NEC

Electra™ 8/24

ELECTRONIC KEY TELEPHONE SYSTEM

INSTALLATION SERVICE MANUAL

CHAPTER 1

SYSTEM DESCRIPTION

CHAPTER 1
SYSTEM DESCRIPTION

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SECTION 110
GENERAL

The Electra 8/24 Electronic Key Telephone System is a high performance, microprocessor based, stored program controlled, Space Division Switching technology, system that provides numerous capabilities for handling both interoffice and outside call traffic.

The Electra 8/24 Electronic Key Telephone System offers the flexibility required to meet almost any organization's needs.

The Electra 8/24 Electronic Key Telephone System can provide termination for a maximum of twenty four stations and eight Central Office/PBX lines. Each system can be customized to fit the customers' needs by use of display and non-display Electronic Key Telephones, Direct Station Selection/Busy Lamp Field, Doorphones, and Single Line Telephones.

There are two methods for expanding the system to its maximum capacity. Refer to Figure 100-1 System Expansion.
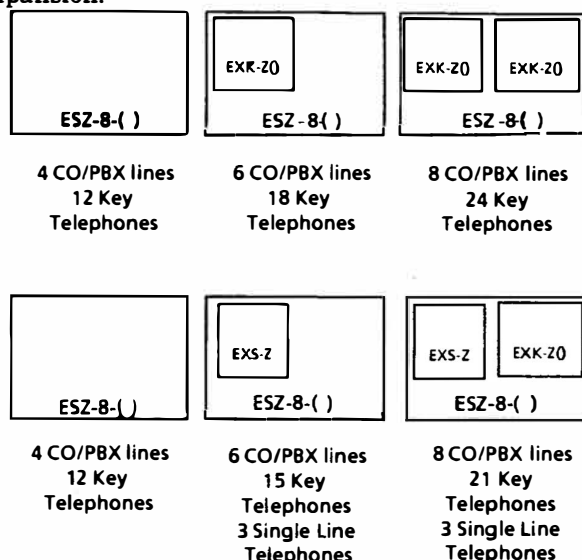

Figure 100-1 System Expansion

The Electra 8/24 Electronic Key Telephone System is a total communication system that offers a wide variety of features, most of which are standard and available to most stations in the system.

The Electra 8/24 Electronic Key Telephone System is designed for *ease of operation* and maximum user convenience. Solid state circuitry and a minimum of mechanical components ensure ease of maintenance and high reliability.

This chapter provides details of features, hardware, and requirements needed prior to the installation of the Electra 8/24 Electronic Key Telephone System.

SECTION 120
REGULATORY INFORMATION

120.1   General Information
The Federal Communications Commission (FCC) has established rules which permit this telephone system to be directly connected to the telephone network. A jack is provided by the telephone company. Jacks for this type of customer provided equipment will not be provided on party lines or coin lines.

The telephone company may make changes in its technical operations and procedures. If such changes affect the compatibility or use of the Electra 8/24, the telephone company is required to give adequate notice of the changes.

120.2   Company Notification

Before connecting this telephone system to the telephone network, the following information must be provided to the telephone company:

1. Your telephone number.
2. FCC registration number:

AY 589N-17672-KF-E AY 589N-17673-MF-E	MADE IN JAPAN
AY 5263-10920-KF-E AY 5263-10919-MF-E	MADE IN TAIWAN R.O.C.
AY 52NV-60250-KF-E AY 52NV-60251-MF-E	MADE IN MEXICO

To install the Electra 8/24 as a Key System the system cannot allow dial access to the CO/PBX line. The jumper strap J4 must not be cut.

3. Ringer equivalence number: 1.5B *
4. USOC Jack required: RJ11C

*Items 2 and 3 above, are indicated on the system equipment labels.

120.3   Incidence of Harm

If the system is malfunctioning, it may also be causing harm to the telephone network. The telephone system should be disconnected until the source of the problem can be determined and until repair has been made. If this is not done, the telephone company may temporarily disconnect service.

120.4   Radio Frequency Interference

In compliance with FCC Part 15 rules, the following statement is provided:

IMPORTANT NOTE:

"This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the installation service manual, may cause interference to radio communications. This equipment has been tested and approved for compliance with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this telephone system in a residential area is likely to cause interference, in which case, the user, at his or her own expense, will be required to take whatever measures may be required to correct the interference."

120.5   Hearing Aid Compatibility

The NEC Key Telephones and Single Line Telephones that are provided for this system, are hearing aid compatible. The manufacturer of other single line telephones for use with the system must provide notice of hearing aid compatibility to comply with FCC rules. FCC rules prohibit the use of non-hearing aid compatible telephones (after August 16, 1989).

120.6   Service Requirements

In the event of equipment malfunction, all repairs will be performed by an authorized agent of NEC America, Inc. or by NEC America, Inc. It is the responsibility of users requiring service to report the need for service to one of NEC America, Inc.'s authorized agents or to NEC America, Inc.

120.7   UL Regulatory Information

This equipment has been listed by Underwriters Laboratories and found to comply with all applicable requirements of the standard for telephone equipment UL 1459 2nd Edition.

SECTION 130
GLOSSARY OF ABBREVIATIONS

- A -

ADA	Ancillary Device Adaptor
ATT	Attendant

- B -

BGM	Background Music
BLF	Busy Lamp Field

- C -

CO	Central Office
CPU	Central Processing Unit
CNF	Conference

- D -

DIT	Direct Inward Termination
DP	Dial Pulse
DSS	Direct Station Selection (also DSS/BLF)
DND	Do Not Disturb
DPH	Doorphone
DTMF	Dual Tone Multi-Frequency

- E -

EXK	Expansion Interface for six Key Telephones and two CO/PBX Lines
EXS	Expansion Interface for three Single Line Telephones, three Key Telephones, and two CO/PBX Lines
EXT	Extension
ESP	External Speaker/Paging Unit

- F -

FCC	Federal Communications Commission
FWD	Forward
FNC	Function

- G - H -

HFU	Handsfree Unit (Speakerphone)

- I -

IC	Integrated Circuit
ICM	Intercom
IDF	Intermediary Distribution Frame
INT	Internal (Calling on Intercom)

- J - K -

KSU	Key Service Unit
KTU	Key Telephone Unit

- L -

LED	Light Emitting Diode
LK	Line key
LCD	Liquid Crystal Display

- M -

MDF	Main Distribution Frame
MSG	Message
MIC	Microphone (Unit & Control Button)
MOH	Music on Hold

- N -

NBR	Number

- O -

OCC	Other Common Carriers

- P -

PR	Power Failure Transfer, Ring Side
PT	Power Failure Transfer, Tip Side
PSU	Power Supply Unit

- S -

S & R	Save/Store and Repeat
SLT	Single Line Telephone
SPKR	Speaker (Control Button)
SCC	Specialized Common Carriers
SPD	Speed Dial
STA	Station
SMDR	Station Message Detail Recorder

- T - U - V - W - X - Y - Z -

TRF	Transfer (Feature)

SECTION 140
FEATURE DESCRIPTION

ADD-ON CONFERENCE provides the ability to converse with a maximum of two additional parties in any combination of internal and/or outside calls.

Conference calls are not amplified and are subject to the quality of the CO/PBX line used.

A Key Telephone conference may consist of:
1 station and 2 CO/PBX lines
2 stations and 1 CO/PBX line
3 stations (no CO/PBX lines)

A Single Line Telephone conference may consist of:
2 stations and 1 CO/PBX line
3 stations (no CO/PBX lines)

A maximum of four Conferences can be established in a system at the same time.

ALPHANUMERIC DISPLAY of the ETZ-16D-1 Key Telephone is provided with a sixteen digit, seven segment Liquid Crystal Display (see Figure 100-2 ETZ-16-1 and ETZ-16D-1 Key Telephones). The LCD is capable of displaying more than 100 fixed and flexible readouts. These displays provide user convenience and programming guidance.

ANCILLARY DEVICE ADAPTOR (ADA-Z Unit) can be installed in each ETZ-16D-1 Key Telephone and can be made to support additional functions and/or features. Connection of a jackset for headset use, an external speakerphone, a handset amplifier, *etc.*, can be accomplished with the ADA-Z Unit installed.

ATTENDANT CALL TRANSFER permits an Attendant to camp a call onto a busy extension. If the transfer is not answered within a preprogrammed time period, the call will return to the Attendant position.

ATTENDANT POSITIONs are assigned to ports 10 and 11. A maximum of two *Attendant Positions* are possible in an Electra 8/24 Electronic Key Telephone System. The *Attendant Positions* require the use of the ETZ-16D-1 Key Telephone.

These positions have access to Attendant features, such as setting and displaying *System Speed Dial* memories, setting and leaving *Night Mode*, and setting the system clock.

The *Direct Station Selection/Busy Lamp Field (DSS/BLF) Console* can transfer calls to any extension. Refer to Figure 100-3 Attendant Position. The transfer can be made by *Internal Voice Signaling*, *Ringing Transfer* (before answer), or after answer by the called station. Unanswered *Attendant Ringing Transfers* recall to the *Attendant Position* and are accompanied by a display identifying the line key number.
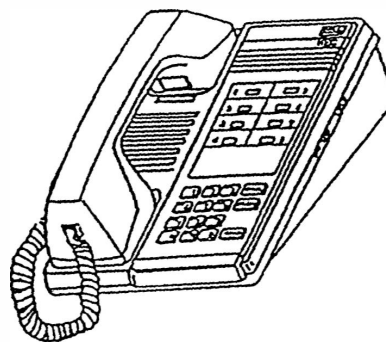
ETZ-16D-1 Key Telephone

ETZ-16-1 Key Telephone

ETE-1HM-2 DtermII H Single Line Telephone

ETE-1-2 DtermII Single Line Telephone

Figure 100-2   Electra 8/24 Telephones

Figure 100-3   Attendant Position

AUTOMATIC CALLBACK allows Key Telephone users to prompt the system to notify them when a busy extension becomes idle. After calling a busy extension, set an *Automatic Callback* by dialing **0**. When both parties are idle, the system will signal the *Automatic Callback* originator first and, after answer, the other station.

Single Line Telephones cannot be used to set an Automatic Callback to other stations, but Automatic Callback can be set to Single Line Telephones from a Key Telephone.

AUTOMATIC HOLD can be accomplished by pressing a *Direct Station Selection* button or **Feature Access** key (*Doorphone, Page,* and *Call Pickup* buttons) on any Key Telephone. This automatically places a current CO/PBX call on hold and establishes an intercom call or activates a feature. This provides the station user with **one step** transfer of calls.

AUTOMATIC PAUSE - BEHIND PBX can be inserted into the dialing pattern to allow for the time needed to access various features of a PBX.

AUTOMATIC REDIAL can be selected by any Key Telephone user by pressing the **FNC** button and then the **LNR/SPD** button. Single Line Telephone users cannot access this feature.

If the number being dialed is busy, the system will periodically redial the busy number.

AUTOMATIC RELEASE is performed by the system when an outside party abandons the call. For this feature to function a timed disconnect signal from the outside line must be provided. This prevents a call from continuing to be connected after the outside party abandons the call.

BACKGROUND MUSIC - EXTERNAL SPEAKERS, when Background Music is installed and is used for paging from the Electra 8/24 Electronic Key Telephone System, BGM will be interrupted only to those speakers paged (within a zone). This feature may require a locally supplied music source, paging amplifier, and control relays. The optional ESP-Z KTU is required.

BACKGROUND MUSIC - STATION SPEAKER is provided to all Key Telephone users. The system is designed to accept a separate, locally supplied, music source. Each Key Telephone user can turn on the music source to be heard over their station speaker while their station is idle. This feature requires a locally supplied music source and the optional ESP-Z KTU.

BATTERY BACKUP - MEMORY is provided to retain system memory, for a maximum of seven days, during a power outage. The System Program, *Clock/Calendar,* and *Speed Dial* are among the items protected.

BATTERY BACKUP - SYSTEM POWER is a built-in backup battery. The system can operate normally for approximately ten minutes (relative to usage and configuration).

BUSY LAMP FIELD, on the Key Telephone, is possible by programming the **Feature Access** keys or any unused line keys. Any extension programmed to a key, for busy lamp indication, will show a **red LED** when that station is off-hook.

CALLBACK REQUEST can be sent to any Key Telephone when that station is busy or the user is not available. The ETZ-16D-1 will display the number of the station making the *Callback Request*. A maximum of three *Callback Requests* can be received at a Key Telephone.

To leave a *Callback Request* (when making an intercom call) the caller dials **#** after reaching the station. The **FNC** LED begins to flash at the called Key Telephone and the LCD (if equipped) will display the calling station's number.

Single Line Telephone users can set a Callback Request to a Key Telephone, however, a Single Line Telephone cannot receive a Callback Request.

CALL FORWARD - ALL CALLS allows a Key Telephone user to redirect transferred or internal calls for their extension to another extension or to an *Attendant Position. Call Forward - All Calls* can be set or canceled by the forwarding station or an Attendant.

Single Line Telephone users cannot forward calls, but can receive calls forwarded from Key Telephones.

CALL PARK places a call into a common Call Park location. This can be done at any Key Telephone in the system. This feature removes the call from the extension and frees that extension to answer other calls. The call can be retrieved from Call Park at any Key Telephone within the system. This feature is not available to Single Line Telephones.

CALL PICKUP provides any station user the ability to answer an Intercom Call intended for a different station user by dialing access code **61**.

This feature is provided by assigning stations to tenant groups. This enables ringing calls in the group

to be answered at any station within that group. Each group has access to their own CO/PBX lines. When a line in the group is ringing, any station user in the group can dial **66** to answer the call.

A maximum of four *Call Pickup* groups can be assigned in the system.

CALL TRANSFER can be performed by any station user in the system. Any call can be transferred to any other station in the system.

CALL WAITING INDICATION is provided by a flashing ICM LED when a busy station is called.

CENTREX RING TONE DISCRIMINATION is provided to allow the Electra 8/24 Electronic Key Telephone System to follow the ring pattern of CENTREX. This helps the system users to identify the difference between CENTREX, internal, and external calls.

Single Line Telephones cannot follow the ringing pattern of a CENTREX system.

CLOCK/CALENDAR DISPLAY is provided to the ETZ-16D-1 Key Telephone LCD when the station is idle. During an idle condition, the LCD will display the MONTH, DATE, and TIME of DAY.

CONSECUTIVE SPEED DIAL simplifies complicated dialing sequences of numbers such as those used for some specialized common carriers.

All Key Telephone users have the ability to consecutively *Speed Dial* with access to *System* and *Station Speed Dial* memories.

When using Single Line Telephones, Station or System Speed Dial must be followed by manual dialing.

CONSULTATION HOLD offers system users the convenience of originating a second call to a station in the system without having to hang up on the first party. The station user places the call on hold and originates another call; after consulting with the second party, the station user can initiate a *Conference*, return to the original call, or *Transfer* the call.

CONVERSATION RECORDING is another user convenience provided by the Electra 8/24 System. Each ETZ-16D-1 Key Telephone is equipped with a mini-jack to accept a locally provided recording device. This will allow a station user to record his or her conversations.

CAUTION

The use of a monitoring device to eavesdrop or record telephone conversations may constitute an illegal invasion of privacy under some circumstances and laws. You should consult a legal advisor prior to implementing any practice involving recording of telephone calls.

FCC order in Docket #20940 permits the use of a beep tone or the consent of all parties when conversations are recorded. Section 2510 to 2520 of the U. S. Criminal Code (18 U.S.C.2510 *et seq.*) provides stiff penalties for unauthorized disclosure of wire or oral communications.

CO/PBX LINE QUEUING allows a station user to increase their call processing efficiency. Station users who are denied use of the CO/PBX lines, because all lines (of the same type) are busy, are able to queue onto the selected busy line by dialing access code **64**.

When the line becomes available, the system reserves it and provides incoming ICM ring to the queuing station.

If the line is no longer needed, before the line becomes available, dialing access code **65** cancels the queue request. System software version 3.0 (or higher) is required to support this feature.

DIAL 0 for ATTENDANT speeds the calling process when attempting to reach an Attendant. If the system is configured for two Attendants, **DIAL 0** will enable the user to reach their assigned Attendant.

DIGIT COUNTING restricts a toll restricted station to a maximum number of digits that can be dialed on CO/PBX lines before being disconnected. A station must be toll restricted for digit counting to apply. Digit counting can be programmed from zero digits to a maximum of sixty three digits. System data default is not assigned. Digit counting applies to CO/PBX lines only. Digit counting can be Allowed or Denied on a per station basis. System software version 2.0 (or higher) is required to support this feature.

DIRECT INWARD TERMINATION (DIT) can be programmed for CO/PBX lines to ring directly at selected Single Line Telephone extensions, bypassing the Attendant. When the system is set to night mode, a separate ringing assignment is available. System software version 3.0 (or higher) is required to support this feature.

DIRECT PAGING ACCESS can be provided to Key Telephones and/or *DSS/BLF Consoles* on their **Feature Access** keys.

DIRECT STATION SELECTION (DSS) provides one button selection to rapidly call internal parties or access system features. The unused CO/PBX line keys (maximum of eight) and the eight programmable **Feature Access** keys, on Key Telephones, can be assigned for this feature.

DISTINCTIVE RINGING helps a user distinguish between outside and internal incoming calls.

DO NOT DISTURB (DND) gives a Key Telephone user the ability to temporarily eliminate all audible signals for incoming calls to that station. Any of the programmable **Feature Access** or unused CO/PBX line keys can be programmed for DND.

DOOR LOCK RELEASE allows any Key Telephone user to remotely operate a maximum of two relays via the Electra 8/24 System's intercom. After calling a Doorphone (when the system is equipped with the DPH-Z KTU and a locally provided external relay) any Key Telephone user can dial access code **6** after pressing the **FNC** button during Doorphone conversation. The relay will activate for five seconds.

Single Line Telephone users cannot access the Door Lock Release feature.

DOOR/MONITOR PHONE expands the system with a maximum of two internal communication units. When the system is equipped with the optional DPH-Z KTU and at least one optional DP-A-1 Doorphone, communication from an isolated area (*ie.*, front door) and an extension can be accomplished. This same unit can be used as a one way room *Monitor.*

When the DP-A-1 is installed as a *Doorphone*, assigned Key Telephones are signaled by pressing the call button on the *Doorphone* unit. Any station in the system can answer the call and conduct a conversation with the person at the *Doorphone.*

When the DP-A-1 is installed as a room *Monitor*, any station can access the unit and listen to the area where the DP-A-1 is installed.

DP (Dial Pulse) TO DTMF (Dual Tone Multi-Frequency) SWITCHING provides the ability to establish a data connection for transmissions to a data receiving unit requiring DTMF signaling. All stations are able to transmit DTMF signals, including * and #, to an outside party via the CO Network. A

Key Telephone that is connected to a DP line can be switched from DP to DTMF.

This operation is performed only during conversation on a CO/PBX line. After a DP line is switched to DTMF, it cannot be switched back to DP. Dial Pulse automatically returns when the station returns to an idle condition. The DP-DTMF switching operation can be programmed as part of a **Speed Dial** program. In this case, it is programmed so DP-DTMF switching takes place during dialing on a CO/PBX line.

This feature does not apply to Single Line Telephones.

DSS/BLF CONSOLE is a unit that provides twenty three buttons for *Direct Station Selection and Busy Lamp Field* indication. Each button is equipped with a *Two Color LED.* Refer to Figure 100-4 EDZ-24-1 DSS/BLF.

An ETZ-16D-1 or ETZ-16-1 Key Telephone and the EDZ-24-1 *DSS/BLF Console* combined make an *Attendant Position.* The Console provides the Attendant with single button access for a maximum of twenty three extensions, page zones, and other features.

Red and **Green** LEDs provide the Attendant positions with Busy Lamp status and Message Wait indication for the associated extension.

A maximum of two EDZ-24-1 *DSS/BLF Consoles* (one per Attendant) can be installed in a system. Each *DSS/BLF Console* uses a station position, reducing the key set capacity respectively.
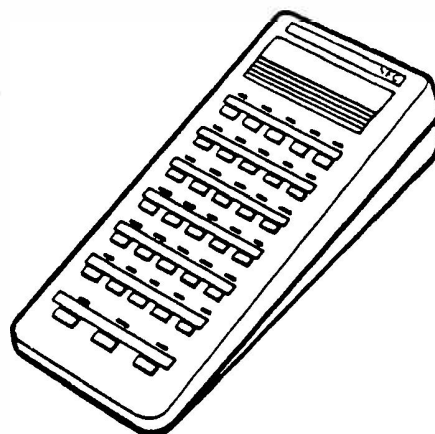

Figure 100-4 EDZ-24-1 DSS/BLF

ELAPSED CALL TIMER is provided to the LCD of an ETZ-16D-1 Key Telephone to indicate the amount of time spent on an outside line.

EQUAL ACCESS ACCOMMODATION is provided to permit *Speed Dial* memories and *Toll Restricted* stations to have access to other specified long distance Common Carriers. *Toll Restriction* applies after an OCC toll call has been dialed (if the OCC code has been assigned in programming). A maximum of eight OCC codes can be programmed in the system.

EXTERNAL TONE SIGNAL CONTROL is provided by an optional ESP-Z KTU. The tone signal control is activated during CO/PBX incoming ring. The relay controls a locally provided tone source or loud ringing bell. The system (when equipped with the ESP-Z KTU) provides an interrupted relay contact closure to a locally provided control relay, which can be used for controlling a call alerting device. This feature provides a user, in a noisy environment, the ability to hear incoming, outside ringing calls.

An ESP-Z KTU is required for the control relay. The external ring control circuit or relay can be assigned to operate using system programming:

- only during the day
- only during the night
- both day and night
- no ring at all
- program default - not assigned

The external relay control circuit provides an interruption with a 1 second ON/1 second OFF cycle that is not synchronous with incoming signals. The external ring equipment must be locally provided.

EXTERNAL ZONE PAGING - MEET ME enables system users to quickly locate and communicate with each other. The system provides the ability to have a maximum of two zones (plus all zones) of *External Zone Paging* with the optional ESP-Z KTU installed. Speakers, relays, and an amplifier are locally provided.

The ESP-Z KTU provides a 2 Watt amplifier for external speaker paging.

The *Meet-Me* feature provides the ability to answer a page and speak privately with the paging party.

FACSIMILE CONNECTION allows the system to share access of the CO/PBX line terminated in KSU port position number four with a locally provided FAX machine. No additional CO/PBX line is required to operate the FAX machine. The Electra 8/24 cannot determine if the incoming CO/PBX call is for a facsimile unit or a station user.

FEATURE ACCESS KEYS - USER PROGRAMMABLE are equipped on each Key Telephone to simplify user operation. Line keys 1~8 are used for installed CO/PBX lines. The unused CO/PBX line keys and line keys 9~16 can be used as Feature Access keys.

Direct access to some System Features, such as, *Last CO/PBX Number Redial, Call Pickup, Paging, DSS, DND, etc.*, can be programmed on these keys.

FLEXIBLE RINGING ASSIGNMENT allows independent ringing assignments for the day and night modes. Day and night ringing assignments are assigned on a per station basis. Any number of Key Telephones can be programmed to ring on all CO/PBX lines.

FLEXIBLE STATION NUMBERING PLAN is automatically assigned by the *Resident System Program* (default) when the system is first powered up. The default *Station Numbering Plan* is set to provide stations 10~21. There are twelve stations available in the basic KSU (stations 10~21), six stations available in the first expansion KTU (stations 22~27), and six stations available in the second expansion KTU (stations 28~33). The System Programmer can alter the *Station Numbering Plan* (station numbers 10 through 59).

FLEXIBLE TIMEOUTS allow the system to be altered, via programming, to meet the customer's needs. Standard *Timeouts* are set by the *Resident System Program* upon power up.

FULL HANDSFREE OPERATION is an optional feature that can be accomplished by either of two methods:

1. Installation of the HFU-Z Unit into an ETZ-16D-1 Key Telephone supplies *Full Handsfree Operation* on both internal and outside calls. A *Microphone Control* button allows muting of the microphone.

2. Installation of the ADA-Z Unit into an ETZ-16D-1 Key Telephone provides termination points for the connection of a locally provided external speakerphone for *Full Handsfree Operation* on both internal and outside calls.

GROUP HUNT of stations can be programmed for a maximum of **ten** consecutively numbered extensions.

A maximum of **five** hunt groups can be established in a system. Each group is assigned a pilot number. Extensions 10, 20, 30, 40, and 50 can be assigned as pilot numbers.

HANDSFREE ANSWERBACK on INTERCOM is a convenience feature provided to each Key Telephone user. Using the Key Telephone's built-in microphone a station user can respond to an internal voice call without lifting the handset, if the microphone LED is lit, indicating the microphone is **ON** .

HANDSFREE DIALING/MONITORING allows a Key Telephone user to initiate a call and/or monitor a line without lifting the handset by using the station's built-in speaker.

HOLD (EXCLUSIVE and NONEXCLUSIVE) with RECALL IDENTIFICATION are features provided to allow for speedy and individualized call handling.

- **EXCLUSIVE HOLD** allows Key Telephone and Single Line Telephone users to place an ongoing conversation on HOLD while ensuring that no other stations are able to accidentally remove it from HOLD. The holding Key Telephone's corresponding line key is **green** and provides a special interrupted **wink** (I-HOLD indication) for easy identification. All other Key Telephones have the corresponding LED lit **steadily red** (busy).

- **NONEXCLUSIVE HOLD** enables a Key Telephone user to place an ongoing conversation on HOLD and allows the user to go to any other Key Telephone, with access to that line, and retrieve the call from hold. The LED indication at the holding Key Telephone is a **green wink**; all other Key Telephones have the corresponding LED with a **red wink**.

- **HOLD RECALL** provides a timed reminder to the station user that has forgotten a call placed on HOLD. This recall is provided for both *Exclusive* and *Nonexclusive Hold.* The recall to a station is controlled by a timer that can be programmed by the installer.

  The LED at the holding Key Telephone will change during recall from a **green wink** to a **green flash**; while at the other Key Telephones it will remain at the **red wink** rate.

  At the holding station, there is an audible recall tone in addition to the change in LED flash rate. The ETZ-16D-1 Key Telephone also receives a *Recall* indication in its display.

I-HOLD INDICATION shows a Key Telephone user which lines are being held by that station. The line key LED will be **green** and **winking** at a special interrupted rate.

INCOMING CALL IDENTIFICATION provides an ETZ-16D-1 Key Telephone user with a quick reference, on the LCD, of who is calling on the intercom. The LCD will display the calling party's extension number.

INTERNAL VOICE/TONE SIGNALING enables a Key Telephone user to select the method of signaling another Key Telephone user.

If the system is programmed for *Internal Voice Signaling*, the calling Key Telephone can initiate a ringing call by dialing the digit 1 after the extension number, or vice versa, (determined in System Programming). Repetitive pressing of the digit 1 will toggle between Tone and Voice Signaling.

INTERNAL ZONE PAGING (MEET-ME) allows all stations to generate a voice page, via station speakers, to a selected zone (maximum of three) or to all Key Telephones. Any station can release the page circuit and talk privately with the originator by dialing the *Meet-Me* answer access code **74**.

I-USE INDICATION shows a Key Telephone user which line is being utilized. The line key LED will be a **green burst wink**.

LAST CO/PBX NUMBER REDIAL allows a station user to redial the last outside number dialed, either with their dial key pad or *Speed Dial*, by pressing two buttons. This feature is accessed from Key Telephones by pressing the **LNR/SPD** button and dialing the **#** or pressing the **FNC** button and dialing **5** for Key Telephones. Single Line Telephone users dial **#**.

MENU PROGRAM provides a user friendly format for System Programming. *Menu* selections of various areas in the program are possible. Programming is performed from either of the two *Attendant Positions* (ETZ-16D-1 Key Telephone ports 10 and/or 11) while the system is in full operation.

MESSAGE WAITING INDICATION is provided to each Key Telephone to indicate that an Attendant has a message for the called station. A Message Wait Indication cannot be sent to a Single Line Telephone.

When *Message Waiting* is set to a Key Telephone from a DSS/BLF Console, the LED in the **FNC** button will **wink**.

MICROPHONE CONTROL is provided with a **MIC** button on each Key Telephone. The **MIC** button

MICROPHONE CONTROL is provided with a **MIC** button on each Key Telephone. The **MIC** button contains an LED, which when lit, indicates the microphone is **ON**.

The **MIC** button is used to mute the microphone for privacy during incoming *Internal Voice Signaling* calls and during calls using the optional HFU-Z Unit.

MUSIC ON HOLD connects a locally provided music source or the synthesized music (provided with the system) to an outside party whenever a call is placed on any type of HOLD.

NESTING DIAL is a uniquely developed feature for Key Telephone users who require long numbers to be dialed (more than twenty four digits). This feature allows a Key Telephone user to store up to five complete (maximum of twenty four digits each) *Speed Dial* buffers into a sixth buffer.

These numbers can then be successively transmitted by pressing the **LNR/SPD** button and then dialing the number of the sixth *Speed Dial* buffer.

Single Line Telephone users cannot access Nesting Dial.

NIGHT CHIME can be provided in systems equipped with an optional ESP-Z KTU, locally provided external relays, and a chime ringer. The ESP-Z KTU will provide relay control during incoming CO/PBX ring to the external relay.

NIGHT TRANSFER is a function of the *Attendant Positions* (with or without a *DSS/BLF Console*). When an Attendant sets the system into **night mode**, it changes from the **day mode** ring assignment.

OFF-HOOK RINGING allows a Key Telephone user to hear when another incoming call is signaling while the station handset is in use. The *Off-Hook Ring* is provided through the station's built-in speaker at a reduced volume level.

PC CONNECTION via MODEM offers Key Telephone (with display) users *Data Communication* capabilities not normally offered in systems of this size. Each ETZ-16D-1 Key Telephone is equipped with a modular jack (**CN10**) providing connection of a modem for data information transfers.

POWER FAILURE TRANSFER (PFT) ensures a customer has access to the Central Office network during a commercial power outage.

During a power outage (for a period longer than the ten minutes protected by the System *Backup Battery*)

selected CO/PBX lines are transferred directly to Single Line Telephones through the PFT-Z ETU, allowing direct access to the CO/PBX network.

When an EXS-Z KTU is installed, CO/PBX lines 5 and 6 will automatically be switched to Single Line Telephone ports 22 and 23 respectively, without the addition of the PFT-Z KTU.

PRIME LINE ASSIGNMENT simplifies the use of the system by providing automatic selection of a line key. When a Key Telephone (programmed for *Prime Line Assignment*) goes off-hook, the assigned outside line is seized automatically.

This feature seizes the line key when the line is **idle**. (This feature is not available for Single Line Telephones.)

PRIVACY on ALL CALLS gives the system users the security of knowing that no one can listen in on their ongoing conversation. Only the person who is talking can allow another party to enter the conversation, either via *Privacy Release* or *Add-On Conference*. Selected stations can enter another party's conversation using *Privacy Override*.

PRIVACY OVERRIDE enables a Key Telephone to be programmed to enter another party's conversation without that party's need to invoke the *Privacy Release* feature. To use *Privacy Override*, go off-hook on the intercom, press the **FNC** button, **CNF** button and CO/PBX line key to be overridden.

A programmable alert tone is provided to the overridden station prior to *Privacy Override* occurring.

This feature does not allow override of a *Private Line*.

Single Line Telephone users cannot access the Privacy Override feature.

PRIVACY RELEASE enables a Key Telephone user to allow another party into their private CO/PBX conversation. To use *Privacy Release*, press the **CNF** button. After the third party enters the conversation, *Privacy on All Calls* is restored.

Single Line Telephone users cannot be included in a Privacy Released call.

PRIVATE LINES can be assigned a maximum of two Key Telephones. Only the Key Telephone programmed for the *Private Line* feature has access to that line, no LED line status indication is provided to any other station. A particular Key Telephone may be assigned to have both Private Lines or two Key Telephones may be assigned one Private Line each.

PROGRAMMABLE PAUSE for SPEED DIAL is especially useful when accessing a Specialized Common Carrier.

During *Speed Dial* memory programming, pressing the **LNR/SPD** button adds a *Pause* into the dialing pattern. The duration of the *Pause* is programmable. Each *Pause* counts as one digit in the buffer. Pauses cannot be programmed into a Single Line Telephone's Station Speed Dial buffers.

PROGRAMMING by KEY TELEPHONE of system functions and timers is permitted by either of the two system *Attendant Positions* (ports 10 and 11). An ETZ-16D-1 is required.

PUSHBUTTON DIALING - DTMF or DP is provided to all stations for simplified and speedy calling.

The actual dialing signals transmitted to the CO/PBX network will be consistent with the type of CO/PBX line terminated in the KSU. The Electra 8/24 can accept termination of a combination of **DTMF** and **DP** (rotary) CO/PBX lines.

RECALL/FLASH BUTTON is provided on all Electra 8/24 Key Telephones. The **RECALL** button can be used to generate either a hookflash to access features provided by an outside exchange (CO, PBX, or CENTREX) or to abandon a call while retaining the outside line to originate another call.

RESIDENT SYSTEM PROGRAM is located in the memory of the Electra 8/24 Electronic Key Telephone System's CPU and enables the system to function fully after power up. This allows system operation before starting any programming. It also provides the installer a method of testing the system for accurate operation and programming comparison.

RESTRICTION - OUTGOING is a software function allowing customized and cost effective usage of outside line calling. Assignment is on a per station, per line basis.

RESTRICTION - TOLL with OVERRIDE aids in customizing station dialing to individual customer's needs. The Electra 8/24 Electronic Key Telephone System's advanced *Restriction* package assists in controlling outside call usage based on area codes (*Toll Restriction*). A maximum of six digit restrictions are possible. The *Restriction* feature offers an *Override* capability to allow *Equal Access* to Secondary Common Carriers.

RING TONE VARIATION is a feature provided to Key Telephone users and is selectable by each user. Each position will provide a different *Ring Tone*. This variation allows users to have their own distinctive Ring Tone for easy call identification. Three different Ring Tones are available.

RINGING LINE PREFERENCE allows Key Telephone users to answer a ringing call by going off-hook.

SAVE AND REPEAT provides Key Telephone users with the ability to save an outside number that is dialed from their station. This unique feature allows a user to Save (for later reuse) the CO/PBX number dialed while talking on a CO/PBX line. Only one number can be saved in memory at a time. System software version 3.0 (or higher) is required to support this feature.

SECURITY ALARM feature of the Electra 8/24 Electronic Key Telephone System provides two *Alarm* circuits. When activated, these circuits provide an audible tone signal to all **idle** Key Telephone speakers. The optional DPH-Z KTU contains the two *Security* detecting circuits and must be installed in the KSU for this feature to function.

When activated, the *Security Alarm* circuit also provides an LCD indication to all **idle** ETZ-16D-1 Key Telephones showing which **Alarm** is active. Only the Attendant Key Telephone can cancel (reset) the **Alarm** signal.

NOTE: This security feature should not be used as a primary source of protection.

SINGLE LINE TELEPHONE CONNECTION provides for the connection of a maximum of three Single Line Telephones. These telephones can be used to make CO/PBX calls, intercom calls, and paging calls.

This option requires the installation of the EXS-Z KTU. If installed, this KTU will provide the termination for a maximum of three Single Line Telephones, three Key Telephones, and two CO/PBX lines. System software version 3.0 (or higher) is required to support this feature.

SPEED DIAL - STATION offers every station in the system access to a personal listing of a maximum of twenty *Speed Dial* memory buffers. Each memory buffer has the capability of storing a maximum of twenty four digits (Key Telephones) or twenty two digits (Single Line Telephones) or five other buffer

numbers (*Nesting Dial*). Each memory buffer is programmed by the individual station user.

Single Line Telephone users cannot access Nesting Dial.

SPEED DIAL - SYSTEM offers every station in the system access to an additional commonly used file of eighty *Speed Dial* memory buffers. Each buffer has the ability of storing a maximum of twenty four digits. These memory buffers can only be programmed by the Attendant.

STATION CALL TRANSFER with RECALL IDENTIFICATION allows a call to be transferred to a station when it is busy or *Ring Transferred* when it is idle. If the transferred call is not answered within a preprogrammed period of time, the initiating station is recalled. The *Recall* will be signaled by a distinctive tone and LED flash rate. ETZ-16D-1 Key Telephones also receive *Identification* on their LCD indicating which line is recalling.

STATION MESSAGE DETAIL RECORDING - SMDR is provided by the optional SMDR-Z KTU. This KTU provides *Detailed* call *Records* of call activity in the system. *Records* are generated for all outgoing CO/PBX calls. Extension number, CO/PBX line number, date, number dialed, time of origination, and call end time are some of the information provided by this KTU. A locally provided printing device needs to be connected to the RS-232C output jack from the KTU.

STEP CALL allows station users, who receive a busy signal when attempting an internal call to another station, to *step* the call to the next station (within the same 10's group) by dialing the digit 1.

STORE AND REPEAT allows a Key Telephone user to store any number into memory (while talking on a CO/PBX line) for later reuse. Only one number can be stored in memory at a time. System software version 3.0 (or higher) is required to support this feature.

TANDEM CONFERENCE provides the ability for a Key Telephone user to establish a conference with two CO/PBX lines by placing them on hold. The station user can hang up freeing that station for other uses. The conference may be reentered at any time by the Key Telephone user.

Only one *Tandem Conference* can be in progress at a time.

The *Tandem Conference* feature requires one station position, therefore, reducing the maximum station capacity by one.

The Tandem Conference feature cannot be accessed from a Single Line Telephone.

TENANT SERVICE allows the system's extensions to be subdivided into four groups. Each group can have access to their own CO/PBX lines and *Call Pickup Group*.

THREE MINUTE REMINDER can be provided to Key Telephone users that originate and answer CO/PBX calls. This timed signal will alert a user every three minutes during a CO/PBX call to help keep the user aware of the length of time they are in conversation.

This feature is not available for Single Line Telephones.

TONE OVERRIDE allows a Key Telephone user to signal another (busy) Key Telephone user. This tone signal is heard only by the called and calling extension users.

Once alerted, a Key Telephone user can immediately answer the Tone *Override* by placing the existing call on hold.

The Tone Override feature does not apply to Single Line Telephones.

TWO COLOR LEDs are provided on the line keys of every Key Telephone to identify the status of different lines. The color **green** is used to show the status of *I-Hold, I-Use, Exclusive Hold, ringing transfers, and Recall*. Other status indications are shown in **red**. The *DSS/BLF Console* is also provided with two color LEDs on *Direct Station Selection* buttons. **Green** indicates the status of *Message Waiting* and **red** indicates the status of the associated extension.

USER PROGRAMMING CAPABILITY reduces installer involvement/time and permits the user to make their own changes. Key Telephone users are able to program such features as *Station Speed Dial, Ring Tone,* and *Background Music* (by dialing an access code).

VOLUME CONTROL on each Key Telephone is adjustable by the individual user. Each user can alter the volume of the built-in speaker by adjusting the slide lever located on the lower front edge of the Key Telephone housing. There is also a three position selector switch located on the bottom of the Key Telephone. This switch enables the user to adjust the ring tone volume.

By pressing the **FNC** button and dialing the digit **2**, the receiving volume level of the Key Telephone's handset can be increased to compensate ICM or CO/PBX volume loss.

WALL MOUNTING - KEY TELEPHONE permits the mounting of each Key Telephone with the installation of the optional WMU-Z Unit.

SECTION 150
LCD INDICATIONS

FUNCTION	DISPLAY	MEANING
DOOR LOCK RELEASE	door 1 rLS	● Door Lock number 1 released
SECURITY ALARM	SEC AL 1	● Security device number 1 activated
CLOCK	1-25 23-59 (1-25 11-59P)	● Jan. 25 23:59 [24 hour clock] ● (Jan. 25 11:59 p.m.) [12 hour clock]
CALL DURATION	00-59	● 0 minutes 59 seconds
CO/PBX LINE SEIZURE	L1 826-4111	● Accessed L1, CO/PBX line number 826-4111
DIALED CO/PBX NUMBER	518 444 2783	● Number just dialed
LAST CO/PBX NUMBER REDIAL / SPEED DIAL	Lnr - SPd - - Ln = 518 444 2783 01 = 301 597 2132 01 = nonE	● LNR/SPD button pressed ● # pressed after LNR/SPD ● Speed Dial buffer 1 accessed, number sent ● Speed Dial buffer not programmed, empty
DO NOT DISTURB	dnd SEt dnd CLEAr	● Set ● Canceled
EXTERNAL PAGING	12 - - [75] EP ALL 12 - - [76] EP	● All zone paging (calling station) ● Zone 1 paging (calling station)
CONFERENCE	[11] [15] CnF '11' [15] [10] 00-59 L1 L2 00-59	● ICM conference between extension 11 and 15 ● Extension 11 on hold ● 1 CO/PBX - 2 extension Conference. 00-59 is call duration. ● 2 CO/PBX - 1 extension Conference. (Key Telephone only)
CALL FORWARD	CF 11 - - [31] 15 - - [21] CF CF CLEAr CF SYS CLEAr	● Call Forward to extension 31 from extension 11 ● Call Forward to extension 21 (calling station) ● Call Forward clear ● Call Forward system clear (Attendant)
TIME SET	07 - 43 P	● Set (7 : 43 p.m.)
CALLBACK REQUEST	18 - - [21] Cbr 18 - - [21] [13] [18] [44] Cbr SYS CLEAr	● Callback Request to extension 21 from extension 18 ● Called party Callback memory full, request denied ● Callback Request from extensions 13, 18, and 44 in order of receipt ● Callback Request system canceled (Attendant)
INTERNAL PAGING	12 - - [70] iP ALL int PAgE 12 - - [71] iP int PAgE	● All call paging (calling station) 70 is the access code ● All zone paging (called stations) ● Zone 1 paging (calling station) 71 is the access code ● Zone 1 paging (called)
OFF-HOOK RING ASSIGNMENT	oFF H ringing	● Set and Cancel
RING TONE ASSIGNMENT	ring ASSign	● Set and Cancel
BUSY INTERCOM DATA	buSY	● All intercom paths busy
MISTAKE	Error	● Invalid operation
FEATURE ACCESS KEY PROGRAMMING {See Access Code Table.}	05 = 0 = 78	● 05 (Line key number) ● 0 (function code) ● 78 (feature access number)

NOTE: The display column shows LCD indication as they appear on the Key Telephone LCD

LCD INDICATIONS CONTINUED

FUNCTION	DISPLAY	MEANING
DOORPHONE	dr PH 1 10 = = dr PH 1	• Incoming from Doorphone 1. • Extension 10 received the call **OR** Ext. 10 called Doorphone 1.
SELF EXTENSION IDENTIFICATION	12 = Port 10	• Extension 12, port 10
NIGHT MODE	nt SEt nt CLEAr n 1 - 24 10 - 59 P	• Set (shows for 5 seconds) • Cancel (shows for 5 seconds) • Clock display in **night mode** on all ETZ-16D-1 TEL
BGM (STATION)	bAC gnd on bAC gnd off	• Set • Clear
CALLBACK REQUEST RESET	Cbr SYS CLEAr	• Callback Request reset - system (Attendant)
FUNCTION LED CLEAR	FnC LEd CLEAr	• Function lamp reset
SPEED DIAL NUMBER CONFIRMATION	xx = nonE	• Speed dial buffer xx has no number programmed
TONE OVERRIDE	10 - - [12] t - o 12 - - [10] t - o	• Sending Override Tone to extension 12}LCD of 10 • Override Tone received at extension 12}LCD of 12
ICM CALL	10 - - [15] 10 = = [15] 15 - - [10] 15 = = [10]	• Extension 10 calling extension 15}LCD of 10 • In conversation • Called by extension 10}LCD of 15 • In conversation
AUTOMATIC CALLBACK	45 - - [10] At Cb 45 - - [10]	• Automatic Callback to extension 10 from extension 45 • Called party Callback memory full, request denied
RING TRANSFER	12 - - [17] Co trF	• CO/PBX call transferred from extension 17 to extension 12
SMDR PRINTER	PrintEr tESt PrintEr diSCnCt	• Printer test mode • Printer disconnected

CALENDAR SET	07 - 22 3 1987	• Set (July 22 Wednesday 1987)
		  0 = Sunday
		  1 = Monday
		  2 = Tuesday
		  3 = Wednesday
		  4 = Thursday
		  5 = Friday
		  6 = Saturday

HOLD RECALL	rCL L1	• Recall on Line Key 1
PRIVACY OVERRIDE	P-rLS [ ]	• Privacy Override
CO/PBX LINE QUEUING	CO LinE rSV CO LinE rSV Clr CO LinE iDLE	• Set (CO/PBX line reserve) • Queue cleared • CO/PBX line idle
SAVE/STORE AND REPEAT DIAL	Sr = 201 344 5961 Sd = 718 225 1213	• Save Dial (Set) • Save/Store Dial (Repeat)

NOTE: The display column shows LCD indication as they appear on the Key Telephone LCD

SECTION 160
FEATURE ACCESS CODES (NUMBERING PLAN)

When the Key Telephone is idle:

FEATURE	ACCESS CODE
Background Music Selection (On/Off)	FNC → 93 → FNC
Call Forward Set (Software Version 1.1 only)	FNC → 60 → Station Number → FNC
Call Forward Reset (Software Version 1.1 only)	FNC → 69 → FNC
Call Forward Reset - System (Attendant)	FNC → 68 → FNC
Call Forward Set and Reset (Software Version 2.0 or higher)	FNC → 60 → Station Number → FNC
Callback Request Reset - System (Attendant)	FNC → 88 → FNC
Do Not Disturb (DND) Set and Reset	FNC → 65 → FNC
FNC Lamp Reset	FNC → 99 → FNC
Last CO/PBX Number Redial Confirmation	CNF → LNR/SPD → #
Night Transfer (Attendant) Set and Clear	FNC → 80 → FNC
Off-Hook Ring Assignment	FNC → LNR/SPD → * → 3 → x → FNC x = 0 (No Ring) 1 (Ring)
Repeat of the Save/Store Dial Number	LNR/SPD → *
Ring Assignment (Day)	FNC → LNR/SPD → * → 2 → Line Keys → FNC
Ring Tone Selection	FNC → LNR/SPD → * → 1 → x → FNC x = 1 (Low Frequency) 2 (Medium Frequency) 3 (High Frequency)
Security Alarm Reset (Attendant)	FNC → 78 → FNC
Self Extension Number Identification Display	FNC → 4
SMDR Printer Test (Attendant)	FNC → 9* → FNC
Speed Dial Number Confirmation	CNF → LNR/SPD → xx xx = 2 Digit Buffer Number
Storing Speed Dial Number into Memory - Station	FNC → LNR/SPD → xx → yyyy → FNC xx = 2 Digit Buffer Number yyyy = Outside CO/PBX Number
Storing Speed Dial Number into Memory - System (Attendant)	FNC → LNR/SPD → xx → yyyy → FNC xx = 2 Digit Buffer Number yyyy = Outside CO/PBX Number

When the Station is connected to the intercom:

FEATURE	ACCESS CODE
Call Doorphone 1	81
Call Doorphone 2	82
Call for an Attendant, Automatic Callback from Call Waiting	0
Call Park (Retrieve) (Key Telephone only)	62
Call Pickup - Incoming CO line (inside of tenant group)	69
Call Pickup - Incoming CO/PBX line (inside of tenant group)	66
Call Pickup - Incoming CO/PBX line (outside of tenant group)	60
Call Pickup - Intercom (inside of group)	61
Call Pickup- Incoming PBX line (inside of tenant group)	68
Callback Request (busy or no answer condition)	#
CO/PBX line access (Multi-Function)	80
CO/PBX line access (Multi-Function)	88
CO/PBX line access (Multi-Function)	9
CO/PBX Line Queuing (Cancel)	65
CO/PBX Line Queuing (Set)	64
External Page - All Zones	75
External Page - Zone 1	76
External Page - Zone 2	77
Internal Paging - All Call	70
Internal Zone Paging - Zone 1	71
Internal Zone Paging - Zone 2	72
Internal Zone Paging - Zone 3	73
Last CO/PBX Number Redial (Single Line Telephone only)	#
Meet-Me, Internal and External Page	74
PC Connection (Key Telephone only)	FNC → 7
Privacy Override (Key Telephone only)	FNC → CNF → Line Key
Receiving Volume Control, handset (Key Telephone only)	FNC → 2
Selection of a designated CO/PBX line	63 → CO/PBX Line Number
Speed Dial Access (Single Line Telephone only)	* → xx xx = Buffer Number
Station Speed Dial (Store) (Single Line Telephone only)	85
Step Call from Call Waiting, Voice/Tone Calling	1
Tone Override from Call Waiting (Key Telephone only)	*

When the Key Telephone is connected to the doorphone path:

FEATURE	ACCESS CODE
Door Lock Release	FNC → 6

When the Key Telephone is connected to a CO/PBX line:

FEATURE	ACCESS CODE
Automatic Redial	FNC → LNR/SPD
Call Park (Set)	HOLD → RECALL
Last CO/PBX Number Redial	FNC → 5
Manual Pause	FNC → 4
PC Connection	FNC → 7
Privacy Release	CNF
Receiving Volume Control of the Handset	FNC → 2
Save Dial, store into memory	FNC → #
Store Dial, store into memory	FNC → * →yyyy→FNC yyyy = Outside CO/PBX Number
To Access Speed Dial Buffer	FNC → LNR/SPD → xx xx = 2 Digit Buffer Number

SECTION 170
EQUIPMENT IDENTIFICATION

DESIGNATION	DESCRIPTION	MAXIMUM PER SYSTEM
ESZ-8-( ) KSU	Key Service Unit	1
EXK-Z ( ) KTU	Expansion Key Telephone Unit (six Key Telephones & two CO/PBX lines)	2
EXS-Z KTU	Expansion Single Line Telephone Unit (three Single Line Telephones, three Key Telephones & two CO/PBX lines)	1
DPH-Z KTU	Doorphone Key Telephone Unit	1
ESP-Z KTU	External Speaker Key Telephone Unit	1
SMDR-Z KTU	Station Message Detail Recording Key Telephone Unit	1
PFT-Z KTU	Power Failure Transfer Key Telephone Unit	4
HFU-Z Unit	Handsfree Unit	24
ADA-Z Unit	Ancillary Device Adaptor Unit	24
ETZ-16-1 TEL	Eight Line Key Telephone	24
ETZ-16D-1 TEL	Eight Line Key Telephone with Liquid Crystal Display	24
EDZ-24-1 DSS/BLF	Thirty Three Button Direct Station Selection / Busy Lamp Field Console	2
ETE 1-2/ETE-1HM-2	Single Line Telephone	3
DP-A-1 Unit	Doorphone	2
WMU-Z Unit	Wall Mounting Unit For a Key Telephone	24
FMU-Z Unit	Floor Mounting Unit for the Key Service Unit	1

170.1   GENERAL INFORMATION

A copy of the Job Specifications (ND-20565), an installation instruction sheet, and a KSU wall mounting template are included with the ESZ-8-( ) KSU. All optional equipment such as external amplifier, MOH source, BGM source, external speaker, modems, etc. must be locally provided.

170.2   EQUIPMENT DESCRIPTION

1. ESZ-8-( ) KSU

   This is the basic system cabinet that houses the system power supply, *Battery Backup*, termination for a maximum of four CO/PBX lines, twelve Key Telephones, *Music On Hold* source, a *FAX* machine, *External Speakers*, *Background Music* source, two *DSS/BLF Consoles*, two synthesized music tunes for *Music On Hold, etc.*

   This cabinet houses the MBD(412)-Z ( ) KTU, which is the main printed circuit board. The MBD(412)-Z ( ) KTU contains the main CPU which controls the system via the various sub-CPUs. This KTU contains several connectors where the optional and expansion KTUs mount.

   Only one ESZ-8-( ) KSU can be used in the system.

