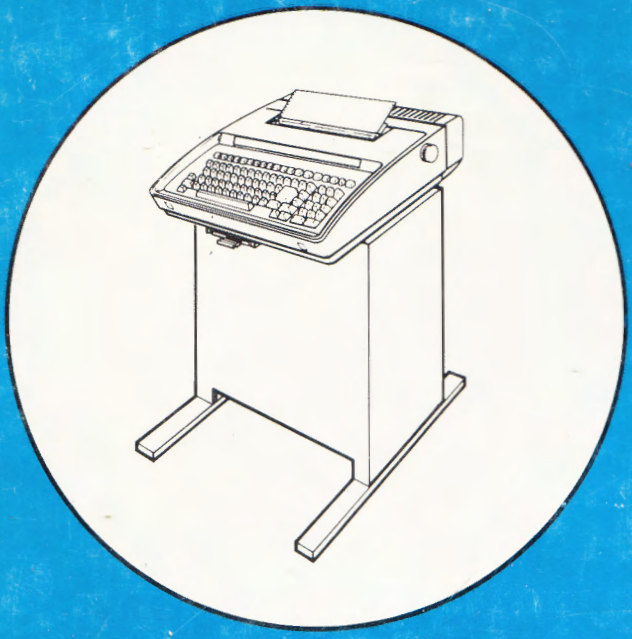

BUFFERED KSR

the 43 teleprinter

SERVICE MANUAL

TELETYPE™

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SERVICE MANUAL 406
Issue 1, January 1979

THE 43 TELEPRINTER BUFFERED KSR

SERVICE MANUAL

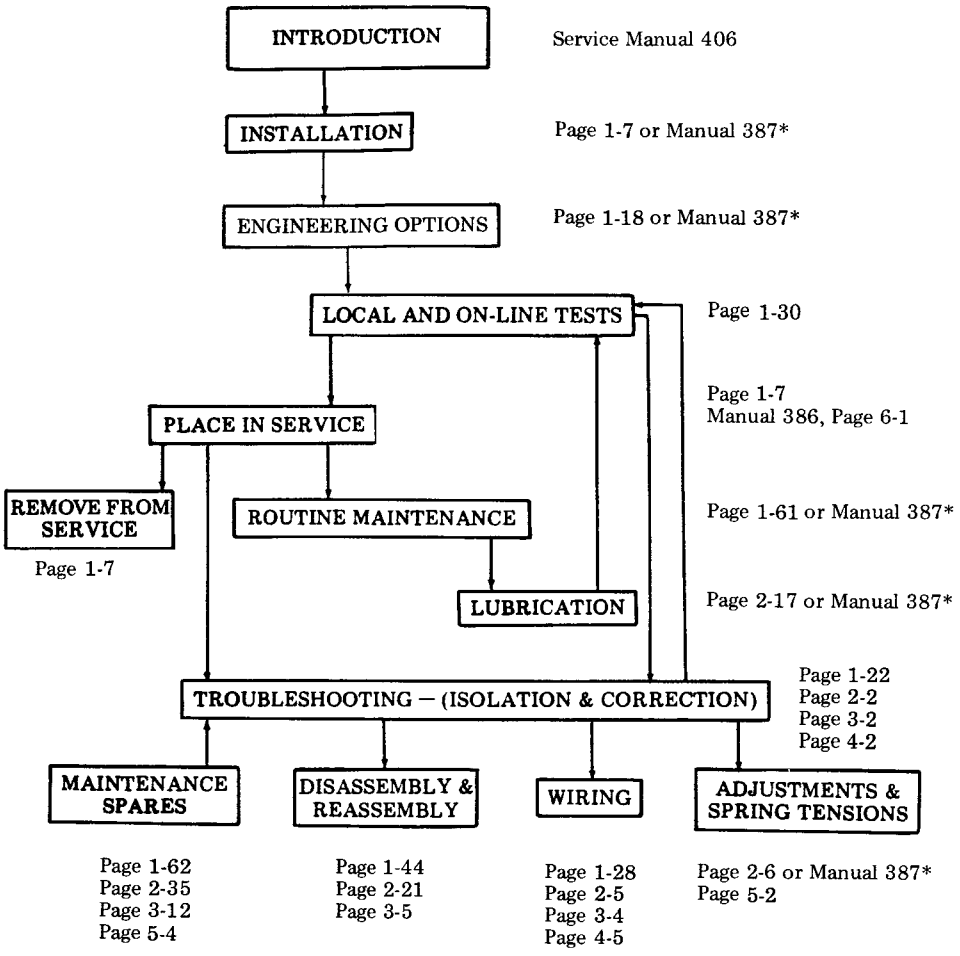
INTRODUCTION

This manual provides service information for the 43 Teleprinter Buffered Friction Feed or Sprocket Feed KSR's used with customer provided switched network or private line Data Sets (Modem). The parts included in the service manual provide instructions for use by craft personnel when performing the servicing tasks required for the installation, testing, trouble-shooting and routine maintenance of the 43 Buffered KSR.

The task flow chart on the next page illustrates the intended servicing activities and associated manual parts.

A brief training course and the maintenance spares as recommended in the parts indexes are available from Teletype Corporation. Craft personnel should be properly trained and have access to maintenance spares before attempting to service the 43 Buffered KSR.

TASK FLOW AND PAGE REFERENCES



*Included with each terminal shipped.

TELETYPE CORPORATION
Skokie, Illinois, U.S.A.

MANUAL 406
Issue 1, December 1978

PART	DESCRIPTION
1	43 BUFFERED KSR TELEPRINTER
2	43 PRINTER
3	43 BUFFERED OPERATOR CONSOLE
4	43 BUFFERED CONTROLLER WITH POWER SUPPLY
5	43 BUFFERED PAPER HANDLING AND ENCLOSURES
6	ATTENDANT MANUAL

PART 1 — 43 BUFFERED KSR TELEPRINTER

INDEX PAGE

PART 1 – 43 BUFFERED KSR TELEPRINTER

A. GENERAL DESCRIPTION

CONTENTS PAGE

1. GENERAL

1.01 This part provides a general description of the 43 Buffered KSR Teleprinter Terminals.

1.02 All ordering numbers shown in this manual are Teletype Corporation part numbers.

2. DESCRIPTION

2.01 The 43 Buffered KSR Teleprinter consists of a KP Set (Keyboard Printer) and a pedestal housing a controller.

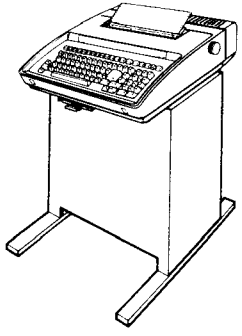


Fig. 1—43 Buffered KSR Teleprinter

2.02 The 43 Buffered KSR Teleprinter is available in either sprocket feed or friction feed versions containing a 4K or 16K (optional to 20K) memory buffer. See Fig. 2 for Teleprinter identification.

2.03 The Teleprinter provides for off-line data preparation (message enter, edit and store), batch transmission, and line speeds higher than the continuous printing rate.

2.04 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. Printout is on a 132 column, approximately 13 character per inch matrix style printer utilizing 12 inch wide paper (sprocket feed) or 80 column, 10 character per inch matrix style printer utilizing 8-1/2 inch wide paper (friction feed). A 7 by 9 dot matrix produces up-low character shapes for ASCII printing graphics and special symbols for 32 ASCII control codes.

2.05 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.

*American National Standard Code for Information Interchange

TELEPRINTER CODE	DESCRIPTION	KP SET CODE	CONTROLLER
4340/AAA	4K BUFFER (S)	4320/AAG	43C102
4340/AAB	16K BUFFER (S)	4320/AAG	43C103
4340/AAE	4K BUFFER (F)	4320/AAT	43C102
4340/AAF	16K BUFFER (F)	4320/AAT	43C103

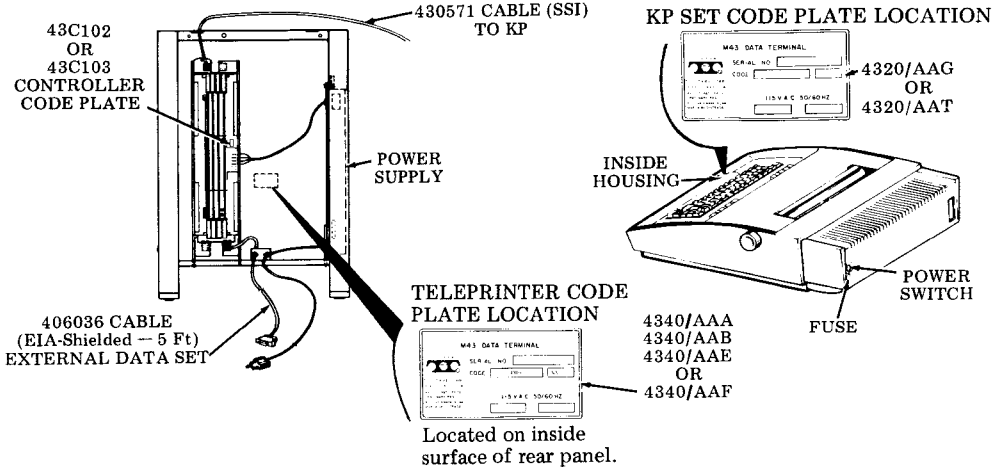


Fig. 2–43 Buffered KSR Teleprinter Identification

2.06 Paper for the Sprocket Feed printer must be 12 inches wide with standard sprocket hole size and spacing. Standard weight, single-ply or multicopy paper consisting of the original and up to two additional copies can be used. Standard single ply 8-1/2 inch wide (5 inches diameter) roll paper is used on Friction Feed Printers.

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

2.08 The 43 Buffered KSR Teleprinter operates on 115 V ac ± 10 percent at 50 or 60 Hz. Power to the KP set is approximately 75 watts and is controlled by an on-off rocker switch located at the right rear of the housing. Power to the controller is approximately 30 watts and is not switch controlled.

2.09 The KP set weighs 31 pounds and the pedestal with controller and power supply weighs 31 pounds.

2.10 The operational controls and status indicators for the Teleprinter are briefly described in Fig. 3.

A. GENERAL DESCRIPTION (Cont)

2. DESCRIPTION (Cont)

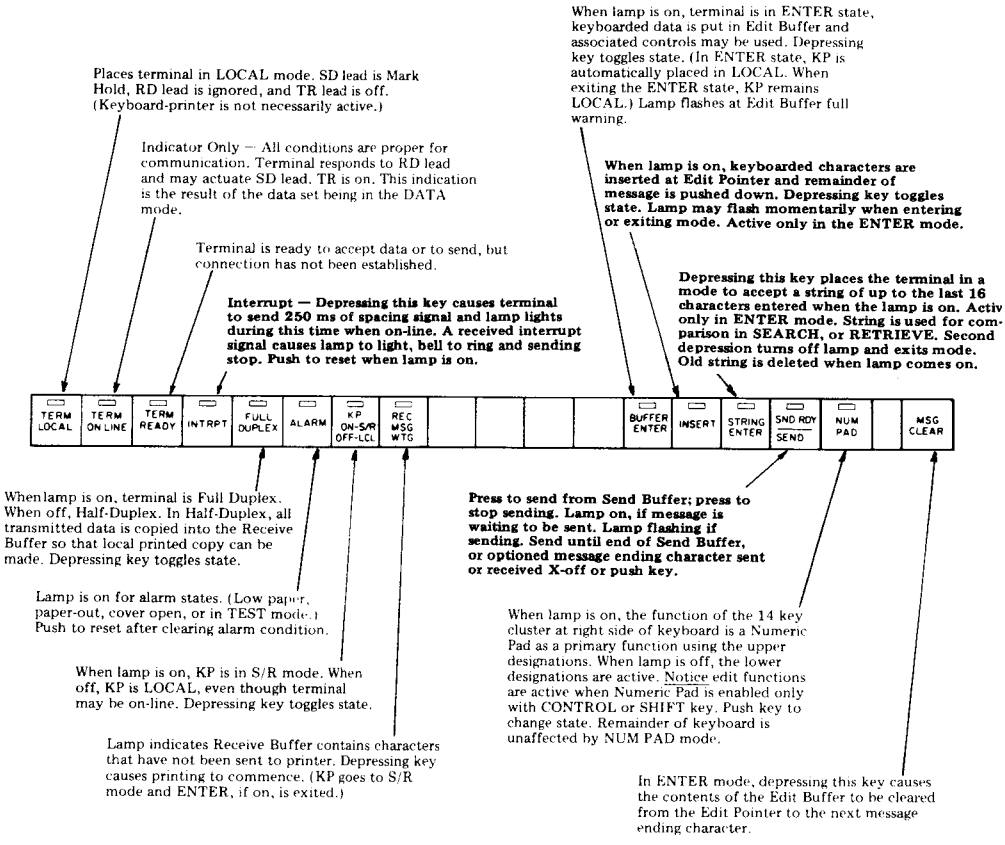


Fig. 3—Operational Controls and Status Indicators

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

ESC 1 (CRTL1) — 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 l (lower case L) (CRTL 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.

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.

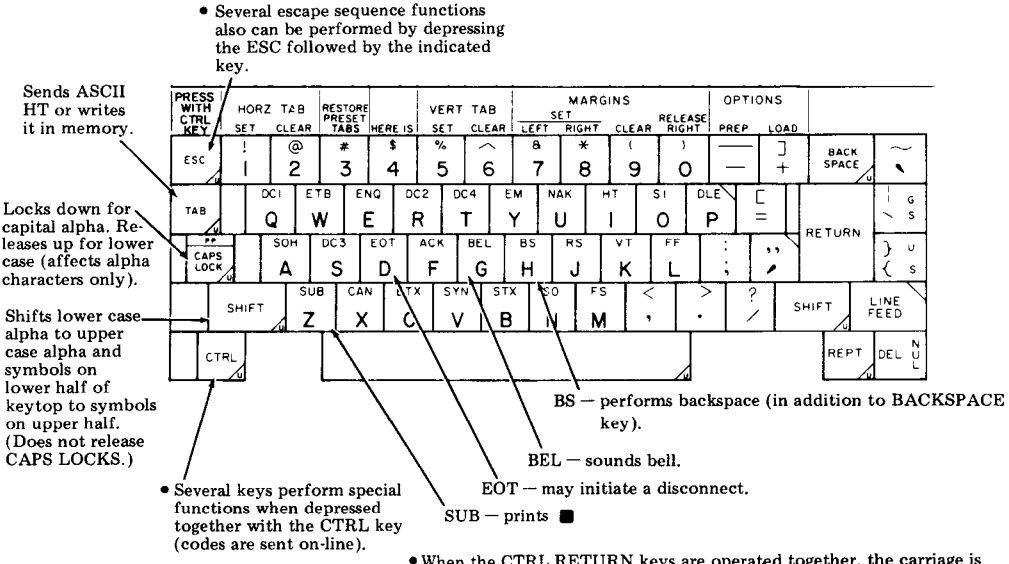


Fig. 4—Basic Keyboard Layout

A. GENERAL DESCRIPTION (Cont)

2. DESCRIPTION (Cont)

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

3. REFERENCES

3.01 The 43 Buffered Teleprinter Technical Reference provides additional descriptions of the teleprinter components, features and interfacing.

3.02 The How to Operate Manual 386 provides information on the 43 Buffered KSR Teleprinter operation.

3.03 The Service Manual 406 provides all necessary information for trained craft personnel to install, maintain, and if necessary, service the 43 Buffered KSR Teleprinter using recommended lists of maintenance spares.

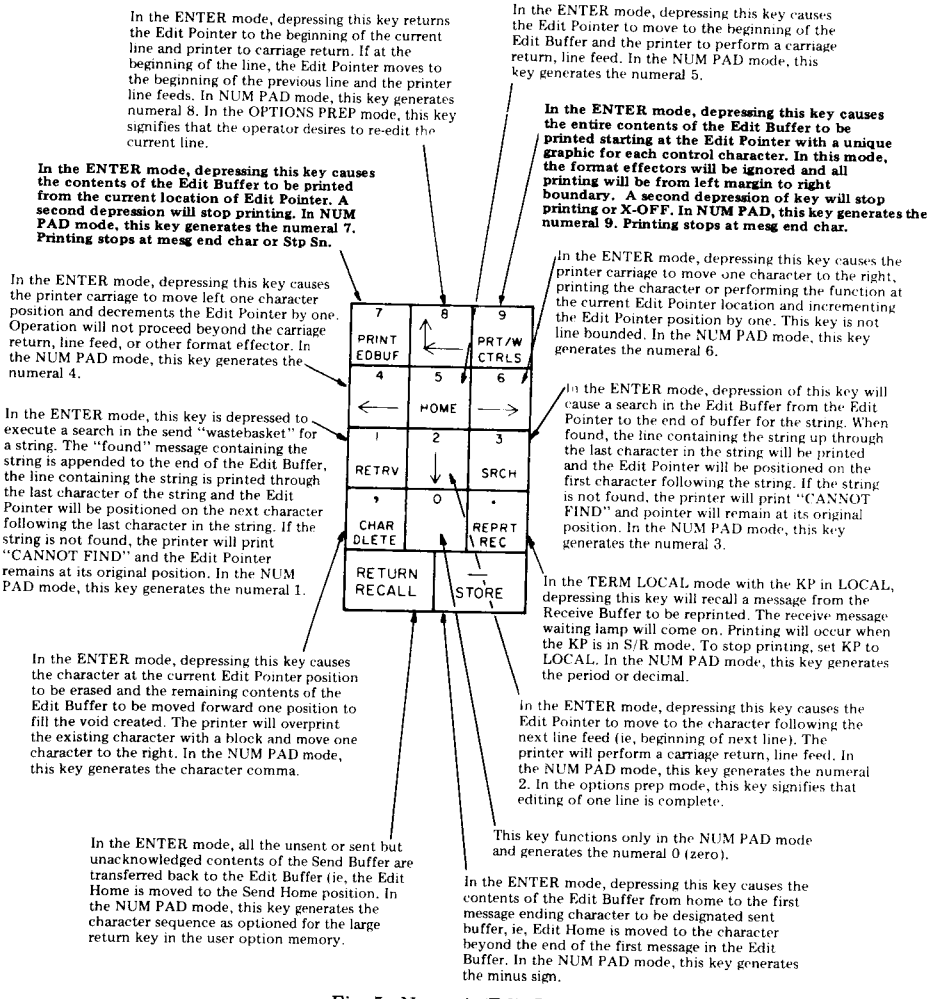


Fig. 5—Numeric/Edit Pad

B. INSTALLATION AND REMOVAL

CONTENTS

1. GENERAL

1.01 This part provides teleprinter installation and removal information for the 43 Buffered KSR (Fig. 1).

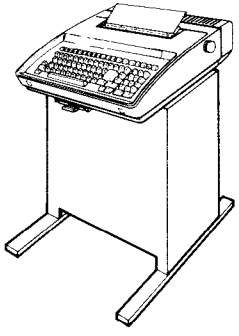


Fig. 1—43 Buffered KSR Teleprinter

1.02 Installation should be performed under the direction of a service order indicating terminal code, options, date, materials required and location.

1.03 For additional information, refer to: Teleprinter Testing, Page 1-30 and Engineering Options, Page 1-18.

1.04 Before starting the installation procedure, verify that paper and the customer provided data set (modem), if required, in addition to the 43 Buffered KSR is present at the installation location.

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

1.06 All ordering numbers shown in this manual are Teletype Corporation part numbers.

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. A 129534 1/4-inch wrench is required to remove the rear panel to remove packing details.

3. INSTALLATION PROCEDURE

A. Unpacking

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 Buffered KSR Teleprinter is furnished in a single carton containing the KP set and a pedestal containing the controller, power supply, interconnecting SSI cable and a data set cable.

3.04 Unpack the carton refering to instructions on the container. Remove tape securing the cover to the housing (Fig. 2).

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

B. INSTALLATION AND REMOVAL (Cont)

3. INSTALLATION PROCEDURE (Cont)

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 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— Set — 43 KP (4320AAG or 4320AAT)
1— Pedestal with Controller (43C102 or 43C103), Power Supply and 2 Cables.
1— Ribbon
1— Manual, Installation and Routine Servicing, 387
1— Manual, How to Operate 386
1— Paper Holder (Sprocket Feed) or Paper Supply assembly (Friction Feed)

Note: Fan fold 12 by 8-1/2 inch paper (sprocket feed) or 8-1/2 inch wide by 5 inch diameter rolls (Friction Feed) must be obtained locally or ordered separately. Refer to the How To Operate Manual 386, Page 6-1.

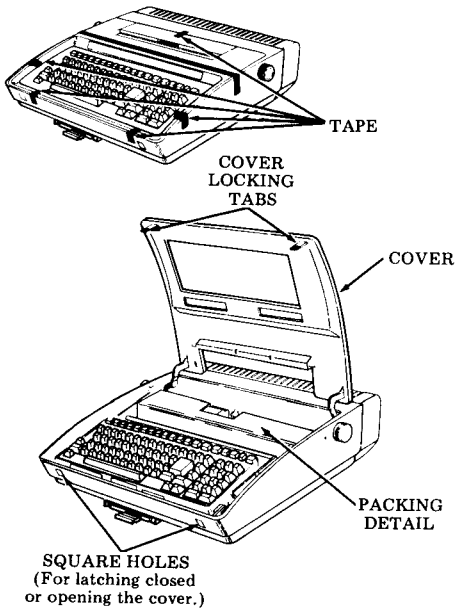


Fig. 2—Packing Detail

B. Assembly

3.08 Fasten the KP set to the pedestal using the four clips provided. Place KP set on top of pedestal, lining up grooves on bottom of housing with slots in pedestal and tray. Push in each clip until fully seated. See Fig. 3.

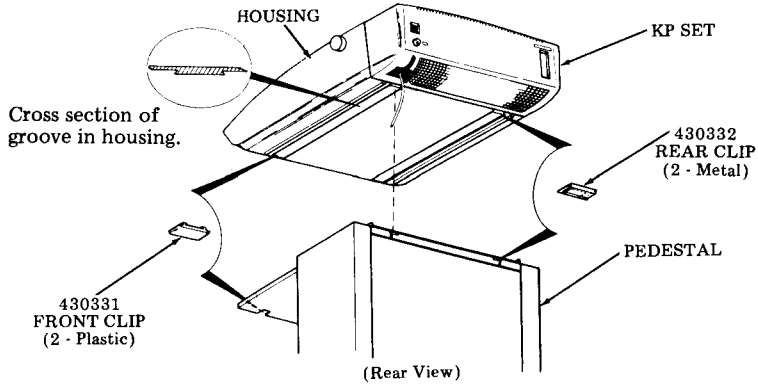


Fig. 3

3.09 Connect the ground strap, attached to the KP, to the pedestal as shown in Fig. 4.

3.10 Connect the SSI cable plug (extending 1.5 feet from the upper rear of the pedestal) to the KP SSI port located at left rear of the bustle. Turn off KP set power switch by depressing lower half. (See Fig. 4.)

3.11 With ac power to the customer supplied data set turned off, connect the data set cable (extending 5 feet from the lower rear of the pedestal, see Fig. 4) to the data set. See below for EIA interface leads and descriptions. Secure using 2 captive screws on plug. For distances greater than 5 feet to the data set, the existing data set cable can be extended by use of the following shielded EIA cables available from Teletype Corporation:

7 Feet Length	408065
12 Feet Length	408066
25 Feet Length	408067
50 Feet Length	408068

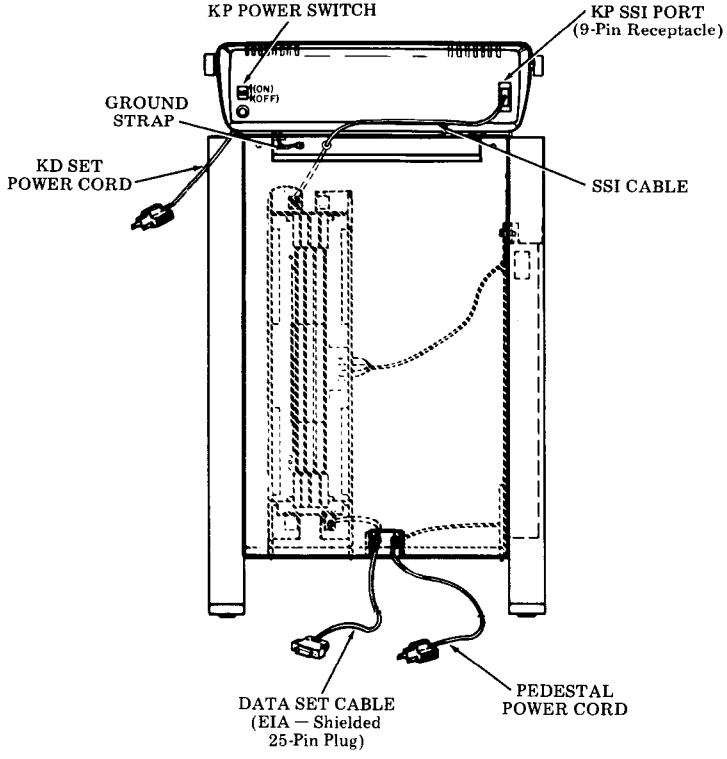
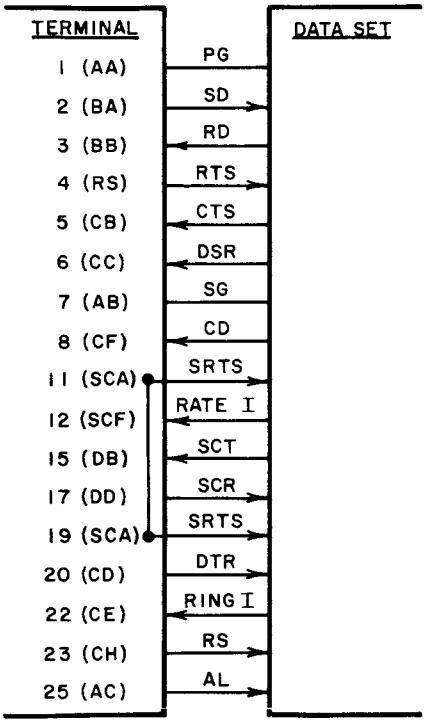


Fig. 4

B. INSTALLATION AND REMOVAL (Cont)

3. INSTALLATION PROCEDURES (Cont)

INTERFACE LEADS



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.

CTS — Clear To Send. ON allows teleprinter to send or receive. OFF teleprinter can receive but not send.

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.

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.

3.12 Position the terminal in the location specified by the customer. A minimum of 6 inches of space behind the terminal is required when the paper holder (sprocket 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. The ac power cords for the KP set and for the pedestal extend 6 feet to the rear.

3.13 Stabilize the terminal by adjusting the left or right pedestal leg leveling screw. See Fig. 5.

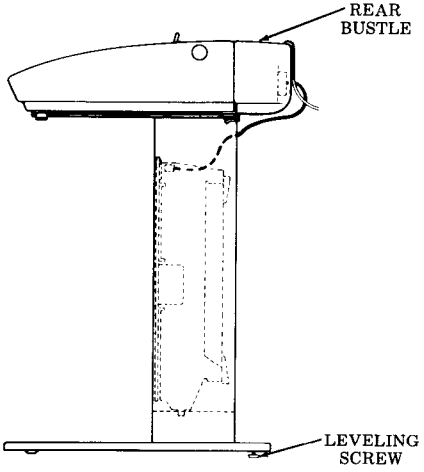


Fig. 5

3.14 Assemble the paper holder or paper supply assembly as shown in Fig. 6.

(a) Sprocket Feed: Attach the paper holder to the bustle cover by hooking in the end slots (early design) or sliding down over the bushings (late design).

(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.

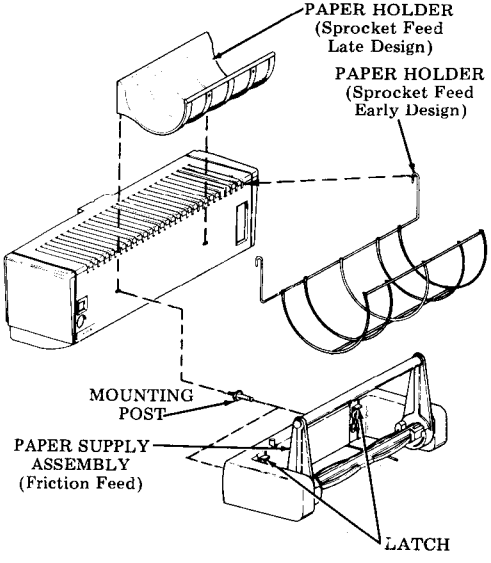


Fig. 6

B. INSTALLATION AND REMOVAL (Cont)

3. INSTALLATION PROCEDURES (Cont)

C. Ribbon and Paper Installation

3.15 Install the ribbon and paper. Refer to the How to Operate Manual 386, Page 6-1.

D. Checkout Procedure

3.16 Connect the data set, pedestal and KP set power cords to a properly polarized and grounded source of 115 V ac 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 KP set and 0.56 A for the pedestal.

3.17 Certain user programmable options listed below should be reviewed to properly interface the 43 Buffered KSR Terminal with the customer supplied data set and/or system requirements. To enable the options, refer to the How To Operate Manual 386, Page 6-1.

3.18 If any of the above options were changed from the state furnished condition enter the new value on the directory card, RECORD OF USER PROGRAMMABLE OPTIONS, section. (See Fig. 7.)

3.19 Perform the teleprinter installation checkout procedures found in Teleprinter Testing, Page 1-30.

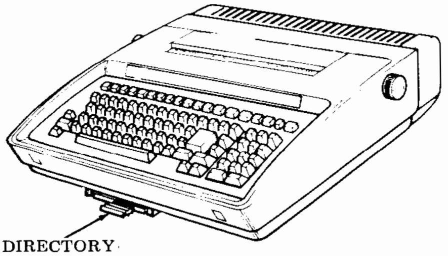
E. Directory Card

3.20 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 slideout directory card (Fig. 7). Also mark the appropriate memory size.

3.21 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 card. Replace the directory card.

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

MNEMONIC	DESCRIPTION	STATE FURNISHED
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



DIRECTORY CARD

3.23 Provide the customer with the How To Operate Manual 386. Advise the customer to order spare ribbons and paper as soon as possible (quantities depending on expected usage).

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

3.25 Place the Manual 387, Installation and Routine Servicing in the shipping containers and retain.

FREQUENTLY CALLED NUMBERS

NAME	AREA CODE	TEL. NO.
INST. 4/1/78		

INSTALLED LOCATION IN BUILDING
FLOOR 3 AREA A16 PHONE 341-7296
LOCATION OF EXTENSION PHONE, IF ANY POST B16

IF THE TERMINAL DOES NOT APPEAR TO BE WORKING PROPERLY, CONSULT THE "HOW TO OPERATE" MANUAL THEN IN CASE OF TROUBLE CALL: 362-1212

RECORD OF OPTIONS NOT PROGRAMMABLE BY USER

MEMORY SIZE 4K [ ] 16K [ ] 20K [ ]

TYPE FONT SWITCHES
SWITCHES 3, 4 & 5 MUST REMAIN OFF
SWITCHES SHOWN AS FACTORY FURNISHED

TYPE FONT 00 [*] (1 ON) (2 ON) 0Ø [ ] (1 OFF) (2 ON) Ø0 [ ] (1 OFF) (2 OFF)
(NUMERIC)

RECORD OF USER PROGRAMMABLE OPTIONS

(REFER TO HOW TO OPERATE MANUAL)

Speed = [ ] 0110 [ ] 0200 [*] 0300 [ ] 0600 [ ] 1200 [ ] 1800 — RBntr = n [*] or y [ ]
StopU = 1 [*] or 2 [ ] — EBWrn = 132 [*] or [| |]
LgKey = ← [*] or [| |] — ABag? = n [*] or y [ ]
SmKey = ≡ [*] or [ ] — MsEnd = $^{E}_{X}$ [*] or [| | |]
LfBdy = 000 [*] or [| |] — StpSn = $^{D}_{3}$ [*] or [ ]
RtBdy = 080 [*] or [| |] — StrSn = $^{D}_{1}$ [*] or [ ]
Fmlgt = 000 [*] or [| |] — NegRs = $^{N}_{K}$ [*]
HTor? = n [*] or y [ ] — or [| | | | |]
VTor? = n [*] or y [ ] — Dscnt = $^{E}_{T}$ [*] or [ ]
PtNL? = n [*] or y [ ] — DiEr? = n [*] or y [ ]
DbLF? = n [*] or y [ ] — PrTyp = [*] E(EVEN) or [ ] O or [ ] M or [ ] S
RBSze = [*] 02000 or [| | | |] — RcPar = n [*] or y [ ]
RBufW = 100 [*] or [| |] — DS212 = n [*] or y [ ]
RBLow = 500 [*] or [| |] — HsStp = 1 [*] or 2 [ ]
FlWrn = BRK [*] or XOF [ ] — Duplx = h [*] or f [ ]
ABmsg [| | | | | | | | | | | | | | | | | | |]

* STATE OF OPTION FURNISHED UNLESS OTHERWISE CHECKED [✓] OR WRITTEN IN [7|5|0] OR [G_S| |]

Fig. 7—Directory Card

B. INSTALLATION AND REMOVAL (Cont)

4. STATION REMOVAL (Repacking)

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 removed in 3.05.

4.03 Tape the cover to the housing as shown in Fig. 2.

4.04 Remove back panel of pedestal. Apply a band of tape around each of the three quarter turn fasteners and their respective mounting brackets. See Fig. 8.

4.05 Obtain the cartons and packing details retained in 3.06.

4.06 Position a 28318PK wood detail at top inside of pedestal. Position a 28326PK corrugated detail in the pedestal to hold the wood detail in position and secure in place with a strip of tape. See Fig. 8.

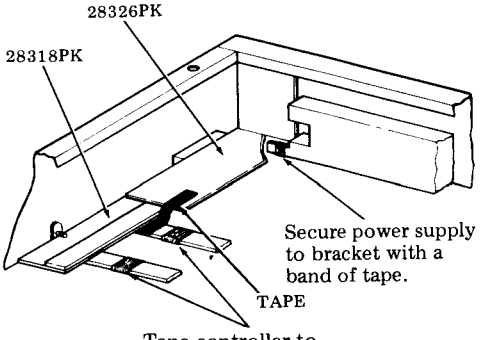


Fig. 8

4.07 Position a 28319PK corrugated detail between the side of the door opening and the controller frame. See Fig. 9.

4.08 Position a 28321PK corrugated detail between the controller frame and the 410251 circuit card. See Fig. 9.

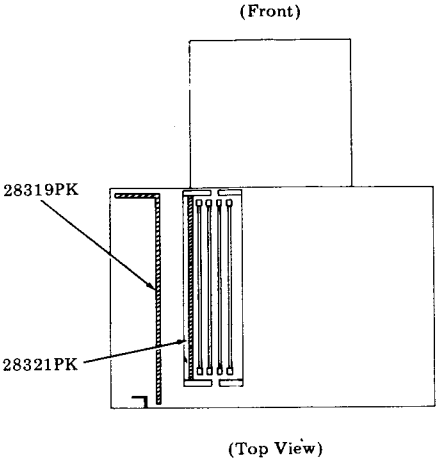


Fig. 9

4.09 Form two 28320PK corrugated details and tape so they hold their shape, if not already formed. See Fig. 10. Position the details between the controller and the power supply. Secure to the power supply and controller with tape.

4.10 Secure the ends of the controller together with a strip of tape. See Fig. 10.

4.11 Replace back panel on the pedestal.

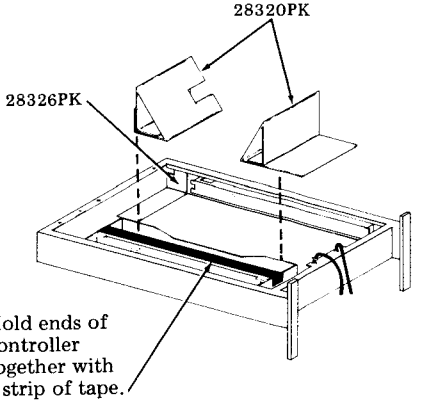


Fig. 10

4.12 Form a 16936PK Detail "B" into a tube. Tightly tape flaps on bottom of Detail with two strips of tape (Fig. 11).

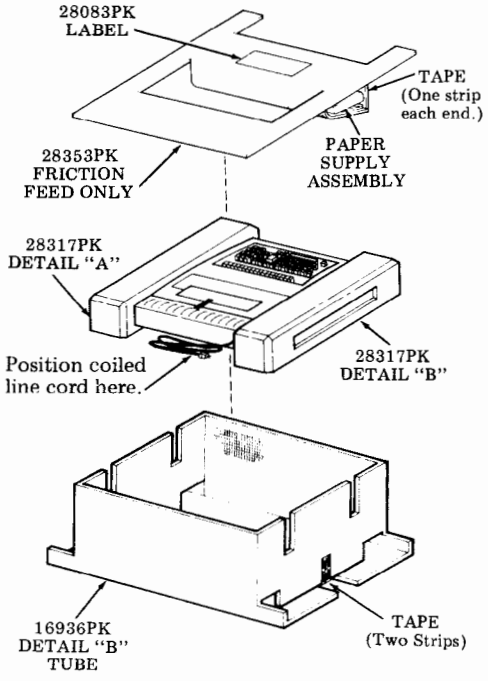


Fig. 11

4.13 Place two 23457PK plastic bags over the KP set. Postion a 28317PK Detail "A" on the right side and a 28317PK Detail "B" on the left side of the KD set.

4.14 Position the KP set with end details in the 16936PK Detail "B" as shown above. Position coiled cable under the set.

4.15 Friction Feed only. Form a 28353PK Detail around the paper supply assembly as shown. Tape the two flaps securely to hold the paper supply assembly in place.

4.16 Friction Feed only. Affix 28083PK label to the 28353PK Detail as shown above.

4.17 Friction Feed only. Place the 28353PK Detail with paper supply assembly on top of the KP set.

4.18 Fold the flaps of 16936PK Detail "B" over the KP set and tightly secure with two strips of tape. See Fig. 12.

4.19 Position a 28322PK Detail on both ends of the 16936PK Detail "B" tube and secure the detail to the tube with two strips of tape. See Fig. 12.

4.20 Form a 16936PK Detail "A" carton. Close and seal bottom flaps with three strips of tape. Apply one strip to each of the end seams and one strip the length of the box.

4.21 Place prepacked KP set assembly in carton. Form a 28323PK Detail and position in carton as shown in Fig. 12.

4.22 Place two 430332 metal clips and two 430331 plastic clips in a 21308PK muslin bag and secure to the loose end of the SSI cable. Secure cable to the top of the cabinet with two strips of tape. See Fig. 12.

4.23 Place a 23461PK plastic bag over the pedestal. Place the pedestal front side down in carton with the legs positioned in the void formed by the 28323PK Detail. See Fig. 12.

4.24 Drape remaining loose cables on the back panel of the cabinet. Form and position a 16936PK Detail "D" against the bottom and rear of the cabinet. See Fig. 12.

4.25 Sprocket Feed only. Position the 430318 paper holder on the 16936PK Detail "D" as shown in Fig. 12, to the Detail with a strip of tape.

4.26 Individually coil the two cables leaving about 12 inches of leader. Secure the coils with a 50136PK twist tie. Position the cables as shown in Fig. 12.

4.27 Position a 16936PK Detail "C" at the top rear of the cabinet. The extensions of the 16936PK Detail "B" should fit in the center of the "U" portion of Detail "C".

4.28 Print the following information on the top of the 16936PK Detail "C": "REMOVE THIS DETAIL FIRST".

4.29 Close and seal the top flaps of the carton as outlined in 4.20.

4.30 Mark the outside of the carton with the teleprinter code (ie, 4340AAA).

B. INSTALLATION AND REMOVAL (Cont)

4. STATION REMOVAL (Repacking) (Cont)

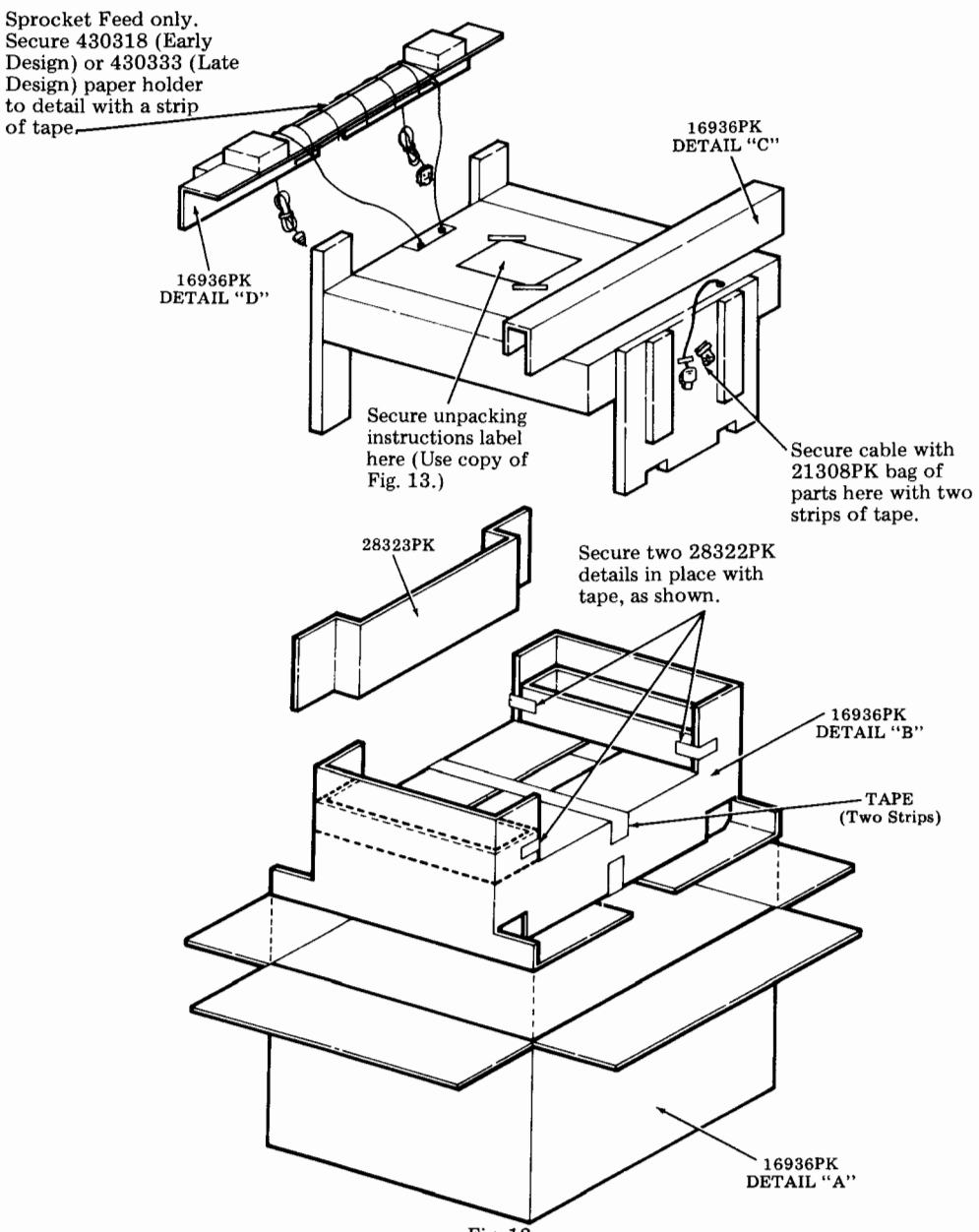


Fig. 12

UNPACKING INSTRUCTIONS

1. REMOVE BACK OF PEDESTAL.
2. REMOVE 1 WOOD & 5 CORRUGATED DETAILS.
3. CHECK TO BE SURE CIRCUIT CARDS ARE SEATED IN THEIR CONNECTORS.
4. REPLACE BACK OF PEDESTAL.

