L MULTIPLEX TERMINALS
COMMON EQUIPMENT
DFSG BANK
J68954( ) BAYS AND J98629( ) FRAMES
DESCRIPTION

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1. INTRODUCTION

1.01 The direct formed supergroup (DFSG) bank is a terminal arrangement that translates 60 VF channels to the supergroup range (312 to 552 kHz) without the use of an intervening group range (60 to 108 kHz). This section provides information on the bays and frames in which the DFSG bank is mounted.

Note: The mounting arrangements for the A6B bank are covered in Section 356-016-105.

1.02 Whenever this section is reissued, the reasons for reissue will be listed in this paragraph.

1.03 Two arrangements are used for mounting the DFSG bank. These are (a) the J68954( ) bays, which is the conventional (stand alone) arrangement and (b) the J98629( ) frames, which is the unitized terminal equipment (UTE) arrangement.

2. J68954( ) BAYS

A. General

2.01 The J68954( ) bay is provided in a shop-wired, duct-type framework that is either 7 feet or 11 feet 6 inches high. Two codes of the J68954( ) bay are described: J68954A and B. These bays are illustrated in Fig. 1 and 2, respectively.

2.02 The basic differences between the J68954A and B bays are the physical size and the number of DFSG banks that can be accommodated. The J68954A bay is a 7-foot double bay that contains a maximum of 6 DFSG banks (360 VF channels); whereas, the J68954B bay is an 11-foot 6-inch single bay that contains a maximum of 5 DFSG banks (300 VF channels). The bay capacities are summarized in Table A.

2.03 The J68954( ) bays are normally used in pairs—a primary bay and a secondary bay; thus a pair of J68954A bays consists of four (two double) bays, and a pair of J68954B bays consists of two (two single) bays. These bays are normally contiguous and both are served by the same carrier supply and VF test, monitor, and talk panel. The primary bay contains the DFSG-bank carrier supply and the VF test, monitor, and talk panel; whereas, the secondary bay contains the J68954R and S carrier supply secondary distribution panels. This arrangement permits the primary bay to be used alone; the secondary bay must always be used with an associated primary bay.

B. DFSG Bank

2.04 The DFSG bank (Fig. 3) translates 60 outgoing 200- to 3400-Hz VF channels into one 312- to 552-kHz supergroup in its transmitting section, and it translates the corresponding incoming basic supergroup into 60 VF channels in its receiving section. Thus, the DFSG bank functions as an interface between 60 VF circuits and one supergroup circuit.

2.05 The required carrier and pilot frequencies (and their distribution) are provided by the DFSG-bank carrier/pilot supply (2.08 through 2.10).

2.06 The required dc power for the DFSG bank is -24 volts (filtered) and is supplied via a fuse panel (2.11 through 2.13). This -24 volt power is reduced to -12 volts and regulated by a regulator on each of the five transmission shelves (J68954T) of the DFSG bank.

2.07 The DFSG bank is described in detail in Section 356-016-106.

C. DFSG-Bank Carrier/Pilot Supply

2.08 The DFSG-bank carrier/pilot supply (Fig. 4 and 5) is used to generate the 12 channel carriers, the five DFSG carriers, the one DFSG pilot, the carrier failure alarm (CFA) one-way and two-way carriers, and the CFA pilot. It consists of frequency generating and distribution circuits, protective switching circuits, alarm circuits, and manual patching and test arrangements. Alarm lamps are provided on all generator units to indicate failure of any of these units.

2.09 The required dc power for the DFSG-bank carrier/pilot supply is -24 volts (filtered) and is supplied via a fuse panel (2.11 through 2.13). This -24 volt power is reduced to -5 and -10 volts and regulated by a regulator circuit on each generator circuit board.

2.10 The DFSG-bank carrier/pilot supply is described in detail in Section 356-016-106.

D. Fuse and Alarm Panel

2.11 The J68954J fuse and alarm panel provides for:

(a) Filtering for A and B office -24 volt signaling battery prior to its application to the DFSG circuits in the same bay.

(b) Fuses for protection of these (A and B) -24 volt filtered sources and the DFSG-bank units with which they are associated. Provision is made for 36 fuses (active and spare) for the A battery circuit and 36 for the B battery circuit.

(c) An alarm circuit for indicating blown fuses in both the A and B battery circuits. Major and minor alarm indications are also provided.

2.12 The fuse and alarm panel is illustrated in Fig. 6. The fuse alarm lamps and fuses are mounted on the central section of the panel, which is hinged at the left side and has a twist-type fastener at the right side to permit access to the inside. The alarm and filter circuitry is inside.

2.13 The filters (the conventional LC type) for both A and B battery circuits remove noise from the corresponding -24 volt signaling battery buses. The fuses protect the -24 volt battery in the event the filter capacitors or some other part of the -24 volt circuit develops a short circuit. Other fuses protect the -12 volt regulator circuits and the various generator and switch circuits in the DFSG-bank carrier/pilot supply. A blown fuse (a) opens the associated power lead; (b) causes the alarm circuit to operate, to apply alarm indications to the office alarm circuit, and cause the MJ or MN alarm lamp on the fuse and alarm panel to light; and (c) causes the corresponding FUSE ALM A or B lamp on the fuse and alarm panel to light. A colored plastic tip protrudes from the center of the holder cap of any blown fuse to permit it to be located quickly. In addition, the fuse holder caps contain a slot with a metal contact for making in-service fuse alarm tests with a metal probe.

E. VF Patch Panel

2.14 Three J68954K VF patch panels are mounted on the J68954A and B bays for monitoring and testing the 60 VF channels in each DFSG bank in the bay. Each panel (Fig. 7) contains VF transmission jacks and common selective monitoring jacks for 12 VF channels. Connections are made (in groups of four VF channels) via (a) three 950C multiple access connectors on each of the five J68954T shelves of the DFSG bank, (b) three corresponding KS-16785, L3 connectors on the right end of the VF patch panel, and (c) an interconnecting ED-51616 patch cord.

> ***Note:*** To prevent interruption of service, the end of the ED-51616 patch cord with the KS-16785, L3 connector ***must*** be connected first and removed last.

2.15 The transmission jacks provide access to the VF transmitting and receiving sections of the DFSG bank and the associated office equipment. Two pairs of transmission jacks are provided for each of 12 channels, one pair (EQ OUT/MOD IN) in the VF transmitting leads and one pair (DEM OUT/EQ IN) in the VF receiving leads. When connected to the 950C connectors on the DFSG-bank shelves, but not being used for testing, these jacks provide VF through connections between the DFSG bank and the associated VF equipment.

2.16 Two monitoring jacks, designated MOD IN MON and DEM OUT MON are provided near the left end of each jack panel. These jacks are selectively bridged across the MOD IN and DEM OUT jacks, via a 12-position channel selector switch, designated MON 1, 2, 3, . . . 12. Thus, each of the three panels provides access for monitoring the 12 associated VF channels (one at a time) in either direction of transmission.

2.17 All VF transmission jacks on the J68954K VF patch panel are WTT-89 Switchcraft twin jacks. Connections are made to standard test equipment jacks via a Switchcraft TT-120, TT-122, TT-124, TT-127, or TT-128-type cord and a TAD-3 adapter. The monitoring jacks are the standard type 246A.

F. VF Test, Monitor, and Talk Panel

2.18 The J68929AD VF test, monitor, and talk panel (in association with the office milliwatt distribution system, the centralized transmission and noise measuring system, and the J68954K VF jack panel) is used to test and monitor the VF circuits in the DFSG banks mounted in the J68954( ) bay. In addition, it is used to provide talking facilities to associated locations. Connections for testing, monitoring, and talking are made via jacks and pushbutton-type switches as shown in Fig. 8. All switches except the HOLD and NM CAL CK switches have built-in lamps (white) that light when the switches are operated.

2.19 The VF test, monitor, and talk panel is provided in two arrangements—one (J68929AD, L1) for use with the 40B T&NMS and the other (J68929AD, L2) for use with the KS-20805 T&NMS. It has the following features for making either terminated or bridged transmission and noise measurements:

(a) Measurement characteristics are as follows:

(1) Frequency: 35 to 15,000 Hz (40B)
100 to 20,000 Hz (KS-20805)

(2) Power: -35 to +15 dBm (40B)
-50 to +10 dBm (KS-20805)

(3) Noise: 15 to 55 dBrnc (40B)
0 to 60 dBrn (KS-20805)

(4) Impedance: 600 ohms terminated or 60,000 ohms bridged (40B)

600 ohms terminated or 200,000 ohms bridged (KS-20805)

Note: For terminated measurements, the MEAS 600Ω TERM jack is patched to the EQ OUT/MOD IN or DEM OUT/EQ IN jacks on the J68954K VF jack panel (2.14); whereas, for bridged measurements, the MON LINE A or MON LINE B jack is patched to the MOD IN MON or DEM OUT MON jack, respectively, on the J68954K VF jack panel. When operated, the MEAS BRDG TST -16 or MEAS BRDG TST +7 switch connects the MON LINE A or MON LINE B jack, respectively, to the centralized transmission and noise measuring equipment.

(b) Connections (via the 1000∿ -26 600Ω, 1000∿ -16 600Ω, or 1000∿ +7 600Ω jacks) to the milliwatt distribution system for test tones of 1000 Hz at -26, -16, or +7 dBm, respectively.

(c) A means for testing (via the CAL -16 600Ω jack) the accuracy of the test tone power from the milliwatt distribution system.

(d) A means for testing (via the CAL PAD 10 DB jack) the accuracy of the -26 dBm test tone.

(e) A means for calibrating (via the nonlocking TRMSN CAL -16 or TRMSN CAL +7 switches) the test circuit at a frequency of 1000 Hz and at a power of either -16 or +7 dBm.

(f) A nonlocking pushbutton-type switch (NM CAL CK) for checking the calibration of the noise measuring circuit.

(g) Lamps (TRMSN BUSY and NOISE BUSY) to indicate that the transmission measurement circuit or the noise measurement circuit is in use.

2.20 For monitoring, the VF monitoring circuit input jacks (MON LINE A and MON LINE B) are patched (using an 8-foot P6T cord) to the MOD IN MON and DEM OUT MON jacks (-16 and +7 dBTL, respectively) on the J68954K VF jack panel. The MON -16 and MON +7 switches are operated, as required, to connect the MON LINE A and MON LINE B jacks to the TEL SET A and TEL SET B jacks via a hybrid coil and an amplifier to produce equal-level signals (-5 dBTL) that can be monitored simultaneously or individually with a headset.

2.21 By means of locking switches on the left half of the J68929AD panel, the talking circuit (TEL SET A or TEL SET B jacks, plus a headset) can be connected to the following facilities:

(a) A 4-wire carrier channel, via the TALK 4W switch (requires patching).

(b) Either of two order-wire trunks, via the OW1 and OW2 switches.

(c) A spare trunk, via the SP switch.

(d) A testboard bay, via the TB BAY switch.

(e) A maintenance center, via the MTCE CTR switch.

(f) A carrier bay, via the CARR BAY switch.

(g) A high-frequency patch bay, via the HF BAY switch.

In addition, a means for dialing is provided, via the DIAL switch and a rotary dial, for use when a suitable dial line is available.

Note: The nonlocking HOLD switch makes it possible to hold the dial line while establishing contact through one of the other trunks.

2.22 Twelve pairs of jacks, designated TANDEM TRUNKS TO BAY 1, 2, 3, . . . 12, are provided on this panel.

Note: These jacks are provided for miscellaneous trunking to tandem patch bays. They are not intended to be multipled to other tandem jacks.

2.23 The required power for the J68929AD panel is -24 volts (filtered) and is supplied via the J68954J fuse and alarm panel (Part 2D).

2.24 The J68929AD VF test, monitor, and talk panel operation is covered in Section 356-016-301.

3. J98629() FRAMES

A. General

3.01 The J98629( ) DFSG bank analog unitized terminal equipment (UTE) consists of various 1-, 2-, and 3-bay frames that, either alone or in combination with an adjacent J98629( ) frame, contain all of the equipment units required for transmission of, and maintenance connections to a maximum of 480 voice-frequency (VF) channels.

3.02 The J98629( ) frames provide equipment for conversion of VF channels to basic supergroups; signaling; VF patching, testing, and monitoring; echo suppression; order-wire service; alarms; and access for local and remote (optional) maintenance connections to the VF channels.

3.03 The J98629( ) frames are provided in a shop-wired, duct-type framework that is either 7 feet or 11 feet 6 inches high. Eleven codes of the J98629( ) frames are described: J98629G, H, J, K, N, P, R, T, U, W and Y. The J98629J frame is illustrated in Fig. 9.

> ***Note:*** The J98629( ) frames are tested in the factory to eliminate wiring errors.

3.04 The basic differences between the various J98629( ) frames are in the number of VF channels available, the type of signaling used, whether or not echo suppressors are used, and the working combinations of frames used. Table B lists the basic arrangements used in the J98629( ) frames.

3.05 The J98629( ) frames will normally be combined in a lineup that will provide up to 480 VF channels for maximum carrier supply efficiency. The optimum arrangements are illustrated in Fig. 10 through 15.

> ***Note:*** The maximum number of VF channels in some arrangements is limited to 480 (8 supergroups) due to carrier supply loading; in others it is limited to 360 (6 supergroups) due to cable losses in the carrier supply distribution circuit.

3.06 The various equipment units used in the J98629( ) frames using SF signaling are listed in Table C; those used in frames using common channel interoffice signaling (CCIS) are listed in Table D. Due to the large number of fuse panels used in the J98629( ) frames, they are listed separately in Table E.

> ***Note:*** The equipment units used in the J98629( ) frames are either plug-in units mounted in suitable shelves or panels that are connector-connected to the frames.

3.07 Included in the J98629( ) UTE frames (Fig. 16 and 17) are the DFSG banks, DFSG-bank carrier/pilot supply and distribution circuits, dc power circuits, fuse and alarm circuits, communication and test circuits, multiple access connectors for VF patching, VF receive level adjustment controls, signaling units, CCIS attenuator units, carrier group conditioning units, and maintenance connecting circuits. This unitized arrangement provides minimum losses and optimum serviceability. Associated optional switched maintenance access system (SMAS) circuitry permits maintenance procedures to be performed by dialing appropriate codes from either a SMAS maintenance line control located at an integrated manual test frame (IMTF) or a testboard (17C, 24A, 51A, etc). The basic maintenance arrangement for the J98629( ) frames is illustrated in Fig. 18.

> ***Note:*** If the SMAS option is not used, the maintenance procedures are performed at the applicable J98629( ) frames.

B. DFSG Bank

3.08 The DFSG bank (Fig. 19) translates 60 outgoing 200- to 3400-Hz VF channels into one 312- to 552-kHz supergroup in its transmitting section, and it translates the corresponding incoming basic supergroup into 60 VF channels in its receiving section. Thus, the DFSG bank function as an interface between 60 VF circuits and one supergroup circuit.

3.09 The required carrier and pilot frequencies (and their distribution) are provided by the DFSG-bank carrier/pilot supply (3.12 through 3.14).

3.10 The required dc power for the DFSG bank is -24 volts (filtered) and is supplied via a fuse panel (3.48 through 3.52). This -24 volt power is reduced to -12 volts and regulated by a regulator on each of the five transmission shelves (J68954T) of the DFSG bank.

3.11 The DFSG bank is described in detail in Section 356-016-106.

C. DFSG-Bank Carrier/Pilot Supply

3.12 The DFSG-bank carrier/pilot supply (Fig. 20) generates the 12 channel carriers, the 5 DFSG carriers, the one DFSG pilot, the CFA one-way and two-way carriers, and the CFA pilot. In addition to frequency generating and distribution circuits, the supply includes protective switching circuits, alarm circuits, and manual patching and test arrangements. Alarm lamps are provided on all generator units to indicate failure of any of these units.

3.13 The required dc power for the DFSG-bank carrier/pilot supply is -24 volts (filtered) and is supplied via a fuse panel (3.48 through 3.52). This -24 volt power is reduced to -5 and -10 volts and regulated by a regulator circuit on each generator circuit board.

3.14 The DFSG-bank carrier/pilot supply is described in detail in Section 356-016-106.

D. Signaling and Associated Circuits

3.15 Provision for two types of signaling systems is made in the J98629( ) frames—the F-type single-frequency (SF) in-band system and the common channel interoffice signaling (CCIS) system. The CCIS system is used in the J98629G, H, J, T, U, W, and Y frames and the SF system is used in the J98629K, N, P, and R frames; however, the CCIS system can be provided for in the J98629K, N, P, and R frames by substituting FM( ) signaling units (3.21-3.22) in place of FW( ) or FU( ) signaling units (3.16-3.20).

3.16 FW( ) or FU( ) signaling units plus associated equipment [current limiting resistors, a tone generator and transfer circuit, and, with the FU( ) units, F-auxiliary signaling units] are used in the SF system. J98624AJ attenuator shelves or FM( ) signaling units are used in the CCIS system.

3.17 The FW( ) signaling unit (Fig. 21) is a single-frequency unit that converts outgoing supervisory and dial pulse signals into corresponding 2600-Hz tones and converts incoming 2600-Hz tones into corresponding supervisory and dial pulse signals. This unit is normally used with 4-wire E&M message trunks using MFP (multifrequency pulsing) or senderized DP (dial pulsing) systems.

3.18 The FW( ) signaling unit is described in detail in Section 179-362-101.

3.19 The FU( ) signaling unit is a single-frequency unit that, in conjunction with the F-type auxiliary unit, converts outgoing supervisory signals into corresponding 2600-Hz tones and converts incoming 2600-Hz tones into corresponding supervisory signals. It is used for 2- or 4-wire E&M signaling, loop reverse-battery signaling, special access signaling, etc.

3.20 The FU( ) signaling unit is described in detail in Section 179-363-101; the F-type auxiliary unit, in Section 179-364-101.

3.21 The FM( ) signaling unit may be used to replace an FW( ) or FU( ) signaling unit when converting from SF signaling to CCIS. This unit provides loss in both the VF transmit path and the VF receive path and is adjustable over a range of 0 to 16.5 dB, in 0.1 dB steps. It builds out the VF transmit path loss to 13 dB and the receive path loss to 6 dB. The unit provides no signaling function.

3.22 The FM( ) signaling unit is described in detail in Section 179-366-101.

3.23 Resistors (one for each signaling unit) are provided for limiting the signaling current in the associated trunk switching equipment to the required value. These resistors are mounted on associated fuse panels.