2. EXK-Z ( ) KTU

   The Key Telephone/CO/PBX Expansion KTU provides system expansion of two additional CO/PBX lines and six additional Key Telephones.

   A maximum of two EXK-Z ( ) KTUs can be installed in a system. These KTUs mount onto the MBD(412)-Z ( ) KTU in positions **CN1,2** and **CN3,4**.

   This KTU contains circuitry for outside line seizure, ring detection, and Dial Pulse dialing conversion. Additionally, this KTU contains a DTMF generation section and supplies power to the Key Telephones terminated to it.

3. EXS-Z KTU

   The Single Line and Key Telephone/CO/PBX Expansion KTU provides system expansion of two additional CO/PBX line ports, three Single Line Telephone ports, three Key Telephone ports, and two Power Failure Transfer circuits built onto the EXS-Z KTU.

   Only one EXS-Z KTU can be installed in the system.

   This KTU mounts onto the MBD(412)-Z ( ) KTU in positions **CN1** and **CN2**. This KTU contains additional circuitry for generation of ringing signals for the Single Line Telephones, outside

ring detection, line seizure, Dial Pulse dialing, and DTMF receive/send section.

4. SMDR-Z KTU

   The Station Message Detail Recording KTU stores and generates detailed call records of all outgoing or outgoing transferred CO/PBX calls.

   Information provided by this KTU includes:
   - Extension Number Calling
   - CO/PBX Line Used for the Call
   - Start Time of Call
   - Time Call Finished
   - Number Dialed
   - Date of Call

   This KTU (maximum one per system) mounts onto the MBD(412)-Z ( ) KTU in position **CN11**.

   A printer or other peripheral recording device must be locally supplied and terminated to the RS-232C connector from the SMDR-Z KTU, located on the **J** connector guide rail, **J4**, of the ESZ-8-( ) KSU.

5. ESP-Z KTU

   The External Speaker Control KTU provides connections for *External Zone Page* speakers (maximum two) to the built-in 2 Watt amplifier, *External Tone Ring* control for **night mode** or high noise area CO/PBX audible signaling, *Background Music* input, and for an external amplifier for paging.

   Only one ESP-Z KTU can be installed in a system. It mounts in the card position next to the battery in the ESZ-8-( ) KSU and plugs into **CN10** on the MBD(412)-Z ( ) KTU.

6. PFT-Z KTU

   The Power Failure Transfer KTU provides CO/PBX dial tone to a Single Line Telephone during the period when power is completely lost to the system.

   Each PFT-Z KTU will transfer CO tip and ring to the Central Office Lines (maximum two) to accommodate Single Line Telephones (maximum two). A maximum of four PFT-Z KTUs can be installed in the system.

   A maximum of two PFT-Z KTUs can be mounted onto the MBD(412)-Z ( ) KTU, in position **CN15** and **CN16**. A PFT-Z KTU can be mounted onto each of the EXK-Z ( ) KTUs in position **CN6**.

Locally provided Single Line Telephones (when connected to the PFT-Z KTU) do not operate during normal system operation.

7. DPH-Z KTU
   The Doorphone/Security Alarm KTU controls the bidirectional internal conversations and signaling for a maximum of two Doorphone Units (DP-A-1).

   This KTU provides connection of up to two *Doorphones*, and/or two *Security Alarm* sensors, and/or two *Room Monitors*, and/or two *Door Lock Release* relays. Any combination of these four features can be installed with the exception of the *Room Monitor* and *Doorphone* (maximum of two combined).

   The KTU contains circuitry to adjust the volume of the ring tone to the Key Telephone from the *Doorphone*.

   This KTU mounts in the KSU between the MBD(412)-Z ( ) KTU and the ESP-Z KTU and plugs into the MBD(412)-Z ( ) KTU in position **CN9.**

   Only one DPH-Z KTU can be installed in a system.

8. DP-A-1 UNIT
   This unit is used as a *Doorphone* to originate a tone signal to preassigned Key Telephones using a call button. This unit is generally installed at front and rear doors of secured work areas. The DP-A-1 Unit can also be used as a one way *Room Monitor* to listen to an area.

   This unit requires one pair wiring to the MDF for termination into the system.

   A maximum of two, weather resistant, DP-A-1 Units can be installed in a system.

9. ETZ-16-1 TEL
   This multiline Key Telephone is a fully modular instrument with eight CO/PBX line keys (each with *Two Color LEDs*), seven function buttons, four programmable **Feature Access** keys with red LED, four programmable **Feature Access** keys without LED, a 3 x 4 pushbutton dial pad, and an intercom LED.

   Line keys LK1~LK8 can be assigned for CO/PBX line access. If all eight CO/PBX ports are **not** installed in the system, the unused line keys can be programmed for **Feature Access** (*DND, Speed Dial, Doorphone*, etc.). Refer to the programming

section, Memory Blocks 2-01 and 3-09, for more information.

Line keys LK9~LK12 can be assigned for *Direct Station Selection (DSS)* with *Busy Lamp* status indication *(BLF)* or any **Feature Access** (*DND, Speed Dial*, etc.).

Line keys LK13~LK16 can be assigned for **Feature Access** keys to such features as *Speed Dial, Call Pickup, Paging* access, *Direct Station Selection* without *Busy Lamp* status, etc.

This instrument requires twisted two pair cabling to the MDF for termination.

A maximum of twenty four ETZ-16-1 Key Telephones can be installed in a system.

10. ETZ-16D-1 TEL
    This multiline Key Telephone is a fully modular instrument with eight CO/PBX line keys (each with *Two Color LEDs*), seven function buttons, four programmable **Feature Access** keys with red LED, four programmable **Feature Access** keys without LED, a 3 x 4 pushbutton dial pad, an intercom LED, and a seven segment sixteen character *Liquid Crystal Display*. This Key Telephone is also provided with a modular plug for the termination of a modem for data transfer applications, a mini-phono jack for the installation of a recording machine to record telephone conversations, and connectors to accept the optional HFU-Z Unit and the ADA-Z Unit.

    This type Key Telephone should be installed as an Attendant Key Telephone (ports 10 and 11).

    Line keys LK1~LK8 can be assigned for CO/PBX line access. If all eight CO/PBX lines are not installed in the system, the unused line keys can be programmed for **Feature Access** (*DND, Speed Dial, Doorphone*, etc.). Refer to the programming section, Memory Blocks 2-01 and 3-09, for more information.

    Line keys LK9~LK12 can be assigned for *Direct Station Selection (DSS)* with *Busy Lamp* status indication *(BLF)*, or any **Feature Access** (*DND, Speed Dial, etc.*).

    Line keys LK13~K16 can be assigned for **Feature Access** keys to such features as *Speed Dial, Call Pickup, Paging* access, *DSS* without *BLF*, etc.

    This instrument requires twisted two pair cabling to the MDF for termination.

A maximum of twenty four ETZ-16D-1 Key Telephones can be installed in a system.

11. HFU-Z UNIT

This unit provides the ETZ-16D-1 Key Telephone with *Full Handsfree* operation for both internal and outside calls. It is mounted inside of the Key Telephone in the compartment located at the bottom of the Key Telephone. The Handsfree Unit utilizes the Key Telephone's built-in speaker and microphone for the conversations.

Only one HFU-Z Unit per ETZ-16D-1 Key Telephone can be installed.

12. ADA-Z UNIT

This unit provides the ETZ-16D-1 Key Telephone with termination capabilities for installation and use of a headset jackset, handset amplifier, or external speakerphone *etc*. It is mounted inside of the Key Telephone in the compartment located at the bottom of the Key Telephone.

Only one ancillary device can be connected to the ADA-Z Unit. Only one ADA-Z Unit can be installed in an ETZ-16D-1 Key Telephone.

13. EDZ-24-1 DSS/BLF

This unit provides *Direct Station Selection* with *Busy Lamp Field* indication for a maximum of twenty three extensions and nine features.

The first twenty four buttons are dedicated to the twenty three extensions of the system providing the Attendant with single button access to every station. Each of these twenty four non-locking buttons are associated with a *Two Color LED*, located above the designation strip. The **red** LED shows the status of the associated station, such as *Do Not Disturb (DND)* and busy (in use). The **green** LED indicates that the Attendant has set a *Message Waiting* indication to the associated station.

The nine fixed non-locking **Feature Access** buttons are for single button access to several of the system's features, such as *Paging* (one per internal zone and All Call), *Doorphones, Night Transfer, Message set, and All Zone External Page*. Each of these buttons are associated with a **red** LED which will indicate when these features are in use (busy).

Two EDZ-24-1 *DSS/BLF Consoles* can be installed in a system, one per Attendant ETZ-16D-1 Key Telephone. Each EDZ-24-1 is supplied with an AC adaptor, which plugs into the *DSS/BLF Console* and then a nearby 120 volt AC outlet. This adaptor supplies the necessary voltage to light the thirty three LEDs on the Console.

Each *DSS/BLF Console* requires twisted one pair cabling run to the MDF for termination to the KSU.

Each *DSS/BLF* uses a station port position, reducing the key set system capacity.

14. WMU-Z UNIT

This unit enables a Key Telephone to be wall mounted. It is constructed of the same color and material as the Key Telephone.

15. FMU-Z UNIT

This unit enables the Key Service Unit to be mounted on the floor when wall mounting is not possible.

This unit requires an installation space of at least 510mm (20") wide, by 240mm (9 19/32") deep, by 516mm (20 5/8") high to allow for its installation and minimum area to work on the equipment.

CHAPTER 2
HARDWARE INSTALLATION

CHAPTER 2
HARDWARE INSTALLATION

SECTION 210
GENERAL

This chapter provides the reader with comprehensive details to properly install each of the Electra 8/24 Key Telephone System components.

It is recommended that this chapter be read in its entirety to familiarize yourself with its contents. This will enable a more productive installation and cut-over.

Power being supplied to the system should be applied as the final step before system operational testing.

The Key Telephone Units (KTUs) make extensive use of CMOS technology. CMOS technology is very susceptible to static. **STATIC DISCHARGES TO ANY KTU MUST BE AVOIDED.**

The MBD(412)-Z ( ) and SMDR-Z KTUs contain a battery to protect the memory of that KTU. To ensure memory retention the switch (SW1) must be **ON.** Refer to Table 200-1 MBD(412)-Z ( ) Switch Identification.

SECTION 220
SPECIFICATIONS

220.1 GENERAL INFORMATION
Before configuring any system, complete the Job Specification Sheets (ND-20565) provided with the KSU. Refer to Section 370 in Chapter 3 of this manual for a sample of the Job Specification Sheets. Ensure all types of station equipment and feature options are considered.

An understanding of System Programming is required to properly complete the Job Specification Sheets (refer to Section 370 in Chapter 3 of this manual).

Table 200-1 MBD(412)-Z ( ) Switch Identification

SWITCH	PURPOSE
SW1	Memory retention, always keep **ON**
SW2	Synthesized Music On Hold (left = *Green Sleeves*, right = *Two Minuets*)
SW3	CO/PBX line 1, external pad control, **OFF** = 0 dB loss, **ON** = 3 dB loss
SW4	CO/PBX line 2, external pad control, **OFF** = 0 dB loss, **ON** = 3 dB loss
SW5	CO/PBX line 3, external pad control, **OFF** = 0 dB loss, **ON** = 3 dB loss
SW6	CO/PBX line 4, external pad control, **OFF** = 0 dB loss, **ON** = 3 dB loss

220.2   PROGRAMMING STATION

A maximum of two programming positions are available in a system. Station equipment, connected to the programming positions, must be an ETZ-16D-1 Key Telephone. These two programming positions are system Attendants and are fixed in system software as Key Telephone ports 10 and 11.

NOTE: During System Programming, only one Attendant Key Telephone can be **off-line** at a time.

220.3   DETERMINATION OF EQUIPMENT REQUIRED

1. **Station Equipment**
   Determine the type and the quantity of each station being installed.

   Types of station equipment available are as follows:
   A. ETZ-16-1 TEL
      8 line Key Telephone
      ● 8 line keys with *Two Color LED* indication for CO/PBX line access
      ● 8 programmable **Feature Access** keys

   B. ETZ-16D-1 TEL
      8 line Key Telephone with LCD
      ● 8 line keys with *Two Color LED* indication, for CO/PBX line access
      ● 8 programmable **Feature Access** keys
      ● LCD to indicate station dialing and feature status.

   C. Single Line Telephones

   D. EDZ-24-1 DSS/BLF Console

2. **Interface KTU**
   To determine the quantity of required interface KTUs, refer to Table 200-2 KTU Identification.

   For reference, mounting location of interface KTUs are shown in Figure 200-1 Front View of ESZ-8-( ) KSU and Table 200-3 MBD(412)-Z ( ) KTU Connector Identification.
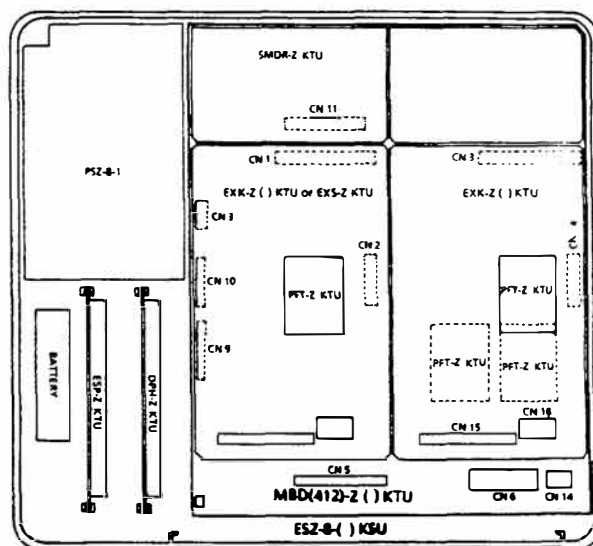
Figure 200-1   Front View of ESZ-8-( ) KSU

3. **ESZ-8-( ) KSU**
   A. The Key Service Unit (KSU) houses the KTUs required for controlling the Electra 8/24 System.

   B. The KSU has a built-in power unit (PSZ-8-1 PSU) that supplies power to all KTUs and Key Telephones. The KSU also has a battery to backup full operation of the system, for approximately ten minutes, during a commercial power failure.

   C. The MBD(412)-Z ( ) KTU accommodates four CO/PBX lines and twelve Key Telephones.

   D. Various units to be installed in the KSU are shown on Table 200-4 System Components.

4. **Optional Equipment**
   Table 200-5 Optional Equipment shows the optional equipment that can be mounted into Key Telephones.

220.4   POWER REQUIREMENTS

The system must have a dedicated grounded nominal 120V ac ± 10% outlet.

The AC outlet must be a standard 120V ac 15A three prong type, which provides circuit ground. If circuit ground is not available, a locally provided **frame ground to earth ground** connection must be used (see paragraph 220.5).

It is recommended that the best locally available AC surge protection be installed at the AC power outlet.

The AC power must be within the limits shown in Table 200-6 Power Consumption.

1. **AC Input (PSZ-8-1 PSU)**
   A. 120V ac $\pm$ 10%, 60 Hz $\pm$ 10%, single phase.

   B. A dedicated outlet, separately fused and grounded is required.

2. **Power Required for DSS/BLF**
   6V dc

Connector Polarity

Positive   Negative
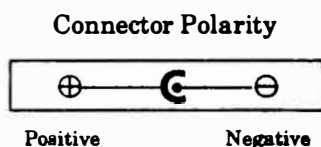
3. **Power Consumption**
   For power consumption information, refer to Table 200-6 Power Consumption.

4. **Power Supply Outputs**
   For power supply output information, refer to Table 200-7 Power Supply Outputs.

5. **Power Outputs - EXS-Z, RSG Section**
   Output Voltage: 75V ac RMS
   Output Frequency: 20 Hz

6. **Fuse Replacement**
   For fuse replacement specifications, refer to Table 200-8 Replacement Fuses.

220.5   GROUNDING REQUIREMENTS
The KSU must be properly grounded. If circuit ground is not available at the dedicated AC outlet, the following steps should be taken:

1. Provide a cold water pipe ground in accordance with the local operating telephone company procedures.

2. If cold water pipe ground is not available, a ground rod should be installed in accordance with the local operating telephone company procedures.

3. Where a ground other than circuit ground is used, a grounding terminal is provided on the PSZ-8-1 (in the KSU) as shown in **Figure 200-2 KSU Grounding.**

220.6   ELECTRICAL NOISE GENERATORS
Certain equipment, such as welding machines, thyristor driven power supplies, large electric motors, etc., generate electrical noise. As a stored program machine, the Electra 8/24 Electronic Key Telephone System is vulnerable to this noise. When this type of machinery is present at an installation, the following precautionary steps are suggested:

1. Locate the KSU, telephones, and cabling away from these machines.

2. If cables must pass near these machines, use shielded cable with the shield grounded.

3. Ensure all machines of this type are well grounded to a separate ground to minimize noise interference.
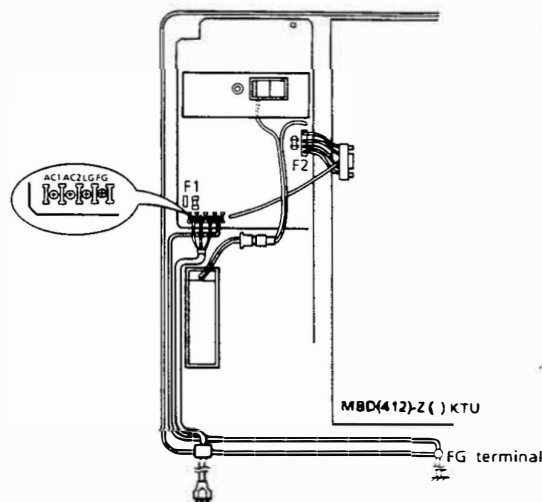
Figure 200-2   KSU Grounding

220.7   ADDITIONAL EQUIPMENT
Additional equipment is required with the station equipment, the KSU, and its components. This includes cables, modular connecting jacks, quick connect blocks, etc. This additional equipment must be locally supplied.

220.8   INSTALLATION CONFIGURATION EXAMPLE
Table 200-9 System Configuration is an example of the configuration requirements for the system. In the example, the following equipment is installed:

- 6 CO/PBX lines
- 12 Key Telephones without optional equipment
- 2 Key Telephones with HFU-Z Unit
- 2 Key Telephones with ADA-Z Unit
- 2 external speakers for zone paging
- 2 DSS/BLF Consoles
- 2 Doorphones
- SMDR

Refer to **Figure 200-3 System Block Diagram** for a conceptual representation of the system.

Table 200-2   KTU Identification

KTU	DESCRIPTION	MAXIMUM KTUs PER SYSTEM
EXK-Z ( ) KTU	This unit is used to provide 2 additional CO/PBX line ports and 6 additional Key Telephone ports.	2
EXS-Z KTU	This unit is used to provide 2 additional CO/PBX line ports, 3 additional Key Telephone ports, and 3 Single Line Telephone (SLT) ports and 2 Power Failure Transfer (PFT) circuits.	1
DPH-Z KTU	This unit allows communication with up to 2 Doorphones. The unit has relays to release 2 Door Locks and has 2 security interface circuits.	1
ESP-Z KTU	This unit has termination for 2 external speakers for paging and BGM, an external bell control, and termination for a external paging amplifier.	1
SMDR-Z KTU	This unit processes call information and sends ASCII data to a printer.	1
PFT-Z KTU	This unit switches 2 CO/PBX lines to 2 Single Line Telephones (SLTs) to originate and receive calls and talk during a power failure, which exceeds the system battery backup.	4

Table 200-3   MBD(412)-Z ( ) Connector Identification

CONNECTOR	PURPOSE
CN1	EXK-Z ( ) KTU or EXS-Z KTU (First Expansion)
CN2	EXK-Z ( ) KTU or EXS-Z KTU (First Expansion)
CN3	EXK-Z ( ) KTU (Second Expansion)
CN4	EXK-Z ( ) KTU (Second Expansion)
CN5	J1 (Station Amphenol Cable)
CN6	Four CO/PBX lines
CN7	NOT PROVIDED
CN8	NOT PROVIDED
CN9	DPH-Z KTU
CN10	ESP-Z KTU
CN11	SMDR-Z KTU
CN12	NOT USED
CN13	POWER SUPPLY
CN14	FAX MACHINE
CN15	PFT-Z KTU (CO/PBX Lines 1 & 2)
CN16	PFT-Z KTU (CO/PBX Lines 3 & 4)

Table 200-4   System Components

MODEL	MAXIMUM QUANTITY	DESCRIPTION
ESZ-8-( ) KSU	1	Electra 8/24 Key Service Unit
PSZ-8-1 PSU	1	Power Supply Contained in KSU
PE07-12R	1	System Backup Battery in KSU
MBD(412)-Z ( ) KTU	1	Main Key Telephone Unit Contained in KSU
EXK-Z ( ) KTU	2	Key Telephone CO/PBX Expansion Unit
EXS-Z KTU	1	Single Line Telephone, Key Telephone, CO/PBX Expansion Unit
SMDR-Z KTU	1	Station Message Detail Recording Unit
DPH-Z KTU	1	Doorphone Interface Unit
ESP-Z KTU	1	External Paging Unit
PFT-Z KTU	4	Power Failure Transfer Unit

Table 200-5   Optional Equipment

| OPTIONAL UNIT | KEY TELEPHONE | |
	ETZ-16-1	ETZ-16D-1
HFU-Z UNIT	NC	C
ADA-Z UNIT	NC	C

NC = Not connectable   C = Connectable

Table 200-6   Power Consumption

CURRENT DRAW	POWER DISSIPATION
AC : 0.5A	200 BTU

Table 200-7   Power Supply Outputs

DC VOLTAGE	MAXIMUM CURRENT
$+13.7V \pm 0.3V$	1.4 A
$+5V \pm 0.25V$	0.5A

Table 200-8   Replacement Fuses

FUSE#	LOCATION	PURPOSE	SPECS	SIZE
F1	PSZ-8-1 PSU	AC INPUT	125V, 2A	5.2mm X 20mm
F2	PSZ-8-1 PSU	DC INPUT	125V, 5A	5.2mm X 20mm
F1~F8	MBD(412)-Z ( ) KTU	CO/PBX (Inline)	.5A	10mmH X 10mmW X 6mmD
F1~F4	EXK-Z ( ) KTU	CO/PBX (Inline)	.5A	10mmH X 10mmW X 6mmD
F1~F4	EXS-Z KTU	CO/PBX (Inline)	.5A	10mmH X 10mmW X 6mmD
F1	EXS-Z KTU (SLI Board)	SLI Ring Signal (Output)	1A	10mmH X 10mmW X 6mmD

Table 200-9   System Configuration (Example)

| DEVICE	FUNCTION QUANTITY	REQUIRED UNITS	REQUIRED QUANTITY	REMARKS
Key Service Unit	1	ESZ-8-( ) KSU	1	Contains MBD(412)-Z ( ) KTU
Power Unit	1	PSZ-8-1 PSU	1	Contained in KSU
CO/PBX Line	6	EXK-Z ( ) KTU	1	4 CO/PBX line ports on the MBD(412)-Z ( ) KTU
Key Telephone	16			12 Key Telephone ports on the MBD(412)-Z ( ) KTU
DSS/BLF Console	2			Connects to Key Telephone ports
Doorphone	2	DPH-Z KTU	1	Mounts in the KSU
External Speaker	2	ESP-Z KTU	1	Mounts in the KSU
Station Message Detail Recorder	1	SMDR-Z KTU	1	Mounts on the MBD(412)-Z ( ) KTU
Handsfree Unit	2	HFU-Z UNIT	2	Installs into the ETZ-16D-1 Key Telephone
Ancillary Device Adaptor	2	ADA-Z UNIT	2	Installs into the ETZ-16D-1 Key Telephone for connection of ancillary equipment
Key Telephone	12	ETZ-16-1	12	Uses 12 keyset ports
Key Telephone	4	ETZ-16D-1	4	Uses 4 keyset ports
DSS/BLF Console	2	EDZ-24-1	2	Uses 2 keyset ports
Doorphone	2	DP-A-1	2	
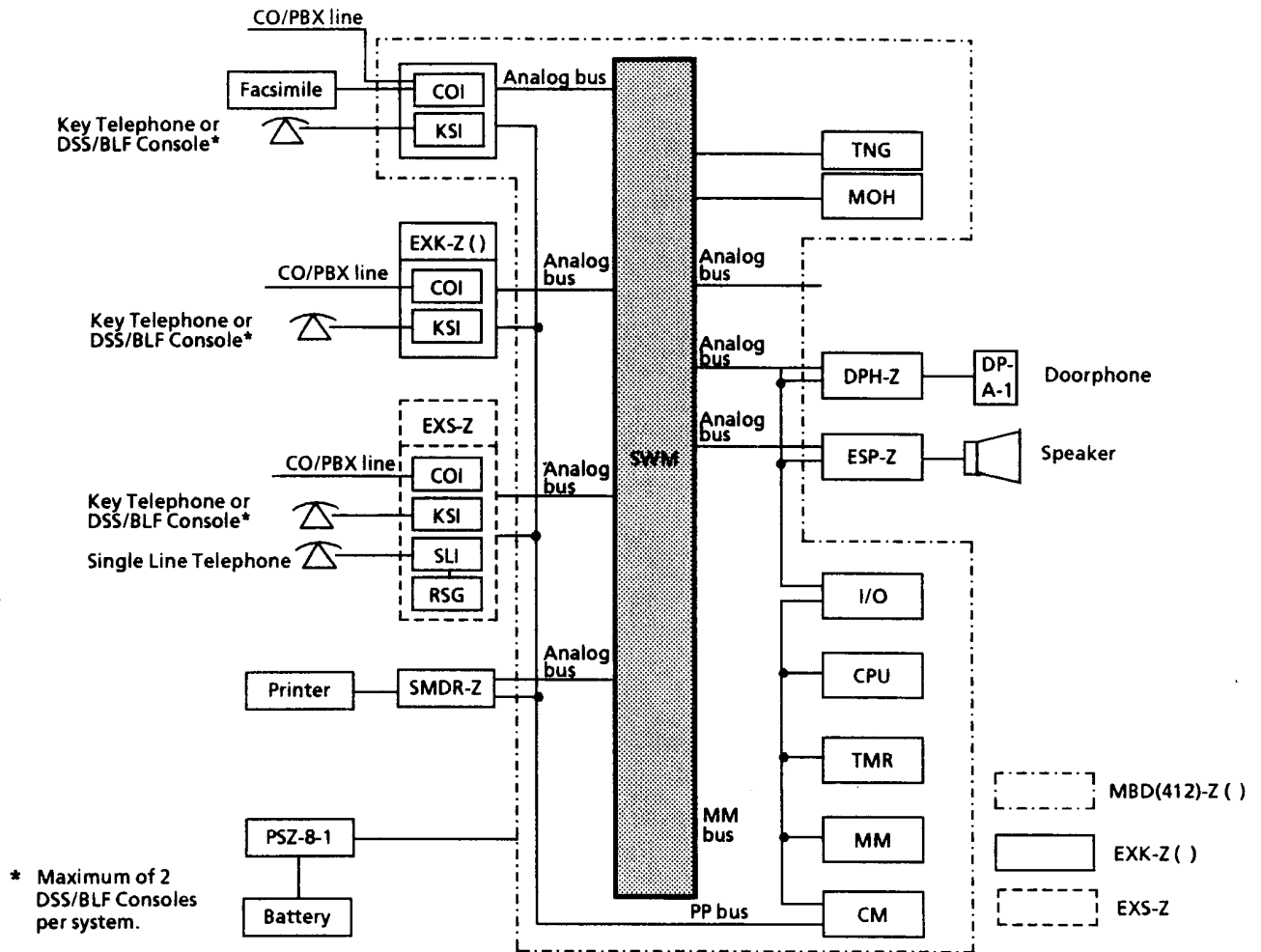
Figure 200-3   System Block Diagram

220.9   SYSTEM CAPACITY

1. The Electra 8/24 Electronic Key Telephone System capacities are as follows:

A. Outside lines: 8 lines max.

B. Intercom paths: 5 max. (4 if BGM Station Speaker is used)

C. Stations: 24 max.

D. DSS/BLF Console: 2 max.

E. System Speed Dial: 80 buffers (24 digits each)

F. Station Speed Dial: 20 buffers each station (Key Tel: 24 digits each)
                         (SLT: 22 digits each)

G. Conference circuits: 4 max.

200 - 7

2. The basic central equipment (KSU) of this telephone system contains one Main Board Unit with provision for up to two expansion units.

    A. MBD(412)-Z ( ) KTU: 4 CO/PBX lines and 12 Key Telephones

    B. MBD(412)-Z ( ) KTU + One Expansion KTU (EXK-Z ( ) or EXS-Z):   6 CO/PBX lines and 18 stations.

    C. MBD(412)-Z ( ) KTU + Two Expansion KTUs (EXK-Z ( )):   8 CO/PBX lines and 24 stations.

3. Combinations of *System Speed Dial* memory numbers can be assigned to *Station Speed Dial* (*Nesting Dial* memory assignment). By using this technique, a number that exceeds twenty four digits can be available for *Speed Dialing*.

220.10   CABLING REQUIREMENTS

The KSU can be equipped with three, fifty position, miniature ribbon type (female), amphenol connectors. Fifty position, miniature ribbon type connector (male), ended cables are required for connection to the Main Distribution Frame (MDF).

Allowable loop resistance, length, and type of station cable is as follows:

1. Maximum Loop Resistance and Cable Length, using 24 AWG

    A. ETZ-16-1:   40 ohms/825 feet (250m)
    B. ETZ-16D-1:   40 ohms/825 feet (250m)
    C. DSS/BLF Console: 40 ohms/825 feet (250m)
    D. Doorphone: 20 ohms/410 feet (123m)
    E. SLT: 600 ohms (including instrument)

2. Maximum Loop Resistance and Cable Length, using 22 AWG

    A. ETZ-16-1:   40 ohms/1250 feet (381m)
    B. ETZ-16D-1:   40 ohms/1250 feet (381m)
    C. DSS/BLF Console: 40 ohms/1250 feet (381m)
    D. Doorphone: 20 ohms/625 feet (188m)
    E. SLT: 600 ohms (including instrument)

3. Cable Type

    A. Key Telephone: Twisted 2 pair
    B. DSS/BLF: Twisted pair

    C. SLT: Twisted pair
    D. Music Source: Hi-Fi type shielded audio (MOH & BGM) cable
    E. External amplifier: Hi-Fi type shielded audio cable

220.11   ENVIRONMENTAL CONDITIONS

1. Temperature

    A. Operating: 32°F~104°F (0°C~40°C)
    B. Recommended long term:

                    50°F~90°F (0°C~32.2°C)

2. Humidity

    A. Operating: 10%~90% relative, non-condensing

220.12   DIMENSIONS AND WEIGHTS

Table 200-10   Dimensions and Weights of Components

COMPONENT	SHIPPING WEIGHT (kg)	HEIGHT (mm)	WIDTH (mm)	DEPTH (mm)
ESZ-8-( ) KSU	8 lbs 8 oz (4.0)	16" (400)	17 1/2" (440)	3 1/4" (80)
ETZ-16-1 TEL	2 lbs (0.9)	3 7/8" (97)	6 1/4" (156)	9 1/8" (228)
ETZ-16D-1 TEL	2 lbs 3 oz (1.0)	3 7/8" (97)	6 1/4" (156)	9 1/8" (228)
EDZ-24-1 DSS/BLF	14 oz (0.4)	3 7/8" (98)	2 5/8" (66)	9 1/4" (230)
DP-A-1	5 oz (0.2)	5 1/4" (130)	3 7/8" (98)	1 1/8" (28)
FMU-Z	7 lbs 7 oz (3.5)	20 5/8" (516)	20 3/8" (510)	9 1/2" (240)

220.13   OUTSIDE LINE TYPE

Two wire, loop start lines.

220.14   NETWORK AND CONTROL

1. Control

    A. Control: Stored program with distributed processing
    B. Central Processor: 8 bit microprocessor
    C. Clock: 6 MHz

D. Interface KTU (EXK-Z ( ), EXS-Z):
                    4 bit 1 chip microprocessor
E. Key Telephone: 4 bit 1 chip microprocessor
F. DSS/BLF Console: 4 bit 1 chip microprocessor

2. Telephones
    Key Telephones and DSS/BLF Consoles:
    ● Voltage: +10 - +13.7 V DC
    ● Maximum current: 100 mA

┌──┐
│ Acoustic characteristics meet Electronic Industry │
│ Association (EIA) standard proposal SP-1286 and │
│ standard EIA RS-470. │
└──┘

    Single Line Telephones:
    ● Standard 2500 Set: 500 Network
    ● Nominal Current: 35 mA
    ● Ring Signal: 65VAC RMS 20 Hz

220.15   VISUAL AND AUDIBLE INDICATIONS

1. Visual Indications
    LED indications on a Key Telephone shown in Table 200-11 LED Flash Patterns (Key Telephone).

2. EDZ-24-1 Visual Indications
    LED (BLF) indications on a DSS/BLF (EDZ-24-1) Console shown in Table 200-12 LED Flash Patterns (DSS/BLF Console) and Table 200-13 LED Indications (DSS/BLF Console) respectively.

3. Audible Indications
    Audible indications from a Key Telephone shown in Table 200-14 Tone Patterns (Key Telephone).

    Audible indications from a Single Line Telephone shown in Table 200-15 Tone Patterns (Single Line Telephone) and Table 200-16 Ring Patterns (Single Line Telephone).

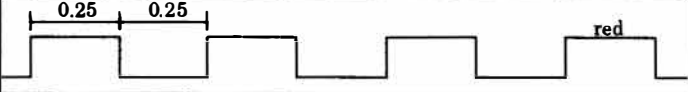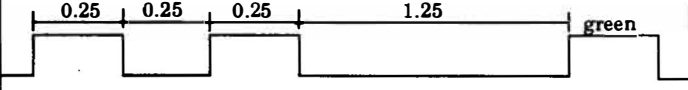Table 200-11   LED Flash Patterns (Key Telephone)
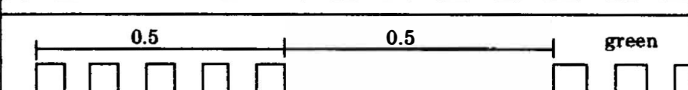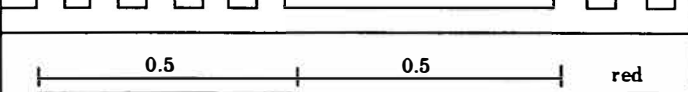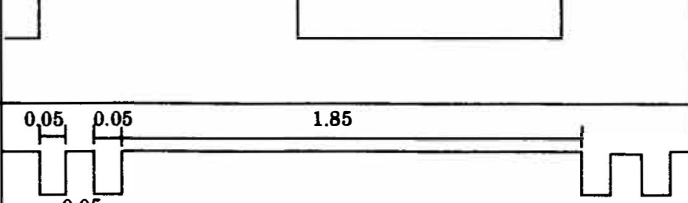
Usage	Cycle (Unit : second)	Duty Cycle
In Use CO/PBX LED DND, Call Forward, Programmable Feature Access Key LED	red	Steady light
Hold CO/PBX LED	0.25 0.25 red	(0.25 sec ON, 0.25 sec OFF)
I-Hold, Exclusive Hold CO/PBX LED	0.25 0.25 0.25 1.25 green	Blinking at 2 Hz intervals
Ringing Transfer CO/PBX LED	0.05 0.05 green	10 Hz flash (0.05 sec ON, 0.05 sec OFF)
Hold Recall, Exclusive Hold Recall, Call Park Recall CO/PBX LED	0.5 0.5 green	Flashing at 10 Hz intervals
Automatic Redial, FNC LED Privacy Release, CNF LED Incoming (CO/PBX, intercom) CO/PBX LED or ICM LED	0.5 0.5 red	(0.5 sec ON, 0.5 sec OFF)
I-Use (green) CO/PBX LED	0.05 0.05 1.85 0.05	Special wink

Table 200-11   LED Flash Patterns (Key Telephone) (continued)
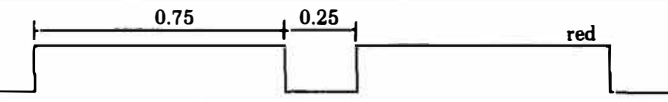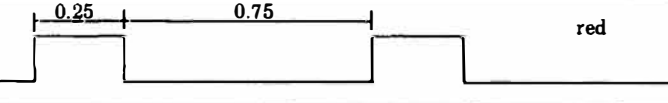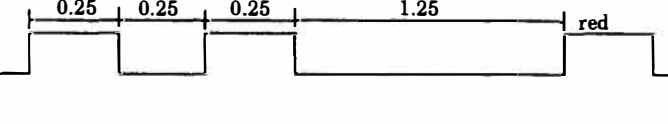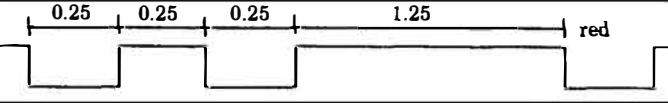
Usage	Cycle (Unit : second)	Duty Cycle
Call Forward All Programmable Feature Access Key LED	0.75 / 0.25 / red	(0.75 sec ON, 0.25 sec OFF)
Message display from DSS/BLF FNC LED	0.25 / 0.75 / red	(0.25 sec ON, 0.75 sec OFF)
Add-On Hold (originator), Intercom Hold (originator), CNF LED Callback Request FNC LED	0.25 / 0.25 / 0.25 / 1.25 / red	Blinking at 2 Hz intervals
Conference Hold (remaining party) CNF LED	0.25 / 0.25 / 0.25 / 1.25 / red	Blinking at 2 Hz intervals

Table 200-12   LED Flash Patterns (DSS/BLF Console)
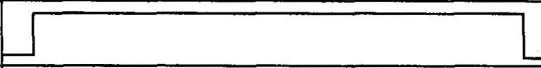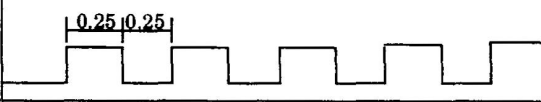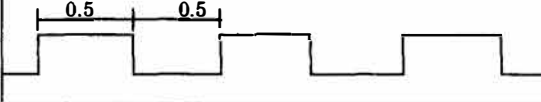
Usage	Cycle (Unit : second)	Duty Cycle
In Use (RED)		Steady light
Do Not Disturb Call Forward All (RED)	0.25 0.25	2 Hz blink (0.25 sec ON, 0.25 sec OFF)
Station Programming Mode (RED)	0.5 / 0.5	1 Hz blink (0.5 sec ON, 0.5 sec OFF)

Table 200-13   LED Indications (DSS/BLF Console)

LED Indication	ON	.5 sec ON .5 sec OFF 1 Hz	.25 sec ON .25 sec OFF 2 Hz	OFF
BLF (RED)	Busy	Station Programming Mode	DND, Call Forward All	Idle
Message (RED)	Message set mode			DSS/BLF Mode
Paging (RED)	Paging			No paging
Night (RED)	Night mode			Day mode
Doorphone (RED)	Busy	Key Tel Ringing		Idle
BLF in Message Mode (Green)	Message			No message

Table 200-14   Tone Patterns (Key Telephone)
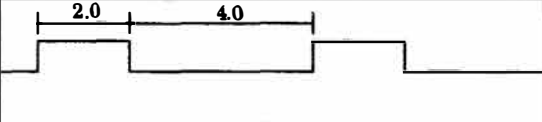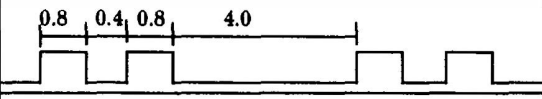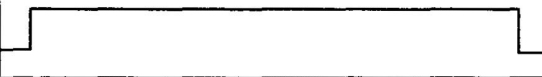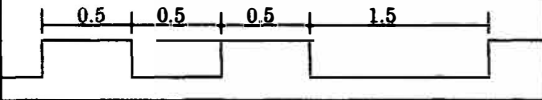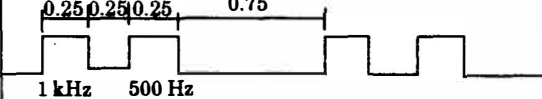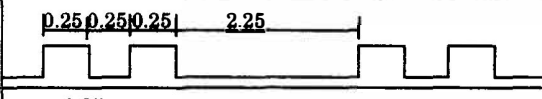
Tone	Cycle (Unit : second)	Frequency
CO/PBX Ring Tone	2.0 4.0	500 Hz/1 kHz 500 Hz/2 kHz 1kHz/2kHz 10 Hz Modulation
CENTREX Ring Tone	0.8 0.4 0.8 4.0	500 Hz/1 kHz 500 Hz/2kHz 1kHz/2kHz 10 Hz Modulation
Transfer Ring	0.5 0.5	500 Hz/1 kHz 10 Hz Modulation
ICM Dial Tone		500 Hz
Tone Burst, Tone Override	0.75	500 Hz
Busy Tone	0.5 0.5	500 Hz
Call Waiting Tone, Hold Recall Tone	0.5 0.5	1 kHz
Error Tone	0.25 0.25	1 kHz
ICM Ring Tone CO/PBX Line Queuing Recall	0.5 0.5 0.5 1.5	500 Hz
Doorphone Call Tone from Busy Station	0.25 0.25 0.25 0.75 1 kHz 500 Hz	500 Hz/1 kHz
Security Alarm Tone	0.25 0.25 0.25 2.25	1 kHz/2 kHz 10 Hz Modulation
3 Minute Alarm	0.25	1 kHz
Mode Set CO/PBX Line Queue Set		1 kHz

Table 200-15   Tone Patterns (Single Line Telephone)
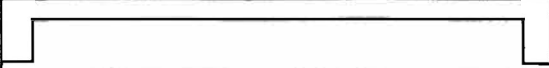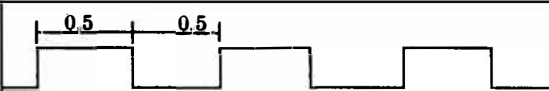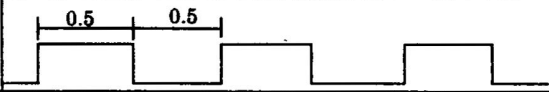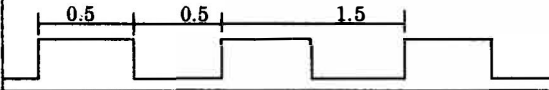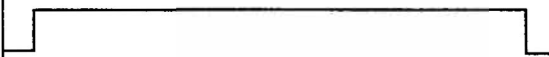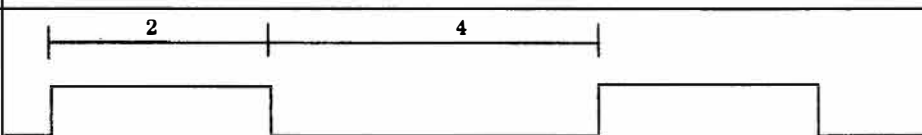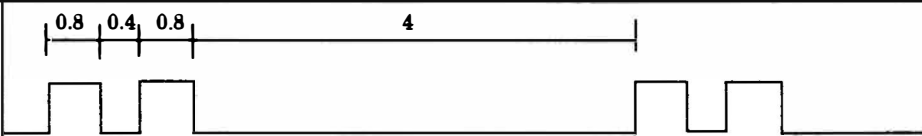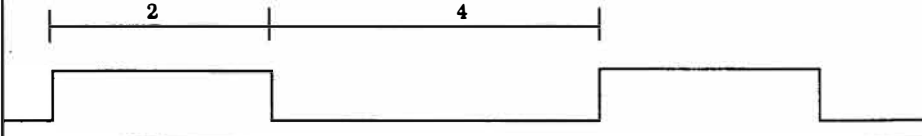
Tone	Cycle (Unit : second)	Duty Cycle
ICM Tone		450 Hz
Tone Burst	0.75	450 Hz
Busy Tone	0.5 0.5	450 Hz
Second Dial Tone	0.25 0.25	450 Hz
Call Waiting Tone	0.5 0.5	1200 Hz
Error Tone	0.25 0.25	1200 Hz
ICM Ring Tone CO/PBX Line Queue Recall	0.5 0.5 1.5	450 Hz
Mode Set Tone CO/PBX Line Queue Set		1200 Hz

Table 200-16   Ring Patterns (Single Line Telephone)

Tone	Cycle (Unit : second)
CO/PBX Ring Tone, Transfer Ring Tone	2 4
ICM Ring Tone (S4 Strap on EXS-Z in Position 1~2)	0.8 0.4 0.8 4
ICM Ring Tone (S4 Strap on EXS-Z in Position 2~3)	2 4

220.16   DIALING SPECIFICATIONS

Table 200-17   High/Low Group Frequencies

	Nominal High Group Frequencies (Hz)		
	1209	1336	1477
Nominal Low Group Frequencies (Hz) — 697	1	2	3
770	4	5	6
852	7	8	9
941	*	0	#

1. Dial Pulse Address Signaling

   A. Pulse rate: 10 pps/20 pps
   B. Percent break: 61 ±3 percent
   C. Interdigital interval: nominal 800 mS

2. DTMF Address Signaling

   A. Frequencies:
      Two sinusoidal signals, one from a high group of three frequencies and one from a low group of four frequencies.
   B. Frequency deviation: Less than ±1.5%
   C. Signal level:
      • Nominal level per
        frequency: − 6~ −4 dBm
      • Minimum level per frequency:
        ▸ Low group: −10 dBm
        ▸ High group: − 8 dBm
      • Maximum level per frequency
        pair: + 2 dBm
   D. Rise time: Within 5 mS
   E. Duration of dual frequency signal:
      • Default: 100 mS
      • Maximum: 300 mS
   F. Interdigital time:
      • Default: 100 mS
      • Maximum: 300 mS

3. Dialing Memories

   A. Station Speed Dial: 20 buffers per station
                           (Key Tel: 24 digits)
                           (SLT: 22 digits)
   B. System Speed Dial: 80 buffers per system
                           (Key Tel: 24 digits)
                           (SLT: 22 digits)

C. Last CO/PBX Number Redial:
   Key Telephone 1 per
   station (24 digits max.)
   (SLT: 22 digits)

220.17   BATTERY BACKUP - SYSTEM MEMORY

1. Backup Battery power is provided on the MBD(412)-Z ( ) KTU. This battery, when fully charged, retains program memory contents for approximately seven days when power is removed from the system.

   Functions receiving Backup with Battery power are as follows:

   A. System Program
   B. Speed Dial Memories (System and Station)
   C. Night Transfer Status
   D. Call Forwarding
   E. Clock/Calendar
   F. Callback Request
   G. Do Not Disturb

220.18   BATTERY BACKUP - FULL SYSTEM POWER

1. A Backup Battery is provided to retain system operation for up to ten minutes during power outages.

2. System Battery Backup Replacement Specifications
   A locally provided, 12V dc, 0.7A, sealed lead calcium storage battery (PE .07 7-12R or PE 12V 0.7) is recommended.

NOTE: For extended battery backup, see ETI E8/24-005 External Battery Backup.

   A. Weight: 0.77 lbs (35g)
   B. Contact Type: W2
   C. Size: 3.78 inches (96mm) length
                     0.98 inches (25mm) width
                     2.42 inches (6.15mm) height
                     2.42 inches (6.15 mm) depth
   D. Maximum discharge current:
                     2.1 Amps
   E. Temperature: Operating: 32° F (0° C) to 104° (40° C)
                    Storage: - 40° F (- 20° C) to 104° F (40° C)

CAUTION

Do not short circuit the battery. The battery could explode and cause damage to personnel and equipment.

220.19   EXTERNAL EQUIPMENT INTERFACING

1. Music on Hold (MOH)

   A. Auxiliary input: 0.1 VRMS signal level

   B. Input impedance: 10 k ohms

2. SMDR Output
   Female connector (System output), Standard RS-232C (Serial Output)

3. External Paging (Audio)

   A. Output power: 2 Watts maximum
                                    -10.0 dBm signal level

   B. Output impedance: 600 ohms or 8 ohms

4. Station BGM Input

   A. Auxiliary input: -10.0 dBm signal level

   B. Input impedance: 40 k ohms

5. External Paging, MOH, Door Lock Release, and Ring Contacts

   A. Contact rating: 500 mA @ 24V DC

6. Door Lock Relay contacts

   A. Contact rating: 100 mA @ 24 V DC

SECTION 230
SITE PREPARATION AND MDF/IDF CONSTRUCTION

230.1   GENERAL INFORMATION

This section presents a survey of the planning details that should be considered before installing an Electra 8/24 Electronic Key Telephone System. Detailed planning in advance of the actual installation helps ensure that minimum time and cost are incurred and minimizes disruption of the customer's business activities. Additional benefits of a well planned and executed installation include flexibility for changes and expansion at minimum cost, efficient maintenance, and increased customer satisfaction.

The following warnings shall be observed during installation.

1. Never install telephone wiring during a lightning storm.

2. Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.

3. Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.

4. Use caution when installing or modifying telephone lines.

230.2   SITE SURVEY

In most cases, a survey of a customer's premises is needed to develop a cost estimate for the installation. This data should be used in the site selection of the Main Distribution Frame (MDF) and possible Intermediate Distribution Frame (IDF) locations. This information will provide the basis for planning an orderly and efficient installation.

230.3   SITE LIMITATIONS

Installation of a telephone system is seldom a straightforward, routine procedure. The uniqueness of each customer's situation requires a tailored approach to each job. In selecting a permanent site for the MDF, the installer may encounter some of the following problems.

1. Limited space is available and must be used regardless of its suitability.

2. The available space may be adequate but may pose one or more environmental hazards.

3. The proposed location has limitations, such as, insufficient lighting, or the lack of a suitable ground, for grounding the KSU.

Whatever the nature of the adversities encountered, the installer must make the necessary decisions to arrive at the best possible solutions for both the customer and the equipment being installed. It is beyond the scope of this manual to cover all possible situations with specific solutions. The following are general guidelines, precautions and necessities that should be observed when making the decisions for installation.

It should be noted that there are certain specific requirements and precautions which, if not followed, will impair the reliability of the system.

230.4   SITE SELECTION CONDITIONS

The following conditions should be met at the site chosen for mounting the Key Service Unit (KSU).

1. The KSU is normally wall mounted to protect against accident or flooding. Use of a 3/4" plywood backboard is recommended for this purpose.

2. The KSU should not be located directly beneath pipes due to the possibility of leaks or condensation causing damage to the Electra 8/24 Electronic Key Telephone System equipment.

3. The area where the KSU is located must be free of corrosive and inflammable gases, excessive chemical or industrial dusts, and other materials that could cause a hazard to personnel or to the proper functioning of the equipment.

4. Heat and humidity must be within the limits provided in paragraph 220.11 of this manual.

5. Although its virtually noiseless operation allows a wide selection of installation sites, care should be taken that the KSU does not present a hazard to office traffic. For purposes of economy, a central location to minimize cabling is often used.

6. The KSU is designed to be mounted vertically. Failure to mount the KSU vertically may cause excessive heat build up in the KSU and intermittent relay operation.