4340 KSR

Fig. 13

C. ENGINEERING OPTIONS

CONTENTS PAGE

1. GENERAL

1.01 This part provides information on engineering option No. 431 for the 43 Buffered KSR Teleprinter.

1.02 The engineering option can be used to change the type font arrangement using the switches located on the logic circuit card mounted on the bottom of the printer frame.

1.03 The option is numbered for field identification and record keeping purposes.

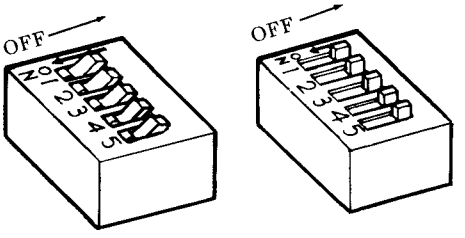
1.04 The operator console circuitry can be damaged by static discharge. The 346392 static discharge ground strap is available for use by service personnel.

1.05 All ordering numbers shown in this manual are Teletype Corporation part numbers.

1.06 For additional servicing information refer to Teleprinter Troubleshooting, Page 1-22.

OPTION SWITCHES

1.07 Different styles of option selecting 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. 1.



Toggle Style Slide Style

(Toggles and Slides shown in OFF position.)

Fig. 1—Option Switches

1.08 The option switches on the logic circuit card are factory optioned and should not be changed unless the local engineering requirements specify incorporating a nonstandard option (Fig. 2).

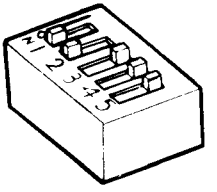


Fig. 2—Standard Switch Positions

2. TOOLS REQUIRED

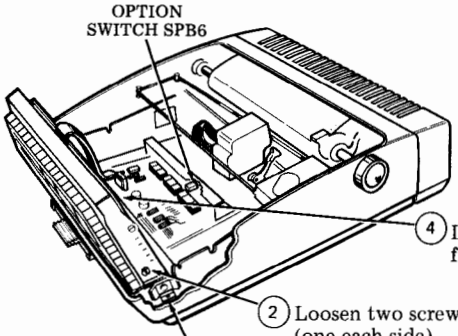
2.01 The following tools will be required to enable the engineering option No. 431. These items should normally be present in standard maintenance tool kits.

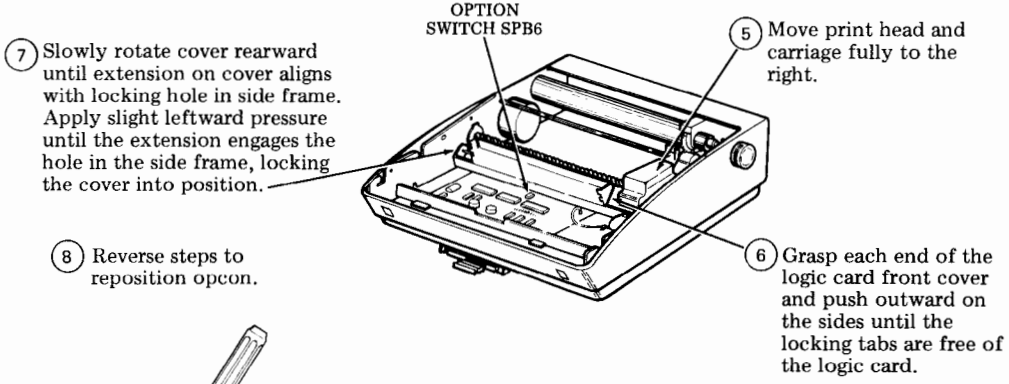
Wrench, Open end — 3/16" and 1/4" 129534
Screwdriver — 1/4", 6" Blade 100982

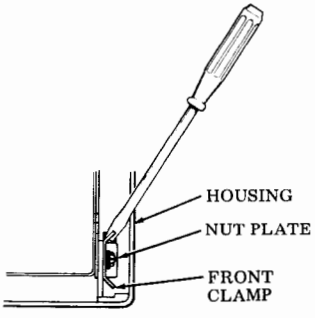
3. ACTIVATING OPTION NO. 431

3.01 Turn off ac power to the teleprinter.

(1) Depress the two locking tabs on the lower front of the cabinet and open the cover.







Note: In repositioning opcon, perform the KEYBOARD TO COVER ALIGNMENT adjustment. See Page 5-2.

Fig. 3—Option Switch Access

C. ENGINEERING OPTIONS (Cont)

3. ACTIVATING OPTION NO. 431 (Cont)

3.02 Locate the Option Switch Pack SPB6 (Fig. 3) on the logic card and activate the option switches in Fig. 4.

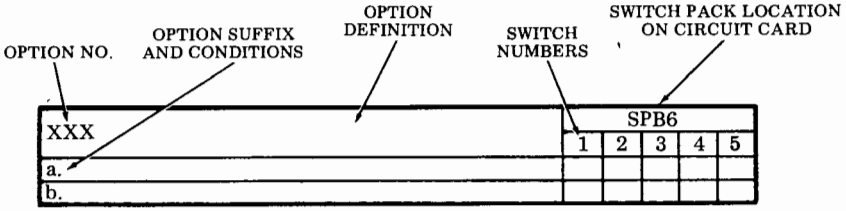
3.03 Reinstall the logic card front cover and operator console, tighten the screws loosened in 3.01 and close the cabinet cover.

3.04 Remove the pullout directory card and record the nonstandard option incorporated in the terminal on the directory card. Check the appropriate square. See Fig. 5.

3.05 Reinstall the directory card and turn on the ac power to the station.

3.06 Perform the option checkout procedure to verify proper operation of the nonstandard option installed. Refer to 4. OPTION CHECKOUT for checkout procedure.

3.07 The checkout procedure in 4. OPTION CHECKOUT provides information for checking nonstandard options only. Refer to Page 1-30 for Teleprinter Testing Procedures.



XXX	SPB6 1	2	3	4	5
a.					
b.					

431. Type Font Arrangement		SPB6 1	2	3	4	5	
a.	Narrow Numeric 0 and Wide Alpha O. Standard ∧ and Underline ___.	●	●	–	–	–	†
b.	Slash Numeric Ø and Wide Alpha O. ∧ Prints as ↑ and ___ Prints as ←.	○	●	–	–	–	
c.	Slash Alpha Ø and Wide Numeric 0. ∧ Prints as ↑ and ___ Prints as ←.	○	○	–	–	–	

	SPB6 1	2	3	4	5	
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 feature.
† Factory furnished state of feature.

Fig. 4—Option Switch Settings

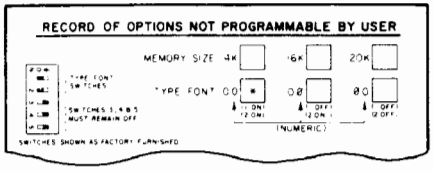


Fig. 5—Directory Card

4. OPTION CHECKOUT

4.01 Latch [CAPS LOCK] key in the down position and perform the following procedure.

PROCEDURE	RESPONSE	OPTION
Depress [SI / O] key.	O Ø	431b. 431c.
Depress [ ) / 0] key.	Ø O	431b. 431c.
Hold [SHIFT] key depressed and depress [^ / 6] key.	↑	431b. & c.
Hold [SHIFT] key depressed and depress [— / _] key.	←	431b. & c.

D. TROUBLESHOOTING

CONTENTS PAGE

1. GENERAL

1.01 This part provides troubleshooting information for the 43 Buffered KSR Teleprinter.

1.02 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 parts of this manual.

Note: All ordering numbers shown in this manual are Teletype Corporation part numbers.

1.03 Component troubleshooting parts are:

Page 2-2	43 Printer
Page 3-2	43 Buffered Operation Console (Opcon)
Page 4-2	43 Buffered Controller with Power Supply

1.04 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.

1.05 Trouble isolation for the attendant is provided in the How to Operate Manual 386, Page 6-1.

1.06 To facilitate trouble correction, the recommended maintenance spares as listed on Page 1-62 should be available. In addition, parts for the repair of components as listed on Page 2-35, Page 3-12 and Page 5-4 for the printer, operator console and paper handling and enclosures should be available.

1.07 For component access, refer to the Disassembly/Reassembly, Page 1-44 and Engineering Options, Page 1-18.

1.08 For location and identification of station components, refer to Page 1-62.

1.09 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 SSI Interface and power supply cables or fuse.
On the opcon — check the cable and keyswitches per opcon troubleshooting.

1.10 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.

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

1.12 When returned to the Teletype Product 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 opcon for static protection.

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

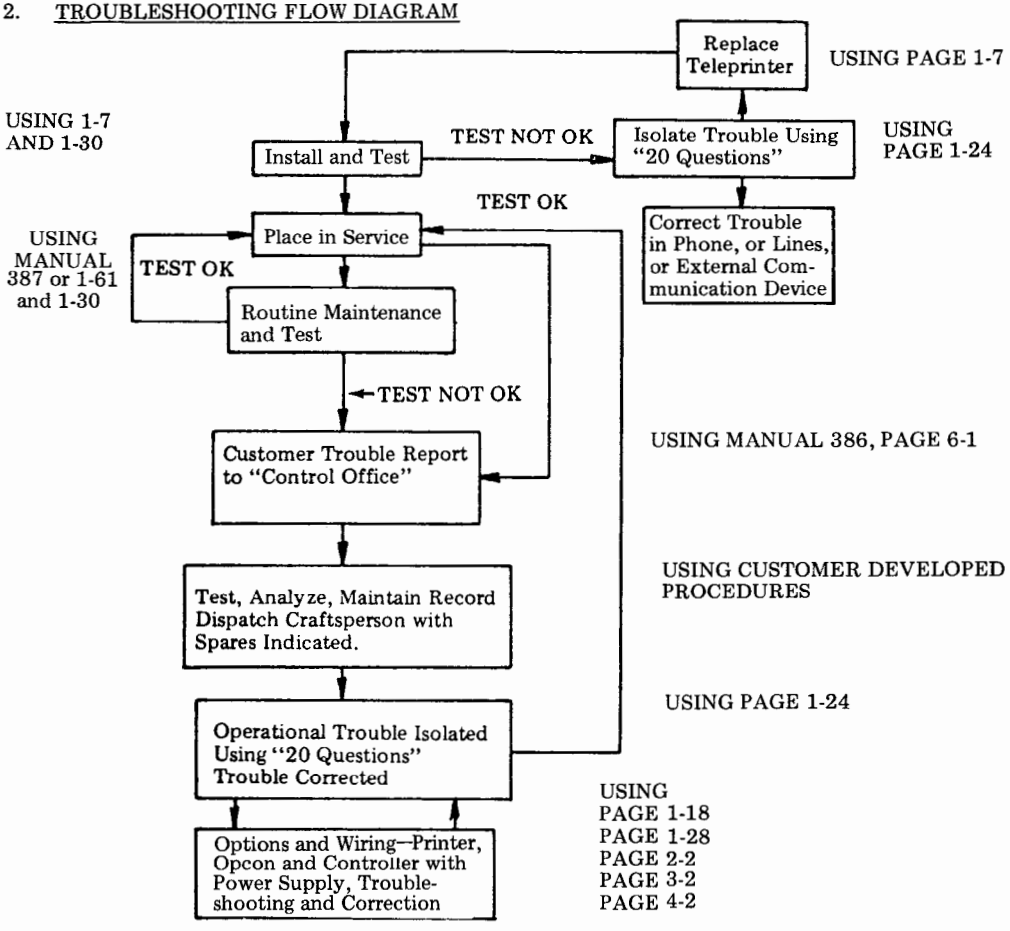
430850 Print Head
43K202/GAB Operator Console
430700 Power Supply
410745 Logic Card
410746 SSI Card
410251 IXL Card
410747 ROM Card
410294 AUX CIU/RAM Card
410291 CIU/SSI Card
430770 Power Supply
410297 16K RAM CARD

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 DIAGRAM for the intended flow of troubleshooting.

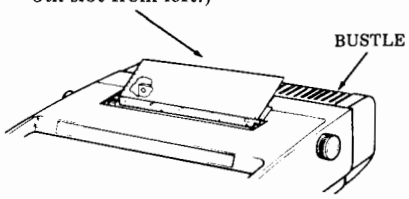
1.16 Trouble analysis is presented in the form of a "20 Questions" routine in 3. TROUBLESHOOTING GUIDE' The guide, with questions and yes or no columns, should be used always starting with the first question and proceeding according to the "yes" or "no" directive.

2. TROUBLESHOOTING FLOW DIAGRAM



D. TROUBLESHOOTING (Cont)

3. TROUBLESHOOTING GUIDE

QUESTION	YES	NO
1. Are any indicators on opcon lit? (Power available, ac and SSI cords plugged in, KP set power on, and cover closed.)	Go to 2.	Go to 1a.
1a. Is there any indication of power in the set? (Opcon lamps flash when KP power is turned on and off, print head indexes to the left, RED lamp on KP power supply lit, etc.)	Go to 1c.	With power off, check KP set F1 fuse. (See Page 1-28.) 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 KP Power Supply. Replace rear frame.
1c. Is RED lamp on KP power supply lit? (Visible through slot in bustle, 6th slot from left.)  	Check SSI cable from KP to controller. Check seating of KP power supply output cable. Check cable to SSI card. Check opcon cable plug. Check Controller Self-Test -- See Controller Troubleshooting, Page 4-2. Check Opcon Self-Test -- See Page 6-1. Replace SSI card. Replace Logic card. Replace CIU/SSI card.	Disconnect power supply cable and go to 1d.
1d. Does RED lamp on KD power supply now light?	Unplug SSI card cable, opcon and all printer cables (7). Reconnect KP power supply cable and go to 1e.	Check Fuse (F2) on power supply. Replace if blown. Replace power supply. Replace rear frame assembly.

	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 SSI card, opcon and printer cables are reconnected one at a time?	Replace the SSI card, opcon or the printer component (refer to Printer Troubleshooting, Page 2-2) 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.	Check Controller Self-Test — See Controller Troubleshooting, Page 4-2. Replace battery on the IXL circuit card. Replace IXL card.	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 Controller Troubleshooting, Page 4-2. Check Opcon Self-Test — See Page 6-1. Replace logic card. If alarm indicator fails on paper out, go to Printer Troubleshooting, Page 2-2.
4.	Can any characters be locally generated from the opcon to the printer?	Go to 5.	Go to Printer Troubleshooting, Page 2-2. Replace logic card.
5.	Are characters properly formed?	Go to 6.	Go to Printer Troubleshooting, Page 2-2. Replace logic card.
6.	Is print density acceptable? (Good Ribbon)	Go to 7.	Go to Printer Troubleshooting, Page 2-2.
7.	Does paper feed properly?	Go to 8.	Check fuse (f3) on logic card. Replace line feed motor if fuse blows again. Go to Printer Troubleshooting, Page 2-2. Replace logic card.

D. TROUBLESHOOTING (Cont)

3. TROUBLESHOOTING GUIDE (Cont)

QUESTION	YES	NO
8. Does print head space and return properly?	Go to 9.	Go to Printer Trouble-shooting, Page 2-2. Replace logic card.
9. Do all characters print, including numeric pad and functions perform (except bell and keyboard edit cluster), when the keys on the opcon are operated locally from the opcon to the printer?	Go to 10.	Check Opcon Self-Test — See Page 6-1. Replace logic card.
10. Does signal bell ring under any conditions? (CTRL G, right margin, received interupt, etc.)	Go to 11.	Go to Printer Trouble-shooting, Page 2-2. Check Controller Self-Test — See Page 4-2. Replace logic card.
11. Does signal bell ring under all conditions?	Go to 12.	Check Controller Self-Test — See Page 4-2.
12. Are margins set, cleared and right margin released properly?	Go to 13.	Check Controller Self-Test — See Page 4-2.
13. Are tabs (vert & horz) set, cleared and restored properly.	Go to 14.	Check Controller Self-Test — See Page 4-2.
14. Can options prep mode be entered, options changed and loaded properly?	Go to 15.	Check Controller Self-Test — See Page 4-2.
15. Does answer-back print correctly on CTRL 4?	Go to 16.	Check user programmable options for ABmsg coded. Check Controller Self-Test — See Page 4-2.
16. Can data be entered into buffer, edited, printed out, stored, recalled and cleared properly?	Go to 17.	Check Controller Self-Test — See Page 4-2.
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.	Check Controller Self-Test — See Page 4-2. Check data set cable. Check external communi-cation equipment.

	QUESTION	YES	NO
18.	Is sent data received by remote terminal?	Go to 19.	Go to 18a.
18a.	When teleprinter is sending, does send light flash on controller CIU/SSI card?	Check data set cable. Check external communication equipment.	Check Controller Self-Test — See Page 4-2.
19.	Is data sent from remote terminal received?	Go to 20.	Go to 19a.
19a.	When remote terminal is sending, does receive light flash on controller CIU/SSI card?	Check Controller Self-Test — See Page 4-2.	Check data set cable. Check external communication equipment.
20.	Are data messages properly sent and received in term on-line mode (both batch and S/R)?	Place in service.	Check user programmable options - Speed, StopU, PrTyp, StrSn, etc. Check Controller Self-Test — See Page 4-2. If self-test is OK, check external communications equipment.

E. WIRING

CONTENTS

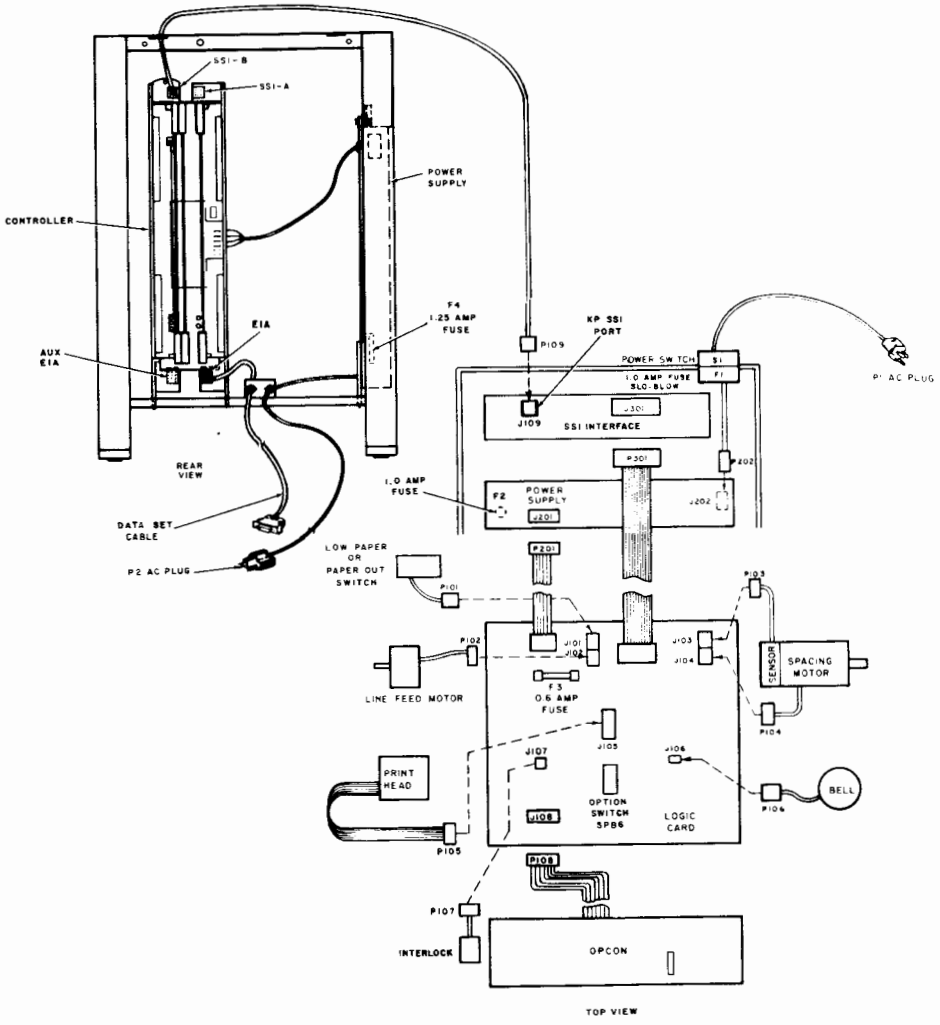
1. GENERAL

1.01 This part provides wiring information for the 43 Buffered KSR Terminal. The wiring information provides proper component interconnection information.

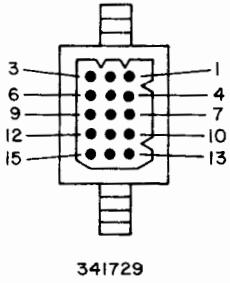
1.02 For additional information refer to Page 2-5 Printer Wiring, Page 3-4 Operator Console Wiring and Page 4-5 Controller with Power Supply Wiring.

1.03 Numbers shown on the terminal wiring do not appear on plugs and jacks.

2. TERMINAL WIRING



DATA SET CABLE



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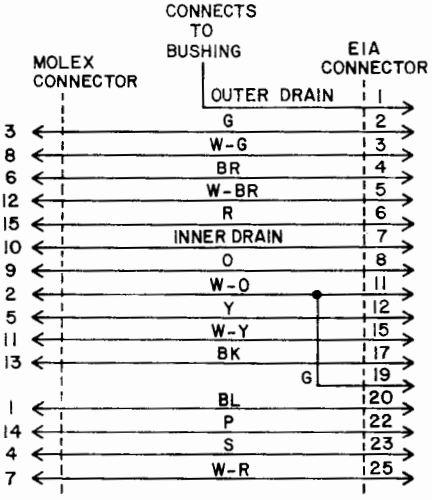

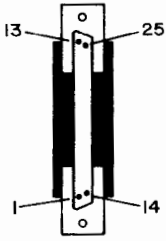

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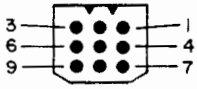
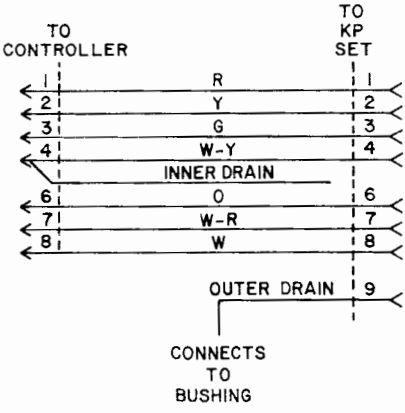
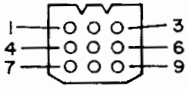
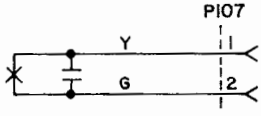
SSI CABLE







INTERLOCK SWITCH ASSEMBLY



F. TESTING

CONTENTS PAGE

1. GENERAL

1.01 This part provides station testing information for the 43 Buffered KSR Teleprinter.

1.02 An installation checkout should be performed after installation to make sure the station is operable.

1.03 On trouble calls an installation checkout should be performed after trouble correction to make sure the Teleprinter 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.

1.04 Following routine maintenance calls at a location, an installation checkout should be performed.

1.05 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.

1.06 Refer to Page 1-22 for Teleprinter Troubleshooting information.

1.07 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 Teleprinter Troubleshooting Page 1-22.

1.08 Always perform the tests in the order given. The Test Steps are based on satisfactory results of all previous steps.

PRELIMINARY CHECK

1.09 Before proceeding with the checkout procedure check the following:

(a) Is Teleprinter connected to a properly grounded and polarized ac service?

(b) Are all cable connectors fully seated?

(c) Are printer paper and ribbon properly installed?

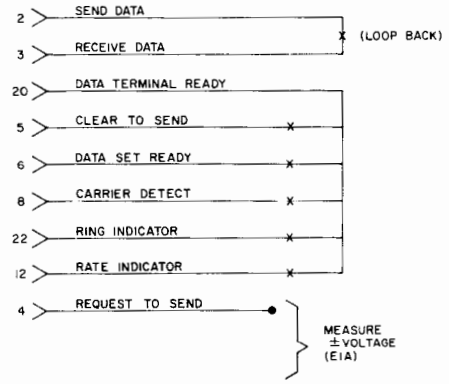
(d) Are any option exceptions present? Refer to Page 1-18.

Note: 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 next character to be printed.

1.10 On-line tests can be simulated using the Test Arrangement shown in 2. TEST EQUIPMENT.

2. TEST EQUIPMENT

2.01 To simulate on-line tests, the following test arrangement should be made locally or can be purchased from Teletype Corporation. Contact Teletype Corporation Sales Department, 312-982-2000 for availability of a 43 Teleprinter Interface Test Box which provides the arrangement shown.

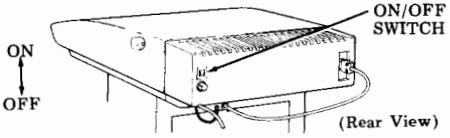
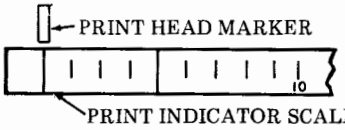


3. TESTING PROCEDURES

3.01 For testing purposes temporarily enable the following user programmable options. See How To Operate, Page 6-1 for information on enabling the options.

```
Speed=0300*          EBWrn=132*
StopU=1*             ABaa?=y*
LgKey=<*             MsEnd=%%*
SmKey==*             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*           Duplx=f*
RBLow=030*           ABmsg=AB MESSAGE*
FlWrn=XOF*           DONE
RBntl=y*
```

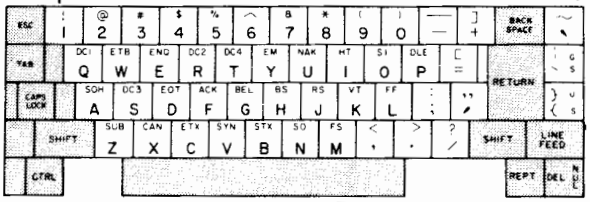
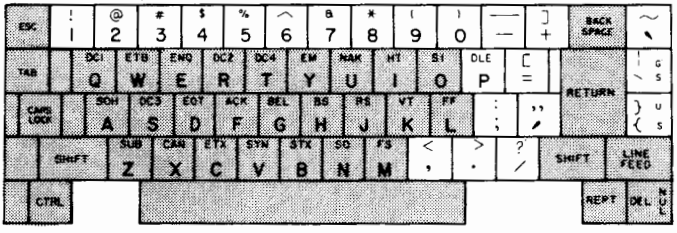
OFF-LINE TESTS (Installation And Trouble Call Checkout)

TEST	STEP	PROCEDURE	RESPONSE
Power on	1	Turn off KP power switch and remove controller power for at least 3 seconds. With power available to the controller and the KP set, turn on POWER SWITCH. 	Print head is indexed to the left boundary. Printer performs one (1) line feed TERM READY, FULL DUPLEX and KP keys light.
Indicator Scale	2		Print head marker points to first mark on indicator scale.
Local Return Line Feed	3	Depress TERM LOCAL key and KP key and depress space bar several times. Hold CTRL key depressed and depress RETURN key.	TERM LOCAL key lights and TERM READY and KP keys go out. Print head spaces several characters. Print head is returned to left boundary and paper feeds to next line.

F. TESTING (Cont)

3. TESTING PROCEDURES (Cont)

OFF-LINE TESTS (Installation And Trouble Call Checkout) (Cont)

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. 1.	Characters are printed as in Fig. 2.
		 Fig. 1	
		1234567890-+^QWERTYUIOP=\ASDFGHJKL;'{ZXCVBNM,./ Fig. 2	
		1234567890-+^qwertyuiop=\asdfghjkl;'{zxcvbnm,./ Fig. 3	
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. 1.	Print head is returned to left boundary and paper feeds to next line. Characters are printed as in Fig. 3.
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. 4. 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. 5.
		 Fig. 4	
		!@#$%^&*()_]~P{|:"}<>?? Fig. 5	

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 SUB Z key.	SUB prints ■
		Hold CTRL key depressed and depress BEL G key.	Signal bell rings.
		Hold CTRL key depressed and depress BS H key.	Print head moves one character position to the left.
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 VT K keys.	The K is continuously printed until the end of line is reached. Signal bell rings at end of line.
Form Feed Vert Tab Set And Clear	11	Depress and hold CTRL key and depress FF L key. (Form Feed)	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 FF L keys again. Paper should then feed out 25 lines.
		Depress CTRL and FF L keys again.	Paper should not feed.
		Depress LINE FEED key five times then depress and hold CTRL key and depress % 5 key. (Vert. Tab Set)	Paper feeds five lines.
		Depress SOH A key. (A)	Character A prints.
		Depress and hold CTRL key and Depress FF L key. (Form Feed)	Paper feeds to next form feed stop (20 lines from character A).
		Depress STX B key. (B)	Character B prints.

F. TESTING (Cont)

3. TESTING PROCEDURES (Cont)

OFF-LINE TESTS (Installation And Trouble Call Checkout) (Cont)

TEST	STEP	PROCEDURE	RESPONSE
Form Feed Vert Tab Set And Clear (Cont)	11 (Cont)	Depress and hold CTRL key and depress [VT / K] key. (Vert. Tab)	Paper feeds five lines from character B.
		Depress and hold CTRL key and depress [^ / 6] key. (Vert. Tab Clear)	No response
		Depress and hold CTRL key and depress [FF / L] key. (Form Feed)	Paper feeds 20 lines to next form stop.
		Depress [ETX / C] key. (C)	The character C prints.
		Depress and hold CTRL key and depress [VT / K] 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 [! / I] key. (H.T. Set)	No response
		Depress RETURN key.	Print head is returned to left boundary.
		Depress [TAB] key. (H. Tab)	Print head spaces to column 10.
		Depress and hold CTRL key and depress [@ / 2] key. (H.T. Clear)	No response
		Depress RETURN key.	Print head is returned to the left boundary.
		Depress [TAB] key. (Tab)	Print head spaces to the right boundary, returns to the left boundary and paper advances one line.
Restore Preset Tabs	13	Space the Print head to column 10.	Print head spaces to column 10.
		Depress and hold CTRL key and depress [! / I] key. (H.T. Set)	No response
		Depress [KP ON-S/R OFF-LCL] key.	KP key lights.

TEST	STEP	PROCEDURE	RESPONSE
Restore Preset Tabs (Cont)	13 (Cont)	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 [TERM LOCAL] and [KP ON-S/R OFF-LCL] keys.	TERM LOCAL key lights, KP and TERM READY keys go out.
		Depress and hold CTRL key and depress [@ 2] key. (H.T. Clear)	No response
		Depress [TAB] 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 [# 3] key. (Restore Preset Tabs)	No response
		Depress [TAB] key.	Print head spaces to column 10.
		Hold CTRL key depressed and depress [@ 2] key. (H.T. Clear)	No 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 [& 7] 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 [* 8] key. (Set Right Margin)	No response
		Depress the RETURN key.	Print head returns to column 10.

F. TESTING (Cont)

3. TESTING PROCEDURES (Cont)
OFF-LINE TEST (Installation and Trouble Call Checkout) (Cont)

TEST	STEP	PROCEDURE	RESPONSE
Margins Set Release Clear (Cont)	14 (Cont)	Space the Print head to column 20.	Print head spaces to column 20.
		Depress the SOH A key. (A)	The character A prints and the Print head spaces to column 21.
		Depress the STX B key. (B)	Bell rings, B does not print.
		Hold the CTRL key depressed and depress the) 0 key. (Release Right Margin)	No response
		Depress ETX C key three times.	Character C prints three times.
		Hold the CTRL key depressed and depress the (9 key. (Margin clear)	Print head returns to the left boundary.
Numeric Pad Mode	15	Depress NUM PAD key.	NUM PAD key lights.
		Starting with top row and moving from right to left depress the keys shown in Fig. 6.	Characters are printed as in Fig. 7. Print head returns to left bounday.
		Depress NUM PAD key.	NUM PAD key goes out.

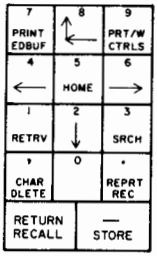


Fig. 6

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Fig. 7

TEST	STEP	PROCEDURE	RESPONSE
Buffer Character Insert	16	Depress [BUFFER ENTER] key.	BUFFER ENTER key lights.
		Depress [SOH A] then [ETX C] keys. (A & C)	A C Prints.
		Depress [4 ←] key once. (Buffer Backspace).	Print head backspaces once.
		Depress [INSERT] key.	Insert key lights.
		Depress [STX B] key. (B)	B prints over C.
		Depress [INSERT] key.	INSERT key goes out.
		Depress [5 HOME] key. (Buffer Home)	Print head returns to left boundary, paper feeds one line.
		Depress [7 PRINT EDBUF] key. (Print Edit Buffer)	ABC prints.
Buffer Character Delete	17	Depress [8 ↑←] key. (Prev. Line)	Print head moves to left boundary.
		Manually advance paper one line (turn platen knob).	
		Depress [6 →] key. (Buffer Space)	A prints.
		Depress [9 CHAR DLETE] key. (Character Delete)	■ prints.
		Depress [5 HOME] then [7 PRINT EDBUF] keys.	AC prints.
Clear Buffer	18	Depress [5 HOME], [MSG CLEAR] then [7 PRINT EDBUF] keys.	Bell rings when [7 PRINT EDBUF] key is depressed.
Buffer Print With Control Characters	19	Type ABC Return, Line Feed DEF.	ABC DEF is printed.
		Depress [5 HOME] then [9 PRT/W CTRLS] keys.	ABC ← ☰ DEF is printed.
Buffer Next Line Control	20	Depress [5 HOME] then [2 ↓] keys. (Buffer Next Line)	Print head returns to left boundary, paper feeds two lines.
		Depress [7 PRINT EDBUF] key.	DEF is printed.

F. TESTING (Cont)

3. TESTING PROCEDURES (Cont)
OFF-LINE TEST (Installation and Trouble Call Checkout) (Cont)

TEST	STEP	PROCEDURE	RESPONSE
Message Store And Recall	21	Depress [— STORE] key. (Store)	[SND RDY SEND] key lights. Print head is returned to left boundary and paper feeds one line.
		Depress [RETURN RECALL] key. (Recall)	[SND RDY SEND] key goes out. Paper feeds one line.
		Depress [7 PRINT EDBUF] key.	ABC DEF is printed.
Buffer String Enter And Search	22	Depress [5 HOME] key.	Print head is returned to left boundary and paper feeds one line.
		Depress [STRING ENTER] key.	String enter key lights. Paper feeds one line.
		Depress [ENQ E] key. (E)	E prints.
		Depress [STRING ENTER] key.	String enter key goes out.
		Depress [3 SRCH] key. (Search)	DE is printed.
Alarm Conditions	23	Open the teleprinter cover.	ALARM key lights.
		Close cover and depress [ALARM] key.	ALARM key goes out.
		Remove paper from the teleprinter.	ALARM key lights and bell rings.
		Replace paper and depress [ALARM] key. On friction feed teleprinters it may be necessary to depress the reset button before depressing the ALARM key.	ALARM key goes out.

Turn off power to controller and connect the test arrangement shown on page 1-31 to the data set cable extending from the rear of the pedestal.

If the 43 Teleprinter Interface Test Box is available, connect the test box to the data set cable. See instructions furnished with test box.

Apply power to the controller.

LOCAL TESTS THROUGH INTERFACE (INSTALLATION CHECKOUT)

TEST	STEP	PROCEDURE	RESPONSE
Term On Line Mode	24	With all switches on test arrangement open place Teleprinter in TERM READY, FULL DUPLEX and KP-on.	TERM READY, FULL DUPLEX and KP keys light. Request To Send should be off.
		Connect Data Set Ready to Data Term Ready.	Request To Send turns on.
Send And Receive Data		Connect Carrier Detect to Data Term Ready.	TERM ON LINE key lights TERM READY key goes out.
		Connect Send Data to Receive Data.	No response.
		Depress SOH A key. (A)	No response.
		Connect Clear To Send to Data Term Ready.	A prints.
Answer Back	25	Hold CTRL key depressed and depress ENQ E key. (WRU)	AB MESSAGE is printed.
		Hold CTRL key depressed and depress $ 4 key. (Here is)	AB MESSAGE is printed.
		Disconnect Data Set Ready from Data Term Ready.	TERM ON LINE key goes out and TERM READY key lights.
		Momentarily connect Ring Indicator to Data Term Ready then connect Data Set Ready to Data Term Ready.	TERM ON LINE key lights. TERM READY key goes out and AB MESSAGE is printed.
Negative Answer-Back	26	Hold CTRL key depressed and depress DC1 Q key. (StrSn)	NO MES is printed.

F. TESTING (Cont)

3. TESTING PROCEDURES (Cont)
OFF-LINE TEST (Installation and Trouble Call Checkout) (Cont)

TEST	STEP	PROCEDURE	RESPONSE
Disconnect Character	27	Connect Ring Indicator to Data Term Ready. (Not Momentarily, Held On)	No response.
		Hold CTRL key depressed and depress EOT D key. (Dscnt)	AB MESSAGE is printed. (DTR momentarily turns off. Simulates auto answer AB)
		Disconnect Ring Indicator from Data Term Ready.	No response.
Full And Half Duplex	28	Depress SOH A key.	A is printed.
		Depress FULL DUPLEX key.	FULL DUPLEX key goes out.
		Depress SOH A key.	AA is printed.
		Depress FULL DUPLEX key.	FULL DUPLEX key lights.
Interrupt	29	Depress INTRPT key.	Bell rings and INTRPT key lights. Operation of keyboard causes bell to ring.
		Depress INTRPT key.	INTRPT key goes out.
DS212 High Speed	30	Disconnect Data Set Ready and Carrier Detect from Data Term Ready.	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.	TERM ON LINE key lights and TERM READY key goes out.
		Depress BUFFER ENTER key.	BUFFER ENTER key lights. KP key goes out.
		Enter two full lines of the character M (Rept M) and end second line with CTRL ETX C. (MsEnd)	Two full lines of M's are printed.
		Depress — STORE key. (Store)	SND RDY SEND key lights. Print head returns to left boundary and paper feeds one line.

TEST	STEP	PROCEDURE	RESPONSE
DS212 High Speed (Cont)	30 (Cont)	Depress KP ON-S/R OFF-LCL key.	KP key lights and BUFFER ENTER key goes out.
		Read expected response then depress SND RDY SEND key.	SND RDY SEND key flashes and M's are printed. SND RDY key goes out before one line of text is printed.
DS212 Low Speed	31	Disconnect Data Set Ready and Rate Indicator from Data Term Ready.	TERM ON LINE key goes out and TERM READY key lights.
		Connect Data Set Ready to Data Term Ready.	TERM ON LINE key lights and TERM READY key goes out.
		Depress BUFFER ENTER key.	BUFFER ENTER key lights and KP key goes out. Print head is returned to left boundary and paper feeds one line.
		Depress RETURN RECALL key. (Recall)	Paper feeds one line.
		Depress — STORE key. (Store)	SND RDY SEND key lights. Paper feeds one line.
		Depress KP ON-S/R OFF-LCL key.	KP key lights and BUFFER ENTER key goes out.
		Read expected response then depress SND RDY SEND key.	SND RDY SEND key flashes and M's are printed. SND RDY key goes out at the same time M's finish printing.
Reprint Received Message	32	Depress TERM LOCAL key.	TERM LOCAL key lights and TERM ON LINE key goes out.
		Depress KP ON-S/R OFF-LCL key.	KP key goes out.

F. TESTING (Cont)

3. TESTING PROCEDURES (Cont)
OFF-LINE TEST (Installation and Trouble Call Checkout) (Cont)

TEST	STEP	PROCEDURE	RESPONSE
Reprint Received Message (Cont)	32 (Cont)	Depress [REPRT REC] key only once. (Reprint Receive)	[REC MSG WTG] key lights.
		Depress [REC MSG WTG] 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	33	Depress [BUFFER ENTER] 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 [ETX C] key. (MsEnd)	Three full lines of M's are printed.
		Depress [STORE] key.	SND RDY key lights, print head is returned to the left boundary and paper feeds one line.
		Depress [BUFFER ENTER] key.	BUFFER ENTER key goes out.
		Depress [TERM READY] key.	TERM ON LINE key lights. LOCAL key goes out.
		Depress [SND RDY SEND] key.	SND RDY key flashes then stays lit. Indicating Buffer full (X-OFF) was received. REC MSG WTG key lights.
		Depress [REC MSG WTG] 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	34	Depress [BUFFER ENTER] 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 [ETX C] key.	ABCDEF is printed.

TEST	STEP	PROCEDURE	RESPONSE
Retrieve Acknowledged Message (Cont)	34 (Cont)	Depress [— STORE] key.	[SND RDY SEND] key lights, print head is returned to left boundary and paper feeds one line.
		Depress [KP ON-S/R OFF-LCL] key.	KP key lights and BUFFER ENTER key goes out.
		Depress [SND RDY SEND] key.	ABCDEF is printed. SND RDY key goes out.
		Hold CTRL key depressed and depress [DCI Q] key.	NO MES is printed.
		Depress [BUFFER ENTER] key.	BUFFER ENTER key lights, KP key goes out, print head is returned to left boundary and paper feeds one line.
		Depress [STRING ENTER] key.	STRING ENTER key lights and paper feeds one line.
		Type AB.	AB is printed.
		Depress [STRING ENTER] key.	STRING ENTER key goes out.
		Depress [! RETRV] key.	Print head is returned to left boundary, paper feeds one line and AB is printed.
		Depress [5 HOME] key.	Print head is returned to left boundary, paper feeds one line.
		Depress [7 PRINT EDBUF] key.	ABCDEF is printed.

G. DISASSEMBLY/REASSEMBLY

CONTENTS

1. GENERAL

1.01 This part provides disassembly/reassembly procedures for the 43 Buffered KSR Teleprinter and its major components.

1.02 Disassembly/reassembly information for enclosures and paper handling parts is provided in the following paragraphs:

Part	Paragraph
Bustle Cover (Sprocket Feed)	3.02
Bustle Cover (Friction Feed)	3.02
Paper Holder (Sprocket Feed)	3.02
Paper Holder (Friction Feed)	3.02
Set Cover	3.05
Rear Frame	3.06

1.03 The procedures provided in this part break the terminal down into subcomponents. The appropriate parts sections illustrate the arrangement of subcomponents and parts — Page 1-62, Teleprinter Parts and Page 5-4, Paper Handling Enclosures and Parts.

Caution: Remove all power from the set before performing any component replacement.

1.04 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.

1.05 Reference in the procedures to left and right and up or down and top or bottom, etc, refer to the Buffered KSR terminal in its normal operating position.

1.06 Refer to Maintenance Tools, Section 570-005-800TC 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.

1.07 All ordering numbers shown in this manual are Teletype Corporation part numbers.

1.08 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.

1.09 The operator console 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.

1.10 Containers and packing materials retained from maintenance spares should be saved and reused when returning defective components for repair.

1.11 Adjustment information is provided in Printer Adjustments and Spring Tensions, Page 2-6 and Paper Handling and Enclosures, Adjustments, Page 5-2.

2. TOOLS REQUIRED

2.01 The following tools may be required when performing the station disassembly/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.

