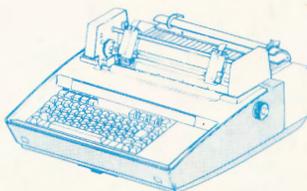


SERVICE MANUAL

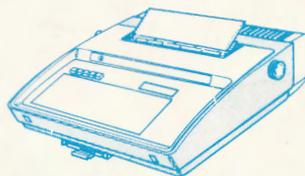
Manual 325-078
August 1982



BASIC KSR



BASIC TRACTOR KSR



BASIC RO

the **43** teleprinter

BASIC and BUFFERED including PAPER TAPE UNIT





The 43 TELEPRINTER SERVICE MANUAL

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| <u>43 TELEPRINTER ASSEMBLY INSTRUCTIONS</u> | | | |
| 51055S | Instructions for configuration and assembly of feature groups and keytops for the 43 Buffered Teleprinters used in the Bell System. | | |

See individual sections for Copyright Notices.

The 43 TELEPRINTER
SERVICE MANUAL

INTRODUCTION

This manual provides servicing information for the 43 Basic and Buffered Teleprinter Terminals and the 43 Teleprinter 5-Level Paper Tape Unit. The 9-digit sections included in the service manual provide a general description and instructions for use by crafts personnel when performing the servicing tasks required for the installation, testing, troubleshooting and routine maintenance of the 43 KSR, BSR and RO Teleprinter and for the Paper Tape Unit.

The task flow charts on the next pages illustrate the intended servicing activities and associated 9-digit sections.

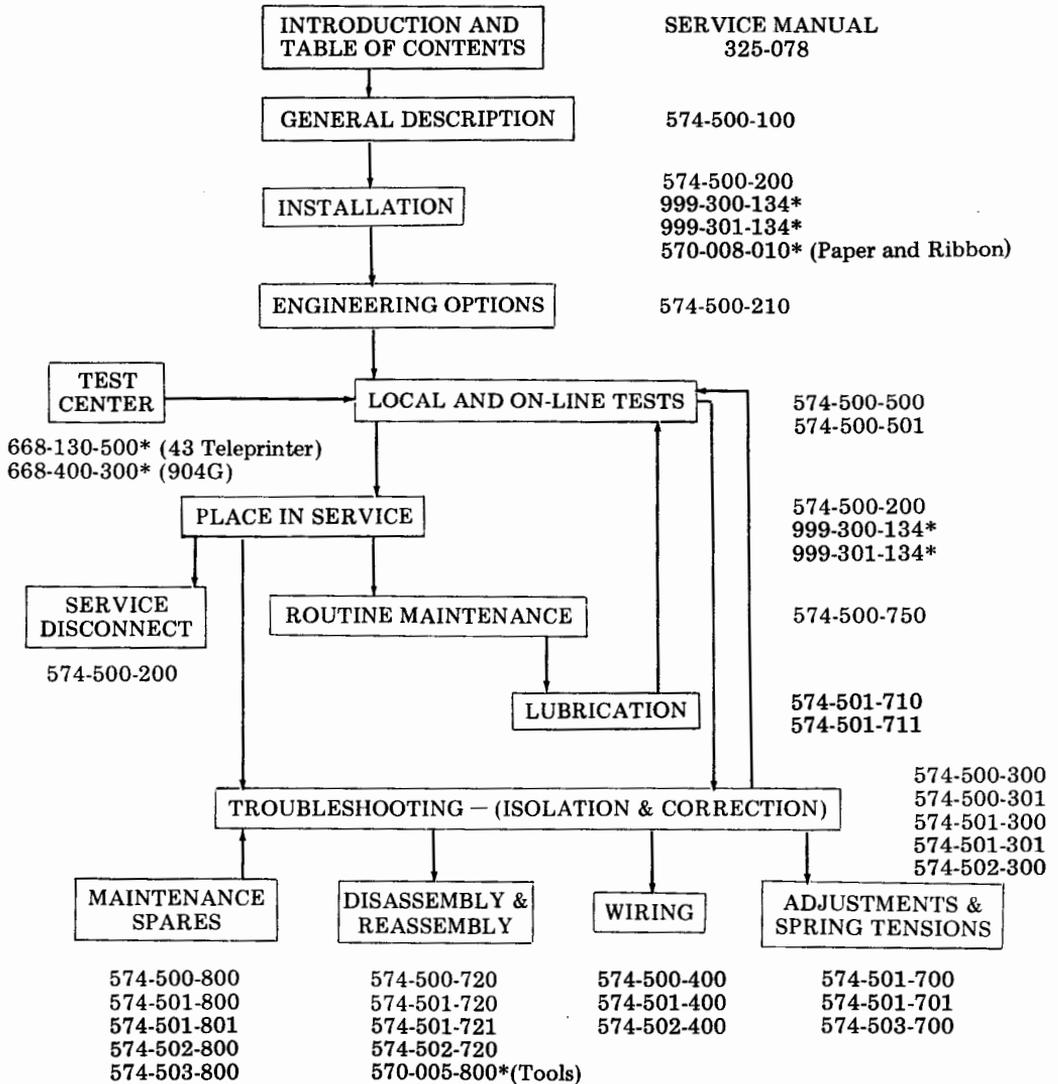
Crafts personnel should be properly trained and have maintenance spares which are available before attempting to service the 43 Teleprinter or Paper Tape Unit.

A brief plant training course on the basic 43 Teleprinter, in addition to courses at Teletype Corporation on all 43 Teleprinters and the Paper Tape Unit, is available.

This manual replaced 325-074 and was issued to provide servicing information for KSR, BSR and RO Teleprinters equipped with integrated terminal data and auxiliary units (TDU, TAU, or TAU1), no integrated terminal unit, and the answer-back modification kit and to include the 43 Teleprinter 5-Level Paper Tape Unit servicing information.

TASK FLOW AND 9-DIGIT SECTIONS

For 43 BASIC TELEPRINTER

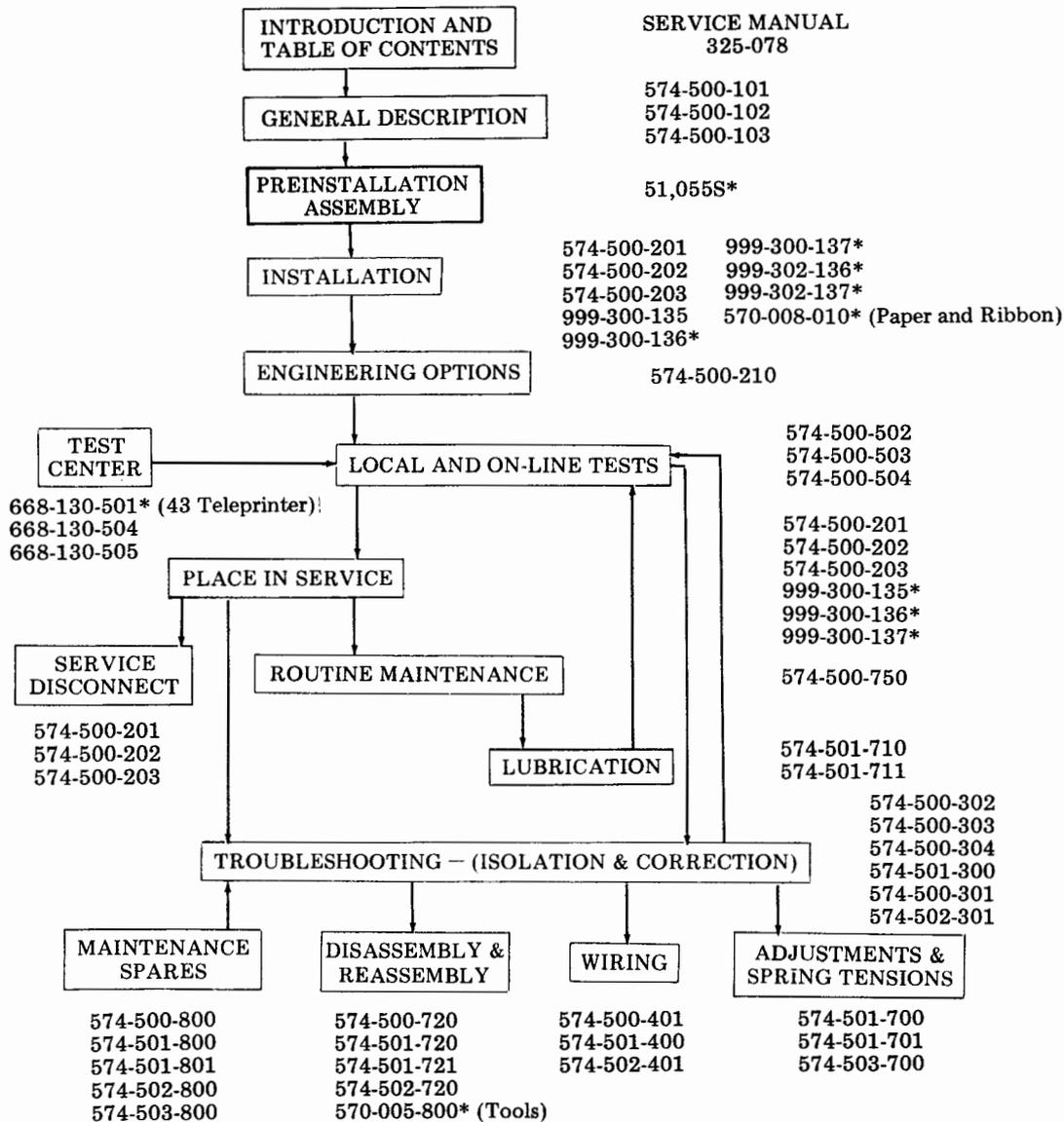


*Not included in Service Manual.

The 999 series How To Operate manuals are not furnished with the terminal.

TASK FLOW AND 9-DIGIT SECTIONS

For 43 BUFFERED TELEPRINTER

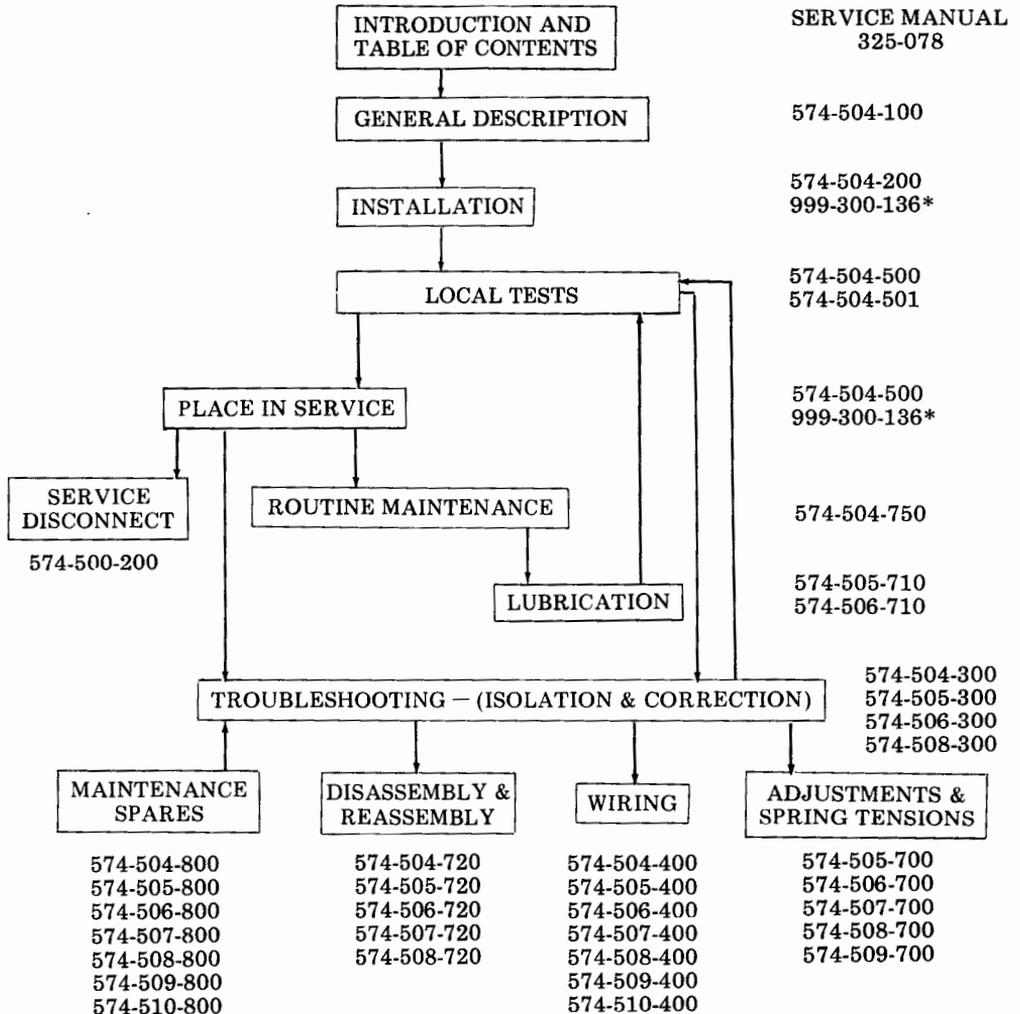


*Not included in Service Manual.

The 999 series How To Operate manuals are not furnished with the terminal.

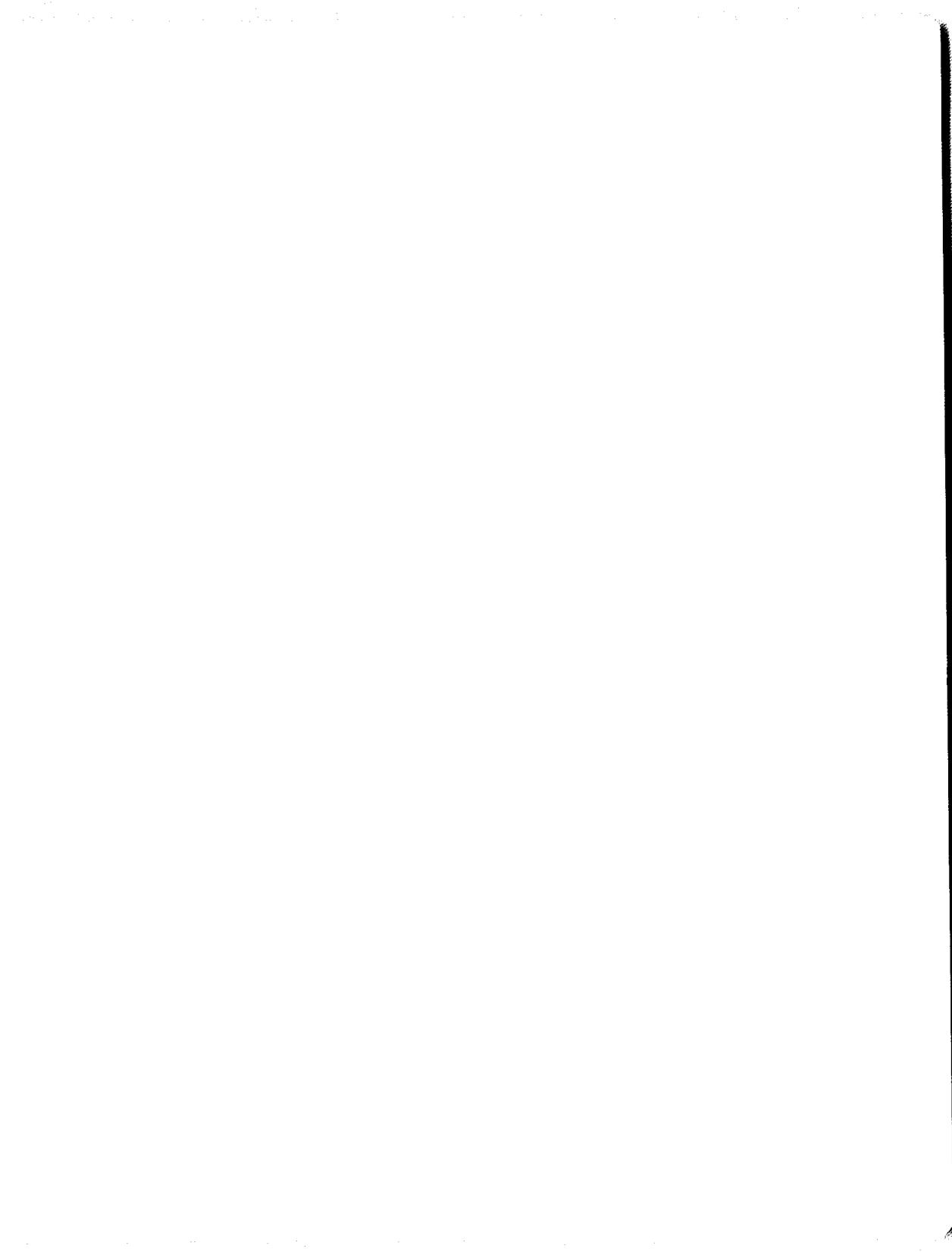
TASK FLOW AND 9-DIGIT SECTIONS

For 43 5-LEVEL PAPER TAPE UNIT



*Not included in Service Manual.

The 999 series How To Operate manuals are not furnished with the terminal.



43 TELEPRINTER BASIC
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1. GENERAL

1.01 This section provides a general description of the 43 Basic Teleprinter terminals and station arrangements.

1.02 This section is reissued to include a general description of variable tractor feed teleprinters and to update the USOC list.

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

2. DESCRIPTION

2.01 The 43 Keyboard Send Receive (KSR) or Receive Only (RO) teleprinter consists of a keyboard printer with a separately ordered and assembled interface unit. Refer to Fig. 1.

2.02 The 43 Teleprinter consists of the following: (Refer to Fig. 2)

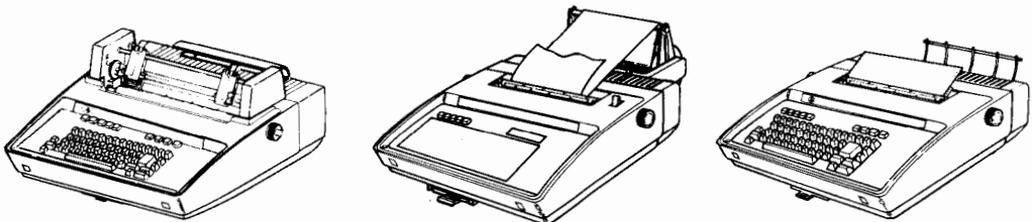
- KSR with a Terminal Data Unit (TDU).
- KSR with Terminal Auxiliary Unit (TAU1) that has an EIA interface.
- KSR with no internal data unit that has a Transistor-Transistor Logic (TTL) voltage level interface.
- Receive Only (RO) terminals with either a TDU, TAU1, or TTL interface.

2.03 Terminals with EIA interface are normally connected to an external data set in either DATAPHONE* service or private line service.

2.04 Terminals with no internal data unit are provided to allow addition of TAU1, TDU or other similar modules.

2.05 The 43 KSR and RO Teleprinters are available with friction feed or tractor feed paper handling capabilities. Early versions include sprocket (pin) feed.

2.06 The 43 Station arrangements consist of a modular 500 or 2500 telephone with the station connected directly to a switched telephone network by means of a modular (D4BU) cord or without a directly connected telephone.



KSR Tractor Feed

RO Friction Feed

KSR Sprocket Feed

Fig. 1—43 Teleprinter

*Registered Service Mark of AT&TCo.

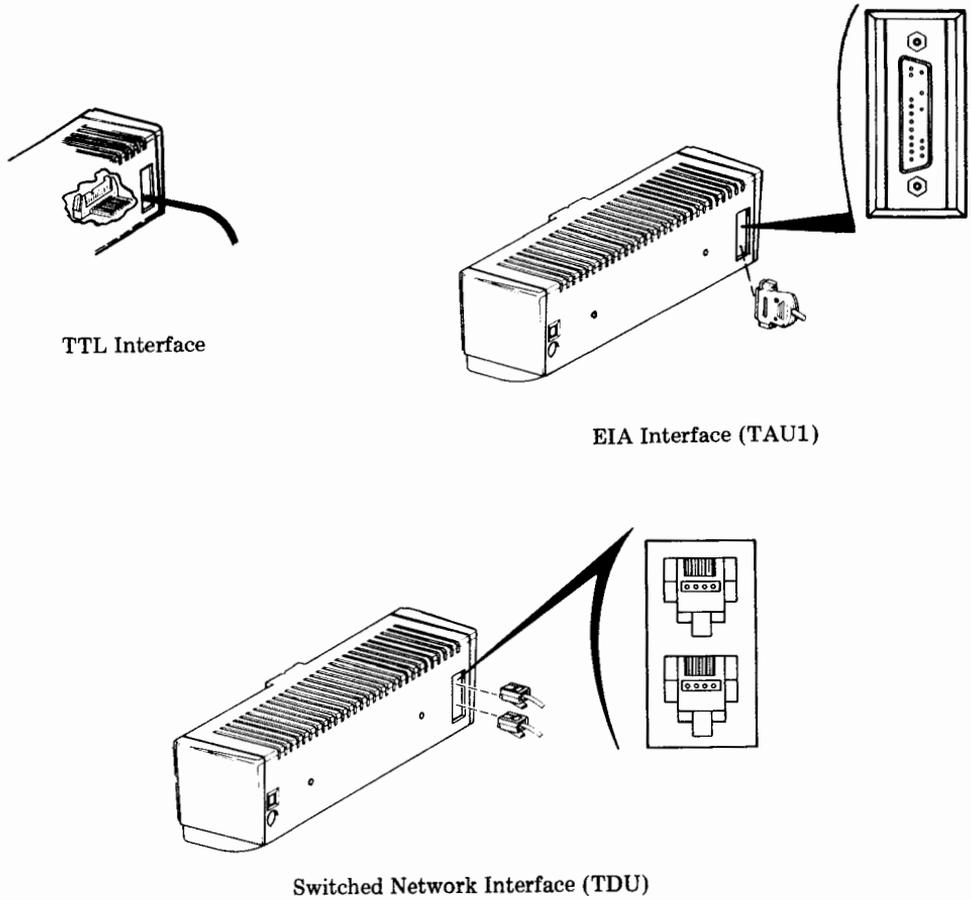


Fig. 2—Interface Connectors

- 2.07 Data messages can be sent or received (or printed locally) a character-at-a-time at user selectable on-line speeds of 10 or 30 characters per second on KSR terminals. Receive only speeds of 10 or 30 characters per second are set by engineering options on RO terminals. The telephone is used to originate calls for data or talk and to answer calls in the talk mode in DATA-PHONE service.
- 2.08 Characters are formed by impact on a 7 by 9 dot matrix and are printed at approximately 13 to the inch on sprocket feed and 10 to the inch on friction or tractor feed. Line lengths of up to 132 characters (SF) or 80 characters (FF and T) can be printed with lines spaced at 6 to the inch.
- 2.09 Inking is provided by a readily replaceable cartridge with ribbon (430035). A package of six cartridges (430484) is available from Teletype Corporation.
- 2.10 Paper for the pin feed printer must be 12 inches wide with standard sprocket hole size and spacing. Tractor feed printer paper widths may be between 3-1/2 inches and 12 inches. Standard weight, single-ply or multicopy paper consisting of the original and up to two additional copies can be used. Only standard single-ply 8-1/2 inches wide (5 inches diameter) roll paper may be used on friction feed printers.
- 2.11 Basic 43 Teleprinters are intended for table top use. The paper can be fed from the supply box or from a paper holder that clips to the rear of the sprocket or tractor feed terminals. On friction feed terminals, the paper roll is held by a paper supply assembly that is mounted on the rear of the terminal.
- 2.12 The terminals operate on a 115 Vac, ± 10 percent 50-60 Hz source of power at 75 watts. Power is controlled by an on-off rocker type switch located at the right rear of the housing. A 10-foot power cord is included with the terminal.
- 2.13 The teleprinters weigh approximately 30 pounds and those with modular phone connectors can readily be moved and reconnected in another location by the user.
- 2.14 Each Uniform Service Order (USOC) arrangement is furnished with the teleprinter terminal (including a paper holder or paper supply assembly and new cartridge with ribbon) in addition to a box or roll of paper, (except paper for tractor feed terminals) a How to Operate Manual, and installation instructions. The modular telephone and one additional D4BU cord are needed to complete a station. TTL interface or a data set and EIA cord arrangements require a locally engineered connection to the data device. Following is a list of available arrangements according to Uniform Service Order Codes (USOC's).

| <u>DESCRIPTION</u> | <u>USOC</u> | <u>COMPONENT</u> |
|------------------------------------|-------------|---------------------------------|
| 43 Basic KSR (S) w/TDU | 43AXS | 4320 AAA Set + 153A1 Modem |
| 43 Basic KSR (F) w/TDU | 43AXF | 4320 AAE Set + 153A1 Modem |
| 43 Basic KSR (S) w/TAU1 | 43LXS | 4320 AAA Set + 410755 Card, EIA |
| 43 Basic KSR (F) w/TAU1 | 43LXF | 4320 AAE Set + 410755 Card, EIA |
| 43 Basic RO (S) w/TDU | 43AYS | 4310 AAA Set + 153A1 Modem |
| 43 Basic RO (F) w/TDU | 43AYF | 4310 AAE Set + 153A1 Modem |
| 43 Basic RO (S) w/TAU1 | 43LYS | 4310 AAA Set + 410755 Card, EIA |
| 43 Basic RO (F) w/TAU1 | 43LYF | 4310 AAE Set + 410755 Card, EIA |
| Answer-Back Modification Kit | AA4 | 430900 |
| Selective Calling Modification Kit | 4SC | 430910 |
| 43 KSR or RO Pedestal | 4PD | 430311 |

2.15 The operational controls and status indicators for the KSRs are briefly described in Fig. 3.

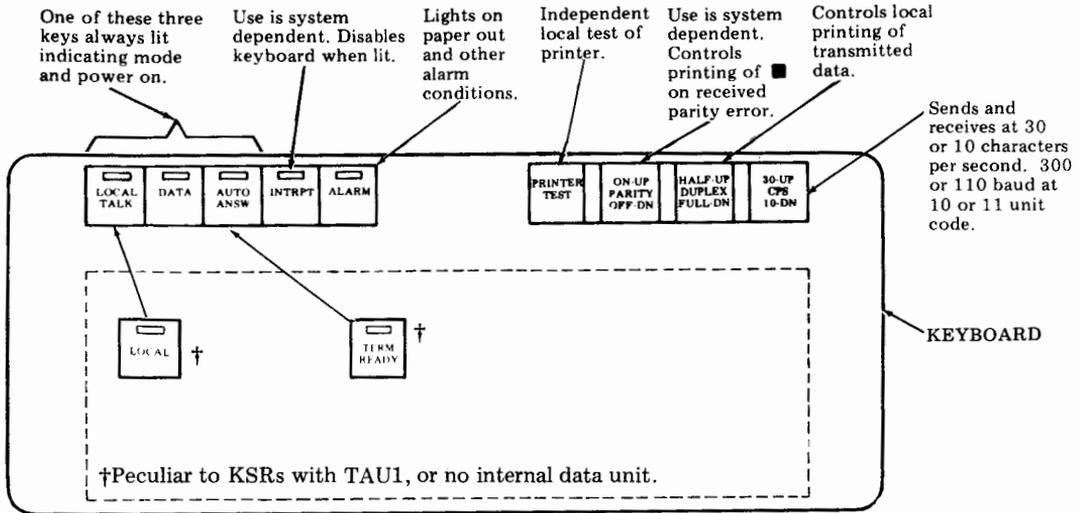


Fig. 3—KSR Operational Controls and Status Indicators

2.16 The keyboard layout for the KSRs is shown in Fig. 4, along with brief descriptions on the keyboard-printer operation of several special keys. Character transmission is 1968 ASCII, (American National Standard Code for Information Interchange) 8-level with the 8th bit used for even parity on all characters sent.

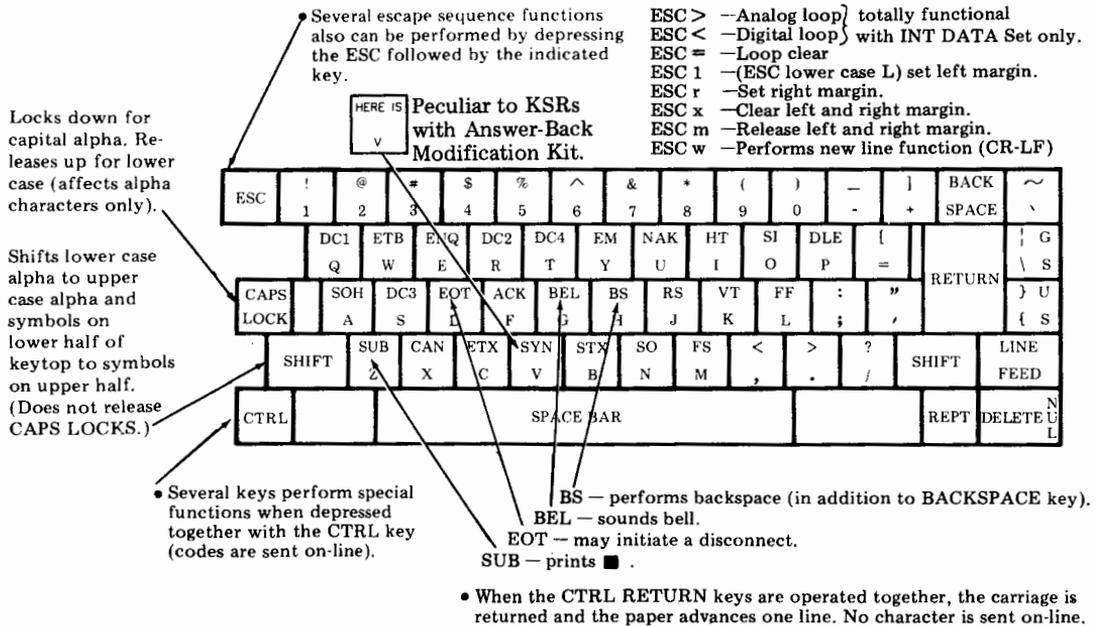


Fig. 4—KSR Keyboard Layout

2.17 The keyboard controls and status indicators for the RO are briefly described in Fig. 5.

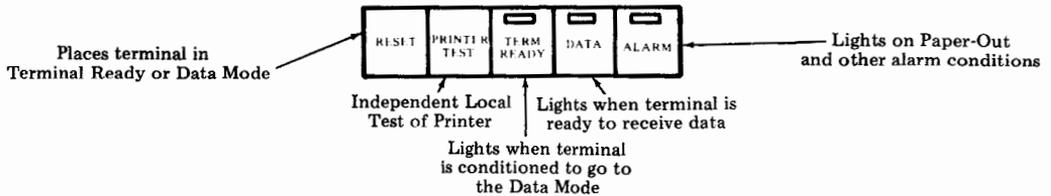


Fig. 5 — RO Operational Controls and Status Indicators

2.18 The following is a 20 percent reduction sample of the printed character set as it appears in the printer test message on sprocket feed printers. (Lines are limited to 80 characters on friction and tractor feed.)

```

■ !"#$%&'()*+,-./0123456789;<=>?@ABCDEFGHIJKLMNPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
■ !"#$%&'()*+,-./0123456789;<=>?@ABCDEFGHIJKLMNPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
    
```

3. ENGINEERING OPTIONS

3.01 Several variations are provided for field applications that may require engineering consideration. These variations (engineering options) can be enabled by crafts personnel without additional material (by means of switches) when so requested on a service order.

3.02 The titles and possible variations are listed as follows. Numbers with alpha suffixes are provided for ordering and record keeping purposes. In each case, the suffix a. indicates the factory furnishes condition except for 432.

| |
|---|
| 431. Type Font Arrangement |
| a. Narrow numeric 0 and wide alpha O Standard ^ and underline _ |
| b. Slash numeric 0 and wide alpha O ^ prints as ↑ and _ prints as ←. |
| c. Slash alpha 0 and wide numeric O ^ prints as ↑ and _ prints as ←. |
| d. Slash alpha 0 and wide numeric O Standard ^ and underline _ |

| |
|--|
| 432. Line Length and Bell |
| a. 132 Characters Bell Enabled (Pin Feed Only) |
| b. 72 Characters — Printed line not centered — Bell Enabled (Friction and Tractor Feed) |
| c. 80 Characters Bell Enabled (Friction and Tractor Feed) |
| d. 72 Characters — Printed line centered — Bell Enabled (Friction Feed Only) |
| e. 132 Characters — Bell Inhibited (Pin Feed Only) |

| |
|---|
| 433. EOT Response |
| a. Disconnect or turn off TERM READY on received EOT. |
| b. Does not disconnect or turn off TERM READY on received EOT. |

| |
|---|
| 434. Character Parity Bit Sent (KSR only) |
| a. Even Parity |
| b. 8th Bit Mark |

| |
|--|
| 435. End-of-Line on Receive |
| a. Auto CR-LF performed |
| b. Bell & Print Inhibit at last char. position |

| |
|------------------------------|
| 436. Speed Control (RO only) |
| a. 30 Characters/Sec |
| b. 10 Characters/Sec |

| |
|--|
| 437. Print Substitute Character ■ on odd parity received. |
| a. Print Sub-Char (■) on odd parity received. |
| b. Ignore parity. |

| |
|-----------------------------|
| 438. Answer-Back on HERE IS |
| a. Yes |
| b. No |

| |
|----------------------------|
| 439. Answer-Back on ANSWER |
| a. Yes |
| b. No |

| |
|-------------------------|
| 440. Answer-Back on ENQ |
| a. Yes |
| b. No |

| |
|-------------------------------|
| 441. Type of Interface Unit |
| a. Terminal Data Unit (TDU) |
| b. TAUI, or no Interface Unit |

| |
|--------------------------------|
| 442. Local Copy of Answer-Back |
| a. Yes |
| b. No |

| |
|---|
| 443. Character Parity Bit Sent from Answer-Back |
| a. Even Parity |
| b. 8th Bit Mark |

| |
|--|
| 444. Blinding of ENQ Recognition. |
| a. Auxiliary Sender Controls (AUX. Pin 4) (HDX Only) |
| b. Auxiliary Sender cannot blind. |

4. REFERENCES

4.01 The 43 Teleprinter Section 574-500-150 provides additional descriptions of the station components, features, applications and interfacing. Specification 50944S provides information on the 430900 Answer-Back Modification Kit with PROM. Specification 50962S provides information on the 430910 Selective Calling Modification Kit.

4.02 The 999-300-134 How to Operate Manual provides information on the 43 Teleprinter KSR Station with internal data set in DATAPHONE Service and for the KSR DATAPHONE with external data set and private line. Manual 999-301-134 is for DATAPHONE and private line RO terminals.

4.03 The sections 574-500 series provide all the necessary information for trained crafts personnel to install, maintain, and, if necessary, service the 43 Teleprinter using recommended lists of maintenance spares.

4.04 Section 570-008-010 provides detailed specifications on the paper and ribbon.

Note: Single-ply 15 pound basic 12-inch sprocket feed paper may be obtained from the suppliers listed below or other suppliers.

Wallace Business Forms, Inc.
444 W. Grand Avenue
Chicago, Illinois 60610
Cat No: E-6879

Duplex Products Company
228 W. Page Street
Sycamore, Illinois 60178
Cat No: 1-1280-15P

43 TELEPRINTER 8-LEVEL BUFFERED SEND/RECEIVE (BSR) STATION

GENERAL DESCRIPTION

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1. GENERAL

1.01 This section provides a general description of the 43 Teleprinter 8-Level Buffered Send/Receive (BSR) Stations (refer to Fig. 1).

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

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

2. DESCRIPTION

2.01 The 43 Buffered Send/Receive (BSR) Station consists of a keyboard, matrix printer and controller in a tabletop housing that can also be mounted on an optional pedestal.

2.02 The 43 BSR stations are available with friction feed or tractor feed paper handling capabilities. See Fig. 1 for teleprinter identification.

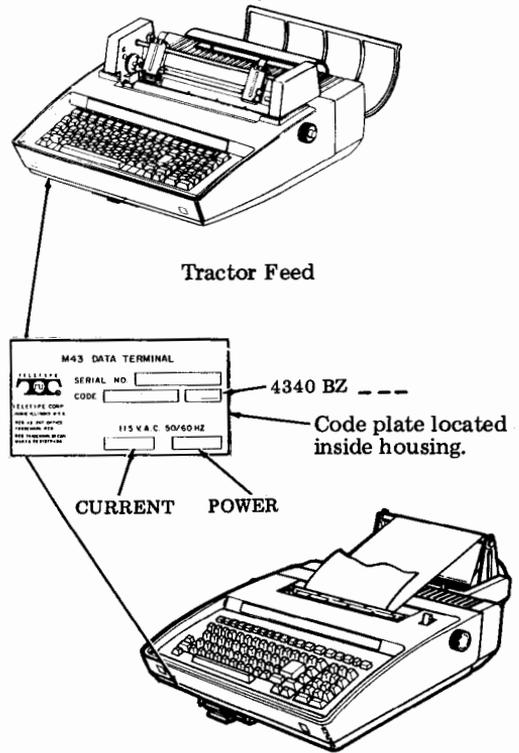


Fig. 1—43 Buffered S/R Stations

SECTION 574-500-101

2.03 The station, feature group, EIA cable and documents are ordered in combinations of USOC codes and the material is furnished in separate cartons. The 43 buffered station (factory furnished without a feature group that determines its operating characteristics) must be assembled according to Specification 51055S before the BSR station is installed.

2.04 The 43 BSR stations are furnished with a ribbon cartridge and the stations include a paper holder with mounting hardware (TF) or a paper supply assembly and a roll of paper (FF). An optional paper winder can be attached to friction feed printers and an optional copy holder can be attached to either version.

2.05 The buffers in these stations provide for off-line data preparation (message enter, enter, and store), batch transmission, and line speeds higher than the continuous printing rate.

2.06 Operating speeds are 110, 200, 300, 600, 1200 or 1800 baud using an 8-bit character structure in an asynchronous format with 33/35 ASCII protocol.

2.07 Printout is on a 10 character per inch matrix-style printer. The 80-column friction feed teleprinter uses 8-1/2 inch wide single-ply roll-type paper and the tractor feed teleprinter uses multicopy paper 3-1/2 to 12 inches wide with a maximum of 100 columns. See paragraph 2.10 for paper specifications.

2.08 A 7 by 9 dot matrix produces up-low character shapes for ASCII printing graphics and special symbols for 32 ASCII control codes.

2.09 The teleprinter interface is EIA-type RS-232-C and is intended for use with an external full duplex data set for use on switched network or private lines.

2.10 Paper for the friction feed printer is the standard single-ply, 8-1/2 inches wide, 5 inch diameter roll paper. Paper for the tractor feed printer may range from 3-1/2 to 12 inches wide with standard sprocket hole size and spacing. It may be standard weight, single-ply or multicopy paper consisting of the original and up to two additional copies. Section 570-008-010 provides detailed specifications on the paper and ribbon.

2.11 Inking is provided by a readily replaceable cartridge with ribbon (430035), available from Teletype Corporation.

2.12 The buffered teleprinter operates on 115 Vac ± 10 percent at 50 or 60 hertz. Power to the station is approximately 84 watts and is controlled by an on-off rocker switch located at the right rear of the housing.

2.13 The 43 teleprinter 8-level BSR station arrangement consists of a 43 BSR friction feed (USOC 4BF) or tractor feed (USOC 4BG) teleprinter, a feature group (USOC 4BQ), How To Operate Manual 999-300-135, Installation and Removal, Section 574-500-201, and Testing, Section 574-500-502, and one of the following EIA cables:

| Description | USOC Assigned |
|-------------------------------|---------------|
| 430569 Cable Assembly — 3 ft | WES (8J) |
| 408065 Cable Assembly — 7 ft | WES (4U) |
| 408066 Cable Assembly — 12 ft | WES (87) |
| 408067 Cable Assembly — 25 ft | WES (88) |
| 408068 Cable Assembly — 50 ft | WES (89) |

2.14 The friction feed teleprinter weight is 32 pounds and the tractor feed teleprinter weight is 34 pounds.

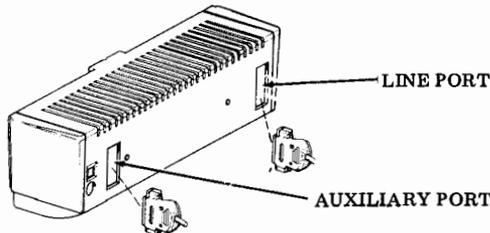


Fig. 2—Interface Ports

3. KEYBOARD

3.01 The keytop arrangement is divided into three major groups according to function or purpose. They are the operational controls and status indicators, the basic keyboard and the numeric/edit pad.

3.02 The operational controls and status indicators for the teleprinter are briefly described in Fig. 3.

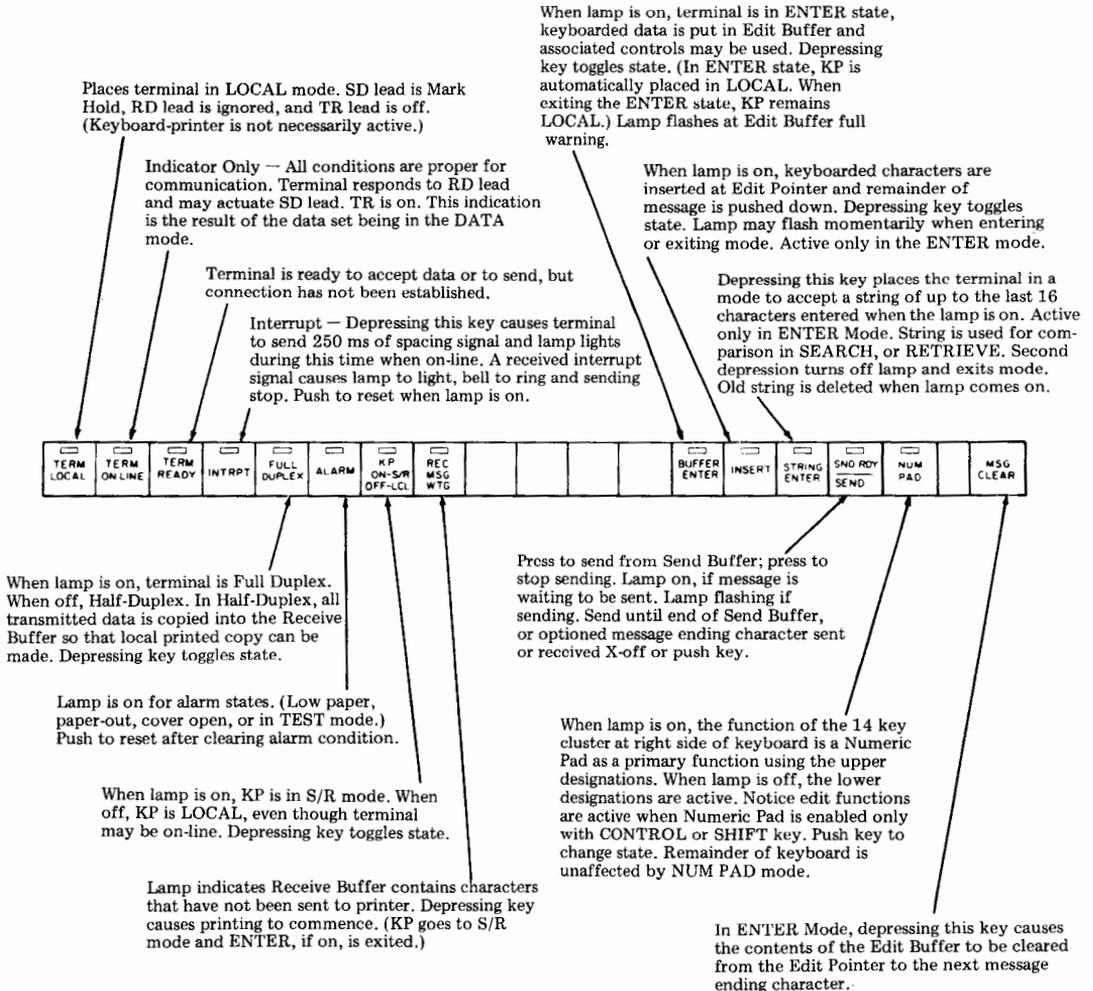


Fig. 3—Operational Controls and Status Indicators

3.03 The basic keyboard layout is shown in Fig. 4 along with brief descriptions on the keyboard printer operation of several special keys.

- ESC 1 (CTRL1) — Sets horizontal tab stop at current printer column position.
- ESC 2 (CTRL 2) — Clears all horizontal tab stops stored in the volatile memory.
- ESC 5 (CTRL 5) — Sets vertical tab stop at current printer line position.
- ESC 6 (CTRL 6) — Clears all vertical tab stops stored in the volatile memory.
- ESC H — Prepares terminal to resend last message.

ESC 1 (lower case L) (CTRL 7) — Sets left margin.

ESC x (CTRL 9) — Clears left margin. CTRL 9 also clears right margin.

ESC y (CTRL 3) — Restores terminal to the pre-set horizontal and vertical tab values.

Note: The escape sequence will be sent on-line or entered in the edit buffer when the control character (if shown in parentheses) is operated locally. Right margin set (CTRL 8) and right margin release (CTRL 0) are local functions only and are not entered in the edit buffer.

• Several escape sequence functions also can be performed by depressing the ESC followed by the indicated key.

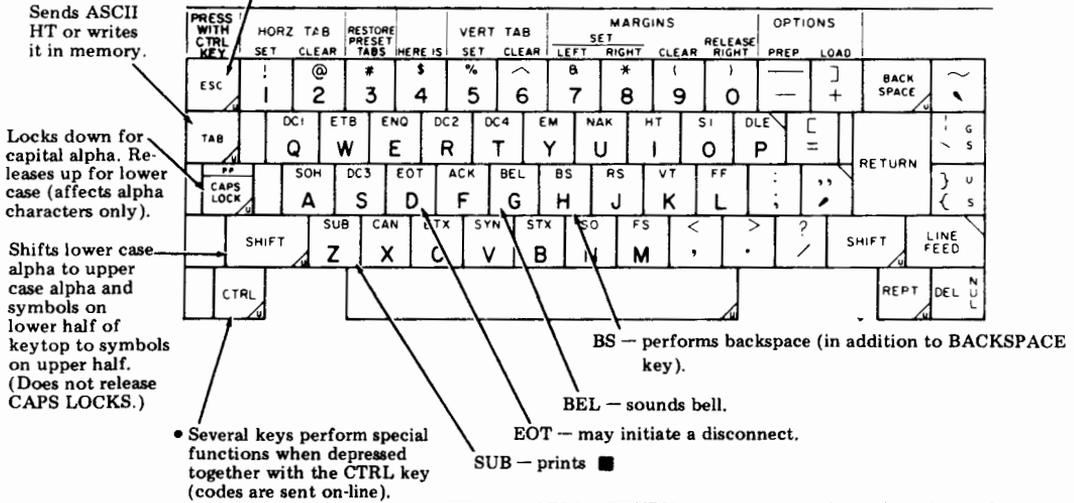


Fig. 4—Basic Keyboard Layout

3.04 The functions of the numeric/edit pad are briefly described in Fig. 5.

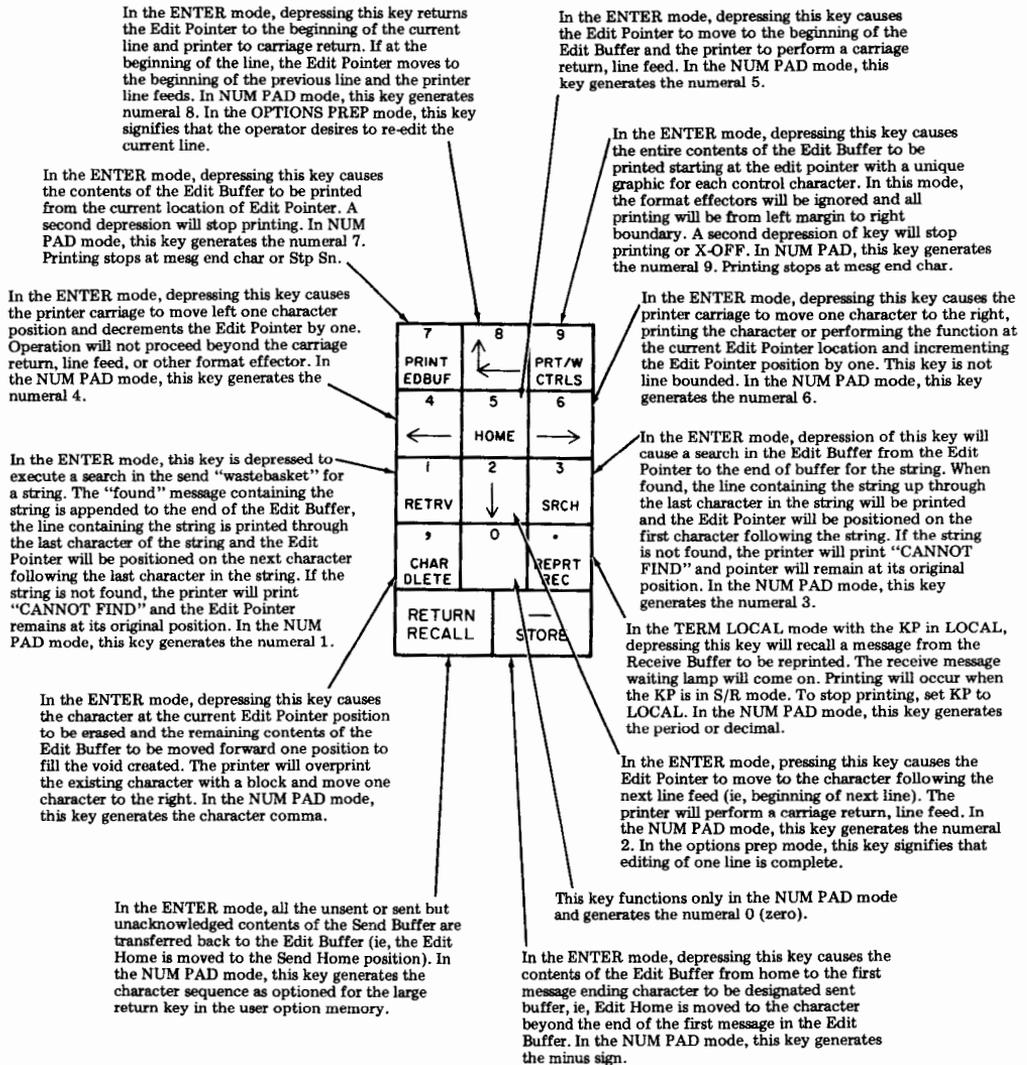
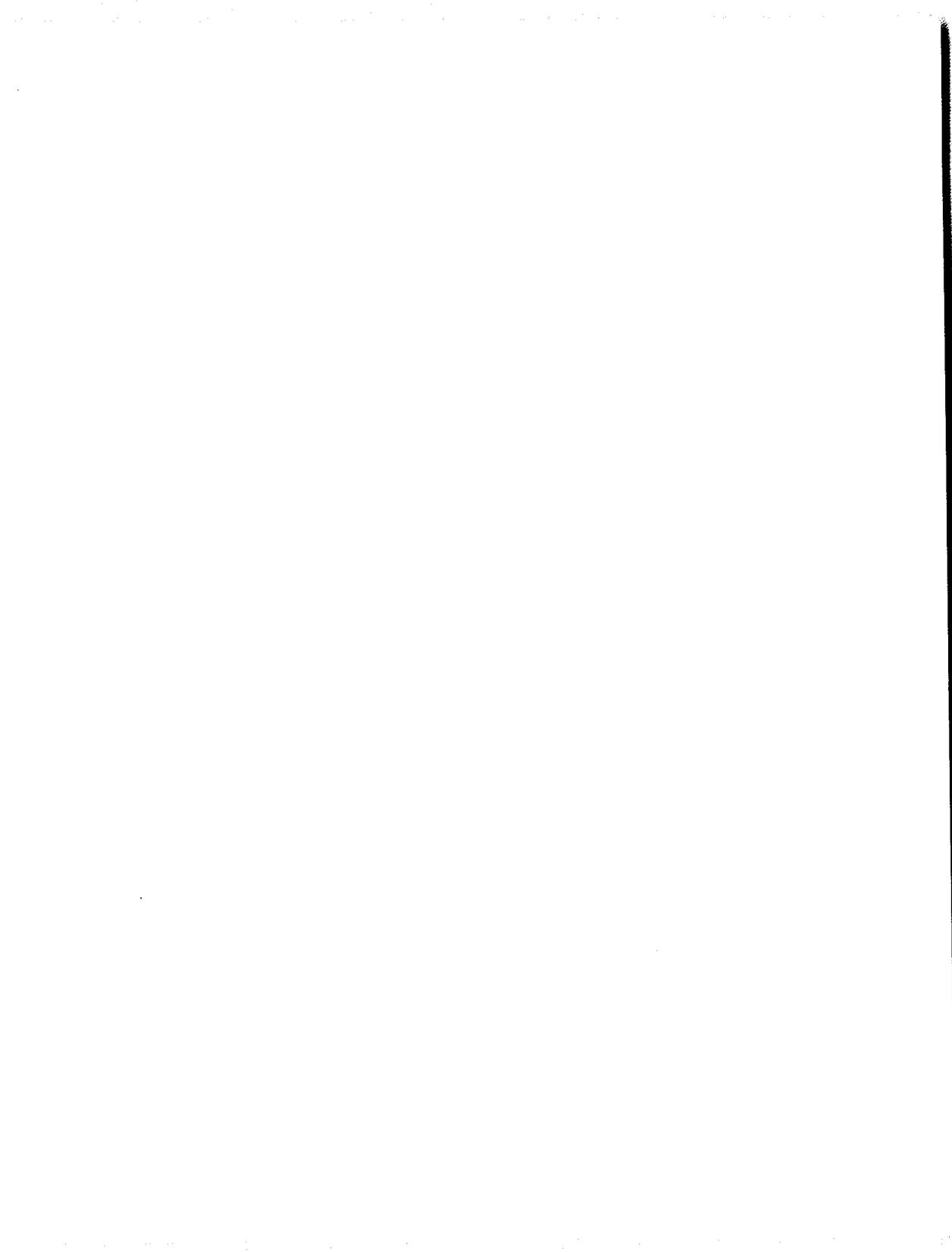


Fig. 5—Numeric/Edit Pad

4. REFERENCES

- 4.01 How To Operate Manual 999-300-135 includes information on 43 buffered send/receive teleprinter operation, ribbon and paper replacement.
- 4.02 Section 574-500 series provide all the necessary information for trained craft personnel to install, maintain, option, and, if necessary, service the 43 buffered teleprinter using recommended lists of maintenance spares.



43 TELEPRINTER 8 LEVEL BUFFERED SELECTIVE CALLING (BSC) STATION

GENERAL DESCRIPTION

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| 2. DESCRIPTION | 1 |
| 3. KEYBOARD | 2 |
| 4. REFERENCES | 6 |

1. GENERAL

1.01 This section provides a general description of the 43 Teleprinter 8 Level Buffered Selective Calling (BSC) Station.

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

1.03 When ordering replaceable components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410405).

2. DESCRIPTION

2.01 The 43 BSC Station consists of a KP set (Keyboard Printer) and a controller housed in the bustle. See Fig. 1.

2.02 The 43 BSC is available as a friction feed or tractor feed teleprinter containing a 16,000 character buffer. See Fig. 1.

2.03 These teleprinters utilize a matrix impact printer, a keyboard with numeric pad and both nonvolatile and volatile memories. They are intended for application in the existing or new selective calling systems using 8-level ASCII code (1968). Data transmission is asynchronous or isochronous, half-duplex (or full duplex on received interrupts only) or 2- or 4-wire multipoint private lines.

2.04 An auxiliary port at the right rear of the teleprinter can support a DATASPEED® 40 ROP, a 43 RO teleprinter or a 43 BSC optioned as an auxiliary terminal.

2.05 On-line speeds can be optioned for asynchronous operation on the line port at baud rates of 110, 150, 300, 600, 1200, 1800 and (when optioned as an auxiliary printer terminal) 2400 baud. Isochronous operation at 0 to 2400 baud (dependent on clocks provided by the data sets) can be optioned at the line port only. On the auxiliary port asynchronous baud rates of 110, 300, 1200 and 2400 can be optioned. Both line and auxiliary ports satisfy voltage requirements of EIA, RS-232C.

2.06 Tractor feed paper may be from 3 inch to 12 inch sprocket feed. The teleprinter requires paper with folds or horizontal perforations located midway between sprocket holes and standard sprocket hole size and spacing. This paper may be single-ply with 8-1/2 inch folds to provide 11 inch by 8-1/2 inch copy when the 1/2-inch wide sprocket hole strip is removed at the edge serrations. Other types of sprocket feed paper with different form lengths, lighter weight, no edge serrations or additional copies, etc, may also be used. Multicopy forms consisting of the original and two copies of 12 pound basic paper (using 8 pound basic carbon paper) produce clear copy. Paper for the 43 friction feed teleprinter should be standard 8-1/2 inches wide, single-ply, furnished in 5 inch maximum diameter rolls with a 1 inch diameter spindle hole.

2.07 Inking is provided by a readily replaceable cartridge with ribbon (430035), available from Teletype Corporation.

2.08 The 43 BSC teleprinter operates on 115 Vac \pm 10 percent, at 50 or 60 Hz. Power to the terminal is approximately 84 watts and is controlled by an on-off rocker switch located at the right rear of the housing.

2.09 The teleprinter weighs 32 pounds.

2.10 The 43 teleprinter 8-level (BSC) can be identified by its keyboard layout. See Fig. 2.

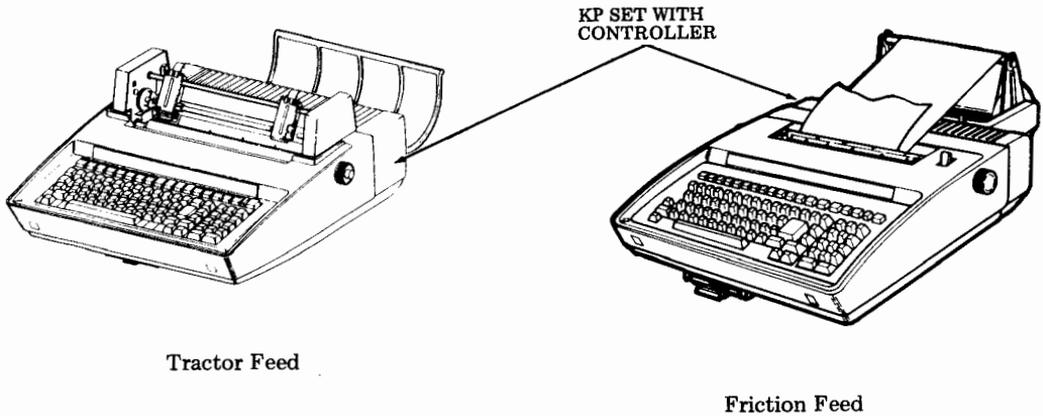


Fig. 1

3. KEYBOARD

3.01 The keytop arrangement is divided into three major groups according to function or purpose. They are the controls and indicators, the basic keyboard and the keyboard edit cluster and numeric pad.

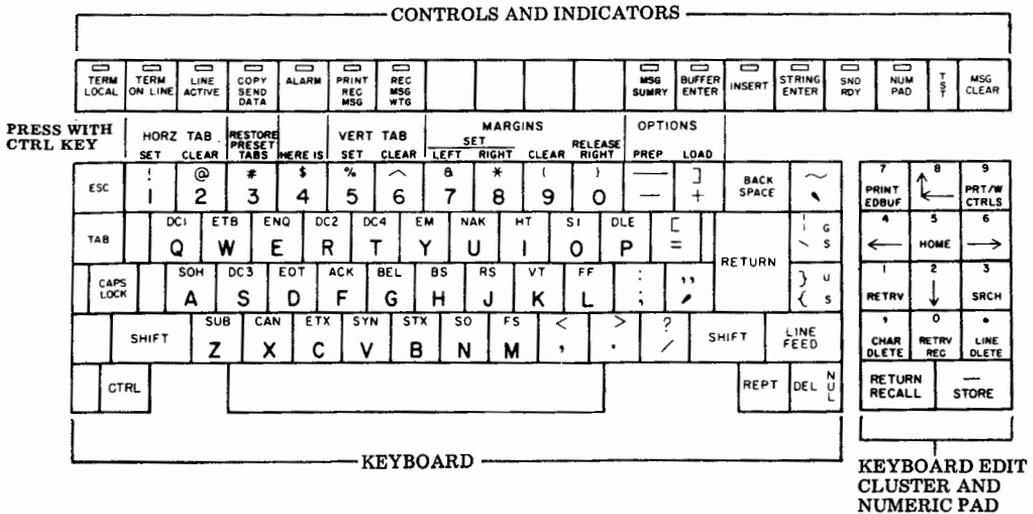


Fig. 2

3.02 The controls and indicators are described in Fig. 3.

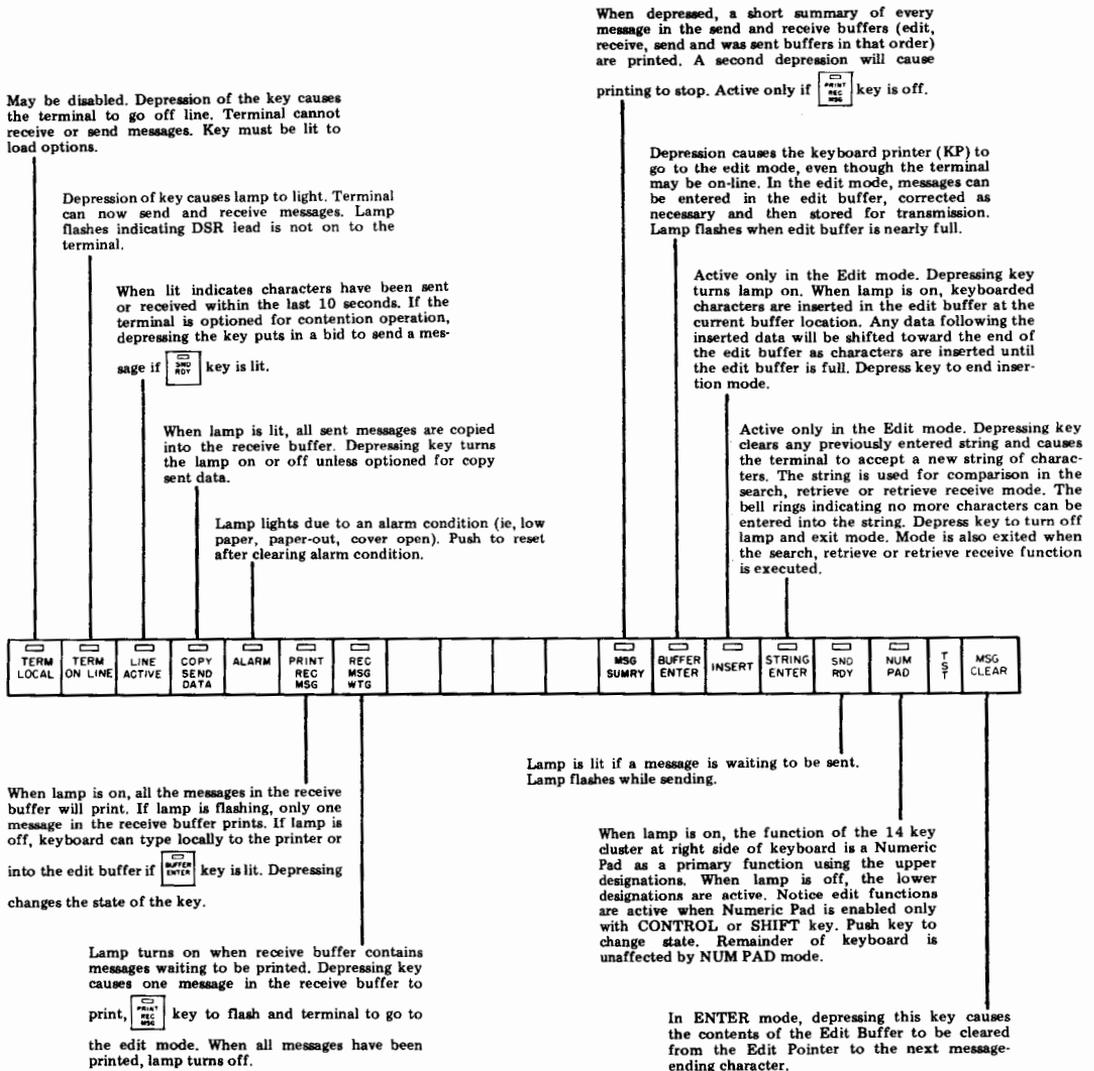


Fig. 3—Controls and Indicators

3.03 The basic keyboard layout is shown in Fig. 4 along with brief descriptions on the keyboard printer operation of several special keys.

ESC 1 (CTRL 1) — Sets horizontal tab stop at current printer column position.

ESC 2 (CTRL 2) — Clears all horizontal tab stops stored in the volatile memory.

ESC 5 (CTRL 5) — Sets vertical tab stop at current line position.

ESC 6 (CTRL 6) — Clears all vertical tab stops stored in the volatile memory.

ESC H — Prepares terminal to resend last message.

ESC 1 (lower case L) (CTRL 7) — Sets left margin.

ESC x (CTRL 9) — Clears left margin. CTRL 9 also clears right margin.

ESC y (CTRL 3) — Restores terminal to the preset horizontal and vertical tab values.

ESC 8 (CTRL 8) — Sets right margin, local function only.

ESC 0 (CTRL 0) — Releases right margin for current line, local function only.

Note: The escape sequence will be entered in the edit buffer if the  key is lit when the control character (if shown in parentheses) is operated locally. Right margin set (CTRL 8) and right margin release (CTRL 0) are local functions only and are not entered in the edit buffer.

- Several escape sequence functions also can be performed by depressing the ESC followed by the indicated key.

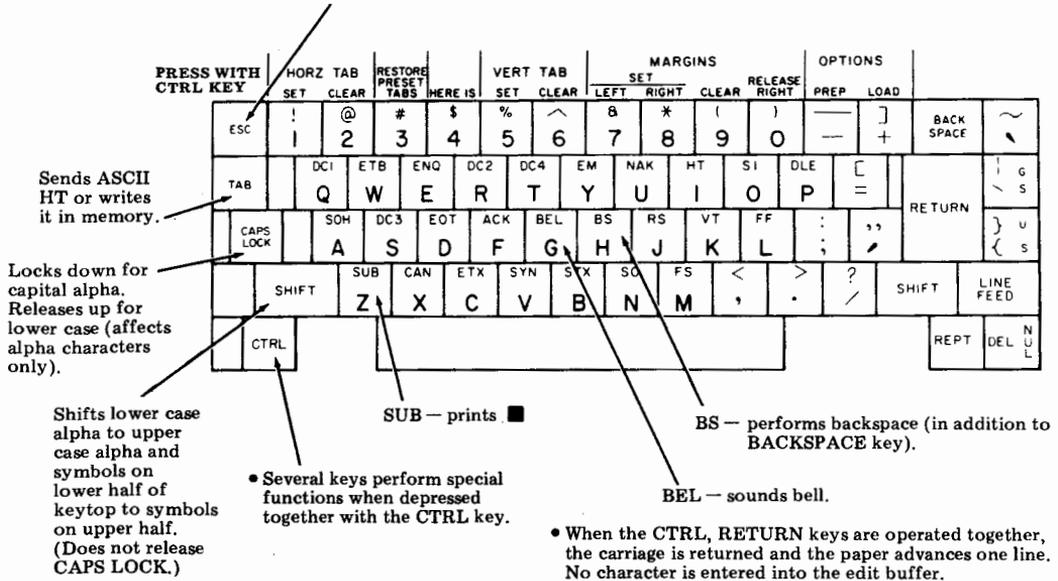


Fig. 4—Basic Keyboard Layout

3.04 The functions of the Numeric/Edit Pad are described in Fig. 5.

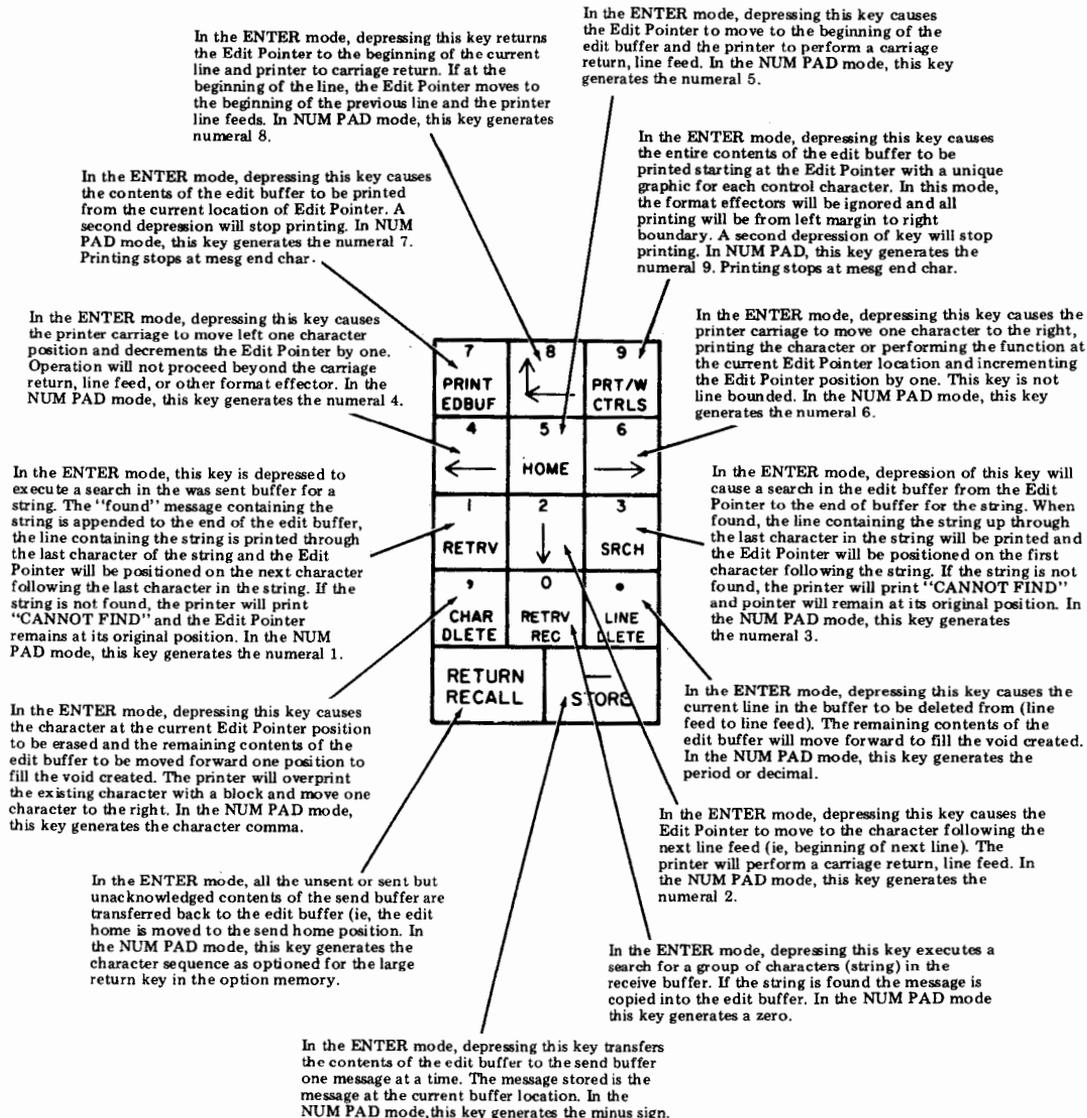


Fig. 5—Numeric/Edit Pad

SECTION 574-500-102

4. REFERENCES

- 4.01 How To Operate Manual 999-300-137 provides information on the operation of the 43 BSC Teleprinter.
- 4.02 Section 574-500 series provides all the necessary information for trained crafts personnel to install, maintain and if necessary, service all 43 teleprinters using recommended lists of maintenance spares.
- 4.03 Section 570-008-010 provides detailed specifications on the paper and ribbon.

43 TELEPRINTER 5-LEVEL BUFFERED SELECTIVE CALLING (BSC) STATION

GENERAL DESCRIPTION

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1. GENERAL

1.01 This section provides a general description of the 43 Teleprinter 5-Level Buffered Selective Calling (BSC) Station.

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

1.03 When ordering replaceable components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410405).

2. DESCRIPTION

2.01 The 43 BSC Station consists of a KP set (Keyboard Printer) and a controller housed in the bustle. See Fig. 1.

2.02 The 43 BSC is available as a friction feed or tractor feed teleprinter containing a 16,000 character buffer. See Fig. 1.

2.03 These teleprinters utilize a matrix impact printer, a keyboard with numeric pad and both nonvolatile and volatile memories. They are intended for application in the existing or new selective calling systems using 5-level baudot code. Data transmission is asynchronous or isochronous, half-duplex (or full duplex on received interrupts only) on 2- or 4-wire multipoint private lines.

2.04 An auxiliary port at the right rear of the teleprinter can support a DATASPEED® 40 ROP, a 43 RO teleprinter, a 43 BSC optioned as an auxiliary terminal or a 43 5-level Paper Tape Unit (PTU).

2.05 On-line speeds can be optioned for asynchronous operation on the line port at baud rates of 45.55, 50, 56.85, 75, 100, 200, 225, 840, 1200, 1680 or 2400 baud. Isochronous operation at 0 to 2400 baud (dependent on clocks provided by the data sets) can be optioned at the line port only. On the auxiliary port asynchronous baud rates are the same as the line port plus 8-level 110, 300, 600, 1200, 1800 or 2400 baud. Both line and auxiliary ports satisfy voltage requirements of EIA, RS-232C.

2.06 Tractor feed paper may be from 3 inch to 12 inch sprocket feed. The teleprinter requires paper with folds or horizontal perforations located midway between sprocket holes and standard sprocket hole size and spacing. This paper may be single-ply with 8-1/2 inch folds to provide 11 inch by 8-1/2 inch copy when the 1/2-inch wide sprocket hole strip is removed at the edge serrations. Other types of sprocket feed paper with different form lengths, lighter weight, no edge serrations or additional copies, etc, may also be used. Multicopy forms consisting of the original and two copies of 12 pound basic paper (using 8 pound basic carbon paper) produce clear copy. Paper for the 43 friction feed teleprinter should be standard 8-1/2 inches wide, single-ply, furnished in 5 inch maximum diameter rolls with a 1 inch diameter spindle hole.

2.07 Inking is provided by a readily replaceable cartridge with ribbon (430035), available from Teletype Corporation.

2.08 The 43 BSC teleprinter operates on 115 Vac ±10 percent, at 50 or 60 Hz. Power to the terminal is approximately 84 watts and is controlled by an on-off rocker switch located at the right rear of the housing.

2.09 The teleprinter weighs 32 pounds.

2.10 The 43 teleprinter 5-level (BSC) can be identified by its keyboard layout. See Fig. 2.

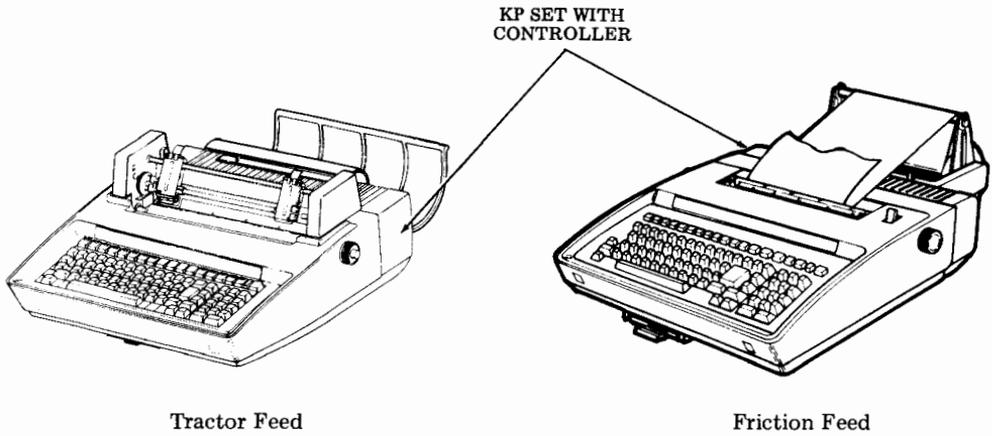


Fig. 1

3. KEYBOARD

3.01 The keytop arrangement is divided into three major groups according to function or purpose. They are the controls and indicators, the basic keyboard and the keyboard edit cluster and numeric pad.

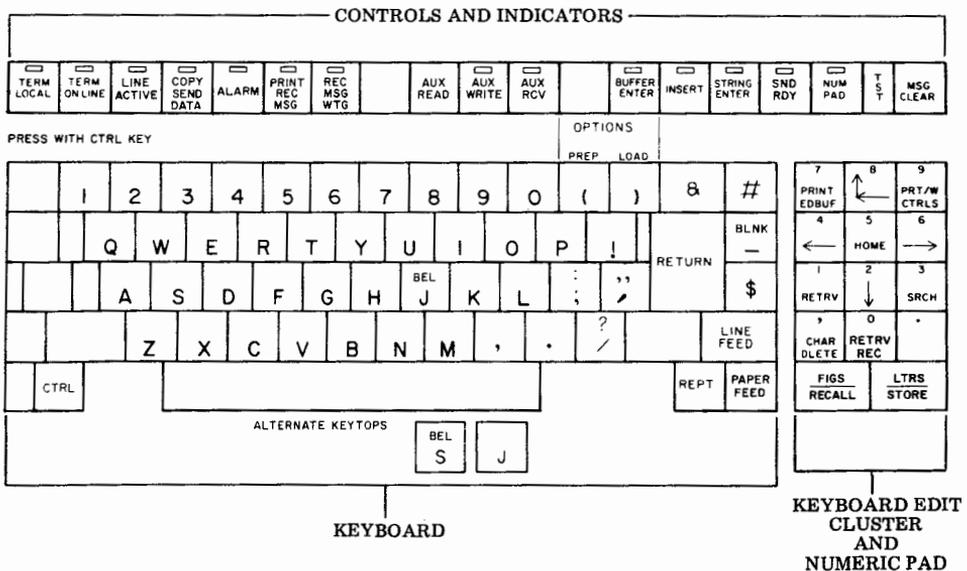


Fig. 2

3.02 The controls and indicators are described in Fig. 3.

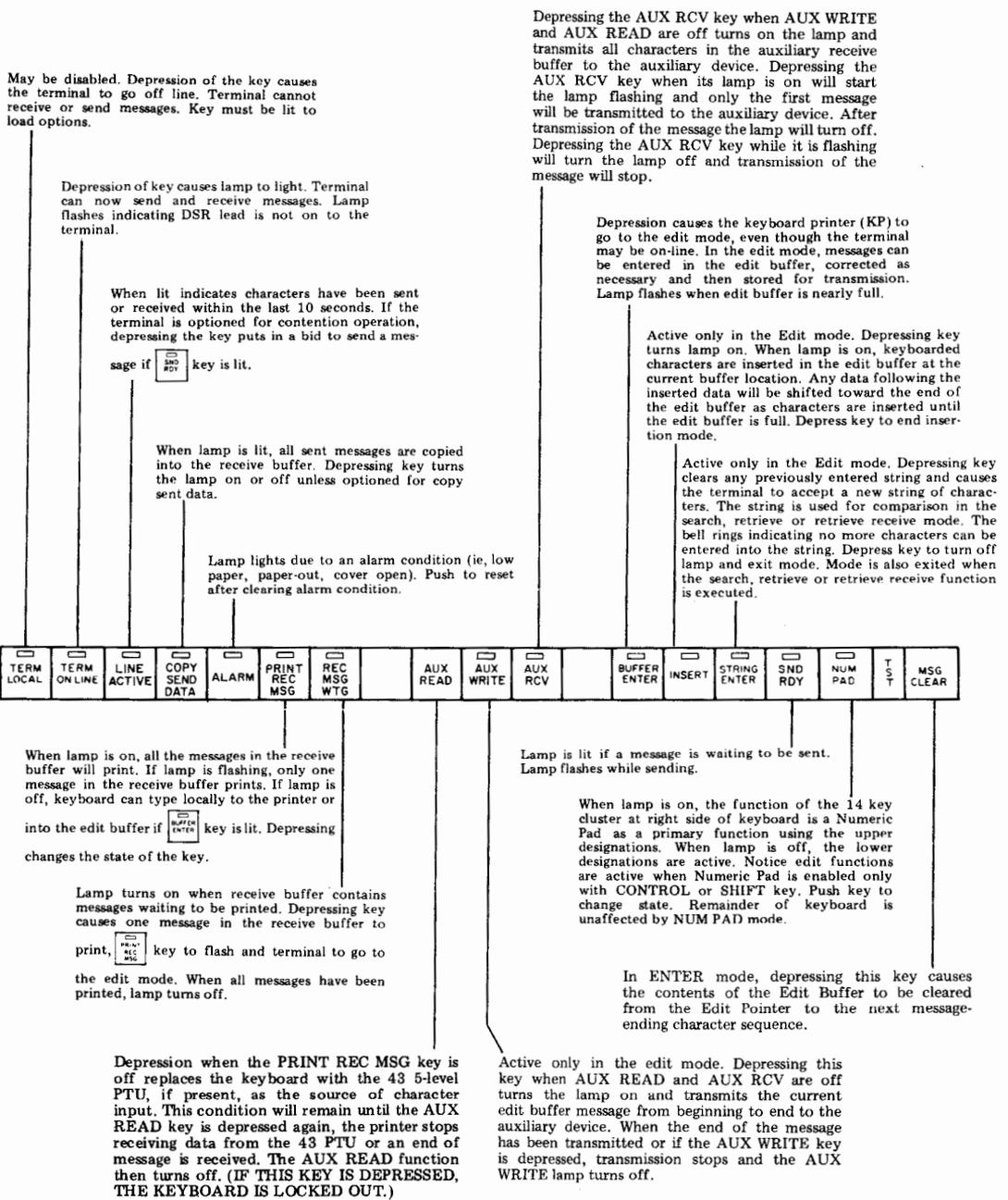
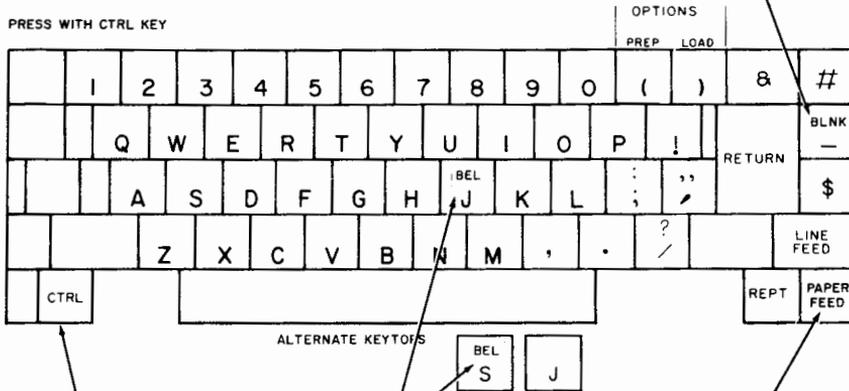


Fig. 3—Controls and Indicators

3.03 The basic keyboard layout is shown in Fig. 4 along with brief descriptions on the keyboard printer operation of several special keys.

BLNK — When operated together with the CTRL key, generates the 5-level code for blank.



BEL — Sounds bell.

PAPER FEED — Performs a local new line function. Printer carriage returns and line feeds once for each depression. No character is written into the edit buffer if BUFFER ENTER lamp is on.

• Several keys perform special functions when depressed together with the CTRL key.

• When the CTRL, RETURN keys are operated together, the carriage is returned and the paper advances one line. No character is entered into the edit buffer.

Fig. 4—Basic Keyboard Layout

3.04 The functions of the Numeric/Edit Pad are described in Fig. 5.

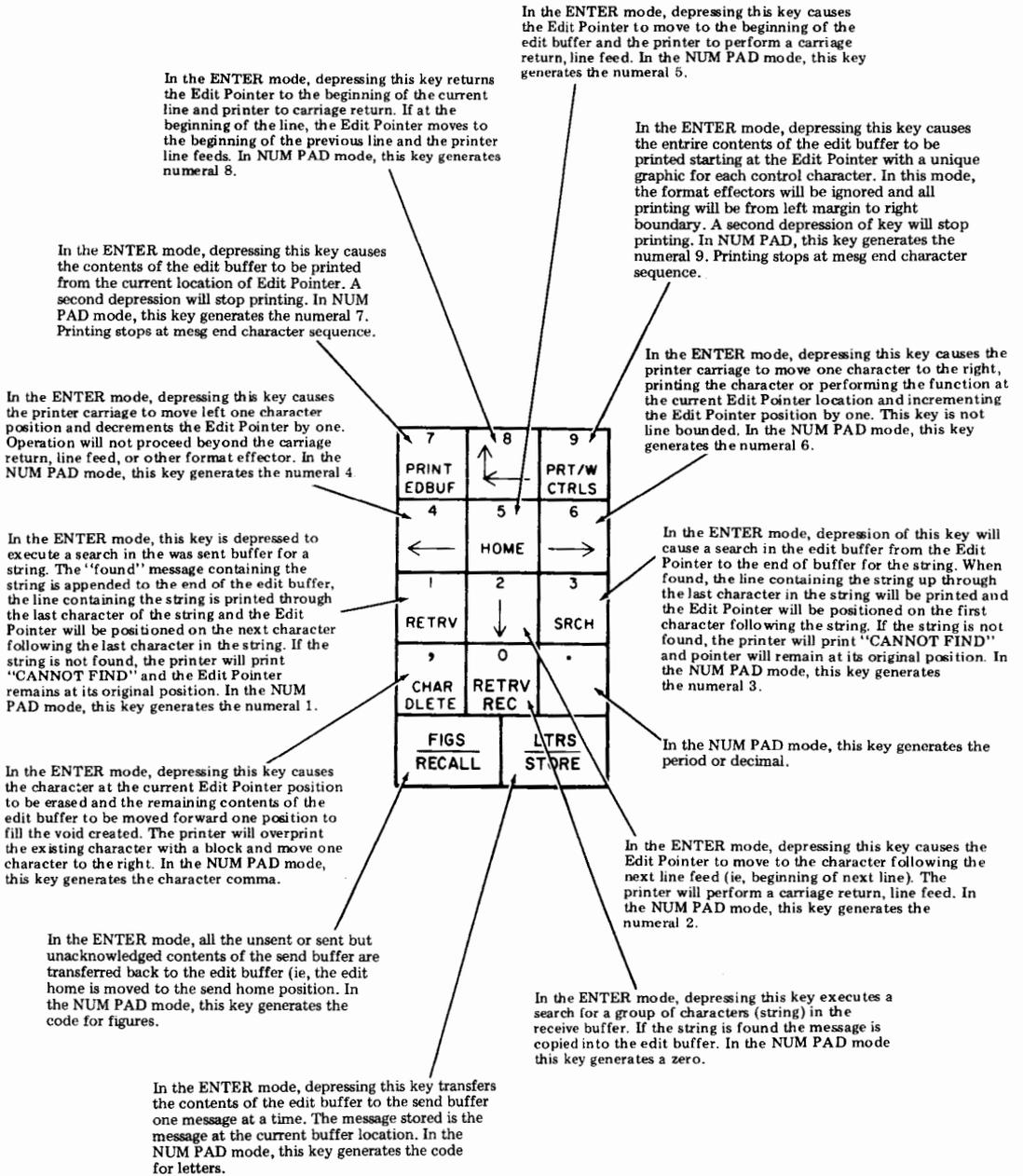


Fig.5—Numeric/Edit Pad

SECTION 574-500-103

4. REFERENCES

- 4.01 How To Operate Manual 999-300-136 provides information on the operation of the 43 BSC teleprinter and, if present, associated 43 Paper Tape Unit.
- 4.02 Optioning Manual 999-302-136 provides information on the programmable optioning of the 43 BSC teleprinter.
- 4.03 Section 574-500 series provides all the necessary information for trained crafts personnel to install, maintain and if necessary, service all 43 teleprinters using recommended lists of maintenance spares.
- 4.04 Section 570-008-010 provides detailed specifications on the paper and ribbon.

43 BASIC TELEPRINTER
INSTALLATION AND REMOVAL

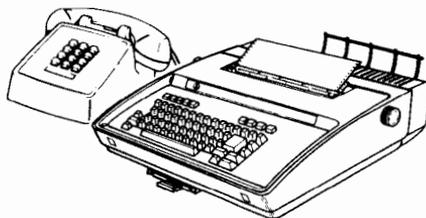


Fig. 1—43 KSR Station (Sprocket Feed)

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1. GENERAL

1.01 This section provides station installation and removal information for the 43 KSR and RO Station Sprocket Feed (Fig. 1).

1.02 This section is revised to include information to add either an internal modem or EIA interface to terminals furnished without an interface unit, prior to installation.

1.03 Installation should be performed under the direction of a service order indicating USOC codes, options, date, materials required and location.

1.04 For additional information, refer to: Section 574-500-501, RO Teleprinter Testing, Section 574-500-500, Basic KSR Teleprinter Testing, and Section 574-500-210, Engineering Options.

1.05 The 43 Teleprinter is furnished fully assembled and tested with or without an interface unit. After addition of a TAU, TAU1 or TDU the teleprinter is ready to connect to an external communications device (EIA) or between a modular 500DM or 2500DM-type keyless telephone and the line telephone jack. Where telephones and jacks are not of the modular type, they must be converted to the modular type before station installation. (Refer to local procedures and Section 503-100-100 for conversion information.)

Note: When installing a terminal with a TDU (KSR or RO with telephone), if a length other than the seven foot D4BU modular cord provided is required, obtain locally or from Teletype Corporation at least one D4BU modular cord of the appropriate length to connect between the telephone or line and the 43 Teleprinter (Fig. 4). Discuss with the customer where the teleprinter and phone are to be installed before obtaining cord(s).

1.06 Before starting the installation procedure, verify that all boxes which make up the Basic 43 Teleprinter USOC Arrangement are present at the installation location. These boxes may contain:

- (a) A 43 Teleprinter and documentation
- (b) Additional documentation
- (c) A TDU, TAU or TAU1
- (d) A roll or box of paper
- (e) A D4BU or EIA cable
- (f) Two keytops
- (g) Four mounting screws

1.07 Reference in the procedures to left or right, up or down, and top or bottom, etc, refer to the teleprinter in its normal operating position.

1.08 When ordering replaceable components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP430202).

1.09 Factory-type packing may be duplicated by ordering the required PK materials from Teletype Corporation.

2. TOOLS REQUIRED

2.01 Tools required for assembly or installation are as follows:

- 1/4 inch, 6 inch Blade Screwdriver — 100982
- 3/8 inch Open End Wrench — 152835

For tools required to enable engineering options, refer to the Engineering Options, Section 574-500-210. A keytop extractor (346260) is required if keytops must be removed.

3. PREASSEMBLY MATERIAL

3.01 Verify that the following items are included as specified on the service order (USOC) and are at the assembly or installation location:

- 1 — Set, 43 Teleprinter
- 1 — Paper, Box of White Fanfold
12 x 8-1/2 inch, (Sprocket Feed Only)
- 1 — Paper, Box of White Roll 8-1/2 inch,
KS8621 (Friction Feed Only)
- 1 — This Practice, Installation
(Section 574-500-200)
- 1 — 153A1 Terminal Data Unit (TDU),
410751 EIA Terminal Auxiliary Unit
(TAU) or 410755 EIA Terminal
Auxiliary Unit (TAU1) if required.
- 4 — 341797 6-32 x 5/16 Screw w/washer
- 1 — Manual, Attendant
999-300-126 TDU KSR (DATAPHONE)
999-300-127 EIA KSR (DATAPHONE)
999-300-128 TDU RO (DATAPHONE)
999-300-129 EIA KSR (Private line)
999-300-130 EIA RO (Private line)
- 1 — D4BU Cable 7 foot (TDU) or an EIA
Cable Length per WES Code
- 1 — 346116 AUTO ANSW Keytop (TDU) KSR
- 1 — 346161 LOCAL-TALK Keytop (TDU)
KSR

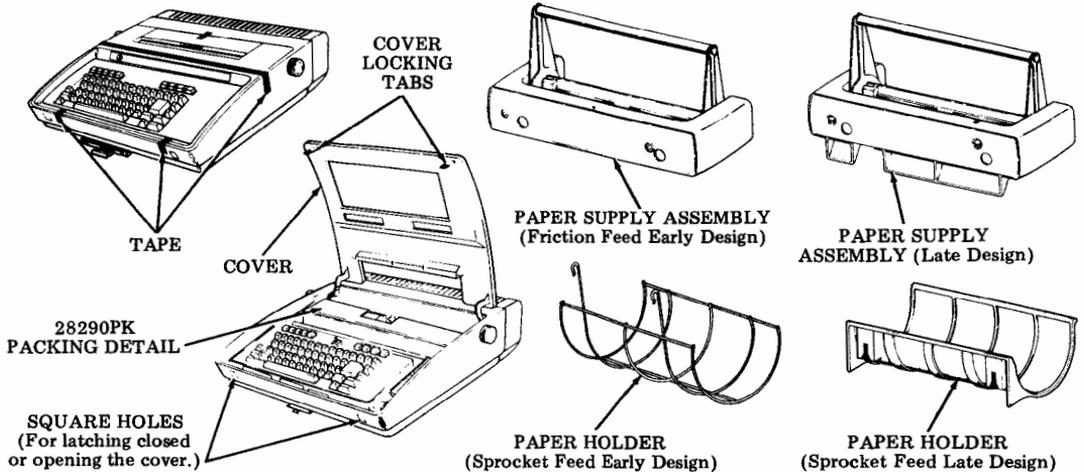


Fig. 2—Packing Detail

4. INSTALLATION PROCEDURE

UNPACKING

- 4.01 Select a convenient area for unpacking and assembly.
- 4.02 When unpacking, be sure to wear approved safety glasses.
- 4.03 Unpack the terminal carton. Refer to instructions on the container. Remove tape securing the cover to the housing (Fig. 2).

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

- 4.04 Depress the cover locking tabs on the lower front of the cabinet and lift the cover. Remove the 28290PK packing detail securing the print head in place (Fig. 2).

Note: Verify that a new ribbon and paper holder (sprocket feed) or paper supply assembly (friction feed) are present and a document package including Manual 367 (KSR) or Manual 372 (RO), Section 574-500-200, Installation and Removal and W-43AXS Wiring Plan.

- 4.05 The containers and other packing details are to be retained and reused by field locations to facilitate movement of stations.

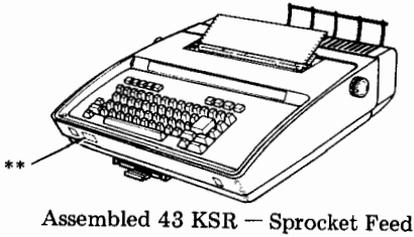
IDENTIFICATION

RO TELEPRINTERS

- Sprocket Feed With TDU - 4310/AAB
- Sprocket Feed With TAU - 4310/AAC
- Sprocket Feed With TAU1 - 4310/AAG
- Sprocket Feed With TTL - 4310/AAA *
- Friction Feed With TDU - 4310/AAF
- Friction Feed With TAU - 4310/AAD
- Friction Feed With TAU1 - 4310/AAH
- Friction Feed With TTL - 4310/AAE *

KSR TELEPRINTERS

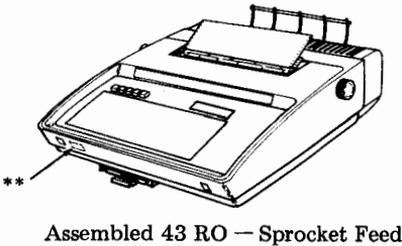
- Sprocket Feed With TDU - 4320/AAB
- Sprocket Feed With TAU - 4320/AAC
- Sprocket Feed With TAU1 - 4320/AAK
- Sprocket Feed With TAU2 - 4320/AAH
- Sprocket Feed With TTL - 4320/AAA *
- Friction Feed With TDU - 4320/AAF
- Friction Feed With TAU - 4320/AAD
- Friction Feed With TAU1 - 4320/AAL
- Friction Feed With TAU2 - 4320/AAJ
- Friction Feed With TTL - 4320/AAE *



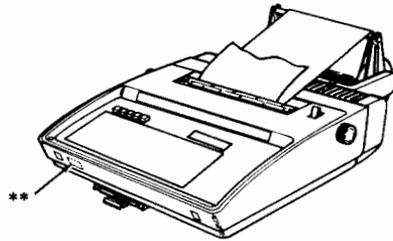
Assembled 43 KSR - Sprocket Feed



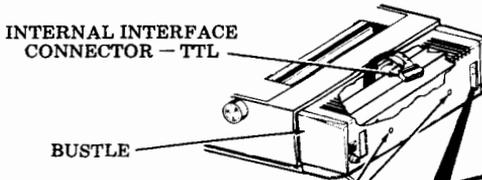
Assembled 43 KSR - Friction Feed



Assembled 43 RO - Sprocket Feed



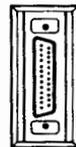
Assembled 43 RO - Friction Feed



Paper holder or supply assembly mounting screws or posts.

CONNECTOR TO EXTERNAL DATA SET OR COMMUNICATIONS DEVICE

TDU CONNECTORS
UPPER - TO TELEPHONE
LOWER - TO LINE



TDU WECO 153A1

Fig. 3 - Identification

*These sets are originally furnished from the factory without an interface unit (TTL interface). Reused "C" stock terminals having other code plates as listed above may also be furnished without an interface unit. Code plates need not be changed or marked when adding or removing an interface unit as specified in 50961S included with TAU1.

** Code plate (inside).

5. ASSEMBLE TELEPRINTER**ACCESS TO INTERFACE UNIT AREA**

5.01 Remove the paper holder screws (sprocket feed) or posts (friction feed) and remove rear bustle. (See Fig 3.)

MOUNTING INTERFACE

5.02 Place the TDU, TAU or TAU1 in the rear frame with the modular or EIA connector toward the left rear. Secure with (4) 341797 screws provided.

Note: If mounting holes do not match refer to 50961S included with the TAU1 for location of new holes required.

5.03 Connect the TTL connector (Fig. 3) to the circuit card or the associated external TTL device cable (internal applications only). See 5.12.

5.04 Reassemble the bustle.

KEYBOARD CONVERSION

5.05 On KSR sets with TDU remove the LOCAL and TERM READY keytops and replace with LOCAL TALK and AUTO ANSWR keytops.

CONNECTION

5.06 Place the 43 Teleprinter on the desk, table, etc, indicated by the customer. Placement should be near the external communications device or modular phone that will be used with the teleprinter.

KSR and RO Sets With TDU

Modular telephone present at installation location:

5.07 Unplug the modular plug of the D4BU cord from the modular jack associated with the telephone specified on the service order (compress tab to release) and connect it to the lower connector marked LINE on the rear of the TDU accessible through the opening in the left rear of the bustle cover (Fig. 4). If telephone is not to be placed at original phone location, a different length cord may be needed. Connect the additional modular cord between the upper connector on the TDU marked PHONE and the telephone jack.

5.08 Since the two cords are interchangeable, the selection of which cord to apply to which function is a matter of installer judgement based on length of cords available and terminal location with respect to the wall jack.

No modular telephone present at installation location:

5.09 Modify phone in Section 503-100-100 or replace with modular phone. Connect one of the arrangements shown at the 42A block to provide a modular jack.

5.10 Connect the modular cord plug to the lower connector marked LINE on the rear of the TDU, accessible through the opening in the left rear of the bustle cover. Connect the remaining end of the modular cord to the line connecting block or adapter.

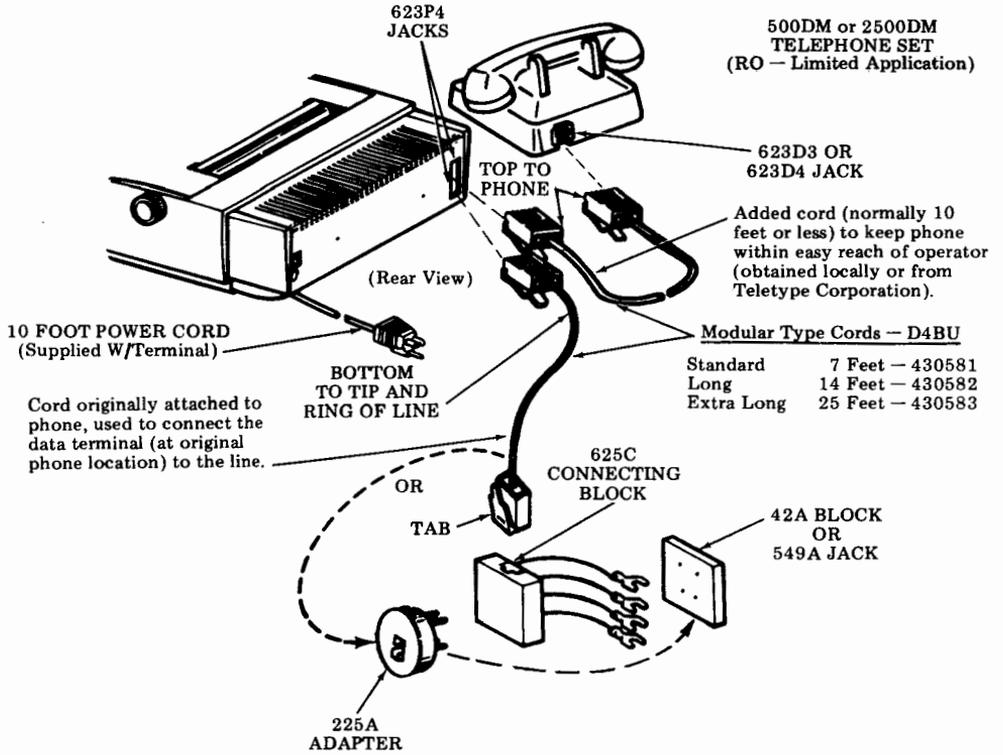


Fig. 4—Telephone Connection

KSR and RO Sets With TAU or TAU1

EIA INTERFACE CONNECTION

5.11 A 25-pin male receptacle with male pins is provided for connection to an external communications device (modem) or distant terminal. The interface meets the requirements of EIA RS-232-C. The pin assignments are given below.

5.12 The connecting cables between the terminal and the data set must be furnished with the order and should employ shielded cable. The following cables are available from Teletype Corporation.

3 foot length — 430569
 7 foot length — 408065
 12 foot length — 408066
 25 foot length — 408067
 50 foot length — 408068

TAU INTERFACE SIGNALS

| <u>Connector</u> <u>Pin</u> | <u>Signal</u> | <u>EIA Circuit</u> <u>Designation</u> | <u>Status</u> |
|--------------------------------|----------------------------------|--|---|
| 1 | Protective Ground | AA | Not Wired in TAU or Recommended Cable |
| * 2 | Transmit Data | BA | KSR, Active — RO, Always Mark |
| 3 | Receive Data | BB | Active |
| 4 | Request to Send | RS | Always Off (Issue 1B Logic Card) — Always On (Issue 2A Logic Card) |
| 5 | Clear to Send | CB | Active |
| 6 | Data Set Ready | CC | Active |
| 7 | Signal Ground | AB | Active |
| 8 | Received Line Signal Detector | CF | Active |
| 9 | | | Not Wired in TAU or Recommended Cable |
| 10 | | | Not Wired in TAU or Recommended Cable |
| 11 | TWX Control | | Not Applicable |
| 12 | Data Speed Indicator | SCF | Not Applicable |
| 13 | | | Not Wired in TAU or Recommended Cable |
| 14 | | | Not Wired in TAU or Recommended Cable |
| † 15 | | | Not Wired in TAU |
| 16 | | | Not Wired in TAU or Recommended Cable |
| 17 | | | Not Wired in TAU |
| 18 | TWX Indicator | — | Not Applicable, Not Wired in Recommended Cable |
| 19 | | | Not Wired in TAU or Recommended Cable |
| 20 | Data Terminal Ready | CD | Active |
| 21 | | | Not Wired in TAU or Recommended Cable |
| * 22 | Ring Indicator | | Not Wired in TAU |
| * 23 | Data Speed Select | CH | Always Off |
| ‡ 24 | | | Not Wired in TAU |
| 25 | Analog Loop Test | | KSR, Active — RO, Always Off |

* Note: Refer to 50944S if 410710 answer-back circuit card is present.

† Wired in all recommended cables except three foot cable.

‡ Wired in three foot cable only.

TAU1 INTERFACE SIGNALS

| <u>Connector</u> | <u>Signal</u> | <u>EIA Circuit</u> | <u>Status</u> |
|------------------|----------------------------------|--------------------|---|
| <u>Pin</u> | | <u>Designation</u> | |
| 1 | Protective Ground | AA | Active |
| * 2 | Transmit Data | BA | KSR, Active — RO, Always Mark |
| 3 | Receive Data | BB | Active |
| 4 | Request to Send | RS | Always On |
| 5 | Clear to Send | CB | Active |
| 6 | Data Set Ready | CC | Active |
| 7 | Signal Ground | AB | Active |
| 8 | Received Line Signal Detector | CF | Active |
| 9 | | | Not Wired in TAU1 or Recommended Cable |
| 10 | | | Not Wired in TAU1 or Recommended Cable |
| 11 | TWX Control | — | Not Wired in TAU1 |
| 12 | Data Speed Indicator | SCF | Active |
| 13 | Transmit Current Loop | See Fig. 6 | Active - Not Wired in Recommended Cable |
| 14 | Transmit Current Loop | See Fig. 6 | Active - Not Wired in Recommended Cable |
| † 15 | Receive Current Loop | See Fig. 6 | Active |
| 16 | Receive Current Loop | See Fig. 6 | Active - Not Wired in Recommended Cable |
| 17 | | | Not Wired in TAU1 |
| 18 | TWX Indicator | — | Not Wired in TAU1 or Recommended Cable |
| 19 | | | Not Wired in TAU1 or Recommended Cable |
| 20 | Data Terminal Ready | CD | Active |
| 21 | | | Not Wired in TAU1 or Recommended Cable |
| 22 | Ring Indicator | | Active |
| 23 | Data Speed Select | CH | Not Wired in TAU1 |
| * 24 | | | Not Wired in TAU1 |
| 25 | Analog Loop Test | | KSR, Active — RO, Always Off |

* Note: Refer to 50944S if 410710 answer-back circuit card is present.

† Wired in all recommended cables except three foot cable.

* Wired in three foot cable only.

5.13 The connection to the data set and telephone (if required) should be performed following the instructions for the particular data set involved (Fig. 5).

May not be present when using RO
Teleprinter or on private line applications.

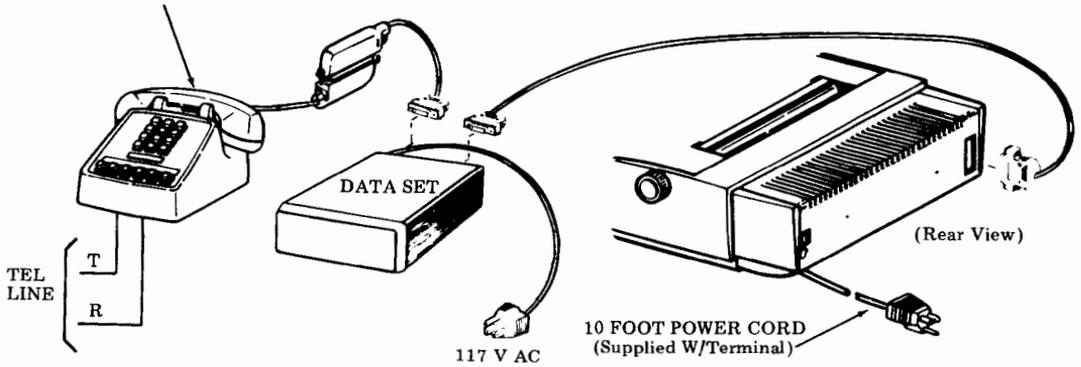


Fig. 5 -- Data Set Connection (Set W/TAU or TAU1)

KSR and RO Sets Without Integrated Terminal Unit

5.14 Connection to the external communications device (provided by the customer) is made through a 20-pin connector at the end of a short ribbon cable. No provision is made for adding additional cable length. The pin assignments are given on the TTL Pin Assignment Chart shown below. Refer to 574-500-150 for available connectors. See 5. for ACCESS TO INTERFACE UNIT AREA.

5.15 The connections to the communications device should be performed following the instructions for the particular device involved.

Electrical Characteristics

| TTL Interface | Electrical Characteristics | |
|--------------------|----------------------------|---------------------|
| | From 43 (Drivers) | To 43 (Terminators) |
| State 0 (Space) On | 0 to 0.4VDC | 0 to 0.7VDC |
| State 1 (Mark) Off | 2.4 to 5.25VDC | 2 to 5.25VDC |

TTL PIN ASSIGNMENT CHART

| <u>Pin No.</u> | <u>Code</u> | <u>Function</u> | <u>Status</u> |
|----------------|-------------|----------------------------------|---|
| 1 | DL | Digital Loop Test | Active |
| 2 | DSI | Data Speed Indicator to Terminal | Not Applicable, Not Wired in TTL Cable |
| 3 | AL | Analog Loop Test | KSR, Active — RO, Not Applicable |
| †† 4 | DSS | Data Speed Select from Terminal | Not Applicable, Not Wired in TTL Cable |
| 5 | TR | Terminal Ready | Required |
| 6 | RS | Request-to-Send | Not Connected, Always Off (Issue 1B Logic Card) — Always On (Issue 2A Logic Card) |
| 7 | +5 | +5 Volts | Active |
| 8 | | Reserved for future | Not Applicable, Not Wired in TTL Cable |
| 9 | GND | Circuit Ground | Active |
| †† 10 | RTS aux. | Request to Send aux. | Not Applicable, Not Wired in TTL Cable |
| 11 | -12 | -12 Volts | Active |
| †† 12 | RI | Ring Indicator | Not Applicable, Not Wired in TTL Cable |
| 13 | +12 | +12 Volts | Active |
| 14 | DP | Duplex Indicator from Terminal | Not Applicable, Is Wired in TTL Cable |
| 15 | DR | Data Ready | Active |
| 16 | TW2 | TWX Indicator | Not Applicable, Not Wired in TTL Cable |
| 17 | RD | Receive Data | Active |
| 18 | TW1 | TWX Control | Not Applicable, Not Wired in TTL Cable |
| †† 19 | SD | Transmit Data | KSR, Active — RO, Always Marked |
| 20 | | Reserved for future | Not Applicable, Not Wired in TTL Cable |

†† Note: Refer to 50944S if 410710 Answer-Back Circuit Card is present.

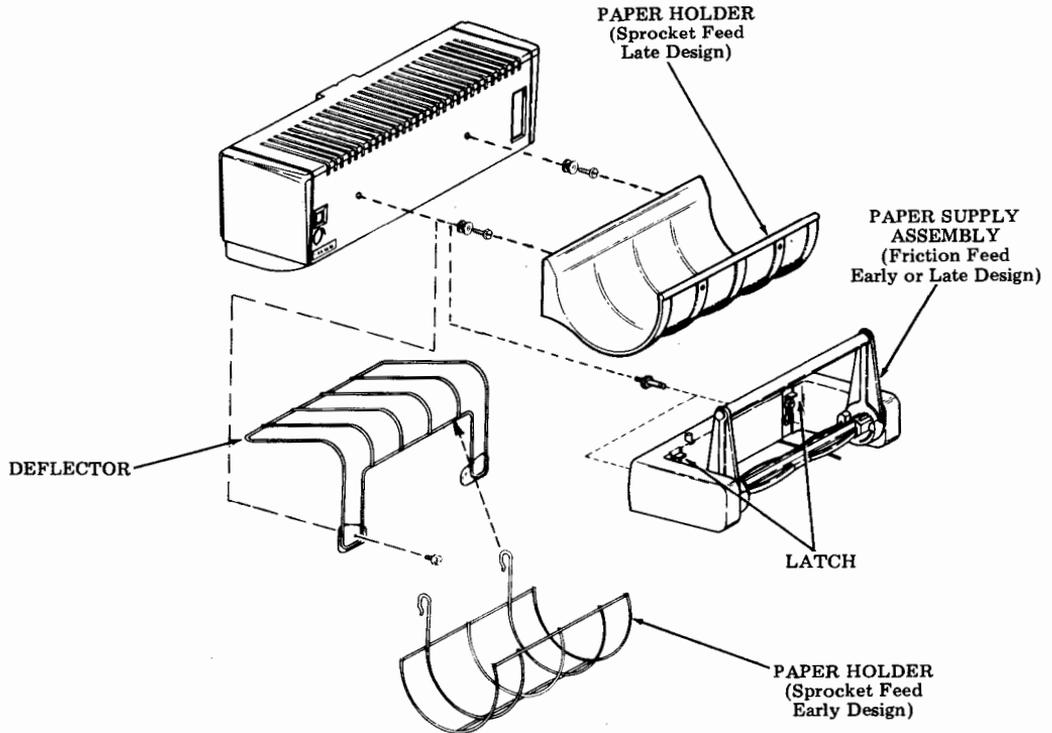


Fig. 6—Paper Holder and Paper Supply Assembly

PAPER HOLDER (Sprocket Feed)

5.16 Attach the paper holder to the deflector if present, otherwise attach it to the bustle cover by sliding down over the bushings as shown in Fig. 6.

PAPER SUPPLY ASSEMBLY (Friction Feed)

5.17 Pull the latches straight up and slide the paper supply assembly fully onto the mounting posts, located at the rear of the bustle cover. Push down on the latches until they are secured over the mounting posts.

RIBBON AND PAPER

5.18 Install the ribbon and paper supplied. Refer to the appropriate How to Operate

Manual (Paragraph 3.01) for ribbon and paper installation information. Refer to Section 570-008-010 for information on other types of paper.

CHECKOUT PROCEDURE

5.19 Plug the 43 Teleprinter into a properly grounded and polarized 3-wire 115V ac $\pm 10\%$ 50-60 Hz electrical power source.

5.20 Perform the appropriate Station Installation Checkout Procedures (Local and On-Line) found in 43 Basic KSR Teleprinter Testing, Section 574-500-500 and RO Teleprinter Testing, Section 574-500-501 or perform a "basic operability" check using the How to Operate Manual.

DIRECTORY CARD

5.21 Record the installed location of the station (floor, area, and phone number), location of extension phone(s) if any, and the number to be called in case of trouble in the space provided on the slide-out directory card (Fig. 8).

5.22 Remove the directory card by pulling it out as far as it will go then by holding card at edges, move it slightly to one side and pivot to clear the opposite latch. Fill in the information requested on the underside of the card. Replace the directory card.

Note: If the BSP checkout procedure was performed successfully, the teleprinter has the standard engineering options incorporated as shown on the card. Record any nonstandard options enabled in the space provided on the card.

INITIATE SERVICE

5.23 Clean up the unpacking area, wipe off any finger prints on the set, and turn the 43 Station over to the subscriber.

5.24 Provide the customer with the appropriate attendant manual and discard any other extra manuals. Explain any option changes, changes in operation procedure and any special added features such as answer-back.

Note: Attendant manuals designated DATA-PHONE apply to teleprinters used on the switched network. Attendant manuals designated Private Line apply to teleprinters associated with external data sets used on private lines.

5.25 Advise the customer to order spare ribbons and paper as soon as possible (quantities depending on expected usage).

5.26 Advise the customer of the "Trouble Number" location on the directory card.

5.27 Place Section 574-500-200, Installation and Removal and the Wiring Plan in the shipping containers and retain.

6. STATION REMOVAL

6.01 Reverse the procedures in 3. INSTALLATION PROCEDURE to remove the station from service (service disconnect).

6.02 If a paper holder was provided with the terminal at the time of installation (check underside of directory card) verify its presence before packing teleprinter.

6.03 Before repacking the teleprinter, move the print head to the center of the printer and insert the 28290PK packing detail removed in 3.04.

6.04 Using the containers and packing details retained in 3.05, pack the 43 Teleprinter (Fig. 7).

6.05 If a modular telephone is present, reconnect the telephone to the phone line. Retain modular cords for future use.

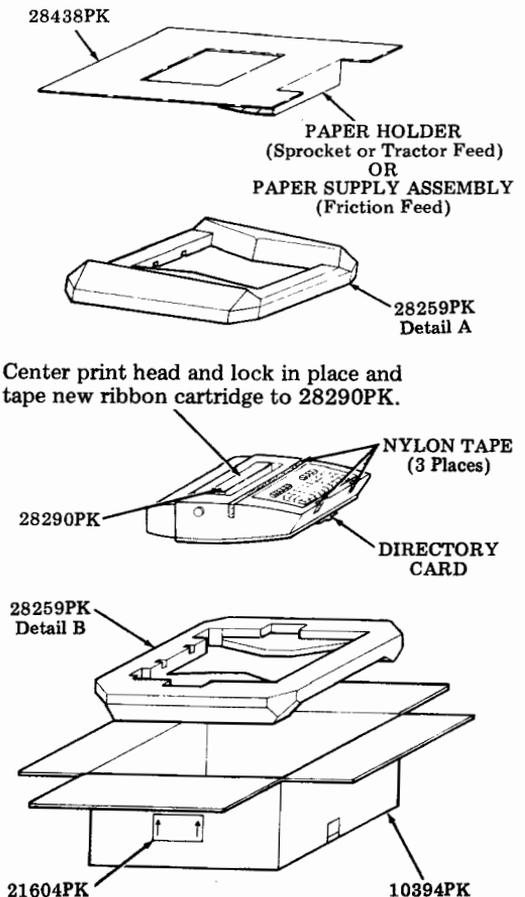
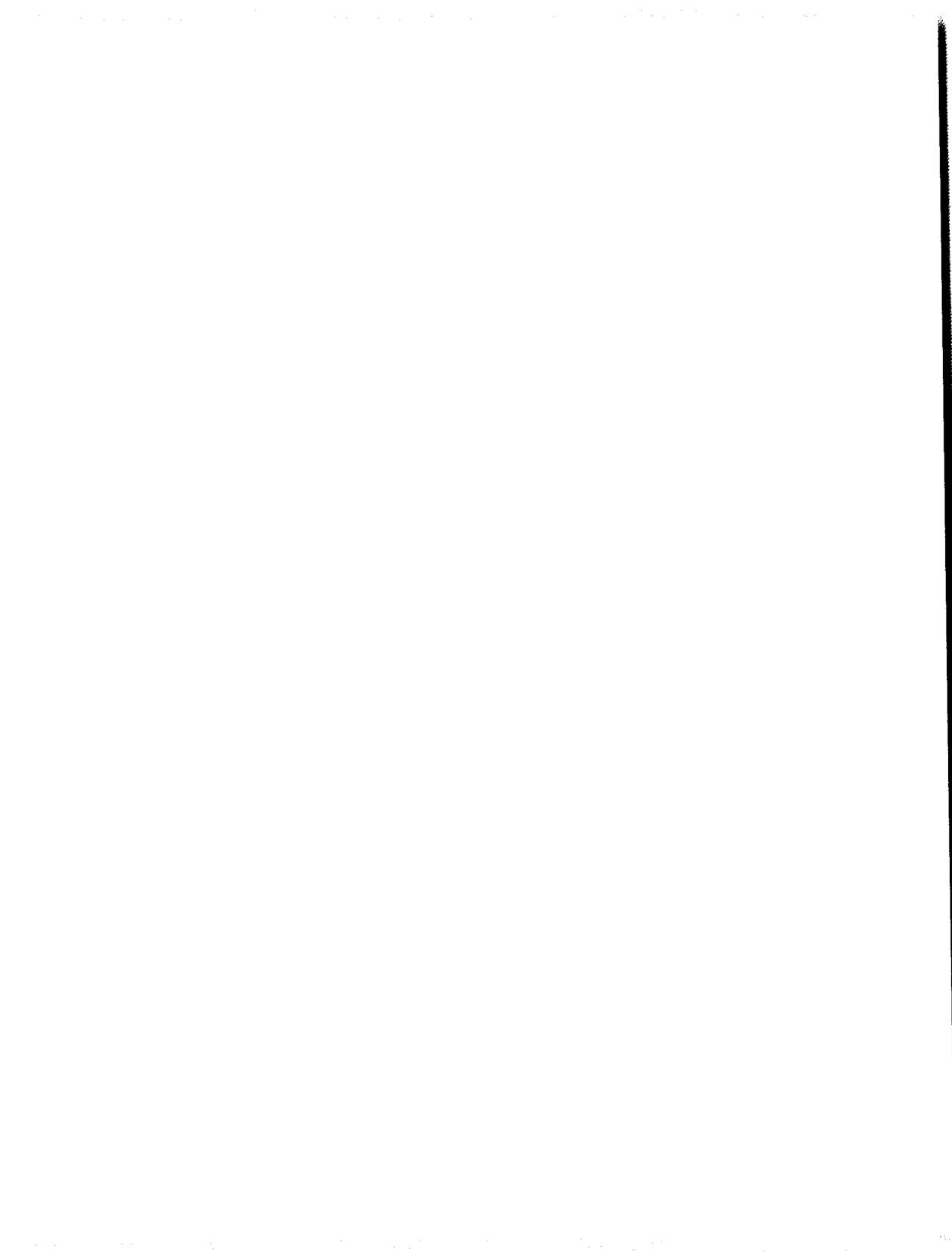


Fig. 7—Packing Details



43 TELEPRINTER 8-LEVEL BUFFERED SEND RECEIVE (BSR) STATION
INSTALLATION AND REMOVAL

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| E. Directory Card | 5 |
| F. Initiate Service | 6 |
| 4. STATION REMOVAL | 7 |



Fig.—43 Teleprinter BSR (Friction Feed)

1. GENERAL

1.01 This section provides installation and removal information for fully assembled, friction feed or tractor feed, 43 Teleprinter 8-Level Buffered Send Receive (BSR) Stations. The feature group and keytop kit, which determines the operating characteristics of the teleprinter, may be furnished separately for terminals without a feature group. Specification 51055S is furnished with these partially assembled terminals to provide instructions necessary to configure and assemble the teleprinter in accordance with USOC arrangements.

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

1.03 Installation should be performed under the direction of a service order indicating USOC codes, options, date, materials required and location.

1.04 For additional information, refer to Section 574-500-502, 43 Teleprinter 8-Level Buffered Send Receive (BSR) Station, Testing, and Section 574-500-210, Engineering Options.

1.05 Before starting the installation procedure, verify that paper, the EIA cable and data set (modem), if required, in addition to the 43 8-Level BSR are present at the installation location.

1.06 Some or all station removal and installation procedures may be used for local station relocation.

SECTION 574-500-201

1.07 Reference in the procedures to left or right and up or down and top or bottom, etc, refer to the terminal in its normal operative position.

1.08 When ordering replaceable components, unless otherwise specified, prefix each part number with the letters "TP" (ie,TP430202).

2. TOOLS REQUIRED

2.01 A 100982 screwdriver, 1/4-inch, 6 inch blade, is required to secure the data set cable to the customer provided data set (modem) if used.

3. INSTALLATION PROCEDURE

A. Unpacking (unless already done as part of pre-installation assembly at the installation site).

3.01 Select an area to unpack the carton so that damage to the terminal will not occur.

3.02 When unpacking, be sure to wear approved safety glasses.

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

3.03 The tabletop 43 Teleprinter BSR, tractor or friction feed, is furnished in a single carton.

3.04 Unpack the carton referring to instructions on the container. Remove tape securing the cover and paper separator to the housing (Fig. 2). If tractor feed, remove tape from tractor mechanism and roller bail.

Note: Observe all "Caution" notes printed on the carton.

3.05 Depress the cover locking tabs on the lower front of the cabinet and lift the cover. Remove the packing detail securing the print head and the ribbon in place (Fig. 2).

3.06 The containers and other packing details should be retained and reused by field locations to facilitate movement of stations.

3.07 Verify that the following items are included in the box:

- 1—Teleprinter Set (4340BJ or 4340BZD)
- 1—Ribbon
- 1—Practice, Installation and Removal (Section 574-500-201)
- 1—Manual, How To Operate 999-300-135
- 1—Paper Supply assembly (Friction Feed) or Paper Holder (Tractor Feed)

Note: Paper for tractor feed terminals must be obtained locally or ordered separately. Refer to How To Operate Manual 999-300-135.

B. Assembly

3.08 Position the terminal on a table or suitable stand, in the location specified by the customer. A minimum of 6 inches of space behind the terminal is required when the paper holder (tractor or friction feed) is used to feed the paper and 9 inches of space is required when sprocket feed paper is fed from a box behind the terminal on the floor. Additional space is required if paper with folded form lengths greater than 8-1/2 inches is used.



Tractor Feed

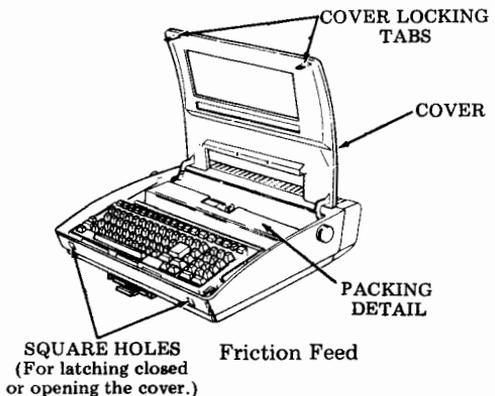


Fig. 2—Packing Detail

3.09 Assemble the paper holder or paper supply assembly as shown in Fig. 3.

- (a) **Tractor Feed:** Attach the paper holder to the bustle cover by sliding down over the bushings.
- (b) **Friction Feed:** Pull the latches straight up and slide the paper supply assembly fully onto the mounting posts located at the rear of the bustle cover. Push down on the latches until they are secured over the mounting posts.

3.10 With ac power to the customer supplied data set turned off, connect the EIA data set cable to the terminal as shown in Fig. 4.

Secure by using two captive screws on plug. To accommodate distances up to 50 feet, the following shielded EIA cables are available from Teletype Corporation:

- 3 Ft. Length — 430569
- 7 Ft. Length — 408065
- 12 Ft. Length — 408066
- 25 Ft. Length — 408067
- 50 Ft. Length — 408068

Note: Data set must be located within 50 feet from the terminal.

See Page 4 for EIA interface leads and descriptions.

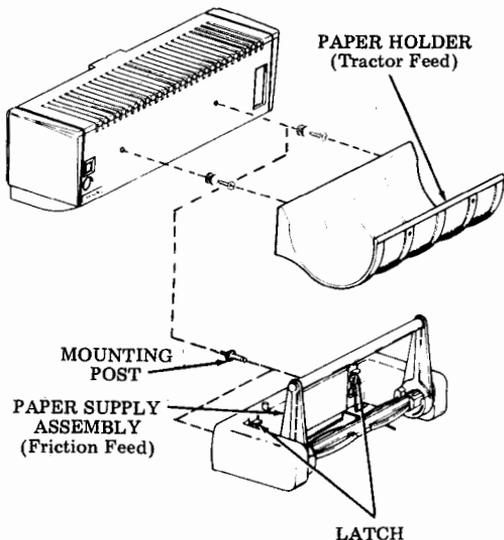
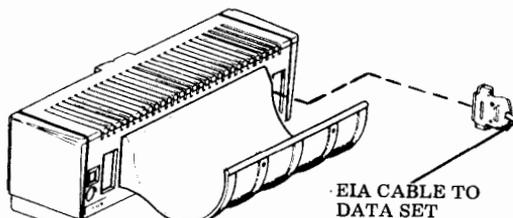
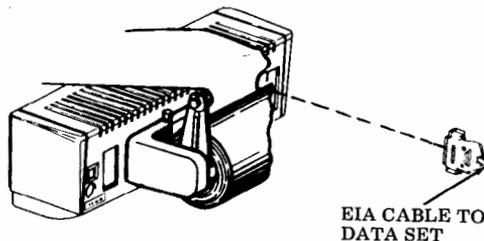


Fig. 3



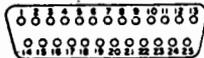
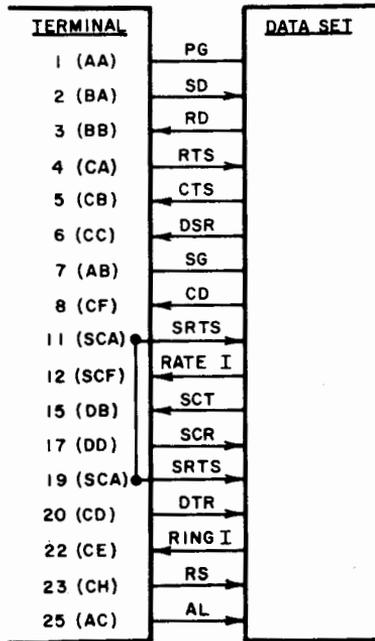
Tractor Feed (Rear View)



Friction Feed (Rear View)

Fig. 4

INTERFACE LEADS



EIA Connector Pin Locations

- CTS — Clear To Send. Must be on for teleprinter to send. May be on or off to receive.
- DSR — Data Set Ready. DSR and CD ON puts teleprinter in Term On Line mode if DTR is on. If DSR is OFF > 450 ms teleprinter switches from Term On Line to Term Ready.
- SG — Signal Ground.
- CD — Carrier Detect. CD and DSR On puts teleprinter in Term On Line mode if DTR is on. If CD turns off, teleprinter remains in Term On Line mode for approximately 20 seconds then switch to Term Ready. Data will appear to be sent but will not. If CD is restored in less than 20 seconds sending will resume with possible loss of one or two characters.
- SRTS — Secondary Request To Send. Wired internally always OFF. Also strapped to Pin 19.
- RATE I — Rate Indicator. Controlled by dual speed data set. OFF is low speed and ON is 1200 Baud. If not connected or user programmable, Option 212 = n then speed is determined by Option Speed.
- SCT — Serial Clock Transmit. Wired but not active in terminal.
- SCR — Serial Clock Receive. Wired but not active in terminal.
- DTR — Data Terminal Ready. OFF if teleprinter in term local, ON if teleprinter in Term Ready or Term On Line mode. Receipt of Dscnt (Option) character or depression of Term Ready if in Term On Line mode turns off DTR for 50 ms. Alarm condition turns off DTR if in Term Ready mode. Alarm does not turn off if in Term On Line mode. Off when controller self-test is entered.
- RING I — Ring Indicator. On condition Primes terminal answer-back. Not connected is an OFF.
- RS — Rate Select. Wired internally always OFF.
- AL — Analog Loopback. Wired internally always OFF.

Electrical Characteristics

| EIA (RS232) Interface | Electrical Characteristics | |
|-----------------------|----------------------------|----------------|
| | From 43 | To 43 |
| State 0 (space) On | +3 to +25 V dc | +3 to +25 V dc |
| State 1 (mark) Off | -3 to -25 V dc | -3 to -25 V dc |

- PG — Protective Ground.
- SD — Send Data. Mark in all modes varies when on-line and sending data.
- RD — Receive Data. In state supplied by Data Set.
- RTS — Request To Send. ON if DTR and DSR are on.

C. Ribbon and Paper Installation

3.11 Install the ribbon and paper. Refer to the How To Operate Manual 999-300-135.

D. Checkout Procedure

3.12 Connect the data set and terminal power cords to a properly polarized and grounded source of 115 Vac power (50 or 60 Hz). Normally the power cords should be connected to unswitched outlets to avoid loss of stored data or call disconnects. Fuse protection should be time delayed and provide for a running current of 0.8 A for the terminal.

3.13 Certain user programmable options listed below should be reviewed to properly interface the 43 8-level BSR teleprinter with the data set and/or to meet system requirements. To enter the options mode, depress TERM LOCAL and KP ON—SR keys (lights on), then depress CTRL and -(minus) keys simultaneously. The option list is stepped by depressing the "next line" key on the numeric pad. Depress CTRL and + keys to store the options. See directory card for options list.

3.14 If any of the options changed from the furnished condition, enter the new values in the RECORD OF USER PROGRAMMABLE OPTIONS section of the directory card. (See Fig. 5.)

3.15 Perform the teleprinter installation checkout procedures found in Section 574-500-502, 43 Teleprinter 8-Level BSR Station, Testing.

E. Directory Card

3.16 Record the installed location of the station (floor, area, and phone, if any), location of extension phone if any, and the number to be called in case of trouble in the space provided on the slide-out directory card (Fig. 5). Also mark the appropriate memory size.

3.17 To remove the directory card, pull it out as far as it will go, then by holding card at edges, move it slightly to one side and pivot to clear the opposite latch. Fill in the information requested on the card. Replace the directory card.

3.18 Clean up the unpacking area, wipe off any fingerprints on the set, and turn the 43 BSR station over to the subscriber.

| <u>MNEMONIC</u> | <u>DESCRIPTION</u> | <u>STATE FURNISHED</u> |
|-----------------|---|------------------------|
| Speed | The decimal value for the baud rate of the terminal. If a dual speed data set is used (212 type) this option is the baud rate for the low speed mode. Allowed values: 0110, 0200, 0300, 0600, 1200, 1800 (leading zeros must be included). | 0300 |
| StopU | The number of stop units in a transmitted character. Allowed values: 1, 2 (2 stop units is usually associated with 110 baud rate. 1 stop unit is usual for all other speeds). | 1 |
| DS212 | A "y" response conditions the terminal for dual speed operation with a 212 data set. The low speed of operation will be as specified by the Speed option and the StopU option. The high speed of operation will always be 1200 baud, using the HsStp option for stop bit definitions. | n |
| HsStp | The number of units in the stop element for the 212 data set high speed mode. Values allowed: 1, 2 (1 is the usual value). | 1 |

4. STATION REMOVAL

4.01 Reverse the procedures in 3. **INSTALLATION PROCEDURE** to remove the teleprinter from service.

4.02 Before repacking the teleprinter, move the print head to the center of the printer and insert the packing detail and new ribbon removed in 3.05.

4.03 Tape the units as shown in Fig. 6.

4.04 Using the proper containers and packing detail, pack the 43 teleprinter as shown in Fig. 6.

4.05 Close and seal the carton flaps with three strips of tape, apply one strip to each of the seam ends and one strip the length of the carton.

4.06 Mark the outside of the carton with the teleprinter code (ie, 4340BZD).

4.07 If the station qualifies as a "Working Station" candidate, mark the return material ticket in the appropriate block.

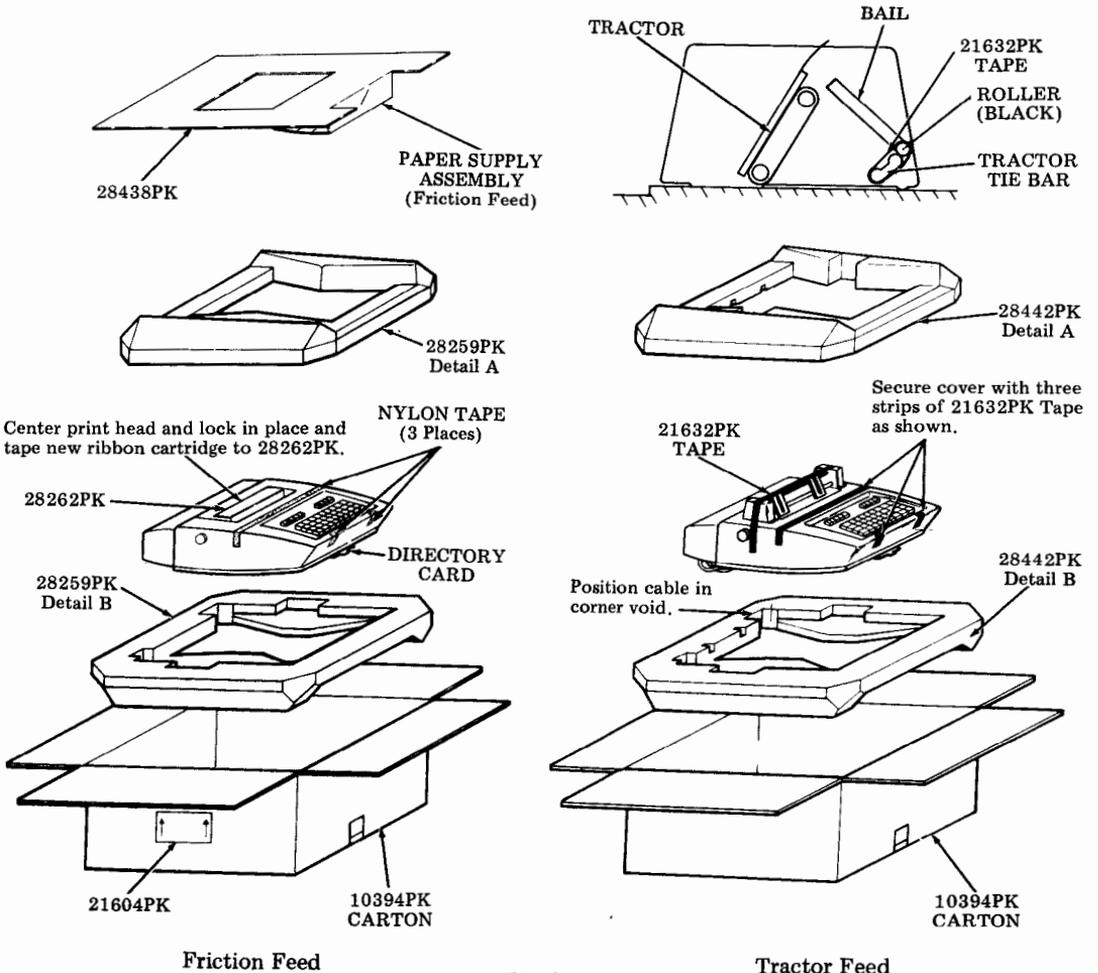
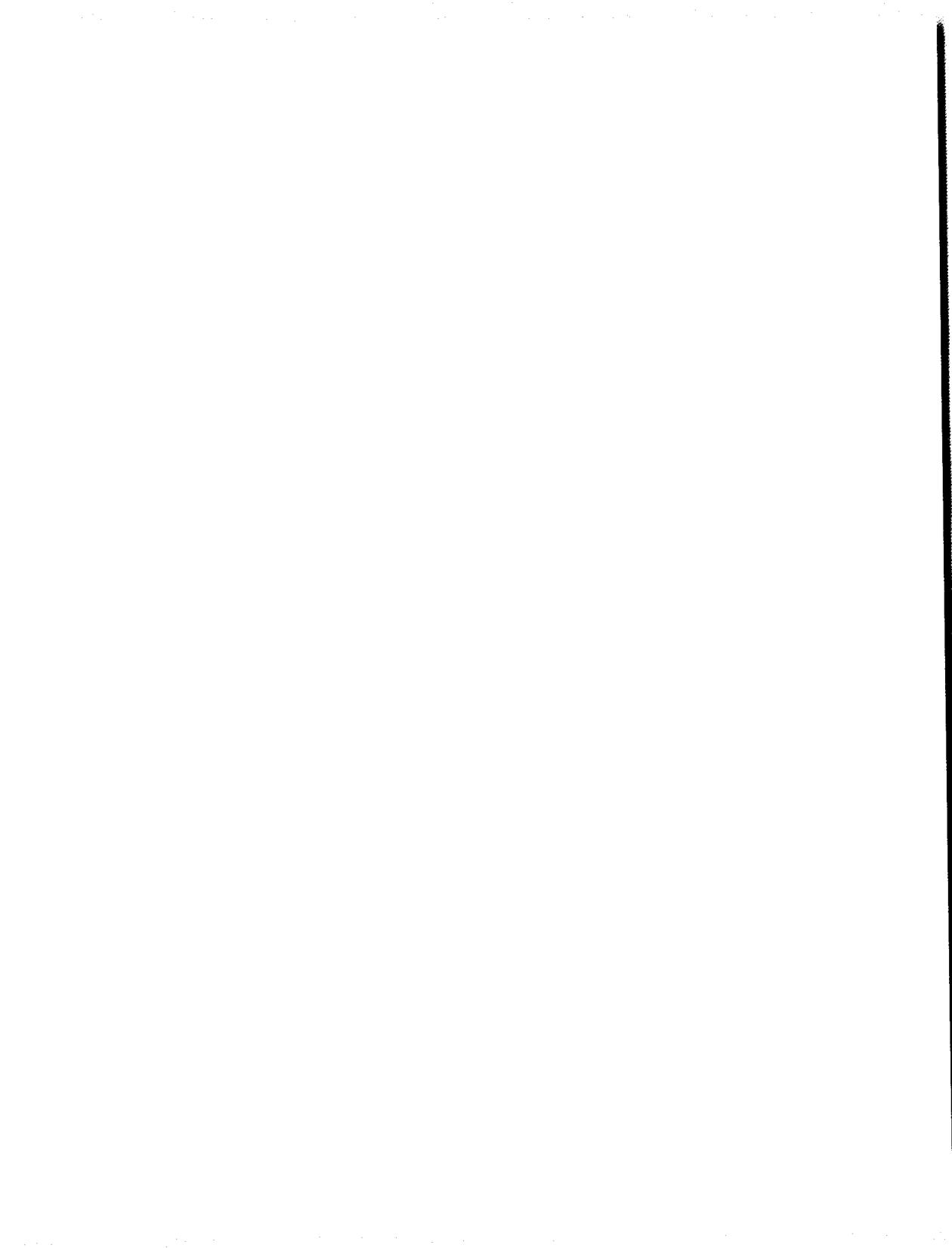


Fig. 6



43 TELEPRINTER 8-LEVEL BUFFERED SELECTIVE CALLING (BSC) STATION
INSTALLATION AND REMOVAL

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| 1. GENERAL | 1 | 1.01 This section provides installation and removal information for fully assembled, friction feed or tractor feed, 43 Teleprinter 8-Level Buffered Selective Calling (BSC) Station. The feature group and keytop kit, which determines the operating characteristics of the teleprinter, may be furnished separately for terminals without a feature group. Specification 51055S is furnished with these partially assembled terminals to provide instructions necessary to configure and assemble the teleprinter in accordance with USOC arrangements. |
| 2. TOOLS REQUIRED | 2 | 1.02 Whenever this section is reissued, the reason for reissue will be listed in this paragraph. |
| 3. INSTALLATION PROCEDURE | 2 | 1.03 Installation should be performed under the direction of a service order indicating USOC codes, options, date, materials required and location. |
| A. Unpacking | 2 | 1.04 For additional information, refer to Section 574-500-503, 43 8-Level BSC Teleprinter, Testing and Section 574-500-210, engineering options. |
| B. Assembly | 2 | 1.05 Before starting the installation procedure, verify that paper, all cables, data set and auxiliary printer, if required, in addition to the 43 8-Level BSC are present at the installation location. |
| C. Ribbon and Paper Installation | 8 | 1.06 Some or all station removal and installation procedures may be used for local station relocation. |
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SECTION 574-500-202

1.07 Reference in the procedures to left or right, up or down, and top or bottom, etc, refer to the teleprinter in its normal operating position as viewed by the operator.

1.08 When ordering replaceable components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP430202).

2. TOOLS REQUIRED

2.01 A 100982 screwdriver, 1/4-inch, 6-inch blade, is required to secure the data set cable to the data set and, if present, connect the EIA cable to the auxiliary printer.

3. INSTALLATION PROCEDURE

A. Unpacking (unless already done as part of pre-installation assembly at the installation site).

3.01 Select an area to unpack the carton so that damage to the terminal will not occur.

3.02 When unpacking, be sure to wear approved safety glasses.

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

3.03 The 43 BSC Teleprinter, tractor or friction, is furnished in a single carton.

3.04 Unpack the carton referring to instructions on the container. Remove tape securing the cover and paper separator to the housing (Fig.1). If tractor feed, remove tape from tractor mechanism and roller bail.

Note: Observe all "Caution" notes printed on the carton.

3.05 Depress the cover locking tabs on the lower front of the cabinet and lift the cover. Remove the packing detail securing the print head and the ribbon in place (Fig. 1).

3.06 The containers and other packing details should be retained and reused by field locations to facilitate movement of stations.

3.07 Verify that the following items are included in the box:

- 1—Teleprinter Set, 8-Level BSC
- 1—Ribbon
- 1—Practice, Installation and Removal (Section 574-500-202)
- 1—Manual, How To Operate 999-300-137
- 1—Manual, Optioning, 999-302-137
- 1—Paper Supply Assembly (Friction Feed) or Paper Holder (Tractor Feed)

B. Assembly

3.08 Position the terminal on a table, suitable stand or pedestal, in the location specified by the customer. A minimum of 6 inches of space behind the terminal is required when the paper holder (tractor or friction) is used to feed the paper and 9 inches of space is required when sprocket feed paper is fed from a box behind the terminal on the floor. Additional space is required if paper with folded form lengths greater than 8-1/2 inches is used.

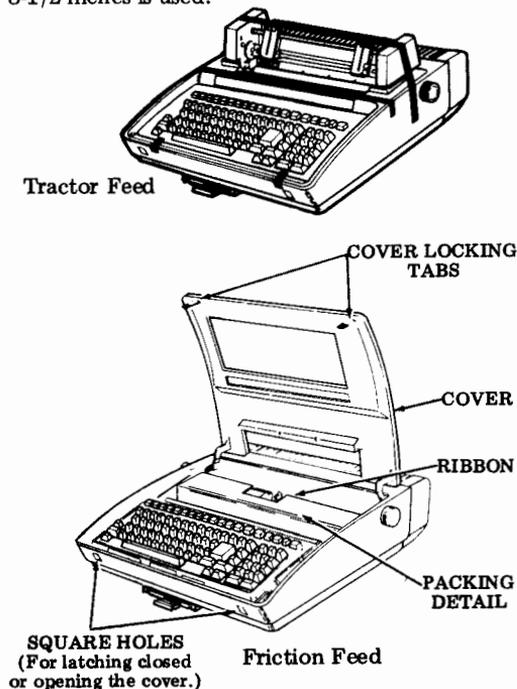


Fig. 1—Packing Detail

3.09 Assemble the paper holder or paper supply assembly as shown in Fig. 2.

- (a) Tractor Feed: Attach the paper holder to the bustle cover by sliding down over the bushings.
- (b) Friction Feed: Pull the latches straight up and slide the paper supply assembly fully onto the mounting posts located at the rear of the bustle cover. Push down on the latches until they are secured over the mounting posts.

3.10 With ac power to the data set turned off, connect the EIA data set cable to the terminal as shown in Fig. 3.

Secure by using two captive screws on plug. To accommodate distances up to 50 feet, the following shielded EIA cables are available from Teletype Corporation:

- 3 Ft. Length — 430569 (Not used with isochronous data sets.)
- 7 Ft. Length — 408065
- 12 Ft. Length — 408066
- 25 Ft. Length — 408067
- 50 Ft. Length — 408068

Note: Data set must be located within 50 cable feet from the terminal.

See Page 4 for EIA Interface Leads and the Descriptions for the line port.

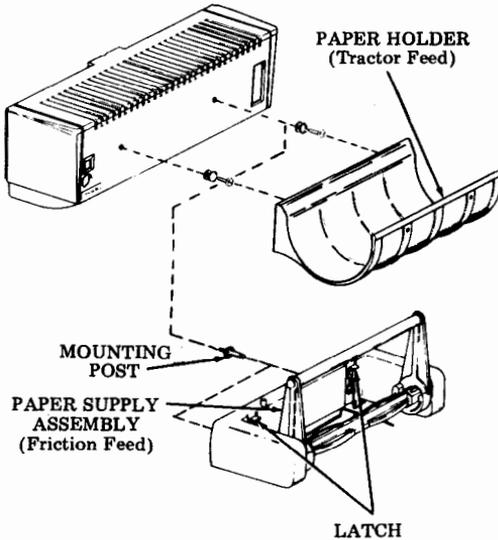
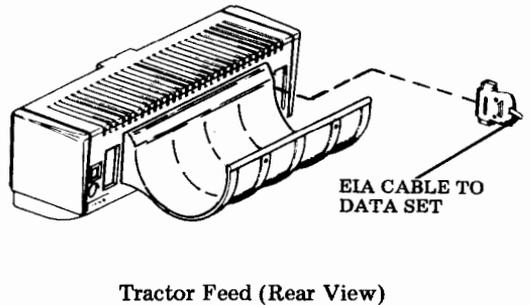
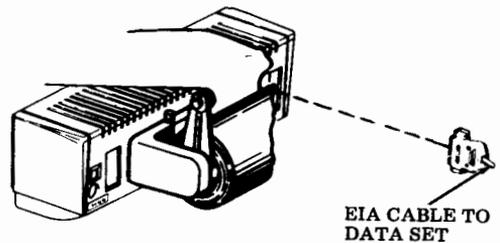


Fig. 2



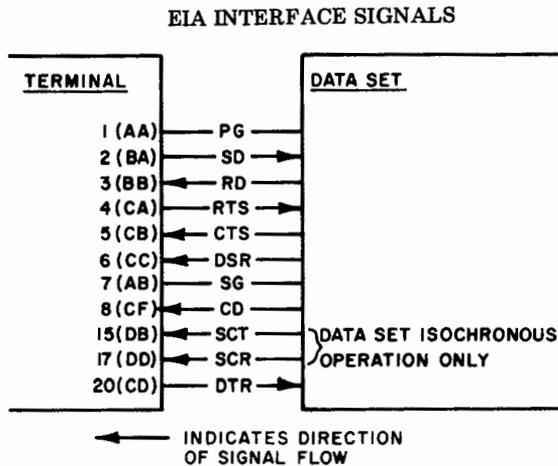
Tractor Feed (Rear View)



Friction Feed (Rear View)

Fig. 3

1. Line Port



Electrical Characteristics

| EIA (RS232) Interface | Electrical Characteristics | |
|--------------------------|----------------------------|---------------|
| | From 43 | To 43 |
| ON (Space) | +3 to +25 Vdc | +3 to +25 Vdc |
| OFF (Mark) | -3 to -25 Vdc | -3 to -25 Vdc |

Note: A lead not connected appears as an OFF or Mark to the 43 BSC Teleprinter.

PG — Protective Ground.

SD — Send Data. Mark in all modes varies when on-line and sending data.

RD — Receive Data. In state supplied by Data Set.

RTS — Request to Send — On when terminal is sending response or messages.

CTS — Clear to Send — On allows teleprinter to send and receive, off allows teleprinter to receive but not send.

DSR — Data Set Ready — On puts terminal in on-line mode. Off causes TERM ON LINE lamp to flash (unless in term local mode) and terminal cannot send or receive.

SG — Signal ground.

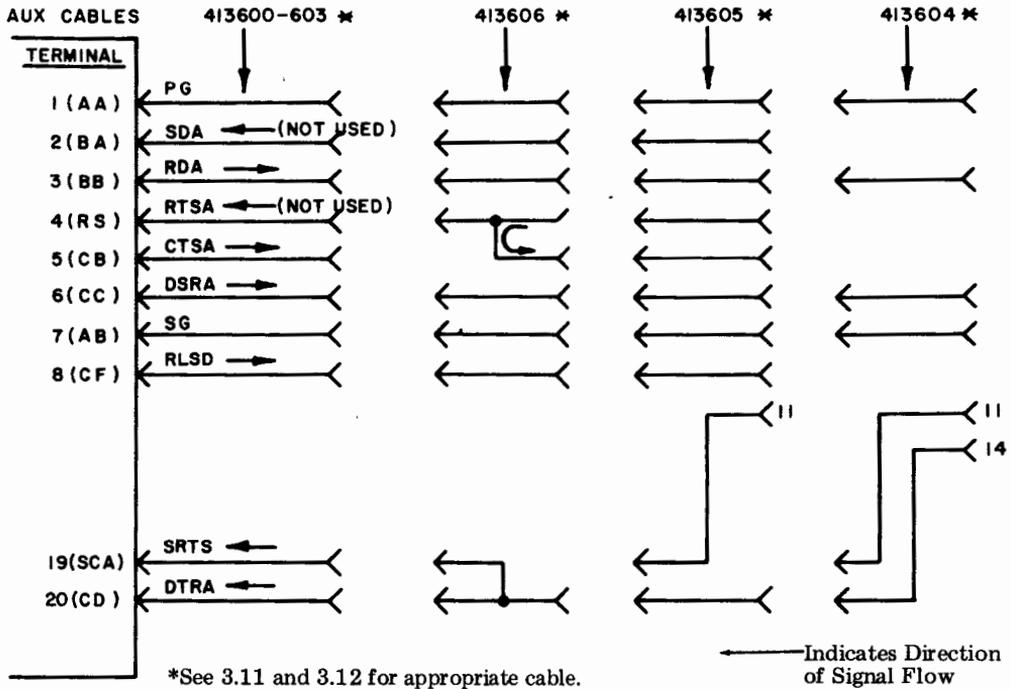
CD — Carrier Detect — On allows teleprinter to send or receive if DSR and CTS are on. If off while sending, data continues to be sent.

SCT — Serial Clock Transmitter — Clock signal used for send data synchronization.

SCR — Serial Clock Receiver — Clock signal used for receive data synchronization.

DTR — Data Terminal Ready — On whenever power to the terminal is on and not in TERM LOCAL.

2. Auxiliary Port



Electrical Characteristics

| EIA (RS232) Interface | Electrical Characteristics | |
|--------------------------|----------------------------|---------------|
| | From 43 | To 43 |
| ON (Space) | +3 to +25 Vdc | +3 to +25 Vdc |
| OFF (Mark) | -3 to -25 Vdc | -3 to -25 Vdc |

Note: A lead not connected appears as an OFF to the 43 BSC Teleprinter.

- PG — Protective Ground.
- SDA — Send Data Aux — Not used.
- RDA — Receive Data Aux — Sends data to auxiliary printer. Mark hold until varied when sending.
- RTSA — Request To Send Aux — Not used.
- CTSA — Clear To Send Aux — Always off.
- DSRA — Data Set Ready Aux — Off after power on reset. Turns on just prior to sending first character out on pin 3. Turns off after message ending character for 250 milliseconds. If SRTS and DTRA on, it turns back on, otherwise pulses on and off every 250 milliseconds.
- SG — Signal ground.
- RLSD — Receive Line Signal Detector — Turns on just prior to sending first character out on pin 3. Turns off after message ending character.
- SRTS — Secondary Request To Send — If off, will not send data on pin 3 to auxiliary printer. If on and DTRA on data can be sent to auxiliary printer on pin 3.
- DTRA — Data Terminal Ready Aux — If off, will not send data on pin 3 to auxiliary printer. If on and SRTS on, data can be sent to auxiliary printer on pin 3.

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3.11 If an optional auxiliary printer is to be installed, turn off power to the auxiliary printer. See below for recommended printers and interface cables available from Teletype Corporation. Other printers may operate properly as an auxiliary printer, however, it may be necessary to locally provide an interface cable. Connect the recommended cable to the auxiliary port of the 43 BSC and the EIA port of the auxiliary printer. Secure using two captive screws on each plug.

See Page 5 for EIA Interface Leads and Descriptions for the auxiliary port.

| | <u>CODE</u> | <u>USOC</u> | <u>CABLE</u> | <u>CABLE PART NO.</u> |
|---|----------------------------|---------------------------|---|-----------------------|
| | 4310AAC or AAG | 43LYS | 7 Foot Length | 413606 |
| | 4310AAD or AAH | 43LYF | 7 Foot Length | 413606 |
| * | 4010BD/001/AR | 400 (4, 5 or 6) (A or F) | 7 Foot Length | 413605 |
| | 4010CJ/002/AM | 40P (4, 5 or 6) (A or F) | 7 Foot Length | 413605 |
| | 4010CQ/003/AP | 40EQ (4, 5 or 6) (A or F) | 7 Foot Length | 413605 |
| | 4010CP/002/AN | 40R (4, 5 or 6) (A or P) | 7 Foot Length | 413605 |
| * | 40P102/ZZ† and 40CAB371/AC | 4QCJ (A or F) | 7 Foot Length | 413604 |
| | 40P154/ZZ and 40CAB351/AD | 4RCJ (A or F) | 7 Foot Length | 413604 |
| | 40P253/ZZ and 40CAB302/AC | 4EJJ (A or F) | 7 Foot Length | 413604 |
| | 40P202/ZZ and 40CAB353/AC | 4STJ (A or F) | 7 Foot Length | 413604 |
| | 43 8-Level BSC Friction ‡ | 4BF + 4BU | { 7 Foot Length 12 Foot Length 25 Foot Length 50 Foot Length | 413600 |
| | 43 8-Level BSC Tractor ‡ | 4BG + 4BU | | 413601 |
| | | 413602 | | |
| | | | 413603 | |

* Do not include type carriers.

† 346745 Kit (Baud Card) also required.

‡ Optioned as an auxiliary terminal.

3.12 The length of cables 413604, 413605, and 413606 can be effectively increased by connecting to one of the cables 413600, 413601, 413602, or 413603. In station arrangements which require such a provision, the 413600-603 cable should be connected to the 43 BSC teleprinter and the 413604-606 cable should be connected to the auxiliary printer. Do not exceed 50 feet from the 43 BSC teleprinter to the auxiliary printer.

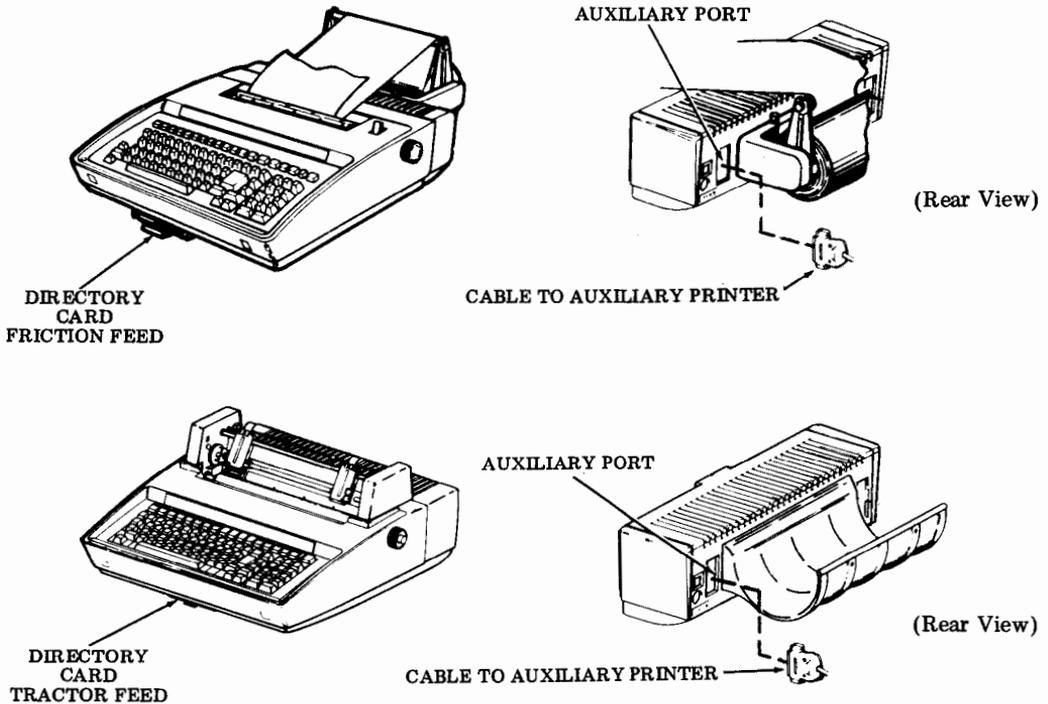


Fig. 4

G. Checkout Procedure

3.19 Connect the data set, 43 BSC Teleprinter and Auxiliary Printer (if present) power cords to a properly polarized and grounded source of 115 Vac power (50 or 60 hertz). Normally the power cords should be connected to unswitched outlets to avoid loss of stored data. Fuse protection should be time delayed and provide for a running current of 0.8 amp for the teleprinter plus the running current of the data set and auxiliary printer, if present.

3.20 Perform the teleprinter installation check-out procedures found in 43 Teleprinter 8-Level Buffered Selective Calling (BSC) Station, Testing, Section 574-500-503.

3.21 Clean up the unpacking area. Wipe off any fingerprints or smudges on the Teleprinter.

H. Initiate Service

3.22 Turn the 43 BSC Teleprinter over to the subscriber.

3.23 Fill out the OPERATOR AFFECTING OPTIONS page in the How To Operate manual. If this information is not available, ask the station manager to fill out that page.

3.24 Inform the station manager that ordinarily the programmable options in the 43 BSC terminals are system dependent and after installation do not require any changes. However, if changes are anticipated the Bell Telephone Company service advisor will provide the necessary training.

3.25 Provide the customer with the How To Operate Manual 999-300-137, and the Optioning Manual 999-302-137. Advise the customer to order spare ribbons and paper as soon as possible (quantities depending on expected usage).

3.26 Advise the customer that the power to the 43 BSC should remain on for at least 10 hours. This will charge the controller battery used to retain the programmable options when power to the teleprinter is turned off.

3.27 Advise the customer of the "Trouble Number" location on the directory card.

3.28 Properly dispose of the shipping container according to local practices.

4. PROGRAMMABLE OPTIONS

- 4.01 The programmable options in this terminal are not programmable by the user unless Option 468.a. was requested. See Engineering Options, Section 574-500-210.
- 4.02 To change these options place controller switch pack SPA7-2 (switch 2) in the ON position (factory furnished ON). See Engineering Options, Section 574-500-210 for location of switch pack.
- 4.03 There are two ways to load programmable options into the terminal:
 - (a) To receive the options on-line as a message and load the options.
 - (b) To manually enter the value for the options and then load the options.

If the options are to be received as a message and loaded, go to A. Options Program Received On-Line.

If the options are to be manually programmed go to B. Manual Programming of Options (From Keyboard).

Note: If power to the terminal has been off for several days (ie, during shipping, unopened on customer premise, etc.) leave power to the terminal on for at least 10 hours. This will fully charge the internal battery used to retain the programmable options for at least 17 days when power is turned off.

A. Options Program Received On-Line

- 4.04 Some options may have to be manually programmed in order for the terminal to be able to receive the options program on-line (ie, LinSpd (Line Speed), PAddr1 (Primary Address 1), Aux Trm (Auxiliary Terminal, etc). If this is the case, go to B. Manual Programming of Options (From Keyboard) to enable the necessary options, then return to this paragraph.

- Depress  key if not lit. Lamp lights. If lamp flashes, data set ready is not being provided by the data set to the terminal.

- Depress  key if not lit. Lamp lights.

When the options list is sent to the terminal it will print on the printer. The list is a series of hexadecimal codes (numbers 0 through 9 and letters A through F).

Note: The entire list of options must be received not just the desired changes.

- After the list has printed, depress  key. Lamp lights and  goes out.
- Depress  key. Lamp lights and  goes out.
- Depress  key, several times if necessary until bell rings.
- Depress  key. Lamp lights.
- Type the first five characters of the option list as printed when received.
- Depress  key. Option list is now in the edit buffer.
- If desired depress  key. Options print out.
- Hold  key depressed and depress  (options load) key. The terminal is now optioned with all the programmable options.

Note: If the bell rings when attempting to load the options, make sure the  and the  keys are lit. If the bell still rings when attempting to load options, data to be printed is in the receive ( key lit) or auxiliary receive buffers. If the  lamp is lit, depress  key to print data in the receive buffer.

Otherwise, place the auxiliary printer in the print mode (see How To Operate Manual associated with auxiliary printer) to print data in the auxiliary buffer. If an error message prints out, one or more of the hexadecimal values is incorrect. Example, **ERR:** prints out. The 18 is a hexadecimal value that **ENTRY 18H** must be converted to a decimal value to determine which pair of entries is incorrect. Refer to Table B (Decimal To Hexadecimal Number Conversion). Find the number 18 in the hex column. It is equal to decimal value 24. Therefore, the 24th pair of entries in the options list is invalid. If the error is in the second pair of digits defining line speed or auxiliary speed, the error indication will be for the first pair. Also, if the sum of options Sum Length, Prime Receive Buffer Size and Auxiliary Receive Buffer Size exceeds 14430 the error indication will be for the Sum Length pair.

Place Controller switch pack SPA7-2 (switch 2) in the OFF position unless Option 468.a. was requested. Depress  key. Lamp lights. Terminal is now optioned and functional on line.

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B. Manual Programming of Options (From Keyboard)

4.05 To Manually program the options from the keyboard:

- Depress  key if not lit. Lamp lights.
- Depress  key if lit. Lamp goes out.
- Depress and hold  key and spacebar down until the print head is fully to the right and bell rings continually.
- Depress  key 10 times.
- Hold  key depressed and depress  key (set left margin).
- Depress  key. Lamp lights.
- Depress  key, several times if necessary until bell rings.
- Depress  key. Lamp lights and  goes out.
- Hold  key depressed and depress  key (options prep).

OPTIONS

IN Prints on printer and  lamp lights.
EDIT
BUFFER

- Depress  key. Option list (in hexadecimal values) prints out in a column of ten. This list corresponds to J. OPTION MAP, Page 25.

To change the value of these options, refer to C. ALPHABETICAL LISTING OF OPTIONS, Page 14. This listing will refer you to the appropriate section for calculating the hexadecimal value of the options that require changes. Once the values are calculated, the options list must be modified with these new values.

- To modify the options list, depress  key.
- Depress  key. Options start to print. When the list approaches the value to be changed, depress the  key again and printing will stop.

- Position the print head marker over the value to be changed using the edit controls (ie ←, → etc) and type the new value. If an error is made in typing, just back space the print head using the  key and retype the new value.

Once all the new values have been entered into the option list, it is necessary to load the new option list.

- Hold  key depressed and depress  (options load) key. The terminal is now optioned with all the programmable options.

Note: If the bell rings when attempting to load the options, make sure the  and the  keys are lit. If the bell still rings when attempting to load options, data to be printed is in the receive ( key lit) or auxiliary receive buffers. If the  lamp is lit, depress  key to print data in the receive buffer.

Otherwise, place the auxiliary printer in the print mode (see How To Operate Manual associated with auxiliary printer) to print data in the auxiliary buffer. If an error message prints out, one or more of the hexadecimal values is incorrect. Example, ERR: prints out. The 18 is a hexadecimal value that ENTRY 18H must be converted to a decimal value to determine which pair of entries is incorrect. Refer to Table B (Decimal To Hexadecimal Number Conversion). Find the number 18 in the hex column. It is equal to decimal value 24. Therefore, the 24th pair of entries in the options list is invalid. If the error is in the second pair of digits defining line speed or auxiliary speed, the error indication will be for the first pair. Also, if the sum of options Sum Length, Prime Receive Buffer Size and Auxiliary Receive Buffer Size exceeds 14430 the error indication will be for the Sum Length pair.

Place Controller switch pack SPA7-2 (switch 2) in the OFF position unless Option 468.a. was requested. Depress  key. Lamp lights. Terminal is now optioned and functional on line.

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C. Alphabetical Listing of Options

4.06 Find the options that require value changes in the alphabetical listing of options below. Read the note associated with the options and proceed to the page referenced for the calculation of the value of the option to be entered in the option list.

| OPTION/MAP NAME/ORDER | NOTE | OPTION/MAP NAME/ORDER | NOTE | OPTION/MAP NAME/ORDER | NOTE | OPTION/MAP NAME/ORDER | NOTE |
|--------------------------|--------|--------------------------|--------|--------------------------|--------|--------------------------|--------|
| AAddr1 | (77) 3 | Dbl_LF | (23) 2 | PE_Rdy | (92) 3 | RTSDly | (37) 5 |
| AAddr2 | (78) 3 | DelErr | (19) 2 | PNNRdy | (90) 3 | SmlKey | (42) 3 |
| AAddr3 | (81) 3 | EditLw | (35) 4 | Poll#1 | (59) 3 | Sumry1 | (55) 3 |
| AAddr4 | (83) 3 | 1stSnt | (75) 3 | PreTab | (96) 3 | Sumry2 | (56) 3 |
| ACBRdy | (87) 3 | FmOut1 | (46) 3 | Ptr_NL | (22) 2 | Sumry3 | (57) 3 |
| AChBfs | (13) 2 | FmOut2 | (47) 3 | PRcvLw | (33) 4 | Sumry4 | (58) 3 |
| AENRdy | (95) 3 | FormLg | (39) 4 | PRcvSz | (31) 4 | SndBrk | (26) 2 |
| AE_Rdy | (93) 3 | HorTab | (20) 2 | P2Rply | (6) 2 | SSDs 1 | (62) 3 |
| ANNRdy | (91) 3 | HTabMap | (98) 6 | P3Rply | (7) 2 | SSDs 2 | (63) 3 |
| A_NRdy | (89) 3 | IdleLn | (38) 5 | P4Rply | (8) 2 | SSInt1 | (71) 3 |
| Append | (48) 3 | LfBdry | (28) 4 | P_NRdy | (88) 3 | SSInt2 | (72) 3 |
| ARcvLw | (34) 4 | LinSpd | (1) 1 | P*_Rdy | (84) 3 | Start1 | (69) 3 |
| ARcvSz | (32) 4 | LRC Ck | (15) 2 | RBfOff | (68) 3 | Start2 | (70) 3 |
| AudAlm | (24) 2 | LrgKey | (41) 3 | RBf_On | (67) 3 | Store1 | (49) 3 |
| AuxSpd | (2) 1 | MsgGen | (97) 3 | ReRcv1 | (51) 3 | Store2 | (50) 3 |
| AuxTrm | (17) 2 | NTNRdy | (61) 3 | ReRcv2 | (52) 3 | StrKey | (40) 1 |
| A2Rply | (9) 2 | NT_Rdy | (60) 3 | ReRcv3 | (53) 3 | StSend | (44) 3 |
| A3Rply | (10) 2 | PAddr1 | (76) 3 | ReRcv4 | (54) 3 | SubChr | (43) 3 |
| A4Rply | (11) 2 | PAddr2 | (78) 3 | Resend | (45) 3 | SumLgt | (30) 4 |
| A*_Rdy | (86) 3 | PAddr3 | (80) 3 | RRDs 1 | (65) 3 | System | (5) 2 |
| BROSta | (16) 2 | PAddr4 | (82) 3 | RRDs 2 | (66) 3 | TransCk | (14) 2 |
| Conten | (25) 2 | Parity | (3) 1 | RRInt | (73) 3 | Trans | (4) 1 |
| CpyRes | (27) 2 | PCBRdy | (86) 3 | RSDsl | (64) 3 | VerTab | (21) 2 |
| CpySnt | (18) 2 | PChBfs | (12) 2 | RSInt | (74) 3 | VTabMap | (99) 6 |
| CTSDly | (36) 5 | PENRdy | (94) 3 | RtBdry | (29) 4 | | |

- Note 1: Go to D. Options Requiring Specific Entries, Page 15.
- Note 2: Go to E. Options Requiring y (yes) or n (no) Values, Page 16.
- Note 3: Go to F. Options Requiring ASCII Character Values, Page 17.
- Note 4: Go to G. Options Requiring Numeric (Decimal) Values, Page 20.
- Note 5: Go to H. Timer Options, Page 21.
- Note 6: Go to I. Horizontal and Vertical Preset Tab Stop Chart, Page 24.

D. Options Requiring Specific Entries

4.07 These options require specific predetermined values. The options and allowable values are listed below. The values shown are hexadecimal values equivalent to the desired option description. Example, desired line speed is 1200 baud, 10 bit code, asynchronous transmission. The value for that option is the hexadecimal value 1584. 1584 is the value to be entered for line speed option. Refer to the option list printout to determine the current value of the option. Refer to J. Option Map, Page 25 to determine the location within the options list to make the entry.

| <u>OPTION NAME</u> | <u>MAP ORDER</u> | <u>CHOICES</u> | <u>ENTRIES REQUIRED</u> |
|--|------------------|----------------------------------|-------------------------|
| LinSpd (Line Port Speed) | ① | 110 Baud, 11 Bit, Asynchronous | E58C |
| | | 150 Baud, 10 Bit, Asynchronous | 54C4 |
| | | 300 Baud, 10 Bit, Asynchronous | 2AC4 |
| | | 600 Baud, 10 Bit, Asynchronous | 15C4 |
| | | 1200 Baud, 10 Bit, Asynchronous | 1584 |
| | | 1800 Baud, 10 Bit, Asynchronous | 07C4 |
| | | 0-2400 Baud, 10 Bit, Isochronous | 1504 |
| | | 2400 Baud, 10 Bit, Asynchronous | 1544 |
| AuxSpd (Auxiliary Port Speed) | ② | No Device | 8080 |
| | | 110 Baud, 11 Bit, Asynchronous | E58C |
| | | 300 Baud, 10 Bit, Asynchronous | 2AC4 |
| | | 1200 Baud, 11 Bit, Asynchronous | 1584 |
| Parity | ③ | Even Vertical Parity | 43 |
| | | Odd Vertical Parity | 41 |
| | | 8th Bit Marking | E0 |
| | | 8th Bit Spacing | C0 |
| Trans (Asynchronous/ Isochronous Transmission) | ④ | Asynchronous | 0C |
| | | Isynchronous | 08 |
| StrKey (Store Key Function) | ④0 | Buffer Enter | E0 |
| | | Print One Message | E1 |
| | | Print Receive Buffer | E2 |

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E. Options Requiring y (yes) or n (no) Values

4.08 The options listed below require y (yes) or n (no) values. Refer to the option list printout to determine the current values. If a different value is required enter a 79 for a yes or a 6E for a no. Refer to J. Option Map, Page 25 to determine the location within the options list to make the entry.

OPTION NAME

MAP
ORDER

System (5) (Half-Duplex)
P2Rply (6) (Prime Address 2 Reply)
P3Rply (7) (Prime Address 3 Reply)
P4Rply (8) (Prime Address 4 Reply)
A2Rply (9) (Aux Address 2 Reply)
A3Rply (10) (Aux Address 3 Reply)
A4Rply (11) (Aux Address 4 Reply)
PChBfs (12) (Prime Receiver Remains Terminated Following Reply, Character In Buffer)
AChBfs (13) (Aux Receiver Remains Terminated Following Replay, Character In Buffer)
Tran_Ck (14) (Transmission Parity Check)
LRC_Ck (15) (Longitudinal Redundancy Check)
BROSta (16) (Buffered Receive Only Station)
AuxTrm (17) (Auxiliary Terminal)
CpySnt (18) (Copy Sent Data)
DelErr (19) (Delete Errored Messages)
HorTab (20) (Enable Horizontal Tab)
VerTab (21) (Enable Vertical Tab)
Ptr_NL (22) (Printer New Line For Line Feed)
Dbl_LF (23) (Double Line Feed)
AudAlm (24) (Audible Alarm For Message Waiting)
Conten (25) (Non-Centralized Contention Operation)
SndBrk (26) (Send Break While Receiving And Buffer Becomes Low)
CpyRes (27) (Copy Host Response In Send Interrupt State)

F. Options Requiring ASCII Character Values

4.09 The options listed below require ASCII character values. All ASCII character values have to be converted and entered as hexadecimal digits. See Table A, ASCII to hexadecimal conversion. Example, if the option requires the character A (upper case), refer to Table A. An upper case A is hexadecimal 41. A 41 would be entered for that option. Unused ASCII values must have the hexadecimal value 80. Options that allow for more than one ASCII character (2 hexadecimal digits) must have the desired values positioned in front of any unused positions. Example, value for LrgKey 0D 80 80. The desired value is 0D which precedes the unused positions of 80 80. Refer to the option list printout to determine the current value of the option. Refer to J. Option Map, Page 25 to determine the location within the options list to make the entry.

| <u>MAP</u> | <u>ORDER</u> | <u>OPTION NAME</u> |
|------------|--------------|--|
| LrgKey | (41) | (Large Key Character Sequence - Return) |
| SmlKey | (42) | (Small Key Character - Line Feed) |
| SubChr | (43) | (Substitute Character For Parity Error) |
| StSend | (44) | (Received Start Send Character) |
| Resend | (45) | (Received Resend Character) |
| FmOut1 | (46) | (Form Out Character #1) |
| FmOut2 | (47) | (Form Out Character #2) |
| Append | (48) | (First Character Appended For Storing) |
| Store1 | (49) | (Message Store Ending Character #1) |
| Store2 | (50) | (Message Store Ending Character #2) |
| ReRcv1 | (51) | (Retrieve Receive Message Ending Character #1) |
| ReRcv2 | (52) | (Retrieve Receive Message Ending Character #2) |
| ReRcv3 | (53) | (Retrieve Receive Message Ending Character #3) |
| ReRcv4 | (54) | (Retrieve Receive Message Ending Character #4) |
| Smmry1 | (55) | (Received Message Summary Start Character #1) |
| Smmry2 | (56) | (Received Message Summary Start Character #2) |
| Smmry3 | (57) | (Received Message Summary Start Character #3) |
| Smmry4 | (58) | (Received Message Summary Start Character #4) |
| Poll#1 | (59) | (Polling Sequence #1) |
| NT_Rdy | (60) | (No Traffic to Send and Ready to Receive Reply Sequence) |
| NTNRdy | (61) | (No Traffic to Send and Not Ready to Receive Reply Sequence) |
| SSDs_1 | (62) | (Sent Sender Deselect Character #1) |
| SSDs_2 | (63) | (Sent Sender Deselect Character #2) |
| RSDs_1 | (64) | (Received Sender Deselect Character) |
| RRDs_1 | (65) | (Received Receiver Deselect Character #1) |
| RRDs_2 | (66) | (Received Receiver Deselect Character #2) |
| Rbf On | (67) | (Primary or Aux Receive Buffer Turn-On Character) |
| Rbf Off | (68) | (Primary or Aux Receive Buffer Turn-Off Character) |
| Start1 | (69) | (Received Start Sending or Receiving Character #1) |
| Start2 | (70) | (Received Start Sending or Receiving Character #2) |
| SSInt1 | (71) | (Sent Sender Interrupt Character #1) |
| SSInt2 | (72) | (Sent Sender Interrupt Character #2) |
| RRInt_ | (73) | (Received Receiver Interrupt Character) |
| RSInt_ | (74) | (Received Sender Interrupt Character) |
| 1stSnt | (75) | (Character Automatically Sent Before Text) |
| PAddr1 | (76) | (Primary Receive Address Sequence #1) |
| AAddr1 | (77) | (Auxiliary Receive Address Sequence #1) |
| PAddr2 | (78) | (Primary Receive Address Sequence #2) |
| AAddr2 | (79) | (Auxiliary Receive Address Sequence #2) |

MAP
ORDER

| | | |
|--------|------|--|
| PAddr3 | (80) | (Primary Receive Address Sequence #3) |
| AAddr3 | (81) | (Auxiliary Receive Address Sequence #3) |
| PAddr4 | (82) | (Primary Receive Address Sequence #4) |
| AAddr4 | (83) | (Auxiliary Receive Address Sequence #4) |
| P*_Rdy | (84) | (Primary Receiver Ready No Errors Reply Sequence) |
| A*_Rdy | (85) | (Auxiliary Receiver Ready No Errors Reply Sequence) |
| PCBRdy | (86) | (Primary Receiver Ready, Character in Buffer Reply Sequence) |
| ACBRdy | (87) | (Auxiliary Receiver Ready, Character in Buffer Reply Sequence) |
| P_NRdy | (88) | (Primary Receiver Not Ready Reply Sequence) |
| A_NRdy | (89) | (Auxiliary Receiver Not Ready Reply Sequence) |
| PNNRdy | (90) | (Primary Received No Error, Not Ready Response) |
| ANNRdy | (91) | (Auxiliary Received No Error, Not Ready Response) |
| PE_Rdy | (92) | (Primary Received Error, Ready Response) |
| AE_Rdy | (93) | (Auxiliary Received Error, Ready Response) |
| PENRdy | (94) | (Primary Received Error, Not Ready Response) |
| AENRdy | (95) | (Auxiliary Received Error, Not Ready Response) |
| PreTab | (96) | (Restore Preset Tab Stops Character) |
| MsgGen | (97) | (Stored Message Generator) |

TABLE A

ASCII Code to Hexadecimal Number Conversion

| ASCII | Hex | ASCII | Hex | ASCII | Hex | ASCII | Hex |
|-------|-----|-------|-----|-------|-----|-------|-----|
| NUL | 00 | SP | 20 | @ | 40 | ` | 60 |
| SOH | 01 | ! | 21 | A | 41 | a | 61 |
| STX | 02 | " | 22 | B | 42 | b | 62 |
| ETX | 03 | # | 23 | C | 43 | c | 63 |
| EOT | 04 | \$ | 24 | D | 44 | d | 64 |
| ENQ | 05 | % | 25 | E | 45 | e | 65 |
| ACK | 06 | & | 26 | F | 46 | f | 66 |
| BEL | 07 | ' | 27 | G | 47 | g | 67 |
| BS | 08 | (| 28 | H | 48 | h | 68 |
| HT | 09 |) | 29 | I | 49 | i | 69 |
| NL | 0A | * | 2A | J | 4A | j | 6A |
| VT | 0B | + | 2B | K | 4B | k | 6B |
| FF | 0C | , | 2C | L | 4C | l | 6C |
| CR | 0D | - | 2D | M | 4D | m | 6D |
| SO | 0E | . | 2E | N | 4E | n | 6E |
| SI | 0F | / | 2F | O | 4F | o | 6F |
| DLE | 10 | 0 | 30 | P | 50 | p | 70 |
| DC1 | 11 | 1 | 31 | Q | 51 | q | 71 |
| DC2 | 12 | 2 | 32 | R | 52 | r | 72 |
| DC3 | 13 | 3 | 33 | S | 53 | s | 73 |
| DC4 | 14 | 4 | 34 | T | 54 | t | 74 |
| NAK | 15 | 5 | 35 | U | 55 | u | 75 |
| SYN | 16 | 6 | 36 | V | 56 | v | 76 |
| ETB | 17 | 7 | 37 | W | 57 | w | 77 |
| CAN | 18 | 8 | 38 | X | 58 | x | 78 |
| EM | 19 | 9 | 39 | Y | 59 | y | 79 |
| SUB | 1A | : | 3A | Z | 5A | z | 7A |
| ESC | 1B | ; | 3B | [| 5B | { | 7B |
| FS | 1C | < | 3C | \ | 5C | | 7C |
| GS | 1D | = | 3D |] | 5D | } | 7D |
| RS | 1E | > | 3E | ^ | 5E | ~ | 7E |
| US | 1F | ? | 3F | _ | 5F | DEL | 7F |

G. Options Requiring Numeric (Decimal) Values

4.10 The options listed below require numeric (decimal) values. All decimal values have to be converted and entered in the options list as hexadecimal digits. See Table B decimal to hexadecimal number conversion. Example, if the option requires the decimal number 132 refer to Table B. The decimal number 132 hexadecimal 84. An 84 would be entered for that option. In numeric options the least significant number is located to the right. Thus, if an option allowed for more than one pair of hexadecimal digits and the value entered had only one pair of hexadecimal digits the value would be entered into the right pair. Example, the option has a current value of 00 00 Hex. The desired value is 84 Hex (132 decimal). Enter the value into the right pair of hex numbers. This would result in the option having the value 00 84. Refer to the option list print out to determine the current value of the option. Refer to J. Option Map Page 25 to determine the location within the options list to make the entry.

OPTION NAME

- LfBdry (28) (Left Boundary Setting) - Must be less than 80 decimal.
 RtBdry (29) (Right Boundary Setting) - Must be greater than LfBdry and equal to or less than 132 decimal for sprocket, 100 decimal for Tractor or 80 Decimal for Friction Feed.
 †SumLgt (30) (Message Summary And String Buffer Length)
 †PRcvSz (31) (Prime Receive Buffer Size)
 †ARcvSz (32) (Auxiliary Receive Buffer Size)
 PRcvLw (33) (Prime Receive Buffer Low Setting) - Must be less than PRcvSz.
 ARcvLw (34) (Auxiliary Receive Buffer Low Setting) - Must be less than ARcvSz.
 †EditLw (35) (Edit Buffer Low Setting)
 FormLg (39) (Form Length In Lines) - Must be equal to or less than 132 decimal.

†14984 (Total Buffer Available) minus the sum of PRcvSz, ARcvSz and SumLgt equals the size of the edit buffer. The edit buffer must be at least 554 positions. EditLw must be less than the edit buffer size, PRcvLw must be less than the PRcvSz and ARcvLw must be less than the ARcvSz.

H. Timer Options

4.11 The options listed below are timer options expressed in milliseconds using hexadecimal equivalent of the decimal value. An entry of all zeros disables the particular timer. The timer consists of 16 millisecond steps (ie 16, 32, 48 etc). The timer can be equal to or less than the value set by up to 16 milliseconds depending on when the timer is activated. Thus, a timer set for 32 milliseconds can vary from 17 through 32 milliseconds. To insure a minimum of 32 milliseconds for a timer it is necessary to enter a value one increment (16 milliseconds) greater than the required value. Example, enter a value of 48 milliseconds. Now the timer can vary 33 through 48 milliseconds. Remember the timer is based on 16 milliseconds steps. Therefore, entering a value anywhere between 16 through 31 milliseconds makes no difference to the timer. It views that entry as one step (16 milliseconds). Once the time in milliseconds has been established, refer to Table B to convert from a decimal value (time in milliseconds) to the hexadecimal value to be entered in the option list. Refer to the option list print out to determine the current value of the option. Refer to J. Option Map Page 25 to determine the location within the option list to make an entry.

MAP
ORDER

CTSDly ⁽³⁶⁾ (Clear to Send Recognition Delay)
RTSDly ⁽³⁷⁾ (Request to Send Turn-Off Delay)
IdleLn ⁽³⁸⁾ (Idle Line Time Out and Deselect)

NOTE: The time in milliseconds for the RTSdly option must be the desired value plus the time for two characters at the optioned LinSpd.

Example: Desired value 300 milliseconds
LinSpd = 1200 Baud = 8.3 ms/character
Two Characters = $8.3 \times 2 = 16.6$ ms
Value to be used = $300 + 16.6 = 317$ ms (Rounded up)

| <u>SPEED (Baud)</u> | <u>TIME PER ONE CHARACTER</u> |
|---------------------|-------------------------------|
| 110 | 100 ms |
| 150 | 66.6 ms |
| 300 | 33.3 ms |
| 600 | 16.6 ms |
| 1200 | 8.3 ms |
| 1800 | 5.5 ms |
| 2400 | 4.2 ms |

TABLE B

Decimal to Hexadecimal Number Conversion

| Dec- imal | Hex | Dec- imal | Hex | Dec- imal | Hex | Dec- imal | Hex |
|--------------|-----|--------------|-----|--------------|-----|--------------|-----|
| 00 | 00 | 32 | 20 | 64 | 40 | 96 | 60 |
| 01 | 01 | 33 | 21 | 65 | 41 | 97 | 61 |
| 02 | 02 | 34 | 22 | 66 | 42 | 98 | 62 |
| 03 | 03 | 35 | 23 | 67 | 43 | 99 | 63 |
| 04 | 04 | 36 | 24 | 68 | 44 | 100 | 64 |
| 05 | 05 | 37 | 25 | 69 | 45 | 101 | 65 |
| 06 | 06 | 38 | 26 | 70 | 46 | 102 | 66 |
| 07 | 07 | 39 | 27 | 71 | 47 | 103 | 67 |
| 08 | 08 | 40 | 28 | 72 | 48 | 104 | 68 |
| 09 | 09 | 41 | 29 | 73 | 49 | 105 | 69 |
| 10 | 0A | 42 | 2A | 74 | 4A | 106 | 6A |
| 11 | 0B | 43 | 2B | 75 | 4B | 107 | 6B |
| 12 | 0C | 44 | 2C | 76 | 4C | 108 | 6C |
| 13 | 0D | 45 | 2D | 77 | 4D | 109 | 6D |
| 14 | 0E | 46 | 2E | 78 | 4E | 110 | 6E |
| 15 | 0F | 47 | 2F | 79 | 4F | 111 | 6F |
| 16 | 10 | 48 | 30 | 80 | 50 | 112 | 70 |
| 17 | 11 | 49 | 31 | 81 | 51 | 113 | 71 |
| 18 | 12 | 50 | 32 | 82 | 52 | 114 | 72 |
| 19 | 13 | 51 | 33 | 83 | 53 | 115 | 73 |
| 20 | 14 | 52 | 34 | 84 | 54 | 116 | 74 |
| 21 | 15 | 53 | 35 | 85 | 55 | 117 | 75 |
| 22 | 16 | 54 | 36 | 86 | 56 | 118 | 76 |
| 23 | 17 | 55 | 37 | 87 | 57 | 119 | 77 |
| 24 | 18 | 56 | 38 | 88 | 58 | 120 | 78 |
| 25 | 19 | 57 | 39 | 89 | 59 | 121 | 79 |
| 26 | 1A | 58 | 3A | 90 | 5A | 122 | 7A |
| 27 | 1B | 59 | 3B | 91 | 5B | 123 | 7B |
| 28 | 1C | 60 | 3C | 92 | 5C | 124 | 7C |
| 29 | 1D | 61 | 3D | 93 | 5D | 125 | 7D |
| 30 | 1E | 62 | 3E | 94 | 5E | 126 | 7E |
| 31 | 1F | 63 | 3F | 95 | 5F | 127 | 7F |

TABLE B (Contd)

Decimal to Hexadecimal Number Conversion (Contd)

| Dec- imal | Hex | Dec- imal | Hex | Dec- imal | Hex | Dec- imal | Hex |
|--------------|-----|--------------|-----|--------------|-----|--------------|-----|
| 128 | 80 | 160 | A0 | 192 | C0 | 224 | E0 |
| 129 | 81 | 161 | A1 | 193 | C1 | 225 | E1 |
| 130 | 82 | 162 | A2 | 194 | C2 | 226 | E2 |
| 131 | 83 | 163 | A3 | 195 | C3 | 227 | E3 |
| 132 | 84 | 164 | A4 | 196 | C4 | 228 | E4 |
| 133 | 85 | 165 | A5 | 197 | C5 | 229 | E5 |
| 134 | 86 | 166 | A6 | 198 | C6 | 230 | E6 |
| 135 | 87 | 167 | A7 | 199 | C7 | 231 | E7 |
| 136 | 88 | 168 | A8 | 200 | C8 | 232 | E8 |
| 137 | 89 | 169 | A9 | 201 | C9 | 233 | E9 |
| 138 | 8A | 170 | AA | 202 | CA | 234 | EA |
| 139 | 8B | 171 | AB | 203 | CB | 235 | EB |
| 140 | 8C | 172 | AC | 204 | CC | 236 | EC |
| 141 | 8D | 173 | AD | 205 | CD | 237 | ED |
| 142 | 8E | 174 | AE | 206 | CE | 238 | EE |
| 143 | 8F | 175 | AF | 207 | CF | 239 | EF |
| 144 | 90 | 176 | B0 | 208 | D0 | 240 | F0 |
| 145 | 91 | 177 | B1 | 209 | D1 | 241 | F1 |
| 146 | 92 | 178 | B2 | 210 | D2 | 242 | F2 |
| 147 | 93 | 179 | B3 | 211 | D3 | 243 | F3 |
| 148 | 94 | 180 | B4 | 212 | D4 | 244 | F4 |
| 149 | 95 | 181 | B5 | 213 | D5 | 245 | F5 |
| 150 | 96 | 182 | B6 | 214 | D6 | 246 | F6 |
| 151 | 97 | 183 | B7 | 215 | D7 | 247 | F7 |
| 152 | 98 | 184 | B8 | 216 | D8 | 248 | F8 |
| 153 | 99 | 185 | B9 | 217 | D9 | 249 | F9 |
| 154 | 9A | 186 | BA | 218 | DA | 250 | FA |
| 155 | 9B | 187 | BB | 219 | DB | 251 | FB |
| 156 | 9C | 188 | BC | 220 | DC | 252 | FC |
| 157 | 9D | 189 | BD | 221 | DD | 253 | FD |
| 158 | 9E | 190 | BE | 222 | DE | 254 | FE |
| 159 | 9F | 191 | BF | 223 | DF | 255 | FF |

Note: For a decimal number equal to or greater than 256, divide the number by 256. The quotient becomes the first decimal number requiring conversion to hex and the remainder becomes the second number requiring conversion to hex. Example, value to be entered is 500 (decimal). $500 \div 256 = 1$ (quotient) with a remainder of 244. Look up number 1 on this table and convert to hex 01. This hex number becomes the first pair in the hex entry value. Look up number 244 on this table and convert to hex F4. This hex number becomes the second pair in the hex entry value. Thus a decimal number 500 is equal to hex value 01 F4.

I. Horizontal and Vertical Preset Tab Stop Chart

Map order (98) and (99)

| Column Or Line No. Group Of Four | | | |
|-------------------------------------|-----|-----|-----|
| 1 | 2 | 3 | 4 |
| 5 | 6 | 7 | 8 |
| 9 | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 |
| 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 |
| 25 | 26 | 27 | 28 |
| 29 | 30 | 31 | 32 |
| 33 | 34 | 35 | 36 |
| 37 | 38 | 39 | 40 |
| 41 | 42 | 43 | 44 |
| 45 | 46 | 47 | 48 |
| 49 | 50 | 51 | 52 |
| 53 | 54 | 55 | 56 |
| 57 | 58 | 59 | 60 |
| 61 | 62 | 63 | 64 |
| 65 | 66 | 67 | 68 |
| 69 | 70 | 71 | 72 |
| 73 | 74 | 75 | 76 |
| 77 | 78 | 79 | 80 |
| 81 | 82 | 83 | 84 |
| 85 | 86 | 87 | 88 |
| 89 | 90 | 91 | 92 |
| 93 | 94 | 95 | 96 |
| 97 | 98 | 99 | 100 |
| 101 | 102 | 103 | 104 |
| 105 | 106 | 107 | 108 |
| 109 | 110 | 111 | 112 |
| 113 | 114 | 115 | 116 |

4.12 Refer to this chart for the hexadecimal entry numbers required for the desired preset tab stops. Each hexadecimal number represents tab stops for four sequential columns (horizontal) or lines (vertical). Refer to the option list print out to determine the current value of the option. Refer to J. Option Map, Page 25 for the location within the option list to enter the hexadecimal numbers.

Example, preset tab stop desired only in Column 15. Referring to this chart a hexadecimal 4 value is to be entered in the option list.

Referring to J. Option Map the 4 would be entered at option HTabMap Column No. 13-16.

| Hex Entry For Groups Of Four Columns Or Lines | 117 | 118 | 119 | 120 |
|--|-----|-----|-----|-----|
| 121 | 122 | 123 | 124 | |
| 125 | 126 | 127 | 128 | |
| 129 | 130 | 131 | 132 | |
| 0 | | | | |
| 1 | X | | | |
| 2 | | X | | |
| 3 | X | X | | |
| 4 | | | X | |
| 5 | X | | X | |
| 6 | | X | X | |
| 7 | X | X | X | |
| 8 | | | | X |
| 9 | X | | | X |
| A | | X | | X |
| B | X | X | | X |
| C | | | X | X |
| D | X | | X | X |
| E | | X | X | X |
| F | X | X | X | X |

X Denotes Tab Column Stops

MAP
ORDER
NUMBER

J. Option Map

When printed out in columns of 10,
these are line numbers!

LEGEND

| |
|---|
| OPTION NAME |
| DEFAULT VALUE (Factory Furnished Value) |
| DEFAULT ENTRY |

| | | | | | | |
|----|--------------------------|----|--------------------------|----|--------------------------|----|
| 1 | Line No 1000 Base | 1 | Ass. 9d (nothing) | 2 | Parity Even | 3 |
| 2 | Trans- Ayanc | 4 | System Yan | 5 | P2Dly No | 6 |
| 3 | ADdy No | 9 | AMdy No | 10 | ANdy No | 11 |
| 4 | Trans No | 14 | LBC_Ch No | 15 | 800Sta No | 16 |
| 5 | DelErr No | 19 | HorTab No | 20 | VerTab No | 21 |
| 6 | AudAm No | 24 | OnLm No | 25 | SndBrk No | 26 |
| 7 | RTBdy Column A | 29 | Sublet 16 Positions | 30 | PRCVz 1,024 Positions | 31 |
| 8 | ARCVz 0 Positions | 32 | PRCVw 0 Positions | 33 | ARCVw 0 Positions | 34 |
| 9 | EdtLw 0 Positions | 35 | CT301 16 milliseconds | 36 | RT301 0 Seconds | 37 |
| 10 | RT301 0 Seconds | 37 | IdleLw 1 Second | 38 | FormL 0 Lines | 39 |
| 11 | Lrgdy Carriage Return | 41 | SelKey Line Feed | 42 | ShchR (nothing) | 43 |
| 12 | St Send (nothing) | 44 | Resend (nothing) | 45 | FuRet (nothing) | 46 |
| 13 | StorL (nothing) | 49 | StorR (nothing) | 50 | ReDev (nothing) | 51 |
| 14 | ReDev (nothing) | 54 | Summary (nothing) | 55 | Summary 2 (nothing) | 56 |
| 15 | RT3dy (nothing) | 60 | PolL1 (nothing) | 61 | RT3dy (nothing) | 62 |
| 16 | RT3dy (nothing) | 60 | RT3dy (nothing) | 61 | SSdL1 (nothing) | 62 |
| 17 | SSdL1 (nothing) | 64 | SSdL2 (nothing) | 65 | SSdL3 (nothing) | 66 |
| 18 | Start1 (nothing) | 69 | Start2 (nothing) | 70 | Start3 (nothing) | 71 |
| 19 | ASInL (nothing) | 74 | Latent (nothing) | 75 | PAder1 (nothing) | 76 |
| 20 | PAder1 (nothing) | 76 | AAder1 (nothing) | 77 | | 77 |

| | | | |
|----|----------------------|----|--------------------------------|
| 21 | PAder2 (nothing) | 78 | AAder2 (nothing) |
| 22 | AAder2 (nothing) | 79 | PAder3 (nothing) |
| 23 | PAder3 (nothing) | 80 | AAder3 (nothing) |
| 24 | AAder3 (nothing) | 81 | PAder3 (nothing) |
| 25 | AAder3 (nothing) | 83 | PAder3 (nothing) |
| 26 | PAder3 (nothing) | 84 | AAder3 (nothing) |
| 27 | AAder3 (nothing) | 87 | PAder3 (nothing) |
| 28 | PAder3 (nothing) | 89 | AAder3 (nothing) |
| 29 | PEder3 (nothing) | 92 | AEder3 (nothing) |
| 30 | PERder3 (nothing) | 94 | AERder3 (nothing) |
| 31 | PERder3 (nothing) | 95 | PreTab (nothing) |
| 32 | PERder3 (nothing) | 96 | MagAm (nothing) |
| 33 | PERder3 (nothing) | 97 | HTCamm 0 Columns 1 4 5 8 |
| 34 | HTCamm 0 Columns | 98 | HTCamm 0 Columns |
| 35 | HTCamm 0 Columns | 99 | HTCamm 0 Columns |
| 36 | HTCamm 0 Columns | 99 | HTCamm 0 Columns |
| 37 | HTCamm 0 Columns | 99 | HTCamm 0 Columns |
| 38 | HTCamm 0 Columns | 99 | HTCamm 0 Columns |
| 39 | HTCamm 0 Columns | 99 | HTCamm 0 Columns |
| 40 | HTCamm 0 Columns | 99 | HTCamm 0 Columns |

Column No.
Column No.
Column No.
Column No.
Line No.
Line No.
Line No.

