

PARITY FAILURE DETECTOR AND  
SUBSTITUTE CHARACTER INSERTER (SA120)

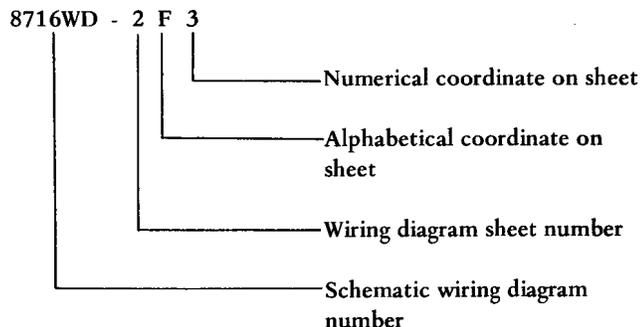
INSTALLATION

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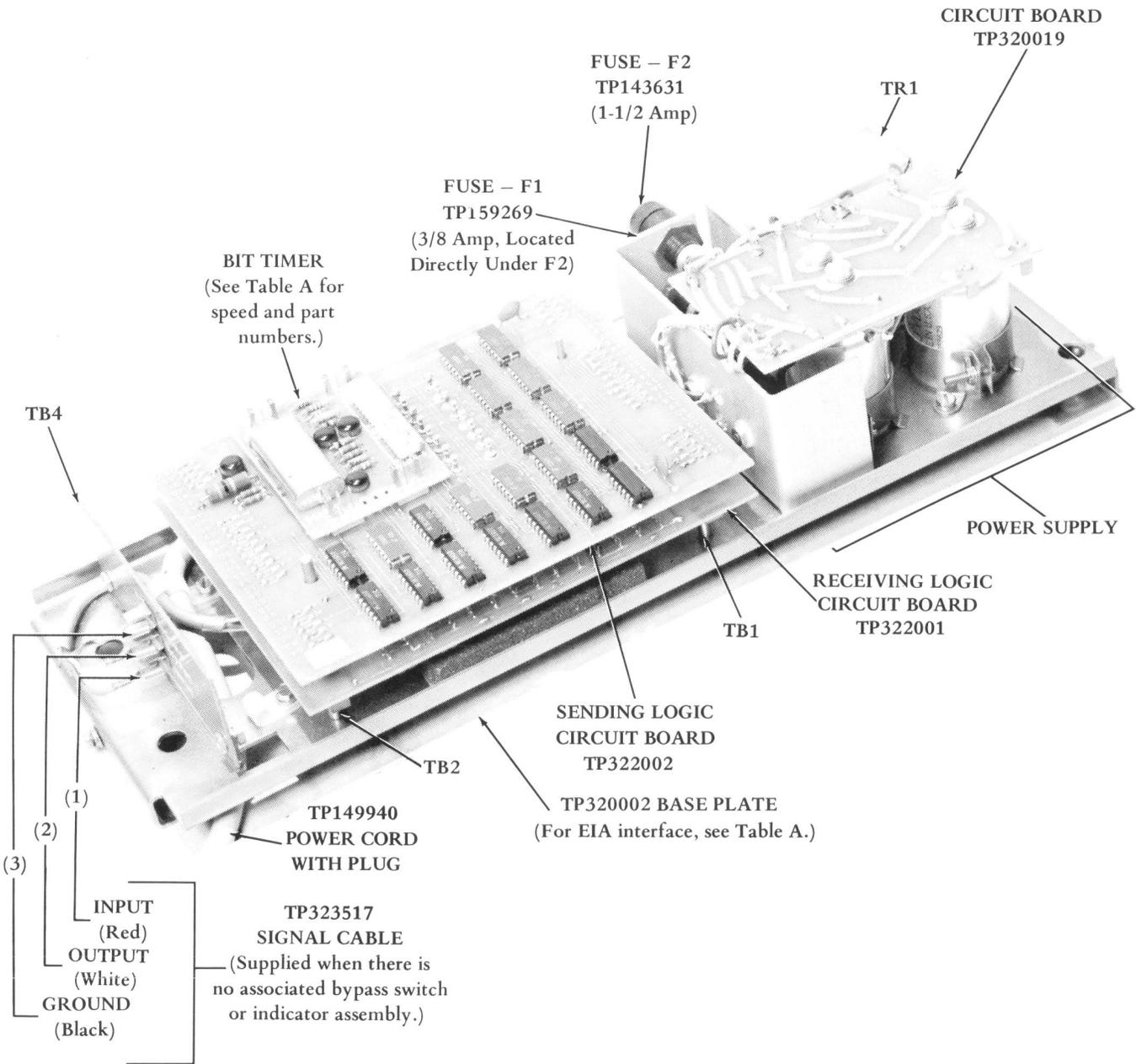
1. GENERAL

1.01 This section provides the installation information and procedures for the SA120 parity failure detector and substitute character inserter (Figure 1). It also provides similar information for the associated variable feature — the bypass switch and indicator assembly (when used with the related wiring diagrams and the wiring diagrams for the terminal equipment to be used). The circuit element locations referenced in the text may be located on schematic wiring diagrams according to the following system:



1.02 When reference to wiring diagrams is necessary, those shipped with the equipment are the most current and should be used if available. Otherwise, use the figures and wiring diagrams referenced in this section, Schematic wiring diagram 8200WD and actual wiring diagrams 8201WD (bipolar) and 8202WD (current/no current) cover the basic SA120.

1.03 There are two versions of the SA120: One for installation on receivers to detect parity errors and insert substitute characters for them in the output copy, and one for installation on senders using nonparity tapes to insert correct parity in the outgoing signal. There are two varieties



**Note 1:** Base plate TP320001 includes two interface amplifiers (in place of TB4) on circuit board TP323513 and must be used for current/no current input and/or output (see Table A and 8200WD, Sheets 5 and 6).

**Note 2:** If either (not both) TP322400 break generator/counter driver or TP322422 parity board is used, it is inserted between TP322002 and TP322001 (see Table A).

Figure 1 - Typical SA120 Parity Failure Detector and Substitute Character Inserter With Cover Removed



of the second version (SA120 AS and SA120 FA) and many varieties of the first (all other two-letter codes in Table A). The SA120 is factory-wired and strapped to monitor even parity (recognize odd parity characters as errors) and have the speed and interface shown in Table A. The part numbers of the associated bypass switch and indicator assembly (if present), type of interface (current/no current or bipolar), speed, and terminal application may also be determined from Table A.

1.04 The substitute character that is selected to indicate an error should be strapped in by the installer. Also, straps must be changed if odd parity is required.

1.05 Along with the wiring diagrams, refer to Section 578-200-301 for troubleshooting information and Section 578-200-101 for description.

1.06 The SA120 parity detector, with bypass switch and indicator assembly, instructions are intended for easy installation in Model 33 and 35 teletypewriter receiving terminals and Type 2 Tape Receivers. The SA120 can be used with any eight-level, serial-by-bit signal that provides a parity bit, at any speed up to 2400 wpm. SA120 units equipped with a TP322422 parity insert board may be used in a sender signal to add parity, if required, for send terminals not so equipped. A basic SA120 may also be used in a send or receive line as a regenerative repeater accepting signals with up to 45 percent distortion and retransmitting them with less than 5 percent distortion. The input or output interface amplifiers of a current/no current SA120 can be strapped for conversion of a signal from polar to neutral or neutral to polar (schematic wiring diagram 8200WD, Sheets 1 and 3). The SA120 may also be used as a test, maintenance and quality check unit by comparing source material with end results and by counting and recording errors.

1.07 The SA120 parity detector accepts a serial signal consisting of a start bit, eight information bits, and a stop bit of unity length or longer. It is available for receiving 110, 150, and 1050 baud signals (see two-letter code information in Table A), but may be specially ordered for other baud rates up to 2400 baud. It comes strapped for even parity (no error), but may be restrapped for odd parity (no error).

1.08 The detailed installation instructions that follow are intended for connecting the various SA120 coded units with the specific terminal sets listed in 1.09 (see Table A).

1.09 If the SA120 is to be installed in a terminal set other than those listed, the installation requirements may vary and require analysis. This section includes specific instructions for the following terminal receiving sets:

(a) Model 33 sets wired in accordance with schematic wiring diagrams 7881WD and 7882WD and actual wiring diagrams 7888WD and 7889WD.

(b) Model 35 sets wired in accordance with actual wiring diagrams 5822WD and 8142WD and schematic wiring diagrams 6000WD and 8226WD.

(c) Type 2 Tape Receiver wired in accordance with actual wiring diagram 4702WD and schematic wiring diagram 4773WD.

There is a two-letter code on the cover nameplate and bottom of the base plate for each SA120 unit. This code covers the type of operation, the components, and factory strapping arrangement for each unit. Refer to Table A and to schematic wiring diagram 8200WD, Sheets 5 and 6 for a complete breakdown of this code. This table includes information on the associated bypass switch and indicator assembly terminal equipment, special circuit boards, and operating speed for each coded unit.

#### PHYSICAL CHARACTERISTICS

1.10 The overall dimensions of the SA120 (Figure 2) are as follows: Length – 14-1/2 inches; width – 5-1/4 inches; and depth – 3-1/2 inches. Mounting brackets are supplied for mounting to a 19-inch vertical relay rack as provided in Model 35 cabinets. Otherwise, it may be mounted in any position (adjacent shelf, table, or wall), and since it has no controls or indicators located at the chassis, it does not have to be accessible to the operator.

1.11 The SA120 unit is intended for operation in a temperature environment of from 40°F to 140°F.

#### SIGNAL REQUIREMENTS

1.12 The polar EIA input (red wire) to TB4 of the SA120 with a TP320002 base plate should comply with EIA RS-232B received data voltage levels, on the receive data lead:

SPACE = +3 to +25 volts

MARK = -3 to -25 volts

The input impedance is 3300 ohms.

