# DIMENSION® PBX
# LOUD SPEAKER PAGING
# USING 89A CONTROL UNIT

## CONTENTS



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## 1. GENERAL

1.1 This section provides installation for the Loud Speaker Paging for DIMENSION 400 and 2000 (See NOTE below) PBX, using 89A Control Unit(s).

NOTE: With the present design of the DIMENSION 2000 PBX, a maximum of 18 paging zones can be provided. However, the all zone paging feature applies to only the first five zones (1-5). Figures 5 and 6 provide non-standard arrangement for all zone paging with more than five zones (max. of 17 zones). Refer to paragraph 4.2 for ALL ZONE PAGING.

## 2. DOCUMENTATION

2.1

| | |
|---|---|
| COD | Customer Order Document |
| SD-1E446-01 | Auxiliary Trunk Interface |

## 3. REQUIREMENTS

3.1 Material for DIMENSION 400 PBX:

| QTY | ITEM | DESCRIPTION |
|---|---|---|
| 1 | 2012B | Power Transformer |
| 1 | 89A | Control Unit |

Material for DIMENSION 2000 PBX (only for all zone paging arrangement):

| QTY | ITEM | DESCRIPTION |
|---|---|---|
| 1 | 2012B | Power Transformer per 89A Control Unit (See NOTE below) |
| 1 | 89A | Control Unit per zone (See NOTE below) |

-One RC network of 619 ohms (1/2 watts) and 2 (200 VDC) capacitor is needed for zones 7 through 18 (refer to note N in Figures 5 and 6 for locations).

-Numbers of 185A network required can be determined by referring to table shown below.

-One 1470 ohms (5 watt) resistor is required for zones 6 through 18 (refer to Fig. 6 for Locations)

NOTE: Maximum zones available for all zone loud speaker paging is 17 zones. For each group of three zones, one 227B KTU is used (See figures 5 and 6). To determine how many 227B KTU(s) and 185A networks(s) are needed refer to Table below:

| Zones Available | 227B KTU Needed | 185A Network Needed |
|---|---|---|
| 1 - 7 | 1 | 3 |
| 1 - 10 | 2 | 6 |
| 1 - 13 | 3 | 9 |
| 1 - 16 | 4 | 12 |
| 1 - 17 | 5 | 15 |

## 4. PROCEDURE

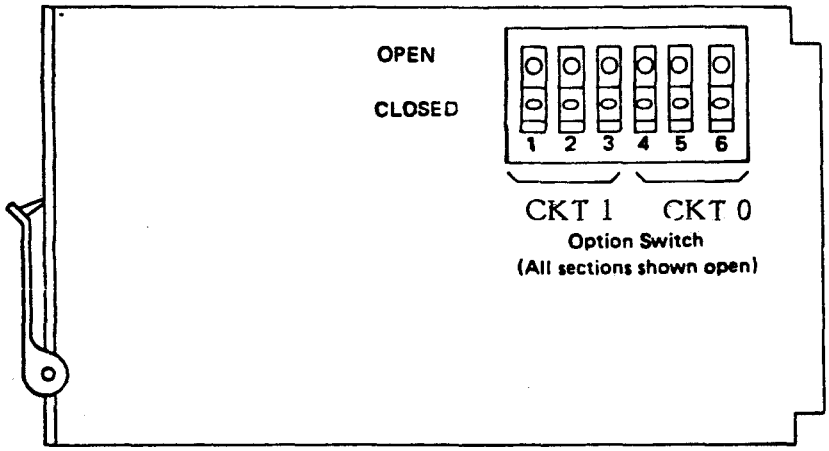
4.1 For DIMENSION 400 PBX:

4.1.1 Insure that the Auxiliary Trunk Interface (LC13) is in any position in the Trunk Carrier according to Table A, (See COD for actual slot assignment).

TABLE A
CIRCUIT CAPACITY AND POSITION IN TRUNK CARRIER

| CIRCUIT PACK | | No. of Ckts. Per CP | Max. No. of CP's per Carrier | POSITION IN CARRIER | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| TYPE | CODE | | | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 |
| Aux. Trunk Interface | LC 13 | 2 | 8 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 |

4.1.2 Options on LC13 are implemented by means of a six-section DIP switch mounted at the upper right center of the board (Fig. 1). The sections are identified by numbers 1 through 6; sections 4, 5, and 6 are assigned to Circuit 0; and 1, 2, and 3 are assigned to Circuit 1. Switch Circuits are closed by depressing the rocker toward the section number.




*CAUTION:*

Never operate switches while power is applied to the circuit.

**SWITCH SETTINGS**

| Circuit | Switch Section | Loudspeaker Paging |
|---|---|---|
| 0 | 6 | C |
| | 5 | O |
| | 4 | O |
| 1 | 3 | O |
| | 2 | O |
| | 1 | C |

**O = Open, C = Closed**

FIG. 1 - LC13 OPTIONS

4.1.3 Installation and connection of 89A Control Unit:

4.1.3.1 The 89A Control Unit should be located as close as possible to the paging Trunk Circuit and the paging amplifier to minimize lead lengths. Choose a mounting surface which is firm, flat, and dry; a backboard is not necessary unless the available space is damp or very uneven. The customer is responsible for providing a suitable and convenient AC outlet for the 2012B (one transformer can power up to two 89A Control Units).

4.1.3.2 Mount the 89A Control Unit as follows:

a) Take the cover off.
b) Separate the printed circuit board from the base pan by removing the six retaining screws.
c) Attach the base pan to the mounting surface with suitable screws so that the Control Unit will be positioned vertically as shown in Fig. 2.
d) Re-attach the printed circuit board to the base pan with the six screws. The music and tone level controls should be on top and the external connection screw terminals on the bottom.

NOTE: Do not plug the 2012B Transformer into its assigned outlet until all other installation and connection is completed.

4.1.3.3 Connect terminals AC1 and AC2 of the 89A Control Unit to the 2012B transformer with D station wire (Fig. 3).

4.1.3.4 Make the connection between the 89A Control Unit and Bell System equipment as shown in Figure 3, using D or G (or equivalent) station wire. NOTE: if any of the equipment is customer-provided, have the customer make the necessary connections.

4.1.3.5 Option Installation - Options X, Y, and Z are enabled by screw switches. S2, S1, and S3, respectively, which are closed at the factory (Figure 2). Do not open these switches except as directed in 4.1.3.6 through 4.1.3.8.

4.1.3.6 If click suppression (option X) is required, install the printed circuit board from kit of parts D-180702 on the Control Unit with the six standoffs and screws supplied in the kit (Figure 2). Electrical connections to the Control Unit are made through the standoffs; no additional wiring is required. When the kit is installed, open switch S2 (Figure 2) by turning it counterclockwise, disabling option X.

4.1.3.7 If several Control Units are paralleled for "all zone paging" in a system with several zones, disable the Y option. Turn switch S1 counterclockwise to open it. This action changes the Control Unit's input impedance from 600 ohms to 15,000 ohms, while overall T/R impedance for several control units in parallel remains near 600 ohms.

4.1.3.8 Option Z, as set in the factory by closing switch S3, gives a voice page

(if provided) in progress priority over a customer busy-out signal. To disable option Z so that the busy-out signal will interrupt a page in progress, open S3 (counterclockwise).

4.1.3.9 After all wiring is completed and options installed, replace the cover on the 89A Control Unit and plug the 2012B Transformer into its assigned power outlet.

