38 AUTOMATIC SEND-RECEIVE (ASR) SET

GENERAL DESCRIPTION AND OPERATION
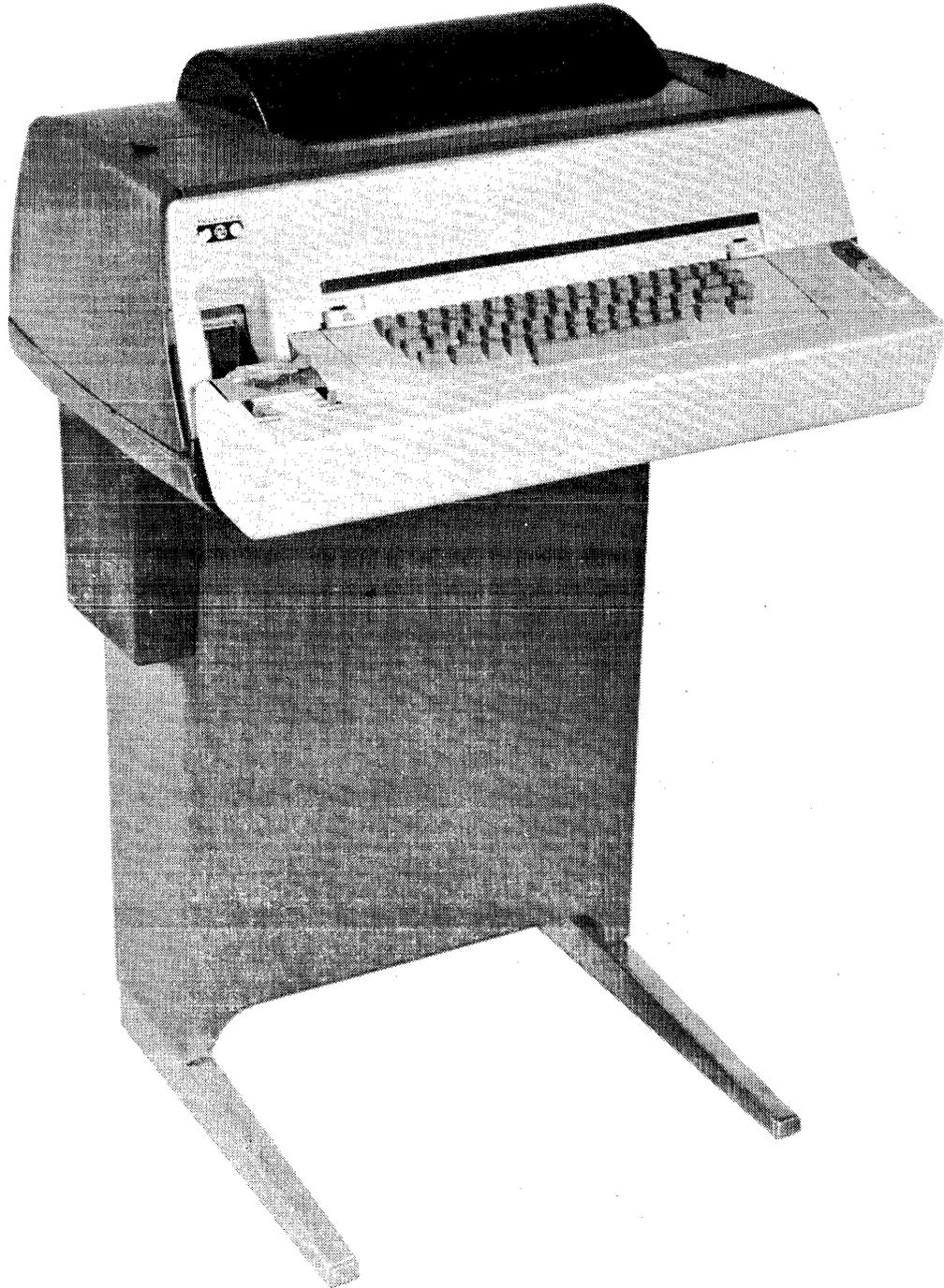

Figure 1 - 38 Automatic Send-Receive (ASR) Set

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1. GENERAL

1.01   This section provides a general description and operation for the 38 Automatic Send-Receive (ASR) Teletypewriter Set (Figure 1). It is reissued to include information on APL (A Programming Language) Sets and to provide information on Model 38 optional features. The information includes a description of the option and any required adjustments, lubrication, and disassembly and reassembly. General description and operation information for the 38 Keyboard Send-Receive (KSR) and the 38 Receive-Only (RO) Teletypewriter Sets are contained in Section 574-401-100TC. (Parts information is not included but may be found in the appropriate component section.) Marginal arrows ordinarily used to indicate changes or additions have not been used.

1.02   The 38 ASR Set is capable of transmitting or receiving data over switched voice grade facilities or private wire facilities at speeds up to 110 baud (100 words per minute).

Depending on option programming, the set operates on half-duplex (HDX) or full-duplex (FDX) transmission facilities.

1.03   The signaling code is the ASCII (X3.4-1968) (American National Standard Code for Information Interchange). These units are capable of generating 128 characters using an 8-level code composed of seven data bits and one parity bit. A single character is generated with a start bit, eight data bits, and a two-unit stop bit.

1.04   The Model 38 ASR Set is composed of an electromechanical printer, keyboard, paper tape punch, and paper tape reader (Figure 2). Station identification is provided by an answer-back mechanism that is an integral part of the distributor mechanism. This equipment provides terminal facilities for exchanging recorded communication via appropriate transmission facilities, including telegraph lines, telephone networks, and radio channels.

1.05   The typing unit has a 15-inch wide sprocket feed platen for 132 character positions that accommodate fanfold paper stock 14-7/8 inches wide. Standard platens of 8-1/2 inches (72 characters) are available in friction and sprocket feed units. The horizontal spacing for the wide platen and standard platens are 10 characters per inch.

1.06   The 38 Automatic Send-Receive (ASR) Set provides keyboard entry into the typing unit, tape punch, and tape reader. On-line operation transmits data manually from the keyboard or automatically from the reader using paper tape. Transmitted data from the reader can be simultaneously printed by the typing unit.

1.07   The cabinet and console may be mounted either on a standard pedestal (Figure 1) or on the customer-provided table or counter. The color of the cabinet, console, and pedestal are charcoal gray and ivory. The set operates at a low noise level that is comfortable in a normal office environment.

1.08   References to left or right, front or rear, top or bottom, etc, apply to the set in its normal position as viewed by the operator.

1.09   The Model 38 equipment is designed to be used as a computer Input-Output (I/O) terminal, and is compatible with switched network, selective calling, and point-to-point private line services. The ESU (Electrical Service Unit) is available, that contains a data modem (data set), as an integral part of the unit. The modem contains a frequency shift that is auto-
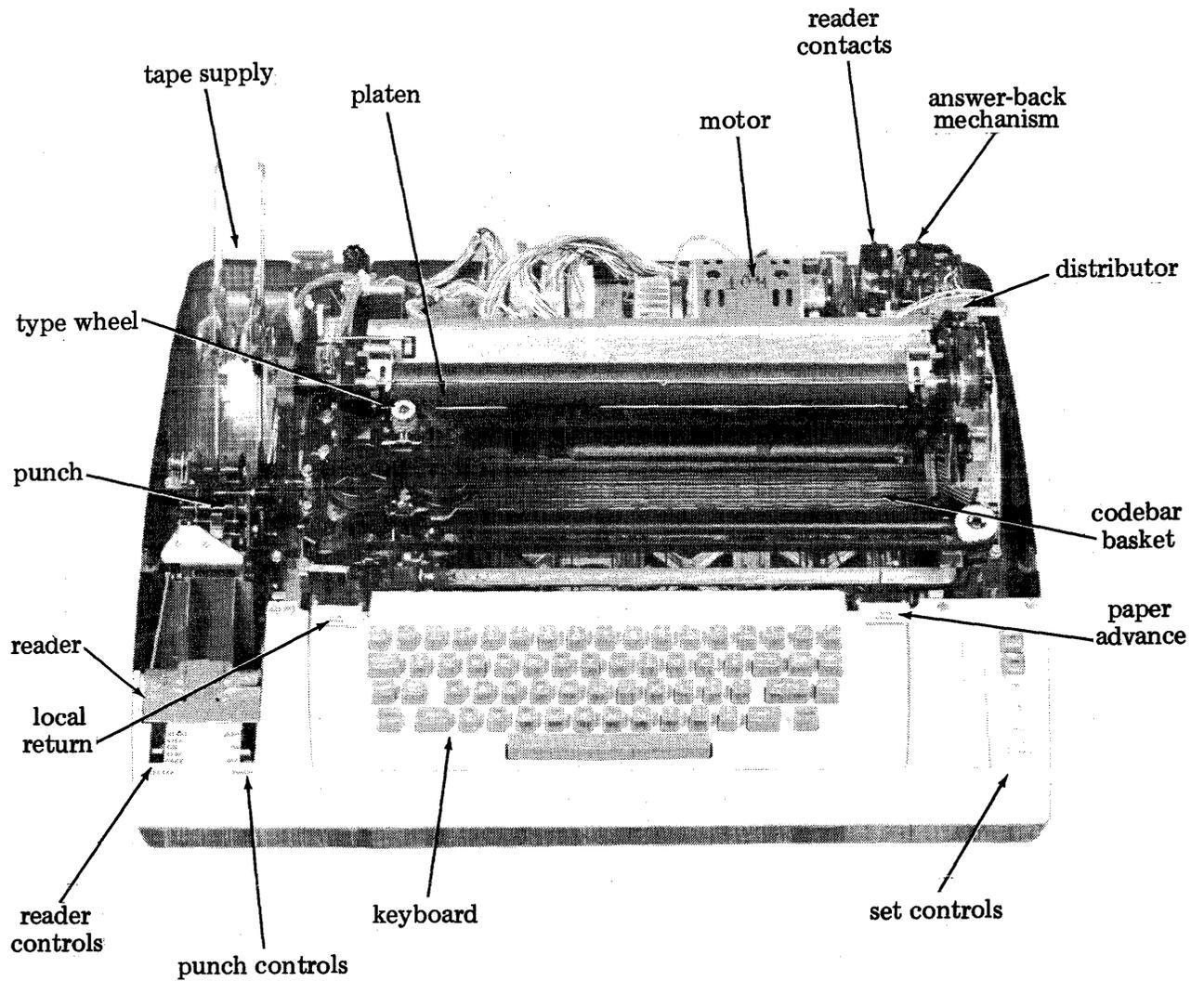
Figure 2 - 38 Automatic Send-Receive (ASR) Set With Cover Removed

matically operated when the set goes on-line. This modem is compatible with WECO 101, 103, and 113 Data Sets or equivalent. The modem and data access arrangements enable the transmission over voice grade telephone lines.

1.10 The Data Access Arrangement (DAA) is required when a customer uses his own modem. This arrangement is provided by the local Telephone Company as part of the contract for use of the telephone network. The reason for this additional unit is to protect other users on the network.

2. DESCRIPTION

2.01 The ASR set is comprised of a keyboard, typing unit, reperforator, and reader (Figures 2, 3, and 4) designed into a cabinet and console as a complete unit. The cabinet and console are mounted on a pedestal, that contains the electrical service unit and a chad box, that attaches to the left side of the pedestal (Figure 1). The cabinet and console can be mounted on an office desk, but the customer must provide for chad collection and a place to mount the electrical service unit.

STANDARD FEATURES

2.02 The following features are standard on ASR sets:

- A 4-row keyboard that generates all 128 ASCII characters.
- Sends on-line through tape reader or through keyboard.
- Receives all 128 ASCII characters — prints 94 graphics including upper and lower case alphabet except, space and delete.
- Receives through typing unit or reader unit.
- Automatic or manual punch — customer-activated.
- Automatic or manual reader — customer-activated.
- Sends and receives at the speed of 100 wpm (10 characters a second) with 11-unit code transmission pattern.
- Sprocket feed printer has a platen 15 inches wide and provides for 132 printing positions, that accommodates fanfold paper stock, 14-7/8 inches wide.
- Sprocket feed and friction feed printers with 8-1/2 inch platens with line capacity of 72 characters.
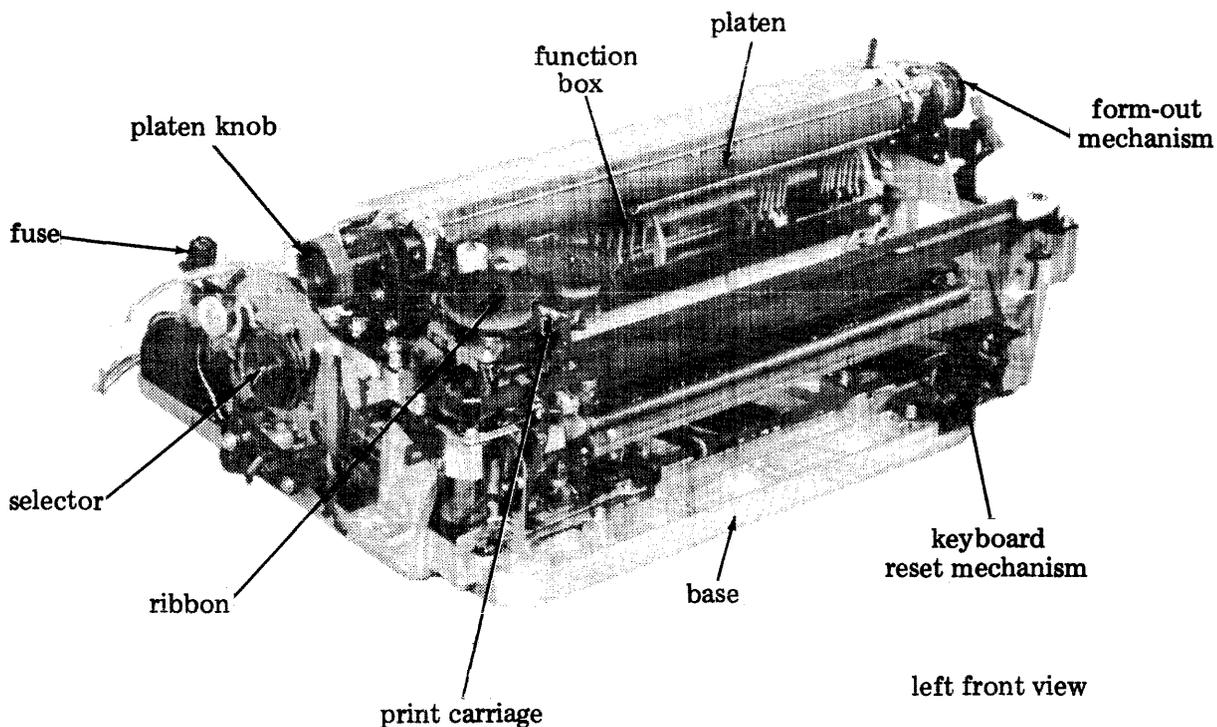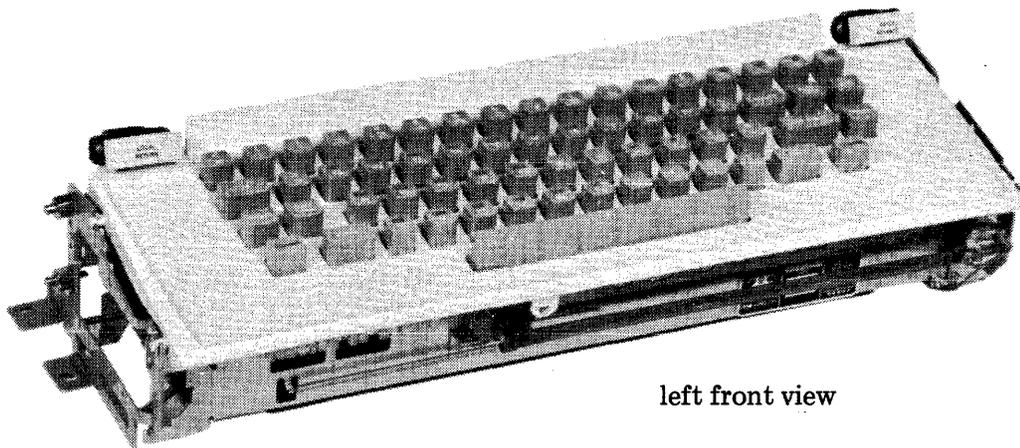

Figure 3 - 38 Printer

Figure 4 - 38 Keyboard

left front view

- Two-color printing — red and black.
- Automatic carriage return and line feed on 132nd character — customer-activated option (for Wide Platen Sets).
- Tape storage for a full roll of 1000 feet of 1 inch paper tape.
- Answer-back triggered either automatically from data modem or data set, upon receipt of ENQ character, or manually with HERE IS key.
- Motor — 50 or 60 Hz.
- Vertical line spacing — single or double (6 or 3 lines per inch).
- Form feed of 11-inch or 5-1/2 inch — customer-activated option.
- Full- or half-duplex mode — customer-activated option.
- Printing in all capitals in the unshift mode — customer-activated option.
- Repeat feature of any key on the keyboard generates the character continuously (Customer-Activated).

