# SEND-RECEIVE APPARATUS UNIT (TP308514)

# FOR SINGLE DATA SET OPERATION OF A

# "DATASPEED"* SEND-RECEIVE TERMINAL

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## 1. GENERAL

1.01 This section provides description, operation, and installation information for the send-receive apparatus unit TP308514 ("Y" cable). The send-receive apparatus unit makes it possible to use only one data set at a "Dataspeed" send-receive terminal.

1.02 This feature may be installed in either the factory or the field. See Figures 1 and 2.

1.03 Although designed for 2-wire applications, this feature may be used in 4-wire applications. It is also compatible with the discrete calling feature.

1.04 The send-receive apparatus unit consists of a "Y" cable assembly and a rotary type switch. The wiring diagram (7419WD) is included at the end of this section. The "Y" cable provides the necessary interconnections between sender, receiver, and data set. The switch selects the desired mode of operation as follows:

| Switch Positions | Mode of Operation |
|---|---|
| SEND | Manual or Unattended Transmitting |
| RECEIVE | Manual or Unattended Receiving |
| SEND-RECEIVE | Unattended Transmitting or Receiving |
| LOCAL | Terminal Testing |
| SEND & RECEIVE | Manual or Unattended Transmitting and Receiving simultaneously (4-wire transmission using full duplex operation and reverse channel in both directions). This function is intended for future use with data sets 201. |

1.05 Manual Operation: Select either the SEND or the RECEIVE position before or after depressing the DATA button on the data set. It is necessary also for the terminal to be in the manual operating mode.

1.06 Unattended Operation: Select either the SEND, the RECEIVE, or the SEND-RECEIVE position and depress the UNATTEND button on the sender or receiver as appropriate.

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Prepared for American Telephone and Telegraph Company by Teletype Corporation

