
DIGITAL TRANSMISSION SYSTEMS

D3 CHANNEL BANK UNITIZED BAY

OPERATION

This section provides basic information for the operation of a unitized D3 channel bank bay which may be equipped with panels for use in the Switched Maintenance Access System (SMAS) or with panels without SMAS capability. The SMAS provides for selectively gaining access from an office test position or from a local bay panel to the transmission and signaling leads of the D3 channels. However, this section deals only with operations at the local bay panels. Figure 1 represents an independent bay or the center bay of a 3-bay configuration in which testing is done from the center bay. Figures 2 and 3 show bay panels for use with SMAS, and Fig. 4 and 5 show panels without SMAS capability. Figures 6 and 7 may be used with any of the panels.

This section does not affect the Equipment Test List.

The optional hot spare and maintenance (HS&M) panel is used primarily for trouble location and maintenance of the D3 channel banks. Therefore, refer to Section 365-150-100 for operation of this panel.

With one exception, all of the alarm circuitry of the unitized bay is an integral part of the D3 channel bank equipment. The one exception is the ALM lamp circuit on each maintenance connector (MAINT CONN) panel for SMAS. This circuit activates a minor bay alarm when the panel access relays malfunction. Refer to Section 365-150-100 for a description of the D3 channel bank alarm circuits.

The KS-20805 transmission measuring system will be referred to as the TMS in this section. Normally the TMS is arranged so that when operating, the TMS BSY or NOISE BSY lamps are lighted at all positions except the one in use. In this way there is no confusion as to what position has access to the TMS. In the D3 unitized bay the TMS BSY and NOISE BSY lamps are located on the manual access (MAN ACS) panel.

Note: The TMS is a dual-channel device. Thus, access can be made to the TMS MEAS channel while the NOISE BSY lamp is lighted; conversely, access can be made to the NOISE MEAS channel while the TMS BSY lamp is lighted.

CHART	PAGE
1—Accessing a VF Channel	2
2—Tests and Measurements	3
3—Monitoring	5
4—Calling—Answering—Talking	6
5—Patching and Testing a VF Channel	9

CHART 1

ACCESSING A VF CHANNEL

Any D3 channel in the unitized bank bay can be accessed, one channel at a time, at the manual access panel, thus eliminating the need for a VF patch bay. When the bank bay is not equipped for SMAS, connections to a channel are made by patching the retractable cord in the manual access panel to the maintenance access connectors (macs) on the MAINT CONN panel. When the bank bay is equipped for SMAS, connections to the channel are made, using the switches on its MAN ACS panel. Each MAINT CONN panel for SMAS has a TPB lamp which, when lighted, indicates that the 24 channels of that panel are under control of a remote test position. Likewise, whenever a channel is accessed locally, none of the channels on that MAINT CONN panel are available at the remote test position.

APPARATUS:

1—52-Type Headset

STEP

PROCEDURE

- 1 Determine which channel bank and channel are to be accessed from the MAN ACS panel.
- 2 For bays equipped for SMAS, verify that the TPB lamp on the MAINT CONN panel for that channel bank is not lighted and proceed to Step 4.
- 3 For bays not equipped for SMAS, withdraw enough of the retractable cord to reach the desired multipin mac on the maintenance connector and plug the end into the desired mac. Proceed to Step 7.
- 4 With all keys and buttons normal on the MAN ACS, MAINT CONN, and communication (COMM) panels select the desired channel bank (1 through 4, Fig. 1) and channel group (A or B) with the CHAN BANK switch on the MAN ACS panel.

Note 1: In testing from a common MAN ACS panel in a 3-bay configuration, select the left, center, or right bay with the MTCE CONN GROUP switch on the J98626AD-2 AUX COMM PNL.

Note 2: The A and B designations connect channel units 1 through 12 and 13 through 24, respectively.
- 5 Set the VF CKT switch to the channel unit desired in group A or B.
- 6 Press the ACS pushbutton. The MAN ACS lamp lights. If a special circuit has been accessed, the SPL CKT lamp will light.
- 7 Monitor the circuit at the TEL jacks of the COMM PANEL with the 52-type headset and by observing the E&M monitor lamps for an on-hook condition.

CHART 1 (Cont)

STEP	PROCEDURE
	<i>Note:</i> E&M lamps will be lighted for on-hook condition (idle circuit) on the E&M channel.
8	When an accessed circuit that must be removed from service is idle, take the appropriate action. <ul style="list-style-type: none"> <li data-bbox="407 632 1533 688">(a) For bays equipped for SMAS, operate the nonlocking LO key on the MAN ACS panel to the OPR position. The LO lamp should light. <li data-bbox="407 722 1273 751">(b) For bays not equipped for SMAS, follow normal office procedures.
	<i>Note:</i> The line and drop patching jacks on the MAN ACS panel are equivalent to those on a 6-wire patch bay. In addition, the E LEAD LINE and M LEAD DROP keys produce off-hook conditions on an E&M channel.
9	Perform the desired tests or operations in Charts 2 through 5.
10	When tests are completed, restore the channel to service by either operating the nonlocking LO key on the MAN ACS panel for SMAS to the RLS position or following normal office procedures.
11	For bays equipped for SMAS, press the ACS RLS button. The MAN ACS lamp extinguishes and the SPL CKT lamp, if lighted, extinguishes. For bays not equipped for SMAS, unplug the retractable cord and guide it back into the MAN ACS panel.
12	If another circuit is to be accessed, repeat this procedure.