3.24 Two J99335YA tone generator and transfer units (Fig. 22) are provided in J98629( ) frames using SF signaling. Each unit provides 2600-Hz tone to the F-type signaling units in the associated frame, one to the odd numbered signaling units; the other to the even units. Each J99335YA unit also provides transfer circuitry (including an ALM lamp and RST key) used in conjunction with the tone transfer and alarm shelf (3.25).

3.25 One ED-1C231-30 tone transfer and alarm shelf (Fig. 23) is used in J98629( ) frames using SF signaling. Two J99335YA tone generators (3.24) are mounted in this shelf, which contains some of the required transfer circuitry. Failure of one tone generator causes the tone transfer

circuitry to transfer the load (F-type signaling units) from the defective tone generator to the second tone generator and also to initiate operation of both the office minor alarm and a panel-type alarm (ALM) lamp. Failure of both tone generators causes the office major alarm to operate and the ALM lamp to light. Operation of the RST key restores the loads to their regular tone generators, provided that the trouble condition has been corrected. The ALM lamp and RST key are located on the front panel of the J99335YA tone generator and transfer unit.

3.26 The J98624AJ attenuator shelves (Fig. 24) are provided in J98629( ) frames intended for use with CCIS. Each J98624AJ shelf is equipped with 12 ED-1C755 slide-switch attenuators, one for each of the 12 VF channels associated with one J68954T DFSG transmission shelf. Each ED-1C755 unit consists of four type 49( ) pads, two in the VF transmit (T & R) leads and two in the VF receive (T1 and R1) leads, mounted on a printed wiring board. One 49A pad in series with one 49B pad is used in each path to build out the switching-machine-to-DFSG-bank loss to 13 dB in the transmitting direction and 6 dB in the receiving direction. The attenuation for each path is adjustable from 0 to 16.5 dB in 0.1 dB steps.

3.27 Either a through connection or an echo suppressor is used on the trunk switching equipment (drop) side of the DFSG bank, depending on the type of J98629 frame used.

E. Maintenance Connectors

3.28 Two codes of maintenance connectors are used—the J98622BK and BL units. The J98622BL unit is designated Type 2B and is a connectorized version for SMAS applications. The J98622BK unit is designated Type 2BX. It is a connectorized unit that is used for non-SMAS applications. These maintenance connectors are illustrated in Fig. 25.

3.29 Each maintenance connector is used to make the connections required for (a) monitoring and performing transmission and signaling tests on any of the 24 VF circuits associated with two J68954T shelves (a maintenance group), (b) VF patching, and (c) performing loop tests on the associated SMAS-3 system. On the J98622BL unit, access for all of these tests is normally controlled and performed from the SMAS-3 testboard, or a test position equipped with SMAS control panels; however, the transmission and signaling tests can be controlled and performed from either the manual access panel (3.34 through 3.37) or the maintenance connector, and the loop test can be performed at the maintenance connector. In the access mode, the maintenance connector can be used to send a control signal to activate a carrier group conditioning unit (when used). Through connections for both transmission and signaling are provided in the maintenance connector when the maintenance connector is in the normal mode.

3.30 The J98622BL and BK maintenance connectors have two sets of 12 miniature 10-pin through connectors (type 950A multiple access connectors) mounted on their front panels. Both sets are designated CHAN BANK ( ) and the 12 connectors in each set are designated 1, 2, 3, . . . 12. These 24 10-pin connectors are associated with the T, R, T1, R1, E, and M leads for the 24 VF channels of two J68954T shelves. They can be used for long-term signaling tests and VF transmission tests (via the manual access panel). They can also be used for patching to substitute facilities or drop equipment via a nearby maintenance connector or via the tandem patch jacks on the communications panel as described in 3.38 and illustrated in Fig. 28. An ED-2C002 (SMAS) or ED-2C008 (non-SMAS) patch cord having a 10-pin plug (type 473A) on each end is used to open the 950A-connector through connections and to connect the associated T, R, T1, R1, E, and M leads to a 950A connector on the manual access panel, communications panel, VF patch panel, or another maintenance connector. In addition, an insulating plug is provided for opening the E lead in order to make a circuit appear idle to the local switching machine.

3.31 Electrical and physical markers are provided on the J98622BL unit to indicate any of 24 special-circuit VF channels that should be interrupted as infrequently as possible. These markers are 525A diodes that are inserted in numbered pin jacks (designated SPL CKT IDENT 1, 2, 3, . . . 24) on the front panel of the maintenance connector. An electrical indication of these marked circuits is provided at the SMAS-3 testboard and at the manual access panel [3.36(g)].

3.32 Two LOOP TST (loop test) jacks on the J98622BL maintenance connector are used to enter the transmission path in order to test and adjust the SMAS-3 test facilities at the

maintenance line control panel. A GT1 TST (gating test) jack is provided for testing the gating circuits in the remote access circuit.

3.33 A TPB (test position busy) lamp on the J98622BL unit is used to indicate that the maintenance connector is being used and cannot be further accessed until released. In addition, an ALM (alarm) lamp is provided on the maintenance connector to indicate failure of the access control circuit and an ALM RLS (alarm release) key is provided for releasing the alarm circuit.

F. Manual Access Panels

3.34 Four codes of connectorized manual access panels are used in the J98629( ) frames. They are: (a) the J98622AT SMAS unit and the J98622AU non-SMAS unit for SF signaling applications and (b) the J98622BW SMAS unit and the J98622BY non-SMAS unit for CCIS applications. These units are designated 2B, 2BX, 2C, and 2CX, respectively, and are illustrated in Fig. 26 and 27.

3.35 The manual access panel provides for all tests and measurements normally performed at 4- or 6-wire VF patch panels. Provided are jacks and switches for testing transmission and signaling toward the drop (toward the switching equipment) or toward the line (toward the facility) for as many as 14 J68954T shelves.

3.36 The manual access panels have the following switches, jacks, and lamps for performing their various functions as listed in Table F.

(a) A rotary switch (designated MTCE CONN GROUP L/C/R) that is used to select the maintenance connector in one of three associated bays.

(b) A rotary switch (designated CHAN BANK) that is used to select any one of a maximum of 14 J68954T shelves used in the associated maintenance connector group.

(c) A rotary switch (designated VF CKT) that is used to select any one of the 12 VF channels in the selected J68954T shelf, a jack multiple (JK MULT) circuit, or a tandem line (TDM L) patch circuit.

(d) A pushbutton switch (designated ACC) that is used to connect the selected VF circuit to appropriate test jacks on the manual access panel.

(e) A pushbutton switch (designated ACC RLS) that is used to disconnect the selected VF circuit from the test jacks on the manual access panel.

(f) A white lamp (designated MAN ACC) that lights when the ACC switch is operated and extinguishes when the ACC RLS switch is operated.

(g) A red lamp (designated SPL CKT) that lights if the selected VF circuit is a special circuit that has been marked at the associated maintenance connector as described 3.31.

(h) A 10-pin plug (type 473A) on a retractable 6-foot cord for connecting to any desired 950A channel connector on the maintenance connector. This arrangement permits any one of the 12 VF channels in any of the associated J68954T shelves in the frame to be selected for testing.

Caution: The 473A plug should be inserted and removed only when all switches on the manual access panel are in the neutral position.

(i) Two lever switches (designated MEAS TMS LINE/DROP and MEAS NOISE LINE/DROP) that are used to open the connections between the line and drop jacks in the selected VF circuit and to make connections between the selected VF circuit and an associated KS-20805 digital transmission and noise measuring system for making level, noise, and frequency tests toward either the line or the drop.

Note: The KS-20805 digital transmission and noise measuring system has the following characteristics:

(1) Frequency: 100 to 20,000 Hz

(2) Power: -50 to +10 dBm

(3) Noise: 0 to 60 dBrn

(4) Impedance: 600 ohms terminated or 200,000 ohms bridged

(j) Two white lamps (designated TMS BSY and NOISE BSY) that light to indicate that either the transmission or noise function, respectively, of the associated transmission and noise measuring system is in use—either locally or at another test position.

(k) Two lever switches (designated SEND LINE/DROP and SEND NOR/DOWN 10 DB) that are used to open the connections between the line and drop jacks in the selected VF circuit and to make connections between the selected VF circuit and an associated milliwatt distribution system (MDS). The MDS sends a 1-kHz test tone of either -16 or -26 dBm toward the line or +7 or -3 dBm toward the drop.

(l) Two lever switches (designated M LEAD LINE ON HOOK/OFF HOOK and E LEAD DROP ON HOOK/OFF HOOK) that are used to simulate on-hook and off-hook signaling conditions on the line and drop circuits associated with the selected VF circuit. When operated, these switches also open connections between the line and drop circuits to permit external test equipment to be connected to the signaling circuits via associated jacks.

(m) Two red lamps (designated M DROP and E LINE) that are used to indicate the signaling conditions on the E and M leads associated with the selected VF circuit. The M DROP lamp lights when the drop circuit is in the on-hook condition and is extinguished when it is in the off-hook condition. Similarly, the E LINE lamp lights when the line circuit is in the on-hook condition and is extinguished when it is in the off-hook condition.

(n) A lever switch (designated LO OPR/RLS) that is used for locking the selected VF trunk out of service and for releasing it when required. An option is available to disable the LO RLS portion of the key and to permit lockout release only when an assigned code is dialed from a maintenance-line control panel.

(o) A red lamp (designated LO) that lights to indicate that the selected VF trunk is locked out of service; it is extinguished when the selected VF trunk is released.

(p) Six jacks (designated LINE IN, LINE OUT, DROP IN, DROP OUT, SIG LINE, and SIG DROP). The DROP OUT and LINE IN jacks, the LINE OUT and DROP IN jacks, and the SIG DROP and SIG LINE jacks are normally used as pairs for through connections; however, the lever switches designated MEAS TMS LINE/DROP, MEAS NOISE LINE/DROP, SEND LINE/DROP, M LEAD LINE ON HOOK/OFF HOOK, and E LEAD DROP ON HOOK/OFF HOOK are used to separate these pairs of jacks and make connections for transmission, noise, and signaling tests, as applicable.

(q) A lever switch (designated CAL CK LINE/DROP) is used for connecting the -16 and +7 dBm test tones from the MDS to the TMS for checking the accuracy of these test tones. In addition, two associated jacks, designated CAL LINE and CAL DROP can be used to check these test tones with external test equipment.

(r) A multiple jack circuit consisting of a miniature 10-pin through connector (type 950A multiple access connector) (designated JK MULT) and associated jacks (designated LINE OUT/DROP IN, LINE IN/DROP OUT, and SIG LINE/SIG DROP). Operation of the VF CKT switch to the JK MULT position permits these jacks to be used, via the ED-2C002 patch cord connected between the JK MULT connector and corresponding connectors on the maintenance connector, for long-term testing of the associated voice and signaling circuits.

3.37 Operation of the manual access panel is covered in Section 667-301-311.

G. Communications Panels

3.38 The J98626AA communications panel (Fig. 28) provides access for monitoring any VF channel selected at the manual access panel (3.34), or patched to the TDM PATCH( ) connectors on the communications panel. In addition, it provides for communication over any VF channel selected at the manual access panel, over either of two 4-wire order-wire circuits, or over any of five 2-wire circuits (PBX station lines, local station lines, or a test trunk circuit). Data set operation over one of these 2-wire circuits and tandem patching for a maximum of six VF channels are also provided for in the communications panel.

3.39 The features provided on the communications panel are as follows:

(a) Six pairs of 10-pin miniature through-type connectors [designated TDM PATCH ( )], which are cabled to a tandem patch bay. One connector of each pair is designated DROP; the other, FAC. These type 950A multiple access connectors permit the drop or facility equipment for a maximum of six defective channels to be made good via associated tandem patch bays, another communications panel, or another maintenance connector at a remote location in the same office. The FAC connectors also permit any of the six channels to be monitored.

(b) A 7-position rotary switch (designated FAC ACCESS) that connects, one at a time, the six TDM PATCH ( ) jacks to the manual access panel for testing any of six corresponding channels having failed facilities while they are patched through the communications panel as described in (a) above, and provides an AUX position for connecting to the J98626AD auxiliary communications panel or the J98626AK VF patch panel.

Note: The VF CKT switch on the manual access panel must be in the TDM L position for use of the tandem patch jacks on both the communications panel and the auxiliary communications panel.

(c) A 3-position locking lever switch (designated OW-1/MAN ACS/OW-2) that is used to connect either of two order-wire circuits or the VF circuit selected at the manual access panel to a local headset (via transmitting and receiving amplifiers) for communication over the selected 4-wire facility.

(d) A 3-position locking lever switch (designated EQPT/NOR/FAC) that is used to connect the communication circuit to either the line, the drop, or both line and drop sides of the facility selected with the OW-1/MAN ACS/OW-2 switch.

(e) A 3-position locking lever switch (designated 4W TLK/MON/2W) that is used to connect the 4-wire communication circuit to the 4-wire facility selected with the OW-1/MAN ACS/OW-2 and EQPT/NOR/FAC switches, to open the transmitting portion of the 4-wire communication circuit to permit monitoring via the receiving portion, or to disconnect the 4-wire communication circuit from the 4-wire facilities and connect the 2-wire communication circuit to 2-wire facilities.

(f) A 6-section pushbutton-type switch (designated HOLD, LINE 1, LINE 2, LINE 3, LINE 4, and LINE 5) that is used to connect the 2-wire communication circuit to any one of five trunk tie lines, local station line circuits, or test trunk circuits. Each of the LINE ( ) switches lock when operated and release when another LINE ( ) switch is operated. An operated LINE ( ) switch is indicated by a lighted white lamp under its plastic pushbutton. Operation of the red HOLD switch releases any operated LINE ( ) switch, but holds that line while communication is established on another of the five lines or while the 4-wire circuits are being accessed.

(g) A rotary dial for use with the 2-wire communication circuit when suitable dial lines are available via the LINE ( ) switches.

(h) A jack (designated EXT DATA SET) that is used to disconnect the 2-wire communication circuit from line 5 and connect an external data set in its place in order to permit data transmission on this line.

(i) A jack (designated EXT MF KEY) that permits an external multifrequency key set to be connected for key pulsing on the 4-wire facility selected with the OW-1/MAN ACC/OW-2, EQPT/NOR/FAC, and 4W TLK/MON/2W switches.

(j) A pair of jacks (designated TEL T and R) that is used to connect a 52-type headset to the 2- and 4-wire communication circuits for both VF communication and monitoring.

(k) A pair of jacks (designated CMS COMM 1A/1B) for data communication with a circuit maintenance system (Section 103-270-100) via a cathode ray tube (CRT) display unit. An associated BUSY lamp indicates that the CMS circuit is busy, either locally or at another test position.

3.40 The J98626AD auxiliary communications panel (Fig. 29) is used to provide access to VF facilities in addition to those provided for by the regular (J98626AA) communications panel and the manual access panel. It has six TDM PATCH connectors and an associated FAC ACCESS switch identical to those described in 3.39(a) and (b) and

thus it provides access to six VF channels in addition to those provided by the J98626AA panel; hence, the two panels provide for monitoring and tandem patching for a total of 12 VF channels. This panel is normally mounted (with an associated manual access panel and a J98626AA communications panel) in the center bay of three associated bays. A rotary switch (designated MTCE CONN GROUP L/C/R) permits the maintenance connectors in any of the three bays to be selected in order to provide access to a maximum of 21 maintenance connectors via a single manual access panel.

3.41 Operation of the communications panels is covered in Section 667-301-311.

H. VF Patch Panel

3.42 The J98626AK VF patch panel (Fig. 30) provides 12 pairs of 10-pin miniature through-type connectors [designated TDM PATCH ( )], which are cabled to a tandem patch bay. One connector of each pair is designated DROP; the other, FAC. These type 950A multiple access connectors permit the drop or facility equipment for a maximum of 12 defective channels to be made good and/or monitored in addition to any being monitored or patched via the communications panels.

3.43 A 12-position rotary switch (designated FAC ACCESS) connects, one at a time, the 12 TDM PATCH ( ) jacks to the manual access panel (via the AUX position on the communications panel) for testing any of 12 corresponding channels having failed facilities while they are patched through the VF jack panel as described in 3.42.

> ***Note:*** The VF CKT switch on the manual access panel must be in the TDM L position for use of these tandem patch jacks.

I. Power Supply

3.44 Two arrangements are used for obtaining filtered -24 volts for the J98629( ) frames—J87304A 48- to 24-volt dc converters or a -24 volt regulated office supply. When the latter arrangement is used, type 116A power units are plug-in mounted in slots in an ED-7C037-30, ED-7C067-30, or ED-7C068-30 shelf. The J87304A power supply and the 116A power unit are shown in Fig. 31.

3.45 The J87304A, L1 power supply is a dc-to-dc converter that converts 48 volts dc (from the 48-volt office battery) to 24 volts dc. This is a plug-in type unit used with the J87304A, L2 filter capacitor to supply 24 volts dc to the J99335YA tone generator and transfer units, the ED-1C231 tone transfer and alarm units, the signaling units, and the echo suppressors.

3.46 The 24-volt output from the power supply is well-regulated and filtered, and it is isolated from the 48-volt office battery. With an input of 44 to 52 volts, the power supply produces an output of 23.0 to 24.75 volts. It is protected from overload by fuses in the fuse and fuse alarm panels (3.48 through 3.52). INPUT - and + and OUTPUT - and + jacks for testing the power supply are provided on the front panel of each unit. The list 2 filter capacitor provides additional reduction of longitudinal noise as required in the DFSG UTE frames.

> ***Caution: The J87304A, L1 power supply should always be equipped with the J87304A, L2 filter capacitor when used in the DFSG UTE frames.***

3.47 The J87304A power supply is described in detail in CD-81868-01; the 116A power unit in CD-82253-01.

J. Fuse Panels

3.48 Various fuse panels are used in the J98629( ) frames as required for the particular arrangements. The panels used in each of the frames are listed by frame and bay in Table E. Typical fuse panels used in the J98629( ) frames are illustrated in Fig. 32.

3.49 The fuse panels provide fuses plus signaling-lead resistors, resistance lamps, and alarm circuits, as required by the applicable J98629( ) frames. Some fuses for the same circuits are used in more than one fuse panel; thus, to enable easy identification, all fuses used in the J98629( ) frames are listed in Section 356-016-000 by designation and application.

3.50 In addition to the fuses provided on all of the fuse panels, some of these panels have red major (MJ) and amber minor (MN) lamps and provide relay closures for remote indication of alarms.

3.51 The ED-7C038 fuse panels have resistance lamps to provide regulation for the 20-Hz ringing tone supply connected to the FUA signaling units.

