REGISTRATION SERVICE MANUAL

11-33125

Bell System

25-088

APRIL 1980

REGISTRATION SERVICE MANUAL

Comments concerning content, usability, and adequacy of this manual will be welcomed. This sheet may be removed and mailed directly to the Bell System Practices Organization. This sheet is not to be used for ordering manuals. The following page will give you ordering information.

Mail To:

Bell System
Data Design Engineering Manager
2400 Reynolda Road
Winston-Salem, N. C. 27106

Orders for these manuals should be placed on:

Western Electric
Indiana Publications Center
P. O. Box 26205
Indianapolis, Indiana 46226

Issue 2
APRIL 1980

REGISTRATION SERVICE MANUAL

Printed in U.S.A.

Introduction

This manual is a compilation of the BSPs covering the Federal Communications Commission Registration Program. The manual is intended to support the Plant Craftsperson in his daily work operations while installing and maintaining Registration Arrangements.

For information not contained in this manual, refer to the standard BSP files.

REGISTRATION

Registration—an FCC Program that permits connection of FCC approved equipment to the telecommunications network. The program applies to one and two line telephone sets, data, ancillary equipment (eg, Answering Set, Dialer), and communications systems, as well as protective circuitry associated with such equipment. The program also includes extension cords, adapters, and patch-panels. Excluded are connections to public coin telephone and party line services. The FCC Registration Program applies equally to equipment provided by the telephone company or by the customer. The customer is required to notify the telephone company when connecting FCC approved equipment to the network.

FOR ALL TELEPHONE TERMINAL EQUIPMENT ***EXCEPT SYSTEMS***

- Direct connection to the network is permitted if the equipment is Registered with the FCC. Registered equipment must be equipped with a standard plug and must have a label affixed showing:

  (a) Compliance with Part 68—FCC rules.

  (b) FCC registration number (14 alphanumeric characters; eg, AS593M-62914-MT-T) Ringer Equivalence Number (2 digits plus 1 letter; eg, 1.0A).

- Registered equipment must be connected to the network through telephone company-provided standard jacks.

- Direct connection is also permitted if the equipment has been classified as grandfathered under one of the conditions following:

  (a) Was directly connected to the network in accordance with telephone company tariffs as of October 17, 1977 ***or***

  (b) Is of a ***type*** that was directly connected as of October 17, 1977 ***and*** was directly connected for the first time in the period between October 17, 1977 and July 1, 1979.

  (c) Equipment which has grandfather status and was directly connected to the network prior to the Register-Only date (July 1, 1979), may be disconnected and reconnected unless it is subsequently modified.

- Grandfather status applies to the equipment and not to its ownership.

AS OF JULY 1, 1979

- The FCC established July 1, 1979 as their Register-Only (RO) date.

- ***All terminal equipment being directly connected*** to the ***network for the first time must be Registered***—this applies even if the new equipment is identical to equipment which was previously grandfathered.

- Grandfathered equipment may remain in service and may be disconnected and reconnected for its normal life.

The customer must notify the telephone company, eg, before connecting any FCC approved customer-provided equipment, either Registered or grandfathered, to the network, as follows:

- For Registered equipment—the customer must provide the equipment Registration information (Registration Number and Ringer Equivalence Number) plus the USOC code for the standard jack to be used in connecting the equipment. The USOC (Jack) code is obtained from the manufacturer customer instruction material, which also includes information on the use and maintenance of the product and the customer responsibilities.

- For grandfathered equipment—the customer must provide the manufacturer name and model number. The means of connection for this type of equipment, which will vary depending upon its vintage, must be obtained from the customer. The customer may be asked to provide the address or location where the set was previously connected.

Customer-provided equipment that is neither Registered nor grandfathered:

- Can be connected only through customer-provided registered or previously connected grandfathered protective circuitry, or

- Can be connected through telephone company-provided grandfathered protective circuitry, if available, only if the equipment had been previously connected through telephone company-provided protective circuitry before the Register-Only date.

The customer must notify the telephone company upon the final disconnection of customer-provided equipment.

NOTE

Systems are included within the Federal Program for which similar rules and a different Register-Only date applies.

Detailed questions relative to the Registration Program should be referred to your local Installation and Maintenance Registration Specialists.

TABLE OF CONTENTS

1. GENERAL

Printed in U.S.A.

REGISTRATION INTERFACE

SELECTION AND GENERAL INFORMATION

1. GENERAL

1.01 This section provides information for the identification and selection of interface apparatus and general information pertaining to the Federal Communications Commission's (FCC) Registration Program for registered telephone, ancillary, data, and protective circuitry of the type associated with telephone, ancillary, and data telephone company (TELCO) or customer-provided equipment (CPE).

Note: Customer-provided data equipment connected to the network via the interfaces in this section must have a fixed signal power level under -9 dBm. See Section 590-101-103 for connection of other data devices.

1.02 This section is reissued to:

- Add information on Uniform Service Order Codes (USOCs) RJ25C, RJ38X, and RJ71C
- Remove RJ18W and RJ19W.

1.03 The FCC Registration Program permits the direct electrical connection to the telecommunications network of certain telephone, ancillary, and data TELCO or CPE which meet FCC registration standards.

1.04 Bell System Practices covering the "standard jack" interfaces under the registration program are as follows:

- Section 463-400-110—RJA1X, RJA2X, RJA3X—Adapter Arrangements
- Section 463-400-120—RJ11C, RJ11W, RJ12C, RJ12W, RJ13C, RJ13W, RJ17C, RJ18C, RJ19C—Bridged Single-Line Tip and Ring and Make-Busy Arrangements
- Section 463-400-121—RJ15C—Bridged Single-Line Weatherproof Tip and Ring Arrangements
- Section 463-400-130—RJ16X, RJ31X, RJ32X, RJ33X, RJ34X, RJ35X, RJ36X, RJ37X, ▶RJ38X◀ —Series Single-Line Tip and Ring Arrangements
- Section 463-400-140—RJ14C, RJ14W—Bridged Two-Line Tip and Ring Arrangements
- Section 463-400-141—RJ21X, RJ22X, RJ23X, RJ24X—Bridged Multiple Tip and Ring Arrangements

  ▶Section 463-400-142—RJ25C—Bridged Three-Line Tip and Ring Arrangements
- Section 463-400-150—RJ71C—Series Multiple Tip and Ring Arrangements.◀

1.05 The apparatus required to provide "standard jack" interfaces used under the FCC Registration Program are covered in the following sections:

- Bridging Adapters—Section 461-200-102
- Miniature Ribbon Connectors—Section 461-200-101
- Modular Jacks—Section 503-100-100
- Jacks, Plugs, and Adapters—Section 461-630-100
- 625-, 630- and 635-Type Connecting Blocks—Section 461-610-100
- ▶66M-type Connecting Blocks—Section 461-604-105.◀

2. DESCRIPTION

2.01 Table A provides USOCs, equipment used, technical references, BSP numbers, description, and typical CPE to be connected.

3. INSTALLATION

3.01 Each telephone company interface requires a specific wiring arrangement. See Table A for reference to the BSP applicable to each standard interface; these BSPs cover complete descriptions and wiring diagrams for the interfaces. Wiring diagrams of the jacks or adapters used as an interface will designate the contacts by number. The numbering arrangement is established by looking into the jack with the release clip opening at the bottom, counting the contacts from left to right. Numbering will be on the basis of the maximum number of contact positions although all positions of the jack may not be equipped. Unused contacts are reserved for telephone company use and are handled according to local instructions.

To assure that proper interfaces are furnished, each USO-coded termination (standard jack) must be wired according to the BSP covering that USOC.

3.02 All wiring required for connection of the interfaces in these BSPs is to be furnished and installed by the telephone company. Registered equipment must be modular plug-ended and connected to the telephone company switched network only through the telephone company-provided interface.

3.03 The interface equipment should be installed in a location mutually acceptable to the customer and the telephone company. The location should facilitate telephone company maintenance and/or customer disconnection for trouble isolation purposes. Where possible, and agreeable with the customer, locate the interface jack as near as possible (approximately 12 inches) to an electrical outlet.

3.04 Surface mounted connecting blocks should be mounted with the modular jack facing downward if the connecting block is at a sufficient height to permit a plug to be inserted with ease. As a second choice, the jack should face to either side. Do not mount a connecting block with the jack facing up—this allows contaminants to enter the jack more easily. A minimum clearance of 3 inches is required directly in front of the modular jack entry to allow for connection and disconnection of equipment, including the possible use of adapters.

3.05 Each installation of a standard interconnection jack(s) should be tested for dial tone, audible noise, ringback, proper tip and ring polarity, and "A" lead control if applicable. Series type jacks should be tested for proper mechanical contact closure to verify that telephone company-provided equipment connected on the "field side" of the series connection will operate properly with or without the registered CPE connected to the standard jack. ▶With RJ71C, it will be necessary to manually connect the furnished bridging adapter to the 66M4-50R connecting block to test continuity with the registered equipment disconnected.◀

> ***Note:*** The telephone company is not responsible if the registered CPE fails to maintain continuity through the series connection, thus causing the telephone company-provided equipment to malfunction.

If the registered CPE device is readily available and can be quickly and conveniently connected, request the customer to connect the device(s) and verify to his satisfaction that the jack and his equipment work properly. If there is a problem other than ringing, advise the customer that the type of jack ordered is installed and functioning properly. The customer should be advised to disconnect the registered equipment, to verify with the manufacturer or supplier whether the correct standard jack has been ordered, and to follow the manufacturer's recommended repair procedures.

> ***Note:*** The total number of telephone company and CPE equivalent ringers bridged across the CO/PBX line must not exceed the limitations outlined in Section 500-114-100 for individual line, capacitor-coupled ringers. If the ringer limitation is exceeded, the customer can do one or a combination of the following.

(a) Arrange to have the ringer(s) in the CPE disconnected if possible, or arrange to obtain a similar device with a lesser ringer equivalence. ***This is not to be done by telephone company personnel.***

(b) Request the ringer(s) in the telephone company equipment be disconnected.

(c) Cancel the existing service order.

4. MAINTENANCE

4.01 The telephone company is responsible for providing standard interfaces as described in Sections 463-400-100 through 463-400-150. The telephone company has no responsibility for CPE devices connected to the network via these interfaces. The customer is responsible for the repair of any CPE. No attempt should be made to install, test, modify, or repair customer-owned and maintained equipment.

Caution: Telephone company employees must be sure that commercially powered CPE is disconnected from power and from the telephone company jack before working on a standard interface or its associated inside wiring.

4.02 When in the judgment of repair personnel the trouble is located in or caused by the CPE, Maintenance of Service Charge Billing should be initiated as required and as outlined in the following:

- Section 660-101-312—Maintenance of Service Charge on Services With Customer-Provided Equipment (CPE)
- Section 660-101-318—Tariff and Registration Violation Notice Procedures.

◗TABLE A◖

GENERAL INFORMATION–REGISTRATION ARRANGEMENTS

USOC	EQUIPMENT USE	DESCRIPTION	TYPICAL CPE TO BE CONNECTED	BSP NUMBER	TECH REF
RJA1X	225AW Adapter	Adapts a modular plug to a 4-prong jack*	Automatic Answering Sets and Announcement Sets	463-400-110	PUB 47101
RJA2X	267AW Adapter	Converts one modular jack to two modular jacks*			
RJA3X	224AW Adapter	Adapts a modular plug to a 12-prong jack*			
RJ11C	See Note	Bridged connection of a single-line tip and ring—surface or flush mounted		463-400-120	PUB 47101
RJ11W	630A Conn Block	Same as above except for portable wall-mounted device			
RJ12C	See Note	Bridged connection of a single-line tip and ring ahead of the line circuit with A lead control—surface or flush mounted			
RJ12W	630A Conn Block	Same as above except for portable wall-mounted device			
RJ13C	See Note	Bridged connection of a single-line tip and ring behind the line circuit with A lead control—surface or flush mounted			
RJ13W	630A Conn Block	Same as above except for portable wall-mounted device			
RJ14C	See Note	Bridge connection of 2-line tip and ring—surface or flush mounted	2-line Ancillary Devices	463-400-140	PUB 47101
RJ14W	630A Conn Block	Same as above except for portable wall-mounted device			
RJ15C	B Weatherproof Female Jack AT—8732	Bridged connections of a single-line weatherproof tip and ring arrangement	Single-Line Telephone Set	463-400-121	PUB 47101
RJ16X		Bridged connections of a single-line tip, ring, MI, and MIC leads (used with RJ36X)	-9 dBm (permissive) Data Equipment With MI (Mode Indication) and MIC (Mode Indication Common) Leads	463-400-130	PUB 47101
RJ17C	See Note	Bridged connection of a single-line tip and ring	Special Nonkey Telephone Sets for use in Hospital Critical Core Areas (ECG Machine)	463-400-120	PUB 47101

♦TABLE A (Contd)♦

GENERAL INFORMATION–REGISTRATION ARRANGEMENTS

USOC	EQUIPMENT USE	DESCRIPTION	TYPICAL CPE TO BE CONNECTED	BSP NUMBER	TECH REF
RJ18C	74D Conn Block or Equivalent	Bridged connection of single-line tip and ring and make-busy MB/MB1 leads	Answering Sets or Other Equipment Requiring Make-Busy Arrangement	463-400-120	PUB 47101
RJ19C		Bridged connection of single-line tip and ring behind line circuit with A lead control and make-busy MB/MB1 leads			
RJ21X	KS-16690 Connector or Equivalent	Bridged connection of the tip and ring of a multiple number of CO/PBX trunks (maximum 25)	Traffic Measuring Devices	463-400-141	PUB 47101
RJ22X		Bridged connection of up to 12 CO/PBX trunks with the tip and ring bridged ahead of the line circuit with A lead control	Multiple Answering Sets		
RJ23X		Same as above except T, R, A, and A1 are bridged behind the line circuit			
RJ24X		Provides same T, R, and A appearances plus A1 of a standard 5-line key telephone set	Conferencing Sets		
RJ25C	74D Conn Block	Bridged connection of maximum of three lines—tip and ring only	Nonkey Telephone Sets or Ancillary Devices	463-400-142	PUB 47101
RJ31X	635A or 635B Conn Block†	When plugged in, CPE is placed in series with tip and ring ahead of all station equipment	Alarm Dialers	463-400-130	PUB 47101
RJ32X		Same as above except CPE is connected in series with one station	Series Dialers		
RJ33X		Series tip and ring connection ahead of a KTS line circuit plus bridged A and A1 behind line circuit			
RJ34X		Series tip and ring plus bridged A and A1 behind KTS line circuit			
RJ35X		Provides a series tip and ring connection of all lines appearing in a key telephone set plus bridged A and A1 leads			
RJ36X		Series tip and ring with mode indication behind series connection (used with RJ16X)	Mode Indication (Exclusion Key) Telephone Set in Series With Data Jack	463-400-130	PUB 47101

◗TABLE A (Contd)◖

GENERAL INFORMATION—REGISTRATION ARRANGEMENTS

USOC	EQUIPMENT USE	DESCRIPTION	TYPICAL CPE TO BE CONNECTED	BSP NUMBER	TECH REF
RJ37X	635A or 635B Conn Block†	Bridged connection of 2-line tip and ring with exclusion on line 1	Two-line Telephones With Exclusion on One Line for Use With Data Sets Requiring Telephones With Exclusion Feature	463-400-130	PUB 47101
RJ38X	635-Type Conn Block	When an 8-position plug is inserted, CPE is placed in series with tip and ring ahead of all station equipment—also has a continuity circuit	Alarm Dialers	463-400-130	PUB 47101
RJ71C	66M4-50R	When plugged in, CPE is placed in series with tip and ring ahead of all station equipment—maximum of 12 lines	Toll Restrictors	463-400-150	PUB 47101

Note: For surface-mounted installations, use a 625A, 625C, 625S, or 625T connecting block. For flush-mounted installations, use a 625B, 625F, or 625FS connecting block. The 625S, 625T, and 625FS connecting blocks have spring-loaded covers which protect the contacts from contamination.

* The adapters are customer-owned in all cases and may be purchased from either the telephone company or an outside supplier.

† An 8-position plug must be used to obtain a series circuit.

REGISTRATION INTERFACE
ADAPTER ARRANGEMENTS
RJA1X, RJA2X, AND RJA3X

1. GENERAL

1.01 This section contains information on the standard wiring arrangements, using a modular jack adapter as an interface, to be provided under the Federal Communications Commission's (FCC) Registration Program for registered telephone, ancillary, data, and protective circuitry of the type associated with telephone, ancillary, and data customer-provided equipment (CPE).

Note: Customer-provided data equipment connected to the network via the interfaces in this section must have a fixed signal power level under -9 dBm. See Section 590-101-103 for connection of other data devices.

1.02 This section is reissued to revise Fig. 1, 2, 3, 4, and 6 to indicate new Bell System Logo.

1.03 Under the registration program, customers can purchase certain standard adapters from either the telephone company or an outside supplier. The adapters can be used with either telephone company or customer-provided devices. Adapters that are manufactured for sale to the customer (or other common carriers) will carry a W code (224AW, 225AW, 267AW), will have an imprint showing they were manufactured by Western Electric, and will be ▶translucent with a Bell System Logo.◀ Adapters that are not for sale will be ivory or translucent, will carry a standard code (224A, 225A, 267A), and will be imprinted with the Bell System ▶Logo◀ stamped on them. The differences in marking are intended as aids in establishing ownership of adapters should the occasion arise at a later date; for example, on a repair visit.

Adapters are NOT to be installed when a customer orders a standard jack.

1.04 These arrangements provide:

- A means of adapting a modular telephone or ancillary device to an existing 4- or 12-contact non-modular jacks to modular type
- Two modular jacks in one adapter housing.

The telephone company equipment or registered CPE must terminate in a modular plug to be physically compatible. If the CPE is terminated in a 4- or 12-prong plug and a modular jack is in place, the equipment is not compatible for use with the adapters.

1.05 In these arrangements, tip and ring only are to be furnished to the CPE and appear on contacts 4 and 3 of the adapters, respectively. In 2-line jacks, T2 and R2 appear on contacts 2 and 5. Otherwise, contacts 2 and 5 are reserved for telephone company use. Disposition of these leads should be per local instructions.

Note: Circuit incompatibility may occur involving the spare leads if a change of service is installed, ie, a party line with dial light power installed originally would not be compatible with a subsequent installation of 2-line service. Whenever service is altered at an installation involving registration Uniform Service Order Codes (USOCs), check that all appearances are properly wired.

2. DESCRIPTION OF ADAPTERS SOLD TO CUSTOMERS

2.01 ***USOC RJA1X:*** This arrangement uses a ◗translucent◖ 225AW adapter (Fig. 1) with a Bell System Logo to provide physical compatibility between the modular plug on the CPE and an existing 4-prong jack such as a 548A or 549A (Fig. 4). Tip and ring are always connected through to the CPE. A and A1 or other leads will appear in the adapter if connected in the existing jack.

2.02 ***USOC RJA2X:*** Uses a 267AW (Fig. 2) adapter to connect two modular jacks to one modular plug. Four leads are multipled to the same contacts in the plug and both jacks (Fig. 5). Tip and ring are always connected through to the multiple jacks. A and A1 or other leads will appear in the multiple jacks if wired into the existing jack. Leads 1 and 6 are multiplied between the two jack ports only and are reserved for Telco use.

2.03 ***USOC RJA3X:*** Used to adapt a modular telephone to an existing 12-pin jack, such as a 541A or 551A, to a 6-pin modular jack (Fig. 6). A 224AW adapter (Fig. 3) is plugged into the 12-pin jack, and the modular plug on the telephone company- or customer-provided equipment plugs into the adapter. Tip and ring are always connected through to the CPE. A and A1 or other leads will appear in the adapter if wired into the existing jack. Adapter is provided by either the telephone company or the customer. Pins 1 and 6 are reserved for Telco use.

3. DISTRIBUTION OF ADAPTERS SOLD TO CUSTOMERS

3.01 Registration program standard USO codes have been assigned to the adapters that can be purchased by the customer. These codes make it easier for the customer to order the appropriate adapter and will enable proper billing.

3.02 The USOCs for the adapters described in Part 2 will appear on a service order only when a customer has placed an order to buy the adapter from the telephone company. These codes will not be used under any circumstance for any other purpose.

3.03 Customer requests to purchase adapters should be handled in the same manner as requests for standard jacks used with CPE, that is, the customer should specify the appropriate USOC as advised by the CPE supplier. Requests for adapters received by an installer while on the premises should be referred to the Business Office. Purchased adapters will ordinarily be distributed to customers by mailing.

3.04 Adapters available for purchase are not normally carried on installation and repair vehicles. However, if the customer orders an adapter in conjunction with other installation work, the ◗translucent with a Bell System Logo◖ W-coded adapter should be stocked on the truck with the other equipment needed to complete the order.

4. MAINTENANCE

4.01 Maintenance of all arrangements is limited to verification of the telephone company wiring and equipment. Check that the required leads are supplied to the interface used for CPE connection. No attempt should be made to test, modify, or repair customer-owned and maintained equipment. The mounting cord on a CPE device is always customer-owned and maintained.

4.02 Maintenance of service charges will not be made on customer-owned adapters purchased from the telephone company if they become defective within 30 days of the purchase date. After 30 days have elapsed, the charge will apply if a visit to the premises is made.

4.03 When in the judgment of repair personnel the trouble is located in or caused by the CPE, or the customer's adapter (including adapters purchased from the telephone company), the Repair Service Bureau should be notified so that proper Maintenance of Service Charge Billing can be initiated as required and as outlined in the following:

- Section 660-101-312—Maintenance of Service Charge on Services With Customer-Provided Equipment (CPE)
- Section 660-101-318—Tariff and Registration Violation Notice Procedures.