230.5   MDF CONSTRUCTION
The Main Distribution Frame (MDF) consists of two different types of standard quick-connect terminal blocks that are to be mounted onto the 3/4" plywood backboard. For neatness and ease of access it is also recommended that the blocks be mounted on appropriate standoffs. The recommended block is the 66M50 type for termination of the station cables. Refer to Figure 200-4 Typical MDF Layout.
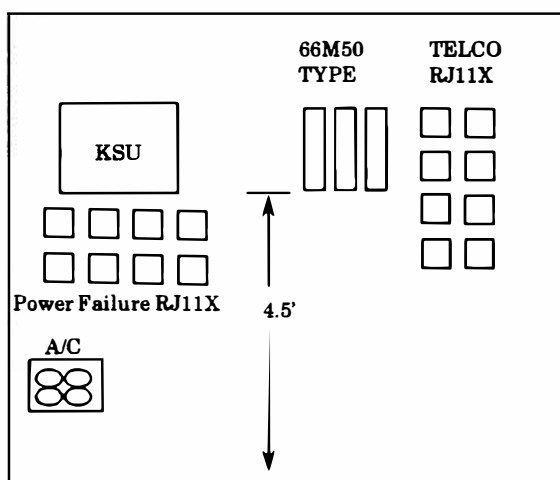
Figure 200-4   Typical MDF Layout

Both the MDF and the IDF utilize standard bridging clips for each type terminal block. The bridging clips are used to mate the left half of the terminal block (terminated cable run) to the right half of the terminal block (cross connection wire).

230.6   KSU CABLES
Each KSU can be equipped with three, fifty pin, female amphenol type connectors. These connectors are designated **J1, J2,** and **J3.** Refer to Section 240 of this manual for KSU wall and floor mounting instructions.

230.7   OUTSIDE LINES
1. The FCC authorized connector for the connection of CO lines is an RJ11C. The lines must be connected in the appearance order best suited to the customer's usage. Refer to Figure 200-5 CO/PBX Line Connection.
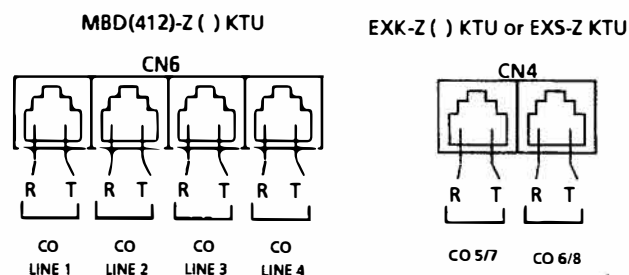
Figure 200-5   CO/PBX Line Connection

2. Table 200-19 Connection Information/Connector and Port Relationship provides complete information about the fifty position connector. This table shows pin number, running cable color, lead functions, station cable color, port, and circuit designation.

3. **Half-tapping or Parallel Connections** must not be used on outside lines connected to the Electra 8/24 Electronic Key Telephone System. This practice may result in system malfunctions on the outside lines.

4. Power Failure Transfer can be provided for all CO/PBX lines, with the PFT-Z KTU installed (maximum of four). To provide Power Failure Transfer for lines 1~4, two PFT-Z KTUs must be installed in connectors **CN15** and **CN16** on the MBD(412)-Z ( ) KTU, on lines 5 & 6, a PFT-Z KTU must be installed in connector **CN6** of the first expansion KTU, lines 7 & 8 would require a PFT-Z KTU installed in connector **CN6** of the second expansion KTU. If an EXS-Z KTU is installed in the first expansion, no additional PFT card is needed for lines 5 & 6. Lines 7 & 8 would require a PFT-Z KTU installed in connector CN6 of the second expansion KTU.

Refer to Figure 200-6 PFT-Z KTU Single Line Telephone Terminal Connector and Table 200-18 Power Failure Connector Identification for PFT-Z and MBD(412)-Z ( ) KTU Power Failure Transfer Connectors.
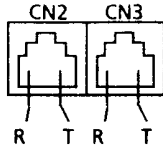
Figure 200-6   PFT-Z KTU Single Line Telephone Terminal Connector

Table 200-18   Power Failure Connector Identification

KTU	Lines	KTU Cons	PFT-Z Cons	Station Port
MBD(412)-Z ( ) (Main Board)	1	CN15	CN2	N/A
	2	CN15	CN3	N/A
	3	CN16	CN2	N/A
	4	CN16	CN3	N/A
1st Expansion KTU (EXK-Z ( ))	5	CN6	CN2	N/A
	6	CN6	CN3	N/A
1st Expansion KTU (EXS-Z)	5	N/A	N/A	22
	6	N/A	N/A	23
2nd Expansion KTU (EXK-Z ( ))	7	CN6	CN2	N/A
	8	CN6	CN3	N/A

230.8   STATION EQUIPMENT

1. When connecting Key Telephones and Single Line Telephones to the MDF or IDF, twisted pair cabling is required.

   Refer to Section 220 in this chapter for specifications, Table 200-19 Connection Information/Connector and Port Relationship for lead identifications, for DSS/BLF modular jack (RJ11C/W) connection see Figure 200-7 View of Modular Terminal for Connection of a DSS/BLF Console, for Key Telephone modular jack (RJ13C/W) connection see Figure 200-8 View of Modular Terminal for Connection of Key Telephone and for Single Line Telephone Modular Jack (RJ11C/W) connection see Figure 200-9 View of Modular Terminal for Connection of Single a Line Telephone.
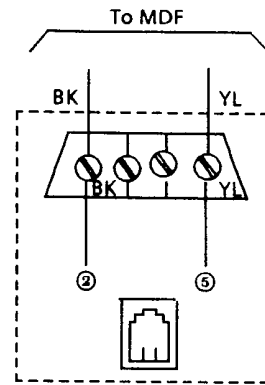
Figure 200-7   View of Modular Terminal for Connection of a DSS/BLF Console
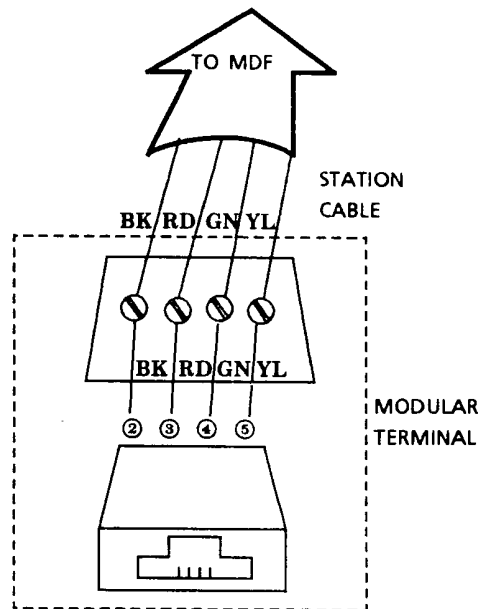
Figure 200-8   View of Modular Terminal for Connection of Key Telephone
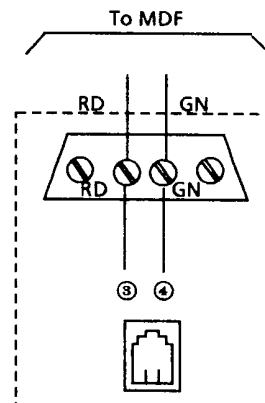
Figure 200-9   View of Modular Terminal for Connection of a Single Line Telephone

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Table 200-19 Connection Information/Connector and Port Relationship

PIN	RUNNING CABLE	STATION CABLE	LEAD FUNCTIONS KEY TELEPHONE DSS/BLF	EXS-Z J2 SLT/KEY TELEPHONE	MBD(412)-Z ( ) J1 PORT	EXK-Z ( ) or EXS-Z J2 PORT	EXK-Z ( ) J3 PORT
26	WH-BL	GN	VT	T			
1	BL-WH	RD	VR	R	10	22	28
27	WH-OR	BK	DT	--			
2	OR-WH	YL	DR	--			
28	WH-GN	GN	VT	T			
3	GN-WH	RD	VR	R	11	23	29
29	WH-BR	BK	DT	--			
4	BR-WH	YL	DR	--			
30	WH-SL	GN	VT	T			
5	SL-WH	RD	VR	R	12	24	30
31	RD-BL	BK	DT	--			
6	BL-RD	YL	DR	--			
32	RD-OR	GN	VT	VT			
7	OR-RD	RD	VR	VR	13	25	31
33	RD-GN	BK	DT	DT			
8	GN-RD	YL	DR	DR			
34	RD-BR	GN	VT	VT			
9	BR-RD	RD	VR	VR	14	26	32
35	RD-SL	BK	DT	DT			
10	SL-RD	YL	DR	DR			
36	BK-BL	GN	VT	VT			
11	BL-BK	RD	VR	VR	15	27	33
37	BK-OR	BK	DT	DT			
12	OR-BK	YL	DR	DR			
38	BK-GN	GN	VT				
13	GN-BK	RD	VR		16	N/C	N/C
39	BK-BR	BK	DT	N/C			
14	BR-BK	YL	DR				
40	BK-SL	GN	VT				
15	SL-BK	RD	VR		17	N/C	N/C
41	YL-BL	BK	DT	N/C			
16	BL-YL	YL	DR				
42	YL-OR	GN	VT				
17	OR-YL	RD	VR		18	N/C	N/C
43	YL-GN	BK	DT	N/C			
18	GN-YL	YL	DR				
44	YL-BR	GN	VT				
19	BR-YL	RD	VR		19	N/C	N/C
45	YL-SL	BK	DT	N/C			
20	SL-YL	YL	DR				
46	VI-BL	GN	VT				
21	BL-VI	RD	VR		20	N/C	N/C
47	VI-OR	BK	DT	N/C			
22	OR-VI	YL	DR				
48	VI-GN	GN	VT				
23	GN-VI	RD	VR		21	N/C	N/C
49	VI-BR	BK	DT	N/C			
24	BR-VI	YL	DR				
50	VI-SL	N/C	N/C	N/C	N/C	N/C	N/C
25	SL-VI						

2. When Single Line Telephones are installed in the system to operate as *Power Failure Transfer* telephones, connection on the PFT-Z KTU is necessary. Refer to **Figure 200-10** Simplified Schematic - Single Line Telephone Connection for Power Failure Transfer.
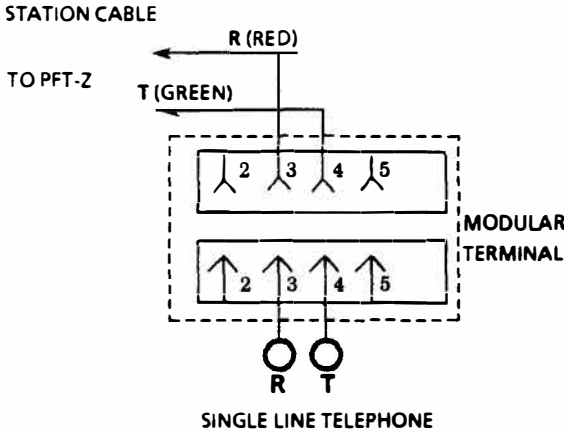
Figure 200-10   Simplified Schematic - Single Line Telephone Connection for Power Failure Transfer

One twisted pair cabling is required; it is recommended that twisted pair cabling be used.

The Single Line Telephones must match the outside line type for proper power failure operation. DTMF for tone dialing and rotary for Dial Pulse signaling.

SECTION 240
KEY SERVICE UNIT (KSU)
CONNECTION

CAUTION

Do not connect the KSU power supply line cord to the AC outlet until the wall or floor mounting procedure is complete.

240.1   OPENING THE KSU COVER
1. Remove two screws as shown in Figure 200-11 KSU Cover Screws.

2. Slightly lift the bottom end of the cover as shown in Figure 200-12 Opening KSU Cover.

3. Push the cover upward until it comes off as shown in Figure 200-13 Removing KSU Cover.
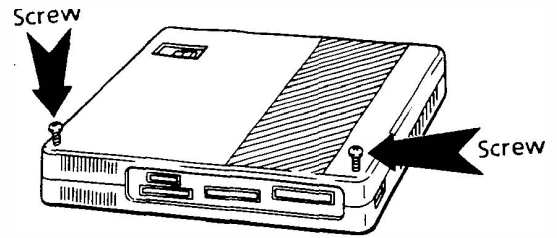
Figure 200-11   KSU Cover Screws
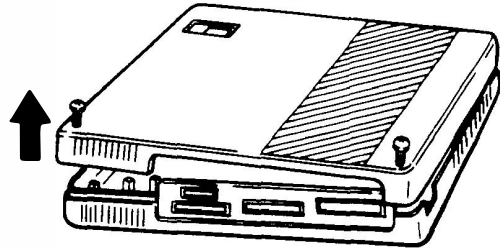
Figure 200-12   Opening KSU Cover
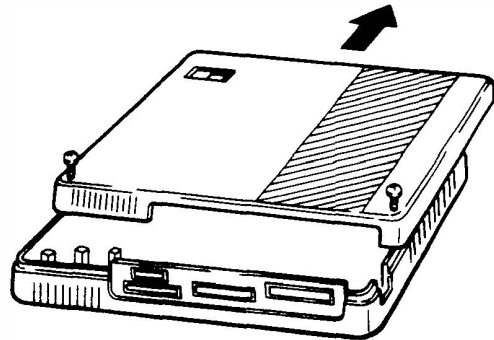
Figure 200-13   Removing KSU Cover

240.2   WALL MOUNTING THE KSU
To secure the KSU onto the wall, fasten it by using the supplied template and mounting screws (locally provided) as shown. Use of a sheet of fire retardant 3/4" plywood for the MDF is recommended.

1. Mount the plywood to a secure wall.

2. Tape the template to the MDF and fasten it with the four mounting screws approximately 7/16" or halfway (locally provided). Refer to Figure 200-14 Wall Mounting the KSU.

3. Hold the KSU against the wall with the holes in line with the screws on the MDF, pull the KSU down to properly seat it and tighten the screws. Refer to Figure 200-15 Mounting Screw Locations.

Figure 200-14   Wall Mounting the KSU
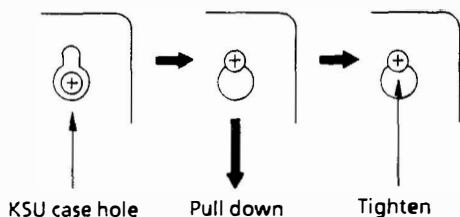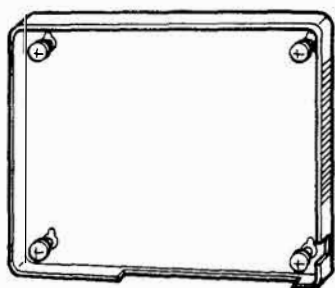
KSU case hole   Pull down   Tighten

Figure 200-15   Mounting Screw Locations

4. Hook the KSU cover with the tabs on top of the base, and tighten the two screws. Refer to Figure 200-16 Replacing the KSU Cover.

Tabs

Screw
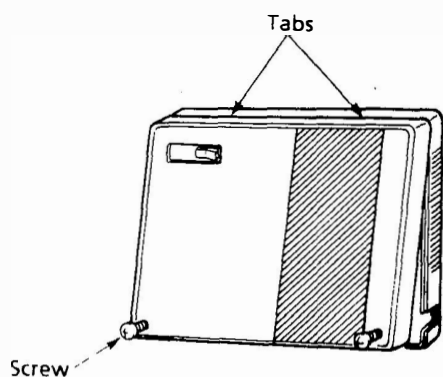
Figure 200-16   Replacing the KSU Cover

240.3   FLOOR MOUNTING THE KSU

To mount the KSU on the floor (when wall mounting is impossible) use the optional FMU-Z mounting unit.

1. Assembly of the floor mount bracket is required. (Refer to Figure 200-17 Floor Mounting the KSU

for the dimensions for the floor bracket assembly.) Attach the base plate to the vertical bracket using the four screws provided. Insert the screws from the bottom as shown in Figure 200-18 Floor Mounting Unit (FMU-Z).
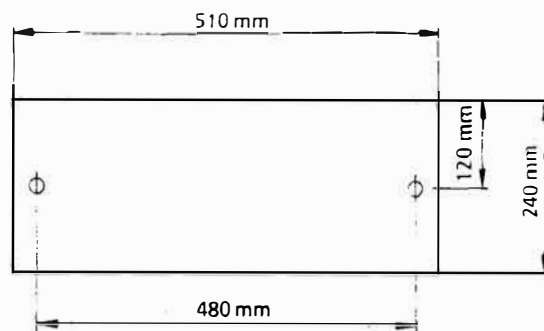
Figure 200-17   Floor Mounting the KSU
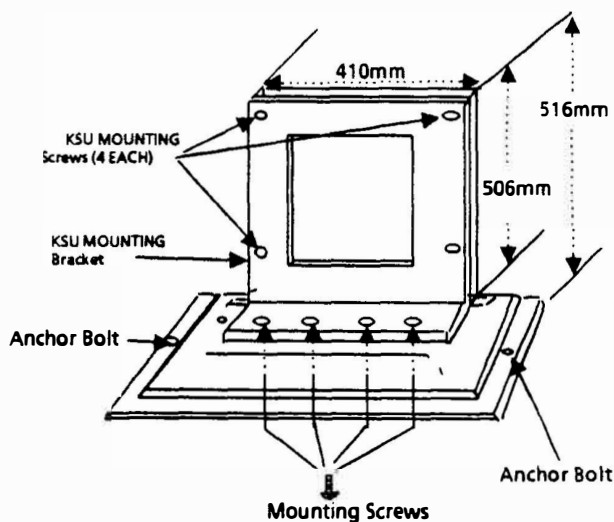
Figure 200-18   Floor Mounting Unit (FMU-Z)

2. Implant two 6.5 mm (approximately 9/32") anchor bolts (locally provided) into the floor.

3. Fasten the FMU-Z unit to the floor with the 6.5 mm anchors and loosen the four KSU mounting screws.

4. Open the KSU cover. (Refer to Section 240.1 for detailed instructions.)

5. Hold the KSU base against the floor mounting unit with the mounting holes in line with the screws and tighten the screws securely from inside the KSU.

6. Hook the KSU cover with the tabs on top of the base and tighten the two screws.

240.4   KTU INSTALLATION NOTES

1. Power must be **OFF** during installation and maintenance to prevent accidental damage to equipment.

2. The KTUs used in this system make extensive use of CMOS technology. CMOS technology is very susceptible to static, therefore, extreme care must be taken to **avoid static discharge** when handling KTUs.

240.5   MOUNTING THE KTUs

1. Be sure to mount the KTUs in their correct positions of the Key Service Unit as shown in Figure 200-19 KTU Positions. Make any connections and switch settings, on the KTUs, prior to mounting them in the KSU.
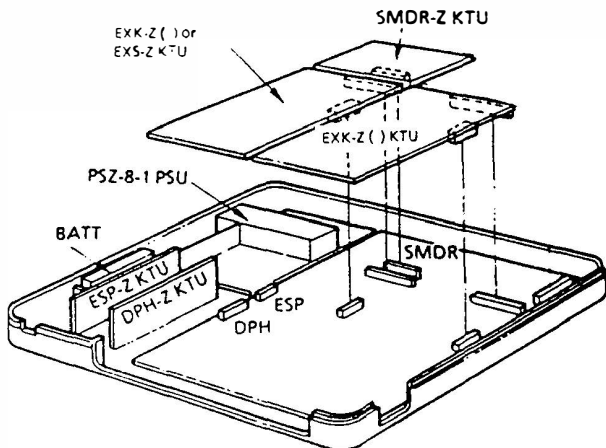
Figure 200-19   KTU Positions

2. Mount the ESP-Z and DPH-Z Units as shown in Figure 200-20 ESP-Z KTU Connection and Figure 200-21 DPH-Z KTU Connection.

   Insert the KTUs into the specified positions in the guide rails and connect them to the connectors on MBD(412)-Z ( ) KTU as shown in Figure 200-22 MBD(412)-Z ( ) KTU Guide Rails Location.

240.6   CONNECTION OF THE J CONNECTORS

When an EXK-Z ( ), EXS-Z, or SMDR-Z KTU is mounted in the KSU the installer must remove the appropriate KNOCK OUTS in the connector plate (located in the lower part of the KSU).

1. Remove the KNOCK OUTS on the connector plate using a diagonal cutter. Refer to Figure 200-23 Mounting the J Cable Connector.
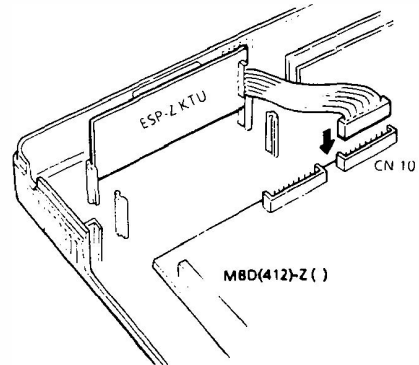
Figure 200-20   ESP-Z KTU Connection
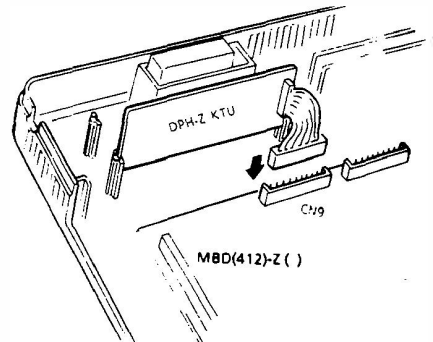
Figure 200-21   DPH-Z KTU Connection
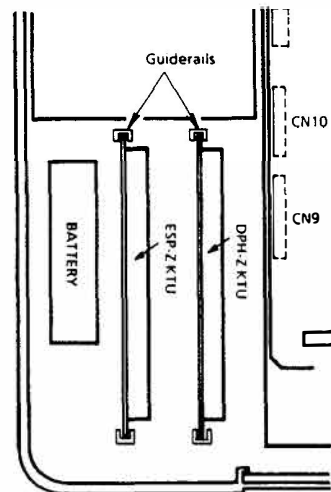
Figure 200-22   MBD(412)-Z ( ) KTU Guide Rails Location

2. Insert the connector into the slot to be used and fasten the connector with screws provided. Refer to Figure 200-24 Fastening the J Cable Connectors Using Tie Wraps.
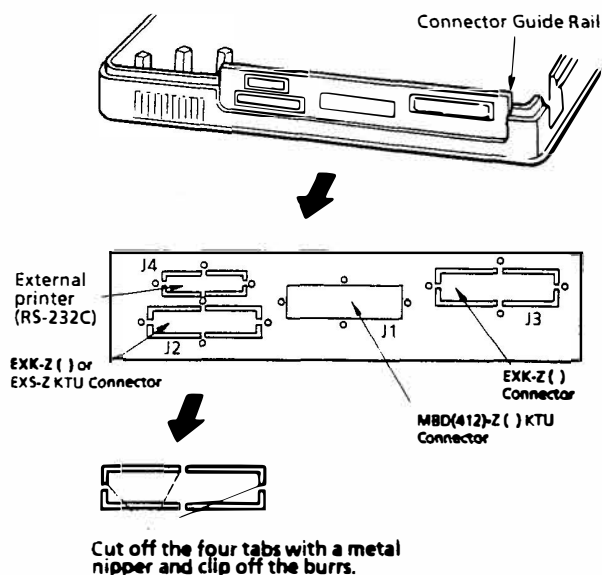
Figure 200-23 Mounting the J Cable Connector
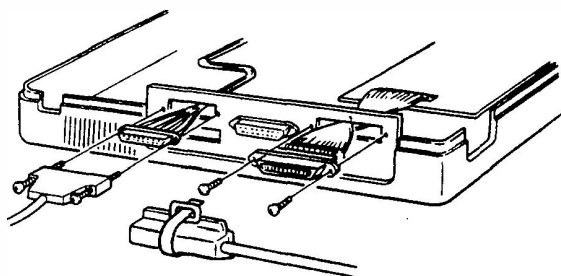
Figure 200-24 Fastening the J Cable Connectors Using Tie Wraps

240.7 CABLING ROUTE IN THE KSU

Form and fasten the cable to be connected to each unit, CO/PBX lines, Key Telephones, Power Failure Single Line Telephones, Facsimile, SMDR printer, *etc*. Refer to Figure 200-25 Cabling Route in the KSU.
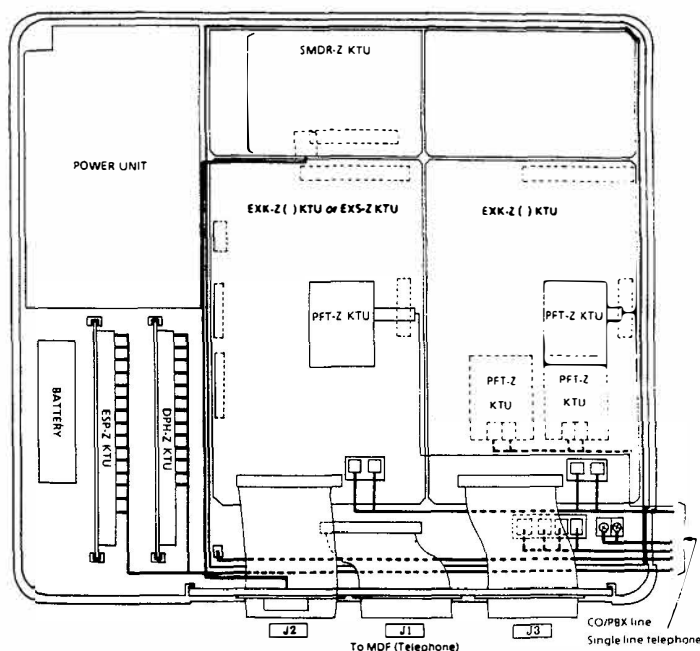
Figure 200-25 Cabling Route in the KSU

240.8 COMMON CONTROL KTU

The MBD(412)-Z ( ) KTU controls the system as a whole and is provided in the Key Service Unit. This KTU provides the switch matrix that controls speech path switching, *Music On Hold*, *Memory Backup Battery*, CO/PBX interface that controls four CO/PBX lines, a facsimile, and a telephone interface which controls twelve Key Telephones.

1. For Multi Function (MF) or Key Function (KF) selection:
   Cut J4 jumper wire when the system is registered as MF. For the jumper location refer to Figure 200-26 MBD(412)-Z ( ) KTU Switch and Connector Layout.

NOTE: MF registration permits dial access to CO/PBX trunks.

2. Memory Backup
   Switch SW1 is used for protecting the contents of the system memory during a commercial power failure, which occurs for longer than the ten minute system *Battery Backup*. Ensure this switch is always in the ON position. Refer to Figure 200-27 Memory Backup Switch.

Figure 200-26 MBD(412)-Z ( ) KTU Switch and
Connector Layout

Figure 200-27 Memory Backup Switch

3. Music On Hold Tune Selection
Either of the two melodies, provided on the
MBD(412)-Z ( ) KTU, can be selected by changing
the setting of switch SW2. When SW2 is set to the
left, the tune **Green Sleeves** is selected and to the
right, **Two Minuets**. If Music On Hold is not
required, install a dummy RCA plug in Jack 1.
Refer to Figure 200-28 Tune Selection.

4. Music on Hold Volume Selection
The Music On Hold source (external or internal)
can be increased by cutting the **J6** jumper wire.

Green Sleeves ⟷ Two Minuets

Figure 200-28 Tune Selection

5. Station busy indication.
LED 1 on the MBD(412)-Z ( ) KTU lights when any
of the telephones are in use.

6. CO/PBX Pad Control.
Set switches SW3~SW6 to the ON position when a
-3dB pad is required. These are set at the factory
to 0dB.

CO/PBX line 1 is controlled by SW3, line 2 by
SW4, line 3 by SW5, and line 4 by SW6. Shown in
Figure 200-29 Pad Control.

SW6	SW5	SW4	SW3

OFF ⟷ ON

Figure 200-29 Pad Control

7. Facsimile
When using a facsimile, connect it to screw
terminal connector CN14 on the MBD(412)-Z ( )
KTU as shown in Figure 200-30 Connector CN14.

A. The facsimile is connected to the CO/PBX side.
Be sure to observe polarity.

B. The facsimile works in conjunction with
CO/PBX line 4.

8. External Music on Hold Source
When a Music on Hold source, other than the
internally provided tunes, is to be used; connect the
source to **JACK 1** on the MBD(412)-Z ( ) KTU as
shown in Figure 200-31 Connector Jack 1
Location. If MOH is not required, plug a dummy
(unterminated) RCA connector into Jack 1.
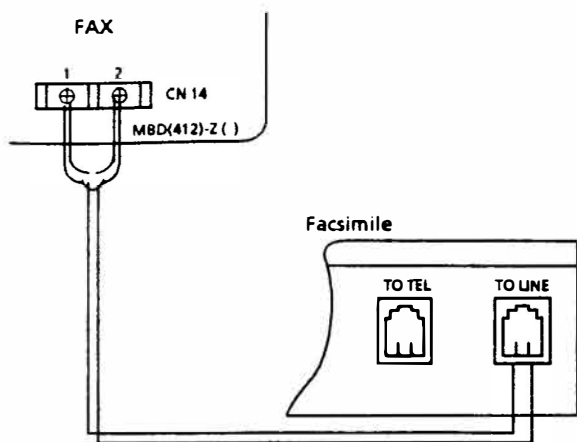
Figure 200-30   Connector CN14

Figure 200-31   Connector Jack 1 Location

Figure 200-32   EXK-Z ( ) KTU Switch and
Connector Layout
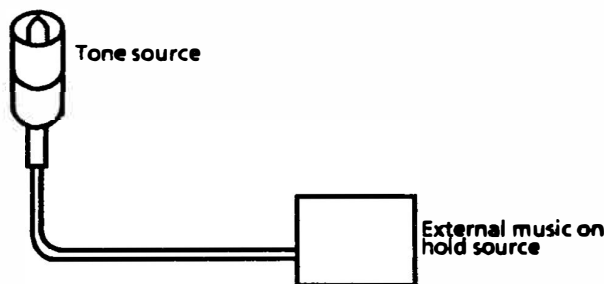
Figure 200-33   EXK-Z ( ) KTU Switch Location

240.9   INTERFACE KTUs

1.   EXK-Z ( ) KTU
This unit provides for two CO/PBX lines and six additional Key Telephone ports.

The unit consists of an interface that controls two CO/PBX lines, an interface that controls six Key Telephones (*DSS/BLF Consoles*), and a switch matrix that controls speech path switching for the two CO/PBX lines and six Key Telephones. Refer to Figure 200-32   EXK-Z ( ) KTU Switch and Connector Layout.

A.   CO/PBX Line Pad Control
Set switches SW1 and SW2 to the ON position when a -3dB pad is required (OFF = 0dB).

B.   CO/PBX line 1 is controlled by **SW1** and CO/PBX line 2 by SW2. Refer to Figure 200-33 EXK-Z ( ) KTU Switch Location.

2.   EXS-Z KTU
This unit provides for two additional CO/PBX lines and six additional telephone ports.

This unit consists of an interface that controls two CO/PBX lines, an interface with a built-in ring generator that controls three Single Line Telephones, an interface that controls three Key Telephones, and a switch matrix that controls speech path switching for the two CO/PBX lines and six telephone ports. Refer to Figure 200-34 EXS-Z KTU Switch and Connector Layout.

The Single Line Telephone interface keeps CO/PBX lines 4 & 5 functional during a power failure.
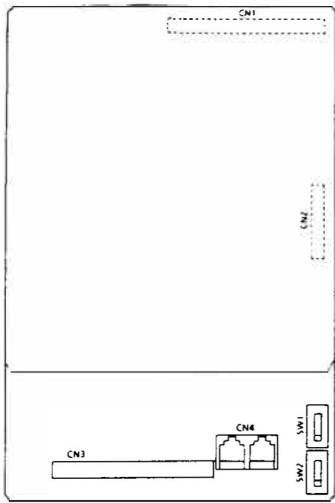
Figure 200-34 EXS-Z KTU Switch and Connector Layout

A. CO/PBX Pad Control.
   Set switches **SW1** and **SW2** to the **ON** position when a -3dB pad is required (**OFF** = 0db).

B. CO/PBX line 1 is controlled by **SW1** and CO/PBX line 2 by **SW2**. Shown in Figure 200-35 EXS-Z KTU Switch Location.

C. The S4 strap in the 1-2 position provides a ring pattern of .8 seconds ON, .4 seconds OFF and .8 seconds ON, 4 seconds OFF for ICM calls. The S4 strap in the 2-3 position provides a ring pattern of 2 seconds ON and 4 seconds OFF for ICM calls.
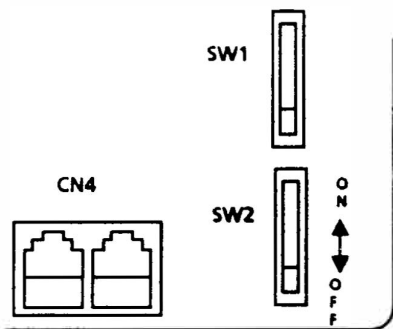
Figure 200-35 EXS-Z KTU Switch Location

3. **DPH-Z KTU**
   This KTU is used when installing a *Doorphone*(s) in a system. (Refer to Figure 200-36 DPH-Z KTU Switch and Connector Layout.)

The DPH-Z KTU allows connection of a maximum of two *Doorphones*. When one *Doorphone* is in use, the other cannot be used. The unit can also control a door lock release and external sensors (security system).
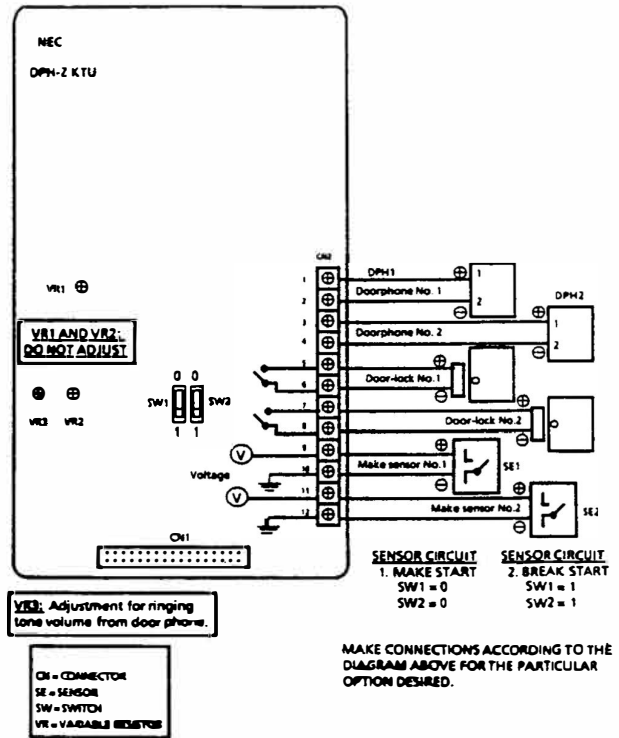
Figure 200-36 DPH-Z KTU Switch and Connector Layout

A. Speech Volume Control
   VR1 and VR2 are factory adjusted for the speech volume between a station and *Doorphone*. (**DO NOT ADJUST.**)

B. Ringing Tone Volume Control
   VR3 is for adjusting the ringing tone volume from the *Doorphone*.

C. Doorphone
   When connecting *Doorphones*, program the *Doorphones* to be installed in System Data, Memory Block 1-31. Refer to Figure 200-37 Doorphone Connection.

D. Door Lock Release
   When this feature is required, additional locally provided door control equipment is needed. Refer to Figure 200-38 Door Lock Release Connection. When using the door lock

release circuits, they must be enabled in System Data (Memory Block 1-32).
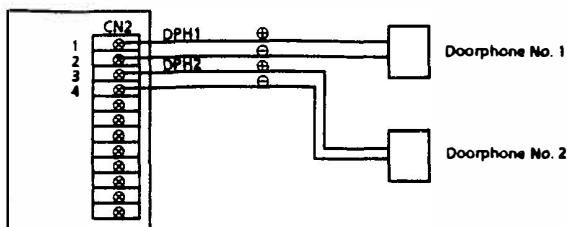
Figure 200-37 Doorphone Connection
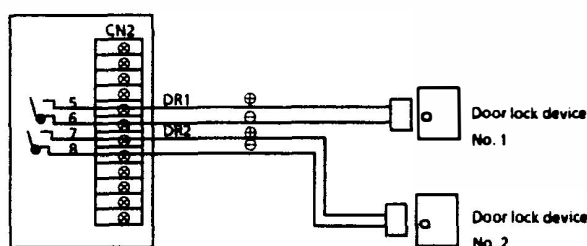
Figure 200-38 Door Lock Release Connection

E. Sensor
Sending an alarm to an idle Key Telephone is done by operating an emergency control circuit.

- Make-start
Set switch SW1 to the 0 position when controlling sensor No. 1 needs a make-start signal. Set SW2 to the 0 position when controlling sensor No. 2 needs a make-start signal. Refer to Figure 200-39 Security Sensor Connection.

- Break-start
When the sensor is installed on a window *etc.*, where current is always present, an alarm is sent to all idle Key Telephones when the current is removed.

Set switch SW1 to the 1 position when controlling sensor No. 1 needs a break-start signal. Set SW2 to the 1 position when controlling sensor No. 2 needs a break-start signal.

3. ESP-Z KTU
This KTU is required when installing an external page speaker(s) in a system. Refer to Figure 200-40 ESP-Z KTU Switch and Connector Layout.

This KTU can also control external and internal BGM, an external amplifier, and/or external relay.
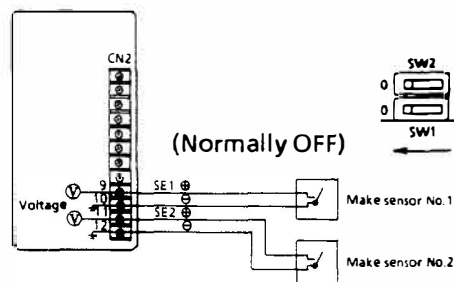
Figure 200-39 Security Sensor Connection
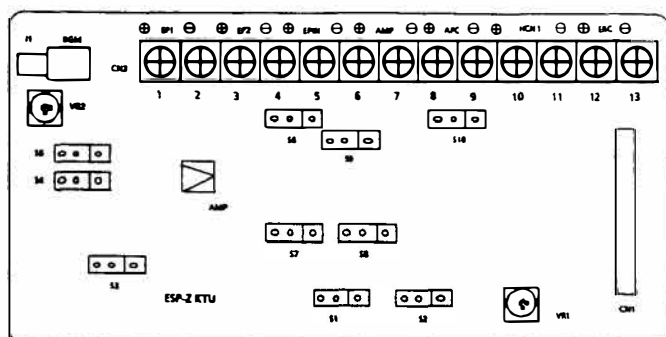
Figure 200-40 ESP-Z KTU Switch and Connector Layout

A. External Speaker Volume Control
When using the amplifier, provided with the KTU, adjust the VR1 clockwise to increase the external speaker volume.

B. Station BGM Volume Control
To increase the station BGM volume, adjust VR2 clockwise.

C. External Speaker
When an external speaker call is made using the built-in amplifier, the impedance of the speakers can be either 600 or 8 ohms. Refer to Figure 200-41 External Speaker with use of the Internal Amplifier Connection.

Connect the external page Zone 1 speaker(s) to the terminal marked EP1 $\oplus$ and $\ominus$ on the ESP-Z KTU. Page Zone 2 speaker(s) connect to the terminals marked EP2 $\oplus$ and $\ominus$.

The S1 and S2 Jumper must be set to the 1-2 position when using the internal amplifier.

Move the jumper position of S3, S4, and S5 to match the impedance of the external speaker connected, as shown on Table 200-20 Switching for External Devices via CN2.
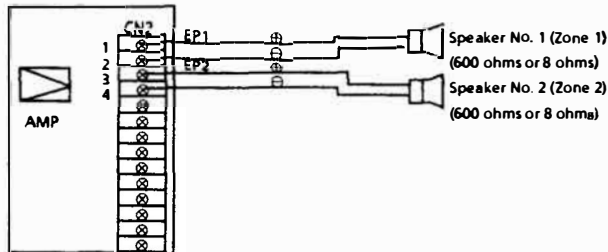
Figure 200-41 External Speaker with use of the Internal Amplifier Connection

D. Music Source for External BGM
When using the internal amplifier and connecting an external music source for BGM to external speakers, use the connection provided in Figure 200-42 External Music Source Connection. Connect the music source to the Amp ⊕ and ⊖ terminals.
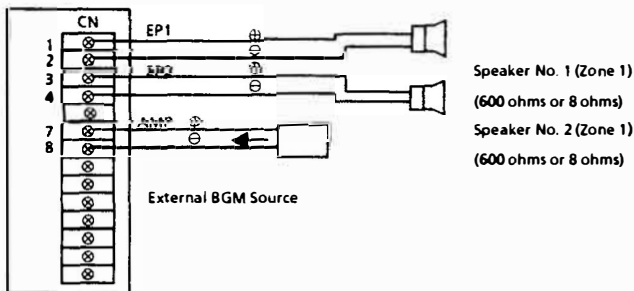
Figure 200-42 External Music Source Connection

An external paging call will interrupt the BGM only to the zone paged and only during the page announcement.

Move the jumper position of S7 and S8 to meet the needs of an external sound source connection, as shown on Table 200-20 Switching for External Devices via CN2.

E. External Amplifier
When the built-in 2 Watt amplifier output is not enough, an external amplifier can be connected using this KTU. Match the impedance of external speakers according to the specification of the external amplifier. Refer to Figure 200-43 External Paging System Connection.

Jumper JP2 may be cut to decrease the External Page Alert Tone.

Connect terminals marked Amp ⊕ and ⊖ to the input of the external amplifier.

Move the jumper position of S1, S2, S3, S4, S5, S6, S7, S8, and S9 for external amplifier connection, as shown on Table 200-20 Switching for External Devices via CN2.
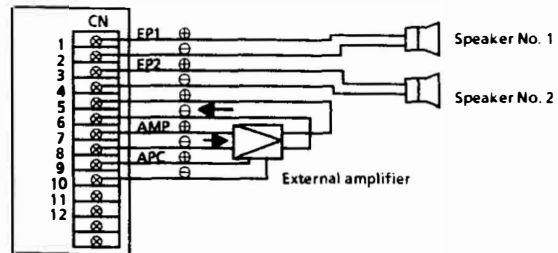
Figure 200-43 External Paging System Connection

If a current capacity (larger than the rating of the internal relay) is required, control the external amplifier via an external relay. Refer to Figure 200-44 External Paging Amplifier Relay Control Connection.
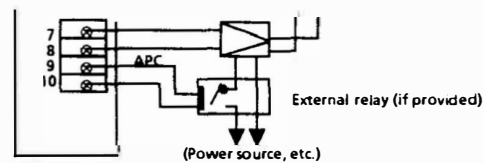
Figure 200-44 External Paging Amplifier Relay Control Connection

NOTE: To reduce external page warning tone, cut JP2 on the ESP-Z.

F. External Music On Hold Source
An external Music On Hold source can be connected, as shown in Figure 200-45 External Music On Hold Source Control and Figure 200-31 Connector Jack 1 Location.
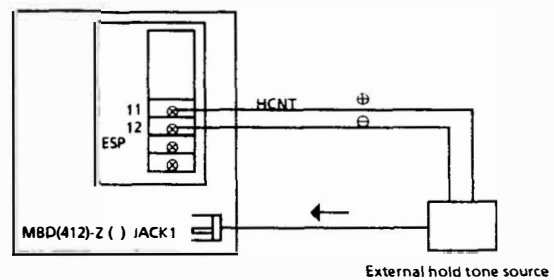
Figure 200-45 External Music On Hold Source Control

Move the jumper position of **S10** for external Music On Hold source connection as shown on Table 200-20 Switching for External Devices via CN2.

Connection to terminals 11 and 12 (as shown) are only required if the Music source needs either a *12 Volt* or *Make Start* (Ground Start) control.

G. External Bell
An external bell, for ringing during incoming CO/PBX calls, in noisy areas is connected to this KTU, as shown in Figure 200-46 External CO/PBX Bell Connection. A 1 sec. ON/1 sec. OFF normally open contact is provided (dry contact).
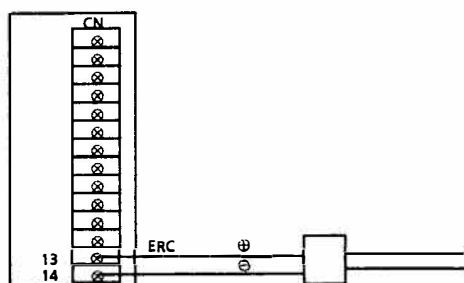
Figure 200-46 External CO/PBX Bell Connection

H. Station BGM (Sending)
To send BGM through the speaker of the Key Telephone, a locally provided sound source must be connected to **J1**. Refer to Figure 200-47 External Station BGM Connection.

ON/OFF control is available at each Key Telephone.

Volume is adjustable with VR2 on a system wide basis.
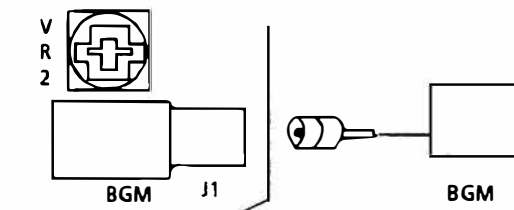
Figure 200-47 External Station BGM Connection

4. SMDR-Z KTU
This KTU provides detailed call records of the system's CO/PBX calls (refer to Figure 200-48 SMDR Print Format). The KTU can output outgoing or outgoing transferred call information (called numbers, call times) to the printer, via the RS-232C connector.

| Key Tel: | 24 digits max |
| SLT: | 22 digits max |
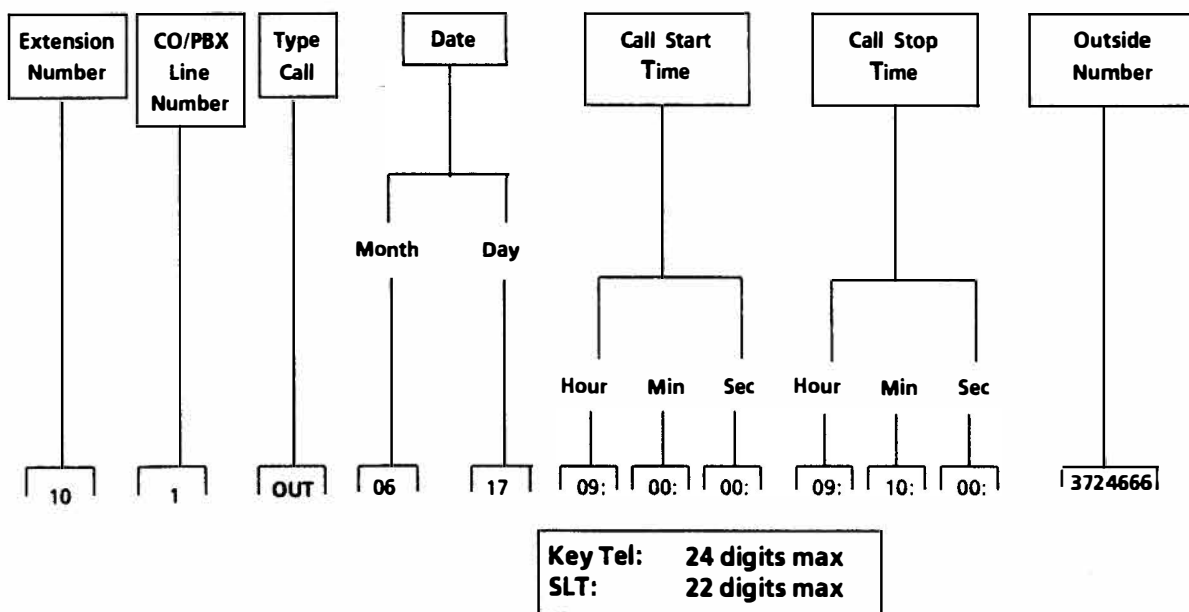
Figure 200-48 SMDR Print Format

Table 200-20   Switching for External Devices via CN2

CONNECTING DEVICES VIA CN2							
SHORTING BAR	EXTERNAL PAGE WITH INTERNAL AMP TERM 1 & 2 = ZONE 1 TERM 3 & 4 = ZONE 2 TERM 7 & 8 = BGM INPUT		SHORTING BAR	EXTERNAL PAGE WITH EXTERNAL AMP TERM 1 & 2 = ZONE 1 TERM 3 & 4 = ZONE 2 TERM 5 & 6 = AMP OUTPUT TERM 7 & 8 = AMP INPUT TERM 9 & 10 = AMP CONTROL MAKE/START 12 VOLT		SHORTING BAR	EXTERNAL MOH SOURCE (HCNT) TERM 11 & 12 = MOH CONTROL
S1	1-2		S1	2-3			
S2	1-2		S2	1-2			
SPEAKER IMPEDANCE	600Ω	8Ω		OPTIONAL			
S3	1-2	2-3	S3	1-2			
S4	1-2	2-3	S4	2-3			
S5	1-2	2-3	S5	1-2			
S6	N/A		S6	2-3			
	BGM	NO BGM					
S7	1-2	2-3	S7	2-3			
S8	1-2	2-3	S8	2-3			
			AMPLIFIER CONTROL				
				MAKE START	12 VOLT START		
S9	N/A		S9	1-2	2-3		MAKE START / MAKE START
S10	N/A		S10	N/A		S10	1-2 / 2-3

NOTES:
1. N/A = Not Applicable
2. TERM = Terminal
3. For External Page with an External amp refer to Figure 200-49 Connection of External High Power Amplifier with BGM and set S9 to 2-3.
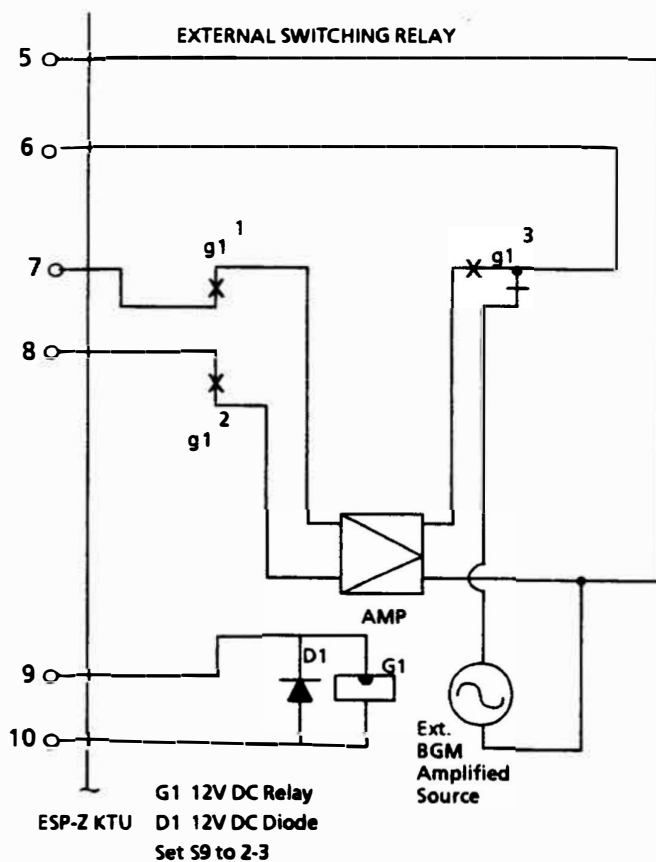
Figure 200-49 Connection of External High Power Amplifier with BGM

A. Plug the larger SMDR-Z KTU into connector CN1 on the MBD(412)-Z ( ).

B. Secure the larger SMDR-Z KTU with four screws provided.

  NOTE: The baud rate must be selected prior to Step C.

Refer to Figure 200-50 SMDR-Z KTU Switch and Connector Layout and Figure 200-51 RS-232C (J4) Cable.

Figure 200-50 SMDR-Z KTU Switch and Connector Layout

CN6

Figure 200-51   RS-232C (J4) Cable

C. Plug the smaller SMDR-Z KTU into connectors CN2 and CN3 located on the larger SMDR-Z KTU.

   a. Memory Backup
Switch SW1 sets the battery backup to preserve the memory in which the call information is stored during a system Power Failure. Ensure that SW1 is always in the ON position.

   b. Baud Rate Selection
The speed of data transfer to the external printer is set with switch SW2. Refer to Figure 200-52 Switch SW2.

   c. Printer specifications in Table 200-21 RS-232C Connector Pin Configuration (J4) and Table 200-22 Interface Signal Specifications are of the SMDR-Z KTU output.

