TELETYPEWRITER STATION WITH 9140 STATION CONTROLLER USING 8A1-TYPE (STATION-TO-STATION) OPERATION

INSTALLATION

CONTENTS

1. GENERAL

1.01 This section contains the information necessary to install a 9140 station controller and the 33, 35, and 37 terminal equipment associated with it. The installation procedures are for a complete station, and assume that the set installation (with modifications, if any), station controller installation, and all station controller programming has been completed at the service center and the station completely tested before being shipped to the customer location.

1.02 Reference information on station controller programming is given in Part 3. The 9140 station controller and its mounting frame (33 and 35 type terminals only) should be programmed at the service center according to the appropriate RS Specification and wiring diagrams. The programming information in this section should be used only as a guide when a card or strap is suspected to be incorrectly programmed.

1.03 For a complete discussion of system operation, refer to Section 581-124-100. Refer to Section 581-124-110 for the description and principles of operation of the 9140 station controller, and Section 581-124-300 for checkout and troubleshooting information.

2. INSTALLATION

33 TYPE ASR SETS

2.01 The 33 type ASR set is usually shipped from the service center completely assembled and tested. If it is not, refer to Section 574-100-201 for the installation procedures of a standard 33 ASR set. The set can be installed in a floor space 22 inches wide and 18-1/2 inches deep. Maximum height with the set cover open is 41 inches. Space for the operator must be added to the depth dimension.

A. 9140 Station Controller and Mounting Frame

2.02 The 9140 station controller should be completely programmed, tested and installed in its mounting frame (Figure 1) before

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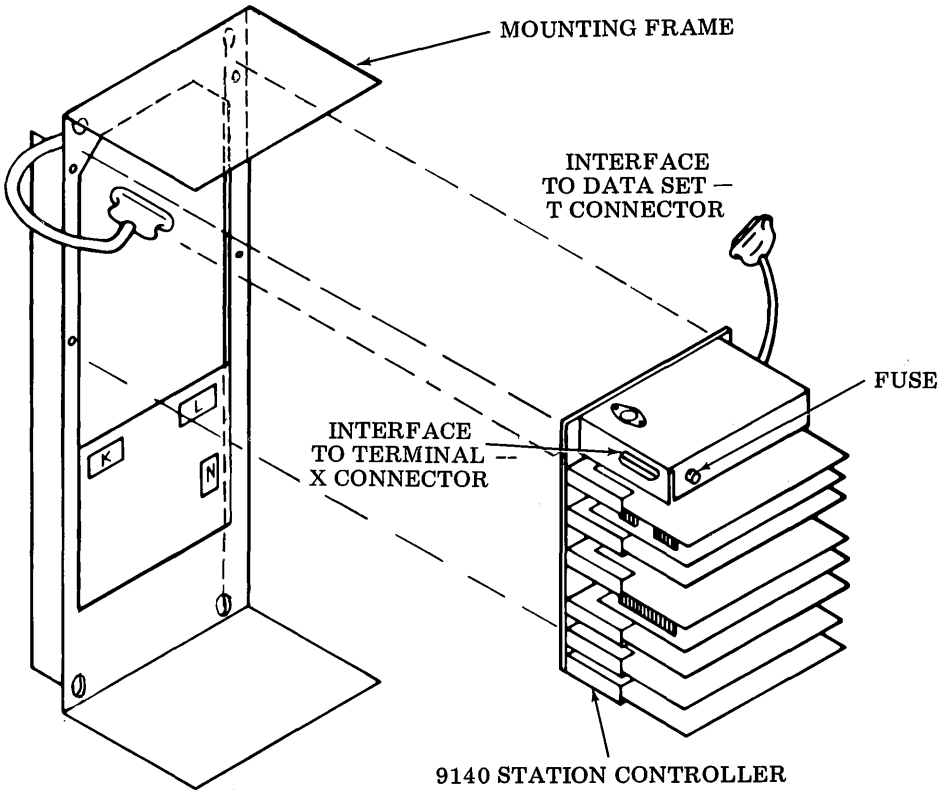

Figure 1 - Mounting Frame for 9140 Station Controller (33 and 35 Type Terminals)

being shipped from the service center. In most cases, the mounting frame and station controller are also installed in the stand of the 33 type ASR set before shipping.

2.03 If the station controller and its mounting frame are not installed in the stand of the 33 type ASR set at the service center, they are shipped in a single container. Carefully open the container, observing all caution and instruction labels, and remove the mounting frame with station controller.

2.04 Mount the frame and controller to the corresponding mounting holes in the floor of the ASR set stand, to the right of center (as viewed from the rear of the set), using two plastic rivets (TP328807). (Refer to Section 581-123-800.)

CAUTION: SUPPORT THE MOUNTING FRAME AND STATION CONTROLLER WHILE INSTALLING THE PLASTIC RIVETS.

The rivets are forced into position and the vertical pin then driven through the center of the rivet to provide a good grip. To remove the rivet, drive the pin completely through.

2.05 Mount the angle bracket (TP328731) to the top portion of the mounting frame using two screws (TP328744) and two speed nuts (TP183259). Secure the top portion of the mounting frame assembly to the top portion of the ASR set stand by inserting two retaining clips (TP183086) into the angle bracket (TP328731) and clipping them to the flange on the stand.

2.06 If not previously connected, mate connector N from the controller to receptacle N on the mounting frame below the controller. Mate connector X from the mounting frame to receptacle X near the fuse.