ELECTRICAL SERVICE UNIT

2.03   Two electrical service units are available for ASR sets:

- Provides interfacing that conforms with EIA (Electronic Industries Association) Standard RS-232-C interfacing and provides 20 ma or 60 ma dc neutral signal line.
- Incorporates in the ESU, a data modem, having both originate and answer modes.

2.04   The ESU that provides a data modem has the following features:

- Half- or full-duplex mode
- Sending on echoplex
- Suppress on disable
- Automatic frequency shift modulation
- 100 words per minute (110 baud)
- Transmission serially by bits
- Manual data access

COMPONENTS

A.   Keyboard

2.05   The 38 keyboard is capable of generating 128 ASCII characters and presenting them in parallel wire form to the transmitter distributor that converts the code to serial form for the typing unit, reperforator, reader, or to be sent over the signal line.

2.06   The keyboard has 4 rows similar to the standard typewriter. Figure 4 shows a typical arrangement. This keyboard has a repeatable key feature that permits any key that is depressed beyond the normal stop position to continuously repeat that key until it is released. The keyboard console has a manual local carriage return button on the left, and a manual paper advance button on the right, refer to Figure 2. Figures 5, 6, and 7 show the three typical keyboard arrangements and their associated type wheel character sets for Model 38 equipment.

2.07   The keyboard interlock prevents the depression of two keys simultaneously with the exception of the SHIFT or CONTROL key. The CONTROL key and code keys are designated on the keytops by darker characters. The control codes are generated by holding the CONTROL key depressed while depressing one of the symbols or characters related to the control codes.

AD TYPE WHEEL CHARACTER SET

POSITION

SHIFT	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
UNSHIFT	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z

SHIFT	<	{	!	"	#	$	%	&	'	(	)		=	_	}	~	¦	>	\	+	*	,	.	?
UNSHIFT	<	[	1	2	3	4	5	6	7	8	9	0	-	_	]	^	\	>	@	;	:	,	.	/

Figure 5 - AAW Keyboard Arrangement

AF TYPE WHEEL CHARACTER SET

POSITION

SHIFT	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
UNSHIFT	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z

SHIFT	<	{	!	"	#	$	%	&	'	(	)		=	_	}	~	¦	>	\	+	*	,	.	?
UNSHIFT	<	[	1	2	3	4	5	6	7	8	9	∅	-	_	]	^	\	>	@	;	:	,	.	/

Figure 6 - ABW Keyboard Arrangement

AG TYPE WHEEL CHARACTER SET

POSITION

SHIFT	A	B	C	D	E	F	G	H	I	J	K	L	M	N	Ø	P	Q	R	S	T	U	V	W	X	Y	Z
UNSHIFT	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z

SHIFT	<	{	!	"	#	$	%	&	'	(	)		=	_	}	~	¦	>	`	+	*	,	.	?
UNSHIFT	<	[	1	2	3	4	5	6	7	8	9	0	-	_	]	^	\	>	@	;	:	,	.	/

Figure 7 - ACW Keyboard Arrangement

B. Printer

2.08 The typing unit (Figure 3) is capable of receiving and printing up to 94 graphics (Figure 8) on a parity insensitive basis. The typing unit can be programmed for one or two line spaces, per line feed (LF) signal, by activating a mechanical rocker switch on the right side of the typing unit. Platens of 8-1/2 inches (72 characters) are available in friction or sprocket feed. These platens fit into the standard wide platen cover and are mounted to the left which enables the punch and reader to couple into the typing unit.

2.09 A low-paper or paper-out indication is provided on friction and sprocket feed machines respectively. Automatic carriage return and line feed is incorporated into the typing units to return printing to the left margin when the standard line length is exceeded.

C. Reader

2.10 The Model 38 tape reader (Figure 9) is a parallel wire transmitter with electromechanical drive for its read-feed cycle. Speed is controlled at 10 characters per second by the typing unit distributor mechanism. The reader conforms to ASCII-1968 for one inch wide fully perforated tape.

2.11 The reader can be programmed by a strapping option to operate in manual or automatic mode. The automatic mode responds to the reception of a DC1 character in the typing unit function box. The tape can be manually pulled through the reader for positioning or advanced one character by the control switch on the side of the reader.

D. Punch

2.12 The punch (Figure 10) operates at 100 words per minute (10 characters per second) and provides fully perforated 8-level, 1-inch wide tape that conforms to ASCII-1968.

2.13 The features of this unit are manual or automatic operation. The punch controls extend out from the keyboard cover and the chad box mounts to the underside of the cabinet.

2.14 Two mechanical inputs provide power to drive the punch block and tape feed mechanism, and another input that provides code transfer from the codebar basket on the typing unit, through codebar extensions, to the reperforator sensing levers.

b7 b6 b5 →				COLUMN	0 0 0	0 0 1	0 1 0	0 1 1	1 0 0	1 0 1	1 1 0	1 1 1
b4	b3	b2	b1	ROW	0	1	2	3	4	5	6	7
0	0	0	0	0	NUL	DLE	SP	0	@	P	`	p
0	0	0	1	1	SOH	DC1	!	1	A	Q	a	q
0	0	1	0	2	STX	DC2	"	2	B	R	b	r
0	0	1	1	3	ETX	DC3	#	3	C	S	c	s
0	1	0	0	4	EOT	DC4	$	4	D	T	d	t
0	1	0	1	5	ENQ	NAK	%	5	E	U	e	u
0	1	1	0	6	ACK	SYN	&	6	F	V	f	v
0	1	1	1	7	BEL	ETB	´	7	G	W	g	w
1	0	0	0	8	BS	CAN	(	8	H	X	h	x
1	0	0	1	9	HT	EM	)	9	I	Y	i	y
1	0	1	0	10	LF	SUB	*	:	J	Z	j	z
1	0	1	1	11	VT	ESC	+	;	K	[	k	{
1	1	0	0	12	FF	FS	,	<	L	\	l	¦
1	1	0	1	13	CR	GS	–	=	M	]	m	}
1	1	1	0	14	SO	RS	.	>	N	^	n	~
1	1	1	1	15	SI	US	/	?	O	___	o	DEL

Figure 8 - ASCII Code Chart
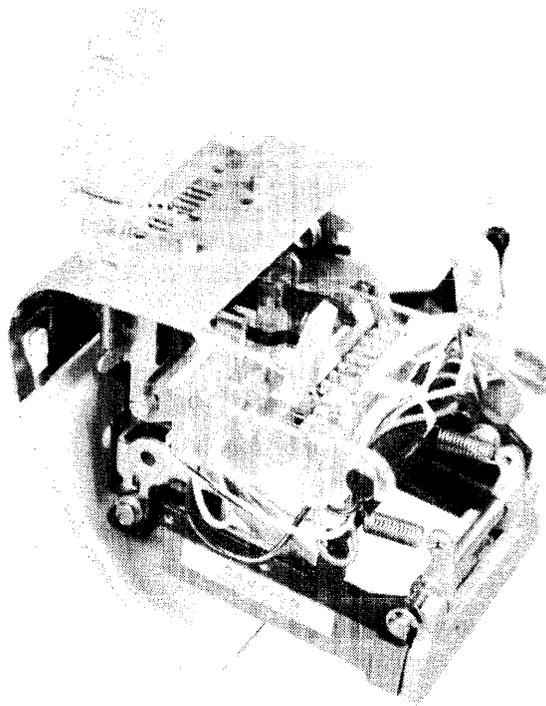
Figure 9 - 38 Reader
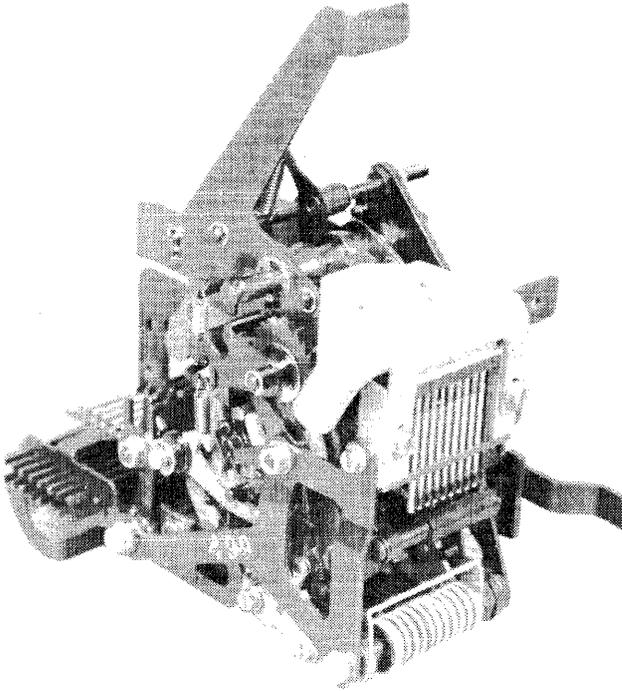
Figure 10 - 38 Punch

E.   Cabinet, Console, Pedestal, and Table

2.15   The cabinet and console are contempo-
         rary in design for both styling and
functionally to provide low operating sounds for
a comfortable work environment. The cabinet
and console are charcoal gray and ivory, the
pedestal is charcoal gray with stainless steel feet
(Figure 1). The typing unit, motor, perforator,
reader, and keyboard are housed in the cabinet
and console. The pedestal contains the electrical
service unit and mounting for the cabinet and
console, form accumulator, and fanfold rack.

2.16   The cabinet and console may be
         mounted on a customer-provided table
or counter. If a customer's table is used, pro-
visions for the electrical service unit and the chad
box must be made by the customer.

2.17   As an option, a double-compartment
         table (Figure 11) is available when a
table style of furniture is desired, or when
additional electrical equipment is required, such
as the station controller. This additional electrical
equipment can be mounted behind the front
panel or in the right pedestal. A right pedestal
door is available that has provisions for an
attendant set.

3.   TECHNICAL DATA

3.01   Electrical and Environmental Charac-
         teristics

   (a)   Power . . . . .115 volts ac $\pm$10%,
                              50 or 60 Hz $\pm$0.5 Hz,
                              3 ampere fused circuit,
                              single phase (3-wire)

   (b)   Power consumption . . . . 300 watts

   (c)   Temperature ranges . . . . This equip-
         ment is intended to be operated in a
         room environment within the temperature
         range of 40°F to 110°F. Serious damage to
         it could result if this range is exceeded. In
         this connection, particular caution should be
         exercised in using acoustical or other enclo-
         sures.

   (d)   Ambient relative
         humidity . . . From 0 to 95 percent

   (e)   Storage
         temperature . . . . . -40°F to 150°F

3.02   Physical Characteristics

   (a)   Dimensions . . . . . . See Figure 12

   (b)   Weight . . . . 98 pounds: 105 pounds
                                      with pedestal
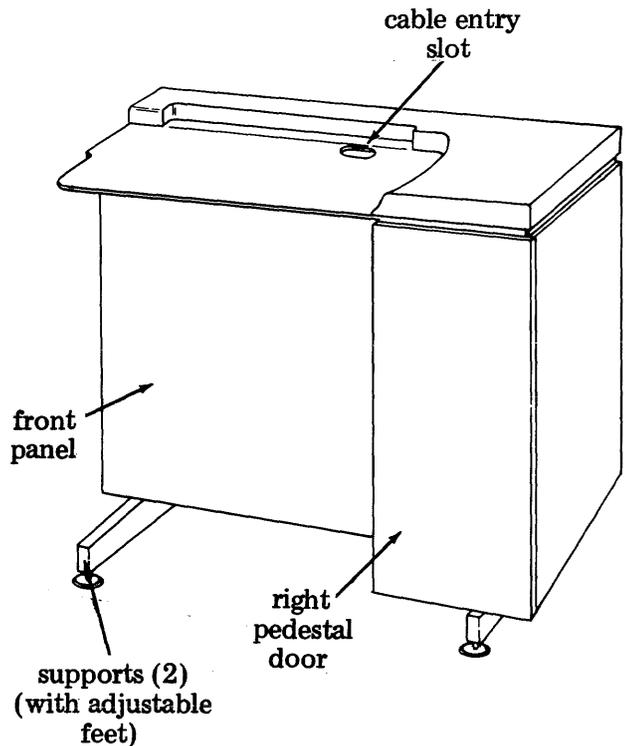
Figure 11 - Double-Compartment Table

(c) Power cord

Purpose . . . . Provides ac power for entire set

Type . . . . Single 3-pin polarized cord

Length . . . . 8 feet from back of cabinet

(d) Interface cable ESU

20 to 60 ma . . . . .Customer-provided

EIA . . . . .Customer-provided
Type . . . . . .25-pin connector
Length . . . . .6 feet

ESU with modem . . 7-pin connector to mate with DAA
Length . . . . .6 feet

3.03 Set Internal Power

(a) EIA voltages for data and control functions:

DESCRIPTION	LOW	HIGH
Binary state	1	0
Signal condition	mark	space
Control function	off	on
EIA voltage	-3 to -15 v	+3 to +15 v
Normal voltage	-12 v	+12 v

(b) DC interface for 20 or 60 ma from an external power source. Allowed voltage range is +25 to +120 volts dc. The terminal accepts the following signals for dc interface applications:

DC Signal lead (+) . . . .P11 pin no. 11
DC Signal lead (-) . . . .P11 pin no. 9
DC Signal ground
(FDX) (+ receive line —
send line) . . . . .P11 pin no. 7

3.04 Transmitting and Receiving Margins

(a) Transmitting — Signals from these terminals will have no more than 5 percent distortion.
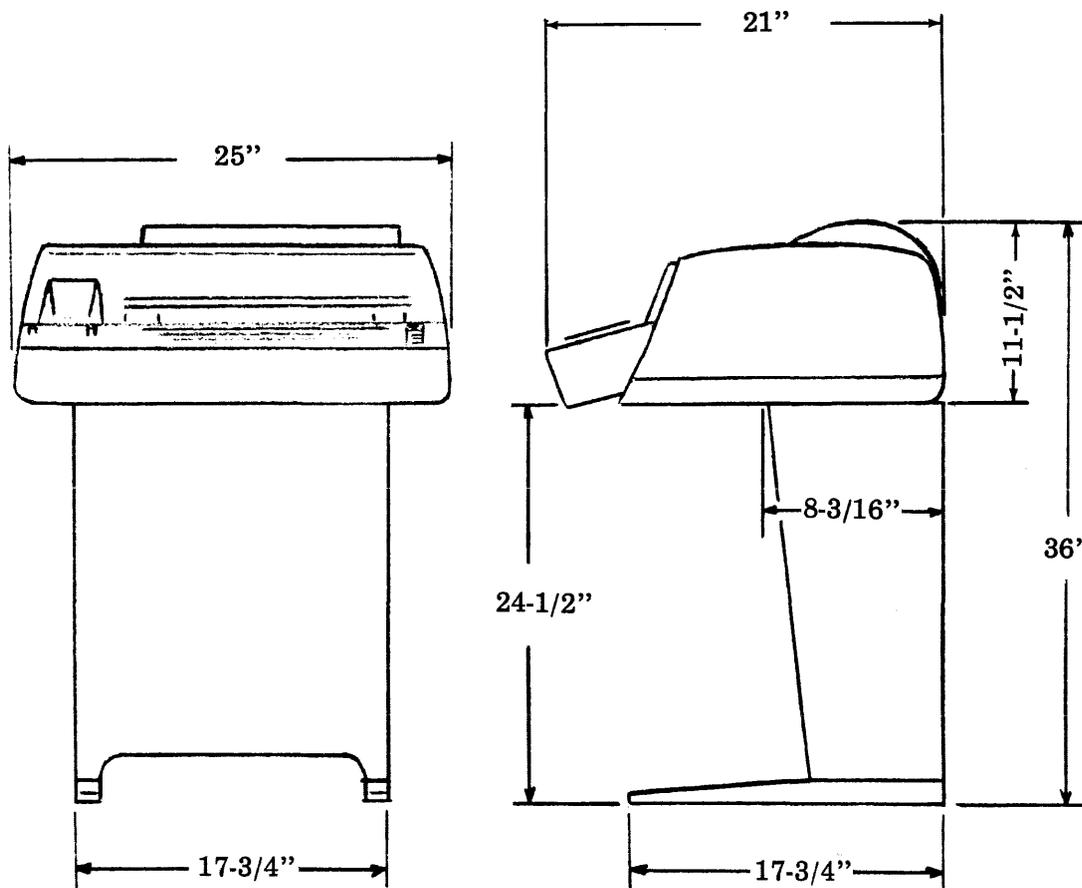
Figure 12 - 38 ASR Set Dimensions

(b) Receiving — Will accept a signal with a maximum of 35 percent bias distortion and 33 percent end distortion.