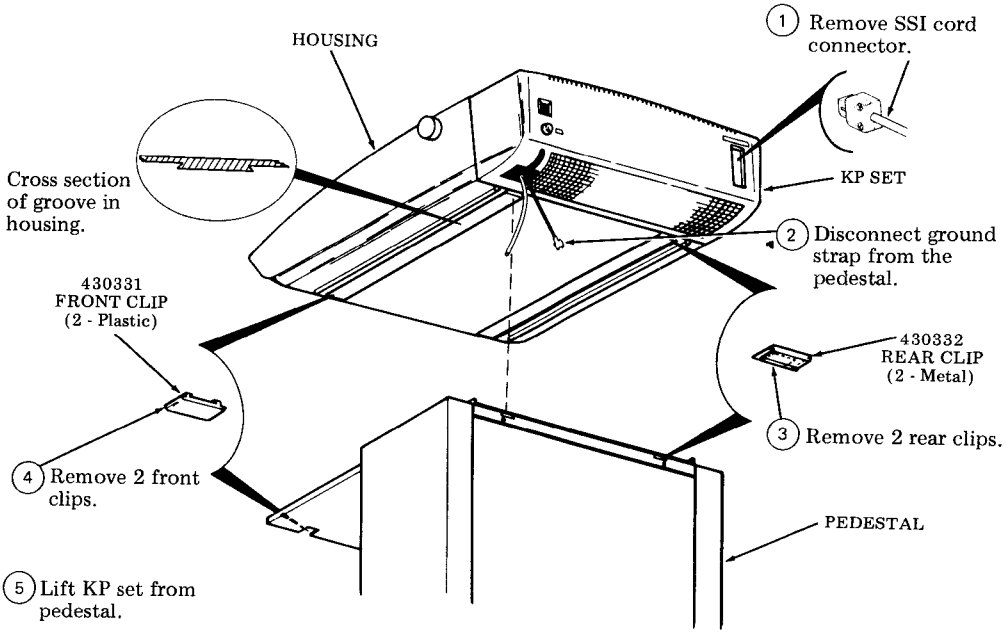
Customer Supplied

Humiseal Type 1A27
130Z Aerosol Can or One Quart Container

3. DISASSEMBLY/REASSEMBLY

KP SET

3.01 To remove the KP set from the pedestal:



(Rear View)

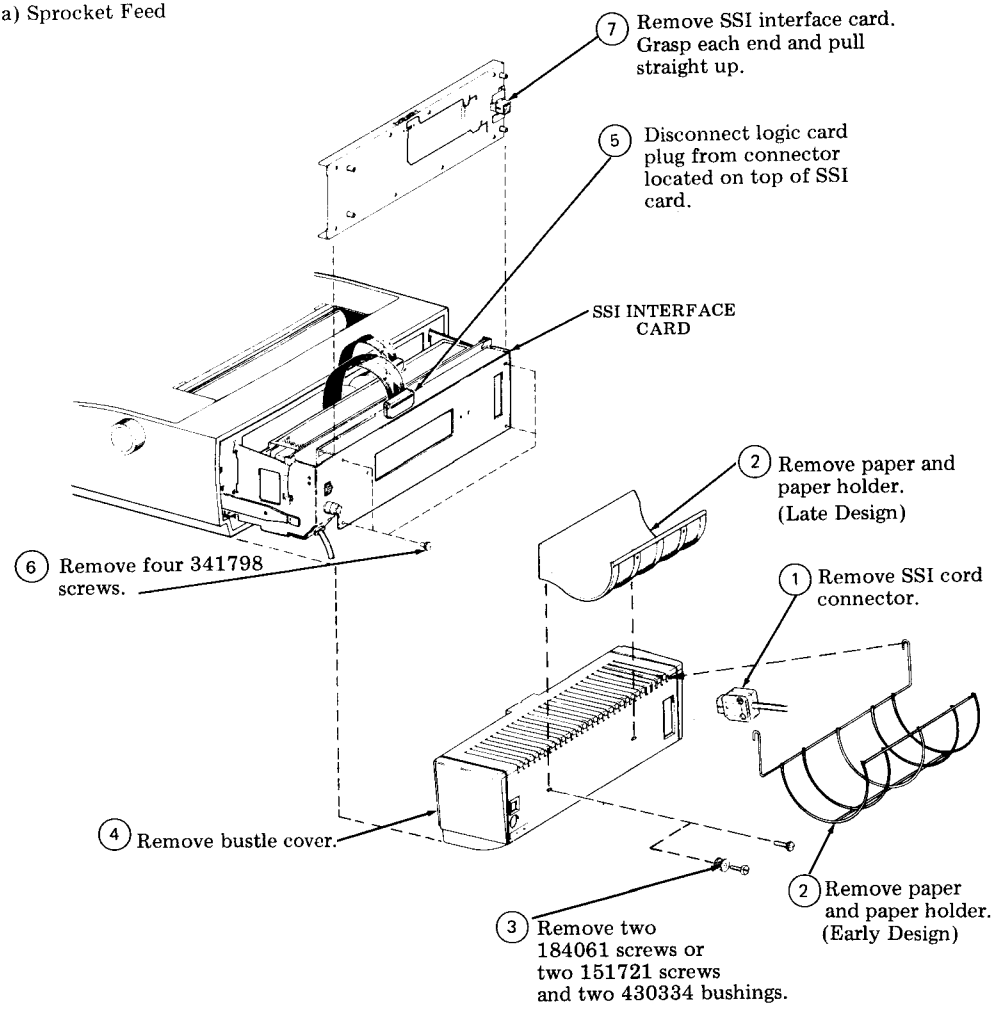
G. DISASSEMBLY/REASSEMBLY (Cont)

3. DISASSEMBLY/REASSEMBLY (Cont)

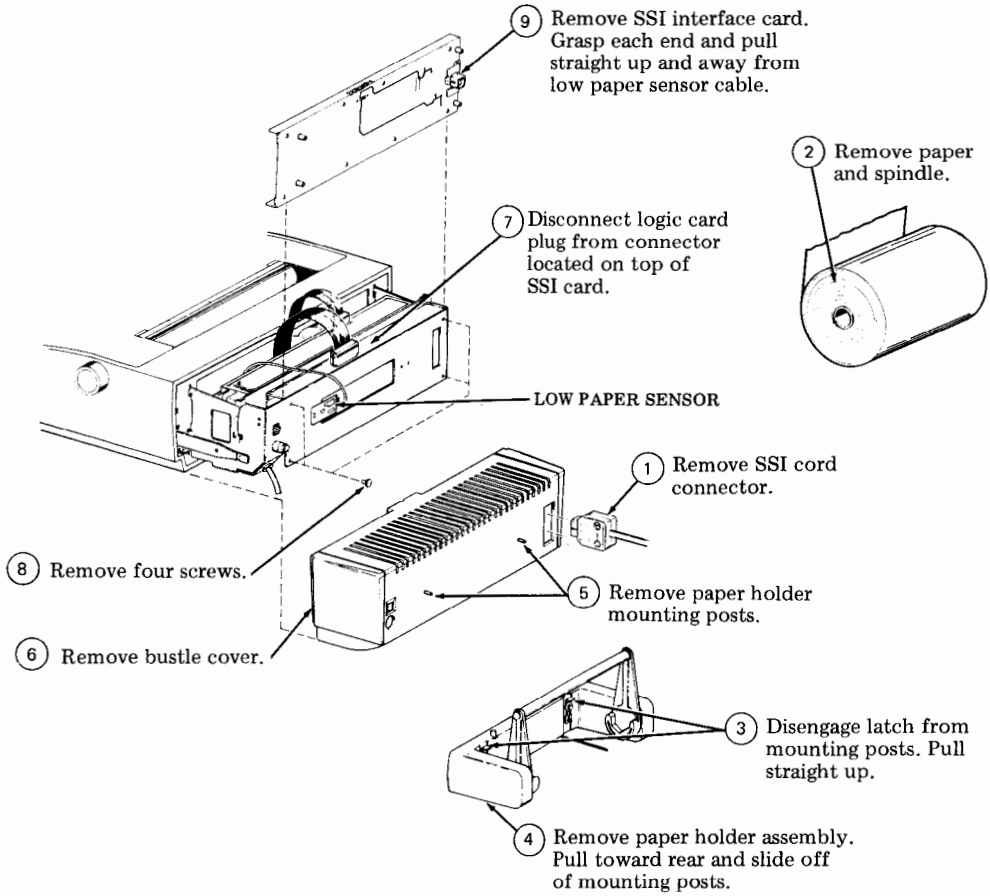
410746 SSI INTERFACE CIRCUIT CARD

3.02 To remove the SSI interface circuit card:

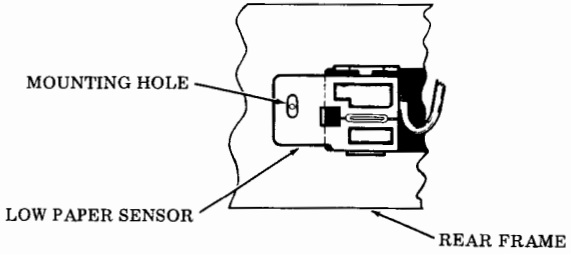
(a) Sprocket Feed



(b) Friction Feed



Note: In reassembly, align low paper sensor mounting hole with mounting hole in rear frame.



G. DISASSEMBLY/REASSEMBLY (Cont)

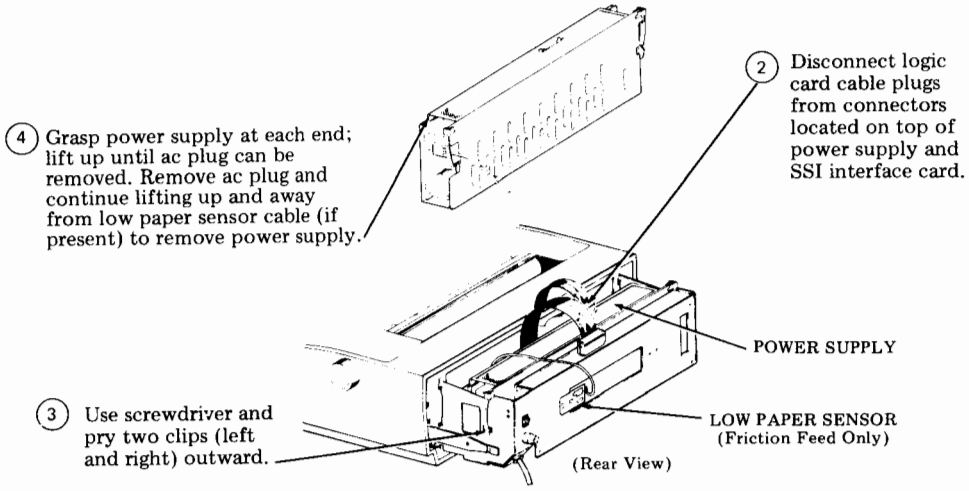
3. DISASSEMBLY/REASSEMBLY (Cont)

430700 POWER SUPPLY

3.03 To remove power supply:

(1) For Sprocket Feed: Remove paper holder and bustle cover. Perform 3.02 a., steps 1 through 4.

For Friction Feed: Remove paper holder and bustle cover. Perform 3.02 b., steps 1 through 6.

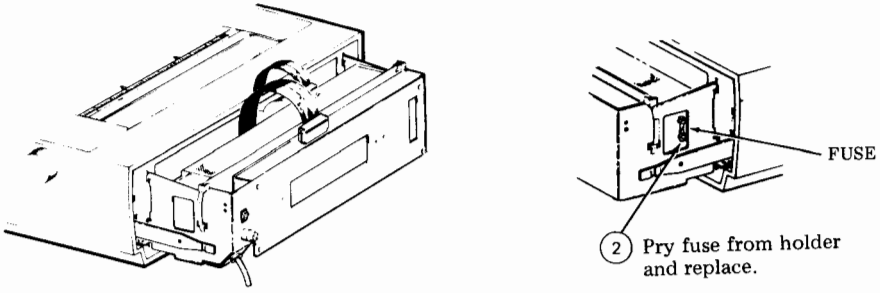


120139 POWER SUPPLY FUSE

3.04 To remove the power supply fuse:

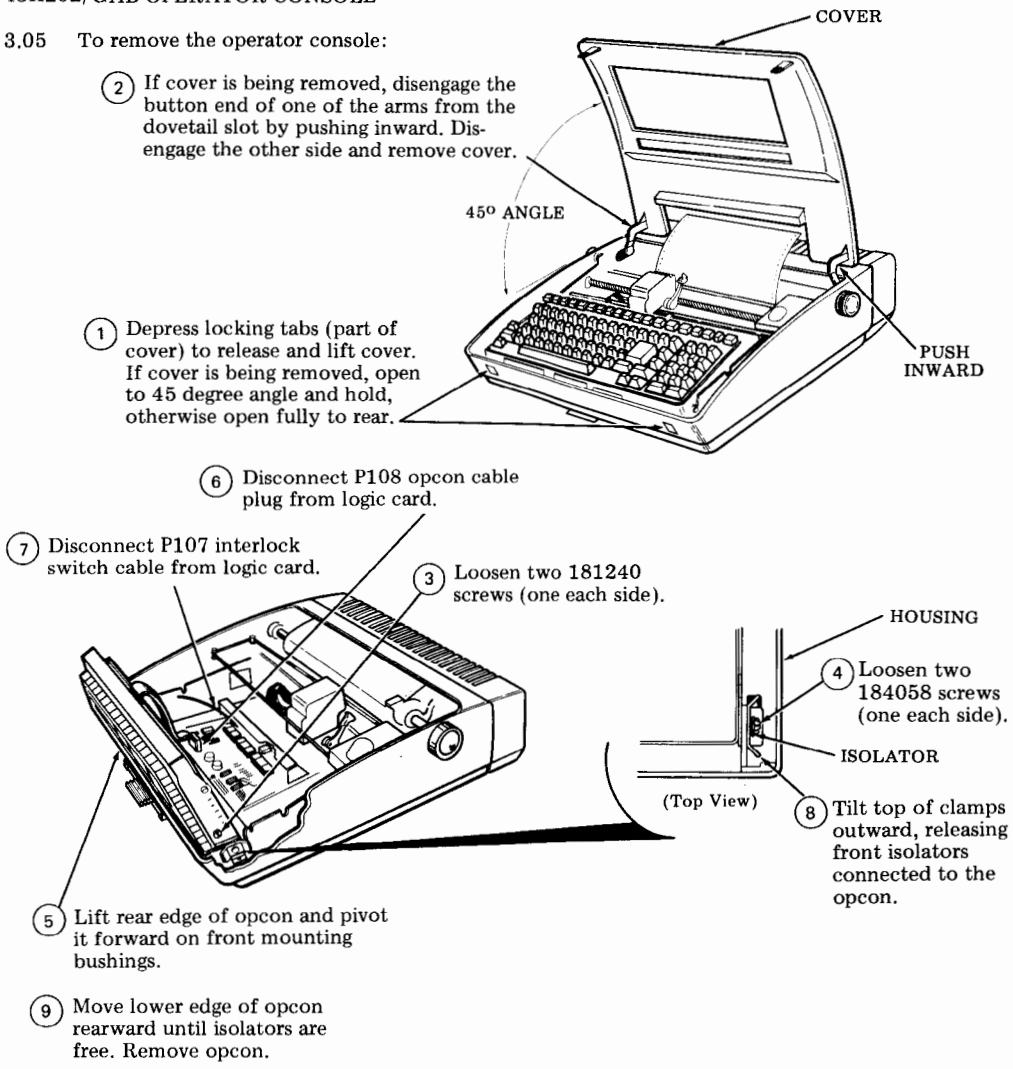
(1) For Sprocket Feed: Remove paper holder and bustle cover. Perform 3.02 a., steps 1 through 4.

For Friction Feed: Remove paper holder and bustle cover. Perform 3.02 b., steps 1 through 6.



43K202/GAB OPERATOR CONSOLE

3.05 To remove the operator console:



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 operator consoles are shipped with 181240 screws and 346397 isolators furnished in a loose envelope. These parts must be assembled to the operator console before installing into the printer side frames.

G. DISASSEMBLY/REASSEMBLY (Cont)

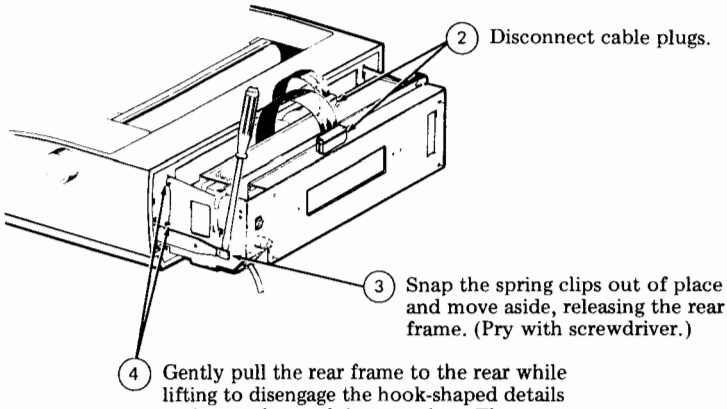
3. DISASSEMBLY/REASSEMBLY (Cont)

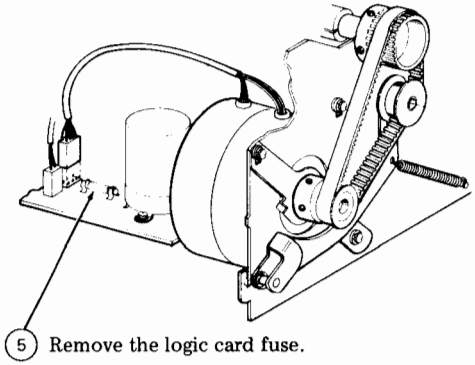
143307 LOGIC CARD FUSE

3.06 To remove the logic card fuse:

(1) For Sprocket Feed: Remove paper holder and bustle cover. Perform 3.02a., Steps 1 through 4.

For Friction Feed: Remove paper holder and bustle cover. Perform 3.02b., Steps 1 through 6.





(Rear View)

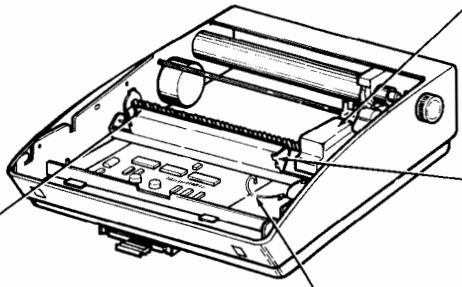
410746 LOGIC CARD

3.07 To remove the logic card:

(1) Remove the rear frame assembly. (Perform 3.06, steps 1 through 4.)

(2) Remove the opcon. (Perform 3.05, steps 1 through 9.)

(3) Move print head and carriage fully to the right.

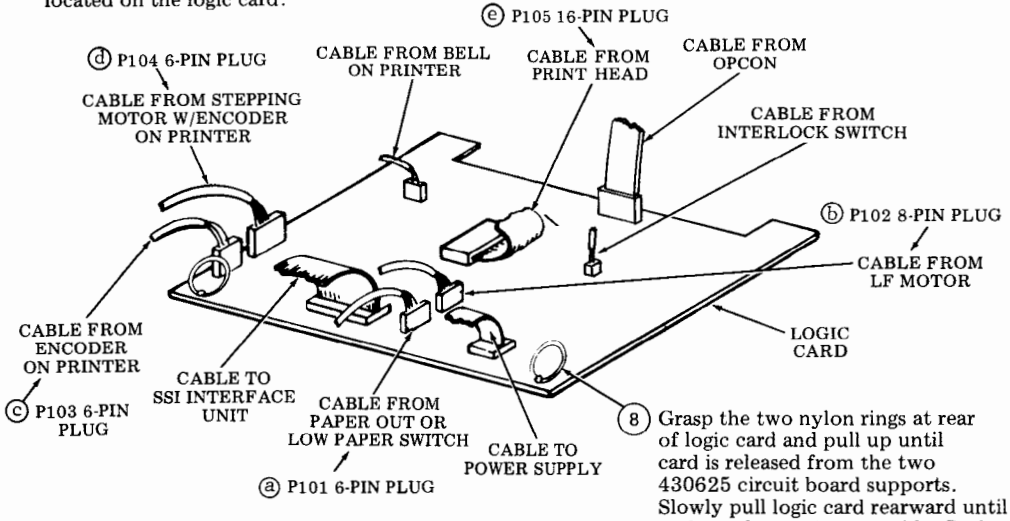


(4) Grasp each end of the logic card front cover and push outward on the sides until the locking tabs are free of the logic card.

(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:



(Rear View)

(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.

G. DISASSEMBLY/REASSEMBLY (Cont)

3. DISASSEMBLY/REASSEMBLY (Cont)

PRINTER

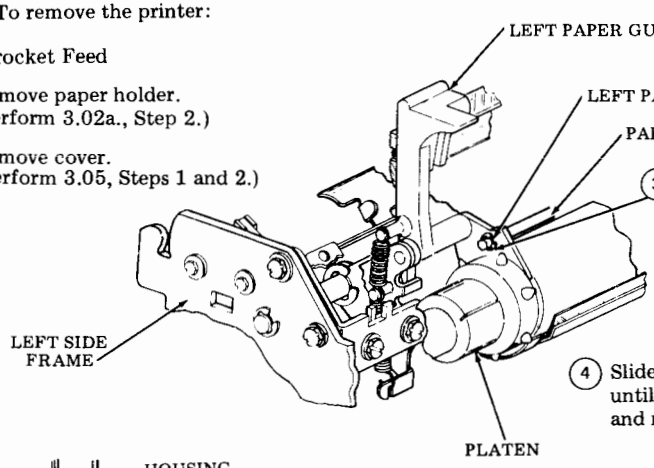
A. Removal

3.08 To remove the printer:

(a) Sprocket Feed

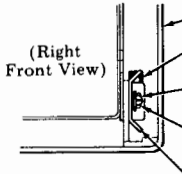
(1) Remove paper holder. (Perform 3.02a., Step 2.)

(2) Remove cover. (Perform 3.05, 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.



(5) Loosen two 184058 screws (one each side).

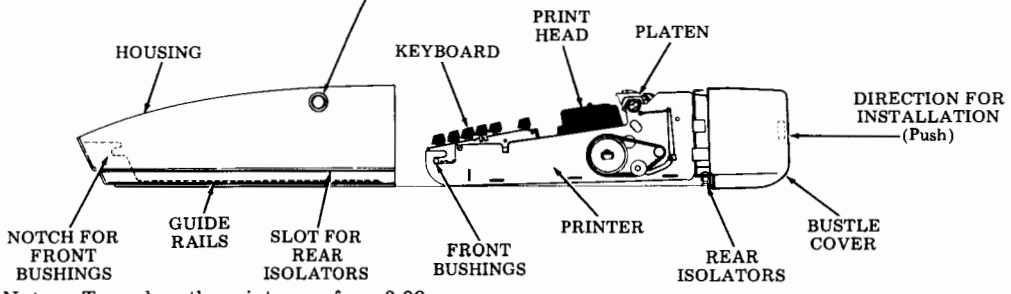
(6) Tilt top of clamps outward, releasing front isolators connected to the opcon.

(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 4.)

(10) Remove the operator console. (Perform 3.05, Steps 3, 5, 6 and 9.)

(7) Remove the left and right platen knobs by pulling straight outward.



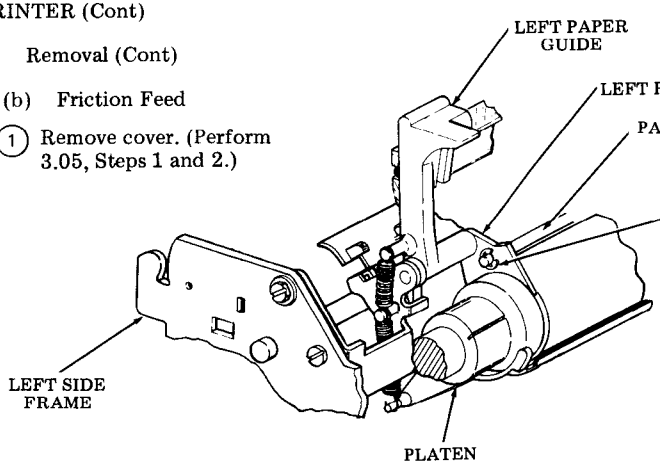
Note: To replace the printer, perform 3.09.

PRINTER (Cont)

A. Removal (Cont)

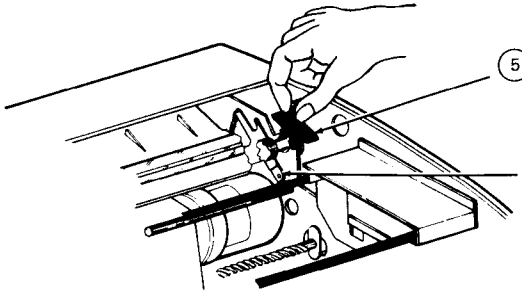
(b) Friction Feed

(1) Remove cover. (Perform 3.05, Steps 1 and 2.)



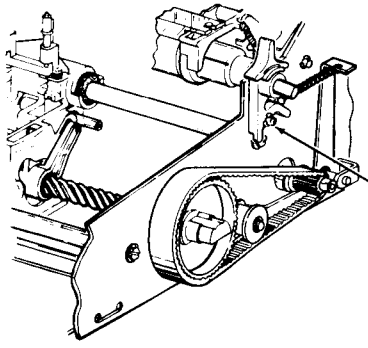
(2) Remove 119651 retaining ring from paper separator shaft.

(3) Slide paper separator to the right until it clears the left paper stripper, and remove.



(5) Push paper release to the rear.

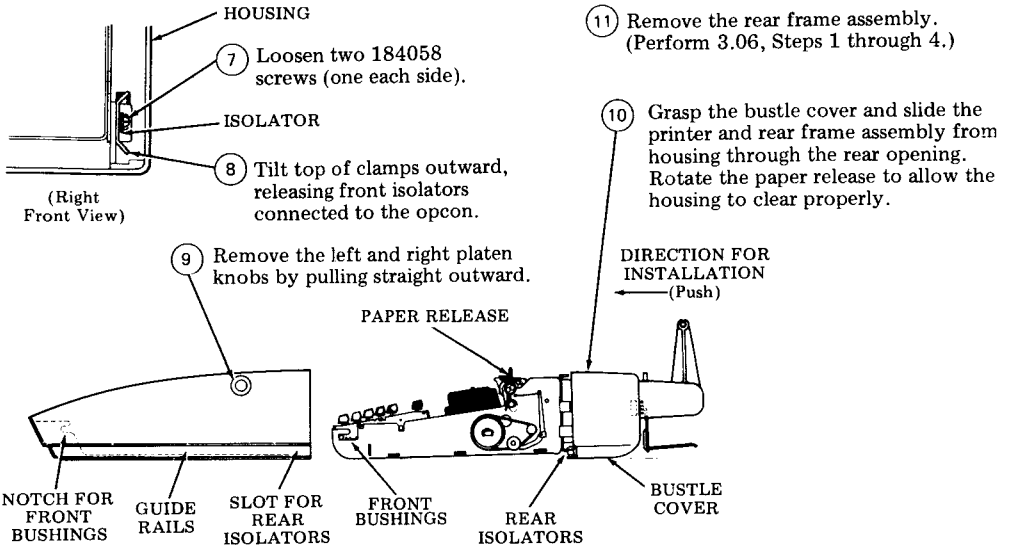
(4) Push down and to the rear on roller bail lever (use screwdriver).



(6) Slide paper release to the right and slowly pull forward until paper release clears 119653 retaining ring on lever shaft.

G. DISASSEMBLY/REASSEMBLY (Cont)

3. DISASSEMBLY/REASSEMBLY (Cont)



B. Replacement

3.09 To replace the printer:

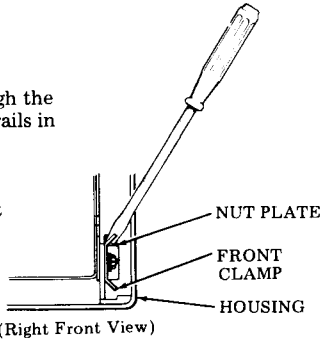
(1) Install the operator console, if previously removed.

(2) Install the rear frame assembly and bustle cover.

(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.

Caution: *Do not overtwist 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 (operator console) 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.

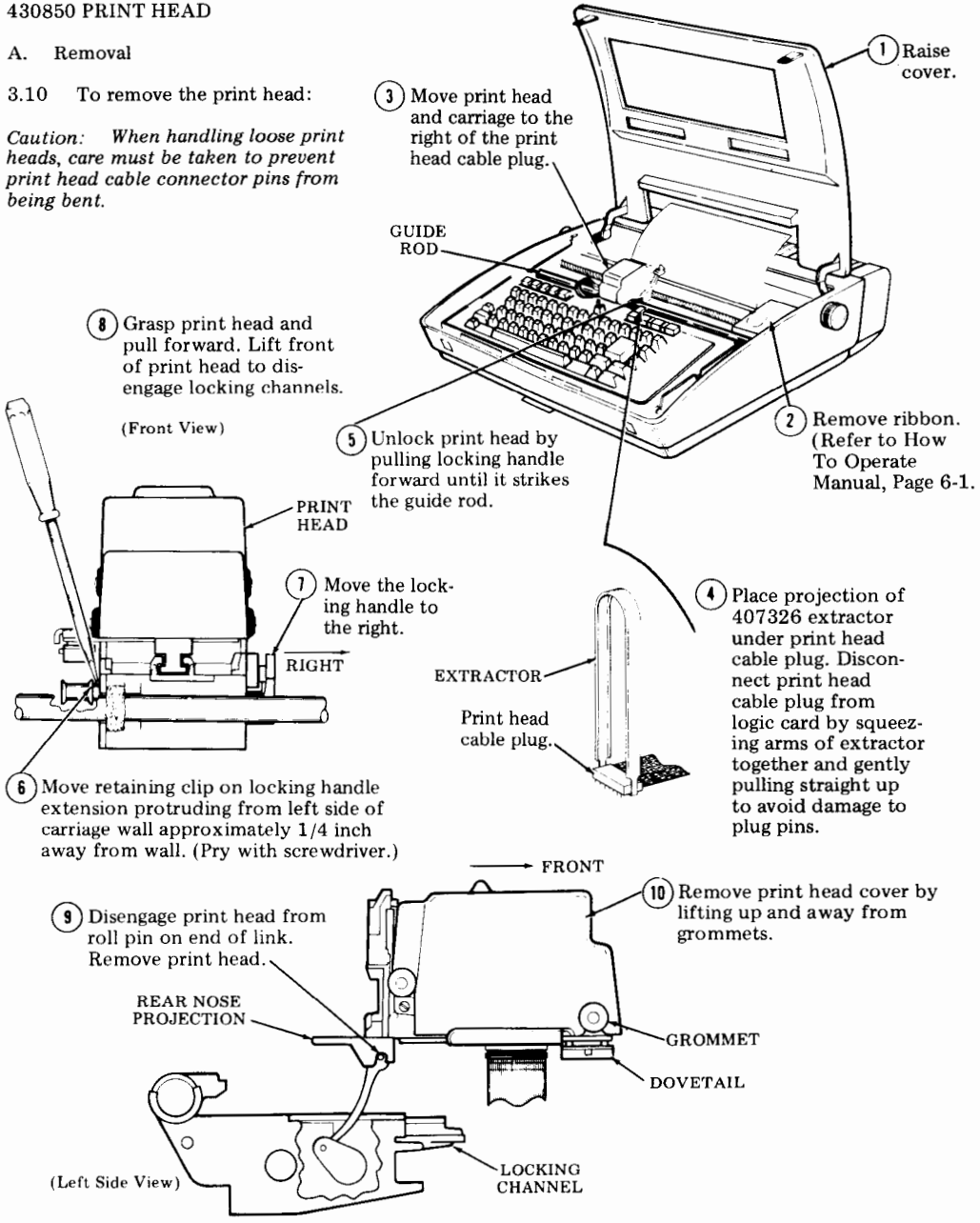
(9) Perform the KEYBOARD TO COVER ALIGNMENT adjustment.

430850 PRINT HEAD

A. Removal

3.10 To remove the print head:

Caution: When handling loose print heads, care must be taken to prevent print head cable connector pins from being bent.



G. DISASSEMBLY/REASSEMBLY (Cont)

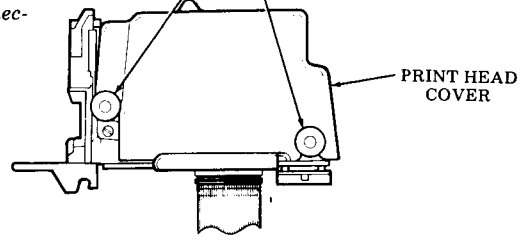
3. DISASSEMBLY/REASSEMBLY (Cont)

B. Replacement

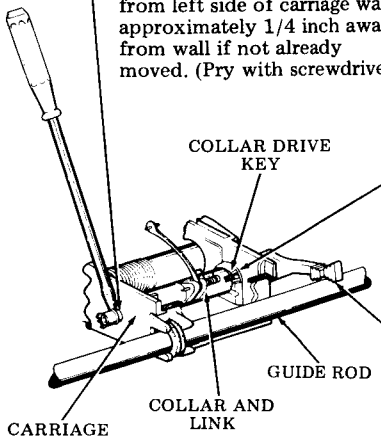
3.11 To replace the print head:

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.)

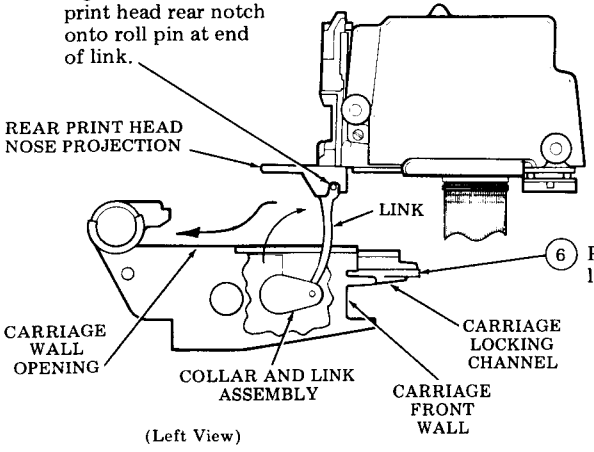


(3) Rotate locking handle frontward until it strikes the guide rod then pull locking handle to the right until collar drive key on locking handle engages slot in right carriage side wall. Observe interaction of these parts for use when performing step 7.

Note: Collar and link may snap rearward.

(5) Hold collar and link forward (by pressing down on the print head) while inserting nose projection in carriage wall opening.

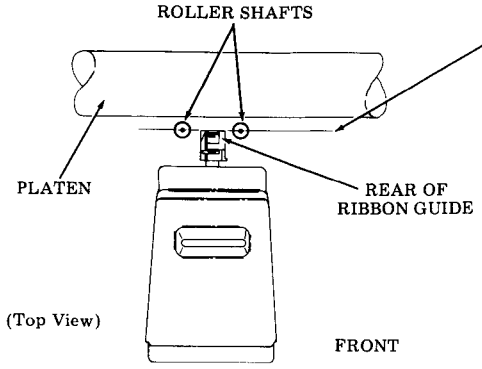
(4) Collar and link must be manually rotated and held toward front of carriage wall by grasping the link. Install print head rear notch onto roll pin at end of link.



(Left View)

(6) Pivot front of print head down to carriage locking channel.

B. Replacement (Cont)



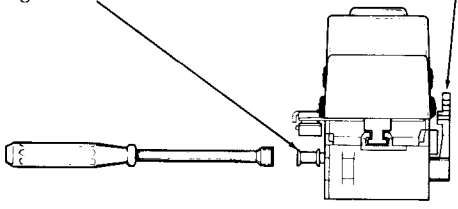
(7) Slowly push print head rearward and further into the carriage locking channel until the rear of the ribbon guide is even with center of roller shafts. Apply continuous leftward pressure to locking handle at its pivot shaft, while slowly pulling print head forward until collar drive key on handle engages (snaps) into slot in collar.

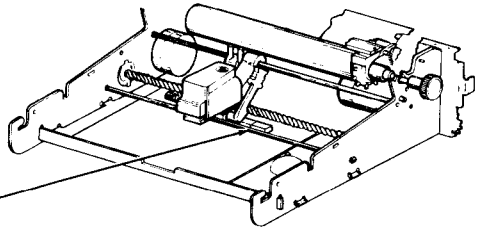
Note: Parts referred to were visible in step 3.

(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.

(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.





(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.

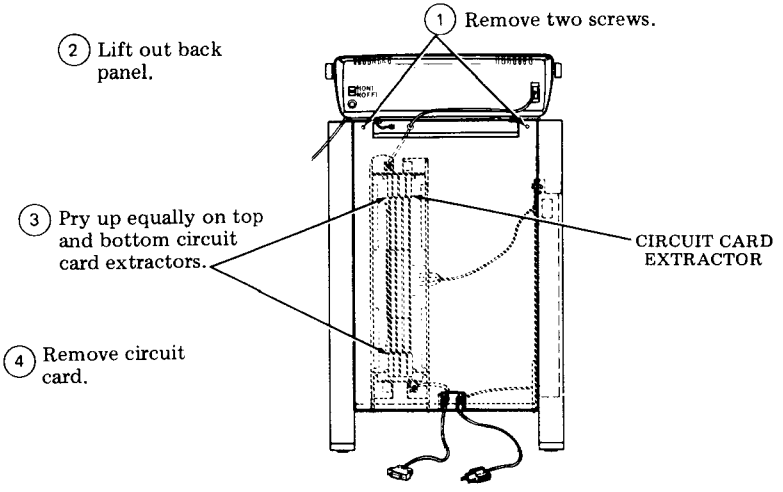
(11) Install ribbon.
(Refer to How to Operate Manual, Page 6-1)

G. DISASSEMBLY/REASSEMBLY (Cont)

3. DISASSEMBLY/REASSEMBLY (Cont)

CONTROLLER CIRCUIT CARDS

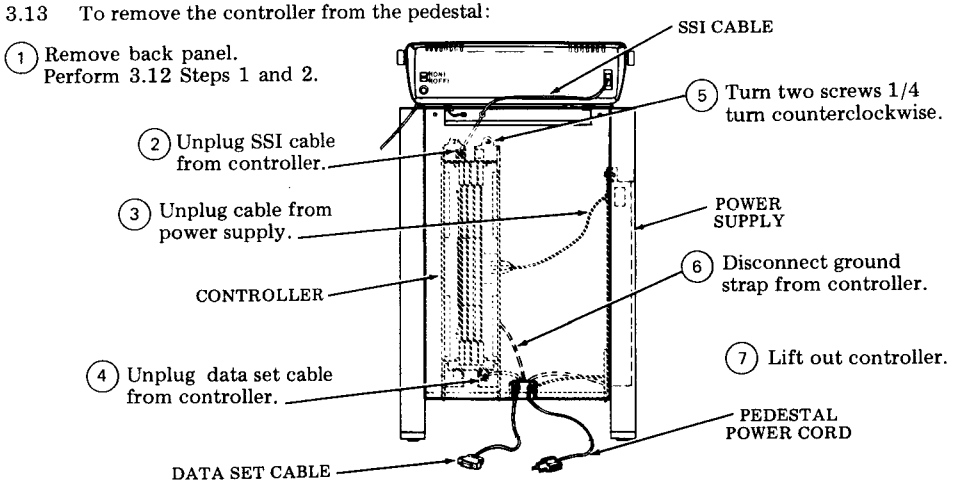
3.12 To remove circuit cards from the controller:



Note: In replacing circuit card be sure card is in guide slot and push in equally on top and bottom of circuit card. Make sure card is fully seated.

CONTROLLER

3.13 To remove the controller from the pedestal:



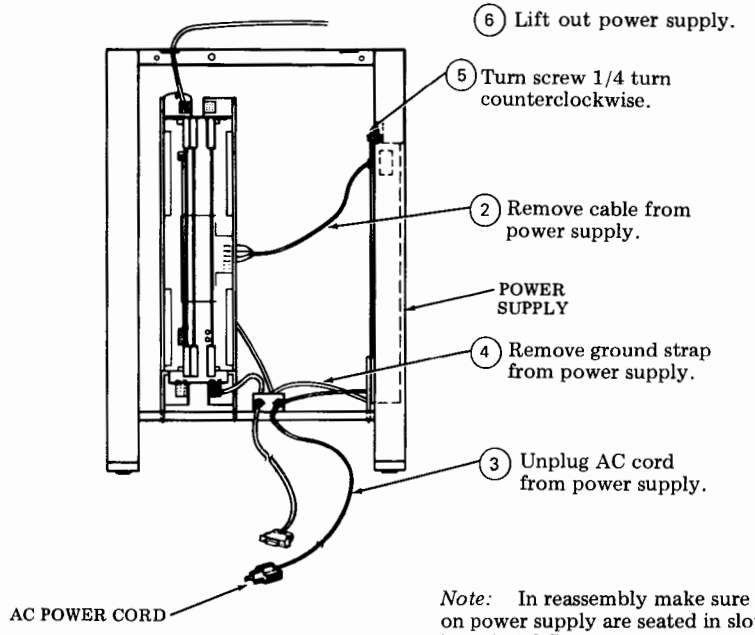
Note 1: In reassembly make sure tabs on controller are seated in slots in pedestal floor.

Note 2: If a new controller is being installed, the eight 124516 grommets supplied with the controller should be placed on the controller feet before assembling the controller to the pedestal.

430770 POWER SUPPLY

3.14 To remove the power supply from the controller:

(1) Remove back panel. Perform 3.12 steps 1 and 2.

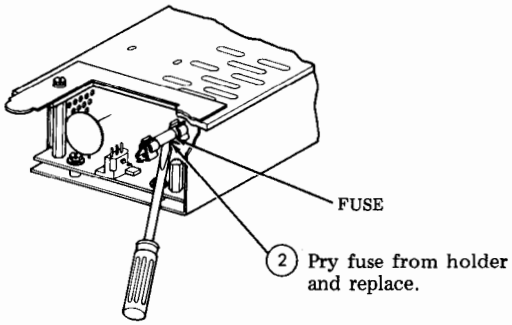


Note: In reassembly make sure tabs on power supply are seated in slots in pedestal floor.

307218 POWER SUPPLY FUSE

3.15 To remove power supply fuse:

(1) Remove 430770 power supply. Perform 3.14 steps 1 through 6.



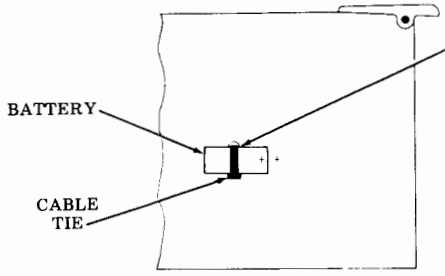
G. DISASSEMBLY/REASSEMBLY (Cont)

3. DISASSEMBLY/REASSEMBLY (Cont)
406099 BATTERY

A. Removal

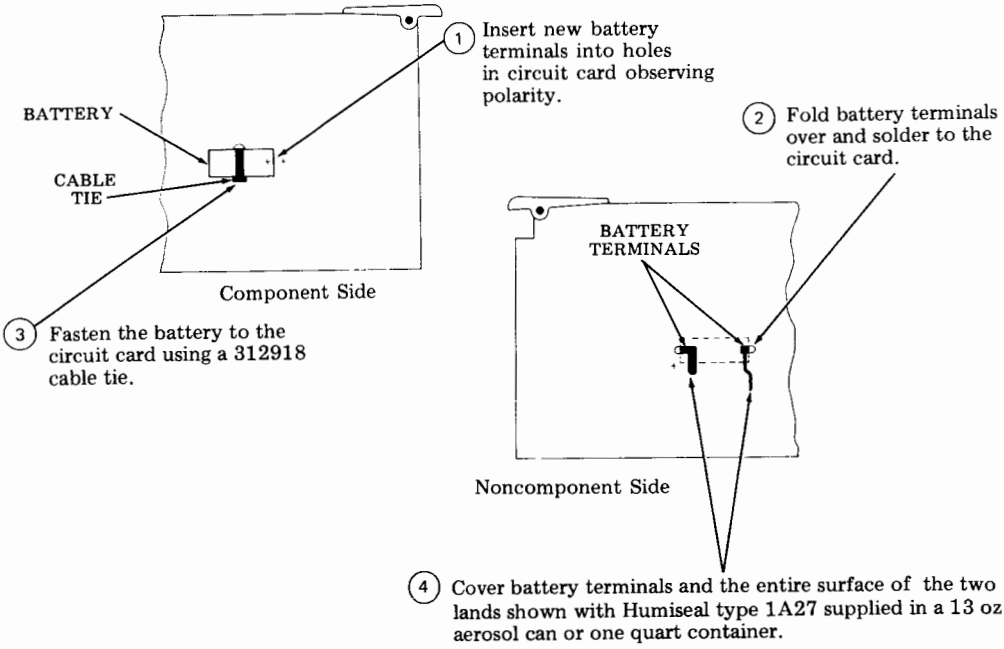
3.16 To remove the battery:

(1) Remove back panel and the 410251 circuit card. Perform 3.12 steps 1 through 4.