B. Data Set Connection

2.07 Mount the data set and data auxiliary set according to local instructions and customer preference.

Note: Make sure that the set power cords (ASR set and data sets) are not connected to the ac power source before making the following electrical connections.

2.08 Plug connector T from the 9140 station controller into the mating 25-pin receptacle on the 820D data auxiliary set, 816 data auxiliary set, or equivalent. EIA interface is required. Connect the data set and the data auxiliary set to the ac power source and the telephone line.

C. Power Line Connection

2.09 Replace the back panel of the ASR set, if previously removed. Connect the set power cord to a 115 v ac power source. The ground pin on the plug must be connected to ground. If the buzzer comes on and the ALARM lamp lights, press the lamp to reset the mechanism. The set is now ready for checkout procedures found in Section 581-124-300.

35 TYPE ASR SETS

2.10 The 35 type ASR set is usually shipped from the service center completely assembled and tested. If the typing unit is shipped separately, carefully open its container, and install the typing unit on the base with four mounting screws furnished with the base. Make the necessary electrical connections, and see Section 574-222-700 for the adjustment of the typing unit to the base. The set can be installed in a floor space 40 inches wide and 24 inches deep. Maximum height with the set cover open is 55 inches. Space for the operator must be added to the depth dimension.

A. 9140 Station Controller and Mounting Frame

2.11 The 9140 station controller should be completely programmed, tested and installed in its mounting frame (Figure 1) before being shipped from the service center. In most cases, the mounting frame and station controller are also installed in the pedestal of the 35 type ASR set before shipping.

2.12 If the station controller and its mounting frame are not installed in the pedestal of the 35 type ASR set at the service center, they are shipped in a single container. Carefully open the container, observing all caution and instruction labels, and remove the mounting frame with station controller.

2.13 Mount the frame and controller to the apparatus mounting rack in the pedestal of the ASR set using four screws (TP165102) and four speed nuts (TP153017). Two screws and speed nuts secure the top portion of the mounting frame, and the remaining two secure the lower portion (refer to Section 581-123-800).

CAUTION: SUPPORT THE MOUNTING FRAME AND STATION CONTROLLER WHILE INSTALLING THE SCREWS AND SPEED NUTS.

2.14 If not previously connected, mate connector N from the controller to receptacle N on the mounting frame below the controller. Mate connector X from the mounting frame to receptacle X near the fuse.

2.15 Check the level of the ASR set and adjust the leveling feet, if necessary.

B. ASR-RO Set Connection

2.16 Install the RO set, if used, as described in 2.24 through 2.29, except for the data set connection.

2.17 Open the pedestal of the RO set by depressing the metal button at the top of the front panel in the center to release the catch. Push up the black spring at the left side above the pedestal and lower the front panel. Lift it off the screw heads and set it aside.

2.18 Both ASR and RO sets have a steel plate at the right rear of the pedestal base, secured by two screws. Remove both plates and punch out a scored knockout on each one.

2.19 Remove the jumper plug from connector RO in the ASR set and retain it for possible future use of the ASR set by itself (without the RO set attached). Bring connector RO from the ASR set through the plate opening and insert it into the RO set through its plate opening. Mate this RO connector to connector RO on the RO set cable. Coil any excess cable inside the RO set pedestal.

2.20 Replace the steel plates at the cable opening in the ASR and RO set pedestals. Close the pedestal of the RO set by reversing the procedure of 2.17.

2.21 Check the level of the RO set and adjust the leveling feet, if necessary.

C. Data Set Installation

2.22 Mount the 108 type data set and 820D data auxiliary set or 130C1 sub set and 816 data auxiliary set and rectifier (or equivalents) inside the pedestal of the ASR set, next to the 9140 station controller, if there is sufficient room. Otherwise, mount them according to local

instructions and customer preference — EIA interface is required. Plug connector T from the controller into the mating 25-pin receptacle on the data auxiliary set. Connect the data set and data auxiliary set to the power source and the telephone line.

D. Power Line Connection

2.23 Connect each set power cord to a 115 v ac power source. The round pin on the plug must be connected to ground. If the buzzer comes on and the ALARM lamp lights, press the ALARM lamp to reset the mechanism. The set is now ready for the checkout procedures found in Section 581-124-300.

35 TYPE RO SETS

2.24 The 35 type RO set is usually shipped from the service center completely assembled and tested. If the typing unit is shipped separately, carefully open its container, and install the typing unit on the base with four mounting screws furnished with the base. Make the necessary electrical connections, and see Section 574-221-700 for the adjustment of the typing unit to the base. The set can be installed in a floor space 24 inches wide and 24 inches deep. Maximum height with the set cover open is 55 inches. Space for the operator must be added to the depth dimension.

A. 9140 Station Controller and Mounting Frame

2.25 If the 35 type RO set is to be equipped with a 9140 station controller, it should be completely programmed, tested and installed in its mounting frame (Figure 1) before being shipped from the service center. In most cases, the mounting frame and station controller are also installed in the pedestal of the 35 type RO set before shipping.

2.26 If the 9140 and its mounting frame are not installed in the 35 type RO set at the service center, follow the installation instructions in 2.12 through 2.14.

2.27 Check the level of the RO set and adjust the leveling feet, if necessary.

B. Data Set Installation

2.28 If not previously installed at the service center, install the data set and data auxiliary set as explained in 2.22.

C. Power Line Connection

2.29 Connect each set power cord to a 115 v ac power source. The round pin on the plug must be connected to ground. If the buzzer comes on and the ALARM lamp lights, press the ALARM lamp to reset the mechanism. The RO set is now ready for the checkout procedures found in Section 581-124-300.

