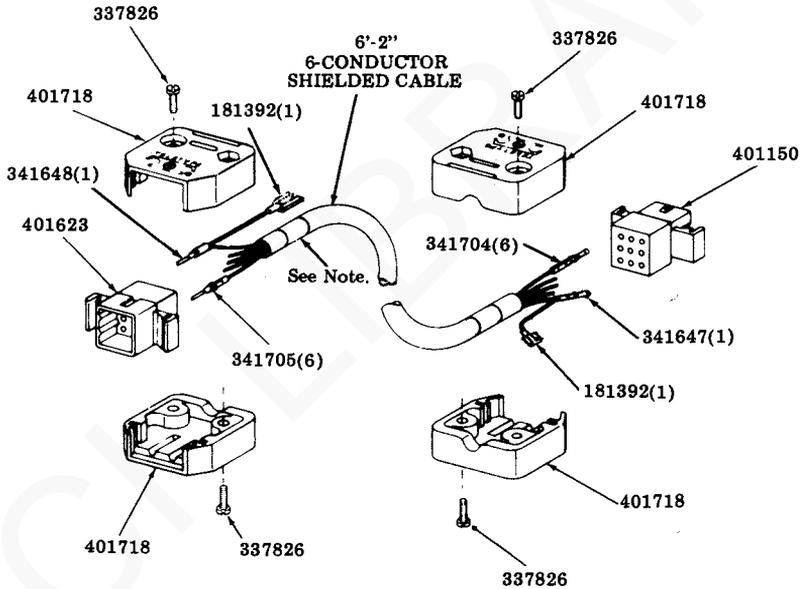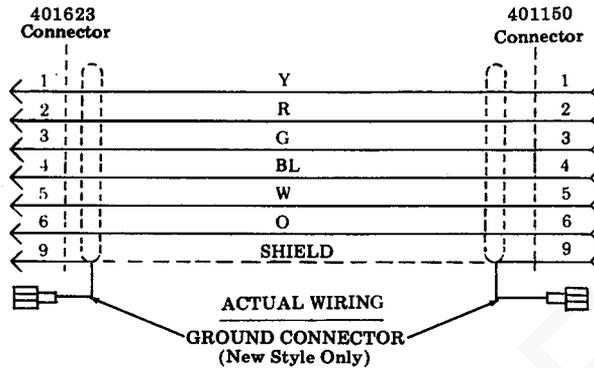
Fig. 22—401640 Printer Extension Cable Assembly (EIA)

*Note:* Cable marker at each end identifies part number of cable.

341977
Connector

341978
Connector

Data
Set
End

| 1 | BK | 1 |
| 2 | BR | 2 |
| 3 | R | 3 |
| 4 | O | 4 |
| 5 | N/C | 5 |
| 6 | G | 6 |
| 7 | BL | 7 |
| 8 | N/C | 8 |
| 20 | W/R | 20 |

N/C = No Connection

Refer to 50822S
for details.

*Note:* Other required
one-to-one connections
are pins: 11, 12, 15, 17,
22, 23.

402185
STRAP

341972 (15)

341873

341978

341873

5'
15-CONDUCTOR
CABLE 24 AWG

341977

341973

402178
(Use with 113A Data Set requires 402178.)

TERMINALS

| | BK | |
| | R | A/B |
| | G | |
| | Y | FDX/HDX |
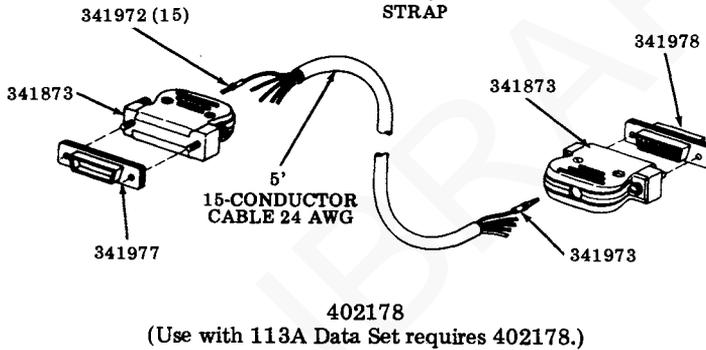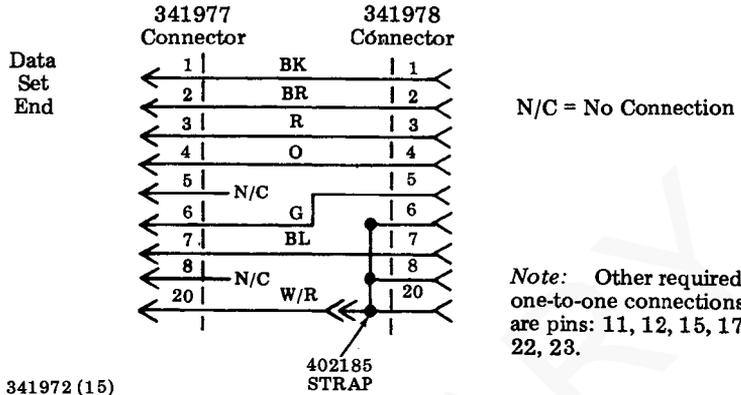
SWITCHES

Refer to 50825S
for details.

403399
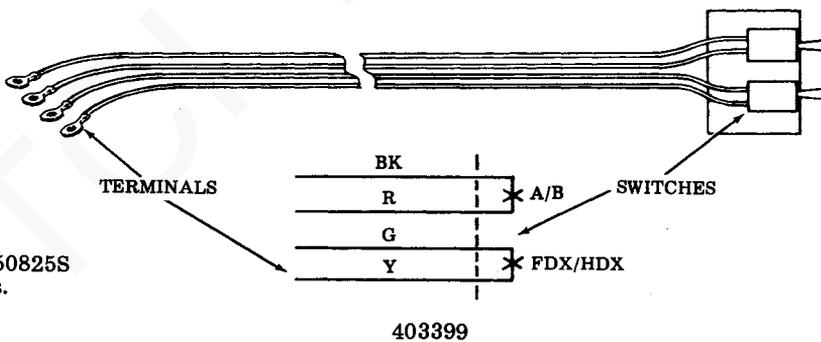
The switches mount to pedestal door, see Section 582-200-202. Terminals mount to 410680.

Fig. 23—Modification Kits

*Note:* Refer to Section 582-200-102 for a list of other modification kits. The related 50000
specifications include wiring information.

OPTIONAL STRAPPING
403378

STRAPS

341973

341873

341978
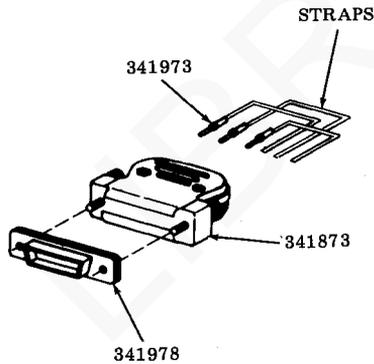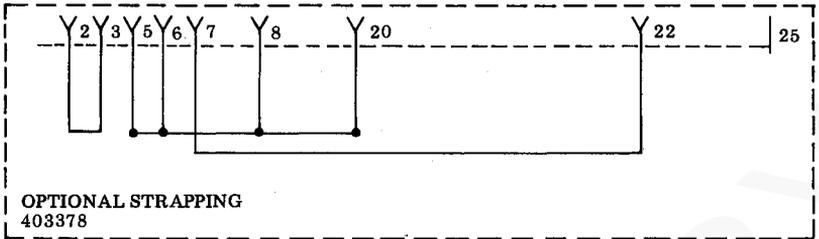
**403378** (For Use With
Current Loop Applications)
Place in data set connector on rear of KD cabinet.

Fig. 23 (Cont)

*Note:* This connector is required when using the **402180 20/60 mA Current Loop Modification Kit**
per Specification 50835S if not using a data set.

TELETYPEWRITER COMPATIBLE "DATASPEED*"40/2

TESTING AND TROUBLESHOOTING

1.   GENERAL

1.001   This addendum supplements Section 582-200-502, Issue 2. Place this pink sheet ahead of Page 1 of the section.

1.002   This addendum is used to correct copyright dates.

2.   CHANGES TO SECTION

2.001   On the bottom of Page 1, change the copyright notice dates to read as follows:

© 1973, 1974, 1975, 1976, 1977 and 1979 by Teletype Corporation.

*Registered Trademark of AT&TCo.

TELETYPEWRITER COMPATIBLE "DATASPEED*" 40/2

TESTING AND TROUBLESHOOTING

## 1. GENERAL

1.01 This section provides the testing and troubleshooting procedures for the Teletypewriter Compatible DATASPEED 40/2 Station arrangements. This section does not provide information on testing associated modification kits. Refer to the appropriate 50000 Specification for information on testing the modification kits.

1.02 This section is reissued to add list of BSPs for additional Data Set Test Procedures. Revision arrows are used to indicate the changes.

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

1.04 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 DATASPEED 40/2.

1.05 With the station arrangement properly interfaced to the system where it will be used, conduct a complete checkout of send and receive capabilities taking into account all option and feature variables. Check all operational modes in sending to or receiving from another station in the system.

1.06 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.

1.07 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.

1.08 The checkout routines are presented in tables. Each table is identified as to the type of station under test, and the nature of the checkout procedures.

1.09 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.

*Registered Trademark of AT&TCo.

1.10 As a further aid to troubleshooting, refer to the wiring diagrams for the DATASPEED 40/2 in Section 582-200-402. For help in identifying components, refer to Section 582-200-702, Disassembly/Reassembly and Parts.

## 2. PRELIMINARY CHECK

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, are printer paper and ribbon properly installed?

2.02 ◗ In addition to the above, check the Station Feature and Option Record (stored in lid of logic module cabinet or in pedestal) or W-4D1XB 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 charts.
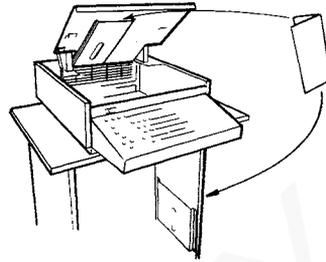


Located in pedestal when logic is mounted in pedestal.

## 3. OFF-LINE CHECKOUT

3.01 Off-line checkout provides a check of the operating condition of the DATASPEED 40/2 terminal. Table A provides a brief checkout for KD or KDP terminals. Table B provides a complete off-line checkout for KD or KDP terminals. The off-line checkout should be performed before attempting any on-line procedures.

BRIEF OFF-LINE CHECKOUT

3.02 The brief off-line checkout is provided in Table A. Use the brief checkout just to make sure that the station is operable. The brief checkout does not exercise all the features and options. If these should also be checked, perform Complete Off-Line Checkout in Table B.

TABLE A

BRIEF OFF-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|------|-----------|---------|------------------|
| 1 | Turn on power switches. | LOCAL indicator lights.<br><br>Fans operate. | Terminal Analysis (Page 55) |
| 2 | Turn on power to monitor and set brightness to maximum. | Within 10 seconds, raster appears with No. 1 segment marker and cursor as in Fig. 1.<br><br>*Note:* If random characters appear or if cursor is not at home position, depress HOME and CLEAR keys. | Terminal Analysis (Page 55)<br><br>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. | Section 582-213-700, Display Monitor Adjustments |
| 4 | Lightly depress cursor right ( → ), down ( ↓ ), left ( ← ), and up ( ↑ ), in that order. | Cursor moves one position in the direction indicated for each depression. | Terminal Analysis (Page 55) |
| 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. | Display Logic (Page 58) |
| 6 | If keyboard has CAPS LOCK keytop, depress CAPS LOCK key.<br>Enter a line of Es at top and bottom of display, then HOME cursor. | Display appears as in Fig. 2, with all requirements as indicated. | Terminal Analysis (Page 55)<br><br>Refer to adjustments of monitor to meet requirements (Section 582-213-700). |
| STEPS 7 THROUGH 14 APPLY TO KDP TERMINALS ONLY. | | | |
| 7 | Preliminary requirements of printer:<br><br>a.  Ribbon and paper loaded.<br>b.  Switches (top right of printer, cabinet cover raised) set as in Fig. 3.<br>    LF-1<br>    Test-Off<br>    Forms (Tractor Feed Only) — On.<br>c.  Cabinet cover closed. | | |

1/2" — | ← (Reference only — not a requirement)

NO. 1 SEGMENT MARKER

CURSOR

RASTER

◆ Fig. 1—Raster ◆

11-1/4"
± 1/4"

5-1/4"
± 1/8"
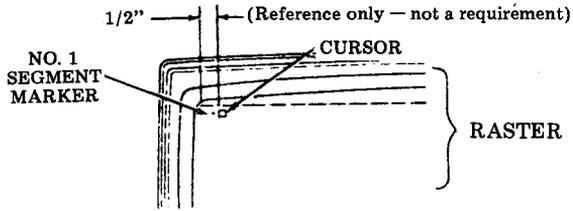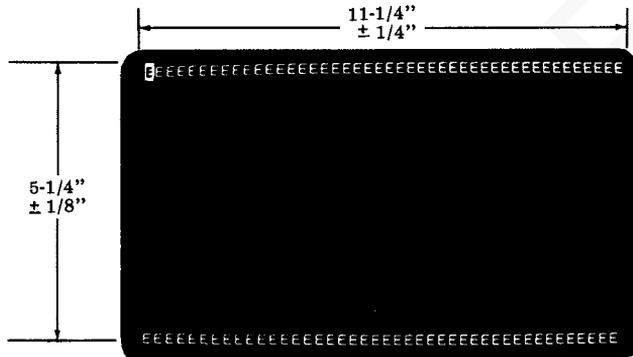
Requirements:

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

Fig. 2—Display Monitor

LF Test
2   On
⇕   ⇕
1   Off

FRICTION FEED

Forms LF Test
On   2   On
⊘    ⊘   ⊘

⊘    ⊘   ⊘
Off   1   Off

TRACTOR FEED
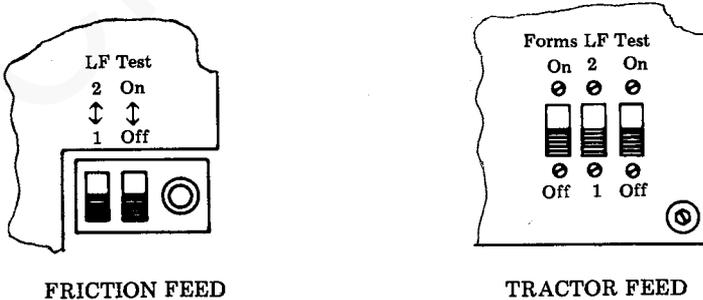
Fig. 3— Printer Switches

*Note:* Fig. 1, 2 and 3 refer to Procedures in Table A.

TABLE A (Cont)

BRIEF OFF-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|------|-----------|---------|------------------|
| 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<br><br>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. | | |
| 12 | Set test switch (Fig. 3) to ON, allow printer to print several lines, then turn test switch OFF. | Printer turns on and prints one of the font identifica-symbols such as $\overline{A}$ repeat-edly until switch is turned off. | Printer (Section 582-210-500) |
| 13 | FRICTION FEED PRINTER<br><br>Lift paper roll to simulate a paper alarm. Lower paper roll, guide paper through window, and close cabinet cover.<br><br>TRACTOR FEED PRINTER<br><br>Tear off next form under pedestal top, then depress PAPER button on cabinet top until last form passes through printer.<br>Reload forms, guide first form through window, and close cabinet cover. | LOW PAPER indicator lights.<br>LOW PAPER indicator goes out.<br><br><br><br>PAPER indicator lights.<br><br><br><br>PAPER indicator goes out. | Printer (Section 582-210-500) |
| 14 | Depress PRINT LOCAL key, and while cursor is moving through third or fourth line of display, depress LOCAL key.<br><br>`PRINT ON LINE` `PRINT LOCAL` | LOCAL indicator goes out.<br><br>PRINT LOCAL and SEND indicators light.<br><br>Cursor moves through line of Es at top of display, returns to left, and moves through lines of spaces (blank lines). | Terminal Analysis (Page 55) |

TABLE A (Cont)

BRIEF OFF-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|---|---|---|---|
| 14 (Cont) | | Printer prints line of Es.<br><br>*Note:* Printing may occur in all 80 character positions or some Es may be carried over to next line, depending on Option 17.<br><br>Printer line feeds but does not print for each line of spaces.<br><br>When LOCAL key is depressed, SEND and PRINT LOCAL indicators go out and LOCAL indicator lights. Printer turns off.<br><br>*Note:* 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. | Printer (Section 582-210-500) |
| This ends BRIEF OFF-LINE CHECKOUT — KD AND KDP TERMINALS. | | | |

COMPLETE OFF-LINE CHECKOUT

3.03    The Complete Off-Line Checkout in Table B exercises all the features of the KD or KDP terminal off-line. These procedures do not check the interface or send and receive capabilities, therefore, an on-line checkout is also required to completely test the DATASPEED 40/2.