5. STATION REMOVAL

5.01 Reverse the procedures in 3. INSTALLATION PROCEDURE to remove the teleprinter from service.

5.02 Before repacking the teleprinter, move the print head to the center of the printer and insert the packing detail and new ribbon removed in paragraph 3.05.

5.03 Tape the units as shown in Fig. 5.

5.04 Using the proper containers and packing detail, pack the 43 teleprinter as shown in Fig. 5.

5.05 Close and seal the carton flaps with three strips of tape, apply one strip to each of the seam ends and one strip the length of the carton.

5.06 Mark the outside of the carton with the teleprinter description (ie, 43 Teleprinter 8-Level Buffered Selective Calling (BSC) Station).

5.07 If the station qualifies as a "Working Station" candidate, mark the return material ticket in the appropriate block.

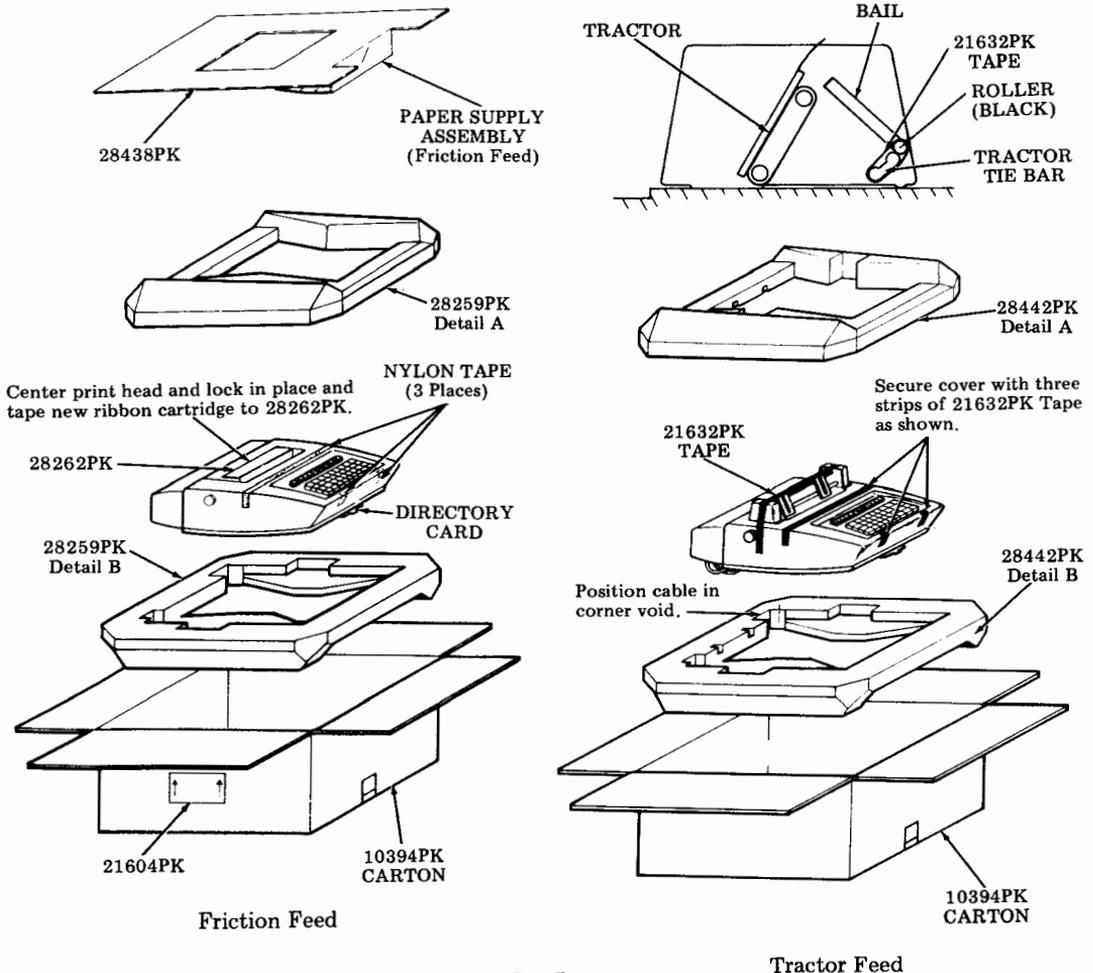


Fig. 5

43 TELEPRINTER 5-LEVEL BUFFERED SELECTIVE CALLING (BSC) STATION
INSTALLATION AND REMOVAL

| CONTENTS | PAGE | 1. GENERAL |
|--|------|--|
| 1. GENERAL | 1 | 1.01 This section provides installation and removal information for fully assembled, friction feed or tractor feed, 43 Teleprinter 5-Level Buffered Selective Calling (BSC) Stations. The feature group and keytop kit, which determines the operating characteristics of the teleprinter, may be furnished separately for terminals without a feature group. Specification 51055S is furnished with these partially assembled terminals to provide instructions necessary to configure and assemble the teleprinter in accordance with USOC arrangements. |
| 2. TOOLS REQUIRED | 2 | |
| 3. INSTALLATION PROCEDURE | 2 | 1.02 Whenever this section is reissued, the reason for reissue will be listed in this paragraph. |
| A. Unpacking | 2 | |
| B. Assembly | 2 | |
| C. Ribbon and Paper Installation | 8 | 1.03 Installation should be performed under the direction of a service order indicating USOC codes, options, date, materials required and location. |
| D. Options | 8 | 1.04 For additional information, refer to Section 574-500-504, 43 Teleprinter 5-Level BSC Station, Testing, and Section 574-500-210, Engineering Options. |
| E. Directory Card | 8 | |
| F. Accessories | 9 | 1.05 Before starting the installation procedure, verify that paper, all cables, data set and auxiliary device, if required, in addition to the 43 5-level BSC are present at the installation location. |
| G. Checkout Procedure | 9 | |
| H. Initiate Service | 9 | 1.06 Some or all station removal and installation procedures may be used for local station relocation. |
| 4. PROGRAMMABLE OPTIONS | 10 | |
| A. Options Program Received On-Line | 10 | |
| B. Manual Programming of Options (From Keyboard) | 11 | |
| C. Alphabetical Listing of Options | 12 | |
| D. Options Requiring Specific Entries | 13 | |
| E. Options Requiring y (yes) or n (no) Values | 14 | |
| F. Options Requiring ASCII Character Values | 15 | |
| G. Options Requiring Numeric (Decimal) Values | 18 | |
| H. Timer Options | 19 | |
| I. Option Map | 22 | |
| 5. STATION REMOVAL | 27 | |

1.07 Reference in the procedures to left or right, up or down, and top or bottom, etc, refer to the teleprinter in its normal operating position as viewed by the operator.

1.08 When ordering replaceable components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP430202).

2. TOOLS REQUIRED

2.01 A 100982 screwdriver, 1/4 inch, 6 inch blade, is required to secure the data set cable to the data set and, if present, connect the EIA cable to the auxiliary printer.

3. INSTALLATION PROCEDURE

A. Unpacking (unless already done as part of pre-installation assembly at the installation site).

3.01 Select an area to unpack the carton so that damage to the terminal will not occur.

3.02 When unpacking, be sure to wear approved safety glasses.

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

3.03 The 43 BSC teleprinter, tractor or friction, is furnished in a single carton.

3.04 Unpack the carton referring to instructions on the container. Remove tape securing the cover and paper separator to the housing (Fig. 1). If tractor feed, remove tape from tractor mechanism and roller bail.

Note: Observe all "Caution" notes printed on the carton.

3.05 Depress the cover locking tabs on the lower front of the cabinet and lift the cover. Remove the packing detail securing the print head and the ribbon in place (Fig. 1).

3.06 The containers and other packing details should be retained and reused by field location to facilitate movement of stations.

3.07 Verify that the following items are included in the box:

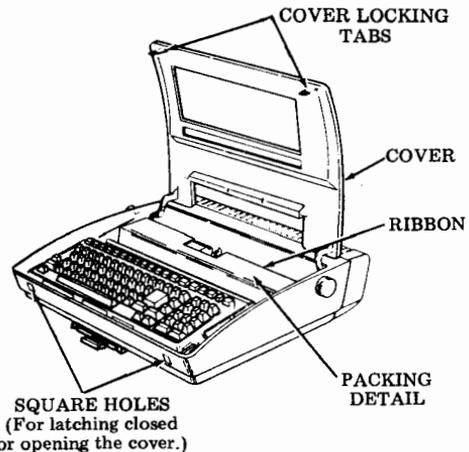
- 1 - Teleprinter Set, 5-Level BSC
- 1 - Ribbon
- 1 - Practice, Installation and Removal (Section 574-500-203)
- 1 - Practice, Troubleshooting (Section 574-500-304)
- 1 - Practice, Testing (Section 574-500-504)
- 1 - Manual, How To Operate 999-300-136
- 1 - Manual, Optioning 999-302-136
- 1 - Paper Supply assembly (Friction Feed) or Paper Holder (Tractor Feed)

B. Assembly

3.08 Position the terminal on a table, suitable stand or pedestal, in the location specified by the customer. A minimum of 6 inches of space behind the terminal is required when the paper holder (tractor or friction) is required when sprocket feed paper is fed from a box behind the terminal on the floor. Additional space is required if paper with folded form lengths greater than 8-1/2 inches is used.



Tractor Feed



Friction Feed

Fig. 1—Packing Detail

3.09 Assemble the paper holder or paper supply assembly as shown in Fig. 2.

- (a) Tractor Feed: Attach the paper holder to the bustle cover by sliding down over the bushings.
- (b) Friction Feed: Pull the latches straight up and slide the paper supply assembly fully onto the mounting posts located at the rear of the bustle cover. Push down on the latches until they are secured over the mounting posts.

3.10 With ac power to the data set turned off, connect the EIA data set cable to the terminal as shown in Fig. 3. Secure by using two

captive screws on plug. To accommodate distances up to 50 feet, the following shielded EIA cables are available from Teletype Corporation:

- 3 Ft. Length — 430569 (Not used with isochronous data sets.)
- 7 Ft. Length — 408065
- 12 Ft. Length — 408066
- 25 Ft. Length — 408067
- 50 Ft. Length — 408068

Note: Data set must be located within 50 cable feet from the terminal.

See Page 4 for EIA interface leads and descriptions for the line port.

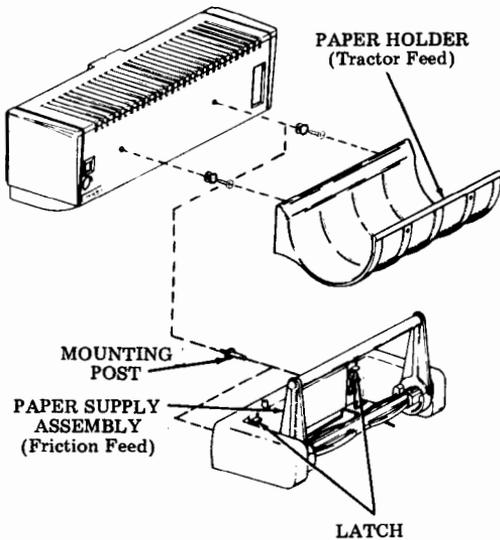


Fig. 2

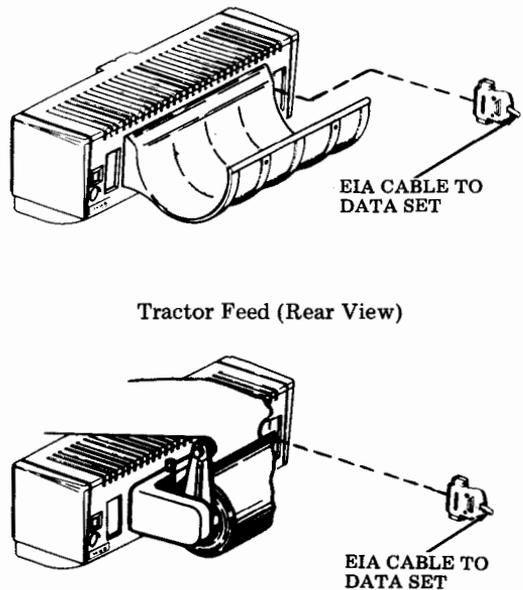
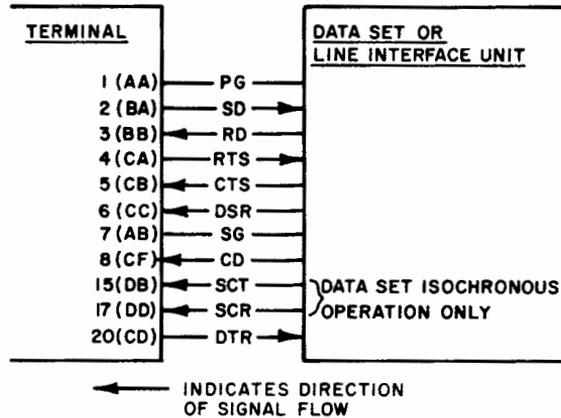


Fig. 3

EIA INTERFACE SIGNALS

LINE PORT



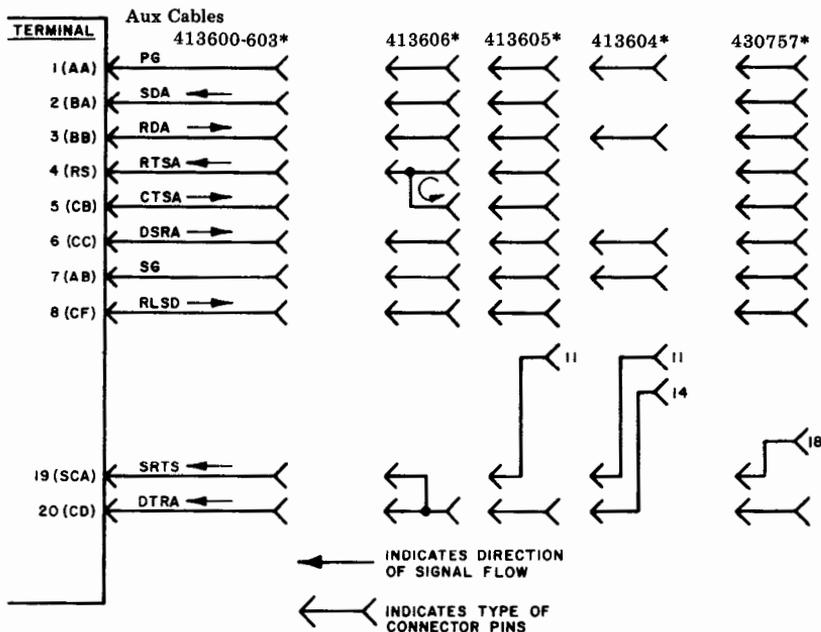
Electrical Characteristics

| EIA (RS232) Interface | Electrical Characteristics | |
|--------------------------|----------------------------|---------------|
| | From 43 | To 43 |
| ON (Space) | +3 to +25 Vdc | +3 to +25 Vdc |
| OFF (Mark) | -3 to -25 Vdc | -3 to -25 Vdc |

Note: A lead not connected appears as an OFF or Mark to the 43 BSC Teleprinter.

- PG --- Protective Ground.
- SD --- Send Data --- Mark in all modes varies when on-line and sending data.
- RD --- Receive Data --- In state supplied by data set or line interface unit.
- RTS --- Request to Send --- On when terminal is sending response or messages.
- CTS --- Clear to Send --- On allows teleprinter to send and receive, off allows teleprinter to receive but not send.
- DSR --- Data Set Ready --- On puts terminal in on-line mode. Off causes TERM ON LINE lamp to flash (unless in term local mode) and terminal cannot send or receive.
- SG --- Signal Ground.
- CD --- Carrier Detect --- On allows teleprinter to send or receive if DSR and CTS are on. If off while sending, data continues to be sent.
- SCT --- Serial Clock Transmitter --- Clock signal used for send data synchronization.
- SCR --- Serial Clock Receiver --- Clock signal used for receive data synchronization.
- SRTS --- Present in Cable --- Not used on-line port.
- DTR --- Data Terminal Ready --- On whenever power to the terminal is on and not in TERM LOCAL.

AUXILIARY PORT



*See Page 6 for devices associated with cables.

Electrical Characteristics

| EIA (RS232) Interface | Electrical Characteristics | |
|-----------------------|----------------------------|---------------|
| | From 43 | To 43 |
| ON (Space) | +3 to +25 Vdc | +3 to +25 Vdc |
| OFF (Mark) | -3 to -25 Vdc | -3 to -25 Vdc |

Note: A lead not connected appears as an OFF or Mark to the 43 BSC Teleprinter.

- PG --- Protective Ground.
- SDA --- Send Data Aux -- In state provided by auxiliary device.
- RDA --- Receive Data Aux -- Sends data to auxiliary device. Mark hold until varied when sending.
- RTSA --- Request To Send Aux -- On required for CTS to turn on if Aux Read key is on.
- CTSA --- Clear To Send Aux -- OFF if Aux Read key is OFF, ON if Aux Read key is ON and RTS is ON.
- DSRA --- Data Set Ready Aux -- Off after power on reset. Turns on just prior to sending first character out pin 3. Turns off after message ending character for 250 milliseconds. If SRTS and DTR on, it turns back on, otherwise pulses on and off every 250 milliseconds.
- SG --- Signal Ground.
- RLSD --- Receive Line Signal Detector -- Turns on just prior to sending first character out on pin 3. Turns off after message ending character.
- SRTS --- Secondary Request To Send -- If off, will not send data on pin 3 to auxiliary printer. If on and DTRA on data can be sent to auxiliary printer on pin 3. If a 43 5-Level PTU is interfaced to the auxiliary port, SRTS on will not send data on pin 3 to 43 5-Level PTU. SRTS off and DTR on data can be sent to 43 5-Level PTU.
- DTRA --- Data Terminal Ready Aux -- If off, will not send data on pin 3 to auxiliary device. If on and SRTS on, data can be sent to auxiliary device on pin 3.

SECTION 574-500-203

3.11 If an optional auxiliary device is to be installed, turn off power to the auxiliary device. See below for recommended cables available from Teletype Corporation. Other devices may operate properly as an auxiliary device, however, it may be necessary to locally provide an interface cable. Connect the recommended cable to the auxiliary port of the 43 BSC and the EIA port of the auxiliary device. Secure using two captive screws on each plug.

See Page 5 for EIA interface leads and descriptions for the auxiliary port.

| <u>CODE</u> | <u>USOC</u> | <u>CABLE</u> | <u>CABLE PART NO.</u> | |
|-----------------------------|--------------------------------|------------------------------|--|--------|
| 4310AAC or AAG | 43LYS | 7 foot length | 413606 | |
| 4310AAD or AAH | 43LYF | 7 foot length | 413606 | |
| * { | 4010 BD/001/AR | 40O (4, 5 or 6) (A or F) | 7 foot length | 413605 |
| | 4010 CJ/002/AM | 40P (4, 5 or 6) (A or F) | 7 foot length | 413605 |
| | 4010 CQ/003/AP | 40EQ (4, 5 or 6) (A or F) | 7 foot length | 413605 |
| | 4010 CP/002/AN | 40R (4, 5 or 6) (A or P) | 7 foot length | 413605 |
| * { | 40 P102/ZZ† and 40CAB371/AC | 4QCJ (A or F) | 7 foot length | 413604 |
| | 40P154/ZZ and 40CAB351/AD | 4RCJ (A or F) | 7 foot length | 413604 |
| | 40P253/ZZ and 40CAB302/AC | 4EJJ (A or F) | 7 foot length | 413604 |
| | 40P202/ZZ and 40CAB353/AC | 4STJ (A or F) | 7 foot length | 413604 |
| | 43 5-Level BSCs Friction | 4BE plus 4BKXF | { 7 foot length 12 foot length 25 foot length 50 foot length | 413600 |
| | | 413601 | | |
| | | 413602 | | |
| | | 413603 | | |
| 43 5-Level BSC s Tractor | 4BG plus 4BKXT | | | |
| 43 5-Level PTU | 4BP | 3 foot length | 430757 | |

†346745 Kit (Baud Card) also required.

*Do not include type carriers.

§ Optioned as an auxiliary terminal.

3.12 The length of cables 413604, 413605, 413606 and 430757 can be effectively increased by connecting to one of the cables 413600, 413601, 413602 or 413603. In station arrangements which require such a provision, the 413600 through 413603 cable should be connected to the 43 BSC teleprinter and the 413604 through 413606 or 413757 cable should be connected to the auxiliary device. Do not exceed 50 feet from the 43 BSC Teleprinter to the auxiliary device.

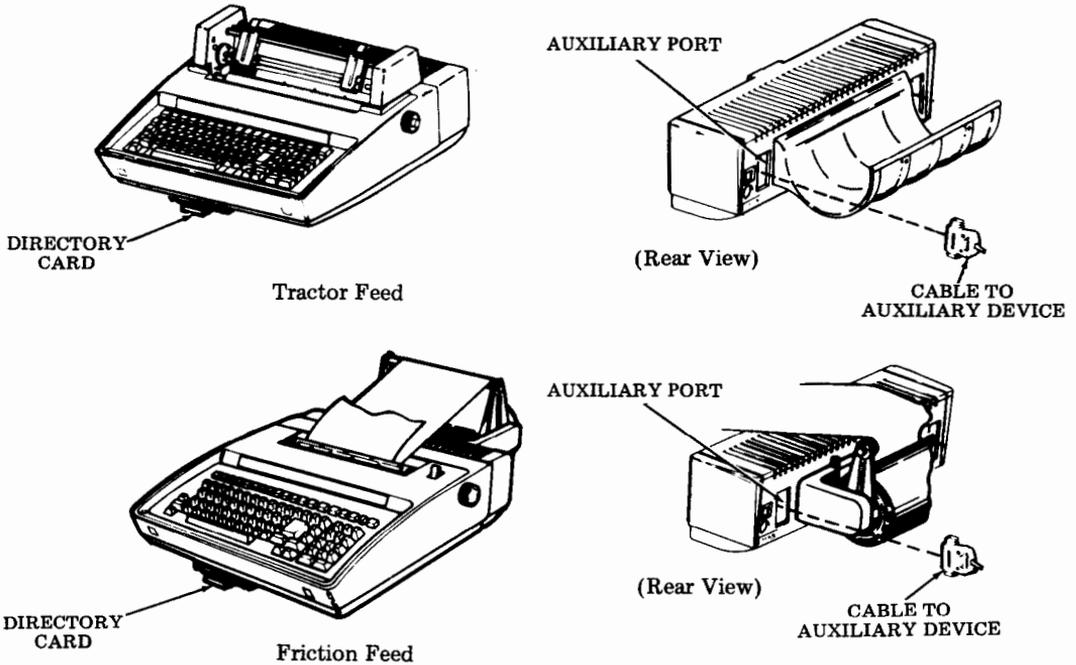
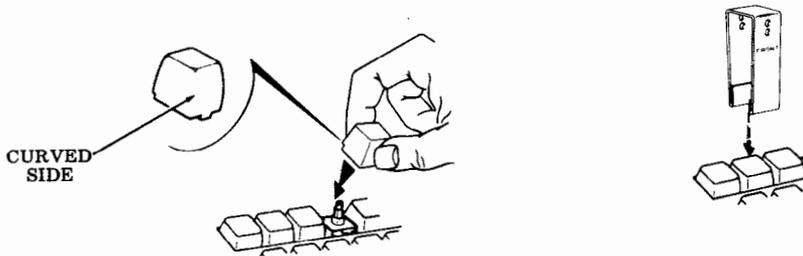


Fig. 4

3.13 If any 43 teleprinter is to be installed as an optional auxiliary device, it is necessary to block the AUX READ function on the primary teleprinter.

- (a) Place the 346260 keytop removal tool over the AUX READ keytop and pull up to remove.
- (b) Place control blocking keytop, provided with the terminal, over the keyswitch (curved side of blocking keytop towards front).
- (c) Push on the top of the blocking keytop until it snaps into place.



F. Accessories

3.19 The following tabletop 43 5-Level BSC accessories are available to the customer.

| <u>Accessory</u> | <u>Part No.</u> | <u>Specification No.</u> |
|------------------------------|-------------------------|--------------------------|
| Copyholder | 430310 Modification Kit | 50994S |
| Paper Winder (Friction Feed) | 430400 | 51035S |

The above parts may be installed following the instruction furnished with each accessory.

G. Checkout Procedure

3.20 Connect the data set, 43 BSC teleprinter and auxiliary device (if present) power cords to a properly polarized and grounded source of 115 Vac power (50 or 60 hertz). Normally the power cords should be connected to unswitched outlets to avoid loss of stored data. Fuse protection should be time delayed and provide for a running current of 0.8 amp for the teleprinter plus the running current of the data set and auxiliary device, if present.

3.21 Perform the teleprinter installation checkout procedures found in Section 574-500-504, 43 Teleprinter 5-Level Buffered Selective Calling, Testing.

3.22 Clean up the unpacking area. Wipe off any fingerprints or smudges on the teleprinter.

H. Initiate Service

3.23 Turn the 43 BSC teleprinter over to the subscriber.

3.24 Fill out the operator affecting options page in the How To Operate Manual.

If this information is not available, ask the station manager to fill out that page.

3.25 Inform the station manager that ordinarily the programmable options in the 43 BSC terminals are system dependent and after installation do not require any changes. However, if changes are anticipated the Bell Telephone Company service advisor will provide the necessary training.

3.26 Provide the customer with the How To Operate Manual 999-300-136 and the Optioning Manual 999-302-136. Advise the customer to order spare ribbons and paper as soon as possible (quantities depending on expected usage).

3.27 Advise the customer that the power to the 43 BSC should remain on for at least 10 hours. This will charge the controller battery used to retain the programmable options when power to the teleprinter is turned off.

3.28 Advise the customer of the "trouble number" location on the directory card.

3.29 Properly dispose of the shipping container according to local practices.

4. PROGRAMMABLE OPTIONS

4.01 The programmable options in this terminal are not programmable by the user unless Option 468.a. was requested. See Engineering Options, Section 574-500-210.

4.02 To change these options place controller switch pack SPA7-2 (switch 2) in the ON position (factory furnished ON). See Engineering Options, Section 574-200-210 for location of switch pack.

4.03 There are two ways to load programmable options into the terminal:

- (a) To receive the options on-line as a message and load the options.
- (b) To manually enter the value for the options and then load the options.

If the options are to be received as a message and loaded, go to A. Options Program Received On-Line.

If the options are to be manually programmed to go to B. Manual Programming of Options (From Keyboard).

Note: If power to the terminal has been off for several days (ie, during shipping, unopened on customer premise, etc.) leave power to the terminal on for at least 10 hours. This will fully charge the internal battery used to retain the programmable options for at least 17 days when power is turned off.

A. Options Program Received On-Line

4.04 Some options may have to be manually programmed in order for the terminal to be able to receive the options program on-line (ie, LinSpd (Line Speed), PAddr1 (Primary Address 1), AuxTrm (Auxiliary Terminal), etc). If this is the case, go to B. Manual Programming of Options (From Keyboard) to enable the necessary options, then return to this paragraph.

- Depress  key if not lit. Lamp lights. If lamp flashes, data set ready is not being provided by the data set or line interface unit to the terminal.
- Depress  key if not lit. Lamp lights.

When the options list is sent to the terminal it will print on the printer. The list is a series of

hexadecimal codes (numbers 0 through 9 and letters A through F).

Note: The entire list of options must be received not just the desired changes.

- After the list has printed, depress  key. Lamp lights and  goes out.
- Depress  key. Lamp lights and  goes out.
- Depress  key, several times if necessary until bell rings.
- Depress  key. Lamp lights.
- Type the first five characters of the option list as printed when received. Must include figures and letters shift. Example: First five characters are FCCA8. Enter letters, ( and  keys operated simultaneously) F, C, C, A, figures ( and  keys operated simultaneously) 8.
- Depress  key. Option list is now in the edit buffer.
- If desired depress  key. Options print out.
- Hold  key depressed and depress  (options load) key. The terminal is now optioned with all the programmable options.

Note: If the bell rings when attempting to load the options, make sure the  and the  keys are lit. If the bell still rings when attempting to load options, data to be printed is in the receive ( key lit) or auxiliary receive buffers. If the  lamp is lit, depress  key to print data in the receive buffer. Otherwise, depress  key if not lit and place the auxiliary device in the ready mode (see How to Operate Manual

associated with auxiliary device) to print or punch data in the auxiliary buffer. If an error message prints out, one or more of the hexadecimal values is incorrect.

Example, ERR:

ENTRY 18H

prints out. The 18 is a hexadecimal value that must be converted to a decimal value to determine which pair of entries is incorrect. Refer to Table B (Decimal To Hexadecimal Number Conversion). Find the number 18 in the hex column. It is equal to decimal value 24. Therefore, the 24th pair of entries in the options list is invalid. If the error is in the second pair of digits defining line speed or auxiliary speed, the error indication will be for the first pair. Also, if the sum of options Sum Length, Prime Receive Buffer Size and Auxiliary Receive Buffer Size exceeds 14430 the error indication will be for the Sum Length pair.

Place controller switch pack SPA7-2 (switch 2) in the OFF position unless Option 468.a. was

requested. Depress  key. Lamp lights.

Terminal is now optioned and functional on line.

B. Manual Programming of Options (From Keyboard)

4.05 To Manually program the options from the keyboard:

- Depress  key if not lit. Lamp lights.
- Depress  key. Lamp lights.
- Depress  key, several times if necessary until bell rings.
- Depress  key. Lamp lights and  goes out.
- Hold  key depressed and depress  key (options prep).

OPTIONS

IN Prints on printer and  lamp lights.
 EDIT
 BUFFER

- Depress  key. Option list (in hexadecimal values) initially prints out in a column of ten. This list corresponds to I. Option Map, Page 22.

To change the value of these options, refer to C. Alphabetical Listing of Options, Page 12. This listing will refer you to the appropriate section for calculating the hexadecimal value of the options that require changes. Once the values are calculated, the options list must be modified with these new values.

- To modify the options list, depress  key.
- Depress  key. Options start to print.

When the list approaches the value to be changed, depress the  key again and printing will stop.

- Position the print head marker over the value to be changed using the edit controls (ie ←, → etc) and type the new value. If an error is made in typing, just back space the print head using the  key and retype the new value. Once all

the new values have been entered into the option list, it is necessary to load the new option list.

- Hold  key depressed and depress  (options load) key. The terminal is now optioned with all the programmable options.

Note: If the bell rings when attempting to load

the options, make sure the  and the  keys are lit. If the bell still rings when attempting to load options, data to be printed is in the receive ( key lit) or auxiliary receive buffers. If the  lamp is lit, depress  key to print data in the receive buffer. Otherwise, depress  key if not lit and place the auxiliary device

in the ready mode (see How To Operate Manual associated with auxiliary device) to print or punch data in the auxiliary buffer. If an error message prints out, one or more of the hexadecimal values is incorrect.

Example, ERR:

ENTRY 18H

prints out. The 18 is a hexadecimal value that must be converted to a decimal value to determine which pair of entries is incorrect. Refer to Table B (Deci-

mal to Hexadecimal Number Conversion). Find the number 18 in the hex column. It is equal to decimal value 24. Therefore, the 24th pair of entries in the options list is invalid. If the error is in the second pair of digits defining line speed or auxiliary speed, the error indication will be for the first pair. Also, if the sum of options Sum Length, Prime Receive Buffer Size and Auxiliary Receive Buffer Size exceeds 14430 the error indication will be for the Sum Length pair.

Place controller switch pack SPA7-2 (switch 2) in the OFF position unless Option 468.a. was requested.

Depress  key. Lamp lights. Terminal is now optioned and functional on-line.

C. Alphabetical Listing of Options

4.06 Find the options that require value changes in the alphabetical listing of options below. Read the note associated with the options and proceed to the page referenced for the calculation of the value of the option to be entered in the option list.

| OPTION/MAP NAME/ORDER | NOTE | OPTION/MAP NAME/ORDER | NOTE | OPTION/MAP NAME/ORDER | NOTE |
|--------------------------|--------|--------------------------|--------|--------------------------|--------|
| AAddr1 | (64) 3 | Dbl_LF | (20) 2 | P3Rply | (6) 2 |
| AAddr2 | (66) 3 | DelErr | (18) 2 | P4Rply | (7) 2 |
| AAddr3 | (68) 3 | EditLw | (33) 4 | P_NRdy | (75) 3 |
| AAddr4 | (70) 3 | 1stSnt | (62) 3 | P*_Rdy | (71) 3 |
| ACBRdy | (74) 3 | FmOut1 | (42) 3 | RBfOff | (56) 3 |
| AChBfs | (12) 2 | FmOut2 | (43) 3 | RBf_On | (55) 3 |
| AENRdy | (82) 3 | FormLg | (37) 4 | ReRcv1 | (47) 3 |
| AE_Rdy | (80) 3 | IdleLn | (36) 5 | ReRcv2 | (48) 3 |
| ANNRdy | (78) 3 | LfBdry | (26) 4 | Resend | (41) 3 |
| A_NRdy | (76) 3 | LinSpd | (1) 1 | RRDsl__ | (54) 3 |
| Append | (44) 3 | LrgKey | (38) 3 | RRInt__ | (60) 3 |
| ARcvLw | (32) 4 | NTNRdy | (51) 3 | RRDsl__ | (53) 3 |
| ARcvSz | (30) 4 | NT_Rdy | (50) 3 | RSInt__ | (61) 3 |
| AudAlm | (21) 2 | PAddr1 | (63) 3 | RtBdry | (27) 4 |
| AuxSpd | (2) 1 | PAddr2 | (65) 3 | RTSDly | (35) 5 |
| AuxTrm | (14) 2 | PAddr3 | (67) 3 | SmlKey | (39) 3 |
| AxApnd | (15) 2 | PAddr4 | (69) 3 | SndBrk | (23) 2 |
| Ax42RT | (16) 2 | PCBRdy | (73) 3 | SSDsl__ | (52) 3 |
| A2Rply | (8) 2 | PChBfs | (11) 2 | SSInt__ | (59) 3 |
| A3Rply | (9) 2 | PENRdy | (81) 3 | Start1 | (57) 3 |
| A4Rply | (10) 2 | PE_Rdy | (79) 3 | Start2 | (58) 3 |
| A*_Rdy | (72) 3 | PNNRdy | (77) 3 | Store1 | (45) 3 |
| BIFigJ | (25) 2 | Poll__ | (49) 3 | Store2 | (46) 3 |
| BROSta | (13) 2 | Ptr_NL | (19) 2 | StSend | (40) 3 |
| Conten | (22) 2 | PRcvLw | (31) 4 | SumLgt | (28) 4 |
| CpyRes | (24) 2 | PRcvSz | (29) 4 | System | (4) 2 |
| CpySnt | (17) 2 | P2Rply | (5) 2 | Trans__ | (3) 1 |
| CTSDly | (34) 5 | | | | |

Note 1: Go to D. Options Requiring Specific Entries, Page 13.

Note 2: Go to E. Options Requiring y (yes) or n (no) Values, Page 14.

Note 3: Go to F. Options Requiring ASCII Character Values, Page 15.

Note 4: Go to G. Options Requiring Numeric (Decimal) Values, Page 18.

Note 5: Go to H. Timer Options, Page 19.

D. Options Requiring Specific Entries

4.07 These options require specific predetermined values. The options and allowable values are listed below. The values shown are hexadecimal values equivalent to the desired option description. Example, desired line speed is 1200 baud, 10 bit code, asynchronous transmission. The value for that option is the hexadecimal value 158D. A 158D is the value to be entered for line speed option. Refer to the option list printout to determine the current value of the option. Refer to I. Option Map, Page 22, to determine the location within the options list to make the entry.

| <u>OPTION NAME</u> | <u>MAP ORDER</u> | <u>CHOICES</u> | <u>ENTRIES REQUIRED</u> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|------------------|---|-------------------------|------|------|------|-----|-----|-------|------|-----|-----|----|------|-----|-----|-------|------|------|-----|----|------|------|-----|-----|------|------|-----|-----|------|------|-----|-----|------|-------|-----|-----|------|-------|------|------|------|-------|-----|------|------|-------|------|------|------|-------|-----|------------|------|--|
| LinSpd (Line Port Speed) | ① | <table border="1"> <thead> <tr> <th>CPS</th> <th>Unit</th> <th>baud</th> <th>Code</th> </tr> </thead> <tbody> <tr><td>6.0</td><td>7.5</td><td>45.55</td><td>5F8A</td></tr> <tr><td>6.6</td><td>7.5</td><td>50</td><td>FCCA</td></tr> <tr><td>7.6</td><td>7.5</td><td>56.85</td><td>DECA</td></tr> <tr><td>10.0</td><td>7.5</td><td>75</td><td>A8CA</td></tr> <tr><td>13.3</td><td>7.5</td><td>100</td><td>7ECA</td></tr> <tr><td>26.7</td><td>7.5</td><td>200</td><td>3FCA</td></tr> <tr><td>30.0</td><td>7.5</td><td>225</td><td>38CA</td></tr> <tr><td>120.0</td><td>7.0</td><td>840</td><td>0FC6</td></tr> <tr><td>120.0</td><td>10.0</td><td>1200</td><td>158D</td></tr> <tr><td>240.0</td><td>7.0</td><td>1680</td><td>0F86</td></tr> <tr><td>240.0</td><td>10.0</td><td>2400</td><td>154D</td></tr> <tr><td>isoch</td><td>7.0</td><td>up to 2400</td><td>150D</td></tr> </tbody> </table> | CPS | Unit | baud | Code | 6.0 | 7.5 | 45.55 | 5F8A | 6.6 | 7.5 | 50 | FCCA | 7.6 | 7.5 | 56.85 | DECA | 10.0 | 7.5 | 75 | A8CA | 13.3 | 7.5 | 100 | 7ECA | 26.7 | 7.5 | 200 | 3FCA | 30.0 | 7.5 | 225 | 38CA | 120.0 | 7.0 | 840 | 0FC6 | 120.0 | 10.0 | 1200 | 158D | 240.0 | 7.0 | 1680 | 0F86 | 240.0 | 10.0 | 2400 | 154D | isoch | 7.0 | up to 2400 | 150D | |
| CPS | Unit | baud | Code | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6.0 | 7.5 | 45.55 | 5F8A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6.6 | 7.5 | 50 | FCCA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7.6 | 7.5 | 56.85 | DECA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10.0 | 7.5 | 75 | A8CA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13.3 | 7.5 | 100 | 7ECA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 26.7 | 7.5 | 200 | 3FCA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30.0 | 7.5 | 225 | 38CA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 120.0 | 7.0 | 840 | 0FC6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 120.0 | 10.0 | 1200 | 158D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 240.0 | 7.0 | 1680 | 0F86 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 240.0 | 10.0 | 2400 | 154D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| isoch | 7.0 | up to 2400 | 150D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AuxSpd (Auxiliary Port Speed) | ② | NO DEVICE | 8080 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | All speeds for LinSpd are valid plus | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 30.0 10.0 300 (special framing for Model 42 R/T) | 2ACD | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | and for 8-level operation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 10.0 11.0 110 | E58C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 30.0 10.0 300 | 2AC4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 60.0 10.0 600 | 15C4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 120.0 10.0 1200 | 1584 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 109.1 11.0 1200 | 158C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 180.0 10.0 1800 | 07C4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 240.0 10.0 2400 | 1544 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Trans_(Asynchronous/ Isochronous Transmission) | ③ | Asynchronous Isochronous | 0C 08 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

SECTION 574-500-203

E. Options Requiring y (yes) or n (no) Values

4.08 The options listed below require y(yes) or n(no) values. Refer to the option list printout to determine the current values. If a different value is required enter a 79 for a yes or a 6E for a no. Refer to I. Option Map, Page 22, to determine the location within the options list to make the entry.

| <u>MAP ORDER</u> | <u>OPTION NAME</u> |
|----------------------|---|
| System (4) | (Half-Duplex) |
| P2Rply (5) | (Prime Address 2 Reply) |
| P3Rply (6) | (Prime Address 3 Reply) |
| P4Rply (7) | (Prime Address 4 Reply) |
| A2Rply (8) | (Aux Address 2 Reply) |
| A3Rply (9) | (Aux Address 3 Reply) |
| A4Rply (10) | (Aux Address 4 Reply) |
| PChBfs (11) | (Prime Receiver Remains Terminated Following Reply, Character In Buffer) |
| AChBfs (12) | (Aux Receiver Remains Terminated Following Reply, Character in Buffer) |
| BROSta (13) | (Buffered Receive Only Station) |
| AuxTrm (14) | (Auxiliary Terminal) |
| AxApnd (15) | (Characters Automatically Appended After Aux Write Message) |
| Ax42RT (16) | (Aux Model 42 Reperforator/Transmitter) |
| CpySnt (17) | (Copy Sent Data) |
| DelErr (18) | (Delete Errored Messages) |
| Ptr_NL (19) | (Printer New Line For Line Feed) |
| Dbl_LF (20) | (Double Line Feed) |
| AudAlm (21) | (Audible Alarm For Message Waiting) |
| Conten (22) | (Non-Centralized Contention Operation) |
| SndBrk (23) | (Send Break While Receiving And Buffer Becomes Low) |
| CpyRes (24) | (Copy Host Response In Send Interrupt State) |
| BlFigJ (25) | (Bell on Figs. J) |

F. Options Requiring ASCII Character Values

4.09 The options listed below require ASCII character values. All ASCII character values have to be converted and entered as hexadecimal digits. See Table A, Baudot to ASCII Hexadecimal Number Conversion. Example, if the option requires the character A, refer to Table A. An A is hexadecimal 41. A 41 would be entered for that option. Unused ASCII values must have the hexadecimal value 80. Options that allow for more than one ASCII character (2 hexadecimal digits) must have the desired values positioned in front of any unused positions. Example, value for LrgKey 0D 80 80. The desired value is 0D which precedes the unused positions of 80 80. Refer to the option list printout to determine the current value of the option. Refer to I. Option Map, Page 22, to determine the location within the options list to make the entry.

| <u>MAP ORDER</u> | <u>OPTION NAME</u> |
|----------------------|--|
| LrgKey (38) | (Large Key Character Sequence – Return) |
| SmlKey (39) | (Small Key Character – Line Feed) |
| StSend (40) | (Received Start Send Character Sequence) |
| Resend (41) | (Received Resend Character Sequence) |
| FmOut1 (42) | (Form Out Character Sequence #1) |
| FmOut2 (43) | (Form Out Character Sequence #2) |
| Append (44) | (First Character Sequence Appended For Storing) |
| Store1 (45) | (Message Store Ending Character Sequence # 1) |
| Store2 (46) | (Message Store Ending Character Sequence # 2) |
| ReRcv1 (47) | (Retrieve Receive Message Ending Character Sequence # 1) |
| ReRcv2 (48) | (Retrieve Receive Message Ending Character Sequence # 2) |
| Poll __ (49) | (Polling Sequence) |
| NT_Rdy (50) | (No Traffic to Send and Ready to Receive Reply Sequence) |
| NTNRdy (51) | (No Traffic to Send and Not Ready to Receive Reply Sequence) |
| SSDsl__ (52) | (Sent Sender Deselect Character Sequence) |
| RSDsl__ (53) | (Received Sender Deselect Character Sequence) |
| RRDsl_ (54) | (Received Receiver Deselect Character Sequence) |
| RBf_On (55) | (Primary or Aux Receive Buffer Turn-On Character Sequence) |
| RBfOff (56) | (Primary or Aux Receive Buffer Turn-Off Character Sequence) |
| Start1 (57) | (Received Start Sending or Receiving Character Sequence # 1) |
| Start2 (58) | (Received Start Sending or Receiving Character Sequence # 2) |
| SSInt_ (59) | (Sent Sender Interrupt Character Sequence) |
| RRInt_ (60) | (Received Receiver Interrupt Character Sequence) |
| RSInt_ (61) | (Received Sender Interrupt Character Sequence) |
| 1stSnt (62) | (Character Sequence Automatically Sent Before Text) |
| PAddr1 (63) | (Primary Receive Address Sequence # 1) |
| AAddr1 (64) | (Auxiliary Receive Address Sequence # 1) |
| PAddr1 (65) | (Primary Receive Address Sequence #2) |
| AAddr2 (66) | (Auxiliary Receive Address Sequence # 2) |

MAP
ORDER

OPTION NAME (Contd)

| | | |
|--------|------|--|
| PAddr3 | (67) | (Primary Receive Address Sequence #3) |
| AAddr3 | (68) | (Auxiliary Receive Address Sequence # 3) |
| PAddr4 | (69) | (Primary Receive Address Sequence # 4) |
| AAddr4 | (70) | (Auxiliary Receive Address Sequence # 4) |
| P*_Rdy | (71) | (Primary Receiver Ready No Errors Reply Sequence) |
| A*_Rdy | (72) | (Auxiliary Receiver Ready No Errors Reply Sequence) |
| PCBRdy | (73) | (Primary Receiver Ready, Character in Buffer Reply Sequence) |
| ACBRdy | (74) | (Auxiliary Receiver Ready, Character in Buffer Reply Sequence) |
| P_NRdy | (75) | (Primary Receiver Not Ready Reply Sequence) |
| A_NRdy | (76) | (Auxiliary Receiver Not Ready Reply Sequence) |
| PNNRdy | (77) | (Primary Received No Error, Not Ready Response) |
| ANNRdy | (78) | (Auxiliary Received No Error, Not Ready Response) |
| PE_Rdy | (79) | (Primary Received Error, Ready Response) |
| AE_Rdy | (80) | (Auxiliary Received Error, Ready Response) |
| PENRdy | (81) | (Primary Received Error, Not Ready Response) |
| AENRdy | (82) | (Auxiliary Received Error, Not Ready Response) |

TABLE A
BAUDOT TO ASCII HEXADEcimal NUMBER CONVERSION

| BAUDOT CHARACTER LTRS MODE | CONVERSION TO ASCII HEX | BAUDOT CHARACTER FIGS MODE | CONVERSION TO ASCII HEX |
|-------------------------------|----------------------------|-------------------------------|----------------------------|
| A | 41 | — | 2D |
| B | 42 | ? | 3F |
| C | 43 | : | 3A |
| D | 44 | \$ | 24 |
| E | 45 | 3 | 33 |
| F | 46 | ! | 21 |
| G | 47 | & | 26 |
| H | 48 | # | 23 |
| I | 49 | 8 | 38 |
| J | 4A | BELL ¶ | 07 ¶ |
| K | 4B | (| 28 |
| L | 4C |) | 29 |
| M | 4D | . | 2E |
| N | 4E | , | 2C |
| O | 4F | 9 | 39 |
| P | 50 | 0 | 30 |
| Q | 51 | 1 | 31 |
| R | 52 | 4 | 34 |
| S | 53 | ' ¶ | 27 ¶ |
| T | 54 | 5 | 35 |
| U | 55 | 7 | 37 |
| V | 56 | : | 3B |
| W | 57 | 2 | 32 |
| X | 58 | / | 2F |
| Y | 59 | 6 | 36 |
| Z | 5A | “ | 22 |
| LTRS | 0F | LTRS | 0F |
| FIGS | 0E | FIGS | 0E |
| SPACE | 20 | SPACE | 20 |
| CR | 0D | CR | 0D |
| LF | 0A | LF | 0A |
| BLANK | 00 | BLANK | 00 |

¶ Figs J and Figs S are reversed if BIFig J (25) = 'n'.

EXAMPLE: Desired RRDsl __ = Figs H LTRS H
Hex entry for RRDsl __ = 0E 23 0F 48

G. Options Requiring Numeric (Decimal) Values

4.10 The options listed below require numeric (decimal) values. All decimal values have to be converted and entered in the options list as hexadecimal digits. See Table B Decimal to Hexadecimal Number Conversion. Example, if the option requires the decimal number 132, refer to Table B. The decimal number 132 is hexadecimal 84. An 84 would be entered for that option. In numeric options the least significant number is located to the right. Thus, if an option allowed for more than one pair of hexadecimal digits and the value entered had only one pair of hexadecimal digits the value would be entered into the right pair. Example, the option has a current value of 00 00 Hex. The desired value is 84 Hex (132 decimal). Enter the value into the right pair of hex numbers. This would result in the option having the value 00 84. Refer to the option list printout to determine the current value of the option. Refer to I. Option Map, Page 22, to determine the location within the options list to make the entry.

| <u>MAP ORDER</u> | <u>OPTION NAME</u> |
|----------------------|---|
| LfBdry (26) | (Left Boundary Setting) — Must be less than RtBdry. |
| RtBdry (27) | (Right Boundary Setting) — Must be greater than LfBdry and equal to or less than the width of the paper being used (80 or 100). |
| ** SumLgt (28) | (String Buffer Length) |
| ** PRcvSz (29) | (Prime Receive Buffer Size) |
| ** ARcvSz (30) | (Auxiliary Receive Buffer Size) |
| PRcvLw (31) | (Prime Receive Buffer Low Setting) — Must be less than PRcvSz. |
| ARcvLw (32) | (Auxiliary Receive Buffer Low Setting) — Must be less than ARcvSz. |
| ** EditLw (33) | (Edit Buffer Low Setting) |
| FormLg (37) | (Form Length In Lines) — Must be equal to or less than 132 decimal. |

**The size of the edit buffer is approximately 15,000 characters (Total Buffer Available) minus the sum of PRcvSz, ARcvSz and SumLgt equals the size of the edit buffer. The edit buffer must be at least 554 positions. EditLw must be less than edit buffer size, PRcvLw must be less than PRcvSz, and ARcvLw must be less than ARcvSz.

H. Timer Options

4.11 The options listed below are timer options expressed in milliseconds using hexadecimal equivalent of the decimal value. An entry of all zeros disables the particular timer. The timer consists of 16 millisecond steps (ie, 16, 32, 48 etc). The timer can be equal to or less than the value set by up to 16 milliseconds depending on when the timer is activated. Thus, a timer set for 32 milliseconds can vary from 17 through 32 milliseconds. To insure a minimum of 32 milliseconds for a timer it is necessary to enter a value one increment (16 milliseconds) greater than the required value. Example, enter a value of 48 milliseconds. Now the timer can vary 33 through 48 milliseconds. Remember the timer is based on 16 milliseconds steps. Therefore, entering a value anywhere between 16 through 31 milliseconds makes no difference to the timer. It views that entry as one step (16 milliseconds). Once the time in milliseconds has been established, refer to Table B to convert from a decimal value (time in milliseconds) to the hexadecimal value to be entered in the option list. Refer to the option list printout to determine the current value of the option. Refer to I. Option Map, Page 22, to determine the location within the option list to make an entry.

| <u>MAP ORDER</u> | | <u>OPTION NAME</u> |
|----------------------|----|-----------------------------------|
| CTSDly | 34 | (Clear to Send Recognition Delay) |
| RTSDly | 35 | (Request to Send Turn-Off Delay) |
| IdleLn | 36 | (Idle Line Time Out and Deselect) |

Note: The time in milliseconds for the RESDly option must be the desired value plus the time for two characters at the optioned LinSpd.

Example: Desired value 300 milliseconds
 $\text{LinSpd} = 1200 \text{ Baud} = 8.3 \text{ ms/character}$
 $\text{Two Characters} = 8.3 \times 2 = 16.6 \text{ ms}$
 Value to be used = $300 + 16.6 = 317 \text{ ms}$ (Rounded up)

| <u>SPEED (Baud)</u> | <u>TIME PER ONE CHARACTER</u> |
|---------------------|-------------------------------|
| 45.55 | 166.6 ms |
| 50 | 151.5 ms |
| 56.85 | 131.6 ms |
| 75 | 100.0 ms |
| 100 | 75.2 ms |
| 200 | 37.6 ms |
| 225 | 33.3 ms |
| 840 | 8.3 ms |
| 1200 | 8.3 ms |
| 1680 | 4.2 ms |
| 2400 Async | 4.2 ms |

TABLE B
DECIMAL TO HEXADECIMAL NUMBER CONVERSION

| Dec- imal | Hex | Dec- imal | Hex | Dec- imal | Hex | Dec- imal | Hex |
|--------------|-----|--------------|-----|--------------|-----|--------------|-----|
| 00 | 00 | 32 | 20 | 64 | 40 | 96 | 60 |
| 01 | 01 | 33 | 21 | 65 | 41 | 97 | 61 |
| 02 | 02 | 34 | 22 | 66 | 42 | 98 | 62 |
| 03 | 03 | 35 | 23 | 67 | 43 | 99 | 63 |
| 04 | 04 | 36 | 24 | 68 | 44 | 100 | 64 |
| 05 | 05 | 37 | 25 | 69 | 45 | 101 | 65 |
| 06 | 06 | 38 | 26 | 70 | 46 | 102 | 66 |
| 07 | 07 | 39 | 27 | 71 | 47 | 103 | 67 |
| 08 | 08 | 40 | 28 | 72 | 48 | 104 | 68 |
| 09 | 09 | 41 | 29 | 73 | 49 | 105 | 69 |
| 10 | 0A | 42 | 2A | 74 | 4A | 106 | 6A |
| 11 | 0B | 43 | 2B | 75 | 4B | 107 | 6B |
| 12 | 0C | 44 | 2C | 76 | 4C | 108 | 6C |
| 13 | 0D | 45 | 2D | 77 | 4D | 109 | 6D |
| 14 | 0E | 46 | 2E | 78 | 4E | 110 | 6E |
| 15 | 0F | 47 | 2F | 79 | 4F | 111 | 6F |
| 16 | 10 | 48 | 30 | 80 | 50 | 112 | 70 |
| 17 | 11 | 49 | 31 | 81 | 51 | 113 | 71 |
| 18 | 12 | 50 | 32 | 82 | 52 | 114 | 72 |
| 19 | 13 | 51 | 33 | 83 | 53 | 115 | 73 |
| 20 | 14 | 52 | 34 | 84 | 54 | 116 | 74 |
| 21 | 15 | 53 | 35 | 85 | 55 | 117 | 75 |
| 22 | 16 | 54 | 36 | 86 | 56 | 118 | 76 |
| 23 | 17 | 55 | 37 | 87 | 57 | 119 | 77 |
| 24 | 18 | 56 | 38 | 88 | 58 | 120 | 78 |
| 25 | 19 | 57 | 39 | 89 | 59 | 121 | 79 |
| 26 | 1A | 58 | 3A | 90 | 5A | 122 | 7A |
| 27 | 1B | 59 | 3B | 91 | 5B | 123 | 7B |
| 28 | 1C | 60 | 3C | 92 | 5C | 124 | 7C |
| 29 | 1D | 61 | 3D | 93 | 5D | 125 | 7D |
| 30 | 1E | 62 | 3E | 94 | 5E | 126 | 7E |
| 31 | 1F | 63 | 3F | 95 | 5F | 127 | 7F |

| Dec- imal | Hex | Dec- imal | Hex | Dec- imal | Hex | Dec- imal | Hex |
|--------------|-----|--------------|-----|--------------|-----|--------------|-----|
| 128 | 80 | 160 | A0 | 192 | C0 | 224 | E0 |
| 129 | 81 | 161 | A1 | 193 | C1 | 225 | E1 |
| 130 | 82 | 162 | A2 | 194 | C2 | 226 | E2 |
| 131 | 83 | 163 | A3 | 195 | C3 | 227 | E3 |
| 132 | 84 | 164 | A4 | 196 | C4 | 228 | E4 |
| 133 | 85 | 165 | A5 | 197 | C5 | 229 | E5 |
| 134 | 86 | 166 | A6 | 198 | C6 | 230 | E6 |
| 135 | 87 | 167 | A7 | 199 | C7 | 231 | E7 |
| 136 | 88 | 168 | A8 | 200 | C8 | 232 | E8 |
| 137 | 89 | 169 | A9 | 201 | C9 | 233 | E9 |
| 138 | 8A | 170 | AA | 202 | CA | 234 | EA |
| 139 | 8B | 171 | AB | 203 | CB | 235 | EB |
| 140 | 8C | 172 | AC | 204 | CC | 236 | EC |
| 141 | 8D | 173 | AD | 205 | CD | 237 | ED |
| 142 | 8E | 174 | AE | 206 | CE | 238 | EE |
| 143 | 8F | 175 | AF | 207 | CF | 239 | EF |
| 144 | 90 | 176 | B0 | 208 | D0 | 240 | F0 |
| 145 | 91 | 177 | B1 | 209 | D1 | 241 | F1 |
| 146 | 92 | 178 | B2 | 210 | D2 | 242 | F2 |
| 147 | 93 | 179 | B3 | 211 | D3 | 243 | F3 |
| 148 | 94 | 180 | B4 | 212 | D4 | 244 | F4 |
| 149 | 95 | 181 | B5 | 213 | D5 | 245 | F5 |
| 150 | 96 | 182 | B6 | 214 | D6 | 246 | F6 |
| 151 | 97 | 183 | B7 | 215 | D7 | 247 | F7 |
| 152 | 98 | 184 | B8 | 216 | D8 | 248 | F8 |
| 153 | 99 | 185 | B9 | 217 | D9 | 249 | F9 |
| 154 | 9A | 186 | BA | 218 | DA | 250 | FA |
| 155 | 9B | 187 | BB | 219 | DB | 251 | FB |
| 156 | 9C | 188 | BC | 220 | DC | 252 | FC |
| 157 | 9D | 189 | BD | 221 | DD | 253 | FD |
| 158 | 9E | 190 | BE | 222 | DE | 254 | FE |
| 159 | 9F | 191 | BF | 223 | DF | 255 | FF |

Note: For a decimal number equal to or greater than 256, divide the number by 256. The quotient becomes the first decimal number requiring conversion to hex and the remainder becomes the second number requiring conversion to hex. Example, value to be entered is 500 (decimal). $500 \div 256 = 1$ (quotient) with a remainder of 244. Look up number 1 on this table and convert to hex 01. This hex number becomes the first pair in the hex entry value. Look up number 244 on this table and convert to hex F4. This hex number becomes the second pair in the hex entry value. Thus a decimal number 500 is equal to hex value 01 F4.

I. Option Map

When printed out in columns of 10 these are line numbers.

| | | | | | | | | | | |
|----|--------------------------------|---|----------------------------|---|--------------------------------|---|----------------------------|---|-----------------------------|---|
| 1 | LinSpd 50 Baud (1) | | | | AuxSpd (Nothing) (2) | | | | Trans_ Async (3) | |
| | F | C | C | A | 8 | 0 | 8 | 0 | 0 | C |
| 2 | System (4) Yes | | P2Rply (5) No | | P3Rply (6) No | | P4Rply (7) No | | A2Rply (8) No | |
| | 7 | 9 | 6 | E | 6 | E | 6 | E | 6 | E |
| 3 | A3Rply (9) No | | A4Rply (10) No | | PChBfs (11) No | | AChBfs (12) No | | BROSta (13) No | |
| | 6 | E | 6 | E | 6 | E | 6 | E | 6 | E |
| 4 | AuxTrm (14) No | | AxApnd (15) No | | Ax42RT (16) No | | CpySnt (17) No | | DelErr (18) No | |
| | 6 | E | 6 | E | 6 | E | 6 | E | 6 | E |
| 5 | Ptr_NL (19) No | | Dbl_LF (20) No | | AudAlm (21) No | | Conten (22) No | | SndBrk (23) No | |
| | 6 | E | 6 | E | 6 | E | 6 | E | 6 | E |
| 6 | CpyRes (24) No | | BlFigJ (25) Yes | | LfBdry (26) Column 0 | | RtBdry (27) Column 10 | | SumLgt (28) 16 Positions | |
| | 6 | E | 7 | 9 | 0 | 0 | 0 | A | 1 | 0 |
| 7 | PRcvSz (29) 1024 Positions | | | | ARcvSz (30) 0 Positions | | | | PRcvLw 0 Positions | |
| | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 8 | PRcvLw (31) 0 Positions | | ARcvLw (32) 0 Positions | | | | EditLw (33) 0 Positions | | | |
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | CTSDly (34) 16 Milliseconds | | | | RTSDly (35) 0 Seconds | | | | IdleLn 1 Second | |
| | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 10 | IdleLn (36) 1 Second | | FormLg (37) 0 Lines | | LrgKey (38) Carriage Return | | | | | |
| | 0 | 0 | 0 | 0 | 0 | D | 8 | 0 | 8 | 0 |

Yes 94
21
12/12/94

RIGIT
BUMPY

Legend

| | |
|---------------|---------------------------------|
| Option Name | |
| Default Value | (Factory Furnished Value) |
| Default Entry | |

MAP ORDER NUMBER

When printed out in columns of 10 these are line numbers.

| | | | | | | | | | | | |
|----|---------------------|------|---------------------|----------------------|---------------------|------|---------------------|---------------------|---------------------|------|------|
| 11 | SmlKey Line Feed | (39) | StSend (Nothing) | | | | | | | (40) | |
| | 0 | A | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | |
| 12 | Resend (Nothing) | | | | | | | | | (41) | |
| | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | |
| 13 | FmOut1 (Nothing) | | | | | | (42) | FmOut2 (Nothing) | | | |
| | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | |
| 14 | FmOut2 (Nothing) | | | | | (43) | Append (Nothing) | | | | |
| | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | |
| 15 | Append (Nothing) | | | | | | | | | | |
| | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | |
| 16 | Append (Nothing) | | (44) | Store1 (Nothing) | | | | | | (45) | |
| | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | |
| 17 | Store2 (Nothing) | | | | | | | (46) | ReRcv1 (Nothing) | | |
| | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | |
| 18 | ReRcv1 (Nothing) | | | | | (47) | ReRcv2 (Nothing) | | | | |
| | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | |
| 19 | ReRcv2 (Nothing) | | | (48) | Poll__ (Nothing) | | (49) | Poll__ (Nothing) | | | |
| | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | |
| 20 | Poll__ (Nothing) | | (49) | NT__Rdy (Nothing) | | | (50) | NTNRdy (Nothing) | | | (51) |
| | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | |

Legend

| | |
|---------------|---------------------------------|
| Option Name | |
| Default Value | (Factory Furnished Value) |
| Default Entry | |

MAP ORDER NUMBER

When printed out in columns of 10 these are line numbers.

| | | | | | | | | | | |
|----|-------------------------------------|---|-------------------------------------|---|---------------------|---|---------------------|---|---------------------|---|
| 21 | SSDsl_ (Nothing) ⁽⁵²⁾ | | | | | | | | RSDsl_ (Nothing) | |
| | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 |
| 22 | RSDsl_ (Nothing) ⁽⁵³⁾ | | | | | | RRDsl_ (Nothing) | | | |
| | 8 | 0 | 8 | 0 | 8 | 0 | B | B | 8 | 0 |
| 23 | RRDsl_ (Nothing) ⁽⁵⁴⁾ | | | | RBf_On (Nothing) | | | | | |
| | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 |
| 24 | RBf_On ⁽⁵⁵⁾ (Nothing) | | RBfOff ⁽⁵⁶⁾ (Nothing) | | | | | | | |
| | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 |
| 25 | Start1 ⁽⁵⁷⁾ (Nothing) | | | | | | | | Start2 (Nothing) | |
| | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 |
| 26 | Start2 ⁽⁵⁸⁾ (Nothing) | | | | | | SSInt_ (Nothing) | | | |
| | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 |
| 27 | SSInt_ (Nothing) ⁽⁵⁹⁾ | | | | RRInt_ (Nothing) | | | | | |
| | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 |
| 28 | RRInt_ (Nothing) ⁽⁶⁰⁾ | | RSInt_ (Nothing) ⁽⁶¹⁾ | | | | | | | |
| | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 |
| 29 | 1stSnt (Nothing) | | | | | | | | | |
| | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 |
| 30 | 1stSnt | | | | | | | | | |
| | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 |

Legend

| | | |
|---------------|---------------------------------|---|
| Option Name | |  |
| Default Value | (Factory Furnished Value) | |
| Default Entry | | |

MAP ORDER NUMBER

When printed out in columns of 10 these are line numbers.

| | | | | | | | | | | |
|----|--------------------------|---|--------------------------|--------------------------|------------------|--------------------------|---|------------------|---|---|
| 31 | 1stSnt (62) | | | | PAddr1 (Nothing) | | | | | |
| | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 |
| 32 | PAddr1 (63) (Nothing) | | AAddr1 (64) (Nothing) | | | | | | | |
| | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 |
| 33 | PAddr2 (65) (Nothing) | | | | | | | AAddr2 (Nothing) | | |
| | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 |
| 34 | AAddr2 (66) (Nothing) | | | | | PAddr3 (Nothing) | | | | |
| | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 |
| 35 | PAddr3 (67) (Nothing) | | | AAddr3 (Nothing) | | | | | | |
| | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 |
| 36 | AAddr3 (68) (Nothing) | | PAddr4 (69) (Nothing) | | | | | | | |
| | 8 | 0 | A | A | 8 | 0 | 8 | 0 | 8 | 0 |
| 37 | AAddr4 (70) (Nothing) | | | | | | | P*_Rdy (Nothing) | | |
| | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 |
| 38 | P*_Rdy (71) (Nothing) | | A*_Rdy (72) (Nothing) | | | PCBRdy (73) (Nothing) | | | | |
| | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 |
| 39 | ACBRdy (74) (Nothing) | | | P_NRdy (75) (Nothing) | | | | A_NRdy (Nothing) | | |
| | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 |
| 40 | A_NRdy (76) (Nothing) | | PNNRdy (77) (Nothing) | | | ANNRdy (78) (Nothing) | | | | |
| | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 | 8 | 0 |

Legend

| | |
|---------------|---|
| Option Name |  |
| Default Value | (Factory Furnished Value) |
| Default Entry | |

MAP ORDER NUMBER

5. STATION REMOVAL

5.01 Reverse the procedures in 3. INSTALLATION PROCEDURE to remove the teleprinter from service.

5.02 Before repacking the teleprinter, move the print head to the center of the printer and insert the packing detail and new ribbon removed in 3.05.

5.03 Tape the units as shown in Fig. 5.

5.04 Using the proper containers and packing detail, pack the 43 teleprinter as shown in Fig. 5.

5.05 Close and seal the carton flaps with three strips of tape, apply one strip to each of the seam ends and one strip the length of the carton.

5.06 Mark the outside of the carton with the teleprinter description (ie, 43 Teleprinter 5-Level Buffered Selective Calling (BSC) Station).

5.07 If the station qualifies as a "Working Station" candidate, mark the return material ticket in the appropriate block.

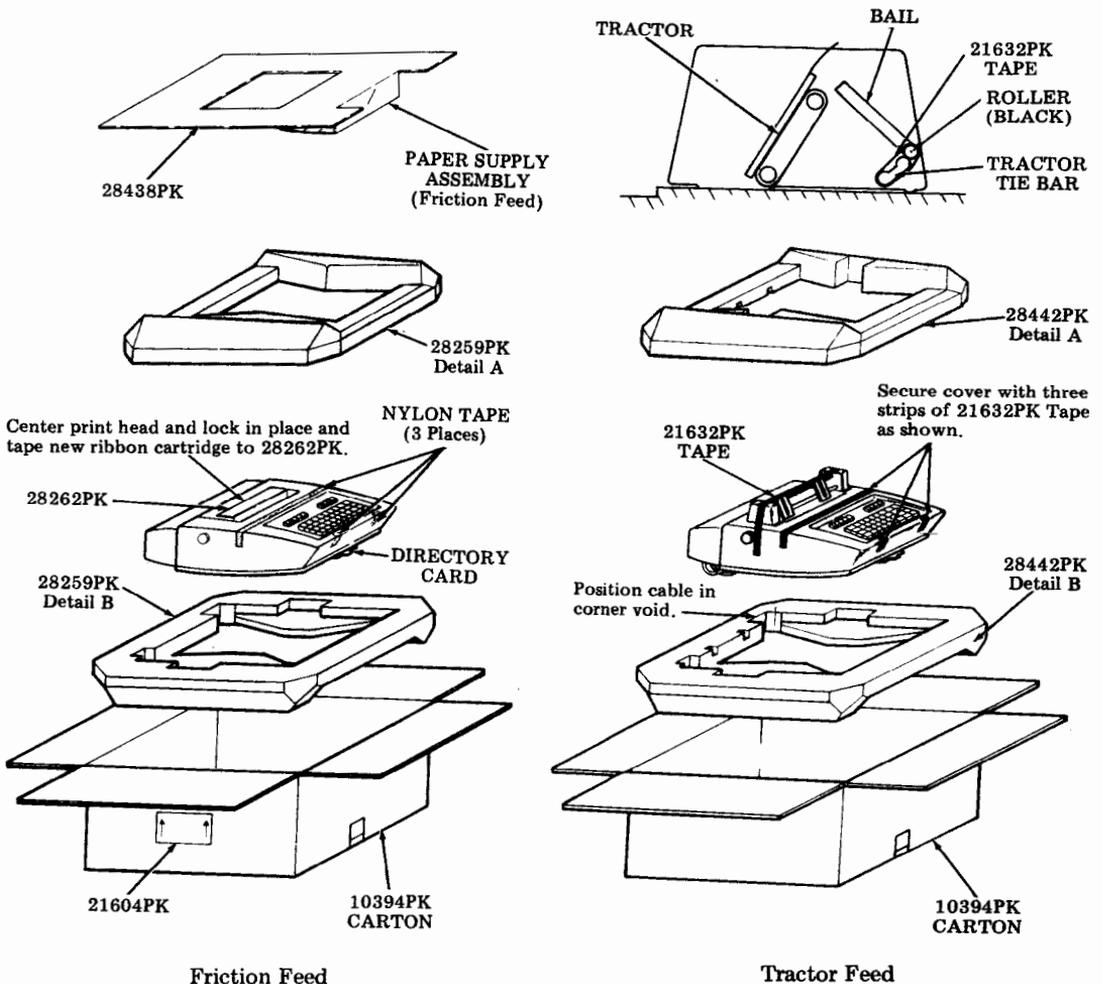
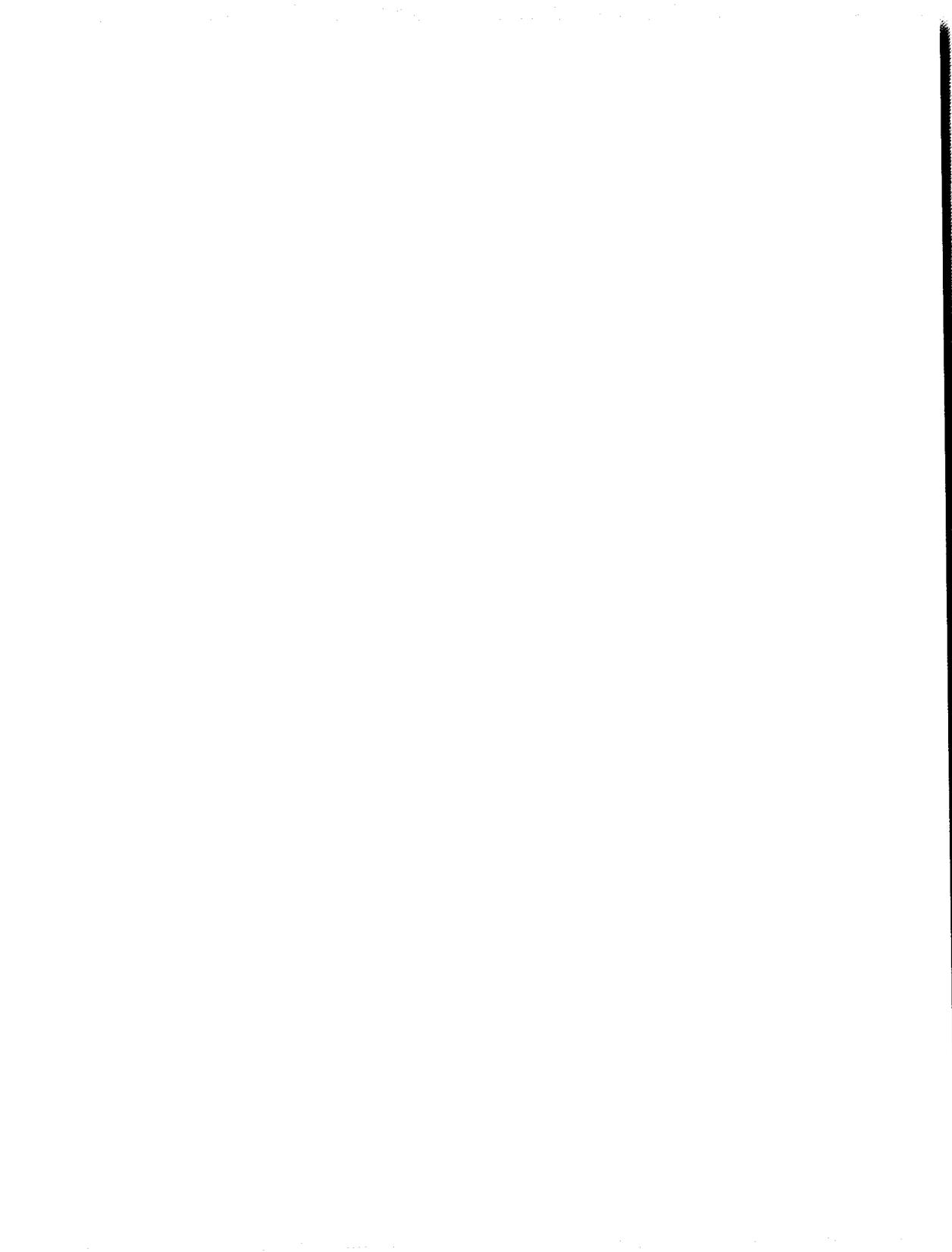


Fig. 5



43 TELEPRINTER
ENGINEERING OPTIONS

| CONTENTS | PAGE | CONTENTS | PAGE |
|--|------|---|------|
| 1. GENERAL | 1 | G Options Checkout Procedures (8-Level Buffered Selective Calling) | 29 |
| 2. TOOLS REQUIRED | 3 | H Options Checkout Procedures (5-Level Buffered Selective Calling) | 31 |
| 3. ACTIVATING OPTIONS | 3 | 10. MODIFIED 403378 INTERFACE LOOPBACK CONNECTOR | 32 |
| 4. ENGINEERING OPTIONS BASIC KSR. | 5 | 1. GENERAL | |
| 5. ENGINEERING OPTIONS BASIC RO. | 7 | 1.01 This section provides information on engi- neering options for the 43 basic KSR and RO teleprinter and for the 43 5- and 8-level buf- fered teleprinter. | |
| 6. ENGINEERING OPTIONS ANSWER-BACK | 10 | 1.02 This section is reissued to include the selective calling unit modification kit circuit card and 43 5- and 8-level buffered tele- printer engineering options. | |
| 7. ENGINEERING OPTIONS SELECTIVE CALLING UNIT | 13 | 1.03 The engineering options can be made to satisfy engineering requirements using switches or in some cases, straps located on the circuit cards of the 43 teleprinter. | |
| 8. ENGINEERING OPTIONS BUFFERED TELEPRINTERS | 17 | 1.04 The options are numbered for field identi- fication and record keeping purposes. | |
| 9. OPTION CHECKOUT | 19 | 1.05 The keyboard circuitry can be damaged by static discharge. The 346392 static discharge ground strap is available for use by service personnel. | |
| TABLES | | 1.06 When ordering replaceable components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410055). | |
| A Loopback Mode Procedures (Basic KSR and RO) | 19 | | |
| B On-Line Mode Procedures (Basic KSR and RO) | 20 | | |
| C Options Checkout Procedures (Basic KSR and RO) | 21 | | |
| D Options Checkout Procedures (Answer-Back Associated With Basic KSR and RO) | 24 | | |
| E Options Checkout Procedures (SCU Mod Kit Associated With Basic RO) | 28 | | |
| F Options Checkout Procedures (8-Level Buffered Send/Receive) .. | 29 | | |

1.07 For additional servicing information, refer to sections listed below:

- 574-500-300 43 Basic KSR Teleprinter, Troubleshooting
- 574-500-301 43 Basic RO Teleprinter, Troubleshooting
- 574-500-302 43 Teleprinter 8-Level Buffered Send/Receive (BSR) Station, Troubleshooting
- 574-500-303 43 Teleprinter 8-Level Buffered Selective Calling (BSC) Station, Troubleshooting
- 574-500-304 43 Teleprinter 5-Level Buffered Selective Calling (BSC) Station, Troubleshooting

Specification 50944S — 430900 Answer-Back Modification Kit

Specification 50962S — 430910 Selective Calling Modification Kit

1.08 The option switches are factory optioned and should not be changed unless the local engineering requirements specify incorporating a nonstandard option (Fig. 1).

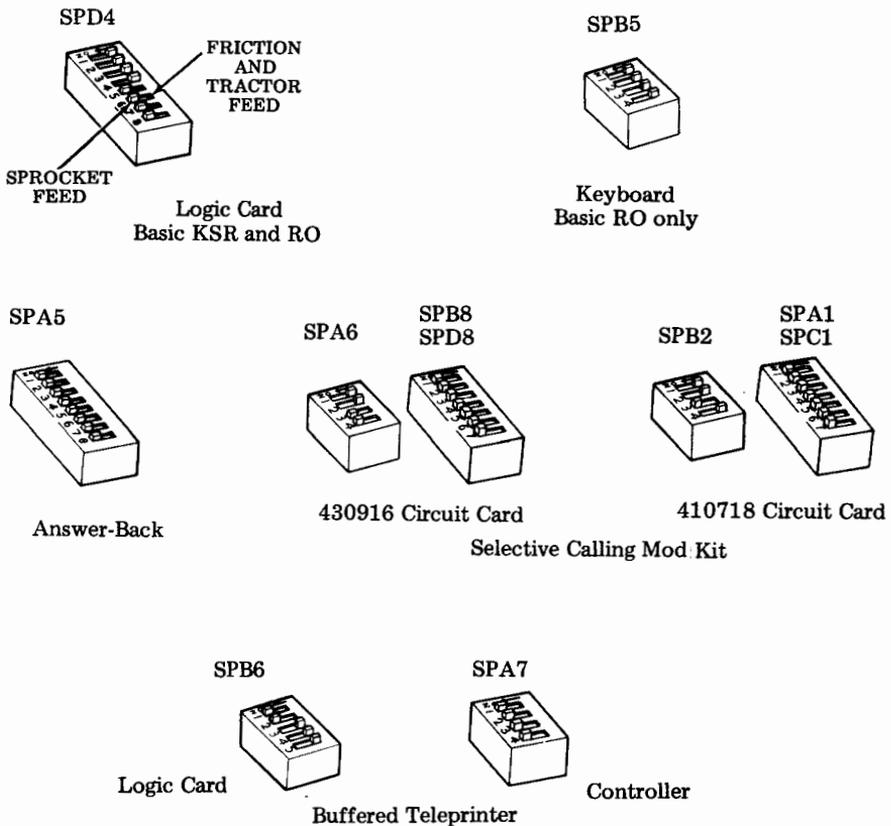


Fig. 1—Standard Switch Positions

1.09 The procedures in Table C through Table H verify proper operation of engineering options only. The features as furnished from the factory are checked in Sections 574-500-500 through 574-500-504, teleprinter testing. The procedures in Table C through Table H may be checked either on-line or off-line as indicated.

1.10 For basic KSR and RO teleprinters without access to the switched network, off-line test procedures are provided to simulate on-line tests where external communication test devices or test centers are not available. For basic RO teleprinters with the selective calling unit modification kit, access to a data set center or a test device capable of transmitting call directing codes and monitoring the answerbacks, is required.

1.11 Off-line checkout of Options 433 through 444 will require placing the teleprinter into the loopback mode. See Table A. To perform these tests, the connector terminals, as shown below, should be strapped before proceeding with the tests. The remaining terminals should be connected or measured as specified during the tests steps.

Note: Contact Teletype Corporation Custom System Division for availability of a 43 Teleprinter Interface Test Box, CP10.002.001-1 which provides both arrangements shown as follows:

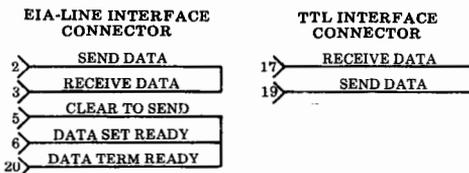


Fig. 2

1.12 A 43 KSR keyboard, 43K101/CAA or CAB can be substituted in RO teleprinters to perform option checks off-line when external communication test devices are not available for on-line operation.

1.13 A volt-ohmmeter or equivalent means to measure ± 12 volts and +5 volts is required to perform continuity checks.

1.14 For buffered teleprinters, access to the switched network or to a data test center is not required. Checkout of engineering options is done off-line or through a data set in analog loopback mode or through a 403378 interface loopback connector. See Page 32 for configuration of loopback connector.

1.15 Before an on-line checkout of options (teleprinters with access to the switched network) can be performed, the test center must be provided details about the teleprinter under test, such as telephone number, type of terminal (KSR, RO, buffered, friction feed, tractor feed etc.) options present, speed etc. After the test is completed, contact the test center and verify test results.

2. TOOLS REQUIRED

2.01 The following tools will be required to enable the engineering options. These items should normally be present in standard maintenance tool kits.

| | | |
|------------------------|----------------|--------|
| Wrench, open end | 3/16" and 1/4" | 129534 |
| Screwdriver | 1/4", 6" blade | 100982 |
| Static Discharge Strap | | 346392 |

3. ACTIVATING OPTIONS

3.01 Refer to the appropriate paragraph 4. through 8. for the engineering options pertaining to the various teleprinters.

3.02 Paragraphs 4. through 8. list the engineering options and provide the method to activate these options.

3.03 After enabling the engineering options, remove the directory card (see Fig. 3) and fill in the appropriate option information. See Fig. 4 through 7 for examples of the various directory cards. To remove the directory card, pull it out as far as it will go, then by holding card at edges, move it slightly to one side and pivot to clear the opposite latch. After filling in the options information replace the directory card "Frequently Called Numbers" side up.

3.04 Proceed to paragraph 9. OPTION CHECKOUT to verify proper operation of the non-standard option(s) installed.

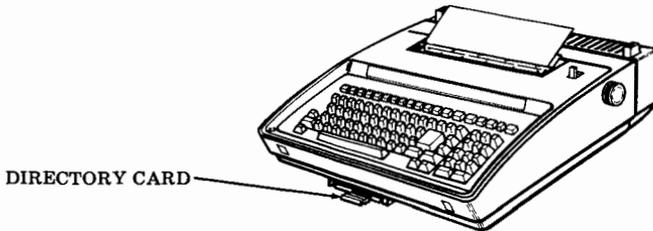


Fig. 3—Directory Card Location

| | | | |
|--|--|--|---|
| STANDARD SWITCH POSITION SPD4 20 ← N W A D R T ← | | INSTALLATION DATE <u>11-4-76</u> INITIALS <u>A.P.S.</u> <input checked="" type="checkbox"/> CHECK NON STANDARD OPTIONS ENABLED OPTION NO. 435 <input checked="" type="checkbox"/> 434 <u>Send bit B Mark</u> <input checked="" type="checkbox"/> 432 <u>80 Character line length</u> <input checked="" type="checkbox"/> <u>436-Speed 10</u> | NON-STANDARD OPTIONS INSTALLED (NUMBER & DESCRIPTION) <u>#434 b. Send Bit B Mark</u> <u>#432 c. Line Length 80</u> _____ _____ _____ _____ |
|--|--|--|---|

Early Design

Fig. 4—Basic KSR and RO Directory Card

Late Design

RECORD OF TELEPRINTER OPTIONS

Font 431 or b or c or d

L Length 432 or b or c or d

EOT Res 433 or b

Parity Sent 434 or b

EOL on Rec 435 or b

Speed 436 or b

Sub on OP 437 or b

RECORD OF SCU OPTIONS

| | | |
|--|---|---|
| (1) CDC 445 <input checked="" type="checkbox"/> or b | 1ST <input checked="" type="checkbox"/> | 2ND <input checked="" type="checkbox"/> |
| (G) CDC 446 <input checked="" type="checkbox"/> or b | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| (B) CDC 447 <input type="checkbox"/> or b | <input type="checkbox"/> | <input type="checkbox"/> |
| (1) AB 448 <input checked="" type="checkbox"/> or b | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

AB to (GP) CDC 449 or b

AB to (BC) CDC 450 or b

Speed 451 or b

STATE OF OPTION FURNISHED UNLESS OTHERWISE CHECKED OR WRITTEN IN

Fig. 5—Basic RO with Selective Calling Unit Mod Kit Directory Card

RECORD OF OPTIONS NOT PROGRAMMABLE BY USER

| | | | |
|-----------------------------------|--|---|--|
| SEND RECEIVE LOCAL LOCAL | TYPE FONT SWITCHES 3, 4 & 5 MUST REMAIN OFF SWITCHES SHOWN AS FACTORY FURNISHED | MEMORY SIZE: 4K <input type="checkbox"/> 16K <input checked="" type="checkbox"/> 32K <input type="checkbox"/> | TYPE FONT: 00 <input type="checkbox"/> 01 <input type="checkbox"/> 02 <input type="checkbox"/> 03 <input type="checkbox"/> 04 <input type="checkbox"/> 05 <input type="checkbox"/> 06 <input type="checkbox"/> 07 <input type="checkbox"/> 08 <input type="checkbox"/> 09 <input type="checkbox"/> 10 <input type="checkbox"/> 11 <input type="checkbox"/> 12 <input type="checkbox"/> 13 <input type="checkbox"/> 14 <input type="checkbox"/> 15 <input type="checkbox"/> |
|-----------------------------------|--|---|--|

Fig. 6—Buffered 8-Level Send/Receive Teletypewriter Directory Card

NON-STANDARD OPTIONS INSTALLED (NUMBER & DESCRIPTION)

468 b. Disable Entry to Terminal Local.

Fig. 7—Buffered 5-Level and 8-Level Selective Calling Teletypewriter Directory Card

4. ENGINEERING OPTIONS BASIC KSR

| Option No. | Option Suffix and Conditions | Option Definition | Switch Numbers | | | | | | | | Location of Switch on Circuit Card (See Page 6). |
|------------|------------------------------|-------------------|----------------|---|---|---|---|---|---|---|--|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| XXX | | | SPD4 | | | | | | | | |
| a. | | | - | - | - | - | ○ | ● | - | - | * |
| b. | | | - | - | - | - | ○ | ● | - | - | |

Logic Card

| 431. Type Font Arrangement | SPD4 | | | | | | | | |
|--|------|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| a. Narrow numeric 0 and wide alpha O Standard ^ and underline _ | - | - | - | - | - | - | ● | ● | * |
| b. Slash numeric # and wide alpha O ^ prints as ↑ and _ prints as ← | - | - | - | - | - | - | ● | ○ | |
| c. Slash alpha Ø and wide numeric O ^ prints as ↑ and _ prints as ← | - | - | - | - | - | - | ○ | ○ | |
| d. Slash alpha Ø and wide numeric O Standard ^ and underline _ | - | - | - | - | - | - | ○ | ● | |

| 432. Line Length and Bell | SPD4 | | | | | | | | |
|---|------|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| a. 132 Characters Bell Enabled (Pin Feed Only) | - | - | - | - | ● | ● | - | - | † |
| b. 72 Characters - Printed line not centered - Bell Enabled. | - | - | - | - | ○ | ● | - | - | |
| c. 80 Characters - Bell Enabled. ‡ | - | - | - | - | ● | ○ | - | - | ‡ |
| d. 72 Characters - Printed line centered - Bell Enabled (Friction Feed Only) § | - | - | - | - | ○ | ● | - | - | |
| e. 132 Characters - Bell Inhibited. (Pin Feed Only) ¶ | - | - | - | - | ○ | ○ | - | - | |

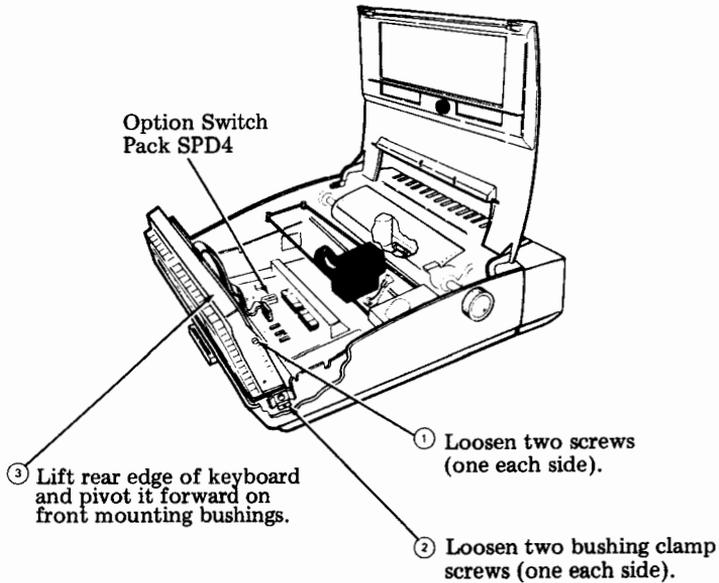
| 433. EOT Response | SPD4 | | | | | | | | |
|---|------|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| a. Disconnect or turn off Term Ready on received EOT. | - | - | - | ○ | - | - | - | - | * |
| b. Does not disconnect or turn off Term Ready on received EOT. | - | - | - | ● | - | - | - | - | |

| 434. Character Parity Bit Sent. | SPD4 | | | | | | | | |
|---------------------------------|------|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| a. Even Parity | - | - | ○ | - | - | - | - | - | * |
| b. 8th Bit Mark | - | - | ● | - | - | - | - | - | |

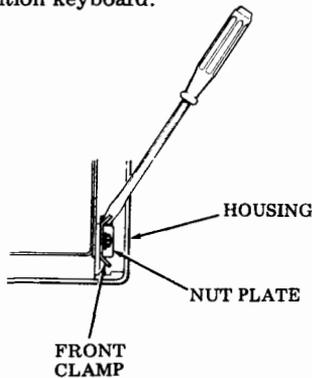
| 435. End-of-Line on Receive | SPD4 | | | | | | | | |
|---|------|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| a. Auto CR-LF performed. | ○ | - | - | - | - | - | - | - | * |
| b. Bell & Print Inhibit at last char. position. | ● | - | - | - | - | - | - | - | |

- Indicates toggle or slide position to ON.
- Indicates toggle or slide position to OFF.
- Position of switch does not affect option.
- * Factory furnished state of option (all versions).
- † Factory furnished state of option (pin feed only).
- ‡ On friction and tractor feed terminals, 432c (80 Characters) is factory furnished. 432a or 432e (132 Characters) should not be selected.
- § LEFT-HAND MARGIN adjustment must be checked on friction feed sets.
- ¶ Inhibits margin bell and the E.O.L. bell that rings on AUTO CR-LF (Option 435a). Option 432e is overridden if right margin is set using ESC_r sequence. The signal bell (CTRL G) operates normally.

4.01 To enable engineering options for the basic KSR:



④ Reverse steps to reposition keyboard.



Note: When repositioning keyboard, insert a screwdriver into the square hole in the nut plate and gently twist (or pry) the screwdriver with enough force to draw the assembly forward.

Caution: Do not over twist the screwdriver.

⑤ Tighten the clamp screws.

5. ENGINEERING OPTIONS BASIC RO

| Option No. | Option Suffix and Conditions | Option Definition | Switch Numbers Location of Switch on Circuit Card (See Page 9). | | | | | | | |
|------------|---------------------------------|-------------------|--|---|---|---|---|---|---|---|
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| XXX | | | SPD4 | | | | | | | |
| a. | | | - | - | - | - | ○ | ● | - | - |
| b. | | | - | - | - | - | ○ | ● | - | - |

Logic Card

| | | | | | | | | | |
|---|------|---|---|---|---|---|---|---|---|
| 431. Type Font Arrangement | SPD4 | | | | | | | | |
| a. Narrow numeric 0 and wide alpha O Standard ^ and underline _ | - | - | - | - | - | - | ● | ● | * |
| b. Slash numeric / and wide alpha O ^ prints as ↑ and _ prints as ← | - | - | - | - | - | - | ● | ○ | |
| c. Slash alpha Ø and wide numeric O ^ prints as ↑ and _ prints as ← | - | - | - | - | - | - | ○ | ○ | |
| d. Slash alpha Ø and wide numeric O Standard ^ and underline _ | - | - | - | - | - | - | ○ | ● | |
| 432. Line Length and Bell | SPD4 | | | | | | | | |
| a. 132 Characters Bell Enabled (Pin Feed Only) | - | - | - | - | ● | ● | - | - | † |
| b. 72 Characters — Printed line not centered — Bell Enabled. | - | - | - | - | ○ | ● | - | - | |
| c. 80 Characters — Bell Enabled. § | - | - | - | - | ● | ○ | - | - | ‡ |
| d. 72 Characters — Printed line centered — Bell Enabled (Friction Feed Only) § | - | - | - | - | ○ | ● | - | - | |
| e. 132 Characters — Bell Inhibited. (Pin Feed Only) ¶ | - | - | - | - | ○ | ○ | - | - | |
| 433. EOT Response | SPD4 | | | | | | | | |
| a. Disconnect or turn off Term Ready on received EOT. | - | - | - | ○ | - | - | - | - | * |
| b. Does not disconnect or turn off Term Ready on received EOT. | - | - | - | ● | - | - | - | - | |
| 434. Character Parity Bit Sent. ** | SPD4 | | | | | | | | |
| a. Even Parity | - | - | ○ | - | - | - | - | - | * |
| b. 8th Bit Mark | - | - | ● | - | - | - | - | - | |
| 435. End-of-Line on Receive | SPD4 | | | | | | | | |
| a. Auto CR-LF performed. | ○ | - | - | - | - | - | - | - | * |
| b. Bell & Print Inhibit at last char. position. | ● | - | - | - | - | - | - | - | |

● Indicates toggle or slide position to ON.

○ Indicates toggle or slide position to OFF.

— Position of switch does not affect option.

* Factory furnished state of option (all versions).

† Factory furnished state of option (pin feed only).

‡ On friction and tractor feed terminals, 432c (80 characters) is factory furnished. 432a or 432c (132 characters) should not be selected.

§ LEFT HAND MARGIN adjustment must be checked on friction feed sets.

¶ Inhibits margin bell and the EOL bell that rings on AUTO CR-LF (Option 435a). Option 432e is overridden if right margin is set using ESCR sequence. The signal bell (CTRL G) operates normally.

** Not applicable on RO.

SECTION 574-500-210

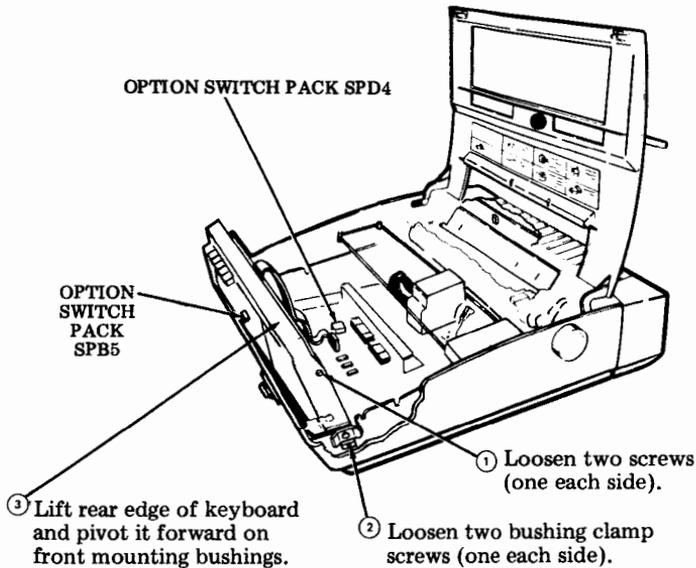
Keyboard

| | | | | | |
|-----------------------|------|---|---|---|---|
| 436. Speed Control | SPB5 | | | | |
| | 1 | 2 | 3 | 4 | |
| a. 30 Characters/Sec. | — | O | — | — | * |
| b. 10 Characters/Sec. | — | ● | — | — | |

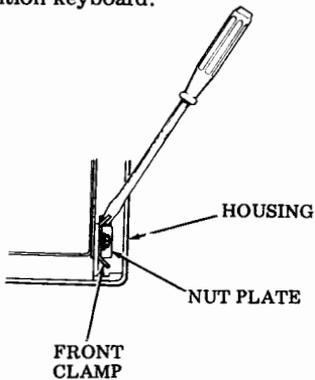
| | | | | | |
|---|------|---|---|---|---|
| 437. Print Substitute character ■ on odd Parity Received. | SPB5 | | | | |
| | 1 | 2 | 3 | 4 | |
| a. Print ■ on odd parity received. | O | — | — | — | * |
| b. Ignore parity. | ● | — | — | — | |

- Indicates toggle or slide position to ON.
- O Indicates toggle or slide position to OFF.
- Position of switch does not affect option.
- * Factory furnished state of option (all versions).

5.01 To enable engineering options for the basic RO:



④ Reverse steps to reposition keyboard.



Note: When repositioning keyboard, insert a screwdriver into the square hole in the nut plate and gently twist (or pry) the screwdriver with enough force to draw the assembly forward.

Caution: Do not over twist the screwdriver.

⑤ Tighten the clamp screws.

6. ENGINEERING OPTIONS ANSWER-BACK

| Option No. | Option Suffix and Conditions | Option Definition | Switch Numbers | | | | | | | | Location of Switch on Circuit Card (See Page 12). |
|------------|------------------------------|-------------------|----------------|---|---|---|---|---|---|---|---|
| | | | SPA5 | | | | | | | | |
| | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| XXX | | | | | | | | | | | |
| a. | | | - | - | - | - | ○ | ● | - | - | |
| b. | | | - | - | - | - | ○ | ● | - | - | |

Answer-Back Card

| | | | | | | | | | |
|-----------------------------|------|---|---|---|---|---|---|---|---|
| 438. Answer-Back on HERE IS | SPA5 | | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| a. Yes | - | - | - | - | - | - | ● | - | * |
| b. No | - | - | - | - | - | - | ○ | - | |
| 439. Answer-Back on ANSWER | SPA5 | | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| a. Yes | - | - | - | - | ● | - | - | - | * |
| b. No | - | - | - | - | ○ | - | - | - | |
| 440. Answer-Back on ENQ | SPA5 | | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| a. Yes | - | - | - | - | - | - | - | ● | * |
| b. No | - | - | - | - | - | - | - | ○ | |

- Indicates toggle or slide position to ON.
- Indicates toggle or slide position to OFF.
- Position of switch does not affect option.
- * Factory furnished state of option.

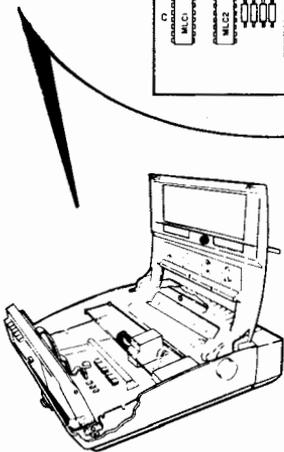
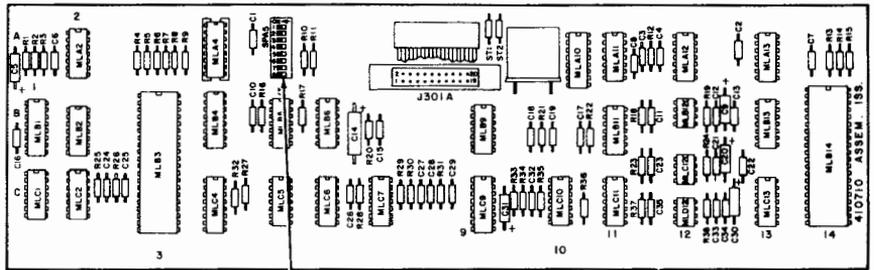
| 441. Type of Interface Unit | SPA5 | | | | | | | | |
|---|------|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| a. Terminal Data Unit (TDU) | — | — | — | — | — | ● | — | — | * |
| b. TAU, TAU1, TAU2 or no Interface Unit | — | — | — | — | — | ○ | — | — | |
| 442. Local Copy of Answer-Back | SPA5 | | | | | | | | |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| a. Yes | — | — | — | ● | — | — | — | — | * |
| b. No | — | — | — | ○ | — | — | — | — | |

| 443. Character Parity Bit Sent from Answer-Back (should be the same as Option 434 if installed in KSR teleprinter). | SPA5 | | | | | | | | |
|---|------|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| a. Even Parity | ● | ● | — | — | — | — | — | — | * |
| b. 8th Bit Mark | ○ | ○ | — | — | — | — | — | — | |

| 444. Blinding of ENQ Recognition | SPA5 | | | | | | | | |
|---|------|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| a. Auxiliary Sender controls (HDX only) (Aux Pin 4) | — | — | ● | — | — | — | — | — | * |
| b. Auxiliary Sender cannot blind | — | — | ○ | — | — | — | — | — | |

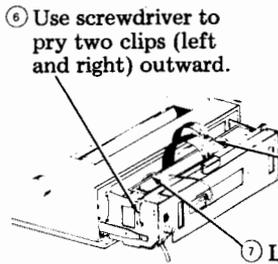
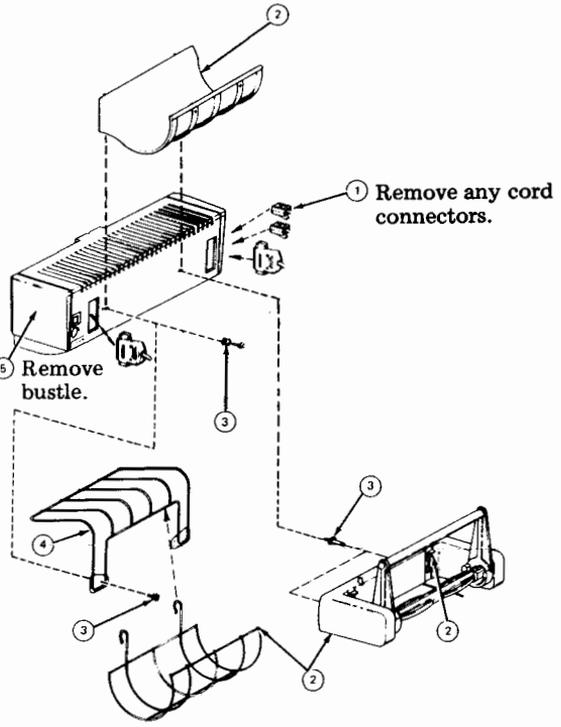
- Indicates toggle or slide position to ON.
- Indicates toggle or slide position to OFF.
- Position of switch does not affect option.
- * Factory furnished state of option.

6.01 To enable engineering options for the answer-back:



SPA5

- ② Remove paper and paper holder or paper supply assembly, if present. To remove paper supply assembly, disengage latch from mounting posts and pull straight up. Slide off of mounting posts.
- ③ Remove screws with bushings, or mounting posts.
- ④ Remove deflector, if present.



OPTION SWITCH PACK SPA5 (Answer-Back Only)

- ⑥ Use screwdriver to pry two clips (left and right) outward.
- ⑦ Lift up the power supply until the option switch pack SPA5 on the answer-back card clears the housing.

7. ENGINEERING OPTIONS SELECTIVE CALLING UNIT

Selective Calling Unit Card

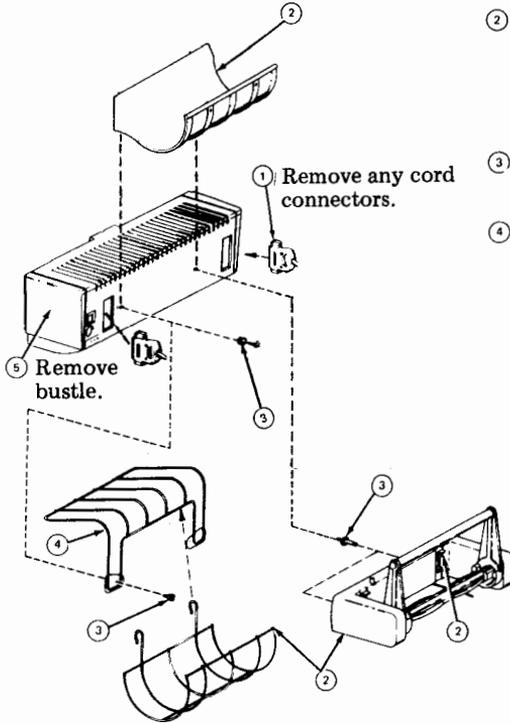
(See Page 15)

| | | | | |
|---|--|---------------------|---------------------|---|
| 445. Individual Call Directing Code (CDC) | | 1st ASCII Character | 2nd ASCII Character | |
| a. | Uncoded | | | * |
| b. | Two ASCII Characters (must specify) | | | |
| 446. Group Call Directing Code (CDC) | | 1st ASCII Character | 2nd ASCII Character | |
| a. | Uncoded | | | * |
| b. | Two ASCII characters (must specify – same for all terminals in group) | | | |
| 447. Broadcast Call Directing Code (CDC) | | 1st ASCII Character | 2nd ASCII Character | |
| a. | Uncoded | | | * |
| b. | Two ASCII characters (must specify – same for all terminals in system) | | | |

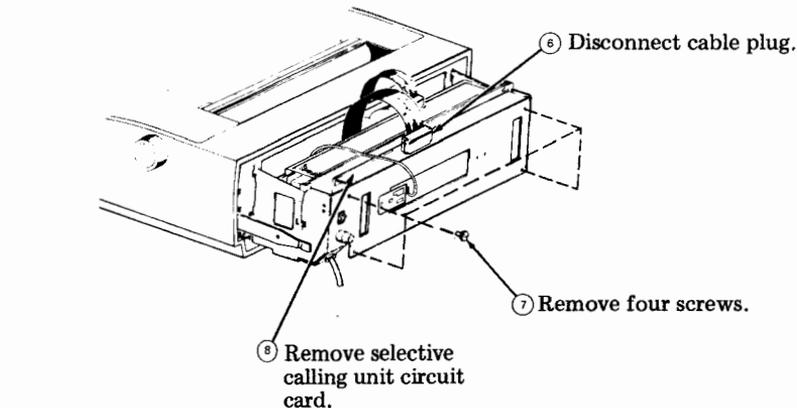
| | | | | |
|---|---|---|----------------------------------|---|
| 448. Answer-Back (to individual group or broadcast CDC) | | 430916 Circuit Card (Early) | 410718 Circuit Card (Late) | |
| | | SPD8 and SPB8 (See Page 14) | SPA1 and SPC1 (See Page 14) | |
| a. | Uncoded | All ON-Space | All ON-Space | * |
| b. | Two ASCII Characters | Coded ON - Space OFF- Mark | Coded ON - Space OFF- Mark | † |
| c. | Second AB Character Sent: Programmed Character (Positive Reply) Delete (Negative Reply) | Not Applicable Negative Reply Always Delete | SPB2 1 2 3 4 — — — ○ | * |
| d. | Second AB Character Sent (410718 Circuit Card Only): ‡ ACK (Positive Reply) NAK (Negative Reply) | Not Applicable Negative Reply Always Delete | SPB2 — — — ● | |
| 449. Answer-Back to Group CDC | | 430916 SPA6 | 410718 SPB2 | |
| | | 1 2 3 4 | 1 2 3 4 | |
| a. | No | ○ — — — | ○ — — — | * |
| b. | Yes | ● — — — | ● — — — | |
| 450. Answer-Back Broadcast CDC | | 430916 SPA6 | 410718 SPB2 | |
| | | 1 2 3 4 | 1 2 3 4 | |
| a. | No | — ○ — — | — ○ — — | * |
| b. | Yes | — ● — — | — ● — — | |
| 451. SCU Speed Control | | 430916 SPA6 | 410718 SPB2 | |
| | | 1 2 3 4 | 1 2 3 4 | |
| a. | 30 Characters/Sec | — — ● ● | — — ● ● | * |
| b. | 10 Characters/Sec | — — ○ ○ | — — ○ ○ | |

- Indicates toggle or slide position to ON.
- Indicates toggle or slide position to OFF.
- Position of switch does not affect option.
- * Factory furnished state of option.
- † Must code answer-back characters.
- ‡ Second AB character if coded, will be overridden.

7.01 To enable engineering options for the selective calling unit:



- ② Remove paper and paper holder or paper supply assembly, if present. To remove paper supply assembly, disengage latch from mounting posts and pull straight up. Slide off of mounting posts.
- ③ Remove screws, screws with bushings or mounting posts.
- ④ Remove deflector, if present.



7.02 Call Directing Codes (CDC) are optioned by wiring from the column field to the column field terminals and from the row field to the row field terminals (see Fig. 8 and 9). Refer to Fig. 10 to determine the correct column and row for the characters to be optioned as the CDC's. Two straps are required for each character to be coded, one to the column field terminals and one to the row field terminals. Fig. 11 and 12 show an example of CDC wiring where the individual CDC is AA, the group CDC is XY and the broadcast CDC is BB.

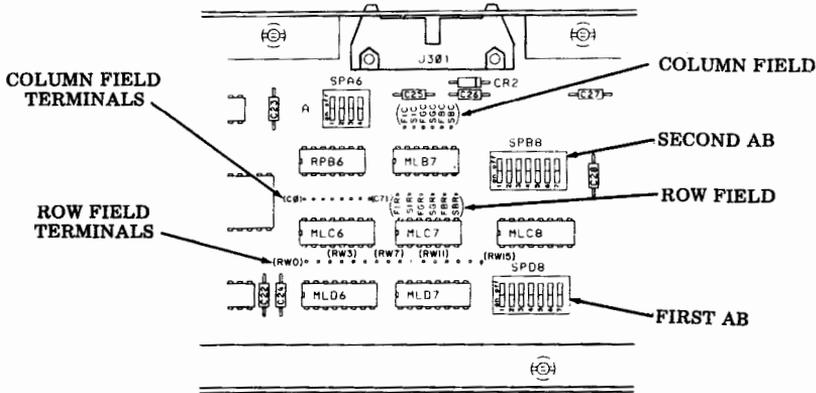


Fig. 8—430916 Circuit Card

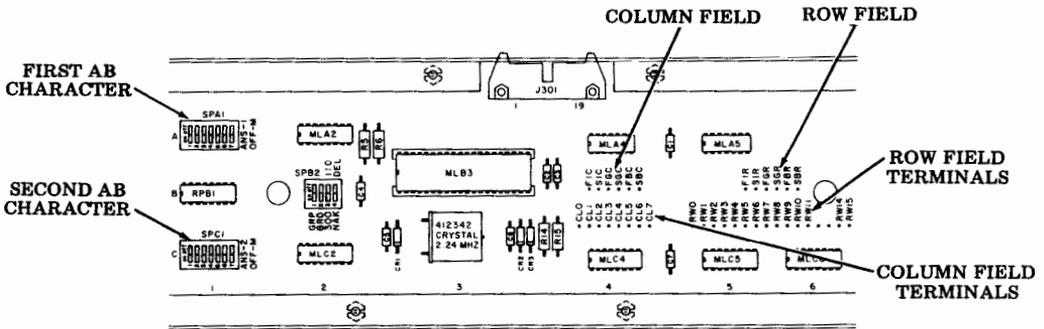


Fig. 9—410718 Circuit Card

| Char. | Col | Row | | | |
|-------|-----|-----|-------|-----|-----|-------|-----|-----|-------|-----|-----|-------|-----|-----|-------|-----|-----|-------|-----|-----|-----|---|----|
| NULL | 0 | 0 | DLE | 1 | 0 | SP | 2 | 0 | 0 | 3 | 0 | @ | 4 | 0 | P | 5 | 0 | ▶ | 6 | 0 | p | 7 | 0 |
| SOH | 0 | 1 | DC1 | 1 | 1 | ! | 2 | 1 | 1 | 3 | 1 | A | 4 | 1 | Q | 5 | 1 | a | 6 | 1 | q | 7 | 1 |
| STX | 0 | 2 | DC2 | 1 | 2 | " | 2 | 2 | 2 | 3 | 2 | B | 4 | 2 | R | 5 | 2 | b | 6 | 2 | r | 7 | 2 |
| ETX | 0 | 3 | DC3 | 1 | 3 | # | 2 | 3 | 3 | 3 | 3 | C | 4 | 3 | S | 5 | 3 | c | 6 | 3 | s | 7 | 3 |
| EOT | 0 | 4 | DC4 | 1 | 4 | \$ | 2 | 4 | 4 | 3 | 4 | D | 4 | 4 | T | 5 | 4 | d | 6 | 4 | t | 7 | 4 |
| ENQ | 0 | 5 | NAK | 1 | 5 | % | 2 | 5 | 5 | 3 | 5 | E | 4 | 5 | U | 5 | 5 | e | 6 | 5 | u | 7 | 5 |
| ACK | 0 | 6 | SYN | 1 | 6 | & | 2 | 6 | 6 | 3 | 6 | F | 4 | 6 | V | 5 | 6 | f | 6 | 6 | v | 7 | 6 |
| BEL | 0 | 7 | ETB | 1 | 7 | / | 2 | 7 | 7 | 3 | 7 | G | 4 | 7 | W | 5 | 7 | g | 6 | 7 | w | 7 | 7 |
| BS | 0 | 8 | CAN | 1 | 8 | (| 2 | 8 | 8 | 3 | 8 | H | 4 | 8 | X | 5 | 8 | h | 6 | 8 | x | 7 | 8 |
| HT | 0 | 9 | EM | 1 | 9 |) | 2 | 9 | 9 | 3 | 9 | I | 4 | 9 | Y | 5 | 9 | i | 6 | 9 | y | 7 | 9 |
| LF | 0 | 10 | SUB | 1 | 10 | * | 2 | 10 | : | 3 | 10 | J | 4 | 10 | Z | 5 | 10 | j | 6 | 10 | z | 7 | 10 |
| VT | 0 | 11 | ESC | 1 | 11 | + | 2 | 11 | ; | 3 | 11 | K | 4 | 11 | [| 5 | 11 | k | 6 | 11 | { | 7 | 11 |
| FF | 0 | 12 | FS | 1 | 12 | , | 2 | 12 | < | 3 | 12 | L | 4 | 12 | \ | 5 | 12 | l | 6 | 12 | | 7 | 12 |
| CR | 0 | 13 | GS | 1 | 13 | - | 2 | 13 | = | 3 | 13 | M | 4 | 13 |] | 5 | 13 | m | 6 | 13 | } | 7 | 13 |
| SO | 0 | 14 | RS | 1 | 14 | . | 2 | 14 | > | 3 | 14 | N | 4 | 14 | ^ | 5 | 14 | n | 6 | 14 | ~ | 7 | 14 |
| SI | 0 | 15 | US | 1 | 15 | / | 2 | 15 | ? | 3 | 15 | O | 4 | 15 | - | 5 | 15 | o | 6 | 15 | DEL | 7 | 15 |

DO NOT USE FOR CDC.

Fig. 10—Character To Row and Column Conversion

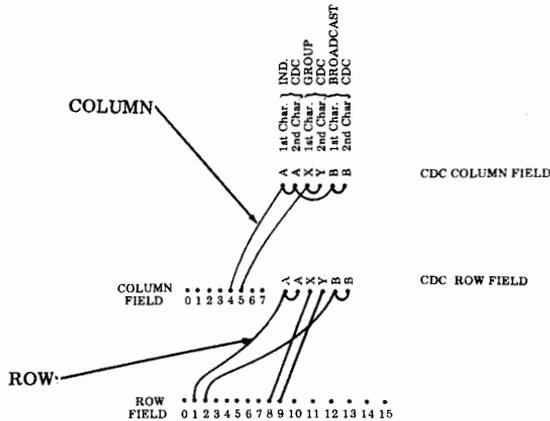


Fig. 11—430916 Circuit Card CDC Wiring Example

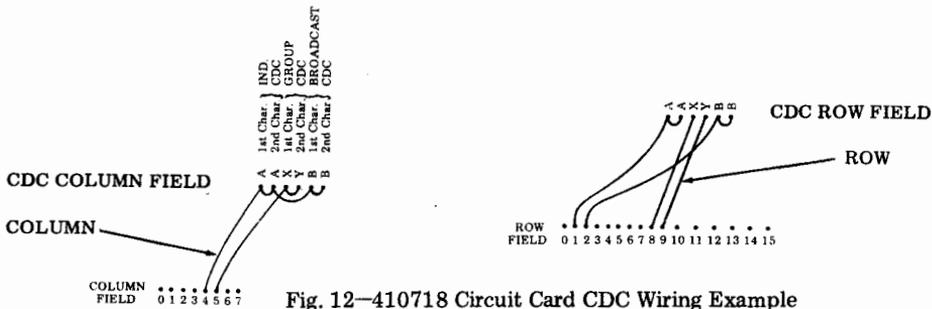


Fig. 12—410718 Circuit Card CDC Wiring Example

8. ENGINEERING OPTIONS BUFFERED TELEPRINTERS

| OPTION NO. | OPTION SUFFIX AND CONDITIONS | OPTION DEFINITION | SWITCH NUMBERS | SWITCH PACK LOCATION ON CIRCUIT CARD (See Page 18) | | | | |
|------------|------------------------------|-------------------|----------------|---|---|---|---|---|
| | | | | SPB6 | | | | |
| XXX | | | | 1 | 2 | 3 | 4 | 5 |
| a. | | | | | | | | |
| b. | | | | | | | | |

Logic Card

| 431. Type Font Arrangement | SPB6 | | | | |
|--|------|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| a. Narrow Numeric 0 and Wide Alpha 0. Standard ^ and Underline _. | ● | ● | - | - | - |
| b. Slash Numeric 0 and Wide Alpha 0. ^ Prints as ↑ and _ Prints as ←. | ○ | ● | - | - | - |
| c. Slash Alpha 0 and Wide Numeric 0. ^ Prints as ↑ and _ Prints as ←. | ○ | ○ | - | - | - |
| d. Slash Alpha 0 and Wide Numeric 0. Standard ^ and Underline _. | ● | ○ | - | - | - |
| Switches Must be Set as Shown | - | - | ○ | ○ | ○ |

Controller for 43 8-Level Send/Receive Teleprinter

| | SPA7 | | | |
|-------------------------------|------|---|---|---|
| | 1 | 2 | 3 | 4 |
| Switches Must be Set as Shown | ● | ● | ● | ● |

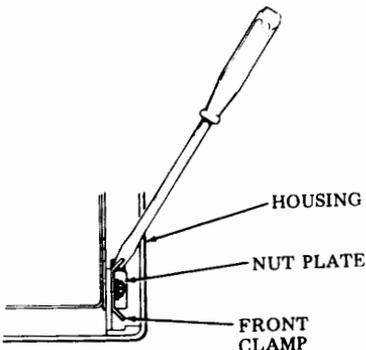
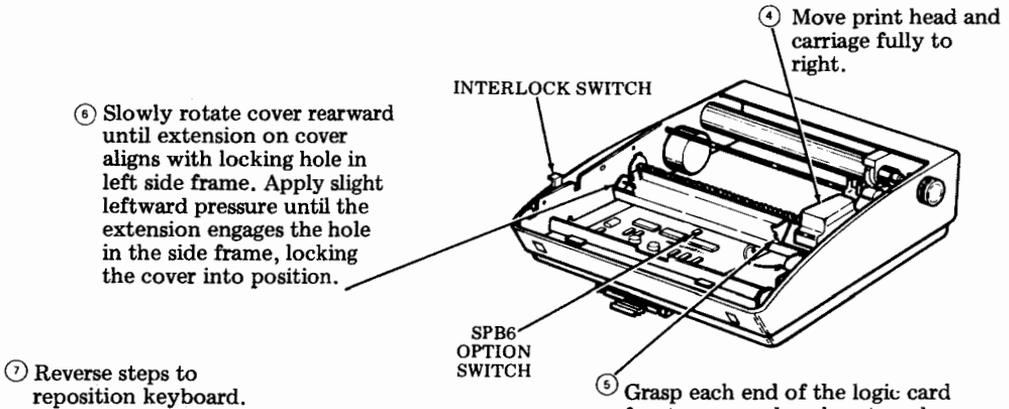
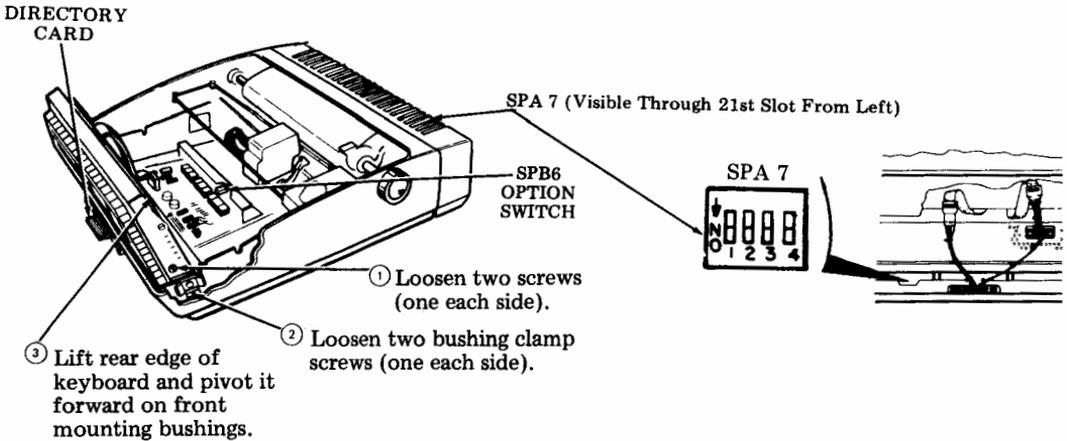
Controller for 43 5- or 8-Level Selective Calling Teleprinter

| 468. Entry To Terminal Local Mode | SPA7 | | | |
|-----------------------------------|------|---|---|---|
| | 1 | 2 | 3 | 4 |
| a. Enable | - | ● | - | - |
| b. Disable | - | ○ | - | - |
| Switches Must be Set as Shown | ● | | | ● |

| 469. Terminal Loopback Test | SPA7 | | | |
|-------------------------------|------|---|---|---|
| | 1 | 2 | 3 | 4 |
| a. Enable | - | - | ● | - |
| b. Disable | - | - | ○ | - |
| Switches Must be Set as Shown | ● | | | ● |

- Indicates toggle or slide position to ON.
- Indicates toggle or slide position to OFF.
- Position of switch does not affect option.
- * Factory furnished state of option.

8.01 To enable engineering options for the buffered teleprinters:



Note: When repositioning keyboard, insert a screwdriver into the square hole in the nut plate and gently twist (or pry) the screwdriver with enough force to draw the assembly forward.

Caution: Do not over twist the screwdriver.

⑧ Tighten the clamp screws.

9. OPTION CHECKOUT

TABLE A
LOOPBACK MODE PROCEDURES (Basic KSR and RO)

| PROCEDURE | RESPONSE |
|---|--|
| <p>(RO) Remove RO Operator Console and install KSR Operator Console.</p> <p>W/TDU — Depress TERM READY (AUTO ANSW) key. Depress ESC key. Hold SHIFT key depressed and depress key.</p>  | <p>TERM READY (AUTO ANSW) turns on, if not already on.</p> <p>TERM READY (AUTO ANSW) goes off. DATA turns on. ALARM flashes.</p> |
| <p>W/TAU or TAU1 — LINE INTERFACE: Connect the test arrangement shown on Page 3 to the interface connector. Connect Carrier Detect Pin 8 to Data Term Ready Pin 20. Turn on Teleprinter POWER switch.</p> <p>W/TTL INTERFACE — Connect the test arrangement shown on Page 3 to the interface connector. Connect Terminal Ready Pin 5 to Data Ready Pin 15.</p> <p>Turn on Teleprinter POWER switch.</p> | <p>Print head returns to left-hand margin. Printer performs one line feed. DATA turns on.</p> |

TABLE B

ON-LINE MODE PROCEDURES (Basic KSR and RO)
(Teleprinters with access to the switched network.)

RO

| STATION UNDER TEST | | TEST CENTER | |
|--------------------------|--|---|------------------------------------|
| PROCEDURE | RESPONSE | PROCEDURE | RESPONSE |
| Verify TERM READY is on. | DATA turns on. TERM READY goes off. | Set up operating speed. Call station under test. Go to Data mode. | Answering data tone will be heard. |

KSR

| STATION UNDER TEST | | TEST CENTER | |
|--|---|--|----------|
| PROCEDURE | RESPONSE | PROCEDURE | RESPONSE |
| With power on and AUTO ANSW lit, depress LOCAL-TALK key and place DUPLEX key in UP position (HALF-DUPLEX). | LOCAL-TALK turns on. | | |
| Place CAPS LOCK key in DOWN position. Depress RETURN and LINE FEED keys. | Print head is returned to left-hand margin. Paper feeds to next line. | | |
| Call test center and request 43 KSR Teleprinter on-line option test. Provide testing station with phone number of station, operating speed and option numbers to be tested. Agree that testing station will call back after disconnect. | | Set up operating speed as indicated by station under test. | |

TABLE C

OPTIONS CHECKOUT PROCEDURES (Basic KSR and RO)

Note: All switches except those indicated for the option being checked must be in the factory furnished state while performing the options checkout procedures.

| CHECK | PROCEDURE | RESPONSE |
|---------------------------|------------------------------------|--|
| Option 431.b., c., and d. | Depress and hold PRINTER TEST key. | Characters printed as in Fig. 13. Bell sounds at end of each line. |

(Option 431.b.)

```

      ↓           ↓           ↓↓
■ !"#%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~"
    
```

(Option 431.c.)

```

      ↓           ↓           ↓↓
■ !"#%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN@PQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~"
    
```

(Option 431.d.)

```

      ↓           ↓           ↓↓
■ !"#%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN@PQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~"
    
```

Fig. 13—Printer Test Message

| CHECK | PROCEDURE | RESPONSE |
|----------------------|------------------------------------|---|
| Option 432.b. and c. | Depress and hold PRINTER TEST key. | Line length will be: 432.b. or .d. — 72 characters 432.c. — 80 characters 432.e. — 132 characters Characters printed as in Fig. 14. Bell sounds at end of each line. |

*(Option 432.b. or d.)

Note: The lower case "g" does not print on 72 character lines.

```

■ !"#%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN@PQRSTUVWXYZ[\]^_`abcdef
hijklmnopqrstuvwxyz{|}~"
■ !"#%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN@PQRSTUVWXYZ[\]^_`abcdef
hijklmnopqrstuvwxyz{|}~"
    
```

*(Option 432.c.)

Note: The lower case "o" does not print on 80 character lines.

```

■ !"#%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN@PQRSTUVWXYZ[\]^_`abcdefghijklmn
pqrstuvwxyz{|}~"
■ !"#%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN@PQRSTUVWXYZ[\]^_`abcdefghijklmn
pqrstuvwxyz{|}~"
    
```

(Option 432.e.) Sprocket Feed Only

```

■ !"#%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN@PQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~"
■ !"#%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN@PQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~"
    
```

*Sprocket Feed (approximately 13 characters per inch), Friction or Tractor Feed (10 characters per inch)

Fig. 14—Printer Test Message

TABLE C (Contd)
 OPTIONS CHECKOUT PROCEDURES (Basic KSR and RO)

| CHECK | PROCEDURE | | RESPONSE |
|---------------------------------|-----------|--|--|
| Option 433.b. | Off-Line | Place teleprinter in Loopback mode. (See Table A.) Depress DUPLEX key to DOWN position (FULL DUPLEX). Depress the following keys: ABC Hold CTRL key depressed and depress  key. | Printer will print ABC. DATA remains on (does not flash). TERM READY (AUTO ANSW) remains off (does not flash) as EOT key is depressed. |
| | On-Line | Place teleprinter in On-line mode. (See Table B.) <u>TEST CENTER</u> Send the following message ending with EOT: 43 TELEPRINTER | <u>STATION UNDER TEST</u> 43 TELEPRINTER will be printed. DATA remains on. AUTO ANSW remains off. |
| Option 434.b. (KSR only) | Off-Line | Place teleprinter in Loopback mode. (See Table A.) Depress DUPLEX key to DOWN position (FULL DUPLEX). Depress and release PARITY key to UP position (PARITY ON). Place CAPS LOCK key in DOWN position. Depress the following keys: PARITY TEST | Printer will print: ■■RII■ TE■T |
| | On-Line | Place teleprinter in On-line mode. (See Table B.) <u>TEST CENTER</u> Set up to check even parity. <u>STATION UNDER TEST</u> Type the following test message on the operator console: THE QUICK BROWN FOX | <u>TEST CENTER</u> Test Center receives message ■ Indicates even parity error. T■E Q■IC■ ■RQ■ FOX |

TABLE C (Contd)

OPTIONS CHECKOUT PROCEDURES (Basic KSR and RO)

| CHECK | PROCEDURE | RESPONSE |
|--------------------------------|---|---|
| Option 435.b. | <p>Off-Line</p> <p>Place teleprinter in Loopback mode. (See Table A.)</p> <p>Depress DUPLEX key to DOWN position (FULL DUPLEX).</p> <p>Depress REPT and K keys. Hold down until end of line is reached.</p> | <p>Characters will be printed until end of line is reached.</p> <p>Automatic return and line feed will not be performed.</p> <p>Bell will sound continuously until keys are released.</p> |
| | <p>On-Line (TDU only)</p> <p>Place teleprinter in On-line mode. (See Table B.)</p> <p><u>TEST CENTER</u></p> <p>Send the following message in Full Duplex mode: ESC x (lower case) LF four spaces ESC L (lower case) six spaces ESC r (lower case) CR LF ESC < two lines of repeat Ks ESC x (lower case) Send ESC =</p> <p>Note: CR = Carriage Return LF = Line Feed < = Hold shift key depressed when depressing < key.</p> | <p><u>STATION UNDER TEST</u></p> <p>ALARM flashes. Printer will print one line of Ks between columns 5 and 10. Automatic return and line feed will not be performed. Bell will sound until message is completed. Print head returns to left-hand margin and indicates beginning of line. ALARM turns off.</p> |
| Option 436.b. (RO only) | <p>Off-Line</p> <p>Place teleprinter in Loopback mode. (See Table A.)</p> <p>Depress DUPLEX key to DOWN position (FULL DUPLEX).</p> <p>Place CPS key in DOWN position (10 CPS).</p> <p>Depress REPT and K keys.</p> <p>Hold down until two lines of Ks are printed.</p> <p>Measure continuity between pins 4 and 17 on RO opcon connector.</p> | <p>Continuous Ks will be printed across entire line.</p> <p>Bell rings at end of line and automatic return and line feed will be performed.</p> <p>One printed line plus return will occur in approximately: 14 seconds (sprocket feed) 8.5 seconds (friction feed).</p> <p>First part of second line (approximately 18 characters) will be printed at a faster rate of speed.</p> <p>Meter should read 0 ohms.</p> |
| | <p>On-Line (TDU only)</p> <p>Place teleprinter in On-line mode (See Table B.)</p> <p><u>TEST CENTER</u></p> <p>Send the "FOX" test message at (10 CPS) to station under test.</p> | <p><u>STATION UNDER TEST</u></p> <p>"FOX" test message will be printed.</p> |

TABLE C (Contd)

OPTIONS CHECKOUT PROCEDURES (Basic KSR and RO)

| CHECK | PROCEDURE | | RESPONSE |
|--------------------------------|-----------|--|---|
| Option 437.b. (RO only) | Off-Line | Enable Option 434.b. Place teleprinter in Loopback mode. (See Table A.) Place CAPS LOCK key in DOWN position. Depress DUPLEX key to DOWN position (FULL DUPLEX). Depress the following keys: <u>PARITY TEST</u> Measure continuity between pins 4 and 20 on RO opcon connector. | Printer will print: <u>PARITY TEST.</u> Meter should read 0 ohms. |
| | On-Line | Place teleprinter in On-line mode. (See Table B.) <u>TEST CENTER</u> Send the following message (8th Bit Marking) <u>PARITY TEST</u> | <u>STATION UNDER TEST</u> Printer will print: <u>PARITY TEST</u> |

TABLE D

 OPTIONS CHECKOUT PROCEDURES
 (Answer-Back Associated with Basic KSR and RO)

| CHECK | PROCEDURE | | RESPONSE |
|--|-----------|---|---|
| Option 438.b. (KSR with Answer-Back only) | Off-Line | Place teleprinter in Loopback mode. (See Table A.) Place DUPLEX key in UP position (HALF-DUPLEX). Hold CTRL key depressed and depress  key. | Answer-Back message does not print. |
| | On-Line | Place teleprinter in On-line mode. (See Table B.) <u>STATION UNDER TEST</u> Hold CTRL key depressed and depress  key. | <u>TEST CENTER</u> Answer-Back message does not print. |

TABLE D (Contd)
 OPTIONS CHECKOUT PROCEDURES
 (Answer-Back Associated with Basic KSR and RO)

| CHECK | PROCEDURE | RESPONSE |
|--|--|--|
| Option 439.b. (with Answer-Back only) | Place teleprinter in Loopback mode. (See Table A.) Place DUPLEX key in UP position (HALF-DUPLEX). | |
| | Off-Line W/TDU -- Depress ESC and then  key. Place DUPLEX key in UP position (HALF-DUPLEX). Wait 6 seconds, then depress ESC key. Hold SHIFT key depressed and depress  key. | ALARM turns off. ALARM flashes. DATA turns on. Answer-Back message does not print. |
| | W/TAU, TAU1 OR TAU2 -- LINE INTERFACE: Remove strap from Send Data pin 2 to Rec Data pin 3. (Perform the following procedures within 6 seconds.) Disconnect wire from Carrier Detect pin 8 and momentarily connect to Ring Indicator pin 22, then reconnect to pin 8. | Answer-Back message does not print. |
| | W/TTL INTERFACE -- Remove strap from Send Data pin 19 to Rec Data pin 17. (Perform the following procedures within 6 seconds.) Disconnect wire from Term Ready pin 5 and connect to +5 V pin 7. Connect strap between +12 V pin 3 and Ring Indicator pin 12. Immediately disconnect wire from pin 7 and reconnect to pin 5. | Answer-Back message does not print. |
| | On-Line Place teleprinter in On-line mode. (See Table B.) <u>TEST CENTER</u> Data Test Center will disconnect call and then recall station under test. | <u>STATION UNDER TEST</u> Phone rings once. DATA turns on. AUTO ANSW goes off. Answer-Back message does not print. |

TABLE D (Contd)

OPTIONS CHECKOUT PROCEDURES
(Answer-Back Associated with Basic KSR and RO)

| CHECK | PROCEDURE | | RESPONSE |
|--|--|--|--|
| Option 440.b. (with Answer-Back only) | Off-Line | Place teleprinter in Loopback mode. (See Table A.) Place DUPLEX key in UP position (HALF-DUPLEX). | |
| | | W/TAU, TAU1, TAU2 or TTL INTERFACE – Depress ESC key. Hold SHIFT key depressed and depress  key. | ALARM flashes. |
| | | Hold CTRL key depressed and depress  key. | Answer-Back message does not print. |
| | On-Line | Place teleprinter in On-Line mode. (See Table B.) <u>TEST CENTER</u> Data Test Center sends CTRL E “ENQ”. | <u>STATION UNDER TEST</u> Answer-Back message does not print. |
| Option 441 (with Answer-Back only) | Must match type of interface unit — Refer to Off-Line Test Procedures in Section 574-500-500 or Section 574-500-501. | | |
| Option 442.b. (with Answer-Back only) | Off-Line | Place teleprinter in Loopback mode. (See Table A.) Place DUPLEX key in UP position (HALF-DUPLEX). | |
| | | W/TAU, TAU1, TAU2 OR TTL INTERFACE – Depress ESC key. Hold SHIFT key depressed and depress  key. | ALARM flashes |
| | | Hold CTRL key depressed and depress  key. | Answer-Back message does not print. |
| | | | |

TABLE D (Contd)
 OPTIONS CHECKOUT PROCEDURES
 (Answer-Back Associated with Basic KSR and RO)

| CHECK | PROCEDURE | | RESPONSE |
|---|-----------|---|--|
| | On-Line | Place teleprinter in On-Line mode. (See Table B.) <u>TEST CENTER</u> Data Test Center sends CTRL E "ENQ". Answer-back message is received. | <u>STATION UNDER TEST</u> Answer-Back message does not print. |
| Option 443.b. (with Answer- Back only) | Off-Line | Place teleprinter in Loopback mode. (See Table A.) Depress and release PARITY key to UP position (PARITY ON). Place DUPLEX key in UP position (HALF-DUPLEX). Hold CTRL key depressed and depress  key. | Answer-Back message will be printed with substitute character (■) on parity error. |
| | On-Line | Place teleprinter in On-Line mode. (See Table B.) Depress and release PARITY key to UP position (PARITY ON). <u>TEST CENTER</u> Data Test Center sends CTRL E "ENQ". Answer-Back message will be received with 8th bit marking. | <u>STATION UNDER TEST</u> Answer-Back message will be printed with substitute character (■) on parity error. |
| Option 444.b. (with Answer- Back only) | Off-Line | W/TAU2 AUX PORT INTERFACE: Place teleprinter in Loopback mode. (See Table A.) Connect Clear to Send pin 5 to Request to Send pin 4. Place DUPLEX key in UP position (HALF-DUPLEX). Hold CTRL key depressed and depress  key. | Answer-Back message is printed. |

Note: Options 433 through 444 — Depress LOCAL (LOCAL-TALK) key to terminate checkout procedure. Disconnect Interface Test arrangement, if present. Replace RO operator console if removed.

TABLE E

OPTIONS CHECKOUT PROCEDURES
(SCU Mod. Kit Associated with Basic RO)

| CHECK | PROCEDURE | RESPONSE |
|---------------|--|--|
| Option 448.d. | <p style="text-align: center;"><u>STATION UNDER TEST</u></p> <p>Teleprinter in data mode, cover closed and no paper alarm.</p> <p style="text-align: center;"><u>TEST CENTER</u></p> <p>Data test center sends individual CDC to station under test.</p> | <p>Data test center receives the first character of the coded answer-back followed by the control character ACK.</p> |
| | <p style="text-align: center;"><u>STATION UNDER TEST</u></p> <p>Open teleprinter cover.</p> <p style="text-align: center;"><u>TEST CENTER</u></p> <p>Data test center sends individual CDC to station under test.</p> | <p>Data test center receives the first character of the coded answer-back followed by the control character NAK.</p> |
| Option 449.b. | <p style="text-align: center;"><u>STATION UNDER TEST</u></p> <p>Teleprinter in data mode, cover closed and no paper alarm.</p> <p style="text-align: center;"><u>TEST CENTER</u></p> <p>Data test center sends group CDC.</p> | <p>Data test center receives the teleprinter's positive answer-back.</p> |
| Option 450.b. | <p style="text-align: center;"><u>STATION UNDER TEST</u></p> <p>Teleprinter in data mode, cover closed and no paper alarm.</p> <p style="text-align: center;"><u>TEST CENTER</u></p> <p>Data test center sends broadcast CDC.</p> | <p>Data test center receives the teleprinter's positive answer-back.</p> |
| Option 451.b. | <p style="text-align: center;"><u>STATION UNDER TEST</u></p> <p>Teleprinter in data mode, cover closed and no paper alarm.</p> <p style="text-align: center;"><u>TEST CENTER</u></p> <p>Data test center sends individual CDC at 110 baud.</p> | <p>Data test center receives the teleprinter's positive answer-back.</p> |

TABLE F
OPTIONS CHECKOUT PROCEDURES
(8-Level Buffered Send/Receive)

Latch  key in the down position and perform the following procedure.

| CHECK | PROCEDURE | RESPONSE |
|--------------------------------------|--|-------------|
| Option 431.b. 431.c. 431.d. | Depress  key. | O Ø Ø |
| Option 431.b. 431.c. 431.d. | Depress  key. | Ø O O |
| Option 431.b. & c. 431.d. | Hold  key depressed and depress  key. | ↑ ^ |
| Option 431.b. & c. 431.d. | Hold  key depressed and depress  key. | ← _ |

TABLE G
OPTIONS CHECKOUT PROCEDURES
(8-Level Buffered Selective Calling)

Latch  key in the down position and perform the following procedure.

| CHECK | PROCEDURE | RESPONSE |
|--------------------------------------|--|-------------|
| Option 431.b. 431.c. 431.d. | Depress  key. | O Ø Ø |
| Option 431.b. 431.c. 431.d. | Depress  key. | Ø O O |
| Option 431.b. & c. 431.d. | Hold  key depressed and depress  key. | ↑ ^ |
| Option 431.b. & c. 431.d. | Hold  key depressed and depress  key. | ← _ |

TABLE G (Contd)
 OPTIONS CHECKOUT PROCEDURES
 (8-Level Buffered Selective Calling)

| CHECK | PROCEDURE | RESPONSE |
|---------------|--|---|
| Option 468.b. | Depress  key. |  key does not light. |
| Option 469.b. | <p>If the teleprinter is attached to data set and data set has analog loopback feature, place data set in analog loopback mode. Otherwise, attach the 403378 loopback connector or modified 403378 loopback connector* to the line port of the 43 8-Level BSC Teleprinter.</p> <p>Depress  key if not lit.</p> <p>Hold the  key depressed and depress the  key.</p> <p>*See Page 32 for modification instructions of the 403378 loopback connector.</p> | <p> key lights.</p> <p>“Test 1234” does not print.</p> |

TABLE H
 OPTIONS CHECKOUT PROCEDURES
 (5-Level Buffered Selective Calling)

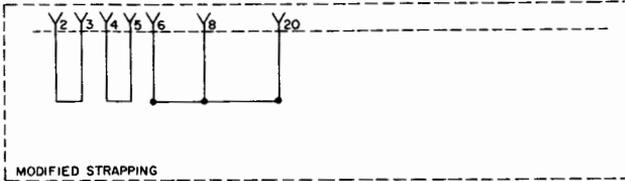
Perform the following procedure.

| CHECK | PROCEDURE | RESPONSE |
|----------------------------|---|---|
| Option 431.b. 431.c. | Depress  (Alpha) key. | O ∅ |
| 431.b. 431.c. | Depress  (Zero) key. | ∅ O |
| Option 468.b. | Depress  key. |  key does not light. |
| Option 469.b. | <p>If the teleprinter is attached to data set and data set has analog loopback feature, place data set in analog loopback mode. Otherwise, attach the 403378 loopback connector or modified 403378 loopback connector* to the line port of the 43 5-Level BSC Teleprinter.</p> <p>Depress  key if not lit.</p> <p>Hold the  key depressed and depress the  key.</p> <p>*See Page 32 for modification instructions of the 403378 loopback connector.</p> | <p> key lights.</p> <p>“Test 1234” does not print.</p> |

10. MODIFIED 403378 INTERFACE LOOPBACK CONNECTOR



403378 INTERFACE†
LOOPBACK CONNECTOR



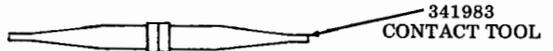
† See instructions for modification below.

Modification Instructions

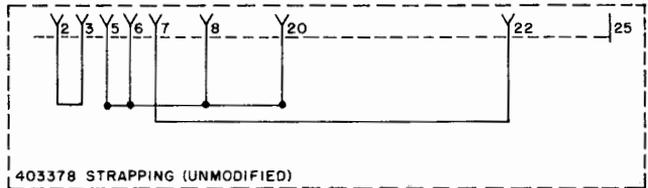
10.01 The following instructions should be followed to modify the connector, if desired, to assure that RTS (pin 4) turns on.



403378 INTERFACE
LOOPBACK CONNECTOR



341983
CONTACT TOOL



- (a) Disassemble the 403378 interface loopback connector.
- (b) Cut the strap between terminals 5 and 6 at terminal 6.
- (c) Using the 341983 contact tool, remove terminal 5 and the attached strap.
- (d) Using the 341983 contact tool, remove the strap between positions 7 and 22 and install between positions 4 and 5.
- (e) Reassemble the connector.

43 BASIC KSR TELEPRINTER

TROUBLESHOOTING

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| 1. GENERAL | |
| 1.01 This section provides troubleshooting information for the 43 Basic KSR Tele- printer. | |
| 1.02 This section is reissued to include trouble- shooting information for Basic KSR Teleprinters with terminal auxiliary units (TAU1 and TAU2) and answer-back modification kits. | |
| 1.03 Troubleshooting is based on isolation of troubles to major components and the correction of troubles by replacement of these components or by reference to the component troubleshooting sections. | |
| <i>Note:</i> Except for the 153A1 Terminal Data Unit and the 861B1 Terminal Auxiliary Unit which are Western Electric components, all numbers shown in this section are Teletype Corporation part numbers. | |
| 1.04 Component troubleshooting sections are: 574-501-300 43 Printer 574-502-300 43 Basic Operator Con- sole (Opcon) | |
| 1.05 Trouble isolation provided in this section is intended for use by the craftsperson at the same location as the station. Troubles may occur either during an installation, a routine maintenance visit or as the result of a customer trouble report. | |
| 1.06 Trouble isolation for the attendant is pro- vided in the 999-300-126, 999-300-127, and 999-300-129 How to Operate Manuals and for the Test Center in Section 668-130-500. | |

1.07 To facilitate trouble correction, the recommended maintenance spares as listed in the parts Section 574-500-800 should be available. In addition, parts for the repair of components as listed in Section 574-501-800, 574-502-800 and 574-503-800 for the printer, operator console and enclosures and paper handling should be available.

1.08 For component access, refer to the Disassembly/Reassembly Section 574-500-720 and Engineering Options Section 574-500-210.

1.09 For location and identification of station components, refer to the parts Section 574-500-800.

1.10 When replacement of the print head, logic card or opcon corrects the trouble, additional checks should be made to isolate and possibly correct the trouble without returning for repair.

On the print head — check cable continuity.
On the logic card — check terminal unit and power supply cables or fuse.
On the opcon — check the cable and key-switches per opcon troubleshooting.

1.11 When replacement of a component does not correct the trouble, the original component should be reinstalled before going to the next step of the trouble analysis. If there are no more steps provided, go to the last question.

1.12 Circuitry used in the operator console can be damaged by high static voltage discharge. The 346392 wrist strap is available to ground service personnel.

1.13 When returned to the WECO Service Center for repair, the set or components should be packed in the container in which the replacement is received. This includes the conductive (black) plastic bag used with the opcon and logic card for static protection.

SECTION 574-500-300

1.14 Components returnable for repair and referred to in this section for replacement are:

- 430850 Print Head
- 43K101/CAA and CAB Operator Console
- 410710 Answer-Back Card
- 410740 Logic Card
- 410754 Terminal Auxiliary Unit (TAU2)
- 410755 Terminal Auxiliary Unit (TAU1)
- 430700 Power Supply
- 153A1 Terminal Data Unit
- 861B1 Terminal Auxiliary Unit

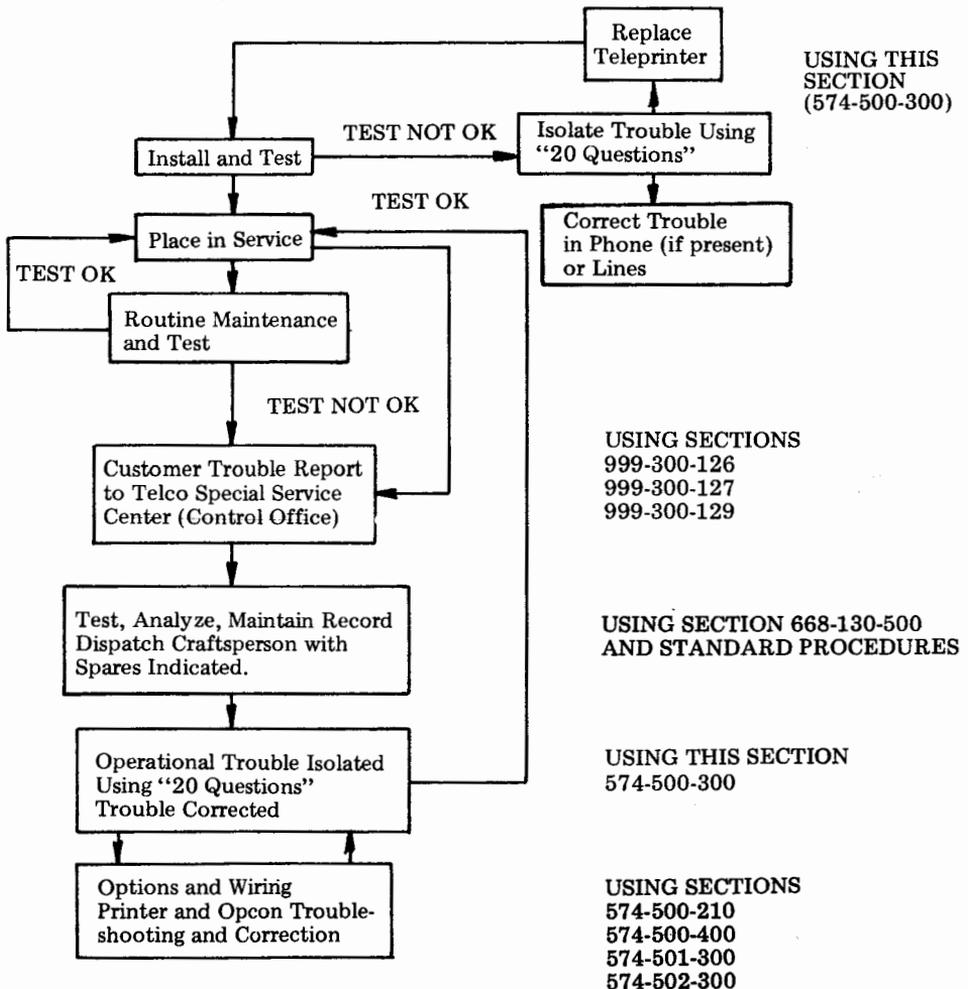
1.15 Before disconnecting the internal cables or replacing circuit cards, turn off ac

2. TROUBLESHOOTING FLOW DIAGRAM.

power. Make certain the power cord is connected to a properly polarized and grounded ac outlet.

1.16 Refer to 2. TROUBLESHOOTING DIAGRAM for the intended flow of troubleshooting procedures.

1.17 Trouble analysis is presented in the form of a "20 Questions" routine in 3. TROUBLESHOOTING GUIDE. The guide, with questions and yes or no columns, should be used always starting with the first question and proceeding according to the "yes" or "no" directive.



3. TROUBLESHOOTING GUIDE (Teleprinter with TDU)

| QUESTION | YES | NO |
|---|--|--|
| 1. Are any of the three communications mode indicators lit? (Power available and set power on.) (Depress other keys if proper indicator not lit.) | Go to 2. | Go to 1a. |
| 1a. Is there any indication of power in the set? (Indicators flash when power is turned on and off, red lamp on power supply, etc.) | Go to 1b. | Check and replace set F1 fuse if blown. Replace power supply if fuse blows again. If not blown go to 1b. |
| 1b. Is red lamp on power supply lit? | Check P107 opcon cable connector. Replace logic card. Replace opcon. | Disconnect power supply cable. Go to 1c. |
| 1c. Does red lamp on power supply now light? | Unplug TDU, answer-back card (if present) opcon and printer cables (6). Reconnect power supply cable. Go to 1d. | Check F2 fuse on power supply. Replace if blown. Replace power supply. Replace rear frame assembly. |
| 1d. Does red lamp on power supply still light? | Go to 1e. | Replace logic card. |
| 1e. Does red lamp on power supply go out after the TDU, opcon, answer-back card and printer cables are reconnected one at a time? | Replace the TDU, opcon, answer-back card or the printer component (refer to printer troubleshooting) that caused lamp to extinguish. | Intermittent short. Check for foreign objects between circuit lands or terminals. |
| 2. Does AUTO ANSW indicator light when power is turned on? | Go to 3. | Go to 2a. |
| 2a. Does ALARM indicator: 1. Flash? 2. Light (cover closed and paper installed?) | 1. Replace logic card. 2. Replace opcon or refer to printer troubleshooting. | Go to 2b. |
| 2b. Does AUTO ANSW indicator light when depressed? | Replace logic card. | Replace opcon. |

SECTION 574-500-300

| QUESTION | YES | NO |
|--|---|---|
| 3. Does LOCAL TALK indicator light when depressed? | Go to 4. | Go to 3a. |
| 3a. Does AUTO ANSW indicator go out? | Replace logic card. | Replace opcon. |
| 4. Does AUTO ANSW indicator light when depressed? | Go to 5. | Replace opcon. |
| 5. Does test message print and perform properly while the PRINTER TEST key is depressed? | Go to 6. | Check option 431 and 432. Go to 5a. |
| 5a. Is red lamp on power supply lit? | Go to 5c. | Disconnect power supply cable. Go to 5b. |
| 5b. Does red lamp on power supply now light? | Reconnect power supply cable. Unplug print head and motor cables then reconnect one at a time to isolate cause of lamp not lit. Replace defective component (refer to printer troubleshooting). | Replace power supply. |
| 5c. Does anything print or perform? | Go to 5d. | Place printer test bypass switch SPD4-2 on logic card to ON position. If ok replace opcon. Replace logic card. |
| 5d. Does anything print? | Go to 5e. | Replace logic card. Refer to printer troubleshooting. |
| 5e. Are characters properly formed? | Go to 5f. | Refer to printer troubleshooting. Replace logic card. |
| 5f. Are the proper characters printed? | Go to 5g. | Replace logic card. |
| 5g. Is print density acceptable (Good ribbon)? | May be undefined printing problem. Refer to printer troubleshooting. Replace logic card. Go to 5h. | Refer to printer troubleshooting. |

| QUESTION | YES | NO |
|---|---|--|
| 5h. Does paper feed properly (paper supply free)? | Go to 5i. | Check F3 fuse on logic card. Replace line feed motor if fuse blows again. Refer to printer troubleshooting. Replace logic card. |
| 5i. Does print head space and return properly? | Undefined problem in printer test functions. Refer to printer troubleshooting. | Refer to printer troubleshooting. Replace logic card. |
| 6. Did ALARM indicator light during printer test? | Go to 7. | Go to 6a. |
| 6a. Does ALARM indicator light when cover is opened? | Replace logic card. | Replace opcon. |
| 7. Does ALARM indicator light when 1. paper is out and when 2. cover is opened? | Go to 8. | 1. Check printer troubleshooting. 2. Replace opcon. 3. Replace logic card. |
| 8. Do all characters print and functions (except bell and margin set) perform when the keys on the keyboard are operated (local talk mode)? | Go to 9. | Replace opcon. Replace logic card. |
| 9. Does signal bell ring on CTRL G? | Go to 10. | Go to 9a. |
| 9a. Did signal bell ring during printer test? | Replace logic card. Replace opcon. | Check P106 bell connector. Refer to printer (bell) troubleshooting. Replace logic card. |
| 10. Does signal bell ring eight characters before right margin and at left and right margins? | Go to 11. | Replace logic card. |
| 11. Are margins set and cleared properly? | Go to 12. | Check column indicator positioning adjustment. Replace logic card. |

SECTION 574-500-300

| QUESTION | YES | NO |
|--|---|---|
| 12. Does printer respond properly to keyboard operated in analog loop-back mode? (Entered from keyboard by ESC > sequence (data mode). Ended by ESC = sequence.) | Go to 13. | Check P301 connector. Bypass answer-back card, if present. Go to 12a. |
| 12a. Does printer now respond properly to keyboard operated in analog loop-back mode? | Replace answer-back card. | Reconnect answer-back card. Replace Terminal Data Unit. Replace logic card. |
| 13. Did 1. ALARM indicator flash and 2. DATA indicator light during analog loop-back? | Go to 14. | 1. Replace logic card. 2. Replace opcon. |
| 14. Does telephone operate normally in both local talk mode and with set power off? | Go to 15. | Check that modular cords are properly connected at rear of teleprinter and phone. Go to 14a. |
| 14a. Does telephone operate normally (dial tone, dial, talk, ring) when connected directly to line using modular cord that was connected to the teleprinter? | Check modular cord originally between set and phone. If ok Replace Terminal Data Unit. Replace logic card. | Check tip and ring of phone line for 48 V dc. (use 150 V or higher scale). Check proper polarity (if no touch tone dial). Check phone resistance on hook (capacitors only) off-hook (600 ohms). Correct wiring of phone lines or replace phone as indicated. |
| 15. Does DATA indicator flash when depressed in local talk mode? (Handset on hook.) | Go to 16. | Replace opcon. Replace logic card. |
| 16. Does phone ring repeatedly in automatic answer mode? | Replace Terminal Data Unit. Replace logic card. | Go to 17. |
| 17. Does DATA indicator light following a received call in automatic answer mode? | Go to 18. | Remote station must also go to data mode. Check that modular cords are not reversed. Bypass answer-back card, if present. Go to 17a. |

| QUESTION | YES | NO |
|---|---|---|
| 17a. Does DATA indicator now light following a received call in automatic answer mode? | Replace answer-back card. | Replace TDU. Replace logic card. Go to 28. |
| 18. Are data messages properly sent and received in the data mode? | Go to 19. | Go to 18a. |
| 18a. Do PARITY, DUPLEX and CPS keys alternately lock down then release up when depressed? | Go to 19. | Replace defective key switch. |
| 19. Can any data be received? | Go to 19a. | Go to 28. |
| 19a. Is answer-back message properly sent and/or printed under all conditions. | Go to 20. | Check options 438 thru 444. Replace answer-back card. |
| 20. Does substitute character print on some characters (PARITY key on)? | Remote station may be sending incorrect parity or be at different speed. Go to 25. | Go to 21. |
| 21. Does printer copy and data transmit properly in half-duplex? (DATA indicator lit.) | Go to 22. | Check option 434. Replace opcon. Replace logic card. Go to 28. |
| 22. Is printer blinded to keyboard transmission in full duplex? (DATA indicator lit.) | Go to 23. | Replace opcon. Replace logic card. |
| 23. Does the carriage return automatically when characters to the right of the right hand margin are received (DATA indicator lit)? | Go to 24. | Check option 435. Replace logic card. |
| 24. Does call disconnect on received EOT and when carrier is not received (in data mode)? | Go to 25. | Check option 433. Replace logic card. Replace TDU. |

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| QUESTION | YES | NO |
|---|--|--|
| 25. Is INTRPT indicator lit? | (Interrupt received) Go to 25a. | Go to 26. |
| 25a. Does INTRPT indicator go off when depressed? | Go to 26. | Replace opcon. Replace logic card. Go to 28. |
| 26. Does INTRPT indicator light briefly and bell ring when INTRPT indicator is depressed? | Go to 27. | Replace opcon. Replace logic card. |
| 27. Does remote station receive interrupt? | Go to 29. | Go to 28. |
| 28. Does station pass on-line end-to-end tests with Test Center? | Trouble (if any) is in remote station. | Perform distortion, dBm level, or other parameter tests including digital loop-back under control of Test Center to isolate trouble to line, TDU, answer-back card, or logic card (904G, Section 668-400-300). |
| 29. Is trouble present but not defined by Questions 1 to 28? | Refer to printer or opcon troubleshooting for other symptoms. Replace opcon, power supply, TDU, logic card, answer-back card, and/or print head to correct trouble. | |

4. TROUBLESHOOTING GUIDE (Teleprinter without TDU)

| QUESTION | YES | NO |
|---|--|--|
| 1. Are any of the three communications mode indicators lit? (Power available and set power on.) (Depress other keys if proper indicator not lit.) | Go to 2. | Go to 1a. |
| 1a. Is there any indication of power in the set? (Indicators flash when power is turned on and off, red lamp on power supply, etc.) | Go to 1b. | Check and replace set F1 fuse if blown. Replace power supply if fuse blows again. If not blown go to 1b. |
| 1b. Is red lamp on power supply lit? | Check P107 opcon cable connector. Replace logic card. Replace opcon. | Disconnect power supply cable. Go to 1c. |
| 1c. Does red lamp on power supply now light? | Unplug terminal unit and answer-back card, if present, opcon and printer (6) cables. Reconnect power supply cable. Go to 1d. | Check F2 fuse on power supply. Replace if blown. Replace power supply. Replace rear frame assembly. |
| 1d. Does red lamp on power supply still light? | Go to 1e. | Replace logic card. |
| 1e. Does red lamp on power supply go out after the terminal unit, opcon, answer-back card and printer cables are reconnected one at a time? | Replace the terminal unit, opcon, answer-back card or the printer component (refer to printer troubleshooting) that caused lamp to extinguish. | Intermittent short. Check for foreign objects between circuit lands or terminals. |
| 2. Does ALARM indicator: 1. Flash? 2. Light (cover closed and paper installed)? | 1. Replace logic card. 2. Replace opcon or refer to printer troubleshooting. | Go to 3. |

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| QUESTION | YES | NO |
|--|---|---|
| 3. Does LOCAL indicator light when depressed? | Go to 4. | Go to 3a. |
| 3a. Does DATA indicator go out? | Replace logic card. | Replace opcon. |
| 4. Does test message print and perform properly while the PRINTER TEST key is depressed? | Go to 5. | Check option 431 and 432. Go to 4a |
| 4a. Is red lamp on power supply lit? | Go to 4c. | Disconnect power supply cable. Go to 4b. |
| 4b. Does red lamp on power supply now light? | Reconnect power supply cable. Unplug print head and motor cables then reconnect one at a time to isolate cause of lamp not lit. Replace defective component (refer to printer troubleshooting). | Replace power supply. |
| 4c. Does anything print or perform? | Go to 4d. | Place printer test bypass switch SPD4-2 on logic card to ON position. If ok replace opcon. Replace logic card. |
| 4d. Does anything print? | Go to 4e. | Replace logic card. Refer to printer troubleshooting. |
| 4e. Are characters properly formed? | Go to 4f. | Refer to printer troubleshooting. Replace logic card. |
| 4f. Are the proper characters printed? | Go to 4g. | Replace logic card. |
| 4g. Is print density acceptable (good ribbon)? | May be undefined printing problem. Refer to printer troubleshooting. Replace logic card. Go to 4h. | Refer to printer troubleshooting. |

| QUESTION | YES | NO |
|--|---|---|
| 4h. Does paper feed properly (paper supply free)? | Go to 4i. | Check F3 fuse on logic card. Replace line feed motor if fuse blows again. Refer to printer troubleshooting. Replace logic card. |
| 4i. Does print head space and return properly? | Undefined problem in printer test functions. Refer to printer troubleshooting. | Refer to printer troubleshooting. Replace logic card. |
| 5. Did ALARM indicator light during printer test? | Go to 6. | Go to 5a. |
| 5a. Does ALARM indicator light when cover is opened? | Replace logic card. | Replace opcon. |
| 6. Does ALARM indicator light when 1. paper is out and when 2. cover is opened? | Go to 7. | 1. Check printer troubleshooting. 2. Replace opcon. 3. Replace logic card. |
| 7. Do all characters print and functions (except bell and margin set) perform when the keys on the keyboard are operated (local mode)? | Go to 8. | Replace opcon. Replace logic card. |
| 8. Does signal bell ring on CTRL G? | Go to 9. | Go to 8a. |
| 8a. Did signal bell ring during printer test? | Replace logic card. Replace opcon. | Check P106 bell connector. Refer to printer (bell) troubleshooting. Replace logic card. |
| 9. Does signal bell ring eight characters before right margin and at left and right margins? | Go to 10. | Replace logic card. |
| 10. Are margins set and cleared properly? | Go to 11. | Check column indicator positioning adjustment. Replace logic card. |

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| QUESTION | YES | NO |
|--|--|--|
| 11. Does printer respond properly to keyboard operation in loop-back mode? | Go to 12. | Check P301 connector. Bypass answer-back card, if present. Go to 11a. |
| 11a. Does printer now respond properly to keyboard operation in loop-back mode? | Replace answer-back card. | Replace logic card. Replace Terminal Unit. |
| 12. Did ALARM indicator flash and DATA indicator light during loopback? | Go to 13. | Replace logic card. Replace opcon. |
| 13. Does external device connected to interface connector go to data mode (DATA indicator depressed, exclusion key lifted, etc)? (TTL interface — Data Ready, pin 15 on, 0 V) (EIA interface — Carrier Detect, pin 8 on, + 12V) | Go to 14. | Go to 13a. |
| 13a. Is Terminal Ready pin 5, TTL interface on, 0 V, TERM READY (AUTO ANSWER) on? | Go to 13b. | Bypass answer-back card, if present. Go to 13b. |
| 13b. Is Terminal Ready pin 5, TTL interface now on, 0 V? | Replace answer-back card. | Reconnect answer-back card. Replace logic card. |
| 13c. Does external device require Request to Send (EIA interface) to be on? | Use issue 2A logic card or strap ON in cable (Sets w/TAU). Sets with Terminal Unit — go to 13d. | Sets without Terminal Unit — trouble is in external device. |
| 13d. Is Data Term Ready pin 20 EIA interface on, + 12V? | Trouble is in external device. | Replace TAU or TAU1. Go to 13e. (Sets w/TAU2) |
| 13e. Is Data Term Ready auxiliary pin 20 on, + 12V? | Replace TAU2 | Trouble is in external auxiliary device. |
| 14. Does DATA indicator on opcon light when external device is in data mode? | Go to 15. | Go to 14a. |

| QUESTION | YES | NO |
|--|---|---|
| <p>14a. Is EIA interface Clear to Send, pin 5, Carrier Detect pin 8, and Data Set Ready, pin 6 on, + 12V?</p> <p>(Request to Send on if requested by external device (strapped or Issue 2A logic card present – Sets w/TAU).</p> | Go to 14b. | Trouble in external device. |
| 14b. Is TTL interface Data Ready, pin 15 on? | Replace logic card. | Bypass answer-back card. Go to 14c. |
| 14c. Is TTL interface Data Ready, pin 15 now on? | Replace answer-back card. | Replace Terminal Unit. |
| 15. Are data messages properly sent and received in the data mode? | Go to 18. | Go to 15a. |
| 15a. Do PARITY, DUPLEX and CPS keys alternately lock down and release up when depressed. | Go to 16. | Replace opcon. |
| 16. Can any data be received? | Go to 16a. | Replace logic card. Replace Terminal Unit. Go to 25. |
| 16a. Is answer-back message properly sent and/or printed under all conditions. | Go to 17. | Check options 438 thru 444. Replace answer-back card. |
| 17. Does substitute character print on some characters (PARITY key on)? | Remote station may be sending incorrect parity or be at different speed. Go to 22. | Go to 18. |
| 18. Does printer copy and data transmit properly in half-duplex (DATA indicator lit)? | Go to 19. | Check option 434. Replace opcon. Replace logic card. Replace Terminal Unit. Go to 25. |
| 19. Is printer blinded to keyboard transmission in full duplex (DATA indicator lit)? | Go to 20. | Replace opcon. Replace logic card. |
| 20. Does the carriage return automatically when characters to the right of the right hand margin are received (DATA indicator lit)? | Go to 21. | Check option 435. Replace logic card. |

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| QUESTION | YES | NO |
|---|--|---|
| 21. Does Term Ready turn off momentarily on received EOT and when carrier is not received (in data mode) (call disconnect on switched network)? | Go to 22. | Check option 433. Replace logic card. Replace Terminal Unit if present. |
| 22. Is INTRPT indicator lit? | (Interrupt received) Go to 22a. | Go to 23. |
| 22a. Does INTRPT indicator go off when depressed? | Go to 23. | Replace opcon. Replace logic card. Go to 25. |
| 23. Does INTRPT indicator light briefly and bell ring when INTRPT indicator is depressed? | Go to 24. | Replace opcon. Replace logic card. |
| 24. Does remote station receive interrupt? | Go to 26. | Go to 25. |
| 25. Does station pass on-line end-to-end tests with Test Center? | Trouble (if any) is in remote station. | Perform distortion, dBm level, or other locally developed tests including digital loop-back under control of Test Center to isolate trouble to line, Terminal Unit, answer-back card if present, or logic card. |
| 26. Is trouble present but not defined by questions 1 to 25? | Refer to printer or opcon troubleshooting for other symptoms. Replace opcon, power supply, Terminal Unit, answer-back card, logic card, and/or print head to correct trouble. | |

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TROUBLESHOOTING

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| 4. TROUBLESHOOTING GUIDE (Teleprinter Without TDU) | 8 |

1. GENERAL

1.01 This section provides troubleshooting information for the 43 Basic RO Teleprinter.

1.02 This section is reissued to include troubleshooting information for Basic RO Teleprinters with Terminal Auxiliary Unit (TAU1) and answer-back modification kits.

1.03 Troubleshooting is based on isolation of troubles to major components and the correction of troubles by replacement of these components or by reference to the component troubleshooting sections.

Note: Except for the 153A1 Terminal Data Unit and the 861B1 Terminal Auxiliary Unit which are Western Electric components, when ordering replaceable components, prefix each part number with the letters "TP" (ie, TP346392).

1.04 Component troubleshooting sections are:

Section 574-501-300 43 Printer
Section 574-502-300 43 Basic Operator Console (Opcon)

1.05 Trouble isolation provided in this section is intended for use by the craftsperson at the same location as the station. Troubles may

occur either during an installation, a routine maintenance visit or as the result of a customer trouble report.

1.06 Trouble isolation for the attendant is provided in:

999-300-128 How To Operate Manual (DATA-PHONE Service)
999-300-130 How To Operate Manual (Private Line Service)
Manual 372 How To Operate Manual (Internal Use)

For the Test Centers:

Section 668-130-500

1.07 To facilitate trouble correction, the recommended maintenance spares as listed in the parts Section 574-500-800 should be available. In addition, parts for the repair of components as listed in Section 574-501-800, 574-502-800 and 574-503-800 for the printer, operator console and enclosures and paper handling should be available.

1.08 For component access, refer to the Disassembly/Reassembly Section 574-500-720 and Engineering Options Section 574-500-210.

1.09 For location and identification of station components, refer to the parts Section 574-500-800.

1.10 When replacement of the print head, logic card or opcon corrects the trouble, additional checks should be made to isolate and possibly correct the trouble without returning for repair.

On the print head — check cable continuity.
On the logic card — check TDU or Terminal Unit, power supply cables or fuse.
On the opcon — check the cable and key-switches per opcon troubleshooting.

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1.11 When replacement of a component does not correct the trouble, the original component should be reinstalled before going to the next step of the trouble analysis. If there are no more steps provided, go to the last question.

1.12 When returned to the WECO Service Center for repair, the set or components should be packed in the container in which the replacement is received. This includes the conductive (black) plastic bag used with the logic card for static protection.

1.13 Components returnable for repair and referred to in this section for replacement are:

430850 Print Head
43K001/AAA Operator Console
430700 Power Supply
410710 Answer-Back Card

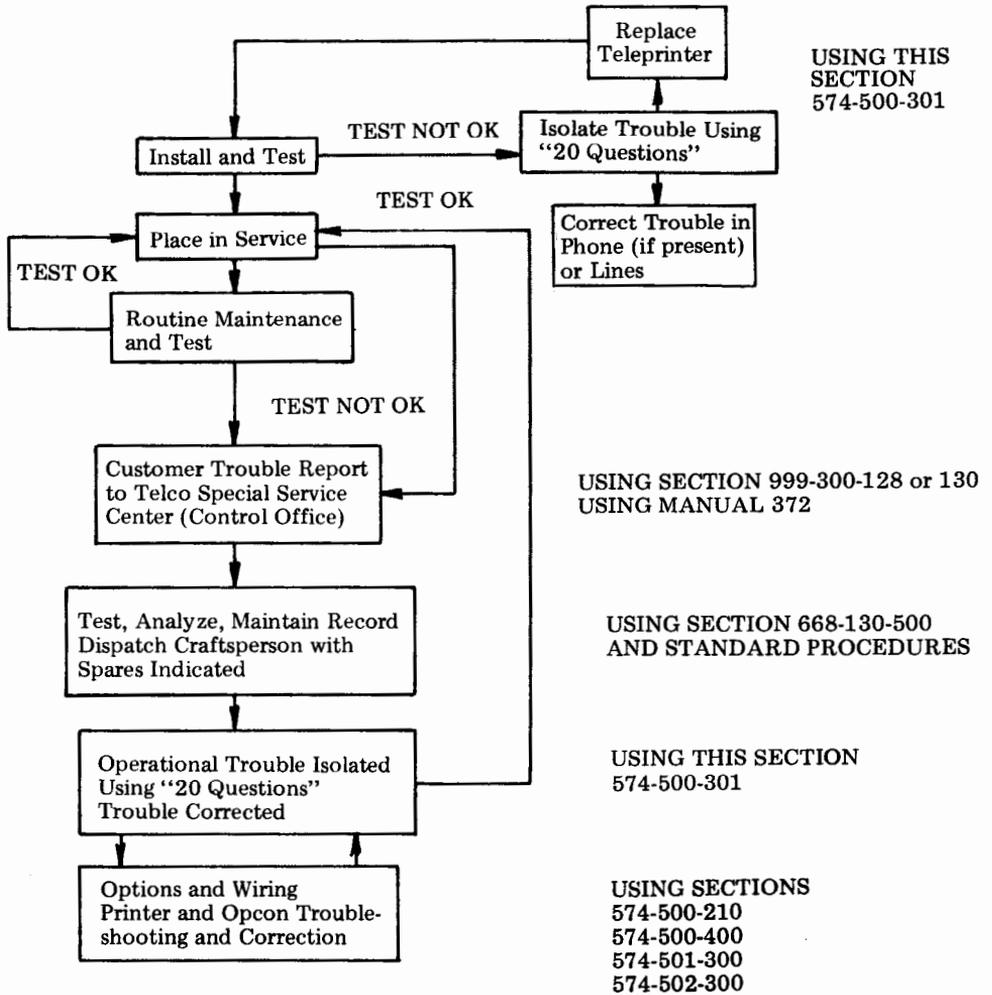
410755 Terminal Auxiliary Unit (TAU1)
410740 Logic Card
153A1 Terminal Data Unit
861B1 Terminal Auxiliary Unit

1.14 Before disconnecting internal cables or replacing circuit cards, turn off ac power. Make certain power cord is connected to a properly polarized and grounded ac outlet.

1.15 Refer to 2. TROUBLESHOOTING FLOW DIAGRAM for the intended flow of troubleshooting procedures.

1.16 Trouble analysis is presented in the form of a "20 Questions" routine in 3. and 4. TROUBLESHOOTING GUIDE. The guide, with questions and yes or no columns, should be used always starting with the first question and proceeding according to the "yes" or "no" directive.

2. TROUBLESHOOTING FLOW DIAGRAM



3. TROUBLESHOOTING GUIDE (Teleprinter With TDU)

| QUESTIONS | YES | NO |
|---|--|--|
| 1. Are any of the 3 mode indicators lit? (Power available and set power on.) (Depress other indicators if proper indicator is not lit.) | Go to 2. | Go to 1a. |
| 1a. Is there any indication of power in the set? (Indicators flash when power is turned on and off, red lamp on power supply, etc.) | Go to 1b. | Check and replace set F1 fuse if blown. Replace power supply if fuse blows again. If not blown go to 1b. |
| 1b. Is red lamp on power supply lit? | Check P107 opcon cable connector. Replace logic card. Replace opcon. | Disconnect power supply cable. Go to 1c. |
| 1c. Does red lamp on power supply now light? | Unplug TDU, answer-back card (if present), opcon and printer cables (6). Reconnect power supply cable. Go to 1d. | Check F2 fuse on power supply. Replace if blown. Replace power supply. Replace rear frame assembly. |
| 1d. Does red lamp on power supply still light? | Go to 1e. | Replace logic card. |
| 1e. Does red lamp on power supply go out after the TDU, opcon, answer-back card and printer cables are reconnected one at a time? | Replace the TDU, opcon, answer-back card or the printer component (refer to printer troubleshooting) that caused lamp to extinguish. | Intermittent short. Check for foreign objects between circuit lands or terminals. |
| 2. Does TERM READY indicator light when power is turned on? | Go to 3. | Go to 2a. |
| 2a. Does ALARM indicator: 1. Flash? 2. Light (cover closed and paper installed)? | 1. Replace logic card. 2. Replace opcon or refer to printer troubleshooting. | Go to 3. |
| 3. Does RESET indicator cause the printer to carriage return and line feed and turn on the TERM READY indicator when depressed (ALARM indicator off)? | Go to 4. | Replace opcon. Replace logic card. |

| QUESTIONS | YES | NO |
|---|---|--|
| 4. Does PRINTER TEST key cause the printer to carriage return and line feed and turn on the TERM READY indicator when released? | Go to 5. | Replace opcon. Replace logic card. |
| 5. Does test message print and perform properly while the PRINTER TEST key is depressed? | Go to 6. | Check option 431 and 432. Go to 5a. |
| 5a. Is red lamp on power supply lit? | Go to 5c. | Disconnect power supply cable. Go to 5b. |
| 5b. Does red lamp on power supply now light? | Reconnect power supply cable. Unplug print head and motor cables then reconnect one at a time to isolate cause of lamp not lit. Replace defective component (refer to printer troubleshooting). | Replace power supply. |
| 5c. Does anything print or perform? | Go to 5d. | Place the printer test bypass switch SPD4-2 on logic card to ON position. If ok, replace opcon. Replace logic card. |
| 5d. Does anything print? | Go to 5e. | Replace logic card. Refer to printer troubleshooting. |
| 5e. Are characters properly formed? | Go to 5f. | Refer to printer troubleshooting. Replace logic card. |
| 5f. Are the proper characters printed? | Go to 5g. | Replace logic card. |
| 5g. Is print density acceptable (good.. ribbon)? | May be undefined printing problem. Refer to printer troubleshooting. Replace logic card. Go to 5h. | Refer to printer troubleshooting. |

| QUESTION | YES | NO |
|--|---|--|
| 5h. Does paper feed properly (paper supply free)? | Go to 5i. | Check F3 fuse on logic card. Replace line feed motor if fuse blows again. Refer to printer troubleshooting. Replace logic card. |
| 5i. Does print head space and return properly? | Undefined problem in printer test functions. Refer to printer troubleshooting. | Refer to printer troubleshooting. Replace logic card. |
| 6. Did ALARM indicator light during printer test? | Go to 7. | Go to 6a. |
| 6a. Does ALARM indicator light when cover is opened? | Replace logic card. | Replace opcon. |
| 7. Does ALARM indicator light when 1. paper is out and when 2. cover is opened? | Go to 8. | 1. Check printer troubleshooting. 2. Replace opcon. 3. Replace logic card. |
| 8. Does signal bell ring on received CTRL G? | Go to 9. | Go to 8a. |
| 8a. Did signal bell ring during printer test? | Replace logic card. | Check P106 bell connector. Refer to printer (bell) troubleshooting. Replace logic card. |
| 9. Does signal bell ring eight characters before right margin and at left and right margins? | Go to 10. | Replace logic card. |
| 10. Are margins set and cleared properly? | Go to 11. | Check column indicator positioning adjustment. Replace logic card. |

| QUESTION | YES | NO |
|---|---|--|
| 11. Does DATA indicator light following a received call in automatic answer mode? | Go to 12. | Remote station must also go to data mode. Check that modular cords are not reversed. Replace TDU. Replace logic card. Go to 18. |
| 12. Are data messages properly sent and received in the data mode? | Go to 13. | Check options 436b and 437b. Go to 13. |
| 13. Can any data be received? | Go to 13a. | Replace logic card. Replace TDU. Go to 18. |
| 13a. Is answer-back message properly send and/or printer under all conditions? | Go to 14. | Check options 438 through 444. Replace answer-back card. |
| 14. Does substitute character print on some characters (option 437a enabled)? | Remote station may be sending incorrect parity or be at different speed. Go to 17. | Go to 15. |
| 15. Does the carriage return automatically when characters to the right of the right-hand margin are received (DATA indicator lit)? | Go to 16. | Check option 435. Replace logic card. |
| 16. Does call disconnect on received EOT and when carrier is not received (in data mode)? | Go to 17. | Check option 433. Replace logic card. Replace TDU. |
| 17. Does station pass on-line end-to-end tests with Testing Station or Test Center? | Trouble (if any) is in remote station. | Perform distortion, dBm level, or other parameter tests including digital loopback under control of Test Center to isolate trouble to line, TDU, answer-back card, if present or logic card (904G, Section 668-400-300). |
| 18. Is trouble present but not defined by Questions 1 to 17? | Refer to printer or opcon troubleshooting for other symptoms. Replace opcon, power supply, TDU, logic card, answer-back card and/or print head to correct trouble. | |

4. TROUBLESHOOTING GUIDE (Teleprinter Without TDU)

| QUESTIONS | YES | NO |
|---|--|--|
| 1. Are any of the 3 mode indicators lit? (Power available and set power on.) (Depress other keys if proper key not lit.) | Go to 2. | Go to 1a. |
| 1a. Is there any indication of power in the set? (Indicators flash when power is turned on and off, red lamp on power supply, etc.) | Go to 1b. | Check and replace set F1 fuse if blown. Replace power supply if fuse blows again. If not blown go to 1b. |
| 1b. Is red lamp on power supply lit? | Check P107 opcon cable connector. Replace logic card. Replace opcon. | Disconnect power supply cable. Go to 1c. |
| 1c. Does red lamp on power supply now light? | Unplug terminal unit and answer-back card if present, opcon and printer (6) cables. Reconnect power supply cable. Go to 1d. | Check F2 fuse on power supply. Replace if blown. Replace power supply. Replace rear frame assembly. |
| 1d. Does red lamp on power supply still light? | Go to 1e. | Replace logic card. |
| 1e. Does red lamp on power supply go out after the terminal unit, opcon, answer-back card and printer cables are reconnected one at a time? | Replace the terminal unit, opcon, answer-back card or the printer component (refer to printer troubleshooting) that caused lamp to extinguish. | Intermittent short. Check for foreign objects between circuit lands or terminals. |
| 2. Does ALARM indicator: 1. Flash? 2. Light (cover closed and paper installed)? | 1. Replace logic card. 2. Replace opcon or refer to printer troubleshooting. | Go to 3. |

| QUESTIONS | YES | NO |
|---|---|---|
| 3. Does RESET key cause the printer to carriage return line feed and turn on the TERM READY indicator when depressed (ALARM indicator off)? | Go to 4. | Replace opcon. Replace logic card. |
| 4. Does PRINTER TEST key cause the printer to carriage return and line feed and turn on the TERM READY indicator when released? | Go to 5. | Replace opcon. Replace logic card. |
| 5. Does test message print and perform properly while the PRINTER TEST key is depressed? | Go to 6. | Check option 431 and 432. Go to 5a. |
| 5a. Is red lamp on power supply lit? | Go to 5c. | Disconnect power supply cable. Go to 5b. |
| 5b. Does red lamp on power supply now light? | Reconnect power supply cable. Unplug print head and motor cables then reconnect one at a time to isolate cause of lamp not lit. Replace defective component (refer to printer troubleshooting). | Replace power supply. |
| 5c. Does anything print or perform? | Go to 5d. | Place the printer test bypass switch SPD4-2 on logic card to ON position. If ok, replace opcon. Replace logic card. |
| 5d. Does anything print? | Go to 5e. | Replace logic card. Refer to printer troubleshooting. |
| 5e. Are characters properly formed? | Go to 5f. | Refer to printer troubleshooting. Replace logic card. |
| 5f. Are the proper characters printed? | Go to 5g. | Replace logic card. |
| 5g. Is print density acceptable (good ribbon)? | May be undefined printing problem. Refer to printer troubleshooting. Replace logic card. Go to 5h. | Refer to printer troubleshooting. |

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| QUESTION | YES | NO |
|--|---|--|
| 5h. Does paper feed properly (paper supply free)? | Go to 5i. | Check F3 fuse on logic card. Replace line feed motor if fuse blows again. Refer to printer troubleshooting. Replace logic card. |
| 5i. Does print head space and return properly? | Undefined problem in printer test functions. Refer to printer troubleshooting. | Refer to printer troubleshooting. Replace logic card. |
| 6. Did ALARM indicator light during printer test? | Go to 7. | Go to 6a. |
| 6a. Does ALARM indicator light when cover is opened? | Replace logic card. | Replace opcon. |
| 7. Does ALARM indicator light when 1. paper is out and when 2. cover is opened? | Go to 8. | 1. Check printer troubleshooting. 2. Replace opcon. 3. Replace logic card. |
| 8. Does signal bell ring on received CTRL G? | Go to 9. | Go to 8a. |
| 8a. Did signal bell ring during printer test? | Replace logic card. Replace opcon. | Check P106 bell connector. Refer to printer (bell) troubleshooting. Replace logic card. |
| 9. Does signal bell ring eight characters before right margin and at left and right margins? | Go to 10. | Replace logic card. |
| 10. Are margins set and cleared properly on-line? | Go to 11. | Replace logic card. |

| QUESTION | YES | NO |
|---|---|---|
| <p>11. Does external device connected to interface connector go to data mode (data key depressed, exclusion key lifted, etc)?</p> <p>(TTL interface — Data Ready, pin 15 on, 0 V) (EIA interface — Carrier Detect, pin 8 on, +12 V)</p> | Go to 12. | Go to 11a. |
| <p>11a. Is Terminal Ready pin 5, TTL interface on, 0 V, TERM READY (AUTO ANSW) indicator on?</p> | Go to 11c. | Bypass answer-back card if present, Go to 11b. |
| <p>11b. Is Terminal Ready pin 5, TTL interface now on, 0 V?</p> | Replace answer-back card. | Reconnect answer-back card. Replace logic card. |
| <p>11c. Does external device require Request to Send (EIA interface) to be on?</p> | Use Issue 2A logic card or strap ON in cable. (Sets w/TAU) Sets with terminal unit, go to 11d. | Sets without Terminal Unit — Trouble is in external device. |
| <p>11d. Is Data Term Ready pin 20, EIA interface on, +12 V?</p> | Trouble is in external device. | Replace Terminal Unit if present. |
| <p>12. Does DATA indicator on opcon light when external device in data mode?</p> | Go to 13. | Go to 12a. |
| <p>12a. Is EIA interface Clear to Send, pin 5, Carrier Detect pin 8, and Data Set Ready, pin 6 on, +12 V.</p> <p>(Request to Send on if required by external device (strapped or Issue 2A logic card present — Sets w/TAU).</p> | Go to 12b. | Trouble in external device. |
| <p>12b. Is TTL interface Data Ready, pin 15 on?</p> | Replace logic card. | Bypass answer-back card. Go to 12c. |
| <p>12c. Is TTL interface Data Ready pin 15 now on?</p> | Replace answer-back card. | Replace Terminal Unit. |
| <p>13. Are data messages properly sent and received in the data mode?</p> | Go to 16. | Go to 13a. |
| <p>14. Can any data be received?</p> | Go to 14a. | Replace logic card. Replace Terminal Unit if present. Go to 19. |
| <p>14a. Is answer-back message properly sent and/or printed under all conditions?</p> | Go to 15. | Check options 438 through 444. Replace answer-back card. |

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| QUESTION | YES | NO |
|---|--|---|
| 15. Does substitute character print on some characters (option 437a. enabled)? | Remote station may be sending incorrect parity or be at different speed. (Check option 436). Go to 18. | Go to 16. |
| 16. Does the carriage return automatically when characters to the right of the right-hand margin are received (DATA indicator lit)? | Go to 17. | Check option 435. Replace logic card. |
| 17. Does call disconnect on received EOT and when carrier is not received (in data mode)? | Go to 18. | Check option 433. Replace logic card. Replace Terminal Unit if present. |
| 18. Does remote station receive interrupt? | Go to 20. | Go to 19. |
| 19. Does station pass on-line end-to-end tests with Test Center? | Trouble (if any) is in remote station. | Perform distortion, dBm level, or other parameter tests, including digital loopback under control of Test Center to isolate trouble to line, terminal unit, answer-back card if present, or logic card. |
| 20. Is trouble present but not defined by Questions 1 to 19? | Refer to printer or opcon troubleshooting for other symptoms. Replace opcon, power supply, terminal unit, answer-back card if present, logic card and/or print head to correct trouble. | |

43 TELEPRINTER 8-LEVEL BUFFERED SEND/RECEIVE (BSR) STATION

TROUBLESHOOTING

| CONTENTS | PAGE | |
|---|------|---|
| 1. GENERAL | 1 | 1.06 Trouble isolation for the user is provided in the How to Operate Manual 999-300-135. |
| 2. TROUBLESHOOTING FLOW DIAGRAM..... | 2 | 1.07 To facilitate trouble correction, the recommended maintenance spares listed in Section 574-500-800, 43 Teleprinter, Parts, should be available. |
| 3. TROUBLESHOOTING GUIDE..... | 3 | 1.08 Refer to Section 574-500-720, 43 Teleprinter, Disassembly/Reassembly for component access. |
| 4. 403378 INTERFACE LOOP-BACK CONNECTOR | 7 | 1.09 For location and identification of terminal components, refer to Section 574-500-800, 43 Teleprinter, Parts. |
| Modification Instructions | 7 | 1.10 Components returnable for repair and referred to in this section for replacement are: |
| 5. CONTROLLER SELF TEST..... | 9 | 4340 BZJ — 43 Teleprinter, Tractor Feed |
| 1.01 This section provides troubleshooting information for the 43 Teleprinter 8-Level Buffered Send/Receive (BSR) Station, Friction Feed and Tractor Feed. | | 4340 BZD — 43 Teleprinter, Friction Feed |
| 1.02 Whenever this section is reissued, the reason for reissue will be listed in this paragraph. | | 4240 BZD — 43 Teleprinter, Friction Feed |
| 1.03 Troubleshooting is based on isolation of troubles to major components and the correction of troubles by replacement of these components or by reference to the component troubleshooting paragraphs in the related component sections of the manual. | | 43K202GAB — Keyboard |
| <i>Note:</i> When ordering replaceable components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410205). | | 43K202GAG — Keyboard |
| 1.04 Component troubleshooting sections are: | | 410745 — Card, Logic |
| 574-500-300 — 43 Friction and Sprocket (Pin) Feed Printer | | 410785 — Card, Logic |
| 574-501-301 — 43 Tractor Feed Printer | | 411901 — Card, Controller |
| 574-502-301 — 43 Buffered Keyboard | | 430700 — Power Supply |
| 1.05 Trouble isolation provided in this section is intended for use by the craftsman at the station location. Troubles may occur either during an installation, a routine maintenance visit or as the result of a customer trouble report. | | 430780 — Power Supply |
| | | 411952 — Application Program Card Assembly in 43FG210/AA/01 |
| | | 411954 — Application Program Card Assembly in 43FG210/BA/01 |
| | | 411955 — Application Program Card Assembly in 43FG110/BA/01 |
| | | 1.11 When replacement of a component does not correct the trouble, the original component should be reinstalled before going to the next step of the trouble analysis. If there are no more directives provided, go to the last question. |

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1.12 Circuitry used in the keyboard can be damaged by high static voltage discharge. The 346392 wrist strap is available to ground service personnel.

1.13 When returned to the WECO Service Center for repair, the teleprinter or components should be packed in the container in which the replacement is received. This includes the conductive (black) plastic bag used with the keyboard, for static protection.

1.14 Before disconnecting cables or replacing circuit cards, turn off ac power. Make certain power cords are connected to a properly polarized and grounded ac outlet.

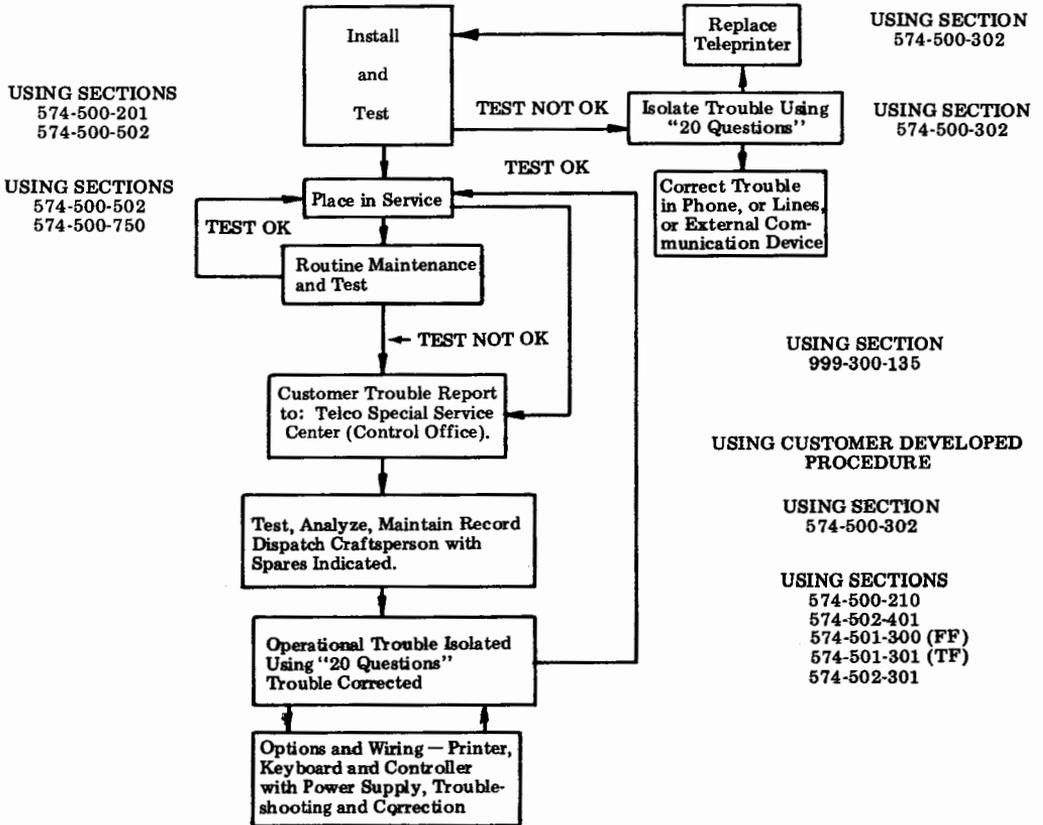
1.15 Refer to 2. TROUBLESHOOTING FLOW DIAGRAM for the intended flow of troubleshooting.

1.16 Trouble analysis is presented in the form of a "20 Questions" routine in 3. TROUBLESHOOTING GUIDE. The guide, with questions and yes or no columns, should be used always starting with the first question and proceeding according to the "yes" or "no" directive.

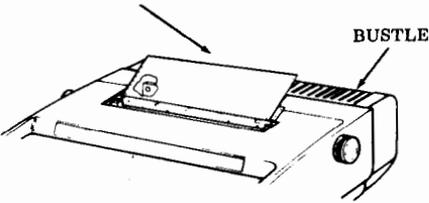
1.17 If a component fails its self-test, replace the component.

1.18 If the trouble cannot be corrected using the "20 Questions" routine, replace the terminal.

2. TROUBLESHOOTING FLOW DIAGRAM



3. TROUBLESHOOTING GUIDE

| <u>QUESTION</u> | <u>YES</u> | <u>NO</u> |
|--|---|---|
| 1. Are any indicators on keyboard lit? (Power available, ac cord plugged in, power switch on, and cover closed.) | Go to 2. | Go to 1a. |
| 1a. Is there any indication of power in the set? (Keyboard lamps flash when power is turned on and off, print head indexes to the left, RED lamp on power supply lit, etc.) | Go to 1c. | With power off, check ac F1 fuse. If fuse is OK, go to 1c. Replace fuse if blown. Go to 1b. |
| 1b. Do any indicators now light when power is turned on? | Original trouble is corrected. | Replace power supply. |
| 1c. Is RED lamp on power supply lit? (Visible through slot in bustle, 6th slot from left.)  | Check cable to controller card assembly. Check seating of power supply output cable. Check keyboard cable plug. Go to 2. | Disconnect power supply cable from power supply and go to 1d. |
| 1d. Does RED lamp on power supply now light? | Unplug controller cable, keyboard and all printer cables (7). Reconnect power supply cable and go to 1e. | Check fuse (F2) on power supply. Replace if blown. Replace power supply. |

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| <u>QUESTION</u> | <u>YES</u> | <u>NO</u> |
|---|---|--|
| 1e. Does RED lamp on power supply still light? | Go to 1f. | Replace logic card. |
| 1f. Does RED lamp on power supply go out after the controller card assembly, keyboard and printer cables are reconnected one at a time? | Replace the controller card assembly, keyboard or the printer component that caused lamp to extinguish. | Intermittent short. Check for foreign objects between circuit lands or terminals. |
| 2. Does set continually go to options prep mode when powering up. | Recharge Battery (10 hours for full charge) Replace battery on the controller card assembly. Replace controller card assembly. | Go to 3. |
| 3. Do all indicators operate properly (ie, light and extinguish under normal operation)? | Go to 4. | Check continuity through depressed interlock switch. Perform Controller Self-Test. Replace 411901 controller card. Replace application program card assembly. Perform Keyboard Self-Test. See 999-300-135. If alarm indicator fails on paper-out, refer to Printer Troubleshooting. |
| 4. Can any characters be locally generated from the opcon to the printer? | Go to 5. | Refer to Printer Troubleshooting. Replace logic card. |
| 5. Are characters properly formed? | Go to 6. | Refer to Printer Troubleshooting. Replace logic card. |
| 6. Is print density acceptable? (Good Ribbon) | Go to 7. | Refer to Printer Troubleshooting. |
| 7. Does paper feed properly? | Go to 8. | Check fuse (f3) on logic card. Replace logic card if fuse blows again. Refer to Printer Troubleshooting. Replace logic card. |

| <u>QUESTION</u> | <u>YES</u> | <u>NO</u> |
|--|------------|--|
| 8. Does print head space and return properly? | Go to 9. | Refer to Printer Troubleshooting. Replace logic card. Replace terminal. |
| 9. Do all characters print, including numeric pad, and functions perform (except bell and keyboard edit cluster), when the keys on the keyboard are operated locally from the keyboard to the printer? | Go to 10. | Perform Keyboard Self-Test. Replace logic card. |
| 10. Does signal bell ring under any conditions? (CTRL G, right margin, received interrupt, etc.) | Go to 11. | Refer to Printer Troubleshooting. Perform Controller Self-Test. Replace 411901 controller card. Replace application program card assembly. Replace logic card. |
| 11. Does signal bell ring under all conditions? | Go to 12. | Perform Controller Self-Test. Replace 411901 controller card. Replace application program card assembly. |
| 12. Are margins set, cleared and right margin released properly? | Go to 13. | Perform Controller Self-Test. Replace 411901 controller card. Replace application program card assembly. |
| 13. Are tabs (vert & horz) set, cleared and restored properly. | Go to 14. | Perform Controller Self-Test. Replace 411901 controller card. Replace application program card assembly. |
| 14. Can options prep mode be entered, options changed and loaded properly? | Go to 15. | Perform Controller Self-Test. Replace 411901 controller card. Replace application program card assembly. |

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| QUESTION | YES | NO |
|---|-----------------------------------|--|
| 15. Does answer-back print correctly on CTRL 4? | Go to 16. | Check user programmable options for coded ABmsg? Perform Controller Self-Test. Replace 411901 controller card. Replace application program card assembly. |
| 16. Can data be entered into buffer, edited, printer out, stored, recalled and cleared properly. | Go to 17. | Perform Controller Self-Test. Replace 411901 controller card. Replace application program card assembly. |
| 17. Does Term On Line light after entering the data mode (switched network data set — high pitched tone heard when call is originated)? | Go to 18. | Perform Controller Self-Test. Replace 411901 controller card. Replace application program card assembly. Check data set cable. Check external communication equipment. |
| 18. Can any data be both sent and received on-line? | Go to 19. | Go to 18a. |
| 18a. Does data set provide analog loopback feature? | Place in test mode and go to 18b. | Connect an interface loopback arrangement (see paragraph 4, Page 8), then go to 18c. |
| 18b. With teleprinter in full duplex, SR, terminal on-line mode, is sent data received? | Go to 19. | Connect an interface loopback arrangement (see paragraph 4, Page 8), then go to 18c. |
| 18c. With teleprinter in full duplex, SR, terminal on-line mode, is sent data received? | Go to 19. | Replace 411901 controller card. |

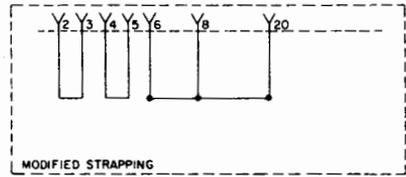
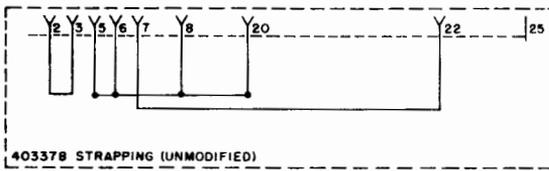
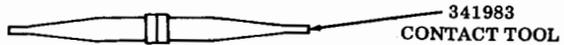
| QUESTION | YES | NO |
|--|--------------------------|--|
| <p>19. Are data messages properly sent and received in terminal on-line mode (both batch and S/R)?</p> | <p>Place in service.</p> | <p>Check user programmable options — Speed, StopU, PrTyp, etc.</p> <p>Perform Keyboard Self-Test. See How to Operate Manual.</p> <p>If test fails, replace keyboard.</p> <p>If test is OK, perform Controller Self-Test.</p> <p>If controller LED is not lit (test fails), replace 411901.</p> <p>If self-test is OK, trouble is in external communication device or remote terminal. (If interface loopback test was not performed the trouble may be in either the teleprinter or external communications device.)</p> |

SECTION 574-500-302

4. INTERFACE LOOPBACK ARRANGEMENTS

- 4.01 Connect a 921A Data Test Set (DTS), or equivalent, with the interface lead jacks connected as follows: 2 to 3, 4 to 5 and 6 to 8 to 20.
- 4.02 If a 921A DTS or equivalent interface adapter is not available, a 403378 interface loopback connector may be modified.