CHART 2
TESTS AND MEASUREMENTS

This chart gives the operating procedure for typical tests which can be made at the bay. These tests utilize the TMS as the measuring device for the line or drop side of the circuit, as desired. For transmission measurements the incoming tone of the proper level and frequency must be supplied at the other end of the circuit. External test equipment may be used, if desired, or when the TMS is in use. The LINE OUT and DROP OUT jacks on the MAN ACS panel are provided to accommodate an external transmission measuring set. The office milliwatt supply is used to furnish a +7 dBm tone on the receive side and a -16 dBm tone on the transmit path and can also be used to check the calibration of the TMS transmission channel.

CHART 2 (Cont)

APPARATUS:

1—52-Type Headset

1—J94021A Transmission Measuring Set, or equivalent if an office measuring system is not provided

A. Calibration Check

- 1 Verify that the TMS BSY lamp on the MAN ACS panel is extinguished.
- 2 With all keys normal, operate and hold the CAL key on the MAN ACS panel to LINE. Verify that the TMS BSY lamp is extinguished. Read -26 dBm on the LEVEL display and 1 kHz (within local tolerance) on the FREQUENCY display of the TMS.
- 3 Operate the SEND key on the MAN ACS panel to NOR. Read -16 dBm on the LEVEL display of the TMS.
- 4 Release the SEND and CAL keys. Verify that the TMS BSY lamp is extinguished.
- 5 Operate and hold the CAL key to DROP. Verify that the TMS BSY lamp is extinguished. Read -3 dBm on the LEVEL display and 1 kHz on the FREQUENCY display of the TMS.
- 6 Operate the SEND key to NOR. Read $+7$ dBm on the LEVEL display of the TMS.
- 7 Release the SEND and CAL keys.

Note: If desired, external test equipment may be patched into the CAL LINE or CAL DROP jacks, bypassing the TMS.

B. Transmission Testing

- 1 Access the VF circuit per Chart 1. Verify that the TMS BSY lamp on the MAN ACS panel is extinguished.
- 2 Operate and hold the MEAS TMS key on the MAN ACS panel toward LINE or DROP as required. Read the transmission level in dBm on the LEVEL display and the frequency in kHz on the FREQUENCY display of the TMS. Refer to office records for requirements.
- 3 Release the MEAS TMS key.
- 4 If the TMS BSY lamp is lighted or if the use of external test equipment is desired, patch an external TMS into the LINE OUT or DROP OUT jack as required.
- 5 If no other tests are to be made on this channel, release the accessed circuit per Chart 1.

C. Noise Measuring

- 1 Access the VF circuit per Chart 1. Verify that the NOISE BSY lamp on the MAN ACS panel is extinguished.

CHART 2 (Cont)

- 2 Operate and hold the MEAS NOISE key on the MAN ACS panel toward LINE or DROP as required. Read the noise level in dBrn on the TMS NOISE display. Refer to office records for requirements.
- 3 Release the MEAS NOISE key.
- 4 If the NOISE BSY lamp is lighted or if the use of external test equipment is desired, patch an external NMS into the LINE OUT or DROP OUT jack as required.
- 5 If no other tests are to be made on this channel, release the accessed circuit per Chart 1.

D. Sending Tone

- 1 Access the VF circuit per Chart 1.
- 2 Operate the SEND key on the MAN ACS panel to LINE or DROP, as required.

Note: The LINE position sends 1000 Hz at -16 dBm through a 10-dB pad toward the line, and the DROP position sends 1000 Hz at +7 dBm through a 10-dB pad toward the drop equipment. To send the standard level of tone, operate and hold the second SEND key on the MAN ACS panel to NOR to bypass the 10-dB pad.

- 3 Return both SEND keys to their center positions.
- 4 If no other tests are to be made on this channel, release the accessed circuit per Chart 1.

CHART 3**MONITORING**

APPARATUS:

1—52-Type Headset

A. Transmission Monitoring

- 1 Verify that the 4W TLK key on the COMM panel is in MON position.
- 2 Plug the 52-type headset into the TEL jack on the COMM panel.
- 3 Access the VF circuit per Chart 1.
- 4 Any traffic on the accessed circuit will be heard on the headset.

CHART 3 (Cont)

- 5 When transmission monitoring is complete, release the accessed circuit per Chart 1 and remove the 52-type headset.

B. E&M Lead Monitoring and Supervision Testing

- 1 Access the VF circuit per Chart 1.
- 2 To monitor, observe the M DROP and E LINE lamps on the MAN ACS panel. A lighted lamp indicates that an on-hook condition exists on that lead. Conversely, an unlighted lamp indicates an off-hook condition on that lead.
- 3 To supervise, operate the M LEAD LINE or E LEAD DROP key to the ON HOOK or OFF HOOK position as required.

Note: The operation of the M LEAD LINE or E LEAD DROP keys will have no effect on the M DROP and E LINE lamps.

- 4 Restore all keys to normal when E&M lead monitoring and supervision testing is completed.
- 5 If no other tests are to be made on this channel, release the accessed circuit per Chart 1.