TABLE B

COMPLETE OFF-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|------|-----------|---------|------------------|
| 1 | Power on. Monitor brightness adjusted for desired viewing level. LOCAL key depressed. Depress HOME and CLEAR keys. Put CAPS LOCK key in down position. | Cursor goes to home position and all data is cleared from screen. | Terminal Analysis (Page 55) Display Logic (Page 58) |
| 2 | Starting with top row and moving from left to right, depress each unshaded key in Fig. 4.<br><br>Depress RETURN and NEW LINE keys. | Characters displayed as in Fig. 7. Cursor goes to beginning of next line. | Terminal Analysis (Page 55) |
| 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 as in Fig. 7. Cursor goes to beginning of next line. | |
| 4 | Hold left SHIFT key depressed.<br><br>Starting with top row and moving from left to right, depress each unshaded key in Fig. 5.<br><br>Hold right SHIFT key depressed and depress $\boxed{?/}$ key.<br><br>Depress NEW LINE key. | Characters displayed as in Fig. 7. Cursor moves to beginning of next line. | |
| 5 | Hold left CONTROL key depressed.<br><br>Depress all unshaded keys of Fig. 6 in sequence shown by circled numbers.<br><br>Hold right CONTROL key depressed and depress $\boxed{\begin{array}{c}FS\\M\end{array}}$ key.<br><br>Depress NEW LINE key. | Characters displayed (Page 10). Cursor moves to beginning of next line. | |
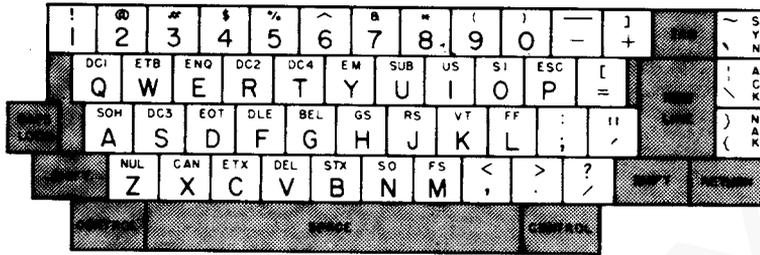
Fig. 4
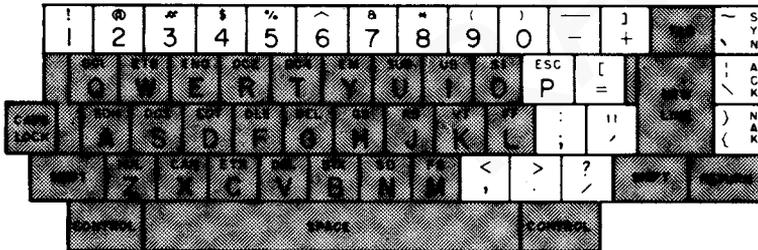


Fig. 5



Fig. 6

TABLE B (Cont)

COMPLETE OFF-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|---|---|---|---|
| 6 | Fully depress and hold [ — / _ ] key until about half line of characters are displayed.<br><br>Depress NEW LINE key. | Repeated - characters and ≡ symbol displayed as in Fig. 7. Cursor moves to beginning of next line. | Terminal Analysis (Page 55)<br><br>Operator Console (Opcon) (Section 582-211-500) |
| 7 | Repeat Step 6 using [ > / . ] key, and then again using Spacebar. | Repeated . characters followed by ≡ symbol, and repeated spaces followed by ≡ symbol, displayed as in Fig. 7. Cursor moves to beginning of next line. | Controller Logic (Page 62) |
| 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 as in Fig. 7. | |
| 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 as in Fig. 7. | |
| 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 as if Fig. 7. | |
| 13 | THIS STEP APPLIES ONLY TO KDP WITH TRACTOR FEED PRINTER<br><br>Hold CONTROL key depressed and depress [ FF / L ] key three times.<br><br>*Note:* Make sure forms switch of printer is on. | Three $F_F$ characters are entered in display to the right of the D4. | |
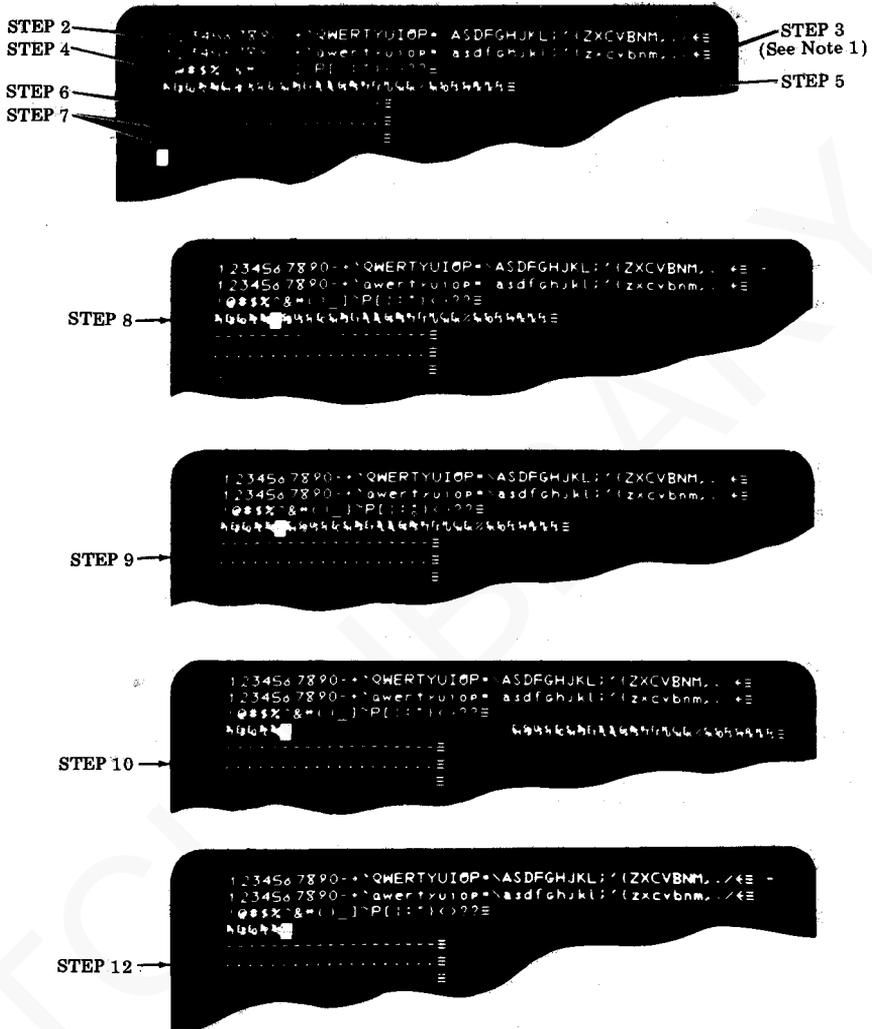
**Note 1:** Step 3 applies only if keyboard has CAPS LOCK key.

**Note 2:** Figures shown are for opcons which have monocase and up-low ASCII (American National Standard Code for Information Interchange).

Fig. 7

TABLE B (Cont)

COMPLETE OFF-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|------|-----------|---------|------------------|
| 14 | Depress HOME. | Cursor goes to home position. | |
| 15 | **KDP ONLY**<br><br>Depress PRINT LOCAL key. When complete message on monitor has been sent to printer, depress LOCAL key. | LOCAL indicator goes out; PRINT LOCAL and SEND indicators light.<br><br>Cursor moves through display and printer prints according to features and options as in Fig. 8.<br><br>When LOCAL key is depressed, SEND and PRINT LOCAL indicators go out, printer turns off, and LOCAL indicator lights.<br><br>TRACTOR PRINTER<br><br>Form-out occurs when first $F_F$ character is sent from display.<br>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. | Terminal Analysis (Page 55)<br><br>Printer (Section 582-210-500) |