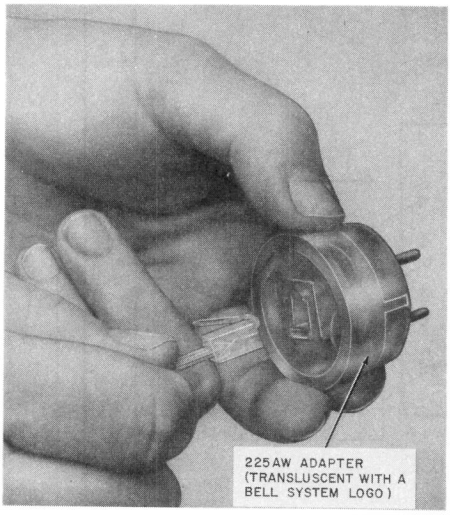


Fig. 1—225AW Adapter

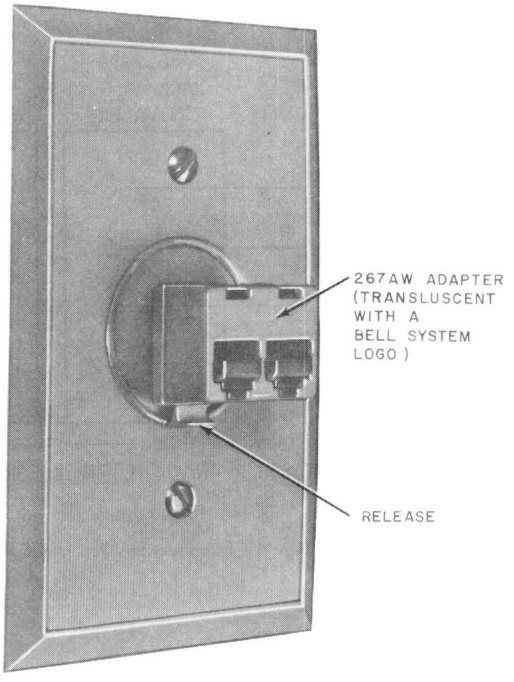


Fig. 2—267AW Adapter Mounted on 625-Type Connecting Block

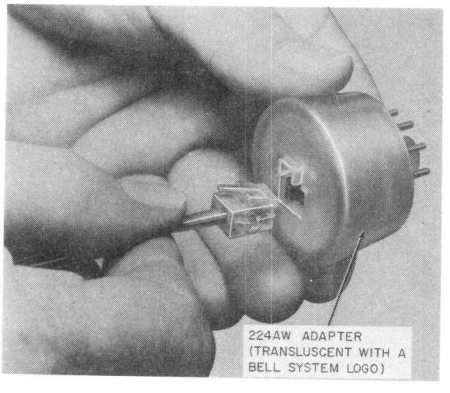


Fig. 3—224AW Adapter

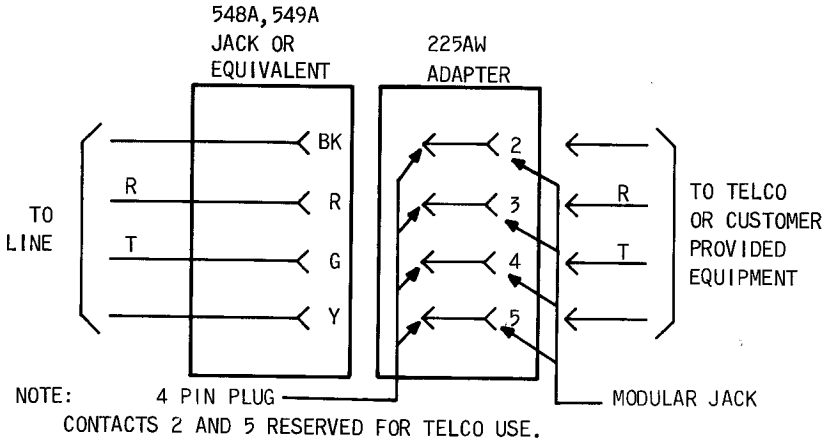


Fig. 4—Connections for USOC RJA1X, 4-Pin Jack to Modular Jack

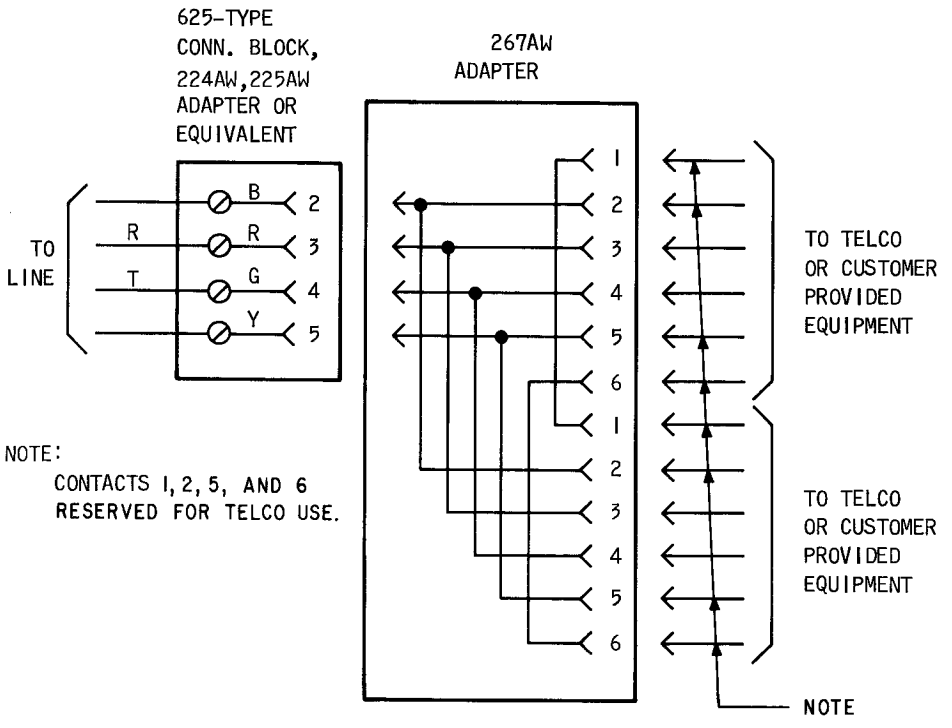
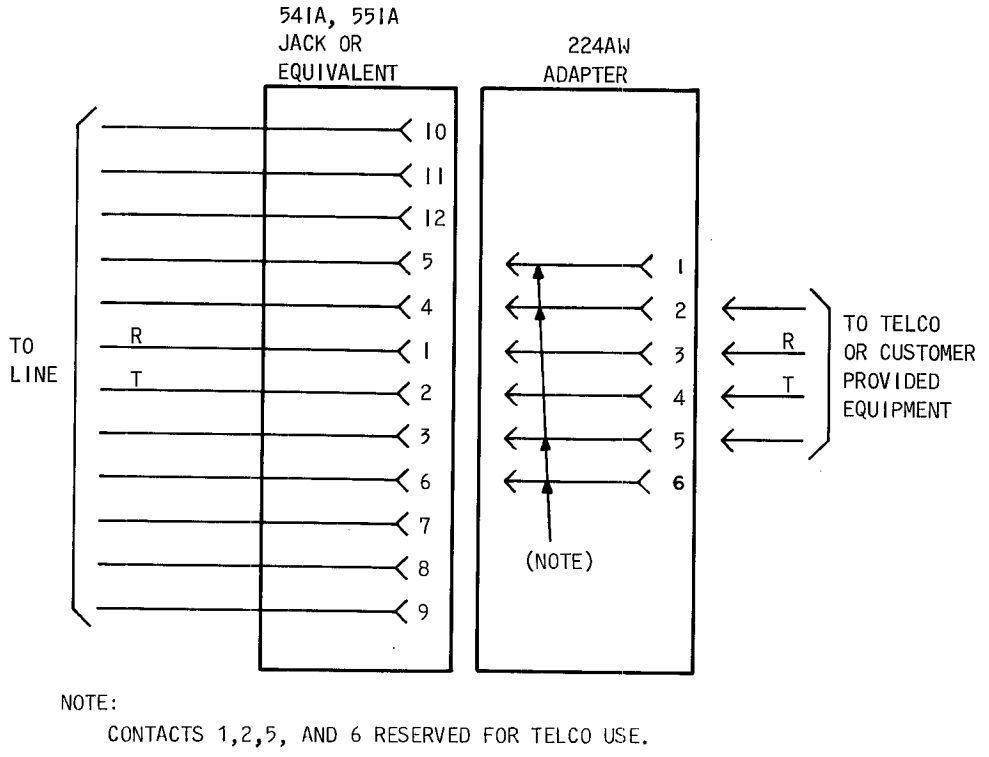


Fig. 5—Connections for USOC RJA2X, Modular Plug to Dual Modular Jack



NOTE:
CONTACTS 1,2,5, AND 6 RESERVED FOR TELCO USE.

Fig. 6—Connections for USOC RJA3X, 12-Pin Jack to Modular Jack

REGISTRATION INTERFACE
RJ11C, RJ11W, RJ12C, RJ12W, RJ13C, RJ13W, RJ17C, RJ18C, RJ18W, RJ19C, AND RJ19W
BRIDGED SINGLE LINE—TIP AND RING ARRANGEMENTS

1. GENERAL

1.01 This section contains information on the standard wiring arrangements to be provided under the Federal Communication Commission's (FCC) Registration Program for registered telephone, ancillary, data, and protective circuitry of the type associated with telephone, ancillary, and data customer-provided equipment (CPE).

> ***Note:*** Customer-provided data equipment connected to the network via the jacks in this section must have a fixed signal power level under -9 dBm. See Section 590-101-103 for connection of other data devices.

1.02 This section has been reissued to:

- Add USOC RJ17C
- Remove COM KEY 416
- Add USOC RJ18C and RJ18W
- Add USOC RJ19C and RJ19W
- Update text
- Add information on 625H connecting block.

1.03 The arrangements in this section provide a termination of a single line in a modular jack. A bridged connection of the tip and ring is always furnished to the CPE on contacts 4 and 3, respectively. In addition, where required in a key telephone system (KTS), A and A1 leads are also furnished. ▶Where make-busy leads MB/MB1 are required, they will appear on contacts 1 and 6, respectively.◀ The CPE must terminate in a modular plug for compatibility. Where A and A1 are not furnished, contacts 2 and 5 are reserved for telephone company use. Disposition of these leads should be per local instructions.

> ***Note:*** Circuit incompatibility may occur involving the spare leads if a change of service is installed, ie, a line with "A" lead control installed originally would not be compatible with a subsequent installation of 2-line service. Whenever service is altered at an installation involving registration Uniform Service Order Codes (USOCs), check that all appearances are properly wired.

1.04 Unless otherwise specifically required by a particular wiring arrangement, access to the required leads can be at any access point. If installed in a large key system with color-keyed backboards, the auxiliary (yellow) field should be used; otherwise, access at satellite closets, distribution boxes, connecting blocks, etc.

1.05 The manufacturer of ▶telephone or◀ ancillary CPE intended for use on a key system has the option of designing equipment to be compatible with connections to the tip and ring, either ahead of or behind the KTS line circuit. Certain electrical characteristics of the tip and ring (such as voltages during the ringing cycle and voltages during the holding period) are different, depending on the type of key system. Thus, for example, it is conceivable that a registered answering set would require an RJ12C for COM KEY* systems (tip and ring ahead of the line circuit) or an RJ13C for 1A1-type systems (tip and ring behind the line circuit). Further, it is also possible that a different manufacturer of an answering set would require just the opposite.

*Trademark

1.06 Select the appropriate (compatible) interface USOC, using a knowledge of the type of Key Telephone System (1A, 1A1, 1A2, or COM KEY) and the selection information provided on the service order; then wire the interface according to the wiring diagram for that specific USOC.

1.07 When necessary to access leads in COM KEY installations, wire as follows.

(a) COM KEY 718—Tip and ring ahead of the line circuit can be obtained at the incoming CO/PBX line terminations on block 3 using 183B2 adapters. If T, R, A, or A1 are required behind the line circuit, they can be accessed per line at any of the line appearances of the station terminations on blocks 3, 4, or 5. Again use 183B2 adapters. For information on COM KEY 718, refer to Section 518-450-100.

(b) COM KEY 1434—Tip and ring ahead of the line circuit can be accessed at the incoming line terminations on block 7 using 183B2 adapters. T and R behind the line circuit and A and A1 for a particular line can be accessed at any of the line appearances of the station terminations on blocks 6 through 15 using 183B2 adapters. For information on COM KEY 1434, refer to Section 518-450-102.

(c) COM KEY 2152—Because of insufficient clearance between the connecting blocks and the closed gate, 183B2 adapters cannot be used on the connecting units of COM KEY 2152. To access T and R ahead of the line circuit, route the incoming CO/PBX line to an external 66-type connecting block, then to block 3 of the 100A1 or 101A-type connecting unit. The 66-type connecting block is then used to provide a multiple of the line. To access T and R behind the line circuit, use an idle station code termination which must be sacrificed for system use. If no idle station terminations are available, use any station code by running a jumper cable to external 66-type connecting blocks and transferring the station cable to these blocks. The blocks are then used to provide the line appearance multiple. For information on COM KEY 2152, refer to Section 518-450-110.

1.08 These arrangements use a standard modular type connecting block (Fig. 1, 2, and 3) as the interface with the CPE as follows.

- For surface-mounted installations (RJ11C, RJ12C, RJ13C)—use 625A, 625C, 625S*, or 625T* connecting block. ⧫For surface-mounted installations requiring contacts 1 and 6 (RJ18C, RJ19C), use the 74D connecting block or equivalent.⧫

- For flush-mounted installations (RJ11C, RJ12C, RJ13C)—use 625B, 625F, ⧫or 625FS*⧫ connecting block.

- ⧫For flush-mounted installations (RJ17C)—use 625H connecting block.⧫

- For wall-mounted telephone set installations (RJ11W, RJ12W, RJ13W)—use 630A connecting block. ⧫For wall-mounted equipment requiring 1 and 6 (RJ18W, RJ19W), use a 630A connecting block equipped with a 6-conductor jack.⧫

*The ⧫625FS, 625H,⧫ 625S, and 625T connecting blocks have spring-loaded covers which protect the contacts from contamination.

2. DESCRIPTION

2.01 ***USOC RJ11C:*** Provides a bridged connection of the tip and ring only of a single line to the CPE (Fig. 2, 3, and 6). Used where customer requires a surface- or flush-mounted installation. Requires installation of a 625-type connecting block at location of connection to CPE. Connection to tip and ring can be at any convenient access point.

2.02 ***USOC RJ11W:*** Same as RJ11C but installed at wall-mounted installations using 630A connecting block (Fig. 4 and 5).

2.03 ***USOC RJ12C:*** Provides a bridged connection of a single tip and ring with A lead control (Fig. 2, 3, and 7). Tip and ring are bridged ***ahead*** of the line circuit because the registered equipment requires CO/PBX ringing. A and A1 are obtained behind the line circuit. T, R, A, and A1 are supplied to the CPE at a surface- or flush-mounted installation using a 625-type connecting block. Connection to the required leads must be made at the KTS multiple for proper access. Typically used for connecting ancillary equipment requiring A lead control where the CPE is not compatible with tip and ring behind the line circuit.

2.04 ***USOC RJ12W:*** Same as RJ12C except requires installation of a 630A connecting block for wall-mounted installations (Fig. 4 and 7).

2.05 ***USOC RJ13C:*** Provides a bridged connection of the tip and ring ***behind*** the KTS line circuit with A lead control to the CPE (Fig. 2, 3, and 7). Connection to the leads is made anywhere access to T, R, A, and A1 leads can be obtained, such as the KTS, distribution field, connecting blocks, etc. Uses a 625-type connecting block for surface- or flush-mounted installations. Primarily used for connecting ancillary devices with A lead control where the registered CPE is located near the key set.

2.06 ***USOC RJ13W:*** Same as RJ13C except installed at wall-mounted installations using a 630A connecting block (Fig. 4 and 8).

2.07 ***USOC RJ17C:*** Provides a bridged connection of the tip and ring only of a single line to special telephone sets or ancillary equipment (eg, ECG machines) in hospital critical care areas (Fig. 5 and 9). It provides a standard connecting configuration that will only permit connection to the network of equipment conforming to Article 517 of the 1978 National Electrical Code.

2.08 ***USOC RJ18C:*** Provides a bridged connection of single-line tip and ring and make-busy leads MB/MB1 (Fig. 10). Used where customer requires surface-mounted installation. Requires installation of a 74D connecting block (Fig. 1) or equivalent at location of connection to CPE. Connection to the network should be made per Operating Comapny make-busy circuit drawings.

Note: Do no connect MB/MB1 leads directly across tip and ring of the network.

2.09 ***USOC RJ18W:*** Same as RJ18C but installed at wall-mounted installations using a 630A connecting block equipped with a 6-conductor jack (Fig. 4 and 10).

2.10 ***USOC RJ19C:*** Provides a bridged connection of single-line tip and ring behind a line circuit with "A" lead control and make-busy leads MB/MB1 (Fig. 11). Used where customer requires surface-mounted installation. Requires installation of a 74D connecting block (Fig. 1) or equivalent at location of connection to CPE. Connection to the network should be made per Operating Company make-busy circuit drawings.

Note: Do not connect MB/MB1 leads directly across tip and ring of the network.

2.11 ***USOC RJ19W:*** Same as RJ19C but installed at wall-mounted installations using a 630A connecting block equipped with a 6-conductor jack (Fig. 4 and 11).

3. MAINTENANCE

3.01 Maintenance of the wiring arrangements covered in this section is limited to:

- Verification of the telephone company wiring and equipment
- Assurance that the required leads are supplied in the interface used for CPE connection.

No attempt should be made to test, modify, or repair customer-owned and maintained equipment.

3.02 When in the judgment of repair personnel the trouble is located in or caused by the CPE, the Repair Service Bureau should be notified so that proper Maintenance of Service Charge Billing can be initiated as required and as outlined in the following:

- Section 660-101-312—Maintenance of Service Charge on Services With Customer-Provided Equipment (CPE)
- Section 660-101-318—Tariff and Registration Violation Notice Procedures.

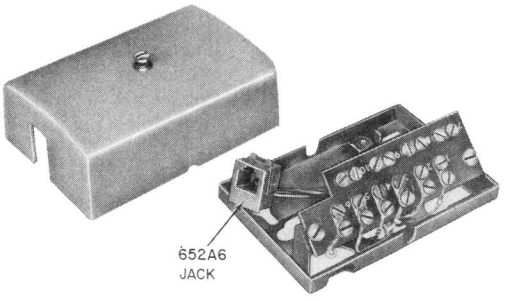


Fig. 1—74D Connecting Block

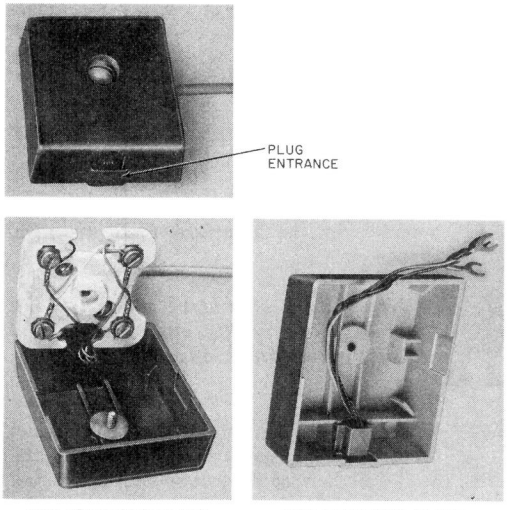
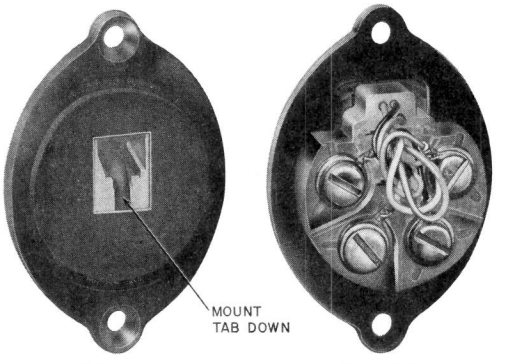


Fig. 2—625A and 625C Connecting Block



- 4 CONTACTS
- FLUSH MOUNTED:
  USING 63-TYPE OR KS-20502,L2 BRACKET AND 16A FACEPLATE OR IN STANDARD ELECTRICAL OUTLET BOX USING 43B BRACKET OR IN WOODWORK USING 1-1/4 INCH HOLE
- MATES WITH D4BU MOUNTING CORD PLUG
- MOUNTING SCREWS SUPPLIED
- FOR NEW INSTALLATIONS OR MODULAR REPLACEMENT OF 548-TYPE JACKS

Fig. 3—625F Connecting Block

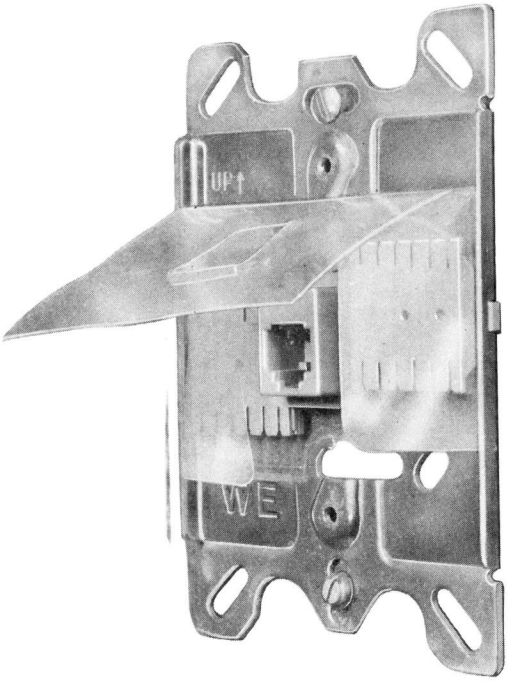
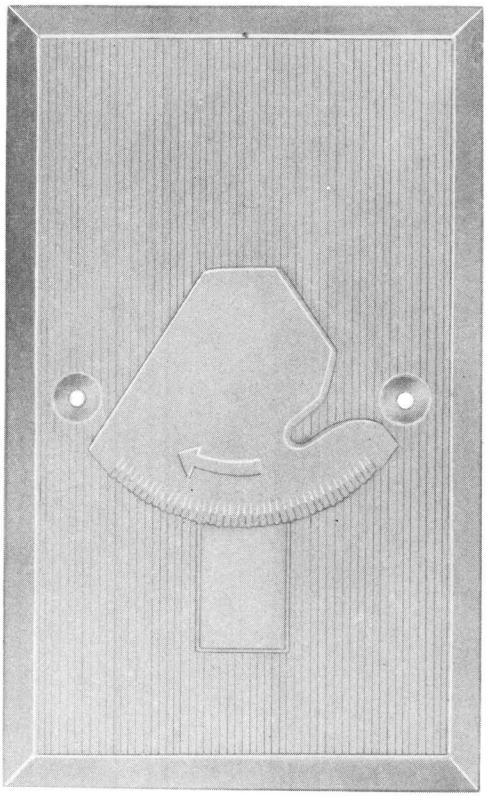
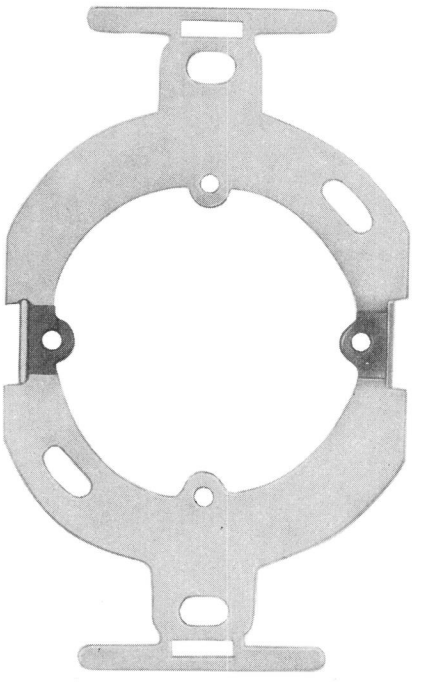


Fig. 4—630-Type Connecting Block (Without Mounting Plate)





NOTE:
BRACKET IS USED TO MOUNT 625H TO GEM BOX, 63A, OR 63B MOUNTING BRACKET.

Fig. 5—625H Connecting Block

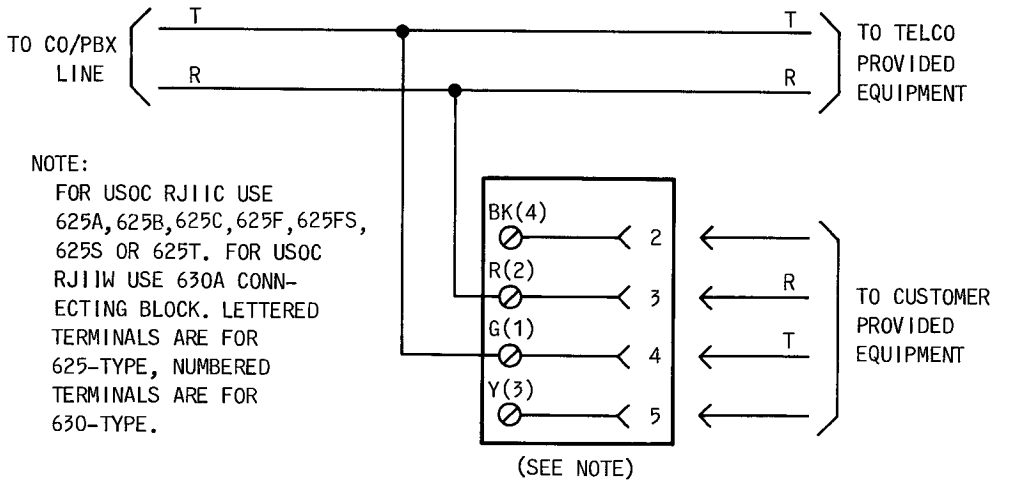
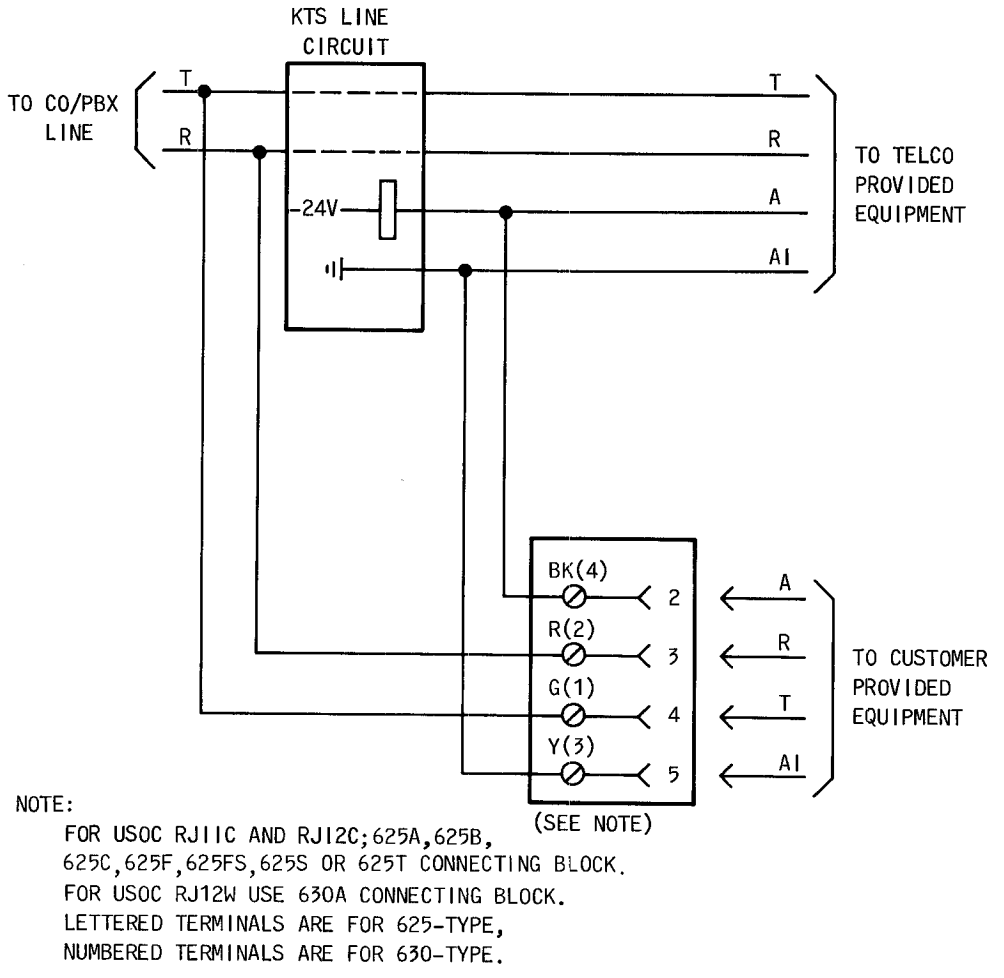


Fig. 6—Connections for USOC RJ11C and RJ11W—Bridged Tip and Ring



NOTE:
FOR USOC RJ11C AND RJ12C; 625A, 625B, 625C, 625F, 625FS, 625S OR 625T CONNECTING BLOCK.
FOR USOC RJ12W USE 630A CONNECTING BLOCK.
LETTERED TERMINALS ARE FOR 625-TYPE,
NUMBERED TERMINALS ARE FOR 630-TYPE.

