MULTIPOINT JUNCTION UNITS AND AUXILIARY CIRCUITS

TEST PROCEDURES

DIGITAL DATA SYSTEM

CONTENTS PAGE

1. GENERAL

1.01 This practice contains test procedures to be used when testing a multipoint junction unit assembly consisting of FDX MJUs (full-duplex multipoint junction units, or referred to as MJUs), and CKLD CPs (clock distribution circuit packs) at a bay location. A list of equipment to be used when performing the MJU test is also provided in this practice.

1.02 This practice is reissued to include information on the new secondary channel HL223 and HL224 circuit packs. Revision arrows are used to emphasize the more significant changes.

1.03 The test of an MJU should be performed after the installation of, and during maintenance of, an MJU.

1.04 When a station in a multipoint network experiences trouble, a test from the test center to the station should be performed according to Practice 314-901-500. If the test from the test center indicates that an MJU or associated equipment is malfunctioning, check the MJU and equipment per the test procedures in this practice.

1.05 The JCT (junction) test checks the combiner and splitter circuitry in an MJU at the bay location for proper operation. For testing procedures of a 5-volt power supply shelf located in an MJU bay, refer to Practice 314-970-101, Digital Data System—5 Volt Power Supply Shelf—Identification. For testing procedures concerning the BCPA (bay clock, power, and alarms) unit, refer to Practice 314-916-500, Digital Data System—Bay Clock, Power, and Alarms Circuit—Test Procedures.

2. APPARATUS

2.01 This part contains a list of the equipment required to test an MJU at the bay location.

2.02 A KS-20908 digital DTS (data test set) receiver and a KS-20909 digital DTS transmitter are required at the bay location to test a 3-port or 5-port MJU.

3. TEST PROCEDURES

Test A—CLKD CP Test

3.01 Proper operation of a CLKD CP can be checked by visual observation of the alarm LEDs (light-emitting diodes) on the faceplate of the HL69 CP (Fig. 1). The clock signal to the CP from the BCPA unit must be present and in proper alignment, and the BCPA unit must be operating properly before this check is valid. If the minor alarm LED on the faceplate of a CLKD CP is lighted, this is an indication that the CP is defective. If the major alarm LED is lighted, this is an indication that both of the CLKD CPs in a 2-shelf MJU assembly are defective.

Test B—JCT CP Test

3.02 The following procedures can be used to test a 3- or 5-port (2- or 4-branch) MJU. ▶A single JCT (HL68 or HL223 CP) is tested for a 3-port MJU and two JCTs (two HL68 CPs or one HL223 and one HL224 CP) are tested for a 5-port MJU. See Fig. 2 for an HL68 CP, Fig. 3 for an HL223 CP, and Fig. 4 for an HL224 CP.◀

STEP	PROCEDURE
	Obtain customer permission before performing the following test procedures on any MJU.
1	Condition the KS-20909 DTS transmitter as follows:
	(a) OUTPUT switch to BIPOLAR
	(b) ▶TESTS for HL68 CP—Set DATA RATE switch to 56 TESTS for HL223 CP—Set DATA RATE switch to same rate as marked on HL223 CP faceplate label.◀
	(c) FUNCTION switch to BYTE ENCODER
	(d) MODE switch to REPEAT
	(e) BYTE ENCODER switches to 11111110.
2	Condition the KS-20908 DTS receiver as follows:
	(a) INPUT switch to BIPOLAR
	(b) ▶TESTS for HL68 CP—Set DATA RATE switch to 56 TESTS for HL223 CP—Set DATA RATE switch to same rate as marked on HL223 CP faceplate label.◀
	(c) SUBRATE CHANNEL switch to SINGLE
	(d) COUNTER MODE switch to HOLD
	(e) COUNTER switch to BIT ERRORS
	(f) TEST WORD switch to 511.
	Note 1: If difficulty is encountered while performing the following steps, an attempt should be made to return the MJU to normal operation by connecting the transmitter test signal plug to TP (test point) 1 IN on the JCT CP faceplate and sending the idle code.
	Note 2: While changing the settings of the BYTE ENCODER switches on the transmitter, depress the ALL 1s key until the desired byte is obtained.