37 TYPE ASR SETS

2.30 The 37 ASR set consists of a reperforator-transmitter (RT) module and a 37 keyboard send-receive (KSR) unit. The set can be installed in a floor space 44-1/2 inches wide and 27 inches deep. Maximum height, with the printer cover and RT cabinet lids open, is 46 inches. Space for the operator must be added to the depth dimension.

2.31 The 37 ASR set operates under a 3-wire, single-phase 117-volt ±10%, 60 Hz ac power source. The ac receptacle must be located within 8 feet of the installation area, and be capable of carrying 15 amperes of current.

Note: The ac receptacle should not be under control of a switch.

A. Unpacking

2.32 The 37 ASR set is shipped to the service center in three cartons containing the following major components:

(1) KSR set (less typing unit) with electrical service unit and 9140 station controller.

(2) Reperforator-transmitter module (RT).

(3) Typing unit.

2.33 Unpack each carton carefully to avoid marring paint finishes or losing small parts. Observe all special unpacking instructions associated with each carton. The KSR and RT module should be unpacked and prepared first, followed by the installation of the typing unit.

2.34 Unpack the KSR portion of the set and remove all external packing material. Place it in the assembly area.

B. Table Access

2.35 The front panel is removed as follows:

(1) While holding the front panel, push down on the panel latch in the panel slot unlatching it and allowing it to move forward.

(2) Release the spring stop safety catch on the underside of the table.

(3) Open the panel and align its top edge with the front edge of the table.

(4) Carefully lift upward and remove the panel from its hinges. Place the panel aside until the set is completely assembled.

2.36 To prevent damage to the terminals on the cable connections, do not remove the packing material that protects the connector terminals until the routing is complete.

CAUTION: DO NOT CONNECT AC POWER TO SET UNTIL INSTALLATION IS COMPLETE AND SET IS READY FOR CHECKOUT.

C. Reperforator-Transmitter Module

2.37 Unpack the RT module and place it in the assembly area. Move the RT cabinet to the left side of the table and route the RT interface plug (P310) and the power cord through the base of the cabinet and into the opening at the base of the table.

2.38 Connect the ac power cord from the RT module to a convenience receptacle on the utility strip. Mate P310 to J310 inside the table. Refer to Section 574-302-200 for other installation procedures that may be necessary on the RT module.

D. Typing Unit

2.39 Unpack the typing unit from its carton and remove all packing materials. Remove the wire retainer that secures the print hammer assembly. Check the feed pawls for packing detail. If detail is present, remove it when moving the print hammer assembly toward the left. Perform the following visual checks before applying power to the typing unit:

(1) View the typing unit from the back over the trip shaft mechanism, and check to insure that the suppression slide is not hung-up over the suppression bail. The correct position is shown in Figure 2.

Corrective Action:

(a) Push down on suppression bail and move the suppression slide toward the front of the unit.

(b) Hold slide in and release the bail.

(2) View the typing unit from the top and check the alignment of the number 1, 2, 3, and 4 horizontal positioning clutch trip levers with the number 1, 2, 3, and 4 codebar forks. The correct alignment is shown in Figure 3.

Corrective Action: Lift up the number 1, 2, 3, or 4 codebar fork and position the trip lever into the fork.

(3) Remove ties from side of vertical positioning mechanism, if present.

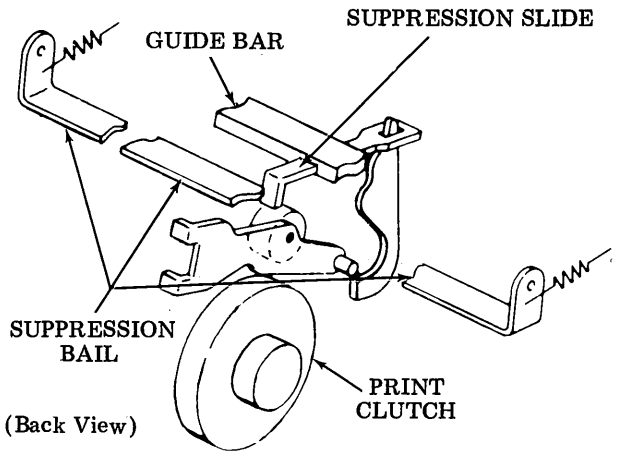

Figure 2 - Suppression Slide and Bail

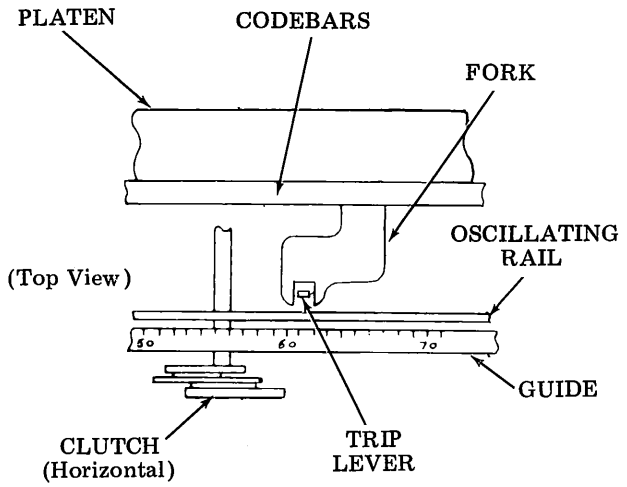

Figure 3 - Number 2 and Number 4 Codebar Fork and Clutch Trip Lever Alignment

2.40 Mount the typing unit on the base, and install the ribbon, shipped with the typing unit, according to the instructions in Section 574-302-200. Make all necessary electrical connections. Lubricate the typing unit per Section 574-320-704, and the base per Section 574-321-704. If other installation procedures are required, such as form-out positioning and interrelated adjustments, see Section 574-302-200.