3.52 In addition to the protection provided by its fuses, the ED-6G403 fuse and fuse alarm panel has an alarm circuit that operates in the event any of its fuses are blown or the overvoltage/undervoltage circuit operates. It has one red PC (power converter) ALM lamp, one red F (fuse) ALM lamp, and four white PF (power failure) lamp and key assemblies. The PC ALM lamp lights to indicate a blown P( ) fuse due to failure of any of one to four associated J87304A power converters (3.44 through 3.47). The F ALM lamp lights to indicate loss of any fuse on the ED-6G403 panel, other than the four P( ) fuses, and thus upon failure of at least one of the following:

(a) One or more of the power failure alarm circuits.

(b) One or more of the signaling units.

(c) The ALM fuse.

The PF( ) lamps light and the alarm circuit operates in the event the output voltage from the corresponding power converters drops below or rises above the preestablished range of 24 ±2.4 volts. When a PF( ) lamp is lighted and the corresponding PF( ) key is pressed, the lamp will extinguish and the corresponding power converter alarm circuit will reset—provided that the trouble condition has been corrected.

> ***Note:*** In the event a -24 volt regulated office supply is used, the ED-6G403 panel and associated ED-6G403-30 shelf and J87304A power converters will be replaced with an ED-7C037-30, ED-7C067-30, or ED-7C068-30 fuse panel and associated 116A power units.

K. Echo Suppressor

3.53 The 4A echo suppressor is used in the J98629J, W, and Y frames for suppressing echoes on long telephone connections. It produces suppression by means of a high loss inserted in the echo path.

3.54 The echo suppressor consists of three plug-in units that are shelf-mounted in the DFSG UTE frames. They are: a tone disabler, a bridging amplifier, and a logic unit as shown in Fig. 33.

3.55 The 4A echo suppressor is described in detail in Section 332-414-100.

L. Carrier Group Alarm Control Unit

3.56 The J99335YH carrier group alarm control unit (Fig. 34) is used (in conjunction with one J68954BJ CFA unit and twelve F-type auxiliary signaling units) to activate all trunk processing functions provided.

3.57 Upon receiving an alarm indication from the associated CFA unit, the carrier group alarm control unit, via the associated auxiliary signaling units, releases all trunk circuits in the corresponding carrier group and causes outgoing trunks (except one-way trunks) to appear busy as long as the alarm condition exists.

3.58 An ACO1 key is provided on this unit to silence the office alarms and to permit, when operated, substitution of a good transmission facility for a defective facility and to restore the auxiliary signaling units to service. An ACO1 lamp lights when the ACO1 key is operated. It is extinguished when the ACO1 key is released.

3.59 The J99335YH carrier group alarm control is described in CD-1C284-01.

M. Terminal Strips

3.60 Various terminal strip or connector arrangements are used for office cabling connections to the J98629( ) frames. The ED-1C233 terminal strip is illustrated in Fig. 35.

4. DFSG/A6B CONVERTIBILITY

4.01 By changing appropriate transmission and carrier supply plug-in units and cabling the bays to the GDF instead of the SGDF, one DFSG bank is convertible to five A6B banks in both the J68954( ) bays and the J98629( ) frames.

5. REFERENCES

5.01 Following is a list of references associated with this section.

Bell System Practices

103-231-104	KS-20805 Measuring System—Description
103-270-100	Circuit Maintenance System—Description
179-362-101	FW ( ) Signaling Units
179-363-101	FU ( ) Signaling Units
179-364-101	F-Auxiliary Signaling Units
179-366-101	FM ( ) Signaling Units
212-517-101	MTF SD-68587—Description
212-517-501	MTF SD-68587—Test
212-530-501	Incoming (One-Way) IT Trk Ckt Test Using SD-68359
212-534-501	Incoming Toll Tandem Trk Ckt Test Using SD-68359
212-560-501	Outgoing (One-Way) IT Trk Ckt Test Using SD-68359
212-567-501	Toll Switching Trunks—Operational Tests Using MTF SD-68587
212-567-502	Toll Switching Trunks—Transmission Tests Using MTF SD-68587
212-567-503	Toll Switching Trunks—Miscellaneous Tests & Features Using MTF SD-68587
212-570-101	IMTF e/w SMAS-3 Maint Line Cont Pan.—Descr
212-570-501	IMTF e/w SMAS-3 Maint Line Cont Pan.—Test
212-571-501	Intertoll Trk Operational Tests Using the IMTF
212-571-502	Intertoll Trk Transmission Tests Using the IMTF
212-571-503	Intertoll Trk Misc Tests Using the IMTF
212-572-101	Trk Status Display System Associated With the IMTF Desc and Operation
212-572-501	Trk Status Display System Associated With the Test
212-580-501	Two-Way IT Trk Ckt Test Using SD-68359
332-414-100	4A Echo Suppressor
356-016-000	A6B/DFSG Bank—TOP
356-016-104	A6B Channel Bank—Descr
356-016-105	A6B Channel Bank—J68954( ) Bays and J98629( ) Frames—Descr
356-016-106	DFSG Bank—Descr
365-150-110	D3 Chan Bank With SMAS—Descr
365-150-310	D3 Chan Bank With SMAS—Method of Operation
667-301-100	Switched Maintenance Access System No. 3
667-301-311	Maint Conn, Manual Access Panel, & Comm Panel—Operation
667-301-321	Maint Line Cont Panel in the MFT & IMTF—Method of Operation
667-301-506	Maint Conn SD-1C454, Manual Access Pan. SD-1C491, & Comm Pan. SD-99555—Test
667-301-507	Maint Line Cont Panel in the MTF & IMTF—Test
660-642-301	Overall Procedures for Testing & Trouble Sectionalizing IT Trks Using IMTF With SMAS-3
660-640-301	Overall Procedures for Testing & Trouble Sectionalizing TC Trks Using IMTF With SMAS-3

Drawings

CD-1C224-01	Tone Generator and Transfer Circuit

CD-1C225-01	FW( ) Signaling Circuit
CD-1C226-01	FU( ) Signaling Circuit
CD-1C240-01, CD-1C240-02, and CD-1C286-01	F-Signaling Application Schematic
CD-1C296-01	FM( ) Signaling Circuit
CD-1C454-01	Maintenance Connector Circuit
CD-1C491-01	Manual Access Panel (2B)
CD-1C637-01	Manual Access Panel (2C)
CD-1C638-01	Manual Access Panel (2CX)
CD-51349-01	VF Test, Monitor, and Talk Panel
CD-51623-01	DFSG Bank—J68954( ) Bays—Application Schematic
CD-7C013-01	DFSG Bank—J98629K and N Frames—Application Schematic
CD-7C015-01	DFSG Bank—J98629T, U, W, and Y Frames—Application Schematic
CD-7C016-01	DFSG Bank—J98629G, H, and J Frames—Application Schematic
CD-7C019-01	DFSG Bank—J98629P and R Frames—Application Schematic
CD-51349-01	VF Test, Monitor, and Talk Panel
CD-81868-01	Power Converter Circuit
CD-82253-01	Power Filter
CD-96619-01	Manual Access Panel (2BX)
CD-99552-02 and CD-99553-02	Unitized Terminal Equipment
CD-99555-01	Communications Panels and VF Patch Panel
CD-99587-01	Carrier Group Conditioning Circuit
CD-99740-02	Attenuator Circuits

TABLE A

DFSG BANKS AND VF CHANNELS IN J68954( ) BAYS

BAY CODE	BAY SIZE	DFSG BANKS			TOTAL VF CHANNELS
		PRIMARY BAY	SECONDARY* BAY	TOTAL	
J68954A	7 Foot (Double)	6	6	12	720
J68954B	11 1/2 Foot (Single)	5	5	10	600

* Used only with a primary bay.

TABLE B

J98629( ) FRAMES – BASIC ARRANGEMENTS

CODE	HEIGHT	VF CHANNELS	SIGNALING SYSTEM	ECHO SUPPRESSOR USED	USED WITH J98629( )	PRINCIPAL APPLICATION
J98629G	11'6" S	168	CCIS	No	H	CSBR – MSG
J98629H	11'6" S	144	CCIS	No	G	
J98629J	11'6" D	72	CCIS	Yes	Alone	CSBR – MSG
J98629K	7' D	96	SF	No	N	ESS – MSG
J98629N	7' D	96	SF	No	K	
J98629P	7' T	96	SF	No	R	ESS – MSG or SPL SRV
J98629R	7' T	96	SF	No	P	
J98629T	7' S	96	CCIS	No	U	ESS – MSG
J98629U	7' D	192	CCIS	No	T	
J98629W	7' D	48	CCIS	Yes	Y	ESS – MSG
J98629Y	7' D	48	CCIS	Yes	W	

Note: S in the height column indicates a single-bay frame, D indicates a double-bay frame, and T indicates a triple-bay frame.

TABLE C

J98629( ) FRAME EQUIPMENT – SF SIGNALING

EQUIPMENT	QUANTITY IN J98629( ) FRAME											
	K		N		P			R				
	BAY NO.		BAY NO.		BAY NO.			BAY NO.				
	1	2	1	2	1	2	3	1	2	3		
Terminal Strip	1	0	1	0	1	1	1	1	1	1		
Fuse and Alarm Panel*												
ED-2C172 Bat., Flt, and Loop Res Pnl	0	1										
or												
ED-7C038 Fuse and Loop Res Pnl	0	1										
J87304A 48-V to 24-V Power Supply	0	4	0	4	0	0	4	0	0	4		
or												
116A Power Unit	0	4	0	4	0	0	4	0	0	4		
J99335W( ) FW( ) F-Signaling Unit	48	48	48	48								
J99335U( ) FU( ) F-Signaling Unit					36	24	36	36	24	36		
J99335( ) Auxiliary Signaling Unit					36	24	36	36	24	36		
ED-2C142 CGC, OSC, and Transfer Shelf					0	1	0	0	1	0		
ED-1C231 Tone Transfer and Alarm Shelf	1	0	1	0								
J99335YA Tone Generator and Transfer Unit	2	0	2	0	0	2	0	0	2	0		
J99335YH Carrier Group Alarm Control Unit					0	8	0	0	8	0		
J68954T DFSG Transmission Shelf	4	4	4	4	4	0	4	4	0	4		
J68954L Channel Carrier Supply Shelf			1	0				0	1	0		
J68954M Channel Carrier Supply Shelf			1	0				0	1	0		
J68954N CFA Carrier/Pilot Supply Shelf			0	1				0	1	0		
J68954P DFSG Carrier/Pilot Supply Shelf			0	1				0	1	0		
ED-7C075 Secondary Distribution Shelf	1	0			0	1	0					
ED-7C076 Tertiary Distribution Shelf	1	0	1	0	0	1	0					
J98626AA Communications Panel	0	1			0	1	0					
J98626AD Auxiliary Communications Panel	0	1			0	1	0					
J98622BK or BL Maintenance Connector	2	2	2	2	0	4	0	0	4	0		
J98622AT or AU Manual Access Panel	1	0			0	1	0	0	1	0		

Note: The FW( ) and FU( ) signaling units may be replaced with the FM( ) unit to convert to CCIS.

* See Table E for details.

TABLE D

J98629( ) FRAME EQUIPMENT – CCIS SIGNALING

EQUIPMENT	QUANTITY IN J98629( ) FRAME													
	G	H	J		T	U		W		Y				
	BAY NO.	BAY NO.	BAY NO.		BAY NO.	BAY NO.		BAY NO.		BAY NO.				
	1	1	1	2	1	2	3	1	2	3	4			
Terminal Strip Fuse and Alarm Panel*	2	2	1	1	1	1	1			1	0			
J87304A 48-V to 24-V Power Supply			4	4				4	0	0	4			
or 116A Power Unit	2	2	4	4	1	2	0	4	0	0	4			
J98624AJ Attenuator Shelf	14	12	3	3	8	8	8	2	2	2	2			
J68914AA, AB, AC 4A Echo Suppressor Units			36	36				24	24	24	24			
J68954T DFSG Transmission Shelf	14	12	3	3	8	8	8	2	2	2	2			
J68954L Channel Carrier Supply Shelf		1	1	0		0	1	0	1					
J68954M Channel Carrier Supply Shelf		1	1	0		0	1	0	1					
J68954N CFA Carrier/Pilot Supply Shelf		1	0	1		0	1			1	0			
J68954P DFSG Carrier/Pilot Supply Shelf		1	0	1		0	1			1	0			
ED-7C075 Secondary Distribution Shelf			1	1	1	1	0	0	1	1	0			
ED-7C076 Tertiary Distribution Shelf			1	1	1			0	1	1	0			
J68954R Secondary Distribution Shelf		1												
J68954S Secondary Distribution Shelf		1												
J98626AA Communications Panel		1	0	1	1	1	0	0	1					
J98622BK or BL Maintenance Connector	7	6	2	1	4	4	4	1	1	1	1			
J98622BW or BY Manual Access Panel		1	1	0	1	1	0	1	0					
J98626AK VF Patch Panel	1		1	1	1									

* See Table E for details.

TABLE E

FUSE PANELS USED IN J98629( ) FRAMES

PANEL	FRAME	BAY NO.
ED-2C166	P, List 1 R, List 1	2 2
ED-6G403	J, List 2 K, List 6 N, List 2 P, List 6 and 8 R, List 2 W, List 2 Y, List 2	1 and 2 2 2 3 3 1 4
ED-7C037	J, List 3 K, List 7 N, List 3 P, List 7 and 9 R, List 3 W, List 3 Y, List 3	1 2 2 3 3 1 4
ED-7C038	K, List 7 or N, List 3	2 2
ED-7C059	K, List 1, 6, and 7	1
ED-7C060	N, List 2 and 3	1
ED-7C061	W, List 1, 2, and 3 Y, List 1, 2, and 3	2 4
ED-7C062	Y, List 4	4
ED-7C063	J, List 2	1
ED-7C064	J, List 4	2
ED-7C065	J, List 3	1
ED-7C066	G, List 1 H, List 1 U, List 1	1 1 1
ED-7C067	G, List 1 H, List 1 U, List 1	1 1 1
ED-7C068	T, List 1 and 6	1
ED-7C095	P, List 7 and 9 R, List 3	1 1
ED-7C096	P, List 6 and 8	1

Note: Either the ED-6G403 panel or the ED-7C037 panel, but not both, will be used in each frame so indicated.

TABLE F

PANEL	APPLICABLE ITEMS																	
	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r
J98622AT		▒	▒	▒	▒	▒	▒		▒	▒	▒	▒	▒	▒	▒	▒	▒	▒
J98622AU								▒	▒	▒	▒	▒	▒	▒	▒	▒	▒	
J98622BW	▒	▒	▒	▒	▒	▒	▒		▒	▒	▒					▒	▒	▒
J98622BY								▒	▒	▒	▒					▒	▒	

▒ = Used ☐ = Not Used

Note: In addition to the above, the SIG LINE and SIG DROP jacks (part of Items p and r) and the M LEAD LINE and E LEAD DROP switches (part of Item p) are not used on the J98622BW and BY panels.

