DSX-0 CROSS-CONNECT BAY

DESCRIPTION

DIGITAL DATA SYSTEM

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1. GENERAL

1.01 This section describes the digital system cross-connect bay for the 64-kb/s data rate (DSX-0) and illustrates its functions within the Digital Data System (DDS). The 64-kb/s is also referred to as the digital signal at the zero level (DS-0). A general knowledge of DDS is required for a complete understanding of this section. (Refer to Section 314-900-100.)

1.02 This section is reissued for the following reasons:

(a) To add information on the line access test system (LATS) II

(b) To delete all switched DDS information which affected Fig. 1 and 2

(c) To add and clarify information on the quad terminal panel (QTP)

(d) To delete information on 510A data service unit (DSU).

Revision arrows are used to emphasize the more significant changes.

1.03 Adaptability, accessibility, and flexibility in interconnection of DDS components are provided by use of the DSX-0. Figure 1 illustrates the routing of cable from an office channel unit (OCU), ◗DS-0 dataport channel unit (DSO DP), a multipoint junction unit (MJU), a T1 data multiplexer (T1DM), a subrate data multiplexer (SRDM), a T1WB4 data-voice multiplexer (T1WB4), a line access test system II, and a 950A testboard. The DSO DP channel unit may be used in D3 and D4 channel banks and in the central office terminal of a SLC* 96 Carrier System. A unique method is used to connect the appropriate equipment at the DSX-0.