STEP	PROCEDURE

Note 3: Before testing an MJU, open all input and output lines associated with the MJU by inserting dummy plugs into the appropriate jacks at the test center.

3 Insert the transmitter and receiver power plugs into a 117-volt ac outlet and insert the clock connectors into available clock connectors at the BCPA.

4 Using the test point adapters in the test sets—
Connect the transmitter and receiver test signals to TP1 IN and TP2 OUT, respectively, on the MJU (0-2) faceplate ▶(Fig. 2 or 3).◀ Connect the ground wire from the receiver test point adapter to TP12. ▶The ground wire on the transmitter test point adapter is not used. The metal contacts on the test point adapters must face to the right. The metal contact on the test point adapter ground wire must face to the left.◀

5 Depress the transmitter and receiver POWER ON switches and verify that the switch tops and CLOCK indicators are lighted.

6 Depress the transmitter RESET button.

▶***Requirement:*** Verify that the following KS-20908 DTS receiver indicators are lighted.

- TERMINATED
- CONTROL CODES—Idle Code
- BYTE PATTERN indicators 1 through 7 ONLY.◀

7 Operate the transmitter FUNCTION switch to 511 TEST WORD and the receiver COUNTER MODE switch, momentarily to RESET and then to COUNT.

Requirement: Verify that the receiver counter display indicates zero errors after a 15-second interval.

8 Operate the receiver COUNTER MODE switch momentarily to RESET and then to HOLD.

9 Operate the transmitter FUNCTION switch to BYTE ENCODER.

10 Repeat Steps 6 through 9 with the receiver test signal plug connected to TP3 OUT (Fig. 2 or 3) of the MJU (0-2) via the test point adapter.

11 If the MJU is a 5-port MJU, repeat Steps 6 through 9 with the receiver test signal plug and test point adapter connected to TP2 OUT and then to TP3 OUT (Fig. 2 or 4) of the MJU (3-4).

12 Disconnect the transmitter ▶and receiver test signal plugs◀ from the MJU. Connect the receiver test signal plug, via a test point adapter, to TP1 OUT (Fig. 2 or 3) of the MJU (0-2). ▶Verify that the ground wire from the receiver test point adapter is connected to TP12.◀

Requirement: Verify that receiver BYTE PATTERN indicators 1 through 7 and the CONTROL CODES—IDLE CODE indicators are lighted.

STEP	PROCEDURE
13	Set the transmitter BYTE ENCODER switches to 11000011.
14	Connect the transmitter test signal plug, via the test point adapter, to TP2 IN (Fig. 2 or 3) of the MJU (0-2). ***Requirement:*** Verify that the receiver BYTE PATTERN indicators 1, 2, 7, and 8 ***only*** are lighted.
15	Operate the transmitter FUNCTION switch to 511 TEST WORD.
16	Operate the receiver COUNTER MODE switch momentarily to RESET and then to COUNT. ***Requirement:*** Verify that the receiver counter display indicates zero errors after a 15-second interval.
17	Operate the receiver COUNTER MODE switch momentarily to RESET and then to HOLD.
18	Operate the transmitter FUNCTION switch to BYTE ENCODER.
19	Repeat Steps 14 through 17 with the transmitter test signal plug and test point adapter connected to TP3 IN (Fig. 2 or 3) of the MJU (0-2).
20	If the MJU is a 5-port MJU, repeat Steps 14 through 17 with the transmitter test signal plug and test point adapter connected to TP2 IN and then to TP3 IN (Fig. 2 or 4) of the MJU (3-4).
21	After all tests have been performed, remove the transmitter and receiver test signal plugs and test point adapters from the MJU CP faceplate and remove the dummy plugs from the appropriate jacks at the test center.