1	■	4800
2	■	2400
3	■	1200
4	■	600

OPEN = OFF

Figure 200-52   Switch SW2

Table 200-21   RS-232C Connector Pin Configuration (J4)

PIN	DESCRIPTION
1	FG (Frame Ground)
2	TXD (Transmit Data)
5	CTS (Clear to Send)
7	SG (Signal Ground)

Table 200-22   Interface Signal Specifications

EIA RS-232C based:
- Data: 8-bit ASCII code
- Parity bit: Even
- Stop bit: 1 bit
- Baud rate: 600, 1200, 2400, 4800 bps
- Signals: FG, TXD, CTS, SG
- Synchronization: Asynchronous
- Maximum distance: (15 meters) 50 feet
- Printer Cable: RS232C Reverse (Serial)

5. PFT-Z KTU
This unit automatically connects a Single Line Telephone to a CO/PBX line during a Power Failure (after the system *Backup Battery* discharges) to enable conversation and ensure contact outside the affected Power Failure area. One KTU can connect two Single Line Telephones, each to a CO/PBX line. A maximum of four PFT-Z KTUs can be mounted in a system. Refer to Figure 200-53 PFT-Z KTU Switch and Connector Layout.

A. A set of four standoffs are included with the PFT-Z KTU. The standoffs are used to attach a PFT-Z KTU to the MBD(412)-Z ( ) KTU or to a EXK-Z ( ) KTU when PFT-Z KTUs are required.
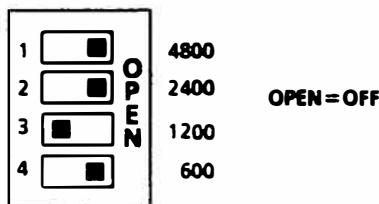
SECTION 250
POWER SUPPLY INFORMATION

1. The system power unit, PSZ-8-1, is mounted in the KSU. A battery that will backup full system operation for ten minutes is also mounted.

2. The connector from the PSZ-8-1 unit to the battery is not connected at the time of shipment. Figure 200-54 PSZ-8-1 Connections shows the location for these connections.

Avoid connection of the KSU to a receptacle or grounding wire used in common with any device (computer, Fax machine, copier, *etc*).
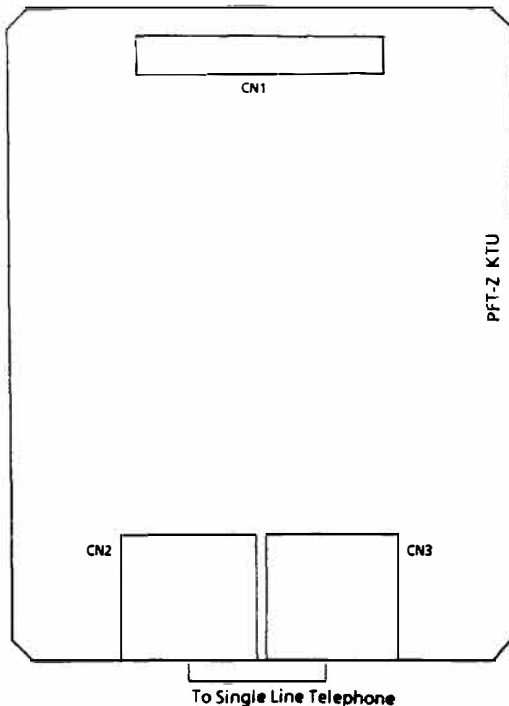
Figure 200-53 PFT-Z KTU Switch and Connector Layout
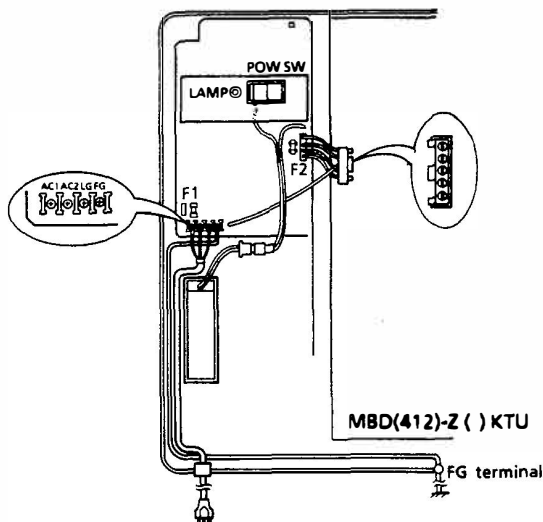
Figure 200-54 PSZ-8-1 Connections

SECTION 260
ANCILLARY DEVICE CONNECTION

260.1 GENERAL INFORMATION
The ETZ-16D-1 Key Telephone can be equipped with devices such as the HFU-Z and ADA-Z Units.

260.2 HANDSFREE UNIT (HFU-Z)
The optional HFU-Z unit is required to enable an ETZ-16D-1 Key Telephone to have handsfree operation on both internal and CO/PBX calls.

1. Remove the access cover, located on the bottom of the Key Telephone, by lifting the edge on the side where the handset jack is located and then sliding it to the right, as shown in Figure 200-55 Mounting the HFU-Z Unit.

2. Install the HFU-Z unit onto connector CN7 inside the telephone access area.

3. To replace the access cover, slide it to the left until it snaps into place.
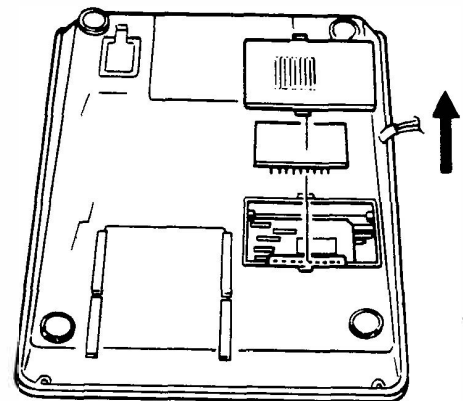
Figure 200-55 Mounting the HFU-Z Unit

260.3 ANCILLARY DEVICE ADAPTOR UNIT (ADA-Z)
The optional ADA-Z unit is required to connect locally provided items, such as a jackset for a headset, or an external speakerphone to the ETZ-16D-1 Key Telephone. Refer to the published ETIs in Chapter 6 of this manual for individual device connections.

To connect the ADA-Z Unit:
A. Unplug line and handset cords.

B. Turn Key Telephone upside down and place it on a dry surface.

C. Locate the access panel at the top of the keyset. Press in slightly on the rear surface, then lift up. Refer to Figure 200-56 ADA-Z Unit Installation.

D. Locate the connector labeled CN2 (HAND). Unplug this connector from the TMB unit (main circuit board) then plug it into the ADA-Z jack labeled CN3. Plug connector labeled CN2 from the ADA-Z into the jack

labeled **CN2 (HAND)** on the TMB unit. Plug the connector labeled **CN1** from the ADA-Z into the jack labeled **CN8 ADA** on the TMB unit. Refer to Figure 200-57 ADA-Z Unit Connection and Table 200-23 ADA-Z Unit Cables for connections.
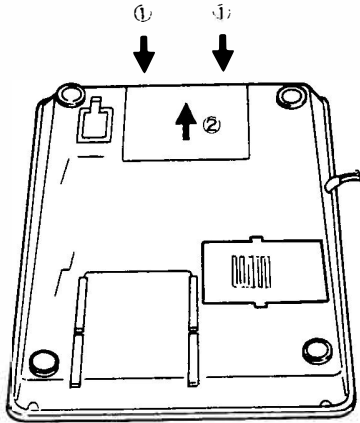
Figure 200-56 ADA-Z Unit Installation
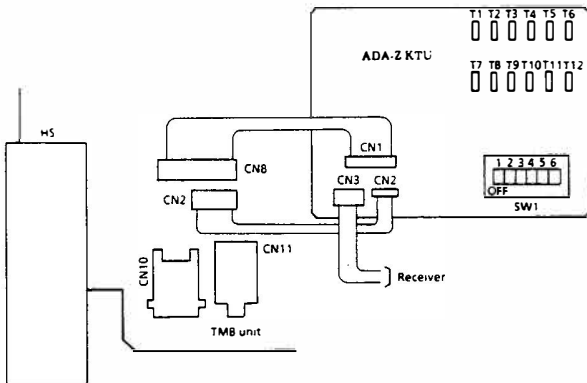
Figure 200-57 ADA-Z Unit Connection

Table 200-23   ADA-Z Unit Cables

TMB UNIT		ADA-Z UNIT	
FROM	**TO**	**FROM**	**TO**
HANDSET			CN3
	CN2	CN2	
	CN8	CN1	

E. Connect external device using the information provided in ETIs. (See Chapter 6.)

F. Mount the ADA-Z unit into Key Telephone using a screw provided with component side

down. Refer Figure 200-58 ADA-Z Unit Mounting Screw.

G. Remove knock-out in access panel to route cables.

H. Reinstall access panel by hooking the front edge into the bottom housing, then snap the back into place.

I. Plug in the handset cord and line the cord.

J. Test Key Telephone operation, then test external device operation.

NOTE: The ADA-Z Unit should not be installed until the external device has been connected.
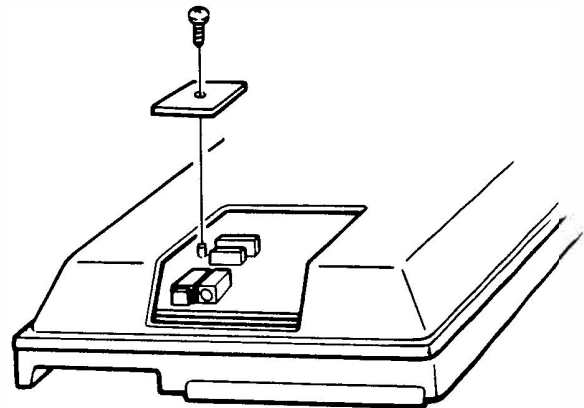
Figure 200-58   ADA-Z Unit Mounting Screw

260.4   WALL MOUNT UNIT INSTALLATION
An optional WMU-Z Key Telephone wall mounting unit is required when installing a Key Telephone onto a wall.

1. Remove the extension number plate and designation strip.

2. Remove the hanger by sliding it out and remount it back in the original position upside down (with the projected side faced upward.) Refer to Figure 200-59 Wall Mounting Preparation.

3. Reinstall the extension number plate and designation strip.
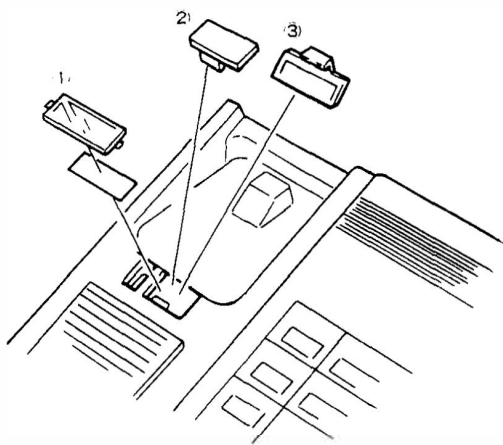
Figure 200-59 Wall Mounting Preparation

4. Fasten the optional wall mount unit (WMU-Z) to the wall, as shown in Figure 200-60 Setting the WMU-Z Unit to the Wall.
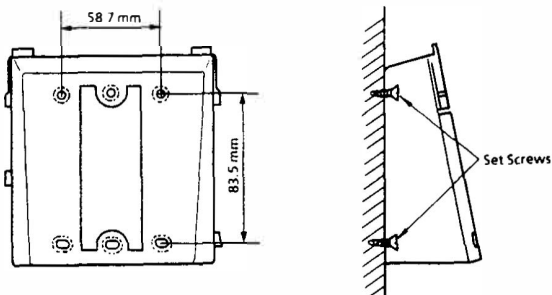
Figure 200-60 Setting the WMU-Z Unit to the Wall

5. Mount the telephone onto the wall mounting unit by aligning the notches on the bottom of the Key Telephone with the rails on the wall mounting unit, as shown in Figure 200-61 Mounting the Key Telephone to the WMU-Z Unit.
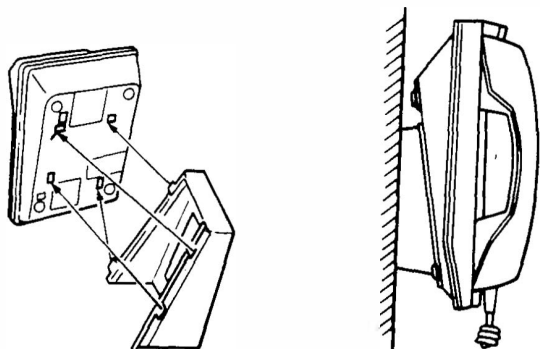
Figure 200-61 Mounting the Key Telephone to the WMU-Z Unit

260.5   CONNECTION OF A DSS/BLF CONSOLE

The DSS/BLF Console cannot be connected to ports 10 or 11. Refer to Table 200-21 RS-232C Connector Pin Configuration (J4) for DSS/BLF Console cable information and Figure 200-7 View of Modular Terminal for Connection of a DSS/BLF for the modular terminal connection.

260.6   CONNECTION OF THE DSS/BLF CONSOLE TO AN ETZ-16D-1 KEY TELEPHONE

1. Disconnect the DSS/BLF Console line cord and DC power connection.

2. Place the DSS/BLF Console face down on a clean dry surface with the RJ11C connector to the top.

3. Insert the DSS/BLF Console connector bracket (with the tabs pointing up) into the two notches located on the right side of the DSS/BLF Console. Secure it with the provided screw. Refer to Figure 200-62 DSS/BLF Console Connection to an ETZ-16D-1 Key Telephone.

4. Disconnect the ETZ-16D-1 Key Telephone line cord from the RJ11C located on the bottom of the Key Telephone.

5. Place the Key Telephone face down on a clean dry surface with the RJ11C connector to the top.

6. Insert the DSS/BLF Console connector bracket (with the tabs pointing up) into the two notches located on the left side of the Key Telephone, and secure it with the provided screw. Refer to Figure 200-62 DSS/BLF Console Connection to an ETZ-16D-1 Key Telephone.

7. Plug in the line cord for the Key Telephone into the RJ11C located on the bottom of the Key Telephone.

8. Plug in the line cord for the DSS/BLF Console into the RJ11C located on the bottom of the DSS/BLF Console.

9. Plug in the DC power cord connector into the jack located on the bottom of the DSS/BLF Console. Refer to Figure 200-63 Bottom View of ETZ-16D-1 Key Telephone for Jack Locations.

10. Turn the attached two units right side up and test for proper operation.
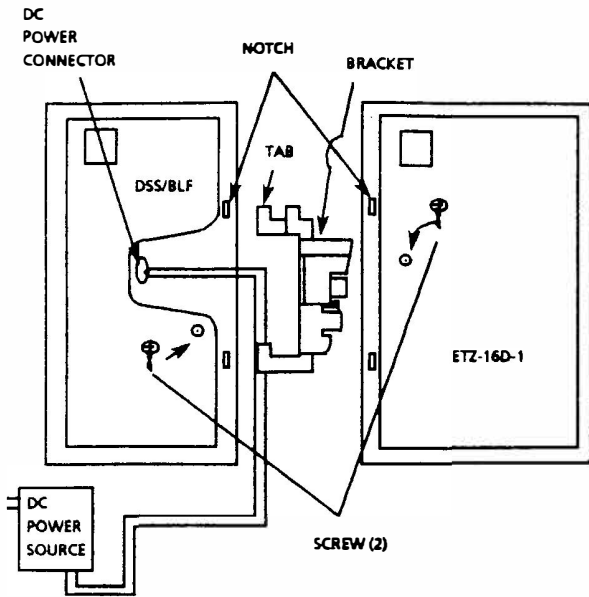
Figure 200-62   DSS/BLF Console Connection to
an ETZ-16D-1 Key Telephone

260.7   CONNECTION OF A RECORDING
DEVICE AND/OR A MODEM

To record a conversation a locally provided recording
device, such as a tape recorder, can be connected to the
ETZ-16D-1 Key Telephone. Data communication, by
connecting a locally provided modem, is also available.

CAUTION

The use of a monitoring device to
eavesdrop or record telephone
conversations may constitute an illegal
invasion of privacy under some
circumstances and laws. You should
consult a legal advisor prior to
implementing any practice involving
recording of telephone calls.

FCC Order Docket #20940 permits the use
of beep tone -OR- the consent of all parties
when conversations are recorded.
Sections 2510 to 2520 of the US Criminal
Code (18U.S.C.2510 et seq.) provides stiff
penalties for unauthorized disclosure of
wire or oral communications.

Both a recording device and modem can be connected
to a ETZ-16D-1 Key Telephone.

1. Remove the access cover, turn the ETZ-16D-1 Key
    Telephone upside down and place it on a dry
    surface. Press in on the back surface of the access
    panel slightly, then lift up.

2. Connect the mini-jack of the recording device to
    CN11 or connect the modular connector of the
    modem to CN10, as shown in Figure 200-63
    Bottom View of the ETZ-16D-1 Key Telephone for
    Jack Locations.
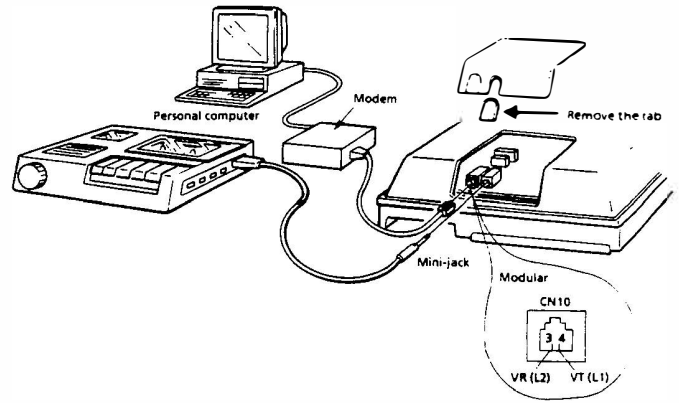
Figure 200-63   Bottom View of ETZ-16D-1 Key
Telephone for Jack Locations

3. Remove the knock out(s) of the access cover and
    route the cable(s) through it.

4. Reinstall the access cover by hooking the front
    edge into the lower housing and snapping it into
    place.

CHAPTER 3
PROGRAMMING

CHAPTER 3
PROGRAMMING

TABLE OF CONTENTS

SECTION 310
GENERAL

The Electra 8/24 Electronic Key Telephone System is a stored program controlled system. Upon initial power up, the system's ESZ-8- ( ) KSU CPU scans each of the possible interface units to determine the hardware configuration. The system stores this information as well as system default values into memory (referred to as *Resident System Program*). After initial power ON, the Resident System Program can be changed so that the System can meet the particular needs of the customer. Job Specification Sheets are provided in this chapter. The Job Specifications (included with each KSU) should be used and retained on the job site as well as in your office.

NOTE: Before attempting any programming of the Electra 8/24 Electronic Key Telephone System, it is important that the battery on the MBD(412)-Z ( ) KTU in the ESZ-8-( ) KSU be checked to ensure SW1 is ON. Failure to do so will result in loss of System Programming in the event of a commercial power outage and the system battery is no longer providing power to the system.

SECTION 320
HOW TO USE THIS CHAPTER

This chapter provides all the necessary information for programming the Electra 8/24 Electronic Key Telephone System. The chapter is divided into the following sections:

310   General
320   How To Use This Chapter
330   Resident System Default Values
340   System Programming Data Sheets
350   Function Timer Chart
360   Toll Restriction
370   Job Specifications Sheets

RESIDENT SYSTEM DEFAULT VALUES
Section 330 provides a table of the default values for each memory block.

SYSTEM PROGRAMMING DATA SHEETS
Section 340 describes in detail each of the programming areas in the six Memory Blocks. This section is to be used as a guide when programming. Section 340 also provides reference pages with step by step instructions as well as all display messages for programming areas.
Charts and notes are also provided in Section 340 to help explain the program instructions; it helps explain

the use of each function and line key as it pertains to the particular program area.

FUNCTION TIMER CHART
Section 350 is provided as a quick reference for the system's timers which can be set through programming. This section provides a full description of each timer, explaining their purpose and function in the system as well as their default values, range, and the Memory Block area it is assigned.

TOLL/CALL RESTRICTION
Section 360 discusses the Toll Restriction plan designed into the Electra 8/24 Electronic Key Telephone System. This section describes the Toll Restriction Table and its general use when dialing restricted numbers. Discussion is then extended to the following dialing areas:

A.   1 + dialing areas
B.   Direct Dialing areas
C.   OCC, Equal Access

A flow chart is included to provide the reader with a step by step approach of how the restrictions are applied. On the facing page detailed steps explain the flow chart to further simplify the process.

JOB SPECIFICATION SHEETS
Section 370 contains duplicate Job Specification Sheets from the Job Specifications Manual that is shipped with each KSU. These sheets contain all the System Programming values and configurations required for an installation.

The Job Sheets from the Job Specifications Manual must be kept current and LEFT ON THE JOB SITE. A duplicate copy of completed Job Sheets should also be kept in the customer's file for reference at the servicing office.

During the initial stages of system planning, the Job Specification Sheets are necessary for collecting information to accurately configure the installation of the Electra 8/24 Electronic Key Telephone System. The customer information, collected by the salesperson or the installation supervisor, is recorded on the specification sheets. These sheets are arranged in the logical order of the Memory Blocks to make the System Programming as efficient as possible.

The first group of Specification Sheets are used for entering the System Mode functions. The second group for assigning the Tenant Mode functions. The third group for programming the CO/PBX Line Mode functions. The fourth group for entering the Telephone Mode functions. The fifth group for the Menu (Pattern)

Selection Mode and the sixth group for the Special Mode. This section is very useful for service technicians who keep track of adds, moves, changes, and in some cases, for troubleshooting.

FOLD OUT THE LAST PAGE OF THIS CHAPTER TO HELP AS A GUIDE THROUGH THE PROGRAMMING STEPS.

ENTERING THE PROGRAMMING MODE AND THE SELECTION OF MEMORY BLOCKS

In order to use the sections just discussed, a brief description of how to enter the Programming Mode and the selection of Memory Block areas is necessary.

Programming of the Resident System Program can be accomplished by either of two ETZ-16D-1 Key Telephones. These programming positions are automatically assigned to the two lowest Key Telephone interface circuits on the MBD(412)-Z ( ) KTU in the system (ports 10 and/or 11).

The first step when entering any area of programming is to place the programming station into an **OFF-LINE** mode.

TO GO OFF-LINE
    A. The Programming Station must be idle
    B. Press the **FNC** Key
    C. Press the **HOLD** Key
    D. Dial *,# in sequence

After these three steps, the display on the Key Telephone will show.

While the programming Key Telephone is **OFF-LINE**, it cannot be signaled by any station in the system. Equally, no other station is able to do system controlled programming changes (i.e., *Ring Assignment*, *Ring Tone* or *Off-hook*). Only one programming Key Telephone can be **off-line** at one time.

The next step is to select the area in the System Memory Blocks that correspond to the feature or function to be programmed. A Memory Block index has been provided to help the programmer locate the area needed. Selection of a Memory Block location is done by pressing the Key Telephone's line keys in a predetermined sequence. The ETZ-16D-1 Key Telephone has eight Line Keys, LK1~LK4 is used to select Memory Block locations 1~4 respectively and Line Keys LK9~LK12 are used to select Memory Block location 5. The Resident System Program is set up into

six Memory Block areas. Each area is designated by a number to represent a function:

    1. **System Mode**
    2. **Tenant Mode**
    3. **CO/PBX Line Mode**
    4. **Telephone Mode**
    5. **Menu Selection Mode**
    6. **Special Mode**

Memory Blocks 1~4 can be accessed by pressing Line Keys 1~4, respectively. Memory Block 5 can be accessed by pressing Line Keys 9~12. Memory Block 6 can be accessed by pressing the **FNC** key or **CNF** key.

	MEMORY BLOCK	KEY
Designation	1 ~ 4	Line Key 1~4
Designation	5	Line Key 9~12
Designation	6	FNC Key, CNF Key

	FUNCTION NUMBER	KEY
Designation	01~xx	Dial Key 0~9 (Any number)

After selecting a Memory Block area, enter the function number using dial pad keys (0~9). (Memory Blocks 5 & 6 do not have function numbers.)

If the Menu Programming Feature assignment is needed, it must be programmed prior to other assignments.

To return to the main Memory Block areas (1~4) from the Menu Programming block, press the appropriate line key (LK1~LK4).

System Data Registration can be registered while telephones are in use. However, there are two types of data items. One is immediately updated upon registration operation, and the other is updated when all circuits in the system become idle.

The data items that will not be updated while telephones are in use are as follows:

Memory Block	Function
1-14	Station BGM Connection
1-17	DSS/BLF Console Assignment (when DSS number is changed)
1-21	DTMF Digit Duration
1-44	Tandem Conference Line Assignment

If any of the above data items are registered while a telephone is in use, the LCD will display:

```
dATA SEt on idLE
```

without returning to the time display, even though the **off-line mode** is released, by pressing the **SPKR** key. When all circuits in the system become idle, the data is updated and the on-line mode is restored.

SECTION 325
SYSTEM INITIALIZATION

Two initialization procedures are provided:
A **first initialization** clears the Resident Program and returns it to its default values and returns the system to an idle condition. A **second initialization** is a hardware reset which will return the entire system to an idle condition. The following are procedures for both types of initialization:

First Initialization:
A. Go Off Line
B. Press the **FNC** Key
C. Press the **RECALL** Key
D. Dial the digit 3
E. Press the **HOLD** Key
F. Press the **MIC** Key

Second Initialization:
A. Go Off Line
B. Press the **FNC** Key
C. Press the **HOLD** Key
D. Press the **LNR/SPD** Key
E. Dial the digits 1, 3
F. Press the **RECALL** Key
G. Press the **MIC** Key

SECTION 330
RESIDENT SYSTEM DEFAULT VALUES

Memory Block	FUNCTION	DEFAULT VALUES
1-01	Hookflash Time Selection	Hookflash: 0.6 sec. Hookflash End: 1.0 sec.
1-02	Hold Recall/Call Park Recall Time Selection	2 minutes.
1-03	Paging Time Out Selection	90 sec.
1-04	CO/PBX Line Queuing Recall Time	10 sec.
1-05	Pause Time and Interdigit Time Selection	Pause Time: 3.5 sec. Interdigit Time (Dial Pulse Lines): 800 msec.
1-06	MFR Timer	10 sec.
1-07	Doorphone Display Time Selection	10 sec.
1-08	Ring Transfer Recall Time Selection	1 minute.
1-09	Automatic Callback Time Selection	No limit
1-10	Automatic/Redial Time Selection	Ringing Time: 60 sec. Waiting Time: 120 sec. Repeat 5 times.
1-11	Bounce Protection Time	0.3 sec.
1-12	Elapsed Call and SMDR Start Timer Selection	10 sec.
1-13	Intercom Call Signal Tone/Voice Selection	Voice
1-14	Station BGM Connection (Allow/Deny)	Deny
1-15	System Speed Dial Toll Override	Deny
1-16	System Speed Dialing Confirmation Key Telephone	Port Numbers 10 and 11 only
1-17	DSS/BLF Console Assignment	DSS/BLF Console port numbers are assigned if they are connected during system power up.

RESIDENT SYSTEM DEFAULT VALUES (Continued)

Memory Block	FUNCTION	DEFAULT VALUES
1-18	Ringing Tone Transfer	Allow
1-19	Time Display Switching (12h/24h)	12 Hour System
1-20	Off-Hook Ringing Tone	Allow
1-21	DTMF Digit Duration	100 msec.
1-23	Handset Receiving Volume	Down: The Volume increase is reset when you hang up.
1-24	Privacy Override Tone on CO/PBX Line (Allow/Deny)	Deny
1-25	External Speaker (Connected/Not Connected)	Connected
1-26	Line Selection Codes	Code 9: CO/PBX line Code 80: PBX Code 88: —
1-27	PBX Access Code Assignment -I	8 - (pause)
1-28	PBX Access Code Assignment -II	9 - (pause)
1-29	Privacy Override Assignment	NONE
1-30	Private Line Assignment	NONE
1-31	Doorphone Assignment (Installed/Not Installed)	Installed (Both Door Phones 1 and 2)
1-32	Door Lock Release (Yes/No)	Allow (Both relays)
1-34	SMDR Print Format	All Digits of dialed numbers
1-35	Single Line Telephone Hookflash	Internal Hold
1-36	Intercom Master Number	No
1-37	CO/PBX Line On-Hook Origination/Abandoning (Yes/No)	No
1-42	Doorphone Call Automatic Answer (Allow/Deny)	Deny
1-43	External Tone Signal Control	No
1-44	Tandem Conference Line Assignment	Port 21
1-50	Automatic Release Disconnection Signal Detection Time	150 msec.
1-51	1 + Dialing Assignment	1 + Dial
1-52	Toll Restriction Allow Table Size Assignment	00 (All Deny Table)
1-53	Digit Rejection Assignment	NONE
1-54	OCC Override Table Assignment	NONE
1-55	Toll Restriction Override Table Assignment	NONE
1-56	Digit Counting	NONE
2-01	Tenant CO/PBX Line Accommodation	Tenant 0 accommodates all CO/PBX lines

RESIDENT SYSTEM DEFAULT VALUES (Continued)

Memory Block	FUNCTION	DEFAULT VALUES
3-01~08	Seized Self CO/PBX Number Display	All clear (NONE)
3-09	CO/PBX Line Status Selection	• CO/PBX Line Function: Origination & answering • Polarity Reversal: No • CO/PBX Line: CO line • DP/DTMF Selection: DTMF
3-10	Single Line Telephone Ring Assignment (DIT)	No Assignment
3-20	Automatic Release Selection	Deny
4-01	Telephone Status Selection -I	• SLT Installed: Yes • Tenant Number: Tenant 0 • Internal Page Group: Group 1 • DSS/BLF dialing 0: DSS 1
4-02	Telephone Status Selection -II	• Ringing Line Preference: No • 3-Minute Alarm: Deny • Off-Hook Ringing Tone: Port 10, 11 only • Prime Line Assignment: Deny
4-03	Extension Number Assignment	10~33
4-04	Automatic CO/PBX Line Seizure/Prime Line Assignment	Allow
4-06	Ringing Tone/Doorphone Ringing Assignment	• Telephone Ringing Tone Variation: Low • Door Phone 1, 2 (Day, Night): Port 10 and 11 only ring on both Door Phone calls
4-07	Digit Restriction Assignment	Deny
5-01	Feature Assignment	Pattern No. 000
5-02	Ringing Assignment - Day	Port 10, 11 only ring on all incoming CO/PBX calls
5-03	Ringing Assignment - Night	Port 10, 11 only ring on all incoming CO/PBX calls
5-04	Non/Toll/Outgoing Restriction	No Restriction on any CO/PBX line or telephone
6-A	Speed Dialing Clear (System)	
6-B	Speed Dialing Clear (Telephone)	
6-C	ROM Version Confirmation	

SECTION 340
SYSTEM PROGRAMMING DATA SHEETS

MEMORY BLOCK 1 - 01
HOOKFLASH TIME SELECTION

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 01		**4-01, 1-35**

OPERATION ◄——————— *AND* ————————► **DISPLAY**

1. Go off-line.

2. Press LK1 (see NOTE 2).

3. Dial 0, then 1, to specify function №. 01.

4. Input data (0~3) with dial pad.
   Example: To set 0.4 seconds as data for CO/PBX line, input 0 (see Notes 1 & 3).
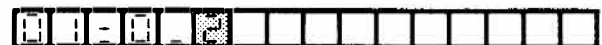
5. Press **MIC** key (see Note 4).

6. Press **SPKR** key to go back on line.

NOTES:

1. Dial * (←), # (→) to move the setting position then input data or function №.

   Function №. ┘ └ Data position for Hookflash end
   └ Data position for Recall/Hookflash

2. Pressing LK1 will automatically display Function №. 01.

3. Data Table   Default value*

Recall/Hookflash	
Code	Feature
0	0.4 sec.
* 1	0.6 sec.
2	1.0 sec.
3	1.5 sec.

Hookflash End (SLT)	
Code	Feature
0	0.4 sec.
1	0.6 sec.
* 2	1.0 sec.
3	1.5 sec.

4. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.

GENERAL INFORMATION - HOOKFLASH TIME SELECTION

This Memory Block area is used to enter the instantaneous break time of the Hookflash signal to be sent to a CO/PBX line when the **RECALL** key on a Key Telephone is pressed and the Hookflash end time for Single Line Telephones.

MEMORY BLOCK 1 - 02
HOLD RECALL/CALL PARK RECALL TIME SELECTION

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 02		**5-01**

OPERATION ◄─────── AND ───────► DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 0, then 2, to specify function No. 02.

4. Input data (0-3) with dial pad.
   Example: Input 2 to select 4 minutes (see Notes 1 & 2).

5. Press **MIC** key (see Note 3).

6. Press **SPKR** key to go back on line.

NOTES:

1. Dial * (←), # (→) to move the setting position then input data or function No.

   Function No. └── Data setting position

3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.

2. Data Table   Default value*

Code	Feature
0	1 min.
* 1	2 min.
2	4 min.
3	No limit

┌ GENERAL INFORMATION - HOLD RECALL/CALL PARK RECALL TIME SELECTION ┐

This Memory Block area is used to enter the time for the Hold Recall to start (both visual and audible). If No limit is selected, there will not be any Hold Recall. This timer is used for both Exclusive and Non-Exclusive Hold.

MEMORY BLOCK 1 - 03
PAGING TIME OUT SELECTION

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
		1-25
1 - 03		4-01

OPERATION ← AND → DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 0, then 3, to specify function N⁰. 03.

4. Input data (0-2) with dial pad.
   Example: Input 1 to select 120 seconds (see Notes 1 and 2).

5. Press **MIC** key (see Note 3).

6. Press **SPKR** key to go back on line.

NOTES:

1. Dial * (←),# (→) to move the setting position then input data or function N⁰.

    Function N⁰. ⌐ Data setting position

3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.

2. Data Table   Default value*

Code	Feature
* 0	90 sec.
1	120 sec.
2	No limit

GENERAL INFORMATION - PAGING TIME OUT SELECTION

This Memory Block area is used to enter the duration of internal zone paging and external speaker paging.

MEMORY BLOCK 1 - 04
CO/PBX LINE QUEUING RECALL TIME

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 04		**4-04**

OPERATION ◄———— AND ————► DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 0, then 3, to specify function No. 04.
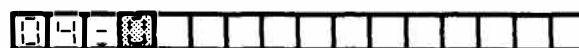
4. Input data (0~2) with dial pad.
   Example: Input 2 to select 30 seconds (see Notes 1 and 2).
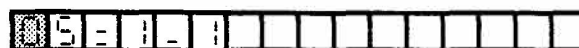
5. Press **MIC** key (see Note 3).

6. Press **SPKR** key to go back on line.

NOTES:

1. Dial * (←),# (→) to move the setting position then input data or function No.

   Function No. ⌐ Data setting position

3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.

2. Data Table   Default value*

Code	Feature
* 0	10 sec.
1	20 sec.
2	30 sec.
3	60 sec.
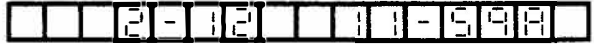
GENERAL INFORMATION - CO/PBX LINE QUEUING RECALL TIME

This Memory Block area is used to enter the duration of a queued trunk that goes unanswered.

MEMORY BLOCK 1 - 05
PAUSE TIME AND INTERDIGIT TIME SELECTION

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 05		1-27, 1-28
		3-09
		5-01

OPERATION ◄————— AND —————► DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 0, then 5, to specify function №. 05.

4. Input data (0-1) with dial pad.
   Example: Input 0 to select 1 second as a pause time (See Notes 1 and 2), input interdigit time data (See Note 2).

5. Press **MIC** key (see Note 3).

6. Press **SPKR** key to go back on line.

NOTES:

1. Dial * (←), # (→) to move the setting position then input data or function №.

   Function №.
   Data position for interdigit time
   Data position for pause time
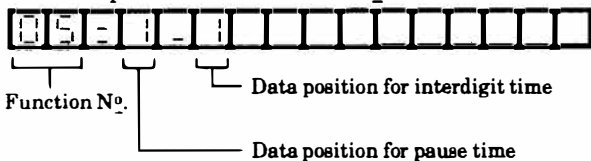
2. Data Table   Default value*

Pause time		Interdigit time	
Code	Feature	Code	Feature
0	1.0 sec.	0	700 msec. @10pps 550 msec. @20pps
* 1	3.5 sec.	* 1	800 msec.

3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.

GENERAL INFORMATION - PAUSE TIME AND INTERDIGIT TIME SELECTION

Pause Time refers to the time in which no dial signals will be sent to the CO/PBX line. This is the amount of time that the system will wait after a PBX access code or a pause has been entered into a System or Station Speed Dial buffer. Interdigit time is the amount of time that the system will wait between sending digits to the CO/PBX line. The interdigit time selection pertains only to **Dial Pulse** lines.

MEMORY BLOCK 1 - 06
MFR TIMER

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 06	**4-01**	
	4-02	

OPERATION ←——————— *AND* ——————→ **DISPLAY**

1. Go off-line.

2. Press LK1.

3. Dial 0, then 6, to specify function N⁰. 06.

4. Input data (0~5) with dial pad.
   Example: Input 2 to select 20 seconds (see Notes 1 and 2).

5. Press **MIC** key (see Note 3).

6. Press **SPKR** key to go back on line.
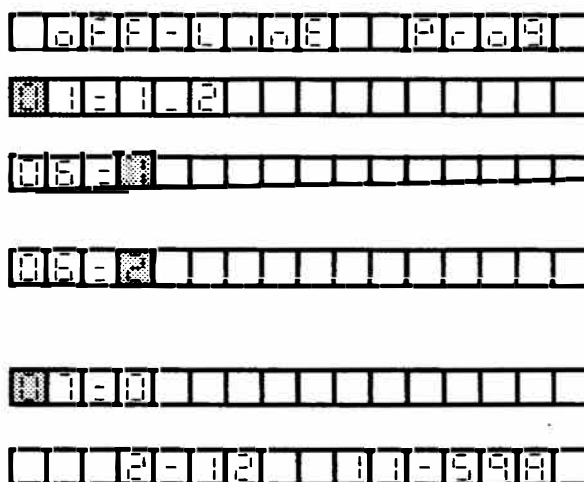
NOTES:

1. Dial * (←),# (→) to move the setting position then input data or function N⁰.

   Function N⁰. — Data setting position

3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.

2. Data Table   Default value*

Code	Feature	Code	Feature
0	5 sec.	4	50 sec.
* 1	10 sec.	5	60 sec.
2	20 sec.		
3	30 sec.		

GENERAL INFORMATION - MFR TIMER

This Memory Block area is used to enter the time during which the receiver (MFR) can receive DTMF signals from a Single Line Telephone. The receiver (MFR) can no longer receive DTMF signals after the set time has elapsed. The timer begins after the last digit is dialed.

MEMORY BLOCK 1 - 07
DOORPHONE DISPLAY TIME SELECTION

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 07	**1-31, 4-06**	**1-42**

OPERATION ◄——————— *AND* ——————► DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 0, then 7, to specify function №. 07.

4. Input data (0~3) with dial pad.
   Example: Input 1 to select 30 seconds (see Notes 1 and 2).

5. Press **MIC** key (see Note 3).

6. Press **SPKR** key to go back on line.

■━ ■ ━ ■ ━ ■ ━ ■ ━ ■ ━ ■ ━ ■ ━ ■ ━

NOTES:

1. Dial * (←),# (→) to move the setting position then input data or function No.

   └─┬─┘ └─┬─┘ — Data setting position
   Function №.

2. Data Table   Default value*

Code	Feature
* 0	10 sec.
1	30 sec.
2	60 sec.
3	90 sec.

3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.

GENERAL INFORMATION - DOOR PHONE DISPLAY TIME SELECTION

This Memory Block area is used to enter the time during which **DOORPHONE 1** or **DOORPHONE 2** is displayed on an ETZ-16D-1 Key Telephone that is assigned to ring upon access by a Doorphone. This same parameter is used for the warning tone given to a station user when off-hook, when a Doorphone is activated, and for the time interval for which a station can answer an incoming call from a Doorphone (if the Doorphone is programmed for automatic call answer).

MEMORY BLOCK 1 - 08
RING TRANSFER RECALL TIME SELECTION

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 08		**1-18**

OPERATION ←———— AND ————→ DISPLAY

1. Go off-line.

    `[ oFF-LinE  ProG ]`

2. Press LK1.

    `[ 11-1_2 ]`

3. Dial 0, then 8, to specify function № 08.

    `[ 08-  ]`

4. Input data (0~3) with dial pad.
   Example: Input 2 to select 2 minutes (see Notes 1 and 2).

    `[ 08-2 ]`

5. Press **MIC** key (see Note 3).

    `[ 09-3 ]`

6. Press **SPKR** key to go back on line.

    `[ 2-2   1-598 ]`

■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■

NOTES:

1. Dial * (←),# (→) to move the setting position then input data or function №.

    `[ 08-1 ]`
    Function №.   Data setting position

2. Data Table   Default value*

Code	Feature
0	30 sec.
* 1	1 min.
2	2 min.
3	4 min.

3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.
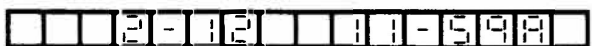
GENERAL INFORMATION - RING TRANSFER RECALL TIME SELECTION

This Memory Block area is used to enter the time for the Recall to occur at the Key Telephone that ring transferred a call, if the transferred call was not answered within the preprogrammed time interval.

MEMORY BLOCK 1 - 09
AUTOMATIC CALLBACK TIME SELECTION

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 09		

OPERATION ◄——— AND ———► DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 0, then 9, to specify function No. 09.

4. Input data (0~3) with dial pad.
   Example: Input 1 to select 60 minutes (see Notes 1 and 2).

5. Press **MIC** key (see Note 3).

6. Press **SPKR** key to go back on line.

NOTES:

1. Dial * (←),# (→) to move the setting position then input data or function No.

   Function No. ⌐ Data setting position

2. Data Table   Default value*

Code	Feature
0	30 min.
1	60 min.
2	90 min.
*3	No Limit

3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.

4. The audible signal that is received by the sending station, when the called station returns to an idle condition, is fixed at 30 seconds.

┌─ **GENERAL INFORMATION - AUTOMATIC CALLBACK TIME SELECTION** ─┐

This Memory Block area is used to enter the time from when a Callback is set until it is released.

MEMORY BLOCK 1 - 10
AUTOMATIC REDIAL TIME SELECTION

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 10		

OPERATION ← —————— AND —————→ DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 1, then 0, to specify function N⁰. 10.

4. Input data (0~3) with dial pad.
   Example: Input 1 to select 60 seconds Callback time, 90 second waiting time, repeat 5 times (see Notes 1 & 2).

5. Press **MIC** key (see Note 3).
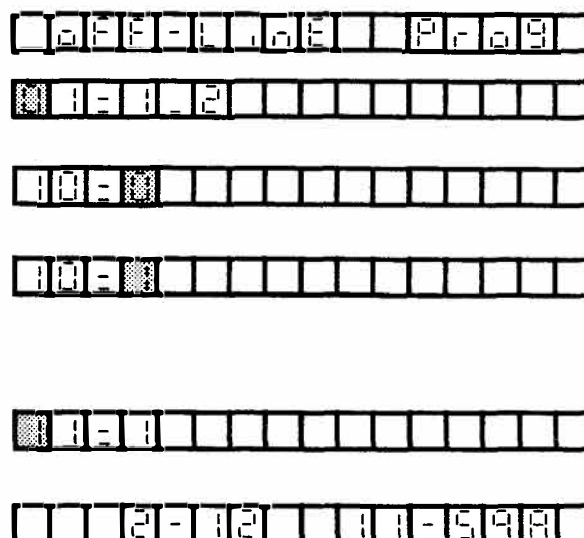
6. Press **SPKR** key to go back on line.

NOTES:

1. Dial * (←), # (→) to move the setting position then input data or function N⁰.

   └─Function N⁰. └─Data setting position
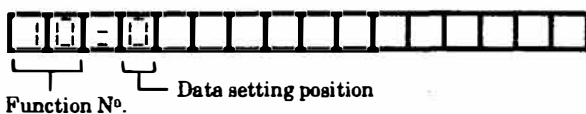
2. Data Table   Default value*

Code	Feature		
	Callback time	Waiting time	Repeat
* 0	60 sec.	120 sec.	5
1	60 sec.	90 sec.	5
2	40 sec.	60 sec.	5
3	30 sec.	30 sec.	5

3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.

Callback Time = How long the call will be monitored by the system before it releases the CO/PBX call.

Waiting Time = The time between redial attempts.

GENERAL INFORMATION - AUTOMATIC REDIAL TIME SELECTION

This Memory Block area is used to enter the monitoring and waiting time between each dialing attempt.

MEMORY BLOCK 1 - 11
BOUNCE PROTECTION TIME

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 11	**4-01**	

OPERATION ◄───── AND ─────► DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 1, then 1, to specify function №. 11.

4. Input data (0~3) with dial pad.
   Example: Input 2 to select 0.6 seconds (see Notes 1 & 2).

5. Press **MIC** key (see Note 3).
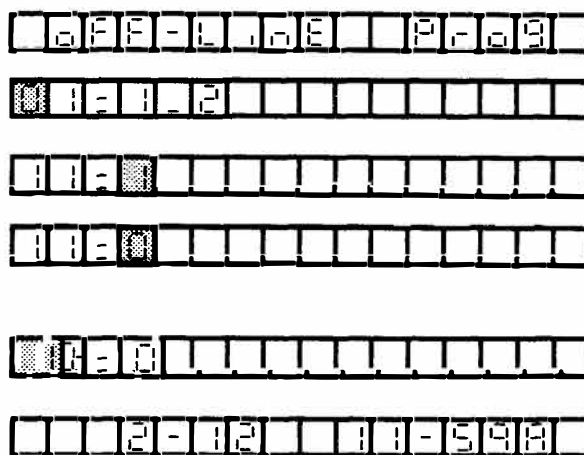
6. Press **SPKR** key to go back on line.

■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■

NOTES:

1. Dial * (←), # (→) to move the setting position then input data or function №.

   └┬┘ └┬┘ Data setting position
   Function №.

2. Data Table   Default value*

Code	Feature
0	0 sec.
* 1	0.3 sec.
2	0.6 sec.
3	0.9 sec.

3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.

GENERAL INFORMATION - BOUNCE TIME SELECTION

This Memory Block area is used to enter the duration of time before a valid Hookflash from a Single Line Telephone is detected.

MEMORY BLOCK 1 - 12
ELAPSED CALL AND SMDR START TIMER SELECTION

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 12		**3-09**

OPERATION ◄———————— AND ————————► DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 1, then 2, to specify function N°. 12.

4. Input data (0~2) with dial pad.
   Example: Input 1 to select 20 seconds (see Notes 1 and 2).

5. Press **MIC** key (see Note 3).

6. Press **SPKR** key to go back on line.

NOTES:

1. Dial * (←),# (→) to move the setting position then input data or function N°.
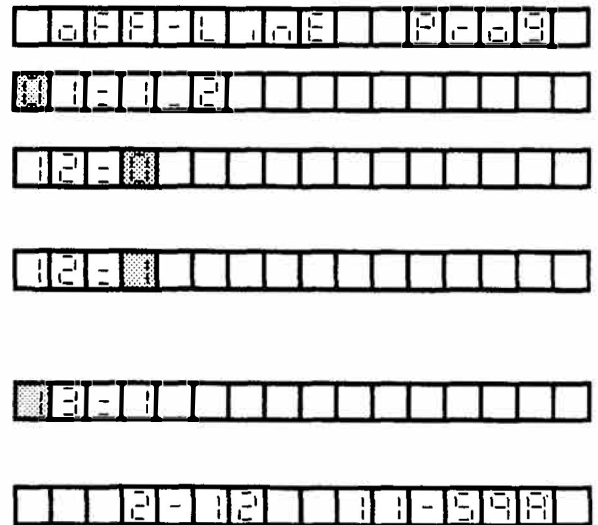
   Function N°.⌐⌐ Data setting position

2. Data Table   Default value*

Code	Feature
* 0	10 sec.
1	20 sec.
2	30 sec.

3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.

GENERAL INFORMATION - ELAPSED CALL AND SMDR START TIMER SELECTION

This Memory Block area is used to enter the time in which the Elapsed Call Timer will start when originating a CO/PBX call. The same parameter is used as the SMDR start time. This is the amount of time that must elapse after the last dialed digit in order to present an SMDR call record.

MEMORY BLOCK 1 - 13
INTERCOM CALL SIGNAL TONE/VOICE SELECTION

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 13		

OPERATION ◄────── AND ──────► DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 1, then 3, to specify function No. 13.

4. Input data (0~1) with dial pad.
   Example: Input 0 to select signal tone (see Notes 1 and 2).

5. Press **MIC** key (see Note 3).

6. Press **SPKR** key to go back on line.

NOTES:

1. Dial * (←),# (→) to move the setting position then input data or function No.

   Function No. ⌐ Data setting position

3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.
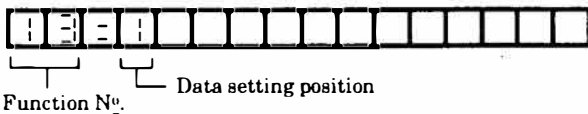
2. Data Table   Default value*

Code	Feature
0	Tone
* 1	Voice
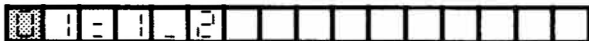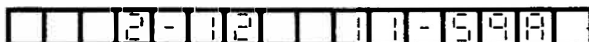
GENERAL INFORMATION - INTERCOM CALL SIGNAL TONE/VOICE SELECTION

This Memory Block area is used to specify the type of signal to be received on internal calls (Tone or Voice). The originating user can alternate between Voice and Tone by dialing the digit 1.

MEMORY BLOCK 1 - 14
STATION BGM CONNECTION (ALLOW/DENY)

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 14		

OPERATION ◄——— AND ———► DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 1, then 4, to specify function № 14.

4. Input data (0~1) with dial pad.
   Example: Input 1 to select Allow (see Notes 1, 2, 3 and 4).

5. Press MIC key (see Note 3).

6. Press SPKR key to go back on line.

NOTES:

1. Dial * (←),# (→) to move the setting position then input data or function №.

   Function № ⌐ Data setting position

2. Data Table   Default value*

Code	Feature
* 0	Deny
1	Allow

3. Pressing the MIC key enters the data and causes the display to increment to the next function number.

4. This feature, when enabled, requires a dedicated intercom path. This will leave the system with 4 remaining intercom paths for internal calls.

GENERAL INFORMATION - STATION BGM CONNECTION (ALLOW/DENY)

This Memory Block area is used to specify if Background Music will be supplied to a Key Telephone speaker when the proper feature access code is dialed and a locally provided music source is connected. An ESP-Z KTU is required to support this feature.

MEMORY BLOCK 1 - 15
SYSTEM SPEED DIAL TOLL OVERRIDE

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 15	**5-04**	**5-01**

OPERATION ◄——————— AND ———————► DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 1, then 5, to specify function № 15.