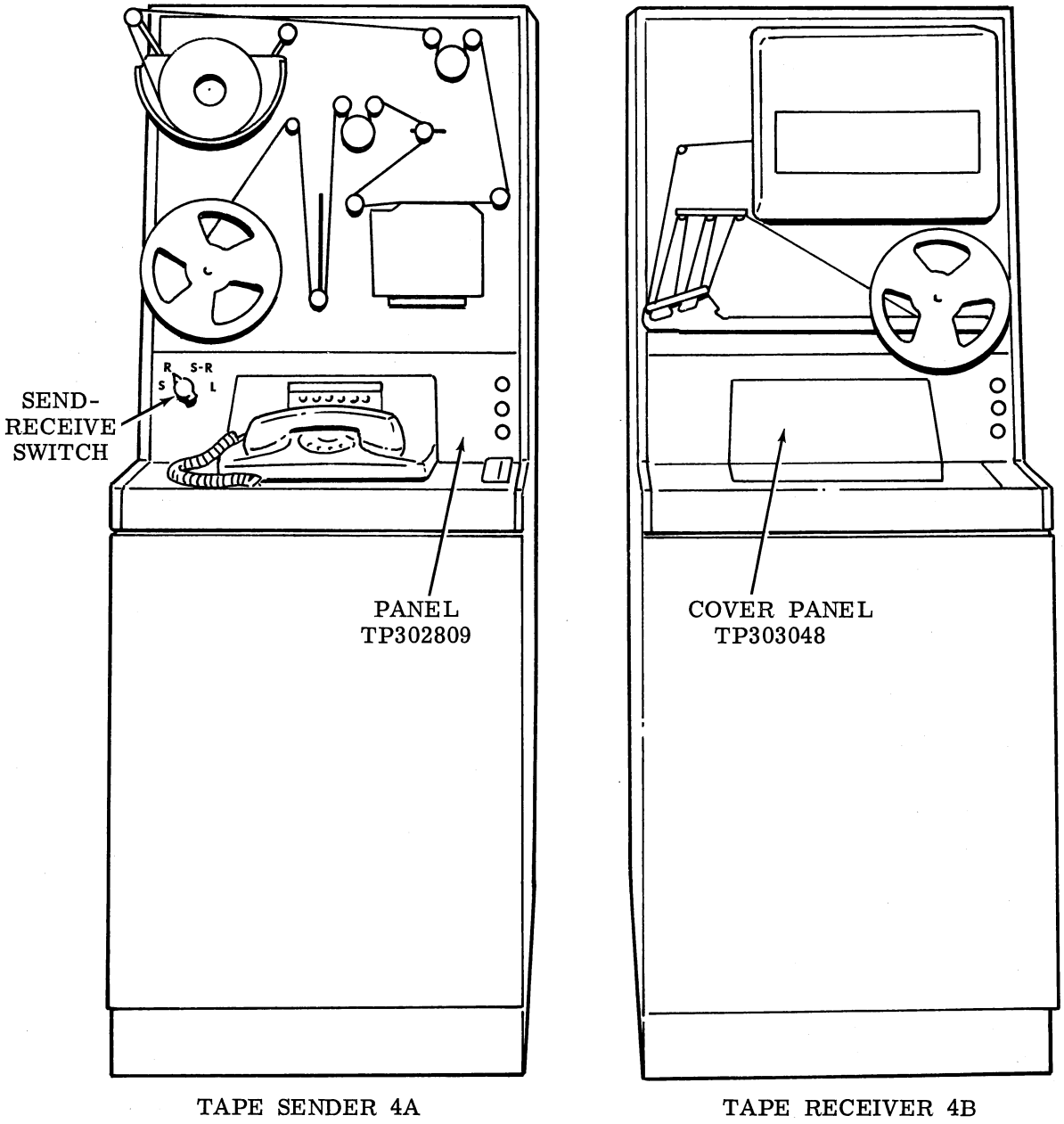


Figure 1 - Send-Receive Terminal

1.07 Local Operation: In the local mode, the data sets are by-passed and the sender and receiver are under data set simulation. Depress the MANUAL buttons on both the sender and receiver before switching the send-receive switch to the LOCAL mode.

1.08 Send and Receive Four Wire Transmission: Although not applicable at present, when a data set becomes available with full full-duplex four wire reverse channel capability, this type of transmission will be possible with the send-receive apparatus unit.

1.09 Manual Operation (Send and Receive): Select the SEND and RECEIVE position before depressing the DATA button on the data set. It is necessary also for both the sender and receiver to be in the unattended (automatic) mode of operation.