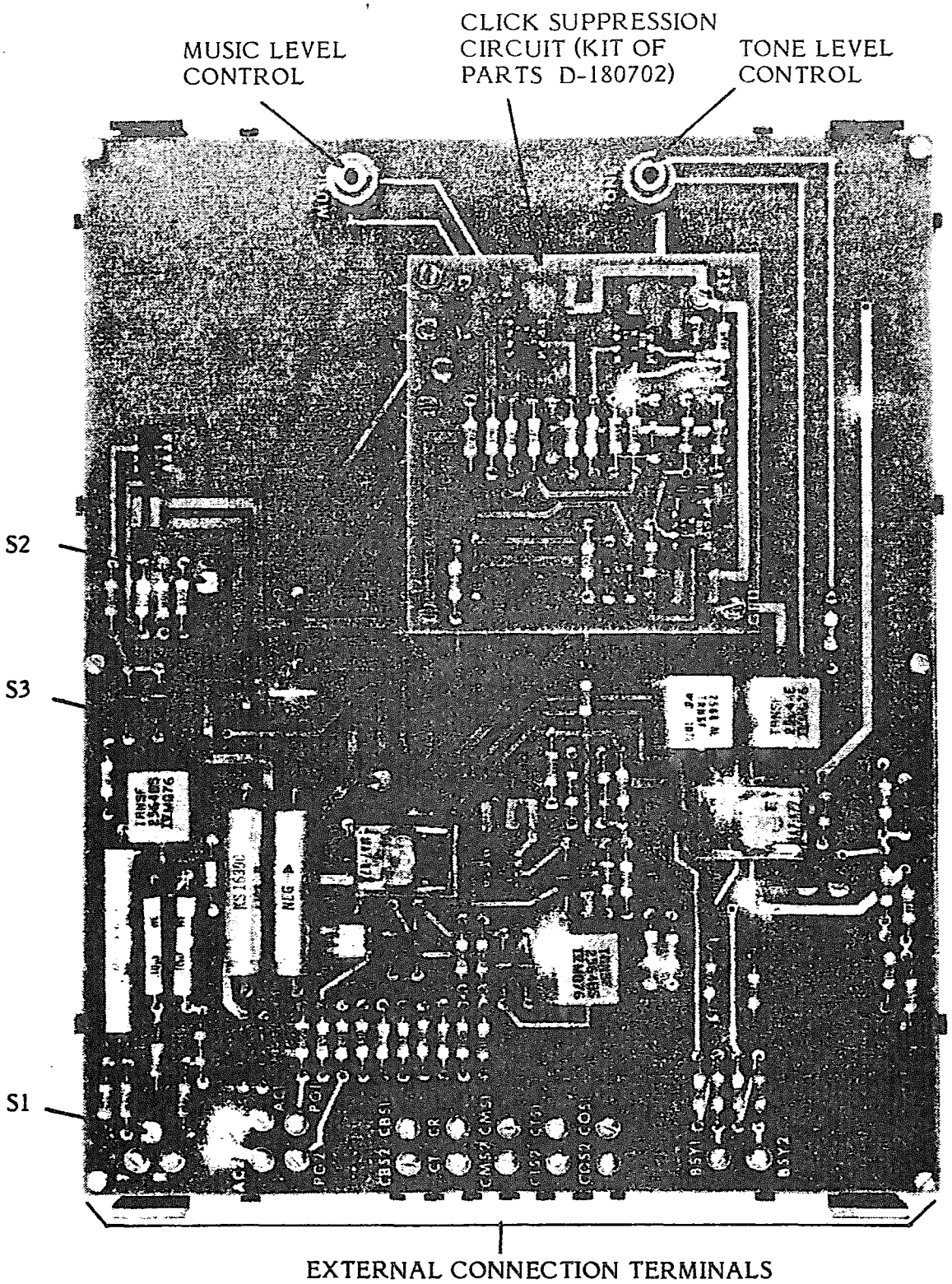



Fig. 2 - 89A Control Unit, Mounted With Cover Removed

NOTE: Kit of parts D-180702 might become part of main circuit board, but the X, Y, Z options are still present. Refer to paragraph 4.1.3.5.

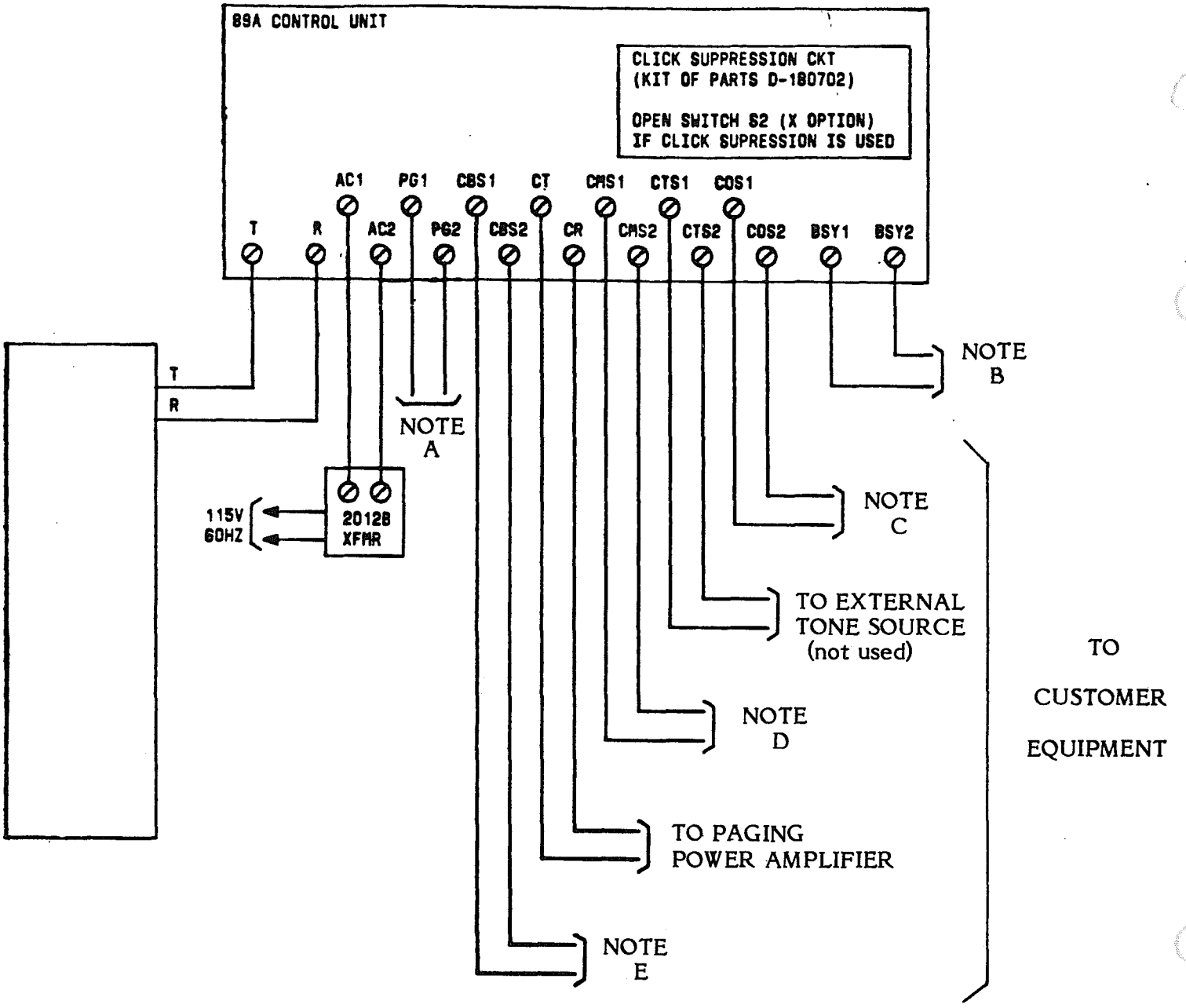



**Fig. 3—Connections for 89A Control Unit**

NOTES:

A PG1 and PG2 are connected to the PBX as is shown in Figure 4.

B BSY1 and BSY2 are connected to the PBX as is shown in Figure 4.