3.05 ESU With Modem

(a) Modulation . . . . . Frequency shift

(b) Timing . . . . Asynchronous

(c) Code . . . . Insensitive

(d) Turn around time (transmission to receive) . . . . . Half-duplex 100 ms Full-duplex instantaneous

(e) Signal level . . . . 0 to -12 dBm transmit 0 to -50 dBm receive

NOTE: *dBm = Decibels referenced to 1 milliwatt of power at 600 ohms impedance.*

(f) Echo suppressor disable . . . . . . Receipt of answering terminal's carrier, disables echo suppress

(g) Phone line interface . . . . . . Manual data access arrangement 1000A, 2 leads: DT — Data Tip DR — Data Ring

(h) Terminal controls . . . OFF/ALARM ORIGINATE FULL-DUPLEX ECHOPLEX LOCAL BREAK HERE IS

(i) Environmental . . . . Operating temperature 40°F to 110°F up to 95 percent max

4. INTERFACE INFORMATION

4.01   Two electrical service units are available for the standard Model 38 Set. These two ESUs provide three types of electrical interface. The interfaces associated with each ESU are an integral part of the electrical assembly. The two ESU assemblies are described in the following paragraphs and a typical mounting for an ESU is shown in Figure 13.

rear view
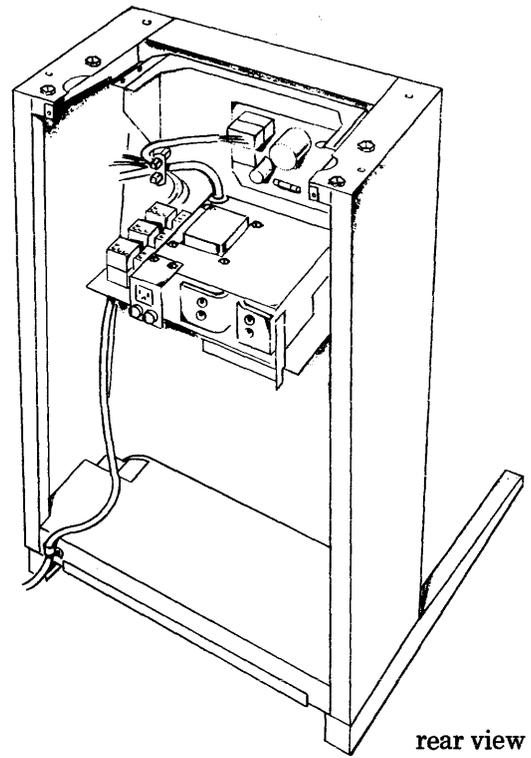
Figure 13 - ESU in Pedestal

EIA Channel Interface

4.02   One ESU provides interface signals that conform to EIA RS-232-C and are listed along with the name, purpose, and pin number of each lead in Table A. The leads which have designations beginning with "A" are ground leads. Interface leads which have designations beginning with "B" are data leads. Interface leads which have designations beginning with "C" are control leads.

4.03   The ESU for EIA channel interface also provides a current interface on either 20 or 60 ma dc. The customer has the option of strapping for either current, but the sets from the factory will be wired for 20 ma dc. Refer to the WD package accompanying the set for wiring instructions.

4.04   The EIA and current interface has a six-button key switch that mounts at the right side of the console, for the operator control and signaling, refer to Figures 14 and 15.

ESU With Modem

4.05   This electrical service unit contains a data modem that converts digital data from the set components, and converts this information to analog frequency shift audio tone

EIA INTERFACE LEADS

DESIGNATION	NAME	PIN NO.	PURPOSE
AA	Protective Ground	1	To connect ac power service ground to equipment chassis. It is electrically isolated from signal ground.
AB	Signal Ground	7	To provide ground for all signal circuits.
BA	Transmitted Data	2	To carry set output data when the set is in the on-line mode and to remain "marking" when set is in the off-line (local) mode.
BB	Received Data	3	To present incoming data to the set when the set is in the on-line mode. *NOTE: If this lead is grounded at the interface, the set will act as if it were in the "marking" condition.*
CA	Request to Send	4	To condition local line interface unit to transmit. This lead is connected permanently on by a strap in the set.
CB	Clear to Send	5	To inform set that local data set is ready to transmit any data presented on BA lead.
CC	Data Set Ready	6	To inform the set that local data set is connected to the transmission facility. *NOTE: When this lead is on, it causes set motor to start running.*
CD	Data Terminal Ready	20	To inform data set that the set is ready to receive data messages. *NOTE: The set is prepared to receive when:* *(a) No alarms are present.* *(b) Set is not in "do not answer" mode.* *(c) Typing unit is on-line.*
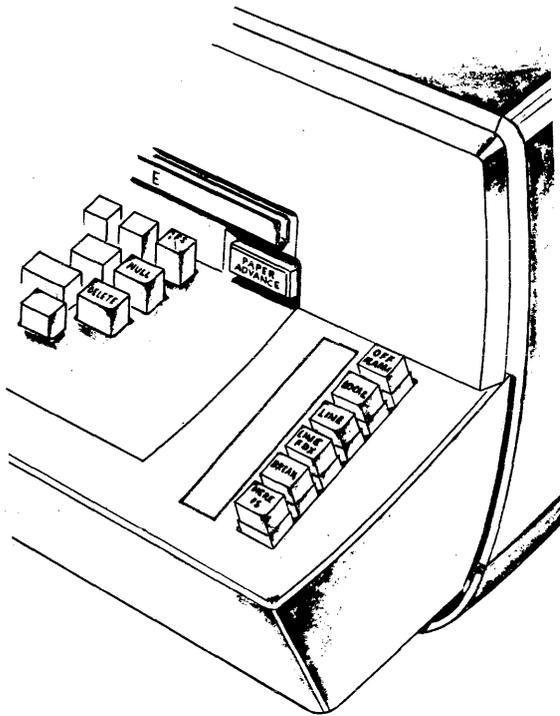
Figure 14 - Control Console for ESU Without
Modem

Figure 15 - Console Controls for Set
Without Modem

to the Data Access Arrangement. The electrical assembly for the data modem contains a modem circuit card, logic card, and power supply which interconnect through cables and Molex connectors. The interface cable, using a Molex connector on the circuit card to interface with a private line or switched network service, must be provided by the customer.

4.06   The electrical interface is compatible with private telephone lines or data access arrangement, Bell System 1000A, 1001B, 1001D, or similar units. This ESU has the capability to provide either manual or automatic answer; both arrangements provide manual originate. Controls for the ESU with modem are shown in Figures 16 and 17. Refer to Section 574-423-100TC for the description and principles of operation of the electrical service unit.

5.   OPERATION

5.01   The operation of the set is described in terms of the controls located on the console and interface leads. The ASR set may be operated locally (off-line), on-line, or simultaneously locally and on-line. Model 38 terminals may be used with the magnetic tape data terminal to obtain speeds of 1050, 1200, 2000, or 2400 baud.

5.02   The Model 38 ASR Set is used as computer Input-Output (I/O) machines and in the following services:

(a)   Switched Network

(b)   Selective Calling (Multipoint Private Line)

(c)   Point-to-Point Private Line

EIA Operation With 103 or 113 Type Data Sets

5.03   The terminal is conditioned for on-line half-duplex operation by depressing the LINE key. Calls can now be originated or answered in the data mode. After the call has been established by the data set, terminal motors will turn on, indicating that the set is now conditioned to send or receive data on-line.

5.04   Selection of the LINE FDX key provides full-duplex operation of the terminal similar to that in 5.03 except, data may be transmitted and received from a remote terminal simultaneously. The LINE FDX key is intended primarily for operation in a full-duplex hook-up, it can also be utilized for half-duplex operation when local monitor copy of data being sent is not required.
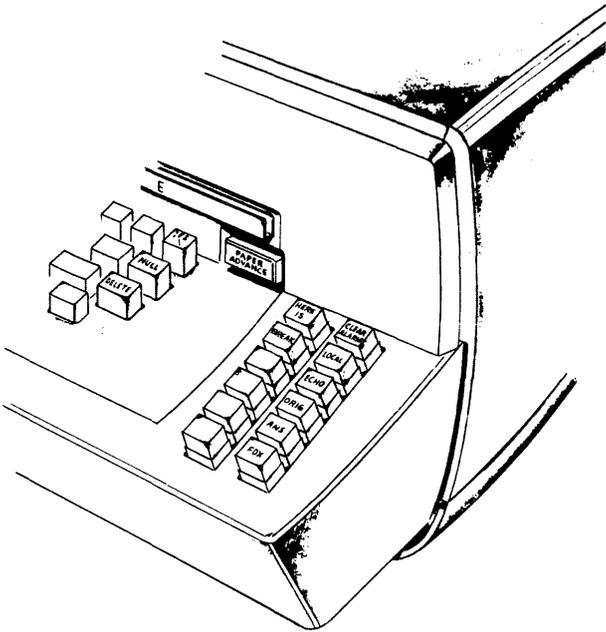
Figure 16 - Control Console for ESU
With Modem

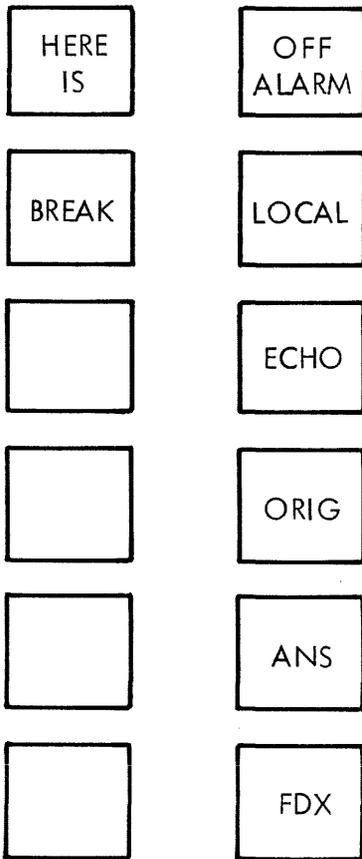|	
HERE IS	OFF ALARM
BREAK	LOCAL
	ECHO
	ORIG
	ANS
	FDX

Figure 17 - Console Controls for Set
With Modem

5.05   Calls may be answered automatically, providing the data set has automatic answer capability, by selecting either LINE or LINE HDX key. Automatic answer is disabled by form-feed contacts, paper-out contacts and OFF or LOCAL key switch.

DC Line Operation

5.06   If the dc interface option is desired, the customer must provide an external battery to supply 20 or 60 ma dc at 20 to 125 v dc as the signal source. The operation of the terminal will be similar to EIA operation except, the motor will turn on with the selection of LINE or HDX keys.

Send Circuit

5.07   The ASR set can send by operating the keyboard, reader, answer-back mechanism, or BREAK key on the console. The keyboard, reader, and answer-back signal contacts are in parallel with the signal generator (distributor), which presents the data to the electrical service unit in serial data form. Send and receive circuits within the terminal are supplied by an internal 24 v dc battery at 20 ma. The BREAK key is independently connected into the internal signal circuit at the electrical service unit.

5.08   Transmission over dc telegraph loop or telephone line may be accomplished by tape transmission. A prepared tape is placed into the reader. The operator depresses the LINE or LINE FDX key. After making the connection, the reader is started by momentarily moving the control lever to the start position. The printer will operate (half-duplex only) and the message will be transmitted to the distant station. As the end of tape approaches the reading gate, or if the tape becomes taut during transmission, the reader will stop by action of the tape-out tight-tape switch. Each of these conditions operate the same switch through different linkages.

5.09   A break detection circuit is optionally available to receive and recognize a "break" transmitted from a distant station. The break detect circuit will stop tape reader transmission, blind sending circuits, and light an alarm lamp. To clear the alarm condition, the operator must operate the BRK-RLS key.

Receive Circuits

5.10   The internal 20 ma signal circuit supplies a dc signal to the selector magnet driver associated with the page printer. The selector magnet driver amplifies this signal to 500 ma dc to operate the selector magnet on the page printer.

Answer-Back

5.11   The answer-back message is a fixed series of characters used to identify a station. It consists of a commutator disc and brush-type of signal generator and a coded drum with sensing contacts to determine the message. The answer-back drum has 21 positions for characters. This can be reduced to three sections of 7 positions by removing tines on the drum. The output can be blinded on a given character position by one of the sensing contacts if the associated tine on the drum is not removed. The drum is coded to send the required message by removal of the appropriate tines on the drum. Thus any fixed message from 1 to 20 characters can be sent by the answer-back.

NOTE: The first character position must always be blinded for timing reasons.

5.12   The answer-back mechanism is tripped by a magnet pulsed from external contact function box contacts or the HERE IS key. Closure of any of these contacts places ground on the answer-back lead to energize the answer-back clutch trip magnet.

5.13   During a call the answer-back mechanism can be tripped manually (HERE IS key) or by a code combination (ENQ). The ENQ operates at both sending and receiving stations, but only the receiving station answer-back is tripped. The sending station answer-back is not tripped because the function box is blocked whenever the distributor is tripped.

Disconnecting a Call

5.14   A call will normally be terminated by the EOT code combination which provides fast disconnect without introducing hit characters. This is accomplished by the electrical service unit in response to EOT contact opening in the typing unit function box.

5.15   Alternately to clear a connection, the OFF or LOCAL locking key is operated. This triggers the clearing sequence in the electrical service unit.

Local Operation

5.16   The local operation provides off-line operation of the set. The operator selects the local mode by depressing the LOCAL locking key. The LOCAL key lights the local lamp and operates the motor control relay which in turn makes the motor run. The ESU connects the sending circuit to the receiving circuit enabling the keyboard and answer-back to send to the page printer.

5.17   Should an outside call attempt to connect with the printer while in the local mode, the call may be answered by the operator by depressing the LINE key. If no interruption is desired, the set may be placed into the off condition by depressing the OFF locking key.

5.18   The set can be conditioned to prepare tape locally by depressing the LOCAL key and operating the perforator ON switch. Every time the keyboard is operated the printer will print the message while the perforator will prepare tape. If an error occurs the switch may be moved to the backspace position. This will back the tape by one character at a time. After the tape has been prepared, a series of rubout (delete) characters may be used to clear the last character desired from the punch block.

Off Key/Paper Handling

5.19   The OFF key prevents the automatic answering of incoming calls. It can be used for normal servicing of the terminal or to place the terminal in inactive status during idle periods. The OFF key may be used to facilitate paper insertion because it insures that the set will not automatically answer while the paper is being inserted into the machine. The paper alarm is indicated by a lamp located on the OFF key. If a low-paper alarm is given during a call the operator has the option of completing the call before changing paper or interrupting the call. If she chooses to interrupt the call she must stop transmission at some convenient point and notify the distant station of the problem. Momentarily depress the CONTROL key and the END OF TRANSMISSION key simultaneously, which will clear the connection.

5.20   On units equipped for handling sprocket forms, there is a paper-out contact. Should the operator ignore the low-paper alarm, or should the present message be too long, the contact will close when the last form passes by and will automatically cause a disconnect.