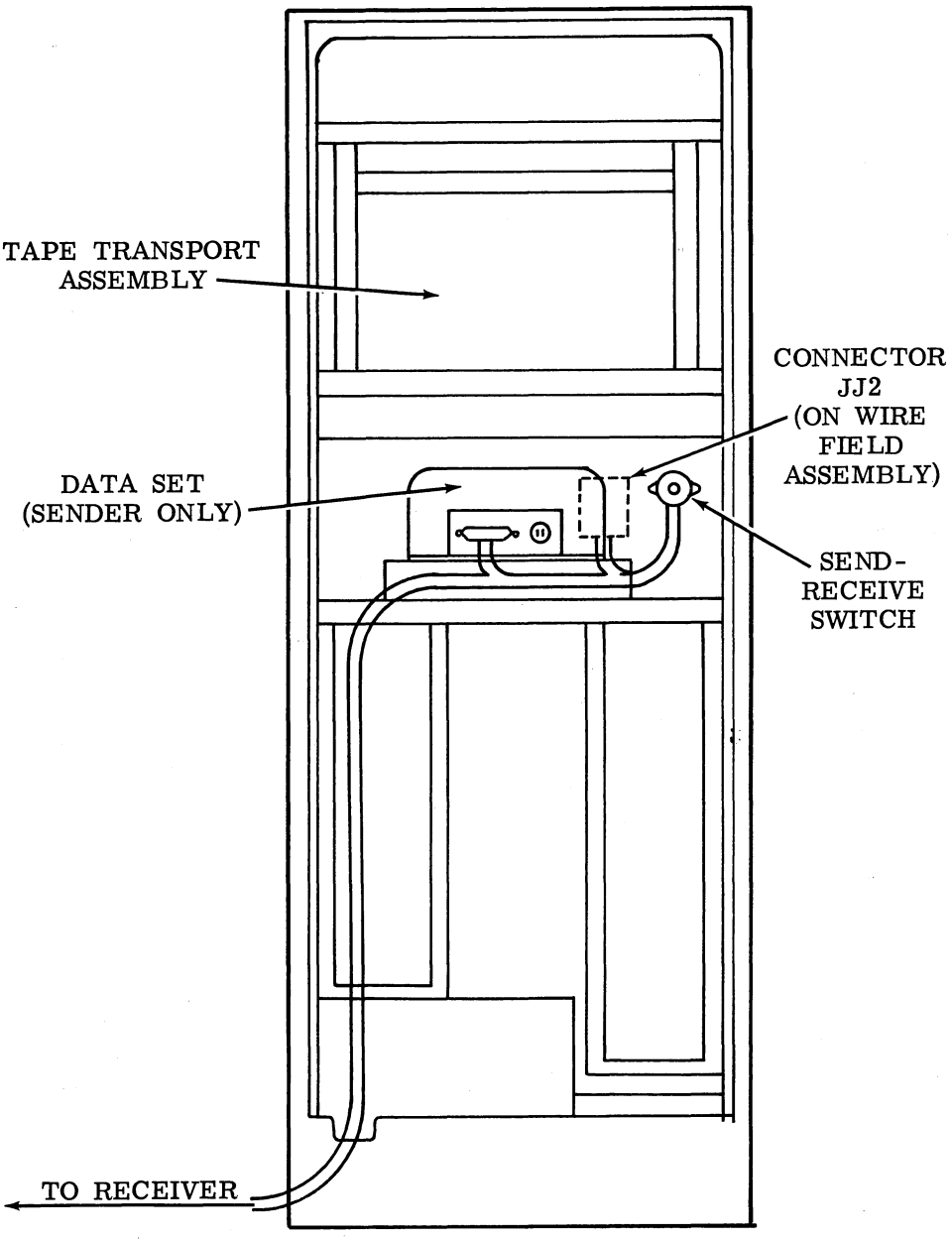


Figure 2 - Send-Receive Cable TP303053

## 2. OPERATION

### GENERAL

2.01 In the SEND position of the send-receive switch, the terminal will allow manual or unattended send only operation. The sender is operated by the data set Data Set Ready Lead. The data set Send Data, Request to Send, Ready, Data Terminal Ready, Receive Data, Clear to Send, Reverse Channel, Receive, and Transmit Clock leads are controlled by the sender. The Request to Send lead is controlled by the sender interface lead 4, Request to Send. This interface lead is used when the sender is operated in the unattended (automatic) or manual modes. Refer to Figure 3.