B. Replacement

3.17 To replace battery:



H. ROUTINE MAINTENANCE

CONTENTS

1. GENERAL

1.01 This part provides routine maintenance procedures for the 43 Teleprinter Buffered KSR Terminal.

1.02 A routine maintenance should be performed, at the convenience of the customer, at least once a year.

1.03 Routine maintenance consists of visual checks, lubrication, and cleaning. When performed at routine intervals, the possibility of later troubles will be reduced.

1.04 Following the routine maintenance, a local and on-line installation checkout should be performed. (See Page 1-30.) 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

(d) Print head cover fully seated

3. LUBRICATION

3.01 Lubrication of the printer is required during routine maintenance. Refer to Page 2-17 for type, location, and amounts of lubrication.

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 (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 EXTERIOR PLASTIC SURFACES.

I. PARTS

CONTENTS PAGE

1. GENERAL

1.01 Information on maintenance spare parts is provided in this part for the 43 Buffered KSR Teleprinter.

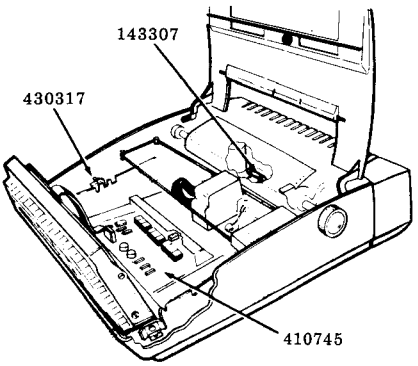
1.02 This part is provided to identify the Teletype Corporation part number and location of recommended spares that should be available and may be required to correct a trouble.

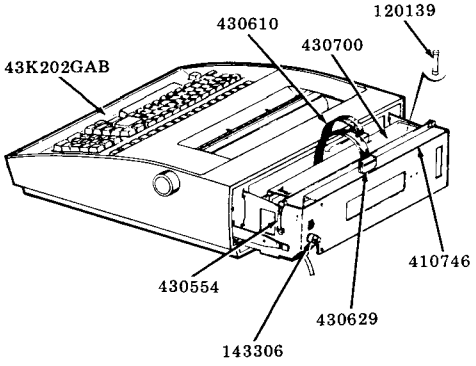
1.03 Part numbers are listed in the index in numerical order and indicate the page on which the parts appear. Asterisked numbers, stocked as "List 1", indicate a maintenance spare stocking ratio of one spare for the first twenty stations and an additional spare for each additional 30 stations in a maintenance area. Part numbers without asterisks, 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.

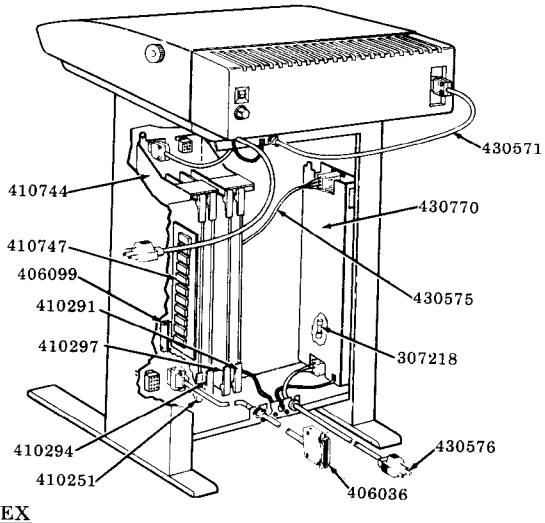
1.04 All ordering part numbers shown in this manual ,are Teletype Corporation part numbers.

1.05 Troubleshooting, disassembly/reassembly information for these parts are covered on Pages 1-22 and 1-44, respectively.

2. PARTS







3. NUMERICAL INDEX

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.

Part Number or Unit Code	Description	Page No.
120139*(5)	Fuse 1.0A(KP Power Supply)F2	1-62
143306*(5)	Fuse 1.0A SLO-BLO(R. Frame)F1	1-62
143307*(5)	Fuse 0.6A(L. Card)F3	1-62
307218*(5)	Fuse 1.25A(C. Power Supply)F4	1-63
406036	Cable, E1A	1-63
406099	Battery, 3.6V Nicad	1-63
410251*	Card, Circuit IXL	1-63
410291*	Card, Circuit CIU/SSI	1-63
410294*	Card, 4K Memory	1-63
410297*	Card, 16K Memory	1-63
410744	Back Panel	1-63
410745*	Card Logic	1-62
410746*	Card, SSI Interface	1-62
410747*	Card, ROM	1-63
430317*	Switch Assembly, Interlock	1-62
430554(2)	Clip	1-62
430571	Cable, SSI	1-63
430575	Cable, Power Supply Controller	1-63
430576	Cord, Power	1-63
430610	Cable, Power Supply KP	1-62
430629	Cable	1-62
430700*	Power Supply, KP Set	1-62
430770*	Power Supply, Controller	1-63
43K202GAB*	Operator Console	1-62

*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.

J. CONVERSIONS

CONTENTS

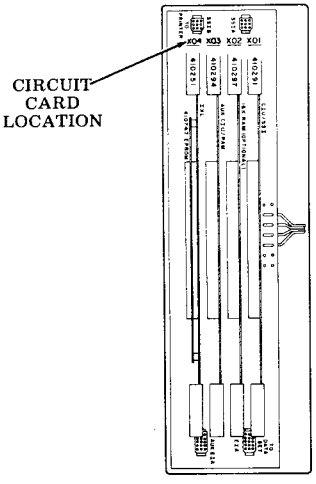
1. GENERAL

1.01 This section provides conversion information for the catagories listed in CONTENTS above.

1.02 Refer to Teleprinter Disassembly/Reassembly Page 1-44 for component removal and replacement procedures.

1.03 After making conversions, an installation checkout should be performed to make sure the station is operable. See Page 1-30.

1.04 All ordering numbers shown in this manual are Teletype Corporation part numbers.



2. TOOLS REQUIRED

2.01 The following tools are required to make the conversions listed in CONTENTS. These items should normally be present in standard maintenance tool kits.

Wrench Open End 3/16" and 1/4" — 129534
Pliers, Cutting — 108286
Soldering Iron (Low Wattage)
Desolderer

3. CONVERSIONS

A. Changing Memory Size

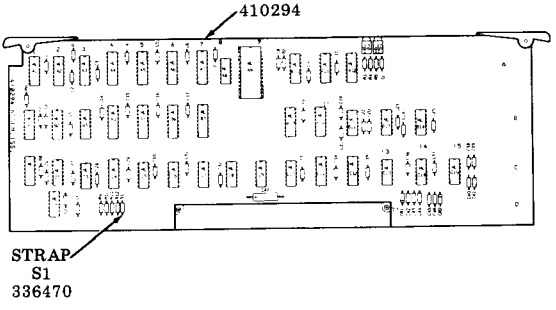
3.01 The 43 Buffered KSR Controller can be configured for 4K, 16K or 20K memory size. Refer to the chart below for circuit card part numbers and locations for the various memory sizes.

Caution: Turn off power before removing or replacing circuit cards.

3.02 If increasing memory size to 20K, strap SI (336470) must be cut on the 410294 circuit card. If decreasing memory size from 20K to 4K, strap SI (336470) must be connected on the 410294 circuit card.

CIRCUIT CARD LOCATION	4K	16K	20K
X02	Empty	410297	410297
X03	410294 With Strap S1	Empty	410294 Without Strap S1

Note: The 32K memory is not available in the 43 Buffered KSR.



PART 2 — 43 PRINTER

INDEX

PART 2 — 43 PRINTER

A. TROUBLESHOOTING

CONTENTS PAGE

1. GENERAL

1.01 This part provides troubleshooting information for the 43 Printer.

1.02 Printer troubleshooting is initiated either by the 43 Buffered KSR Teleprinter Troubleshooting, Page 1-22 or when trouble in the printer is suspected from symptoms observed.

1.03 Analysis in this part 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 Buffered KSR Teleprinter, refer to Page 1-30. Where analysis indicates the trouble is not in the printer, return to Part 1, Teleprinter, for further analysis.

1.04 All ordering part numbers shown in this manual are Teletype Corporation part numbers.

1.05 The 430850 print head is returnable to Teletype Product Service Centers for repair.

1.06 Isolation and correction of troubles is based on electrical checks, parts replacement or adjustments.

Reference Sections are:

Page 2-5 Wiring
Page 2-6 Adjustments and Spring Tensions
Page 2-21 Disassembly/Reassembly
Page 2-35 Parts

1.07 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 Switch No. 5 is operated on the logic card (interlock switch closed)? See caution below.	Go to 2.	Go to 1a.
1a. Is red lamp on power supply lit?	Go to 1b.	Go to Teleprinter Troubleshooting.

Caution: Do not operate Switch No. 5 on the logic card with the circuit card shield raised. Operate Switch No. 5 by reaching under the circuit card shield with a non-metalic object.

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.	Check for mechanical bind by moving carriage manually with power off. Check for proper spacing belt spring tension. Check PLATEN END PLAY adjustment. Check continuity of spacing motor and encoder. Check switch No. 1 on print head. Replace motor and/or encoder or cable. Replace lead screw nut.
1d. Does paper advance properly (successive lines uniformly spaced)?	Go to 1e.	Check line feed belt tension. Check for mechanical bind by rotating platen manually with power off. Check PLATEN END PLAY adjustment. Check LINE FEED FOLLOWER PULLEY STOP BRACKET and PRESSURE ROLLER BAIL adjustments (friction feed). With power on (reset) check platen detenting through full rotation by turning platen knob. Check continuity of line feed motor. Replace motor or cable.
1e. Sprocket Feed — Do sprocket pins on platen line up with paper and with paper guides?	Go to 1f.	Check LEFT AND RIGHT SPROCKET adjustment. Check LEFT AND RIGHT PAPER GUIDE adjustment.
1f. Are any characters printed?	Go to 1g.	Check continuity of print head and cable. Go to Teleprinter Troubleshooting.

A. TROUBLESHOOTING (Cont)

2. TROUBLESHOOTING GUIDE (Cont)

QUESTION	YES	NO
1g. Are any dots missing from printed characters?	Check continuity of associated print magnet. Check PRINT HEAD ARMATURE 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).	Go to 1j.	Check PRINT HEAD TO PLATEN 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 PRINTER TEST. Go to Teleprinter Troubleshooting.	Check PRINTED LINE POSITION adjustment.
2. Did bell ring during PRINTER TEST?	Go to 3.	Go to 2a.
2a. Does bell ring under any conditions (CTRL G RH margin, etc)?	Go to Teleprinter Troubleshooting.	Check bell coil and cable continuity. Check for freedom of bell plunger.
3. Does ALARM indicator light when a paper-out condition is sensed?	Undefined trouble. Go to Teleprinter Troubleshooting.	Check continuity of paper-out cable and contacts. Check PAPER ALARM CONTACT adjustment.

B. WIRING

CONTENTS PAGE

1. GENERAL

1.01 This section provides wiring information for the 43 printer.

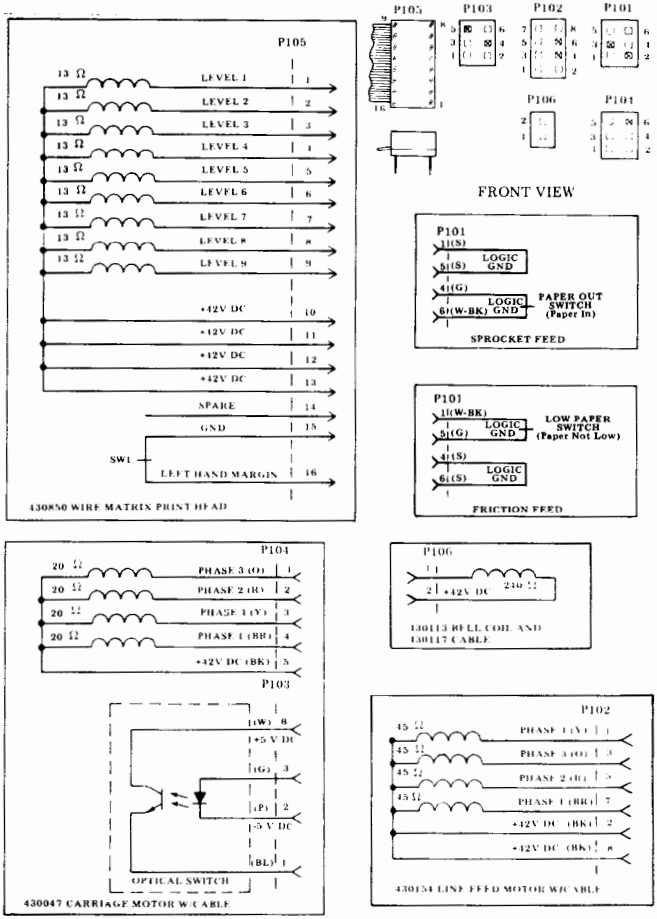
1.02 Related wiring information and cable connections to the logic card are shown on Page 1-28, Teleprinter Wiring.

1.03 Designations on printer wiring diagrams do not appear on the components.

1.04 The wiring information in this section is provided to support the 43 Printer Troubleshooting on Page 2-2.

1.05 All part numbers shown in this manual are Teletype Corporation part numbers.

2. PRINTER WIRING



C. ADJUSTMENTS AND SPRING TENSIONS

CONTENTS PAGE

1. GENERAL

1.01 This part provides printer adjustments and spring tensions.

1.02 Belt tensions are checked with a spring scale held at the angle shown in the adjustment illustration.

1.03 All part numbers shown in this manual are Teletype Corporation part numbers.

1.04 After an adjustment is complete, tighten any screws or nuts loosened to make the adjustment.

1.05 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.

1.06 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.

2. TOOLS REQUIRED

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.

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.

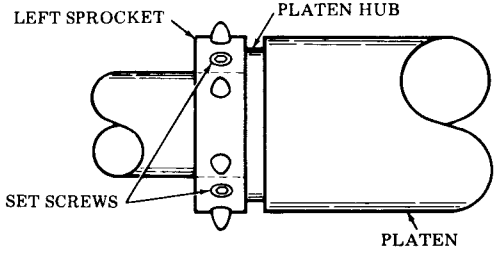
Tools	
Bit, 1/4 Inch Socket	135677
Bit, 5/16 Inch Socket	135678
Gauge Set	117781
Gauge, Tape	95960
Handle	135676
Hook, Pull Spring	75765
Hook, Pull Spring	142554
Hook, Push Spring	142555
Scale, Spring (64 Ounce)	82711
Scale, Spring (8 Ounce)	110443
Scale, Spring (32 Ounce)	110444
Scale, 15 Pound Spring	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)

Requirement
The left sprocket should be biased against the collar of the platen hub.

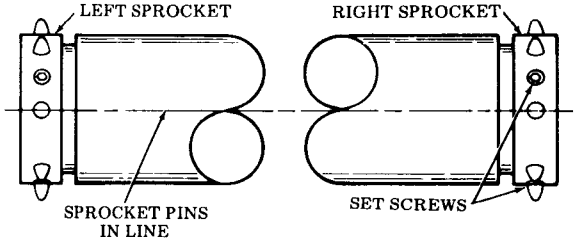
To Adjust
Loosen set screws and position left sprocket to meet requirement.



RIGHT PAPER SPROCKET (Sprocket Feed Only)

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.

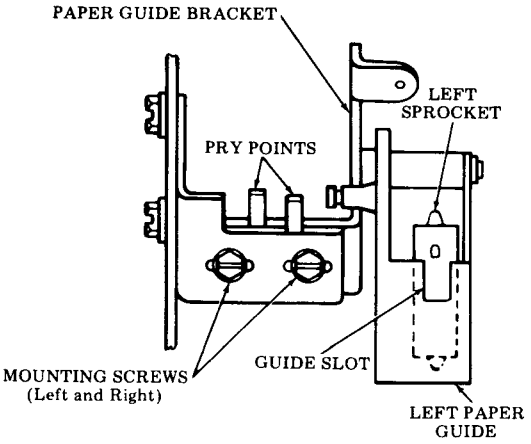
C. ADJUSTMENTS AND SPRING TENSIONS (Cont)

3. PRINTER ADJUSTMENTS (Cont)

LEFT AND RIGHT PAPER GUIDES
(Horizontal Positioning) (Sprocket Feed Only)

Requirement
There should be some clearance between the base of the sprocket pins and either side of the paper guide slot.

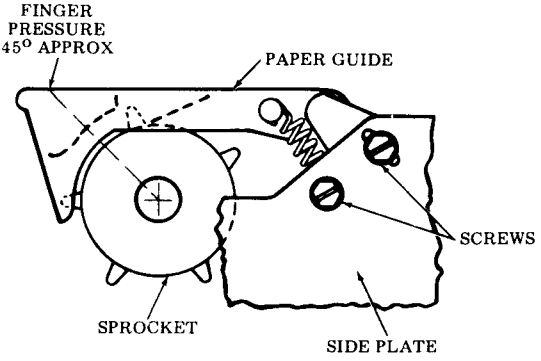
To Adjust
Loosen screws friction tight and position paper guide bracket by using a screwdriver on the pry points.



LEFT AND RIGHT PAPER GUIDES
(Angular Positioning) (Sprocket Feed Only)

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.

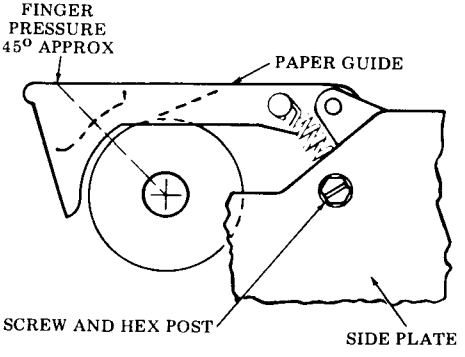


LEFT AND RIGHT PAPER GUIDES
(Angular Positioning) (Friction Feed Only)

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

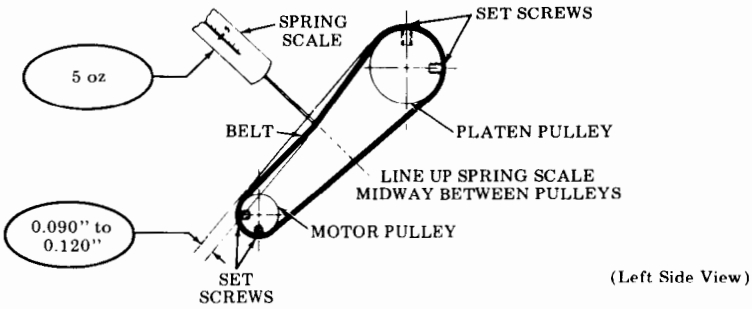
When the belt and sprocket system is at the point of least slack; a force of 5 ounces applied with a spring scale midway between the sprockets the belt should deflect between

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.



PRINT HEAD TO PLATEN

Requirement

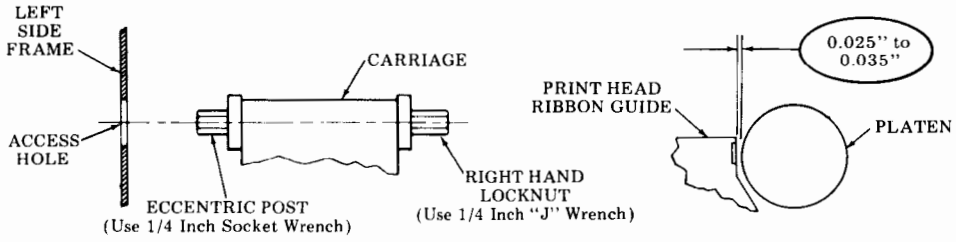
There should be

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.



C. ADJUSTMENTS AND SPRING TENSIONS (Cont)

3. PRINTER ADJUSTMENTS (Cont)

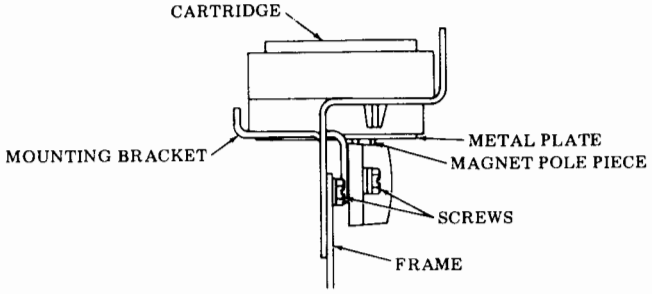
RIBBON CARTRIDGE MAGNETIC LATCH

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

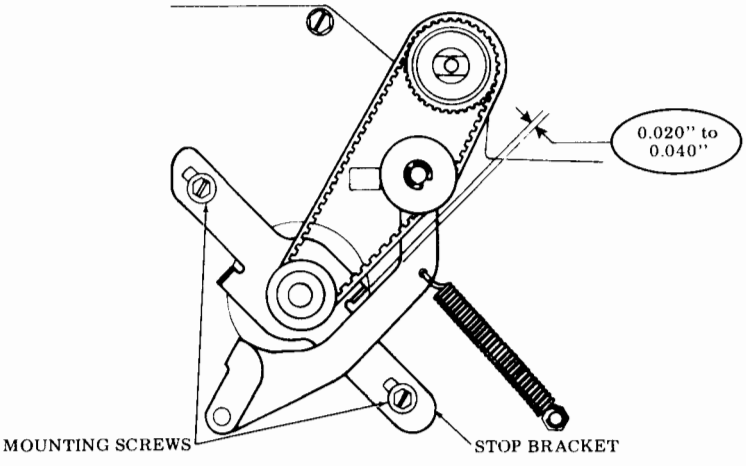
With the follower pulley resting on the belt, push the pulley against the belt to take up all friction. Slowly release pressure. Measuring between the follower lever and the adjacent tab of the stop bracket there should be

Min 0.020 inch---Max 0.040 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.



PRESSURE ROLLER BAIL (Friction Feed Only)

Requirement

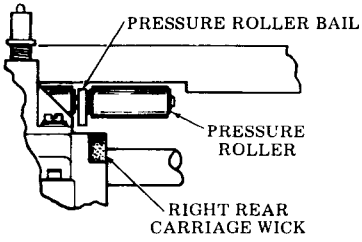
With the paper release lever in the forward position and the right end of the carriage next to the right rear carriage wick located immediately under the arm of the pressure roller bail (between the two pressure rollers) there should be from

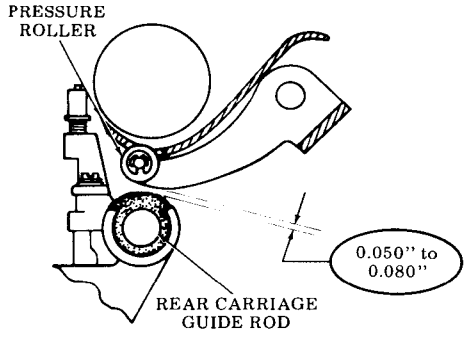
Min 0.050 inch---Max 0.080 inch

gap between the carriage and the bail arm when measured at the closest point.

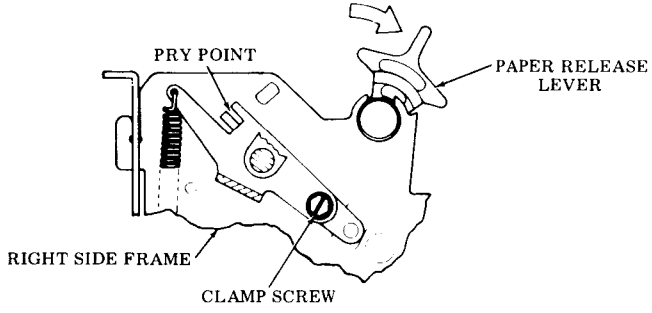
To Adjust

Loosen the clamp screw to friction tight. Move pry point down to increase gap or up to decrease gap.





(Right Side View)



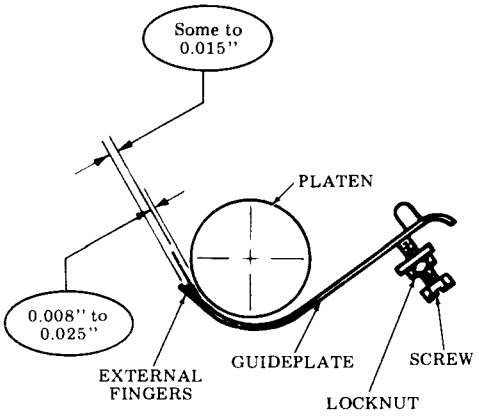
C. ADJUSTMENTS AND SPRING TENSIONS (Cont)

3. PRINTER ADJUSTMENTS (Cont)

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.

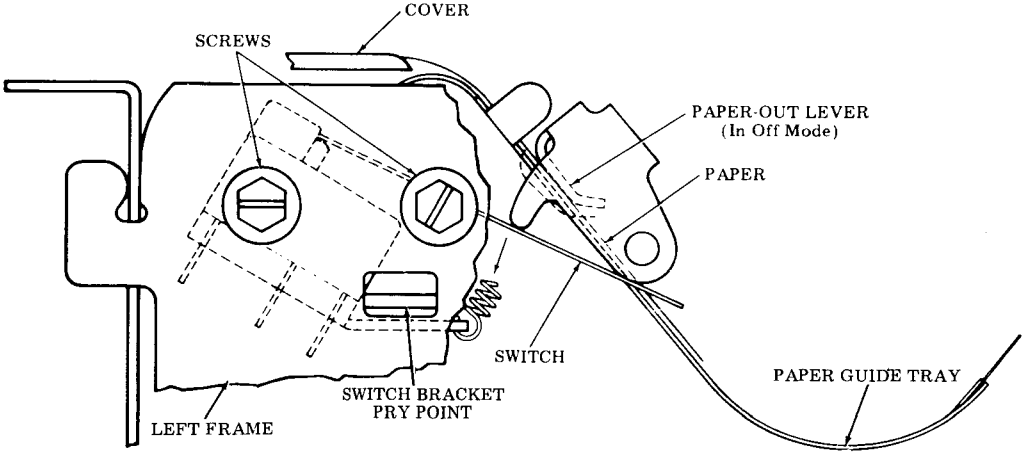
(2) Requirement
The fingers at both the left and right ends of the platen should be
Min Some---Max 0.015 inch
beyond the recorded gap between the platen and the left and right ends of the paper guideplate.

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.



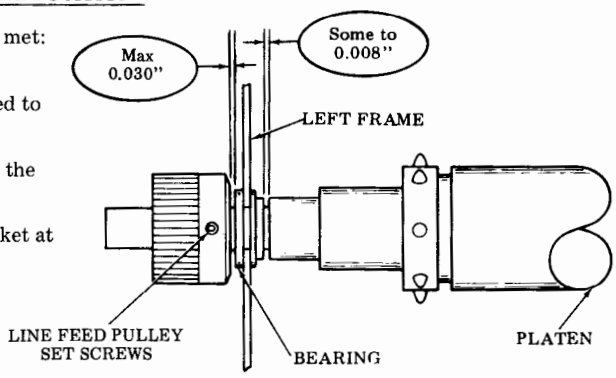
(Left Side View)

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 sprocket at the closest point.

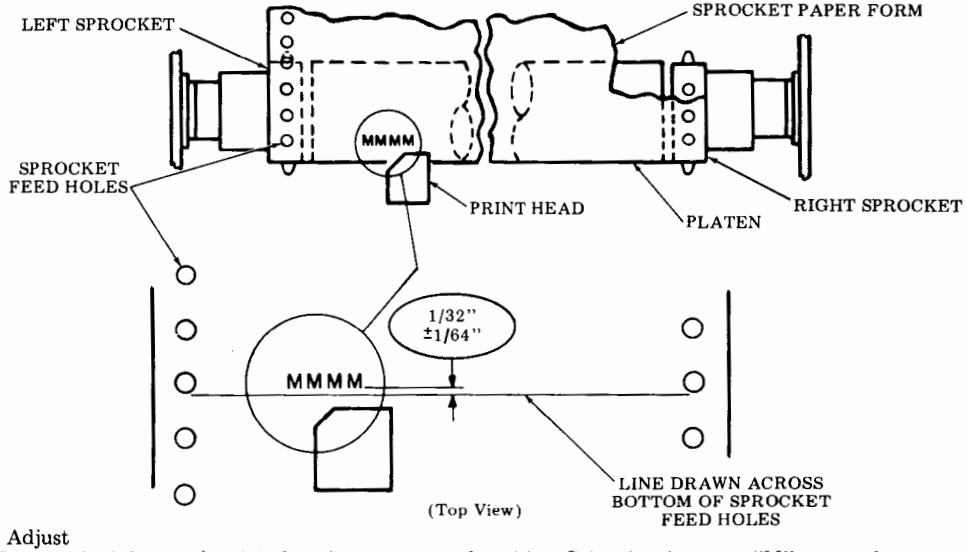
To Adjust
Loosen line feed pulley set screws and position.



(2) Requirement (Sprocket Feed Only)
Printed Line Position — The lower edge of a typed line of M characters should be 1/32 ± 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.)

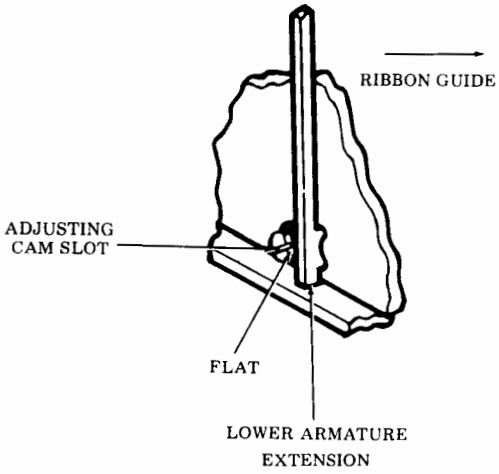


To Adjust
Loosen the left sprocket (at platen) set screws and position. Print the character "M" across the line and check (2) Requirement. If necessary, loosen set screw on right sprocket to meet alignment requirement.

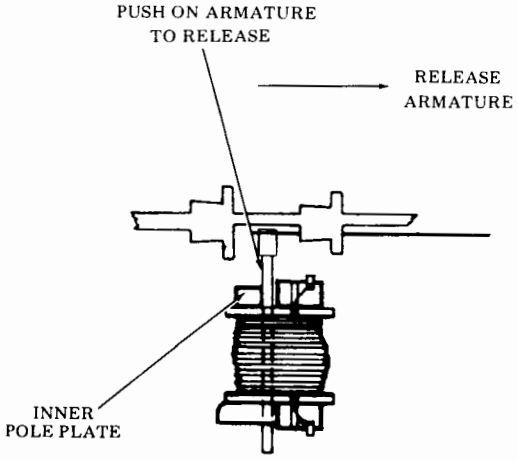
C. ADJUSTMENTS AND SPRING TENSIONS (Cont)

3. PRINTER ADJUSTMENTS (Cont)

PRINT HEAD ARMATURE



(Right Side View)



(Top View-Cover Removed)

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

(1) 430028 Lead Screw Spring

On left side of lead screw, push to start to compress spring — 9 to 11 pounds.

(2) 430030 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) 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) 430118 Bell Plunger Spring

1/2 to 1 ounce to seat plunger.

(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 5 to 9 ounces to start the tray moving forward.

(10) 430021 Line Feed Belt Tension Arm Spring

10 to 14 ounces to pull spring to installed length.

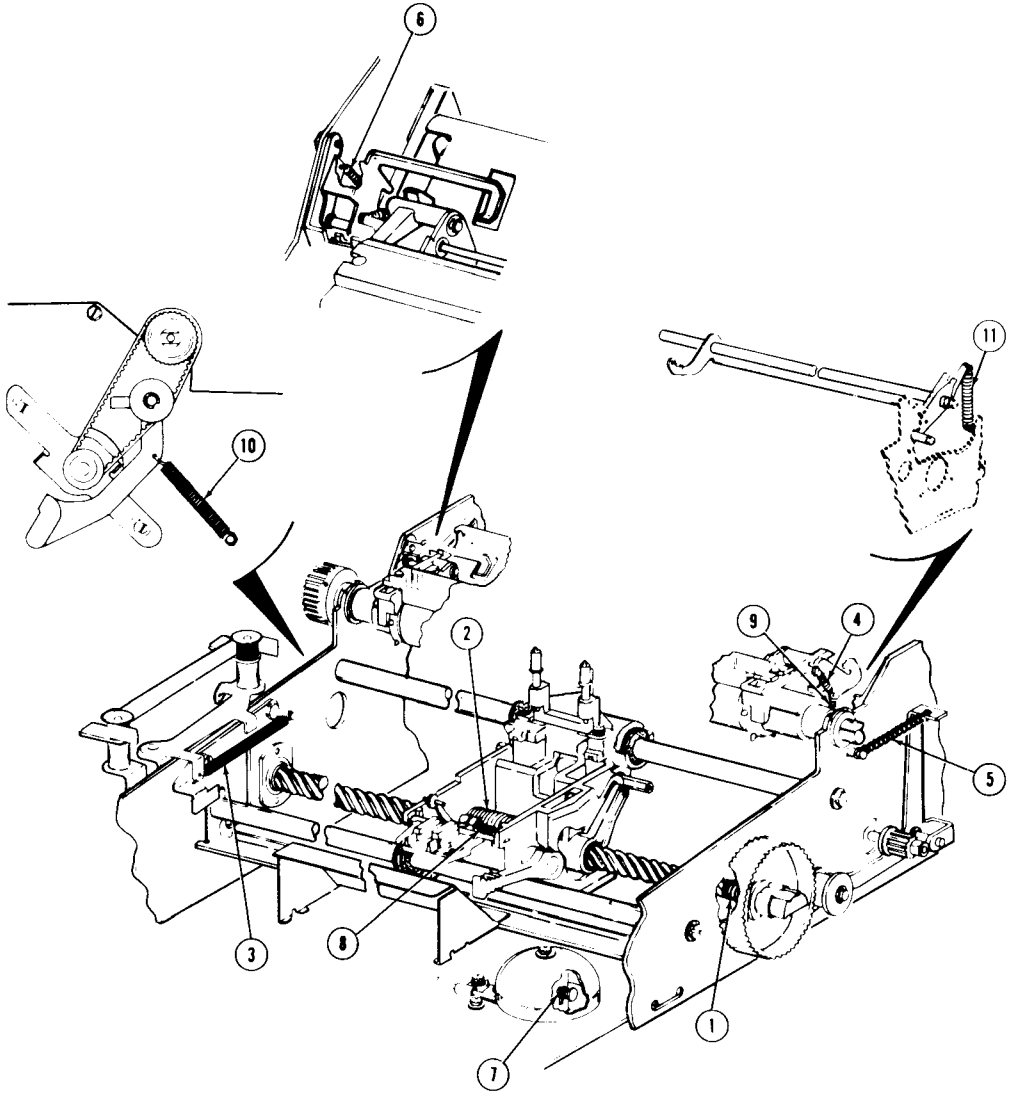
(11) 82727 Pressure Roller Bail Spring (Friction Feed Only)

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 40 to 44 ounces to start the roller bail moving.

C. ADJUSTMENTS AND SPRING TENSIONS (Cont)

4. SPRING TENSIONS (Cont)

SPRING IDENTIFICATION



D. LUBRICATION

CONTENTS PAGE

1. GENERAL

1.01 This part provides lubrication procedures for the 43 printer.

1.02 Lubricate the printer at intervals indicated under Routine Maintenance, Page 1-61.

1.03 The printer can be lubricated by opening the cabinet cover.

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	Oil 88970(1qt), 88971(1gal),
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: (See Pages 2-19 and 2-20).

Lead Screw — Film of grease over the entire threaded portion of lead screw.

Carriage Wicks — Saturate with oil (4 places).

Ribbon Guide Rollers — Two drops of oil (2 places).

Ribbon Rollers — Two drops of oil (2 places).

Ribbon Tension Arm Pivot and Spring — Two drops of oil each (4 places).

Spacing Tension Arm Pivot, Roller and Spring — Two drops of oil each (4 places).

Platen Bearing — Five drops of oil each side (2 places).

Finger Pivots — Two drops of oil each side (2 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.

D. LUBRICATION (Cont)

2. LUBRICATION PROCEDURES (Cont)

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.

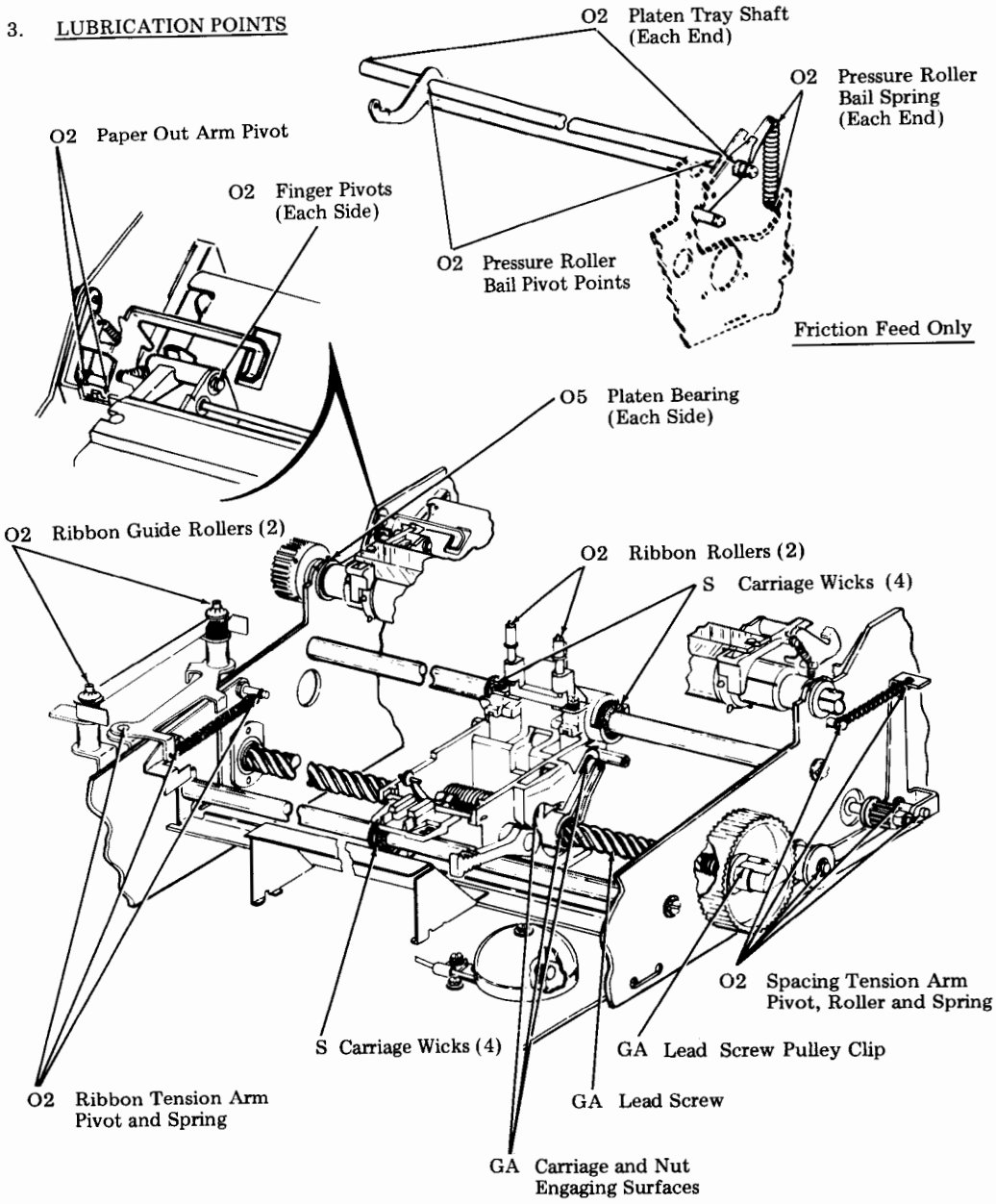
(b) Nut Keying Arm — Lubricate by packing carriage engaging slot with grease.

Print Head:

(a) Active Armatures and Outer Pole Plate — Grease at the upper pivot area as well as the lower locator area (9 places).

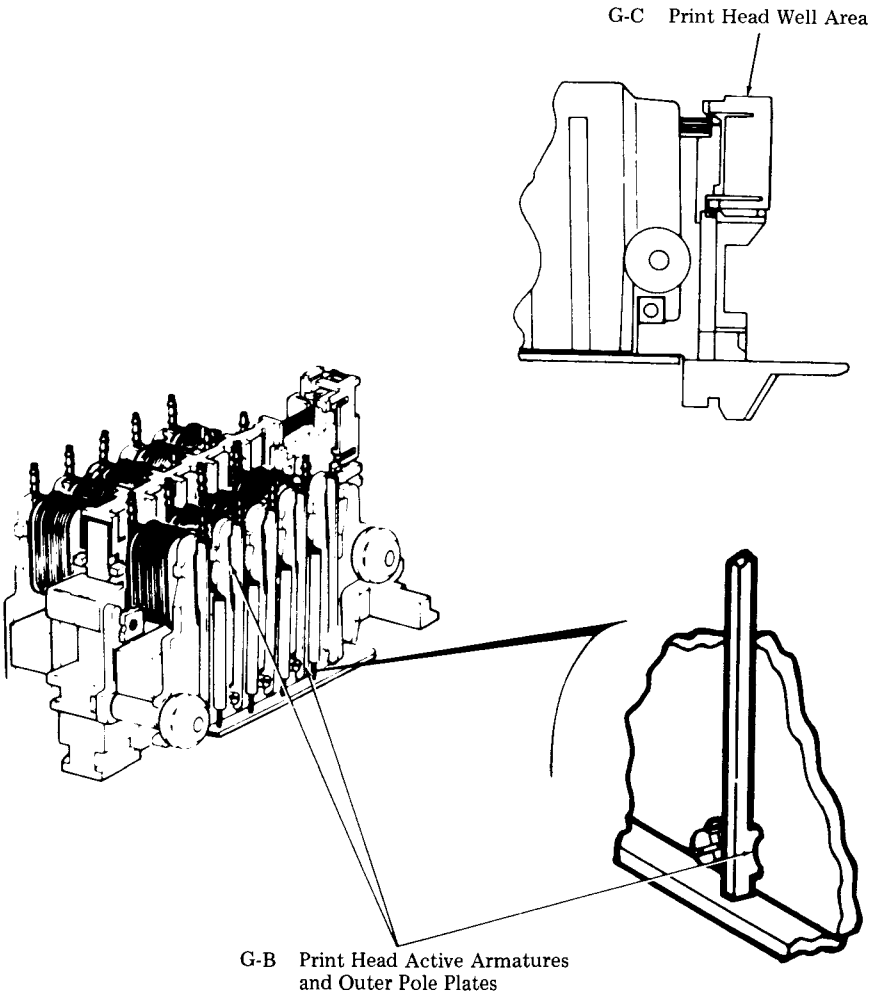
(b) Print Wire Well Area — Completely fill with grease.