C COS1 and COS2 are connected to the customer's equipment. These connections are used by customer for maintenance purposes. By busying out the circuit, there will not be signal passage through the busy-out 89A Control Unit. When maintenance work is done, he takes the 89A Control Unit out of the busy mode by disabling (opening up) the COS1 and COS2 which will put the 89A Control Unit on the line again.

D CMS1 and CMS2 should be connected to the customer's system if the customer has or wants to play music over the same system, which will be used for Chime Paging while Chime Paging is not in process. Otherwise, do not connect CMS1 and CSM2 to the customer's system.

E CBS1 and CBS2 should be connected to the customer's system if there exists the possibility that the customer's system is only used for Loudspeak paging and will stay idle the rest of the time. Therefore, the CBS1 and CBS2 connection will seize (activate) the customer's system everytime the 89A Control Unit is seized to transmit the Loudspeaker paging signal from the PBX to the customer's equipment. But, there is no need to connect CBS1 and CBS2 if the customer is using the same system for other purposes (for example, background music) because his system is not idle between Loudspeaker pagings.

4.1.4.1 Make connection between 201S PBX and 89A Control Unit per Fig. 4, using cross connect fields.

4.1.4.2 Connect the GROUND (GRD), and -48V leads (See Table C). Choose any unassigned pair of GRD, -48V leads to connect to the yellow cross connect field.

TABLE C

| PIN NO. | COLOR CODE | CX01 |
|---|---|---|
| 41<br>16 | Y - BL<br>BL - Y | -48<br>GRD |
| 42<br>17 | Y - O<br>O - Y | -48<br>GRD |
| 43<br>18 | Y - G<br>G - Y | -48<br>GRD |
| 44<br>19 | Y - BR<br>BR Y | -48<br>GRD |
| 45<br>20 | Y - S<br>S - Y | -48<br>GRD |

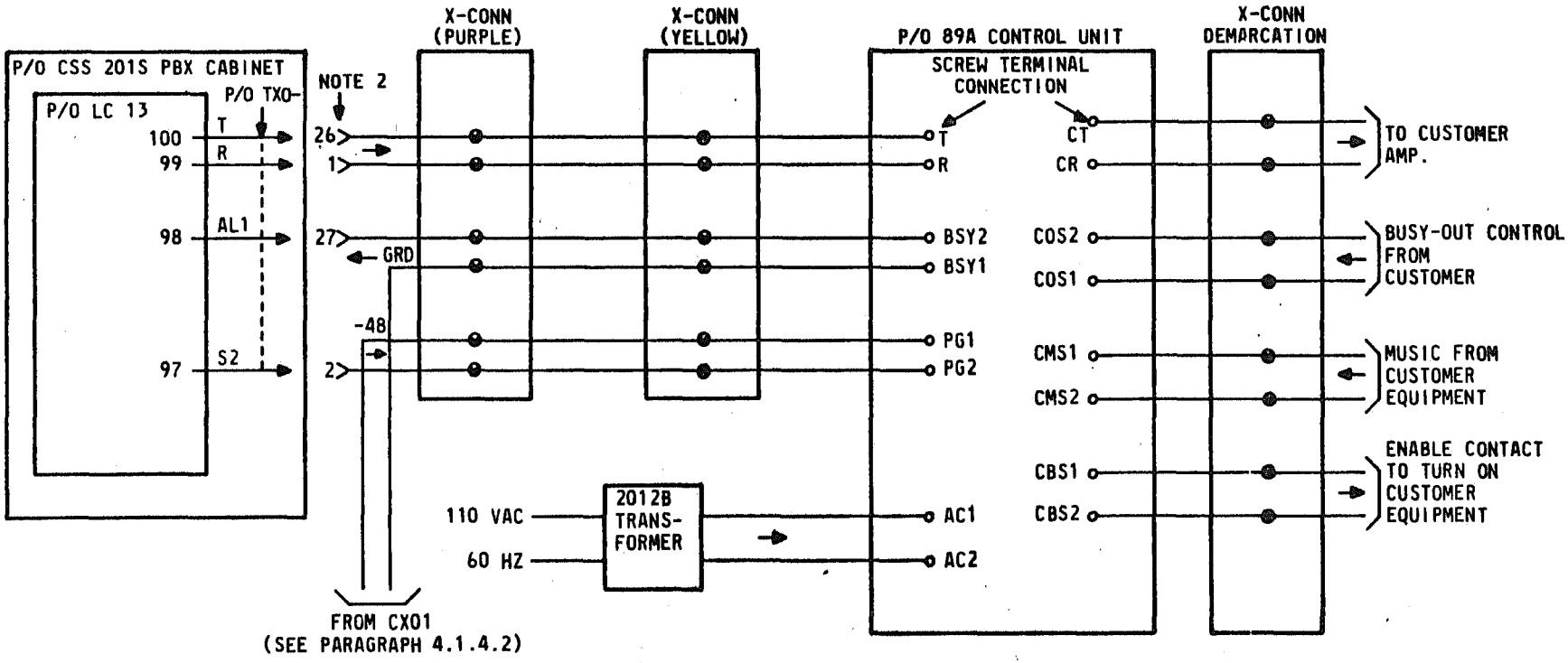



FIG. 4- LOUD SPEAKER PAGING, USING 89A CONTROL UNIT, PER EACH ZONE

NOTE:

1. NOT TO SCALE
2. SEE FIG. 11-13

4.2 For DIMENSION 2000 PBX:

NOTE: All extra hardwares shown in Detail A (Fig. 6) should be ordered and provided by TELLCO.

4.2.1 Insure that all the Auxiliary Trunk Interface(s) (LC13) are in position according to the Tables shown below, (See COD for actual slot(s) assignment(s)).

MODULE CONTROL AND TRUNK PORT CARRIER (NOTE A1)

| CIRCUIT PACK | | No. of Ckts. Per CP | POSITION IN CARRIER | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| TYPE | CODE | | 06 | 07 | 08 | 10 | 12 | 15 | 19 |
| Aux. Trunk Interface | LC 13 | 2 | 13 | 13 | 13 | 13 | 13 | 13 | 13 |

TRUNK PORT CARRIER (NOTE A2)

| CIRCUIT PACK | | No. of Ckts. Per CP | POSITION IN CARRIER | | | | | |
|---|---|---|---|---|---|---|---|---|
| TYPE | CODE | | 03 | 04 | 05 | 06 | 07 | 08 |
| Aux. Trunk Interface | LC 13 | 2 | 13 | 13 | 13 | 13 | 13 | 13 |

NOTE: A1 - The wiring for this carrier comes out on MX01 through MX03, Figures 8 through 10.

A2 - The wiring for this carrier comes out on TX01 through TX03, Figures 11 through 13.

4.2.2 Options on LC13 are implemented by means of a six-section DIP switch mounted at the upper right center of the board (Fig.1). The sections are identified by number 1 through 6; Sections 4, 5, and 6 are assigned to Circuit 0. Sections 1, 2, and 3 are assigned to Circuit 1. Switch circuits are closed by depressing the rocker toward the section number.

4.2.3 See note in paragraph 1.1. The arrangement is to provide a maximum of 17 zones, and one of the first five zones (say zone 5) is used to drive zones 6 - 18 (See Fig. 5).

4.2.4 The LC13s for zones 1 - 4 are connected in a normal way to their 89A Control Units (See paragraph 4.1). The LC13s for zones 6 - 18 connect to their 89As with the T and R leads going through break contacts of an AZ (All Zone) relay, which is part of 227B Key Telephone Unit (Fig. 7).

4.2.5 The transmission problems are taken care of by using the characteristics of 89A. With option Y, the 89A has an input impedance of 600 ohms. Without option Y, the 89A has an input impedance of 15K ohms. The inputs of a number of 89As can be bridged as long as only one has option Y. Zone 6 has option Y, and zones 7 through 18 do not require option Y. The input impedance is maintained at about 600 ohms. A RC network, 619 ohm (1/2 watt) resistor and a 2 (200 VDC) capacitor in series must be placed across the T and R leads of the LC13 associated with zones 7 - 18 in order to maintain 600 ohms for individual zone paging on these zones.