4. Input data (0~1) with dial pad.
   Example: Input 1 to select Cancel (see Notes 1 and 2).

5. Press **MIC** key (see Note 3).

6. Press **SPKR** key to go back on line.

— ■ — ■ — ■ — ■ — ■ — ■ — ■ — ■ — ■ — ■ —

NOTES:

1. Dial * (←), # (→) to move the setting position then input data or function №.

   Function № └─┬─┘ └─┬─┘ — Data setting position
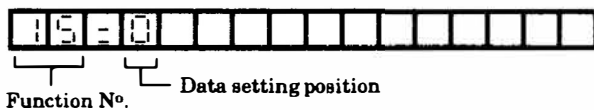
2. Data Table   Default value*

Code	Feature
* 0	Deny (do not override Toll Restriction)
1	Allow (override Toll Restriction)

3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.

r — ■ — ■ — ■ — ■ — ■ — ■ — ■ — ■ — ■ — ■ — ■ — ■ ─
| **GENERAL INFORMATION - SYSTEM SPEED DIAL TOLL OVERRIDE** |
| This Memory Block area is used to allow System Speed Dial buffers 20~39 to bypass Toll Restriction parameters. |
| The remaining buffers (40~99) will not allow long distance calls to be made from a restricted station. |
L — ■ — ■ — ■ — ■ — ■ — ■ — ■ — ■ — ■ — ■ — ■ — ■ ─

MEMORY BLOCK 1 - 16
SYSTEM SPEED DIALING CONFIRMATION KEY TELEPHONE

| MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 16		

OPERATION ◄——————— AND ————————► DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 1, then 6, to specify function № 16.

4. Input data (0~1) with dial pad.
   Example: Input 1 to select All telephones (see Notes 1 and 2).
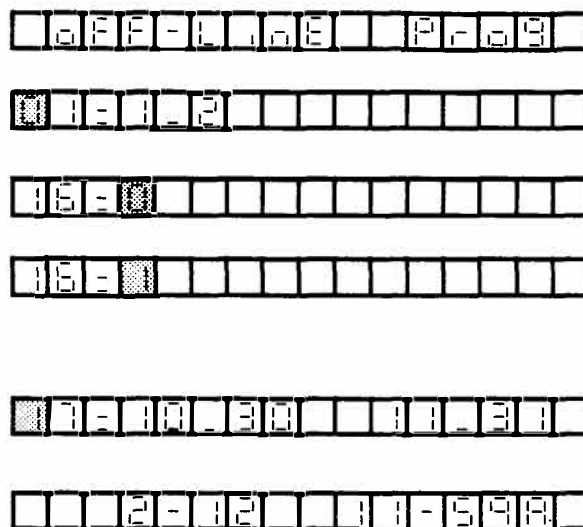
5. Press **MIC** key (see Note 3).

6. Press **SPKR** key to go back on line.

NOTES:

1. Dial * (←), # (→) to move the setting position then input data or function №.

   Function № — Data setting position

3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.

2. Data Table   Default value*

Code	Feature
* 0	Ports 10 and 11 only
1	All telephones
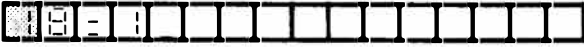
GENERAL INFORMATION - SYSTEM SPEED DIALING CONFIRMATION KEY TELEPHONE

This Memory Block area is used to specify if the Attendant positions or all ETZ-16D-1 stations can examine System Speed Dial buffer contents when initiating System Speed Dialing by stations other than Attendants.

MEMORY BLOCK 1 - 17
DSS/BLF CONSOLE ASSIGNMENT

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 17		**1-44**
		4-01

OPERATION ←———— AND ————→ DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 1, then 7, to specify function №. 17.

4. Input data with dial pad.
   Example: When DSS 1 is assigned to port №. 12 its
   Attendant is port №. 10.
   Repeat steps to set DSS 2.

5. Press **MIC** key (see Note 3).

6. Press **SPKR** key to go back on line.

NOTES:

1. Dial * (←),# (→) to move the setting position then input data or function №.

Function №. Port №. of DSS 1 Port №. of DSS 2

Port №. pair to DSS 1
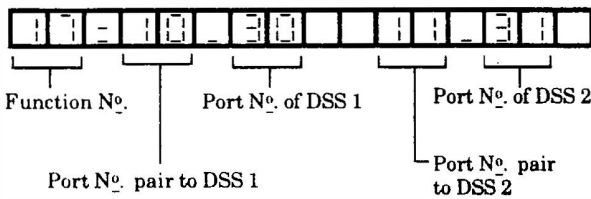
Port №. pair to DSS 2

If neither DSS 1 nor DSS 2 are installed, the areas showing their port numbers will be blank.

2. Data and keys used to input data.

Key	Feature
Dial key	Port pair to DSS : (Port 10~33) №. of DSS :(Port 12~33)
HOLD	Clear 1 data (2 digits)

Default value:Ports №. 10 and 11 are Attendants to DSS 1 and 2, respectively. DSS numbers are the port numbers provided at first power on.

3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.

4. A DSS/BLF cannot share the same port as the Tandem Conference feature.

GENERAL INFORMATION - DSS/BLF CONSOLE ASSIGNMENT

This Memory Block area is used to specify ports to which DSS/BLF Consoles are connected. Up to two DSS/BLF Consoles can be connected per system.

MEMORY BLOCK 1 - 18
RINGING TONE TRANSFER

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 18	**5-02**	**1-08**
	5-03	

OPERATION ◄———— AND ————► DISPLAY

1. Go off-line.

   `o F F - L i n E    P r o g`

2. Press LK1.

   `1 - 1 . 2`

3. Dial 1, then 8, to specify function No. 18.

   `1 8 - M`

4. Input data (0~1) with dial pad.
   Example: Input 0 to select Deny (see Notes 1 and 2).

   `1 8 - 0`

5. Press MIC key (see Note 3).

   `1 9 - 0`

6. Press SPKR key to go back on line.

   `2 - 12   1 1 - 5 9 8`

NOTES:

1. Dial * (←), # (→) to move the setting position then input data or function No.

   `1 8 - 1`

   Function No. ⌐ Data setting position

3. Pressing the MIC key enters the data and causes the display to increment to the next function number.

2. Data Table   Default value*

Code	Feature
0	Deny
* 1	Allow

GENERAL INFORMATION - RINGING TONE TRANSFER

This Memory Block area is used to Allow or Deny Ringing Tone Transfer from all Key Telephones.

MEMORY BLOCK 1 - 19
TIME DISPLAY SWITCHING (12 h/24 h)

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 19		

OPERATION ◄——————— AND ——————► DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 1, then 9, to specify function N⁰. 19.

4. Input data (0~1) with dial pad.
   Example: Input 1 to select 24 hour system (see Notes 1 and 2).

5. Press **MIC** key (see Note 3).
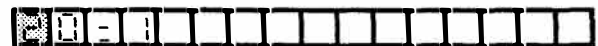
6. Press **SPKR** key to go back on line.

NOTES:

1. Dial * (←), # (→) to move the setting position then input data or function N⁰.

   Function N⁰. ⌐ Data setting position

2. Data Table   Default value*

Code	Feature
* 0	12 hour system
1	24 hour system

3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.

┌───┐
│ **GENERAL INFORMATION - TIME DISPLAY SWITCHING (12h/24h)** │
│   │
│ This Memory Block area is used to select either a 12 or 24 hour clock for the time display on an ETZ-16D-1 Key Telephone. │
│   │
│   12 hour clock: 12:00 A.M. to 11:59 P.M. │
│   24 hour clock: 0:00 to 23:59   │
└───┘
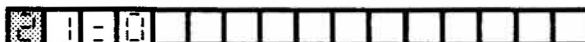
MEMORY BLOCK 1 - 20
OFF HOOK RINGING TONE

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 20	**4-02**	**5-01, 5-02, 5-03**

OPERATION ◄─────── *AND* ───────► **DISPLAY**

1. Go off-line.

2. Press LK1.

3. Dial 2, then 0, to specify function №. 20.

4. Input data (0~1) with dial pad.
   Example: Input 0 to select Deny (see Notes 1 and 2).

5. Press **MIC** key (see Note 3).

6. Press **SPKR** key to go back on line.

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NOTES:

1. Dial * (←), # (→) to move the setting position then input data or function №.

   └─┬─┘ └┬┘ — Data setting position
   Function №.

2. Data Table   Default value*

Code	Feature
0	Deny
* 1	Allow

3. Pressing the MIC key enters the data and causes the display to increment to the next function number.

4. This parameter must be allowed for off-hook ring to function.

┌─ ┐

GENERAL INFORMATION - OFF HOOK RINGING TONE

This Memory Block area is used to specify to Allow or Deny an off-hook audible ring tone to a ring assigned Key Telephone when it is off-hook using its handset.

└─ ┘

MEMORY BLOCK 1 - 21
DTMF DIGIT DURATION

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
		3-09
1 - 21		

OPERATION ← *AND* → DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 2, then 1, to specify function Nº. 21.

4. Input data (0~1) with dial pad.
   Example: Input 1 to select 300 msec. (see Notes 1 and 2).

5. Press **MIC** key (see Note 3).

6. Press **SPKR** key to go back on line.

NOTES:

1. Dial * (←),# (→) to move the setting position then input data or function Nº.

Function Nº. ⌐ Data setting position

3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.

2. Data Table   Default value*

Code	Digit Duration
* 0	100 msec.
1	300 msec.

GENERAL INFORMATION - DTMF DIGIT DURATION

This Memory Block area is used to set the DTMF Digit Duration for each digit dialed on an outside line.

MEMORY BLOCK 1 - 23
HANDSET RECEIVING VOLUME

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 23		

OPERATION ←——— AND ———→ DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 2, then 3, to specify function No. 23.
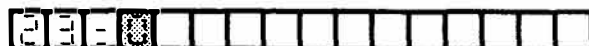
4. Input data (0~1) with dial pad.
   Example: Input 1 to select Up (see Notes 1 and 2).

5. Press **MIC** key (see Note 3).

6. Press **SPKR** key to go back on line.

NOTES:

1. Dial * (←), # (→) to move the setting position then input data or function No.

   Function No. ⌐ Data setting position

2. Data Table   Default value*

Code	Feature
* 0	Down
1	Up

   Down: The volume increase is reset when you hang up.
   Up: The volume increase is not reset when you hang up.

3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.

GENERAL INFORMATION - HANDSET RECEIVING VOLUME

This Memory Block area is used to specify, when a Key Telephone raises its receiving volume during a call, either *return to normal volume* or *stay at the raised volume* after the call is terminated and the handset is returned to the handset cradle.

MEMORY BLOCK 1 - 24
PRIVACY OVERRIDE TONE ON CO/PBX LINE (ALLOW/DENY)

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 24	**1-29**	

OPERATION ⟵⎯⎯⎯ *AND* ⎯⎯⎯⟶ **DISPLAY**

1. Go off-line.

2. Press LK1.

3. Dial 2, then 4, to specify function N⁰. 24.

4. Input data with dial pad.
   Example: Input 1 to select Allow (see Notes 1 and 2).

5. Press **MIC** key (see Note 3).

6. Press **SPKR** key to go back on line.

NOTES:

1. Dial * (⟵), # (⟶) to move the setting position then input data or function N⁰.

   Function N⁰. — Data setting position

3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.
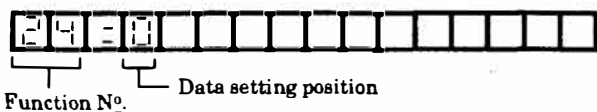
2. Data Table   Default value*

Code	Feature
* 0	Deny
1	Allow

GENERAL INFORMATION - PRIVACY OVERRIDE TONE ON CO/PBX LINE (ALLOW/DENY)

This Memory Block area is used to specify whether or not to send an Override Tone to both the overridden and overriding station when a conversation is interrupted.

MEMORY BLOCK 1 - 25
EXTERNAL SPEAKER (CONNECTED / NOT CONNECTED)

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
		1-03
1 - 25		

### OPERATION ←———— AND ————→ DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 2, then 5, to specify function №. 25.

4. Input data (0~1) with dial pad.
    Example: When speaker 2 is not connected.
    A. Move setting position (see Note 1).
    B. Input 0 (See Note 2).

5. Press **MIC** key (see Note 3).

6. Press **SPKR** key to go back on line.

NOTES:

1. Dial * (←),# (→) to move the setting position then input data or function №.

    Function №. — Data position for speaker 2
    Data position for speaker 1
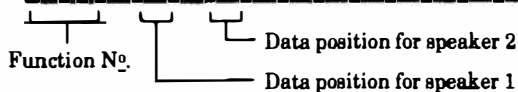
3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.

2. Data Table   Default value*

Code	Feature
0	Not connected
* 1	Connected

GENERAL INFORMATION - EXTERNAL SPEAKER (CONNECTED / NOT CONNECTED)

This Memory Block area is used to specify if external speakers are connected or not connected.

MEMORY BLOCK 1 - 26
LINE SELECTION CODES

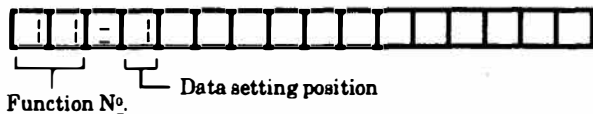| MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 26		3-09
		4-02
		4-04

OPERATION ◄───────── *AND* ─────────► **DISPLAY**

1. Go off-line.

2. Press LK1.

3. Dial 2, then 6, to specify function No. 26.

4. Input data (0~3) with dial pad.
   Example: When code 80 is specified to seize PBX line:
   A. Move setting position (see Note 1).
   B. Input 1 (see Note 2).
   Similarly, operate as above to specify codes 9 and 88 for line seizure.

5. Press **MIC** key (see Note 3).
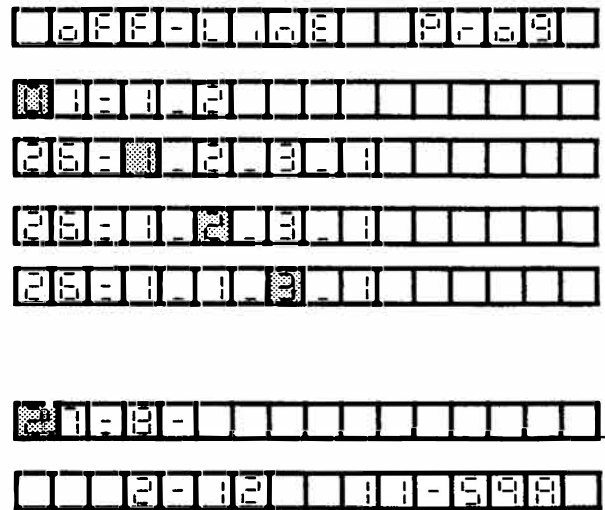
6. Press **SPKR** key to go back on line.

■ ▪ ■ ▪ ■ ▪ ■ ▪ ■ ▪ ■ ▪ ■ ▪ ■ ▪ ■

NOTES:

1. Dial ∗ (←), # (→) to move the setting position then input data or function No.

Function No. ⌐ Data position for code 9 / Data position for code 80 / Data position for code 88 / Not used

2. Data Table

Code	Feature
0	NONE
1	CO line
2	PBX line
3	—

Default value
Code 9: CO line
Code 80: PBX line
Code 88: —

3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.
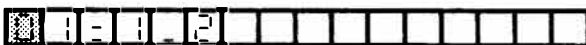
┌ ─ ┄ ─ ┄ ─ ┄ ─ ┄ ─ ┄ ─ ┄ ─ ┄ ─ ┐
GENERAL INFORMATION - LINE SELECTION CODES
This Memory Block area is used to specify the type of lines that are associated with the fixed trunk access codes.
└ ─ ┄ ─ ┄ ─ ┄ ─ ┄ ─ ┄ ─ ┄ ─ ┄ ─ ┘

MEMORY BLOCK 1 - 27
PBX ACCESS CODE ASSIGNMENT - I

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 27	**3-09**	**1-05**

OPERATION ◄──────── *AND* ────────► **DISPLAY**

1. Go off-line.

2. Press LK1.

3. Dial 2, then 7, to specify function № 27.

4. Input data (0~9) with dial pad.
   Example: Input 8~22- (see Notes 1 and 2).

5. Press **MIC** key (see Note 3).

6. Press **SPKR** key to go back on line.

■ ▬ ■ ▬ ■ ▬ ■ ▬ ■ ▬ ■ ▬ ■ ▬ ■ ▬ ■ ▬ ■ ▬ ■

NOTES:

1. Dial * (←), # (→) to move the setting position then input data or function №.

   Function №. — Data setting position (Max. 6 digits)

2. Data and keys used to input data.

Key	Feature
Dial key	Data
LNR/SPD	Pause
HOLD	All clear

   Default value: 8-

   Numerals and pauses (maximum of three each) can be input as the outgoing code.

3. Consecutive pauses cannot be entered, *i.e.* 8 - -.
   A pause cannot be entered as the first digit, *i.e.* - 8.

4. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.

GENERAL INFORMATION - PBX ACCESS CODE ASSIGNMENT -

This Memory Block area is used to allow a station user to dial access to a PBX line without the Toll Restriction inspection occurring until after the PBX access code.

MEMORY BLOCK 1 - 28
PBX ACCESS CODE ASSIGNMENT - II

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 28	**3-09**	**1-05**

OPERATION ← — AND — → DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 2, then 8, to specify function No. 28.

4. Input data with dial pad.
   Example: Input 9~22- (see Notes 1 and 2).

5. Press **MIC** key (see Note 3).

6. Press **SPKR** key to go back on line.

NOTES:

1. Dial * (←), # (→) to move the setting position then input data or function No.

Function No. — Data setting position (Max. 6 digits)

2. Data and keys used to input data.

Key	Feature
Dial key	Data
LNR/SPD	Pause
HOLD	All clear

Default value: 9-

Numerals and pauses (maximum of three each) can be input as the outgoing code.

3. Consecutive pauses cannot be entered, i.e. 9 - -.
   A pause cannot be entered as the first digit, i.e. - 9.

4. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.

GENERAL INFORMATION - PBX ACCESS CODE ASSIGNMENT - II

This Memory Block area is used to allow a station user to dial access to a PBX line without the Toll Restriction inspection occurring until after the PBX access code.

MEMORY BLOCK 1 - 29
PRIVACY OVERRIDE ASSIGNMENT

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 29		**1-24**

OPERATION ◄——————— AND ———————► DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 2, then 9, to specify function N⁰. 29.

4. Input data with dial pad.
   Example: When port N⁰s. 10, 11, 14, 15,18, 19 and 20 are entered.
   A. Move setting position (see Note 1).
   B. Input data (10, 11, 14, 15). (see Note 2).
   C. Press **MIC** key (see Note 3).
   D. Repeat steps A. and B. to input data (18, 19, 20) in page 1.

5. Press **MIC** key (see Note 3).

6. Press **SPKR** key to go back on line.

NOTES:

1. Dial ∗ (←), # (→) to move the setting position then input data or function N⁰.

   Function N⁰.　Page 0　Data setting position
   　　　　　　　　　　 1　(Max. 8 telephones)

2. Data and keys used to input data.

Key	Feature
Dial key	Port N⁰s. 10~33
HOLD	Clear 1 data (2 digits)

   Default value: NONE

3. Pressing the **MIC** key while setting page 0 enters the data and causes the display to increment to the next page number.

4. Pressing the **MIC** key while setting page 1 enters the data and causes the display to increment to the next function.

GENERAL INFORMATION - PRIVACY OVERRIDE ASSIGNMENT

This Memory Block area is used to specify which Key Telephones (maximum of eight per system) can Override calls of other stations on CO/PBX lines.

MEMORY BLOCK 1 - 30
PRIVATE LINE ASSIGNMENT

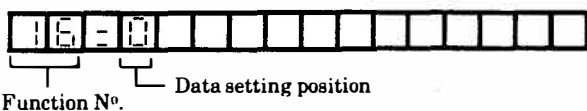| MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 30		

OPERATION ◄———— AND ————► DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 3, then 0, to specify function № 30.

4. Input data with dial pad.
   Example: When port № 12, 13 are assigned to CO 5, and port № 14, 15 to CO 6.
   A. Move setting position (see Note 1).
   B. Input data (5, 12, 13) (see Note 2).
   C. Press MIC key (see Note 3).
   D. Repeat steps A. and B. to input data in page 1.

5. Press MIC key (see Note 3 and 4).
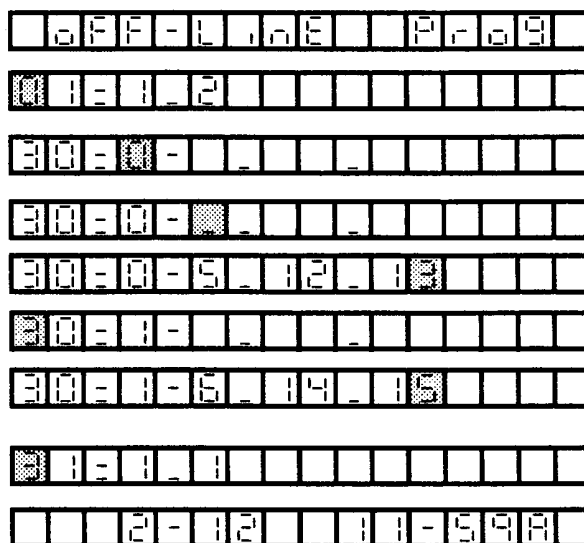
6. Press SPKR key to go back on line.

NOTES:

1. Dial * (←), # (→) to move the setting position then input data or function №.

   Function №. Page 0 1 CO/PBX line №. Port №. Port №.
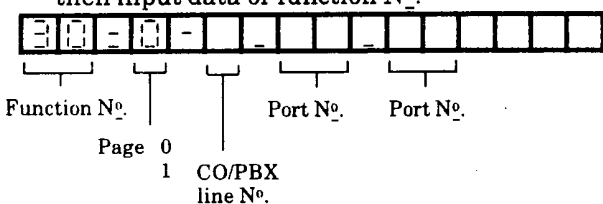
2. Data and keys used to input data.

Key	Feature
Dial key	CO line No. (1-8)
	Port No. (10-33)
HOLD	Clear 1 data (1 or 2 digits)

   Default value: No Station Assigned

3. Pressing the MIC key enters the data for page 0 and causes the display to increment to page 1.

4. Pressing the MIC key while setting page 1 causes the display to increment to the next function.

GENERAL INFORMATION - PRIVATE LINE ASSIGNMENT

This Memory Block area is used to assign CO/PBX lines to two Key Telephones in the system for private use. Up to two groups, each consisting of one CO/PBX line assigned to two Key Telephones, can be entered.

DOORPHO

OPERATI

1. Go off-line.

2. Press LK1.

MEMORY BLOCK 1 - 32
DOOR LOCK RELEASE (YES/NO)

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 32	**1-31**	

OPERATION ← —— AND ——→ DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 3, then 2, to specify function №. 32.

4. Input data (0 or 1)with dial pad.
   Example: When Door Lock 2 is not needed.
   A.   Move setting position (see Note 1).
   B.   Input 0 (see Note 2).

5. Press **MIC** key (see Note 3).

6. Press **SPKR** key to go back on line.

NOTES:

1. Dial * (←), # (→) to move the setting position then input data or function №.

Function №.
Data setting position for Door Lock 1.
Data setting position for Door Lock 2.

3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.

2. Data Table   Default value*

Code	Feature
0	Deny
* 1	Allow

GENERAL INFORMATION - DOOR LOCK RELEASE (YES/NO)

This Memory Block area is used to specify to Allow/Deny control of the external relay circuit on the Doorphone KTU (DPH-Z).

MEMORY BLOCK 1 - 34
SMDR PRINT FORMAT

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 34		

OPERATION ◄————— AND —————► DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 3, then 4, to specify function N⁰. 34.

4. Input data (0 or 1) with dial pad.
   Example: Input 1 to select *Mask last 4 digits* (see Notes 1 and 2).
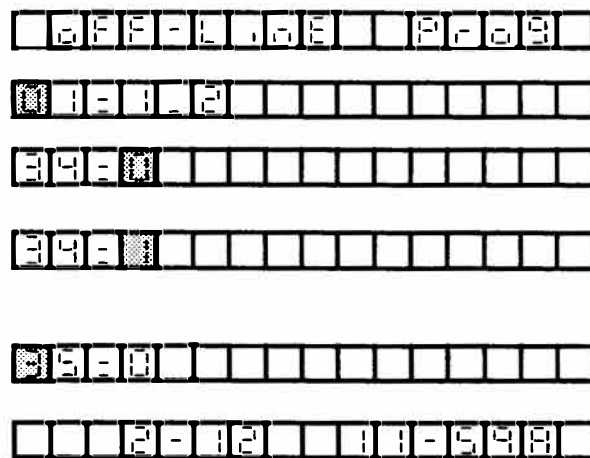
5. Press **MIC** key (see Note 3).

6. Press **SPKR** key to go back on line.

NOTES:

1. Dial * (←), # (→) to move the setting position then input data or function N⁰.

Function N⁰. ⌐ Data setting position

3. Pressing the MIC key enters the data and causes the display to increment to the next function number.

2. Data Table   Default value*

Code	Feature
* 0	All
1	Mask last 4 digits

Example: When Data 1 is set the SMDR will output:
516 753 - - - -

GENERAL INFORMATION - SMDR PRINT FORMAT

This Memory Block area is used to specify whether or not to print out all the digits or all the digits except the last four, of the called telephone number.

MEMORY BLOCK 1 - 35
SINGLE LINE TELEPHONE HOOKFLASH

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 35	**4-01**	**1-01**

OPERATION ◄——————— AND ———————► **DISPLAY**

1. Go off-line.

2. Press LK1.

3. Dial 3, then 5, to specify function No. 35.

4. Input data (0 or 1) with dial pad.
   Example: Input 1 to select CO/PBX Hookflash (see Notes 1, 2, and 4).

5. Press **MIC** key (see Note 3).

6. Press **SPKR** key to go back on line.

■■■ ■ ■■■ ■ ■■■ ■ ■■■ ■ ■■■ ■ ■■■ ■ ■■■ ■ ■■■ ■ ■■■

NOTES:

1. Dial * (←), # (→) to move the setting position then input data or function No.

   └─┬─┘ └─┬─┘ Data setting position
   Function No.

3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.

4. If data is set to 1, a Single Line Telephone can not get a second dial tone for feature access.

2. Data Table   Default value*

Code	Feature
* 0	Internal Hold/Feature Access
1	Send Hookflash on CO/PBX Line

GENERAL INFORMATION - SINGLE LINE TELEPHONE HOOKFLASH

This Memory Block area is used to specify when a Single Line Telephone user presses the Hookswitch during a CO/PBX call, either to place the call on hold or to send a Hookflash signal to the CO/PBX line.

MEMORY BLOCK 1 - 36
INTERCOM MASTER NUMBER

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 36		**4-03**

OPERATION ◄————— *AND* ————► **DISPLAY**

1. Go off-line.

2. Press LK1.

3. Dial 3, then 6, to specify function N⁰. 36.

4. Move setting position (see Note 1).

5. Input data (0 or 1)with dial pad.
   Example: When Master N⁰. 10 is set (see Note 2).

6. Press **MIC** key (see Note 3).
   Repeat steps 4, 5 and 6 to input data up to Master N⁰. 50.

7. Press **MIC** key (see Note 4).

8. Press **SPKR** key to go back on line.

NOTES:

1. Dial * (←), # (→) to move the setting position
   then input data or function N⁰.

   Function N⁰. — Master N⁰. (10, 20, 30, 40, 50) — Data setting position.
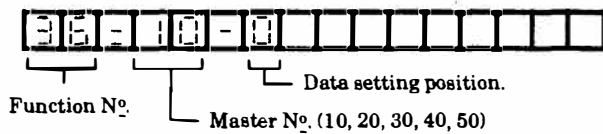
3. Pressing the **MIC** key enters the data and causes the display to increment to the next Master Number.

4. When data is written up to Master N⁰. 50, the display increments to the next function number.

2. Data Table   Default value*

Code	Feature
* 0	No
1	Yes
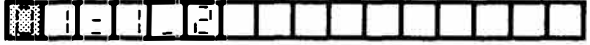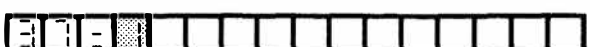
GENERAL INFORMATION - INTERCOM MASTER NUMBER

This Memory Block area is used to specify an Intercom Master Number. When a Master number is assigned, the subsequent stations in the same tens group are automatically assigned to that hunt group.

MEMORY BLOCK 1 - 37
CO/PBX LINE ON HOOK ORIGINATION / ABANDONING (YES/NO)

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 37		

OPERATION ←———— AND ————→ DISPLAY

1. Go off-line.

   `[ oFF-LinE ProG ]`

2. Press LK1.

   `[ 1-L2 ]`

3. Dial 3, then 7, to specify function No. 37.

   `[ 37-0 ]`

4. Input data (0 or 1) with dial pad.
   Example: Input 1 to select *YES* (see Notes 1 and 2).

   `[ 37-1 ]`

5. Press **MIC** key (see Note 3).

   `[ 38-0 ]`

6. Press **SPKR** key to go back on line.

   `[ 2-12 1-598 ]`

■ ▪ ■ ▪ ■ ▪ ■ ▪ ■ ▪ ■ ▪ ■ ▪ ■ ▪ ■ ▪ ■

NOTES:

1. Dial * (←), # (→) to move the setting position then input data or function No.

   `[ 37-0 ]`

   ┕┬┘ ┕┬┘ Data setting position
   Function No.

3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.

2. Data Table   Default value*

Code	Feature
* 0	No
1	Yes

GENERAL INFORMATION - CO/PBX LINE ON HOOK ORIGINATION/ ABANDONING (YES/NO)

This Memory Block area is used to specify whether or not to disconnect an existing CO/PBX call by pressing the CO/PBX line key.

MEMORY BLOCK 1 - 42
DOORPHONE CALL AUTOMATIC ANSWER (ALLOW/DENY)

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 42	**1-31**	**1-07**
	4-06	

OPERATION ◄————— AND ————► DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 4, then 2, to specify function No. 42.

4. Input data (0 or 1) with dial pad.
   Example: Input 1 to select *ALLOW* (see Notes 1 and 2).

5. Press **MIC** key (see Note 3).

6. Press **SPKR** key to go back on line.

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NOTES:

1. Dial * (←), # (→) to move the setting position then input data or function No.

Function No. └─Data setting position.

2. Data Table   Default value*

Code	Feature
* 0	Deny
1	Allow
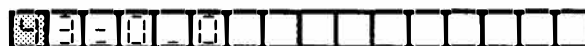
3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.

GENERAL INFORMATION - DOOR PHONE CALL AUTOMATIC ANSWER (ALLOW/DENY)

This Memory Block area is used to specify Allow/Deny answering Doorphone calls automatically via the handset.

MEMORY BLOCK 1 - 43
EXTERNAL TONE SIGNAL CONTROL

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 43		

OPERATION ⟵ —————— AND ————⟶ DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 4, then 3, to specify function No. 43.

4. Input data (0 or 1) with dial pad.
   Example: Enter 1 for data position when *YES* is to be specified for night mode.
   A. Move setting position (see Note 1).
   B. Input 1 (see Note 2).
   Repeat steps A. and B. to input data for day mode.

5. Press **MIC** key (see Note 3).

6. Press **SPKR** key to go back on line.

NOTES:

1. Dial * (⟵), # (⟶) to move the setting position then input data or function No.

3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.

Function No.
Data position for night mode
Data position for day mode

2. Data Table   Default value*

Code	Feature
* 0	No
1	Yes

┌─ ┐
GENERAL INFORMATION - EXTERNAL TONE SIGNAL CONTROL

This Memory Block area is used to specify whether or not to activate the control relay (located on the ESP-Z KTU) for incoming CO/PBX calls. Yes or No can be specified for the day and/or night modes respectively.
└─ ┘

MEMORY BLOCK 1 - 44
TANDEM CONFERENCE LINE ASSIGNMENT

| MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 44		

OPERATION ◄──────── AND ────────► DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 4, then 4, to specify function No. 44.

4. Input data with dial pad.
   Example: Input 33 (see Notes 1 and 2).

5. Press MIC key (see Note 3).

6. Press SPKR key to go back on line.

NOTES:

1. Dial * (←), # (→) to move the setting position then input data or function No.

Function No. ⌐⌐ ── Data setting position

2. Data and keys used to input data.

Key	Feature
Dial key	Port No. (12~33).
HOLD	Clear data (2 digits)

Default value: 21

3. Pressing the MIC key enters the data and causes the display to increment to the next function number.

4. If a Key Telephone is connected to the position assigned in this parameter, it will not function (No button response).

┌───┐
│ ## GENERAL INFORMATION - TANDEM CONFERENCE LINE ASSIGNMENT │
│ This Memory Block area is used to assign a hardware port for Tandem Conference. │
└───┘

MEMORY BLOCK 1 - 50
AUTOMATIC RELEASE DISCONNECT SIGNAL DETECTION TIME

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 50	**3-20**	

OPERATION ← AND → DISPLAY

1. Go off-line.

    `| |o|F|F|-|L| |i|n|E| | |P|r|o|g| |`

2. Press LK1.

    `|▓| |1|-|1|_|2| | | | | | | | | | | |`

3. Dial 5, then 0, to specify function No. 50.

    `|5|0|-|▓| | | | | | | | | | | | | | |`

4. Input data (0~2) with dial pad.
   Example: Input 1 for 300 milliseconds
   (see Notes 1 and 2).
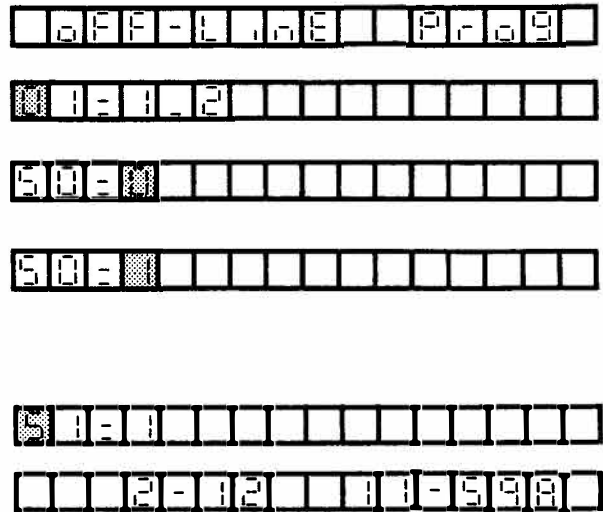
    `|5|0|-|▓| | | | | | | | | | | | | | |`

5. Press **MIC** key (see Note 3).

    `|▓| |1|-|1| | | | | | | | | | | | | |`

6. Press **SPKR** key to go back on line.

    `| | | |2|-|0|2| | | |1|-|5|9|8| |`

NOTES:

1. Dial ✻ (←), # (→) to move the setting position then input data or function No.

    `|5|0|-|0| | | | | | | | | | | | | | |`

    Function No. ⌐ ⌐ Data setting position

3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.

2. Data Table   Default value✻

Code	Feature
✻ 0	150 msec.
1	300 msec.
2	450 msec.

GENERAL INFORMATION - AUTOMATIC RELEASE DISCONNECT SIGNAL DETECTION TIME

This Memory Block area is used to enter the duration of the disconnect signal that is sent from the CO/PBX when the outside party hangs up on a CO/PBX call, after which the call is processed as a disconnect and the system releases.

MEMORY BLOCK 1 - 51
1 + DIALING ASSIGNMENT

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
	5-04	1-56, 5-01
1 - 51		

OPERATION ←——— AND ———→ DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 5, then 1, to specify function No. 51.

4. Input data (0~1) with dial pad.
   Example: Input 0 to select *Direct Area* (see Notes 1 and 2).

5. Press **MIC** key (see Note 3).

6. Press **SPKR** key to go back on line.

NOTES:

1. Dial * (←), # (→) to move the setting position then input data or function No.

   Function No. ⌐ Data setting position

2. Data Table   Default value *

Code	Dialing Assignment
0	Direct Area
*1	1 + Area

3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.

GENERAL INFORMATION - 1 + DIALING ASSIGNMENT

This Memory Block area is used to designate whether 1 + dialing or direct dialing service is required on the CO/PBX lines installed.

MEMORY BLOCK 1 - 52
TOLL RESTRICTION ALLOW TABLE SIZE ASSIGNMENT

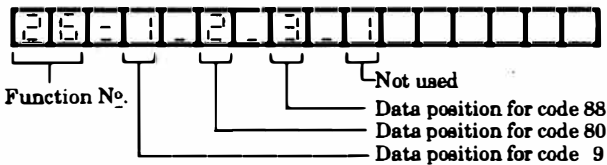| MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 52	**1-55**	
	5-04	

OPERATION ◄———— AND ————► DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 5, then 2, to specify function №. 52.

4. Input data (00~80) with dial pad.
   Example: Input 25 (see Notes 1, 2 and 4).

5. Press **MIC** key (see Note 3).
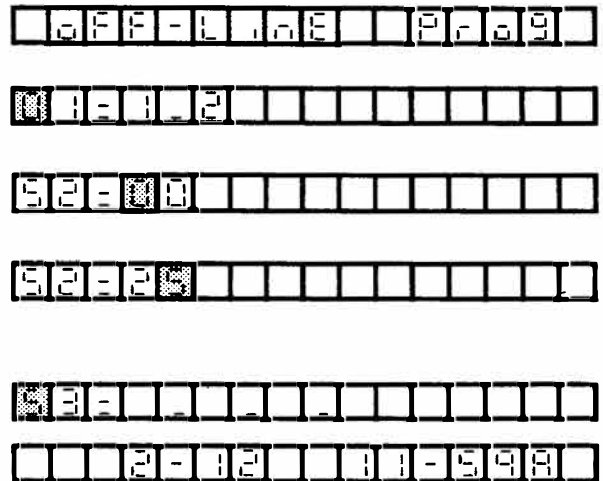
6. Press **SPKR** key to go back on line.

NOTES:

1. Dial * (←), # (→) to move the setting position then input data or function №.

   Function №. | Data setting position

2. Data Table   Default value: **00**

Key	Data
Dial key	00~80

3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.

4. If data 00 is set, all entries are automatically assigned as deny entries. If data 80 is set, all entries are automatically assigned as Allow entries.

5. The data entered in this parameter designates the last Allow entry.

GENERAL INFORMATION - TOLL RESTRICTION ALLOW TABLE SIZE ASSIGNMENT

This Memory Block area is used to specify which entry numbers in the Toll Restriction Tables are Allow or Deny entries. The Toll Override Table can be assigned up to 80 entries. Each entry can consist of 6 digits (3 for area code and 3 for office code).

MEMORY BLOCK 1 - 53
DIGIT REJECTION ASSIGNMENT

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 53	**5-04**	

OPERATION ← AND → DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 5, then 3, to specify function No. 53.

4. Input data with dial pad.
   Example: Input 6,7,8,9 (see Notes 1 and 2).

5. Press **MIC** key (see Note 3).
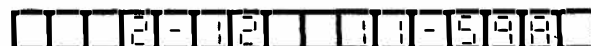
6. Press **SPKR** key to go back on line.

NOTES:

1. Dial * (←), # (→) to move the setting position then input data or function No.

Function No. ⌐ Code 1 ⌐ Code 2 ⌐ Code 3 ⌐ Code 4

2. Data and keys used to input data.   Default value: NONE

Key	Data
Dial key	Rejection code (4 single digits)
Hold key	Clear 1 data

3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.

GENERAL INFORMATION - DIGIT REJECTION ASSIGNMENT

This Memory Block area is used to assign up to four single digit rejection codes. The rejection code is used to prevent repeated dialing of the same digit from the beginning of the dialing process to defeat the Toll inspection process.

MEMORY BLOCK 1 - 54
OCC OVERRIDE TABLE ASSIGNMENT

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 54	**5-04**	

OPERATION ← AND → DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 5, then 4, to specify function No. 54.

4. Input data with dial pad.
   Example: Input 233 into entry No.1.
   A. Move setting position (see Note 1).
   B. Input 233 (see Note 2).
   C. Press **MIC** key (see Note 3).
   Repeat steps A., B. and C. to input data up to entry No.8.

5. Press **MIC** key (see Note 4).

6. Press **SPKR** key to go back on line.

NOTES:

1. Dial * (←), # (→) to move the setting position then input data, entry No., or function No.

   Function No. ⌐ Entry No. 1-8 ⌐ Data setting position

2. Data and keys used to input data. Default value: NONE

Key	Data
Dial key	OCC code 3 digits
Hold key	Clear 1 data

3. Pressing the **MIC** key enters the data and causes the display to increment to the next entry number.

4. Pressing the **MIC** key after data is entered to entry 8 causes the display to increment to the next function number.

GENERAL INFORMATION - OCC OVERRIDE TABLE ASSIGNMENT

This Memory Block area is used to assign a maximum of eight OCC codes to an OCC Override Table.

MEMORY BLOCK 1 - 55
TOLL RESTRICTION OVERRIDE TABLE ASSIGNMENT

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 55	**5-04**	**1-52**

OPERATION ← *AND* → DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 5, then 5, to specify function N⁰. 55.
   A. Move setting position (see Note 1).

4. Input data with dial pad.
   Example: Input 516777 into entry No. 01.
   A. Input 516777 (see Note 2).
   B. Press **MIC** key (see Note 4).
   Repeat steps A. and B. to input data up to entry N⁰. 80.

5. Press **MIC** key (see Note 5).

6. Press **SPKR** key to go back on line.
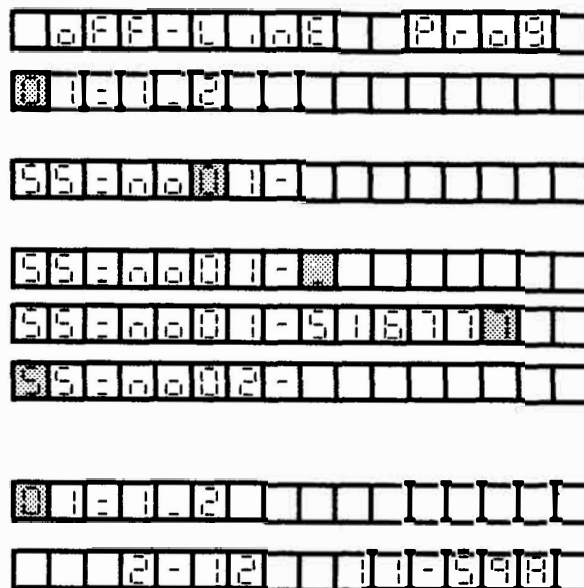
NOTES:

1. Dial * (←), # (→) to move the setting position then input data or function N⁰.

   Function N⁰.   Entry N⁰. (01~80)   Area code (3 digits)   Office code (3 digits)

2. Data and keys used to input data

Key	Data	
Dial key	0~9, No entry (all digits)	Default value:
Hold key	Clear 1 data (All clear)	NONE

3. If No Entry is specified, Pressing the MIC key enters all blanks.

4. Pressing the **MIC** key enters the data and causes the display to increment to the next entry.

5. Pressing the **MIC** key after data is entered up to 80 causes the display to increment to next function number.

GENERAL INFORMATION - TOLL RESTRICTION OVERRIDE TABLE ASSIGNMENT

This Memory Block area provides a table where up to eighty, six digit numbers can be entered. This table can be separated into an Allow and a Deny section. When Toll Restriction is applied, the system scans the Allow/Deny Table from its beginning (entry 1) to its end (entry 80). Numbers in the Deny section take precedence over numbers in the Allow section.

MEMORY BLOCK 1 - 56
DIGIT COUNTING

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 56	4-07	
	5-04	

OPERATION ◄——————— AND ———————► **DISPLAY**

1. Go off-line.

2. Press LK1.

3. Dial 5, then 6, to specify function No. 56.

4. Input data with dial pad.
   Example: Input 09 to select 9 digits (see Notes 1 and 2).

5. Press **MIC** key (see Note 3).

6. Press **SPKR** key to go back on line.

NOTES:

1. Dial * (←), # (→) to move the setting position then input data or function No.

   └─┬─┘ Function No.   └─┬─┘ Data setting position

2. Data Table   Default value*

Code	Feature
* 00	None
01	1 digit
≈ ∫	≈ ∫
63	63 digits

3. Pressing the **MIC** key enters the data and causes the display to increment to Memory Block 1-01.

4. The PBX access code is not counted as a digit.

GENERAL INFORMATION - DIGIT COUNTING

This area of the program is used to specify the maximum number of digits for telephone numbers that can be originated from Toll Restricted telephones. When a telephone number exceeding the registered digits is dialed, the line is immediately dropped and an error tone is returned.

MEMORY BLOCK 2 - 01
TENANT CO/PBX LINE ACCOMMODATION

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
2 - 01	4-01	3-09

OPERATION ← — AND — → DISPLAY

1. Go off-line.

2. Press LK2.

NOTE: Pressing LK2 automatically brings up Function 01.

3. Dial 0, then 1, to specify function No. 01.

4. Input data (0 or 1) with dial pad.
   Example: Input 0 when CO No. 1 is not used in Tenant 0.
   A. Move setting position (see Note 1).
   B. Input 0 (see Note 2).

5. Press **MIC** key (see Note 3).
   Repeat steps 4 and 5 to input data up to CO No. 8.

6. Press **MIC** key (see Note 4).
   Repeat steps 4, 5 and 6 to input data up to Tenant No.3.

7. Press **MIC** key (see Note 5).

8. Press **SPKR** key to go back on line.
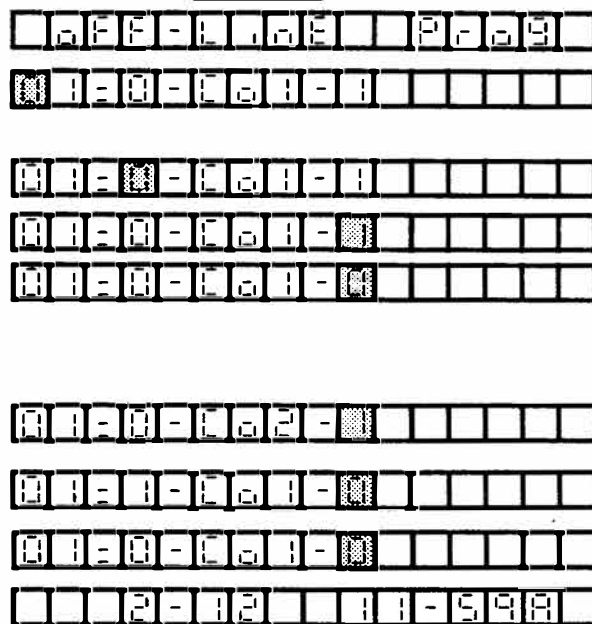
NOTES:

1. Dial * (←), # (→) to move the setting position then input data, tenant No., CO/PBX line No., or function No.

   Function No. — Tenant No. 0~3 — CO/PBX line No. 1~8 — Allow/Deny
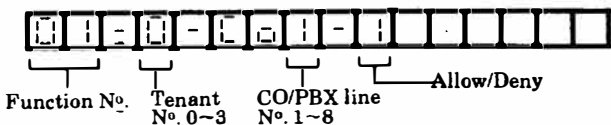
2. Data Table

   Default value: Tenant 0 accommodates all CO/PBX lines.

Code	Feature
0	Deny
1	Allow

3. Pressing the **MIC** key enters the data and causes the display to increment to the next CO number.

4. When data has been entered (up to CO No. 8) pressing the MIC key enters the data and the display increments to the next Tenant No.

5. When data is entered (up to Tenant No. 3, CO No. 8) the display is restored to Tenant No. 0, CO No. 1.

6. When a line key is not being used, it should be denied from all Tenant groups. This will allow that line key to be used as a Feature Access key (see Memory Block 3-09).

GENERAL INFORMATION - TENANT CO/PBX LINE ACCOMMODATION

This Memory Block area is used to specify which tenants will have access to each CO/PBX line.

MEMORY BLOCK 3 - 01 to 08
SEIZED SELF CO/PBX NUMBER DISPLAY

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
3 - 01 **~ 08**		

OPERATION ←———— AND ————→ DISPLAY

1. Go off-line.

   `off-line Prog`

2. Press LK3.

   `01-`

   NOTE: Pressing LK3 automatically brings up Function 01.

3. Dial appropriate number to specify function (01~08) (see Note 4).

   `01-`

4. Input data with dial pad.
   Example: Input 844-1234 (see Notes 1 & 2).

   `01-0411-54-3864`

5. Press **MIC** key (see Note 3).
   Repeat steps 4 and 5 to input data up to Function No. 08.

   `02-`

6. Press **SPKR** key to go back on line.

   `2-12  11-548`

NOTES:

1. Dial * (←), # (→) to move the setting position then input data or function No.

   `01-`

   Function No.   Dial No. (Max. 13 digits)

2. Data and keys used to input data

Key	Feature
Dial key	Dial No.
LNR/SPD	(-)
HOLD	Space

Default value: NONE

3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.

4. Functions 01~08 correspond to CO/PBX Lines 1~8 respectively.

GENERAL INFORMATION - SEIZED SELF CO/PBX NUMBER DISPLAY

This Memory Block area is used to enter the CO/PBX numbers to be displayed on Key Telephones upon seizure of outgoing CO/PBX lines.

MEMORY BLOCK 3 - 09
CO/PBX LINE STATUS SELECTION

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
3 - 09		1-05, 1-12,
		1-21, 1-26,
		2-01, 4-02, 5-01

OPERATION ◄─────── AND ──────► DISPLAY

1. Go off-line.

2. Press LK3.

3. Dial 0, then 9, to specify function N⁰. 09.

4. Input data with dial pad.
   Example: The CO/PBX line function on CO 1 is set for *ANSWERING* only.
   A. Move setting position (see Note 1).
   B. Input 1 (see Note 2).
      Repeat steps A. and B. to specify other items.

5. Press **MIC** key (see Note 3).
   Repeat steps 4 and 5, and 6 to input data up to CO N⁰. 8.
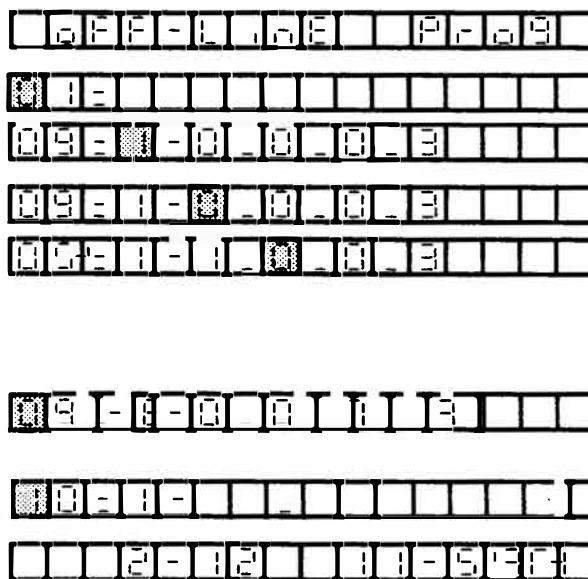
6. Press **MIC** key (see Note 4).

7. Press **SPKR** key to go back on line.

NOTES:

1. Dial * (◄─), # (─►) to move the setting position then input data, CO/PBX line N⁰., or function N⁰.

   Function N⁰. | CO/PBX line N⁰. 1~8 | Line polarity reversal (Not used in U.S.) | Line type | DP/DTMF selection
   CO/PBX line function

2. Data Table   Default value*

Code	CO/PBX line function	Line polarity reversal	Line type	DP/DTMF selection
0	* Origination & Answering	* No	* CO	Not Connected (Feature Key)
1	Answering	Yes	PBX	DP (10 PPS)
2			—	DP (20 PPS)
3				* DTMF

3. Pressing the **MIC** key enters the data and causes the display to increment to the next CO number.

4. When data has been entered up to CO N⁰. 8, Pressing the **MIC** key enters the data and the display increments to the next function number.

5. If the CO/PBX line is assigned to **Not Connected** by DP/DTMF selection item, the corresponding CO/PBX line key can be used as a programmable **Feature Access** key (see Memory Block 2-01). If both CO/PBX lines in the line pair (N⁰s. 1-2, 3-4, 5-6, 7-8) are assigned as DP, the pulse rate can not be assigned separate of each other. The Pulse rate for the even numbered line is determined by the assignment of the odd numbered line.