* Trademark

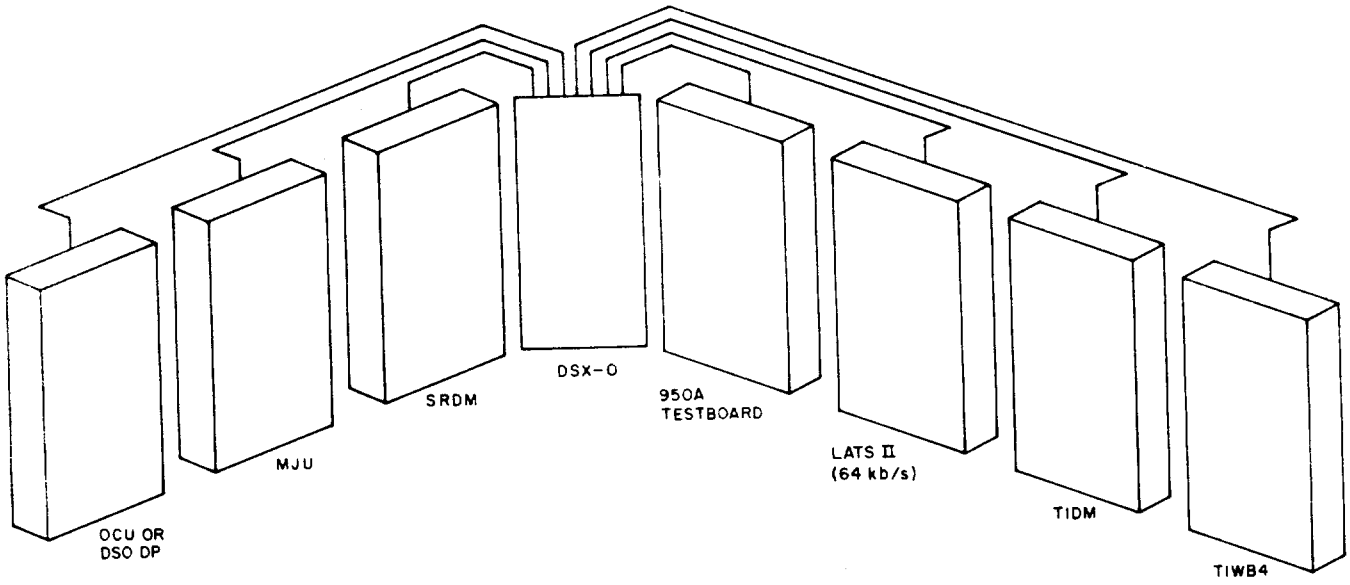


Fig. 1—Equipment Interconnected at the DSX-0 Bay

1.04 This interconnecting method includes two designations (A and B) for the DSX-0 (Fig. 2).

(a) The ***DSX-0A*** provides LATS II or testboard access to each desired customer circuit. Normally, the desired LATS II access is used in hub offices where LATS I (local loop) access is not available. See paragraph 1.06 for additional information on LATS II. The customer circuit may carry a subrate or a single-customer DS-0A signal. Subrate DS-0A signals are 2.4-, 4.8-, or 9.6-kb/s customer data signals with synchronizing information and the required stuffing bytes added to produce a 64-kb/s signal. Single-customer DS-0A signals are 56-kb/s customer data signals with synchronizing information added to produce a 64-kb/s signal. These signals via circuits are hard wired to the wire-wrapped terminals at the DSX-0A.

(b) The ***DSX-0B*** provides cross-connections for multiplexed subrate signals and single-customer signals. A multiplexed subrate signal contains data from several subrate customers. A multiplexed signal (DS-0B) is a single 64-kb/s signal. A single-customer signal is a 64-kb/s data signal (56 kb/s plus synchronizing information) coming from the DSX-0A. The single-customer DS-0A and DS-0B signals are the same. The primary function of the DSX-0B is customer grouping.

1.05 A typical DSX-0 bay contains nine QTPs when fully equipped for a hub office. A nonhub office such as an end or intermediate office may require only one QTP. For example, in a T1WB5 data-voice multiplexer (T1WB5) local end office bay arrangement (Fig. 3), one QTP allows for the routing of DS-0B level signals to the ports of the T1WB5.

1.06 In hub offices equipped with an Automated Bit Access Test System (ABATS), the LATS II equipment allows test access to individual customer channels at the 64-kb/s rate. The LATS II equipment is normally used whenever a DS-1 signal level access via the digital signal access unit (DSAU) is ***not*** available. Two cases requiring LATS II are: (1) local services that do not appear at the DSX-1, and (2) multipoint services where the zero leg of a multipoint junction unit is downstream from the DSX-1.

1.07 Every circuit requiring 64-kb/s test access needs a LATS II matrix unit consisting of two relays. The matrix units are mounted in the DSX-0A bay. The relays are connected in series between the DSX-0A and the bit access test system, the 950A testboard, or the first stage multiplexing equipment. The first relay, when operated, bridges the LATS II test equipment to the circuit. The second relay, when operated, opens the circuit which connects the LATS II equipment in series with the circuit. In this condi-