E. 9140 Station Controller

2.41 The 9140 station controller should be completely programmed, tested and installed in the 37 electrical service unit (Figure 4). The electrical service unit with 9140 station controller should be shipped from the service center already mounted in the table of the KSR portion of the set.

2.42 If the station controller requires servicing, refer to Section 581-124-300 and the wiring diagrams (for complete programming information). Reference programming information is given in Part 3.

F. Data Set Connection

2.43 If not installed at the service center, mount the data set and data auxiliary set according to local instructions and customer preference. Connect the T connector on the cable from the 9140 station controller to the data set. Secure the T connector, and plug the data set power cord to an ac outlet. The 37 ASR terminal and station controller are now ready for the checkout procedures found in Section 581-124-300.

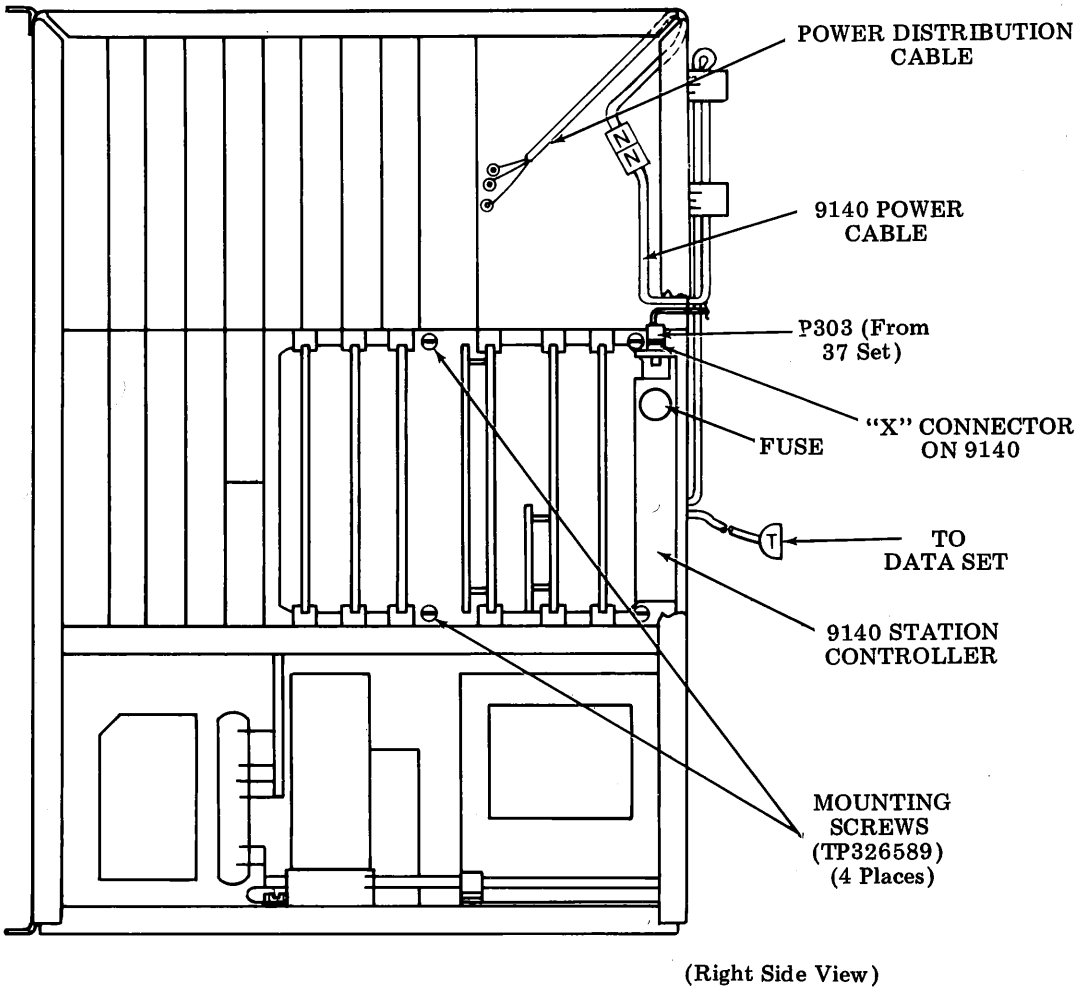

Figure 4 - 9140 Station Controller Mounted in 37 Electrical Service Unit

37 TYPE RO SETS

2.44 The 37 Receive-Only (RO) set can be installed in a floor space 32-1/2 inches wide and 27 inches deep. Maximum height, with the printer cover lids open, is 43 inches. Space for the operator must be added to the depth dimension.

2.45 The 37 RO set operates under a 3-wire, single-phase 117 volt ±10% 60 Hz ac power source. The ac receptacle must be located within 8 feet of the installation area, and be capable of carrying 15 amperes of current.

Note: The ac receptacle should not be under control of a switch.

A. Unpacking

2.46 The 37 RO set is shipped from the service center in two cartons: one for the RO set with electrical service unit and 9140 station controller (programmed and installed), and the second for the typing unit.