1.13 The current/no current (neutral) input of an SA120 with a TP320001 base plate (Figure 3) accepts data from either a 101C or 105A type of data set and converts it into suitable bipolar voltage signals for use by the SA120. A -14 volt source at the SA120 input provides for a 30 ma current loop.

1.14 Receiving distortion (bias, end, or mixed) up to 45 percent, will be accepted at the input and regenerated to less than 5 percent at the output.

1.15 False start pulses (pulses less than 0.5 bits in length) are rejected and ignored as noise.

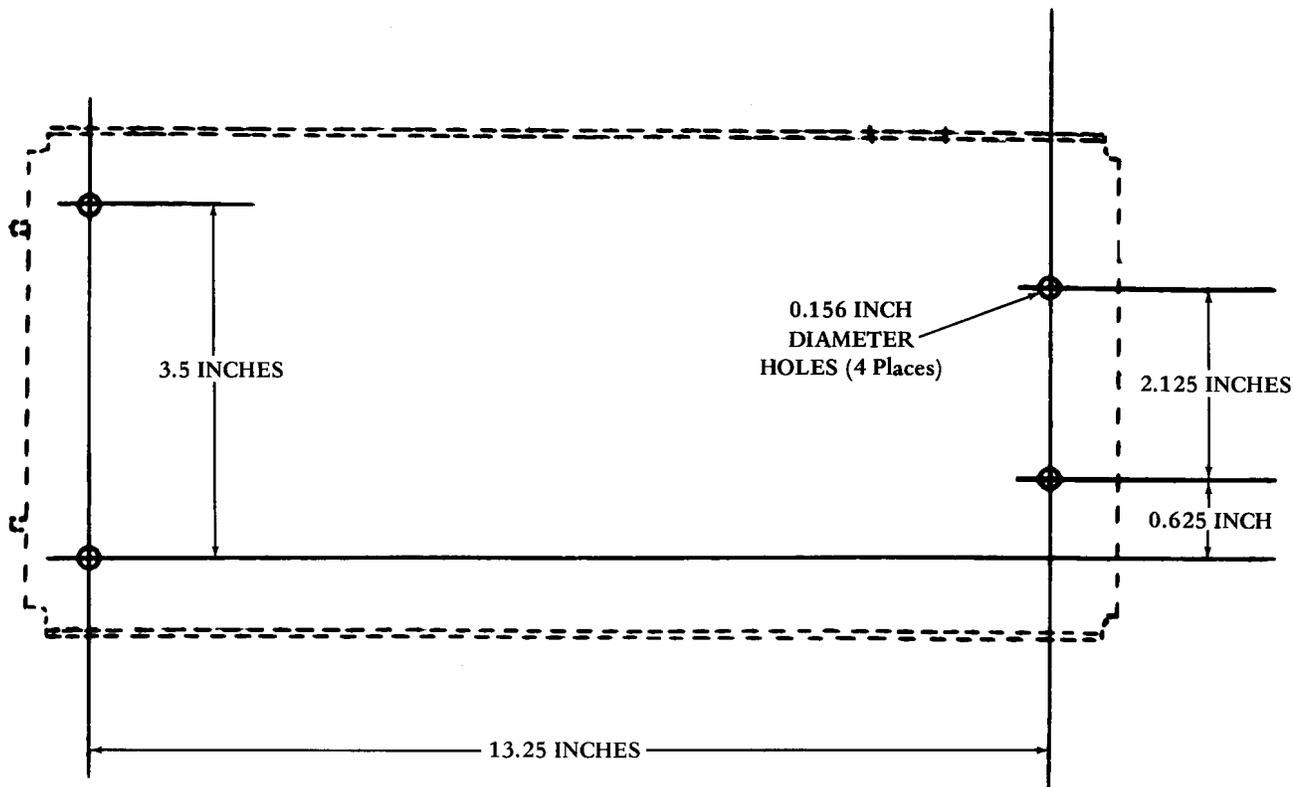


Figure 2 - SA120 Base Plate Assembly

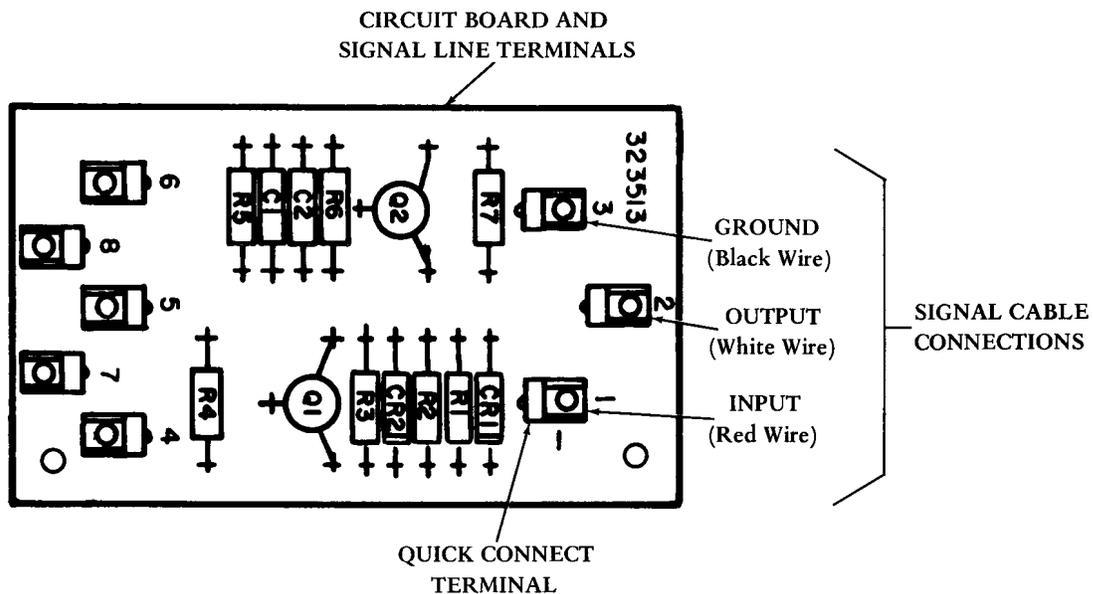


Figure 3 - Signal Line Connections to Interface Amplifiers (TP323513) of Base (TP320001) for Current/No Current Operation

1.16 Incoming characters will be registered correctly if the character length is equal to or greater than 9.55 bit intervals. A shorter character will result in temporary loss of synchronization with the incoming signal.

1.17 The output is a serial signal consisting of a start bit, eight information bits, and a stop bit. The information bits are regenerated. The length of each outgoing character is identical to its length as received. The significance of this is that the stop bit is not regenerated. This means whatever stop bit distortion the receiving terminal can accept from the line is unchanged by the insertion of the SA120 parity detector in front of the terminal.

1.18 The unit may be ordered for baud rates up to 2400 baud. When equipped with a 110 baud receiving speed and a 150 baud sending speed, the unit will permit matching a 150 baud receiving device to a 110 baud incoming signal.

1.19 The EIA output signal units should meet the requirements of EIA RS-232B send data voltage levels (+5 volts minimum when terminated in 3000 ohms):

SPACE = +6  $\pm$ 1 volt)  
into 3000 ohms  
MARK = -8  $\pm$ 2 volt)

Source impedances are 56 ohms and 2200 ohms, respectively.

1.20 The current/no current unit output is a switched transistor stage which is capable of providing a current/no current signal. The maximum voltage which may be applied is -48 volts dc. Maximum current switched (limited externally) is 30 ma.

#### POWER REQUIREMENTS

1.21 A 115 v ac source only is required. A three-wire grounding power cord, TP149940, is connected to and provided as part of the SA120. The round pin must be connected to ground.

## 2. SA120 INSTALLATION PROCEDURES

### GENERAL

2.01 The instructions for the preparation of the SA120 apply whether it is or is not equipped with a bypass switch and indicator assembly.

#### A. Preparation of All SA120 Units

2.02 If the SA120 parity detector is installed in a terminal set that is yet to be uncrated and assembled, first unpack, assemble, and insure proper

operation of the terminal set as prescribed in the associated instructions for that particular set before installing the SA120.

2.03 If the SA120 is to be installed in a presently operating terminal set, proper operation of the terminal set should be confirmed prior to adding the SA120 unit.

2.04 After proper operation of the terminal set has been confirmed, preparation of the SA120 should be undertaken prior to installing it into the terminal set as follows:

(a) Unpack the SA120, wiring diagrams, and any associated bypass switch and indicator assembly. Check for and retain complete set of wiring diagrams for installation and future use.

(b) Refer to the two-letter code following SA120 on the cover nameplate and to Table A to determine the components, operable combination, and which instruction paragraphs of this section are applicable.

(c) Obtain and refer to the wiring diagrams of the associated terminal equipment in addition to the equipment being installed. Use for verification of installation connections illustrated in this section.

(d) When a choice is available, decide on the physical location of all components and check for required mounting hardware if any, before starting work.

**CAUTION:** POWER MUST BE DISCONNECTED WHEN REMOVING COVER OR MAKING OR CHANGING CONNECTIONS.

(e) Remove cover from SA120.

(f) Select the substitute character (Figures 4, 5, and 6) to indicate a parity error and cut the required straps for the MARK code elements on the top circuit board TP322002 (Figure 8 and schematic wiring diagram 8200WD, Sheet 3).

(g) If odd parity is required, remove the top circuit boards (Figures 1, 8, and 7) and then change the factory straps on the bottom circuit board TP320001 as indicated in Figure 9 (schematic wiring diagram 8200WD-1C7).

