

**97-TYPE CONNECTING BLOCKS AND 97A-TYPE DATA MOUNTINGS
IDENTIFICATION, INSTALLATION, MAINTENANCE, AND TESTING
SINGLE AND MULTILINE INSTALLATIONS
JACKS FOR REGISTERED DATA EQUIPMENT**

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1. GENERAL

1.01 This section contains information on jacks for registered data sets or registered protective circuitry to be provided under the Federal Communications Commission (FCC) Registration Program. The jacks described herein are for use with data equipment registered as fixed loss loop (FLL) type, programmable (P) type or equipment with an output not to exceed -9 dBm.

The FCC Registration Program requires that telephone-company provided or customer-provided data equipment be connected to the public switched network by means of a standard jack and plug with the jack to be installed by the telephone company.

The FCC Registration Program rules do not permit data jacks behind PBXs or key telephone systems. Registered data sets with an output not exceeding -9 dBm may be connected using voice jacks in these situations.

1.02 This section is reissued to incorporate information on the 97D and 97E connecting blocks and the 97A3 and 97A4 data mountings. Revision arrows are used to emphasize the more significant changes.

1.03 The fixed loss loop type of data equipment must transmit at an output level of -4 dBm and a pad is included in the data jack so that the total of loop loss plus pad loss will range between 8 and 9 dB. The programmed type of data equipment adjusts the output level in accordance with a programming resistor in the data jack. Both types of registered data equipment, when used with the appropriate data jacks, result in signal levels no greater than -12 dBm at the serving central office. A third type of registered data equipment must transmit at a nonadjustable level not to exceed -9 dBm for use on voice loops via a standard miniature voice jack. Since the mean attenuation of business loops is on the order of 3 dB, the -12 dBm objective will be met at the central office. Registered data equipment with this fixed output level of -9 dBm may be used with either type of data jack and all of the 6- and 8-position miniature voice jacks to be provided under the registration program. The miniature voice jacks are described in the 463-400-ZZZ series of Bell System Practices.

NOTICE

Not for use or disclosure outside the
Bell System except under written agreement

1.04 In addition to providing the physical interface to the switched network, the 97-type connecting blocks provide the following:

- Physical termination of the line
- Miniature keyed 8-position jack (97A-type and 97B) or two 50-position connectors (97D and 97E)
- Programming resistor (97B, 97D and 97E).

The 97A-type connecting block also provides a fixed loss loop pad and a switch to allow the user to select operation with either fixed loop loss or programmed data equipment.

2. IDENTIFICATION

A. 97-Type Connecting Blocks

2.01 The 97A-type, and 97B, 97D, and 97E connecting blocks provide a means for connecting registered data equipment to the public switched network. The 97A-type (Fig. 1) is for use with data equipment registered as either fixed loss loop type or programmed and is also referred to as the universal data jack. The 97B (Fig. 2), 97D (Fig. 3), and 97E (Fig. 4) are for use with data equipment registered as programmed, and is also referred to as the programmed data jack.

2.02 The 97A-type and 97B connecting blocks are for use with single line installations. The 97D and 97E connecting blocks are for use with multiline installations (eight lines maximum). The 97E is similar to the 97D except the 97E is designed for wall mounting.

2.03 The 97A-type and 97B connecting blocks measure 3.9 inches long by 1 inch high by 2.4 inches wide. The 97D measures 3.75 inches long by 2 inches high by 1 inch wide. The 97E measures 4 inches long by 2.75 inches high by 1.5 inches wide. The 97A-type weighs 5 ounces and the 97B weighs 3 ounces. The 97D weighs 0.5 pound and the 97E weighs 0.75 pound.

2.04 The 97A-type and 97B connecting blocks have a pair of screw terminals for the telephone line tip and ring leads. They also have a second pair of screw terminals for auxiliary telephone connections, such as mode indication, from an exclusion key-type telephone set. The mode indication function indicates to the customer's registered data equipment whether the telephone line is in the voice or data mode. As an alternative, if the customer chooses, the mode indication function can indicate operation of the switchhook contacts only.

2.05 The 97A-type and 97B connecting blocks are equipped with an 8-position miniature jack

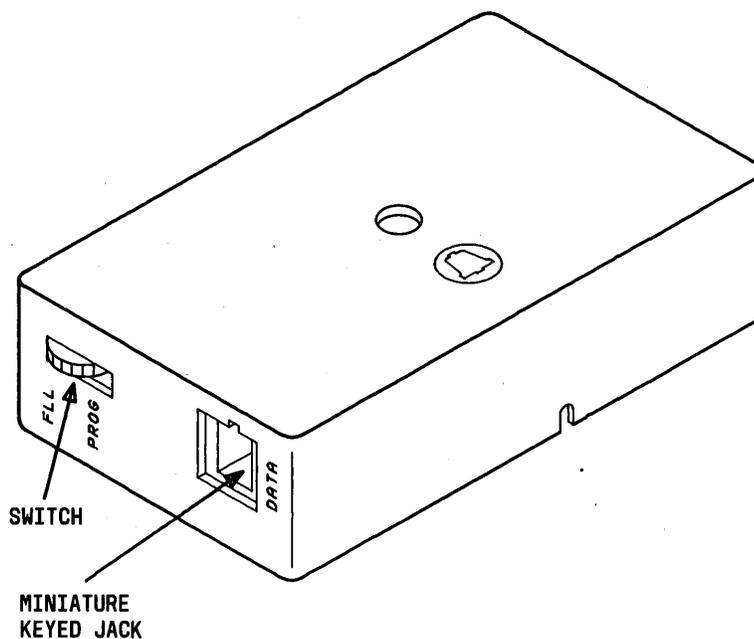


Fig. 1—97A-Type Connecting Block

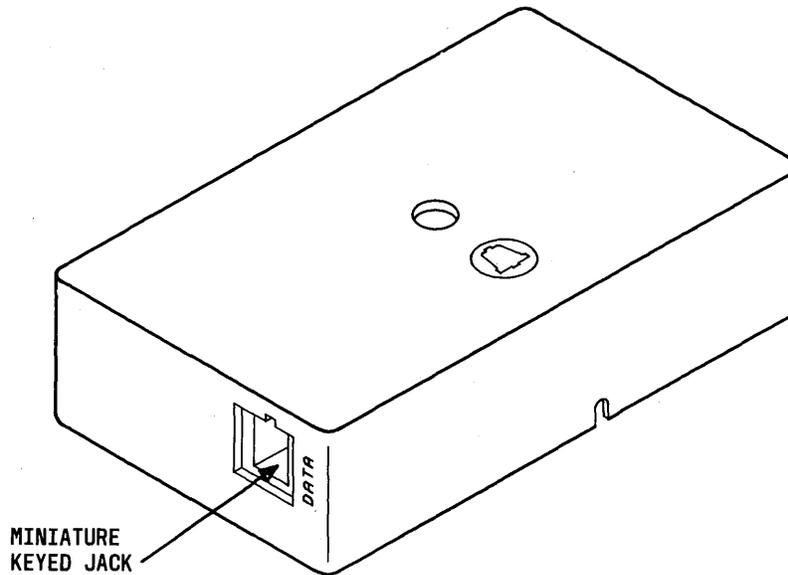


Fig. 2—97B Connecting Block

which is specially keyed for use with data equipment. The jack also accepts the miniature nonkeyed 6-position standard telephone plug. ♦The 97D and 97E connecting blocks are equipped with two 50-position connectors allowing for connection of up to eight (8) programmable types of data equipment to the public switched network.♦

Note: Starting third quarter 1977, the 97A-type and 97B connecting blocks are shipped with a sliding door which cover the jack opening to keep out dust and dirt, etc. The door is spring-loaded and automatically closes unless a plug is inserted.

2.06 When the 97A-type connecting block is provided, the associated switch must be in the correct position to ensure proper operation. Should the switch be in the programmed position with fixed loss loop data equipment, the data signal will not reach the line. Should the customer attempt to connect fixed loss loop type data equipment through a programmed data jack, the signal will not reach the line. If the switch on the 97A-type (universal) data jack is in the fixed loss loop position with programmable data equipment, the data signal may have an additional loss of up to 3 dB due to the bridged open circuit impedance of the pad.

2.07 The 97A-type data connecting block is available in nine versions coded 97A1 through

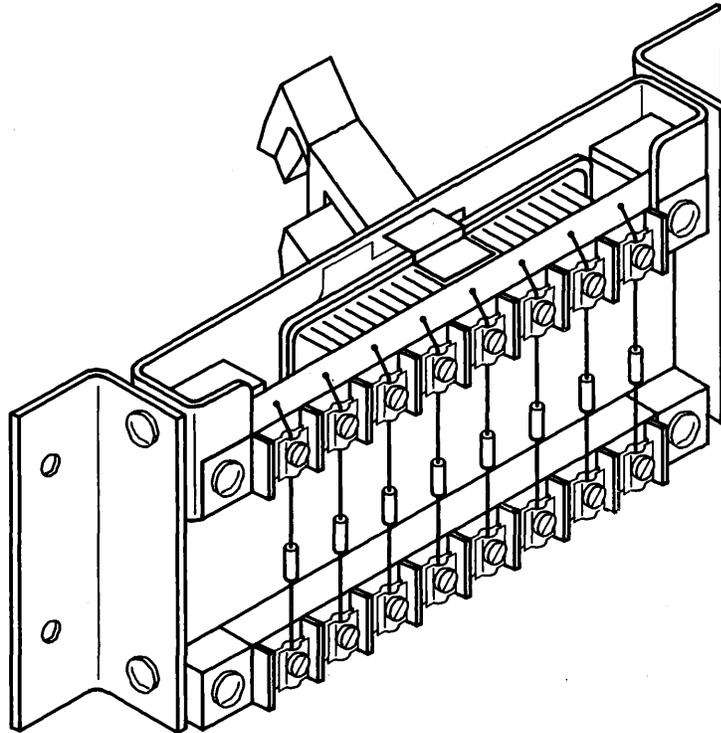
97A9, with each code having the appropriate pad and programming resistor for a particular loop loss. The last digit of the code represents the loss of the loop rounded up to the next whole dB. The resulting loop loss is between 8 and 9 dB, as illustrated in Fig. 5. ♦The 97B, 97D, and 97E connecting blocks are shipped with a complete set of programming resistors. ♦

B. 97A-Type Data Mounting

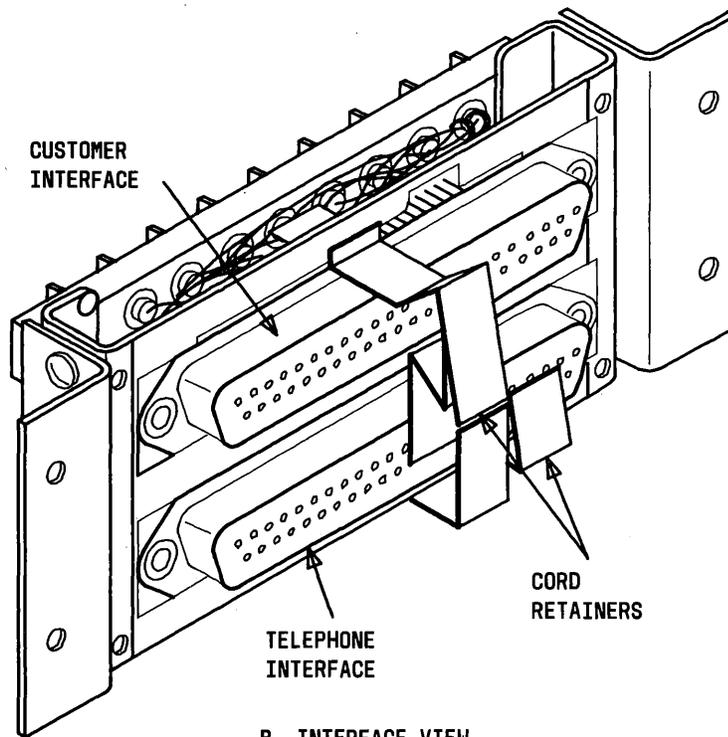
2.08 The 97A1 manufacture discontinued (MD) data mounting (Fig. 6) is a multiple mounting for up to eight D97A-type circuit packs connected via 910B connectors that are mounted on a printed wiring board backplane. One 50-position connector mounted on the backplane provides means for connecting registered data equipment. The other 50-position connector is for the connection of telephone line facilities.

