330-TYPE ADAPTER

DESCRIPTION, INSTALLATION, AND TESTS

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1. GENERAL

1.01 Bell System 200-type data sets (DS) have a nominal transmit level of -4 dBm and are intended to connect to a universal data jack. Federal Communications Commission (FCC) rules do not permit the use of a data jack behind systems such as a private branch exchange (PBX) or a key telephone system (KTS). In order to connect a 1AR graphics transmitter-receiver or 1AR graphics receiver (which include a 200-type DS), or a DS 201CR, 202SR, 208BR, or 212AR arrangement to a voice jack behind a PBX or KTS, a 330-type adapter is required. This reduces the transmit level to a value below -9 dBm.

1.02 This section is reissued to add coverage on the 330B adapter.

2. PHYSICAL DESCRIPTION

330A Adapter

2.01 The 330A adapter (comcode 103 259 891) consists of a printed wiring board on which are mounted six resistors and a capacitor. No active components are employed. Connections are made via a 2-foot cord terminated in a miniature 6-position plug, and a miniature 8-position jack.

2.02 The printed wiring board is mounted in a plastic housing which measures 2.5 inches wide, 4 inches long, and 1 inch high (Fig. 1). The 8-position miniature jack is accessible on one end of the housing. The cord is attached to the circuit board and enters the housing from the opposite end. The 330A adapter weighs 4 ounces.

330B Adapter

2.03 ➧The 330B adapter (Fig. 2) consists of two printed wiring boards on which are mounted 42 resistors and 9 capacitors; electrically, these equal eight 330A adapters. The 330B adapter (comcode 103 161 923) is used for multiple data set installations. The adapter is equipped with two 50-pin connectors, one for connection to an RJ21X multiple-line voice jack, and the other to the P1 plug of the 40A-type data mounting or to the P6 connector of the five-set adapter, KS-21253.

2.04 The two printed wiring boards, two 50-pin connectors, and a test switch are mounted in a bracket measuring 5 inches long, 1-7/8 inches high, and 6 inches deep. The 330B adapter weighs about 1.2 pounds.➧

3. FUNCTIONAL DESCRIPTION

330A Adapter

3.01 To connect a 200-type data set to a voice jack behind a PBX or KTS, the 330A adapter is required to drop the transmit level to a value below -9 dBm. The adapter contains a balanced T attenuator which assures that the data set arrangement transmit level will not exceed -9 dBm under any operating condition. Attenuation of about 6.3 dB at 1 kHz is realized by the adapter.