2.05 Obtain and use terminal extractor TP182697 (included as part of tool kit TP185830 for Model 33 equipment) to remove terminals from terminal equipment connectors. Part ordering numbers for any maintenance tools may be found in Section 570-005-800.

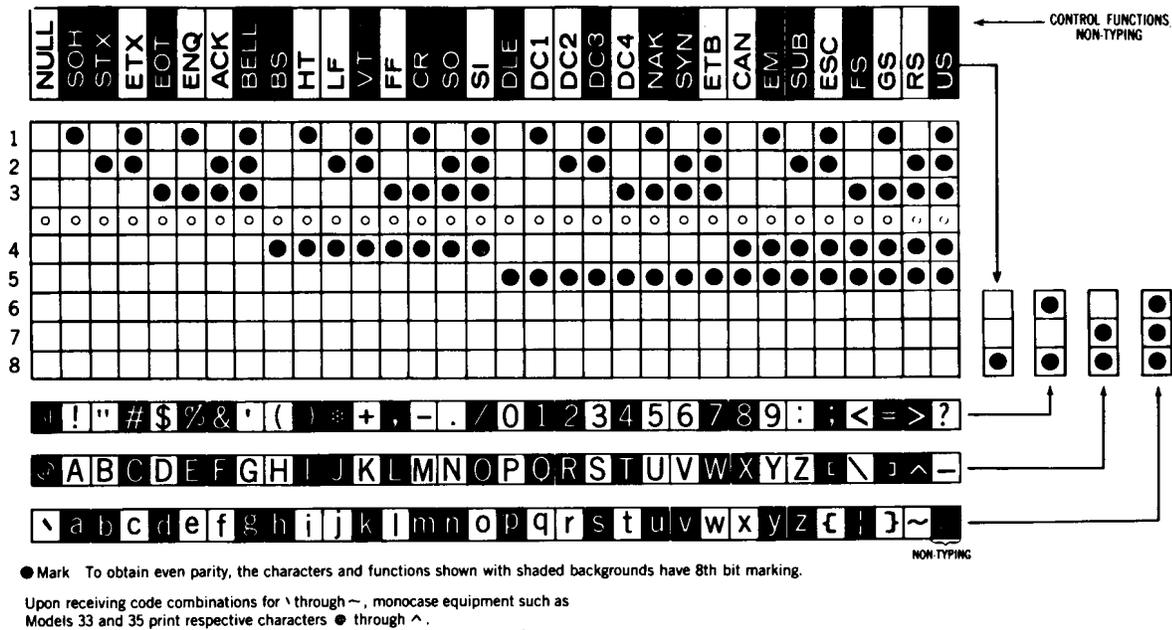


Figure 4 - Example of Eight-Level Code

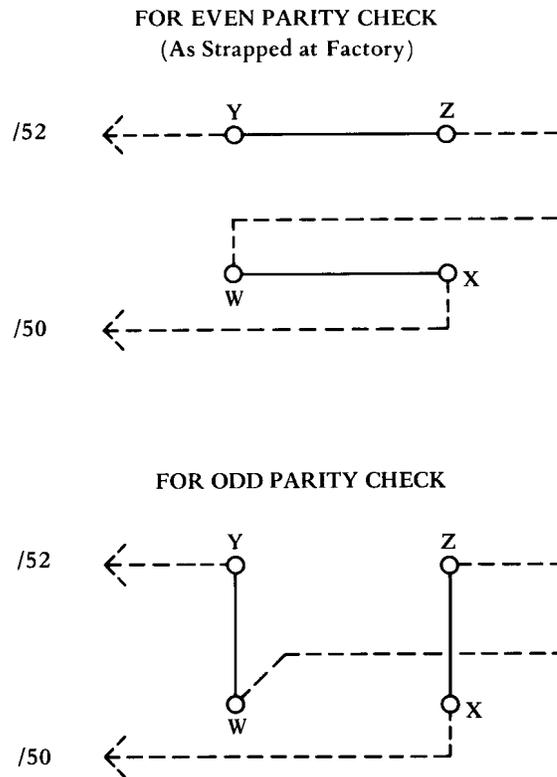


Figure 5 - Odd and Even Parity Strap Options

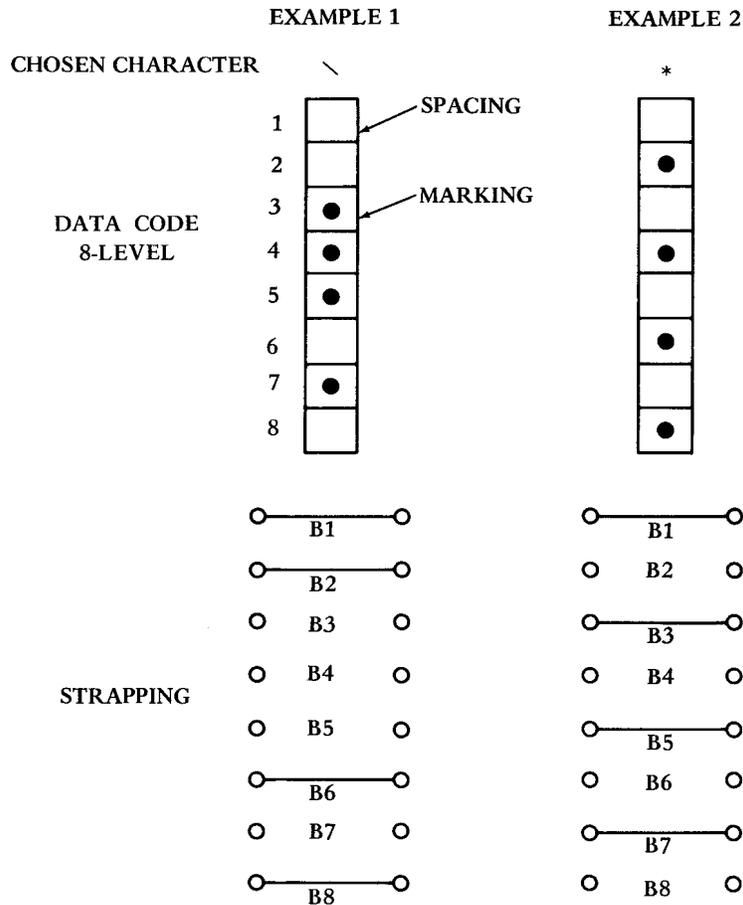


Figure 6 - Typical Examples of Preprogrammed Substitute Character

Note: At time of final reassembly for operation, it may be necessary to remove all the circuit boards, carefully align the pins and then assemble them together as a complete "sandwich" before inserting them in the SA120.

B. Preparation of TP322400 Break Generator/Counter Driver

2.06 If the TP322400 circuit board is a part of the coded SA120 (refer to Table A) prepare it for operation as follows:

- (a) Remove the send-logic circuit board TP322002 (top board) from the SA120.

- (b) With a pair of wire cutters, clip out the factory installed bare wire straps to provide the mode of operation desired as indicated in Table B and Figure 7.

- (c) Add capacitors and strap or resistor as needed. Refer to Table C, Figure 7, and 2.05.

- (d) Attach the push-on terminals from the associated bypass switch or indicator assembly, if any. Refer to the related paragraphs, tables, Figure 7, and wiring diagrams referenced in this section.

- (e) Replace the top circuit board TP322002, dress the attached cable so as not to interfere with the cover, and then replace the cover after all connections have

TABLE B

## REMOVABLE STRAPS (CARD TP322400)

A. SA120 AK, SA120 AM, SA120 AP, SA120 BC, SA120 BD, SA120 CC, SA120 CD, AND SA120 EB									
<u>OPERATION</u>	<u>STRAP</u>								
	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>	<u>G</u>	<u>H</u>	<u>J</u>
Substitute character on each error* plus 250 ms line break (SA120 AK, SA120 AP, SA120 BC, SA120 BD, SA120 CC and SA120 CD) or pulse on reverse channel (SA120 AM and SA120 EB) on first error.	In	In	Out	In	In	Out	Out	In	In
No substitute character – line break or pulse on reverse channel only.	In	In	Out	In	In	Out	Out	Out	Out
B. SA120 BE, SA120 BF, SA120 CE, SA120 CF, AND SA120 EC									
<u>OPERATION</u>	<u>STRAP</u>								
	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>	<u>G</u>	<u>H</u>	<u>J</u>
Substitute character on each error* plus counts consecutive errors at 100 wpm (SA120 BE, SA120 BF, SA120 CE, and SA120 CF) and error bursts at 1050 wpm (SA120 EC); lamp flashes on each error or burst.	Out	Out	Out	In	In	Out	Out	In	In
No substitute character – count and lamp flash on each error* only.	Out	Out	Out	In	In	Out	Out	Out	Out
Substitute character on each error* plus counts consecutive errors at 100 wpm (SA120 BE, SA120 BF, SA120 CE, and SA120 CF) and error bursts at 1050 wpm (SA120 EC); lamp lights on first error and blinks off briefly on following errors until reset.	Out	Out	Out	In	Out	In	In	In	In
No substitute character – count and lamp light on first error* and blink on following errors.	Out	Out	Out	In	Out	In	In	Out	Out
C. SA120 EE									
<u>OPERATION</u>	<u>STRAP</u>								
	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>	<u>G</u>	<u>H</u>	<u>J</u>
Substitute character on each error* plus counts consecutive errors at 1050 wpm; lamp lights on first error and stays on until reset.	Out	Out	Out	In	Out	In	In	In	In
No substitute character – count and lamp flash on each error* only.	Out	Out	Out	In	Out	In	In	Out	Out
D. SA120 ED									
<u>OPERATION</u>	<u>STRAP</u>								
	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>	<u>G</u>	<u>H</u>	<u>J</u>
Substitute character – lamp lights on first error* and stays on until reset.	In	In	Out	In	Out	Out	In	In	In
No substitute character – lamp lights on first error* only.	In	In	Out	In	Out	Out	In	Out	Out
* Error as used here refers to parity errors detected by the SA120 parity failure detector and substitute character inserter. Other errors cannot be detected. Refer to Section 578-200-101 for a discussion of the error-detecting ability and limitations of the SA120.									