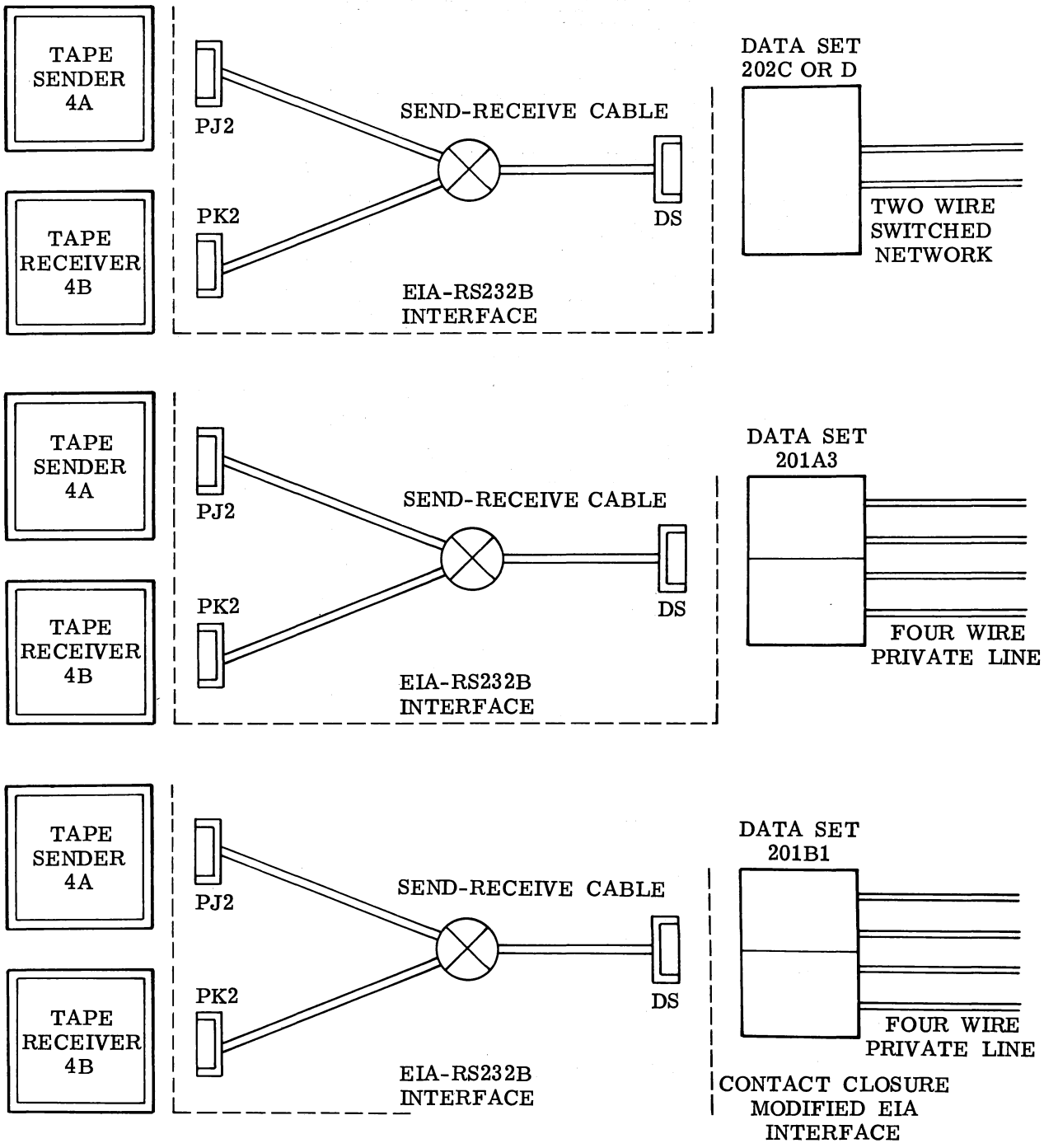


Figure 3 - Send-Receive Cable Interface

2.02 In the RECEIVE position of the send-receive switch, the terminal will allow manual or unattended receive only operation. The receiver is operated by the data set Data Set Ready lead. The data set Send Data, Request to Send, Ready, Data Terminal Ready, Receive Data, Carrier Detect, Reverse Channel, Send and Receive Clock leads are controlled by the receiver.

2.03 In the SEND-RECEIVE position of the send-receive switch, the terminal will allow unattended send or receive (half-duplex) operation. The sender and the receiver are operated by the data set Data Set Ready Lead. The data set Send Data, Receive Data, Clear to Send, Request to Send, Reverse Channel Receive and Transmit Clock are controlled by the sender. The Receive Data, Carrier Detect, Reverse

Channel Send, Receive Clock and Data Terminal Ready leads are controlled by the receiver.

2.04 To operate the terminal as an unattended sender, the sender must have the TP308513 discrete calling recognizer. The calling receiver must have the TP308512 discrete calling generator.

2.05 With the send-receive switch in the LOCAL position, the Receive Data Lead is opened at the data set and the Send Data lead is tied to the Receive Data lead at the switch. The Data Set Ready lead is opened at the data set and a positive voltage is applied to the sender and receiver Data Set Ready leads to simulate the DSR function. The Reverse Channel Receive lead is opened at the data set and the Reverse Channel Send and Receive leads are tied together at the switch. At the sender, the Request to Send lead is tied to the Clear to Send lead.