4.2.6 Refer to Figures 5 and 6. Across each AZ winding on 227B KTU. Connect one 185A network. Also one 1470 ohms 5 watt resistor needs to be connected to the 227B KTU as shown in Figure 6.

4.2.7 Care should be taken to use twisted pair for T and R leads and to keep the distance short between the LC13s and the 89As.

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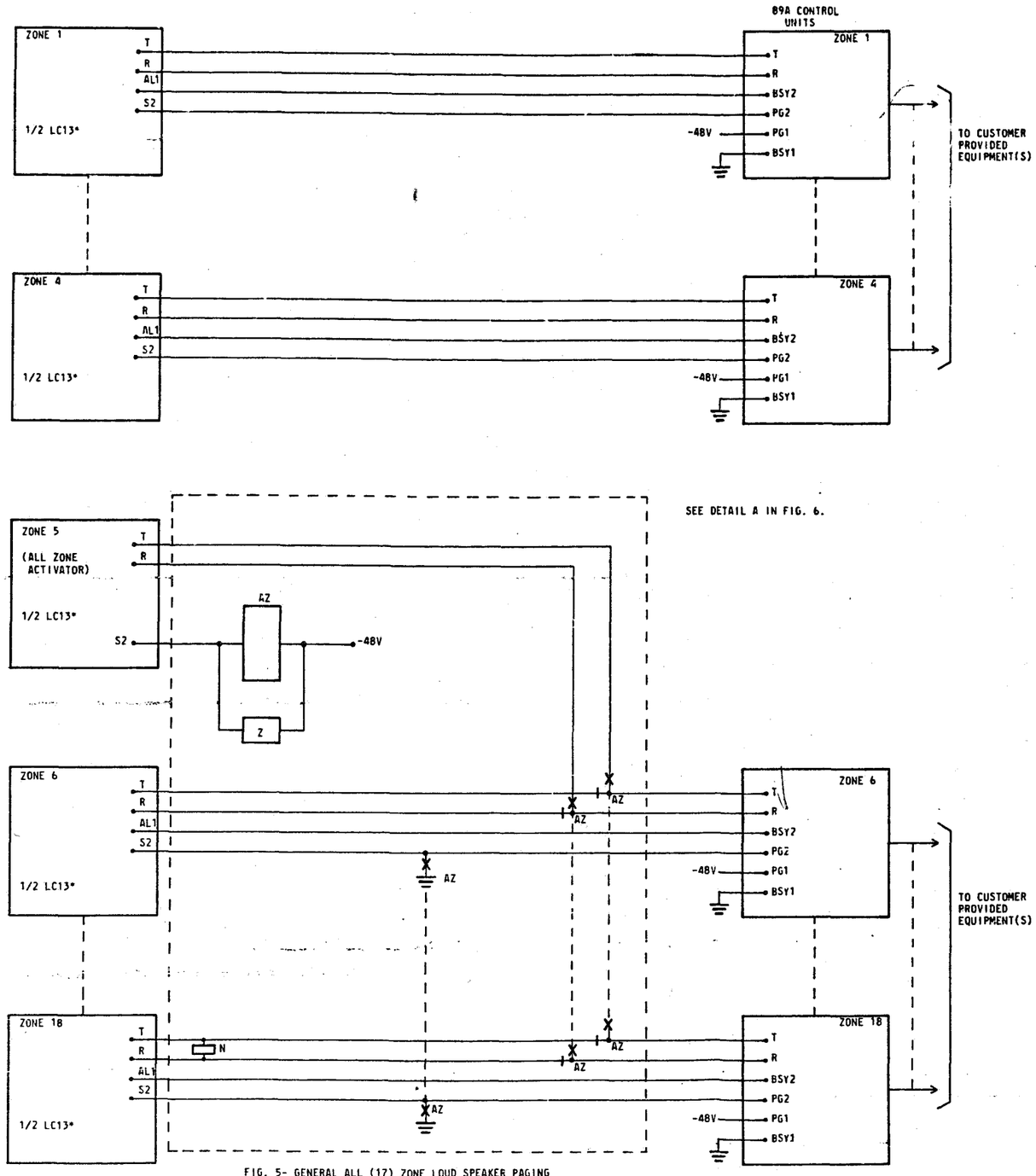


FIG. 5- GENERAL ALL (17) ZONE LOUD SPEAKER PAGING ARRANGEMENT FOR DIMENSION® 2000 PBX

* - EITHER CIRCUIT 0 OR CIRCUIT 1 OF LC13.

AZ - THE RELAY WHICH IS LOCATED ON THE 2276 KTU ACROSS TERMINALS 1,5 AND 8,10 AND 2,40.

N - CONSISTS OF 619 OHMS (1/2 WATT), AND 2MF (200VDC) CAPACILOR IN SERIES 619 Ω 2MF ACROSS T AND R LEADS OF LC13S FOR ZONES 7 THROUGH 18.

Z - 185A NETWORK.