TABLE C  
ADD-ON CAPACITOR AND STRAP (TP322400)

	SA120 AK, SA120 AM, SA120 AP, SA120 BC, SA120 BD, SA120 CC, SA120 CD, AND SA120 EB	SA120 BE, SA120 BF, SA120 CE, SA120 CF, AND SA120 EC	SA120 EE	SA120 ED
Added Capacitor Between 65 and 66	None	2 MFD (TP320290)	None	None
Terminal 70 Strapped to	No Strap	Terminal 71 (-14 volts)	Terminal 69 (+14 volts)	Terminal 71 (-14 volts)

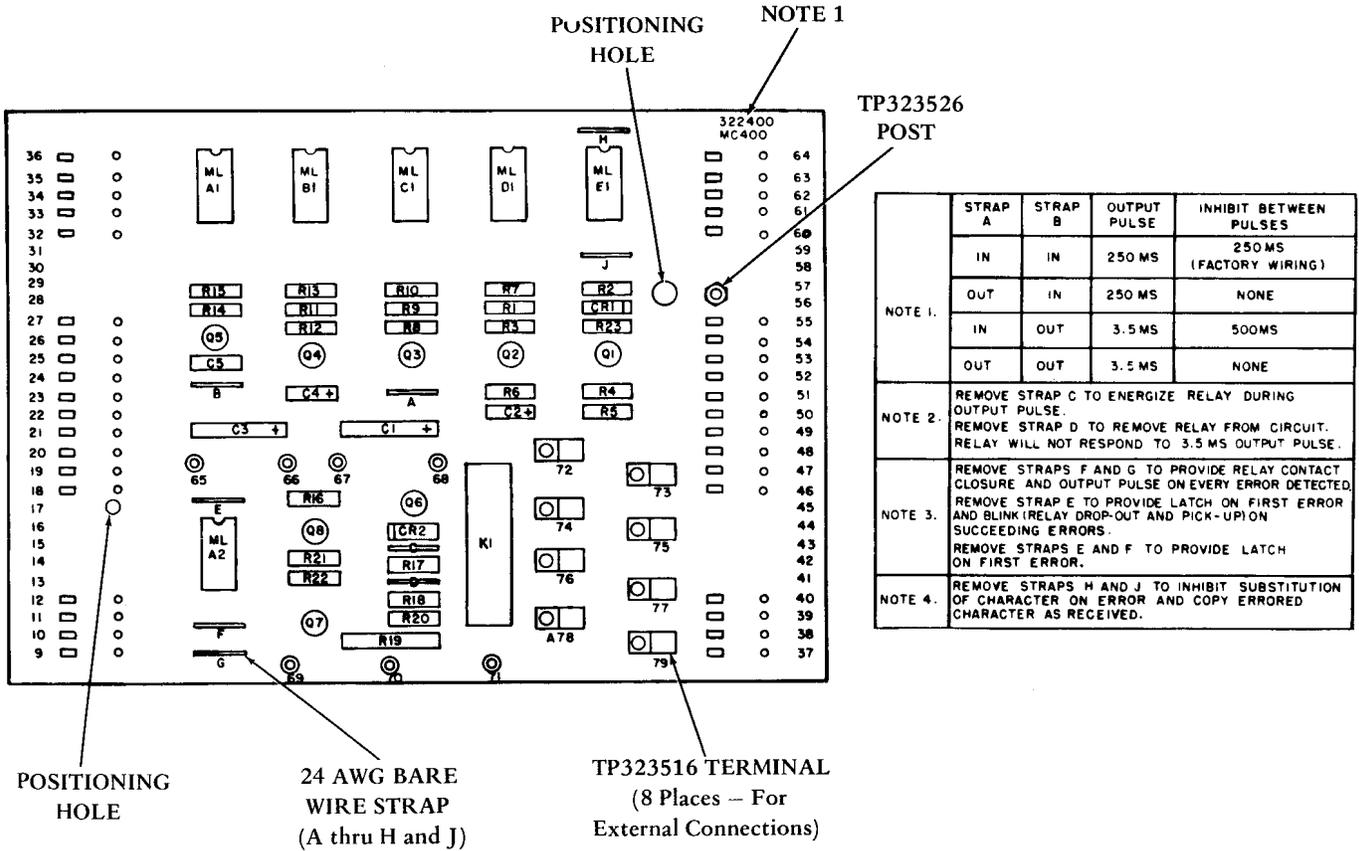
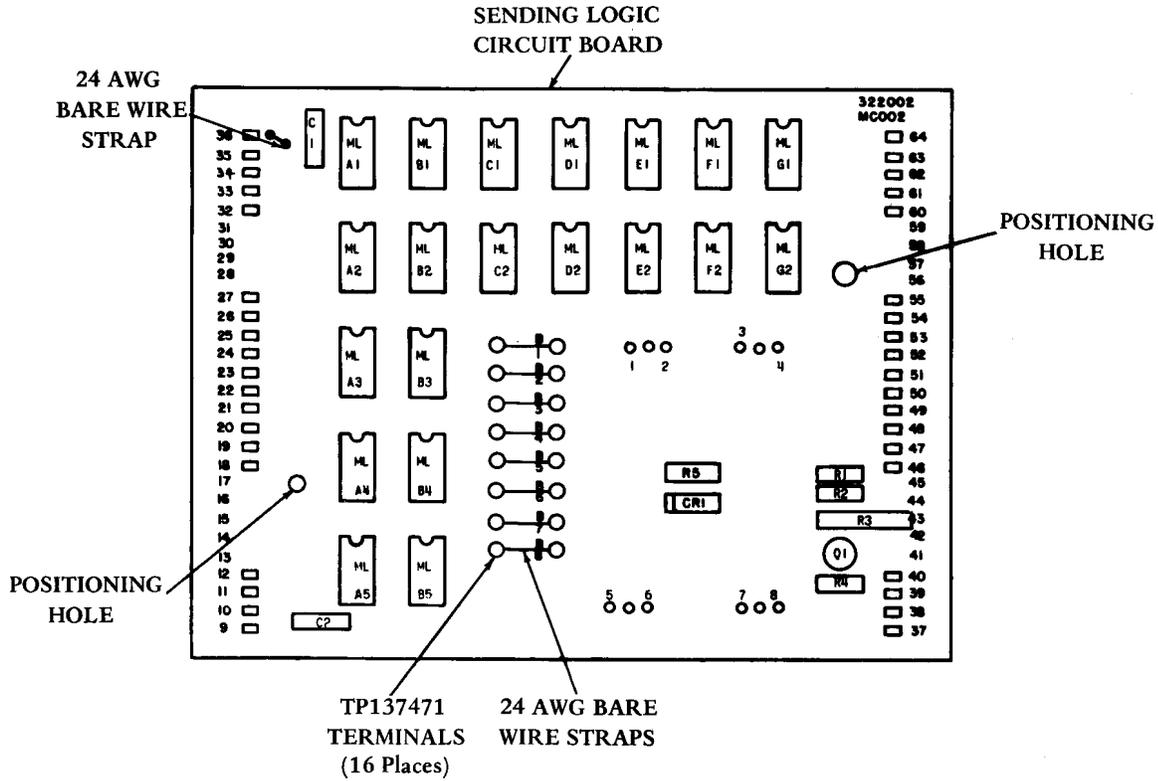


Figure 7 - Rubout Detect-Break Generator Counter Driver Circuit Board TP322400



Note: Cut straps B1 through B8 where a MARK code element is desired.