Fig. 7—Connections for USOC RJ12C and RJ12W—Bridged Tip and Ring Ahead of Line Circuit With A Lead Control

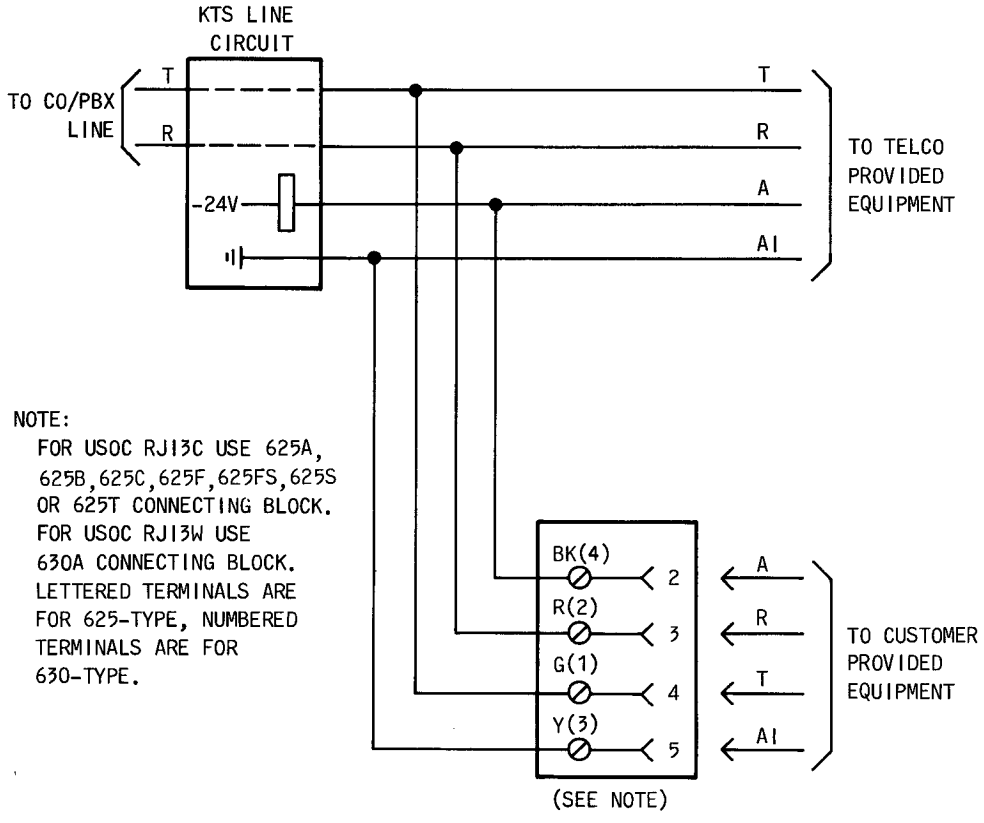
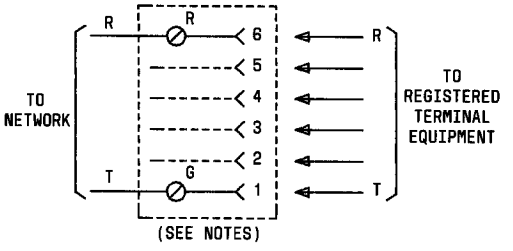


Fig. 8—Connections for USOC RJ13C and RJ13W—Bridged Tip and Ring Behind Line Circuit With A Lead Control



NOTE:
1. FOR USOC RJ17C USE 625H CONNECTING BLOCK
2. ONLY POSITIONS 1 AND 6 IN THE JACKS ARE EQUIPPED WITH CONTACTS

Fig. 9—Connections for USOC RJ17C—Bridged Tip and Ring

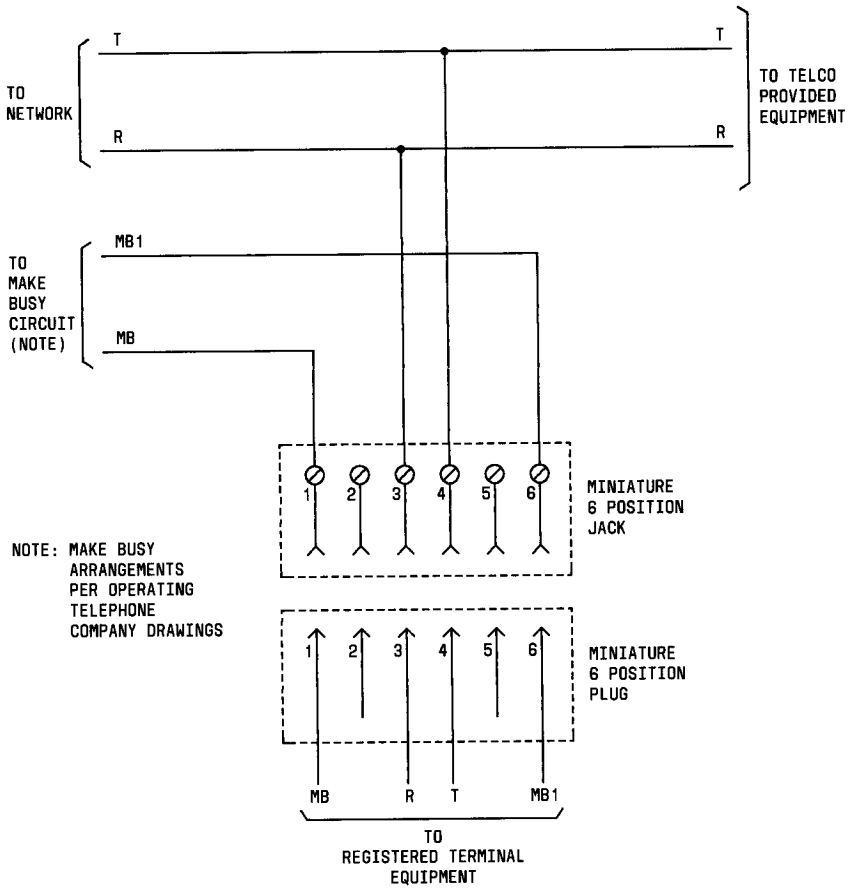


Fig. 10—Connections for USOC RJ18C and RJ18W—Bridged Tip and Ring With Make-Busy Leads

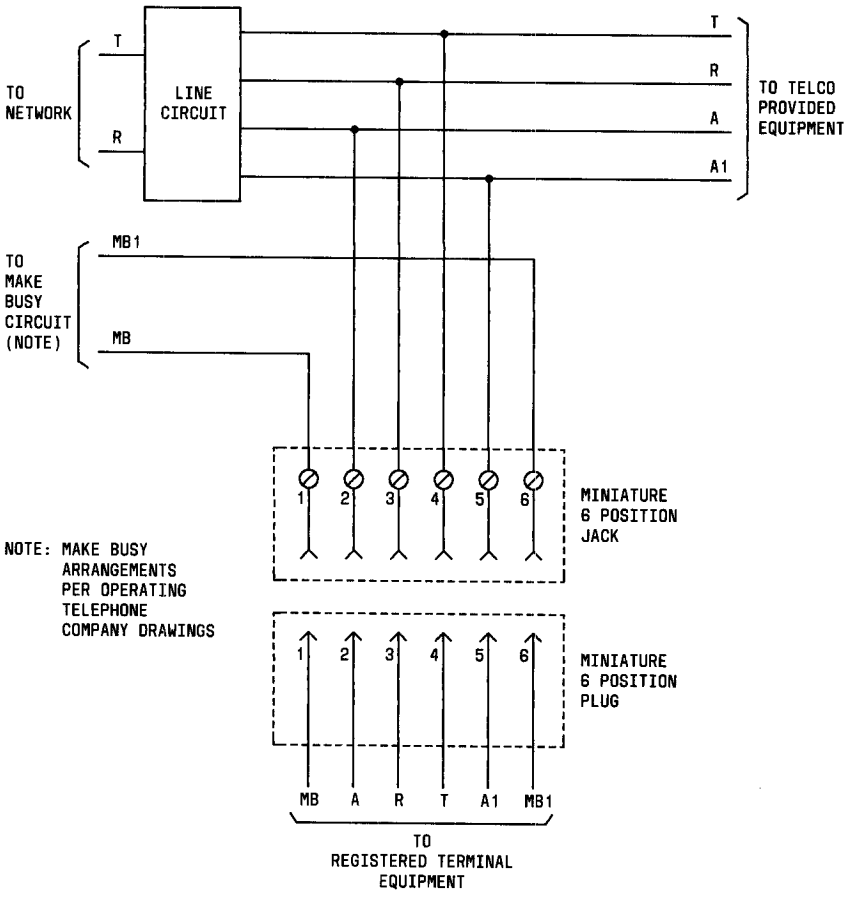


Fig. 11—Connections for USOC RJ19C and RJ19W—Bridged Tip and Ring With A Lead Control and Make-Busy Leads

REGISTRATION INTERFACE
BRIDGED SINGLE LINE WEATHERPROOF
TIP AND RING ARRANGEMENTS
RJ15C

1. GENERAL

1.01 This section contains information on the standard arrangement to be provided under the Federal Communications Commission's (FCC) Registration Program for telephone, ancillary, and protection circuitry of the type associated with telephone and ancillary customer-provided equipment (CPE).

1.02 This section is reissued to:

- Update text
- Change Fig. 1.

1.03 For arrangement RJ15C, provide the following:

- At existing installations where the brass outlet box used with a KS-8421 jack is in place—use a B Weatherproof Female Jack Adapter, AT-8732 (Fig. 3)
- At all other installations—use a B Outlet Box, AT-8732, and a B Weatherproof Female Jack, ▶Adapter◀ AT-8732 (Fig. 1 and 2).

2. IDENTIFICATION

2.01 ***USOC RJ15C:*** Provides a bridged connection of the tip and ring only of a single line to the CPE (Fig. 4). Used at docks or marinas to provide connections to boats having no "on-board" wiring. Uses a B Weatherproof Female jack, AT-8732 ▶(Fig. 2 or 3)◀ as the interface to the CPE.

3. MAINTENANCE

3.01 Maintenance of the wiring arrangements covered in this section is limited to:

- Verification of the telephone company wiring and equipment
- Assurance that the required leads are supplied in the interface used for CPE connection.

No attempt should be made to test, modify, or repair customer-owned and maintained equipment.

3.02 When in the judgment of repair personnel the trouble is located in or caused by the CPE, the Repair Service Bureau should be notified so that proper Maintenance of Service Charge Billing can be initiated as required and as outlined in the following:

- Section 660-101-312—Maintenance of Service Charge on Services With Customer-Provided Equipment (CPE)
- Section 660-101-318—Tariff and Registration Violation Notice Procedures.

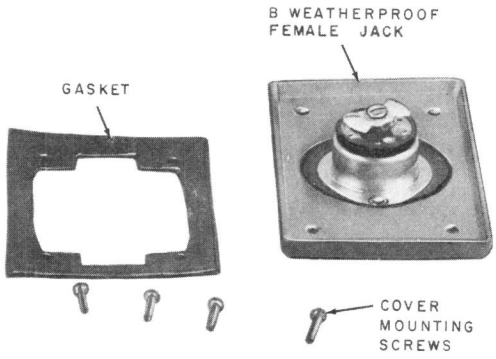


Fig. 1—B Weatherproof Female Jack

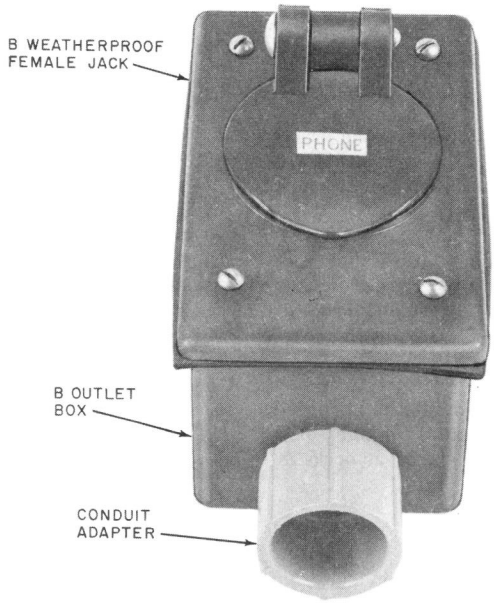


Fig. 2—B Weatherproof Female Jack on B Outlet Box

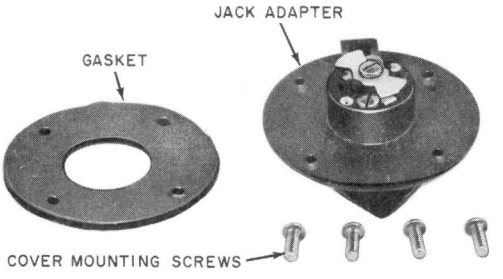


Fig. 3—B Weatherproof Female Jack Adapter

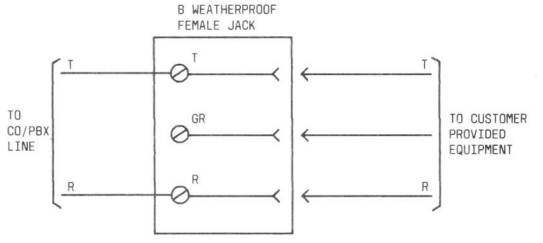


Fig. 4—Connections for USOC RJ15C—Bridged Tip and Ring

REGISTRATION INTERFACE

SERIES SINGLE LINE

TIP AND RING ARRANGEMENTS

RJ16X, RJ31X, RJ32X, RJ33X, RJ34X, RJ35X, RJ36X, RJ37X, AND RJ38X

1. GENERAL

1.01 This section provides information on the standard arrangements to be provided under the Federal Communications Commission's (FCC) Registration Program for registered telephone, ancillary, data, and protective circuitry of the type associated with telephone, ancillary, and data telephone company (TELCO) or customer-provided equipment (CPE).

> ***Note:*** TELCO or customer-provided data equipment connected to the network via the jacks in this section must have a fixed signal power level under -9 dBm. See Section 590-101-103 for connection of other data devices.

1.02 This section is reissued to:

- Expand the information for USOC RJ35X to include additional sets and sets with new line switch. This information is now supplied in tables by type of set.
- Add note to figures denoting differences between 635A and 635B connecting block
- Revise Fig. 8 and 9.

1.03 The arrangements covered in this section require the installation of a 635-type connecting block. ▶The RJ16X uses a 625-type connecting block and is used with a 635-type connecting block.◀ 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.
3. The 635A uses a shorting bar while the 635B uses outrigger contacts. This connecting block is designed to place the registered equipment in series with the telephone line and the CPE or TELCO-provided equipment ▶(8 position plug)◀ when the plug from the registered equipment is inserted in the modular jack. In the series mode, loop continuity must be maintained through the registered equipment. When the plug is removed, the circuit is restored between the line and the CPE or TELCO-provided equipment by the shorting bars.

> ***Note:*** In some instances (RJ35X, RJ16X) the telephone company provides an exclusion set which controls a customer-provided data set.

1.04 In all the arrangements, tip and ring of a single line are supplied through the interface. Where the arrangement is used with a key telephone system (KTS), the **A** and **A1** leads are also furnished on a bridged basis.

1.05 All unused leads and terminals are reserved for telephone company use. Disposition of spare leads should be per local instructions. All contact positions of the modular jack used in the 635-type connecting block are equipped with leads. In early production, the leads associated with contacts 2 and 7 were not terminated but were insulated and stored, since there are only six contacts on the connecting block terminal.

Note: Circuit incompatibility may occur involving spare leads if a change in service is installed, ie, a line with **A** lead control installed originally would not be compatible with a subsequent installation involving a data set. Whenever service is altered at an installation involving registration Uniform Service Order Codes (USOCs), check that all appearances are properly wired.

1.06 Unless otherwise specifically required by a particular wiring arrangement, access to the required leads can be at any access point. The USOC RJ35X must be accessed in the telephone set in order to provide the series tip and ring connection of all lines appearing in the set. Figure 7 provides modification of the more common sets. For the other arrangements, if installed in a large KTS with color-keyed backboards, the auxiliary (yellow) field should be used; otherwise, access at satellite closets, distribution boxes, connecting blocks, etc.

1.07 When necessary to access leads in COM KEY* installations, wire as follows:

(a) COM KEY 718—Tip and ring ahead of the line circuit can be obtained at the incoming CO/PBX line terminations on block 3 using 183B2 adapters. If **T, R, A,** or **A1** are required behind the line circuit, they can be accessed per line at any of the line appearances of the station terminations on blocks 3, 4, or 5. Again use 183B2 adapters. For information on COM KEY 718, refer to Section 518-450-100.

(b) COM KEY 1434—Tip and ring ahead of the line circuit can be accessed at the incoming line terminations on block 7 using 183B2 adapters. **T** and **R** behind the line circuit and **A** and **A1** for a particular line can be accessed at any of the line appearances of the station terminations on blocks 6 through 15 using 183B2 adapters. For information on COM KEY 1434, refer to Section 518-450-102.

(c) COM KEY 2152—Because of insufficient clearance between the connecting blocks and the closed gate, 183B2 adapters cannot be used on the connecting units of COM KEY 2152. To access **T** and **R** ahead of the line circuit, route the incoming CO/PBX line to an external 66-type connecting block, then to block 3 of the 100A1 or 101A1 connecting unit. The 66-type connecting block is then used to provide a multiple of the line. To access **T** and **R** behind the line circuit, use an idle station code termination which must be sacrificed for system use. If no idle station terminations are available, use any station code by running a jumper cable to external 66-type connecting blocks and transferring the station cable to these blocks. The blocks are then used to provide the line appearance multiple. For information on COM KEY 2152, refer to Section 518-450-110.

*Trademark of AT&T.

2. IDENTIFICATION

2.01 ***USOC RJ16X:*** This arrangement in connection with a series jack such as RJ36X provides "mode indication" leads (M1 and M1C) for data sets using the "permissive" mode of transmission (Fig. 1 and 2). ▶This arrangement uses a 625-type connecting block.◀

2.02 ***USOC RJ31X:*** This arrangement is wired so that when the registered equipment is plugged into the 635-type connecting block, the equipment is place in series with the tip and ring of the line (Fig. 3). When the plug is removed, tip and ring are cut through to the station equipment. ***The 635-type connecting block must be wired in the circuit, ahead of ALL station equipment, to prevent false operation of the registered device and to cut off ALL station equipment from the line.*** Typical usage is an alarm dialer.

2.03 ***USOC RJ32X:*** This arrangement (Fig. 4) also provides a series tip and ring connection through the 635-type connecting block but is used where the registered equipment is connected in series with a single station, such as an automatic dialer.

2.04 ***USOC RJ33X:*** Provides a series connection of the tip and ring of a KTS line ahead of the line circuit because the registered equipment requires CO/PBX ringing and a bridged connection of **A** and **A1** from behind the line circuit. It provides the busy feature at other stations in the same KTS (Fig. 5). Tip and ring are the only leads opened when the plug is inserted in the 635-type connecting block. Typical usage would be for registered automatic dialers or call restrictors. Access to the required leads can be anywhere leads

are available, but tip and ring must be ahead of the line circuit.

2.05 ***USOC RJ34X:*** This arrangement provides a series tip and ring connection and a bridged A and A1 to the registered equipment. All leads are connected behind the line circuit (Fig. 6). Typical usage is for automatic dialers and call restrictors.

2.06 ***USOC RJ35X:*** Provides a series tip and ring connection to whatever line has been selected in a key telephone set plus a bridged **A** and **A1**. The arrangement requires that the set wiring be modified as shown in ▶Fig. 7 and Tables A through E◀ to put the registered equipment in series with the T and **R** multiple from the key(s) and the **T** and **R** going to the speech network. Connections between the 635-type connecting block and the telephone set terminals can be made using a D6AA cord or equivalent.

> ▶***Note:*** When USOC RJ35X is installed using a telephone set having a new line switch that breaks both sides of the line and having speakerphone or a headset adjunct, it may be necessary to strap out the line switch contact in the tip side of the line (BL leads) for proper operation.◀

2.07 ***USOC RJ36X:*** This arrangement provides a connection for a telephone set equipped with an exclusion key where the telephone line is also to be used with a registered data set. The arrangement provides a series connection to the tip and ring, plus mode indication leads M1 and M1C. The exclusion key can be used to transfer the telephone line between the data set and the telephone set. This arrangement will be associated with a TELCO-provided voice jack (Fig. 8) used for permissable data.

2.08 ***USOC RJ37X:*** This arrangement provides for the connection of two lines. The tip and ring of both lines are bridged at the jack which provides the ability to exclude one line. The TELCO will wire the jack in the sequence designated by the customer. Typical usage is for two line telephones with exclusion on one line for use with data sets requiring telephones with the exclusion feature (Fig. 9).

2.09 ▶***USOC RJ38X:*** This arrangement provides a series single-line arrangement ahead of all station equipment and has a continuity circuit. A strap must be added between terminals 2 and 7 of the 635-type connecting block (Fig. 10)—terminals 3 and 6 are reserved for TELCO use. When the registered equipment is plugged into the 635-type connecting block, the equipment is placed in series with the tip and ring of the line. When the plug is removed, tip and ring are cut through to the station equipment. ***The 635-type connecting block must be wired in the circuit ahead of ALL station equipment, to prevent false operation of the registered device and to cut off ALL station equipment from the line.*** Typical usage is alarm reporting devices.◀

3. MAINTENANCE

3.01 Maintenance of the wiring arrangements covered in this section is limited to:

- Verification of the telephone company wiring and equipment
- Assurance that the required leads are supplied in the interface used for the connection.

No attempt should be made to test, modify, or repair customer-owned and maintained equipment.

3.02 When in the judgment of repair personnel the trouble is located in or caused by the CPE, the Repair Service Bureau should be notified so that proper Maintenance of Service Charge Billing can be initiated as required and as outlined in the following:

- Section 660-101-312—Maintenance of Service Charge on Services With Customer-Provided Equipment (CPE)
- Section 660-101-318—Tariff and Registration Violation Notice Procedures.

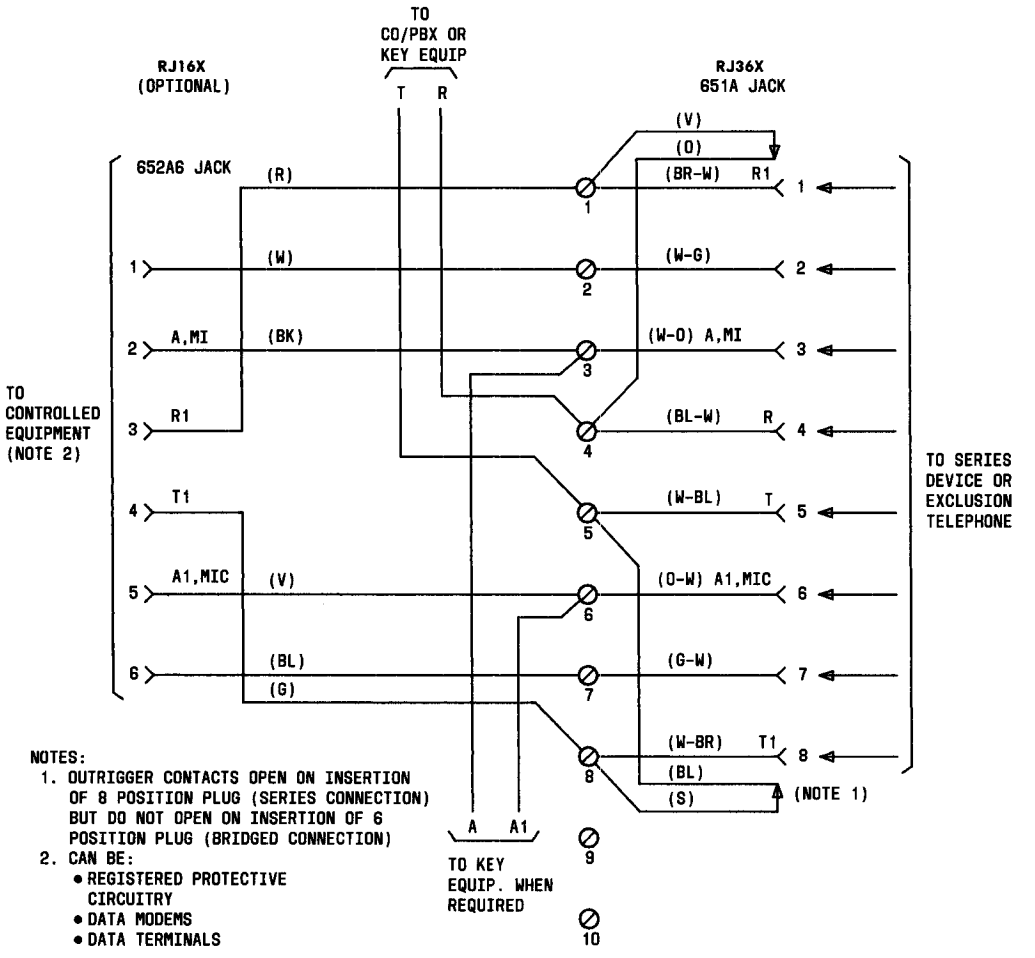
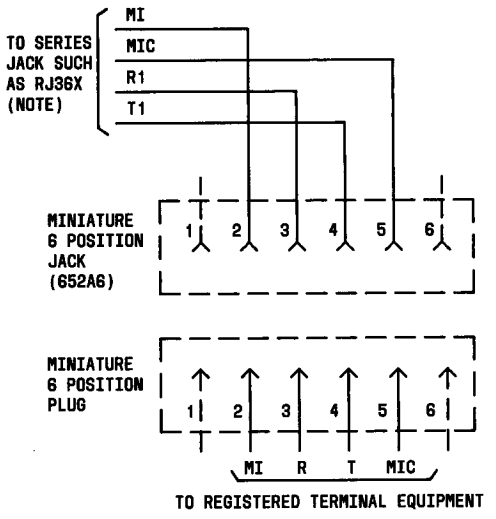


Fig. 1—Schematic Diagram, 635B Connecting Block (652A6 Jack for Controlled Station, Mounted in 635B Connecting Block Cover or Externally Mounted)



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. 2—Connections for USOC RJ16X

NOTES:

1. SHORTING BARS OPEN CIRCUITS BETWEEN 1-4 AND 5-8 WHEN PLUG IS INSERTED IN JACK.
2. IN EARLY PRODUCTION LEADS 2 AND 7 WERE NOT TERMINATED.
3. THE DIFFERENCE BETWEEN THE 635A AND 635B ARE:
   A. THE 635A REMOVES THE SHORT ON INSERTION OF A 6 OR 8 POSITION PLUG.
   B. THE 635B PROVIDES A BRIDGED CONNECTION WITH A 6 POSITION PLUG AND A SERIES CONNECTION WITH AN 8 POSITION PLUG.