2.09 ♦The 97A3 data mounting is rated MD/NO (manufacture discontinued/not orderable).♦ The 97A3 data mounting (Fig. 7) replaced and is similar to the 97A1. The 97A3 data mounting is equipped with a 2-foot cable assembly and clamp instead of the telephone interface connector mounted on the backplane as on the 97A1.

2.10 ♦The 97A4 data mounting replaces 97A3 data mounting and is identical to 97A1 data mount-



A. PROGRAMMABLE RESISTOR VIEW



B. INTERFACE VIEW

Fig. 3—97D Connecting Block

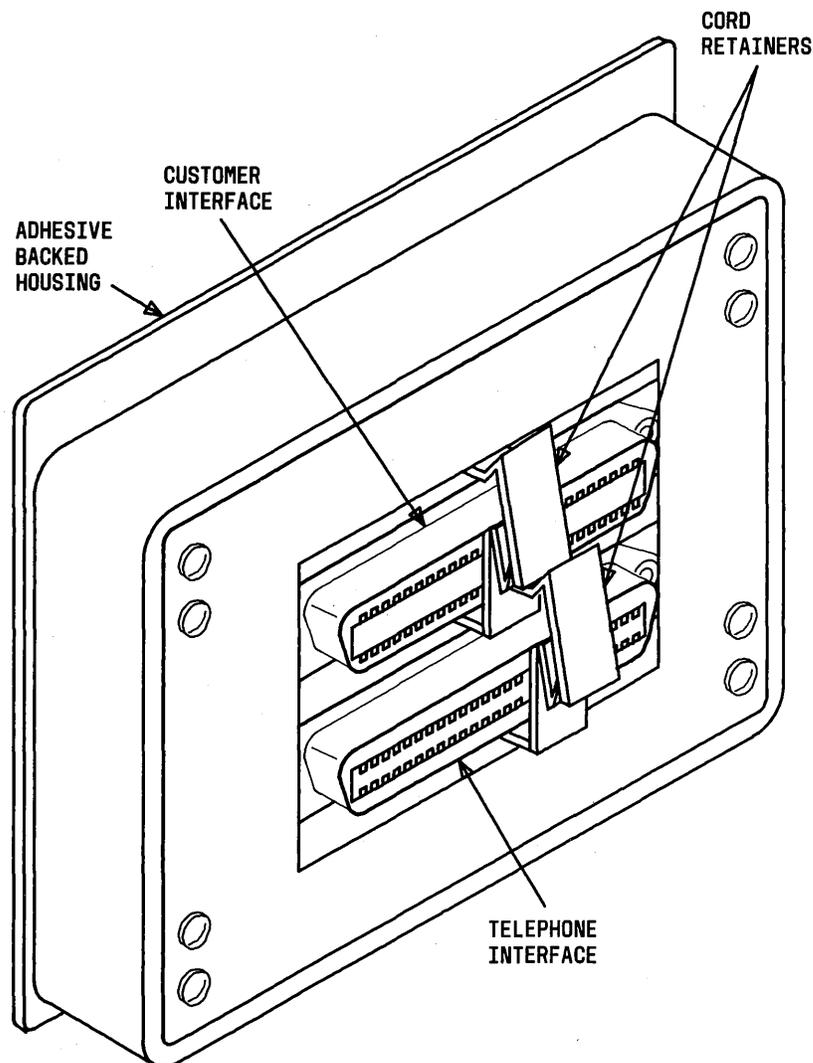


Fig. 4—97E Connecting Block

ing except for the telephone line pin assignment. The pin assignment is shown in Table B.

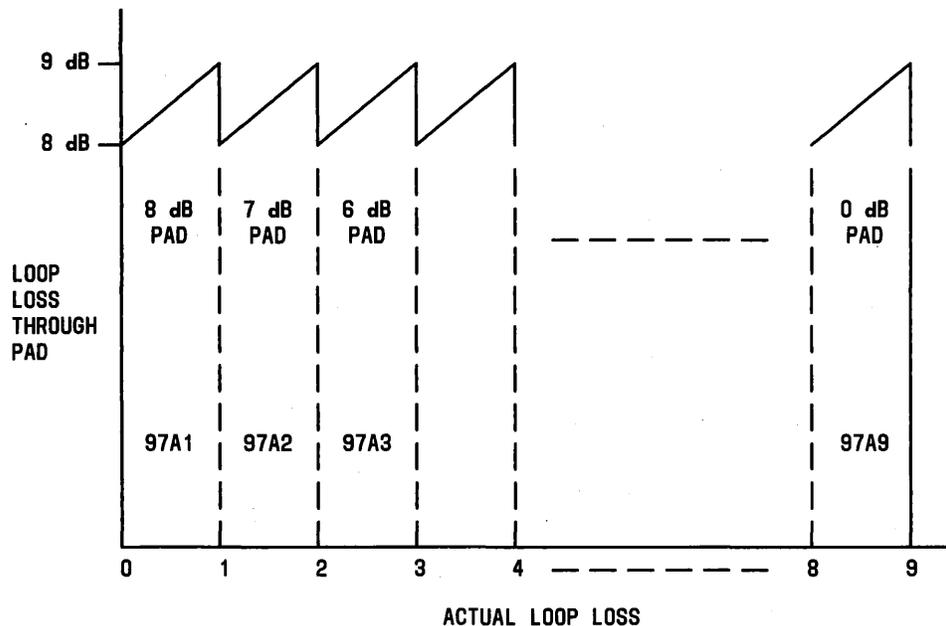
Caution: *M16M cord used with 97A1 data mounting shall not be used with 97A4 data mounting.*

2.11 The overall dimensions of the 97A-type data mounting are 5 inches long, 1.87 inches high, and 5 inches deep.

2.12 A gray plastic cover and base pan (D-180935 mounting kit) may be used to house a 97A-type data mounting to facilitate wall mounting (Fig. 8). The cover has eight slots which allows the

D97A-type circuit pack switches to protrude and a writing surface under each switch position to write in telephone line number and loop loss. The switches provide a means for selection of operation with either fixed loss loop or programmed data equipment. A fully equipped 97A-type data mounting in a D-180935 mounting kit weighs approximately 3 pounds.

2.13 A bracket and a clamp, to lock connecting cables to the 97A-type data mounting, are provided as part of the 97A-type data mounting. An adhesive pad (comcode 842 309 643), to allow mounting to a metal wall without drilling, is provided as part of the D-180935 mounting kit.



1. DIAL CO MILLIWATT SUPPLY.
2. MEASURE INCOMING SIGNAL LEVEL.
3. ROUND UPWARD TO NEXT WHOLE NUMBER.
4. USE THAT CODE OF 97A.

EXAMPLE: 2.2dB = 97A3

Fig. 5—Determining Correct 97A-Type Connecting Block

2.14 The 97A-type data mounting has been designed for both 19- and 23-inch rack mounting as well as wall mounting. In a 19-inch rack, a comcode number 842 310 781 two-inch mounting plate accommodates three 97A-type data mountings providing up to 24 lines. A 23-inch rack application requires the use of a comcode number 842 310 773 two-inch mounting plate which holds four 97A-type data mountings providing up to 32 lines.

2.15 The 97A-type data mounting was designed to serve the same purpose as the 97A-type and 97B connecting block, except the 97A-type data mounting has these advantages:

- (a) Is more compact
- (b) Provides a more attractive multiline arrangement.

C. D97A-Type Circuit Pack

2.16 The D97A-type circuit pack (Fig. 9) is electrically equivalent to the 97A-type connecting

block, except for the absence of the 8-position miniature jack, provides a fixed loss loop pad and a switch to allow the user to select operation with either fixed loss loop or programmed data equipment.

2.17 The D97A-type circuit pack is available in nine versions, coded D97A1 through D97A9, with each code having the appropriate pad and programming resistor for a particular loop loss (Table A). The last digit of the code represents the loss of the loop rounded up to the next whole dB. The resulting loop loss (loop plus pad) is between 8 and 9 dB.

D. Summary of (USOC) Uniform Service Order Code Designations

2.18 The data jacks have been assigned USOC designations in the RJ family. The remaining characters identify a specific interface and physical arrangement. An arrangement can be provided to interconnect a data jack and an exclusion key telephone set. Each of the data jacks and the telephone