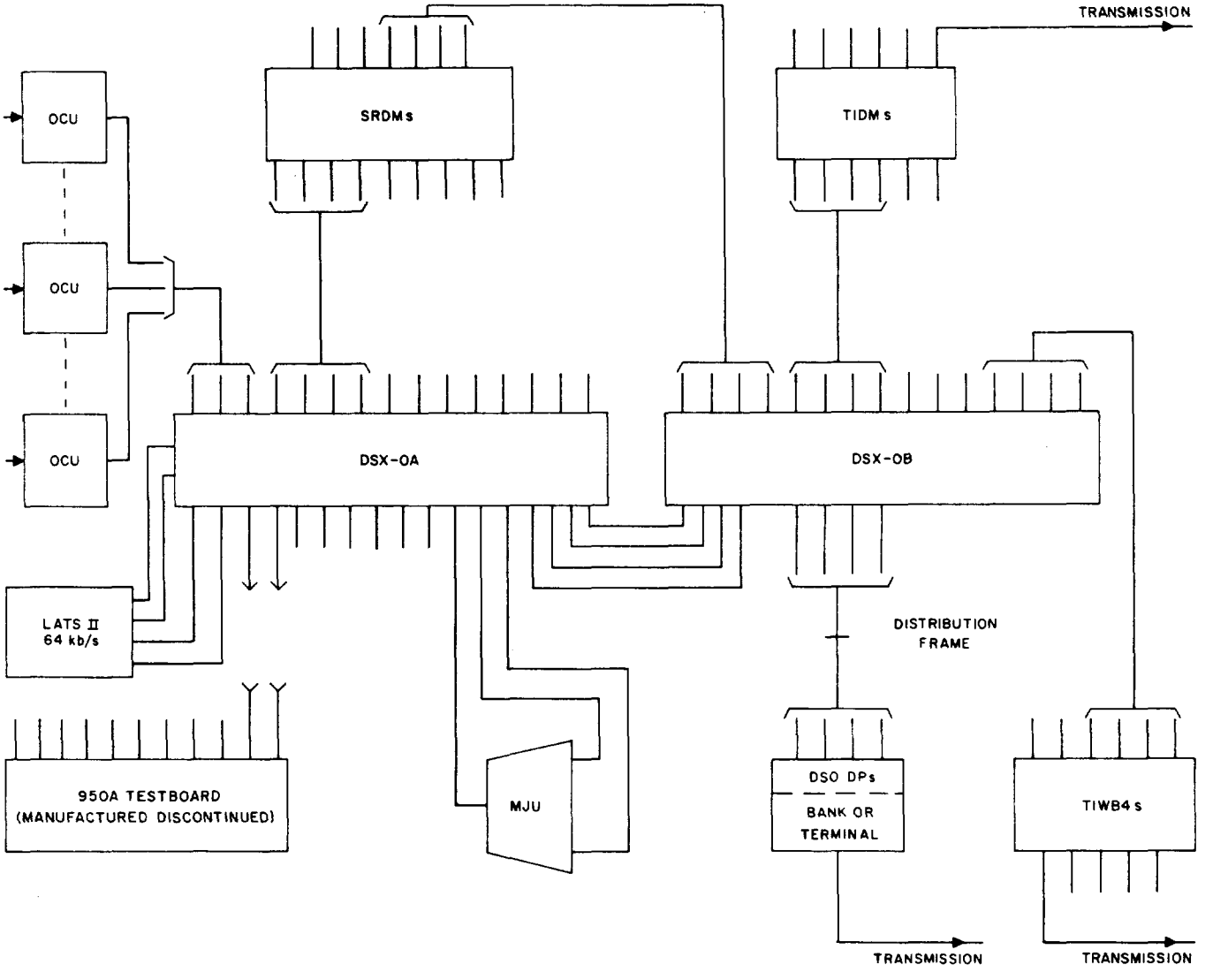


Fig. 2—DSX-0A and DSX-0B With Some Associated Equipment

tion, the LATS II equipment is transparent to the signal and testing is possible to the near end or far end of the circuit.

2. PHYSICAL BAY DESCRIPTION

DIMENSIONS AND ARRANGEMENTS

2.01 The DSX-0 is available in either an 11-1/2 or 7-foot cable-duct framework for single bay or multiple bay (Fig. 4) arrangements. The upper one-third portion of the 11-1/2 foot bay (above the top horizontal duct) is not intended to be equipped with QTPs. Some hub offices use this space to mount the LATS II matrix units (relay assembly). Normally, each 7-foot bay is equipped with nine QTPs. The QTPs measure 8 inches high and 23 inches wide and contain 400 quad terminals each (Fig. 5). The QTPs are installed from top to bottom with the uppermost panel designated as number 1.

2.02 Bays are equipped with two 4- by 5-inch plastic ducts (with 3-section snap-on covers) running vertically, one at each side of the bay (Fig. 6). These ducts provide vertical routing paths for the quad jumpers between horizontal levels. A 4- by 5-inch duct (with a hinged cover) is positioned horizontally at the top of each bay. Nine 3- by 5-inch horizon-