Figure 8 - Substitute Character Straps on Top Circuit Board TP322002

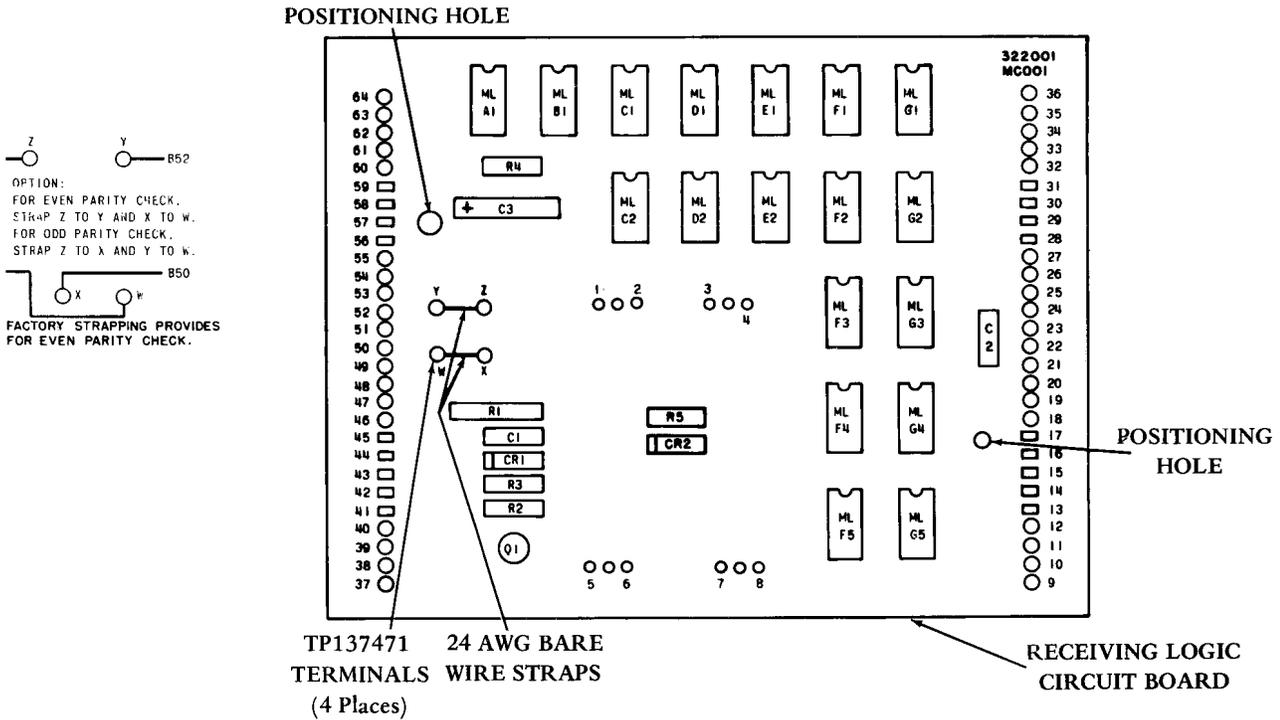


Figure 9 - Parity Straps on Bottom Circuit Board TP322001

been completed per instructions in related paragraphs of this section. If difficulty is encountered in replacing top circuit board, refer to note following 2.05.

### C. Signal Line Connections

2.07 For insertion in the signal line when not equipped with an associated bypass switch assembly or indicator assembly (SA120 AA through SA120 AS), a three-wire cable TP323517 (Figure 1) approximately 5-1/2 feet long, is provided as part of the SA120 for connection at the terminal equipment apparatus wiring field. For the SA120 AA through SA120 AQ, the red wire is the SA120 parity detector input and should be connected to the output of the data set that normally supplies the terminal set with a signal. The white wire is the SA120 parity detector output and should be connected to the input of the terminal set. The black wire is signal ground and should be connected to signal ground at the terminal set. For the SA120 AS, the red wire should be connected to the output of the terminal and the white wire to the input of the data set. The black wire is signal ground and should be connected to signal ground at the terminal.

### D. Power and Ground Connections

2.08 A power cord (TP149940) is provided with the SA120 for connecting the unit to the 115 volt ac source. The round pin on the plug must be connected to ground.

2.09 The SA120 parity detector is factory-wired to provide chassis ground common to circuit ground. If it is desired that chassis ground and circuit ground be separated, remove all circuit boards and remove the green strap connecting TB1, pin 3, to screw S1 (Figure 1).

### 3. SA120 INSTALLATION WITHOUT BYPASS SWITCH OR INDICATOR ASSEMBLY

3.01 Prepare SA120 in accordance with Part 2.

3.02 The SA120, without the bypass switch or indicator assembly, may be mounted wherever there is available space within the limits of its three-wire signal line cable and ac power cord. It has no controls and therefore does not have to be accessible to the operator. The SA120 may be mounted on a 19-inch relay rack by two TP320000 mounting straps, hung on a wall by means of its base plate mounting holes (Figure 2), or set on a shelf or table. Refer to the following figures for mounting suggestions:

- (a) Figure 10 - Model 33 set; pedestal in cabinet
- (b) Figure 12 - Model 35 set; pedestal in cabinet

(c) Figure 14 - Type 2 Tape Receiver or Sender; shelf in cabinet

### 4. SA120 INSTALLATION IN RECEIVER WITH BYPASS SWITCH OR INDICATOR ASSEMBLY

4.01 Prepare SA120 in accordance with Part 2. Paragraph 2.07 does not apply to these units.

#### ASSEMBLIES, TERMINALS, AND FUNCTIONS

4.02 For circuit boards and the bypass switch and indicator assembly associated with any coded SA120 unit, refer to Table A. For the functions of any bypass switch and indicator assembly with its associated terminal equipment, refer to Table D.

4.03 The TP322400 break generator/counter drive applique circuit board, MC400 (Figure 7 and Tables B and C), is designed to provide drive signals for error display devices. The circuit description may be found in Section 578-200-101.

4.04 The SA120 FA, used to examine outgoing signals from a sender for parity, has a TP322422 parity insert board assembly, MC422. If parity is found incorrect, insertion of a parity bit in the eighth level of a sender prior to transmission is provided. The circuit description may be found in Section 578-200-101 or schematic wiring and description drawing 322422. Refer to Part 5 for installation information for SA120 FA.

4.05 The TP327631 and TP327633 bypass switch assemblies (Figures 11 and 13) are for use on Model 33 and 35 terminal equipment. They are identical except for the physical mounting facilities. The TP327631 assembly mounts with a bracket on the Model 33 and is equipped with a TP327628 cable (Figure 10). The TP327633 mounts with mounting hardware on the Model 35 and is equipped with the TP327629 cable (Figure 12 and Table E). Refer to 8716WD, Sheet 1, for schematics of the TP327631 and TP327633 bypass switch assemblies.

4.06 The TP327632 and TP327634 indicator assemblies (Figures 11 and 12) are for use on Model 33 and 35 terminal equipment. They are identical except for the physical mounting facilities. The TP327632 assembly mounts with a bracket on the Model 33 and is equipped with a TP327628 cable (Figure 10). The TP327634 mounts with mounting hardware on the Model 35 and is equipped with the TP327629 cable (Figure 12 and Table E). Refer to 8716WD, Sheet 1, for schematic of the TP327632 and TP327634 assemblies.

TABLE D  
ASSEMBLIES, TERMINALS, AND FUNCTIONS

ASSEMBLY	RECEIVING TERMINAL	FUNCTION
TP327631	Model 33	Bypass switch only – for use with timed break on half-duplex.
TP327632	Model 33	Bypass switch, alarm lamp, counter.
TP327633	Model 35	Bypass switch only – for use with timed break on half-duplex.
TP327634	Model 35	Bypass switch, alarm lamp, counter.
TP327637	Type 2 Receiver	Bypass switch, alarm lamp, high speed counter.
TP327638	Type 2 Receiver	Bypass switch, alarm lamp, counter.
TP327639	Type 2 Receiver	Bypass switch, alarm lamp.
TP327640	Type 2 Receiver	Bypass switch only – for use with timed break on reverse channel.

Note: These bypass switch and indicator assemblies for displaying error count are available for use with the SA120.

4.07 The TP327637 through TP327640 assemblies are for use on Type 2 Tape Receiver terminals. They are mounted on the top of the receiver cabinet and held by means of two magnets mounted on the bottom of the assemblies. The assemblies come equipped with cable assemblies TP327647 and TP327648. See Table E and Figure 14 for placement in cabinet. Refer to 8717WD, Sheets 1 and 2, for schematic of the TP327637 through TP327640 assemblies.

Note: A detailed circuit description for the SA120 and associated bypass and indicator assemblies is available in Section 578-200-101.

A. TP327631 Bypass Switch or TP327632 Bypass Switch, Indicator Lamp and Counter Assembly in Model 33 Sets

Note: The following Model 33 set paragraphs apply only to those sets that are wired in accordance with schematic wiring diagrams 7881WD and 7882WD, and actual wiring diagrams 7888WD and 7889WD. Refer to 8200WD for schematic wiring and to 8201WD and 8202WD for actual

wiring of the basic SA120 (included with all SA120 and bypass switch and indicator wiring diagrams in wiring diagram package WDP 0204).

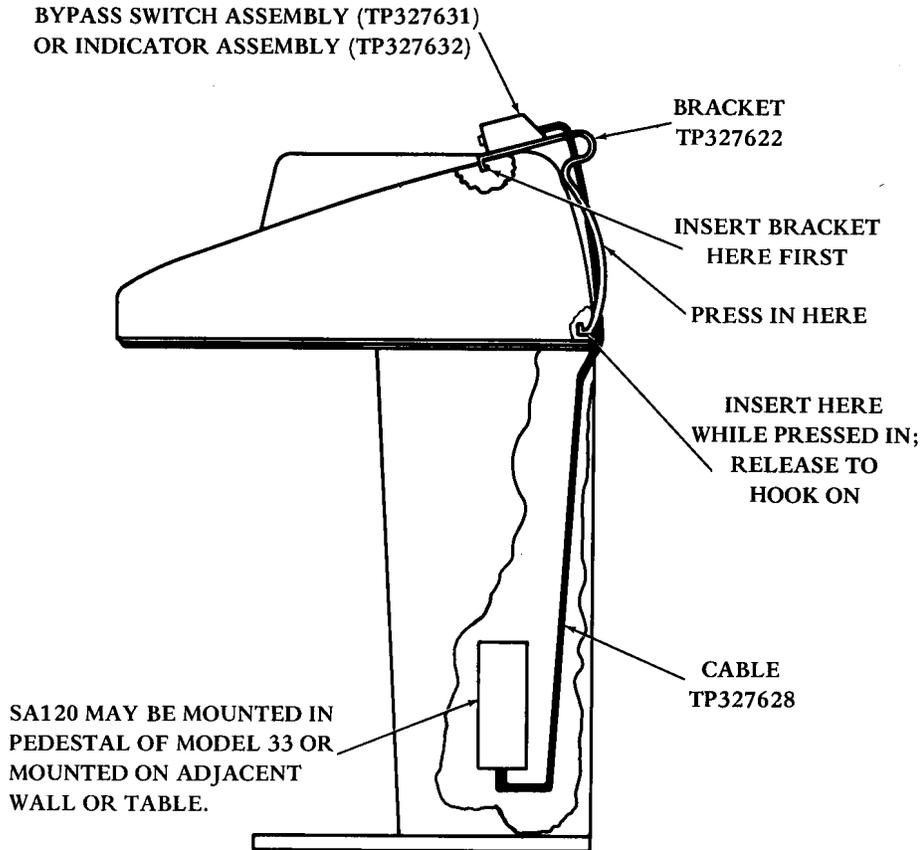
4.08 Locate the SA120 unit in the pedestal of the Model 33 (Figure 10) if there is available space, if not, mount on wall or place on table adjacent to set. Refer to Table E for cables, terminals, and functions and to schematic wiring diagram 8716WD for complete interconnections,

- (a) Remove cover from Model 33 set.
- (b) Remove TP182630 selector magnet driver (SMD) circuit board and disconnect the 9-point, white plastic, unlabeled connector (CW) immediately behind it (8716WD-2F3).
- (c) Remove the black-green wire from position 7 of this connector (CW) (8716WD-2E3).
- (d) Connect the black-green wire just removed to the orange wire of the TP327628 cable. Cover the connection with vinyl tubing or tape.