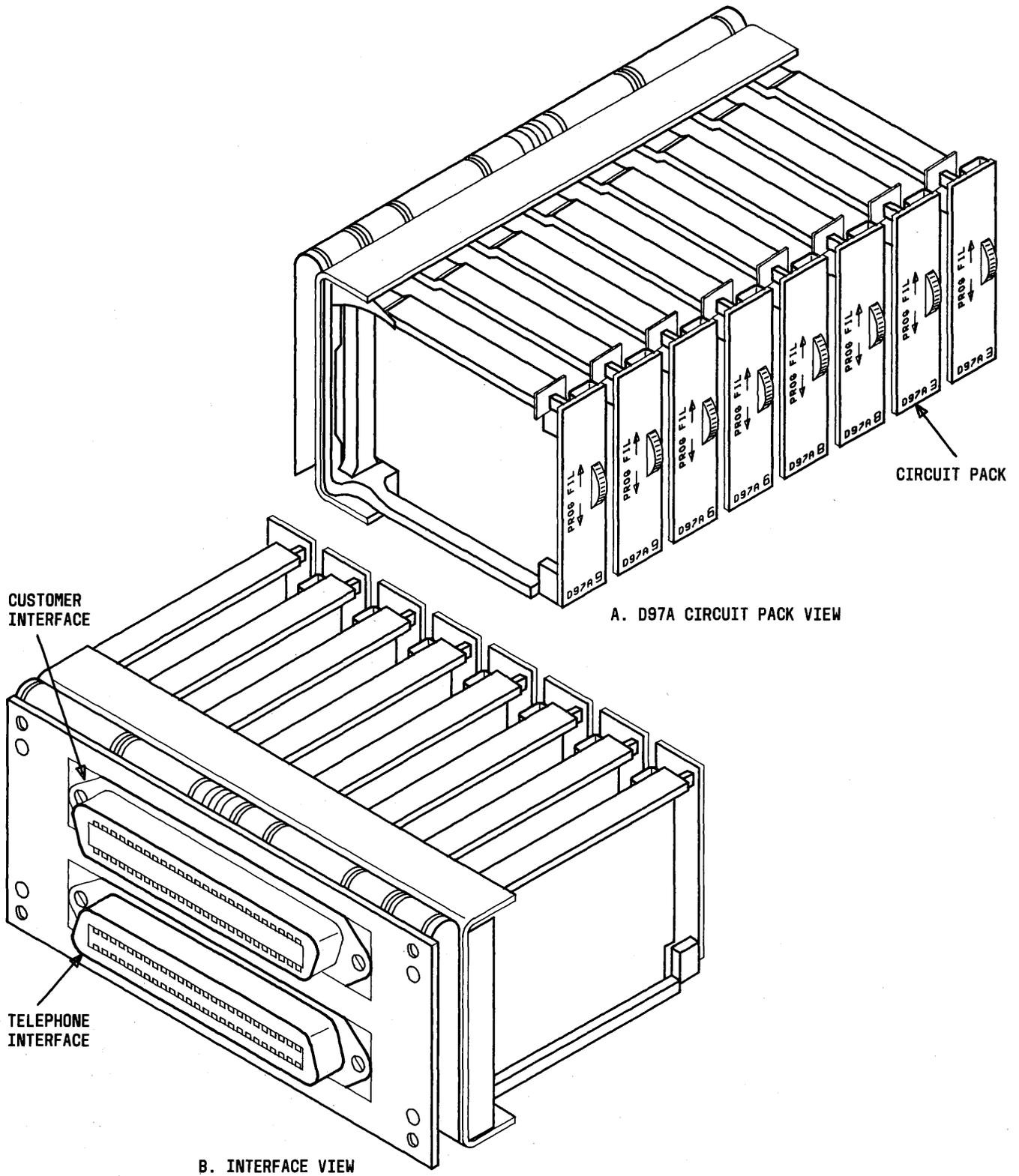


Fig. 6—D97A1 and 97A4 Data Mounting

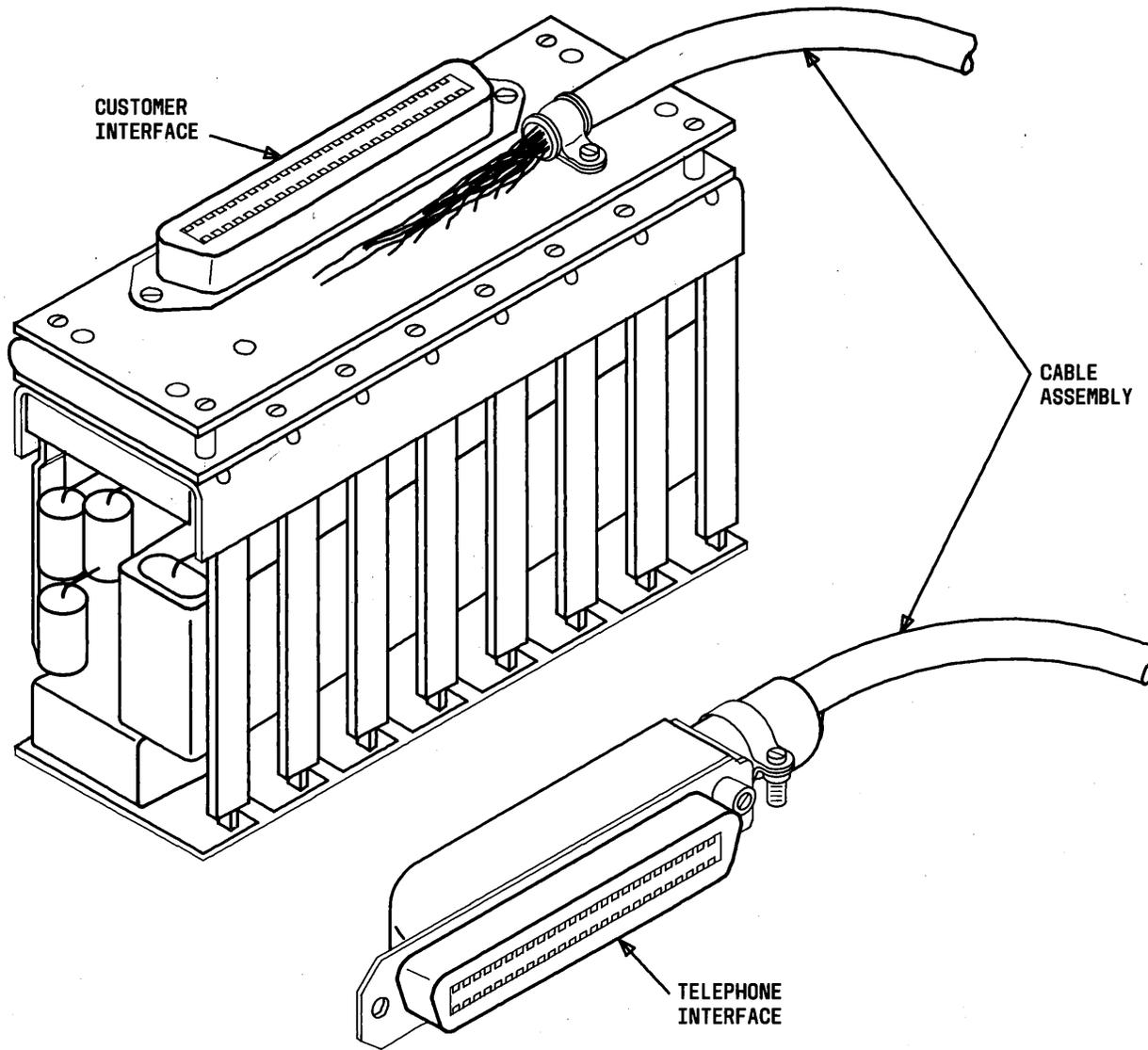


Fig. 7—97A3 Data Mounting

arrangement is described in the following paragraphs.

2.19 USOC RJ41S: RJ41S is the universal data jack (requires the 97A-type connecting block) for single-line applications of both fixed loss loop and programmed data equipment. The jack is an 8-position miniature keyed jack and is shown schematically in Fig. 10.

2.20 USOC RJ45S: RJ45S is the programmed data jack (requires the 97B connecting block) for single-line applications of the programmable type

data equipment only. The jack is an 8-position miniature keyed jack and is shown schematically in Fig. 11.

2.21 USOC RJ16X: This arrangement in connection with a series jack such as RJ36X provides mode indication (MI) and mode indication common (MIC) leads for data sets using the *permissive* mode of transmission (shown schematically in Fig. 12). This is a miniature 6-position connector.

2.22 USOC RJ41M: RJ41M is the multiple mounting arrangement equipped with up to eight universal data jacks. This USOC is imple-

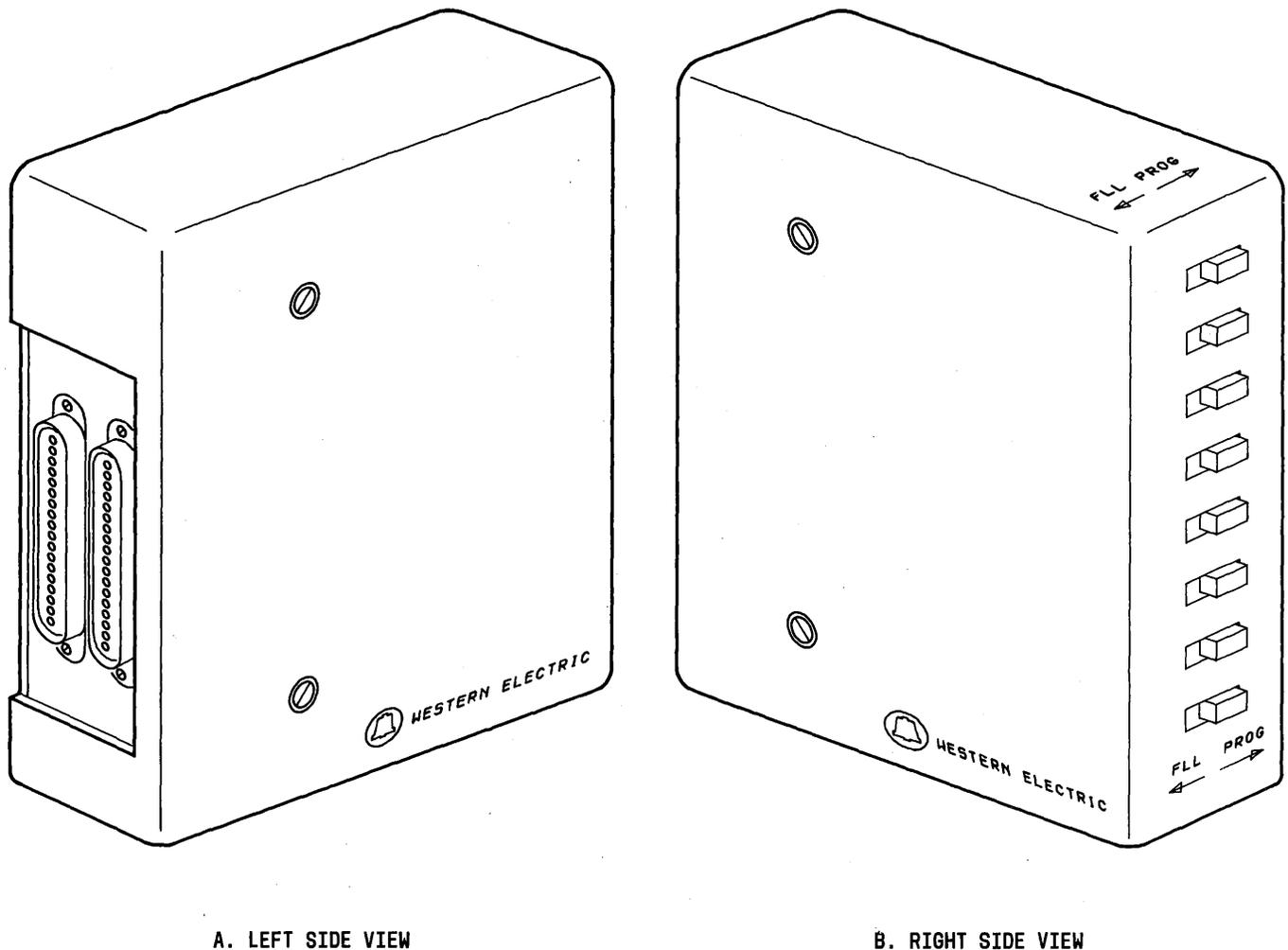


Fig. 8—97A1 Data Mounting E/W Eight D97A-Type Circuit Packs Installed in a D-180935 Mounting Kit

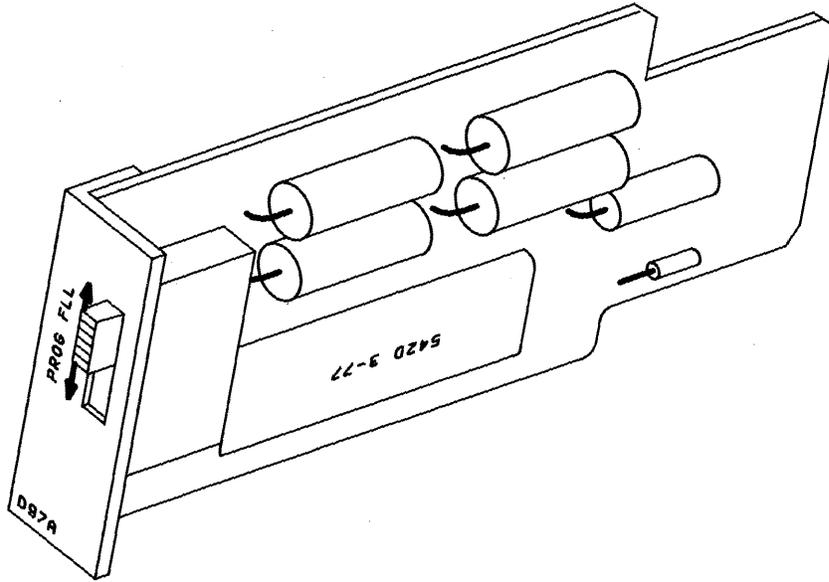
mented with the 103A apparatus mounting (RJM2X) and the appropriate number of 97A-type connecting blocks (RJ41S). A 103A apparatus mounting accommodates up to 16 single universal data jacks.

2.23 USOC RJ45M: RJ45M is the multiple mounting arrangement equipped with up to eight programmed data jacks. This USOC is implemented with a 103A apparatus mounting (RJM2X) and the appropriate number of 97B connecting blocks (RJ45S). A 103A apparatus mounting accommodates up to 16 single programmed data jacks.