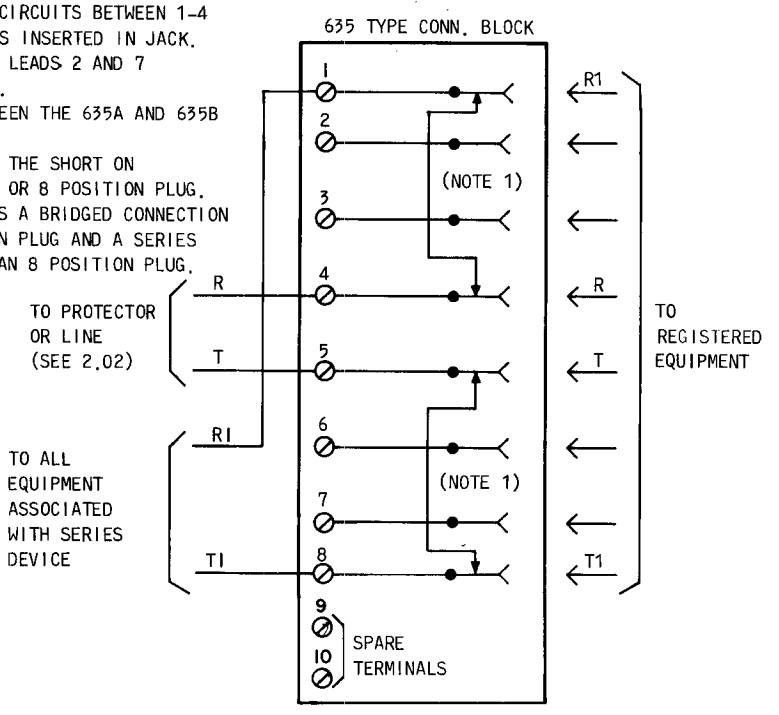


Fig. 3—Connections for USOC RJ31X

NOTES:

1. SHORTING BARS OPEN CIRCUITS BETWEEN 1-4 AND 5-8 WHEN PLUG IS INSERTED IN JACK.
2. IN EARLY PRODUCTION LEADS 2 AND 7 WERE NOT TERMINATED.
3. THE DIFFERENCE BETWEEN THE 635A AND 635B ARE:
   A. THE 635A REMOVES THE SHORT ON INSERTION OF A 6 OR 8 POSITION PLUG.
   B. THE 635B PROVIDES A BRIDGED CONNECTION WITH A 6 POSITION PLUG AND A SERIES CONNECTION WITH AN 8 POSITION PLUG.

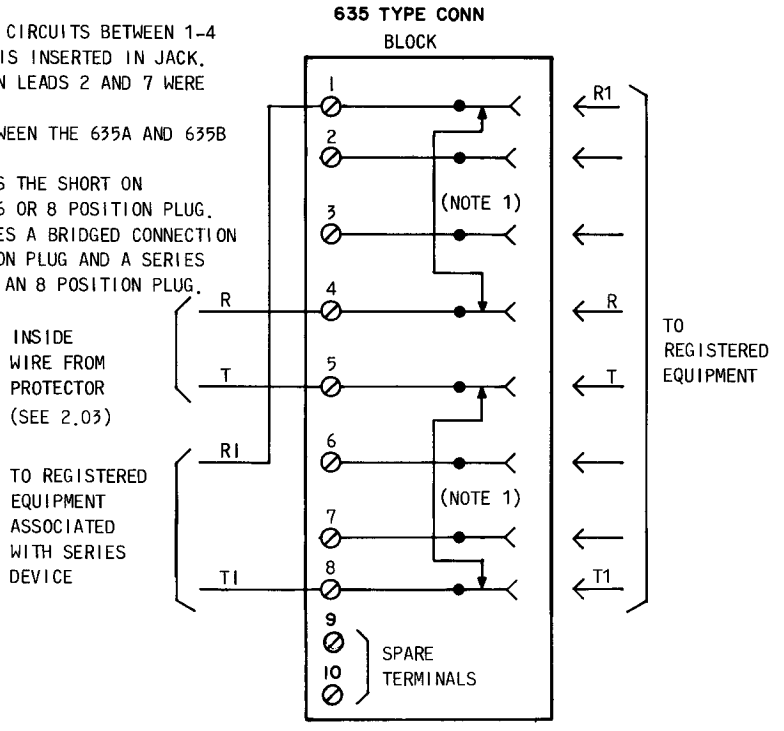
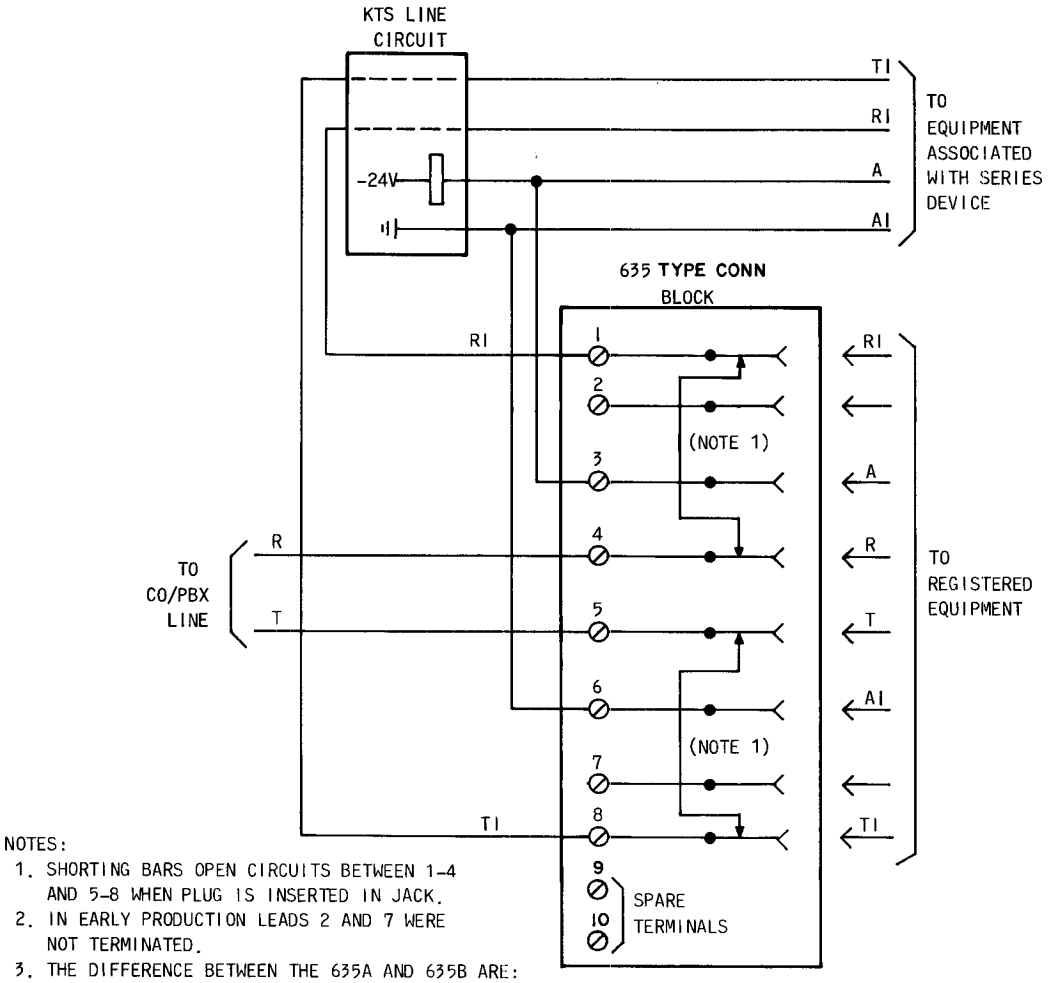


Fig. 4—Connections for USOC RJ32X



NOTES:

1. SHORTING BARS OPEN CIRCUITS BETWEEN 1-4 AND 5-8 WHEN PLUG IS INSERTED IN JACK.
2. IN EARLY PRODUCTION LEADS 2 AND 7 WERE NOT TERMINATED.
3. THE DIFFERENCE BETWEEN THE 635A AND 635B ARE:
   A. THE 635A REMOVES THE SHORT ON INSERTION OF A 6 OR 8 POSITION PLUG.
   B. THE 635B PROVIDES A BRIDGED CONNECTION WITH A 6 POSITION PLUG AND A SERIES CONNECTION WITH AN 8 POSITION PLUG.

Fig. 5—Connections for USOC RJ33X

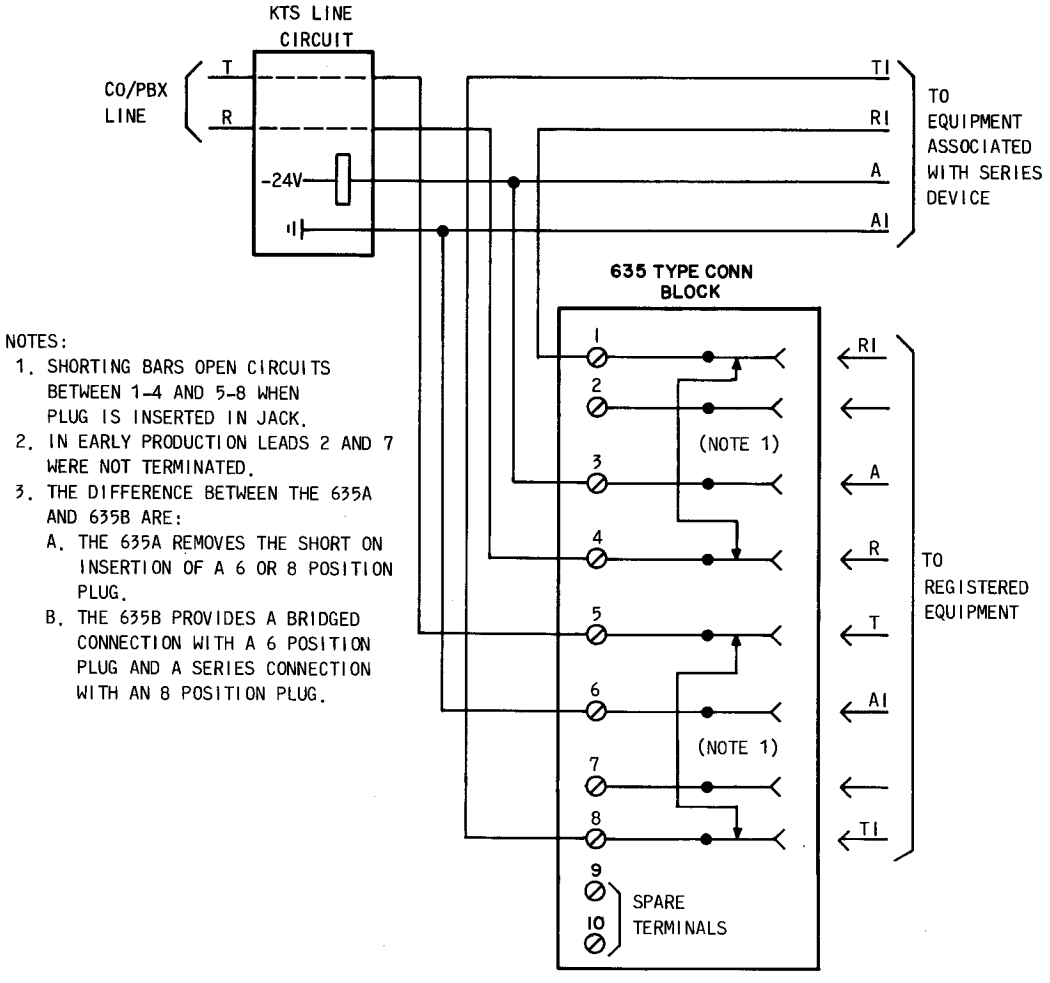
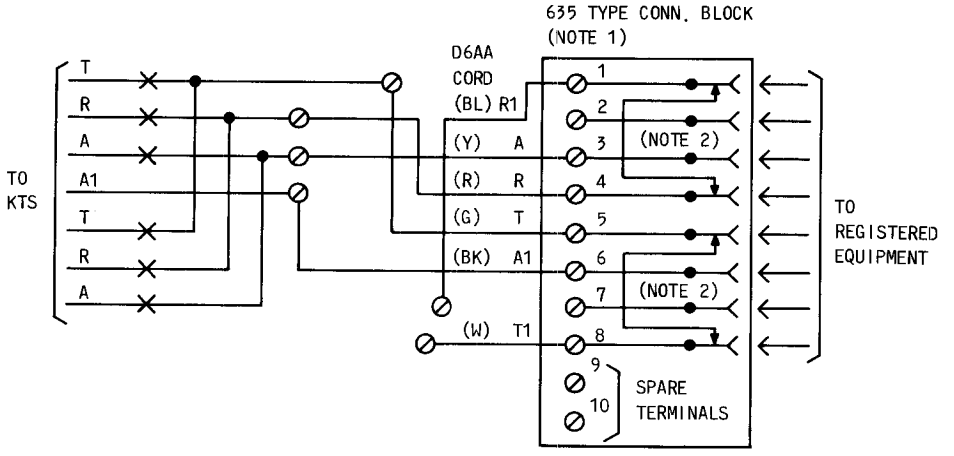


Fig. 6—Connections for USOC RJ34X



NOTES:

1. REFER TO TABLES A THROUGH E FOR SPECIFIC TERMINATING POINTS DEPENDING ON TELEPHONE SET USED.
2. SHORTING BARS OPEN CIRCUITS BETWEEN 1-4 AND 5-8 WHEN PLUG IS INSERTED IN JACK.
3. THE DIFFERENCE BETWEEN THE 635A AND 635B ARE:
   A. THE 635A REMOVES THE SHORT ON INSERTION OF A 6 OR 8 POSITION PLUG.
   B. THE 635B PROVIDES A BRIDGED CONNECTION WITH A 6 POSITION PLUG AND A SERIES CONNECTION WITH AN POSITION PLUG.

Fig. 7—Connections for USOC RJ35X

♦TABLE A♦

6-BUTTON TELEPHONE SETS

TELEPHONE SET CODES	TELEPHONE SET TERMINATIONS										D6AA CORD			
	T1*						R1*				T	R	A	A1
	(BL)-DIAL		(G)-DIAL		(BL)-LINE SW		(G)-LINE SW		(R) FLASH KEY					
	FROM	CONNECT TO D6AA	FROM	CONNECT TO D6AA	FROM	CONNECT TO D6AA	FROM	CONNECT TO D6AA	FROM	CONNECT TO D6AA	(G)	(R)	(Y)	(BK)
563HB,HBM	F	(W)							9	(BL)	F	9	M	1B
565GK,GKM	F	(W)					N	(BL)			F	N	M	1B
565GKMS†	F	(W)					N	(BL)			F	N	M	1B
565HK,HKM,LK,LKM	F	(W)					9	(BL)			F	9	M	1B
565HKMS,LKMS†	F	(W)					9	(BL)			F	9	M	1B
2563HB,HBM			L1	(W)					9	(BL)	L1	9	M	1B
2565GK,GKM			L2	(W)			N	(BL)			L2	N	M	1B
2565GKMS†			L2	(W)			N	(BL)			L2	N	M	1B
2565HK,HKM,LK,LKM			L2	(W)			9	(BL)			L2	9	M	1B
2565HKMS,LKMS†			L2	(W)			9	(BL)			L2	9	M	1B
851BT,B,BM	F	(W)					13	(BL)			F	13	9	4
851CM					2	(W)	13	(BL)			2	13	9	4
2851BT,B,BM			20	(W)			13	(BL)			20	13	9	4
2851CM					2	(W)	13	(BL)			2	13	9	4

* Remove designated leads from terminals in "T1" and "R1" columns—connect to (W) and (BL) leads from D6AA cord using spare terminals or D-161488 connectors. Connect other cord leads to terminals shown in "D6AA cord" column.

† When using these sets with speakerphone or headset adjunct, it may be necessary to strap out the line switch contact in the tip of the line (BL leads).

◆TABLE B◆

10- OR 20-BUTTON TELEPHONE SETS

TELEPHONE SET CODES	TELEPHONE SET TERMINATIONS								D6AA CORD			
	T1*						R1*		T	R	A	A1
	(BL)-DIAL		(G)-DIAL		(BL)-LINE SW		(G)-LINE SW					
	FROM	CONNECT TO D6AA	FROM	CONNECT TO D6AA	FROM	CONNECT TO D6AA	FROM	CONNECT TO D6AA	(G)	(R)	(Y)	(BK)
830A1M,C,CT,CM	F	(W)					6	(BL)	F	6	7	10
830CM†§					16	(W)	6	(BL)	16	6	7	10
830CM‡§,DM,FM					8	(W)	6	(BL)	8	6	7	10
831A1M,B1M,C,CT,CM	F	(W)					6	(BL)	F	6	7	10
831CM†§					16	(W)	6	(BL)	16	6	7	10
831CM‡§,DM,FM					8	(W)	6	(BL)	8	6	7	10
2830A1M,B1M,C,CT,CM			8	(W)			6	(BL)	8	6	7	10
2830CM†§					16	(W)	6	(BL)	16	6	7	10
2830CM‡§,DM,FM					8	(W)	6	(BL)	8	6	7	10
2831A1M,B1M,C,CT,CM			8	(W)			6	(BL)	8	6	7	10
2831CM‡§,DM					8	(W)	6	(BL)	8	6	7	10
852A	F	(W)					1	(BL)	F	1	12	3
2852A			4	(W)			1	(BL)	4	1	12	3
852AM,2852AM					4	(W)	1	(BL)	4	1	12	3

* Remove designated leads from terminals in "T1" and "R1" columns—connect to (W) and (BL) leads from D6AA cord using spare terminals or D-161488 connectors.

† New line switch—manufactured before 2/77.

‡ New line switch—manufactured after 2/77.

§ When using these sets with speakerphone or headset adjunct, it may be necessary to strap out the line switch contact in the tip of the line (BL leads).

♦TABLE C♦

CALL DIRECTOR TELEPHONE SETS

TELEPHONE SET CODES	TELEPHONE SET TERMINATIONS												D6AA CO			
	T1*								R1*				T	R	A	A1
	(BL)-DIAL		(G)-DIAL		(BL)-LINE SW		(W-BL)-CORD		(G)-LINE SW		(BL-W)-FLASH					
	FROM	CONNECT TO D6AA	FROM	CONNECT TO D6AA	FROM	CONNECT TO D6AA	FROM	CONNECT TO D6AA	FROM	CONNECT TO D6AA	FROM	CONNECT TO D6AA	(G)	(R)	(Y)	(BK)
630D/631D/632A,C	F	(W)							2	(BL)			F	2	A-H	1
630DAM/631DAM	F	(W)							13	(BL)			F	13	10	8
630DAMS/631DAMS†					G	(W)			13	(BL)			G	13	10	8
2630D/2631D/2632C			4	(W)					2	(BL)			4	2	A-H	1
2630DA,DAM/2631DA,DAM			12	(W)					13	(BL)			12	13	10	8
2630DAMS/2631DAMS†					1	(W)			13	(BL)			1	13	10	8
634D/635D	F	(W)							2	(BL)			F	2	5	1
634DA,DAM/635DA,DAM	F	(W)							13	(BL)			F	13	2	10
634DAMS/635DAMS†							G	(W)	13	(BL)			G	13	2	10
2634D/2635D			4	(W)					2	(BL)			4	2	5	1
2634DA,DAM/2635DA,DAM			L2	(W)					13	(BL)			L2	13	2	10
2634DAMS/2635DAMS†					1**	(W)			13	(BL)			1	13	2	10
636C/637D	F	(W)									2	(BL)	F	2	A-H	1
636CA,CAM/637DA,DAM	F	(W)									9	(BL)	F	9	10	8
636CAMS/637DAMS†					G	(W)					9	(BL)	G	9	10	8
2636C/2637D			4	(W)							2	(BL)	4	2	A-H	1
2636CA,CAM/2637DA,DAM			12	(W)							9	(BL)	12	9	10	8
2636CAMS/2637DAMS†					1**	(W)					9	(BL)	1	9	10	8

* Remove designated lead from terminals in "T1" and "R1" columns—connect to (W) and (BL) leads from D6AA cord using spare terminals or D-161488 connectors.

† When using these sets with speakerphone or headset adjunct, it may be necessary to strap out the line switch contact in the tip of the line (BL leads).

** Also move (BL) headset jack lead.

◗TABLE D◖

COM KEY TELEPHONE SETS (NOTE)

TELEPHONE SET CODES	TELEPHONE SET TERMINATIONS						D6AA CORD			
	T1*				R1*		T	R	A	A1
	(BL)-LINE SW		(O)-STRAP		(G)-LINE SW					
	FROM	CONNECT TO D6AA	FROM	CONNECT TO D6AA	FROM	CONNECT TO D6AA	(G)	(R)	(Y)	(BK)
832A,B,C			22	(W)	4	(BL)	22	4	15	10
832BM,CM,DM,EM†	22	(W)			4	(BL)	22	4	15	10
2832A,B,C			22	(W)	4	(BL)	22	4	15	10
2832BM,CM,DM,EM†	22	(W)			4	(BL)	22	4	15	10
833B,C			22	(W)	4	(BL)	22	4	15	10
833BM,CM,DM,EM†	22	(W)			4	(BL)	22	4	15	10
2833B,C			22	(W)	4	(BL)	22	4	15	10
2833BM,CM,DM,EM†	22	(W)			4	(BL)	22	4	15	10

* Remove designated leads from terminals in "T1" and "R1" columns—connect to (W) and (BL) leads from D6AA cord using spare terminals or D-161488 connectors. Connect other cord leads to terminals shown in "D6AA cord" column.

† When using these sets with speakerphone or headset adjunct, it may be necessary to strap out the line switch contact in the tip of the line (BL leads).

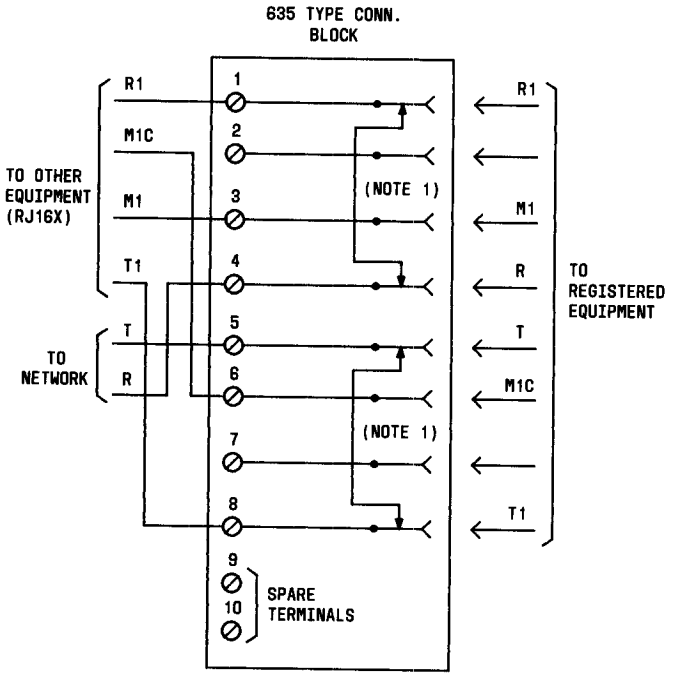
Note: RJ35X should not be connected in COM KEY telephone sets equipped with privacy because of possible circuit incompatibility.