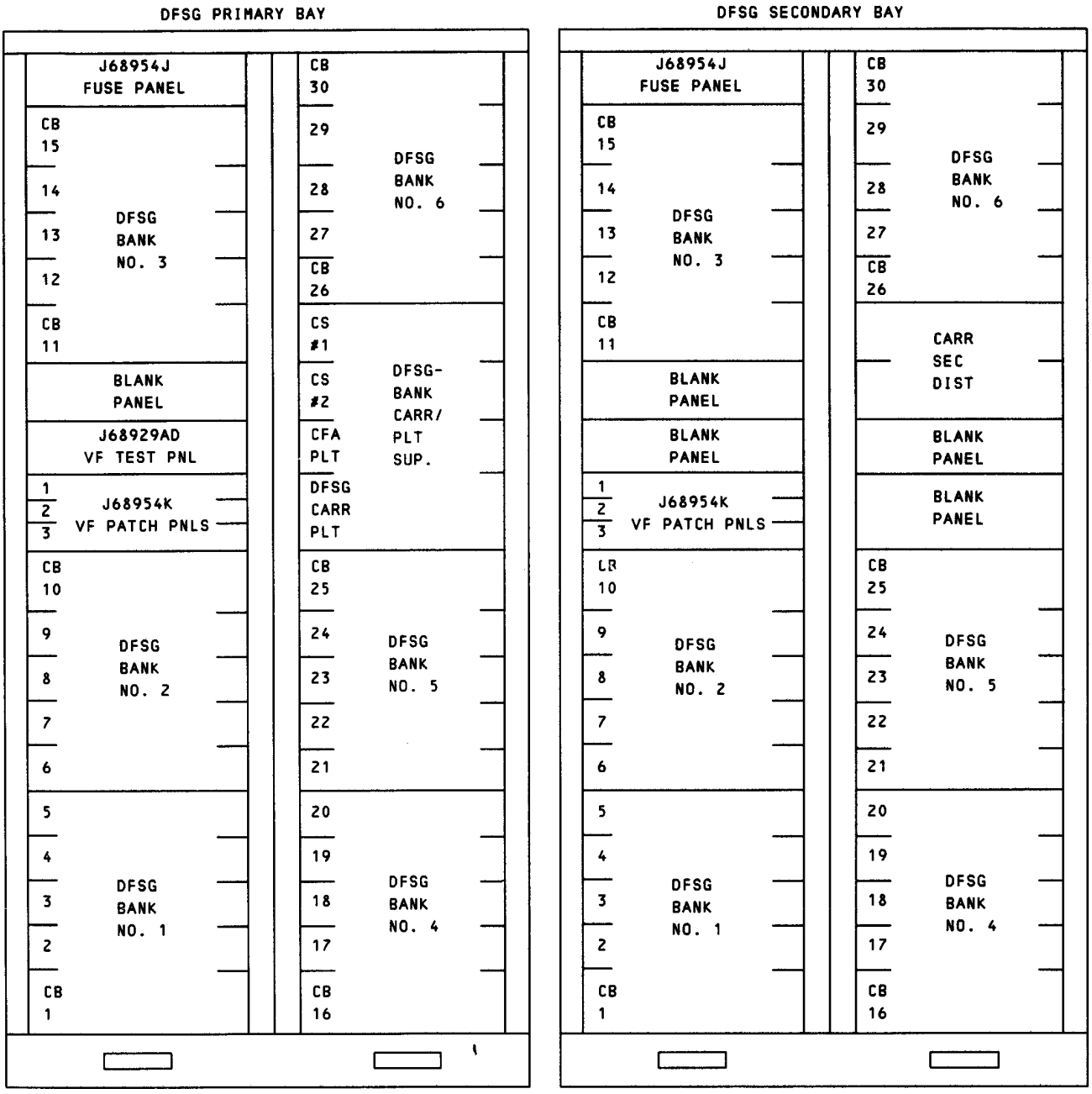


Fig. 1—J68954A Bay Equipped with DFSG Banks and Associated Equipment—Front View

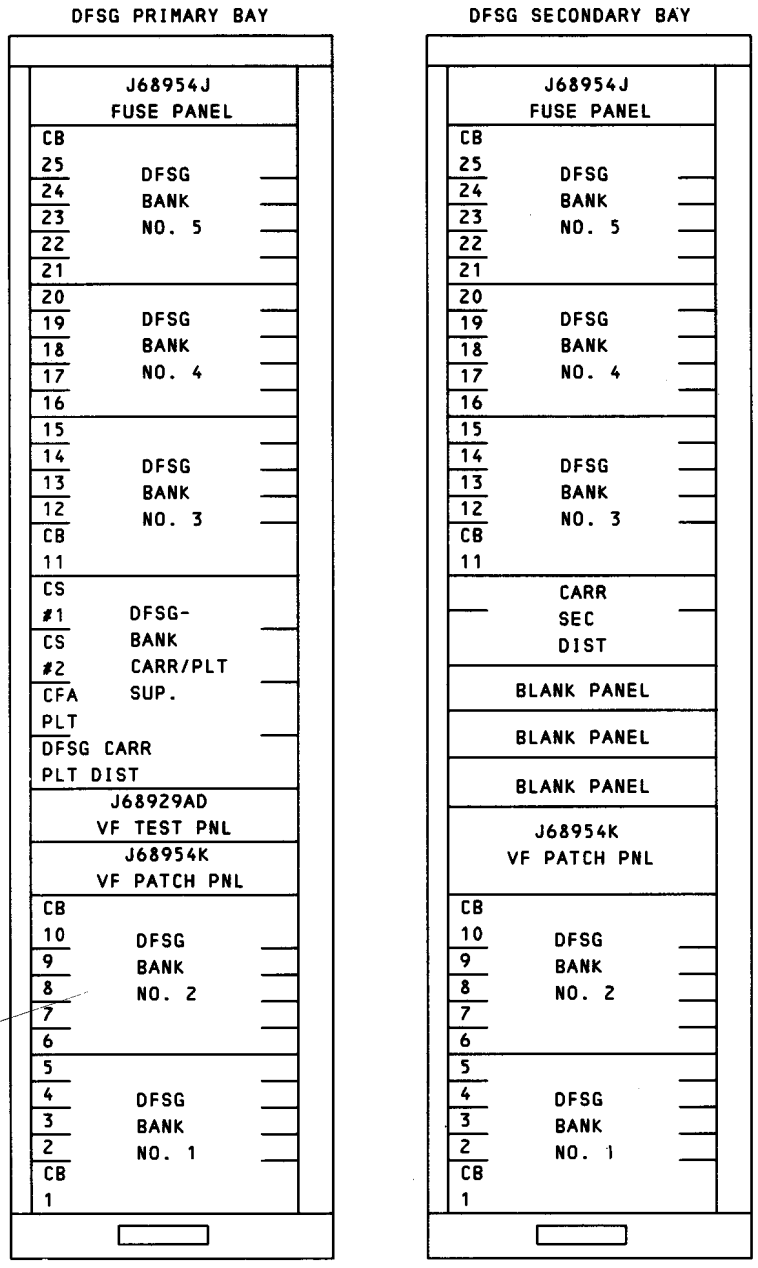


Fig. 2—J68954B Bay Equipped with DFSG Banks and Associated Equipment—Front View

J68954T SHELF 4	MULTIPLE ACCESS CONNECTORS	CHAN BK -12V REG J68954-BF ◎ -12V ◎ GRD	MODEM CHAN 1 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 2 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 3 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 4 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 5 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 6 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 7 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 8 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 9 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 10 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 11 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 12 J68954-BG ○ GAIN ADJ	DFSG TRMT J68954-BD	DFSG TRMT J68954-BE ○ PIL ALM	CFA UNIT J68954-BJ ○ TRMT FAIL ○ RCV FAIL	
J68954T SHELF 4	MULTIPLE ACCESS CONNECTORS	CHAN BK -12V REG J68954-BF ◎ -12V ◎ GRD	MODEM CHAN 1 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 2 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 3 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 4 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 5 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 6 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 7 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 8 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 9 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 10 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 11 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 12 J68954-BG ⊘ GAIN ADJ	DFSG TRMT J68954-BD	DFSG RCVG J68954-BE ○ PIL ALM	CFA UNIT J68954-BJ ○ TRMT FAIL ○ RCV FAIL	DFSG COMBG J68954-BA ◎ TST ⊘ ADJ
J63954T SHELF 3	MULTIPLE ACCESS CONNECTORS	CHAN BK -12V REG J68954-BF ◎ -12V ◎ GRD	MODEM CHAN 1 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 2 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 3 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 4 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 5 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 6 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 7 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 8 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 9 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 10 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 11 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 12 J68954-BG ⊘ GAIN ADJ	DFSG TRMT J68954-BD	DFSG RCVG J68954-BE ○ PIL ALM	CFA UNIT J68954-BJ ○ TRMT FAIL ○ RCV FAIL	DFSG PIL SEC DIST J68954-BC ◎ TST ⊘ ADJ
J63954T SHELF 2	MULTIPLE ACCESS CONNECTORS	CHAN BK -12V REG J68954-BF ◎ -12V ◎ GRD	MODEM CHAN 1 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 2 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 3 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 4 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 5 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 6 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 7 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 8 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 9 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 10 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 11 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 12 J68954-BG ⊘ GAIN ADJ	DFSG TRMT J68954-BD	DFSG RCVG J68954-BE ○ PIL ALM	CFA UNIT J68954-BJ ○ TRMT FAIL ○ RCV FAIL	DFSG SPLIT J68954-BB ◎ TST ⊘ ADJ
J68954T SHELF 1	MULTIPLE ACCESS CONNECTORS	CHAN BK -12V REG J68954-BF ◎ -12V ◎ GRD	MODEM CHAN 1 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 2 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 3 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 4 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 5 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 6 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 7 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 8 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 9 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 10 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 11 J68954-BG ⊘ GAIN ADJ	MODEM CHAN 12 J68954-BG ⊘ GAIN ADJ	DFSG TRMT J68954-BD	DFSG RCVG J68954-BE ○ PIL ALM	CFA UNIT J68954-BJ ○ TRMT FAIL ○ RCV FAIL	

NOTE:
EQUIVALENT PLUG-IN UNITS (J68929AR ~ J68954BG AND J68929BC ~ J68954BJ) MAY BE USED IN THESE SHELVES.

Fig. 3—The DFSG Bank—As Equipped for J68954( ) Bays—Front View

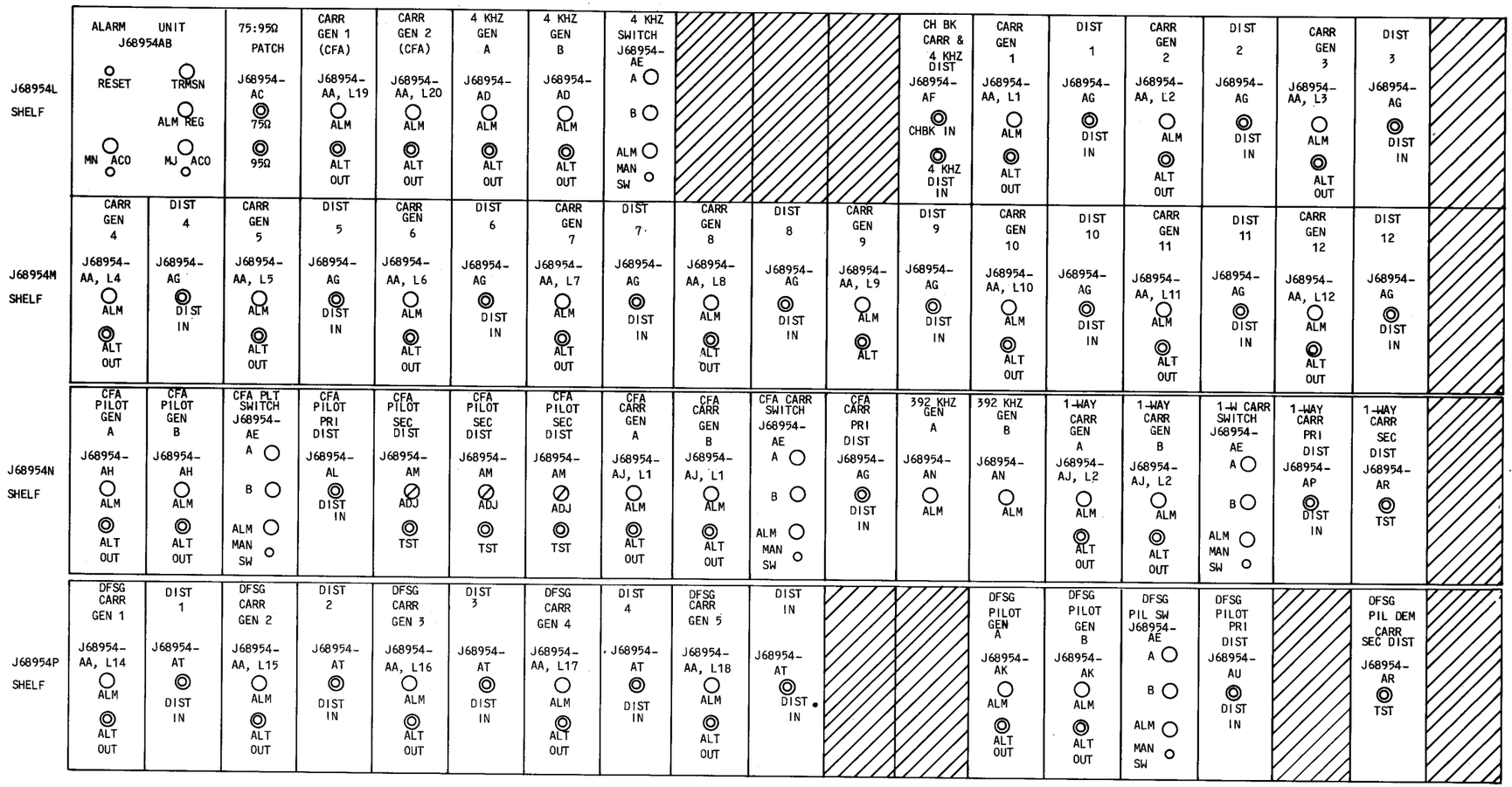


Fig. 4—DFSG—Bank Carrier/Pilot Supply as Equipped for J68954( ) Bays (Bay No. 1) and J98629H Frames

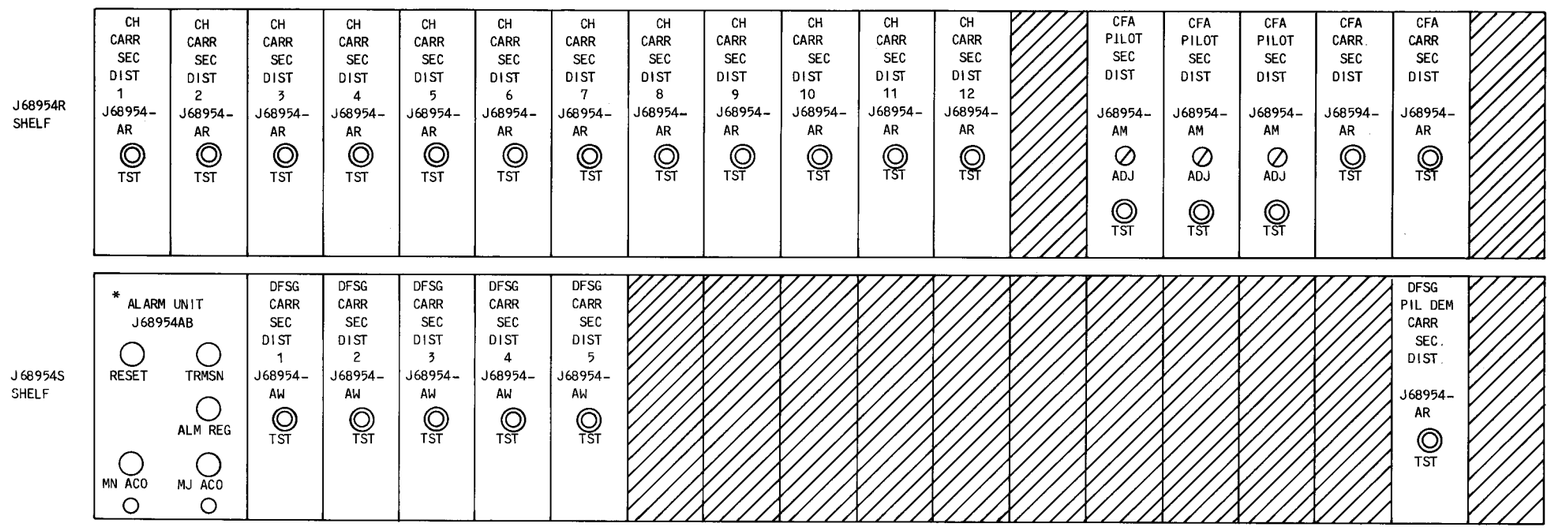


Fig. 5—DFSG-Bank Carrier/Pilot Supply as Equipped for J68954( ) Bays (Bay No. 2) and J98629H Frames

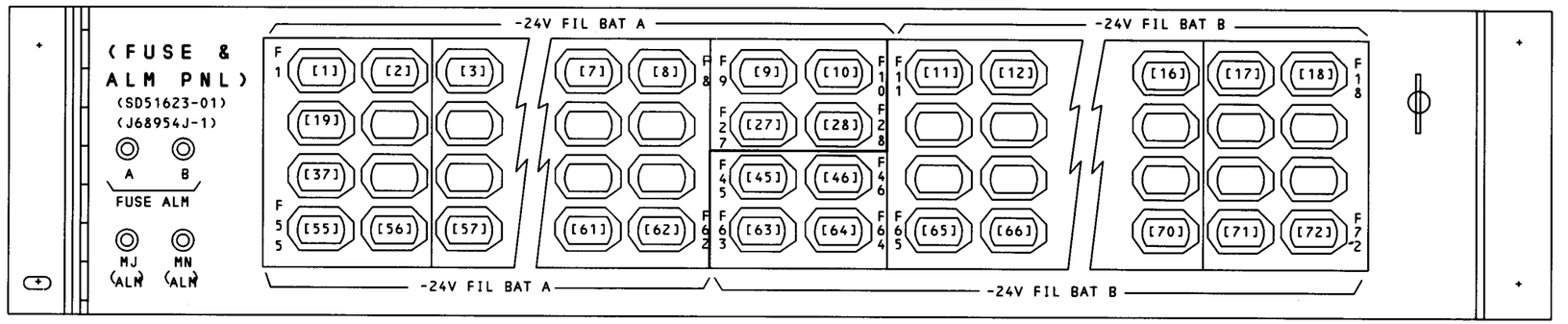


Fig. 6—J68954J Fuse and Alarm Panel—Front View

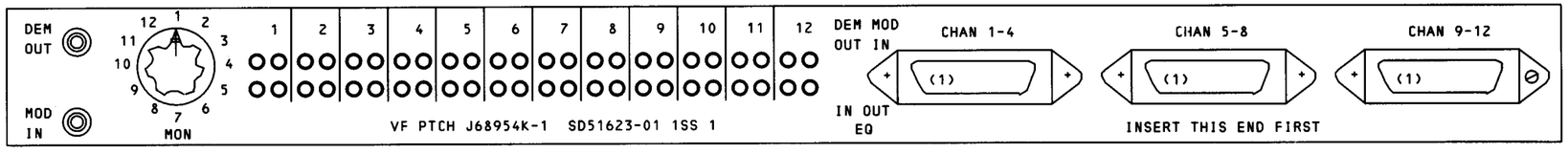
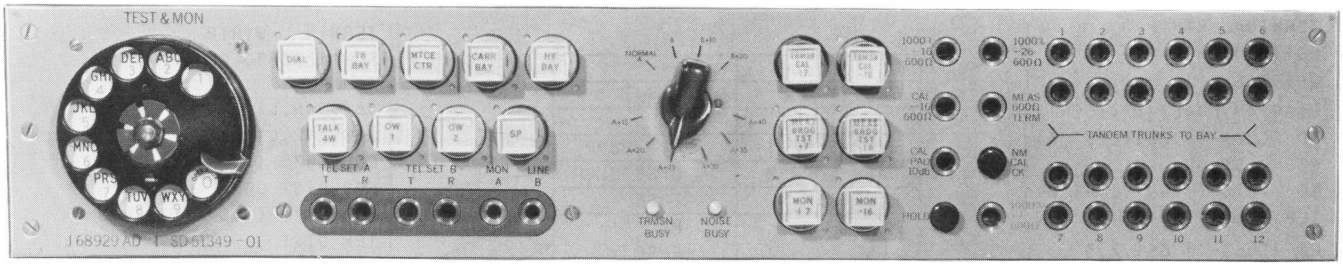
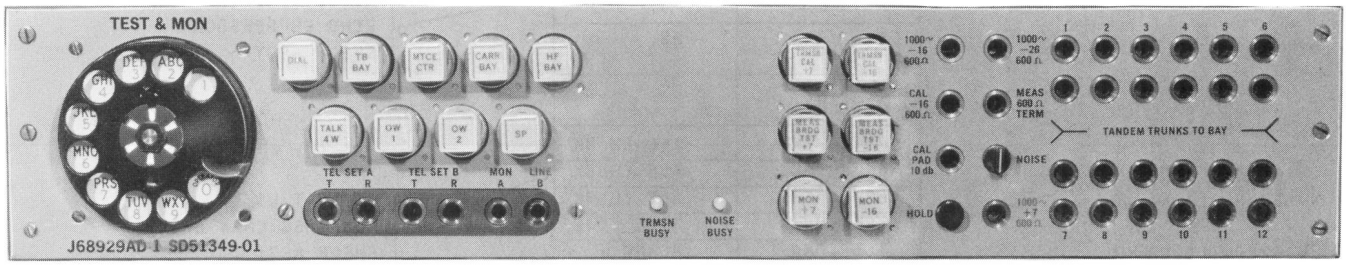