Set Controls and Functions

5.21   The description of set controls are outlined in Tables A and B. Refer to 5.12, 5.13, and 5.14 for information on HERE IS, ENQ, and EOT. Two-color printing is activated by using "ESC" "3" for red ribbon and "ESC" "4" for black ribbon.

5.22   The BELL responds to the sending and receiving station when the function is transmitted. The Paper Out Alarm key on sprocket feed unit illuminates when the last form has been fed into the platen; when this occurs, if the unit is on-line, the call will immediately terminate.

CONTROLS DESCRIPTION

CONTROL	DESCRIPTION	USE
PAPER ADVANCE	When this key is held depressed, the typing unit feeds paper until key is released.	Operator controls paper feed with no effect on line signals.
LOCAL RETURN	When this key is momentarily depressed, causes the carriage to return for starting a new line.	Operator activates carriage return with no effect on line signals.
OFF ALARM	Depressing key — motor off and set is out-of-service. Illuminated red for alarm.	Set off-line. Paper handling and low-paper or paper-out condition.
LOCAL	Motor on — set operable but cannot send or receive.	Set off-line. Punching tape, testing.
ECHO	Depressing keys simultaneously with the remote station for sending or receiving (FDX only). The transmitted data is echoed back and printed on the typing unit.	Set on-line. Error check and detection used with either ORIG or ANS.
ORIG	Originate — turns motor on. When lighted, indicates presence of receive carrier.	Set on-line — conditions set for call origination and after establishment of a call.
ANS	Answer — manual or automatic response to a sending station. Depressing key causes answer-back to trip.	Set on-line — conditions set to answer incoming calls. Call will disconnect in 4 to 6 seconds if not answered.
FDX	When depressed (lighted) set is in full-duplex mode. When key is not selected, the set is in half-duplex.	Set on-line — permits simultaneous sending and receiving. Hard copy and punch tape of received data.
HERE IS	When depressed it operates a stored series of up to 20 characters to be transmitted over the line.	Set on-line — set identification is sent to the remote terminal.
BREAK	When depressed, places a spacing condition on the signal line. An alarm condition to stop reader, blind sending circuit.	On-line operation after a call has been established — sends and recognizes a break signal in both LINE and FDX modes. Lights the alarm lamp.
LINE	Motors on — full capability for HDX.	On-line operation conditions the set to receive data.
LINE FDX	Motors on — full capability for HDX or FDX.	On-line operation conditions the set to send and receive data.

READER

5.23   The Model 38 paper tape reader can be operated in the manual or automatic modes. Sets are shipped with the reader in the manual mode. By removing a wire strap on the reader circuit, refer to the Wiring Diagram Package (WDP) furnished with the set, the automatic feature can be activated.

Manual Operation

5.24   Controls for the paper tape reader are located on the left side of the unit, refer to Figure 18; Table C calls out the controls and describes the operation of each position of the control lever.
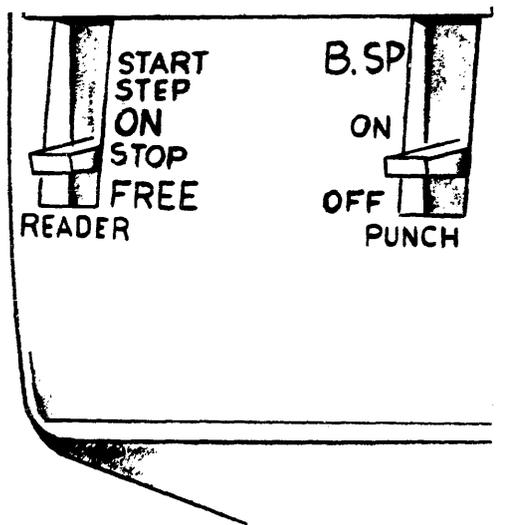
left side of console

Figure 18 - 38 Reader and Punch Controls

Automatic Operation

5.25   When the reader is in the automatic mode, control can be accomplished by the reader controls on the console or through the keyboard. In on-line operation, sending or receiving can be initiated and controlled from a remote station. In Selective Calling Systems the reader can be controlled from a line controller-computer that polls each of the stations in the system according to a predetermined program.

5.26   The reader in the automatic mode responds to the receipt of ASCII control codes. To operate the reader from external control, the bat handle switch must be positioned to ON and a coded tape must be in the reader. The following control codes cover the operations of the reader from the keyboard or another input device.

    DC1 — Turns the reader on.
    DC3 — Turns the reader off.
    ENQ — Stops reader and calls in answer-back. To automatically start the reader after ENQ; the last coded answer-back character must be a DC1.
    EOT — Turns off reader and the station.

5.27   The reader will stop in response to a Form Feed (FF) code. After the completion of the form-feed operation the reader will start to process the tape when the next character is received. For the exception of ASCII designated information separators, two delete characters must follow each control character in the paper tape.

5.28   The tight-tape and tape-out switches are two safety features on the reader. The tight-tape switch operates when the paper tape

TABLE C

MANUAL READER CONTROLS

CONTROL	OPERATION
START	Moving the control lever switch to this position, starts the reader.
STEP	Causes the reader to step for each movement of the bat handle switch; allows for single character reading.
ON	Spring loaded control lever returns from the START position to ON which continues reader operation.
STOP	Reader is inoperative in this position.
FREE	Enables the paper tape to be manually pulled through the reader for positioning.

becomes tight or tangled by turning off the reader and prevents the tape from tearing. The tape-out switch operates when the end of the tape is sensed, and automatically turns off the reader before the last four characters on the tape have been read.

PUNCH

5.29   The tape punch is shipped programmed for manual operation. The tape punch has the facility for automatic operation by removing two clips, refer to Figure 19. The controls for manual operation are listed in Table D.

5.30   The automatic operation of the punch responds to the receipt of ASCII control codes. The local keyboard or a remote station sending a DC2 code will turn the punch on. The sending station turns the receiving station's punch off at the end of the message by using the DC4 control code.

5.31   In preparing tapes for subsequent transmission, all control codes (except information separators) should be followed by two DELETE characters. These characters allow the terminal to perform functions before additional data is transmitted.

5.32   Error correction is accomplished by positioning the tape so that a character to be blocked out is over the punch block. The DELETE key on the keyboard is typed over the error followed by typing the correct character. When the reader senses delete characters no punching, printing, or spacing occurs. This feature allows the page copy to maintain the correct format.

6.   REFERENCES

6.01   The publications associated with the Model 38 equipment are subdivided into the following four manuals: Operator's, Installation and Servicing, Maintenance, and Motor Manuals. These manuals provide general and specific technical information for this equipment. The Maintenance Manual is divided into three volumes and each volume is made up of a group of appropriate, independent, sections. Volume 1 contains sections for description, troubleshooting, lubrication, and disassembly and reassembly. Volume 2 provides the adjustments and Volume 3 includes the part sections. The following publications pertain to the ASR set.
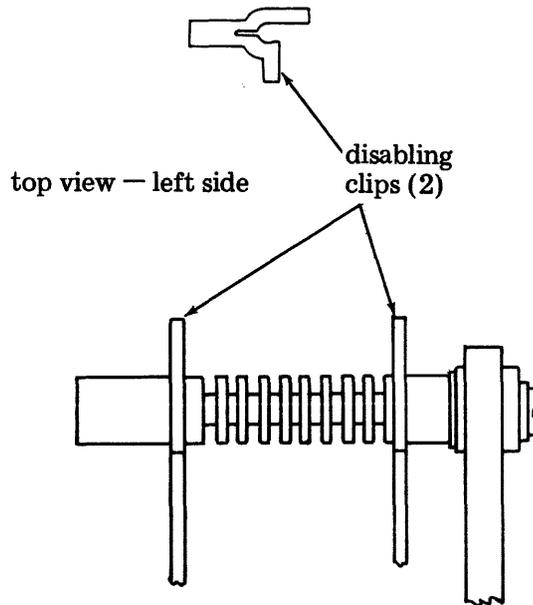

top view — left side   disabling clips (2)

Figure 19 - 38 Perforator Lever Post

TABLE D

MANUAL PUNCH CONTROLS

CONTROL	OPERATION
B.SP.	Primarily used for tape correction. Each time the control lever switch (Figure 18) is moved to this position, the tape moves in reverse direction one character space.
ON	Punch operates and permits characters received by the printer to be punched on the tape.
OFF	Punch inactive and prohibits punching the tape.

TITLE	NUMBER
Installation and Servicing Manual	341
Operator's Manual	342
ASR Maintenance Manual	343

Volume 1

Title	Number
Description and Operation	574-400-100TC
Troubleshooting	574-400-300TC
Removal and Replacement of Components	574-400-700TC

Keyboard

Title	Number
Description and Operation	574-421-100TC
Lubrication	574-421-701TC
Disassembly and Reassembly	574-421-702TC

Printer

Title	Number
Description and Operation	574-422-100TC
Lubrication	574-422-701TC
Disassembly and Reassembly	574-422-702TC

Electrical Service Unit

Title	Number
Description and Operation	574-423-100TC
Disassembly and Reassembly	574-423-702TC

Reader

Title	Number
Description and Operation	574-424-100TC
Lubrication	574-424-701TC
Disassembly and Reassembly	574-424-702TC

Punch

Title	Number
Description and Operation	574-425-100TC
Lubrication	574-425-701TC
Disassembly and Reassembly	574-425-702TC

Cover

Title	Number
Lubrication	574-426-701TC
Disassembly and Reassembly	574-426-702TC

Volume 2

Adjustments

Title	Number
Keyboard	574-421-700TC
Printer	574-422-700TC
Reader	574-424-700TC
Punch	574-425-700TC
Cover	574-426-700TC

Volume 3

Parts

Title	Number
Keyboard	574-421-800TC
Typing Unit	574-422-800TC
Electrical Service Unit	574-423-800TC
Reader	574-424-800TC
Tape Punch	574-425-800TC
Cover and Table	574-426-800TC
Motor Bulletin	295B

7. APL SETS

7.01   The APL (A Programming Language) set is equipped with special symbols which allow the customer to use it in APL applications. Upper case letters of the alphabet and numerics are also generated. All the symbols generated by this set are shown in Figure 20. The APL set does not generate lower case letters of the alphabet.

7.02   The APL Sets are 60 Hz, ASR or KSR terminals. Interface is the same as for the standard Model 38 sets: DC neutral current, EIA, or modem. The APL Sets are available as wide platen (14-7/8 inch) sprocket feed terminals or 8-1/2 friction feed. A Modification to reduce the 14-7/8 inch sprocket platen to 8-1/2 inch is also available. Refer to the Model 38 Catalog.

7.03   The APL characters generated by this set are shown in Figure 21. The code assignments are shown in Figure 22. APL overstrike characters are achieved by generating the primary symbol, backspacing, and then generating the overstrike symbol. The overstrike symbols are shown in Figure 23.

7.04   In order to backspace, the 38 APL Set is equipped with a backspace mechanism. A detailed description of this mechanism may be found in Section 574-422-100TC.

7.05   The 8th bit always marking option is not available on the APL Sets.

POSITION

SHIFT	α	⊥	∩	⌊	∈	_	∇	Δ	⍳	○	'	⎕	⏐	⊤	○	⋆	?	ρ	⌈	~	↓	∪	⍵	⊃⋅	↑	⊂
UNSHIFT	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T·	U	V	W	X	Y	Z

SHIFT	⏐	¨	‾	<	≤	=	≥	>	≠	∨		−	∧	÷	⍀	⍇	→	(	)	⍃	⍄	\
UNSHIFT	⏐	1	2	3	4	5	6	7	8	9	0	+	∧	×	◇	⊢	←	[	]	·	⋅	/

Figure 20 - Characters and Symbols Generated From APL Keyboard

APL CHARACTER DESIGNATION				
APL SYMBOL	DESCRIPTION	APL SYMBOL	DESCRIPTION	
¨	UMLAUT OR DIAERESIS	α	ALPHA	
‾	NEGATIVE	⌈	CEILING OR MAXIMUM	
<	LESS THAN	⌊	FLOOR OR MINIMUM	
≤	LESS THAN OR EQUAL TO	_	UNDERLINE	
=	EQUAL	▽	DEL	
≥	GREATER THAN OR EQUAL TO	△	DELTA	
>	GREATER THAN	°	DEGREE (SMALL CIRCLE)	
≠	NOT EQUAL	'	QUOTE	
∨	OR	□	QUAD	
∧	AND	(	PARENTHESIS	
−	MINUS	)	PARENTHESIS	
÷	DIVISION	[	BRACKET	
+	PLUS	]	BRACKET	
×	TIMES			
?	ROLL	⊂	UNNAMED	
ω	OMEGA	⊃	UNNAMED	
∈	ELEMENT	∩	UNNAMED	
ρ	RHO	∪	UNNAMED	
∼	NOT	⊥	DECODE	
↑	TAKE	⊤	ENCODE	
↓	DROP	|	ABSOLUTE VALUE OR RESIDUE	
⍳	IOTA	;	SEMICOLON	
○	PI TIMES	,	CATENATION	
*	EXPONENT	:	COLON	
→	BRANCH	.	DECIMAL	
←	ASSIGN	\	LEFT SLASH	
⊢	UNNAMED	/	RIGHT SLASH	
⊣	UNNAMED			

Figure 21 - APL Characters

b7 b6 b5 →			0 0 0	0 0 1	0 1 0	0 1 1	1 0 0	1 0 1	1 1 0	1 1 1
b4 b3 b2 b1	**COLUMN →**	**ROW ↓**	0	1	2	3	4	5	6	7
0 0 0 0		0	NUL	DLE	SP	0	←	P	→	★
0 0 0 1		1	SOH	DC1	¨	1	A	Q	α	?
0 0 1 0		2	STX	DC2	¯	2	B	R	⊥	ρ
0 0 1 1		3	ETX	DC3	<	3	C	S	∩	⌈
0 1 0 0		4	EOT	DC4	≤	4	D	T	⌊	~
0 1 0 1		5	ENQ	NAK	=	5	E	U	∈	↓
0 1 1 0		6	ACK	SYN	≥	6	F	V	─	∪
0 1 1 1		7	BEL	ETB	>	7	G	W	∇	ω
1 0 0 0		8	BS	CAN	≠	8	H	X	△	⊃
1 0 0 1		9	HT	EM	∨	9	I	Y	ι	↑
1 0 1 0		10	LF	SUB	)	]	J	Z	∘	⊂
1 0 1 1		11	VT	ESC	(	[	K	}	'	¦
1 1 0 0		12	FF	FS	,	;	L	⊢	□	⊣
1 1 0 1		13	CR	GS	+	−	M	×	|	÷
1 1 1 0		14	SO	RS	.	:	N	◊	T	$
1 1 1 1		15	SI	US	/	\	O	∧	○	DEL

Characters in Shaded Areas Conform to 1968 ASCII

Figure 22 - APL Code Assignments

APL OVERSTRIKE CHARACTER GENERATION				
COMPLETED SYMBOL	DESCRIPTION	PRIMARY SYMBOL		OVER-STRIKE SYMBOL
⊛	LOGARITHIM	○	B	★
⏀	REVERSAL OR ROTATE	○	A	|
⍉	TRANSPOSE	○	C	\
⍋	GRADE UP	△	K	|
⍒	GRADE DOWN	▽	S	|
⍝	COMMENT OR LAMP	∩	P	○
⍞	QUOTE QUAD	⎕	A	□
!	FACTORIAL COMBINATION	|	C	.
⍲	NAND	∧	E	~
⍱	NOR	∨		~
⍫	DEL TILDE	▽		~
I	I BEAM	T		⊥
⊢⊣	UNNAMED	⊢		⊣
⊚	"ANY ST'D. SCALAR DYADIC OPERATOR"	○		∘

Figure 23 - APL Overstrike Symbols

8. OPTIONAL FEATURES

● 188800 Modification Kit — Provides Model 38 wide platen sprocket feed printer with facilities to use 8-1/2 inch wide friction paper.

Description

8.01 The 188800 modification kit allows the 14-7/8 inch wide platen sprocket feed Model 38 terminal to use 8-1/2 inch narrow platen friction feed paper. The modification is not permanent. The customer may use either the 14-7/8 inch paper or the 8-1/2 inch paper. A selection lever mounted at the right of the platen is marked "N" and "W." In the "N" (narrow) position, 8-1/2 inch paper can be used; in the "W" (wide) position, 14-7/8 inch paper can be used.