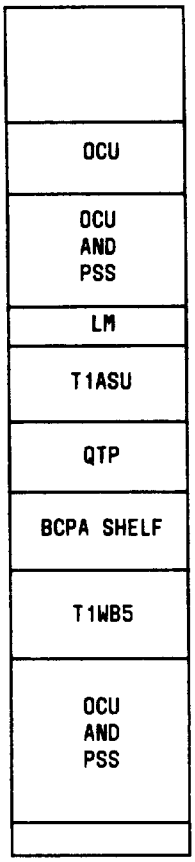
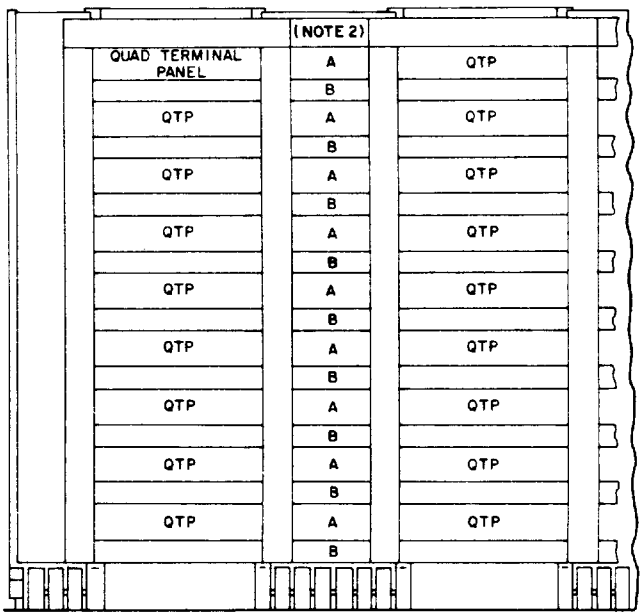


Fig. 3—11-Foot 6-Inch T1WB5 Local Office Bay Arrangement



NOTES:
1. THE LATS II MATRIX UNITS ARE MOUNTED IN A DSX-0A BAY OR A MISCELLANEOUS BAY ADJACENT TO THE DSX-0A BAY.
2. THE FILLER PLATE (A) AND THE HORIZONTAL INTERBAY DUCT (B) ALTERNATE FROM TOP TO BOTTOM.

Fig. 4—Typical DSX-0 Multiple Bay Arrangement (Note 1)

tal ducts (with hinged covers) are alternately spaced between and attached to the bottom of the quad terminal panels (Fig. 7). In a multiple bay arrangement, nine 3- by 5-inch horizontal interbay ducts with snap-on covers are used between the vertical ducts of adjacent bays (Fig. 6). The horizontal intrabay and interbay ducts in conjunction with the vertical ducts allow for trouble-free fanning and routing of the quad jumpers.

2.03 Covering for the ducts is provided by two similar but separate means: (a) the horizontal intrabay ducts have hinged aluminum covers with quad terminal designation strips attached, and (b) the horizontal interbay and vertical ducts have plastic snap-on covers.

Note: Corner strips are provided to form vertical-to-horizontal junctions.

2.04 The 4- by 5-inch ducts are capable of holding 1070 quads; the 3- by 5-inch, 770 quads. In the configuration of ducts used, there is a bay capacity of 8000 quads horizontally and 2140 quads vertically. Since only 3600 quad terminal stations are possible for each bay, there is adequate capacity for routing quad jumpers, issuing from other bays, through adjacent bays without filling the duct if the sequence for routing jumpers in Section 314-914-400 is followed.

DESIGNATIONS

2.05 The bay designation is given in the standard form and appears at the bottom of a bay (Fig. 7). An extension of this form easily permits the location of a specific quad terminal.

2.06 The QTP designation appears in the upper left- and right-hand corners of the horizontal duct cover and refers to the QTP directly above it (Fig. 7). Each quad terminal has a unique designation