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

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

```
1234567890-+CQWERTYUIOP=\ASDFGHJKL;'[ZXCVBNM,./
1234567890-+CQWERTYUIOP=\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.

*Note 4:* Figures shown are for monocase and up-low ASCII.

Fig. 8

TABLE B (Cont)

COMPLETE OFF-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|------|-----------|---------|------------------|
| 16 | Depress HOME, then CLEAR key. | Cursor goes to home position and all information is cleared from display. | Terminal Analysis (Page 55) |
| 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 key, then enter a line of 80 Us across top of display. | Cursor returns to home position and *s move down one line.<br><br>Us are displayed above *s. | Display Logic (Page 58) |
| 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 key until *s move to to last line of display. | Cursor returns to home position and *s and Us both move down one line each time LINE INSRT key is depressed.<br><br>Movement stops when *s reach bottom of display.<br><br>Cursor stays at home position. | Terminal Analysis (Page 55)<br><br>Display Logic (Page 58) |
| 20 | Depress cursor down ( ↓ ) and then cursor right ( → ) to move cursor to about the middle of the line of Us. | | Terminal Analysis (Page 55) |
| 21 | Depress LINE DLETE key. | Cursor returns to left margin, and Us are removed.<br><br>*s move up one line to replace Us. | |
| 22 | Depress LINE INSRT key several times. | *s move down one line to bottom of display and stop.<br><br>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. | Terminal Analysis (Page 55) |

TABLE B (Cont)

COMPLETE OFF-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|------|-----------|---------|------------------|
| 24 | Depress SEGMT ADV key 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.<br><br>*s and Us disappear as segment changes, and reappear at top of display when segment 1 marker reappears.<br><br>Cursor does not move. | |
| 25 | Depress SCROL UP key one time. | ◗Segment 1 marker and Us disappear from top of display.◖<br><br>◗ *s move to top of display, and segment 2 marker appears at bottom left of display.◖<br><br>Cursor does not move. | |
| 26 | Depress SCROL UP key fully.<br><br><br><br><br><br><br><br><br>*Note:* Operation with 410009 or 410018 continuous scrolling circuit card. | Segment 2 marker (then 3 marker if terminal has three segments) moves up the display.<br><br>◗ *s disappear from top of display.◖<br><br>Scrolling stops when segment marker of last segment reaches top line of display.<br><br>Cursor does not move (see Note).<br><br>Scrolling will not stop when segment marker of last segment reaches top line of display, but will continue while key is fully depressed. | |

TABLE B (Cont)

COMPLETE OFF-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|---|---|---|---|
| 27 | Depress SCROL DOWN key once, then fully.<br><br>*Note:* Operation with 410009 or 410018 continuous scrolling circuit card. | 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.<br><br>*s and Us reappear in original position at top of display when segment 1 returns to display.<br><br>Cursor does not move (see Note).<br><br>Scrolling will not stop when segment marker of last segment reaches top line of display, but will continue while key is fully depressed. | Terminal Analysis (Page 55)<br><br>Display Logic (Page 58) |
| 28 | Repeatedly depress LINE INSRT key until *s move to last line of segment. | *s and Us both move down one line each time LINE INSRT key is depressed.<br><br>Cursor does not move. | Terminal Analysis (Page 55)<br><br>Display Logic (Page 58) |
| 29 | Depress cursor down ( ↓ ), and then cursor right (→) to position cursor at about the middle of the line of Us. | | |
| 30 | Depress LINE DLETE key. | Cursor returns to left margin and Us are removed.<br><br>*s move up one line to replace Us. | |
| 31 | Depress LINE INSRT key several times. | *s move down one line to bottom of display on first depression, then disappear from display on second depression.<br><br>Cursor does not move. | |

TABLE B (Cont)

COMPLETE OFF-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|------|-----------|---------|------------------|
| 32 | Depress SEGMT ADV key. | Segment 2 marker appears at top left of display.<br><br>*s appear a few lines down from top in segment 2.<br><br>Cursor does not move. | |
| 33 | Depress HOME and CLEAR. | Cursor goes to home position.<br><br>Segment 1 is displayed. | |
| 34 | Depress SEGMT ADV key to display last segment of page. | Segment marker of last segment appears at upper left of display.<br><br>*s have been cleared from segment 2.<br><br>Cursor remains in home position. | Terminal Analysis (Page 55) |
| 35 | Depress cursor down ( ↓ ) to position cursor at about next to last line of display, then enter a few Us in this line. | | |
| 36 | Depress LINE INSRT key 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. | Terminal Analysis (Page 55) |
| 38 | Alternately depress TAB SET key and Spacebar until cursor reaches end of line. | Column of tab marks is displayed in every character position of page.<br><br>Alarm sounds at 73rd and 80th character positions. (On terminals with more than one segment, depress SEGMT ADV key as necessary to view tab columns on other segment(s), then return to segment 1.) | Controller Logic (Page 62)<br><br>Display Logic (Page 58)<br><br>Operator Console (Opcon) (Section 582-211-500) |

TABLE B (Cont)

COMPLETE OFF-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|------|-----------|---------|------------------|
| 39 | Home cursor and depress TAB CLEAR. | All tab marks (on all segments) are cleared. | Terminal Analysis (Page 55) |
| 40 | Depress HIGH LIGHT key. | HIGH LIGHT indicator lights. | |
| 41 | Enter a full line of *s at top of display. | *s continuously flash between half- and full intensity.<br><br>Alarm sounds at 73rd and 80th character positions.<br><br>Cursor remains at right end of line. | |
| 42 | Depress HIGH LIGHT key again. | HIGH LIGHT indicator goes out. | |
| 43 | Depress LINE INSRT key. | Cursor moves to left margin, and highlighted *s move down one line. | Terminal Analysis (Page 55) |
| 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 key. | FORM ENTER indicator lights. | Controller Logic (Page 62) |
| 45 | Enter a full line of Us at top of display. | Us are displayed at half intensity (protected).<br><br>Alarm sounds at 73rd and 80th character positions.<br><br>Cursor remains at right end of line. | Terminal Analysis (Page 55)<br><br>Display Logic (Page 58) |
| 46 | Depress LINE INSRT key. | Cursor moves to left margin and lines of *s and Us both move down one position.<br><br>Cursor remains in home position. | |
| 47 | Depress CLEAR. | Screen is cleared. | |
| 48 | Depress FORM ENTER key. | FORM ENTER indicator goes out. | |

TABLE B (Cont)

COMPLETE OFF-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|------|-----------|---------|------------------|
| 49 | Enter message of Fig. 9 in lines 1 through 9 of display. | Message appears as in Fig. 9. (To observe protected spaces, increase monitor brightness and note that all protected data has darker background than unprotected data.) | |
| 50 | Depress CHAR INSRT key fully and hold until movement stops. | Word QUICK in line 1 moves to tab column and stops. No other characters affected. | Terminal Analysis (Page 55) |
| 51 | Depress CHAR DLETE key twice. | Word QUICK in line 1 moves two positions left. No other characters affected. | |
| 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 key fully and hold until movement stops. | Word UNPROTECTED moves three positions to right, stopping when it reaches word PROTECTED. No other characters affected. | |
| 54 | Depress CHAR DLETE key 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 depress first time. Cursor moves to character position preceding protected New Line symbol. Alarm sounds continuously, and cursor does not advance beyond this position. | |

Protected Data Displayed
at Half Intensity
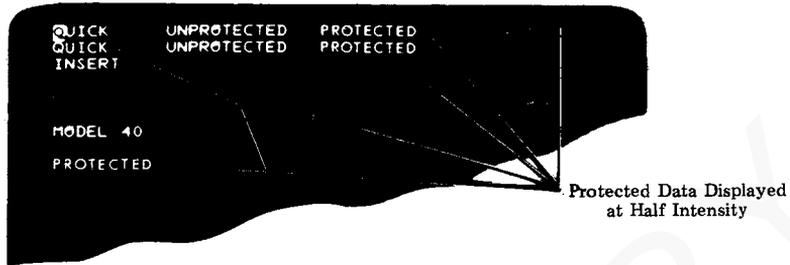
*Note:* Depress each key once unless number of depressions is indicated in parentheses.

LINE 1

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

LINE 2

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

LINE 3

Type INSERT
Depress Space until
cursor is under
NEW LINE symbol.
Depress FORM ENTER
Depress NEW LINE

LINE 4 AND 5

Depress Cursor
Right ( → ) until
cursor is under
NEW LINE symbol.
Depress NEW LINE

(Repeat for Line 5)

LINE 6

Depress Cursor
Right ( → ) until
cursor is at about
23rd character
position.
Depress NEW LINE.
Depress FORM ENTER.

LINE 7

Type MODEL
Depress Space
Type 40

LINE 8

Depress CURSR RTRN
Depress Cursor
down ( ↓ ) twice

LINE 9

Depress FORM ENTER
Type PROTECTED
Depress FORM ENTER
Depress HOME

Fig. 9

TABLE B (Cont)

COMPLETE OFF-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|------|-----------|---------|------------------|
| 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.<br><br>Cursor moves to space following word PROTECTED on second depression.<br><br>Cursor moves to beginning of word INSERT in line 3 on third depression.<br><br>No characters altered in any way. | Terminal Analysis (Page 55)<br><br>Operator Console (Opcon) (Section 582-211-500)<br><br>Display Logic (Page 58) |
| 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 overwrite a protected character.) | |
| 62 | Depress HOME, CLEAR, then TAB CLEAR. | Cursor goes to home position.<br><br>All unprotected characters and tab columns are cleared.<br><br>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 checkout 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. | | | |

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## 4. ON-LINE CHECKOUT

**4.01** On-line checkout is performed between the DATASPEED 40/2 Station under test and a Data Test Center equipped with a DATASPEED 40/2 Test Set. The Data Test Center operator controls the checkout using standard test messages generated by the test set. Table C provides a brief on-line checkout for KD or KDP terminals. Table D provides a complete on-line checkout for KD or KDP terminals. The off-line checkout procedures should be performed before attempting any on-line procedures.

**4.02** Instructions are provided in Tables C and D for establishing a data connection with a switched network data set. If a Private Line Data Set (202T) is used, different line connection procedures are performed.

**4.03** If station is equipped with a private line data set and private line(s) is (are) available, use those lines for on-line testing with the Test Center. If private lines are not available between the station and Test Center, switched network lines may be used by following the procedures in 4.04.

**4.04** The Private Line Data Set (202T, 201C, or 208A) can be connected to switched network lines by using the equipment and connections shown in Fig. 10. Cable length restrictions are shown in Fig. 11.

**4.05** Once line connections have been completed for a station using a Private Line Data Set 202T, test the station using the procedures in Table C for brief on-line checkout or Table D for complete on-line checkout. With a Data Set 202T, however, the station does not disconnect and drop the line as in switched network service. Disregard disconnect information when testing with Private Line Data Sets 202T.

### BRIEF ON-LINE CHECKOUT

**4.06** The brief on-line checkout is provided in Table C. Use the brief on-line checkout for a quick check of the ability of the DATASPEED 40/2 KD or KDP to send and receive data on-line. The brief checkout does not test all features of the station.
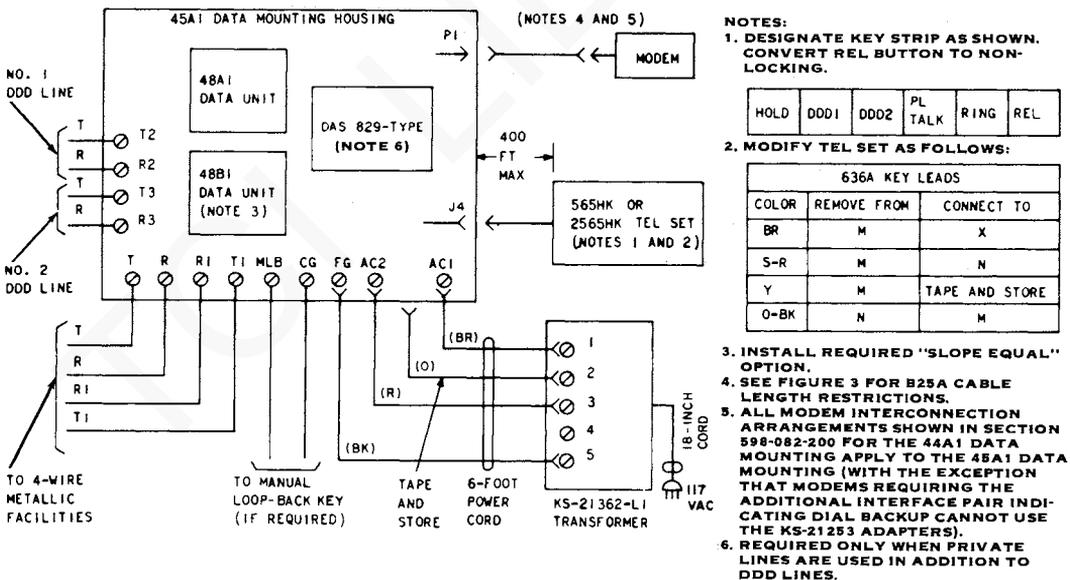


Fig. 10—Connection Diagram for Full Data—Dial Backup of Station
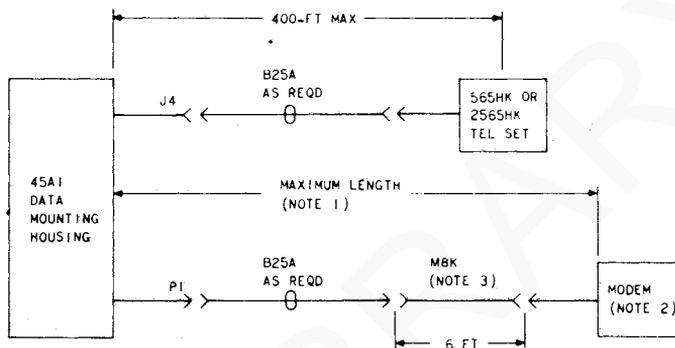
NOTES:
1. DATA SET           MAX LENGTH IN FT.
   201C                   1400
   202D                    500
   202T                    200
   208A                   1400
   209A                   1400
2. ALL MODEM INTERCONNECTION ARRANGEMENTS SHOWN IN SECTION 598-082-200 FOR THE 44AI DATA MOUNTING APPLY TO THE 45AI DATA MOUNTING (WITH THE EXCEPTION THAT MODEMS REQUIRING THE ADDITIONAL INTERFACE PAIR INDICATING DIAL BACKUP CANNOT USE THE KS-21253 ADAPTERS).
3. THE M8K CORD IS NOT USED WITH DATA SET 202D. USE D50AA-3 IN PLACE OF D6AA-61 SUPPLIED WITH DATA SET 202D.

Fig. 11—Connection Diagram Showing Cable Length Restrictions

TABLE C

BRIEF ON-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|------|-----------|---------|------------------|
| 1 | With power ON and local mode selected, depress HOME and CLEAR. | LOCAL lit.<br><br>Cursor goes home and all data is cleared from screen. | Terminal Analysis (Page 55)<br><br>Controller Logic (Page 62)<br><br>Operator Console (Opcon) (Section 582-211-500) |
| 2 | Depress REC. For KDP, also depress PRINT ON LINE.<br><br>*Note:* Print-on-line mode for Teletypewriter Compatible DATASPEED 40/2 is determined by Option 29. This step is for Option 29.a. only. | 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. 13 for data set configurations).<br><br>Data Set 202C<br><br>Depress TALK key, lift handset, and dial Data Test Center.<br><br>Data Set 202R<br><br>Lift handset, and dial Data Test Center.<br><br>Data Set 202S<br><br>Depress appropriate line key, lift handset, and dial Data Test Center.<br><br>Data Set 103A3<br><br>Depress CLEAR/TALK key, lift handset, dial Data Test Center. | *Note 1:* 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.<br><br>*Note 2:* If Private Line Data Set 202T is used, follow line connections procedures given in 4.06. | |

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.

Depress AUTO key to
enable auto-answer, if
data set is so equipped.

Depress TALK key to
call or converse with
Data Test Center
operator.

Depress DATA key
to enter data mode.

Data Set 202C

Depress DATA key
to enter data mode.

Depress appropriate
line key to place call
or converse with operator.

Data Set 202S and Attendant Set

TALK
POSITION

EXCLUSION KEY

DATA POSITION
(Key Pulled Up)

Data Set 202R

Fig. 12

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TABLE C (Cont)

BRIEF ON-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|---|---|---|---|
| 4 | When instructed by Data Test Center, go to data mode per standard procedure for data set used: | FOX message displayed on screen (and printed on printer, if KDP) as below: | Controller Logic (Page 62) |
| | | THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK 1234567890 THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK 1234567890 | |
| | Data Set 202C or 202S Depress DATA key and place handset on switchhook. Data Set 202R Lift exclusion key. Do not place handset on switchhook. Data Set 103A3 (or 113A) Depress DATA key and place handset on switchhook. | *Note:* One or more CR (Carriage Return) symbols (←) may appear as above if Option 5.d. enabled. CR rejected if Option 5.c. enabled. | Operator Console (Opcon) (Section 582-211-500) Data Set Problem (Page 57) |
| | THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG'S BACK 1234567890 THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG'S BACK 1234567890 | Revert to local, if Option 8.c. is enabled. For KDP, printer feeds out 16 lines of paper on receipt of ETX if Option 18.c. enabled. | |
| 5 | *Note 1:* If Option 8.c. is enabled, do not perform Step 5; go to Step 6. If Option 8.d. is enabled, go to local mode and change ETX at end of message to EOT. *Note 2:* Do not go from receive to local manually in switched network service. Depress SEND, first, then LOCAL, to prevent a disconnect. | Display appears as in Step 4, but but $E_X$ replaced by $E_T$. For KDP, printer motor stops immediately (Option 53.b.) or after a two minute delay (Option 53.a.). | |
| 6 | Home cursor and depress SEND. *Note:* 103A3 equipped stations will disconnect when EOT is sent. If disconnect occurs, call Data Test Center. | SEND lights (LOCAL goes out). Cursor moves through message and stops after end character. Printer prints message if KDP. Revert to local if Option 11.a. is enabled. | Operator Console (Opcon) (Section 582-211-500) Controller Logic (Page 62) Display Logic (Page 58) |

TABLE C (Cont)

BRIEF ON-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|---|---|---|---|
| 6 (Cont) | | For KDP, printer feeds out 16 lines of paper if Option 18.c. enabled. | Data Set Problem (Page 57) |
| 7 | Go to talk mode and evaluate results of test with Data Test Center operator:<br><br>Data Set 202C, 103A3, or 113A<br><br>Lift handset and depress TALK key.<br><br>Data Set 202R<br><br>Lower exclusion key to talk position. Do not depress all the way or call will disconnect.<br><br>Data Set 202S<br><br>Lift handset and depress appropriate 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 ends the BRIEF ON-LINE CHECKOUT — TELETYPEWRITER COMPATIBLE "DATASPEED" 40/2 KD AND KDP STATIONS IN "DATAPHONE**" SERVICE. For futher on-line checkout go to Table D. | | | |

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COMPLETE ON-LINE CHECKOUT

4.07    The complete on-line checkout is provided in Table D. These procedures provide a complete check of the receiving options and send variations on the DATASPEED 40/2 KD or KDP.

TABLE D

COMPLETE ON-LINE CHECKOUT — KD AND KDP TERMINALS

This table provides a complete checkout of options and variable features of Teletypewriter Compatible DATASPEED 40/2 KD and KDP stations.

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|------|-----------|---------|------------------|
| 1 | Proceed to Step 50 for Teletypewriter Compatible DATASPEED 40/2 using 103-type modem interface.<br><br>For a complete on-line checkout using a 202-series data set, perform the following steps. If no options are given, option the DATASPEED 40/2 as follows:<br><br>OPTION      TITLE<br><br>4.a. — Reverse Channel Required to Send (only if data set is equipped with reverse channel, otherwise choose 4.b.)<br>41.b. — Full Duplex (if local copy feature is provided in data set, HDX if not)<br>42.a. — Even Parity<br>44.a. — Enable EIA Rec Data<br>45.b. — Disable Rec Data From Current Loop<br>47.a. — Enable PTR Interface (KDP only)<br>43.a. — Send One Stop Bit<br>3.b. — 1200 Baud<br>29.a. — PRINT ON LINE Normal<br>1.b. — SSI to Printer (KDP only)<br>8.a., c.,e.,g. — End on EOT, ETX, GS, FF<br>7.a. — Disable Vertical Parity Detection<br>10.b. — Line Ending Sequence CR, CR LF (←  ← ≡ )<br>11.a. — Go Local After Send<br>46.b. — 202-Type Modem Interface<br>19.c. — PTR Errored Character Symbol Not Printed on Parity Error | | |

TABLE D (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|---|---|---|---|
| 2 | With power on and local mode selected, depress FORM ENTER, HOME, CLEAR, TAB CLEAR, and FORM ENTER. | LOCAL lit<br>Cursor goes home and all data is cleared from screen. | Terminal Analysis (Page 55) |
| 3 | Depress REC. For KDP depress PRINT ON LINE. | REC lights. (LOCAL goes out).<br>For KDP, PRINT ON LINE lights. | Controller Logic (Page 62) |
| 4 | If call is not already established as a result of Brief On-Line Checkout (Table C), call Data Test Center in talk mode and request complete on-line checkout:<br><br>Data Set 202C<br><br>Depress TALK key, lift handset, and dial Data Test Center.<br><br>Data Set 202R<br><br>Lift handset and dial Data Test Center.<br><br>Data Set 202S<br><br>Depress appropriate Line key, lift handset, and dial Data Test Center. | *Note:* 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. | |

REPEATED FOX TEST

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. Both operators will go to talk mode for evaluation of test.

| 5 | When instructed by Data Test Center operator, go to data mode per standard procedure for data set used:<br><br>Data Set 202C or 202S<br><br>Depress DATA key and place handset on switchhook. | Repeated FOX message displayed on screen (and printed on printer, if KDP) as below: | Terminal Analysis (Page 55)<br><br>Data Set Problem (Page 57) |

THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK 1234567890
THE QUICK BROWN FOX JUMPED OVER THE LAZY DOGS BACK 1234567890

TABLE D (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|---|---|---|---|
| 5 (Cont) | **Data Set 202R**<br><br>Lift exclusion key. Do not place handset on switchhook.<br><br>THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG'S BACK 1234567890<br>THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG'S BACK 1234567890<br><br>If terminal is equipped for interrupt feature, depress INTRPT key while message is being received, then depress again to release. | *Note 1:* One or more CR (Carriage Return) symbols ( ← ) may appear as shown on Page 28 if Option 5.d. enabled. CR rejected if Option 5.c. enabled.<br><br>If terminal is equipped with interrupt feature, reception will stop when INTRPT key is depressed first time (indicator lights), and will resume when key is depressed second time (indicator goes out).<br><br>*Note 2:* KD stations must have an Issue 2A or later of 410770 circuit card to have the interrupt feature.<br><br>KD/KDP goes to local if Option 8.c. is used. | |
| 6 | Go to local mode and type EOT over the ETX at end of message.<br><br>*Note:* If terminal is in Receive, depressing LOCAL will disconnect call. Depress SEND first, then LOCAL, to prevent call from disconnecting. | Display appears as in Step 5, but $E_X$ is replaced by $E_T$. | |
| 7 | Home cursor and depress SEND. If KDP, also depress PRINT ON LINE.<br><br>If Option 27.a. is enabled, cursor will go home on depressing SEND. Try it when cursor is not in the home position. | SEND lights (LOCAL goes out).<br><br>Cursor moves through message. Printer prints message, if KDP, and Option 29.a. enabled. | Operator Console Opcon (Section 582-211-500)<br><br>Controller Logic (Page 62) |

TABLE D (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|---|---|---|---|
| 7 (Cont) | | If reverse channel Option 4.a. enabled, Data Test Center may produce interrupt during message transfer, causing transmission to pause, then resume.<br><br>KD/KDP reverts to receive. | |
| 8 | Go to talk mode per standard procedure for data set used and evaluate results with Data Test Center.<br><br>Data Set 202C<br><br>Lift handset and depress TALK key.<br><br>Data Set 202R<br><br>Lower exclusion key to talk position. Do not depress exclusion key all the way or call will disconnect.<br><br>Data Set 202S<br><br>Lift handset and depress line key. | | |
| 9 | If results of fox test are satisfactroy, home cursor and clear screen (local mode), then depress REC. | | |
| MODIFIED FOX TEST ONE<br><br>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. | | | |
| 10 | For KDP with tractor feed printer, make sure the FORMS switch is on. Depress PRINT ON LINE if KDP. | | |
| 11 | When instructed by Data Test Center, go to data mode per standard procedure for data set used. | FOX message displayed on screen (and printed if KDP). | Terminal Analysis (Page 55) |

TABLE D (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|---|---|---|---|
| 11 (Cont) | | *Note:* One or more CR (Carriage Return) symbols ( ← ) may precede New Line symbol ( ≡ ) if Option 5.d. enabled. CR rejected if Option 5.c. enabled.<br><br>If KDP has tractor feed printer, form out occurs on receipt of $F_F$ at end-of-message (FORM switch on). Check for proper form out length.<br><br>Upon receipt of $F_F$ at end-of-message, terminal reverts to local, if Option 8.a. is enabled. | Controller Logic (Page 62)<br><br>Printer (Section 582-210-500)<br><br>Controller Logic (Page 62) |
| 12 | Go to talk mode per standard procedure for data set used and evaluate results of test with Data Test Center operator.<br><br>If results of test are satisfactory, home cursor and clear screen then depress REC. | | |
| MODIFIED FOX TEST TWO<br><br>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, enter data mode per standard procedure for data set being used. | FOX message is received and displayed on screen with $G_S$ (Group Separator) as end character.<br><br>*Note:* One or more CR ( ← ) symbols may be displayed preceding New Line symbol ( ≡ ) if Option 5.d. enabled. CR ( ← ) rejected if Option 5.c. enabled.<br><br>Revert to local, if Option 8.g. is enabled. | Terminal Analysis (Page 55)<br><br>Controller Logic (Page 62) |
| 14 | Home cursor, depress SEND.<br><br>Go to talk mode per standard procedure for data set being used to evaluate results with Data Test Center operation. | Message is sent.<br>Revert to local (goes to receive if Option 11.b. is enabled). | Terminal Analysis (Page 55)<br><br>Controller Logic (Page 62) |

TABLE D (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|------|-----------|---------|------------------|
| 15 | If results are satisfactory, enter local mode, home cursor, and clear screen. Depress REC. | All data is cleared, REC lights. | Controller Logic (Page 62) |

MODIFIED FOX TEST THREE

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.

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|------|-----------|---------|------------------|
| 16 | 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:<br><br>Data Set 202C<br><br>Depress AUTO key on data set. Place handset on switch-hook. Depress REC on KD, or PRINT ON LINE on KDP if Option 29.a. present (indicator lights).<br><br>Data Set 202S<br><br>Depress appropriate Line key. Place handset on switchhook. Depress REC on KD, or PRINT ON LINE on KDP (indicator lights).<br><br>Data Set 202R<br><br>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. | For auto-answer operation (Data Set 202S equipped with auto-answer), DATA button or indicator lights automatically when Data Test Center calls station.<br><br>Printer of KDP may copy message with KDP in local mode if PRINT ON LINE key lit. KD copies message. Characters ($D_L$) and ($E_T$) are not printed on printer at station under test.<br><br>Station will disconnect on receipt of DLE-EOT. Terminal goes to local mode. (Data Set 202C or 202S drops out of data mode and disconnects from line. On Data Set 202R handset must be placed on switchhook.) | Terminal Analysis (Page 55)<br><br>Controller Logic (Page 62) |
| 17 | Call Data Test Center in talk mode and evaluate results of test.<br><br>If results are satisfactory, home cursor and clear screen. Depress REC. | | |

TABLE D (Cont)

## COMPLETE ON-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|------|-----------|---------|------------------|
| | MODIFIED FULL ASCII TEST ONE | | |
| | In this test, Data Test Center will send a test message containing all ASCII code characters except $D_2$, $D_3$, and $D_4$ should be removed. 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. | | |
| 18 | For KDP equipped with tractor feed printer, set FORMS switch on printer to OFF. Depress PRINT ON LINE if KDP. When instructed by Data Test Center, enter data mode. | Full ASCII message displayed on screen (and suitable characters printed if KDP and PRINT ON LINE selected). | Terminal Analysis (Page 55)<br><br>Controller Logic (Page 62) |



*Note 1:* 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.

```
 !"#$%&'()*+,-./0123456789:;<=>?
 !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^ _
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^ _
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^
```

*Note 2:* Illustration shows print-out for up-low printer with Option 21.b. enabled or monocase printer with Option 22.b. enabled.