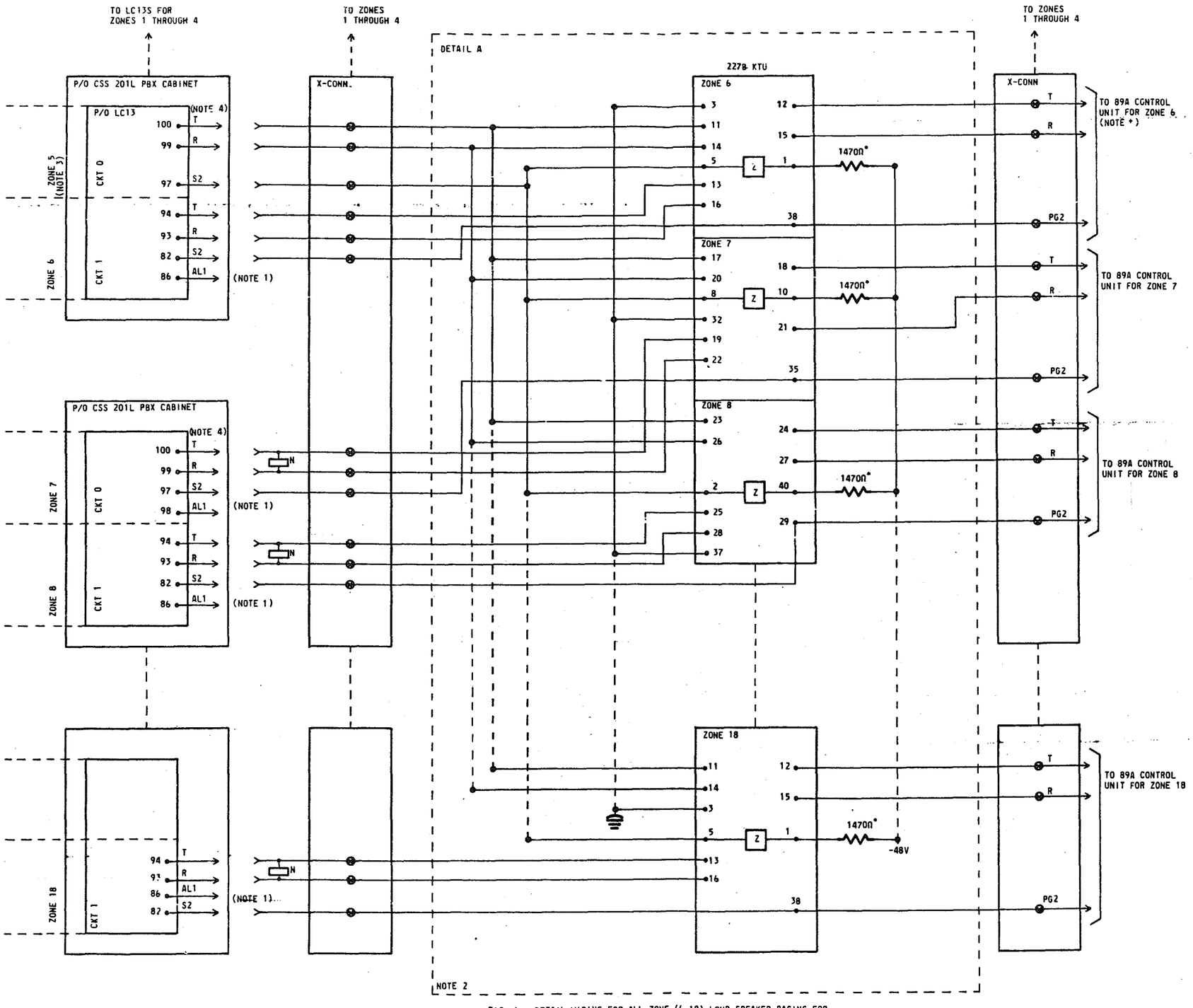


FIG. 6 - DETAIL WIRING FOR ALL ZONE (6-18) LOUD SPEAKER PAGING FOR DIMENSION (E) 2000 PBX, USING 2278 KTU

N - CONSISTS OF 619 OHMS (1/2 WATT), AND 2 MF (200 VDC) CAPACITOR IN SERIES 619Ω 2MF ACROSS T AND R LEADS OF LC13S FOR ZONES 7-18.

Z - 185A NETWORK

* - 1470 OHM 5 WATT RESISTORS.

+ - AT ZONE 6 ACTIVATE OPTION Y OF THE 89A CONTROL UNIT BY TURNING SWITCH S1 CLOCKWISE. ALL OTHER ZONES (7-18) OPTION Y IS NOT ACTIVATED.

NOTES:

1. AL1 TERMINATES AT BSY2 TERMINAL OF THE ASSOCIATED 89A CONTROL UNIT FOR THE RESPECTIVE ZONE.
2. DETAIL DRAWING OF THE BOX SHOWN ON FIGURE 5.
3. CIRCUIT 0 AND 1 WHICH ARE SHOWN ONLY FOR DEMONSTRATION PURPOSES.
4. SEE FIG. 8 THROUGH 13 ACCORDING TO THE LOCATION OF LC13S. ALSO SEE PARAGRAPH 4.2.1.

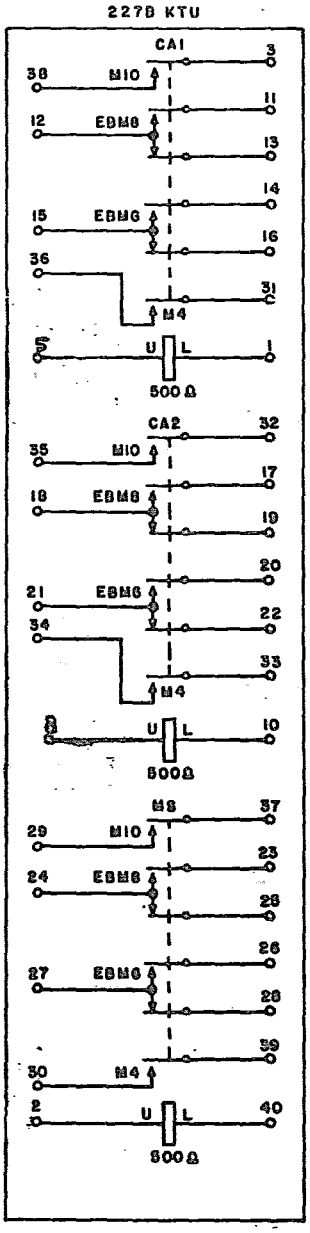


Fig. 7 - GENERAL CONFIGURATION FOR 227B KTU.

| A25D CONNECTOR CABLE TO MODULE CONTROL AND TRUNK PORT CARRIER CONNECTOR MX01 (NOTE 2) | | | | | | TO PURPLE BACKBOARD | | SLOT |
|---|---|---|---|---|---|---|---|---|
| LEAD DESIGNATION FOR CIRCUIT PACKS (NOTE 1) | | | | | | CUT LEADS DOWN ON | | |
| LC7 | LC8C, LC9 | LC11 | LC13 | LC15 NOTE 4 | LC16B NOTE 3 | LEAD COLOR | CONN BLK TERMINALS | |
| T | T(0) | T1(0) | T(0) | CID-0 | M(0) | W-BL | 1 | 06 |
| R | R(0) | R1(0) | R(0) | CIG-0 | | BL-W | 2 | |
| | T(1) | T(0) | AL1(0) | CID-1 | M(1) | W-OR | 3 | |
| | R(1) | R(0) | S2(0) | CIG-1 | | OR-W | 4 | |
| | | E(0) | C0(0) | CID-2 | M(2) | W-GR | 5 | |
| | | M(0) | | CIG-2 | | GR-W | 6 | |
| | | T1(1) | T(1) | CID-3 | M(3) | W-BR | 7 | |
| | | R1(1) | R(1) | CIG-3 | | BR-W | 8 | |
| | | T(1) | AL1(1) | CID-4 | M(4) | W-S | 9 | |
| | | R(1) | S2(1) | CIG-4 | | S-W | 10 | |
| | | E(1) | C0(1) | CID-5 | M(5) | R-BL | 11 | |
| | | M(1) | | CIG-5 | | BL-R | 12 | |
| | | | | CID-6 | M(6) | R-OR | 13 | |
| | | | | CIG-6 | | OR-R | 14 | |
| | | | | CID-7 | M(7) | R-GR | 15 | |
| T | T(0) | | | CIG-7 | | GR-R | 16 | |
| R | R(0) | T1(0) | T(0) | CID-0 | M(0) | R-BR | 17 | 07 |
| | T(1) | R1(0) | R(0) | CIG-0 | | BR-R | 18 | |
| | R(1) | T(0) | AL1(0) | CID-1 | M(1) | R-S | 19 | |
| | | E(0) | S2(0) | CIG-1 | | S-R | 20 | |
| | | R(0) | C0(0) | CID-2 | M(2) | BK-BL | 21 | |
| | | M(0) | | CIG-2 | | BL-BK | 22 | |
| | | T1(1) | T(1) | CID-3 | M(3) | BK-OR | 23 | |
| | | R1(1) | R(1) | CIG-3 | | OR-BK | 24 | |
| | | T(1) | AL1(1) | CID-4 | M(4) | BK-GR | 25 | |
| | | R(1) | S2(1) | CIG-4 | | GR-BK | 26 | |
| | | E(1) | C0(1) | CID-5 | M(5) | BK-BR | 27 | |
| | | M(1) | | CIG-5 | | BR-BK | 28 | |
| | | | | CID-6 | M(6) | BK-S | 29 | |
| | | | | CIG-6 | | S-BK | 30 | |
| | | | | CID-7 | M(7) | Y-BL | 31 | |
| | | | | CIG-7 | | BL-Y | 32 | |
| T | T(0) | T1(0) | T(0) | CID-0 | M(0) | Y-O | 33 | 08 |
| R | R(0) | R1(0) | R(0) | CIG-0 | | O-Y | 34 | |
| | T(1) | T(0) | AL1(0) | CID-1 | M(1) | Y-G | 35 | |
| | R(1) | R(0) | S2(0) | CIG-1 | | G-Y | 36 | |
| | | E(0) | C0(0) | CID-2 | M(2) | Y-BR | 37 | |
| | | M(0) | | CIG-2 | | BR-Y | 38 | |
| | | T1(1) | T(1) | CID-3 | M(3) | Y-S | 39 | |
| | | R1(1) | R(1) | CIG-3 | | S-Y | 40 | |
| | | T(1) | AL1(1) | CID-4 | M(4) | V-BL | 41 | |
| | | R(1) | S2(1) | CIG-4 | | BL-V | 42 | |
| | | E(1) | C0(1) | CID-5 | M(5) | V-OR | 43 | |
| | | M(1) | | CIG-5 | | OR-V | 44 | |
| | | | | CID-6 | M(6) | V-GR | 45 | |
| | | | | CIG-6 | | GR-V | 46 | |
| | | | | CID-7 | M(7) | V-BR | 47 | |
| | | | | CIG-7 | | BR-V | 48 | |
| | | | | | | V-S | 49 | |
| | | | | | | S-V | 50 | |