8.02 When the 8-1/2 inch paper is used, the margin bell operates after the 66th character and the automatic carriage return-line feed operates after the 72nd character. When the 14-7/8 inch paper is used, the margin bell operates at approximately the 125th character and the automatic carriage return-line feed operates after the 132nd character.

NOTE: Automatic carriage return-line feed will occur as described only if the option has been installed, otherwise carriage return and line feed will take place as separate functions.

There is a minor variation in the left margins with this modification. The margin for the wide paper is approximately 1/2 inch. The margin for the narrow paper is from 0.125 inch to 0.364 inch.

8.03 Automatic Carriage Return-Line Feed

Narrow Platen — 8-1/2 inch paper: As the carriage approaches the 66th character, the carriage engages the actuating lever (Figure 24) and moves it to the right an amount greater than for the margin bell. This causes the automatic codebar to be moved to the right an equal amount. The carriage return and line feed function levers move up affecting carriage return and line feed.

Wide Platen — 14-7/8 inch paper: In the wide platen mode the actuating lever is pivoted downward, allowing the carriage to pass over it without engaging it. As the carriage approaches the right margin, it engages the automatic codebar and moves it to the right. The carriage return and line feed function levers then move up affecting both functions.
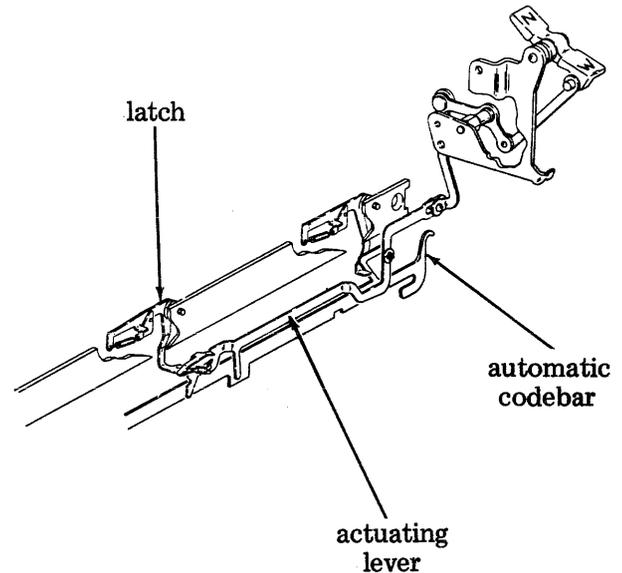
left front view

Figure 24 - Automatic Carriage Return-Line Feed and Margin Bell

8.04 Margin Bell

Narrow Platen — 8-1/2 inch paper: As the carriage moves to the right it depresses a latch. Depressing the latch causes the actuating lever to move to the right. This causes the automatic codebar to move to the right slightly. The margin bell function lever rises up and latches its pawl. During the middle portion of the function cycle, the function lever moves the pawl down. When the stripper bail strips the pawl late in the function cycle, the pawl moves up and causes the clapper mounted on the wire spring to snap and ring the bell

Wide Platen — 14-7/8 inch paper: Margin bell, when in the wide paper mode, is similar to narrow paper. A similar mechanism is present at the far right of the carriage rail which causes the automatic codebar to move to the right slightly, allowing the margin bell function lever to move up and latch its pawl. During the middle portion of the function cycle, the function lever moves the pawl down. When the stripper bail strips the pawl late in the function cycle, the pawl moves up and causes the clapper mounted on the wire spring to snap and ring the bell.

Adjustments

BELL CLAPPER

• Printer in stop condition.

    Requirement — 0.030 to 0.070 inch
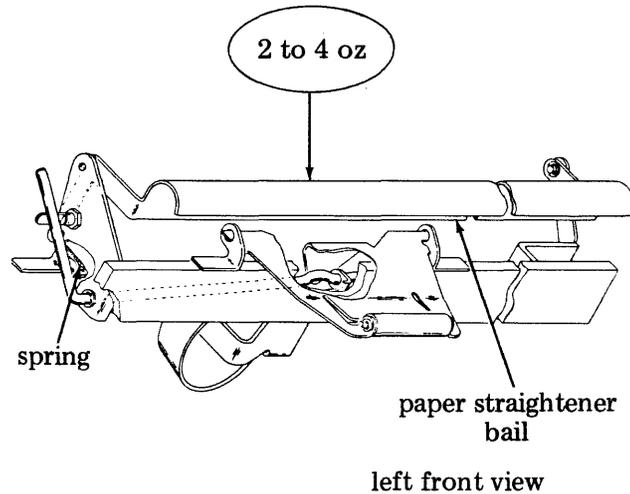   between clapper and bell.

    Adjust — Loosen screw and position clapper.
        If refinement is necessary, bend spring.

0.030" to
0.070"

spring

screw

clapper

rear view
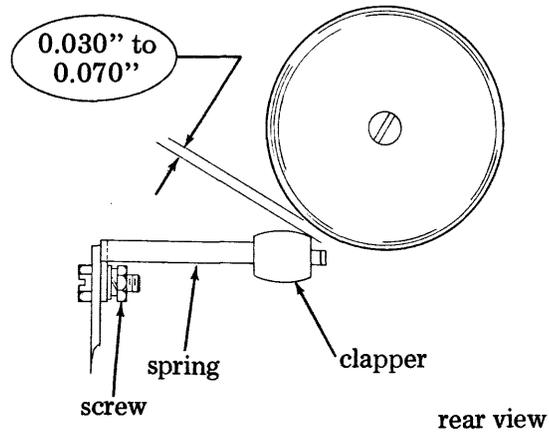
PAPER STRAIGHTENER BAIL SPRING

• No paper in platen assembly.
• Push down at the center of the bail.

   Requirement — 2 to 4 oz to start bail
        moving downward.

2 to 4 oz

spring

paper straightener
bail

left front view

PRESSURE PLATE ENDPLAY

• Bias pressure plate against the right bracket.

    Requirement — Some to 0.062 inch between left bracket and the flat surface of the pressure plate.

    Adjust — Loosen mounting screws on left or right bracket.
        Position left bracket.
        Tighten mounting screws.

left
bracket

right
bracket

mounting
screws

some to
0.062"

pressure
plate

front view

front view
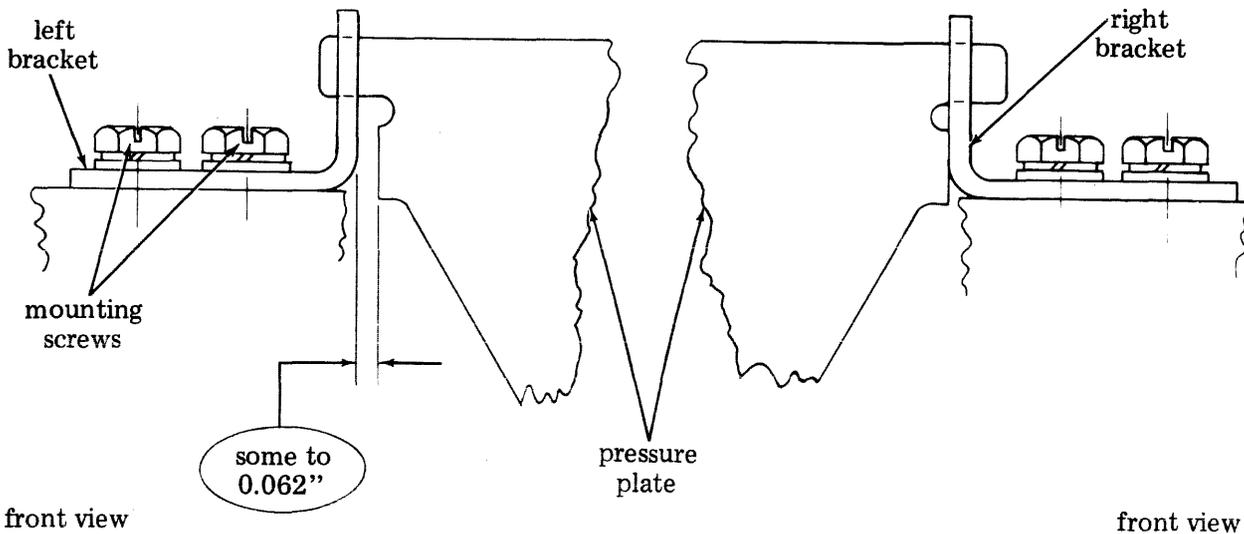
PRESSURE ROLLER CLEARANCE

• Tension roller rod in latched position.
• Move carriage to a position where the carriage is nearest the roller or plate.

Requirement — Some to 0.047 inch between carriage and plate.

Adjust — Loosen nut on lever assembly.
     Move assembly up or down.
     Tighten nut.

tension roller
rod

platen

some to
0.047"

carriage

right side view

nut

lever assembly

left front view

G   Ends   Pressure Plate

O   Shaft   Pressure Roller

G   **Detent**   Pressure Roller

O   Pivot   Paper Straightener
      (Both Sides)   Bail

O   Hooks   Paper Straightener
      (Both Ends)   Bail Spring

left front view

O   Pivots   Lever

O   Sliding Surface   **Actuating Lever**

O   Pivot   **Actuating Lever**

O   Pivot   Latch

O   Hooks   Spring
      (Both Ends)

G   Engaging Surface   Latch

O   Hooks   Spring
      (Both Ends)

left front view

Disassembly and Reassembly

- Remove paper trough by sliding it upward.

paper trough
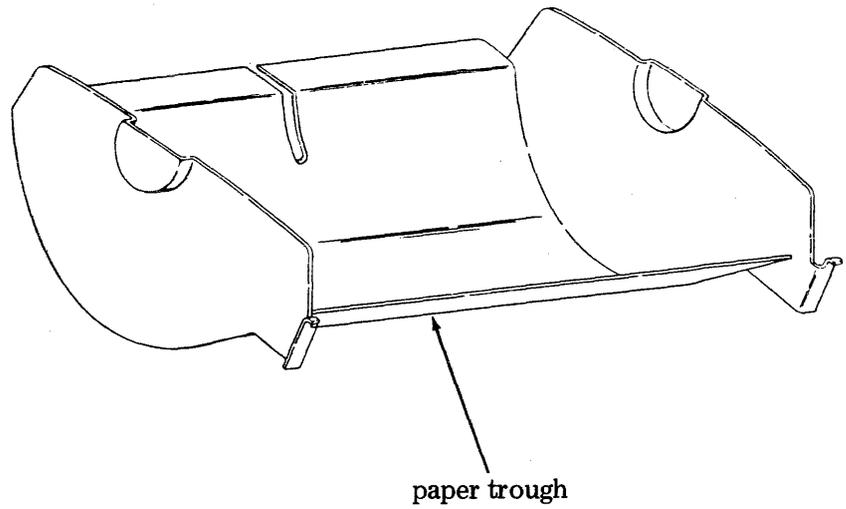
- Remove coverplate:

  1. Remove 180798 screw from 188981 bracket supporting coverplate.

  2. Remove 181241 screw from top of coverplate.

  3. Remove two 181245 screws securing coverplate to 188911 bracket.

181245 screw

188980 coverplate

181242 screw

180798 screw

188981 bracket
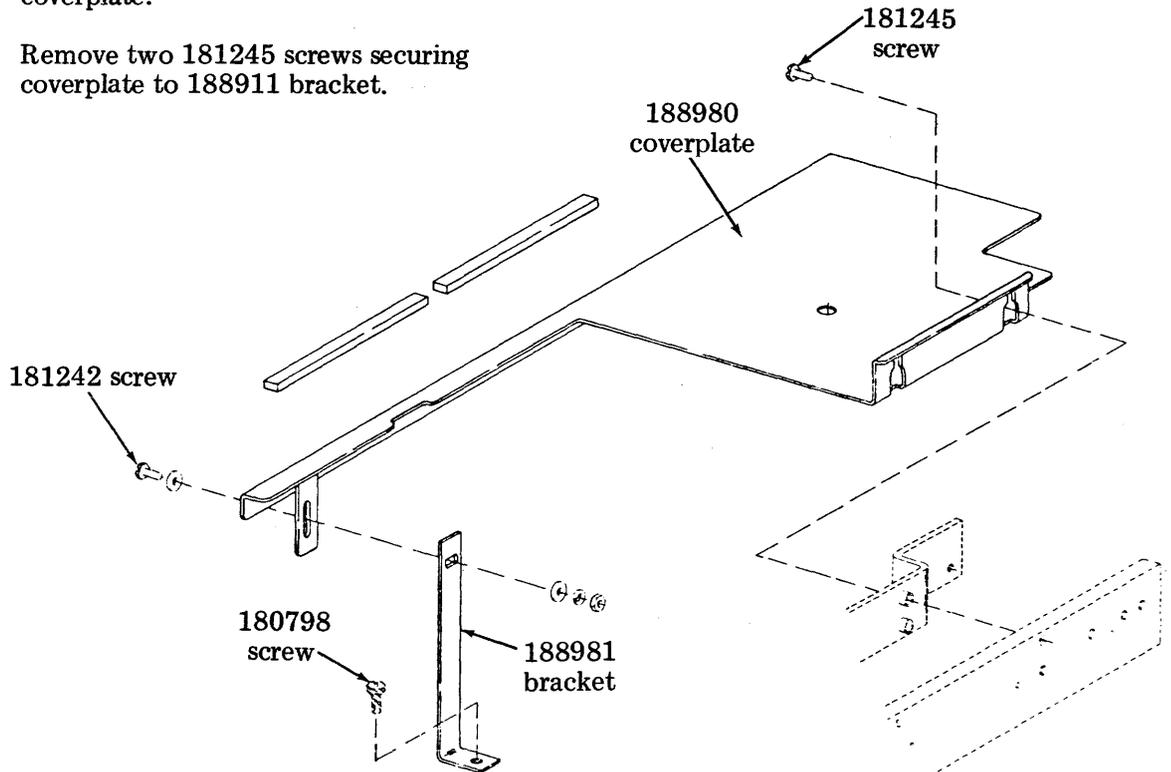
- Remove 119648 retainer holding 188919 lever in elongated slot of actuating lever.

- Remove 119649 retainer securing 188919 lever to post of 188918 lever. Remove 188919 lever.

- Remove 119649 retainer holding 181071 link to short extension of 188918 lever.

- Remove 119649 retainer and remove 188918 lever from post.

- Remove 188917 post by removing 3598 nut and 2191 washer.

- Remove 119649 retainer securing 188915 and 182889 (not shown) selection levers to post.

- Remove 188915 selection lever, 188920 sleeve, 182890 plate, and the 182889 single-double line feed selection lever (not shown — next to 188915 selection lever).

- Remove 181071 link.

- Remove 42661 spring.

- Remove 119648 retainer securing 188793 actuating lever to automatic codebar.

- Remove actuating lever.

- Remove 188796 screw.

- Remove 188792 latch.