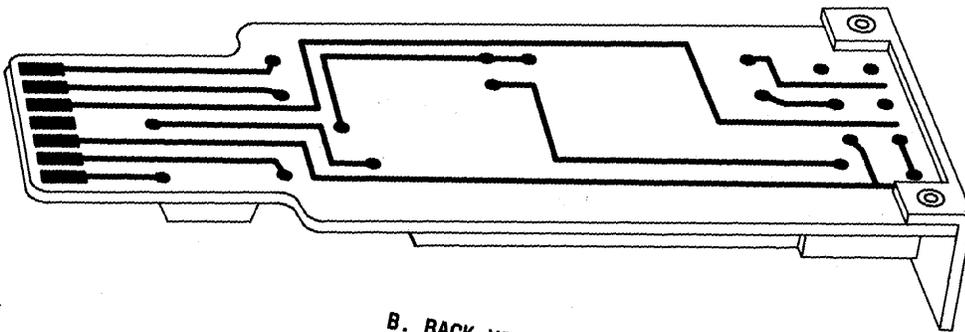
2.24 USOC RJ26X: As an interim arrangement, RJ26X is implemented with the M48A-87 cord

for combining up to eight single-line universal data jacks into one 50-position miniature ribbon connector. RJ26X can also be implemented with the 97A4 data mounting. In this case, the following USOCs would apply:

USOC RJ26X: Multiple line universal data jack for up to eight lines—common equipment (97A4 data mounting). The connector that the data equipment connects to is shown schematically in Fig. 13. The pin assignment for the connector that the telephone facilities connect to is shown in Table B.



A. FRONT VIEW



B. BACK VIEW

Fig. 9—D97A-Type Circuit Pack

TABLE A

**PAD AND PROGRAMMING RESISTOR
CODE LISTINGS FOR PARTICULAR LOOP LOSS
OF D97A-TYPE CIRCUIT PACKS**

CODE	LOOP LOSS IN dB
D97A1	0.0-1.0
D97A2	1.1-2.0
D97A3	2.1-3.0
D97A4	3.1-4.0
D97A5	4.1-5.0
D97A6	5.1-6.0
D97A7	6.1-7.0
D97A8	7.1-8.0
D97A9	8.1-9.0

USOC RJ26S: Line circuits for use with RJ26X on a per line basis (D97A-type circuit pack).

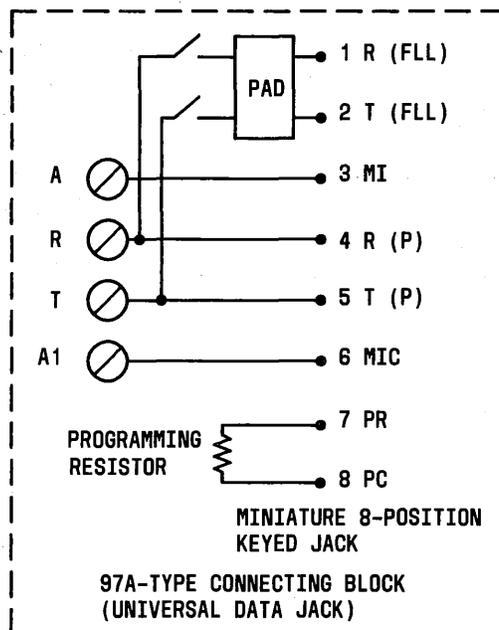
USOC RJM3X: Wall mounting arrangement for use with an 8-line multiple data jack (D-180935 mounting kit).

USOC RJM4X: Rack mounting for use with multiple line data jack (19- or 23-inch mounting).

2.25 USOC RJ27X: As an interim arrangement, the RJ27X is implemented with the M48A-87 cord for combining up to eight programmed data jacks (97B connecting blocks) into one 50-position miniature ribbon connector. The RJ27X can also be implemented with the new 97D and 97E connecting blocks. In this case, the following USOCs also apply:

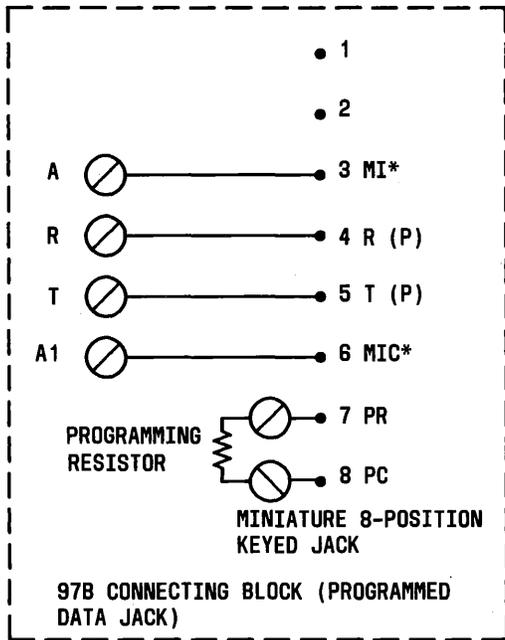
USOC RJ27X: Multiple line programmed data jack for up to eight lines (97D or 97E connecting block). The connector that the data equipment connects to is shown schematically in Fig. 14. The pin assignment for the connector that the telephone facilities connect to is shown in Table B.

USOC RJM4X: Rack mounting for use with 97D connecting block (19- or 23-inch rack mounting).



LOOP LOSS IN dB	SELECT
0.0-1.0	97A1
1.1-2.0	97A2
2.1-3.0	97A3
3.1-4.0	97A4
4.1-5.0	97A5
5.1-6.0	97A6
6.1-7.0	97A7
7.1-8.0	97A8
8.1-9.0	97A9

Fig. 10—USOC RJ41S, Schematic



LOOP LOSS IN dB	PROGRAMMING RESISTOR VALUE (OHMS)	RESISTOR MARKING
0.0-1.0	NONE	NONE
1.1-2.0	19,800	19K8
2.1-3.0	9,200	9K20
3.1-4.0	5,490	5K49
4.1-5.0	3,610	3K61
5.1-6.0	2,520	2K52
6.1-7.0	1,780	1K78
7.1-8.0	1,240	1K24
8.1-9.0	866	866R

*MI IS LABELLED "A" AND MIC IS LABELLED "A1" ON CONNECTING BLOCK.

Fig. 11—USOC RJ45S, Schematic

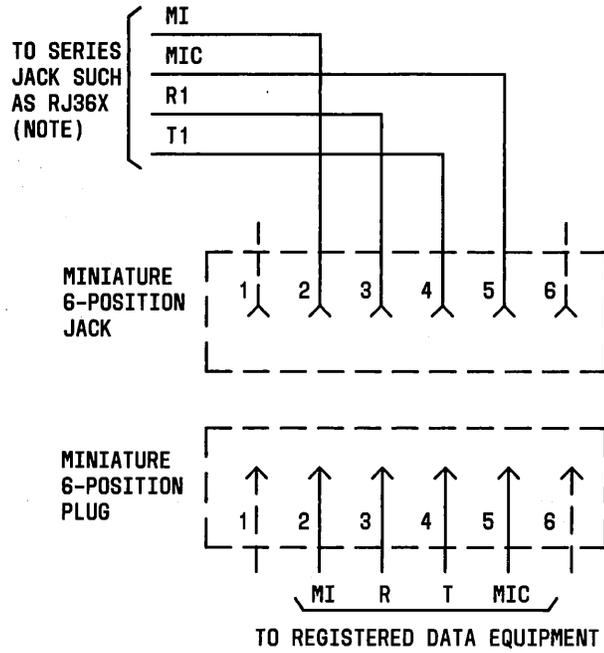
2.26 **USOC RJ36X:** RJ36X is a miniature 8-position series jack (635-type connecting block) shown schematically in Fig. 15.

2.27 **USOC RJM2X:** RJM2X is implemented with the 103A apparatus mounting for up to sixteen 97A-type and 97B connecting blocks.

2.28 **USOC RJA5X:** RJA5X is implemented with an M48A-87 adapter cord with a 50-position miniature ribbon connector attached.

2.29 A summary of the USOCs for registered data equipment jacks is presented in Table C.

2.30 **USOC RTC:** This is the USOC for the 503CM or 2503CM telephone set which provides exclusion key transfer of the line to either the telephone set or the data equipment and provides a mode indication to the data equipment. The set is connected by means of a D8AA-87 cord which plugs into a miniature 8-position series jack (635-type connecting block, USOC RJ36X) and which connects to the data jack as shown in Fig. 16 for the 503CM telephone set or Fig. 17 for the 2503CM telephone set.



NOTE:
 MI AND MIC LEADS ARE TYPICALLY WIRED TO AN RJ36X SERIES JACK WHICH CAN BE USED TO CONNECT AN EXCLUSION KEY TELEPHONE SET AHEAD OF THE DATA EQUIPMENT.

Fig. 12—Connections for USOC RJ16X

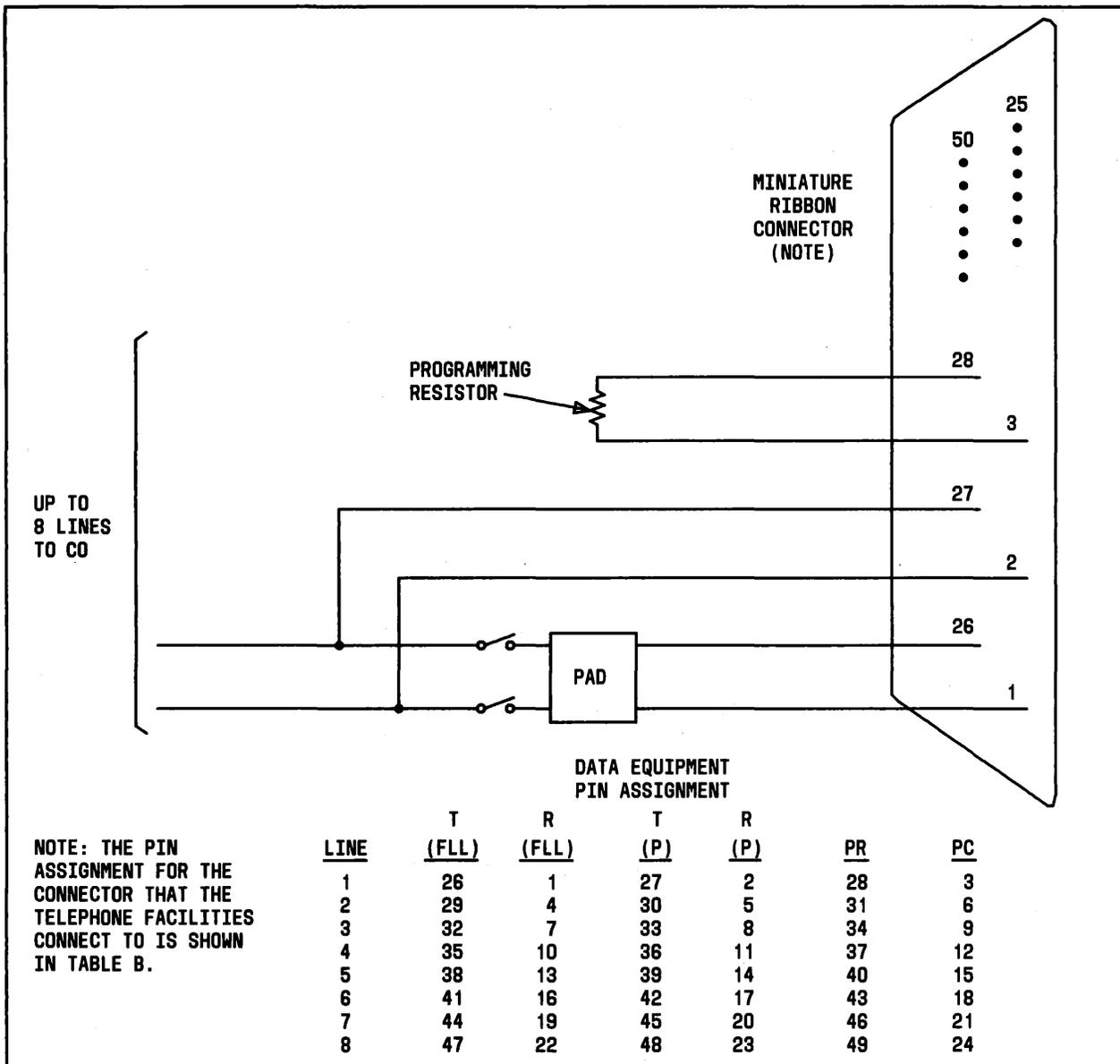


Fig. 13—USOC RJ26X, Schematic

♦TABLE B♦

**PIN ASSIGNMENT CONNECTING THE
EIGHT CENTRAL OFFICE LINES
TO 97A-TYPE DATA MOUNTING
AND 97D AND 97E CONNECTING BLOCKS**

LINE NO.	PIN ASSIGNMENT OF:	
	97A1 DATA MOUNTING	97A1 DATA MOUNTING E/W M16M CORD, 97A3 DATA MOUNTING, 97A4 DATA MOUNTING (NOTE), 97D AND 97E CONNECTING BLOCKS
1	24-49	1-26
2	21-46	2-27
3	18-43	3-28
4	15-40	4-29
5	12-37	5-30
6	9-34	6-31
7	6-31	7-32
8	3-28	8-33

Note: The M16M cord used with 97A1 data mounting shall not be used with 97A4 data mounting.