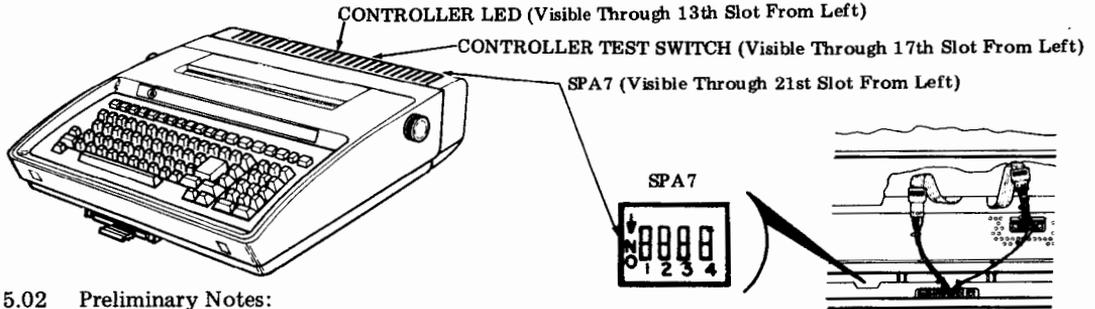
Modification Instructions



- (a) Disassemble the 403378 interface loopback connector.
- (b) Cut the strap between terminals 5 and 6 at terminal 6.
- (c) Using the 341983 contact tool, remove terminal 5 and the attached strap.
- (d) Using the 341983 contact tool, remove the strap between positions 7 and 22 and install between positions 4 and 5.
- (e) Reassemble the connector.

5. CONTROLLER SELF-TEST

5.01 An LED, located under the thirteenth bustle air vent slot from the left, is used to indicate controller operation and the result of the self-test routine. The round, black test switch actuator is located under the seventeenth bustle air vent slot from the left.



5.02 Preliminary Notes:

- (a) The controller self-test is independent of the keyboard and the printer.
- (b) Information stored in the volatile memory will be lost when this test is performed and the terminal may be unresponsive to the modem for about one minute.
- (c) Ignore any data that may print as a result of this test.
- (d) If the controller LED continues to flash (approximately every seven seconds), the controller test switch may be in its 'locked' position. To release the switch, rotate the actuator 1/8-turn counter-clockwise.

A. Controller Test

- (1) Momentarily depress the controller test switch actuator by reaching through the air vent slot with a small, nonmetallic tool such as an orange stick or a plastic rod.
- (2) The controller LED will flash periodically during the test (approximately 30 seconds) indicating the test is in progress.
- (3) When the test is concluded (all flashing stops) the LED will be lit indicating that the test passed and normal operation may be resumed.
- (4) If the LED is not lit after conclusion of the test (all flashing stopped) the controller failed the test. Proceed to B. Controller — Application Card Isolation Test.

Caution: Depression of the controller test switch or turning off ac power while the controller is performing a self-test can result in the loss of all programmed options. In this case, default (factory furnished) values will be loaded.

SECTION 574-500-302

B. Controller — Application Card Isolation Test

Note: Perform this test only if controller failed A. Controller Test.

- (1) Remove the application program card from the controller assembly. Reassemble and place the controller without the application program card into the rear frame. Reconnect cable plug to top of controller assembly. Place SPA 7 switches as follows:

1, 2, and 3 — OFF
4 — ON

- (2) Momentarily depress the controller test switch actuator.
- (3) The controller LED will flash periodically during the test (approximately 30 seconds) indicating the test is in progress.
- (4) If the LED is ON at the end of the test, replace the defective application program card. If the LED is OFF at the end of the test, replace the 411901 controller card assembly.

Note: After testing, return controller switches to their former position.

43 TELEPRINTER 8-LEVEL BUFFERED SELECTIVE CALLING (BSC) STATION
TROUBLESHOOTING

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1. GENERAL

1.01 This section provides troubleshooting information for the 43 Teleprinter 8-Level Buffered Selective Calling (BSC) Station.

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

1.03 Troubleshooting is based on isolation of troubles to major components and the correction of troubles by replacement of these components or by reference to the component troubleshooting sections.

Note: When ordering replaceable components unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410745).

1.04 Component troubleshooting sections are:

| | |
|-------------|---------------------------------------|
| 574-501-300 | 43 Friction and Sprocket Feed Printer |
| 574-501-301 | 43 Tractor Feed Printer |
| 574-502-301 | 43 Buffered Keyboard |

1.05 Trouble isolation provided in this section is intended for use by the craftsperson at the station location. Troubles may occur either

during an installation, a routine maintenance visit or as the result of a customer trouble report.

1.06 Trouble isolation for the attendant is provided in the 999-300-137 How To Operate Manual and for the Test Center in Section 668-130-504.

1.07 To facilitate trouble correction, the recommended maintenance spares as listed in Section 574-500-800, Parts, should be available. In addition, parts for the repair of components as listed in Section 574-501-800, 574-501-801, 574-502-800 and 574-503-800 for the printer, keyboard and enclosures and paper handling should be available.

1.08 For component access, refer to Section 574-500-720, Disassembly/Reassembly and Section 574-500-210, Engineering Options.

1.09 For location and identification of station components, refer to Section 574-500-800, Parts.

1.10 When replacement of the print head, logic card or keyboard corrects the trouble, additional checks should be made to isolate and possibly correct the trouble without returning for repair.

On the print head — check cable continuity.
On the logic card — check SSI interface and power supply cables or fuse.

On the keyboard — check the cable and key-switches per keyboard troubleshooting.

1.11 When replacement of a component does not correct the trouble, the original component should be reinstalled before going to the next step of the trouble analysis. If there are no more directives provided, go to the last question.

1.12 Circuitry used in the keyboard can be damaged by high static voltage discharge. The 346392 wrist strap is available to ground service personnel.

1.13 When returned to the WECO Service Center for repair, the teleprinter or components should be packed in the container in which the replacement is received. This includes the conductive (black) plastic bag used with the keyboard for static protection.

1.14 Components returnable for repair referred to in this section for replacement are:

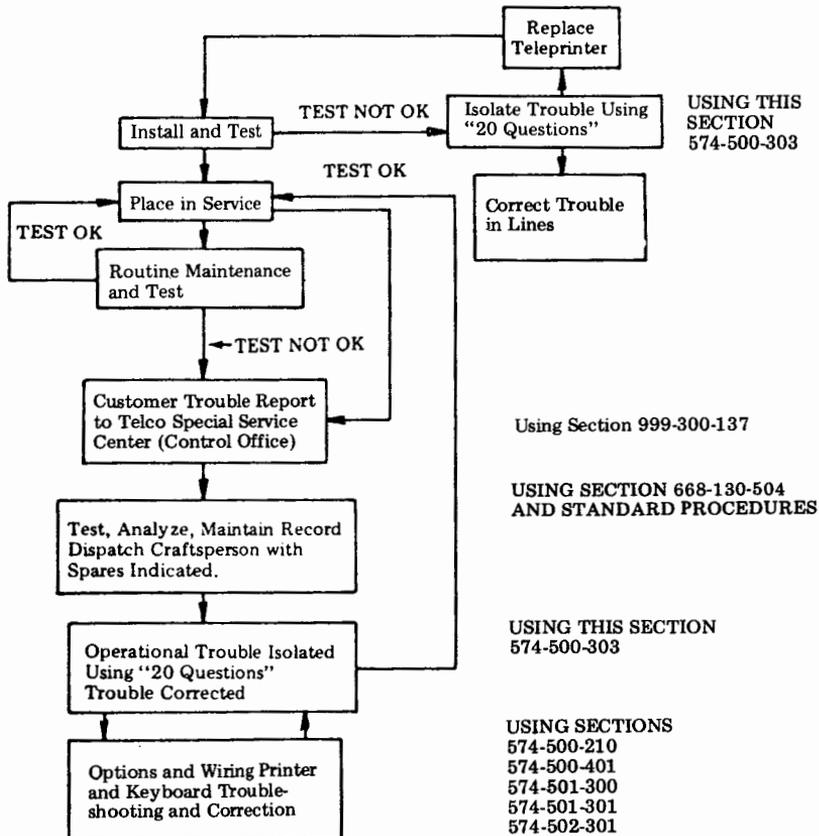
- 430850 Print Head
- 43K202 Type Keyboard
- 430780 Power Supply
- 410745 Logic Card
- 410785 Logic Card
- 411901 Controller Card Assembly
- 43FG210/BA/01 Circuit Card Portion Only

1.15 Before disconnecting cables or replacing circuit cards, turn off ac power. Make certain power cords are connected to a properly polarized and grounded ac outlet.

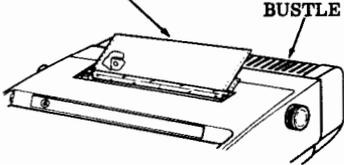
1.16 Refer to 2. TROUBLESHOOTING DIAGRAM for the intended flow of troubleshooting.

1.17 Trouble analysis is presented in the form of a "20 Questions" routine in 3. TROUBLESHOOTING GUIDE. The guide, with questions and yes or no columns, should be used always starting with the first question and proceeding according to the "yes" or "no" directive.

2. TROUBLESHOOTING FLOW DIAGRAM



3. TROUBLESHOOTING GUIDE

| QUESTION | YES | NO |
|---|--|--|
| 1. Are any indicators on keyboard lit? (Power available, ac cord plugged in, power switch on, and cover closed.) | Go to 2. | Go to 1a. |
| 1a. Is there any indication of power in the set? (Keyboard lamps flash when power is turned on and off, print head indexes to the left. RED lamp on power supply lit, etc.) | Go to 1c. | With power off, check set ac F1 fuse. If fuse is OK, go to 1c. Replace fuse if blown. Go to 1b. |
| 1b. Do any indicators now light when power is turned on? | Original trouble is corrected. | Replace power supply. Replace rear frame assembly. |
| <p>1c. Is RED lamp on power supply lit?</p> <p>(Visible through slot in bustle, 6th slot from left.)</p>  <p style="text-align: center;">BUSTLE</p> | <p>Check cable to controller card assembly.</p> <p>Check seating of power supply output cable.</p> <p>Check keyboard cable plug.</p> <p>Check fuse (F2) on power supply. Replace if blown.</p> <p>Check Controller Self-Test — See Page 8.</p> <p>Check Keyboard Self-Test — See How To Operate Manual.</p> <p>Replace power supply. Replace controller card assembly. Replace logic card.</p> | Disconnect power supply cable from power supply and go to 1d. |
| 1d. Does RED lamp on power supply now light? | <p>Unplug controller cable, keyboard and all printer cables (7).</p> <p>Reconnect power supply output cable and go to 1e.</p> | <p>Check fuse (F2) on power supply. Replace if blown.</p> <p>Replace power supply.</p> <p>Replace rear frame assembly.</p> |

SECTION 574-500-303

| QUESTION | YES | NO |
|---|---|---|
| 1e. Does RED lamp on power supply still light? | Go to 1f. | Replace logic card. |
| 1f. Does RED lamp on power supply go out after the controller card assembly, keyboard and printer cables are reconnected one at a time? | Replace the controller card assembly, keyboard or the printer component that caused lamp to extinguish. | Intermittent short. Check for foreign object between circuit lands or terminals. |
| 2. Does set continually go to options default mode when powering up (provided power to the set had been on at least 10 hours to charge the controller battery)? | Check Controller Self-Test, see Page 8. Replace battery on the controller card assembly. Replace controller card assembly. | Go to 3. |
| 3. Do all indicators operate properly (ie, light and extinguish under normal operation)? | Go to 4. | Check continuity through depressed interlock switch. Check Controller Self-Test — See Page 8. Check Keyboard Self-Test — See How To Operate Manual. Replace logic card. If alarm indicator fails on paper out, go to Printer Troubleshooting, Section 574-501-300 or 574-501-301. |
| 4. Can any characters be locally generated from the keyboard to the printer? | Go to 5. | Go to Printer Troubleshooting, Section 574-501-300 or 574-501-301. Replace logic card. |
| 5. Are characters properly formed? | Go to 6. | Go to Printer Troubleshooting, Section 574-501-300 or 574-501-301. Replace logic card. |
| 6. Is print density acceptable? (Good ribbon) | Go to 7. | Go to Printer Troubleshooting, Section 574-501-300 or 574-501-301. |

| QUESTION | YES | NO |
|---|-----------|--|
| 7. Does paper feed properly? | Go to 8. | <p>Check fuse (F3) on logic card.</p> <p>Replace line feed motor if fuse blows again.</p> <p>Go to Printer Troubleshooting, Section 574-501-300 or 574-501-301.</p> <p>Replace logic card.</p> |
| 8. Does print head space and return properly? | Go to 9. | <p>Go to Printer Troubleshooting, Section 574-501-300 or 574-501-301.</p> <p>Replace logic card.</p> |
| 9. Do all characters print, including numeric pad and functions perform (except bell and keyboard edit cluster), when the keys on the keyboard are operated locally to the printer. | Go to 10. | <p>Check Keyboard Self-Test — See How to Operate Manual.</p> <p>Replace logic card.</p> |
| 10. Does signal bell ring under any conditions? (CTRL G, right margin, etc.) | Go to 11. | <p>Go to Printer Troubleshooting, Section 574-501-300 or 574-501-301.</p> <p>Check Controller Self-Test — See Page 8.</p> <p>Replace logic card.</p> |
| 11. Does signal bell ring under all conditions? | Go to 12. | <p>Check Controller Self-Test — See Page 8.</p> |
| 12. Are margins set, cleared and right margin released properly? | Go to 13. | <p>Check Controller Self-Test — See Page 8.</p> |
| 13. Are tabs (vert & horz) set, cleared and restored properly. | Go to 14. | <p>Check Controller Self-Test — See Page 8.</p> |
| 14. Can options prep mode be entered, options changed and loaded properly? (Option 468.a. must be installed.) | Go to 15. | <p>Check Controller Self-Test — See Page 8.</p> |

SECTION 574-500-303

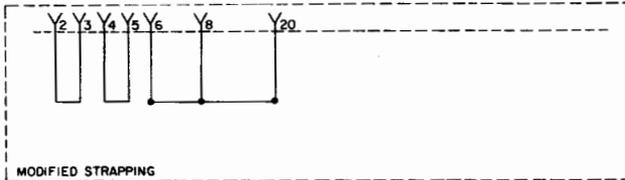
| QUESTION | YES | NO |
|--|---|--|
| 15. Does Message Generator print correctly on CTRL 4? | Go to 16. | Check programmable options for Msg Gen coded. Check Controller Self-Test — See Page 8. |
| 16. Can data be entered into buffer, edited, printed out, stored, recalled and cleared properly? | Go to 17. | Check Controller Self-Test — See Page 8. |
| 17. Does Term On Line light, not flash, when depressed? (Connected to modem and modem supplying DSR.) | Go to 18. | Check data set cable. Check external communication equipment. Check Controller Self-Test — See Page 8. |
| 18. Can any data be both sent and received on-line? (Terminal optioned for BROStA or AuxTrm cannot send.) | Go to 19. | Go to 18a. |
| 18a. Does data set provide analog loopback feature? | Place data set in analog loopback test mode and go to 18b. | Remove data set cable and install modified 403378 interface loopback connector (or equivalent*) in teleprinter data set connector, then go to 18c. |
| 18b. With  and  key lit hold  key depressed and depress  key. Does "TEST 1234" print? (Option 469.a. must be installed.) | Go to 19. | Remove data set cable and install modified 403378 interface loopback connector (or equivalent*) in teleprinter data set connector, then go to 18c. |
| 18c. With  and  key lit hold  key depressed and depress  key. Does "TEST 1234" print? (Option 469.a. must be installed.) | If test was originally done with data set in loopback mode, trouble is in data set. Otherwise go to 19. | Check Controller Self-Test — See Page 8. |
| <p>Note: Test will not work if terminal is optioned for isochronous operation Trans __.</p> | | |

| QUESTION | YES | NO |
|---|-------------------|---|
| 19. Are data messages properly sent and received. (Terminal optioned for BROSta or Auxtrm cannot send.) | Place in service. | Check programmable options — LinSpd, PAddr1, Poll # 1, etc. |

*Go directly to the NO response directive for Step 19 if loopback arrangement is not available.



MODIFIED 403378 INTERFACE †
LOOPBACK CONNECTOR



†See instructions for modification below.

Perform Keyboard Self-Test — See How To Operate Manual.

If test is OK, perform Controller Self-Test — See Page 8.

If self-test is OK, trouble is in external communications device or remote terminal. (If interface loopback test was not performed, the trouble may be in either the teleprinter or external communications device.)

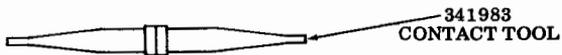
4. 403378 INTERFACE LOOPBACK CONNECTOR

Modification Instructions

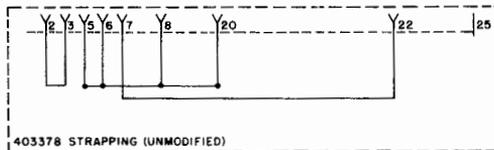
4.01 The following instructions should be followed to modify the connector if desired, to assure that RTS (Pin 4) turns on.



403378 INTERFACE
LOOPBACK CONNECTOR



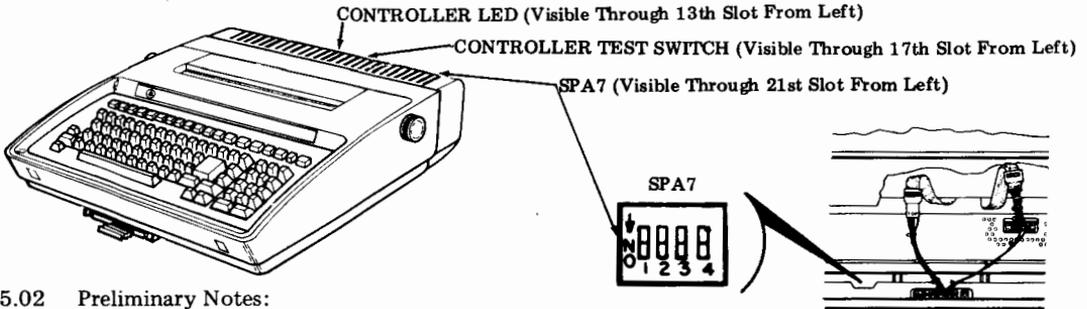
341983
CONTACT TOOL



- (a) Disassemble the 403378 interface loopback connector.
- (b) Cut the strap between terminals 5 and 6 at terminal 6.
- (c) Using the 341983 contact tool, remove terminal 5 and the attached strap.
- (d) Using the 341983 contact tool, remove the strap between positions 7 and 22 and install between positions 4 and 5.
- (e) Reassemble the connector.

5. CONTROLLER SELF-TEST

5.01 An LED, located under the thirteenth bustle air vent slot from the left, is used to indicate controller operation and the result of the self-test routine. The round, black test switch actuator is located under the seventeenth bustle air vent slot from the left.



5.02 Preliminary Notes:

- (a) The controller self-test is independent of the keyboard and the printer.
- (b) Information stored in the volatile memory will be lost when this test is performed and the terminal may be unresponsive to the modem for about one minute.
- (c) Ignore any data that may print as a result of this test.
- (d) If the controller LED continues to flash (approximately every seven seconds), the controller test switch may be in its 'locked' position. To release the switch, rotate the actuator 1/8-turn counter-clockwise.

5.03 Test Procedure

A. Controller Test

- (1) Momentarily depress the controller test switch actuator by reaching through the air vent slot with a small, nonmetallic tool such as an orange stick or a plastic rod.
- (2) The controller LED will flash periodically during the test (approximately 30 seconds) indicating the test is in progress.
- (3) When the test is concluded (all flashing stops) the LED will be lit indicating that the test passed and normal operation may be resumed.
- (4) If the LED is not lit after conclusion of the test (all flashing stopped) the controller failed the test. Proceed to B. Controller — Application Card Isolation Test.

Caution: Depression of the controller test switch or turning off ac power while the controller is performing a self-test can result in the loss of all programmed options. In this case, default (factory furnished) values will be loaded.

B. Controller — Application Card Isolation Test

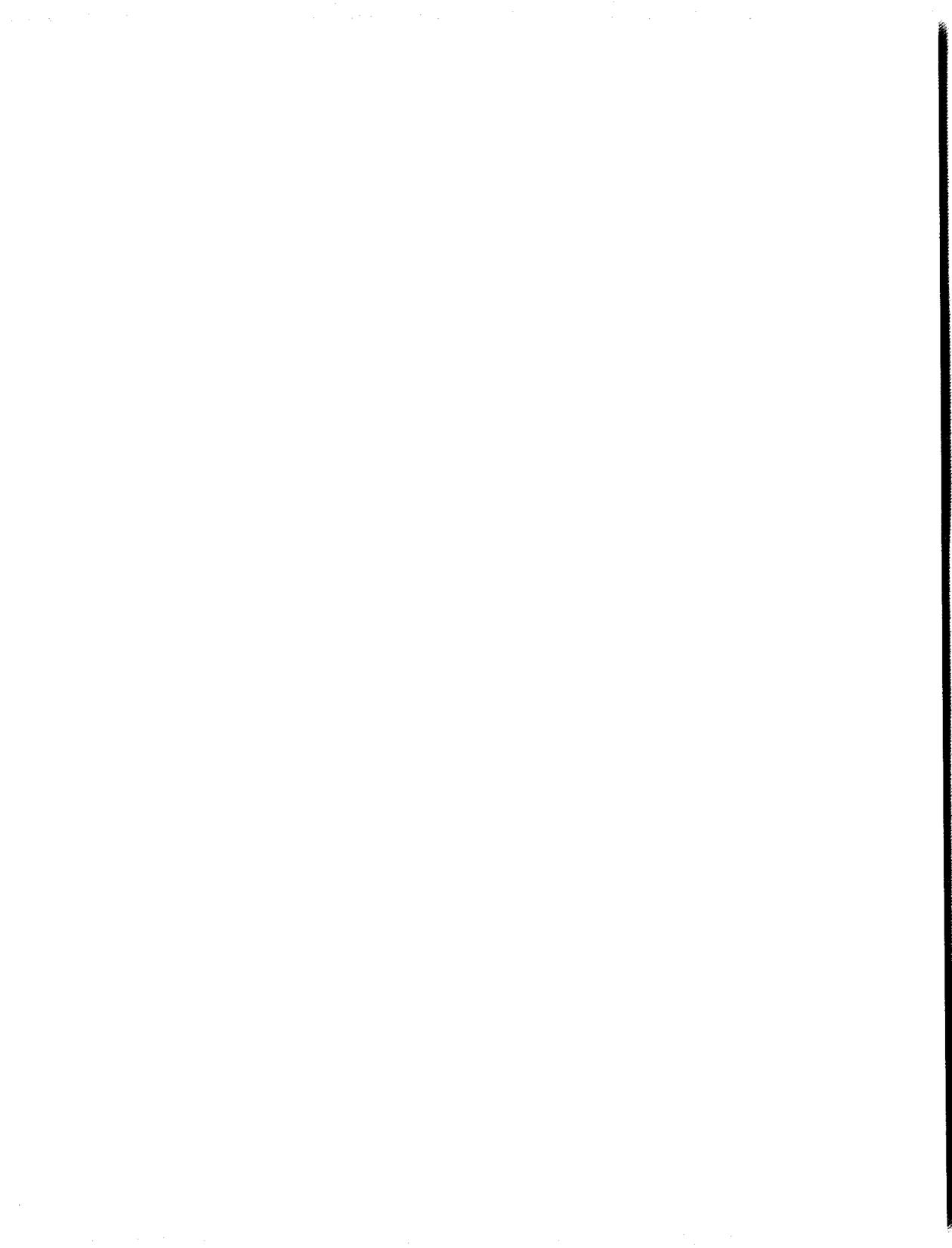
Note: Perform This test only if controller failed A. Controller Test.

(1) Remove the application program card from the controller assembly. Reassemble and place the controller without the application program card into the rear frame. Reconnect cable plug to top of controller assembly. Place SPA7 switches as follows:

1, 2, and 3 — OFF
4 — ON

- (2) Momentarily depress the controller test switch actuator by reaching through the air vent slot with a small, nonmetallic tool such as an orange stick or a plastic rod.
- (3) The controller LED will flash periodically during the test (approximately 80 seconds) indicating the test is in progress.
- (4) If the LED is ON at the end of the test, replace the defective application program card. If the LED is OFF at the end of the test, replace the 411901 controller card assembly.

Note: After testing, return controller switches to their former position.



43 TELEPRINTER 5-LEVEL BUFFERED SELECTIVE CALLING (BSC) STATION

TROUBLESHOOTING

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| 5. CONTROLLER SELF-TEST | 8 |
| A. Controller Test | 9 |
| B. Controller — Application Card Isolation Test | 9 |

1. GENERAL

1.01 This section provides troubleshooting information for the 43 Teleprinter 5-Level Buffered Selective Calling (BSC) Station.

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

1.03 Troubleshooting is based on isolation of troubles to major components and the correction of troubles by replacement of these components or by reference to the component troubleshooting sections.

Note: When ordering replaceable components unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410745).

1.04 Component troubleshooting sections are:

- 574-501-300 43 Friction and Sprocket Feed Printer
- 574-501-301 43 Tractor Feed Printer
- 574-502-301 43 Buffered Keyboard

1.05 Trouble isolation provided in this section is intended for use by the craftsperson at the station location. Troubles may occur either

during an installation, a routine maintenance visit or as the result of a customer trouble report.

1.06 Trouble isolation for the attendant is provided in the 999-300-136 How To Operate Manual and for the Test Center in Section 668-130-505.

1.07 To facilitate trouble correction, the recommended maintenance spares as listed in Section 574-500-800, Parts, should be available. In addition, parts for the repair of components as listed in Section 574-501-800, 574-501-801, 574-502-800 and 574-503-800 for the printer, keyboard and enclosures and paper handling should be available.

1.08 For component access, refer to Section 574-500-720, Disassembly/Reassembly and Section 574-500-210, Engineering Options.

1.09 For location and identification of station components, refer to Section 574-500-800, Parts.

1.10 When replacement of the print head, logic card or keyboard corrects the trouble, additional checks should be made to isolate and possibly correct the trouble without returning for repair.

On the print head — check cable continuity.
On the logic card — check SSI interface and power supply cables or fuse.
On the keyboard — check the cable and key-switches per keyboard troubleshooting.

1.11 When replacement of a component does not correct the trouble, the original component should be reinstalled before going to the next step of the trouble analysis. If there are no more directives provided, go to the last question.

1.12 Circuitry used in the keyboard can be damaged by high static voltage discharge. The 346392 wrist strap is available to ground service personnel.

1.13 When returned to the WECO Service Center for repair, the teleprinter or components should be packed in the container in which the replacement is received. This includes the conductive (black) plastic bag used with the keyboard for static protection.

1.14 Components returnable for repair referred to in this section for replacement are:

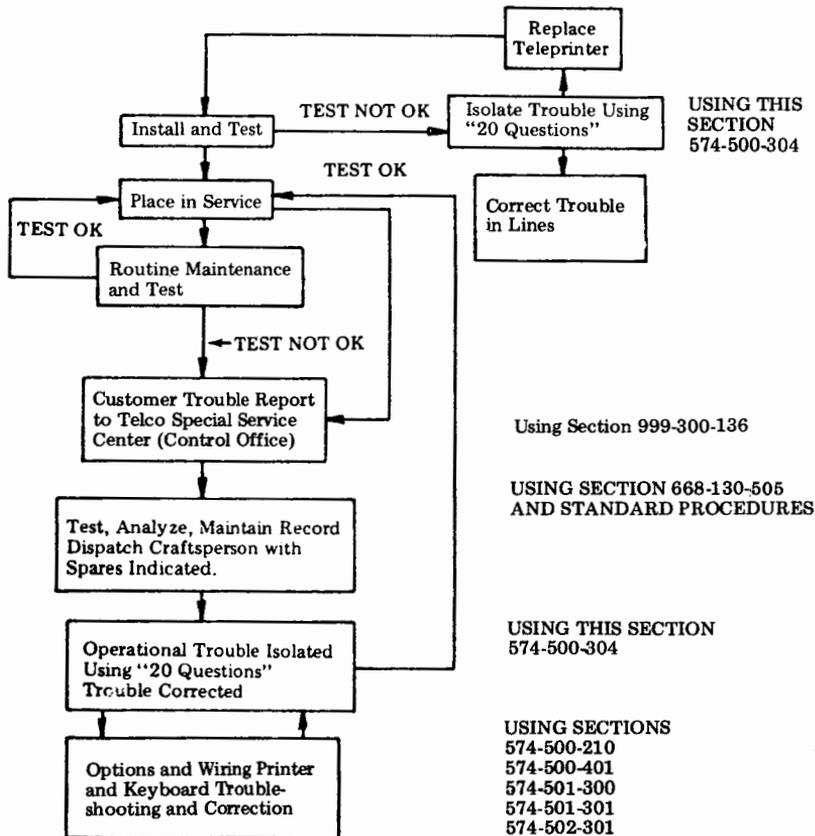
- 430850 Print Head
- 43K202 Type Keyboard
- 430780 Power Supply
- 410745 Logic Card
- 410785 Logic Card
- 411901 Controller Card Assembly
- 43FG110/BA/01 Circuit Card Portion Only

1.15 Before disconnecting cables or replacing circuit cards, turn off ac power. Make certain power cords are connected to a properly polarized and grounded ac outlet.

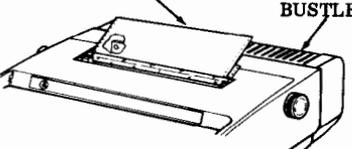
1.16 Refer to 2. TROUBLESHOOTING DIAGRAM for the intended flow of troubleshooting.

1.17 Trouble analysis is presented in the form of a "20 Questions" routine in 3. TROUBLESHOOTING GUIDE. The guide, with questions and yes or no columns, should be used always starting with the first question and proceeding according to the "yes" or "no" directive.

2. TROUBLESHOOTING FLOW DIAGRAM



3. TROUBLESHOOTING GUIDE

| QUESTION | YES | NO |
|---|---|---|
| 1. Are any indicators on keyboard lit? (Power available, ac cord plugged in, power switch on, and cover closed.) | Go to 2. | Go to 1a. |
| 1a. Is there any indication of power in the set? (Keyboard lamps flash when power is turned on and off, print head indexes to the left. RED lamp on power supply lit, etc.) | Go to 1c. | With power off, check set ac F1 fuse. If fuse is OK, go to 1c. Replace fuse if blown. Go to 1b. |
| 1b. Do any indicators now light when power is turned on? | Original trouble is corrected. | Replace power supply. Replace rear frame assembly. |
| 1c. Is RED lamp on power supply lit? (Visible through slot in bustle, 6th slot from left.)  | Check cable to controller card assembly. Check seating of power supply output cable. Check keyboard cable plug. Check fuse (F2) on power supply. Replace if blown. Check Controller Self-Test — See Page 8. Check Keyboard Self-Test — See How To Operate Manual. Replace power supply. Replace controller card assembly. Replace logic card. | Disconnect power supply cable from power supply and go to 1d. |
| 1d. Does RED lamp on power supply now light? | Unplug controller cable, keyboard and all printer cables (7). Reconnect power supply output cable and go to 1e. | Check fuse (F2) on power supply. Replace if blown. Replace power supply. Replace rear frame assembly. |

SECTION 574-500-304

| QUESTION | YES | NO |
|---|---|---|
| 1e. Does RED lamp on power supply still light? | Go to 1f. | Replace logic card. |
| 1f. Does RED lamp on power supply go out after the controller card assembly, keyboard and printer cables are reconnected one at a time? | Replace the controller card assembly, keyboard or the printer component that caused lamp to extinguish. | Intermittent short. Check for foreign object between circuit lands or terminals. |
| 2. Does set continually go to options default mode when powering up (provided power to the set had been on at least 10 hours to charge the controller battery)? | Check Controller Self-Test, see Page 8. Replace battery on the controller card assembly. Replace controller card assembly. | Go to 3. |
| 3. Do all indicators operate properly (ie, light and extinguish under normal operation)? | Go to 4. | Check continuity through depressed interlock switch. Check Controller Self-Test — See Page 8. Check Keyboard Self-Test — See How To Operate Manual. Replace logic card. If alarm indicator fails on paper out, go to Printer Troubleshooting, Section 574-501-300 or 574-501-301. |
| 4. Can any characters be locally generated from the keyboard to the printer? | Go to 5. | Go to Printer Troubleshooting, Section 574-501-300 or 574-501-301. Replace logic card. |
| 5. Are characters properly formed? | Go to 6. | Go to Printer Troubleshooting, Section 574-501-300 or 574-501-301. Replace logic card. |
| 6. Is print density acceptable? (Good ribbon) | Go to 7. | Go to Printer Troubleshooting, Section 574-501-300 or 574-501-301. |

| QUESTION | YES | NO |
|---|-----------|--|
| 7. Does paper feed properly? | Go to 8. | <p>Check fuse (F3) on logic card.</p> <p>Replace line feed motor if fuse blows again.</p> <p>Go to Printer Troubleshooting, Section 574-501-300 or 574-501-301.</p> <p>Replace logic card.</p> |
| 8. Does print head space and return properly? | Go to 9. | <p>Go to Printer Troubleshooting, Section 574-501-300 or 574-501-301.</p> <p>Replace logic card.</p> |
| 9. Do all characters print, including numeric pad and functions perform (except bell and keyboard edit cluster), when the keys on the keyboard are operated locally to the printer. | Go to 10. | <p>Check Keyboard Self-Test — See How to Operate Manual.</p> <p>Replace logic card.</p> |
| 10. Does signal bell ring under any conditions? (CTRL S or J, right margin, etc.) | Go to 11. | <p>Go to Printer Troubleshooting, Section 574-501-300 or 574-501-301.</p> <p>Check Controller Self-Test — See Page 8.</p> <p>Replace logic card.</p> |
| 11. Does signal bell ring under all conditions? | Go to 12. | <p>Check Controller Self-Test — See Page 8.</p> |
| 12. Can options prep mode be entered, options changed and loaded properly? (Option 468.a. must be installed.) | Go to 13. | <p>Check Controller Self-Test — See Page 8.</p> |
| 13. Can data be entered into buffer, edited, printed out, stored, recalled and cleared properly? | Go to 14. | <p>Check Controller Self-Test — See Page 8.</p> |
| 14. Does the terminal have an auxiliary device connected to the auxiliary port? | Go to 15. | Go to 18. |

SECTION 574-500-304

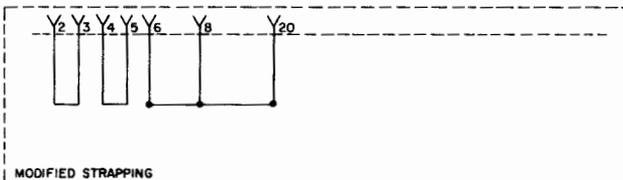
| QUESTION | YES | NO |
|---|--|--|
| 15. Does data addressed to the auxiliary device print or punch correctly? | Go to 16. | <p>Check Keyboard Self-Test — See How to Operate Manual.</p> <p>Check Controller Self-Test — See Page 8.</p> <p>Refer to Auxiliary Device Troubleshooting Section.</p> |
| 16. Is external device a 43 5-Level Paper Tape Unit? | Go to 17. | Go to 18. |
| 17. Can data be sent from the terminal to the paper tape punch and can data be sent from the paper tape reader to the terminal. | Go to 18. | <p>Check Keyboard Self-Test — See How To Operate Manual.</p> <p>Check Controller Self-Test — See Page 8.</p> <p>Refer to 43 5-Level Paper Tape Unit, Troubleshooting, Section 574-504-300.</p> |
| 18. Does Term On Line Light, not flash, when depressed? (Connected to a modem and modem supplying DSR.) | Go to 19. | <p>Check data set cable.</p> <p>Check external communication equipment.</p> <p>Check Controller Self-Test — See Page 8.</p> |
| 19. Can any data be both sent and received on-line? (Terminal optioned for BROStA or AuxTrm cannot send.) | Go to 20. | Go to 19a. |
| 19a. Does data set provide analog loopback feature? | Place data set in analog loopback test mode and go to 19b. | Remove data set cable and install modified 403378 interface loopback connector (or equivalent*) in teleprinter data set connector then go to 19c. |

| QUESTION | YES | NO |
|--|--|---|
| <p>19b. With  and  key lit hold  key depressed and depress  key. Does "TEST 1234" print? (Option 469 a. must be installed.)</p> | <p>Go to 20.</p> | <p>Remove data set cable and install modified 403378 interface loopback connector (or equivalent*) in teleprinter data set connector, then go to 19c.</p> |
| <p>19c. With  and  key lit hold  key depressed and depress  key. Does "TEST 1234" print? (Option 469 a. must be installed.)</p> <p><i>Note: Test will not work if terminal is optioned for isochronous operation Trans _ .</i></p> | <p>If test was originally done with data set in loopback mode, trouble is in data set. Otherwise go to 20.</p> | <p>Check Controller Self -Test — See Page 8.</p> |
| <p>20. Are data messages properly sent and received? (Terminal optioned for BROSta or Auxtrm cannot send.)</p> | <p>Place in service.</p> | <p>Check programmable options — LinSpd, PAddr1, Poll __ , etc.</p> |

*Go directly to the NO response directive for Step 20 if loopback arrangement is not available.



MODIFIED 403378 INTERFACE † LOOPBACK CONNECTOR



MODIFIED STRAPPING

†See instructions for modification on Page 8.

Perform Keyboard Self-Test — See How To Operate Manual.

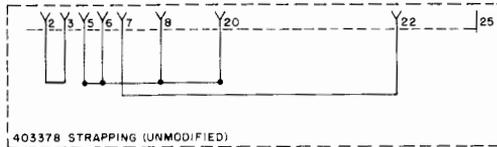
If test is OK, perform Controller Self-Test — See Page 8.

If self-test is OK, trouble is in external communications device or remote terminal. (If interface loopback test was not performed, the trouble may be in either the teleprinter or external communications device.)

4. 403378 INTERFACE LOOPBACK CONNECTOR

Modification Instructions

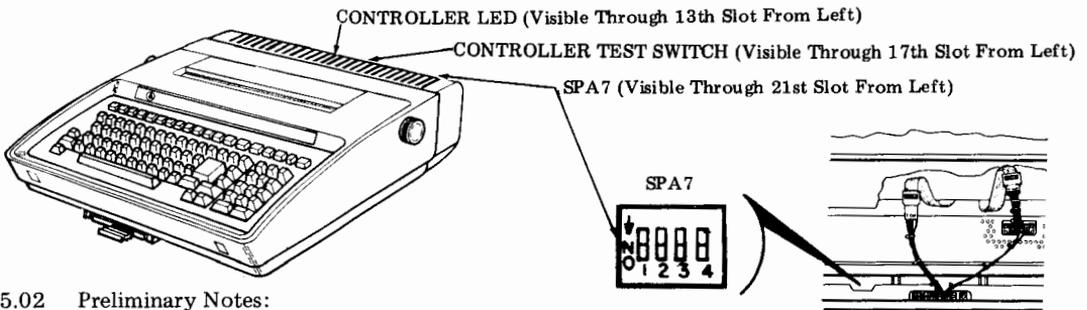
4.01 The following instructions should be followed to modify the connector if desired, to assure that RTS (Pin 4) turns on.



- (a) Disassemble the 403378 interface loopback connector.
- (b) Cut the strap between terminals 5 and 6 at terminal 6.
- (c) Using the 341983 contact tool, remove terminal 5 and the attached strap.
- (d) Using the 341983 contact tool, remove the strap between positions 7 and 22 and install between positions 4 and 5.
- (e) Reassemble the connector.

5. CONTROLLER SELF-TEST

5.01 An LED, located under the thirteenth bustle air vent slot from the left, is used to indicate controller operation and the result of the self-test routine. The round, black test switch actuator is located under the seventeenth bustle air vent slot from the left.



5.02 Preliminary Notes:

- (a) The controller self-test is independent of the keyboard and the printer.
- (b) Information stored in the volatile memory will be lost when this test is performed and the terminal may be unresponsive to the modem for about one minute.
- (c) Ignore any data that may print as a result of this test.
- (d) If the controller LED continues to flash (approximately every seven seconds), the controller test switch may be in its 'locked' position. To release the switch, rotate the actuator 1/8-turn counter-clockwise.

5.03 Test Procedure

A. Controller Test

- (1) Momentarily depress the controller test switch actuator by reaching through the air vent slot with a small, nonmetallic tool such as an orange stick or a plastic rod.
- (2) The controller LED will flash periodically during the test (approximately 30 seconds) indicating the test is in progress.
- (3) When the test is concluded (all flashing stops) the LED will be lit indicating that the test passed and normal operation may be resumed.
- (4) If the LED is not lit after conclusion of the test (all flashing stopped) the controller failed the test. Proceed to B. Controller — Application Card Isolation Test.

Caution: Depression of the controller test switch or turning off ac power while the controller is performing a self-test can result in the loss of all programmed options. In this case, default (factory furnished) values will be loaded.

B. Controller — Application Card Isolation Test

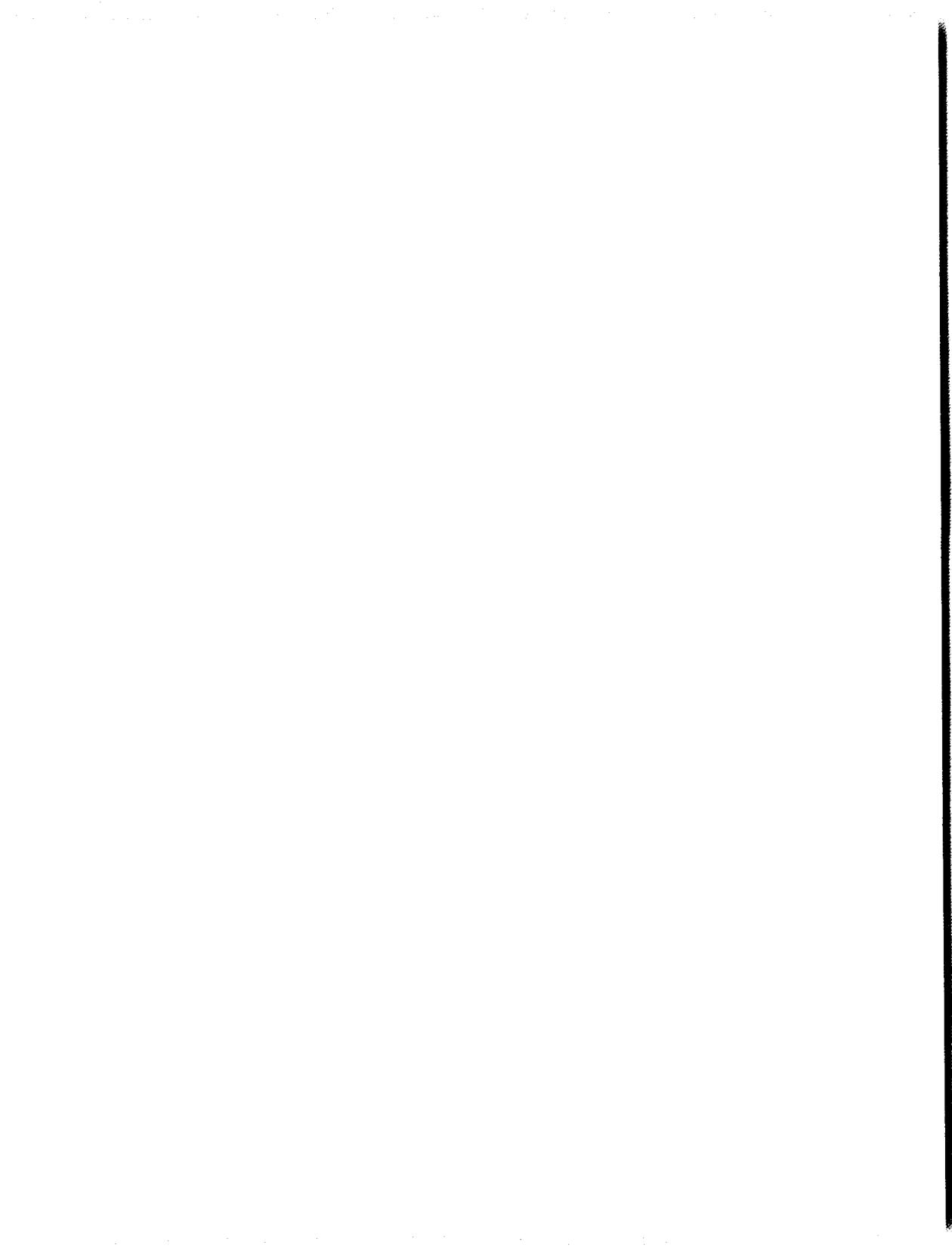
Note: Perform This test only if controller failed A. Controller Test.

- (1) Remove the application program card from the controller assembly. Reassemble and place the controller without the application program card into the rear frame. Reconnect cable plug to top of controller assembly. Place SPA7 switches as follows:

1, 2, and 3 — OFF
4 — ON

- (2) Momentarily depress the controller test switch actuator by reaching through the air vent slot with a small, nonmetallic tool such as an orange stick or a plastic rod.
- (3) The controller LED will flash periodically during the test (approximately 30 seconds) indicating the test is in progress.
- (4) If the LED is ON at the end of the test, replace the defective application program card. If the LED is OFF at the end of the test, replace the 411901 controller card assembly.

Note: After testing, return controller switches to their former position.

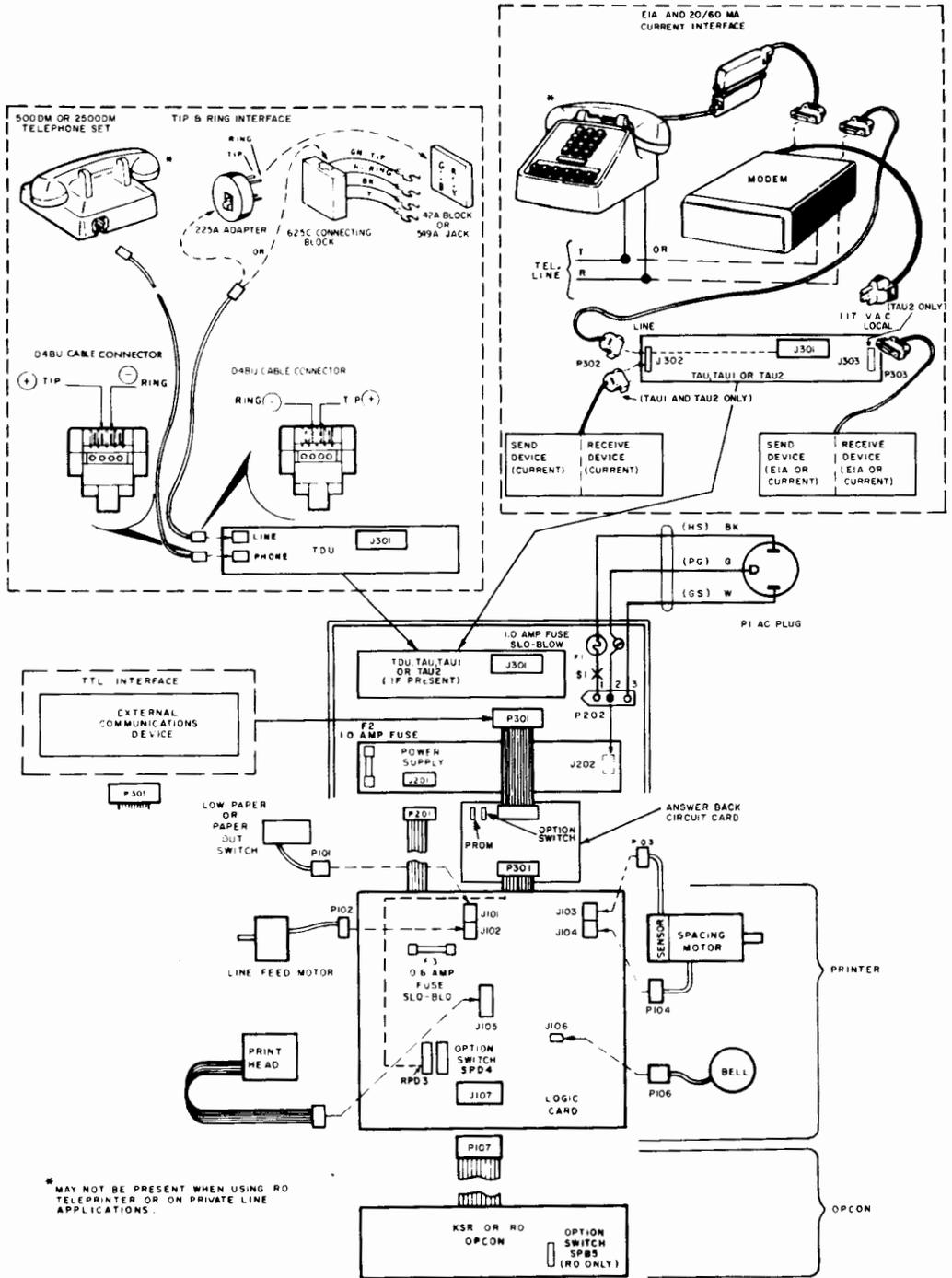


43 BASIC TELEPRINTER

WIRING

| CONTENTS | PAGE | |
|--|------|---|
| 1. GENERAL | 1 | 1.02 This section is reissued to include wiring information for teleprinters equipped with an integrated terminal auxiliary unit (TAU1 or TAU2) or the 43 answer-back modification kit. |
| 2. STATION WIRING..... | 2 | 1.03 For additional wiring information refer to Sections 574-501-400, Printer Wiring and 574-502-400, Operator Console Wiring. |
| 1. GENERAL | | 1.04 All numbers shown on the station wiring do not appear on plugs and jacks. |
| 1.01 This section provides wiring information for the 43 Basic Teleprinter. The wiring information provides proper component inter-connection information. | | |

SECTION 574-500-400



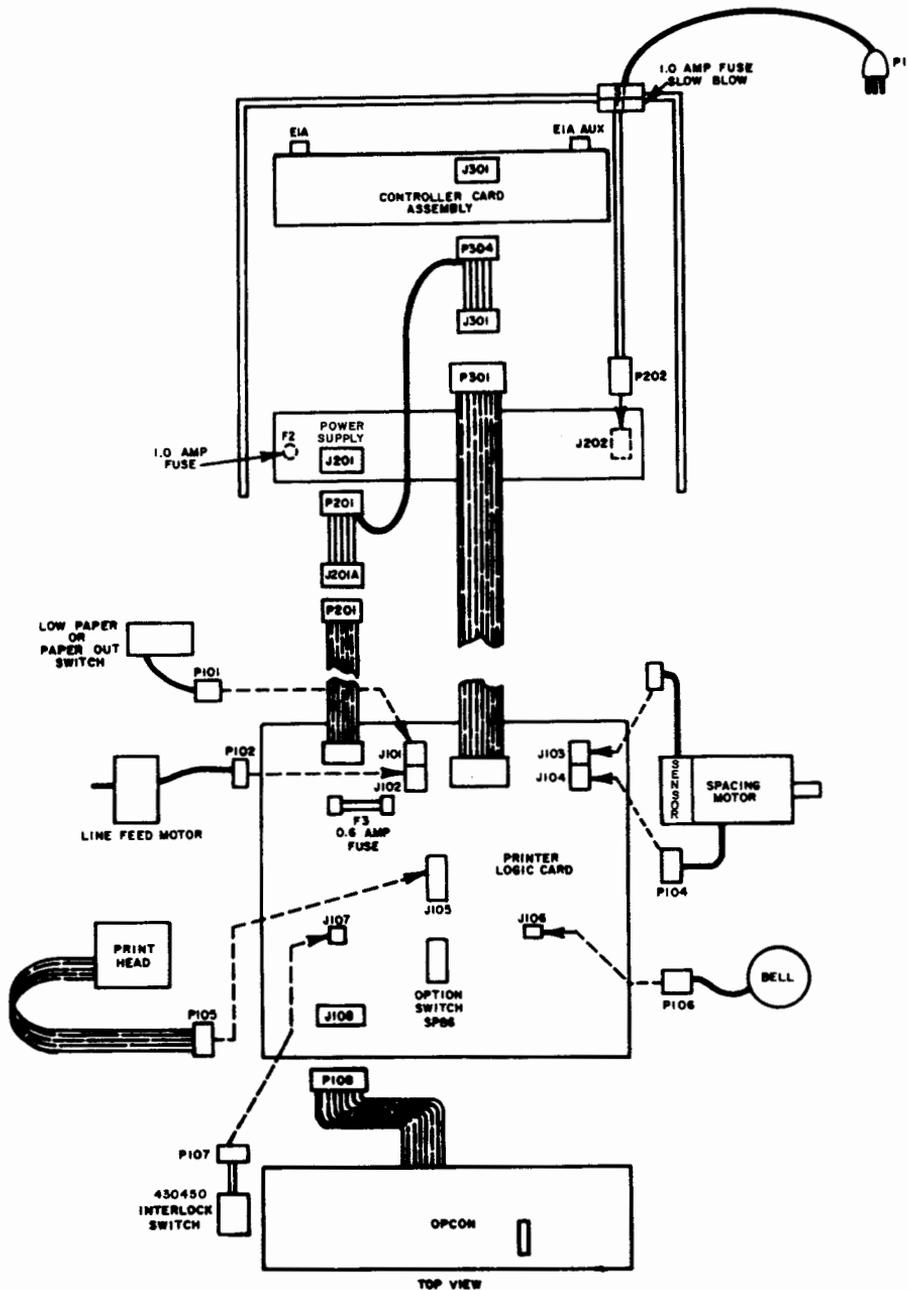
* MAY NOT BE PRESENT WHEN USING RO TELEPRINTER OR ON PRIVATE LINE APPLICATIONS.

43 TELEPRINTER BUFFERED STATION

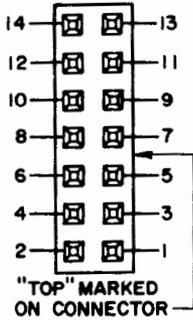
WIRING

| CONTENTS | PAGE | |
|--|------|---|
| 1. GENERAL | 1 | 1.02 Whenever this section is reissued, the reason for reissue will be listed in this paragraph. |
| 2. TELEPRINTER WIRING | 2 | 1.03 For additional wiring information refer to Section 574-501-400, Printer Wiring, and Section 574-502-401, Buffered Operator Console Wiring. |
| 1. GENERAL | | 1.04 Numbers shown on the teleprinter wiring do not appear on plugs and jacks. |
| 1.01 This section provides wiring information for the 43 Teleprinter Buffered Station. The wiring information provides proper component interconnection information. | | |

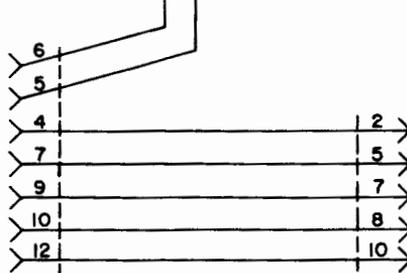
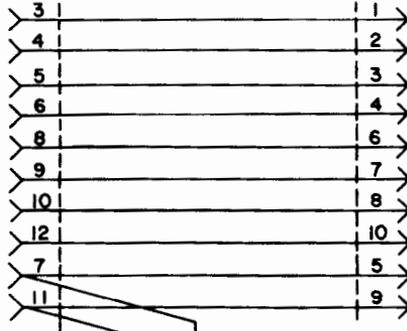
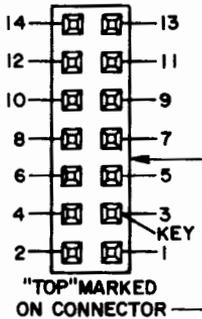
2. TELEPRINTER WIRING



P201
TO POWER SUPPLY

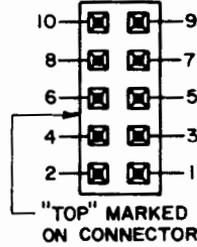


P304
TO CONTROLLER

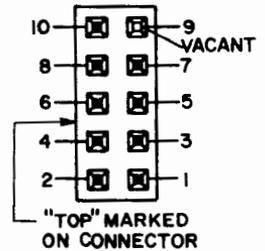


452811 CABLE ASSEMBLY

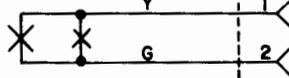
J201A
TO LOGIC CARD
POWER SUPPLY CABLE

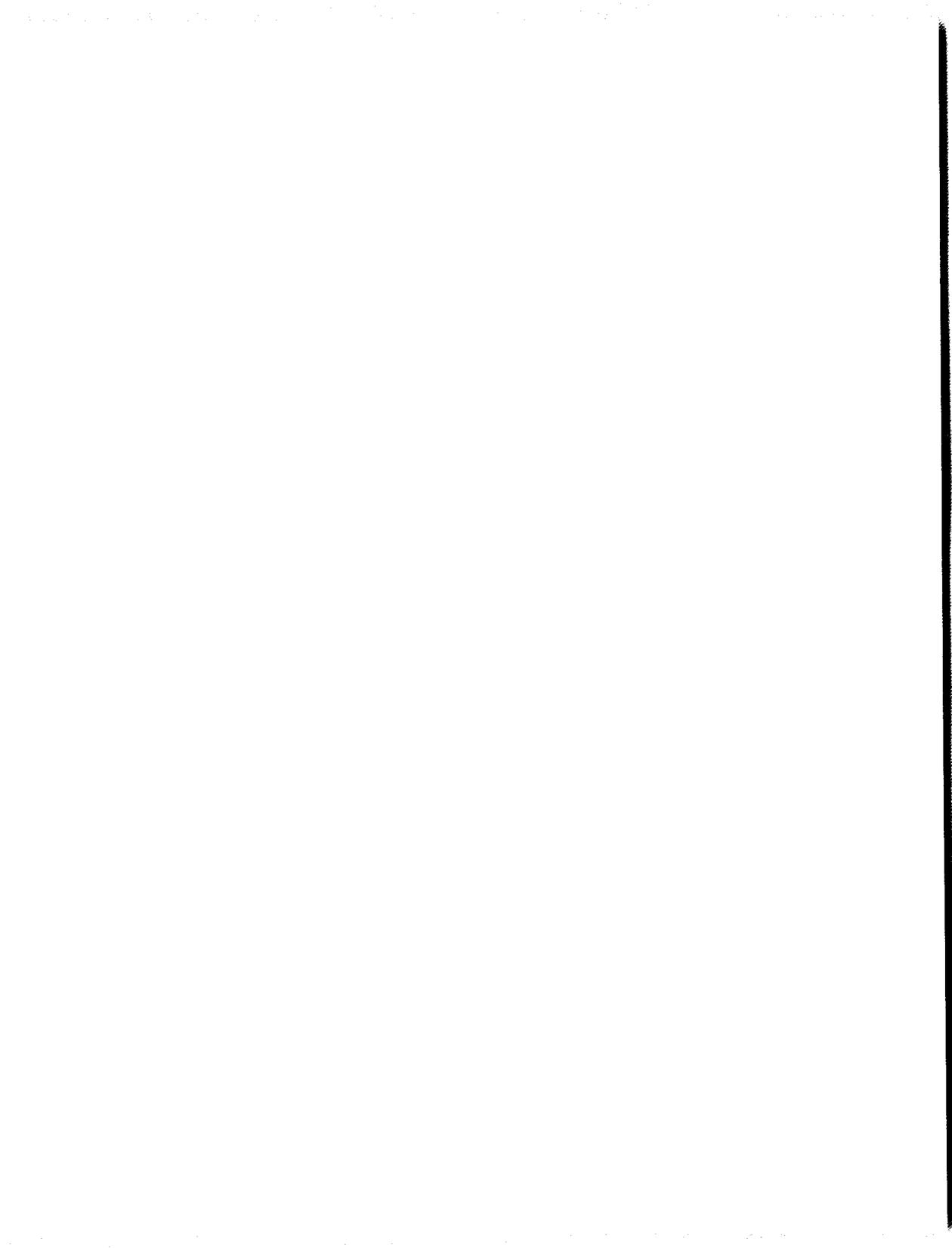


J301
TO LOGIC CARD
CONTROLLER CABLE



INTERLOCK SWITCH ASSEMBLY
PI07





43 BASIC KSR TELEPRINTER

TESTING

| CONTENTS | PAGE |
|---|------|
| 1. GENERAL | 1 |
| PRELIMINARY CHECK. | 1 |
| 2. TEST EQUIPMENT | 2 |
| 3. TESTING PROCEDURES. | 3 |
| OFF-LINE TESTS (Installation and Trouble Call Checkout) | 3 |
| ON-LINE TESTS (Teleprinters With Access to the Switched Network — Installation Checkout). | 16 |

1. GENERAL

- 1.01 This section provides testing information for the 43 Basic KSR Teleprinter.
- 1.02 This section is reissued to include testing of teleprinters equipped with an integrated Terminal Auxiliary Unit (TAU1 or TAU2) or an answer-back modification kit.
- 1.03 An installation checkout should be performed after installation to make sure the station is operable.
- 1.04 On trouble calls, an installation checkout should be performed after trouble correction to make sure the station is operable and a trouble verification test should be performed under the direction of the Test Center to isolate specific troubles not covered in the installation test. After correction of a trouble, the test may be confined to the specific area that was failing.
- 1.05 Following routine maintenance calls at a location, an installation checkout should be performed.
- 1.06 The checkout routines are presented in table form with test conditions arranged in a specific sequence. A response is given to verify the test condition has passed.

- 1.07 Always perform the tests in the order given. The test steps are based on satisfactory results of all previous steps.
- 1.08 If the indicated response is not obtained in any step of a test procedure, repeat the step to make sure that the procedure has been performed properly. If the results are still unsatisfactory, refer to the KSR Teleprinter Troubleshooting Section 574-500-300.
- 1.09 Teleprinters without access to the switched network must be associated with locally developed external testing arrangements and procedures to perform actual On-Line Tests. If test station is remote, a copy of KSR On-Line Tests should be available at the test station.

Note: The local tests specified in this section simulate most on-line tests for these teleprinters.

- 1.10 On-Line Tests can be performed with Test Centers equipped with a 43 Teleprinter or equivalent using Section 668-130-500.
- 1.11 Before an On-Line Test can be performed, the remote testing station or Test Center must be provided with advance details about the teleprinter under test, such as, telephone number, type of terminal (friction or sprocket), option exceptions present, speed, etc.

PRELIMINARY CHECK

- 1.12 Before proceeding with the checkout procedure, check the following:
 - (a) Is the station connected to a properly grounded and polarized ac service?
 - (b) Are all cable connectors fully seated?
 - (c) Are printer paper and ribbon properly installed?
 - (d) Are any option exceptions present? Refer to the Engineering Options, Section 574-500-210 and reverse side of directory card.

SECTION 574-500-500

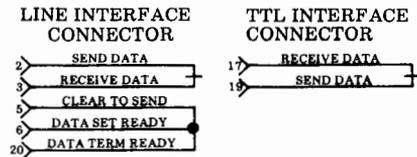
Procedures in Off-Line and On-Line Tests are based on standard factory furnished options being present. If option exceptions are present, the test response will be as shown in Engineering Options Section 574-500-210.

1.13 All references to columns are after a one-second delay, to allow the print head to index two character spaces to the right. The print head indicates the next character position to be printed.

2. TEST EQUIPMENT

2.01 For teleprinters without access to the switched network, Off-Line Test Procedures are provided to simulate On-Line Tests where external communication test devices are not available. To perform these tests, the connector terminals, shown as follows, should be strapped before proceeding with the tests. The remaining terminals should be connected or measured as specified during the test steps.

Note: Contact Teletype Corporation Custom Product Division for availability of a 43 Teleprinter Interface Test Box, CP10.002.001-1, which provides both arrangements shown as follows:



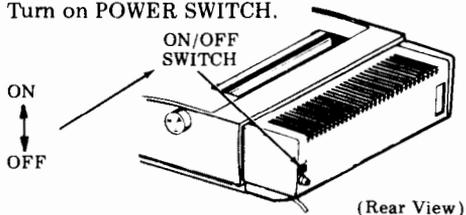
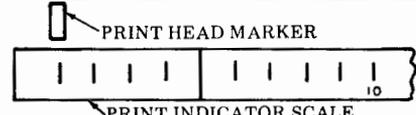
2.02 A volt-ohmmeter or equivalent means to measure +12 volts and +5 volts and perform continuity checks is required.

2.03 Steps 1 through 31 apply to all teleprinters. Steps 32 through 61 apply to all teleprinters unless otherwise indicated.

3. TESTING PROCEDURES

OFF-LINE TESTS (Installation and Trouble Call Checkout)

TABLE A
OFF-LINE TEST PROCEDURES

| TEST | STEP | PROCEDURE | RESPONSE |
|------------------------------|------|--|---|
| Power On/Off | 1. | Turn on POWER SWITCH.  (Rear View) | Print head returns to the left-hand margin. Paper feeds to next line. TERM READY (AUTO ANSW) turns on. |
| | 2. |  | Print head marker points to first mark on indicator scale. |
| Printer Option 431.a. 432.a. | 3. | Hold PRINTER TEST key depressed until approximately eight lines are printed. | ALARM and LOCAL (LOCAL-TALK) turn on. Characters printed as in Fig. 1. (Refer to Options 431 and 432.b. and c. for any exceptions.) Bell rings at end of each line (Right-Hand Margin and Test Message). |

Note 1: First line may start with any character for sprocket or friction feed printers.

```

lnopqrstuvwxyz{;}
■ !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNQRSTUUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~

```

Sprocket Feed — Approximately 13 characters per inch

See Note 1.

Note 2: The lower case "o" does not print on 80 character line.

```

tuvxyz{;}
■ !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNQRSTUUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
■ !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNQRSTUUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
■ !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNQRSTUUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
■ !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNQRSTUUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~
■ !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNQRSTUUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz{|}~

```

Friction Feed — 10 Characters per inch

Fig. 1

TABLE A (Cont)
OFF-LINE TEST PROCEDURES

| TEST | STEP | PROCEDURE | RESPONSE |
|------------------|------|---|--|
| Printer (Cont) | 4. | Release PRINTER TEST key. | ALARM turns off. Character printing stops. |
| Operator Console | 5. | Hold CTRL key depressed and depress RETURN key. | Print head is returned to left-hand margin and paper feeds to next line. |
| | 6. | Place CAPS LOCK key in DOWN position. Starting with top row and moving from left to right, depress unshaded keys in Fig. 2. | Characters printed as in Fig. 3. |

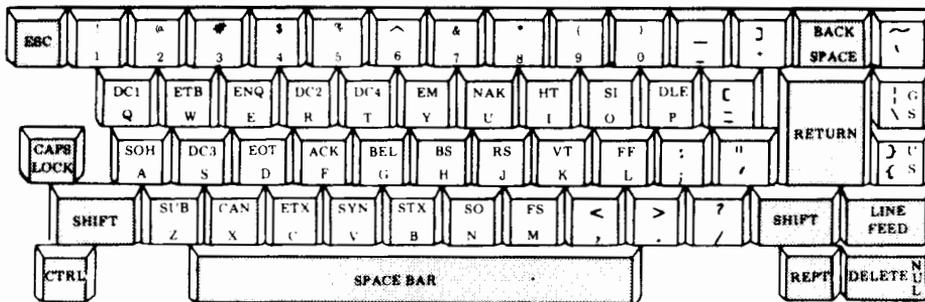


Fig. 2

1234567890-+`QWERTYUIOP=\ASDFGHJKL;'<{ZXCVBNM,./

Fig. 3

1234567890-+`qwertyuiop=\asdfghjkl;'<{zxcvbnm,./

Fig. 4

TABLE A (Cont)
OFF-LINE TEST PROCEDURES

| TEST | STEP | PROCEDURE | RESPONSE |
|-------------------------|------|--|--|
| Operator Console (Cont) | 7. | Depress RETURN and then LINE FEED key. | Print head is returned to left-hand margin and paper feeds to next line. |
| | 8. | Depress and release CAPS LOCK key so it returns to UP position. Starting with top row and moving left to right, depress each unshaded key in Fig. 2. | Characters printed as in Fig. 4. |
| | 9. | Depress RETURN and then LINE FEED key. | Print head returns to left-hand margin and paper feeds to next line. |

TABLE A (Cont)
OFF-LINE TEST PROCEDURES

| TEST | STEP | PROCEDURE | RESPONSE |
|-------------------------|------|---|----------------------------------|
| Operator Console (Cont) | 10. | Hold left SHIFT key depressed and starting with top row and moving from left to right, depress each unshaded key in Fig. 5. Hold right SHIFT key depressed and depress  key. | Characters printed as in Fig. 6. |

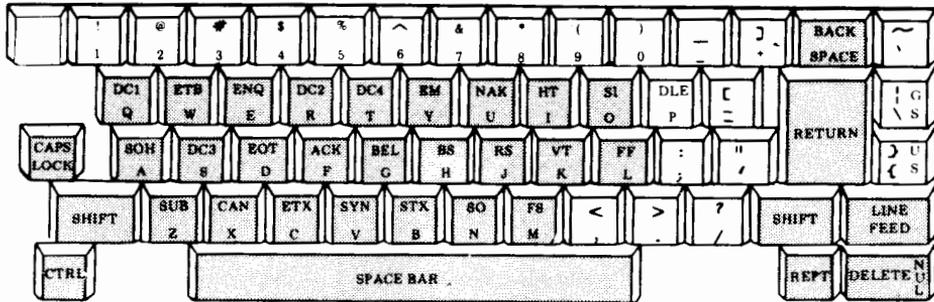


Fig. 5

!@#\$%&*()_] P [: " > < ??

Fig. 6

TABLE A (Cont)
OFF-LINE TEST PROCEDURES

| TEST | STEP | PROCEDURE | RESPONSE |
|-------------------------|------|--|--|
| Operator Console (Cont) | 11. | Depress RETURN and then LINE FEED key. | Print head returns to left-hand margin and paper feeds to next line. |
| | 12. | Hold CTRL key depressed and depress  key. | SUB prints ■ . |
| | 13. | Hold CTRL key depressed and depress  key. | Signal bell rings. |
| | 14. | Hold CTRL key depressed and depress  key. | Print head moves one character position to the left. |
| | 15. | Depress SPACE BAR. | Print head moves one character position to the right. |

TABLE A (Cont)
OFF-LINE TEST PROCEDURES

| TEST | STEP | PROCEDURE | RESPONSE |
|------------------------------|------|--|--|
| Operator Console (Cont) | 16. | Depress BACK SPACE key. | Print head moves one character position to the left. |
| | 17. | Depress LINE FEED key. Depress and hold REPT and  keys. | Paper feeds to next line. The k is printed until end of line is reached. Signal bell rings at end of line. |
| Cover Interlock | 18. | Depress TERM READY (AUTO ANSW) key. Raise cover. | TERM READY (AUTO ANSW) goes off. LOCAL (LOCAL-TALK) and ALARM turns on. |
| | 19. | Close cover. | ALARM goes off. |
| Right Margin and Signal Bell | 20. | Depress RETURN and the LINE FEED key. | Print head returns to left-hand margin and paper feeds to next line. |
| | 21. | Space print head to column 125 (sprocket feed). Space print head to column 73 (friction feed). (See 1.13.) Depress  key. | Signal bell operates as character b is being printed. |
| | 22. | Depress SPACE BAR six times. | Signal bell does not operate. Print head moves six character positions to the right. |
| | 23. | Depress SPACE BAR two times. | Signal bell operates two times. |
| Margin Set and Clear | 24. | Depress ESC and then  key (ESC _w). | Print head returns to left-hand margin and paper feeds to next line. |
| (Remember Lower Case) | 25. | Depress SPACE BAR nine times. Depress ESC and then  key. (ESC _L lower case.) | Print head moves to Column 10. |

TABLE A (Cont)
OFF-LINE TEST PROCEDURES

| TEST | STEP | PROCEDURE | RESPONSE |
|-----------------------------|------|--|---|
| Margin Set and Clear (Cont) | 26. | Space print head to Column 51. Depress ESC and then  key. (ESC _r) Depress RETURN key. | Print head returns to left margin (Column 10). |
| | 27. | Depress BACK SPACE key. | Signal bell rings. |
| | 28. | Space print head to Column 50. Depress SPACE BAR. | Signal bell operates. Print head indicates Column 51. |
| | 29. | Depress SPACE BAR. | Signal bell rings. Print head remains at Column 51. |
| | 30. | Depress ESC and then  key (ESC _m). Depress SPACE BAR four times. | Print head moves to Column 55. |
| | 31. | Depress ESC and then  key. (ESC _x) | Print head returns to left-hand margin and indicates beginning of line. Left and right margins are cleared. |

On teleprinters without the Terminal Data Unit (TDU), turn off POWER switch and connect the test arrangement shown on Page 2 to the interface connector before proceeding to Step 32.

If the 43 Teleprinter Interface Test Box is available, connect the test box to the teleprinter interface connector (TTL, LINE, AUX-PORT). See instructions furnished with test box. Steps 32 through 61 may be omitted if on-line tests are performed instead.

Note: Not all tests performed in Steps 32 through 61 are checked in on-line tests.

TABLE A (Cont)

OFF-LINE TEST PROCEDURES
SIMULATED ON-LINE TESTS (LOOPBACK)

| TEST | STEP | PROCEDURE | RESPONSE |
|-------|-------|---|--|
| Setup | 32. | Place teleprinter in Loopback mode: Perform 32.a., b., or c. | |
| | 32.a. | W/TDU — Depress ESC and then  key (Esc _x). | Print head returns to left-hand margin (Column 1) and indicates beginning of line. |

TABLE A (Cont)
OFF-LINE TEST PROCEDURES

| TEST | STEP | PROCEDURE | RESPONSE |
|--|-----------------|--|--|
| Setup (Cont) Options 439.a. 441.a. 442.a. 443.a. | 32.a. (Cont) | Place DUPLEX key in UP position (HALF-DUPLEX). Depress TERM READY (AUTO ANSW) key. Wait 6 seconds then depress ESC key. Hold SHIFT key depressed and depress  key. | TERM READY (AUTO ANSW) turns on. LOCAL (LOCAL-TALK) turns off. ALARM flashes. DATA turns on. Answer-Back message is printed (sets w/answer-back). (Refer to Options 439.b., 441.b., 442.b., and 443.b., for any exceptions). |
| | 32.b. | W/TAU, TAU1 OR TAU2 — LINE INTERFACE: Connect Carrier Detect pin 8 to Data Term Ready pin 20. W/TAU2 — AUX PORT INTERFACE: Turn on Data Term Ready pin 20 (floating condition is On.) Turn on Teleprinter POWER switch. | Print head is returned to left-hand margin. Paper feeds to next line. DATA turns on. <u>LINE INTERFACE CONNECTOR</u> +12 V will be present on pin 4 (Issue 2A Logic Card, sets W/TAU, sets W/TAU1 or TAU2). Gnd will be present on pin 7. <u>AUX PORT INTERFACE CONNECTOR</u> +12 V will be present on pin 6 (sets W/TAU2). Gnd will be present on pin 7. |
| | 32.c. | W/TTL INTERFACE — Connect Terminal Ready pin 5 to Data Ready pin 15. Measure continuity between pins 6 Request to Send and 9 Gnd on TTL Interface Connector. Turn on Teleprinter POWER switch. | Meter should read 0 ohms (Issue 2A Logic Card). Print head is returned to left-hand margin. Paper feeds to next line. DATA turns on. <u>INTERFACE CONNECTOR</u> +5 V dc will be present on pin 7. -12 V dc will be present on pin 11. +12 V dc will be present on pin 13. Gnd will be present on pin 9. |

TABLE A (Cont)
OFF-LINE TEST PROCEDURES

| TEST | STEP | PROCEDURE | RESPONSE |
|--------------------------------|------|--|--|
| Data Loopback Option 434.a. | 33. | Place CPS key in UP position (30 CPS). Depress and release PARITY key to UP position (PARITY ON). Place DUPLEX key in UP position (HALF-DUPLEX). Place CAPS LOCK key in DOWN position. Type the following: ANALOG Depress SPACE BAR. | <u>LINE INTERFACE CONNECTOR</u> -12 V will be present on pin 23 (sets W/TAU). <u>AUX PORT INTERFACE CONNECTOR</u> -12 V will be present on pin 23 (sets W/TAU2). AANNAALLOOGG is printed. (Refer to Option 434.b. for any exceptions). |
| Printer on/off (Aux Port) | 34. | W/TAU2 — AUX PORT INTERFACE: Connect Gnd pin 7 to Printer on/off pin 17. Type the following: ANALOG Depress SPACE BAR. Remove connection from pin 7 to 17. | ANALOG is printed. |
| | 35. | Place DUPLEX key in DOWN position (FULL DUPLEX). Type the following: TEST | TEST is printed. |
| EOT Option 433.a. | 36. | Watch TERM READY (AUTO ANSW) key, then hold CTRL key depressed and depress  key. | DATA and TERM READY (AUTO ANSW) indicators flash as EOT key is depressed. (Refer to Option 433.b. for any exceptions.) |
| Intrpt | 37. | Depress INTRPT key. | INTRPT turns on momentarily. Signal bell rings. |
| | 38. | Hold CRTL key depressed and depress RETURN key. | Print head does not return. |

TABLE A (Cont)
OFF-LINE TEST PROCEDURES

| TEST | STEP | PROCEDURE | RESPONSE |
|--|------|---|--|
| CPS Option 435.a. | 39. | Depress RETURN and then LINE FEED key. Depress REPT and K keys. Hold down until two lines of Ks are printed. (Check time to print line.) | Continuous Ks will be printed across entire new line. Bell rings at end of line and automatic return and line feed will be performed. One printed line plus return will occur in approximately: 4 seconds (sprocket feed) 2.5 seconds (friction feed). (Refer to Option 435.b. for any exceptions.) |
| | 40. | Place CPS key in DOWN position (10 CPS). Depress REPT and K keys. Hold down until two lines of Ks are printed. (Check time to print line.) | <u>LINE INTERFACE CONNECTOR</u> +12 V will be present on pin 23 (sets W/TAU). <u>AUX PORT INTERFACE CONNECTOR</u> +12 V will be present on pin 23 (sets W/TAU2). Continuous Ks will be printed across entire line. Bell rings at end of line and automatic return and line feed will be performed. One printed line plus return will occur in approximately: 14 seconds (sprocket feed) 8.5 seconds (friction feed). First part of second line (approximately 18 characters) will be printed at a faster rate of speed. (Refer to Option 435.b. for any exceptions.) |
| Low paper (Friction Feed) Paper-Out (Sprocket Feed) | 41. | Remove the paper — paper-out (sprocket feed). Lift paper roll from paper support — (friction feed). | Signal bell rings (sprocket feed only). ALARM remains on, ie, stops flashing (sets W/TDU). ALARM turns on (sets W/O TDU). |

TABLE A (Cont)
OFF-LINE TEST PROCEDURES

| TEST | STEP | PROCEDURE | RESPONSE |
|--|------|--|--|
| Low Paper (Friction Feed) Paper-Out (Sprocket Feed) (Cont) | 42. | Watch DATA key and depress LINE FEED key eight times. | <u>Sprocket Feed</u> DATA turns off. LOCAL (LOCAL-TALK) turns on as 8th LINE FEED is received. <u>Friction Feed</u> DATA remains on. LOCAL (LOCAL-TALK) remains off. |
| | 43. | Watch and depress TERM READY (AUTO ANSW) key. | <u>Sprocket Feed</u> DATA remains off. LOCAL (LOCAL-TALK) remains on. <u>Friction Feed</u> TERM READY (AUTO ANSW) flashes as key is depressed. LOCAL (LOCAL-TALK) turns on. |
| | 44. | Replace the paper. Depress RESET button on paper roll support (friction feed only). | ALARM flashes (sets W/TDU). ALARM turns off (sets W/O TDU). |
| | 45. | Depress DATA key. | DATA turns on. LOCAL (LOCAL-TALK) turns off. |
| Data Term Ready (Aux) | 46. | W/TAU2 — AUX PORT INTERFACE: Connect Data Term Ready pin 20 to Receive Data Pin 3. Disconnect strap between pin 20 and pin 3. | DATA turns off. TERM READY (AUTO ANSW) turns on. DATA turns on. TERM READY (AUTO ANSW) turns off. |
| Answer-back on ENQ. Option 440.a. Option 443.a. | 47. | W/ANSWER-BACK AND TAU, TAU1, TAU2, OR TTL INTERFACE — Depress ESC key. Hold SHIFT key depressed and depress  key. | ALARM flashes. |

TABLE A (Cont)
OFF-LINE TEST PROCEDURES

| TEST | STEP | PROCEDURE | RESPONSE |
|--|-------|---|---|
| Answer-Back on ENQ Option 440.a. Option 443.a. (Cont) | 47.a. | W/ANSWER-BACK — Place DUPLEX key in DOWN position (FULL DUPLEX). Hold CTRL key depressed and depress  key. | Answer-Back message does not print. |
| | 47.b. | W/ANSWER-BACK — Place DUPLEX key in UP position (HALF-DUPLEX). Hold CTRL key depressed and depress  key. | Answer-Back message is printed. (Refer to Options 440.b. and 443.b. for any exceptions.) |
| | 47.c. | W/ANSWER-BACK AND TAU2 — AUX PORT INTERFACE: Connect Clear to Send pin 5 to Request to Send pin 4. Hold CTRL key depressed and depress  key. Disconnect strap between pins 4 and 5. | Answer-Back message does not print. |
| Answer-Back on HERE-IS Option 438.a. | 48. | W/ANSWER-BACK — Hold CTRL key depressed and depress  key. | Answer-Back message is printed. (Refer to Option 438.b. for exceptions.) |
| | 49. | W/ANSWER-BACK AND TAU, TAU1, TAU2, or TTL — Depress ESC and then  key. | ALARM turns off. |
| Answer-Back Options 439.a. 441.a. 442.a. | 50.a. | W/ANSWER-BACK AND TAU, TAU1 OR TAU2 — LINE INTERFACE: Remove strap from Send Data pin 2 to Rec Data pin 3. (Perform the following procedures within 6 seconds) Disconnect wire from Carrier Detect pin 8 and momentarily connect to Ring Indicator pin 22, then reconnect to pin 8. Reconnect strap from pin 2 to pin 3. | Answer-Back message is printed. (Refer to Options 439.b., 441.b., and 442.b. for any exceptions.) |

TABLE A (Cont)
OFF-LINE TEST PROCEDURES

| TEST | STEP | PROCEDURE | RESPONSE |
|---|-------|--|--|
| Answer-Back Option 439.a. 441.a. 442.a. (Cont) | 50.b. | <p>W/ANSWER BACK AND TTL INTERFACE — Remove strap from Send Data pin 19 to Rec Data pin 17.</p> <p>(Perform the following procedures within 6 seconds) Disconnect wire from Term Ready pin 5 and connect to +5 pin 7. Connect strap between +12 V pin 3 and Ring Indicator pin 12. Immediately disconnect wire from pin 7 and reconnect to pin 5.</p> <p>Disconnect strap from pin 3 to pin 12. Reconnect strap from pin 19 to pin 17.</p> | Answer-Back message is printed. (Refer to Options) 439.b., 441.b., and 442.b. for any exceptions.) |
| Interface Option 441.b. | 51.a. | <p>W/ANSWER BACK AND TAU OR TAU1 — Momentarily disconnect wire from Carrier Detect pin 8, then reconnect to pin 8.</p> | Answer-Back message is not printed. (Refer to Option 441.a. for any exceptions.) |
| | 51.b. | <p>W/ANSWER BACK AND TTL INTERFACE — Momentarily disconnect wire from Term Ready pin 5, then reconnect to pin 5.</p> | Answer-Back message is not printed. (Refer to Option 441.a. for any exceptions.) |
| Current Loop | 52.a. | <p>W/TAU1 OR TAU2 — LINE INTERFACE: Connect Data Term Ready pin 20 to Rec Data pin 3. Remove strap from Send Data pin 2 to Rec Data pin 3.</p> <p>Disconnect strap between pin 20 and pin 3. Reconnect strap from pin 2 to pin 3.</p> <p>Depress INTRPT key.</p> | <p>INTRPT turns on. Signal bell rings.</p> <p>INTRPT turns off.</p> |
| | 52.b. | <p>W/TAU2 — AUX PORT INTERFACE: Connect Data Set Ready pin 6 to Trans Data pin 2.</p> <p>Disconnect strap between pin 6 and pin 2.</p> <p>Depress INTRPT key.</p> | <p>INTRPT turns on.</p> <p>INTRPT turns off.</p> |
| Data Loopback Clear | 53.a. | <p>W/TDU — Depress ESC and then  key.</p> | <p>ALARM and DATA turn off. TERM READY (AUTO ANSW) turns on.</p> |

TABLE A (Cont)
OFF-LINE PROCEDURES

| TEST | STEP | PROCEDURE | RESPONSE |
|---|-------|---|---|
| Loopback, Clear (Cont) | 53.b. | W/TAU, TAU1, TAU2 — LINE INTERFACE: Disconnect strap between Data Term Ready pin 20 and Carrier Detect pin 8. | TERM READY (AUTO ANSW) turns on. DATA turns off. -12 V will be present on AUX Interface Connector pin 6 (sets W/TAU2). |
| | 53.c. | W/TTL INTERFACE — Disconnect strap between Data Ready pin 15 and Terminal Ready pin 5. | |
| Analog Loop | 54. | W/O TDU — Depress ESC key. Hold SHIFT key depressed and depress  key. | ALARM flashes. DATA turns on. TERM READY (AUTO ANSW) turns off (sets W/TAU or TAU1). +12 V will be present on Line Interface Connector pin 25, Analog Loop (sets W/TAU). 0 V will be present on TTL Interface Connector pin 3, Analog Loop. (sets W/TTL Interface). |
| | 55. | W/O TDU — Depress ESC key and then  key. | ALARM turns off. DATA turns off. TERM READY (AUTO ANSW) turns on (sets W/ TAU or TAU1). -12 V will be present on Line Interface Connector pin 25, Analog Loop (sets W/TAU). +5 V dc will be present on TTL Interface Connector pin 3, Analog Loop (sets W/TTL Interface). |
| Digital Loop | 56. | W/TTL INTERFACE — Depress ESC key. Hold SHIFT key depressed and depress  key. | 0 V will be present on TTL Interface pin 1 (Digital Loop). +5 V dc will be present on TTL Interface pin 1 (Digital Loop). |
| | 57. | W/TTL INTERFACE — Depress ESC key and then  key. | |
| Low Paper (Friction Feed) Paper-Out (Sprocket Feed) | 58. | Sprocket Feed — Remove paper. Friction Feed — Lift paper roll from paper roll support. | Signal bell rings (sprocket feed only). TERM READY (AUTO ANSW) turns off. LOCAL (LOCAL-TALK) and ALARM turn on. |

TABLE A (Cont)
OFF-LINE PROCEDURES

| TEST | STEP | PROCEDURE | RESPONSE |
|--|------|---|--|
| Low Paper (Friction Feed) Paper-Out (Sprocket Feed) (Cont) | 59. | Depress TERM READY (AUTO ANSW) key. | TERM READY (AUTO ANSW) remains off. LOCAL (LOCAL-TALK) and ALARM remain on. |
| | 60. | Replace the paper. | ALARM turns off. +12 V will be present on AUX Interface Connector pin 6 (sets W/TAU2). |
| Data key | 61. | Depress DATA key. Place CPS key in UP position (30 CPS). Place DUPLEX key in UP position (HALF-DUPLEX). | LOCAL (LOCAL-TALK) turns off. DATA flashes for approximately 20 seconds then turns off. TERM READY (AUTO ANSW) turns on. |

This completes the OFF-LINE test of the 43 KSR Teleprinter. Teleprinters with access to the switched network, proceed to the ON-LINE TESTS. Teleprinters without access to the switched network, use local procedures and arrangements for ON-LINE testing.

ON-LINE TESTS (Teleprinters With Access to the Switched Network — Installation Checkout)

TABLE B

ON-LINE TEST PROCEDURES

| TEST | STEP | PROCEDURE | RESPONSE |
|---|------|--|--|
| Full Duplex Send & Receive Data (Originating Station) | 1. | With power on and AUTO ANSW lit, depress LOCAL-TALK key and place DUPLEX key in DOWN position (FULL DUPLEX). Place CAPS LOCK key in DOWN position. Depress RETURN and LINE FEED keys. | LOCAL-TALK lights. Print head is returned to left-hand margin. Paper feeds to next line. |
| | 2. | Call Data Test Center and request a 43 Teleprinter test. Provide Test Center with phone number of station and operating speed. Agree that Test Center will call back after disconnect. | |
| | 3. | When instructed by Data Test Center operator, go to Data mode by depressing DATA key. | DATA turns on. LOCAL-TALK goes off. |
| | 4. | Type the following message request on the operator console: SEND THE QUICK BROWN FOX TEST MESSAGE. | Test message request will be received by the Data Test Center. |
| | 5. | Data Test Center will send 'The Quick Brown Fox' test message ending with EOT. | 'The Quick Brown Fox' test message will be printed. Station will disconnect. DATA goes off. AUTO ANSW goes on. |
| Automatic Answer Option 439.a. 441.a. 442.a. 443.a. | 6. | Depress and release DUPLEX key so it returns to upper position. (HALF-DUPLEX) | Data Test Center will call station. Phone rings once. DATA turns on. AUTO ANSW goes off. Answer-Back message is printed at station and Test Center (sets W/answer-back). Refer to Options 439.b., 441.b., 442.b. and 443.b. for any exceptions). |

TABLE B (Cont)
ON-LINE TEST PROCEDURES

| TEST | STEP | PROCEDURE | RESPONSE |
|--|------|--|---|
| ENQ Option 440.a. | 7. | Data Test Center will send CTRL E (ENQ). | Answer-Back message is printed at station and Test Center (sets W/answer-back). Refer to Option 440.b. for any exceptions). |
| Aux Sender and Receiver (Full Duplex) | 8. | W/AUX SENDER — Send the following message from aux sender: AUX SENDER MESSAGE FDX. | AUX SENDER MESSAGE FDX will be received by Data Test Center. Message will not be printed on printer. |
| | 9. | W/AUX RECEIVER — Data Test Center will send: AUX RECEIVER MESSAGE FDX. | AUX RECEIVER MESSAGE FDX will be received by aux receiver and printed on printer. |
| Half-Duplex Send and Receive Data (Answering Station) | 10. | Test Center will send the following test message: NOW IS THE TIME FOR ALL GOOD MEN | Test message will be printed. |
| | 11. | Depress the SPACE bar. Send the following test message from the operator console: TO COME TO THE AID OF THEIR COUNTRY. | Printed copy at the station will be: NOW IS THE TIME FOR ALL GOOD MEN TO COME TO THE AID OF THEIR COUNTRY. Data Test Center will receive the test message sent from the operator console. |
| Digital Loop | 12. | Test Center will send the following test message: ESC< DIGITAL LOOP ESC = | ALARM flashes. DIGITAL LOOP will be printed. ALARM turns off. |
| Parity Detect | 13. | Depress and release PARITY key to UP position (PARITY ON). Test Center will send the following test message (8th Bit Marking): PARITY TEST | Printer will print: ■ ■ RIT ■ TE ┘ T |

TABLE B (Cont)
ON-LINE TEST PROCEDURES

| TEST | STEP | PROCEDURE | RESPONSE |
|---------------------------------------|------|--|---|
| Parity Detect (Cont) | 14. | Place PARITY key in DOWN position (PARITY OFF). Test Center will send the following test message (8th Bit Marking): PARITY | Printer will print: PARITY |
| Aux Sender and Receiver (Half-Duplex) | 15. | W/AUX SENDER — Send the following Message from aux sender: AUX SENDER MESSAGE HDX | AUX SENDER MESSAGE HDX will be received by aux receiver (if present) and Data Test Center and printed on printer. |
| | 16. | W/AUX RECEIVER — Data Test Center will send: AUX RECEIVER MESSAGE HDX | AUX RECEIVER MESSAGE HDX will be received by aux receiver and printed on printer. |
| Intrpt | 17. | Data Test Center will send INTRPT | INTRPT turns on. Signal bell rings. |
| | 18. | Send RYRY from the keyboard. | Keyboard is blinded. RYRY will not be printed on printer or sent to Data Test Center. |
| | 19. | Depress INTRPT key. Send RYRY from keyboard. | INTRPT turns off. RYRY will be printed and sent to Data Test Center. |
| | 20. | Test Center will send TEST OK message if test was satisfactory and disconnect call. Test Center will send GO TO TALK message if test was unsatisfactory. Pick up handset, depress LOCAL-TALK key and evaluate results. | Station will disconnect. AUTO ANSW goes on. DATA goes off. |

This completes the On-Line test of the 43 KSR Teleprinter.

43 RO TELEPRINTER

TESTING

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| ON-LINE TESTS (Teleprinters With Access to the Switched Network — Installation Checkout) | 10 |
| 1. GENERAL | |
| 1.01 This section provides testing information for the 43 RO Teleprinter. | |
| 1.02 This section is reissued to include testing of teleprinters equipped with an integrated Terminal Auxiliary Unit (TAU1) or an answer- back modification kit. | |
| 1.03 An installation checkout should be per- formed after installation to make sure the station is operable. | |
| 1.04 On trouble calls, an installation checkout should be performed after trouble cor- rection to make sure the station is operable and a trouble verification test should be performed under the direction of the Test Center to isolate specific troubles not covered in the installation test. After correction of a trouble, the test may be confined to the specific area that was failing. | |
| 1.05 Following routine maintenance calls at a location, an installation checkout should be performed. | |
| 1.06 The checkout routines are presented in table form with test conditions arranged in a specific sequence. A response is given to verify the test condition has passed. | |

1.07 Always perform the tests in the order given. The test steps are based on satisfactory results of all previous steps.

1.08 If the indicated response is not obtained in any step of a test procedure, repeat the step to make sure that the procedure has been performed properly. If the results are still unsatisfactory, refer to the RO Teleprinter Troubleshooting Section 574-500-301.

1.09 Teleprinters without access to the switched network must be associated with locally developed external testing arrangements and procedures to perform actual On-Line Tests. If test station is remote, a copy of RO Teleprinter On-Line Tests should be available at the test station.

Note: The local tests specified in this section simulate most On-Line Tests for these teleprinters.

1.10 On-Line Tests can be performed with Test Centers equipped with a 43 Teleprinter or equivalent using Section 668-130-500.

1.11 Before an On-Line Test can be performed, the remote testing station or Test Center must be provided with advance details about the teleprinter under test, such as, telephone number, type of terminal (friction or sprocket) option exceptions present, speed, etc.

PRELIMINARY CHECK

1.12 Before proceeding with the checkout procedure, check the following:

- (a) Is the station connected to a properly grounded and polarized ac service?
- (b) Are all cable connectors fully seated?
- (c) Are printer paper and ribbon properly installed?
- (d) Are any option exceptions present? Refer to the Engineering Options, Section 574-500-210 and reverse side of directory card.

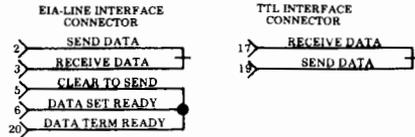
SECTION 574-500-501

Procedures in Off-Line and On-Line Tests are based on standard factory furnished options being present. If option exceptions are present, the test response will be as shown in Engineering Options Section 574-500-210.

2. TEST EQUIPMENT

2.01 For teleprinters without access to the switched network, Off-Line Test Procedures are provided to simulate On-Line Tests where external communication test devices are not available. To perform these tests, the connector terminals, shown as follows, should be strapped before proceeding with the tests. The remaining terminals should be connected or measured as specified during the test steps.

Note: Contact Teletype Corporation Custom Product Division for availability of a 43 Teleprinter Interface Test Box, CP10.002.001-1, which provides both arrangements shown as follows:



2.02 A 43 KSR Operator Console, 43K101/CAA or CAB can be substituted in RO Teleprinters to perform tests off-line when external communication test devices (Test Centers) are not available for on-line operation.

2.03 A volt-ohmmeter or equivalent means to measure ± 12 volts and ± 5 volts and perform continuity checks is required.

2.04 Steps 1 through 7 apply to all teleprinters. Steps 8 through 29 apply to all teleprinters unless otherwise indicated.

TABLE A (Cont)
OFF-LINE TEST PROCEDURES

| TEST | STEP | PROCEDURE | RESPONSE |
|-----------------|------|---------------------------|---|
| Printer (Cont) | 4. | Release PRINTER TEST key. | ALARM turns off. Character printing stops. Print head returns to left-hand margin. Paper feeds to next line. |
| Cover Interlock | 5. | Raise cover | ALARM turns on. TERM READY turns off. |
| | 6. | Close cover | ALARM remains on. |
| | 7. | Depress RESET key. | ALARM turns off. TERM READY turns on. |

Steps 8 through 29 may be omitted if On-Line Tests are performed instead.

Note: Not all tests performed in Steps 8 through 29 are checked in on-line tests.

SIMULATED ON-LINE TESTS (LOOPBACK)

| | | | |
|----------|------|---|--|
| Loopback | 8. | Turn off POWER switch and connect the test arrangement shown on Page 2 to the interface connector. | |
| | 8.a. | W/TDU — Remove the paper holder and bustle cover. Unplug the logic card cable connector on top of the TDU and plug into test arrangement. Measure continuity between pins 6 and 9 on TTL Interface Connector. TTL INTERFACE — Connect Terminal Ready pin 5 to Data Ready pin 15. Turn on teleprinter POWER switch. | Meter should read 0 ohms (Issue 2A Logic Card). Print head returns to left-hand margin. Paper feeds to next line. DATA turns on. |
| | 8.b. | W/TAU OR TAU1 — LINE INTERFACE: Connect Carrier Detect pin 8 to Data Term Ready pin 20. Turn on teleprinter POWER switch. | Print head returns to left-hand margin. Paper feeds to next line. DATA turns on. +12 V will be present on pin 4 of Line Interface Connector (Issue 2A Logic Card, sets w/TAU or sets w/TAU1). |
| | 8.c. | TTL INTERFACE — Measure continuity between pins 6 and 9 on TTL Interface Connector. Connect Terminal Ready pin 5 to Data Ready Pin 15. Turn on teleprinter POWER switch. | Meter should read 0 ohms (Issue 2A Logic Card). Print head returns to left-hand margin. Paper feeds to next line. DATA turns on. |

TABLE A (Cont)

OFF-LINE TEST PROCEDURES

| TEST | STEP | PROCEDURE | RESPONSE |
|--|-------|--|--|
| Setur | 9. | Turn off POWER switch. Remove RO Operator Console and install KSR Operator Console. Remove cover and manually depress Interlock switch on KSR operator console (between ALARM and PRINTER TEST keys) during test procedure. | |
| | 9.a. | W/TDU — Remove test arrangement and reconnect TTL connector from logic card to TDU. Replace bustle cover and paper holder. | |
| Analog Loop Option 439.a. 441.a. 442.a. 443.a. | 10. | Turn on POWER switch. | TERM READY (AUTO ANSW) turns on. |
| | 10.a. | W/TDU — Place DUPLEX key in UP position (HALF-DUPLEX). Wait 6 seconds then depress ESC key. Hold SHIFT key depressed and depress  key. | ALARM flashes. DATA turns on. Answer-Back message is printed (sets w/answer-back). (Refer to options 439.b., 441.b., 442.b., and 443.b. for any exceptions.) |
| | 10.b. | W/TTL INTERFACE ONLY | +5 V will be present on pin 7. -12 V will be present on pin 11. +12 V will be present on pin 13. GND will be present on pin 9. |
| Data Loopback | 11. | Place CPS key in UP position (30 CPS). Depress and release PARITY key to UP position (PARITY ON). Place DUPLEX key in UP position (HALF-DUPLEX). Place CAPS LOCK key in DOWN position. Type the following: ANALOG Depress SPACE BAR. | -12 V will be present on pin 23 of Line Interface Connector (sets w/TAU). AANNAALLOOG is printed. |

TABLE A (Cont)
OFF-LINE TEST PROCEDURES

| TEST | STEP | PROCEDURE | RESPONSE |
|---|------|--|---|
| EOT Option 433.a. | 12. | Place DUPLEX key in DOWN position (FULL DUPLEX). Type the following: TEST Watch TERM READY (AUTO ANSW) key, then hold CTRL key depressed and depress  key. | TEST is printed. DATA and TERM READY (AUTO ANSW) flash as EOT key is depressed. (Refer to Option 433.b. for any exceptions.) |
| | 13. | Depress INTRPT key. | INTRPT turns on momentarily. Signal bell rings. |
| | 14. | Hold CTRL key depressed and depress RETURN key. | Print head does not return. |
| CPS Option 435.a. Option 436.a. | 15. | Depress RETURN and then LINE FEED key. Depress REPT and K keys. Hold down until two lines of Ks are printed (check time to print line). | Continuous Ks will be printed across entire new line. Bell rings at end of line and automatic return and line feed will be performed. One printed line plus return will occur in approximately: 4 seconds (sprocket feed) 2.5 seconds (friction feed) (Refer to Option 435.b. or 436.b. for any exceptions.) |
| | | Measure continuity between pins 4 and 17 on connector of RO opcon that was removed. | Meter should read an open circuit. (Refer to Option 436.b. for any exceptions.) |
| Option 437.a. | 16. | Enable Option 434.b. Depress the following keys: PARITY TEST | Printer will print: ■ ■ R I T ■ T E ■ T (Refer to Option 437.b. for any exceptions.) |
| | | Measure continuity between pins 4 and 20 on connector of RO opcon that was removed. Enable Option 434.a. | Meter should read an open circuit. (Refer to Option 437.b. for any exceptions.) |

TABLE A (Cont)

OFF-LINE TEST PROCEDURES

| TEST | STEP | PROCEDURE | RESPONSE |
|--|------|--|---|
| Low-Paper (Friction Feed) Paper-Out (Sprocket Feed) | 17. | Remove the paper — Paper-out (sprocket feed). Lift paper roll from paper support — (friction feed). | Signal bell rings (sprocket feed only). ALARM remains on, ie, stops flashing (sets w/TDU). ALARM turns on (sets w/o TDU). |
| | 18. | Watch DATA key and depress LINE FEED key eight times. | <u>Sprocket Feed</u> DATA turns off. LOCAL (LOCAL-TALK) turns on as 8th LINE FEED is received. <u>Friction Feed</u> DATA remains on. LOCAL (LOCAL-TALK) remains off. |
| | 19. | Watch and depress TERM READY (AUTO ANSW) key. | <u>Sprocket Feed</u> DATA remains off. LOCAL (LOCAL-TALK) remains on. <u>Friction Feed</u> TERM READY (AUTO ANSW) flashes as key is depressed. LOCAL (LOCAL-TALK) turns on. |
| | 20. | Replace the paper. Depress RESET button on paper roll support (friction feed only). | ALARM flashes (sets w/TDU). ALARM turns off (sets w/o TDU). |
| | 21. | Depress DATA key . | DATA turns on. LOCAL (LOCAL-TALK) turns off. |
| Answer-Back on ENQ Option 440.a. Option 443.a. | 22. | W/ANSWER-BACK AND TAU, TAU1 OR TTL — Hold SHIFT key depressed and depress  key. | ALARM flashes. |

TABLE A (Cont)

OFF-LINE TEST PROCEDURES

| TEST | STEP | PROCEDURE | RESPONSE |
|--|-------|--|--|
| Answer-Back on ENQ Option 440.a. Option 443.a. (Cont) | 22.a. | Place DUPLEX key in DOWN position (FULL DUPLEX). Hold CTRL key depressed and depress  key. | Answer-Back message does not print. |
| | 22.b. | Place DUPLEX key in UP position (HALF-DUPLEX). Hold CTRL key depressed and depress  key. | Answer-Back message is printed. (Refer to Options 440.b. and 443.b. for any exceptions.) |
| | 22.c. | W/ANSWER-BACK AND TAU, TAU1, OR TTL – Depress ESC and then  key. | ALARM turns off. |
| Answer-Back Option 439.a. 442.a. | 23.a. | W/ANSWER-BACK AND TAU OR TAU1 – LINE INTERFACE: Remove strap from Send Data pin 2 to Rec Data pin 3. (Perform the following procedures within 6 seconds.) Disconnect wire from Carrier Detect pin 8 and momentarily connect to Ring Indicator pin 22; then reconnect to pin 8. Reconnect strap from pin 2 to pin 3. | Answer-Back message is printed. (Refer to Options 439.b. and 442.b. for any exceptions.) |
| | 23.b. | W/ANSWER-BACK AND TTL INTERFACE – Remove strap from Send Data pin 19 to Rec Data pin 17. (Perform the following procedures within 6 seconds.) Disconnect wire from Term Ready pin 5 and connect to +5 V pin 7. Connect strap between +12 V pin 3 and Ring Indicator pin 12. Immediately disconnect wire from pin 7 and reconnect to pin 5. Disconnect strap from pin 3 to pin 12. Reconnect strap from pin 19 to pin 17. | Answer-Back message is printed. (Refer to Options 439.a. and 442.a. for any exceptions.) |
| Answer-Back Option 441.b. | 24.a. | W/ANSWER-BACK AND TAU OR TAU1 – Momentarily disconnect wire from Carrier Detect pin 8, then reconnect to pin 8. | Answer-Back message is not printed. (Refer to Option 441.a. for any exceptions.) |
| | 24.b. | W/ANSWER-BACK AND TTL INTERFACE – Momentarily disconnect wire from Term Ready pin 5, then reconnect to pin 5. | Answer-Back message is not printed. (Refer to Option 441.a. for any exceptions.) |

TABLE A (Cont)
OFF-LINE TEST PROCEDURES

| TEST | STEP | PROCEDURE | RESPONSE |
|--|-------|--|---|
| Current Loop | 25. | W/TAU1 — LINE INTERFACE: Connect Data Term Ready pin 20 to Rec Data pin 3. Remove strap from Send Data pin 2 to Rec Data pin 3. Disconnect strap between pin 20 and pin 3. Reconnect strap from pin 2 to pin 3. Depress INTRPT key. | INTRPT turns on. Signal bell rings. |
| | | | INTRPT turns off. |
| Loopback Clear | 26.a. | W/TDU — Depress ESC and then  key. | ALARM and DATA turn off. TERM READY (AUTO ANSW) turns on. |
| | 26.b. | W/TAU OR TAU1 LINE INTERFACE — Disconnect strap between Data Term Ready pin 20 and Carrier Detect pin 8. | DATA turns off. TERM READY (AUTO ANSW) turns on. |
| | 26.c. | W/TTL INTERFACE — Disconnect strap between Data Ready pin 15 and Terminal Ready pin 5. | |
| Low-Paper (Friction Feed) Paper-Out (Sprocket Feed) | 27. | Sprocket Feed — Remove paper. | TERM READY (AUTO ANSW) turns off. LOCAL (LOCAL-TALK) and ALARM turn on. Signal bell rings (sprocket feed only). |
| | | Friction Feed — Lift paper roll from paper roll support. | |
| | 28. | Depress TERM READY (AUTO ANSW) key. | TERM READY (AUTO ANSW) remains off. LOCAL (LOCAL-TALK) and ALARM remain on. |
| | 29. | Replace the paper. Depress RESET button on paper roll support (friction feed only). | ALARM turns off. |

This completes the OFF-LINE test of the 43 RO Teleprinter.

Remove the KSR Operator Console and replace the RO Operator Console.

Remove the Interface Test Arrangement (if present) and replace the bustle cover and paper holder.

Teleprinters with access to the switched network, proceed to the ON-LINE TESTS.

Teleprinters without access to the switched network, use local procedures and arrangements for ON-LINE testing.

ON-LINE TESTS (Teleprinters With Access to the Switched Network — Installation Checkout)

TABLE B

ON-LINE TEST PROCEDURES

| TEST | STEP | PROCEDURE | RESPONSE |
|--|------|--|--|
| Auto- matic Answer Option 439.a. 441.a. 442.a. 443.a. | 1. | With power on, verify TERM READY is on. | Data Test Center will call station. DATA turns on. TERM READY goes off. Answer-Back message is printed at station and Test Center (sets w/ answer-back). (Refer to Options 439.b., 441.b., 442.b. and 443.b. for any exceptions). |
| ENQ Option 440.a. | 2. | Test Center will send CTRL E (ENQ) | Answer-Back message is printed at station and Test Center (sets w/ answer-back). (Refer to Option 440.b. for any exceptions.) |
| EOT Detect Option 433.a. 436.a. | 3. | Test Center will send the following test message ending with EOT: 43 RO TELEPRINTER ON LINE TEST | Test message will be printed. Station will disconnect: DATA goes off. TERM READY turns on. (Refer to Option 433.b. or 436.b. for any exceptions.) |
| Digital Loop | 4. | Test Center will call station. | DATA turns on. TERM READY goes off. Answer-Back message is printed (sets w/ answer-back.) |
| | 5. | Test Center will send the following message: Esc < DIGITAL LOOP | ALARM flashes. DIGITAL LOOP will be printed. |
| | 6. | Test Center will send: Esc = | ALARM turns off. |

TABLE B (Cont)
ON-LINE TEST PROCEDURES

| TEST | STEP | PROCEDURE | RESPONSE |
|--|------|--|--|
| Paper-Out | 7. | Remove the paper — paper-out (sprocket feed). Lift and hold paper roll (friction feed). Test Center will send eight LINE FEED characters. Test Center will disconnect call. | Signal bell rings (sprocket feed only). ALARM turns on. ALARM turns on. <u>Sprocket Feed</u> DATA turns off as 8th line feed is received. <u>Friction Feed</u> DATA remains on as 8th line feed is received. |
| | 8. | Test Center will call station. | Station will not go to Data mode. DATA remains off. |
| Automatic Carriage Return Option 435.a. | 9. | Replace the paper. Depress RESET key. Test Center will call station and send the following message: CR LF 4 Spaces E _{sc} L (lower case) 5 Spaces E _{sc} r (lower case) CR LF E _{sc} < two full lines of repeat Ks E _{sc} x (lower case) E _{sc} = <i>Note:</i> CR = Carriage Return LF = Line Feed (Refer to Option 435.b. for any exceptions.) | ALARM turns off. DATA turns on. TERM READY goes off. ALARM flashes. Printer will print Ks between columns 5 and 10 and line feed automatically at right margin. Print head will move to column 1 at end of message. ALARM turns off. |
| Receive Parity Detect Option 437.a. | 10. | Test Center will send the following message (8th Bit Marking): PARITY TEST | Printer will print: ■ ■ R I T ■ T E ■ T |

TABLE B (Cont)
ON-LINE TEST PROCEDURES

| TEST | STEP | PROCEDURE | RESPONSE |
|--|------|--|---|
| Receive Parity Detect Option 437.a. (Cont) | 11. | <p>Test Center will send TEST OK message if test was satisfactory and disconnect.</p> <p>Test Center will send TEST NOT OK message if test was unsatisfactory and disconnect call.</p> <p>Call Test Center and evaluate results.</p> | <p>Station will disconnect. DATA goes off. TERM READY turns on.</p> |

This completes the On-Line Test of the 43 RO Teleprinter.

43 TELEPRINTER 8-LEVEL BUFFERED SEND/RECEIVE (BSR) STATION

TESTING

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| 3. TESTING PROCEDURES | 2 |
| INSTALLATION CHECKOUT | 3 |
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1. GENERAL

- 1.01 This section provides testing information for the 43 Teleprinter 8-Level Buffered Send/Receive (BSR).
- 1.02 Whenever this section is reissued, the reason for reissue will be listed in this paragraph.
- 1.03 The installation checkout should be performed after installation to make sure the station is basically operable and that the installation was properly performed.
- 1.04 In case of trouble either during or after installation, do the more comprehensive local and on-line tests to isolate specific troubles not covered in the installation check. After correction of a trouble, the test may be confined to the specific area that was failing.
- 1.05 Following routine maintenance visits at a location, the installation checkout should be performed.

- 1.06 The checkout routines are presented in chart form with test conditions arranged in a specific sequence. A response is given to verify the test condition has passed.
- 1.07 Always perform the tests in the order given. The test steps are based on satisfactory results of all previous steps.
- 1.08 If the indicated response is not obtained in any step of a test procedure, repeat the step to make sure that the procedure has been performed properly. If the results are still unsatisfactory, refer to the KSR Teleprinter Troubleshooting, Section 574-500-302.
- 1.09 Teleprinters without access to the switched network must be associated with locally developed external testing arrangements and procedures to perform actual on-line tests. If test station is remote, a copy of KSR On-Line Tests should be available at the test station.

Note: The local tests specified in this section simulate most on-line tests for these teleprinters.

- 1.10 On-line tests can be performed with the ADTS (Automatic Data Test System), — Generic 5 or higher, Data Test Centers equipped with a 43 Teleprinter (or equivalent) using Section 668-130-501 or they can be simulated using the test arrangements shown in 2. TEST EQUIPMENT. Whenever possible all testing should be performed with ADTS.

- 1.11 Before an on-line test can be performed, the remote testing station or Test Center must be provided with advance details about the teleprinter under test, such as, telephone number, type of terminal (friction or tractor), option exceptions present, speed, etc.

PRELIMINARY CHECK

- 1.12 Before proceeding with the checkout procedure, check the following:
- (a) Is the station connected to a properly grounded and polarized ac service?
 - (b) Are all cable connectors fully seated?

- (c) Are printer paper and ribbon properly installed?
- (d) Are any option exceptions present? Refer to the Engineering Options, Section 574-500-210 and reverse side of directory card.

1.13 Procedures in local and on-line tests are based on options given in this section which may or may not be customer options. If option exceptions are present, the test response will be as shown in Engineering Options, Section 574-500-210.

1.14 All references to columns are after a one-second delay, to allow the print head to index two character spaces to the right. The print head indicates the next character position to be printed.

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

2. TEST EQUIPMENT

2.01 Testing should be performed on-line using ADTS or a Data Test Center in which case no local test equipment is required. If testing with ADTS or a Data Test Center is not possible, on-line test can be simulated using either a 921A Data Test Set, version 4 or higher or a 403378 jumper plug. The 403378 jumper plug can be purchased from Teletype Corporation or made locally (Fig. 1).

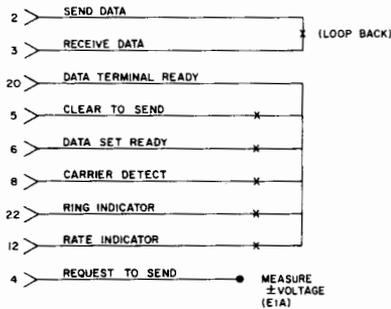


Fig. 1—Jumper Plug

3. TESTING PROCEDURES

3.01 For the more comprehensive local and on-line tests, temporarily enable the following user programmable options; otherwise you will

have to recognize when your 43 is varying from the test procedure due to your options. The 212AR Data Set should have factory options, except speed control YQ (switch 8-ON) must be used.

```

Speed=0300*      EBWrn=132*
StopU=1*         ABaa?=y*
LgKey=€*        MsEnd=€€*
SnKey=€*        StpSn=€*
LfBdy=000*      StrSn=€*
RtBdy=080*      NegRs=NO MES*
FmLgt=025*      Dscnt=€*
HTon?=y*        DLer?=n*
VTon?=y*        PrTyp=E*
PtNL?=n*        RcPar=y*
DbLF?=n*        DS212=y*
RBSze=00175*    HsStp=1*
RBufW=025*      Dup1x=f*
RBLow=030*      ABmsg=AB MESSAGE*
FlWrn=X0F*      NONE
RBnt1=y*
    
```

(Option RtBdy = 132* for ADTS test using Chart 6)

- 3.02 To enter the option preparation mode, depress TERM LOCAL and KP ON-SR if not on.
- 3.03 Depress CONTROL - (minus). The TERM LOCAL lamp flashes. The Speed = 1200* option should print.
- 3.04 To change this option to 300 bits per second, type in the new value:

Example: Speed = 1200*0300

3.05 Step through the option list using the  key until the desired option and value is printed. The printer carriage will stop in a position ready to accept a new value for the option.

key until the desired option and value is printed. The printer carriage will stop in a position ready to accept a new value for the option.

3.06 If a value on a previous option is to be changed, depress the  key and step through the list to the desired option. See Section 574-500-210 for all the options.

3.07 Depress CONTROL + (plus) key to store the changed options or TERM LOCAL key if no options are to be changed.

3.08 Do the INSTALLATION CHECKOUT, Chart 1, after telephone is installed.

INSTALLATION CHECKOUT

CHART 1

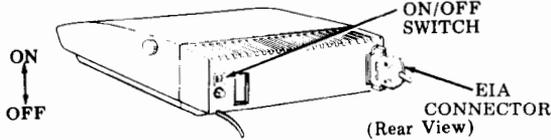
| TEST | STEP | PROCEDURE | RESPONSE |
|-----------------------|------|--|--|
| Power On | 1 | Turn power switch OFF. Wait for one second and then turn the power switch ON.  | Print head is indexed to the left boundary. Printer performs one (1) line feed TERM READY, FULL DUPLEX and KP keys light. |
| Keyboard Check | 2 | Depress TERM LOCAL key and KP key and depress space bar several times. | TERM LOCAL key lights and TERM READY and KP keys go out. Print head spaces several characters. |
| | | Type the following: "Teleprinter is basically operable". | Characters print correctly. |
| Customer Option Check | 3 | Depress and hold CTRL key and depress  key. (Options Prep) <i>Note:</i> Speed options must be 0300* if testing with ADTS (Automatic Data Test System). | KP key goes out, TERM LOCAL key flashes and Speed = 0300* is printed. |
| | | Ensure customer options are installed, depress  to step through options. | Change if necessary. |
| | | Depress and hold CTRL key and depress  key. (Options Load) | Print head returns to left boundary, TERM LOCAL key goes out, TERM READY and KP keys light. |
| | | Turn off teleprinter power switch. | All lamps off. |
| On-Line Check | — | Do the installation checkout per Steps 4, 5 or 6 using the 921A Data Test Set, 403378 jumper plug or with the ADTS. | If access to ADTS equipped with Generic 5 or higher is available, test with ADTS; if not, choose testing using the 921A Data Test Set or the 403378 jumper plug. |

CHART 1 (Contd)

| TEST | STEP | PROCEDURE | RESPONSE |
|--------------------------------------|------|---|---|
| Using 921A Data Test Set | 4 | Connect the 921A DTS as shown in paragraph 3.10. | — |
| | | Turn on teleprinter power switch. | Print head is indexed to the left boundary. Printer performs one (1) line feed; TERM READY, FULL DUPLEX and KP keys light. |
| | | Connect Data Set Ready to Data Term Ready (6 to 20) on 921A DTE board. | No response |
| | | Connect Carrier Detect to Data Term Ready (8 to 20). | TERM ON LINE key lights TERM READY key goes out. |
| | | Connect Send Data to Receive Data (2 to 3). | No response |
| | | Depress  key. (A) | Bell rings |
| | | Connect Clear To Send to Data Term Ready (5 to 20). | No response |
| | | Type the following: "Teleprinter is basically operable". | Prints correctly |
| | | Hold CTRL key depressed and depress  key. (WRU) | AB MESSAGE is printed (if coded). |
| | | This completes the installation checkout. Disconnect the test set, connect the teleprinter to its data set and tell the customer it is ready for his system test. | — |
| Using 403378 Jumper Plug | 5 | Disconnect the controller cable from the data set and plug in the 403378 jumper plug. | — |
| | | Turn ON teleprinter power switch. | Print head is indexed to the left boundary. Printer performs one (1) line feed; TERM ON-LINE, FULL DUPLEX and KP keys light. |
| | | Type the following: "Teleprinter is basically operable". | Prints correctly |
| | | Hold CTRL key depressed and depress  key (WRU). | AB MESSAGE is printed (if coded). |

| TEST | STEP | PROCEDURE | RESPONSE |
|----------------------------------|--------------|--|--|
| Using 403378 Jumper Plug (Contd) | 5 (Contd) | This completes the installation checkout. Disconnect the jumper plug and connect the data set. Tell the customer it is ready for its system test. | — |
| Using ADTS | 6 | Turn ON teleprinter power switch. | Print head is indexed to the left boundary. Printer performs one (1) line feed; TERM READY, FULL DUPLEX and KP keys light. |
| ADTS Hand-Shaking | 6.a. | Call the ADTS from a Touch-Tone† telephone (either from station under test or from another telephone). The ADTS will answer with a voice. All the following is entered via the Touch-Tone telephone pad. | ADTS voice answers with: THIS IS THE AUTOMATIC DATA TEST SYSTEM. PLEASE ENTER THE PASSWORD. <i>Note:</i> Depressing # * on pad requests ADTS voice to repeat the last response. |
| | 6.b. | Enter the 4-character password of the ADTS. All entries must be followed by a star. Example: 1234* | ENTER THE FUNCTION YOU WISH TO PERFORM. |
| | 6.c. | Enter 87* | TERMINAL TEST. IS THIS TEST SERVICE ORDER RELATED? |
| | 6.d. | Enter 1* OR Enter 0* for "YES" for "NO" | WHAT IS THE TELEPHONE NUMBER? |
| | 6.e. | Enter the teleprinters telephone number. Example: xxx xxx xxxx* | YOU HAVE ENTERED xxx xxx xxxx. IS THAT CORRECT? |
| | 6.f. | Enter 1* OR Enter 0* for "YES" for "NO" A "NO" answer causes the ADTS to repeat the question in 6.d., "WHAT IS THE TELEPHONE NUMBER?" | ENTER THE TERMINAL ID? |
| | 6.g. | Enter 43* | YOU HAVE ENTERED 43. IS THAT CORRECT? |

†Registered Service Mark of AT&TCo.

SECTION 574-500-502

| TEST | STEP | PROCEDURE | RESPONSE |
|-------------------------------------|--|--|--|
| ADTS Hand- Shaking (Contd) | 6.h. | Enter 1* OR Enter 0* for "YES" for "NO" | THIS IS THE 43 TELEPRINTER KEYBOARD SEND-RECEIVE AND RECEIVE-ONLY TELEPRINTER TEST. <i>Note:</i> If this is a repeat test, at this point the voice will skip to Step 6.o. DOES THE STATION HAVE A KEYBOARD? |
| | 6.i. | Enter 1* for "YES" | ENTER THE DATA SET ACCESS TYPE AS FOLLOWS: ZERO FOR BOTH ORIGINATE AND ANSWER, ONE FOR ANSWER ONLY, TWO FOR ORIGINATE ONLY. |
| | 6.j. | Enter 0* for originate-answer. | DO YOU WANT TO SUPPRESS ANSWER-BACK CHECKING? |
| | 6.k. | Enter 1* OR Enter 0* for "YES" for "NO" | DOES THE STATION SEND ANSWER-BACK ON CONNECTION? |
| | | | A "YES" answer causes the ADTS to ignore any answer-back sent by the 43 Terminal. No ENQ characters will be sent to the terminal and no answer-back failures will be reported regardless of how the terminal is optioned. A "NO" answer causes the questions in Steps 6.k. and 6.l. to be asked. |
| | 6.l. | Enter 1* OR Enter 0* for "YES" for "NO" | DOES THE STATION SEND ANSWER-BACK ON ENQUIRY RECEIVED? |
| | 6.m. | Enter 1* OR Enter 0* for "YES" for "NO" | DOES THE STATION SEND EVEN PARITY? |
| | 6.n. | Enter 1* OR Enter 0* for "YES" for "NO" | DOES THE STATION DISCONNECT ON EOT? |
| 6.o. | Enter 1* OR Enter 0* for "YES" for "NO" | ADTS will say the following summary. This is an example: THE STATION HAS A KEYBOARD. THE DATA SET ACCESS TYPE IS ORIGINATE-ANSWER. | |

| TEST | STEP | PROCEDURE | RESPONSE |
|-------------------------------------|-----------------|--|---|
| ADTS Hand- Shaking (Contd) | 6.o. (Contd) | | <p>THE STATION SENDS ANSWER-BACK ON CONNECTION.</p> <p>THE STATION SENDS ANSWER-BACK ON ENQUIRY.</p> <p>THE STATION SENDS EVEN PARITY.</p> <p>THE STATION DISCONNECTS ON EOT.</p> <p>DO YOU WANT TO MAKE ANY CORRECTIONS?</p> |
| | 6.p. | <p>Enter 1* OR Enter 0* for "YES" for "NO"</p> <p>A YES answer causes the ADTS to repeat starting at Step 6.f.</p> | DO YOU WANT TO TEST FOR DISCONNECT ON LONG-SPACE AND CARRIER-LOSS? |
| | 6.q. | Enter 0* for "NO" | DO YOU WANT THE ADTS TO ORIGINATE FIRST TEST CALL? |
| | 6.r. | Enter 1* for "YES" | IF THE ON-LINE MARGIN CONTROL TEST IS RUN, THE MARGINS WILL BE RESET. DO YOU WANT TO RUN THE ON-LINE MARGIN CONTROL TEST? |
| | 6.s. | Enter 0* for "NO" | DO YOU WANT TO RUN THE KEYBOARD SEND TEST? |
| | 6.t. | Enter 1* for "YES" | <p>THE TEST IS READY TO START.</p> <p>ARE YOU CALLING FROM THE DATA SET?</p> |
| | 6.u. | <p>Enter 1* OR Enter 0* for "YES" for "NO"</p> <p>If YES, skip to Step 6.x.</p> | <p>Example: SET THE STATION FOR 30 CHARACTERS PER SECOND, PARITY ON, HALF-DUPLEX, LOCAL, AND AUTO-ANSWER. DO YOU WANT THESE INSTRUCTIONS REPEATED?</p> |

SECTION 574-500-502

| TEST | STEP | PROCEDURE | RESPONSE |
|-------------------------------------|-------|---|--|
| ADTS Hand- Shaking (Contd) | 6.v. | Enter 0* for "NO" | ADTS WILL CALL THE STATION. LEAVE THIS TELEPHONE OFF- HOOK TO RECEIVE THE TEST RESULTS. DO YOU WANT THESE INSTRUCTIONS REPEATED? |
| | 6.w. | Enter 0* for "NO". Leave teleprinter in TERM READY. Depress DUPLEX key. Leave parity option per customer selection. | LOCAL and DUPLEX lamps OFF. TERM READY lamp ON. Skip to Step 6.aa. |
| | 6.x. | If Step 6.u. was YES. | SET THE STATION FOR 30 CHARACTERS PER SECOND, PARITY ON, HALF-DUPLEX, AND LOCAL. DO YOU WANT THESE INSTRUCTIONS REPEATED? |
| | 6.y. | Enter 0* for "NO" Leave teleprinter in TERM READY. Depress DUPLEX key. Leave parity option per customer selection. | LOCAL and DUPLEX lamps OFF. TERM READY lamp ON. ADTS WILL CALL THE STATION. ON THE TONE, GO ON-HOOK AND DEPRESS THE AUTO-ANSWER. AFTER THE TEST CALL, DEPRESS THE LOCAL KEY AND ANSWER THE PHONE WHEN IT RINGS. DO YOU WANT THESE INSTRUCTIONS REPEATED? |
| | 6.z. | Enter 0* for "NO" Hang up phone when tone is heard. | ADTS will send a two second tone. |
| ADTS Calls for Test | 6.aa. | ADTS calls teleprinter. Check Fig. 2 for correct copy. <i>Note:</i> If station has keyboard, crafts- person must type in U*U*U*U*U*U*U*U* when requested before proceeding to Step 6.bb. | ON-LINE lamp lights. TERM READY lamp goes out. Teleprinter prints message (see Fig. 2). |

| TEST | STEP | PROCEDURE | RESPONSE |
|---------|--|---|--|
| Results | 6.bb | If craftsperson called from the teleprinter: When set disconnects, depress LOCAL key and when ADTS calls, pick up handset and listen for test results. Enter 1* | LOCAL lamp lights. TERM READY lamp goes out. TO RECEIVE THE TEST RESULTS ENTER 1. |
| | | If craftsperson called from another phone line: When set disconnects, listen on the other Touch-Tone telephone. | |
| | 6.cc. | If teleprinter passed: Enter: #63 * to disconnect, hang up the phone. <i>Note:</i> When an external data set is used instead of an internal one, the loopback test will fail. Ignore this failure when testing with an external data set. | Example: THE TEST RESULTS ARE: THE RECEIVED LEVEL IS -20 Dbm. THE DIGITAL LOOPBACK TEST FAILED. THE TEST FAILED DO YOU WANT TO REPEAT THE TEST? |
| | 6.dd. | If teleprinter failed: The ADTS responds with an abort message. (See Tables 1 and 2) Enter: 1* to retest or # 63* to disconnect, hang up telephone. | Example: THE TEST RESULTS ARE: THE CARRIER WAS NOT RECEIVED. TEST ABORTED. DO YOU WANT TO REPEAT THE TEST? |
| 6.ee. | This completes the installation checkout. If speed option was changed, change back to customer speed. Tell the customer it is ready for their system test. | — | |

3.09 If the installation checkout did not operate properly or if some troubles are suspected or reported, do the Local Test, (Chart 2), and one of the following on-line tests; ADTS (Chart 6 and 7), Data Test Center (Chart 5), 921A Data Test Set (Chart 3) or 403378 Jumper Plug (Chart 4) — in that order of preference. (The ADTS test is the most comprehensive and the jumper plug test is least comprehensive).

TABLE 1
ADTS 43 TELEPRINTER
TEST ABORT MESSAGES

| MESSAGE | REMARKS |
|--|--|
| Test aborted. | General message. |
| The station did not disconnect after loss of carrier. | The station not responding as optioned. |
| The station did not disconnect after three seconds of space frequency. | The station not responding as optioned. |
| There has been an ADTS test equipment malfunction. Try again later. | ADTS hardware trouble detected. |
| Ringling was not detected. | ADTS did not receive ringling during access attempt. |
| Carrier was not received. | Connection and answer tone detected but carrier dropped. |
| The DDD connection was lost. Test aborted. | Test aborted due to loss of DDD connection. |
| The receive level is too low. | The received signal was not within limits. |
| The receive level is too high. | The received signal was not within limits. |
| The received level is (Neg. No.) Dbm. | Measured level of received signal. |
| The station disconnected after receiving EOT. | The station not responding as optioned. |
| The station did not disconnect after receiving EOT. | The station not responding as optioned. |
| Digital Loopback mode could not be enabled. | The station did not go into the Digital Loopback mode. This message should be ignored if the 43 Terminal has an external data set. |
| The Digital Loopback mode could not be disabled. | The station will not return to Data mode. |

TABLE 2
ADTS 43 TELEPRINTER
TEST FAIL MESSAGES

| MESSAGE | REMARKS |
|--|---|
| Answer-back on connection was received. | The station is not responding as optioned. |
| Answer-back on connection was not received. | The station is not responding as optioned. Station did not send its answer-back. |
| Answer-back on enquiry was received. | The station is not responding as optioned. |
| Answer-back on enquiry was not received. | The station is not responding as optioned. Station did not send its answer-back. |
| A parity error was detected in the answer-back. | The answer-back to the ADTS has a parity error. |
| A parity error was detected during the keyboard send test. | A parity error was detected during the keyboard send test. |
| The keyboard send test failed. | The ADTS did not receive the correct data from the station. |
| The station failed the test. | General message. |
| Incomplete test. | The test was not completed. |

Note: The LOCAL TEST is necessary only in case of trouble and requires using the options stated in paragraph 3.01. The battery must be fully charged (power on 10 hours) to avoid losing the options when set power is turned off for up to 17 days.

CHART 2
LOCAL TESTS

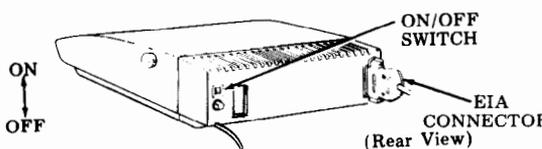
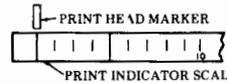
| TEST | STEP | PROCEDURE | RESPONSE |
|------------------------|------|--|--|
| Power on | 1 | <p>Turn power switch OFF. Wait for one second and then turn the power switch ON.</p>  | <p>Print head is indexed to the left boundary.</p> <p>Printer performs one (1) line feed; TERM READY, FULL DUPLEX and KP keys light.</p> |
| Indicator Scale | 2 |  | <p>Print head marker points to first mark on indicator scale.</p> |
| Local Return Line Feed | 3 | <p>Depress TERM LOCAL key and KP key and depress space bar several times.</p> <p>Hold CTRL key depressed and depress RETURN key.</p> | <p>TERM LOCAL key lights and TERM READY and KP keys go out. Print head spaces several characters.</p> <p>Print head is returned to left boundary and paper feeds to next line.</p> |

CHART 2 (Contd)

LOCAL TESTS

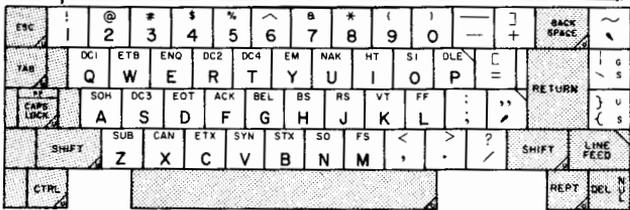
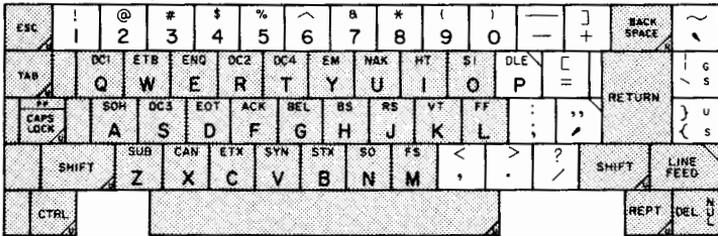
| TEST | STEP | PROCEDURE | RESPONSE |
|---|------|---|---|
| Caps Lock Upper Case | 4 | Place CAPS LOCK key in latched down position. Starting with top row and moving from left to right, depress unshaded keys in Fig. 3. | Characters are printed as in Fig. 4. |
|  | | | |
| <p style="text-align: center;">Fig. 3</p> | | | |
| <p style="text-align: center;">1234567890-+`QWERTYUIOP=\ASDFGHJKL;`ZXCVBNM,./</p> | | | |
| <p style="text-align: center;">Fig. 4</p> | | | |
| <p style="text-align: center;">1234567890-+`qwertyuiop=\asdfghjkl;`zxcvbnm,./</p> | | | |
| <p style="text-align: center;">Fig. 5</p> | | | |
| Caps Lock Lower Case | 5 | Depress RETURN and then LINE FEED key. Depress and release CAPS LOCK key so it returns to the up position. Starting with top row and moving left to right, depress each unshaded key in Fig. 3. | Print head is returned to left boundary and paper feeds to next line. Characters are printed as in Fig. 5. |
| Shift Key | 6 | Depress RETURN and then LINE FEED key. Hold left SHIFT key depressed and starting with top row and moving from left to right, depress each unshaded key in Fig. 6. Hold right SHIFT key depressed and depress  key. | Print head is returned to left boundary and paper feeds to next line. Characters are printed as in Fig. 7. |
|  | | | |
| <p style="text-align: center;">Fig. 6</p> | | | |
| <p style="text-align: center;">!@#%&'*()_]"P[!:"><??</p> | | | |
| <p style="text-align: center;">Fig. 7</p> | | | |

CHART 2 (Contd)

LOCAL TESTS

| TEST | STEP | PROCEDURE | RESPONSE | | | | |
|--|------|---|---|---|--|----|---|
| Control Characters | 7 | Depress RETURN and then LINE FEED key. | Print head is returned to left boundary and paper feeds to next line. | | | | |
| | | Hold CTRL key depressed and depress <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="text-align: center;">SUB</td></tr><tr><td style="text-align: center;">Z</td></tr></table> key. | SUB | Z | SUB prints ■ | | |
| | | SUB | | | | | |
| | | Z | | | | | |
| Hold CTRL key depressed and depress <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="text-align: center;">BEL</td></tr><tr><td style="text-align: center;">G</td></tr></table> key. | BEL | G | Signal bell rings. | | | | |
| BEL | | | | | | | |
| G | | | | | | | |
| Hold CTRL key depressed and depress <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="text-align: center;">BS</td></tr><tr><td style="text-align: center;">H</td></tr></table> key. | BS | H | Print head moves one character position to the left. | | | | |
| BS | | | | | | | |
| H | | | | | | | |
| Space Bar | 8 | Depress SPACE BAR. | Print head moves one character position to the right. | | | | |
| Back Space | 9 | Depress BACK SPACE key. | Print head moves one character position to the left. | | | | |
| Rept Key | 10 | Depress CAPS LOCK key then depress and hold REPT and <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="text-align: center;">VT</td></tr><tr><td style="text-align: center;">K</td></tr></table> keys. | VT | K | The K is continuously printed until the end of line is reached. Signal bell rings at end of line. | | |
| VT | | | | | | | |
| K | | | | | | | |
| Form Feed Vert Tab Set And Clear | 11 | Depress and hold CTRL key and depress <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="text-align: center;">FF</td></tr><tr><td style="text-align: center;">L</td></tr></table> key. (Form Feed) | FF | L | Paper feeds one or more lines and print head returns to left boundary. If paper did not feed first time, depress LINE FEED then CTRL and <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="text-align: center;">FF</td></tr><tr><td style="text-align: center;">L</td></tr></table> keys again. Paper should then feed out 25 lines. | FF | L |
| | | FF | | | | | |
| | | L | | | | | |
| | | FF | | | | | |
| L | | | | | | | |
| Depress CTRL and <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="text-align: center;">FF</td></tr><tr><td style="text-align: center;">L</td></tr></table> keys again. | FF | L | Paper should not feed. | | | | |
| FF | | | | | | | |
| L | | | | | | | |
| Depress LINE FEED key five times then depress and hold CTRL key and depress <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="text-align: center;">%</td></tr><tr><td style="text-align: center;">5</td></tr></table> key. (Vert. Tab Set) | % | 5 | Paper feeds five lines. | | | | |
| % | | | | | | | |
| 5 | | | | | | | |
| Depress <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="text-align: center;">SOH</td></tr><tr><td style="text-align: center;">A</td></tr></table> key. (A) | SOH | A | Character A prints. | | | | |
| SOH | | | | | | | |
| A | | | | | | | |
| Depress and hold CTRL key and depress <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="text-align: center;">FF</td></tr><tr><td style="text-align: center;">L</td></tr></table> key. (Form Feed) | FF | L | Paper feeds to next form feed stop (20 lines from character A). | | | | |
| FF | | | | | | | |
| L | | | | | | | |

CHART 2 (Contd)

LOCAL TESTS

| TEST | STEP | PROCEDURE | RESPONSE |
|---|---------------|--|--|
| Form Feed Vert Tab Set And Clear (Contd) | 11 (Contd) | Depress  key. (B) | Character B prints. |
| | | Depress and hold CTRL key and depress  key. (Vert. Tab) | Paper feeds five lines from character B. |
| | | Depress and hold CTRL key and depress  key. (Vert. Tab Clear) | No response |
| | | Depress and hold CTRL key and depress  key. (Form Feed) | Paper feeds 20 lines to next form stop. |
| | | Depress  key. (C) | The character C prints. |
| | | Depress and hold CTRL key and depress  key. (Vert. Tab) | Paper feeds 25 lines from character C. |
| Horiz. Tab Set And Clear | 12 | Space the print head to column 10. | Print head spaces to column 10. |
| | | Depress and hold CTRL key and depress  key. (H.T. Set) | No response |
| | | Depress RETURN key. | Print head is returned to left boundary. |
| | | Depress  key. (H. Tab) | Print head spaces to column 10. |
| | | Depress and hold CTRL key and depress  key. (H.T. Clear) | No response |
| | | Depress RETURN key. | Print head is returned to the left boundary. |
| | | Depress  key. (Tab) | Print head spaces to the right boundary, returns to the left boundary and paper advances one line. |

CHART 2 (Contd)

LOCAL TESTS

| TEST | STEP | PROCEDURE | RESPONSE |
|---------------------|------|---|---|
| Restore Preset Tabs | 13 | Space the print head to column 10. | Print head spaces to column 10. |
| | | Depress and hold CTRL key and depress  key. (H.T. Set) | No response |
| | | Depress  key. | KP key lights. |
| | | Depress and hold CTRL key and depress  key. (Options Prep) | KP key goes out, TERM LOCAL key flashes and Speed = 0300* is printed. |
| | | Depress and hold CTRL key and depress  key. (Options Load) | Print head returns to left boundary, TERM LOCAL key goes out, TERM READY and KP keys light. |
| | | Depress  and  keys. | TERM LOCAL key lights, KP and TERM READY keys go out. |
| | | Depress and hold CTRL key and depress  key. (H.T. Clear) | No response |
| | | Depress  key. | Print head space to the right boundary, returns to the left boundary and paper advances one line. |
| | | Depress and hold CTRL key and depress  key. (Restore Preset Tabs) | No response |
| | | Depress  key. | Print head spaces to column 10. |
| | | Hold CTRL key depressed and depress  key. (H.T. Clear) | No response |

CHART 2 (Contd)

LOCAL TESTS

| TEST | STEP | PROCEDURE | RESPONSE |
|---|--|--|---|
| Margins Set Release Clear | 14 | Space the print head to column 10. | Print head spaces to column 10. |
| | | Hold the CTRL key depressed and depress the  key. (Set Left Margin) | No response |
| | | Space the print head to column 21. | Print head spaces to column 21. |
| | | Hold the CTRL key depressed and depress the  key. (Set Right Margin) | No response |
| | | Depress the RETURN key. | Print head returns to column 10. |
| | | Space the print head to column 20. | Print head spaces to column 20. |
| | | Depress the  key. (A) | The character A prints and the Print head spaces to column 21. |
| | | Depress the  key. (B) | Bell rings, B does not print. |
| | | Hold the CTRL key depressed and depress the  key. (Release Right Margin) | No response |
| | | Depress  key three times. | Character C prints three times. |
| Hold the CTRL key depressed and depress the  key. (Margin clear) | Print head returns to the left boundary. | | |
| Numeric Pad Mode | 15 | Depress  key. | NUM PAD key lights. |
| | | Starting with top row and moving from right to left depress the keys shown in Fig. 8. | Characters are printed as in Fig. 9. Print head returns to left boundary. |
| | | Depress  key. | NUM PAD key goes out. |

CHART 2 (Contd)

LOCAL TESTS

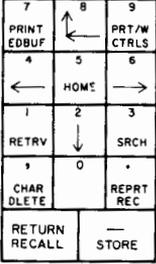
| TEST | STEP | PROCEDURE | RESPONSE |
|--------------------------|------------|--|--|
| Numeric Pad Mode (Contd) | 15 (Contd) | <div style="text-align: center;">  <p>Fig. 8</p> <p>987654321.0,-</p> <p>Fig. 9</p> </div> | |
| Buffer Character Insert | 16 | Depress  key. | BUFFER ENTER key lights. |
| | | Depress  then  keys. (A & C) | A C Prints. |
| | | Depress  key once. (Buffer Backspace) | Print head backspaces once. |
| | | Depress  key. | Insert key lights. |
| | | Depress  key. (B) | B prints over C. |
| | | Depress  key. | INSERT key goes out. |
| | | Depress  key. (Buffer Home) | Print head returns to left boundary, paper feeds one line. |
| | | Depress  key. (Print Edit Buffer) | ABC prints. |

CHART 2 (Contd)
LOCAL TESTS

| TEST | STEP | PROCEDURE | RESPONSE |
|--------------------------------------|------|--|---|
| Buffer Character Delete | 17 | Depress  key. (Prev. Line) | Print head moves to left boundary. |
| | | Manually advance paper one line (turn platen knob). | |
| | | Depress  key. (Buffer Space) | A prints. |
| | | Depress  key. (Character Delete) | ■ prints. |
| | | Depress  then  keys. | AC prints. |
| Clear Buffer | 18 | Depress  ,  then  keys. | Bell rings when  key is depressed. |
| Buffer Print With Control Characters | 19 | Type ABC Return, Line Feed DEF. | ABC DEF is printed. |
| | | Depress  then  keys. | ABC ← ≡ DEF is printed. |
| Buffer Next Line Control | 20 | Depress  then  keys. (Buffer Next Line) | Print head returns to left boundary, paper feeds two lines. |
| | | Depress  key. | DEF is printed. |
| Message Store And Recall | 21 | Depress  key. (Store) |  key lights. Print head is returned to left boundary and paper feeds one line. |
| | | Depress  key. (Recall) |  key goes out. Paper feeds one line. |
| | | Depress  key. | ABC DEF is printed. |

CHART 2 (Contd)

LOCAL TESTS

| TEST | STEP | PROCEDURE | RESPONSE |
|---------------------------------|------|--|---|
| Buffer String Enter And Search | 22 | Depress  key. | Print head is returned to left boundary and paper feeds one line. |
| | | Depress  key. | STRING ENTER key lights. Paper feeds one line. |
| | | Depress  key. (E) | E prints. |
| | | Depress  key. (Search) | DE is printed. STRING ENTER key goes out. |
| Alarm Conditions | 23 | Open the teleprinter cover. | ALARM key lights. |
| | | Close cover. Depress  key on some sets. | ALARM key goes out. |
| | | Remove paper from the teleprinter. | ALARM key lights and bell rings. |
| | | Replace paper and depress  key. On friction feed teleprinters it may be necessary to depress the reset button before depressing the ALARM key. | ALARM key goes out. |
| Analog Loop-back 212AR Data Set | 24 | Depress AL switch on data set (all other switches out.) | TM, MB, TR and MR lights on data set. TERM ON LINE lights on 43. |
| | | Type some miscellaneous characters. | Test message will print. |
| | | Release AL switch. | TR and MC lights on data set, TERM READY lights on 43. |

CHART 2 (Contd)

LOCAL TESTS

| TEST | STEP | PROCEDURE | RESPONSE |
|---|------|---|---|
| Analog Loopback 202TL1A Data Set | 25 | Depress AL switch on data set (202TL1A must have YB options.) | All lamps light on data set, TERM ON LINE light on 43. |
| | | Type miscellaneous characters. | Test message will print. |
| | | Depress AL OUT. | ON and TR lights on data set, TERM READY lights on 43. |
| Analog Loopback 103JR Data Set | 26 | Depress AL switch on data set, 103JR must have ZF option. | All lamps light on data set, TERM ON LINE lights on 43. |
| | | Type miscellaneous characters. | Characters will print. |
| | | Depress AL OUT. | TR and MC lights on data set, TERM READY lights on 43. |
| This completes the LOCAL TEST of the 43 Teleprinter. Proceed to ON-LINE TEST. | | | |

ON-LINE TESTS

When trouble is suspected or reported, perform one of the following on-line tests: ADTS (paragraph 3.17), Data Test Center (paragraph 3.15), 921A Data Test Set (paragraph 3.10) or 403378 jumper plug (paragraph 3.13) — in that order of preference.

USING THE 921A DATA TEST SET (Version 4 or Higher)

3.10 Arrange the 921A DTS interface wiring as follows:

- (a) Open all DTE slide switches on left side, except 1, 7, 15 and 17 which should be closed.
- (b) Insert EIA RS-449/232 C card module into the interface module port. All card switches should be toward the right (TERM).
- (c) Wire the jumpers in the jack field (DTE) as stated in each step.

Caution: Do not close cover with jumper wires inserted in pin jacks.

- (d) Disconnect the controller cable from the data set and connect it to the 921A Data Term (DTE) connector using the 25-pin to 37-pin cable adapter provided with the 921A DTS. See Fig. 10.

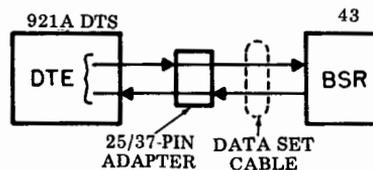


Fig. 10—921A — Connections

CHART 3
ON-LINE TEST USING 921A DATA TEST SET

| TEST | STEP | PROCEDURE | RESPONSE |
|-----------------------|------|--|---|
| Term On-Line Mode | 1 | Turn power switches on test set and 43 on. | Print head is indexed to the left boundary. Printer performs one (1) line feed TERM READY, FULL DUPLEX and KP keys light. |
| | | Connect Data Set Ready to Data Term Ready (6 to 20) on 921A DTE board. | No response |
| Send and Receive Data | 2 | Connect Carrier Detect to Data Term Ready. (8 to 20) | TERM ON LINE key lights TERM READY key goes out. |
| | | Connect Send Data to Receive Data. (2 to 3) | No response |
| | | Depress  key. (A) | Bell rings |
| | | Connect Clear To Send to Data Term Ready. (5 to 20) Depress A key. | A prints. |
| Answer-Back | 3 | Hold CTRL key depressed and depress  key. (WRU) | AB MESSAGE is printed. |
| | | Hold CTRL key depressed and depress  key. (Here is) | AB MESSAGE is printed. |
| | | Disconnect Data Set Ready from Data Term Ready. (6 to 20) | TERM ON LINE key goes out and TERM READY key lights. |
| | | Connect Ring Indicator to Data Term Ready (22 to 20) then connect Data Set Ready to Data Term Ready. (6 to 20) | TERM ON LINE key lights. TERM READY key goes out and AB MESSAGE is printed. |
| | | Remove Ring Indicator to Data Terminal Ready. (22 to 20) | No response |
| | | Hold CTRL key depressed and depress  key. (StrSn) | No MES is printed. |

CHART 3 (Contd)
ON-LINE TEST USING 921A DATA TEST SET

| TEST | STEP | PROCEDURE | RESPONSE |
|----------------------|------|--|--|
| Disconnect Character | 4 | Connect Ring Indicator to Data Term Ready. (22 to 20) | No response |
| | | Hold CTRL key depressed and depress  key. (Dscnt) | AB MESSAGE is printed (DTR momentarily turns on and ON LINE lamp momentarily off. Simulates auto answer AB). |
| | | Disconnect Ring Indicator from Data Term Ready. (22 to 20) | No response |
| Full And Half-Duplex | 5 | Depress  key. | A is printed. |
| | | Depress  key. | FULL DUPLEX key goes out. |
| | | Depress  key. | AA is printed. |
| | | Depress  key. | FULL DUPLEX key lights. |
| Interrupt | 6 | Depress  key. | Bell rings and INTRPT key lights. Operation of keyboard causes bell to ring. |
| | | Depress  key. | INTRPT key goes out. |
| 212AR DS High Speed | 7 | Disconnect Data Set Ready and Carrier Detect from Data Term Ready. (6-20) and (8-20) | TERM ON LINE key goes out and TERM READY key lights. |
| | | Connect Rate Indicator, Data Set Ready and Carrier Detect to Data Term Ready in that order. (12-6-8 to 20) | TERM ON LINE key lights and TERM READY key goes out. |
| | | Depress  key. | BUFFER ENTER key lights. KP key goes out. Printer will carriage returns and line feeds. |
| | | Enter two full lines of the character M (Rept M) and end second line with CTRL  (MsEnd) | Two full lines of M's are printed. |

CHART 3 (Contd)

ON-LINE TEST USING 921A DATA TEST SET

| TEST | STEP | PROCEDURE | RESPONSE |
|--------------------------------------|--------------|--|---|
| 212AR DS High Speed (Contd) | 7 (Contd) | Depress  key. (Store) |  key lights. Print head returns to left boundary and paper feeds one line. |
| | | Depress  key. | KP key lights and BUFFER ENTER key goes out. |
| | | Read expected response then depress  key. |  key flashes and M's are printed. SND RDY key goes out before two lines of text are printed. |
| 212AR DS Low Speed | 8 | Disconnect Data Set Ready and Rate Indicator from Data Term Ready. (6 to 20) (12 to 20) | TERM ON LINE key goes out and TERM READY key lights. |
| | | Connect Data Set Ready to Data Term Ready. (6 to 20) | TERM ON LINE key lights and TERM READY key goes out. |
| | | Depress  key. | BUFFER ENTER key lights and KP key goes out. Print head is returned to left boundary and paper feeds one line. |
| | | Depress  key. (Recall) | Paper feeds one line. |
| | | Depress  key. (Store) |  key lights. Paper feeds one line. |
| | | Depress  key. | KP key lights and BUFFER ENTER key goes out. |
| | | Read expected response then depress  key. |  key flashes and M's are printed. SND RDY key goes out at the same time M's finish printing. |

CHART 3 (Contd)

ON-LINE TEST USING 921A DATA TEST SET

| TEST | STEP | PROCEDURE | RESPONSE |
|---|------|--|--|
| Reprint Received Message | 9 | Depress  key. | TERM LOCAL key lights and TERM ON LINE key goes out. |
| | | Depress  key. | KP key goes out. |
| | | Depress  key only once. (Reprint Receive) |  key lights. |
| | | Depress  key. | Two lines of M's are printed. REC MSG WTG key goes out and KP key lights. |
| Full Receive Buffer Sends XOF Receive Buffer Not Low Sends Start Send | 10 | Depress  key. | BUFFER ENTER key lights, KP key goes out, print head is returned to left boundary and paper feeds one line. |
| | | Enter three full lines of the character M (Rept M) ending with CTRL  key. (MsEnd) | Three full lines of M's are printed. |
| | | Depress  key. | SND RDY key lights, print head is returned to the left boundary and paper feeds one line. |
| | | Depress  key. | BUFFER ENTER key goes out. |
| | | Depress  key. | TERM ON LINE key lights. LOCAL key goes out. |
| | | Depress  key. | SND RDY key flashes then stays lit. Indicating Buffer full (X-OFF) was received. REC MSG WTG key lights. |
| | | Depress  key. | KP key lights, SND RDY key starts flashing, indicating Buffer not low (StrSn) was received. Three lines of M's are printed, REC MSG WTG key goes out and SND RDY key goes out. |

CHART 3 (Contd)

ON-LINE TEST USING 921A DATA TEST SET

| TEST | STEP | PROCEDURE | RESPONSE |
|--|--------------------|--|---|
| Retrieve Acknowledged Message | 11 | Depress  key. | BUFFER ENTER key lights KP key goes out, print head is returned to left boundary and paper feeds one line. |
| | | Type ABCDEF followed by CTRL  key. | ABCDEF is printed. |
| | | Depress  key. |  key lights, print head is returned to left boundary and paper feeds one line. |
| | | Depress  key. | KP key lights and BUFFER ENTER key goes out. |
| | | Depress  key. | ABCDEF is printed. SND RDY key goes out. |
| | | Hold CTRL key depressed and depress  key. | NO MES is printed. |
| | | Depress  key. | BUFFER ENTER key lights KP key goes out, print head is returned to left boundary and paper feeds one line. |
| | | Depress  key. | STRING ENTER key lights and paper feeds one line. |
| | | Type AB. | AB is printed. |
| | | Depress  key. | STRING ENTER key goes out. |
| | | Depress  key. | Print head is returned to left boundary, paper feeds one line and AB is printed. |
| | | Depress  key. | Print head is returned to left boundary, paper feeds one line. |
| Depress  key. | ABCDEF is printed. | | |

3.11 Make the following connections on the 921A Data Term (DTE) connector as shown in Fig. 11.

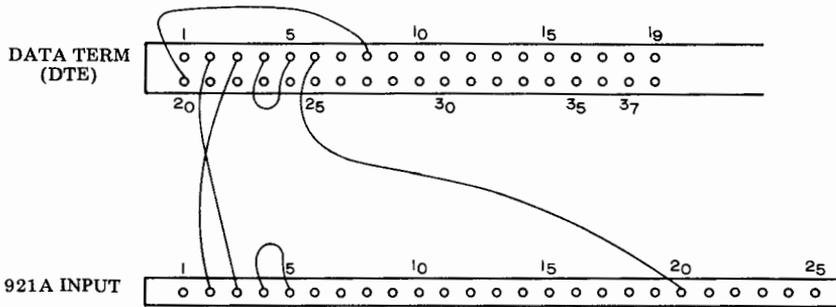


Fig. 11—921A Jumper Connections
CHART 3 (Contd)

ON-LINE TEST USING 921A DATA TEST SET

| TEST | STEP | PROCEDURE | RESPONSE |
|------------|------|--|---|
| 921A Setup | 12 | Depress RST and initialize the 921A DTS as shown in the flow chart on the right side of the inside cover of the test set or refer to Section 107-402-100, paragraph 4.01. Select a data set code and bit rate like those to be used by the station. Sample: Depress RST, display reads "Data Set". Depress 36 GO (if 212 or no Data Set), display reads "Bit Rate". Depress 03 (if 300 baud). | None |
| ASCII Test | 13 | The 921A DTS display reads "TEST SEQ". | |
| | | Depress 58 GO, display reads "CHANGE JACK FIELD IF LOCAL TEST" followed by "1 = PROGRAMMABLE 2 = STANDARD MSG". | |
| | | Depress 2, display reads "STANDARD MSG NUMBER = ?? (01-17)". | |
| | | Depress 07, display reads "ENTER A TO CONTINUE OR ← TO EDIT TRMT". | |
| | | Depress A, display reads "SELECT 0000 TO 0020 TRAP CHARACTERS" followed by "???? TRAP CHARACTERS". | |
| | | Depress 0000, display reads "NO TRAP CHARACTERS ENTERED" followed by "PRESS A TO START". | |
| | | Depress A. | Display reads 4E CF A0 4D C5 53. 43 prints: !"#\$%&'()*+,-./0123456789:;<=>? @ABCDEFGHIJKLMN0PQRSTUVWXYZ[\]^_ `abcdefghijklmnopqrstuvwxyz{ }~ AABBCC |

CHART 3 (Contd)

ON-LINE TEST USING 921A DATA TEST SET

| TEST | STEP | PROCEDURE | RESPONSE |
|--------------|------|---|---|
| Run Test | 14 | Depress GO, display reads "TEST SEQ". | |
| | | Depress 52 GO, display reads "PARITY = ? (0 = EVEN, 1 = ODD)". | |
| | | Depress 0, display reads "TRMT? (1 = MAN 2 = CONT)". | |
| | | Depress 2, display reads "PRESS A TO START". | |
| | | Depress A, sends FOX until GO is depressed. | 43 prints Fox Test Message. |
| Parity Check | 15 | Display reads "TEST SEQ". | |
| | | Depress 52 GO, display reads "PARITY = ? (0 = EVEN, 1 = ODD)". | |
| | | Depress 1, display reads "TRMT? (1 = MAN 2 = CONT)". | |
| | | Depress 1, display reads "PRESS A TO START". | |
| | | Depress A, sends one line of parity errors. | 43 prints a line of ■■■■ (parity errors). |
| ENQ Check | 16 | Depress GO, display reads "TEST SEQ". | |
| | | Depress 58 GO, display reads "CHANGE JACK FIELD IF LOCAL TEST" followed by "1 = PROGRAMMABLE 2 = STANDARD MSG". | |
| | | Depress 1, display reads "SELECT 0001 TO 0255 CHARACTERS" followed by "???? CHARACTERS IN MESSAGE". | |
| | | Depress 0001, display reads "00:??". | |
| | | Depress 05, display reads "A TO CONTINUE OR ← TO EDIT TRMT". | |
| | | Depress A, display reads "SELECT 0000 TO 0020 TRAP CHARACTERS" followed by "???? TRAP CHARACTERS". | |
| | | Depress 0000, display reads "NO TRAP CHARACTERS ARE ENTERED" followed by "PRESS A TO START". | |
| | | Depress FULL DUPLEX key on 43 (half-duplex). | DUPLEX lamp out. |
| | | Depress A. | Display reads 43 answer-back message in Hex, 43 prints its answer-back. |

CHART 3 (Contd)

ON-LINE TEST USING 921A DATA TEST SET

| TEST | STEP | PROCEDURE | RESPONSE |
|--------------------------|------|---|---|
| Receive Buffer Full Test | 17 | Depress KP key on 43 (lamp out). Do Step 13, display reads "4E CF A0 4D C5 53". | When A is depressed, REC MSG WTG lamp lights, nothing is printed. |
| | | Do Step 13 again, display reads "4E CF A0 4D C5 53 93". The 93 is Hex for DC3 indicating the receive buffer is full. | 43 TERM ON LINE lamp goes out. |
| | | Depress REC MSG WTG key on 43. | 43 prints a full ASCII message plus: ="!#\$%&'()*+,-. REC MSG WTG lamp goes out and KP lamp comes on. |
| Edit Buffer Test | 18 | Depress BUFFER ENTER on 43. | BUFFER ENTER lights. |
| | | Type 111222333. | 43 prints 111222333. |
| | | Depress STORE. | SND RDY lights 43 carriage returns and line feeds. |
| | | Depress KP. | KP lights, BUFFER ENTER goes off. |
| | | Depress SND RDY SEND. | Display reads "00 : 4E CF A0 4D C5 53 93 B1 B1 B1" followed by "01 : B2 B2 B2 33 33". |
| | | <i>Note:</i> To read 00 line on display depress C. To read 01 line depress F. | |

3.12 This completes the test of the 43 Teleprinter BSR if Chart 3 operated properly. Disconnect the test set, connect the teleprinter to its data set, install customer options if changed and tell the customer it is ready for his system test.

Using the 403378 Jumper Plug

3.13 Disconnect the controller cable from the data set and plug in the 403378 jumper plug.

CHART 4

ON-LINE TEST USING THE 403378 JUMPER PLUG

| TEST | STEP | PROCEDURE | RESPONSE |
|-----------------------|------|--|--|
| Term On-Line Mode | 1 | Turn power switch on 43 on. | Print head is indexed to the left boundary. Printer performs one (1) line feed, TERM ON-LINE, FULL DUPLEX and KP keys light. |
| Send And Receive Data | 2 | Depress  key (A). | A prints |
| Answer-Back | 3 | Hold CTRL key depressed and depress  key (WRU). | AB MESSAGE is printed (if coded). |
| | | Hold CTRL key depressed and depress  key (Here is). | AB MESSAGE is printed (if coded). |
| Negative Answer-Back | 4 | Hold CTRL key depressed and depress  key (StrSn). | NO MSG is printed. |
| Full And Half-Duplex | 5 | Depress  key. | A is printed. |
| | | Depress  key. | FULL DUPLEX key goes out. |
| | | Depress  key. | AA is printed. |
| | | Depress  key. | FULL DUPLEX key lights. |
| Interrupt | 6 | Depress  key. | Bell rings and INTRPT lights. Operation of keyboard causes bell to ring. |
| | | Depress  key. | Bell rings but A does not print. |
| | | Depress  key. | INTRPT key goes out. |

CHART 4 (Contd)
ON-LINE TEST USING THE 403378 JUMPER PLUG

| TEST | STEP | PROCEDURE | RESPONSE |
|---|------|---|--|
| Full Receive Buffer Sends XOF Receive Buffer Not Low Sends Start Send | 7 | Depress  key. | BUFFER ENTER key lights and KP key goes out. Print head is returned to left boundary and paper feeds one line. |
| | | Enter three full lines of character M (Rept M) ending with CTRL  key. (Ms End) | Three full lines of M's are printed. |
| | | Depress  key. | SND RDY key lights, print head is returned to the left boundary and paper feeds one line. |
| | | Depress  key. | BUFFER ENTER key goes out. |
| | | Depress  key. | SND RDY key flashes then stays lit. Indicating Buffer full (X-OFF) was received REC MSG WTG key lights. |
| | | Depress  key. | KP key lights, SND RDY key starts flashing, indicating Buffer not low (StrSn) was received. Three lines of M's are printed, REC MSG WTG key goes out and SND RDY key goes out. |
| Retrieve Acknowledged Message | 8 | Depress  key. | BUFFER ENTER key lights, KP key goes out, print head is returned to left boundary and paper feeds one line. |
| | | Depress  key (Recall). | Paper feeds one line. |
| | | Depress  key. |  key lights, print head is returned to left boundary and paper feeds one line. |
| | | Depress  key. | KP key lights and BUFFER ENTER key goes out. |
| | | Depress  key. | Approximately one line of M's are printed. SND RDY key goes out. |

3.14 This completes the test of the 43 BSR Teleprinter if Chart 4 operated properly. Remove the jumper plug, install customer option if changed, connect the teleprinter to its data set and tell the customer it is ready for his system test.

USING A TEST CENTER

3.15 Do the following checkout with the teleprinter accessed to the switched network. The test assumes using a 212AR Data Set. If a 103JR or 202TL1A Data Set is used, Options DS212 and HsStp do nothing and the 43 will only operate at one speed (at speed option). If access to ADTS equipped with Generic 5 or higher is available, test with the ADTS (using Chart 6 and 7). If testing with ADTS is not possible, use the Data Test Center (Chart 5). These charts assume the teleprinter is optioned per paragraph 3.01.

CHART 5
ON-LINE TEST*
DATA TEST CENTER

| TEST | STEP | PROCEDURE | RESPONSE |
|---|------|--|--|
| Power On | 1 | Turn power switch ON. | Print head is indexed to the left boundary. Printer performs one line feed. TERM READY, FULL DUPLEX and KP keys light. TR and MC lights on data set. |
| Full Duplex Send and Receive Data (Originating Station) | 2 | Call Data Test Center and request a 43 Teleprinter 8-level BSR test per Section 668-130-501. Provide Test Center with phone number station, operating speed and other options. Agree that Test Center will call back after disconnect. | |
| | 3 | When tone is heard from the Test Center, go to data mode by depressing DATA key. | TERM READY goes out and TERM ON-LINE comes on. On data set TR and MR light. |
| | 4 | Type the following: SEND THE QUICK BROWN FOX TEST MESSAGE — 5 LINES — END WITH EOT. | Test message request will be received by the Test Center. |
| | 5 | Data Test Center will send 5 lines of "The Quick Brown Fox" test message ending with EOT. | "The Quick Brown Fox" test message will be printed. Station will disconnect and DATA goes off. |
| Auto-matic Answer | 6 | Depress DUPLEX key (HALF-DUPLEX with lamp out). | Data Test Center will call station. Phone rings once. Data turns on. Answer-back message is printed at station and Test Center. |

*Over switched network.

CHART 5 (Contd)
ON-LINE TEST
DATA TEST CENTER

| TEST | STEP | PROCEDURE | RESPONSE |
|---|------|--|--|
| ENQ | 7 | Test Center will send CTRL E (ENQ). | Answer-back message is printed at station and Test Center (sets with answer-back coded). |
| Half-Duplex Send and Receive Data (Answering Station) | 8 | Test Center will send 5 lines of the: "The Quick Brown Fox" test message. | Test message will be printed. |
| | 9 | Depress the SPACE bar. Send the following test message from the operator console: Send the options test. | Test Center will receive the test message sent from the operator console. |
| Parity Detect | 10 | Test Center should send options test. | 43 will print: 5 NULLS 5 DELETES 5 CRS 5 BAD PARITY ■■■■■ 5 BELLS |
| Intrpt | 11 | Test Center will send INTRPT (Break). | INTRPT turns on. Signal bell rings. |
| | 12 | Send RYRY from the keyboard | Bell rings when key is depressed. Keyboard is blinded. RYRY will not be printed on printer or sent to Test Center. |
| | 13 | Depress INTRPT key. Send RYRY from keyboard. | INTRPT turns off. RYRY will be printed and sent to Data Test Center. |
| | 14 | Depress INTRPT key. | Data Test Center receives NULL. INTRPT light flashes. |
| EOT Disconnect | 15 | Disconnect call - - Data Test Center sends EOT. | Station disconnects. |

CHART 5 (Contd)
ON-LINE TEST
DATA TEST CENTER

| TEST | STEP | PROCEDURE | RESPONSE |
|---|--|---|---|
| 212AR DS High Speed Orig. Test | 16 | Depress HS switch on data set. (Do the following test at standard speed if no 212AR DS.) | TR and MC lights on data set. |
| | 17 | Depress  key. Type the following: "SEND THE FOX TEST MESSAGE — 5 LINES". | 43 prints the message typed. |
| | 18 | Depress  key. |  key lights. Print head is returned to left boundary and paper feed one line. |
| | 19 | Depress  key. | KP key lights and BUFFER ENTER key goes out. |
| | 20 | Call Test Center, go into DATA when tone is heard. | TR, MR and HS light on 212AR DS. |
| | 21 | Depress  key. | 43 sends at 1200 baud to Test Center which prints the message. 43 copies message at 300 baud. |
| | 22 | Depress  key. | BUFFER ENTER key lights and KP key goes out. Print head is returned to left boundary and paper feeds one line. |
| | 23 | Depress  key (Recall). | Paper feeds one line. |
| | 24 | Depress  key. |  key lights, print head is returned to left boundary and paper feeds one line. |
| | 25 | Depress  key. | KP key lights and BUFFER ENTER key goes out. |
| 26 | Test Center sends five lines of "FOX" message. | 43 prints approximately 3-1/2 lines and disconnects the call (see Note on next page). | |
| 212AR DS High Speed Answer Test | 27 | Depress HS on Data Set. | HS lamp out. |
| | 28 | Test Center calls 43 and 212AR DS answers call automatically. | 43 answer-back prints on both sets. |
| | 29 | Test Center sends DC1. | 43 responds "SEND THE FOX TEST MESSAGE — 5 LINES" and both receive correctly. |

CHART 5 (Contd)
ON-LINE TEST
DATA TEST CENTER

| TEST | STEP | PROCEDURE | RESPONSE |
|--|------|---|---|
| 212AR DS High Speed Answer Test (Contd) | 30 | Test Center sends DC1. | 43 responds "NO MES" and both receive correctly. |
| | 31 | Depress  key. | KP lamps goes out. |
| | 32 | Test Center sends 5-lines of "FOX" message |  key lights. and call disconnects (see note). |
| Finish Test | 33 | Depress  key. | KP lights and the 43 prints approximately 2-1/2 lines of "FOX". |
| | 34 | Test Center calls 43 and 212AR DS answers call automatically. | 43 answer-back prints on both sets. |
| | 35 | Type the following: "TEST OK" (if everything worked) or "GO TO TALK" (if problems). Test Center will send "GO TO TALK" message if any part of the test was unsatisfactory. Pick up handset, depress TALK and evaluate results. If the test passed, the Test Center sends "TEST OK" and disconnects the call. | |

Note: As buffer fills, the 43 responds with a DC3. Since the Test Center ignores the DC3 and keeps sending, when the buffer is full (125 characters) the 43 responds with a break and the call is disconnected.

3.16 This completes the test of the 43 Teleprinter BSR if Chart 5 operated properly. Install the customer options if changed and tell them it is ready for their system test.

USING ADTS (Generic 5 or Higher)

3.17 This is the preferred on-line test if access to an ADTS equipped with Generic 5 or higher is available. The test is presented on two charts. Chart 6 is to be used with the teleprinter accessed to the switched network using a 212AR Data Set at low speed or 103JR Data Set. Chart 7 is for use with a 212AR Data Set at high speed (1200 BPS).

CHART 6

ON-LINE TEST*

ADTS

| TEST | STEP | PROCEDURE | RESPONSE |
|-------------------|------|---|--|
| Using ADTS | 1 | Turn teleprinter power switch ON. | Print head is indexed to the left boundary. Printer performs one (1) line feed TERM READY, FULL DUPLEX and KP keys light |
| Buffer Store | 2 | Depress  key. | BUFFER ENTER key lights. |
| | 3 | Depress  then   keys eight times. | U*U*U*U*U*U*U*U* |
| | 4 | Depress  key. |  lamp lights. Print head is returned to left boundary and paper feeds one line. |
| | 5 | Depress  | BUFFER lamp goes out and KP lamp lights. |
| ADTS Hand-Shaking | 6 | Call the ADTS from a Touch-Tone telephone (either from station under test or from another telephone). The ADTS will answer with a voice. All the following is entered via the Touch-Tone telephone pad. | <u>ADTS voice answers with:</u> THIS IS THE AUTOMATIC DATA TEST SYSTEM. PLEASE ENTER THE PASSWORD. |
| | 7 | Enter the 4-character password. All entries must be followed by a star. Example: 1234* | ENTER THE FUNCTION YOU WISH TO PERFORM. |
| | 8 | Enter 87* if this is the first call on this teleprinter. Enter 387* if this is a repeat call and none of the information has changed. | TERMINAL TEST (or if 387) FAST TERMINAL TEST. IS THIS TEST SERVICE ORDER RELATED? |
| | 9 | Enter 1* OR Enter 0* for "YES" for "NO" | WHAT IS THE TELEPHONE NUMBER? |
| | 10 | Enter the teleprinters telephone number, use area code only if required. Example: XXX XXX XXXX* | YOU HAVE ENTERED XXX XXX XXXX IS THAT CORRECT? |

*Over switched network.

CHART 6 (Contd)

ON-LINE TEST

ADTS

| TEST | STEP | PROCEDURE | RESPONSE |
|-------------------------------------|------|---|---|
| ADTS Hand- Shaking (Contd) | 11 | Enter 1* for "YES" OR Enter 0* for "NO" A "NO" answer causes the ADTS to repeat the question in 9, "WHAT IS THE TELEPHONE NUMBER?" | ENTER THE TERMINAL ID? |
| | 12 | Enter 43* | YOU HAVE ENTERED 43. IS THAT CORRECT? |
| | 13 | Enter 1* for "YES" OR Enter 0* for "NO" A "YES" entry will cause the ADTS to repeat the command in Step 11. | THIS IS THE 43 TELEPRINTER KEYBOARD SEND-RECEIVE AND RECEIVE-ONLY TELEPRINTER TEST. <i>Note:</i> If this is a repeat 87* test, at this point the voice will skip to Step 20. If 387* was entered in Step 8, the voice will skip to Step 25. DOES THE STATION HAVE A KEYBOARD? |
| | 14 | Enter 1* for "YES" | ENTER THE DATA SET ACCESS TYPE AS FOLLOWS: ZERO FOR BOTH ORIGINATE AND ANSWER, ONE FOR ANSWER ONLY, TWO FOR ORIGINATE ONLY. |
| | 15 | Enter 0* for originate- answer | DO YOU WANT TO SUPPRESS ANSWER-BACK CHECKING? |
| | 16 | Enter 0* for "NO" | DOES THE STATION SEND ANSWER-BACK ON CONNec- TION? |
| | 17 | Enter 1* for "YES" | DOES THE STATION SEND ANSWER-BACK ON ENQUIRY RECEIVED? |
| | 18 | Enter 1* for "YES" | DOES THE STATION SEND EVEN PARITY? |
| | 19 | Enter 1* for "YES" | DOES THE STATION DISCONNECT ON EOT? |

CHART 6 (Contd)

ON-LINE TEST

ADTS

| TEST | STEP | PROCEDURE | RESPONSE |
|-------------------------------------|------|---|--|
| ADTS Hand- Shaking (Contd) | 20 | Enter 1* for "YES" | THE STATION HAS A KEY- BOARD. THE DATA SET ACCESS TYPE IS ORIGINATE-ANSWER. THE STATION SENDS ANSWER- BACK ON CONNECTION. THE STATION SENDS ANSWER- BACK ON ENQUIRY RECEIVED. THE STATION SENDS EVEN PARITY. THE STATION DISCONNECTS ON EOT. DO YOU WANT TO MAKE ANY CORRECTIONS? |
| | 21 | Enter 1* for "YES" OR Enter 0* for "NO" A yes answer causes the ADTS to repeat starting at Step 11. | DO YOU WANT TO TEST FOR DISCONNECT ON LONG- SPACE AND CARRIER- LOSS? |
| | 22 | Enter 1* for "YES" | DO YOU WANT THE ADTS TO ORIGINATE FIRST TEST CALL? |
| | 23 | Enter 0* for "NO" | IF THE ON-LINE MARGIN CONTROL TEST IS RUN, THE MARGINS WILL BE RESET. DO YOU WANT TO RUN THE ON-LINE MARGIN CONTROL TEST? |
| | 24 | Enter 1* for "YES" | DO YOU WANT TO RUN THE KEYBOARD SEND TEST? |
| | 25 | Enter 1* for "YES" | THE TEST IS READY TO START. ARE YOU CALLING FROM THE DATASET? |

CHART 6 (Contd)

ON-LINE TEST

ADTS

| TEST | STEP | PROCEDURE | RESPONSE |
|-------------------------------------|------|--|---|
| ADTS Hand- Shaking (Contd) | 26 | Enter 1* for "YES" OR Enter 0* for "NO" | Example: SET THE STATION FOR 30 CHARACTERS PER SECOND, PARITY ON, HALF-DUPLEX AND LOCAL. DO YOU WANT THESE INSTRUCTIONS REPEATED? |
| | 27 | Enter 0* for "NO" Leave teleprinter in TERM READY. Depress DUPLEX key. Leave parity option per customer selection. | LOCAL and DUPLEX lamps OFF. TERM READY lamp ON. |
| | 28 | If 0 entered in Step 26, skip to the reply in Step 45. If 1 entered, listen to this reply and do the following steps. | CALL THE ADTS DYNAMIC TEST PORTS AS FOLLOWS: TRANSMIT AND RECEIVE PORT. _____ TRANSMIT AND RECEIVE PORT. _____ WHEN THE ADTS ANSWERS, DEPRESS THE DATA KEY AND GO ON-HOOK. AFTER THE TEST CALL, DEPRESS THE LOCAL KEY AND ANSWER THE PHONE WHEN IT RINGS. DO YOU WANT THESE INSTRUCTIONS REPEATED? |
| | 29 | Enter 0* for "NO" | GO ON HOOK AND CALL THE ADTS. |
| Call ADTS for Test | 30 | Call ADTS using telephone number received in Step 28. | Use area code if necessary. |
| ADTS Test | 31 | When ADTS answers with tone, depress DATA key. <i>Note:</i> Send U* from buffer, when requested, by depressing the SND RDY key. | ON-LINE lamp lights. TERM READY lamp goes OFF. Teleprinter prints message (See Fig. 12). |
| EOT Disconnect | 32 | Check Fig. 12 for correct printing. When printing stops and station disconnects because of EOT, depress the LOCAL key. | LOCAL lamp lights. ADTS calls station. |

CHART 6 (Contd)

ON-LINE TEST

ADTS

| TEST | STEP | PROCEDURE | RESPONSE |
|----------------------------------|------|---|--|
| EOT Discon- nect | 33 | When telephone rings, pick up handset and listen. | TO RECEIVE THE TEST RESULTS ENTER 1. |
| | 34 | Enter 1* | THE TEST RESULTS ARE: THE RECEIVED LEVEL IS -?? Dbm. THE DIGITAL LOOPBACK TEST COULD NOT BE ENABLED, THE ADTS WILL CALL THE STATION. ON THE TONE, GO ON HOOK AND DEPRESS THE AUTO ANSWER KEY. AFTER THE TEST CALL, DEPRESS THE LOCAL KEY AND ANSWER THE PHONE WHEN IT RINGS. DO YOU WANT THESE INSTRUC- TIONS REPEATED? |
| | 35 | Enter 0* Depress TERM READY key. Hang up telephone. | TERM READY lamp ON. ADTS calls station. |
| Long Space Discon- nect | 36 | Station answers call. | 43 prints: (Answer-back plus). ADTS will now perform a disconnect test: Long space sent — 43 should dis- connect. |
| | 37 | Depress LOCAL key after station disconnects. | INTRPT lamp lights for a few seconds. Station disconnects. ADTS calls station. |
| | 38 | When telephone rings, pick up handset and listen. | TO RECEIVE THE TEST RESULTS ENTER 1. |
| | 39 | Enter 1* | THE TEST RESULTS ARE: THE RECEIVED LEVEL IS -?? Dbm. THE DIGITAL LOOPBACK MODE COULD NOT BE ENABLED. THE ADTS WILL CALL THE STATION. ON THE TONE, GO ON HOOK AND DEPRESS THE AUTO ANSWER KEY. AFTER THE TEST CALL, DEPRESS THE LOCAL KEY AND ANSWER THE PHONE WHEN IT RINGS. DO YOU WANT THESE INSTRUCTIONS REPEATED? |

CHART 6 (Contd)

ON-LINE TEST

ADTS

| TEST | STEP | PROCEDURE | RESPONSE |
|------------------------------------|------|--|---|
| Loss Carrier Discon- nect | 40 | Enter 0* Depress TERM READY key. Hang up telephone. | TERM READY lamp ON. ADTS calls station. |
| | 41 | Station answers call. | 43 prints: (Answer-back plus). ADTS will now perform a disconnect test: Loss of carrier — 43 should dis- connect. |
| | 42 | Depress LOCAL key after station disconnects. | Station disconnects. LOCAL lamp lights. ADTS calls station. |
| | 43 | When telephone rings, pick up handset and listen. | TO RECEIVE THE TEST RESULTS ENTER 1. |
| Results | 44 | Enter 1* if teleprinter passed: Enter: #63* to disconnect, hang up the telephone and skip to paragraph 3.18. <i>Note:</i> When an external data set is used instead of an internal one, the loopback test will fail. Ignore this failure when testing with an external data set. | THE TEST RESULTS ARE: THE RECEIVED LEVEL IS -?? Dbm. THE DIGITAL LOOPBACK MODE COULD NOT BE ENABLED. THE STATION FAILED THE TEST. DO YOU WANT TO REPEAT THIS TEST? |
| | | If teleprinter failed: The ADTS responds with an abort message. (See Tables 1 and 2) Enter: 1* to retest or # 63* to disconnect, hang up telephone. | Example: THE TEST RESULTS ARE: THE CARRIER WAS NOT RECEIVED. TEST ABORTED. DO YOU WANT TO REPEAT THIS TEST? |

CHART 6 (Contd)

ON-LINE TEST

ADTS

| TEST | STEP | PROCEDURE | RESPONSE |
|-----------------------|------|---|---|
| ADTS Hand-Shaking | 45 | If calling ADTS from another telephone, (Step 26 had 0 entered). | CALL THE ADTS DYNAMIC TEST PORTS AS FOLLOWS: TRANSMIT AND RECEIVE PORT TRANSMIT AND RECEIVE PORT WHEN THE ADTS ANSWERS, DEPRESS THE DATA KEY AND GO ON-HOOK. LEAVE THIS TELEPHONE OFF-HOOK TO RECEIVE THE TEST RESULTS. DO YOU WANT THESE INSTRUCTIONS REPEATED? |
| | 46 | Enter 0* for "NO". | CALL THE ADTS. |
| Call ADTS For Test | 47 | Call ADTS from station handset using telephone number received in Step 45. | Use area code if necessary. |
| ADTS Test | 48 | When ADTS answers with tone, depress DATA key. <i>Note:</i> Send U* from buffer when requested, by depressing the SND RDY key. | ON-LINE lamp lights. TERM READY lamp goes OFF. Teletypewriter prints message (See Fig. 12). |
| EOT Disconnect | 49 | Check Fig. 12 for correct printing. | When printing stops station disconnect on receipt of EOT. |
| | 50 | Listen on talk handset. | THE ADTS WILL CALL THE STATION. LEAVE THIS PHONE OFF HOOK TO RECEIVE THE TEST RESULTS. |
| Long Space Disconnect | 51 | ADTS calls station. | 43 prints: (Answer-back plus). ADTS will now perform a disconnect test: Long space sent — 43 should disconnect. INTRPT lamp lights for a few seconds. Station disconnects. |

CHART 6 (Contd)

ON-LINE TEST

ADTS

| TEST | STEP | PROCEDURE | RESPONSE |
|-------------------------|------|--|--|
| Results (Contd) | 52 | Listen on talk handset. | THE ADTS WILL CALL THE STATION. LEAVE THIS PHONE OFF HOOK TO RECEIVE THE TEST RESULTS. |
| Loss Carrier Disconnect | 53 | ADTS calls station. | 43 prints: (Answer-back plus). ADTS will now perform a disconnect test: Loss of carrier -- 43 should disconnect. The station disconnects. |
| Results | 54 | Listen on talk handset If teleprinter passed: Enter: #63* to disconnect, hang up the telephone. <i>Note:</i> When an external data set is used instead of an internal one, the loopback test will fail. Ignore this failure when testing with an external data set. | Example: THE TEST RESULTS ARE: THE RECEIVED LEVEL IS --?? Dbm. THE DIGITAL LOOPBACK MODE COULD NOT BE ENABLED. THE STATION FAILED THE TEST. DO YOU WANT TO REPEAT THIS TEST? |
| | | If teleprinter failed: The ADTS responds with an abort message (see Tables 1 and 2). Enter: 1* to retest or # 63* to disconnect, (hang up telephone). | Example: THE TEST RESULTS ARE: THE CARRIER WAS NOT RECEIVED. TEST ABORTED. DO YOU WANT TO REPEAT THIS TEST? |

3.18 This completes the low speed test of the 43 BSR Teleprinter if chart operated properly. Do Chart 7 only if teleprinter operates at 1200 baud. Install customer options if changed and tell the customer it is ready for their system checkout.

CHART 7

ON-LINE TEST

ADTS — 1200 BPS USING 212AR DATA SET

| TEST | STEP | PROCEDURE | RESPONSE |
|--------------------------|------|---|--|
| ADTS Hand- Shaking | 1 | Call the ADTS from a Touch-Tone telephone (either from station under test or from another telephone). The ADTS will answer with a voice. All the following is entered via the Touch-Tone telephone pad. | ADTS voice answers with: THIS IS THE AUTOMATIC DATA TEST SYSTEM. PLEASE ENTER THE PASSWORD. |
| | 2 | Enter the 4-character password. All entries must be followed by a star. Example: 1234* | ENTER THE FUNCTION YOU WISH TO PERFORM. |
| | 3 | Enter 39* | FOX EXERCISER. IS THIS TEST SERVICE ORDER RELATED? |
| | 4 | Enter 1* for "YES" OR Enter 0* for "NO" | WHAT IS THE TELEPHONE NUMBER? |
| | 5 | Enter the teleprinter's telephone number; use area code only if required. Example: XXX XXX XXXX* | YOU ENTERED XXX XXX XXXX. IS THAT CORRECT? |
| | 6 | Enter 1* for "YES" OR Enter 0* for "NO" A "NO" answer causes the ADTS to repeat the question in 4, "WHAT IS THE TELEPHONE NUMBER?". | THIS IS THE ADTS FOX EXERCISE TEST. ENTER: 0 for BAUDOT CODE 1 FOR ASCII CODE: |
| | 7 | Enter 1* for ASCII | ENTER UNIT CODE EQUAL TO 10 OR 11. |
| | 8 | Enter 10* for "10" | ENTER THE STATION SPEED AS 150 to 1200 BITS PER SECOND. |
| | 9 | Enter 1200* | IS THE DATA SET A 212 TYPE? |
| | 10 | Enter 1* for "YES" Press in HS key on 212AR Data Set. | ENTER THE PARITY OPTION AS FOLLOWS, 0 FOR MARK OR NO PARITY CHECKED, 1 FOR EVEN OR 2 FOR ODD PARITY. |
| | 11 | Enter 0* for mark or no parity checked OR Enter 1* for even parity OR Enter 2* for odd parity | ENTER THE NUMBER OF CHARACTERS PER LINE 16, 72, 80, OR 132. |

CHART 7 (Contd)

ON-LINE TEST

ADTS — 1200 BPS USING 212AR DATA SET

| TEST | STEP | PROCEDURE | RESPONSE |
|-------------------------------------|------|--|---|
| ADTS Hand- Shaking (Contd) | 12 | Enter 72* OR Enter 80* OR Enter 132* for "72" OR for "80" OR for "132" | ARE YOU CALLING FROM THE STATION TO BE TESTED? |
| | 13 | Enter 1* OR Enter 0* for "YES" OR for "NO" | DO YOU WANT TO MAKE ANY CORRECTIONS? |
| | 14 | Enter 0* for "NO" Leave teleprinter in TERM READY. Leave parity option per customer selection. | LOCAL Lamp goes OFF. TERM READY lamp goes ON. |
| | 15 | If 0 was entered in Step 13, skip this reply and listen to the reply in Step 21. If 1 was entered, listen to this reply. | CONDITION THE STATION TO RECEIVE DATA ON-LINE. ON THE TONE, HANG UP. THE ADTS WILL CALL THE STATION TO RUN THE TEST. AT THE COMPLETION OF THE TEST, THE ADTS WILL CALL TO REPORT THE TEST RESULTS. IF AUTO- ANSWER IS NOT PROVIDED, PREPARE TO ANSWER TEST CALL MANUALLY. WHEN READY, ENTER 1. |
| | 16 | Enter 1* and when tone is heard, hang up the telephone. | ADTS sends tone. |
| ADTS Test | 17 | ADTS calls teleprinter. Check for correct copy. Note that the set disconnects, but continues to print what was stored in the buffer. | ON-LINE lamp lights. TERM READY lamp goes OFF. Teleprinter prints message (see Fig. 13). |
| Results | 18 | After set disconnects and finishes printing out, depress LOCAL key and when ADTS calls, pick up handset and listen. | TO RECEIVE THE TEST RESULTS ENTER 1. |
| | 19 | Enter 1 | Voice will state if troubles occurred or if no trouble, voice says: TEST HAS BEEN COMPLETED. ENTER THE FUNCTION YOU WISH TO PERFORM. |
| | 20 | Enter 39* if another test is desired or if test is OK, enter * # 63*, hang up the telephone and proceed to para- graph 3.19. | — |

```

① ADTS FOX TEST.

1234567890123456789012345678901234567890123456789012345678901234567890 ②
THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG'S BACK 0123456789
THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG'S BACK 0123456789
THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG'S BACK 0123456789
THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG'S BACK 0123456789
@ABCDEFGHIJKLMNO
PQRSTUVWXYZ[\]^_
!"#$%&'()*+,-./
0123456789:;<=>?
@ABCDEFGHIJKLMNO
PQRSTUVWXYZ[\]^_
!"#$%&'()*+,-./
0123456789:;<=>?
`abcdefghijklmnopqrstuvwxyz{}`
`abcdefghijklmnopqrstuvwxyz{}`

```

- ① Answer-back is printed. If the answer-back is garbled into the "ADTS FOX TEST" line, do not count it as teleprinter problem.
- ② Sample is for 80 character line. The line would be 132 characters long if set is optioned for 132.

Fig. 13

CHART 7 (Contd)

ON-LINE TEST

ADTS — 1200 BPS USING 212AR DATA SET

| TEST | STEP | PROCEDURE | RESPONSE |
|-----------|------|--|--|
| ADTS Test | 21 | If calling from other than the station under test. | CONDITION THE STATION TO RECEIVE DATA ON-LINE. ADTS WILL CALL THE STATION. IF AUTO-ANSWER IS NOT PROVIDED, PREPARE TO ANSWER TEST CALL MANUALLY. WHEN READY, ENTER ONE. |
| | 22 | Enter 1* | ADTS calls station. |
| | 23 | Station answers call. | ON-LINE lamp lights. TERM READY lamp goes OFF. Teleprinter prints message (see Fig. 13). |
| | 24 | Check for correct copy. | THE RECEIVED LEVEL IS — ?? Dbm. (Pause, about 10 seconds.) DO YOU WANT TO RUN A SENDING TEST? |
| | 25 | Enter 1* | ONE LINE OF CHARACTERS SENT TO ADTS WILL BE ECHOED BACK TO THE STATION AS RECEIVED. Teleprinter will print the following under the Fig. 13 message: SENDING TEST: ENTER UP TO ONE LINE, CR LF, AND SEND (paper will form out). |
| | 26 | Keyboard a one line message, ending with CR and LF. | The one line message is printed (if in half-duplex). PUT THE STATION IN THE RECEIVE MODE. WHEN READY ENTER 1. |
| | 27 | Enter 1* Check for correct one line message. | ADTS echoed back the one line of data. DO YOU WANT TO RUN ANOTHER SENT TEST? |
| Results | 28 | Enter 0* if test is OK (or enter 1* if necessary to run another test). | Voice will state if troubles occurred or if no trouble, voice says: TEST HAS BEEN COMPLETED. DO YOU WANT TO RUN ANOTHER TEST? |

CHART 7 (Contd)

ON-LINE TEST

ADTS — 1200 BPS USING 212AR DATA SET

| TEST | STEP | PROCEDURE | RESPONSE |
|--------------------|------|--|----------|
| Results (Contd) | 29 | Enter 1* if another test is desired or if test is OK, enter * # 63* and hang up the telephone. | |

3.19 This completes the test of the 43 BSR Teleprinter if chart operated properly. Install customer options if changed and tell the customer it is ready for their system checkout.

43 TELEPRINTER 8-LEVEL BUFFERED SELECTIVE CALLING (BSC) STATION

TESTING

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1. GENERAL

1.01 This section provides testing information for the 43 Teleprinter 8-Level Buffered Selective Calling (BSC).

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

1.03 The installation checkout, which includes both local and on-line tests, should be performed after installation to make sure the station is basically operable and that the installation was properly performed.

1.04 On trouble calls: Do the more comprehensive local and on-line tests to isolate specific troubles not covered in the installation check. After correction of a trouble, the test may be confined to the specific area that was failing.

1.05 Following routine maintenance calls at a location, the installation checkout should be performed.

1.06 The checkout routines are presented in chart form with test conditions arranged in a specific sequence. A response is given to verify the test condition has passed.

1.07 Always perform the tests in the order given. The test steps are based on satisfactory results of all previous steps.

1.08 If the indicated response is not obtained in any step of a test procedure, repeat the step to make sure that the procedure has been performed properly. If the results are still unsatisfactory, refer to the KSR Teleprinter Troubleshooting Section 574-500-303.

1.09 On-line tests can be performed with a Data Test Center or equivalent using Section 668-130-504, or can be simulated locally using the 921A Data Test Set (version four or higher).

1.10 Before an on-line test can be performed the remote testing station or Data Test Center must be provided with advance details about the teleprinter under test, such as telephone number, type of terminal (friction or tractor), option exceptions present, speed, etc, as in Chart 1, Step 7.

1.11 If the terminal is set up for isochronous operation, do the Installation Checkout with the Data Test Center; do not use the 921A Data Test Set.

1.12 In the test procedures, a (15) indicates an option, eg, LRC_Ck. Refer to the "option map" in Section 574-500-202 for a listing of all options. This option map, filled out with the customer options, is required for testing.

1.13 The option map is coded with some 8th bit mark and space Hex characters but the teleprinter will send the Hex characters per option (3). See Table A on Page 3 for all the Hex parity values.

1.14 When LINE ACTIVE key lights as stated in the testing responses, the LED will be ON approximately 10 seconds after transmission ends, then go off again. If the teleprinter contains a 02 feature group (SC EC on set description label next to the code plate inside housing), the LED will be on only three seconds after transmission ends.

SECTION 574-500-503

1.15 Procedures in local and on-line tests are based on options given in this section which may or may not be customer options. If option exceptions are present, the test response will be as shown in Engineering Options, Section 574-500-210.

1.16 All references to columns are after a one-second delay, to allow the print head to index two character spaces to the right. The print head indicates the next character position to be printed.

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

PRELIMINARY CHECK

1.18 Before proceeding with the checkout procedure, check the following:

- (a) Is the station connected to a properly grounded and polarized ac service?
- (b) Are all cable connectors fully seated?
- (c) Are printer paper and ribbon properly installed?
- (d) Are any option exceptions present? Refer to the Engineering Options, Section 574-500-210 and reverse side of directory card.

2. TEST EQUIPMENT

2.01 To simulate on-line tests, the 921A Data Test Set can be used instead of calling the Data Test Center. If the teleprinter can be

tested in the customer system, do that instead of testing with either the 921A DTS or the Data Test Center.

3. TESTING PROCEDURES

3.01 Follow Chart 1 for the installation checkout. Do Steps 1, 2 and 3. If using the 921A Data Test Set, do Steps 4 and 5 if (15) and (19) are NO; do Step 6 if (15) is YES. If using the Data Test Center do Steps 7 and 8 if (15) and (19) are NO; do Steps 7 and 9 if (15) is YES. Do the Aux Only Tests in Steps 5, 6, 8 or 9 if an auxiliary teleprinter is used and (17) is NO.