- Remove 185968 latch and spring.
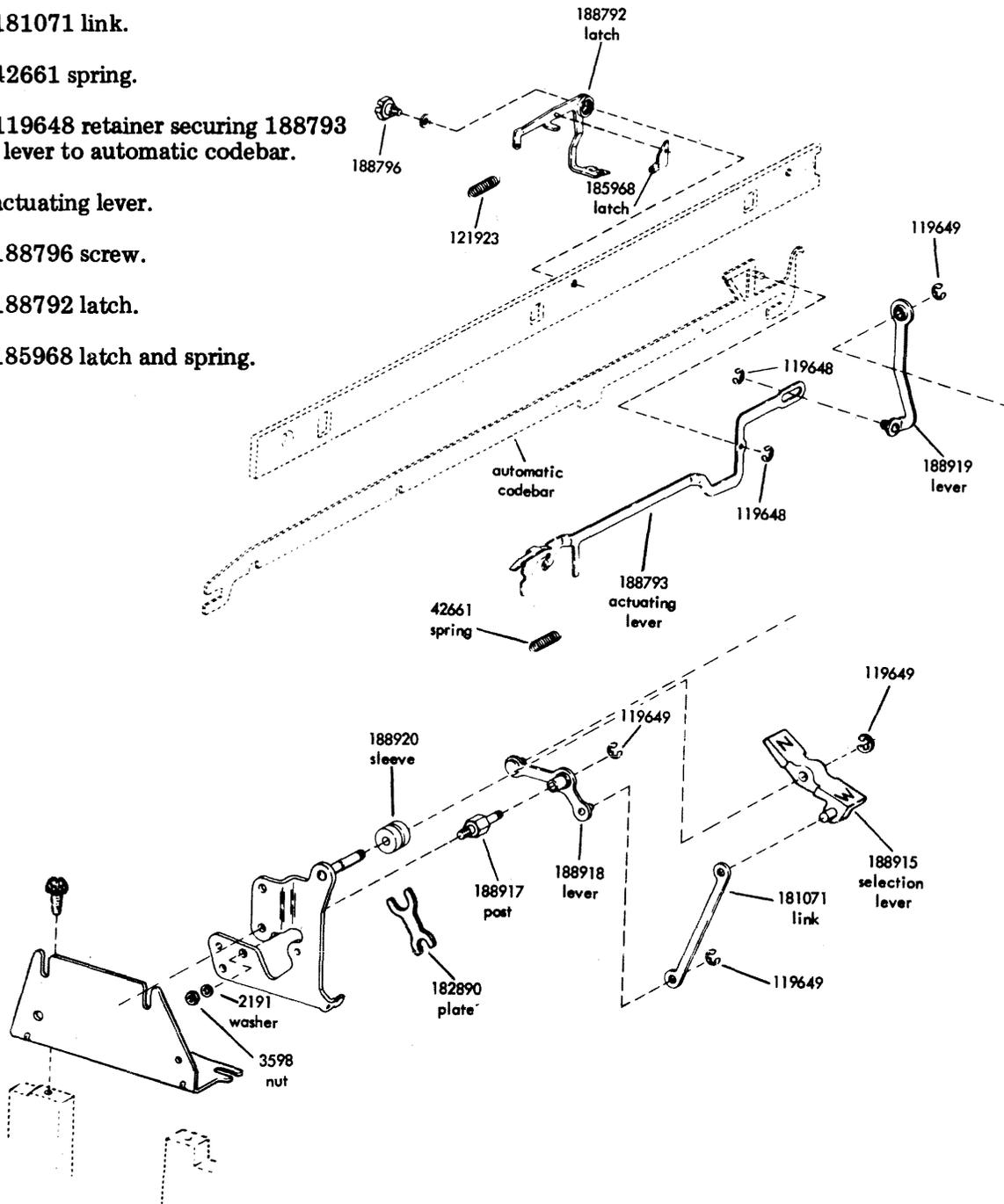
- Remove 118905 spring.

- Remove 119649 retainers securing paper straightener to 188909 left bracket and 188910 right bracket.

- Remove 188912 paper straightener.

- Remove paper alarm contact assembly.

- Remove two 119652 retainers securing tension roller rod to 188909 bracket.

- Loosen screws securing 188588 and 188587 brackets to tie bar and remove brackets.

- Remove 188594 plate.

- Remove 188914 leaf spring by removing nut, lockwasher, and flat washer.

- Remove two screws with lockwashers securing the 188590 bell bracket to tie bar.

- Remove bell bracket.

- Remove two screws with lockwashers securing the 188910 right bail bracket.

- Remove 188910 right bail bracket.

- Remove four screws securing the 188911 bracket to tie bar.

- Remove 188911 bracket.

- Remove two screws securing 188909 bracket to tie bar.

- Remove 188909 bracket.
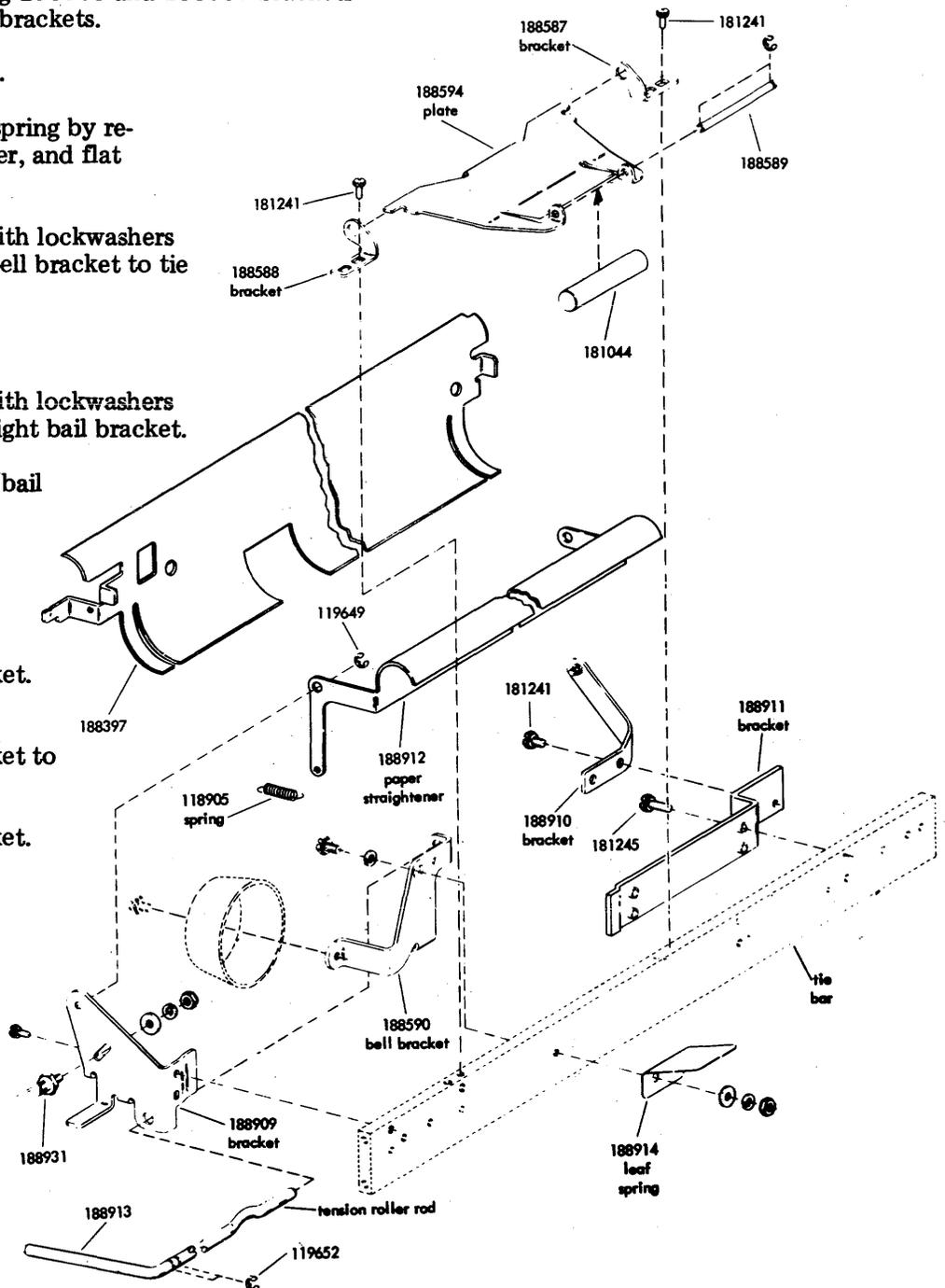
● 188944 Modification Kit — Provides Model 38 with on-line backspace.

NOTE: The backspace mechanism is a standard feature on APL (A Programming Language) sets.

Description

8.05   The backspace mechanism (Figure 25) achieves backspace by moving the feed pawl and check pawl away from the ratchet. The entire backspace function is accomplished in two parts: half a character backspaced during the first part of the printer cycle, and half in the second part of the printer cycle.

8.06   When the backspace function is received, the feed pawl and check pawl are completely disengaged from the ratchet, allowing the carriage to move to the left half a character, after which the backspace pawl engages the ratchet. As the printer completes its cycle, the backspace pawl is moved away from the ratchet and the carriage moves to the left the other half character.

8.07   When the backspace code combination is received, the backspace function lever rises and picks up its pawl which is then driven downward. This action of the function pawl is transferred to an actuating lever by means of an extension on the backspace function pawl. As this actuating lever moves downward it rotates the carriage return lever through the backspace and carriage return bails and the carriage return link. This movement of the carriage return lever is sufficient to free the feed pawl and check pawls from the spacing ratchet, but not enough movement is imparted to latch up the carriage return function.

8.08   As the backspace function pawl approaches its lowest point of travel, the pawl is stripped off by the stripper bail. This stripping action causes the feed pawl and check pawl to return to the spacing ratchet.

8.09   During a carriage return function, the backspace pawl is held away from spacing ratchet so that should a carriage return-backspace sequence be sent, the printer does not malfunction.
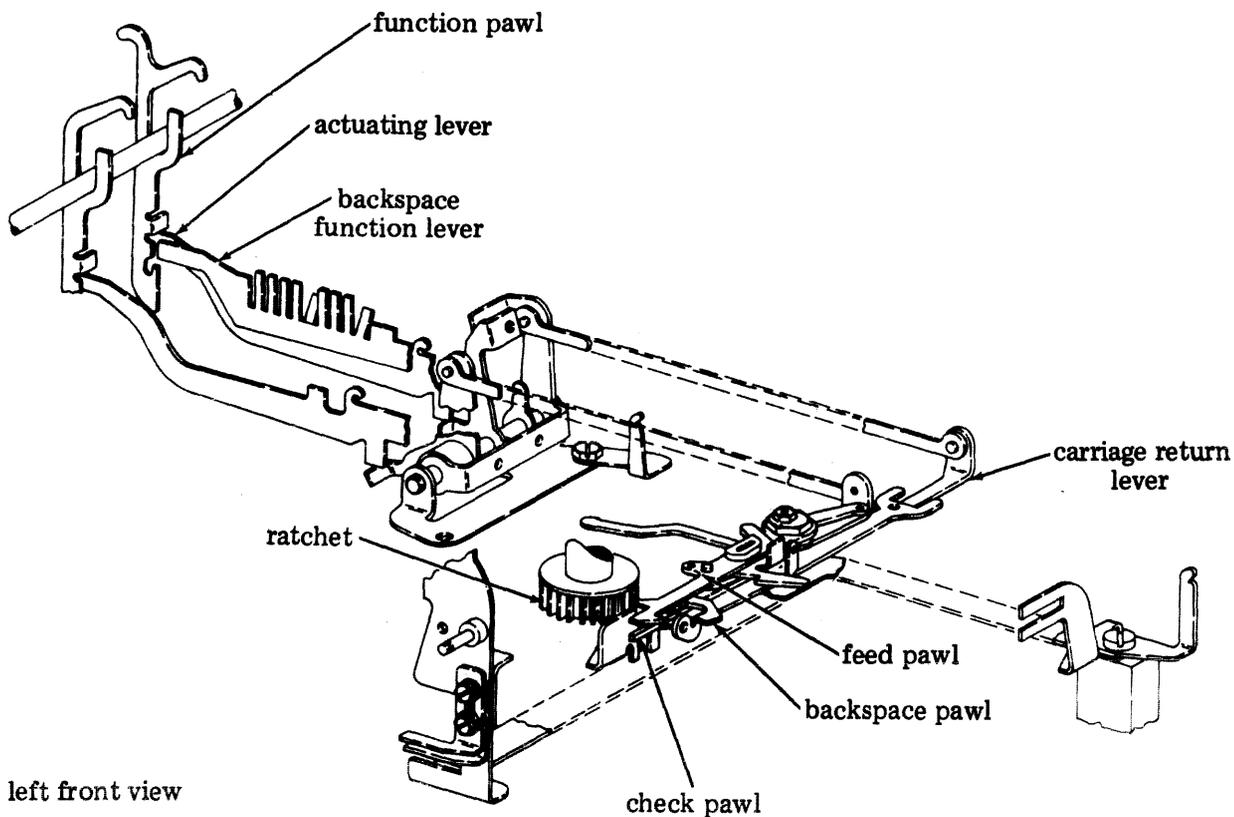

Figure 25 - Backspace Mechanism

Adjustments

NOTE 1:   Before performing the backspace adjustments, position both guide brackets so that the backspace pawl does not bind and there is not too much play in it. Tighten the two guide bracket mounting screws.

NOTE 2:   Sets which have been field modified with the 188944 modification kit, may require that the clearance between the function levers in slots "D" and "5" and the function lever retainer be increased to prevent interference (does not apply to sets modified at the factory).

left front view

backspace
pawl

guide
brackets
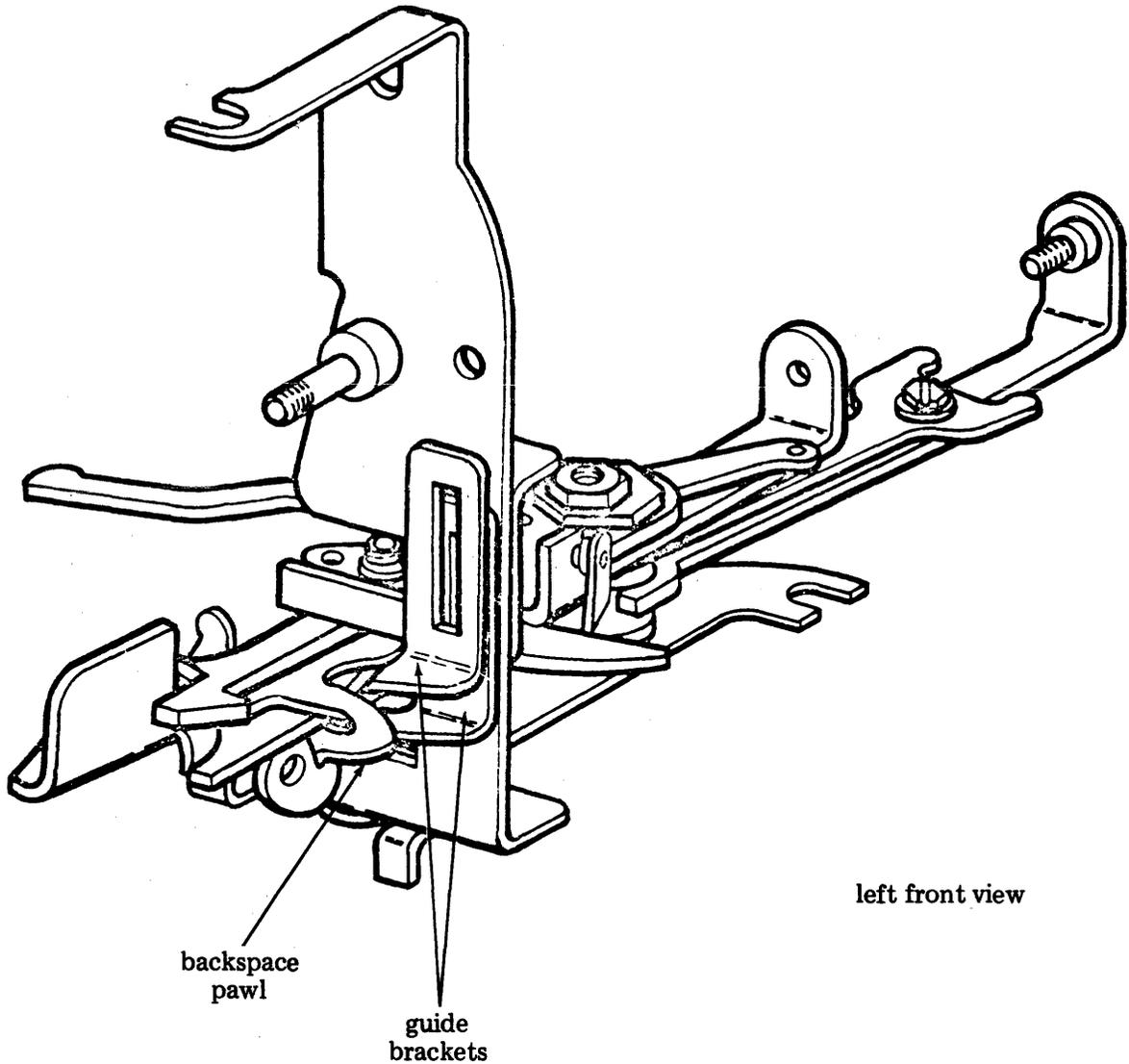
BACKSPACE PAWL

- Printer in stop condition.
- Move carriage one or two spaces from left margin.
- Feed pawl resting against ratchet.