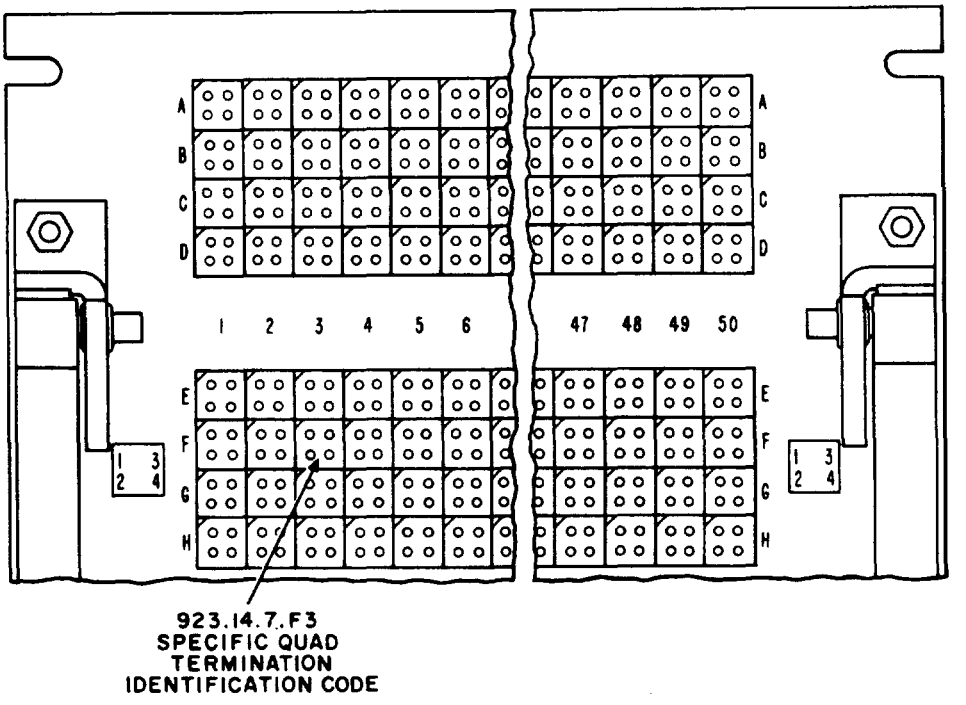


Fig. 5—Quad Terminal Panel

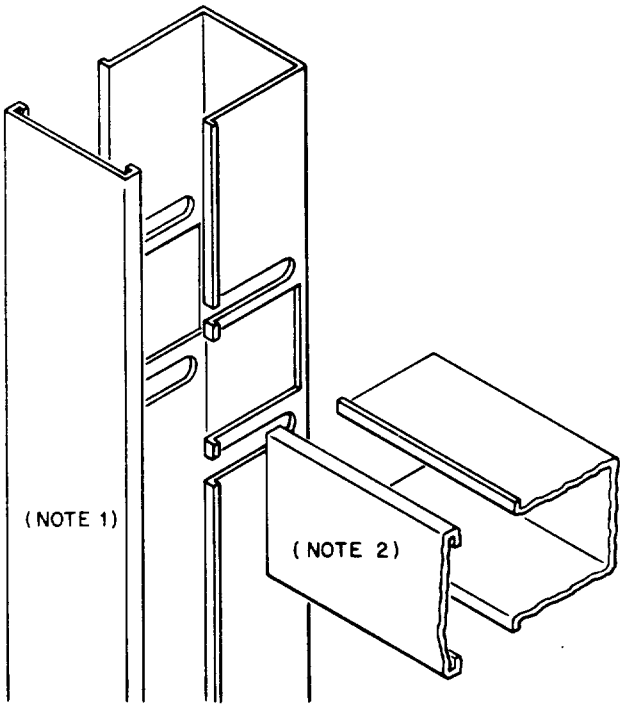
(Fig. 5) consisting of an alphanumeric code: the letters (A through H) indicate the horizontal row of the terminal and the numerals (1 through 50), the vertical file. The designation letters appear at both ends of the terminal panel and the numerals appear once between the upper and lower halves of the panel. This form yields a unique designation for each terminal in the cross-connect, regardless of the number of panels or bays used.

2.07 When a cross-connection is made at the DSX-0, the spaces on the hinged duct cover designation strips are used to indicate the other end of the cross-connection. The information to be entered (in pencil) is the bay number, panel number, horizontal row number, and vertical file number of the other end of the cross-connection. For example, if terminations designated (a) 923.18.4.B31 and (b) 923.14.7.F3 are to be connected, the space on the designation strip position for (a) will contain 14.7.F3 from (b) and the space on the designation strip position for (b) will contain 18.4.B31 from (a). If the jumper is removed or rearranged, the recorded information should be changed accordingly.

2.08 The individual pins within each quad terminal are designated 1, 2, 3, and 4, and are shown at the left and right of the panel in Fig. 5. The pin configuration diagrams also appear in proper perspective on the back of the panel as an easy reference to avoid confusion during connection of the wire-wrapped terminals.