2.06 The data set Receive Data, Signal Ground, Frame Ground and Ring Indicator leads are connected to both sender and receiver connectors PJ2 and PK2, respectively. The data set Reverse Channel Receive lead is connected to the sender connector PJ2. The data set Reverse Channel Send lead is connected to the receiver connector PK2.

2.07 Two resistors are provided. They terminate on the send-receive switch and are connected to the receiver +6 volts and -6 volts leads. Resistor R2 is used to supply a permanent +6 volts to the Data Set Ready leads when the switch is in the LOCAL position. Resistor R1 is used to supply a permanent -6 volts to the sender Data Set Ready lead when the switch is in the RECEIVE position and a permanent -6 volts to the receiver Data Set Ready lead when the switch is in the SEND position.

2.08 Three straps are provided to give the capability of using either the 202C or 202D type data sets or the 201A or 202B type data sets.

2.09 Three straps are provided on the "Y" cable to permit the use of any one of four different data sets with the send-receive terminal. During installation, the straps must be either left in place or removed as specified below and illustrated in schematic diagram 7419WD.

| Data Set | Remove Strap |
|---|---|
| 201A3 | None |
| 202C1B, 202C2B, 202D1B, 202D2B | A and B |
| 201B1 | C |

OPERATION WITH 202C AND 202D TYPE DATA SETS

2.10 With these data sets, strap C is retained and straps A and B are removed. With strap C retained, the terminal has automatic answering and disconnect in any mode of operation (send, receive or send-receive, manual or unattended).

2.11 With these data sets, the send-receive apparatus unit is fully compatible with the discrete calling features:

(a) Receiver Discrete Calling Generator, TP308512

(b) Sender Discrete Calling Recognizer TP308513

OPERATION WITH 201A AND 201B TYPE DATA SETS

2.12 Since the 201 type data sets have no reverse channel (a system requirement), the data set must be used in a full-duplex manner. The send-receive apparatus unit gives the system the capability of using the data stream on the second set of two wires for reverse channel control. In this arrangement the data set is operated in full-duplex and the terminal is operated in half-duplex.

2.13 For use with these data sets, the following "Y" cable strapping arrangements apply:

| Data Set | |
|---|---|
| 201A3 | Straps A, B, and C retained. |
| 201B1 | Straps A and B retained. Strap C removed. |

2.14 Since data set 201A3 has an EIA interface, strap C is retained and the terminal has an automatic answering and disconnect capability. Since data set 201B1 is a modified contact/EIA interface, strap C is removed and the terminal will answer all calls without disconnect capability.

2.15 The send-receive switch positions that can be used with these data sets are SEND, RECEIVE or LOCAL only. Operation can be either manual or unattended. Because of the strapping that is performed on the switch the SEND-RECEIVE and the SEND and RECEIVE positions cannot be used.

2.16 Since the clock signal for terminal operation is derived from the internal clock generated by data sets 201A3 and 201B1, these data sets must be retained in the system during LOCAL operation of send-receive apparatus unit. Also, ac power to the data sets must be left on to obtain these clock signals.

## 3. INSTALLATION

### GENERAL

3.01 Figures 1 and 2 illustrate the mounting location of the send-receive switch in the sender and receiver. Refer to the appropriate parts section for illustrations showing the various parts and assemblies in detail.

3.02 Tools required to perform the installation are a screwdriver, wrench, and side cutters.

### INSTALLATION IN TAPE SENDER 4A

3.03 Remove and discard the TP302807 front panel. Install the TP302809 panel furnished.

3.04 Remove the rear panel of the cabinet and unplug the cooling fans. Bring the send-receive rotary switch associated with the TP303053 cable assembly to the front of the cabinet by routing the cable of the switch under the wire field plate and along the right-hand side of the data set. Mount the send-receive rotary switch on the TP302809 front panel with the hardware supplied. Align the shaft of the rotary switch so that the flat of the shaft in the counterclockwise position is opposite the switch position designation SEND. Mount the TP146732 knob.