Requirement — The front edge of the feed pawl should line up with the groove on the backspace pawl (view requirement from above the printer).

Adjust — Position backspace pawl by means of adjusting screw.
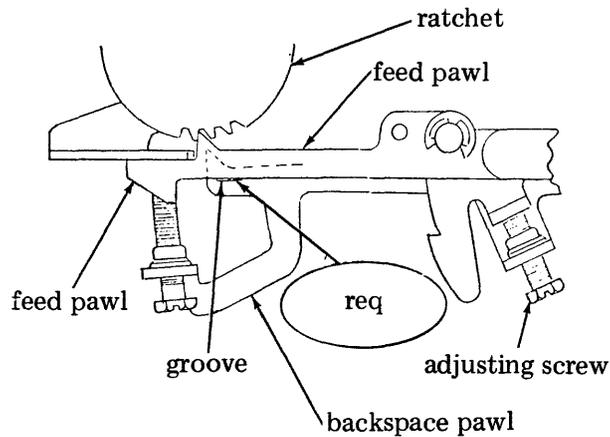
top view

CARRIAGE RETURN INTERLOCK

- Carriage to left margin.
- Set up SPACE code (-----6-8) in selector.
- Rotate main shaft to position "C."
- Latch up the carriage return lever.

Requirement — 0.010 to 0.025 inch between tooth on ratchet and tooth of backspace pawl.

Adjust — Position backspace pawl by means of adjusting screw.
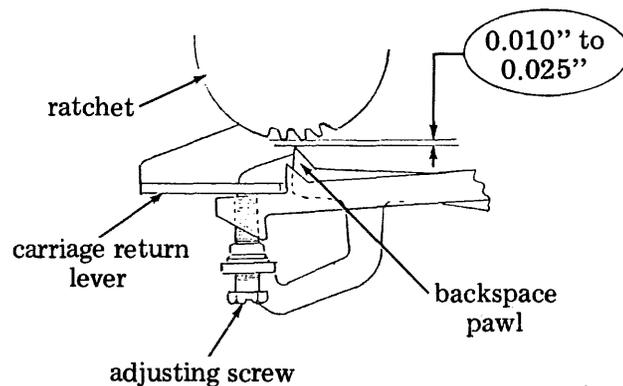
top view

BACKSPACE BAIL

- Place carriage at middle of platen.
- Carefully remove the carriage return spring.
- Set up BACKSPACE code (---4---8) in selector.
- Rotate main shaft to position "C."
- Move carriage to left so that the tip of the spacing pawl is in line with the tooth on the ratchet.

Requirement — 0.005 to 0.010 inch between spacing pawl and ratchet tooth.

Adjust — Rotate backspace bail adjusting screw.

CAUTION: Do not push on the adjusting screw, otherwise the carriage return mechanism will latch up.
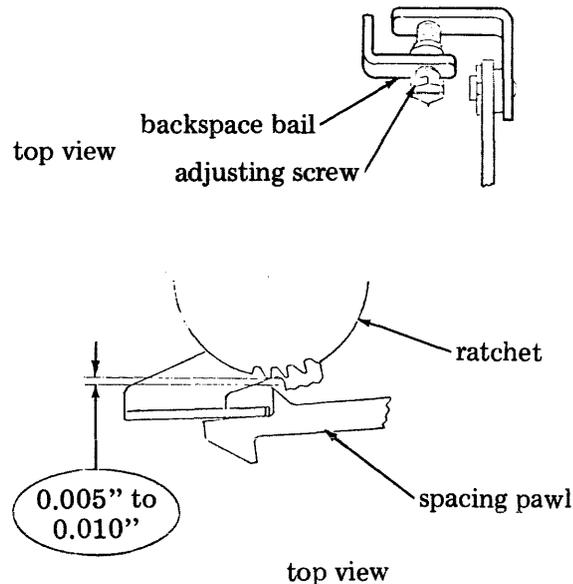
top view

FEED PAWL TRAVEL

- Place carriage at left margin.
- Set up character M (1-34--78) in selector.
- Rotate main shaft until function clutch is in position "B."
- Hold check pawl away from ratchet.
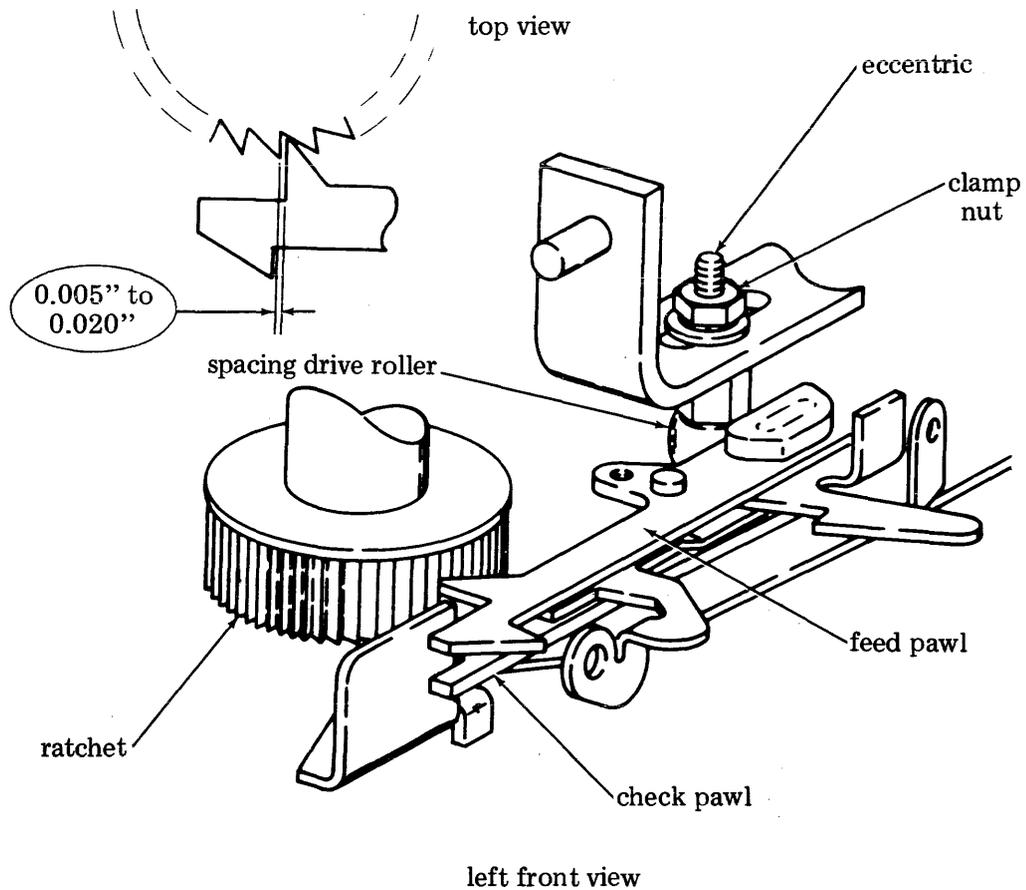
   Requirement — 0.005 to 0.020 inch between
      surface of feed pawl and face of ratchet
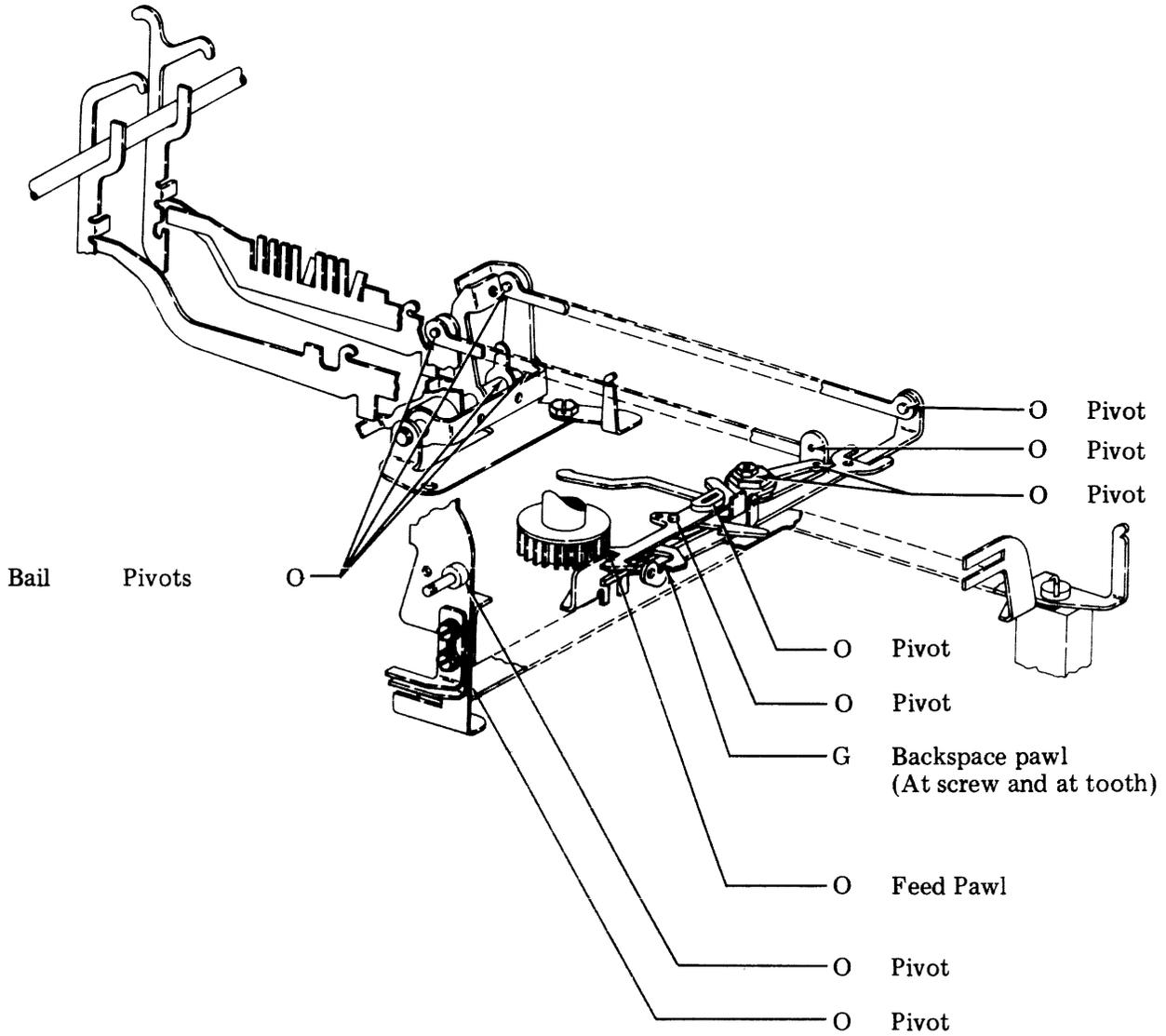   tooth.

   Adjust — Loosen clamp nut.
      Move the whole assembly all the way to
      the left.
   Position spacing drive roller with the
      eccentric.
   Tighten clamp nut and recheck
      requirement.

top view

eccentric

clamp nut

0.005" to 0.020"

spacing drive roller

ratchet

feed pawl

check pawl

left front view

O — Pivot

O — Pivot

O — Pivot

Bail   Pivots   O

O — Pivot

O — Pivot

G — Backspace pawl
(At screw and at tooth)

O — Feed Pawl

O — Pivot

O — Pivot

● 343693GF Modification Kit — Provides a shelf assembly for attendant set mounting on 38 KSR and ASR Sets.

This modification requires no maintenance. If it becomes necessary to remove the shelf, remove mounting hardware and pull the shelf. If adhesive remains attached, remove it with a mild detergent. <u>DO NOT USE SOLVENTS</u>.

343693
shelf assembly
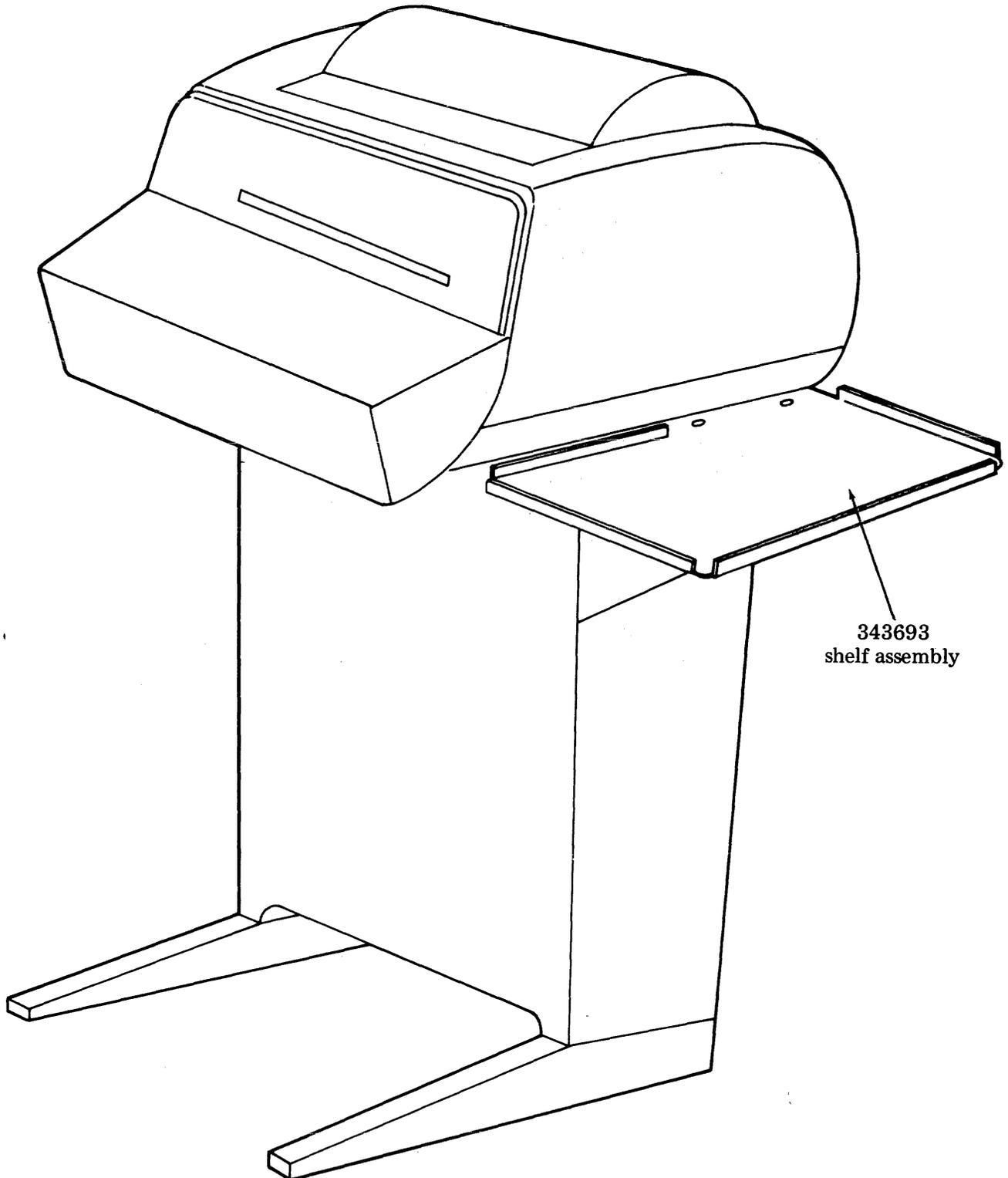
● 188500 Modification Kit — To equip Model 38 terminal with copyholder.