GENERAL INFORMATION - CO/PBX LINE STATUS SELECTION

This Memory Block area is used to specify line status for each CO/PBX line. CO/PBX Line Status Selection covers Origination and Answering, Line polarity reversal (Yes/No), CO/PBX line type and DP/DTMF.

MEMORY BLOCK 3 - 10
SINGLE LINE TELEPHONE RING ASSIGNMENT (DIT)

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
3 - 10	**4-01**	

OPERATION ← AND → DISPLAY

1. Go off-line.

    `oFF-LinE  ProG`

2. Press LK3.

    `3-`

3. Dial 1, then 0, to specify function No. 10.

    `10-0-`

4. Input data with dial pad.
   Example: Specify TEL No. 23 in day mode and TEL No. 23 in night mode.
   A. Move setting position (see Note 1).
   B. Input 22 and 23 (see Note 2).

    `10-1-`

    `10-1-22_23`

5. Press **MIC** key (see Note 3).
   Repeat steps 4 and 5 to input data up to CO No. 08.

    `10-2-`

6. Press **MIC** key (see Note 4).

    `1-1-0`

7. Press **SPKR** key to go back on line.

    `2-02  11-598`
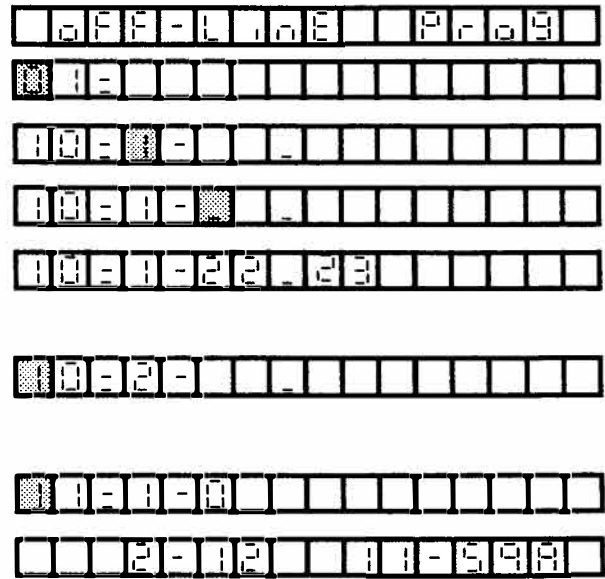
NOTES:

1. Dial * (←), # (→) to move the setting position then input data , CO/PBX line No., or function No.

    `10-1-`

    Function No. | Day TEL No.   Night TEL No.
    CO/PBX line No. 1~8

2. Data and keys used to input data   Default value: NONE

Key	Feature
Dial key	22, 23, 24
HOLD	Clear 1 data

3. Pressing the **MIC** key enters the data and causes the display to increment to the next CO number.

4. When data is written up to CO No. 8, the display increments to the next function number.

GENERAL INFORMATION - SINGLE LINE TELEPHONE RING ASSIGNMENT (DIT)

This Memory Block area is used to specify Single Line Telephones to ring on each CO/PBX line in the day/night mode.

MEMORY BLOCK 3 - 20
AUTOMATIC RELEASE SELECTION

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
3 - 20		**1-50**

OPERATION ◄——— AND ———► DISPLAY

1. Go off-line.

2. Press LK3.

3. Press **HOLD** key.

4. Dial 2, then 0, to specify function № 20.

5. Input data (0 or 1) with dial pad.
   Example: Input 1 specify *ALLOW* (Automatic Release).
   A. Move setting position (see Note 1).
   B. Input 1 (see Note 2).

6. Press **MIC** key (see Note 3).
   Repeat steps 4 and 5 to input data up to CO №. 8.

7. Press **MIC** key (see Note 4).

8. Press **SPKR** key to go back on line.

NOTES:

1. Dial * (←), # (→) to move the setting position then input data, CO/PBX line №., or function №.

   Function № ⎯ CO/PBX line № 1~8 ⎯ Allow/Deny

2. Data Table   Default value *

Code	Feature
* 0	Deny
1	Allow

3. Pressing the **MIC** key enters the data and causes the display to increment to the next CO number.

4. When data is written up to CO №. 8, the display returns to function number 01 (Memory Block 3-01).
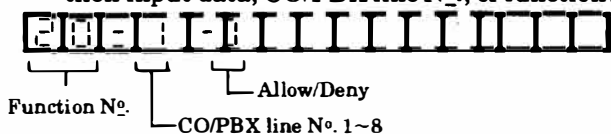
GENERAL INFORMATION - AUTOMATIC RELEASE SELECTION

This Memory Block area is used to specify Allow or Deny Automatic Release for each CO/PBX line, to disconnect or not, when a disconnect signal is received from the distant Central Office or PBX. If Automatic Release is Denied, the line will not be disconnected when a disconnect signal is received.

MEMORY BLOCK 4 - 01
TELEPHONE STATUS SELECTION I

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
4 - 01		**1-17, 2-01**

OPERATION ◄——————— *AND* ——————► **DISPLAY**

1. Go off-line.

2. Press LK4.

NOTE: Pressing LK4 automatically displays Function 1.

3. Dial 0, then 1, to specify function № 01.

4. Input data with dial pad.
   Example: Tenant 0
   A. Move setting position (see Note 1).
   B. Input 2 (see Note 2).
   Input other items by repeating steps A. and B.

5. Press **MIC** key (see Note 3).
   Repeat steps 4 and 5, to input data up to Port № 33.

6. Press **MIC** key (see Note 4).

7. Press **SPKR** key to go back on line.

■— ■ ■— ■ ■— ■ ■— ■ ■— ■ ■— ■ ■— ■ ■— ■ ■

NOTES:

1. Dial * (←), # (→) to move the setting position then input data, Port №, or function №.

   Function № | Port № 10~33 | SLT Installed (YES/NO) | Tenant № | Internal Page Group | Associated Attendant | Not Used

3. Pressing the **MIC** key enters the data and causes the display to increment to the next Port number.

4. When data has been entered up to Port № 33, Pressing the **MIC** key enters the data and the display increments to the next function number.

2. Data Table   Default value*

Code	SLT Installed	Tenant No.	Internal Page Group	Associated Attendant
0	NO	* Tenant 0	Not Used	* DSS 1
1	* YES	Tenant 1	* Group 1	DSS 2
2		Tenant 2	Group 2	
3		Tenant 3	Group 3	

GENERAL INFORMATION - TELEPHONE STATUS SELECTION I

This Memory Block area is used to enter the following status data for each station: Station type, Tenant Number, Internal Page Assignment, Associated Attendant Call. Tenant number is used to assign a station to a call pick group and is also used for Trunk Access. A station can only access trunks assigned to its Tenant Group. A station dialing 0 on intercom will be connected to the assigned Associated Attendant.

MEMORY BLOCK 4 - 02
TELEPHONE STATUS SELECTION II

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
4 - 02	**1-20, 1-26,**	**1-06, 4-04,**
	3-09,	**5-01**
	5-02, 5-03	

OPERATION ◄——————— *AND* ————————► DISPLAY

1. Go off-line.

2. Press LK4.

3. Dial 0, then 2, to specify function № 02.

4. Input data (0 or 1) with dial pad.
   Example: Input 1 to allow three minute alarm on Port № 10.
   A. Move setting position (see Note 1).
   B. Input 1 (see Note 2).
   Input other items by repeating steps A. and B.

5. Press **MIC** key (see Note 3).
   Repeat steps 4 and 5 to input data up to Port №.33.

6. Press **MIC** key (see Note 4).

7. Press **SPKR** key to go back on line.

NOTES:

1. Dial * (←), # (→) to move the setting position then input data, Port №., or function №.

   Function № | Port No. 10~33 | Ringing line Preference | Not Used | Off-hook ringing tone | Prime line

   Three minute alarm

3. Pressing the **MIC** key enters the data and causes the display to increment to the next Port number.

2. Data Table   Default value *

Ringing Line Preference		Three minute alarm	
* 0	NO	* 0	Deny
1	YES	1	Allow
Off-hook Ringing Tone		**Prime line**	
0	Deny	* 0	Deny
# 1	Allow	1	Allow

Default value for Off-hook ringing tone: Yes Allowed on Port № 10, 11 only.

4. When data is written up to Port №. 33, the display increments to the next function number.

GENERAL INFORMATION - TELEPHONE STATUS SELECTION II

This Memory Block area is used to enter the following status data for each telephone: Three Minute Alarm (Allow/Deny), Off-Hook Ring (Allow/Deny), and Prime Line (Allow/Deny) Selection.

MEMORY BLOCK 4 - 03
EXTENSION NUMBER ASSIGNMENT

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
4 - 03		

OPERATION ◄——————— AND ———————► DISPLAY

1. Go off-line.

2. Press LK4.

3. Dial 0, then 3, to specify function Nº. 03.

4. Move setting position (see Note 1).

5. Input data with dial pad.
   Example: To set Port 10 as EXT 25, input 25 (see Note 2).

6. Press **MIC** key (see Note 3).
   Repeat steps 4, 5 and 6 to input data up to Port Nº. 33.

7. Press **MIC** key (see Note 4).

8. Press **SPKR** key to go back on line.
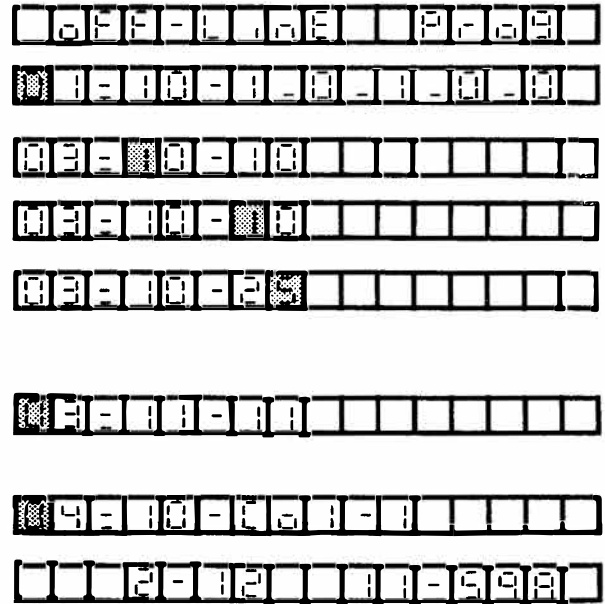
NOTES:

1. Dial * (←), # (→) to move the setting position then input data, Port Nº., or function Nº.

   Function Nº. / Port Nº. 10~33 / Extension Nº. (2 digits)
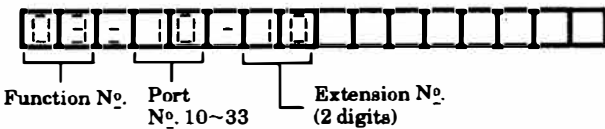
2. Data and keys used to input data.

Key	Feature
Dial key	Ext. Nº. (10~59)

   Default value:
   Port No. = Extension No.

3. Pressing the **MIC** key enters the data and causes the display to increment to the next Port number.

4. When data has been entered up to Port Nº. 33, pressing the **MIC** key enters the data and the display increments to the next function number.

- -

GENERAL INFORMATION - EXTENSION NUMBER ASSIGNMENT

This Memory Block area is used to change the extension number of a telephone.

MEMORY BLOCK 4 - 04
AUTOMATIC CO / PBX LINE SEIZURE/PRIME LINE ASSIGNMENT

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
4 - 04		1-26,
		4-02

OPERATION ◄────── AND ──────► DISPLAY

1. Go off-line.

2. Press LK4.

3. Dial 0, then 4, to specify function № 04.

4. Input data (0 or 1) with dial pad.
   Example: For Port 10, CO 1 is denied automatic seizure on outgoing call.
   A. Move setting position (see Note 1).
   B. Input 0 (see Note 2).

5. Press **MIC** key (see Note 3).
   Repeat steps 4 and 5 to input data up to CO № 8.

6. Press **MIC** key (see Note 4).
   Repeat steps 4, 5 and 6 to input data up to Port № 33.

7. Press **MIC** key (see Note 5).

8. Press **SPKR** key to go back on line.

NOTES:

1. Dial * (←), # (→) to move the setting position then input data, CO/PBX line №., Port №., or function No.

Function № | Port № 10~33 | CO/PBX line № 1~8 | Data setting position

2. Data Table   Default value*

Code	Feature
0	Deny
* 1	Allow

3. Pressing the **MIC** key enters the data and causes the display to increment to the next CO number.

4. Pressing the **MIC** key when CO 8 is displayed, enters the data and causes the display to increment to the next Port number.

5. When data is written up to Port № 33, and CO/PBX line № 8, the display increments to the next function number.

6. If a prime line is being assigned, all lines with the exception of the prime line must be assigned data 0.

7. When Prime Line is allowed, an ICM button (PFA) may have to be programmed (per Key Telephone basis). PFA 8 is defaulted as ICM key when Prime Line is assigned.

GENERAL INFORMATION - AUTOMATIC CO/PBX LINE SEIZURE/PRIME LINE ASSIGNMENT

This Memory Block area is used to specify whether or not an idle CO/PBX line may be accessed when a trunk access code is dialed on an intercom line. This Memory Block is also used to assign the CO/PBX line in which a station user will access when going off-hook (Prime line). If the line is busy, the station user will receive intercom dial tone upon going off-hook, another CO/PBX line can then be selected. A station user will not be able to automatically seize an idle line if the system is registered as a KF system.

MEMORY BLOCK 4 - 06
RINGING TONE / DOORPHONE RINGING ASSIGNMENT

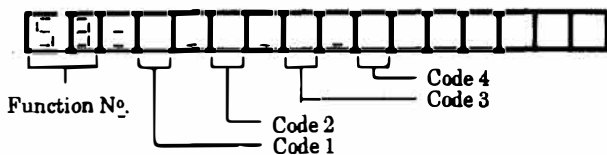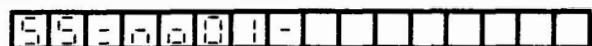| MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
4 - 06	1-31,	1-07
	5-02,	1-42
	5-03	

OPERATION ◄——————— *AND* ————————► **DISPLAY**

1. Go off-line.

2. Press LK4.

3. Dial 0, then 6, to specify function N⁰. 06.

4. Input data with dial pad.
   Example: Input 2 to set ringing tone on Port 10 *HIGH*.
   A.   Move setting position (see Note 1).
   B.   Input 2 (see Note 2).
   For Doorphone ringing tone, also input data by
   repeating steps A. and B.

5. Press **MIC** key (see Note 3).
   Repeat steps 4 and 5 to input data up to Port N⁰. 33.

6. Press **MIC** key (see Note 4).

7. Press **SPKR** key to go back on line.

■ ■ ▬ ■ ▬ ■ ▬ ■ ▬ ■ ▬ ■ ▬ ■ ▬ ■ ▬ ■ ▬ ■ ▬ ■ ▬ ■

NOTES:

1. Dial * (←), # (→) to move the setting position
   then input data, Port N⁰., or function N⁰.

   Function N⁰.   Port N⁰. 10~33
   TEL ringing tone variation ⎤
   Doorphone 1 { Day Mode ⎤ / Night Mode ⎤
   Doorphone 2 { Day Mode / Night Mode
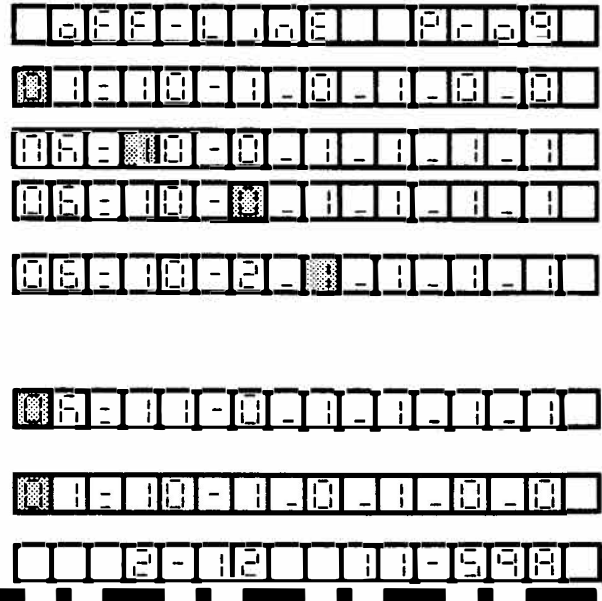
2. Data Table   Default value*

Code	TEL ringing tone
* 0	L (Low)
1	M (Medium)
2	H (High)

Code	Doorphone & Ringing Tone
0	Deny
1	Allow

Default value:
Only telephones on
Port No. 10 and 11
ring on all Doorphone
calls.

3. Pressing the **MIC** key enters the data and causes
   the display to increment to the next Port number.

4. When data has been entered up to Port N⁰. 33,
   pressing the **MIC** key enters the data and the
   display increments to the next function number.

GENERAL INFORMATION - RINGING TONE / DOORPHONE RINGING ASSIGNMENT

This Memory Block area is used to assign one of the three ring tones during CO/PBX ring for Key Telephones,
and to assign Key Telephones to ring upon access by a Doorphone (Maximum: Six Stations).

MEMORY BLOCK 4 - 07
DIGIT RESTRICTION ASSIGNMENT

| MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
4 - 07	**5-04**	
	1-56	

OPERATION ◄────── AND ──────► **DISPLAY**

1. Go off-line.

2. Press LK4.

3. Dial 0, then 7, to specify function № 07.

4. Move setting position (see Note 1).

5. Input Data with dial pad (see Note 2).

6. Press **MIC** key (see Note 3).
   Repeat steps 4, 5 and 6 to input data up to Port № 33.

7. Press **MIC** key (see Note 4).

8. Press **SPKR** key to go back on line.

■ ▪ ■ ▪ ■ ▪ ■ ▪ ■ ▪ ■ ▪ ■ ▪ ■ ▪ ■ ▪ ■

NOTES:

1. Dial * (←), # (→) to move the setting position then input data, Port №., or function №.

```
0 7 - 1 0 - 0 [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]
└──┬──┘ └──┬──┘ └┬┘
Function №.  Port №.   └── Data setting position
           (10~33)
```

2. Data Table   Default value*

Code	Feature
* 0	Deny
1	Allow

3. Pressing the **MIC** key enters the data and causes the display to increment to the next Port number.

4. When data has been entered up to Port № 33, pressing the **MIC** key enters the data and the display increments to Memory Block 4-01.

GENERAL INFORMATION - DIGIT RESTRICTION ASSIGNMENT

This Memory Block selects Allow/Deny of digit counting restriction. Digit counting restriction is effective only for a telephone on which Toll Restriction is assigned.

MEMORY BLOCK 5 - 01
FEATURE ASSIGNMENT

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
5 - 01		1-02, 1-05,
		1-15, 1-20, 3-09
		4-02, 5-04

OPERATION ← AND → DISPLAY

1. Go off-line.

2. Press LK9 (see Note 1). MIC LED illuminates.

3. Dial #. MIC LED goes out.

4. Input pattern Nº.with dial pad.
   Example: Input pattern Nº. 123.(see Note 2)
   A. Press dial key 1.
   B. Press dial key 2.
   C. Press dial key 3.
   Resume operation from step 3 to correct pattern Nº.

5. Press **MIC** key (see Note 3).
   (MIC LED and CO LED (red) illuminate.)

6. Press **SPKR** key to go back on line.

NOTES:

1. Press LK9, display changes as follows:

   Function Nº. ⌐ Pattern Nº.

2. Specified status is shown on CO LEDs.

   | LK1(7) | LK2(6) | LK3(5) | LK4(4) | ☐ OFF: 0 |
   | LK5(3) | LK6(2) | LK7(1) | LK8 | ▨ ON: 1 |

   (Pattern No: 123)

3. Select Pattern Nº. having the optimum desired combination of values for each item below (see Pattern Table on the following pages) and input pattern numbers. Default Pattern = 000.

Item to be set Data value (0/1) (off/on as shown in Pattern Table).

(1) Type of CO — CO/PBX
(2) Off-hook Ringing System wide — No/Yes
(3) Ringing Line Preference — No/Yes
(4) Toll Restriction — Direct/1 +
(5) System Speed Dial Toll Override — Allow/Deny
(6) Pause Timer — 3.5sec/1.0sec
(7) Hold Recall Time — 2min/No limit

4. When off-hook ring setting is yes, Memory Blocks 1-20 and 4-02 are enabled. Memory Block 4-02 for off-hook ring is enabled for all ports.

5. Pattern Nº. is always 000 when this Memory Block is accessed.

GENERAL INFORMATION - FEATURE ASSIGNMENT

This Memory Block area is used to select the pattern of desired values for the following items from the Pattern Table. Type of CO (CO/PBX line mode), Off-hook Ringing System wide (TEL mode), Ring Line Preference (TEL mode), Toll Restriction (SYS mode), System Speed Dial Toll Override (SYS mode), Pause Timer (SYS mode), Hold Recall Time (SYS mode).

PATTERN TABLE

PATTERN NUMBER	TYPE of CO (CO/PBX LINE MODE)		OFF-HOOK RINGING SYS. WIDE		RINGING LINE PREFERENCE (TEL. MODE)		TOLL RESTRICTION (SYS. MODE)		SYS. SPD TOLL OVERRIDE (SYS. MODE)		PAUSE TIMER (SYS. MODE)		HOLD RECALL TIME (SYS. MODE)	
	PBX	CO	YES	NO	YES	NO	NON 1+	1+	ALLOW	DENY	1.0SEC	3.5SEC	NO LIMIT	2MIN
000		√		√		√		√		√		√		√
001		√		√		√		√		√		√	√	
002		√		√		√		√		√	√			√
003		√		√	√			√		√	√		√	
004		√		√		√		√	√			√		√
005		√		√		√		√	√			√	√	
006		√		√		√		√	√		√			√
007		√		√		√		√	√		√		√	
008		√		√		√	√			√		√		√
009		√		√		√	√			√		√	√	
010		√		√		√	√			√	√			√
011		√		√		√	√			√	√		√	
012		√		√		√	√		√			√		√
013		√		√		√	√		√			√	√	
014		√		√		√	√		√		√			√
015		√		√	√		√		√		√		√	
016		√		√	√			√		√		√		√
017		√		√	√			√		√		√	√	
018		√		√	√			√		√	√			√
019		√		√	√			√		√	√		√	
020		√		√	√			√	√			√		√
021		√		√	√			√	√			√	√	
022		√	√		√			√	√		√			√
023		√		√	√			√	√		√		√	
024		√		√	√		√			√		√		√
025		√		√	√		√			√		√	√	
026		√		√	√		√			√	√			√
027		√		√	√		√			√	√		√	
028		√		√	√		√		√			√		√
029		√		√	√		√		√			√	√	
030		√		√	√		√		√		√			√
031		√		√	√		√		√		√		√	
032		√	√			√		√		√		√		√

PATTERN TABLE (continued)

PATTERN NUMBER	TYPE of CO (CO/PBX LINE MODE)		OFF-HOOK RINGING SYS. WIDE		RINGING LINE PREFERENCE (TEL. MODE)		TOLL RESTRICTION (SYS. MODE)		SYS. SPD TOLL OVERRIDE (SYS. MODE)		PAUSE TIMER (SYS. MODE)		HOLD RECALL TIME (SYS. MODE)	
	PBX	CO	YES	NO	YES	NO	NON 1+	1+	ALLOW	DENY	1.0SEC	3.5SEC	NO LIMIT	2MIN
033		√	√			√		√		√		√	√	
034		√	√			√		√		√	√			√
035		√	√			√		√		√	√		√	
036		√	√			√		√	√			√		√
037		√	√			√		√	√			√	√	
038		√	√			√		√	√		√			√
039		√	√			√		√	√		√		√	
040		√	√			√	√			√		√		√
041		√	√			√	√			√		√	√	
042		√	√			√	√			√	√			√
043		√	√			√	√			√	√		√	
044		√	√			√	√		√			√		√
045		√	√			√	√		√			√	√	
046		√	√			√	√		√		√			√
047		√	√			√	√		√		√		√	
048		√	√		√			√		√		√		√
049		√	√		√			√		√		√	√	
050		√	√		√			√		√	√			√
051		√	√		√			√		√	√		√	
052		√	√		√			√	√			√		√
053		√	√		√			√	√			√	√	
054		√	√		√			√	√		√			√
055		√	√		√			√	√		√		√	
056		√	√		√		√			√		√		√
057		√	√		√		√			√		√	√	
058		√	√		√		√			√	√			√
059		√	√		√		√			√	√		√	
060		√	√		√		√		√			√		√
061		√	√		√		√		√			√	√	
062		√	√		√		√		√		√			√
063		√	√		√		√		√		√		√	
064	√			√		√		√		√	√		√	
065	√			√		√		√		√	√		√	√
066	√			√	√			√		√	√			√

PATTERN TABLE (continued)

PATTERN NUMBER	TYPE of CO (CO/PBX LINE MODE)		OFF-HOOK RINGING SYS. WIDE		RINGING LINE PREFERENCE (TEL. MODE)		TOLL RESTRICTION (SYS. MODE)		SYS. SPD TOLL OVERRIDE (SYS. MODE)		PAUSE TIMER (SYS. MODE)		HOLD RECALL TIME (SYS. MODE)	
	PBX	CO	YES	NO	YES	NO	NON 1+	1+	ALLOW	DENY	1.0SEC	3.5SEC	NO LIMIT	2MIN
067	√			√		√		√		√	√		√	
068	√			√		√		√	√			√		√
069	√			√		√		√	√			√	√	
070	√			√		√		√	√		√			√
071	√			√		√		√	√		√		√	
072	√			√		√	√			√	√			√
073	√			√		√	√			√	√		√	
074	√			√		√	√			√	√			√
075	√			√		√	√			√	√		√	
076	√			√		√	√		√			√		√
077	√			√		√	√		√			√	√	
078	√			√		√	√		√		√			√
079	√			√		√	√		√		√		√	
080	√			√	√			√		√		√		√
081	√			√	√			√		√		√	√	
082	√			√	√			√		√	√			√
083	√			√	√			√		√	√		√	
084	√			√	√			√	√			√		√
085	√			√	√			√	√			√	√	
086	√			√	√			√	√		√			√
087	√			√	√			√	√		√		√	
088	√			√	√		√			√		√		√
089	√			√	√		√			√		√	√	
090	√			√	√		√			√	√			√
091	√			√	√		√			√	√		√	
092	√			√	√		√		√			√		√
093	√			√	√		√		√			√	√	
094	√			√	√		√		√		√			√
095	√			√	√		√		√		√		√	
096	√		√			√		√		√		√		√
097	√		√			√		√		√		√	√	
098	√		√			√		√		√	√			√
099	√		√			√		√		√	√		√	
100	√		√			√		√	√			√		√

PATTERN TABLE (continued)

PATTERN NUMBER	TYPE of CO (CO/PBX LINE MODE)		OFF-HOOK RINGING SYS. WIDE		RINGING LINE PREFERENCE (TEL. MODE)		TOLL RESTRICTION (SYS. MODE)		SYS. SPD TOLL OVERRIDE (SYS. MODE)		PAUSE TIMER (SYS. MODE)		HOLD RECALL TIME (SYS. MODE)	
	PBX	CO	YES	NO	YES	NO	NON 1+	1+	ALLOW	DENY	1.0SEC	3.5SEC	NO LIMIT	2MIN
101	√		√			√		√	√			√	√	
102	√		√			√		√	√		√			√
103	√		√			√		√	√		√		√	
104	√		√			√	√			√	√			√
105	√		√			√	√			√		√	√	
106	√		√			√	√			√	√			√
107	√		√			√	√			√	√		√	
108	√		√			√	√		√			√		√
109	√		√			√	√		√			√	√	
110	√		√			√	√		√		√			√
111	√		√			√	√		√		√		√	
112	√		√		√			√		√		√		√
113	√		√		√			√		√		√	√	
114	√		√		√			√		√	√			√
115	√		√		√			√		√	√		√	
116	√		√		√			√	√			√		√
117	√		√		√			√	√			√	√	
118	√		√		√			√	√		√			√
119	√		√		√			√	√		√		√	
120	√		√		√		√			√		√		√
121	√		√		√		√			√		√	√	
122	√		√		√		√			√	√			√
123	√		√		√		√			√	√		√	
124	√		√		√		√		√			√		√
125	√		√		√		√		√			√	√	
126	√		√		√		√		√		√			√
127	√		√		√		√		√		√		√	

MEMORY BLOCK 5 - 02
RINGING ASSIGNMENT - DAY

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
5 - 02		**1-20, 4-06, 5-03**

OPERATION ◄——————— AND ———————► DISPLAY

1. Go off-line.

2. Press LK10 (see Note 1). MIC LED illuminates.

3. Press #. MIC LED goes out.

4. Input Port No. from dial key.
   Example: Input PORT No. 12.
   A. Press dial key 1, 2 (see note 2).
   Each CO/PBX line assigned to ring is indicated by the CO/PBX LEDs (LED is on).

5. Press Line Keys to specify Ring Assignment (day) for each CO/PBX line (Status is changed by pressing the Line Key).

6. Press **MIC** key (see Notes 3 and 4). MIC LED goes on Repeat steps 5 and 6, or 3~6 to specify other telephones.

7. Press **SPKR** key to go back on line.

■ — ■ ■ — ■ ■ — ■ ■ — ■ ■ ■ — ■ ■ — ■ ■ — ■ ■ ■ — ■ ■ — ■

NOTES:

1. Press LK10 and the input display appears.

   Function No. ⌐ Port No.

3. Pressing the **MIC** key enters yes/no of Ring Assignment (day), and the status of the next Port No. is shown by CO LEDs (red).

4. Default: Port 10, 11 ring on all incoming CO/PBX calls.

2. The visual indication at each CO/PBX line button (1~8) identifies if CO/PBX ring is enabled. Pressing each button changes the ring assignment.

   LED OFF = Not assigned to ring
   LED ON = Ring assigned

GENERAL INFORMATION - RINGING ASSIGNMENT - DAY

This Memory Block area is used to specify CO/PBX day mode ring assignment for each station.

MEMORY BLOCK 5 - 03
RINGING ASSIGNMENT - NIGHT

| MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
5 - 03		**1-20, 4-06, 5-02**

OPERATION ←——— AND ———→ DISPLAY

1. Go off-line.

2. Press LK11 (see Note 1). MIC LED illuminates.

3. Press #. MIC LED goes out.

4. Input Port N⁰. with dial pad.
   Example: Input PORT N⁰. 20.
   Press dial key 2, 0 (see Note 2).
   Each CO/PBX line assigned to ring is indicated by the CO/PBX LEDs (LED is On).

5. Press the Line Keys to specify Ring Assignment (night) for each CO/PBX line. (Status is changed by pressing the Line Key).

6. Press MIC key (see Notes 3 & 4). MIC LED goes on. Repeat steps 5 and 6, or 3~6 to specify other telephones.

7. Press SPKR key to go back on line.
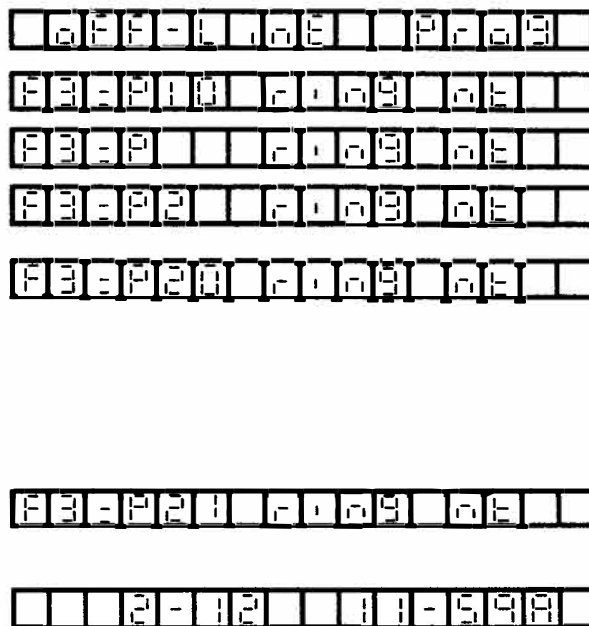
NOTES:

1. Press LK11, display changes as follows:

   Function N⁰. ——— Port N⁰.

2. The visual indication at each CO/PBX Line Key (1~8) identifies if CO/PBX ring is enabled. Pressing each key changes the ring assignment.

   LED OFF = Not assigned to ring
   LED ON = Ring assigned

3. Pressing the MIC key enters the Ring Assignment (night), and the status of the next PORT N⁰. is shown by CO LEDs (red).

4. Default: PORT 10,11 ring on all incoming CO/PBX calls.

GENERAL INFORMATION - RINGING ASSIGNMENT - NIGHT

This Memory Block area is used to specify CO/PBX Night Mode ring assignment for each Key Telephone and each line.

MEMORY BLOCK 5 - 04
NON/TOLL/OUTGOING RESTRICTION

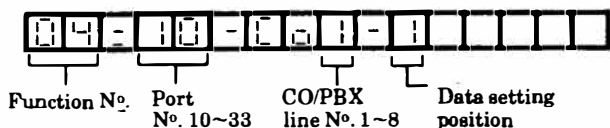| MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
5 - 04		1-15, 1-56, 4-07,
		5-01

OPERATION ←——————— AND ———————→ DISPLAY

1. Go off-line.

2. Press LK12 (see Note 1). MIC LED illuminates.

3. Press # key. MIC LED goes out.

4. Input Port №. with dial pad.
   Example: Input PORT №. 25.
   Press dial key 2, 5.
   Specified status of each CO/PBX line is shown by
   CO/PBX LEDs (red).

5. Press Line Keys to specify Restriction for each CO/PBX
   line (see Note 2).

6. Press **MIC** key (see Note 4). MIC LED goes on. Repeat
   steps 5 and 6, or 3~6 to specify other telephones.

7. Press **SPKR** key to go back on line.

NOTES:

1. Press LK12 and displays changes as follows:

   Function №.   Port №.

2. Visual indication at each CO/PBX Line Key (1-8)
   identifies the type of restriction for that line.
   Pressing each key changes restriction status of
   associated CO/PBX line.
   LED OFF = No restrictions
   LED ON = Toll Restriction (Press once)
   LED Flashing = Outgoing Restriction (Press
   twice).
   Press a third time to return to idle condition.

3. Pressing the MIC key specified Non/Toll/
   Outgoing and the status of the next Port No. is
   shown by CO/PBX LEDs (red).

4. Default: No Restrictions are assigned to
   any Key Telephone.

GENERAL INFORMATION - NON /TOLL/OUTGOING RESTRICTION

This Memory Block area is used to specify three types of restrictions for each telephone and each CO/PBX line;
No Restriction, Outgoing Restriction, and Toll Restriction.

MEMORY BLOCK 6-A
SPEED DIALING CLEAR (SYSTEM)

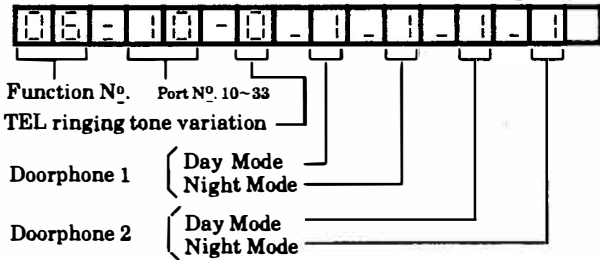| MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
6 - A		

OPERATION ◄─────── *AND* ───────► DISPLAY

1. Go off-line.

   `off-line    prog`

2. Press **FNC** key.

   `Clear`

3. Press **LNR/SPD** key.

4. Press dial key 1.

5. Press * key.

   `Sys Spd Clear`

6. Press **MIC** key (see Note 1).

   `Clear`

7. Press **SPKR** key to go back on line.

   `2-12    11-598`

NOTES:

1. Pressing the **MIC** key clears the speed dialing (system).

GENERAL INFORMATION - SPEED DIALING CLEAR (SYSTEM)

This operation is performed to clear all the System Speed Dial numbers.

MEMORY BLOCK 6 - B
SPEED DIALING CLEAR (STATION)

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
6 - B		

OPERATION ⟵ *AND* ⟶ DISPLAY

1. Go off-line.

   `oFF-LinE  Prog`

2. Press **FNC** key.

   `CLEAr`

3. Press **LNR/SPD** key.

4. Press dial key 3.

5. Press **#** key.

   `StA SPd CLEAr`

6. Press **MIC** key (see Note 1).

   `CLEAr`

7. Press **SPKR** key to go back on line.

   `2-12  11-59A`

NOTES:

1. Pressing the MIC key clears all Station Speed Dial memory.

GENERAL INFORMATION - SPEED DIALING CLEAR (STATION)

This operation is performed to clear all the Station Speed Dial numbers assigned to all stations.

MEMORY BLOCK 6-C
ROM VERSION CONFIRMATION

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
6 - C		

OPERATION ◄─────── AND ───────► DISPLAY

1. Go off-line.

2. Press CNF key (see Note 1).

3. Press MIC key (see Note 2).

4. Press MIC key (see Note 2).

5. Press MIC key (see Note 3).

6. Press SPKR key to go back on line.

NOTES:

1. Meaning of Display Items:

   Slot N⁰.   Package Name   ROM Version   Not used

2. Whether or not the EXK-Z ( ) KTU or EXS-Z KTU is installed on the MBD(412)-Z KTU.

   Display signifies the following.
   Blank: No installation
   OP0:   EXK-Z ( ) or EXS-Z
   OP1:   EXK-Z ( )

3. ROM version in the SMDR unit is displayed.

GENERAL INFORMATION - ROM VERSION CONFIRMATION

The ROM version can be confirmed without taking the package from the slot.

SECTION 350
FUNCTION TIMER CHART

TIMER	MEMORY BLOCK	DEFINITION	DEFAULT VALUE
Hookflash Time	1-01	The duration of CO/PBX Hookflash when the RECALL key is pressed or the Single Line Telephone hookswitch is tapped. The Hookflash end time for Single Line Telephone.	Recall/Hookflash: 0.6 sec. Hookflash end: (SLT) 1.0 sec.
Hold Recall/Call Park Recall Time	1-02	Time duration that the held CO/PBX waits to provide a recall indication.	2 min.
Paging Time Out	1-03	The duration of internal or external zone paging.	90 sec.
CO/PBX Line Queuing Recall Time	1-04	Duration of reserved CO/PBX line access after the line becomes idle.	10 sec.
Pause Time and Interdigit Time	1-05	The duration of a pause when inserted into a Speed Dial buffer. Minimum time duration between dial signals (DP).	Pause Time: 3.5 sec. Interdigit Time: 800 msec.
MFR Timer	1-06	Duration of the MFR circuit will remain on line to decode digits dialed by a Single Line Telephone.	10 sec.
Doorphone Display Time	1-07	Duration of displaying accessed doorphone on an assigned Telephone.	10 sec.
Ringing Transfer Tone Recall Time Selection	1-08	The duration from transfer of ringing tone before the recall tone to originating station.	1 min.
Automatic Callback Time Selection	1-09	The duration from a callback to set its release (cancellation).	No limit
Automatic Redial Time	1-10	Ringing and waiting time to access a busy or no answer outside party.	Ringing Time: 60 sec. Waiting Time: 120 sec. Repeat: 5 times
Bounce Protection Time	1-11	Period of Time before a valid hookflash is detected on a Single Line Telephone.	0.3 sec.
Elapsed Call and SMDR Start Timer Selection	1-12	The time in which the Elapsed Call Timer is displayed on an ETZ-16D-1 Key Telephone and the SMDR Wait time to present a call record.	10 sec.
DTMF Digit Duration Selection	1-21	Duration of DTMF signal sending.	100 msec.
Automatic Release Disconnection Signal Detection Time	1-50	Duration of disconnection signal detection.	150 msec.

SECTION 360
TOLL/CALL RESTRICTION

GENERAL

A method of Toll Restriction has been designed into the Electra 8/24 Electronic Key Telephone System to provide dialing restrictions to individual stations on a CO/PBX line basis.

There are three types of dialing restrictions.
1. Non restriction
2. Toll Restriction
3. Outgoing Restriction

The three can be specified using Memory Block 5-04.

To register Toll Restriction, the following System Programming must be specified using Memory Blocks 1-51 through 1-56 and 4-07.

1-51	1+ Dialing Assignment
1-52	Toll Restriction Allow Table Size Assignment
1-53	Digit Rejection Assignment
1-54	OCC Override Table Assignment
1-55	Toll Restriction Override Table Assignment
1-56	Digit Counting
4-07	Digit Restriction Assignment

This section will fully explain this procedure. It is recommended that before attempting to program any restrictions that this section be fully reviewed.

NON/TOLL/OUTGOING RESTRICTION (SEE MEMORY BLOCK 5-04.)

This memory block area is used to specify any of three types of dialing restriction (Non Restriction, Outgoing Restriction, and Toll Restriction) for each station and each CO/PBX line.

1. Non Restriction: No restriction on any outgoing calls.

2. Outgoing Restriction: Outgoing calls on CO/PBX lines are restricted.

   A. In the automatic selection of CO/PBX lines by Automatic Idle CO/PBX Line Seizure, Speed Dialing, etc., CO/PBX lines under Outgoing Restriction will not be seized.

   B. Incoming calls can be answered, held calls can be reanswered, and calls can be transferred.

   C. If RECALL key is pressed while talking on a CO/PBX line under Outgoing Restriction, that CO/PBX line will be disconnected.

   D. If a dial key is pressed while talking on a CO/PBX line under Outgoing Restriction, that CO/PBX line will be disconnected.

3. Toll Restriction: Toll calls are restricted.

TOLL RESTRICTION (SEE MEMORY BLOCK 1-51 TO 1-56,)

These Memory Block areas are used to restrict the dialing of toll calls according to the Toll Restriction Algorithm shown in Figure 3-1. The following assignments are necessary to restrict toll calls.

1. 1+ Dialing Assignment (See Memory Block 1-51)

   This area of the program is used to select a Toll Restriction format to suit the installation Site Requirements.

   In some locations it is necessary to dial the digit 1 before dialing a long distance call. If 1+ Dialing is entered into the program, calls beginning with 1 will be denied when the station is Toll Restricted on that line (local dialing will be allowed). In other locations it is not necessary to dial a 1 before dialing a long distance call; in this case 1+ Dialing should be removed from the program. Memory Block 1-51 is used to select which type of inspection process is desired. The default value is that 1+ Dialing is assigned.

2. Digit Rejection Assignment (See Memory Block 1-53)

   This area of the program is used to prevent repeated dialing of the same digit from the beginning of the dialing process to defeat the Toll Restriction Inspection Process. A Toll Restricted station, dialing a number listed in the digit Rejection Table, will be dropped from the CO/PBX line and receive error tone. Up to four separate digits can be entered. The default value is No Assignment.

3. OCC Override Table Assignment (See Memory Block 1-54)

   This area of the program is used to specify OCC (Other Common Carriers) to be accessed.

   A. OCC can be accessed by dialing 10 after seizing a CO/PBX line.

   B. If an OCC code (3 digit) is not dialed within 10 seconds after OCC access, the CO/PBX line is disconnected.

   C. Up to 8 OCC codes can be programmed per system. (OCC Override Table)

   D. If an unprogrammed OCC code is dialed, the CO/PBX line is released.

E. Toll Restriction is in effect as in ordinary dialing after OCC access (10XXX).

F. The default value is "No Digits Assigned" in all tables.

4. Toll Restriction Allow Table Size and Override Table Assignment (See Memory Block 1-52, 1-55)

These areas of the program are used to restrict toll calls by area code and office code.

A. Override Table: 6 digits×80

B. Register area code (3 digit) and office code (3 digit) in the 6 digit line of Override Table.

C. Override Tables can be classified into Allow Tables and Deny Tables by Table Size Assignment through Memory Block 1-52.

D. .If a number not registered in Allow Override Table is dialed, the CO/PBX line is disconnected.

E. Any digit (0 to 9) can be registered in the Override Table.

F. Outgoing calls can be allowed or denied by an office code for the same area depending on combination of Allow Table and Deny Table.

Example 1:
Restricting a certain office code only for the same area.
    Allow Table: 214 XXX
    Deny Table: 214 333

Example 2:
Allowing a certain office code only for the same area.
    Allow Table: 214 333
    Deny Table: -   - (Not registered)

G. If a number dialed is not specified in the Override Table, the number dialed will be denied.

H. Only the digits dialed after the PBX access code on a PBX line is restricted by Toll Restriction.

I. Dialing # or * is restricted only when sending DTMF signals on CO/PBX/PBX lines.

5. Outgoing Restriction by Digit Counting (See Memory Block 1-56 and Memory Block 4-07).

This area of the program is used to specify the maximum number of digits for telephone numbers that can be originated from telephones specified by Memory Block 1-56. When a station number exceeding the registered digits is dialed, the line is immediately dropped and an error tone sounds (Max. sixty three digits).

TOLL RESTRICTION ALGORITHM
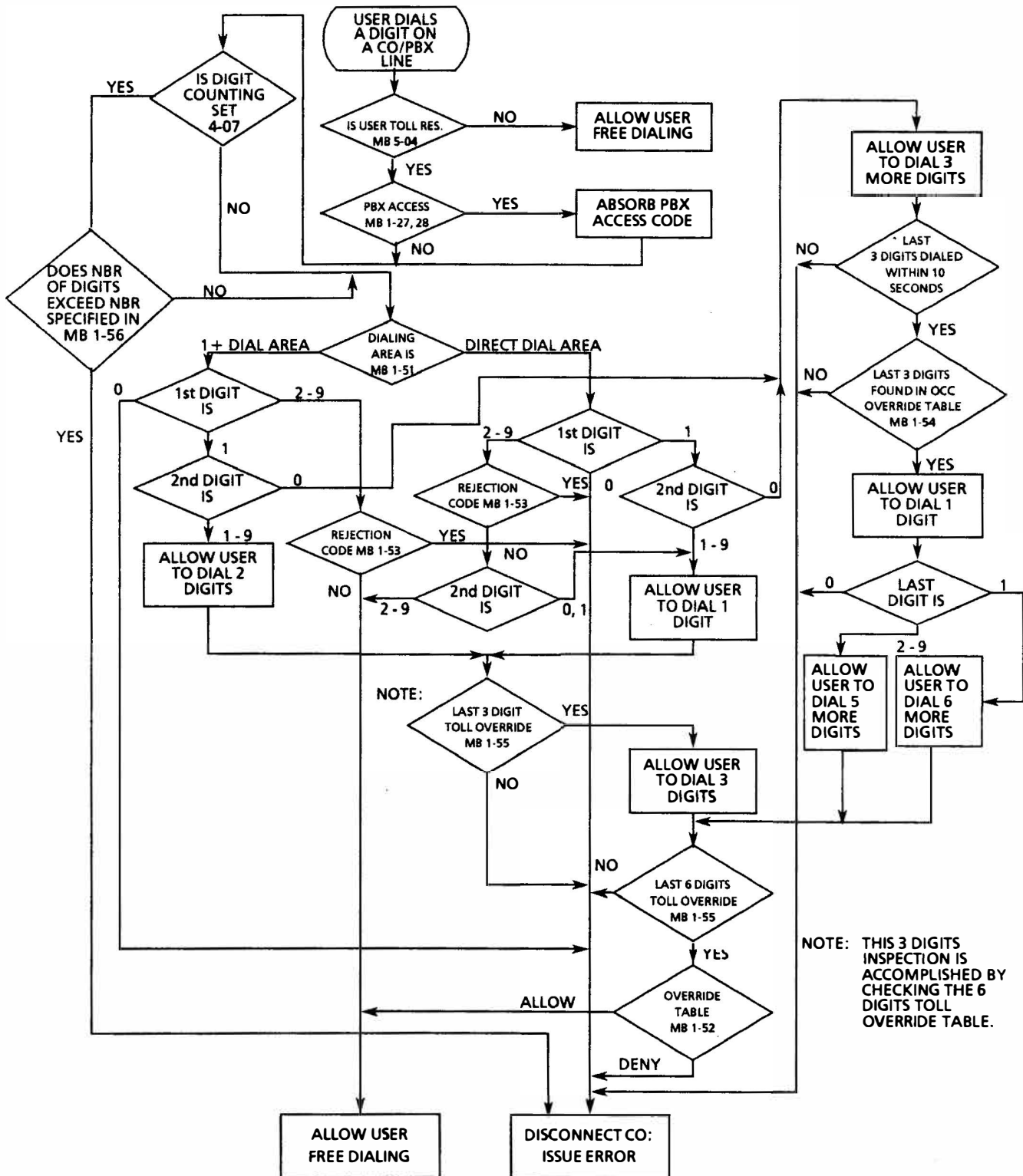
Figure 3-1. Electra 8/24 Electronic Key Telephone System Toll Denial

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SECTION 370
JOB SPECIFICATION SHEETS

This section consists of Job Specification Sheets. When completed they provide all the System Programming values and configuration information necessary to assist technicians in maintaining the system.

During the initial stages of system planning, the Job Specification Sheets are necessary for collecting information to accurately configure the installation of the Electra 8/24 Electronic Key Telephone System. The customer information, collected by the appropriate personnel, is recorded on the specification sheets. These sheets are arranged in the logical order of the Memory Blocks to make the system programming as efficient as possible.

There are five groups of programming sheets.
- The first group of sheets is used for entering the System Mode functions.
- The second group is used to assign the Tenant Mode functions.
- The third group is used to program the CO/PBX Line Mode functions.
- The fourth group is used to enter the Telephone Mode Functions.
- The fifth group is used to for the Menu (Pattern) Selection Mode.

The first page of each Job Sheet includes a brief description of each column and the possible entries. After initial installation, **job sheets must be kept up to date and left on site** to provide technicians with the necessary information required when servicing/maintaining the system. A duplicate copy should also be kept in the servicing office's customer file.

Each KSU is shipped with a copy of the complete Job Specification Sheet Manual (ND-20565). Additional copies can be obtained by ordering Stock Number 710225.