CROSS-CONNECTING PLAN

2.09 A quad jumper is a specially designed piece of prefabricated apparatus (2 to 30 feet long in 1/2-foot color-coded increments) consisting of four twisted 26-gauge wires with a special connector at each end (Fig. 8). The connector incorporates the features of polarization by allowing one orientation of entry into the quad terminal. The transition of input (pins 1 and 2) to output (pins 3 and 4) occurs within the length of the jumper (Fig. 9). A special tool (part No. 91079-01) is used for placement and removal of the quad jumper into and from the quad terminal. The quad terminal is a recessed 4-pin male unit that can accommodate the 4-socket female quad jumper in only one orientation of pin to socket (Fig. 10).



NOTES:
1. A SINGLE-BAY HAS TWO VERTICAL FILLER PLATES AT ITS SIDES.
2. NO HORIZONTAL INTERBAY DUCTS ARE NEEDED FOR SINGLE-BAY INSTALLATION.

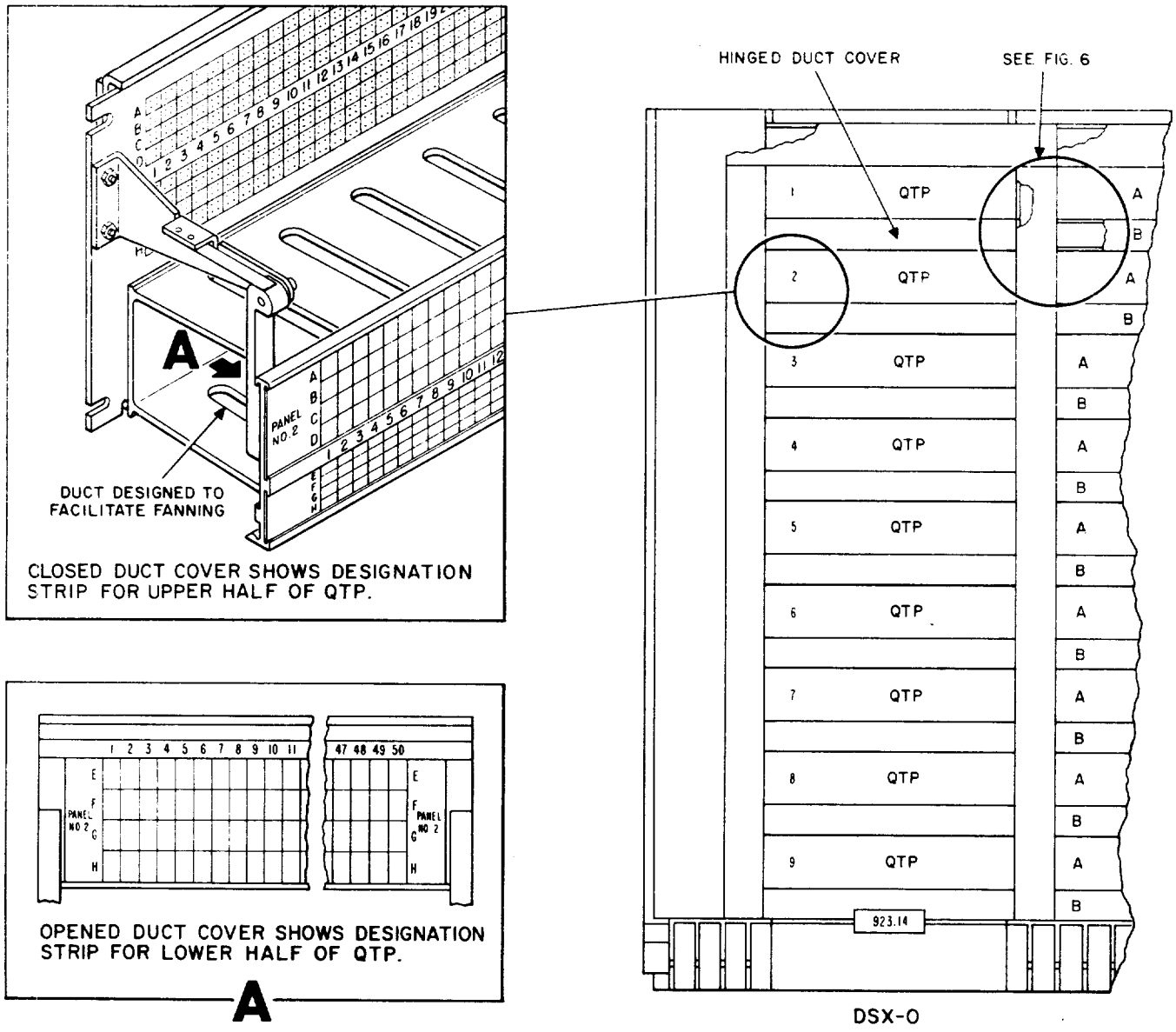
Fig. 6—◆Vertical and Horizontal Interbay Ducts With Snap-On Covers◀