3.02 Chart 2 is followed when a more comprehensive test is required. Do this local checkout before doing the comprehensive on-line test (Chart 3).

3.03 Chart 3 is followed when a more comprehensive on-line test is required. This chart is the same chart that is in the Data Test Center Section, 668-130-504. It indicates what the test center operator is doing besides what the installer is doing. The teleprinter options are transmitted to the Test Center to compare with the options the set should have. A set of test options is transmitted to the 43BSC for this test. After the test is completed either the Test Center will transmit the options back to the BSC or the installer will have to reoption the set locally. Voice and data lines are required. Call the Data Test Center on the voice line and request a comprehensive checkout. Give them the customer name so they can program the third field (in Chart 3, Step 1) with the customer options.

TABLE A

HEX TO CHARACTER CONVERSION FOR EVEN PARITY,
ODD PARITY, 8TH BIT MARKING AND 8TH BIT SPACING

Use for 921A Data Test Set programming (Steps 5 and 6).

| Hex | Even Parity ASCII | Odd Parity ASCII | 8th Bit Spacing | 8th Bit Marking | Even Parity ASCII | Odd Parity ASCII | Hex | Hex | Even Parity ASCII | Odd Parity ASCII | 8th Bit Spacing | 8th Bit Marking | Even Parity ASCII | Odd Parity ASCII | Hex |
|-----|-------------------|------------------|-----------------|-----------------|-------------------|------------------|-----|-----|-------------------|------------------|-----------------|-----------------|-------------------|------------------|-----|
| 00 | NUL | | NUL | NUL | NUL | NUL | 80 | 40 | | @ | @ | @ | @ | @ | C0 |
| 01 | | SOH | SOH | SOH | SOH | | 81 | 41 | A | | A | A | A | A | C1 |
| 02 | | STX | STX | STX | STX | | 82 | 42 | B | | B | B | B | B | C2 |
| 03 | ETX | | ETX | ETX | | ETX | 83 | 43 | | C | C | C | C | C | C3 |
| 04 | | EOT | EOT | EOT | | EOT | 84 | 44 | D | | D | D | D | D | C4 |
| 05 | ENQ | | ENQ | ENQ | | ENQ | 85 | 45 | | E | E | E | E | E | C5 |
| 06 | ACK | | ACK | ACK | | ACK | 86 | 46 | | F | F | F | F | F | C6 |
| 07 | | BEL | BEL | BEL | | BEL | 87 | 47 | G | | G | G | G | G | C7 |
| 08 | | BS | BS | BS | | BS | 88 | 48 | H | | H | H | H | H | C8 |
| 09 | HT | | HT | HT | | HT | 89 | 49 | | I | I | I | I | I | C9 |
| 0A | LF | | LF | LF | | LF | 8A | 4A | | J | J | J | J | J | CA |
| 0B | | VT | VT | VT | | VT | 8B | 4B | K | | K | K | K | K | CB |
| 0C | FF | | FF | FF | | FF | 8C | 4C | | L | L | L | L | L | CC |
| 0D | | CR | CR | CR | | CR | 8D | 4D | M | | M | M | M | M | CD |
| 0E | | SO | SO | SO | | SO | 8E | 4E | N | | N | N | N | N | CE |
| 0F | SI | | SI | SI | | SI | 8F | 4F | | O | O | O | O | O | CF |
| 10 | | DLE | DLE | DLE | | DLE | 90 | 50 | P | | P | P | P | P | D0 |
| 11 | DC1 | | DC1 | DC1 | | DC1 | 91 | 51 | | Q | Q | Q | Q | Q | D1 |
| 12 | DC2 | | DC2 | DC2 | | DC2 | 92 | 52 | | R | R | R | R | R | D2 |
| 13 | | DC3 | DC3 | DC3 | | DC3 | 93 | 53 | S | | S | S | S | S | D3 |
| 14 | DC4 | | DC4 | DC4 | | DC4 | 94 | 54 | | T | T | T | T | T | D4 |
| 15 | | NAK | NAK | NAK | | NAK | 95 | 55 | U | | U | U | U | U | D5 |
| 16 | | SYN | SYN | SYN | | SYN | 96 | 56 | V | | V | V | V | V | D6 |
| 17 | ETB | | ETB | ETB | | ETB | 97 | 57 | | W | W | W | W | W | D7 |
| 18 | CAN | | CAN | CAN | | CAN | 98 | 58 | | X | X | X | X | X | D8 |
| 19 | | EM | EM | EM | | EM | 99 | 59 | | Y | Y | Y | Y | Y | D9 |
| 1A | | SUB | SUB | SUB | | SUB | 9A | 5A | Z | | Z | Z | Z | Z | DA |
| 1B | ESC | | ESC | ESC | | ESC | 9B | 5B | | [| [| [| [| [| DB |
| 1C | | FS | FS | FS | | FS | 9C | 5C | | \ | \ | \ | \ | \ | DC |
| 1D | GS | | GS | GS | | GS | 9D | 5D | |] |] |] |] ^ |] ^ | DD |
| 1E | RS | | RS | RS | | RS | 9E | 5E | | ^ | ^ | ^ | ^ | ^ | DE |
| 1F | | US | US | US | | US | 9F | 5F | - | | - | - | - | - | DF |
| 20 | ! | SP | ! | SP | | ! | A0 | 60 | | , | , | , | , | , | E0 |
| 21 | " | | " | | | " | A1 | 61 | | a | a | a | a | a | E1 |
| 22 | | | | | | | A2 | 62 | | b | b | b | b | b | E2 |
| 23 | # | | # | | | # | A3 | 63 | | c | c | c | c | c | E3 |
| 24 | \$ | | \$ | | | \$ | A4 | 64 | | d | d | d | d | d | E4 |
| 25 | | % | % | | | % | A5 | 65 | | e | e | e | e | e | E5 |
| 26 | | & | & | | | & | A6 | 66 | | f | f | f | f | f | E6 |
| 27 | | ' | ' | | | ' | A7 | 67 | | g | g | g | g | g | E7 |
| 28 | (| | (| | | (| A8 | 68 | | h | h | h | h | h | E8 |
| 29 |) | |) | | |) | A9 | 69 | | i | i | i | i | i | E9 |
| 2A | * | | * | | | * | AA | 6A | | j | j | j | j | j | EA |
| 2B | + | | + | | | + | AB | 6B | | k | k | k | k | k | EB |
| 2C | | | | | | | AC | 6C | | l | l | l | l | l | EC |
| 2D | - | | - | | | - | AD | 6D | | m | m | m | m | m | ED |
| 2E | . | | . | | | . | AE | 6E | | n | n | n | n | n | EE |
| 2F | / | | / | | | / | AF | 6F | | o | o | o | o | o | EF |
| 30 | 0 | | 0 | | | 0 | B0 | 70 | | p | p | p | p | p | F0 |
| 31 | 1 | | 1 | | | 1 | B1 | 71 | | q | q | q | q | q | F1 |
| 32 | 2 | | 2 | | | 2 | B2 | 72 | | r | r | r | r | r | F2 |
| 33 | 3 | | 3 | | | 3 | B3 | 73 | | s | s | s | s | s | F3 |
| 34 | 4 | | 4 | | | 4 | B4 | 74 | | t | t | t | t | t | F4 |
| 35 | 5 | | 5 | | | 5 | B5 | 75 | | u | u | u | u | u | F5 |
| 36 | 6 | | 6 | | | 6 | B6 | 76 | | v | v | v | v | v | F6 |
| 37 | 7 | | 7 | | | 7 | B7 | 77 | | w | w | w | w | w | F7 |
| 38 | 8 | | 8 | | | 8 | B8 | 78 | | x | x | x | x | x | F8 |
| 39 | 9 | | 9 | | | 9 | B9 | 79 | | y | y | y | y | y | F9 |
| 3A | : | | : | | | : | BA | 7A | | z | z | z | z | z | FA |
| 3B | | | | | | | BB | 7B | | { | { | { | { | { | FB |
| 3C | < | | < | | | < | BC | 7C | | | | | | | FC |
| 3D | = | | = | | | = | BD | 7D | | ~ | ~ | ~ | ~ | ~ | FD |
| 3E | > | | > | | | > | BE | 7E | | | | | | | FE |
| 3F | ? | | ? | | | ? | BF | 7F | | DEL | DEL | DEL | DEL | DEL | FF |

INSTALLATION CHECKOUT

CHART 1

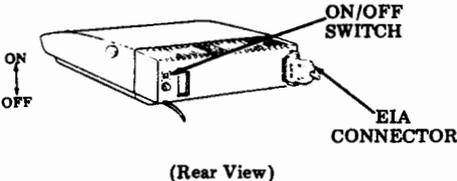
| TEST | STEP | PROCEDURE | RESPONSE |
|-----------------------|------|---|---|
| Power On | 1 | <p>Turn power switch OFF. Wait for one second and then turn the power switch ON.</p>  <p>(Rear View)</p> | <p>Print head is indexed to the left boundary.</p> <p>Printer performs one (1) line feed TERM ON LINE and PRINT REC MSG keys light.</p> |
| Keyboard Check | 2 | Depress TERM LOCAL key. (Must use 468a.) | TERM LOCAL key lights. |
| | | Depress  key. | Lamp goes out. |
| | | Type the following: "Teleprinter is basically operable". | Characters print correctly. |
| Customer Option Check | 3 | Depress and hold  key and spacebar down until the print head is fully to the right. | Bell rings continually. |
| | | Depress  key 10 times. | Backspace 10 spaces. |
| | | Hold  key depressed and depress  key. | Set left margin. |
| | | Depress  key. | Lamp lights. |
| | | Depress  key, several times. | Until bell rings. |
| | | Depress  key. | Lamp lights and  goes out. |
| | | Hold  key depressed and depress  key. | Options in edit buffer prints on printer and  lamp lights. |
| | | Depress  key. | Option list (in hexadecimal values) prints out in a column of ten. |

CHART 1 (Contd)

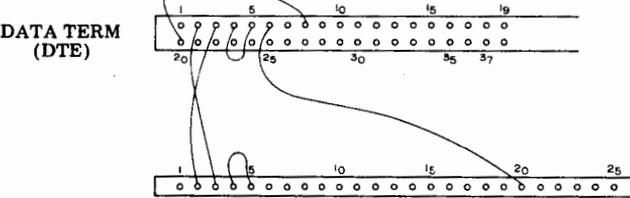
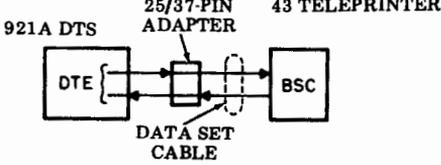
| TEST | STEP | PROCEDURE | RESPONSE |
|---|--------------|--|--|
| Customer Option Check (Contd) | 3 (Contd) | Compare the option list printed to customer desired option list. <i>Note:</i> 38 IdleTm must be coded 00 00 (disabled) for the 921 or Test Center testing. If changed, recode after testing. | If required, correct option per Section 574-500-202. |
| | | Depress and hold CTRL key and depress  key (Options Load). | Print head returns to left boundary, and line feeds on line. |
| | | Depress  and  key until bell rings. | Bell rings. |
| | | Depress  key. | Lamp goes out. |
| Using 921A Data Test Set (Version Four or Higher) | 4 | Arrange the 921A DTS interface wiring as follows: (a) Open all DTE slide switches on left side, except 1, 7, 15 and 17 which should be closed. (b) Insert EIA RS-449/232 C card module into the interface module port. All card switches should be toward the right (TERM). (c) Wire the jumpers in the jack field as shown in Fig. 1.  (d) Disconnect the controller cable from the data set and connect it to the 921A Data Term (DTE) connector using the 25-pin to 37-pin cable adapter provided with the 921A DTS. See Fig. 2.  | |

CHART 1 (Contd)

| TEST | STEP | PROCEDURE | RESPONSE |
|--|--------------|---|----------|
| Using 921A Data Test Set (Contd) | 4 (Contd) | (e) Turn power on. <i>Note:</i> This section is written assuming (3) is optioned for EVEN PARITY. If other than even parity, see Table A for the correct values. | |
| | | Depress RST and initialize the 921A DTS as shown in the flow chart on the right side of the inside cover of the test set or refer to Section 107-402-100, paragraph 4.01. Select a data set code and bit rate like those to be used by the station. <i>Sample:</i> Depress RST; display reads "Data Set". Depress 25 GO; display reads "Bit Rate". Depress 12 (if 1200 baud) (must match (1)). | None |
| | | If (15) LRC_Ck and (19) DelErr: NO, do Step 5, 5A and 5B YES, do Step 6, 6A, 6B and 6C <i>Note:</i> If (16) BROStA and (15) LRC_Ck are YES, change (15) to NO and test per Step 5. | |
| Using 921A Data Test Set if (15) LRC_Ck and (19) DelErr is NO— Receiving Test | 5 | Depress GO; display reads "TEST SEQ". | |
| | | Depress 58 GO; display reads "CHANGE JACK FIELD IF LOCAL TEST" followed by "1 = PROGRAMMABLE 2 = STANDARD MSG". | |
| | | Depress 1, display reads "SELECT 0001 TO 0255 CHARACTERS" followed by "???? CHARACTERS IN MESSAGE". | |
| | | Depress 000* (the * indicates the total number of characters in the following message. In this case, add the character for (65) 1 character, (76) 1 to 4 characters and (69) 1 character); display reads "00:??". | |
| | | Depress the even parity Hex value (see Table A) for (65) (76) (69) in that order. Display reads "A TO CONTINUE OR ← TO EDIT TRMT". | |
| | | Depress A; display reads "SELECT 0000 TO 0020 TRAP CHARACTERS" followed by "???? TRAP CHARACTERS". | |

CHART 1 (Contd)

| TEST | STEP | PROCEDURE | RESPONSE |
|--|--|---|---|
| Receiving Test (Contd) | 5 (Contd) | Depress 0000; display reads "NO TRAP CHARACTERS ARE ENTERED" followed by "PRESS A TO START". | |
| | | Depress A. | LINE ACTIVE key lights Display reads P*_Rdy (Primary Receiver Ready NO Error Reply Sequence) in Hex; for example, with even parity ACK would be displayed as 06 (see Table A). |
| | | Depress DD; display reads "1 = PROGRAMMABLE 2 = STANDARD MSG". | |
| | | Depress 2; display reads "MSG NUMBER =?? (01-17)". | |
| | | Depress 07; display reads "ENTER A TO CONTINUE OR ← TO EDIT TRMT". | |
| | | Depress A; display reads "SELECT 0000 TO 0020 TRAP CHARACTERS" followed by "???? TRAP CHARACTERS". | |
| | | Depress 0000; display reads "NO TRAP CHARACTERS ENTERED" followed by "PRESS A TO START". | |
| | | Depress A. | LINE ACTIVE and REC MSG WTG lights. |
| Depress  key. | 43 Prints: !"#\$%&'()*+,-./0123456789:;<=>? @ABCDEFGHIJKLMN0PQRSTUVWXYZ[\]_` ~abcdefghijklmnopqrstuvwxyz{ }~ | | |
| Using 921A Data Test Set if (15) LRC_Ck and (19) DelErr is NO and have an AUX Device AUX Device Test | 5A | Do this test only if an auxiliary device is used. Place auxiliary device in "ready to receive" mode. | |
| | | Depress DD; display reads "1 = PROGRAMMABLE 2 = STANDARD MSG". | |
| | | Depress 1; display reads "SELECT 0001 TO 0255 CHARACTERS" followed by "???? CHARACTERS IN MESSAGE". | |
| | | Depress 000* (* = (65) RRDsl1, plus the number of characters in (77), AAddr1, plus (69) Start 1; display reads "00:??". | |
| | | Depress the even parity Hex value for (65) and (77) in that order. Display reads "A TO CONTINUE OR ← TO EDIT TRMT". | |

CHART 1 (Contd)

| TEST | STEP | PROCEDURE | RESPONSE |
|--|------------|---|---|
| AUX Device Test (Contd) | 5A (Contd) | Depress A; display reads "SELECT 0000 TO 0020 TRAP CHARACTERS" followed by "???? TRAP CHARACTERS". | |
| | | Depress 0000; display reads "NO TRAP CHARACTERS ARE ENTERED" followed by "PRESS A TO START". | |
| | | Depress A. | LINE ACTIVE key lights, display reads (85), A*_Rdy (Auxiliary Receiver Ready No Error Reply Sequence). |
| | | Depress DD; display reads "1 = PROGRAMMABLE 2 = STANDARD MSG". | |
| | | Depress 2; display reads "MSG NUMBER = ?? (01-17)", depress 07, display reads "ENTER A TO CONTINUE OR ← TO EDIT TRMT." | |
| | | Depress A; display reads "SELECT 0000 TO 0020 TRAP CHARACTERS" followed by "???? TRAP CHARACTERS". | |
| | | Depress 0000; display reads "NO TRAP CHARACTERS ENTERED" followed by "PRESS A TO START". Depress A. | AUX device prints: 1"#\$%&'()*+,-./0123456789:;<=>? @ABCDEFGHIJKLMNOQRSTUVWXYZ[\]_` ~abcdefghijklmnopqrstuvwxyz{ }~ |
| Using 921A Data Test Set if (15) LRC_Ck, (19) DelErr, and (16) BROStA are all NO Polling Test | 5B | Depress  key. | BUFFER ENTER key lights and PRINT REC MSG key goes out. Print head is returned to left boundary and paper feeds one line. |
| | | Keyboard the following: AABBCC (62). | 43 prints AABBCC. |
| | | Depress  key. | SND RDY key lights, print head is returned to the left boundary and paper feeds one line. |
| | | Depress  and  keys. | BUFFER ENTER goes out. |
| Depress DD; display reads "1 = PROGRAMMABLE 2 = STANDARD MSG". | | | |

CHART 1 (Contd)

| TEST | STEP | PROCEDURE | RESPONSE |
|---|------------|--|---|
| Polling Test (Contd) | 5B (Contd) | Depress 1; display reads "SELECT 0001 TO 0255 CHARACTERS" followed by "???? CHARACTERS IN MESSAGE". | |
| | | Depress 000* (* = ⁽⁶⁵⁾ plus the number of characters in ⁽⁵⁹⁾ Poll # 1); display reads "00:??". | |
| | | Depress the even parity Hex value for ⁽⁶⁵⁾ and ⁽⁵⁹⁾ in that order; display reads "A TO CONTINUE OR < - TO EDIT TRMT". | |
| | | Depress A; display reads "SELECT 0000 TO 0020 TRAP CHARACTERS" followed by "???? TRAP CHARACTERS". | |
| | | Depress 0000; display reads "NO TRAP CHARACTERS ARE ENTERED" followed by "PRESS A TO START". | |
| | | Depress A. | Display reads 00:41 41 42 42 C3 C3 ⁽⁶²⁾ . LINE ACTIVE lights. |
| | | This completes the test of the 43 BSC Teleprinter if Step 5 operated properly. Recode any options that were changed for testing. Disconnect the test set, connect the teleprinter to its data set and tell the customer it is ready for his system test. | |
| Using 921A Data Test Set if ⁽¹⁵⁾ LRC_Ck is YES, and ⁽¹⁶⁾ BROSta is NO Polling Test | 6 | Depress  key. | BUFFER ENTER key lights and PRINT REC MSG key goes out. Print head is returned to left boundary and paper feeds one line. |
| | | Keyboard the following: AABBC ⁽⁷¹⁾ | 43 prints AABBC. |
| | | Depress  key. | SND RDY key lights, print head is returned to the left boundary and paper feeds one line. |
| | | Depress  and  keys. | BUFFER ENTER goes out. COPY SEND DATA and PRINT REC MSG light. |
| | | Depress DD; display reads "1 = PROGRAMMABLE 2 = STANDARD MSG". | |
| | | Depress 1; display reads "SELECT 0001 TO 0255 CHARACTERS" followed by "???? CHARACTERS IN MESSAGE". | |

CHART 1 (Contd)

| TEST | STEP | PROCEDURE | RESPONSE |
|--|--------------|---|--|
| Polling Test (Contd) | 6 (Contd) | Depress 000* (the * indicates the total number of characters in the following message. The * = (65) 1 character and (59) 1 to 4 characters); display reads "00:??". | |
| | | Depress the even parity Hex value (see Table A) for (65) and (59) in that order; display reads "A TO CONTINUE OR ← TO EDIT TRMT". | |
| | | Depress A; display reads "SELECT 0000 TO 0020 TRAP CHARACTERS" followed by "???? TRAP CHARACTERS". | |
| | | Depress 0000; display reads "NO TRAP CHARACTERS ARE ENTERED" followed by "PRESS A TO START". | |
| | | Depress A. | Display reads 00:41 41 42 42 C3 C3 (7) (8). SND RDY flashes and LINE ACTIVE lights. (8) is the BLOCK CHECK character. Record this character for later use. |
| | | Depress DD; display reads "1 = PROGRAMMABLE 2 = STANDARD MSG". | |
| | | Depress 1; display reads "SELECT 0001 TO 0255 CHARACTERS" followed by "???? CHARACTERS IN MESSAGE". | |
| | | Depress 0001; display reads "00:??". | |
| | | Depress the even parity Hex value for (64); display reads "A TO CONTINUE OR ← TO EDIT TRMT". | |
| | | Depress A; display reads "SELECT 0000 TO 0020 TRAP CHARACTERS" followed by "???? TRAP CHARACTERS". | |
| Depress 0000; display reads "NO TRAP CHARACTERS ARE ENTERED" followed by "PRESS A TO START". | | | |
| | Depress A. | 43 prints AABBC, SND RDY goes out. | |
| Using 921A Data Test Set if (15) LRC_Ck is YES Receiving Test | 6A | Depress DD; display reads "1 = PROGRAMMABLE 2 = STANDARD MSG". | |
| | | Depress 1; display reads "SELECT 0001 TO 0255 CHARACTERS" followed by "???? CHARACTERS IN MESSAGE". | |

CHART 1 (Contd)

| TEST | STEP | PROCEDURE | RESPONSE |
|--|---------------|--|---|
| Receiving Test (Contd) | 6A (Contd) | Depress 00** (** = (65) (1 character), (76) (1 to 4 characters), (69) (1 character), 6 character message (AABBCC), (73) (1 character) and 1 LRC character); display reads "00:??". | |
| | | Depress the even parity Hex value for the following: (65) (76) (69), 41 41 42 42 C3 C3, (73) and (6C) BLOCK CHECK character recorded above. (This (6C) character is correct as long as (71) SSInt1 is the same as (73) RRInt __.) | |
| | | Display reads "ENTER A TO CONTINUE OR ← TO EDIT TRMT" | |
| | | Depress A; display reads "SELECT 0000 TO 0020 TRAP CHARACTERS" followed by "???? TRAP CHARACTERS". | |
| | | Depress 0000; display reads "NO TRAP CHARACTERS ENTERED" followed by "PRESS A TO START". | |
| | | Depress A. | 43 prints AABBCC, display reads (64) (P*_ Rdy) twice. |
| Using 921A Data Test Set if (15) LRC_Ck is YES and have an AUX Device Aux Device Test | 6B | Do this test only if an auxiliary device is used. Place auxiliary device in ready to receive mode. | |
| | | Depress DD; display reads "1 = PROGRAMMABLE 2 = STANDARD MSG". | |
| | | Depress 1; display reads "SELECT 0001 TO 0255 CHARACTERS" followed by "???? CHARACTERS IN MESSAGE". | |
| | | Depress 00** (** = (65) (1 character), (77) (1 to 4 characters), (69) (1 character), 6 character message (AABBCC), (73) (1 character) and 1 LRC character). Display reads "00:??". | |
| | | Depress the even parity Hex value for the following: (65) (77) (69) 41 41 42 42 C3 C3 (73) and (15) LRC character recorded above. (This LRC character is correct as long as (71) SSInt1 = (73) RRInt __.) Display reads "ENTER A TO CONTINUE OR ← TO EDIT TRMT". | |

CHART 1 (Contd)

| TEST | STEP | PROCEDURE | RESPONSE |
|--|---------------|--|--|
| AUX Device Test (Contd) | 6B (Contd) | Depress A; display reads "SELECT 0000 TO 0020 TRAP CHARACTERS" followed by "???? TRAP CHARACTERS". | |
| | | Depress 0000; display reads "NO TRAP CHARACTERS ENTERED" followed by "PRESS A TO START". | |
| | | Depress A. | AUX device prints: AABBC, display reads ⁽⁶⁵⁾ twice. |
| Using 921A Data Test Set if ⁽¹⁵⁾ LRC_Ck is YES Disconnect Test | 6C | Depress DD; display reads "1 = PROGRAMMABLE 2 = STANDARD MSG". | |
| | | Depress 1; display reads "SELECT 0001 TO 0255 CHARACTERS" followed by "???? CHARACTERS IN MESSAGE". | |
| | | Depress 0001; display reads "00:??". | |
| | | Depress the even parity Hex value for ⁽⁶⁵⁾ ; display reads "A TO CONTINUE OR ← TO EDIT TRMT". | |
| | | Depress A; display reads "SELECT 0000 TO 0020 TRAP CHARACTERS" followed by "???? TRAP CHARACTERS". | |
| | | Depress 0000; display reads "NO TRAP CHARACTERS ARE ENTERED" followed by "PRESS A TO START". | |
| | | Depress A. | LINE ACTIVE lights. Set is deselected. |
| | | This completes the test of the 43 BSC Teleprinter if Step 6 operated properly. Recode any options that were changed for testing. Disconnect the test set, connect the teleprinter to its data set and tell the customer it is ready for the system test. | |
| Using Data Test Center | 7 | Do the following installation checkout with the teleprinter accessed to the switched network or channeled through a central office to a Data Test Center. Use a DDD phone for verbal communication with the Test Center while doing this checkout. | |
| | | If Option 15, LRC_Ck is: NO, do Step 8, 8A, 8B and 8C. YES, do Step 9, 9A, 9B and 9C. | |

CHART 1 (Contd)

| TEST | STEP | PROCEDURE | RESPONSE | | | | | | | | | | | | | | | | | | | | | | |
|---|-----------------|--|--|----------------|--------------------|----------------|-------------------------------------|---------------|---------------------------|---------------|--------------|----------------|--------------|----------------|-------------------------|-----------------|-----------------|-----------------|-----------------|--|-----------------|--|-----------------|--|--|
| Using Data Test Center (Contd) | 7 (Contd) | <p>Tell the Test Center the following options in ASCII (American National Standard Code for Information Interchange) or English (not Hex):</p> <table border="0"> <tr> <td>① LinSpd ---- baud</td> <td>⑥⑨ Start1 ____</td> </tr> <tr> <td>② AuxSpd ---- baud</td> <td>⑦① SSInt1 ____</td> </tr> <tr> <td>③ Parity _____ Must be 43 (even)</td> <td>⑦③ RRInt ____</td> </tr> <tr> <td>④ Trans _____ Asych/Isych</td> <td>⑦④ RSInt ____</td> </tr> <tr> <td>⑮ LRC_CK Y/N</td> <td>⑦⑥ PAddr1 ____</td> </tr> <tr> <td>⑮ DelErr Y/N</td> <td>⑦⑦ AAddr1 ____</td> </tr> <tr> <td>③⑧ IdleTm Must be 00 00</td> <td>⑧④ P*_ Rdy ____</td> </tr> <tr> <td>⑤⑨ Poll #1 ----</td> <td>⑧⑤ A*_ Rdy ____</td> </tr> <tr> <td>⑥② SSDsl1 _____</td> <td></td> </tr> <tr> <td>⑥④ RSDsl1 _____</td> <td></td> </tr> <tr> <td>⑥⑤ RRDsl1 _____</td> <td></td> </tr> </table> <p>Note: Change ③ and ③⑧ if not <u>even</u> parity and <u>no</u> time out.</p> <p>Call Data Test Center and request a manual 43 Teleprinter test. Note: This test is not available on ADTS.</p> <p>Provide Test Center with phone number of station.</p> <p>Agree that Test Center will call set and if disconnected will call back.</p> | ① LinSpd ---- baud | ⑥⑨ Start1 ____ | ② AuxSpd ---- baud | ⑦① SSInt1 ____ | ③ Parity _____ Must be 43 (even) | ⑦③ RRInt ____ | ④ Trans _____ Asych/Isych | ⑦④ RSInt ____ | ⑮ LRC_CK Y/N | ⑦⑥ PAddr1 ____ | ⑮ DelErr Y/N | ⑦⑦ AAddr1 ____ | ③⑧ IdleTm Must be 00 00 | ⑧④ P*_ Rdy ____ | ⑤⑨ Poll #1 ---- | ⑧⑤ A*_ Rdy ____ | ⑥② SSDsl1 _____ | | ⑥④ RSDsl1 _____ | | ⑥⑤ RRDsl1 _____ | | |
| ① LinSpd ---- baud | ⑥⑨ Start1 ____ | | | | | | | | | | | | | | | | | | | | | | | | |
| ② AuxSpd ---- baud | ⑦① SSInt1 ____ | | | | | | | | | | | | | | | | | | | | | | | | |
| ③ Parity _____ Must be 43 (even) | ⑦③ RRInt ____ | | | | | | | | | | | | | | | | | | | | | | | | |
| ④ Trans _____ Asych/Isych | ⑦④ RSInt ____ | | | | | | | | | | | | | | | | | | | | | | | | |
| ⑮ LRC_CK Y/N | ⑦⑥ PAddr1 ____ | | | | | | | | | | | | | | | | | | | | | | | | |
| ⑮ DelErr Y/N | ⑦⑦ AAddr1 ____ | | | | | | | | | | | | | | | | | | | | | | | | |
| ③⑧ IdleTm Must be 00 00 | ⑧④ P*_ Rdy ____ | | | | | | | | | | | | | | | | | | | | | | | | |
| ⑤⑨ Poll #1 ---- | ⑧⑤ A*_ Rdy ____ | | | | | | | | | | | | | | | | | | | | | | | | |
| ⑥② SSDsl1 _____ | | | | | | | | | | | | | | | | | | | | | | | | | |
| ⑥④ RSDsl1 _____ | | | | | | | | | | | | | | | | | | | | | | | | | |
| ⑥⑤ RRDsl1 _____ | | | | | | | | | | | | | | | | | | | | | | | | | |
| Using Data Test Center if ⑮ LRC_Ck is NO Polling Test | 8 | <p>Depress  key.</p> <hr/> <p>Keyboard the following: AABBC⑥②.</p> <p>Depress  key.</p> <hr/> <p>Depress  and  keys.</p> <hr/> <p>Test Center should call teleprinter. Both data sets should be placed in data mode.</p> <hr/> <p>Test Center sends: ⑥⑤ ⑤⑨.</p> | <p>BUFFER ENTER key lights and PRINT REC MSG key goes out. Print head is returned to left boundary and paper feeds one line.</p> <hr/> <p>43 prints: AABBC⑥②.</p> <hr/> <p>SND RDY key lights, print head is returned to the left boundary and paper feeds one line.</p> <hr/> <p>BUFFER ENTER goes out. COPY SEND DATA and PRINT REC MSG lights.</p> <hr/> <p>43 prints: AABBC⑥②. Test Center receives AABBC⑥②.</p> | | | | | | | | | | | | | | | | | | | | | | |

CHART 1 (Contd)

| TEST | STEP | PROCEDURE | RESPONSE |
|--|------|--|--|
| Using Data Test Center if (15) LRC_Ck is NO Receiving Test | 8A | Test Center sends: (65) (76) . | Test Center receives (64) . |
| | | Test Center sends : (69) ASCII test message (65) . | 43 prints: !"#\$%&'()*+,-./0123456789;:<=>? !"#\$%&'()*+,-./0123456789;:<=>? @ABCDEFGHIJKLMNopqrstuvwxyz[\]^_` @ABCDEFGHIJKLMNopqrstuvwxyz[\]^_` `abcdefghijklmnopqrstuvwxyz{ }~" `abcdefghijklmnopqrstuvwxyz{ }~" |
| Using Data Test Center if (15) LRC_Ck is NO and have AUX Device AUX Device Test | 8B | Do this test only if an auxiliary device is used. Place the auxiliary device in the ready to receive mode. | |
| | | Test Center sends: (65) (77) . | Test Center receives: (65) . |
| | | Test Center sends:(69)ASCII test message (65) . | AUX device prints: !"#\$%&'()*+,-./0123456789;:<=>? !"#\$%&'()*+,-./0123456789;:<=>? @ABCDEFGHIJKLMNopqrstuvwxyz[\]^_` @ABCDEFGHIJKLMNopqrstuvwxyz[\]^_` `abcdefghijklmnopqrstuvwxyz{ }~" `abcdefghijklmnopqrstuvwxyz{ }~" |
| Using Data Test Center if (15) LRC_Ck is NO End of Test | 8C | This completes the test of the 43 BSC. Check on the voice line with the Test Center to see if everything was OK at there end. If OK, disconnect the data and voice lines. Change back (3) and (38) if changed. Tell the customer the teleprinter is ready for the system test. | |
| Using Data Test Center if (15) LRC_Ck is YES Polling Test | 9 | Depress  key. | BUFFER ENTER key lights and PRINT REC MSG key goes out. Print head is returned to left boundary and paper feeds one line. |
| | | Keyboard the following: AABBCC (71) . | 43 prints: AABBCC. |
| | | Depress  key. | SND RDY key lights, print head is returned to the left boundary and paper feeds one line. |

CHART 1 (Contd)

| TEST | STEP | PROCEDURE | RESPONSE |
|--|--------------|---|---|
| Polling Test (Contd) | 9 (Contd) | Depress  and  keys. | BUFFER ENTER goes out. COPY SEND DATA and PRINT REC MSG lights. |
| | | Test Center should call teleprinter. Both data sets should be placed in data mode. | |
| | | Test Center sends: (65) (59) . | SND RDY flashes. LINE ACTIVE lights. Test Center receives AABBC (71) (69) . (6C) is the BLOCK CHECK character. Record this character for later use. |
| | | Test Center sends: (64) . | 43 prints: AABCC SND RDY goes out. |
| Using Data Test Center if (15) LRC_Ck is YES Receiving Test | 9A | Test Center sends: (65) (76) . | Test Center displays: (84) . |
| | | Test Center sends: (69) AABCC (73) (6C) . | Test Center display: (84) 43 prints AABCC. |
| | | Test Center sends: (65) . | 43 is deselected. |
| Using Data Test Center if (15) LRC_Ck is YES and have an AUX Device AUX Device Test | 9B | Do this test only if an auxiliary device is used. Place the auxiliary device in the ready to receive mode. | PRINT REC MSG key lights. |
| | | Test Center sends: (65) (77) . | Test Center displays: (85) . |
| | | Test Center sends: (69) AABCC (73) (6C) . | Test Center displays: (85) AUX PRINTS: AABCC. |
| | | Test Center sends: (65) . | 43 is deselected. |
| Using Data Test Center if (15) LRC_Ck is YES End of Test | 9C | This completes the test of the 43 BSC. Check on the voice line with the Test Center to see if everything was OK at there end. If satisfactory, disconnect the data and voice line. Change back (3) and (38) if changed. Tell the customer the teleprinter is ready for the system test. | |

LOCAL TESTING

CHART 2

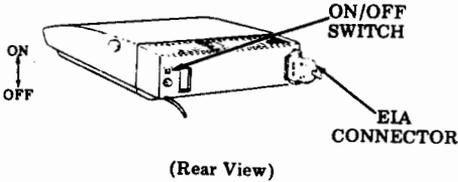
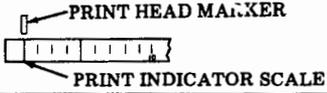
| TEST | STEP | PROCEDURE | RESPONSE |
|------------------------|------|---|---|
| Power On | 1 | Turn power switch OFF. Wait for one second and then turn the power switch ON. | Print head is indexed to the left boundary. |
| | |  <p>(Rear View)</p> | Printer performs one (1) line feed TERM ON LINE and PRINT REC MSG keys light. (TERM ON LINE will flash if no Data Set Ready signal.) |
| Indicator Scale | 2 |  | Print head marker points to first mark on indicator scale or (28). |
| Local Return Line Feed | 3 | Depress TERM LOCAL key. (Must use 468a.) | TERM LOCAL key lights. |
| | | Depress  key. | Lamp goes out. |
| | | Hold CTRL key depressed and depress RETURN key. | Print head is returned to left boundary and paper feeds to next line. If using 02 feature group card and (39) not zero, paper feeds (38) lines. |
| Caps Lock Upper Case | 4 | Place CAPS LOCK key in latched down position. Starting with top row and moving from left to right, depress unshaded keys in Fig. 3. | Characters are printed as in Fig. 4. |



Fig. 3

1234567890-+`qwertyuiop=\asdfghjkl;`{zxcvbnm,./

Fig. 4

1234567890-+`qwertyuiop=\asdfghjkl;`{zxcvbnm,./

Fig. 5

CHART 2 (Contd)

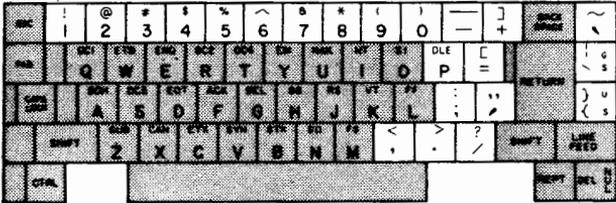
| TEST | STEP | PROCEDURE | RESPONSE |
|---|------|---|---|
| Caps Lock Lower Case | 5 | Depress RETURN and then LINE FEED key. | Does (41) . |
| | | Depress LINE FEED key. | Does (22) , (23) and (42) . |
| | | Depress and release CAPS LOCK key so it returns to the up position. Starting with top row and moving left to right, depress each unshaded key in Fig. 3. | Characters are printed as in Fig. 5. |
| Shift Key | 6 | Depress RETURN and then LINE FEED key. (Assumes (41) is CR, (22) is NO, (23) is NO and (42) is LF) for the rest of the test.) | Print head is returned to left boundary and paper feeds to next line. |
| | | Hold left SHIFT key depressed and starting with top row and moving from left to right, depress each unshaded key in Fig. 6. Hold right SHIFT key depressed and depress  key. | Characters are printed as in Fig. 7. |
|  | | | |
| <p>Fig. 6</p> <p>!@#%&'*()_] " P [: ; < > ?</p> <p>Fig. 7</p> | | | |
| Control Characters | 7 | Depress RETURN and then LINE FEED key. | Print head is returned to left boundary and paper feeds to next line. |
| | | Hold CTRL key depressed and depress  key. | SUB prints ■ |
| | | Hold CTRL key depressed and depress  key. | Signal bell rings. |
| | | Hold CTRL key depressed and depress  key. | Print head moves one character position to the left. |

CHART 2 (Contd)

| TEST | STEP | PROCEDURE | RESPONSE | | |
|--|------|---|--|---|---|
| Space Bar | 8 | Depress SPACE BAR. | Print head moves one character position to the right. | | |
| Back Space | 9 | Depress BACK SPACE key. | Print head moves one character position to the left. | | |
| Rept Key | 10 | Depress CAPS LOCK key then depress and hold REPT and <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>VT</td></tr><tr><td>K</td></tr></table> keys. | VT | K | The K is continuously printed until the end of line is reached. Signal bell rings at end of line. |
| VT | | | | | |
| K | | | | | |
| Form Feed Vert Tab Set and Clear | 11 | Depress and hold CTRL key and depress <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>FF</td></tr><tr><td>L</td></tr></table> key. (Form Feed) (³⁹ must be coded for form feed to operate.) | FF | L | Paper feeds one or more lines and print head returns to left boundary. |
| | | FF | | | |
| | | L | | | |
| | | Depress CTRL and <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>FF</td></tr><tr><td>L</td></tr></table> keys again. | FF | L | Paper should not feed. |
| | | FF | | | |
| | | L | | | |
| | | Depress <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>SOH</td></tr><tr><td>A</td></tr></table> key. (A) | SOH | A | Character A prints. |
| | | SOH | | | |
| A | | | | | |
| Depress and hold CTRL key and depress <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>FF</td></tr><tr><td>L</td></tr></table> key. (Form Feed). | FF | L | Paper feeds ³⁹ lines down from character A. | | |
| FF | | | | | |
| L | | | | | |
| Depress <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>STX</td></tr><tr><td>B</td></tr></table> key. (B) | STX | B | Character B prints. | | |
| STX | | | | | |
| B | | | | | |
| Depress and hold CTRL key and depress <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>VT</td></tr><tr><td>K</td></tr></table> key. (Vert. Tab) (²¹ must be yes, or no tabbing will occur. | VT | K | Paper feeds ⁹⁹ lines from character B. | | |
| VT | | | | | |
| K | | | | | |
| Depress and hold CTRL key and depress <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>^</td></tr><tr><td>6</td></tr></table> key. (Vert. Tab Clear) | ^ | 6 | No response. | | |
| ^ | | | | | |
| 6 | | | | | |
| Depress and hold CTRL key and depress <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>FF</td></tr><tr><td>L</td></tr></table> key. (Form Feed) | FF | L | Paper feeds ³⁹ lines to next form stop. | | |
| FF | | | | | |
| L | | | | | |
| Horiz. Tab Set and Clear | 12 | Depress RETURN key. | Print head is returned to left boundary. | | |
| | | Depress <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>TAB</td></tr></table> key. (Horiz. Tab) | TAB | Print head spaces to column ⁹⁸ . | |
| TAB | | | | | |

CHART 2 (Contd)

| TEST | STEP | PROCEDURE | RESPONSE |
|---|---------------|--|---|
| Horiz. Tab Set and Clear (Contd) | 12 (Contd) | Depress and hold CTRL key and depress  key. (Horiz. Tab Clear) | No response. |
| | | Depress RETURN key. | Print head is returned to the left boundary. |
| | | Depress  key. (Tab) | Print head spaces to the right boundary, returns to the left boundary and paper advances one line. |
| | | Space the Print head to column 10. | Print head spaces to column 10. |
| | | Depress and hold CTRL key and depress  key. (Horiz. Tab Set) | No response. |
| | | Depress RETURN key. | Print head is returned to the left boundary. |
| | | Depress  key. | Print head spaces to column 10. |
| | | Depress  key. | Print head space to the right boundary, returns to the left boundary and paper advances one line. |
| Restore Preset Tabs | 13 | Depress and hold CTRL key and depress  key. (Restore Preset Tabs) | No response. |
| | | Depress  key. (Horiz. Tab) | Print head spaces to column  . |
| Margins Set Release Clear | 14 | Space the print head 10 columns. | Print head spaces 10 columns. |
| | | Hold the CTRL key depressed and depress the  key. (Set Left Margin) | No response. |
| | | Space the print head 10 columns. | Print head spaces 10 columns. |

CHART 2 (Contd)

| TEST | STEP | PROCEDURE | RESPONSE |
|---|---------------|--|---|
| Margins Set Release Clear (Contd) | 14 (Contd) | Hold the CTRL key depressed and depress the  key. (Set Right Margin) | No response. |
| | | Depress the RETURN key. | Print head returns to left boundary plus 10 columns. |
| | | Space the print head 10 columns. | Print head spaces 10 columns. |
| | | Depress the  key. (A) | The character A prints and the print head spaces to next column. |
| | | Depress the  key. (B) | Bell rings, B does not print. |
| | | Hold the CTRL key depressed and depress the  key. (Release Right Margin) | No response. |
| | | Depress  key three times. | Character C prints three times. |
| | | Hold the CTRL key depressed and depress the  key. (Margin Clear) | Print head returns to the left boundary: (28) . |
| Numeric Pad Mode | 15 | Depress  key. | NUM PAD key lights. |
| | | Starting with top row and moving from right to left depress the keys shown in Fig. 8 (Page 21). | Characters are printed as in Fig. 9 (Page 21). Print head returns to left boundary. |
| | | Depress  key. | NUM PAD key goes out. |

CHART 2 (Contd)

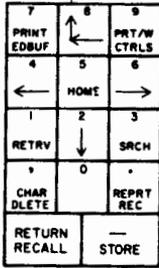
| TEST | STEP | PROCEDURE | RESPONSE |
|---------------------------------|-------------------|---|--|
| <p>Numeric Pad Mode (Contd)</p> | <p>15 (Contd)</p> | <div style="text-align: center;">  <p>Fig. 8</p> <p>987654321.0,-</p> <p>Fig. 9</p> </div> | |
| <p>Buffer Character Insert</p> | <p>16</p> | <p>Depress  key.</p> <p>Depress  then  keys. (A & C)</p> <p>Depress  key once. (Buffer Backspace)</p> <p>Depress  key.</p> <p>Depress  key. (B)</p> <p>Depress  key.</p> <p>Depress  key. (Buffer Home)</p> <p>Depress  key. (Print Edit Buffer)</p> | <p>BUFFER ENTER key lights.</p> <p>A C Prints.</p> <p>Print head backspaces once.</p> <p>INSERT key lights.</p> <p>B prints over C.</p> <p>INSERT key goes out.</p> <p>Print head returns to left boundary, paper feeds one line.</p> <p>ABC prints.</p> |
| <p>Buffer Character Delete</p> | <p>17</p> | <p>Depress  key. (Prev. Line)</p> <p>Manually advance paper one line (turn platen knob).</p> <p>Depress  key. (Buffer Space)</p> | <p>Print head moves to left boundary.</p> <p>A prints.</p> |

CHART 2 (Contd)

| TEST | STEP | PROCEDURE | RESPONSE |
|--------------------------------------|------------|--|---|
| Buffer Character Delete (Contd) | 17 (Contd) | Depress  key. (Character Delete) | ■ prints. |
| | | Depress  then  keys. | AC prints. |
| Clear Buffer | 18 | Depress  ,  then  keys. | Bell rings when  key is depressed. |
| Buffer Print With Control Characters | 19 | Type ABC Return, Line Feed, DEF. | ABC DEF is printed. |
| | | Depress  then  keys. | ABC ← ≡ DEF is printed. |
| Buffer Next Line Control | 20 | Depress  then  keys. (Buffer Next Line) | Print head returns to left boundary, paper feeds two lines. |
| | | Depress  key. | DEF is printed. |
| Message Store and Recall | 21 | Depress  key. (Store) |  key lights. Print head is returned to left boundary and paper feeds one line. |
| | | Depress  key. (Recall) |  key goes out. Paper feeds one line. |
| | | Depress  key. | ABC DEF is printed. |
| Buffer String Enter and Search | 22 | Depress  key. | Print head is returned to left boundary and paper feeds one line. |
| | | Depress  key. | STRING ENTER key lights. Paper feeds one line. |
| | | Depress  key. (E) | E prints. |
| | | Depress  key. (Search) | DE is printed. STRING ENTER key goes out. |

CHART 2 (Contd)

| TEST | STEP | PROCEDURE | RESPONSE |
|------------------------|------|---|---|
| Buffer Line Delete | 23 | Depress  then  keys. (Buffer Next Line) | Print head returns to left boundary, paper feeds two lines. |
| | | Depress  key. | DEF is printed. |
| Message Generator Test | 24 | Depress and hold  key and depress  key. (Here Is) | Prints (97) . |
| Alarm Conditions | 25 | Open the teleprinter cover. | ALARM key lights. |
| | | Close cover. Depress  key on some sets. | ALARM key goes out. |
| | | Remove paper from the teleprinter. | ALARM key lights and bell rings. |
| | | Replace paper and depress  key. On friction feed teleprinters it may be necessary to depress the reset button before depressing the ALARM key. | ALARM key goes out. |

CHART 3 (Contd)

| STEP | ACTION REQUIRED AT TEST CENTER | RESPONSE AT TEST CENTER | ACTION REQUIRED AT STATION (UUT) | RESPONSE AT STATION (UUT) |
|------|--|---|--|---|
| 1 | Prepares message. | None | None | None |
| 2 | None | None | Power down terminal for 10 seconds then power terminal back up. | Print head indexes to left boundary and performs one line feed. TERM ON LINE and PRINT REC MSG keys light. |
| 3 | None | None | Depress and hold CTRL key and depress  key. | Print head indexes to left boundary and performs one line feed. OPTIONS (Is Printed) IN EDIT BUFFER |
| 4 | None | None | Depress  key then  key. | BUFFER ENTER key lights and PRINT REC MSG light goes out. SND RDY key lights and BUFFER ENTER light goes out. |
| 5 | Establishes data communications with craftperson and terminal. Requests options (65) and (59). | | | |
| 6 | Sends (65) and (59). | Compares options sent with options received for errors (wrong options). | None | SND RDY key flashes (sends set options to Test Center). |

CHART 3 (Contd)

| STEP | ACTION REQUIRED AT TEST CENTER | RESPONSE AT TEST CENTER | ACTION REQUIRED AT STATION (UUT) | RESPONSE AT STATION (UUT) |
|------|--------------------------------|-------------------------|--|--|
| 7 | Sends (65). | None | None | SND RDY light goes out, set is deselected. |
| 8 | None | None | Power down terminal for ten seconds then power terminal back up. | Print head indexes to left boundary and performs one line feed. TERM ON LINE and PRINT REC MSG keys light. |
| 9 | None | None | Depress and hold CTRL key and depress  key. | Print head indexes to left boundary and performs one line feed. Options (Is Printed) In Edit Buffer BUFFER ENTER key lights and PRINT REC MSG light goes out. |
| 10 | None | None | Confirm and change if necessary: (1) = 1584 (1200 Baud) (15) to 6E (No LRC_Ck) and (17) to 79 (Receives Everything). Depress and hold CNTL key and depress  key. | Print head indexes to left boundary and performs one line feed. |

CHART 3 (Contd)

| STEP | ACTION REQUIRED AT TEST CENTER | RESPONSE AT TEST CENTER | ACTION REQUIRED AT STATION (UUT) | RESPONSE AT STATION (UUT) |
|------|---|-------------------------|--|--|
| 11 | None | None | Depress  key and  key several times (until bell rings). | Print head indexes to left boundary and performs one line feed. Bell rings when buffer is empty. |
| 12 | None | None | Depress  key. | BUFFER ENTER light goes out. |
| 13 | Sends all options (7 separate 1-line messages). | None | None | LINE ACTIVE key lights each time a line is received. REC MSG WTG key lights. |
| 14 | None | None | Depress  key. | BUFFER ENTER key lights, print head indexes to left boundary and performs one line feed. |
| 15 | None | None | Depress  key. | STRING ENTER key lights, print head indexes to left boundary and performs one line feed. |
| 16 | None | None | Type 1584. Depress  key. | 1584 prints. Print head indexes to left boundary and performs one line feed. |
| 17 | None | None | Depress and hold  key and depress  key. | Print head indexes to left boundary and performs one line feed. |

CHART 3 (Contd)

| STEP | ACTION REQUIRED AT TEST CENTER | RESPONSE AT TEST CENTER | ACTION REQUIRED AT STATION (UUT) | RESPONSE AT STATION (UUT) |
|------|---------------------------------|---|--|--|
| 18 | None | None | Depress  key and  key several times (until bell rings). Depress BUFFER ENTER key. | Print head indexes to left boundary and performs one line feed. Bell rings when buffer is empty. BUFFER ENTER light goes out. |
| 19 | Sends (76) Primary Address 1. | Test set receives and displays a "T" (84) . | None | LINE ACTIVE key lights. |
| 20 | Sends (77) Auxiliary Address 1. | Test set receives and display a "U" (86) . | None | LINE ACTIVE key lights. |
| 21 | None | None | Depress  key. | PRINT REC MSG light goes out. |

CHART 3 (Contd)

| STEP | ACTION REQUIRED AT TEST CENTER | RESPONSE AT TEST CENTER | ACTION REQUIRED AT STATION (UUT) | RESPONSE AT STATION (UUT) |
|------|--------------------------------|---|--|--|
| 22 | Sends (76) . | Test set receives and displays a "T" (84) . | None | LINE ACTIVE key lights. |
| 23 | Sends ABC message. | Test set receives and displays a "T" (84) . | None | LINE ACTIVE key lights. REC MSG WTG key lights. |
| 24 | Sends (76) . | Test set receives and displays a "V" (86) . | None | LINE ACTIVE key lights. |
| 25 | None | None | Depress:  key. | PRINT REC MSG key lights and AABCC prints. REC MSG WTG light goes out. |
| 26 | None | None | Depress:  key. | PRINT REC MSG light goes out. |
| 27 | Sends (76) . | Test set receives and displays a "T" (84) . | None | LINE ACTIVE key lights. |

CHART 3 (Contd)

| STEP | ACTION REQUIRED AT TEST CENTER | RESPONSE AT TEST CENTER | ACTION REQUIRED AT STATION (UUT) | RESPONSE AT STATION (UUT) |
|------|--|--|---|---|
| 28 | Sends (69) Start Character and 15 lines of "FOX" followed by E _x g. | Test set receives and displays a "Z" (90) . | None | LINE ACTIVE key lights. REC MSG WTG key flashes. |
| 29 | Sends (59) Station Poll. | Test set receives and displays "N _K N _K " (61) . | None | LINE ACTIVE key lights. REC MSG WTG key continues to flash. |
| 30 | None | None | Depress  key. | PRINT REC MSG key lights and 15 lines of FOX message prints. REC MSG WTG stops flashing as buffer empties and goes out after message has printed. |
| 31 | None | None | Depress  key again after printing stops. | PRINT REC MSG light goes out. |
| 32 | Sends (76) . | Test set receives and displays a "T" (84) . | None | LINE ACTIVE key lights. |

CHART 3 (Contd)

| STEP | ACTION REQUIRED AT TEST CENTER | RESPONSE AT TEST CENTER | ACTION REQUIRED AT STATION (UUT) | RESPONSE AT STATION (UUT) |
|---|--|---|----------------------------------|---|
| 33 | Sends (88) and 15 lines of "FOX" followed by E _x E _x (wrong (89)). | Test set receives and displays a "\ " (92). | None | LINE ACTIVE key lights. |
| <i>Note:</i> Perform steps 34 through 39 only if auxiliary device is present. | | | | |
| 34 | Sends (77) Auxiliary Address 1. | Test set receives and displays a "U" (85). | None | LINE ACTIVE key lights. |
| 35 | Sends ABC message. | Test set receives and displays a "U" (85). | None | LINE ACTIVE key lights. AUX device prints AABBC. |
| 36 | Sends (77). | Test set receives and displays a "U" (85). | None | LINE ACTIVE key lights. |
| 37 | Sends ABC message with wrong (89). | Test set receives and displays a "J" (93). | None | LINE ACTIVE key lights. |

CHART 3 (Contd)

| STEP | ACTION REQUIRED AT TEST CENTER | RESPONSE AT TEST CENTER | ACTION REQUIRED AT STATION (UUT) | RESPONSE AT STATION (UUT) |
|------|--|---|---|---|
| 38 | Sends (77) . | Test set receives and displays a "U" (86) . | None | LINE ACTIVE key lights. |
| 39 | Sends (89) and 15 lines of "FOX" followed by E _x g. While AUX device is printing, Test Center sends (77) . | Test set receives and displays a " [" (91) . Test set receives and displays a "W" (87) . | None None | LINE ACTIVE key lights. AUX device prints 15 lines of FOX message. AUX device continues to print out. |
| 40 | Sends (59) Station Poll. | Test set receives and displays "AKAK" (80) . | None | None |
| 41 | None | None | Depress  key. Type AABBC E _x . Depress  key. | BUFFER ENTER key lights. AABBC is printed. SND RDY key lights. |

CHART 3 (Contd)

| STEP | ACTION REQUIRED AT TEST CENTER | RESPONSE AT TEST CENTER | ACTION REQUIRED AT STATION (UUT) | RESPONSE AT STATION (UUT) |
|---|---------------------------------|---|---|---|
| 42 | None | None | Depress  and  keys. | BUFFER ENTER key goes out. PRINT REC MSG and COPY SEND DATA keys light. |
| 43 | Sends (59). | Test set receives and displays "AABBCC E _x E _x ". | None | LINE ACTIVE key lights. SND RDY key flashes. |
| 44 | Sends R _g character. | Test set receives and displays "AABBCC E _x E _x ". | None | LINE ACTIVE key lights. SND RDY key continues to flash. |
| 45 | Sends Deselect character (EOT). | Test set receives and displays a "T" (84). | None | LINE ACTIVE key lights. SND RDY key goes out. AABBCC is printed. |
| <p>Note: This is the end of the ON-LINE TESTING. If the customer options were available and are stored in the third field, do the following steps. If the customer options are not available at the Test Center, reoption the set locally. The set is now ready to be tested in the customer's system.</p> | | | | |
| 46 | | | Change (17) to Hex 79. After option is changed, depress and hold  key and depress  key. | Print head indexes to left boundary and performs one line feed. |

CHART 3 (Contd)

| STEP | ACTION REQUIRED AT TEST CENTER | RESPONSE AT TEST CENTER | ACTION REQUIRED AT STATION (UUT) | RESPONSE AT STATION (UUT) |
|------|--|-------------------------|--|--|
| 47 | None | None | Depress  key and  key several times (until bell rings). | Print head indexes to left boundary and performs one line feed. Bell rings when buffer is empty. |
| 48 | None | None | Depress  key. | BUFFER ENTER light goes out. |
| 49 | Send the options this customer should have. Seven lines of information will be sent but only one line at a time. | None | None | LINE ACTIVE key lights each time a line is received. REC MSG WTG key lights. |
| 50 | None | None | Depress  key. | BUFFER ENTER key lights. Print head indexes to left boundary and performs one line feed. |
| 51 | None | None | Depress  key. | STRING ENTER key lights. Print head indexes to left boundary and performs one line feed. |

CHART 3 (Contd)

| STEP | ACTION REQUIRED AT TEST CENTER | RESPONSE AT TEST CENTER | ACTION REQUIRED AT STATION (UUT) | RESPONSE AT STATION (UUT) |
|---|--------------------------------|-------------------------|--|--|
| 52 | None | None | Type 1584 (or whatever ① is). Depress  key. | 1584 prints (or whatever ① is). Print head indexes to left boundary and performs one line feed. |
| 53 | None | None | Depress and hold  key and depress  key. | Print head indexes to left boundary and performs one line feed. |
| 54 | None | None | Depress  key and  key several times (until bell rings). Depress BUFFER ENTER key. | Print head indexes to left boundary and performs line feed. Bell rings when buffer is empty. BUFFER ENTER light goes out. |
| This completes the ON-LINE TESTING. The telephone lines can be disconnected. The set is ready for testing in the customer's system. | | | | |

43 TELEPRINTER 5-LEVEL BUFFERED SELECTIVE CALLING (BSC) STATION

TESTING

| CONTENTS | PAGE | |
|---|------|--|
| 1. GENERAL | 1 | 1.05 Following routine maintenance calls at a location, the installation checkout should be performed. |
| 2. TEST EQUIPMENT | 2 | |
| 3. TESTING PROCEDURES..... | 2 | 1.06 The checkout routines are presented in chart form with test conditions arranged in a specific sequence. A response is given to verify the test condition has passed. |
| A. Installation Checkout Off-Line ... | 3 | |
| B. Installation Checkout On-Line ... | 5 | |
| Table | 7 | |
| C. Comprehensive Checkout Off-Line | 11 | 1.07 Always perform the tests in the order given. The test steps are based on satisfactory results of all previous steps. |
| D. Comprehensive Checkout On-Line | 18 | |
| 4. OPTION MAP WORKSHEET | 24 | 1.08 If the indicated response is not obtained in any step of a test procedure, repeat the step to make sure that the procedure has been performed properly. If the results are still unsatisfactory, refer to the 43 Teleprinter 5-Level Buffered Selective Calling (BSC) Station Troubleshooting Section, 574-500-304. |
| 1. GENERAL | | |
| 1.01 This section provides testing information for the 43 Teleprinter 5-Level Buffered Selective Calling (BSC) Station. | | |
| 1.02 This section is reissued to provide comprehensive testing of the 43 5-Level BSC in addition to the installation testing. | | 1.09 On-line tests can be performed with Test Centers equipped with a 5-level baudot sending and receiving device such as a 28-type KSR or equivalent such as a 921A Data Test Set, list 4 or higher. On-line tests can also be simulated locally using a 921A Data Test Set. |
| <i>Note:</i> When ordering replaceable components unless otherwise specified, prefix each part number with letters "TP" (ie, TP430047). | | |
| 1.03 The installation checkout should be performed after installation to make sure the station is basically operable and that the installation was performed properly. | | 1.10 Before an on-line test can be performed, the Test Center must be provided with advance details about the 43 5-Level BSC such as speed, primary address, start character sequence, and deselect sequence. |
| 1.04 On trouble calls, the more comprehensive local and on-line tests can be performed to isolate specific troubles not covered in the installation check. After correction of a trouble, the test may be confined to the specific area that was failing. | | 1.11 Throughout the testing procedures circled numbers (ie, (54)) are referenced. These circled numbers are map order numbers defining the location and description of an option within the option map. Refer to paragraph 4 for option map. |

SECTION 574-500-504

Preliminary Check

1.12 Before proceeding with the checkout procedure check the following:

- (a) Is the station connected to a properly grounded and polarized ac service?
- (b) Are all cable connectors fully seated?
- (c) Are printer paper and ribbon properly installed?

2. TEST EQUIPMENT

2.01 To simulate on-line tests the 921A Data Test Set can be used instead of going to the Test Center.

3. TESTING PROCEDURES

3.01 For initial installation, perform A. Installation Checkout Off-Line. Then perform B. Installation Checkout On-Line.

3.02 If troubles are encountered on installation or if called out for a trouble call, perform C. Comprehensive Checkout Off-Line and D. Comprehensive Checkout On-Line.

3.03 The charts for on-line testing, both installation and comprehensive, are duplicated in the Test Center Section, 668-130-505, so that the test center technician and the installer or repair technician are aware of each other's test sequences. Both the testing Section, 574-500-504, and the Test Center Section, 668-130-505, show the test sequences and responses for the 43 5-Level BSC and for the test equipment.

3.04 Paragraph 4. OPTION MAP WORKSHEET is provided to fill in option values for the station under test, and is to be used as a quick reference for testing purposes. The option map worksheets can be locally reproduced if required.

A. Installation Checkout Off-Line

CHART 1

OFF-LINE INSTALLATION CHECKOUT

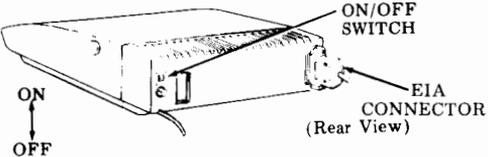
| TEST | STEP | PROCEDURE | RESPONSE |
|-----------------------|------|--|---|
| Power On | 1 | <p>Turn power switch OFF. Wait for one second and then turn the power switch ON.</p>  | <p>Print head is indexed to the left boundary.</p> <p>Printer performs one (1) line feed TERM ON-LINE and PRINT REC MSG keys light.</p> |
| Keyboard Check | 2 | <p>Depress TERM LOCAL key.</p> <p>Option 468a. must be installed.</p> | TERM LOCAL key lights. |
| | | <p>Depress  key.</p> | Lamp goes out. |
| | | <p>Type the following "TELEPRINTER IS BASICALLY OPERABLE".</p> | Characters print correctly. |
| Customer Option Check | 3 | <p>Depress  key.</p> | Lamp lights. |
| | | <p>Depress  key, several times until bell rings.</p> | Bell rings. |
| | | <p>Depress  key.</p> | Lamp lights and  goes out. |
| | | <p>Hold  key depressed and depress  key.</p> | OPTIONS IN EDIT BUFFER Prints on printer and  lamp lights. |
| | | <p>Depress  key.</p> | Option list in hexadecimal values prints out. |
| | | <p>Compare the option list printed to customer desired option list.</p> <p>Retain this option list for B. Installation Checkout On-Line.</p> | If required, correct option per Section 574-500-203. |
| | | <p>Depress and hold CTRL key and depress  key. (Options Load)</p> | Print head returns to left boundary, and line feeds ON-LINE lamp lights. |

CHART 1 (Contd)
OFF-LINE INSTALLATION CHECKOUT

| TEST | STEP | PROCEDURE | RESPONSE |
|---|--|--|--|
| Customer Option Check | 3 (Contd) | Depress  and  key several times until bell rings. | Bell rings. |
| | | Depress  key. | Key lights. BUFFER ENTER goes out. |
| Transmitting To Aux Device if Present. | 4 | <u>43 5-Level BSC</u> | |
| | | Depress  key if not lit. | Key lights. |
| | | Depress  key several times if necessary until bell rings. | Bell rings. |
| | | Type RYRYRYRY. | RYRYRYRY prints. |
| | | Depress  key. | Print head returns to left boundary and line feeds. |
| If  key is lit, depress twice to turn off. Depress  key. | Key lights, RYs are printed or punched on aux device, AUX WRITE key turns off. | | |
| Reading From Aux 43 5-Level PT Unit if Present. | 5 | <p><u>43 PT Unit</u></p> <p>Place tape with RYs punched from previous step in reader.</p> <p>Place reader control switch in ON position.</p> <p><u>43 5-Level BSC</u></p> <p>If  key is lit, depress to turn off.</p> <p>Depress  key.</p> | 43 5-Level PT Unit transmits RYs to 43 5-Level BSC. RYs print out. |

B. Installation Checkout On-Line

Using 921A Data Test Set Locally or With Test Center

If simulating on-line tests locally using a 921A Data Test Set, list 4 or higher, use the setup shown in Fig. 1.

If testing with a Test Center and the Test Center is using a 921A Data Test Set, the Test Center should use setup shown in Fig. 2.

Four options in the 43 5-Level BSC may have to be changed from customer options to test with a 921A Data Test Set. Option ① must be 1200 baud, 10 unit code (Hex 158D), Option ③ must be async (Hex 0C), Option ④ must be full duplex (Hex 6E), and Option ③⑥ must be disabled (Hex 0000). Refer to the 43 5-Level BSC Installation Section, 574-500-203, for procedures to change options. Use option printout retained from Chart 1, Step 3 to reinstall customer options after installation checkout.

The following LEDs must be lit on the 43 5-Level BSC before on-line testing: ,  and .

Depress key to light.

If testing with a Test Center, establish data and talk lines and proceed to Chart 2. Otherwise just proceed to Chart 2.

Testing With Test Center Using 28-Type KSR or Equivalent

Inform Test Center of your baud rate, Option ①. If Test Center cannot test at that baud rate, establish a common baud rate and change Option ①. If necessary also change Option ③. Option ④ must be full duplex (Hex 6E). Disable idle line time-out, Option ③⑥, by entering Hex 0000 for that option. Refer to 43 5-Level BSC Installation Section, 574-500-203, for procedures to change options. Use option printout retained from Chart 1 Step 3 to reinstall customer options after installation checkout. Establish data and talk lines with the Test Center and proceed to Chart 3.

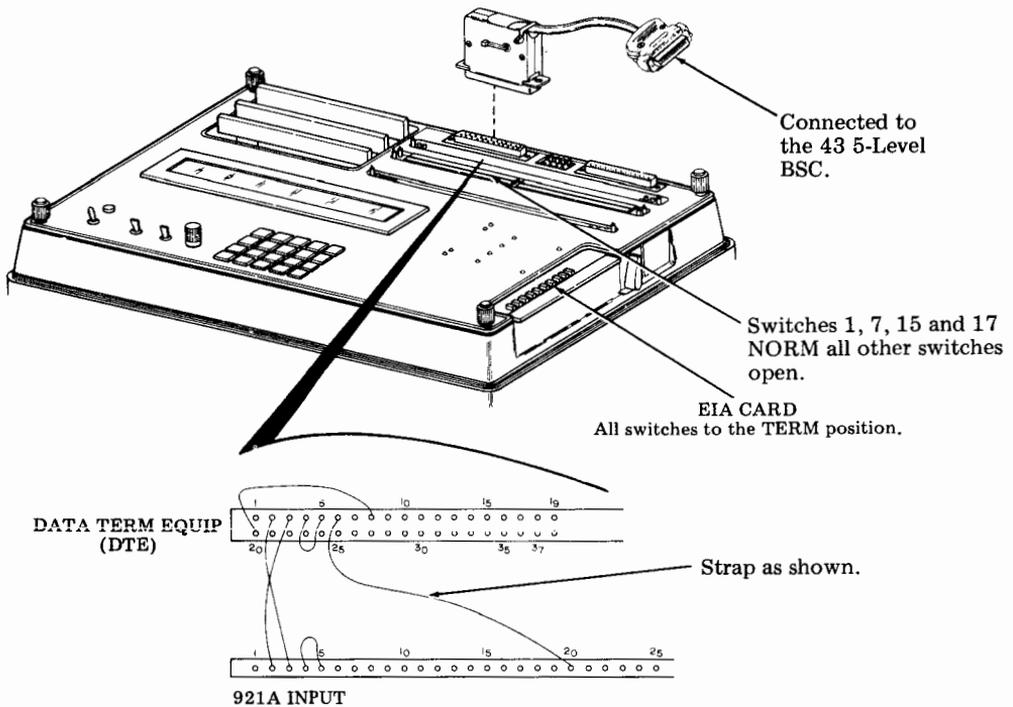


Fig. 1—921A Data Test Set Setup Transmitting Directly to 43 5-Level BSC

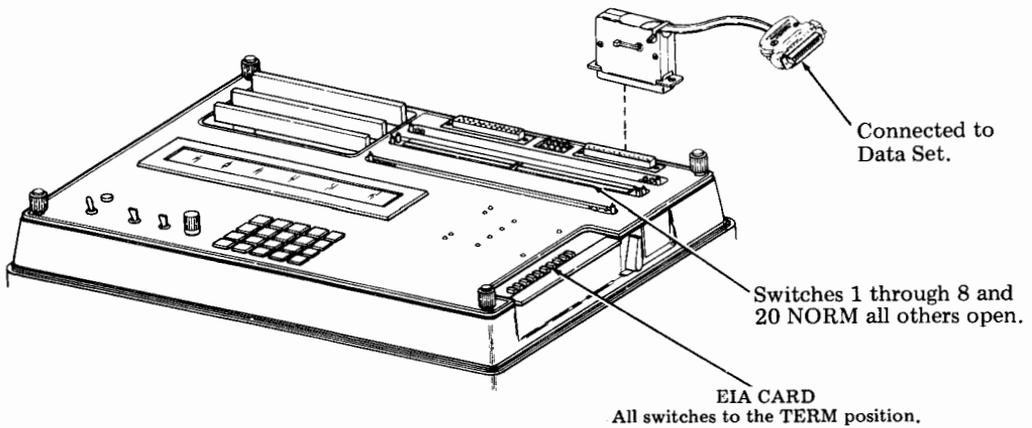


Fig. 2—921A Data Test Set Setup Transmitting Through A Data Set

TABLE
BAUDOT TO HEXADECIMAL NUMBER CONVERSION

| BAUDOT CHARACTER LTRS MODE | CONVERSION TO HEX | BAUDOT CHARACTER FIGS MODE | CONVERSION TO HEX |
|-------------------------------|----------------------|-------------------------------|----------------------|
| A | E3 | — | E3 |
| B | F9 | ? | F9 |
| C | EE | : | EE |
| D | E9 | \$ | E9 |
| E | E1 | 3 | E1 |
| F | ED | ! | ED |
| G | FA | & | FA |
| H | F4 | # | F4 |
| I | E6 | 8 | E6 |
| J | EB | BELL* | EB* |
| K | EF | (| EF |
| L | F2 |) | F2 |
| M | FC | . | FC |
| N | EC | , | EC |
| O | F8 | 9 | F8 |
| P | F6 | 0 | F6 |
| Q | F7 | 1 | F7 |
| R | EA | 4 | EA |
| S | E5 | *, | E5* |
| T | F0 | 5 | F0 |
| U | E7 | 7 | E7 |
| V | FE | ; | FE |
| W | F3 | 2 | F3 |
| X | FD | / | FD |
| Y | F5 | 6 | F5 |
| Z | F1 | " | F1 |
| LTRS | FF | LTRS | FF |
| FIGS | FB | FIGS | FB |
| SPACE | E4 | SPACE | E4 |
| CR | E8 | CR | E8 |
| LF | E2 | LF | E2 |
| BLANK | E0 | BLANK | E0 |

*Figs J and Figs S are reversed if BlFig J (25) = "n".

CHART 2

ON-LINE INSTALLATION CHECKOUT USING 921A DATA TEST SET
EITHER LOCALLY OR FROM TEST CENTER

| STEP | ACTION REQUIRED AT TEST CENTER | RESPONSE AT TEST CENTER | ACTION REQUIRED AT STATION (UUT) | RESPONSE AT STATION (UUT) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|--|----------------------------------|---|------------|------|---|---|------------|------|---|---|------------|------|---|---|------------|------|---|---|------------|-------|--|--|--|---------|--|----|--|--|--|--|
| 1 SELECT 43 5-Level BSC and send it a message. | <p>921A Data Test Set Depress RST to initialize the 921A Data Test Set. Display reads "DATA SET".</p> <p>Depress 25 GO. Display reads "BIT RATE".</p> <p>Depress 12 (for 1200 baud) GO. Display reads, "TEST SEQ".</p> <p>Depress 58 GO. Display reads "CHANGE JACK FIELD IF LOCAL TEST" followed by "1=PROGRAMMABLE 2=STANDARD MSG".</p> <p>Depress 1. Display reads "SELECT 0001 to 0255 CHARACTERS" followed by "???? CHARACTERS IN MESSAGE".</p> <p>Depress 00***(**=-The sum of the number of characters (not Hex codes) for Option (64), (65), (67) plus 9 for test characters plus Option (64) again).</p> <p>Example:</p> <table style="margin-left: 40px;"> <tr><td>(64)</td><td>=</td><td>3</td><td>Characters</td></tr> <tr><td>(65)</td><td>=</td><td>2</td><td>Characters</td></tr> <tr><td>(67)</td><td>=</td><td>2</td><td>Characters</td></tr> <tr><td>Text</td><td>=</td><td>9</td><td>Characters</td></tr> <tr><td>(64)</td><td>=</td><td>3</td><td>Characters</td></tr> <tr><td colspan="4"><hr/></td></tr> <tr><td>Total =</td><td></td><td>19</td><td></td></tr> </table> <p>Enter 0019</p> <p>Display reads "00:???" etc. Refer to the Table and enter the Hex values in the following sequence for Options (64), (65), (67). Enter the following Hex values: FF, E3, F9, EE, E9, E1, ED, FA, F4. Enter the Hex value for Option (64).</p> <p>Display then reads "A TO CONTINUE OR ← TO EDIT TRMT". Depress A. Display reads "SELECT 0000 TO 0020 TRAP CHAR" followed by "???? TRAP CHARACTERS". Depress 0000. Display reads "NO TRAP CHARACTERS ARE ENTERED" followed by "PRESS A TO START". Depress A.</p> | (64) | = | 3 | Characters | (65) | = | 2 | Characters | (67) | = | 2 | Characters | Text | = | 9 | Characters | (64) | = | 3 | Characters | <hr/> | | | | Total = | | 19 | | | | |
| (64) | = | 3 | Characters | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (65) | = | 2 | Characters | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (67) | = | 2 | Characters | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Text | = | 9 | Characters | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (64) | = | 3 | Characters | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <hr/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total = | | 19 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <p>921A Test Set Display reads Hex code for Option (71). See Table.</p> | | <p>43 5-Level BSC LINE ACTIVE key lights for approximately 10 seconds. The characters ABCDEFGH print out.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

CHART 2 (Contd)

ON-LINE INSTALLATION CHECKOUT USING 921A DATA TEST SET
EITHER LOCALLY OR FROM TEST CENTER

| STEP | ACTION REQUIRED AT TEST CENTER | RESPONSE AT TEST CENTER | ACTION REQUIRED AT STATION (UUT) | RESPONSE AT STATION (UUT) |
|---|--|--|---|---|
| <p>2 POLL 43 5-Level BSC and receive a message from it.</p> | <p>921A Data Test Set Depress D twice. Display reads "1= PROGRAMMABLE 2-STANDARD MSG". Depress 1. Display reads "SELECT 0001 TO 0265 CHARACTERS" followed by "???? CHARACTERS IN MESSAGE". Depress 000* (*=The sum of the number of characters (not Hex codes) for Options (5) and (4)). Display reads "00:?????" etc. Refer to the Table and enter the Hex values in the following sequence for Options (5) and (4). Display reads "A TO CONTINUE OR TO EDIT TRMT". Depress A. Display reads "SELECT 0000 TO 0020 TRAP CHAR" followed by "???? TRAP CHARACTERS". Depress 0000. Display reads "NO TRAP CHARACTERS ARE ENTERED" followed by "PRESS A TO START". Depress A.</p> | <p>921A Data Test Set Display reads "E3 F9 EE E9 E1 ED" plus Hex code for Option (5). See Table. <i>Note:</i> May be preceded by characters from Option (6) and followed by characters from Option (4).</p> | <p>43 5-Level BSC</p> <p>Depress  key.</p> | <p>Key lights. PRINT REC MSG light goes out.</p> |
| | | | <p>Depress  key several times, if necessary, until bell rings.</p> | <p>Bell rings.</p> |
| | | | <p>Type ABCDEF then enter delect sequence Option (5). Depress the STORE key.</p> | <p>ABCDEF prints then SND RDY key lights.</p> |
| | | | <p>Depress  key if not lit.</p> | <p>Key lights. BUFFER ENTER goes out.</p> |
| | | | <p>Depress  key if not lit.</p> | <p>Key lights.</p> |
| | | | | <p>43 5-Level BSC Prints ABCDEF. <i>Note:</i> May be preceded by characters from Option (6) and followed by characters from Option (4).</p> |

CHART 3

ON-LINE INSTALLATION CHECKOUT WITH TEST CENTER
USING 28-TYPE KSR OR EQUIVALENT

| STEP | ACTION REQUIRED AT TEST CENTER | RESPONSE AT TEST CENTER | ACTION REQUIRED AT STATION (UUT) | RESPONSE AT STATION (UUT) |
|--|--|---|---|--|
| <p>1 SELECT 43 5-Level BSC and send it a message.</p> | <p>Test Center Send the appropriate characters for Options (54), (53), (57) followed by "ABCDEFGH" followed by Option (54).</p> <p>Note: If terminal is optioned as an auxiliary terminal (Option (14) = Hex 79), the terminal requires no select code and will copy all text sent to it.</p> | <p>Test Center Receives Option (71) characters.</p> | | <p>43 5-Level BSC LINE ACTIVE key lights for approximately 10 seconds. The characters ABCDEFGH print out.</p> |
| <p>2 POLL 43 5-Level BSC and receive a message from it.</p> <p>Skip this step for sets optioned yes for Option (13) or (14).</p> | <p>Test Center Send the appropriate characters for Options (54) and (44).</p> | <p>Test Center Receives ABCDEF.</p> <p>Note: May be preceded by characters from Option (42) and followed by characters from Option (44).</p> | <p>43 5-Level BSC</p> <p>Depress  key.</p> <p>Depress  key several times, if necessary, until bell rings.</p> <p>Type ABCDEF then enter deselect sequence Option (52). Depress the STORE key.</p> <p>Depress  key if not lit.</p> <p>Depress  key if not lit.</p> | <p>Key lights. PRINT REC MSG light goes out.</p> <p>Bell rings.</p> <p>ABCDEF prints then SND RDY key lights.</p> <p>Key lights. BUFFER ENTER goes out.</p> <p>Key lights.</p> <p>43 5-Level BSC Prints ABCDEF.</p> <p>Note: May be preceded by characters from Option (42) and followed by characters from Option (44).</p> |

C. Comprehensive Checkout Off-Line

CHART 4

OFF-LINE COMPREHENSIVE CHECKOUT

| TEST | STEP | PROCEDURE | RESPONSE |
|------------------------|------|---|---|
| Power On | 1 | Turn power switch OFF. Wait for one second and then turn the power switch ON. | <p>Print head is indexed to the left boundary.</p> <p>Printer performs one (1) line feed TERM ON-LINE and PRINT REC MSG keys light.</p> |
| | | <p>Fig. 3</p> | |
| Indicator Scale | 2 | <p>Fig. 4</p> | Print head marker points to first mark on indicator scale unless Option 29 is other than 1. |
| Local Return Line Feed | 3 | Depress TERM LOCAL key. | TERM LOCAL key lights. |
| | | Option 468a. must be installed. | |
| | | Depress key. | Lamp goes out. |
| | | Depress space bar several times. | Print head spaces to the right several times. |
| | | Hold CTRL key depressed and depress RETURN key. | Print head is returned to the left boundary and paper feeds to the next line. |
| Customer Option Check | 4 | Depress key. | Lamp lights. |
| | | Depress key, several times until bell rings. | Bell rings. |
| | | Depress key. | Lamp lights and goes out. |

CHART 4 (Contd)

OFF-LINE COMPREHENSIVE CHECKOUT

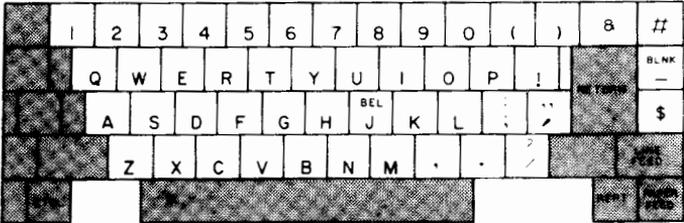
| TEST | STEP | PROCEDURE | RESPONSE |
|-----------------------|-----------|--|---|
| Customer Option Check | 4 (Contd) | Hold  key depressed and depress  key. | OPTIONS IN EDIT BUFFER prints on printer and  lamp lights. |
| | | Depress  key. | Option list in hexadecimal values prints out. |
| | | Compare the option list printed to customer desired option list. Retain this option list for Comprehensive Checkout On-Line. | If required, correct option per Section 574-500-203. |
| | | Depress and hold CTRL key and depress  key (Options Load). | Print head returns to left boundary, and line feeds ON-LINE lamp lights. |
| | | Depress  and  key several times until bell rings. | Bell rings. |
| | | Depress  key. | BUFFER ENTER goes out. |
| Keyboard | 5 | <p>Starting with the top row and moving from left to right, depress each unshaded key in Fig. 5.</p>  <p style="text-align: center;">Fig. 5</p> <p style="text-align: center;">1234567890()&#QWERTYUIOP!-ASDFGHJKL;/\$ZXCVBNN,./</p> <p style="text-align: center;">Fig. 6</p> <p>Hold the CTRL key depressed and depress the following keys:   </p> | <p>Characters are printed as shown in Fig. 6.</p> <p>The following characters print : " ?</p> |

CHART 4 (Contd)

OFF-LINE COMPREHENSIVE CHECKOUT

| TEST | STEP | PROCEDURE | RESPONSE |
|---|------|---|---|
| Return Key | 6 | Depress the RETURN key. For the remainder of the testing, it is assumed the RETURN key provides only the return function. | Option (38) performs. If line feed is part of Option (38) and Option (20) equals yes, teleprinter will double line feed. |
| Line Feed Key | 7 | Depress the LINE FEED key. For the remainder of the testing, it is assumed the LINE FEED key provides only the line feed function. | Option (39) performs. If Option (39) is line feed and Option (20) equals yes, teleprinter will double line feed. If Option (39) is line feed and Option (19) equals yes, teleprinter will also carriage return. |
| Space Bar | 8 | Depress the SPACE BAR. | Print head moves one character position to the right. |
| Paper Feed | 9 | Depress the  key. | Teleprinter feeds one line and carriage returns to the left boundary. |
| REPT | 10 | Depress the  key and  key simultaneously. | M's are printed until the end of line is reached, then bell rings. |
| Line Length | 11 | Count the number of M's printed in Step 9. | Count equals right boundary Option (27) minus the left boundary Option (28). |
| Form Out Perform only if Option (37) is greater than zero | 12 | Depress the key sequence for Option (42). | Key sequence prints (if printable), paper feeds out, and print head returns to left boundary. |
| | | Depress the key sequence for Option (42). | Key sequence prints (if printable), paper feeds out the amount of line feeds specified in Option (37), and print head returns to left boundary. |

CHART 4 (Contd)

OFF-LINE COMPREHENSIVE CHECKOUT

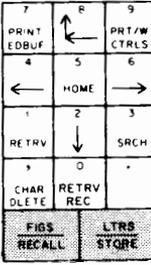
| TEST | STEP | PROCEDURE | RESPONSE |
|-------------------------|------|--|--|
| Control Characters | 13 | Depress the  key. | BUFFER ENTER key lights. |
| | | Hold down the CTRL key and depress  or  key, whichever is present. | Bell rings. |
| | | Hold the CTRL key depressed and depress the following keys:  ,  ,  . Release the CTRL key. Depress the  key and then depress the  key. | B S S N L O I U prints. |
| NUM PAD Function | 14 | Depress the  key. | NUM PAD key lights. |
| | | Starting with the top row and moving from left to right, depress unshaded keys in Fig. 7. | 789456123, 0. prints. |
| | |  <p style="text-align: center;">Fig. 7</p> | |
| Buffer Character Insert | 15 | Depress  key. | Printer carriage returns and line feeds. |
| | | Depress  key several times until bell rings. | Bell rings. |
| | | Depress  then  key. | AC prints. |

CHART 4 (Contd)

OFF-LINE COMPREHENSIVE CHECKOUT

| TEST | STEP | PROCEDURE | RESPONSE |
|--|---------------|--|---|
| | 15 (Contd) | Depress  key once. (Buffer backspace). | Print head backspaces once. |
| | | Depress  key. | INSERT key lights. |
| | | Depress  key. | B prints over C. |
| | | Depress  key. | INSERT key goes out. |
| | | Depress  key. | Printer carriage returns and line feeds. |
| | | Depress  key (Print Edit Buffer). | ABC prints. |
| Buffer Character Delete | 16 | Depress  key (prev. Line). | Print head moves to left boundary. |
| | | Manually advance paper one line (turn platen knob). | |
| | | Depress  key (Buffer Space). | A prints. |
| | | Depress  key (Character Delete). | ■ prints. |
| | | Depress  then  keys. | AC prints. |
| Clear Buffer | 17 | Depress  ,  then  keys. | Bell rings when  key is depressed. |
| Buffer Print With Control Characters | 18 | Type ABC Return, Line Feed DEF. | ABC DEF is printed. |
| | | Depress  then  keys. | ABC ← ≡ DEF is printed. |

CHART 4 (Contd)

OFF-LINE COMPREHENSIVE CHECKOUT

| TEST | STEP | PROCEDURE | RESPONSE |
|--------------------------------|------|--|---|
| Buffer Next Line | 19 | Depress  then  keys (Buffer Next Line). | Print head returns to left boundary, paper feeds two lines. |
| | | Depress  key. | DEF is printed. |
| Message Store And Recall | 20 | Depress  key (Store). |  key lights. Print head is returned to left boundary and paper feeds one line. |
| | | Depress  key (Recall). |  key goes out. Paper feeds one line. |
| | | Depress  key. | ABC DEF is printed. |
| Buffer String Enter And Search | 21 | Depress  key. | Print head is returned to left boundary and paper feeds one line. |
| | | Depress  key. | STRING ENTER key lights. Paper feeds one line. |
| | | Depress  key (E). | E prints. |
| | | Depress  key (Search). | DE is printed. STRING ENTER key goes out. |
| Alarm Conditions | 22 | Open the teleprinter cover. | ALARM key lights. |
| | | Close cover. | ALARM key goes out. |
| | | Remove paper from the teleprinter. | ALARM key lights and bell rings. |
| | | Replace paper and depress  key. On friction feed teleprinters it may be necessary to depress the reset button on the paper supply assembly before depressing the ALARM key. | ALARM key goes out. |

CHART 4 (Contd)

OFF-LINE COMPREHENSIVE CHECKOUT

| TEST | STEP | PROCEDURE | RESPONSE |
|---|------|--|--|
| Transmitting To Aux Device If Present. | 23 | Depress  key if not lit. | Key lights. |
| | | Depress  key several times if necessary until bell rings. | Bell rings. |
| | | Type RYRYRYRY. | RYRYRYRY prints. |
| | | Depress  key. | Print head returns to left boundary and line feeds. |
| | | If  key is lit, depress twice to turn off. Depress  key. | Key lights, RYs are printed or punched on aux device, AUX WRITE key turns off. |
| Reading From Aux 43 5-Level PT Unit if present. | 24 | <p><u>43 PT Unit</u></p> <p>Place tape with RYs punched from previous step in reader.</p> <p>Place reader control switch in ON position.</p> <p><u>43 5-Level BSC</u></p> <p>If  key is lit, depress to turn off.</p> <p>Depress  key.</p> | 43 5-Level PT Unit transmits RYs to 43 5-Level BSC. RYs print out. |

D. Comprehensive Checkout On-Line

Using 921A Data Test Set Locally or With Test Center

If simulating on-line tests locally using a 921A Data Test Set, list 4 or higher, use the setup shown in Fig. 1.

If testing with a Test Center and the Test Center is using a 921A Data Test Set, the Test Center should use setup shown in Fig. 2.

Four options in the 43 5-Level BSC may have to be changed from customer options to test with a 921A Data Test Set. Option ① must be 1200 baud, 10 unit code (Hex 158D), Option ③ must be async (Hex 0C), Option ④ must be full duplex (Hex 6E), and Option ③⑥ must be disabled (Hex 0000). Refer to the 43 5-Level BSC Installation Section, 574-500-203, for procedures to change options. Use option printout retained from Chart 4, Step 4 to reinstall customer options after installation checkout.

The following LEDs must be lit on the 43 5-Level BSC before on-line testing:  ,  and  .

Depress key to light.

If testing with a Test Center, establish data and talk lines and proceed to Chart 5. Otherwise just proceed to Chart 5.

Testing With Test Center Using 28-Type KSR or Equivalent

Inform Test Center of your baud rate, Option ①. If Test Center cannot test at that baud rate, establish a common baud rate and change Option ①. If necessary also change Option ③. Option ④ must be full duplex (Hex 6E). Disable idle line time-out, Option ③⑥, by entering Hex 0000 for that option. Refer to 43 5-Level BSC Installation Section, 574-500-203, for procedures to change options. Use option printout retained from Chart 4 Step 4 to reinstall customer options after installation checkout. Establish data and talk lines with the Test Center and proceed to Chart 6.

CHART 5

**COMPREHENSIVE ON-LINE CHECKOUT USING 921A DATA TEST
SET EITHER LOCALLY OR FROM TEST CENTER**

| STEP | ACTION REQUIRED AT TEST CENTER | RESPONSE AT TEST CENTER | ACTION REQUIRED AT STATION (UT) | RESPONSE AT STATION (UT) | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|-------------------------|---------------------------------|--------------------------|------------|-----|---|---|------------|-----|---|---|------------|------|---|---|------------|-----|---|---|------------|-------|--|--|--|---------|--|----|--|--|--|---|
| <p>1 SELECT 43 5-Level BSC and send it a message.</p> | <p>921A Data Test Set Depress RST to initialize the 921 A Data Test Set. Display reads "DATA SET".</p> <p>Depress 25 GO. Display reads "BIT RATE".</p> <p>Depress 12 (for 1200 baud) GO. Display reads, "TEST SEQ".</p> <p>Depress 58 GO. Display reads "CHANGE JACK FIELD IF LOCAL TEST" followed by "1=PROGRAMMABLE 2=STANDARD MSG".</p> <p>Depress 1. Display reads "SELECT 0001 to 0255 CHARACTERS" followed by "???? CHARACTERS IN MESSAGE".</p> <p>Depress 00**(**=The sum of the number of characters (not Hex codes) for Option (M), (N), (P) plus 9 for test characters plus Option (M) again).</p> <p>Example:</p> <table style="margin-left: 40px;"> <tr><td>(M)</td><td>=</td><td>3</td><td>Characters</td></tr> <tr><td>(N)</td><td>=</td><td>2</td><td>Characters</td></tr> <tr><td>(P)</td><td>=</td><td>2</td><td>Characters</td></tr> <tr><td>Text</td><td>=</td><td>9</td><td>Characters</td></tr> <tr><td>(M)</td><td>=</td><td>3</td><td>Characters</td></tr> <tr><td colspan="4"><hr/></td></tr> <tr><td>Total =</td><td></td><td>19</td><td></td></tr> </table> <p>Enter 0019</p> <p>Display reads "00:???" etc. Refer to the Table and enter the Hex values in the following sequence for Options (M), (N), (P). Enter the following Hex values: FF, E3, F9, EE, E9, E1, ED, FA, F4. Enter the Hex value for Option (M).</p> <p>Display then reads "A TO CONTINUE OR— TO EDIT TRMT". Depress A. Display reads "SELECT 0000 TO 0020 TRAP CHAR" followed by "???? TRAP CHARACTERS". Depress 0000. Display reads "NO TRAP CHARACTERS ARE ENTERED" followed by "PRESS A TO START". Depress A.</p> | (M) | = | 3 | Characters | (N) | = | 2 | Characters | (P) | = | 2 | Characters | Text | = | 9 | Characters | (M) | = | 3 | Characters | <hr/> | | | | Total = | | 19 | | <p>921A Data Test Set Display reads Hex code for Option (P). See Table.</p> | | <p>43 5-Level BSC LINE ACTIVE key lights for approximately 10 seconds. The characters ABCDEFGH print out.</p> |
| (M) | = | 3 | Characters | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (N) | = | 2 | Characters | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (P) | = | 2 | Characters | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Text | = | 9 | Characters | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (M) | = | 3 | Characters | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <hr/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total = | | 19 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | <p><i>Note 1:</i> If necessary to test primary addresses other than PAddr1, substitute the desired address Hex code for Option (N) above and perform above test.</p> <p><i>Note 2:</i> If terminal is optioned as an auxiliary terminal (Option (M) = Hex 79), the terminal requires no select code and will copy all text sent to it.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

CHART 5 (Contd)

COMPREHENSIVE ON-LINE CHECKOUT USING 921A DATA TEST SET EITHER LOCALLY OR FROM TEST CENTER

| STEP | ACTION REQUIRED AT TEST CENTER | RESPONSE AT TEST CENTER | ACTION REQUIRED AT STATION (UUT) | RESPONSE AT STATION (UUT) |
|--|---|---|---|--|
| <p>2 POLL 43 5-Level BSC and receive a message from it.</p> <p>Skip this step for sets Optioned yes for Option (13) or (14).</p> | <p>921A Data Test Set Depress D twice. Display reads "1= PROGRAMMABLE 2=STANDARD MSG". Depress 1. Display reads "SELECT 0001 TO 0255 CHARACTERS" followed by "???? CHARACTERS IN MESSAGE". Depress 000* (*=The sum of the number of characters (not Hex codes) for Options (54) and (40)).</p> <p>Display reads "00:?????" etc. Refer to the Table and enter the Hex values in the following sequence for Options (54) and (40).</p> <p>Display reads "A TO CONTINUE OR ← TO EDT TRMT". Depress A. Display reads "SELECT 0000 TO 0020 TRAP CHAR" followed by "???? TRAP CHARACTERS". Depress 0000. Display reads "NO TRAP CHARACTERS ARE ENTERED" followed by "PRESS A TO START". Depress A.</p> | <p>921A Data Test Set Display reads "E3 F9 EE E9 E1 ED" plus Hex code for Option (62).</p> <p>See Table.</p> <p><i>Note:</i> May be preceded by characters from Option (62) and followed by characters from Option (44).</p> | <p>43 5-Level BSC</p> <p>Depress  key.</p> | <p>Key lights. PRINT REC MSG light goes out.</p> |
| | | | <p>Depress  key several times, if necessary, until bell rings.</p> | <p>Bell rings.</p> |
| | | | <p>Type ABCDEF then enter deselect sequence Option (62). Depress the STORE key.</p> | <p>ABCDEF prints then SND RDY key lights.</p> |
| | | | <p>Depress  key if not lit.</p> | <p>Key lights. BUFFER ENTER goes out.</p> |
| | | | <p>Depress  key if not lit.</p> | <p>Key lights.</p> |
| <p>43 5-Level BSC Prints ABCDEF.</p> <p><i>Note:</i> May be preceded by characters from Option (62) and followed by characters from Option (44).</p> | | | | |

CHART 5 (Contd)

COMPREHENSIVE ON-LINE CHECKOUT USING 921A DATA TEST SET EITHER LOCALLY OR FROM TEST CENTER

| STEP | ACTION REQUIRED AT TEST CENTER | RESPONSE AT TEST CENTER | ACTION REQUIRED AT STATION (UUT) | RESPONSE AT STATION (UUT) |
|--|---|--|--|--|
| <p>3 SELECT Aux Device, if present, and send it a message.</p> | <p><u>921A Data Test Set</u> Depress D twice. Display reads "1-PROGRAMMABLE 2-STANDARD MSG". Depress 1. Display reads "SELECT 0001 TO 0255 CHARACTERS" followed by "???? CHARACTERS IN MESSAGE".</p> <p>Depress 00***(***)=The sum of the number of characters (not Hex codes) for Option (64), (64), (67) plus 9 for test characters plus Option (64) again).</p> <p>Example:</p> <p>(64) = 3 Characters (64) = 2 Characters (67) = 2 Characters Text = 9 Characters (64) = 3 Characters</p> <p>Total = 19</p> <p>Enter 0019</p> <p>Display reads "00:???" etc. Refer to the Table and enter the Hex values in the following sequence for Options (64), (64), (67). Enter the following Hex values: EA, F5, EA, F5, EA, F5, EA, F5, EA. Enter the Hex value for Option (64).</p> <p>Display then reads "A TO CONTINUE OR— TO EDIT TRMT". Depress A. Display reads "SELECT 0000 TO 0020 TRAP CHAR" followed by "???? TRAP CHARACTERS". Depress 0000. Display reads "NO TRAP CHARACTERS ARE ENTERED" followed by "PRESS A TO START". Depress A.</p> <p><u>921A Test Set</u> Display reads Hex code for Option (72). See Table.</p> <p><i>Note:</i> If necessary to test auxiliary addresses other than AAddr1, substitute the desired address Hex code for Option (64) above and perform above test.</p> | <p><u>921A Test Set</u> Display reads Hex code for Option (72). See Table.</p> | <p><u>43 5-Level BSC</u> Place Aux device in a ready to receive mode.</p> <p>Depress  key if not lit.</p> | <p> Key lights.</p> <p><u>43 5-Level BSC</u> <u>LINE ACTIVE</u> key lights for approximately 10 seconds.</p> <p><u>Aux Device</u> Prints or punches RYRYRYR.</p> |

CHART 6

COMPREHENSIVE ON-LINE CHECKOUT WITH TEST CENTER
USING 28-TYPE KSR OR EQUIVALENT

| STEP | ACTION REQUIRED AT TEST CENTER | RESPONSE AT TEST CENTER | ACTION REQUIRED AT STATION (UUT) | RESPONSE AT STATION (UUT) |
|--|--|---|---|---|
| <p>1 SELECT 43 5-Level BSC and send it a message.</p> | <p>Send the appropriate characters for Options (2), (3), (7) followed by "ABCDEFGH" followed by Option (4).</p> <p><i>Note 1: If necessary to test primary addresses other than PAddr1, substitute the desired address characters for Option (3) above and perform above test.</i></p> <p><i>Note 2: If terminal is optioned as an auxiliary terminal (Option (4) = Hex 79), the terminal requires no select code and will copy all text sent to it.</i></p> | <p>Test Center Receives Option (7) characters.</p> | | <p>43 5-Level BSC LINE ACTIVE key lights for approximately 10 seconds. The characters ABCDEFGH print out.</p> |
| <p>2 POLL 43 5-Level BSC and receive a message from it.</p> <p>Skip this step for sets Optioned yes for Option (13) or (14).</p> | <p>Send the appropriate characters for Options (5) and (6).</p> | <p>Test Center Receives ABCDEF.</p> <p><i>Note: May be preceded by characters from Option (8) and followed by characters from Option (4).</i></p> | <p>43 5-Level BSC</p> <p>Depress  key.</p> <p>Depress  key several times, if necessary, until bell rings.</p> <p>Type ABCDEF then enter deselect sequence Option (9). Depress the STORE key.</p> <p>Depress  key if not lit.</p> <p>Depress  key if not lit.</p> | <p>Key lights. PRINT REC MSG light goes out.</p> <p>Bell rings.</p> <p>ABCDEF prints then SND RDY key lights.</p> <p>Key lights. BUFFER ENTER goes out.</p> <p>Key lights.</p> <p>43 5-Level BSC Prints ABCDEF.</p> <p><i>Note: May be preceded by characters from Option (8) and followed by characters from Option (4).</i></p> |

CHART 6 (Contd)

COMPREHENSIVE ON-LINE CHECKOUT WITH TEST CENTER
USING 28-TYPE KSR OR EQUIVALENT

| STEP | ACTION REQUIRED AT TEST CENTER | RESPONSE AT TEST CENTER | ACTION REQUIRED AT STATION (UUT) | RESPONSE AT STATION (UUT) |
|--|---|---|---|--|
| <p>3 SELECT Aux Device, if present, and send it a message.</p> | <p>Send the appropriate characters for Options (64), (64), (62) followed by "RYRYRYRY" followed by Option (64).</p> | <p>Test Center Receives Option (72) characters.</p> | <p>43 5-Level BSC Place Aux device in a ready to receive mode. Depress  key if not lit.</p> | <p> Key lights.</p> <p>43 5-Level BSC LINE ACTIVE key lights for approxi- mately 10 seconds.</p> <p>Aux Device Prints or punches RYRYRYRY.</p> |
| <p>Note: If necessary to test auxiliary addresses other than AAddr1, substitute the desired address characters for Option (64) above and perform above test.</p> | | | | |

4. OPTION MAP WORKSHEET

When printed out in columns of 10 these are line numbers.

| | | | | | |
|----|--------------------------------|----------------------------|--------------------------------|----------------------------|-----------------------------|
| 1 | LinSpd 50 Baud (1) | AuxSpd (Nothing) (2) | | | Trans_ Async (3) |
| 2 | System Yes (4) | P2Rply No (5) | P3Rply No (6) | P4Rply No (7) | A2Rply No (8) |
| 3 | A3Rply No (9) | A4Rply No (10) | PChBfs No (11) | AChBfs No (12) | BROSta No (13) |
| 4 | AuxTrm No (14) | AxApnd No (15) | Ax42RT No (16) | CpySnt No (17) | DelErr No (18) |
| 5 | Ptr_NL No (19) | Dbl_LF No (20) | AudAlm No (21) | Conten No (22) | SndBrk No (23) |
| 6 | CpyRes No (24) | BlFigJ Yes (25) | LfBdry Column 0 (26) | RtBdry Column 10 (27) | SumLgt 16 Positions (28) |
| 7 | PRevSz 1024 Positions (29) | | ARcvSz 0 Positions (30) | | PRevLw 0 Positions |
| 8 | PRevLw 0 Positions (31) | ARcvLw 0 Positions (32) | | EditLw 0 Positions (33) | |
| 9 | CTSDly 16 Milliseconds (34) | | RTSDly 0 Seconds (35) | | IdleLn 1 Second |
| 10 | IdleLn 1 Second (36) | FormLg 0 Lines (37) | LrgKey Carriage Return (38) | | |

Legend

| | |
|---------------|---------------------------------|
| Option Name | |
| Default Value | (Factory Furnished Value) |
| Default Entry | |

MAP ORDER NUMBER

When printed out in columns of 10 these are line numbers.

| | | | | |
|----|---------------------|----|---------------------|----|
| 11 | SmlKey Line Feed | 39 | StSend (Nothing) | 40 |
| 12 | Resend (Nothing) | | | 41 |
| 13 | FmOut1 (Nothing) | 42 | FmOut2 (Nothing) | |
| 14 | FmOut2 (Nothing) | 43 | Append (Nothing) | |
| 15 | Append (Nothing) | | | |
| 16 | Append (Nothing) | 44 | Store1 (Nothing) | 45 |
| 17 | Store2 (Nothing) | 46 | ReRcv1 (Nothing) | |
| 18 | ReRcv1 (Nothing) | 47 | ReRcv2 (Nothing) | |
| 19 | ReRcv2 (Nothing) | 48 | Poll__ (Nothing) | |
| 20 | Poll__ (Nothing) | 49 | NT_Rdy (Nothing) | 50 |
| | | | NTNRdy (Nothing) | 51 |

Legend

| | |
|---------------|---------------------------------|
| Option Name | |
| Default Value | (Factory Furnished Value) |
| Default Entry | |

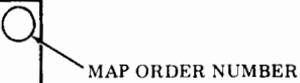
MAP ORDER NUMBER

4. OPTION MAP WORKSHEET (Contd)

When printed out in columns of 10 these are line numbers.

| | | | |
|----|------------------------------|----|-------------------------|
| 21 | SSDsl_ (Nothing) | 52 | RSDsl_ (Nothing) |
| 22 | RSDsl_ (Nothing) | 53 | RRDsl_ (Dummy Value) |
| 23 | RRDsl_ For Searching Only | 54 | RBf_On (Nothing) |
| 24 | RBf_On (Nothing) | 55 | RBfOff (Nothing) |
| 25 | Start1 (Nothing) | 57 | Start2 (Nothing) |
| 26 | Start2 (Nothing) | 58 | SSInt_ (Nothing) |
| 27 | SSInt_ (Nothing) | 59 | RRInt_ (Nothing) |
| 28 | RRInt_ (Nothing) | 60 | RSInt_ (Nothing) |
| 29 | 1stSnt (Nothing) | | |
| 30 | 1stSnt | | |

Legend

| | | |
|---------------|---------------------------------|---|
| Option Name | |  |
| Default Value | (Factory Furnished Value) | |
| Default Entry | | |

When printed out in columns of 10 these are line numbers.

| | | | |
|----|---------------------|----|--|
| 31 | 1stSnt | 62 | PAddr1 (Nothing) |
| 32 | PAddr1 (Nothing) | 63 | AAddr1 (Nothing) |
| 33 | PAddr2 (Nothing) | | 65 |
| 34 | AAddr2 (Nothing) | 66 | PAddr3 (Nothing) |
| 35 | PAddr3 (Nothing) | 67 | AAddr3 (Nothing) |
| 36 | AAddr3 (Nothing) | 68 | PAddr4 (Dummy Value For Searching Only) |
| 37 | AAddr4 (Nothing) | | 70 |
| 38 | P*_Rdy (Nothing) | 71 | A*_Rdy (Nothing) |
| 39 | ACBRdy (Nothing) | 74 | P_NRdy (Nothing) |
| 40 | A_NRdy (Nothing) | 76 | PNNRdy (Nothing) |
| | | 77 | ANNRdy (Nothing) |
| | | 73 | PCBRdy (Nothing) |
| | | 72 | A*_Rdy (Nothing) |
| | | 75 | A_NRdy (Nothing) |
| | | 78 | ANNRdy (Nothing) |

Legend

| | | |
|---------------|---|------------------|
| Option Name |  | MAP ORDER NUMBER |
| Default Value | (Factory Furnished Value) | |
| Default Entry | | |

43 TELEPRINTER

DISASSEMBLY/REASSEMBLY

| CONTENTS | PAGE | | | | | | | | | | | | | | | | | | | | | | | |
|--|-----------|--|------|-----------|------------------------------------|------|------------------------------|------|-----------------------------|------|---------------------------------|------|--------------------------|------|------------------------------|------|------------------------------|------|-----------------------------|------|-----------|------|------------|------|
| 1. GENERAL | 1 | 1.02 This section is reissued to include disassembly and reassembly procedures for the 5-level teleprinter and the tractor for 5- and 8-level teleprinter. | | | | | | | | | | | | | | | | | | | | | | |
| 2. TOOLS REQUIRED | 2 | | | | | | | | | | | | | | | | | | | | | | | |
| 3. DISASSEMBLY/REASSEMBLY. | 3 | 1.03 Disassembly and reassembly information for additional enclosures and paper handling parts is provided in the following paragraphs: | | | | | | | | | | | | | | | | | | | | | | |
| 153A1 TERMINAL DATA UNIT (TDU), 861B1 TERMINAL AUXILIARY UNIT (TAU), 410755 TERMINAL AUXILIARY UNIT (TAU1) AND 411901 CARD, ASSEMBLY | 3 | <table border="0" style="width: 100%;"> <thead> <tr> <th style="text-align: left;">Part</th> <th style="text-align: left;">Paragraph</th> </tr> </thead> <tbody> <tr> <td>Bustle Cover (Sprocket (Pin) Feed)</td> <td>3.01</td> </tr> <tr> <td>Bustle Cover (Friction Feed)</td> <td>3.01</td> </tr> <tr> <td>Bustle Cover (Tractor Feed)</td> <td>3.01</td> </tr> <tr> <td>Deflector (Sprocket (Pin) Feed)</td> <td>3.01</td> </tr> <tr> <td>Deflector (Tractor Feed)</td> <td>3.01</td> </tr> <tr> <td>Paper Holder (Sprocket Feed)</td> <td>3.01</td> </tr> <tr> <td>Paper Holder (Friction Feed)</td> <td>3.01</td> </tr> <tr> <td>Paper Holder (Tractor Feed)</td> <td>3.01</td> </tr> <tr> <td>Set Cover</td> <td>3.04</td> </tr> <tr> <td>Rear Frame</td> <td>3.06</td> </tr> </tbody> </table> | Part | Paragraph | Bustle Cover (Sprocket (Pin) Feed) | 3.01 | Bustle Cover (Friction Feed) | 3.01 | Bustle Cover (Tractor Feed) | 3.01 | Deflector (Sprocket (Pin) Feed) | 3.01 | Deflector (Tractor Feed) | 3.01 | Paper Holder (Sprocket Feed) | 3.01 | Paper Holder (Friction Feed) | 3.01 | Paper Holder (Tractor Feed) | 3.01 | Set Cover | 3.04 | Rear Frame | 3.06 |
| Part | Paragraph | | | | | | | | | | | | | | | | | | | | | | | |
| Bustle Cover (Sprocket (Pin) Feed) | 3.01 | | | | | | | | | | | | | | | | | | | | | | | |
| Bustle Cover (Friction Feed) | 3.01 | | | | | | | | | | | | | | | | | | | | | | | |
| Bustle Cover (Tractor Feed) | 3.01 | | | | | | | | | | | | | | | | | | | | | | | |
| Deflector (Sprocket (Pin) Feed) | 3.01 | | | | | | | | | | | | | | | | | | | | | | | |
| Deflector (Tractor Feed) | 3.01 | | | | | | | | | | | | | | | | | | | | | | | |
| Paper Holder (Sprocket Feed) | 3.01 | | | | | | | | | | | | | | | | | | | | | | | |
| Paper Holder (Friction Feed) | 3.01 | | | | | | | | | | | | | | | | | | | | | | | |
| Paper Holder (Tractor Feed) | 3.01 | | | | | | | | | | | | | | | | | | | | | | | |
| Set Cover | 3.04 | | | | | | | | | | | | | | | | | | | | | | | |
| Rear Frame | 3.06 | | | | | | | | | | | | | | | | | | | | | | | |
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| 120139 POWER SUPPLY FUSE | 6 | | | | | | | | | | | | | | | | | | | | | | | |
| 43 KEYBOARDS | 7 | 1.04 The procedures provided in this section break the terminal down into subcomponents. The appropriate parts section illustrates the arrangement of subcomponents and parts — Section 574-500-800, 43 Teleprinter 5- and 8-Level, Parts, and Section 574-503-800, 43 Enclosures and Paper Handling Parts. | | | | | | | | | | | | | | | | | | | | | | |
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| LOGIC CARD. | 9 | | | | | | | | | | | | | | | | | | | | | | | |
| PRINTER | 10 | <i>Caution: Remove all power from the set before performing any component replacement.</i> | | | | | | | | | | | | | | | | | | | | | | |
| A. Removal | 10 | | | | | | | | | | | | | | | | | | | | | | | |
| B. Replacement. | 13 | 1.05 When removing a major component or part from the terminal, do not pry or force parts to provide the necessary clearance for removal. Follow the removal procedure and note how each part is removed and the sequence of its removal so that proper reassembly can be accomplished. For reassembly, reverse the removal procedure except where different instructions are given. | | | | | | | | | | | | | | | | | | | | | | |
| 430850 PRINT HEAD | 14 | | | | | | | | | | | | | | | | | | | | | | | |
| A. Removal | 14 | | | | | | | | | | | | | | | | | | | | | | | |
| B. Replacement. | 15 | | | | | | | | | | | | | | | | | | | | | | | |
| 1. GENERAL | | 1.06 Reference in the procedures to left and right and up or down and top or bottom, etc, refer to the 43 terminal in its normal operating position. | | | | | | | | | | | | | | | | | | | | | | |
| 1.01 This section provides disassembly and reassembly procedures for the 43 Teleprinters and their major components. | | | | | | | | | | | | | | | | | | | | | | | | |

SECTION 574-500-720

1.07 Refer to Maintenance Tools, Section 574-005-800 for a complete listing of the various types of hand tools available for maintenance of Teletype Corporation equipment. For a listing of the tools required to perform the disassembly and reassembly procedures, refer to 2. TOOLS REQUIRED.

1.08 When ordering replaceable components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410205).

1.09 Some parts that are not listed in the parts sections are shown as necessary to the disassembly procedures such as screws, ring retainers, etc. Most of these parts are common to other Teletype Corporation product lines and, if needed, may already be available in field repair kits or can be ordered.

1.10 The keyboard circuitry can be damaged by static discharge. The 346392 static discharge ground strap is available for use by service personnel. Maintenance spares are provided in antistatic bags which should be saved for reuse when returning components for repair.

1.11 Containers and packing materials retained from maintenance spares should be saved and reused when returning defective components for repair.

1.12 Adjustment information is provided in Section 574-501-700, 43 Friction Feed and Sprocket Feed Printer Adjustment and Spring Tension, Section 574-501-701, 43 Tractor Feed Printer Adjustment and Spring Tension and Section 574-503-700, 43 Enclosures and Paper Handling Adjustments.

2. TOOLS REQUIRED

2.01 The following tools may be required when performing the station disassembly and reassembly procedures. Most of these items should normally be present in standard maintenance tool kits.

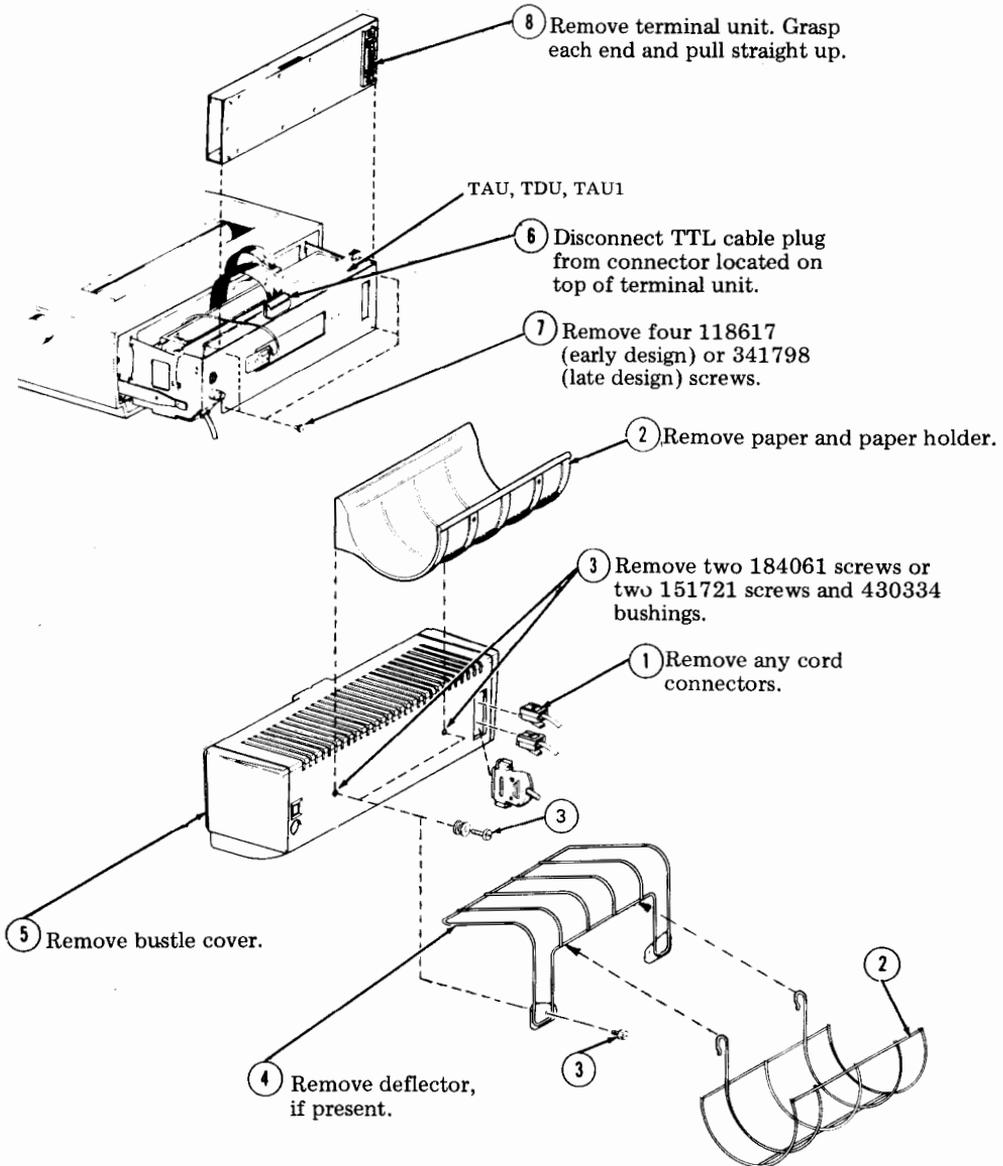
| Part No. | Tools |
|----------|---|
| 129534 | Wrench, Open End, 3/16 Inch and 1/4 Inch |
| 135676 | Handle |
| 135677 | Bit, 1/4 Inch Socket |
| 135678 | Bit, 5/16 Inch Socket |
| 95368 | Screwdriver, 1/8 Inch, 2 Inch Blade |
| 100982 | Screwdriver w/clip 1/4 Inch, 6 Inch Blade |
| 346392 | Strap, Static Discharge |
| 407326 | Extractor, I.C. |

3. DISASSEMBLY/REASSEMBLY

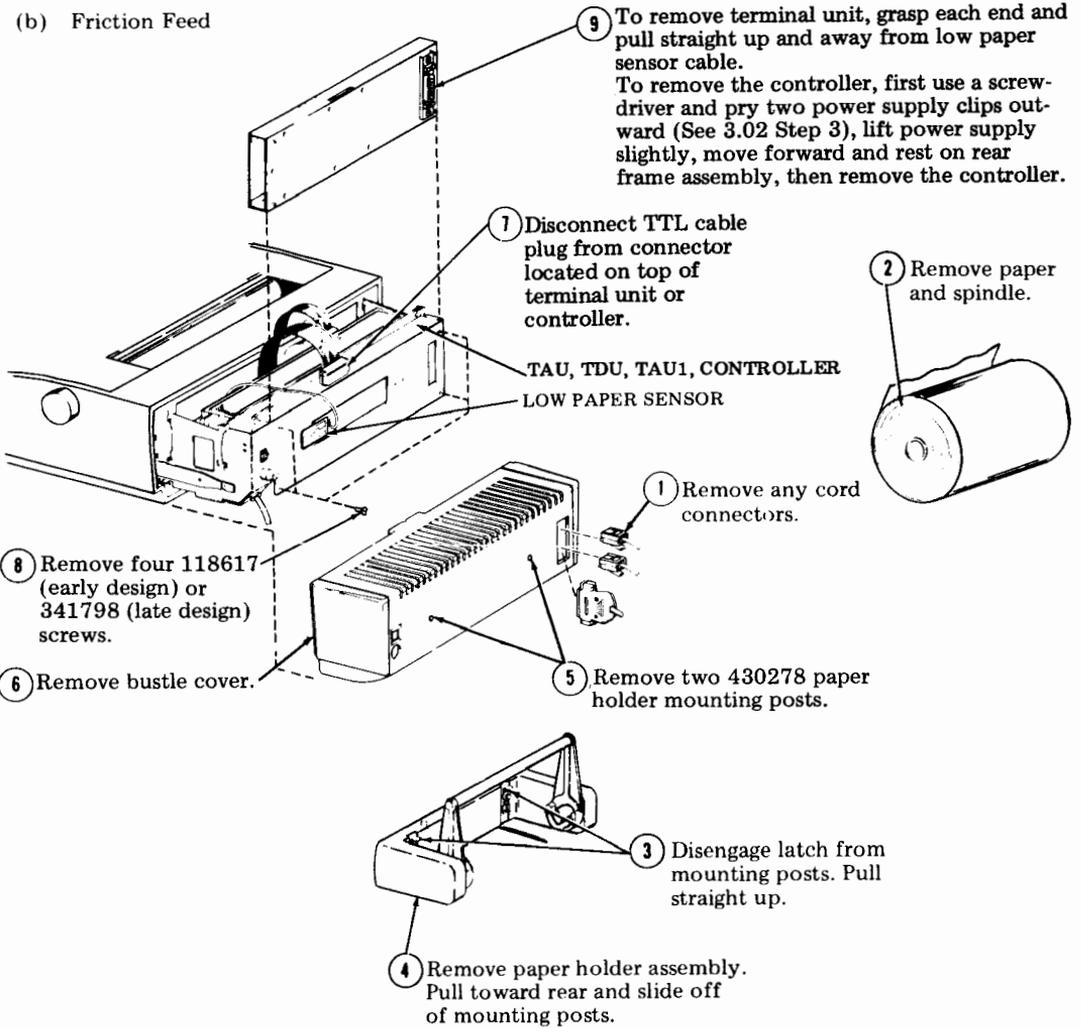
153A1 TERMINAL DATA UNIT (TDU), 861B1 TERMINAL AUXILIARY UNIT (TAU), 410755 TERMINAL AUXILIARY UNIT (TAU1) AND 411901 CONTROLLER CARD ASSEMBLY

3.01 To remove the terminal unit:

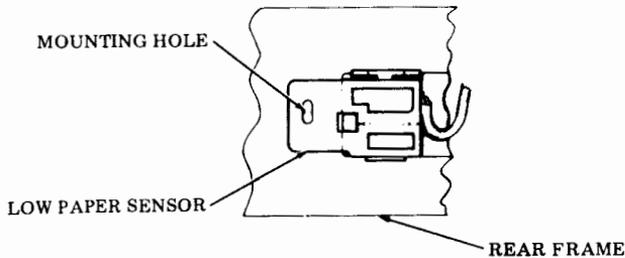
(a) Sprocket Feed



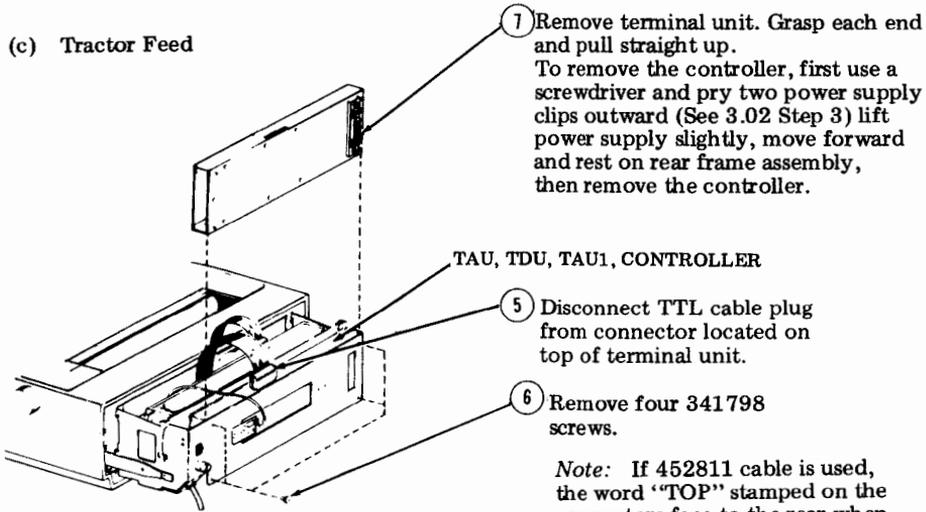
(b) Friction Feed



Note: In reassembly, align low paper sensor mounting hole with mounting hole in rear frame.



(c) Tractor Feed



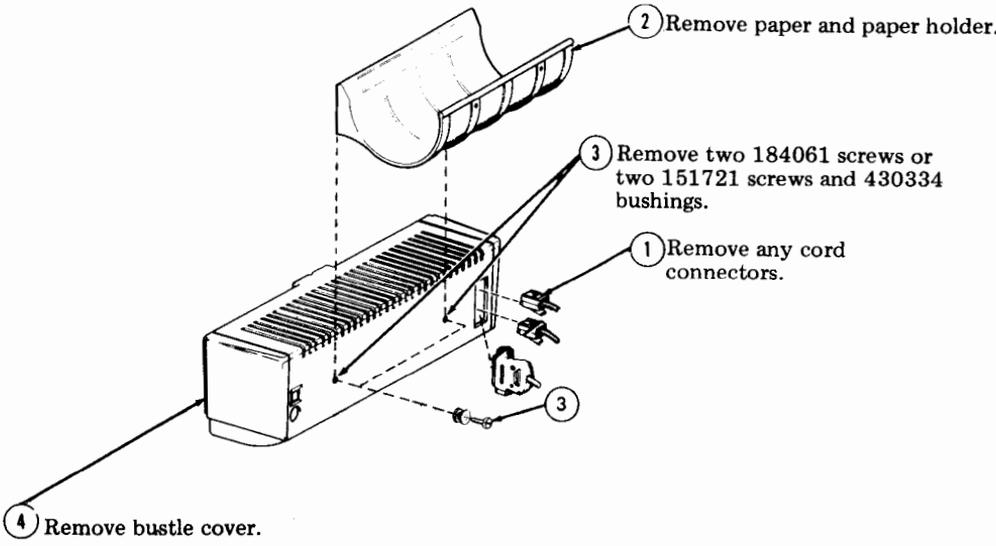
7 Remove terminal unit. Grasp each end and pull straight up.
To remove the controller, first use a screwdriver and pry two power supply clips outward (See 3.02 Step 3) lift power supply slightly, move forward and rest on rear frame assembly, then remove the controller.

TAU, TDU, TAU1, CONTROLLER

5 Disconnect TTL cable plug from connector located on top of terminal unit.

6 Remove four 341798 screws.

Note: If 452811 cable is used, the word "TOP" stamped on the connectors face to the rear when properly connected.



2 Remove paper and paper holder.

3 Remove two 184061 screws or two 151721 screws and 430334 bushings.

1 Remove any cord connectors.

4 Remove bustle cover.

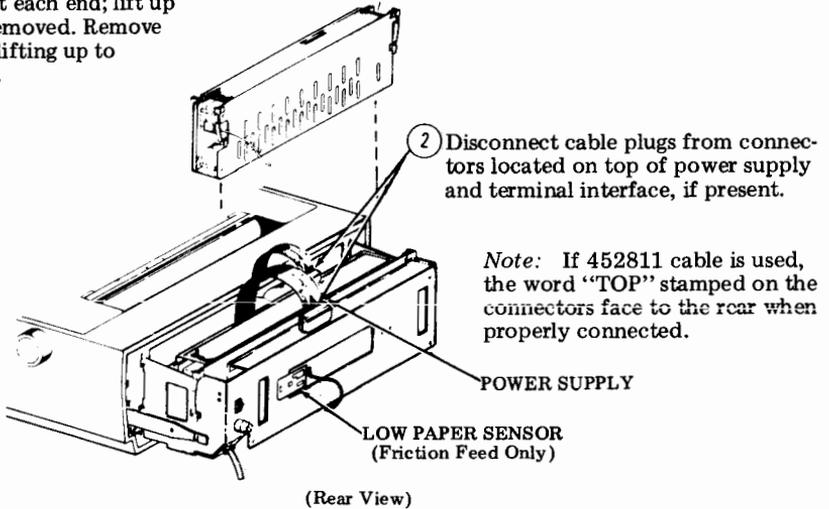
SECTION 574-500-720

430700 or 430780 POWER SUPPLY

3.02 To remove power supply:

- ① For Sprocket Feed: Remove paper holder, deflector, if present, and bustle cover. Perform 3.01 Steps 1 through 5.
- For Friction Feed: Remove paper holder and bustle cover. Perform 3.01, Steps 1 through 6.
- For Tractor Feed: Remove Paper holder and bustle cover. Perform 3.01, Steps 1 through 4.

- ④ Grasp power supply at each end; lift up until ac plug can be removed. Remove ac plug and continue lifting up to remove power supply.

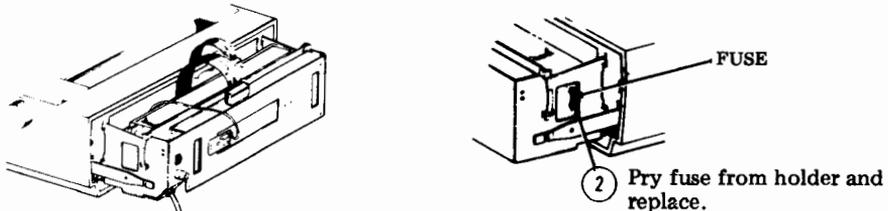


- ③ Use screwdriver and pry two clips (left and right) outward.-

120139 POWER SUPPLY FUSE

3.03 To remove the power supply fuse:

- ① For Sprocket Feed: Remove paper holder, deflector and bustle cover. Perform 3.01, steps 1 through 5.
- For Friction Feed: Remove paper holder and bustle cover. Perform 3.01, Steps 1 through 6.
- For Tractor Feed: Remove paper holder and bustle cover. Perform 3.01, Steps 1 through 4.



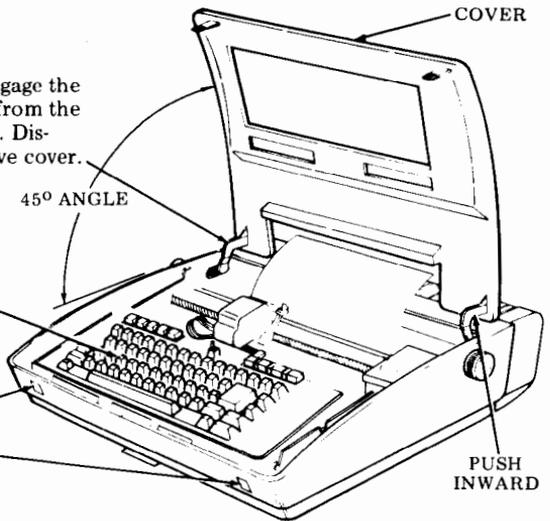
43 KEYBOARDS

3.04 To remove the keyboard:

- ② If cover is being removed, disengage the button end of one of the arms from the dovetail slot by pushing inward. Disengage the other side and remove cover.

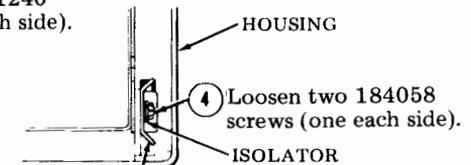
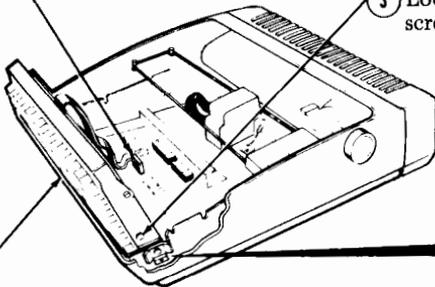
Character keys and some control keys are not present on RO keyboards.

- ① Depress locking tabs (part of cover) to release and lift cover. If cover is being removed, open to 45 degree angle and hold, otherwise open fully to rear.



- ⑥ Disconnect keyboard cable plug from logic card.

- ③ Loosen two 181240 screws (one each side).

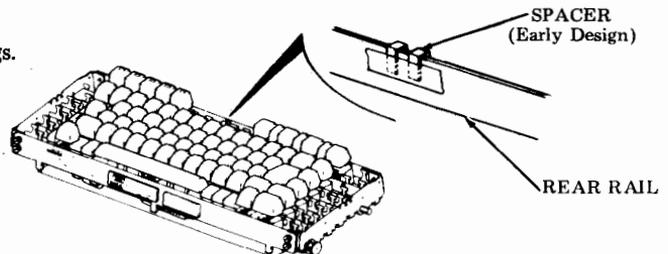


(Top View)

- ⑦ Tilt top of clamps outward, releasing front isolators connected to the keyboard.

- ⑤ Lift rear edge of keyboard and pivot it forward on front mounting bushings.

- ⑧ Move lower edge of keyboard rearward until isolators are free. Remove keyboard.



Note 1: In reassembly, perform the KEYBOARD TO COVER ALIGNMENT adjustment.

Note 2: When replacing the cover or indicator scale, perform the COLUMN INDICATOR POSITIONING adjustment.

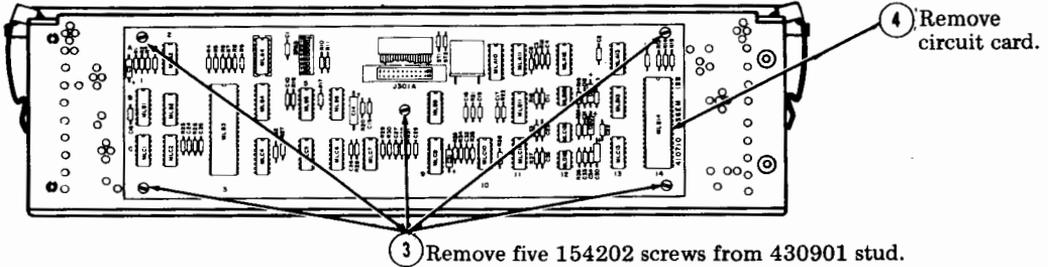
Note 3: Loose keyboards are shipped with 181240 screws and 346397 isolators furnished in a loose envelope. These parts must be assembled to the keyboard before installing into the printer side frames.

SECTION 574-500-720

410710 ANSWER-BACK CARD

3.05 To remove the answer-back card:

- ① Remove power supply. Perform 3.02.
- ② Remove logic card TTL cable.

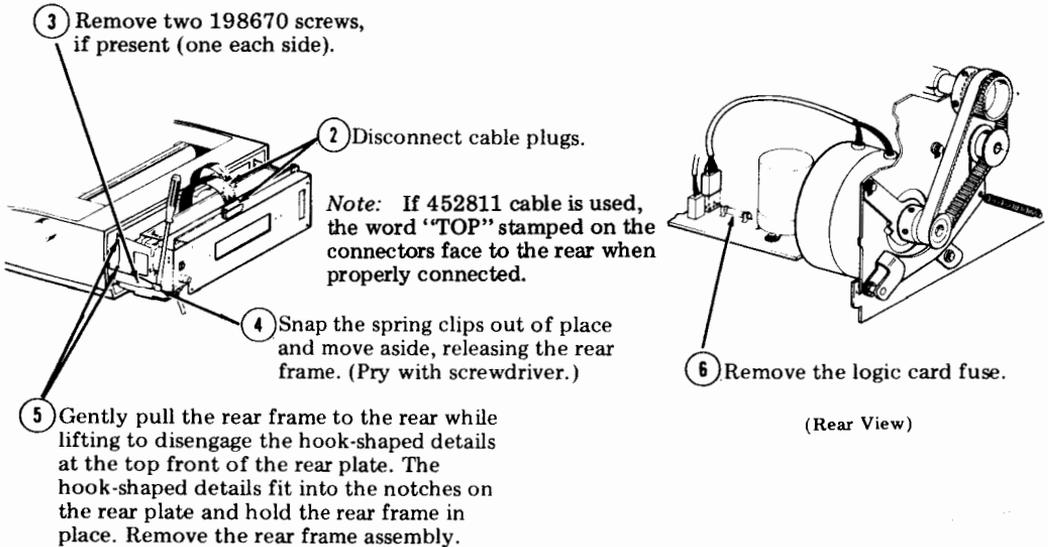


③ Remove five 154202 screws from 430901 stud.

143307 LOGIC CARD FUSE

3.06 To remove the logic card fuse:

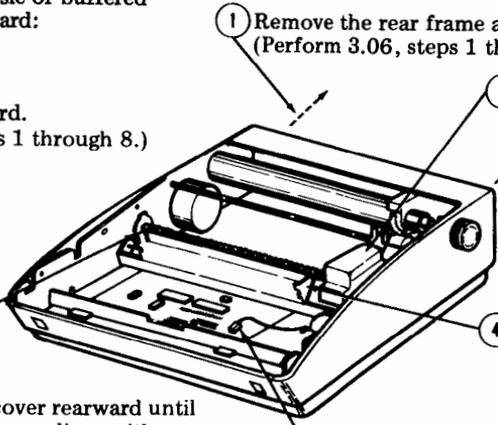
- ① For Sprocket Feed: Remove paper holder, deflector and bustle cover. Perform 3.01, Steps 1 through 5.
For Friction Feed: Remove paper holder and bustle cover. Perform 3.01, Steps 1 through 6.
For Tractor Feed: Remove paper holder and bustle cover. Perform 3.01, Steps 1 through 4.



LOGIC CARD

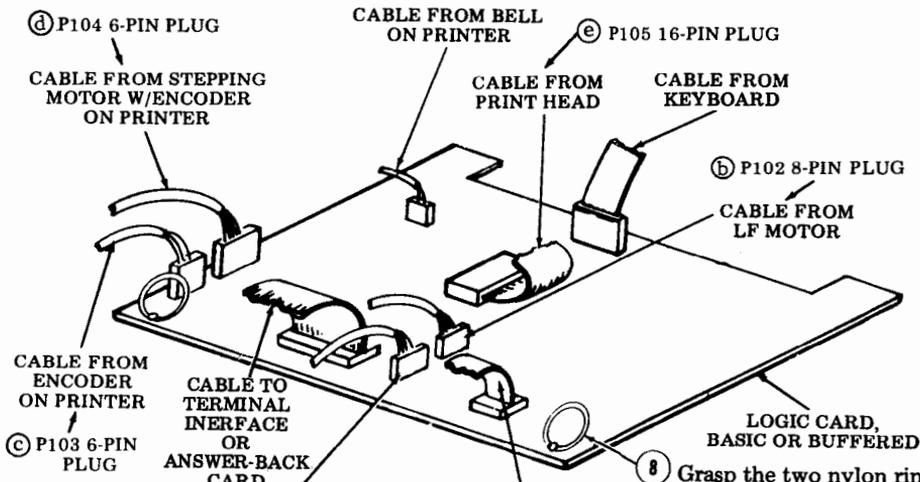
3.07 To remove the basic or buffered teleprinter logic card:

- 1 Remove the rear frame assembly. (Perform 3.06, steps 1 through 5.)
- 2 Remove the keyboard. (Perform 3.04, steps 1 through 8.)
- 3 Move print head and carriage fully to the right.
- 4 Grasp each end of the logic card front cover and push outward on the sides until the locking tabs are free of the logic card.
- 5 Slowly rotate cover rearward until extension on cover aligns with locking hole in side frame. Apply slight leftward pressure until the extension engages the hole in the side frame, locking the cover into position.
- 6 Disconnect bell cable from logic card.



7 Disconnect the following plugs located on the logic card:

- a P101 6-PIN PLUG
- b P102 8-PIN PLUG
- c P103 6-PIN PLUG
- d P104 6-PIN PLUG
- e P105 16-PIN PLUG



8 Grasp the two nylon rings at rear of logic card and pull up until card is released from the two 430625 circuit board supports. Slowly pull logic card rearward until it clears the printer assembly. Push down in middle of logic card, if components touch front cover.

(Rear View)

PRINTER

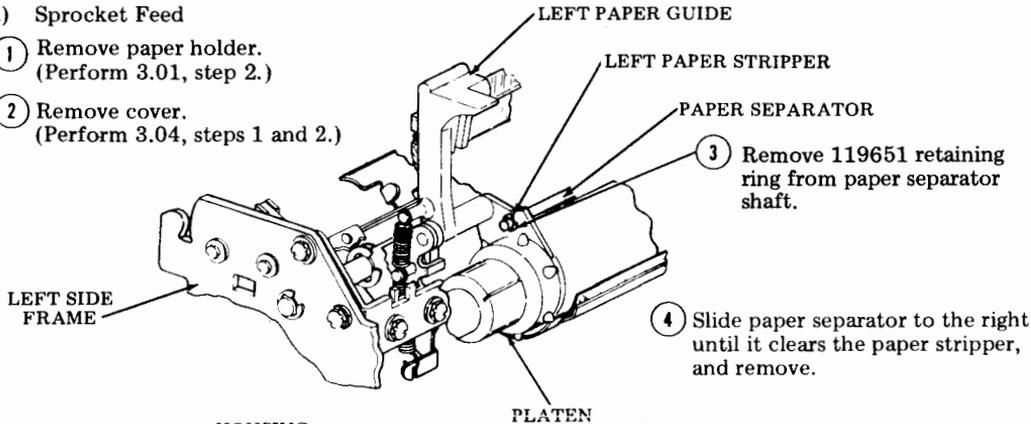
A. Removal

3.08 To remove the printer:

(a) Sprocket Feed

① Remove paper holder.
(Perform 3.01, step 2.)

② Remove cover.
(Perform 3.04, steps 1 and 2.)

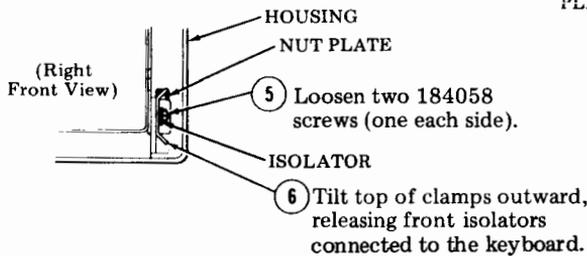


③ Remove 119651 retaining ring from paper separator shaft.

④ Slide paper separator to the right until it clears the paper stripper, and remove.

⑨ Remove the rear frame assembly.
(Perform 3.06, steps 1 through 5.)

⑩ Remove the keyboard.
(Perform 3.04, steps 3, 5, 6 and 8.)

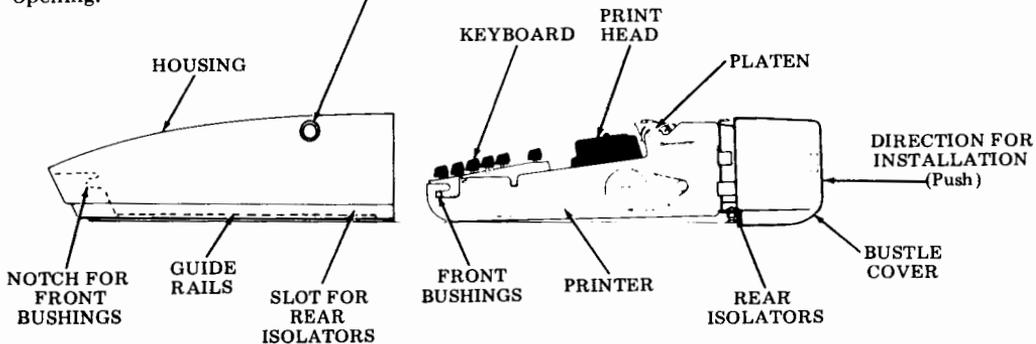


⑤ Loosen two 184058 screws (one each side).

⑥ Tilt top of clamps outward, releasing front isolators connected to the keyboard.

⑧ Grasp the bustle cover and slide the printer and rear frame assembly from the housing through the rear opening.

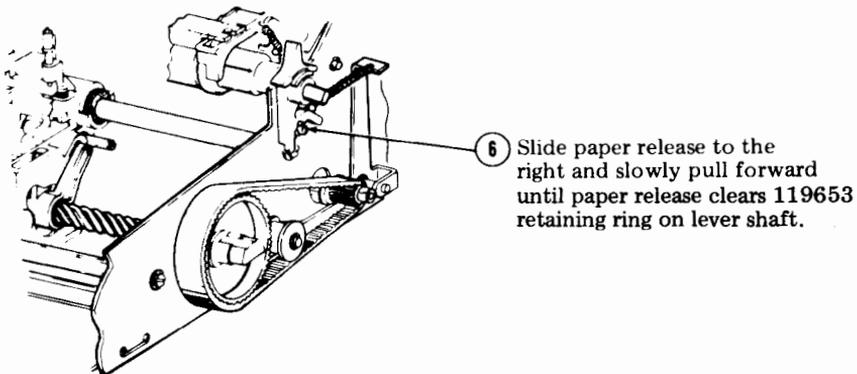
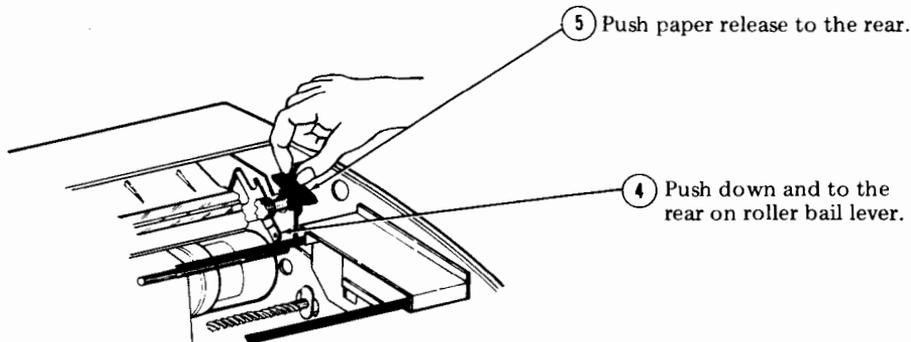
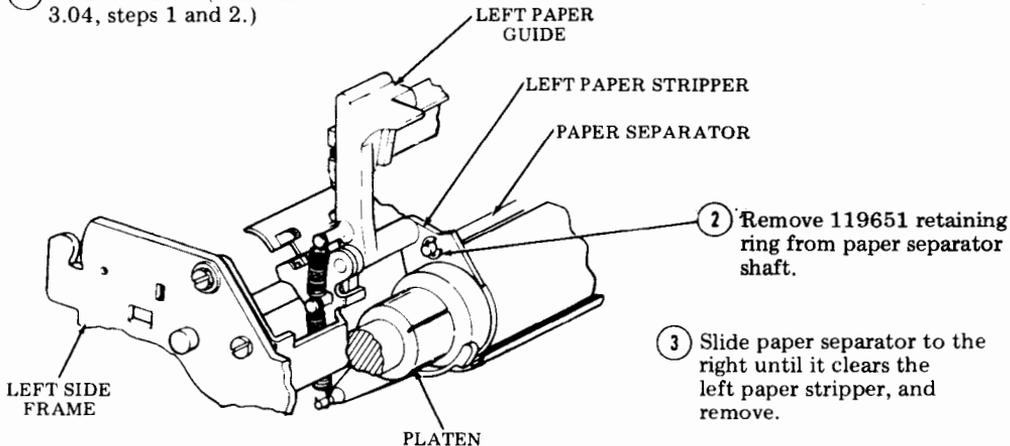
⑦ Remove the left and right platen knobs by pulling straight outward.

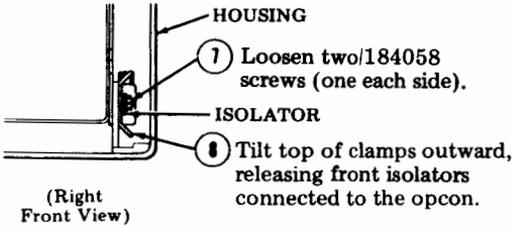


Note: To replace the printer, perform 3.09.

(b) Friction Feed

- ① Remove cover. (Perform 3.04, steps 1 and 2.)

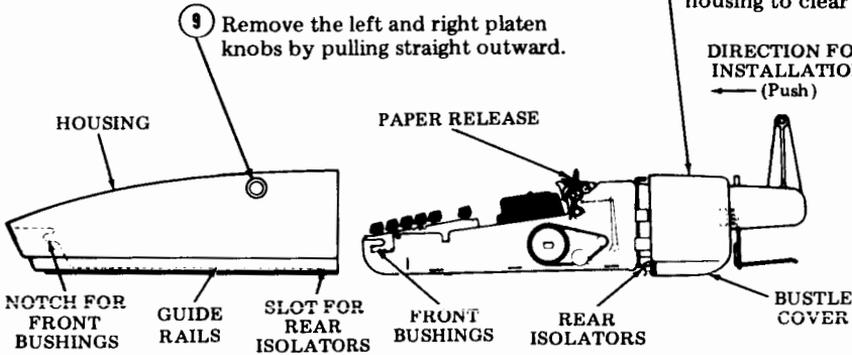




⑦ Loosen two/184058 screws (one each side).
 ⑧ Tilt top of clamps outward, releasing front isolators connected to the opcon.

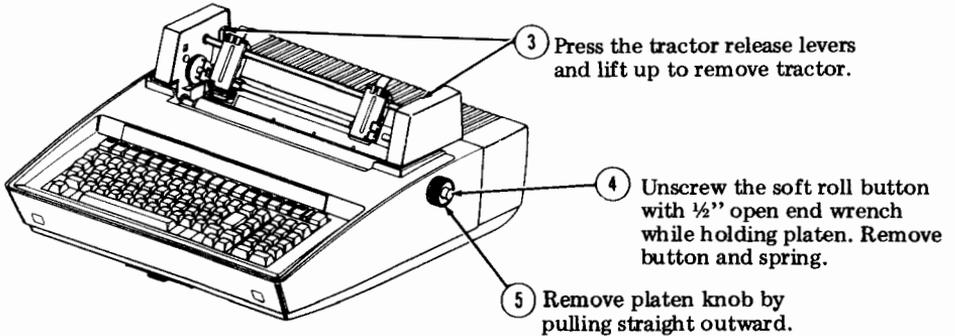
⑩ Grasp the bustle cover and slide the printer and rear frame assembly from housing through the rear opening. Rotate the paper release to allow the housing to clear properly.

DIRECTION FOR INSTALLATION
 ← (Push)



(c) Tractor Feed

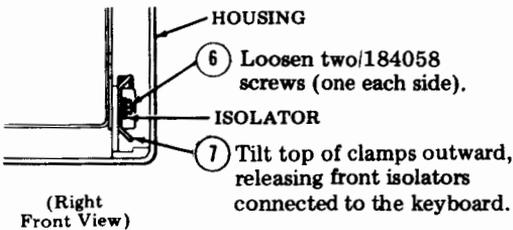
- ① Remove paper holder. (Perform 3.01, Step 2)
- ② Remove cover. (Perform 3.04, Steps 1 and 2)



③ Press the tractor release levers and lift up to remove tractor.

④ Unscrew the soft roll button with 1/2" open end wrench while holding platen. Remove button and spring.

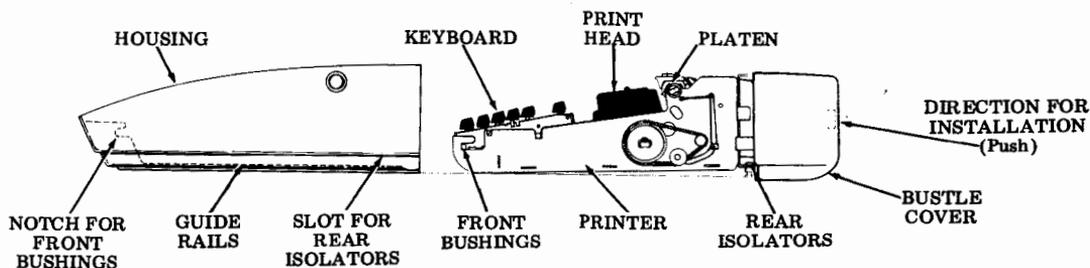
⑤ Remove platen knob by pulling straight outward.



⑧ Grasp the bustle cover and slide the printer and rear frame assembly from the housing through the rear opening.

⑨ Remove the rear frame assembly. (Perform 3.06, Steps 1 through 5.)

- ⑩ Remove the keyboard.
(Perform 3.04, Steps 3, 5, 6 and 8.)



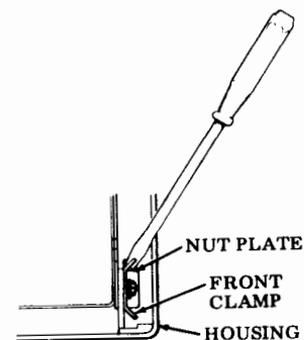
Note: To replace the printer, perform 3.09.

B. Replacement

3.09 To replace the printer:

(a) Sprocket and Friction Feed.

- ① Install the keyboard, if previously removed.
- ② Install the rear frame assembly, bustle cover and deflector, if present.
- ③ Push the printer and rear frame assembly into the housing through the opening in the rear of the housing. There are two molded guide rails in the bottom of the housing to steer the assembly into position.
- ④ Lock the printer and rear frame assembly into position. Insert a screwdriver into the square hole in the nut plate and gently twist (or pry) the screwdriver with enough force to draw the assembly forward.



(Right Front View)

Caution: Do not overtighten the screwdriver.

- ⑤ Tighten the clamp screws.

Note: The two front clamps should be loosely fastened to the nut plate before the assembly is pushed into the housing. Position each clamp so that the front bushings (keyboard) protrude through the large holes in their respective clamps.

- ⑥ Replace the paper separator and platen knobs.
- ⑦ Replace the paper release (friction-feed only).
- ⑧ Replace the cover and paper holder.
- ⑨ Perform the KEYBOARD TO COVER ALIGNMENT adjustment.

(b) Tractor Feed.

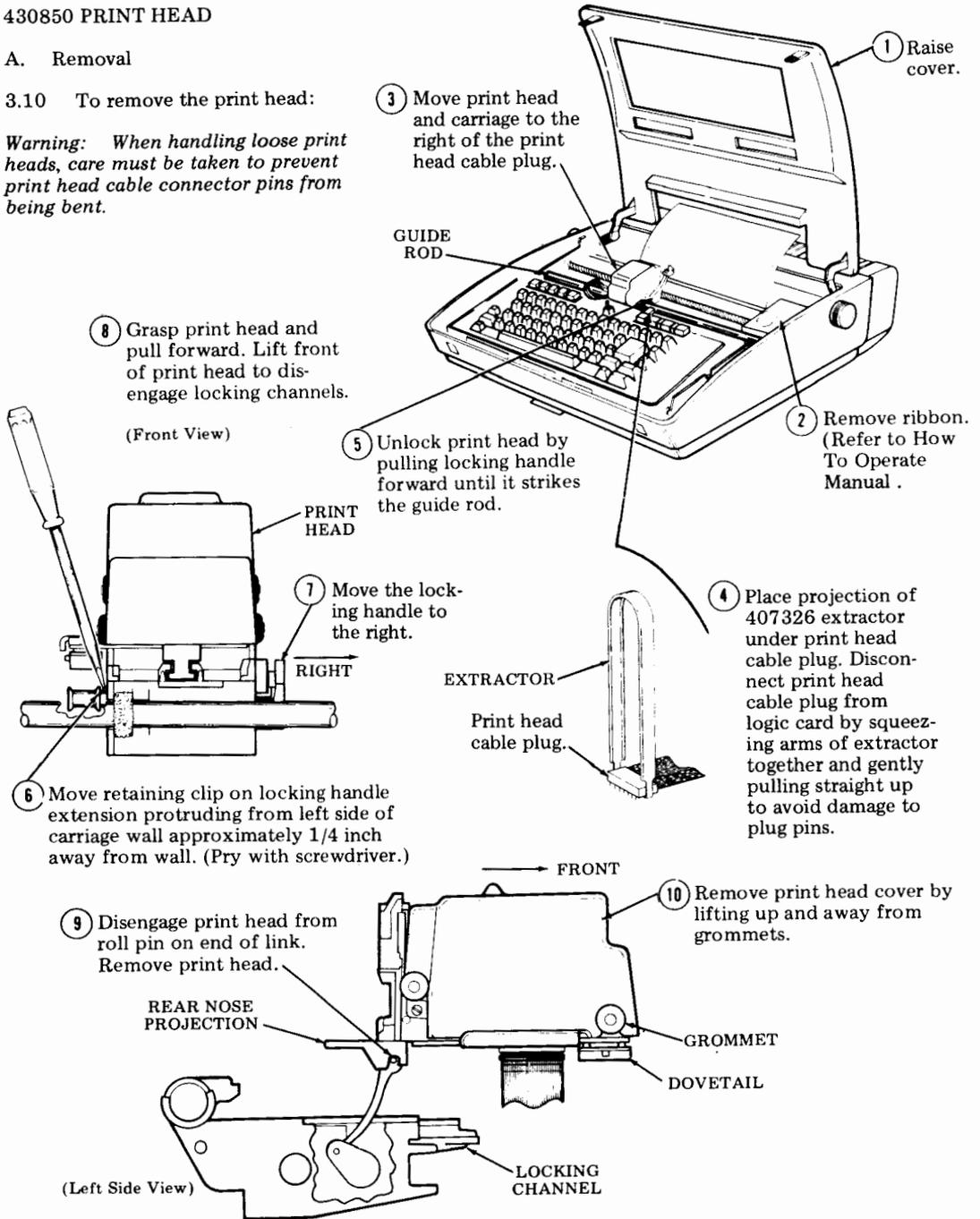
- ① Reverse disassembly procedure.

430850 PRINT HEAD

A. Removal

3.10 To remove the print head:

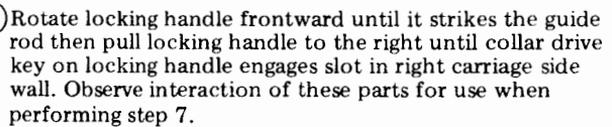
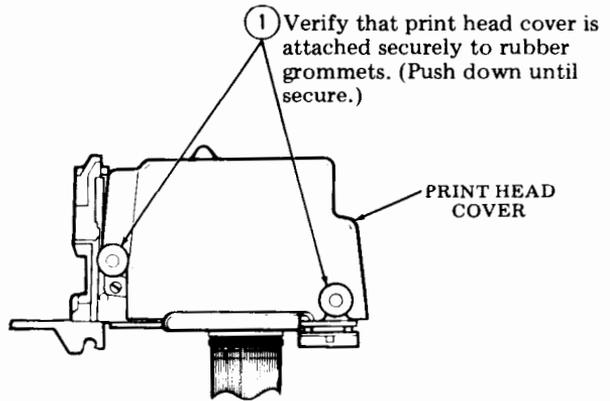
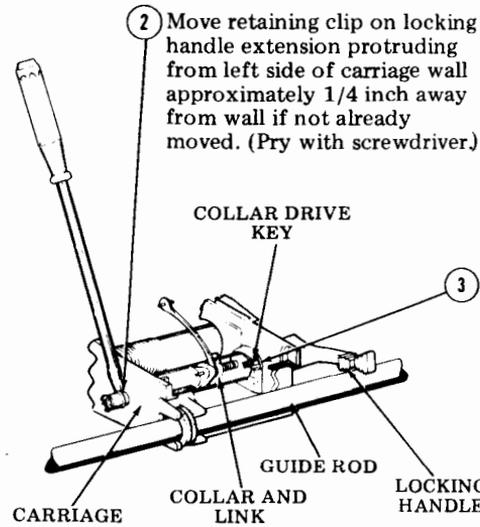
Warning: When handling loose print heads, care must be taken to prevent print head cable connector pins from being bent.



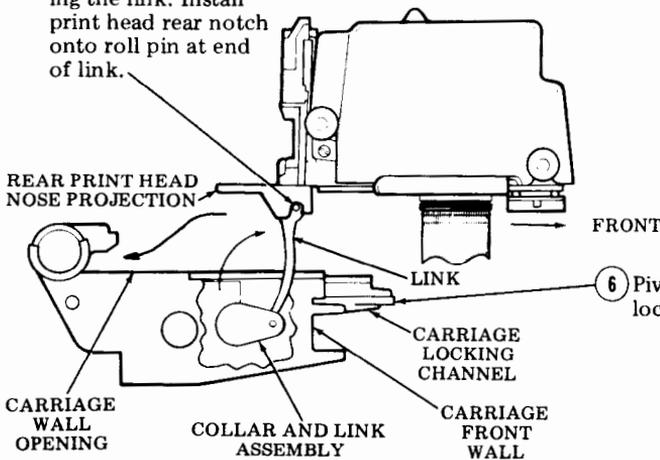
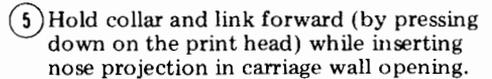
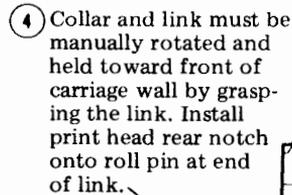
B. Replacement

3.11 To replace the print head:

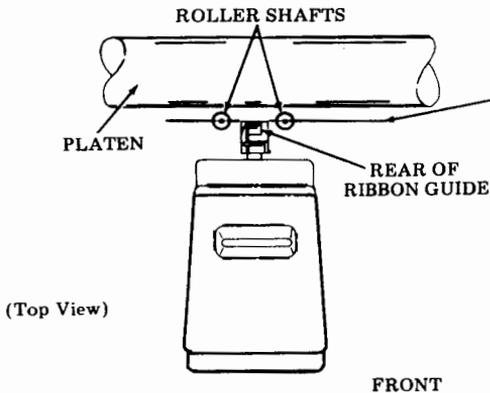
Warning: When handling loose print heads, care must be taken to prevent print head cable connector pins from being bent.



Note: Collar and link may snap rearward.

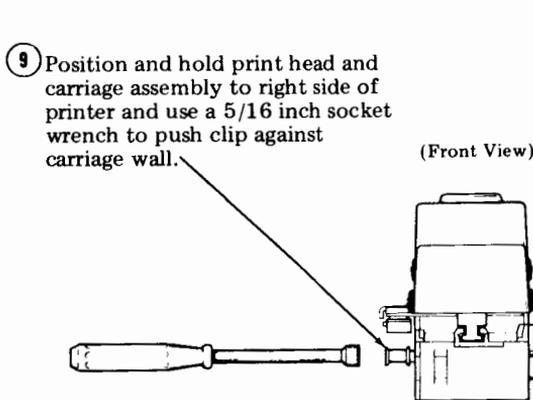


(Left View)



- 7 Slowly push print head rearward and further into the carriage locking channel until the rear of the ribbon guide is even with center of roller shafts. Apply continuous leftward pressure to locking handle at its pivot shaft, while slowly pulling print head forward until collar drive key on handle engages (snaps) into slot in collar.

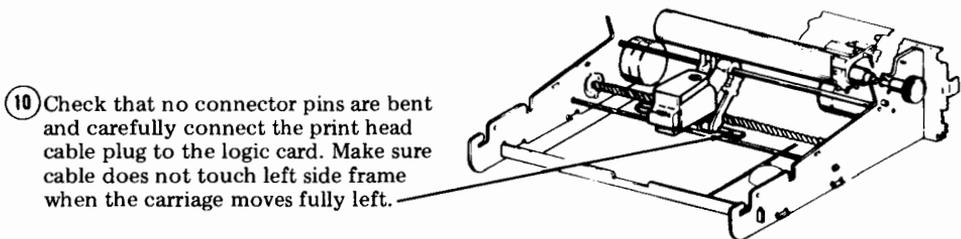
Note: Parts referred to were visible in step 3.



- 9 Position and hold print head and carriage assembly to right side of printer and use a 5/16 inch socket wrench to push clip against carriage wall.

- 8 Move the handle all the way to the rear, locking the print head in close proximity to the platen by the additional force necessary to detent the handle. If handle does not move to rear, the drive key did not properly engage the collar slot (step 7).

Note: Check to make sure there is some clearance between print head and platen before detenting handle. Check PRINT HEAD TO PLATEN adjustment.



- 10 Check that no connector pins are bent and carefully connect the print head cable plug to the logic card. Make sure cable does not touch left side frame when the carriage moves fully left.

- 11 Install ribbon.
(Refer to How to Operate Manual)

43 TELEPRINTER

ROUTINE MAINTENANCE

| CONTENTS | PAGE |
|-------------------------------|------|
| 1. GENERAL | 1 |
| 2. VISUAL CHECKS | 1 |
| 3. LUBRICATION | 1 |
| 4. CLEANING AND APPEARANCE .. | 1 |

1. GENERAL

- 1.01 This section provides routine maintenance procedures for the 43 Teleprinter.
- 1.02 This section is reissued to add tractor feed information.
- 1.03 Routine maintenance should be performed, at the convenience of the customer, at least once a year.
- 1.04 Routine maintenance consists of visual checks, lubrication, and cleaning. When performed at routine intervals, the possibility of later troubles will be reduced.
- 1.05 Following the routine maintenance, a local and on-line installation checkout should be performed. (See 43 Teleprinter Basic KSR Testing, Section 574-500-500 or 43 Teleprinter RO, Testing, Section 574-500-501, 43 Teleprinter 8-Level Buffered Send/Receive (BSR) Station, Testing, Section 574-500-502, 43 Teleprinter 8-Level Buffered Selective Calling (BSC) Station, Testing, Section 574-500-503 or 43 Teleprinter 5-Level Buffered Selective Calling (BSC) Station, Testing, Section 574-500-504.) The routine maintenance date should be filled out on the bottom side of the directory card holder.

2. VISUAL CHECKS

- 2.01 The following areas should be checked for mechanical condition:

- (a) Frayed belts on spacing and line feed motors.
- (b) Worn or frayed ribbon.
- (c) All cable connectors fully seated.

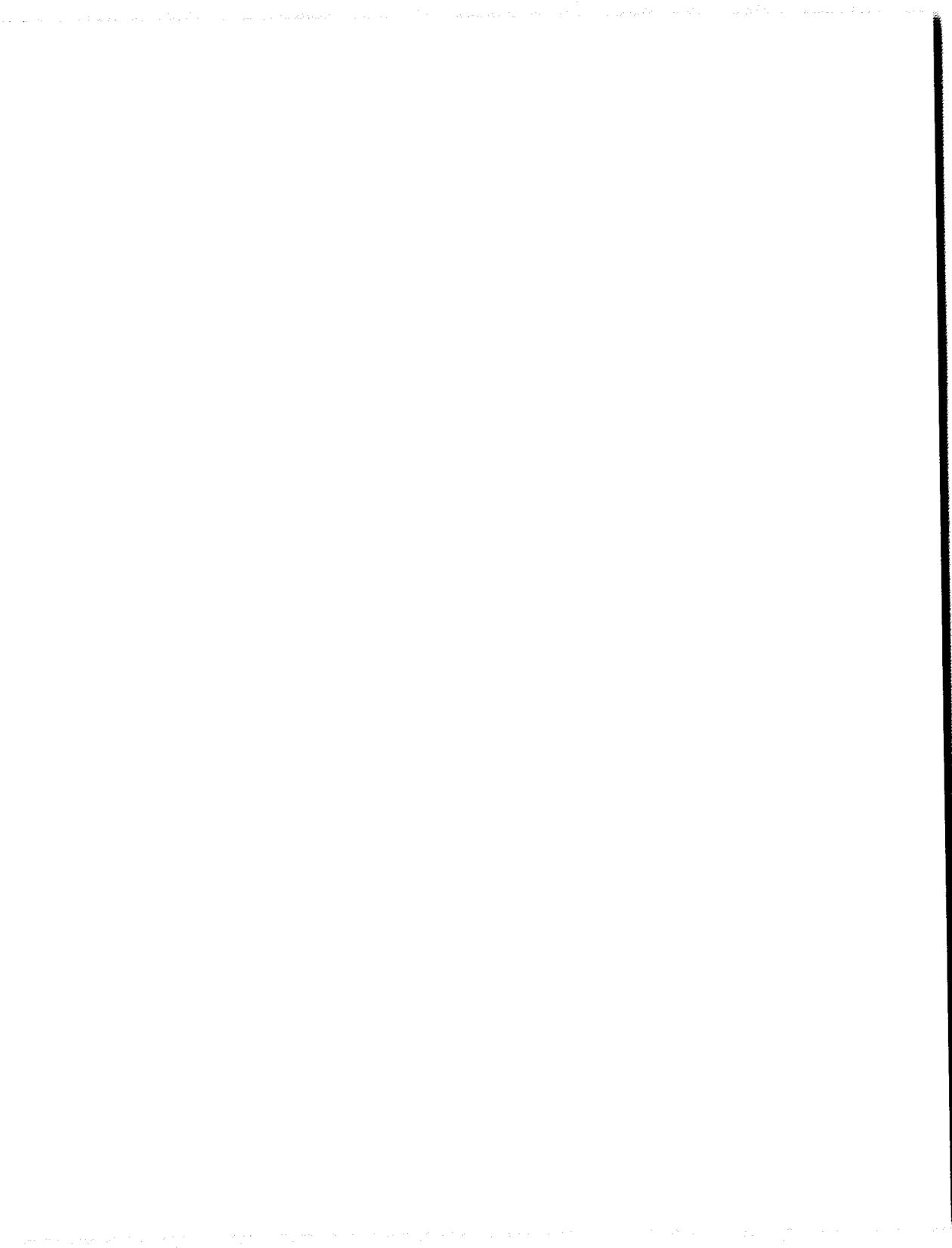
3. LUBRICATION

3.01 Lubrication of the printer is required during routine maintenance. For type, location, and amounts of lubrication refer to Section 574-501-710 for friction and sprocket (pin) feed and Section 574-501-711 for tractor feed.

4. CLEANING AND APPEARANCE

- 4.01 Examine exterior areas for smudges, dust, etc.
- 4.02 Check proper fit of cover. Replace extremely damaged or discolored cover, housing, bustle, etc.
- 4.03 Exterior cleaning should normally be limited to wiping with a soft cloth (such as KS-2423) moistened with a mild detergent. However, in case of ink stained plastic surfaces, a waterless (nonabrasive) hand cleaner or a lather from abrasive bar soap applied with a cloth should be used.
- 4.04 Interior areas should be examined with the cover opened and accumulations of paper dust or ribbon fragments cleaned by carefully brushing loose material onto a cloth. Ink stains or deposits on interior surfaces, ribbon rollers, platen, etc, can be wiped with a cloth dampened in mineral spirits.

Warning: Do not allow solvents to contact interior, exterior or any component plastic surfaces.



43 TELEPRINTER

PARTS

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| 1. GENERAL | 1 |
| 2. PARTS | 2 |
| Basic KSR and RO | 2 |
| 430900 Answer-Back Modification Kit | 3 |
| 410718 Selective Calling Unit Circuit Card | 4 |
| 43 Buffered Teleprinter 8-Level | 5 |
| 43 Buffered Teleprinter 5-Level | 5 |
| 430550 Rear Frame Assembly | 6 |
| 3. NUMERICAL INDEX | 7 |

1. GENERAL

1.01 Information on maintenance spare parts is provided in this section for the 43 Basic KSR and RO Teleprinter, 8-Level, and 43 Teleprinter 5- and 8-level Buffered Stations.

1.02 This section is reissued to change the maintenance spare stocking ratios, update the maintenance spare information and to provide 43 Teleprinter 5- and 8-level Buffered Station information.

1.03 This section is provided to identify the Teletype Corporation or Western Electric Company part number and location of recom-

mended spares that should be available and may be required to correct a trouble. It also provides other parts which may be used to repair a major component or terminal without returning it to the WECO service center.

1.04 Part numbers are listed in the index in numerical order and indicate the page on which the parts appear. Asterisked numbers, stocked as "List 1", indicate a maintenance spare stocking ratio of one spare for each 50 stations in a maintenance area. Part numbers with two asterisks, stocked as "List 2", indicate that one spare should be available for each 200 stations in a maintenance area. Before ordering, verify that a particular spare is applicable to the type of terminal in service.

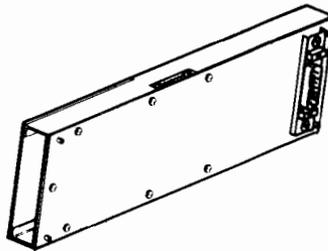
1.05 When ordering replaceable components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410205).

1.06 Troubleshooting information for these parts are provided in:

Section 574-500-300,
Section 574-500-301,
Section 574-500-302,
Section 574-500-303,
Section 574-500-304.

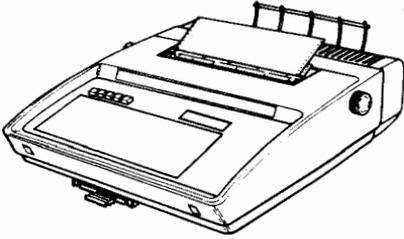
1.07 Disassembly/reassembly information for these parts are provided in:

Section 574-500-720.

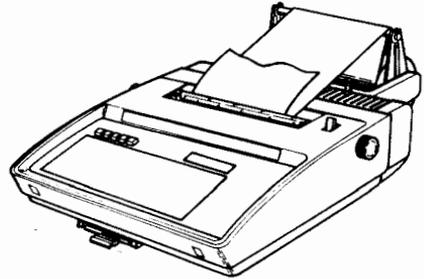


SECTION 574-500-800

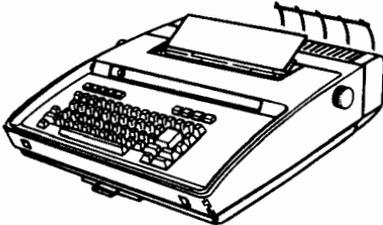
2. PARTS



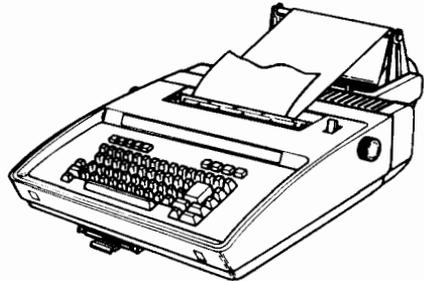
43 RO — Sprocket (Pin) Feed
4310AAA



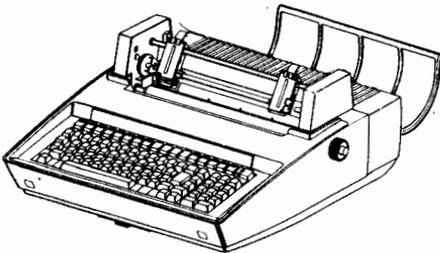
43 RO — Friction Feed
4310AAE



43 KSR — Sprocket (Pin) Feed
4320AAA



43 KSR — Friction Feed
4320AAE

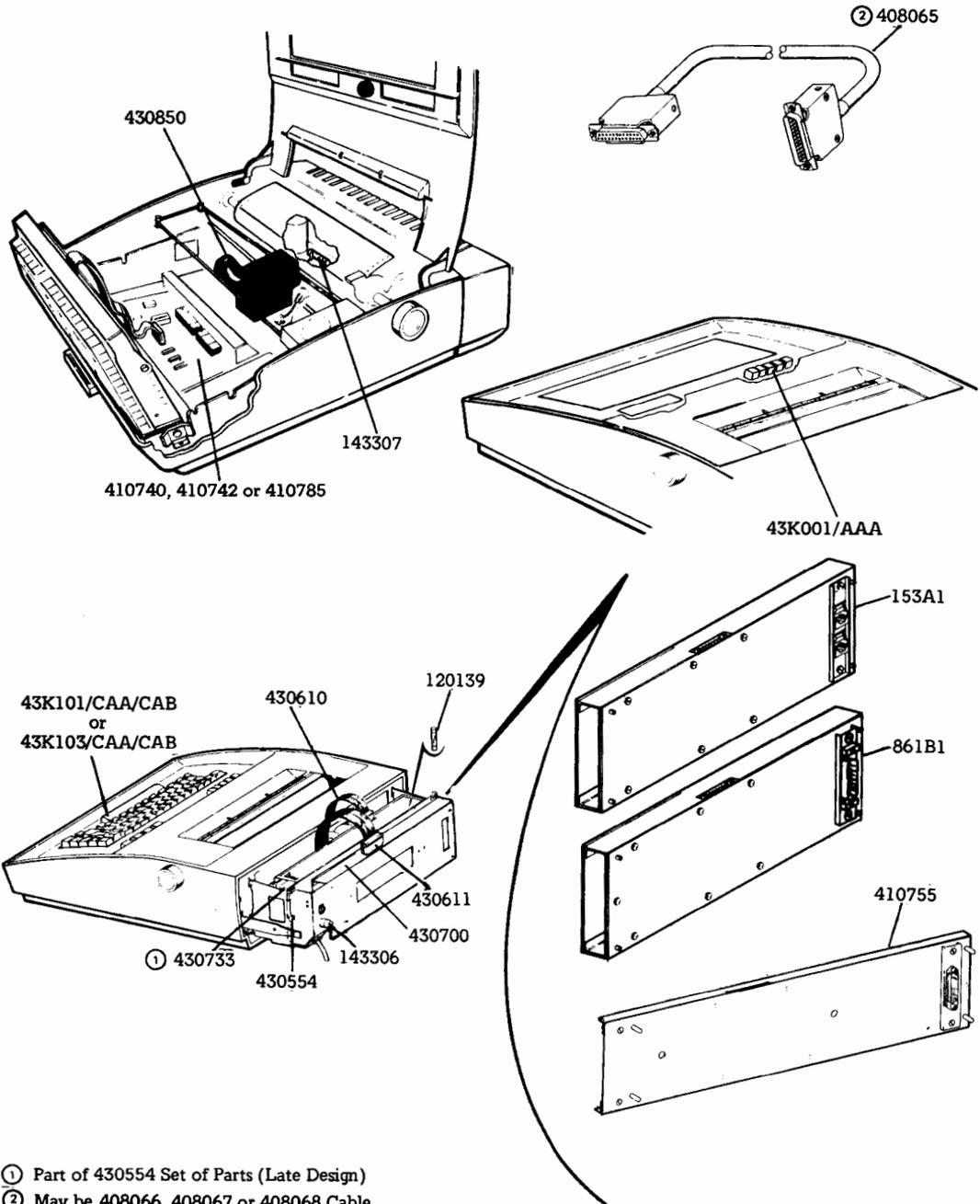


43 Buffered Terminal — Variable Tractor Feed
4340BZJ



43 Buffered Terminal — Friction Feed
4240BZD or 4340BZD

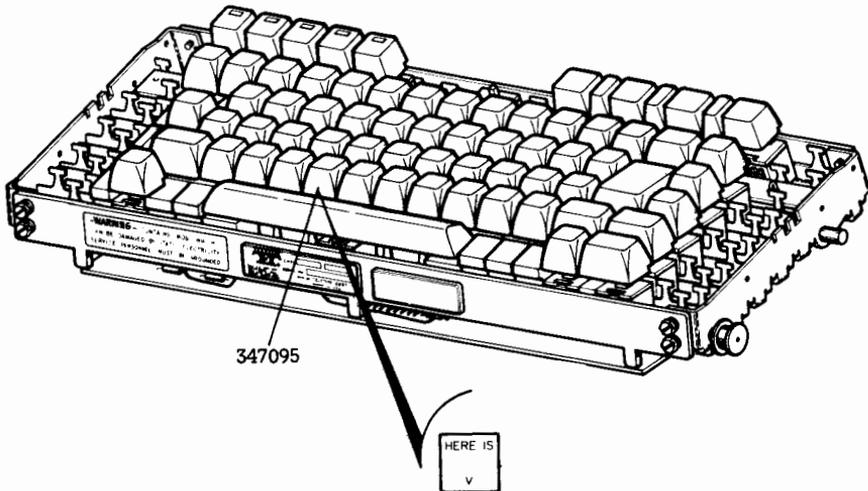
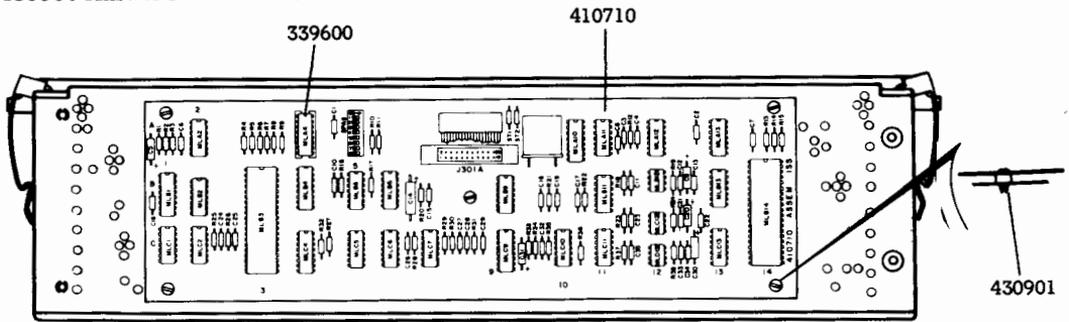
Basic KSR and RO Teleprinters



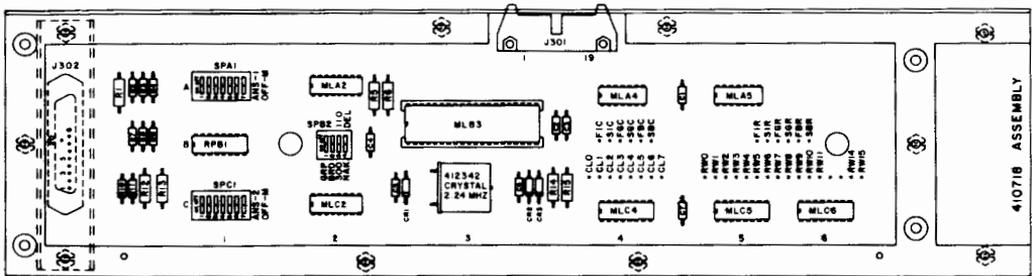
① Part of 430554 Set of Parts (Late Design)

② May be 408066, 408067 or 408068 Cable.

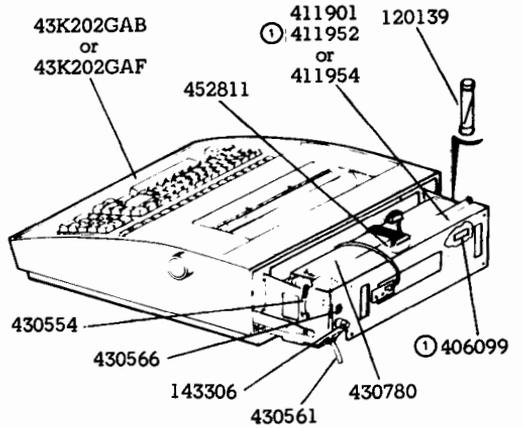
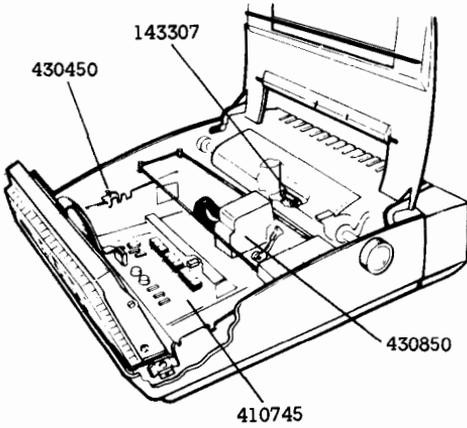
430900 Answer-Back Modification Kit



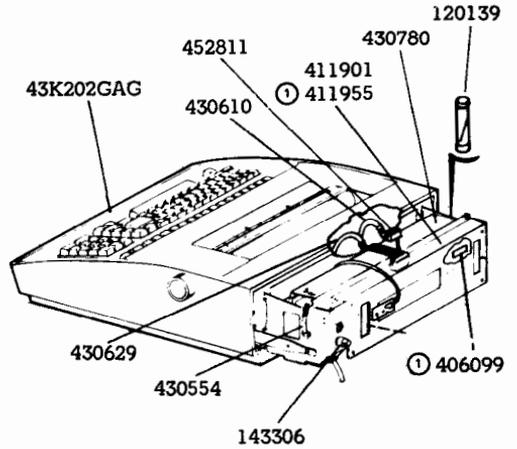
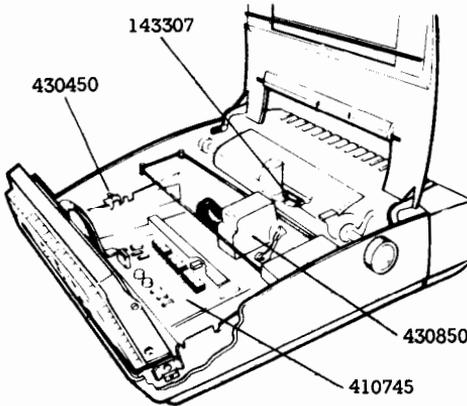
410718 Selective Calling Unit Circuit Card



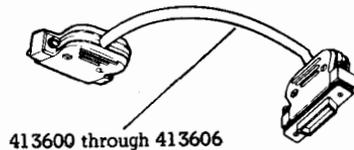
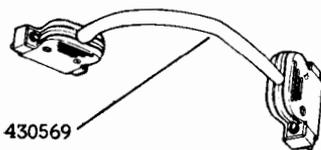
43 Teleprinter — 8-Level Buffered



43 Buffered Teleprinter — 5-Level

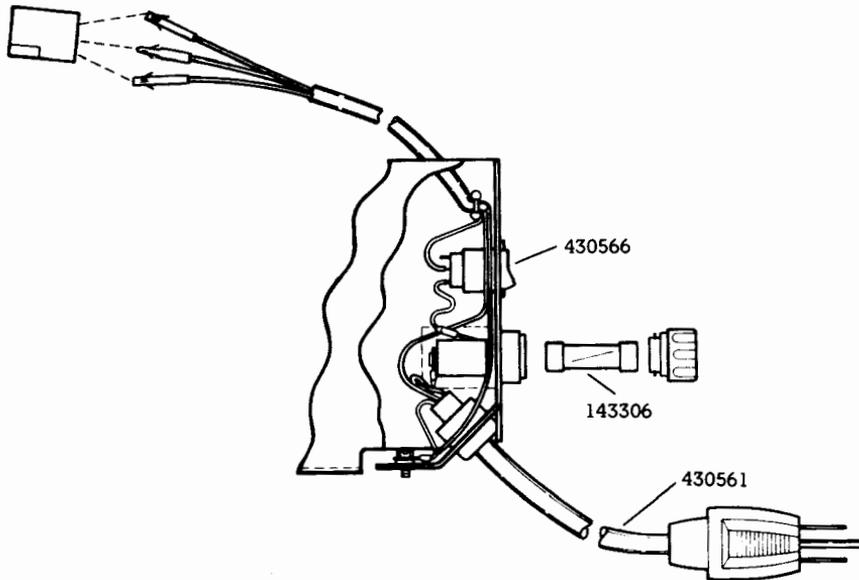


① Part of 43FG110/BA/01, 43FG210/AA/01 or 43FG210/BA/01



SECTION 574-500-800

430550 Rear Frame Assembly



3. NUMERICAL INDEX

3.01 Parts and unit codes listed without asterisks are not maintenance spares but may be ordered as needed for local repairs of major components or terminals.

| | | | | | |
|------------|---------------------------------|----------|----------------------------|------------|-------------------------------------|
| 120139*(5) | Fuse, 1 Amp 3, 5 | 410745* | Card, Logic 5 | 430554 (2) | Clip 3, 5 |
| 143306*(5) | Fuse, SL-BL, 1 Amp 3, 5, 6 | 410755 | Outerface Assembly 3 | 430561 | Cord, Power 5, 6 |
| 143307*(5) | Fuse, 0.6 Amp 3, 5 | 410785* | Card, Logic 3 | 430566 | Switch, Rocker 5, 6 |
| 339600*(2) | Prom (Uncoded) 4 | 411901* | Card Assembly 5 | 430569* | Cable Assembly, 2 Ft 5 |
| 347095 | Keytop (HERE IS) 4 | 413600** | Cable Assembly, 7 Ft 5 | 430610 | Cable Assembly Power Supply 3, 5 |
| 406099 | Battery, 3.6 V Nicad 5 | 413601** | Cable Assembly, 12 Ft 5 | 430611 | Cable Assembly 3 |
| 408065** | Cable Assembly, 7 Ft 3 | 413602** | Cable Assembly, 25 Ft 5 | 430629 | Cable Assembly 5 |
| 408066** | Cable Assembly, 12 Ft 3 | 413603** | Cable Assembly, 50 Ft 5 | 430700* | Power Supply Assembly 5 |
| 408067** | Cable Assembly, 25 Ft 3 | 413604** | Cable Assembly, 7 Ft 5 | 430733 | Clip 3 |
| 408068** | Cable Assembly, 50 Ft 3 | 413605** | Cable Assembly, 7 Ft 5 | 430780* | Power Supply Assembly 5 |
| 410710* | Circuit Card, Answer- Back 4 | 413606** | Cable Assembly, 7 Ft 5 | 430850* | Head Assembly, Print 3, 5 |
| 410718 | Card, Circuit 4 | 430450 | Switch, Interlock 5 | 430900 | Answer-Back Mod Kit 4 |
| 410740* | Card, Logic 3 | 430550 | Frame Assembly, Rear 6 | 430901(15) | Fastener, Stud 4 |
| 410742* | Card, Logic 3 | | | 452811 | Cable 5 |

4310 AAA** Terminal, RO Pin Feed, 2
 4310 AAE** Terminal, RO Friction Feed, 2
 4320 AAA** Terminal, KSR Pin Feed, 2
 4320 AAE** Terminal KSR Friction Feed, 2
 4340 BZD** Terminal, BSC Friction Feed, 2
 4340 BZD** Terminal, BSR Friction Feed, 2
 4340 BZJ** Terminal, BSR Tractor Feed, 2

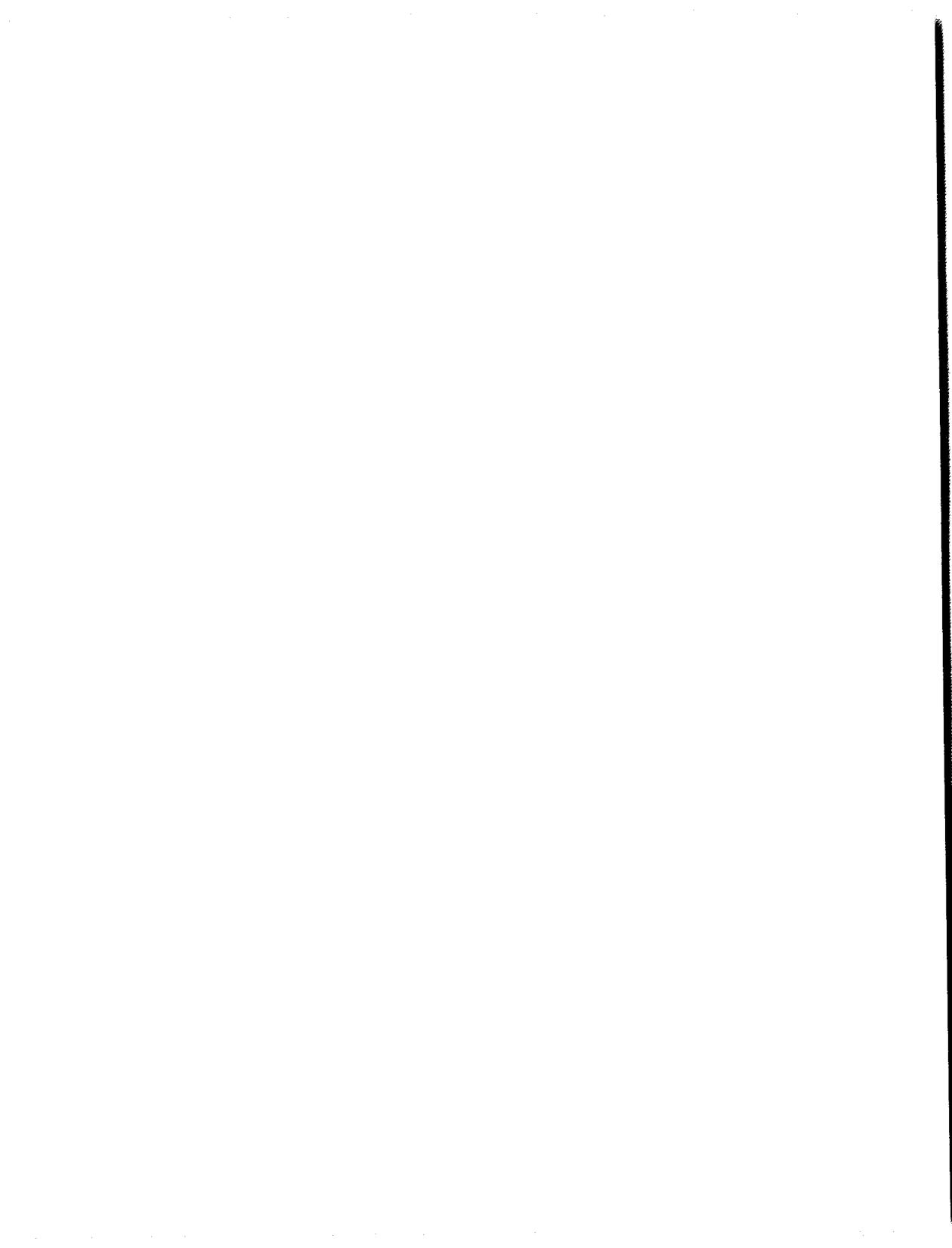
43K001/AAA* Keyboard (Unit Code) 2
 43K101/CAA* Keyboard (Unit Code) 2
 43K101/CAB* Keyboard (Unit Code) 2
 43K103/CAA* Keyboard (Unit Code) 2
 43K103/CAB* Keyboard (Unit Code) 2
 43K202/GAB* Keyboard (Unit Code) 2
 43K202/GAF* Keyboard (Unit Code) 2
 43K202/GAG* Keyboard (Unit Code) 2

43FG110/BA/01* Feature Group 5
 43FG210/AA/01* Feature Group 5
 43FG210/BA/01* Feature Group 5

Modification Kits

430900 Modification Kit, Answer-back
 430910 Modification Kit, Selective Calling

*A maintenance spare stocking ratio of one spare for each 50 terminals in a maintenance area should be available.
 **One spare should be available for each 200 terminals in a maintenance area.



43 FRICTION FEED AND SPROCKET FEED PRINTER

TROUBLESHOOTING

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| 1. GENERAL | 1 |
| 2. TROUBLESHOOTING GUIDE..... | 1 |
| 1. GENERAL | |
| 1.01 This section provides troubleshooting information for the 43 Printer, Friction Feed and Sprocket (Pin) Feed. | |
| 1.02 This section is reissued to change the title. | |
| 1.03 Printer troubleshooting is initiated either by the 43 Teleprinter Basic KSR or RO Troubleshooting Sections 574-500-300 and 574-500-301 or when trouble in the printer is suspected from symptoms observed. | |
| 1.04 Analysis in this section is limited to isolation of the trouble within the printer up to its electrical interface to the logic card. The 43 printer must be tested as part of a 43 Teleprinter Basic KSR or RO Station. Refer to Section 574-500-500 or 574-500-501. Where | |

analysis indicates the trouble is not in the printer, return to the station section for further analysis.

1.05 When ordering replaceable components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410355).

1.06 The 430850 print head is returnable to Western Electric Company Service Center for repair.

1.07 Isolation and correction of troubles is based on electrical checks, parts replacement or adjustments.

Reference Sections are:

- 574-501-400 Wiring
- 574-501-700 Adjustments and Spring Tensions
- 574-501-720 Disassembly/Reassembly
- 574-501-800 Parts

1.08 Trouble analysis is presented in the form of a "20 Questions" routine in 2. TROUBLESHOOTING GUIDE. The guide, with questions and yes or no columns, should be used always starting with the first question and proceeding according to the "yes" or "no" directive.