3. LUBRICATION POINTS



D. LUBRICATION (Cont)

3. LUBRICATION POINTS (Cont)



E. DISASSEMBLY/REASSEMBLY

CONTENTS

1. GENERAL

1.01 This part covers disassembly/reassembly procedures for the 43 printer.

1.02 The printer is not considered a field replaceable item. Any trouble can be corrected by adjustments or by replacement with maintenance spares.

1.03 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.

1.04 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 see Page 2-6.

1.05 Disassembly of printer parts except the print head will require the removal of the set housing and rear frame. Refer to Teleprinter Disassembly/Reassembly, Page 1-44 for set housing and rear frame removal and replacement procedures.

1.06 Disassembly of the printer motors will require the removal of the logic card.

1.07 Disassembly of the printer lead screw, carriage with post assembly, lead screw nut, and collar with link will require the removal of the operator console.

1.08 After replacing printer parts, refer to the lubrication procedures Page 2-17 and lubricate any parts requiring lubrication.

1.09 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.

1.10 All part numbers shown in this manual are Teletype Corporation part numbers.

1.11 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.

E. DISASSEMBLY/REASSEMBLY (Cont)

2. TOOLS REQUIRED

2.01 The following tools may be required when performing the printer disassembly/reassembly procedures. Most of these items should normally be present in standard maintenance tool kits.

Part No.	Description
75765	Hook, Pull Spring
95368	Screwdriver, 1/8 Inch, 2 Inch Blade
100704	Screwdriver w/Clip, 10 Inch Blade
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
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.

3. DISASSEMBLY/REASSEMBLY

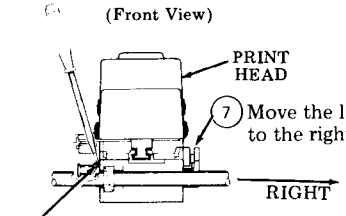
PRINT HEAD WITH COVER

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.

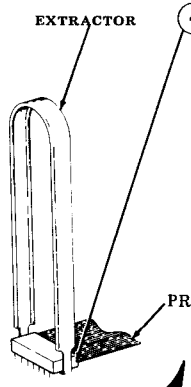
Note: Print head removal and replacement is also shown in Teleprinter Disassembly/Reassembly, Page 1-44.

(8) Grasp print head and pull forward. Lift front of print head to disengage locking channels.

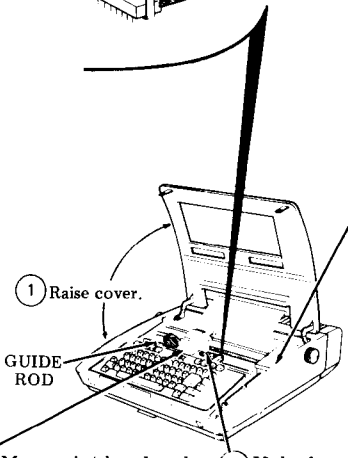


(7) Move the locking handle to the right.

(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.)



(4) Place projections of 407326 extractor under print head cable plug. Disconnect print head cable plug from logic card by squeezing arms of extractor together and pulling straight up to avoid damage to plug pins.



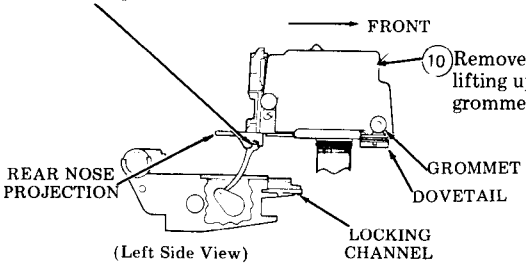
(1) Raise cover.

(2) Remove ribbon. (Refer to How To Operate Manual 386, Page 6-1.)

(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.

(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.

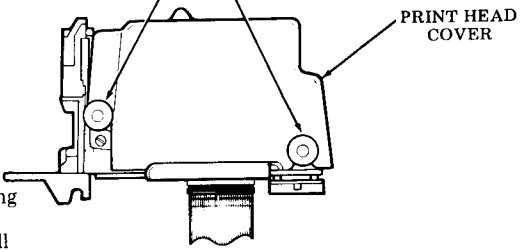
E. DISASSEMBLY/REASSEMBLY (Cont)

3. DISASSEMBLY/REASSEMBLY (Cont)

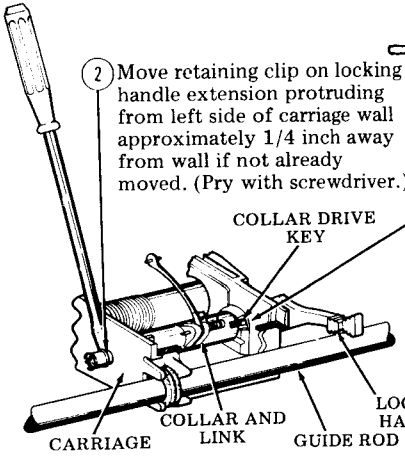
PRINT HEAD WITH COVER (Cont)

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.)



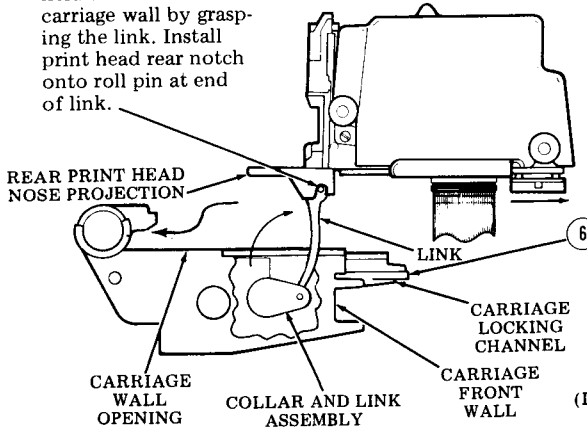
(2) Move retaining clip on locking handle extension protruding from left side of carriage wall approximately 1/4 inch away from wall if not already moved. (Pry with screwdriver.)

(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.

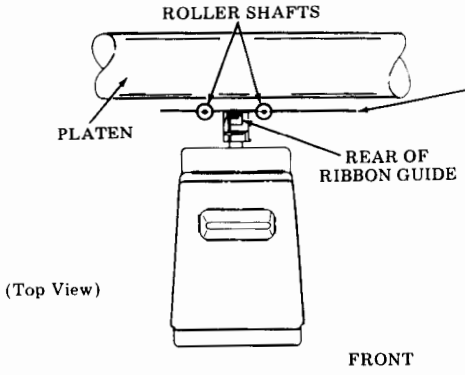
Note: Collar and link may snap rearward.

(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.



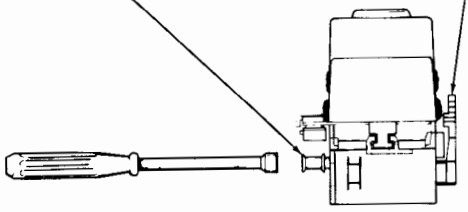
(7) Slowly push print head rearward and further into the carriage locking channel until the rear of the ribbon guide is even with center of roller shafts. Apply continuous leftward pressure to locking handle at its pivot shaft, while slowly pulling print head forward until collar drive key on handle engages (snaps) into slot in collar.

Note: Parts referred to were visible in step 3.

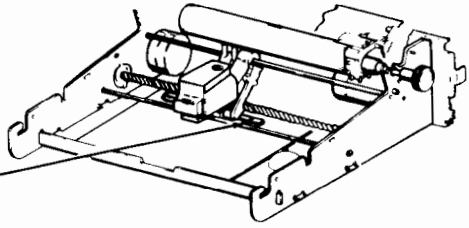
(8) Move the handle all the way to the rear, locking the print head in close proximity to the platen by the additional force necessary to detent the handle. If handle does not move to rear, the drive key did not properly engage the collar slot (step 7).

Note: Check to make sure there is some clearance between print head and platen before detenting handle. Check PRINT HEAD TO PLATEN adjustment.

(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.



(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.



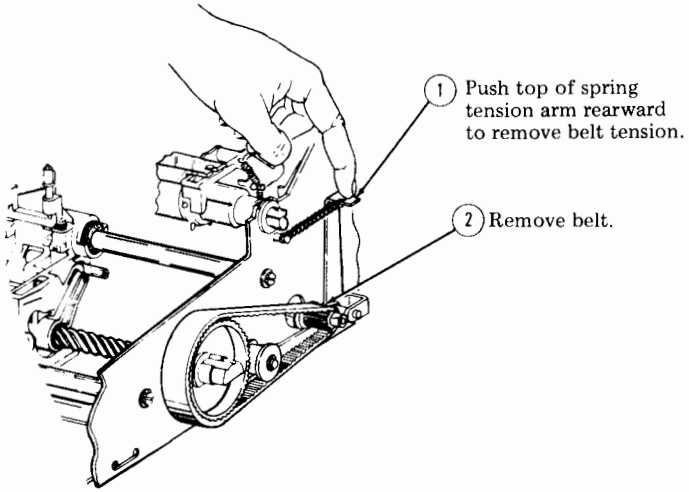
(11) Install ribbon. (Refer to How To Operate Manual 386, Page 6-1.)

E. DISASSEMBLY/REASSEMBLY (Cont)

3. DISASSEMBLY/REASSEMBLY (Cont)

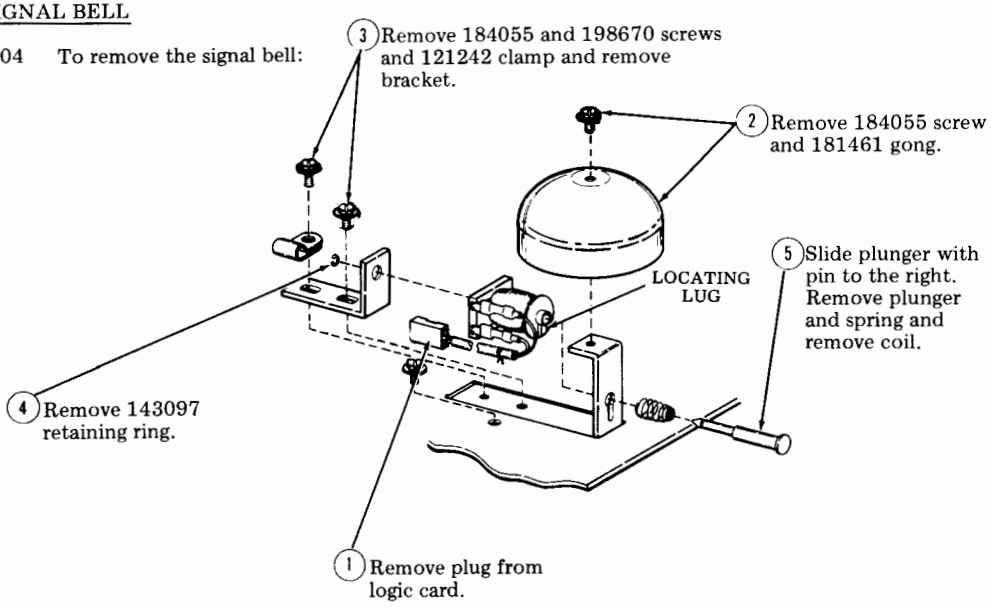
SPACING MOTOR BELT

3.03 To remove the spacing motor belt:



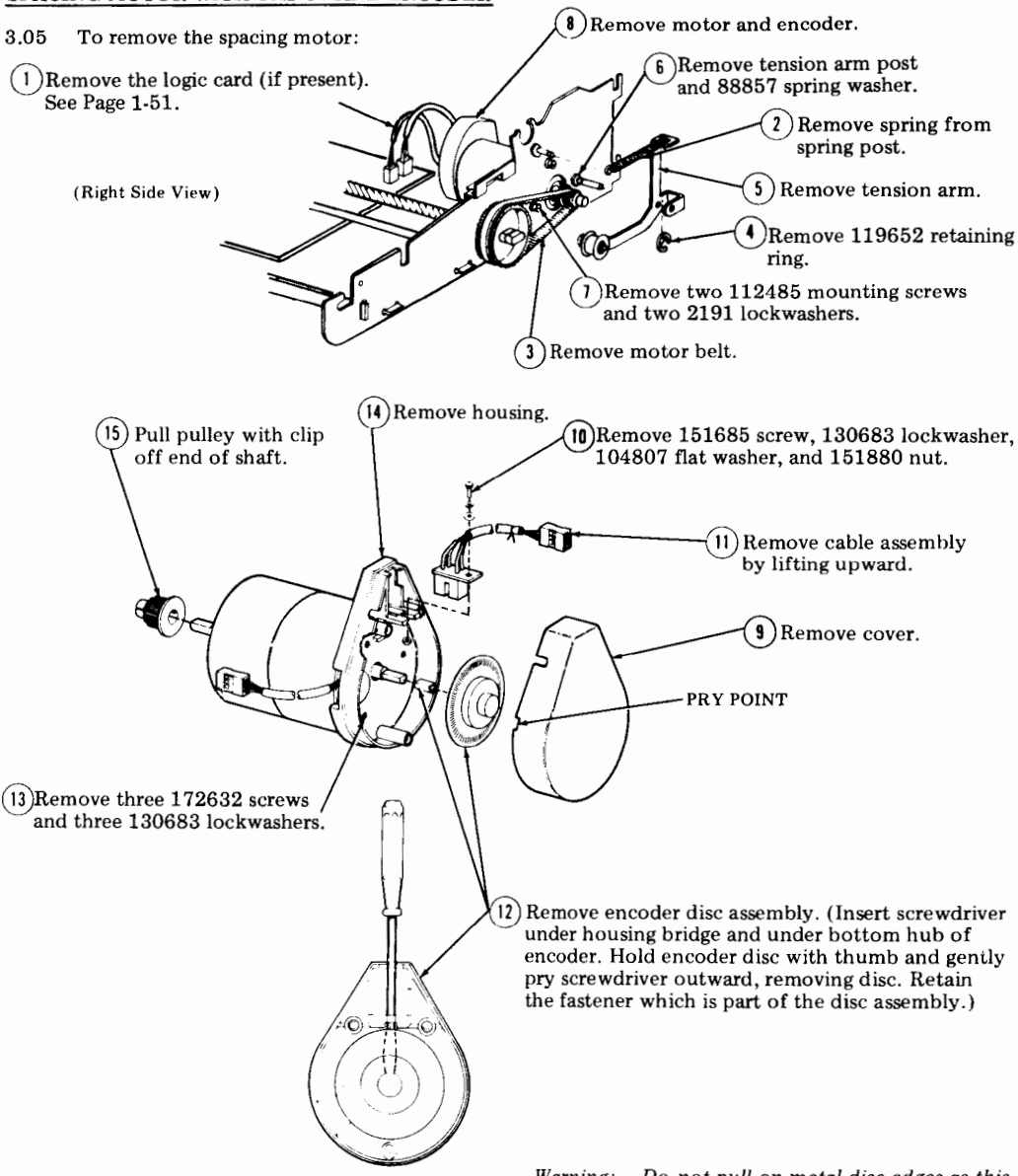
SIGNAL BELL

3.04 To remove the signal bell:



SPACING MOTOR WITH CABLE AND ENCODER

3.05 To remove the spacing motor:



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.

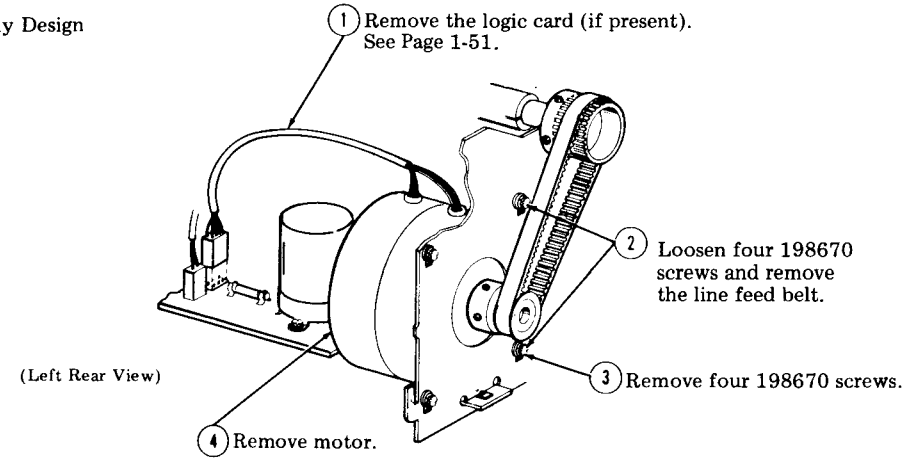
E. DISASSEMBLY/REASSEMBLY (Cont)

3. DISASSEMBLY/REASSEMBLY (Cont)

LINE FEED MOTOR

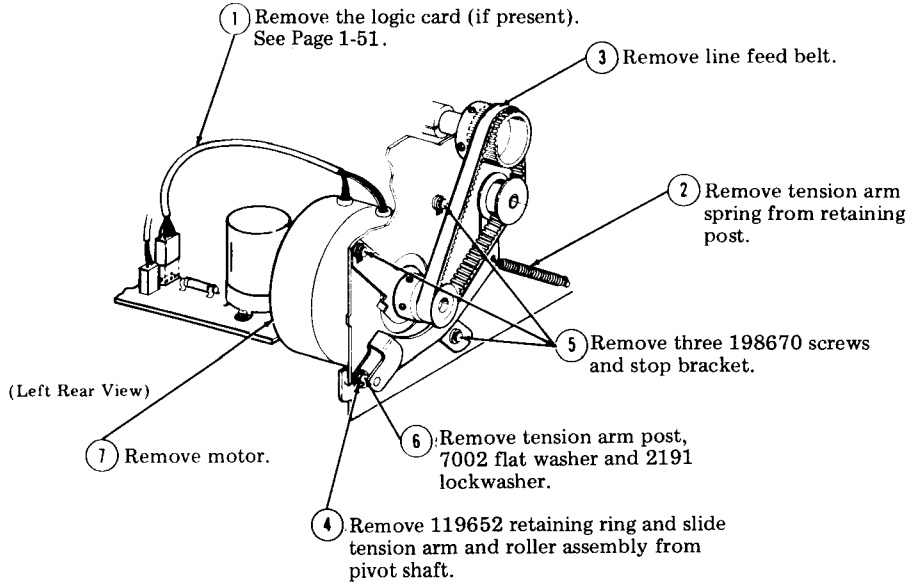
3.06 To remove the line feed motor:

(a) Early Design



Note: In reassembly, perform LINE FEED BELT TENSION adjustment

(b) Late Design

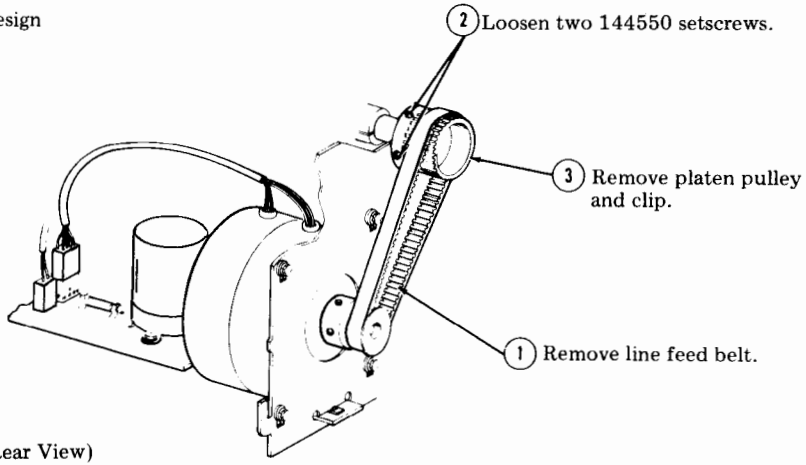


Note: In reassembly, perform STOP BRACKET adjustment.

PLATEN

3.07 To remove the platen:

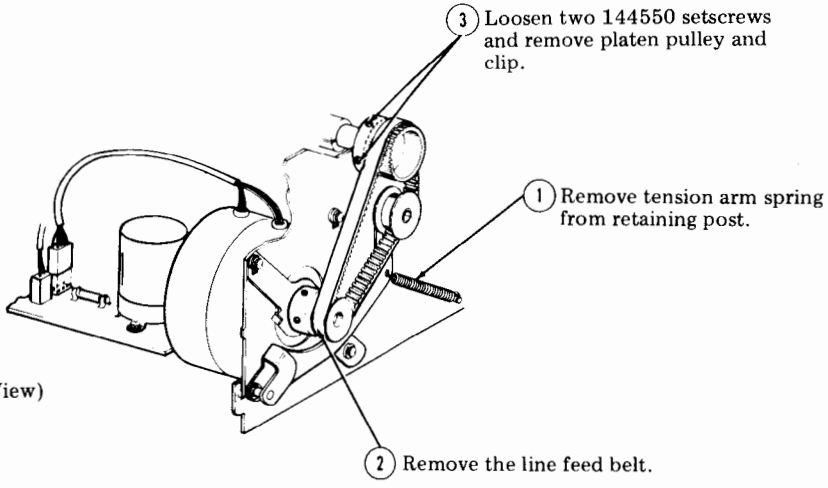
(a) Early Design



(Left Rear View)

Note: In reassembly, position the setscrews away from the slot in the platen clip.

(b) Late Design



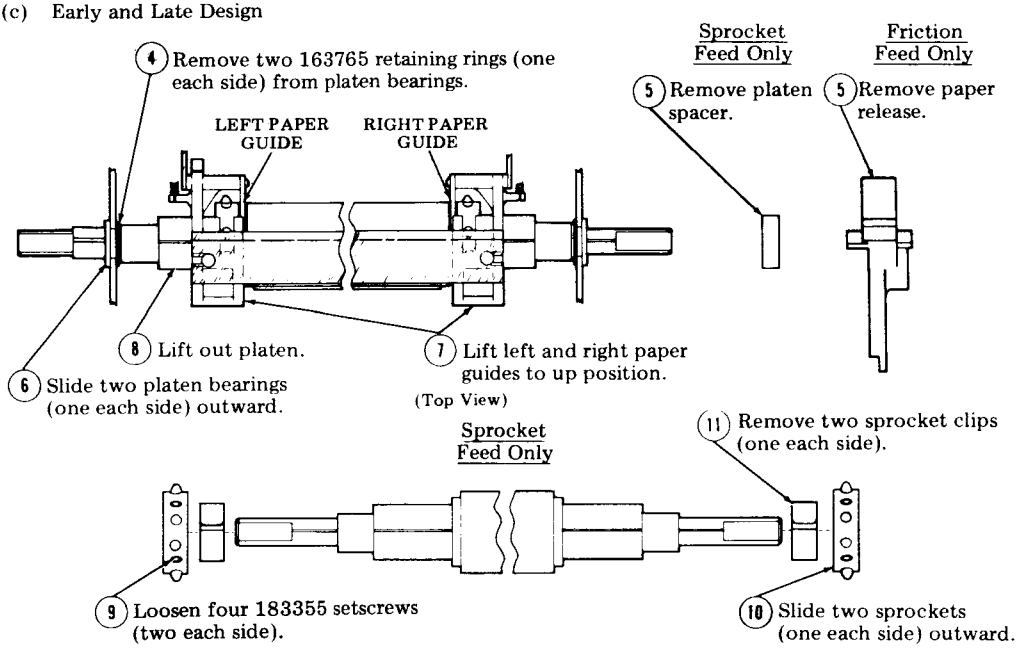
(Left Rear View)

E. DISASSEMBLY/REASSEMBLY (Cont)

3. DISASSEMBLY/REASSEMBLY (Cont)

PLATEN (Cont)

(c) Early and Late Design



Note: In reassembly, position the setscrews away from the slot in the sprocket clip.

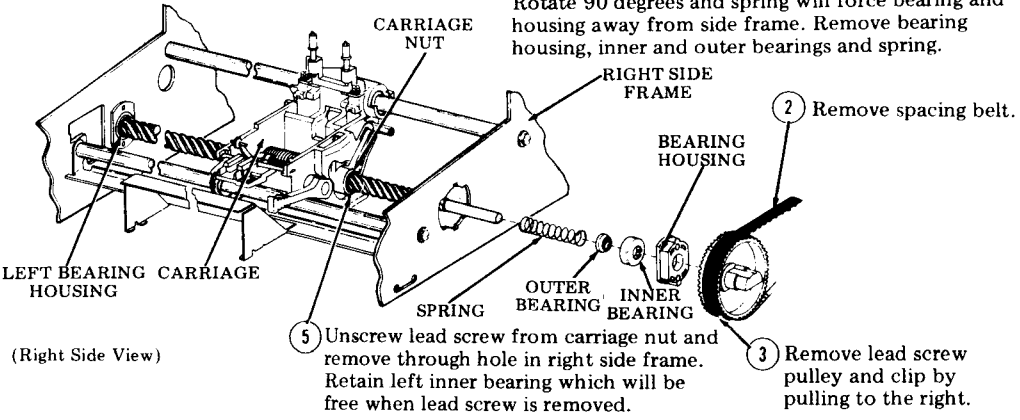
Perform the LEFT and RIGHT SPROCKET adjustments and PRINTED LINE POSITION and PLATEN ENDPLAY adjustments.

LEAD SCREW

1 Remove operator console if present. See Page 1-49.

3.08 To remove the lead screw:

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 bearing housing, inner and outer bearings and spring.

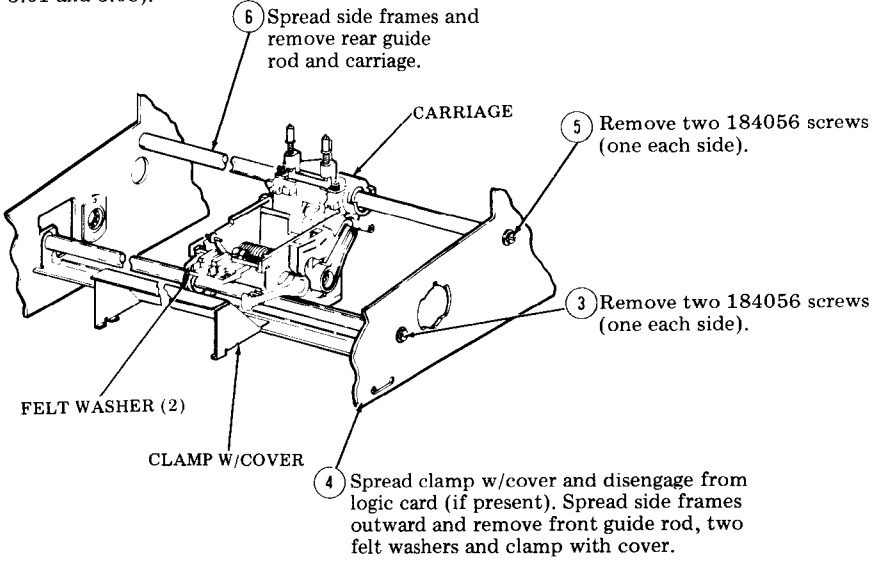


CARRIAGE WITH POST ASSEMBLY

3.09 To remove the carriage with post assembly:

(1) Remove operator console, if present. See Page 1-49.

(2) Remove print head and lead screw (perform 3.01 and 3.08).



LEAD SCREW NUT

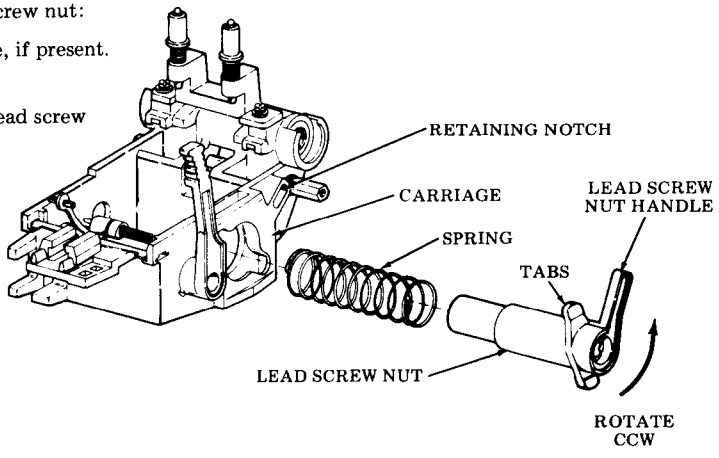
3.10 To remove the lead screw nut:

(1) Remove operator console, if present. See Page 1-49.

(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 counterclockwise (CCW) until tabs on nut align with opening in carriage. Spring will force nut away from carriage.

(4) Remove spring and nut.



E. DISASSEMBLY/REASSEMBLY (Cont)

3. DISASSEMBLY/REASSEMBLY (Cont)

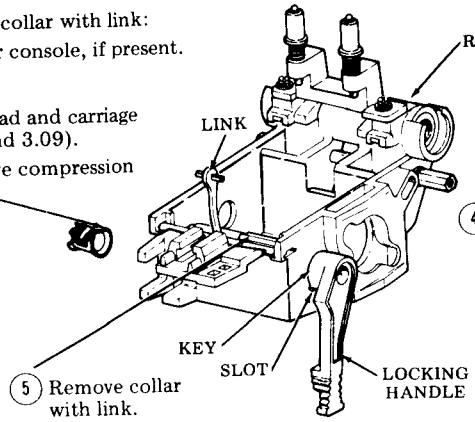
COLLAR WITH LINK

3.11 To remove the collar with link:

(1) Remove operator console, if present. See Page 1-49

(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

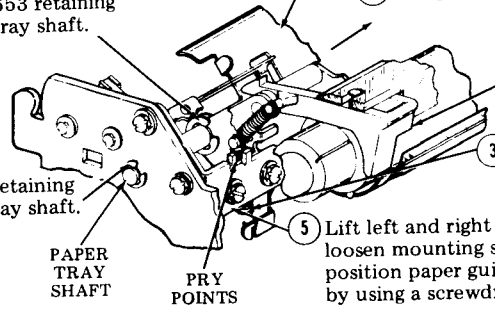
3.12 To remove the paper tray:

(a) Sprocket Feed

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) Unhook and retain two 4708 paper tray springs (one each side).

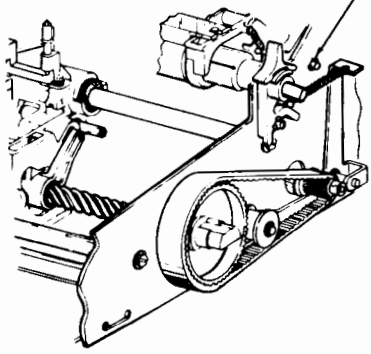
(4) Pull paper tray shaft out to right.

(5) 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.

(6) Remove paper tray.

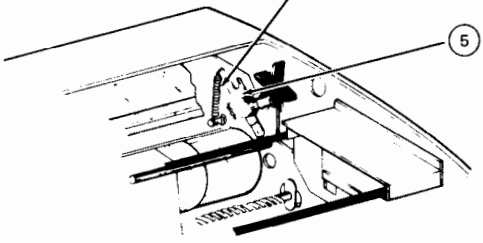
Note 2: In reassembly, LEFT AND RIGHT PAPER GUIDE adjustments must be made.

(b) Friction Feed



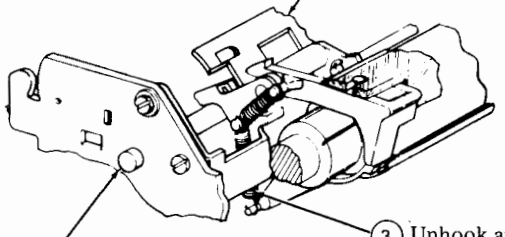
(1) Remove 119653 retaining ring from paper tray shaft and roller bail lever shaft.

(2) Remove 82727 roller bail spring from post.



(5) Remove roller bail assembly.

(6) Remove paper tray.



(3) Unhook and retain two 4708 paper tray springs (one each side).

(4) Pull paper tray shaft to the left and remove.

E. DISASSEMBLY/REASSEMBLY (Cont)

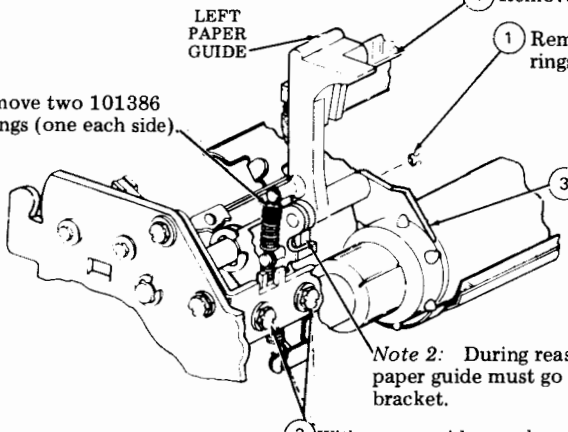
3. DISASSEMBLY/REASSEMBLY (Cont)

PAPER GUIDES

3.13 To remove the paper guide:

(a) Sprocket Feed

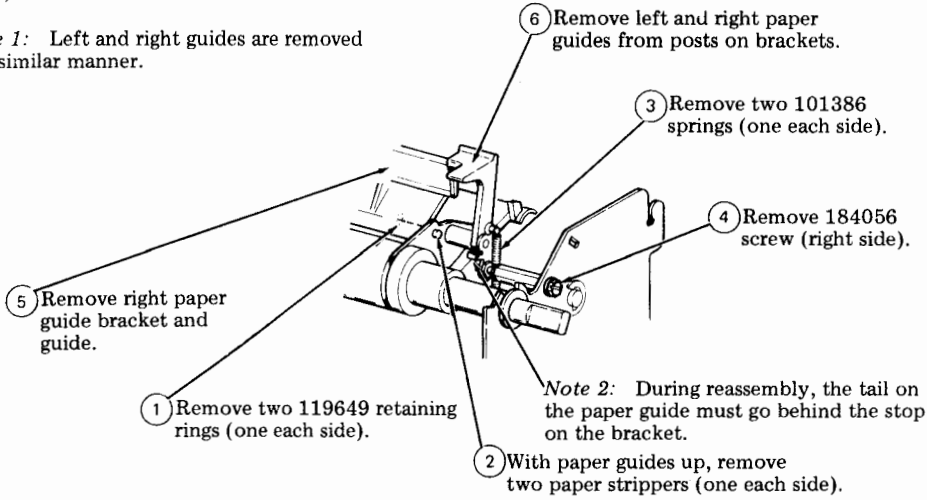
Note 1: Left and right guides are removed in a similar manner.



Note 3: In reassembly, LEFT PAPER GUIDE adjustment must be made.

(b) Friction Feed

Note 1: Left and right guides are removed in a similar manner.



Note 3: In reassembly, RIGHT PAPER GUIDE adjustment must be made.

F. PARTS

CONTENTS PAGE

1. GENERAL

1.01 Information on maintenance spare parts is provided in this part for the 43 printer.

1.02 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, stocked as "List 2", indicate that one spare should be available in each maintenance area.

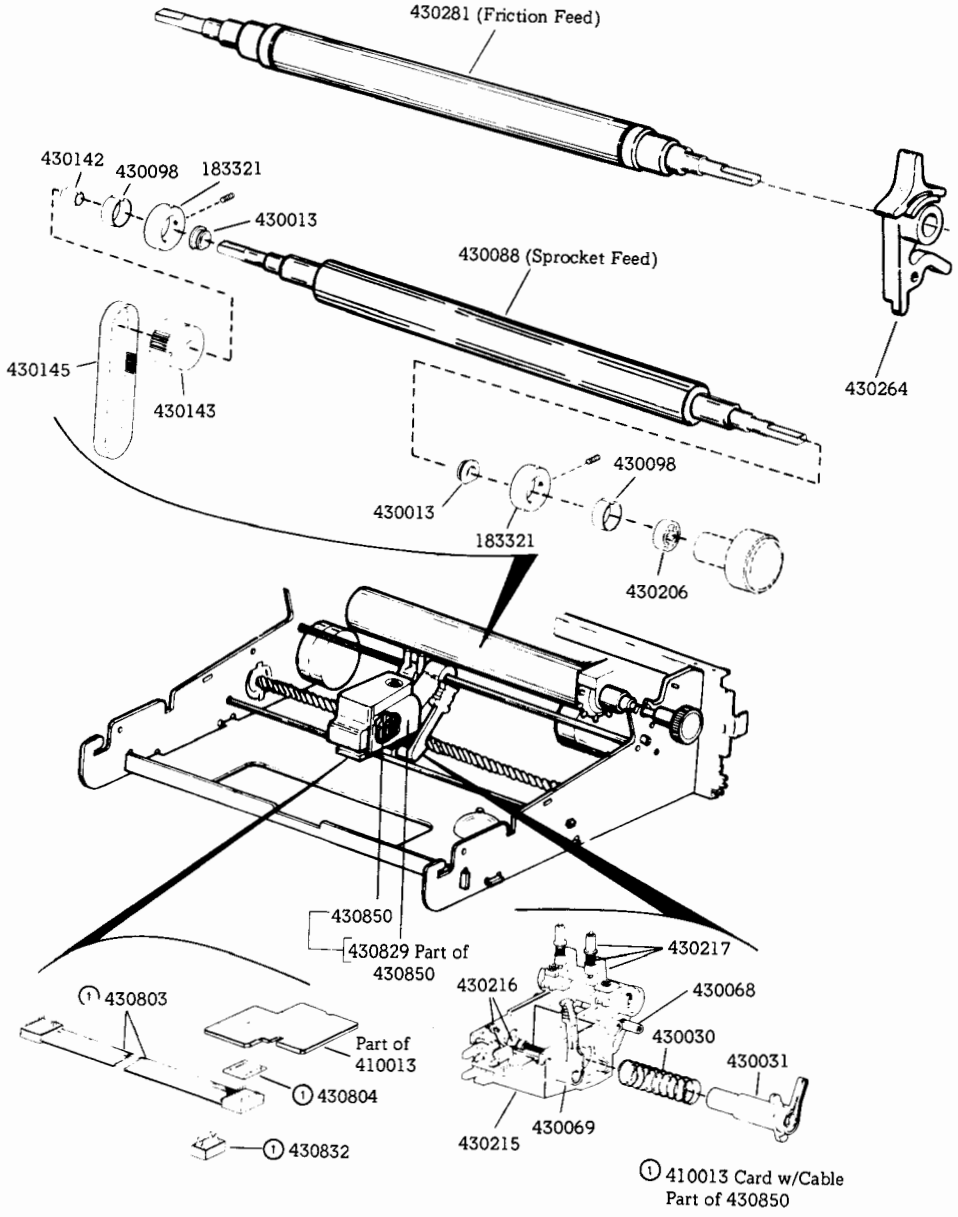
1.03 All part numbers shown in this manual are Teletype Corporation part numbers.

1.04 The Troubleshooting and disassembly/reassembly information for these parts is provided on Pages 2-2 and 2-21, respectively.