CHART 4

CALLING—ANSWERING—TALKING

The COMM PANEL is used to establish 4-wire communication on the accessed circuit toward the line or toward the drop or both. Two-wire communication is possible to any of five trunk tie lines, local station line circuits, or test trunk circuits. Four-wire communication is also available to either of two order-wire circuits. Jacks on the front of the panel permit using a 52-type headset for communication. The EXT MF KEY jack provides an access point for an MF keyset so that a circuit number can be keypulsed on the circuit to be tested. The communication panel position dial is used only in 2-wire communications to call any of the five trunk tie lines, local station line circuits, or test trunk circuits. The EXT DATA SET jack is also used only in 2-wire communications, but with the LINE 5 position.

APPARATUS:

- 1—52-Type Headset
 - 1—MF Keyset (optional)
 - 1—External Data Set (optional)
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CHART 4 (Cont)

A. 4-Wire Communication to Accessed Circuit

- 1 With VF circuit accessed per Chart 1, plug a 52-type headset into the TEL jacks on the COMM PANEL. Any traffic on the accessed circuit will be heard in the headset.
- 2 To talk on the accessed circuit in a bridged mode, operate the 4W TLK key.
- 3 To talk only toward the facility or only toward the equipment, operate the FAC/EQPT key in addition to the 4W TLK key, as required.
- 4 When communication is completed, restore all keys to normal, release the accessed circuit per Chart 1, and remove the headset.

B. 4-Wire Talk to Order-Wire Lines

- 1 With all keys normal on the COMM PANEL and with the 52-type headset plugged into the TEL jack, operate the order-wire key to OW-1 or OW-2 as required.
- 2 Operate the 4W TLK key to initiate communication.
Note: Signaling is not provided on order-wire circuits. It is "meet me on the line" communications.
- 3 When communication is completed, restore all keys to normal and remove the headset.

C. 4-Wire Talk on Tandem Line to the External Tandem Patch Bay

- 1 Plug the 52-type headset into the TEL jacks on the COMM PANEL.
- 2a With SMAS capability, operate the VF CKT switch (MAN ACS panel) to TDML and the FAC ACCESS switch (COMM PANEL) to the desired tandem line.
Note: Turn to the AUX position (if provided on COMM PANEL) to pick up six more tandem lines, any one of which is selected by the FAC ACCESS switch on the J98626AD-2 AUX COMM PNL.
- 2b Without SMAS capability, patch the retractable cord (MAN ACS panel) to either the DROP or FAC mac for the desired tandem line (on COMM PANEL or AUX COMM PNL).
- 3 Operate the 4W TLK key to effect communication.
- 4 When communication is completed, restore normal conditions and remove headset.

D. External Multifrequency (MF) Key pulsing

- 1 Plug a locally provided external MF keypulse set into the EXT MF KEY jack.

CHART 4 (Cont)

- 2a To keypulse on a tandem line to the tandem patch bay, take the appropriate action:
- (1) With SMAS capability, operate the VF CKT switch (MAN ACS panel) to TDML and the FAC ACCESS switch (COMM PANEL) to the desired tandem line. Turn to the AUX position (if provided on COMM PANEL) to pick up six tandem lines, any one of which is selected by the FAC ACCESS switch on the J98626AD-2 AUX COMM PNL.
 - (2) Without SMAS capability, patch the retractable cord (MAN ACS panel) to either the DROP or FAC mac for the desired tandem line (on COMM PANEL or AUX COMM PNL).
- 2b To keypulse on a VF circuit, access the desired channel per Chart 1 and operate the FAC/EQPT key on the COMM PANEL to the position desired. Proceed to Step 3.
- 2c To keypulse on an order-wire circuit, operate the order-wire key on the COMM PANEL to the desired position. Proceed to Step 3.
- 3 Operate the 4W TLK key on the COMM PANEL.
- 4 Keypulse the desired digits.
- 5 When communication is completed, restore keys and switches to normal and remove the MF keypulse set.

E. 2-Wire Call and Answer

Call

- 1 With all keys normal on the COMM PANEL and with the 52-type headset plugged into the TEL jack, operate the 2W key.
- 2 Depress desired LINE () pushbutton on the COMM PANEL. Verify that the LINE lamp lights continuously.
- 3 Dial the desired circuit number by using the position dial set.
- 4 To release the call, partially depress another LINE pushbutton to release the depressed pushbutton. Verify that the LINE lamp is off.

Answer

- 5 With 52-type headset plugged into the TEL jack, operate the 2W key.
- 6 Depress the LINE() pushbutton that is flashing (line that is calling into the COMM PANEL). Verify that the LINE lamp lights continuously.
- 7 To release the connection, partially depress another LINE pushbutton to release the depressed pushbutton. Verify that the LINE lamp is off.

CHART 4 (Cont)

8 When communication is completed, restore all keys to normal and remove the headset.

F. External Data Set

1 Plug a locally provided external data set into the EXT DATA SET jack on the COMM PANEL.

2 Operate the 2W key.

3 Depress LINE 5 pushbutton.

4 When data transmission is completed, restore all keys to normal and remove the data set.

CHART 5

PATCHING AND TESTING A VF CHANNEL

STEP

PROCEDURE

APPARATUS:

For SMAS panels, use the ED-2C002-20 patch cord per SD-1C492, 3-, 6-, or 9-foot length.

For nonSMAS panels, use the ED-2C008-20, Type X cord, 6- or 9-foot length.

In addition to the plugs at each end for restoration patching between macs, the type X cord has a center block with connectors (receptacles) which accommodate the MAN ACS cord.