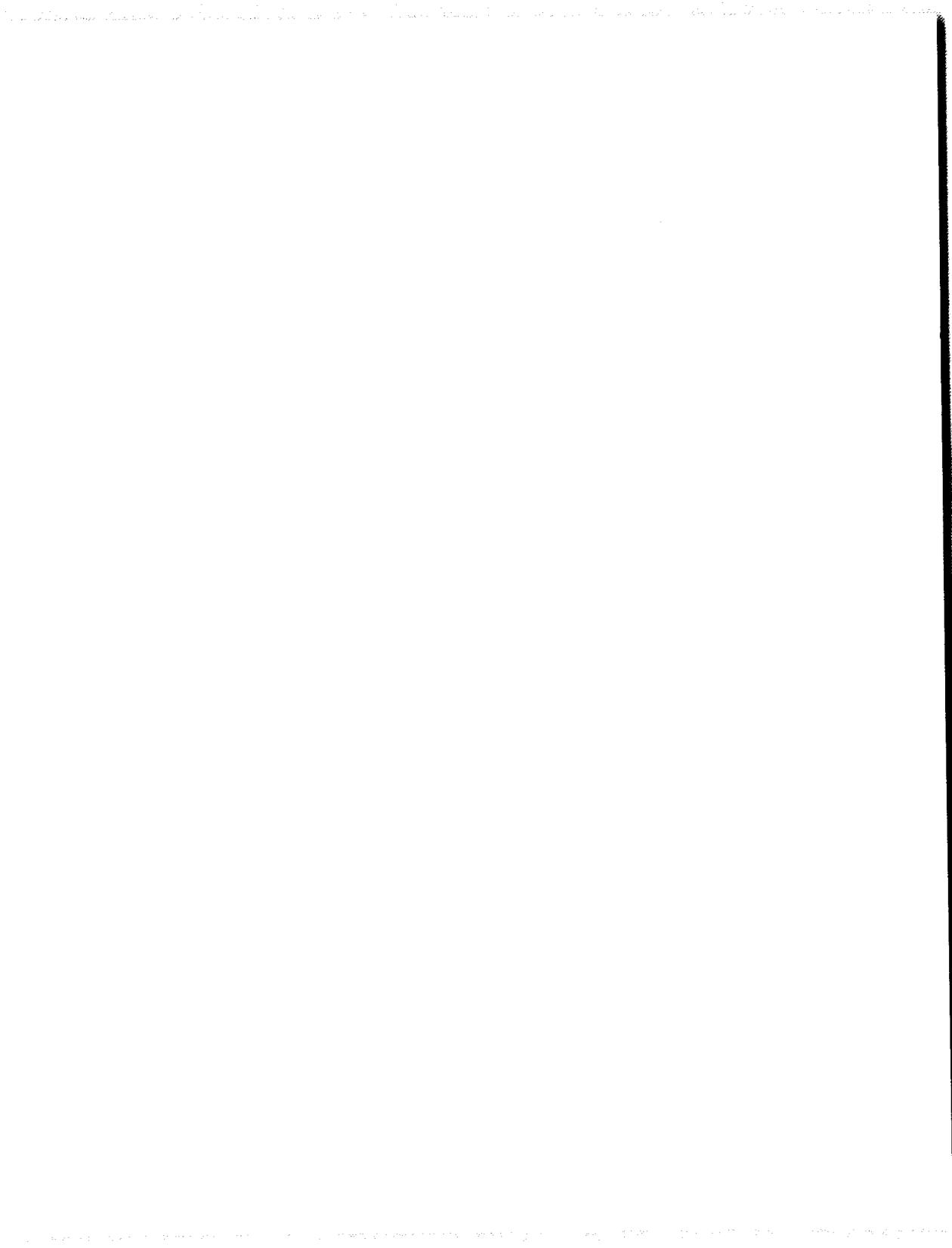
2. TROUBLESHOOTING GUIDE

| QUESTION | YES | NO |
|---|-----------|---|
| 1. Does test message print and paper advance properly while PRINTER TEST key is depressed (or No. 2 switch on logic card is operated on)? | Go to 2. | Go to 1a. |
| 1a. Is red lamp on power supply lit? | Go to 1b. | Go to Teleprinter Troubleshooting. Check circuit that failed for shorts. |

SECTION 574-501-300

| QUESTION | YES | NO |
|--|-----------|---|
| 1b. Does anything print or perform? | Go to 1c. | Go to Teleprinter Troubleshooting. |
| 1c. Does carriage space and return properly? | Go to 1d. | <p>Check for mechanical bind by moving carriage manually with power off.</p> <p>Check for proper spacing belt spring tension.</p> <p>Check for proper lead screw lubrication.</p> <p>Check continuity of spacing motor and encoder.</p> <p>Check switch No. 1 on print head.</p> <p>Replace motor and/or encoder or cable.</p> <p>Replace lead screw nut.</p> |
| 1d. Does paper advance properly (successive lines uniformly spaced)? | Go to 1e. | <p>Check line feed belt tension.</p> <p>Check for mechanical bind by rotating platen manually with power off.</p> <p>Check <u>PLATEN END PLAY</u> adjustment.</p> <p>Check <u>LINE FEED FOL-LOWER PULLEY STOP BRACKET</u> and <u>PRESSURE ROLLER BAIL</u> adjustments (friction feed).</p> <p>With power on (reset) check platen detenting through full rotation by turning platen knob.</p> <p>Check continuity of line feed motor.</p> <p>Replace motor or cable.</p> |
| 1e. Sprocket Feed – Do sprocket pins on platen line up with paper and with paper guides? | Go to 1f. | <p>Check <u>LEFT AND RIGHT SPROCKET</u> adjustment.</p> <p>Check <u>LEFT AND RIGHT PAPER GUIDE</u> adjustment.</p> |
| 1f. Are any characters printed? | Go to 1g. | <p>Check continuity of print head and cable.</p> <p>Go to Teleprinter Troubleshooting.</p> |

| QUESTION | YES | NO |
|--|--|--|
| 1g. Are any dots missing from printed characters? | Check continuity of associated print magnet. Check <u>PRINT HEAD ARMATURE</u> adjustment. Replace print head or cable. | Go to 1h. |
| 1h. Are any dots noticeably out of line on characters with vertical segments? | Replace print head. | Go to 1i. |
| 1i. Is proper print density obtained (good ribbon, proper multicopy paper — see Section 570-008-010)? | Go to 1j. | Check <u>PRINT HEAD TO PLATEN</u> adjustment. With power off and carriage moved manually, check that ribbon moves with carriage without slipping during return and does not move when carriage is moved to the right. Check carriage and left bracket ribbon rollers for “one way” rotation. |
| 1j. Sprocket Feed — Does printed copy align properly with edge of paper (prints equally on each side of page perforation)? | Undefined problem during <u>PRINTER TEST</u> . Go to Teleprinter Troubleshooting. | Check <u>PRINTED LINE POSITION</u> adjustment. Check <u>LEFT-HAND MARGIN</u> adjustment. |
| 2. Did bell ring during <u>PRINTER TEST</u> ? | Go to 3. | Go to 2a. |
| 2a. Does bell ring under any conditions (<u>CTRL G RH margin</u> , etc)? | Go to Teleprinter Troubleshooting. | Check bell coil and cable continuity. Check for freedom of bell plunger. |
| 3. Sprocket Feed — Does <u>ALARM</u> indicator light when a paper-out condition is sensed? | Undefined trouble. Go to Teleprinter Troubleshooting. | Check continuity of paper-out cable and contacts. Check <u>PAPER ALARM CONTACT</u> adjustment. |



43 TRACTOR FEED PRINTER
TROUBLESHOOTING

| | |
|--------------------------------|------|
| CONTENTS | PAGE |
| 1. GENERAL | 1 |
| 2. TROUBLESHOOTING GUIDE | 1 |

1. GENERAL

1.01 This section provides troubleshooting information for the 43 Tractor Feed Printer.

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

1.03 Printer troubleshooting is initiated either by the associated 43 Teleprinter Troubleshooting sections or when trouble in the printer is suspected from symptoms observed.

1.04 Analysis in this section is limited to isolation of the trouble within the printer up to its electrical interface to the logic card. The 43 printer must be tested as part of a 43 Teleprinter Station. Where analysis indicates the trouble is not in the printer, return to the station section for further analysis.

1.05 When ordering replaceable components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP41055).

1.06 The 430850 print head is returnable to Western Electric Company Service Center for repair.

1.07 Isolation and correction of troubles is based on electrical checks, parts replacement or adjustments.

Reference Sections are:

574-501-400 Wiring
574-501-701 Adjustments and Spring Tensions
574-501-721 Disassembly/Reassembly
574-501-801 Parts

1.08 Trouble analysis is presented in the form of a "20 Questions" routine in 2. TROUBLESHOOTING GUIDE. The guide, with questions and yes or no columns, should be used always starting with the first question and proceeding according to the "yes" or "no" directive.

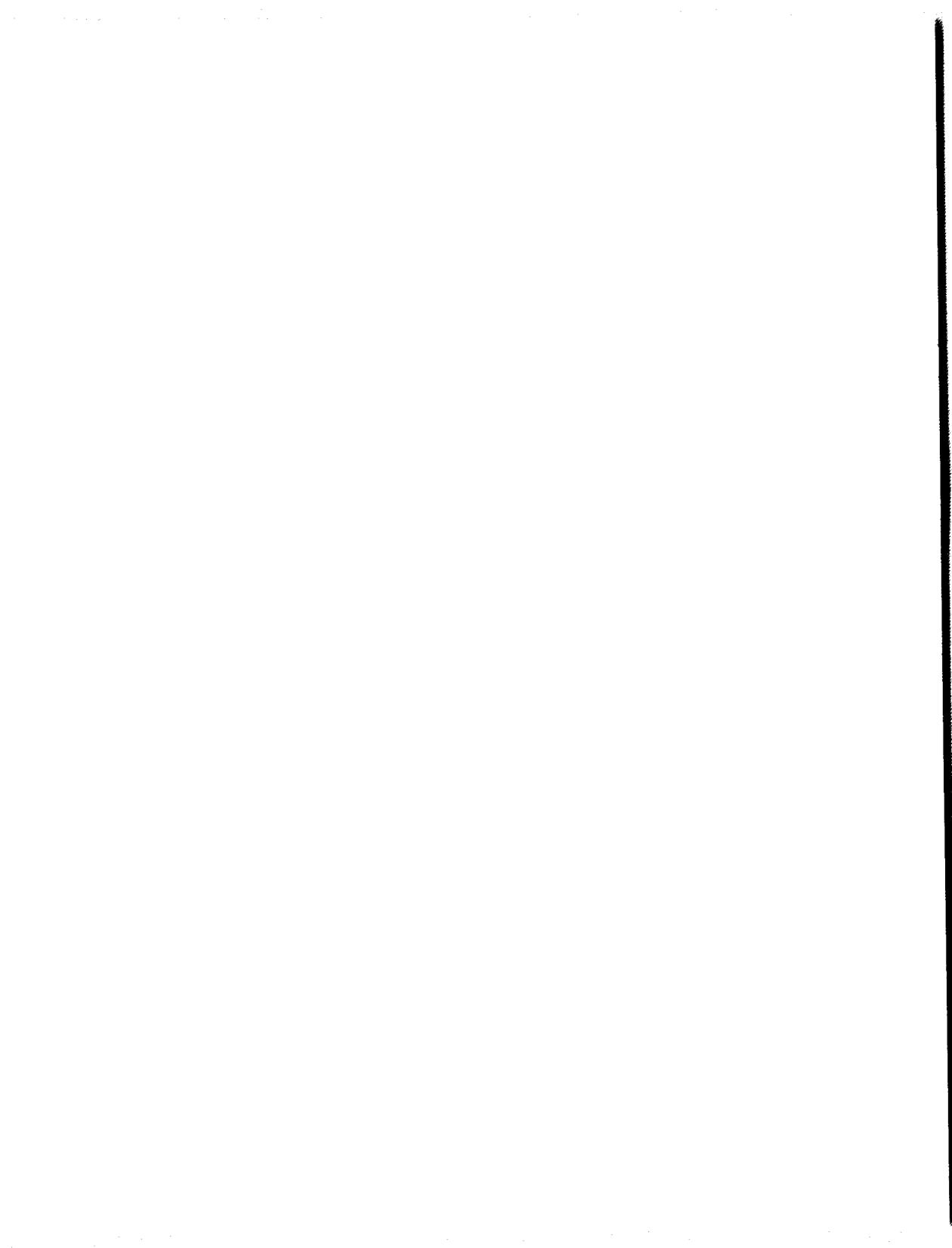
2. TROUBLESHOOTING GUIDE

| QUESTION | YES | NO |
|--|-----------|--|
| 1. Does test message print and paper advance properly while PRINTER TEST key is depressed (or No. 2 switch on logic card) is operated? | Go to 2. | Go to 1a. |
| 1a. Is red lamp on power supply lit? | Go to 1b. | Go to Teleprinter Troubleshooting. Check circuit in printer that failed for shorts. |

SECTION 574-501-301

| QUESTION | YES | NO |
|--|-----------|---|
| 1b. Does anything print or perform? | Go to 1c. | Go to Teleprinter Troubleshooting. |
| 1c. Does carriage space and return properly? | Go to 1d. | <p>Check for mechanical bind by moving carriage manually with power off.</p> <p>Check for proper lead screw lubrication.</p> <p>Check for proper spacing belt spring tension.</p> <p>Check continuity of spacing motor and encoder.</p> <p>Check switch No. 1 on print head.</p> <p>Replace motor and/or encoder or cable.</p> <p>Replace lead screw nut.</p> |
| 1d. Does paper advance properly (successive lines uniformly spaced)? | Go to 1e. | <p>Check for mechanical bind by rotating platen manually with power off.</p> <p>Check for both tractor rotation as platen knob is rotated.</p> <p>Check PLATEN END PLAY adjustment.</p> <p>Check line feed motor gear backlash.</p> <p>Check idler gear to platen gear backlash.</p> <p>With power on (reset) check platen detenting through full rotation by turning platen knob.</p> <p>Check continuity of line feed motor.</p> <p>Replace motor or cable.</p> |
| 1e. Do tractor pins line up with paper holes? | Go to 1f. | Check paper specifications. |
| 1f. Are any characters printed? | Go to 1g. | <p>Check continuity of print head and cable.</p> <p>Go to Teleprinter Troubleshooting.</p> |

| QUESTION | YES | NO |
|--|---|---|
| 1g. Are any dots missing from printed characters? | <p>Check continuity of associated print magnet.</p> <p>Check <u>PRINT HEAD ARMATURE</u> adjustment.</p> <p>Replace print head or cable.</p> | Go to 1h. |
| 1h. Are any dots noticeably out of line on characters with vertical segments? | Replace print head. | Go to 1i. |
| 1i. Is proper print density obtained (good ribbon, proper multicopy paper — see Section 570-008-010)? | Go to 2. | <p>Check <u>PRINT HEAD TO PLATEN</u> adjustment.</p> <p>With power off and carriage moved manually, check that ribbon moves with carriage during return but does not move when carriage is moved to the right.</p> <p>Check left bracket ribbon rollers for “one way” rotation.</p> |
| 1j. Does printed copy align properly with edge of paper (prints equally on each side of page perforation)? | <p>Undefined problem during PRINTER TEST.</p> <p>Go to Teleprinter Troubleshooting.</p> | <p>Reposition tractors.</p> <p>Readjust left margin verneir.</p> |
| 2. Did bell ring during PRINTER TEST? | Go to 3. | Go to 2a. |
| 2a. Does bell ring under any conditions (on power turn on)? | Go to Teleprinter Troubleshooting. | <p>Check bell coil and cable continuity.</p> <p>Check for freedom of bell plunger.</p> |
| 3. Does ALARM indicator light when a paper-out condition is sensed? | <p>Undefined trouble.</p> <p>Go to Teleprinter Troubleshooting.</p> | <p>Check continuity of paper-out cable and contacts.</p> <p>Check <u>PAPER ALARM CONTACT</u> adjustment.</p> |

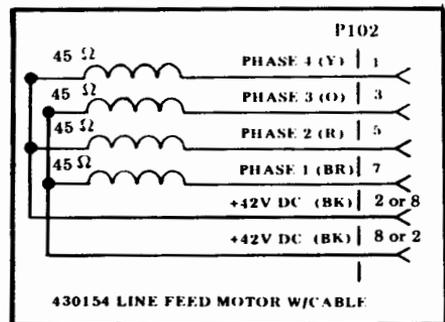
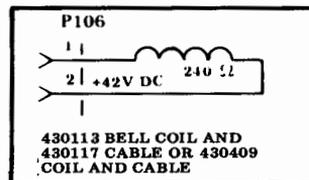
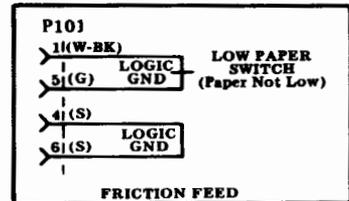
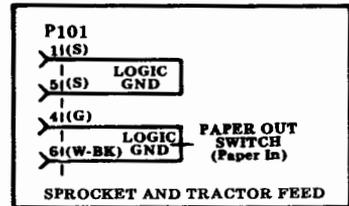
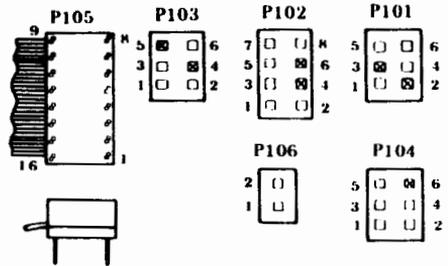
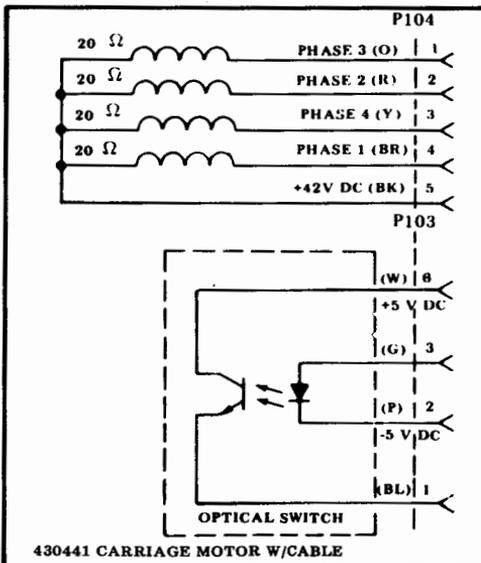
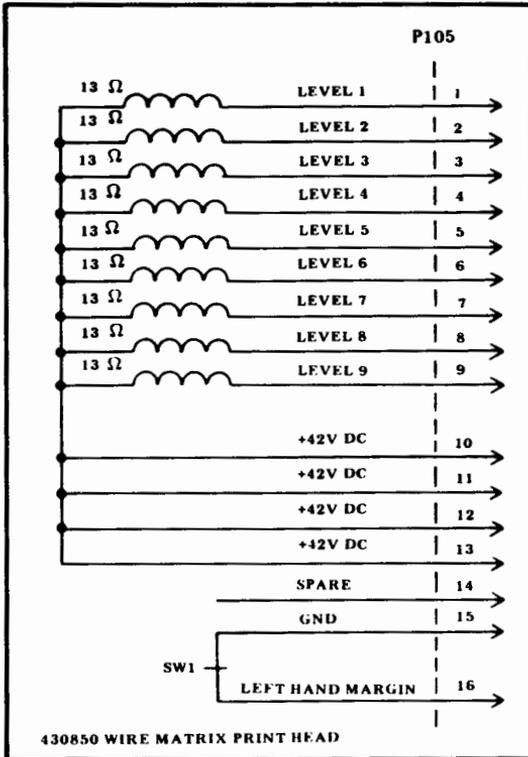


43 PRINTER

WIRING

| CONTENTS | PAGE | |
|---|------|---|
| 1. GENERAL | 1 | 1.03 Related wiring information and cable connections to the logic card are shown in Section 574-500-400, Station Wiring. |
| 2. PRINTER WIRING | 2 | 1.04 Designations on printer wiring diagram do not appear on the components. |
| 1. GENERAL | | 1.05 The wiring information in this section is provided to support the 43 Printer Troubleshooting in Section 574-501-300 and Section 574-501-301. |
| 1.01 This section provides wiring information for the 43 printer. | | 1.06 When ordering replaceable components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410055). |
| 1.02 This section is reissued to include variable tractor feed printers and update the bell coil and carriage motor part numbers. | | |

2. PRINTER WIRING



43 FRICTION AND SPROCKET FEED PRINTER

ADJUSTMENTS AND SPRING TENSIONS

| CONTENTS | PAGE | CONTENTS | PAGE |
|--|------|--|------|
| 1. GENERAL | 1 | PAPER GUIDE PLATE CLEARANCE (Sprocket Feed Only) | 9 |
| 2. TOOLS REQUIRED | 2 | PAPER ALARM CONTACT LEVER (Sprocket Feed Only) | 9 |
| 3. PRINTER ADJUSTMENTS | 2 | PLATEN ENDPLAY AND PRINTED LINE POSITION | 10 |
| LEFT PAPER SPROCKET (Sprocket Feed Only) | 2 | PRINT HEAD ARMATURE | 11 |
| RIGHT PAPER SPROCKET (Sprocket Feed Only) | 3 | 4. SPRING TENSIONS | 11 |
| LEFT AND RIGHT PAPER GUIDES (Horizontal Positioning) (Sprocket Feed Only) (Early Design) | 3 | SPRING IDENTIFICATION | 13 |
| LEFT AND RIGHT PAPER GUIDES (Angular Positioning) (Sprocket Feed Only) (Early Design) | 3 | 1. GENERAL | |
| LEFT AND RIGHT PAPER GUIDES (Angular Positioning) (Friction Feed and Late Design Sprocket Feed) | 4 | 1.01 This section provides friction and sprocket (Pin) feed printer adjustments and spring tensions. Variable tractor feed adjustments and spring tension are covered in Section 574-501-701. | |
| LINE FEED BELT TENSION (Sprocket Feed Only) | 4 | 1.02 This section is reissued to change the title and update the adjustments. | |
| LINE FEED MOTOR BELT TENSION (Floating Motor Only) | 5 | 1.03 Belt tensions are checked with a spring scale held at the angle shown in the adjustment illustration. | |
| PRINT HEAD TO PLATEN | 6 | 1.04 When ordering replaceable components, unless otherwise specified, prefix each part number with "TP" (ie, TP430028). | |
| RIBBON CARTRIDGE MAGNETIC LATCH | 7 | 1.05 After an adjustment is complete, tighten any screws or nuts loosened to make the adjustment. | |
| LINE FEED FOLLOWER PULLEY STOP BRACKET | 7 | 1.06 Reference in the procedure to left or right, up or down, and top or bottom, etc, refer to the printer in its normal operating posi- tion as viewed by the operator. | |
| PRESSURE ROLLER BAIL (Friction Feed Only) | 8 | | |

SECTION 574-501-700

- 1.07 Adjustments should be checked and performed when a trouble indicates a specific adjustment may be out of tolerance or when an adjustment is disturbed to enable a part to be removed or replaced.
- 1.08 Spring tension checks should be performed when a trouble indicates a possible defective spring or to verify proper part numbers.
- 1.09 Springs that do not meet the tension requirements should be replaced.

2. TOOLS REQUIRED

- 2.01 Refer to Maintenance Tools Section 570-005-800 for a complete listing of various types of hand tools available for maintenance of Teletype Corporation equipment.
- 2.02 The following tools may be required when performing adjustments or spring tension checks. Most of these items should normally be present in standard maintenance tool kits.

| Tools | |
|---|--------|
| Bit, 1/4 Inch Socket | 135677 |
| Bit, 5/16 Inch Socket | 135678 |
| Gauge Set | 117781 |
| Gauge, Tape | 95960 |
| Handle | 135676 |
| Hook, Pull Spring | 75765 |
| Hook, Pull Spring | 142554 |
| Hook, Push Spring | 142555 |
| Scale, Spring (64 Ounce) | 82711 |
| Scale, Spring (8 Ounce) | 110443 |
| Scale, Spring (32 Ounce) | 110444 |
| Scale, 15 Pound Spring | 135059 |
| Screwdriver, 3-1/2 Inch Blade | 94647 |
| Screwdriver | 95368 |
| Screwdriver With Clip | 100982 |
| Tweezers | 151392 |
| Wrench, Hex Key | 124682 |
| Wrench, 3/16 Inch Socket | 125752 |
| Wrench, 3/16 Inch and 1/4 Inch Open End | 129534 |
| Wrench, 5/16 Inch and 3/8 Inch Open End | 152835 |

3. PRINTER ADJUSTMENTS

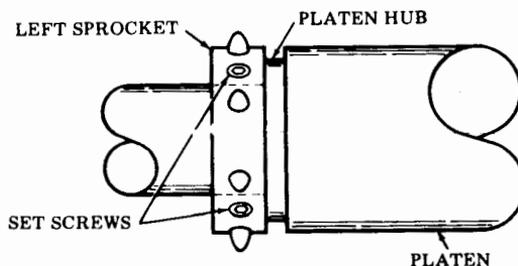
LEFT PAPER SPROCKET (Sprocket Feed Only)

(Early Design)
Requirement

The left sprocket should be biased against the collar of the platen hub.

To Adjust

Loosen set screws and position left sprocket to meet requirement.



RIGHT PAPER SPROCKET (Sprocket Feed Only)

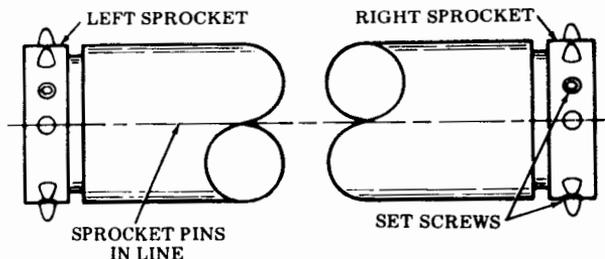
(Early Design)

Requirement

The right sprocket should be biased against the collar of the platen hub and the pins should be in line with the pins of the left sprocket.

To Adjust

Loosen set screws and position right sprocket to meet requirement.



Note: This adjustment to be refined when making the PRINTED LINE POSITION adjustment.

LEFT AND RIGHT PAPER GUIDES (Early Design)
(Horizontal Positioning) (Sprocket Feed Only)

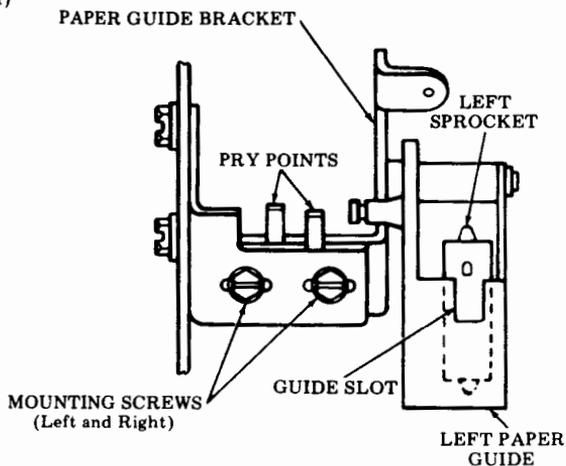
Note: Late design brackets do not require this paper guide adjustment.

Requirement

There should be some clearance between the base of the sprocket pins and either side of the paper guide slot.

To Adjust

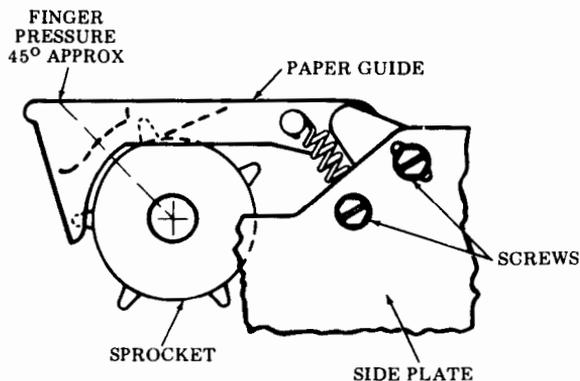
Loosen screws friction tight and position paper guide bracket by using a screwdriver on the pry points.

LEFT AND RIGHT PAPER GUIDES
(Angular Positioning) (Sprocket Feed Only)
(Early Design)**Requirement**

The paper guides should seat fully on the paper sprockets (left and right sides).

To Adjust

Loosen screws. To seat the paper guides, apply finger pressure to top of paper guides at 45 degrees and toward center of platen. With finger pressure applied at approximately 45 degrees; tighten screws.



LEFT AND RIGHT PAPER GUIDES

(Angular Positioning) (Friction Feed and Late Design Sprocket Feed)

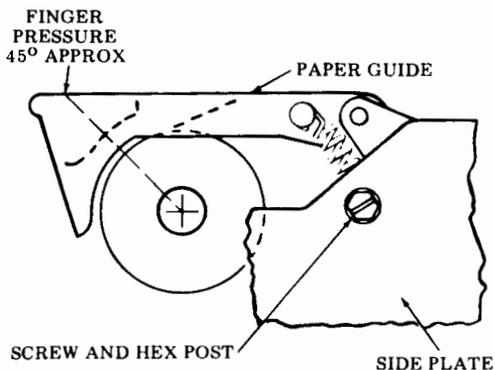
Requirement

The left paper guide should seat fully on the hub. The right paper guide should also be fully seated on the hub and the center paper guide should just touch the platen in the middle.

To Adjust

On left side, loosen the two mounting screws friction tight and move the left paper guide mounting bracket to meet the adjustment. With finger pressure applied, tighten screws.

On right side, loosen one mounting screw and with an open end wrench applied to the hex post, rotate bracket until adjustment is met. While holding the post, retighten the screw.



LINE FEED BELT TENSION (Sprocket Feed Only)

Note: This adjustment applies to Sprocket Feed (Early Design) only, without follower pulley.

Requirement

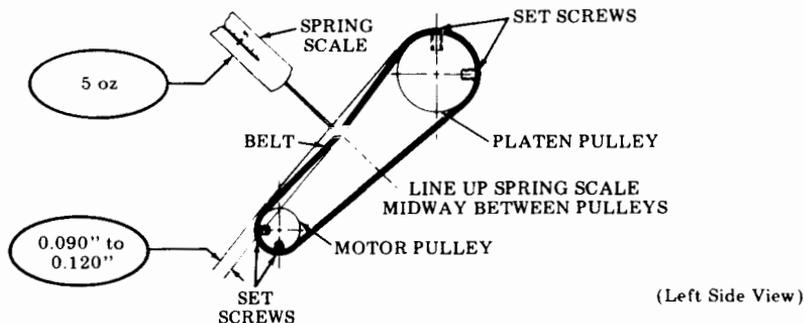
When the belt and sprocket system is at the point of least slack; a force of 5 ounces applied with a spring scale midway between the sprockets the belt should deflect between

Min 0.090 inch---Max 0.120 inch

The point of least slack is the point where the set screws on the platen pulley and those on the motor pulley are set as shown below.

To Adjust

Rotate the platen until the set screws on the platen pulley and the set screws on the motor pulley are aligned as shown below. Loosen motor screws, position motor to meet requirement at the point of least slack. Tighten screws.



LINE FEED MOTOR BELT TENSION (Floating Motor Only)

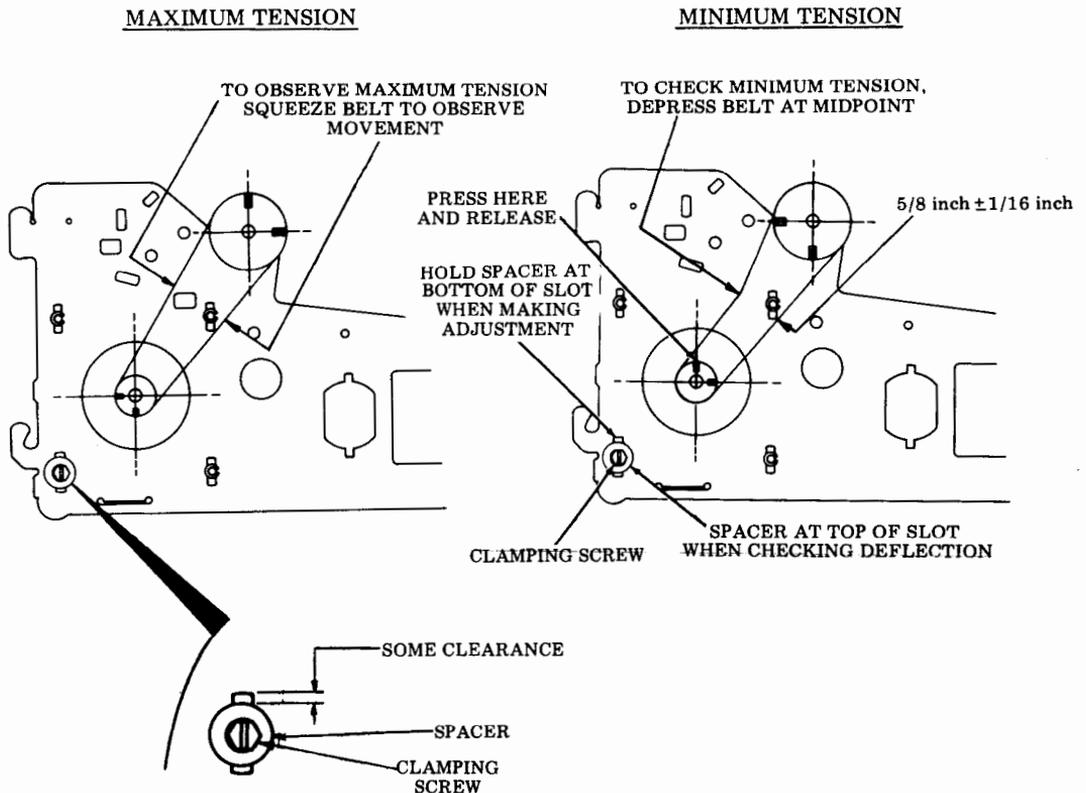
Requirement:

When the belt and sprocket system is at the point of maximum tension as shown (pulley screws facing out), there shall be some clearance between the top of the spacer and the top of the slot. Check by squeezing belt while observing upward motor movement.

When the pulleys are at the point of minimum tension (pulley screws facing in), the distance across the belt shall be a minimum of 5/8 inch with the belt deflected until the motor rises to the top of its free travel (spacer at top of slot).

To Adjust:

With the system pulleys set up for minimum tension and the clamping screw loose, press down on the motor to reduce any belt slack, then release. Hold spacer down and tighten screw.



PRINT HEAD TO PLATEN

Requirement

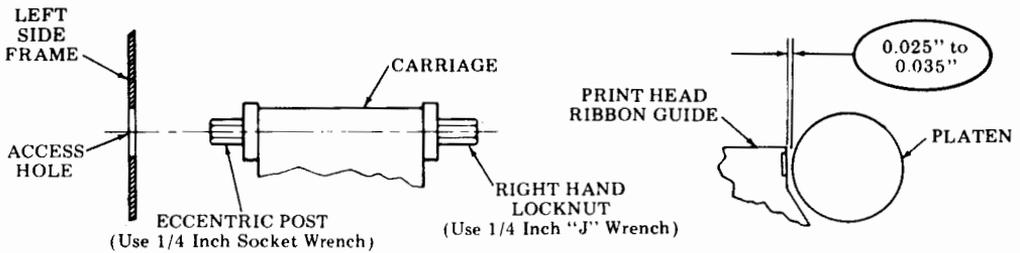
There should be

Min 0.025 inch---Max 0.035 inch

gap between the ribbon guide of the print head and the platen (without paper or ribbon) and at all positions of the carriage and platen, when platen play at the right end is biased down and to the rear and the print head is locked.

To Adjust

Position carriage to the extreme left position. Unlock locking handle, use 1/4 inch "J" wrench to loosen right-hand locknut and with carriage biased rearward, insert 1/4 inch socket wrench through access hole in left side frame and rotate eccentric post to adjust. Tighten locknut. Check adjustment with carriage locked. Check adjustment on extreme right end of platen, while biasing platen down and to the rear. Refine adjustment, if necessary.

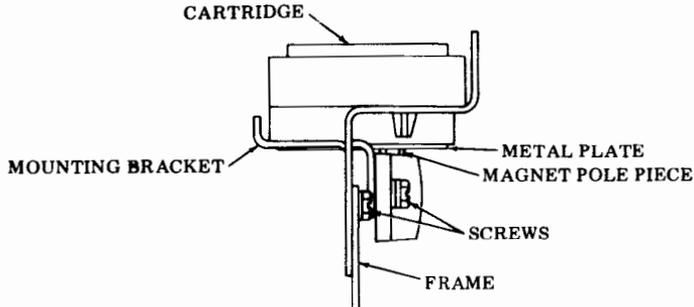


RIBBON CARTRIDGE MAGNETIC LATCH**Requirement**

The magnetic pole pieces of the magnetic latch should be firmly engaged with the cartridge lower metal plate when the cartridge is installed in the right-hand cartridge mounting bracket.

To Adjust

Loosen the two magnetic latch mounting screws. Install cartridge onto the mounting bracket. While holding the cartridge down firmly, allow the magnetic latch to fully engage the lower metal plate of the cartridge. Tighten the latch mounting screws.

LINE FEED FOLLOWER PULLEY STOP BRACKET

Note: For units with line feed pulleys only.

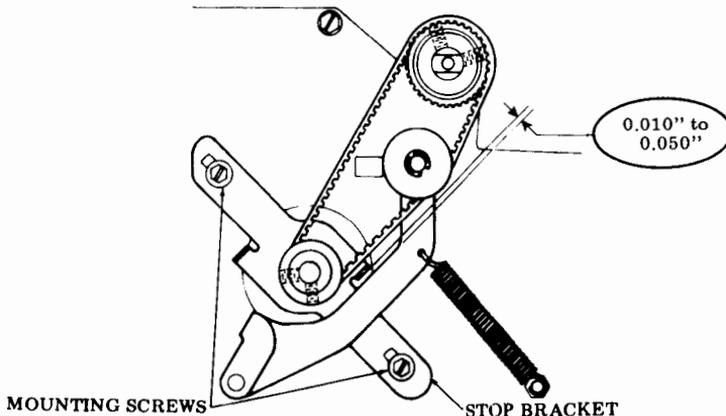
Requirement

With the set screws on both pulleys positioned as shown below and with the follower pulley resting on the belt, push the pulley against the belt to take up all friction. Slowly release pressure. Measuring between the follower lever and the adjacent tab of the stop bracket there should be

Min 0.010 inch---Max 0.050 inch
gap between them.

To Adjust

Loosen the two mounting screws on the stop bracket to friction tight and move bracket to meet the adjustment. If the motor mounting holes are slotted, the motor may be repositioned from the center of the slot, if necessary, if the stop bracket adjustment does not meet the requirement.



PRESSURE ROLLER BAIL (Friction Feed Only)

Requirement

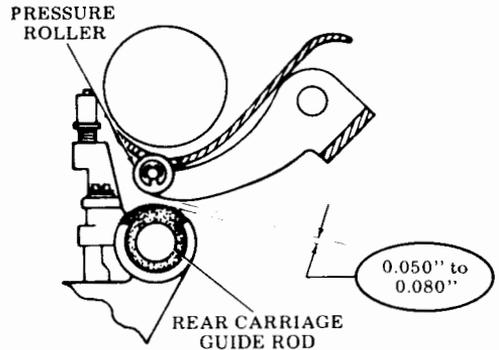
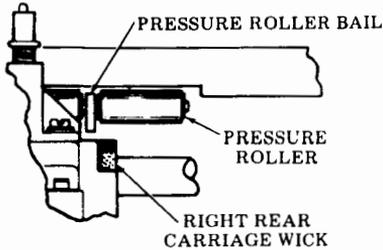
With the paper release lever in the forward position and the right end of the carriage next to the right rear carriage wick located immediately under the arm of the pressure roller bail (between the two pressure rollers) there should be from

Min 0.050 inch---Max 0.080 inch

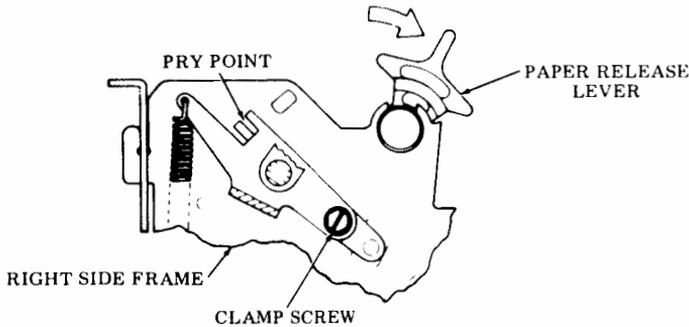
gap between the carriage and the bail arm when measured at the closest point.

To Adjust

Loosen the clamp screw to friction tight. Move pry point down to increase gap or up to decrease gap.



(Right Side View)



PAPER GUIDE PLATE CLEARANCE (Sprocket Feed Only)

Note: For sprocket feed (Early Design) with metal paper guide only.

(1) Requirement

With no sprocket forms in the platen mechanism and the platen oriented with the slot, or rib, on the right platen hub in the top uppermost position there should be

Min 0.008 inch--Max 0.025 inch between the platen and the left and right ends of the paper guideplate. Record the two clearances.

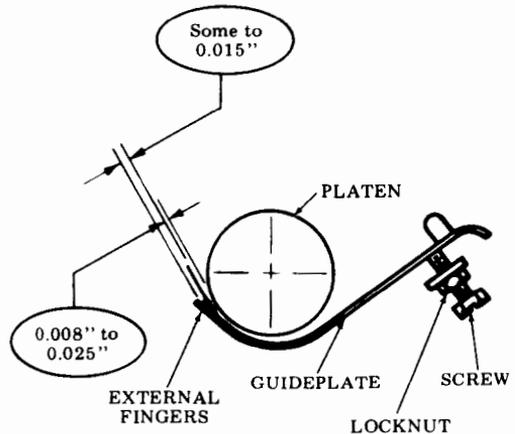
To Adjust

Loosen locknut and adjust screw. Tighten locknut.

(2) Requirement

The fingers at both the left and right ends of the platen should be

Min Some--Max 0.015 inch beyond the recorded gap between the platen and the left and right ends of the paper guideplate.



To Adjust

Bend fingers to meet requirement.

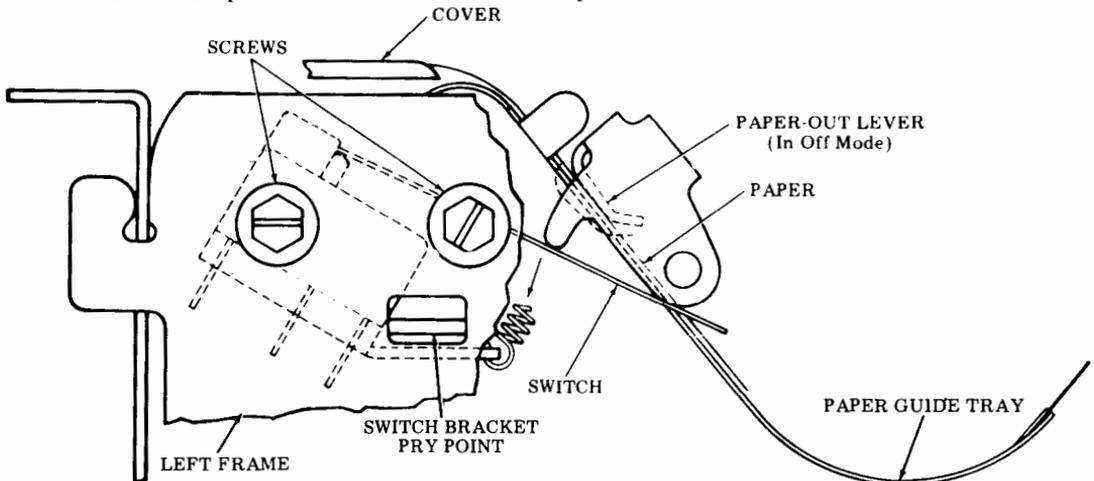
PAPER ALARM CONTACT LEVER (Sprocket Feed Only)

Requirement

With the paper alarm contact lever resting on the paper and the paper held taut over the cutout in the paper guide tray, the switch will be in the off mode (nonalarm). With the paper out, the lever should activate the switch (alarm mode).

To Adjust

Loosen screws and position switch bracket to meet requirement.



(Left Side View)

PLATEN ENDPLAY AND PRINTED LINE POSITION

The following two requirements must be met:

(1) Requirement

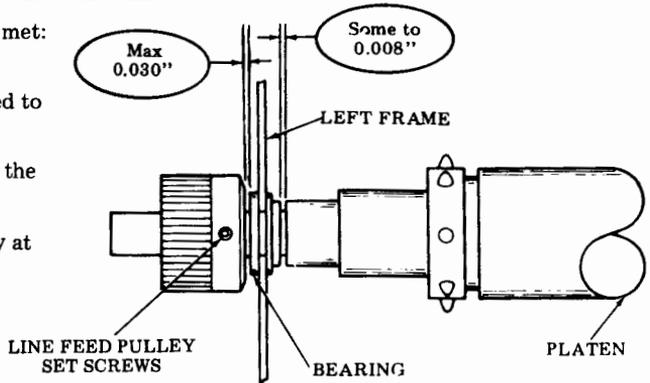
Platen Endplay -- With the platen biased to the right, there should be

Min Some ---Max 0.008 inch clearance between the left bearing and the platen hub, at the closest point, and

Max 0.030 inch between the left bearing and the pulley at the closest point.

To Adjust

Loosen line feed pulley set screws and position.

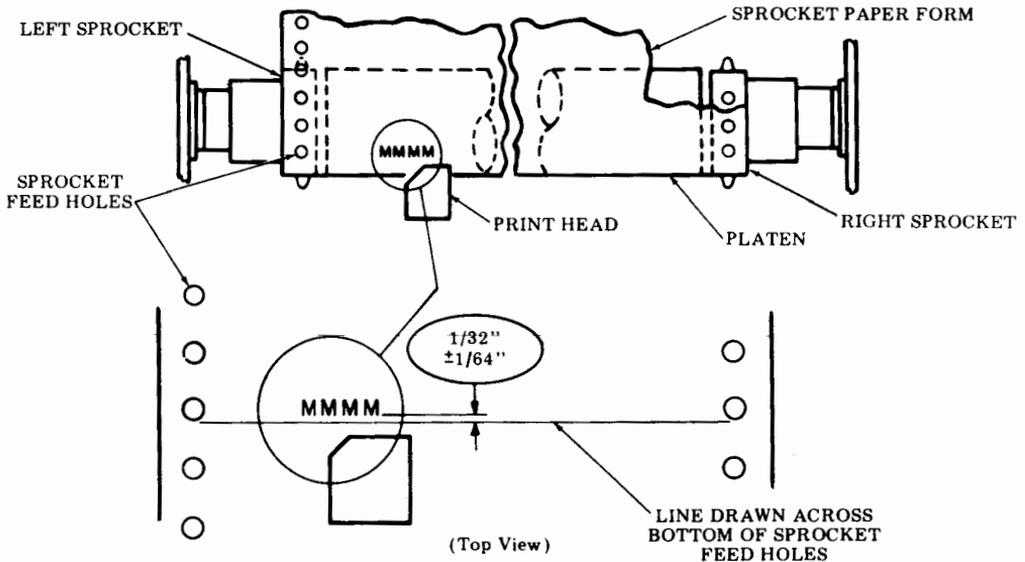


(2) Requirement (Sprocket Feed Only)

Printed Line Position — The lower edge of a typed line of M characters should be $1/32 \pm 1/64$ inch above a horizontal line located by any of the following methods:

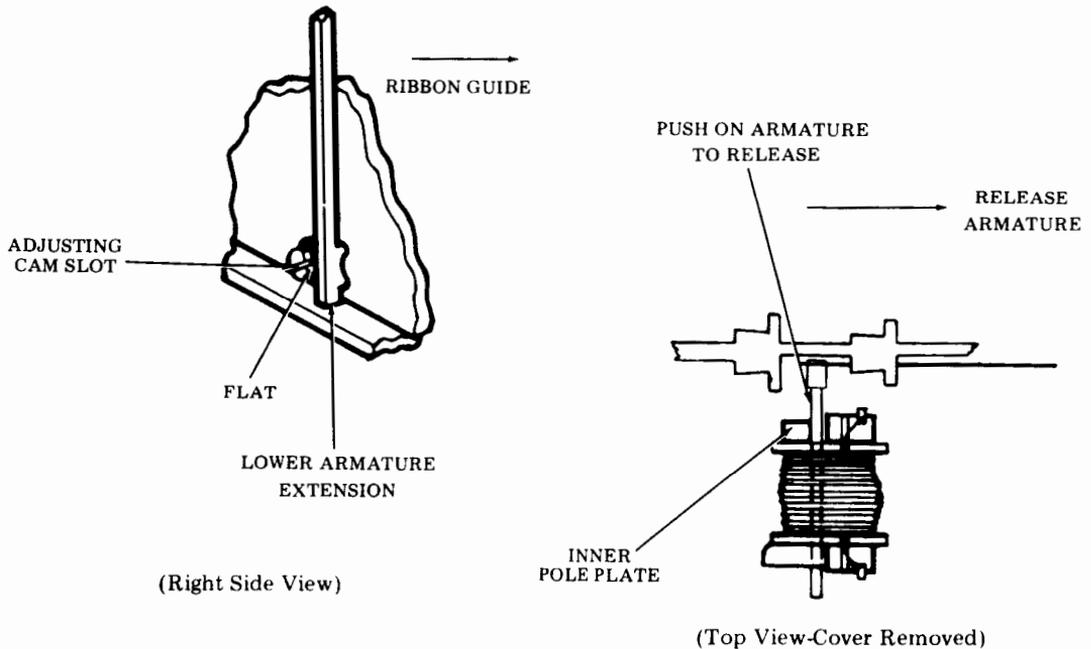
1. A line drawn between the lower edges of two opposite sprocket holes.
2. A preprinted line on the form the same as in 1. above or in 1/6 inch multiples.
3. A fold midway between two sprocket holes on fanfold paper.

(Power must be on line feed motor for this adjustment.)



To Adjust

Loosen the line feed pulley set screws and position. Print the character "M" across the line and check (2) Requirement. If necessary, (early design platen only) loosen set screw on right sprocket to meet alignment requirement.

PRINT HEAD ARMATURE**Requirement**

With a good ribbon installed and the print head positioned and locked toward the platen, no wires shall stick through the ribbon (will not retract) and no dots shall be missing or noticeably lighter than other dots on printed copy.

To Adjust

Note: This adjustment applies to all 9 levels.
(Power must be off for this adjustment)

Remove the ribbon and print head cover. Release the print head and position away from the platen. With the lower armature extension on the high part of the cam (adjusting cam slot horizontal and the flat facing toward the ribbon guide) and the armature released from the inner pole plate, rotate the adjusting cam slowly clockwise until the armature is magnetically pulled up. Continue rotating cam clockwise for 3 more clicks.

4. **SPRING TENSIONS** (Spring identification and location on Page 13.)

① 430028 Lead Screw Spring

On left side of lead screw, push to start to compress spring — 9 to 11 pounds.

SECTION 574-501-700

② 430030 or 430366 Carriage Nut Spring

Place carriage on left side of unit. Hold lead screw pulley. Insert spring scale through top hole of left bearing housing. Push carriage with 46 ± 8 ounces to compress carriage nut spring.

②a 430366 Bias Spring

The free length of the bias spring (not assembled on the lead screw nuts) should be between 1.55 inch and 1.65 inch.

③ 430242 Ribbon Tension Spring

4-1/2 to 6-1/2 ounces to pull spring to installed length with ribbon installed.

④ 101386 Paper Finger Springs (Left and Right) (2)

2 to 4 ounces to start to lift paper fingers at front edge of fingers (with center paper guide installed)

⑤ 430021 SP Belt Tension Arm Spring

18 to 22 ounces to pull spring to installed length.

⑥ 72473 Paper-Out Spring (Sprocket Feed Only)

1/2 to 1 ounce to start paper-out lever moving.

⑦ Bell Plunger (Striker) Spring (Old Bell)

1/2 to 1 ounce to seat plunger (430118).

⑦a 430411 Bell Plunger Spring (New Bell)

1 to 10 grams for striker (430411) to contact gong.

⑧ Link Spring (Part of 430216)

3/4 to 1-1/4 ounces at roll pin to hold spring in lowest position with locking handle in the most forward position.

⑨ 4708 Paper Tray Springs (Left and Right) (2)

On sprocket feed units, lift paper out contact bail to latched position. Move the printhead away from the platen. With a spring scale hooked over the center of the top edge of the tray, and pulling at right angles to the main surface of the tray, it should require 8 to 12 ounces to start the tray moving forward.

⑨a 82463 Paper Tray Springs (Left and Right) (2)

On friction feed sets with plastic paper trays, move the printhead away from the platen. With a spring scale hooked over the center of the top edge of the tray, and pulling at right angles to the main surface of the tray, it should require 1 to 1-1/2 ounce to start the tray moving forward.

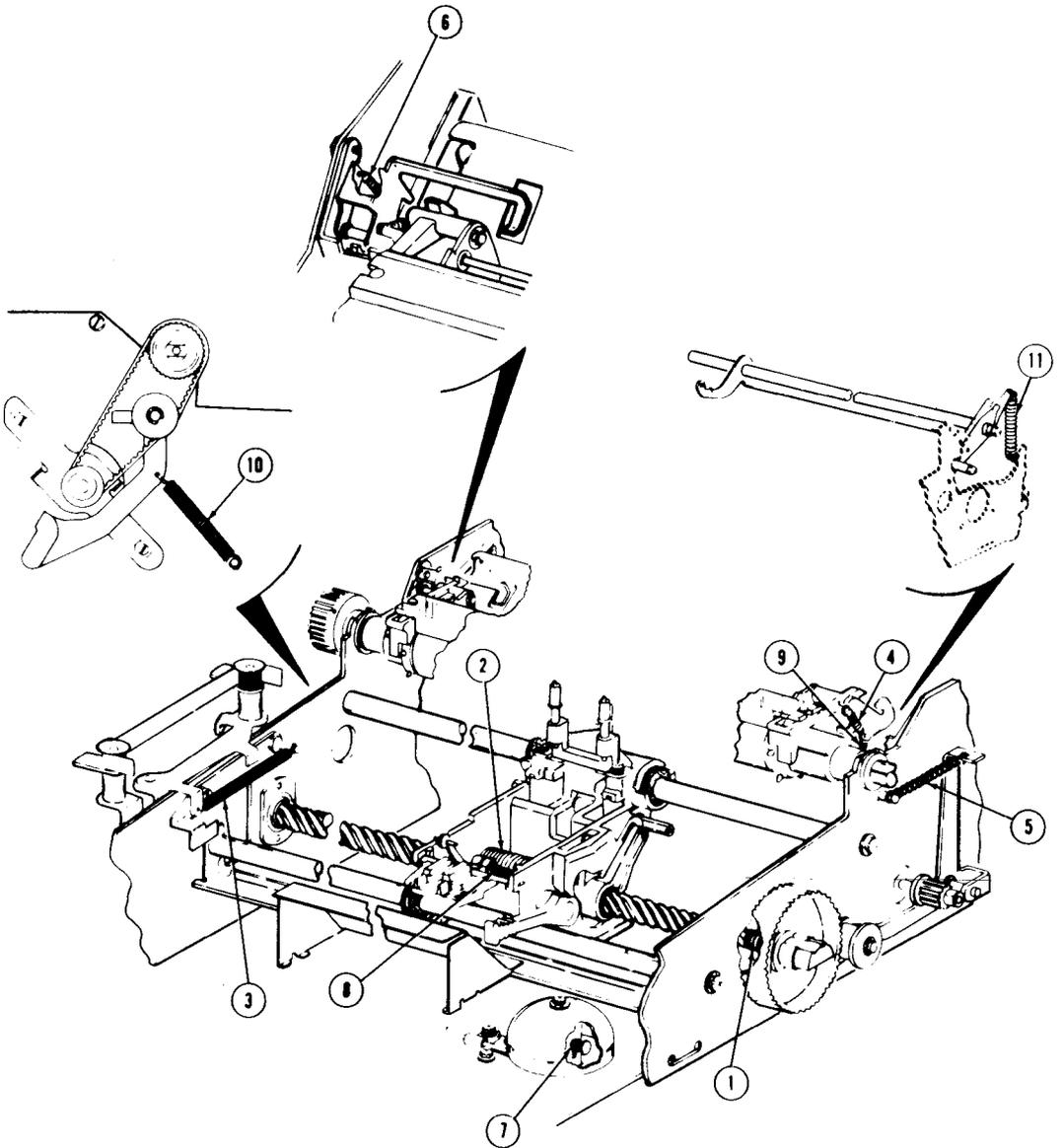
⑩ 430021 Line Feed Belt Tension Arm Spring

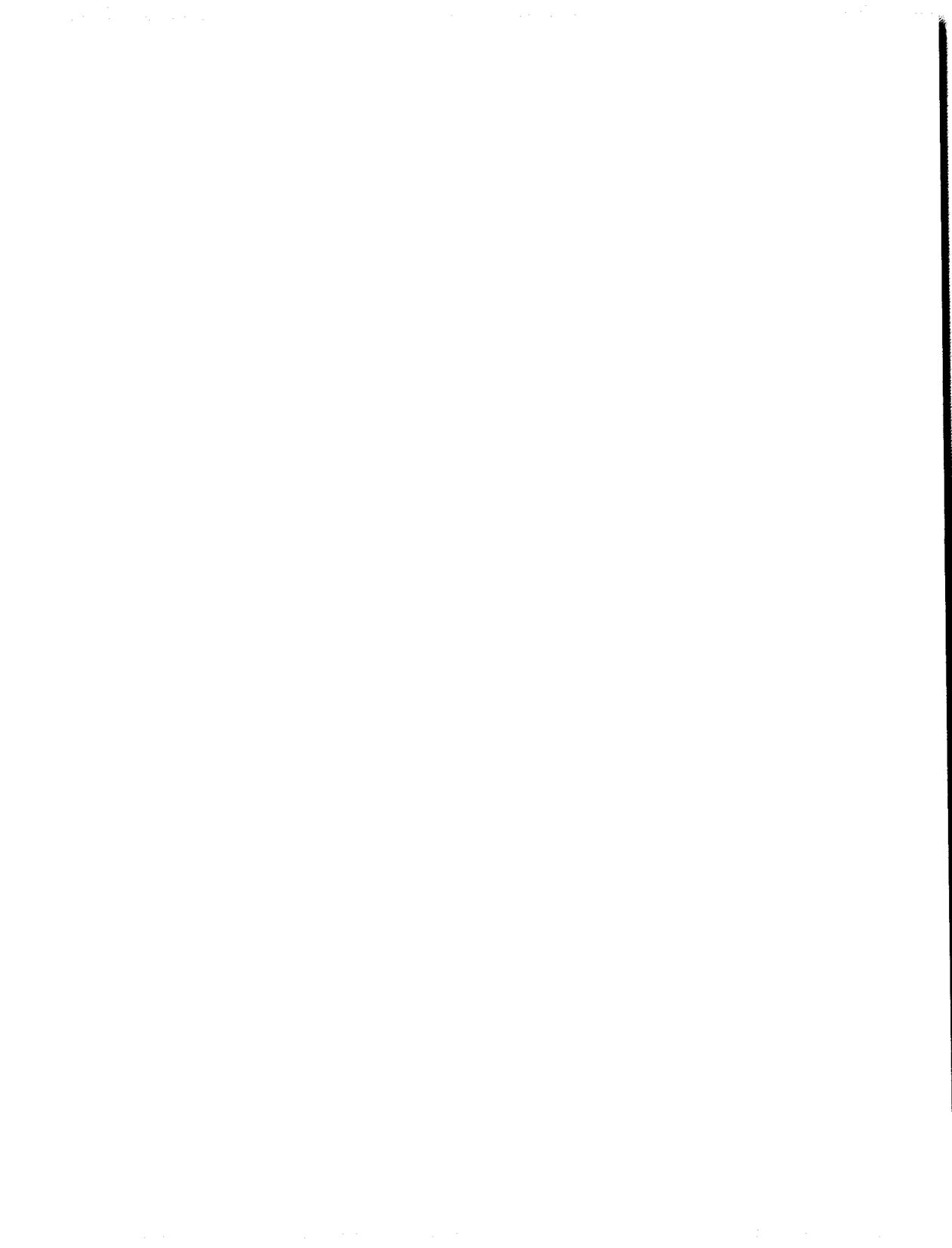
10 to 14 ounces to pull spring to installed length.

⑪ 82727 Pressure Roller Bail Spring (Friction Feed Only)

With the paper release lever in the rear position and pulling the pressure roller bail at the spring mounting hole at a right angle to the bail arm, it should take 46 to 56 ounces to start the roller bail moving.

SPRING IDENTIFICATION





43 TRACTOR FEED PRINTER
ADJUSTMENTS AND SPRING TENSIONS

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| 3. PRINTER ADJUSTMENTS | 2 |
| Print head to platen | 2 |
| Ribbon cartridge magnetic latch | 2 |
| Pressure roller bail | 3 |
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| Platen endplay | 4 |
| Printed line position | 5 |
| Print head armature | 5 |
| Line feed motor gear-backlash | 6 |
| Idler gear and platen gear | 6 |
| Tractor idler gear backlash | 7 |
| Tractor idler gear to platen gear | 8 |
| 4. SPRING TENSIONS | 9 |
| SPRING IDENTIFICATION | 10 |

1. GENERAL

- 1.01 This section provides printer adjustments and spring tensions.
- 1.02 Whenever this section is reissued, the reason for reissue will be listed in this paragraph.
- 1.03 Belt tensions are checked with a spring scale held at the angle shown in the adjustment illustration.
- 1.04 When ordering replaceable parts or components, unless otherwise specified, prefix each part number with "TP" (ie, TP410055).
- 1.05 After an adjustment is complete, tighten any screws or nuts loosened to make the adjustment.
- 1.06 Reference in the procedure to left or right, up or down, and top or bottom, etc, refer to the printer in its normal operating position.

1.07 Adjustments should be checked and performed when a trouble indicates a specific adjustment may be out of tolerance or when an adjustment is disturbed to enable a part to be removed or replaced.

1.08 Spring tensions checks should be performed when a trouble indicates a possible defective spring or to verify proper part numbers.

1.09 Springs that do not meet the tension requirements should be replaced.

2. TOOLS REQUIRED

2.01 Refer to Maintenance Tools Section 570-005-800 for a complete listing of various types of hand tools available for maintenance of Teletype Corporation equipment.

2.02 The following tools may be required when performing adjustments or spring tension checks. Most of these items should normally be present in standard maintenance tool kits.

Tools

| | |
|---|--------|
| Bit, 1/4 Inch Socket | 135677 |
| Bit, 5/16 Inch Socket | 135678 |
| Gauge Set | 117781 |
| Handle | 135676 |
| Hook, Pull Spring | 75765 |
| Hook, Pull Spring | 142554 |
| Hook, Push Spring | 142555 |
| Scale, Spring (64 ounce) | 82711 |
| Scale, Spring (8 ounce) | 110443 |
| Scale, Spring (32 ounce) | 110444 |
| Scale, 15 Pound Spring | 135059 |
| Screwdriver, 3-1/2 Inch Blade | 94647 |
| Screwdriver | 95368 |
| Screwdriver With Clip | 100982 |
| Tweezers | 151392 |
| Wrench, Hex Key | 124682 |
| Wrench, 3/16 Inch Socket | 125752 |
| Wrench, 3/16 Inch and 1/4 Inch Open End | 129534 |
| Wrench, 5/16 Inch and 3/8 Inch Open End | 152835 |

3. PRINTER ADJUSTMENTS

PRINT HEAD TO PLATEN

Requirement

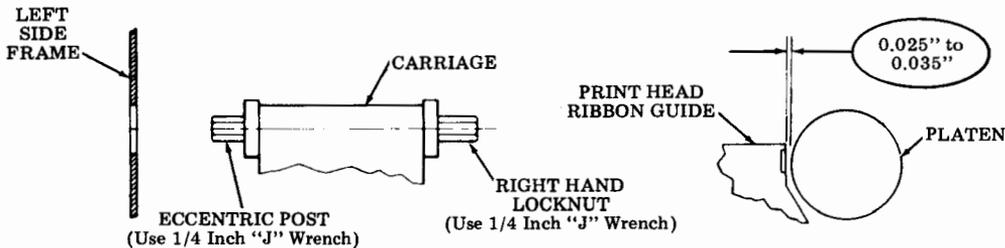
There should be

Min 0.025 inch--Max 0.035 inch

gap between the ribbon guide of the print head and the platen (without paper or ribbon) and at all positions of the carriage and platen, when platen play at the right end is biased down and to the rear and the print head is locked.

To Adjust

Position carriage to the extreme left position. Unlock locking handle, use 1/4 inch "J" wrench to loosen right-hand locknut and with carriage biased rearward, rotate eccentric post to adjust. Tighten locknut. Check adjustment with carriage locked. Check adjustment on extreme right end of platen, while biasing platen down and to the rear. Refine adjustment, if necessary.



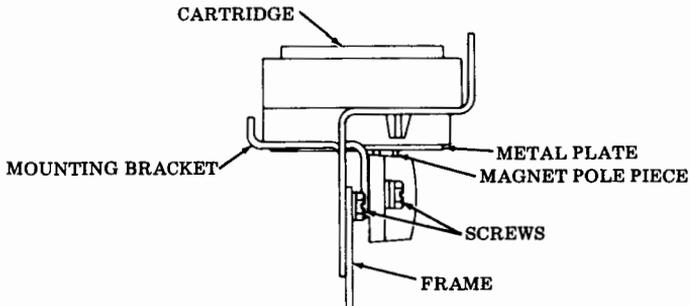
RIBBON CARTRIDGE MAGNETIC LATCH

Requirement

The magnetic pole pieces of the magnetic latch should be firmly engaged with the cartridge lower metal plate when the cartridge is installed in the right-hand cartridge mounting bracket.

To Adjust

Loosen the two magnetic latch mounting screws. Install cartridge onto the mounting bracket. While holding the cartridge down firmly, allow the magnetic latch to fully engage the lower metal plate of the cartridge. Tighten the latch mounting screws.



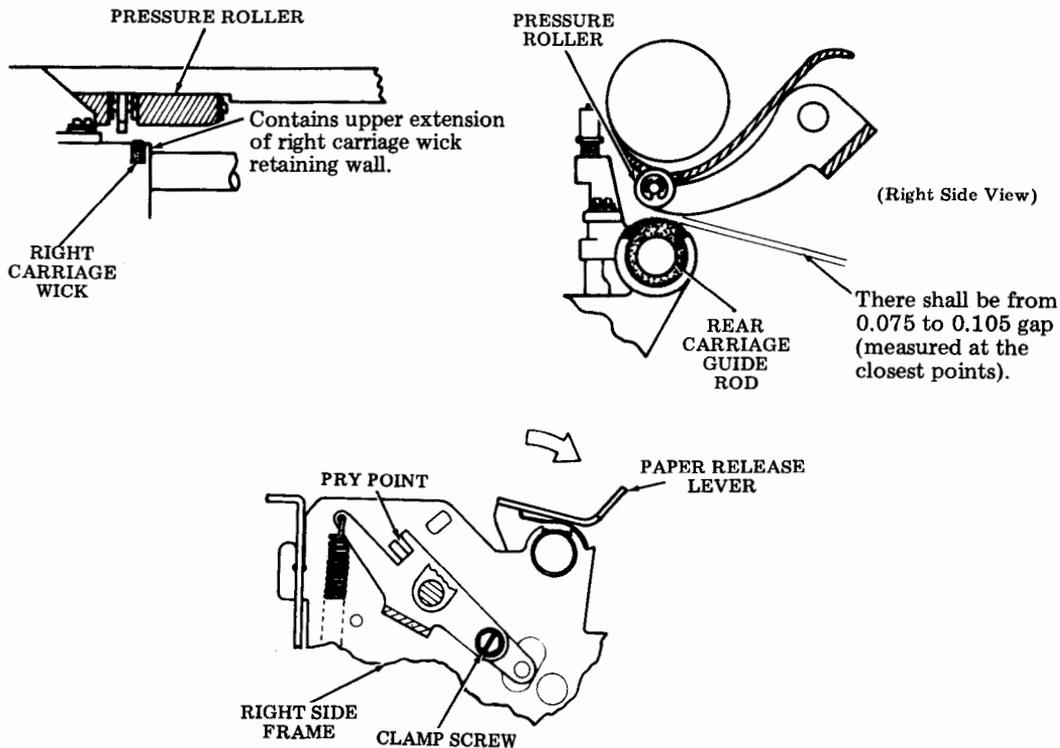
PRESSURE ROLLER BAIL**Requirement**

With the paper release lever in the forward position and the right end of the carriage next to the right rear carriage wick located immediately under the arm of the pressure roller bail (between the two pressure rollers) there should be from

Min 0.075 inch--Max 0.105 inch gap between the carriage and the bail arm when measured at the closest point.

To Adjust

Loosen the clamp screw to friction tight. Move pry point down to increase gap or up to decrease gap.



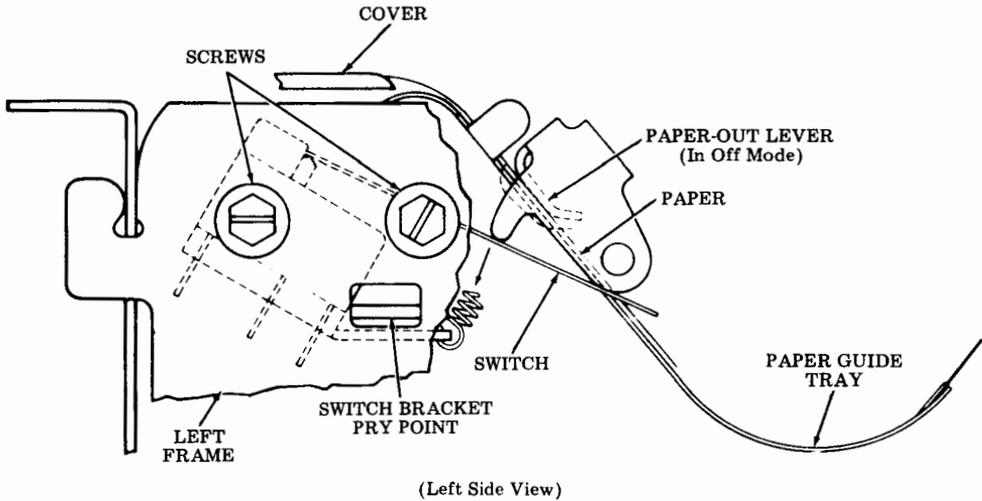
PAPER ALARM CONTACT LEVER

Requirement

With the paper alarm contact lever resting on the paper and the paper held taut over the cutout in the paper guide tray, the switch will be in the off mode (nonalarm). With the paper out, the lever should activate the switch (alarm mode).

To Adjust

Loosen screws and position switch bracket to meet requirement.



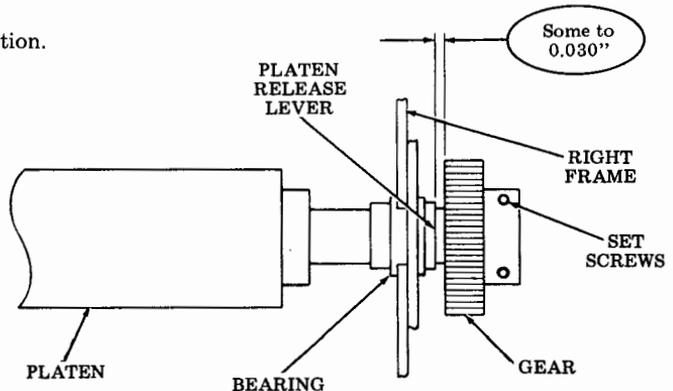
PLATEN ENDPLAY

Requirement

With the platen biased against the right bearing, there shall be
Min some--Max 0.030 inch
clearance between the right bearing and the gear.

To Adjust

Loosen the gear set screws and position.

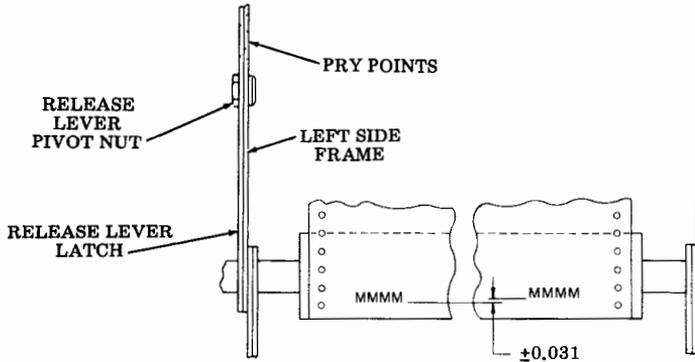


PRINTED LINE POSITION**Requirement**

The printed line shall not vary more than ± 0.031 from an arbitrary horizontal reference line (lined paper) when a line is drawn even with the bottom of the first and last character of a 10 inch long printed line. It is recommended that a single character (ie, M) be repeated on the entire line.

To Adjust

Remove the left end cover, loosen the release lever pivot nut and position release lever latch to meet the requirement. Retighten the shoulder nut and recheck the requirement.

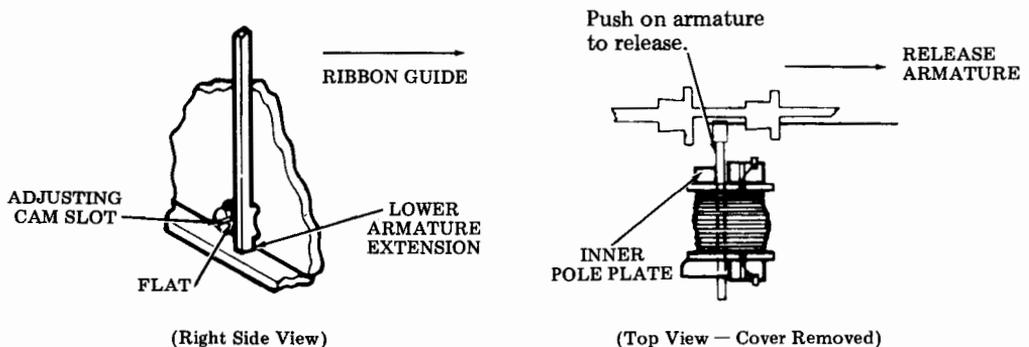
PRINT HEAD ARMATURE**Requirement**

With a good ribbon installed and the print head positioned and locked toward the platen, no wires shall stick through the ribbon (will not retract) and no dots shall be missing or noticeably lighter than other dots on printed copy.

To Adjust

Note: This adjustment applies to all nine levels. (Power must be off for this adjustment.)

Remove the ribbon and print head cover. Release the print head and position away from the platen. With the lower armature extension on the high part of the cam (adjusting cam slot horizontal and the flat facing toward the ribbon guide) and the armature released from the inner pole plate, rotate the adjusting cam slowly clockwise until the armature is magnetically pulled up. Continue rotating cam clockwise for 3 more clicks.



LINE FEED MOTOR GEAR-BACKLASH

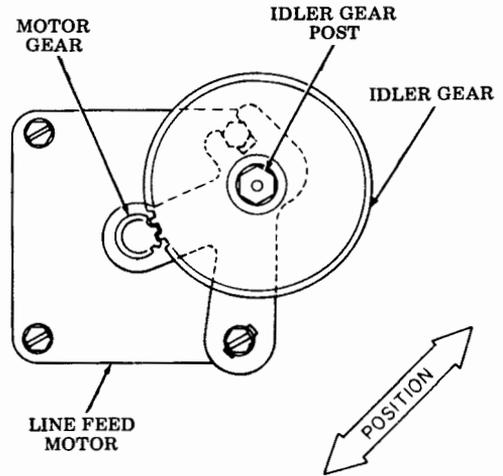
Requirement

There should be a minimum backlash between the motor pinion and the idler gear, when checked at point of least clearance between gears.

To Adjust

Rotate gears until the least clearance between the gears is found. Loosen the nut on the idler gear post and position the idler gear to minimize the backlash. Retighten the nut. Turn the gear and check for any binding. Remake the adjustment if necessary.

Note: When loosening the idler gear post, be careful not to loosen more than just enough to slide gear in and out towards the motor gear. If post is too loose, it will come out of the slot in the mounting bracket.



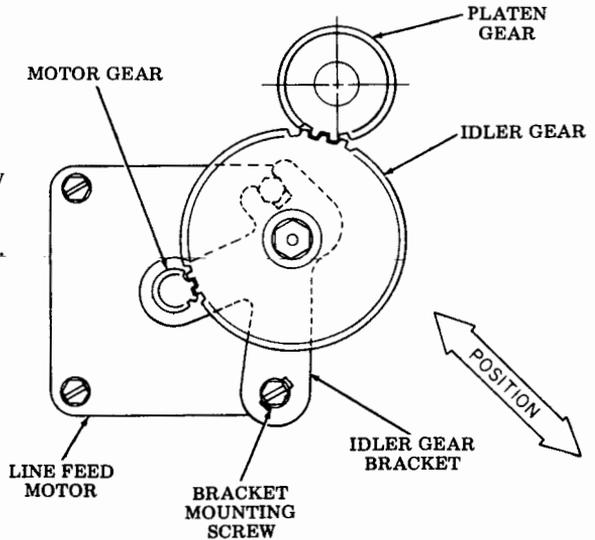
IDLER GEAR AND PLATEN GEAR

Requirement

There should be a minimum backlash between the idler gear and the platen gear.

To Adjust

Loosen the idler gear bracket mounting screw friction tight. Position the idler gear to minimize the backlash. Retighten the mounting screw. Turn the platen and check for binding. Remake the adjustment if necessary.



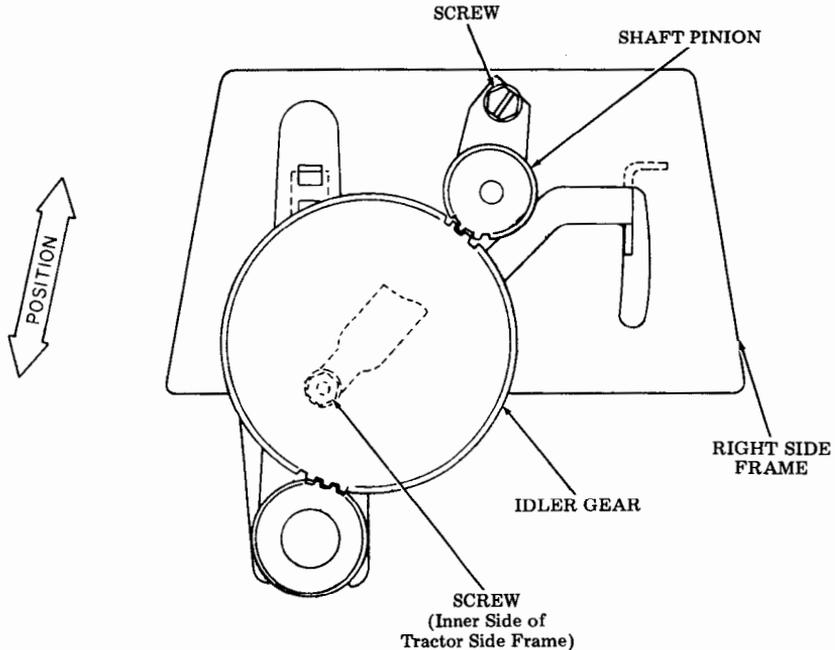
TRACTOR IDLER GEAR BACKLASH

Requirement

There should be a minimum backlash between the tractor idler gear and the shaft pinion.

To Adjust

Loosen the screws securing the idler gear bracket to the side frame and position the idler gear to minimize the backlash. Retighten the screws and turn the gear to insure free rotation. Remake the adjustment, if necessary.



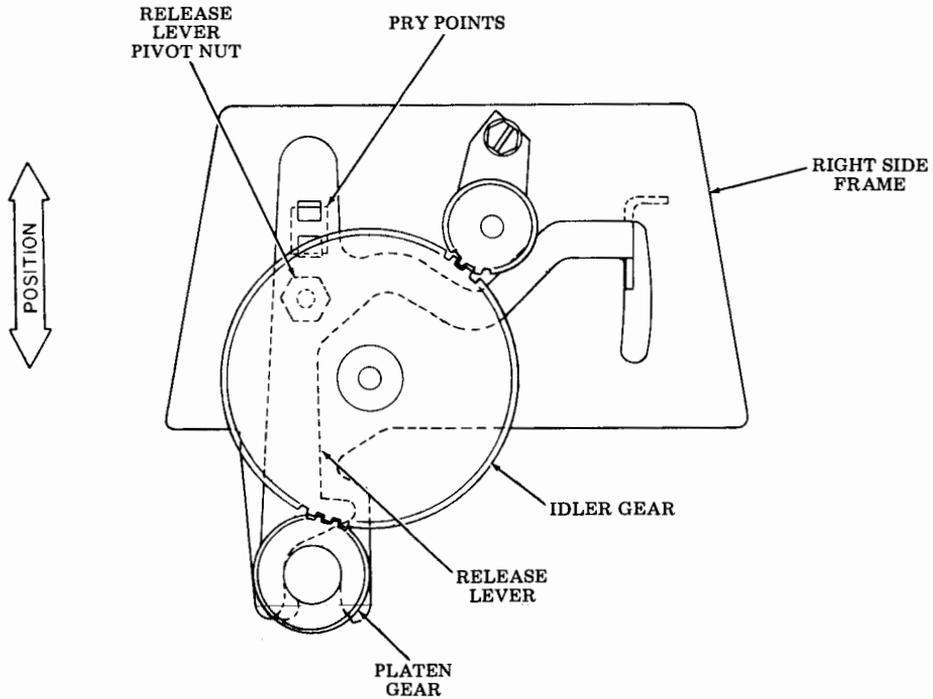
TRACTOR IDLER GEAR TO PLATEN GEAR

Requirement

With the tractor mechanism installed on the printer (latched on the platen bushings) there should be a minimum backlash between the platen drive gear and the tractor idler gear.

To Adjust

Remove the end cover from the right tractor frame, loosen the release lever pivot shoulder nut, and use the pry points to make the adjustment. Retighten the shoulder nut and rotate the platen with the line feed motor de-clutched (soft roll) to insure the mechanism rotates freely and there is no binding. Remake the adjustment, if necessary.



4. SPRING TENSIONS

① 430028 Lead Screw Spring

On left-side of lead screw, push to start to compress spring — 9 to 11 pounds.

② 430366 Carriage Nut Spring

Place carriage on left-side of unit. Hold lead screw pulley. Insert spring scale through top hole of left bearing housing. Push carriage with 46 ± 8 ounces to compress carriage nut spring.

③ 430366 Bias Spring

The free length of the bias spring (not assembled on the lead screw nuts) should be between 1.55 inch and 1.65 inch.

④ 130242 Ribbon Tension Spring

4-1/2 to 6-1/2 ounces to pull spring to installed length with ribbon installed.

⑤ 430021 SP Belt Tension Arm Spring

13-1/2 to 18-1/2 ounces to pull spring to installed length.

⑥ 110437 Paper-Out Spring

1/2 to 1 ounce to start paper-out lever moving.

⑦ 430410 Bell Plunger Spring

1 to 10 grams for striker (430411) to contact gong.

⑧ Link Spring (Part of 430216)

3/4 to 1-1/4 ounces at roll pin to hold spring in lowest position with locking handle in the most forward position.

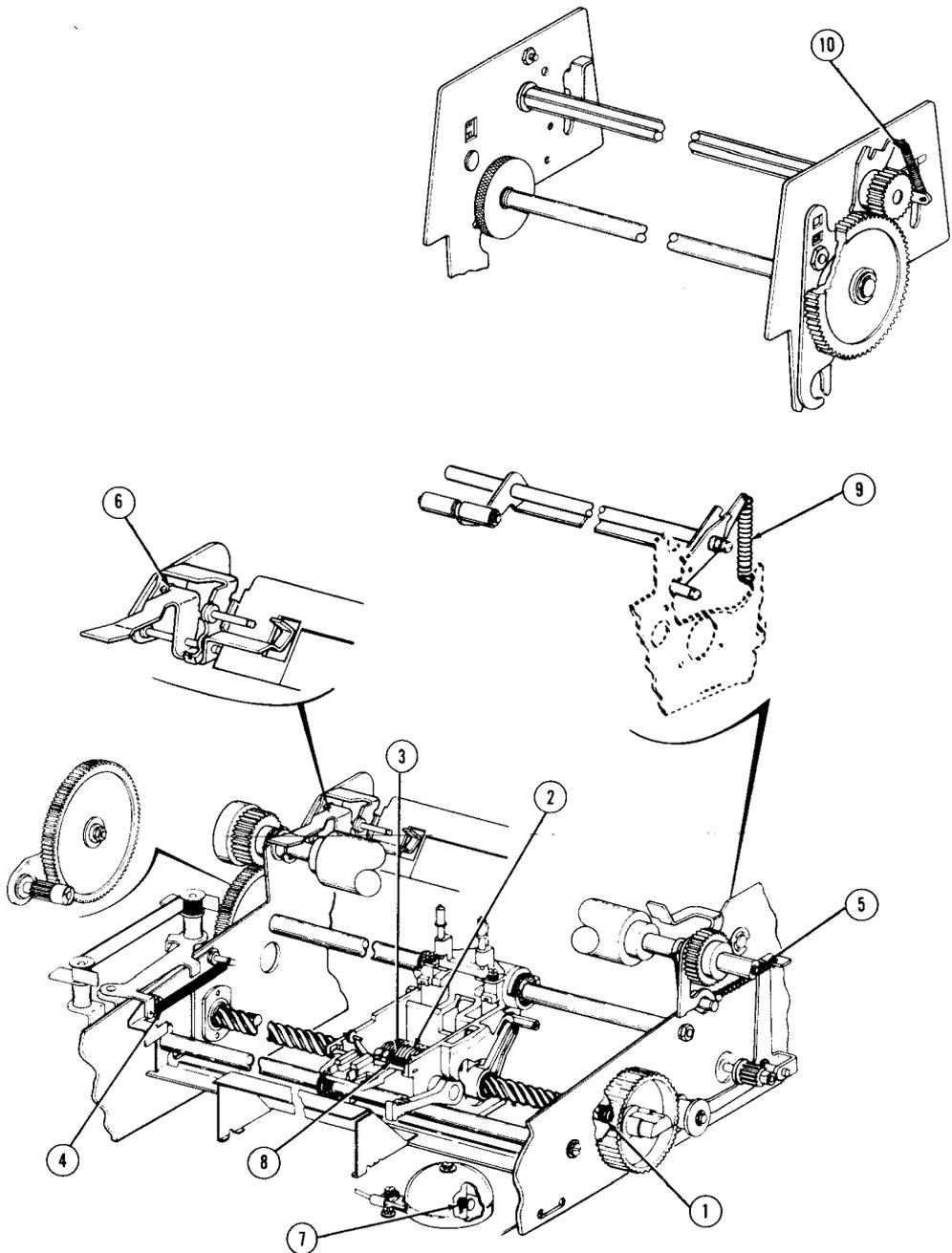
⑨ 82727 Pressure Roller Bail Spring

With the paper release lever in the rear position and pulling the pressure roller bail at the spring mounting hole at a right angle to the bail arm, it should take 46 to 56 ounces to start the roller bail moving.

⑩ 152871 Tractor Latch Lever Spring

10 to 20 ounces to pull spring to installed length.

SPRING IDENTIFICATION



43 FRICTION AND SPROCKET FEED PRINTERS

LUBRICATION

| CONTENTS | PAGE |
|--------------------------------|------|
| 1. GENERAL | 1 |
| 2. LUBRICATION PROCEDURES..... | 1 |
| 3. LUBRICATION POINTS | 3 |

1. GENERAL

1.01 This section provides lubrication procedures for the 43 Friction and Sprocket (Pin) Feed Printers.

1.02 This section is reissued to change the title and the type of grease used (G-A) to lubricate the printer (paragraph 2.03).

1.03 Lubricate the printer at intervals indicated under Routine Maintenance, Section 574-500-750.

1.04 The printer can be lubricated by opening the cabinet cover.

Note: When ordering replaceable components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP430837).

2. LUBRICATION PROCEDURES

2.01 Apply lubricant to points as indicated.

(a) On small parts, a minimum amount of lubricant should be applied so that the lubricant remains on the parts and does not run off.

(b) Excessive lubricant should be removed with a dry, lint-free cloth.

(c) The following areas must be kept dry, free of all lubricant: All electrical components, including terminals. All parts normally touched by the operator, including exposed surfaces in ribbon, paper handling areas, and all large flat areas.

2.02 The following symbols indicate the quantity of lubricant to be used in a specified area: Symbols O1, O2, O3, etc, refer to 1, 2, 3, etc, drops of oil.

2.03 The following list of symbols applies to the lubrication instructions and the type of lubricant to be used:

O Apply KS-7470 oil.

G-A Apply thin film of grease (use 14 oz container of 454641 grease).

G-B Apply thin film of Syn-Tech grease (use 430836 tube with grease and 430838 brush).

G-C Fill with Poly Oil grease (use 430837 injector with grease).

S Saturate felt oilers, washers, and wicks with oil.

D Keep dry, no lubricant permitted.

2.04 Lubrication checklist:

Lead Screw — Film of grease over the entire threaded portion of lead screw.

Carriage Wicks — Saturate with oil (four places).

Ribbon Guide Rollers — Two drops of oil (two places).

Ribbon Rollers — Two drops of oil (two places).

Ribbon Tension Arm Pivot and Spring — Two drops of oil each (four places).

Spacing Tension Arm Pivot, Roller and Spring — Two drops of oil each (four places).

Platen Bearing — Five drops of oil each side (two places).

Finger Pivots — Two drops of oil each side (two places).

Paper-Out Arm Pivot — Two drops of oil on both pivot points (sprocket feed only).

Lead Screw Pulley Clip — Grease between clip and lead screw shaft.

SECTION 574-501-710

Pressure Roller Bail Spring — Two drops of oil each end (2 places — Friction Feed only).

Platen Tray Shaft — Two drops of oil each end at the side plates (2 places — Friction Feed only).

Pressure Roller Bail — Two drops of oil each end at pivot points on each side of bail (2 places — Friction Feed only).

Carriage and Nut Engaging Surfaces:

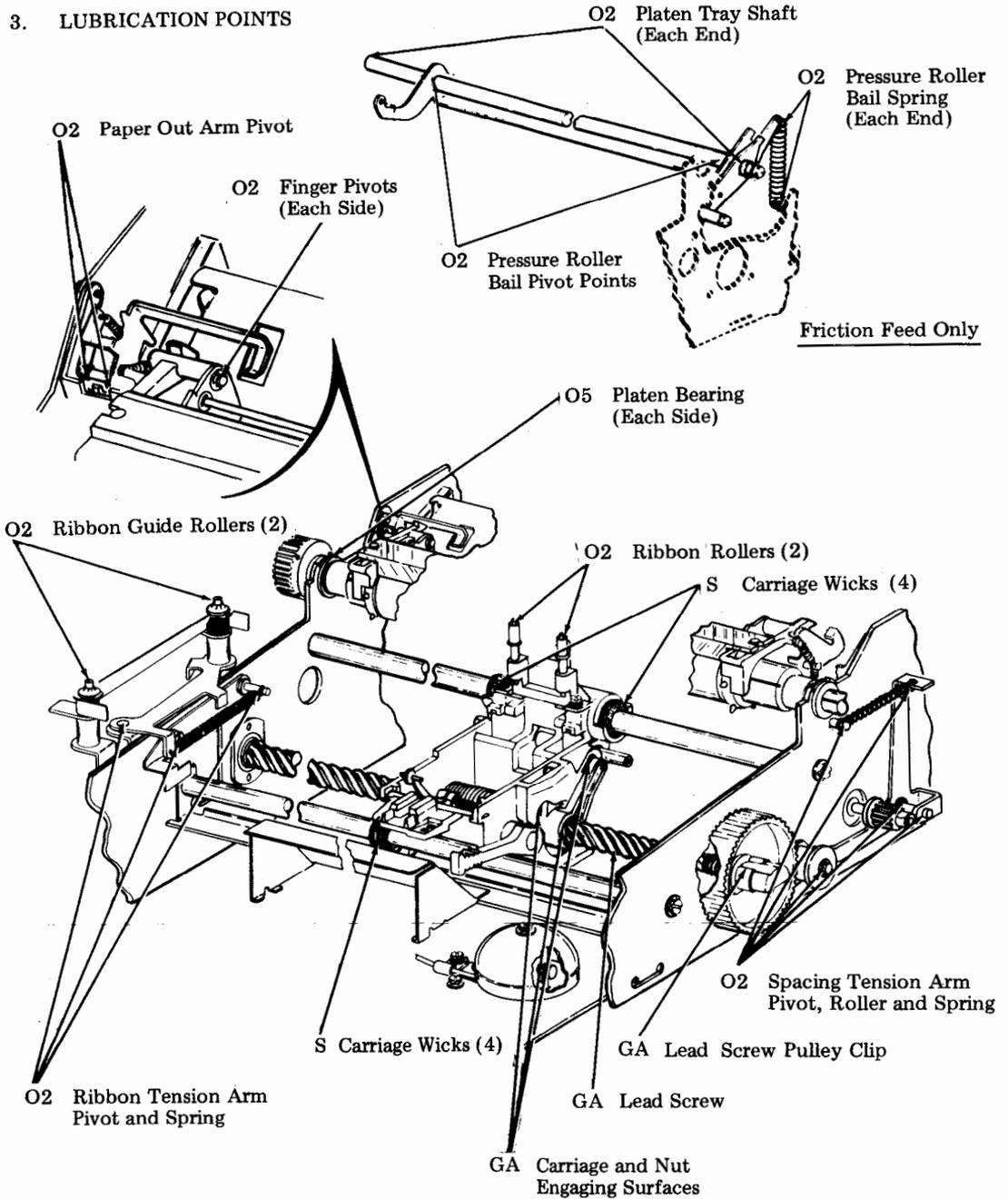
- (a) Two Nut Drive Arms — Grease four bearing surfaces.

- (b) Nut Keying Arm — Lubricate by packing carriage engaging slot with grease.

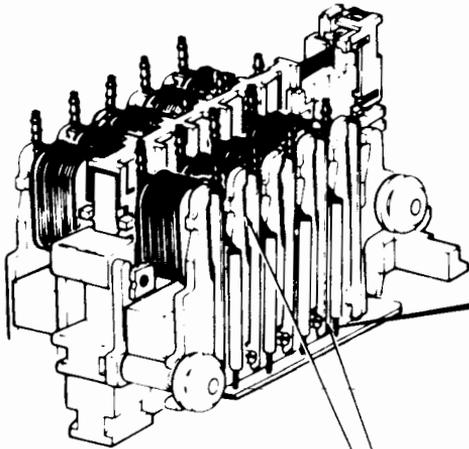
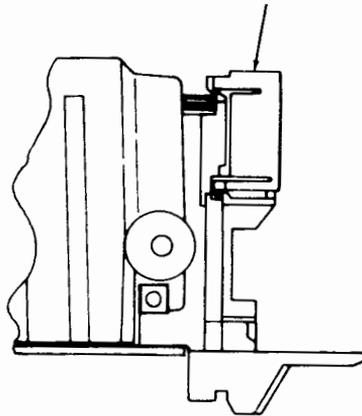
Print Head:

- (a) Active Armatures and Outer Pole Plate — Grease at the upper pivot area as well as the lower locator area (9 places).
- (b) Print Wire Well Area — Completely fill with grease.

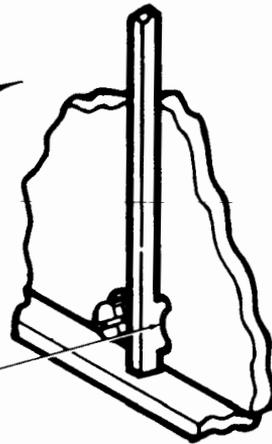
3. LUBRICATION POINTS



G-C Print Head Well Area



G-B Print Head Active Armatures and Outer Pole Plates



43 TRACTOR FEED PRINTER

LUBRICATION

| CONTENTS | PAGE |
|-------------------------------|------|
| 1. GENERAL | 1 |
| 2. LUBRICATION PROCEDURES.... | 1 |
| 3. LUBRICATION POINTS | 3 |

1. GENERAL

1.01 This section provides lubrication procedures for the 43 tractor feed printer. Refer to Section 574-501-710 for the 43 friction and sprocket (pin) feed printer lubrication.

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

1.03 Lubricate the printer at intervals indicated under Routine Maintenance, Section 574-500-750.

1.04 The printer can be lubricated by opening the cabinet cover.

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

2. LUBRICATION PROCEDURES

2.01 Apply lubricant to points as indicated.

(a) On small parts, a minimum amount of lubricant should be applied so that the lubricant remains on the parts and does not run off.

(b) Excessive lubricant should be removed with a dry, lint-free cloth.

(c) The following areas must be kept dry, free of all lubricant: All electrical components, including terminals. All parts normally touched by the operator, including exposed surfaces in ribbon, paper handling areas, and all large flat areas.

2.02 The following symbols indicate the quantity of lubricant to be used in a specified area: Symbols O1, O2, O3, etc, refer to 1, 2, 3, etc, drops of oil.

2.03 The following list of symbols applies to the lubrication instructions and the type of lubricant to be used:

- O Apply KS-7470 oil.
- G-A Apply thin film of grease (use 14 oz container of 454641 grease).
- G-B Apply thin film of Syn-Tech grease (use 430836 tube with grease and 430838 brush).
- G-C Fill with Poly Oil grease (use 430837 injector with grease).
- S Saturate felt oilers, washers, and wicks with oil.
- D Keep dry, no lubricant permitted.

2.04 Lubrication checklist:

Lead Screw — Film of grease over the entire threaded portion of lead screw.

Carriage Wicks — Saturate with oil (four places).

Carriage Oiler Foam — Saturate with oil.

Ribbon Guide Rollers — Two drops of oil (two places).

Ribbon Roller — Two drops of oil (two places).

Ribbon Tension Arm Pivot and Spring — Two drops of oil each (four places).

Spacing Tension Arm Pivot, Roller and Spring — Two drops of oil each (four places).

Platen Bearing — Five drops of oil each side (two places).

Platen Release Lever — Two drops of oil each side (two places).

Paper-Out Arm Pivot — Two drops of oil on both pivot points.

SECTION 574-501-711

Lead Screw Pulley Clip — Grease between clip and lead screw shaft.

Pressure Roller Bail Spring — Two drops of oil each end (two places).

Platen Tray Shaft — Two drops of oil each end at the side plates (two places).

Pressure Roller Bail — Two drops of oil each end at pivot points on each side of bail (two places).

Carriage and Nut Engaging Surfaces:

- (a) Two Nut Drive Arms — Grease four bearing surfaces.
- (b) Nut Keying Arm — Lubricate by packing carriage engaging slot with grease.

Inner Platen Shaft and Roll Pin — Apply thin film of grease.

Platen Pressure Roller Release Arm Pivot and Working Surfaces — Apply thin film of grease.

Line Feed Motor to Platen Intermediate Gear and Shaft — Apply a thin film of grease.

Tractor:

Spline Shaft — One drop of oil on each bearing (two places).

Margin Adjust Wheel — Oil light coating on threads.

Release Lever Pivots — One drop of oil on each pivot (two places).

Idler Gear Shaft — Light film of grease.

Gear Surfaces — Light film of grease on drive surfaces.

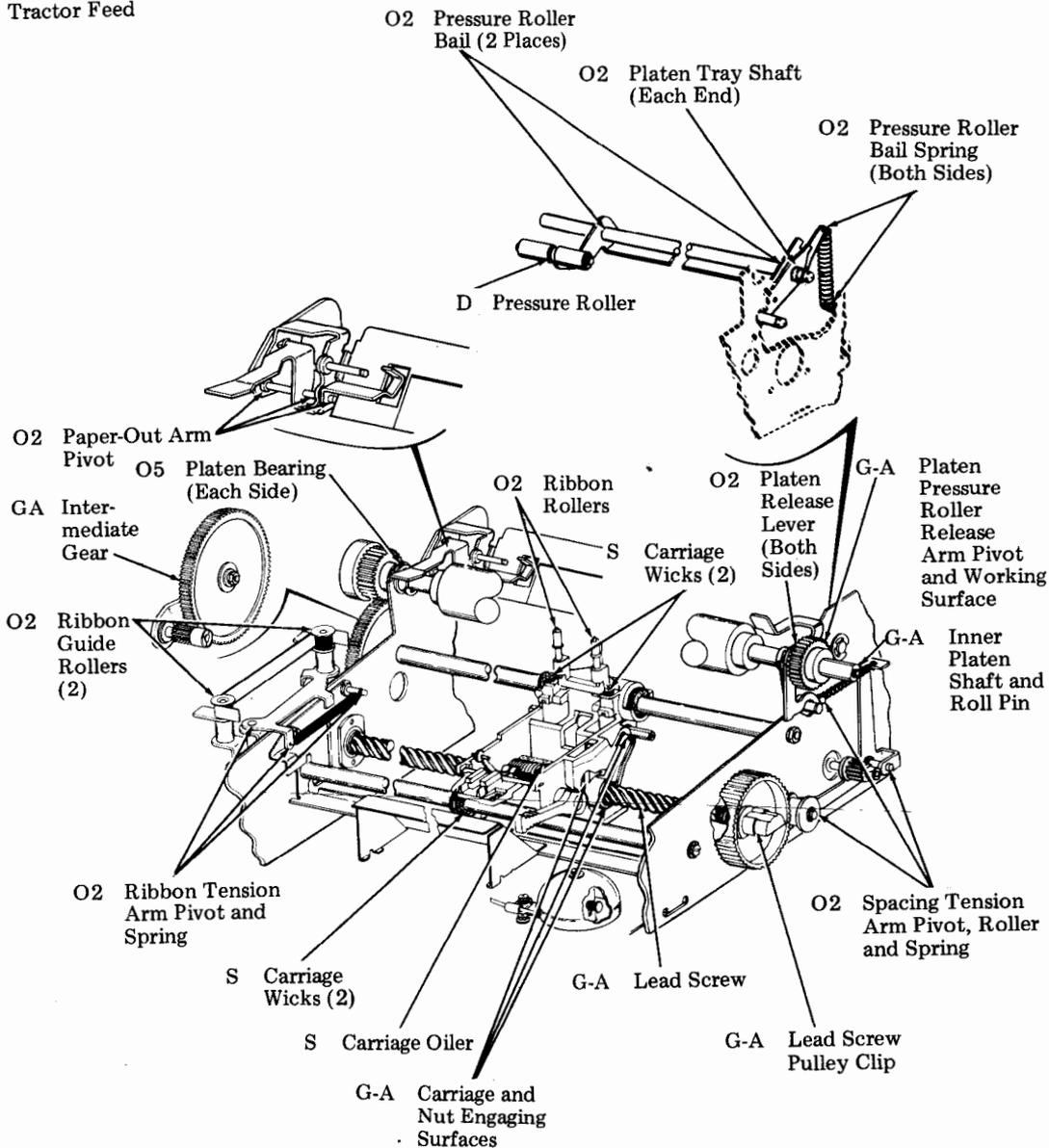
Tractor Release Springs — One drop of oil each end (two springs).

Print Head:

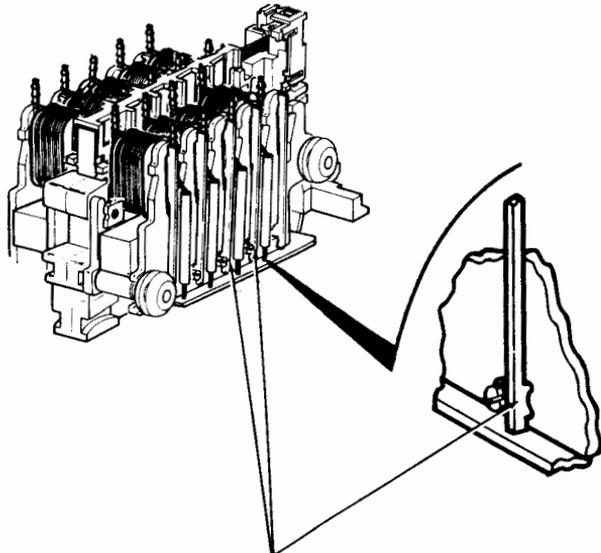
- (a) Active Armatures and Outer Pole Plate — Grease at the upper pivot area as well as the lower locator area (nine places).
- (b) Print Wire Well Area — Completely fill with grease.

3. LUBRICATION POINTS

Tractor Feed

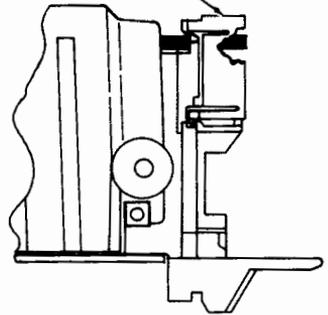


Print Head

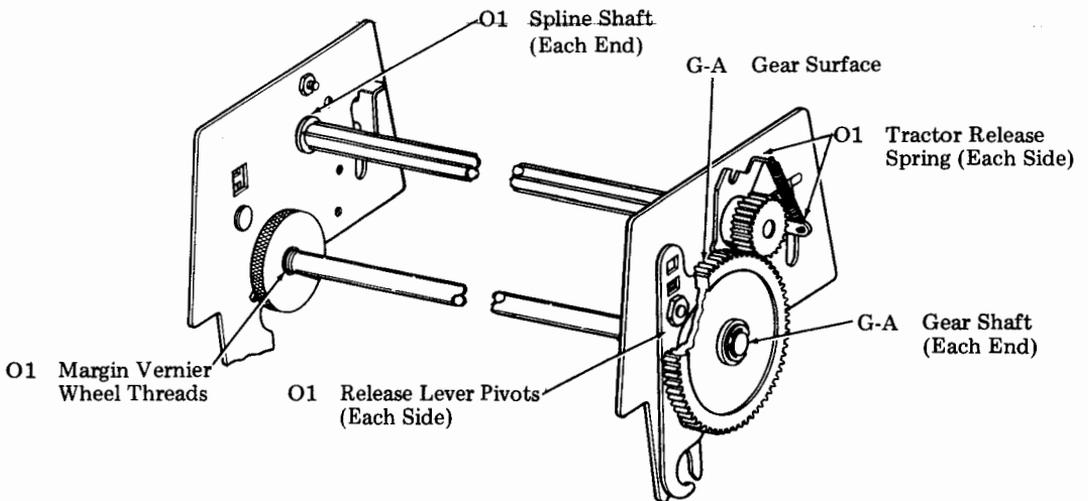


G-B Print Head Active Armatures and Outer Pole Plates

G-C Print Head Well Area



Tractor



43 FRICTION AND SPROCKET FEED PRINTER

DISASSEMBLY/REASSEMBLY

| CONTENTS | PAGE | |
|---|------|--|
| 1. GENERAL | 1 | intended to directly access any assembly or part, insofar as possible, without total disassembly of the unit. |
| 2. TOOLS REQUIRED | 2 | 1.05 When removing a subassembly or part from the printer, follow the removal procedure and note the sequence of removal to enable proper reassembly. For reassembly, reverse the procedure except where different instructions are given. Perform any adjustments indicated using Section 574-501-700. |
| 3. DISASSEMBLY/REASSEMBLY | 3 | |
| PRINT HEAD WITH COVER | 3 | 1.06 Disassembly of printer parts except the print head will require the removal of the set housing and rear frame. Refer to Teleprinter Disassembly/Reassembly, Section 574-500-720 for set housing and rear frame removal and replacement procedures. |
| SPACING MOTOR BELT | 6 | |
| SIGNAL BELL | 6 | |
| SPACING MOTOR WITH CABLE AND ENCODER | 8 | 1.07 Disassembly of the printer motors will require the removal of the logic card. |
| LINE FEED MOTOR | 10 | 1.08 Disassembly of the printer lead screw, carriage with post assembly, lead screw nut(s), and collar with link will require the removal of the keyboard, if present. |
| PLATEN | 12 | |
| LEAD SCREW | 14 | 1.09 After replacing printer parts, refer to the lubrication procedures in Section 574-501-710 and lubricate any parts requiring lubrication. |
| CARRIAGE WITH POST ASSEMBLY | 15 | |
| LEAD SCREW NUT | 15 | 1.10 Some parts that are not listed in the parts sections are shown as necessary to the disassembly procedures such as screws and ring retainers, etc. These parts are common to other Teletype Corporation product lines and if needed may already be available in field repair kits or can be ordered. |
| COLLAR WITH LINK | 16 | |
| PAPER TRAY | 16 | 1.11 When ordering replaceable components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP430047). |
| PAPER GUIDES | 20 | |
| 1. GENERAL | | |
| 1.01 This section covers disassembly and reassembly procedures for the 43 Friction and Sprocket (Pin) Feed Printer. | | |
| 1.02 This section is reissued to change the title and update some of the disassembly procedures. | | |
| 1.03 The printer is not considered a field replaceable item. Any trouble can be corrected by adjustments or by replacement with maintenance spares. | | |
| 1.04 Procedures are provided to remove individual assemblies and parts and are | | 1.12 Reference in the procedures to left and right, up or down, and top or bottom, etc, refer to the printer in its normal operating position as viewed by the operator. |

SECTION 574-501-720

2. TOOLS REQUIRED

2.01 The following tools may be required when performing the printer disassembly and reassembly procedures. Most of these items should normally be present in standard maintenance tool kits.

| <u>Part No.</u> | <u>Description</u> | <u>Part No.</u> | <u>Description</u> |
|-----------------|---|-----------------|--|
| | | 108285 | Pliers, Long-Nose |
| | | 110271 | Wrench, Hex Key |
| | | 124682 | Wrench, Hex Key |
| | | 125752 | Wrench, 3/16 Inch Socket |
| | | 129534 | Wrench, Open End, 3/16 Inch and 1/4 Inch |
| | | 135676 | Handle |
| 75765 | Hook, Pull Spring | 135677 | Bit, 1/4 Inch Socket |
| 95368 | Screwdriver, 1/8 Inch, 2 Inch Blade | 135678 | Bit, 5/16 Inch Socket |
| | | 142554 | Hook, Pull Spring |
| 100704 | Screwdriver w/Clip, 10 Inch Blade | 142555 | Hook, Push Spring |
| | | 151392 | Tweezers |
| 100982 | Screwdriver w/Clip, 1/4 Inch 6 Inch Blade | 152835 | Wrench, Open End, 5/16 Inch and 3/8 Inch |
| | | 407326 | Extractor, I.C. |

3. DISASSEMBLY/REASSEMBLY

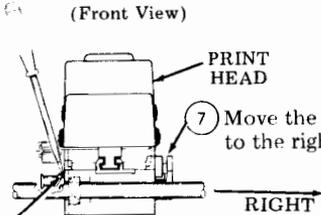
PRINT HEAD WITH COVER

3.01 To remove the print head with cover:

Caution: When handling loose print heads, care must be taken to prevent print head cable connector pins from being bent.

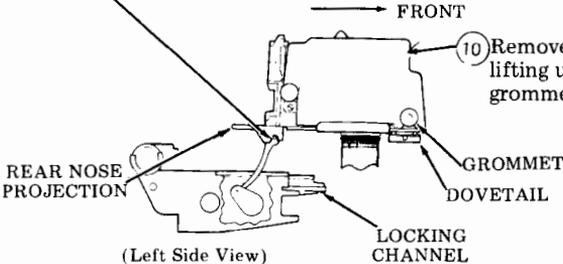
Note: Print head removal and replacement is also shown in Teleprinter Disassembly/Reassembly, Section 574-500-720.

- 8 Grasp print head and pull forward. Lift front of print head to disengage locking channels.

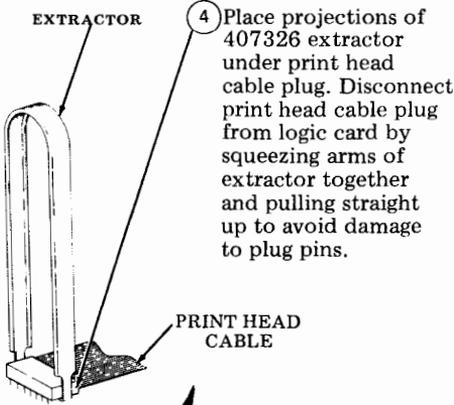


- 6 Move retaining clip on locking handle extension protruding from left side of carriage wall approximately 1/4 inch away from wall. (Pry with screwdriver.)
- 7 Move the locking handle to the right.

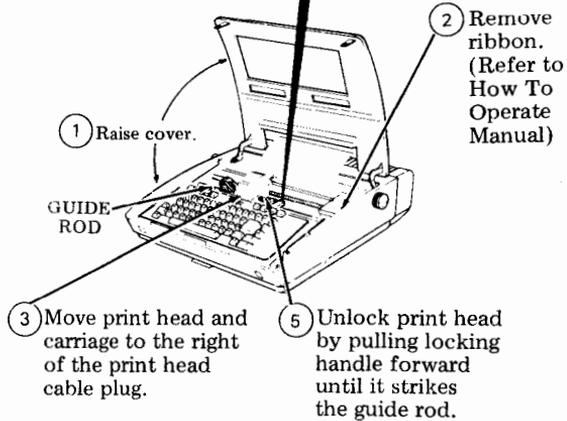
- 9 Disengage print head from roll pin on end of link. Remove print head.



- 10 Remove print head cover by lifting up and away from grommets.



- 4 Place projections of 407326 extractor under print head cable plug. Disconnect print head cable card by squeezing arms of extractor together and pulling straight up to avoid damage to plug pins.

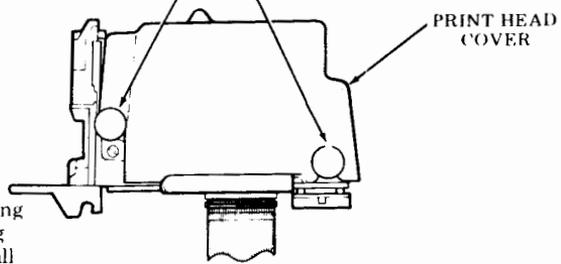


- 1 Raise cover.
- 2 Remove ribbon. (Refer to How To Operate Manual)
- 3 Move print head and carriage to the right of the print head cable plug.
- 5 Unlock print head by pulling locking handle forward until it strikes the guide rod.

3.02 To replace the print head with cover:

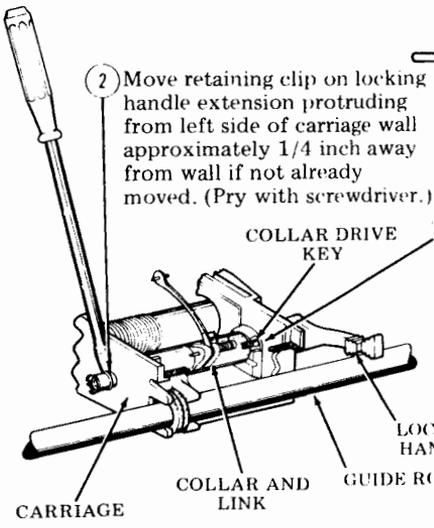
Caution: When handling loose print heads, care must be taken to prevent print head cable connector pins from being bent.

1 Verify that print head cover is attached securely to rubber grommets. (Push down until secure.)



PRINT HEAD COVER

2 Move retaining clip on locking handle extension protruding from left side of carriage wall approximately 1/4 inch away from wall if not already moved. (Pry with screwdriver.)

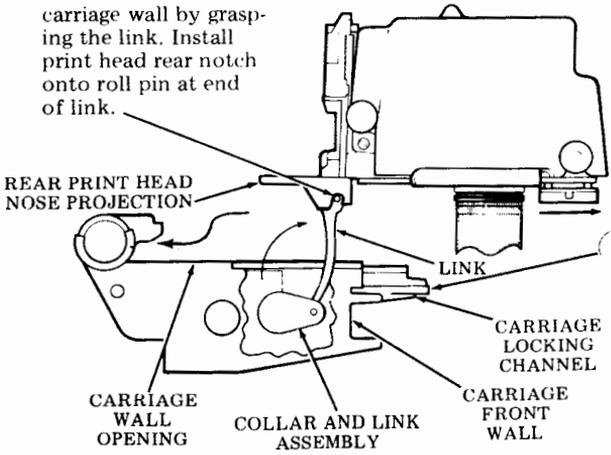


3 Rotate locking handle forward until it strikes the guide rod then pull locking handle to the right until collar drive key on locking handle engages slot in right carriage side wall. Observe interaction of these parts for use when performing step 7.

Note: Collar and link may snap rearward.

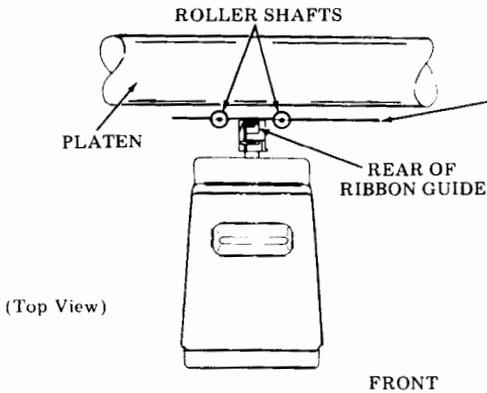
4 Collar and link must be manually rotated and held toward front of carriage wall by grasping the link. Install print head rear notch onto roll pin at end of link.

5 Hold collar and link forward (by pressing down on the print head) while inserting nose projection in carriage wall opening.



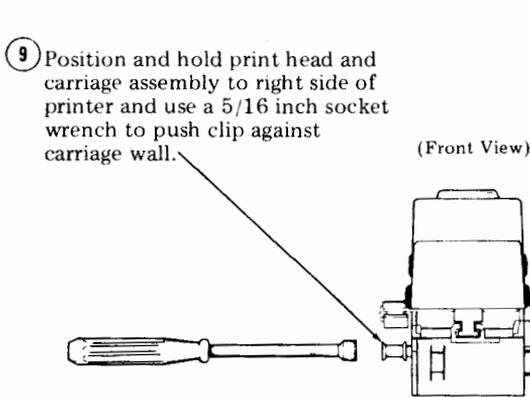
6 Pivot front of print head down to carriage locking channel.

(Left View)



7 Slowly push print head rearward and further into the carriage locking channel until the rear of the ribbon guide is even with center of roller shafts. Apply continuous leftward pressure to locking handle at its pivot shaft, while slowly pulling print head forward until collar drive key on handle engages (snaps) into slot in collar.

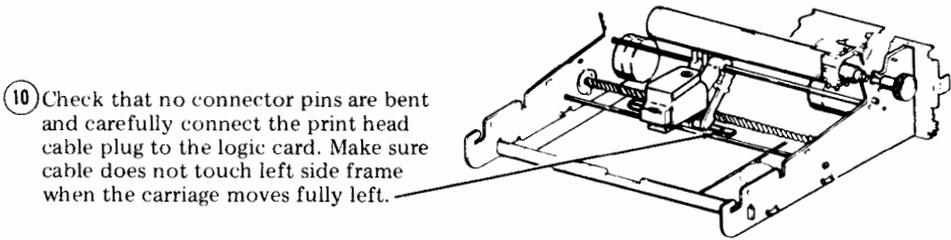
Note: Parts referred to were visible in step 3.



9 Position and hold print head and carriage assembly to right side of printer and use a 5/16 inch socket wrench to push clip against carriage wall.

8 Move the handle all the way to the rear, locking the print head in close proximity to the platen by the additional force necessary to detent the handle. If handle does not move to rear, the drive key did not properly engage the collar slot (step 7).

Note: Check to make sure there is some clearance between print head and platen before detenting handle. Check PRINT HEAD TO PLATEN adjustment.

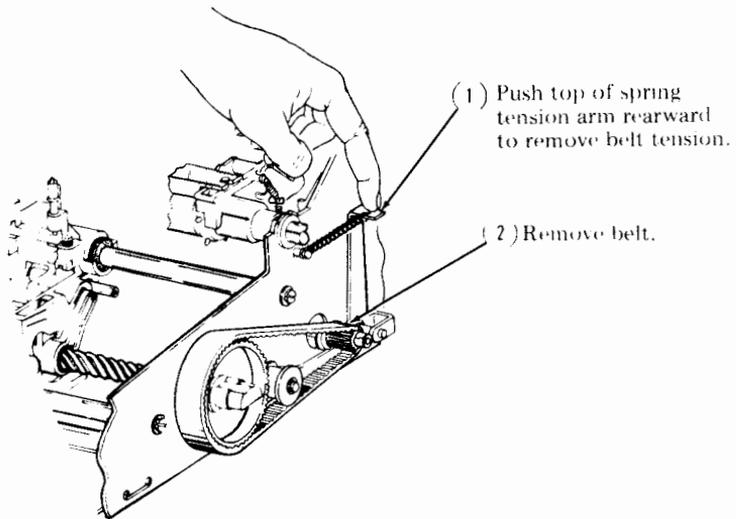


10 Check that no connector pins are bent and carefully connect the print head cable plug to the logic card. Make sure cable does not touch left side frame when the carriage moves fully left.

11 Install ribbon. (Refer to How To Operate Manual.)

SPACING MOTOR BELT

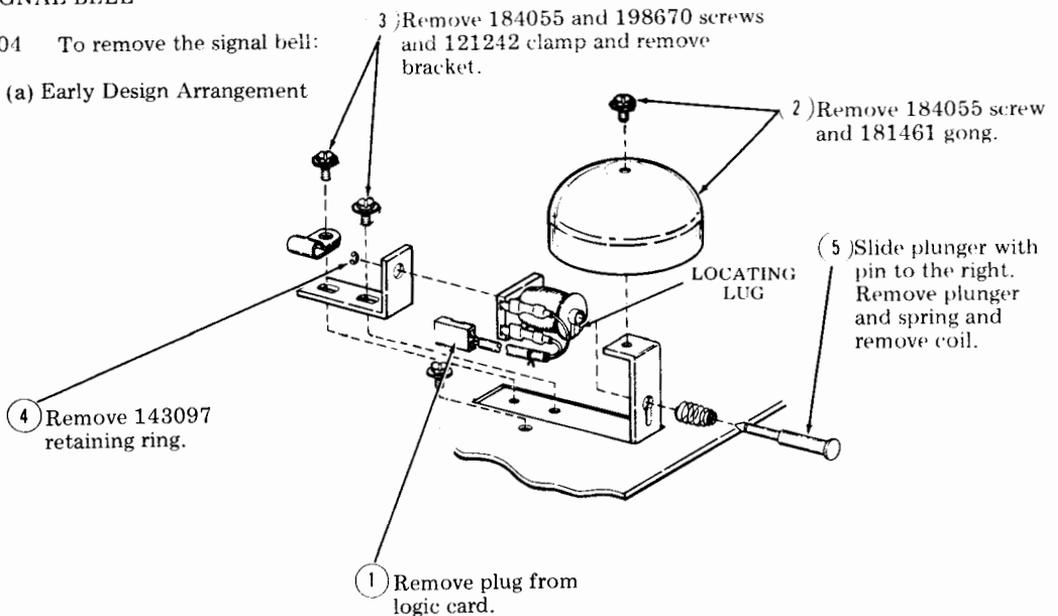
3.03 To remove the spacing motor belt:



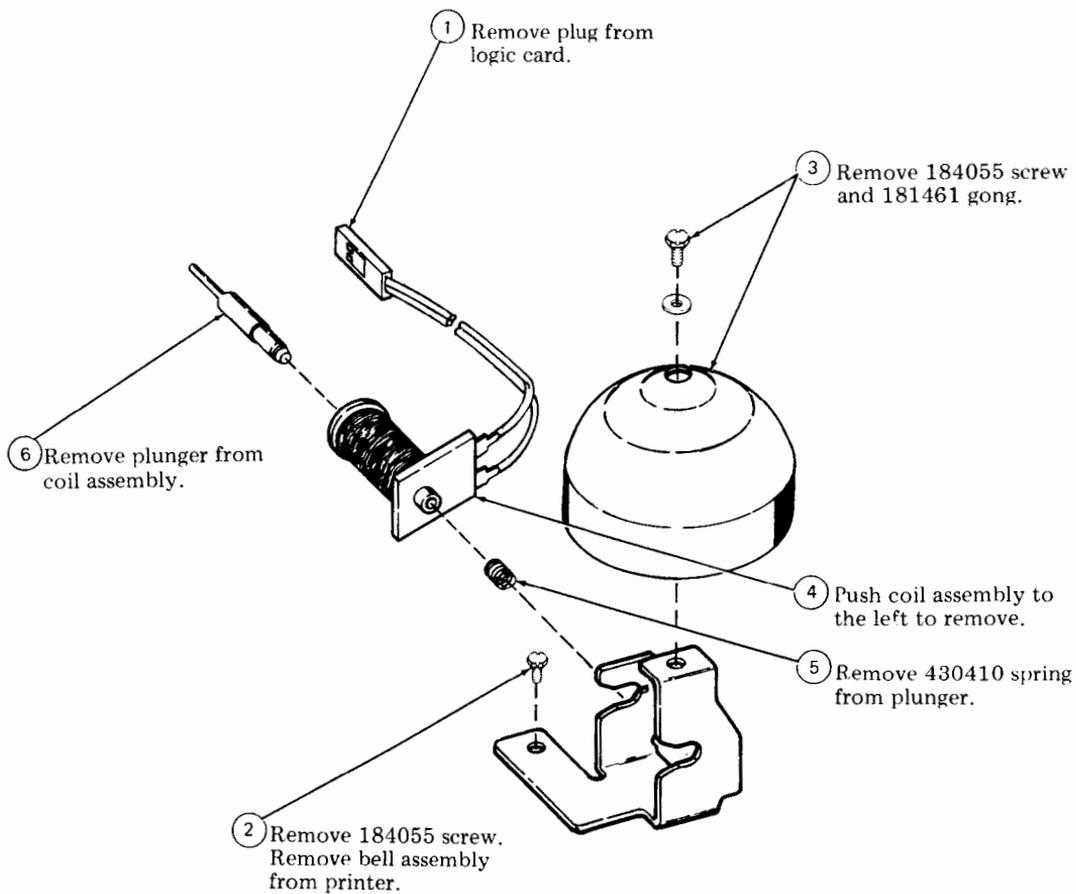
SIGNAL BELL

3.04 To remove the signal bell:

(a) Early Design Arrangement



(b) Late Design Arrangement

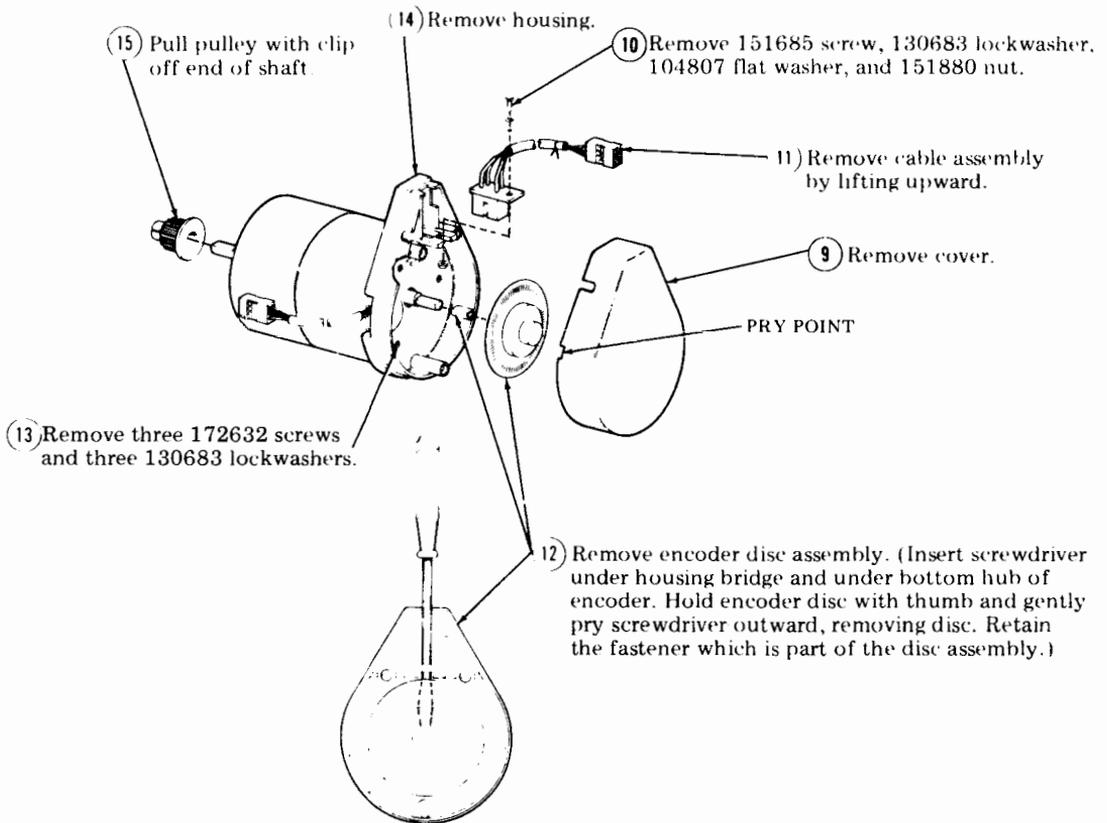
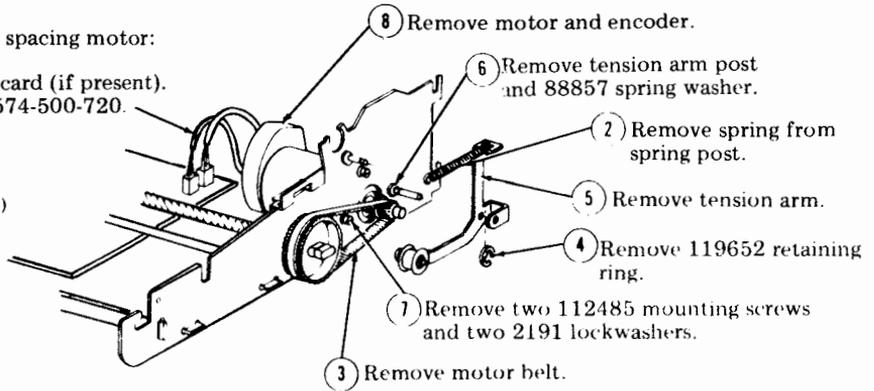


SPACING MOTOR WITH CABLE AND ENCODER

3.05 To remove the spacing motor:

- 1 Remove the logic card (if present). Refer to Section 574-500-720.

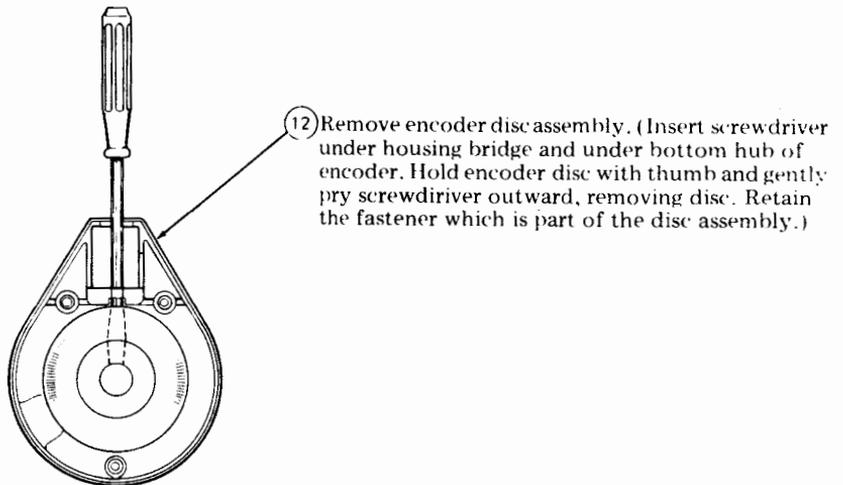
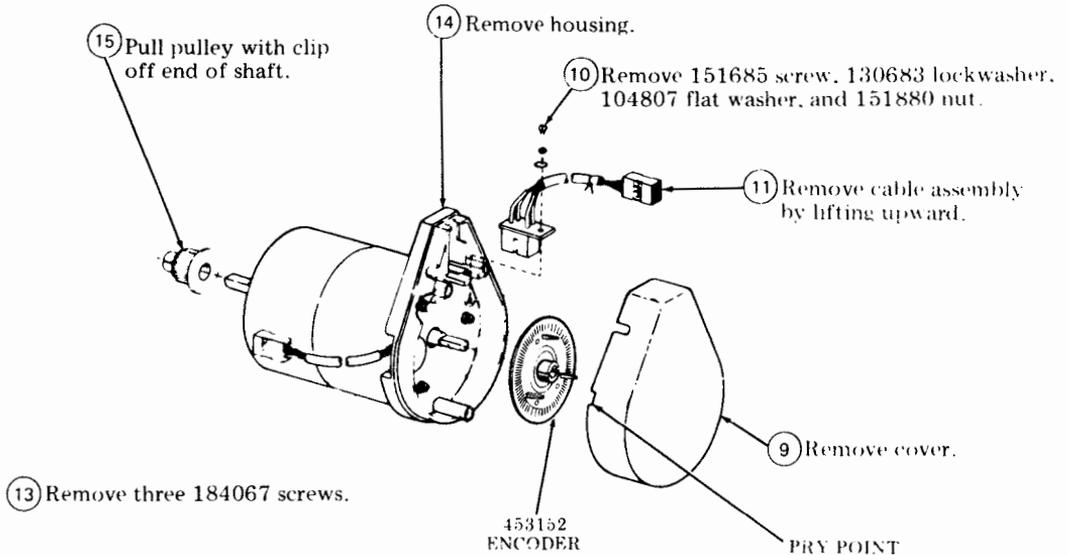
(Right Side View)



Warning: Do not pull on metal disc edges as this will deform encoder disc causing it to rub against the encoder.

Note: In reassembly, make sure disc does not rub on encoder assembly.

(b) 430441 Motor with cable and encoder.



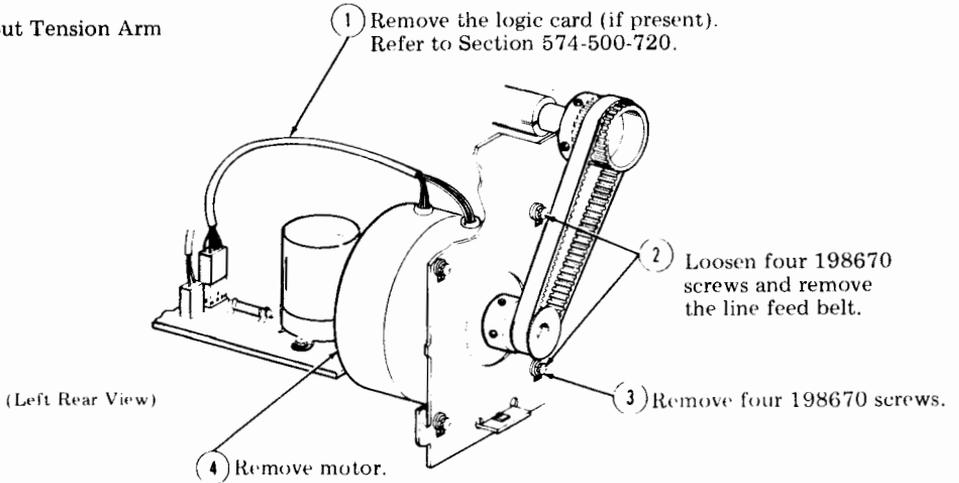
Note: In reassembly, make sure disc does not rub on encoder assembly.

SECTION 574-501-720

LINE FEED MOTOR

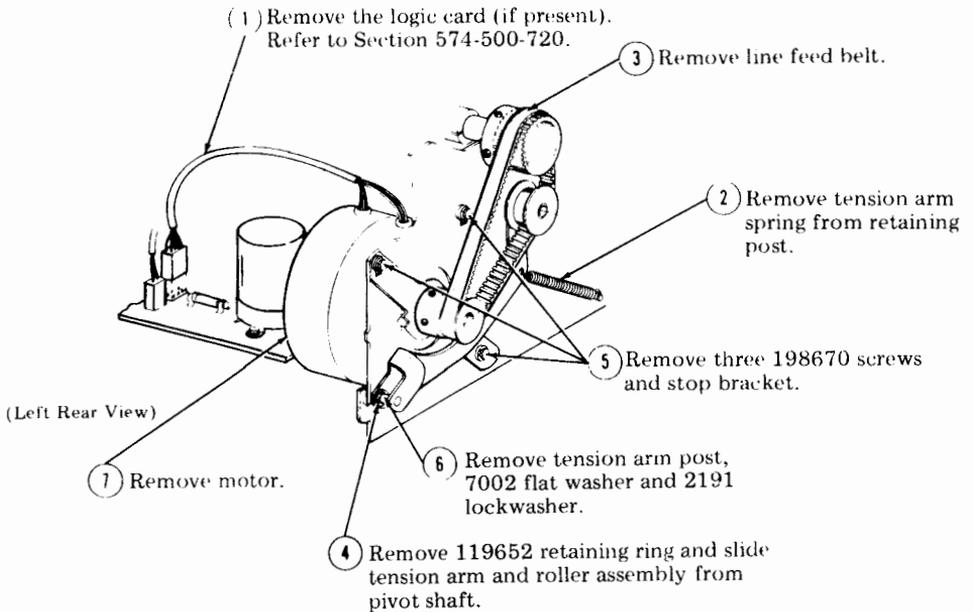
3.06 To remove the line feed motor:

(a) Without Tension Arm



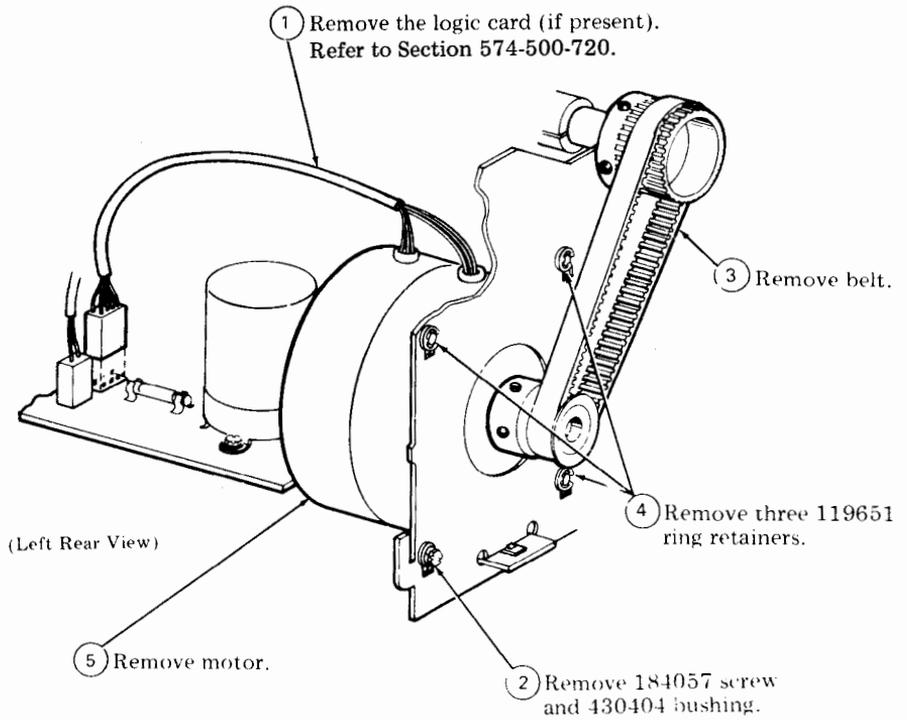
Note: In reassembly, perform LINE FEED BELT TENSION adjustment

(b) With Tension Arm



Note: In reassembly, perform STOP BRACKET adjustment.

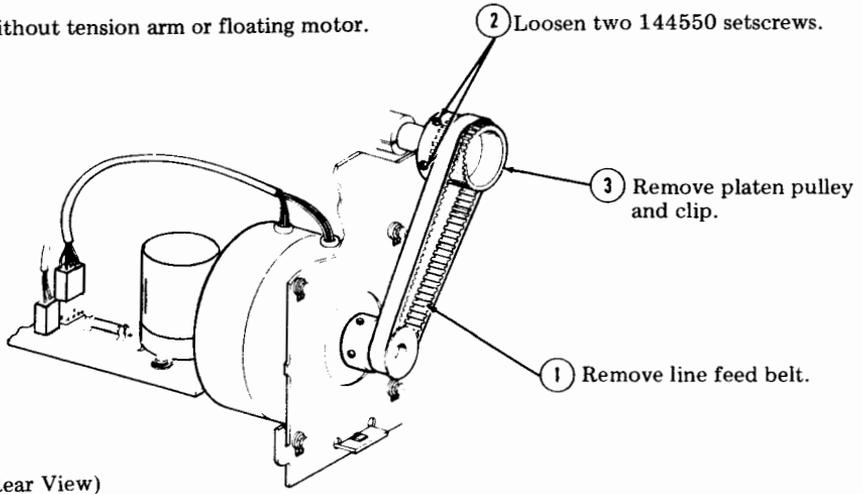
(c) With floating motor



PLATEN

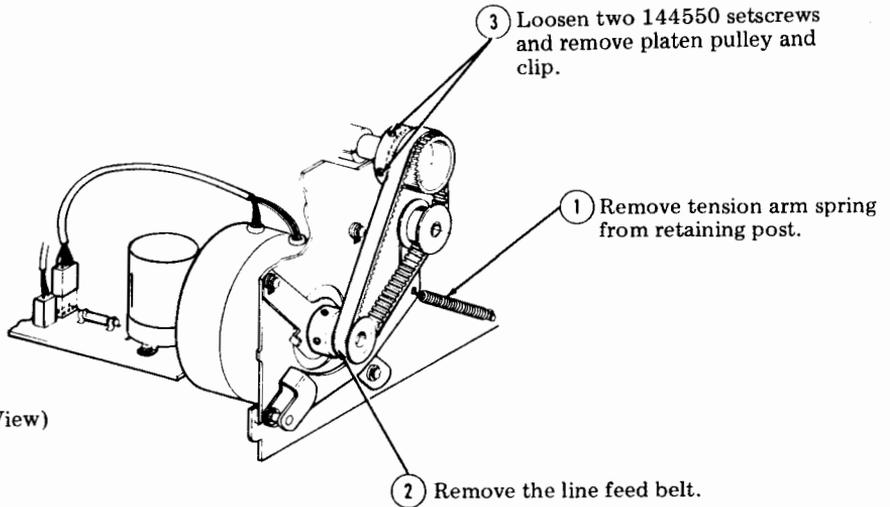
3.07 To remove the platen:

(a) Motor without tension arm or floating motor.

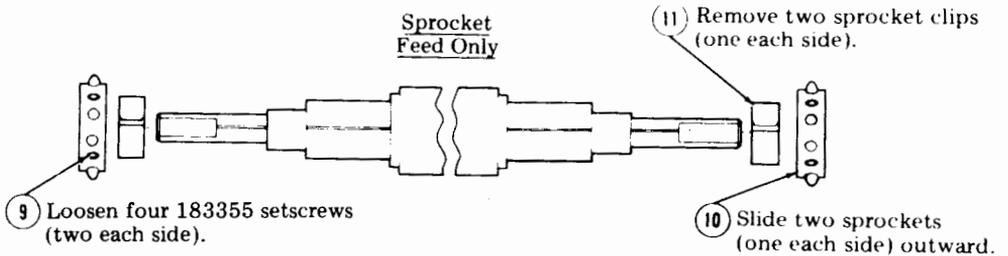
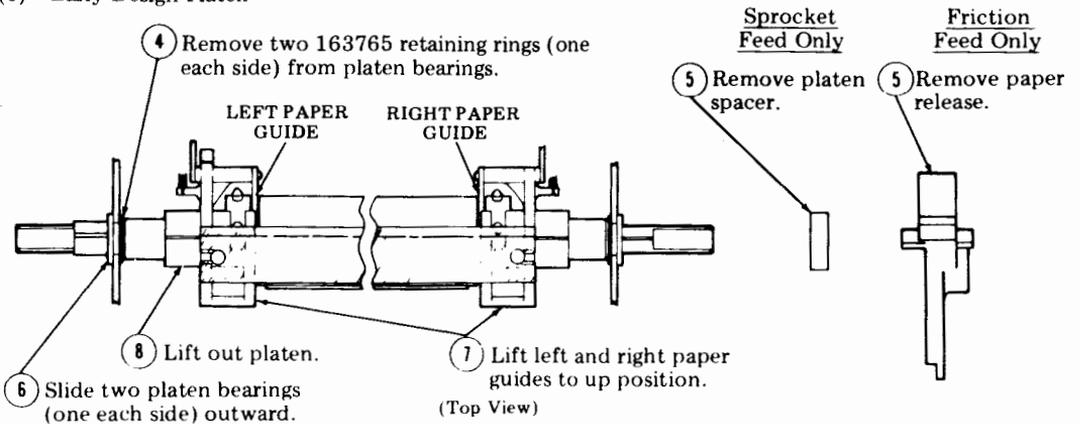


Note: In reassembly, position the setscrews away from the slot in the platen clip.

(b) Motor with tension arm.



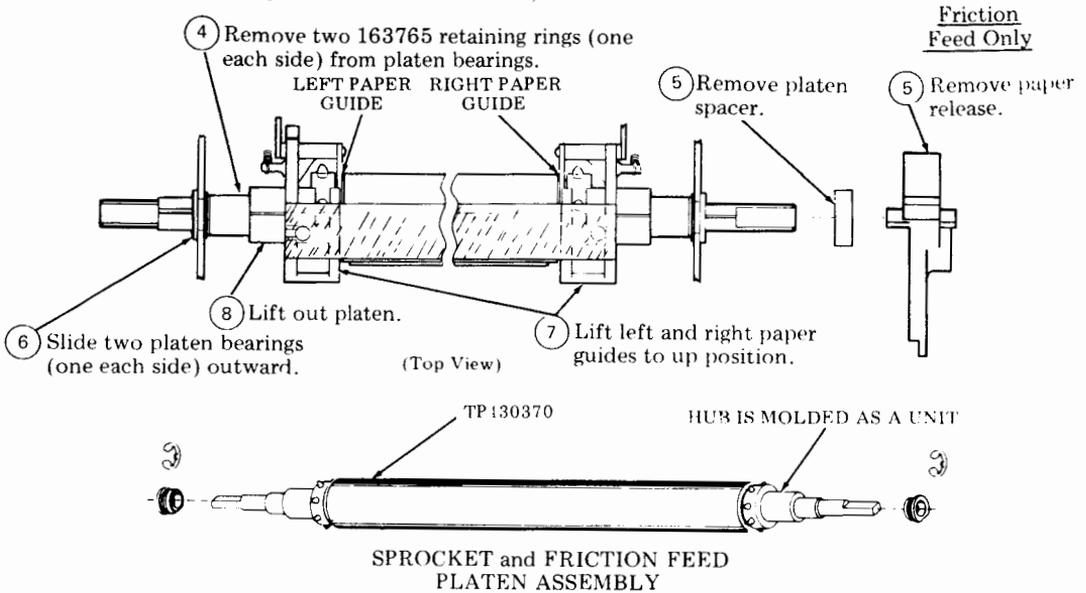
(c) Early Design Platen



Note: In reassembly, position the setscrews away from the slot in the sprocket clip.

Perform the LEFT and RIGHT SPROCKET adjustments and PRINTED LINE POSITION and PLATEN ENDPLAY adjustments.

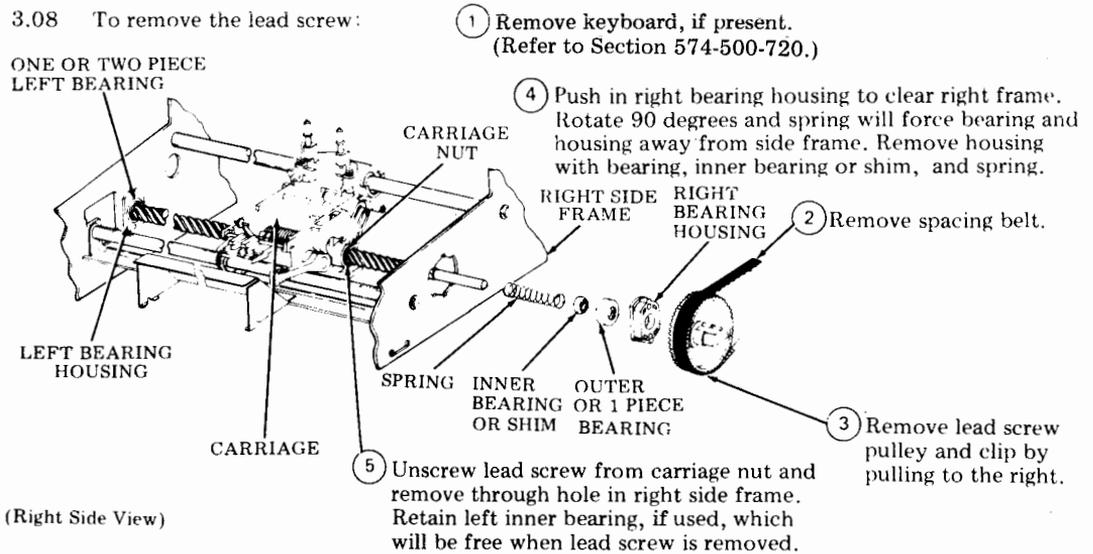
(d) Late Design Platen (Sprocket and Friction Feed)



Perform the PLATEN ENDPLAY adjustments.

LEAD SCREW

3.08 To remove the lead screw:



CARRIAGE WITH POST ASSEMBLY

3.09 To remove the carriage with post assembly:

Note: The upper guide rod must be nickel plated. The lower guide rod may be nickel plated or black oxide.

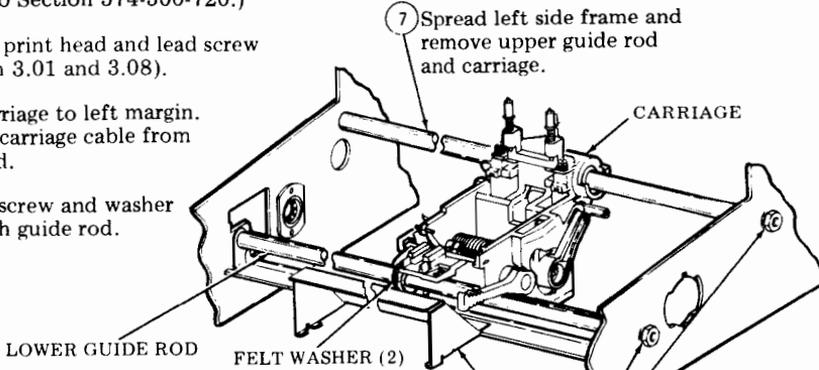
① Remove keyboard, if present.
(Refer to Section 574-500-720.)

② Remove print head and lead screw
(perform 3.01 and 3.08).

③ Move carriage to left margin.
Remove carriage cable from
logic card.

④ Remove screw and washer
from each guide rod.

⑦ Spread left side frame and
remove upper guide rod
and carriage.



⑥ Spread clamp with cover and disengage from
logic card (if present). Spread left side frame
outward to disengage left end of lower guide
rod, then pull toward the front to remove lower
guide rod, two felt washers and clamp with
cover.

⑤ Remove a 112626 nut and a 45815
lockwasher from each guide rod.

LEAD SCREW NUT

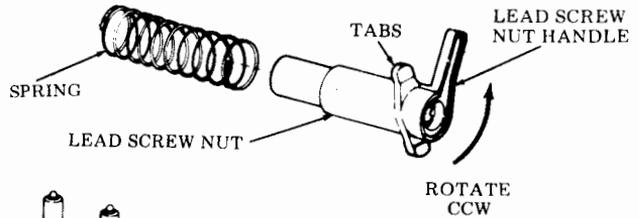
3.10 To remove the lead screw nut:

① Remove keyboard, if present.
(Refer to Section 574-500-720.)

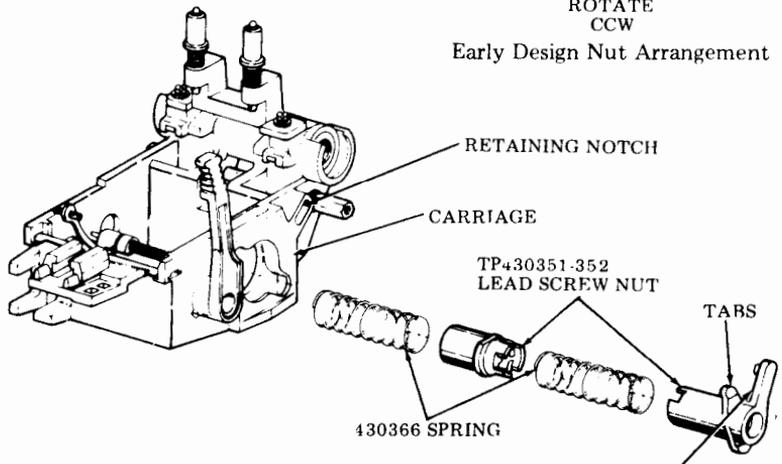
② Remove print head and lead screw
(perform 3.01 and 3.08).

③ Tilt lead screw nut
handle outward to
clear retaining
notch in carriage.
Rotate counterclock-
wise (CCW) until
tabs on nut align
with opening in
carriage. Spring
will force nut
away from carriage.

④ Remove springs and nuts.



Early Design Nut Arrangement



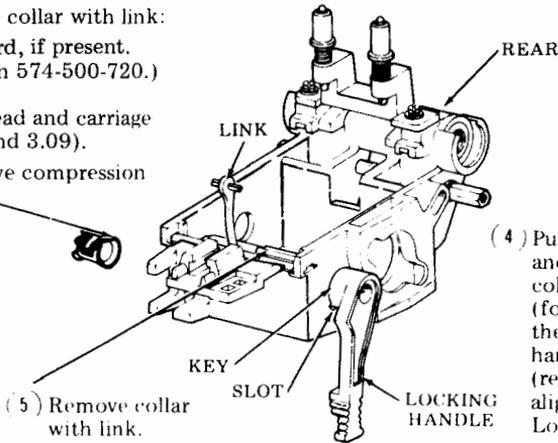
Late Design Nut Arrangement

Note: The 430351 and 430352 lead
screw nuts are keyed and must be engaged
when properly installed.

COLLAR WITH LINK

3.11 To remove the collar with link:

- ① Remove keyboard, if present.
(Refer to Section 574-500-720.)
- ② Remove print head and carriage
(perform 3.01 and 3.09).
- ③ Remove compression
ring.



- ④ Push locking handle to the left and rotate locking handle and collar fully counterclockwise (forward). Pull the handle to the right while slowly rotating handle and collar clockwise (rearward) until key on handle aligns with slot in carriage. Locking handle will pop out.
- ⑤ Remove collar with link.

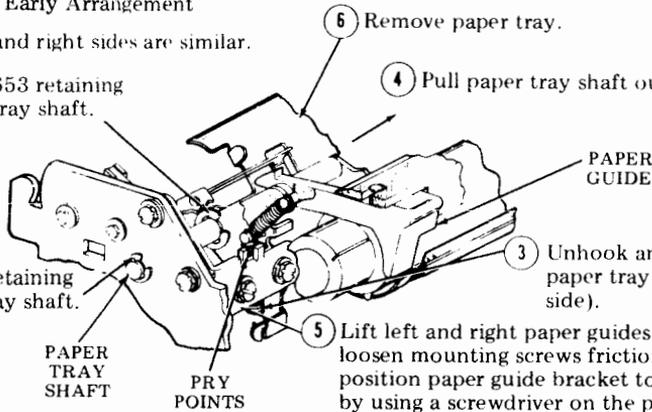
PAPER TRAY

3.12 To remove the paper tray:

(a) Sprocket Feed, Early Arrangement

Note 1: Parts on left and right sides are similar.

- ① Remove two 119653 retaining rings from paper tray shaft.



- ② Remove 119652 retaining ring from paper tray shaft.

- ③ Remove paper tray.

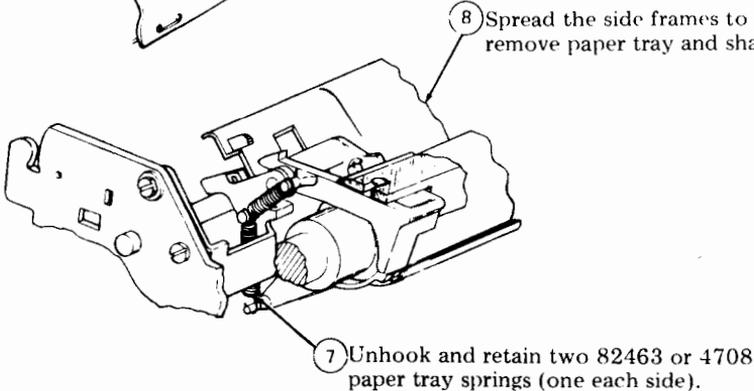
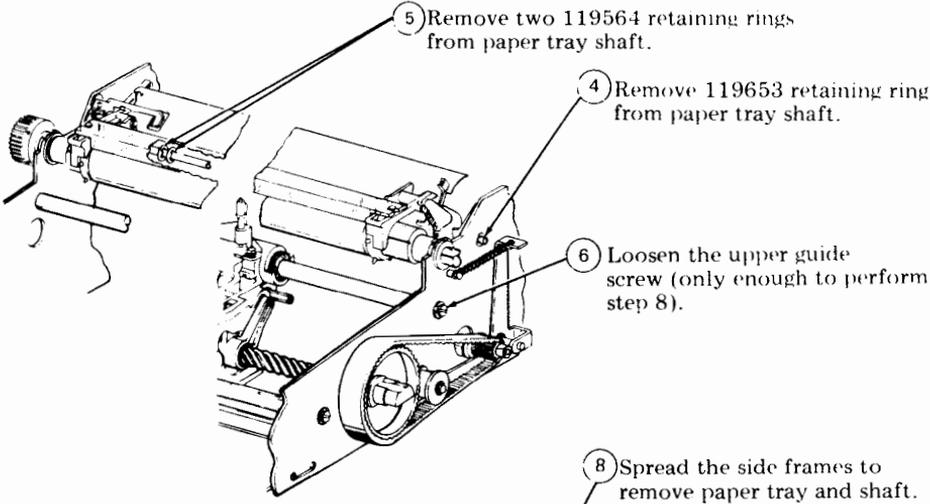
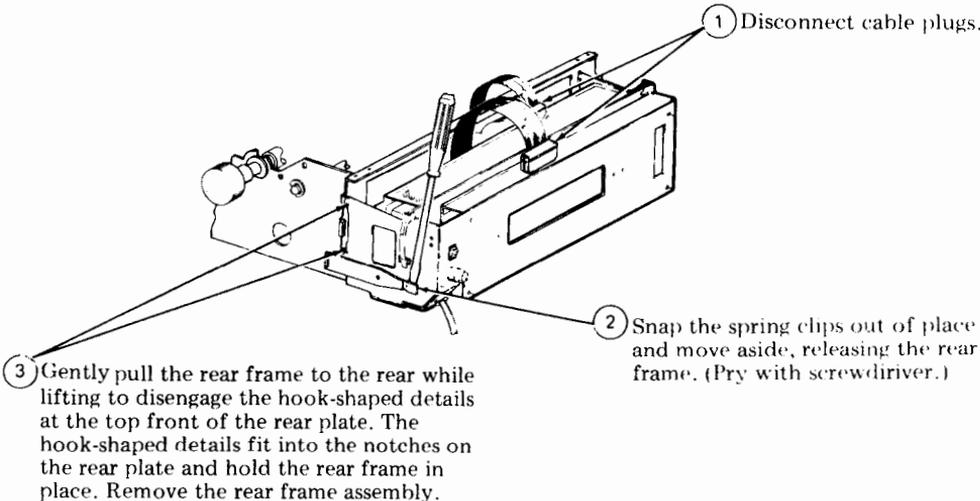
- ④ Pull paper tray shaft out to right.

- ⑤ Unhook and retain two 4708 paper tray springs (one each side).

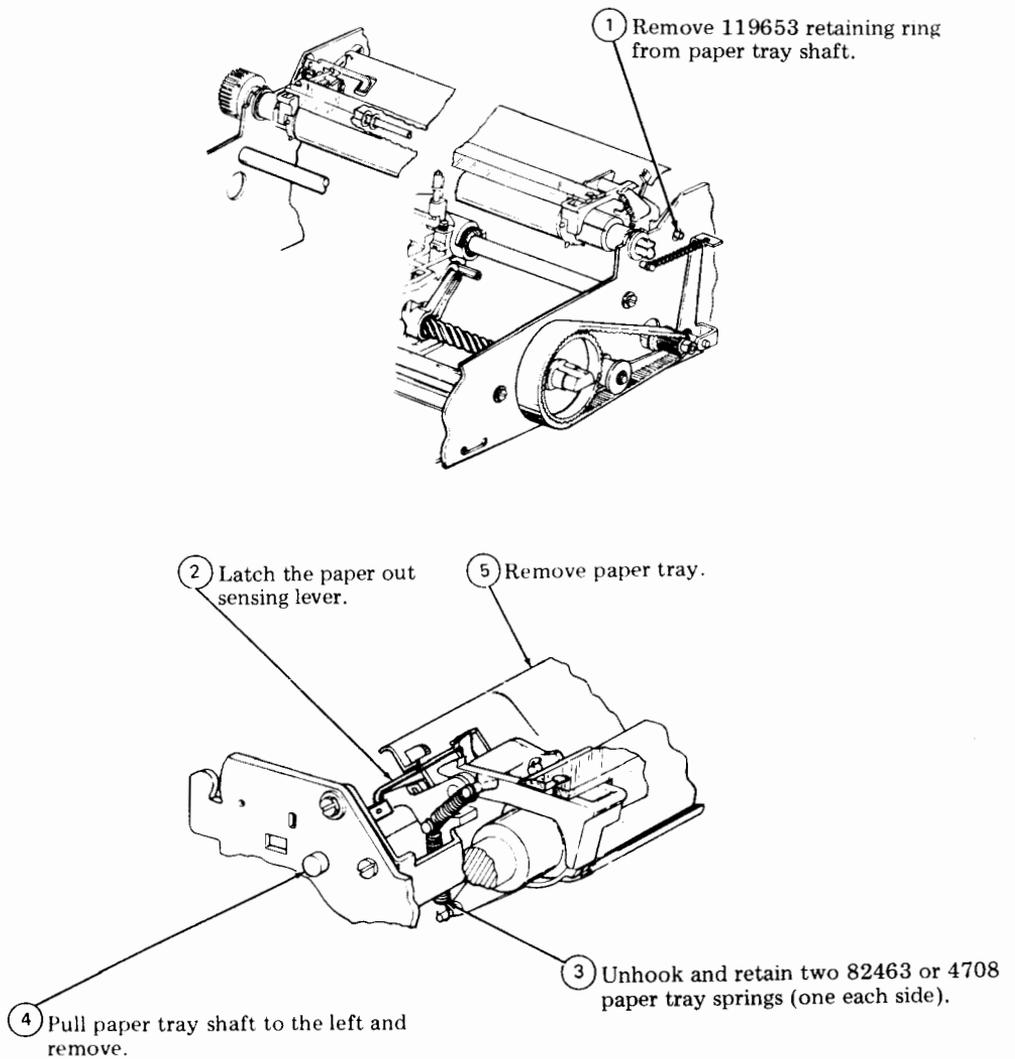
- ⑥ Lift left and right paper guides to up position, loosen mounting screws friction tight, and position paper guide bracket toward the frame by using a screwdriver on the pry points.

Note 2: In reassembly, LEFT AND RIGHT PAPER GUIDE adjustments must be made.
(Early Arrangement)

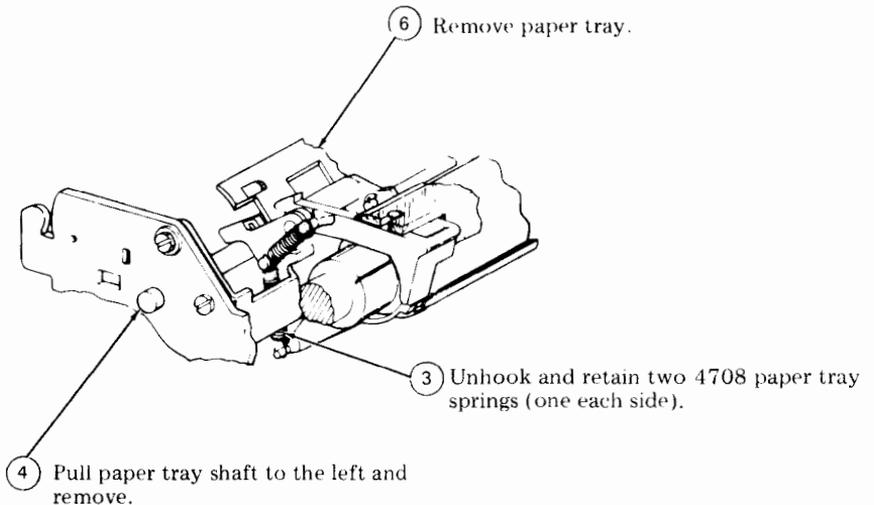
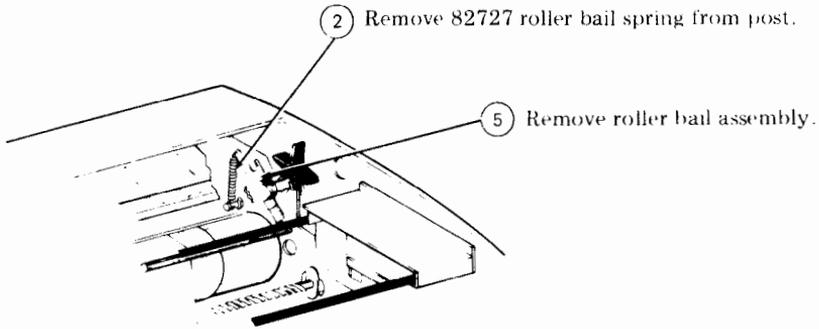
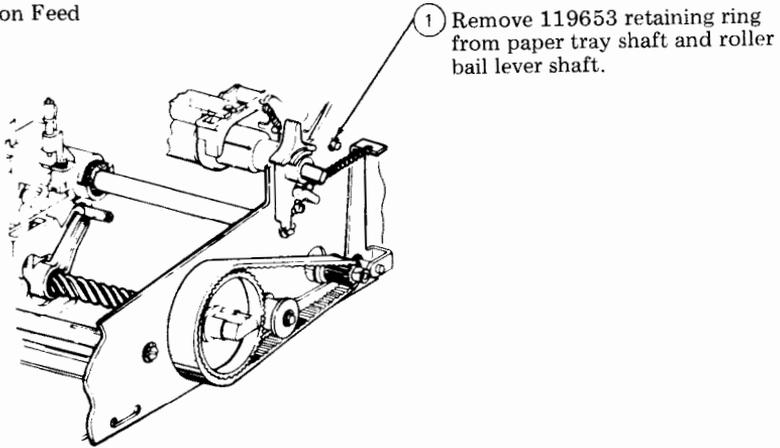
(b) Sprocket Feed (Intermediate Design) and Friction Feed (Early Design)



(c) Sprocket Feed, Late Design



(d) Friction Feed

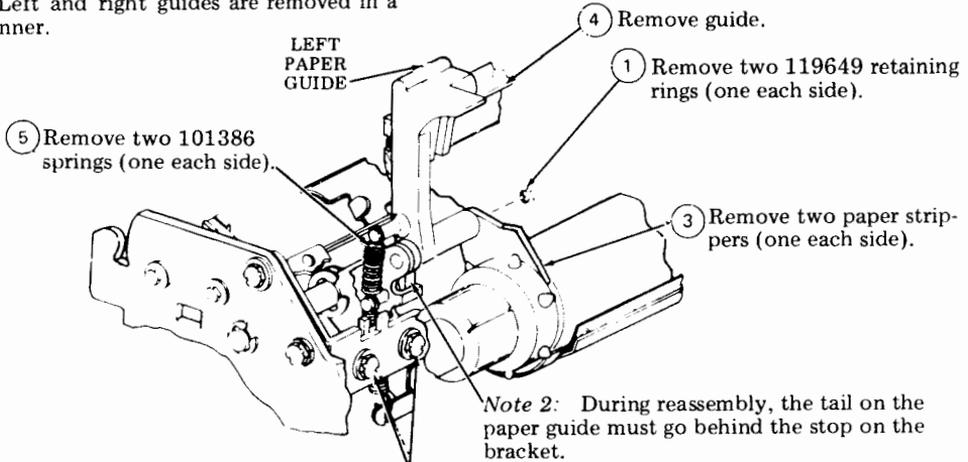


PAPER GUIDES

3.13 To remove the paper guide:

(a) Sprocket Feed, Early Design

Note 1: Left and right guides are removed in a similar manner.



Note 2: During reassembly, the tail on the paper guide must go behind the stop on the bracket.

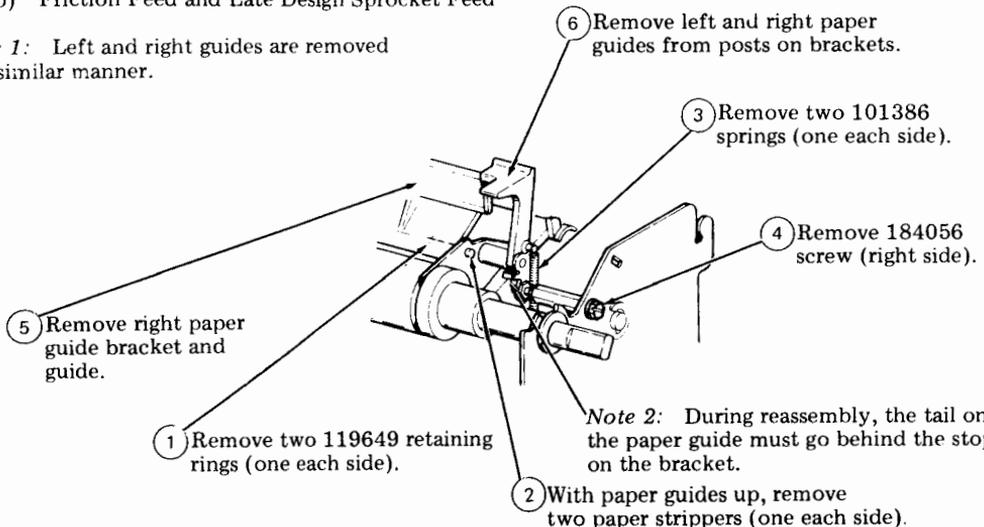
6 Remove left and right paper guides from posts on brackets.

2 With paper guides up, loosen mounting screws friction tight; position paper guide bracket toward the frame by using a screwdriver in the pry points.

Note 3: In reassembly, LEFT PAPER GUIDE adjustment must be made.

(b) Friction Feed and Late Design Sprocket Feed

Note 1: Left and right guides are removed in a similar manner.



Note 2: During reassembly, the tail on the paper guide must go behind the stop on the bracket.

2 With paper guides up, remove two paper strippers (one each side).

Note 3: In reassembly, RIGHT PAPER GUIDE adjustment must be made.

43 TRACTOR FEED PRINTER
DISASSEMBLY/REASSEMBLY

| CONTENTS | PAGE | |
|--|------|--|
| 1. GENERAL | 1 | 1.03 The printer is not considered a field replaceable item. Any trouble can be corrected by adjustments or by replacement with maintenance spares or other parts listed in Section 574-501-801, 43 Tractor Feed Printer, Parts. |
| 2. TOOLS REQUIRED | 2 | |
| 3. DISASSEMBLY/REASSEMBLY.... | 3 | 1.04 Procedures are provided to remove individual assemblies and parts and are intended to directly access any assembly or part, insofar as possible, without total disassembly of the unit. |
| PRINT HEAD WITH COVER | 3 | |
| SPACING MOTOR BELT | 6 | |
| SIGNAL BELL | 6 | |
| SPACING MOTOR WITH CABLE AND ENCODER | 7 | 1.05 When removing a subassembly or part from the printer, follow the removal procedure and note the sequence of removal to enable proper reassembly. For reassembly, reverse the procedure except where different instructions are given. Perform any adjustments indicated using Section 574-501-701. |
| LINE FEED MOTOR | 8 | |
| PLATEN | 8 | |
| LEAD SCREW | 9 | 1.06 Disassembly of printer parts except the print head will require the removal of the set housing and rear frame. Refer to Teleprinter Disassembly/Reassembly, Section 574-500-720 for set housing and rear frame removal and replacement procedures. |
| CARRIAGE WITH POST ASSEMBLY | 10 | 1.07 Disassembly of the printer motors will require the removal of the logic card. |
| LEAD SCREW NUT | 10 | 1.08 Disassembly of the printer lead screw, carriage with post assembly, lead screw nuts, and collar with link will require the removal of the keyboard, if present. |
| COLLAR WITH LINK | 11 | |
| PAPER TRAY | 11 | |
| TRACTOR MECHANISM | 12 | |
| 1. GENERAL | | 1.09 After replacing printer parts, refer to the lubrication procedures in Section 574-501-711 and lubricate any parts requiring lubrication. |
| 1.01 This section covers disassembly and reassembly procedures for the 43 tractor feed printer. Refer to Section 574-501-720 for the 43 friction and sprocket (pin) feed printer Disassembly/Reassembly. | | 1.10 Some parts that are not listed in the parts sections are shown as necessary to the disassembly procedures such as screws and ring retainers, etc. These parts are common to other Teletype Corporation product lines and if needed may already be available in field repair kits or can be ordered. |
| 1.02 Whenever this section is reissued, the reason for reissue will be listed in this paragraph. | | |

SECTION 574-501-721

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

1.12 Reference in the procedures to left and right, up or down, and top or bottom, etc, refer to the printer in its normal operating position.

2. TOOLS REQUIRED

2.01 The following tools may be required when performing the printer disassembly and reassembly procedures. Most of these items should normally be present in standard maintenance tool kits.

| <u>Part No.</u> | <u>Description</u> |
|-----------------|--|
| 100982 | Screwdriver w/Clip, 1/4 Inch 6 Inch Blade |
| 108285 | Pliers, Long-Nose |
| 110271 | Wrench, Hex Key |
| 124682 | Wrench, Hex Key |
| 125752 | Wrench, 3/16 Inch Socket |
| 129534 | Wrench, Open End, 3/16 Inch and 1/4 Inch |
| 129536 | Wrench, Open End, 7/16 Inch and 1/2 Inch |
| 135676 | Handle |
| 135677 | Bit, 1/4 Inch Socket |
| 135678 | Bit, 5/16 Inch Socket |
| 142554 | Hook, Pull Spring |
| 142555 | Hook, Push Spring |
| 151392 | Tweezers |
| 152835 | Wrench, Open End, 5/16 Inch and 3/8 Inch |
| 407326 | Extractor, I.C. |

| <u>Part No.</u> | <u>Description</u> |
|-----------------|--|
| 75765 | Hook, Pull Spring |
| 95368 | Screwdriver, 1/8 Inch, 2 Inch Blade |
| 100704 | Screwdriver w/Clip, 10 Inch Blade |

3. DISASSEMBLY/REASSEMBLY

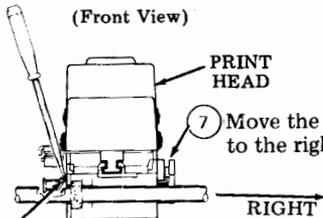
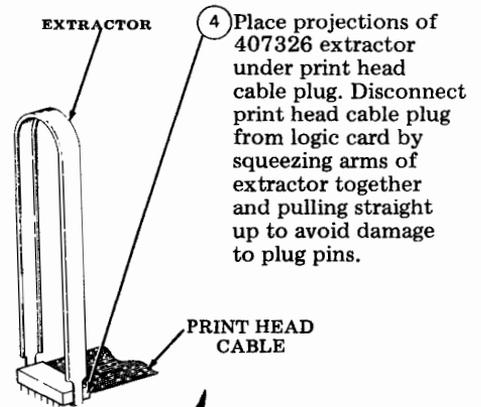
PRINT HEAD WITH COVER

3.01 To remove the print head with cover:

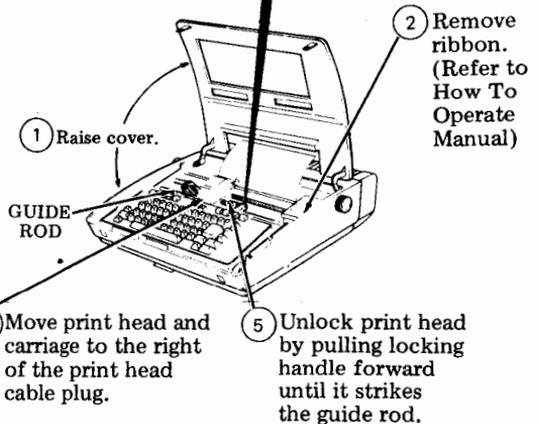
Caution: When handling loose print heads, care must be taken to prevent print head cable connector pins from being bent.

Note: Print head removal and replacement is also shown in Teleprinter Disassembly/Reassembly, Section 574-500-720.

- ⑧ Grasp print head and pull forward. Lift front of print head to disengage locking channels.

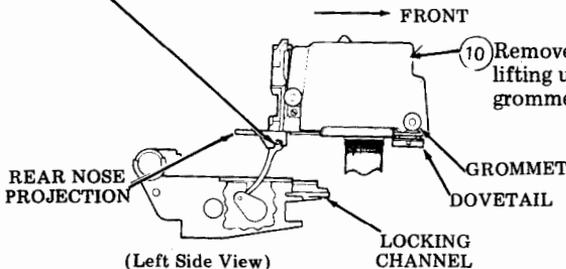


- ⑥ Move retaining clip on locking handle extension protruding from left side of carriage wall approximately 1/4 inch away from wall. (Pry with screwdriver.)
- ⑦ Move the locking handle to the right.



- ⑨ Disengage print head from roll pin on end of link. Remove print head.

- ⑩ Remove print head cover by lifting up and away from grommets.

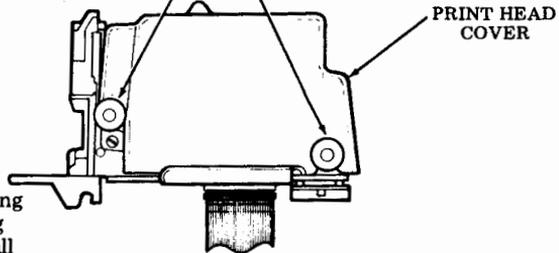


SECTION 574-501-721

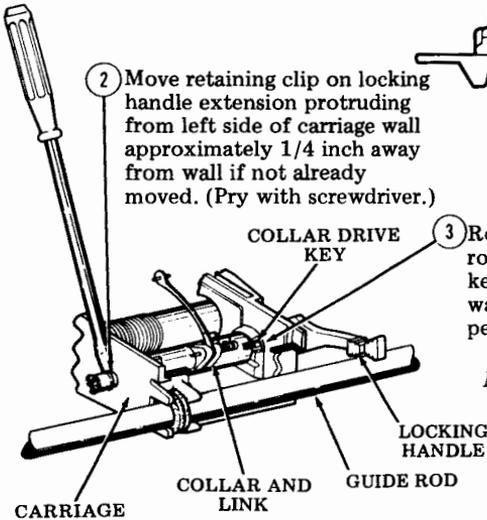
3.02 To replace the print head with cover:

Caution: When handling loose print heads, care must be taken to prevent print head cable connector pins from being bent.

1 Verify that print head cover is attached securely to rubber grommets. (Push down until secure.)



2 Move retaining clip on locking handle extension protruding from left side of carriage wall approximately 1/4 inch away from wall if not already moved. (Pry with screwdriver.)

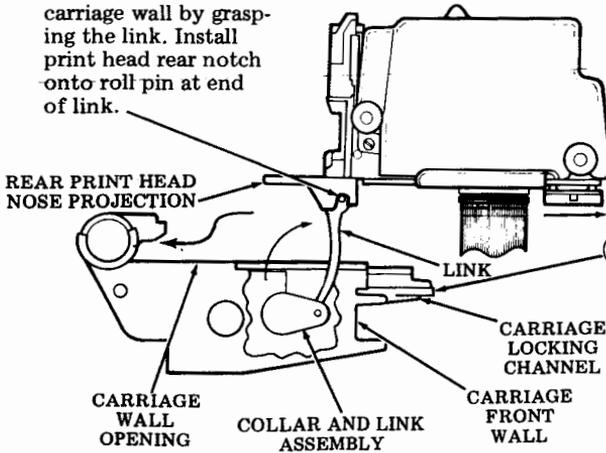


3 Rotate locking handle frontward until it strikes the guide rod then pull locking handle to the right until collar drive key on locking handle engages slot in right carriage side wall. Observe interaction of these parts for use when performing step 7.

Note: Collar and link may snap rearward.

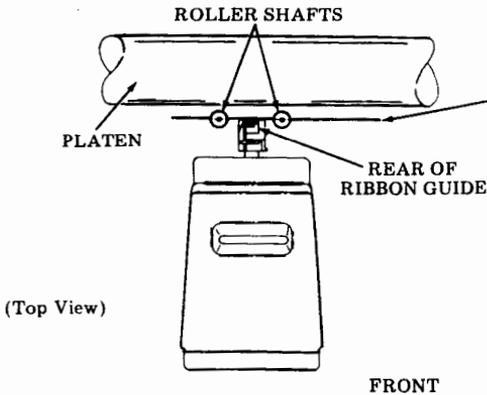
4 Collar and link must be manually rotated and held toward front of carriage wall by grasping the link. Install print head rear notch onto roll pin at end of link.

5 Hold collar and link forward (by pressing down on the print head) while inserting nose projection in carriage wall opening.



6 Pivot front of print head down to carriage locking channel.

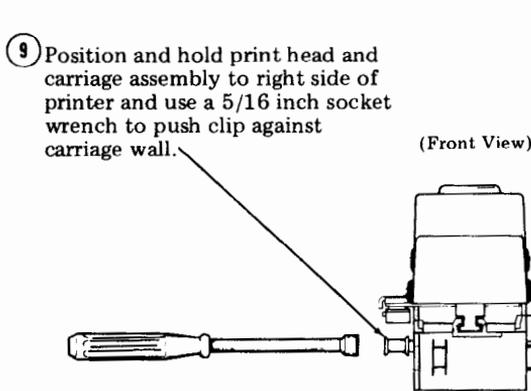
(Left View)



(Top View)

- 7 Slowly push print head rearward and further into the carriage locking channel until the rear of the ribbon guide is even with center of roller shafts. Apply continuous leftward pressure to locking handle at its pivot shaft, while slowly pulling print head forward until collar drive key on handle engages (snaps) into slot in collar.

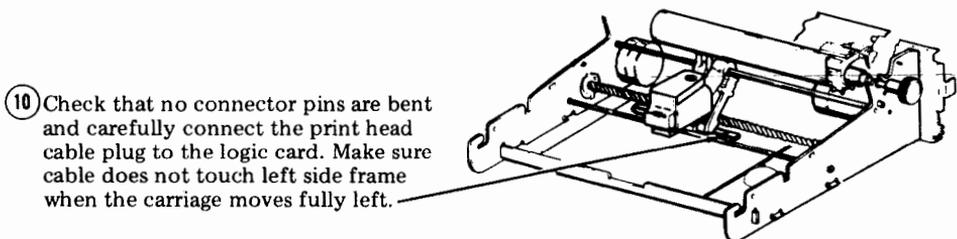
Note: Parts referred to were visible in step 3.



- 9 Position and hold print head and carriage assembly to right side of printer and use a 5/16 inch socket wrench to push clip against carriage wall.

- 8 Move the handle all the way to the rear, locking the print head in close proximity to the platen by the additional force necessary to detent the handle. If handle does not move to rear, the drive key did not properly engage the collar slot (step 7).

Note: Check to make sure there is some clearance between print head and platen before detenting handle. Check PRINT HEAD TO PLATEN adjustment.

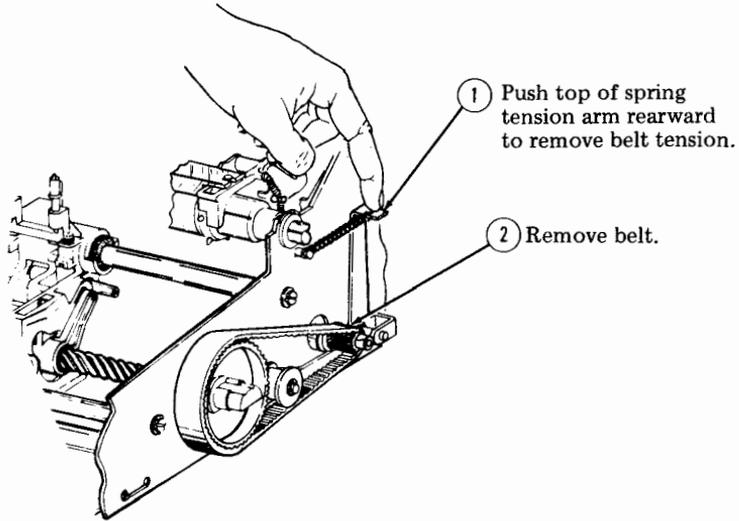


- 10 Check that no connector pins are bent and carefully connect the print head cable plug to the logic card. Make sure cable does not touch left side frame when the carriage moves fully left.

- 11 Install ribbon. (Refer to How To Operate Manual or label under cover.)

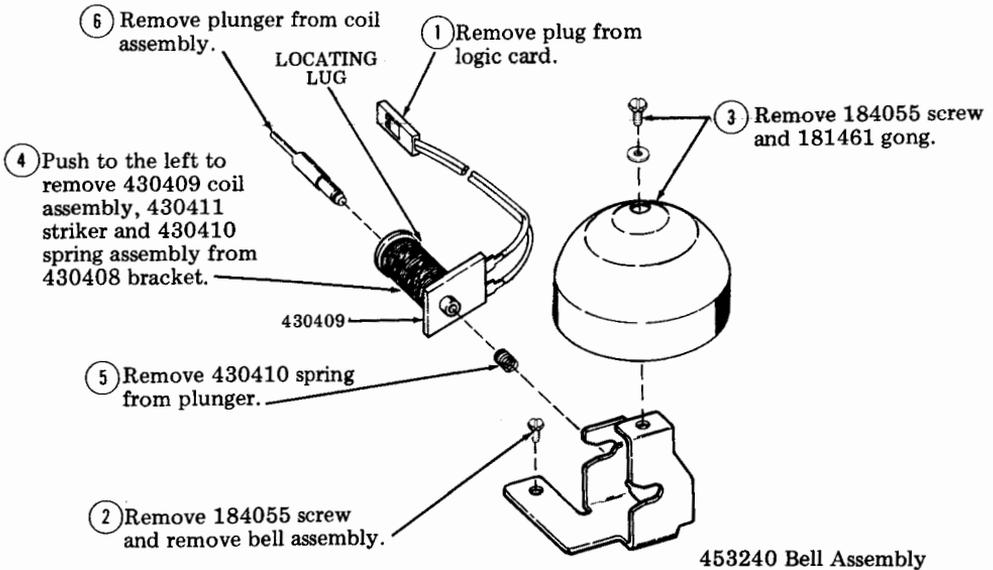
SPACING MOTOR BELT

3.03 To remove the spacing motor belt:



SIGNAL BELL

3.04 To remove the signal bell:

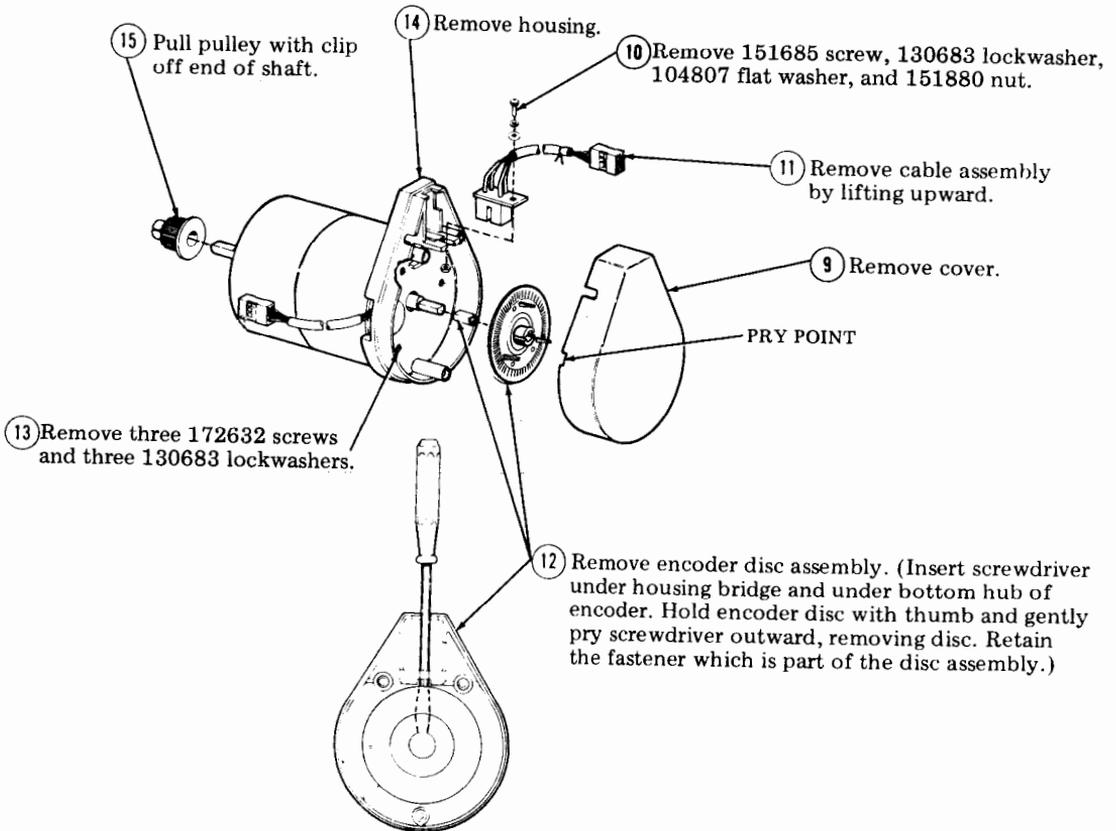
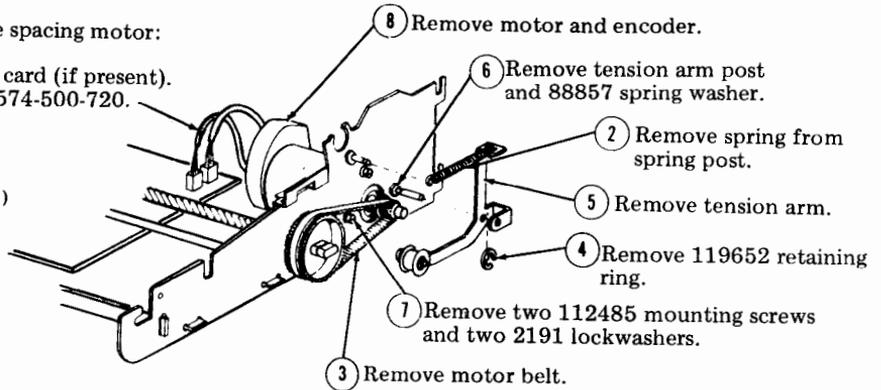


SPACING MOTOR WITH CABLE AND ENCODER

3.05 To remove the spacing motor:

- ① Remove the logic card (if present).
Refer to Section 574-500-720.

(Right Side View)



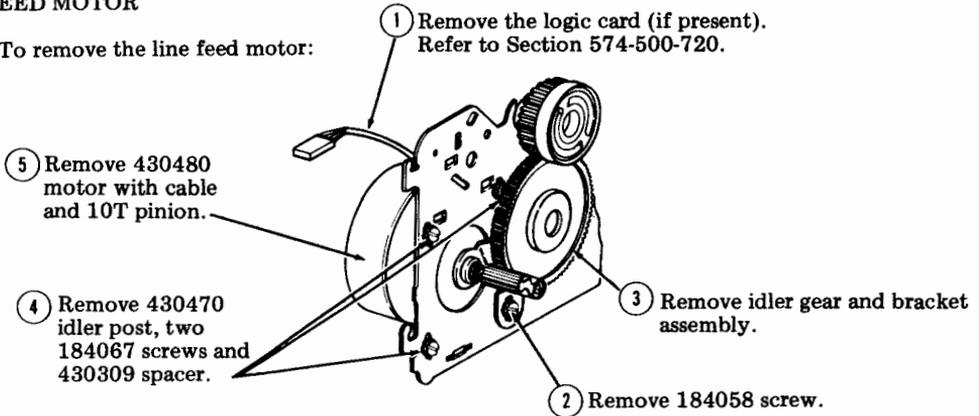
Note: In reassembly, make sure disc does not rub on encoder assembly.

Warning: Do not pull on metal disc edges as this will deform encoder disc causing it to rub against the encoder.

SECTION 574-501-721

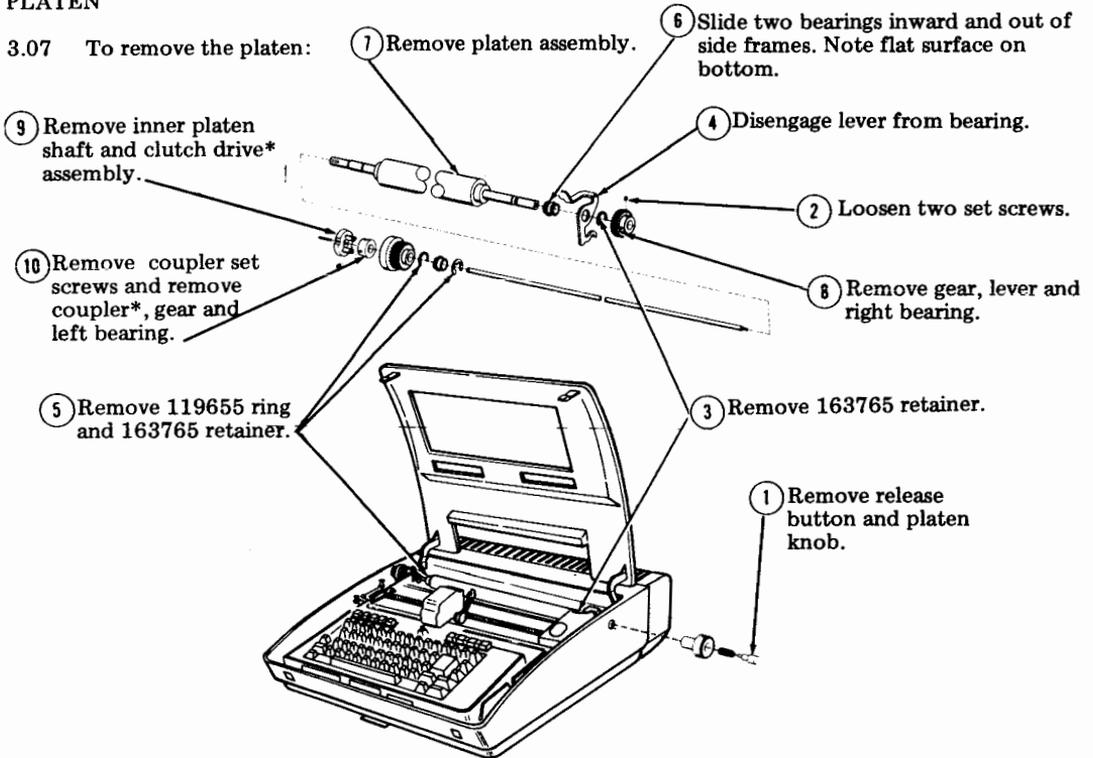
LINE FEED MOTOR

3.06 To remove the line feed motor:



PLATEN

3.07 To remove the platen:



*Clutch drive must be engaged with coupler when coupler set screws are tightened.

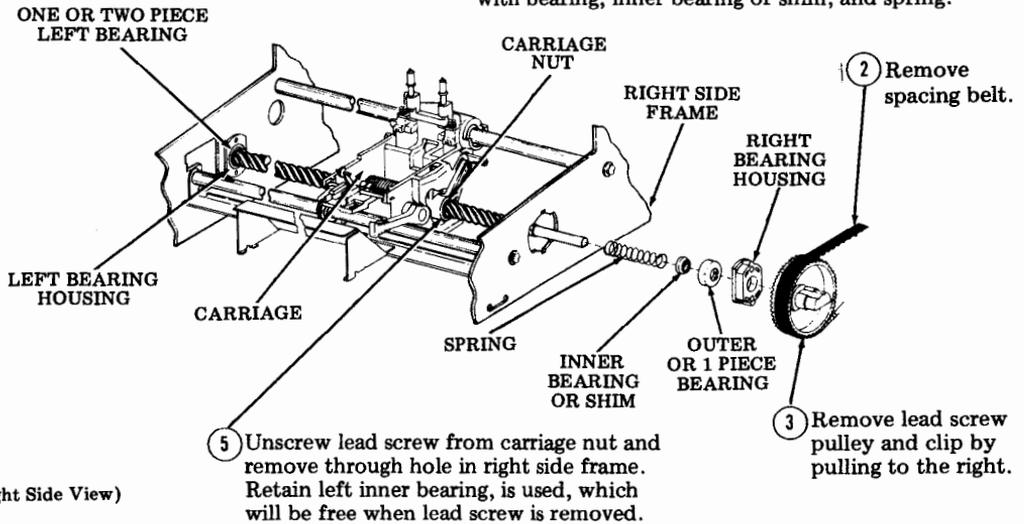
Perform PLATEN ENDPLAY adjustment.

LEAD SCREW

3.08 To remove the lead screw:

① Remove keyboard if present.
(Refer to Section 574-500-720.)

④ Push in right bearing housing to clear right frame. Rotate 90 degrees and spring will force bearing and housing away from side frame. Remove housing with bearing, inner bearing or shim, and spring.



CARRIAGE WITH POST ASSEMBLY

3.09 To remove the carriage with post assembly:

Note: The upper guide rod must be nickel plated. The lower guide rod may be nickel plated or black oxide.

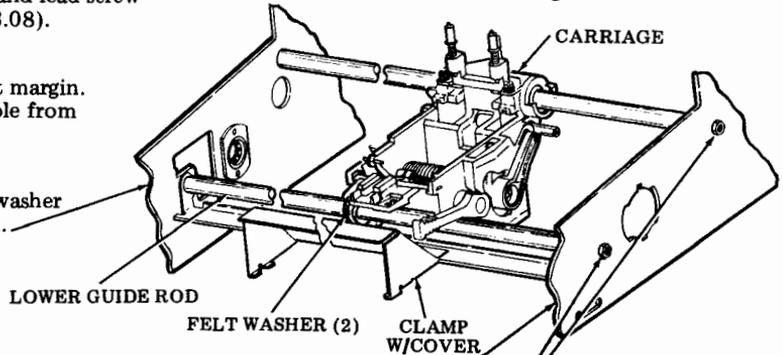
① Remove keyboard, if present.
(Refer to Section 574-500-720.)

② Remove print head and lead screw
(perform 3.01 and 3.08).

③ Move carriage to left margin.
Remove carriage cable from
logic card.

④ Remove screw and washer
from each guide rod.

⑦ Spread left side frame and
remove upper guide rod and
carriage.



⑥ Spread clamp with cover and disengage from
logic card (if present). Spread left side frame
outward to disengage left end of lower guide
rod, then pull toward the front to remove lower
guide rod, two felt washers and clamp with cover.

⑤ Remove nut and lockwasher
from each guide rod.

LEAD SCREW NUT

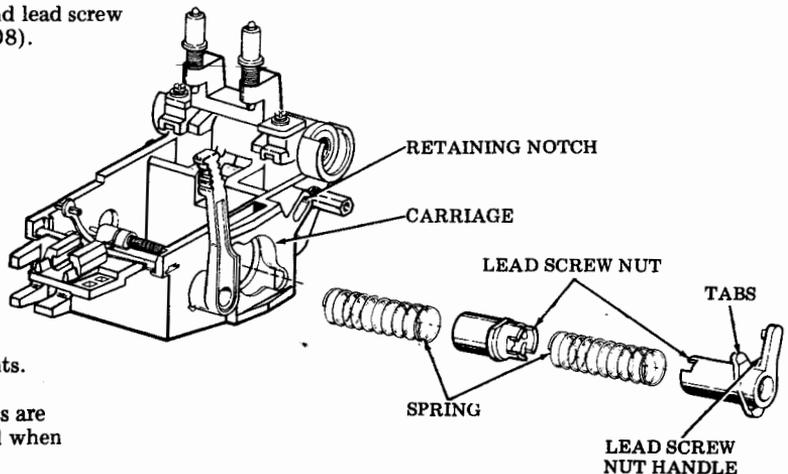
3.10 To remove the lead screw nut:

① Remove keyboard, if present.
(Refer to Section 574-500-720.)

② Remove print head and lead screw
(perform 3.01 and 3.08).

③ Tilt lead screw nut
handle outward to
clear retaining
notch in carriage.
Rotate counterclock-
wise (CCW) until
tabs on nut align
with opening in
carriage. Spring
will force nut
away from carriage.

④ Remove springs and nuts.

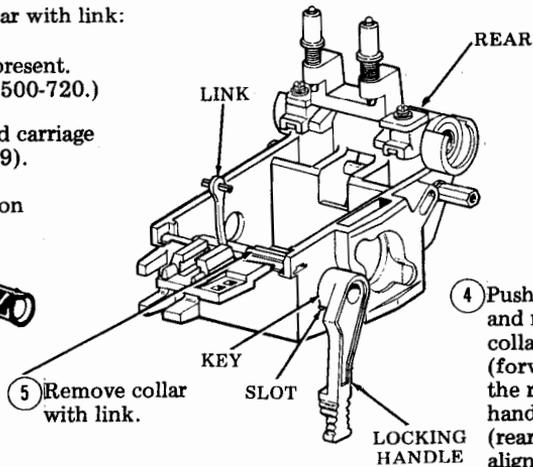


Note: The lead screw nuts are
keyed and must be engaged when
properly installed.