```
 !"#$%&'()*+,-./0123456789:;<=>?
 !"#$%&'()*+,-./0123456789:;<=>?
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^ _
@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^ _
`abcdefghijklmnopqrstuvwxyz{¦}~
`abcdefghijklmnopqrstuvwxyz{¦}~
```

*Note 3:* Illustration shows print-out for up-low printer with Option 21.a. enabled, last two lines will print lower case. For monocase printer printer with Option 22.a. enabled, last two lines will print as errored character symbols ( ⌀ ).

Terminal reverts to local mode.

TABLE D (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|------|-----------|---------|------------------|
| 19 | Home cursor; depress PRINT ON LINE for KDP and depress SEND.<br><br>*Note:* Print on line function will be determined by Option 29.a.<br><br>Go to talk mode and evaluate results of test with Data Test Center.<br><br>If results are satisfactory, enter local mode, home cursor, clear screen. Depress REC. | Cursor moves through message.<br><br>Printer prints if KDP and Option 29.a. enabled.<br><br>Transmission stops, terminal reverts to receive upon sending EOT. | Terminal Analysis (Page 55) |
| | **MODIFIED FULL ASCII TEST TWO**<br><br>In this test, Data Test Center will send a test message containing all ASCII code characters except $D_2$ and $D_4$. Station under test will receive message, then send it back to Data Test Center. If terminal has Issue 4B or later of 410674 circuit card, make sure Option 5.j. is used. | | |
| 20 | For KDP, depress PRINT ON LINE. Depress REC. When instructed by the Data Test Center, enter data mode. | Full ASCII message is displayed minus the characters $D_2$ and $D_4$. Message will be displayed as in Step 18 except for absence of $D_2$ and $D_4$ characters.<br><br>Revert to LOCAL. | Terminal Analysis (Page 55)<br><br>Controller Logic (Page 62) |
| 21 | Home cursor, depress PRINT ON LINE for KDP, depress SEND.<br><br>*Note:* Terminal is now in expanded conversational mode. Keyboard on-line, a character at-a-time. | Cursor moves through message and stops on $D_3$ character. Data Test Center receives all data through $D_3$. SEND goes out. S/R lights. REC lights.<br><br>Opcon is now active for expanded conversational mode testing. | Terminal Analysis (Page 55)<br><br>Controller Logic (Page 62)<br><br>Operator Console (Opcon) (Section 582-211-500). |
| 22 | Test Center send $E_C$ f character sequence. | SEND key lights. REC key goes out. S/R still lighted.<br><br>*Note:* If 410674 circuit card is earlier than Issue 4B, you must manually depress SEND key to light it. | Operator Console (Opcon) (Section 582-211-500)<br><br>Controller Logic (Page 62) |

TABLE D (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|------|-----------|---------|------------------|
| 23 | Type several U*U* characters on operator console. | U*U* characters should appear on display monitor as characters typed on operator console. The Data Test Center should have received U*U*. | Controller Logic (Page 62)<br><br>Display Logic (Page 58) |
| 24 | Type the following escape sequences and characters on the operator console. Characters are sent on-line while being typed.<br><br>*Note:* "E$_C$" is "ESC" key on opcon. | The display monitor of station under test should display the data and functions performed.<br><br>*Note:* If FDX is selected as an option (Option 41.b.), display will not follow sequences sent if no local copy is provided in data set.<br><br>Escape sequences will be performed if Option 6.b. is enabled and displayed if 6.a. is enabled. | Terminal Analysis (Page 55)<br><br>Controller Logic (Page 62)<br><br>Display Logic (Page 58) |
| | D$_2$ RYRY D$_4$ | KDP only: PRINT ON LINE turns on, printer copies RYRY, then PRINT ON LINE turns off. | |
| | E$_C$3<br>FOX $\Big\}$<br>E$_C$4 | FOX should be displayed as highlighted characters. | |
| | E$_C$1<br>E$_C$2<br>E$_C$0<br>E$_C$B<br>E$_C$C<br>E$_C$7<br>E$_C$G<br>E$_C$J<br>U*U*<br>E$_C$B<br>U*U<br>(Cursor left) ($\leftarrow$)<br>E$_C$L<br>E$_C$M<br>E$_C$W<br>FOX $\Big\}$<br>E$_C$X<br><br>E$_C$H<br>E$_C$T<br>E$_C$S | ◗ Tab (Column) Set ◖<br>Tab Clear<br>Single Tab Set<br>Cursor Down<br>Cursor Right<br>Cursor Up<br>Cursor Return<br>Clear (Single tab does not clear).<br>U*U* is displayed.<br>Cursor Down<br>U*U is displayed.<br>Backspace is sent.<br>Line Insert<br>Line Delete<br>FOX should be displayed as protected characters.<br><br>Cursor Home<br>Scroll Down<br>Scroll Up | |

TABLE D (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|---|---|---|---|
| 24 (Cont)<br><br>*Note:* Enter $E_CU$ for each memory segment present in station. | $\begin{cases} E_CU \\ E_CU \\ E_CU \end{cases}$<br><br>$E_C@$<br>$E_CR$<br>$U*U*$<br>$E_CG$<br>$E_CP$<br>$E_C\wedge$<br>$D_L E_X$ | Seg Adv (to 2nd segment)<br>Seg Adv (to 3rd segment)<br>Seg Adv (to 1st segment)<br>Cursor Tab<br>Clear ALL, Cursor Home<br>U*U* is displayed.<br>Cursor Return<br>Character Delete<br>Character Insert<br>Station should revert to local mode and data set should remain in data mode. | $\begin{cases} \text{For two or three} \\ \text{segment terminals only.} \end{cases}$<br>$\begin{cases} \text{For three segment ter-} \\ \text{minals only.} \end{cases}$ |
| 25 | Depress S/R.<br>Depress SEND and send (by typing) following characters:<br>$U*U* E_T$<br>from operator console.<br><br>If Issue 4B of 410674 circuit card is present and Option 40.a. is enabled, depress SEND and repeat this step, ending with ← instead of $E_T$. | S/R and REC light.<br>S/R and SEND light.<br>U*U* is received at Data Test Center.<br><br>Station should revert to S/R receive mode. | Terminal Analysis (Page 55)<br><br>Controller Logic (Page 62) |

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.

| 26 | When instructed by the Data Test Center, depress RECEIVE and PRINT ON LINE, and enter data mode per standard procedures from data set being used. | Option test message displayed on screen (printed if KDP as follows:<br><br>S NULLS<br>S DELETE<br>S CR<br>S BAD PARITY 12345<br>S CELL AAAAAA<br><br>Display shows factory program-med options — Reject NULs (Option 5.a.) DEL (Option 5.e.), and CR (Option 5.c.). | Controller Logic (Page 62) |

TABLE D (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|------|-----------|---------|------------------|
| 26 (Cont) | | (display screen image) | |
| | | Exceptions to factory program-med options — NUL displayed as N$_U$ (Option 5.b.), DEL dis-played as ⌀ (Option 5.f.), and CR displayed as ← (Option 5.d.). | |
| | | Print-out for Option 19.c.: | Printer (Section 582-210-500) |
| | | 5 NULLS<br>5 DELETES<br>5 CRS<br>5 BAD PARITY 12345<br>5 BELLS | |
| | | *Note:* Message received on printer may "data stack" (car-riage returns inserted during line of data, data "stacked" together, no missing charac-ters). | |
| | | Printer will feed out 16 lines on receipt of ETX, if Option 18.c. is enabled. Upon receipt of E$_X$ at end-of-message, station will revert to local mode, if Option 8.c. is enabled. Data set does not disconnect. Option 18.c. should not be used with tractor feed printers. | |
| 27 | Change ETX at end-of-message to EOT. | E$_X$ is replaced by E$_T$. | Operator Console (Opcon) (Section 582-211-500) |
| | Home cursor and depress SEND. | SEND lights and cursor moves through message. Printer prints if KDP. | Controller Logic (Page 62) |
| | *Note:* If Option 27.a. is enabled, cursor automatically homes on depressing SEND. | Station reverts to receive after sending EOT. | Display Logic (Page 58) |
| | Check Option 27.a. when cursor is not in home positon. | For KDP, printer stops immedi-ately (Option 53.b.) or after a two minute delay (Option 53.a.). | |

TABLE D (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|------|-----------|---------|------------------|
| 28 | 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). | | |

STEPS 29 THROUGH 36. APPLY ONLY TO FULL-EDIT KD OR KDP WITH OPTION 6.b. ENABLED. FOR FULL-EDIT TERMINALS WITH OPTION 6.a. ENABLED, GO TO STEP 37.

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.

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|------|-----------|---------|------------------|
| 29 | When instructed by Data Test Center operator, depress RECEIVE, PRINT ON LINE, and enter data mode. | REC and PRINT ON LINE light.<br><br>Cursor automatically goes home.<br><br>Edit test message displayed on screen (and printed, if KDP) as below: | Terminal Analysis (Page 55)<br><br>Controller Logic (Page 62)<br><br>Printer (Section 582-210-500) |

HALF INTENSITY

FLASHING



*Note:* Printed message should NOT contain suffixes of escape sequences sent by Data Test Center.

Upon receipt of ETX at end-of-message, station should revert to the local mode if Option 8.c. is enabled.

TABLE D (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|---|---|---|---|
| 29 (Cont) | | For KDP, friction feed printer feeds out 16 lines of paper on receipt of ETX, if Option 18.c. is enabled.<br><br>*Note:* Option 18.c. should not be used with tractor feed printers. | |
| 30 | Change ETX at end-of-message to EOT. | $E_X$ is replaced by $E_T$. | Operator Console (Opcon) (Section 582-211-500)<br><br>Controller Logic (Page 62) |
| 31 | Depress PRINT ON LINE if KDP.<br>Depress FORM SEND. | PRINT ON LINE and FORM SEND keys light. | Operator Console (Opcon) (Section 582-211-500)<br><br>Controller Logic (Page 62) |
| 32 | Home cursor, depress SEND.<br><br>*Note 1:* If Option 27.a. is enabled, cursor will automatically home on depressing SEND. | SEND lights and cursor moves through message. Printer prints if KDP.<br><br>Upon sending EOT, station reverts to receive mode.<br><br>*Note 2:* Option 18.c. should not be used with tractor feed printers. | Operator Console (Opcon) (Section 582-211-500)<br><br>Controller Logic (Page 62) |
| 33 | Go to talk mode and evaluate results of test with Data Test Center operator. | | |
| 34 | Depress LOCAL, HOME, and SEND.<br><br>*Note:* If Option 27.a. is enabled, cursor will automatically home on depressing SEND. | Cursor goes home and SEND lights. | Controller Logic (Page 62) |
| 35 | When instructed by Data Test Center operator, go to data mode. | Cursor moves through message. Printer prints if KDP.<br><br>After sending EOT, station reverts to receive mode. | Operator Console (Opcon) (Section 582-211-500)<br><br>Controller Logic (Page 62) |

TABLE D (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|------|-----------|---------|------------------|
| 36 | Go to talk mode and evaluate results of test with Data Test Center operator.<br><br>If results are satisfactory, depress LOCAL, home cursor (local mode) and depress FORM ENTER, TAB CLEAR, and CLEAR, then depress FORM ENTER again.<br><br>*Note:* Option 12.b. must be enabled to clear or change protected data. | | |

STEPS 37 THROUGH 49 APPLY ONLY TO FULL-EDIT KD OR KDP WITH OPTION 6.a. ENABLED. FOR FULL-EDIT TERMINALS WITH OPTION 6.b. ENABLED, PERFORM STEP 29 THROUGH STEP 36.

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.

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|------|-----------|---------|------------------|
| 37 | 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:<br><br>THIS SHOULD BE THE FIRST LINE<br>PROTECT HILIGHT U N D E R L I N E SINGLE TAB SET  COLUMN TAB SET<br>HORIZ. TABCURSOR TABTAB CLEAR<br>SHOULD BE A DIAMOND<br>XXXXSHOULD NOT REMAIN ON DISPLAY<br><br>Upon receipt of ETX at end-of-message, terminal will go to local mode, if Option 8.c. is enabled. For KDP, friction feed printer feeds out 16 lines of paper on receipt of ETX if Option 18.c. is enabled. Option 18.c. should not be used with tractor feed printers. | Terminal Analysis (Page 55)<br><br>Controller Logic (Page 62) |
| 38 | Go to talk mode and evaluate results of test with Data Test Center operator. | | |

TABLE D (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|------|-----------|---------|------------------|
| 39 | When instructed by Data Test Center operator, hang up to disconnect call. | | |
| 40 | With terminal in local mode, enter following message on display: (Procedure is indicated in message.) <br><br>  <br><br> ① — FORM ENTER on <br> ② — FORM ENTER off; HIGHLIGHT on, one space <br> ③ — HIGHLIGHT off, then <br>     Depress spacebar three times <br>     Depress TAB SET <br>     Depress cursor left ( ← ) once <br>     Depress TAB <br>     Depress spacebar once <br>     Depress CONTROL and EOT. | | |
| 41 | Home cursor, depress FORM SEND, depress PRINT ON LINE if KDP, depress REC. | FORM SEND, PRINT ON LINE, and REC keys light. | Operator Console (Opcon) (Section 582-211-500) |
| 42 | Place call to Data Test Center in talk mode and advise operator that message has been prepared for transmission. | | |
| 43 | 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. Printing depends upon Option 29. <br><br> Transmission stops and terminal reverts to receive mode upon transmitting EOT at end-of-message. | |
| 44 | Go to talk mode and evaluate results of test with Data Test Center operator. | | |

TABLE D (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|---|---|---|---|
| 45 | Depress LOCAL and HOME. | LOCAL lights, FORM SEND goes out.<br><br>Cursor goes to home position. | Terminal Analysis (Page 55)<br><br>Controller Logic (Page 62)<br><br>Operator Console (Opcon) (Section 582-211-500) |