JOB SPECIFICATION INSTRUCTIONS
FOR
MEMORY BLOCKS 1 - 01 ~ 1 - 10 ASSIGNMENT OF SYSTEM MODE FUNCTIONS

| ITEM | DESCRIPTION | ENTRY |

	FUNCTION (AREA)	DEFAULT		NEW		DESCRIPTION	ENTRY
		HOOK (sec)	HOOK END (sec)	HOOK (sec)	HOOK END (sec)	TIMING OF CO/PBX HOOKFLASH FROM THE RECALL KEY OF KEY TELEPHONE OR SWITCH HOOKFLASH OF SLT TO THE CO/PBX LINE	0.4, 0.6, 1.0, 1.5 (sec)
1-01	HOOKFLASH TIME	0.6	1.0			TIMING OF HOOKFLASH END TIME FROM HOOKSWITCH OF SINGLE LINE TELEPHONE FOR INTERNAL HOLDING OR HOOKFLASH TO THE CO/PBX LINE	0.0, 0.6, 1.0, 1.5 (sec)
1-02	HOLD RECALL/CALL PARK RECALL TIME	2 min				DURATION FROM THE HOLD/PARK OF A CO/PBX CALL UNTIL RECALL	1, 2, 4, NO LIMIT (min)
1-03	PAGING TIME	90 sec				DURATION OF PAGING, GROUP PAGING OR EXTERNAL SPEAKER PAGING	90, 120, NO LIMIT (sec)
1-04	CO/PBX LINE QUEUING RECALL TIME	10 sec				DURATION OF THE RECALL SIGNAL OF A LINE THAT HAS BEEN QUEUED	10, 20, 30, 60 (sec)
1-05	PAUSE TIME AND INTERDIGIT TIME	PAUSE (sec)	INTERDIGIT TIME (msec)	PAUSE (sec)	INTERDIGIT TIME (msec)	DURATION OF SENDING NO DIAL SIGNAL TO CO/PBX LINE	PAUSE: 1.0, 3.5 (sec)
		3.5	800			MINIMUM INTERVAL BETWEEN DIAL SIGNALS IN DP DIALING	INTERDIGIT PAUSE: 700/550, 800 (msec)
1-06	MFR TIMER	10 sec				MAXIMUM TIME MFR WILL REMAIN ONLINE BEFORE THE FIRST AND BETWEEN EACH DIGIT DIALED BY A SINGLE LINE TELEPHONE	5, 10, 20, 30, 50, 60 (sec)
1-07	DOORPHONE DISPLAY TIME	10 sec				DURATION IN WHICH THE ACCESSED DOORPHONE IS DISPLAYED ON A KEY TELEPHONE WHICH IS ASSIGNED TO RING	10, 30, 60, 90 (sec)
1-08	RINGING TONE TRANSFER RECALL TIME	1 min				DURATION FROM RINGING TONE TRANSFER TO ALARM SOUNDING	0.5, 1, 2, 4 (min)
1-09	AUTOMATIC CALLBACK TIME	NO LIMIT		MIN		DURATION FROM A CALLBACK TO ITS RELEASE	30, 60, 90 NO LIMIT (min)
1-10	AUTOMATIC REDIAL TIME	RINGING TIME (sec)	60	RINGING TIME (sec)		RINGING TIME AND WAITING TIME, NUMBER OF DIALS TO BE REPEATED	
		WAITING TIME (sec)	120	WAITING TIME (sec)			
		REPEAT	5	REPEAT	5		

RINGING TIME (sec)	60	60	40	30
WAITING TIME (sec)	120	90	60	30
REPEAT	5	5	5	5

MEMORY BLOCKS 1 - 01 ~ 1 - 10 ASSIGNMENT OF SYSTEM MODE FUNCTIONS

MEMORY BLOCK	FUNCTION (AREA)	DEFAULT		NEW	
1-01	HOOKFLASH TIME	HOOK (sec)	HOOK END (sec)	HOOK (sec)	HOOK END (sec)
		0.6	1.0		
1-02	HOLD RECALL/CALL PARK RECALL TIME	2 min			
1-03	PAGING TIME	90 sec			
1-04	CO/PBX LINE QUEUING RECALL TIME	10 sec			
1-05	PAUSE TIME AND INTERDIGIT TIME	PAUSE (sec)	INTERDIGIT TIME (msec)	PAUSE (sec)	INTERDIGIT TIME (msec)
		3.5	800		
1-06	MFR TIMER	10 sec			
1-07	DOORPHONE DISPLAY TIME	10 sec			
1-08	RINGING TONE TRANSFER RECALL TIME	1 min			
1-09	AUTOMATIC CALLBACK TIME	NO LIMIT		MIN	
1-10	AUTOMATIC REDIAL TIME	RINGING TIME (sec)	60	RINGING TIME (sec)	
		WAITING TIME (sec)	120	WAITING TIME (sec)	
		REPEAT	5	REPEAT	5

JOB SPECIFICATION INSTRUCTIONS
FOR
MEMORY BLOCKS 1 - 11 ~ 1 - 20 ASSIGNMENT OF SYSTEM MODE FUNCTIONS

ITEM				DESCRIPTION	ENTRY

MEMORY BLOCK	FUNCTION (AREA)	DEFAULT	NEW	DESCRIPTION	ENTRY
1-11	BOUNCE PROTECTION TIME	0.3 sec		DURATION OF TIME AFTER HOOKFLASH ON A SINGLE LINE TELEPHONE BEFORE DETECTING AN ON-HOOK CONDITION	0.0, 0.3, 0.6, 0.9 (sec)
1-12	ELAPSED CALL AND SMDR START TIMER	10 sec		DURATION FROM WHEN THE ELAPSED CALL TIMER WILL START. ALSO USED FOR SMDR START TIMER	10, 20, 30 (sec)
1-13	INTERCOM CALL SIGNAL TONE/VOICE	VOICE		SELECTION OF SIGNAL TONE OR VOICE FOR INTERCOM CALL	VOICE OR TONE SIGNAL
1-14	STATION BGM CONNECTION	DENY		ALLOW/DENY OF BGM CONNECTION	ALLOW OR DENY
1-15	SYSTEM SPEED DIAL TOLL OVERRIDE	DENY		RESTRICT OR NOT RESTRICT KEY TELEPHONES USING SYSTEM SPEED DIAL NUMBERS	ALLOW OR DENY
1-16	SYSTEM SPEED DIALING CONFIRMATION KEY TELEPHONE	PORT 10, 11 ONLY		SELECTION OF PORT 10, 11 OR ALL TELEPHONES IN CONFIRMING SYSTEM SPEED DIAL NUMBERS	PORT NO. 10, 11 OR ALL TELEPHONES
1-17	DSS/BLF CONSOLE	DSS1 — ASSOCIATED PORT NO. 10		SETTING OF DSS/BLF CONSOLES TO ASSOCIATED PORTS 10 AND 11	PORT NO. (10~33)
		DSS2 — ASSOCIATED PORT NO. 11			
1-18	RINGING TONE TRANSFER	ALLOW		ALLOW/DENY FOR RINGING TONE TRANSFER	ALLOW/DENY
1-19	TIME DISPLAY SWITCHING (12 HR./24 HR. SYSTEM)	12 HOUR SYSTEM		SPECIFY EITHER 12 HOURS OR 24 HOURS FOR TIME DISPLAY	12 HOUR SYSTEM OR 24 HOUR SYSTEM
1-20	OFF-HOOK RINGING TONE	ALLOW		ALLOW/DENY OF RINGING TONE WHILE TALKING	ALLOW OR DENY

MEMORY BLOCKS 1 - 11 ~ 1 - 20 ASSIGNMENT OF SYSTEM MODE FUNCTIONS

MEMORY BLOCK	FUNCTION (AREA)	DEFAULT		NEW
1-11	BOUNCE PROTECTION TIMER	0.3 sec		
1-12	ELAPSED CALL AND SMDR START TIMER	10 sec		
1-13	INTERCOM CALL SIGNAL TONE/VOICE	VOICE		
1-14	STATION BGM CONNECTION	DENY		
1-15	SYSTEM SPEED DIAL TOLL OVERRIDE	DENY		
1-16	SYSTEM SPEED DIALING CONFIRMATION KEY TELEPHONE	TEL 10, 11 ONLY		
1-17	DSS/BLF CONSOLE	DSS1	ASSOCIATED PORT NO. 10	
		DSS2	ASSOCIATED PORT NO. 11	
1-18	RINGING TONE TRANSFER	ALLOW		
1-19	TIME DISPLAY SWITCHING (12 HOUR/24 HOUR)	12 HOUR SYSTEM		
1-20	OFF-HOOK RINGING TONE	ALLOW		

JOB SPECIFICATION INSTRUCTIONS
FOR
MEMORY BLOCKS 1 - 21 ~ 1 - 29 ASSIGNMENT OF SYSTEM MODE FUNCTIONS

ITEM		DESCRIPTION	ENTRY

MEMORY BLOCK	FUNCTION (AREA)	DEFAULT			NEW			DESCRIPTION	ENTRY
1-21	DTMF DIGIT DURATION	100 msec						DURATION OF SENDING DTMF SIGNALS	100, 300 (msec)
1-23	HANDSET RECEIVING VOLUME	DOWN						VOLUME INCREASE IS DOWN OR REMAINS UP WHEN YOU HANG UP	DOWN (RESET) OR UP (NOT RESET) WHEN YOU HANG UP
1-24	PRIVACY OVERRIDE TONE ON CO/PBX LINE	DENY						ALLOW/DENY OF OVERRIDING PRIVACY TONE OF A CALL ON CO/PBX LINE WHEN PRIVACY OVERRIDE IS ENABLED	ALLOW/DENY
1-25	EXTERNAL SPEAKER (CONNECTED/NOT CONNECTED)	1 CONNECTED	2 CONNECTED		1	2		EXTERNAL SPEAKERS ARE CONNECTED OR NOT CONNECTED	(C) CONNECTED/(NC) NOT CONNECTED (SPEAKER 1, 2)
1-26	LINE SELECTION CODES	CODE 9 / CODE 80 / CODE 88	CO LINE / PBX / —		CODE 9 / CODE 80 / CODE 88			SPECIFY LINE TO BE SEIZED WHEN CODES 9, 80, 88 ARE DIALED	CO LINE, PBX, —
1-27	PBX ACCESS CODE ASSIGNMENT I	8 - (PAUSE)						SPECIFY THE CODE TO SEIZE OUTSIDE LINE CONNECTED TO PBX	PBX LINE OUTGOING CODE MAX. 6 DIGITS
1-28	PBX ACCESS CODE ASSIGNMENT II	9 - (PAUSE)						SPECIFY THE CODE TO SEIZE OUTSIDE LINE CONNECTED TO PBX	PBX LINE OUTGOING CODE MAX. 6 DIGITS
1-29	PRIVACY OVERRIDE ASSIGNMENT	NONE						SPECIFY THE TELEPHONE(S) ALLOWED TO OVERRIDE CALLS ON CO/PBX LINES	PORT NO. (10~33): MAX. 8 TELEPHONES

MEMORY BLOCKS 1 - 21 ~ 1 - 29 ASSIGNMENT OF SYSTEM MODE FUNCTIONS

MEMORY BLOCK	FUNCTION (AREA)	DEFAULT		NEW	
1-21	DTMF DIGIT DURATION	100 msec			
1-23	HANDSET RECEIVING VOLUME	DOWN			
1-24	PRIVACY OVERRIDE TONE ON CO/PBX LINE	DENY			
1-25	EXTERNAL SPEAKER (CONNECTED/NOT CONNECTED)	1	2	1	2
		CONNECTED	CONNECTED		
1-26	LINE SELECTION CODES	CODE 9	CO LINE	CODE 9	
		CODE 80	PBX	CODE 80	
		CODE 88	_	CODE 88	
1-27	PBX ACCESS CODE ASSIGNMENT I	8 - (PAUSE)			
1-28	PBX ACCESS CODE ASSIGNMENT II	9 - (PAUSE)			
1-29	PRIVACY OVERRIDE ASSIGNMENT	NONE			

JOB SPECIFICATION INSTRUCTIONS
FOR
MEMORY BLOCKS 1 - 30 ~ 1 - 32, 1 - 34 ~ 1 - 37 ASSIGNMENT OF SYSTEM MODE FUNCTIONS

	ITEM			DESCRIPTION	ENTRY

MEMORY BLOCK	FUNCTION (AREA)	DEFAULT		NEW			DESCRIPTION	ENTRY
1-30	PRIVATE LINE	NONE		PAGE 0 — LINE # / PORT #; PAGE 1 — LINE # / PORT #			ASSIGN A CO/PBX LINE TO KEY TELEPHONE FOR EXCLUSIVE USE	CO NO. (1~8) AND PORT NO. (10~33): 1 CO/PBX LINE 2 STATIONS X 2
1-31	DOORPHONE	DPH 1 — INSTALLED	DPH 2 — INSTALLED	DPH 1	DPH 2		SPECIFY YES/NO IF A DOOR PHONE IS INSTALLED	INSTALLED/NOT INSTALLED (DOORPHONE 1, 2)
1-32	DOOR LOCK RELEASE	DOOR LOCK 1 — ALLOW	DOOR LOCK 2 — ALLOW	DOOR LOCK 1	DOOR LOCK 2		SPECIFY DOOR LOCK OR RELEASE	ALLOW OR DENY (DOOR LOCK 1, 2)
1-34	SMDR PRINT FORMAT	ALL DIGITS					SPECIFY ALL DIGITS OR MASK LOWER 4 DIGITS OF DIALED TELEPHONES IN PRINTING	ALL (DIGITS) OR MASK LOWER 4 DIGITS
1-35	SINGLE LINE TELEPHONE (HOLD/HOOKFLASH)	INTERNAL HOLD					SPECIFY INTERNAL HOLD OR HOOKFLASH TO CO/PBX LINE WHEN HOOKFLASH IS PERFORMED ON AN SLT	INTERNAL HOLD/CO/PBX HOOKFLASH
1-36	INTERCOM MASTER NUMBER	MASTER NUMBER 10-NO 20-NO 30-NO 40-NO 50-NO		MASTER NUMBER 10 20 30 40 50			SPECIFY MASTER NUMBER USED OR NOT USED	YES OR NO (MASTER NUMBER: 10-20-30-40-50)
1-37	CO/PBX LINE ON-HOOK ORIGINATION/ABANDONING	NO					YES/NO OF ON-HOOK ORIGINATION/ABANDONING OF A CO/PBX CALL	YES OR NO

MEMORY BLOCKS 1 - 30 ~ 1 - 32, 1 - 34 ~ 1 - 37 ASSIGNMENT OF SYSTEM MODE FUNCTIONS

MEMORY BLOCK	FUNCTION (AREA)	DEFAULT			NEW				
1-30	PRIVATE LINE	NONE			PAGE 0	LINE #		PORT #	
					PAGE 1	LINE #		PORT #	
1-31	DOORPHONE	DPH 1	DPH 2		DPH 1		DPH 2		
		INSTALLED	INSTALLED						
1-32	DOOR LOCK RELEASE	DOOR LOCK 1	DOOR LOCK 2		DOOR LOCK 1		DOOR LOCK 2		
		ALLOW	ALLOW						
1-34	SMDR PRINT FORMAT	ALL DIGITS							
1-35	SINGLE LINE TELEPHONE (HOLD/HOOKFLASH)	INTERNAL HOLD							
1-36	INTERCOM MASTER NUMBER	MASTER NUMBER			MASTER NUMBER				
		10 / NO	20 / NO	30 / NO · 40 / NO · 50 / NO	10	20	30	40	50
1-37	CO/PBX LINE ON-HOOK ORIGINATION/ABANDONING	NO							

JOB SPECIFICATION INSTRUCTIONS
FOR
MEMORY BLOCKS 1 - 42 ~ 1 - 44 and 1 - 50 ASSIGNMENT OF SYSTEM MODE FUNCTIONS

ITEM					DESCRIPTION	ENTRY

MEMORY BLOCK	FUNCTION (AREA)	DEFAULT		NEW		DESCRIPTION	ENTRY
1-42	DOORPHONE CALL AUTOMATIC ANSWER (ALLOW/DENY)	DENY				SPECIFY WHETHER OR NOT TO ALLOW ANSWERING DOORPHONE CALLS BY SIMPLY LIFTING THE HANDSET	ALLOW OR DENY
1-43	EXTERNAL TONE RING CONTROL	DAY	NO	DAY		SPECIFY WHETHER OR NOT TO RING THE EXTENSION BELL ON ALL INCOMING CO/PBX CALLS FOR DAY, NIGHT OR BOTH	YES OR NO
		NIGHT	NO	NIGHT			
1-44	TANDEM CONFERENCE LINE	PORT 21				INTERCOM PATH USED FOR TANDEM CONFERENCE	PORT NO. 12~33
1-50	AUTOMATIC RELEASE DISCONNECTION SIGNAL DETECTION TIME	150 msec				TIMING OF DETECTING THE DISCONNECT SIGNAL SENT FROM THE OPPOSITE STATION	150/300/400 msec

MEMORY BLOCKS 1 - 42 ~ 1 - 44 and 1 - 50 ASSIGNMENT OF SYSTEM MODE FUNCTIONS

MEMORY BLOCK	FUNCTION (AREA)	DEFAULT		NEW	
1-42	DOORPHONE CALL AUTOMATIC ANSWER (ALLOW/DENY)	DENY			
1-43	EXTERNAL TONE RING CONTROL	DAY	NO	DAY	
		NIGHT	NO	NIGHT	
1-44	TANDEM CONFERENCE LINE	PORT 21			
1-50	AUTOMATIC RELEASE DISCONNECTION SIGNAL DETECTION TIME	150 msec			

JOB SPECIFICATION INSTRUCTIONS
FOR
MEMORY BLOCKS 1 - 51~1 - 53 SYSTEM RESTRICTIONS

ITEM	DESCRIPTION	ENTRY

MEMORY BLOCK 1-51= 1+ DIALING (DEFAULT : 1 + DIAL)	DIALING METHOD USED FOR TOLL CALLING	✓ APPROPRIATE TYPE (ONE ONLY)
☐ DIRECT DIAL ☐ 1 + DIAL		

MEMORY BLOCK 1-52= TOLL RESTRICTION ALLOW TABLE SIZE	ENTER THE LINE NUMBER TO DIVIDE THE OVERRIDE TABLE INTO AN ALLOW AND DENY GROUP. AN ENTRY NUMBER DESIGNATES THE LAST ALLOW ENTRY. ALL REMAINING ENTRIES, UP TO 80, WILL BE DENY ENTRIES. ENTER 00 TO SPECIFY ALL AS DENY ENTRIES, OR 80 TO SPECIFY ALL AS ALLOW ENTRIES.	00~80
TABLE SIZE		

MEMORY BLOCK 1-53 = DIGIT REJECTION (DEFAULT : NONE)	REJECTION OF FIRST DIGIT DIALED	1~9 EACH OF THE FOUR BOXES
REJECTION CODE 1 (SINGLE DIGIT)		
REJECTION CODE 2 (SINGLE DIGIT)		
REJECTION CODE 3		

MEMORY BLOCKS 1 - 51~1 - 53 SYSTEM RESTRICTIONS

MEMORY BLOCK 1-51 = 1 + DIALING (DEFAULT : 1 + DIAL)
☐ DIRECT DIAL
☐ 1 + DIAL

MEMORY BLOCK 1-52 = TOLL RESTRICTION ALLOW TABLE SIZE (DEFAULT: 00)	
TABLE SIZE	

MEMORY BLOCK 1-53 = DIGIT REJECTION (DEFAULT: NONE)	
REJECTION CODE 1 (SINGLE DIGIT)	
REJECTION CODE 2 (SINGLE DIGIT)	
REJECTION CODE 3 (SINGLE DIGIT)	
REJECTION CODE 4 (SINGLE DIGIT)	

JOB SPECIFICATION INSTRUCTIONS
FOR
MEMORY BLOCKS 1 - 54 ~ 1 - 56 SYSTEM RESTRICTIONS

ITEM	DESCRIPTION	ENTRY

MEMORY BLOCK
1-54 = OCC OVERRIDE TABLE
(DEFAULT : NOT ASSIGNED)

TABLE	OCC CODE
1	10 - | | |
2	10- | | |

ASSIGNMENT OF EIGHT OTHER COMMON CARRIERS

3 DIGIT CARRIER CODE

MEMORY BLOCK
1-55 = TOLL RESTRICTION OVERRIDE TABLE

ENTRY NO.	CODE	
	AREA	OFFICE
01		
02		
03		
04		
05		

PERMITS UP TO SIX DIGITS PER ENTRY
(3 FOR AREA CODE AND 3 FOR OFFICE CODE).

0 - 9, NO ENTRY (ALL DIGITS 0-9)

MEMORY BLOCK 1-56 (DEFAULT 00)

DIGIT COUNTING

SETTING IS MADE TO DISABLE ANY DIALING EXCEEDING THE SPECIFIED NUMBER OF DIGITS. ANY FIGURE WITHIN THE RANGE OF 00~63 CAN BE SPECIFIED

DIGIT NO. (00~63)

MEMORY BLOCKS 1 - 54 ~ 1 - 56 SYSTEM RESTRICTIONS

MEMORY BLOCK 1-54 = OCC Override Table (DEFAULT : NOT ASSIGNED)		
TABLE	**OCC**	**CODE**
1	10 -	
2	10 -	
3	10 -	
4	10 -	
5	10 -	
6	10 -	
7	10 -	
8	10 -	

MEMORY BLOCK 1-55 (DEFAULT: NOT ASSIGNED)

ENTRY NO.	CODE AREA	OFFICE	ENTRY NO.	CODE AREA	OFFICE	ENTRY NO.	CODE AREA	OFFICE	ENTRY NO.	CODE AREA	OFFICE
01			21			41			61		
02			22			42			62		
03			23			43			63		
04			24			44			64		
05			25			45			65		
06			26			46			66		
07			27			47			67		
08			28			48			68		
09			29			49			69		
10			30			50			70		
11			31			51			71		
12			32			52			72		
13			33			53			73		
14			34			54			74		
15			35			55			75		
16			36			56			76		
17			37			57			77		
18			38			58			78		
19			39			59			79		
20			40			60			80		

MEMORY BLOCK 1-56 (DEFAULT NONE)	DIGIT COUNTING

JOB SPECIFICATION INSTRUCTIONS
FOR
MEMORY BLOCK 2 - 01 ASSIGNMENT OF TENANT MODE FUNCTIONS

ITEM	DESCRIPTION	ENTRY
	ALLOW OR DENY EACH TENANT CO/PBX ACCESS	ALLOW OR DENY

MEMORY BLOCK	2 - 01							
ITEM	TENANT CO/PBX LINE ACCOMMODATION							
DEFAULT	CO/PBX LINES 1~8 ASSIGNED TO TENANT 0							
CO NO.	1	2	3	4	5	6	7	8

TENANT NO.		1	2	3	4	5	6	7	8
	0								
	1								
	2								
	3								

MEMORY BLOCK 2 - 01 ASSIGNMENT OF TENANT MODE FUNCTIONS

MEMORY BLOCK		2 - 01							
ITEM		TENANT CO/PBX LINE ACCOMMODATION							
DEFAULT		CO/PBX LINES 1~8 ASSIGNED TO TENANT 0							
CO NO.		1	2	3	4	5	6	7	8
TENANT NO.	0								
	1								
	2								
	3								

JOB SPECIFICATION INSTRUCTIONS
FOR
MEMORY BLOCKS 3 - 01~3 - 10 AND 3 - 20 ASSIGNMENT OF CO/PBX LINE MODE FUNCTIONS

| | 3-01~08 | | | 3-09 | | | | | | | | | | 3-10 | | 3-20 | |

ITEM	SEIZED SELF CO/ PBX NUMBER DISPLAY			CO/PBX LINE STATUS SELECTION										SLT RINGING ASSIGNMENT (DIT)		AUTOMATIC RELEASE SELECTION	
				CO/PBX LINE FUNCTION		POLARITY REVERSAL	LINE TYPE		DP/DTMF SELECTION								
DEFAULT	NOT ASSIGNED			ORIGINATION & ANSWERING		NO	CO LINE		DTMF					DENY		DENY	
				ORIGINATION & ANSWERING	ANSWERING	NO	YES	CO LINE	PBX	NOT CONNECTED	DP/ 10 PPS	DP/ 20 PPS	DTMF	DAY	NIGHT	DENY	ALLOW
FNC NO.	1		1														
	2		2														
	3	CO NO.	3														
	4	①	4	②		③		④		⑤				⑥	⑦	⑧	

ITEM DESCRIPTION ENTRY

① TELEPHONE NUMBER TO BE ASSIGNED — 0-9, PAUSE OR SPACE (MAXIMUM OF 13 DIGITS)

② LINE FUNCTION ASSIGNMENT — √ APPROPRIATE COLUMN

③ LINE POLARITY REVERSAL ASSIGNMENT — √ APPROPRIATE COLUMN

④ LINE SPECIFICATION ASSIGNMENT — √ APPROPRIATE COLUMN

⑤ LINE DIAL SIGNAL ASSIGNMENT — √ APPROPRIATE COLUMN

⑥ DAY MODE SLT RINGING ASSIGNMENT (DIT) — EXTENSION (10~33) (ONLY ONE SLT PER LINE)

⑦ NIGHT MODE SLT RINGING ASSIGNMENT (DIT) — EXTENSION (10~33) (ONLY ONE SLT PER LINE)

⑧ AUTOMATIC RELEASE ASSIGNMENT — √ APPROPRIATE COLUMN

MEMORY BLOCKS 3 - 01 ~ 3 - 10 AND 3 - 20 ASSIGNMENT OF CO/PBX LINE MODE FUNCTIONS

	3-01~08						3-09									3-10		3-20	
ITEM	SEIZED SELF CO/PBX NUMBER DISPLAY			CO/PBX LINE STATUS SELECTION												SLT RINGING ASSIGNMENT (DIT)		AUTOMATIC RELEASE SELECTION	
				CO/PBX LINE FUNCTION			POLARITY REVERSAL		LINE TYPE		DP/DTMF SELECTION								
DEFAULT	NOT ASSIGNED			ORIGINATION & ANSWERING			NO		CO LINE		DTMF					DENY		DENY	
				ORIGINATION & ANSWERING	ANSWERING		NO	YES	CO LINE	PBX	NOT CONNECTED	DP/10 PPS	DP/20 PPS	DTMF		DAY	NIGHT	DENY	ALLOW
FNC NO.	CO NO.	1	1																
		2	2																
		3	3																
		4	4																
		5	5																
		6	6																
		7	7																
		8	8																

JOB SPECIFICATION INSTRUCTIONS
FOR
MEMORY BLOCKS 4 - 01 ~ 4 - 03 ASSIGNMENT OF TELEPHONE MODE FUNCTIONS

	4-01								4-02					4-03
ITEM	SINGLE LINE TELEPHONE INSTALLED (YES/NO)		TELEPHONE STATUS SELECTION I						RINGING LINE PREFERENCE	TELEPHONE STATUS SELECTION II				EXTENSION NUMBER ASSIGNMENT
			TENANT NO.	INTERNAL PAGE GROUP			ASSOCIATED ATTENDANT			3-MINUTE ALARM (ALLOW/DENY)	OFF-HOOK RINGING TONE	PRIME LINE ASSIGNMENT		
DEFAULT	YES		TENANT 0	GROUP 1			DSS 1		DENY	DENY	PORTS 10, 11 ONLY	DENY		PORT NUMBER = EXTENSION NUMBER
	YES	NO	0~3	Not Assigned	GROUP 1	GROUP 2	GROUP 3	DSS 1	DSS 2	DENY	ALLOW	ALLOW	DENY	ALLOW	DENY	ALLOW	DENY	10~59
PORT NUMBER 10																		
PORT NUMBER 11																		
NUMBER 12																		
13	①		②	③				④		⑤	⑥	⑦	⑧	⑨

ITEM	DESCRIPTION	ENTRY
①	SLT ASSIGNMENT (PORT 22, 23, AND 24 ONLY)	√ IF APPROPRIATE
②	TENANT NUMBER TO BE ASSIGNED	√ 0, 1, 2, OR 3
③	INTERNAL PAGE GROUP ASSIGNMENT	√ IF APPROPRIATE
④	ASSOCIATED ATTENDANT ASSIGNMENT	√ APPROPRIATE COLUMN
⑤	AUTOMATIC ANSWERING ASSIGNMENT	√ APPROPRIATE COLUMN
⑥	3-MINUTE ALARM TONE ASSIGNMENT	√ APPROPRIATE COLUMN
⑦	OFF HOOK RINGING TONE ASSIGNMENT (KEY TELEPHONE ONLY)	√ APPROPRIATE COLUMN
⑧	PRIME LINE ASSIGNMENT (KEY TELEPHONE ONLY)	√ APPROPRIATE COLUMN
⑨	STATION NUMBER TO BE ASSIGNED	√ EXTENSION (10~59)

MEMORY BLOCKS 4 - 01 ~ 4 - 03   ASSIGNMENT OF TELEPHONE MODE FUNCTIONS

		4-01								4-02						4-03
		SINGLE LINE TELEPHONE INSTALLED (YES/NO)		TELEPHONE STATUS SELECTION I							RINGING LINE PREFERENCE	TELEPHONE STATUS SELECTION II						EXTENSION NUMBER ASSIGNMENT
ITEM				TENANT NO.	INTERNAL PAGE GROUP				DSS CALL NO.			3-MINUTE ALARM YES/NO		OFF HOOK RINGING TONE		PRIME LINE ASSIGNMENT		
DEFAULT		YES		TENANT 0	GROUP 1				DSS 1		DENY	NO		PORTS 10, 11 ONLY		DENY		PORT NUMBER = EXTENSION NUMBER
		YES	NO	0~3	NOT ASSIGNED	GROUP 1	GROUP 2	GROUP 3	DSS 1	DSS 2	ALLOW	DENY	ALLOW	DENY	ALLOW	DENY	ALLOW	DENY	10~59
PORT NUMBER	10																		
	11																		
	12																		
	13																		
	14																		
	15																		
	16																		
	17																		
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	32																		
	33																		

JOB SPECIFICATION INSTRUCTIONS
FOR
MEMORY BLOCKS 4 - 04, 4 - 06 AND 4 - 07 ASSIGNMENT OF TELEPHONE MODE FUNCTIONS

		4-04 AUTOMATIC CO/PBX LINE SEIZURE/PRIME LINE ASSIGNMENT															4-06 RINGING TONE/DOORPHONE RINGING ASSIGNMENT									4-07 DIGIT RESTRICTION ASSIGNMENT	
ITEM		CO 1		CO 2		CO 3		CO 4		CO 5		CO 6		CO 7		COB		TELEPHONE RINGING TONE VARIATION			DOORPHONE RINGING TONE ASSIGNMENT							
																				DOORPHONE 1				DOORPHONE 2				
																				DAY		NIGHT		DAY		NIGHT			
DEFAULT		ALLOW		ALLOW		ALLOW		ALLOW		ALLOW		ALLOW		ALLOW		ALLOW		L (LOW)			PORTS 10, 11 ONLY		PORTS 10, 11 ONLY		PORTS 10, 11 ONLY		PORTS 10, 11 ONLY		DENY	
A = ALLOW D = DENY		D	A	D	A	D	A	D	A	D	A	D	A	D	A	D	A	L	M	H	D	A	D	A	D	A	D	A	D	A
PORT NO.	10																														
	11																														
	12																														
		①																②			③								④	

ITEM DESCRIPTION — ENTRY

① AUTOMATIC CO/PBX LINE SEIZURE ASSIGNMENT — √ APPROPRIATE COLUMN

② RINGING TONE VARIATION ASSIGNMENT — √ APPROPRIATE COLUMN

③ DOORPHONE RINGING TONE ASSIGNMENT — √ APPROPRIATE COLUMN (MAX. OF 6 STATIONS PER DOORPHONE CAN BE ASSIGNED TO RING)

④ DIGIT RESTRICTION ASSIGNMENT — √ ALLOW/DENY APPROPRIATE COLUMN

MEMORY BLOCKS 4 - 04, 4 - 06 AND 4 - 07   ASSIGNMENT OF TELEPHONE MODE FUNCTIONS

				4-04														4-06										4-07	

ITEM		AUTOMATIC CO/PBX LINE SEIZURE/PRIME LINE ASSIGNMENT																RINGING TONE/DOORPHONE RINGING ASSIGNMENT										DIGIT RESTRICTION ASSIGNMENT	
		CO 1		CO 2		CO 3		CO 4		CO 5		CO 6		CO 7		CO 8		TELEPHONE RINGING TONE VARIATION			DOORPHONE RINGING TONE ASSIGNMENT								
																					DOORPHONE 1				DOORPHONE 2				
																					DAY		NIGHT		DAY		NIGHT			
DEFAULT		ALLOW		ALLOW		ALLOW		ALLOW		ALLOW		ALLOW		ALLOW		ALLOW		L (LOW)			PORTS 10, 11 ONLY		PORTS 10, 11 ONLY		PORTS 10, 11 ONLY		PORTS 10, 11 ONLY		DENY	
A = ALLOW D = DENY		D	A	D	A	D	A	D	A	D	A	D	A	D	A	D	A	L	M	H	D	A	D	A	D	A	D	A	D	A
PORT NO.	10																														
	11																														
	12																														
	13																														
	14																														
	15																														
	16																														
	17																														
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	30																														
	31																														
	32																														
	33																														

JOB SPECIFICATION INSTRUCTIONS
FOR
MEMORY BLOCKS 5 - 01 ~ 5 - 03 MENU PROGRAMMING

MEMORY BLOCK 5-01

FEATURE	ASSIGN-MENT	MARK √
TYPE OF LINE	CO	
	PBX	
OFF HOOK RINGING SYS WIDE	DENY	
	ALLOW	
RINGING LINE PREFERENCE	DENY	
	ALLOW	
TOLL RESTRICTION	1+	
	DIRECT	
SYSTEM SPEED TOLL OVERRIDE	DENY	
	ALLOW	
PAUSE TIMER	3.5 SEC	
	1.0 SEC	
HOLD/PARK RECALL TIME	2 MIN	
	NO LIMIT	

PATTERN NO.	

PATTERN NUMBERS SELECTED FROM PATTERN TABLE

MEMORY BLOCK 5-02

PORT NO.	RING ASSIGNMENT (DAY) A=ALLOW D=DENY							
	CO 1	CO 2	CO 3	CO 4	CO 5	CO 6	CO 7	CO 8
10								
11								
12								
13								

RING ASSIGNMENT (DAY)
(A) ALLOW OR (D) DENY

MEMORY BLOCK 5-03

RING ASSIGNMENT (NIGHT) A=ALLOW D=DENY							
CO 1	CO 2	CO 3	CO 4	CO 5	CO 6	CO 7	CO 8

RING ASSIGNMENT (NIGHT)
(A) ALLOW OR (D) DENY

√ ONE OF TWO ITEMS FOR EACH FEATURE

MEMORY BLOCKS 5 - 01 ~ 5 - 03   MENU PROGRAMMING

MEMORY BLOCK 5-01

FEATURE	ASSIGN-MENT	MARK √
TYPE OF LINE	CO	
	PBX	
OFF HOOK RINGING SYS WIDE	DENY	
	ALLOW	
RINGING LINE PREFERENCE	DENY	
	ALLOW	
TOLL RESTRICTION	1+	
	DIRECT	
SYSTEM SPEED TOLL OVERRIDE	DENY	
	ALLOW	
PAUSE TIMER	3.5 SEC	
	1.0 SEC	
HOLD/PARK RECALL TIME	2 MIN	
	NO LIMIT	

PATTERN NO.		

MEMORY BLOCK 5-02 / MEMORY BLOCK 5-03

STA. NBR.	RING ASSIGNMENT (DAY) A=ALLOW D=DENY								RING ASSIGNMENT (NIGHT) A=ALLOW D=DENY							
	CO1	CO2	CO3	CO4	CO5	CO6	CO7	CO8	CO1	CO2	CO3	CO4	CO5	CO6	CO7	CO8
10																
11																
12																
13																
14																
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31																
32																
33																

JOB SPECIFICATION INSTRUCTIONS
FOR
MEMORY BLOCK 5 - 04 NON/TOLL/OUTGOING RESTRICTION

ITEM	DESCRIPTION	ENTRY

PORT NO.	NON/TOLL/OUTGOING RESTRICTION							
	CO 1	CO 2	CO 3	CO 4	CO 5	CO 6	CO 7	CO 8
10								
11								
12								
13								

RESTRICTION PATTERN FOR EACH STATION AND EACH CO/PBX LINE

N: NO RESTRICTION (LED OFF)
O: OUTGOING RESTRICTION (LED FLASHING)
T: TOLL RESTRICTION (LED ON)

MEMORY BLOCK 5 - 04 NON/TOLL/OUTGOING RESTRICTION

PORT NO.	NON/TOLL/OUTGOING RESTRICTION							
	CO 1	CO 2	CO 3	CO 4	CO 5	CO 6	CO 7	CO 8
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								

DSS/BLF CONSOLE LAYOUT

1. Up to two DSS/BLF consoles can be paired with Key Telephones in a system.

2. Key assignment on the DSS/BLF console is as shown below. DSS BUTTONS (Port Numbers 10~33) and function keys are fixed.

3. Key Telephone in port number 10 is initially paired with DSS 1 and Key Telephone in port number 11 with DSS 2 as Attendant Consoles.

   Default numbers can be changed as desired. (Refer to Memory Block 1-17.)

NOTE: DSS/BLF consoles cannot be installed in ports 10, 11.

KEYS ON DSS/BLF CONSOLE

10	11	12	13	14
15	16	17	18	19
20	21	22	23	24
25	26	27	28	29
30	31	32	33	INTERNAL ZONE PAGING ALL CALLS

← DSS BUTTONS (PORT NUMBERS 10~33): FIXED

| INTERNAL ZONE PAGING ZONE 1 | INTERNAL ZONE PAGING ZONE 2 | INTERNAL ZONE PAGING ZONE 3 | DOORPHONE CALL 1 | DOORPHONE CALL 2 |

← FUNCTION KEY: FIXED

| MESSAGE | EXTERNAL ZONE PAGING ALL CALLS | NIGHT TRANSFER |
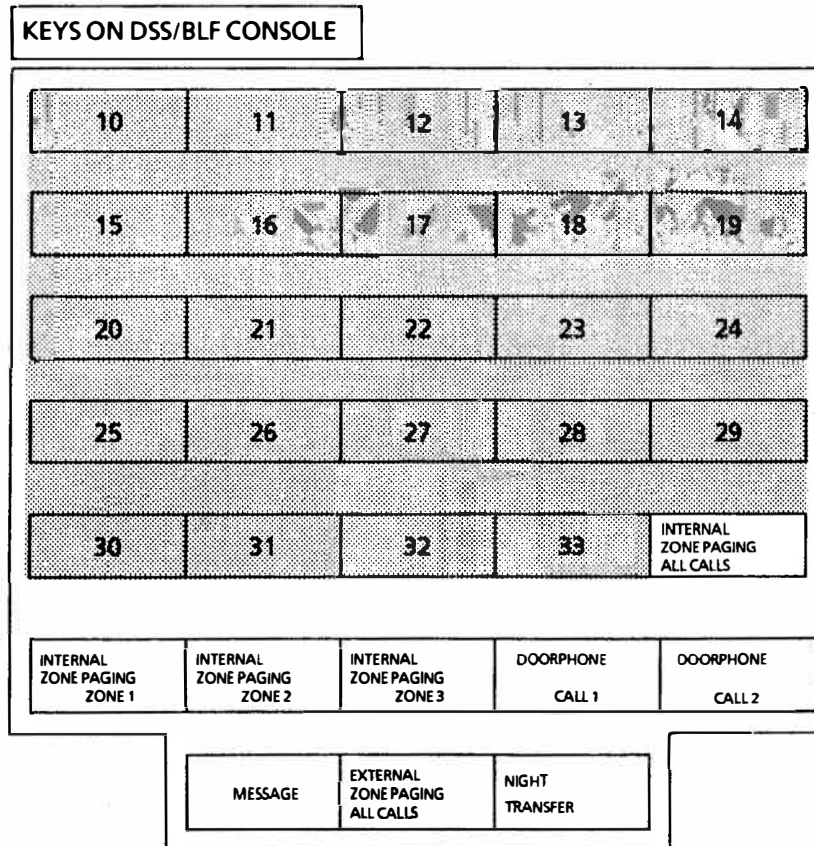
DSS/BLF AND KEY TELEPHONES TO BE PAIRED AS ATTENDANTS

	DEFAULT (ASSOCIATED PORT)	NEW	
DSS NO.		DSS/BLF PORT NO.	ASSOCIATED EXTENSION NO.
DSS 1	10		
DSS 2	11		

SPEED DIAL ASSIGNMENT LISTING

* A maximum of 80 speed dial numbers for common use by all tenants can be registered.

BUFFER	NUMBER STORED
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	
31	
32	
33	
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	
46	

BUFFER	NUMBER STORED
47	
48	
49	
50	
51	
52	
53	
54	
55	
56	
57	
58	
59	
60	
61	
62	
63	
64	
65	
66	
67	
68	
69	
70	
71	
72	
73	

BUFFER	NUMBER STORED
74	
75	
76	
77	
78	
79	
80	
81	
82	
83	
84	
85	
86	
87	
88	
89	
90	
91	
92	
93	
94	
95	
96	
97	
98	
99	

ENTERING the PROGRAMMING MODE and the SELECTION of Memory Blocks

In order to use the sections just discussed, a brief description of how to enter the programming mode and the selection of Memory Block areas is necessary.

Changes to the Resident System Program can be accomplished by either of two ETZ-16D-1 Key Telephones. These station positions are automatically assigned to the two lowest Key Telephone interface circuits on the MBD(412)-Z ( ) KTU in the system (ports 10 and 11).

The first step, when entering any area of programming, is to place the programming station into the OFF-LINE mode.

TO GO OFF-LINE

A. Press the FNC Key
B. Press the HOLD Key
C. Dial *,# in sequence

After these three steps, the display on the Key Telephone will show.

```
| |o|F|F|-|L| |i|n|E| | |P|r|o|g| |
```

While the programming Key Telephone is OFF-LINE, it cannot be signaled by any station in the system. Only one programming Key Telephone can be off-line at one time.

The next step is to select the area in the system Memory Blocks which correspond to the feature, or function, to be programmed. A Memory Block index has been provided to help the programmer locate the area needed. Selection of a Memory Block location is done by pressing the Key Telephone's line keys in a predetermined sequence. The ETZ-16D-1 Key Telephone uses eight Line Keys, LK1 through LK4 and LK9 through LK12, to select Memory Block locations. The Resident System Program is set up into six Memory Block areas, each of which is designated by a number to represent a function as follows:

1. System Mode
2. Tenant Mode
3. CO/PBX Line Mode
4. Telephone Mode
5. Menu (Pattern) Selection Mode
6. Special Mode

Memory Blocks 1 through 4 can be accessed by pressing Line Keys 1 through 4, respectively. Memory Block 5 can be accessed by pressing Line Keys 9 through 12. Memory Block 6 can be accessed by pressing the FNC and the CNF keys. (See pages 300-64, 65 and 66)

	MEMORY BLOCK	KEY
Designation	1 ~ 4	Line Key 1 ~ 4
Designation	5	Line Key 9 ~ 12
Designation	6	FNC and CNF Key

	FUNCTION NUMBER	KEY
Designation	01-xx (Any number)	Dial Key 1 ~ 9

After selecting a Memory Block, enter the function number using dial keys (1 to 9). (Memory Block 6 Special Mode has no function number.)

System Data Registration Timing can be registered while telephones are in use. However, there are two types of data items. One is immediately updated upon registration operation, and the other is updated when all circuits in the system become idle.

KEY FUNCTION (OFF LINE)

* # keys	— Shift setting position
Dial key	— Inputs function No. and data
MIC	— Data is Entered
SPKR	— ON line
HOLD	— Clear Function, Data
FNC	— Shift to Memory Block 6A & B
CNF	— Shift to Memory Block 6C

If any of the data items are registered while a telephone is in use, tl LCD will display

```
| |d|A|t|A| |S|E|t| |o|n| |i|d|L|E|
```

without returning to the time display, even though the off-line moc is released, by pressing the SPKR key. When all circuits in the syste become idle, the data is updated and the on-line mode is restored.

CHAPTER 4
STATION OPERATION

CHAPTER 4
STATION OPERATION

410 GENERAL

The Electra 8/24 Station User's Operation Guide is divided into four sections. Each section is further sub-divided to provide a detailed step-by-step feature operation guide. The Operation Guide provides the LED and LCD status for each feature at each point of operation.

The remaining sections of Chapter 4 are:

- 420 Key Telephone Operation
- 430 Attendant Operation
- 440 Single Line Telephone Operation
- 450 Feature Access Code List

Section 420 includes all operations available to Key Telephones.

Section 430 augments section 420, with only Attendant operations included in this section.

Section 440 presents operations that can be performed from a Single Line Telephone.

Section 450 provides a list of System Feature Access Codes that can be registered on the Programmable Feature Keys (LKs).

NOTE: This chapter describes on-hook origination procedures (monitor mode) for outgoing calls. The handset may be lifted at anytime during on-hook origination (monitor mode) or conversation. An outgoing call can also be originated by pressing an idle CO/PBX key, after lifting the handset (off-hook).

| 420 KEY TELEPHONE OPERATION | SAMPLE LED INDICATIONS | SAMPLE LCD INDICATIONS |

420   KEY TELEPHONE OPERATION

420.1   CO/PBX (OUTSIDE) CALLS

420.1.1   Originating

a. Manual Dialing:

   ● Press an idle CO/PBX line key.

          SPKR LED lights.

          CO/PBX green LED winks.

   ● Dial desired number.

   ● Lift handset to talk with called party.

          SPKR LED goes off.

b. Dial Access on Intercom Line (MF System only):

   ● Press **SPKR** key (or lift handset) to receive dial tone.

          SPKR and **ICM** LEDs light.

   ● Dial trunk access code (Default 9) and desired number.

          ICM LED goes off.

          CO/PBX green LED winks.

   ● Lift handset to talk with called party.

          SPKR LED goes off.

c1. Last CO/PBX Number Redial (MF operation):

   ● Press **LNR / SPD** key.

          CO/PBX green LED winks.

   ● Dial #.

          SPKR LED lights.

<center>**OR**</center>

   ● Press FNC key and dial 5.

          CO/PBX green LED winks.

NOTE: If a **Feature Access** key is programmed for LNR and pressed instead of **LNR/SPD**, the last number is automatically redialed and displayed.

SAMPLE LED INDICATIONS   **SAMPLE LCD INDICATIONS**

- Lift handset to talk with called party.

  `SPKR` LED goes off.

  | | | | | | | | | | | | 0 0 - 5 9 |

c2. Last CO/PBX Number Redial (KF Operation):

- Press CO/PBX Line Key.

  `CO/PBX` green LED winks.

  | L 1 | | | | | | | | | | | | |

- Press **LNR/SPD** key.

  `SPKR` LED lights.

  | L n r | | | S P d | - | |

  | L n - 5 1 6 7 5 3 7 0 0 0 | | |

- Dial #.

OR

- Press CO/PBX Line Key.

  `CO/PBX` green LED winks.

  | L n - 5 1 6 7 5 3 7 0 0 0 | | |

- Press **FNC** key and dial 5.

- Lift handset to talk when called party answers

NOTE: If a **Feature Access** key is programmed for **LNR** and pressed after selecting a CO/PBX line instead of **LNR/SPD**, the last number is automatically redialed and displayed.

  `SPKR` LED goes off.

  | | | | | | | | | | | | 0 0 - 5 9 |

d.   Automatic Redial:

To Set: (With handset off-hook.)

- Upon receiving busy or no answer from CO/PBX line.

  `CO/PBX` green LED winks.

  | | | | | | | | | | | | 0 0 - 5 9 |

- Press **SPKR** key and return handset to cradle (Monitor Mode).

- Press **FNC** key.

  `FNC` LED lights.

  | L n - 5 1 6 7 5 3 7 0 0 0 | | |

- Press **LNR/SPD** key.

  `FNC` LED blinks.

  | L 1 | | | | | | | | | | | | |

- Call origination is repeated 5 times (maximum) automatically.

  `CO/PBX` green LED winks.

  | L n - 5 1 6 7 5 3 7 0 0 0 | | |

- Lift handset to talk when outside party answers.

  | | | | | | | | | | | | 0 0 - 5 9 |

SAMPLE LED INDICATIONS	**SAMPLE LCD INDICATIONS**

To Cancel:

- Press **SPKR** key.

    OR

- When all dialing attempts are completed, station returns to idle condition.

NOTE: The system continues its redial attempts until the initiator lifts the handset during a redial attempt, an incoming call is received on that line, or the maximum amount of attempts has been exhausted.

e. Station Speed Dialing (MF Operation):

- Press **LNR/SPD** key.

- Dial station speed dial buffer number (00~19).

- Lift handset to talk with called party.

NOTE: For KF operation, press CO/PBX line key before pressing the **LNR/SPD** key.

f. System Speed Dialing (MF Operation):

- Press **LNR/SPD** key.

- Dial system speed dial buffer number (20~99).

- Lift handset to talk with called party.

NOTE 1: When the speed dial buffer number is programmed from a programmable line key and that line key is pressed, the programmed number is dialed automatically.

SAMPLE LED INDICATIONS

| CO/PBX | green LED goes off. |
| SPKR | LED goes off. |

CO/PBX	green LED goes off.
SPKR	LED goes off.
FNC	LED goes off.

| CO/PBX | green LED winks. |
| SPKR | LED lights. |

| SPKR | LED goes off. |

| CO/PBX | green LED winks. |
| SPKR | LED lights. |

| SPKR | LED goes off. |

	SAMPLE LED INDICATIONS	**SAMPLE LCD INDICATIONS**

NOTE 2: For KF operation, press CO/PBX line key before pressing the **LNR/SPD** key.

g. Prime Line (Programmable):

- Press **SPKR** key or lift handset to receive dial tone.

  CO/PBX green LED winks.

  `L :`

- Use any of the dialing methods described:
  - Dial pad
  - System Speed Dial
  - Station Speed Dial

  `S :675378 00`

h. Consecutive Speed Dial (MF Operation):

Originating:

- Press **LNR/SPD** key

  CO/PBX green LED winks.
  SPKR LED lights.

  `L n r    S P d`

- Dial desired Speed Dial buffer number.

  `0 1 - 358564`

- If manual dialing is desired, dial number

  `L n r    S P d`

OR

- Press **LNR/SPD** key.

- Dial desired Speed Dial buffer number

  (Can be continued if needed)

  `0 2 - 789032`

- Lift handset to talk with called party.

  SPKR LED goes off.

  `0 0 - 5 9`

NOTE 1: Use any combination of manual, Station Speed and System Speed Dialing.

NOTE 2: For KF operation, press CO/PBX line key before pressing the **LNR/SPD** key.

SAMPLE LED INDICATIONS   SAMPLE LCD INDICATIONS

i. Specific CO/PBX Line Seizure:

● Press **SPKR** key.

| ICM | and | SPKR | LED lights.

● Dial **63**.

| ICM | LED goes off.

● Dial the specific CO/PBX line number (1~8).

| CO/PBX | green LED winks.

● See 420.1 CO/PBX (outside) Calls to continue calling operation.

420.1.2   Answering

a. Manually Selecting Line:

| CO/PBX | red LED flashes.

● Press CO/PBX line key associated with flashing LED.

| CO/PBX | green LED winks.
| SPKR | LED lights.

● Use handset to talk.

| SPKR | LED goes off.

b. Ringing Line Preference:

● Lift handset to respond.

| CO/PBX | green LED winks.

NOTE: System Data must be programmed and the line must be programmed to ring for incoming calls to be picked up on Ringing Line Preference.

SAMPLE LED INDICATIONS   **SAMPLE LCD INDICATIONS**

420.1.3   Placing a Call On Hold

With a call in progress:

- Press **HOLD** key once for Non-Exclusive Hold. ICM dial tone is heard.

| CO/PBX | green LED is winking. |

OR

| CO/PBX | green LED winks intermittently. |
| ICM | LED lights. |

- Press **HOLD** key twice for Exclusive Hold. ICM dial tone is heard.

| CO/PBX | green LED winks intermittently. |
| ICM | LED lights. |

NOTE: If the Key Telephone user placed the call on hold longer than a predetermined time, the call will recall to the Key Telephone and a recall tone is provided.

Held | CO/PBX | green LED flutters.

| CO/PBX | green LED flashes. |

- Press the line key with flashing LED to answer the Hold Recall.

| CO/PBX | green LED winks. |
| SPKR | LED lights. |

420.1.4   Abandoning a Call

a. Using handset:

| CO/PBX | green LED winks. |

- Restore handset.

| CO/PBX | green LED goes off. |

b. Using Recall key:

- Press **RECALL** key at the end of the call.

| CO/PBX | green LED winks. |

- CO/PBX call is released, but line is retained and new dial tone is heard.

c. Using CO/PBX line key:

- Press CO/PBX line key, green LED winks at the end of the call.

- CO/PBX line is released.

NOTE: Option "C" is programmable in System Data.

SAMPLE LED INDICATIONS   **SAMPLE LCD INDICATIONS**

420.2   EXTENSION (INTERNAL) CALLS

420.2.1   Originating

a.   Manual Dialing:

● Depress **SPKR** key, ICM dial tone is heard.

| SPKR | and | ICM | LEDs light.

● Dial extension number.

● Lift handset to talk with called extension.

| SPKR | LED goes off.

NOTE: When a system is programmed for Voice, a caller can Voice Announce or dial 1 to change to tone signaling or vice versa.

b.   Using Feature Access Key:

| SPKR | ICM | and | PFA |
LEDs light.