COLLAR WITH LINK

3.11 To remove the collar with link:

- ① Remove keyboard, if present.
(Refer to Section 574-500-720.)
- ② Remove print head and carriage
(perform 3.01 and 3.09).
- ③ Remove compression
ring.

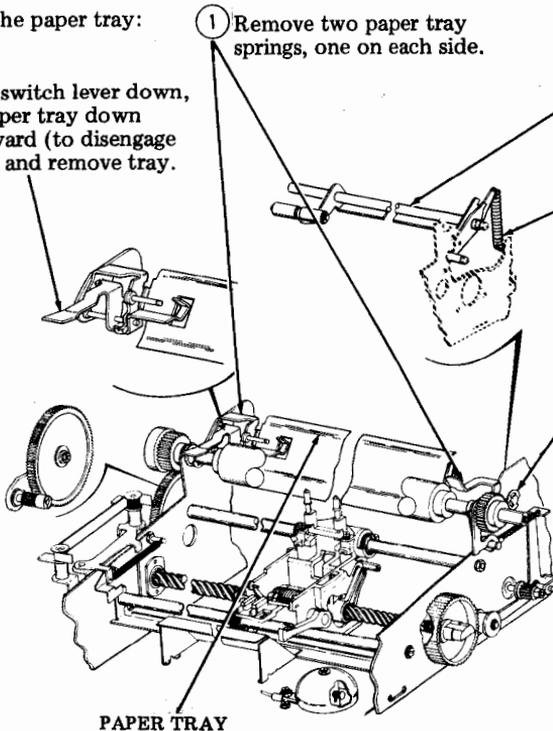


- ④ Push locking handle to the left and rotate locking handle and collar fully counterclockwise (forward). Pull the handle to the right while slowly rotating handle and collar clockwise (rearward) until key on handle aligns with slot in carriage. Locking handle will pop out.
- ⑤ Remove collar with link.

PAPER TRAY

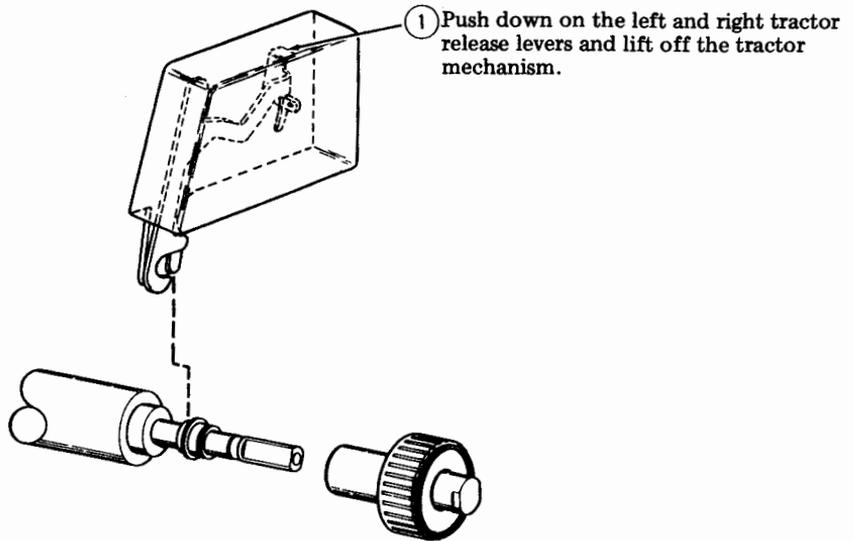
3.12 To remove the paper tray:

- ① Remove two paper tray springs, one on each side.
- ② Remove pressure roller spring.
- ③ Remove shaft ring and pull shaft left to remove.
- ④ Remove pressure roller assembly.
- ⑤ Holding switch lever down, move paper tray down and forward (to disengage bracket) and remove tray.

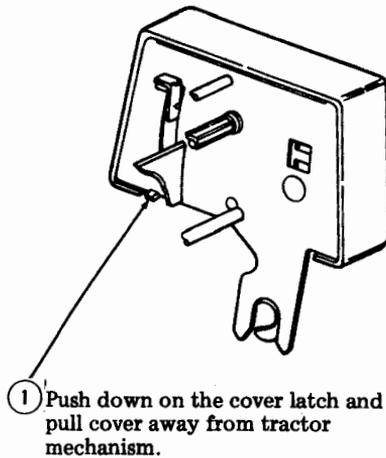


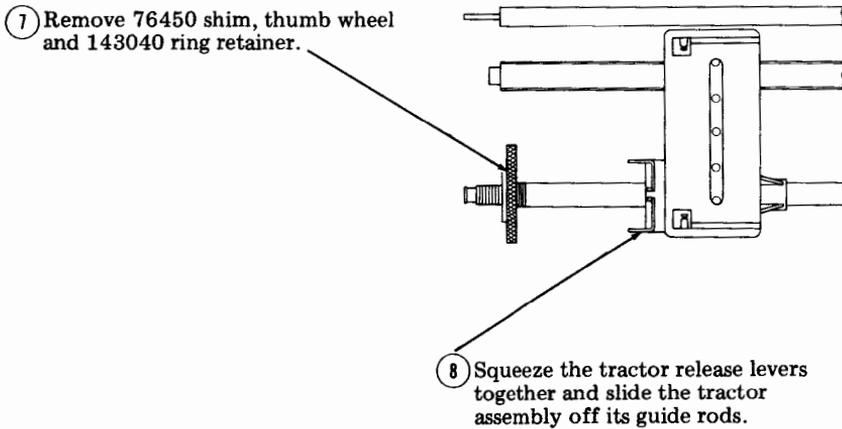
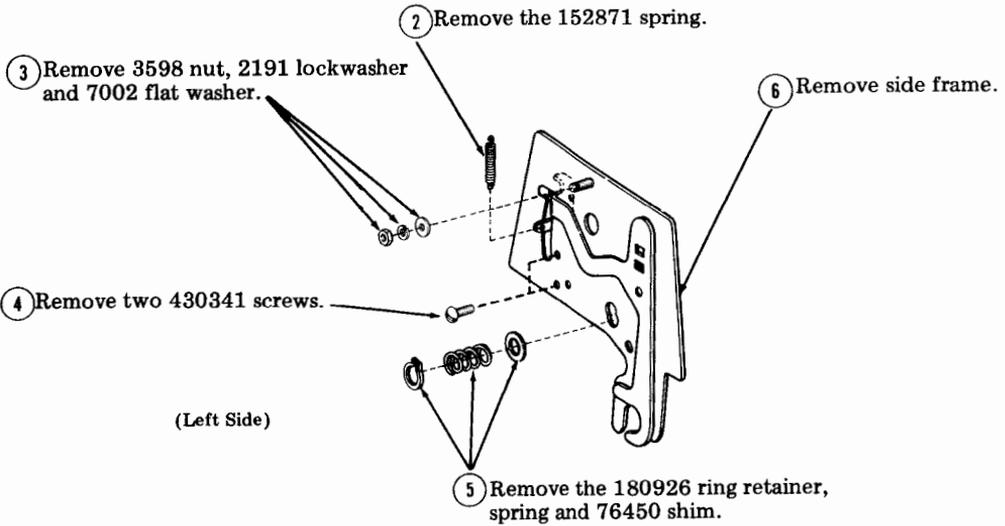
TRACTOR MECHANISM

3.13 (a) To remove the tractor mechanism:

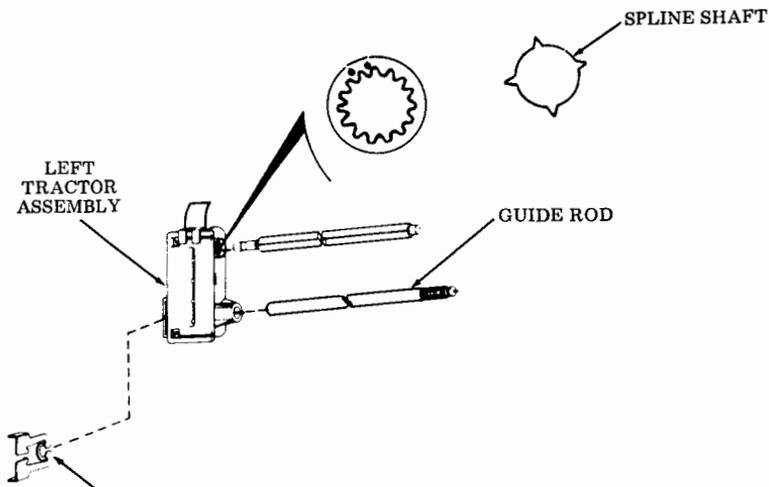


3.13 (b) To disassemble the tractor mechanism:



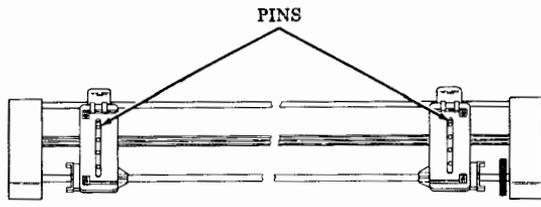


3.12 (c) To reassemble the tractor mechanism:



① Squeeze the tractor release levers together and slide the right tractor assembly onto the guide rod and the spline shaft. Be sure the release lever is facing the right side frame.

② Squeeze the tractor release levers together and slide the left tractor assembly onto the guide rod and the spline shaft. When sliding onto the spline shaft, make sure the pins are aligned horizontally as shown below.



③ Reassemble the remainder of the components removed in (b).

43 FRICTION AND SPROCKET FEED PRINTER

PARTS

| CONTENTS | PAGE |
|--|------|
| 1. GENERAL | 1 |
| 2. PARTS | 2 |
| Platen Assembly, Friction Feed, and Sprocket Feed | 2 |
| Carriage Assembly | 3 |
| Line Feed Spacing Motor and Bell Assembly | 4 |
| Spacing Motor with Cable and Encoder | 5 |
| Spacing Drive and Lead Screw | 6 |
| Right Side Frame and Rear Frame (Sprocket Feed) | 7 |
| Right Side Frame (Friction Feed) | 8 |
| Paper Guide and Paper Tray | 9 |
| Left Side Frame | 10 |
| 3. NUMERICAL INDEX | 11 |
| 1. GENERAL | |
| 1.01 Information on maintenance spare parts is provided in this section for the 43 Friction and Sprocket (Pin) Feed Printer. | |

1.02 This section is reissued to change the maintenance spare stocking ratios and update the maintenance spare information.

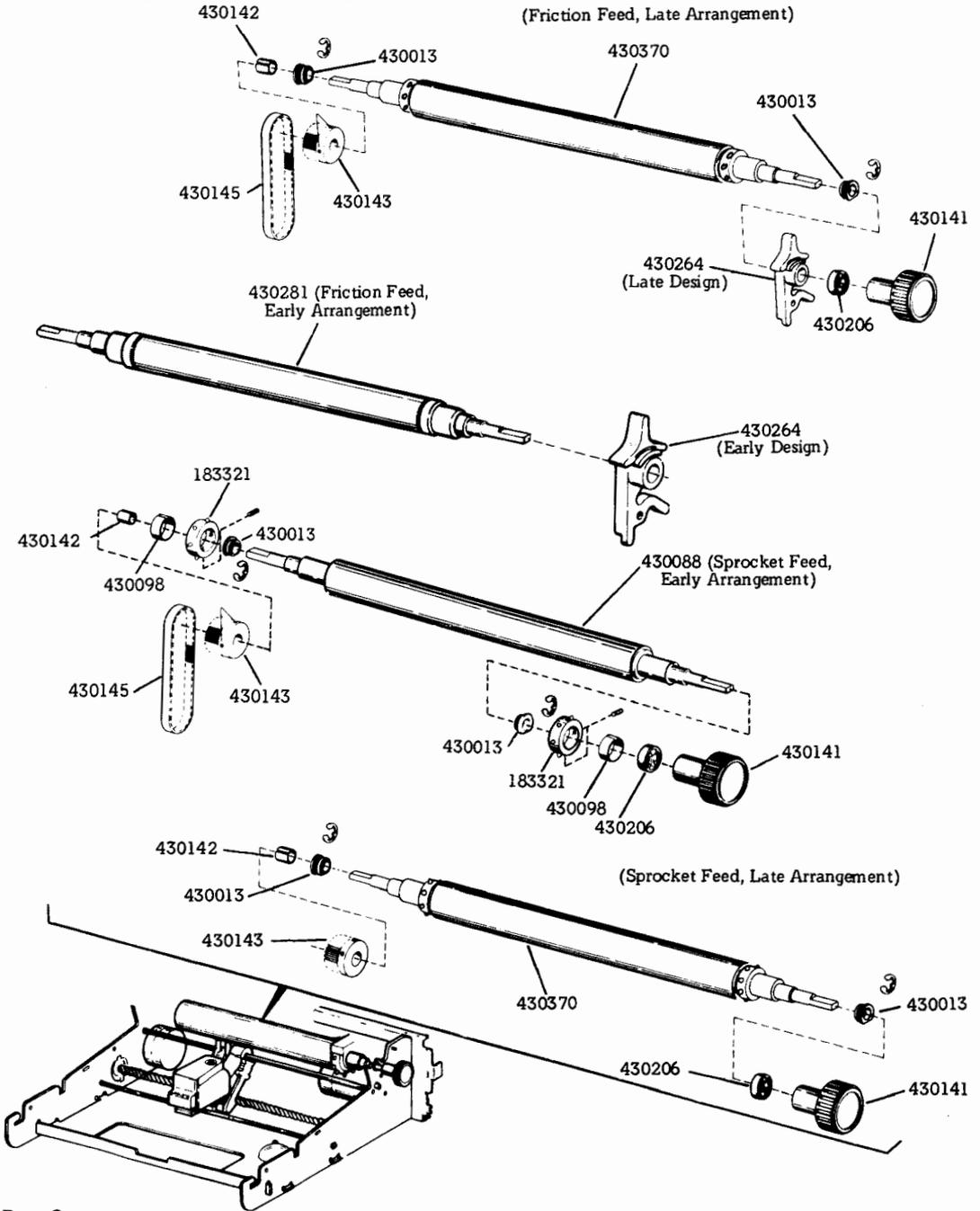
1.03 Part numbers are listed in the index in numerical order and indicate the page on which the parts appear. Asterisked numbers, stocked as "List 1", indicate a maintenance spare stocking ratio of one spare for each 50 stations in a maintenance area. Part numbers without asterisks are not maintenance spares but may be ordered separately for local repair of the printer. Before ordering, verify that a particular spare is applicable to the type of printer in service.

1.04 When ordering replaceable components, unless otherwise specified, prefix each part number with "TP" (ie, TP430019).

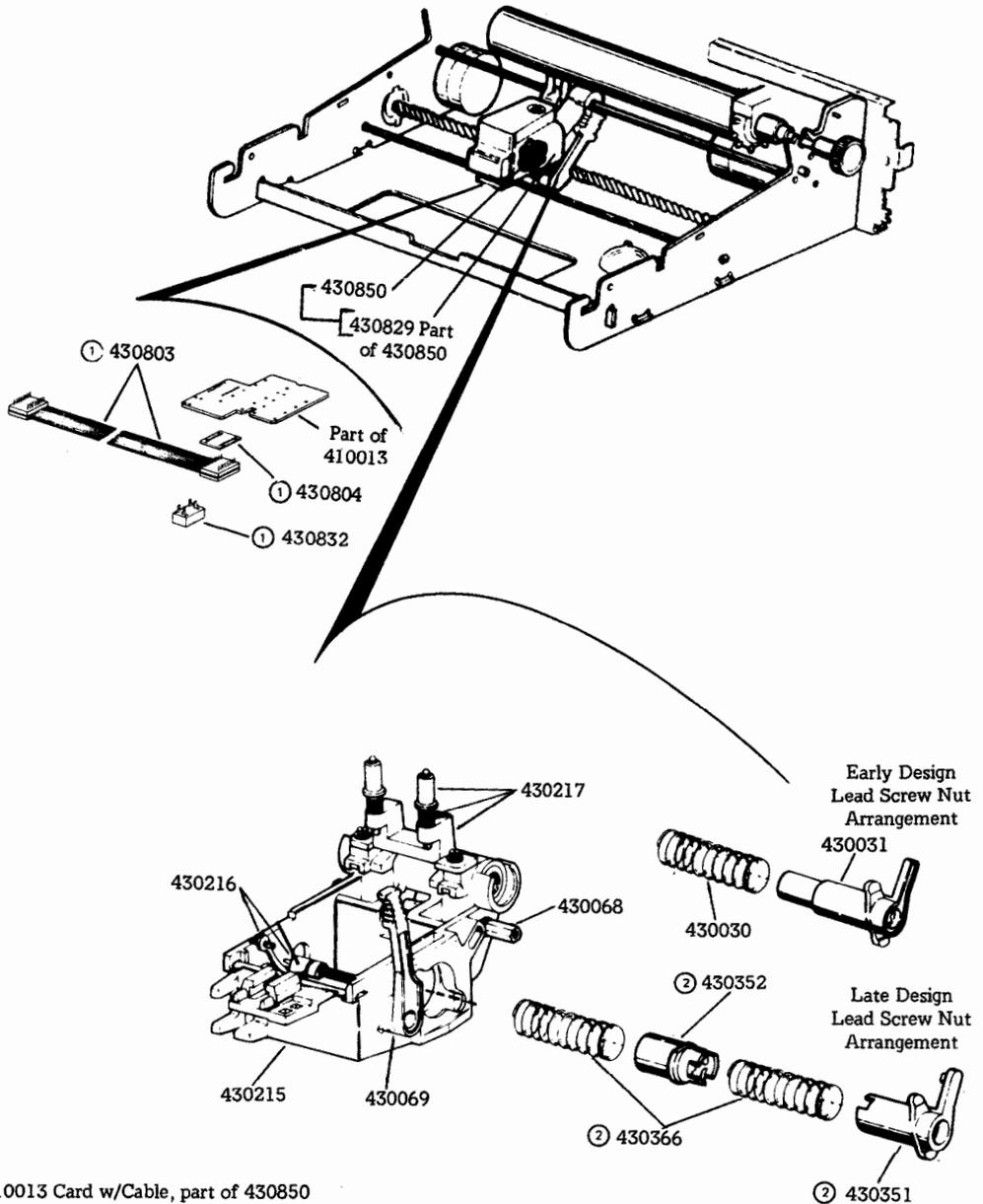
1.05 Troubleshooting and disassembly/reassembly information for these parts is provided in Section 574-501-300 and Section 574-501-720, respectively.

2. PARTS

Platen Assembly, Friction Feed and Sprocket Feed



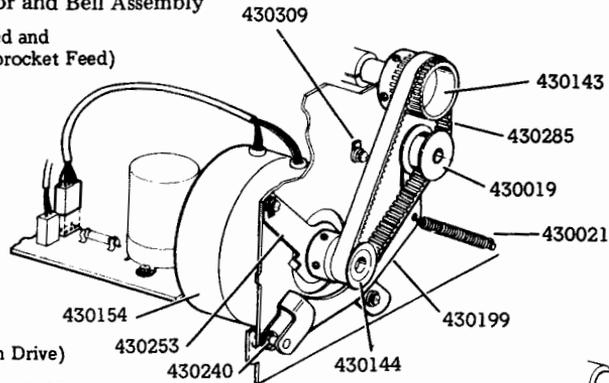
Carriage Assembly



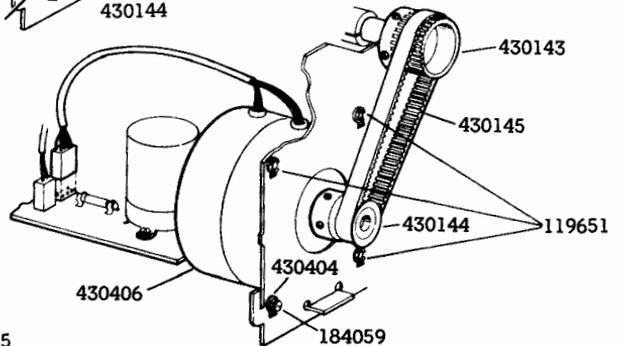
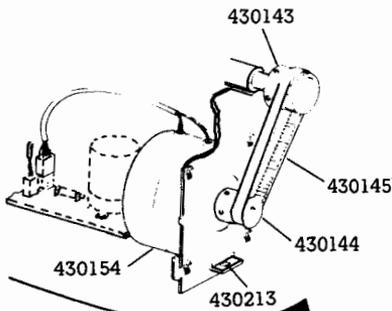
- ① 410013 Card w/Cable, part of 430850
- ② Part of 430440 Modification Kit

Line Feed Spacing Motor and Bell Assembly

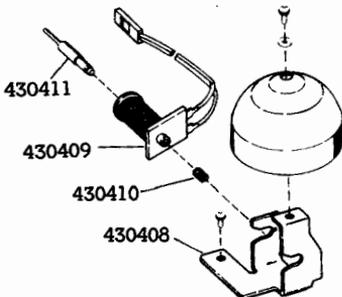
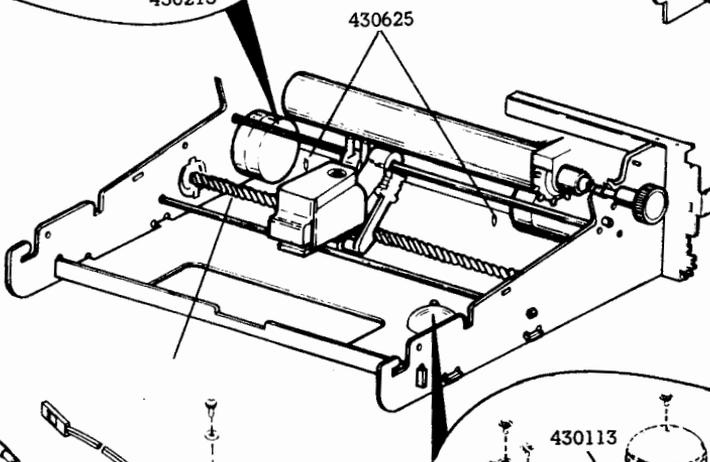
(Friction Feed and
Late Design Drive Sprocket Feed)



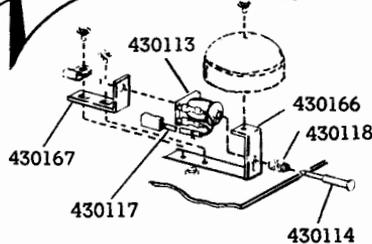
(Sprocket Feed Early Design Drive)



Sprocket and Friction Feed
Late Arrangement



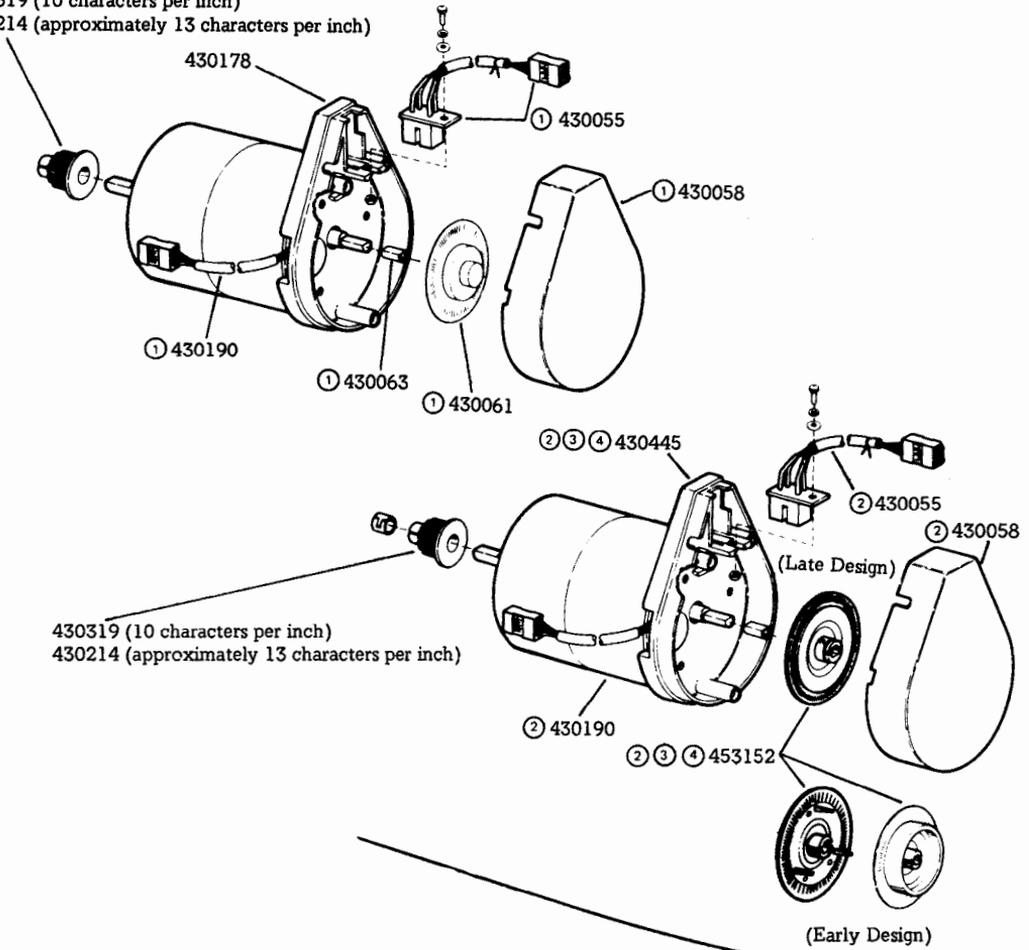
453240 Bell Assembly
Late Design



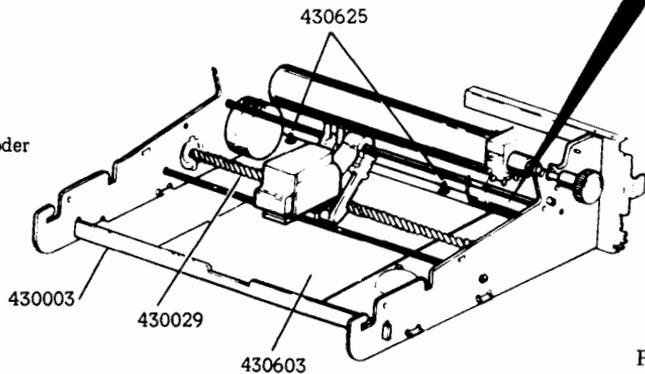
(Bell Assembly, Early Design)

Spacing Motor with Cable and Encoder

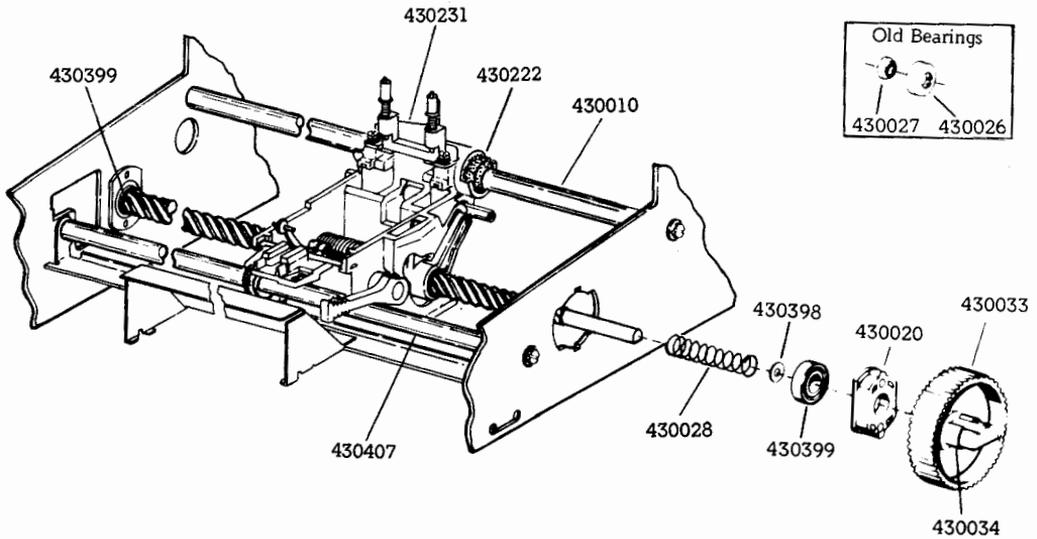
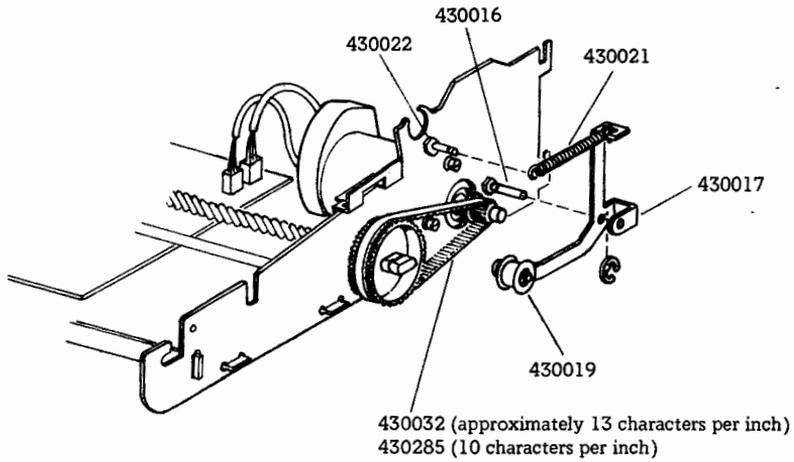
430319 (10 characters per inch)
 430214 (approximately 13 characters per inch)



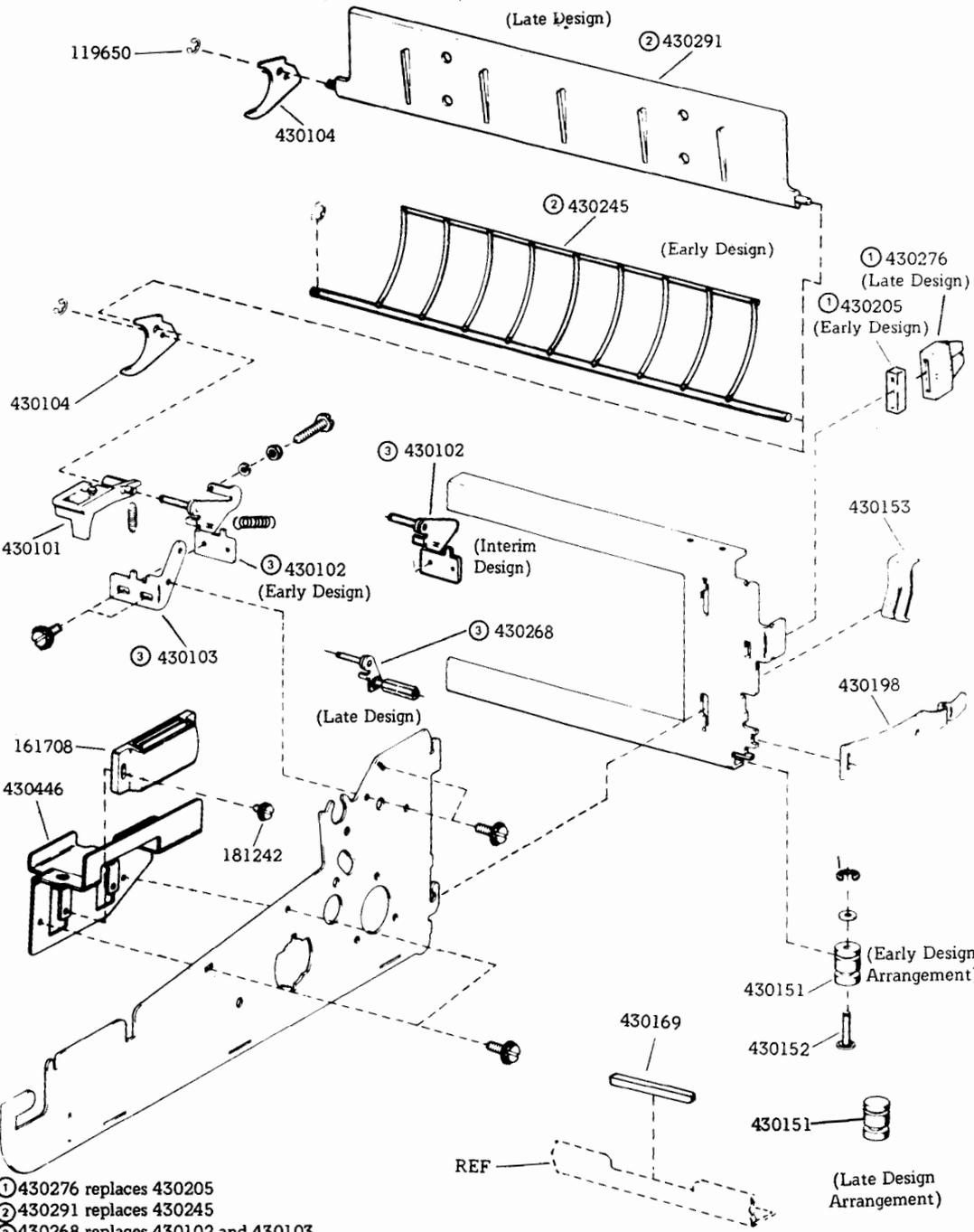
- ① 430047 Motor w/Cable and Encoder
- ② Part of 430441 Motor w/Cable and Encoder
- ③ Part of 430440 Modification Kit
- ④ Part of 430439 Modification Kit



Spacing Drive and Lead Screw



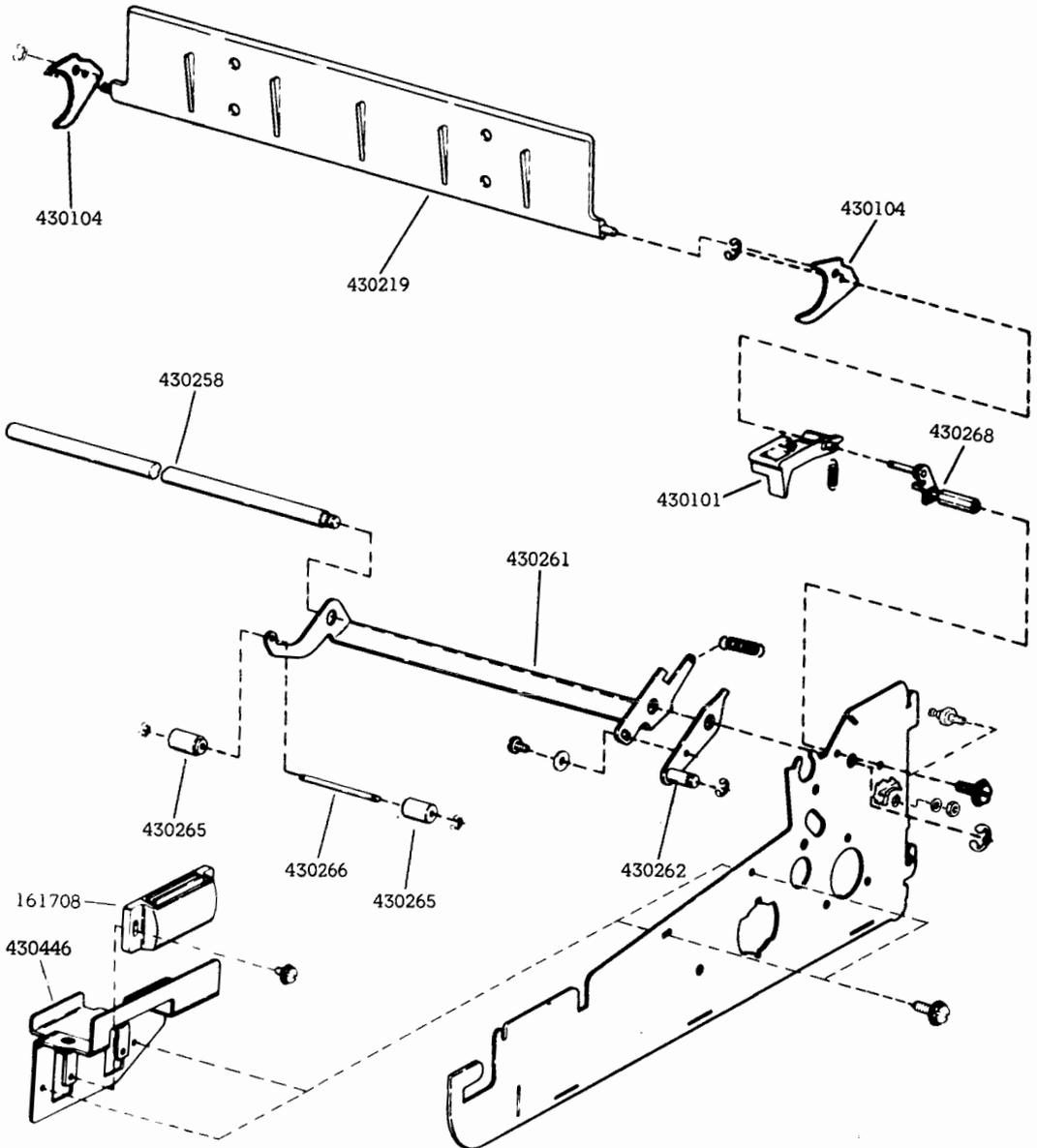
Right Side Frame and Rear Frame (Sprocket Feed)



- ① 430276 replaces 430205
- ② 430291 replaces 430245
- ③ 430268 replaces 430102 and 430103

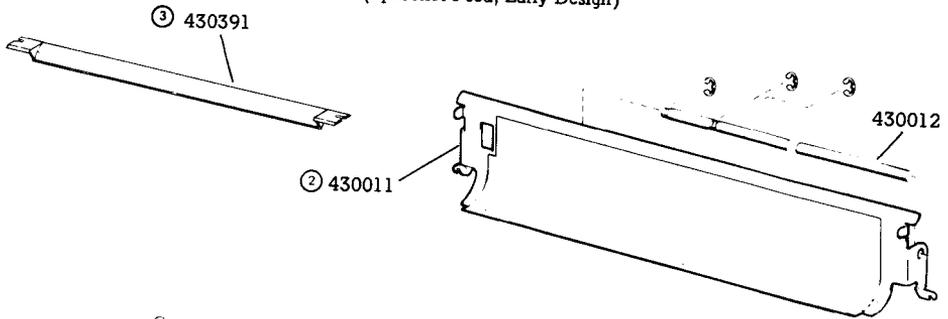
SECTION 574-501-800

Right Side Frame (Friction Feed)

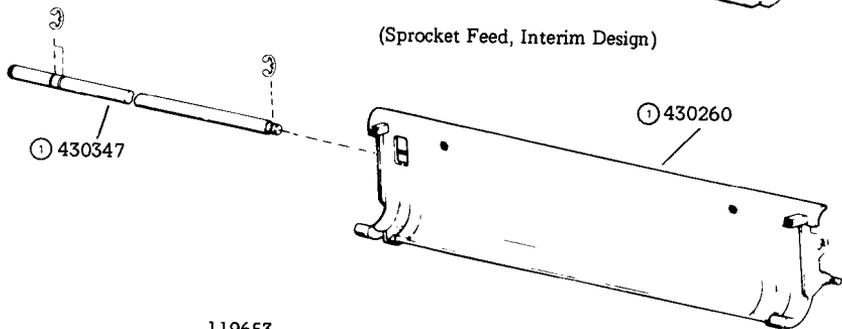


Paper Guide and Paper Tray

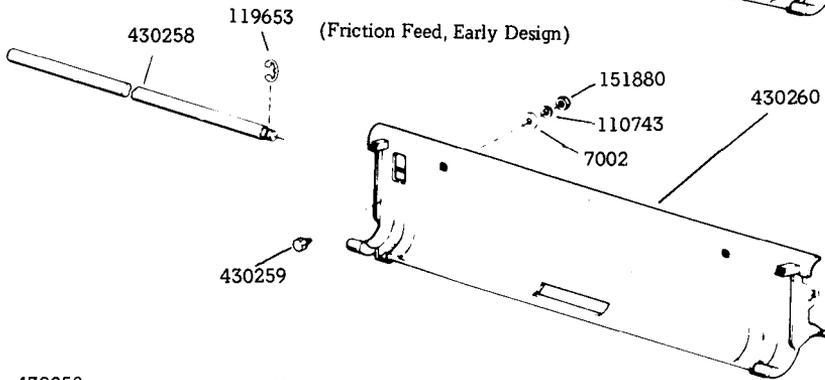
(Sprocket Feed, Early Design)



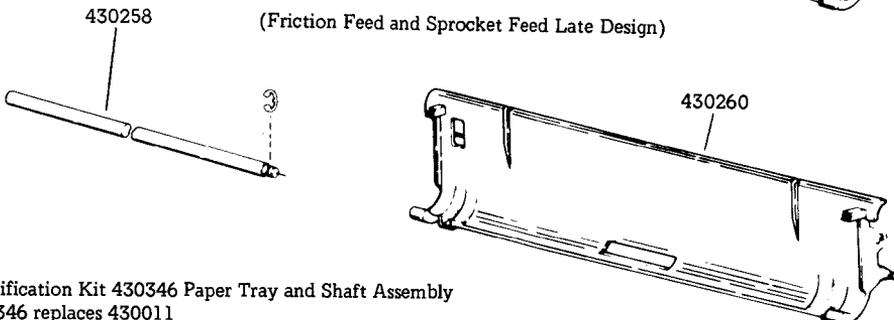
(Sprocket Feed, Interim Design)



(Friction Feed, Early Design)



(Friction Feed and Sprocket Feed Late Design)

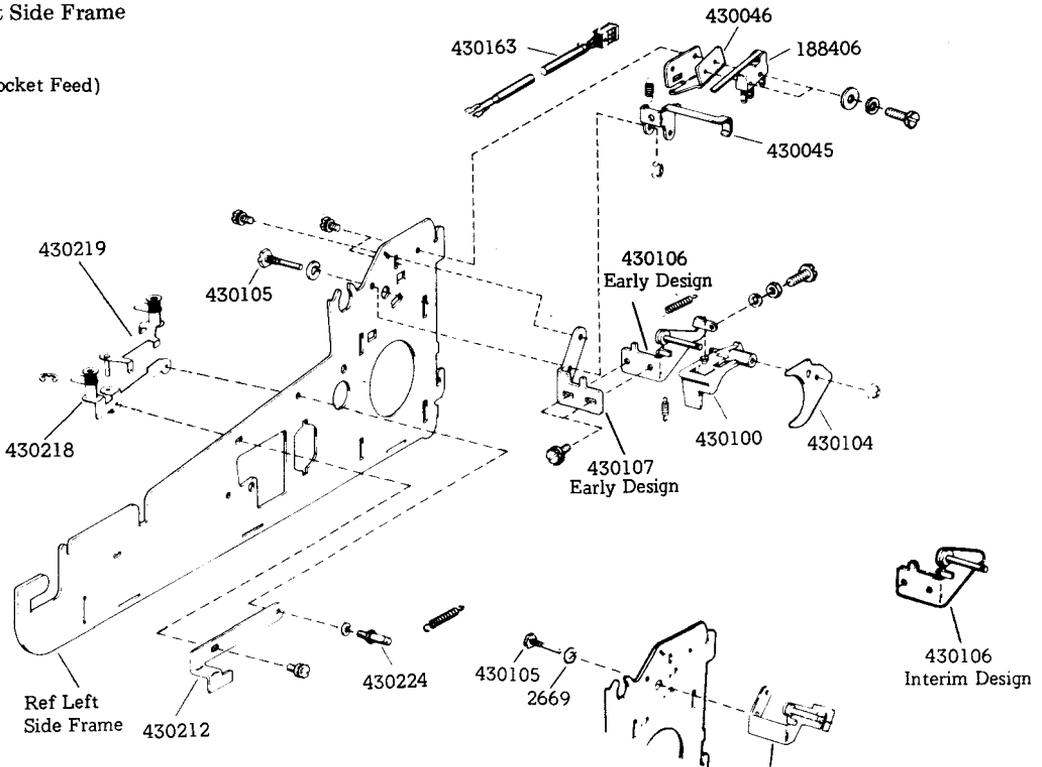


- ① Modification Kit 430346 Paper Tray and Shaft Assembly
- ② 430346 replaces 430011
- ③ 430391 replaces 430179

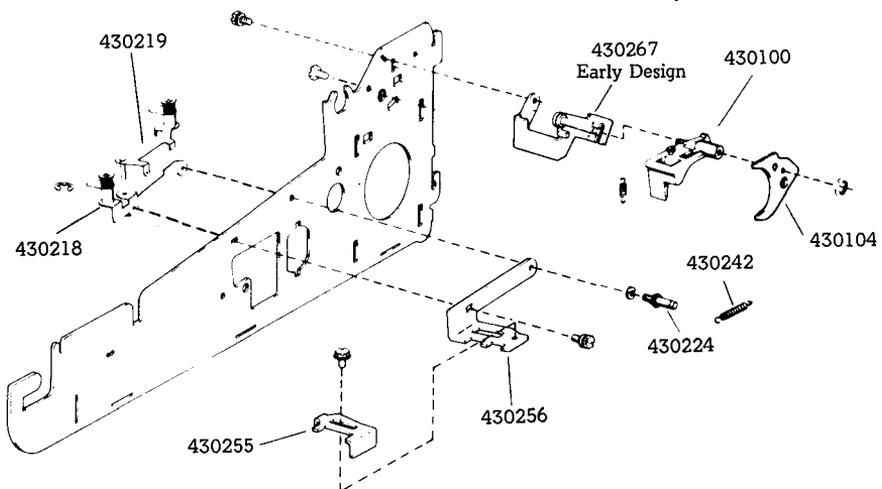
SECTION 574-501-800

Left Side Frame

(Sprocket Feed)



(Friction Feed)



3. NUMERICAL INDEX

3.01 Parts listed without asterisks are not maintenance spares but may be ordered as needed for local repair of major components or terminals.

| Part Number | Description and Page Number | Part Number | Description and Page Number | Part Number | Description and Page Number |
|-------------|--|-------------|-----------------------------|-------------|-------------------------------------|
| 2669 | Lockwasher 10 | 430101 | Guide, Right Paper 7,8 | 430258 | Shaft, Paper Tray 8, 9 |
| 7002 | Washer, Flat 9 | 430102 | Bracket, w/Posts 7 | 430259 | Stud, Paper Guide 9 |
| 110743 | Lockwasher 9 | 430103 | Bracket, Right 7 | 430260 | Tray, Paper 9 |
| 119650 | Ring, Retaining 7 | 430104 | Stripper, Paper 7, 8, 10 | 430261 | Bail, Roller 8 |
| 119651 | Ring, Retaining 4 | 430105 | Post 10 | 430262 | Plate w/Post 8 |
| 119653 | Ring, Retaining 9 | 430106 | Bracket w/Post, Left 10 | 430264 | Lever, Friction Feed 2 |
| 151880 | Nut, 4-40 Hex 9 | 430107 | Bracket, Left 10 | 430265 | Roller, Pressure 8 |
| 161708 | Latch, Magnetic 7,8 | 430113 | Coil Assembly 4 | 430266 | Shaft, Roller 8 |
| 181242 | Screw w/Lockwasher, 6-40 x 5/16 Hex 7 | 430114 | Plunger w/Pin 4 | 430267 | Bracket, Left 10 |
| 183321 | Sprocket w/Pins 2 | 430117 | Cable Assembly 4 | 430268 | Bracket w/Posts 7, 8 |
| 184059 | Screw w/Lockwasher, 6-40 x 1/2 Hex 4 | 430118 | Spring, Compression 4 | 430276 | Support, Bustle 7 |
| 188406 | Switch, Actuator 10 | 430141 | Knob, Platen 2 | 430281 | Platen w/Spacers 2 |
| 410013 | Card Assembly 3 | 430142 | Clip, Platen 2 | 430285 | Belt Timing 4, 6 |
| 430003 | Pan 5 | 430143 | Pulley, 42T Platen 2, 4 | 430291 | Separator, Paper 7 |
| 430010 | Rod, Guide 6 | 430144 | Pulley w/Flange, 24T 4 | 430309 | Slot, Bushing 4 |
| 430011 | Tray, Paper 9 | 430145 | Belt, Timing 2, 4 | 430319 | Pulley w/Clip 5 |
| 430012 | Shaft, Paper Tray 9 | 430151 | Mount, Rear 7 | 430346 | Assembly, Paper Tray and Shaft 9 |
| 430013 | Bearing, Platen 2,3 | 430152 | Stud 7 | 430347 | Shaft, Paper Tray 9 |
| 430016 | Post, Lever 6 | 430153 | Clip 7 | 430351 | Nut, Lead Screw 3 |
| 430017 | Lever w/Stud 6 | 430154 | Motor w/Cable 4 | 430352 | Nut, Lead Screw 3 |
| 430019 | Roller w/Bearing 4,6 | 430163 | Cable Assembly 10 | 430366 | Spring, Compression 3 |
| 430020 | Bearing, Housing 6 | 430166 | Bracket, Bell 4 | 430370 | Platen 2 |
| 430021 | Spring 4,6 | 430167 | Bracket, Bell 4 | 430391 | Guide, Paper 9 |
| 430022 | Post, Spring 6 | 430169 | Strip, Insulator 7 | 430398 | Washer, Flat 6 |
| 430026 | Bearing, Outer 6 | 430178 | Housing 5 | 430399 | Bearing, Ball 6 |
| 430027 | Bearing, Inner 6 | 430179 | Guide 9 | 430404 | Spacer, Line Feed 4 |
| 430028 | Spring, Compression 6 | 430190 | Motor w/Cable 5 | 430406 | Motor Assembly 4 |
| 430029 | Screw, Lead 5 | 430198 | Clamp 7 | 430407 | Rod, Lower Guide 6 |
| 430030 | Spring, Compression 3 | 430199 | Lever w/Stud 4 | 430408 | Bracket 4 |
| 430031 | Nut, Special 3 | 430205 | Bumper 7 | 430409 | Coil 4 |
| 430032 | Belt, Timing 6 | 430206 | Spacer 2 | 430410 | Spring, Plunger 4 |
| 430033 | Pulley, 81T 6 | 430212 | Bracket, Margin 10 | 430411 | Striker, Bell 4 |
| 430034 | Fastener 6 | 430213 | Nut, Speed 4 | 430439 | Modification Kit 5 |
| 430045 | Lever, Switch 10 | 430214 | Pulley w/Clip 5 | 430440 | Modification Kit 3, 5 |
| 430046 | Bracket, Switch 10 | 430215 | Carriage w/Post 3 | 430441* | Motor W/Cable and Encoder 5 |
| 430047 | Motor w/Cable and Encoder 5 | 430216 | Collar w/Link 3 | 430445 | Housing 5 |
| 430055 | Cable Assembly 5 | 430217 | Bridge Assembly 3 | 430446 | Bracket, Right 7, 8 |
| 430058 | Cover 5 | 430218 | Bracket Assembly, Left 10 | 430448 | Bracket, Left 10 |
| 430061 | Disc, Encoder 5 | 430219 | Plate Assembly, Left 8, 10 | 430603 | Insulator 5 |
| 430063 | Fastener 5 | 430222 | Washer, Felt 6 | 430625 | Support 4, 5 |
| 430068 | Nut 8-32 Spl 3 | 430224 | Post, Spring 10 | 430803 | Cable Assembly 3 |
| 430069 | Handle, Locking 3 | 430231 | Shield, Ribbon 6 | 430804 | Insulator 3 |
| 430088 | Plate 2 | 430240 | Stud, Idler Bracket 4 | 430829 | Cover 3 |
| 430098 | Clip, Sprocket 2 | 430242 | Spring 10 | 430832 | Switch 3 |
| 430100 | Guide, Left Paper 10 | 430245 | Separator, Paper 7 | 430850 | Head Assembly, Print 3 |
| | | 430253 | Bracket, Stop 4 | 453152 | Disc, Encoder 5 |
| | | 430255 | Slide 10 | 453240 | Bell Assembly 4 |
| | | 430256 | Bracket 10 | | |

*A Maintenance spare stocking ratio of one spare for each 50 stations in a maintenance area.



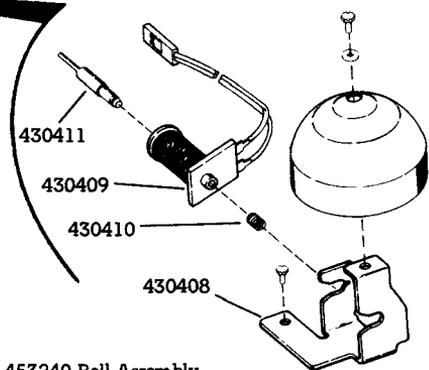
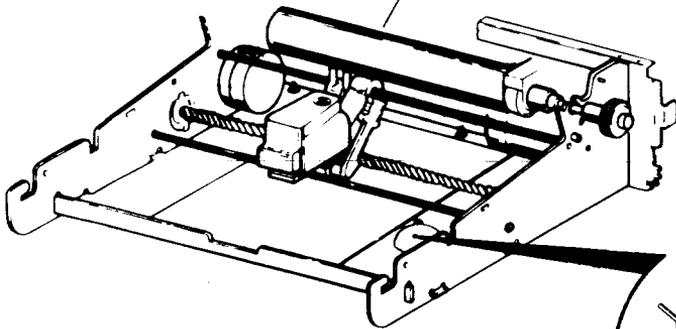
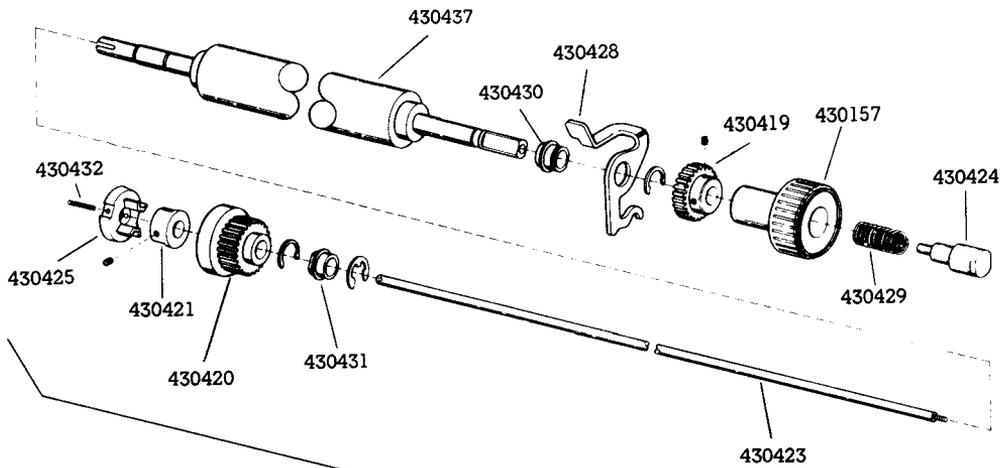
43 TRACTOR FEED PRINTER
PARTS

| CONTENTS | PAGE | 1. GENERAL |
|--|------|---|
| 1. GENERAL | 1 | 1.01 Information on maintenance spare parts is provided in this section for the 43 tractor feed printer. |
| 2. PARTS | 2 | 1.02 Whenever this section is reissued, the reason for reissue will be listed in this paragraph. |
| PLATEN AND BELL ASSEMBLY | 2 | 1.03 Part numbers are listed in the index in numerical order and indicate the page on which the parts appear. Asterisked numbers, stocked as "List 1", indicate a maintenance spare stocking ratio of one spare for each 50 stations in a maintenance area. Part numbers without asterisks are not maintenance spares but may be ordered separately for local repair of the printer. Before ordering, verify that a particular spare is applicable to the type of printer in service. |
| CARRIAGE ASSEMBLY | 3 | |
| LINE FEED SPACING MOTOR | 4 | |
| CHARACTER SPACING MOTOR | 5 | |
| LEAD SCREW AND DRIVE | 6 | |
| PAPER TRAY AND PRESSURE ROLLER | 7 | 1.04 When ordering replaceable parts or components, unless otherwise specified, prefix each part number with "TP" (ie, TP410055). |
| LEFT AND RIGHT SIDE FRAME ARRANGEMENTS | 8 | 1.05 Troubleshooting and disassembly/reassembly information for these parts is provided in Section 574-501-301 and Section 574-501-721, respectively. |
| TRACTOR MECHANISM | 9 | |
| 3. NUMERICAL INDEX | 10 | |

SECTION 574-501-801

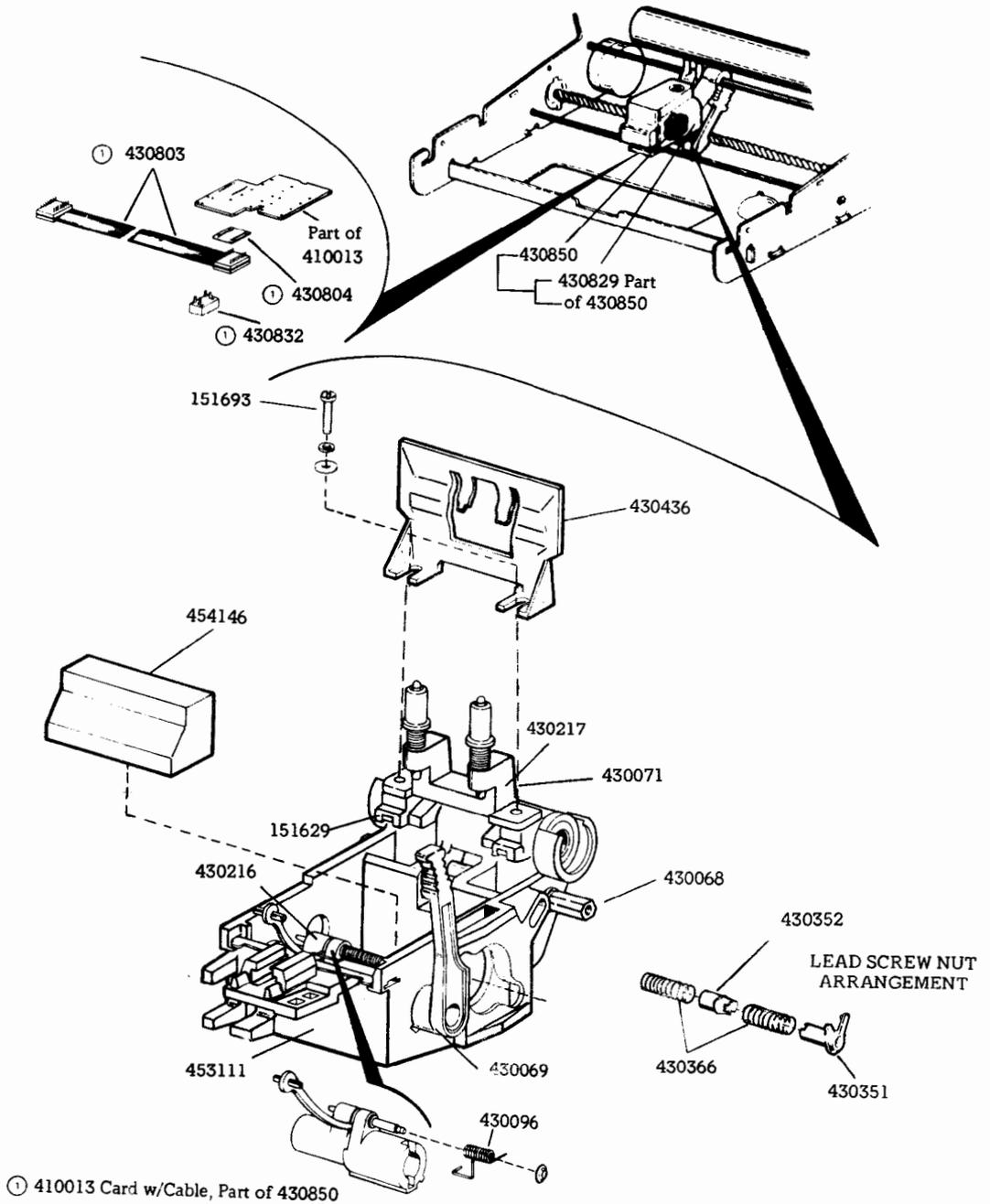
2. PARTS

PLATEN AND BELL ASSEMBLY



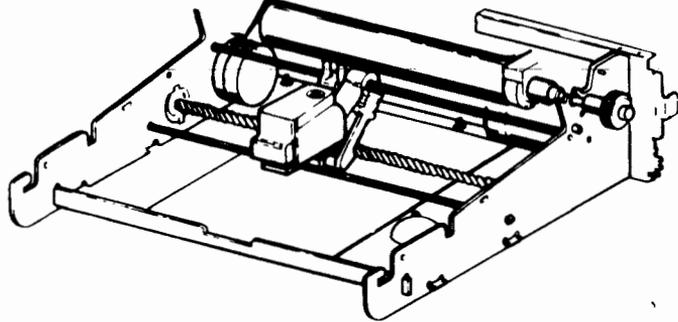
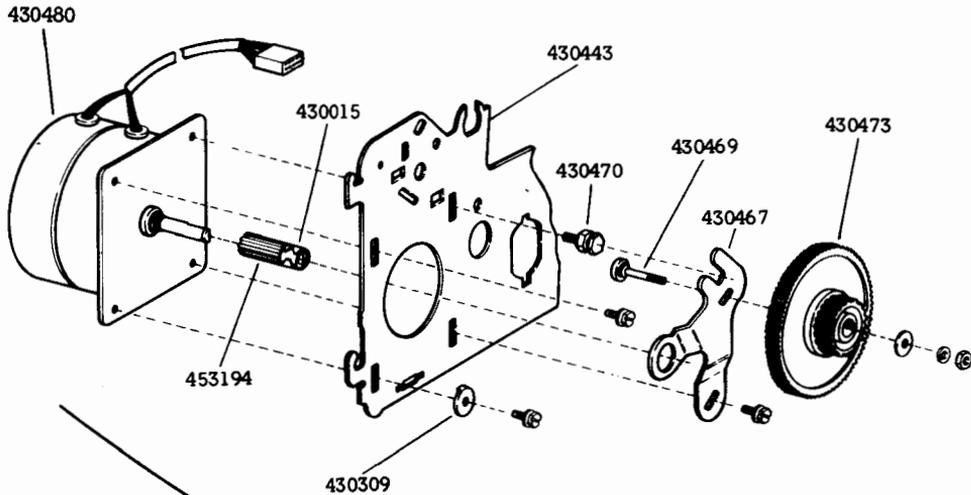
453240 Bell Assembly

CARRIAGE ASSEMBLY

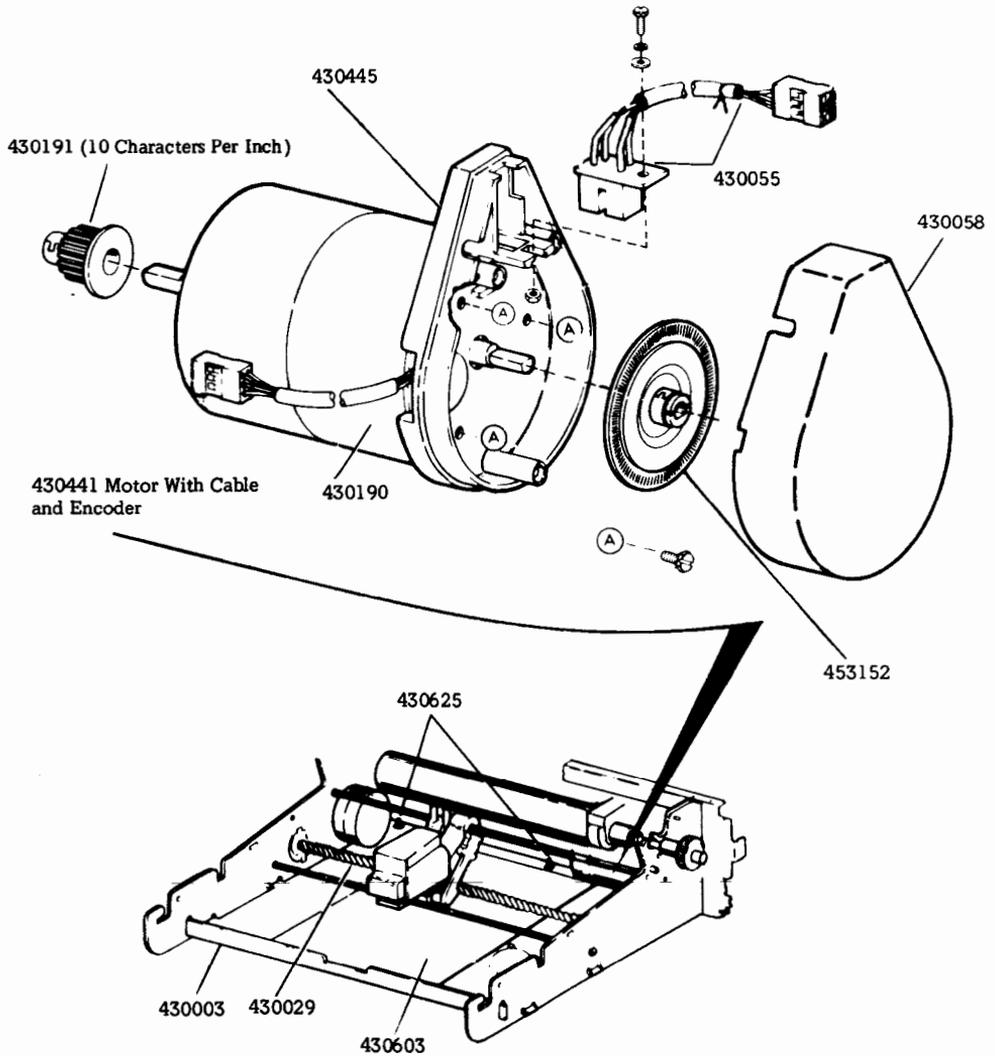


SECTION 574-501-801

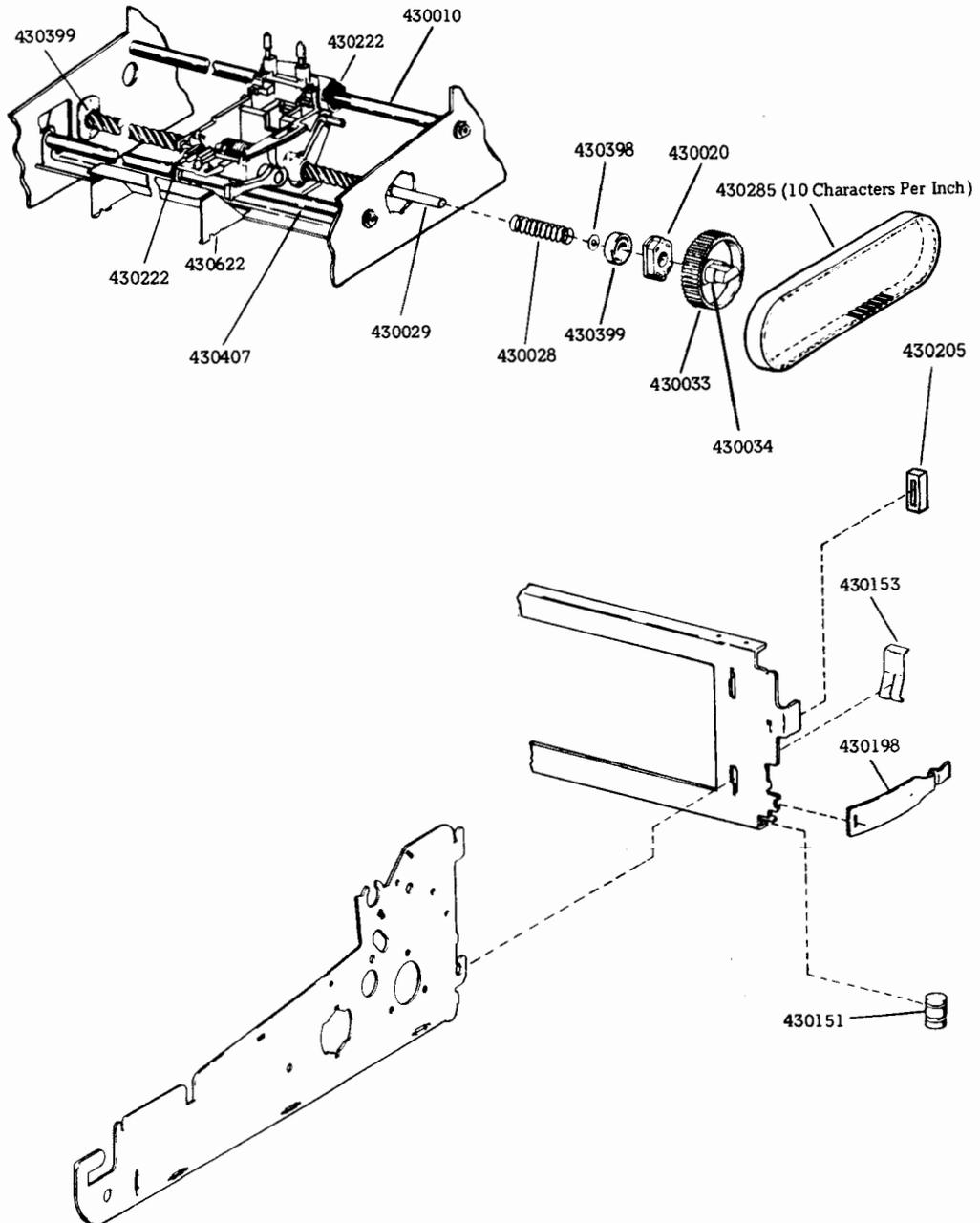
LINE FEED SPACING MOTOR



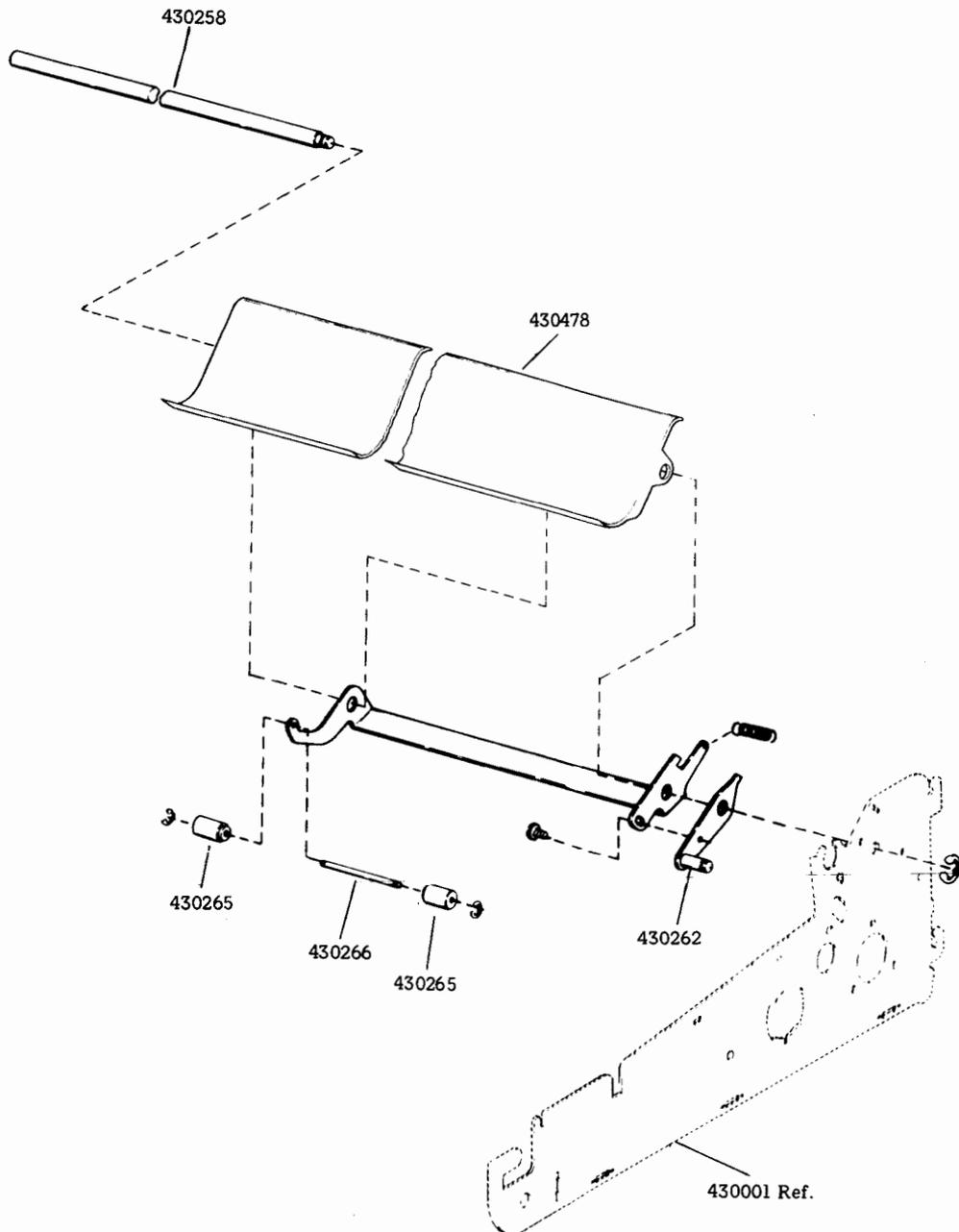
CHARACTER SPACING MOTOR



LEAD SCREW AND DRIVE

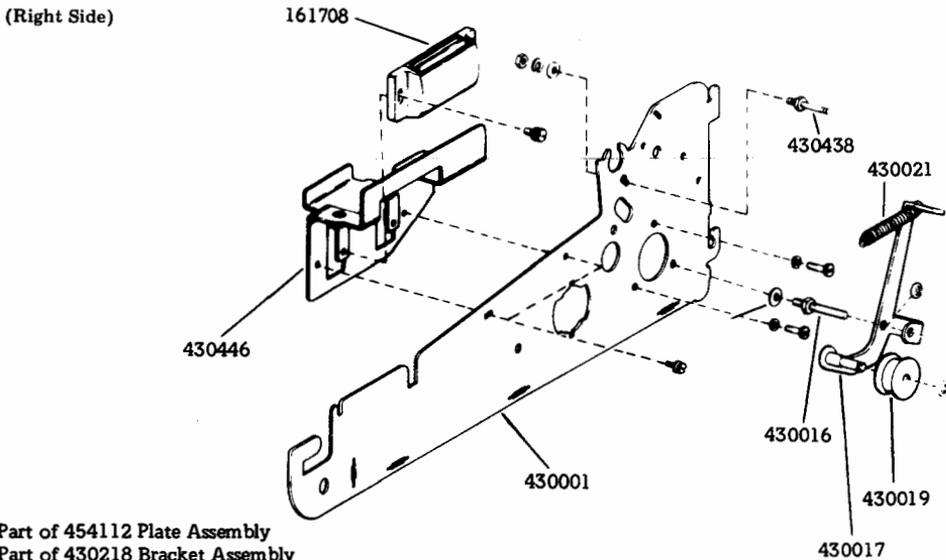
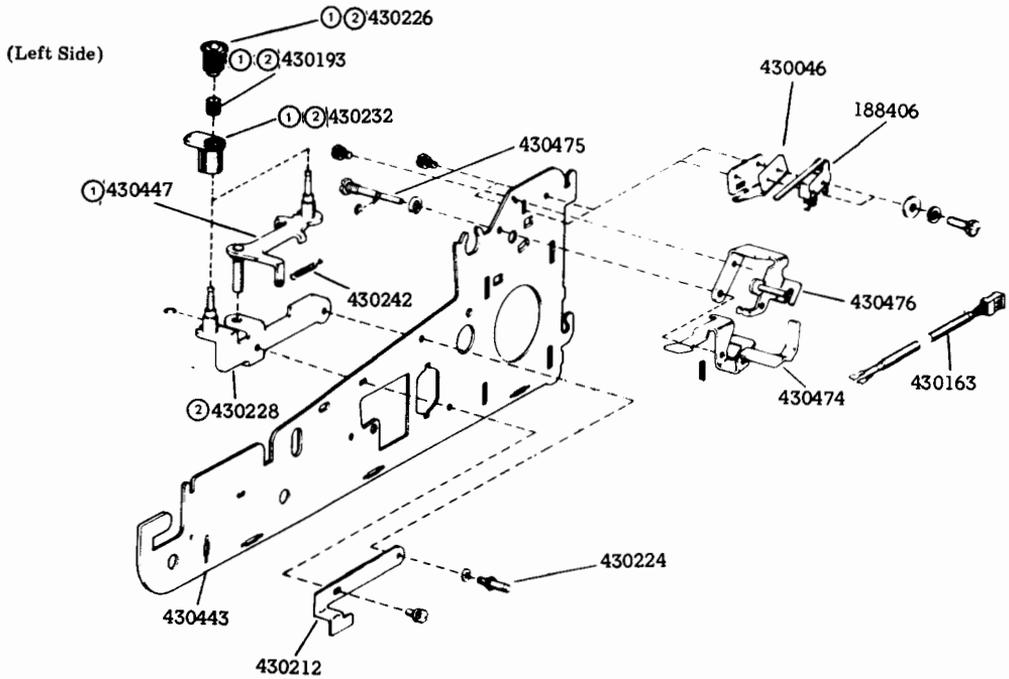


PAPER TRAY AND PRESSURE ROLLER



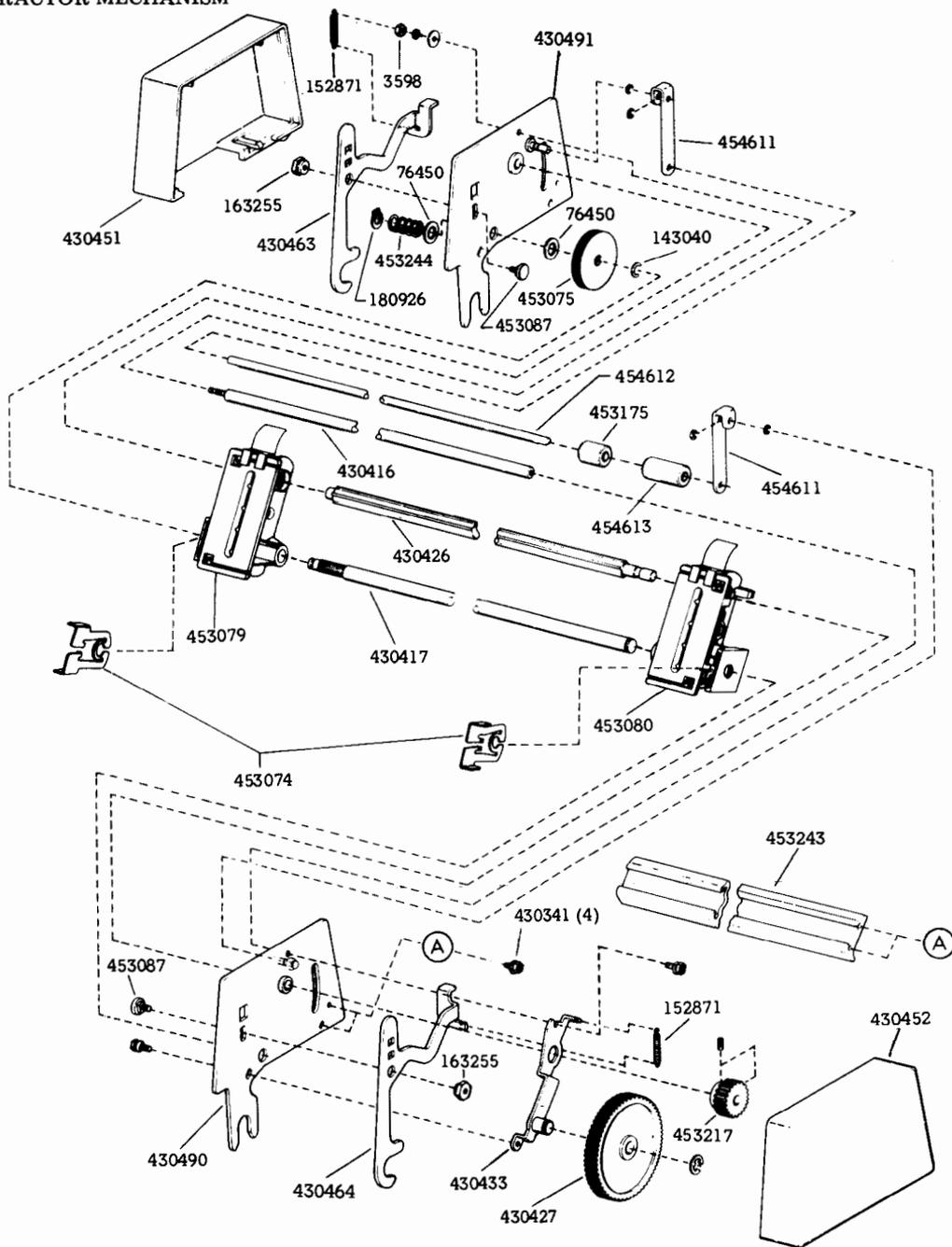
SECTION 574-501-801

LEFT AND RIGHT SIDE FRAME ARRANGEMENTS



- ① Part of 454112 Plate Assembly
- ② Part of 430218 Bracket Assembly

TRACTOR MECHANISM



SECTION 574-501-801

3. NUMERICAL INDEX

3.01 Parts listed without asterisks are not maintenance spares but may be ordered as needed for local repair of major components.

| Part Number | Description and Page Number | Part Number | Description and Page Number | Part Number | Description and Page Number |
|-------------|-----------------------------|-------------|-----------------------------|-------------|-----------------------------|
| 3598 | Nut, 6-40 Hex 9 | 430228 | Bracket 8 | 430452 | Cover, Right 9 |
| 76450 | Shim, 0.028 THK 9 | 430232 | Rotor 8 | 430464 | Lever, Latch Right 9 |
| 143040 | Ring, Retaining 9 | 430242 | Spring 8 | 430467 | Plate 4 |
| 151629 | Nut, 6-40 Lug 3 | 430258 | Shaft 7 | 430469 | Post, Idler 4 |
| 151693 | Screw, 6-40 x 3/16 Fil 3 | 430262 | Plate w/Post 7 | 430470 | Post, Guide 4 |
| 152871 | Spring 9 | 430265 | Roller 7 | 430473 | Gear 4 |
| 161708 | Latch, Magnetic 8 | 430266 | Shaft 7 | 430474 | Lever, Switch 8 |
| 163255 | Nut, 6-40 Shoulder 9 | 430276 | Support, Bustle 6 | 430475 | Post 8 |
| 180926 | Ring, Retaining 9 | 430285 | Belt, Timing 6 | 430476 | Bushing, Left 8 |
| 188406 | Switch 8 | 430309 | Bushing 4 | 430478 | Tray 7 |
| 410013 | Card Assembly, Circuit 3 | 430341 | Screw, 5/16 Self Tap 9 | 430480 | Motor Assembly 4 |
| 430001 | Plate, Right Side 7,8 | 430351 | Nut, Lead Screw 3 | 430490 | Frame, Side 9 |
| 430003 | Pan 5 | 430352 | Nut, Lead Screw 3 | 430491 | Frame, Side 9 |
| 430010 | Rod, Guide 6 | 430366 | Spring, Compression 3 | 430603 | Insulator 5 |
| 430015 | Fastener 4 | 430398 | Washer, Flat 6 | 430622 | Clamp 6 |
| 430016 | Post 8 | 430399 | Bearing, Ball 6 | 430625 | Support 5 |
| 430017 | Lever 8 | 430407 | Rod, Lower Guide 6 | 430803 | Cable Assembly 3 |
| 430019 | Roller w/Bearing 8 | 430408 | Bracket 2 | 430804 | Insulator 3 |
| 430020 | Housing, Bearing 6 | 430409 | Coil 2 | 430829 | Cover 3 |
| 430021 | Spring 8 | 430410 | Spring, Plunger 2 | 430832 | Switch 3 |
| 430028 | Spring, Compression 6 | 430411 | Striker, Bell 2 | 430850 | Head Assembly, Print 3 |
| 430029 | Screw, Lead 5,6 | 430416 | Rod, Tractor Guide 9 | 453074 | Shaft, Support 9 |
| 430033 | Pulley, 8IT 6 | 430417 | Shaft, Support 9 | 453075 | Wheel, Thumb 9 |
| 430034 | Fastener 6 | 430419 | Gear, Spur 2 | 453079 | Tractor Assembly, Left 9 |
| 430046 | Bracket, Switch 8 | 430420 | Gear, Spur 2 | 453080 | Tractor Assembly, Right 9 |
| 430055 | Cable Assembly 5 | 430421 | Coupler 2 | 453087 | Screw, 6-40 Shoulder 9 |
| 430058 | Cover 5 | 430423 | Shaft, Inner Platen 2 | 453111 | Carriage w/ Bushing 3 |
| 430068 | Nut, 8-32 SPL 3 | 430424 | Button, Release 2 | 453152 | Encoder, Disc 5 |
| 430069 | Handle, Locking 3 | 430425 | Clutch, Drive 2 | 453175 | Roller Assembly 9 |
| 430071 | Bridge w/Post 3 | 430426 | Bar, 4 Teeth Spline 9 | 453194 | Pinion, 10T 4 |
| 430096 | Spring, Torsion 3 | 430427 | Gear 9 | 453217 | Gear, 25T 9 |
| 430151 | Mount, Rear 6 | 430428 | Lever, Release 2 | 453240 | Bell Assembly 2 |
| 430153 | Clip 6 | 430429 | Spring 2 | 453243 | Bar, Tie 9 |
| 430157 | Knob 2 | 430430 | Bearing, Right Platen 2 | 453244 | Spring, Compressor 9 |
| 430163 | Cable Assembly 8 | 430431 | Bearing, Left Platen 2 | 454112 | Plate Assembly 8 |
| 430190 | Motor w/Cable 5 | 430432 | Pin, Roll 2 | 454146 | Oiler, Foam 3 |
| 430191 | Pulley, 27T 5 | 430433 | Plate, Idler Adjusting 9 | 454611 | Arm 9 |
| 430193 | Band, Left 8 | 430436 | Shield, Print Head 3 | 454612 | Shaft, Roller 9 |
| 430198 | Clamp 6 | 430437 | Platen 2 | 454613 | Roller w/Spring 9 |
| 430212 | Bracket, Margin 8 | 430438 | Post 8 | | |
| 430216 | Collar w/Link 3 | 430441 | Motor w/Cable 5 | | |
| 430217 | Bridge Assembly 3 | 430443 | Plate 4,8 | | |
| 430218 | Bracket Assembly 8 | 430445 | Housing 5 | | |
| 430222 | Washer, Felt 6 | 430446 | Bracket, Right 8 | | |
| 430224 | Post, Spring 8 | 430447 | Plate 8 | | |
| 430226 | Roller, Left Guide 8 | 430451 | Cover, Left 9 | | |

43 BASIC KEYBOARD
TROUBLESHOOTING

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| 1. GENERAL | 1 |
| 2. TROUBLESHOOTING | 2 |
| TROUBLESHOOTING GUIDE (KSR Keyboard) | 2 |
| TROUBLESHOOTING GUIDE (RO Keyboard) | 3 |
| 1. GENERAL | |
| 1.01 This section provides troubleshooting information for the 43 keyboard (KSR and RO). | |
| 1.02 This section is reissued to change the title and change references from opcon to keyboard. | |
| 1.03 Keyboard troubleshooting is initiated by the 43 Basic KSR Teleprinter or 43 RO Teleprinter Troubleshooting Sections 574-500-300 and 574-500-301 or when trouble in the keyboard is suspected from symptoms observed. | |
| 1.04 Analysis in this section is limited to isolating the trouble within the keyboard up to its electrical interface at the logic card. The 43 keyboard must be tested as part of the 43 Basic KSR or RO Teleprinter Station. Refer to Section 574-500-500 and Section 574-500-501. Where analysis indicates the trouble is not in the keyboard, return to the Teleprinter Troubleshooting Section 574-500-300 or Section 574-500-301 for further analysis. | |

1.05 When a trouble is verified to be in the keyboard (by replacement of the keyboard) this section should be used to help isolate the trouble to any replaceable components to correct the trouble.

1.06 Troubleshooting procedures for the 50K 122/AAE and AAF unitized keyboards are not provided since these keyboards are not field serviceable. They are returnable for repair. See 1.07.

1.07 The keyboards are returnable to the Western Electric Service Center for repair as a unit. Pack in carton (KSR keyboards using conductive plastic bag) that was used to pack replacement keyboard. High voltage static discharge can damage KSR keyboard circuitry. The 346392 wrist strap is available to ground service personnel.

1.08 Isolation and correction of trouble is based on electrical and mechanical checks and parts replacement.

Reference sections are:

| | |
|-------------|------------------------|
| 574-502-400 | Wiring |
| 574-502-720 | Disassembly/Reassembly |
| 574-502-800 | Parts |

1.09 Trouble analysis is presented in the form of a "20 Questions" type of routine in Paragraph 2. TROUBLESHOOTING GUIDE. The guide, with questions and yes and no columns, should be used always starting with the first question and proceeding according to the "yes" or "no" directive.

SECTION 574-502-300

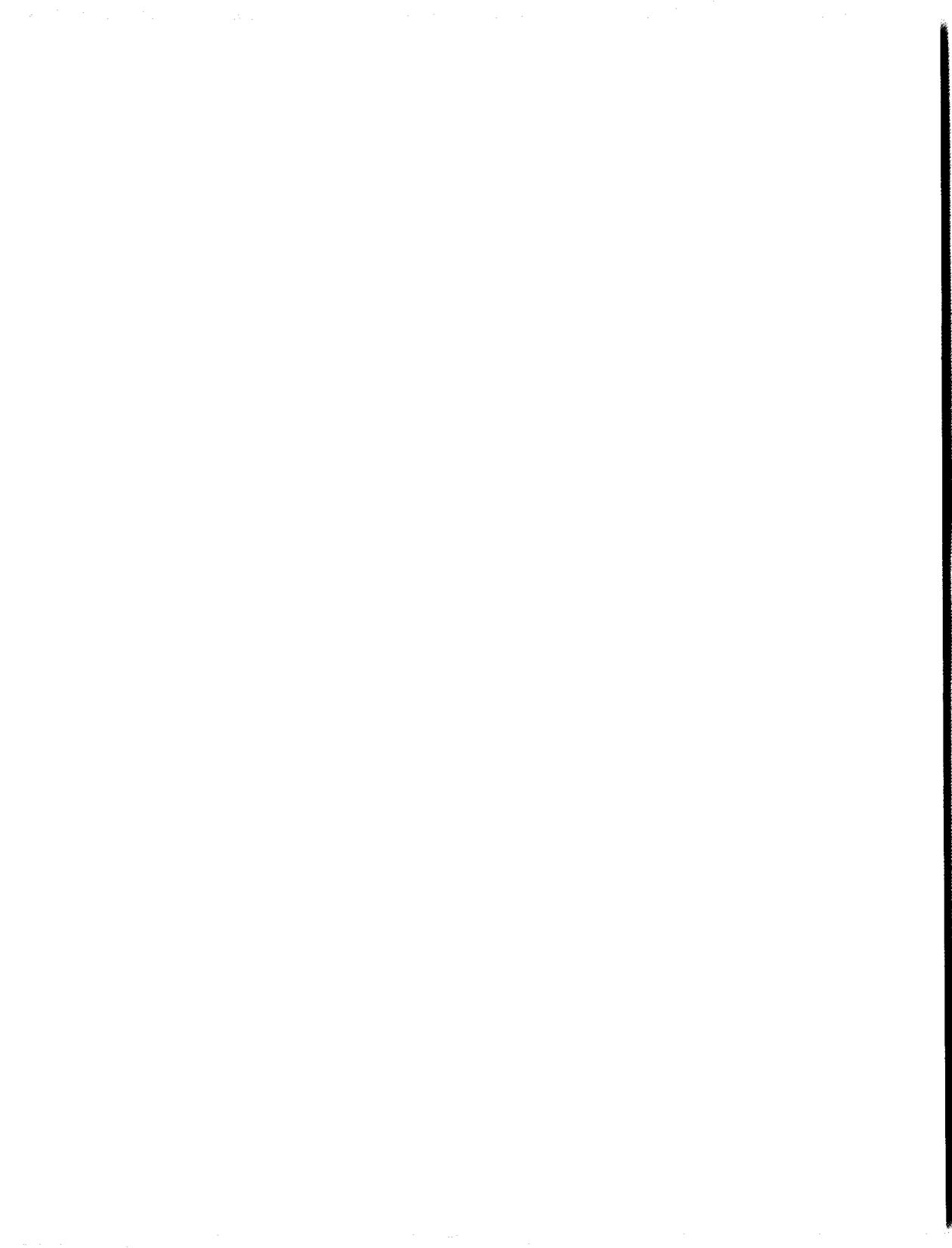
2. TROUBLESHOOTING

TROUBLESHOOTING GUIDE (KSR Keyboard)

| QUESTION | YES | NO |
|--|---|---|
| 1. Are any of the communication mode indicators: LOCAL (LOCAL-TALK), DATA, TERM READY (AUTO ANSW) lit? (Power on, red light in power supply lit.) | Go to 2. | Check continuity through key-lamp indicator common to -12 V. |
| 2. Do any indicators fail to light properly? | Go to 2a. | Go to 3. |
| 2a. Do any keys on the keyboard generate characters? | <i>Note:</i> If indicators light when depressed but not under all its conditions, go to KSR Teleprinter Troubleshooting. Verify proper voltage at circuit card test points. Replace keyswitch or cable. | Check dc supply to keyboard at circuit card test points. Check cable. |
| 3. Do any latching keys fail to latch down when depressed or release up when depressed again? (CAPS LOCK, PARITY, DUPLEX, or CPS) Do any other keys (except ALARM) fail to snap down when depressed or release up when released? | Replace defective key-switch. | Go to 4. |
| 4. Does any keyboard key fail to generate the proper character or function? | Go to 4a. | Go to 5. |
| 4a. Does the key fail in all modes (Shift, Unshift, Ctrl, Caps Lock)? | Replace keyswitch. | Replace keyboard. |
| 5. Do any of the latching type keys (PARITY, DUPLEX, CPS) or PRINTER TEST key fail to operate? | Check continuity through switch. Replace keyswitch or cable. | Go to 6. |
| 6. Does ALARM indicator light when cover is opened? | Undefined trouble. Go to KSR Teleprinter Troubleshooting. | Check continuity through Interlock keyswitch. Check fit of cover actuating button. |

TROUBLESHOOTING GUIDE (RO Keyboard)

| QUESTION | YES | NO |
|--|---|---|
| 1. Are any of the communication mode indicators (TERM READY, DATA) lit? (Power on, red light in power supply lit.) | Go to 2. | Check continuity through key-lamp indicator common to -12 V. |
| 2. Do any indicators fail to light properly? | Verify proper voltage at circuit card test points. Replace keyswitch or cable. | Go to 3. |
| 3. Does the PRINTER TEST or RESET key fail to snap down when depressed or release up when released? | Replace defective key-switch. | Go to 4. |
| 4. Does the PRINTER TEST or RESET key fail to generate the proper character or function. | Check continuity through switch. Replace keyswitch or cable. | Go to 5. |
| 5. Does ALARM indicator light when cover is opened? | Undefined trouble. Go to RO Teleprinter Troubleshooting. | Check continuity through Interlock keyswitch. Check fit of cover actuating button. |



43 BUFFERED KEYBOARD
TROUBLESHOOTING

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| 2. TROUBLESHOOTING GUIDE. | 2 |

1. GENERAL

1.01 This section provides troubleshooting information for the 43 Buffered Keyboard.

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

1.03 Keyboard troubleshooting is initiated by the 43 Teleprinter 5-level Buffered Selective Calling (BSC) station, 43 Teleprinter 8-level Buffered Selective Calling (BSC) station or 43 Teleprinter 8-level Buffered Send/Receive (BSR) station Troubleshooting Sections 574-500-304, 574-500-303 or 574-500-302 or when trouble in the keyboard is suspected from symptoms observed.

1.04 Analysis in this section is limited to isolating the trouble within the keyboard up to its electrical interface at the logic card. The 43 keyboard must be tested as part of a 43 Buffered Teleprinter. Refer to Section 574-500-502, 574-500-503 or 574-500-504. Where analysis indicates the trouble is not in the key-

board, return to the 43 Buffered Teleprinter Troubleshooting Section 574-500-302, 574-500-303 or 574-500-304 for further analysis.

1.05 When a trouble is verified to be in the keyboard (by replacement of the keyboard) this section should be used to help isolate the trouble to any replaceable components to correct the trouble.

1.06 The keyboards are returnable to the Western Electric Service Center for repair as a unit. Pack in carton (using conductive plastic bag) that was used to pack replacement keyboard. High voltage static discharge can damage keyboard circuitry. The 346392 wrist strap is available to ground service personnel.

1.07 Isolation and correction of trouble is based on electrical and mechanical checks and parts replacement.

Reference sections are:

| | |
|-------------|------------------------|
| 574-502-401 | Wiring |
| 574-502-720 | Disassembly/Reassembly |
| 574-502-800 | Parts |

1.08 Trouble analysis is presented in the form of a "20 Questions" type of routine in Paragraph 2. TROUBLESHOOTING GUIDE. The guide, with questions and yes and no columns, should be used always starting with the first question and proceeding according to the "yes" or "no" directive.

2. TROUBLESHOOTING GUIDE

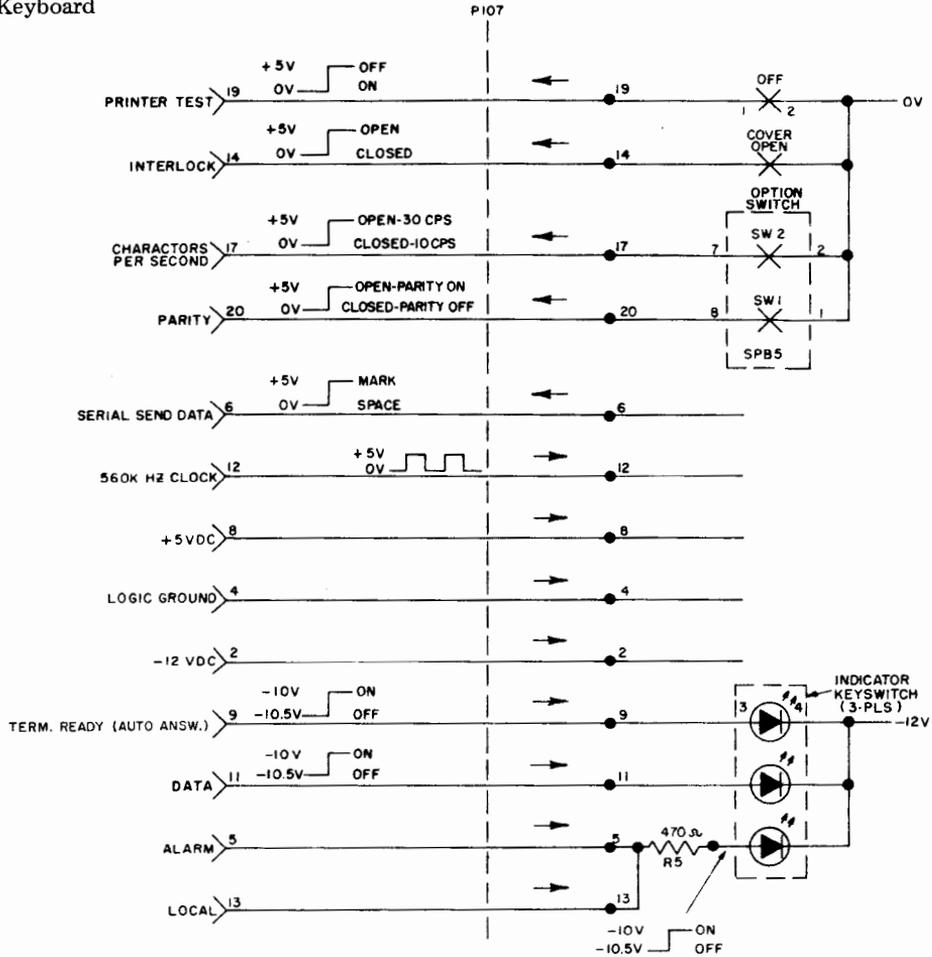
| QUESTION | YES | NO |
|--|--|---|
| 1. Does keyboard pass the Keyboard Test shown in the appropriate How to Operate Manual, IF TROUBLE OCCURS section? | Go to 2. | Go to 1a. |
| 1a. Do any indicators light during keyboard test? | Check continuity of indicator that doesn't light. If defective replace. If ok go to 1b. If light doesn't turn off go to 1b. | Check continuity of all leads of cable. Replace keyboard. |
| 1b. Exit test mode. Does keyswitch used to light or extinguish indicator, function properly? (Local Function) | Replace keyboard. | Replace keyswitch. |
| 2. Does the CAPS LOCK key (if present) fail to latch down when depressed or release up when depressed again? | Replace keyswitch. | Go to 3. |
| 3. Does any keyboard key fail to generate the proper character or function? | Go to 3a. | Undefined trouble. Go to Buffered Teleprinter Troubleshooting. |
| 3a. Does the key fail in all modes? (Shift, Unshift, Ctrl, Caps Lock etc. if keys are present.) | Replace keyswitch. Replace keyboard. | Replace keyboard. |

43 BASIC KEYBOARD

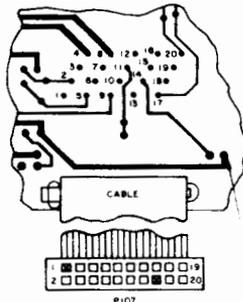
WIRING

| CONTENTS | PAGE | |
|--|------|--|
| 1. GENERAL | 1 | 1.03 Wiring information for the 50K122/AAE and AAF unitized keyboards is not provided since these keyboards are not field serviceable. |
| 2. WIRING | 2 | |
| 1. GENERAL | | 1.04 For additional wiring information, plug or cable locations, refer to 43 Basic Teleprinter Wiring, Section 574-500-400. |
| 1.01 This section provides wiring information for the 43 Basic Keyboard. | | 1.05 Where possible, small notes indicating voltage levels have been added to aid in troubleshooting. |
| 1.02 This section is reissued to change the title and change references from operator console to keyboard. | | |

RO Keyboard

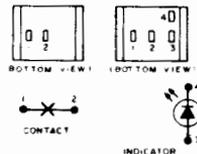


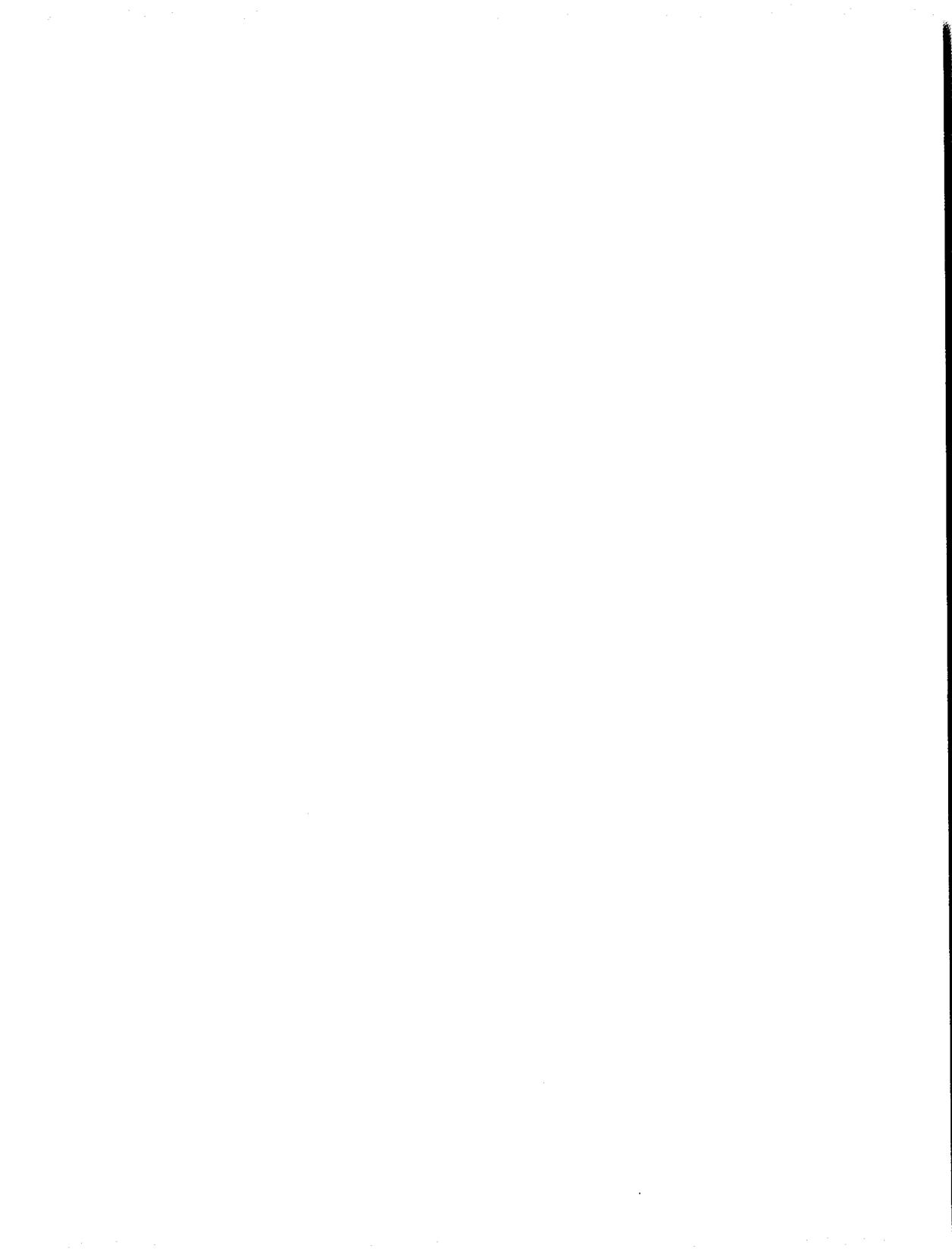
CABLE TERMINATION (ON CIRCUIT CARD)



0V DC REFERENCE POINT
(INTERLOCK)

KEYSWITCH TYPES





43 TELEPRINTER BUFFERED STATION KEYBOARD

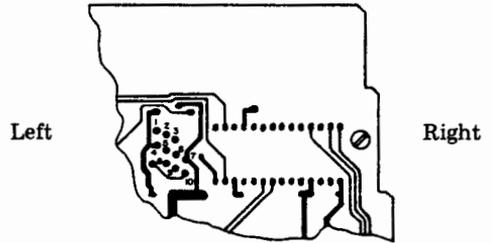
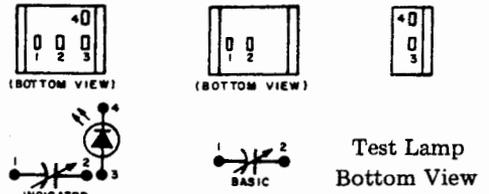
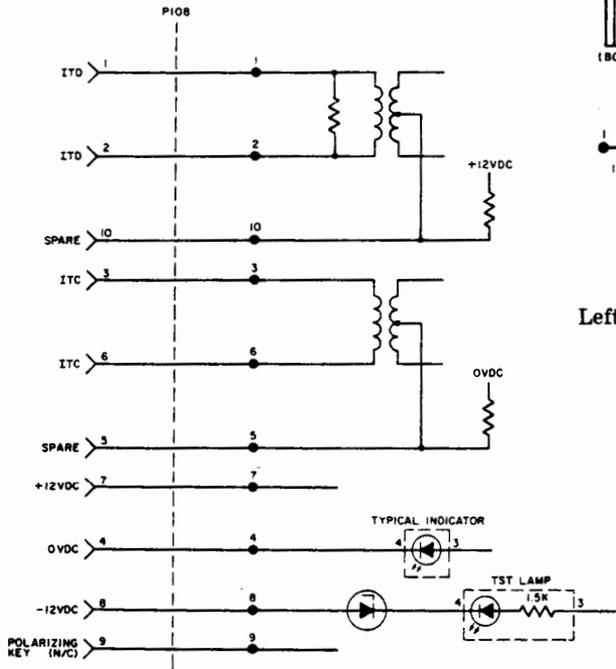
WIRING

| CONTENTS | PAGE |
|---|------|
| 1. GENERAL | 1 |
| 2. WIRING | 1 |
| 1. GENERAL | |
| 1.01 This section provides wiring information for the 43 Buffered Keyboard. | |

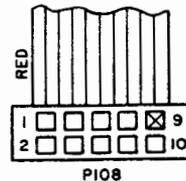
1.02 Whenever this section is reissued, the reason for reissue will be listed in this paragraph.

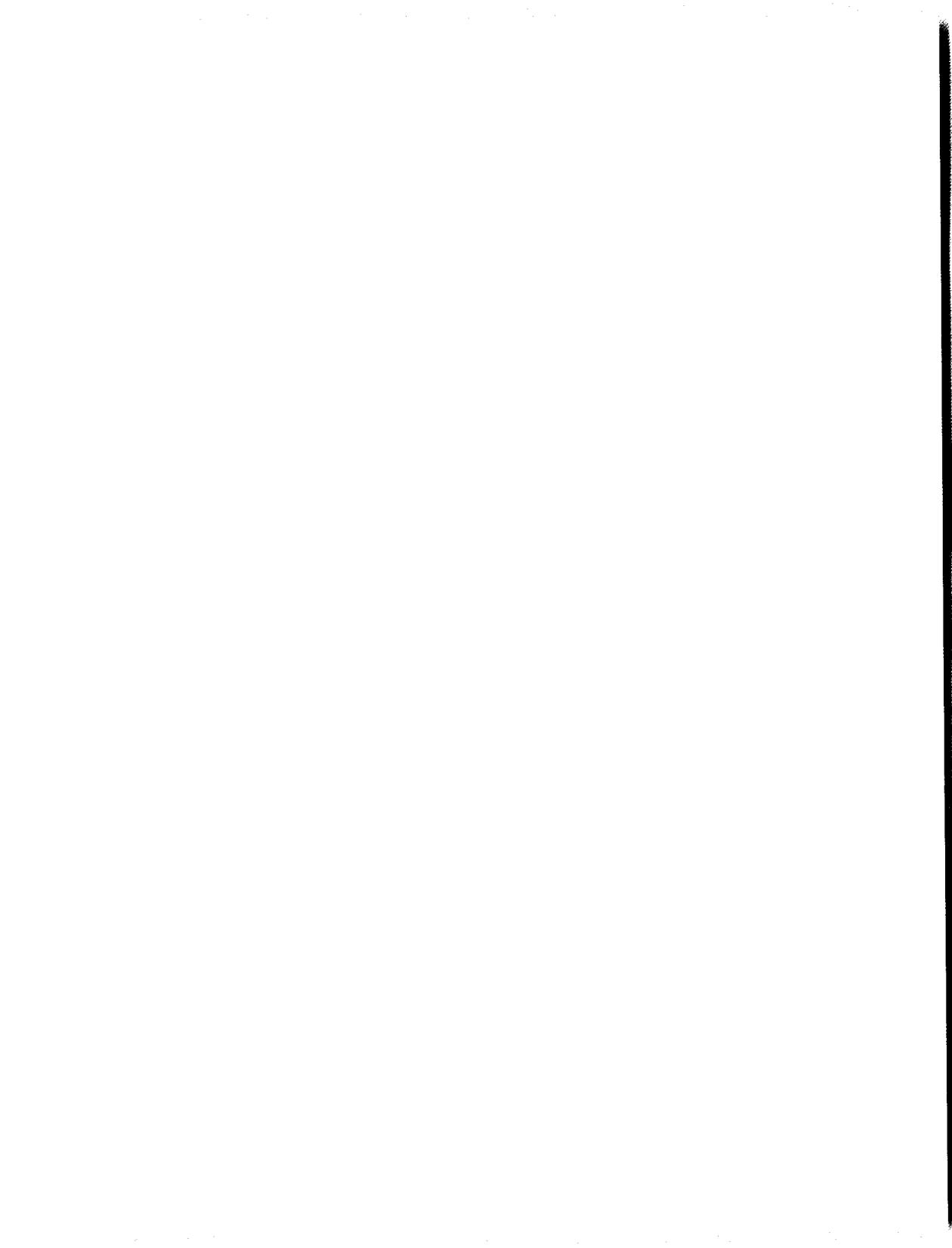
1.03 For additional wiring information, plug or cable locations, refer to 43 Buffered Teleprinter, Wiring, Section 574-500-401.

2. WIRING



Bottom View
Circuit Card





43 KEYBOARD

DISASSEMBLY/REASSEMBLY

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| 4. KEYTOP AND KEYSWITCH IDENTIFICATION | 10 |
| 5. SPACER, HOUSING AND REFERENCE IDENTIFICATION | 16 |
| 1. GENERAL | |
| 1.01 This section provides disassembly and re- assembly procedures for the 43 keyboard. | |
| 1.02 This section is reissued to include the 50K122/AAE and AAF unitized keyboard and all the 43 Teleprinter Buffered Station key- boards. All references to opcon have been changed to keyboard. | |
| 1.03 The KSR keyboard circuitry can be damaged by static discharge. The 346392 static discharge ground strap is available for use by service personnel. Maintenance spares are provided in antistatic bags which should be saved for reuse when returning keyboards for repair. | |

1.04 The extent of the disassembly procedure is limited to that which is required for correction of troubles or replacement of parts in field locations. When removing a subassembly or part from the keyboard, follow the removal procedure and note the sequence of removal to enable proper reassembly.

1.05 The 50K122/AAE and AAF unitized keyboards are not field servicable. Therefore, disassembly procedures are not provided. However, keytop identification information in this section does apply. The unitized keyboards are returnable to Western Electric for repair.

1.06 Refer to Maintenance Tools, Section 570-005-800, for a complete listing of the various types of hand tools available for maintenance of Teletype[®] equipment. For a listing of the tools required to perform the disassembly and reassembly of the 43 keyboard, refer to 2. TOOLS REQUIRED.

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

1.08 Precautions should be taken to assure that the keyboard is disassembled and reassembled under clean conditions. No oil, grease, or other liquids should be allowed on loose parts, subassemblies, keyswitches, or the complete keyboard.

1.09 Reference in the procedures to left or right, up or down and top or bottom, etc, refer to the keyboard in its normal operating position as viewed by the operator.

1.10 When removing a subassembly or part from the keyboard, do not force or pry parts to provide the necessary clearance for removal. No forcing is required to accomplish a removal procedure. Follow the removal procedure and note how each part is removed and the sequence of its removal so that proper reassembly can be accomplished. For reassembly, reverse the removal procedure except where different instructions are given.

1.11 Refer to 43 Teleprinter Dissassembly/ Reassembly, Section 574-500-720 for keyboard removal and replacement procedures.

1.12 Some parts that are not listed in the parts sections are shown as necessary to the disassembly procedures such as screws, ring retainers, etc. Most of these parts are common to other Teletype product line and if needed may already be available in available in field repair kits or can be ordered.

2. TOOLS REQUIRED

2.01 The following tools are recommended for uses during the disassembly and reassembly procedures:

| | |
|----------------|------------------------------|
| 75765 | Spring Hook – Pull |
| 89954 | 1/4 Inch Nut Driver |
| 100982 | Screwdriver (6 Inch Medium) |
| 108285 | Long-Nose Pliers |
| 346257 | Keyswitch Extractor |
| 346260 | Keytop Extractor |
| 346392 | Static Discharge Strap |
| Telco Provided | Soldering Iron (Low Wattage) |
| Telco Provided | Desoldering Tool |

3. DISASSEMBLY/REASSEMBLY

SPACEBAR MECHANISM (Early Design)

3.01 To remove the spacebar mechanism:

(a) Disengage the leaf spring (bronze colored) from the wire bail using a spring hook and pull toward the front (Fig. 1).

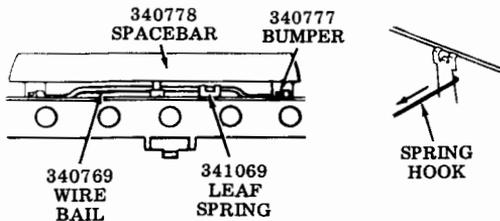


Fig. 1—Leaf Spring Disengagement

(b) Disengage the two rear tines (one at each end of spacebar) with a small screwdriver while pulling the spacebar up and toward the front (Fig. 2).

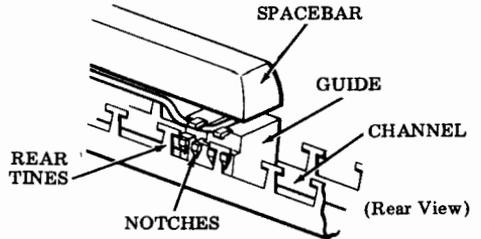


Fig. 2—Spacebar Removal

(c) Continue applying upward pressure to the spacebar and disengage the two front tines.

(d) Remove the wire bail from the left and right spacebar guides (snaps in and out) (Fig. 3).

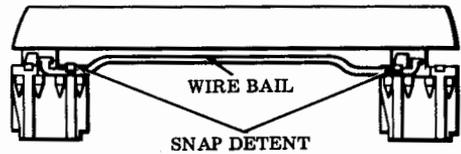


Fig. 3—Wire Bail Removal

3.02 To reassemble the spacebar mechanism:

(a) Make sure the four tines engage the notches in the space bar housing and the leaf spring is engaged to the wire bail.

(b) Check mechanical operation of the spacebar so that it returns to its unoperated position freely when depressed and released slowly.

SPACEBAR MECHANISM (Late Design)

3.03 To remove the spacebar, pry up on the left spacebar, slide projection until the spacebar slide disengages from the housing. Lift and remove spacebar.

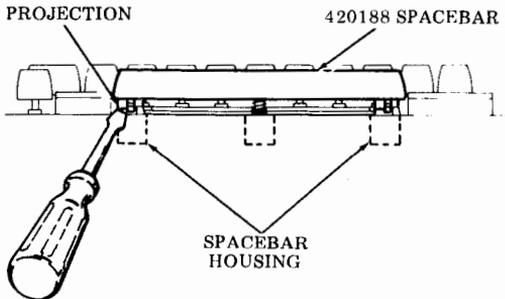


Fig. 4—Spacebar Removal

3.04 To remove the spacebar bail:

- (a) Remove spacebar see 3.03.
- (b) Place 346257 tool over either spacebar housing and press downward. When the tool bottoms and embossed projections snap into notches on housing, squeeze and pull back on the tool to lift housing up (Fig. 5).

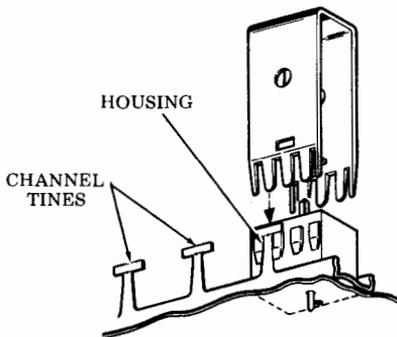


Fig. 5—Spacebar Housing

Note: The tines of the tool must pass between the housing and the inside of the tines of the channel

- (c) Repeat (b) for the other housing and lift out both housings with bail.
- (d) Remove bail from housings by snapping out of housing tab.

3.05 To reassemble the spacebar mechanism:

- (a) Snap the bail into the tabs on the spacebar housings as shown below.

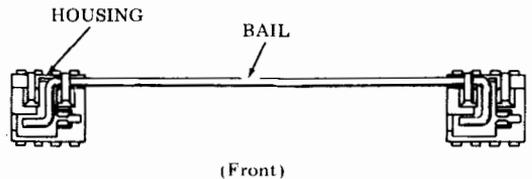


Fig. 6—Wire Bail and Housing Assembly

- (b) Snap the two spacebar housings into the keyboard channel, see Fig. 6. Make sure the four tines of the channel engages the notches in the spacebar housing.
- (c) Place the spacebar into the guide slots in the left and right housing. Position the bail into the notch (one left side and one right side) on the spacebar. Push down on the spacebar snapping it into place in the housing, see Fig. 7.

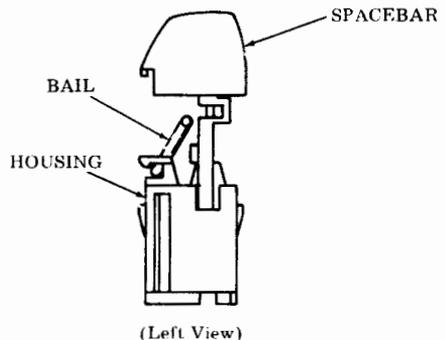


Fig. 7—Spacebar Assembly

- (d) Check mechanical operation of the spacebar so that it returns to its unoperated position freely when depressed and released slowly.

KEYTOPS

3.06 To remove the keytops (Fig. 8):

(a) There are two types of keytops used on the keyboard.

(1) Control Keytop

Indicator
Nonindicator



(2) Data Keytop



Fig. 8—Keytops

(b) To remove data keytops, place 346260 tool over the keytop and pull up to remove (Fig. 9).

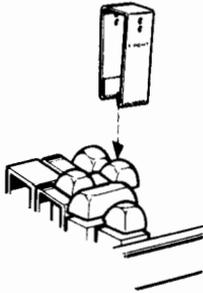


Fig. 9—Data Keytop Removal

Warning: CAPS LOCK, PARITY, DUPLEX, and CPS keytops, if present, 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.

(c) To remove control keytops (Fig. 10):

(1) Grasp keytop using thumb and index finger.

(2) Exert upward force until keytop releases.

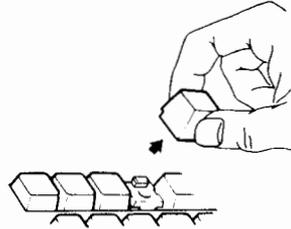
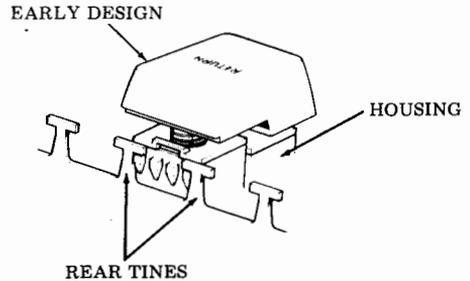


Fig. 10—Control Keytop Removal

(d) To remove the early design RETURN keytop with housing:

(1) Remove the keytops that surround the RETURN keytop using 346260 tool.

(2) Disengage the rear tines from housing with a small screwdriver while pulling the RETURN keytop up and toward the front (Fig. 11).



(Rear View)

Fig. 11—Rear Tine Disengagement

- (3) Continue applying upward pressure to the RETURN key and disengage the front tine from housing using a spring hook. Remove keytop with housing from channel (Fig. 12).

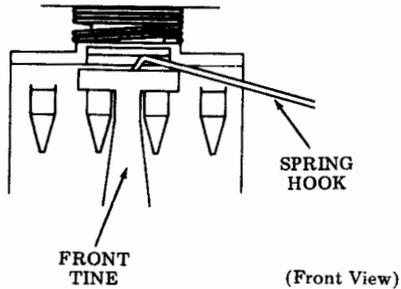


Fig. 12--Front Tine Disengagement

- (e) To remove the late design RETURN keytop:
- (1) Remove the keytops that surround the RETURN keytop using the 346260 tool.
 - (2) Grasp the RETURN keytop using thumb and index finger.
 - (3) Exert upward force until keytop releases.

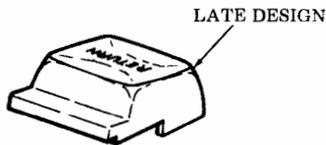


Fig. 13--Late Design RETURN Keytop

- 3.07 To reassemble the early design RETURN keytop with housing:

Insert housing with key; observe position of locating lug on housing and press into channel. Housing must snap fully into front and rear channel tines.

KEYSWITCH

- 3.08 To remove the keyswitch:

- (a) Remove shield to expose circuit card by removing four screws. Cut cable tie, if present, securing loose end of cable to the keyboard.
- (b) Remove keytop.
- (c) Remove solder from around terminal pins of keyswitch to be removed (Fig. 14).

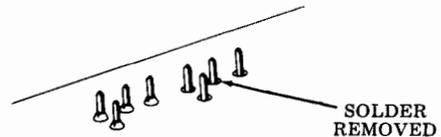


Fig. 14--Solder Removal

Warning: Use a grounded low wattage soldering iron (avoid prolonged contact with pins) along with a desoldering tool to prevent damage to keyswitch, card circuits and components.

- (d) Place 346257 tool over the keyswitch and press downward. When the tool bottoms and embossed projections snap into notches on keyswitch, squeeze and pull back on the tool to lift keyswitch out (Fig. 15).

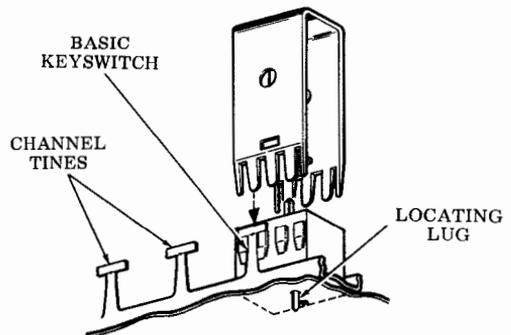


Fig. 15--Keyswitch Removal

Note: The tines of the tool must pass between the keyswitch housing and the inside of the tines of the channel.

3.09 To reassemble the keyswitch:

Insert new keyswitch, observe position of the locating lug, and press keyswitch into channel. Switch must snap fully into front and rear channel tines. Hold keyswitch in place and resolder.

BLOCKING SPACER

3.10 To remove blocking spacer:

- (a) Remove keytop associated with blocking spacer and first keytop, if present, to the left (see 3.06).
- (b) Slide spacer to the left as far as it will go and then pull to the rear (Fig. 16).

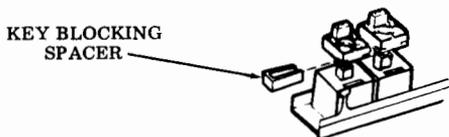


Fig. 16—Blocking Spacer Removal

- (c) In reassembly, insert spacer from the left and observe that the spacer encapsulates the keyswitch push rod and that the front part of the spacer is located between the keyswitch springs (Fig. 17).

- (d) Replace keytops.

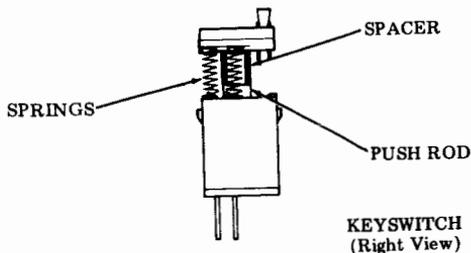


Fig. 17—Blocking Spacer Reassembly

CABLE BASIC (KSR)

3.11 To remove the cable:

- (a) Remove shield to expose circuit card by removing four screws.
- (b) Remove the PRINTER TEST, PARITY, DUPLEX and CPS keytops.
- (c) Remove the INTERLOCK, PRINTER TEST, PARITY, DUPLEX and CPS keyswitches (Fig. 18).

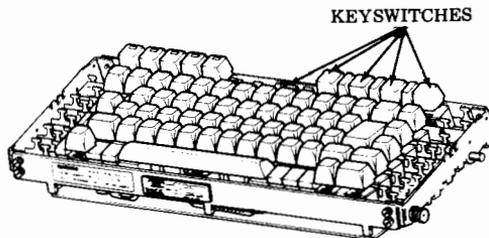


Fig. 18—Keyswitch Identification

- (d) Remove solder from around connector pins of cable to be removed (Fig. 19).

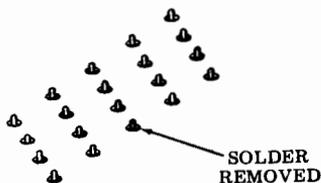


Fig. 19—Connector Pins

Warning: Use a grounded, low wattage soldering iron (avoid prolonged contact with pins) along with a desoldering tool to prevent damage to card circuits and components.

- (d) Remove the circuit card cover located in front of the control keys from the channel. Use a spring hook to remove the cover from the mounting posts (Fig. 20).

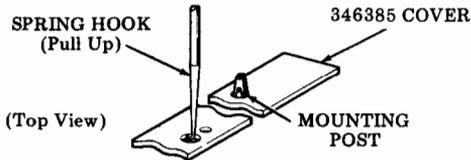


Fig. 20—Cover Removal

- (e) Grasp the cable connector using thumb and index finger.
- (f) Exert upward force until cable connector releases (Fig. 21).

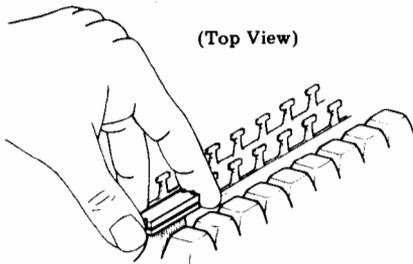


Fig. 21—Cable Connector Removal

- (g) Remove rear plate (Fig. 22).

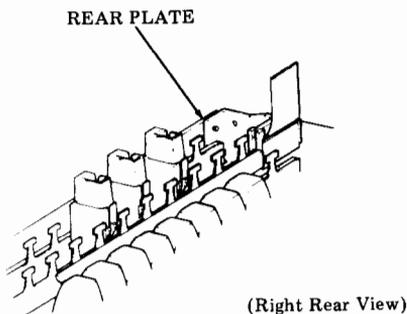


Fig. 22—Cable Removal

- (h) Slide cable to the right until it clears the circuit card. Remove through opening between channels (Fig. 22).

3.12 To reassemble the cable:

- (a) Insert new cable connector into circuit card holes and press into place. Hold cable connector in place and resolder.
- (b) Fasten cable to card using locally furnished cable tie.
- (c) Reassemble keyswitches and keytops removed in 3.11 (b) and (c).
- (d) Replace circuit card cover removed in 3.11 (e).
- (e) Replace rear plate.
- (f) Replace shield removed in 3.11 (a).

CABLE BASIC (RO)

3.13 To remove the cable:

- (a) Remove the interlock keyswitch (see 3.08).
- (b) Remove solder from around connector pins of cable to be removed (Fig. 19).

Warning: Use a grounded, low wattage soldering iron (avoid prolonged contact with pins) along with a desoldering tool to prevent damage to card circuits and components.

- (c) Cut the cable tie securing the cable to the circuit card.
- (d) Remove the screw securing the right rear side of the circuit card to the channel (Fig. 23).
- (e) Grasp the cable connector using thumb and index finger (Fig. 21).
- (f) Exert upward force until cable connector releases.
- (g) While biasing the right rear cover of the circuit card in the downward direction; slide the cable to the rear until it clears the circuit card. Remove cable.

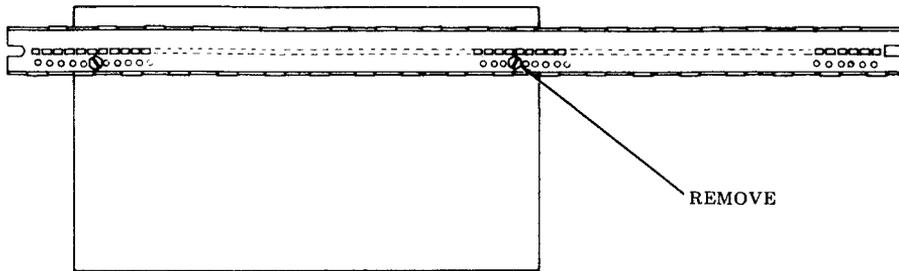


Fig. 23 Channel

3.14 To reassemble the cable:

- (a) Insert new cable connector into circuit card holes and press into place. Hold cable connector in place and resolder.
- (b) Fasten cable to card using cable tie.
- (c) Secure the circuit card to the channel with the screw previously removed.
- (d) Reassemble interlock keyswitch previously removed.
- (e) Replace circuit card shield.

- (b) Remove the keyswitches associated with the keytops in (a). See 3.08 for keyswitch removal.
- (c) Remove solder from around connector pins of cable to be removed (Fig. 25).



Fig. 25—Connector Pins

CABLE BUFFERED STATION

3.15 To remove the cable:

- (a) Remove the left most nine keytops. See Fig. 24.

Warning: Use a grounded, low wattage soldering iron (avoid prolonged contact with pins) along with a desoldering tool to prevent damage to card circuits and components.

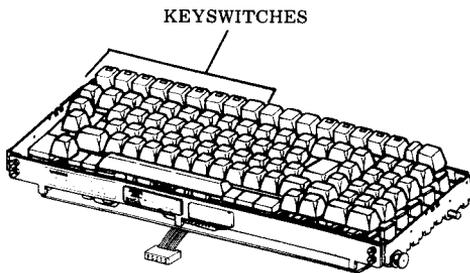
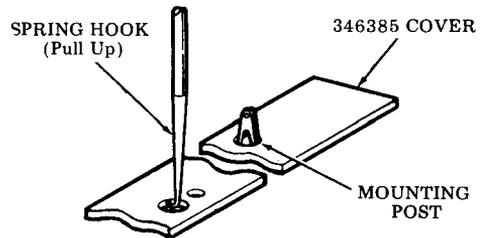


Fig. 24—Keyswitch Identification

- (d) Remove the circuit card cover located in front of the control keys from the channel. Use a spring hook to remove the cover from the mounting posts (Fig. 26).



(Top View)

Fig. 26—Cover Removal

- (e) Grasp the cable and cable connector and exert upward force until cable connector releases.
- (f) Cut cable ties securing the cable to the circuit card.
- (g) Remove rear plate and left side frame (Fig. 27).

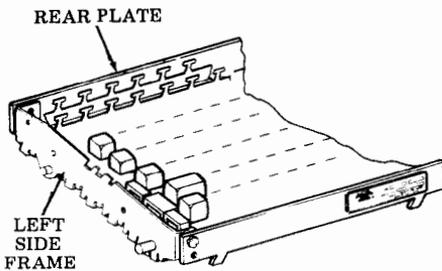


Fig. 27—Cable Removal

- (h) Slide cable to the left until it clears the circuit card and remove.

3.16 To reassemble the cable:

- (a) Insert new cable connector into circuit card holes and press into place. Route cable as shown in Fig. 28. Hold cable connector in place and resolder.

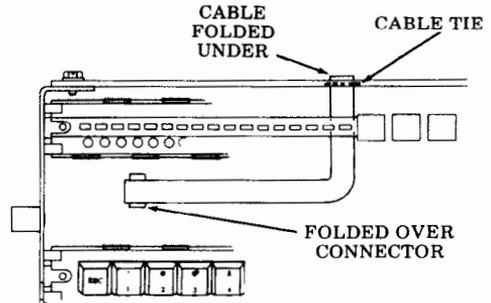


Fig. 28—Cable Routing

- (b) Fold the cable under the circuit card and fasten to the circuit card using a cable tie. See Fig. 28.
- (c) Reassemble keyswitches and keytops removed in 3.15 (a) and (b).
- (d) Replace rear plate and left side frame removed in 3.15 (g).
- (e) Replace circuit card cover removed in 3.15 (d).
- (f) Replace circuit card shield and fasten the loose end of the cable to the circuit card using a cable tie, see Fig. 29.

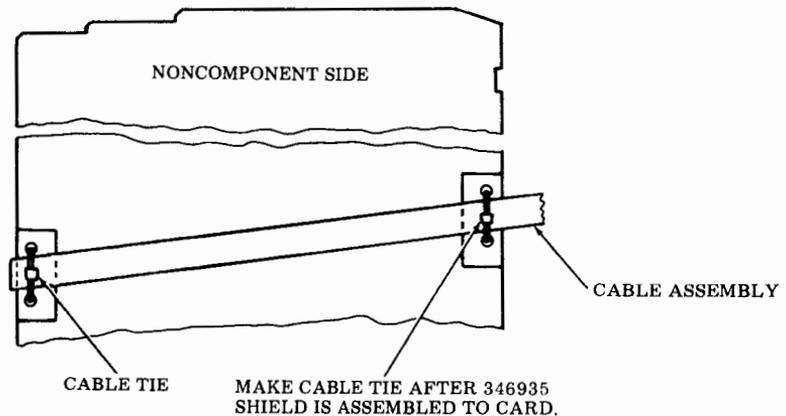
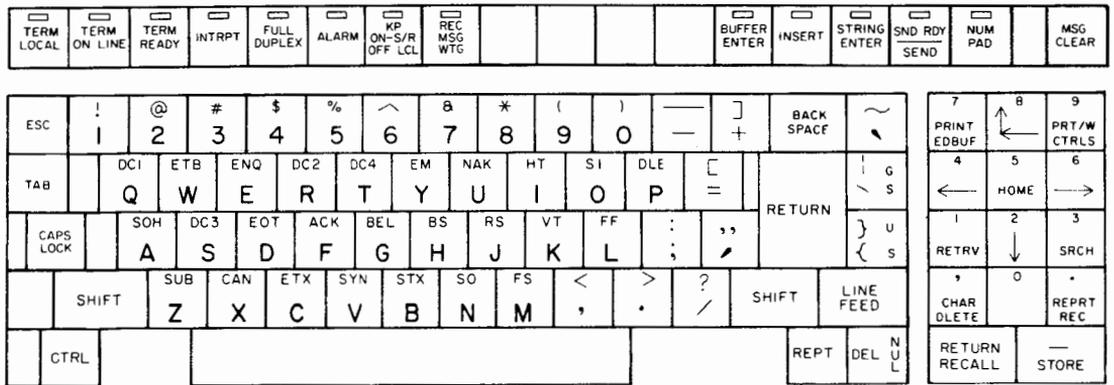
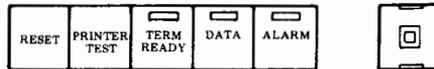
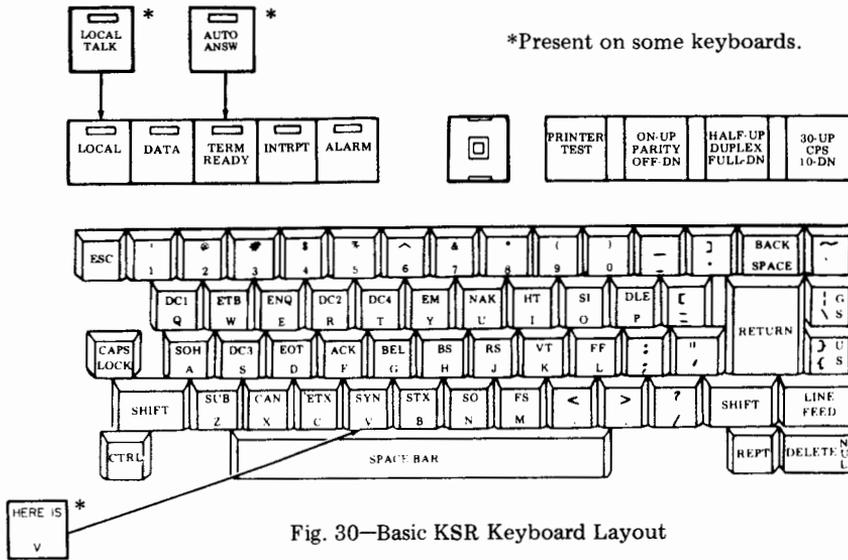


Fig. 29—Cable Replacement

4. KEYTOP AND KEYSWITCH IDENTIFICATION



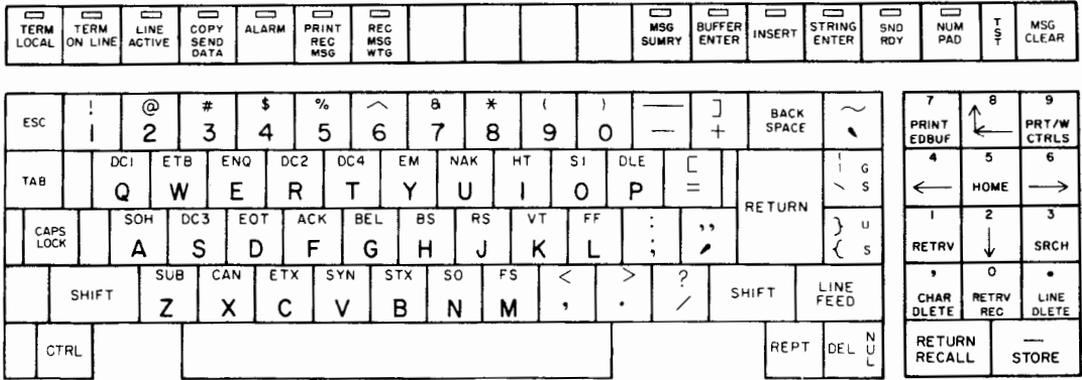
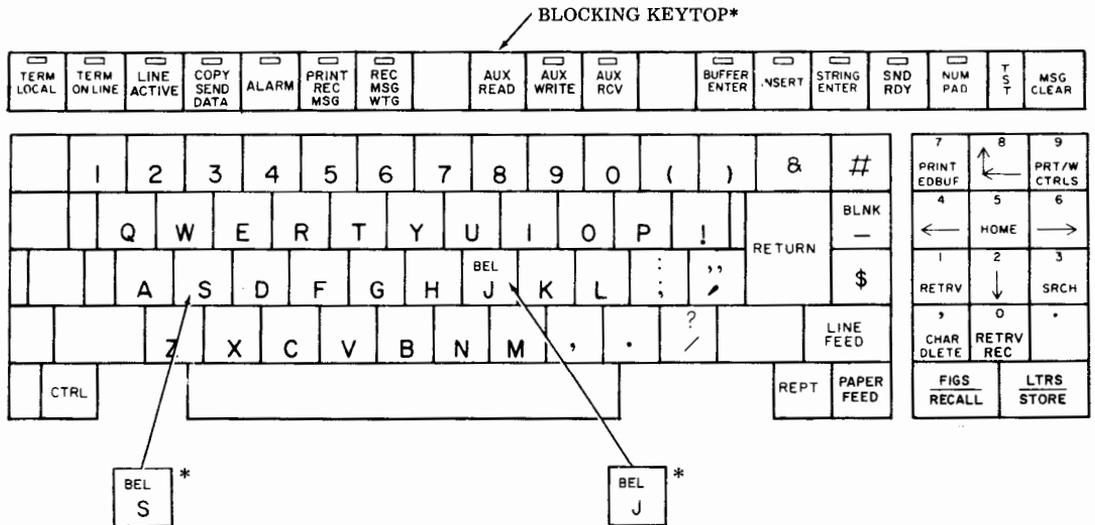


Fig. 33-8-Level Buffered Selective Calling Keyboard Layout



*Present on some keyboards.

Fig. 34-5-Level Buffered Selective Calling Keyboard Layout

SECTION 574-502-720

| PART NO. | KEYTOP DESCRIPTION | PART NO. | KEYTOP DESCRIPTION |
|----------|--------------------|----------|------------------------|
| 340701 | BLOCKING - CONTROL | 340982 | BS H |
| | | 340983 | } US { |
| 340714 | BLOCKING - DATA | 340984 | SUB Z |
| | | 340985 | SYN V |
| 340778† | SPACEBAR | 340986 | LINE FEED |
| 340821 | ! 1 | 340987 | CTRL |
| 340822 | @ 2 | 340988 | REPT |
| 340823 | # 3 | 340989‡ | DELETE NUL |
| 340824 | \$ 4 | 340990 | 6 |
| 340825 | % 5 | 340993 | Q |
| 340826 | ^ 6 | 340994 | W |
| 340827 | & 7 | 340995 | E |
| 340828 | * 8 | 340996 | R |
| 340829 | (9 | 340997 | T |
| 340830 |) 0 | 340998 | Y |
| 340831 | - . | 340999 | U |
| 340838 | DC1 Q | 341000 | I |
| 340839 | ETB W | 341001 | O(ALPHA) |
| 340840 | ENQ E | 341002 | P |
| 340841 | DC2 R | 341005 | D |
| 340842 | DC4 T | 341006 | F |
| 340843 | EM Y | 341007 | G |
| 340844 | NAK U | 341008 | H |
| 340846 | SI O | 341009 | K |
| 340852 | SOH A | 341010 | L |
| 340853 | DC3 S | 341012 | Z |
| 340854 | EOT D | 341013 | X |
| 340855 | ACK F | 341014 | C |
| 340856 | BEL G | 341015 | V |
| 340858 | RS J | 341016 | B |
| 340859 | VT K | 341017 | N |
| 340860 | FF L | 341020 | (BLANK SHIFT) |
| 340861 | : ; | 346102 | LOCAL |
| 340862 | " / | 346106 | INTRPT |
| 340867 | SHIFT | 346116 | AUTO ANSW |
| 340869 | CAN X | 346127 | TERM READY |
| 340870 | ETX C | 346161 | LOCAL TALK |
| 340872 | STX B | 346162 | DATA |
| 340873 | SO N | 346163 | ALARM |
| 340874 | FS M | 346164 | ON-UP PARITY OFF-DN |
| 340875 | < , | 346165 | HALF-UP DUPLEX FULL-DN |
| 340876 | > . | 346166 | 30-UP CPS 10-DN |
| 340877 | ? / | 346169 | PRINTER TEST |
| 340889 |] + | 346403§ | RETURN |
| 340890 | [= | 346536 | 1 |
| 340894 | CAPS LOCK | 346537 | 2 |
| 340975 | ESC | 346538 | 3 |
| 340976 | BACKSPACE | 346539 | 4 |
| 340977 | ~ \ | 346540 | 5 |
| 340978 | HT I | 346541 | 7 |
| 340979 | DLE P | 346542 | 8 |
| 340981 | GS \ | 346543 | 9 |

Fig. 35—Keypop Identification

| PART NO. | KEYTOP DESCRIPTION | PART NO. | KEYTOP DESCRIPTION |
|----------|--------------------|----------|--------------------|
| 346544 | 0(ZERO) | 346842 | KP ON—SR OFF—LCL |
| 346548 | , | 346843 | REC MSG WTG |
| 346549 | . | 346844 | BUFFER ENTER |
| 346558 | M | 346845 | INSERT |
| 346559 | J | 346846 | STRING ENTER |
| 346589 | TAB | 346847 | SND RDY SEND |
| 346590¶ | DEL NUL | 346848 | NUM PAD |
| 346591 | 7 PRINT EDBUF | 346849 | MSG CLR |
| 346592 | 8 ↵ | 347095 | HERE IS V |
| 346593 | 9 PRT/W CTRLS | 347142 | BLNK— |
| 346594 | 4 ← | 347149** | RETURN |
| 346595 | 5 HOME | 347177 | PAPER FEED |
| 346596 | 6 → | 347218 | 0 RETRV REC |
| 346597 | 1 RETRV | 347219 | . LINE DLETE |
| 346598 | 2 ↓ | 347236 | & |
| 346599 | 3 SRCH | 347237 | # |
| 346600 | , CHAR DLETE | 347238 | ! |
| 346601 | 0 | 347239 | \$ |
| 346602 | . REPRT REC | 347240 | BEL S |
| 346603 | RETURN RECALL | 347241 | FIGS — RECALL |
| 346604 | — STORE | 347242 | LTRS — STORE |
| 346675 | (| 347255 | . (NUM PAD) |
| 346676 |) | 420188†† | SPACEBAR |
| 346682 | A | 454351 | COPY SEND DATA |
| 346683 | S | 454352 | PRINT REC MSG |
| 346694 | BEL J | 454353 | LINE ACTIVE |
| 346834 | RESET | 454354 | MSG SUMRY |
| 346839 | TERM LOCAL | 454355 | SND RDY |
| 346840 | TERM ON LINE | 454365 | AUX REC |
| 346841 | FULL DUPLEX | 454366 | AUX READ |
| | | 454367 | AUX WRITE |

† Early Design Spacebar

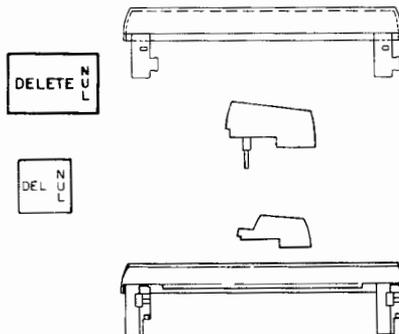
‡ Basic Keyboard Key

§ Early Design Return Key

¶ Buffered Keyboard Key

**Late Design Return Key

†† Late Design Spacebar



See Notes on following page.

Fig. 35—Keytop Identification (Contd)

SECTION 574-502-720

Note 1: The 346409 spacer must be installed under the 346163 key to block the action of the ALARM keyswitch on 43K101/CAA keyboard.

Note 2: The 346409 spacer must be installed under the 346162, 346163 and 346127 key to block the action of the ALARM keyswitch on the 43K101/CAB and 43K001/AAA and the TERM READY and DATA keyswitches on the 43K001/AAA keyboard.

Note 3: The 340764 compression spring between the 346403 key and the housing must be ordered separately.

Note 4: The 346116 and 346161 keys are used on 43K101/CAA keyboard.

Note 5: The 346102 and 346127 keys are used on 43K101/CAB keyboard.

Note 6: The 340701 and 340714 keys may be used for local engineering requirements to block the action of keyswitches.

Note 7: All 43K101/CAB operator consoles should have the DATA key unblocked. Remove the 346409 spacer, if present under the 346162 DATA key.

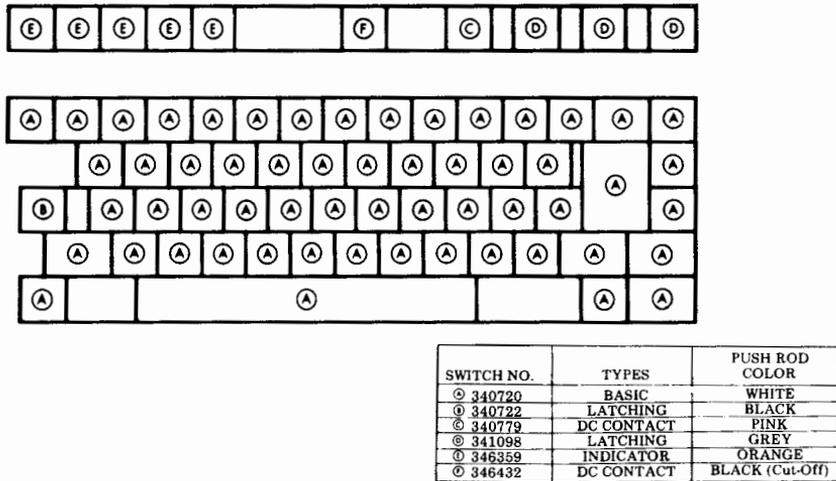
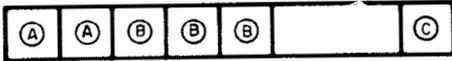
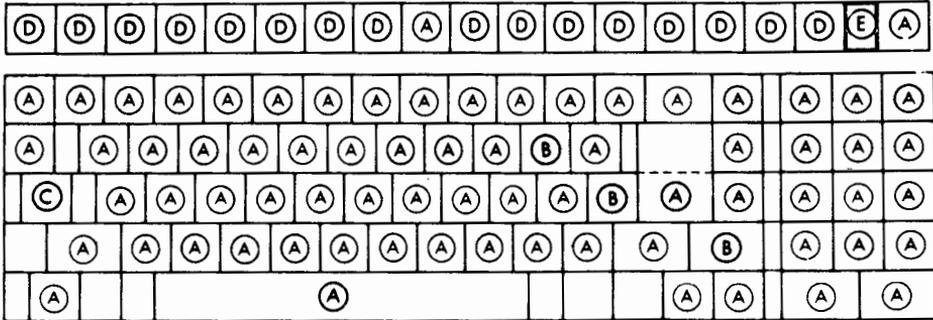


Fig. 36—Basic KSR Keyswitch Identification



| SWITCH NO. | TYPES | PUSH ROD COLOR |
|------------|------------|-----------------|
| (A) 340779 | DC CONTACT | PINK |
| (B) 346359 | INDICATOR | ORANGE |
| (C) 346432 | DC CONTACT | BLACK (CUT-OFF) |

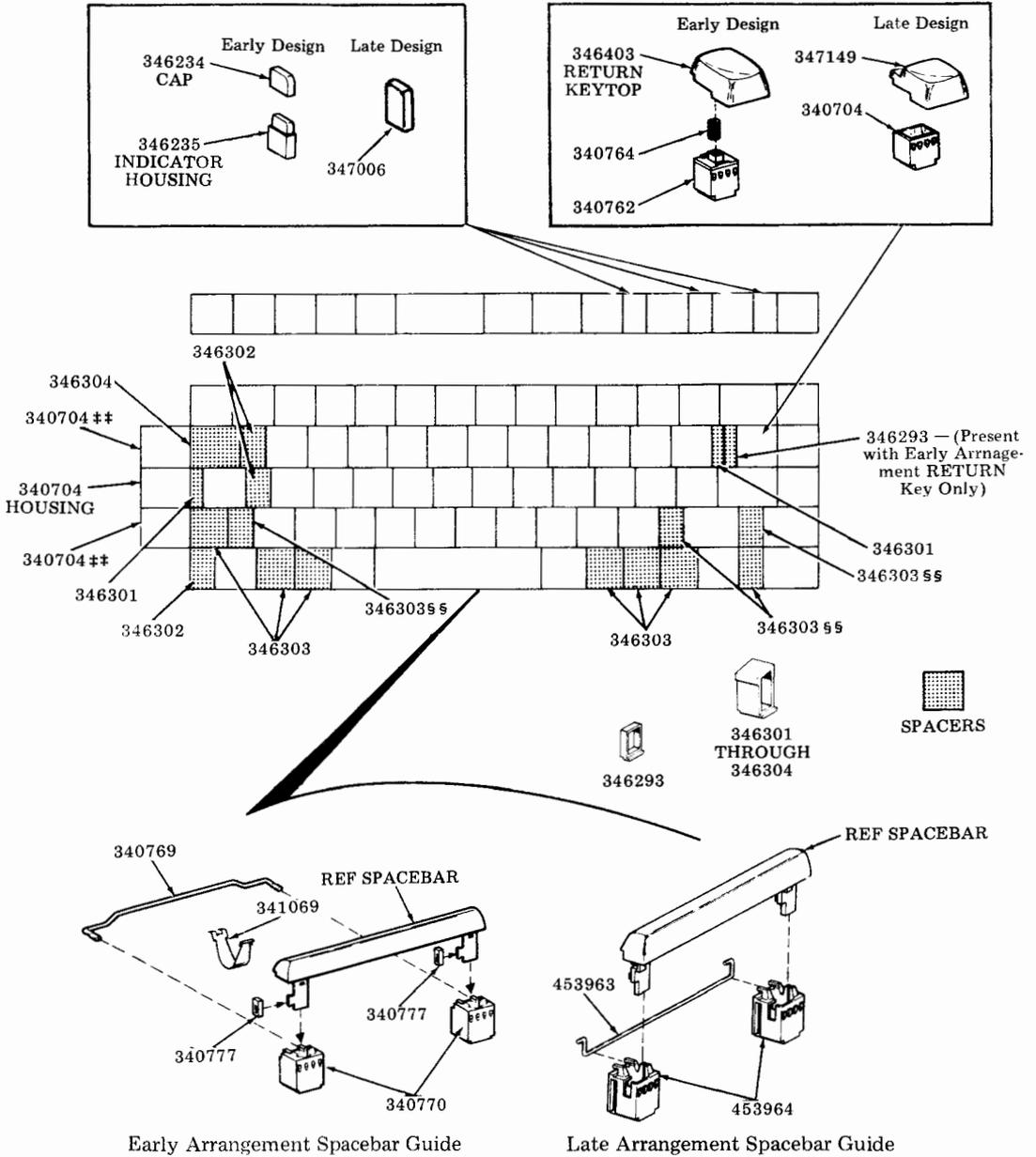
Fig. 37—Basic RO Keyswitch Identification



| SWITCH NO. | TYPES | COLOR PUSH ROD |
|------------|----------------|----------------|
| (A) 340720 | BASIC | WHITE |
| (B) 340721 | OVERTRAVEL | GREEN |
| (C) 340722 | LATCHING | BLACK |
| (D) 346359 | INDICATOR | ORANGE |
| (E) 341088 | INDICATOR ONLY | ————— |

Fig. 38—Buffered KSR Keyswitch Identification

5. SPACER, HOUSING AND REFERENCE IDENTIFICATION



**Present on Early Arrangement Keyboards

ss Replaces Two 346293 Spacers Used on Early Arrangement Keyboards

Fig. 39—Basic KSR Keyboard

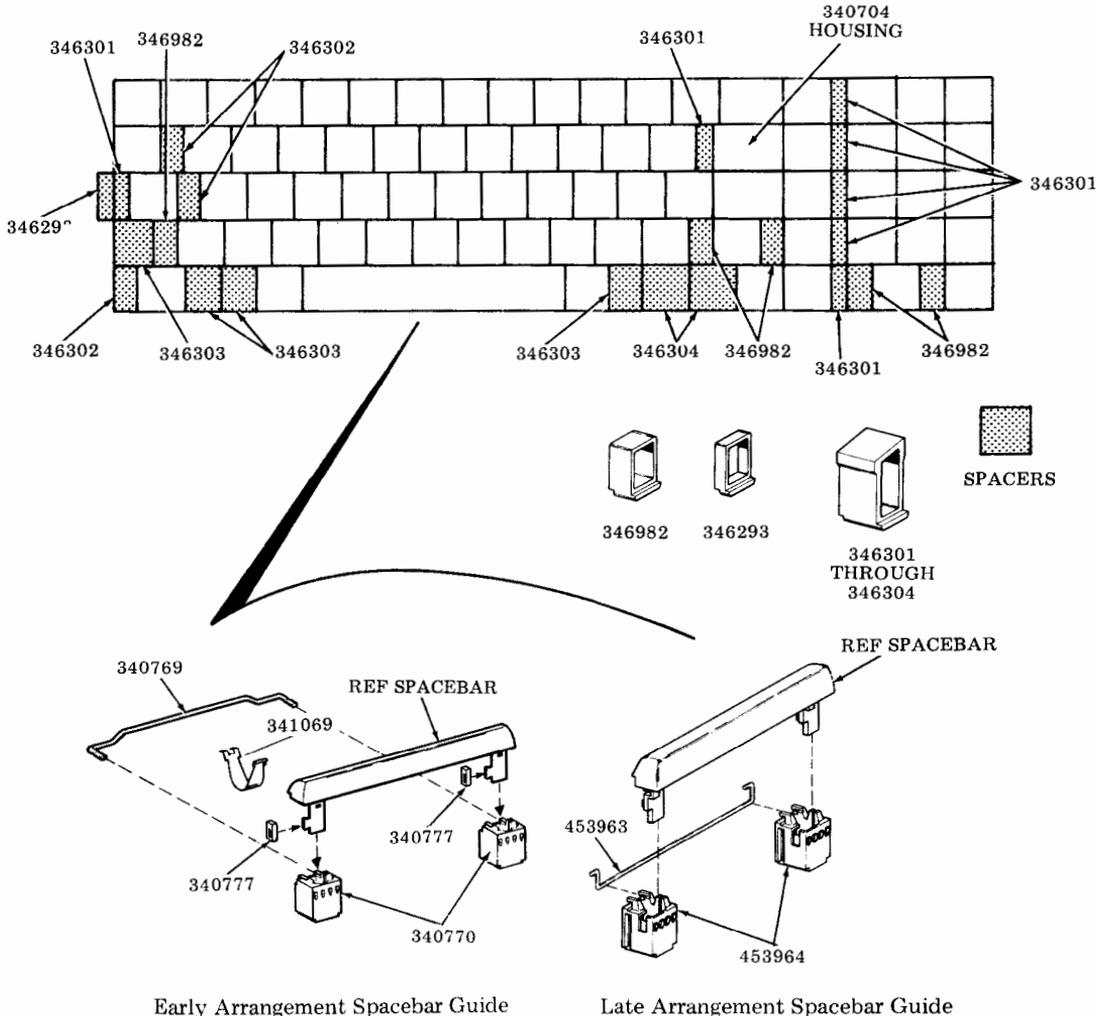
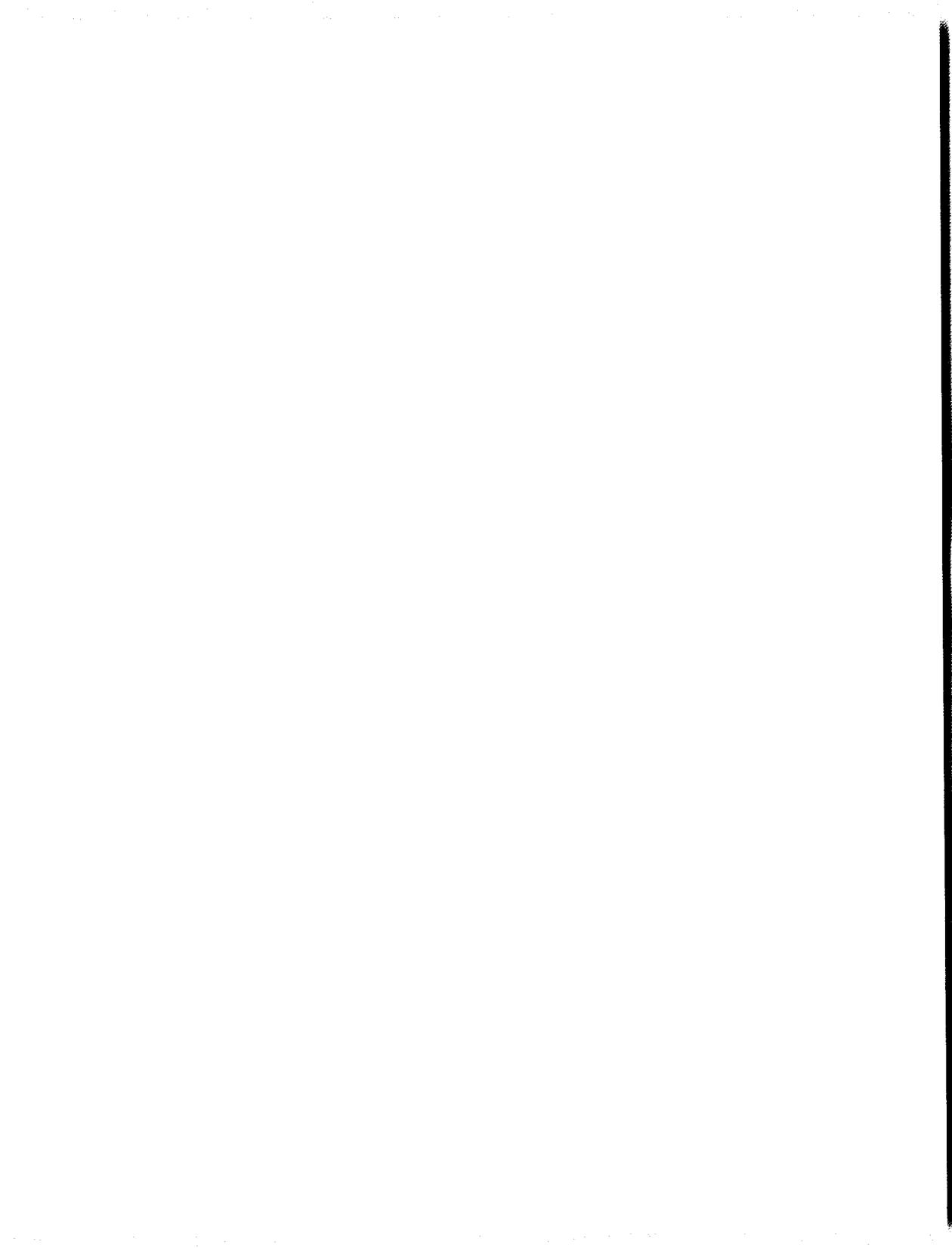


Fig. 40—Buffered Keyboard



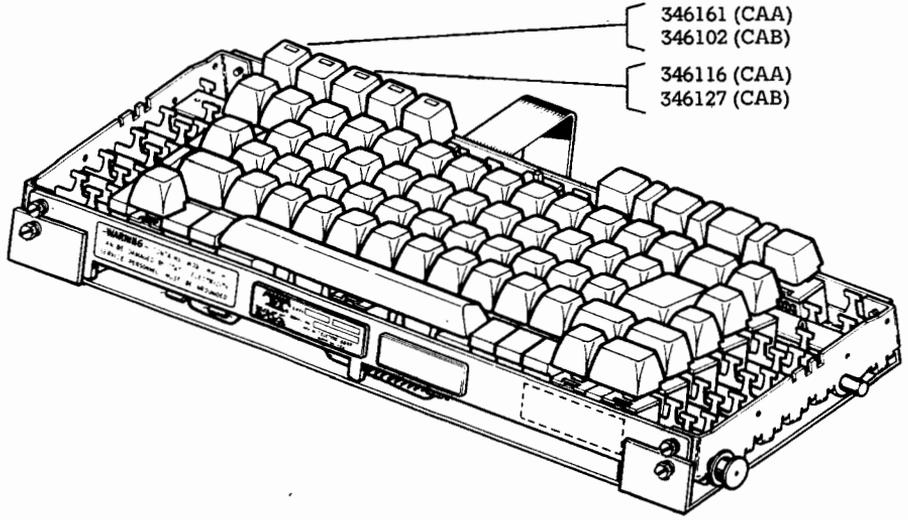
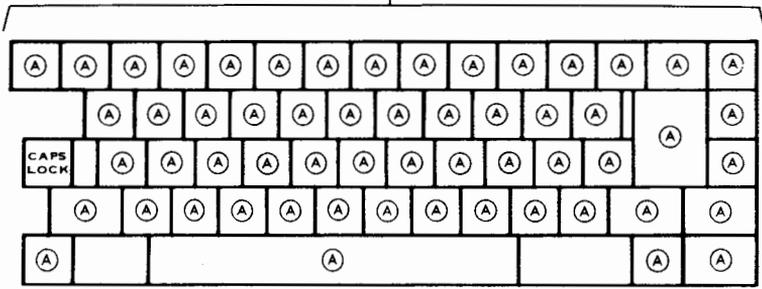
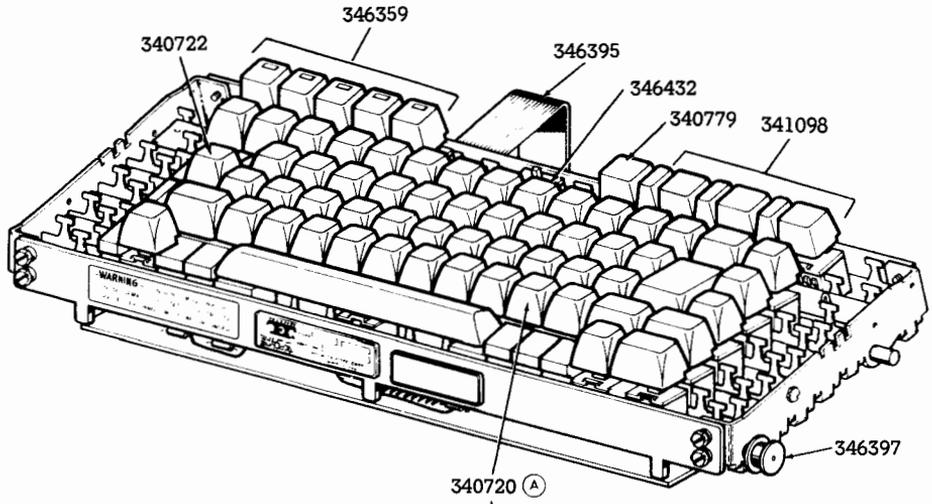
43 KEYBOARD 5- AND 8-LEVEL

PARTS

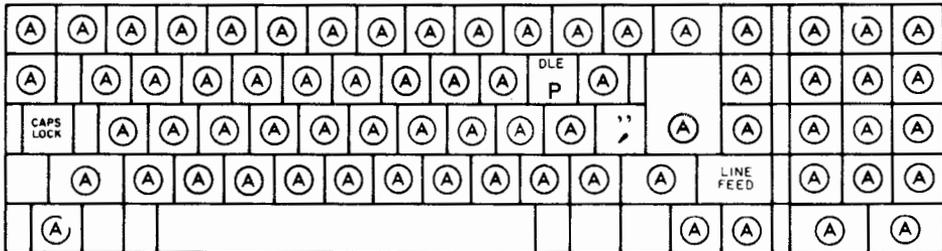
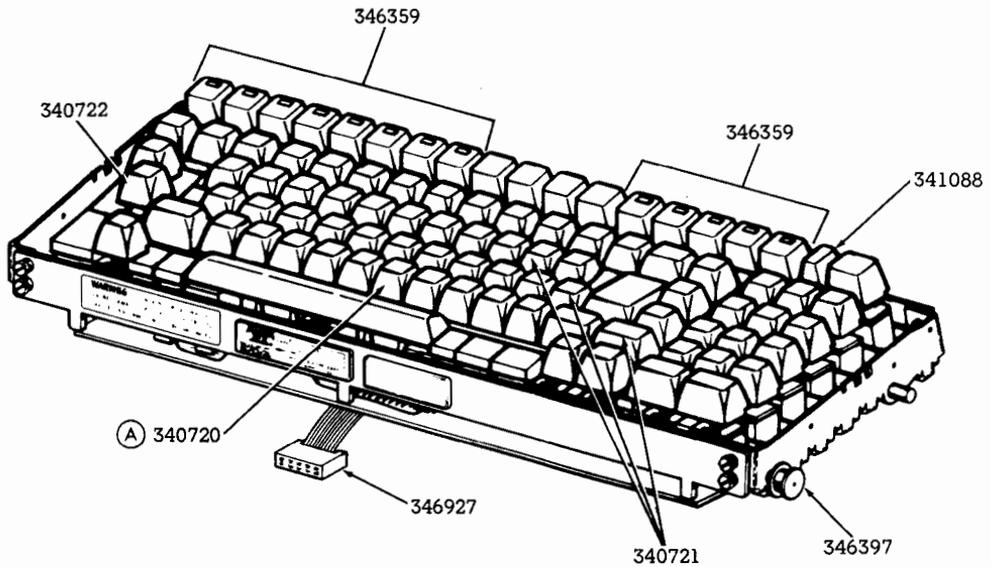
| CONTENTS | PAGE | |
|--|------|--|
| 1. GENERAL | 1 | 1.03 When ordering replaceable components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP430722). Before ordering, verify that a particular spare is applicable to the type of keyboard in service. |
| 2. PARTS | 2 | |
| 3. NUMERICAL INDEX..... | 4 | 1.04 Troubleshooting information for these parts is provided in Section 574-502-300 for the basic keyboard and Section 574-502-301 for the buffered keyboard. |
| 1. GENERAL | | |
| 1.01 The parts in this section are used in the 43 Keyboards. | | 1.05 Disassembly/reassembly information for all keyboards is provided in Section 574-502-720. |
| 1.02 This section is reissued to redefine the parts listing and to add the 43K103/CAA and CAB (unitized) and the 43K202/GAB, GAF and GAG (buffered) keyboards. | | 1.06 Parts for the unitized keyboards 43K103/CAA and CAB are not shown since these keyboards are not field servicable. |

2. PARTS

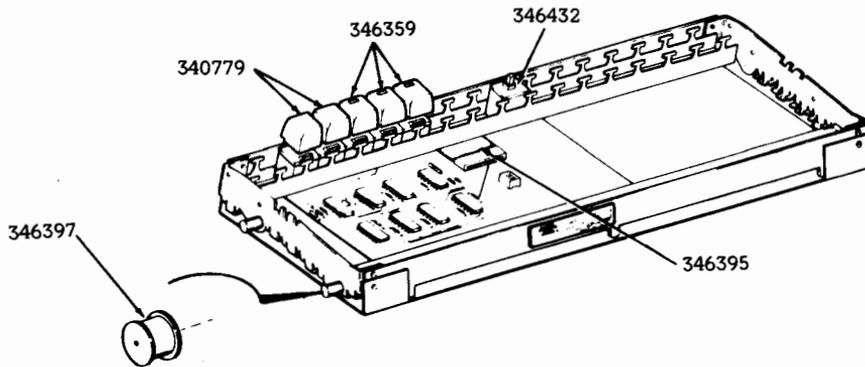
KSR Keyboard — 43K101/CAA and CAB



BSC or BSR (5-and 8-Level) Keyboards -- 43K202/CAB, GAF and GAG



RO Keyboard — 43K001/AAA



3. NUMERICAL INDEX

3.01 Parts listed are not maintenance spares but may be ordered separately for local repair of the keyboard.

| <u>Part Number</u> | <u>Description and Page Number</u> | <u>Part Number</u> | <u>Description and Page Number</u> |
|--------------------|------------------------------------|--------------------|------------------------------------|
| 340720 | Keyswitch 2, 3 | 346127 | Keytop 2 |
| 340721 | Keyswitch 3 | 346161 | Keytop 2 |
| 340722 | Keyswitch 2, 3 | 346359 | Keyswitch 2, 3, 4 |
| 340779 | Keyswitch 2, 4 | 346395 | Cable 2, 4 |
| 341088 | Spacer 3 | 346397 | Bushing 2, 4 |
| 341098 | Keyswitch 2 | 346432 | Keyswitch 2, 4 |
| 346102 | Keytop 2 | 346927 | Cable 3 |
| 346116 | Keytop 2 | | |

43 ENCLOSURES AND PAPER HANDLING

ADJUSTMENTS

| CONTENTS | PAGE |
|--|------|
| 1. GENERAL | 1 |
| 2. TOOLS REQUIRED..... | 1 |
| 3. CABINET ADJUSTMENTS | 2 |
| KEYBOARD TO COVER ALIGNMENT | 2 |
| COLUMN INDICATOR POSITIONING | 2 |
| 1. GENERAL | |
| 1.01 This section provides adjustment information for the 43 cabinet. | |
| 1.02 This section is reissued to remove manual number from first page. | |

1.03 After an adjustment is completed, tighten any screws or nuts loosened to make the adjustment.

1.04 Reference in the procedure to left or right, up or down, and top or bottom, etc, refer to the teleprinter in its normal operating position.

1.05 Adjustments should be checked and performed when a trouble indicates a specific adjustment may be out of tolerance, or when an adjustment is disturbed to enable a part to be removed or replaced.

2. TOOLS REQUIRED

2.01 The only tool required to perform the cabinet adjustments is a 100982 screwdriver (1/4 inch, 6 inch blade).

3. CABINET ADJUSTMENTS

KEYBOARD TO COVER ALIGNMENT

The following two requirements must be met:

(1) Requirement

Left to Right Positioning — When the free play movement of the cover (left to right) is taken up lightly in each direction, the cover shall not touch any opcon keytops.

To Adjust

Loosen two screws and position the printer and rear frame assembly to meet the requirement.

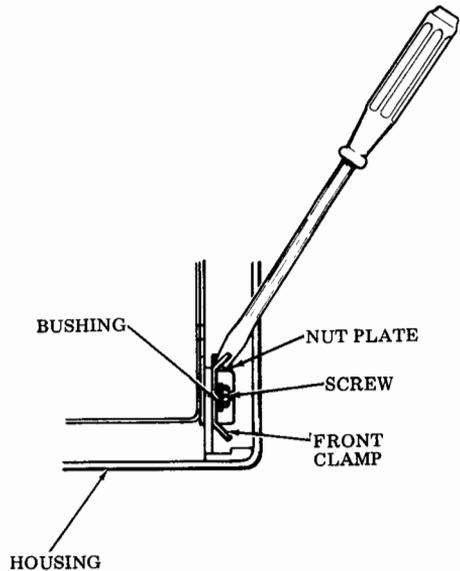
(2) Requirement

Forward Positioning — The two front bushing clamps shall firmly engage the opcon bushings and hold the printer and rear frame assembly fully forward into the housing. There should be no front to rear play between the bushing and clamp (left and right sides).

To Adjust

Insert a screwdriver into the square hole in the nut plate and gently twist (or pry) the screwdriver with enough force to meet the requirement.

Warning: Do not overtwist the screwdriver.



(Top View — Right Corner)

COLUMN INDICATOR POSITIONING

Requirement

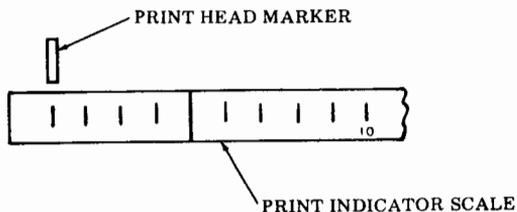
With power applied, the cover closed, and the print head positioned to column one (1), the print head marker should point to the first mark on the indicator scale.

To Adjust

Reposition scale to meet the requirement.

Note 1: Various means are used to hold the indicator scale in position. If glue is present, gently remove, perform adjustment and reglue indicator scale using household cement or equivalent.

Note 2: This adjustment to be refined when making the KEYBOARD TO COVER ALIGNMENT adjustment.



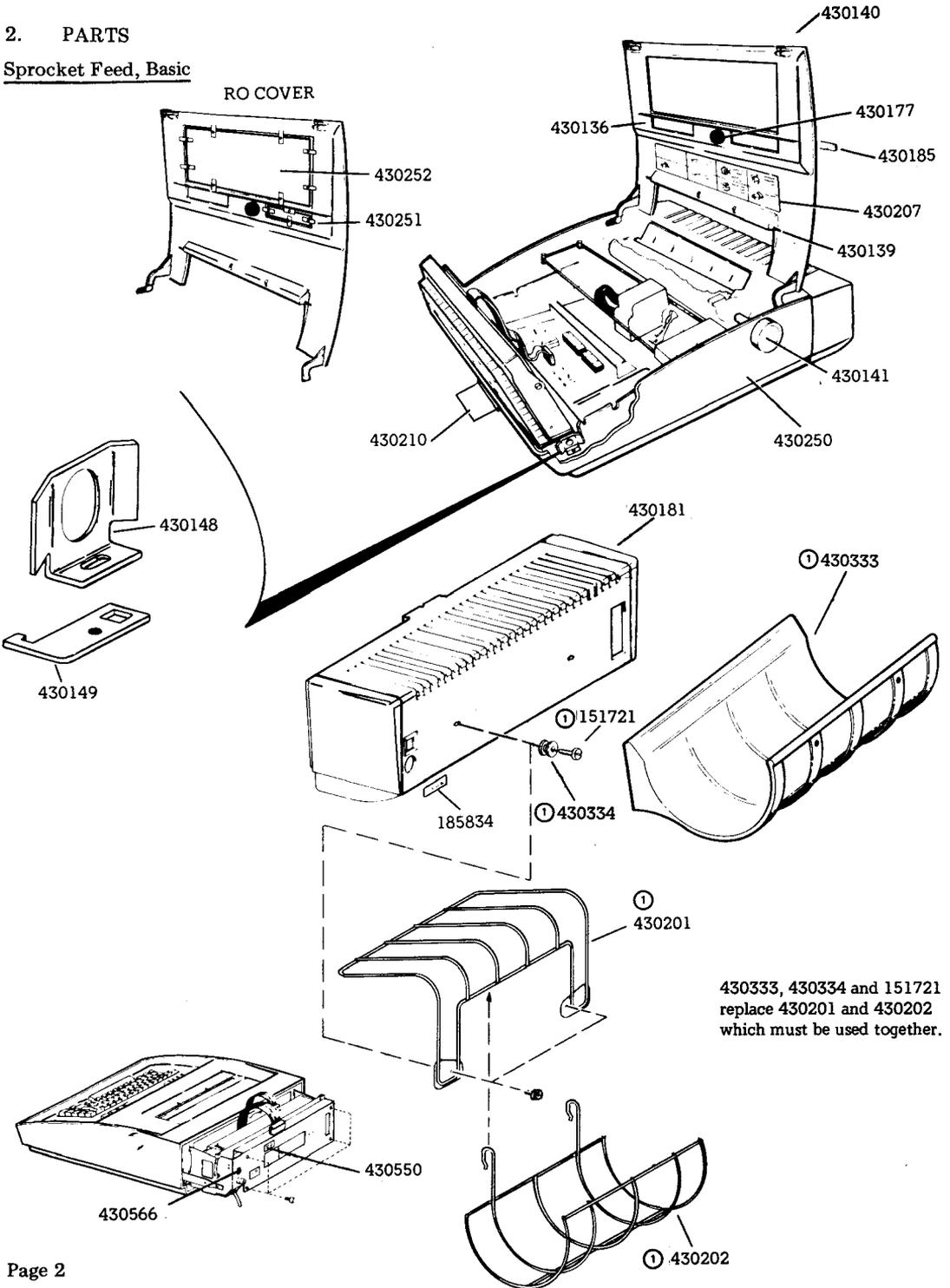
43 TELEPRINTER ENCLOSURES AND PAPER HANDLING

PARTS

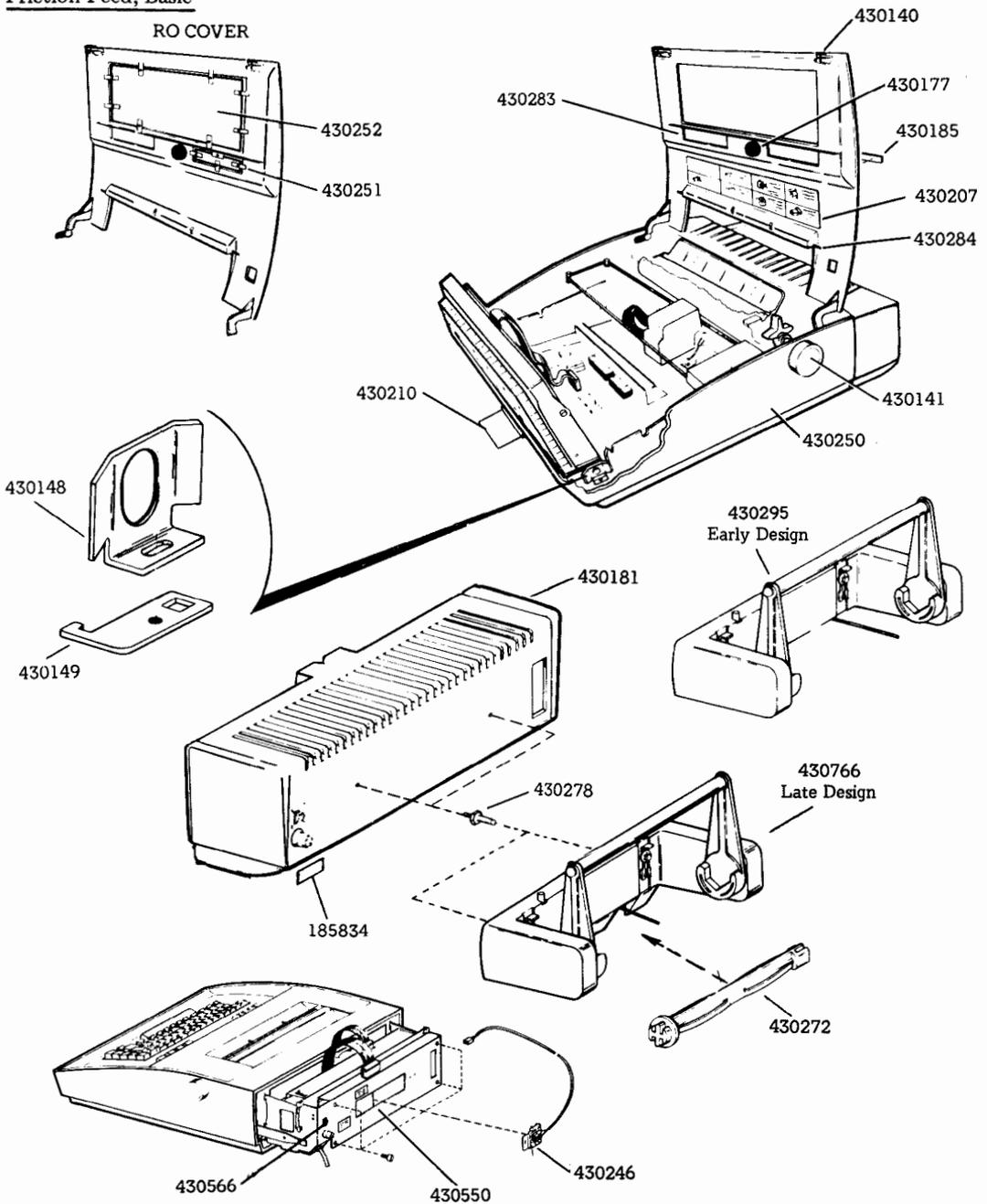
| | CONTENTS | PAGE | |
|------|--|------|---|
| 1. | GENERAL | 1 | 1.02 This section is reissued to redefine the parts listing and update the information to include tractor feed teleprinters. |
| 2. | PARTS | 2 | |
| 3. | NUMERICAL INDEX..... | 7 | 1.03 When ordering replacement parts, unless otherwise specified, prefix all part numbers with the letters "TP" (ie, TP430250). Before ordering, verify that a particular spare is applicable to the type of terminal in service. |
| 1. | GENERAL | | |
| 1.01 | The parts in this section are maintenance spares for the 43 enclosures and paper handling assemblies. They should be available in the quantities shown in each maintenance area to correct possible troubles or to meet appearance requirements. | | 1.04 Replacement of enclosures and paper handling parts is provided in Section 574-500-750. Routine Maintenance for 43 Teleprinter. Disassembly and reassembly is provided in the 43 Teleprinter Section 574-500-720. |

2. PARTS

Sprocket Feed, Basic

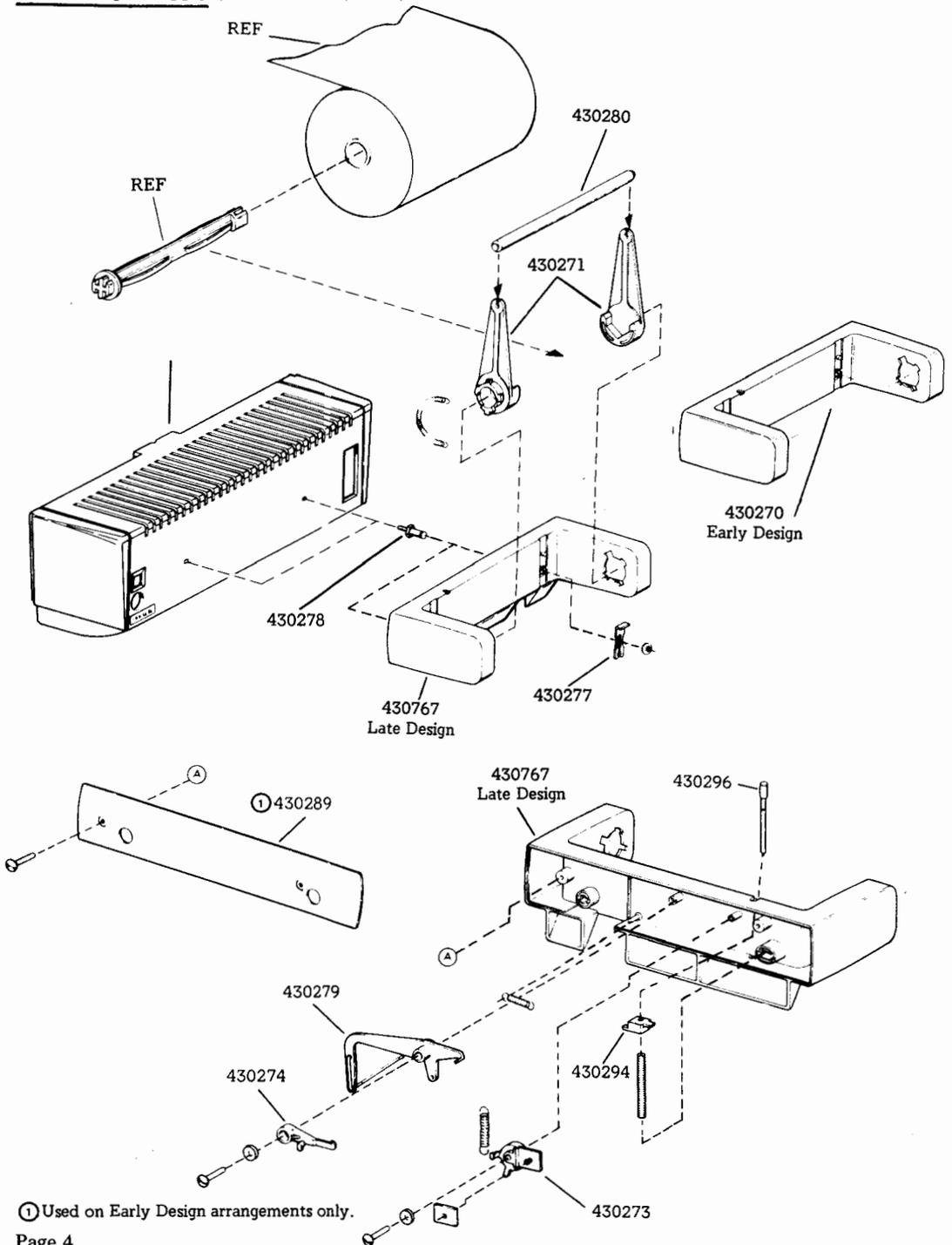


Friction Feed, Basic

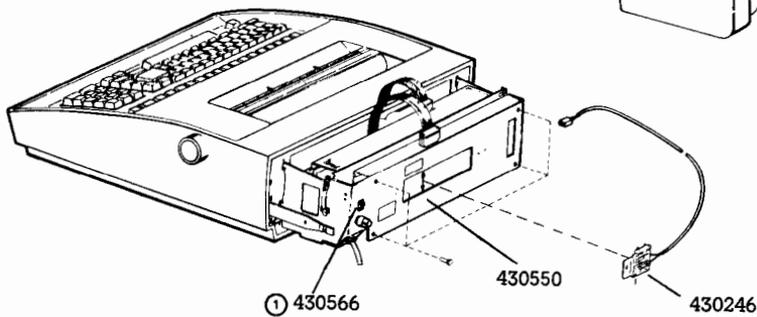
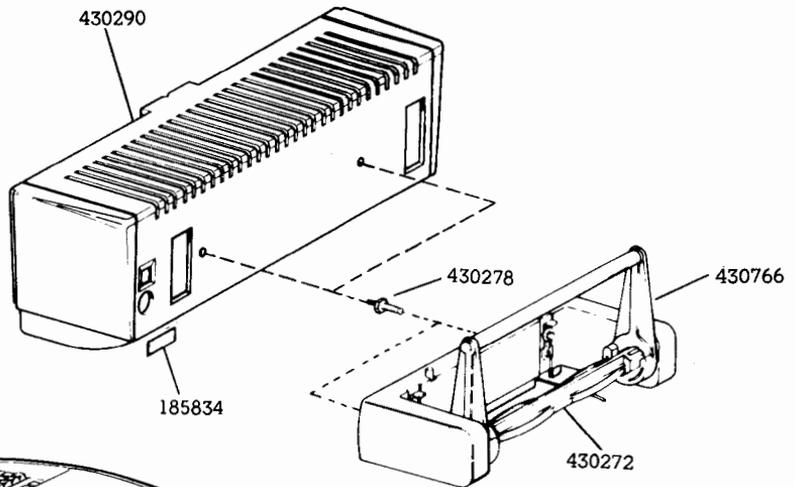
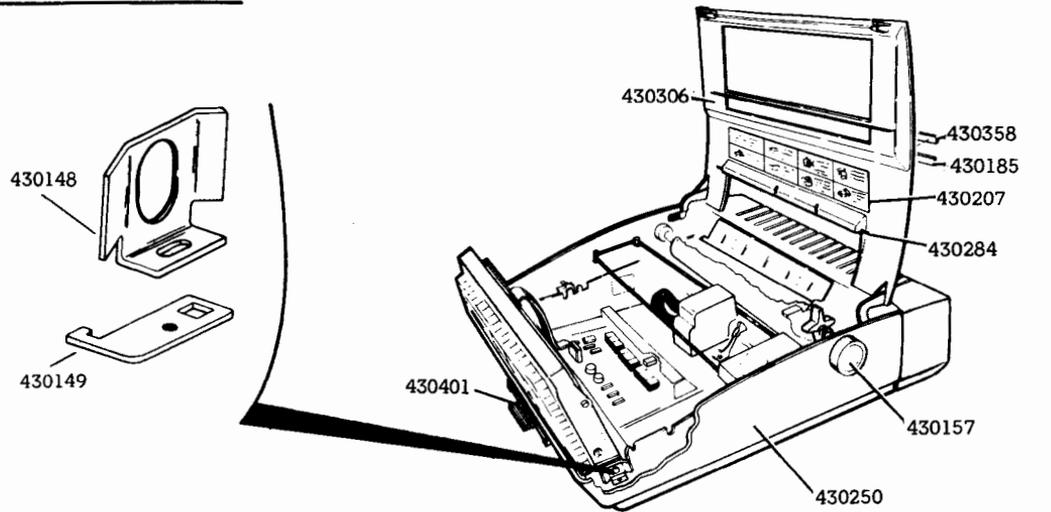


SECTION 574-503-800

430295 Paper Supply (Friction Feed, Basic)

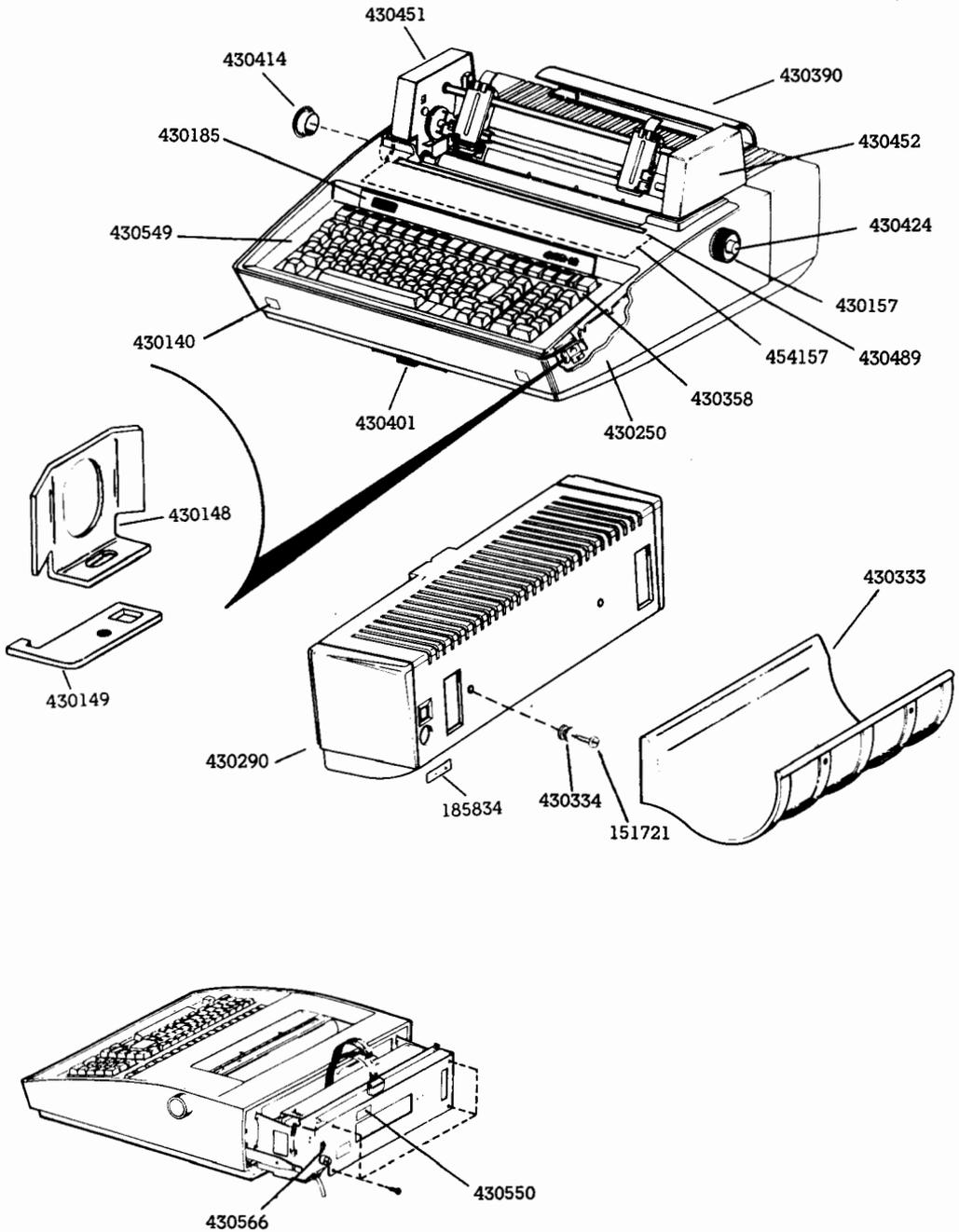


Friction Feed, Buffered



① Part of 430550

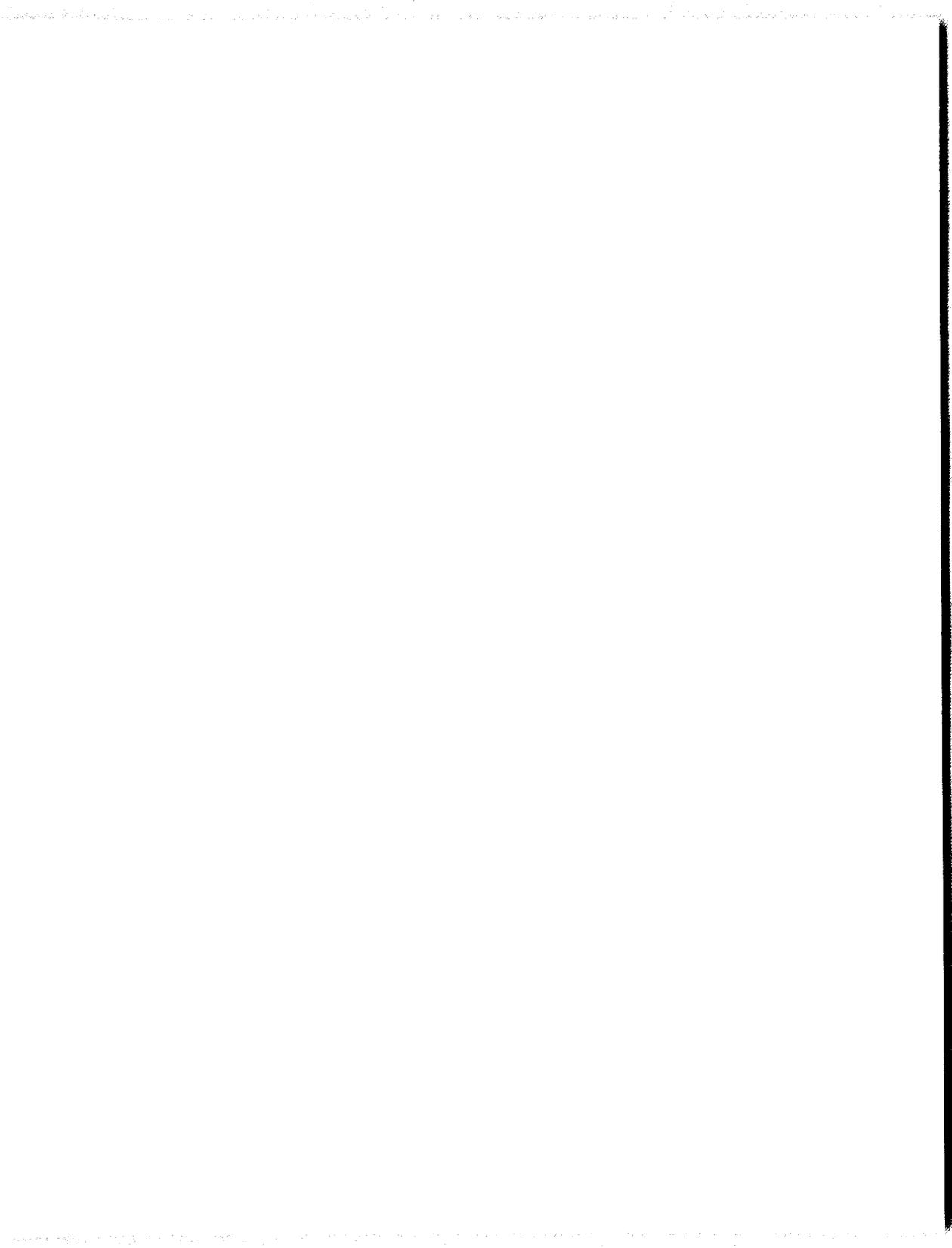
Tractor Feed, Buffered



3. NUMERICAL INDEX

3.01 These parts are not considered maintenance spares. They may be ordered for local repair of terminals.

| <u>PART NUMBER</u> | <u>DESCRIPTION AND PAGE NUMBER</u> |
|------------------------|--|
| 151721 | Screw, 6-40 x 3/4 Hex 2, 6 |
| 185834 | Label, Fuse 2, 3, 5, 6 |
| 430136 | Cover 2 |
| 430139 | Scale 2 |
| 430140 | Button 2, 3, 6 |
| 430141 | Knob w/Insert 2, 3 |
| 430148 | Clamp 2, 3, 5, 6 |
| 430149 | Nut Plate 2, 3, 5, 6 |
| 430157 | Knob, Platen 5, 6 |
| 430177 | Button, Acuator 2,3 |
| 430181 | Cover, Bustle 2, 3 |
| 430185 | Nameplate, Bell 2, 3, 5, 6 |
| 430201 | Deflector, Paper 2 |
| 430202 | Holder, Paper 2 |
| 430207 | Label Instruction 2, 3, 5 |
| 430210 | Directory Card w/Labels 2, 3 |
| 430246 | Assembly, Switch Bracket 3, 5 |
| 430250 | Housing w/Holder 2, 3, 5, 6 |
| 430251 | Plate, Cover 2, 3 |
| 430252 | Plate, Cover 2, 3 |
| 430270 | Support, Paper Roll 4 |
| 430271 | Lever, Arm 4 |
| 430272 | Spindle, Paper 3, 5 |
| 430273 | Cam, Low Paper 4 |
| 430274 | Cam, Follower 4 |
| 430277 | Latch 4 |
| 430278 | Post 3, 4, 5 |
| 430279 | Lever, Paper Sensor 4 |
| 430280 | Roller, Paper 4 |
| 430283 | Cover, Friction Feed 3 |
| 430284 | Scale, 80-Column 3, 5 |
| 430289 | Plate, Rear Cover 4 |
| 430290 | Cover, Bustle 5, 6 |
| 430294 | Lever, Reset 4 |
| 430295 | Assembly, Paper Supply 3 |
| 430296 | Shaft, Lever 4 |
| 430306 | Cover 5 |
| 430333 | Holder, Rear Paper 2, 6 |
| 430334 | Bushing 2, 6 |
| 430358 | Label 5, 6 |
| 430390 | Deflector, Paper 6 |
| 430401 | Card, Directory 5, 6 |
| 430414 | Plug, Hole 6 |
| 430424 | Button, Release 6 |
| 430451 | Cover, Left 6 |
| 430452 | Cover, Right 6 |
| 430489 | Scale, 100 Column 6 |
| 430549 | Cover 6 |
| 430550 | Rear Frame Assembly 2, 5, 6 |
| 430566 | Switch, Rocker 2, 3, 5, 6 |
| 450766 | Assembly, Paper Supply 3, 5 |
| 430767 | Support, Paper Roll 4 |
| 454157 | Label 6 |



43 5-LEVEL PAPER TAPE UNIT

GENERAL DESCRIPTION

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| 1. GENERAL | 1 |
| 2. DESCRIPTION | 1 |
| 3. REFERENCES | 6 |

1. GENERAL

1.01 This section provides a general description of the 43 Paper Tape Unit, hereafter known as the PTU.

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

1.03 When ordering replaceable components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410711).

2. DESCRIPTION
- 2.01 The PTU consists of a five-level fully perforating punch, a five-level photo-electric sensing tape reader, signal processing and control electronics, a power supply, tape supply and chad collecting facilities, all housed within a 43 styled cover.
- 2.02 The PTU provides for the preparation, reception, permanent storage and transmission of data in the form of five-level fully perforated tape.
- 2.03 Operating speed of the PTU is up to 30 characters-per-second (300 wpm). Speed on-line is controlled by the associated Buffered 43 Five-Level Teleprinter and off-line speed is at a full 30 CPS.
- 2.04 The PTU operates on 115V ac \pm 10 percent at 50 or 60 hertz and power is controlled by an ON-OFF rocker switch located at the left rear of unit.
- 2.05 The PTU interface is EIA-type RS-232-C and TTL voltage levels.
- EIA — Electronics Industries Association (Specification RS-232-C) +25V dc to -25V dc (ON-OFF range).
- TTL — Transistor Logic 0V dc to +5V dc (ON-OFF range).
- 2.06 The PTU does not generate or check parity.