TABLE E

## CABLES, CONNECTOR TERMINALS, AND FUNCTIONS

MODEL 33 AND 35 SETS			
BYPASS SWITCH OR INDICATOR ASSEMBLY	CABLE ASSEMBLY TP327628 OR TP327629 (Note 1)	TP322400/TB4 TERMINAL NUMBER (Note 4)	FUNCTION
TP327631 through TP327634	R W G BL S BR BK P BK	TB4-1 (Note 3) TB4-2 (Note 3) A76 A74 A78 A72 A73 (Note 2) A77 A75 (Note 2)	SA120 Input SA120 Output Lamp Test Indicator Lamp Relay Common Relay Latch Reset Common Counter Drive Common
TYPE 2 TAPE RECEIVER SETS			
BYPASS SWITCH OR INDICATOR ASSEMBLY	CABLE ASSEMBLY TP327648	TP322400/TB4 TERMINAL NUMBER (Note 5)	FUNCTION
TP327637 through TP327640	R W G BL S BR BK P BK-S W-BL BK-S	TB4-1 (Note 3) TB4-2 (Note 3) A76 A74 A78 A72 A73 A77 A75 A79 A73	SA120 Input SA120 Output Lamp Test Relay Make Contact Relay Common Relay Latch Reset Common Relay Break Contact Common Counter Drive Common
<p><b>Note 1:</b> The TP327628 cable is used with Model 33 terminals and the TP327629 cable with Model 35 terminals.</p> <p><b>Note 2:</b> Black wires are both circuit ground, reversing the connections will have no adverse affects.</p> <p><b>Note 3:</b> Terminals TB4-1 and TB4-2 are for EIA (polar) data interface. When using a current/no current (neutral) interface, the input terminal is no. 1 of TP323513 and the output terminal is no. 2 of TP323513 (Figure 3).</p> <p><b>Note 4:</b> For units not equipped with card TP322400, connect R and W wires as shown but connect both BK wires to TB4-3 or terminal 3 of TP323513 instead of to A73 and A75. The other wires are not used.</p> <p><b>Note 5:</b> For units not equipped with card TP322400, connect R and W wires as shown but connect BK and both BK-S wires to TB4-3 or terminal 3 of TP323513 instead of to A73 and A75. The other wires are not used.</p>			



Note 1: Ac power cord not shown.

Note 2: Model 33 set schematic wiring diagrams are 7881WD and 7882WD;  
actual wiring diagrams are 7888WD and 7889WD.

Figure 10 - Mounting Bypass Switch or Indicator Assembly on Model 33 Set

- (e) Insert the yellow wire of the TP327628 cable in position 7 of the connector (CW).
- (f) Reconnect the connector (CW) remove in (b) and replace the SMD circuit board.
- (g) Remove the red-slate wire from position 12 (PC) of the 15-point, white plastic connector labeled no. 8 at the rear of the Model 33 call control unit (PC not labeled on equipment) (8716WD-2E6).
- (h) Connect this red-slate wire to the single black wire of the TP327628 cable. Cover the connection with vinyl tubing or tape.
- (i) Insert the two black wires at one terminal (branch) of the TP327628 cable in position 12 (PC) of the connector labeled no. 8.
- (j) If using the TP327632 bypass switch and indicator assembly or the TP327631 bypass switch assembly without a TP322400 circuit board in the SA120, disregard the following three steps. Instead, merely tape back individually the white-slate and white-purple wires of the TP327628 cable. Use of the TP327631 bypass switch assembly requires the following steps if a TP322400 circuit board is part of the SA120.
  - (1) Remove the W-BK wire from position 1 (PC) of the connector labeled no. 8 (8716WD-2E2).

(2) Connect the W-BK wire to the white-slate wire of the TP327628 cable. Cover the connection with vinyl tubing.

(3) Insert the white-purple wire of the TP327628 cable in position 1 (PC) of the connector labeled no. 8.

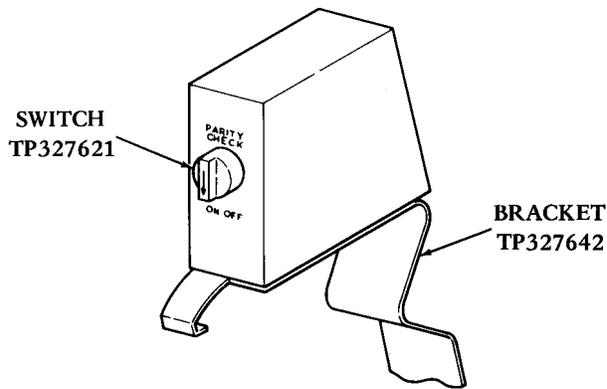
(k) Refer to Figure 10 for physical placement of units.

B. TP327633 Bypass Switch or TP327634 Bypass Switch, Indicator Lamp and Counter Assembly in Model 35 Set

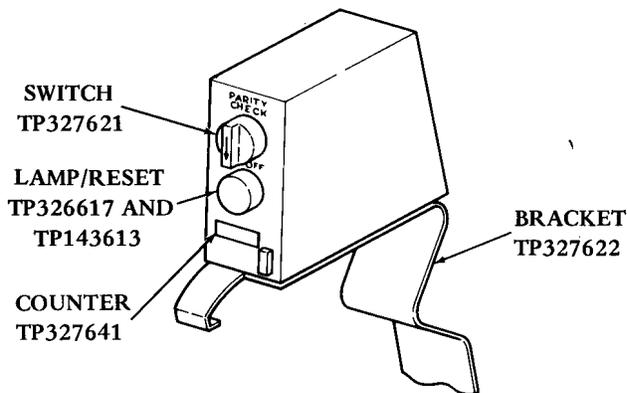
Note: The following Model 35 set paragraphs apply only to those sets that are wired in ac-

cordance with actual wiring diagrams 5822WD and 8142WD and schematic wiring diagrams 6000WD and 8226WD. Refer to 8200WD for schematic wiring and to 8201WD and 8202WD for actual wiring of the basic SA120 (included with all SA120 and bypass switch and indicator wiring diagrams in wiring diagram package WDP 0204).

4.09 Locate the SA120 unit in the pedestal of the Model 35 set (Figure 12), if there is available space, if not, mount on wall or place on table adjacent to set. Refer to Table E for cables, terminals, and functions and to schematic wiring diagram 8716WD for complete interconnections.



Bypass Switch TP327631



Bypass Switch and Indicator Assembly TP327632

Note 1: Use actual wiring diagram 8566WD and schematic wiring diagram 8716WD for both TP327631 and TP327632.

Note 2: TP327631 and TP327632 use cable TP327628 for connection to terminal set.