Fig. 7—J68954K VF Patch Panel—Front View



FOR 40B T&NMS



FOR KS-20805 T&NMS

Fig. 8—J68929AD VF Test, Monitor, and Talk Panel

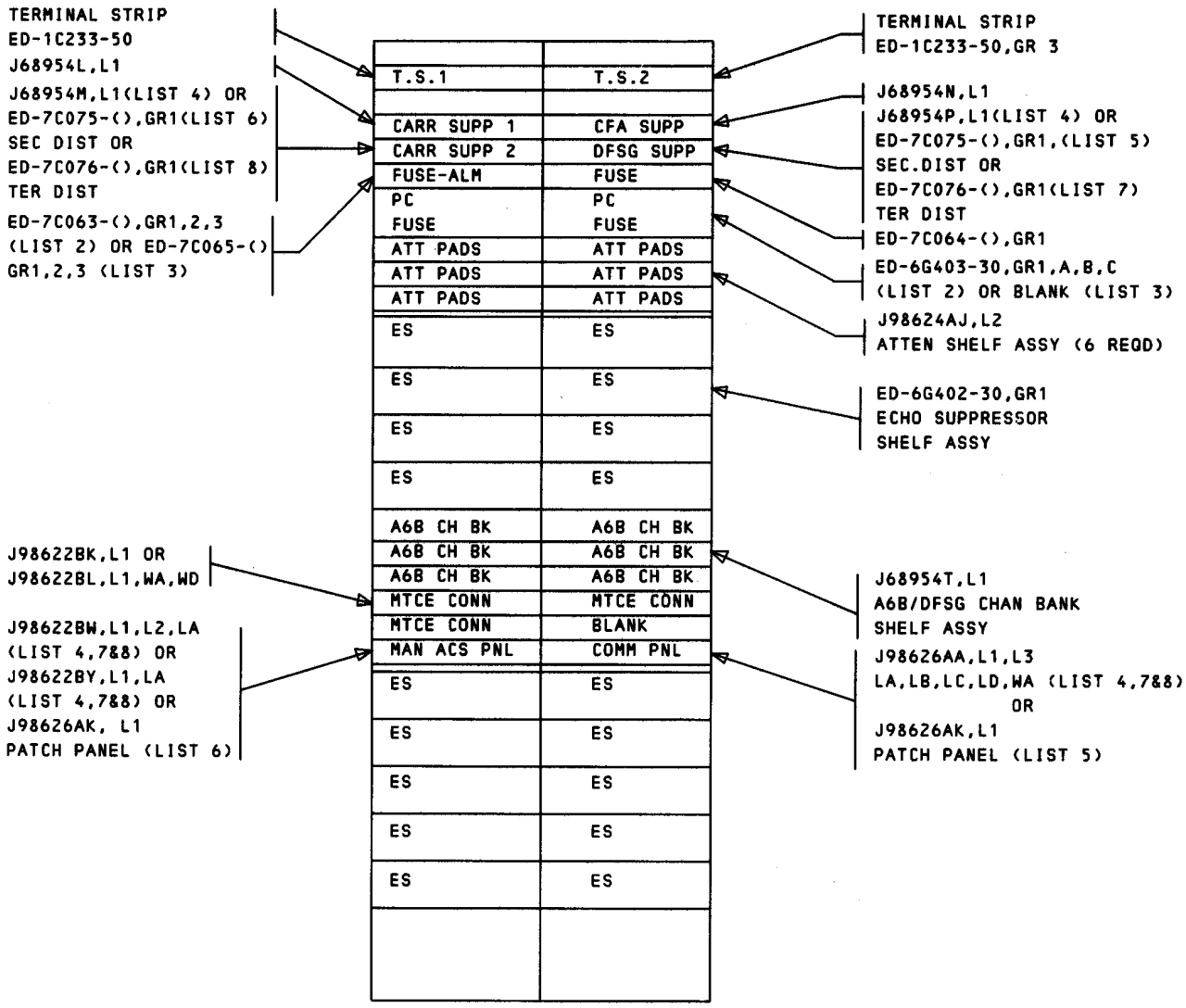


Fig. 9—DFSG Unitized Terminal Equipment—J98629J Frame

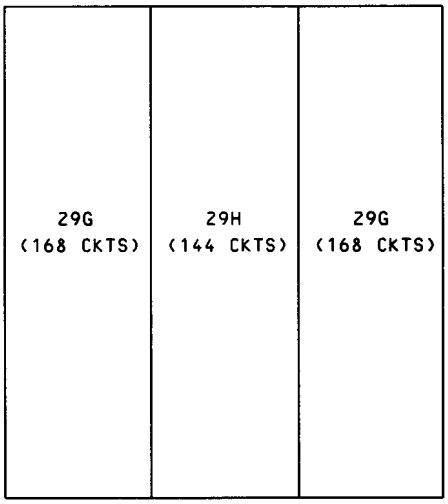


Fig. 10—J98629G and H Frames Optimum Arrangement

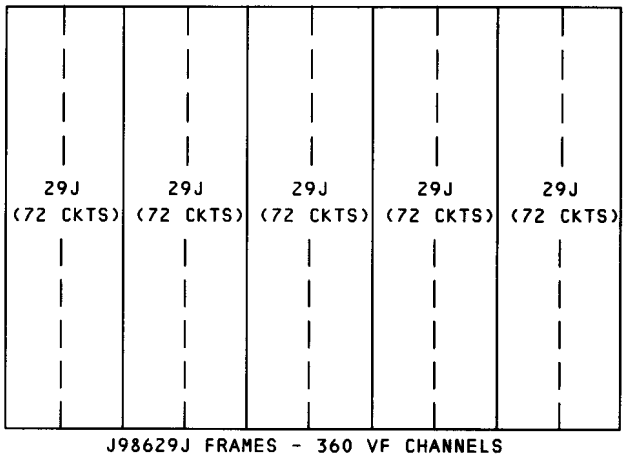


Fig. 11—J98629J Frames—Optimum Arrangement

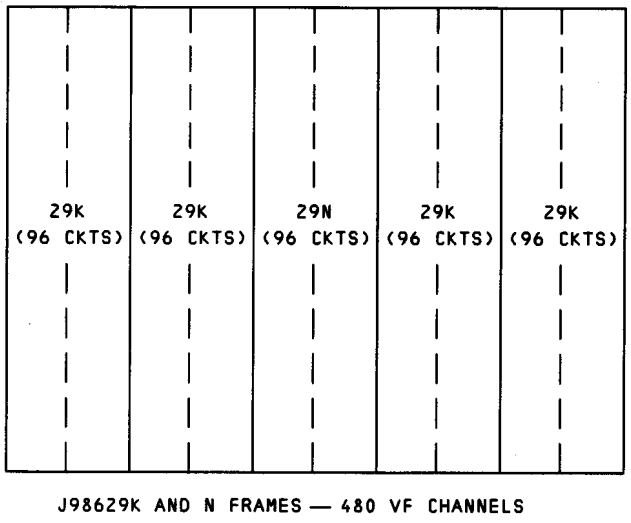


Fig. 12—J98629K and N Frames—Optimum Arrangement

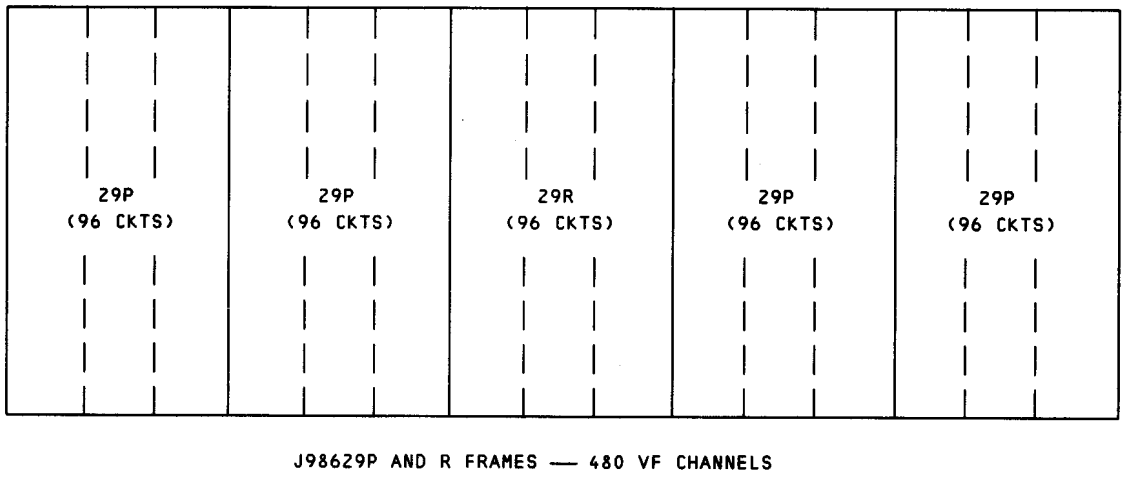


Fig. 13—J98629P and R Frames—Optimum Arrangement

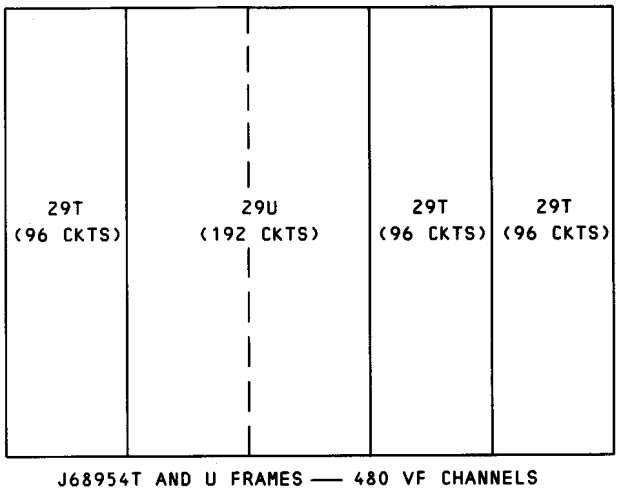


Fig. 14—J98629T and U Frames Optimum Arrangement

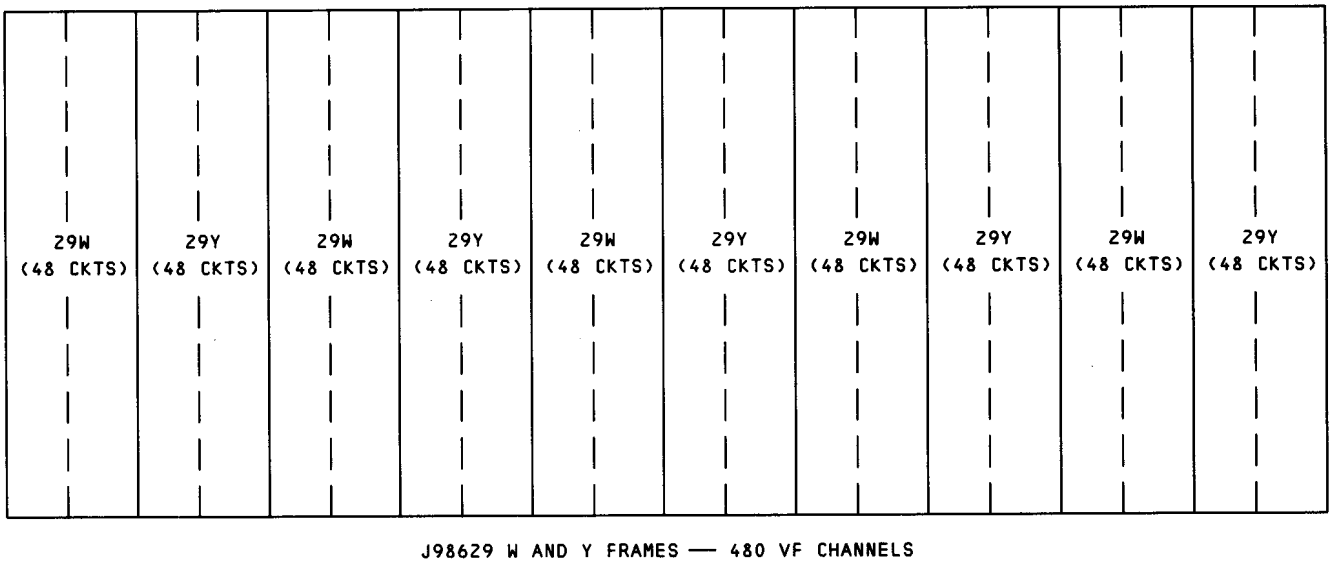
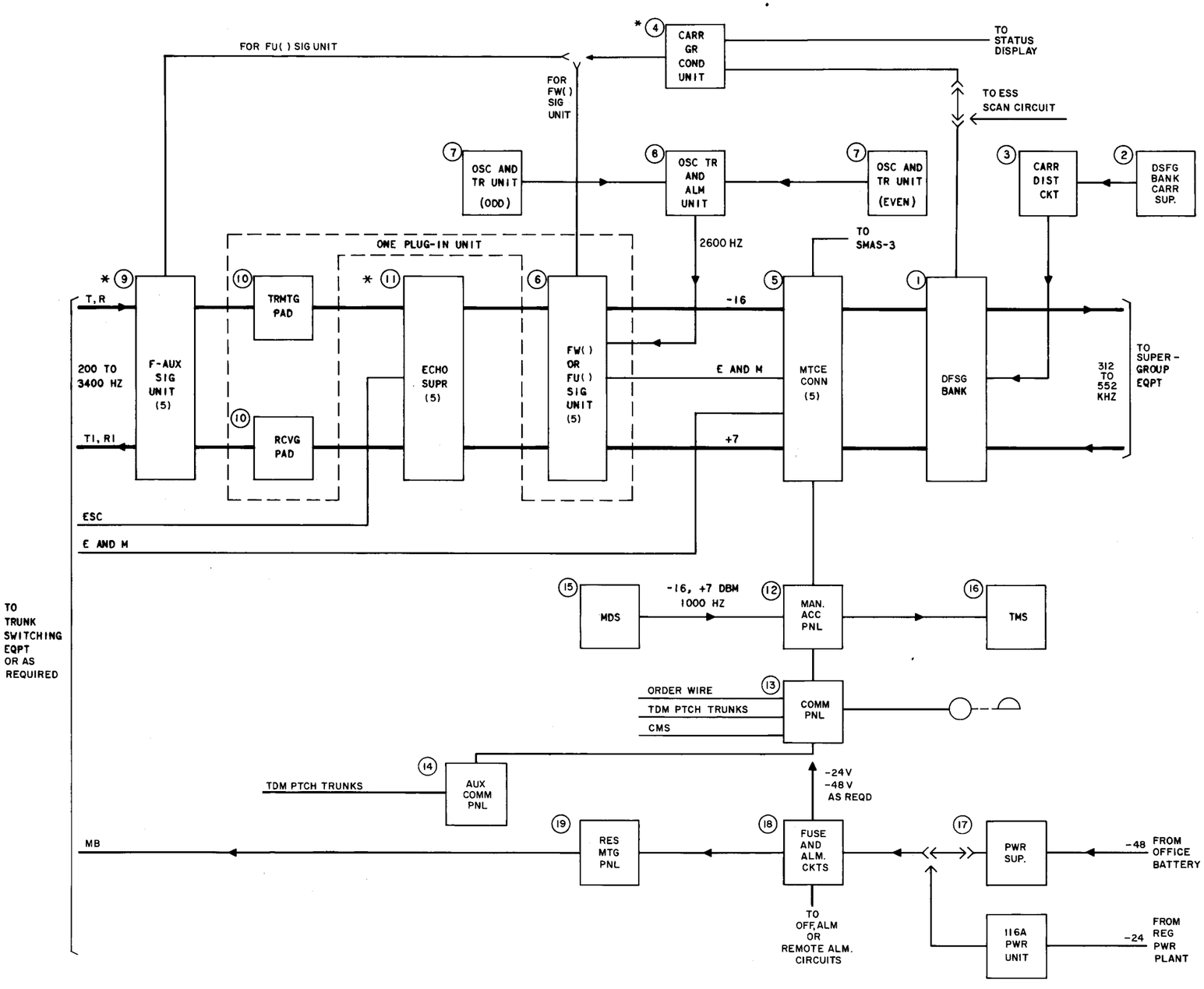


Fig. 15—J98629W and Y Frames—Optimum Arrangement



LEGEND:

(1) TRANSLATES VF TO SUPERGROUP FREQUENCIES-TRANSMITTING. TRANSLATES SUPERGROUP FREQUENCIES TO VF - RECEIVING.

(2) GENERATES CHANNEL, DSFG, AND CFA CARRIER FREQUENCIES.

(3) DISTRIBUTES CHANNEL, DFSG, AND CFA CARRIER FREQUENCIES.

(4) REMOVES VF CIRCUITS FROM SERVICE IF CARRIER FAILS.

(5) PERMITS LOCAL AND REMOTE TESTING OF VF CHANNELS. PROVIDES FOR MAKE-GOOD PATCHING OF VF CHANNELS.

(6) APPLIES IN-BAND SIGNALING TO VF CHANNEL - TRANSMITTING. EXTRACTS IN-BAND SIGNALING FROM VF CHANNEL - RECEIVING.

(7) GENERATES 2000-HZ TONE FOR SIGNALING - TRANSMITTING. IF ONE OSCILLATOR FAILS, GOOD UNIT ASSUMES LOAD OF DEFECTIVE UNIT.

(8) PROVIDES ALARM INDICATIONS IF 2600-HZ OSCILLATOR FAILS.

* (9) PROVIDES INTERFACE BETWEEN FUA SIGNALING UNIT (6) AND SWITCHING EQPT.

(10) ADJUSTS TRMTG AND RCVG VF POWER TO STANDARD LEVELS.

* (11) SUPPRESSES ECHOES ON LONG TELEPHONE CONNECTIONS.

(12) APPLIES TEST TONE TO VF-DROP OR VF-LINE TEST POINT. APPLIES VF-DROP OR VF-LINE TEST POINT TO TMS. PROVIDES FOR LONG-TERM-TEST PATCHING.

(13) PROVIDES FOR TANDEM MAKE-GOOD PATCHING OF VF CHANNELS. PROVIDES FOR MONITORING AND TESTING OF PATCHED VF CHANNELS. PROVIDES FOR ORDER-WIRE COMMUNICATION. PROVIDES FOR CMS DATA COMMUNICATION.

(14) PROVIDES FOR SELECTION OF MAINTENANCE CONNECTOR GROUP FOR TANDEM MAKE-GOOD PATCHING OF VF CHANNELS.

(15) PROVIDES VF TEST TONE (1000 HZ AT -16 AND + 7 DBM).

(16) MEASURE VF FREQUENCY, POWER, AND NOISE.

(17) CONVERTS -48 VOLTS DC TO -24 VOLTS DC OR FILTERS -24 VOLTS DC.