copyholder assembly
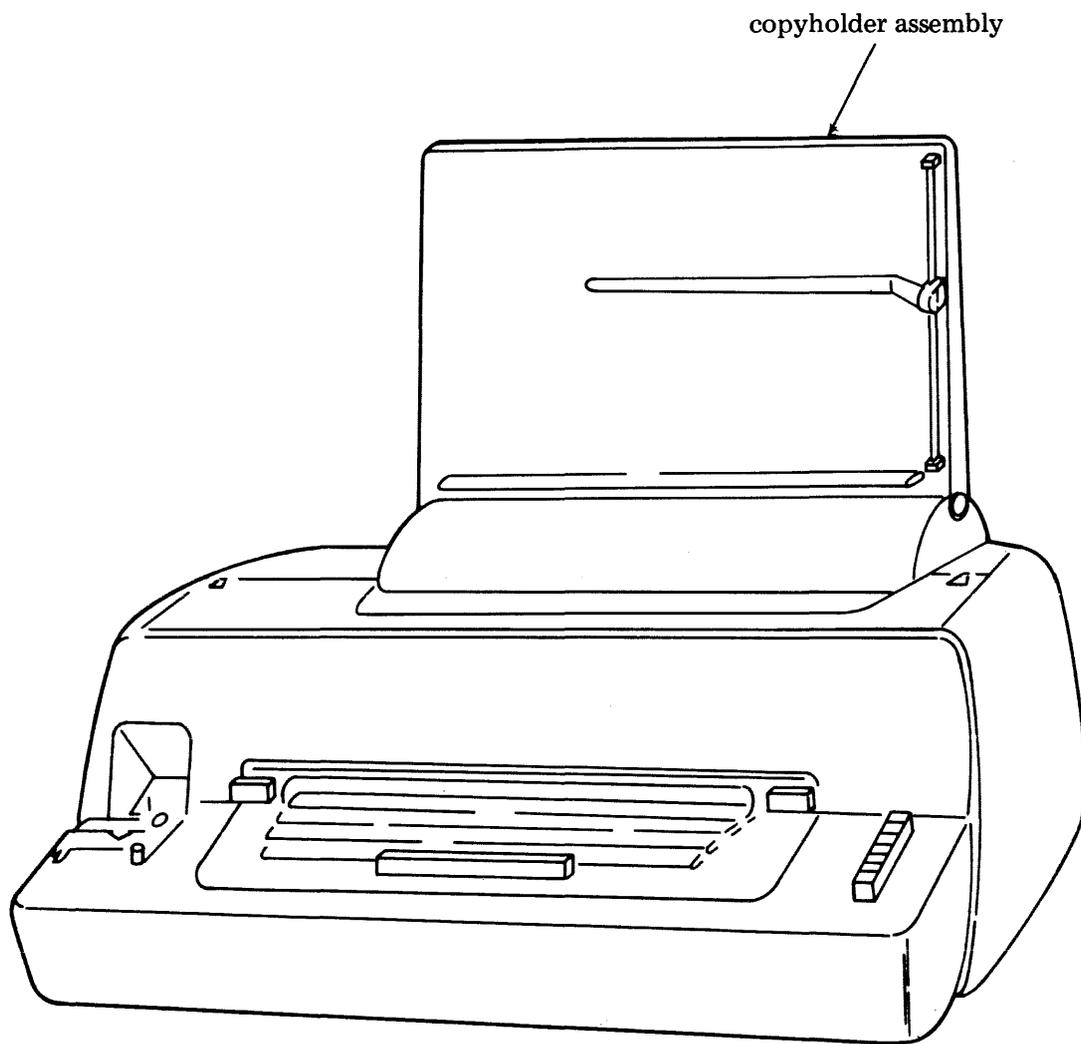
● 188860 Modification Kit — To convert Model 38 wide platen sprocket feed printer to accept 8-1/2 inch sprocket feed paper.

Description

8.10 The 188860 modification kit adapts wide platen (14-7/8 inch) sprocket feed printer to use 8-1/2 inch wide sprocket fed forms (Figure 26).

8.11 With this modification, the printer suppresses spacing at the end of the line. There is no automatic carriage return-line feed with this modification. Carriage return and line feed are distinct functions and must be performed manually.

Adjustments

8.12 For all adjustments pertinent to this modification, refer to Section 574-422-700TC.

Disassembly and Reassembly

8.13 To disassemble, proceed as follows:

● Remove paper tray.

● Remove cable tie on rear tie bar of platen assembly.

● Remove belts on sprocket assembly.

● Remove low paper alarm switch.

● Remove platen assembly.

To reassemble, reverse disassembly procedure.

Lubrication

8.14 Similar to wide platen. Add a few drops of oil to the new guides at both ends of the 8-1/2 inch platen.

Figure 26 - 188860 Modification Kit to Convert Wide Platen Sprocket Feed
to 8-1/2 Inch Wide Sprocket Feed

● WT001 Table

A double-compartment table is available when a table-style of furniture is desired, or when additional electrical equipment is required, such as a station controller. This additional electrical equipment can be mounted behind the front panel or in the right pedestal. A right pedestal door is available that has provisions for an attendant set.
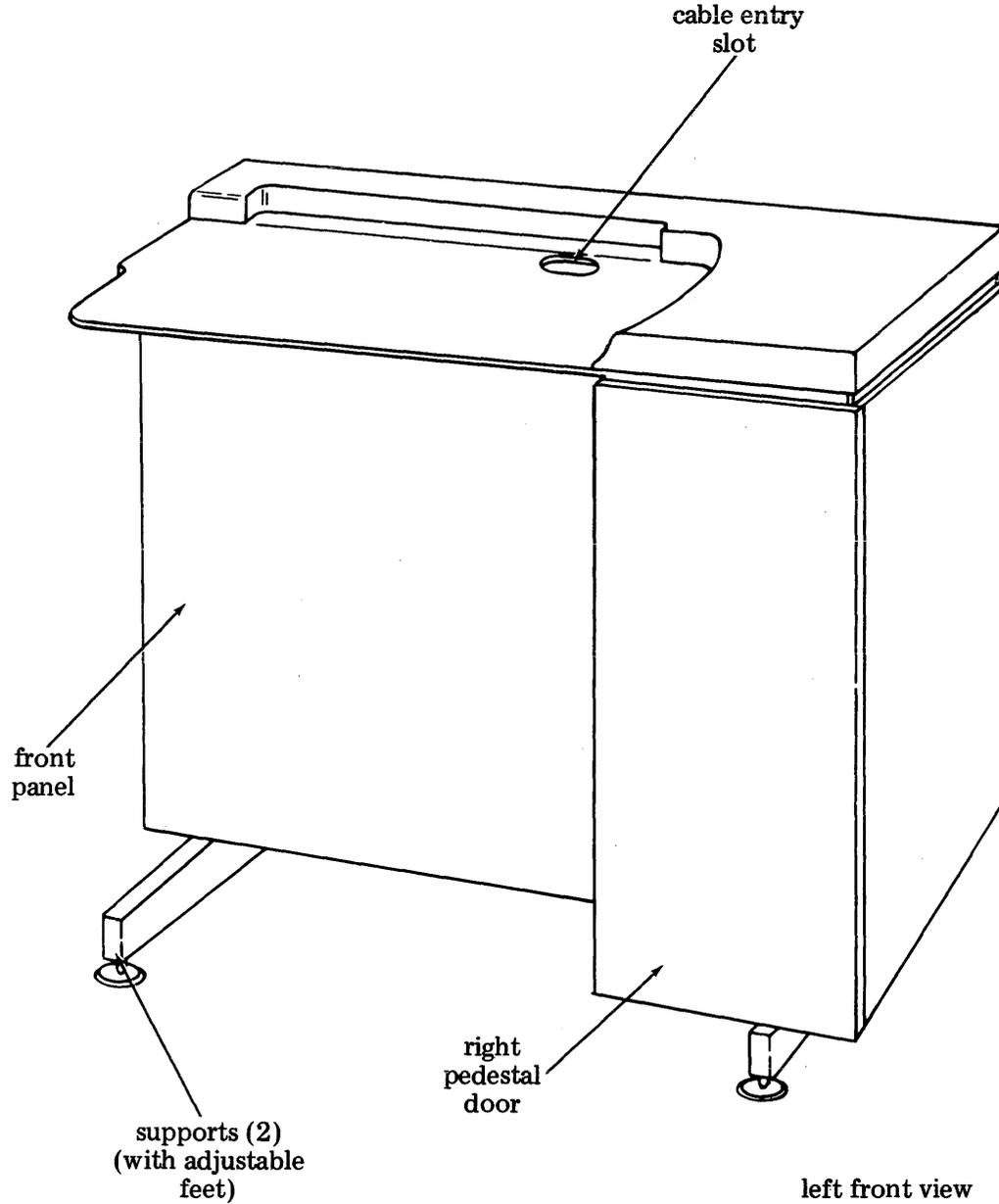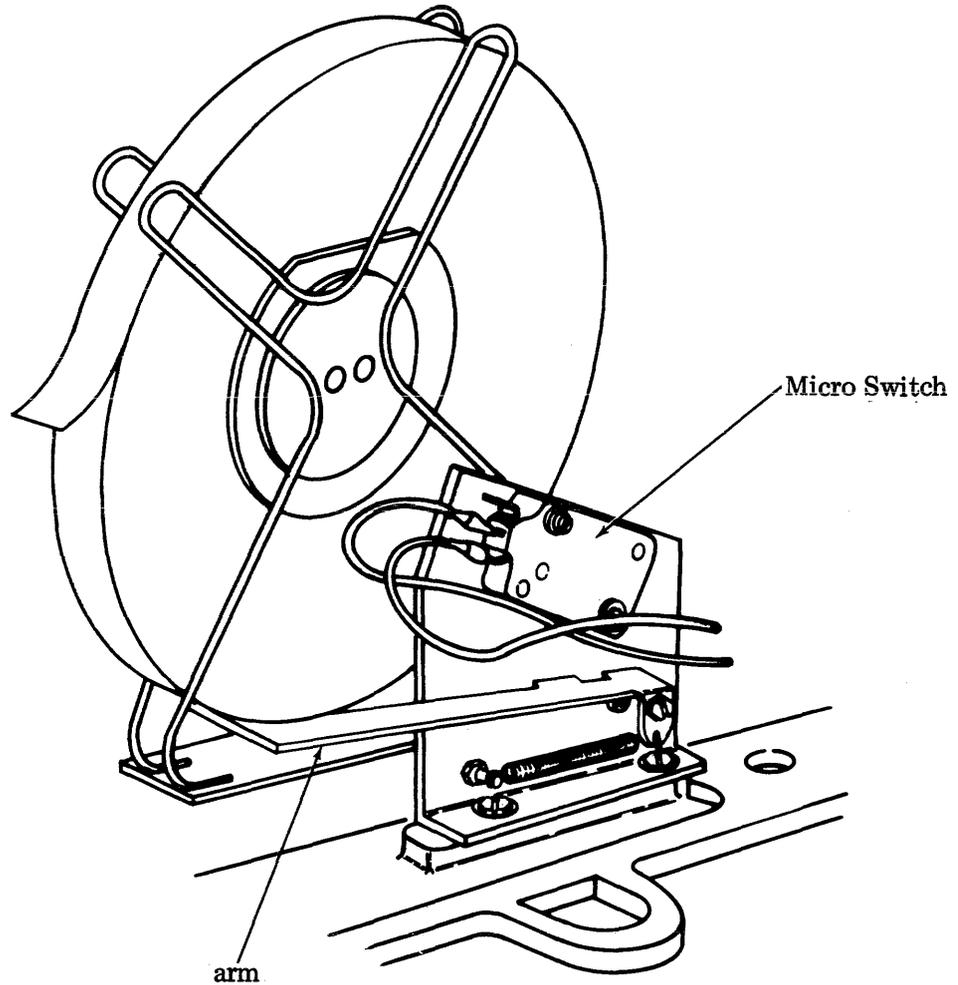

double-compartment table
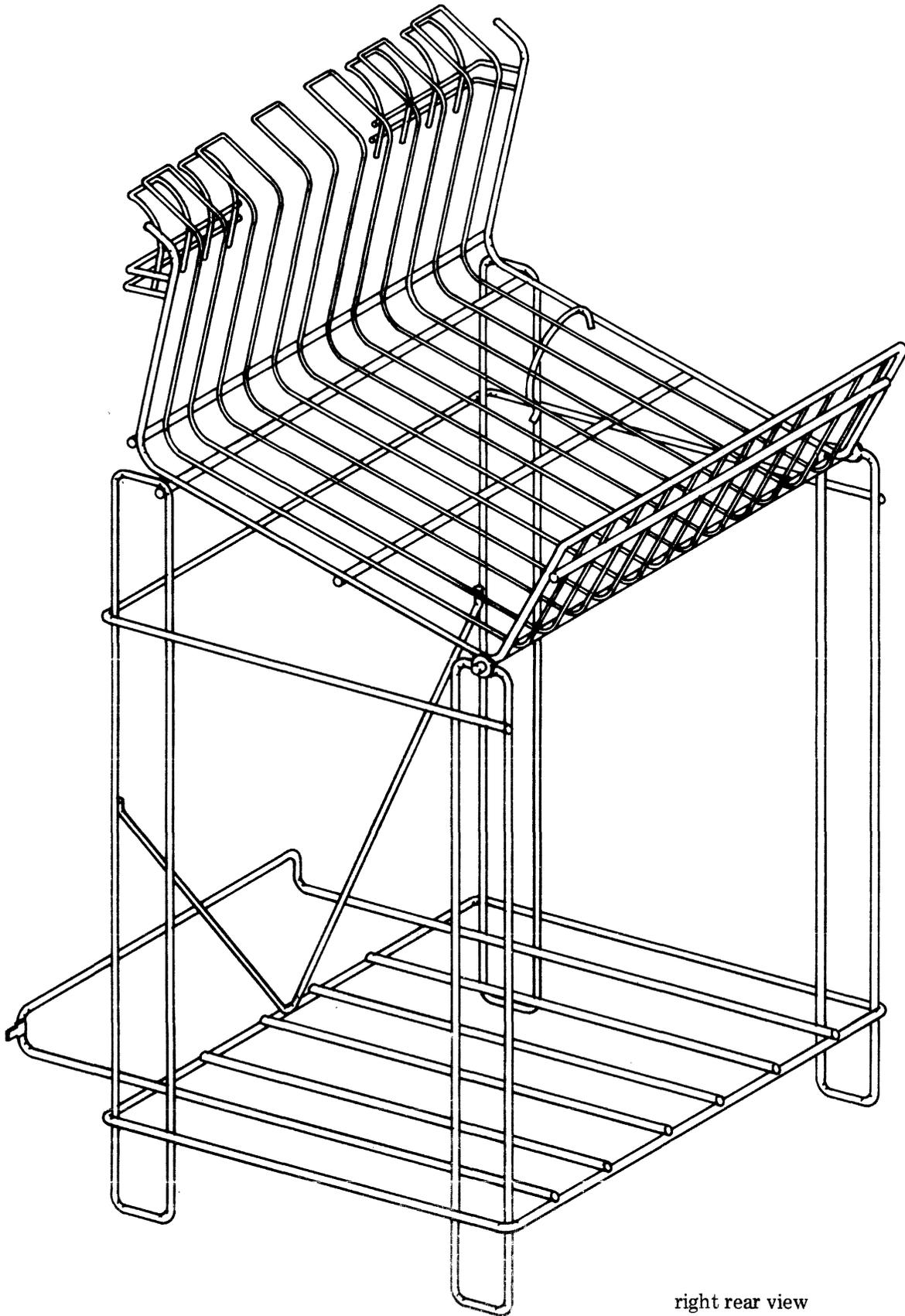
right rear view

● 188388 Low Tape Alarm Modification

When the tape supply becomes low, the arm closes a Micro Switch which causes the OFF/ALARM button (CLEAR/ALARM in modem sets) to light, indicating low tape.

Micro Switch

arm

right front view

● 188724 Cable

As shipped from the factory, a Model 38 terminal equipped with WESU 001 can interface with other equipment or transmission system on a current basis. The 188724 cable allows the Model 38 terminal to interface with other equipment on anEIA (Electronic Industries Association — Standard RS-232-C) basis. Connector J11 of the cable connects to P11 on the circuit board of the WESU 001. The pin assignments on the EIA connector are as follows:

EIA CONNECTOR PIN NO.	DESIGNATION	DEFINITION
1	(AA)	Protective Ground
2	(BA)	Send Data
3	(BB)	Receive Data
4	(CA)	Request to Send
6	(CC)	Data Set Ready
7	(AB)	Signal Ground
20	(CD)	Data Terminal Ready

standard 25-pin
EIA connector

J11

P11

303847
circuit card on
WESU 001