Figure 11 - Model 33 Set Bypass Switch and Indicator Assemblies

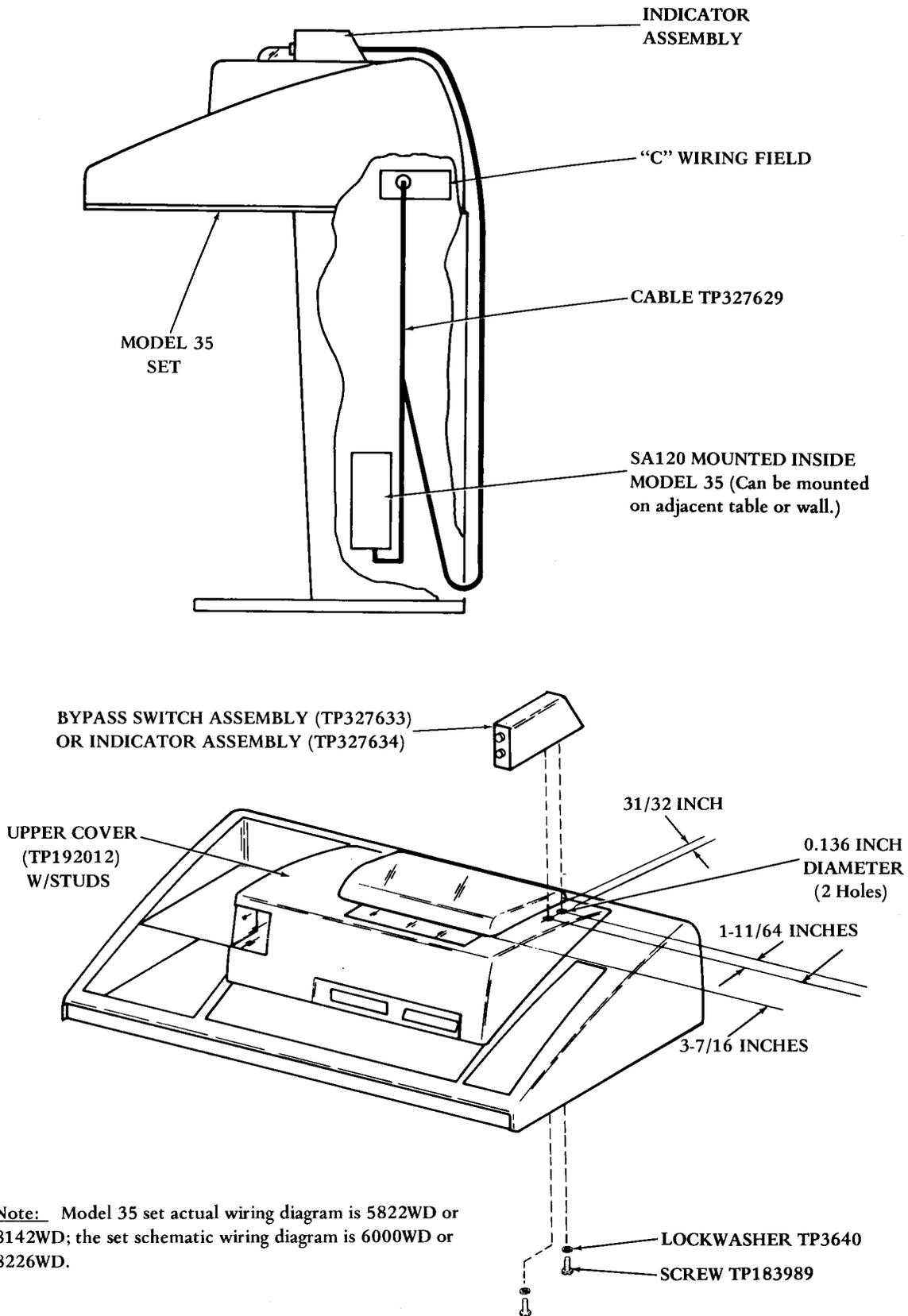
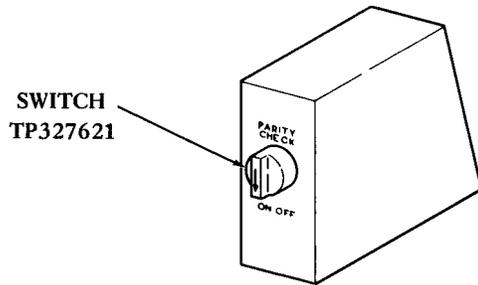
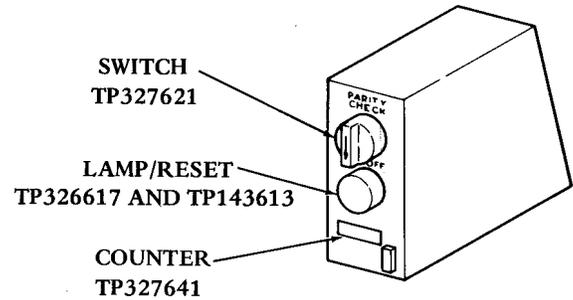


Figure 12 - Mounting of Bypass Switch or Indicator Assembly on Model 35 Set



Bypass Switch TP327633



Bypass Switch and Indicator Assembly TP327634

**Note 1:** Use actual wiring diagram 8566WD and schematic wiring diagram 8716WD for both TP327633 and TP327634.

**Note 2:** TP327633 and TP327634 use cable TP327629 for connection to terminal set.

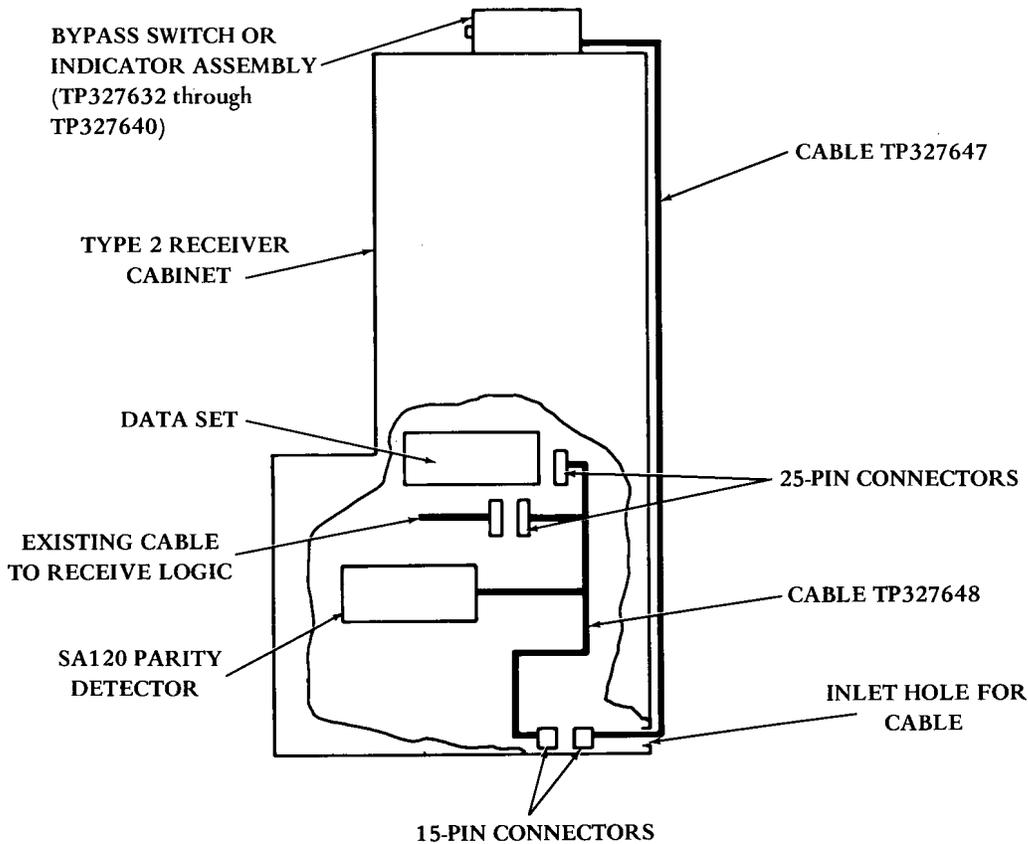
Figure 13 - Model 35 Bypass Switch and Indicator Assemblies

- (a) Drill two holes for mounting of the bypass switch or indicator assembly as shown in Figure 12, and use indicated hardware.
  - (b) Remove the W-BK wire from terminal C-R4 on Model 35 C wiring field (Figure 12) and place on an unused terminal of this C wiring field (8716WD-2C3).
  - (c) Connect the yellow wire of the TP327629 cable to terminal C-R4 of the C wiring field.
  - (d) Connect the orange wire of the TP327629 cable to the spare terminal of the C wiring field, selected in (b).
  - (e) Connect the black wire of the TP327629 cable to terminal C-L7 or any spare ground terminal of the C wiring field.
  - (f) If using the TP327634 indicator assembly, disregard the following three steps. Instead, merely tape back individually the white-slate and white-purple wires of the TP327629 cable at the Model 35 set (8716WD-2C3 and 2C4). Use of the TP327633 bypass switch assembly requires the following steps, provided a TP322400 board assembly is part of the SA120. If a TP322400 board is not supplied, the white-slate and white-purple wires, are taped back as above.
    - (1) Remove the white-purple wire from terminal C-E3 on the C wiring field and place on an unused terminal on the C wiring field (8716WD-2C3).
    - (2) Connect the white-slate wire of the TP327629 cable to terminal C-E3 on the C wiring field.
    - (3) Connect the white-purple wire of the TP327629 cable assembly to the same spare terminal on the C wiring field selected in (1).
  - (g) Refer to Figure 12 for physical placement of units.
- C. TP327637 Bypass Switch With Lamp and High Speed Counter; TP327638 Bypass Switch With Lamp and Low Speed Counter; TP327639 Bypass Switch With Lamp Only; and TP327640 Bypass Switch Only, All in Type 2 Receiver
- Note:** Refer to actual wiring diagram 4702WD and schematic wiring diagram 4773WD for the Type 2 Tape Receiver. Refer to 8200WD for schematic wiring and to 8201WD and 8202WD for actual wiring of the basic SA120 (included with all SA120 and bypass switch and indicator wiring diagrams in wiring diagram package WDP 0204).

4.10 Place the SA120 unit on a shelf within the Type 2 Tape Receiver cabinet (Figures 14 and 15). Refer to Table E for cables, terminals, and functions and to schematic wiring diagram 8717WD for complete interconnections. The bypass switch or indicator assembly is placed on the top of the Type 2 cabinet and is held by means of two magnets located at the underside of the indicator assembly.

- (a) The TP327647 cable from the bypass switch or indicator assembly is routed down the back of the Type 2 Tape Receiver cabinet and enters via the small hole at the bottom of the cabinet (Figure 14).
- (b) Remove the 25-pin connector (P701) from the data set (Figure 15).