◗TABLE E◖

TOUCH-A-MATIC TELEPHONE SETS

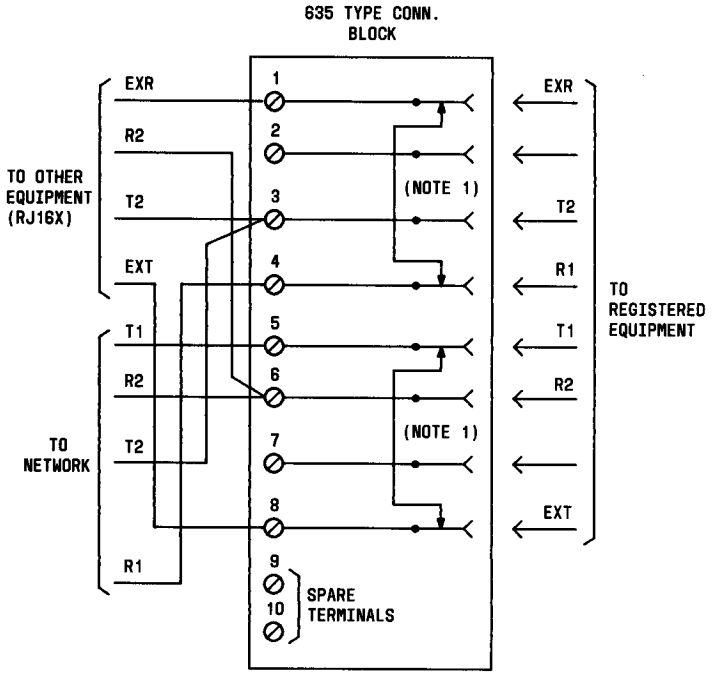
TELEPHONE SET CODES	TELEPHONE SET TERMINATIONS				D6AA CORD			
	T1*		R1*		T	R	A	A1
	(G)-KEY LEAD		(R)-KEY LEAD					
	FROM	CONNECT TO D6AA	FROM	CONNECT TO D6AA	(G)	(R)	(Y)	(BK)
872A1M	TB1-8	(W)	PSB-9	(BL)	TB1-8	PSB-9	TB1-3	TB1-12
2872A1M,A2M	TB1-8	(W)	PSB-12	(BL)	TB1-8	PSB-12	TB1-3	TB1-12

* Remove designated leads from terminals in "T1" and "R1" columns—connect to (W) and (BL) leads from D6AA cord using spare terminals or D-161488 connectors. Connect other cord leads to terminals shown in "D6AA cord" column.



NOTES:
1. SHORTING BARS OPEN CIRCUITS BETWEEN 1-4 AND 5-8 WHEN PLUG IS INSERTED IN JACK.
2. IN EARLY PRODUCTION LEADS 2 AND 7 WERE NOT TERMINATED.
3. THE DIFFERENCE BETWEEN THE 635A AND 635B ARE
   A. THE 635A REMOVES THE SHORT ON INSERTION OF A 6 OR 8 POSITION PLUG.
   B. THE 635B PROVIDES A BRIDGED CONNECTION WITH A 6 POSITION PLUG AND A SERIES CONNECTION WITH AN 8 POSTTION PLUG.

Fig. 8—Connections for USOC RJ36X



NOTES:
1. SHORTING BARS OPEN CIRCUITS BETWEEN 1-4 AND 5-8 WHEN PLUG IS INSERTED IN JACK.
2. IN EARLY PRODUCTION LEADS 2 AND 7 WERE NOT TERMINATED.
3. THE DIFFERENCE BETWEEN THE 635A AND 635B ARE
   A. THE 635A REMOVES THE SHORT ON INSERTION OF A 6 OR 8 POSITION PLUG.
   B. THE 635B PROVIDES A BRIDGED CONNECTION WITH A 6 POSITION PLUG AND A SERIES CONNECTION WITH AN 8 POSITION PLUG.

Fig. 9—Connections for USOC RJ37X

NOTES:

1. SHORTING BARS OPEN CIRCUITS BETWEEN 1-4 AND 5-8 WHEN PLUG IS INSERTED IN JACK.
2. IN EARLY PRODUCTION LEADS 2 AND 7 WERE NOT TERMINATED.
3. THE DIFFERENCE BETWEEN THE 635A AND 635B ARE:
   A. THE 635A REMOVES THE SHORT ON INSERTION OF A 6 OR 8 POSITION PLUG.
   B. THE 635B PROVIDES A BRIDGED CONNECTION WITH A 6 POSITION PLUG AND A SERIES CONNECTION WITH AN 8 POSITION PLUG.

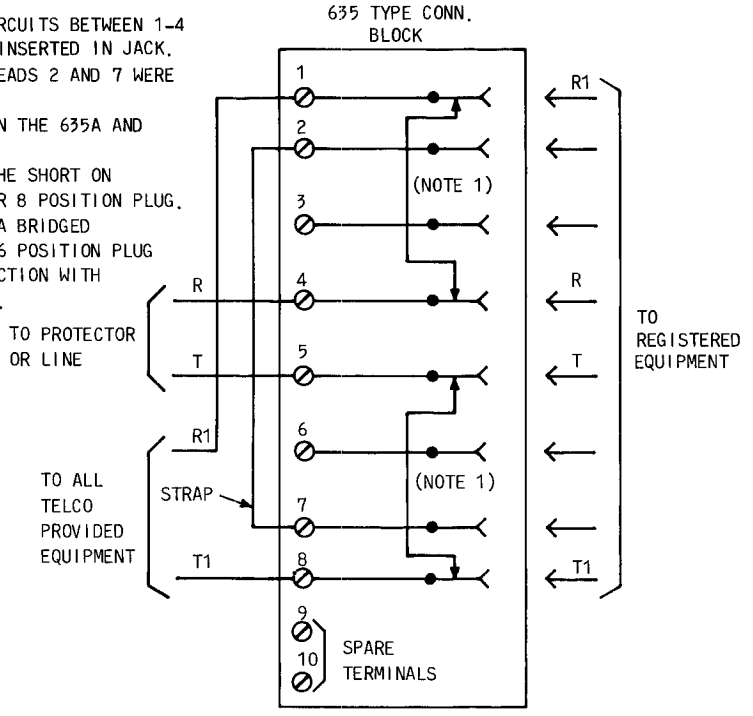


Fig. 10—Connections for USOC RJ38X

REGISTRATION INTERFACE
BRIDGED TWO LINE
TIP AND RING ARRANGEMENTS
RJ14C AND RJ14W

1. GENERAL

1.01 This section contains information on the standard wiring arrangements to be provided under the Federal Communications Commission's (FCC) Registration Program for registered telephone, ancillary, data, and protective circuitry of the type associated with telephone, ancillary, and data customer-provided equipment (CPE).

> ***Note:*** Customer-provided data equipment connected to the network via the jacks in this section must have a fixed signal power level under -9 dBm. See Section 590-101-103 for connection of other data devices.

1.02 This section is reissued to make minor text changes.

1.03 This section covers 2-line interface connections. For information on multiple (more than two lines) connections, refer to Section 463-400-141.

> ***Note:*** Circuit incompatibility may occur involving the spare leads if a change of service is installed, ie, a line with "A" lead control installed originally would not be compatible with a subsequent installation of 2-line service. Whenever service is altered at an installation involving registration Uniform Service Order Codes (USOCs), check that all appearances are properly wired.

1.04 These arrangements use a standard modular type connecting block (Fig. 1, 2, ▶3, 4, 5, and 6)◀ as the interface with the CPE as follows:

- For surface-mounted installations (RJ14C)—use 625A, 625C, 625S*, or 625T* connecting block
- For flush-mounted installations (RJ14C)—use 625B, 625F, ▶or 625FS*◀ connecting block
- For wall-mounted telephone set installations (RJ14W)—use 630A connecting block.

*The 625S, ▶625FS◀ , and 625T connecting blocks have spring-loaded covers which protect the contacts from contamination.

2. IDENTIFICATION

2.01 ***USOC RJ14C***—Provides bridged connections of the tips and rings of two lines to the CPE ▶(Fig. 1, 2, 3, 4, or 5).◀ Used where customer requires a surface- or flush-mounted installation. Requires installation of a 625-type connecting block at location of connection to CPE. Connection to CPE can be at any convenient point. Figure 7 shows connections for RJ14C.

2.02 ***USOC RJ14W***—Same as RJ14C except installed at wall-mounted installations using 630A connecting block ▶(Fig. 6).◀ Figure 7 shows connections for RJ14W.

3. MAINTENANCE

3.01 Maintenance of the wiring arrangements covered in this section is limited to:

- Verification of the telephone company wiring and equipment
- Assurance that the required leads are supplied in the interface used for CPE connection.

No attempt should be made to test, modify, or repair customer-owned and maintained equipment.

3.02 When in the judgment of repair personnel the trouble is located in or caused by the CPE, the Repair Service Bureau should be notified so that proper Maintenance of Service Charge Billing can be initiated as required and outlined in the following:

- Section 660-101-312—Maintenance of Service Charge on Services With Customer-Provided Equipment (CPE)
- Section 660-101-318—Tariff and Registration Violation Notice Procedures.

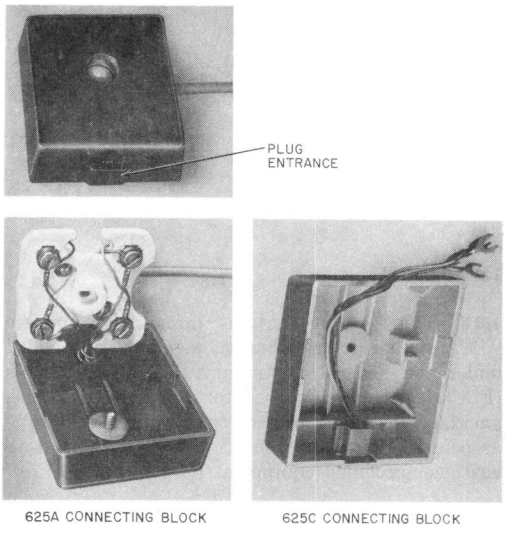
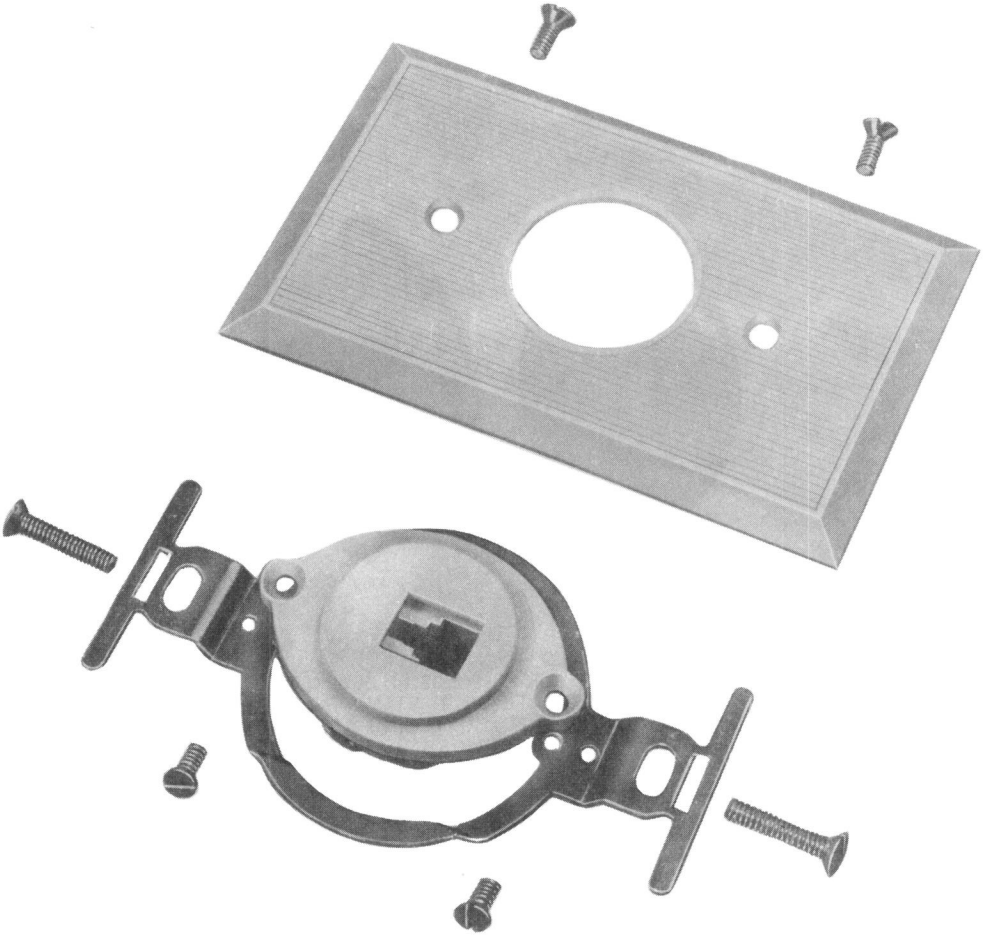
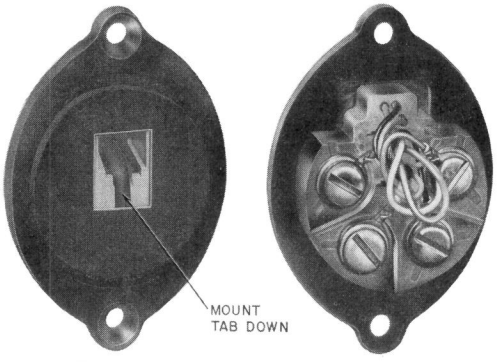


Fig. 1—625A and 625C Connecting Block



- 4 CONTACTS
- FLUSH MOUNTED:
  FOR USE IN STANDARD ELECTRICAL OUTLET BOX
  NOTE:
  MOUNTING SCREWS, BRACKET, AND FACEPLATE PROVIDED
- MATES WITH D4BU MOUNTING CORD PLUG
- FOR NEW INSTALLATIONS OR MODULAR REPLACEMENT OF 548-TYPE JACKS

Fig. 2—▶625B Connecting Block (Includes Mounting Hardware)◀



- 4 CONTACTS
- FLUSH MOUNTED:
  USING 63-TYPE OR KS-20502,L2 BRACKET AND 16A FACEPLATE OR IN STANDARD ELECTRICAL OUTLET BOX USING 43B BRACKET OR IN WOODWORK USING 1-1/4 INCH HOLE
- MATES WITH D4BU MOUNTING CORD PLUG
- MOUNTING SCREWS SUPPLIED
- FOR NEW INSTALLATIONS OR MODULAR REPLACEMENT OF 548-TYPE JACKS

Fig. 3—625F Connecting Block

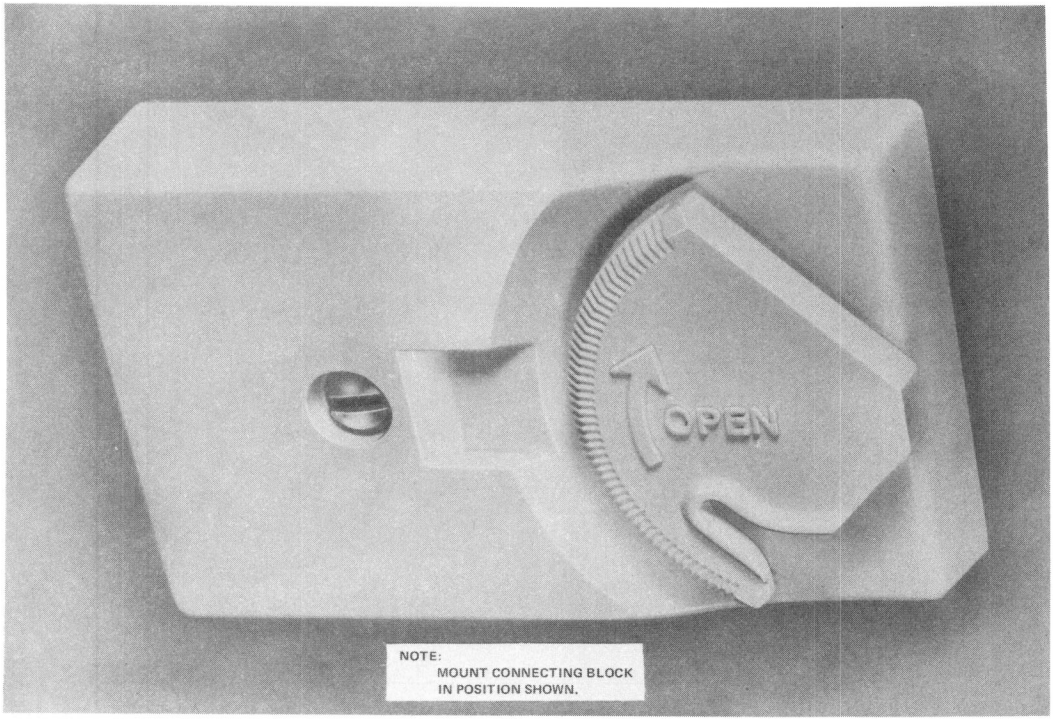
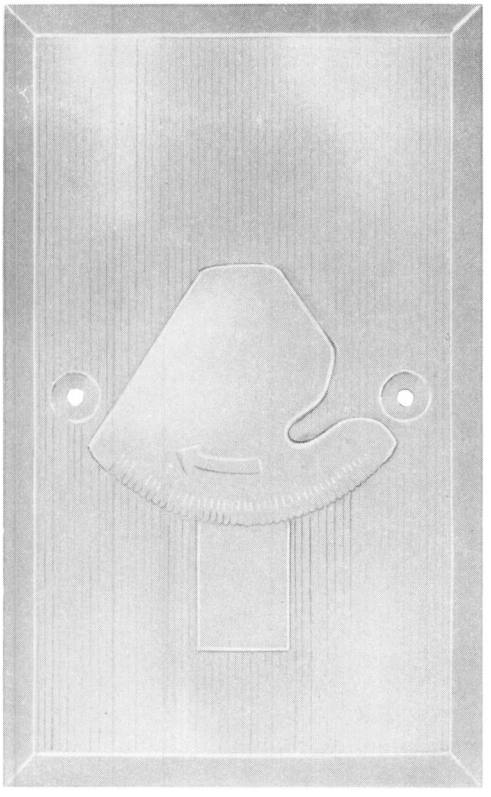
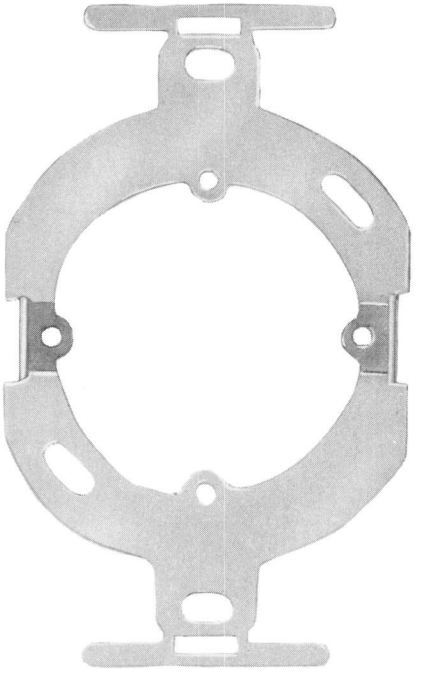


Fig. 4—◗625S Connecting Block◖



BRACKET
(PROVIDED WITH 625FS CONNECTING BLOCK)



NOTE:
BRACKET IS USED TO MOUNT 625FS TO GEM BOX, 63A, OR 63B MOUNTING BRACKET.

Fig. 5—◗625FS Connecting Block◖

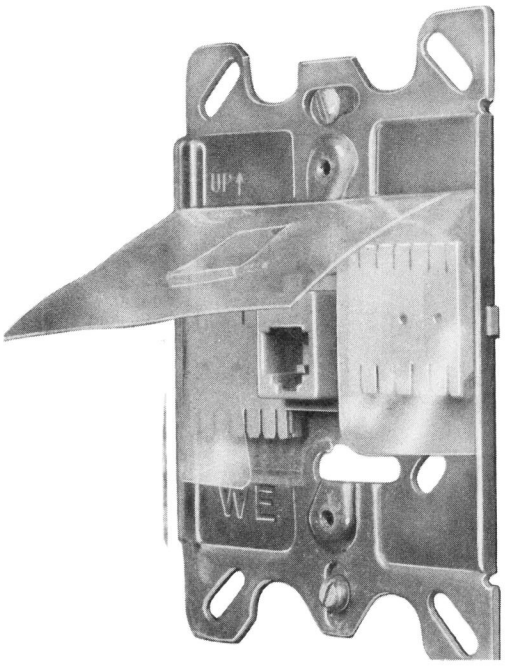


Fig. 6—630-Type Connecting Block (Without Mounting Plate)

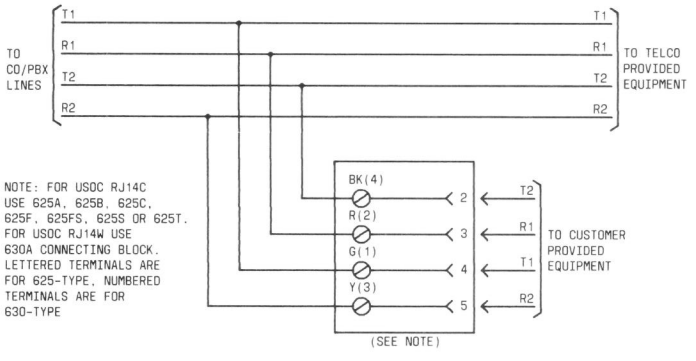


Fig. 7—Connections for USOC RJ14C and RJ14W—Bridged Tip and Ring of Two Lines

REGISTRATION INTERFACE
BRIDGED MULTIPLE
TIP AND RING ARRANGEMENTS
RJ21X, RJ22X, RJ23X, AND RJ24X

1. GENERAL

1.01 This section provides information on the standard wiring arrangements to be provided under the Federal Communications Commission's (FCC) Registration Program for registered telephone, ancillary, data, telephone, and protective circuitry of the type associated with ancillary and data customer-provided equipment (CPE). This section covers multiple (more than three lines) connections. For information on 2-line interface connections, see Section 463-400-140. For information on 3-line interface connections, see Section 463-400-142.

> ***Note:*** Customer-provided data equipment connected to the network via the jacks in this section must have a fixed signal power level under -9 dBm. See Section 590-101-103 for connection of other data devices.

1.02 This section is reissued to add connections for RJ21X, RJ22X, RJ23X, or RJ24X using a 66M3-50R connecting block.

1.03 Arrangements RJ21X, RJ22X, RJ23X, and RJ24X use a 50-pin miniature ribbon connector (female) to provide a bridged tip and ring connection of several telephone lines. ▶The connections are furnished through a connector such as the KS-16690 connector or equivalent, as part of an A25B connector cable. A 66M3-50R connecting block which is equipped with a connector wired to a 66-type connecting block, can also be used (Fig. 6).◀ Where key telephone systems (KTSs) are involved, the A and A1 leads may also be supplied. The plug (male) in the registered CPE must be a compatible 50-pin miniature ribbon connector.

1.04 Figure 1 is provided as an aid in establishing the position and numbering in the connector. The lead to pin assignments differs for each arrangement, requiring care be taken that the jack be wired per Fig. 2 through 6. Interfaces RJ21X, RJ22X, and RJ23X are to have the designated lines ***consecutively*** wired into the jack in the ***sequence*** specified by the customer, starting with the first position and not skipping any positions.

1.05 In some of the arrangements, only tip and ring are to be furnished to the CPE. Disposition of the other leads should be per local instructions.

> ***Note:*** Circuit incompatibilty may occur involving the spare leads if a change of service is installed, ie, RJ21X, if installed originally, would not be compatible with a subsequent installation of RJ22X. Whenever service is altered at a location involving registration Uniform Service Order Codes (USOCs), check that all appearances are properly wired.

1.06 Unless otherwise specifically required by a particular wiring arrangement, access to the required leads can be at any access point. If installed in a large key system with color-keyed backboards, the auxiliary (yellow) field should be used; otherwise, access at satellite closets, distribution boxes, connecting blocks, etc.

1.07 When necessary to access leads in COM KEY* installations, wire as follows:

(a) COM KEY 718—Tip and ring ahead of the line circuit can be obtained at the incoming CO/PBX line terminations on block 3 using 183B2 adapters. If T, R, A, or A1 are required behind the line circuit, they can be accessed per line

*Trademark of AT&T.

at any of the line appearances of the station terminations on blocks 3, 4, or 5. Use 183B2 adapters. For information on COM KEY 718, refer to Section 518-450-100.

(b) COM KEY 1434—Tip and ring ahead of the line circuit can be accessed at the incoming line terminations on block 7 using 183B2 adapters. T and R behind the line circuit and A and A1 for a particular line can be accessed at any of the line appearances of the station terminations on blocks 6 through 15 using 183B2 adapters. For information on COM KEY 1434, refer to Section 518-450-102.

(c) COM KEY 2152—Because of insufficient clearance between the connecting blocks and the closed gate, 183B2 adapters cannot be used on the connecting units of COM KEY 2152. To access T and R ahead of the line circuit, route the incoming CO/PBX line to an external 66-type connecting block, then to block 3 of the 100A1 or 101A1 connecting block. The 66-type connecting block is then used to provide a multiple of the line. To access T and R behind the line circuit, use an idle station code termination which must be sacrificed for system use. If no idle station terminations are available, use any station code by running a jumper cable to external 66-type connecting blocks and transferring the station cable to these blocks. The blocks are then used to provide the line appearance multiple. For information on COM KEY 2152, refer to Section 518-450-110.

2. IDENTIFICATION

2.01 ***USOC RJ21X:*** This arrangement provides a bridged connection of the tip and ring of a multiple number of CO or PBX trunks to the CPE. The connection is furnished through a female ribbon connector, such as the KS-16690 connector or equivalent, as part of an A25B connector cable. Up to 25 trunks or lines can be furnished (Fig. 2 and 6). Bridging to the tip and ring may be at various locations. Typical usage for RJ21X would be for connection of registered traffic data recording equipment furnished by the customer.