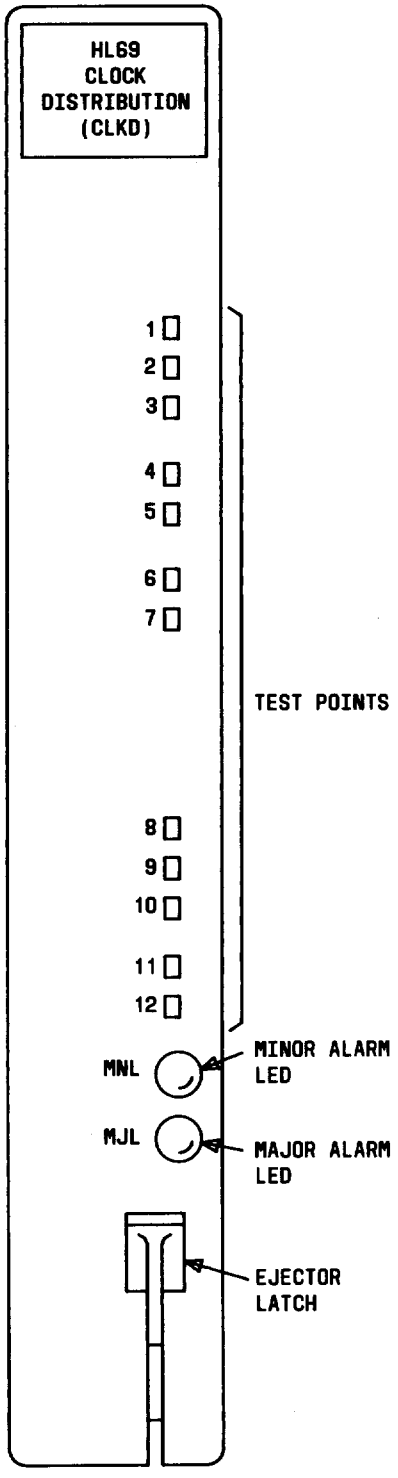


Fig. 1—Faceplate of an HL69 Circuit Pack

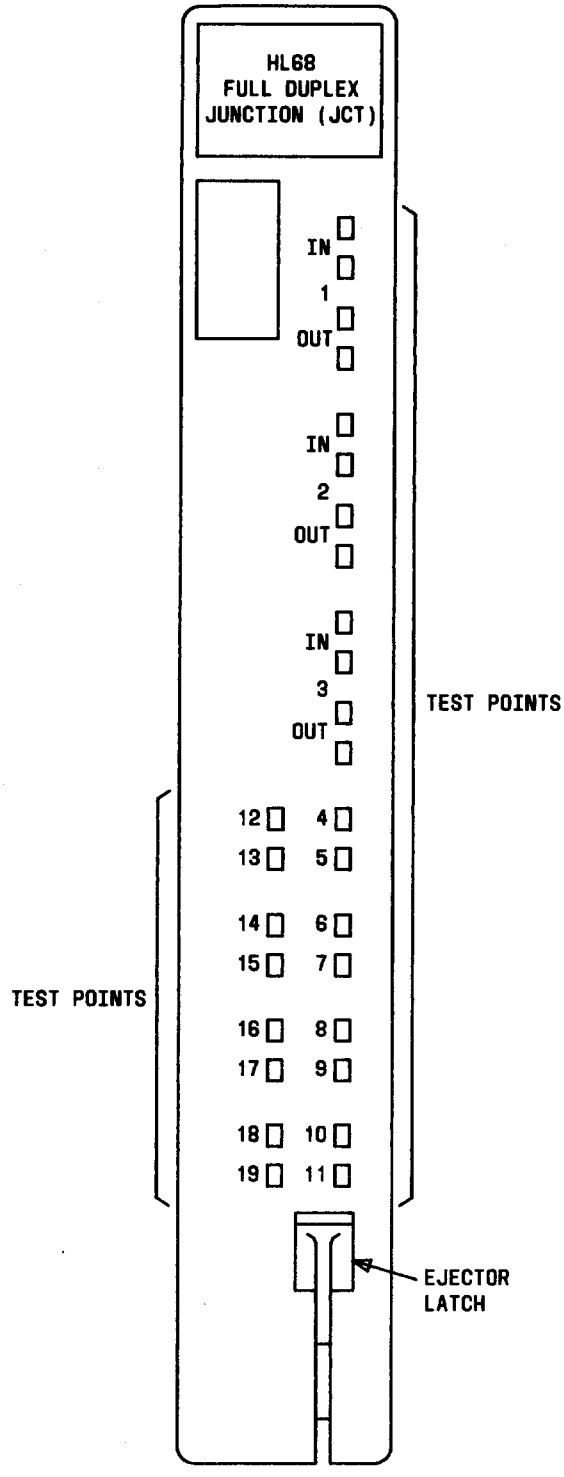