2.47 Unpack the RO set first, and place it in the installation area. Then, unpack the typing unit. Install the typing unit following the procedures in 2.39 and 2.40. If other installation procedures are required, refer to Section 574-300-200.

B. 9140 Station Controller

2.48 The 9140 station controller should be completely programmed and installed in the 37 electrical service unit (Figure 4). The electrical service unit with 9140 station controller should be shipped from the service center already mounted in the table of the RO set.

2.49 If the station controller requires servicing, refer to Section 581-124-300 and the wiring diagrams (for complete programming information). Reference programming information is given in Part 3.

C. Data Set Connection

2.50 If not installed at the service center, install the data set and data auxiliary set according to the instructions in 2.43.

3. STATION CONTROLLER PROGRAMMING

3.01 The 9140 station controller should be completely programmed at the service center. The information that follows should be used only for reference.

3.02 Some circuit cards in the station controller have wire straps which must be cut prior to installation. When straps are cut, make sure the cut ends do not touch each other, adjacent straps, or lands on the circuit card. Also, be sure that the straps on card A located underneath the piggy-back printed circuit card do not come in contact with the bottom of this card.

3.03 Table A shows the circuit card programming for the 9140 station controller. Table B shows the mounting frame strapping for a 33 type ASR set. Table C shows the mounting frame strapping for a 35 type ASR set, and Table D shows the mounting frame strapping for a Selective Calling 35 type RO set. Figure 5 gives the current (x3.4 — 1968) version of ASCII (American National Standard Code for Information Interchange). Programming for a 37 type ASR set (circuit card option AB), and for a 37 type RO set (circuit card option AI) can be found on 8366WD.

3.04 All 9140 controllers must be programmed for two CDC codes, or twice for one CDC code, per local instructions. (Every station is programmed differently.) Each CDC is programmed for two letters of the alphabet.

3.05 Each CDC character is programmed by cutting seven of 14 wire straps (Figure 6), one for each mark or space of the first seven bits of the character. To program a character, determine the mark and space condition of the first seven bits (Figure 5), if not specified on the installation order. Cut the straps labeled M for the bits that are marking and those labeled S for the bits that are spacing. Be sure the cut ends are some distance from each other.

Note: Every bit level, 1 through 7, must have one strap cut. If only one CDC is specified, both CDC1 CH1 and CDC2 CH1 must be programmed for the same character; CDC1 CH2 and CDC2 CH2 must be similarly programmed.

TABLE A

9140 OPERATIONAL STRAPS

CARD DESIGNATION	STRAP NO.	8A1-TYPE (STATION-TO-STATION) OPERATION
A	1	X
	2	—
	3	—
	4	X
	5	Note 1
	6	Note 1
	28	Note 2
	29	Note 2
	50	Note 15
A-1	10	X (If Used)
	11	— (If Used)
	31	Note 2
B	13	Note 15
	26	Note 3
	30	—
C2	7	Note 4
	8	Note 4
	9	Note 4
	16	Note 5
	17	Note 5
	35	Note 4
	62	X
C2-1 or C2-2	20	Note 6
	55	—
	56	—
	57	—
	58	Note 7
	59	Note 7
	60	Note 7
	68	Note 8
	73	Note 13
	74	Note 13
D1	14	Note 9
	15	Note 10
	34	X
	51	—
	52	X
	53	—
E1 or E2	27	Note 11
	37	Note 11
	38	—
	39	—
	54	Note 11
	61	Note 12
	63	Note 9
	75	Note 14
	76	Note 14
F1 or F2	64	X
	65	X
	66	—

See notes next page.

X=Strap Open; — = Strap Closed

TABLE A

9140 OPERATIONAL STRAPS (Continued)

Note 1: To enable CDC 2, leave straps 5 and 6 closed. To disable CDC 2, cut straps 5 and 6; however, the character straps for CDC 2 must still be programmed, either for CDC 1 or for DELETE.

Note 2: To provide a not-ready-to-receive answer-back to a CDC, cut straps 28 and 29 (and strap 31, if card A-1 is present). To provide no response to a CDC when not ready to receive, leave straps 28 and 29 (and strap 31, if card A-1 is present) closed.

Note 3: To blind receive data input (in order to regenerate data sent by terminal in 9140), leave strap 26 closed. If the system requires that the station always monitor the receive data lead, even when sending, cut strap 26 (no sent data regeneration possible with this option).

Note 4: These four straps determine when and if an answer-back is sent in response to a CDC. (Only one station can be strapped to send an answer-back to a group or broadcast CDC.) The following cases are possible:

A. CDC consists of alpha, alpha, DELETE (standard 8A1-type operation)

CDC 1

Generate answer-back:	Leave strap 9 closed
No answer-back:	Cut strap 9

CDC 2

Generate answer-back:	Leave strap 7 closed
No answer-back:	Cut strap 7

CDC 3 (if used)

Generate answer-back:	Leave strap 8 closed
No answer-back:	Cut strap 8

Leave strap 35 closed in all cases.

B. CDC consists of alpha, alpha (modified 8A1-type operation)

Same as A. for straps 9, 7, and 8; cut strap 35 in all cases.

Note 5: To generate a 400 ms line break (on the send data line) and disconnect the set on receipt of a character with odd parity, leave strap 16 closed; to do the same on loss of the data terminal ready signal from the set, leave strap 17 closed. To eliminate this line break and disconnect for each case, cut straps 16 and 17.