| 46 | Depress PRINT ON LINE if KDP, depress REC. | PRINT ON LINE lights.<br><br>LOCAL goes out and REC lights. | |
| 47 | 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.<br><br>Transmission stops and terminal reverts to receive mode upon transmission of EOT at end-of-message. | |
| 48 | Go to talk mode and evaluate results of test with Data Test Center operator. | | |
| 49 | Depress LOCAL, HOME, then TAB CLEAR.<br><br>Depress FORM ENTER, then CLEAR.<br><br>Depress FORM ENTER. | LOCAL lights, cursor goes home, and tab marks are cleared.<br><br>FORM ENTER lights, and all data is cleared from screen.<br><br>FORM ENTER goes out. | |
| | THIS COMPLETES ON-LINE CHECKOUT PROCEDURES FOR KD/KDP STATIONS USING 202-TYPE DATA SETS. FOR CHECKOUT OF KD/KDP STATIONS OPERATING WITH 103-TYPE DATA SETS, REFER TO STEP 50. | | |
| 50 | For complete on-line checkout of KD/KDP stations, utilizing 103-type modem interface, if no options are given, option Teletypewriter Compatible DATASPEED 40/2 as follows:<br>3.h.  — 300 Baud<br>4.b.  — Reverse Channel Not Required to Send<br>5.a.,  — Reject Null, Delete,<br>c.,e.,    CR, DC$_1$, and DC$_3$.<br>g.,i. | *Note:*  This checkout can be used for stations operating with 113-A type data sets provided all calls are placed from station, not Data Test Center. | |

TABLE D (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|------|-----------|---------|------------------|
| 50 (Cont) | 6.b. — Perform Escape Sequences<br>7.b. — Disable Vertical Parity Detection<br>8.a., c.,e.,g. — End on $E_X$, $E_T$, $F_F$, $G_S$<br>9.b. — Send Highlight Delimiters<br>11.a. — Go Local After Sending<br>19.c. — Not Printed on Parity Error (KDP is being checked out)<br>40.a. — Go Rec on Sending CR (if Issue 4B of 410674 circuit card is present)<br>41.a. — Half-Duplex<br>42.a. — Send Even Parity<br>43.a. — Send One Stop Bit<br>44.a. — Enable EIA Rec Data<br>45.b. — Disable Rec Data From Current Loop<br>46.a. — 103-Type Modem Interface<br>47.a — Enable PTR Interface (if KDP only)<br>49.a. — Enable Interrupt Feature (if KD only) | | |
| 51 | With power on and local mode selected, depress FORM ENTER, HOME, CLEAR, TAB CLEAR, and FORM ENTER. | LOCAL lit.<br>Cursor goes home and all data is cleared from screen. | Terminal Analysis (Page 55) |
| 52 | Depress REC. For KDP, depress PRINT ON LINE.<br><br>If call is not already established as a result of Brief On-Line Checkout (Table C), call Data Test Center in talk mode and request complete on-line checkout:<br><br>For Data Set 103A3:<br><br>Depress CLEAR/TALK key, lift handset, and dial Data Test Center. | REC lights (LOCAL goes out).<br>For KDP, PRINT ON LINE lights.<br><br>*Note:* 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. | Controller Logic (Page 62) |

TABLE D (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|------|-----------|---------|------------------|
| | REPEATED FOX TEST<br><br>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. | | |
| 53 | When instructed by Data Test Center, go to data mode per standard procedure. | Repeated FOX messsage displayed on screen (and printed on printer, if KDP) as below:<br><br><br><br>*Note:* One or more CR (Carriage Return) symbols (←—) may appear as above if Option 5.d. enabled. CR rejected if Option 5.c. enabled.<br><br>THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG'S BACK 1234567890<br>THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG'S BACK 1234567890<br><br>KD/KDP goes to local if Option 8.c. is enabled. | Data Set Problem (Page 57)<br><br>Terminal Analysis (Page 55) |
| 54 | Go to local mode and type EOT over the ETX at the end of the message. | Display appears as in Step 53, but $E_X$ is replaced by $E_T$. | |
| 55 | Home cursor and depress SEND. If KDP, also depress PRINT ON LINE.<br><br>If Option 27.a. is enabled, cursor will go home on depressing SEND. Try it when cursor is not in home position. | SEND lights (Local goes out).<br><br>Cursor moves through message.<br><br>Printer prints message if KDP, and Option 29.a. enabled.<br><br>KD and KDP revert to local upon sending EOT. Data Set Disconnects. | Operator Console (Opcon) (Section 582-211-500)<br><br>Controller Logic (Page 62)<br><br>Data Set Problem (Page 57) |
| 56 | If results of fox test are satisfactory, home cursor and clear screen (local mode).<br><br>Depress REC. | Cursor goes home, screen clears.<br><br>LOCAL goes out.<br><br>REC lights. | Terminal Analysis (Page 55) |

TABLE D (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|------|-----------|---------|------------------|
| MODIFIED FOX TEST ONE | | | |
| 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. | | | |
| 57 | For KDP with tractor feed printer, make sure the FORMS switch is on. Depress PRINT ON LINE if KDP. | | |
| 58 | Depress CLEAR/TALK key, lift handset, and dial Data Test Center. When instructed by Data Test Center, go to data mode per standard procedure for data set used. | FOX message displayed on screen (and printed if KDP). *Note:* One or more CR (carriage Return) symbols ( ← ) may precede New Line symbol ( ≡ ) if Option 5.d. enabled. CR rejected if Option 5.c. enabled. If KDP has tractor feed printer, form out occurs on receipt of $F_F$ at end-of-message (FORM switch on). Check for proper form out length. Upon receipt of $F_F$ at end-of-message, terminal reverts to local, if Option 8.a. is enabled. | Terminal Analysis (Page 55) Controller Logic (Page 62) Printer (Section 582-210-500) |
| 59 | Go to talk mode per standard procedure for data set used and evaluate results of test with Data Test Center operator. If results of test are satisfactory, home cursor and clear screen then depress REC. | | |
| MODIFIED FOX TEST TWO | | | |
| 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. | | | |
| 60 | When instructed by the Data Test Center, enter the data mode per standard procedure for the data set being used. | FOX message is received and displayed on screeen with $G_S$ (Group Separator) as end character. | Terminal Analysis (Page 55) Controller Logic (Page 62) |

TABLE D (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|------|-----------|---------|------------------|
| 60 (Cont) | | *Note:* One or more CR (←) symbols may be displayed preceding New Line symbol ( ≡ ) if Option 5.d. enabled. CR (←) rejected if Option 5.c. enabled. At end-of-message, the terminal will revert to local, if Option 8.g. is enabled. | |
| 61 | Home cursor, depress SEND. After cursor stops at ending character, go to talk mode per standard procedure for data set being used to evaluate results with Data Test Center operator. | Message is sent. Revert to local (goes to receive, if Option 11.b. is enabled.) | Terminal Analysis (Page 55)<br><br>Controller Logic (Page 62) |
| 62 | If the results are satisfactory, enter local mode, home cursor and clear screen. Depress REC. | All data is cleared. REC lights. | Controller Logic (Page 62) |

MODIFIED FULL ASCII TEST

In this test, Data Test Center will send a test message containing all ASCII code characters except, $D_2$, $D_3$, and $D_4$ should be removed. 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.

| | | | |
|------|-----------|---------|------------------|
| 63 | For KDP equipped with tractor feed printer, set FORMS switch on printer to OFF. Depress PRINT ON LINE if KDP. Depress REC. When instructed by Data Test Center, enter data mode per standard procedures for data set being used. | Full ASCII message displayed on screen (and suitable characters printed if KDP and PRINT ON LINE selected). | Terminal Analysis (Page 55)<br><br>Controller Logic (Page 62) |

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TABLE D (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|---|---|---|---|
| 63 (Cont) | | *Note 1:* 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. | |
| | | !"#$%&'()*+,-./0123456789:;<=>? !"#$%&'()*+,-./0123456789:;<=>? @ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_ @ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_ @ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^ @ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^ | |
| | | *Note 2:* Illustration shows print-out for up-low printer with Option 21.b. enabled or monocase printer with Option 22.b. enabled. For up-low printer with Option 21.a. enabled, last two lines will print lower case. For monocase printer with Option 22.a. enabled, last two lines will print as errored characters symbols (≣A≣). Terminal reverts to local mode. Data set disconnects. | |
| 64 | Enter local mode and change EOT at end-of-message to ETX. Home cursor, depress PRINT ON LINE for KDP. Depress REC. Recall Data Test Center, and when instructed, enter data per standard procedure for data set being used. Test Center sends $E_cf$ character sequence. | EOT is replaced by ETX in message. REC lights. SEND lights (see Note) and cursor moves through message. Printer prints if KDP and Option 29.a. enabled. Transmission stops after ETX is sent. Station now reverts to local (goes to receive, if Option 11.b. is enabled). *Note:* If 410674 circuit card is earlier than Issue 4a, you must manually depress SEND key to light it. | Terminal Analysis (Page 55) |
| 65 | Go to talk mode and evaulate results of test with Data Test Center. If results are satisfactory, home cursor and clear screen. | LOCAL lights, screen clears. | Terminal Analysis (Page 55) |

TABLE D (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|---|---|---|---|
| — MODIFIED FULL ASCII TEST TWO ||||

**MODIFIED FULL ASCII TEST TWO**

In this test, Data Test Center will send a test message containing all ASCII code characters except $D_2$ and $D_4$. Station under test will receive message, then send it back to Data Test Center.

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|---|---|---|---|
| 66 | For KDP, depress PRINT ON LINE. Depress REC. When instructed by Data Test Center, enter data mode. | Full ASCII message is displayed minus characters $D_2$ and $D_4$.<br><br>Message will be displayed as in Step 18, except for absence of $D_2$ and $D_4$ characters. Station goes to local data set disconnects. | Terminal Analysis (Page 55)<br><br>Controller Logic (Page 62) |
| 67 | Recall Test Center. Home cursor, depress REC. Depress PRINT ON LINE for KDP. Enter data mode per standard procedure when instructed then depress SEND.<br><br>*Note:* Terminal is now in expanded conversational mode. Keyboard on-line, a character at-a-time.<br><br>Receipt of DLE ETX, DLE GS or DLE FF will force station to local mode.<br><br>Sending DLE ETX, DLE FF, DLE GS will force the station to local mode, but the data set will not disconnect. | SEND lights PRINT ON LINE lights. Cursor moves through message and stops on $D_3$ character. Data Test Center receives all data up to $D_3$. S/R, SEND, and RECEIVE light.<br><br>Opcon is now active for expanded conversational mode testing. | Terminal Analysis (Page 55)<br><br>Controller Logic (Page 62)<br><br>Operator Console (Opcon) (Section 582-211-500) |
| 68 | Type several U*U* characters on operator console. | U*U* characters should appear on display monitor as characters are typed on operator console. The Data Test Center should have received U*U*. | Controller Logic (Page 62)<br><br>Display Logic (Page 58) |
| 69 | Type the following escape sequences and characters on the operator console. Characters are sent on-line while being typed.<br><br>*Note:* "$E_c$" is "ESC" key on opcon. | The display monitor of station under test should display the data and functions performed.<br><br>*Note:* If FDX is selected as an option (Option 41.b.), display will not follow sequences sent.<br><br>Escape sequences will be performed if Option 6.b. is enabled and displayed if 6.a. is enabled. | Terminal Analysis (Page 55)<br><br>Controller Logic (Page 62)<br><br>Display Logic (Page 58) |

TABLE D (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|------|-----------|---------|------------------|
| 69 (Cont) | $D_2$ RYRY $D_4$ | KDP only: PRINT ON LINE turns on, printer copies RYRY, then PRINT ON LINE turns off. | |
| | $E_C3$<br>FOX<br>$E_C4$ | FOX should be displayed as high-lighted characters. | |
| | $E_C1$ | ◆ Tab (Column) Set ◆ | |
| | $E_C2$ | Tab Clear | |
| | $E_C0$ | Single Tab Set | |
| | $E_CB$ | Cursor Down | |
| | $E_CC$ | Cursor Right | |
| | $E_C7$ | Cursor Up | |
| | $E_CG$ | Cursor Return | |
| | $E_CJ$ | Clear (single tab does not clear). | |
| | U*U* | U*U* is displayed. | |
| | $E_CB$ | Cursor Down | |
| | U*U | U*U is displayed. | |
| | CURSOR left (◄—) | Backspace is sent. | |
| | $E_CL$ | Line Insert | |
| | $E_CM$ | Line Delete | |
| | $E_CW$<br>FOX<br>$E_CX$ | FOX should be displayed as protected characters. | |
| | $E_CH$ | Cursor Home | |
| | $E_CT$ | Scroll Down | |
| | $E_CS$ | Scroll Up | |
| *Note:* Enter $E_CU$ for each memory segment present in station. | $E_CU$ | Seg Adv (to 2nd segment) ◄— | For two or three segment terminals only. |
| | $E_CU$<br>$E_CU$ | Seg Adv (to 3rd segment) ◄—<br>Seg Adv (to 1st segment) | For three segment terminals only. |
| | $E_C@$ | Cursor Tab | |
| | $E_CR$ | Clear ALL, Cursor | |
| | U*U* | Home | |
| | $E_CG$ | Cursor Return | |
| | $E_CP$ | Character Delete | |
| | $E_C\wedge$ | Character Insert | |
| | DLE $E_X$ | Station should revert to local mode and data set should remain in data mode. | |