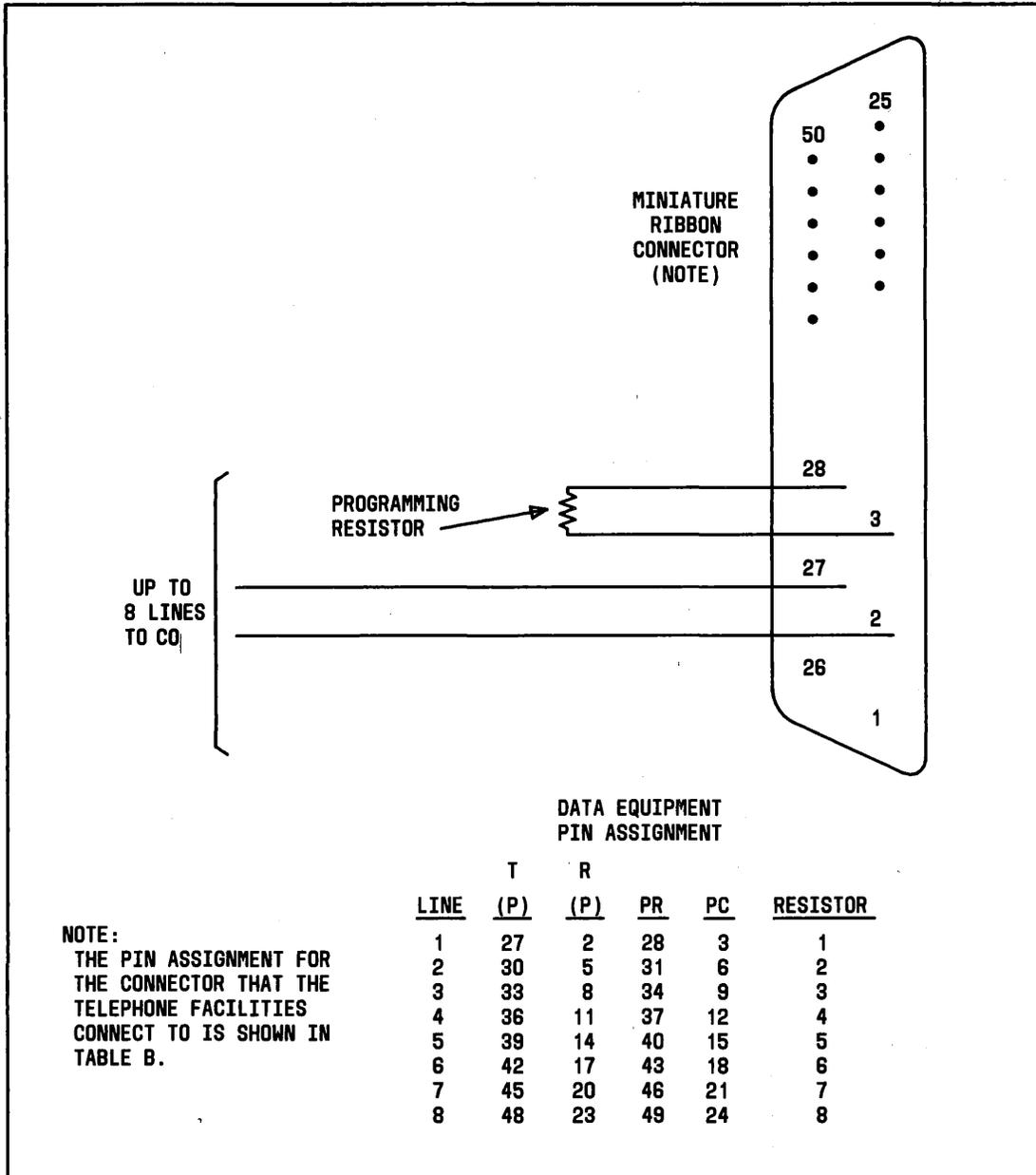
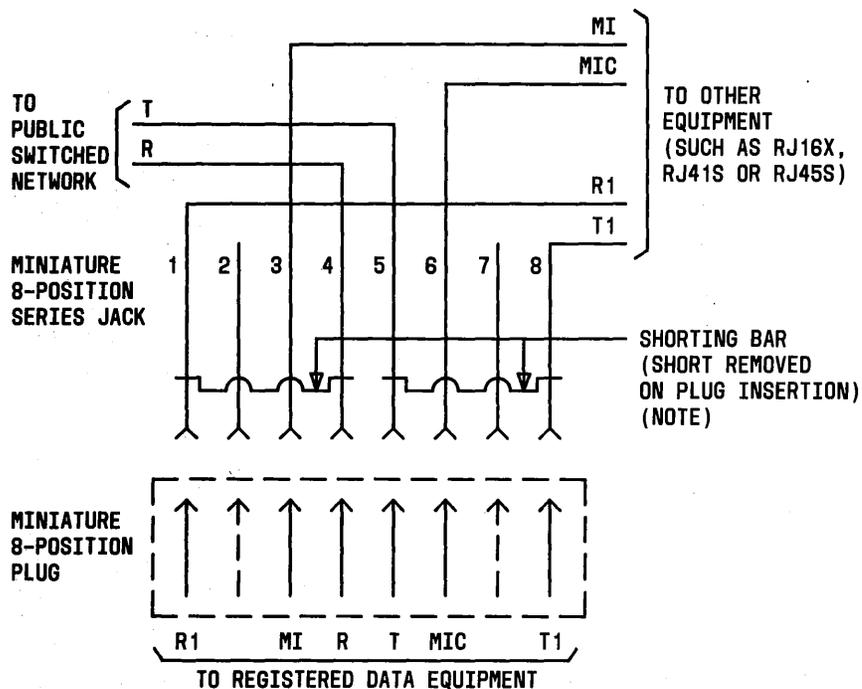


Fig. 14—USOC RJ27X, Schematic



NOTE: THE DIFFERENCE BETWEEN THE 635A AND 635B ARE

1. THE 635A REMOVES THE SHORT ON INSERTION OF A 6- OR 8-POSITION PLUG.
2. THE 635B PROVIDES A BRIDGED CONNECTION WITH A 6-POSITION PLUG AND A SERIES CONNECTION WITH AN 8-POSITION PLUG.

Fig. 15—Connections for USOC RJ36X

TABLE C

**STANDARD CONFIGURATIONS FOR CONNECTION
TO THE SWITCHED TELEPHONE NETWORK**

USOC	PLUG/JACK	DESCRIPTION	METHOD OF IMPLEMENTATION
RJ41S	Miniature 8-position keyed	Single line universal data jack for fixed loss loop or programmable data equipment.	97A-type connecting block.
RJ45S	Miniature 8-position keyed	Single line programmed data jack for programmable data equipment.	97B connecting block.
RJ41M	Up to eight miniature 8-position keyed	Multiple mounting arrangement and up to eight single line universal data jacks.	103A apparatus mounting (RJM2X) and the appropriate number of 97A-type connecting blocks (RJ41S). The 103A apparatus mounting will hold up to 16 single line data jacks.
RJ45M	Up to eight miniature 8-position keyed	Multiple mounting arrangement and up to eight single line programmed data jacks.	103A apparatus mounting (RJM2X) and the appropriate number of 97B connecting blocks (RJ45S). The 103A apparatus mounting will hold up to 16 single line data jacks.
RJ26X* (interim)	50-position miniature ribbon connector	Adapter cord which provides miniature ribbon connectors and up to eight single line universal data jacks.	M48A-87 adapter cord (RJA5X) and up to eight 97A-type connecting blocks (RJ41S). The 97A connecting blocks may be wall mounted or they may be housed in a 103A apparatus mounting (RJM2X) at added cost. The 103A will hold up to sixteen 97As.
RJ26X† (new) consists of:			
RJ26X	50-position miniature ribbon connector	Multiple line universal data jack for up to eight lines — common equipment.	97A4 data mounting.
RJ26S		Line circuits for use with RJ26X on a per line basis.	D97A-type circuit pack.
RJM3X		Wall mounting arrangement for use with an 8-line multiple data jack.	D-180935 mounting kit (includes plastic cover and base pan with mounting screws and adhesive pad).
RJM4X		Rack mounting for use with multiple line data jacks.	Comcode 842 310 781 mounting plate — 19 inch, Comcode 842 310 773 mounting plate — 23 inch.

♦TABLE C♦ (Contd)

**STANDARD CONFIGURATIONS FOR CONNECTION
TO THE SWITCHED TELEPHONE NETWORK**

USOC	PLUG/JACK	DESCRIPTION	METHOD OF IMPLEMENTATION
RJ27X (interim)	50-position miniature ribbon connector	Adapter cord which provides 50-position miniature ribbon connector and up to eight single line programmed data jacks.	M48A-87 adapter cord (RJA5X) and up to eight 97B connecting blocks (RJ45S). The 97B connecting blocks may be wall mounted or they may be housed in a 103A apparatus mounting (RJM2X) at added cost. The 103A will hold up to sixteen 97Bs.
RJ27X (new)	50-position miniature ribbon connector	Multiple line programmed data jack for up to eight lines.	97D connecting block (rack mount) or 97E connecting block (wall mount).
RJ36X	Miniature 8-position unkeyed	Series jack to connect 503CM or 2503CM exclusion key telephone set ahead of jack provided for data equipment.	635-type connecting block.
RJ16X	Miniature 6-position	Voice jack with connection to RJ36X series jack.	625-type connecting block.

*RJ26X (interim) is the original implementation of the 50-position connector.

†RJ26X (new) provides those features in a self-contained arrangement.