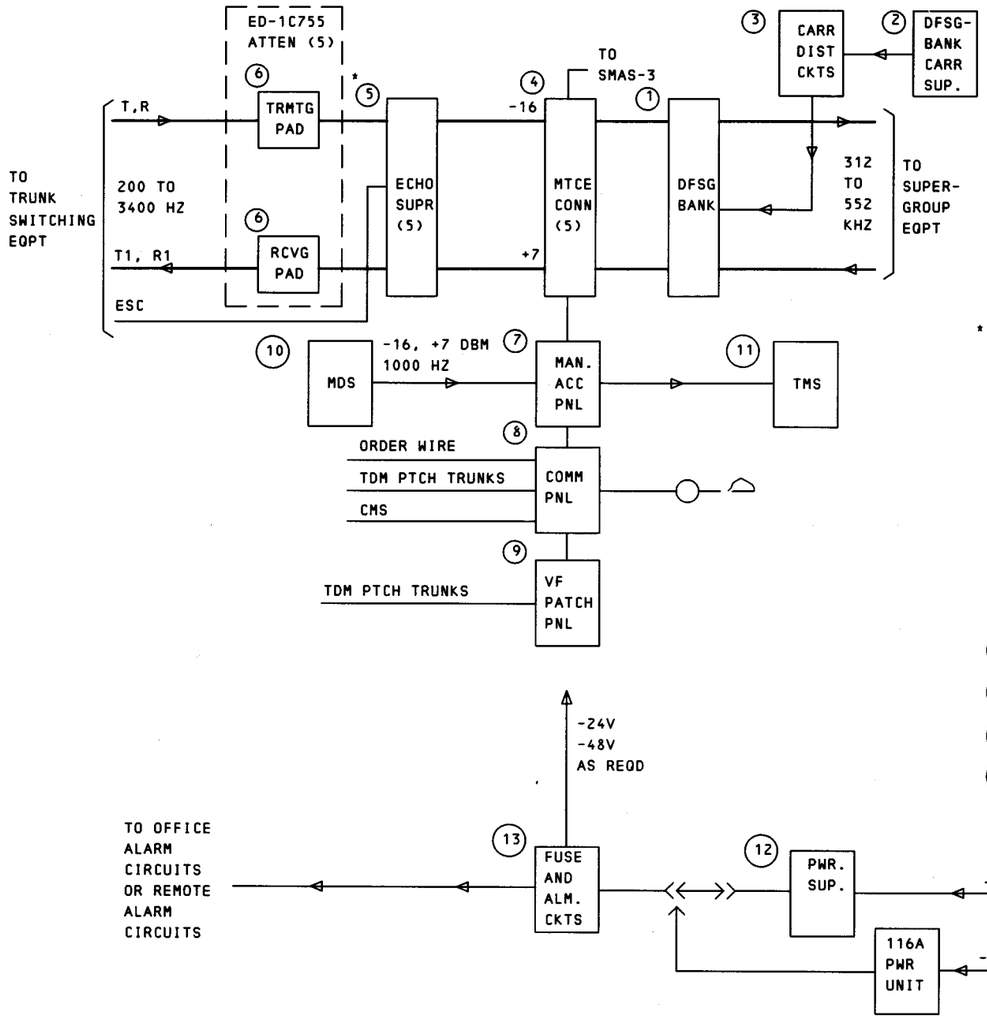
(18) PROVIDES FUSES AND FUSE ALARMS FOR -24, AND -48V CIRCUITS.

(19) PROVIDES CURRENT LIMITING IN SIGNALING LEADS TO SWITCHING EQUIPMENT.

* ITEMS 4, 9 AND 11 ARE NOT USED IN ALL J98629( ) FRAMES.

NOTE: THE FM( ) SIGNALING UNIT MAY REPLACE ITEMS 6 AND 10 FOR CONVERTING TO CCIS.

Fig. 16—DFSG Unitized Terminal Equipment—J98629( ) Frames with SF Signaling—Block Diagram



LEGEND:

(1) TRANSLATES VF TO SUPERGROUP FREQUENCIES - TRANSMITTING.
TRANSLATES SUPERGROUP FREQUENCIES TO VF - RECEIVING.

(2) GENERATES CHANNEL, DFSG, AND CFA CARRIER FREQUENCIES.

(3) DISTRIBUTES CHANNEL, DFSG, AND CFA CARRIER FREQUENCIES.

(4) PERMITS LOCAL AND REMOTE TESTING OF VF CHANNELS.
PROVIDES FOR MAKE-GOOD PATCHING OF VF CHANNELS.

* (5) SUPPRESSES ECHOS ON LONG TELEPHONE CONNECTIONS.

(6) ADJUSTS TRMTG AND RCVG VF POWER TO STANDARD LEVELS.

(7) APPLIES TEST TONE TO VF-DROP OR VF-LINE TEST POINT.
APPLIES VF-DROP OR VF-LINE TEST POINT TO TMS.
PROVIDES FOR LONG-TERM-TEST PATCHING.

(8) PROVIDES FOR TANDEM MAKE-GOOD PATCHING OF VF CHANNELS.
PROVIDES FOR MONITORING AND TESTING OF PATCHED VF CHANNELS.
PROVIDES FOR ORDER-WIRE COMMUNICATION.
PROVIDES FOR CMS DATA COMMUNICATION.

(9) PROVIDES FOR TANDEM MAKE-GOOD PATCHING OF VF CHANNELS.

(10) PROVIDES VF TEST TONE (1000 HZ AT -16 AND +7 DBM).

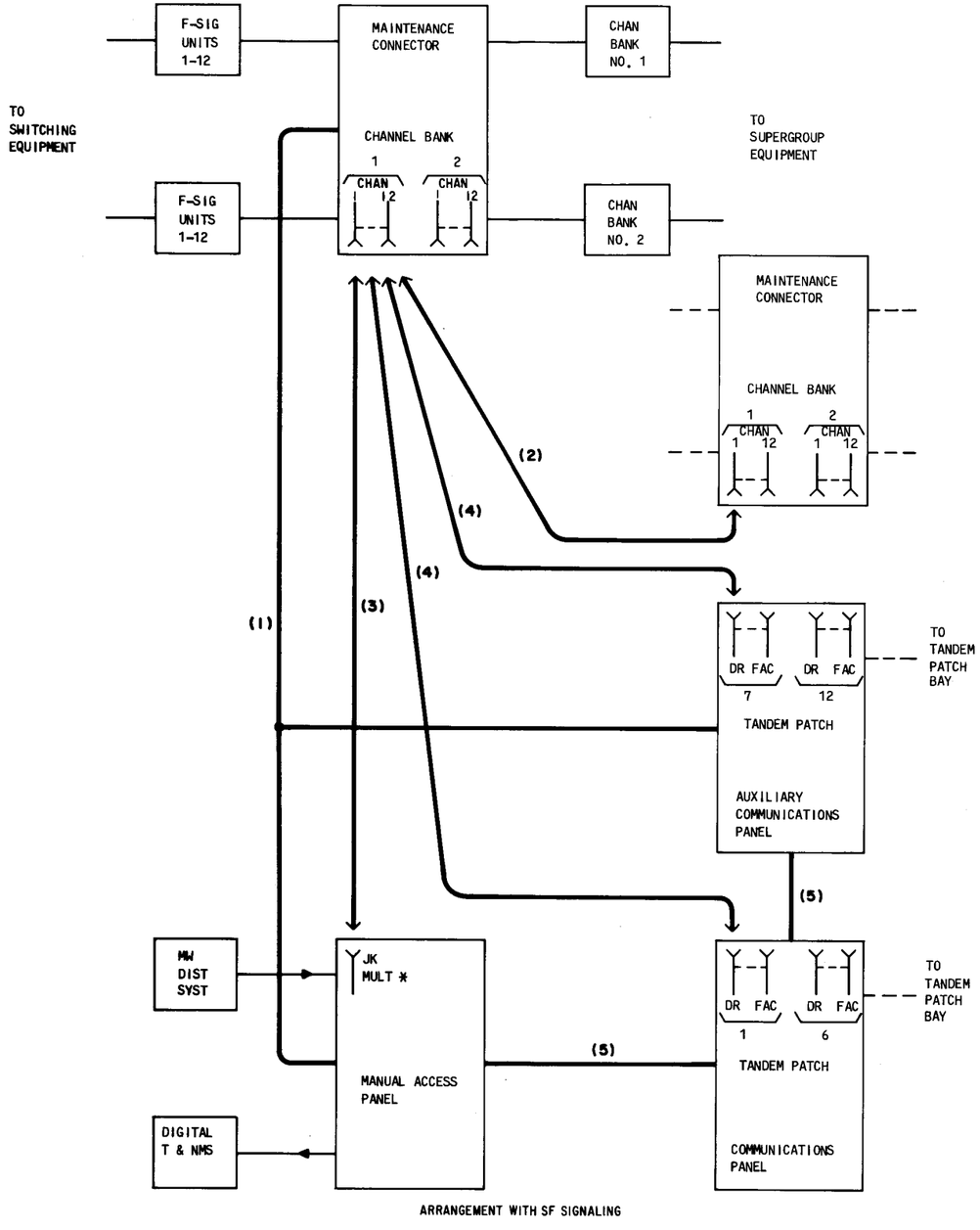
(11) MEASURES VF FREQUENCY, POWER, AND NOISE.

(12) CONVERTS -48 VOLTS DC TO -24 VOLTS DC OR FILTERS -24 VOLTS DC.

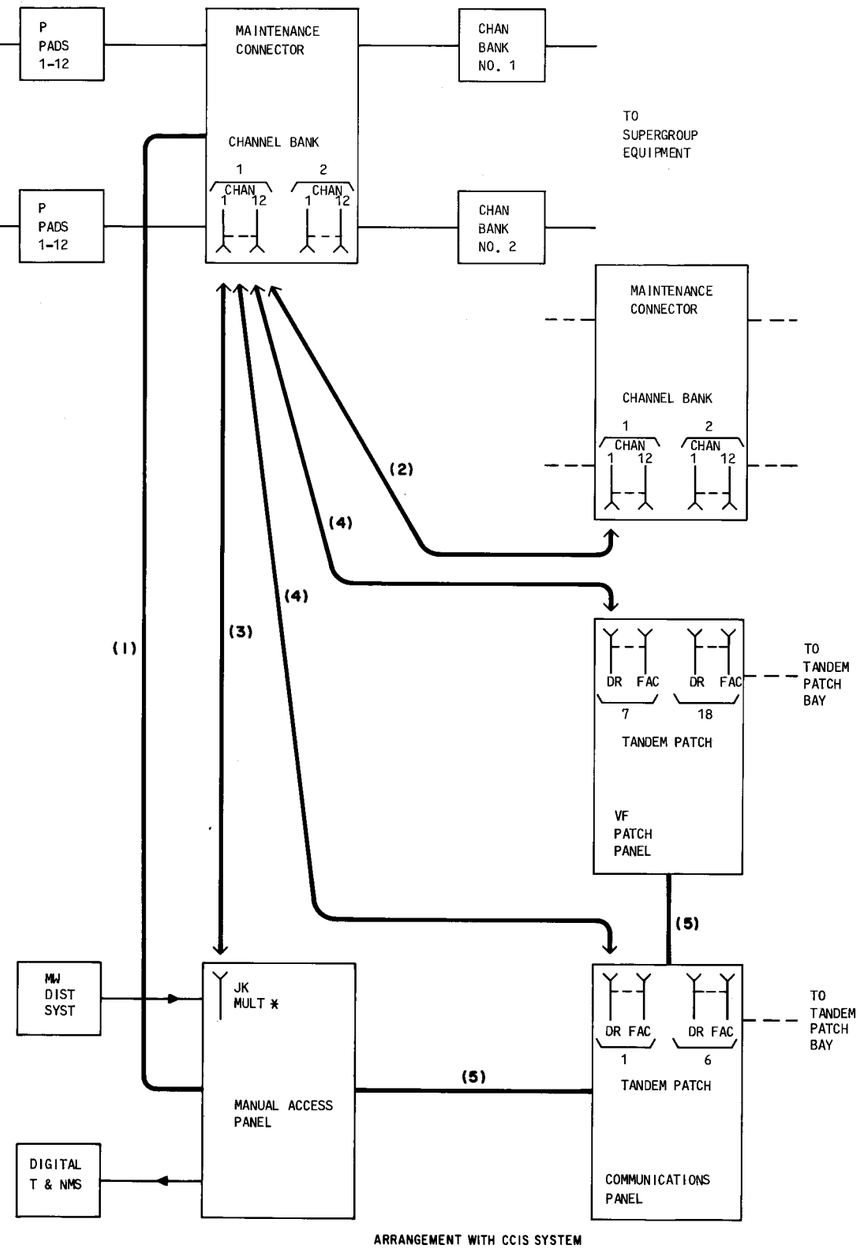
(13) PROVIDES FUSES AND FUSE ALARMS FOR -24, AND -48V CIRCUITS.

* NOT USED IN ALL J98629( ) FRAMES.

Fig. 17—DFSG Unitized Terminal Equipment—J98629( ) Frames with CCIS—Block Diagram



ARRANGEMENT WITH SF SIGNALING



ARRANGEMENT WITH CCIS SYSTEM

LEGEND - CONNECTIONS:
(1) PROVIDES ACCESS, VIA SWITCHES, FOR TESTING VF CHANNELS NO. 1 TO 12 FOR TWO CHANNEL BANKS.
(2) FOR MAKING 1 TO 24 CHANNELS GOOD VIA NEARBY MAINTENANCE CONNECTOR.
(3) FOR TESTING A VF CHANNEL ON LONG-TERM BASIS
(4) TO MAKE-GOOD, MONITOR AND TEST 1 TO 6, 12, OR 18 VF CHANNELS.
(5) PROVIDES ACCESS FOR TESTING VF CHANNEL PATCHED IN (4) ABOVE.

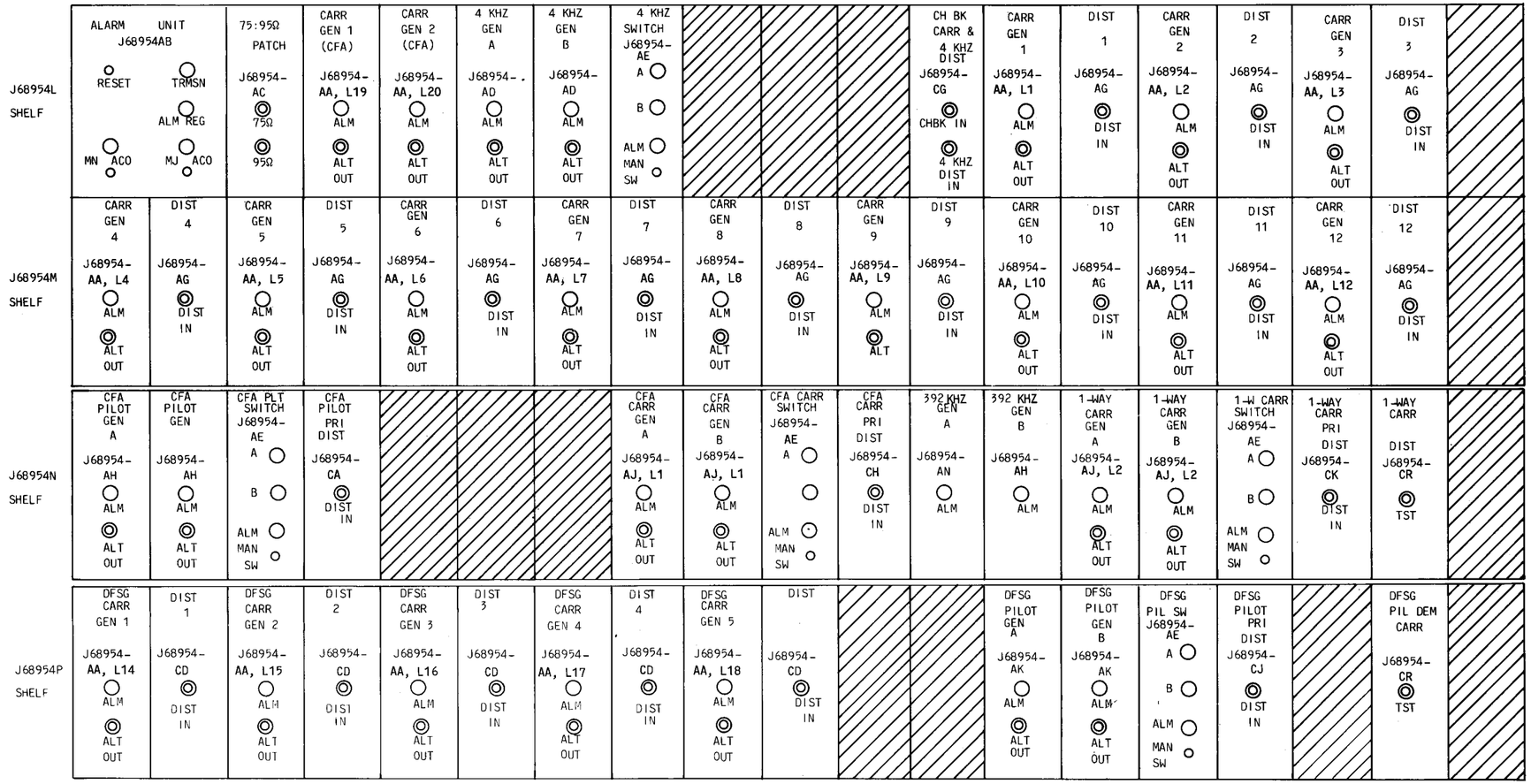
* NOT ON J98622AU AND BY MANUAL ACCESS PANELS.