**NOTES:**

1. **leads not designated are cut down on connecting blocks, but not used for cross-connections.**
2. **connector MX01 serves carrier slots 6,7,and 8.**
3. **LC16B for FP9 only.**
4. **LC07 and LC15 for FP8 only.**

**Fig. 8 -Module Control and Trunk Port Carrier Cross-Connections**

| A25D CONNECTOR CABLE TO MODULE CONTROL AND TRUNK PORT CARRIER CONNECTOR MX02 (NOTE 2) | | | | | | TO PURPLE BACKBOARD | | SLOT |
|---|---|---|---|---|---|---|---|---|
| LEAD DESIGNATION FOR CIRCUIT PACKS (NOTE 1) | | | | | | CUT LEADS DOWN ON | | |
| LC7 | LC8C, LC9 | LC11 | LC13 | LC15 NOTE 4 | LC16B NOTE 3 | LEAD COLOR | CONN BLK TERMINALS | |
| T | T(0) | T1(0) | T(0) | M-0 | M(0) | W-BL | 1 | |
| R | R(0) | R1(0) | R(0) | | | BL-W | 2 | |
| | T(1) | T(0) | AL1(0) | M-1 | M(1) | W-OR | 3 | |
| | R(1) | R(0) | S2(0) | | | OR-W | 4 | |
| | | E(0) | CO(0) | M-2 | M(2) | W-GR | 5 | |
| | | M(0) | | | | GR-W | 6 | |
| | | T1(1) | T(1) | M-3 | M(3) | W-BR | 7 | |
| | | R1(1) | R(1) | | | BR-W | 8 | |
| | | T(1) | AL1(1) | M-4 | M(4) | W-S | 9 | 10 |
| | | R(1) | S2(1) | | | S-W | 10 | |
| | | E(1) | CO(1) | M-5 | M(5) | R-BL | 11 | |
| | | M(1) | | | | BL-R | 12 | |
| | | | | M-6 | M(6) | R-OR | 13 | |
| | | | | | | OR-R | 14 | |
| | | | | M-7 | M(7) | R-GR | 15 | |
| T | T(0) | | | | | GR-R | 16 | |
| R | R(0) | T1(0) | T(0) | M-0 | M(0) | R-BR | 17 | |
| | T(1) | R1(0) | R(0) | | | BR-R | 18 | |
| | R(1) | T(0) | AL1(0) | M-1 | M(1) | R-S | 19 | |
| | | E(0) | S2(0) | | | S-R | 20 | |
| | | R(0) | CO(0) | M-2 | M(2) | BK-BL | 21 | |
| | | M(0) | | | | BL-BK | 22 | |
| | | T1(1) | T(1) | M-3 | M(3) | BK-OR | 23 | |
| | | R1(1) | R(1) | | | OR-BK | 24 | |
| | | T(1) | AL1(1) | M-4 | M(4) | BK-GR | 25 | 12 |
| | | R(1) | S2(1) | | | GR-BK | 26 | |
| | | E(1) | CO(1) | M-5 | M(5) | BK-BR | 27 | |
| | | M(1) | | | | BR-BK | 28 | |
| | | | | M-6 | M(6) | BK-S | 29 | |
| | | | | | | S-BK | 30 | |
| | | | | M-7 | M(7) | Y-BL | 31 | |
| | | | | | | BL-Y | 32 | |
| T | T(0) | T1(0) | T(0) | M-0 | M(0) | Y-O | 33 | |
| R | R(0) | R1(0) | R(0) | | | O-Y | 34 | |
| | T(1) | T(0) | AL1(0) | M-1 | M(1) | Y-G | 35 | |
| | R(1) | R(0) | S2(0) | | | G-Y | 36 | |
| | | E(0) | CO(0) | M-2 | M(2) | Y-BR | 37 | |
| | | M(0) | | | | BR-Y | 38 | |
| | | T1(1) | T(1) | M-3 | M(3) | Y-S | 39 | |
| | | R1(1) | R(1) | | | S-Y | 40 | |
| | | T(1) | AL1(1) | M-4 | M(4) | V-BL | 41 | 15 |
| | | R(1) | S2(1) | | | BL-V | 42 | |
| | | E(1) | CO(1) | M-5 | M(5) | V-OR | 43 | |
| | | M(1) | | | | OR-V | 44 | |
| | | | | M-6 | M(6) | V-GR | 45 | |
| | | | | | | GR-V | 46 | |
| | | | | M-7 | M(7) | V-BR | 47 | |
| | | | | | | BR-V | 48 | |
| | | | | | | V-S | 49 | |
| | | | | | | S-V | 50 | |

NOTES:

1. leads not designated are cut down on connecting blocks, but not used for cross-connects.
2. connector MX02 serves carrier slots 10, 12, and 15.
3. LC16B for FP8 only.
4. LC07 and LC15 for FP8 only.

Fig. 9 -Module Control and Truck Port Carrier Cross-Connections

| A25D CONNECTOR CABLE TO MODULE CONTROL AND TRUNK PORT CARRIER CONNECTOR MX03 (NOTE 2) | | | | | | TO PURPLE BACKBOARD | | SLOT |
|---|---|---|---|---|---|---|---|---|
| LEAD DESIGNATION FOR CIRCUIT PACKS (NOTE 1) | | | | | | CUT LEADS DOWN ON | | |
| LC7 | LC8C, LC9 | LC11 | LC13 | LC15 NOTE 4 | LC16B NOTE 3 | LEAD COLOR | CONN BLK TERMINALS | |
| T | T(0) | T1(0) | T(0) | M-0 | M(0) | W-BL | 1 | |
| R | R(0) | R1(0) | R(0) | | | BL-W | 2 | |
| | T(1) | T(0) | AL1(0) | M-1 | M(1) | W-OR | 3 | |
| | R(1) | R(0) | S2(0) | | | OR-W | 4 | |
| | | E(0) | C0(0) | M-2 | M(2) | W-GR | 5 | |
| | | M(0) | | | | GR-W | 6 | |
| | | T1(1) | T(1) | M-3 | M(3) | W-BR | 7 | |
| | | R1(1) | R(1) | | | BR-W | 8 | |
| | | T(1) | AL1(1) | M-4 | M(4) | W-S | 9 | 17 |
| | | R(1) | S2(1) | | | S-W | 10 | |
| | | E(1) | C0(1) | M-5 | M(5) | R-BL | 11 | |
| | | M(1) | | | | BL-R | 12 | |
| | | | | M-6 | M(6) | R-OR | 13 | |
| | | | | | | OR-R | 14 | |
| | | | | M-7 | M(7) | R-GR | 15 | |
| T | T(0) | | | | | GR-R | 16 | |
| R | R(0) | T1(0) | T(0) | M-0 | M(0) | R-BR | 17 | |
| | T(1) | R1(0) | R(0) | | | BR-R | 18 | |
| | R(1) | T(0) | AL1(0) | M-1 | M(1) | R-S | 19 | |
| | | E(0) | S2(0) | | | S-R | 20 | |
| | | R(0) | C0(0) | M-2 | M(2) | BK-BL | 21 | |
| | | M(0) | | | | BL-BK | 22 | |
| | | T1(1) | T(1) | M-3 | M(3) | BK-OR | 23 | |
| | | R1(1) | R(1) | | | OR-BK | 24 | |
| | | T(1) | AL1(1) | M-4 | M(4) | BK-GR | 25 | 19 |
| | | R(1) | S2(1) | | | GR-BK | 26 | |
| | | E(1) | C0(1) | M-5 | M(5) | BK-BR | 27 | |
| | | M(1) | | | | BR-BK | 28 | |
| | | | | M-6 | M(6) | BK-S | 29 | |
| | | | | | | S-BK | 30 | |
| | | | | M-7 | M(7) | Y-BL | 31 | |
| | | | | | | BL-Y | 32 | |
| T | T(0) | | | | | Y-O | 33 | |
| R | R(0) | | | | | O-Y | 34 | 21 |
| | T(1) | | | | | Y-G | 35 | |
| | R(1) | | | | | G-Y | 36 | |
| T | T(0) | | | | | Y-BR | 37 | |
| R | R(0) | | | | | BR-Y | 38 | 23 |
| | T(1) | | | | | Y-S | 39 | |
| | R(1) | | | | | S-Y | 40 | |
| T | T(0) | | | | | V-BL | 41 | |
| R | R(0) | | | | | BL-V | 42 | 25 |
| | T(1) | | | | | V-OR | 43 | |
| | R(1) | | | | | OR-V | 44 | |
| | | | | | | V-GR | 45 | |
| | | | | | | GR-V | 46 | |
| | | | | | | V-BR | 47 | |
| | | | | | | BR-V | 48 | |
| | | | | | | V-S | 49 | |
| | | | | | | S-V | 50 | |