Note 6: To generate a not-ready-to-receive answer-back (such as BEL BEL) to a TSC when the station has no traffic and the data terminal ready signal is off (station has low paper, low tape, is off-line, or is in alarm), and a no traffic answer-back (same as the ready-to-receive answer-back to a CDC) to a TSC when the station has no traffic and the data terminal ready signal is on, cut strap 20. To dispense with the not-ready-to-receive response to a TSC and send the no traffic answer-back whenever the station has no traffic, whether data terminal ready is on or off, leave strap 20 closed.

Note 7: In 8A1-type systems using direct station-to-station transmission (controlled by 35A line controller or equivalent), these three straps depend on whether the first or second character of the two-character answer-back from a receiver is ACK or X-ON, the character used to restart the sender after sending a CDC. If the second character of the answer-back is ACK or X-ON, cut straps 58 and 60 and leave strap 59 closed (sender restarts on receipt of ACK or X-ON). If the first character of the answer-back is ACK or X-ON, cut strap 59 and leave straps 58 and 60 closed (sender waits one character after receipt of ACK or X-ON before restarting).

Note 8: If terminal motors are controlled by 9140, cut strap 68 (1 to 2 second delay before answer-back is sent or reader starts sending). If terminal motors run all the time, leave strap 68 closed (200 millisecond delay before answer-back is sent or reader starts sending).

Note 9: These two straps determine if and when a sender is stopped after transmitting a CDC. Two cases are possible. For 8A1-type systems using direct station-to-station transmission where the sender must stop on the second non-DELETE character of the CDC (systems controlled by 35A line controller or equivalent), cut strap 14 and leave strap 63 closed. For 8A1-type systems using direct station-to-station transmission where the sender must stop on the first DELETE character

TABLE A

9140 OPERATIONAL STRAPS (Continued)

after one or more non-DELETE characters, cut strap 63 and leave strap 14 closed. Two other straps affect this operation also, straps 27 and 37. If the character (or characters) coasted through by the tape reader during stopping are not to be allowed to be sent on line, leave strap 27 closed and cut strap 37; if the character or characters coasted through in stopping are to be allowed to be sent on line (systems controlled by 35A line controller or equivalent), cut strap 27 and leave strap 37 closed. See also Note 11.

Note 10: To provide local copy of transmitted data, cut strap 15. To omit local copy of transmitted data, leave strap 15 closed. If strap 15 is cut, strap 1 on mounting frame must also be cut.

Note 11: To regenerate data sent by terminal (in 9140), cut strap 37 and leave straps 27 and 54 closed. If the system requires that the station always monitor the receive data lead, even when sending, cut straps 27 and 54 and leave strap 37 closed (no sent data regeneration). For 8A1-type systems using direct station-to-station transmission, Note 9 must be followed even if sent data regeneration is lost.

Note 12: If card F1 is used in 9140, leave strap 61 closed. If card F2 is used in 9140, cut strap 61.

Note 13: If the third answer-back to a CDC is not required, cut straps 73 and 74 (disables third answer-back). If a negative answer-back response is required (along with an additional input chosen by customer), leave strap 73 closed and open strap 74. If a positive answer-back response is required (along with an additional input chosen by customer), open strap 73 and leave strap 74 closed.

Note 14: If the option to allow a sending station to copy all CDCs and answer-back responses is required (not used in Record Communication System), leave straps 75 and 76 closed. If this capability is not required, cut straps 75 and 76.

Note 15: For 110 baud operation, strap 50 on card A is open, and strap 13 on card B is closed. For 150 baud operation, strap 50 on card A is closed, and strap 13 on card B is open.

TABLE B

MOUNTING FRAME STRAPPING FOR 33 TYPE ASR SET

CARD DESIGNATION	STRAP NO.	USUAL 8A1-TYPE OPERATION
MTL — TP303801	1	X
	2	—
	3	X
	4	X
TBP — TP328725	5	—
	6	X
	7	—
	8	—
	9	—
	10	X

X = Strap Open; — = Strap Closed

Note: Sets are strapped as shown, except that strap 4 is closed. To provide local copy of sent data (8A1-type operation only), close strap 1. To enable the off-line receiving indication option, leave strap 4 closed. To eliminate the audible alarm indication, cut strap 5.

TABLE C

MOUNTING FRAME STRAPPING FOR 35 TYPE ASR SET

CARD DESIGNATION	STRAP NO.	USUAL 8A1-TYPE OPERATION	
		ALONE	WITH RO SET
MTL — TP303801 (Horizontal)	1	X	X
	2	—	—
	3	X	X
	4	X	X
TBP — TP328725 (Vertical)	5	—	—
	6	X	X
	7	—	—
	8	—	—
	9	—	X
	10	X	X

X = Strap Open; — = Strap Closed

Note: Sets are strapped as shown for usual 8A1-type operation with RO set, except that strap 4 is closed. To provide local copy of sent data, close strap 1. To provide for the punch to be controlled by the third CDC signal (on line punch control option — stand-alone sets with card A-1 only), close strap 3. To enable the off-line receiving indication option (stand-alone sets only), leave strap 4 closed. To eliminate the audible alarm indication, cut strap 5. If individual motor control is used without an auxiliary RO set, leave strap 9 cut; if it is not used with an auxiliary RO set, close strap 9.