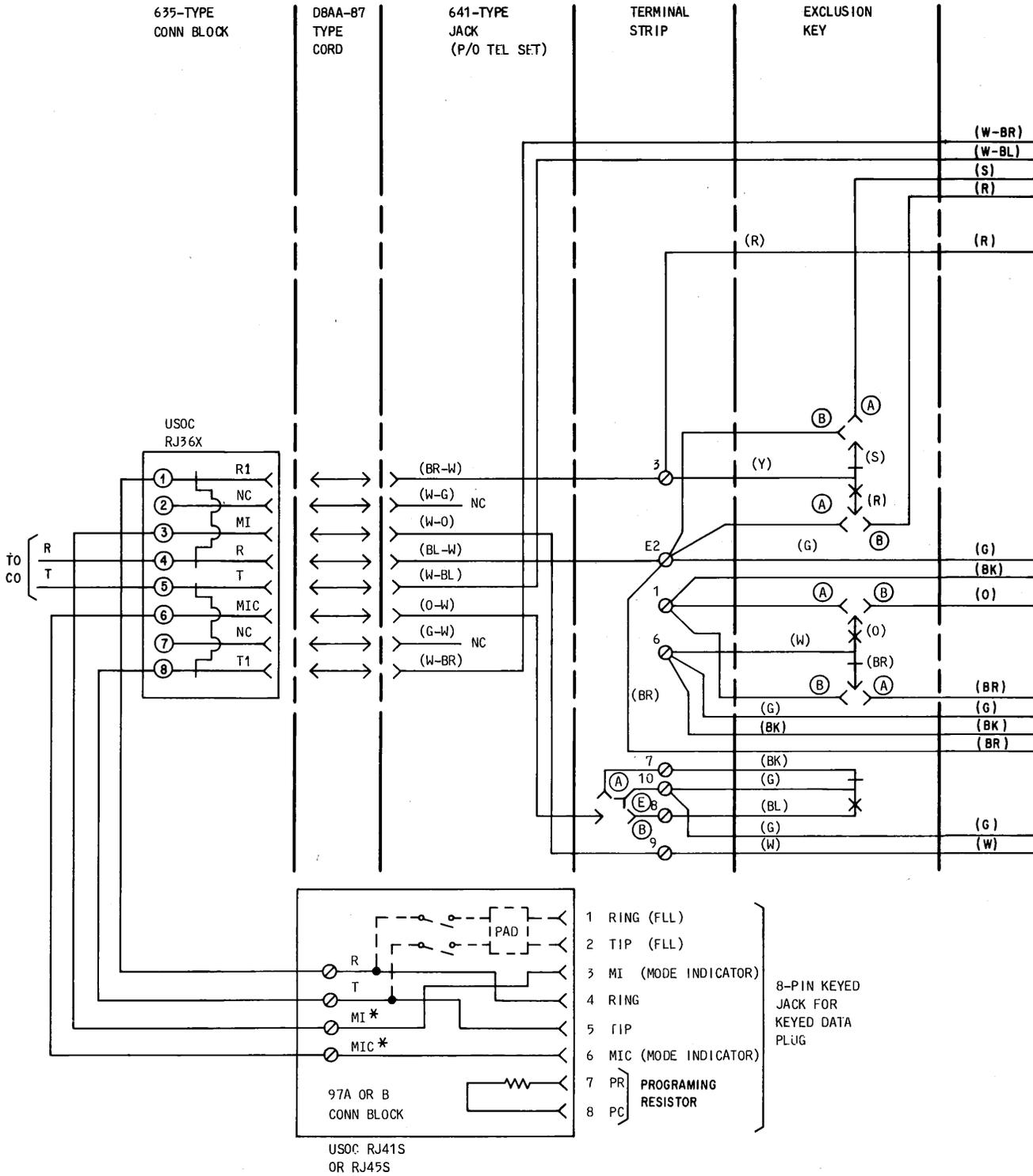
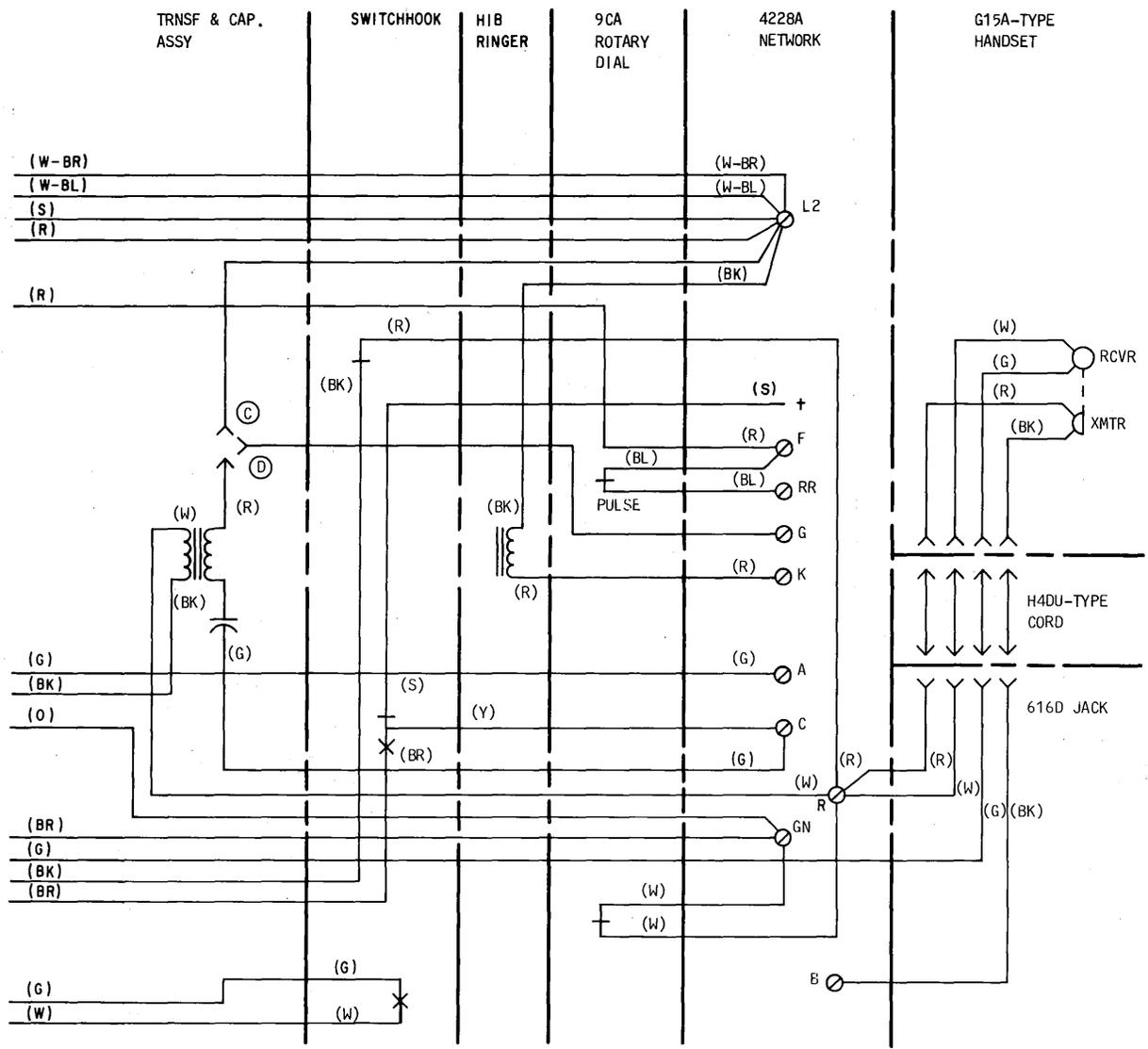


Fig. 16—503CM Telephone Set—Registration Jack Connections (Sheet 1 of 2)



NOTE:
VOICE MODE INDICATION
IS THE ABSENCE OF
WIRING OPTION E.

* MI IS LABELLED "A" ON 97-TYPE
CONNECTING BLOCKS AND MIC IS
LABELLED "A1"
† INSULATED AND STORED

- OPTIONS:
- (A) TELEPHONE SET CONTROLS LINE
 - (B) DATA SET CONTROLS LINE
 - (C) AURAL MONITORING PROVIDED
 - (D) NO AURAL MONITORING PROVIDED
 - (E) SWITCHHOOK INDICATION L SUPERSEDES
A AND B ON TERMINAL STRIP WHEN
BOTH A AND E OR B AND E ARE TO
BE USED.

Fig. 16—503CM Telephone Set—Registration Jack Connections (Sheet 2 of 2)

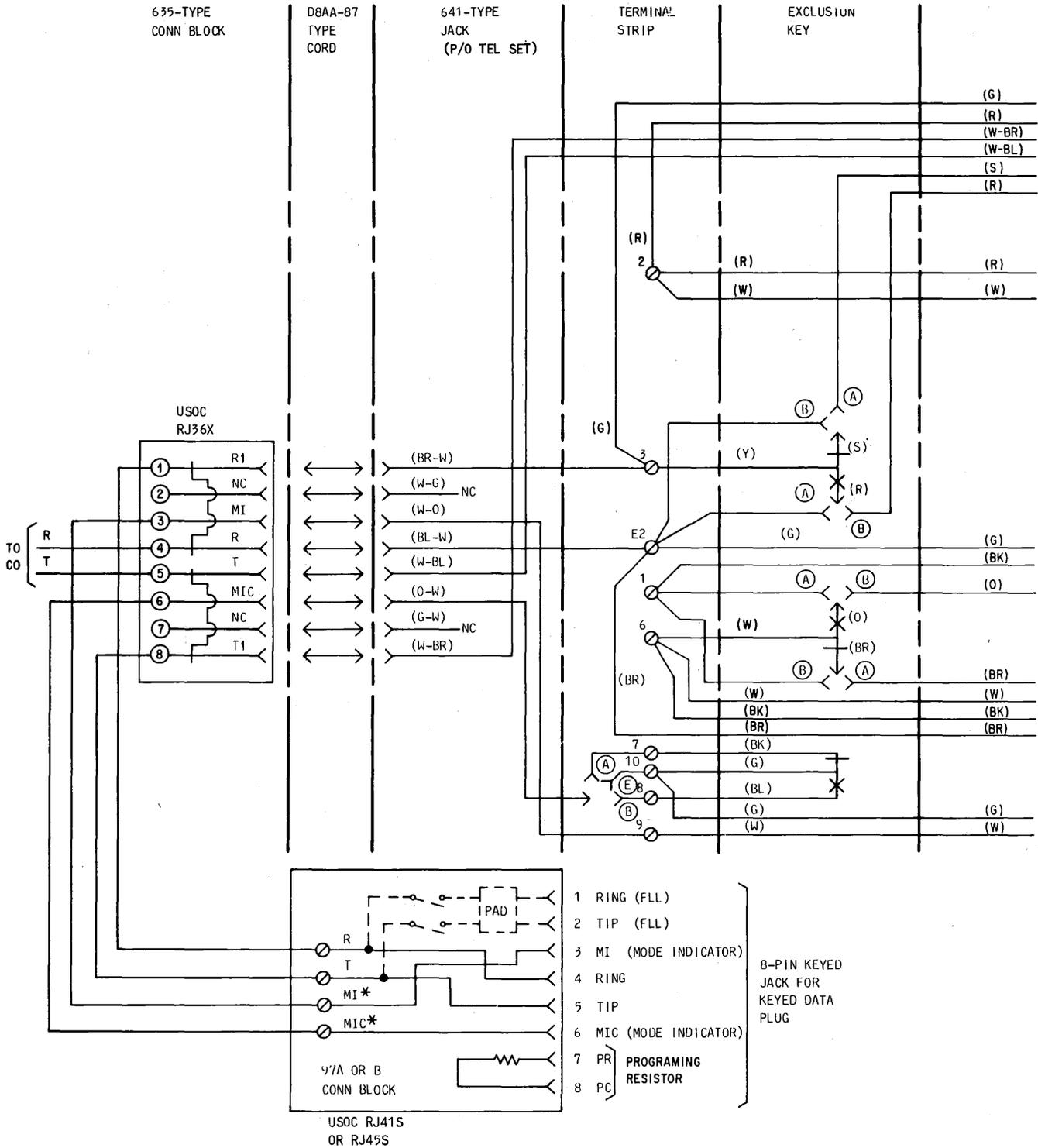
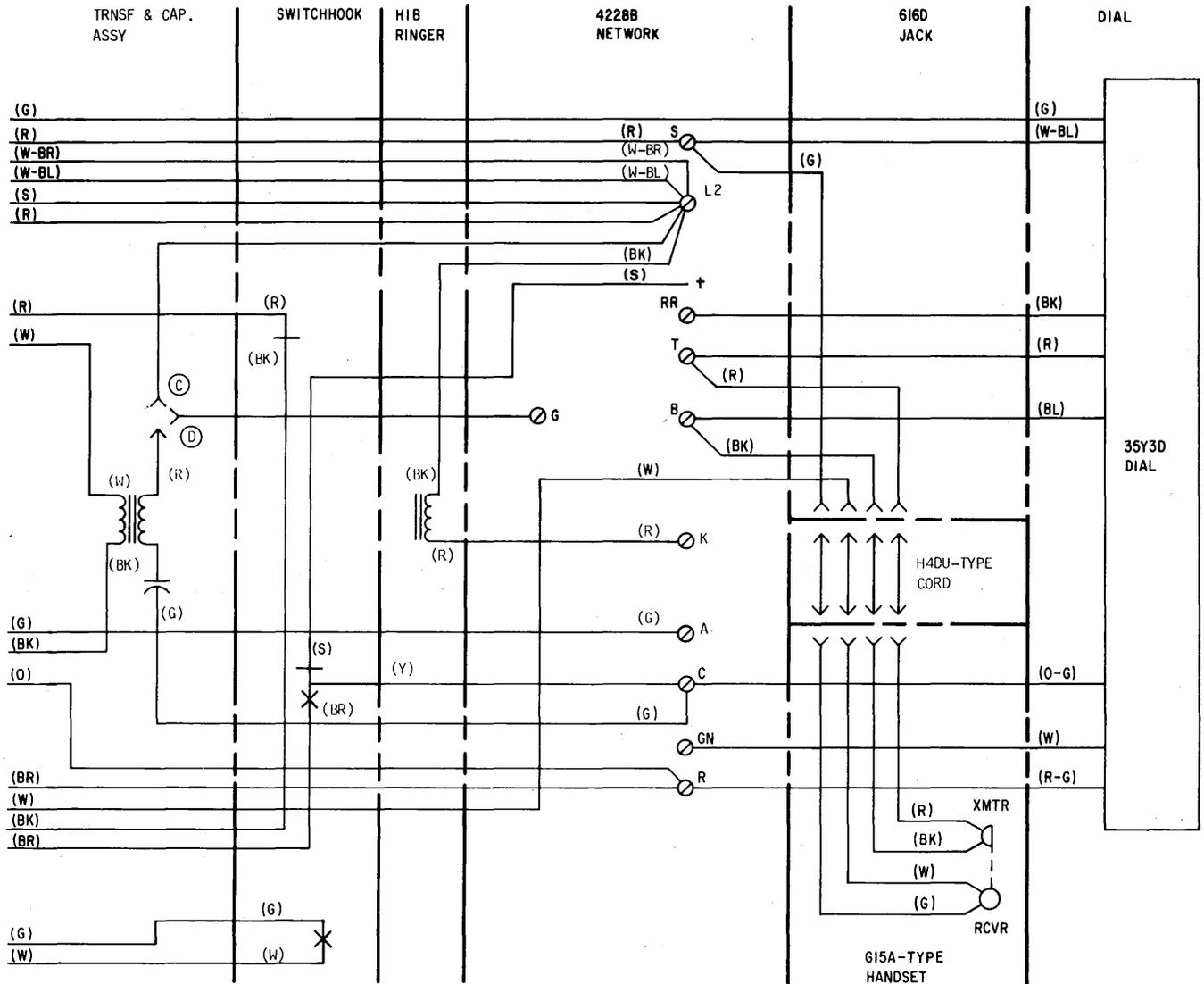