STEP

PROCEDURE

A. Patching VF Channel at Maintenance Connectors—Testing

1 Patch from the CHAN BANK mac of the failed circuit to the CHAN BANK mac of a known good circuit, available either on the same maintenance connector or another maintenance connector (see Fig. 8).

2a With SMAS capability, take the appropriate action to test the line and drop sides of the failed circuit.

CHART 5 (Cont)

STEP	PROCEDURE
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TEST	SELECT
LINE SIDE OF FAILED CIRCUIT	VF CKT, CHAN BANK, and MTCE CONN GROUP (if provided) numbers to access the good circuit
DROP SIDE OF FAILED CIRCUIT	VF CKT, CHAN BANK, and MTCE CONN GROUP (if provided) numbers to access the failed circuit

2b Without SMAS capability, take the appropriate action to test line and drop sides of the failed circuit (Fig. 9).

TEST	CONNECT RETRACTABLE CORD TO
LINE SIDE OF FAILED CIRCUIT	The side of center block (Type X Cord) with the LINE* designation nearest to the plug at the failed circuit
DROP SIDE OF FAILED CIRCUIT	The side of center block (Type X Cord) with the DROP* designation nearest to the plug at the failed circuit
<p>* LINE and DROP designations nearest to a plug end are associated with that end. Thus, to access the line or drop of the failed circuit, connect the MAN ACS cord to the side of center block that has the LINE or DROP designation for that plug end.</p>	

- 3 Depress the ACS pushbutton on the MAN ACS panel for SMAS.
- 4 Perform tests toward the line or the drop, as required, using the procedures of Chart 2.
- 5 When testing is completed, restore normal nontest conditions and refer to Section 365-150-505 to clear line troubles or refer to office procedures to clear drop troubles.

B. Patching VF Channel to the Tandem Patch Lines—Testing

Note 1: Final connections to spare carriers or drops are made at the external tandem patch bay.

Note 2: On the type X cord, the LINE and DROP designations nearest to a plug end are associated with that end. To access the line or drop of the failed circuit, connect the MAN ACS cord to the side of the center block that has the LINE or DROP designation for that plug end.

CHART 5 (Cont)

STEP	PROCEDURE
Patching to a Good Carrier	
1	Patch from the CHAN BANK mac of the failed circuit to the DROP jack of the desired tandem line (see Fig. 10). This patch connects the good drop to a good carrier provided at the tandem patch bay.
2a	With SMAS capability to test the failed carrier, set the FAC ACCESS switch on the COMM PANEL to the TDM PATCH line with the spare carrier.
2b	Without SMAS capability to test the failed carrier, connect the retractable cord to the side of center block (type X cord) with the LINE designation nearest to the plug at the failed circuit.
3	Operate the VF CKT switch on the MAN ACS panel for SMAS to TDML.
4	Perform the desired tests toward the failed carrier using the procedures of Chart 2.
Patching to a Good Drop	
1	Patch from the CHAN BANK mac of the failed circuit to the FAC jack of the desired tandem line. This patch connects the good carrier to a good drop provided at the tandem patch bay.
2a	With SMAS capability to test the failed drop, select the VF CKT, CHAN BANK, and MTCE CONN GROUP (if provided) numbers to access the failed circuit.
2b	Without SMAS capability to test the failed drop, connect the retractable cord to the side of center block (type X cord) with the DROP designation nearest to the plug at the failed circuit.
3	Depress the ACS pushbutton on a MAN ACS panel for SMAS.
4	Perform the desired tests toward the failed drop using the procedures of Chart 2.
5	When testing is completed, restore normal nontest conditions and depress the ACS RLS pushbutton on the MAN ACS panel for SMAS.
C. Patching VF Channel for Long-Term Testing (SMAS Panels Only)	
Note 1: The retractable cord must also be used for long-term testing with the MAN ACS panel without SMAS capability.	
Note 2: This procedure allows long-term testing with external equipment while the MAN ACS panel for SMAS is free to access other channels.	

CHART 5 (Cont)

STEP	PROCEDURE
1	Plug one end of the patch cord into the JK MULT connector on the MAN ACS panel and the other end into the CHAN BANK connector of the desired channel on the maintenance connector (see Fig. 11).
2	Plug external test equipment into the CONN JK MULT jacks on the MAN ACS panel as required for long-term testing.
3	If the TMS is to be used, set the VF CKT switch on the MAN ACS panel to the JK MULT position.
4	When testing is completed, restore all switches to normal and remove the patch cord.