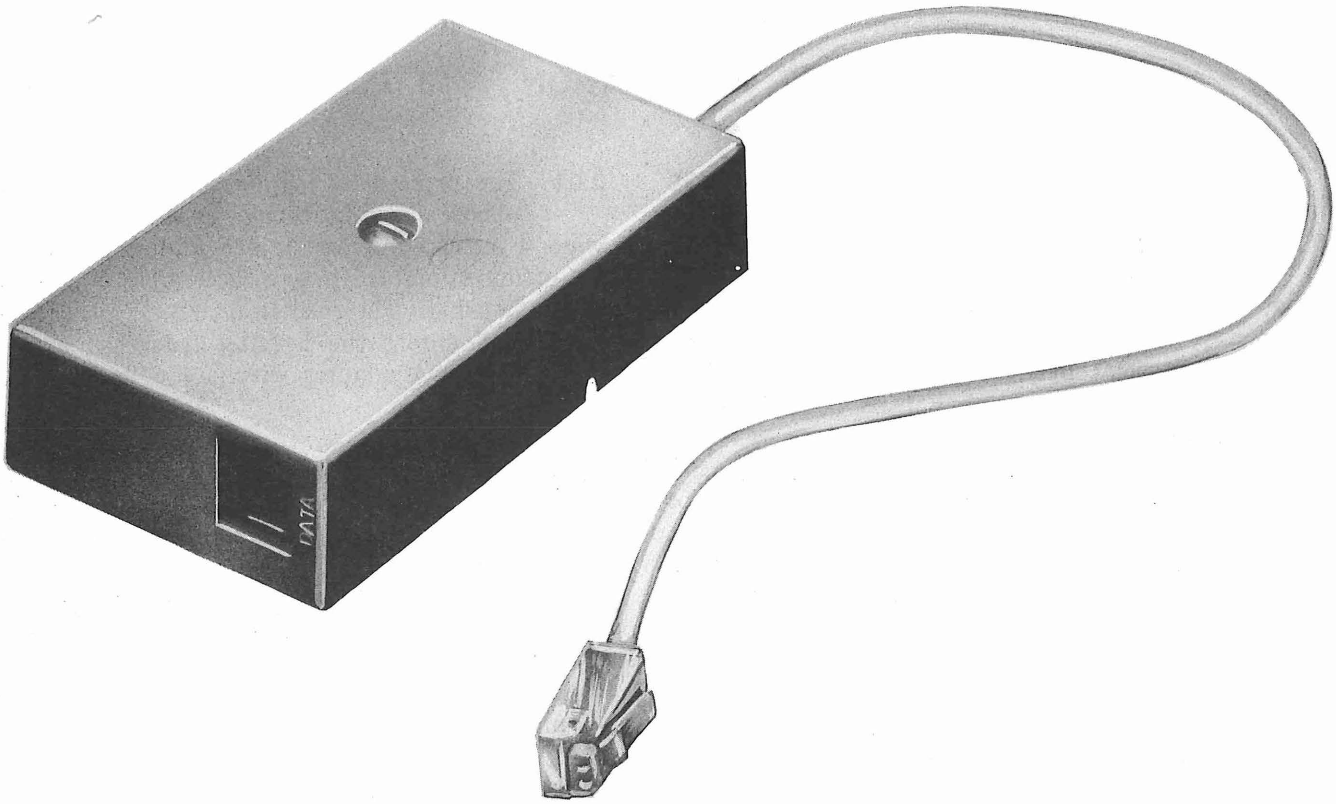


Fig. 1—330A Adapter

3.02 Some side effects that the adapter imparts to the arrangement are as follows:

(1) Received signals are attenuated by the adapter.

(2) Transmitted TOUCH-TONE® signals are attenuated by the adapter.

(3) The adapter adds 420 ohms to the loop resistance.

(4) The adapter decreases the effective ringing voltage reaching the bell of the telephone set and the ring detector of the data set. This results in an increase of the ringer equivalence number of the data station arrangement. When used with the 330A adapter, DSs 201CR, 202SR, 208BR or 212AR have a ringer equivalence of 2.0A.

Note: Items (2) and (4) do not apply to 1AR graphics arrangements, which use a series voice jack to connect to the network.

330B Adapter

3.03 ◗Each of the eight circuits of the 330B adapter is functionally equivalent to the 330A adapter. The same operating functions and restrictions apply to both adapters. When used with the 330B adapter, DSs 201CR, 202SR, 208BR, or 212AR have a ringer equivalence of 2.0A.

4. INSTALLATION

4.01 A second 330A adapter is required to perform margin tests of a 330A adapter installation. No special tools are required for installing the 330B adapter.