F. PARTS (Cont)

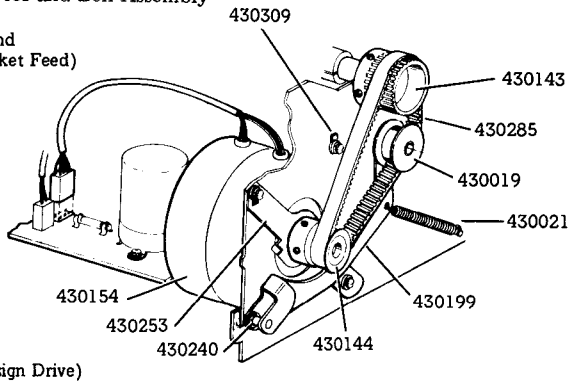
2. PARTS

Platen and Carriage Assembly

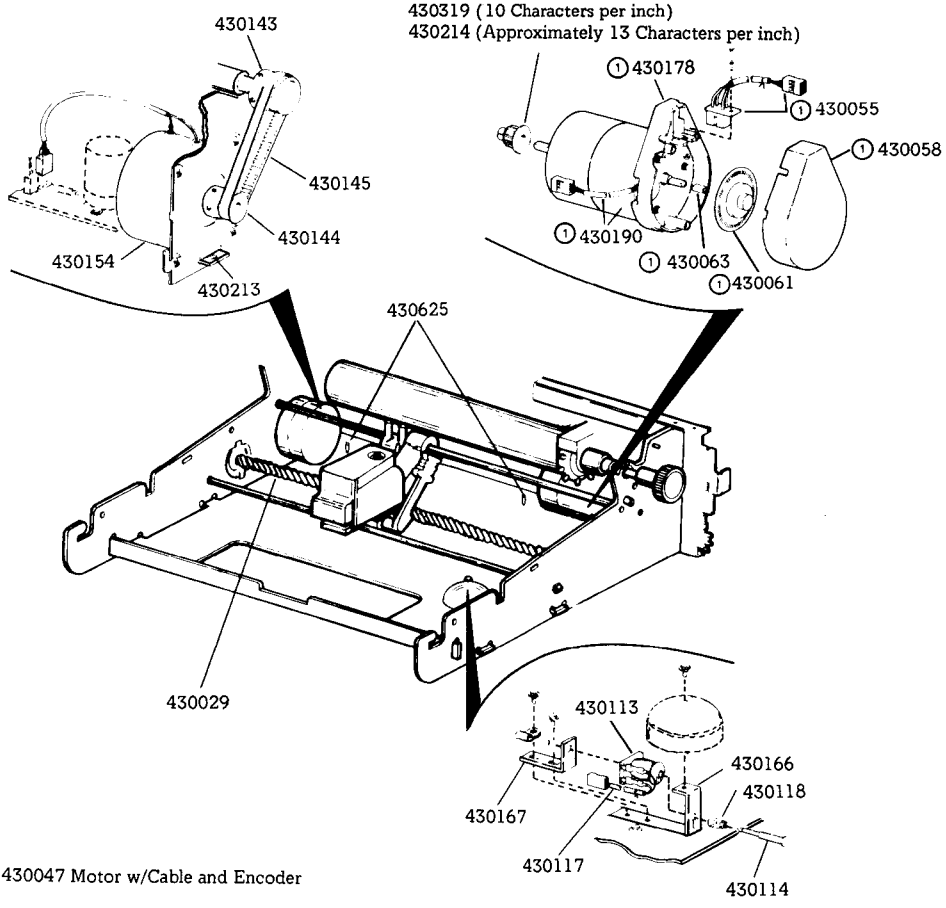


Line Feed Spacing Motor and Bell Assembly

(Friction Feed and
Late Design Drive Sprocket Feed)



(Sprocket Feed Early Design Drive)

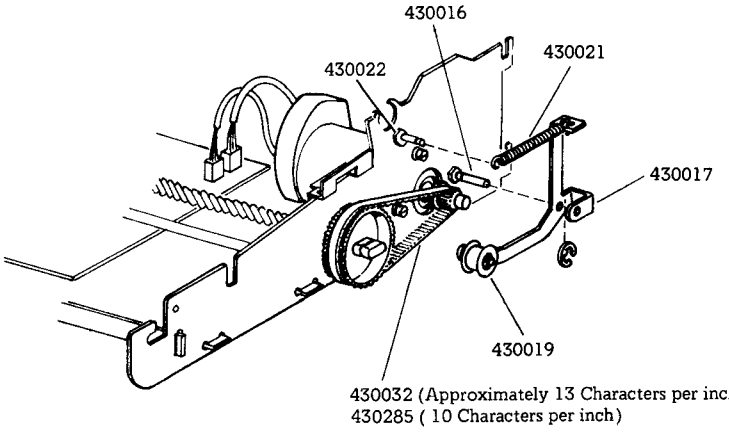


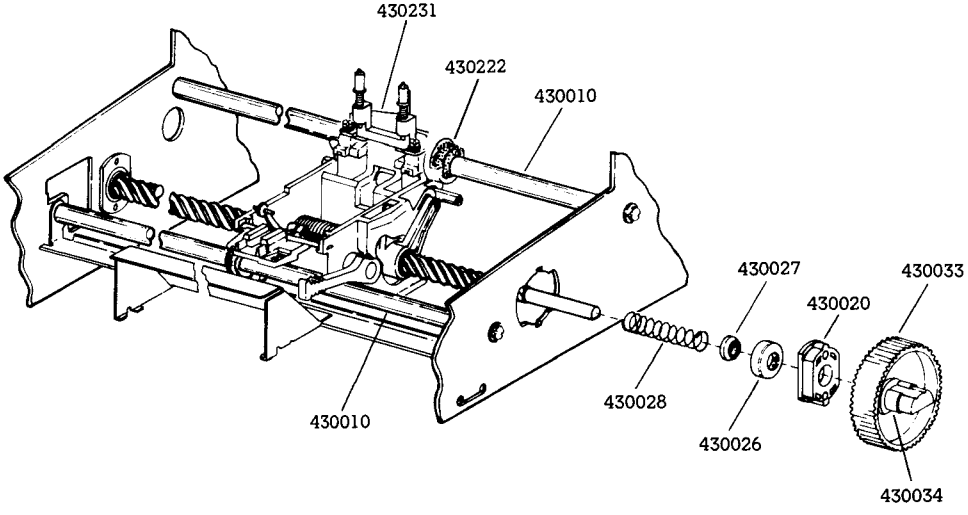
① 430047 Motor w/Cable and Encoder

F. PARTS (Cont)

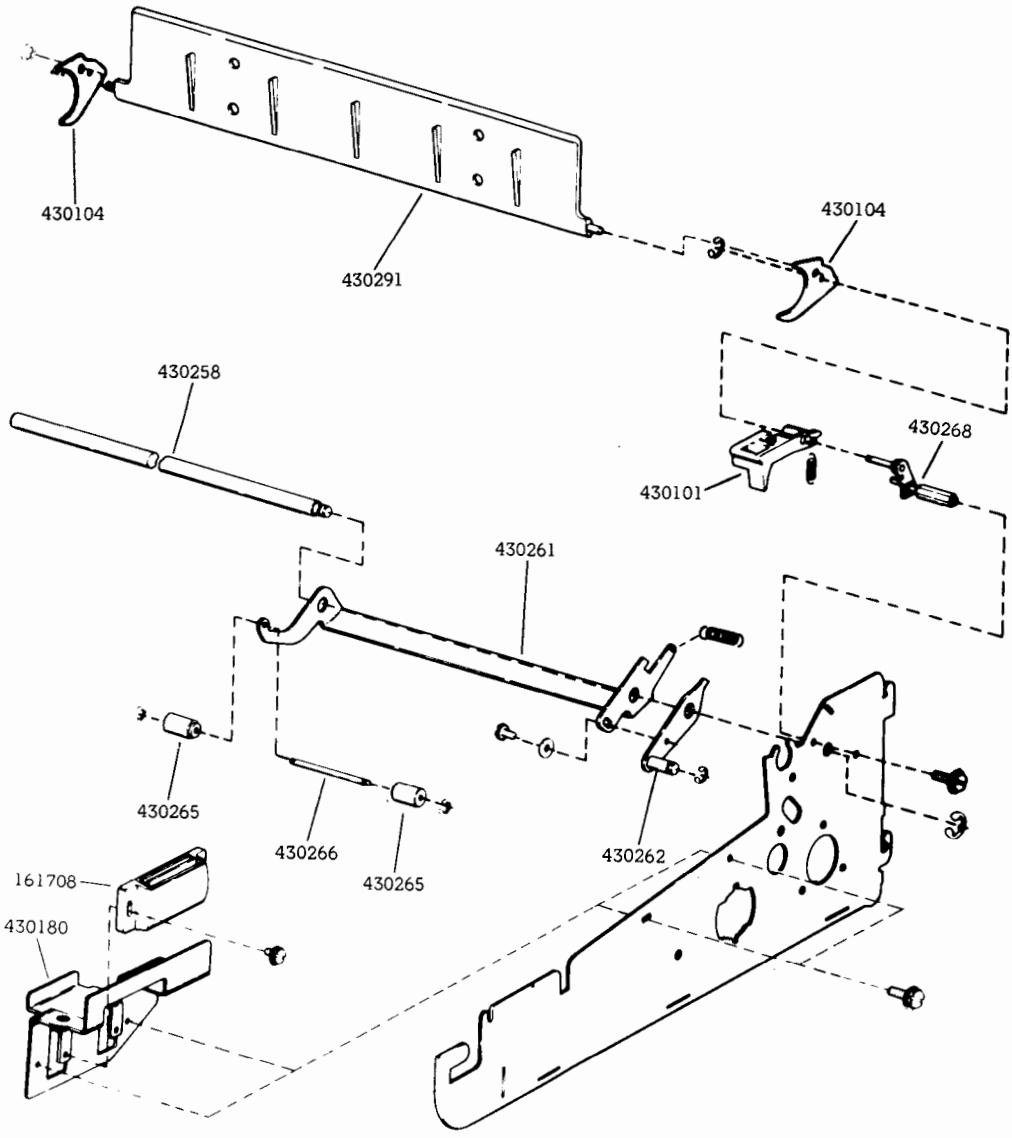
2. PARTS (Cont)

Spacing Drive and Lead Screw





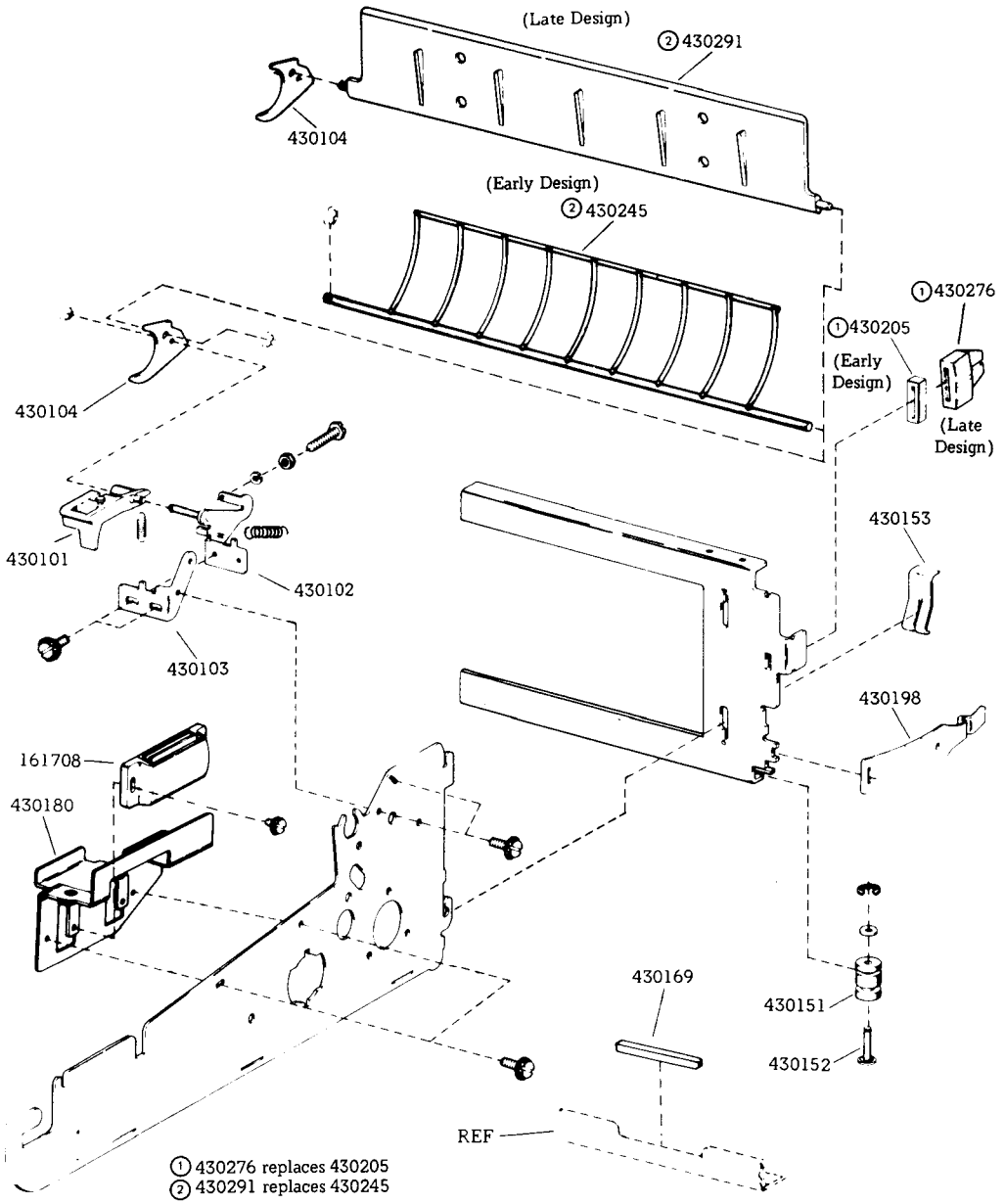
Right Side Frame (Friction Feed)



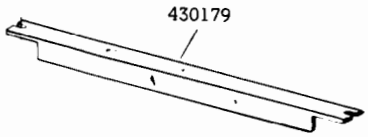
F. PARTS (Cont)

2. PARTS (Cont)

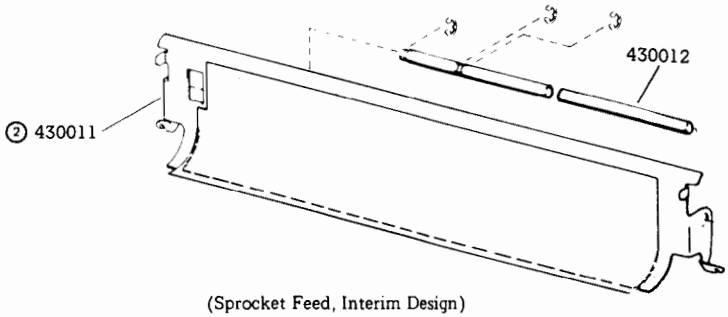
Right Side Frame (Sprocket Feed) and Rear Frame



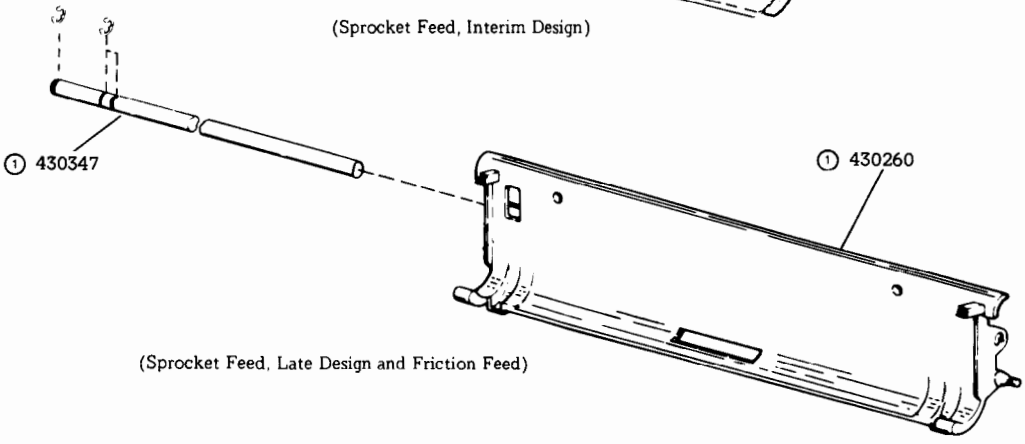
Paper Tray



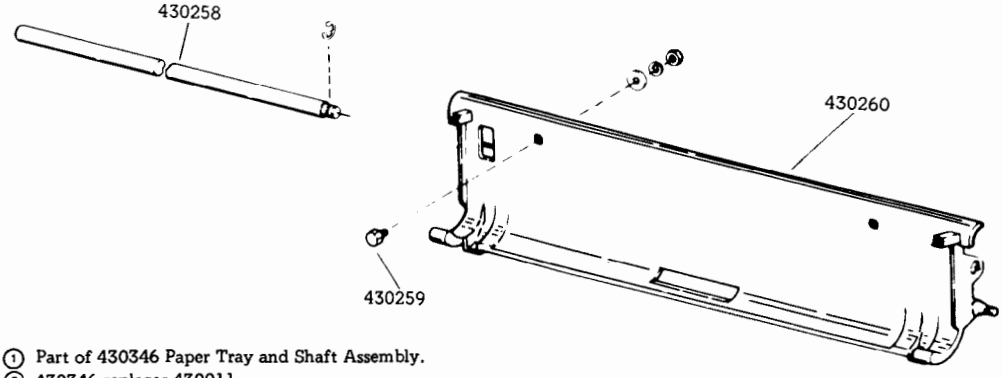
(Sprocket Feed, Early Design)



(Sprocket Feed, Interim Design)



(Sprocket Feed, Late Design and Friction Feed)

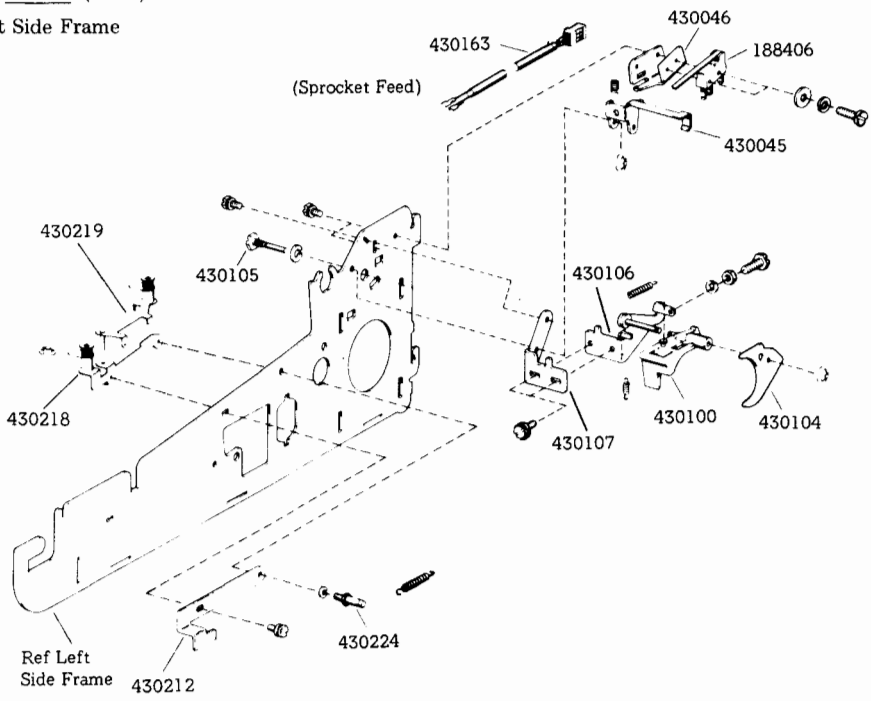


① Part of 430346 Paper Tray and Shaft Assembly.
② 430346 replaces 430011.

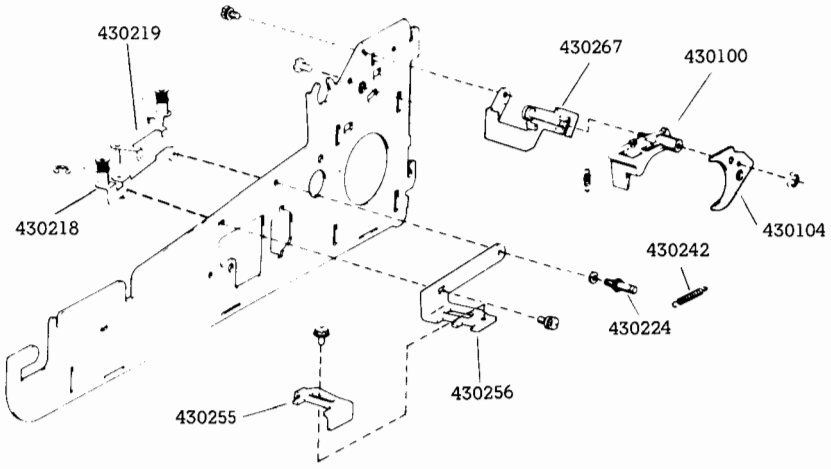
F. PARTS (Cont)

2. PARTS (Cont)

Left Side Frame



(Friction Feed)



3. NUMERICAL INDEX

Note: One spare should be available in each maintenance area, unless otherwise specified in parentheses.

*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.

PART 3 — 43 BUFFERED OPERATOR CONSOLE

INDEX

PART 3 — 43 BUFFERED OPERATOR CONSOLE

A. TROUBLESHOOTING

CONTENTS PAGE

1. GENERAL

1.01 This part provides troubleshooting information for the 43 Buffered Operator Console (opcon).

1.02 Opcon troubleshooting is initiated by the 43 Buffered KSR Teleprinter Troubleshooting, Page 1-22 or when trouble in the opcon is suspected from symptoms observed.

1.03 Analysis in this part is limited to isolating the trouble within the opcon up to its electrical interface at the logic card. The 43 opcon must be tested as part of a 43 Buffered KSR Teleprinter. Refer to Page 1-30. Where analysis indicates the trouble is not in the opcon, return to Part 1, D. TROUBLESHOOTING for further analysis.

1.04 When a trouble is verified to be in the opcon (by replacement of the opcon) this part should be used to help isolate the trouble to any replaceable components to correct the trouble. The opcon is returnable to the Teletype Product Service Center for repair as a unit 43K202/GAB. Pack in carton (using conductive plastic bag) that was used to pack replacement opcon. High voltage static discharge can damage opcon circuitry. The 346392 wrist strap is available to ground service personnel.

1.05 Isolation and correction of troubles is based on electrical and mechanical checks and parts replacement.

Reference sections are:

Page 3-4	Wiring
Page 3-5	Disassembly/Reassembly
Page 3-12	Parts

1.06 Trouble analysis is presented in the form of a "20 Questions" routine in 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 opcon pass the keyboard test (see Page 6-1 [WHEN TROUBLE OCCURS])?	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 opcon.
1b. Exit test mode. Does keyswitch used to light or extinguish indicator, function properly? (in LOCAL & KP off)	Replace opcon.	Replace keyswitch.
2. Does the CAPS LOCK key 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 Teleprinter Troubleshooting.
3a. Does the key fail in all modes? (Shift, Unshift, Ctrl, Caps Lock etc.)	Replace keyswitch. Replace opcon.	Replace opcon.

B. WIRING

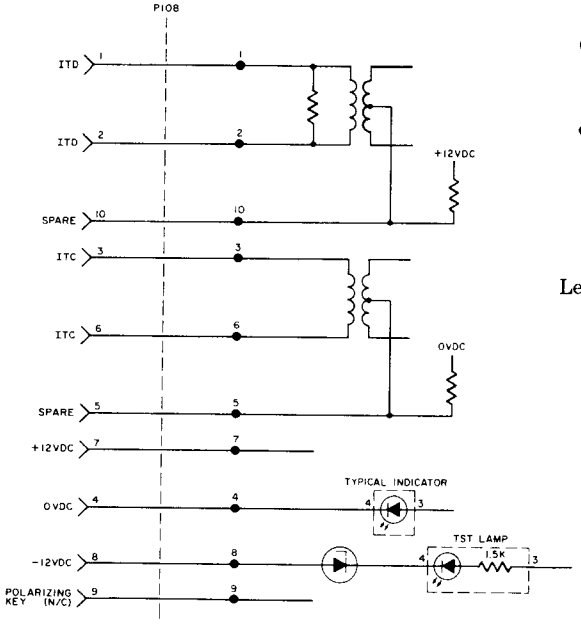
CONTENTS PAGE

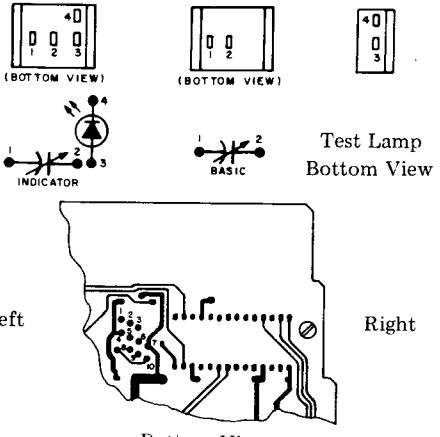
1. GENERAL

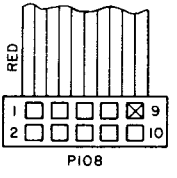
1.01 This part provides wiring information for the 43 Buffered Operator Console.

1.02 For additional wiring information, plug or cable locations, refer to Part 1, E. WIRING, Page 1-28.

2. WIRING







C. DISASSEMBLY/REASSEMBLY

CONTENTS

1. GENERAL

1.01 This part provides disassembly/reassembly procedures for the 43 Buffered Operator Console (opcon) (Fig. 1).

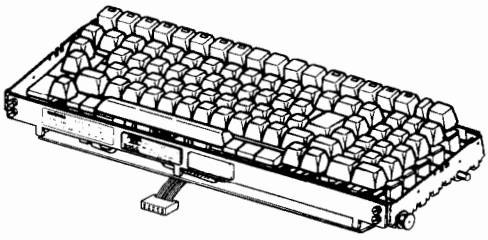


Fig. 1--43K202/GAB Operator Console

Note: All part numbers shown in this manual are Teletype Corporation part numbers.

1.02 The operator console 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 operator consoles for repair.

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 a subassembly or part from the operator console, follow the removal procedure and note the sequence of removal to enable proper reassembly.

1.04 Refer to Maintenance Tools, Section 570-005-800TC or 311B Bulletin 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 of the 43 Buffered Operator Console, refer to 2. TOOLS REQUIRED.

1.05 Precautions should be taken to assure that the opcon is disassembled and reassembled under clean conditions. No oil, grease, or other liquids shall be allowed on loose parts, subassemblies, keyswitches, or the complete opcon.

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

1.07 When removing a subassembly or part from the opcon, 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.

1.08 Refer to Teleprinter Disassembly/Reassembly, Page 1-44 for opcon removal and replacement procedures.

C. DISASSEMBLY/REASSEMBLY (Cont)

2. TOOLS REQUIRED

2.01 The following tools are recommended for use 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
	Customer Provide Tools
	Soldering Iron (Low Wattage)
	Desolderer

3. DISASSEMBLY/REASSEMBLY

3.01 Spacebar Mechanism

(a) Disengage the leaf spring (bronze colored) from the wire bail using a spring hook and pull towards the front (Fig. 2).

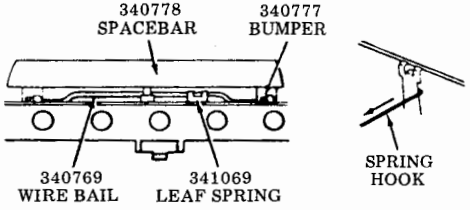


Fig. 2—Leaf Spring Disengagement

(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. 3).

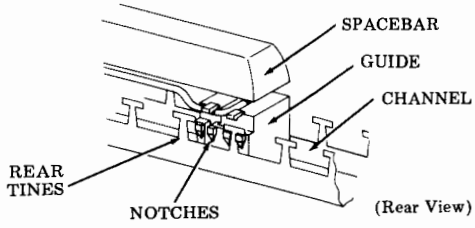


Fig. 3—Spacebar Removal

(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. 4).

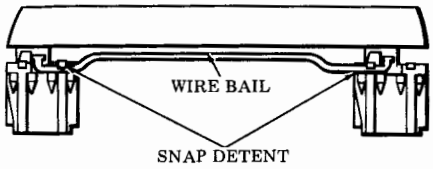


Fig. 4—Wire Bail Removal

(e) In reassembly, make sure the four tines engage the notches in the spacebar housing and the leaf spring is engaged to the wire bail.

(f) Check mechanical operation of the spacebar so that it returns to its unoperated position freely when depressed and released slowly.

3.02 Keytop Removal (Fig. 5)

(a) There are two types of keytops used on the operator console.

(1) Control Keytop

Indicator
Non-Indicator

(2) Data Keytop

Fig. 5—Keytops

(b) To remove data keytops, place 346260 tool over the keytop and pull up to remove (Fig. 6).

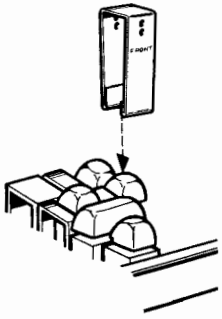


Fig. 6—Data Keytop Removal

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

(c) To remove control keytops (Fig. 7):

(1) Grasp keytop using thumb and index finger.

(2) Exert upward force until keytop releases.

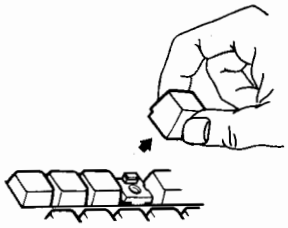
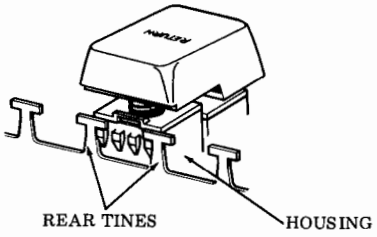


Fig. 7—Control Keytop Removal

(d) To remove the RETURN keytop with housing.

(1) Remove keytops BACKSPACE, OVERLINE, GS, US, LINE FEED, SHIFT, and QUOTES 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. 8).



(Rear View)

Fig. 8—Rear Tine Disengagement

(3) Continue applying upward pressure to the RETURN keytop and disengage the the front tine from housing using a spring hook. Remove keytop with housing from channel (Fig. 9).

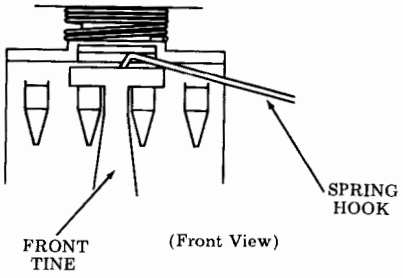


Fig. 9—Front Tine Disengagement

(4) In reassembly, insert housing with keytop; observe position of locating lug on housing and press into channel. Housing must snap fully into front and rear channel tines.

3.03 Keyswitch Removal

(a) Remove keytop.

(b) Remove circuit card shield by removing the four screws securing it to the opcon and cut cable tie securing loose end of cable to the opcon.

(c) Remove solder from around terminal pins of keyswitch to be removed (Fig. 10).

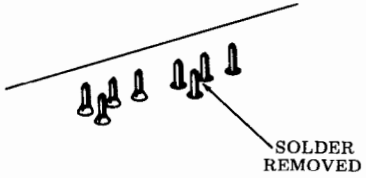


Fig. 10—Solder Removal

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.

C. DISASSEMBLY/REASSEMBLY (Cont)

(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. 11).

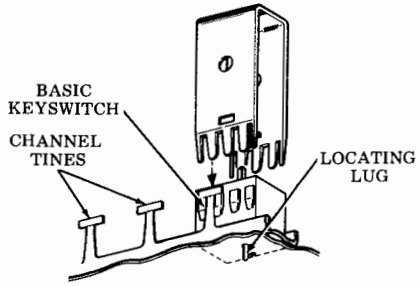


Fig. 11—Keyswitch Removal

Note: The tines of the tool must pass between the keyswitch housing and the inside of the tines on the channel.

(e) In reassembly, 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.

3.04 346927 Cable Removal

(a) Remove the Blocking, REC MSG WTG, KP, ALARM, FULL DUPLEX, INTRPT, TERM READY, TERM ON LINE and TERM LOCAL keytops. (See Fig. 12)

(b) Remove the keyswitches associated with the keytops in (a).

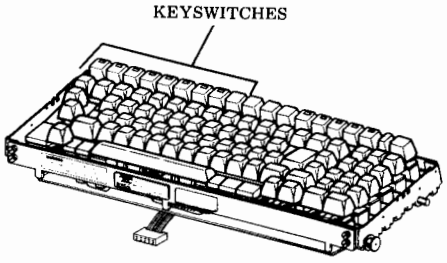


Fig. 12—Keyswitch Identification

(c) Remove solder from around connector pins of cable to be removed (Fig. 13).

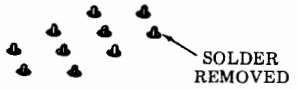


Fig. 13—Connector Pins

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. 14).

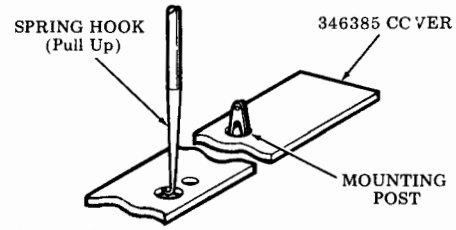


Fig. 14—Cover Removal

(e) Grasp the cable and cable connector and exert upward force until cable connector releases.

(f) Cut cable tie securing the cable to the circuit card.

(g) Remove rear plate and left side frame. (Fig. 15).

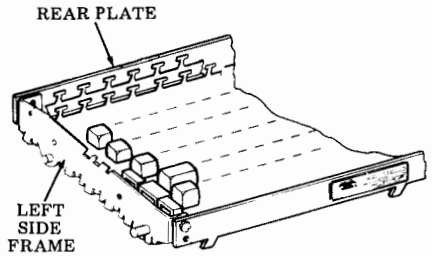


Fig. 15—Cable Removal

(h) Slide cable to the left until it clears the circuit card and remove.

(i) In reassembly, insert new cable connector into circuit card holes and press into place. Route cable as shown in Fig. 16. Hold cable connector in place and resolder.

(j) Fold cable under circuit card then fasten cable to card using locally furnished cable tie. Fasten in two places. See Fig. 16.

(k) Reassemble keyswitches and keytops removed in steps (a) and (b).

(l) Replace circuit card cover removed in step (d).

(m) Replace rear plate, left side frame and circuit card shield.

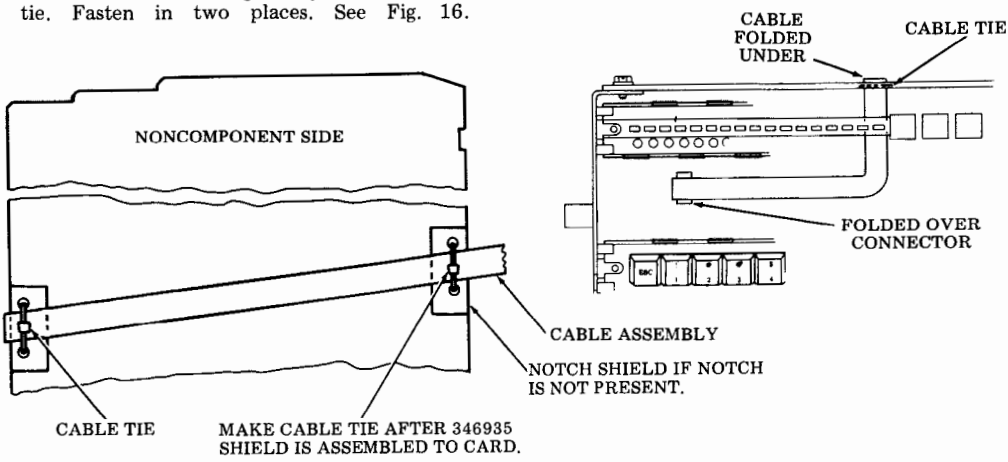


Fig. 16—Cable Replacement

4. KEYTOP AND KEYSWITCH IDENTIFICATION (Fig. 17, 18 and 19)

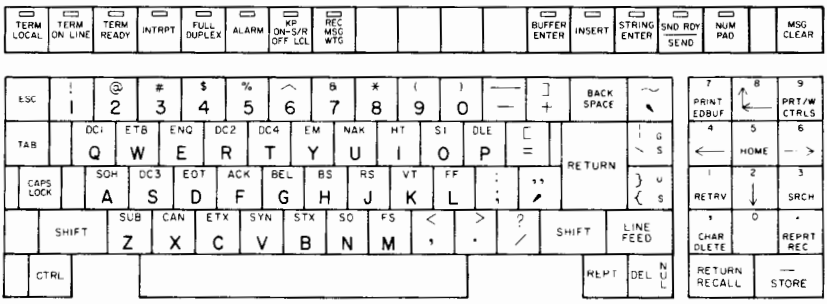


Fig. 17—Keyboard Layout

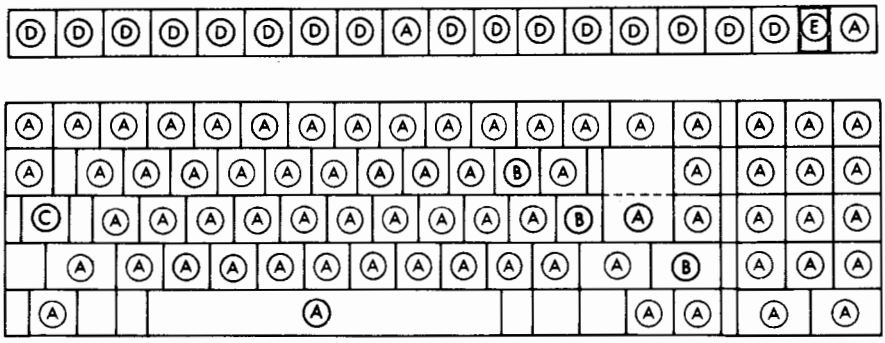
C. DISASSEMBLY/REASSEMBLY (Cont)

4. KEYTOP AND KEYSWITCH IDENTIFICATION (Cont)

TP PART NO.	KEYTOP DESCRIPTION	TP PART NO.	KEYTOP DESCRIPTION
340701	BLOCKING — CONTROL	340894	CAPS LOCK
		340975	ESC
340714	BLOCKING — DATA	340976	BACKSPACE
		340977	~ `
340778	SPACEBAR	340978	HT I
340821	! 1	340979	DLE P
340822	@ 2	340981	¦ GS \
340823	# 3	340982	BS H
340824	$ 4	340983	} US {
340825	% 5	340984	SUB Z
340826	^ 6	340985	SYN V
340827	& 7	340986	LINE FEED
340828	* 8	340987	CTRL
340829	(9	340988	REPT
340830	) 0	346106	INTRPT
340831	— .	346127	TERM READY
340838	DC1 Q	346163	ALARM
340839	ETB W	346403*	RETURN
340840	ENQ E	346589	TAB
340841	DC2 R	346590	DEL NUL
340842	DC4 T	346591	7 PRINT EDBUF
340843	EM Y	346592	8 ↵
340844	NAK U	346593	9 PRT/W CTRLS
340846	SI O	346594	4 ←
340852	SOH A	346595	5 HOME
340853	DC3 S	346596	6 →
340854	EOT D	346597	1 RETRV
340855	ACK F	346598	2 ↓
340856	BEL G	346599	3 SRCH
340858	RS J	346600	, CHAR DLETE
340859	VT K	346601	0
340860	FF L	346602	. REPRT REC
340861	: ;	346603	RETURN RECALL
340862	" /	346604	- STORE
340867	SHIFT	346839	TERM LOCAL
340869	CAN X	346840	TERM ON LINE
340870	ETX C	346841	FULL DUPLEX
340872	STX B	346842	KP ON—SR OFF—LCL
340873	SO N	346843	REC MSG WTG
340874	FS M	346844	BUFFER ENTER
340875	< ,	346845	INSERT
340876	> .	346846	STRING ENTER
340877	? /	346847	SND RDY SEND
340889	] +	346848	NUM PAD
340890	[=	346849	MSG CLR

*The 340764 compression spring between the 346403 keytop and the housing must be ordered separately.

Fig. 18—Keytop 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. 19—Keyswitch Identification

5. SPACER HOUSING AND REFERENCE IDENTIFICATION

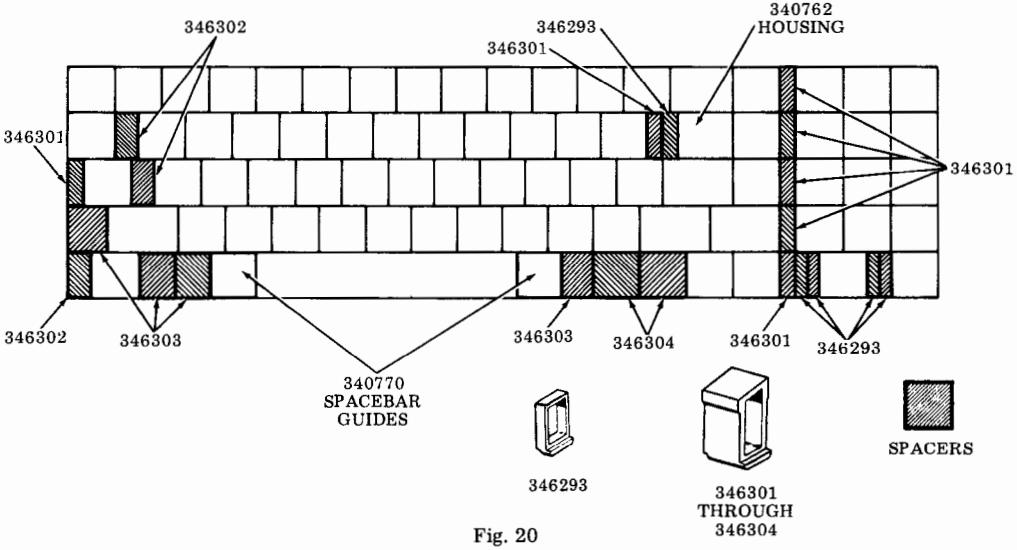


Fig. 20

D. PARTS

CONTENTS PAGE

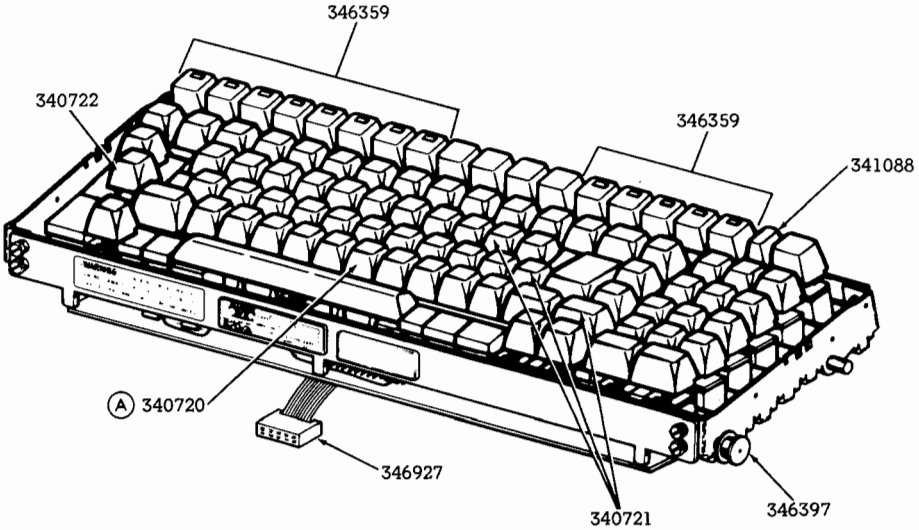
1. GENERAL

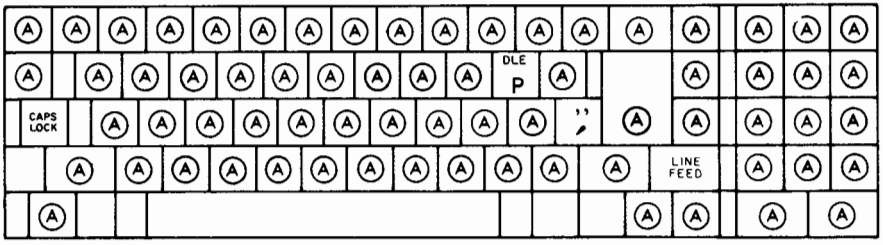
1.01 The parts in this part are maintenance spares for the 43 Buffered Operator Console. They should be available, in the quantities shown, in each maintenance area to correct troubles in the operator console.

1.02 All part numbers shown in this manual are Teletype Corporation part numbers.

1.03 Troubleshooting and disassembly/reassembly information for these parts is provided on Pages 3-3 and 3-5, respectively.

2. PARTS





3. NUMERICAL INDEX

QTY PER MAINTENANCE AREA	PART NUMBER	DESCRIPTION	PAGE
3	340720	Keyswitch	3-12
1	340721	Keyswitch	3-12
1	340722	Keyswitch	3-12
1	341088	Indicator Assembly	3-12
1	346359	Keyswitch	3-12
2	346397	Bushing	3-12
1	346927	Cable	3-12

PART 4 — 43 BUFFERED CONTROLLER WITH POWER SUPPLY

INDEX PAGE

PART 4 — 43 BUFFERED CONTROLLER WITH POWER SUPPLY

A. TROUBLESHOOTING

CONTENTS PAGE

1. GENERAL

1.01 This part provides troubleshooting information for the 43 Buffered Controller.

1.02 Controller troubleshooting is initiated by the 43 Buffered KSR Teleprinter Troubleshooting, Page 1-22 or when trouble in the controller is suspected from symptoms observed.

1.03 Analysis in this section is limited to isolation of the trouble within the controller and its associated power supply up to its electrical interface to the KP set SSI circuit card. Refer to Page 1-28. Where analysis indicates the trouble is not in the controller or its associated power supply, return to the Teleprinter Part 1, for further analysis.

1.04 All numbers shown in this manual are Teletype Corporation part numbers.

1.05 The following components are returnable to Teletype Product Service Centers for repair:

410251	IXL Circuit Card
410291	CIU/SSI Circuit Card
410294	4K Memory Circuit Card
410297	16K Memory Circuit Card
410747	ROM Circuit Card
430770	Power Supply

1.06 Isolation and correction of troubles is based on electrical checks and parts replacement.

Reference sections are:

Page 4-5 WIRING
Page 1-44 DISASSEMBLY/REASSEMBLY
Page 1-62 PARTS

1.07 A volt meter is required for measuring power supply voltages.

1.08 Trouble analysis is presented in the form of a "20 Questions" routine in 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.	Is LED 2 lit on the IXL circuit card? (power cord to controller and KP set plugged in and power available, KP switch on) (Top) (1) o (2) ● (3) o	Go to 2.	Go to 1a.
1a.	Disconnect controller cable from power supply and measure at power supply for +12V dc, -12V dc and +5V dc. Are any voltages persent?	Go to 1c.	Check AC cord connection. Check fuse F4 and replace if blown. Replace power supply if fuse blows again. Replace power supply.
1c.	Are all voltages present?	Go to 1d.	Replace power supply.
1d.	Reconnect the controller cable to the power supply. remove all circuit cards from controller. Measure the voltages at the cable connection to the controller. Are all voltages present?	Go to 1e.	Check continuity of cable. Replace if bad. Replace back panel.
1e.	Replace the controller circuit cards one at a time measuring the voltages at the controller after each card. Are all voltages present?	Replace IXL card if LED 2 is not lit. If LED 2 on IXL card is lit, check for intermittent short or open.	Replace circuit card that caused voltage to change.
2.	Does controller pass self-test? (See Page 4-4 for for self-test)	Refer to Teleprinter Troubleshooting Page 1-22 for further analysis.	Replace defective circuit card indicated by self-test.