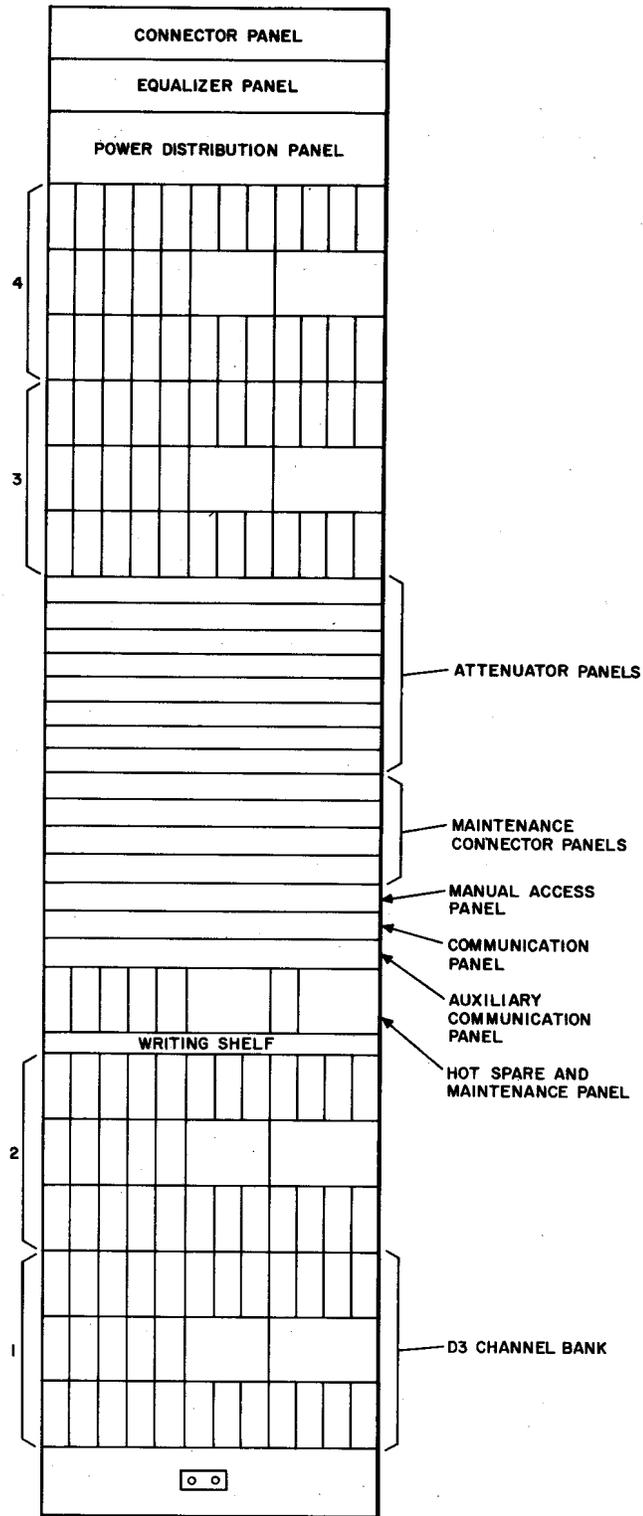


Fig. 1—D3 Unitized Bay

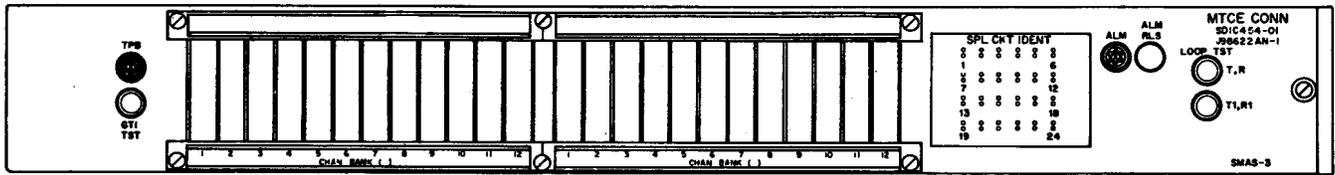


Fig. 2—Maintenance Connector Panel

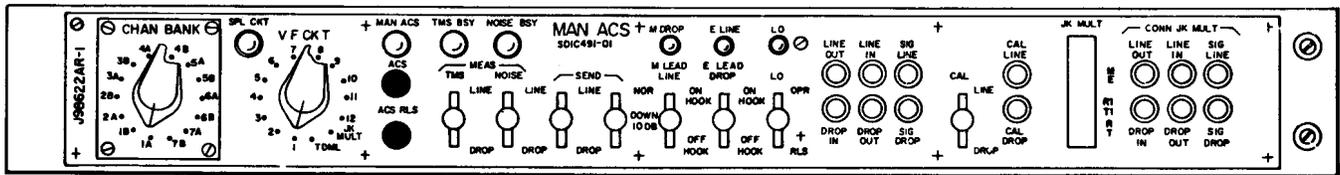


Fig. 3—Manual Access Panel