**NOTES:**

1. leads not designated are cut down on connecting blocks, but not used for cross-connections.
2. connector MX03 serves carrier slots 17, 19, 21, 23, and 25.
3. LC16B for FP9 only.
4. LC07 and LC15 for FP8 only.

Fig.10- Module Control and Trunk Port Carrier Cross-Connections

| A25D CONNECTOR CABLE TO MODULE CONTROL AND TRUNK PORT CARRIER CONNECTOR TX01 (NOTE 2) | | | | | | TO PURPLE BACKBOARD | | SLOT |
|---|---|---|---|---|---|---|---|---|
| LEAD DESIGNATION FOR CIRCUIT PACKS (NOTE 1) | | | | | | CUT LEADS DOWN ON | | |
| LC7 | LC8C, LC9 | LC11 | LC13 | LC15 NOTE 4 | LC16B NOTE 3 | LEAD COLOR | CONN BLK TERMINALS | |
| T | T(0) | T1(0) | T(0) | CID-0 | M(0) | W-BL | 1 | |
| R | R(0) | R1(0) | R(0) | CIG-0 | | BL-W | 2 | |
| | T(1) | T(0) | AL1(0) | CID-1 | M(1) | W-OR | 3 | |
| | R(1) | R(0) | S2(0) | CIG-1 | | OR-W | 4 | |
| | | E(0) | C0(0) | CID-2 | M(2) | W-GR | 5 | |
| | | M(0) | | CIG-2 | | GR-W | 6 | |
| | | T1(1) | T(1) | CID-3 | M(3) | W-BR | 7 | |
| | | R1(1) | R(1) | CIG-3 | | BR-W | 8 | 02 |
| | | T(1) | AL1(1) | CID-4 | M(4) | W-S | 9 | |
| | | R(1) | S2(1) | CIG-4 | | S-W | 10 | |
| | | E(1) | C0(1) | CID-5 | M(5) | R-BL | 11 | |
| | | M(1) | | CIG-5 | | BL-R | 12 | |
| | | | | CID-6 | M(6) | R-OR | 13 | |
| | | | | CIG-6 | | OR-R | 14 | |
| | | | | CID-7 | M(7) | R-GR | 15 | |
| | | | | CIG-7 | | GR-R | 16 | |
| T | T(0) | T1(0) | T(0) | CID-0 | M(0) | R-BR | 17 | |
| R | R(0) | R1(0) | R(0) | CIG-0 | | BR-R | 18 | |
| | T(1) | T(0) | AL1(0) | CID-1 | M(1) | R-S | 19 | |
| | R(1) | E(0) | S2(0) | CIG-1 | | S-R | 20 | |
| | | R(0) | C0(0) | CID-2 | M(2) | BK-BL | 21 | |
| | | M(0) | | CIG-2 | | BL-BK | 22 | |
| | | T1(1) | T(1) | CID-3 | M(3) | BK-OR | 23 | |
| | | R1(1) | R(1) | CIG-3 | | OR-BK | 24 | |
| | | T(1) | AL1(1) | CID-4 | M(4) | BK-GR | 25 | 03 |
| | | R(1) | S2(1) | CIG-4 | | GR-BK | 26 | |
| | | E(1) | C0(1) | CID-5 | M(5) | BK-BR | 27 | |
| | | M(1) | | CIG-5 | | BR-BK | 28 | |
| | | | | CID-6 | M(6) | BK-S | 29 | |
| | | | | CIG-6 | | S-BK | 30 | |
| | | | | CID-7 | M(7) | Y-BL | 31 | |
| | | | | CIG-7 | | BL-Y | 32 | |
| T | T(0) | T1(0) | T(0) | CID-0 | M(0) | Y-O | 33 | |
| R | R(0) | R1(0) | R(0) | CIG-0 | | O-Y | 34 | |
| | T(1) | T(0) | AL1(0) | CID-1 | M(1) | Y-G | 35 | |
| | R(1) | R(0) | S2(0) | CIG-1 | | G-Y | 36 | |
| | | E(0) | C0(0) | CID-2 | M(2) | Y-BR | 37 | |
| | | M(0) | | CIG-2 | | BR-Y | 38 | |
| | | T1(1) | T(1) | CID-3 | M(3) | Y-S | 39 | |
| | | R1(1) | R(1) | CIG-3 | | S-Y | 40 | |
| | | T(1) | AL1(1) | CID-4 | M(4) | V-BL | 41 | 04 |
| | | R(1) | S2(1) | CIG-4 | | BL-V | 42 | |
| | | E(1) | C0(1) | CID-5 | M(5) | V-OR | 43 | |
| | | M(1) | | CIG-5 | | OR-V | 44 | |
| | | | | CID-6 | M(6) | V-GR | 45 | |
| | | | | CIG-6 | | GR-V | 46 | |
| | | | | CID-7 | M(7) | V-BR | 47 | |
| | | | | CIG-7 | | BR-V | 48 | |
| | | | | | | V-S | 49 | |
| | | | | | | S-V | 50 | |

**NOTES:**

1. leads not designated are cut down on connecting blocks, but not used for cross-connections.
2. connector TX01 serves carrier slots 2, 3, and 4.
3. LC16B for FP3 and FP9; LC16 can be used for FP3.
4. LC15 for FP8 and FP10