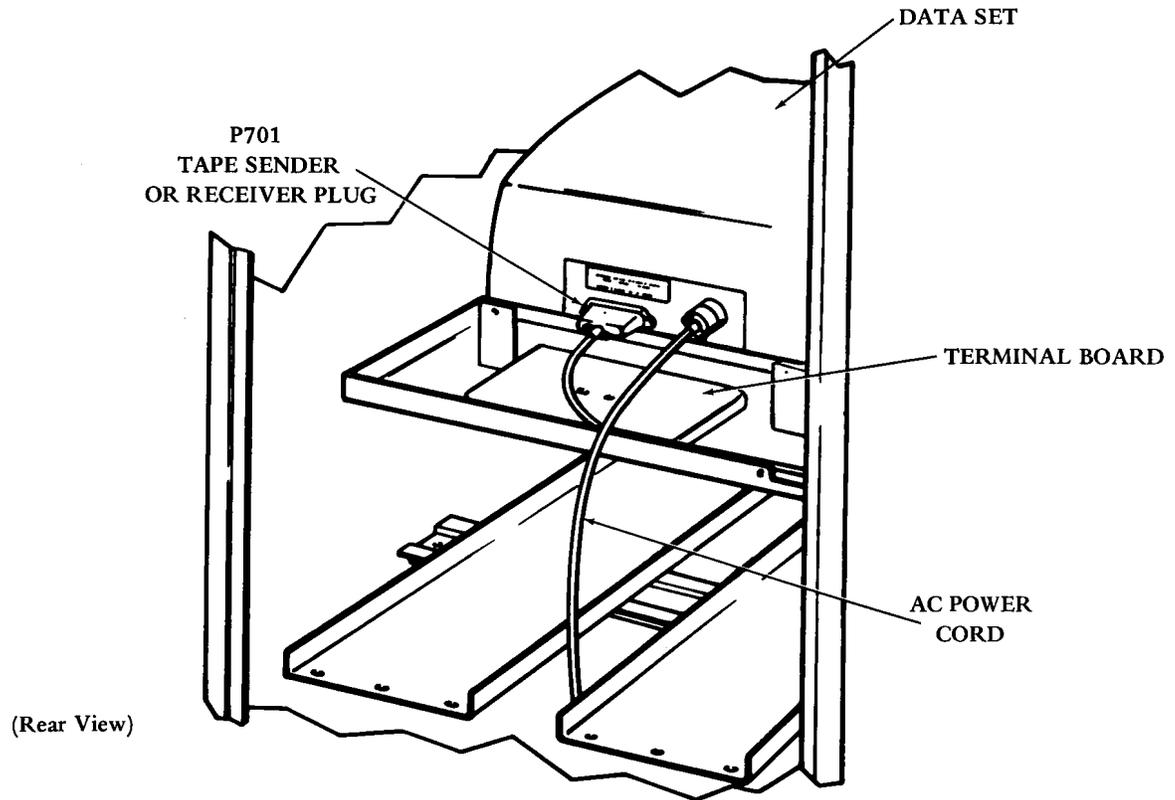
- (c) Insert the mating 25-pin connector of the TP327648 cable into the data set.
- (d) Connect the 25-pin connector (P701) removed from the data set in (b) to the mating 25-pin connector on the TP327648 cable.
- (e) Connect the 15-pin connector at the end of the TP327647 cable to the mating 15-pin connector of the TP327648 cable.
- (f) If a TP327637 bypass switch and indicator assembly is part of the installation, the following connection must be made. Plug the single W-BK wire from the TP327648 cable into the P902 connector at pin C7. This connector plugs into the rear of the multivoltage rectifier in the Type 2 cabinet.



**Note 1:** The SA120 power cord and the W-BK wire from the TP327648 cable are not shown.

**Note 2:** Actual wiring diagram for Type 2 Receiver is 4702WD and the schematic wiring diagram is 4773WD.

Figure 14 - Mounting of Bypass Switch or Indicator Assembly on Type 2 Receiver Cabinet



**Note 1:** The receiver actual wiring diagram is 4702WD and the schematic wiring diagram is 4773WD. The sender actual wiring diagram is 4701WD and the schematic wiring diagram is 4772WD.

**Note 2:** The SA120 FA may be used in series with the transmitting line of a sender where it is required to add parity (if equipped with TP322422 circuit board) or serve as a regenerative repeater to accept signals with up to 45 percent distortion and retransmit them with less than 5 percent distortion.

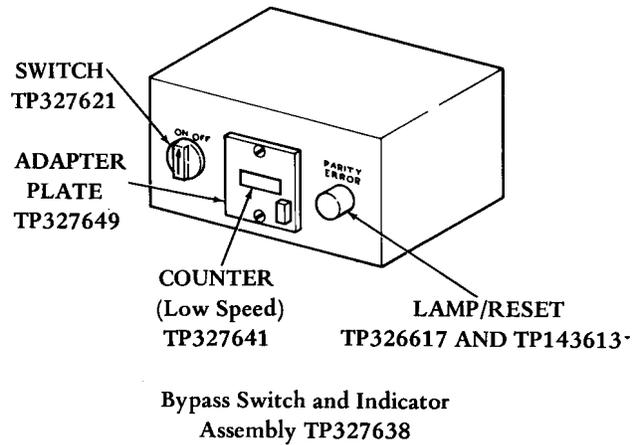
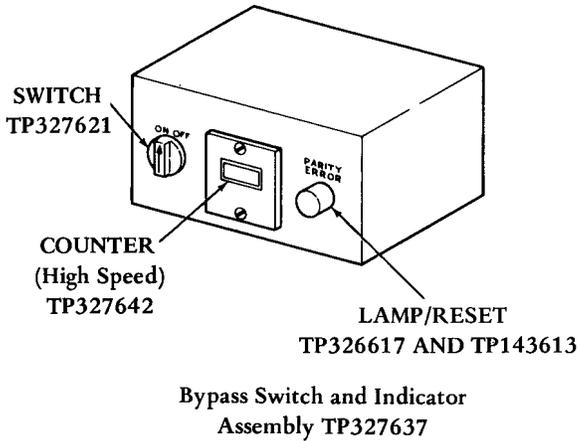
Figure 15 - Type 2 Tape Receiver or Sender

- (g) If a bypass switch and indicator assembly other than the TP327637 is used, the above connection is not required and the W-BK wire should be taped back.
  - (h) Plug the line cord of the SA120 unit into a 115 v ac receptacle.
  - (i) Refer to Figure 14 for physical placement of the units.
5. SA120 INSTALLATION IN SENDER WITH BYPASS SWITCH ASSEMBLY (SA120 FA ONLY)
- 5.01 Prepare the SA120 in accordance with Part 2. Paragraphs 2.06 and 2.07 do not apply to this unit.
- 5.02 The SA120 FA has a TP327640 bypass switch for installation on Type 2 Tape Sender terminals wired in accordance with 4701WD and 4772WD. It mounts on top

of the sender cabinet and is held by means of two magnets on the bottom of the assembly. It comes equipped with cable assemblies TP327647 and TP327669. Refer to 8717WD, Sheets 1 and 2, for schematic of the TP327640 assembly.

**Note:** A detailed circuit description for the SA120 and the TP327640 bypass assembly is included in Section 578-200-101.

- (a) Prior to placing the SA120 unit in the cabinet, remove the cover from the SA120 unit. The three wires from the TP322669 cable should be connected as follows: Red wire to TB4-1; white wire to TB4-2; black wire to TB4-3 (Figures 1 and 3).
- (b) Replace the cover and place the SA120 unit on a shelf within the Type 2 Tape Sender cabinet.



**Note 1:** Use actual wiring diagram 8567WD and schematic wiring diagram 8717WD for TP327637, TP327638, TP327639, and TP327640.

**Note 2:** TP327637, TP327638, and TP327639 use cables TP327647 and TP327648 for connection to terminal set. TP327640 uses cable TP327647.

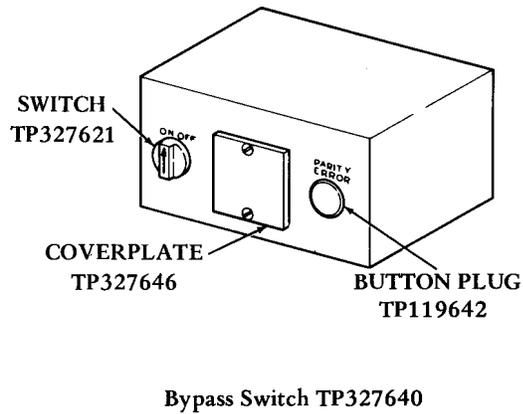
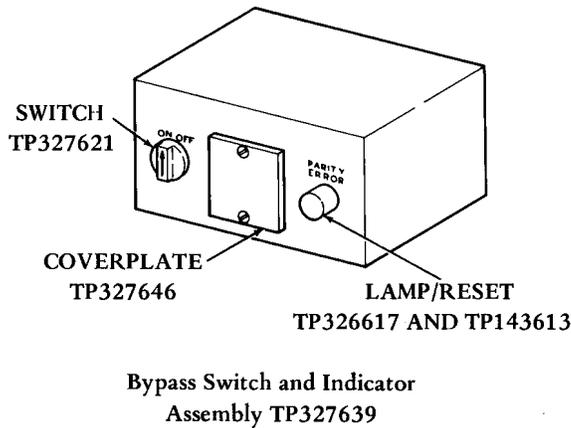


Figure 16 - Type 2 Tape Receiver Bypass Switch and Indicator Assemblies

- (c) The TP327640 bypass switch assembly (Figure 16) is placed on the top of the cabinet and is held by means of two magnets located at the underside of the bypass switch assembly.
- (d) The TP327647 cable from the bypass switch assembly is routed down the back of the cabinet and enters via the small hole at the bottom of the cabinet.
- (e) Remove the 25-pin connector (P701) from the data set.
- (f) Insert the mating 25-pin connector of the TP327669 cable into the data set.
- (g) Connect the 25-pin connector (P701), removed from data set in (e), to the mating 25-pin connector on the TP327669 cable.
- (h) Connect the 15-pin connector at the end of the TP327647 cable to the mating 15-pin connector of the TP327669 cable.
- (i) Plug the line cord of the SA120 unit into a 115 v ac receptacle.
- (j) The physical placement of the units is the same as shown in Figure 14 except that the TP327648 cable shown is replaced by the TP327669 cable.