| 70 | Depress S/R.<br><br>Send (by typing) the following characters:<br>U*U*<br>from operator console.<br><br>Send $E_T$. | S/R, REC, and SEND light.<br><br>U*U* is received at Data Test Center and displayed on display monitor.<br><br><br>Station reverts to local mode.<br>Data set disconnects. | Terminal Analysis (Page 55)<br><br>Controller Logic (Page 62) |

TABLE D (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|------|-----------|---------|------------------|
| | **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. | | |
| 71 | Depress CLEAR/TALK key, lift handset, and dial Data Test Center. When instructed by Data Test Center, depress RECEIVE, PRINT ON LINE, and enter the data mode per standard procedures from the data set being used. | Option test message displayed on screen (printed if KDP) as follows: <br><br> Display shows factory programmed options — rejects NULs (Option 5.a.) DEL (Option 5.e.), and CR (Option 5.c.). <br><br> Exceptions to factory programmed options — NUL displayed as $N_U$ (Option 5.b.), DEL displayed as ∥ (Option 5.f.), and CR displayed as ← (Option 5.d.). <br><br> Print-out for Option 19.c.: <br><br> 5 NULLS <br> 5 DELETES <br> 5 CRs <br> 5 BAD PARITY 12345 <br> 5 BELLS <br><br> *Note:* Message received on printer may "data stack" (carriage returns inserted during line of data, data "stacked" together, no missing characters). | Controller Logic (Page 62) <br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br><br>Printer (Section 582-210-500) |

TABLE D (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|------|-----------|---------|------------------|
| 71 (Cont) | | Printer will feed out 16 lines on receipt of ETX if Option 18.c. is enabled. Option 18.c. should not be used with tractor feed printers. Station will revert to local mode if Option 8.c. is enabled. Data set does not disconnect. | |
| 72 | Change ETX at end-of-message to EOT.<br><br>Home cursor and depress SEND.<br><br>*Note:* If Option 27.a. is enabled, cursor automatically homes on depressing SEND. Try when cursor is not in home position. | $E_X$ is replaced by $E_T$.<br><br>SEND lights and cursor moves through message. Printer prints if KDP.<br><br>Station reverts to local after sending EOT. Data set disconnects.<br><br>*Note:* Data Set 113A does not disconnect although data set at Data Test Center does. | Operator Console (Opcon) (Section 582-211-500)<br><br>Controller Logic (Page 62)<br><br>Display Logic (Page 58) |
| 73 | Depress CLEAR/TALK key, lift handset, and dial Data Test Center. Evaluate results of test with Data Test Center operator. If results are satisfactory, home cursor and clear screen (local mode. | | |
| | STEPS 74 THROUGH 78. APPLY ONLY TO FULL-EDIT KD OR KDP WITH OPTION 6.b. ENABLED. FOR FULL-EDIT TERMINALS WITH OPTION 6.a. ENABLED, GO TO STEP 79.<br><br>EDIT TEST<br><br>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. | | |
| 74 | When instructed by Data Test Center operator, depress RECEIVE, PRINT ON LINE, and enter data mode. | REC and PRINT ON LINE light.<br><br>Cursor automatically goes home. Edit test message displayed on screen (and printed, if KDP) as follows: | Terminal Analysis (Page 55)<br><br>Controller Logic (Page 62)<br><br>Printer (Section 582-210-500) |

TABLE D (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|---|---|---|---|
| 74 (Cont) | HALF INTENSITY    FLASHING<br><br>THIS SHOULD BE THE FIRST LINE≡<br>PROTECT HILIGHT UNDERLINE<br>SINGLE TAB SET    COLUMN TAB SET<br>HORIZ. TAB<br>CURSOR TAB<br>TAB CLEAR<br>≡<br>SHOULD BE A DIAMOND≡<br><br>*Note:*   KDP printed message should **NOT** contain suffixes of escape sequences sent by Data Test Center. | Upon receipt of ETX at end-of-message, station should revert to the local mode, if Option 8.c. is enabled.<br><br>For KDP, friction feed printer feeds out 16 lines of paper on receipt of ETX if Option 18.c. is enabled.<br><br>*Note:*   Option 18.c. should not be used with tractor feed printers. | |
| 75 | Depress PRINT ON LINE if KDP.<br>Depress FORM SEND. | PRINT ON LINE and FORM SEND keys light. | Operator Console (Opcon) (Section 582-211-500)<br><br>Controller Logic (Page 62) |
| 76 | Home cursor, depress SEND.<br><br>*Note 1:*   If Option 27.a. is enabled, cursor will automatically home on depressing SEND. | SEND lights and cursor moves through message. Printer prints if KDP.<br><br>Upon sending ETX, station reverts to local mode, if Option 8.c. is enabled.<br><br>FORM SEND light goes out.<br><br>*Note 2:*   Option 18.c. should not be used with tractor feed printers. | Operator Console (Opcon) (Section 582-211-500)<br><br>Controller Logic (Page 62) |
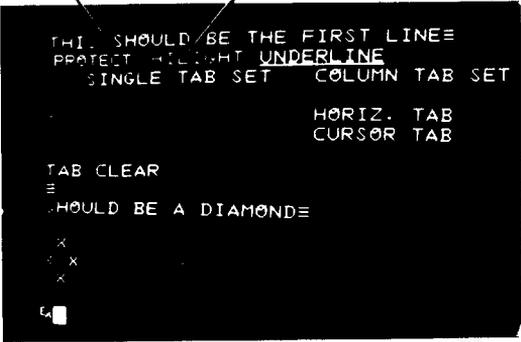
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TABLE D (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|------|-----------|---------|------------------|
| 77 | Home cursor, depress SEND.<br><br>*Note:* If Option 27.a. is enabled, cursor will automatically home on depressing SEND. | SEND lights and cursor moves through message.<br><br>After sending ETX, station reverts to local mode. | Operator Console (Opcon) (Section 582-211-500)<br><br>Controller Logic (Page 62) |
| 78 | Go to talk mode and evaluate results of test with Data Test Center operator.<br><br>If results are satisfactory, home cursor (local mode) and depress FORM ENTER, TAB CLEAR, and CLEAR, then depress FORM ENTER again.<br><br>*Note:* Option 12.b. must be enabled to clear or change protected data. | | |

STEPS 79 THROUGH 81 APPLY ONLY TO FULL-EDIT KD OR KDP WITH OPTION 6.a. ENABLED. FOR FULL-EDIT TERMINALS WITH OPTION 6.b. ENABLED, PERFORM STEPS 74 THROUGH 78.

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.

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|------|-----------|---------|------------------|
| 79 | 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: | Terminal Analysis (Page 55)<br><br>Controller Logic (Page 62) |



THIS SHOULD BE THE FIRST LINE
PROTECT HILIGHT U N D E R L I N E  SINGLE TAB SET   COLUMN TAB SET
HORIZ. TABCURSOR TABTAB CLEAR
SHOULD BE A DIAMOND
XXXXSHOULD NOT REMAIN ON DISPLAY

Upon receipt of ETX at end-of-message, terminal will go to local mode, if Option 8.c. is enabled. For KDP, friction feed printer feeds out 16 lines of paper on receipt of ETX if Option 18.c. is enabled. Option 18.c. should not be used with tractor feed printers.

TABLE D (Cont)

COMPLETE ON-LINE CHECKOUT — KD AND KDP TERMINALS

| STEP | PROCEDURE | RESULTS | TROUBLE ANALYSIS |
|---|---|---|---|
| 80 | Home cursor. Depress SEND. | SEND lights. Message is sent. Upon sending ETX, station reverts to local. | Terminal Analysis (Page 55) |
| 81 | Go to talk mode and evaluate results with Data Test Center. | | |

THIS COMPLETES THE ON-LINE CHECKOUT OF A TELETYPEWRITER COMPATIBLE DATASPEED 40 KD OR KDP USING A 103-TYPE DATA SET.

5. TROUBLESHOOTING

5.01 The troubleshooting information contained herein is divided into two parts:

(a) Terminal Analysis — A step-by-step procedure to determine which component of the Teletypewriter Compatible DATASPEED 40 Station or Set is failing.

(b) Component Analysis — A step-by-step procedure to determine which subcomponent or part (or related adjustment) of the component (display logic, controller logic, etc) is causing failure.

5.02 To use the troubleshooting information, always start with Analysis Question 1 of the Terminal Analysis, and follow the indicated procedure to the directive which specifies jumping into the Component Analysis section. Then follow the specific Component Analysis indicated (ie, display logic, controller logic, etc) starting with Analysis Question 1 to isolate and correct the trouble by replacing the indicated defective component.

5.03 To locate components, circuit cards, connectors, test switches, indicator lamps and other elements indicated in the troubleshooting information, refer to Section 582-200-702, Disassembly/Reassembly, and Parts.

5.04 For wire color codes, cable, connector, and other wiring indicated for continuity checks etc, in troubleshooting, refer to Section 582-200-402, Wiring Diagrams.

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

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

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

5.08 Once the trouble has been corrected, the terminal should be checked out to be sure that it is performing properly. Refer to the apropriate On-Line or Off-Line Checkout procedures.

5.09 The following caution procedures must be observed when troubleshooting the DATASPEED 40:

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

*Warning 2: Personnel working with the Model 40 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.*
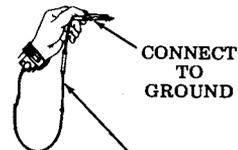
CONNECT TO GROUND

346392

*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.

TABLE E

TERMINAL ANALYSIS

| ANALYSIS QUESTION | "YES" RESPONSE DIRECTIVE | "NO" RESPONSE DIRECTIVE |
|---|---|---|
| 1. Do the fans turn when power is ON? | Go to 2. | Check ac to fan.<br>Ref: Section 582-200-402, Wiring Diagrams Section 582-200-702, Disassembly/Reassembly, and Parts.<br><br>Fan cable connected.<br><br>Power switch(es) ON.<br><br>AC present at fan assembly connector. |
| 2. Does the LOCAL lamp on the opcon turn ON when power is turned ON? | Go to 4. | Go to 3. |
| 3. Are all three LED indicators in the power supply ON? | Go to Section 582-211-500, Operator Console (Opcon).<br><br>Go to Page 62, Controller Logic. | Go to Section 582-214-500, 40PSU101 Power Supply. |
| 4. Is the red drive lamp I5 (in display monitor) ON? | Go to 5. | Go to Page 58, Display Logic.<br><br>Go to Section 582-213-500, 40MN101 Display Monitor. |
| 5. Is the red pilot lamp I7 (next to fuse on power distribution assembly in display monitor) ON? | Go to 6. | Go to Section 582-213-500, 40MN101 Display Monitor. |
| 6. With the monitor OFF/ON control switch ON (CCW) and the operator brightness control to full intensity (CCW), is the raster visible? | Go to 8. | Go to 7. |
| 7. Is the I6 high voltage lamp in the display monitor ON? | Check Master Brightness adjustment (Section 582-213-700, Display Monitor adjustments).<br><br>Go to 8. | Go to Section 582-213-500, 40MN101 Display Monitor. |
| 8. Is the cursor displayed on the monitor? | Go to 10. | Go to 9. |

TABLE E (Cont)

TERMINAL ANALYSIS

| ANALYSIS QUESTION | "YES" RESPONSE DIRECTIVE | "NO" RESPONSE DIRECTIVE |
|---|---|---|
| 9. 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.<br><br>Go to Page 58, Display Logic. | Go to Page 58, Display Logic. |
| 10. In the local mode, can all data (including editing functions) be input from the opcon to the display monitor on all segments? | Go to 11. | Go to Section 582-211-500, Operator Console (Opcon).<br><br>Go to Page 58, Display Logic.<br><br>Go to Page 62, Controller Logic |
| 11. Are the characters displayed on the display monitor distorted? | Go to Section 582-213-500, 40MN101 Display Monitor.<br><br>Go to Page 58, Display Logic. | Go to 12. |
| 12. Do characters displayed on the display monitor correspond to those generated from the opcon? | Go to 13. | Go to Page 58, Display Logic<br><br>Go to Page 62, Controller Logic.<br><br>Go to Section 582-211-500, Operator Console (Opcon). |
| 13. Does the terminal have a printer? | Go to 14. | Go to 18. |
| 14. Does the printer respond properly when the PRINT LOCAL key on the opcon is depressed? | Go to 18. | Go to 15. |
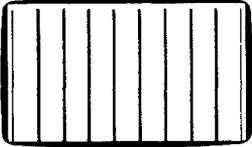
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TABLE E (Cont)

TERMINAL ANALYSIS

| ANALYSIS QUESTION | "YES" RESPONSE DIRECTIVE | "NO" RESPONSE DIRECTIVE |
|---|---|---|
| 15. Does the PRINT LOCAL key on the opcon light? | Go to 16. | Go to Local Loop-Back Tests (Section 582-211-500). If PRINT LOCAL lamp fails test, replace opcon. If PRINT LOCAL lamp passes test, remove opcon from loop-back mode and go to 16. |
| 16. 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 is in the maintenance up position? | Go to 17. | Go to Section 582-210-500, Printer. |
| 17. Does the printer feed paper when PAPER ADVANCE is depressed? | Go to Page 62, Controller Logic.  Go to Section 582-210-500, Printer. | Replace 341895 printer cable.  Go to Page 62, Controller Logic.  Go to Section 582-210-500, Printer. |
| 18. Does the station perform on-line tests properly? | Place in service. | Go to Page 62, Controller Logic. |

COMPONENT ANALYSIS

5.10 The following tables contain the Trouble Analysis for the logic in the DATASPEED 40/2 Station. Table F contains analysis for the Display Logic, and Table G contains analysis for the Controller Logic.

5.11 Trouble Analysis for components other than the Display Logic and Controller Logic can be found in the following BSPs:

| | |
|---|---|
| 582-210-500 | Printer |
| 582-211-500 | Operator Console (Opcon) |
| ◆ 582-213-500 | 40MN101 or 40MN201 Display Monitor ◆ |
| 582-214-500 | 40PSU101 Power Supply |

◆ 5.12 If Data Set problems are suspected, refer to the following BSPs for Data Set Test Procedures:

| | | |
|---|---|---|
| 103G | — | 591-026-200 |
| 103J | — | 591-039-200 |

| | | |
|---|---|---|
| 103JR | — | 591-044-200 |
| 108F | — | 591-042-100 |
| 108G | — | 591-042-100 |
| 113A | — | 591-033-200 |
| 113C | — | 591-041-200 |