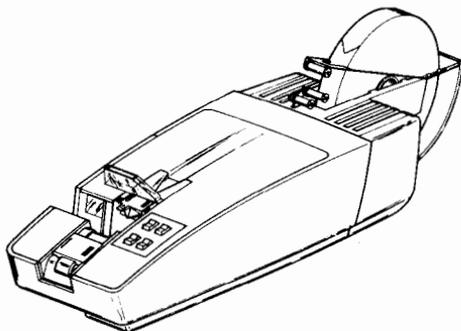
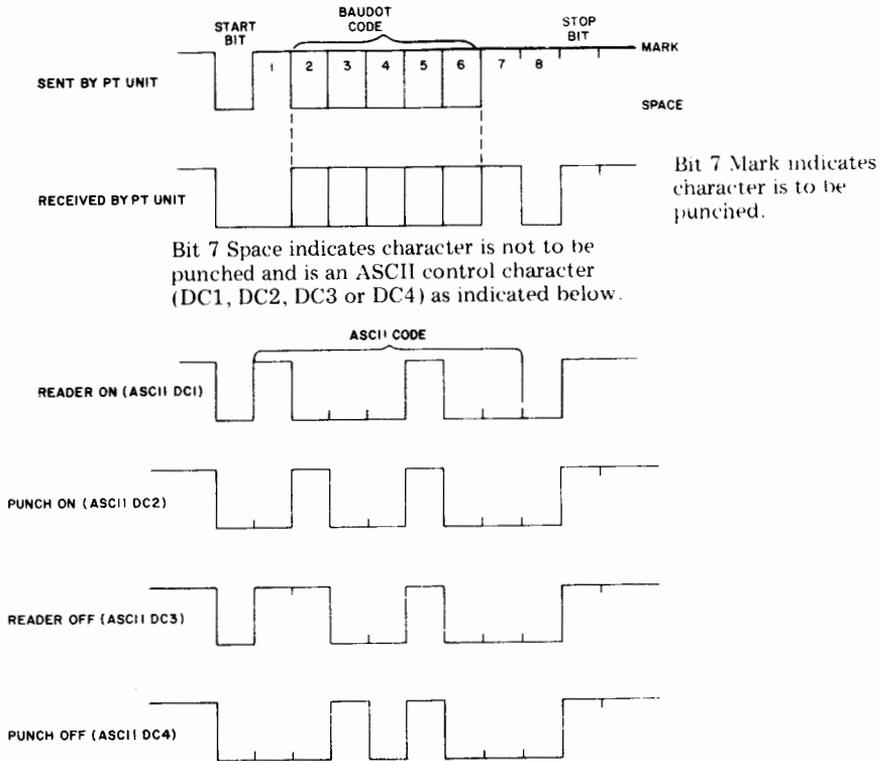


Fig. 1 — 43 Paper Tape Punch and Reader Unit

SECTION 574-504-100

2.07 The PTU operates as part of a set with a controller that signals across the interface is via a special 10 unit code (eight code bits, plus START-STOP) at 300 baud. The special 10 unit code configuration is described in the following table.

TABLE A
10 UNIT CODE



2.08 Paper tape for the PTU must be 11/16 inch wide oiled paper tape furnished in 8 inch maximum diameter rolls with 2 inch wide diameter spindle hole and must conform to ANSI Standard x 3:29 - 1971. This 0.004 inch thick, 50 pound paper tape may be obtained from local suppliers.

2.09 The PTU's physical characteristics are as follows:

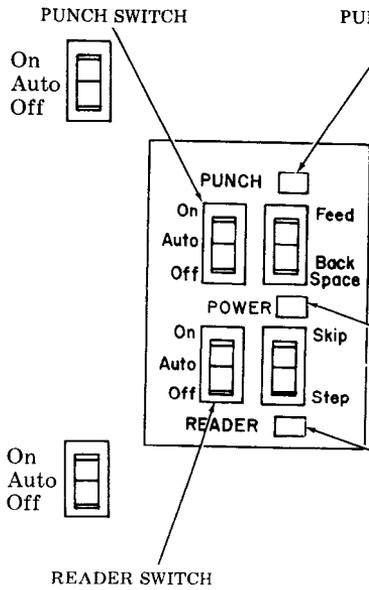
- Length - 27-1/2 inches
- Width - 7-1/4 inches
- Height (without tape roll) - 5-9/16 inches
- Weight (without tape roll) - 20 pounds
- The housing is gloss charcoal gray. The cover and bustle are off-white.

2.10 The Status Indicators and Associated Controls for the PTU are briefly described in Fig. 2.

INDICATORS
ASSOCIATED CONTROLS

Indicator turns ON, OFF or Blinks
Indicator turns ON, OFF or Blinks
Indicator OFF.

Indicator turns ON or Blinks
Indicator turns ON, OFF or Blinks
Indicator OFF or Blinks



INDICATORS

- Lights steadily indicating punch can perforate tape.
- Blinks indicating tape supply is low and punch may not be able to perforate tape.
- When not lit tape cannot be perforated.
- Lights steadily when Power to the PT Unit is turned on.
- Lights steadily when the reader is conditioned to read tape.
- Blinks indicating tape gate is opened, tape becomes tight or tangled, or runs out or fails to advance. (See Note.)
- When not lit reader cannot read tape.

Note: Operating READER switch to Off and opening tape reader lid, allowing tape out contact to rise, will reset blinking indicator, except for tight or tangled tape.

Fig. 2 -- Indicators

2.11 Controls

PUNCH OPERATIONAL CONTROLS

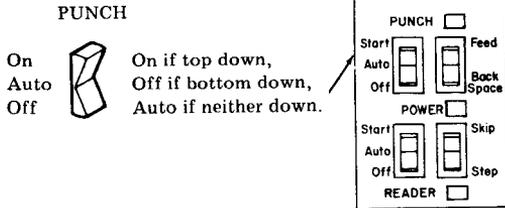


Fig. 3

● On

The punch functions as an extension of the associated printer. In the On position, the punch responds (perforates tape) to all data outputted by the associated teleprinter whether on-line or local.

● Auto

In the Auto position, the punch will automatically start upon receipt of the punch start code (CCCC or ::::). In the term on-line mode, the punch will start on receipt of the punch start code received from the keyboard, or the send buffer of the associated teleprinter or from the line, if the associated teleprinter is not in LOCAL PREP. If in LOCAL PREP (terminal on-line or off-line), the keyboard or reader can start the punch (punch start code).

If, while operating on-line, the punch receives a stop code (FFFF or \$\$\$\$) from the line, keyboard, reader, or send buffer, the punch will stop punching. If the associated teleprinter is operating in a local mode the punch will stop on receipt of a punch stop code from the keyboard or reader.

Note: The punch will not respond to these sequences when printed by the PRINT EDBUF key.

● Off

Operation to the Off position stops the punch if it is operating. Any data received while the switch is off will not be punched. Punch will not respond to punch start code.

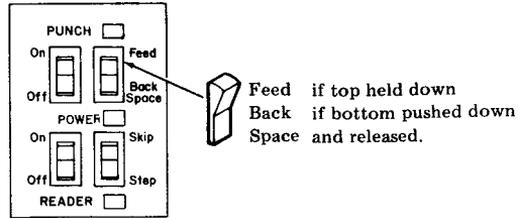


Fig. 4

● Feed

Operation to the Feed position causes the punch mechanism to continuously perforate only the sprocket hole and to advance the blank tape as long as the switch is held operated. This operation may be used to prepare "leaders" for separating messages in the tape, or for initiating tape feed when a new supply of tape is entered into the punch. Cannot be operated with punch in Auto position.

Note: Data may be lost if the switch is operated to feed while data is being received and punched.

● Back Space

Operation to the Back Space position causes the tape to be reverse fed one space position for each operation. No code holes are punched. More than ten successive operations are not recommended. Cannot be operated with punch in Auto position.

Note: The tape may be damaged and/or data lost if the switch is operated to Back Space while data is being received and punched.

READER OPERATIONAL CONTROLS

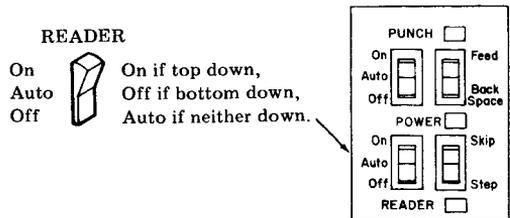


Fig. 5

● On

Operation to the On position causes the reader to continuously step and sense tape (provided tape has been properly placed in reader). When running, the reader will stop wherever and as long as a tight or tangled tape condition occurs, and will restart upon correction of the condition. It will stop completely if the tape lid is opened or the tape runs out or fails to advance. To restart, see Note below.

Note: Operate switch to the Off position before opening tape lid to correct condition.

Opening of the reader tape lid while transmission is temporarily interrupted may cause loss of characters so the tape should be backed up and restarted at the beginning, the tape lid should be closed and switch operated to the On position.

● Auto

In the Auto position, the reader will automatically start upon receipt of the reader start code (SSSS or """). In the term on-line mode, the reader will start on receipt of the reader start code received from the line or, if the associated teleprinter is in the send receive mode, from the keyboard.

If the associated teleprinter is in the local mode (terminal on-line or off line) the keyboard can start the reader (reader start code). The reader will transmit locally.

When running, the reader will stop on a tight tape or tangled tape condition and will restart upon removal of the condition. The reader will stop upon sensing the reader stop code (AAAA or - - -) in its tape. Up to six additional characters may be read after the reader stop code, therefore six blank characters should be placed on the tape following the reader stop code. The reader will also stop when tape runs out or tape lid is opened. If tape lid is opened while reader is running, loss of characters may occur.

● Off

Operation to the Off position stops the reader if it is operating, and prevents further response to control signals. Restarting is possible in the middle of a message, without loss of data, if the reader lid is not opened.

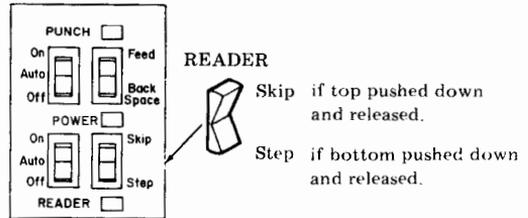


Fig. 6

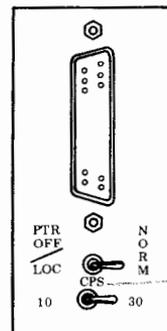
● Skip

With the reader control switch off, operation to the Skip position causes the tape to advance one character space, but the character will not be transmitted.

● Step

With the reader control switch off, operation to the Step position causes the reader feed mechanism to advance one character space, and if tape is present and has moved, causes the transmission of the character locally or on-line. No action will occur if the reader lid is open, no tape is present in the gate, or tight or tangled tape is present. If tape is in the reader but does not move, due to torn feed holes or improper insertion, the feed mechanism will operate once, but no character will be transmitted.

2.12 Auxiliary Controls (At Rear of Set)



CHAP. 2.12 PTR SEC.

10 30

Fig. 7

SECTION 574-504-100

- Controls the signaling speed in characters-per-second of the unit but is to be always positioned to the 30 CPS position. (For present application.)

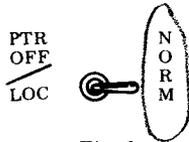


Fig. 8

- The "copy" switch located above the CPS switch can be operated to either the NORM position or to the PTR OFF/LOC position.
- When operated to the NORM position, data flow is always normal as shown:

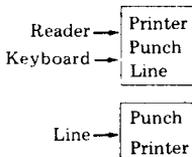


Fig. 9

- When operated to the PTR OFF/LOC position, one of the two following modes, depending on the installer option, is provided:

| ✓ Check One Provided | Option | Mode of Operation | Data Flow |
|----------------------|--------|-------------------|--|
| | 453a | Normal | Same as for Normal Above. * |
| | 453c | Local | Reader → Punch Keyboard → Printer Line |

*Factory Furnished State

Fig. 10

2.13 Connections and Power Turn On

- The ac power cord and cable to associated teleprinter auxiliary port should be connected as shown before turning on power.

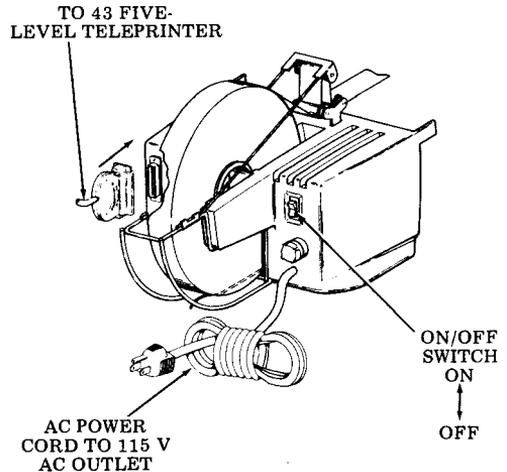


Fig. 11

- Power to the PTU is applied by depressing upper half of ON/OFF switch.
- Power should normally be left on for automatic punch and reader operation on sets so equipped.
- An Associated 43 Five-Level Buffered Teleprinter will revert to normal operation when the PTU power is turned off or the cable is disconnected.

3. REFERENCES

- 3.01 The 999-300-136, How To Operate Manual provides information for the 43 PTU used with a 43 Five-Level Buffered Selective Calling Teleprinter.

43 5-LEVEL PAPER TAPE UNIT
INSTALLATION AND REMOVAL

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| 4. REMOVAL | 4 |
| 5. ACTIVATING ENGINEERING OPTIONS | 5 |
| 6. ENGINEERING OPTIONS CHECKOUT | 7 |
| 1. GENERAL | |

1.01 This section provides installation and removal information for the Paper Tape Unit (Fig. 1), hereafter known as the PTU.

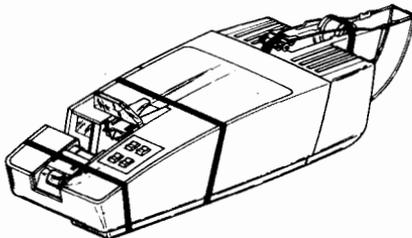


Fig. 1

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

1.03 The PTU may be located on a table top or shelf and attached to an associated 43 Five-Level Buffered Teleprinter or it may be separately located up to 50 cable feet from the teleprinter.

1.04 Installation should be performed under the direction of a service order indicating terminal code, options, date, materials required and location.

1.05 For additional information on testing refer to Section 574-504-300.

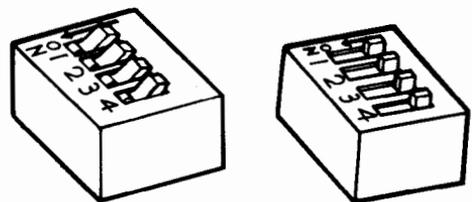
1.06 Before starting the installation procedure, verify that paper tape and the customer provided communications device is present at the installation location.

1.07 References in the procedures to left or right, up or down and top or bottom, etc, refer to the PTU in its normal operative position.

1.08 All ordering numbers shown in this manual are Teletype Corporation part numbers.

OPTION SWITCHES

1.09 Different styles of option switches may be present on the logic card. On toggle or slide type switches, options are activated by positioning the toggle or slide toward the positions indicated in Fig. 2.

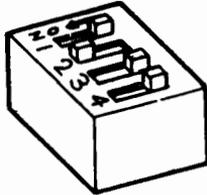


Toggle Type

Slide Type

Fig. 2

1.10 The options switches are factory optioned and should not be changed unless the local engineering requirements specify incorporating a nonstandard feature (Fig. 3).



Standard Switch Positions

Fig. 3

1.11 The procedure in Engineering Option Checkout verifies proper operations of variable features only. The features as furnished from the factory are checked in Section 574-504-500. The procedures in Engineering Option Checkout may be checked either on-line or off-line as indicated.

1.12 Independent off-line test procedures are provided to simulate on-line tests. Off-line checkout of Option 453 will require placing the PTU into the loopback mode (see Fig. 4). To perform these tests, the connector terminals, as shown in Fig. 4, should be strapped before proceeding with the tests. The remaining terminals, should be connected or measured as specified during the test steps.

1.13 When ordering replaceable parts, unless otherwise specified prefix each part number with the letters "TP" (ie, TP430047).

2. TOOLS REQUIRED

2.01 The following tools will be required to enable the option switches and/or straps. These items should normally be present in standard maintenance tool kits.

- Wrench, Open End — 129534
- 3/16 Inch x 1/4 Inch Screwdriver —
- 1/4 Inch x 6 Inch Blade 100982
- Pliers, Cutting — 408071
- Soldering Iron (Low Wattage)

3. INSTALLATION PROCEDURE

A. Unpacking

- 3.01 Select an area to unpack the carton so that damage to the unit will not occur.
- 3.02 When unpacking, be sure to wear approved safety glasses.

Caution: To avoid condensation on the electrical components, the unit should be allowed to assume room temperature before unpacking; for example, when brought into a warm humid room from outside subzero temperatures.

- 3.03 The 43 Five-Level PTU is furnished fully assembled in a single carton.
- 3.04 Unpack the unit referring to instructions on the carton.

Note: Observe all "Caution" notes printed on the carton.

- 3.05 Carefully remove tape securing the reader cover, chad container, spindle and tape tensioning arm (Fig. 5).

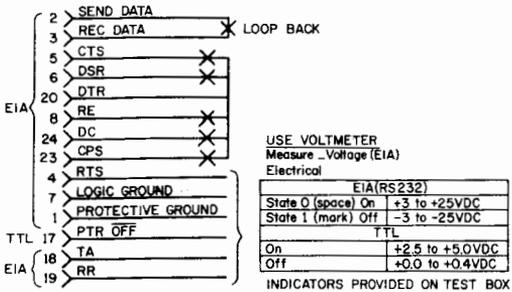


Fig. 4

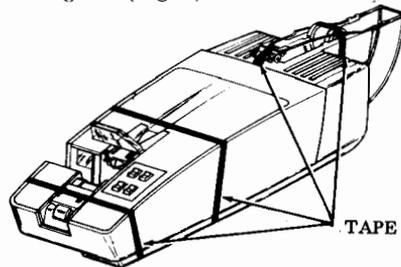


Fig. 5

3.06 Verify that the following items are present at the customer site:

- 1 - PTU (4250AAA)
- 1 - Practice, Installation (574-504-200)
- 1 - Roll KS-8483, L1 Yellow Paper Tape
- 1 - 430757 Cable

3.07 The container and other packing details should be retained by field location to facilitate movement of equipment.

Note: Paper tape must be obtained locally or ordered separately. The first roll comes with the PTU.

B. Assembly

3.08 The connecting cable (430757) between the PTU and associated equipment is furnished with the PTU. The following extension cables are available from Teletype Corporation. See Fig. 6 for definition of interface leads.

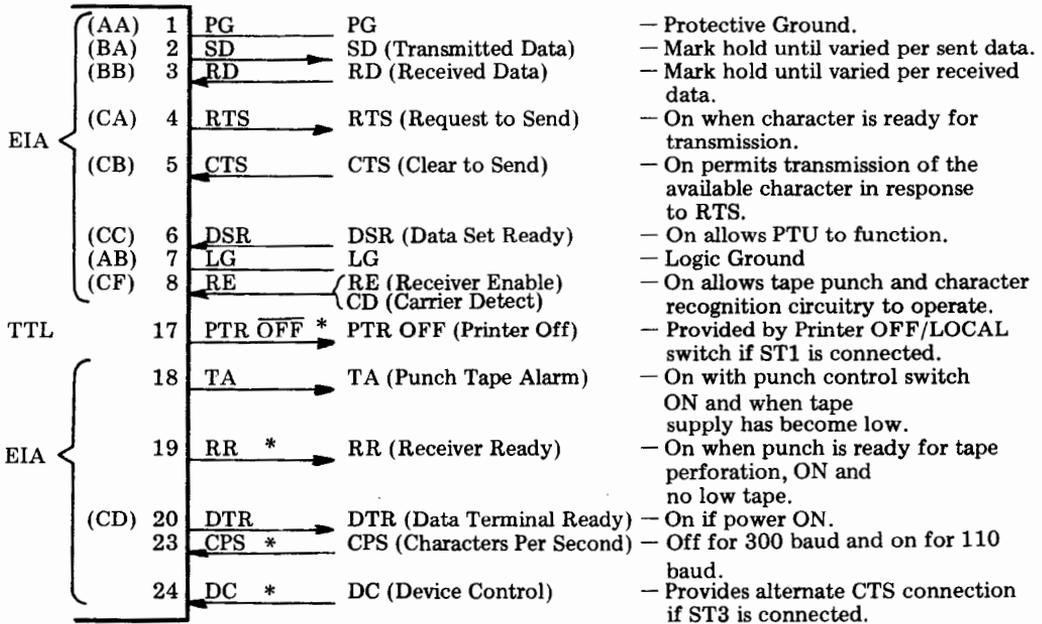
| | |
|----------------|----------------------------|
| 3 foot length | 430757 (included with PTU) |
| 7 foot length | 413600 |
| 12 foot length | 413601 |
| 25 foot length | 413602 |
| 50 foot length | 413603 |

INTERFACE LEADS

The PTU Interface terminates at a 25 EIA receptacle with male pins located at the right rear of the unit. The pin assignments are given below. (See Note.)

Pin Assignments

Descriptions



Electrical

| EIA (RS232) | |
|--------------------|------------------|
| State 0 (space) On | +3 to +25 VDC |
| State 1 (mark) Off | -3 to -25 VDC |
| TTL | |
| On | +2.5 to +5.0 VDC |
| Off | +0.0 to +0.4 VDC |

Note: In the local operation mode of the "copy" switch (see Option 453c) with switch in PTR OFF/LOC position, DTR, RTS, RR and TA will be off and SD will be mark hold. The RD, CTS, DSR, RE and DC inputs will be ignored.

The "copy" switch is located above the CPS switch at the rear of the set.

*Not wired in recommended EIA cable.

Fig. 6

SECTION 574-504-200

3.09 Position the PTU in the location specified by the customer. Normally, the PTU will be placed on the left side of an associated teleprinter. No space is required behind the PTU itself. For additional space requirements, refer to manuals furnished with associated communications devices. The ac power cord for the PTU extends ten feet to the rear.

3.10 Certain user programmable options (see 5. ACTIVATING ENGINEERING OPTIONS) listed in this section should be reviewed to properly interface the PTU with the associated buffered teleprinter. Refer to the How to Operate Manual 999-300-136.

3.11 If any of the user options are changed from the state furnished condition, mark the How to Operate Manual 999-300-136 to indicate changes.

C. Tape Installation

3.12 Install the paper tape. Refer to How to Operate Manual 999-300-136.

D. Checkout Procedure

3.13 Connect the interface cable from the PTU to the associated teleprinter using the two captive screws on each plug.

3.14 With the ac power turned off, plug the PTU into a properly grounded and polarized 3-wire, 115 V ac ± 10 percent, 50-60 hertz electrical power source (refer to Option 455). Fuse protection should be delayed and provide for a running current of 1.0 amp for the PTU.

3.15 Perform the PTU installation checkout procedure found in Section 574-504-500.

3.16 Clean up the unpacking area, wipe off any finger prints on the cover and turn PTU over to the customer.

E. Initiate Service

3.17 Record the installed location of the PTU (floor, area and phone, if any) and the number to be called in case of trouble on a label and/or in the How to Operate Manual 999-300-136.

3.18 Provide the customer with the How to Operate Manual 999-300-136.

3.19 Advise the customer of the "trouble number" locations on a label or in the How to Operate Manual.

4. REMOVAL

4.01 To remove the PTU from service, reverse the procedures in 3. INSTALLATION PROCEDURE.

4.02 Before repacking the PTU, remove chad from punch block, chad chute and empty the chad container.

4.03 Place PTU on bench. Tape set as shown in Fig. 5. Place one band of tape around set so that it secures the chad box. Place another band of tape around set so that it secures the reader lid.

4.04 Secure the tape tension arm approximately two inches above the housing with a strip of tape (see Fig. 5).

4.05 Secure the spindle in its slot with a strip of tape (see Fig. 5).

4.06 Coil the power cord and band it with a strip of tape. Position power cord in package as shown in Fig. 7.

4.07 Obtain the carton and packing details retained in 3.07.

4.08 Position a Detail "A" and a Detail "B" on the PTU as shown in Fig. 7.

4.09 Tape the Details (A and B) in position with three strips of tape. Start at center of details and go all around the details. See Fig. 7.

4.10 Position the corrugated detail in carton as shown in Fig. 7.

- 4.11 Position the corrugated detail in the carton as shown in Fig. 7.
- 4.12 Close top flaps of carton and seal with tape.
- 4.13 Mark the outside of the carton with the PTU code (4250AAA).
- 4.14 If the PTU is a candidate for the working station plan, prepare the necessary paper work.

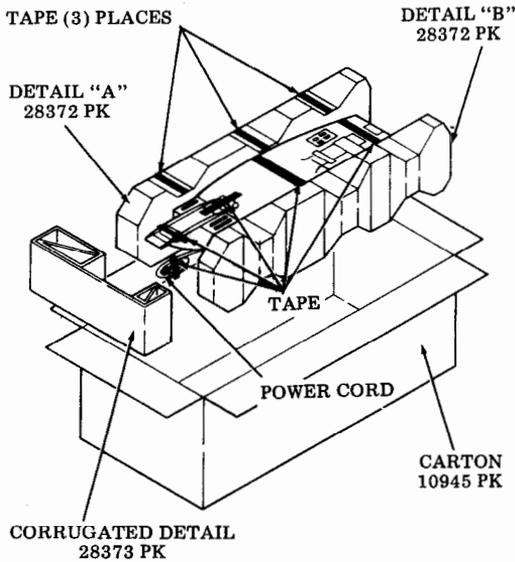


Fig. 7

5. ACTIVATING ENGINEERING OPTIONS

- 5.01 Turn off ac power to the PTU.
- 5.02 Remove 410711 logic cord (see Section 574-504-720).

- 5.03 Locate the option switch pack SPA1 and straps (ST1, ST2, ST3) (see Fig. 8 for location). Activate the variable features as required (see Fig. 9). Straps can be removed by cutting or unsoldering.

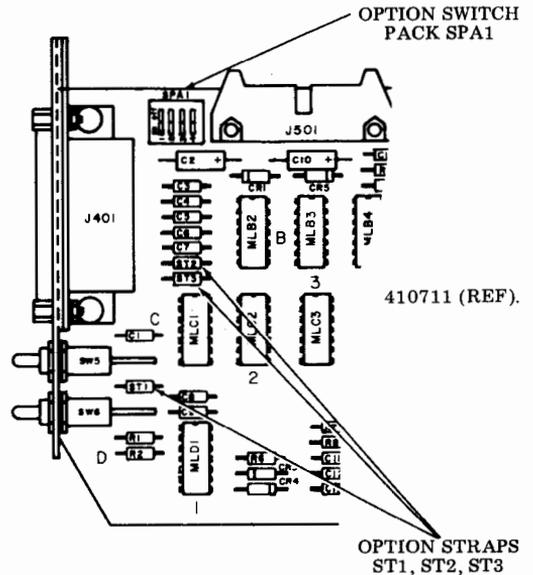


Fig. 8

- 5.04 Reinstall the logic card, bustle and covers.
- 5.05 Record any nonstandard option incorporated in the PTU in the How to Operate Manual 999-300-136.
- 5.06 Perform the option checkout procedure to verify proper operation of any nonstandard feature installed. Refer to 6. ENGINEERING OPTION CHECKOUT for checkout procedure.

SECTION 574-504-200

5.07 The checkout procedure in 6. ENGINEERING OPTION CHECKOUT provides information for checking nonstandard options only. Refer to Section 574-504-500 for PT Testing procedures.

| OPTION NO. OPTION SUFFIX AND CONDITIONS | OPTION DEFINITION | SWITCH NUMBERS | | | | LOCATION OF SWITCH OR STRAP ON CIRCUIT CARD |
|--|-------------------|----------------|---|---|---|---|
| | | SPA1 | | | | |
| XXX | | 1 | 2 | 3 | 4 | |
| a. | | — | — | — | — | |
| b. | | — | — | — | — | |

| 453. | Function of "Copy" Switch in PTR OFF/LOC Position. | SPA1 | | | | ST1 |
|------|--|------|---|---|---|------------|
| | | 1 | 2 | 3 | 4 | |
| a. | Normal | — | — | — | ○ | Strap In * |
| b. | NA for 5-Level | — | — | — | ● | Strap Out |
| c. | Local Operation | — | — | — | ● | Strap In |
| d. | NA for 5-Level | — | — | — | ○ | Strap Out |

| 454. | Clear to Send Select | ST2 | ST3 |
|------|--|---------------|-------------------------|
| | | a. | Clear to Send Controls. |
| b. | Device Control Controls | Strap Removed | Strap In |
| c. | Device Control and Clear to Send Controls. | Strap In | Strap In † |

| 455. | 50/60 Hz Operation | Motor Pulley ** | |
|-------|--------------------|-----------------|------------|
| | | Small Side | Large Side |
| 455a. | 60 Hz Operation | Outside | Inside * |
| 455b. | 50 Hz Operation | Inside | Outside |

The following feature is not a customer option and is preset at the factory.

| 5- or 8-Level Operation | SPA1 | | | |
|-------------------------|------|---|---|-----|
| | 1 | 2 | 3 | 4 |
| a. 8-Level | — | ○ | — | — |
| b. 5-Level | — | ● | — | — † |

● Indicates toggle or slide position to ON.

○ Indicates toggle or slide position to OFF.

— Position of switch does not affect feature.

* Factory furnished state of feature.

† Factory furnished state of feature — required for application.

‡ On 5-level units, SPA1-2 must be positioned to ON.

** Verify motor pulley is aligned with reader pulley and there is some clearance between the motor pulley and the ac power connector bracket.

Fig. 9

The following features are for craft personnel during troubleshooting.

| Punch and Reader Adjust | | SPA1 | | | | |
|-------------------------|----------|------|---|---|---|---|
| | | 1 | 2 | 3 | 4 | |
| a. | Disabled | ○ | — | — | — | * |
| b. | Enabled | ● | — | — | — | |

| Self Test Message | | SPA1 | | | | |
|-------------------|----------|------|---|---|---|---|
| | | 1 | 2 | 3 | 4 | |
| a. | Disabled | — | — | ○ | — | * |
| b. | Enabled | — | — | ● | — | |

- Indicates toggle or slide position to ON.
- Indicates toggle or slide position to OFF.
- Position of switch does not affect feature.
- * Factory furnished state of feature.
- § LTRS/BLANK/R/Y is perforated (5-level).

Fig. 9 (Contd)

6. ENGINEERING OPTION CHECKOUT

- 6.01 Turn off power to the PTU and connect the test arrangement shown in Fig. 4 to the EIA connector at rear of PTU.
- 6.02 Place tape roll in PTU and thread tape through punch block.
 Operate POWER switch Off.
 Operate PUNCH and READER switches Off.
 Place CPS switch in 30 CPS position.
 Place message tape in reader.
 Close all switches on test arrangement.

ENGINEERING OPTION CHECKOUT (453a)

| PROCEDURE | RESPONSE | VARIABLE OPTION |
|--|--|-----------------|
| Place "copy" switch in PTR OFF/LOCAL position. | +5V will be present on interface pin 17. | |
| Place "copy" switch in NORM position. | +5V will be present on interface pin 17. | |

ENGINEERING OPTION CHECKOUT (453c)

| PROCEDURE | RESPONSE | VARIABLE OPTION |
|---|--|--------------------------------------|
| "Copy" switch in LOCAL position. Turn on POWER switch. | Motor starts. POWER indicator lamp lights. | 453c permits LOCAL tape duplication. |
| Move PUNCH switch to On. | PUNCH lamp lights. | |
| Move READER switch to On. | READER lamp lights. Reader starts transmitting. Punch starts receiving from reader and perforating tape. | |
| With reader sending to punch, open and close the test arrangement switches (loopback 5, 6 and 8) one at a time. | Switches have no effect — reader continues sending to punch. 0V will be present on interface pin 17. | |

43 5-LEVEL PAPER TAPE UNIT

TROUBLESHOOTING

| CONTENTS | PAGE |
|--|------|
| 1. GENERAL | 1 |
| 2. TROUBLESHOOTING FLOW DIAGRAM | 2 |
| 3. TROUBLESHOOTING GUIDE..... | 3 |

574-505-800, 574-506-800 and 574-508-800
Punch, Reader and Power Supply should be
available.

1.08 Refer to Disassembly/Reassembly in Sec-
tion 574-504-720 for component access.

1.09 For location and identification of station
components, refer to Section 574-504-800.

1.10 When replacement of the Punch, Reader
or Power Supply corrects the trouble,
additional checks should be made to isolate and
possibly correct the trouble without returning
for repair.

1.11 When replacement of a component does
not correct the trouble, the original
component should be reinstalled before going
to the next step of the trouble analysis. If there
are no more directives provided, go to the last
question.

1.12 When returned to the Western Electric
Service Center for repair, the PTU or com-
ponents should be packed in the container in
which the replacement is received.

1.13 Components returnable for repair and
referred to in this section for replacement
are:

- 412280 Reader
- 412399 Punch
- 410711 Logic Card
- 412396 Power Supply

1.14 Before disconnecting cables or replac-
ing circuit cards, turn off ac power.
Make certain power cords are connected to a
properly polarized and grounded ac outlet.

1.15 Refer to 2. TROUBLESHOOTING DIA-
GRAM for the intended flow of trouble-
shooting.

1.16 Troubles analysis is presented in the form
of a "20 Questions" routine in 3. TROU-
BLESHOOTING GUIDE. The Guide, with
questions and yes or no columns, should be
used always starting with the first question and
proceeding according to the "yes" or "no"
directive.

1. GENERAL

1.01 This section provides troubleshooting
information for the 43 Paper Tape Unit.

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

1.03 Troubleshooting is based on isolation
of troubles to major components and
the correction of troubles by replacement of
these components or by reference to the compon-
ent troubleshooting paragraphs in the related
component parts of this manual.

Note: All ordering numbers shown in this
manual are Teletype Corporation part numbers.

1.04 Component troubleshooting sections are:

- 574-505-300 Punch
- 574-506-300 Reader
- 574-508-300 Power Supply

1.05 Trouble isolation provided in this section
is intended for use by the craftsperson at
the same location as the station. Troubles may
occur either during an installation, a routine
maintenance visit or as the result of a customer
trouble report.

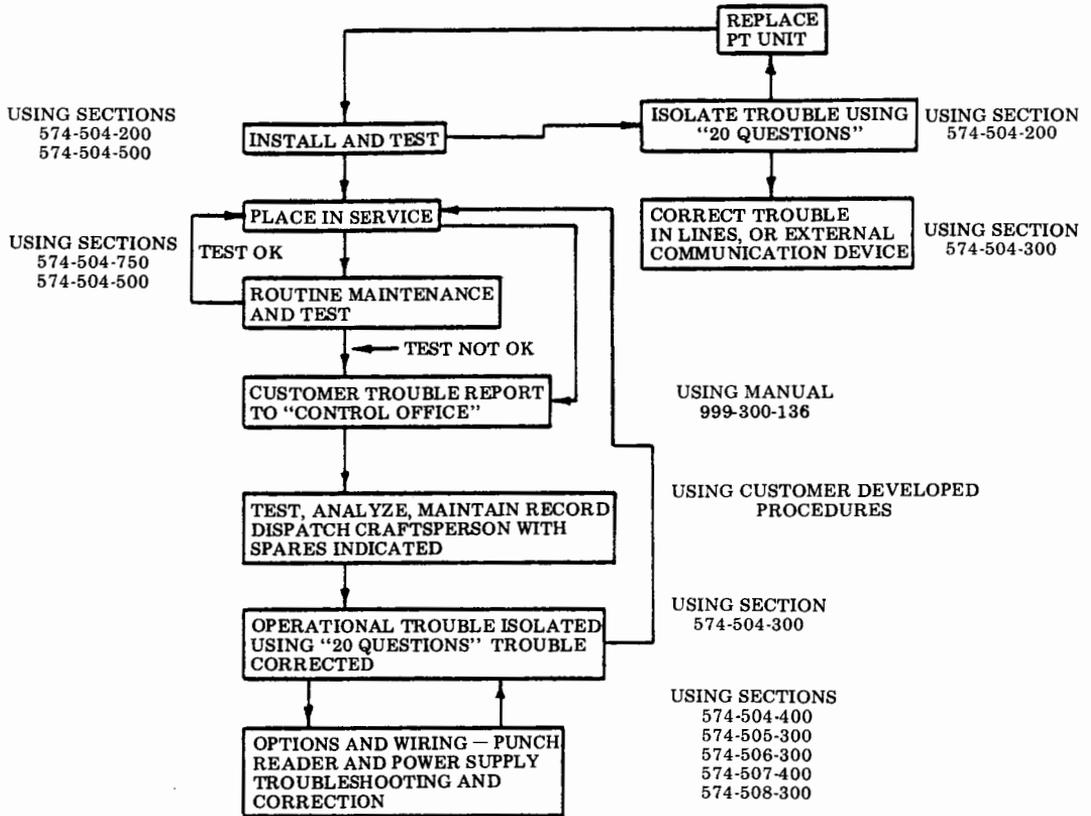
1.06 Trouble isolation for the attendant is
provided in the How To Operate Man-
ual 999-300-136.

1.07 To facilitate trouble correction, the
recommended maintenance spares, as
listed, should be available. In addition, parts
for the repair of components as listed in Sections

SECTION 574-504-300

Note: When ordering replaceable parts, unless otherwise specified prefix each part number with the letters "TP" (ie, TP430047).

2. TROUBLESHOOTING FLOW DIAGRAM



3. TROUBLESHOOTING GUIDE

| QUESTION | YES | NO |
|--|------------------|--|
| 1. Is green power indicator lamp lit? (Power available, ac cord plugged in, cover on, power switch On). | Go to 1-C | Go to 1-A |
| 1A Is there any indication of power in the set? (lamps lit, motor starts when power turned on) | Go to 1-C | Check fuses F1, F2, F3, F4. Replace if blown. Go to 1-B Check mode switch. Replace if defective. |
| 1B Do indicators now light? Does motor start? | Original trouble | Check cable connections. If power light is On and motor does not start, check motor relay and its connector at power supply cord. Replace motor start relay. Replace power supply. Replace motor assembly. |
| 1C Punch On and back to Auto (PTR - OFF/LOCAL, SPA1 - 4 closed) Does punch indicator lamp light? | Go to 2 | Check lamp and switch. Replace mode switch. Replace logic card. |
| 2. Can tape be threaded into punch? | Go to 3 | Remove chad from chute and punch block. Go to punch troubleshooting. |
| 3. Simulate low tape Does low tape conditions cause punch lamp to blink? | Go to 4 | Go to Section 574-508-700 and Section 574-509-700 (Adj. for Low Tape Switch and Tape Arm). Go to Section 574-508-300 (Power Supply Troubleshooting). |
| 4. Does punch feed tape with only feed holes perforated, when Feed switch is operated? (Punch Off) | Go to 5 | Go to punch troubleshooting. Replace logic card. |
| 5. Does unit reverse feed tape properly when Back Space is operated? | Go to 6 | Go to punch troubleshooting. Replace logic card. |

3. TROUBLESHOOTING GUIDE (Contd)

| QUESTION | YES | NO |
|--|-----------------------------|---|
| 6. Does unit perforate characters properly (use self-test — SPA 1-3) | Go to 7 | Go to Punch troubleshooting. Replace logic card. Check Variable Feature 455. Check Variable Feature switch. |
| 7. Are perforations straight (no wavering) with respect to edge of tape? | Go to 8 | Go to Punch troubleshooting. |
| 8. Do perforations meet 10 to the inch? | Go to 9 | Go to Punch troubleshooting and adjustments. |
| 9. Does Punch intermittently feed? | Go to punch troubleshooting | Go to 10 |
| 10. Does operation of tight tape arm cause transmission to stop and reader lamp to blink? (Reader on and tape in gate) | Go to 11 | Go to Reader troubleshooting. Replace reader. Replace logic card. Replace mode switch. |
| 11. Does operations of tape-out switch cause transmission to stop and reader lamp to blink? | Go to 12 | Check switch adjustment. Go to Reader troubleshooting. Replace reader. Replace logic card. |
| 12. Does reader step and sense characters in tape properly (tape which is checked good for 10 to the inch)? | Go to 13 | Check for paper dust on windows. Go to Reader troubleshooting. Replace reader. Replace logic card. |
| 13. Does reader step and sense character-at-a-time properly when Step and Skip switches are operated? | Go to 14 | Go to Reader troubleshooting. Replace mode switch. Replace logic card. |
| 14. Is sent data received by remote terminal? | Go to 15 | Check interface. Check external equipment. |
| 15. Is data sent from remote terminal received? | Go to 16 | Check interface. Check external equipment. |
| 16. Are data messages properly sent and received in normal on-line mode? | Place in service | Check user programmable options. Check PTU Self-Test. If Self-Test is OK check external equipment. |

43 5-LEVEL PAPER TAPE UNIT

WIRING

1. GENERAL

1.01 This section provides wiring information for the 43 Paper Tape Unit. The wiring information provides proper component inter-connection information.

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

1.03 For additional information refer to:

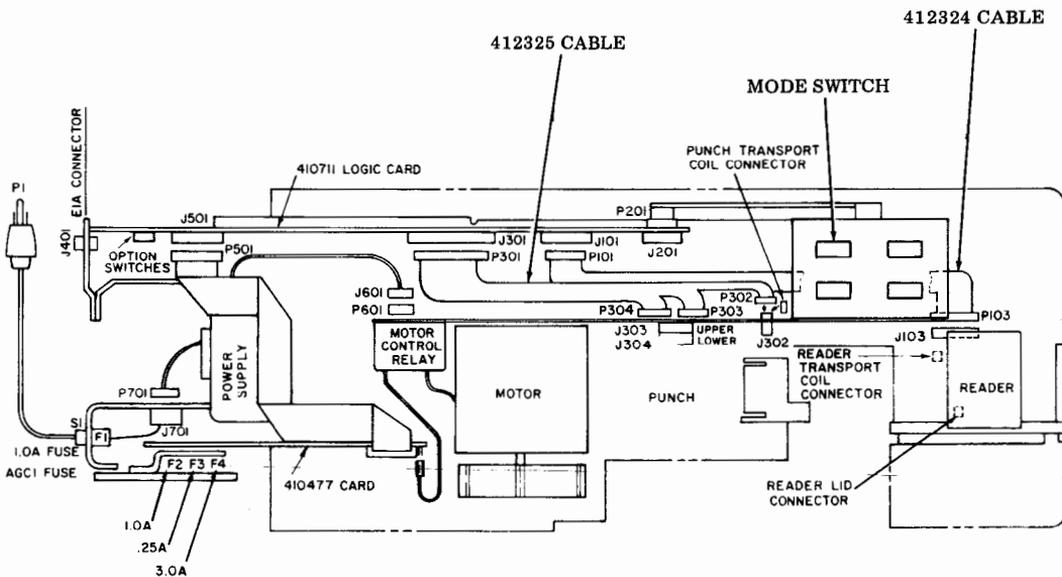
- 574-505-400 Punch Wiring
- 574-506-400 Reader Wiring

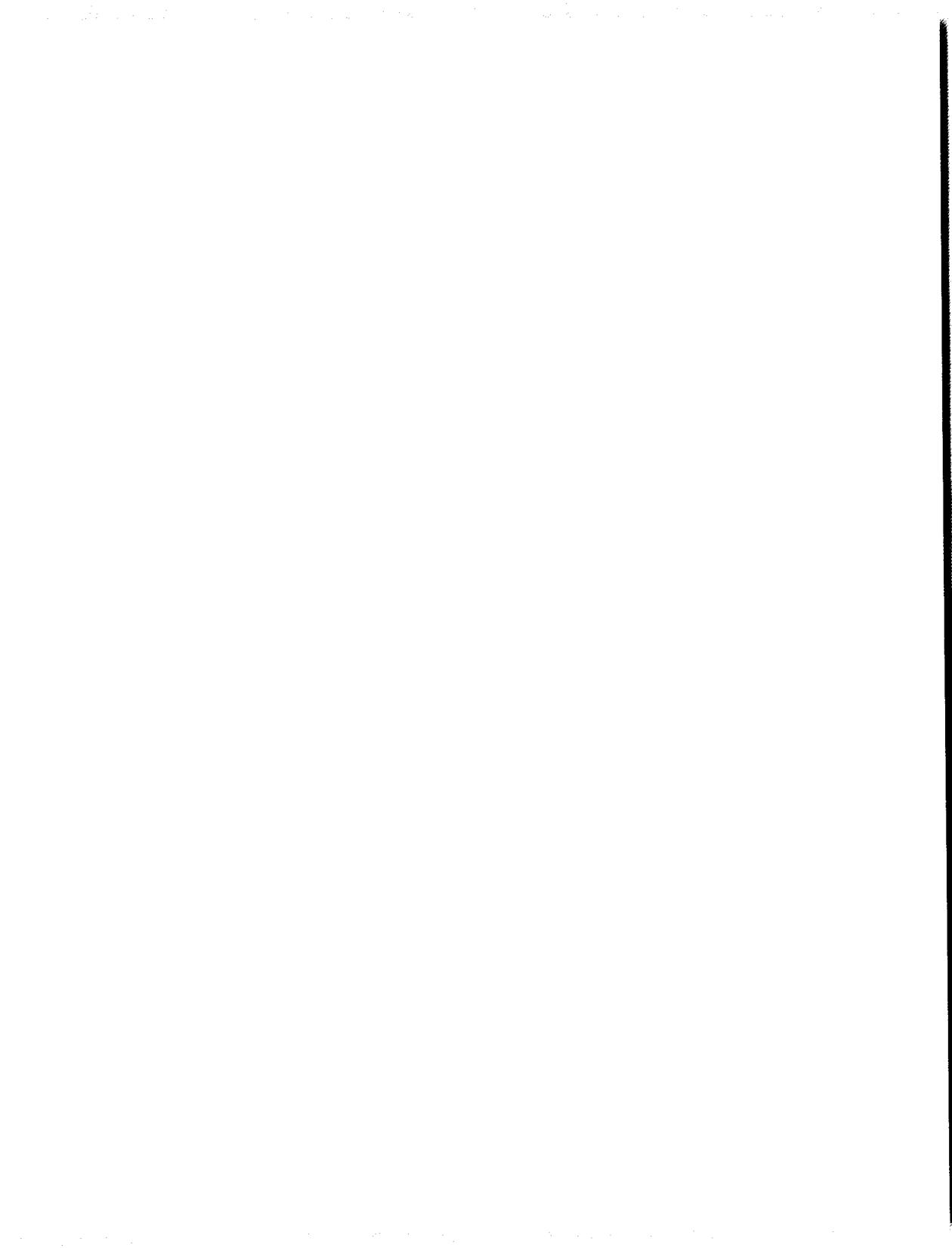
- 574-507-400 Motor Area Wiring
- 574-508-400 Power Supply Wiring
- 574-509-400 Covers and Enclosures
- 574-510-400 Rear Frame and Miscellaneous Wiring

1.03 Numbers shown on the terminal wiring do not appear on components.

1.04 When ordering replaceable parts, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP430407).

2. TERMINAL WIRING





43 5-LEVEL PAPER TAPE UNIT

TESTING

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| PRELIMINARY CHECKS..... | 1 |
| 2. TEST EQUIPMENT | 2 |
| 3. TESTING PROCEDURES..... | 3 |
| OFF-LINE TESTS (Installation Call Checkout) | 4 |
| Manual — Automatic | 4 |
| SIMULATED ON-LINE TESTS (Loopback)..... | 5 |

1. GENERAL

- 1.01 This section provides station testing information of the 43 Paper Tape Punch and Reader.
- 1.02 Whenever this section is reissued, the reason for reissue will be listed in this paragraph.
- 1.03 An installation checkout should be performed after installation to make sure the station is operable.
- 1.04 On trouble calls an installation checkout should be performed after trouble correction to make sure the PTU is operable and a trouble verification test should be performed under the direction of a test station (if available) to isolate specific troubles not covered in the installation test. After correction of a trouble the test may be confined to the specific area that was failing.
- 1.05 Following routine maintenance calls at a location, an installation checkout should be performed.
- 1.06 The checkout routines are present in chart form with test conditions arranged in a

specific sequence. A response is given to verify the test condition has passed.

1.07 Refer to Section 574-504-300 for PTU Troubleshooting information.

1.08 If the indicated response is not obtained in any step of a test procedure, repeat the step to make sure that the procedure has been performed properly. If the results are still unsatisfactory refer to PTU Troubleshooting Section 574-504-300.

Note: The local test specified in this section simulate most on-line tests for the PTU.

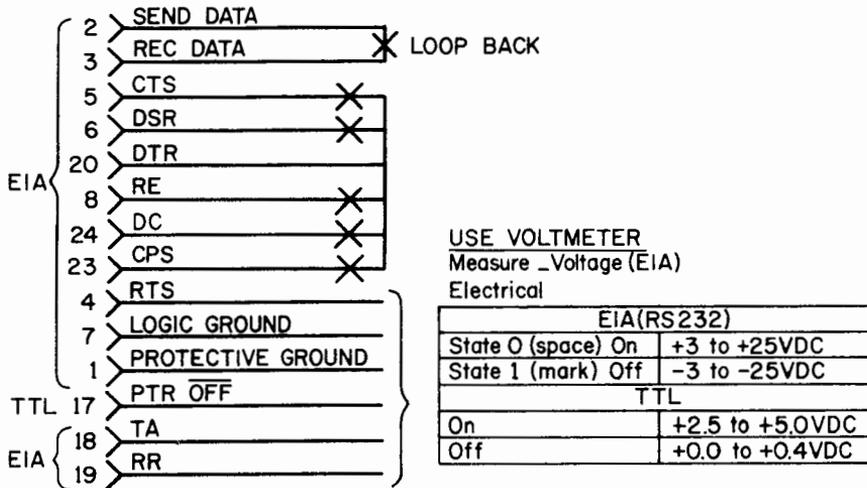
1.09 Always perform the tests in the order given. The Tests Steps are based on satisfactory results of all previous steps.

PRELIMINARY CHECK

- 1.10 Before proceeding with the checkout procedure check the following:
- (a) Is PT Unit connected to a properly grounded and polarized ac service?
 - (b) Are all cable connectors fully seated?
 - (c) Is Paper Tape properly installed?
 - (d) Are any option exceptions present?
Refer to Section 574-504-200.
- 1.11 The 43 Paper Tape Unit must be used in conjunction with a 43 Teleprinter 5-Level Buffered Selective Calling Station, or similar controller. On-line tests are covered in How to Operate Manual 999-300-136.
- 1.12 On-line tests for the 43 Paper Tape Unit can be simulated using the test arrangement shown in 2. TEST EQUIPMENT.
- 1.13 When ordering replaceable parts, unless otherwise specified prefix each part number with the letters "TP" (ie, TP430047).

2. TEST EQUIPMENT

2.01 To simulate on-line tests, the following test arrangement should be made locally.

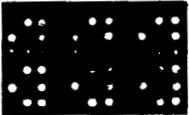


3. TESTING PROCEDURES

3.01 The following off-line tests will check the basic operability of the Paper Tape-Unit without the use of a test device or external communications device. All features of the PT Unit except the EIA interface and response to start and stop control codes can be checked with these procedures. The response to start and stop control codes can be checked with an associated Buffered 43 Five-Level Teleprinter.

OFF-LINE TESTS (Installation and Trouble Call Checkout)

Manual — Automatic

| TEST | STEP | PROCEDURE | RESPONSE |
|--------------------------|------|--|---|
| | | A. Insert tape roll in unit. B. Thread tape through punch block. C. CPS switch in 30 CPS position. | |
| Power On | 1 | With PUNCH and READER switches Off. Plug ac cord into 110 Vac. Turn on power switch. | GREEN Power indicator lamp lights and motor starts. |
| | 2 | Operate the Feed switch. | Punch will perforate feed holes and advance tape as long as switch is held operated. |
| SPA1-3 Self-Test Message | 3 | Place "Copy" switch in LOCAL position. Enable SPA1-3 to on. Operate PUNCH switch to On. | Punch will perforate self-test message:  |
| | | Return PUNCH switch to Off. | Punch stops perforating tape. Motor shuts off after approx. 30 seconds. |
| Low Tape Alarm | 4 | Operate SPA1-3 to OFF. Enable SPA1-4 to ON. Operate PUNCH control switch to On. Lift out tape roll. | Punch lamp will blink. |
| Punch Backspace | 5 | Replace tape roll. Operate Back Space switch. | Tape will reverse feed one character space for each operation. Punch lamp will turn off each time the switch is operated. |

SECTION 574-504-500

OFF-LINE TESTS (Installation and Trouble Call Checkout) (Contd)

Manual — Automatic (Contd)

| TEST | STEP | PROCEDURE | RESPONSE |
|-------------|------|---|---|
| Tape Out | 6 | Operate PUNCH and READER switches Off. Place perforated tape in reader. (Tape obtained from self-test or pre-punched message .) | Reader lamp does not light. Reader does not sense tape. |
| | | Operate READER switch from Off to Auto. | Reader lamp lights. Reader steps and reads tape. |
| | | Operate READER switch to On. | Reader stops. Reader lamp blinks. |
| Tight Tape | 7 | Operate READER switch to Off. Place tape in Reader. Operate READER switch from Off to On and back to Auto. | Reader lamp lights. Reader steps and reads tape. |
| | | Lift tight tape arm. | Reader stops. Reader lamp will blink. |
| | | Release tight tape arm. | Reader resumes reading tape. Reader lamp remains ON. |
| | | Operate READER switch to Off. | Reader lamp turns OFF. Reader stops reading tape. |
| Reader Step | 8 | Operate PUNCH switch to On. Operate READER switch to Off. Place message tape in Reader. Operate Step switch. | Reader will advance one character space. Punch will perforate transmitted character. |
| Reader Skip | 9 | Operate Skip switch. | Reader advances one character space. Punch does not perforate character or move one character space. |

- 3.02 Turn off power to the PTU and connect the test arrangement shown in paragraph 2 to the Interface Connector at rear of PTU.

SIMULATED ON-LINE TESTS (Loopback)

| TEST | STEP | PROCEDURE | RESPONSE |
|--|------|--|--|
| Option 453A Receiver Ready Off Request to Send Off Tape Alarm Off | 1 | Place tape in punch and reader. Place "Copy" switch in NORM position. Place PT POWER switch Off. Place PUNCH and READER switch Off. Place CPS switch in 30 CPS position. Place all switches on test arrangement closed. Turn on PT POWER switch. | Motor starts. Power indicator lamp lights. -12V will be present on interface pins 4, 18, 19. +5V will be present on interface pin 17. |
| Receive Reader On | 2 | Operate PUNCH switch to On position. | Punch lamp lights. +12V will be present on interface pin 19. |
| Request to Send On Characters Per Sec. On Send and Receive Data | 3 | Operate Reader switch to On position. | Reader lamp lights. Reader starts transmitting at 10 CPS. (Approx. 2 ft of tape in 24 seconds). Punch receives data from reader and perforates tape. +12V will be present on interface pin 4. |
| Data Set Ready Off | 4 | Open Lead 6 (DSR). | Punch and reader stop. Lamps OFF. -12V will be present on interface pins 4 and 19. |
| Character per Sec. Off | 5 | Close Lead 6 (DSR). Open Lead 23 (CPS). Operate PUNCH and READER switches to On (if not already on). | Punch and reader start. Lamps on. Data is transmitted at 30 CPS (approx. 2 ft of tape in 8 seconds). |

SIMULATED ON-LINE TESTS (Loopback) (Contd)

| TEST | STEP | PROCEDURE | RESPONSE |
|----------------------------------|------|--|--|
| Receiver Enable Off | 6 | Open Lead 8 (RE). | Punch stops perforating (Punch Lamp OFF). Reader continues to send. |
| Clear to Send and Device Control | 7 | Open Lead 5 (CTS). | Reader continues to send. |
| | 7a | Close Lead 5 (CTS). Open Lead 24 (DC). | Reader continues to send. |
| | 7b | Open Lead 5 (CTS). | Reader stops transmitting. Punch and reader lamps remain ON. |
| Tape Alarm | 8 | Remove tape from tape supply. | +12V will be present on interface pin 18. -12V will be present on interface pin 19. |
| Printer Off | 9 | Operate "Copy" switch to PTR OFF/LOCAL position. | 0V will be present on interface pin 17. |

43 5-LEVEL PAPER TAPE UNIT
DISASSEMBLY/REASSEMBLY

| CONTENTS | PAGE |
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| 1. GENERAL | 1 |
| 2. TOOLS REQUIRED | 2 |
| 3. DISASSEMBLY/REASSEMBLY..... | 2 |
| Replace of Fuses and Access to Variable Feature Switches..... | 2 |
| Punch and Reader Assembly with Motor | 3 |
| 410711 Logic Card | 5 |
| Power Supply and Rear Frame Assembly | 5 |
| Transport Assemblies | 6 |
| Punch Assembly | 8 |
| Reader Assembly..... | 9 |

1. GENERAL

1.01 The procedures provided in this section break the PTU down into subcomponents. The appropriate parts sections illustrate the arrangement of subcomponents and parts.

Caution: Remove all power from the PTU before performing any component replacement.

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

1.03 When removing a major component or part from the PTU, do not pry or force parts to provide the necessary clearance for removal. Follow the removal procedure and note how each part is removed and the sequence of its removal so that proper reassembly can be accom-

plished. For reassembly, reverse the removal procedure except where different instructions are given.

1.04 Reference in the procedures to left and right and up or down and top or bottom, etc, refer to the paper tape unit in its normal operating position.

1.05 Refer to Maintenance Tools, Section 570-005-800 for a complete listing of the various types of hand tools available for maintenance of Teletype Corporation equipment. For a listing of the tools required to perform the disassembly/reassembly procedures, refer to 2. TOOLS REQUIRED.

1.06 All ordering numbers shown in this manual are Teletype Corporation part numbers.

1.07 Some parts that are not listed in the parts index are shown as necessary to the disassembly procedures such as screws, ring retainers, etc. Most of these parts are common to other Teletype Corporation product lines and, if needed, may already be available in field repair kits or can be ordered.

1.08 Containers and packing materials retained from maintenance spares should be saved and reused when returning defective components for repair.

1.09 Adjustment information is provided in Punch Unit adjustments and Spring Tensions, Section 574-505-700, and Reader Unit adjustments and Spring Tensions, Section 574-506-700.

Note: When ordering replaceable components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410205).

2. TOOLS REQUIRED

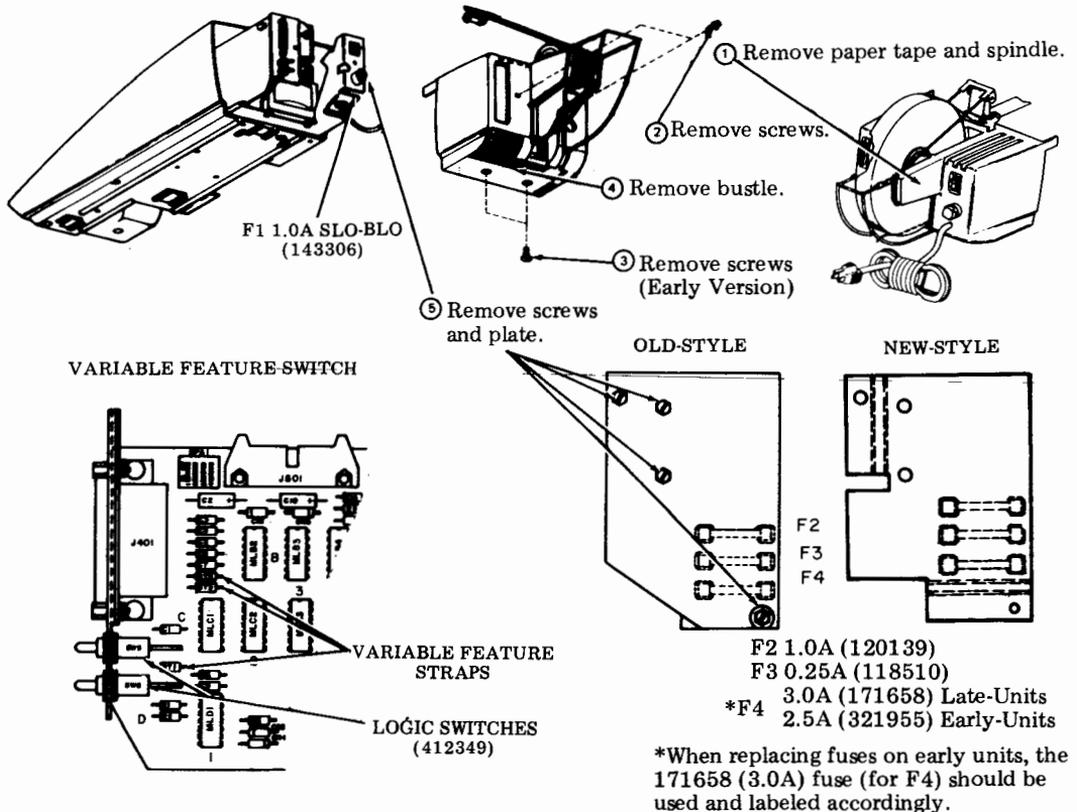
2.01 The following tools may be required when performing the disassembly/reassembly procedure. Most of these items should normally be present in standard maintenance tool kits (refer to Section 570-005-800).

| PART NO. | TOOLS |
|----------|------------------------------|
| 124682 | Hex key wrench, 1/16 inch |
| 104457 | Hex key wrench (.050) |
| 159841 | Hex key wrench (.093) |
| 100982 | Screwdriver/w clip, 1/4 inch |
| 89994 | Assembly wrench, 1/4 inch |
| 129534 | Wrench, 3/16 x 1/4 open end |
| 152835 | Wrench, 5/16 x 3/8 open end |
| 129536 | Wrench, 7/16 x 1/2 open end |

3. DISASSEMBLY/REASSEMBLY

Replacement of Fuses for Access to Variable Feature Switches

3.01 To replace fuses or gain access to variable feature switches:

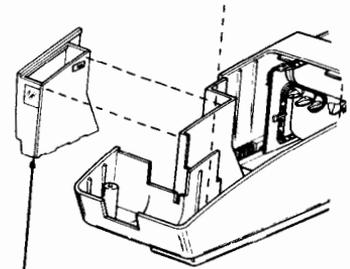
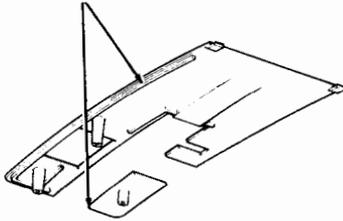


Punch and Reader Assembly with Motor

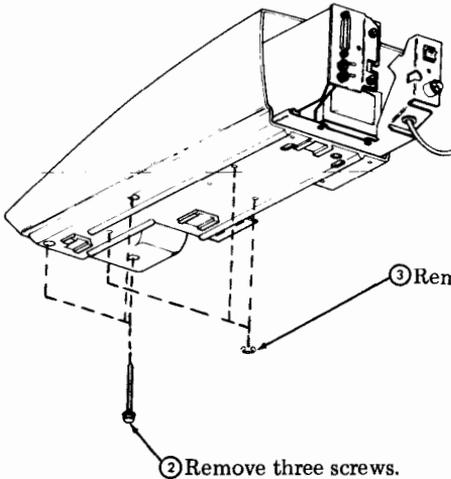
3.02 To remove punch and reader with motor:

Remove main cover, wind cover and chad box.

④ Remove main and wind cover.



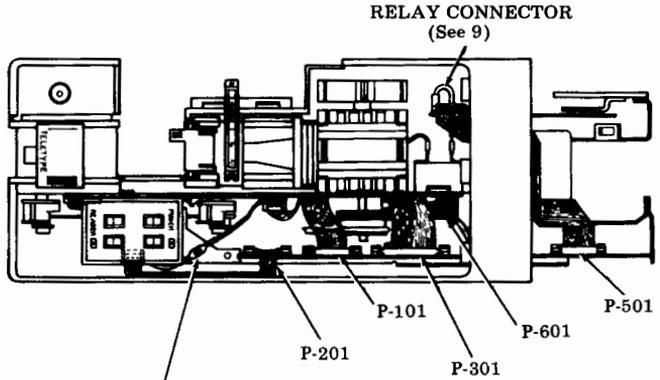
① Remove chad box.
(Pull to left and up)



③ Remove three retaining rings.

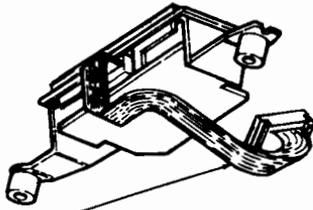
② Remove three screws.

430618 securing main cover (2).
180675 securing wing cover (1).



- ⑤ Loosen screw (nut on later units) and remove ground strap running from punch frame (412390 strap).

Note: Steps 11 and 12 need no be performed to remove Punch and Reader.



- ⑥ Disconnect cable connector P201 from logic card and lift out switch assembly.

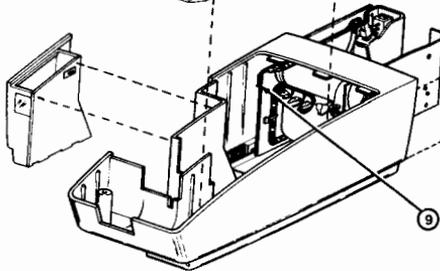
- ⑧ Remove power supply ac cable connector (P-601).

PUNCH AND READER ASSEMBLY

- ⑩ Remove punch and reader assembly from housing. Lift straight up.

- ⑦ Remove cable connectors from logic card.

- ⑪ Remove 2 circuit card bracket screws.



- ⑨ Remove relay cable connector located at front of power supply circuit card.

- ⑫ Slide logic card rearward out of plastic guides and housing.

Note: During reassembly, be certain that the reader tight tape arm remains outside the opening in the cover.

410711 Logic Card

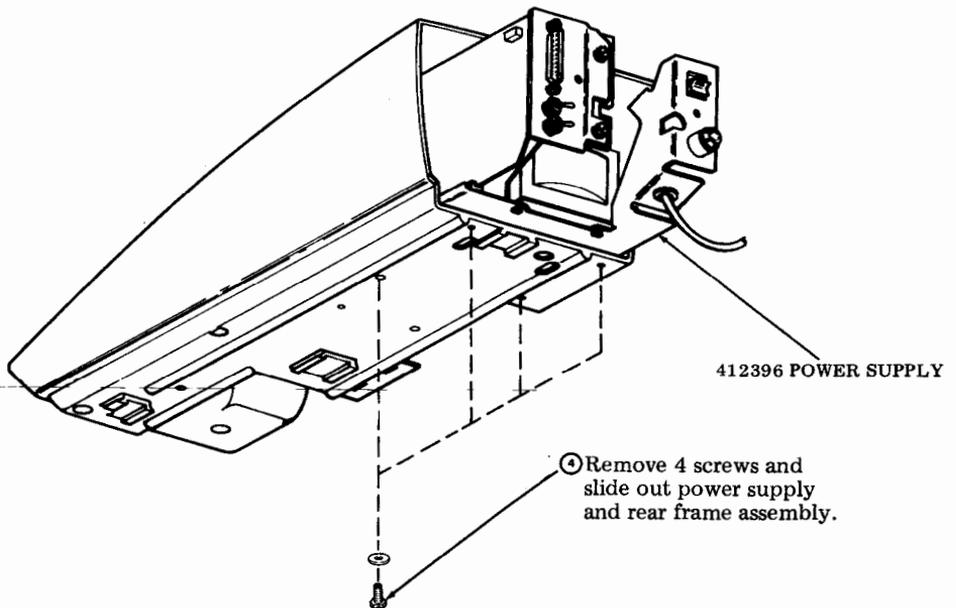
3.03 To remove the 410711 logic card assembly:

- ① Remove bustle and guard assembly. Perform 3.01, Steps 1 through 4.
- ② Remove covers. Perform 3.02, Steps 1 through 4.
- ③ Remove logic card. Perform 3.02, Steps 5, 6, 7, 11 and 12.

Power Supply and Rear Frame Assembly

3.04 To remove the power supply and rear frame assembly:

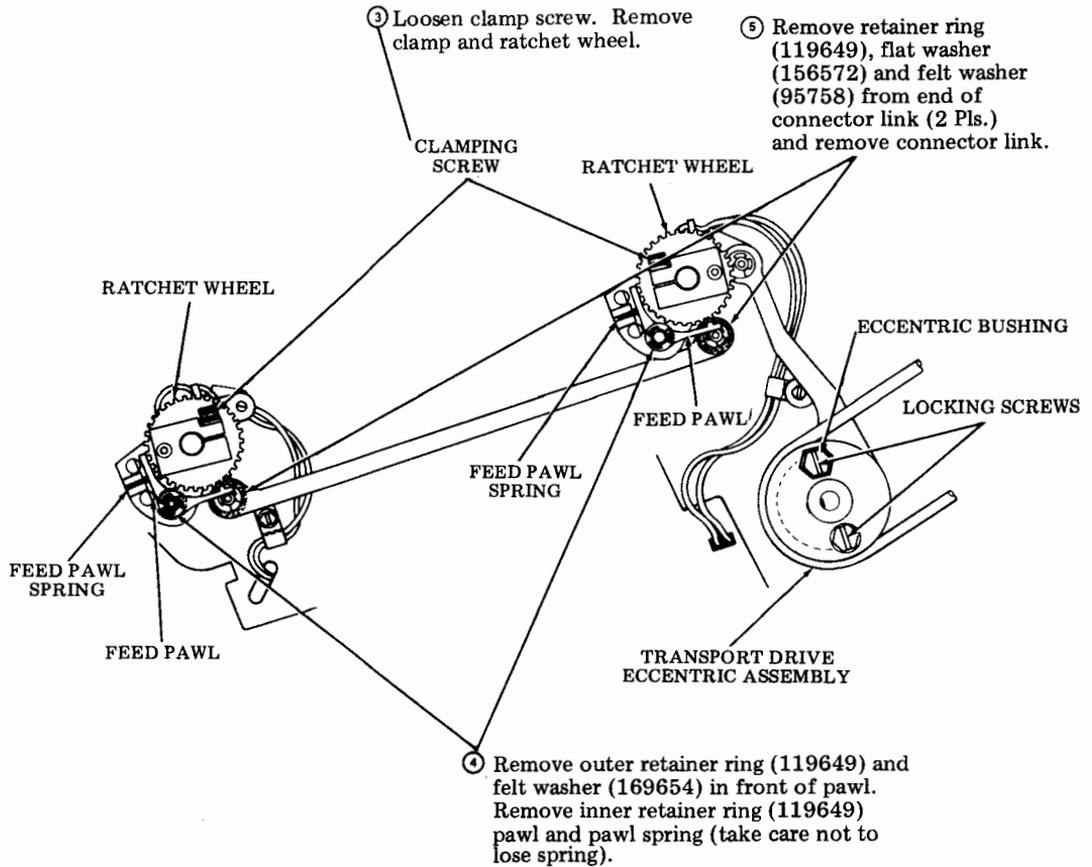
- ① Remove bustle and guard assembly. Perform 3.01, Steps 1 through 4.
- ② Remove covers and chad box. Perform 3.02, Steps 1 through 4.
- ③ Remove punch and reader assembly and logic card. Perform 3.02, Steps 5 through 12.



Transport Assemblies

3.05 To remove transport assemblies:

- ① Remove paper tape. Perform 3.01, Step 1.
- ② Remove punch and reader assembly. Perform 3.02, Steps 1 through 10.

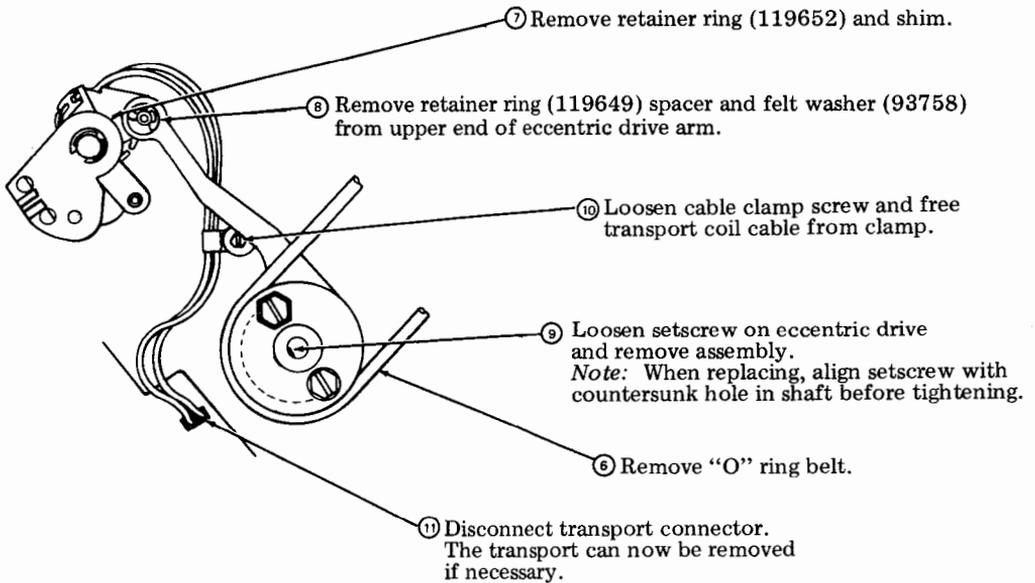


Note: When replacing, carefully compress spring in hole as pawl is moved onto post in front of spring.

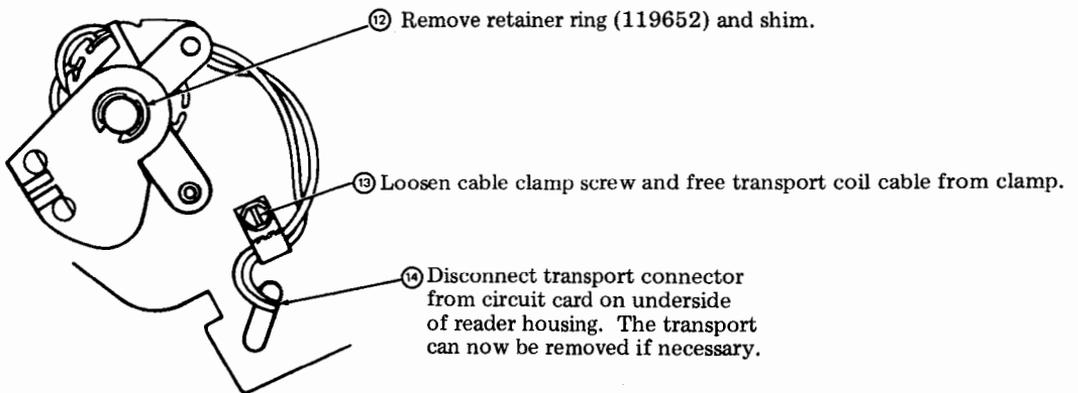
Steps 6 through 11 for Punch transport.

Steps 12 through 14 for Reader transport.

To remove punch transport assembly:



To remove reader transport assembly:



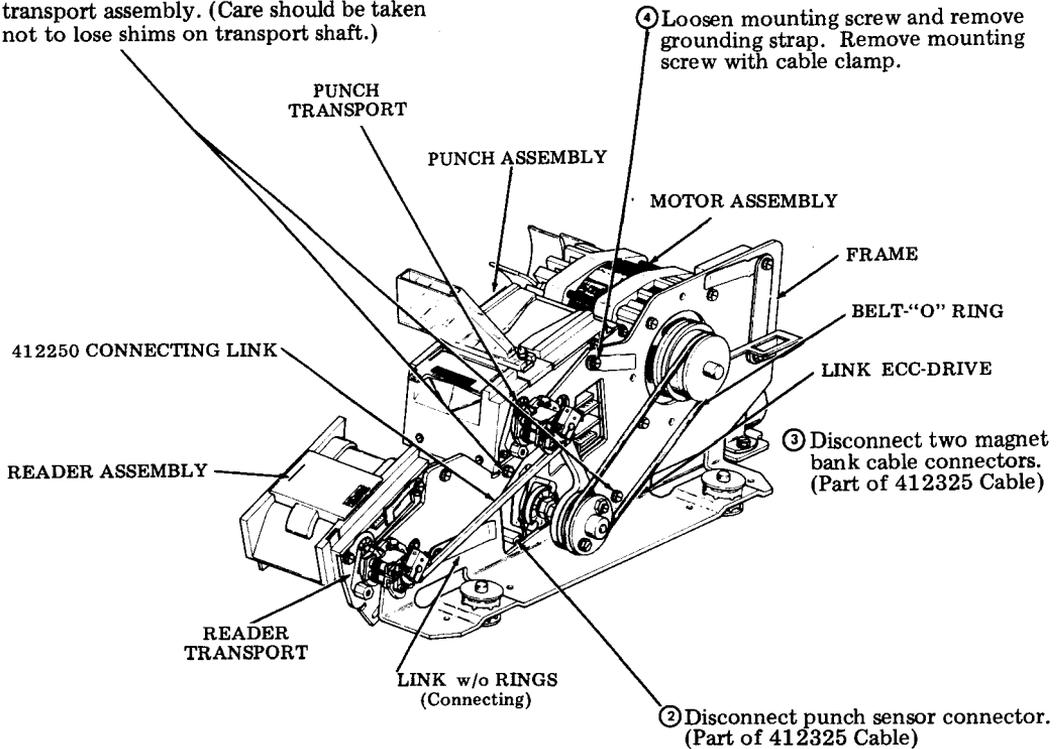
SECTION 574-504-720

Punch Assembly

3.06 To remove punch assembly:

① Perform paragraph 3.05 Steps 1, 2, 3, 6, 7, 9, 10 and 11.

⑤ Remove two remaining mounting screws. Move punch assembly to left away from center frame, disconnecting link from transport assembly. (Care should be taken not to lose shims on transport shaft.)



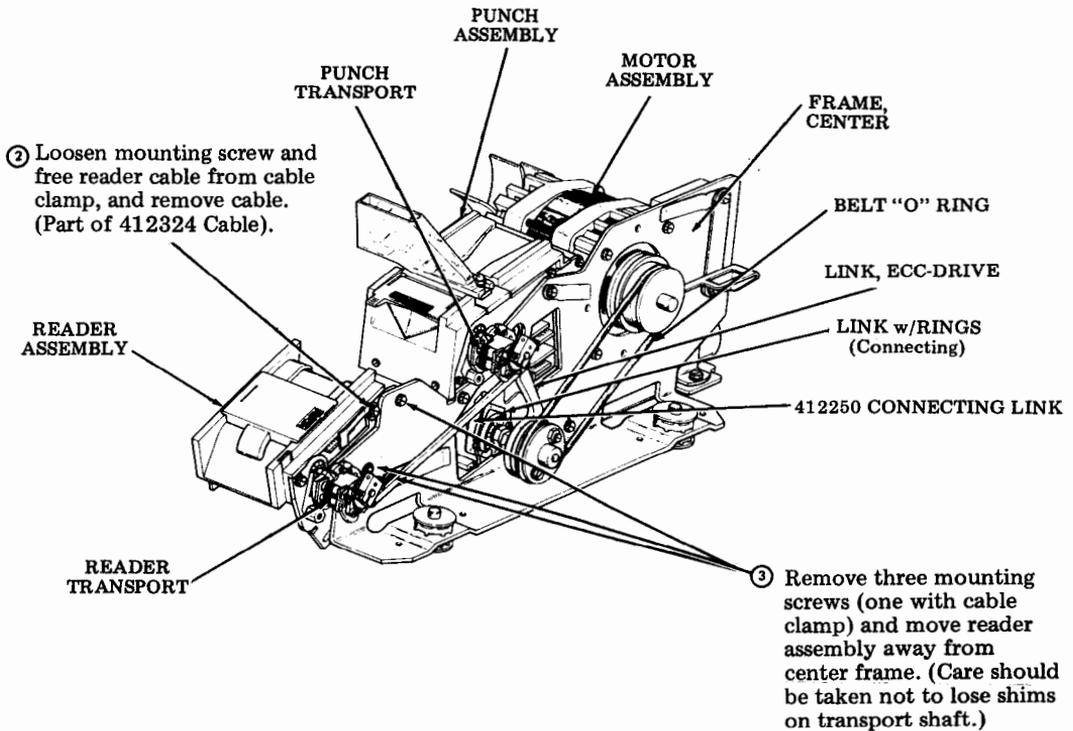
Note 1: In reassembly, the Feed Pawl and Ratchet Wheel Engagement adjustment must be made.

Note 2: In reassembly connect link to transport assembly while mounting punch to center frame.

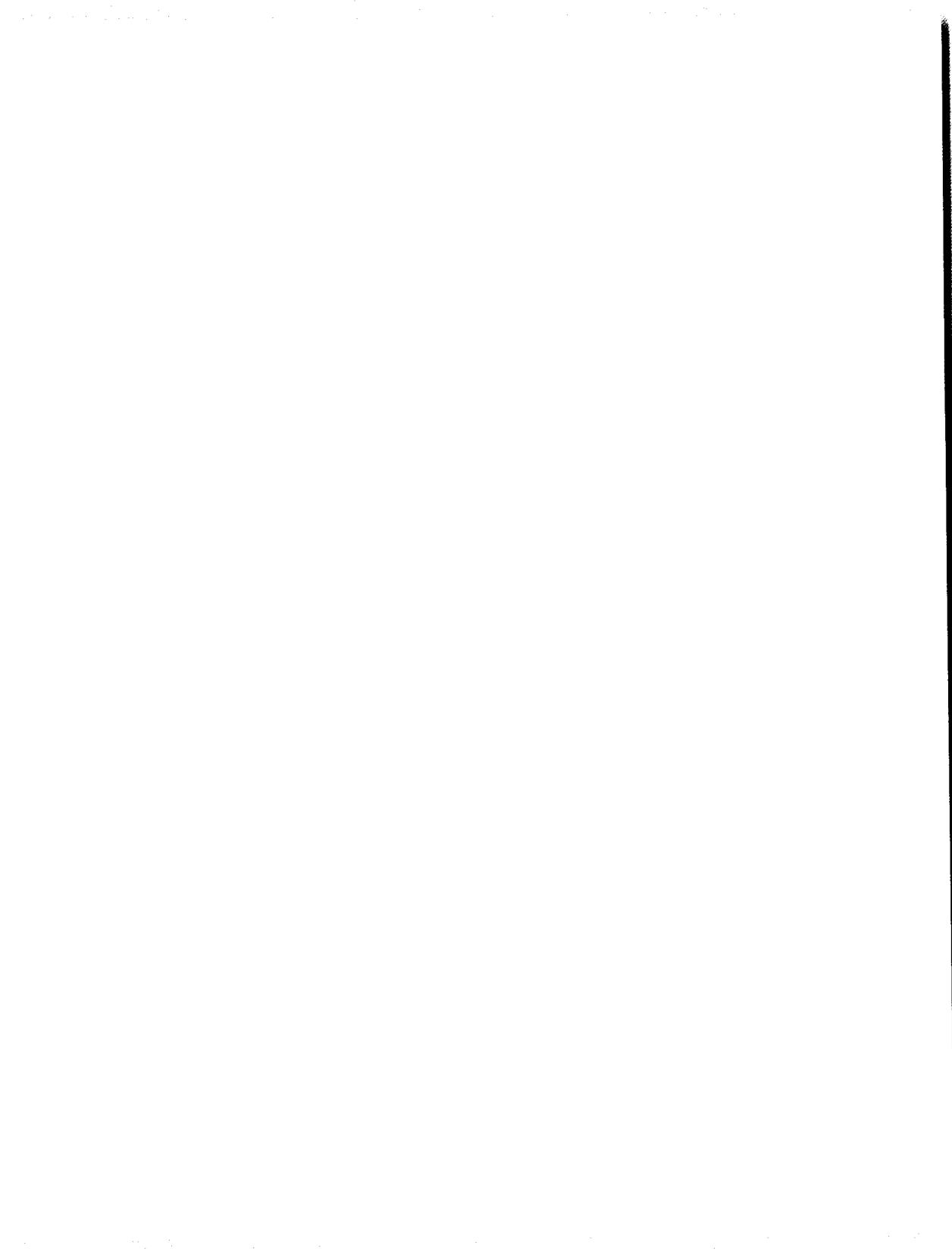
Reader Assembly

3.07 To remove reader assembly

- ① Perform paragraph 3.05, Steps 1, 2, 3, 12, 13, and 14.



Note: In reassembly, the Feed Pawl and Ratchet Wheel Engagement adjustment must be made.



43 5-LEVEL PAPER TAPE UNIT

ROUTINE MAINTENANCE

1. GENERAL

1.01 This section provides routine maintenance procedures for the 43 Paper Tape (PT) Punch and Reader.

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

1.03 A routine maintenance should be performed, at the convenience of the customer, at least once a year.*

1.04 Routine maintenance consists of visual checks, lubrication*, and cleaning. When performed at routine intervals, the possibility of later troubles will be reduced.

1.05 Following the routine maintenance, a local and on-line installation checkout should be performed. The routine maintenance data should be filled out and recorded locally.

1.06 When ordering replaceable parts, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP430407).

*Lubrication of the punch and reader should be performed every six months or 500 operating hours (whichever occurs earlier).

2. VISUAL CHECKS

2.01 The following areas should be checked for mechanical condition:

- (a) Loose punch drive "O" ring belt.
- (b) All cable connectors fully seated.

3. LUBRICATION

3.01 Before lubrication, the punch and reader assembly must be removed from the

housing. (See Section 574-504-720.) Apply lubricants to points as indicated in Sections 574-505-710 and 574-506-710.

3.02 On small parts a minimum amount of lubricant should be applied so that the lubricant remains on the parts and does not run off.

3.03 Excessive lubricant should be removed with a dry, lint free cloth.

4. CLEANING AND APPEARANCE

4.01 Examine exterior areas for smudges, dust, etc.

4.02 Check proper fit of cover. Replace extremely damaged or discolored cover, housing, bustle, etc.

4.03 Exterior cleaning should normally be limited to wiping with a soft cloth moistened with a mild detergent. However, in case of ink stained plastic surfaces, a waterless (non-abrasive) hand cleaner or a lather from abrasive bar soap applied with a cloth should be used.

4.04 Interior areas should be examined with the cover removed and accumulations of paper tape dust cleaned by carefully brushing loose material onto a cloth.

4.05 Periodically check and remove any paper dust which may have accumulated on the plastic windows in the reader housing and lid.

4.06 If the punch block is packed with chad such that tape cannot easily be threaded into the punch clear out the punch block with cleaning tool.

Warning: Do not allow solvents to contact plastic surfaces.



43 5-LEVEL PAPER TAPE UNIT

PARTS

| CONTENTS | PAGE |
|--|------|
| 1. GENERAL | 1 |
| 2. PARTS | 2 |
| 3. NUMERICAL INDEX..... | 4 |
| 1. GENERAL | |
| 1.01 Information on maintenance spare parts is provided in this section for the 43 Paper Tape Unit. | |
| 1.02 Whenever this section is reissued, the reason for reissue will be listed in this paragraph. | |
| 1.03 This section is provided to identify the Teletype Corporation part number and location of recommended spares that should be available and may be required to correct a trouble. | |
| 1.04 Part numbers are listed in the index in numerical order and indicate the page | |

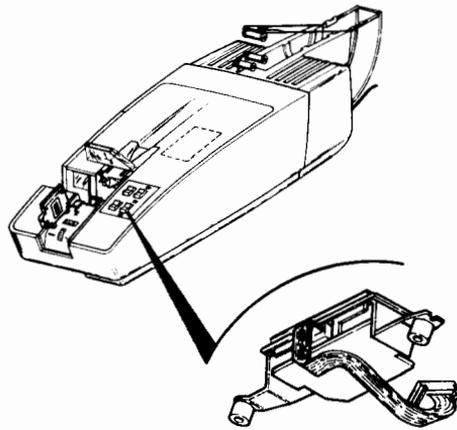
on which the parts appear. Asterisk numbers, stocked as "List 1", indicate a maintenance spare stocking ratio of one spare for the first twenty stations and an additional spare for each additional 30 stations in a maintenance area. Part numbers without asterisks, stocked as "List 2", indicate that one spare should be available in each maintenance area. Before ordering, verify that a particular spare is applicable to the type of terminal in service.

1.05 All ordering part numbers shown in this manual are Teletype Corporation part numbers.

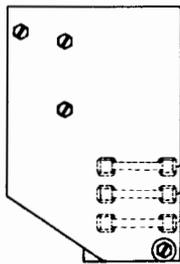
1.06 Troubleshooting and disassembly/reassembly information for these parts are covered in Section 574-504-300 and Section 574-504-720 respectively.

1.07 When ordering replaceable parts, unless otherwise specified prefix each part number with the letters "TP" (ie,TP430047).

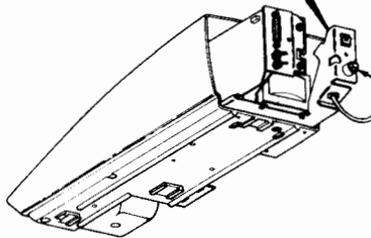
2. PARTS



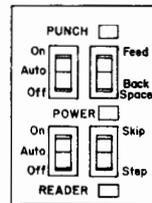
MODE SWITCH
(BOTTOM VIEW)



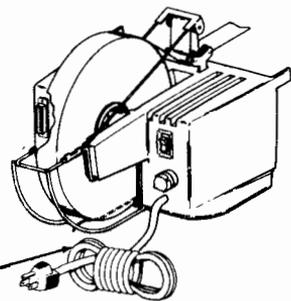
- F2 1.0A, 120139
- F3 0.25A, 118510
- F4 2.5A, 321955 - Early Units
3.0A, 171658 - Late Units



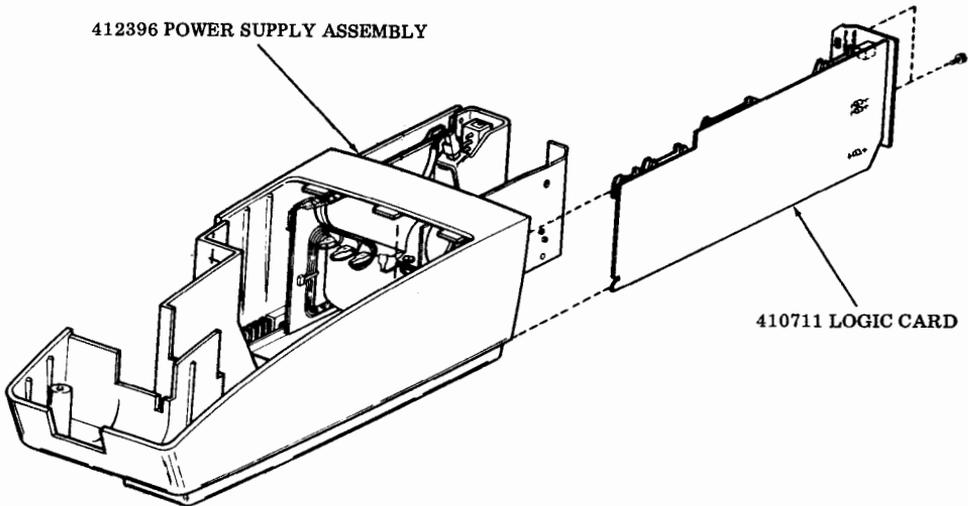
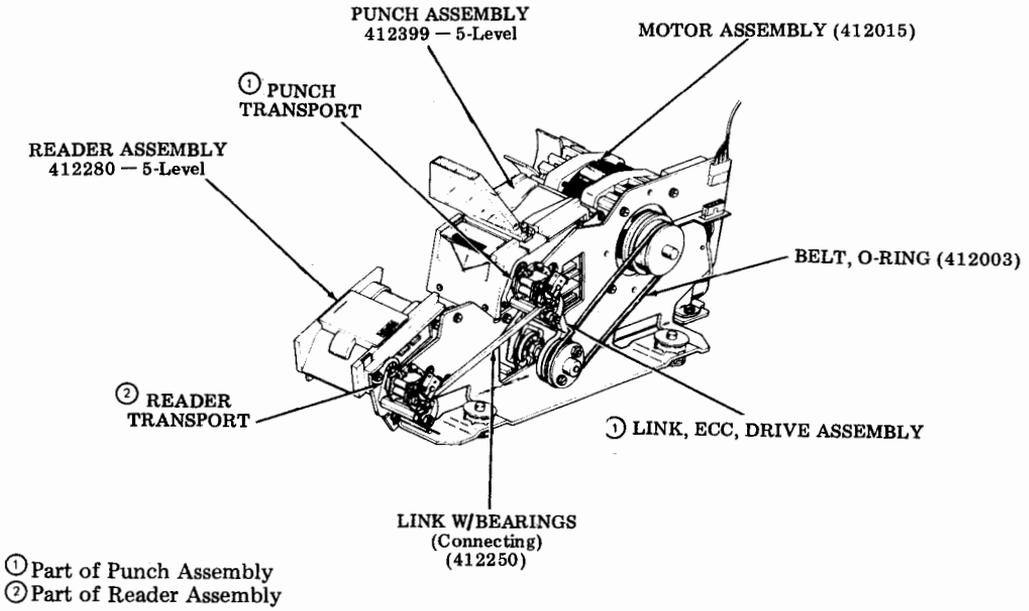
143306
MAIN FUSE
F1 1.0A SLO-BLO



(412336)
MANUAL &
AUTOMATIC



POWER CORD
(412313)



SECTION 574-504-800

3. NUMERICAL INDEX

| PART NUMBER OR UNIT CODE | DESCRIPTION |
|-----------------------------|----------------------------------|
| 118510* (5) | Fuse, 0.25A Power Supply F3 |
| 120139* (5) | Fuse, 1.0A (Power Supply) F2 |
| 143306* (5) | Fuse, 1.0A Slo-Blo (R. Frame) F1 |
| 171658* (5) | Fuse, 3.0A (Power Supply) F4 |
| 410711* | Logic Card Assembly |
| 412003* | Belt, O-Ring |
| 412015* | Motor Assembly |
| 412280* | Reader Assembly |
| 412336* | Switch Assembly (Manual-Auto) |
| 412390* | Ground Strap |
| 412396* | Power Supply Assembly |
| 412399* | Punch Assembly |

*A maintenance spare stocking ratio of one spare for the first twenty stations and one additional spare for each additional 30 stations in a maintenance area.

Note 1: One spare should be available in each maintenance area.

Note 2: Numbers in parentheses indicate a quantity of parts that is considered one maintenance spare.

43 TELEPRINTER 5-LEVEL PAPER TAPE PUNCH ASSEMBLY

TROUBLESHOOTING

1. GENERAL

1.01 This section provides troubleshooting information for 43 Teleprinter 5-Level Paper Tape Punch Assembly.

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

1.03 Punch troubleshooting is initiated by the 43 Teleprinter 5-Level Paper Tape Unit, Troubleshooting, Section 574-504-300 when trouble in the punch is suspected from symptoms observed.

1.04 Analysis in this section is limited to isolation of the trouble within the punch up to its electrical interface to the PTU set logic card. Where analysis indicates the trouble is not in the punch, return to Section 574-504-300 for further analysis.

1.05 The 412399 punch assembly and 410711 logic card are returnable to Western Electric Service Center for repair.

1.06 Isolation and correction of troubles is based on electrical checks and parts replacement.

Reference sections are:

| | |
|--------------------------------|------------------------|
| 574-505-400 | Wiring |
| 574-504-720 and 574-505-720 | Disassembly/Reassembly |
| 574-504-800 and 574-505-800 | Parts |

1.07 A voltmeter is required for measuring voltages or checking continuity.

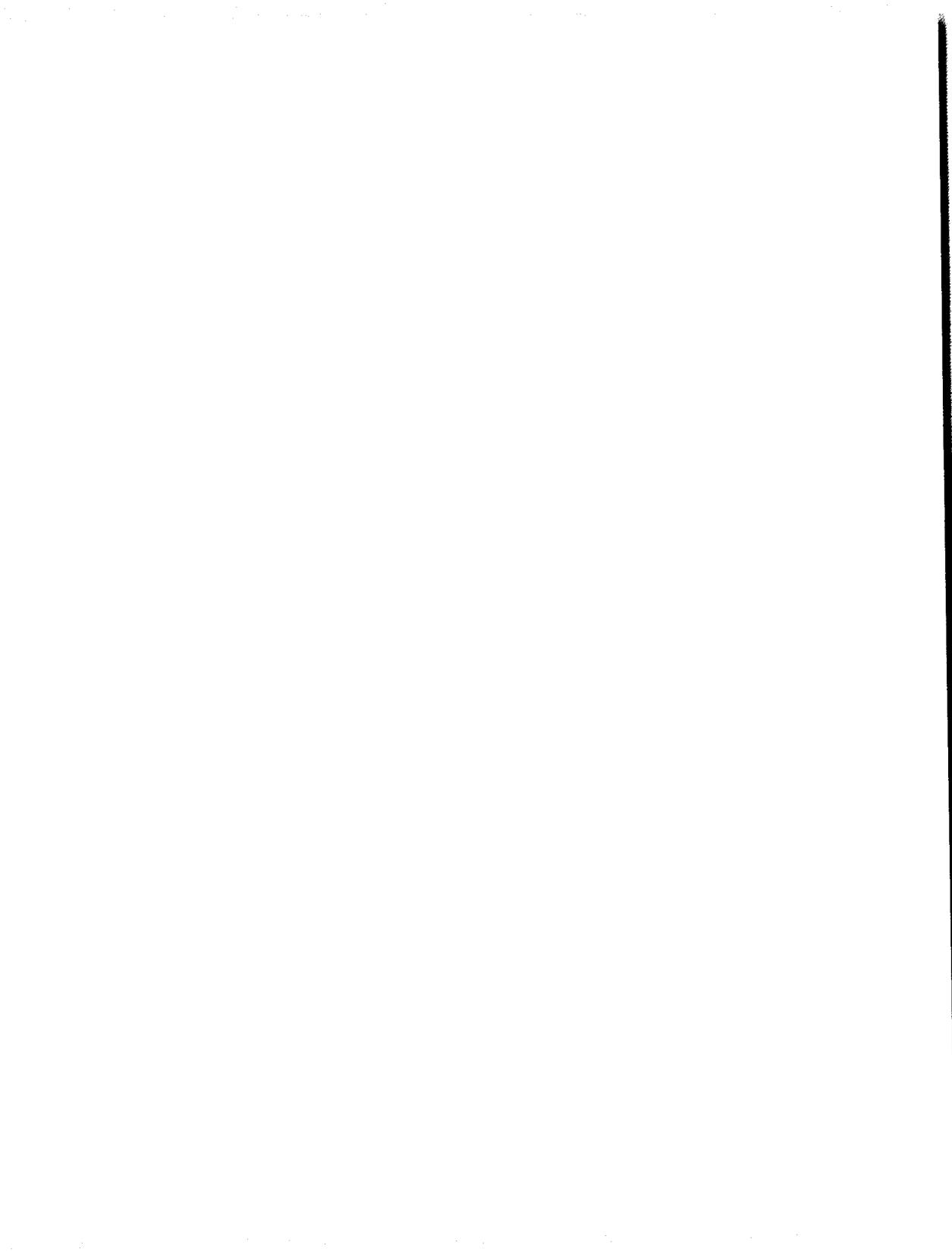
1.08 Trouble analysis is presented in the form of a "20 Questions" type of routine in paragraph 2. TROUBLESHOOTING GUIDE. The guide, with questions and yes and no column, should be used always starting with the first question and proceeding according to the "yes" and "no" directive.

1.09 When ordering, replaceable parts, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410047).

2. TROUBLESHOOTING GUIDE

| QUESTION | YES | NO |
|---|----------|--|
| 1 Can tape be threaded into punch? | Go to 2. | <p>Check for and remove chad from opening.</p> <p>Check bias spring (adjust or replace).</p> <p>Check for binding punch pins.</p> <p>Replace punch block.</p> |
| 2 Does punch feed tape with only feed holes perforated, when Feed switch is operated? | Go to 3. | <p>Check for mechanical binds (punch feed, pin, selector levers, armature, etc).</p> <p>Check continuity of feed magnet.</p> <p>Check transport detent spring tension.</p> <p>Check feed pawl and ratchet wheel adjustment.</p> <p>Tape supply bind.</p> <p>Replace punch block.</p> |
| 3 Are feed holes cleanly punched? (no burrs) | Go to 4. | <p>Check punch pin penetrations and feed wheel axial alignment adjustment.</p> <p>Check TTI.</p> <p>Replace punch block.</p> |
| 4 Does unit reverse feed properly when Backspace is operated? | Go to 5. | <p>Check adjustments -- (Feed pawl-pole face gap adjustment) (Feed pawl and ratchet wheel adjustment)</p> |

| QUESTION | YES | NO |
|--|-------------------------------|--|
| 5 Does unit perforate characters properly? (tape obtainable from self-test) | Go to 6. | <p>Check switch SPA1-3.</p> <p>Check variable feature 455.</p> <p>Check for mechanical binds (punch pins levers, armatures).</p> <p>Check continuity of magnet coils.</p> <p>Check adjustments - (punch pin penetration adjustment) (magnet bank position adjustment)</p> <p>Replace magnet bank.</p> <p>Replace punch unit.</p> |
| 6 Are perforations straight with respect to edge of tape? | Go to 7. | <p>Check tape entry guide adjustment.</p> <p>Check bias spring adjustment.</p> <p>Adjust or replace bias spring.</p> |
| 7 Does perforated tape meet 10 to the inch requirement? | Go to Section 574-504-300. | <p>Check for drag on tape roll.</p> <p>Check adjustments - (transport detent spring adjustment) (ten to inch adjustment) (Feed pawl and ratchet wheel adjustment) (Feed pawl-pole face gap adjustment)</p> |



43 TELEPRINTER 5-LEVEL PAPER TAPE PUNCH ASSEMBLY

WIRING

1. GENERAL

1.01 This section provides wiring information for the 43 Teleprinter 5-Level Paper Tape Punch Assembly.

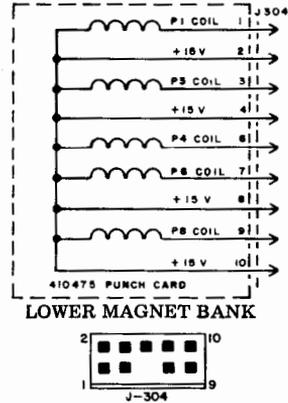
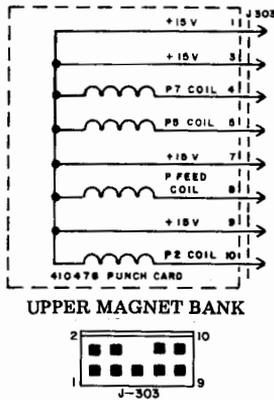
1.02 Whenever this section is reissued, the reason will be listed in this paragraph.

1.03 Related wiring information and cable connections to the logic card are shown in Section 574-504-400.

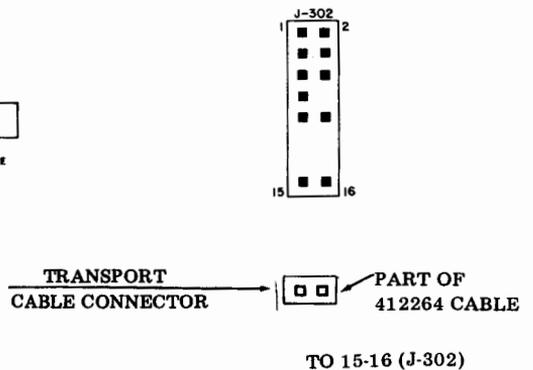
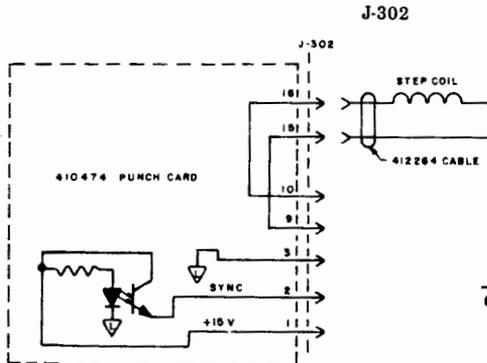
1.04 Designations on punch assembly wiring diagrams do not appear on the components.

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

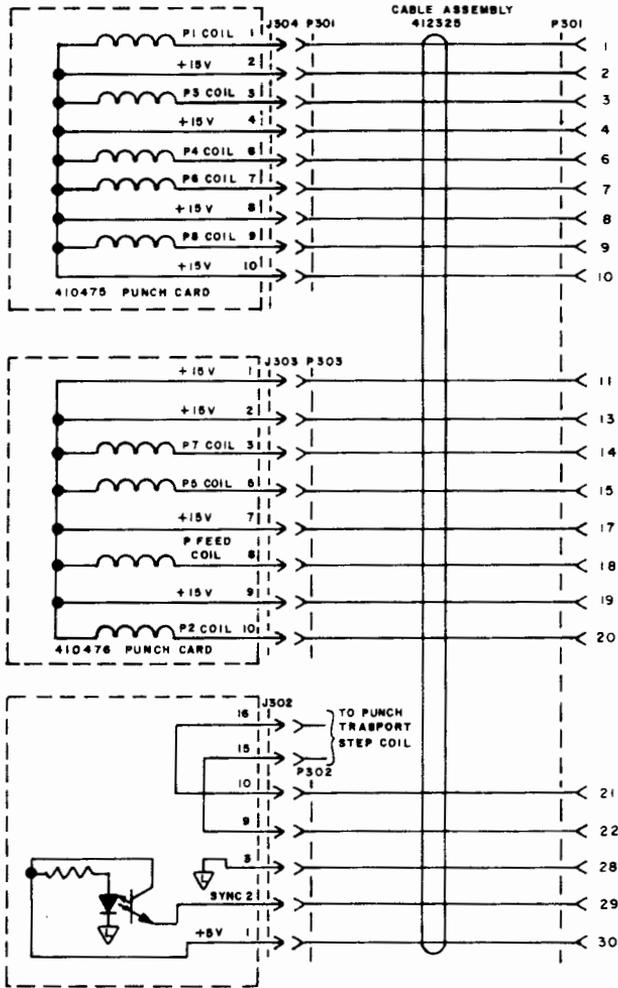
2. PUNCH WIRING



Note: Terminals numbered as viewed from connector end.



CONNECTOR P-301
TERMINAL NUMBERS



43 TELEPRINTER 5-LEVEL PAPER TAPE PUNCH ASSEMBLY
ADJUSTMENTS AND SPRING TENSIONS

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| 2. TOOLS REQUIRED | 1 |
| 3. PUNCH ADJUSTMENTS | 2 |
| Armature bank and magnet pole ... | 2 |
| Armature latch surface | 3 |
| Bail and pin penetration | 4 |
| Magnet bank position | 6 |
| Tape bias spring | 7 |
| Punch feed wheel axial alignment | 8 |
| Clock circuit card | 9 |
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| Transport drive eccentric | 12 |
| Ratchet wheel and feed pawl | 13 |
| Punch ten to the inch (TTI) (preliminary) | 14 |
| Punch ten to the inch (final) | 15 |
| Tape entry guide | 16 |
| 4. SPRING TENSIONS | 17 |
| SPRING IDENTIFICATION | 18 |

1.06 Adjustments should be checked and performed when a trouble indicates a specific adjustment may be out of tolerance or when an adjustment is disturbed to enable a part to be removed or replaced.

1.07 Spring tension checks should be performed when a trouble indicates a possible defective spring or to verify proper part numbers.

1.08 Springs that do not meet the tension requirements should be replaced.

1.09 When ordering, replaceable parts or components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410045).

2. TOOLS REQUIRED

2.01 Refer to Maintenance Tools Section 570-005-800 for a complete listing of various types of hand tools available for maintenance of Teletype Corporation equipment.

2.02 The following tools may be required when performing adjustments or spring tension checks. Most of these items should normally be present in standard maintenance tool kits.

| 1. GENERAL | <u>Part No.</u> | <u>Tools</u> |
|--|-----------------|---------------------------------|
| 1.01 This section provides punch adjustments and spring tensions. | 73404 | Wrench, Tommy |
| | 82711 | Scale, 64 ounce Spring |
| | 94647 | Screwdriver, 3-1/2" Blade |
| 1.02 Whenever this section is reissued, the reason will be listed in this paragraph. | 98631 | Scale, 50 Gram Spring |
| | 100982 | Screwdriver W/Clip |
| | 104457 | Wrench, Hex Key (0.050) |
| 1.03 Tensions are checked with a spring scale held at the angle shown in the illustration. | 110443 | Scale, 8 ounce Spring |
| | 110444 | Scale, 32 ounce Spring |
| | 117781 | Gauge Set |
| 1.04 After an adjustment is complete, tighten any screws or nuts loosened to make the adjustment. | 124682 | Wrench, Hex Key (1116) |
| | 125752 | Wrench, 3/16" Socket |
| | 129534 | Wrench, 3/16" and 1/4" Open End |
| | 129536 | Wrench, 7/16" and 1/2" Open End |
| 1.05 Reference in the procedure to left or right, up or down, and top or bottom, etc, refer to the punch in its normal operating position. | 142554 | Hook, Pull Spring |
| | 142555 | Hook, Push Spring |
| | 149836 | Punch Block Cleaner |

| Part No. | Tools |
|----------|---------------------------------|
| 153835 | Wrench, 5/16" and 3/8" Open End |
| 159841 | Wrench, Hex Key (0.093) |
| 302990 | Gauge, Tape |

3. PUNCH ADJUSTMENTS

ARMATURE BANK AND MAGNET POLE

(The magnet bank assembly should be removed from unit to check this adjustment and the Armature Latch Surface.)

Requirement 1

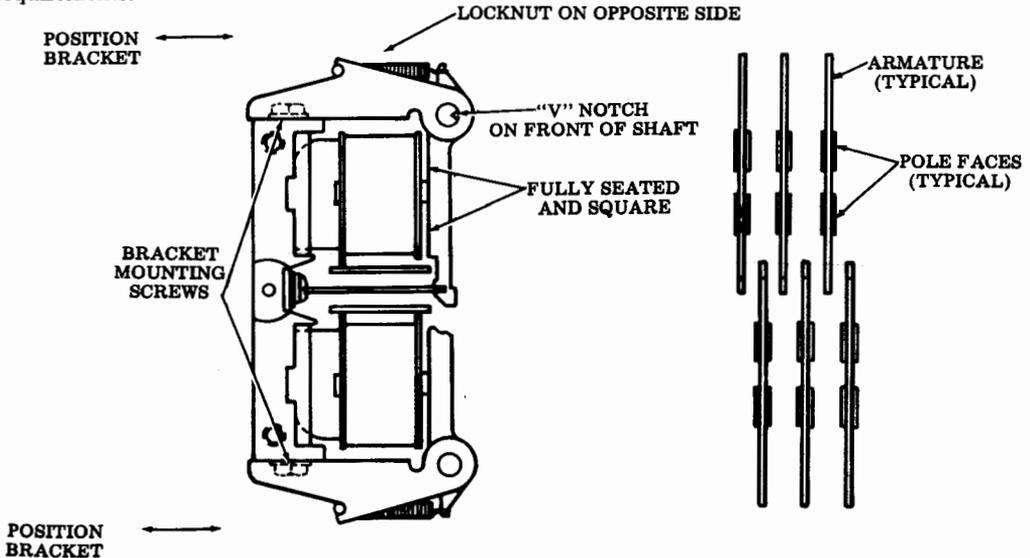
All armatures shall remain fully seated in their guide post slots during normal operation of the magnet assembly.

Requirement 2

All armatures shall be centered, parallel to, and square with their respective magnet poles in the fully attracted position.

To Adjust

With the armature bank bracket mounting screws friction tight and armature held manually in their fully attracted position against their respective magnet poles, position the bracket to meet the requirements.



Note: Before making this adjustment the upper armature eccentric guide post should be oriented so that its "V" notch is at three o'clock when viewing magnet assembly from No. 2 armature end as shown. If not, loosen guide post lock nut and rotate "V" notch to three o'clock position.

Related adjustment: Magnetic bank position.

ARMATURE LATCH SURFACE

(Magnet bank assembly removed from unit.)

Requirement

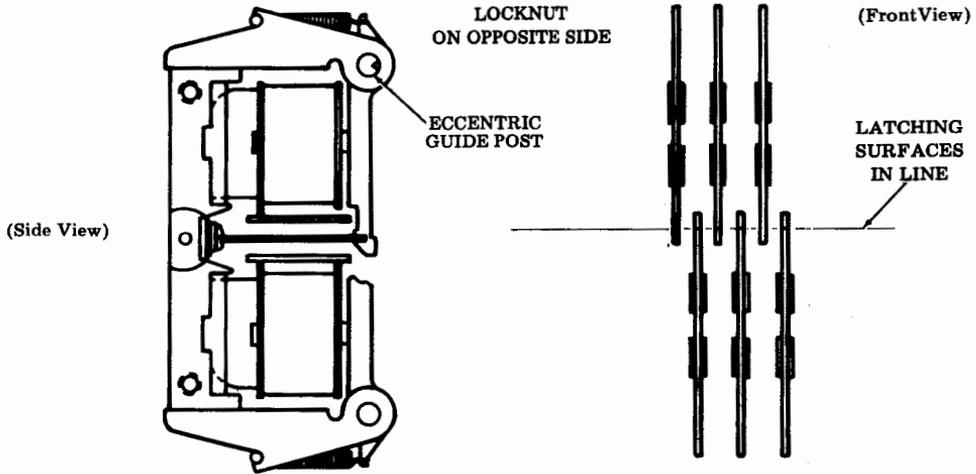
The latching surfaces of all armatures of the upper and lower magnet banks shall be in line in their fully attracted position, as gauged by eye.

To Check

Lay straight edge along latching surfaces and observe alignment by eye.

To Adjust

With the upper armature eccentric guide post lock nut friction tight, rotate the guide post to meet the requirement.



Note: Utilize a 73404 tommy wrench in the guide post adjusting hole to effect rotation.

Recheck ARMATURE BANK AND MAGNET POLE adjustment and refine, if necessary.

BAIL AND PIN PENETRATION

Note: It is recommended that these adjustments be made before the magnet bank is installed (if it has been removed). The selector levers must be in engagement with the punch pins. However, the adjustment can be made in the same manner with a fully assembled unit (magnet back installed).

Step 1: Bail Eccentric Position

Requirement

The notch on the bail eccentric shall be oriented, as gauged by eye, to 10 o'clock as indicated in the figure below.

To Adjust

With the locking nut friction tight rotate the eccentric to meet the requirement. Tighten the locking nut.

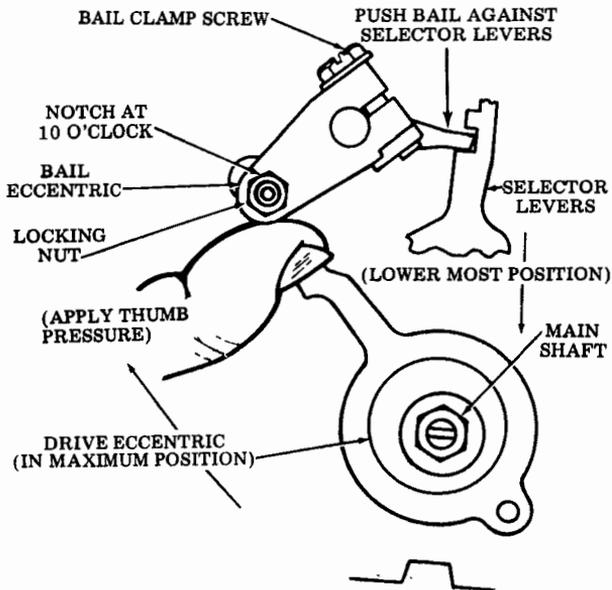
Step 2: Bail Adjustment

Requirement

When the drive eccentric passes through its maximum position, as indicated in the figure below, the bail shall drive the selector levers to their lowest position without allowing the bail to bottom on the selector levers. If you can feel the bail bottom on the selector levers readjustment is necessary.

To Adjust

With the bail clamp screw loose and the selector levers selected; (this occurs automatically before the magnet bank is installed. In a fully assembled unit this is done by energizing the magnets or manually depressing the armatures) apply thumb pressure on the bail eccentric towards the 10 o'clock position as shown. This assures that the drive eccentric is at its maximum position. While maintaining this pressure force the bail down against the selector levers. Tighten the bail clamp screw.



Step 3: Pin Penetration Adjustment

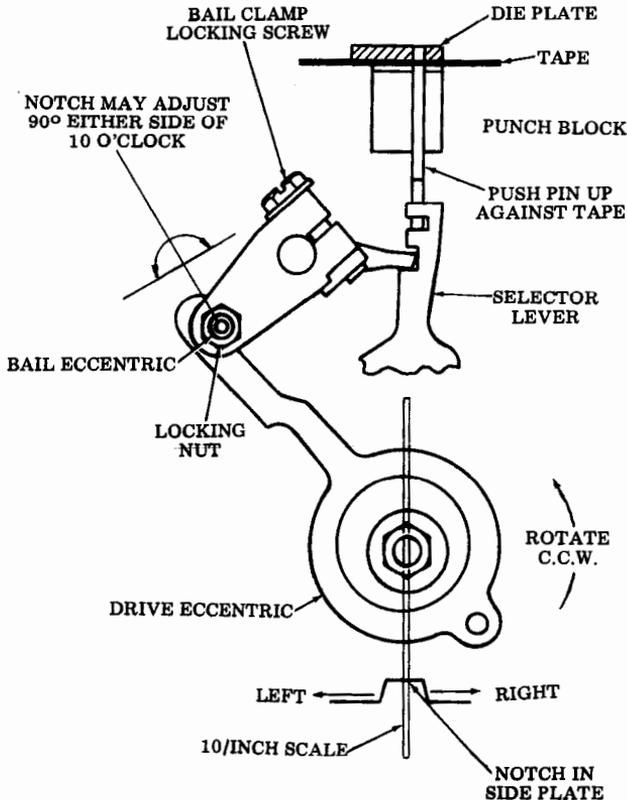
Requirement

With a piece of 0.004 blank paper tape in the punch and the selector levers selected rotate the mainshaft counterclockwise when viewed as shown. When resistance is felt the tape is up against the die plate ready to be punched. At this position a "10 inch scale" when placed in the slot of the mainshaft shall align, as gauged by eye, with the notch in the bottom of the side plate. Also punch holes in tape to verify.

To Adjust

Loosen bail clamp screw and with the bail eccentric locking nut friction tight proceed as follows: If the scale aligned to the right of the notch, rotate the bail eccentric clockwise to increase penetration. If the scale aligned to the left of the notch, rotate the bail eccentric counterclockwise to decrease penetration. (Rotate the bail eccentric in increments of five degrees or less.) Tighten the bail eccentric locking nut making sure that the bail does not rotate. Leave the bail clamp screw loose and repeat the bail adjustment (Step 2).

Related adjustment: Magnetic bank position.



MAGNET BANK POSITION

Requirement 1:

When the armatures are not energized, the clearance between the bail and selector levers should be
Min 0.005 inch---Max 0.013 inch
as shown by clearance "A". Confirm minimum gap by biasing selector levers to left at their pivot and
visually check for clearance between bail and selector levers at "A".

To Adjust

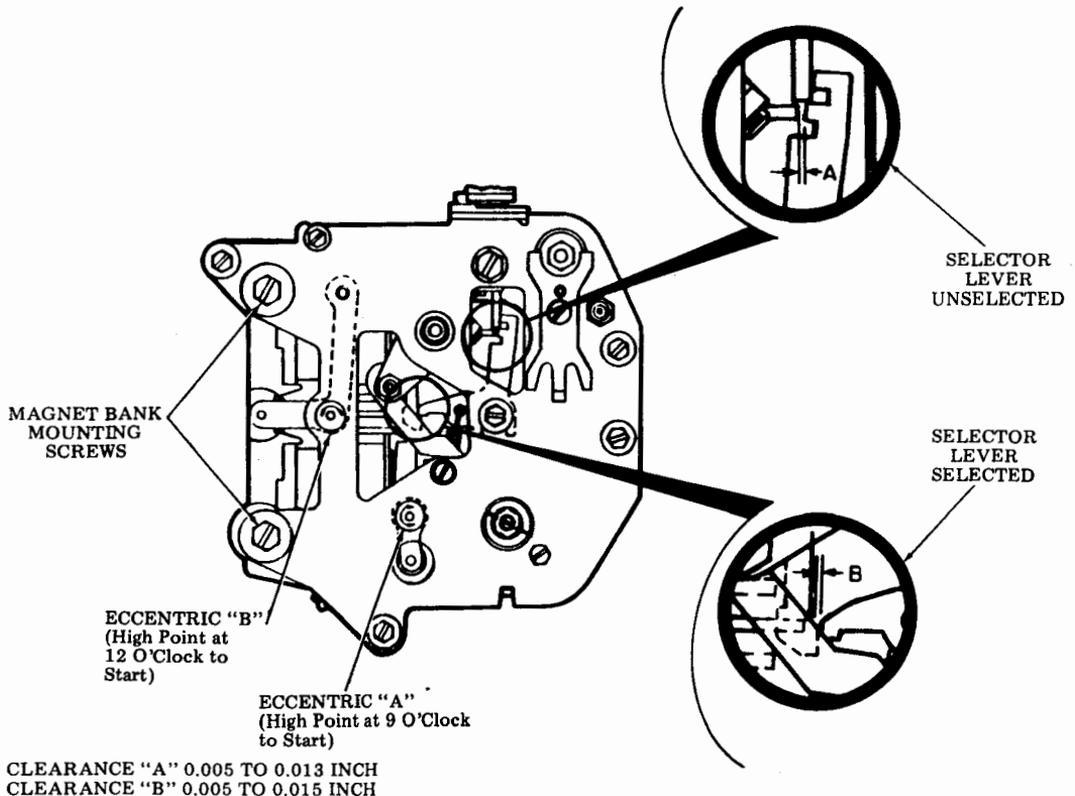
With mounting screws friction tight, and eccentric "A" at nine o'clock rotate eccentric, as needed, to
meet requirements. Tighten mounting screws and recheck requirement.

Requirement 2:

When the armatures are fully seated on their respective pole faces and selector levers in the "selected"
position, there should be
Min 0.005 inch---Max 0.015 inch
clearance between the armature tip and the selector levers as shown by "B".

To Adjust

With mounting screws friction tight and eccentric "B" at 12 o'clock, rotate eccentric "B" as needed,
to meet requirements. Tighten mounting screws and recheck requirements.

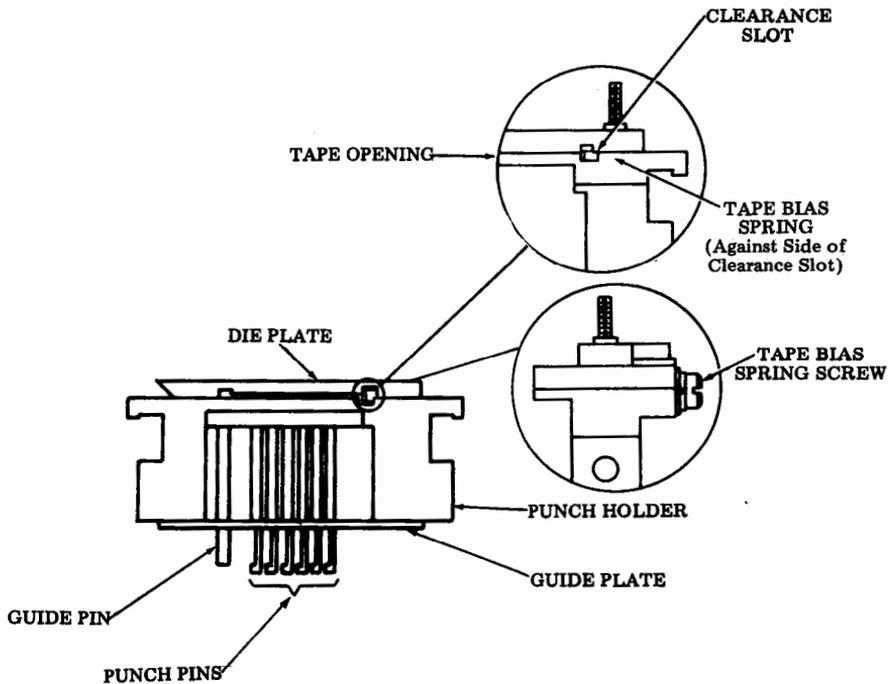


TAPE BIAS SPRING**Requirement**

The tape bias spring shall bias the tape toward the left of the punch block in order to maintain alignment of the perforated holes (visually checking a three or four foot perforated tape), there shall be no wavering of the perforations with respect to the edge of tape.

To Adjust

Remove the tape lid and the tape entry guide. Loosen the spring mounting screw and position the spring such that it rests against the side of the clearance slot in the die plate and is symmetrical (not rubbing top or bottom) about the tape opening in the assembly.



PUNCH FEED WHEEL AXIAL ALIGNMENT

Requirement 1

The feed wheel shall be centered, as gauged by eye, in the opening in the tape punch guide.

Requirement 2

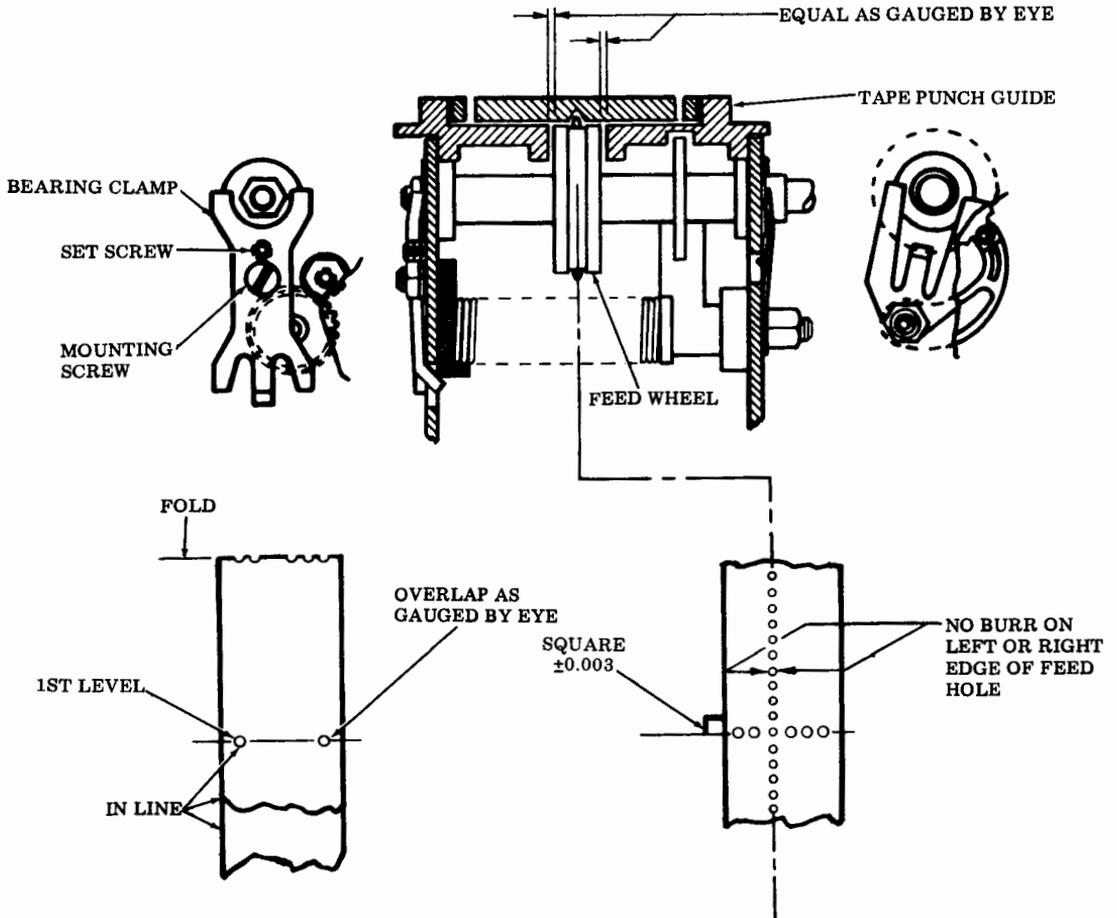
There shall be no burr on the left or right edge of the feed holes of a perforated tape and the code holes shall lie square within ± 0.003 .

To Check

Perforate a length of tape and examine it for burrs. Fold the tape with edges and 1st level holes in line. The 5th level shall overlap, within requirement, as gauged by eye.

To Adjust

Loosen the mounting screw on the bearing clamp and adjust the setscrew in or out as needed. Tighten the mounting screw and recheck requirement.



CLOCK CIRCUIT CARD**Requirement**

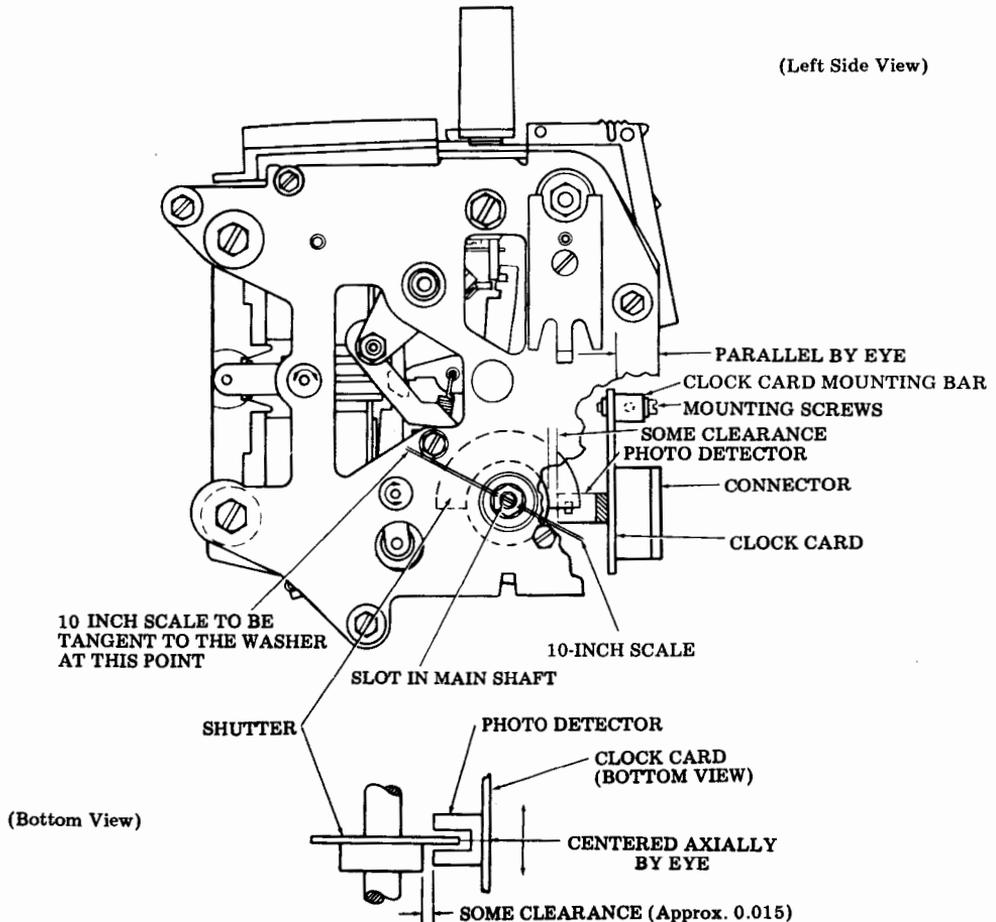
There will be some clearance between the hub of the shutter and the face of the photo detector and the shutter shall be centered axially in the photo detector as gauged by eye.

To Check

With a Ten to The Inch (TTI) scale in the slot of the mainshaft rotate the mainshaft until the scale lines up with the edge of the washer.

To Adjust

Position the clock card mounting bar such that the card is parallel to the front edge of the side plates and there is some clearance between the hub of the shutter and the face of the photo detector. With the clock circuit card mounting screws friction tight and a TTI scale in the slot of the mainshaft, line up the scale with the edge of washer. Adjust clock card up or down as required so that the edge of the shutter is centered radially in the photo detector when the TTI scale is lined up with the edge of the washer as shown below. Make sure the shutter width is centered axially by eye in the photo detector. Tighten the clock card mounting screws. Recheck requirements.



TRANSPORT DETENT SPRING

(Tape lid and housing removed to check)

Requirement

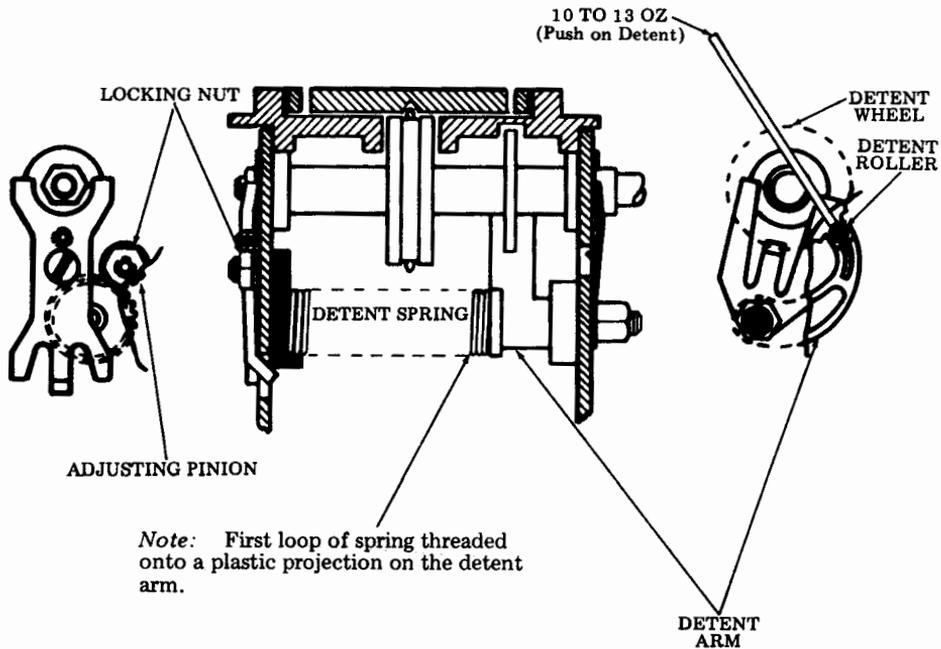
With the detent roller fully seated in the detent wheel the force required to start motion of the detent roller away from the detent wheel should be

Min 10 ounces--Max 13 ounces
(use 32 ounce scale).

To Adjust

With the locking nut friction tight rotate the pinion with a 1/16 inch allen key to meet requirement. Tighten locking screw and recheck requirement.

Note: Be careful not to over tighten spring.



FEED PAWL-POLE FACE GAP**Requirement 1**

With the feed pawl tooth seated in a ratchet wheel notch there shall be a 0.005 to 0.010 inch gap between the lower pole face and feed pawl at the point of least clearance. (Check at several places 90 degrees apart on ratchet wheel.)

Requirement 2

With the feed pawl tooth seated in a ratchet wheel notch, the gap between the upper pole face and feed pawl shall be equal to or greater than the lower pole face and feed pawl gap. (Check at several places 90 degrees apart on ratchet wheel.)

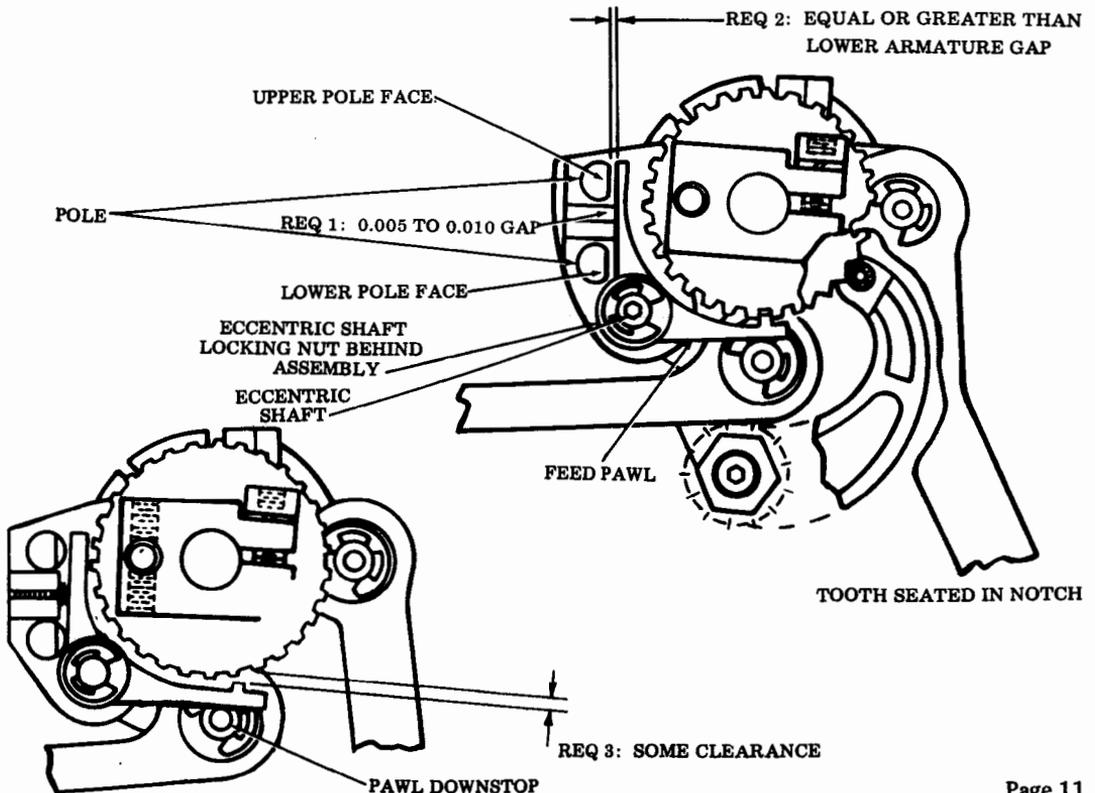
Requirement 3

With the feed pawl resting against its downstop, there shall be some clearance between the face of the feed pawl tooth and the ratchet wheel as gauged at eye throughout one complete revolution of the ratchet wheel.

To Adjust

With locking nut friction tight and feed pawl tooth held seated in ratchet wheel notch by slight pressure opposite pawl tooth, rotate the eccentric shaft clockwise until gaps at both pole faces are maximum. From this point rotate eccentric shaft counterclockwise to meet Requirements 1, 2, and 3. Tighten eccentric shaft locking nut and recheck requirements.

Caution: Rotation of the eccentric feed pawl shaft is limited. Attempted 360 degree rotation will cause the pawl to jam against the magnet poles and backstop. This may result in damage to the transport assembly.



TRANSPORT DRIVE ECCENTRIC

Requirement

Rotation of the transport drive eccentric between Top Dead Center (TDC) and Bottom Dead Center (BDC) shall move the feed pawl tooth a distance of one tooth on the ratchet wheel.

To Check

If the requirements of the ratchet wheel and feed pawl engagement adjustments (punch and reader) are met, the requirements of this adjustment are met. If those requirements are not met, determine if the eccentric throw of the adjustment is either too great or too little as follows:

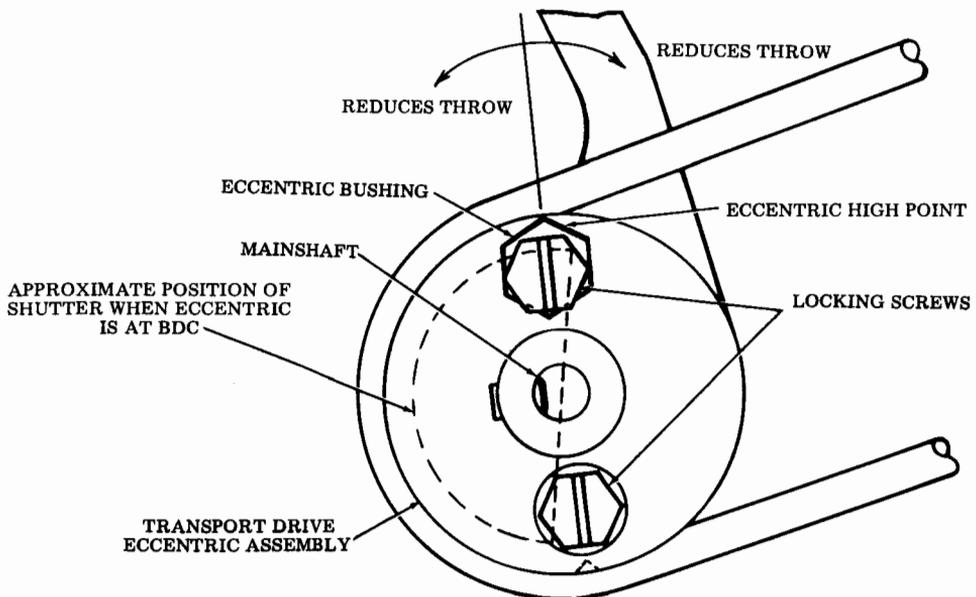
With eccentric drive at TDC, lift pawl away from ratchet and (with ratchet detented) allow the pawl to reengage observing the point at which it rests on the tooth or drops into the notch. Repeat at BDC. Engagement should be the same.

- (a) If pawl engagement at BDC is too far left adjust eccentric for reduced throw.
- (b) If pawl engagement at BDC is too far right adjust eccentric for increased throw.

To Adjust

Loosen the transport drive eccentric locking screws to a friction tight condition and rotate the transport drive eccentric bushing, noting the high point as shown below, as needed to meet the requirement. Tighten the locking screws.

Note: This adjustment will affect the ratchet wheel and feed pawl engagement adjustment. (Both punch and reader.) It may be necessary to refine this adjustment if the requirements of the ratchet wheel and feed pawl engagement adjustments cannot be met, however, those adjustments do not affect this adjustment.



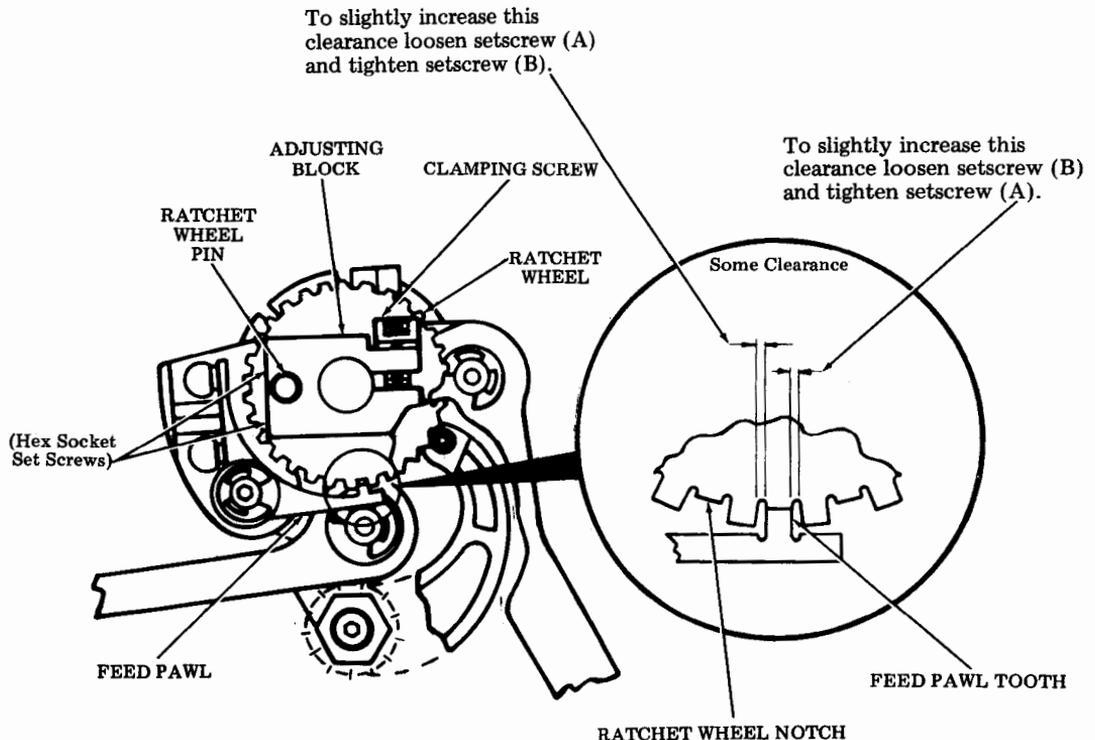
RATCHET WHEEL AND FEED PAWL ENGAGEMENT**Requirement**

When the transport drive eccentric is at Top Dead Center (TDC) and at Bottom Dead Center (BDC) the feed pawl tooth shall fall freely into the respective notches on the ratchet wheel. (Engagement should be checked at four places approximately 90 degrees apart on the ratchet wheel.)

To Adjust

- (a) If the feed pawl tooth does not fall freely into the ratchet wheel notch, at both TDC and BDC, the position of the feed wheel relative to the feed pawl may only need refinement. This is accomplished by moving the hex socket screws in the adjusting block against or away from the pin in the ratchet wheel as needed. When one screw is loosened the other must be tightened to insure a rigid assembly.
- (b) If the adjustment cannot be refined using the hex socket screws, adjust them to center of the ratchet wheel pin in the ratchet wheel hole. Then, with the adjusting block clamping screw loose rotate the mainshaft to TDC. Engage the feed pawl tooth and hold it centered in a notch in the ratchet wheel. Tighten the screw. Refine (a) if necessary.
- (c) Rotate the mainshaft to BDC and check requirement. Refine (a) if necessary.

Note: The transport drive eccentric adjustment will affect this adjustment.



PUNCH TEN TO THE INCH (TTI) (PRELIMINARY)

Note: The preliminary adjustment should be made only if the final TTI requirement cannot be met.

Requirement

Detent eccentric to be at midrange.

To Adjust

With the detent shaft locking nut and locking screw (on later units) friction tight and the detent roller seated in the detent wheel use a 1/16 inch allen key to move the detent wheel to one extreme of its adjustment. (Observe feed wheel to determine the extreme). Then rotate the allen key 180 degrees and observe the other extreme. Now set the adjustment to midrange by rotating the allen key approximately 90 degrees between the extremes. Tighten locking nut.

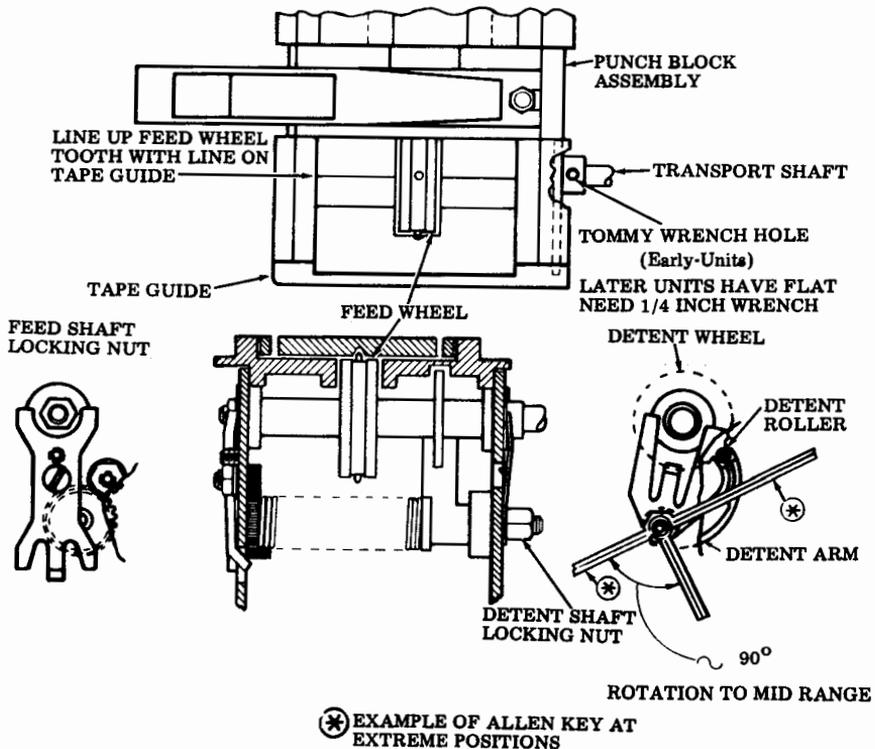
Hint: Set eccentric so that clockwise rotation of allen key causes clockwise rotation of feed wheel.

Requirement

With the detent roller seated in the detent wheel a feed wheel tooth shall line up with line on the tape guide as gauged by eye.

To Adjust

Loosen the feed shaft locking nut. (Use 1/4 inch socket and tommy wrench on early units or 1/4 inch open end wrench on later model feed shaft flat). While the detent roller remains seated in the detent wheel, rotate the feed wheel until requirement is met. Tighten locking nut.



PUNCH TEN TO THE INCH (FINAL)**Requirement**

The reperfector shall produce tape which conforms to the 302990 tape gauge at 300 wpm.

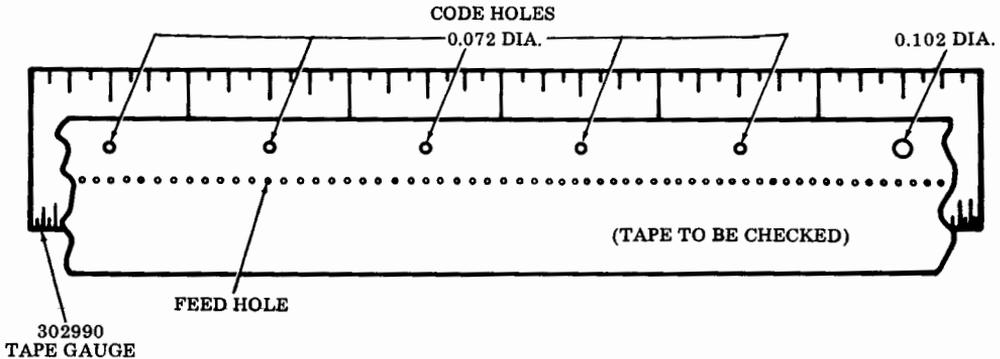
To Measure

Perforate a test pattern using self-test message (SPA1-3) at least 5 inches long. Place the tape over the 302990 tape gauge so that the first number two code hole in the tape is concentric with the first (0.072) holes in the tape gauge. (See Note.) The next four (0.072) holes in the tape gauge shall be visible through the number two code holes in the tape and the last (sixth) number two code hole in the tape shall be entirely within the 0.102 diameter hole in the tape gauge. This adjustment should be made with the tape coming from a 1000 foot supply roll routed through the tape tensioning system. Favor long TTI if a loose tape is used instead of routing through the tape tension system and coming from a 1000 foot roll of tape.

Note: The first five holes in the gauge are the same size as the code holes in the tape (0.072 inch diameter) but the sixth hole in the gauge is larger (0.102 inch diameter). This arrangement allows +0.015 inch variation in the ten to the inch spacing over five inches.

To Adjust

With the detent shaft locking nut friction tight and the detent roller seated in the detent wheel put a 1/16 inch allen key into the end of the eccentric detent shaft (see PUNCH TEN TO THE INCH (TTI) (PRELIMINARY) and adjust the feed wheel to meet requirement. (If the TTI is short the feed wheel must move away from the punch block. If the TTI is long the feed wheel must move toward the punch block). Tighten nut and recheck requirement. Check RATCHET WHEEL AND FEED PAWL ENGAGEMENT and refine, if necessary, To Adjust (c).



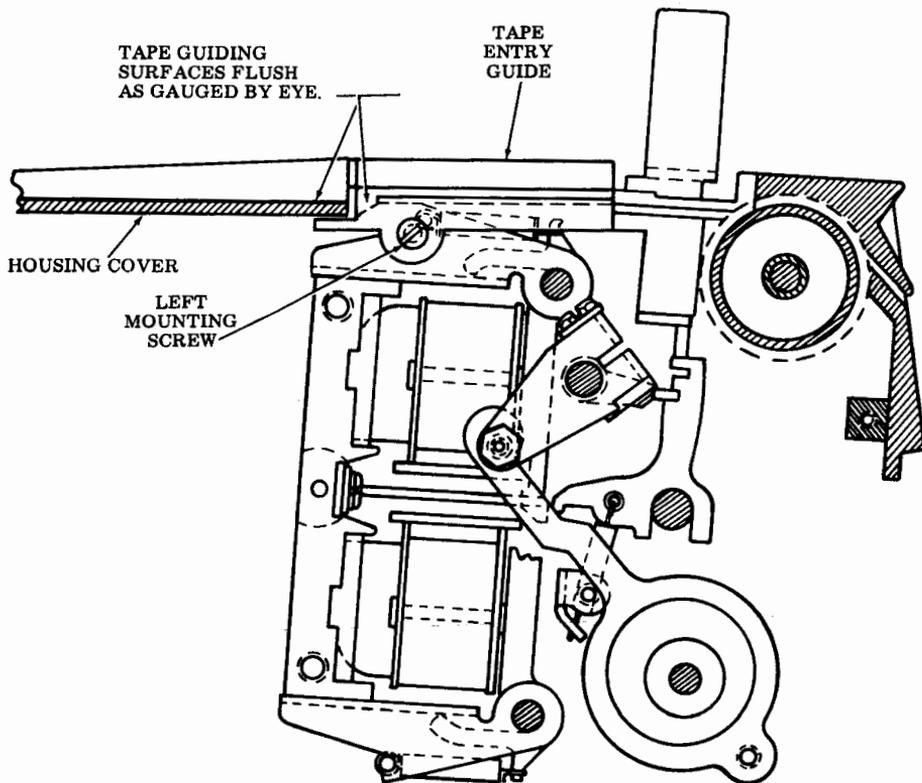
TAPE ENTRY GUIDE

Requirement

The tape guiding surface of the tape entry guide shall be flush with the tape guiding surface of the housing cover.

To Adjust

With the tape entry guide mounting screws loose, place unit in housing. Put cover in place and observe alignment. Remove cover and adjust tape entry guide up or down to meet requirement. Tighten right mounting screw. Replace cover and check requirement. Readjust, if necessary. Remove cover, lift unit for access to left mounting screw, and tighten left screw.



4. SPRING TENSIONS

Punch Block Assembly

Note: Remove punch block assembly from perforator unit to perform this check.

- With the punch pin slots facing the guide pin and with a spring scale (push-pull).
- Maximum total force to move all pins—3 ounces.

This requirement must be met anywhere along the punch pin travel in the perforator unit.

Punch Selector Return Springs (9 Places)

(With punch block assembly removed from unit.)

With selector lever resting on armature (unselected), apply spring force at top of lever

perpendicular to center line of punch pins. It should take 20 to 30 grams to start lever moving.

Transport Pawl Return Spring

Measure at top of pawl as shown, it should take 21 to 25 grams to bias pawl so the tooth is seated in ratchet wheel.

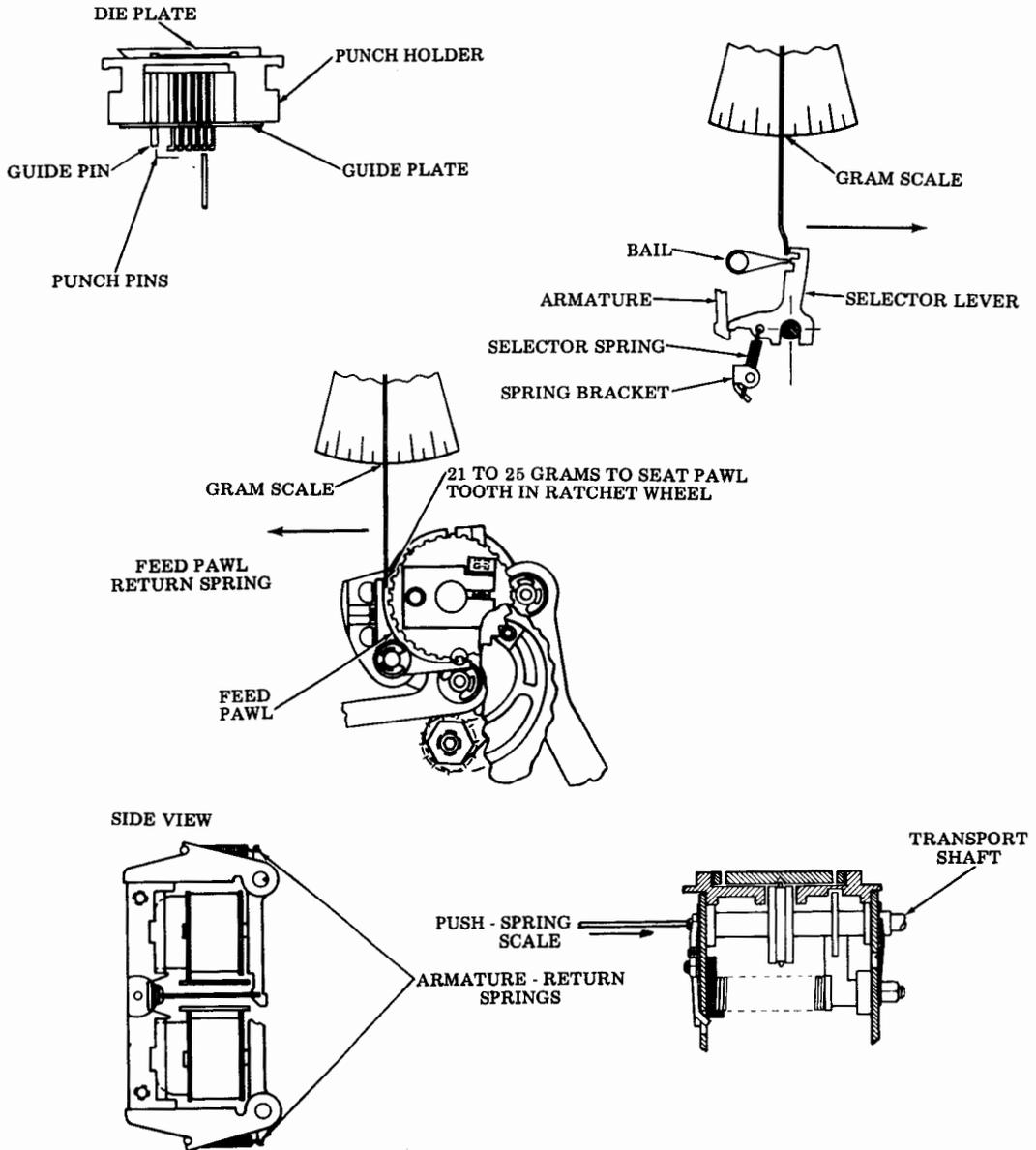
Punch Transport Shaft

With spring scale push on shaft from left side of unit until bearing is flush with left side plate, as seen by eye. Minimum 32 ounces — maximum 48 ounces.

Punch Armature Return Springs (9 Places)

With a spring scale hooked to one end of the spring, pull spring to installed length. Minimum two ounces (57 grams) — maximum two ounces (86 grams).

SPRING IDENTIFICATION



43 TELEPRINTER 5-LEVEL PAPER TAPE PUNCH ASSEMBLY

LUBRICATION

1. GENERAL

1.01 This section provides lubrication procedures for the 43 Teleprinter 5-Level Paper Tape Punch Assembly.

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

1.03 Lubricate the punch at intervals indicated under 43 Teleprinter 5-Level Paper Tape Unit Routine Maintenance, Section 574-504-750.

1.04 The punch can be lubricated by removing the punch and reader module from the housing (see Section 574-504-720.)

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

2. LUBRICATION PROCEDURES

2.01 Apply lubricant to parts as indicated.

(a) On small parts, a minimum amount of lubricants should be applied so that the lubricant remains on the parts and does not run off.

(b) Excessive lubricant should be removed with a dry, lint-free cloth.

2.02 The following areas must be kept dry and free of all lubricants: All electrical components, including terminals, connectors, and cables. Punch armatures and core faces. All parts normally touched by the operator, including tape handling areas, punch lids, and all large flat areas.

2.03 The following symbols indicate the quantity of lubricant to be used in a specified area: Symbols O1, O2, O3, etc, refer to 1, 2, 3, etc, drops of oil.

2.04 The following list of symbols applies to the lubrication instructions and the type of lubricant to be used:

| | |
|----|---|
| O | Oil 88970 (1 qt), 88971 (1 gal). |
| GA | Apply thin film of Syn-Tech grease (use 430836 4 oz tube with grease and 430838 brush). |
| GB | Apply thin film of Mobil No. 2 grease (use 145867 4 oz tube or 143484 1 lb can). Apply with 43C838 brush. |
| S | Saturate felt oilers, washers, and wicks with oil. |
| D | Keep dry, no lubricant permitted. |

SECTION 574-505-710

2.05 Lubrication Check List:

Punch Assembly:

Magnet Bank

Armature Pivots
Spring Posts and Brackets
Spring Hooks

- Grease (9 places).
- 1 drop of oil (4 places).
- 1 drop of oil (18 places).

Selector Levers

Spring Holes in Levers
Levers in the Slot
Levers at area of Armature Engagement
Bail

- Grease (9 places).
- 1 drop of oil (9 Places).
- Grease (9 places).
- Grease end of bail at selector lever engagement (9 places).

Punch Pins

- 1 drop of oil at bottom of punch pins at selector lever engagement (9 places).

Spring Bracket
Bail Bearing (left and right)
Bail Crank Arm Bearing Wick

- Grease fingers of spring bracket.
- 2 drops of oil (2 places).
- Saturate with oil.

Transport:

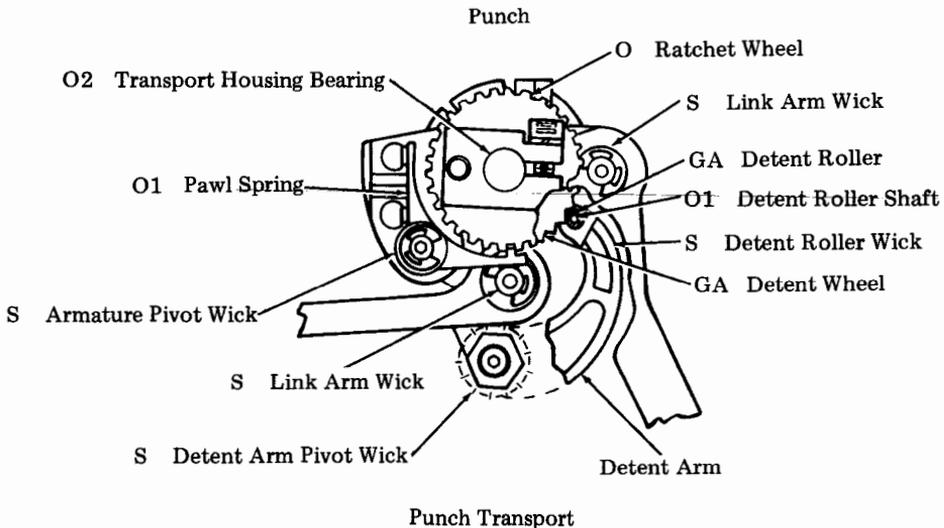
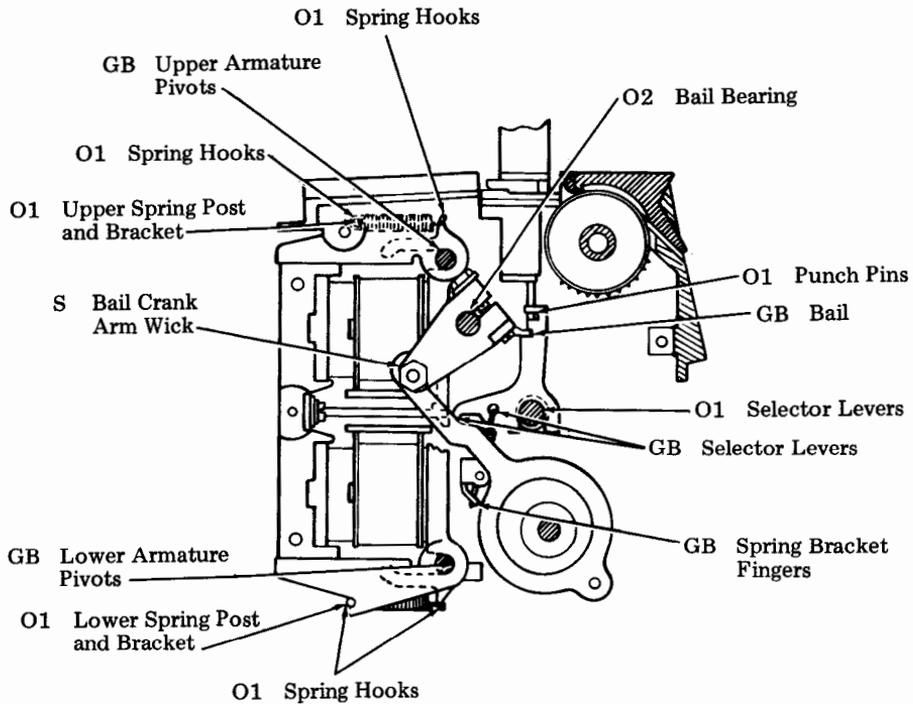
Ratchet Wheel Teeth
Detent Roller
Detent Wheel
Armature Pivot Wick
Transport Housing Bearing
Link Arm Wicks
Detent Roller Shaft

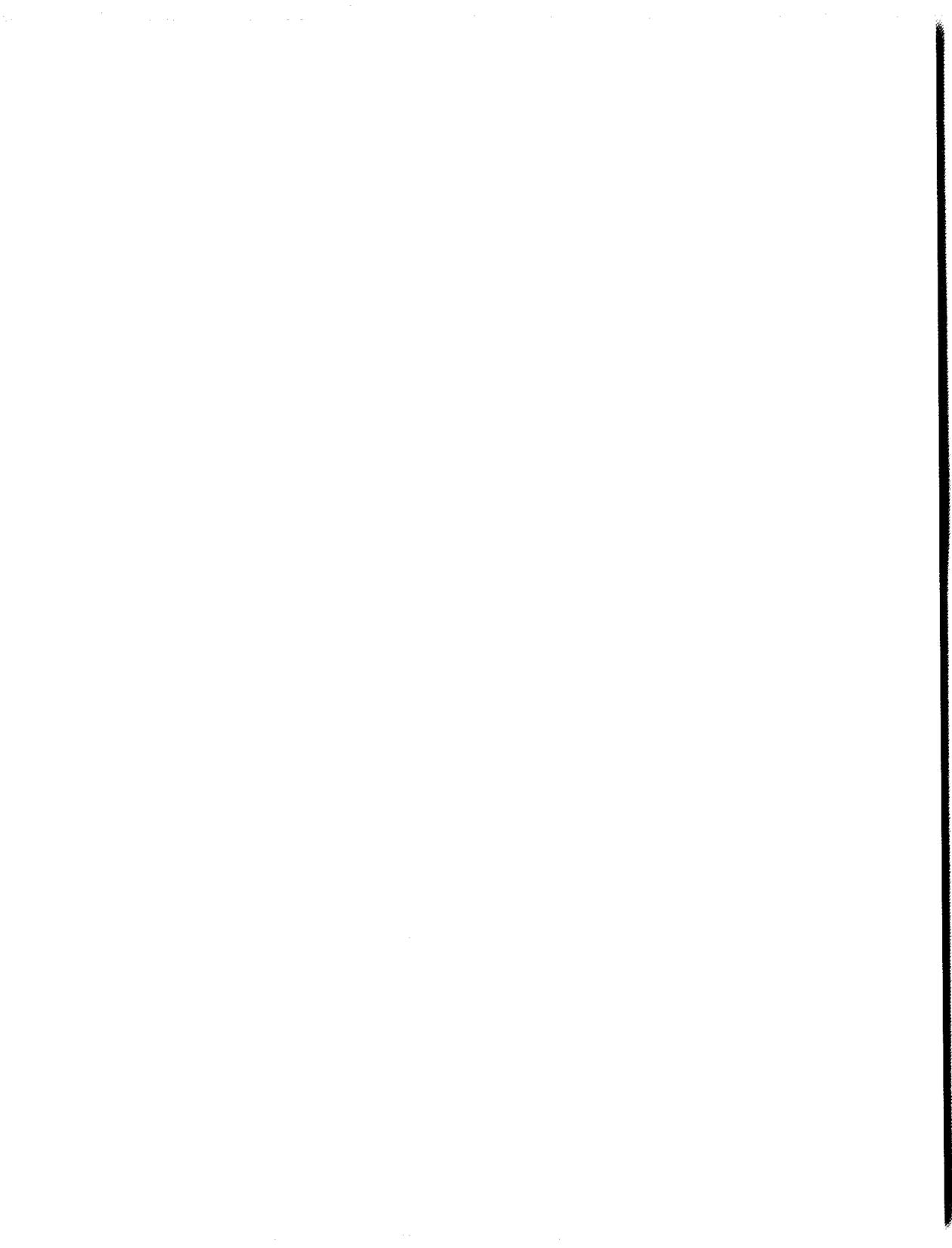
- Film of oil on all teeth.
- Grease.
- Grease.
- Saturate with oil.
- 2 drops on each side.
- Saturate with oil (2 places).
- 1 drop of oil on shaft between roller and detent arm.

Detent Roller Wick
Detent Arm Pivot Wick
Pawl Spring

- Saturate with oil.
- Saturate with oil.
- 1 drop of oil.

3. LUBRICATON POINTS





43 TELEPRINTER 5-LEVEL PAPER TAPE PUNCH ASSEMBLY

DISASSEMBLY/REASSEMBLY

| CONTENTS | PAGE |
|------------------------------------|------|
| 1. GENERAL | 1 |
| 2. TOOLS REQUIRED | 1 |
| 3. DISASSEMBLY/REASSEMBLY. | 2 |
| CHAD CHUTE | 2 |
| TAPE LID | 2 |
| PUNCH HOUSING | 3 |
| TAPE ENTRY GUIDE | 3 |
| PUNCH BLOCK | 4 |
| PUNCH MAGNET | 5 |

1. GENERAL

1.01 This section covers disassembly/reassembly procedures for the 43 Teleprinter 5-Level Paper Tape Punch Assembly.

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

1.03 Although the punch is considered a field replaceable item, many troubles can be corrected by adjustments or by replacement of repair parts.

1.04 The extent of the disassembly procedure is limited to that which is required for correction of troubles or replacement of parts in field locations. When removing a subassembly or part from the punch, follow the removal procedure and note the sequence of removal to enable proper reassembly. For reassembly, reverse the procedure except where different instructions are given. Do not force or pry parts in the process of removal.

1.05 Reference in the procedures to left or right, up or down and top or bottom, etc, refer to the punch in its normal operating position.

1.06 Disassembly of punch unit parts except the tape lid and chad chute will require removal of the punch and reader module from the set housing. Refer to 43 Teleprinter 5-Level Paper Tape Unit Disassembly/Reassembly, Section 574-504-720.

1.07 Disassembly of punch block and/or the punch magnet assemblies require removal of the punch unit from the center frame. See 43 Teleprinter 5-Level Paper Tape Unit Disassembly/Reassembly, Section 574-504-720.

1.08 After replacing punch parts, refer to the 43 Teleprinter 5-Level Paper Tape Unit Lubrication, Section 574-505-710 and lubricate any parts requiring lubrication.

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

2. TOOLS REQUIRED

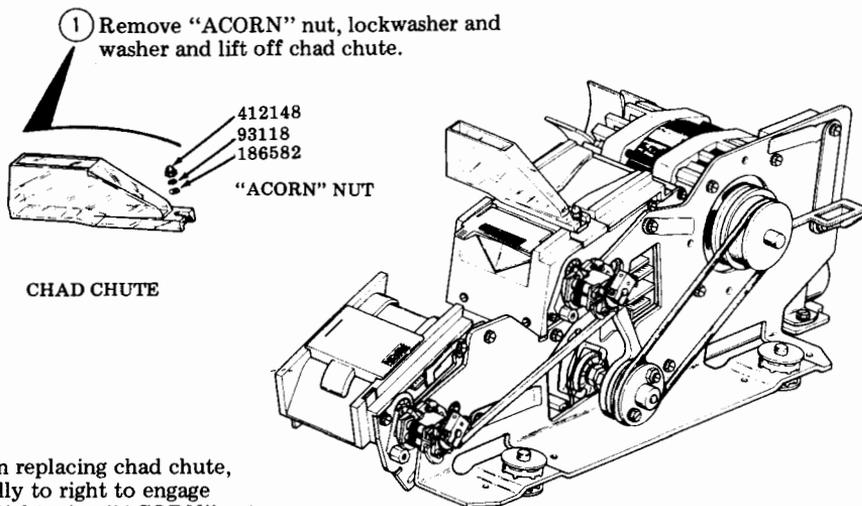
2.01 The following tools may be required when performing the punch disassembly/reassembly procedures. Most of these items should normally be present in standard maintenance tool kits. See Section 570-005-800 for a complete listing of various hand tools available for maintaining Teletype Corporation equipment.

| <u>Part No.</u> | <u>Tools</u> |
|-----------------|--------------------------------------|
| 89954 | Wrench, Assembly 1/4" |
| 100982 | Screwdriver w/Clip, 1/4" 6" blade |
| 104457 | Wrench, Hex Key (0.050) |
| 124682 | Wrench, Hex Key 1/16" |
| 129534 | Wrench, 3/16" x 1/4" Open End |
| 129536 | Wrench, 7/16" x 1/2" Open End |
| 142554 | Hook, Pull Spring |
| 152835 | Wrench, 5/16" x 3/8" Open End |
| 159841 | Wrench, Hex Key (0.093) |

3. DISASSEMBLY/REASSEMBLY

CHAD CHUTE

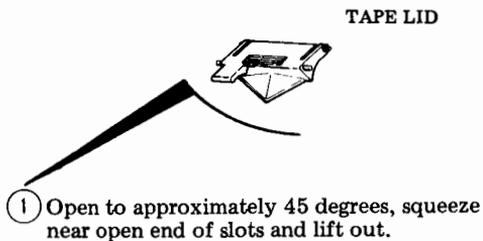
3.01 To remove the chad chute:



Note: When replacing chad chute, seat chute fully to right to engage latch before tightening "ACORN" nut.

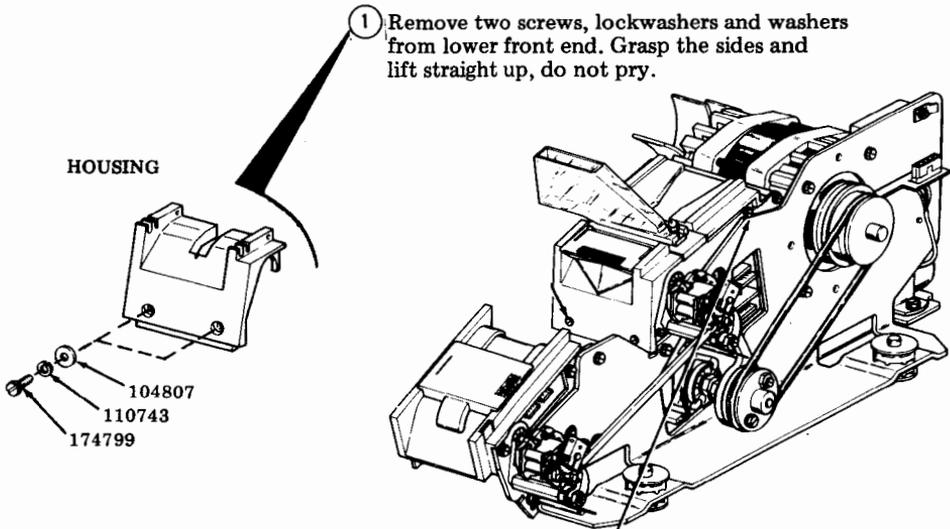
TAPE LID

3.02 To remove tape lid:



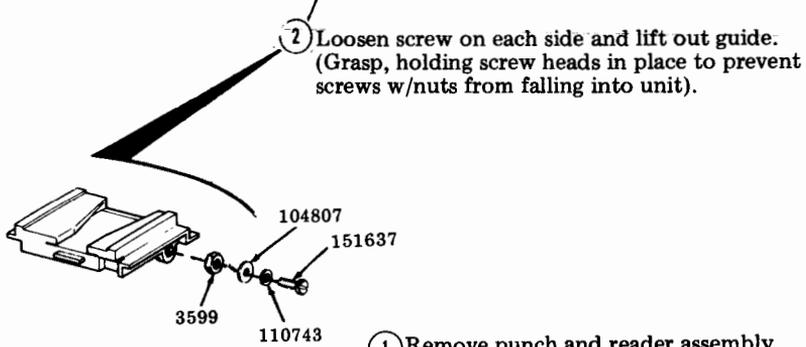
PUNCH HOUSING

3.03 To remove punch housing:



TAPE ENTRY GUIDE

3.04 To remove tape entry guide:



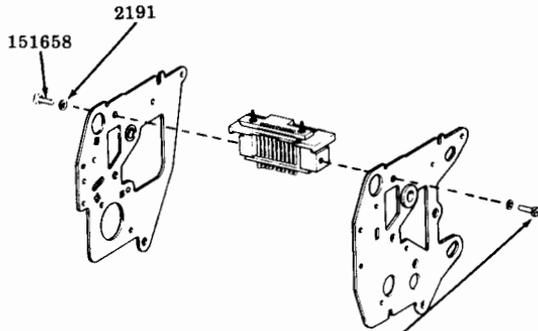
Note: When replacing guide it must be adjusted vertically to align with surface of cover. (See TAPE ENTRY GUIDE adjustment Section 574-505-700.

1 Remove punch and reader assembly from set housing. See Section 574-509-720.

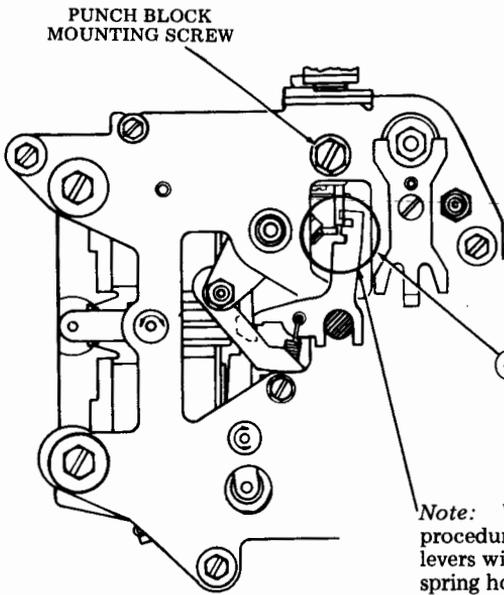
PUNCH BLOCK

3.05 To remove punch block:

- ① Remove punch and reader assembly from set housing (see Section 574-504-720).
- ② Remove tape lid and housing, chad chute and tape entry guide (see 3.01, 3.02, 3.03 and 3.04 of this section).



- ③ Remove two screws and lockwashers.



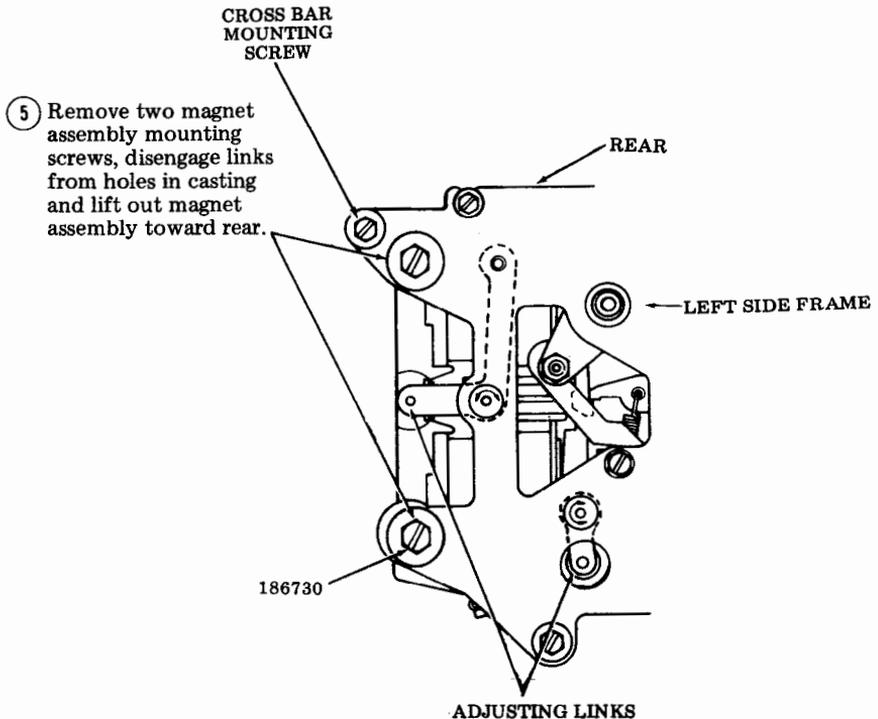
- ④ Grasp top of punch block, move lower end slightly toward rear to disengage lower end of punch pins from selector levers, and lift out.

Note: When replacing punch block, reverse the procedure, being careful to properly engage selector levers with lower end of punch pins (use tip of spring hook to move parts into engagement) before replacing housing.

PUNCH MAGNET

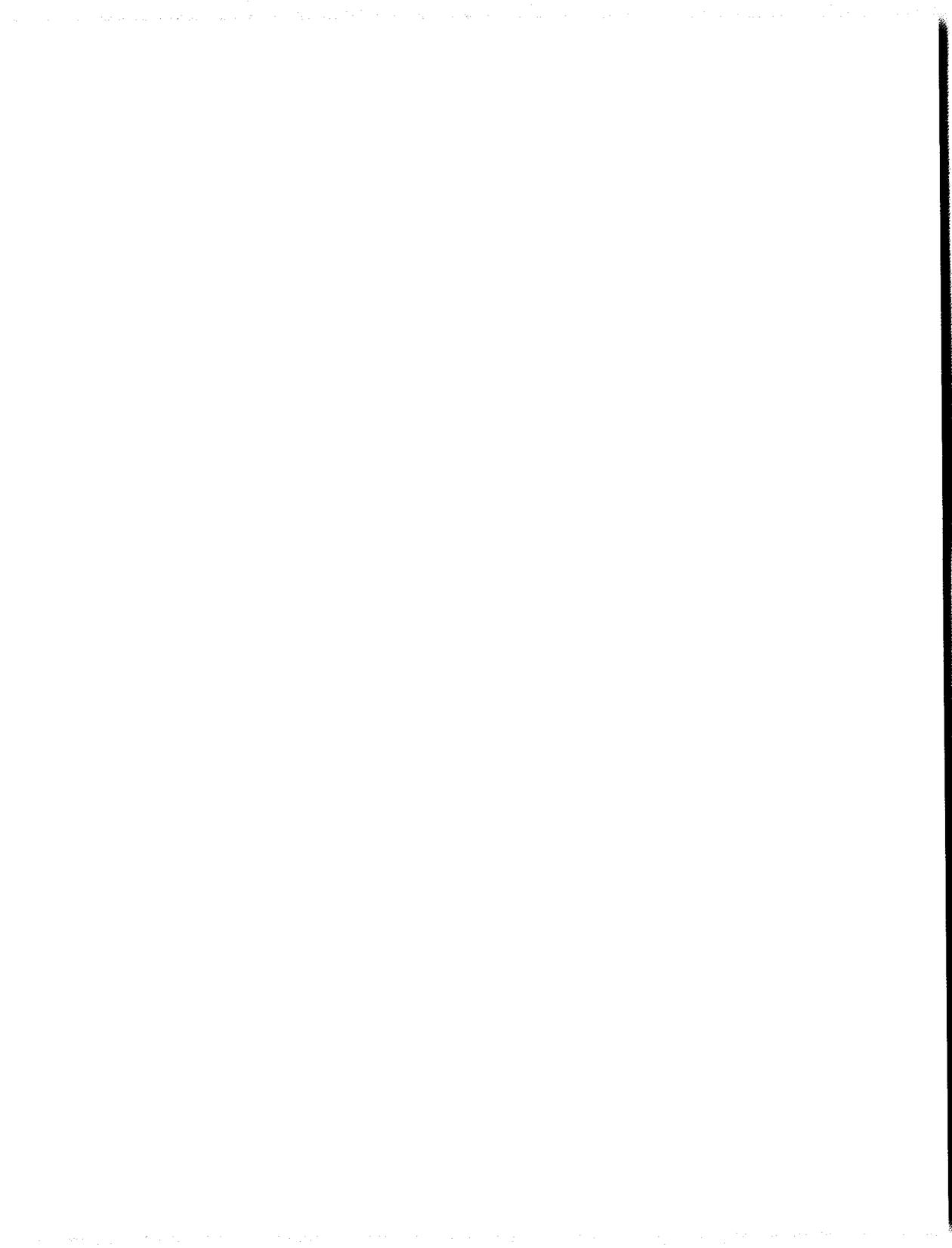
3.06 To remove the punch magnet assembly:

- ① Remove punch and reader assembly from the set housing. See Section 574-504-720.
- ② Remove punch from center frame and place on bench. See Section 574-504-720.
- ③ Remove tape entry guide (see 3.04, ②).
- ④ Remove the 412145 top rear cross bar.



Note: When replacing magnet assembly, use rubber bands, or other means, to hold armatures in engaged position, separated by nylon finger guides.

After installing the magnet assembly, the punch MAGNET BANK POSITION adjustment must be made. See Section 574-505-700.



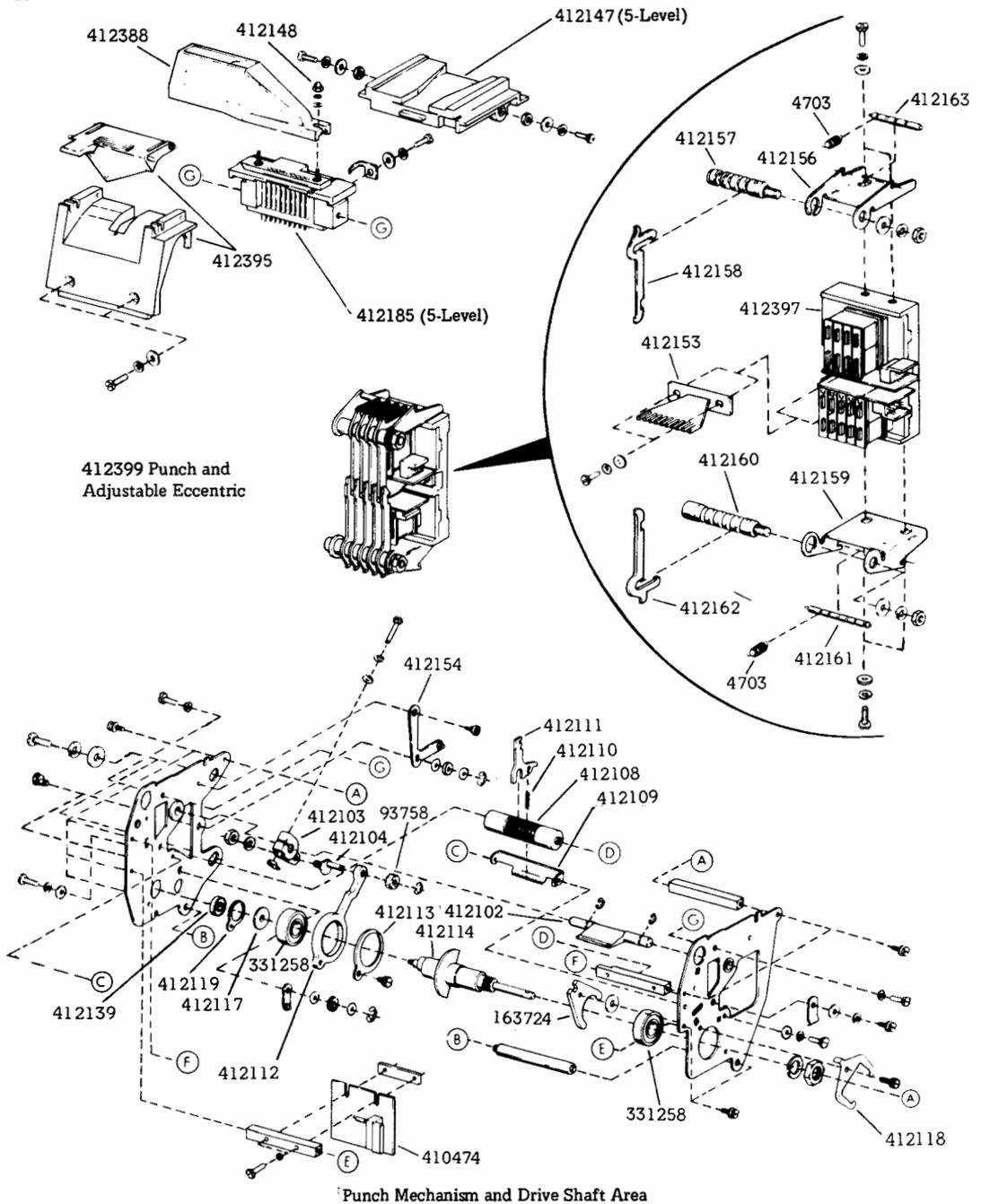
43 TELEPRINTER 5-LEVEL PAPER TAPE PUNCH ASSEMBLY

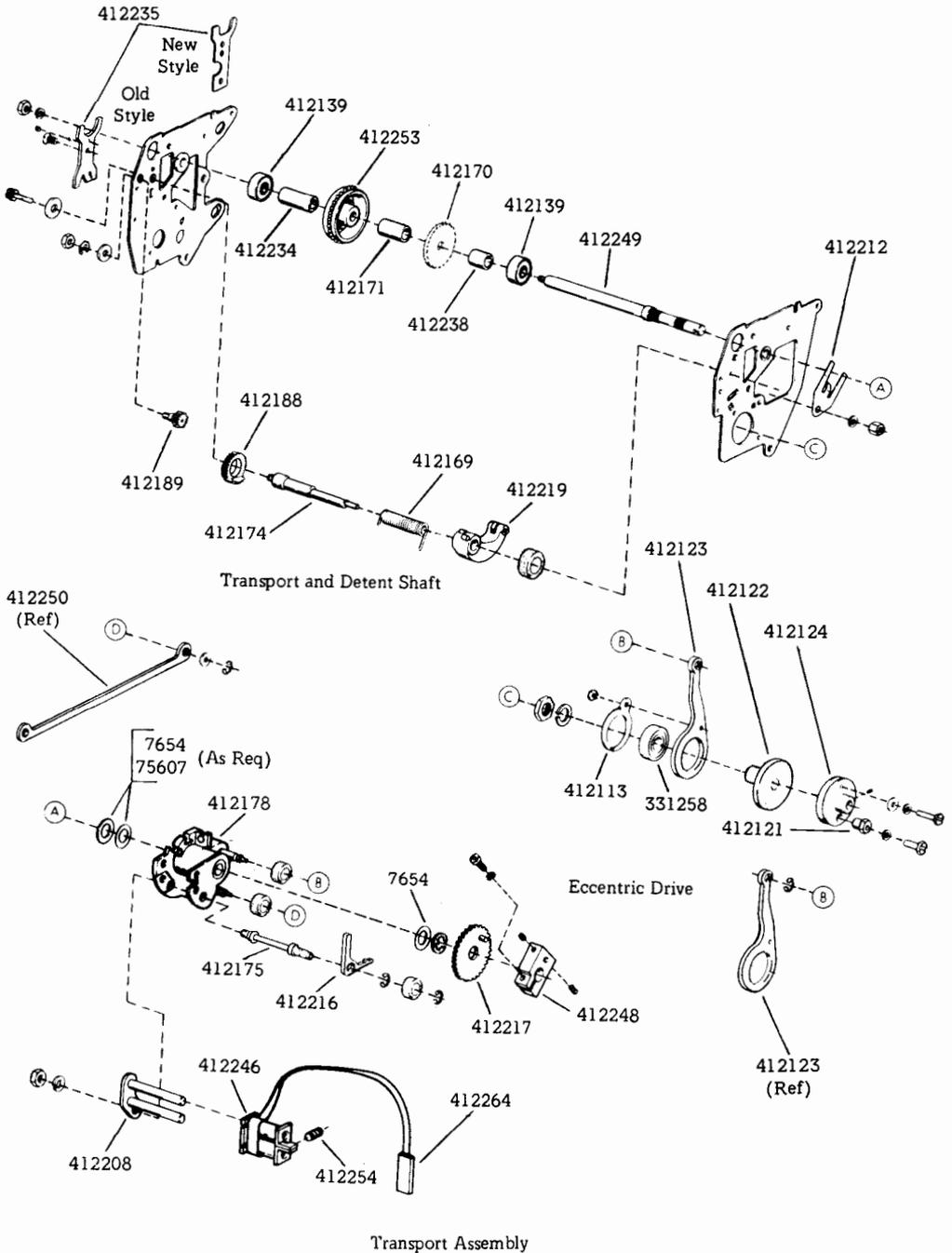
PARTS

1. GENERAL

- 1.01 This section provides information on maintenance spare parts for the 43 Teleprinter 5-Level Paper Tape Punch Assembly.
- 1.02 Whenever this section is reissued, the reason will be listed in this paragraph.
- 1.03 Part numbers are listed in the index in numerical order and indicate the page on which the parts appear. Asterisked numbers, stocked as "List 1", indicate a maintenance spare stocking ratio of one spare for the first twenty stations and an additional spare for each additional
- 30 stations in a maintenance area. Part numbers without asterisks, are not maintenance spares but may be ordered separately for local repair of the Paper Tape Unit.
- 1.04 The troubleshooting and disassembly/reassembly information for these parts is provided in 574-505-300 and 574-505-720 respectively.
- 1.05 When ordering replaceable parts or components, unless otherwise specified, prefix each part number with the letter "TP" (ie, TP410055).