2.10 The front of the QTP is accessible only by a connector, whereas the rear is of the wire-wrapped terminal type. Connectors eliminate the need for soldering when interconnections are made and, because of their design, virtually eliminate the possibility of hits. Since the connections are associated with private line service, they are semipermanent; therefore, the terminal is designed so that a quad jumper cannot be removed from its terminal without a special tool (Section 314-914-400). This design helps to prevent accidental or indiscriminate plugging and unplugging of the jumpers.

2.11 There is a sequence for routing quad jumpers which, when followed, will prevent overfilling of the cable routes. This sequence and the procedures for replacing faulty or damaged jumper sockets or terminal pins are given in Sections 314-914-300 and 314-914-400.

2.12 The distance between two quad terminations, via the specified route, must be known in order to choose the proper length quad jumper before a connection is made. A slide rule type calculator (Fig. 11 and 12) is provided to calculate this distance quickly and easily. The calculating procedure is given in Section 314-914-400.

2.13 In nonhub offices that use a QTP, the quad jumpers need not be routed in any special sequence and the maximum number of 2-1/2 foot long quad jumpers is 23. Information on circuit assignment for the QTP is given in Section 314-914-400.



LEGEND:
QTP = QUAD TERMINAL PANEL
A = FILLER PLATE
B = INTERBAY HORIZONTAL DUCT

Fig. 7—Horizontal Duct With Hinged Cover

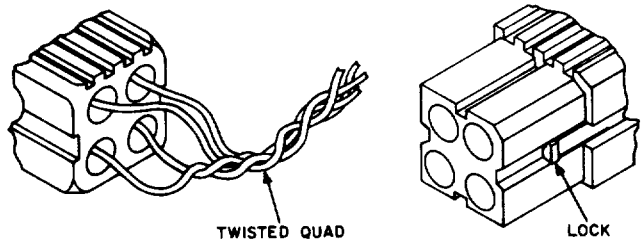


Fig. 8—Quad Jumper

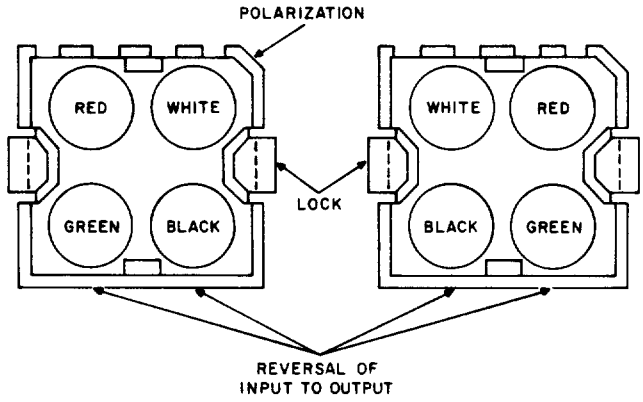


Fig. 9—Quad Jumper Mating Face

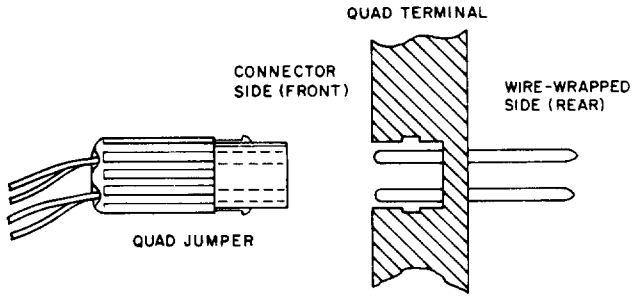


Fig. 10—DSX-0 Connector System

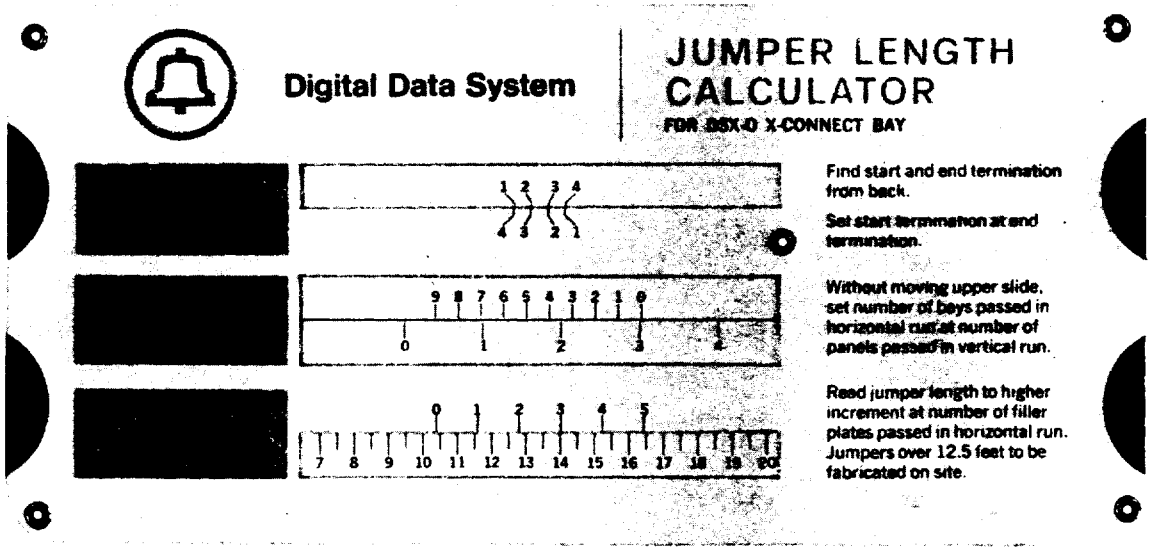


Fig. 11—Jumper Length Calculator—Front View

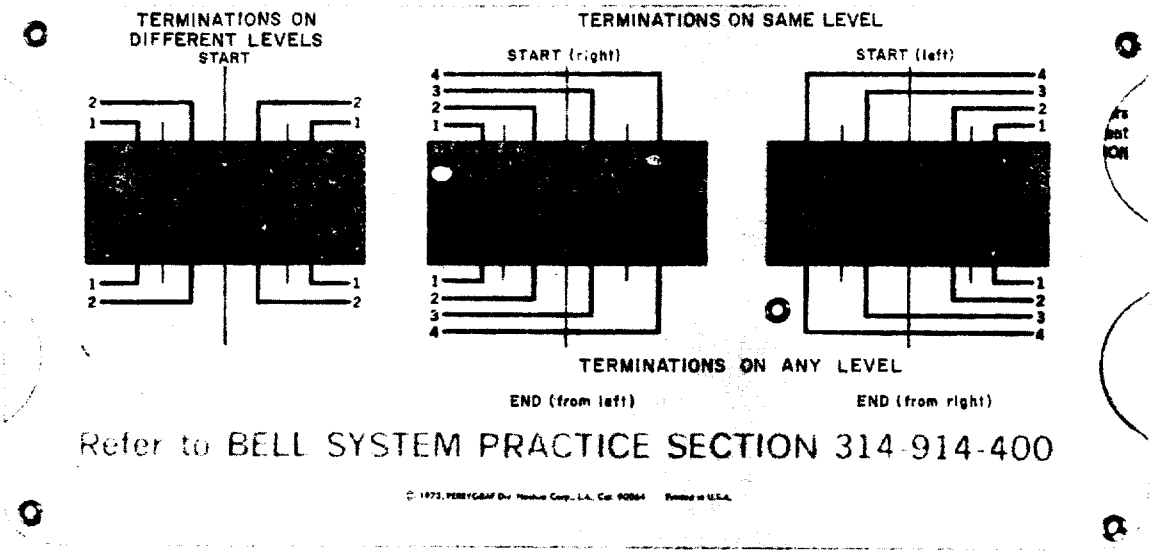


Fig. 12—Jumper Length Calculator—Rear View