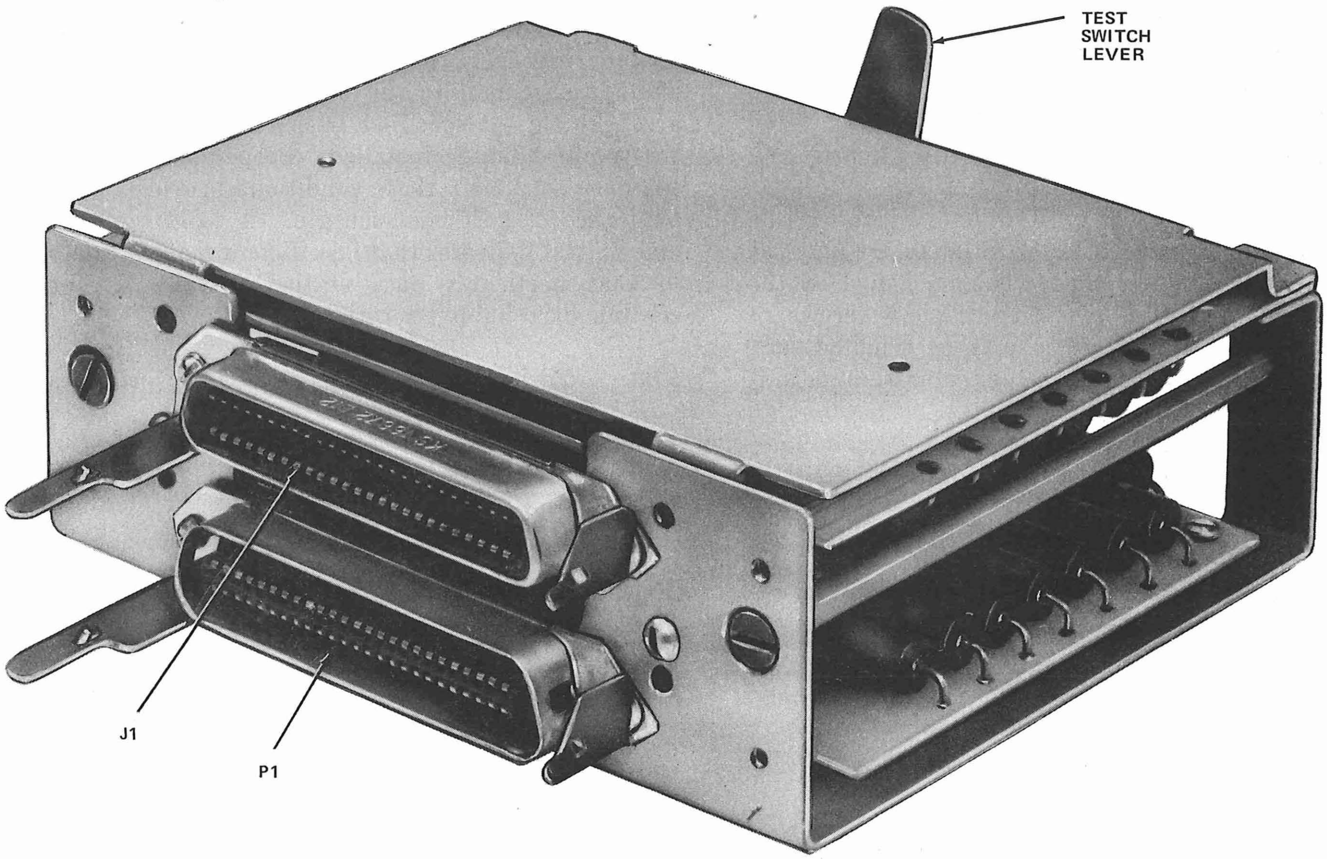


Fig. 2—▶330B Adapter◀

330A Adapter

4.02 The 330A adapter should be installed so that the 2-foot cord of the adapter can be plugged into the RJ11C voice jack.◀

4.03 Two keyhole slots on the adapter facilitate wall mounting with two screws included with the adapter. A double-sided self-adhesive tape is also provided for mounting on a flat surface.

4.04 Connect the data plug of the data set into the miniature 8-position jack of the adapter. Connect the plug of the adapter cord into the RJ11C voice jack.

330B Adapter

4.05 ▶The 330B adapter may be mounted on a 40A1, 40A2, or 40A3 data mounting, or on mounting plates designed for 19- or 23-inch racks, or in a plastic housing suitable for wall mounting. Using double-sided self-adhesive tape, the adapter can be mounted directly on a flat surface, typically inside a cabinet.

4.06 A gray plastic cover and base pan coded D-180935 mounting kit may be used to wall mount the 330B adapter. The base pan attaches with two screws to the base of the adapter, which is the side adjacent to plug P1 (male 50-pin connector). The cover attaches to the other side. When mounted on the wall, plug P1 should be to the left of connector J1 to permit the flag to operate properly. Using the double-sided self-adhesive tape shipped with the kit, the base pan can be mounted directly on a flat surface, or four screws can be used. The eight slots in the cover, which are used for the 97A data mounting, are not functional for this application.

4.07 The 330B adapter may be mounted in one of four cutouts in an 842 310 773 mounting plate. This plate requires 2 inches vertical mounting space on a 23-inch rack. It also may be mounted in one of three cutouts in an 842 310 781 mounting plate, which mounts on a 19-inch rack. The adapter should be mounted such that plug P1 is below connector J1 to permit the flag to operate properly.

4.08 For 40A1, 40A2, or 40A3 data mountings on 23-inch racks the 330B adapter may be mounted directly on the extension flange of the mounting, using the two long, captive screws of the adapter. The adapter should be oriented such that plug P1 is to the left of connector J1 to permit the flag to operate properly.

4.09 The following cords are required:

- For 40A1 or 40A2 data mounting: B25A cable or M16L cord.
- For 40A3 or 40A4 data mounting: Connect directly to P1 plug, or extend with B25A cable.
- For KS-21253, L3 (MD): M10J cord (MD). Extend with B25A cable if required.
- For KS-21253, L8 (MD): B25A cable or M16L cord.
- For KS-21253, L10 (New): B25A cable or M16L cord.

Note: B25A cables may be up to 60 feet long.◀

5. TESTING

5.01 After connections are complete, test the installation for proper operation of supervision, dialing, ringing, ring detection, and data transmission, in accordance with the pertinent Bell System Practice. A test failure indicates that the insertion loss of the adapter may be too great for proper operation of the data station arrangement behind a PBX.