| 113CR | — | 591-046-200 |
| 113D | — | 591-040-200 |
| 113DR | — | 591-047-200 |
| 201C | — | 592-029-200 |
| 201CR | — | 592-036-200 |
| 202C | — | 592-015-200 |
| 202R | — | 592-025-200 |
| 202S | — | 592-028-200 |
| 202SR | — | 592-037-200 |
| 202T | — | 592-031-200 |
| 208A | — | 592-027-200 |
| 208B | — | 592-030-200 |
| 208BR | — | 592-038-200 |
| 209A | — | 592-032-200 |
| 212A | — | 592-034-200 |
| 212AR | — | 592-039-200 |

829 DATA AUXILIARY SET — 598-082-200 ◆

TABLE F

DISPLAY LOGIC
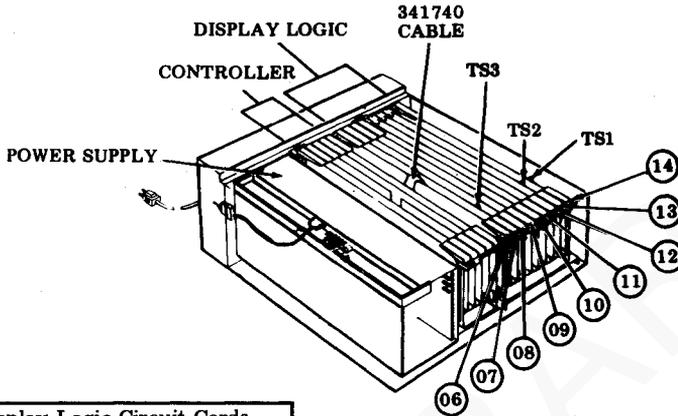


| Display Logic Circuit Cards | |
|---|---|
| Pos. | |
| 06 | 410002 |
| 07 | 410001, 410009 or 410018 |
| 08 | 410003 |
| 09 | AUX |
| 10 | 410005 (See Note 1.) |
| 11 | 410005 (See Note 1.) |
| 12 | 410005 (See Note 1.) |
| 13 | 410657, 410020, 410021, 410022 |
| 14 | 410855 |
| Wired Frame | 341672 (See Note 2.) |

*Note 1:* For 1 segment (24 lines), card is in position 10. For 2 segments (48 lines), cards are in position 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.

| ANALYSIS QUESTION | "YES" RESPONSE DIRECTIVE | "NO" RESPONSE DIRECTIVE |
|---|---|---|
| 1. Depress TS1 test switch on 410855 circuit card.<br><br>Is the following pattern generated on the display?<br><br>Are all of the elements shown in enlarged view I and II present? | Go to 2. | Replace 410855 circuit card. |

TABLE F (Cont)

DISPLAY LOGIC

| ANALYSIS QUESTION | "YES" RESPONSE DIRECTIVE | "NO" RESPONSE DIRECTIVE |
|---|---|---|
| 1. (Cont) | | |

Enlarged View I

**FLASHING FULL TO HALF INTENSITY**

Enlarged View II

**SEGMENT MARKER FLASHING ON-OFF**

**FLASHING FULL TO HALF INTENSITY**

TS1 Test Pattern

| ANALYSIS QUESTION | "YES" RESPONSE DIRECTIVE | "NO" RESPONSE DIRECTIVE |
|---|---|---|
| 2. Depress TS2 test switch on 410657, 410020, 410021, or 410022 circuit card.<br><br>Is the U* (or *U) pattern, with protected and high-lighted elements as indicated below, generated across all lines of the display?<br><br>**PROTECTED**<br><br>**FLASHING FULL TO HALF INTENSITY**<br><br>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, 410009, or 410018 circuit card.<br><br>Is the * character generated across all lines of the display in all character positions?<br><br>Also check segments 2 and 3 (if present) by scrolling. | If data appears on screen that is not sent from opcon: Replace 410005 circuit card for segment affected. Replace 410002 circuit card.<br><br>Go to 8. | Go to 4. |
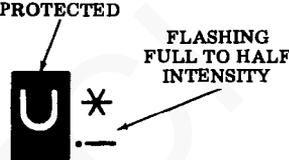
TABLE F (Cont)

DISPLAY LOGIC

| 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?<br><br>**WHITE BARS** (4 Char Wide)<br>**BLACK BACKGROUND** (4 Char Wide)<br><br>TS3 Test Pattern | Go to 5.<br><br><br><br><br>*Note:* Pattern is not necessarily centered on the display as illustrated. | Go to 6. |
| 5. Remove 341740 cable. Depress TS3.<br><br>Is the test pattern from Question 4 still generated on the display? | Replace 410002 circuit card. | Trouble is in controller. Go to Controller Logic (Page 62). |
| 6. With TS3 depressed, is a black an white bar pattern generated on the display with white bars 4 character positions wide and black bars 12 characters positions wide as shown below?<br><br>**WHITE BARS** (4 Char Wide)<br>**SEGMENT MARKER**<br>**BLACK BACKGROUND** (12 Char Wide)<br><br>TS3 Test Pattern | Replace 410005 circuit card. for the segment indicated by the segment marker displayed in the test pattern.<br><br><br>*Note:* Pattern is not necessarily centered on the display as illustrated. | Go to 7. |
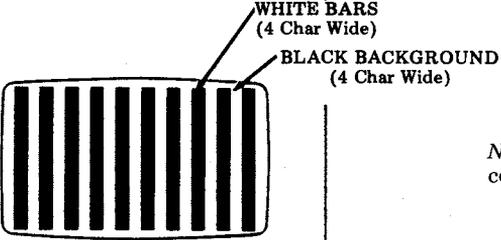
TABLE F (Cont)

DISPLAY LOGIC

| 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?<br><br>WHITE BARS (8 Char Wide)<br>BLACK BACKGROUND (8 Char Wide)<br><br>TS3 Test Pattern | Replace 410003 circuit card.<br><br><br><br>*Note:* Pattern is not necessarily centered on the display as illustrated. | Replace 410001, 410009, or 410018 circuit card. |
| 8. With TS3 depressed, does 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. |
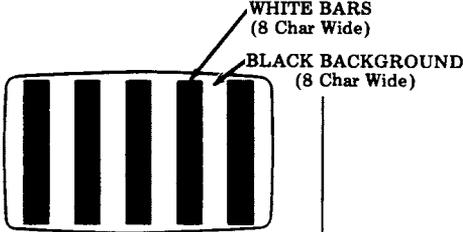
TABLE G

CONTROLLER LOGIC

DISPLAY LOGIC

EIA CONTROLLER

POWER SUPPLY

341740 CABLE

410672

TS2

TS1

TS3

05

04

03

02

01

F1
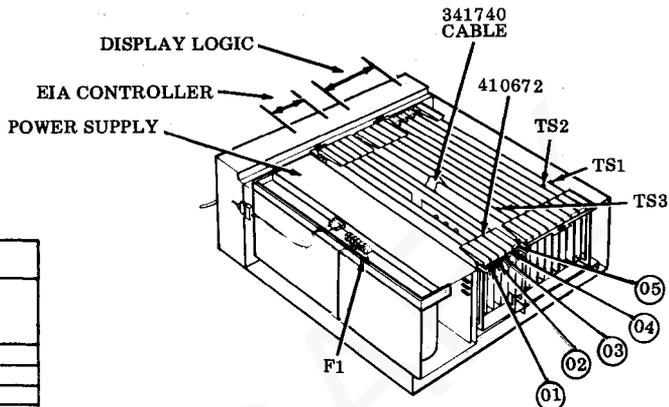
*410770 required for
KDP or S/R operation.

| Controller Circuit Cards | |
|---|---|
| Pos | Full Edit W/P or S/R |
| 01 | 410770* |
| 02 | 410679 |
| 03 | 410672 |
| 03 | 410676 |
| 04 | 410675 |
| 05 | 410674 |
| Wired Frame | 402176 |

*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 characters be entered from the opcon to the display in the local mode? | Go to 2. | Refer to Operator Console (Opcon) (Section 582-211-500)<br><br>Replace 410672 circuit card.<br><br>Replace 410674 circuit card.<br><br>Replace 410675 circuit card. |
| 2. Can the characters be entered and displayed properly? | Go to 3. | Replace 410672 circuit card.<br><br>Replace 410674 circuit card.<br><br>Replace 410002 circuit card.<br><br>Check 341740 display logic interface cable. |
| 3. Do any keys fail to light on the opcon when depressed? | Replace 410672 circuit card.<br><br>Go to Operator Console (Opcon) (Section 582-211-500). | Go to 4. |
| 4. Do all mode selection and editing features operate properly (ie send lamp lights with 202 modem and HDX)? (Refer to <u>Mode Charts</u>, Pages 65,66). | Go to 5. | Replace 410672 circuit card.<br><br>Replace 410674 circuit card.<br><br>Replace 410675 circuit card. |

TABLE G (Cont)

CONTROLLER LOGIC

| ANALYSIS QUESTION | "YES" RESPONSE DIRECTIVE | "NO" RESPONSE DIRECTIVE |
|---|---|---|
| 4. (Cont) | | Replace 410679 circuit card. |
| | | Check CTS lead (pin 5) of EIA interface for "on" condition with data set in data mode, station in send mode. |
| | | Replace 410002 circuit card. |
| | | Go to Operator Console (Opcon) (Section 582-211-500). |
| 5. Can the station send and receive properly on line? | Go to 8. | Replace 410679 circuit card. Check data set, 408065 data set cable or transmission line facilities. Go to 6. |
| 6. With the 410676 circuit card removed, is the station able to send properly — excluding Send Variations (Option 13.) responses? | Replace with new 410676 circuit card. | ◆ Reinsert 410676 card and: ◆ Replace 410679 circuit card. Replace 410675 circuit card. Replace 410674 circuit card. Replace 410002 circuit card. Go to Display Logic (Page 58). Go to 7. |
| 7. Does the station respond properly to control characters and sequences? | Go to 8. | Replace 410674 circuit card. Replace 410675 circuit card. Replace 410679 circuit card. Replace 410770 circuit card. |
| 8. Does the terminal have a printer? | Enter U*U* across the first two lines of the display. Go to 9. | Go to 10. |
| 9. Does the terminal respond properly to the PRINT LOCAL function and the PRINT ON LINE function? | Go to 10. | Replace 410770 circuit card. Replace 410674 circuit card. Replace 410679 circuit card. |
| 10. Can the proper escape sequences be sent on line? (Refer to Mode Charts Pages 65,66). | Go to 11. | Replace 410676 circuit card. Replace 410675 circuit card. |

TABLE G (Cont)

CONTROLLER LOGIC

| ANALYSIS QUESTION | "YES" RESPONSE DIRECTIVE | "NO" RESPONSE DIRECTIVE |
|---|---|---|
| 10. (Cont) | | Replace 410674 circuit card. |
| | | Replace 410002 circuit card. |
| 11. Are the proper line ending sequences (LF, CR LF, CR CR LF) sent on line? | Go to 12. | Replace 410675 circuit card. |
| | | Replace 410674 circuit card. |
| 12. Does the S/R mode operate properly? | Controller is good. Trouble is elsewhere. | Replace 410679 circuit card. |
| | | Replace 410674 circuit card. |
| | | Replace 410770 circuit card. |

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## MODE CHART 1
## 202-TYPE MODEM INTERFACE



CONVERSATIONAL
MODE (S/R On)

BATCH MODE (S/R Off)

FDX-HDX

| | DEPRESS | | SEND | | RECEIVE |
|---|---|---|---|---|---|
| D1 | SEND key | S1 | DLE EOT | R1 | DLE EOT |
| D2 | REC key | S2 | EOT | R2 | EOT |
| D3 | LOCAL key | S3 | ETX or GS or FF | R3 | ETX or GS or FF |
| D4 | S/R key (on) | S4 | DC3 (2) | R4 | DLE ETX, FF, GS |
| D5 | S/R key (off) | S5 | DC3 | R5 | ESCf (1) |
| D6 | INTRPT key (on) or PRINT ON LINE key (off) (DC4) | S6 | DLE ETX, GS, FF | R6 | DC1 (2) |
| | | S7 | RETURN (←) (1) | R7 | EOT (2) |
| | | S8 | EOT (2) | | |

Mode of 40 Terminal

PRINT ON LINE key on or off

Mode of Data Set
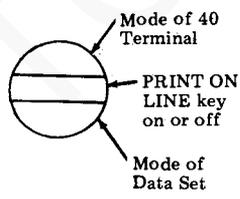
(1) — Applies to Issue 4B and later 410674 circuit card.
* — STD (Reverse Channel) off.
RI — Detection of ring indicator from the data set with PRINT LOCAL off, INTRPT off and KD in LOCAL.
CD — No carrier detected for 45 seconds.
↗ — Change in mode.
+ — Then make connection or auto-answer.
△ — If PRINT ON LINE is on.
□ — If PRINT ON LINE is off.
(2) — Requires 407414 modification kit.
CF — Loss of Carrier Detect.

## MODE CHART 2
## 103-TYPE MODEM INTERFACE
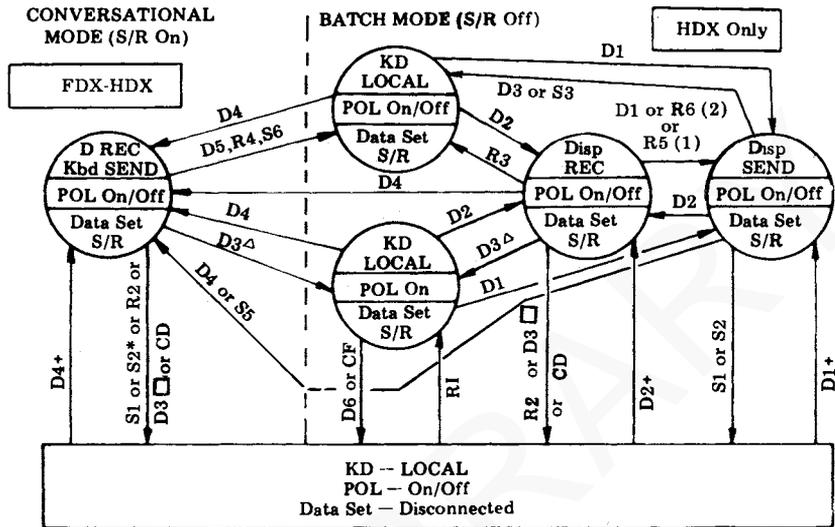
CONVERSATIONAL MODE (S/R On)

BATCH MODE (S/R Off)

HDX Only

FDX-HDX



KD LOCAL
POL On/Off
Data Set S/R

D REC Kbd SEND
POL On/Off
Data Set S/R

Disp REC
POL On/Off
Data Set S/R

Disp SEND
POL On/Off
Data Set S/R

KD LOCAL
POL On
Data Set S/R

D1
D4
D5,R4,S6
D3 or S3
D2
D1 or R6 (2) or R5 (1)
R3
D4
D2
D2
D4
D3△
D2
D3△
D1
D4 or S5

S1 or S2* or R2 or D3□ or CD
D4+
D6 or CF
RI
R2 or D3 or CD
D2+
S1 or S2
D1+

KD -- LOCAL
POL -- On/Off
Data Set -- Disconnected

| DEPRESS | SEND | RECEIVE |
|---|---|---|
| D1 SEND key | S1 DLE EOT | R1 DLE EOT |
| D2 REC key | S2 EOT | R2 EOT |
| D3 LOCAL key | S3 ETX or GS or FF | R3 ETX or GS or FF |
| D4 S/R key (on) | | R4 DLE ETX, FF, GS |
| D5 S/R key (off) | S5 DC3 | R5 ESCf (1) |
| D6 INTRPT key (on) or PRINT ON LINE key (off) (DC4) | S6 DLE ETX, FF, GS (HDX, or Echoplex Only) | R6 DC1 (2) |
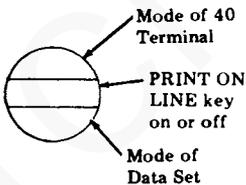


Mode of 40 Terminal

PRINT ON LINE key on or off

Mode of Data Set

(1) — Applies to Issue 4B and later 410674 Circuit Card.
* — HDX Only
RI — Detection of ring indicator from the data set with PRINT LOCAL off, INTRPT off and KD in LOCAL.
CD — No carrier detected for 45 seconds.
⌿ — Change in mode.
+ — Then make connection or auto-answer.
△ — If PRINT ON LINE is on.
□ — If PRINT ON LINE is off.
(2) — Requires 407414 modification kit.
CF — Loss of Carrier Detect.

TELETYPEWRITER COMPATIBLE "DATASPEED*"40/2

DISASSEMBLY/REASSEMBLY AND PARTS

1.  GENERAL

1.001  This addendum supplements Section 582-200-702, Issue 2. Place this pink sheet ahead of Page 1 of the section.

1.002  This addendum is used to correct copyright dates.

2.  CHANGES TO SECTION

2.001  On the bottom of Page 1, change the copyright notice dates to read as follows:

© 1973, 1975, 1977 and 1979 by Teletype Corporation.

*Registered Trademark of AT&TCo.

# TELETYPEWRITER COMPATIBLE "DATASPEED*" 40/2
## DISASSEMBLY/REASSEMBLY AND PARTS

### CONTENTS

## 1. GENERAL

**1.01** This practice covers the Teletypewriter Compatible DATASPEED 40/2 Station Arrangements, and provides the information necessary to disassemble and reassemble DATASPEED 40/2 and associated equipment.

**1.02** This section is reissued, to add detailed information on Display Logic. Revision arrows are used to indicate the changes.

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

**1.04** The following Warnings and Danger are to be used as safety measures for the apparatus and the craftsperson.

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

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

Attach static ground strap tightly to wrist.

Attach clip end of static discharge strap to frame ground.

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

*Registered Trademark of AT&TCo.
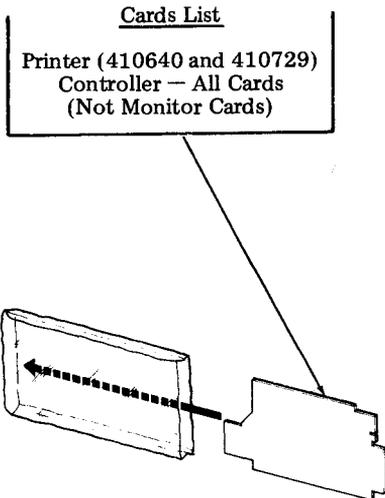
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Cards List

Printer (410640 and 410729)
Controller — All Cards
(Not Monitor Cards)



*Warning 3: Place listed card in an RM150592 static bag immediately after removal from unit. Do not place any printer paper in the bag with the card. Keep the card in the static bag at all times. Never handle the card outside the bag without wearing a properly grounded 346392 static ground strap.*

1.05 Disassembly and parts information for individual components in the DATA-SPEED 40 Station can be found in the following BSPs:

582-210-702  DATASPEED 40 Printer
582-211-700  DATASPEED 40 Operator Console
582-212-700  DATASPEED 40 Cabinets
582-213-701  DATASPEED 40 Display Monitor
582-214-700  DATASPEED 40 Power Supplies

1.06 Reverse the disassembly instructions in order to reassemble the station components.

## 2. KD AND KDP

*Warning: 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

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.
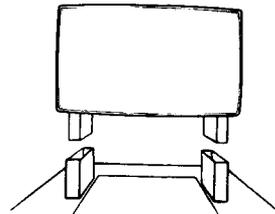


WEAR
SAFETY
GLASSES
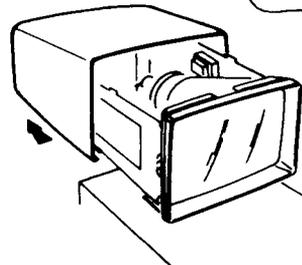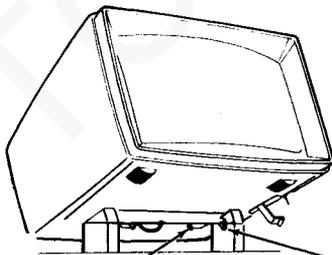


LATCH RELEASE

TILT RELEASE
(When Housing
is Removed)

## OPERATOR CONSOLE

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 latchlevers upward into locked position.)
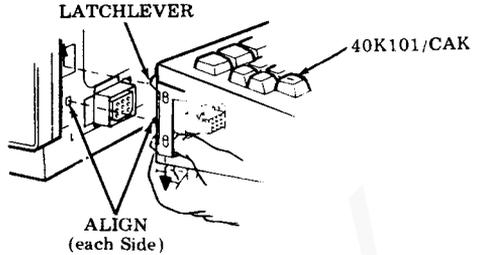
## ELECTRONICS PACKAGE AND POWER SUPPLY

**A.  KD or KDP (Logic Under Monitor)**

To remove cards or power supply:

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

*Note:*  Do not attempt to lift at opcon (if present).
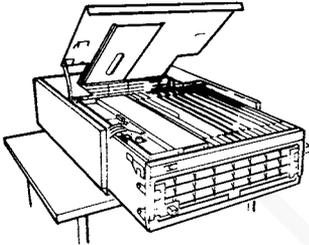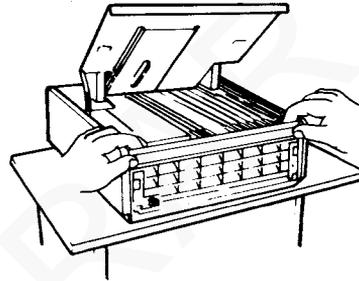