Fig. 17—2503CM Telephone Set—Registration Jack Connections (Sheet 1 of 2)



NOTE:
VOICE MODE INDICATION IS THE ABSENCE OF WIRING OPTION E.

* MI IS LABELLED "A" ON 97-TYPE CONNECTING BLOCKS AND MIC IS LABELLED "A1".
† INSULATED AND STORED

- OPTIONS:
- (A) TELEPHONE SET CONTROLS LINE
 - (B) DATA SET CONTROLS LINE
 - (C) AURAL MONITORING PROVIDED
 - (D) NO AURAL MONITORING PROVIDED
 - (E) SWITCHHOOK INDICATION E SUPERSEDES A AND B ON TERMINAL STRIP WHEN BOTH A AND E OR B AND E ARE TO BE USED.

Fig. 17—2503CM Telephone Set—Registration Jack Connections (Sheet 2 of 2)

E. Associated Telephone Arrangement

2.31 A telephone set can be connected to the data line and used for voice or call origination and answering. The telephone line is connected to either the telephone set or the data equipment under control of the exclusion key. With this arrangement, an indication of the voice mode can be given to the customer through the mode indication positions of the data jack. As an alternative, the mode indication pins can provide an indication of the operation of switchhook contacts. The customer must specify whether the telephone set or the data equipment controls the line. The customer must also specify whether or not aural monitoring is desired. Refer to Table D for items requiring a customer decision. With aural monitoring, the 503CM or 2503CM telephone set can monitor the line (on a high impedance basis) while the data equipment is in the data mode.

2.32 Refer to Fig. 16 or 17 for wiring and connection diagrams for the telephone set. With wiring option B (Fig. 16 or 17) the telephone handset is lifted from the switchhook and the exclusion key lifted for the voice mode. This is usually described as

“data equipment controls the line” because, until the telephone set exclusion key is lifted, the data equipment has control over incoming and outgoing calls, as it is directly connected to the line. The positive action of going off-hook with the telephone set is required to take the line away from the data equipment. Operation of the telephone set can be inverted by reversing the exclusion key wiring (Fig. 16 or 17, wiring option A), so that the telephone set controls the line and the exclusion key must be operated to allow data equipment connection to the line. With aural monitoring (wiring option C), the telephone handset is bridged on the line on a high impedance basis whenever the handset is off-hook and the exclusion key is in the data position. With wiring option E, the mode indication function indicates to the data equipment that the handset is off-hook through the MI and MIC leads.

2.33 When customers request a telephone set as an adjunct to the data jack, an exclusion key telephone set (503CM or 2503CM or equivalent) is recommended.

2.34 An exclusion key telephone set (USOC RTC) is recommended when customers request a tele-

TABLE D

CUSTOMER DECISION TABLE

DECISION		DESCRIPTION	OPTION (NOTE)
I	1	Telephone Set Controls Line	A
	2	Data Set Controls Line*	B
II	3	Aural Monitoring Not Provided	D
	4	Aural Monitoring Provided*	C
III	5	TOUCH-TONE® Dialing	—
	6	Rotary Dial	—
IV	7	Switchhook Indication Only	E
	8	Voice Mode Indication	B

Note: Connections for listed options are shown in Fig. 16 and Fig. 17.

*Factory-furnished for telephone set.

phone set ahead of a data jack. This is because room noise and switchhook operation can cause data errors if an ordinary bridged telephone set is used. Also, calls can be dropped if the transfer between talk and data modes are not carefully coordinated.

2.35 Requests for regular bridged telephone sets should not be denied if the customer is aware of the possible problems, and feels that the telephone set will be used properly. The telephone set should be located not more than 6 feet from the data equipment to minimize data transmission errors and false disconnects.

3. INSTALLATION

3.01 Prior to installing the data jack, ensure that the loop meets requirements specified in Section 314-205-501. The telephone company (telco) data sets operating at speeds higher than 300 bps require conditioned access lines. In addition, it is assumed that customers with data equipment operating at speeds higher than 300 bps will order data jacks and request conditioned access lines. The procedures described applies to data jacks installed on foreign exchange (FX) lines as well as regular public switched network loops.

Note: The FX lines are normally designed to have a nominal 4.5 dB loss to the central office.

3.02 Determine the loop loss as follows:

- (1) Dial the central office milliwatt supply or request the testboard, at the central office, to send a 1004-Hz tone at 0 dBm on the loop.
- (2) Use a transmission test set with a 600-ohm termination (TTS-4 or equivalent) to measure the level of the incoming signal. The numerical reading is equal to the loop loss in dB. (For example, -6 dBm on the meter is equal to 6 dB loop loss.)
- (3) When the measured loop loss is not a whole number, round off the fraction to the next higher whole number (for example, 5.4 dB becomes 6 dB).
- (4) Record the loop loss (to the nearest tenth of a dB) and leave this information with the data jack.

A. Universal Data Jack

3.03 When the loop loss has been determined, select the proper 97A-type connecting block as

directed in the table in Fig. 10. Connect the 97A-type connecting block to the data line. Operate the switch to the position appropriate for the type of data equipment being connected. Instruct the customer as to the proper switch position and leave a copy of the How-to-Operate card (999-100-117).

B. Programmable Data Jack

3.04 When the loop loss has been determined, select the proper programming resistor from those provided in the plastic bag, which corresponds to the loop loss, using the table in Fig. 11. Install this resistor between terminals PR and PC of the 97B connecting block or the terminals associated with that line of the 97D and 97E connecting blocks. Store the bag of unused resistors under the circuit board of the connecting block or other convenient location. Connect the connecting block to the data line.

Note 1: A 97A-type connecting block can be used in an emergency if a 97B is not readily available.

Note 2: A chart similar to that shown in Fig. 11 is included in the plastic envelope which contains the programming resistors. Starting first quarter 1977, the chart was etched on the noncomponent side of the circuit board of the 97B connecting block instead of being shipped as a ship-loose item.

3.05 Select a flat mounting surface and install the 97B connecting block using the two No. 6 pan-head wood/metal self-tapping screws or the double coated adhesive pad included as ship-loose items. The preferred mounting position is on a vertical surface with the jack opening to the lower left. Refer to paragraphs 3.12, 3.13, and 3.14 of this section for installation information on the 97D and 97E connecting blocks.

3.06 Record loop loss (as measured in paragraph 3.02) and the telephone line number on the matte surface on the side of the cover above the jack opening of the 97B connecting block using a No. 2 lead pencil or a ball-point pen. All 97A-type and 97B connecting blocks manufactured starting in second quarter 1978 have an enlarged matte writing area. Designations loop loss (LPL) and telephone line number (TLN) are stamped on the surface for convenience.

Note: The LPL and TLN information for each line used of the 97D and 97E connecting

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blocks should be recorded on a suitable sheet of paper and left at the installation.⚡

C. 103A Apparatus Mounting

3.07 Where several 97A-type and 97B connecting blocks are to be installed in the same location, a 103A apparatus mounting may be used (Fig. 18).

3.08 The 103A apparatus mounting provides a multiple arrangement for up to sixteen 97A-type and 97B connecting blocks. The 103A apparatus mounting can be mounted in any of the following configurations (Fig. 19).

(a) Wall-mounted with the rear of the unit against the wall.

(b) Rack-mounted in a 19-inch cabinet with the front of the unit flush with the mounting surface.

(c) Rack-mounted in a 19-inch cabinet with the front of the unit either 4.33 or 4.95 inches forward of the mounting surface.

(d) Rack-mounted in a 23-inch cabinet with the front of the unit 4.95 inches forward of the mounting surface.