330A Adapter

5.02 Proper operation of the tests in paragraph 5.01 does not assure sufficient margin for continuous reliable service. Therefore, it is necessary to perform a margin test. For this purpose, place a second 330A adapter in tandem with the first adapter by connecting the miniature plug on the cord of the first adapter into the jack of the second adapter (Fig. 3). This adds approximately 3 dB of additional loss to the arrangement. Test the arrangement as specified in paragraph 5.01 with the second adapter installed. Proper operation of the data set under these conditions provides some assurance of sufficient margin. A failure of the margin test indicates that insufficient margin exists in that particular data station installation for continuous reliable operation.

5.03 Addition of the second adapter produces the following:

(1) Data signals are further attenuated.

(2) TOUCH-TONE signals are further attenuated.

(3) An additional 100 ohms is added to the loop resistance.

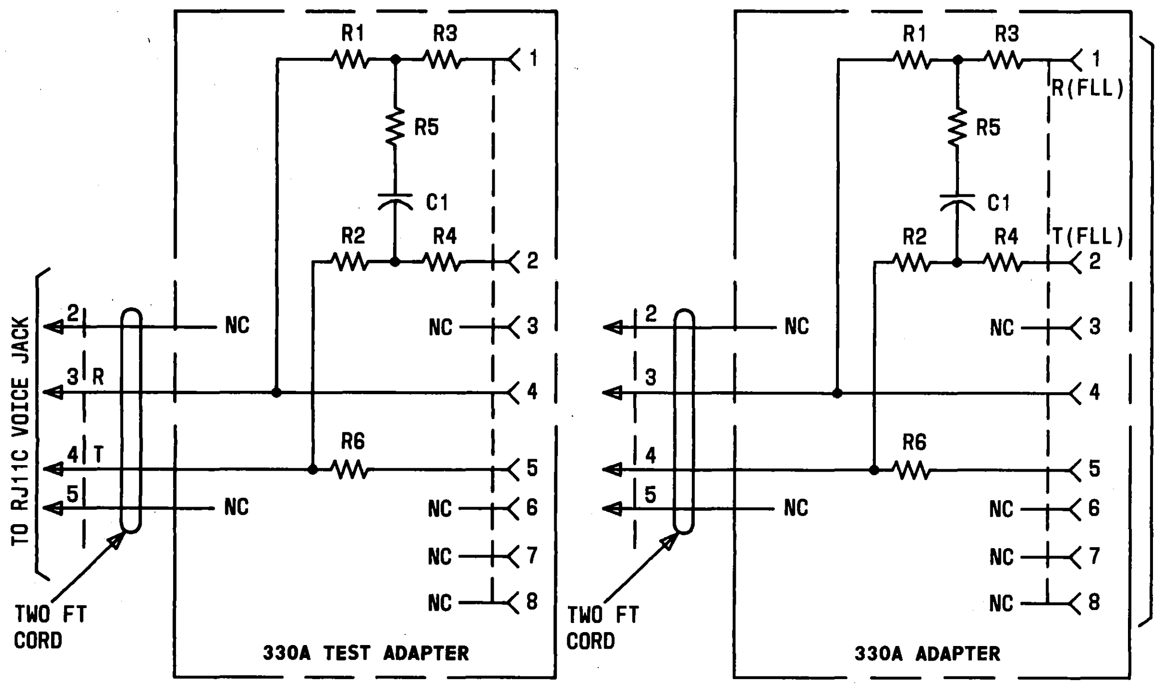
(4) Ringing voltage reaching the telephone set and data set is further decreased.

Note: Subparagraphs (2) and (4) above do not apply to 1AR graphics arrangements.

5.04 After the margin test is satisfactorily completed, remove the second 330A adapter and reconnect the 2-foot cord of the first adapter to the voice jack.

330B Adapter

5.05 ▶As with the 330A adapter, proper operation of the tests in paragraph 5.01 does not assure sufficient margin for continued reliable service. Therefore, it is necessary to perform a margin test. To provide for this test in a 330B adapter, a test circuit actuated by a test switch is built into the 330B adapter for line 1 (Fig. 4). When the test switch is in test position, a lever extends from the side of the adapter as a warning that the circuit is not in the normal operating condition. The extended lever also prevents replacing the cover in wall-mounted arrangements. This prevents leaving the test switch in the test mode accidentally in the wall-mounted arrangement. When the 330B adapter is directly mounted on a 40A-type data mounting, it may be difficult to operate the switch. In this case, remove the



NOTE: PINS 3 AND 4 OF ADAPTER CORD MATE WITH PINS 4 AND 5 OF TEST ADAPTER JACK.

Fig. 3—Two 330A Adapters in Tandem for Margin Test

adapter from the mounting for the test. Resetting the flag by hand will always restore the test switch to its normal position.