A. TROUBLESHOOTING (Cont)

3. SELF-TEST PROCEDURES FOR CONTROLLER

3.01 The self-test should be performed when so directed by the response to questions in the Teleprinter Troubleshooting Page 1-22 or Controller With Power Supply Troubleshooting.

3.02 Preliminary Notes

1. Information stored in the volatile memory will be lost when this test is performed.
2. Before initiating test, disconnect or turn off ac power to 430770 power supply and make sure all circuit cards are fully seated.
3. During test, ignore any data that may print or keys that may light on the operator console.
4. To initiate test, with power off, depress and hold Self-Test switch on the 410251 IXL circuit card.

3.03 Test Procedure

1. With Self-Test switch depressed, apply ac power to 430770 power supply and observe LED pattern for Step 1 in Self-Test chart. Release Self-Test switch.
2. For Step 1 and for each additional step, observe proper LED pattern for the time indicated followed by LED2 flashing. Then, wait 5 seconds and go to the next step by depressing the Self-Test switch for at least 1/2 second.
3. If patterns for Steps 1 thru 7 are correct, the controller and 430770 power supply are operating properly!

3.04 To Terminate Self-Test

1. Disconnect or turn off power. Self-Test switch must be released out. (If locked in, release by rotating 1/4 turn counterclockwise.)
2. Wait at least 3 seconds before applying power to resume normal operation.

SELF TEST PATTERNS FOR CONTROLLER

(BEFORE PROCEEDING WITH TEST, REFER TO MANUAL 387 OR 406 FOR SELF TEST PROCEDURES)

STEP	LED PATTERN	TIME BEFORE LED#2 STARTS FLASHING (INDICATES CARD PASSED TEST)	CARD TESTED
1	(1) ● TOP (2) ● (3) ●	1 SEC.	410251 (IN SLOT X04)
2	○ ● ●	1 SEC.	410747 (PIGGY BACK ON 410251)
3	● ○ ●	55 SEC.	410294 W/STRAP S1 (IN SLOT X03) OR 410297 (IN SLOT X02)
4	○ ○ ●	62 SEC. (IF SLOT X02 IS EMPTY SEE NOTE)	410297 (IN SLOT X02)
5	○ ● ○	37 SEC. (IF SLOT X02 OR X03 ARE EMPTY SEE NOTE)	410294 W/O STRAP S1 OR 410297 (IN SLOT X03)
6	● ○ ○	45 SEC. (IF SLOT X02 OR X03 ARE EMPTY OR HAVE CARDS WITH DIFFERENT PART NUMBERS SEE NOTE)	410297 (IN SLOT X03)
7	● ● ○	1 SEC.	410291 (IN SLOT X01)

SYMBOLS:
● LED "ON"
○ LED "OFF"

NOTE: LED#2 WILL NOT FLASH. WAIT 5 SEC. AND PROCEED TO NEXT STEP.

LED#2 IS LIT DURING NORMAL OPERATION.

B. WIRING

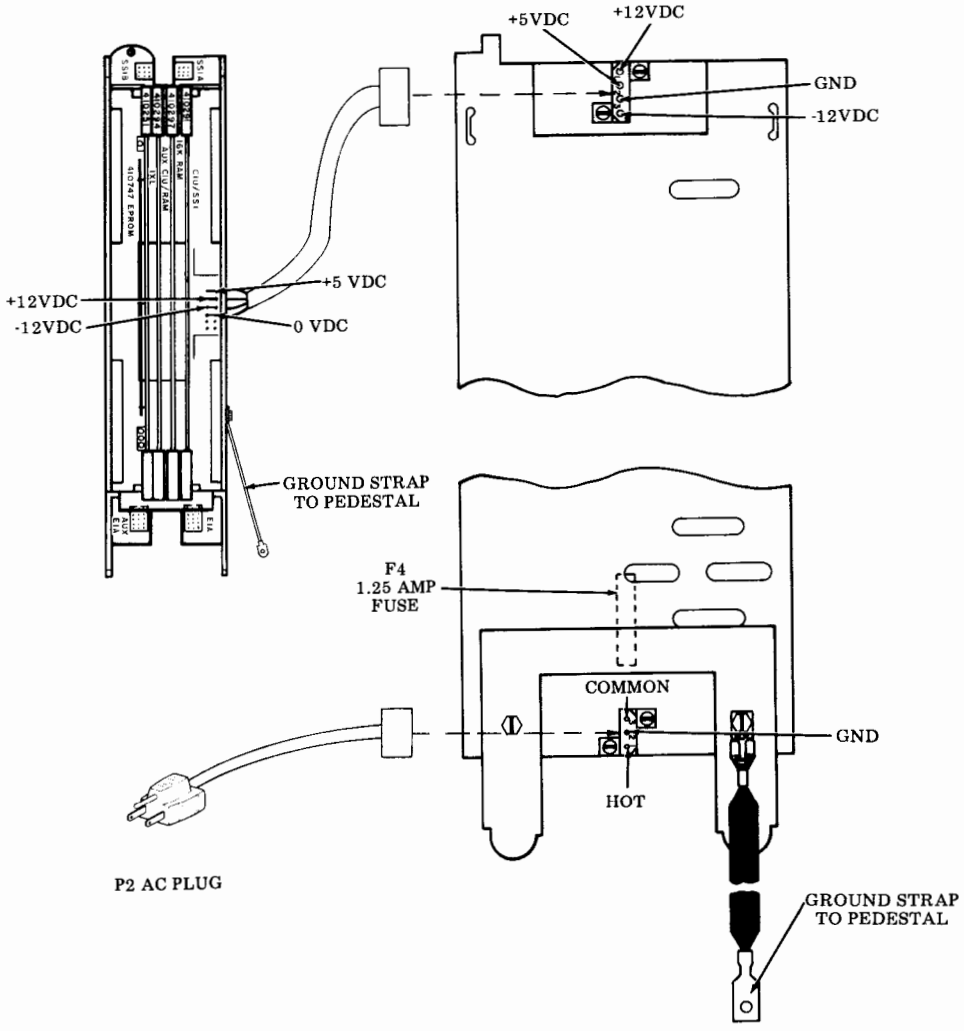
CONTENTS PAGE

1. GENERAL

1.01 This part provides wiring information for the 43 Buffered Controller with Power Supply.

1.02 For additional wiring information, plug or cable locations, refer to Page 1-28 Teleprinter Wiring.

2. WIRING



PART 5 — 43 BUFFERED PAPER HANDLING AND ENCLOSURES

INDEX

PART 5 — 43 BUFFERED PAPER HANDLING AND ENCLOSURES

A. ADJUSTMENTS

CONTENTS

1. GENERAL

1.01 This part provides adjustment information for the 43 Buffered Cabinet.

1.02 After an adjustment is completed, tighten any screws or nuts loosened to make the adjustment.

1.03 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.

1.04 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:

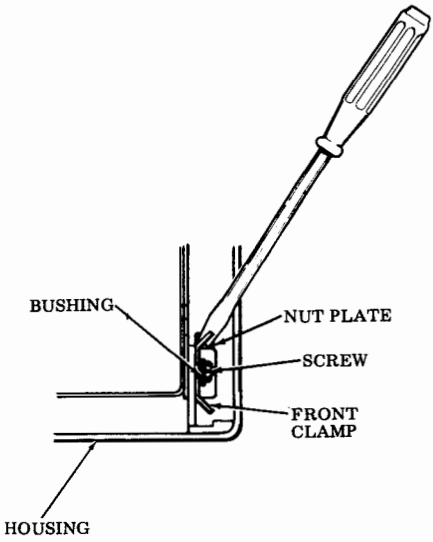
(1) Requirement
Left to Right Positioning — When the free play movement of the cover (left to right) is taken up lightly in each direction, the cover shall not touch any opcon keytops.

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)

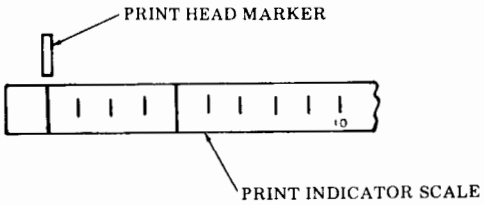
COLUMN INDICATOR POSITIONING

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.



B. PARTS

CONTENTS PAGE

1. GENERAL

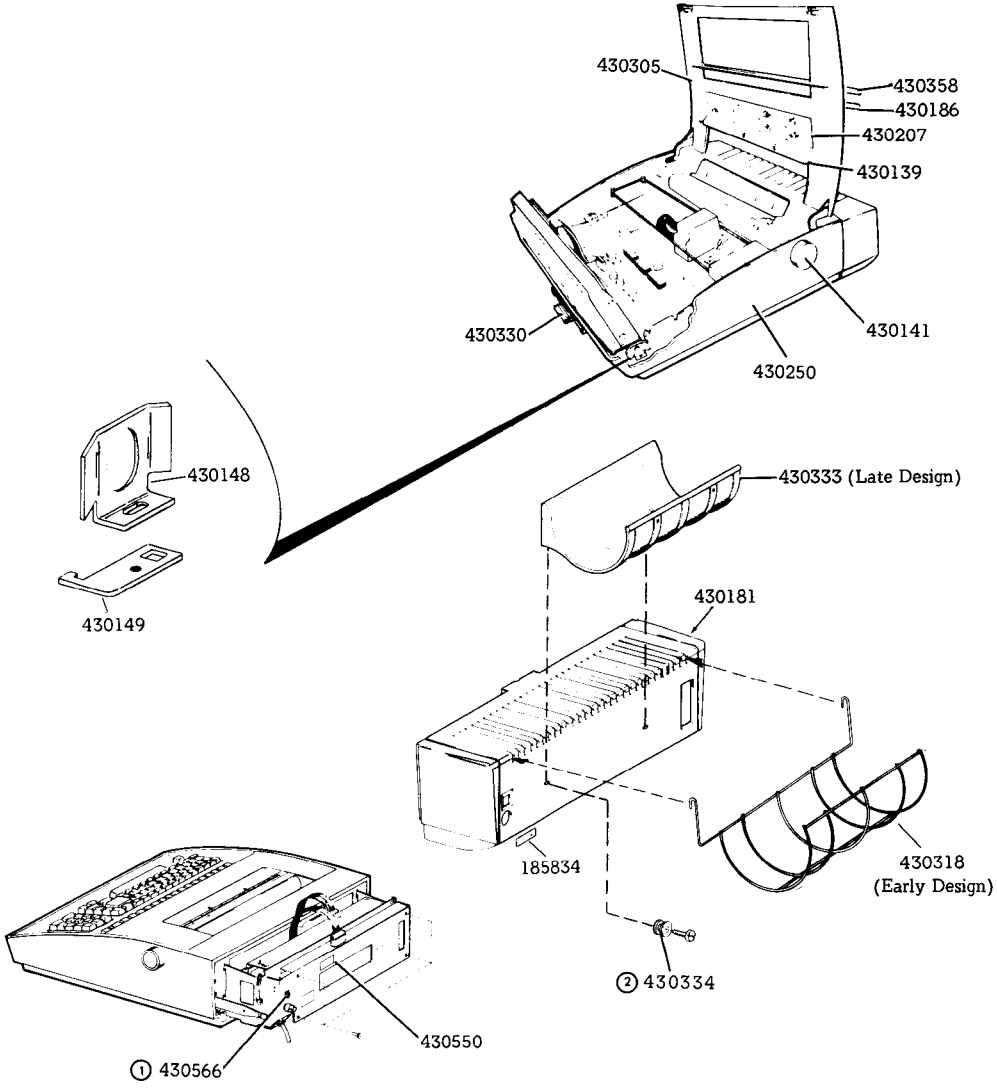
1.01 The parts in this part are maintenance spares for the 43 Buffered Paper Handling and Enclosures. They should be available in the quantities shown in each maintenance area to correct possible troubles or to meet appearance requirements of the 43 Buffered Cabinets.

1.02 All part numbers shown in this manual are Teletype Corporation part numbers.

1.03 Replacement of cabinet parts is specified on Page 1-61, ROUTINE MAINTENANCE. DISASSEMBLY/REASSEMBLY is specified on Page 1-44.

2. PARTS

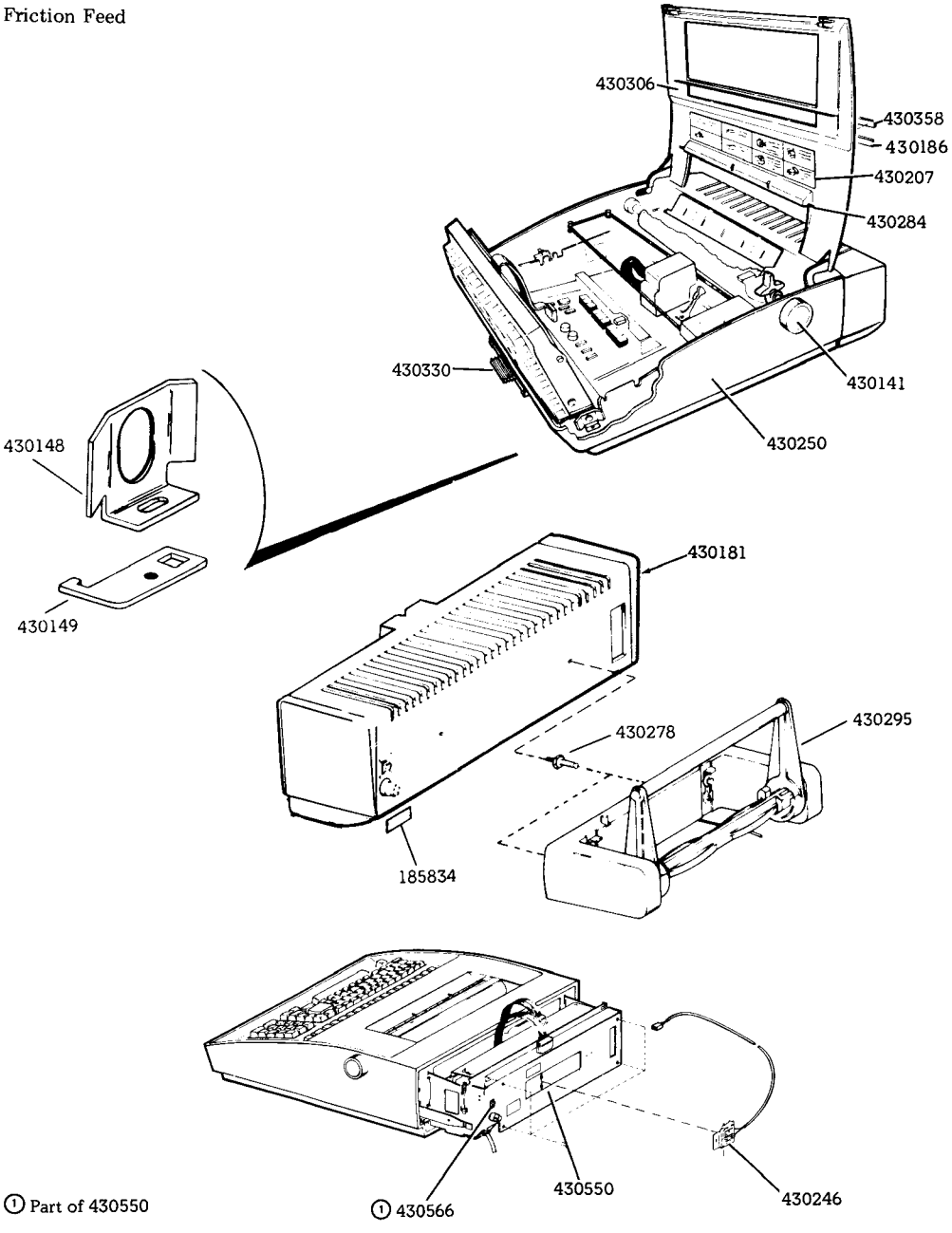
Sprocket Feed



① Part of 430550
② Used with 430333 Paper Holder only

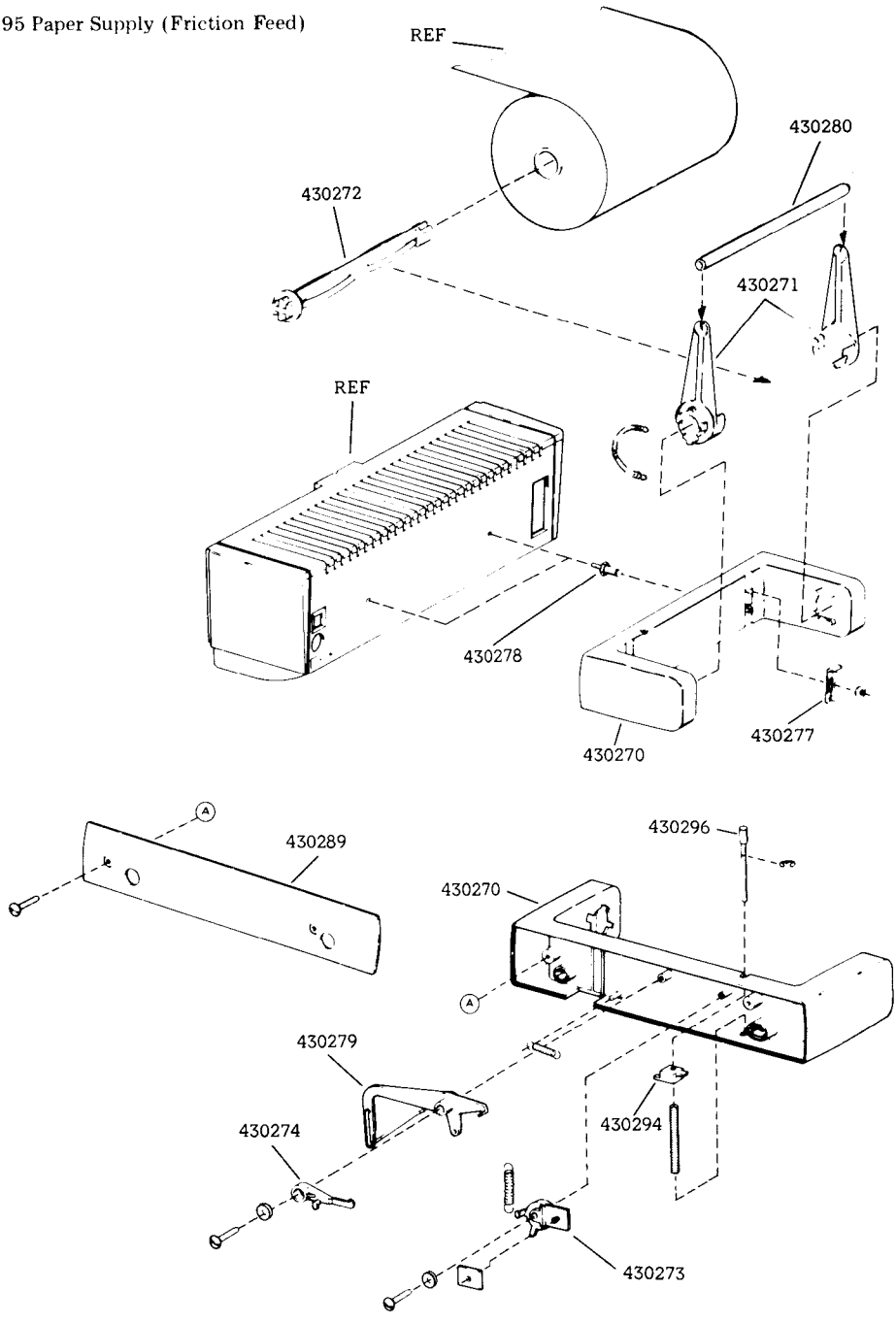
B. PARTS (Cont)

Friction Feed

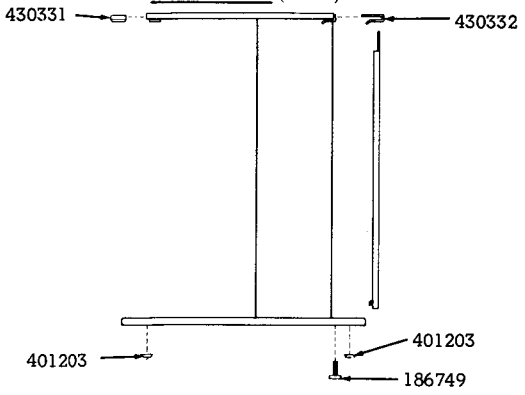


① Part of 430550

430295 Paper Supply (Friction Feed)



B. PARTS (Cont)



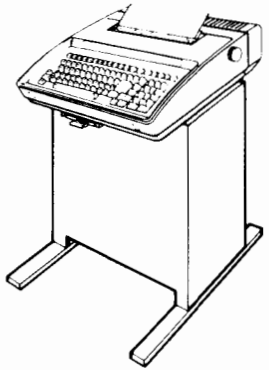
3. NUMERICAL INDEX

QTY PER MAINTENANCE AREA	PART NUMBER	DESCRIPTION	PAGE
1	185834	Plate, Fuse	5-5,5-6
2	186749	Bolt w/cap	5-8
5	401203	Bumper	5-8
1	430139	Scale, 132-Column	5-5
2	430141	Knob w/Insert	5-5,5-6
2	430148	Clamp	5-5,5-6
2	430149	Plate, Nut	5-5,5-6
1	430181	Bustle	5-5,5-6
1	430186	Nameplate, Teletype	5-5,5-6
1	430207	Label Instruction	5-5,5-6
1	430246	Assembly, Switch Bracket	5-6
1	430250	Housing w/Holder	5-5,5-6
1	430270	Support, Paper Roll	5-7
1	430271	Lever, Arm	5-7
1	430272	Spindle, Paper	5-7
1	430273	Cam, Low Paper	5-7
1	430274	Cam, Follower	5-7
1	430277	Latch	5-7
5	430278	Post	5-6,5-7
1	430279	Lever, Paper Sensor	5-7
1	430280	Roller, Paper	5-7
1	430284	Scale, 80-Column	5-6
1	430289	Plate, Rear Cover	5-7
1	430294	Lever, Reset	5-7
1	430295	Assembly, Paper Supply	5-6
1	430296	Shaft, Lever	5-7
1	430305	Cover, Sprocket	5-5
1	430306	Cover, Friction	5-6
1	430318	Holder, Paper (Early Design)	5-5
1	430330	Directory Card w/Labels	5-5,5-6
2	430331	Clip, Front	5-8
2	430332	Clip, Rear	5-8
1	430333	Paper Holder (Late Design)	5-5
2	430334	Bushing	5-5
1	430358	Label	5-5,5-6
1	430550	Rear Frame Assembly	5-5,5-6
1	430566	Switch, Rocker	5-5,5-6

PART 6 — ATTENDANT MANUAL

HOW TO OPERATE MANUAL 386

HOW TO OPERATE



Manual 406 Part 6
also available as..
Manual 386
Issue 2, November 1978

the 43 teleprinter

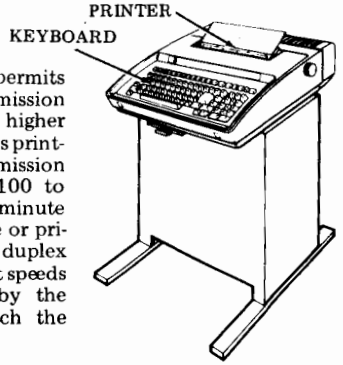
BUFFERED KSR

TABLE OF CONTENTS

TABLE OF CONTENTS (Cont)

INTRODUCTION

Your Buffered 43 Teleprinter is operationally compatible with existing Basic 43 Teleprinters, 33 and 35-type terminals and time-sharing computers. Buffering permits storing messages prepared off-line for later transmission or simultaneous message preparation while receiving.



Buffering also permits batch-type transmission and line speeds higher than the continuous printing rate. Transmission speeds are from 100 to 1800 words per minute over the telephone or private line in full duplex operation. Different speeds can be selected by the attendant to match the remote station.

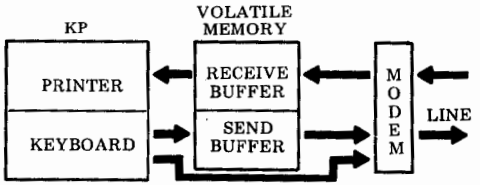
The 43 Teleprinter may be connected to an external communications device (modem) which may be associated with a telephone for connections and for transmission of data. A permanent connection via private line may also be used in these arrangements.

The telephone is used to establish a data call or to answer a call manually or automatically. In some arrangements the Buffered 43 may be connected directly to a computer or remote terminal.

Included in the Buffered 43 is a 132-column pin-feed or 80-column friction feed matrix printer, keyboard with numeric pad and buffer (nonvolatile and volatile memory).

Keyboarded data can be sent directly on-line or stored locally in the send buffer of the volatile memory. The stored data (or message) can then be recalled for editing or sent from storage manually or automatically.

If the Keyboard-Printer (KP) is not available (local functions) when the terminal is on-line, received messages are stored in the receive buffer of the volatile memory until the printer is available for printing.

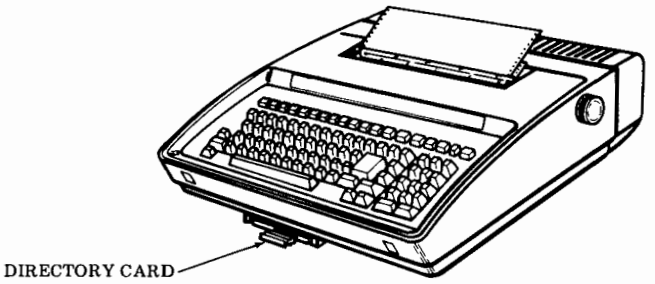


The total amount of data that can be stored in the send and receive buffers is determined by the memory size provided. Memory size of 4,000, 16,000 or optional 20,000 characters are available.

The optional characteristics of your terminal are stored in the nonvolatile memory. A pull-out "Directory" card is located under the front bottom edge of the keyboard. This card contains the user programmable and not programmable by user options of your terminal on one side. The directory side of the card may be used to write in frequently used telephone numbers and note any extensions.

A table describing the user programmable options, prompt mnemonics that are used throughout this manual and procedures on how to change these options are given in the OPTIONS section of this manual.

Refer to the TELEPRINTER SUPPLIES AND MAINTENANCE section of this manual for paper and ribbon replacement information.



POWER TURN ON

The Buffered 43 is not operable unless both power cords are plugged into a source of ac power and the KP is turned on.

Memory Power

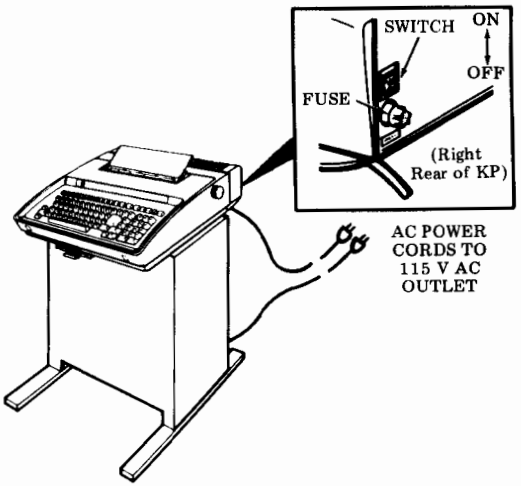
Power to the memory is always on when the ac power cord from the pedestal is plugged into a source of ac power.

- Volatile Memory (Data) — Data stored in the memory will be retained indefinitely unless the power cord is unplugged or power to the ac outlet is turned off.

- Nonvolatile (User Programmable Options) — The options will be in the original states indicated by an (*) on the "Directory" card, the first time power is applied to the memory. If power is turned off, the state of the options (either original or as user programmed) will not be affected for up to 17 days. After 17 days with power off, the options will revert to their original states.

KP Power

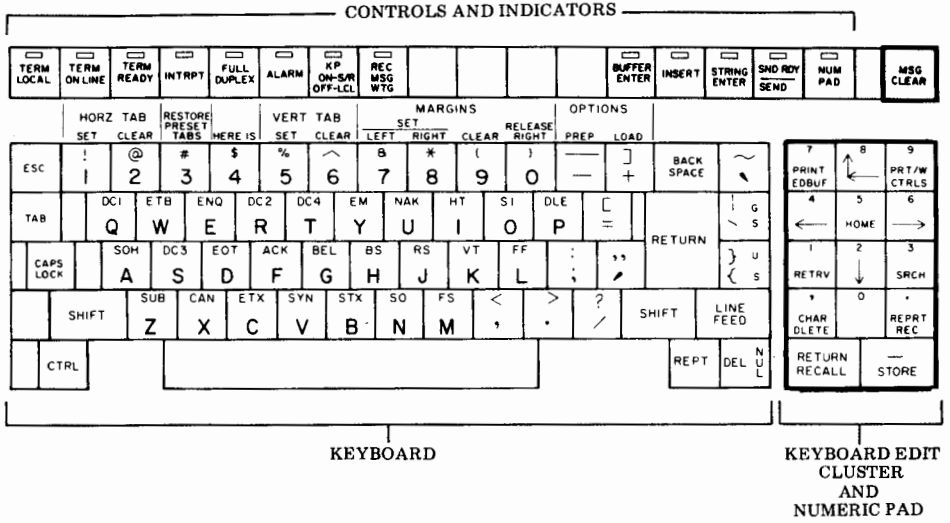
With both power cords plugged in, depress the upper half of the KP ON-OFF rocker switch to turn on KP.



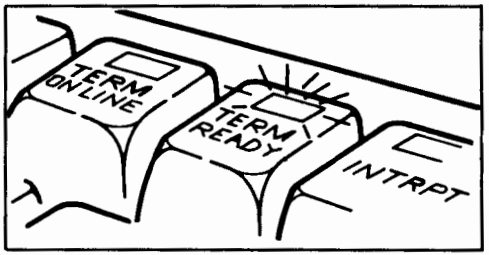
- If you are using a telephone, to originate and answer calls, the TERM READY and KP lamps normally light when all power to your terminal is first turned on. In systems where an on-line connection is directed to a distant terminal or computer, the TERM ON LINE key lights instead of the TERM READY key. Terminal may come up in the Options Prep mode (LOCAL key flashing) if power to the terminal has been off for more than 17 days.

- If only the KP power is turned off, the same lamps that were on will light again when KP power is turned back on.

KEYTOP ARRANGEMENT



CONTROLS AND INDICATORS



This section describes the purpose and operation of all controls and indicators on the 43 Buffered KSR. Nearly all the operating controls are across the top of the keyboard — some are on the keyboard.

Places terminal in Local mode — Causes disconnect if terminal is on-line. TERM READY lamp turns off. When TERM LOCAL lamp is on and KP lamp is off, local keyboard-printer operation is possible. Lamp flashes when in the Options Preparation mode.

Indicator Only — Lamp lights when Data mode is established on-line. If in Term Local mode, depress TERM READY and with Data mode established, lamp will light.

Lamp indicates terminal is ready to send or receive but on-line connection is not established. Depress key when in Term Local mode to go on-line.

This key is active on-line only. Operation of this feature is system dependent. Depression of this key may cause sending to stop at the remote station. If lamp lights on a received interrupt, keyboard operation will be inhibited on-line until INTRPT key is depressed (lamp extinguishes).

When lamp is off, terminal is operating in Half-Duplex operation (printer copies any sent data). Lamp lights indicating Full Duplex (only data received on-line will be printed) operation by depressing key or, if terminal is so optioned, will light at power turn on or following options load.

Lamp lights due to an alarm condition (ie, low paper, paper-out, cover open. Depress key to reset after clearing alarm condition.

When lamp is on, terminal is in the S/R (conversational) mode. The keyboard is actively on-line and the printer prints received data. Depression of key turns off lamp, places KP in Local mode even though the terminal may be on-line. If depressed when lamp is not on and REC MSG WTG lamp is on, will cause received message to print.

REC MSG WTG

Lamp turns on when receive buffer contains messages waiting to be printed. Depressing key causes printing of messages (KP goes to S/R mode). Depressing KP key when lamp is on will also cause printing. When all messages have been printed, lamp will turn off.

BUFFER ENTER

Depression causes KP to go Local and enter the Edit mode, even though the terminal may be on-line. In the Edit mode, messages can be prepared in the edit buffer, corrected as necessary and stored (see EDIT MODE section). Lamp flashes when edit/send buffer is nearly full. (EBWrn)

INSERT

Active only in the Edit mode otherwise bell rings. Depressing key turns lamp on; when lamp is on, keyboarded characters are inserted in the edit buffer at the current buffer location. Any following data in the edit buffer will be moved to the end of the line and to the next line until the edit buffer is full. Depress key to end Insertion mode. See Message Edit.

STRING ENTER

Active only in the Edit mode. Depressing key clears any previously entered string and causes terminal to accept a new string of up to 16 characters (lamp turns on). If more than 16 characters are entered, only the last 16 characters are accepted. The string is used for comparison in Buffer Search or Retrieve modes. Depress key to turn off lamp and exit mode. Mode is also exited when the Search or Retrieve is executed.

SND RDY SEND

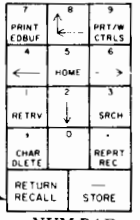
Lamp turns on when message is waiting to be sent in send buffer as a result of depressing the STORE key. When lamp is on, depress key to send; depress again to stop sending. Message may also be sent automatically if a start sending code (StrSn) is received. Lamp flashes when sending.

NUM PAD

When lamp is turned on by depressing key, the 14-key cluster at the right side of the keyboard functions primarily as a Numeric Pad. The RETURN key performs the same function as the LgKey option. With the lamp off, the lower designations (edit functions) are active.

Note: With the NUM PAD lamp on, edit functions can be performed by use with the CTRL or SHIFT keys.

In Num Pad mode, RETURN functions as LgKey.



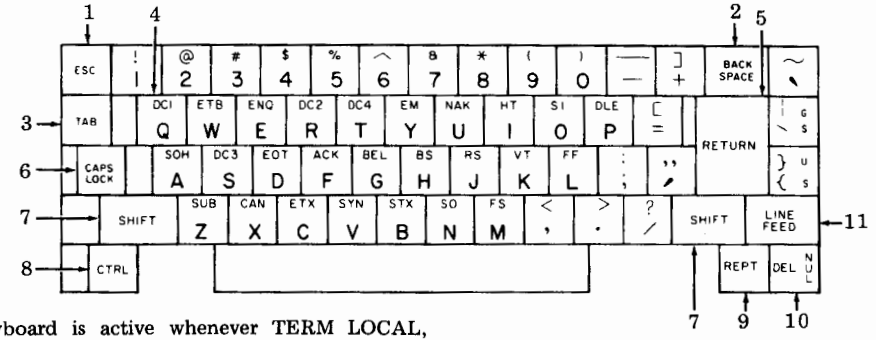
NUM PAD

Remainder of the keyboard is unaffected by NUM PAD mode.

MSG CLEAR

Active only in the Edit or Options Prep mode. Depression causes the contents of the edit buffer to be cleared from the current location in the buffer through the next message-ending character.

Keyboard



The keyboard is active whenever TERM LOCAL, TERM ON LINE OR TERM READY lamps are on.

1. ESC — Depress key momentarily, then the desired key to perform escape sequence functions on-line. See SENDING AND RECEIVING ESCAPE (ESC) SEQUENCES.

2. BACK SPACE — Causes the printing position to move one printing space backward on the same printing line. Writes a backspace character into the edit buffer. Send backspace on-line.

3. TAB — Sends the ASCII HT or writes it in memory depending on terminal mode. The printer carriage will move to the next tab stop. If no tab stops are set, carriage will move to the right boundary of the printer and perform a carriage return-line feed function. See Horizontal Tabulation.

4. DC1 — DC1 and other special control character keys (keys with abbreviations at top or right side of key) when depressed together with the CTRL key (codes are sent on-line), print or perform special functions.

5. RETURN — Returns printer carriage to the left margin of the current line unless otherwise optioned (LgKey). Character is sent on-line. When the CTRL and RETURN keys are operated together, the carriage is returned and the paper advances one line regardless of how key is optioned. No character is sent on-line.

6. CAPS LOCK — Keyboard produces capital alpha characters when key is locked down. Produces lower case alpha characters when key is released up (affects alpha characters only).

Keyboard (Cont)

7. SHIFT — Performs normal shift function (does not release CAPS LOCK mode).

8. CTRL — Depress and hold while selected key is depressed to perform special control function on-line. This key is also used during local operations for setting margins, tabs (see Keyboard-Printer (KP) Operation), options preparation and load and answer-back.

9. REPT — This key provides the attendant the ability to cause any key on the keyboard, keyboard edit cluster and numeric pad to repeat by holding the REPT key and the desired key depressed at the same time.

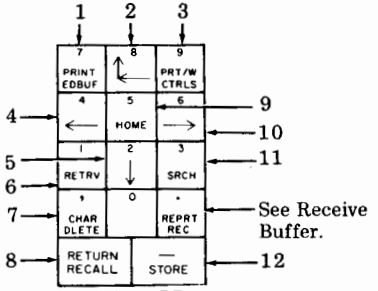
10. DEL NUL — Depression of this key alone generates the ASCII DELETE code sometimes used as a time-fill character. Also obliterates erroneous or unwanted characters. Depression of this key together with the CTRL key generates the ASCII NULL character that may also serve as a time or media-fill character.

11. LINE FEED — Advances the paper one line for each depression. Also programmable for any one ASCII character (SmKey).

Keyboard Edit Cluster

These keys along with INSERT, STRING-ENTER and MSG CLEAR function as edit controls when the BUFFER ENTER lamp is on and the NUM PAD lamp is off.

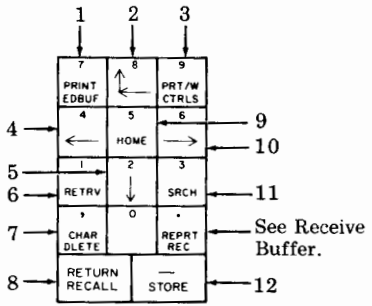
If the NUM PAD lamp is on, the CTRL or SHIFT key must be depressed and held down while the desired edit control key is selected. The edit key functions are as follows:



KEYBOARD EDIT CLUSTER

1. PRINT EDBUF — Causes the contents of the edit buffer to be printed or functions to be performed one message at a time from the current buffer location. Depress key again to stop printing message or to print next message.

2. ↑← — This key causes a return to the beginning of the current line in the buffer and printer to carriage return. If operated at the beginning of the line, the current location moves to the beginning of the previous line in the buffer and printer will line feed.



3. PRT/W CTRLS — Causes the message from the current buffer location to be printed with symbols for control characters (see SPECIAL CONTROL CHARACTERS). Depress key a second time to stop printing or to print next message.

4. ← — The printer carriage moves one character position to the left on the same line. The printer carriage will not move on control characters but location in buffer will be moved back. Movement is limited by all format effectors.

5. ↓ — The current location is moved to the character following the next line feed (ie, beginning of next line). The printer will perform a carriage return-line feed.

6. RETRV — This key executes a search for a character string in the data already sent and acknowledged section of the send buffer. See Retrieve a Message to Edit.

7. CHAR DLETE — Causes the character at the current buffer location to be erased. The remaining contents of the edit buffer will move forward one position to fill the void created. The printer will overprint the existing character with a block (■) and move one character to the right.

8. RECALL — Transfers all unsent or sent but unacknowledged messages from the data stored to the edit buffer.

Note: Returning messages to the data to be sent section is accomplished one message at a time by use of the STORE key.

9. HOME — Returns the current edit buffer location to the beginning of the edit buffer (edit home). The printer performs a carriage return-line feed.

10. —→ — Causes the printer carriage to move within a message one character to the right, printing a character from the edit buffer or performing the function at the current buffer location.

11. SRCH — Executes a search in the edit buffer for up to a 16-character string from the current buffer location to the end of the edit buffer for the string. See Message Search in the Edit Buffer.

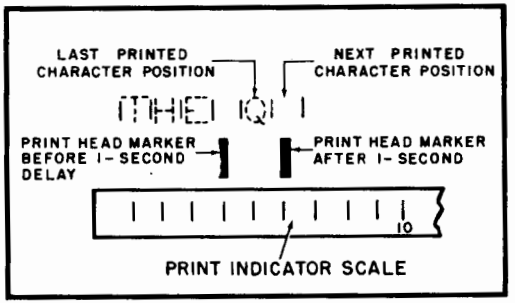
12. STORE — Transfers the contents of the edit buffer to the data stored but not sent buffer one message at a time. Data stored is from home location to the first message-ending character. If no message-ending characters have been entered, the entire contents of the edit buffer is stored.

KEYBOARD-PRINTER (KP) OPERATION

To operate your KP locally off-line or on-line, the KP ON-S/R OFF-LCL lamp must be off. At this time messages can be typed, margins changed, tabs set or paper loaded even though your terminal may be on-line. You can now type messages on your keyboard as you would on an ordinary typewriter.

☐ Print Head Marker

The next printing location of the print head and the position for setting tabs and margins is indicated by the print head marker after a 1-second delay. The print head moves back when printing resumes. The print head is also used to indicate the current location in the edit buffer.



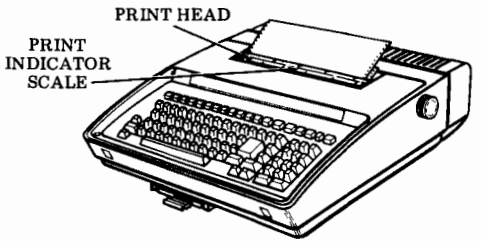
☐ Left- and Right-Hand Margins

When power is turned on, the left- and right-hand margins are reset to the boundary values set in the user option memory (LfBdy and RtBdy). Different values can be temporarily set by moving print head (use spacebar) to desired position and depressing the CTRL key together with the indicated key. See SENDING AND RECEIVING ESCAPE (ESC) SEQUENCES.

- CTRL 7 — Sets left margin.
- CTRL 8 — Sets right margin.
- CTRL 9 — Clears left and right margins.
- CTRL 0 — Releases right margin.

MARGINS			
SET			RELEASE
LEFT	RIGHT	CLEAR	RIGHT
7	8	9	0

Note: The bell sounds when a character is printed 8 columns before and at the right margin. Printing is suppressed at the right margin.



☐ Horizontal Tabulation*

To utilize horizontal tabulation, tab stops must be set. Tab stops can be set at any desired location between the left and right margins. It may be necessary to first clear existing tabs if they are unwanted, then position the print head (use spacebar) to desired position and enter the horizontal tab. This can be accomplished by depressing the CTRL key together with the indicated key. See SENDING AND RECEIVING ESCAPE (ESC) SEQUENCES.

HORZ TAB SET	HORZ TAB CLEAR	RESTORE PRESET TABS
!	@	#
1	2	3

- CTRL 1 — Sets a tab stop.
- CTRL 2 — Clears all tab stops.
- CTRL 3 — Restores preset tab stops (see Note).

Note: Preset tab stops may be stored in the user option memory; depressing CTRL 3 restores tab stops to the preset values.

☐ Vertical Tabulation and Form Feed*

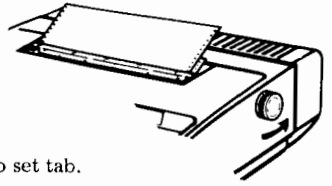
Vertical tabs can be set to any line position from the top of the form to the currently set form length.

VERT TAB SET	VERT TAB CLEAR
%	^
5	6

*Response to horizontal and vertical tabs may be disabled in the user option memory (see OPTIONS HTon? and VTon?). Form feed commands may be disabled by setting the user option FmLgt to 000. All horizontal and vertical tab stops set on terminal will be stored when options are loaded. Previously stored tabs will be changed if option tabs are different and are not stored before loading options for any reason.

To Set Vertical Tabs:

- Depress CTRL 6 to clear all existing vertical tabs (if desired).
- Depress CTRL L (form feed).
- Manually (use platen knob) position top of form to print position.
- Use [LINE FEED] to advance form to the first vertical tab position desired.