2.02 ***USOC RJ22X:*** Provides up to 12 CO/PBX circuits to the CPE where the tip and ring must be bridged ahead of the line circuit and A lead control is required. Leads furnished to the CPE on a per line basis are T, R, A, and A1 using a KS-16690 connector or equivalent (Fig. 3 and 6). Access to leads will probably be at the KTS to permit connecting tip and ring ahead of the line circuit and A and A1 behind line circuit. Primary use of arrangement will be to provide for connection of a number of CPE ancillary devices, requiring A lead control.

2.03 ***USOC RJ23X:*** This arrangement is similar to RJ22X except the tip and ring, as well as A and A1, are connected behind the line circuit. Up to 12 circuits are connected using the KS-16690 connector or equivalent (Fig. 4 and 6).

2.04 ***USOC RJ24X:*** Provides the same T, R, and A appearances plus A1 as a standard 5-line key telephone set to the CPE (Fig. 5 and 6). The L and LG appearances must be omitted to be in conformance with tariffs. Connection to the CPE is through a KS-16690 connector or equivalent. All connections are bridged behind the line circuit.

> ***Note:*** Some multibutton key sets are terminated in other than the standard wiring arrangement. When accessing the leads for this arrangement, care must be taken that the desired leads will appear on the connector as required.

3. MAINTENANCE

3.01 Maintenance of the wiring arrangements covered in this section is limited to:

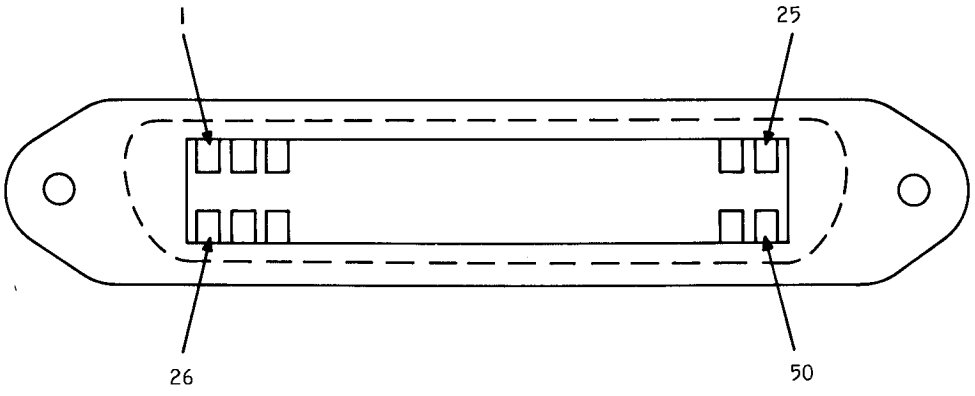
- Verification of the telephone company wiring and equipment
- Assurance that the required leads are supplied in the interface used for CPE connection.

No attempt should be made to test, modify, or repair customer-owned and maintained equipment.

3.02 When in the judgment of repair personnel the trouble is located in or caused by the CPE, the Repair Service Bureau should be notified so that proper Maintenance of Service Charge Billing

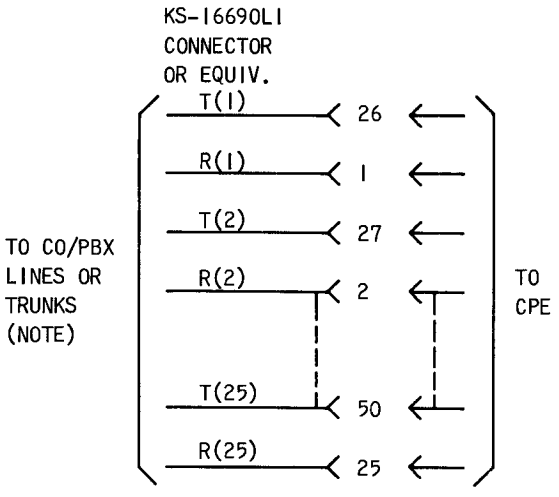
can be initiated as required and as outlined in the following:

- Section 660-101-312—Maintenance of Service Charge on Services With Customer-Provided Equipment (CPE)
- Section 660-101-318—Tariff and Registration violation Notice Procedures.



NOTE:
CONNECTOR VIEWED FROM WIRING SIDE

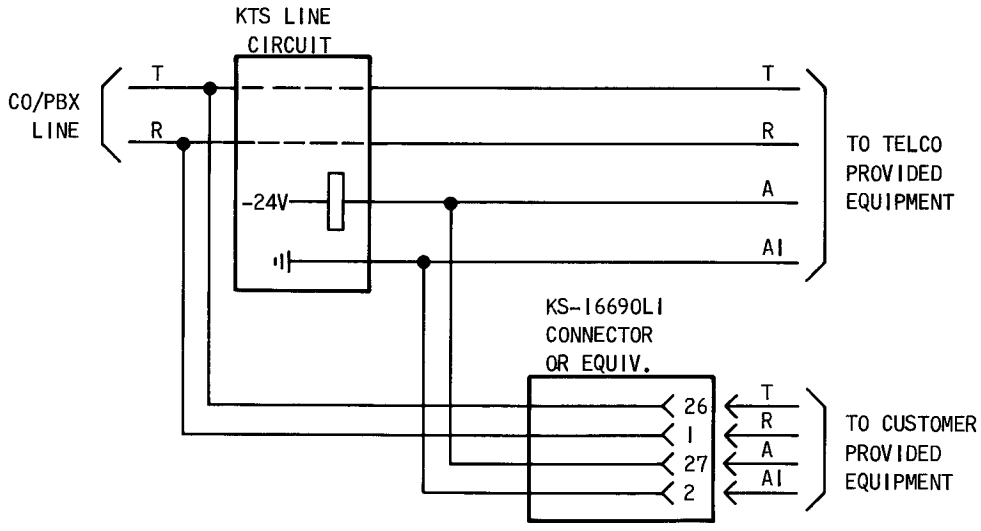
Fig. 1—Location of Contacts in KS-16690 Connector



NOTE:
CONNECT CIRCUITS
AS REQUIRED

CKT	LEAD	PIN	CKT	LEAD	PIN
1	T R	26 1	14	T R	39 14
2	T R	27 2	15	T R	40 15
3	T R	28 3	16	T R	41 16
4	T R	29 4	17	T R	42 17
5	T R	30 5	18	T R	43 18
6	T R	31 6	19	T R	44 19
7	T R	32 7	20	T R	45 20
8	T R	33 8	21	T R	46 21
9	T R	34 9	22	T R	47 22
10	T R	35 10	23	T R	48 23
11	T R	36 11	24	T R	49 24
12	T R	37 12	25	T R	50 25
13	T R	38 13			

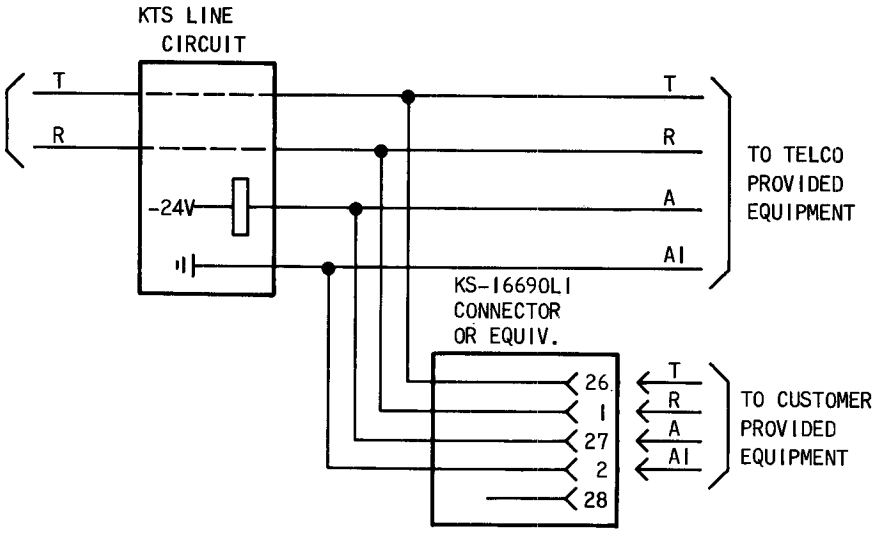
Fig. 2—Connections for USOC RJ21X—Multiple Bridged Tip and Ring



CKT	LEAD	PIN	CKT	LEAD	PIN
1	T	26	7	A	39
	R	1		AI	14
	A	27	8	T	40
	AI	2		R	15
2	T	28		A	41
	R	3		AI	16
	A	29	9	T	42
	AI	4		R	17
3	T	30		A	43
	R	5		AI	18
	A	31	10	T	44
	AI	6		R	19
4	T	32		A	45
	R	7		AI	20
	A	33	11	T	46
	AI	8		R	21
5	T	34		A	47
	R	9		AI	22
	A	35	12	T	48
	AI	10		R	23
6	T	36		A	49
	R	11		AI	24
	A	37			50
	AI	12			25
7	T	38			
	R	13			

NOTE:
CONNECT CIRCUITS AS REQUIRED. ONLY 1ST CIRCUIT SHOWN CONNECTED

Fig. 3—Connections for USOC RJ22X—Multiple Bridged Tip and Ring Ahead of Line Circuit With "A" Lead Control



CKT	LEAD	PIN	CKT	LEAD	PIN
1	T	26	7	A	39
	R	1		AI	14
	A	27	8	T	40
	AI	2		R	15
2	T	28		A	41
	R	3		AI	16
	A	29	9	T	42
	AI	4		R	17
3	T	30		A	43
	R	5		AI	18
	A	31	10	T	44
	AI	6		R	19
4	T	32		A	45
	R	7		AI	20
	A	33	11	T	46
	AI	8		R	21
5	T	34		A	47
	R	9		AI	22
	A	35	12	T	48
	AI	10		R	23
6	T	36		A	49
	R	11		AI	24
	A	37			50
	AI	12			25
7	T	38			
	R	13			

NOTE:
CONNECT CIRCUITS AS REQUIRED. ONLY 1ST CIRCUIT SHOWN CONNECTED.

Fig. 4—Connections for USOC RJ23X—Multiple Bridged Tip and Ring Behind Line Circuit With "A" Lead Control

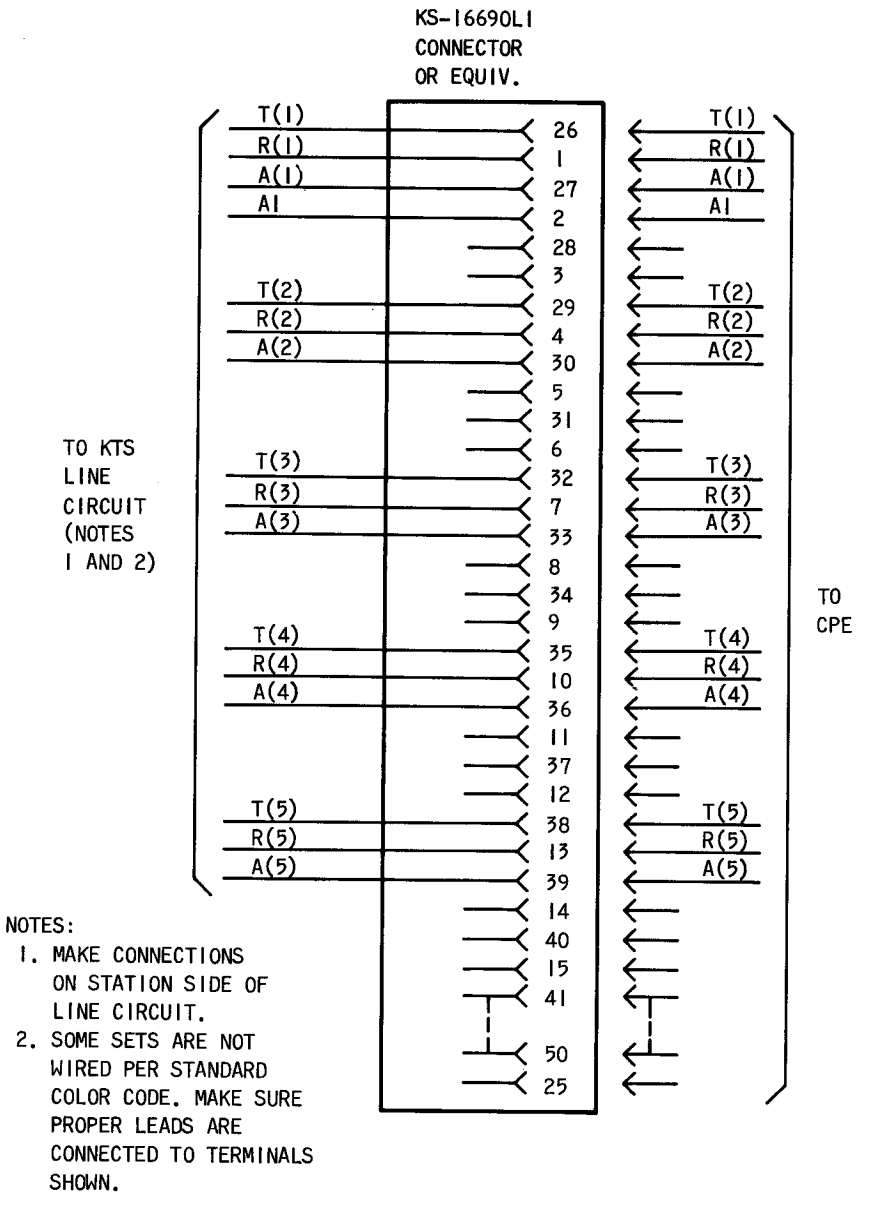
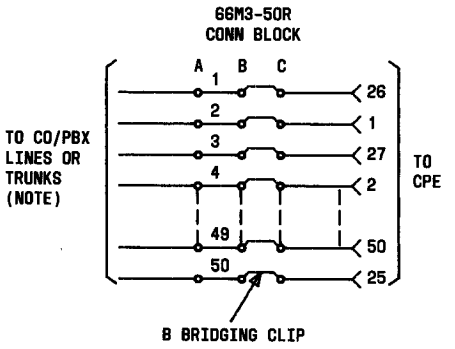


Fig. 5—Connections for USOC RJ24X—Multiple Bridged Tip and Ring With "A" Lead Control, Standard Appearance



66M3-50R CONN. BLOCK		RJ21X		RJ22X		RJ23X		RJ24X	
CLIP	CONN. TERM.	CIR-CUIT	LEAD DESIG	CIR-CUIT	LEAD DESIG	CIR-CUIT	LEAD DESIG	CIR-CUIT	LEAD DESIG
1	26	1	T	1	T	1	T	1	T
2	1		R		R		R		R
3	27	2	T		A		A		A
4	2		R		A1		A1		A1
5	28	3	T	2	T	2	T		
6	3		R		R		R		
7	29	4	T		A		A	2	T
8	4		R		A1		A1		R
9	30	5	T	3	T	3	T		A
10	5		R		R		R		
11	31	6	T		A		A		
12	6		R		A1		A1		
13	32	7	T	4	T	4	T	3	T
14	7		R		R		R		R
15	33	8	T		A		A		A
16	8		R		A1		A1		
17	34	9	T	5	T	5	T		
18	9		R		R		R		
19	35	10	T		A		A	4	T
20	10		R		A1		A1		R
21	36	11	T	6	T	6	T		A
22	11		R		R		R		
23	37	12	T		A		A		
24	12		R		A1		A1		

Fig. 6—Connections for RJ21X, RJ22X, RJ23X, and RJ24X Using 66M3-50R Connecting Block (Sheet 1 of 2)

66M3-50R CONN. BLOCK		RJ21X		RJ22X		RJ23X		RJ24X	
CLIP	CONN. TERM.	CIR-CUIT	LEAD DESIG	CIR-CUIT	LEAD DESIG	CIR-CUIT	LEAD DESIG	CIR-CUIT	LEAD DESIG
25	38	13	T	7	T	7	T	5	T
26	13		R		R		R		R
27	39	14	T		A		A		A
28	14		R		A1		A1		
29	40	15	T	8	T	8	T		
30	15		R		R		R		
31	41	16	T		A		A		
32	16		R		A1		A1		
33	42	17	T	9	T	9	T		
34	17		R		R		R		
35	43	18	T		A		A		
36	18		R		A1		A1		
37	44	19	T	10	T	10	T		
38	19		R		R		R		
39	45	20	T		A		A		
40	20		R		A1		A1		
41	46	21	T	11	T	11	T		
42	21		R		R		R		
43	47	22	T		A		A		
44	22		R		A1		A1		
45	48	23	T	12	T	12	T		
46	23		R		R		R		
47	49	24	T		A		A		
48	24		R		A1		A1		
49	50	25	T						
50	25		R						

NOTE:

CONNECT CIRCUITS AS REQUIRED

Fig. 6—Connections for RJ21X, RJ22X, RJ23X, and RJ24X Using 66M3-50R Connecting Block (Sheet 2 of 2)

REGISTRATION INTERFACE

BRIDGED THREE LINE TIP AND RING ARRANGEMENTS

RJ25C

1. GENERAL

1.01 This section contains information on the standard wiring arrangements to be provided under the Federal Communications Commission (FCC) Registration Program for registered telephone, ancillary, data, and protective circuitry of the type associated with telephone and ancillary customer-provided equipment (CPE).

> ***Note:*** Customer-provided data equipment connected to the network via the jack in this section must have a fixed signal power level under -9 dBm. See Section 590-101-103 for connection of other data devices.

1.02 Whenever this section is reissued, the reason(s) for reissue will be shown in this paragraph.

1.03 This section covers 3-line bridged tip and ring arrangements. For information on other bridged tip and ring arrangements, refer to the following:

- Single line—Section 463-400-120
- Two line—Section 463-400-140
- Multiple (more than three)—Section 463-400-141.

1.04 A 74D connecting block (Fig. 1) or equivalent can be used to provide the 6-position modular jack required for this arrangement.

2. IDENTIFICATION

2.01 ***USOC RJ25C:*** Provides a bridged connection of the tips and rings of up to three lines to the CPE (Fig. 2). Normally used with nonkey telephone sets or ancilliary devices.

3. MAINTENANCE

3.01 Maintenance of the wiring arrangements covered in this section is limited to:

- Verification of the telephone company wiring and equipment
- Assurance that the required leads are supplied in the interface used for CPE connection.

No attempt should be made to test, modify, or repair customer-owned and maintained equipment.

3.02 When in the judgment of repair personnel the trouble is located in or caused by the CPE, the Repair Service Bureau should be notified so that proper Maintenance of Service Charge Billing can be initiated as required and as outlined in the following:

- Section 660-101-312—Maintenance of Service Charge on Services With Customer-Provided Equipment (CPE)
- Section 660-101-318—Tariff and Registration Violation Notice Procedures.

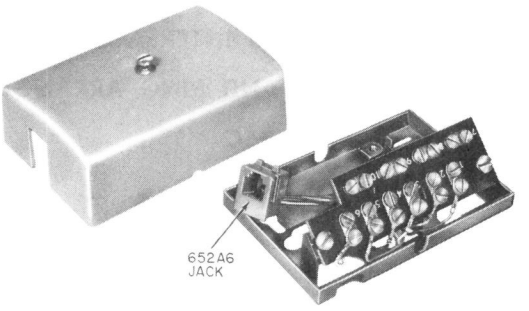


Fig. 1—74D Connecting Block

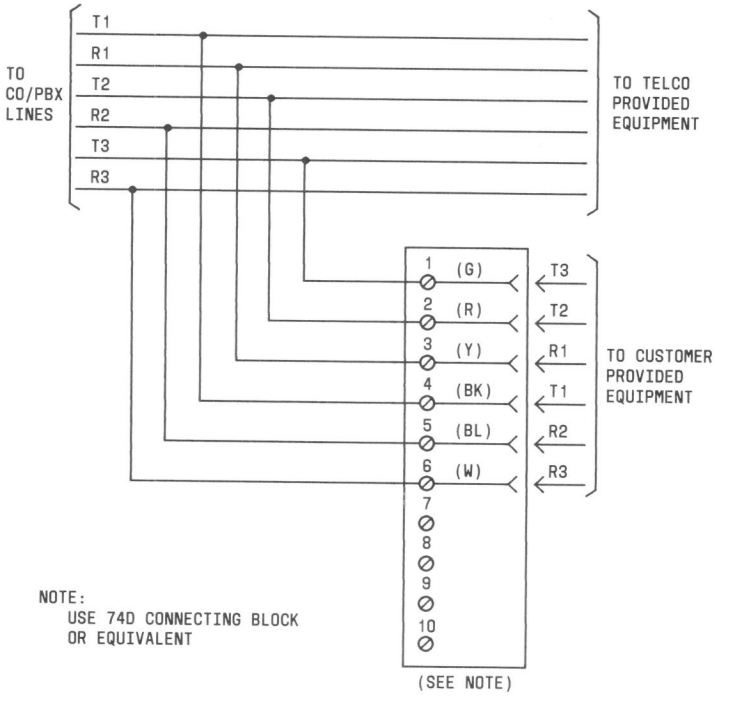


Fig. 2—Connections for USOC RJ25C

REGISTRATION INTERFACE

RJ71C

SERIES MULTIPLE TIP AND RING ARRANGEMENTS

1. GENERAL

1.01 This section provides information on a standard jack arrangement to be provided under the Federal Communications Commission's (FCC) Registration Program for use with registered telephone, ancillary, data, systems, and protective circuitry of the type associated with telephone, ancillary, and data customer-provided equipment (CPE).

Note: Customer-provided data equipment connected to the network via the connecting block in this section must have a fixed signal power level under -9 dBm. See Section 590-101-103 for connection of other data devices.

1.02 Whenever this section is reissued, the reason(s) for reissue will be listed in this paragraph.

1.03 Arrangement RJ71C provides a series connection of tip and ring only for a maximum of 12 lines. The A and A1 leads for key telephone systems (KTSs) are not supplied. The plug (male) in the registered CPE must be a compatible 50-pin miniature ribbon connector.

1.04 Uniform Service Order Code (USOC) RJ71C requires the installation of a 66M4-50R connecting block. This block consists of a 66M-type connecting block wired to a 50-pin ribbon connector (female) which provides the means of connection to the registered equipment. A prewired bridging adapter is shipped loose with the connecting block for use in providing the series connection when the plug to the registered equipment is not connected. The bridging adapter is fastened to the connecting block during installation to avoid misplacement.

Note: The 66M4-50 connecting block is very similar in appearance to the 66M3-50R used as a standard interface. However, the internal wiring between the clips of the connecting block and the 50-pin ribbon connector is different and the two are not interchangeable. ***Do not attempt to use a 66M3-50R in installations requiring a 66M4-50R or vice versa.***

1.05 The USOC RJ71C provides a series connection from the incoming tip and ring, through the CPE or telephone company (TELCO)-provided equipment connected to the ribbon connector, to the outgoing tip and ring. With the plug inserted in the connector, loop continuity must be maintained through the registered equipment either by a metallic series circuit or by transformer coupling. Any time the plug is removed from the connector, the bridging adapter must be plugged into the connector or the tip and ring will be open on all lines beyond that point.

1.06 Incoming lines are brought into the 66M4-50R connecting block and terminated on the first 12 pairs of clips of column A (rows 1 through 24). Outgoing lines to other CPE or TELCO-provided equipment are terminated on the next 12 pairs of clips of column A (rows 25 through 48). Rows 49 and 50 are unwired. The incoming lines should be terminated in the sequence specified by the customer without skipping any positions. The B bridging clips must then be installed between columns B and C ***on both the incoming and outgoing clips.*** Refer to Section 461-604-105 for complete information on interface type connecting blocks.

1.07 If the plug to the registered equipment is not available at the time of installation, the bridging adapter supplied with the connecting block must be plugged into the connector to provide continuity to any downstream equipment.

2. CONNECTIONS

2.01 Install the 66M4-50R connecting block in a location mutually agreeable to the TELCO and the customer. The 66M4-50R connecting block is applicable to color-coded modular backboards, but a size variance will not permit mounting of additional 66M-type blocks butting directly above or below it.

2.02 Connect the incoming lines and outgoing lines to other equipment on column A as shown in Table A. Place B bridging clips between columns B and C on all rows—both incoming and outgoing. Install cover on connecting block. Fasten the bridging adapter to one of the clips on the 89C bracket using the fastener supplied.

2.03 Plug the bridging adapter into the ribbon connector and test all connected lines for continuity. If the customer is not ready, secure the bridging adapter in place. If the customer has the registered equipment wired at the time of installation, have them connect their plug to the ribbon connector and secure in place. Internal wiring of the 66M4-50R connecting block is shown in Fig. 1.

3. MAINTENANCE

3.01 Maintenance of the wiring arrangements covered in this section is limited to:

- Verification of the TELCO wiring and equipment
- Assurance the required leads are supplied in the interface used for CPE connection.

No attempt should be made to test, modify, or repair customer-owned and maintained equipment.