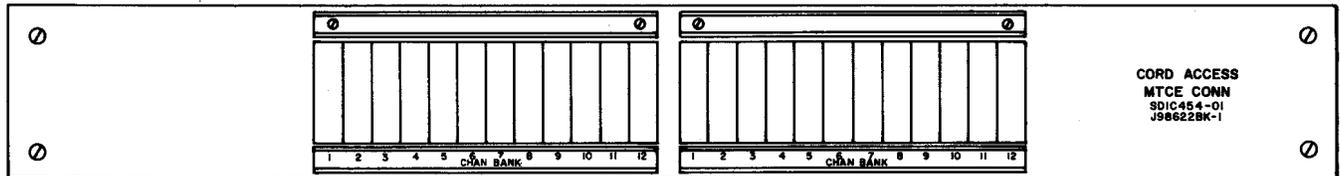


Fig. 4—Cord Access Maintenance Connector Panel

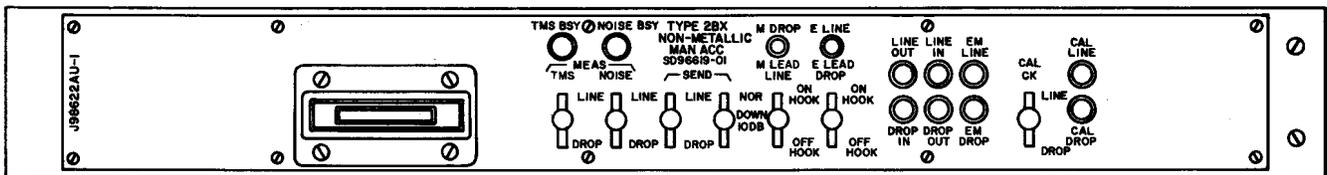


Fig. 5—Manual Access Panel With Retractable Cord

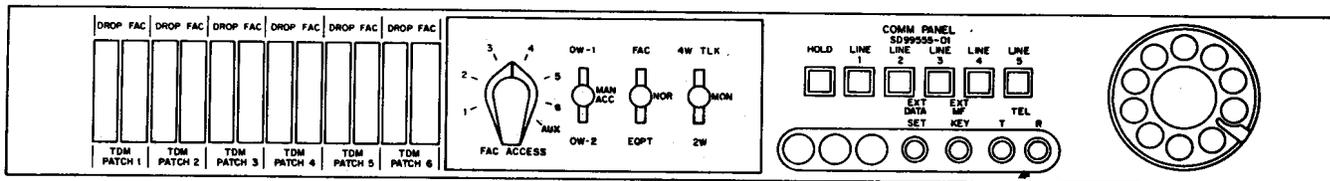


Fig. 6—Communication Panel