TABLE D

MOUNTING FRAME STRAPPING FOR SELECTIVE CALLING 35 TYPE RO SET

CARD DESIGNATION	STRAP NO.	USUAL 8A1-TYPE OPERATION
MTL — TP303801 (Horizontal)	1	—
	2	X
	3	X
	4	X
TBP — TP328725 (Vertical)	5	—
	6	X
	7	X
	8	—
	9	—
	10	X

X = Strap Open; — = Strap Closed

Note: Sets are strapped as shown, except that strap 4 is closed. To enable the off-line receiving indication option, leave strap 4 closed. To eliminate the audible alarm indication, cut strap 5.

Bits b_7 b_6 b_5 →					0 0 0	0 0 1	0 1 0	0 1 1	1 0 0	1 0 1	1 1 0	1 1 1
b_4	b_3	b_2	b_1	COLUMN → / ROW ↓	0	1	2	3	4	5	6	7
0	0	0	0	0	NUL (NULL)	DLE (DC0)	SP	0	@	P	`	p
0	0	0	1	1	SOH (SOM)	DC1	!	1	A	Q	a	q
0	0	1	0	2	STX (EOA)	DC2	"	2	B	R	b	r
0	0	1	1	3	ETX (EOM)	DC3	#	3	C	S	c	s
0	1	0	0	4	EOT	DC4	$	4	D	T	d	t
0	1	0	1	5	ENQ (WRU)	NAK (ERR)	%	5	E	U	e	u
0	1	1	0	6	ACK (RU)	SYN (SYNC)	&	6	F	V	f	v
0	1	1	1	7	BEL (BELL)	ETB (LEM)	'	7	G	W	g	w
1	0	0	0	8	BS (FEO)	CAN (S_0)	(	8	H	X	h	x
1	0	0	1	9	HT	EM (S_1)	)	9	I	Y	i	y
1	0	1	0	10	LF	SUB (S_2)	*	:	J	Z	j	z
1	0	1	1	11	VT	ESC (S_3)	+	;	K	[	k	{
1	1	0	0	12	FF	FS (S_4)	,	<	L	\	l	¦ (ACK)
1	1	0	1	13	CR	GS (S_5)	–	=	M	]	m	} (ALT MODE)
1	1	1	0	14	SO	RS (S_6)	.	>	N	^ ↑	n	~ (ESC)
1	1	1	1	15	SI	US (S_7)	/	?	O	_ ←	o	DEL

(Columns 6 and 7, rows 0–11 in column 7: PREVIOUSLY UNASSIGNED)

Note: Shaded boxes indicate characters with bit 8 "1" for even parity.
Example: Bits 1 through 7 of the bit permutation for the character M are 101001, respectively.
1 = Mark, 0 = Space

Controls and Their Meanings:

NUL(L)=Null
SOH =Start of Heading
SOM =Start of Message
STX =Start of Text
EOA =End of Address
ETX =End of Text
EOM =End of Message
EOT =End of Transmission
ENQ =Enquiry
WRU =Who Are You
ACK =Acknowledge
RU =Are You
BEL(L)=Bell
BS =Backspace
FE_O =Format Effector

HT =Horizontal Tabulation
LF =Line Feed
VT =Vertical Tabulation
FF =Form Feed
CR =Carriage Return
SO =Shift Out
SI =Shift In
DLE=Data Link Escape
DC_0=Device Control 0
DC_1 =Device Control 1
DC_2 =Device Control 2
DC_3 =Device Control 3
DC_4 =Device Control 4
NAK=Negative Acknowledge
ERR=Error

SYN(C) =Synchronous Idle
ETB =End of Transmission Block
LEM =Logical End of Media
CAN =Cancel
S_0 through S_7=Separators
EM =End of Medium
SUB =Substitute
ESC =Escape
FS =File Separator
GS =Group Separator
RS =Record Separator
US =Unit Separator
SP =Space
ALT MODE=Alternate Mode
DEL =Delete

Figure 5 - ASCII (x3.4 With 1963 Version Shown on Right)

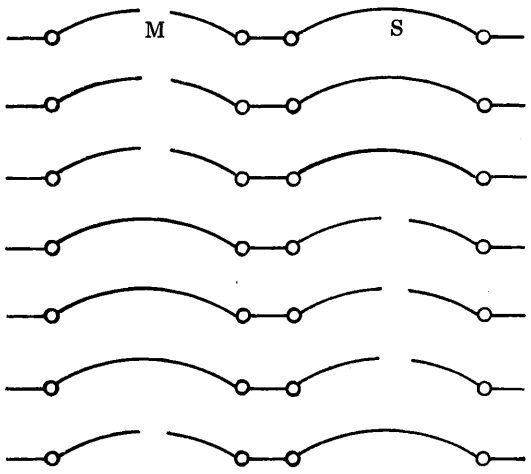

Figure 6 - Example of CDC or TSC Programming for the Character G (Bits 1, 2, 3, and 7 marking)

3.06 As an example, the straps to be cut to program the character G (bits 1, 2, 3, and 7 marking) are shown in Figure 6. CDC codes are programmed on card A, in position A (Figure 7).

TSC Programming

3.07 All send/receive station controllers must be programmed for one TSC code. Every station is programmed differently. The first character of each TSC code is the ASCII character DLE (data link escape).

3.08 Each TSC character is programmed by cutting seven of 14 wire straps. These straps are located on card D1 (Figure 8). Follow the directions given in 3.05 and 3.06 for programming TSC CHAR 1 and TSC CHAR 2.