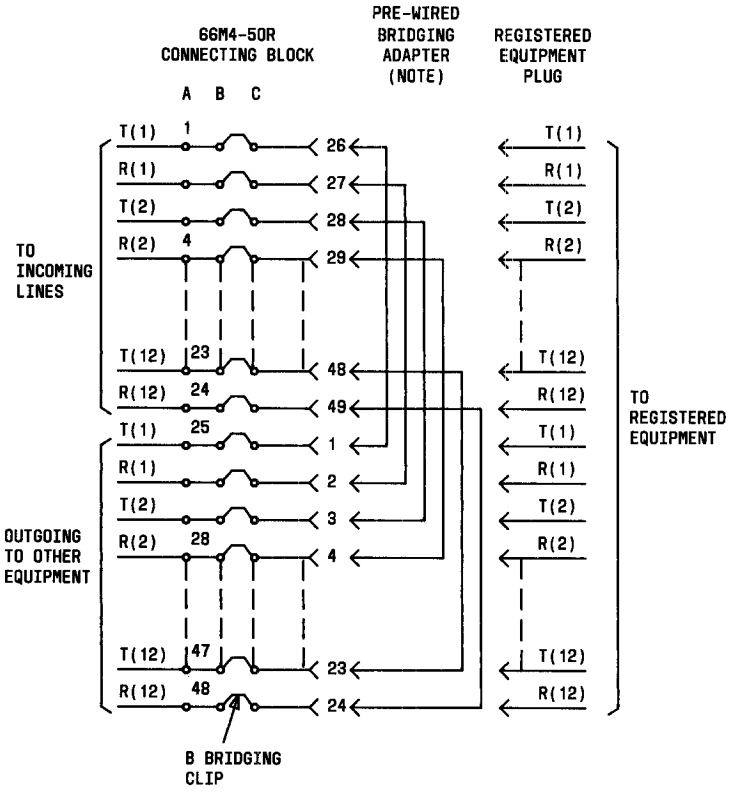
3.02 When in the judgment of repair personnel the trouble is located in or caused by the CPE, the Repair Service Bureau should be notified so that proper Maintenance of Service Charge Billing can be initiated as required and as outlined in the following:

- Section 660-101-312—Maintenance of Service Charge on Services With Customer-Provided Equipment (CPE)
- Section 660-101-318—Tariff and Registration Violation Notice Procedures.

TABLE A

TERMINATIONS FOR RJ71C IN 66M4-50R CONNECTING BLOCK

LINE	INCOMING TERMINATIONS			OUTGOING TERMINATIONS		
	COLUMN A/B	COLUMN C	CONNECTING TERMINAL	COLUMN A/B	COLUMN C	CONNECTING TERMINAL
T(1)	1	1	26	25	25	1
R(1)	2	2	27	26	26	2
T(2)	3	3	28	27	27	3
R(2)	4	4	29	28	28	4
T(3)	5	5	30	29	29	5
R(3)	6	6	31	30	30	6
T(4)	7	7	32	31	31	7
T(4)	8	8	33	32	32	8
T(5)	9	9	34	33	33	9
R(5)	10	10	35	34	34	10
T(6)	11	11	36	35	35	11
R(6)	12	12	37	36	36	12
T(7)	13	13	38	37	37	13
R(7)	14	14	39	38	38	14
T(8)	15	15	40	39	39	15
R(8)	16	16	41	40	40	16
T(9)	17	17	42	41	41	17
R(9)	18	18	43	42	42	18
T(10)	19	19	44	43	43	19
R(10)	20	20	45	44	44	20
T(11)	21	21	46	45	45	21
R(11)	22	22	47	46	46	22
T(12)	23	23	48	47	47	23
R(12)	24	24	49	48	48	24



NOTE:
BRIDGING ADAPTER MUST BE CONNECTED TO MAINTAIN CONTINUITY WHENEVER PLUG TO REGISTERED EQUIPMENT IS DISCONNECTED

Fig. 1—Schematic for USOC RJ71C

JACKS FOR REGISTERED DATA EQUIPMENT

SINGLE AND MULTILINE INSTALLATIONS

1. GENERAL

1.001 This addendum supplements Section 590-101-103, Issue 3. Place this pink sheet ahead of page 3 of the section.

1.002 This addendum is issued to provide additional information on the 97A1 data mounting used with associated apparatus to implement USOC Jacks RJ26X and RJ27X required by the FCC Registration Program. The pin assignments for the two (2) miniature 50-position ribbon connectors, on the 97A1 data mounting, were omitted from issue 3 of Section 590-101-103. The pin assignments for the telephone line (male) plug used to connect the eight central office lines to the 97A1 data mounting are as shown in Table A1.

1.003 The pin assignment for the telephone line facilities can be converted to standard pin assignments (shown in Table B1). This is accomplished by using an M16M cord, 12 inches long, with a (male) plug at one end and a (female) connector at the other end.

1.004 The pin assignment for the connector that the data equipment connects to is shown in Fig. 1a along with a simplified schematic of the 97A1 data mounting equipped with D97A-type circuit packs.

TABLE A1

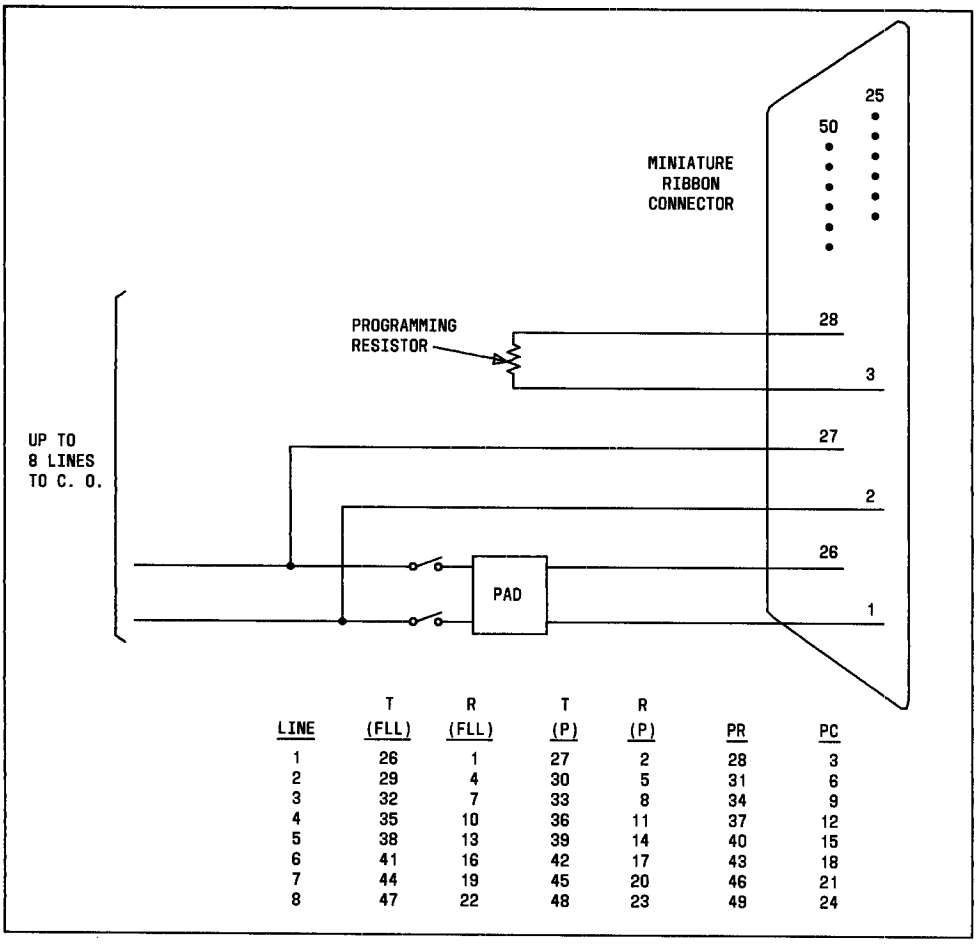
PIN ASSIGNMENT CONNECTING THE EIGHT CENTRAL OFFICE LINES

LINE NO.	PIN ASSIGNMENT
1	24 - 49
2	21 - 46
3	18 - 43
4	15 - 40
5	12 - 37
6	9 - 34
7	6 - 31
8	3 - 28

TABLE B1

STANDARD PIN ASSIGNMENT

LINE NO.	PIN ASSIGNMENT
1	1 - 26
2	2 - 27
3	3 - 28
4	4 - 29
5	5 - 30
6	6 - 31
7	7 - 32
8	8 - 33



LINE	T (FLL)	R (FLL)	T (P)	R (P)	PR	PC
1	26	1	27	2	28	3
2	29	4	30	5	31	6
3	32	7	33	8	34	9
4	35	10	36	11	37	12
5	38	13	39	14	40	15
6	41	16	42	17	43	18
7	44	19	45	20	46	21
8	47	22	48	23	49	24

Fig. 1a—97A1 Data Mounting Equipped With D97A-Type Circuit Packs

JACKS FOR REGISTERED DATA EQUIPMENT

SINGLE AND MULTILINE INSTALLATIONS

CONTENTS PAGE

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 type, programmable 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 switched telecommunications network by means of a standard jack and plug with the jack to be installed by the telephone company (telco).

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 for the following reasons.

- To incorporate information on the 97A-type data mountings and the D97A-type circuit packs.
- To make changes in Fig. 11 and 12.
- To update Tables A and B.
- To add information on a new jack, the RJ16X.
- To make other minor deletions and changes.

Since this reissue is a general revision, arrows ordinarily used to indicate changes have been omitted.

1.03 The programmed type of data equipment will adjust the output level in accordance with a programming resistor in the data jack. The fixed loss loop type of data equipment must transmit at an output level not exceeding -4 dBm and a pad will be included in the data jack so that the total of loop loss plus pad loss will range between 8 and 9 dB. Both types of registered 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 non-adjustable 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 when signal power is averaged over all cases. Registered data equipment with

this fixed level of -9 dBm may be used with either type of data jack and all of the 6- and 8-position miniature jacks to be provided under the registration program. The miniature jacks for voice use are described in the 463-400-ZZZ series of BSPs.

1.04 In addition to providing the physical interface to the telephone network, the 97A- and 97B-type data connecting blocks provide the following:

- Physical termination of the line
- Miniature keyed 8-position jack
- Programming resistor.

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

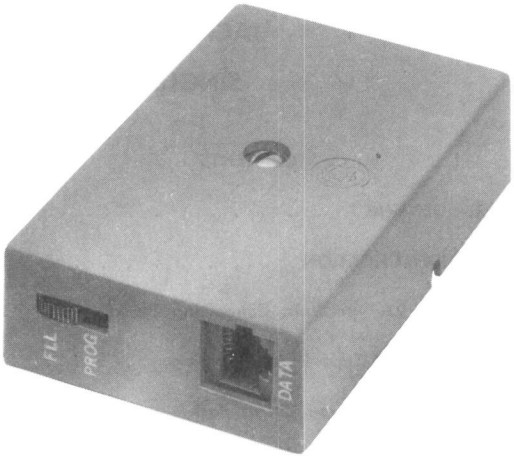


Fig. 1—97A-Type Connecting Block

2. IDENTIFICATION

A. 97-Type Data Connecting Blocks

2.01 The 97A- and 97B-type data connecting blocks provide a means for connecting registered data equipment to the switched telecommunications 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-type connecting block (Fig. 2) is for use with data equipment registered as programmed, and is also referred to as the programmed data jack.

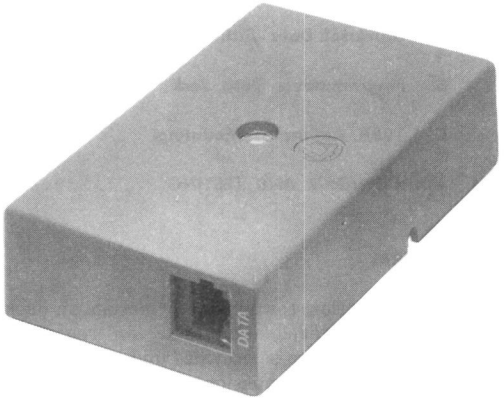


Fig. 2—97B-Type Connecting Block

2.02 The 97A- and 97B-type data jacks measure 9.9 centimeters long by 2.5 centimeters high by 6.1 centimeters wide (3.9 inches by 1 inch by 2.4 inches). The 97A type weighs 140 grams (5 ounces) and the 97B type weighs 85 grams (3 ounces).

2.03 The 97-type data 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.

2.04 The data connecting blocks are equipped with an 8-position miniature jack which is specially keyed for use with data equipment. The jack also accepts the miniature non-keyed 6-position standard telephone plug. When the 97A-type data 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 data equipment, the data signal will not reach the line. Should the customer attempt to connect fixed loss loop type data equipment through a 97B (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. (In the near future, the 97-type blocks will be shipped with a sliding door which will cover the jack opening to keep out dust and dirt, etc. The door will be spring-loaded and will automatically close unless a plug is inserted.)

2.05 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. 3. The 97B data connecting block is shipped with a complete set of programming resistors.

B. 97A-Type Data Mounting

2.06 The 97A1 data mounting (Fig. 4) 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.

2.07 The overall dimensions of the 97A1 data mounting (DM) are 5 inches long, 1-7/8 inches high, and 5 inches deep.

2.08 A gray plastic cover and base pan (D-180935 mounting kit) may be used to house a 97A1 data mounting to facilitate wall mounting (Fig. 5). The cover has eight slots which allows the D97A-type circuit pack switches (PWB) to protude 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 97A1 data mounting in a D-180935 mounting kit weighs approximately 3 pounds. A 19-inch mounting, using a 2-inch mounting plate (No. 842310781), accommodates three 97A1 data mountings which serve a total of 24 lines. A 23-inch rack application, using a 2-inch mounting plate (No. 842310773), accommodates four 97A1 data mountings which serve 32 lines.

2.09 A bracket and a clamp, to lock connecting cables to the 97A1 DM, are provided as part of the 97A1 DM. An adhesive pad (842309643, to allow mounting to a metal wall without drilling, is provided as part of the D-180935 mounting kit.

2.10 The 97A1 DM has been designed for both 19 and 23-inch rack mounting as well as wall mounting. In a 19-inch rack, a number 842310781 2-inch mounting plate accommodates three (3) 97A1 data mountings providing up to 24 lines. A 23-inch rack application requires the use of a number 842310773 2-inch mounting plate which holds four 97A1 data mountings providing up to 32 lines.

2.11 The 97A1 DM was designed to serve the same purpose as the 97-type connecting block, except the newer, 97A1 data mounting has these advantages:

- Is more compact
- Provides a more attractive multiline arrangement.

C. D97A-Type Circuit Pack

2.12 The D97A-type circuit pack (Fig. 6) is electrically equivalent to the 97A-type connecting block, except for the absence of the 8-position 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.

2.13 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 Designations

2.14 The data jacks have been assigned USOC designations in the RJ family. The remaining

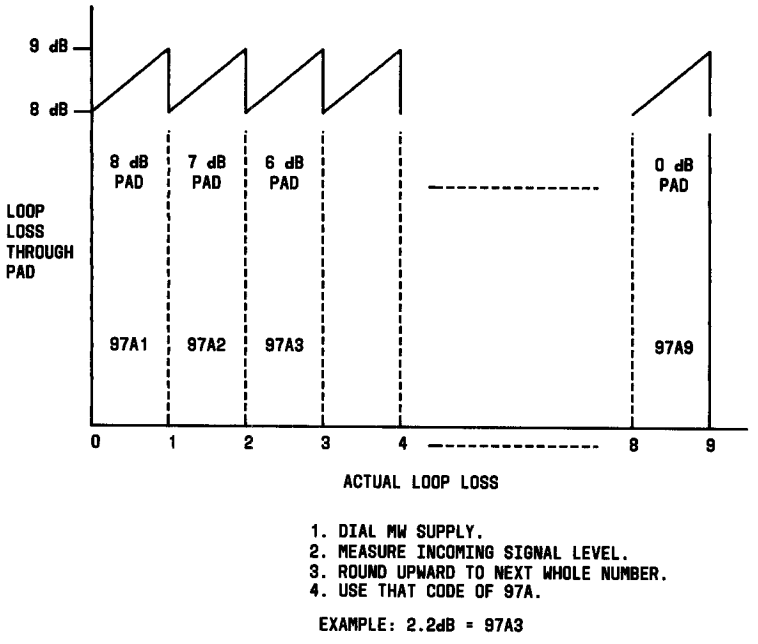


Fig. 3—Determining Correct Pad

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 arrangement is described in the following paragraphs.

2.15 ***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 modems. The jack is an 8-position miniature keyed jack and is shown schematically in Fig. 7.

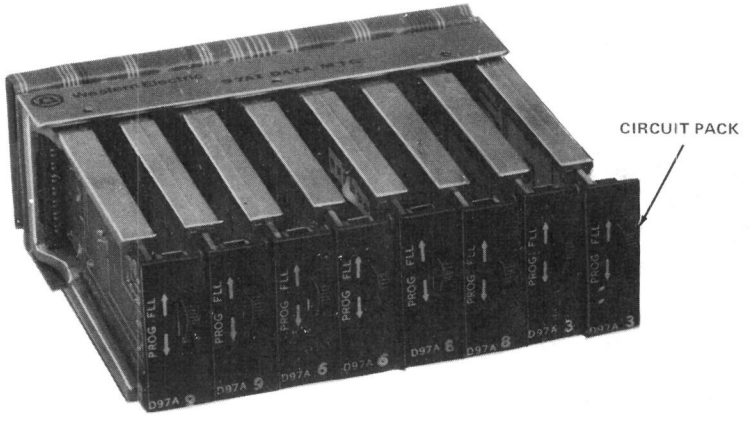
2.16 ***USOC RJ45S:*** RJ45S is the programmed data jack (requires the 97B connecting block) for single-line applications of the programmable type of modem only. The jack is an 8-position miniature keyed jack and is shown schematically in Fig. 8.

2.17 ***USOC RJ16X:*** This arrangement in connection with a series jack such as RJ36X provides "mode indication" leads (MI and MIC) for data sets using the "permissive" mode of transmission (shown schematically in Fig. 9). This is a miniature 6-position connector.

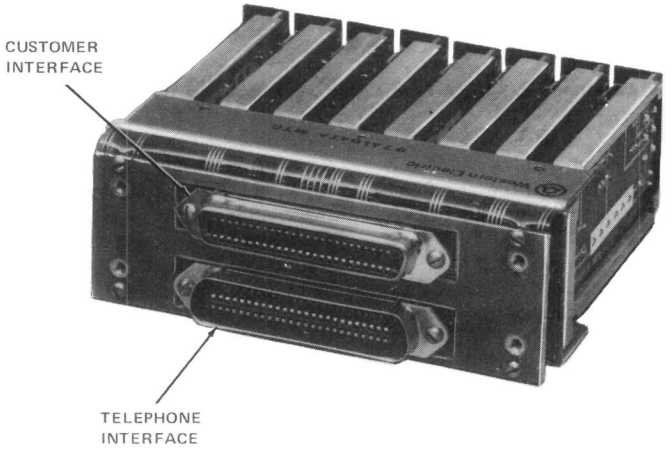
2.18 ***USOC RJ41M:*** RJ41M is the multiple mounting arrangement equipped with up to eight universal data jacks. This USOC is implemented with the 103A apparatus mounting (RJM2X) and the appropriate number of 97A-type connecting blocks (RJ41S). A 103A apparatus mounting accommodates up to 16 single universal data jacks.

2.19 ***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.

2.20 ***USOC RJ26X:*** As an interim arrangement, RJ26X is implemented with the M48A-87 cord for combining up to eight single-line universal data



A. D97A CIRCUIT PACK VIEW



B. INTERFACE VIEW

Fig. 4—97A1 Data Mounting

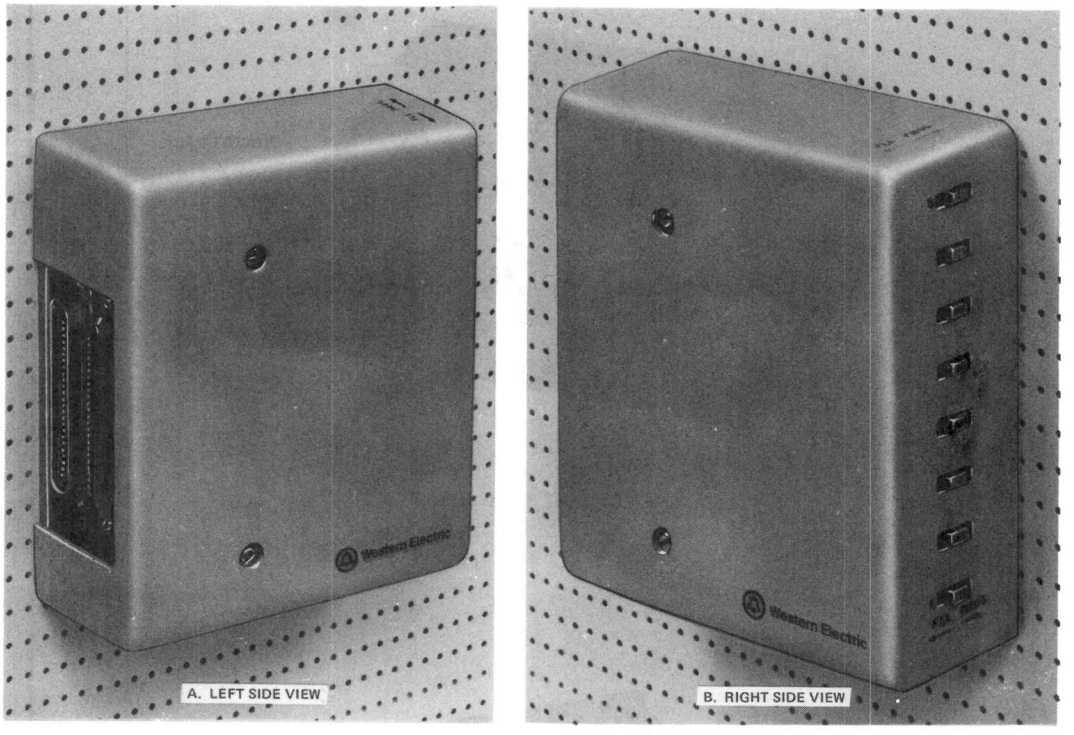


Fig. 5—97A1 Data Mounting W/8-D97A-Type Circuit Pack Installed in a D-180935 Mounting Kit

jacks into one 50-position miniature ribbon connector. RJ26X can also be implemented with the new 97A1 data mounting. In this case, the following USOCs would apply:

USOC RJ26X: Multiple line universal data jack for up to 8 lines—common equipment (97A1 data mounting).

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).

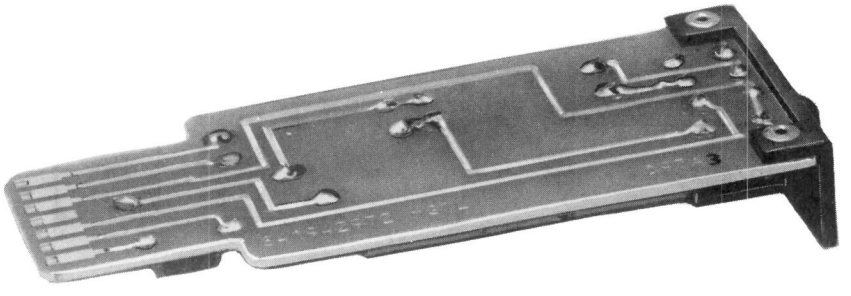
2.21 ***USOC RJ27X:*** As an interim arrangement, RJ27X is implemented with the M48A-87 cord for combining up to eight 97B programmed data jacks into one 50-position miniature ribbon connector. RJ27X can also be implemented with the new 97A1 data mounting. In this case, the USOCs given for RJ26X will also apply.

2.22 ***USOC RJ36X:*** RJ36X is an 8-position series jack (635-type connecting block) shown schematically in Fig. 10.

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

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

A. FRONT VIEW



B. BACK VIEW

Fig. 6—D97A-Type Circuit Pack

TABLE A

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

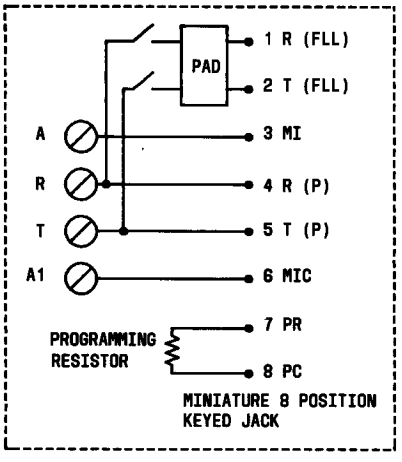
CODE	LOOP LOSS IN dB
D97A1	0.0-1.0
D97A2	1.1-2.0
D97A3	2.1-3.0
D97A4	3.1-4.0
D97A5	4.1-5.0
D97A6	5.1-6.0
D97A7	6.1-7.0
D97A8	7.1-8.0
D97A9	8.1-9.0

2.25 A summary of the USOCs for registered data equipment jacks is presented in Table B.

2.26 ***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 set and provides a mode indication to the data set. The set is connected by means of a D8AA-87 cord which plugs into an 8-position series jack (635-type connecting block, RJ36X) and which connects to the data jack as shown in Fig. 11 for the 503CM telephone set or Fig. 12 for the 2503CM telephone set.