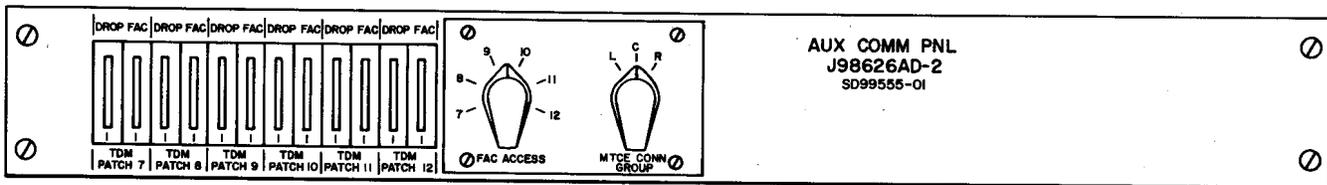


Fig. 7—Auxiliary Communication Panel

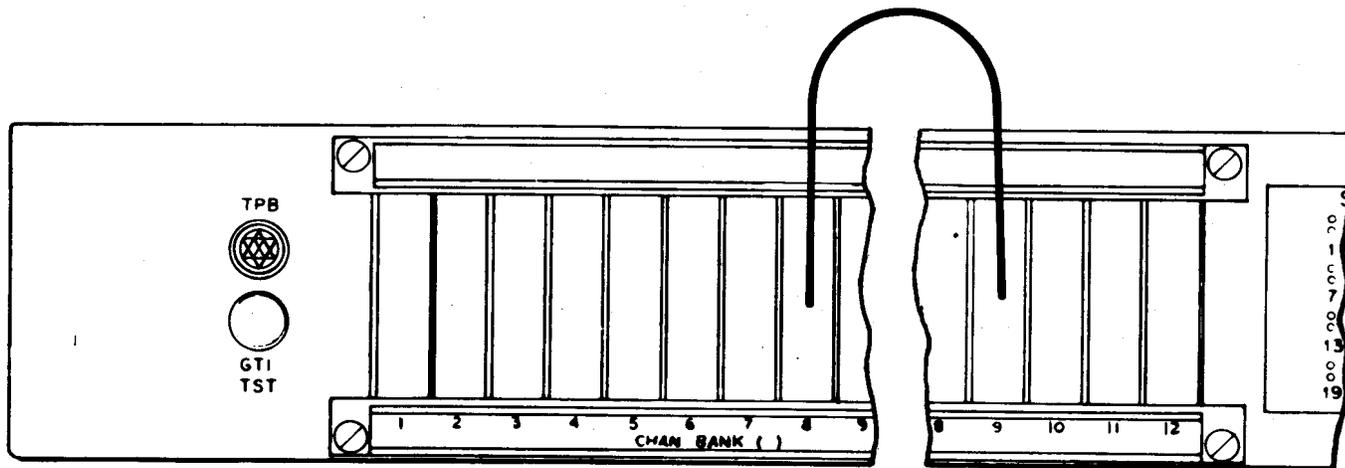


Fig. 8—Patching Failed VF Channel at Maintenance Connector

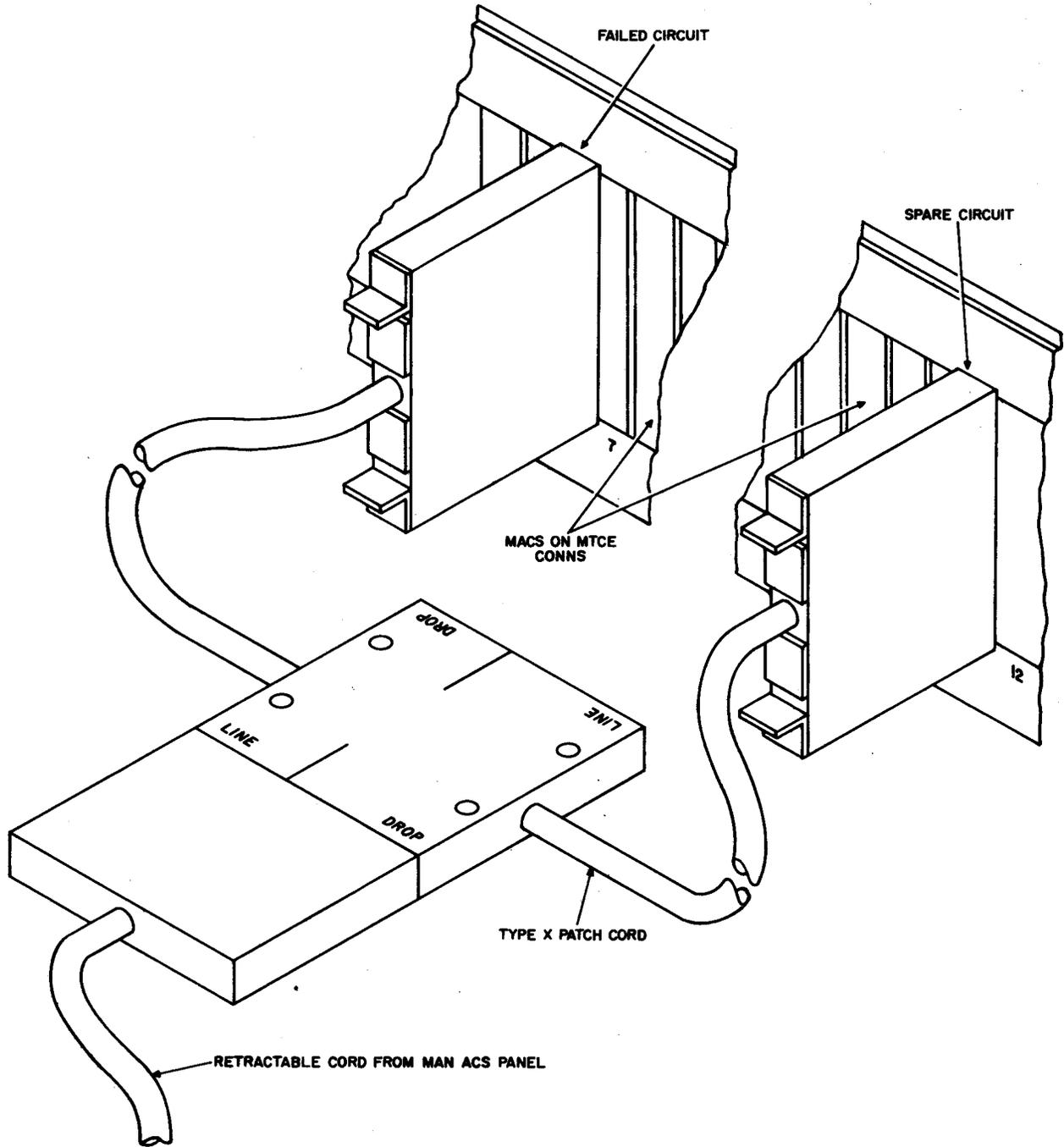