③ Move module forward until blocked by latch to provide sufficient clearance for card removal.

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.

⑧ Replace insulator and plug in ac power cord and reposition retainer bracket.

**POWER SUPPLY RETAINER BRACKET**

| | |
|---|---|
| BLUE | |
| RED | |
| BLACK | |
| YELLOW | |
| WHITE | |

To remove circuit cards:

① Lift handle(s) carefully.

② Remove circuit card.

To remove and replace power supply:
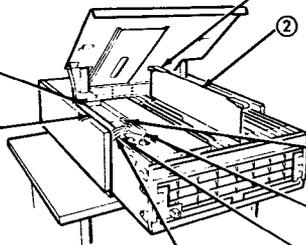
① Disconnect ac power cord.

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.

LATCHLEVER

40K101/CAK

ALIGN
(each Side)

Early Design Only
④ Raise 401783 bracket enough to slide 341891 monitor cable underneath.

⑥ Release latch on right side of cabinet and slide module out of cabinet.

⑤ Remove *341891 monitor cable from grooves in fan assembly frame and display logic frame. Lower 401783 bracket and engage clip to side of module.

① Slide module out of 40CAB251/AB cabinet far enough to engage latch on right side of cabinet.

*Supplied with cabinet

Belted Fan Assembly

*400599
AC DISTRIBUTION
ASSEMBLY

② Reach in and disconnect *401633 ac power cable attached to back of fan assembly.

40CAB251/AB
LOGIC CABINET

Receptacle for 341891 cable plug.

Beltless Fan Assembly

③ Loosen 341819 shoulder screw attached to fan assembly frame where the guide in the display logic aligns with tapped hole in fan assembly. Slide clip attached to 341891 cable out from under lip of display logic frame. Remove cable.

341819

DISPLAY LOGIC
FRAME

341891 CABLE
TO MONITOR

B.   KDP (Logic in Pedestal)

BLUE
RED
BLACK
YELLOW
WHITE

Colors

③ Open cover (2 screws)
and engage wire hook
unless module is
being removed.

② Disconnect cables
if module is to
be removed.

Display Logic:
Perform 1, 2, 3, 6,
7, 8, 9, and 10.
Remove 2 screws
(see WIRED FRAME).

*Power Supply:
Perform 1 and 3.
⑥ Remove 2 cables.
⑦ Remove 115 V ac
connector.
⑧ Lift out power
supply by its
handle.

④ If desired remove
data set.

⑩ Controller:
Perform 1, 2, 3, 6, 7, and 9.
Remove short cable and 2
screws (see WIRED FRAME).

⑨ Fan Assembly:
Perform 1, 2, 3, and 7.
Remove 4 screws from
the rear of fan assembly.

① Slide tabs inward and
open panel CAREFULLY
(attached electronics
package weighs approx-
imately 50 lbs). Handle
latches.

Electronics Package Enclosure:
Perform 1, 2, 3, and 4.
⑤ Remove 2 screws, if data set
is present, loosen two screws
on the inside of electronics
package. Lift bracket up and
remove.

*To reinstall power supply, seat it on locating pins in the base of the enclosure. Cables are routed over
handle.

341893 MONITOR CABLE

408065 DATA SET CABLE
(See Note)

401641 OPCON CABLE

341895 PRINTER CABLE

*Note:*   408066, 408067, 408068 or 341896 cable may be used instead of 408065.

C. KDP (Logic in Adjacent Cabinet)

① Release latches and raise cover.

③ Disconnect 402173 cable from display logic to bracket in cabinet.

② Disconnect 401600 ac power cable at rear of fan assembly.

④ Raise latch.

40CAB201/AB

⑤ Slide electronics package out of cabinet.

## WIRED FRAME

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

① Remove 341819 shoulder screws.

125015

3598

2191

198670

④ Remove fan assembly mounting hardware.

② Disconnect braided ground strap.

*Note:* Fan assembly may be earlier design belted fan assembly.

⑤ Remove power supply.
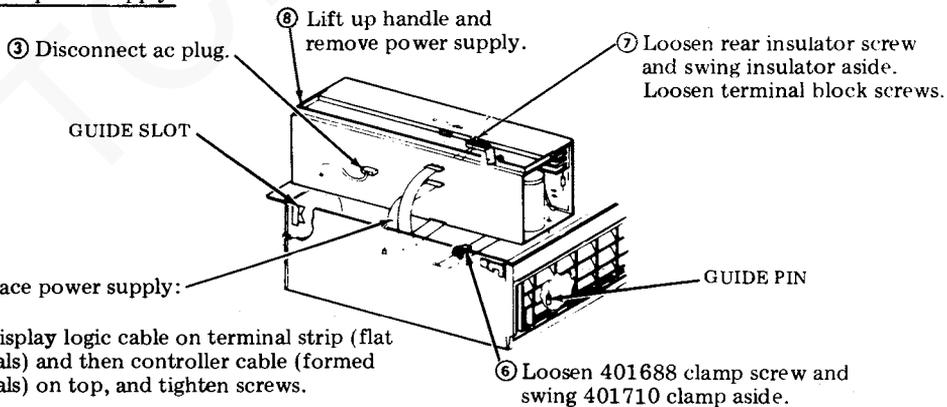
⑧ Lift up handle and remove power supply.

③ Disconnect ac plug.

⑦ Loosen rear insulator screw and swing insulator aside. Loosen terminal block screws.

GUIDE SLOT

GUIDE PIN

To replace power supply:

Place display logic cable on terminal strip (flat terminals) and then controller cable (formed terminals) on top, and tighten screws.

⑥ Loosen 401688 clamp screw and swing 401710 clamp aside.

① Remove 401253 bracket.

② Dislodge opcon connector from bracket.
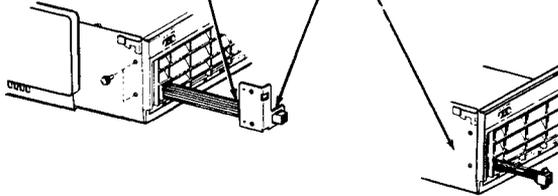
③ Remove 402166 cable protector (if present). Feed 341860 opcon cable carefully out of cable tray.
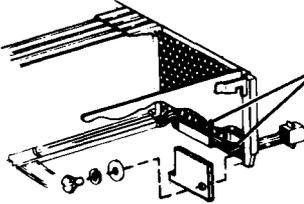
④ Remove 341740 ribbon cable.

TWO RIBBON CABLES

341740 RIBBON CABLE

DISPLAY LOGIC
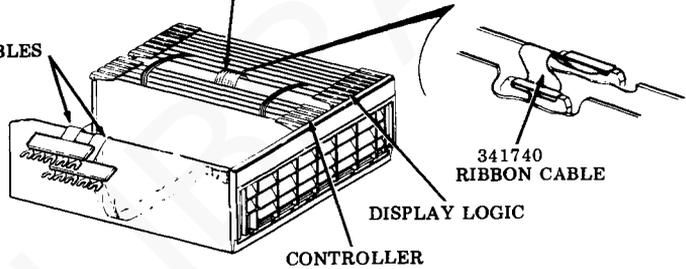
CONTROLLER

⑤ Remove controller wired frame. (Frame may still have cards mounted.)

*Note:* If attendant selectable features 403400 modification kit is used, disconnect cables from 410679 circuit card.
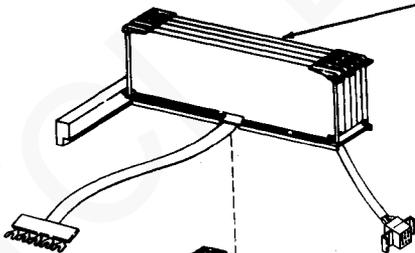
⑥ Remove display logic wired frame. (Frame may still have cards mounted.)

40CAB251/AB
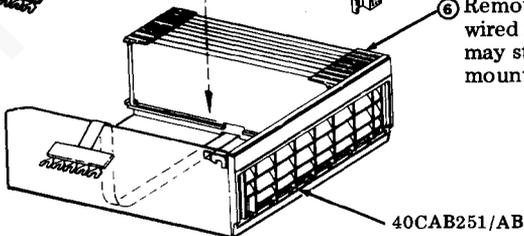
B.   KDP (Logic in Pedestal)

① Remove four hinge screws,
   then loosen two thumbscrews
   and remove cover.
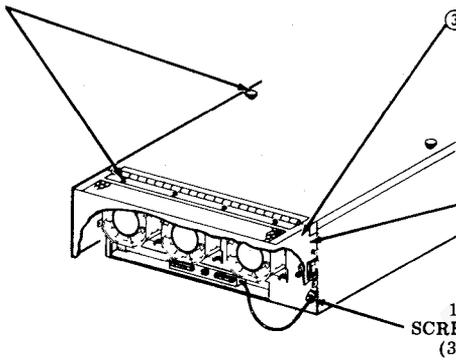
③ Remove fan and shroud.

   *Note:*   Fan assembly may be
   earlier design belted fan assembly.

3598 NUT (6-40)
125015 FLAT WASHER
2191 LOCKWASHER

198670
SCREWS (6-40)
(3 Places)

(Rear of Fan Assembly)
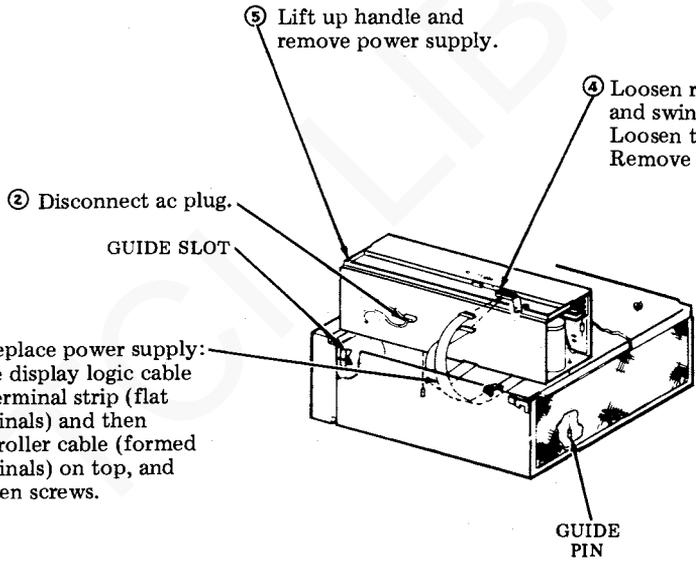
⑤ Lift up handle and
   remove power supply.

④ Loosen rear insulator screw
   and swing insulator aside.
   Loosen terminal block screws.
   Remove ribbon cables.

② Disconnect ac plug.

GUIDE SLOT

To replace power supply:
Place display logic cable
on terminal strip (flat
terminals) and then
controller cable (formed
terminals) on top, and
tighten screws.

GUIDE
PIN

CIRCUIT CARDS

If any field options are to be changed or checked for proper position, turn off power and remove cards using the following procedures.

The station feature and option record should be marked to show any options that differ from factory furnished (*) and should be filled in to indicate what features have been provided in the set or station.
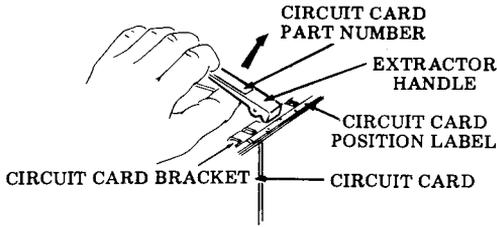


① Extracting circuit card.
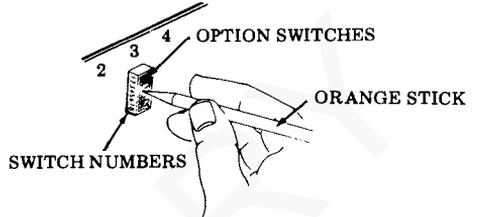


② Activating options.

A.    Controller
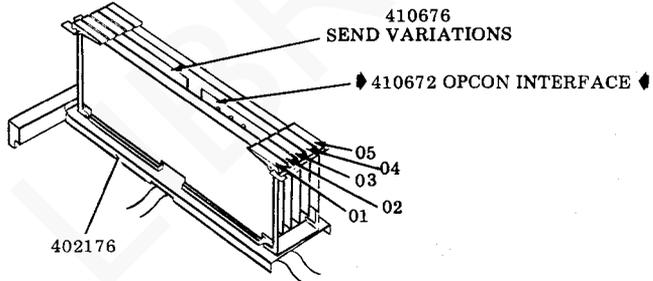


| Position | 40C204/BA | 40C204/BB | Card Description |
|---|---|---|---|
| 01 | | 410770 | Printer Interface |
| 02 | 410679 | 410679 | Full Duplex Interface |
| 03 | 410672 | 410672 | Opcon Interface |
| | 410676 | 410676 | Send Variations |
| 04 | 410675 | 410675 | Message Control |
| 05 | 410674 | 410674 | Data Bus and Decode |
| Wired Frame | 402176 | 402176 | |

◆ B.  Display Logic ◆

410003
ADDRESS
COUNTER

410001 EDIT OR
410009 OR 410018
CONTINUOUS SCROLLING

410002
DATA CONTROL

341672
WIRED FRAME

AUXILIARY     MEMORY

SEGMENT NO. 1

SEGMENT NO. 2

SEGMENT NO. 3

(See chart below for the
circuit cards installed
per set coding.)

See Character Generator
chart below.

410855
VIDEO GENERATOR

014
013
012 ← NO. 3
011 ← NO. 2
010 ← NO. 1
09
08
07
06

POWER CABLE
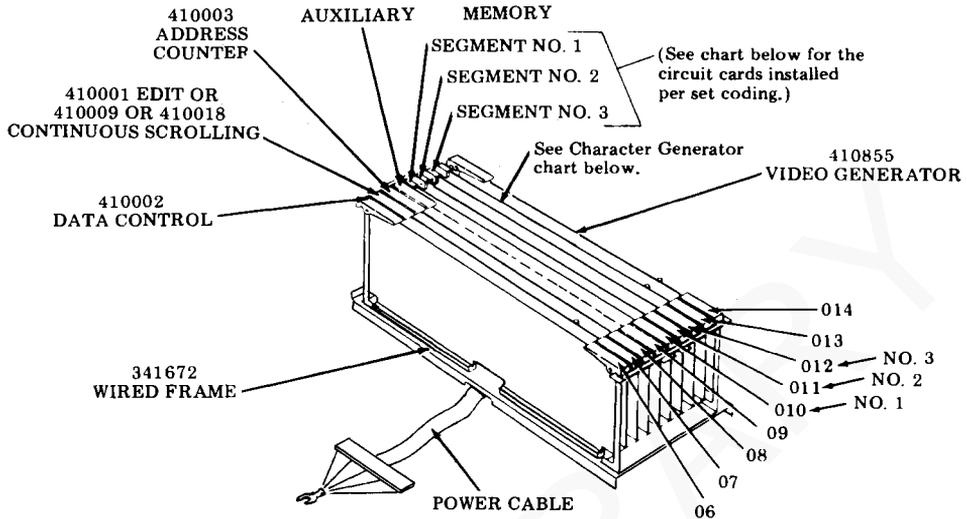
| POSITION NUMBER | 40DL291/ZZ | 40DL291/BR | 40DL291/BS | CIRCUIT CARD DESCRIPTION |
|---|---|---|---|---|
| 06 | 410002 | 410002 | 410002 | Data Control |
| 07 | 410001 | 410018 | ¶ | Edit |
| 08 | 410003 | 410003 | 410003 | Address Counter |
| 09 | — | — | — | — |
| 010 | — | — | — | Memory Segment 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 |

PRINTER

A.   KDP (Adjacent Printer)

Friction Feed Printer

To remove and replace entire
printer assembly:

*Note:*   The circuit card can be removed
after step 4 of disassembly. If printer is
not being removed, omit steps 2 and 3.

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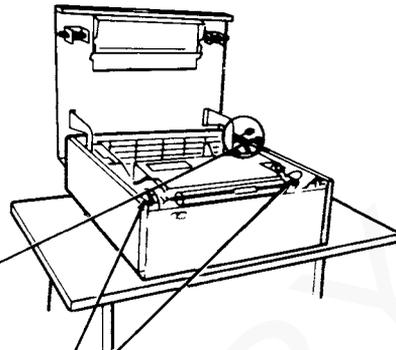
④ Release printer and raise to the
   tilt position by depressing the
   left and right release levers and
   lifting printer.

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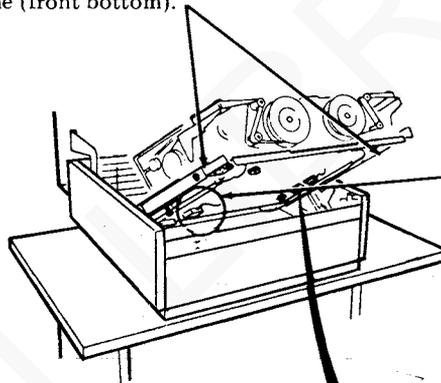
⑤ Disconnect the
   115 V ac connector.
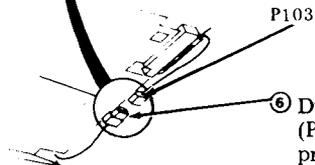
P103

⑥ Disconnect SSI cable
   (P103) from
   printer cable.

Tractor Feed Printer — 80- and 132-Column Printers (Printer shown is 80-Column.)

① Turn power off. Open cover.

② Remove paper by releasing paper guide and opening forms tractors.

③ Release printer to tilt position by pressing left and right latchlevers to rear.

⑤ Pull printer forward by grasping handle at top, and slide off mounting tracks.

④ Insert screwdriver in right mounting track and pry up detent.
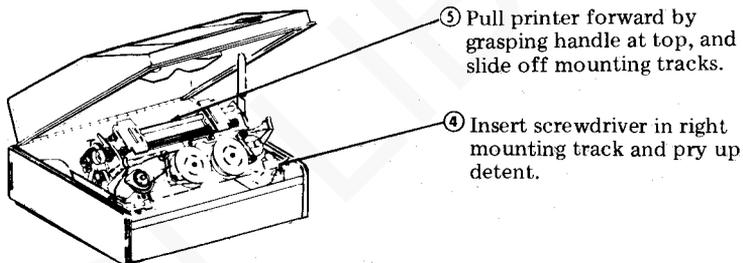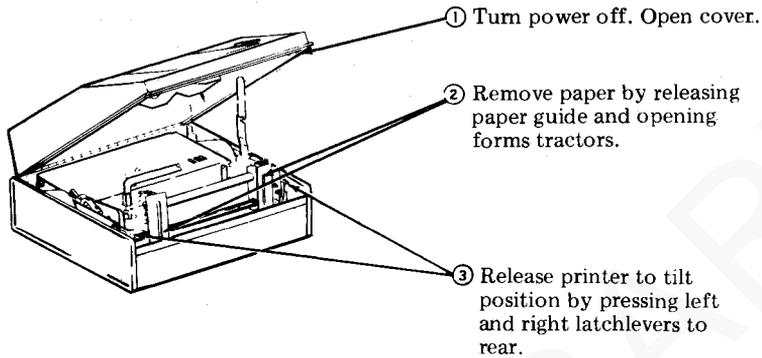
In reassembly, make sure connectors at rear are fully connected.

B. KDP (Printer Under Monitor)

Friction Feed Printer

② Open lid. Lift slide release latches and slide printer module forward about three inches.

④ Disconnect cabinet interlock switch connector.

⑤ Depress release levers and raise printer.

① Turn pedestal and cabinet power OFF. (Depress lower half.)

③ Release paper latch and remove paper. Keep spindle with printer.

OFF

OFF

⑧ Depress detents and slide printer out.

⑦ Disconnect SSI connector.

⑥ Disconnect ac power connector.

3.   PARTS

GENERAL

3.01   Field replacement components of the con-
        troller and its cables are listed in the fol-
lowing index, showing the page number in the
section where they are illustrated.

3.02   Parts for the other station components are
        listed in the following BSPs:

582-210-702  DATASPEED 40 Printer
582-211-700  DATASPEED 40 Operator Console
582-212-700  DATASPEED 40 Cabinets
582-213-701  DATASPEED 40 Display Monitor
582-214-700  DATASPEED 40 Power Supplies

REPLACEMENT PARTS LIST

A.   Display Logic

| | | Ref.<br>Page |
|---|---|---|
| 341672 | Wired Frame | 10 |
| 341740 | Cable, Controller/Display | 7 |
| 410001 | Circuit Card Assembly | 10 |
| 410002 | Circuit Card Assembly | 10 |
| 410003 | Circuit Card Assembly | 10 |
| ◆410004 | Circuit Card Assembly | 10 ◆ |
| 410005 | Circuit Card Assembly | 10 |
| 410009 | Circuit Card Assembly | 10 |
| ◆410014 | Circuit Card Assembly | 10 ◆ |
| ◆410015 | Circuit Card Assembly | 10 ◆ |

| | | Ref.<br>Page |
|---|---|---|
| 410018 | Circuit Card Assembly | 10 |
| ◆410020 | Circuit Card Assembly | 10 ◆ |
| ◆410021 | Circuit Card Assembly | 10 ◆ |
| ◆410022 | Circuit Card Assembly | 10 ◆ |
| 410657 | Circuit Card Assembly | 10 |
| 410855 | Circuit Card Assembly | 10 |

B.   Controller Logic

| | | |
|---|---|---|
| 402176 | Wired Frame | 9 |
| 410672 | Circuit Card Assembly | 9 |
| 410674 | Circuit Card Assembly | 9 |
| 410675 | Circuit Card Assembly | 9 |
| 410676 | Circuit Card Assembly | 9 |
| 410679 | Circuit Card Assembly | 9 |
| 410770 | Circuit Card Assembly | 9 |

C.   Cables

| | | |
|---|---|---|
| 341891 | Cable, Monitor | 4 |
| 341893 | Cable, Monitor | 5 |
| 341895 | Cable, Printer | 5 |
| 341896 | Cable, Data Set | 5 |
| 401600 | Cable, Fan ac | 6 |
| 401633 | Cable, Power ac | 4 |
| 401641 | Cable, Opcon | 5 |
| 402173 | Cable, Display Logic | 6 |
| 408065 | Cable, Data Set | 5 |
| 408066 | Cable, Data Set | 5 |
| 408067 | Cable, Data Set | 5 |
| 408068 | Cable, Data Set | 5 |

TELETYPEWRITER COMPATIBLE "DATASPEED*"40/2

ROUTINE MAINTENANCE

## 1. GENERAL

1.001 This addendum supplements Section 582-200-752, Issue 2. Place this pink sheet ahead of Page 1 of the section.

1.002 This addendum is used to correct copyright dates.

## 2. CHANGES TO SECTION

2.001 On the bottom of Page 1, change the copyright notice dates to read as follows:

© 1973, 1975, 1977 and 1979 by Teletype Corporation.

*Registered Trademark of AT&TCo.

TELETYPEWRITER COMPATIBLE "DATASPEED*" 40/2

ROUTINE MAINTENANCE

## 1. GENERAL

1.01 This section provides the routine maintenance procedures and methods for a DATASPEED 40/2 Station.

1.02 This section is reissued to include additions to terminal gound straps. Revision arrows are used to indicate the change.

1.03 When ordering replaceable components, unless otherwise specified, prefix each part number with 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).*
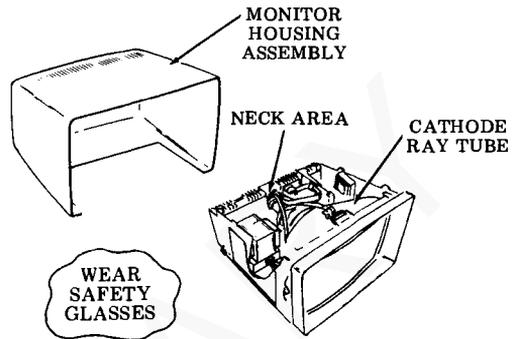


Fig. 1

*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).*
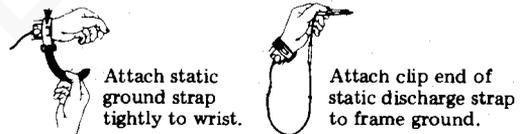


Fig. 2

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 2000 hours or one year of service by the station arrangement (whichever occurs first).

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.
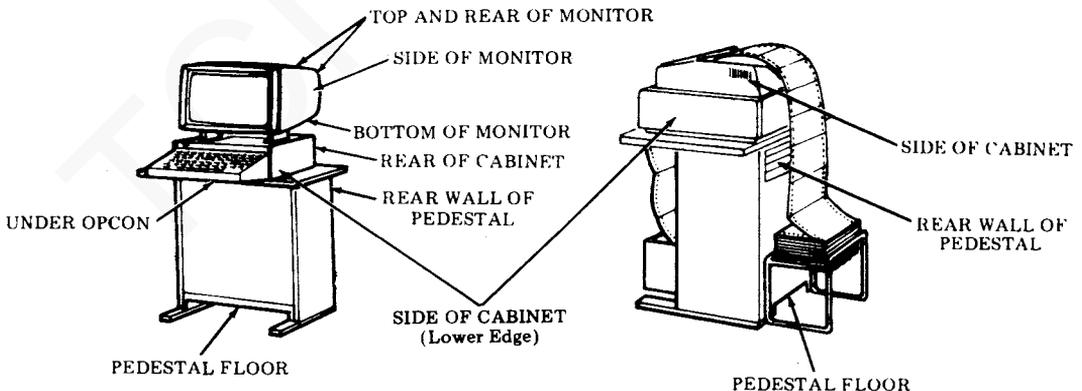


Fig. 3—Ventilating Screen Locations

**3.04** Cabinet, pedestals, monitors and opcons do not require routine lubrication.

**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. 4.

**3.06** Check fuses, condition and ratings (fuse ratings are critical, no higher rating than specified shall be used). Refer to Fig. 4 for locations:

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

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



GROUNDING STRAPS
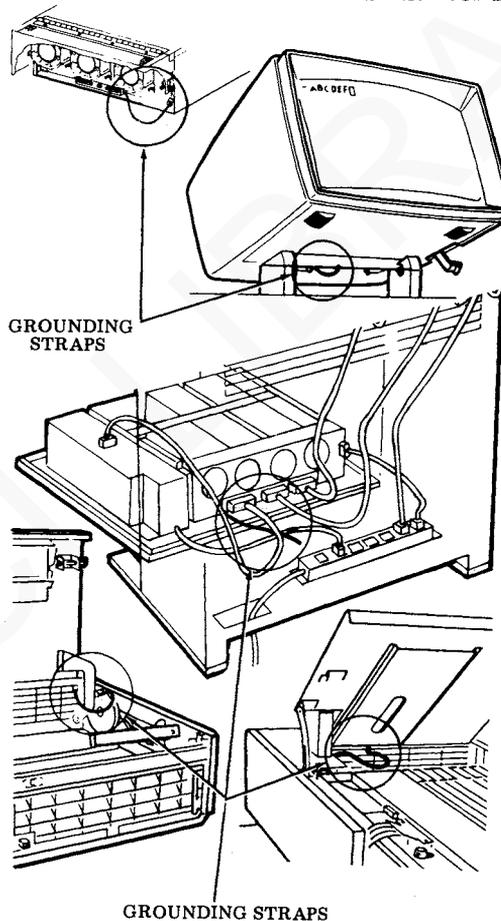
GROUNDING STRAPS

◖ Fig. 4—Grounding Strap Locations ◖

4. OPERATIONAL CHECKOUT

4.01 After servicing a KD or KDP, perform the BRIEF OFF-LINE and BRIEF ON-LINE CHECKOUTS of Section 582-200-502, Testing and Troubleshooting.

4.02 Check the monitor display for

• Brightness
• Size
• Distortion
• Proper message.

*Note:* For monitor adjustments see Section 582-213-700.

4.03 Checkouts for printers are covered in Section 582-210-750.

4.04 If checkout was successful, routine is complete. If checkout responses indicate a need for more testing, refer to Section 582-200-502.

Tractor Feed Printer

F2 (1 Amp SL-BL)

F3 (1 4 Amp)

Friction Feed Printer

F2 (1 Amp SL-BL)

129920 (5 Amp SL-BL)

Fig. 5—Fuse Location

**Bell System**