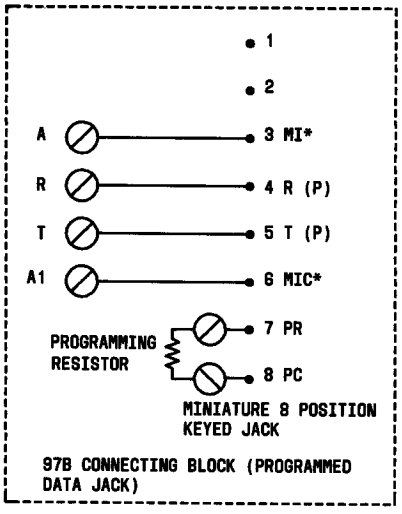
E. Associated Telephone Arrangement

2.27 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 set 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



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

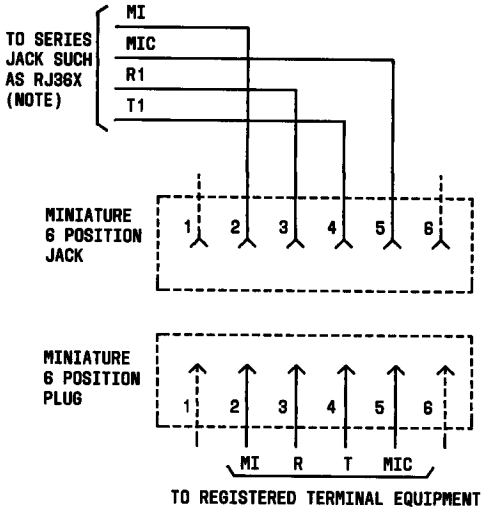
Fig. 7—97A-Type Connecting Block (Universal Data Jack)



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

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

Fig. 8—Determining Correct Programming Resistor for 97B Connecting Block

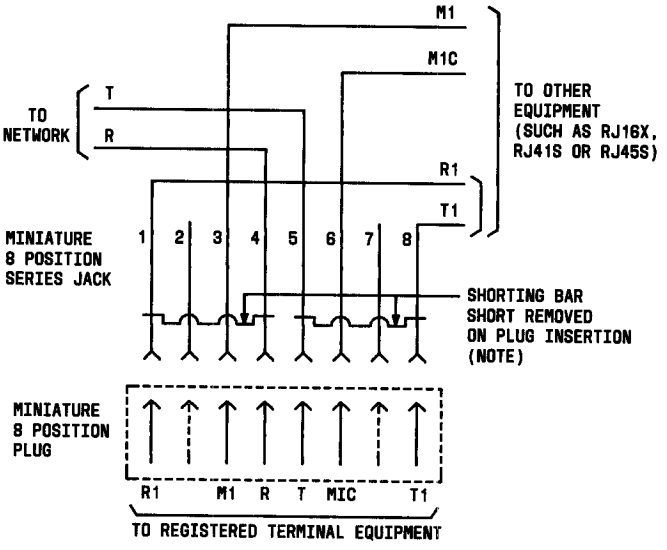


NOTE:
MI AND MIC LEADS ARE TYPICALLY WIRED TO AN RJ36X SERIES JACK WHICH CAN BE USED TO CONNECT AN EXCLUSION KEY TELEPHONE SET AHEAD OF THE DATA EQUIPMENT.

Fig. 9—Connections for USOC RJ16X

operation of switchhook contacts. The customer must specify whether the telephone set or the data set controls the line. The customer must also specify whether or not aural monitoring is desired. Refer to Table C 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 set is in the data mode.

2.28 Refer to Fig. 11 or 12 for wiring and connection diagrams for the telephone set. With wiring option B (Fig. 12 or 13) the telephone handset is lifted from the switchhook and the exclusion key lifted for the voice mode. This is usually described as "data set controls the line" because, until the telephone set exclusion key is lifted, the data set 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 set. Operation of the telephone set can be inverted by reversing the exclusion key wiring [wiring option A (Fig. 11 or 12)] so that the telephone set controls the line and the exclusion key must be operated to allow data set 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



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 POSTTION PLUG.

Fig. 10—Connections for USOC RJ36X

off-hook and the exclusion key is in the data position. With wiring option E, the mode indication function indicates only that the handset is off-hook.

2.29 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.

2.30 An exclusion key telephone set (RTC) is recommended when customers request a telephone 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.

2.31 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 CPE data modem to minimize data transmission errors and false disconnects.

3. INSTALLATION

3.01 Prior to installing the data jack or connecting block, ensure that the loop meets requirements specified in Section 314-205-501. The telco data sets operating at speeds higher than 300 bits per second (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 switched network loops.

TABLE B

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 blcoks (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.	97A1 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.	842310781 mounting plate — 19 inch, 842310773 mounting plate — 23 inch.

TABLE B (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.	At the present, there is no circuit pack designed specifically for programmed only modems. Until one is developed, use the arrangements specified for USOC RJ26X (new).
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.

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

3.02 Determine the loop loss as follows.

(1) Dial the central office milliwatt supply or request the testboard, at the dial tone 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) Write the loop loss (to the nearest tenth of a dB) on the data jack, as described in paragraph 3.06.

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. 7. 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).

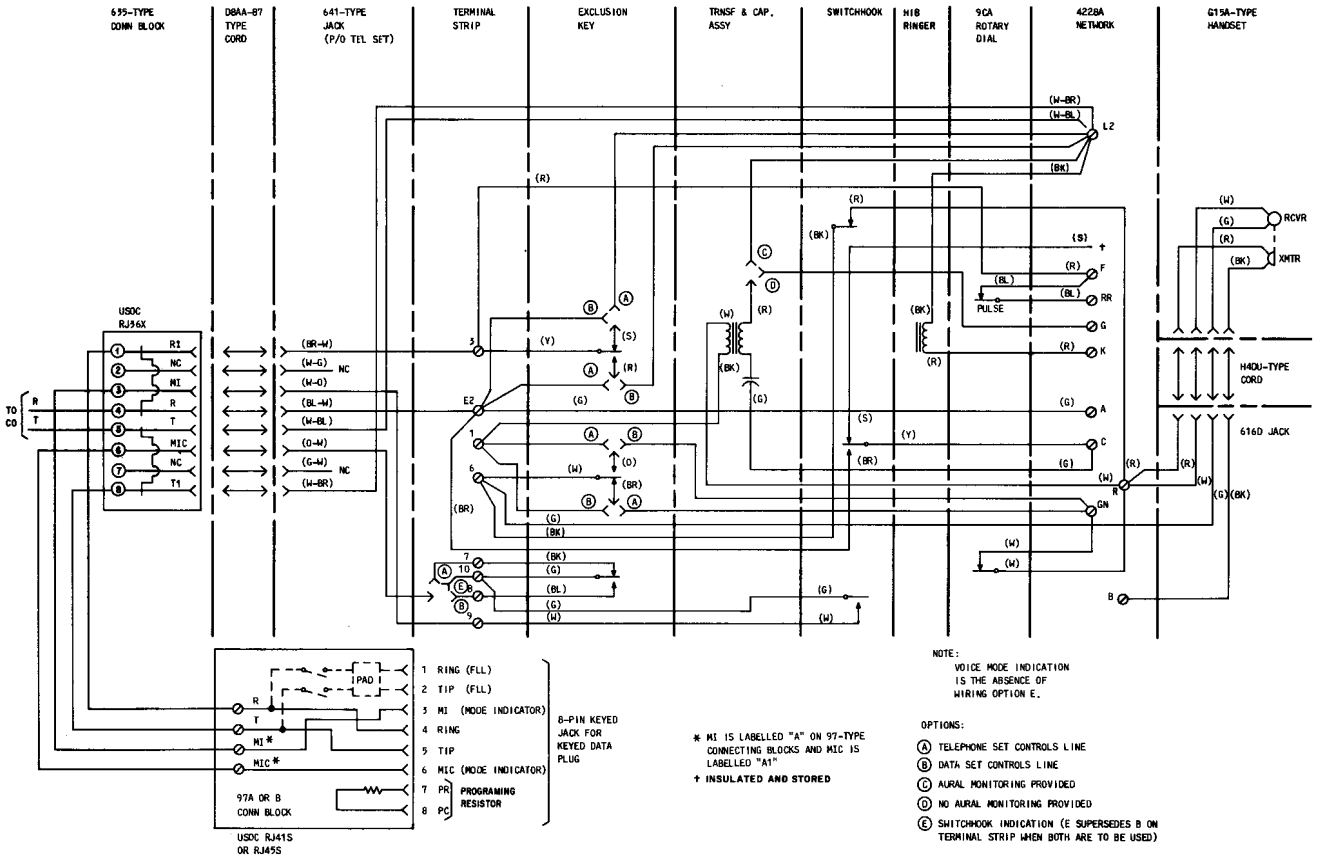


Fig. 11—503CM Telephone Set—Registration Jack Connections

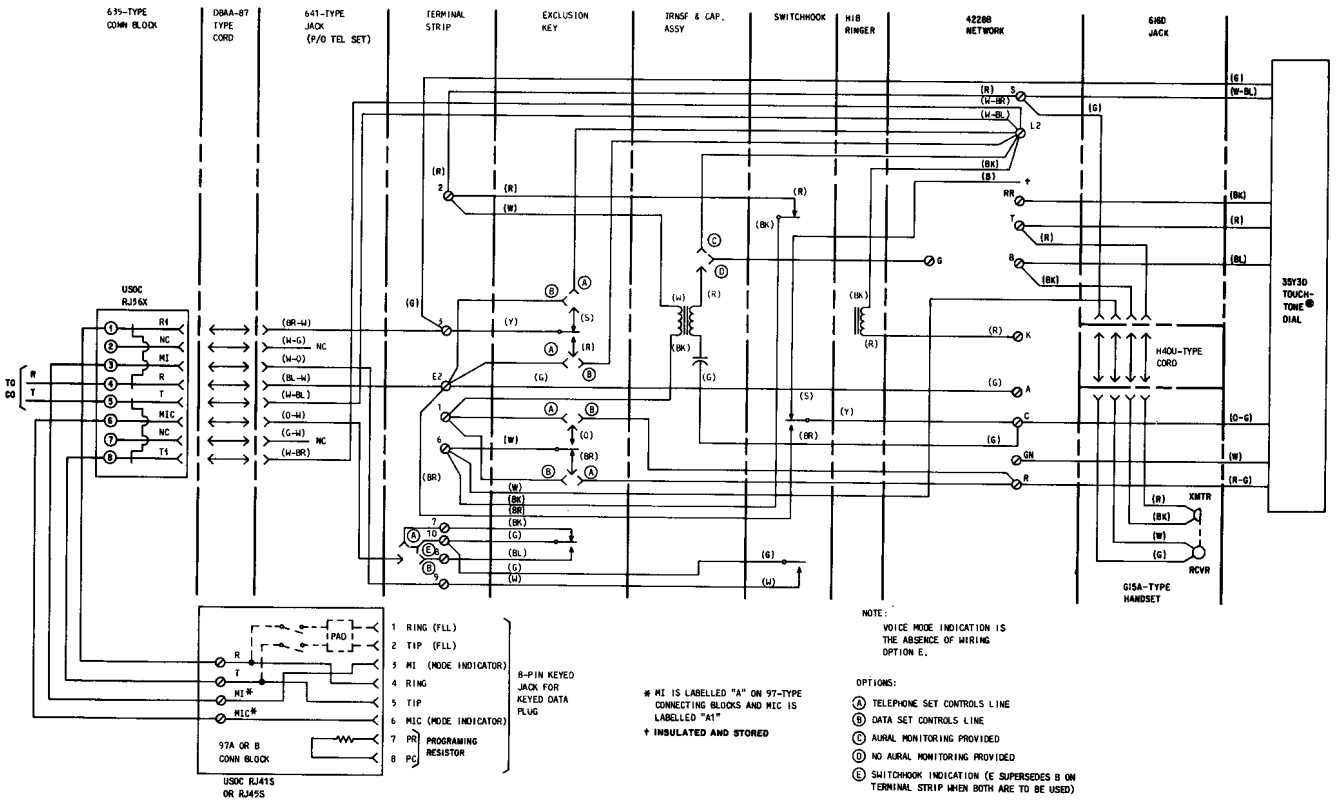


Fig. 12—2503CM Telephone Set—Registration Jack Connections

TABLE C

CUSTOMER DECISION TABLE

DECISION		DESCRIPTION
A	1	Telephone Set Controls Line
	2	Data Set Controls Line*
B	3	Aural Monitoring Not Provided
	4	Aural Monitoring Provided*
C	5	TOUCH-TONE® Dial
	6	Rotary Dial
D	7	Switchhook Indication Only
	8	Voice Mode Indication

* Factory-furnished for telephone set.

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. 8. Install this resistor between terminals PR and PC in the 97B connecting block. Store the bag of unused resistors under the circuit board of the connecting block. Connect the 97B 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. 8 is included in the plastic envelope which contains the programming resistors. Eventually the chart will be etched on the non-component side of the circuit board instead of being shipped as a ship-loose item.

3.05 Select a flat mounting surface and install the connecting block using the two No. 6 pan-head wood/metal 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.

3.06 The loop loss (as measured in paragraph 3.02) and the telephone line number may be marked on the matte surface on the side of the cover above the jack opening using a No. 2 lead pencil or a ball-point pen. All 97-type connecting blocks manufactured starting in 2Q'78 will have an enlarged matte writing area. Designations LPL (loop loss) and TLN (telephone line number) will be stamped on the surface for convenience.

C. 103A Apparatus Mounting

3.07 Where several connecting blocks are to be installed in the same location, a 103A apparatus mounting may be used (Fig. 13).

3.08 The 103A apparatus mounting provides a multiple arrangement for up to sixteen 97-type connecting blocks. The 103A apparatus mounting can be mounted in any of the following configurations (Fig. 14).

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

(b) Rack-mounted in a 48-centimeter (19-inch) cabinet with the front of the unit flush with the mounting surface.

(c) Rack-mounted in a 48-centimeter (19-inch) cabinet with the front of the unit either 11 centimeters or 12.6 centimeters (4.33 or 4.95 inches) forward of the mounting surface.

(d) Rack-mounted in a 58-centimeter (23-inch) cabinet with the front of the unit 12.6 centimeters (4.95 inches) forward of the mounting surface.

> ***Note 1:*** Each 103A apparatus mounting requires 15 centimeters (6.0 inches) [1.3 centimeters (1/2 inch) above and 4.5 centimeters (1-3/4 inches) below] to allow the cover to open properly.
>
> ***Note 2:*** When installing 97-type connecting blocks, leave about 15 cm (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 (order separately) can be used to combine eight connecting blocks to one 50-position female miniature ribbon connector (Fig. 15). To attach the M48A-87 cord to the 103A

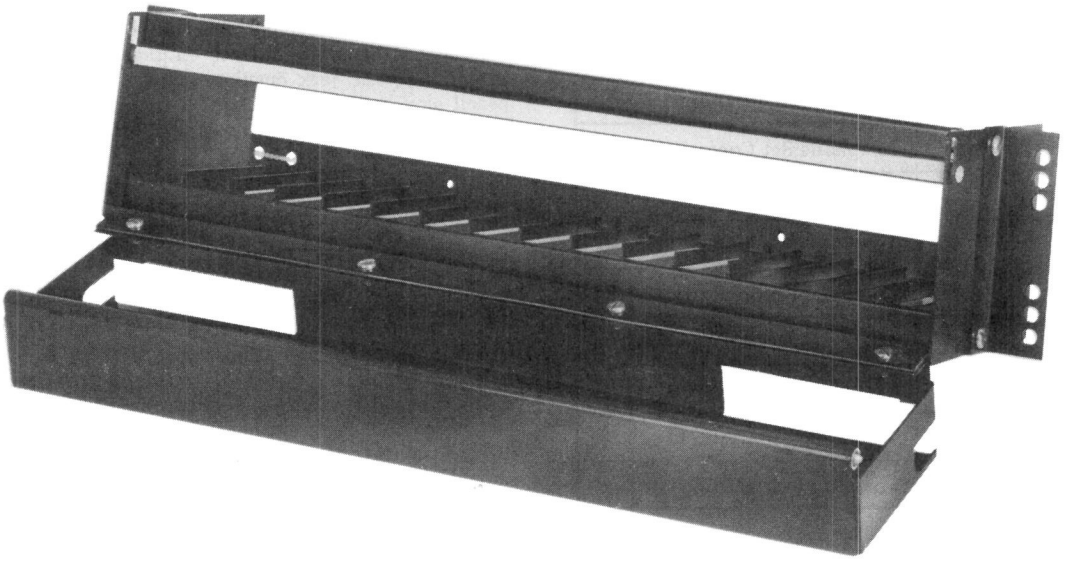


Fig. 13—103A Apparatus Mounting

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 97-type 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 cover to provide a 50-position interface is shown in Fig. 16.

3.12 The 97A1 DM has been designed for both 19- and 23-inch rack mounting as well as wall mounting. In a 19-inch rack, a number 842310781 2-inch mounting plate accommodates three (3) 97A1 data mountings providing up to 24 lines. A 23-inch rack application requires the use of a number 842310773 2-inch mounting plate which holds four 97A1 data mountings providing up to 32 lines.

3.13 A bracket and a clamp are available to lock connecting cables to the 97A1 DM, and an adhesive pad (842309643) is provided to allow mounting to a metal wall without drilling. These items are provided as part of the D-180935 mounting kit.

4. MAINTENANCE AND TESTING

4.01 Maintenance of the data jack on the customer premises is limited to local tests, testing with the serving or test offices, or replacing a defective connecting block.

4.02 Repair forces should be familiar with the tariff provisions which generally provide for a "Maintenance of Service Charge" for each customer-requested repair visit to a data jack installation. When the customer requests such a repair visit and it is subsequently determined that the trouble is ***not*** in the telco facilities, advise the customer and notify the Plant Service Center to fill out Form E-5855 in conformance with the section entitled Maintenance of Service Charge on

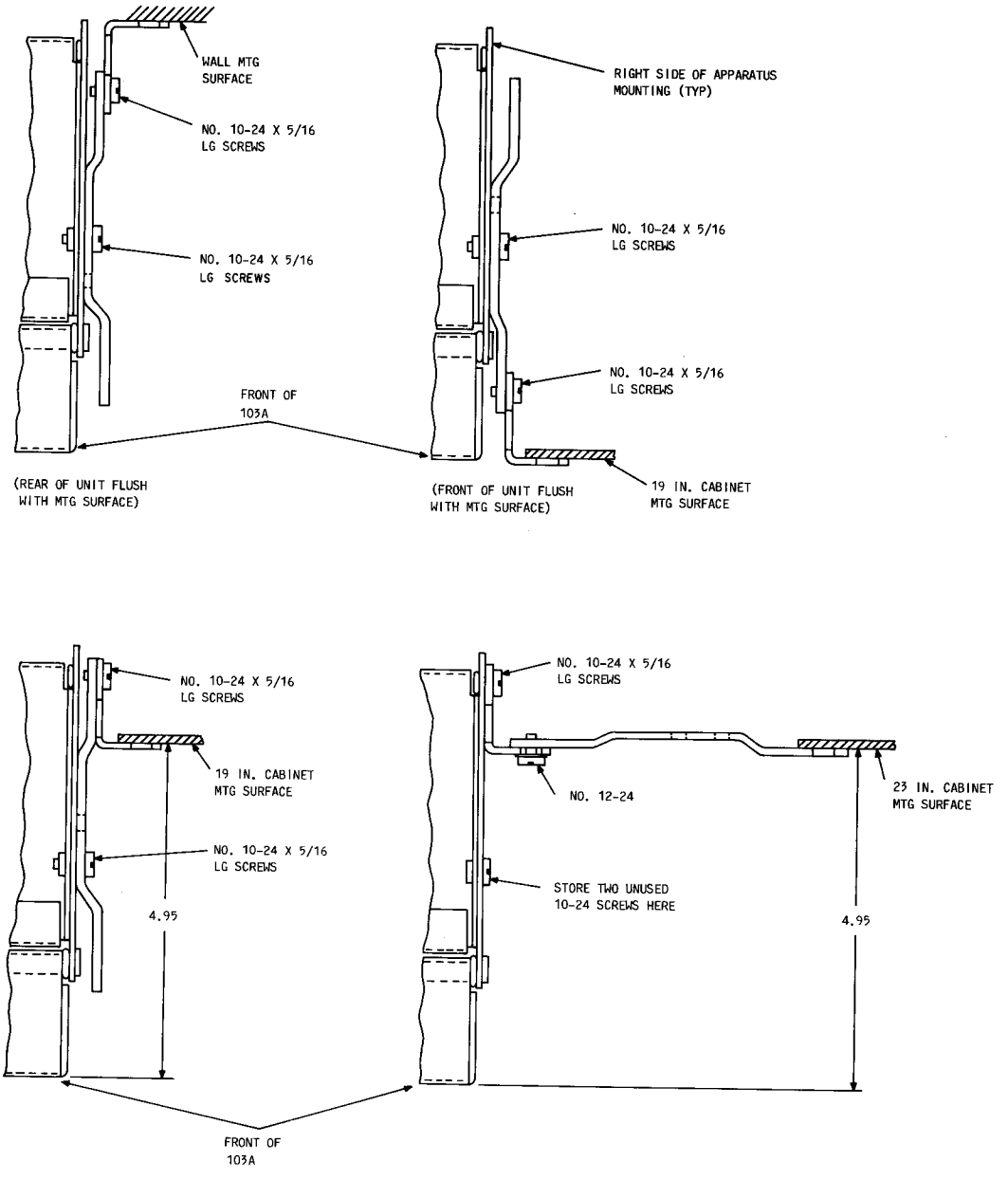


Fig. 14—103A Apparatus Mounting Brackets

Fig. 15—M48A-87 Cord

Service With Customer-Provided Equipment (CPE) (660-101-312).

4.03 The following test may be performed during repair visits to verify continuity of the data jack. Access to the positions of the 97A- or 97B-type connecting block can be obtained by using an M8P-87 cord which terminates in a miniature 8-position keyed plug on one end and color-coded

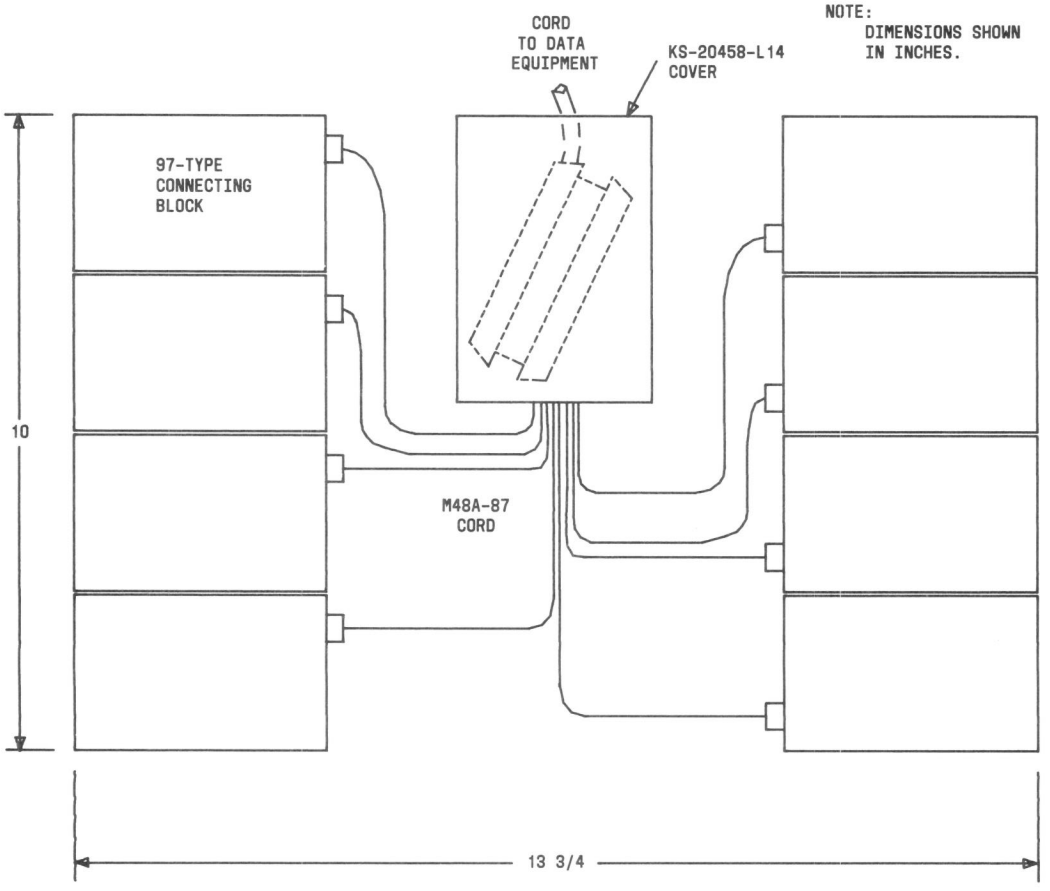


Fig. 16—Wall-Mounted Data Jacks and Adapter Cord

spade-tipped conductors on the other. The pin assignments and colors are as follows.

PIN	COLOR
1	Blue
2	Orange
3	Black
4	Red
5	Green
6	Yellow
7	Brown
8	Slate

(1) Verify continuity and ohmic value of the programming resistor with an ohmmeter via jack pins 7 and 8.

(2) Verify continuity through the 97A- or 97B-type data connecting blocks to the telephone line screw terminals (T and R) with an ohmmeter via jack pins 4 and 5 for programmed data equipment. Level measurements of the milliwatt supply may be made via these pins also. (The switch on the 97A type should be in the programmed position.) The data jack itself should introduce no loss.

(3) Verify continuity to the telephone line screw terminals (T and R) for fixed loss loop data equipment of 97A types via jack pins 1 and 2. Level measurements of the milliwatt supply may be made via these pins also. (The switch on the data jack should be in the FLL position.) The received level should be in a range between -8 and -9 dBm.

(4) If a 503CM or 2503CM telephone set is provided, verify the mode indication function via pins 3 and 6 with an ohmmeter. A short should appear when the line is in the voice mode and an open should appear when the line is in the data mode. If the "switchhook only" option has been provided in the telephone set, a short should appear on pins 3 and 6 whenever the handset is taken off-hook.