5.06 In most applications with similar PBX loops for eight data sets, a margin test on line 1 is sufficient.

5.07 Test the arrangement as specified in paragraph 5.01 with the test switch in test position. Failure of the margin test indicates that insufficient margin exists on this group of PBX lines for continuous reliable operation.

5.08 With the test switch in the test position, results are produced as listed in paragraph 5.03. After the margin test is completed, make sure that the test switch is returned to normal position.

6. MAINTENANCE

6.01 No routine maintenance or adjustment is required on the 330-type adapter. Trouble isolated to the adapter should be cleared by replacing the adapter.

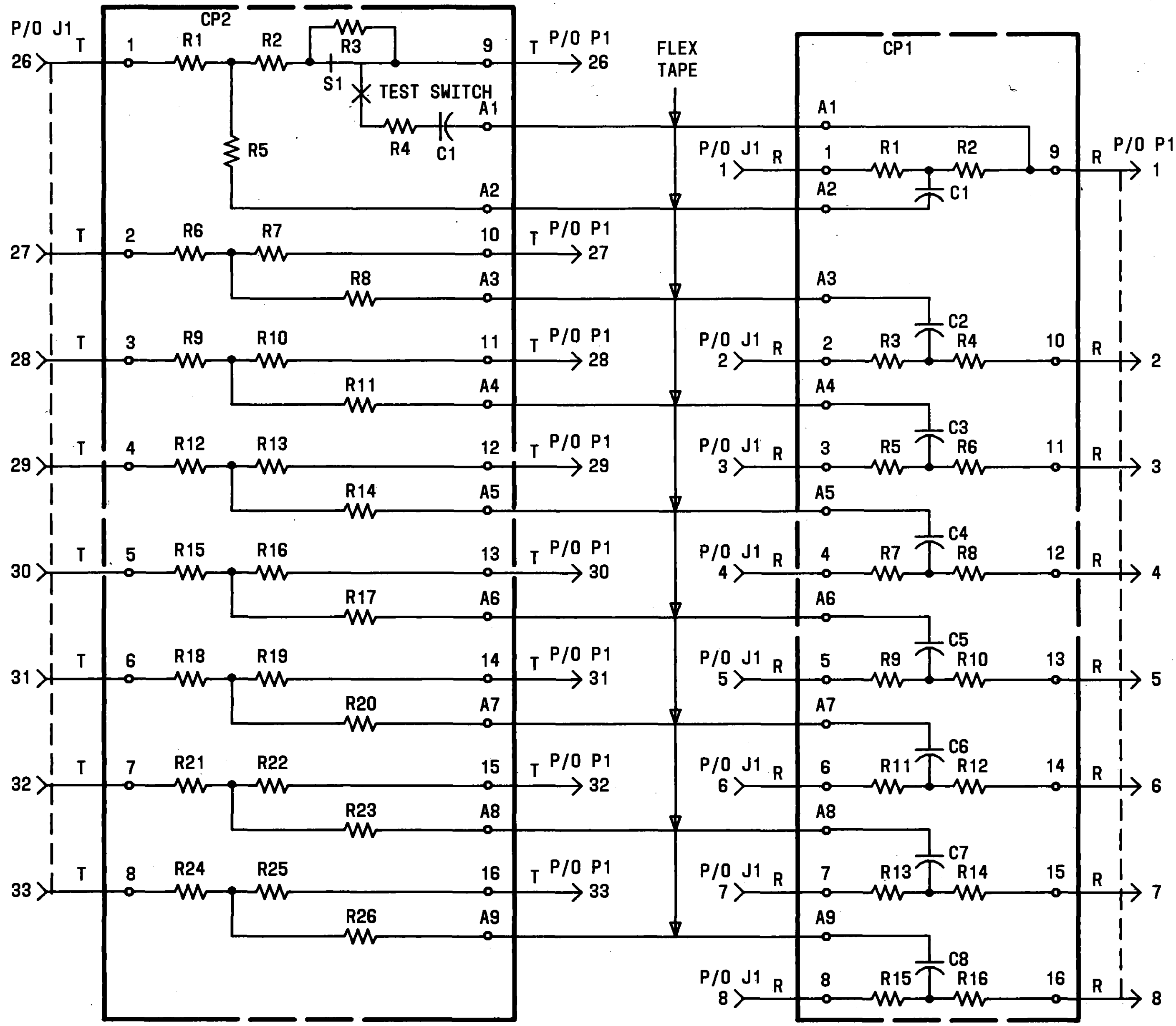


Fig. 4—330B Adapter—Schematic