Fig. 2—Faceplate of an HL68 Circuit Pack

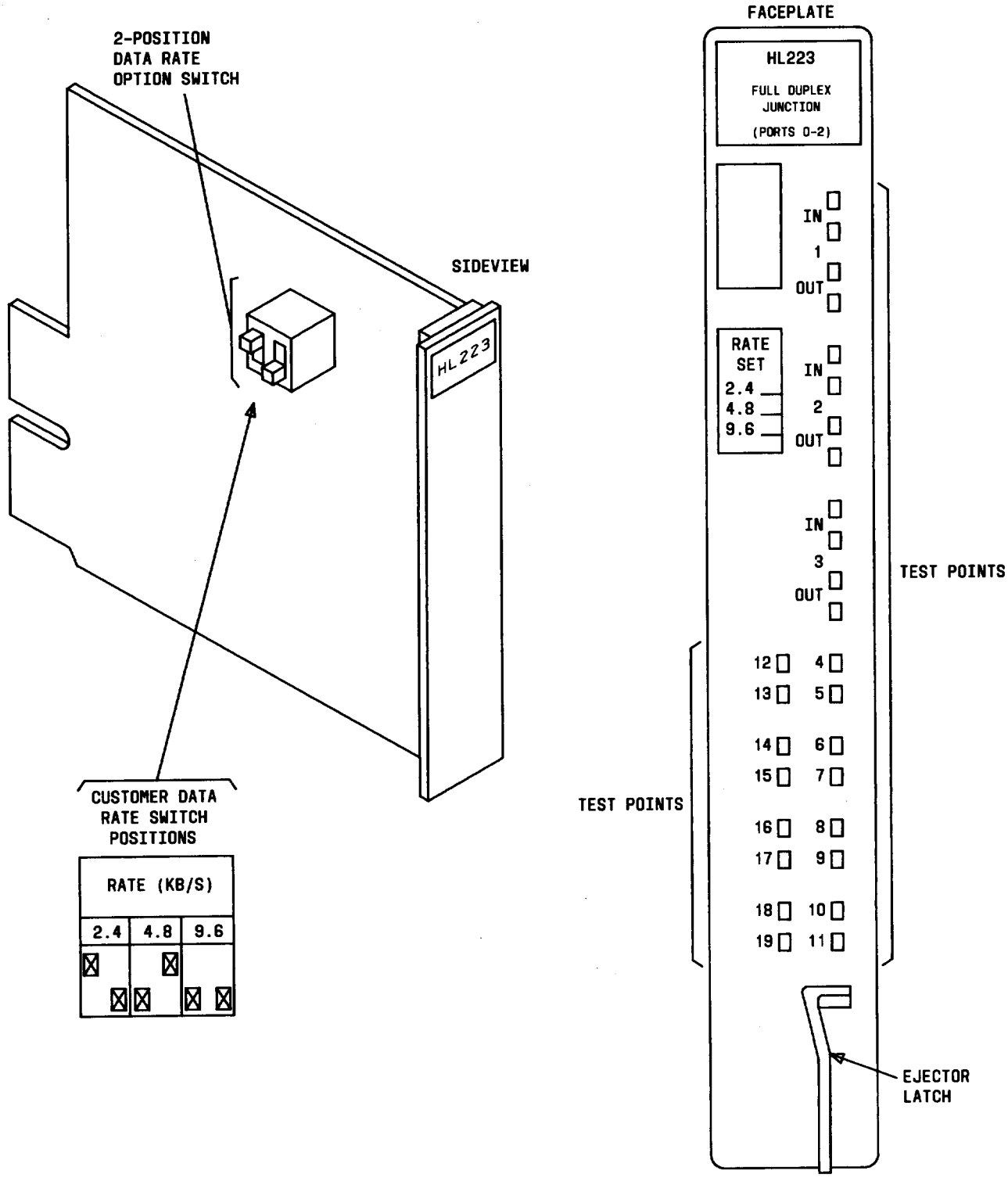
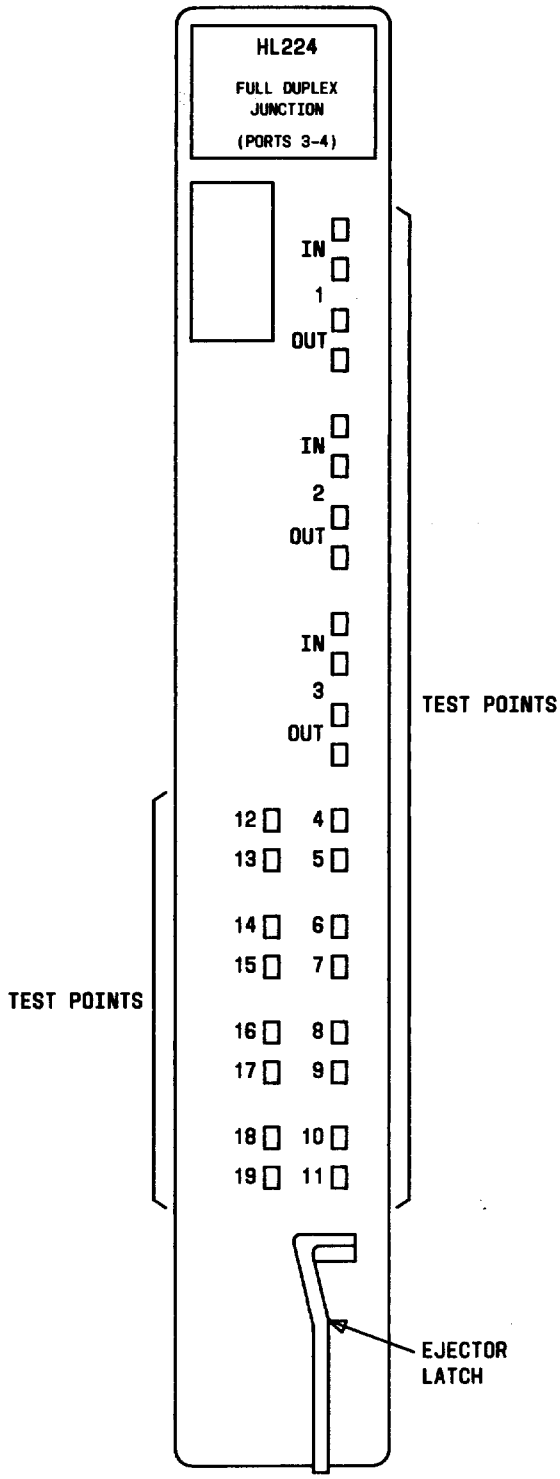


Fig. 3—Faceplate and Side View of an HL223 Circuit Pack



◗Fig. 4—Faceplate of an HL224 Circuit Pack◖