Fig. 18—Basic Maintenance Arrangement for J98629( ) Frames

J68954T SHELF (COMMON)		CHAN BK –12V REG J68954-BF –12V GRD	MODEM CHAN 1 J68954-BG GAIN ADJ	MODEM CHAN 2 J68954-BG GAIN ADJ	MODEM CHAN 3 J68954-BG GAIN ADJ	MODEM CHAN 4 J68954-BG GAIN ADJ	MODEM CHAN 5 J68954-BG GAIN ADJ	MODEM CHAN 6 J68954-BG GAIN ADJ	MODEM CHAN 7 J68954-BG GAIN ADJ	MODEM CHAN 8 J68954-BG GAIN ADJ	MODEM CHAN 9 J68954-BG GAIN ADJ	MODEM CHAN 10 J68954-BG GAIN ADJ	MODEM CHAN 11 J68954-BG GAIN ADJ	MODEM CHAN 12 J68954-BG GAIN ADJ	DFSG TRMT J68954-BD	DFSG TRMT J68954-BE PTL ALM	CFA UNIT J68954-BJ TRMT FAIL RCV FAIL	
J68954T SHELF 4 (COMBINE)		CHAN BK –12V REG J68954-BF –12V GRD	MODEM CHAN 1 J68954-BG GAIN ADJ	MODEM CHAN 2 J68954-BG GAIN ADJ	MODEM CHAN 3 J68954-BG GAIN ADJ	MODEM CHAN 4 J68954-BG GAIN ADJ	MODEM CHAN 5 J68954-BG GAIN ADJ	MODEM CHAN 6 J68954-BG GAIN ADJ	MODEM CHAN 7 J68954-BG GAIN ADJ	MODEM CHAN 8 J68954-BG GAIN ADJ	MODEM CHAN 9 J68954-BG GAIN ADJ	MODEM CHAN 10 J68954-BG GAIN ADJ	MODEM CHAN 11 J68954-BG GAIN ADJ	MODEM CHAN 12 J68954-BG GAIN ADJ	DFSG TRMT J68954-BD	DFSG RCVG J68954-BE PTL ALM	CFA UNIT J68954-BJ TRMT FAIL RCV FAIL	DFSG COMBG J68954-BA TST ADJ
J63954T SHELF (PILOT)		CHAN BK –12V REG J68954-BF –12V GRD	MODEM CHAN 1 J68954-BG GAIN ADJ	MODEM CHAN 2 J68954-BG GAIN ADJ	MODEM CHAN 3 J68954-BG GAIN ADJ	MODEM CHAN 4 J68954-BG GAIN ADJ	MODEM CHAN 5 J68954-BG GAIN ADJ	MODEM CHAN 6 J68954-BG GAIN ADJ	MODEM CHAN 7 J68954-BG GAIN ADJ	MODEM CHAN 8 J68954-BG GAIN ADJ	MODEM CHAN 9 J68954-BG GAIN ADJ	MODEM CHAN 10 J68954-BG GAIN ADJ	MODEM CHAN 11 J68954-BG GAIN ADJ	MODEM CHAN 12 J68954-BG GAIN ADJ	DFSG TRMT J68954-BD	DFSG RCVG J68954-BE PTL ALM	CFA UNIT J68954-BJ TRMT FAIL RCV FAIL	DFSG PIL * SEC DIST J68954-BC TST ADJ
J63954T SHELF 2 (SPLIT)		CHAN BK –12V REG J68954-BF –12V GRD	MODEM CHAN 1 J68954-BG GAIN ADJ	MODEM CHAN 2 J68954-BG GAIN ADJ	MODEM CHAN 3 J68954-BG GAIN ADJ	MODEM CHAN 4 J68954-BG GAIN ADJ	MODEM CHAN 5 J68954-BG GAIN ADJ	MODEM CHAN 6 J68954-BG GAIN ADJ	MODEM CHAN 7 J68954-BG GAIN ADJ	MODEM CHAN 8 J68954-BG GAIN ADJ	MODEM CHAN 9 J68954-BG GAIN ADJ	MODEM CHAN 10 J68954-BG GAIN ADJ	MODEM CHAN 11 J68954-BD GAIN ADJ	MODEM CHAN 12 J68954-BE GAIN ADJ	DFSG TRMT J68954-BD	DFSG RCVG J68954-BE PTL ALM	CFA UNIT J68954-BJ TRMT FAIL RCV FAIL	DFSG SPLIT J68954-BB TST ADJ
J68954T SHELF 1 (COMMON)		CHAN BK –12V REG J68954-BF –12V GRD	MODEM CHAN 1 J68954-BG GAIN ADJ	MODEM CHAN 2 J68954-BG GAIN ADJ	MODEM CHAN 3 J68954-BG GAIN ADJ	MODEM CHAN 4 J68954-BG GAIN ADJ	MODEM CHAN 5 J68954-BG GAIN ADJ	MODEM CHAN 6 J68954-BG GAIN ADJ	MODEM CHAN 7 J68954-BG GAIN ADJ	MODEM CHAN 8 J68954-BG GAIN ADJ	MODEM CHAN 9 J68954-BG GAIN ADJ	MODEM CHAN 10 J68954-BG GAIN ADJ	MODEM CHAN 11 J68954-BG GAIN ADJ	MODEM CHAN 12 J68954-BD GAIN ADJ	DFSG TRMT J68954-BD	DFSG RCVG J68954-BE PTL ALM	CFA UNIT J68954-BJ TRMT FAIL RCV FAIL	

*J68954BC OR J68954CT DFSG PILOT QUATERNARY DISTRIBUTION UNIT.
NOTE 1: THE FIVE J68954T SHELVES MAY NOT BE CONTIGUOUS NOR IN THE SAME ORDER.
NOTE 2: EQUIVALENT PLUG-IN UNITS (J68929AR ∿ J68954BG AND J68929BC ∿ J68954BJ) MAY BE USED IN THESE SHELVES.

Fig. 19—DFSG Bank—As Equipped for J98629( ) Frames—Front View



NOTE:
SECONDARY, TERTIARY, AND QUATERNARY DISTRIBUTION UNITS ARE MOUNTED ON OTHER SHELVES IN THE J98629() FRAMES

Fig. 20—DFSG-Bank Carrier/Pilot Supply as Equipped for J98629J, N, R, U, W, and Y Frames

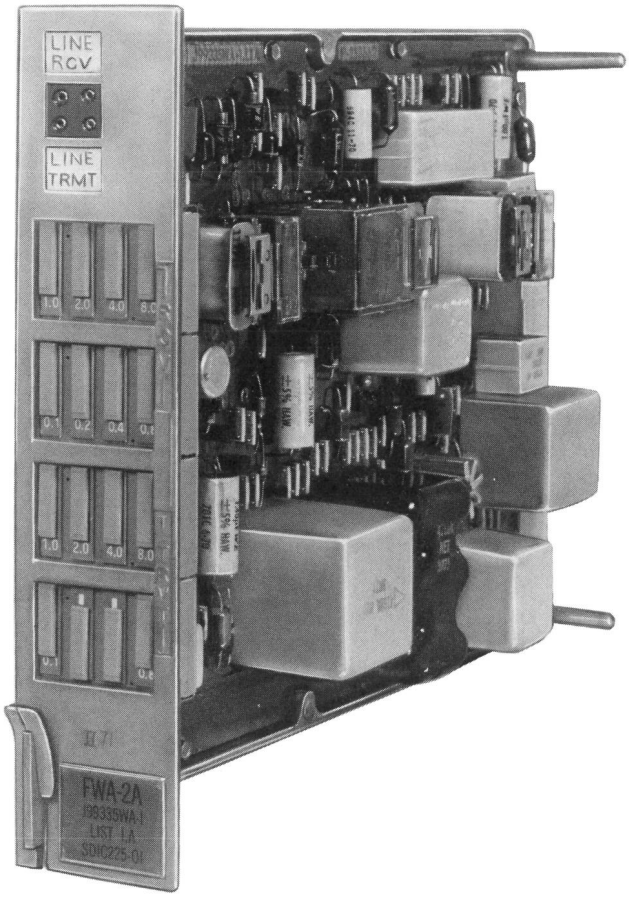


Fig. 21—FWA Signaling Unit

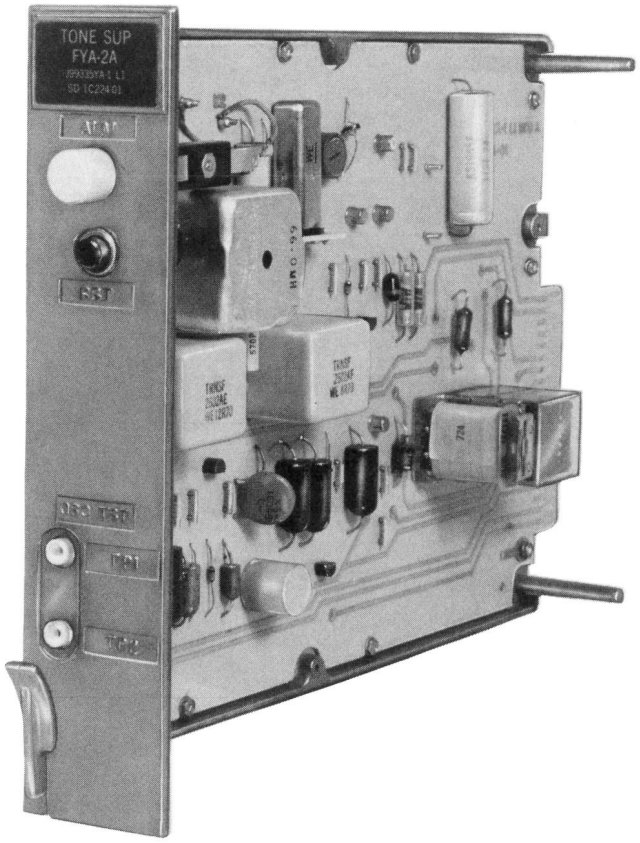


Fig. 22—J99335YA Tone Generator and Transfer Unit

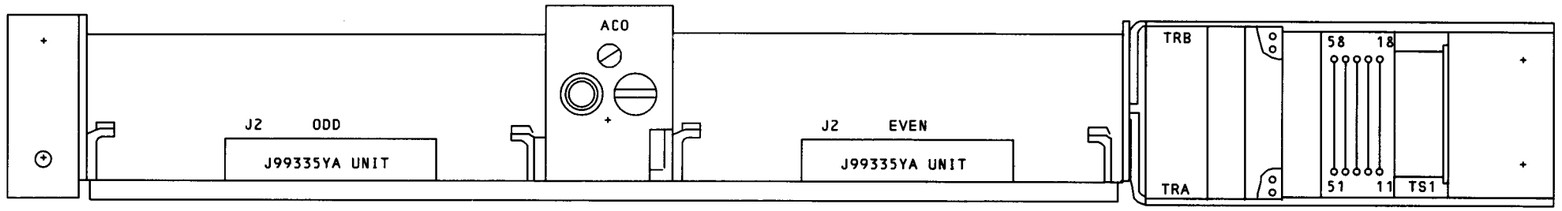


Fig. 23—ED-1C231 Tone Transfer and Alarm Shelf with Associated J99335YA Tone Generator and Transfer Units—Front View

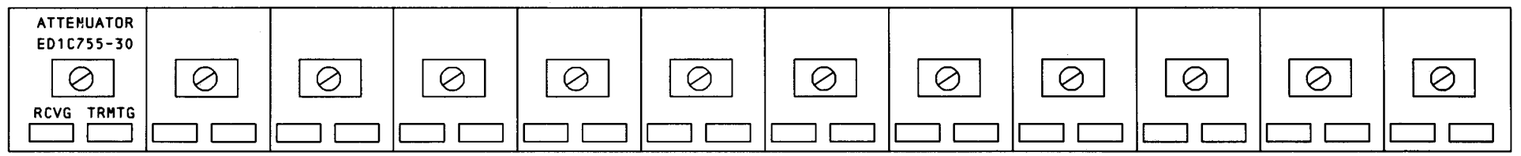
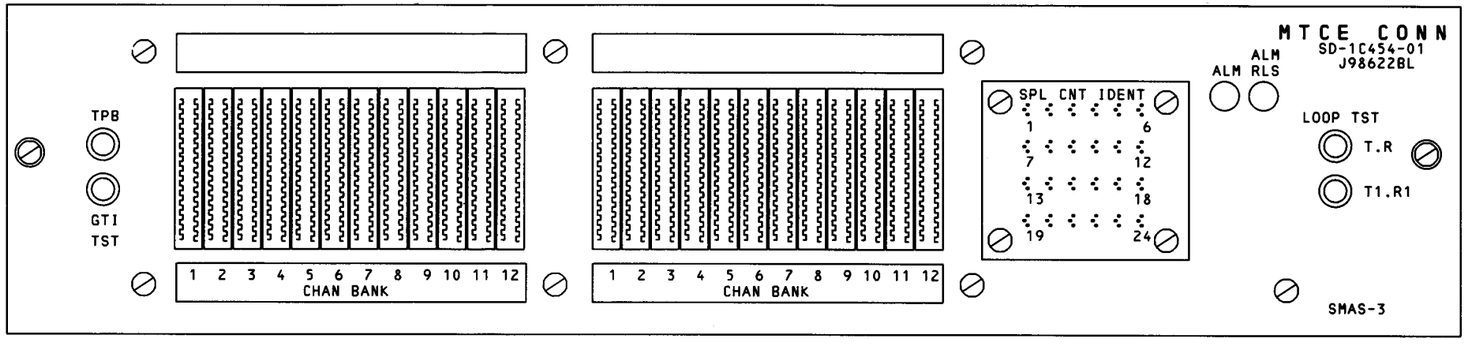
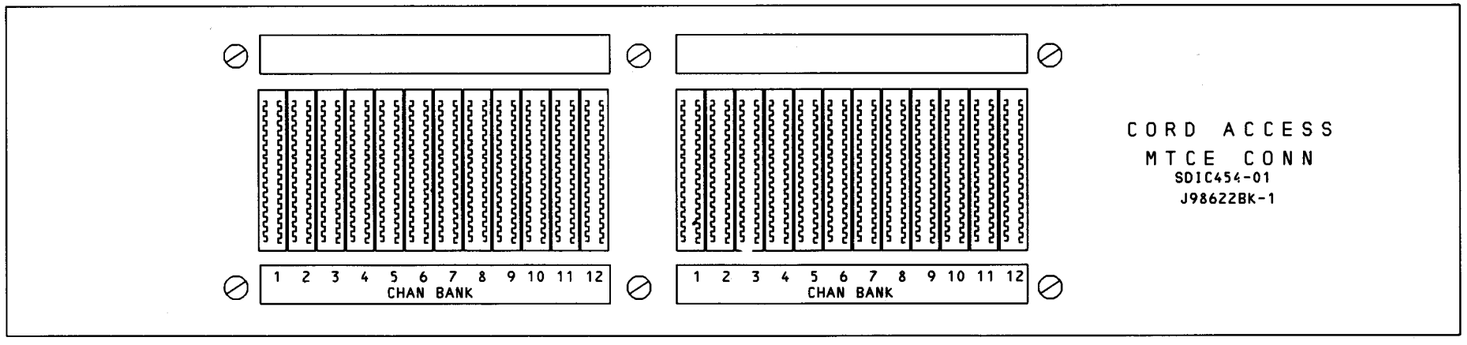


Fig. 24—J98624AJ Attenuator Shelf

Fig. 23 and Fig. 24



J98622BL PANEL



J98622BK PANEL

Fig. 25—J98622BL and BK Maintenance Connectors

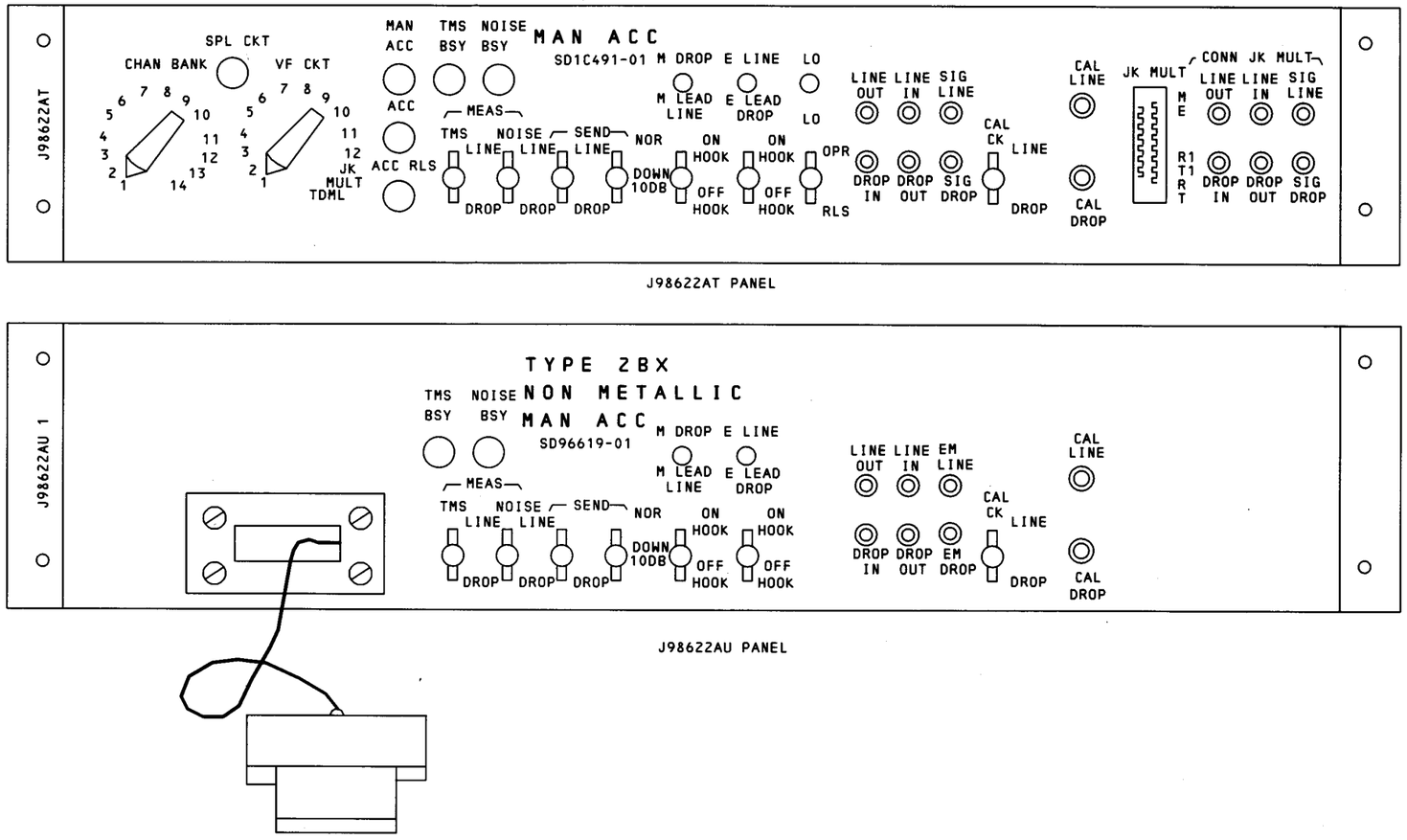
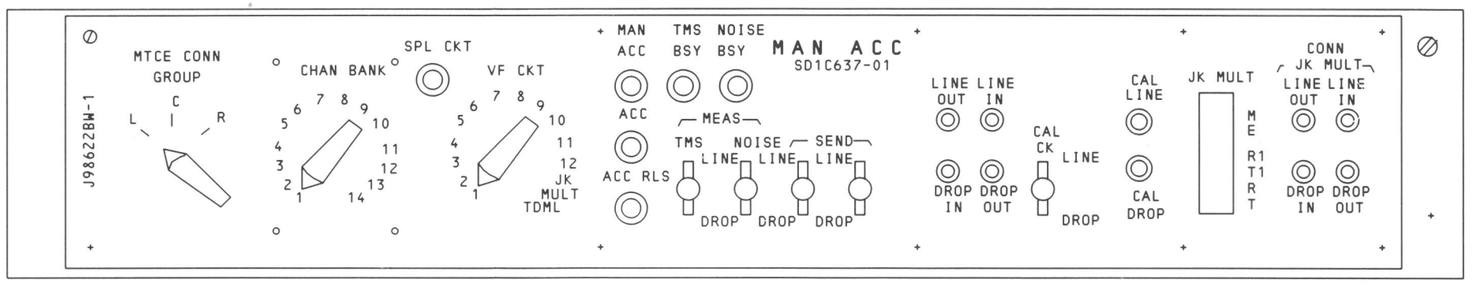
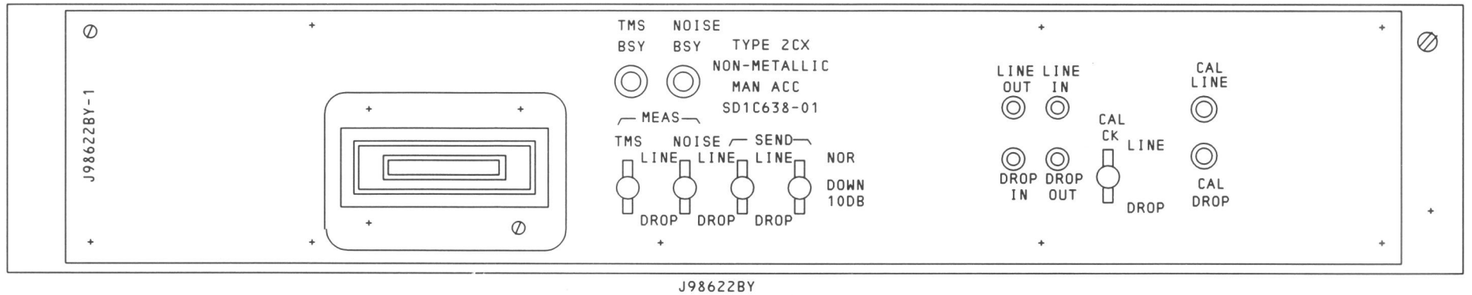