- Depress CTRL 5 to set tab.
- Continue using [LINE FEED] to advance form and CTRL 5 to set tabs until all vertical tabs are set.

Note 1: A vertical tab will be executed and sent on-line by depressing CTRL K (vertical tab).

Note 2: If there is no vertical tab between the current line position and the end of the form, the printer will advance the paper to the beginning of the next form and perform a carriage return.

☐Bell

The bell sounds when characters are entered seven characters before and at the right margin, ie, margin at 80, bell at 73 and 80. Also sounds at left margin when attempting to backspace and when an interrupt is received. Bell sounds when functions cannot be performed, ie, depressing Edit Control keys when not in Buffer Enter mode, depressing 

with no characters to delete, etc.

SPECIAL CONTROL CHARACTERS

Control characters are generated from the buffered 43 keyboard by use of the CTRL key, and at the same time, a control character key. Although some of these characters are functional in the buffered 43, others are used only in other systems.

Note: The symbol ■ is always printed when the substitute character is received on-line or when entered from the keyboard. The ASCII control character S_B is printed when entered from the keyboard in the user programmable options and when the edit buffer is printed with controls.

Keytop	Definition	Printed Character
DC1	Device Control 1	
ETB	End of Transmission Block	
ENQ	Enquiry	
DC2	Device Control 2	
DC4	Device Control 4	
EM	End of Media	
NAK	Negative Acknowledge	
HT	Horizontal Tab	
SI	Shift-In	
DLE	Data Link Escape	
GS	Group Separator	
SOH	Start of Heading	
DC3	Device Control 3	
EOT	End of Transmission	
ACK	Acknowledge	
BEL	Bell	
BS	Backspace	
RS	Record Separator	
VT	Vertical Tab	
FF	Form Feed	
US	Unit Separator	
SUB	Substitute Character	or ■ *
CAN	Cancel	
ETX	End of Text	
SYN	Synchronous Idle	
STX	Start of Text	
SO	Shift-Out	
FS	File Separator	
NUL	Null	

*See Note.

Ribbon

Only cartridges with ribbon designated for use with 43 Teleprinters should be used. The Teletype part number is 430035.

The cartridge with ribbon can be ordered from Teletype Corporation, 5555 Touhy Avenue, Skokie, IL 60077.

The ribbon should be replaced whenever it becomes frayed or print density becomes light. After the first few ribbons, replacement ribbons should produce 3 million or more legible characters of printing.

Sprocket Feed Paper

Paper for the 43 Sprocket Feed Teleprinter must be 12 inch sprocket feed, with folds or horizontal perforations located midway between sprocket holes and standard sprocket hole size and spacing. This paper is single-ply with 8-1/2 inch folds to provide 11 inch x 8-1/2 inch copy when the 1/2 inch wide sprocket hole strip is removed at the edge serrations. (Characters are printed to within 7/8 inch of the left and right paper edge before the strips are removed.)

Similar replacement paper may be obtained from the supplier listed on the original paper box or from other suppliers listed below or in the telephone book yellow pages.

Wallace Business Forms Inc. 444 W. Grand Ave. Chicago, IL 60610 Cat. No. E-6879	Duplex Products Co. 228 W. Page Sycamore, IL 60178 Cat. No. 1-1280-15P

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 2 copies of 12 pound basic paper (using 8 pound basic carbon paper) produce clear copy. Acceptable copy may also be obtained on variations of multicopy forms using different weight paper or carbonless paper, however these should be tried before ordering large quantities. Consult your paper supplier for specific needs to assure complete satisfaction.

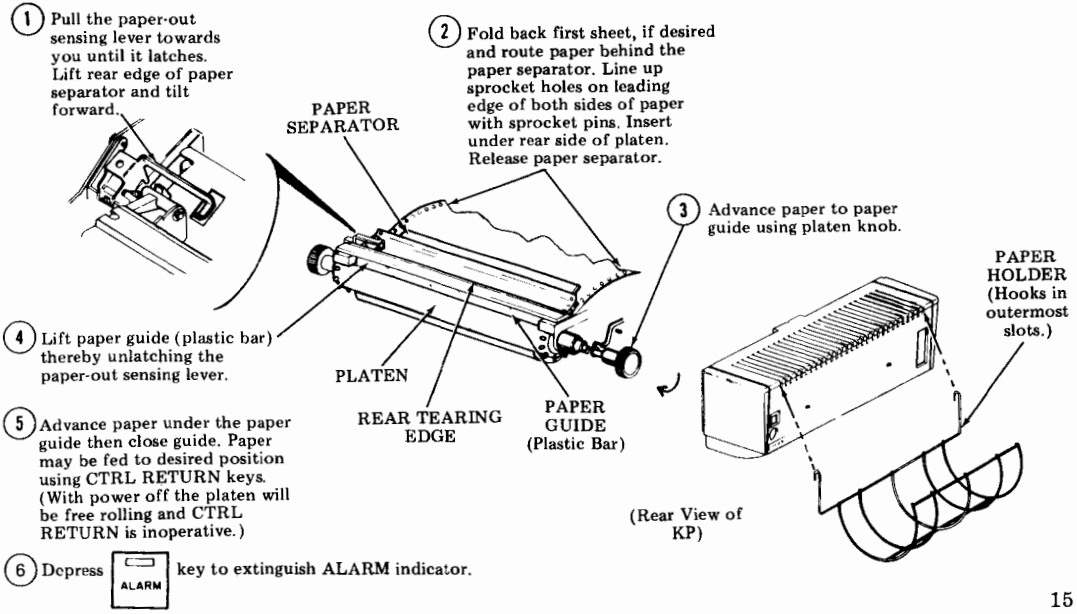
Friction Feed Paper

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.

Installing Paper (Sprocket Feed)

- Install paper as shown after centering the print head and removing the unused paper. It is not necessary to disconnect an on-line call, open the cover or turn off power. However, to avoid loss of data, paper should not be replaced without requesting the remote terminal to stop sending.

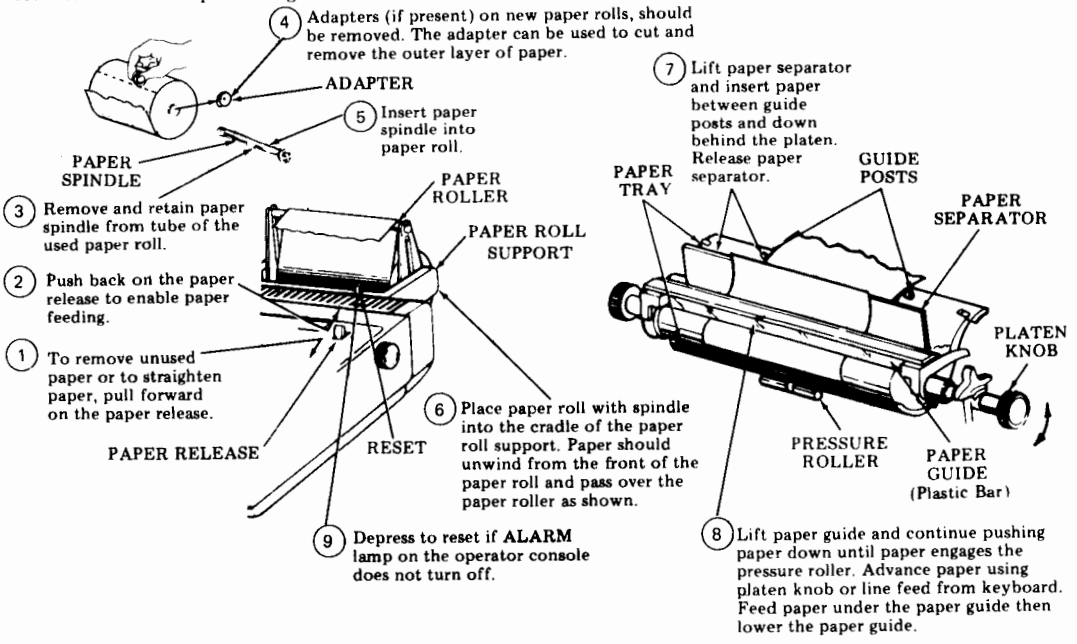
Note: Paper may be fed directly from the supply box or if the paper holder is used, a limited stack of forms may be placed in the holder.



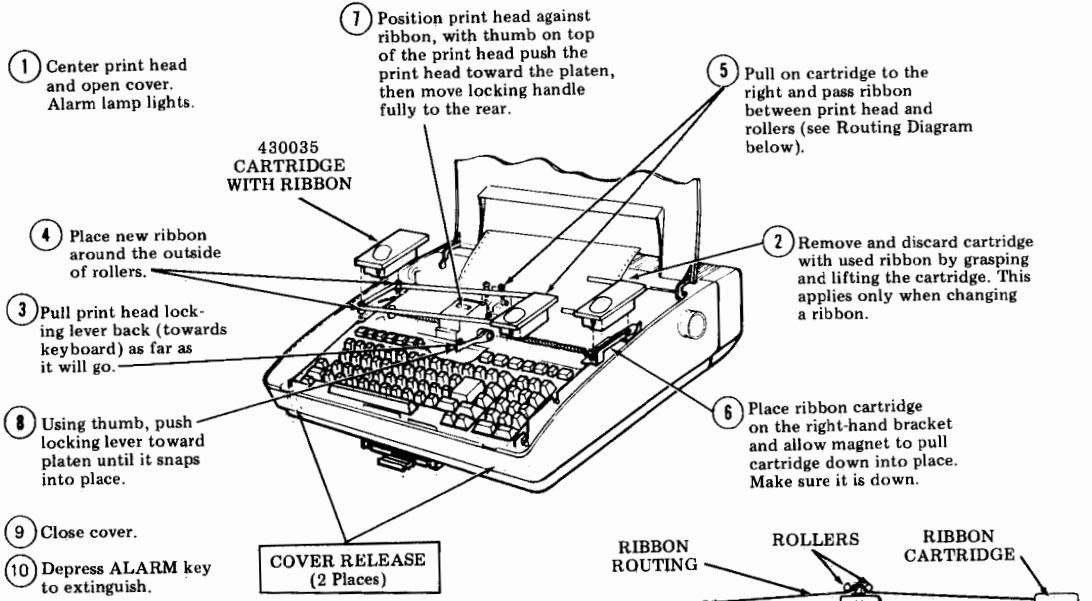
6 Depress ALARM key to extinguish ALARM indicator.

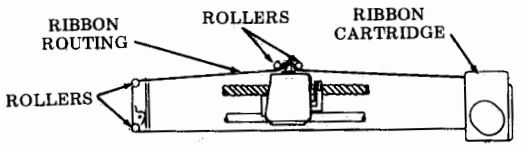
Installing Paper (Friction Feed)

- Install paper as shown after removing the unused paper from the printer. It is not necessary to turn off power or open the cover when replacing the paper but to avoid loss of data, paper should be replaced after the remote terminal stops sending.



To Install Ribbon





Routing Diagram

Note: Make sure ribbon is fully on all four rollers before closing cover.

BUFFER (Data Storage)

There are two kinds of data storage in the terminal buffer, nonvolatile and volatile memory.

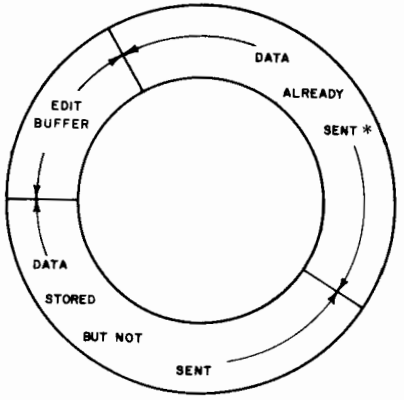
Nonvolatile memory is a place in the buffer where user programmable options are stored. These options when selected and stored, provide many of the operational characteristics of your terminal.

The volatile memory is divided into a Send and Receive buffer whose apportionment is a user programmed option. Refer to the option's side of the directory card for your receive buffer size (RBSze).

Send Buffer

The send buffer is divided into three sections: Edit, Data Stored But Not Sent and Data Already Sent.

* Data is not treated as sent until the message is acknowledged either by receiving a StrSn character or depressing the SND RDY / SEND Key.



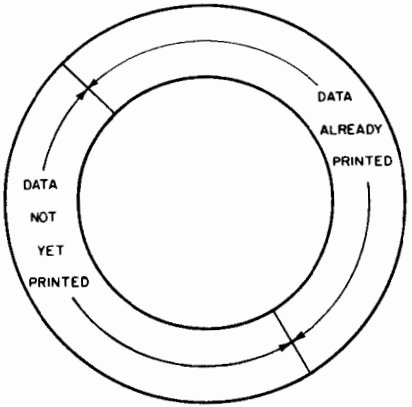
Send Buffer Organization

The Edit Buffer accepts data from the keyboard. The edited data when stored in the Data Stored But Not Sent section is the source of the send data. After having been sent, messages remain in the Data Already Sent section until the space is needed for composing new messages or until intentionally cleared, by entering the Options Prep Mode.

Receive Buffer

The receive buffer accepts all received data from the line and holds it until the printer is available. After printing, the data remains in the buffer until the space is needed for newly received data. The old data may be recalled for reprinting as long as it is in the receive buffer.

The receive buffer is also organized in a circular manner divided into two sections, Data Not Yet Printed and Data Already Printed.



Receive Buffer Organization

The capacity of the receive buffer depends on the value entered in the user option memory (RBSze).

To recall a message from the receive buffer for reprinting, the terminal must be off-line, and the KP must be in Local (KP key not lit).

To reprint a received message:

- Depress [TERM LOCAL] if not on.
- Depress [REPRT REC] key. [REC MSG WTG] may flash while recalling the message then stay lit.
- Depress [REPRT REC] for each message in the receive buffer you wish to reprint waiting each time for the [REC MSG WTG] key to light steadily.
- Depress [REC MSG WTG] and all messages will print.

EDIT MODE

Note: You will notice in certain instances that some of the edit controls (Store, Search, Retrieve, Character Delete, Reprint Receive, Insert) do not respond instantaneously. The response time is typically longer when there are many characters in the Edit Buffer. You should wait until the terminal finishes its current operation before depressing any other keys or controls.

Your terminal is placed in the Edit mode by depressing the BUFFER ENTER key. If in S/R mode, the KP will go Local. This will be indicated by the KP ON-S/R OFF-LCL lamp turning off.

While in the Edit mode, simultaneous batch-sending or receiving or both can take place without interrupting the message preparation.

Before proceeding, become acquainted with the Edit Control keys (INSERT, STRING ENTER, MSG CLEAR and Keyboard Edit Cluster) and keyboard operation. Review the instructions of this part and proceed as follows:

Message Preparation and Store

☐ If forms are used, with KP off (LCL) depress CTRL-L. This will assure first printing line of form. Set tabs if necessary and depress CTRL-L once again.

- Depress BUFFER ENTER, Lamp lights. Printer carriage return-line feeds.
- Type message and end with designated message-end character (Ms End).
- Depress — STORE, SND RDY — SEND lamp lights.

The message is now stored and is ready to be sent on-line or can be recalled for editing.

Message Edit

☐ If a message to be edited is stored and not sent or was sent but not acknowledged, proceed as follows:

- Depress BUFFER ENTER if not on.
- Depress RETURN RECALL
- Depress 7 PRINT EDBUF for each message you wish to edit.

Example: ("FOX" omitted from message.)

THE QUICK BROWN JUMPED OVER THE LAZY DOC

(UNEDITED MESSAGE)

- Position printer carriage (ie, use edit controls ↑, ←, ↓, →, etc) at character "J".
- Depress INSERT, lamp lights.
- Type in the word "FOX", then a space.

THE QUICK BROWN FOX JUMPED OVER THE LAZY DOC

Message Edit (Cont)

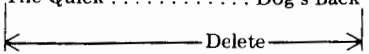
- Depress [INSERT] lamp turns off.
- Depress [5 HOME], then [7 PRINT EDBUF]. The printer carriage return-line feeds and the edited message is printed.

THE QUICK BROWN FOX JUMPED OVER THE LAZY

(EDITED MESSAGE)

To delete a portion of a message
(ie, one or more lines)

The Quick . . . . . Dog's Back



Overwrite last character (K) with MsEnd character. Position printhead over first character (T) and depress [MSG CLEAR] Key.

Retrieve a Message to Edit

☐To retrieve a message, for re-editing or retransmission, that was previously sent and acknowledged proceed as follows:

- Depress [BUFFER ENTER] if not on.
- Depress [STRING ENTER], lamp turns on.
- Type a string of characters in the message being retrieved, the last 16 of which will be used to retrieve the information.

Example:

BROWN FOX JUMPED

- Depress [1 RETRV]. The [STRING ENTER] lamp turns off.

If the string is not found, the printer carriage return-line feeds, "CANNOT FIND" is printed and the edit pointer remains at its former position.

When the string is found, the following occurs:

1. Printer carriage return-line feeds.
2. The message containing the string is appended to the edit buffer by copying the message.
3. The line containing the string is printed.

THE QUICK BROWN FOX JUMPED

4. The current buffer location is positioned on the character following the string.

The message can now be re-edited and stored for retransmission.

Message Search in the Edit Buffer

- Depress  if not on.
- Depress  .
- Depress  , lamp turns on.

Type a string of characters in the message being searched, the last 16 of which will be used to search for the message.

Example:

BROWN FOX JUMPED

- Depress  .

When the string is found, the line containing the string is printed.

If after searching to the last character entered in the edit buffer the string cannot be found, "CANNOT FIND" is printed followed by a carriage return-line feed.

Note: The string typed is always retained until a new-string is entered. To "Walk Through" the edit buffer for an often repeated string, simply depress the  key for the same string.

Print Edit Buffer

A printed copy of the edit buffer can be obtained with or without special symbols for each control character.

- Depress  if not on.
- Depress  .
- Depress  for each message you wish to print without control characters.
- Depress  for each message you wish to print with control character symbols.
- A second depression of either the  or  will stop printing.

ESTABLISHING COMMUNICATIONS WITH DISTANT TERMINALS

Establishing connection and transferring to the Data mode is basically under the control of the directly connected communications device (modem) and its associated telephone over the switched-network or, without a telephone over private lines. In some arrangements terminals are directly connected to the distant terminal or computer. Use of these external devices should be specified locally since many variations are possible, ie, pushbuttons on modem or on phone, exclusion keys, etc.

The procedures as shown below, that normally apply to operation of the controls of the terminal, should be followed:

☐ Before transferring a telephone call to the Data mode (call originated or answered)

- Place terminal in a standby condition:
  1. Turn on ac power.
  2. Clear any alarm condition (paper-out, low paper, or cover open).
  3. Depress TERM READY key (if not lit). Key should light.

☐ Transfer to Data mode

- The TERM ON LINE key lights under control of the external device or distant station:
  1. Data can be sent or received on-line only when the TERM ON LINE key is lit.
  2. On some arrangements the TERM ON LINE key may always be lit.

☐ To disconnect a telephone call in DATA mode.

- Calls may be disconnected as follows:
  1. A disconnect code (Dscnt) is received.
  2. The TERM LOCAL key is depressed. (TERM LOCAL key will light.)
  3. The receive buffer is overflowed.
  4. Other log-off procedures.

SEND ON-LINE

Sending on-line from your buffered 43 is accomplished in either of two communication modes. S/R (Conversational) or Send (Batch).

In Full Duplex S/R, the KP is actively on-line sending from the keyboard while the printer prints received data. In Half-Duplex S/R, only alternate two-way communication (ie, either sending or receiving) should be attempted to avoid interspersing of characters.

In Send mode, data is transmitted from the send buffer either from an attendant command or upon receipt of a start sending code (StrSn) as programmed in the user option memory. In the Send mode, the keyboard is disabled on-line.

S/R Send From Keyboard

- Depress 

if not on.
- Depress 

if not on.
- If required, select half- or full duplex operation.

☐ To Originate a Call

- Establish on-line connection in the usual manner.
- When the distant terminal answers, request Data mode. If the distant terminal called is on automatic-answer, it will respond with a high-pitched answer tone.
- When answer tone is heard, enter the Data mode on the external communications device.
- The 

lamp lights and the 

lamp turns off. The terminal is now on-line and ready to communicate.
- Simply type message on the keyboard. In full duplex operation, the sender will not print the sent message but may be receiving copy simultaneously while sending.
- Terminate call in the usual manner.

Batch-Send From Buffer

- Prepare message(s) and store (see Edit Mode).
- Depress 

if not on.

☐ To Originate a Call and Manually Send

- Establish on-line connection in the usual manner.
- Request Data mode with distant terminal.

If the distant terminal called is on automatic-answer, the terminal will respond with a high-pitched answer tone.

- When answer tone is heard, enter the Data mode on the external communications device.

The 

lamp lights and 

lamp turns off.

The terminal is now on-line and ready to communicate.

- Depress the 

(lighted) for each message to be sent.

The 

lamp will flash during each message sent and turn off when all stored messages are sent or at StpSn in message being sent.

- Terminate call in the usual manner.

Controlled Send

Receipt of a Start Sending code (Str Sn), will cause messages stored in send buffer to be sent when terminal is provided with automatic-answer (Modem Option).

- Prepare message(s) to be sent and stored.
- Depress 

if not on.

When terminal is called, the following occurs:

1. Telephone rings and is automatically answered.
2. An answer-back message may be sent (see Terminal Option Listing ABaa) when call is answered.
3. A message is sent upon receipt of start sending code (StrSn).
4. Transmission may stop upon receipt or sending of stop sending code (StpSn).
5. If send buffer is empty, terminal will send a negative response upon receipt of (StrSn) code (up to 6 characters).

RECEIVE ON-LINE

Receiving on-line is possible whether the KP is available or not. As a message is received, the 

lamp turns on and the printer, if available, copies the received message (S/R Receive). If the KP is in use for some local operation, the received message will be stored in the terminal's receive buffer. To get a copy of the received message, the lighted 

must be depressed. Printing will continue until all messages are printed or printing is stopped by going to KP Local.

Variations during receive on-line operation are as follows:

- As the end of the receive buffer capacity is reached, a timed break or an X-OFF signal, as selected in the option user memory (StpSn), is sent.
- The terminal will not automatically answer with a low receive buffer condition as selected in the option user memory (RBLow).
- An X-ON character may be sent to inform the sender to restart sending when the buffer is not low (RBntl).
- All data designated for reprinting must be printed before newly received data can be printed.

S/R Receive to Printer

- Depress 

if not on.
- Depress 

.
- If required, select half- or full duplex operation.
- When telephone rings, answer call in the usual manner.
- Upon request by distant terminal, select Data mode on the external communications device.

The 

lamp lights and the 

lamp turns off. The terminal is now on-line and ready to print received message.

- Call may terminate by receipt of message-end character or manually by distant terminal.

Receive to Buffer

- Depress 

to turn off lamp if on.
- Depress 

.
- When telephone rings, answer call in the usual manner.
- Upon request by the distant terminal, select Data mode on the external communications device.

The 

lamp lights and the 

lamp turns off. The terminal is now on-line and message is being received in buffer (indicated by 

turning on). At this time you may do local functions (ie, editing, storing, replacing paper, etc).

- Call may terminate by receipt of message-end character or manually by distant terminal.
- Depress 

or 

(lighted) for message copy.

Automatic-Answer

Modem used must be provided with automatic-answer feature; if it does, proceed as follows:

- Check paper supply.
- Depress 

if not on.
- Depress 

.

No further action is necessary. When called, the terminal automatically answers and goes to the Data mode. The 

lamp lights and the 

lamp turns off. Message is printed and stored in buffer (answer-back may be sent at beginning of message).

SENDING AND RECEIVING ESCAPE (ESC) SEQUENCES

Only the following ESC characters are functional in the buffered 43. They are performed when sending or receiving the character immediately following the escape character (ESC key).

Use of these or other escape sequences on-line may be system dependent.

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 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 l (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.

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.

ANSWER-BACK

The Answer-Back feature is a user programmable option. When entered (ABmsg), the message of up to 20 characters can be sent manually or automatically.

The Answer-Back may be sent automatically:

- In response to receipt of the ASCII character ENQ (Enquiry).
- Upon answering an on-line call (ABaa).

The Answer-Back can be generated manually by:

- Depressing CTRL 4. If the terminal is on-line, the answer-back is transmitted. If the terminal is in the Term Local mode and KP off, the Answer-Back will be printed locally.

OPTIONS (Nonvolatile Memory)

A record of how your terminal is optioned is shown on the option's side of the Directory Card provided with your terminal. The options are listed under two categories, options not programmable by user and user programmable options. To change any of the programmable options, you must place the terminal in a user Option Preparation mode. This mode can only be entered when the TERM LOCAL and KP lamps are on. No other terminal functions can be performed during this Option Preparation mode and all volatile data will be lost.

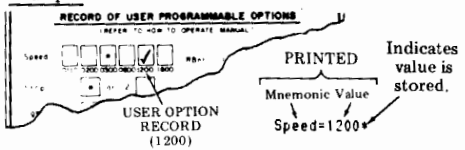
Note: All tab stops that have been set will also be stored when options are loaded. To avoid undesired change of tabs, restore preset tabs before entering Options Prep mode.

To Enter Option Preparation Mode

- Depress TERM LOCAL and KP ON-S/R OFF-LCL if not on.
- Depress CTRL (minus). (OPTIONS PREP) TERM LOCAL lamp flashes.

The first mnemonic in the option list is printed together with its current value.

Example:



- If no change is to be made in an option, depress 2 ↓ (next line) for the next listed option.

By depressing the next line key, the option list can be stepped through making changes only in those options desired.

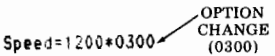
To Change an Option

- Enter Option Preparation mode (volatile data will be lost at this time).
- Step through option list using 2 ↓ key until desired option and value is printed. For fast stepping, also hold REPT key depressed.

The printer carriage will stop in a position ready to accept a new value for the option.

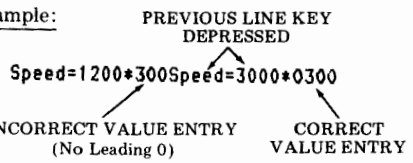
- Type in new value for the desired option change.

Example:



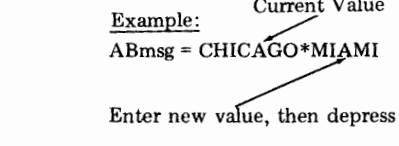
- If while typing the new value an error is made, the entry must be aborted and retyped. To do this, depress the 8 ↑ key (previous line) and retype correct value. If a value on a previous option is to be changed, depress the 5 HOME key and step through the list to the desired option.

Example:



- If the current value has a greater number of characters than the new value to be entered, enter the new value, then depress the MSG CLEAR key. The following options can be completely cleared: LgKey, SmKey, MsEnd, StpSn, StrSn, NegRs, Dscnt or ABmsg.

Example:



the G and O (the excess characters) from the message.

- If it is desired to abort all the currently modified values, depress the TERM LOCAL key.

All options are returned to the values they were assigned prior to entering the Option Preparation mode. You must re-enter mode if any changes are to be made.

To Store New Option List or Preset Tabs

It is not necessary to step through all the options but only those up to the last one that is desired to be changed. The option list is arranged so that seldom changed characteristics (ie, answer-back message, parity, etc) are near the end of the list while such options as speed, automatic line feed and format effectors are near the beginning. Proceed as follows.

- Enter Option Preparation mode.
- Step through list using 2 ↓ key at the same time making the appropriate value changes. If only tabs are being preset, omit this step.

  Note: The value entered for the option must be restricted to the selection in table shown on Pages 31 and 32.

- Depress CRTL + (plus) (OPTIONS LOAD) when satisfied that the option list is as desired or to store tabs that are currently set on the KP set.

The new option list and preset tabs are loaded into the nonvolatile memory, printer carriage return-line feeds. The TERM LOCAL lamp turns off, the TERM READY and KP lamps light.

Note: The Options Preparation mode may be aborted without losing any tabs or changing any options by simply depressing the flashing TERM LOCAL key instead of OPTIONS LOAD.

Mark the "Directory Card" option listing to reflect changes made.

User Programmable Option Table

Prompt Mnemonic	Option	Entry	Default
Speed	Speed, Baud	4 numerals (0110, 0200, 0300, 0600, 1200, 1800)	0300
StopU	Units in stop element (2 units are required for 100 wpm operation)	1 — unit stop 2 — double unit stop	1
LgKey	Codes for large key	1, 2, or 3 ASCII characters or can be cleared	CR
SmKey	Codes for small key	1 ASCII character or can be cleared	LF
LfBdy	Left boundary (Column number 1 less than leftmost character)	3 numerals (131 Max) Sprocket Feed (079 Max) Friction Feed	000
RtBdy	Right boundary (Column Number of rightmost character after which auto CR-LF can occur)	3 numerals (132 Max) Sprocket Feed (080 Max) Friction Feed *Caution:* On friction feed teleprinters, never enter a value for RtBdy greater than 080.	080
FmLgt	Form Length	3 numerals (132 Max)	000
HTon?	Horiz Tab Enable	y / n	n
VTon?	Vert Tab Enable	y / n	n
PtNL?	Printer respond with NL to LF	y / n	n
DbLF?	Double Line Feed	y / n	n
RBSze	Receive Buffer Size	5 numerals, (typ. 1/2 avail. buffer) (Max 600 characters less than memory size)	02000
RBufW	Receive Buffer remaining when send full warning	3 numerals (must be less than RBSze)	100
RBLow	Receive Buffer remaining when don't auto answer	3 numerals (must be less than RBSze must be larger then RBufW)	500

Prompt Mnemonic	Option	Entry	Default
FlWrn	Notification sent when Receive Buffer Full	XOF — X-OFF char. BRK — Break (timed interrupt)	BRK
RBntl	Send X-ON when Receive Buffer Not Low	y / n	n
EBWrn	Edit Buffer remaining when full warning	3 numerals	132
ABaa?	Answer-Back upon answering?	y / n	n
MsEnd	Ending character for messages	4 Max Control chars. or can be cleared	ETX
StpSn	Stop code for Send or Receive (X-OFF)	1 Control char. or can be cleared	DC3
StrSn	Start Sending code (X-ON)	1 Control char. or can be cleared	DC1
NegRs	Negative response to Start Send code	Up to 6 ASCII chars. or can be cleared	NAK
Dscnt	Received character causing disconnect	1 Control char. Must be one of MsEnd characters or cleared.	EOT
DLEr?	Data Link Escape required prior to disconnect char?	y / n	n
PrTyp	Parity Type	O — Odd, E — Even M — Mark, S — Space	E
RcPar	Receive Parity	y / n	n
VDS212	212 Data Set	y / n	n
HsStp	212 Data Set units in stop element	1 — unit stop 2 — double unit stop	1
Duplx	Half- or Full Duplex	h/f (State of teleprinter on power on sequence or exiting Options Prep mode only)	h
ABmsg	Answer-Back Message	Up to 20 ASCII characters or can be cleared	Empty

Lower case

WHEN TROUBLE OCCURS

Trouble that is encountered with the terminal should be reported as locally specified. A number to be called in case of trouble may be entered on the "Directory" card by the installer.

If it can be determined that the trouble is in the remote equipment, the attendant at the location in trouble should follow local procedures for that area.

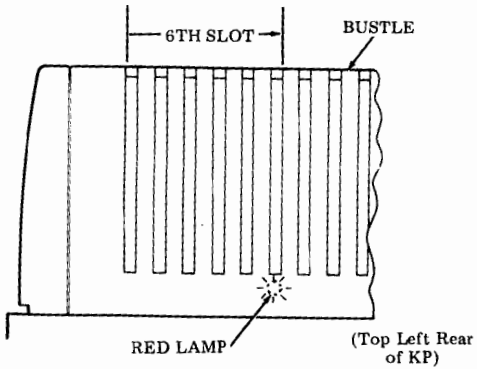
Before reporting a trouble, the attendant or local supervisor should:

☐ First
Check the following.

- Make sure that both ac power cords are properly seated in power outlets.
- Is the KP power switch turned on?
- Are attendants experiencing the same trouble on other terminals?

☐ Second
Answer each one of the following questions. Any "No" response to a question can indicate a source of trouble within the terminal.

- Are any control indicators on?
  (Power available, cords plugged in and cover closed.)
- Is red lamp on at KP power supply?
  The red lamp can be seen through air vent slot (6th slot from left) of the KP bustle.



- Can any characters be locally generated from the keyboard to the printer?
- Can certain control indicators be made to light? (See Keyboard Test.)

- Can data be stored and sent (data received by remote terminal)?

- Can data be received and printed?

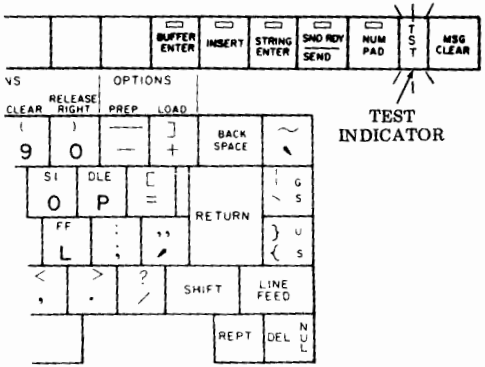
☐Third

Report any "No" response to the questions when making a trouble call.

Keyboard Test

Local analysis of the keyboard can be performed easily by depressing certain keys causing certain lamps on the keyboard to light and extinguish. By doing so the attendant can provide information so that the keyboard electronics can be analyzed, thus assisting in trouble analysis.

With keyboard in the CAPS LOCK mode, proceed as follows:



- Depress LINE FEED and QUOTES keys simultaneously with more force than is required in normal operation.

The TST indicator will light and remain lit indicating Test mode.

Note: If any lamps flash when Test mode is entered, simply depress the LINE FEED and P keys simultaneously to extinguish lamps. Re-enter Test mode by depressing LINE FEED and QUOTES keys.

- Depress the following keys while observing lamps for proper indication.

Depress key (or keys):	Indicator Key	Lamp Condition
A	TERM LOCAL	ON
CTRL & A	TERM LOCAL	OFF
SHIFT PAD 7	TERM LOCAL	FLASH ON
CTRL & 1	TERM LOCAL	FLASH OFF
C	TERM ON LINE	ON
CTRL & C	TERM ON LINE	OFF
SHIFT PAD 9	TERM ON LINE	FLASH ON
CTRL & 3	TERM ON LINE	FLASH OFF
D	TERM READY	ON
CTRL & D	TERM READY	OFF
SHIFT PAD 4	TERM READY	FLASH ON
CTRL & 4	TERM READY	FLASH OFF
G	INTRPT	ON
CTRL & G	INTRPT	OFF
CTRL & RETURN	INTRPT	FLASH ON
CTRL & 7	INTRPT	FLASH OFF
F	FULL DUPLEX	ON
CTRL & F	FULL DUPLEX	OFF
SHIFT PAD 6	FULL DUPLEX	FLASH ON
CTRL & 6	FULL DUPLEX	FLASH OFF
E	ALARM	ON
CTRL & E	ALARM	OFF
SHIFT PAD 5	ALARM	FLASH ON
CTRL & 5	ALARM	FLASH OFF
B	KP	ON
CTRL & B	KP	OFF
SHIFT PAD 8	KP	FLASH ON
CTRL & 2	KP	FLASH OFF
J	REC MSG WTG	ON
LINE FEED	REC MSG WTG	OFF
MSG CLEAR	REC MSG WTG	FLASH ON
CTRL & LINE FEED	REC MSG WTG	FLASH OFF

Depress key (or keys):	Indicator Key	Lamp Condition
K	BUFFER ENTER	ON
CTRL & K	BUFFER ENTER	OFF
SHIFT PAD 3	BUFFER ENTER	FLASH ON
CTRL & K	BUFFER ENTER	FLASH OFF
I	INSERT	ON
CTRL & I	INSERT	OFF
SHIFT PAD 2	INSERT	FLASH ON
CTRL & 9	INSERT	FLASH OFF
H	STRING ENTER	ON
CTRL & H	STRING ENTER	OFF
SHIFT PAD 1	STRING ENTER	FLASH ON
CTRL & 8	STRING ENTER	FLASH OFF
SHIFT & 2	SND RDY	ON
CTRL & NUL	SND RDY	OFF
TAB	SND RDY	FLASH ON
CTRL & 0 (ZERO)	SND RDY	FLASH OFF
O (ALPHA)	NUM PAD	ON
CTRL & O	NUM PAD	OFF
SHIFT PAD RETURN	NUM PAD	FLASH ON
CTRL & O	NUM PAD	FLASH OFF

(Test Ended)

- Depress LINE FEED and P keys simultaneously with additional force to clear Test mode.

TST indicator will extinguish and bell rings indicating Test mode has cleared.

Note 1: If lamps responded correctly in Test mode, the trouble is probably not in the keyboard.

Note 2: If any lamp failed to respond correctly, report failure when making a trouble call.

On the following page is a list of Teletype Corporation Product Service locations which provide maintenance service and repair on all Teletype Corporation products. For more information call toll free (US 800-323-4226) (IL 800-942-4192) 7:00 A.M. – 4:00 P.M. CST.

In addition, Teletype Corporation provides Customer Technical Training at its headquarters at 5555 W. Touhy Avenue, Skokie, IL in the northwest suburban area of Chicago. The training covers the installation, maintenance and repair of all Teletype Corporation products. Arrangements can also be made for training to be conducted at customer-selected field sites.

For information about class schedules, enrollment, tuition, on-site training or any special training needs, please contact:

Customer Technical Training Center
Teletype Corporation
5555 W. Touhy Avenue
Skokie, Illinois 60077
Telephone (312) 982-3940
TLX 25-4051
TWX 901-223-3611

NORTHEASTERN REGION: CT, ME, MA, NH, UPSTATE NY, RI, VT

▲ BOSTON/HARTFORD	*7 WALKUP DR., P.O. BOX 566, WESTBORO, MA 01581*	(617) 366-8881
ROCHESTER	*115 METRO PARKWAY, ROCHESTER, NY 14623*	(716) 442-8480
SYRACUSE	*5858 E. MOLLOY RD., ROOM 153, SYRACUSE, NY 13211*	(315) 454-4916

EASTERN REGION: DE, NJ, DOWNSTATE NY, PA (EASTERN)

LONG ISLAND	*195 PARK AVENUE, BETHPAGE, NY 11714*	(516) 822-3533
▲ NEW YORK CITY	*90 CLINTON RD., FAIRFIELD, NJ 07006*	(201) 575-8240
PHILADELPHIA	*103 ROCK RD., HORSHAM, PA 19044*	(215) 674-2181

SOUTHEASTERN REGION: FL, GA, MD, NC, SC, VA, WASH D.C., WV

ATLANTA	*2520 PARK CENTRAL BLVD., DECATUR, GA 30035*	(404) 981-7267
BALTIMORE	*6655 AMBERTON DR., 100 INDUSTRIAL PARK, — UNIT A BALTIMORE, MD 21227*	(301) 796-1166
CHARLOTTE	*8920 YORK RD., CHARLOTTE, NC 28210*	(704) 588-3297
DURHAM	*2609 CARVER ST., DURHAM, NC 27705*	(919) 471-4334
MIAMI		(305) 944-1829
FT. LAUDERDALE	*6858 N.W. 20th AVE., FT. LAUDERDALE, FL 33309*	(305) 974-4661
ORLANDO	*102 LIVE OAKS BLVD., CASSELBERRY, FL 32707*	(305) 834-3818
RICHMOND	*8427 GLAZEBROOK AVE., RICHMOND, VA 23228*	(804) 262-4062
TAMPA/ST. PETERSBURG	*7406 COMMERCE ST., RIVERVIEW, FL 33569*	(813) 677-3701
▲ WASHINGTON D.C.	*NORTHERN VA INDUSTRIAL PARK, 9022 TELEGRAPH RD., LORTON, VA 22079*	(703) 550-7507

SOUTHWESTERN REGION: AR, CO, KS, LA, NM, OK, TX

▲ DALLAS	*222 N. STORY RD., SUITE 126, IRVING, TX 75061*	(214) 254-4189
DENVER	*7100 BROADWAY, BUILDING 3-J, DENVER, CO 80221*	(303) 429-9555
HOUSTON	*4400 S. WAYSIDE, SUITE 105, HOUSTON, TX 77087*	(713) 641-3295
KANSAS CITY	*6339 W. 110th ST., KANSAS CITY, KANSAS 66211*	(913) 383-3370
NEW ORLEANS	*5636 JEFFERSON HWY., NEW ORLEANS, LA 70123*	(504) 733-4823
OKLAHOMA CITY	*1000 CORNELL PKWY., SUITE 700, OKLAHOMA CITY, OK 73108*	(405) 947-0969

SOUTH CENTRAL REGION: AL, IL(SOUTH), IN, KY, MS, MO, OH, PA(WESTERN), TN

▲ CHICAGO	*2900 21st AVE., BROADVIEW, IL 60153*	(312) 345-7920
CINCINNATI	*9909-C SPRINGFIELD PIKE, CINCINNATI, OH 45215*	(513) 772-6906
CLEVELAND	*5325 NAIMAN PKWY. —SUITE F, SOLON, OH 44139*	(216) 248-0288
COLUMBUS	*6969 WORTHINGTON-GALENA RD., WORTHINGTON, OH 43085*	(614) 436-2065
INDIANAPOLIS	*6240 LAS PAS TRAIL, INDIANAPOLIS, IN 46268*	(317) 297-4149
PITTSBURGH	*6149 SALTSBURG ROAD, VERONA, PA 15147*	(412) 795-6114
ST. LOUIS	*7380 N. LINDBERGH, HAZELWOOD, MO 63042*	(314) 831-0048
TOLEDO	*1000 S. REYNOLDS RD., SUITE 1, TOLEDO, OH 43615*	(419) 381-9900

NORTH CENTRAL REGION: IL(NORTH), IA, MI, MN, NB, ND, SD, WI

APPLETON	*324 W. WISCONSIN AVE., SUITE 3, APPLETON, WI 54911*	(414) 731-1494
▲ CHICAGO	*655 TOUHY, ELK GROVE VILLAGE, IL 60007*	(312) 437-8180
DES MOINES	*2318 HARDING RD., SUITE 15B, DES MOINES, IA 50314*	(515) 274-3801
DETROIT	*12916 FARMINGTON RD., LIVONIA, MI 48154*	(313) 525-5356
KALAMAZOO	*126 E. KILGORE RD., KALAMAZOO, MI 49001*	(616) 343-0573
LANSING	*3202 SO. PENNSYLVANIA AVE., LANSING, MI 48910*	(517) 882-5761
MADISON	*2317 SO. STOUGHTON RD., MADISON, WI 53716*	(608) 222-1662
MILWAUKEE	*448 W. RAWSON AVE., OAK CREEK, WI 53154*	(414) 764-6500
MINNEAPOLIS	*8824 SEVENTH AVE. NO., GOLDEN VALLEY, MN 55427*	(612) 546-0808

WESTERN REGION: AZ, CA, ID, MT, NV, OR, UT, WA, WY

▲ LOS ANGELES	*5445 SHEILA, CITY OF COMMERCE, CA 90040*	(213) 724-5051
TUCSON/PHOENIX	*2015 N. FORBES BLVD., SUITE 106, TUCSON, AZ 85705*	(602) 623-6419
SAN FRANCISCO	*3285 KIFER RD., SANTA CLARA, CA 95051*	(408) 737-7575
SEATTLE	*635 STRANDER BLVD., KOLL COMMERCE CENTER, SEATTLE, WA 98188*	(206) 575-4515

CANADA:

TORONTO	*31 KLONDIKE DR., WESTON, ONTARIO, CANADA M9L 1S1*	(416) 745-9474

▲ REGION HEADQUARTERS