3.05 Remove data set cable connector TP308467 and discard it. Plug data set connector DS of the TP303053 cable assembly into the data set. Tighten it securely.

3.06 Install the sender terminal connector, PJ2, of the TP303053 cable assembly on the wire field assembly receptacle JJ2 using the screws provided. Tighten it securely.

3.07 Route the receiver terminal connector, PK2, on the TP303053 cable assembly to the bottom of the sender cabinet and into the slot provided for the ac power cord. Mount the rear panel on the cabinet. Be sure that the cooling fans are plugged back into the ac receptacle on the wire field plate and that the TP303053 cable assembly does not interfere with the operation of the fans.

### INSTALLATION IN TAPE RECEIVER 4B

3.08 Install the TP303048 cover panel by placing it on top of the TP302806 control panel and then sliding it forward to engage the stop. Press down at the rear of the TP303048 cover panel to engage the two clips into the TP302808 panel cover.

3.09 Remove the rear panel of the cabinet and unplug the cooling fans. Route receiver terminal connector PK2 on the TP303053 cable assembly through the slot provided at the bottom of the cabinet for the ac power cord. Guide the PK2 connector under the wire field assembly and to the data-set area. Remove the TP308467 cable assembly from the data set and receptacle JK2 on the wire field assembly and discard it.

3.10 Plug connector PK2 on the TP303053 cable assembly into receptacle JK2 on the wire field. Tighten it securely.

3.11 Plug the cooling fans into the ac receptacle and make sure the TP303053 cable assembly does not interfere with the operation of the fans.

3.12 Install the rear panel on the cabinet.

### TESTING

3.13 A post-installation checkout to verify the correctness of the installation is desirable. To perform the checkout, the data test center should call the newly installed send-receive terminal and proceed to check its operation throughout the various modes and operating conditions.

| NO. | NOTES |
|---|---|
| 1. | REFER TO 303053 FOR ACTUAL WIRING. |
| 2. | ALL VOLTAGES DC. |
| 3. | ALL RESISTORS 1/2 WATT AND RESISTANCE VALUES IN OHMS. |
| 4. | ← INDICATE TERMINAL ON PLUG DS, PK2 AND PJ2 |
| 5. | COLOR CODE:<br>W- WHITE BK- BLACK<br>P- PURPLE S- SLATE<br>O- ORANGE R- RED<br>BL- BLUE G- GREEN<br>BR- BROWN Y- YELLOW |
| 6. | TERMINAL DESIGNATION ENCLOSED IN PARENTHESES REFER TO TERMINAL ON THE S-R SWITCH. THE TERMINAL DESIGNATIONS ARE FOR REFERENCE AND ARE NOT MARKED ON THE S-R SWITCH. |
| 7. | THIS SECTION REQUIRES SHORTING TYPE CONTACTS. |
| 8. | SWITCH POSITIONS:<br>S — SEND ONLY<br>R — RECEIVE ONLY<br>S-R— SEND OR RECEIVE<br>L — LOCAL (SEND & RECEIVE)<br>S&R— SEND & RECEIVE (NOT USED)<br>SWITCH POSITION S (SEND ONLY) AS VIEWED FROM FRONT OF SWITCH IN EXTREME COUNTER-CLOCKWISE POSITION. |

7419 WD

**REVISIONS**

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| 1 | 9-19-67 | 18818-R |
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| STRAP | TIE POINTS TERMINALS | COLOR |
|---|---|---|
| A | 33 — 40 | Y |
| B | 52 — 12 | G |
| C | 94 — 75 | O |

| DATASET | DESIGN |
|---|---|
| 201A3 | A B C |
| 202C1B 202C2B 202D1B 202D2B | C |
| 201A1 201B1 | A B |

SCHEMATIC WIRING DIAGRAM FOR TELESPEED 1200 "Y" CABLE ASSEMBLY

ASSEM. NO.

**APPROVALS**

| D AND R | E OF M |
|---|---|
| | C-1 |

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