Fig. 26—J98622AT and AU Manual Access Panels



J98622BW PANEL



J98622BY

Fig. 27—J98622BW and BY Manual Access Panels—Front View

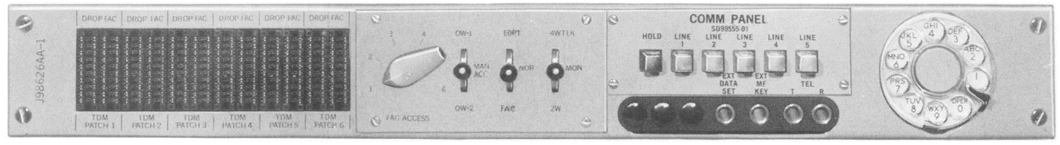


Fig. 28—J98626AA Communications Panel

Fig. 27 and Fig. 28

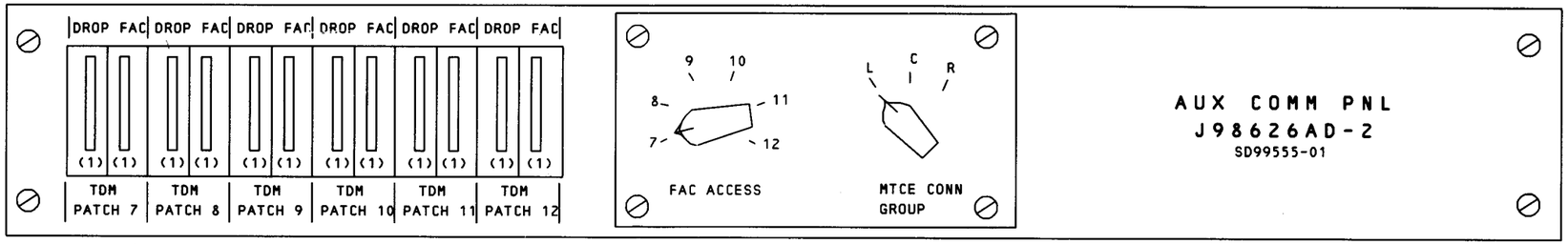


Fig. 29—J98626AD Auxiliary Communications Panel

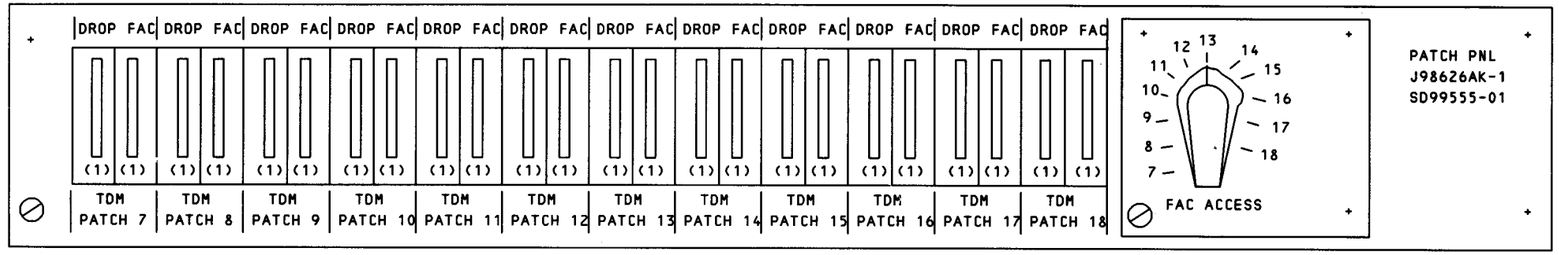


Fig. 30—J98626AK VF Patch Panel—Front View

Fig. 29 and Fig. 30

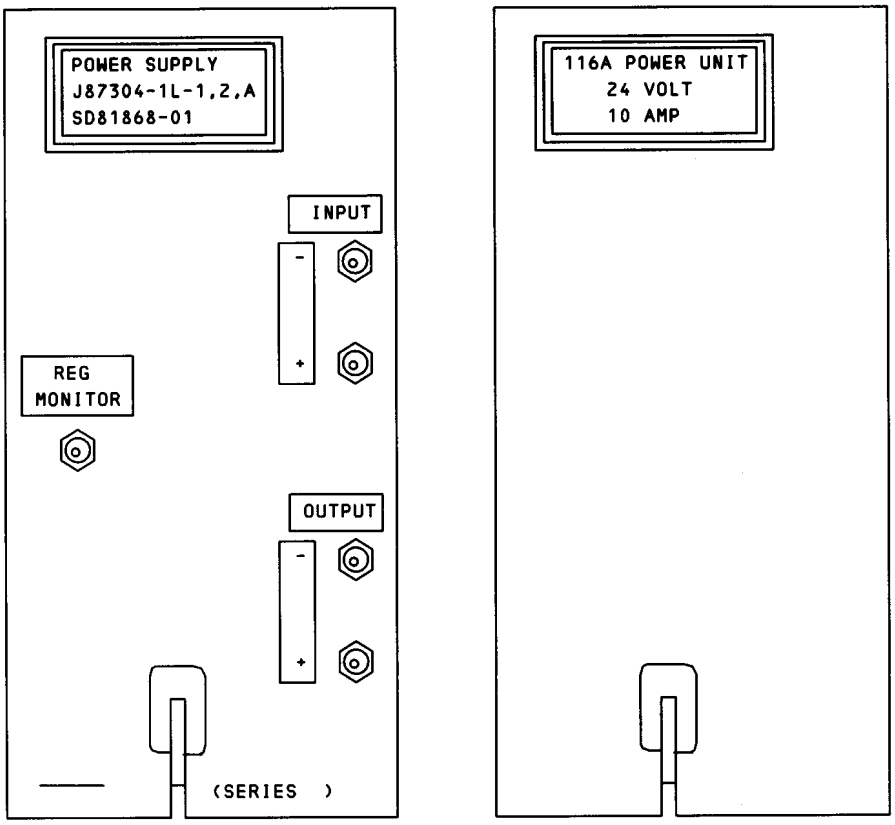
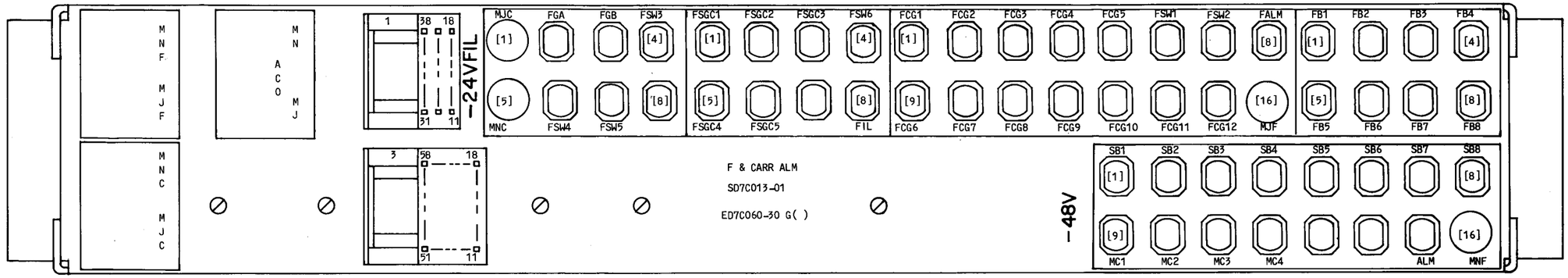
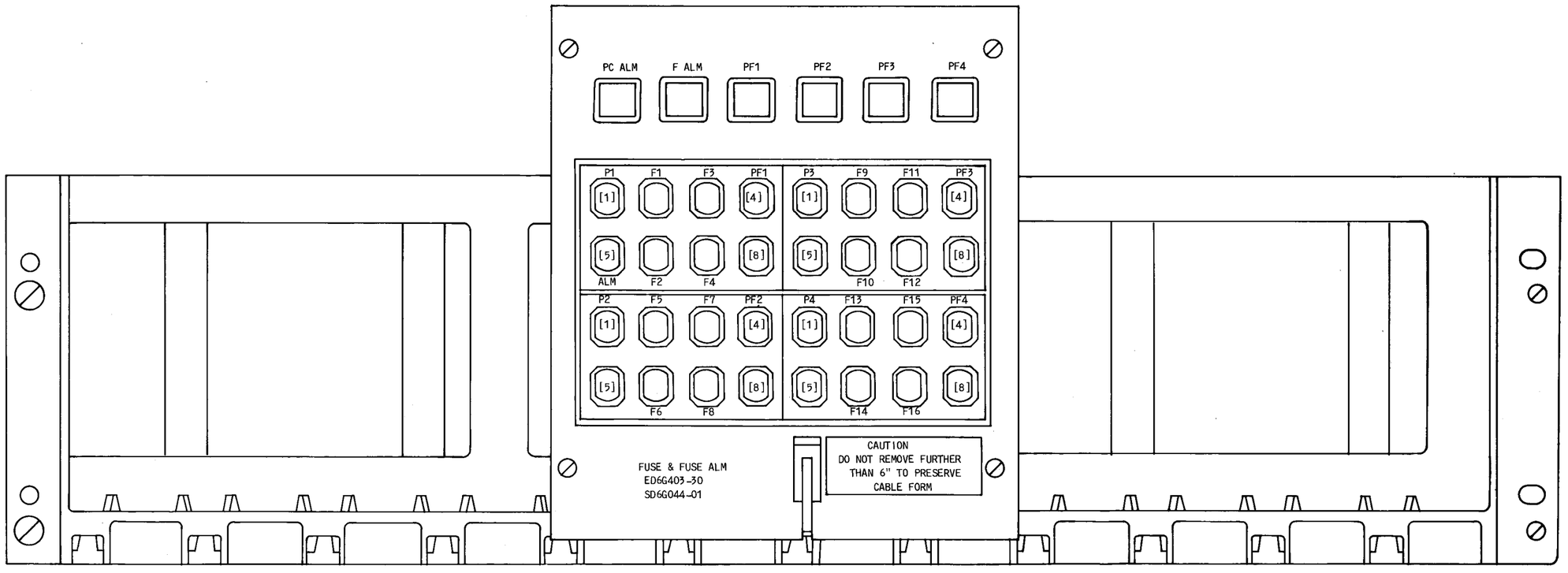


Fig. 31—J87304A Power Supply and 116A Power Unit—Front View



ED-7C060



ED-6G403

Fig. 32—Typical Fuse Panels Used in J98629( ) Frames

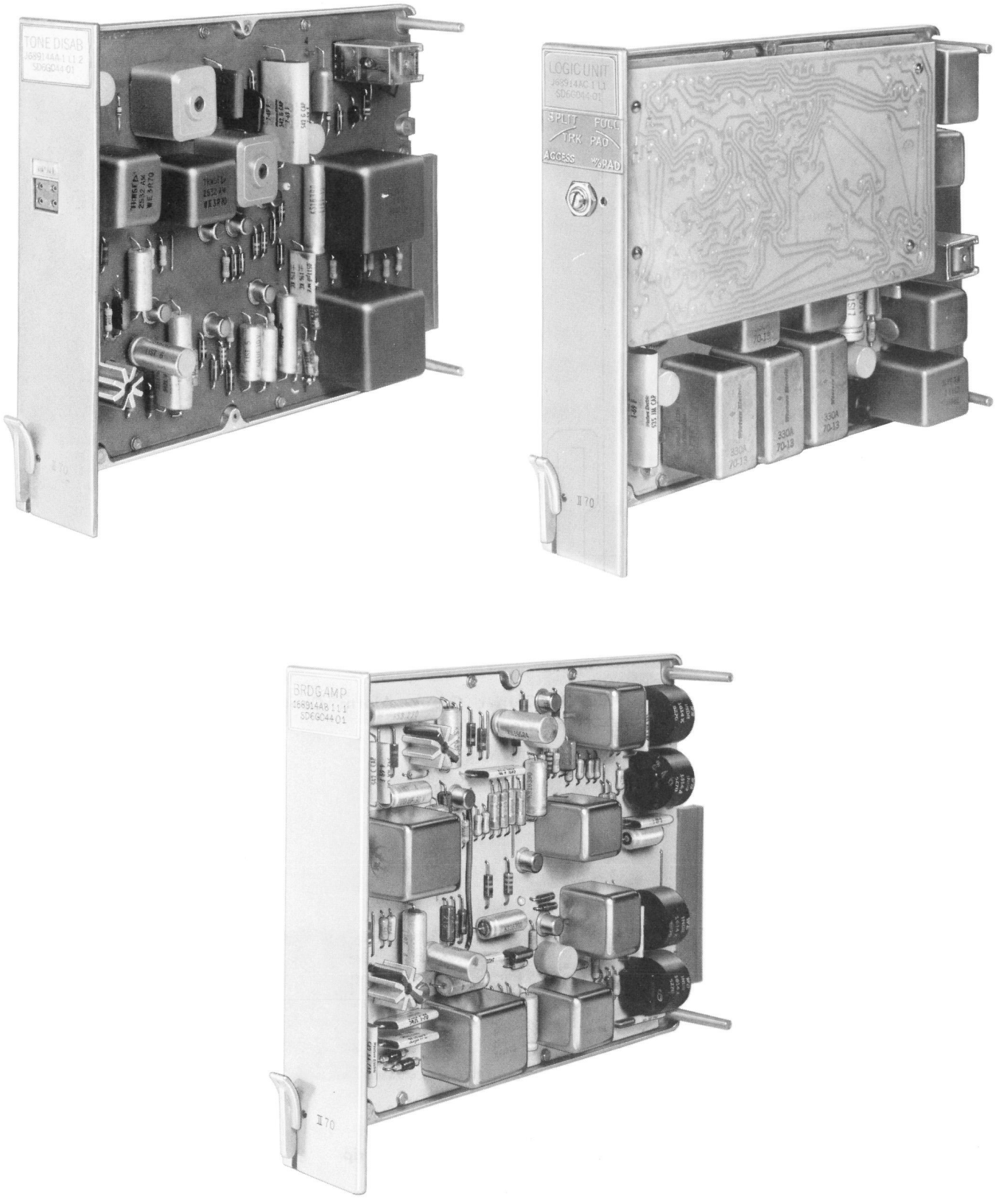


Fig. 33—4A Echo Suppressor Units

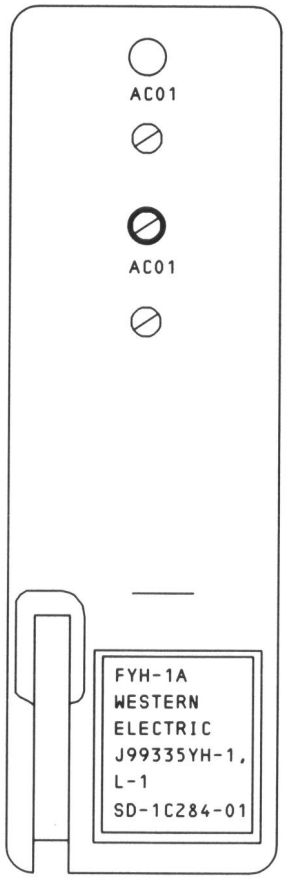


Fig. 34—J99335YH Carrier Group Alarm Control Unit—Front View

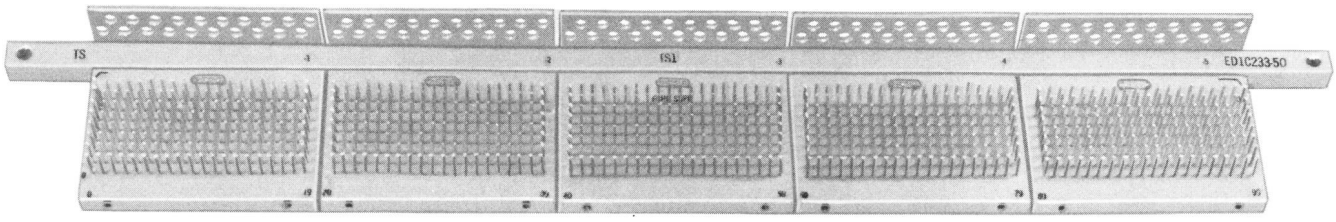


Fig. 35—ED-1C233-50 Terminal Strip