Fig. 11- Trunk Port Carrier Cross-Connections

| A25D CONNECTOR CABLE TO MODULE CONTROL AND TRUNK PORT CARRIER CONNECTOR TX02 (NOTE 2) | | | | | | TO PURPLE BACKBOARD | | SLOT |
|---|---|---|---|---|---|---|---|---|
| LEAD DESIGNATION FOR CIRCUIT PACKS (NOTE 1) | | | | | | CUT LEADS DOWN ON | | |
| LC7 | LC8C, LC9 | LC11 | LC13 | LC15 NOTE 4 | LC16B NOTE 3 | LEAD COLOR | CONN BLK TERMINALS | |
| T | T(0) | T1(0) | T(0) | M-0 | M(0) | W-BL | 1 | |
| R | R(0) | R1(0) | R(0) | | | BL-W | 2 | |
| | T(1) | T(0) | AL1(0) | M-1 | M(1) | W-OR | 3 | |
| | R(1) | R(0) | S2(0) | | | OR-W | 4 | |
| | | E(0) | C0(0) | M-2 | M(2) | W-GR | 5 | |
| | | M(0) | | | | GR-W | 6 | |
| | | T1(1) | T(1) | M-3 | M(3) | W-BR | 7 | |
| | | R1(1) | R(1) | | | BR-W | 8 | 05 |
| | | T(1) | AL1(1) | M-4 | M(4) | W-S | 9 | |
| | | R(1) | S2(1) | | | S-W | 10 | |
| | | E(1) | C0(1) | M-5 | M(5) | R-BL | 11 | |
| | | M(1) | | | | BL-R | 12 | |
| | | | | M-6 | M(6) | R-OR | 13 | |
| | | | | | | OR-R | 14 | |
| | | | | M-7 | M(7) | R-GR | 15 | |
| | | | | | | GR-R | 16 | |
| T | T(0) | T1(0) | T(0) | M-0 | M(0) | R-BR | 17 | |
| R | R(0) | R1(0) | R(0) | | | BR-R | 18 | |
| | T(1) | T(0) | AL1(0) | M-1 | M(1) | R-S | 19 | |
| | R(1) | E(0) | S2(0) | | | S-R | 20 | |
| | | R(0) | C0(0) | M-2 | M(2) | BK-BL | 21 | |
| | | M(0) | | | | BL-BK | 22 | |
| | | T1(1) | T(1) | M-3 | M(3) | BK-OR | 23 | |
| | | R1(1) | R(1) | | | OR-BK | 24 | |
| | | T(1) | AL1(1) | M-4 | M(4) | BK-GR | 25 | 06 |
| | | R(1) | S2(1) | | | GR-BK | 26 | |
| | | E(1) | C0(1) | M-5 | M(5) | BK-BR | 27 | |
| | | M(1) | | | | BR-BK | 28 | |
| | | | | M-6 | M(6) | BK-S | 29 | |
| | | | | | | S-BK | 30 | |
| | | | | M-7 | M(7) | Y-BL | 31 | |
| | | | | | | BL-Y | 32 | |
| T | T(0) | T1(0) | T(0) | M-0 | M(0) | Y-O | 33 | |
| R | R(0) | R1(0) | R(0) | | | O-Y | 34 | |
| | T(1) | T(0) | AL1(0) | M-1 | M(1) | Y-G | 35 | |
| | R(1) | R(0) | S2(0) | | | G-Y | 36 | |
| | | E(0) | C0(0) | M-2 | M(2) | Y-BR | 37 | |
| | | M(0) | | | | BR-Y | 38 | |
| | | T1(1) | T(1) | M-3 | M(3) | Y-S | 39 | |
| | | R1(1) | R(1) | | | S-Y | 40 | |
| | | T(1) | AL1(1) | M-4 | M(4) | V-BL | 41 | 07 |
| | | R(1) | S2(1) | | | BL-V | 42 | |
| | | E(1) | C0(1) | M-5 | M(5) | V-OR | 43 | |
| | | M(1) | | | | OR-V | 44 | |
| | | | | M-6 | M(6) | V-GR | 45 | |
| | | | | | | GR-V | 46 | |
| | | | | M-7 | M(7) | V-BR | 47 | |
| | | | | | | BR-V | 48 | |
| | | | | | | V-S | 49 | |
| | | | | | | S-V | 50 | |

**NOTES:**

1. leads not designated are cut down on connecting blocks, but not used for cross-connections.
2. connector TX02 serves carrier slots 5, 6, and 7.
3. LC16B for FP3 and FP9; LC16 can be used for FP3.
4. LC15 for FP8 and FP10

Fig. 12 - Trunk Port Carrier Cross-Connections

| A25D CONNECTOR CABLE TO MODULE CONTROL AND TRUNK PORT CARRIER CONNECTOR TX03 (NOTE 2) | | | | | | TO PURPLE BACKBOARD | | SLOT |
|---|---|---|---|---|---|---|---|---|
| LEAD DESIGNATION FOR CIRCUIT PACKS (NOTE 1) | | | | | | CUT LEADS DOWN ON | | |
| LC7 | LC8C, LC9 | LC11 | LC13 | LC15 NOTE 4 | LC16B NOTE 3 | LEAD COLOR | CONN BLK TERMINALS | |
| T | T(0) | T1(0) | T(0) | M-0 | M(0) | W-BL | 1 | 08 |
| R | R(0) | R1(0) | R(0) | | | BL-W | 2 | |
| | T(1) | T(0) | AL1(0) | M-1 | M(1) | W-OR | 3 | |
| | R(1) | R(0) | S2(0) | | | OR-W | 4 | |
| | | E(0) | C0(0) | M-2 | M(2) | W-GR | 5 | |
| | | M(0) | | | | GR-W | 6 | |
| | | T1(1) | T(1) | M-3 | M(3) | W-BR | 7 | |
| | | R1(1) | R(1) | | | BR-W | 8 | |
| | | T(1) | AL1(1) | M-4 | M(4) | W-S | 9 | |
| | | R(1) | S2(1) | | | S-W | 10 | |
| | | E(1) | C0(1) | M-5 | M(5) | R-BL | 11 | |
| | | M(1) | | | | BL-R | 12 | |
| | | | | M-6 | M(6) | R-OR | 13 | |
| | | | | | | OR-R | 14 | |
| | | | | M-7 | M(7) | R-GR | 15 | |
| | | | | | | GR-R | 16 | |
| T | T(0) | T1(0) | T(0) | M-0 | M(0) | R-BR | 17 | 09 |
| R | R(0) | R1(0) | R(0) | | | BR-R | 18 | |
| | T(1) | T(0) | AL1(0) | M-1 | M(1) | R-S | 19 | |
| | R(1) | E(0) | S2(0) | | | S-R | 20 | |
| | | R(0) | C0(0) | M-2 | M(2) | BK-BL | 21 | |
| | | M(0) | | | | BL-BK | 22 | |
| | | T1(1) | T(1) | M-3 | M(3) | BK-OR | 23 | |
| | | R1(1) | R(1) | | | OR-BK | 24 | |
| | | T(1) | AL1(1) | M-4 | M(4) | BK-GR | 25 | |
| | | R(1) | S2(1) | | | GR-BK | 26 | |
| | | E(1) | C0(1) | M-5 | M(5) | BK-BR | 27 | |
| | | M(1) | | | | BR-BK | 28 | |
| | | | | M-6 | M(6) | BK-S | 29 | |
| | | | | | | S-BK | 30 | |
| | | | | M-7 | M(7) | Y-BL | 31 | |
| | | | | | | BL-Y | 32 | |
| T | T(0) | | | | | Y-O | 33 | 11 |
| R | R(0) | | | | | O-Y | 34 | |
| | T(1) | | | | | Y-G | 35 | |
| | R(1) | | | | | G-Y | 36 | |
| T | T(0) | | | | | Y-BR | 37 | 12 |
| R | R(0) | | | | | BR-Y | 38 | |
| | T(1) | | | | | Y-S | 39 | |
| | R(1) | | | | | S-Y | 40 | |
| T | T(0) | | | | | V-BL | 41 | 13 |
| R | R(0) | | | | | BL-V | 42 | |
| | T(1) | | | | | V-OR | 43 | |
| | R(1) | | | | | OR-V | 44 | |
| | | | | | | V-GR | 45 | |
| | | | | | | GR-V | 46 | |
| | | | | | | V-BR | 47 | |
| | | | | | | BR-V | 48 | |
| | | | | | | V-S | 49 | |
| | | | | | | S-V | 50 | |

NOTES:
1. leads not designated are cut down on connecting blocks, but not used for cross-connections.
2. connector TX03 serves carrier slots 8, 9, 11, 12, and 13.
3. LC16B for FP3 and FP9; LC16 can be used for FP3.
4. LC15 for FP8 and FP10

Fig.13 - Trunk Port Carrier Cross-Connections

No arrows shown due to extensive changes.

Reason for reissue:
Completely revised.

Manager, Denver PBX PECC