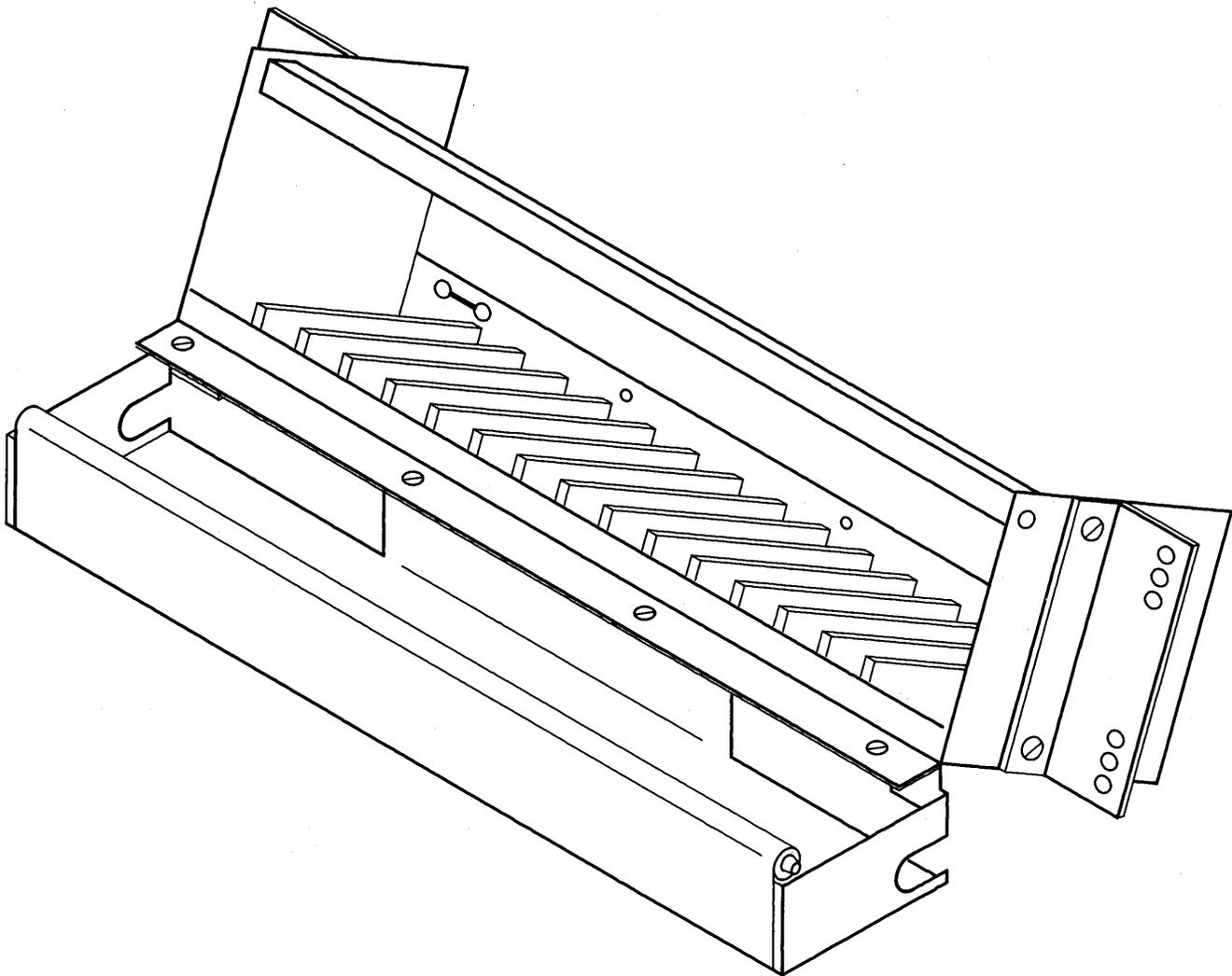


Fig. 18—103A Apparatus Mounting

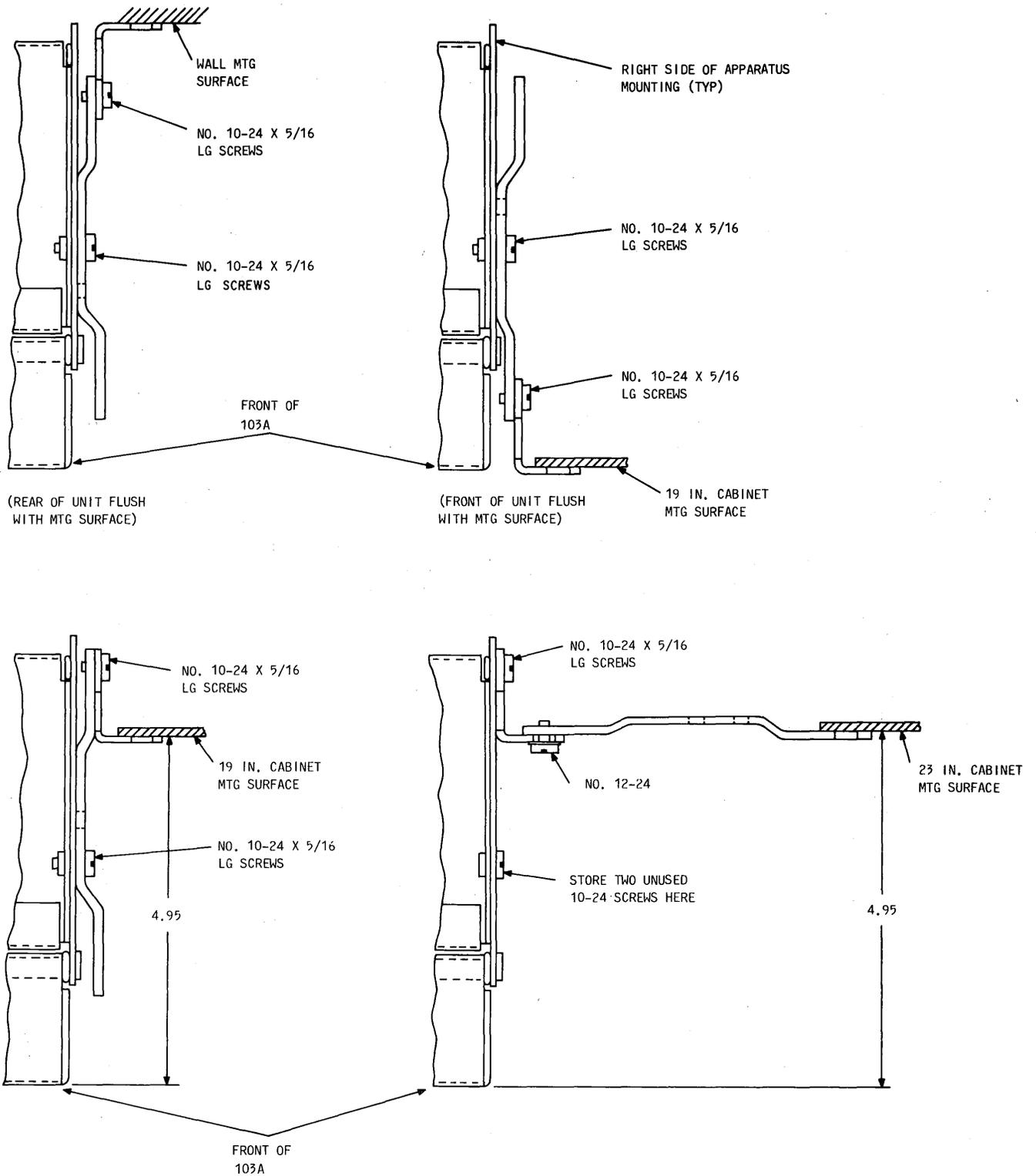


Fig. 19—103A Apparatus Mounting Brackets

Note 1: Each 103A apparatus mounting requires 6.0 inches (1/2 inch above and 1-3/4 inches below) to allow the cover to open properly.

Note 2: When installing 97A-type and 97B connecting blocks, leave about 6 inches slack in the wiring to allow the jack to be removed from the mounting without interrupting service.

3.09 The M48A-87 cord (ordered separately) can be used to combine eight connecting blocks to one 50-position female miniature ribbon connector (Fig. 20). To attach the M48A-87 cord to the 103A cover, remove the nuts from the screws holding the connector retainer bracket to the mounting bracket on the 103A apparatus mounting. Place the ribbon connector of the M48A-87 cord over the screw ends and replace the nut on the outer screw. The mounting screw toward the center of the cover threads into the connector body. (The nut may be discarded.) Clamp the retainer bracket between the connector and the mounting bracket on the 103A cover.

3.10 Eight 97A-type or 97B connecting blocks may be wall-mounted using an M48A-87 cord to provide a 50-position interface.

3.11 A wall-mounted arrangement similar to that described in paragraph 3.10 but using an

M48A-87 cord and a KS-20458, L14 cover to provide a 50-position interface is shown in Fig. 21.

D. Rack and Wall Mounting

3.12 ♦The 97E connecting block has been designed for wall mounting only. Select a flat mounting surface and install the 97E connecting block using the adhesive pad on the back of the block.

3.13 The 97A-type data mounting has been designed for both 19- and 23-inch rack mounting as well as wall mounting. ♦The 97D connecting block has been designed for rack mounting only. ♦ In a 19-inch rack, a comode number 842 310 781 two-inch mounting plate accommodates a total of three (3) data mountings providing up to 24 lines. A 23-inch rack application requires the use of a comode number 842 310 773 two-inch mounting plate which holds a total of four data mountings or connecting blocks providing up to 32 lines.

3.14 A bracket and a clamp are available to lock connecting cables to the 97A-type data mounting, and an adhesive pad comcode number (842 309 643) is provided to allow mounting to a metal wall without drilling. These items are provided as part of the D-180935 mounting kit.

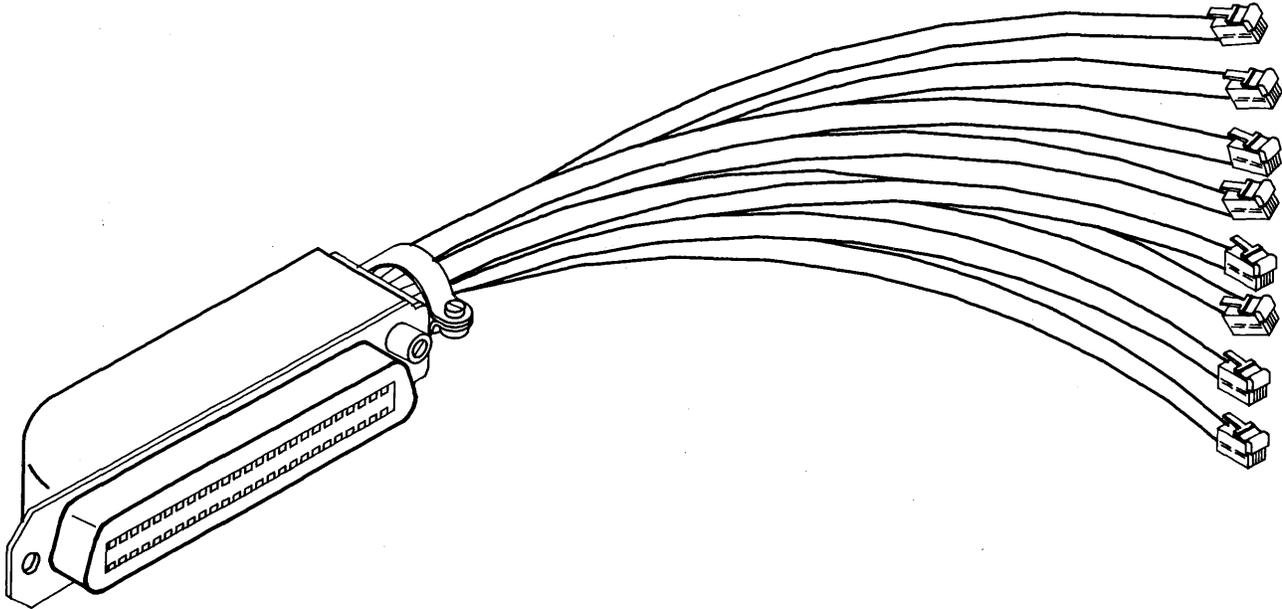


Fig. 20—M48A-87 Cord