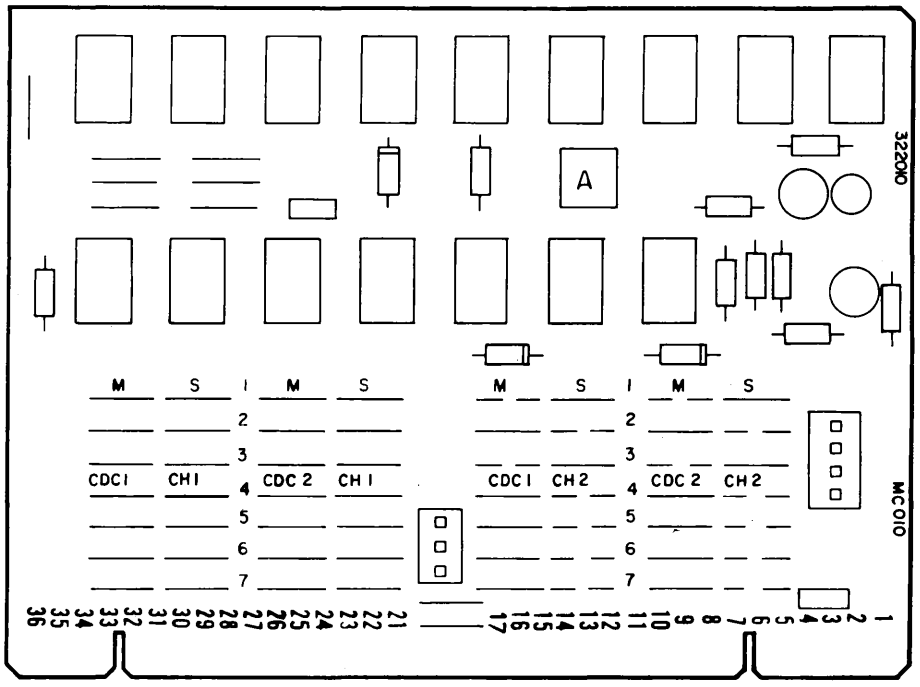

Figure 7 - CDC Programming — Card A

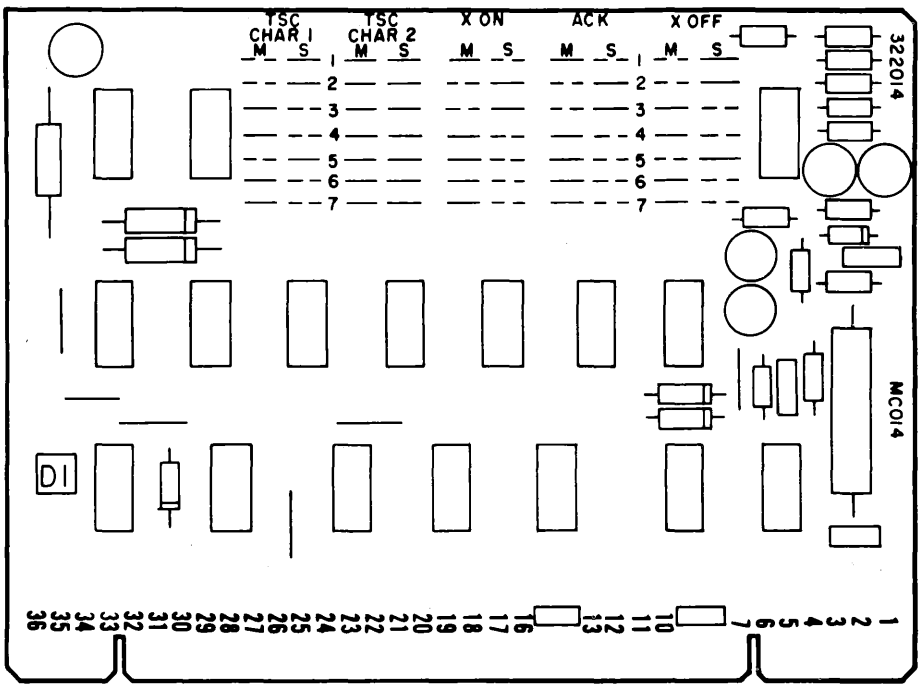

Figure 8 - TSC and Miscellaneous Programming — Card D1

Answer-Back and Miscellaneous Programming

3.09 Three other characters on card D1 (Figure 8) must also be programmed. They are ASCII characters X-ON (DC1), ACK, and X-OFF (DC3). Follow the directions given in 3.05 and 3.06 for programming these three characters.

3.10 The character labeled FDX INT. on card C2, in position C, must be programmed for the ASCII character NUL (all seven bits spacing). The answer-back characters on card C2-1 or C2-2 attached to card C2 must be programmed as follows:

CHAR 1 \ (Reverse Slash)
CHAR 2 ACK
CHAR 3 Not Used
CHAR 4 BEL

All characters must be programmed for even parity (eighth bit marking if the number of marking bits in positions 1 through 7 is odd).

Note: The programming shown is for card C2-2 (TP322422); on card C2-1, CHAR 3 is omitted and CHAR 4 is labeled CHAR 3.

3.11 Each of the characters in 3.10 is programmed by cutting only those straps that correspond to the bits that are marking (Figure 5). Be sure that the cut ends are some distance from each other.

Substitute Character Programming

3.12 Some of the 9140 controllers have a card in position F labeled F2. If present, this card must be programmed for the substitute character. This character is programmed by cutting only those straps that correspond to the bits that are marking.

3.13 If not specified otherwise on the installation order, program the character labeled SUBSTITUTE CHARACTER for underline (_), bits 1, 2, 3, 4, 5 and 7 marking.