2. PARTS





Transport Assembly

SECTION 574-505-800

3. NUMERICAL INDEX

3.01 Parts listed without asterisks are not maintenance spares but may be ordered as needed for local repair of major components or terminals.

| Part Number | Description and Page Number | Part Number | Description and Page Number | Part Number | Description and Page Number |
|-------------|-----------------------------|-------------|-----------------------------|-------------|----------------------------------|
| 4703 | Spring 2 | 412147 | Tape-Entry Guide 2 | 412212 | Clamp, Bearing 3 |
| 7654 | Shim 3 | 412148 | Acorn-Nut 2 | 412216 | Pawl 3 |
| 75607 | Shim 3 | 412153 | Armature Comb 2 | 412217 | Wheel, Ratchet 3 |
| 163724 | Clamp, Plate 2 | 412154 | Link 2 | 412219 | Detent Arm Assembly 3 |
| 331258 | Bearing 2,3 | 412156 | Bracket, Upper Guide 2 | | |
| 410474 | Card, Circuit 2 | 412157 | Upper Guide 2 | 412234 | Spacer 3 |
| 412102 | Bail 2 | 412158 | Upper Armature 2 | 412235 | Plate, Adjusting 3 |
| 412103 | Clamp 2 | 412159 | Bracket, Lower Guide 2 | 412238 | Spacer 3 |
| 412104 | Stud, Eccentric 2 | 412160 | Lower Guide 2 | 412246 | Magnet Coil Assembly 3 |
| 412108 | Shaft, Selector 2 | 412161 | Post, Lower Spring 2 | | |
| 412109 | Spring, Bracket 2 | 412162 | Lower Armature 2 | 412248 | Clamp 3 |
| 412110 | Spring, Extension 2 | 412163 | Post, Upper Spring 2 | 412249 | Shaft, Transport 3 |
| 412111 | Lever, Selector 2 | 412169 | Spring 3 | 412250 | Link 3 |
| 412112 | Link 2 | 412170 | Starwheel 3 | 412253 | Wheel, Feed 3 |
| 412113 | Clamp, Plate 2 | 412171 | Spacer 3 | 412254 | Spring, Pawl 3 |
| 412114 | Drive Shaft 2 | 412174 | Shaft, Eccentric Detent 3 | 412264 | Cable, Transmitter Coil 3 |
| 412117 | Spacer 2 | | | | |
| 412118 | Clamp, Bearing 2 | 412175 | Shaft, Pawl 3 | 412388 | Chad Chute w/Strip 2 |
| 412119 | Ring, Retainer 2 | 412178 | Housing 3 | | |
| 412121 | Bushing, Eccentric 3 | 412185 | Punch Block 2 | 412395 | Housing 2 |
| 412122 | Plate 3 | 412188 | Pinion, Driven 3 | 412397 | Magnet & Frame Assembly 2 |
| 412123 | Link 3 | 412189 | Pinion, Driving 3 | | |
| 412124 | Pulley 3 | 412208 | Magnet Core Assembly 3 | *412399 | Punch and Adjustable Eccentric 2 |
| 412139 | Bearing 2,3 | | | | |

*A maintenance spare stocking ratio of one spare for the first twenty stations and one additional spare for each additional 30 stations in a maintenance area.

43 TELEPRINTER 5-LEVEL PAPER TAPE READER ASSEMBLY

TROUBLESHOOTING

1. GENERAL

1.01 This section provides troubleshooting information for the 43 Teleprinter 5-Level Paper Tape Reader Assembly.

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

1.03 Reader troubleshooting is initiated by the 43 Teleprinter 5-Level Paper Tape Unit, Troubleshooting, Section 574-504-300, when trouble in the reader is suspected from symptoms observed.

1.04 Analysis in this section is limited to isolation of the trouble within the reader, up to its electrical interface to the PTU set logic card. Where analysis indicates the trouble is not in the reader return to Section 574-504-300 for further analysis.

1.05 When ordering replaceable parts, unless otherwise specified prefix each part number with the letters "TP" (ie, TP430047).

1.06 The 412280 Reader (5-Level) is returnable to Western Electric Service Center for repair.

1.07 Isolation and correction of troubles is based on electrical checks and parts replacement.

Reference sections are:

| | |
|-----------------|------------------------|
| 574-506-400 | Wiring |
| 574-504-720 and | |
| 574-506-720 | Disassembly/Reassembly |
| 574-504-800 and | |
| 574-506-800 | Parts |

1.08 A voltmeter is required for measuring voltages or checking continuity.

1.09 Trouble analysis is presented in the form of a "20 Questions" type of routine in paragraph 2. TROUBLESHOOTING GUIDE. The guide, with questions and yes and no column, should be used always starting with the first question and proceeding according to the "yes" or "no" directive.

2. TROUBLESHOOTING GUIDE

| QUESTION | YES | NO |
|--|----------------------------|--|
| 1. Does operation of tight tape arm cause reader to stop sensing tape and cause indicator lamp to flash? | Go to 2. | <ul style="list-style-type: none"> •Check tight tape bail adjustment •Check connectors •Replace mode switch •Replace reader |
| 2. Does operation of tape out lever cause reader to stop sensing tape and cause indicator lamp to flash? | Go to 3. | <ul style="list-style-type: none"> •Check tape out lever adjustment •Check connectors •Replace mode switch •Replace reader |
| 3. Does reader sense characters in tape properly (tape checked OK for ten holes to the inch)? | Go to 4. | <ul style="list-style-type: none"> •Check tape lide is secure (loose spring) •Check adjustments <ul style="list-style-type: none"> (Reader feed wheel adjustment) (Transport tape position adjustment) (Feed pawl-pole face gap adjustment) (Feed pawl and ratchet wheel adjustment) •Check connectors •Replace reader circuit cards •Replace reader |
| 4. Does reader step and sense character-at-a-time correctly, when Step and Skip switches are operated? | Go to Section 574-504-300. | <ul style="list-style-type: none"> •Check connectors •Check switch •Replace mode switch •Check adjustments <ul style="list-style-type: none"> (Reader feed wheel adjustment) (Transport tape position adjustment) (Feed pawl-pole face gap adjustment) (Feed pawl-ratchet wheel adjustment) •Replace reader |

43 TELEPRINTER 5-LEVEL PAPER TAPE READER ASSEMBLY

WIRING

1. GENERAL

1.01 This section provides wiring information for the 43 Teleprinter 5-Level Paper Tape Reader Assembly.

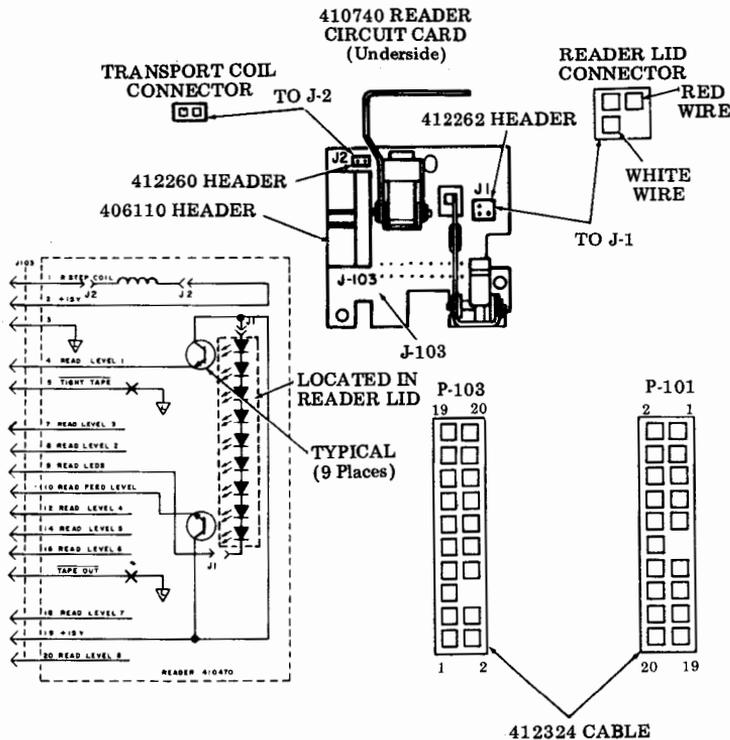
1.02 Whenever this section is reissued the reason for reissue will be listed in this paragraph.

1.03 Related wiring information and cable connections to the logic card are shown in Section 574-504-400.

1.04 Designations on reader wiring diagrams do not appear on the components.

1.05 When ordering replaceable parts, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP430047).

2. WIRING





43 TELEPRINTER 5-LEVEL PAPER TAPE READER ASSEMBLY
ADJUSTMENTS AND SPRING TENSIONS

| CONTENTS | PAGE | |
|---|------|--|
| 1. GENERAL | 1 | 1.02 Whenever this section is reissued the reason for reissue will be listed in this paragraph. |
| 2. TOOLS REQUIRED..... | 1 | 1.03 Tensions are checked with a spring scale held at the angle shown in the adjustment illustration. |
| 3. READER ADJUSTMENT..... | 2 | 1.04 When ordering replaceable parts, unless otherwise specified prefix each part number with the letter "TP" (ie, TP430047). |
| READER FEED WHEEL LOCATION..... | 2 | 1.05 After an adjustment is complete, tighten any screws or nuts loosened to make the adjustment. |
| READER TAPE OUT LEVER | 3 | 1.06 Reference in the procedure to left or right, up or down, and top or bottom, etc, refer to the reader in its normal operating position. |
| TRANSPORT DETENT SPRING (Reader)..... | 3 | 1.07 Adjustments should be checked and performed when a trouble indicates a specific adjustment may be out of tolerance or when an adjustment is disturbed to enable a part to be removed or replaced. |
| FEED PAWL-POLE FACE GAP | 4 | 1.08 Spring tension checks should be performed when a trouble indicates a possible defective spring or to verify proper part numbers. |
| FEED PAWL AND RATCHET WHEEL ENGAGEMENT | 5 | 1.09 Springs that do not meet the tension requirements should be replaced. |
| READER TRANSPORT TAPE POSITION (Preliminary)..... | 6 | 2. TOOLS REQUIRED |
| READER TRANSPORT TAPE POSITION (Final)..... | 7 | 2.01 Refer to Maintenance Tools Section 570-005-800TC for a complete listing of various types of hand tools available for maintenance of Teletype Corporation equipment. |
| TIGHT TAPE BAIL | 8 | |
| 4. SPRING TENSIONS..... | 9 | |
| SPRING IDENTIFICATION..... | 9 | |
| 1. GENERAL | | |
| 1.01 This section provides adjustments and spring tensions for the 43 Teleprinter 5-Level Paper Tape Reader Assembly. | | |

SECTION 574-506-700

2.02 The following tools may be required when performing adjustments or spring tension checks. Most of these items should normally be present in standard maintenance tool kits.

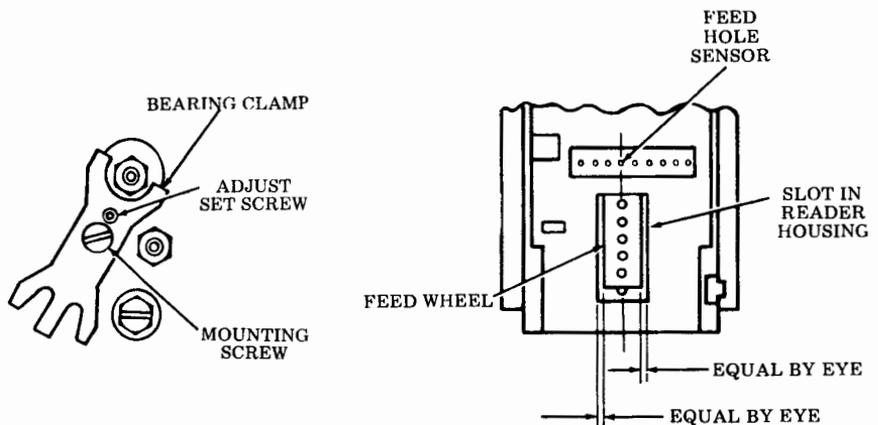
| Part No. | Description |
|----------|---|
| 117781 | Gauge Set |
| 142554 | Hook, Pull Spring |
| 82711 | Scale, Spring (64 Ounce) |
| 110443 | Scale, Spring (8 Ounce) |
| 110444 | Scale, Spring (32 Ounce) |
| 94647 | Screwdriver, 3-1/2 Inch Blade |
| 100982 | Screwdriver W/Clip |
| 124682 | Wrench, Hex Key 1/16 |
| 129534 | Wrench, 3/16 Inch and 1/4 Inch Open End |
| 124682 | Hex Key Wrench (1/16) |
| 104457 | Hex Key Wrench (.050) |
| 159841 | Hex Key Wrench (.093) |
| 302990 | Tape Gauge |
| 73404 | Tommy Wrench |
| 98631 | Scale, Spring (50 Grams) |
| 108285 | Long Nose Pliers |

3. READER ADJUSTMENTS

READER FEED WHEEL LOCATION

Requirement

The sprocket wheel pins shall be in line with the centerline of the feed hole sensor. This requirement should be met when sprocket wheel is centered by eye in the reader housing.



To Adjust

Loosen the bearing clamp mounting screw, turn adjust set screw in or out as needed to meet requirement, tighten bearing clamp mounting screw, recheck requirement.

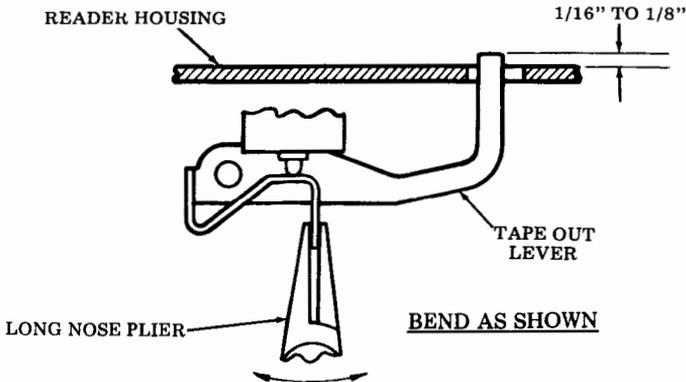
READER TAPE OUT LEVER

Requirement

Depress lever until it "clicks". The top of the lever shall be 1/16 inch to 1/8 inch above the top of the housing surface.

To Adjust

Bend lever to meet requirement. Make certain lever moves freely up and down for full stroke.

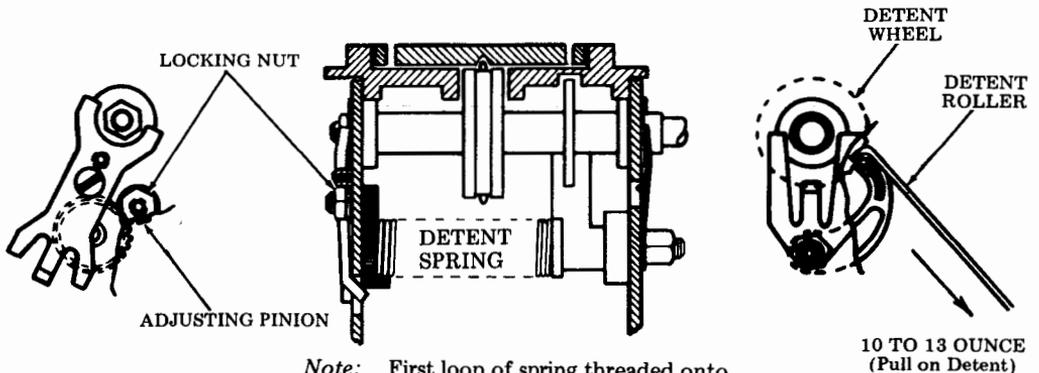


TRANSPORT DETENT SPRING (Reader)

Requirement

With the detent roller fully seated in the detent wheel the force required to start motion of the detent roller away from the detent wheel shall be 10 to 13 ounces. (Use 32 ounce scale.)

Note: Be careful not to over tighten spring.



Note: First loop of spring threaded onto a plastic projection on the detent arm.

To Adjust

With the locking nut friction tight rotate the pinion with a 1/16 inch allen key to meet requirement. Tighten locking nut and recheck requirement.

FEED PAWL-POLE FACE GAP

(1) Requirement

With the feed pawl tooth seated in a ratchet wheel notch there shall be a .005 to .010 inch gap between the lower pole face and feed pawl at the point of least clearance. (Check at several places 90 degrees apart on ratchet wheel.)

(2) Requirement

With the feed pawl tooth seated in a ratchet wheel notch, the gap between the upper pole face and feed pawl shall be equal to or greater than the lower pole face and feed pawl gap. (Check at several places 90 degrees apart on ratchet wheel.)

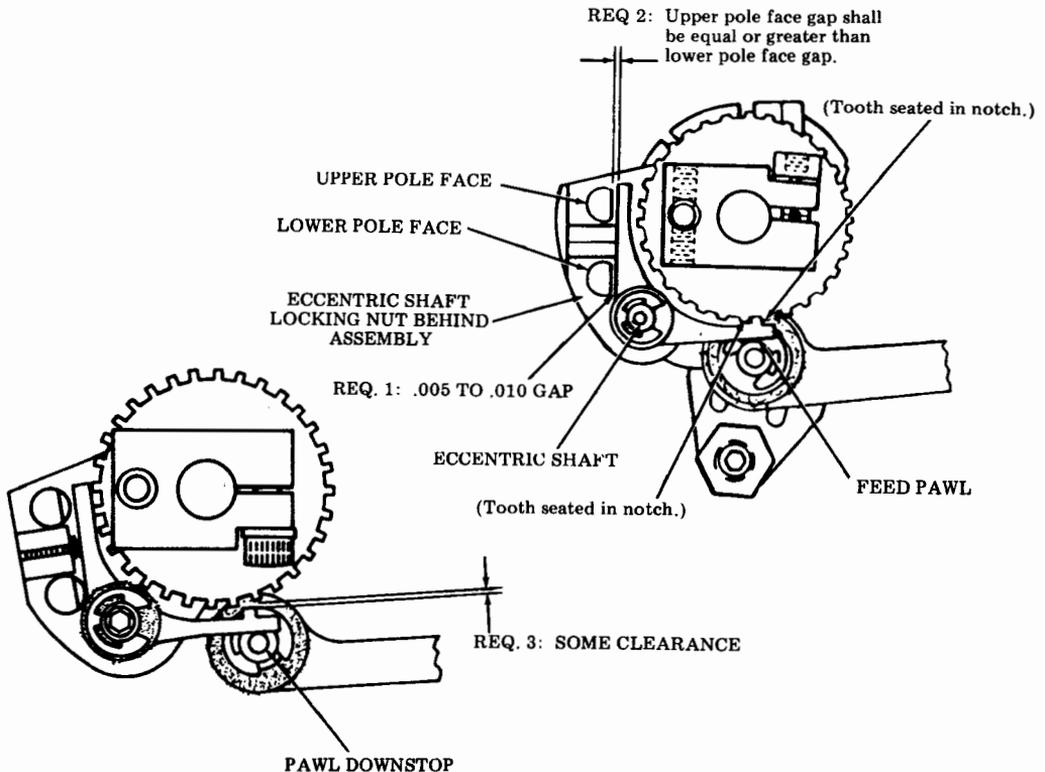
(3) Requirement

With the feed pawl resting against its downstop, there shall be some clearance between the face of the feed pawl tooth and the ratchet wheel as gauged by eye throughout one complete revolution of the ratchet wheel.

To Adjust

With locking nut friction tight and feed pawl tooth held seated in ratchet wheel notch by slight pressure opposite pawl tooth, rotate the eccentric shaft clockwise until gaps at both pole faces are maximum. From this point rotate eccentric shaft counterclockwise to meet requirements 1, 2, and 3. Tighten eccentric shaft locking nut and recheck requirements.

Caution: Rotation of the eccentric feed pawl shaft is limited. Attempted 360 degree rotation will cause the pawl to jam against the magnet poles and backstop. This may result in damage to the transport assembly.



FEED PAWL AND RATCHET WHEEL ENGAGEMENT

Requirement

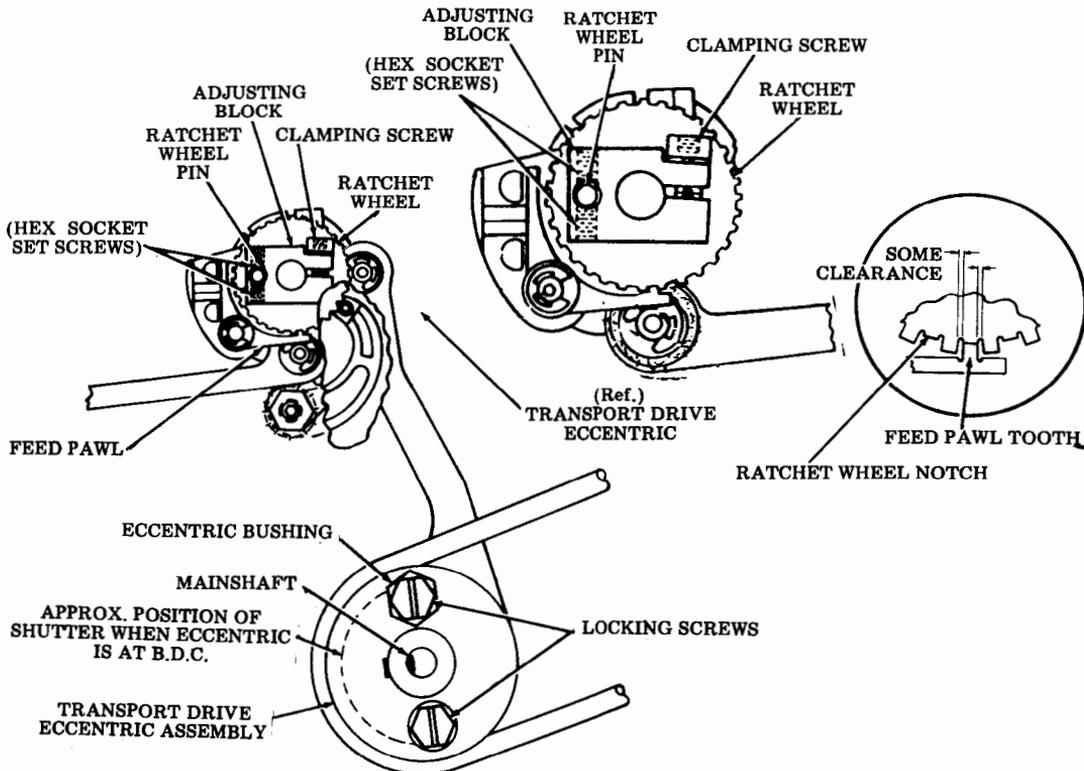
With detent roller seated in the detent wheel and when the transport drive eccentric is at Top Dead Center and at Bottom Dead Center the feed pawl tooth should fall freely into the notch of the ratchet wheel. (Engagement should be checked at four places approximately 90 degrees apart on the ratchet wheel).

To Adjust

- (a) If the feed pawl tooth does not fall freely into the ratchet wheel notch, at both TDC and BDC, the position of the feed wheel relative to the feed pawl may only need refinement. This is accomplished by moving the hex socket screws in the adjusting block against or away from the pin in the ratchet wheel as needed. When one screw is loosened the other must be tightened to insure a rigid assembly.
- (b) If the adjustment cannot be refined using the hex socket screws, adjust them to center of the ratchet wheel pin in the ratchet wheel hole. Then, with the adjusting block clamping screw loose rotate the main shaft to TDC. Engage the feed pawl tooth and hold it centered in a notch in the ratchet wheel. Tighten the screw. Refine a. if necessary or repeat.
- (c) Rotate the mainshaft to BDC and check requirement. Refine a. if necessary.

Note: This adjustment is affected by the transport drive eccentric adjustment.

READER TRANSPORT



READER TRANSPORT TAPE POSITION (Preliminary)

Note: This adjustment is to be made only if the reader transport tape position adjustment (Final) requirement cannot be met.

Requirement

Detent eccentric to be at midrange.

To Adjust

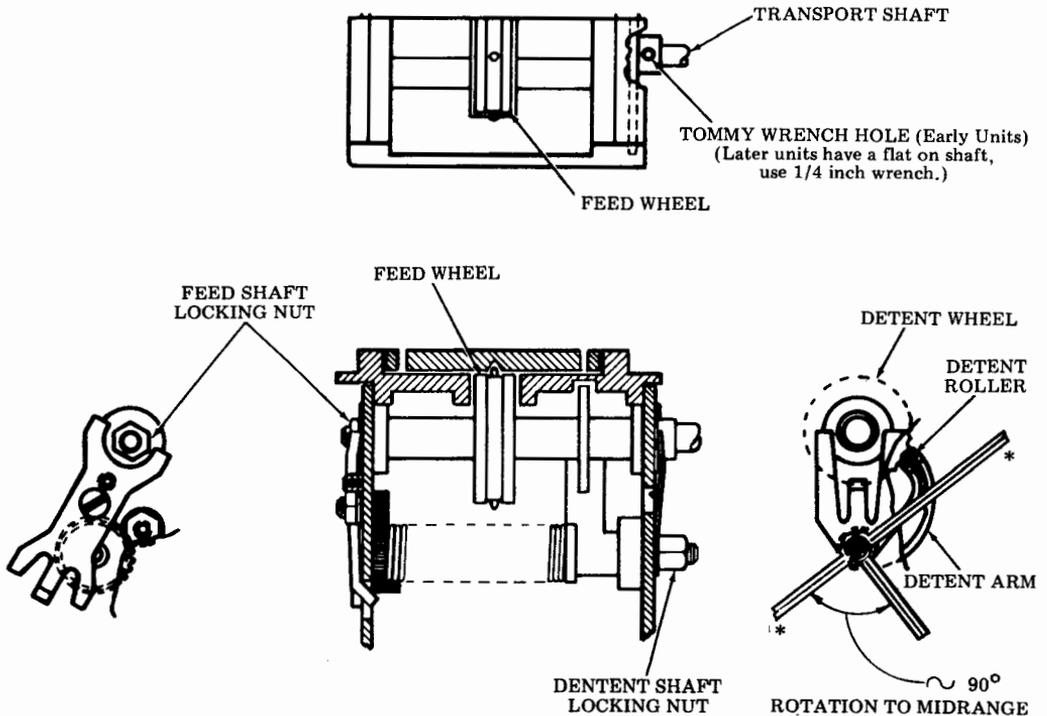
With the detent shaft locking nut and locking screw friction tight use a 1/16 inch allen key to move the detent wheel to one extreme of its adjustment (observe feed wheel to determine extreme). Then rotate the allen key 180 degrees and observe the other extreme. Now set the adjustment to midrange by rotating the allen key approximately 90 degrees between the extremes. Tighten locking nut and screw.

Requirement

With the detent roller seated in the detent wheel a master tape, (TTI correct) when engaged with the feed wheel and lined up with the tape slot in the reader housing, should line up such that the feed and code holes in the tape are centered by eye with the aperture slots in the reader housing.

To Adjust

Loosen feed shaft locking nut. (Use 1/4 inch socket and tommy wrench on early models or 1/4 inch open end wrench on later model feed shaft flat.) While the detent roller remains seated in the detent wheel rotate the feed wheel until requirement is met. Tighten locking nut.



*Example of allen key at extreme positions.

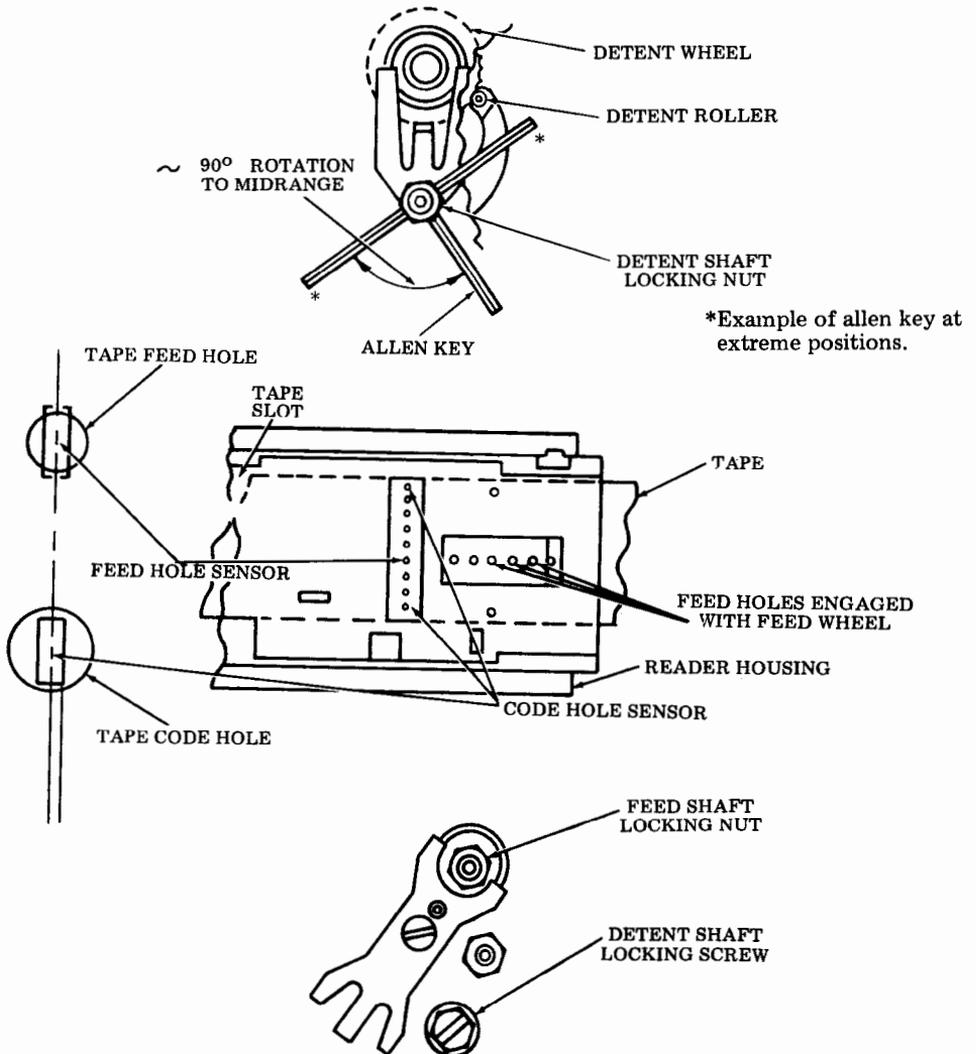
READER TRANSPORT TAPE POSITION (Final)

Requirement

With the detent roller seated in the detent wheel, a test tape perforated on the associated punch, (TTI correct as checked in Section 2C) when engaged with the feed wheel and lined up with the tape slot in the reader housing, should line up such that the feed and code holes in the tape are centered by eye on the aperature slots in the reader housing.

To Adjust

With the detent shaft locking nut and locking screw friction tight and the detent roller seated in the detent wheel, put a 1/16 inch allen wrench into the end of the detent shaft and adjust the feed wheel to meet requirement. Tighten nut and screw. Recheck requirement.



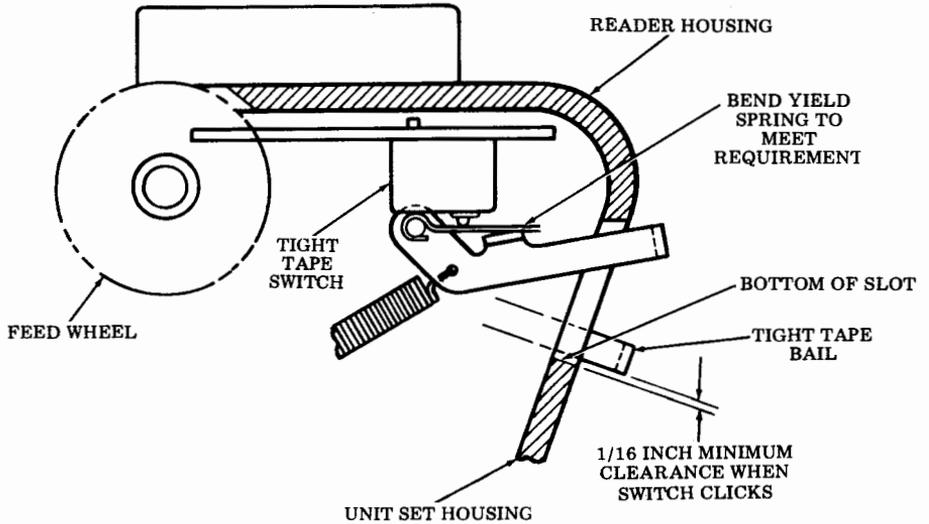
TIGHT TAPE BAIL

Requirement

With unit seated in the set housing and when the tight tape bail is moved up and down, the tight tape switch will click in both directions and, at the lowest click, will have a minimum clearance of 1/16 inch between the bail and the bottom of the slot in the set housing.

To Adjust

Lift unit for access to yeild spring and bend yield spring with pliers to meet requirement.

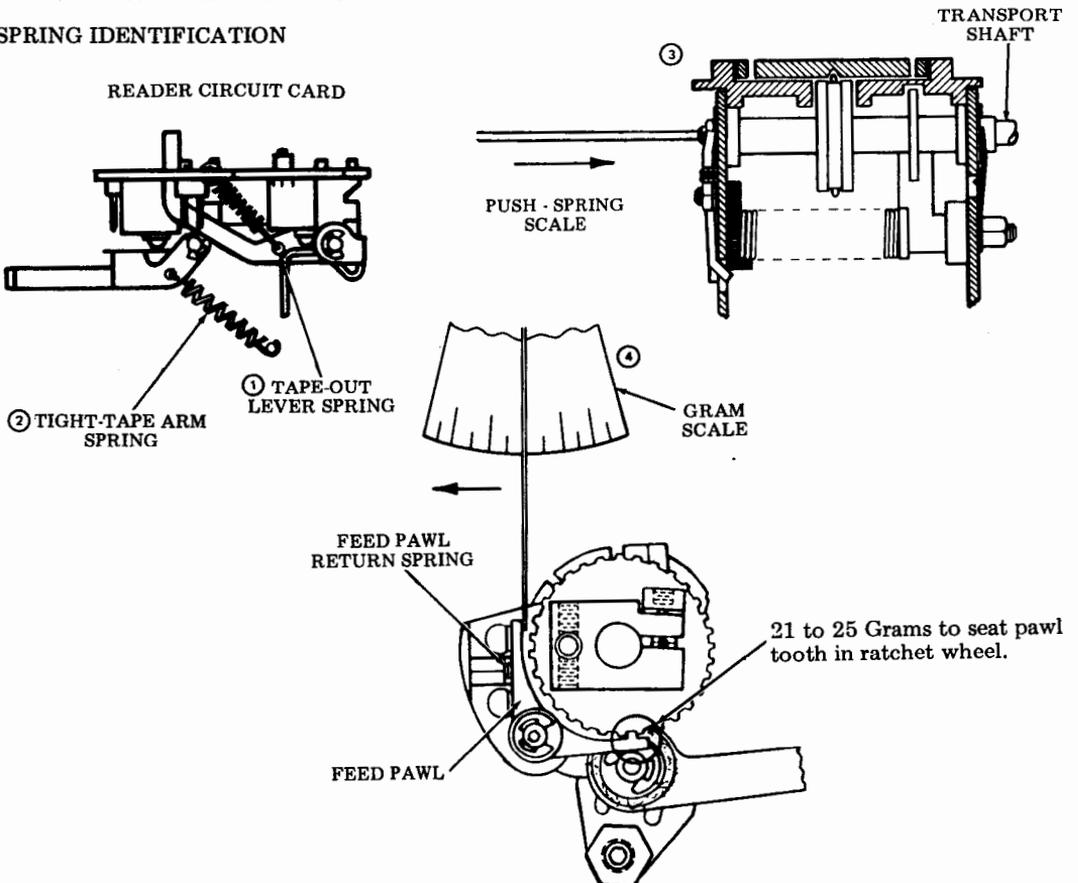


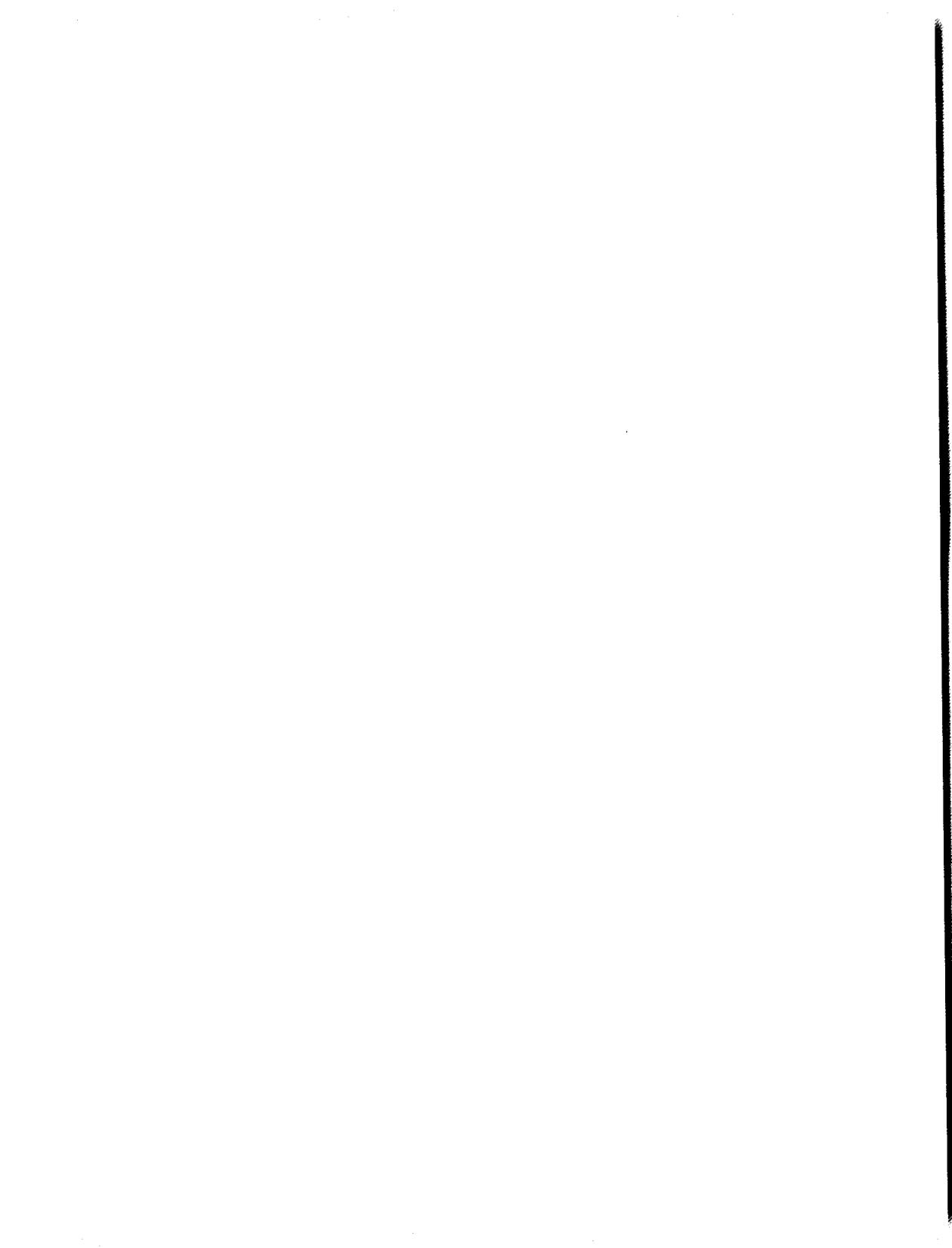
4. SPRING TENSIONS

- ① Reader Tape Out Lever Spring:
With the lever in upmost position and measured at spring end, it shall take 2 1/2 to 4 ounces to start the lever moving down.
- ② Reader Tight Tape Arm Spring:
With the lever biased upward against upstop, it shall take 3 to 4 ounces to pull spring to installed length.
- ③ Reader Transport Shaft:
With spring scale push on shaft from left side of unit until bearing is flush with the left side plate, as seen by eye

Min. 32 oz
Max 48 oz
- ④ Transport Pawl Return Spring:
When measured at the tip of the pawl, as shown, it shall take 21 to 25 grams to bias the pawl so the tooth is seated in ratchet wheel.

SPRING IDENTIFICATION





43 TELEPRINTER 5-LEVEL PAPER TAPE READER ASSEMBLY

LUBRICATION

1. GENERAL

1.01 This section provides lubrication procedures for the 43 Teleprinter 5-Level Paper Tape Reader Assembly.

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

1.03 Lubricate the reader at intervals indicated under 43 Teleprinter 5-Level Paper Tape Unit, Routine Maintenance, Section 574-504-750.

1.04 The reader can be lubricated by removing the punch and reader module from the set housing. See Section 574-504-720.

1.05 When ordering replaceable parts, unless otherwise specified prefix each part number with the letters "TP" (ie, TP430047).

2. LUBRICATION PROCEDURES

2.01 Apply lubricant to points as indicated.

(a) On small parts, a minimum of lubricants should be applied so that the lubricant remains on the parts and does not run off.

(b) Excessive lubricant should be removed with a dry, lint-free cloth.

2.02 The following areas must be kept dry and free of all lubricants: All electrical components, including terminals, connectors and cables, armatures and core faces. All parts normally touched by the operator, including tape handling areas, reader lids, and all large flat areas.

2.03 The following symbols indicate the quantity of lubricant to be used in a specified area: Symbols 01, 02, 03 etc, refer to 1, 2, 3, etc, drops of oil.

The following list of symbols applies to the lubrication instructions as the type of lubricant to be used:

O Oil 88970 (1 qt), 88971 (1gal.).

GA Apply thin film of Syn-Tech grease (use 430836 4 oz. tube with grease and 430838 brush).

GB Apply thin film of Mobil No. 2 grease (use 145867 4 oz. tube or 143383 1 lb. can). Apply with 43C838 brush.

S Saturate felt oilers, washers, and wicks with oil.

D Keep dry, no lubricant permitted.

SECTION 574-506-710

2.04 Lubricant Check List:

Reader Assembly:

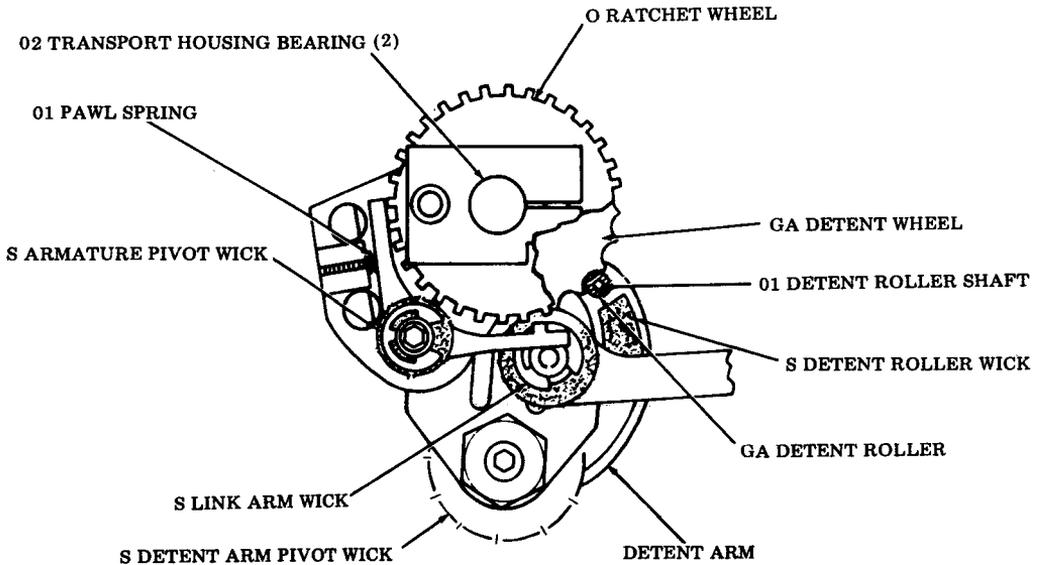
Two drops of oil on all pivots and spring posts except the reader lid hinge and the end of the tape out spring which is directly tied to the reader circuit card.

Transport (Reader)

- Ratchet Wheel Teeth
- Detent Roller
- Detent Wheel
- Armature Pivot Wick
- Transport Housing Bearing
- Link Arm Wicks
- Detent Roller Shaft
- Detent Roller Wick
- Detent Arm Pivot Wick
- Pawl Spring

- Film of oil on all teeth.
- Grease.
- Grease.
- Saturate with oil.
- 2 drops on each side.
- Saturate with oil (2 places).
- 1 drop of oil on shaft between roller and detent arm.
- Saturate with oil.
- Saturate with oil.
- 1 drop of oil.

3. LUBRICATION POINTS



TRANSPORT, READER

43 TELEPRINTER 5-LEVEL PAPER TAPE READER ASSEMBLY
 DISASSEMBLY/REASSEMBLY

| | |
|-------------------------------|------|
| CONTENTS | PAGE |
| 1. GENERAL | 1 |
| 2. TOOLS REQUIRED | 1 |
| 3. DISASSEMBLY/REASSEMBLY.... | 2 |
| READER LID | 2 |
| READER HOUSING | 3 |

1. GENERAL

- 1.01 This section covers disassembly/reassembly procedures for the 43 Teleprinter 5-Level Paper Tape Reader Assembly.
- 1.02 Whenever this section is reissued the reason for reissue will be listed in this paragraph.
- 1.03 Although the reader is considered a field replaceable item, many troubles can be corrected by adjustments or by replacement of repair parts.
- 1.04 The extent of the disassembly procedure is limited to that which is required for correction of troubles or replacement of parts in field locations. When removing a subassembly or part from the reader, follow the removal procedure and note the sequence of removal to enable proper reassembly. For reassembly, reverse the procedure except where different instructions are given. Do not force or pry parts in the process of removal.

- 1.05 Reference in the procedures to left or right, up or down and top or bottom, etc, refer to the reader in its normal operating position.
- 1.06 When ordering replaceable parts, unless otherwise specified prefix each part number with the letters "TP" (ie, TP430047).
- 1.07 Disassembly of readerunit parts will require removal of the punch and reader module from the set housing Refer to Punch and Reader Disassembly/Reassembly, Section 574-504-720.
- 1.08 After replacing reader parts, refer to Section 574-506-710, lubrication procedures and lubricate any parts requiring lubrication.

2. TOOLS REQUIRED

- 2.01 The following tools may be required when performing the reader disassembly/reassembly procedures. Most of these items should normally be present in standard maintenance tool kits. See Section 570-005-800 for a complete listing of various hand tools available for maintaining Teletype Corporation equipment.

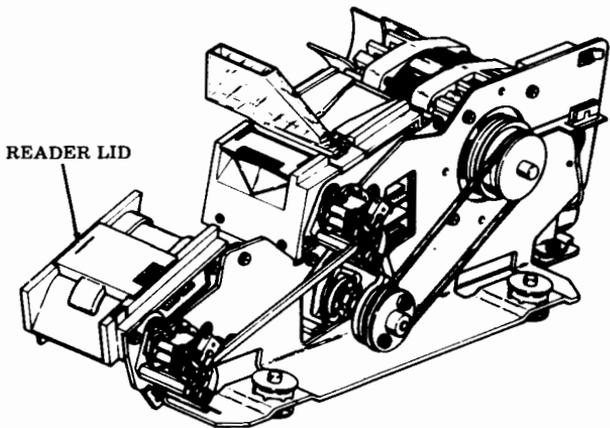
| PART NO. | TOOLS |
|----------|---|
| 100982 | Screwdriver w/Clip, 1/4 Inch, 6 Inch Blade |
| 89954 | Assembly Wrench, 1/4 Inch |
| 129534 | Wrench, 3/16 Inch by 1/4 Inch Open End |
| 142554 | Hook, Pull Spring |

3. DISASSEMBLY/REASSEMBLY

READER LID

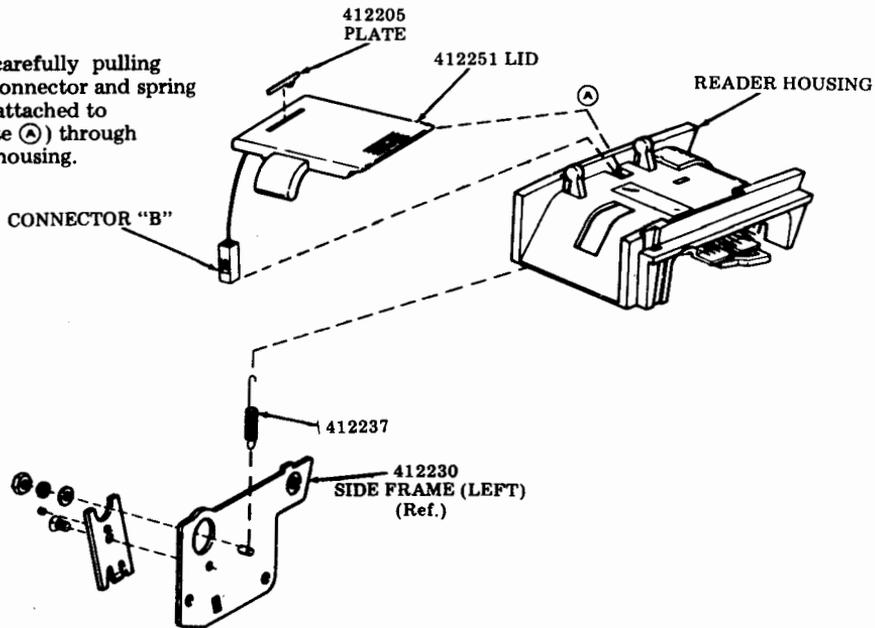
3.01 To remove reader lid:

- ① Remove punch and reader assembly. Perform disassembly procedure in Section 574-504-720.



- ② Unhook lower end of 412237 spring from post on left side frame.
- ③ Disconnect connector "B" from underside of reader housing.

- ④ Lift off lid carefully pulling cable with connector and spring (upper end attached to 412205 plate (A) through opening in housing).



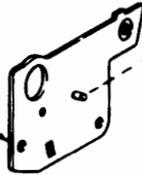
READER HOUSING

3.02 To remove reader housing:

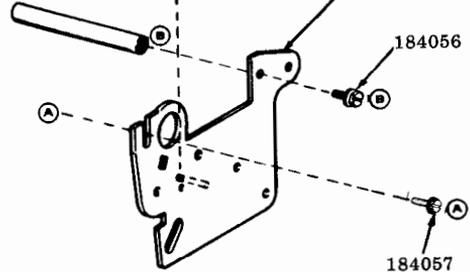
① Remove punch and reader assembly. Perform disassembly procedure in Section 574-504-720, paragraph 3.02.

② Perform disassembly procedure, Section 574-506-720, paragraph 3.01.

412230
LEFT SIDE
FRAME (Ref.)

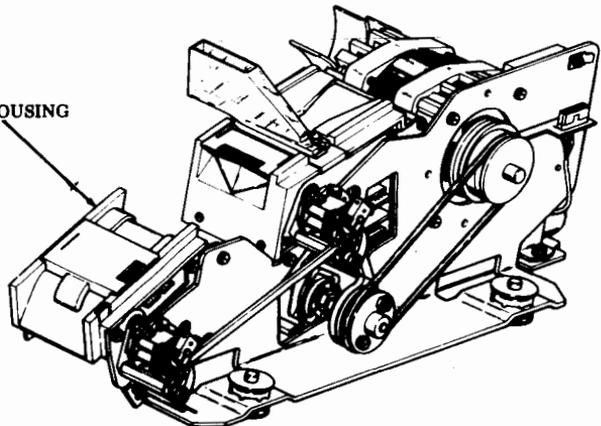


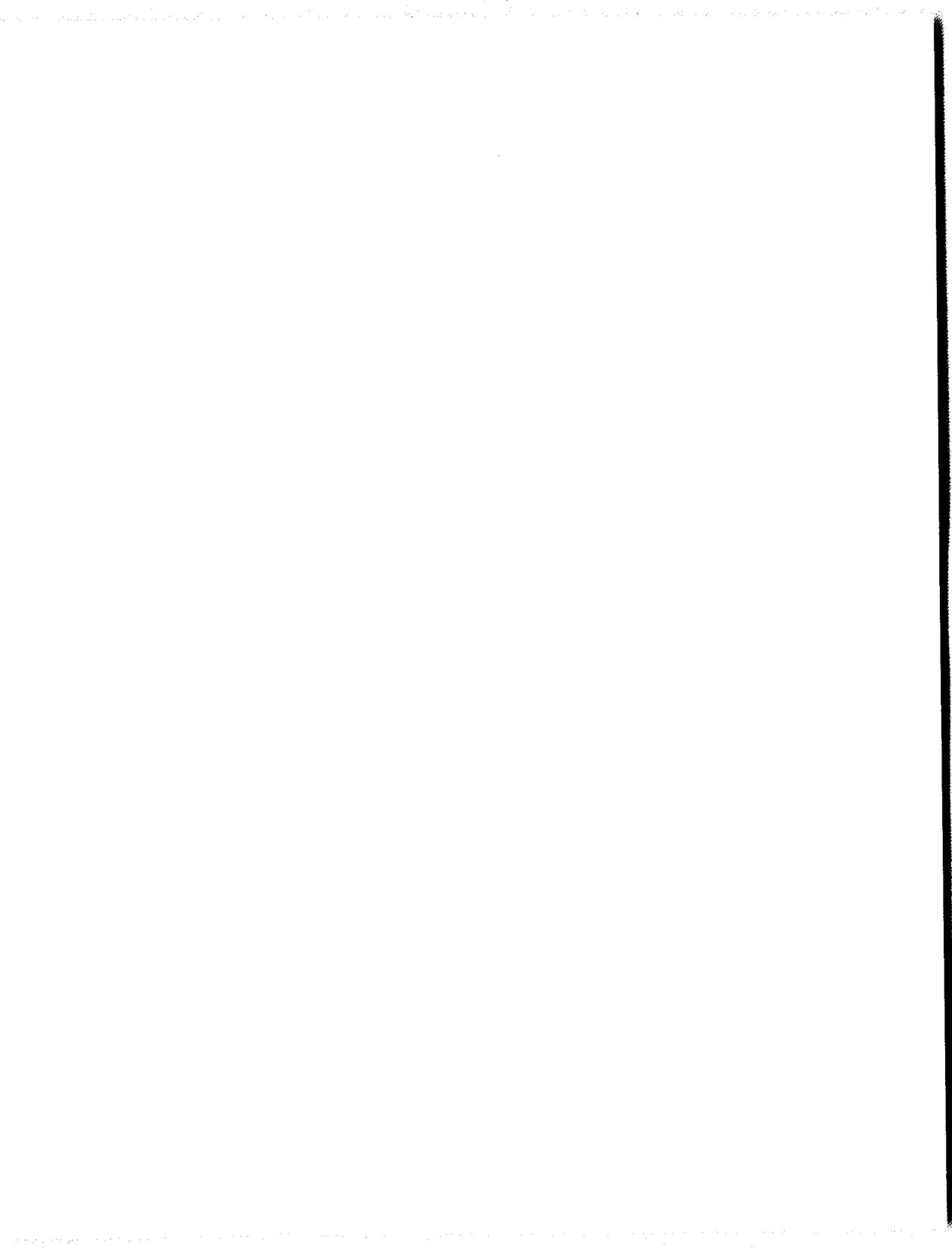
412229
RIGHT SIDE
FRAME (Ref.)



④ Unhook lower end of springs ③ and ④ from posts on side frames. Loosen screw ①. Remove screw ② and lift out housing.

READER HOUSING





43 TELEPRINTER 5-LEVEL PAPER TAPE READER ASSEMBLY

PARTS

1. GENERAL

1.01 Information on maintenance spare parts is provided in this section for the 43 Teleprinter 5-Level Paper Tape Reader Assembly.

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

1.03 Part numbers are listed in the index in numerical order and indicate the page on which the parts appear. Asterisked numbers, stocked as "List 1", indicate a maintenance spare stocking ratio of one spare for the first 20 stations

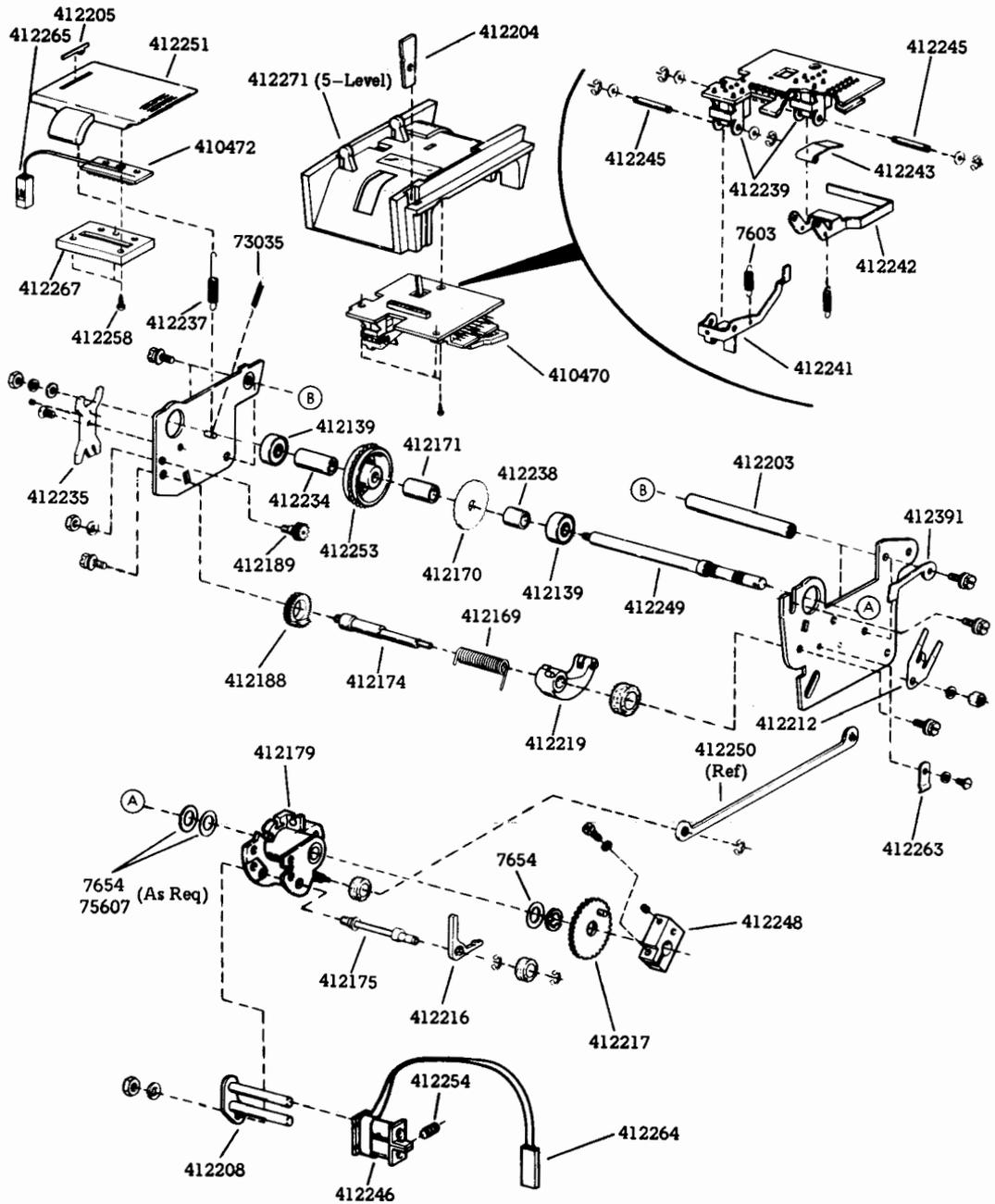
and an additional spare for each additional 30 stations in a maintenance area. Part numbers without asterisks are not maintenance spares but may be ordered separately for local repair of the PTU.

1.04 When ordering replaceable parts, unless otherwise specified prefix each part number with the letters "TP" (ie, TP430047).

1.05 The troubleshooting and disassembly/reassembly information for these parts is provided in Sections 574-506-300 and 574-506-720 respectively.

2. PARTS

READER ASSEMBLY — 412280 5-level

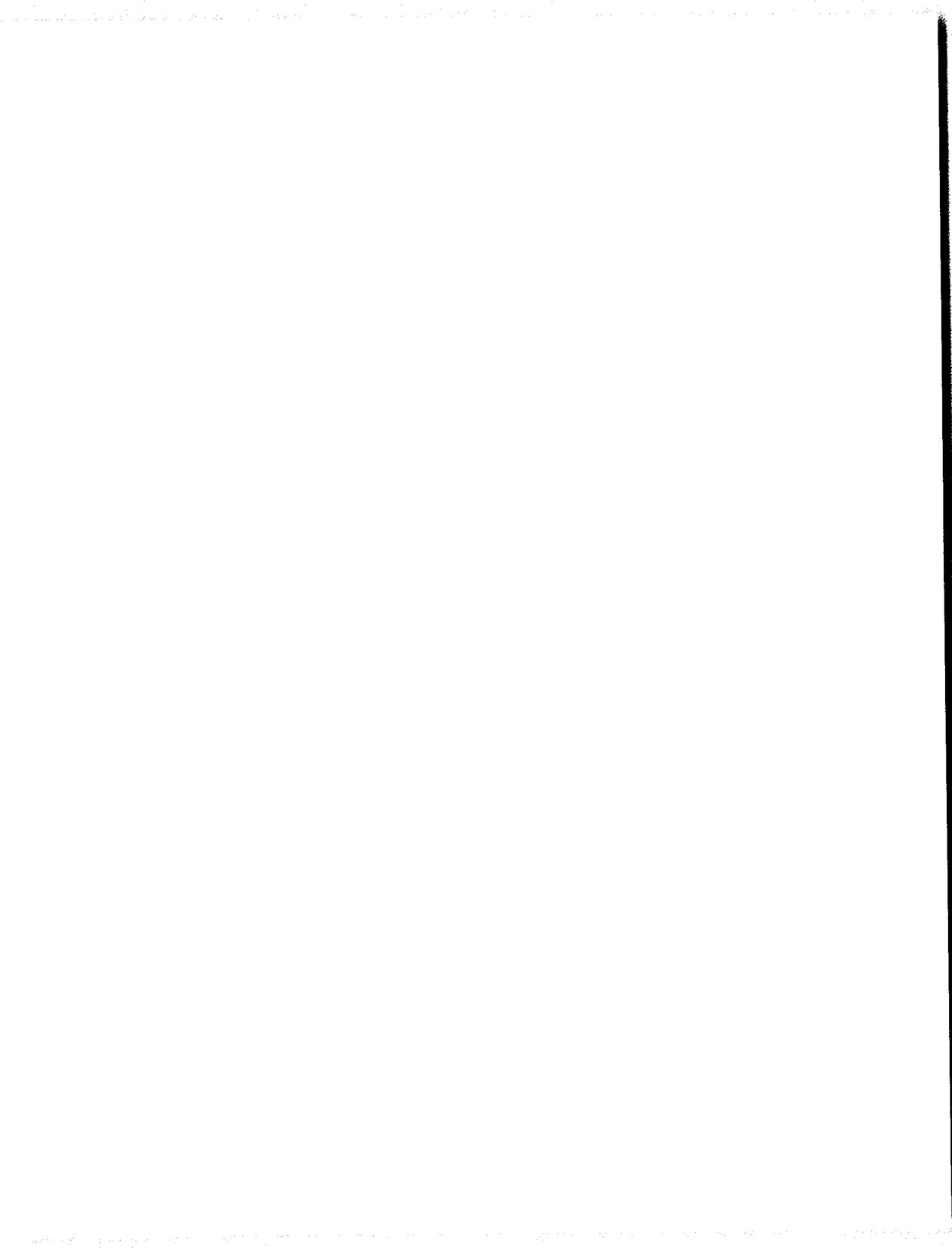


3. NUMERICAL INDEX

3.01 Parts listed without asterisks are not maintenance spares but may be ordered as needed for local repair of major components or terminals.

| Part Number | Description and Page Number | Part Number | Description and Page Number | Part Number | Description and Page Number |
|-------------|-----------------------------|-------------|-----------------------------|-------------|-----------------------------|
| 7603 | Spring 2 | 412204 | Plate, Nut 2 | 412245 | Shaft 2 |
| 7654 | Shim, .004 In Thk 2 | 412205 | Plate, Spring 2 | 412246 | Coil, Transport 2 |
| 73035 | Spring, 2 | 412208 | Core Assembly, Magnet 2 | 412248 | Clamp 2 |
| 75607 | Washer, Flat 2 | | | 412249 | Shaft, Transport 2 |
| 410470 | Card, Circuit 2 | 412212 | Clamp, Bearing 2 | 412250 | Link 2 |
| 410472 | Card, Circuit 2 | 412216 | Pawl 2 | 412251 | Lid, Reader 2 |
| 412139 | Bearing 2 | 412217 | Wheel, Ratchet 2 | 412253 | Wheel, Feed 2 |
| 412169 | Spring 2 | 412219 | Detent Assembly 2 | 412254 | Spring, Pawl 2 |
| 412170 | Starwheel 2 | 412234 | Spacer 2 | 412258 | Screw, 2-32 Spl 2 |
| 412171 | Spacer 2 | 412235 | Plate, Adjustment 2 | 412263 | Clamp, Cable 2 |
| 412174 | Shaft, Eccentric Detent 2 | 412237 | Spring, Tape Lid 2 | 412264 | Cable 2 |
| | | 412238 | Spacer 2 | 412265 | Cable 2 |
| 412175 | Shaft, Pawl 2 | 412239 | Switch 2 | 412267 | Insert w/Cover 2 |
| 412179 | Housing 2 | 412241 | Bail, Tape-Out 2 | 412271 | Housing (5-level) 2 |
| 412188 | Pinion 2 | 412242 | Bail, Tight-Tape 2 | * 412280 | Reader Assembly 2 |
| 412189 | Pinion 2 | 412243 | Spring, Yield 2 | 412391 | Clamp 2 |
| 412203 | Post 2 | | | | |

*A maintenance spare stocking ratio of one spare for the first 20 stations and one additional spare for each additional 30 stations in a maintenance area.



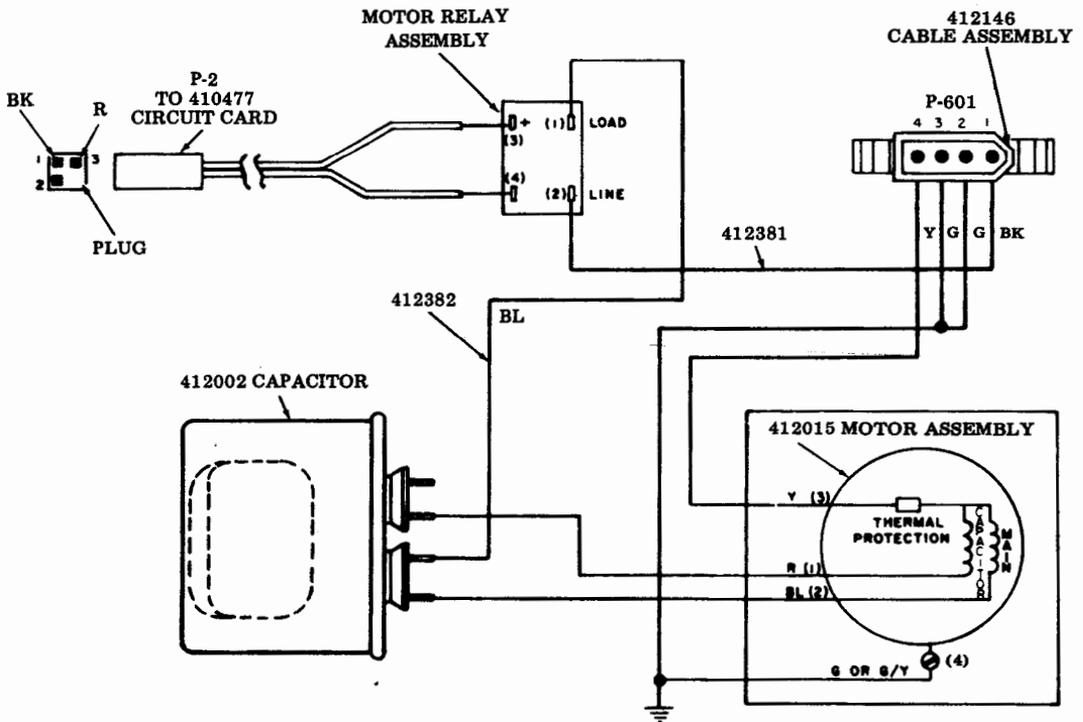
43 TELEPRINTER 5-LEVEL PAPER TAPE MOTOR AREA

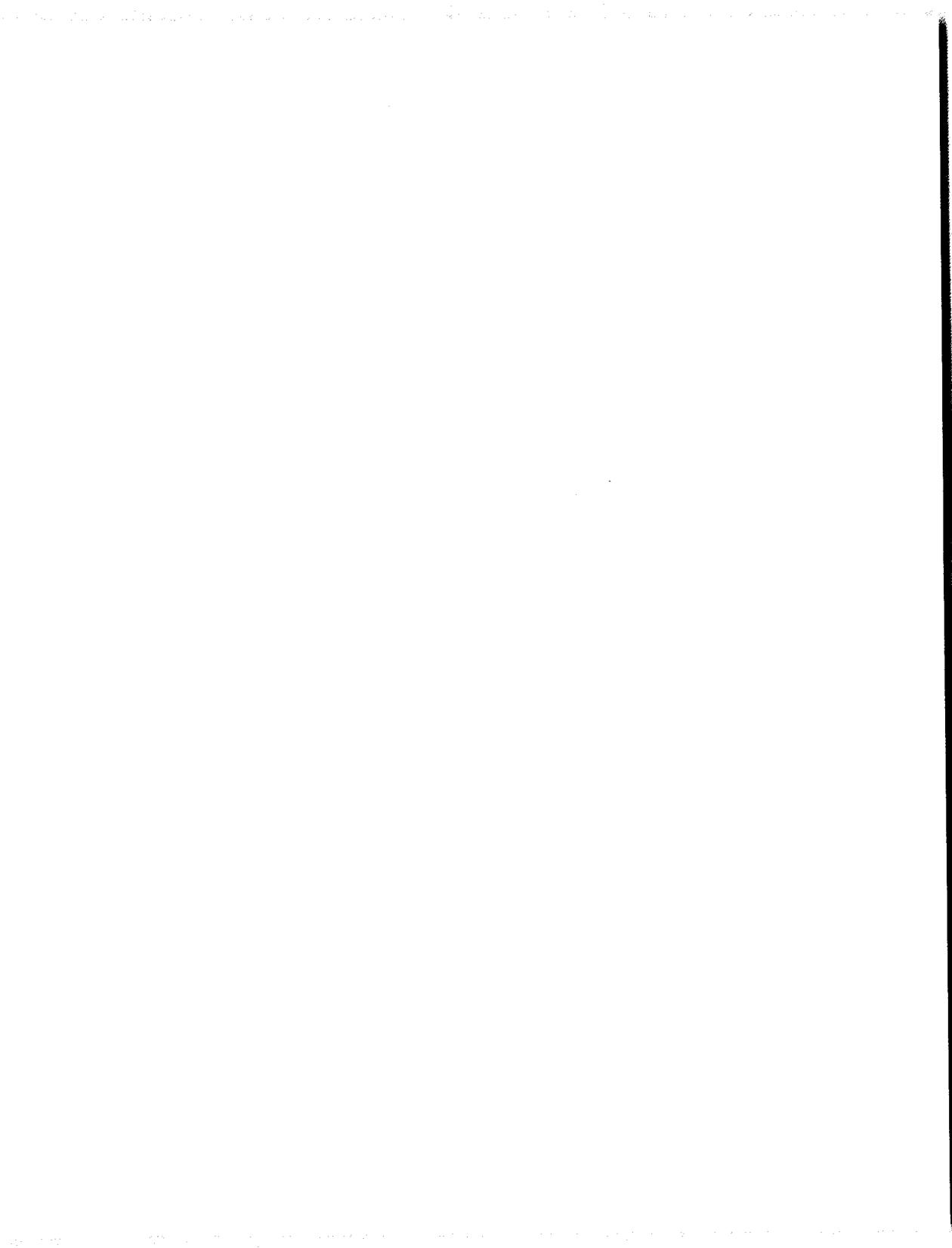
WIRING

1. GENERAL

- 1.01 This section provides wiring information for the 43 Teleprinter 5-Level Paper Tape Motor Area.
- 1.02 Whenever this section is reissued, the reason will be listed in this paragraph.
- 1.03 Related wiring information and cable connections are shown in Section 574-504-400.
- 1.04 Designations on motor wiring diagrams do not appear on the components.
- 1.05 When ordering replaceable parts or components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410055).

2. WIRING





43 TELEPRINTER 5-LEVEL PAPER TAPE MOTOR AREA
ADJUSTMENTS

1. GENERAL

- 1.01 This section provides the motor adjustment. There is no spring tension.
- 1.02 Whenever this section is reissued, the reason will be listed in this paragraph.
- 1.03 When ordering replaceable parts or components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410055).
- 1.04 Reference in the procedures to left and right and up or down and top or bottom, etc, refer to the motor assembly in its normal operating position.

2. ADJUSTMENTS

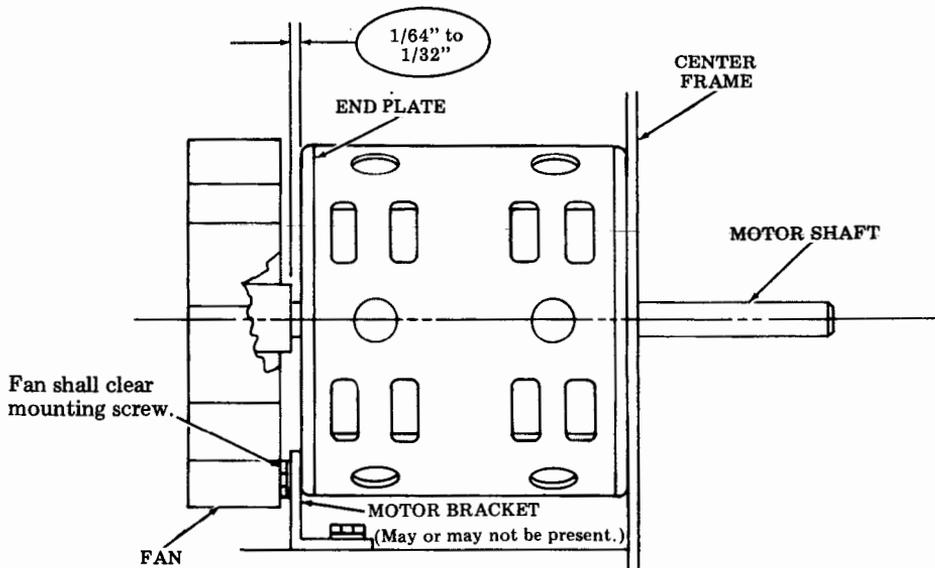
MOTOR FAN

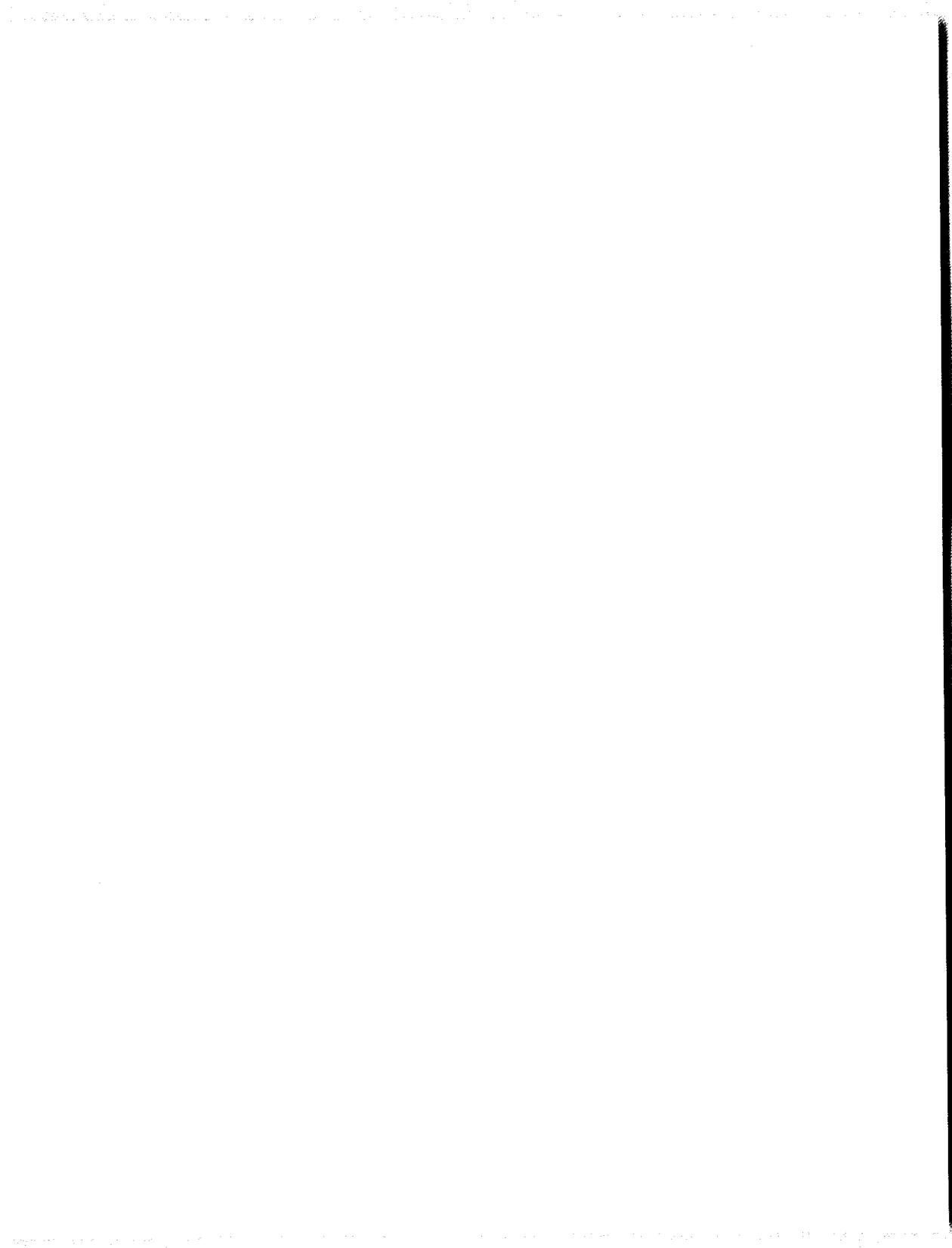
- (1) Requirement
There should be
Min 1/64 inch--Max 1/32 inch
space between the fan hub and the motor end plate.

- (2) Requirement
Fan should clear bracket mounting screw.

To Adjust:

Pry fan in direction necessary to meet the requirement.





43 TELEPRINTER 5-LEVEL PAPER TAPE MOTOR AREA

DISASSEMBLY/REASSEMBLY

1. GENERAL

1.01 This section covers disassembly/reassembly procedures for the 43 Teleprinter 5-Level Paper Tape Motor Area.

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

1.03 The extent of the disassembly procedure is limited to that which is required for correction of troubles or replacement of parts in field locations. When removing the motor follow the removal procedure and note sequence of removal to enable proper reassembly. For reassembly, reverse the procedure except where different instructions are given. Do not force or pry parts in the process of removal.

1.04 Reference in the procedure to left or right, up or down and top or bottom, etc, refer to the unit in its normal operating position.

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

1.06 Disassembly of motor unit parts will require removal of the punch and reader module from the set housing. Refer to 43 Teleprinter 5-Level Paper Tape Unit Disassembly/Reassembly, Section 574-504-720.

2. TOOLS REQUIRED

2.01 The following tools may be required when performing the motor disassembly/reassembly procedures. Most of these items should normally be present in standard maintenance tool kits. See Section 570-005-800 for a complete listing of various hand tools available for maintaining Teletype Corporation equipment.

| <u>Part No.</u> | <u>Tools</u> |
|-----------------|---|
| 89954 | Wrench, Assembly 1/4" |
| 100982 | Screwdriver w/Clip, 1/4", 6" Blade |
| 104457 | Wrench, Hex Key 1/16" |
| 124682 | Wrench, Hex Key 1/16" |
| 129534 | Wrench, 3/16 x 1/4 Open End |
| 129536 | Wrench, 7/16 x 1/2 Open End |
| 152835 | Wrench, 5/16 x 3/8 Open End |
| 159841 | Wrench, Hex Key (0.093) |
| 325991 | Handle (Terminal Insertion and Removal Tool) |
| 325992 | Removal Bit (Male) |
| 325993 | Removal Bit (Female) |
| 325994 | Insertion Bit (0.020 to 0.024 Gauge) |
| 325995 | Insertion Bit (18 Gauge) |

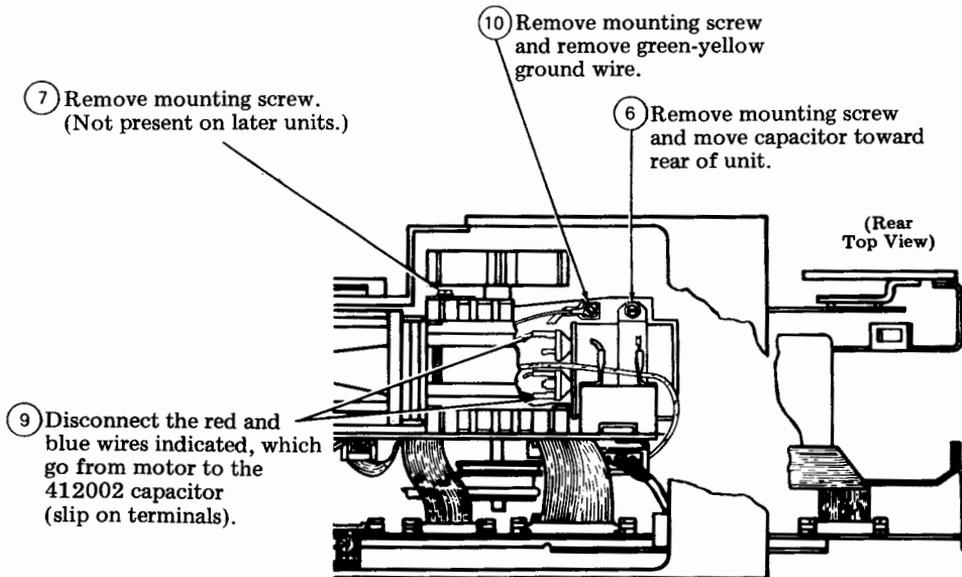
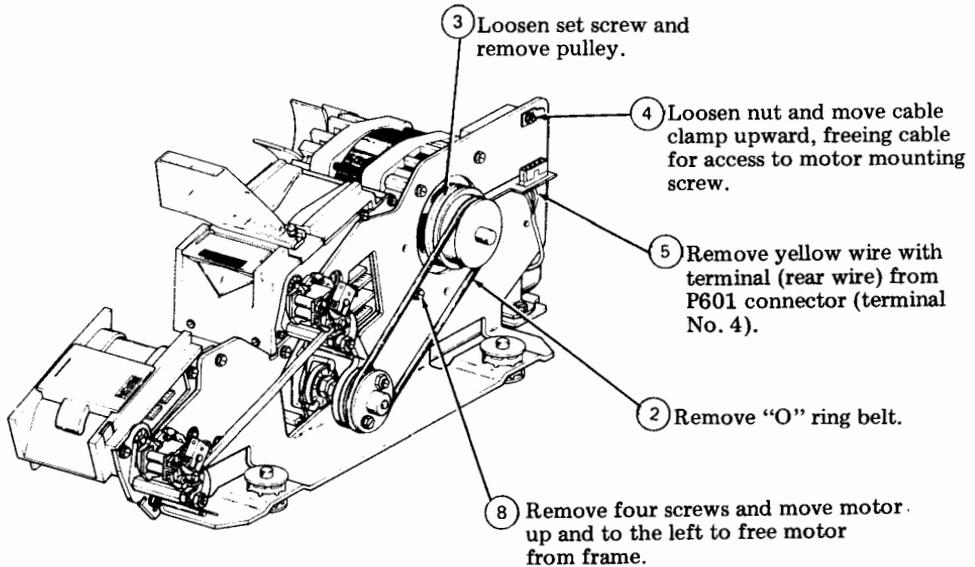
3. DISASSEMBLY/REASSEMBLY

Motor

To remove the motor:

① Remove punch and reader assembly. Perform Section 574-504-720, 3.02.

Note: See Section 574-507-800 for parts location.



43 TELEPRINTER 5-LEVEL PAPER TAPE MOTOR AREA

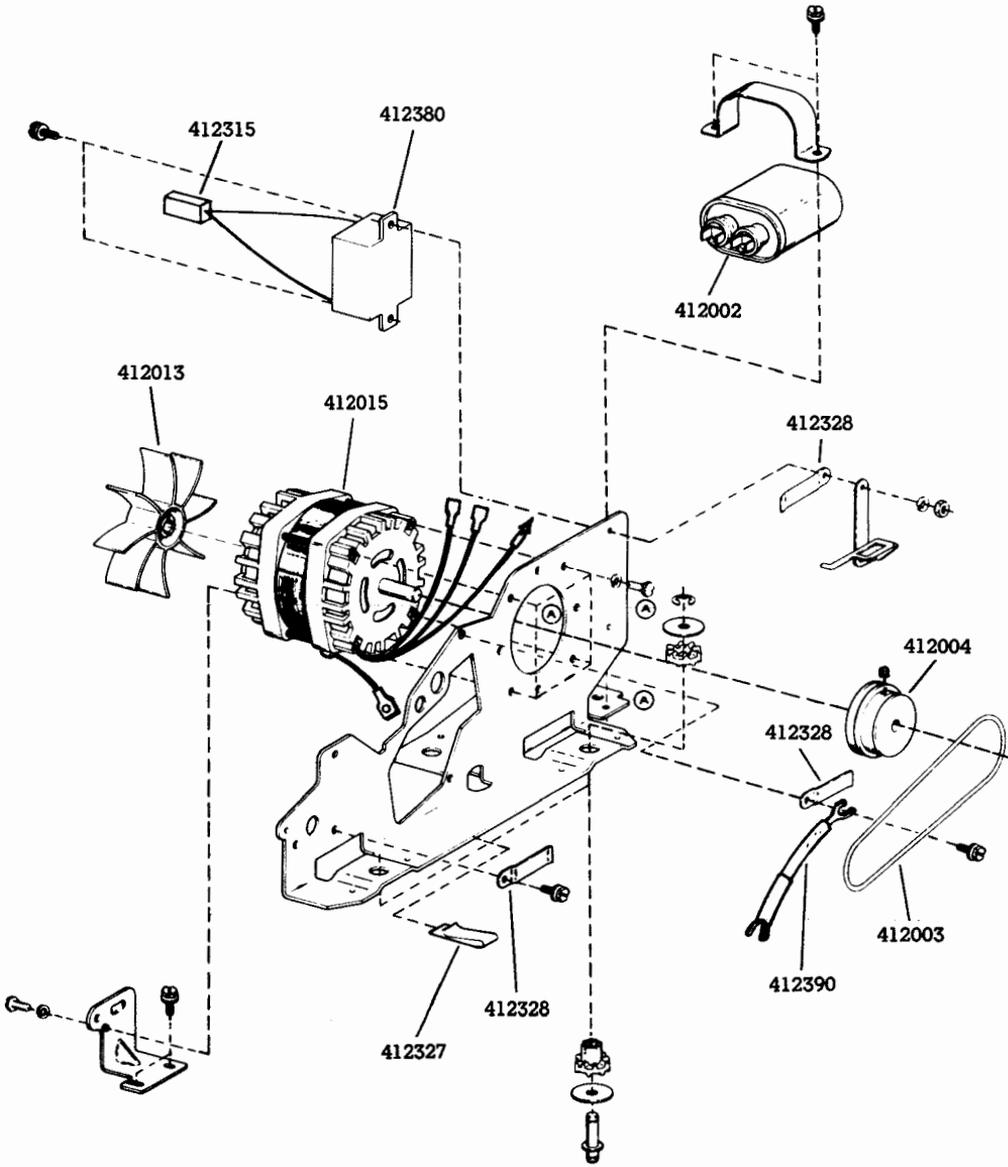
PARTS

1. GENERAL

- 1.01 This section provides information on maintenance spare parts for the 43 Teleprinter 5-Level Paper Tape Motor Area.
- 1.02 Whenever this section is reissued, the reason will be listed in this paragraph.
- 1.03 Part numbers are listed in the index in numerical order and indicate the page on which the parts appear. Asterisked numbers, stocked as "List 1", indicate a maintenance spare stocking ratio of one spare for the first 20 stations
- and an additional spare for each additional 30 stations in a maintenance area. Part numbers without asterisks are not maintenance spares but may be ordered separately for local repair of the Paper Tape Unit.
- 1.04 When ordering replaceable parts or components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410055).
- 1.05 Disassembly and reassembly information for these parts is provided in Section 574-507-720.

SECTION 574-507-800

2. PARTS



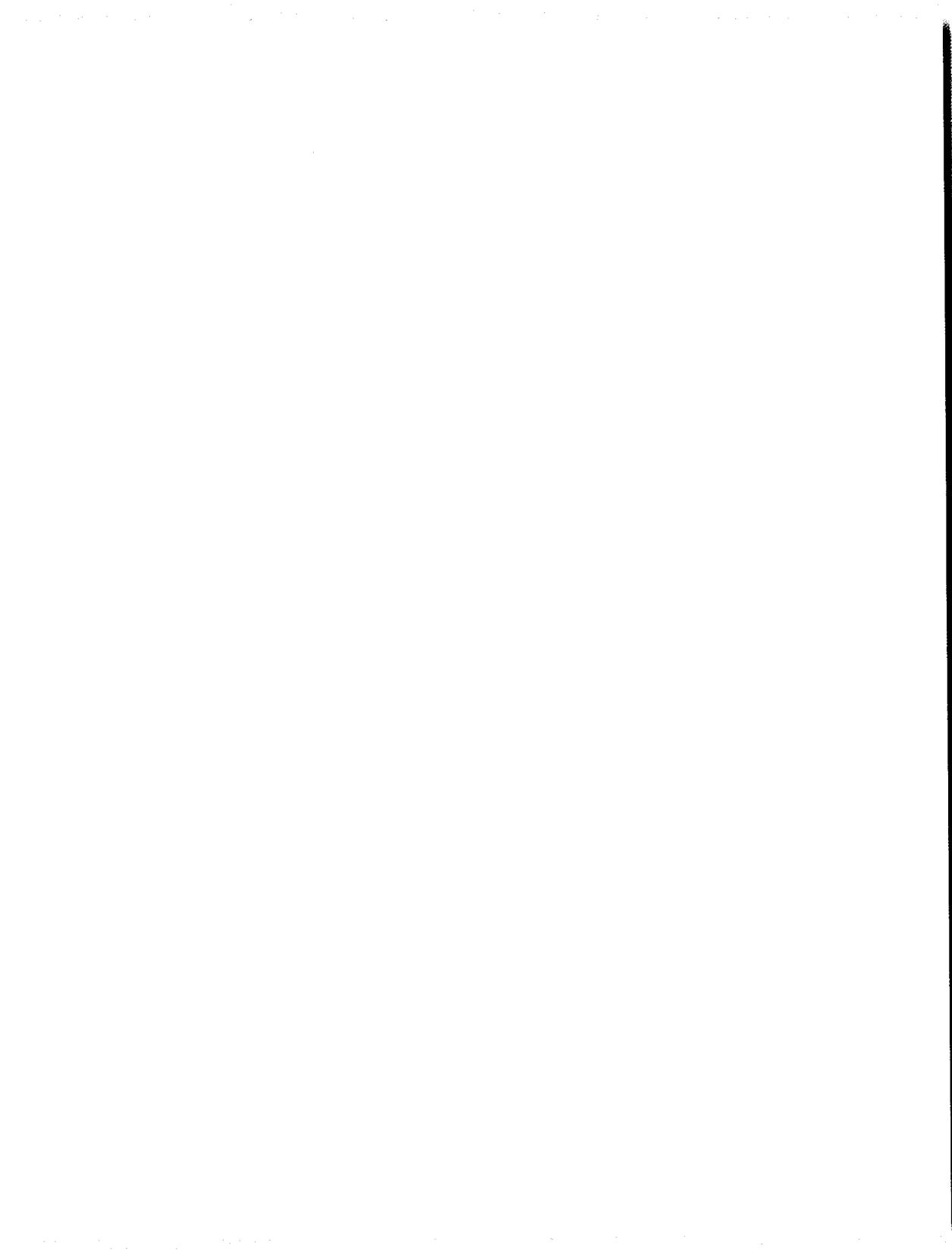
Motor Area

3. NUMERICAL INDEX

3.01 Parts listed without asterisks are not maintenance spares but may be ordered as needed for local repair of major components or terminals.

| Part Number | Description and Page Number | Part Number | Description and Page Number |
|-------------|-----------------------------|-------------|-----------------------------|
| 412002 | Capacitor 2 | 412315 | Cable 2 |
| *412003 | "O" Ring Belt 2 | 412327 | Cable Clamp 2 |
| 412004 | Pulley 2 | 412328 | Cable Clamp 2 |
| 412013 | Fan 2 | 412380 | Motor Control Relay 2 |
| *412015 | Motor 2 | 412390 | Strap 2 |

*A maintenance spare stocking ratio of one spare for the first 20 stations and one additional spare for each additional 30 stations in a maintenance area.



43 TELEPRINTER 5-LEVEL PAPER TAPE POWER SUPPLY

TROUBLESHOOTING

1. GENERAL

1.01 This section provides troubleshooting information for the 43 Teleprinter 5-Level Paper Tape Power Supply.

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

1.03 Power supply troubleshooting is initiated by the 43 Teleprinter 5-Level Paper Tape Unit Troubleshooting, Section 574-504-300 when trouble in the power supply is suspected from symptoms observed.

1.04 Analysis in this section is limited to isolating the trouble within the power supply, up to its electrical interface at the logic card. The power supply must be tested as part of 43 PTU, refer to Section 574-504-500. Where analysis indicated the trouble is not in the power supply, return to Section 574-504-300 Troubleshooting for further analysis.

1.05 When a trouble is verified to be in the power supply (by replacement of the power supply) this section should be used to help

isolate the trouble to any replaceable components to correct the trouble. The power supply is returnable to the Western Electric Service Center for repair as a component 412396. Pack in carton that was used to pack replacement power supply.

1.06 Isolation and correction of troubles is based on electrical and mechanical checks and parts replacement.

Reference sections are:

| | |
|-------------|------------------------|
| 574-508-400 | Wiring |
| 574-508-720 | Disassembly/Reassembly |
| 574-508-800 | Parts |

1.07 Trouble analysis is presented in the form of a "20 Questions" type of routine in paragraph 2. TROUBLESHOOTING GUIDE. The guide, with questions and yes and no columns, should be used always starting with first questions and proceeding according to the "yes" and "no" directive.

1.08 When ordering, replaceable parts, unless otherwise specified, prefix each part number with the letter "TP" (ie, TP410047).

2. TROUBLESHOOTING GUIDE

| QUESTION | YES | NO |
|---|---|--|
| <p>1 Do indicators on mode switch (POWER PUNCH, READER) light? Power cord for PTU plugged in, power available, power switch on, PTR-LOCAL/NORM switch in PTR-LOCAL position and option switch 4-ON.</p> | Go to 1C. | Go to 1B. |
| <p>1A Does punch indicator lamp blink when tape roll is reduced to 25 ft. or less?</p> | Go to 1B. | <p>Check low-tape switch adjustment.</p> <p>Check low-tape switch.</p> <p>Replace if defective.</p> |
| <p>1B Disconnect power supply connector (P-501) from logic card and measure for +5Vdc, -5Vdc, -12Vdc and +15Vdc. (Refer to Section 574-508-400 for pin assignments.)</p> <p>Are any voltages present?</p> | Go to 1C. | <p>Check ac cord connections.</p> <p>Check fuse F2, F3, F4 and replace if blown. Replace power supply if fuses blow again. Replace power supply.</p> |
| <p>1C Are all voltages present?</p> | Go to Section 574-504-300 for further analysis. | <p>Check mode switch replace if defective.</p> <p>Replace logic card.</p> <p>Replace power supply.</p> |

43 TELEPRINTER 5-LEVEL PAPER TAPE POWER SUPPLY

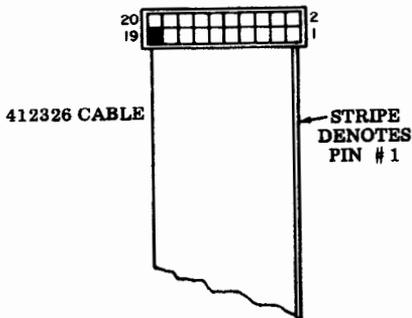
WIRING

1. GENERAL

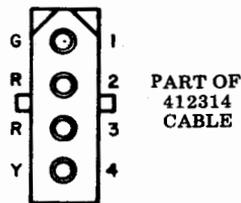
- 1.01 This section provides wiring information for the 43 Teleprinter 5-Level Paper Tape Power Supply.
- 1.02 Whenever this section is reissued, the reason will be listed in this paragraph.
- 1.03 Related wiring information and cable connections are shown in Section 574-504-400.
- 1.04 Designations on wiring diagrams do not appear on the components.
- 1.05 When ordering replaceable parts or components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410055).

2. WIRING

P501 CONNECTOR
(341801)



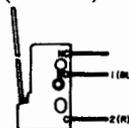
J601 RECEPTACLE
(400921)

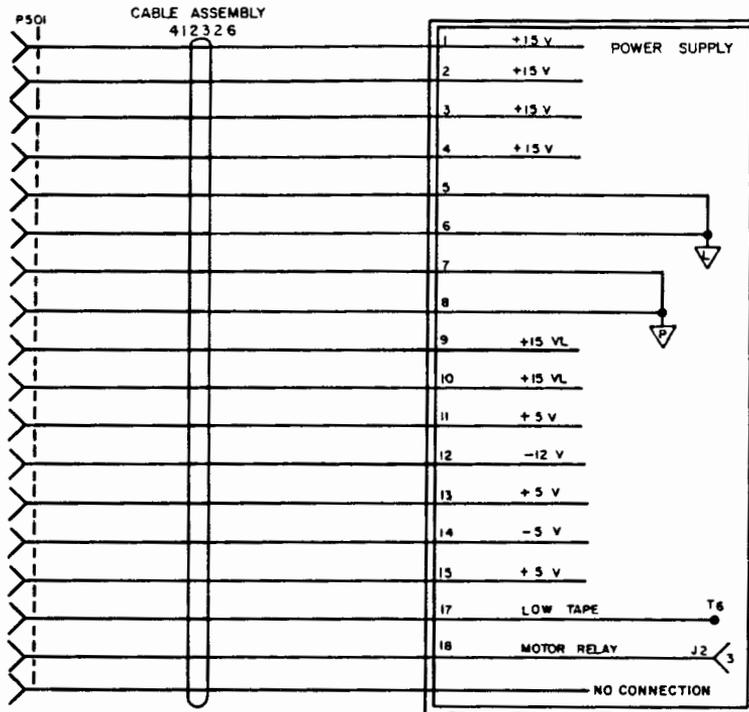


P701 CONNECTOR
(400628)



LOW-TAPE SWITCH
(188406)





Wiring of P501 Connector

43 TELEPRINTER 5-LEVEL PAPER TAPE POWER SUPPLY

ADJUSTMENTS

1. GENERAL

1.01 This section provides adjustment information for the 43 Teleprinter 5-Level Paper Tape Power Supply.

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

1.03 After an adjustment is completed, tighten any screws or nuts loosened to make the adjustment.

1.04 Reference in the procedure to left or right, up or down, and top or bottom, etc, refer to the teleprinter in its normal operating position.

1.05 Adjustments should be checked and performed when a trouble indicates a specific

adjustment may be out of tolerance, or when an adjustment is disturbed to enable a part to be removed or replaced.

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

2. TOOLS REQUIRED

| <u>Part No.</u> | <u>Tools</u> |
|-----------------|---------------------------------------|
| 89954 | Wrench, Assembly 1/4" |
| 100982 | Screwdriver w/Clip, 1/4", 6" Blade |
| 110445 | Bending Tool |

3. ADJUSTMENTS

LOW TAPE SWITCH ACTUATING LEVER ADJUSTMENT

Requirement

The low tape switch shall be actuated when there is approximately 25 feet of tape remaining on tape supply roll (when red marker on tape appears).

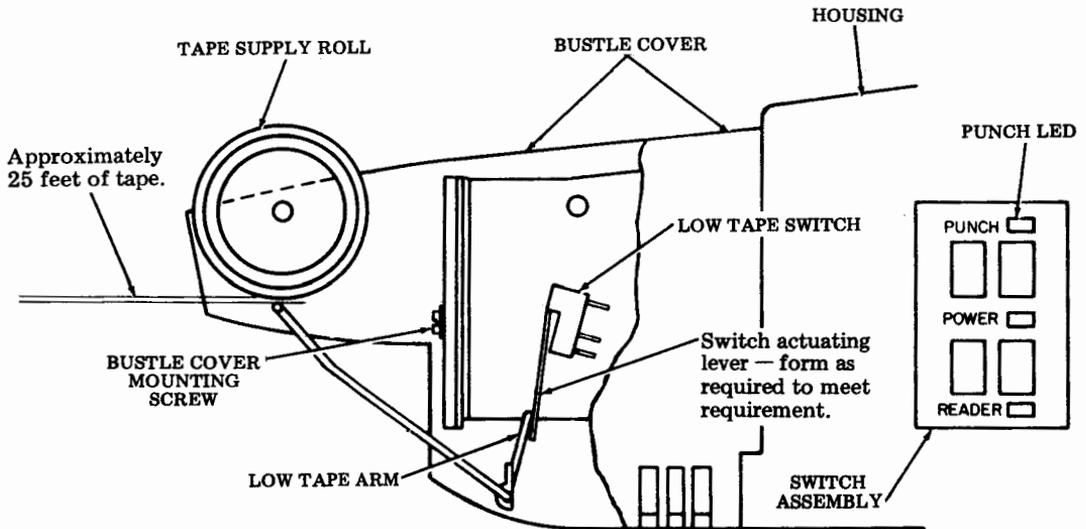
To Check

Bustle cover fully seated over power supply mounting bracket and in module housing. Power supply circuit card and switch assembly cables connected to module logic circuit card and ac input power cable to power. With tape supply roll inserted in bustle cover to actuate low tape arm, turn ac power switch to "ON" position and observe switch assembly punch LED.

To Adjust

Remove two bustle cover mounting screws and bustle cover from module housing and power supply. If the punch LED blinks when tape supply is over 25 feet from the low tape switch actuating lever toward front of unit. If the punch LED does not blink when the tape supply is less than 25 feet from the low tape switch actuating lever toward the rear of the unit.

Caution: Exercise care to avoid damage to the switch while forming the actuating lever.



43 TELEPRINTER 5-LEVEL PAPER TAPE POWER SUPPLY

DISASSEMBLY/REASSEMBLY

1. GENERAL

1.01 This section covers disassembly/reassembly procedures for the 43 Teleprinter 5-Level Paper Tape Power Supply Assembly.

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

1.03 Although the power supply is considered a field replaceable item, many troubles can be corrected by replacement of repair parts.

1.04 The extent of the disassembly procedure is limited to that which is required for correction of troubles or replacement of parts in field locations. When removing parts from the power supply, note the sequence of removal to enable proper reassembly. For reassembly, reverse the procedure except where different instructions are given. Do not force or pry parts in the process of removal.

1.05 Reference in the procedures to left or right, up or down and top or bottom, etc, refer to the unit in its normal operating position.

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

2. TOOLS REQUIRED

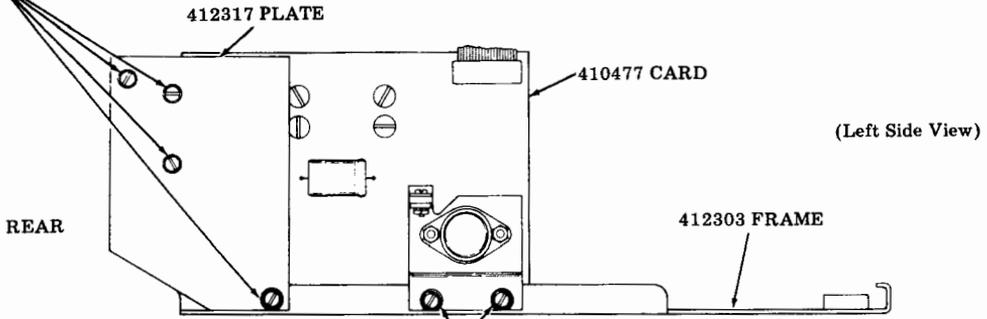
2.01 The following tools may be required when performing the power supply disassembly/reassembly procedures. Most of these items should normally be present in standard maintenance tool kits. See Section 570-005-800 for a listing of various hand tools available for maintaining Teletype Corporation equipment.

| <u>Part No.</u> | <u>Tools</u> |
|-----------------|---------------------------------------|
| 89954 | Assembly Wrench, 1/4" |
| 100982 | Screwdriver w/Clip, 1/4", 6" Blade |

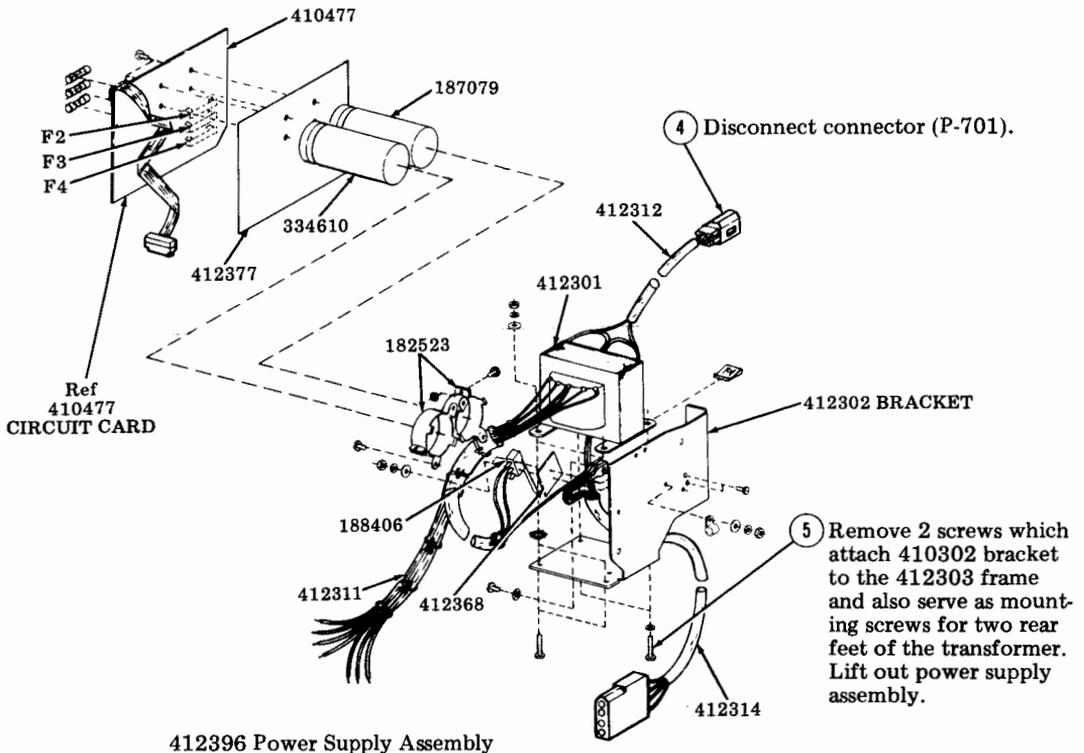
3. DISASSEMBLY/REASSEMBLY

3.01 To remove power supply:

- ① Perform disassembly/reassembly procedures in Section 574-504-720, 3.04 ① through ④.
- ② Remove the 412317 heat sink plate (mounts by 4 screws).



- ③ Remove 2 screws attaching 410477 card to 412303 frame.



- ④ Disconnect connector (P-701).

- ⑤ Remove 2 screws which attach 410302 bracket to the 412303 frame and also serve as mounting screws for two rear feet of the transformer. Lift out power supply assembly.

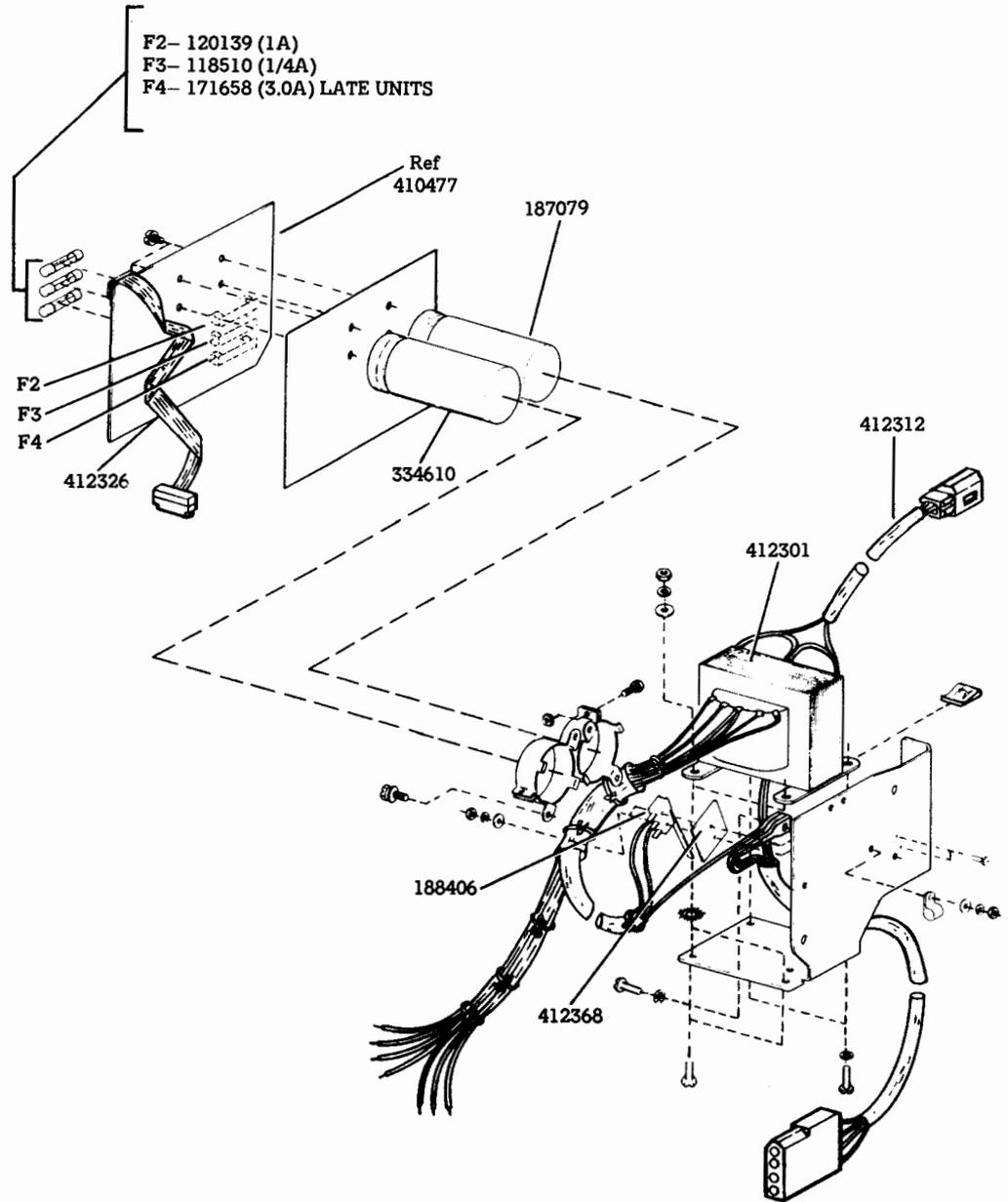
43 TELEPRINTER 5-LEVEL PAPER TAPE POWER SUPPLY

PARTS

1. GENERAL

- 1.01 This section provides information on maintenance parts for the 43 Teleprinter 5-Level Paper Tape Power Supply Assembly.
- 1.02 Whenever this section is reissued, the reason will be listed in this paragraph.
- 1.03 Part numbers are listed in the index in numerical order and indicate the page on which the parts appear. Parts are not maintenance spares but may be ordered separately for local repair of the Paper Tape Unit.
- 1.04 Troubleshooting, disassembly, and reassembly information for these sections is provided in Sections 574-508-300 and 574-508-720 respectively.
- 1.05 When ordering replaceable parts or components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410055).

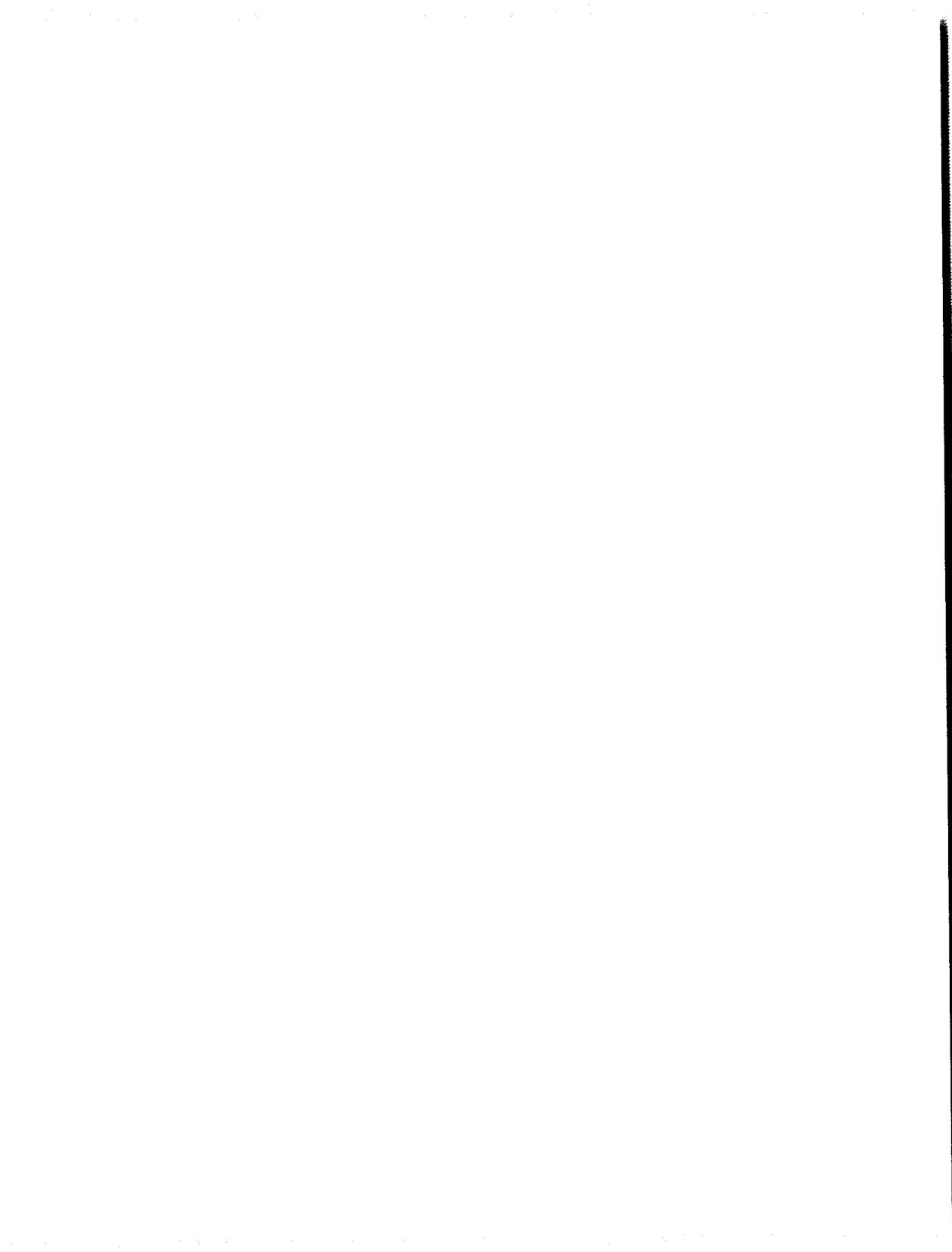
2. PARTS



3. NUMERICAL INDEX

3.01 Parts listed are not maintenance spares but may be ordered as needed for local repair of major components or terminals.

| Part Number | Description and Page Number | Part Number | Description and Page Number |
|-------------|-----------------------------|-------------|-----------------------------|
| 118510 | Fuse, 1/4 Amp 2 | 410477 | Card, Circuit 2 |
| 120139 | Fuse, 1 Amp 2 | 412301 | Transformer 2 |
| 171658 | Fuse, 3 Amp 2 | 412312 | Cable 2 |
| 187079 | Capacitor 2 | 412326 | Cable Assembly 2 |
| 188406 | Switch 2 | 412368 | Insulator 2 |
| 334610 | Capacitor 2 | | |



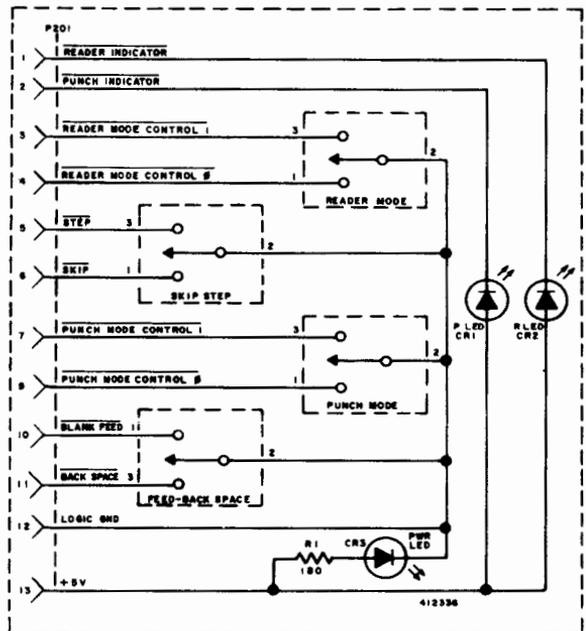
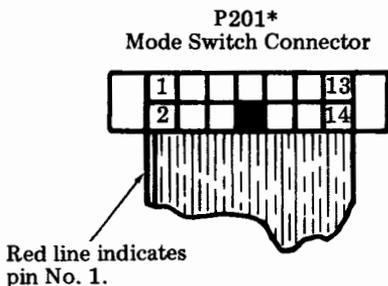
43 TELEPRINTER 5-LEVEL PAPER TAPE — TAPE HANDLING AND ENCLOSURES

WIRING

1. GENERAL

- 1.01 This section provides wiring information for the 43 Teleprinter 5-Level Paper Tape — Tape Handling and Enclosures.
- 1.02 Whenever this section is reissued, the reason will be listed in this paragraph.
- 1.03 Related wiring information and cable connections are shown in Section 574-504-400.
- 1.04 Designations on wiring diagrams do not appear on the components.
- 1.05 When ordering replaceable parts or components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410055).

2. WIRING



*Indicated connector on 412336 switch cards which mate with logic card.



43 TELEPRINTER 5-LEVEL PAPER TAPE — TAPE HANDLING AND ENCLOSURES

ADJUSTMENTS AND SPRING TENSIONS

1. GENERAL

1.01 This section provides adjustment spring tension information for the 43 Teleprinter 5-Level Paper Tape — Tape Handling and Enclosures.

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

1.03 After an adjustment is completed, tighten any screws or nuts loosened to make the adjustment.

1.04 Reference in the procedure to left or right, up or down, and top or bottom, etc, refer to the teleprinter in its normal operating position.

1.05 Adjustments should be checked and performed when a trouble indicates a specific adjustment may be out of tolerance, or when an adjustment is disturbed to enable a part to be removed or replaced.

1.06 Spring tension checks should be performed when a trouble indicates a possible defective spring or to verify proper part numbers.

1.07 Springs that do not meet the tension requirements should be replaced.

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

2. TOOLS REQUIRED

| <u>Part No.</u> | <u>Tools</u> |
|-----------------|--|
| 89954 | Wrench, Assembly 1/4" |
| 98631 | Scale, 50 Gram Spring |
| 100982 | Screwdriver, w/Clip, 1/4", 6" Blade |
| 110445 | Bending Tool |
| 302990 | Gauge, Tape |

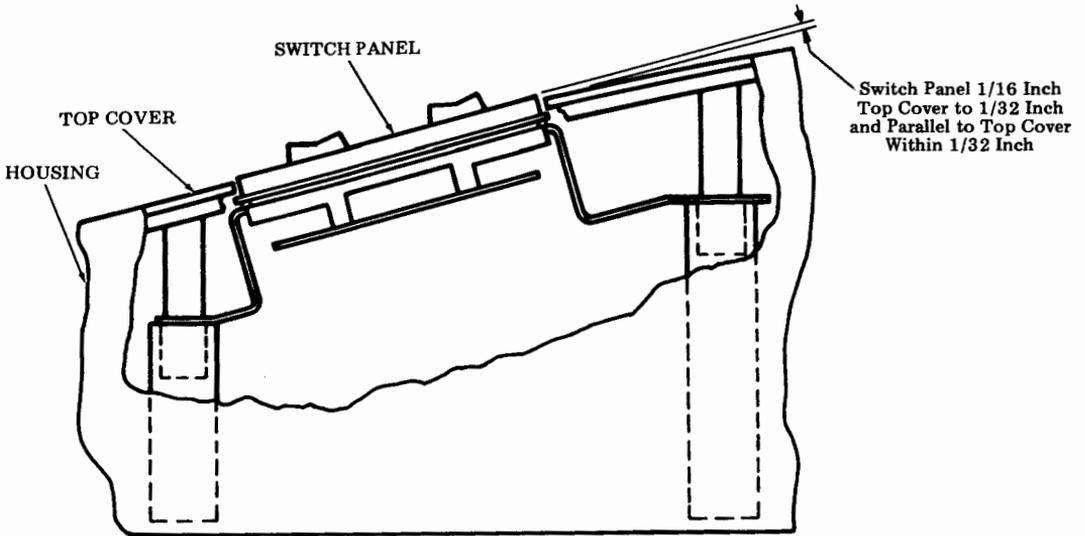
3. ADJUSTMENTS

SWITCH PANEL – TOP COVER ALIGNMENT

Requirement

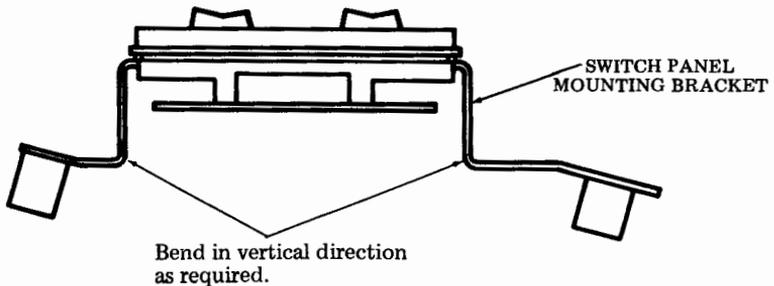
The switch panel should be parallel to the contour of the top cover within 1/32 inch. The top of the switch panel should be

Min 1/32 inch below--1/16 inch above
the upper surface of top cover provided parallelism requirement is met.



To Adjust

Bend associated formed extension of switch panel mounting bracket upward slightly to lower switch panel or downward to raise switch panel exercising caution to avoid twisting mounting bracket.



LOW TAPE ARM POSITION ADJUSTMENT

(1) Requirement

The low tape arm should be centered between the bustle cover spindle support areas, within 1/32 inch and the formed end of the low tape arm should be horizontal as gauged by eye.

To Adjust

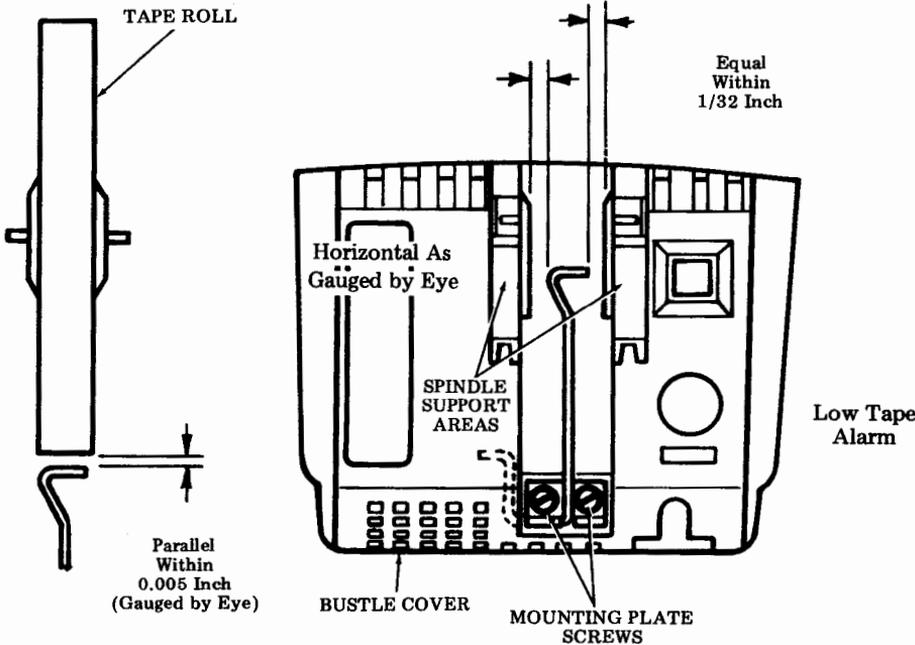
With bustle cover removed from the housing, loosen the two low tape arm mounting plate screws friction tight and position the low tape arm and associated mounting plate. Tighten screws. If necessary, bend low tape arm slightly to meet requirement.

(2) Requirement

With a full roll of tape in the bustle cover, check that the contacting surface of the low tape arm is parallel to the tape within 0.005 inch (as gauged by eye).

To Adjust

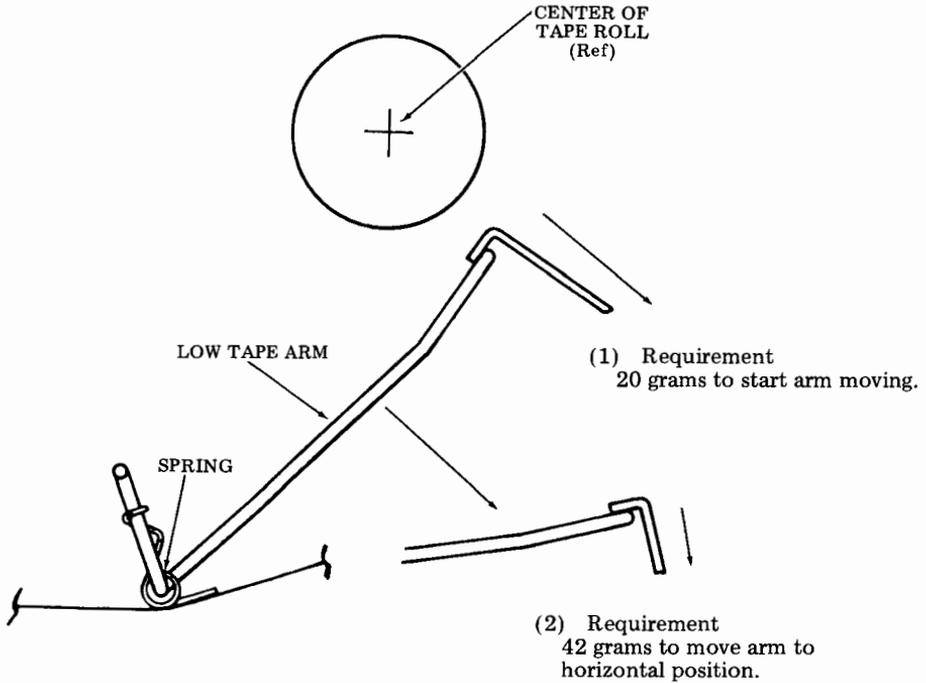
Bend upper formed end of low tape arm to meet requirement. Recheck horizontal requirement.



SECTION 574-509-700

Low Tape Arm Spring (On Bustle)

No tape in unit. Force measured at end of arm as shown.



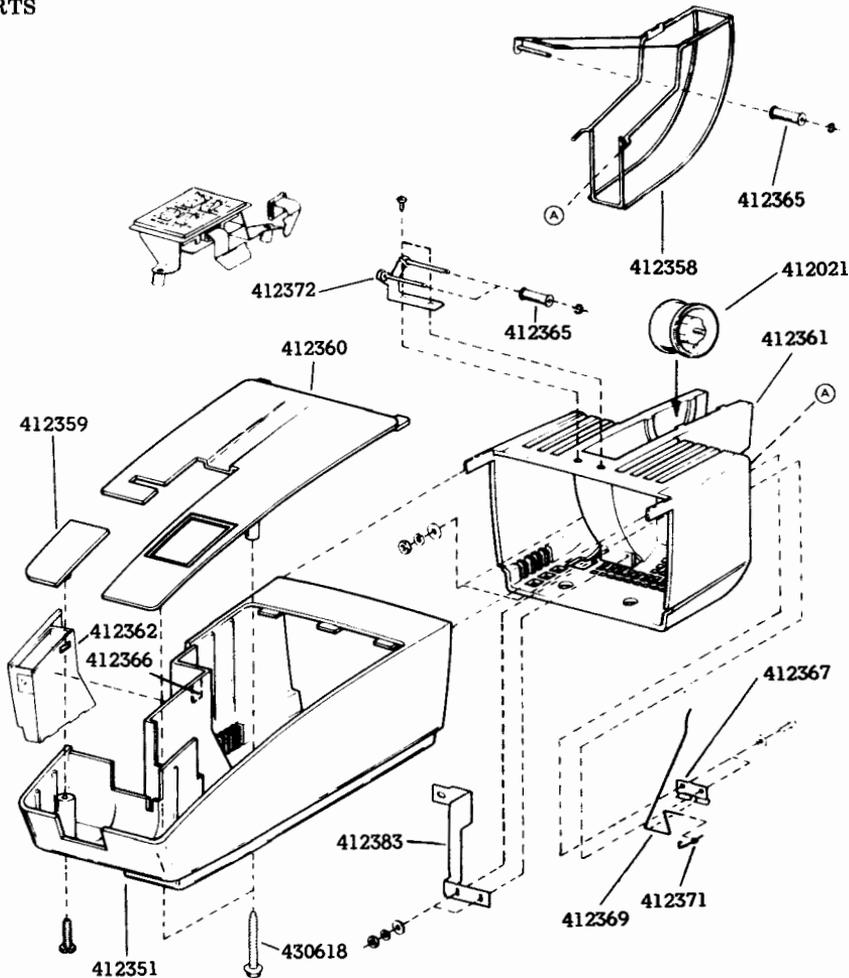
43 TELEPRINTER 5-LEVEL PAPER TAPE — TAPE HANDLING AND ENCLOSURES

PARTS

1. GENERAL

- 1.01 This section provides information on maintenance parts for the tape handling and enclosures.
- 1.02 Whenever this section is reissued, the reason will be listed in this paragraph.
- 1.03 Part numbers are listed in the index in numerical order and indicate the page on which the parts appear. Parts are not maintenance
- spares but may be ordered separately for local repair of the Paper Tape Unit.
- 1.04 Disassembly/reassembly information for these parts are covered in Section 574-504-720.
- 1.05 When ordering replaceable parts or components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410055).

2. PARTS



Paper Handling and Enclosures

3. NUMERICAL INDEX

3.01 Parts listed are not maintenance spares but may be ordered as needed for local repair of major components or terminals.

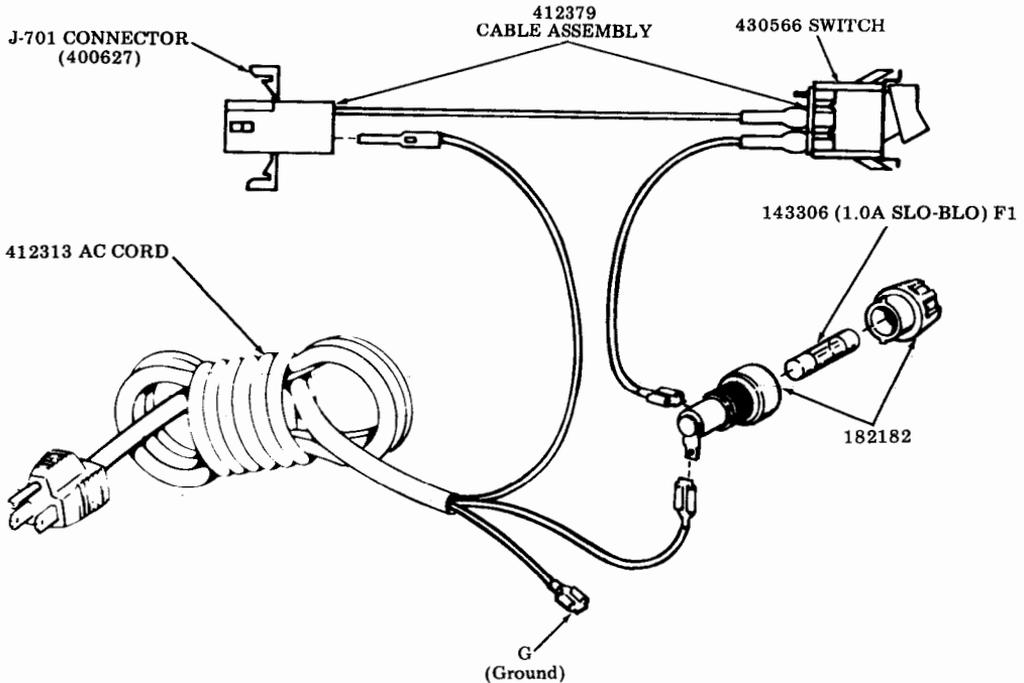
| Part Number | Description and Page Number | Part Number | Description and Page Number | Part Number | Description and Page Number |
|-------------|-----------------------------|-------------|-----------------------------|-------------|-----------------------------|
| 412021 | Spindle 2 | 412361 | Cover, Bustle 2 | 412369 | Rod, Switch 2 |
| 412351 | Housing 2 | 412362 | Box, Chad 2 | 412371 | Spring 2 |
| 412358 | Guard 2 | 412365 | Roller 2 | 412372 | Stand-Off 2 |
| 412359 | Cover, Wing 2 | 412366 | Strike, Steel 2 | 412383 | Ground Bar 2 |
| 412360 | Cover, Top 2 | 412367 | Plate 2 | 430618 | Screw, 7-19 Spl 2 |

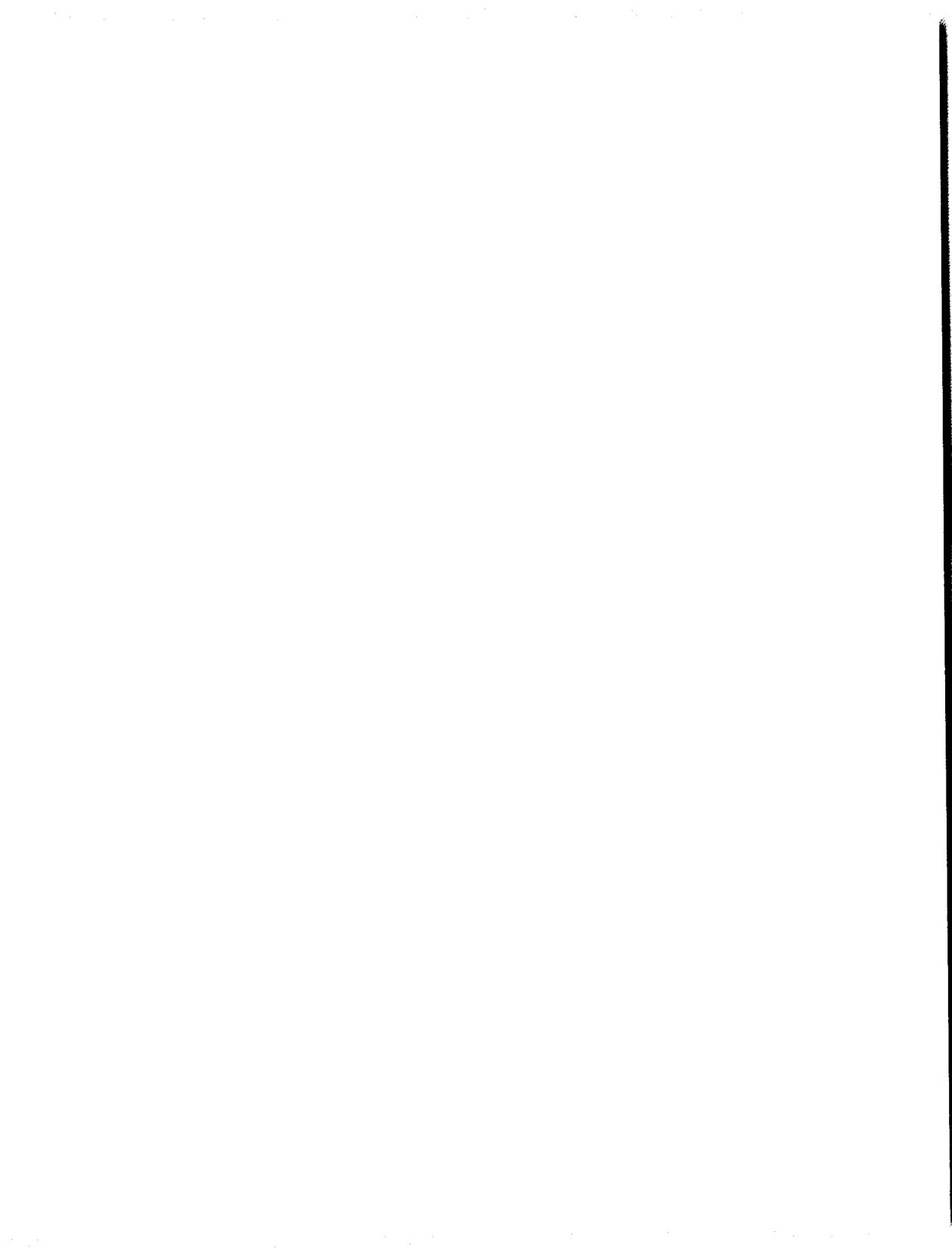
43 TELEPRINTER 5-LEVEL PAPER TAPE REAR FRAME AND MISCELLANEOUS
WIRING

1. GENERAL

- 1.01 This section provides wiring information for the 43 Teleprinter 5-Level Paper Tape Rear Frame and Miscellaneous Assemblies.
- 1.02 Whenever this section is reissued, the reason will be listed in this paragraph.
- 1.03 Related wiring information and cable connections are shown in Section 574-504-400.
- 1.04 Designations on wiring diagrams do not appear on the components.
- 1.05 When ordering replaceable parts or components, unless otherwise specified, prefix each part number with the letters "TP" (ie, TP410055).

2. WIRING





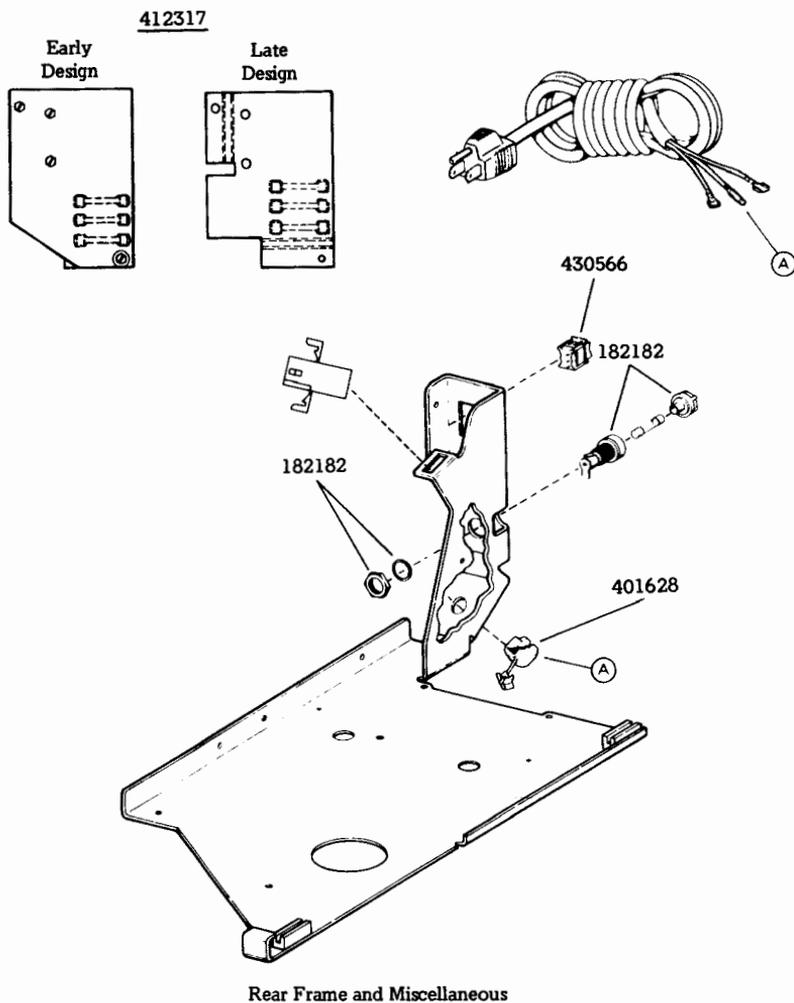
43 TELEPRINTER 5-LEVEL PAPER TAPE REAR FRAME AND MISCELLANEOUS

PARTS

1. GENERAL

- 1.01 This section provides information on maintenance parts for the 43 Teleprinter 5-Level Paper Tape Rear Frame and Miscellaneous Assemblies.
- 1.02 Whenever this section is reissued, the reason will be listed in this paragraph.
- 1.03 Part numbers are listed in the index in numerical order and indicate the page on which the parts appear. Parts are not maintenance spares but may be ordered separately for local repair of the Paper Tape Unit.
- 1.04 When ordering replaceable parts or components, unless otherwise specified prefix each part number with the letters "TP" (ie, TP410055).

2. PARTS



3. NUMERICAL INDEX

3.01 Parts listed are not maintenance spares but may be ordered as needed for local repair of major components or terminals.

| Part Number | Description and Page Number |
|-------------|-----------------------------|
| 182182 | Holder, Fuse 2 |
| 401628 | Bushing 2 |
| 412317 | Plate, Heatsink 2 |
| 430566 | Switch 2 |

INSTRUCTIONS FOR CONFIGURATION AND ASSEMBLY OF
 FEATURE GROUPS AND KEYTOPS FOR THE 43 BUFFERED
 TELEPRINTERS USED IN THE BELL SYSTEM

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| USOC CODES | 17 | 5. GLOSSARY OF ABBREVIATIONS | 21 |
| A. USOC 4BG Buff 43 8-Level BSR (T) Without FG | 17 | 1. GENERAL | |
| B. USOC 4BE Buff 43 5-Level BSC (F) Without FG | 17 | 1.01 The 43 Teleprinter Buffered Sets consist of standard units and components, except that the controllers are not equipped with application program cards. | |
| C. USOC 4BF Buff 43 8-Level BSR (F) Without FG | 17 | | |
| D. USOC 4BU Feature Group and Keytop Conversion Kit for 8-Level BSR to 8-Level BSC | 17 | | |
| E. USOC 4BQ Feature Group for 8-Level BSR | 17 | | |
| F. USOC 4BKXF Feature Group for 5-Level BSC | 18 | | |
| G. USOC 4BKXF + WES 97 Feature Group for 5-Level BSC With Unshift on Space ... | 18 | | |

SPECIFICATION 51055S

- 1.02 The addition of an application program card (circuit card portion of feature group) from a stock of several variations of feature groups, provides an operable set for a specific service.
- 1.03 Only a few 43 Teleprinter Buffered Sets consequently need to be stocked, with the various feature groups giving a multiplicity of arrangements to meet user's needs. Arrangements may be made up as required per USOC service order.
- 1.04 To provide a variety of keyboard arrangements, only the most common sets of keytops are furnished on the keyboards of the stocked sets. Other operable arrangements are supplied by substituting different keytops from designated set of parts.
- 1.05 A set is not operable until equipped with the application program card. The application program card is a "piggyback" plug-in to the large circuit card in the set controller. Although self-test features for major components are operable before the set is completely assembled, they are intended for use during trouble analysis of assembled sets and are specified in the appropriate service manual. However, controller self-test procedures are shown in this specification, Page 9 to assure the feature group card is properly assembled.

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

- 1.06 The labels accompanying the application program card in a feature group are applied to the set directory card and to the cover of the cabinet. (Refer to 2.01 and 2.02.) See paragraph 5. for definition of abbreviations.

KEYTOP MODIFICATION KITS

- 1.07 Keypop modification kits supplied for converting keytop arrangements include:

- 411379 - Converts 43K202/GAB to 43K202/GAG (8-Level BSR to 5-Level BSC)
- 411380 - Converts 43K202/GAB to 43K202/GAF (8-Level BSR to 8-Level BSC)

USOC CODES

- 1.08 USOC codes consisting of feature groups and keytop modification kits are as follows:

| <u>USOC</u> | <u>Feature Group</u> | <u>Keypop Modification Kit</u> | <u>Use</u> |
|---------------|----------------------|--------------------------------|-------------------------------|
| *4BKXT | = 43FG110/BA/01 + | 411379 | Buff 43 5-Level BSC (T) |
| 4BKXT + WES97 | = 43FG110/BA/02 + | 411379 | Buff 43 5-Level BSC (T) w/USP |
| *4BKXF | = 43FG110/BA/01 + | — | Buff 43 5-Level BSC (F) |
| 4BKXF + WES97 | = 43FG110/BA/02 + | — | Buff 43 5-Level BSC (F) w/USP |
| 4BQ | = 43FG210/AA/01 + | — | Buff 43 8-Level BSR |
| 4BU | = 43FG210/BA/01 + | 411380 | Buff 43 8-Level BSC |

*(T) = Tractor Feed, (F) = Friction Feed

- 1.09 Coded 43 Teleprinter Buffered Sets without feature groups include:

| <u>USOC</u> | <u>Set Code</u> | <u>Set Description</u> |
|-------------|-----------------|---------------------------------|
| 4BE | 4240BZD | Buff 43 5-Level BSC (F) w/o FG† |
| 4BF | 4340BZD | Buff 43 8-Level BSR (F) w/o FG |
| 4BG | 4340BZJ | Buff 43 8-Level BSR (T) w/o FG‡ |

†Buffered 43 5-level selective calling, friction feed without feature group.

‡Buffered 43 8-level send/receive, tractor feed without feature group.

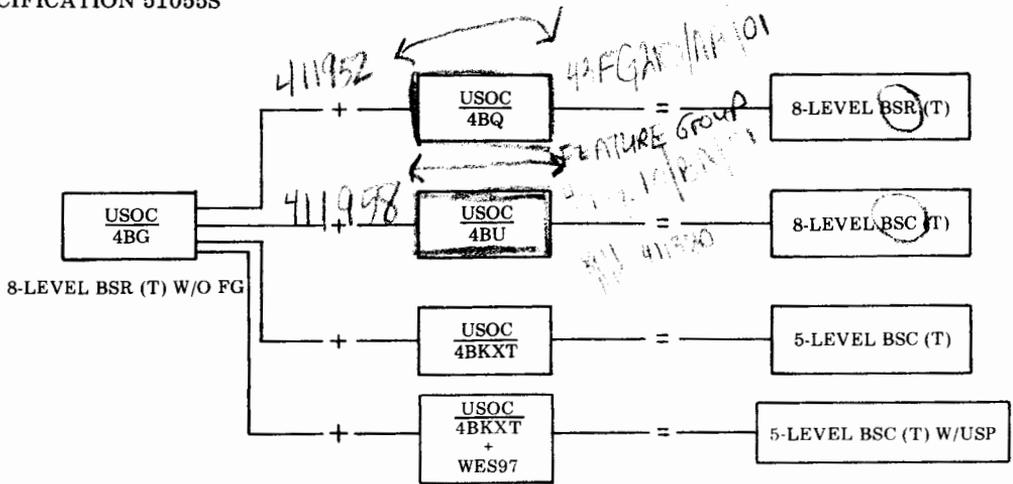
OPERABLE SETS

1.10 Operable sets assembled in the field from the above components include:

(Refer to Fig. 1 and 2.)

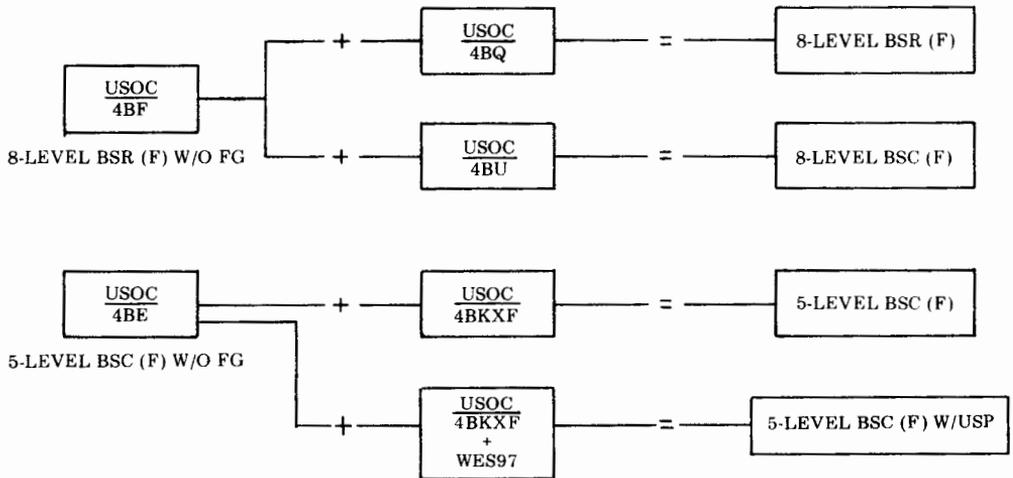
| <u>USOC</u> | | <u>USOC</u> | = | <u>Set Description</u> | <u>Set Description — Label Designation</u> |
|-------------|---|---------------------|---|--|--|
| 4BE | + | 4BKXF | = | 43 Teleprinter 5-Level Buffered Selective Calling (BSC) Station, Friction Feed | Buff 43 5-Level BSC (F) |
| 4BE | + | 4BKXF + WES97 | = | 43 Teleprinter 5-Level Buffered Selective Calling (BSC) Station, Friction Feed With Unshift on Space | Buff 43 5-Level BSC (F) w/USP |
| 4BG | + | 4BKXT | = | 43 Teleprinter 5-Level Buffered Selective Calling (BSC) Station, Tractor Feed | Buff 43 5-Level BSC (T) |
| 4BG | + | 4BKXT + WES97 | = | 43 Teleprinter 5-Level Buffered Selective Calling (BSC) Station, Tractor Feed With Unshift on Space | Buff 43 5-Level BSC (T) w/USP |
| 4BG | + | 4BQ | = | 43 Teleprinter 8-Level Buffered Send/Receive (BSR) Station, Tractor Feed | Buff 43 8-Level BSR (T) |
| 4BG | + | 4BU | = | 43 Teleprinter 8-Level Buffered Selective Calling (BSC) Station, Tractor Feed | Buff 43 8-Level BSC (T) |
| 4BF | + | 4BQ | = | 43 Teleprinter 8-Level Buffered Send/Receive (BSR) Station, Friction Feed | Buff 43 8-Level BSR (F) |
| 4BF | + | 4BU | = | 43 Teleprinter 8-Level Buffered Selective Calling (BSC) Station, Friction Feed | Buff 43 8-Level BSC (F) |

1.11 Refer to 3. PARTS LISTS and verify that the items listed in each USOC are included with the service order and are present at the installation location after the boxes are unpacked. Remove the Specification which is included with feature groups and keytop modification kits. If the set configuration for your application is not covered in this specification, refer to the specifications which are included with the feature group, keytop modification kit or other devices present at the installation location.



Tractor Feed Set Configurations

Fig. 1



Friction Feed Set Configurations

Fig. 2

2. ASSEMBLY INFORMATION

LABELS

- 2.01 Peel the protective backing from the option's label of the feature group. Apply the label to the side of the directory card assembly opposite the "frequently called numbers" list. Install the directory card assembly into its holder.
- 2.02 Pull the protective backing from the press with controls (opcon) label and apply the label to the cover strip located between the two top rows of keyboard keys. Press the label firmly in place.

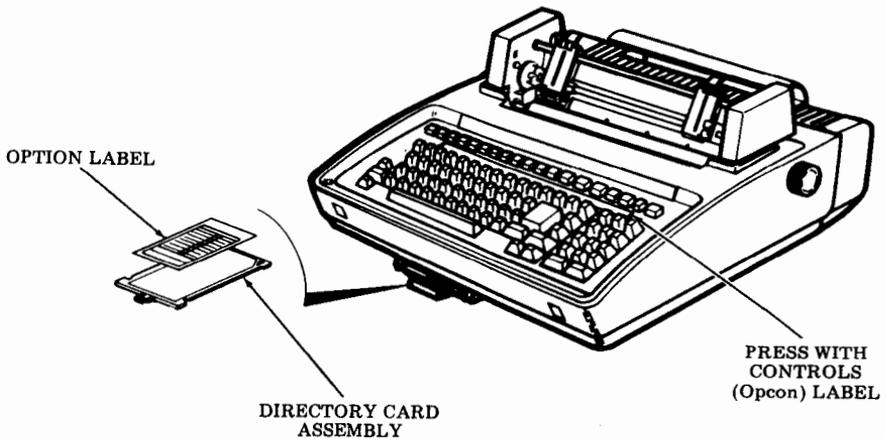


Fig. 3

APPLICATION PROGRAM CARD

2.03 Remove the controller card assembly as follows:

(a) Pin Feed or Tractor Feed

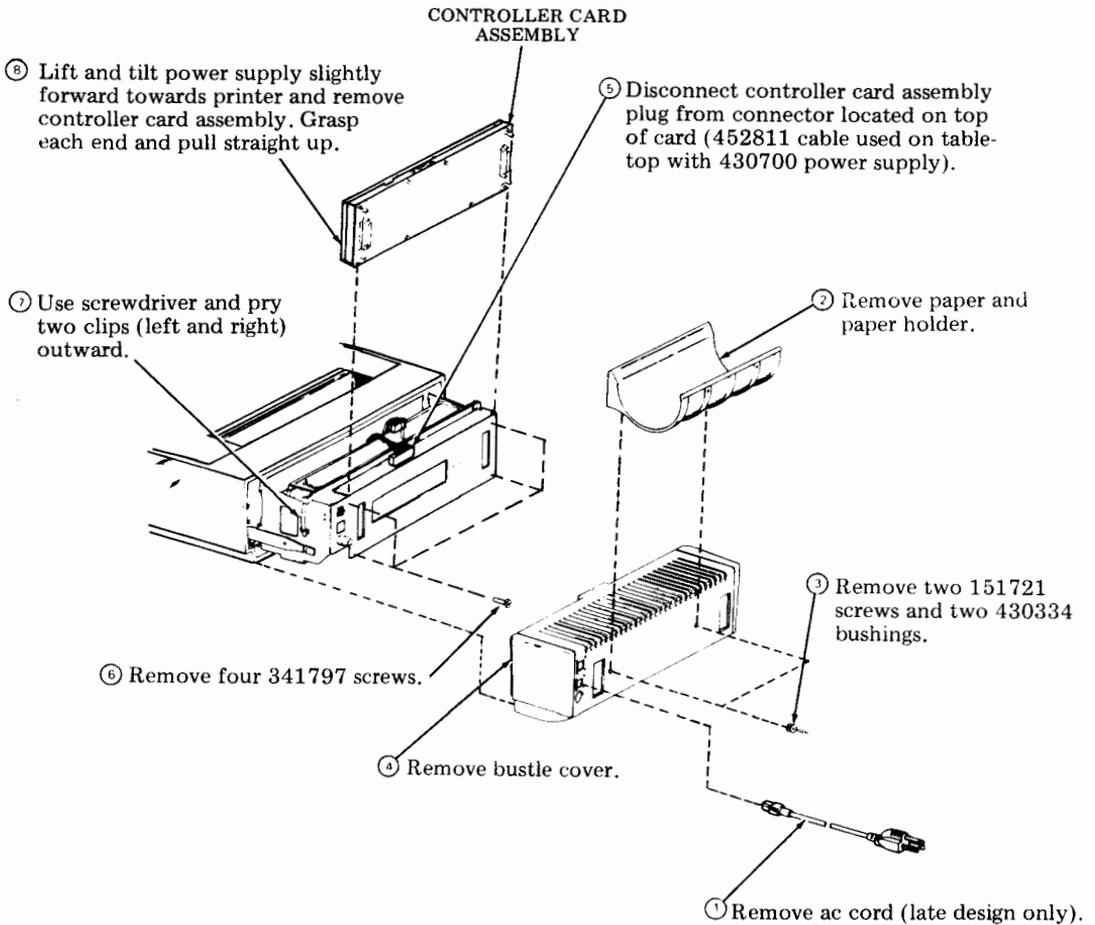
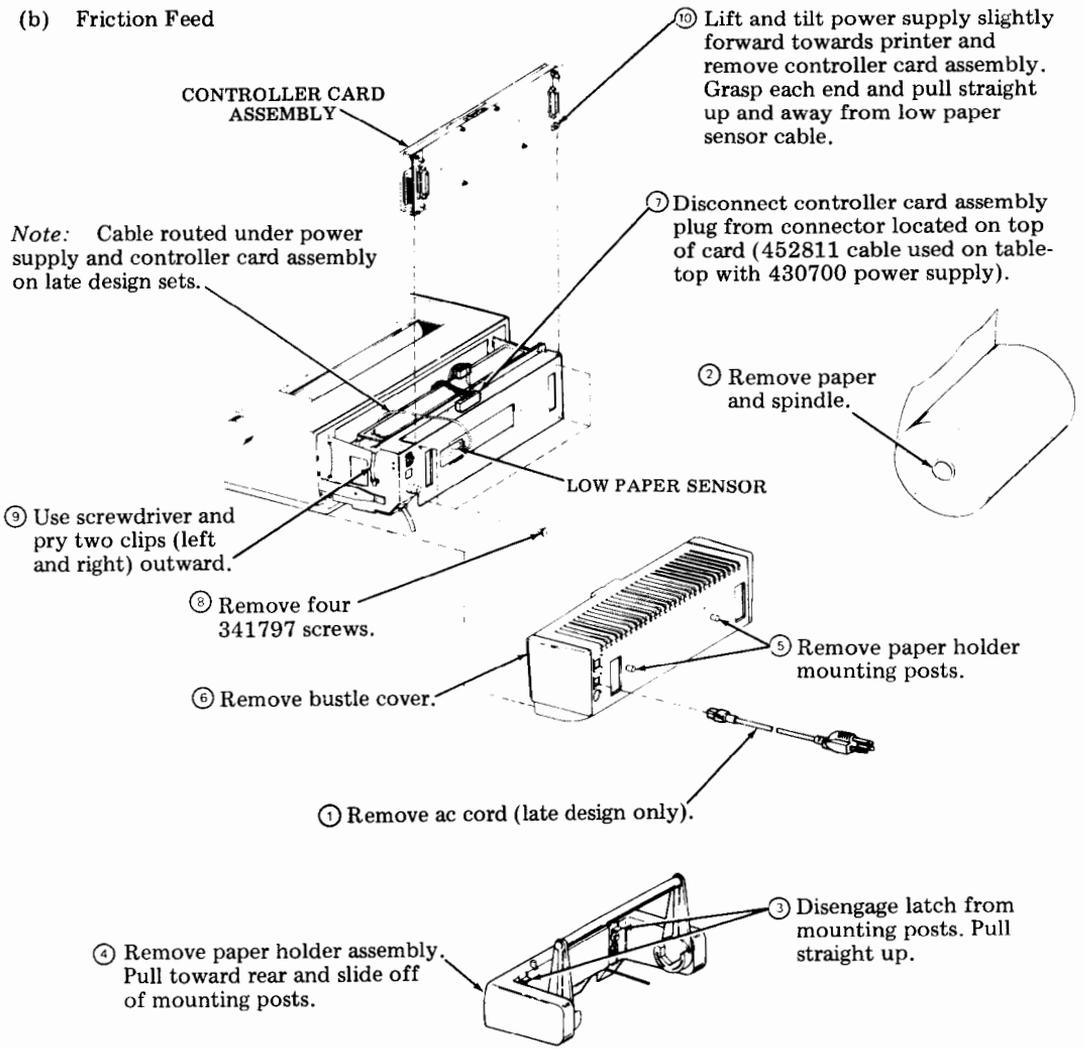


Fig. 4

(b) Friction Feed



Note: In reassembly, align low paper sensor mounting hole with mounting hole in rear frame.

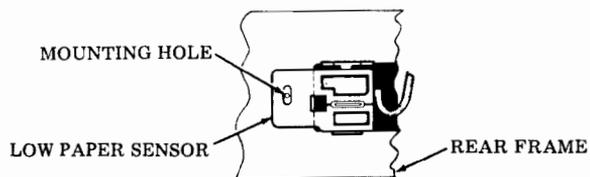


Fig. 5

SPECIFICATION 51055S

2.04 Disassemble the controller card assembly as follows:

- ① Remove eight 410761 mounting screws (do not remove end shield). Retain the two flat washers between the end shield and circuit board shield.
- ② Slide the circuit board shield and the circuit board to the left until they clear the end shield.
- ③ Remove the circuit card shield. (Note the eight 411118 fiber washers between the shield and the circuit card. Retain these for reassembly).

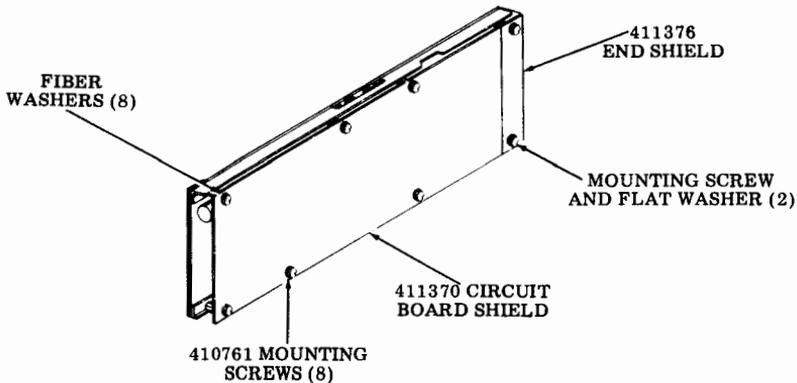


Fig. 6

- ④ Open the controller cards as shown below.
- ⑤ Assemble the applications program card (place over interconnecting pins and carefully push down).

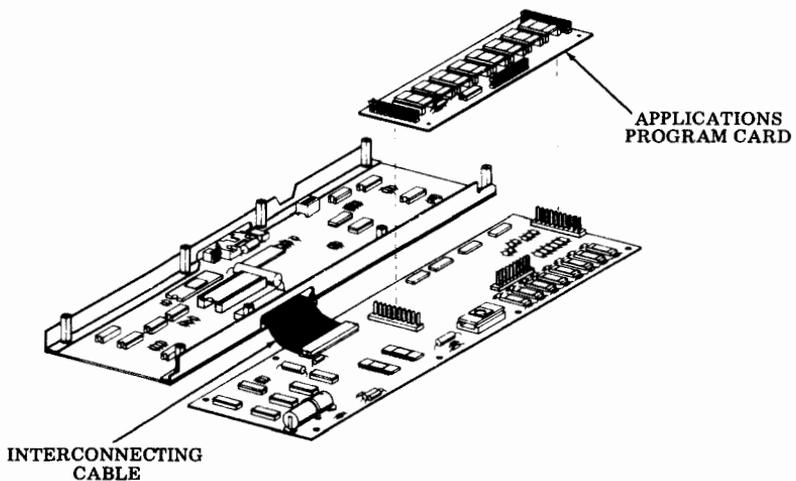


Fig. 7

2.05 Place SPA7 switches to ON position.

2.06 Reassemble controller card assembly and place into rear frame of teleprinter. (Refer to 2.03.)

Note: In reassembly, copper clad side of circuit board shield to face away from controller card assembly.

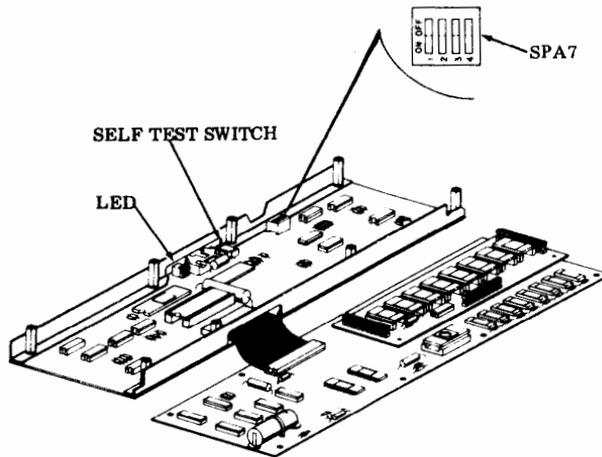


Fig. 8

2.07 Reconnect cable plug to top of controller assembly.

CONTROLLER SELF-TEST

2.08 Temporarily remove the packing detail securing the print head and the ribbon in place. Apply power to the teleprinter and momentarily depress self-test switch:

- (a) The controller LED will flash periodically during the test (approximately 30 seconds) indicating the test is in progress.
- (b) When the test is concluded, the LED will remain ON indicating that the controller passed the self-test.

2.09 If the self-test passed, proceed to 2.11. If the self-test failed, remove the applications program card from the controller assembly. Reassemble and place the controller without applications program card into the rear frame. Reconnect cable plug to top of controller assembly. Place SPA7 switches as follows and repeat the self-test (refer to 2.03).

1, 2, 3 – OFF
4 – ON

2.10 If the LED is ON at the end of the test, replace the defective applications program card. If the LED is OFF at the end of the test, replace the teleprinter or refer to the appropriate troubleshooting section and perform the troubleshooting procedures.

2.11 Replace the print head packing detail and reassemble the remaining components removed in 2.03.

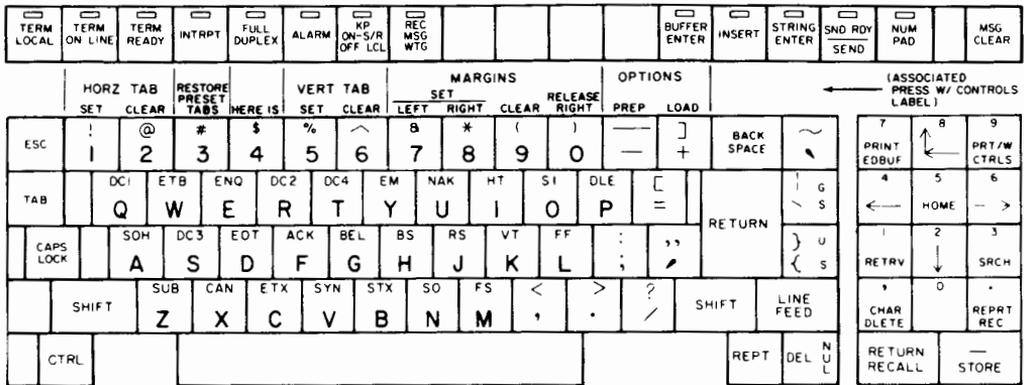
SPECIFICATION 51055S

KEYTOPS

2.12 For installations requiring new keytop arrangements, replace individual keytops per the following lists using the 346260 keytop extractor (supplied in each kit).

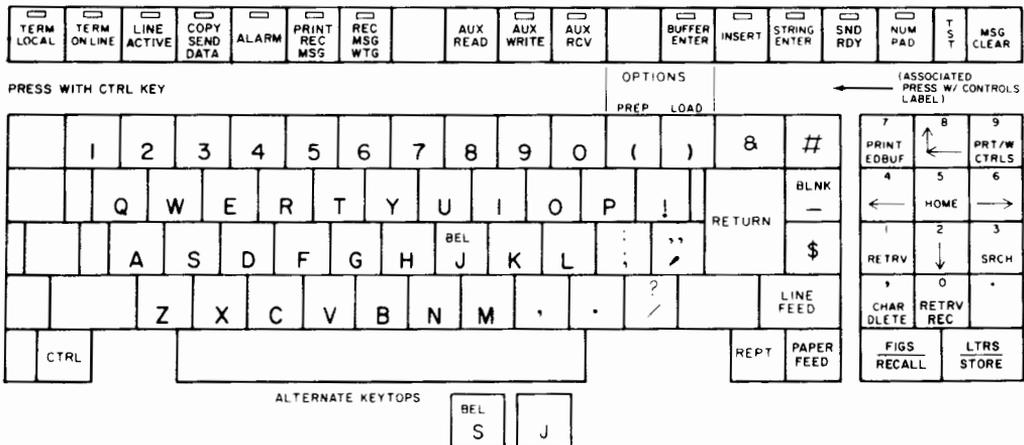
A. 411379 Modification Kit

(Converts 43K202/GAB to 43K202/GAG — 8-Level BSR to 5-Level BSC)



43K202/GAB (Before Conversion)

Fig. 9



43K202/GAG (After Conversion)

Fig. 10

| <u>PART NO.</u> | <u>DESCRIPTION</u> | <u>REPLACES</u> | <u>DESCRIPTION</u> |
|---|---|-----------------|--------------------------------|
| Remove 346409 spacer under TERM ON LINE lamp. | | | |
| 454353 | LINE ACTIVE | 346127 | TERM READY |
| 454351 | COPY SEND DATA | 346106 | INTRPT |
| s 346163 | ALARM (from next position to right) | 346841 | FULL DUPLEX |
| 454352 | PRINT REC MSG | 346163 | ALARM (just moved above) |
| s 346843 | REC MSG WTG (from next position to right) | 346842 | KP/ON-S/R/OFF-LCL |
| s 340701 | BLOCKING from next position to right | 346843 | REC MSG WTG (just moved above) |
| 454366 | AUX READ | 340701 | BLOCKING (just moved above) |
| 454367 | AUX WRITE | 340701 | BLOCKING |
| 454365 | AUX REC | 340701 | BLOCKING |
| 454355 | SND RDY | 346847 | SND RDY/SEND |
| 340714 | BLOCKING | 340975 | ESC |
| 346536 | 1 | 340821 | !/1 |
| 346537 | 2 | 340822 | @/2 |
| 346538 | 3 | 340823 | #/3 |
| 346539 | 4 | 340824 | \$/4 |
| 346540 | 5 | 340825 | %/5 |
| 340990 | 6 | 340826 | ^/6 |
| 346541 | 7 | 340827 | &/7 |
| 346542 | 8 | 340828 | */8 |
| 346543 | 9 | 340829 | (/9 |
| 346544 | 0 | 340830 |)/0 |
| 346675 | (| 340831 | _-/ |
| 346676 |) | 340889 |] /+ |
| 347236 | & | 340976 | BACK SPACE |
| 347237 | # | 340977 | ~^ |
| 340714 | BLOCKING | 346589 | TAB |
| 340993 | Q | 340838 | DC1/Q |
| 340994 | W | 340839 | ETB/W |
| 340995 | E | 340840 | ENQ/E |
| 340996 | R | 340841 | DC2/R |
| 340997 | T | 340842 | DC4/T |
| 340998 | Y | 340843 | EM/Y |
| 340999 | U | 340844 | NAK/U |
| 341000 | I | 340978 | HT/I |
| 341001 | O | 340846 | SI/O |
| 341002 | P | 340979 | DLE/P |
| 347238 | ! | 340890 | [/= |
| 347172 | BLNK/- | 340981 | ! / \ /GS |
| 340714 | BLOCKING | 340894 | CAPS LOCK |
| 346682 | A | 340852 | SOH/A |
| 346683 | S | 340853 | DC3/S |
| 341005 | D | 340854 | EOT/D |
| 341006 | F | 340855 | ACK/F |
| 341007 | G | 340856 | BEL/G |

s Not part of modification kit.

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| <u>PART NO.</u> | <u>DESCRIPTION</u> | <u>REPLACES</u> | <u>DESCRIPTION</u> |
|-----------------|--------------------|-----------------|--------------------------|
| 341008 | H | 340982 | BS/H |
| 346694 | BEL/J | 340858 | RS/J |
| 341009 | K | 340859 | VT/K |
| 341010 | L | 340860 | FF/L |
| 347239 | \$ | 340983 | } / { / US |
| 341020 (2 Plcs) | BLANK | 340867 | SHIFT (2 Pls) |
| 341012 | Z | 340984 | SUB/Z |
| 341013 | X | 340869 | CAN/X |
| 341014 | C | 340870 | ETX/C |
| 341015 | V | 340985 | SYN/V |
| 341016 | B | 340872 | STX/B |
| 341017 | N | 340873 | SO/N |
| 346558 | M | 340874 | FS/M |
| 346548 | , | 340875 | < /, |
| 346549 | . | 340876 | > /. |
| 347218 | O/RETRV REC | 346601 | O |
| 347255 | . | 346602 | ./REPR/REC |
| 347177 | PAPER FEED | 346590 | DEL/NULL |
| 347241 | FIGS/RECALL | 346603 | RETURN/RECALL |
| 347242 | LTRS/STORE | 346604 | -/STORE |
| 340701 | BLOCKING | | Spare , for optional use |
| 346559 | J | | Spare , for optional use |
| 347240 | BEL/S | | Spare , for optional use |

B. 411380 Modification Kit

(Connects 43K202/GAB to 43K202/GAF - 8-Level BSR to 8-Level BSC)

| | | | | | | | | | | | | | | | | | | | | | | |
|--------------------|--------------|---------------------|--------|-------------|--------------------|-------------------|------------------------------|----|----|---------------|-------------------|-----------|--------------------------------------|------------|---|--------------|--------|--------------|---------------|-----------|-----------|-------------|
| TERM LOCAL | TERM ON LINE | TERM READY | INTRPT | FULL DUPLEX | ALARM | KP ON-S/R OFF LCL | REC MSG WTG | | | | | | | | | BUFFER ENTER | INSERT | STRING ENTER | SND RDY SEND | NUM PAD | MSG CLEAR | |
| HORZ TAB SET CLEAR | | RESTORE PRESET TABS | | HERE IS | VERT TAB SET CLEAR | | MARGINS SET LEFT RIGHT CLEAR | | | RELEASE RIGHT | OPTIONS PREP LOAD | | (ASSOCIATED PRESS W/ CONTROLS LABEL) | | | | | | | | | |
| ESC | ! | @ | # | \$ | % | ^ | 8 | * | (|) | - |] | + | BACK SPACE | ~ | 7 | 8 | 9 | PRINT EDBUF | ← | → | PRT/W CTRLS |
| TAB | DC1 | ETB | ENQ | DC2 | DC4 | EM | NAK | HT | SI | DLE | [| = | RETURN | | g | 4 | 5 | 6 | ← | HOME | → | |
| CAPS LOCK | SOH | DC3 | EOT | ACK | BEL | BS | RS | VT | FF | : | ; | / | RETURN | } | u | 1 | 2 | 3 | RETRV | ↓ | SRCH | |
| SHIFT | SUB | CAN | ETX | SYN | STX | SO | FS | < | > | ? | SHIFT | LINE FEED | | | | CHAR DELETE | 0 | . | CHAR DELETE | REPRV REC | | REPRV REC |
| CTRL | | | | | | | | | | | | | | | | REPT | DEL | NUL | RETURN RECALL | | | STORE |

43K202/GAB (Before Conversion)

Fig. 11

| | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------|--------------|---------------------|----------------|---------|--------------------|-------------|------------------------------|----|----|---------------|-------------------|-----------|--------------------------------------|------------|---|-------------|--------------|--------|---------------|-----------|---------|-------------|-----------|
| TERM LOCAL | TERM ON LINE | LINE ACTIVE | COPY SEND DATA | ALARM | PRINT REC MSG | REC MSG WTG | | | | | | | | | | MSG BUMPY | BUFFER ENTER | INSERT | STRING ENTER | SND RDY | NUM PAD | T | MSG CLEAR |
| HORZ TAB SET CLEAR | | RESTORE PRESET TABS | | HERE IS | VERT TAB SET CLEAR | | MARGINS SET LEFT RIGHT CLEAR | | | RELEASE RIGHT | OPTIONS PREP LOAD | | (ASSOCIATED PRESS W/ CONTROLS LABEL) | | | | | | | | | | |
| ESC | ! | @ | # | \$ | % | ^ | 8 | * | (|) | - |] | + | BACK SPACE | ~ | 7 | 8 | 9 | PRINT EDBUF | ← | → | PRT/W CTRLS | |
| TAB | DC1 | ETB | ENQ | DC2 | DC4 | EM | NAK | HT | SI | DLE | [| = | RETURN | | g | 4 | 5 | 6 | ← | HOME | → | | |
| CAPS LOCK | SOH | DC3 | EOT | ACK | BEL | BS | RS | VT | FF | : | ; | / | RETURN | } | u | 1 | 2 | 3 | RETRV | ↓ | SRCH | | |
| SHIFT | SUB | CAN | ETX | SYN | STX | SO | FS | < | > | ? | SHIFT | LINE FEED | | | | CHAR DELETE | 0 | . | CHAR DELETE | RETRV REC | | LINE DELETE | |
| CTRL | | | | | | | | | | | | | | | | REPT | DEL | NUL | RETURN RECALL | | | STORE | |

43K202/GAF (After Conversion)

Fig. 12

SPECIFICATION 51055S

| <u>PART NO.</u> | <u>DESCRIPTION</u> | <u>REPLACES</u> | <u>DESCRIPTION</u> |
|---|--|-----------------|-----------------------------------|
| Remove 346409 spacer under TERM ON LINE lamp. | | | |
| 454353 | LINE ACTIVE | 346127 | TERM READY |
| 454351 | COPY SEND DATA | 346106 | INTRPT |
| § 346163 | ALARM (from next position to right) | 346841 | FULL DUPLEX |
| 454352 | PRINT REC MSG | 346163 | ALARM (just moved above) |
| § 346843 | REC MSG WTG (from next position to right) | 346842 | KP/ON-S/R/OFF-LCL |
| § 340701 | BLOCKING from six positions to right | 346843 | REC MSG WTG (just moved above) |
| 454354 | MSG SUMRY | 340701 | BLOCKING (just moved above) |
| 454355 | SND RDY | 346847 | SND/RDY/SEND |
| 347218 | O/RETRV REC | 346601 | O |
| 347219 | ./LINE DLETE | 346602 | ./REPRT REC |

§ Not part of modification kit.

SET DESCRIPTION AND KEYBOARD LABELS

- 2.13 After the teleprinter is equipped with the feature group and keytop modification kit, peel the protective backing from the correct set description label and affix as shown in Fig. 13 (refer to 1.10).
- 2.14 If any keytops on the keyboard were changed, affix the keyboard label to the front of the keyboard. Place tape over the keyboard code plate.

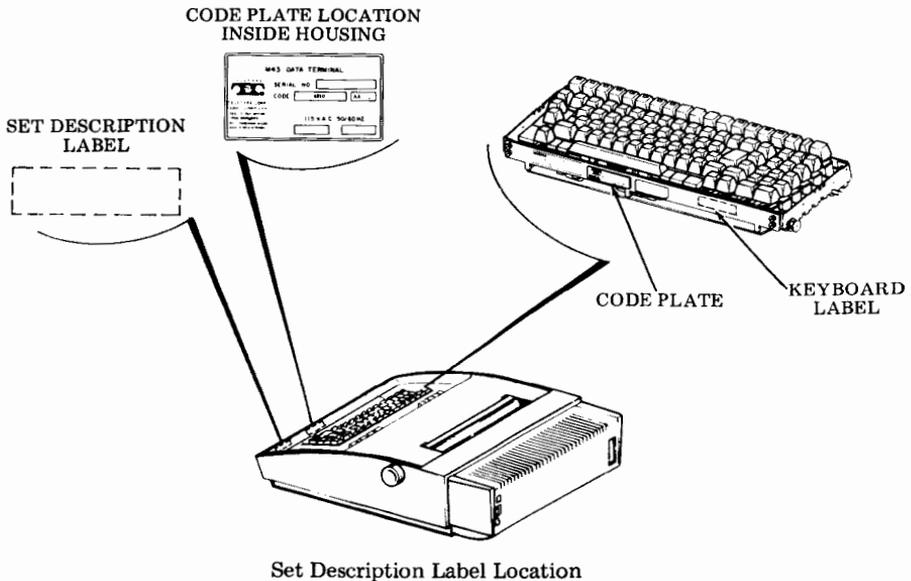
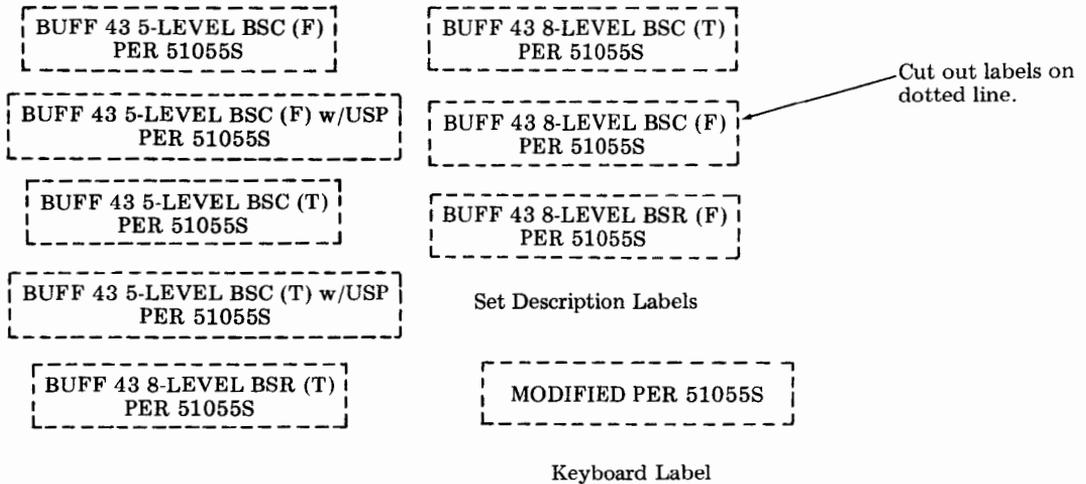
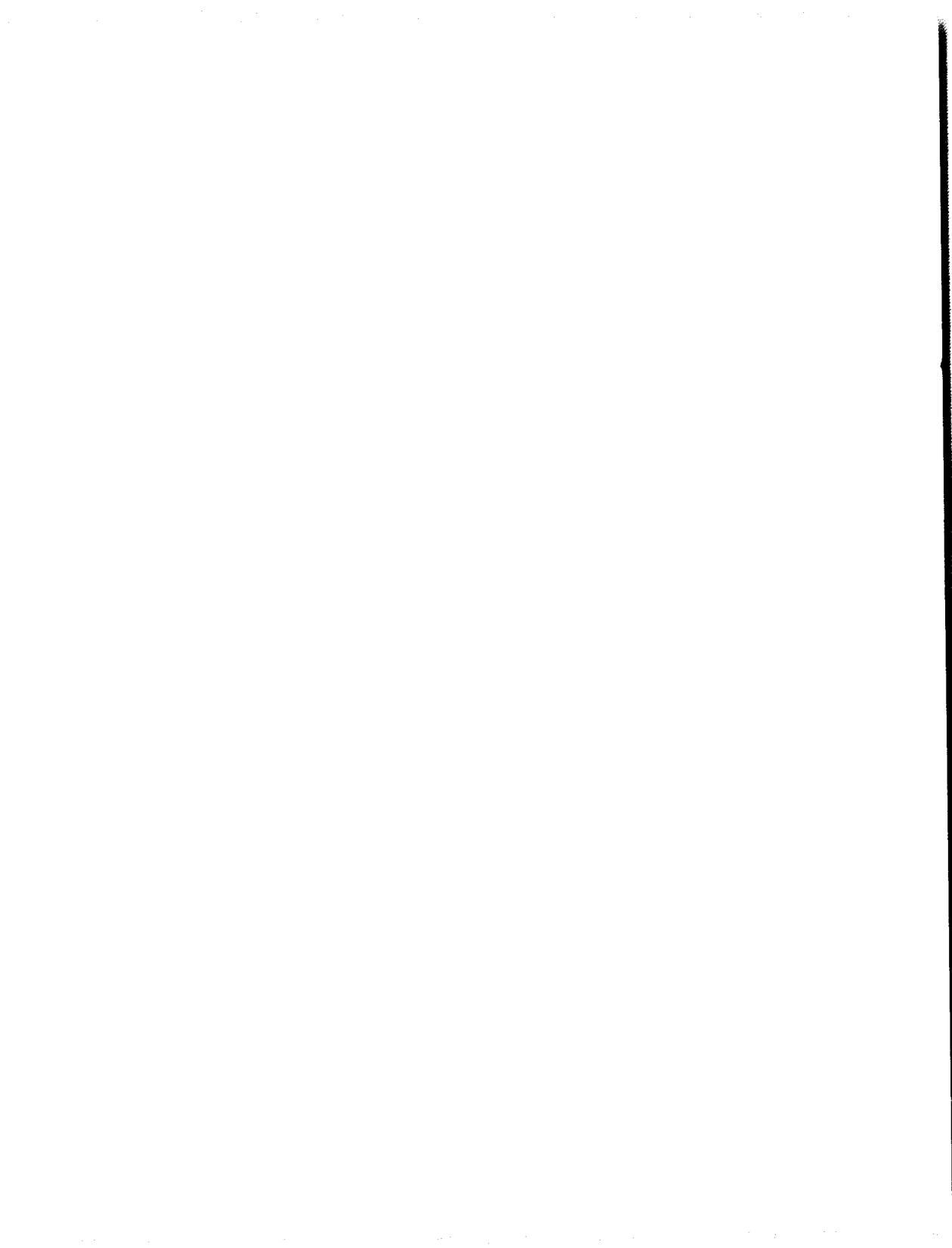


Fig. 13



3. PARTS LISTS

Following is a list of the USOC codes, feature groups and keytop modification kits covered in this specification and their parts lists:

USOC CODES

A. USOC 4BG Buff 43 8-Level BSR (T) Without FG

| <u>Qty</u> | <u>Part or Code No.</u> | <u>Description</u> |
|------------|-------------------------|--|
| 2 | 151721 | Screw, 6-40 x 3/4 Hex |
| 1 | 430333 | Holder, Paper |
| 2 | 430334 | Bushing |
| 1 | 4340BZJ | 8-Level Tractor Feed Printer With BSR Style Keyboard |

B. USOC 4BE Buff 43 5-Level BSC (F) Without FG

| <u>Qty</u> | <u>Part or Code No.</u> | <u>Description</u> |
|------------|-------------------------|---|
| 1 | 4240BZD | 5-Level Friction Feed Printer With BSC Style Keyboard |
| 1 | KS 8621 | Paper 5-Inch Roll 8-1/2 Inch White |

C. USOC 4BF Buff 43 8-Level BSR (F) Without FG

| <u>Qty</u> | <u>Part or Code No.</u> | <u>Description</u> |
|------------|-------------------------|---|
| 1 | 4340BZD | 8-Level Friction Feed Printer With BSR Style Keyboard |
| 1 | KS 8621 | Paper 5-Inch Roll 8-1/2 Inch White |

D. USOC 4BU Feature Group and Keytop Conversion Kit for 8-Level BSR to 8-Level BSC

| <u>Qty</u> | <u>Part or Code No.</u> | <u>Description</u> |
|------------|-------------------------|---|
| 1 | 411380 | Keytop Conversion Kit for BSR to BSC |
| 1 | 43FG210/BA/01 | 8-Level Selective Calling Feature Group |
| 1 | 574-500-202 | Installation Section |
| 1 | 574-500-303 | Troubleshooting Section |
| 1 | 574-500-503 | Testing Section |
| 1 | 999-300-137 | How to Operate Manual |
| 1 | 999-302-137 | Optioning Manual |

E. USOC 4BQ Feature Group for 8-Level BSR

| <u>Qty</u> | <u>Part or Code No.</u> | <u>Description</u> |
|------------|-------------------------|------------------------------------|
| 1 | 43FG210/AA/01 | 8-Level Send/Receive Feature Group |
| 1 | 574-500-201 | Installation Section |
| 1 | 574-500-302 | Troubleshooting Section |
| 1 | 574-500-502 | Testing Section |
| 1 | 999-300-135 | How to Operate Manual |

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F. USOC 4BKXF Feature Group for 5-Level BSC

| <u>Qty</u> | <u>Part or Code No.</u> | <u>Description</u> |
|------------|-------------------------|---|
| 1 | 43FG110/BA/01 | 5-Level Selective Calling Feature Group |
| 1 | 574-500-203 | Installation Section |
| 1 | 574-500-304 | Troubleshooting Section |
| 1 | 574-500-504 | Testing Section |
| 1 | 999-300-136 | How to Operate Manual |
| 1 | 999-302-136 | Optioning Manual |

G. USOC 4BKXF + WES97 Feature Group for 5-Level BSC With Unshift on Space

| <u>Qty</u> | <u>Part or Code No.</u> | <u>Description</u> |
|------------|-------------------------|---|
| 1 | 43FG110/BA/02 | 5-Level Selective Calling With Unshift on Space Feature Group |
| 1 | 574-500-203 | Installation Section |
| 1 | 574-500-304 | Troubleshooting Section |
| 1 | 574-500-504 | Testing Section |
| 1 | 999-300-136 | How to Operate Manual |
| 1 | 999-302-136 | Optioning Manual |

H. USOC 4BKXT Feature Group and Keytop Conversion Kit for 8-Level BSR to 5-Level BSC

| <u>Qty</u> | <u>Part or Code No.</u> | <u>Description</u> |
|------------|-------------------------|--|
| 1 | 411379 | Keytop Conversion Kit for 8-Level BSR to 5-Level BSC |
| 1 | 43FG110/BA/01 | 5-Level Selective Calling Feature Group |
| 1 | 574-500-203 | Installation Section |
| 1 | 574-500-304 | Troubleshooting Section |
| 1 | 574-500-504 | Testing Section |
| 1 | 999-300-136 | How to Operate Manual |
| 1 | 999-302-136 | Optioning Manual |

I. USOC 4BKXT + WES97 Feature Group and Keytop Conversion Kit for 8-Level BSC to 5-Level BSC With Unshift on Space

| <u>Qty</u> | <u>Part or Code No.</u> | <u>Description</u> |
|------------|-------------------------|---|
| 1 | 411379 | Keytop Conversion Kit for 8-Level BSR to 5-Level BSC |
| 1 | 43FG110/BA/02 | 5-Level Selective Calling With Unshift on Space Feature Group |
| 1 | 574-500-203 | Installation Section |
| 1 | 574-500-304 | Troubleshooting Section |
| 1 | 574-500-504 | Testing Section |
| 1 | 999-300-136 | How to Operate Manual |
| 1 | 999-302-136 | Optioning Manual |

FEATURE GROUPS

J. 43FG110/BA/01 5-Level Selective Calling Feature Group

| <u>Qty</u> | <u>Part No.</u> | <u>Description</u> |
|------------|-----------------|------------------------------------|
| 1 | 411955 | Circuit Card, Applications Program |
| 1 | 430234 | Label, Options |
| 1 | 430362 | Label, Press With Controls (Opcon) |
| 1 | 51049S | Specification |

K. 43FG110/BA/02 5-Level Selective Calling With Unshift on Space Feature Group

| <u>Qty</u> | <u>Part No.</u> | <u>Description</u> |
|------------|-----------------|------------------------------------|
| 1 | 411957 | Circuit Card, Applications Program |
| 1 | 430361 | Label, Press With Controls (Opcon) |
| 1 | 430456 | Label, Options |
| 1 | 51049S | Specification |

L. 43FG210/AA/01 8-Level Send/Receive Feature Group

| <u>Qty</u> | <u>Part No.</u> | <u>Description</u> |
|------------|-----------------|------------------------------------|
| 1 | 411952 | Circuit Card, Applications Program |
| 1 | 430358 | Label, Press With Controls (Opcon) |
| 1 | 430402 | Label, Options |
| 1 | 51049S | Specification |

M. 43FG210/BA/01 8-Level Selective Calling Feature Group

| <u>Qty</u> | <u>Part No.</u> | <u>Description</u> |
|------------|-----------------|------------------------------------|
| 1 | 411954 | Circuit Card, Applications Program |
| 1 | 430234 | Label, Options |
| 1 | 430358 | Label, Press With Controls (Opcon) |
| 1 | 51049S | Specification |

SPECIFICATION 51055S

KEYTOP MODIFICATION KITS

N. 411379 Keytop Modification Kit

| <u>QTY</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|------------|-----------------|------------------------|
| 1 | 454353 | Keytop, LINE ACTIVE |
| 1 | 454351 | Keytop, COPY SEND DATA |
| 1 | 454352 | Keytop, PRINT REC MSG |
| 1 | 454366 | Keytop, AUX READ |
| 1 | 454367 | Keytop, AUX WRITE |
| 1 | 454365 | Keytop, AUX REC |
| 1 | 454355 | Keytop, SND RDY |
| 1 | 346536 | Keytop, 1 |
| 1 | 346537 | Keytop, 2 |
| 1 | 346538 | Keytop, 3 |
| 1 | 346539 | Keytop, 4 |
| 1 | 346540 | Keytop, 5 |
| 1 | 340990 | Keytop, 6 |
| 1 | 346541 | Keytop, 7 |
| 1 | 346542 | Keytop, 8 |
| 1 | 346543 | Keytop, 9 |
| 1 | 346544 | Keytop, 0 |
| 1 | 346675 | Keytop, (|
| 1 | 346676 | Keytop,) |
| 1 | 347236 | Keytop, & |
| 1 | 347237 | Keytop, * |
| 1 | 340993 | Keytop, Q |
| 1 | 340994 | Keytop, W |
| 1 | 340995 | Keytop, E |
| 1 | 340996 | Keytop, R |
| 1 | 340997 | Keytop, T |
| 1 | 340998 | Keytop Y |
| 1 | 340999 | Keytop, U |
| 1 | 341000 | Keytop, I |
| 1 | 341001 | Keytop, O |
| 1 | 341002 | Keytop, P |
| 1 | 347238 | Keytop, ! |
| 1 | 347172 | Keytop, BLNK/- |
| 3 | 340714 | Keytop, BLOCKING |
| 1 | 346682 | Keytop, A |
| 1 | 346683 | Keytop, S |
| 1 | 341005 | Keytop, D |
| 1 | 341006 | Keytop, F |
| 1 | 341007 | Keytop, G |
| 1 | 341008 | Keytop, H |
| 1 | 346694 | Keytop, BELL/J |
| 1 | 341009 | Keytop, K |
| 1 | 341010 | Keytop, L |
| 1 | 347239 | Keytop, \$ |
| 2 | 341020 | Keytop, BLANK |
| 1 | 341012 | Keytop, Z |
| 1 | 341013 | Keytop, X |
| 1 | 341014 | Keytop, C |
| 1 | 341015 | Keytop, V |
| 1 | 341016 | Keytop, B |
| 1 | 341017 | Keytop, N |
| 1 | 346558 | Keytop, M |

| <u>QTY</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|------------|-----------------|---------------------|
| 1 | 346548 | Keypop, , |
| 1 | 346549 | Keypop, . |
| 1 | 347218 | Keypop, 0/RETRV REC |
| 1 | 347255 | Keypop, . |
| 1 | 347177 | Keypop, PAPER FEED |
| 1 | 347241 | Keypop, FIGS/RECALL |
| 1 | 347242 | Keypop, LIRS/STORE |
| 1 | 346260 | Keypop, Extractor |
| 1 | 340701 | Keypop, BLOCKING |
| 1 | 346559 | Keypop, J |
| 1 | 347240 | Keypop, BEL/S |
| 1 | 51049S | Specification |

O. 411380 Keypop Modification Kit

| <u>QTY</u> | <u>PART NO.</u> | <u>DESCRIPTION</u> |
|------------|-----------------|------------------------|
| 1 | 454353 | Keypop, LINE ACTIVE |
| 1 | 454351 | Keypop, COPY SEND DATA |
| 1 | 454352 | Keypop, PRINT REC MSG |
| 1 | 454354 | Keypop, MSG SUMRY |
| 1 | 454355 | Keypop, SND RDY |
| 1 | 347218 | Keypop, 0/RETRV REC |
| 1 | 347219 | Keypop, ./LINE DLETE |
| 1 | 346260 | Keypop, Extractor |
| 1 | 51049S | Specification |

4. SUPPLEMENTAL SUPPORT INFORMATION

A. Testing

4.01 An installation checkout of the Buffered Teleprinter Station with feature group and keytops should be performed under direction of the appropriate Testing and Troubleshooting section supplied with the feature group.

B. Tools

4.02 The feature groups and keytop modification kits can be installed without the use of any special tools. The 346260 keytop extractor is supplied with each keytop modification kit. Other standard tools required are a screwdriver and a 1/4-inch socket bit with handle.

C. Disposition of Teleprinter Station

4.03 Refer to the Installation section and install the Teleprinter Station.

5. GLOSSARY OF ABBREVIATIONS

| | | |
|------|---|--|
| (F) | — | Friction Feed |
| (T) | — | Tractor Feed |
| FG | — | Feature Group |
| BSC | — | Buffered Selective Calling — Multipoint Private Line |
| BSR | — | Buffered Send/Receive — Switched Network |
| USP | — | Unshift on Space |
| USOC | — | Universal Service Order Code |
| WES | — | Western Electric Service |