Fig. 9—Testing for Failed Line

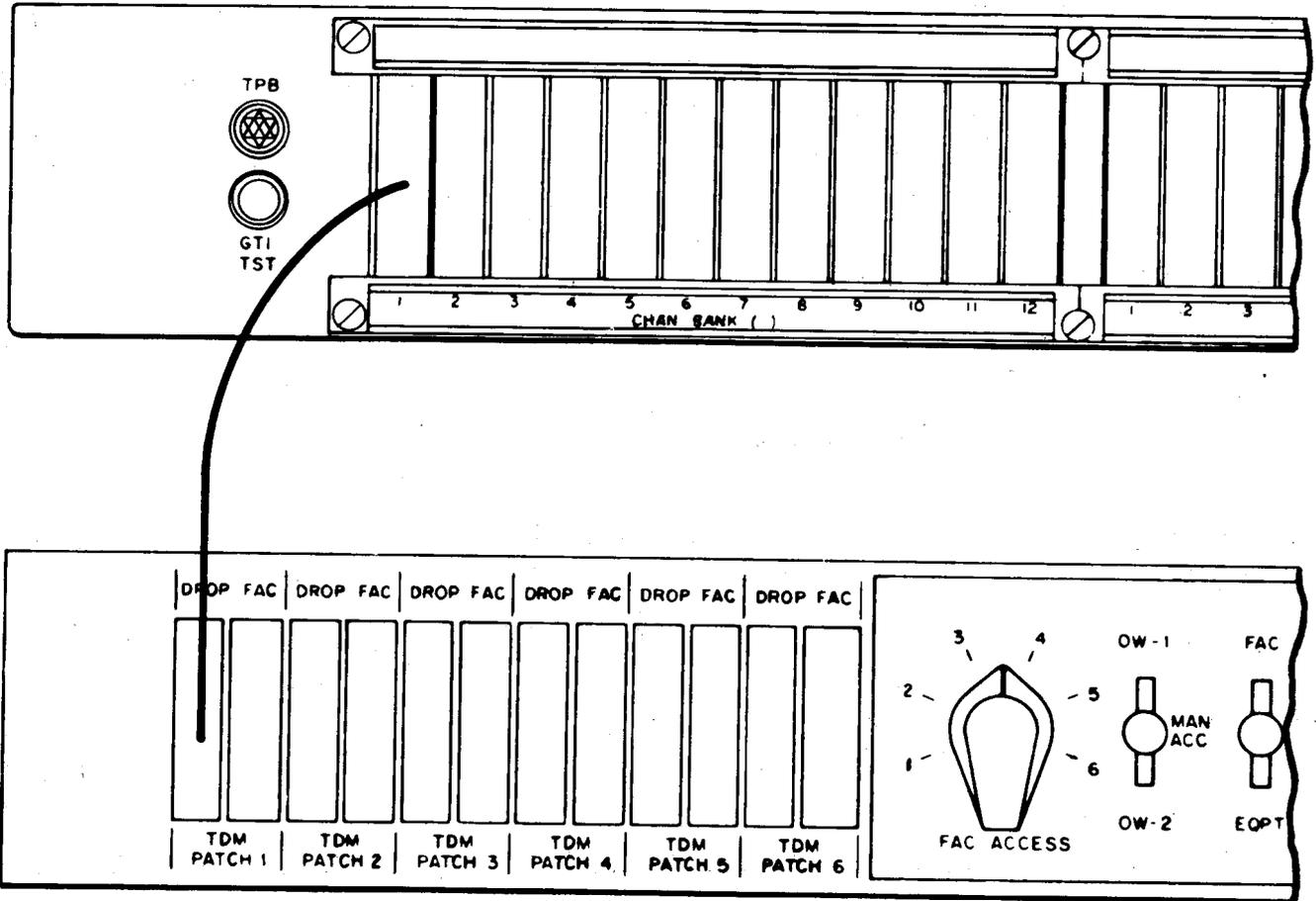


Fig. 10—Patching Failed VF Channel to Tandem Line

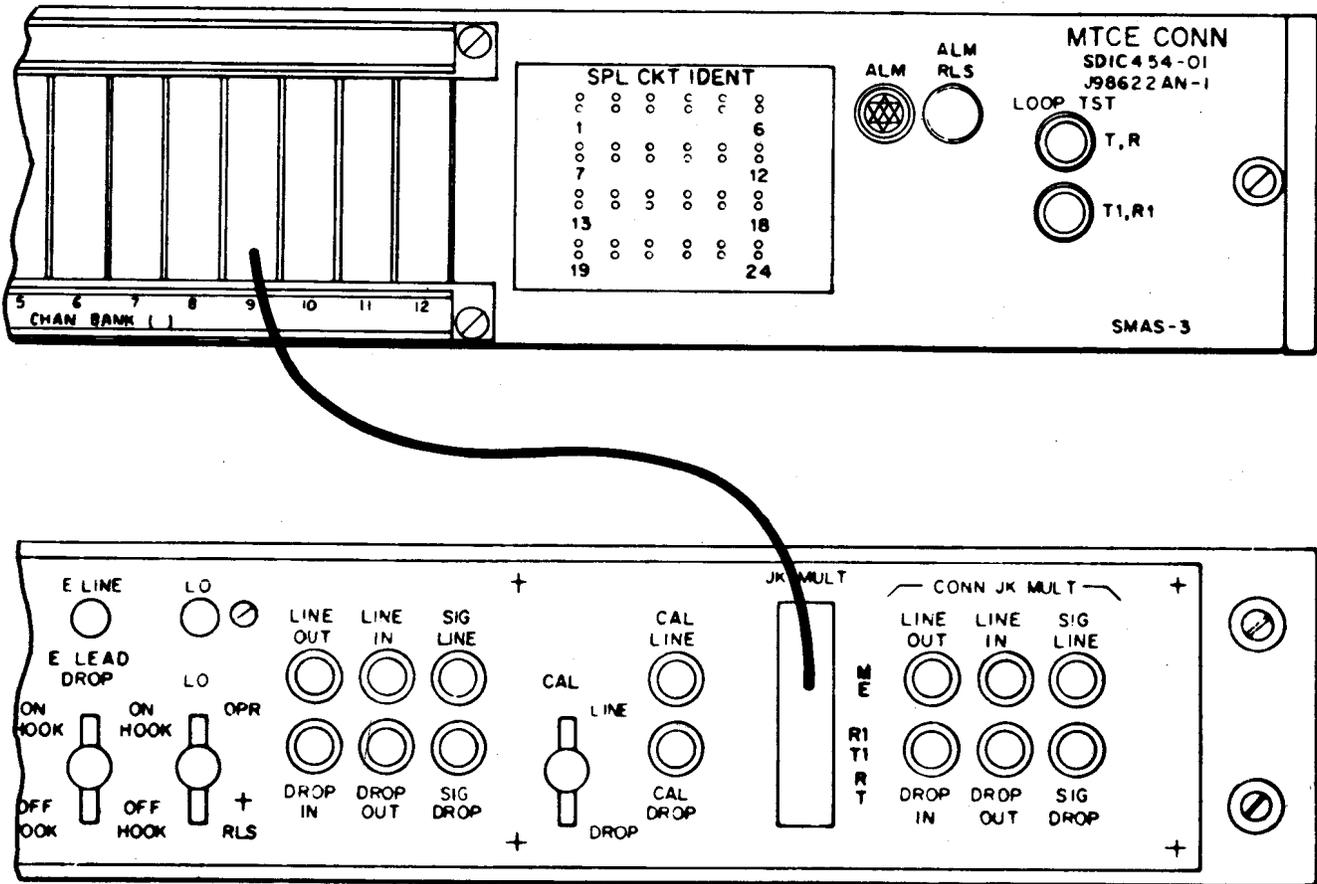


Fig. 11—Patching VF Channel for Long-Term Testing