● Press **Feature Access** key.

| SPKR | LED goes off.

● Lift handset to talk with called party.

NOTE: When **Feature Access Keys** are programmed for internal extension (**DSS** keys), pressing the **Feature Access Key** allows the user to call a desired extension automatically instead of manual dialing.

| DSS (1) | LED lights.

| ICM | and | SPKR | LEDs light.

c.   Chain Calling:

● Press **DSS** (1) key.

| DSS (2) | LED lights.

● Press **DSS** (2) key.

| DSS (1) | LED goes out.

NOTE: A **DSS** key is a **Feature Access Key** which has been programed with an extension number.

SAMPLE LED INDICATIONS   **SAMPLE LCD INDICATIONS**

420.2.2   Answering

a. With handset:

|ICM| LED blinks.

● Lift the handset.

|ICM| LED lights.

b. With Handsfree Answer Back:

|ICM| LED blinks.

● Speak into the microphone to respond.

NOTE: The Key Telephone user can answer an intercom call without lifting the handset if the microphone is on. Press the **MIC** key (LED lights) to enable the microphone.

420.2.3   Placing a Call On Hold

With an intercom call in progress:

|ICM| LED lights.

● Press **HOLD** key for Exclusive Hold.

|CNF| LED winks intermittently.

To answer a call on hold:

● Lift handset.

|ICM| LED lights.

● Press **CNF** key.

|CNF| LED goes off.

NOTE: To place an ICM call on hold, the calling party must be in an off-hook condition, not in the Handsfree Answer Back mode.

420.2.4   Abandoning a Call

|ICM| LED is lit steady.

● Restore handset.

|ICM| LED goes off.

420.3 HANDSFREE CALL

SAMPLE LED INDICATIONS

SAMPLE LCD INDICATIONS

Handsfree call origination/Answer Back is one of the optional features of the Electra 8/24 that allows you to originate or answer calls without lifting the handset.

An ETZ-16D-1 equipped with a HFU-Z Unit provides both call origination and Answer Back Handsfree operation.

420.3.1 Originating

- Press CO/PBX line key or **Feature Access** Key.

- Dial desired number.

- Talk with party when answered.

NOTE: Make sure that the **MIC LED** is lit.

Any of the methods described in Section 420.1 and 420.2 can be used for both call origination and Answer Back Handsfree operation.

When a call is in progress using Handsfree operation, the Key Telephone can not receive Internal Ring Tone, CO/PBX Ring Tone, or Recall Tone.

If Key Telephone is programmed for off-hook ringing, CO/PBX Ring Tone is **not** heard during Handsfree operation.

420.3.2 Answering

- Press the line key receiving an incoming call.
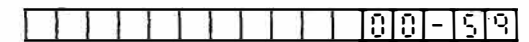
NOTE: Make sure that the **MIC LED** is lit.

420.3.3 Placing a Call On Hold

See Section 420.1.3 and 420.2.3 of this manual.

| CO/PBX | green LED winks and |
| SPKR | LED lights. |

| CO/PBX | green LED winks. |
| SPKR | LED lights. |

L 1

S 16753 7000

00-59

00-59

420.3.4   **Abandoning a Call**

SAMPLE LED INDICATIONS   SAMPLE LCD INDICATIONS

- Restore the handset.

    OR

- Press **SPKR** key.

    OR

- Press CO/PBX key (if System Data is programmed for this feature).

    OR

    | CO/PBX | and | SPKR | LEDs go out.

- Press **RECALL** key at the end of the call.

- The call is released and a new dial tone is heard.

420.4   **CONVENIENT FEATURES ON CO/PBX CALLS**

420.4.1   **CO/PBX Line Queuing**

When all CO/PBX lines are busy, the CO/PBX line can be queued per the following operations.

To Set:

When all CO/PBX lines are busy.

    | CO/PBX | and/or | SPKR | LEDs light.

- Press desired busy outside line key.

    OR

- Dial access code for outside line group (MF only).

- Receive busy tone.

- Dial **64**. (Receive confirmation tone.)

- Restore Handset.

    | SPKR | LED goes off.

SAMPLE LED INDICATIONS   **SAMPLE LCD INDICATIONS**

To Operate:

When the CO/PBX line becomes idle. | ICM | LED blinks.

- Receive ICM ringing tone.

- Lift handset or press **SPKR** key. Receive outside dial tone. | CO/PBX | green LED lights.
  | SPKR | LED lights.

- Dial the desired number.

To Cancel:

- Lift handset or press **SPKR** key. | ICM | and/or | SPKR | LED lights.

- Dial **65**.

- Restore handset. | ICM | and/or | SPKR | LED lights.

<div align="right">SAMPLE LED INDICATIONS   SAMPLE LCD INDICATIONS</div>

420.4.2   Privacy Release on CO/PBX Line

If station A releases the Privacy of a call on a CO /PBX line, station B in the same tenant group as A can participate in that call to establish a Conference call.

Stations releasing Privacy (station A) with a call in progress.

- Press **HOLD** key.

    | CO/PBX | LED winks.

- Notify station B that a Conference Call is available.

- Press held CO/PBX line key to return to original call.

    | CO/PBX | LED lights steady.

- Press **CNF** key.

    | CNF | LED slow blinks.

The station that participates in the call (station B).

    | CNF | LED blinking slowly.

- Press CO/PBX line key on which A's call is in progress.

    | CO/PBX | green LED winks.

    | CNF | LED lights.

- Participate in A's call to establish a Conference.

- Lift handset.

    | SPKR | LED goes off.

SAMPLE LED INDICATIONS   SAMPLE LCD INDICATIONS

420.4.3   **Privacy Override on CO/PBX Line**

If assigned in System Data, a station can Override another station's CO/PBX call.

- Lift handset.

- Press **FNC** key.

- Press **CNF** key.

- Press the CO/PBX line key (or Dial *) and the CO/PBX line number or extension number you want to Override.

Overriding via an Extension

NOTE 1:   System Programming is necessary for this feature to function.

NOTE 2:   A Private line cannot be Overridden.

NOTE 3:   Privacy Override by extension number is valid only in the same Tenant Group.

| ICM | LED lights.

| FNC | LED lights.

| FNC | LED blinks.

| FNC | LED goes out.

| CNF | LED lights.

OR

| ICM | LED lights steady.

SAMPLE LED INDICATIONS   **SAMPLE LCD INDICATIONS**

420.4.4   Switching DP to DTMF

This feature is used only on rotary type (DP) lines.

When transmitting to DTMF receiving equipment on rotary lines you can switch from DP to DTMF signals.

When you hang up, DTMF is automatically switched back to DP.

- After originating a CO/PBX call.

- Dial * and #.

- Use the Key Telephone dial pad to transmit DTMF signals.

420.4.5   Receiving Volume Control

Handset receive volume can be adjusted as follows:

With a call (outside/intercom) in progress.

- Press **FNC** key.

- Dial 2.

NOTE: When enabled, this feature increases receive volume in the handset by 5dB. This feature cancels when the station user returns the Key Telephone to the on-hook condition. Registration cancellation can be assigned in System Data to not occur when the Key Telephone is returned to an idle condition. The same procedure is used to set and cancel the feature.

[FNC] LED lights.

[FNC] LED goes off.
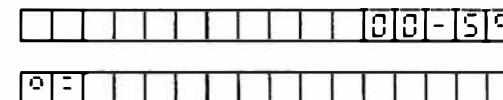
OR

420.5 TRANSFER

420.5.1 Call Transfer (Supervised)

With call in progress:

- Press **HOLD** key; receive Intercom dial tone.

- Dial extension number.

- After called party answers, press **RECALL** key and restore handset.

420.5.2 Ring Transfer (Unsupervised)

With a call in progress:

- Press **HOLD** key.

- Dial extension number.

- Press **RECALL** key before answer.

- Restore handset.

NOTE: Unanswered Transferred calls will Recall to the station user who initiated the Transfer after the Recall time interval has elapsed. A Recall tone is provided.

A Ring Transferred station can answer an incoming outside call by lifting the handset.

SAMPLE LED INDICATIONS

| CO/PBX | green LED winks.

| CO/PBX | green LED flashes intermittently.

| ICM | LED lights.

| CO/PBX | red LED lights.

| CO/PBX | green LED winks.

| CO/PBX | green LED flashes.

| ICM | LED lights.

| CO/PBX | red LED blinks.

| ICM | LED goes out.

SAMPLE LCD INDICATIONS

420.5.3   Page Transfer

| | SAMPLE LED INDICATIONS | SAMPLE LCD INDICATIONS |

To Transfer:

With a call in progress.

CO/PBX green LED winks.

- Press **HOLD** key

CO/PBX green LED flashes.

ICM LED lights.

- Dial paging access code (   ).

  (70) - Internal All Call
  (71) - Internal Zone 1
  (72) - Internal Zone 2
  (73) - Internal Zone 3
  (75) - External All Zone
  (76) - External Zone 1
  (77) - External Zone 2

- Press **RECALL** key after called paged party answers.

CO/PBX red LED lights.

To Answer:

With a page in progress.

CO/PBX red LED blinking.

- Press **SPKR** key.

ICM and SPKR LEDs light.

- Dial access code 74.

- Lift handset to converse with originator.

SPKR LED goes off.

- Talk with the outside party after originator presses the **RECALL** key.

CO/PBX green LED winks.

ICM LED goes off.

SAMPLE LED INDICATIONS　　　　**SAMPLE LCD INDICATIONS**

420.5.4　Call Park

To Set:

With a call in progress.

| CO/PBX | green LED winks.

- Press **HOLD** key.

| CO/PBX | green LED flashes.

| ICM | LED lights.

- Press **RECALL** key.

- Restore handset.

| ICM | LED goes out.

- Inform the Transferred party of the Transfer.

To Retrieve:

- Press **SPKR** key.

| CO/PBX | red LED blinks.

| ICM | LED lights.

- Dial 62 to converse with outside party.

| CO/PBX | green LED winks.

| ICM | LED goes out.

NOTE:　Call Park is available within the same tenant only. When the call, placed on Call Park, is not retrieved within a specified time, Recall tone is heard from the speaker of the originating station.

420.5.5　Automatic Hold

To Transfer:

With a call in progress.

| CO/PBX | green LED winks.

- Press **DSS** key.

| CO/PBX | green LED flashes.

| ICM | LED lights.

NOTE 1:　DSS key is a **Feature Access Key** with a programmed extension number.

NOTE 2:　Pressing **DSS** key automatically holds outside call.

| 420.6 | **CONFERENCE** | **SAMPLE LED INDICATIONS** | **SAMPLE LCD INDICATIONS** |

Possible Conferences are as follows:

3 stations	-	No CO/PBX lines
2 stations	-	1 CO/PBX line
1 station	-	2 CO/PBX lines

NOTE 1: When all Conference circuits are busy, **CNF LED** will light on all Key Telephones. No additional Conferences can be made at this time.

NOTE 2: Conference calls cannot be transferred.

420.6.1   Three Party Conference

1 CO/PBX line and 2 internal stations.

a. With an outside call in progress.

    • With first call in progress, press **HOLD** key to receive intercom dial tone.

    • Originate second call and wait for called party to answer.

    • Press **CNF** key and establish a 3 party conference.

b. With an intercom call in progress.

    • Press **Hold** key.

    • Press idle CO/PBX line key and receive dial tone.

    • Originate second call and wait for called party to answer.

    • Press **CNF** key.

SAMPLE LED INDICATIONS

CO/PBX	green LED winks.
CO/PBX	green LED flashes.
ICM	LED lights.

CNF	LED lights.
CO/PBX	green LED winks.
ICM	LED goes off.
ICM	LED lights.
CNF	LED flashes.
CO/PBX	LED winks.

| **CNF** | LED lights. |

| **CO/PBX** | green LED winks. |

SAMPLE LED INDICATIONS **SAMPLE LCD INDICATIONS**

2 CO/PBX lines and 1 station.

- With first call in progress, press **HOLD** key.

  | CO/PBX | green LED flashes.

  | ICM | LED lights.

- Press another line key and originate second call, then wait for called party to answer.

  | CO/PBX | green LED winks.

  | ICM | LED goes off.

- Press **CNF** key and establish a 3 party Conference.

  Both | CO/PBX | green LEDs wink.

  | CNF | LED lights.

3 Internal stations and no CO/PBX lines.

  | ICM | LED is lit steady.

- With first call in progress, press **HOLD** key to receive intercom dial tone.

  | CNF | LED blinks intermittently.

- Originate another call and wait for called party to answer.

- Press **CNF** key and establish a 3 party conference.

  | CNF | LED lights.

420.6.2 Placing a Conference Call on Hold

Conference with two outside parties.

- With a Conference call in progress.

  Two | CO/PBX | green LEDs wink.

  | CNF | LED is lit steady.

- Press **HOLD** key and hang up.

  | CNF | LED goes off.

  | ICM | LED lights.

LEDs associated with the line keys involved show I-Hold (Non-Exclusive Hold) indication.

NOTE: When a Conference call, using multiple line keys, is placed on hold, it splits into individually Held lines.

| | **SAMPLE LED INDICATIONS** | **SAMPLE LCD INDICATIONS** |

Conference with 3 internal parties.

- With Conference call in progress.

  | ICM | and | CNF | LEDs light.

  `[ l l 3] [ l S 3] [ n F]`

- Press **HOLD** key and hang up.
  Remaining two parties can converse.

  | CNF | LED flashes.

  `[ l 8 - - [ 3]`

To reenter the Conference.

- Lift handset and Press **CNF** key.

  | CNF | LED lights.

  `[ l l 3] [ l S 3] [ n F]`

420.6.3 Abandoning a Conference Call

a. Exiting from a Conference (more than one internal station).

- With a Conference call in progress.

  | ICM | LED is lit steady.
  | CNF | LED is lit steady.

  `[ l l 3] [ l S 3] [ n F]`

- Restore handset.

  | ICM | and | CNF | LEDs go out.

  `l - 2 5    l l - S 9 8`

Other internal stations stay in the Conference.

b. Abandoning (with a CO/PBX call):

- With a Conference call in progress.

  | CNF | and | CO/PBX | LEDs are lit steady.

  `[ l S 3         8 8 - S 9`

- Restore handset.

  | CNF | LED goes out.

  `l - 2 5    l l - S 9 8`

SAMPLE LED INDICATIONS   **SAMPLE LCD INDICATIONS**

420.6.4   Tandem Conference

To Establish:

With a three party Conference, including two CO/PBX parties, in progress.

Two [CO/PBX] green LEDs winking.

[CNF] LED is lit.

[ICM] LED lights.

- Press **CNF** key.

[CNF] LED slow blinks.

Two [CO/PBX] red LEDs light.

- Hang up.

[ICM] LED goes off.

- A warning tone is provided after three minutes, and is repeated every three minutes.

[CNF] LED flutters.

To Reenter:

With a Tandem Conference in progress.

Two [CO/PBX] red LEDs light.

[CNF] LED slow blinking.

- Lift handset.

[ICM] LED lights.

- Press **CNF** key to reenter the conference.

[CNF] LED lights.

[CO/PBX] green LEDs wink.

[ICM] LED goes off.

Abandoning:

After reentering the Conference.

Two [CO/PBX] green LEDs winking.

[CNF] LED is lit.

- Restore the handset.

[CO/PBX] and [CNF] LEDs go out.

420.7   **INTERNAL ZONE PAGING**

| | **SAMPLE LED INDICATIONS** | **SAMPLE LCD INDICATIONS** |

To Originate:

- Press **SPKR** key.

  | SPKR | and | ICM | LEDs light.

- Dial paging access code (   ).

  (70)   -   (All Call)
  (71)   -   (Zone 1)
  (72)   -   (Zone 2)
  (73)   -   (Zone 3)

<center>**OR**</center>

Press the **Feature Access** key that is programmed with one of the paging access codes.

| SPKR | and | ICM | LEDs light.

- Use handset to page.

| SPKR | LED goes off.

To Answer (Meet-me):

NOTE: To use Meet-Me answer feature, a station must be in the same zone being paged.

- Press **SPKR** key.

| ICM | and | SPKR | LEDs light.

- Dial access code 74.

<center>**OR**</center>

Press the **Feature Access** key programmed with the Meet-me access code.

| SPKR | and | ICM | LEDs light.

- Lift handset to talk with the paging party.

| SPKR | LED goes off.

420.8   EXTERNAL ZONE PAGING

To Originate:

- Press **SPKR** key.

- Dial paging access code.

Dialed access code is (   ).

(76)	-	(Zone 1)
(77)	-	(Zone 2)
(75)	-	(All Zones)

OR

Press the **Feature Access** key programmed with one of the paging access codes.

- Use handset to page.

To Answer (Meet-Me):

- Press **SPKR** key.

- Dial access code 74.

OR

Press the Meet-me **Feature Access** key programmed with access code **74**.

- Lift handset to talk with paging party.

SAMPLE LED INDICATIONS

| ICM | and | SPKR | LEDs light.

| ICM | and | SPKR | LEDs light.

| SPKR | LED goes off.

| ICM | and | SPKR | LEDs light.

| ICM | and | SPKR | LEDs light.

| SPKR | LED goes off.

SAMPLE LCD INDICATIONS

SAMPLE LED INDICATIONS   **SAMPLE LCD INDICATIONS**

420.9   STEP CALL - INTERCOM

If the dialed extension is busy, the next idle station in the same tens group will be called. It can be a higher or lower number depending on status of stations within the group.

When the called party's extension is busy and call waiting tone is heard.

● Dial 1.

NOTE: If the called station is the highest number in the extension group, dialing 1 will step the call to the lowest station.

420.10   DIAL 0 FOR ATTENDANT

● Press **SPKR** key.

| ICM | and | SPKR | LEDs light.

● Dial 0 to call the associated Attendant.

● Lift handset to converse with the Attendant.

| SPKR | LED goes off.

NOTE: If the associated Attendant is call forwarded to another station, calls to the Attendant will be automatically forwarded to the target station.

420.11   CALL PICKUP

420.11.1   Outside Calls

| CO/PBX | red LED blinks.

With incoming CO/PBX Call(s) in progress:

| ICM | and | SPKR | LEDs light.

● Press **SPKR** key.

| CO/PBX | green LED winks.

● Dial access code (   ).

| ICM | LED goes off.

OR

Press the **Feature Access** key programmed with the Pickup access code.

| | SAMPLE LED INDICATIONS | SAMPLE LCD INDICATIONS |

● Lift handset to converse.

SPKR LED goes off.

Call Pickup access codes are as follows:

(60) - For other tenant group
(66) - For same tenant group
(68) - For PBX line in same tenant group
(69) - For CO line in same tenant group

420.11.2   Extension Calls

With incoming Internal Call

ICM and **SPKR** LEDs light.

● Press SPKR key.

● Dial access code **61**.

OR

Press the **Feature Access** key programmed for the Pickup access code.

SPKR LED goes off.

● Lift handset to talk.

420.12   SECURITY/ALARM

Two alarm circuits are provided in the system as an option.

When the alarm circuit is activated, this option provides an audible alarm through all idle Key Telephone speakers. The alphanumeric display on all Key Telephones with display indicates which alarm circuit has been activated.

Only the Attendant Key Telephone can cancel the alarm signal. See Attendant operation for the procedure to cancel alarm.

420.13   CALLBACK REQUEST

SAMPLE LED INDICATIONS

SAMPLE LCD INDICATIONS

To Set:

Upon no answer when placing an extension call.

| ICM | LED is lit steady.

- Dial access code #.

- Hang up.

| ICM | LED goes off.

NOTE: A maximum of 3 Callback Requests can be received by a Key Telephone.

To Cancel:

From originating Key Telephone.

- Recall the party that Callback Request was sent to.

To Call Back:

Key Telephone with an LCD.

| FNC | LED flashes.

- Press **SPKR** key.

| ICM | and | SPKR | LEDs light.

- Dial extension to be called back.

| FNC | LED goes off.

- Lift handset to talk when party answers.

| ICM | LED goes off.

- Restore handset.

Key Telephone with or without an LCD.

| FNC | LED flashes.

- Press **SPKR** key.

| ICM | and | SPKR | LEDs light.

- Dial # on the dial pad.

| FNC | LED goes off.

- Lift handset to talk when party answers.

- Restore handset.

| ICM | LED goes off.

NOTE: When one or more Callback Requests are displayed, the parties are called back in order of Callback Requests.

	SAMPLE LED INDICATIONS	**SAMPLE LCD INDICATIONS**

420.14   DOORPHONE CALLS/DOOR LOCK RELEASE

420.14.1   Doorphone Calls

- Calling Doorphone number appears on LCD and chime tone is provided.

- Lift the handset. | ICM | LED lights.

- Answer the Doorphone by dialing the access code.

    81 -   Doorphone 1
    82 -   Doorphone 2

420.14.2   Door Lock Release

A Door Lock can be released by dialing the specified operation code.

With Doorphone call in progress. | ICM | LED lit.

- Press **FNC** key. | FNC | LED lights.

- Dial **6**. | FNC | LED goes off.

- Door Lock release will timeout after 5 seconds.

420.15   TONE OVERRIDE

To Originate:

Upon receiving call waiting tone when placing an extension call. | ICM | LED is lit steady.

- Dial access code **＊**, and receive Override Tone.

- Talk to party when answered.

NOTE: Tone Override cannot be sent to Single Line Telephones.

To Answer:

a. With an intercom call in progress.

Upon receiving Override Tone.

- Press **HOLD** key.

b. With an outside call in progress.

Upon receiving Override Tone.

- Press **HOLD** key.

420.16 CALL WAITING

A station calling a busy station receives Call Waiting tone. The calling station can remain off-hook (or monitor mode) and when the called station becomes idle, the intercom call will be automatically processed.

- Call Waiting tone is heard when the called party is busy.

- Remain off-hook.

- When the calling party becomes idle, a warning tone is received by both parties.

- Talk after the warning tone and called party answers.

NOTE: The ICM LED on the called station continuously flashes to indicate that a Call is Waiting.

SAMPLE LED INDICATIONS

| ICM | LED is lit steady. |
| CNF | LED flashes. |

| CO/PBX | green LED winks. |
| ICM | LED blinks. |

| CO/PBX | red LED flashes. |
| ICM | LED lights. |

| ICM | LED lights. |

SAMPLE LCD INDICATIONS

`| | |5|-|-|C| | |3| |t|-|•| | | |`

`| | |5|=|=|C| | |3| | | | | | | |`

`| | |5|-|-|C| |2|3| |t|-|o| | | |`

`| | |5|=|=|C| | |3| | | | | | | |`

`| | |5|-|-|C| |6|3| | | | | | | |`

`| | |5|=|=|C| |6|3| | | | | | | |`

420.17   AUTOMATIC CALLBACK

SAMPLE LED INDICATIONS

SAMPLE LCD INDICATIONS

To Set:

Upon receiving Call Waiting tone when placing an extension call.

| ICM | LED is lit steady.

- Dial access code **0**.

- Receive confirmation tone, then hang up.

| ICM | LED goes off.

- A Callback tone is provided to the originating station when the called station becomes idle.

| ICM | LED blinks.

- Lift handset.

| ICM | LED lights.

- Use handset to talk when answered.

NOTE: Automatic Callback will be canceled if the Callback is not answered within 30 seconds.

To Cancel:

When set in system programming Automatic Callback will time out if unanswered within a predetermined time.

420.18   SAVE/STORE AND REPEAT

NOTE: If the number is newly registered using Save/Store and Repeat features, the previously registered number is erased.

To Save:

With originating CO/PBX call in progress.

- Press **FNC** key.

| CO/PBX | green LED lights.

| FNC | LED lights.

- Press **#** key.

	SAMPLE LED INDICATIONS	**SAMPLE LCD INDICATIONS**
● The last number dialed is saved into memory.	**FNC** LED goes off.	`Sr=S12599255`
● Restore the handset or press the **SPKR** key.	**CO/PBX** LED goes off.	`1-25  11-598`

To Store:

With originating CO/PBX call in progress:

	CO/PBX green LED lights.	`00-59`
● Press **FNC** key.	**FNC** LED lights.	
● Press *.		`Sd=`
● Dial desired number to be stored into memory.	**FNC** LED blinks.	`Sr=S12599255`
● Press **FNC** key.		
● Restore the handset or press the **SPKR** key.	**FNC** LED goes off.	

NOTE: Pauses can be inserted between digits by pressing the **LNR/SPD** key.

	FNC green LED goes off.	`1-25  11-598`

To Repeat (Save/Store):

● Go off-hook on a CO/PBX line.	**CO/PBX** green LED slow blinks.	`Lnr  SPd _-_`
● Press **LNR/SPD** key.		
● Press the * key.	**SPKR** LED lights.	
		`Sr=S12599255`
● Saved/Stored number is repeated.	**SPKR** LED goes off.	

420.19 DO NOT DISTURB

To Set:

● Press **FNC** key.	**FNC** LED lights.	`1-25  11-598`

	SAMPLE LED INDICATIONS	SAMPLE LCD INDICATIONS

- Dial access code 65.

  FNC LED blinks.

- Press **FNC** key.

  FNC LED winks.   `dnd SEt`

To Cancel:

- Press **FNC** key.

  FNC LED lights.   `1-25 11-598`

- Dial access code 65.

  FNC LED blinks.

- Press **FNC** key.

  FNC LED goes off.   `dnd CLEAr`

When **DND** code is programmed on a **Feature Access** key with an LED:

To Set:

- Press Programmable **Feature Access** key.

  PFA LED lights.   `dnd SEt`

To Cancel:

- Press Programmable **Feature Access** key.

  PFA LED goes off.   `dnd CLEAr`

420.20   CALL FORWARD (Software Version 1.1 only.)

To Set:

- Press **FNC** key, dial access code 60, or press **Feature Access** key programmed for this access code.

  FNC LED lights.   `1-25 11-598`

- Dial the extension number where incoming calls will be forwarded.

  FNC LED blinks.   `CF 10--C 3`

- Press **FNC** key.

  FNC LED goes off.   `1-25 11-598`

NOTE: Access code followed by extension number can be programmed on a **Feature Access** key.

<div style="text-align:center">SAMPLE LED INDICATIONS   SAMPLE LCD INDICATIONS</div>

To Cancel: (Software Version 1.1 only.)

- Press **FNC** key, dial access code 69, or press **Feature Access** key programmed for this access code.

FNC	LED slow blinks.
FNC	LED lights.
FNC	LED blinks.

- Press **FNC** key.

| FNC | LED goes off. |

420.20.1 **Call Forward** (Software Version 2.0 or higher.)

To Set:

- Press **Feature Access** key programmed for this access code.

| PFA | LED lights. |

<div style="text-align:center">**OR**</div>

- Press **FNC** key, dial access code 60.

| FNC | LED lights. |
| FNC | LED blinks. |

- Dial the extension number where incoming calls will be forwarded.

- Press **FNC** key

| FNC | LED goes off. |

NOTE 1: An access code followed by an extension number can be programmed on a **Feature Access** key.

NOTE 2: Assign multiple destinations to multiple **Feature Access** keys.

NOTE 3: Pressing the Programmable **Feature Access** key successively alternates Set and Cancel.

NOTE 4: When programming **Call Forward** an extension number **must** be set.

SAMPLE LED INDICATIONS   SAMPLE LCD INDICATIONS

To Cancel: (Software Version 2.0 or higher.)

- Press **Feature Access** key programmed for this access code.

    | PFA | LED goes off.

           OR

- Press FNC key, dial access code 60.

    | FNC | LED lights.

    | FNC | LED blinks.

- Dial the extension number where the incoming calls are forwarded.

- Press FNC key.

    | FNC | LED goes off.

420.21   PROGRAMMING STATION SPEED DIAL

The last dialed number can be entered as a Station Speed Dial number.

To Program:

a. Speed Dialing.

- Press **FNC** key.

    | FNC | LED lights.

- Press **LNR/SPD** key.

    | FNC | LED slow blinks.

- Dial Speed Dial buffer number (00~19).

    | FNC | LED blinks.

- Dial telephone number to be stored.

- Press FNC key.

    | FNC | LED goes off.

NOTE 1:   To program the last dialed number in a Station Speed Dial buffer, press **SPKR** key instead of dialing telephone number.

SAMPLE LED INDICATIONS   SAMPLE LCD INDICATIONS

NOTE 2:   When System Speed Dial numbers are to be entered into a Station Speed Dial buffer, press **HOLD** and enter the System Speed Dial buffer number (20~99) into the Station Speed Dial buffer.

NOTE 3:   Pauses can be inserted into a Speed Dial number by pressing the **LNR/SPD** key. Each pause that is entered counts as a digit.

NOTE 4:   Hookflash can be entered as the first digit by pressing the **RECALL** key.

NOTE 5:   Each buffer can contain twenty four digits. Pauses and hookflash count as digits.

To Verify: (From Key Telephone with LCD only.)

a.   Speed Dialing.

- Press **CNF** key.

- Press **LNR/SPD** key.

- Dial Speed Dial buffer number (00~19) to be verified.

- Check the contents of the buffer with LCD. (The LCD automatically returns to clock/calendar display in about 5 seconds.)

| CNF | LED flashes.

| CNF | LED goes off.

SAMPLE LED INDICATIONS   **SAMPLE LCD INDICATIONS**

b. Last dialed number.

  ● Press **CNF** key. | CNF | LED flashes.

  ● Press **LNR/SPD** key.

  ● Dial #. | CNF | LED goes off.

  ● Check the contents of the buffer with LCD. (The LCD automatically returns to clock/calendar display in about 5 seconds.)

To Clear:

  ● Press **FNC** key. | FNC | LED lights.

  ● Press **LNR/SPD** key. | FNC | LED slow blinks.

  ● Dial Speed Dial buffer number (00~19) to be cleared.

  ● Press **FNC** key. | FNC | LED goes off.

420.22 PROGRAMMING FEATURE ACCESS CODES

See section 450, Feature Access Code List.

To Program:

a. DSS/Speed Dialing.

  ● Press **FNC** key. | FNC | LED lights.

  ● Press **LNR/SPD** key. | FNC | LED flashes.

  ● Press desired **Feature Access** key.

  ● Dial 0 or 1. (0 : CO/PBX call, 1 : Internal call)

  ● Press Speed Dial buffer number (00~99) or extension number (10~59).

  ● Press **FNC** key. | FNC | LED goes off.

SAMPLE LED INDICATIONS   **SAMPLE LCD INDICATIONS**

NOTE 1: A line key without a CO/PBX line installed can be programmed as a **Feature Access** key. System Programming is necessary.

NOTE 2: Paging, Call Pickup, and Doorphone Calls are treated as Internal calls for programming purposes and can be assigned to **Programmable Feature Access** keys.

b. Storing a **Feature Access** Code.

- Press **FNC** key. | FNC | LED lights.

- Press **LNR/SPD** key. | FNC | LED flashes.

- Press desired **Feature Access** key.

- Dial **#** and desired feature access code.

- Press **FNC** key. | FNC | LED goes off.

c. To program a **PFA** key for ICM path.

- Press **FNC** key. | FNC | LED lights.

- Press **LNR/SPD** key. | FNC | LED flashes.

- Press desired **Feature Access** key.

- Dial 1.

- Press **FNC** key. | FNC | LED goes off.

	SAMPLE LED INDICATIONS	**SAMPLE LCD INDICATIONS**

To Verify:

- Press **FNC** key.

  `FNC` LED lights.

- Press **Feature Access** key to check the contents of **Feature Access** key with LCD. The LCD automatically returns to clock/calendar display in about 5 seconds.

  `FNC` LED goes off.

To Clear:

- Press **FNC** key.

  `FNC` LED lights.

- Press **LNR/SPD** key.

  `FNC` LED flashes.

- Press desired **Feature Access** key.

- Press **FNC** key.

  `FNC` LED goes off.

To Originate (MF operation):

- Press **Feature Access** key programmed for DSS/Speed Dial.

  `CO/PBX` green LED winks.

  `SPKR` LED lights.

To Originate (KF operation):

- Press desired **CO/PBX** line.

  `CO/PBX` green LED winks.

- Press desired **Feature Access** key.

  `SPKR` LED lights.

420.23   NESTING DIAL

Up to five Speed Dial buffers can be stored into a sixth Speed Dial buffer. These numbers can be sent successively by pressing the **LNR/SPD** key and then dialing the sixth Speed Dial buffer number.

NOTE: Confirm that the sixth buffer is vacant or that the information previously stored is no longer needed.

All numbers in the first five Speed Dial buffers must be programmed before storing them in a sixth Speed Dial buffer.

To Set:

- Press **FNC** key.
- Press **LNR/SPD** key.
- Dial vacant buffer number.
- Press **HOLD** key. *
- Dial desired Speed Dialing buffer number.
- * When successive programming is needed, press the **HOLD** key and repeat this step.
- Press **FNC** key.

To Verify:

See section 420.21 of this manual (Programming Station Speed Dial).

To Originate:

See section 420.21 of this manual (Programming Station Speed Dial).

NOTE: Some combinations of Nesting Dial can not be performed.

Speed Dialing buffer | A | can contain buffers

| B | C | D | E | F | : Up to 5 (buffers can be set)

SAMPLE LED INDICATIONS

| FNC | LED lights.

| FNC | LED blinks.

| FNC | LED goes off.

SAMPLE LCD INDICATIONS

SAMPLE LED INDICATIONS   **SAMPLE LCD INDICATIONS**

Impossible Combinations

Speed Dialing buffer **A** cannot be stored within its own buffer.

Speed Dial buffer **B** cannot be stored in buffer **A** because buffer **B** already contains a Nesting Dial sequence (**C**).

420.24   STATION BACKGROUND MUSIC

To Set:

- Press **FNC** key.

  [FNC] LED lights.

- Dial access code **93** for BGM.

  [FNC] LED blinks.

- Press **FNC** key.

  [FNC] LED goes off.

- Background Music is heard over station speaker.

To Cancel:

- Press **FNC** key.

  [FNC] LED lights.

- Dial access code **93** for BGM.

  [FNC] LED blinks.

- Press **FNC** key.

  [FNC] LED goes off.

- Ensure that Background Music is no longer heard over station speaker.

	SAMPLE LED INDICATIONS	SAMPLE LCD INDICATIONS

When using programmed **Programmable Feature Access** key:

To Set:

- Press the **Programmable Feature Access** key (with/without LED).

| FNC | LED lights, then goes off.

To Cancel:

- Press the **Programmable Feature Access** key (with/without LED).

| FNC | LED lights, then goes off.

420.25   RINGING TONE VARIATION ASSIGNMENT

- Press **FNC** key.

| FNC | LED lights.

- Press **LNR/SPD** key.

| FNC | LED flashes.

- Dial *.

| FNC | LED goes out.

| SPKR | LED blinks.

- Dial 1.

| FNC | LED blinks.

- Dial (   ).

Tone Frequency codes:

(1) = (low)
(2) = (medium)
(3) = (high)

| FNC | and | SPKR | LEDs go out.

- Press **FNC** key.

	SAMPLE LED INDICATIONS	SAMPLE LCD INDICATIONS

420.26   **RINGING ASSIGNMENT** (from any Key Telephone)

- Press **FNC** key.

  [FNC] LED lights.

- Press **LNR/SPD** key.

  [FNC] LED flashes.

- Dial *.

  [FNC] LED goes out.

  [SPKR] LED blinks.

- Dial 2.

  [CO/PBX] red LED lights (or is out).

  [FNC] LED blinks.

- Press desired CO/PBX line key.

  [CO/PBX] red LED goes out (or lights).

  Ring   :   CO/PBX red LED on.
  No Ring :   CO/PBX LED off.

- Press **FNC** key.

  [CO/PBX], [FNC] and [SPKR] LEDs go out.

420.27   **OFF- HOOK RINGING ASSIGNMENT**

- Press **FNC** key.

  [FNC] LED lights.

- Press **LNR/SPD** key.

  [FNC] LED flashes.

- Dial *.

  [FNC] LED goes out.

  [SPKR] LED blinks.

- Dial 3.

- Dial ( ).

  [FNC] LED blinks.

  (0) -   (No Ring)
  (1) -   (Ring)

- Press **FNC** key.

  [FNC] and [SPKR] LEDs go out.

SAMPLE LED INDICATIONS   **SAMPLE LCD INDICATIONS**

420.28   **SELF EXTENSION NUMBER CONFIRMATION**
(Display phone only)

● Press **FNC** key.

| FNC | LED lights.

● Dial 4.

| FNC | LED goes out.

LCD displays Extension Number and Port Number at right and left sides respectively. LCD goes back to clock/calendar display in about 5 seconds.

420.29   **RECORDING JACK (ETZ-16D-1 only)**

CO/PBX and intercom calls can be recorded.

● Plug in recording device to the jack dedicated for a recording device in the Key Telephone (ETZ-16D-1 only).

420.30   **PC CONNECTION (ETZ-16D-1 only)**

NOTE: See Chapter 2 of this manual for modem PC connection.

With conversation established (elapsed call timer in display).

● Press **FNC** key.

| CO/PBX | green LED winks.

● Dial 7.

| FNC | LED lights.

● Press **SPKR** key then replace handset to return station to monitor mode.

| FNC | LED goes off.

SAMPLE LED INDICATIONS   **SAMPLE LCD INDICATIONS**

To Cancel:

With elapsed call timer in display.

| 0 | 0 | - | 2 | 5 |

- Press **FNC** key.

      | FNC | LED lights.

- Dial 7.

      | FNC | LED goes off.

- Press **SPKR** key and release **CO/PBX** line.

      | CO/PBX | green LED goes out.

SAMPLE LED INDICATIONS   SAMPLE LCD INDICATIONS

430   ATTENDANT OPERATION

DSS/BLF Consoles can be connected to any type of station (display type is recommended), maximum of two Consoles.

430.1   CO/PBX (OUTSIDE) CALLS

See Section 420.1 of this manual.

430.2   EXTENSION (INTERNAL) CALLS

430.2.1   Originating

● Lift handset.

| ICM | LED lights.

● Press **DSS** key on the DSS/BLF Console, to call the desired extension.

| DSS | red LED lights.

● If the call is not answered, another **DSS** key can be pressed to place another extension call (chain calling).

| DSS | red LED goes off and another
| DSS | red LED lights.

430.2.2   Answering, Hold, Abandoning

See Section 420.2 of this manual.

430.3 ATTENDANT TRANSFER

SAMPLE LED INDICATIONS

SAMPLE LCD INDICATIONS

With a call in progress:

- Press **DSS** key on the **DSS/BLF** Console, the call is placed on Non-Exclusive hold.

  | CO/PBX | green LED winks.

  | CO/PBX | green LED winks intermittently.

  | DSS | red LED lights.

- Voice Announcement or ring back tone is heard.

- Press **RECALL** key on the Key Telephone before party answers.

  | CO/PBX | red LED blinks.

  | DSS | red LED remains lit.

  When transferring a call to an extension, the line key will remain reserved (on hold) until answered at called extension.

  OR

- Press **RECALL** key on the Key Telephone after party answers.

  | CO/PBX | red LED lights.

  | DSS | red LED remains lit.

  Upon completing Transfer, the line key LED indication changes as follows:

- CO/PBX line key:
  I-Hold winking (green)→ solid lit (red)

| | SAMPLE LED INDICATIONS | SAMPLE LCD INDICATIONS |

430.4   ORIGINATING INTERNAL ZONE PAGING

● Press **SPKR** key.

| SPKR | , | ICM | and | DSS |
LEDs light.

● Press Internal Zone Paging key on the DSS/BLF Console.

| DSS | red LEDs light.

● Lift handset to page.

| SPKR | LED goes off.

All Key
Telephones :   **DSS/BLF** key No. 25

Zone 1 :   **DSS/BLF** key No. 26

Zone 2 :   **DSS/BLF** key No. 27

Zone 3 :   **DSS/BLF** key No. 28

430.5   ORIGINATING EXTERNAL ZONE PAGING

● Press **SPKR** key.

| SPKR | , | ICM | and | DSS |
LED lights.

● Press **External Zone Paging** key on the DSS/BLF Console.

| EP | red LED lights.

● Lift handset to page.

| SPKR | LED goes off.

NOTE: **External Zone Paging** key on DSS/BLF Console enables all External Zones.

430.6   MESSAGE WAITING

To Set:

- Press **MSG** key on the DSS/BLF Console.

- Press **DSS** key(s) on the DSS/BLF Console where you want to leave a message.

- Press **MSG** key on the DSS/BLF Console.

To Cancel:

- Press **MSG** key on the DSS/BLF Console.

- Press the **DSS** key(s) on the DSS/BLF Console.

- Press **MSG** key on the DSS/BLF Console.

NOTE: The **MSG** key on the DSS/BLF Console will not time out.

Message Waiting cannot be set to Single Line Telephones.

430.7   NIGHT TRANSFER

To Set:

a.   Dial access.

- Press **FNC** key during **day mode**.

- Dial access code 80 for **night mode**.

- Press **FNC** key.

b.   Using **NT** key.

- Press **NT** key on the DSS/BLF Console during **day mode**.

SAMPLE LED INDICATIONS

| MSG | LED lights. |

| DSS | green LEDs will light. |

| MSG | LED goes off. |

| MSG | LED lights. |

| DSS | green LEDs will go off. |

| MSG | LED goes off. |

| FNC | LED lights. |

| FNC | LED flashes. |

| FNC | LED goes off. |

| NT | LED lights. |

SAMPLE LCD INDICATIONS

SAMPLE LED INDICATIONS   **SAMPLE LCD INDICATIONS**

To Cancel:

a. Dial Access.

- Press **FNC** key during **night mode**.

  | **NT** | LED is lit steady. |
  | **FNC** | LED lights. |

  `n    1-25    10-59P`

- Dial access code 80 for **day mode**.

  | **FNC** | flashes. |

- Press **FNC** key.

  | **FNC** | LED goes off. |

  `nt  CLEAr`

b. Using **NT** key.

- During **night mode**.

  | **NT** | LED is lit steady. |

  `n    1-25    10-59P`

- Press **NT** key on the DSS/BLF Console.

  | **NT** | LED goes off. |

  `nt  CLEAr`

430.8   CALL FORWARD

430.8.1   To Set/Verify:

- See Section 420.20 (Call Forward) of this manual.

430.8.2   To Cancel System Wide Call Forward:

- Press **FNC** key.

  | **FNC** | LED lights. |

  `CF 5y5 CLEAr`

- Dial access code 68.

  | **FNC** | LED flashes. |

- Press **FNC** key.

  | **FNC** | LED goes off. |

430.8.3   To Cancel System Wide Callback Requests:

- Press **FNC** key.

  | **FNC** | LED lights. |

  `1-25    11-59A`

- Dial 88.

  | **FNC** | LED blinks. |

- Press **FNC** key.

  | **FNC** | LED goes off. |

  `Cbr 5y5 CLEAr`

430.9 PROGRAMMING SYSTEM SPEED DIAL

An Attendant can program, erase, and verify System Speed Dial. All Key Telephones can be programmed to verify System Speed Dial via System Programming.

See Section 420.21 (Programming Station Speed Dial) of this manual. For System Speed Dial buffers use numbers (20~99).

430.10 CLOCK/CALENDAR SETTING

The clock/calendar can be set from the Attendant Key Telephone(s) (only Port No. 10 and 11).

EXAMPLE: Monday, February, 9, 1988,
10 : 15 A.M.

1. Press **FNC** key.

2. Dial **9** and **#**.

   ● Move the cursor to the desired position by using **#** or ***** button. (Cursor is indicated by blinking character.)

3. Hour Setting   :   Dial 1, 0

4. Minute Setting :   Dial 1, 5

5. AM/PM Setting: Press **RECALL** key.

6. Press **HOLD** key for setting the Calendar.

7. Month Setting :   Dial 0, 2.

8. Day Setting   :   Dial 0, 9.

9. Day of Week
   Setting   :   Dial 1 (digits 0~6)
   (See Note)

10. Year Setting :   Dial 1, 9, 8, 8

11. Press **FNC** key.

SAMPLE LED INDICATIONS

FNC LED lights.

FNC LED goes off.

SAMPLE LCD INDICATIONS

SAMPLE LED INDICATIONS   SAMPLE LCD INDICATIONS

NOTE: The days of the week are entered by the corresponding numbers as follows:

0 : SUN   4 : THU
1 : MON   5 : FRI
2 : TUE   6 : SAT
3 : WED

430.11   SECURITY/ALARM

Two optional alarm circuits are provided in the system.

When the alarm circuit is activated, an audible alarm is heard through all idle Key Telephone speakers.

The alphanumeric display on all Key Telephones with display indicates which alarm circuit has been activated.

Only the Attendant Key Telephone can cancel the alarm signal.

To cancel the audible signal.

- Press **FNC** key.   `FNC` LED lights. | 5 E C   A L 1 |

- Dial 78.   `FNC` LED blinks.

- Press **FNC** key.   `FNC` LED goes off.

- Sensor input goes out. | 1 - 2 5   1 1 - 5 9 8 |

NOTE: The alarm sound can be canceled by this operation, but the visual alarm indication continues until the sensor input returns to a normal condition.

440   SINGLE LINE TELEPHONE OPERATION

440.1   CO/PBX (OUTSIDE CALLS)

440.1.1   Originating

a.   Manual Dialing.

- Lift handset and receive dial tone.

- Dial CO/PBX access code.

- Dial number for outside party.

- Talk when called party answers.

b.   Station Speed Dialing.

- Lift handset and receive dial tone.

- Dial * followed by Station Speed Dial buffer number (00~19) for outside party.

- Talk when called party answers.

c.   System Speed Dialing.

- Lift handset and receive dial tone.

- Dial * followed by System Speed Dial buffer number (20~99) for outside party.

- Talk when called party answers.

d.   Last CO/PBX Number Redial.

- Lift handset and receive ICM dial tone.

- Dial # for last number redial.

- Talk when called party answers.

e.   Consecutive Dialing.

- Lift handset and receive dial tone.

- Dial * then the desired Speed Dial buffer number.

- Dial desired number. (Manual Dialing)

NOTE: Consecutive dialing cannot be accomplished when a Station or System Speed Dialing sequence follows manual dialing.

440.1.2   Answering

- Lift handset and talk.

440.1.3   Placing A CO/PBX Or Extension Call On Hold

- Hookflash; call is placed on Consultation Hold. (Exclusive Hold)

- Hookflash to retrieve the held call. (Do not return the handset to the cradle.)

440.1.4   Abandoning A Call

- Restore handset.

440.2   EXTENSION (INTERNAL) CALLS

440.2.1   Originating

- Lift handset and receive ICM dial tone.

- Dial desired extension number.

- Talk when called party answers.

440.2.2   Answering

- Lift handset and talk.

440.2.3   Placing A Call On Hold

See Section 440.1.3 (Placing A CO/PBX Or Extension Call On Hold) of this manual.

440.2.4   Abandoning A Call

- Restore handset.

440.3   TRANSFERS

440.3.1   Call Transfer

With a call in progress:

- Hookflash; call is placed on Consultation Hold. (Exclusive Hold)

- Dial the extension number where the call is being transferred.

- When called party answers, restore handset. (Transfer is completed.)

440.3.2   Ring Transfer

- Hookflash; call is placed on Consultation Hold. (Exclusive Hold)

- Dial the extension number where the call is being transferred.

- Hookflash again.

- Restore handset.

440.3.3   Page Transfer

To Transfer:

With a call in progress:

- Hookflash and receive ICM dial tone.

- Dial access code ( ).

    | (70) | - | (All Key Telephones) |
    | (71) | - | (Zone 1) |
    | (72) | - | (Zone 2) |
    | (73) | - | (Zone 3) |

- Restore the handset after called party answers.

To Answer (Meet-Me):

With an internal paging in progress:

- Lift handset and receive dial tone.

- Dial access code **74**.

- Talk with originator of the paging call.

- Talk with outside party after originator hangs up.

440.4 CONFERENCE

Possible Conferences are as follows:

3 stations - No CO/PBX lines
2 stations - 1 CO/PBX line

440.4.1 Three Party Conference

With a call in progress:

- Hookflash; original call is placed on Consultation Hold. (Exclusive Hold)

- Dial second party's extension number.

- Talk when called party answers.

- Hookflash to establish a three party Conference.

440.4.2 Placing a Conference Call on Hold

With a Conference call in progress:

- Hookflash; Conference call is placed on Consultation Hold. (Exclusive Hold)

- Restore handset.

NOTE: Remaining parties can talk.

440.4.3 Abandoning a Conference Call

- Restore handset.

440.5 CO/PBX LINE QUEUING

When all CO/PBX lines in the dialed access group are busy, busy tone is heard.

- Dial **64**, confirmation tone is heard.

- Restore handset.

When CO/PBX line becomes idle, receive ICM ringing tone.

- Lift handset and receive the outside dial tone. Dial desired number.

To Cancel:

- Lift handset.

- Dial **65**, confirmation tone is heard.

- Restore handset.

440.6 INTERNAL ZONE PAGING

To Originate:

- Lift handset and receive ICM dial tone.

- Dial access code and page.

Dial access code is ( ).

(70) - (All Key Telephones)
(71) - (Zone 1)
(72) - (Zone 2)
(73) - (Zone 3)

- Use handset to page.

To Answer (Meet-me):

- Lift handset and receive ICM dial tone.

- Dial access code **74**.

- Talk with paging party.

440.7   **EXTERNAL ZONE PAGING**

To Originate:

- Lift handset and receive ICM dial tone.

- Dial access code and page.

Dial access code is ( ).

       (76)   -   (Zone 1)
       (77)   -   (Zone 2)
       (75)   -   (All Zones)

- Use handset to page.

To Answer (Meet-me):

- Lift handset and receive ICM dial tone.

- Dial access code **74**.

- Talk with paging party.

440.8   **DIAL 0 FOR ATTENDANT**

- Lift handset and receive ICM dial tone.

- Dial 0 to call the associated Attendant.

NOTE: The associated Attendant is programmed for each station in System Data. If the associated Attendant is call forwarded to another station, calls to the Attendant will automatically forward to that station.

440.9   **CALL PICKUP**

440.9.1   **Outside Calls**

With incoming CO/PBX line calls at another station:

- Lift handset.

- Dial access code ( ).

- Talk with calling party.

Call pickup access codes are as follows:

       (60)   -   Incoming CO/PBX line (outside of tenant group)
       (66)   -   Incoming CO/PBX line (inside of tenant group)
       (68)   -   Incoming PBX line (inside of tenant group)
       (69)   -   Incoming CO line (inside of tenant group)

440.9.2   **Internal Calls (Inside of Tenant Group)**

Another station is receiving an incoming internal call.

- Lift handset.

- Dial access code **61**.

- Talk with calling party.

440.10   **AUTOMATIC CALLBACK**

- Receive ringing signal.

- Lift handset to talk with party that set the Automatic Callback.

NOTE: Automatic Callback cannot be set from a Single Line Telephone.

440.11   **PROGRAMMING STATION SPEED DIAL**

● Lift handset and receive ICM dial tone.

● Dial access code **85** and Station Speed Dial buffer number (00~19).

● Dial trunk access code (Default 9, 80, 88).

● Dial number to be stored.

● Restore handset.

450 FEATURE ACCESS CODE LIST

1. Receiving Volume Control   `FNC` → `2`

2. Self Station Number Confirmation (Internal) `FNC` → `4`

3. Manual Pause (Outside)   `FNC` → `4`

4. Last CO/PBX Number Redial   `FNC` → `5`

5. Door Lock Release   `FNC` → `6`

6. PC Connection   `FNC` → `7`

7. Call Forward :   Set   `FNC` → `60` → `Transferred Tel No` → `FNC`

   (Software Version 1.1)   Cancel   `FNC` → `69` → `FNC`

   (Software Version 2.0 or higher) Set/Cancel   `FNC` → `60` → `Transferred Tel No` → `FNC`

   Call Forward Cancel (Attendant system wide) `FNC` → `68` → `FNC`

8. Do Not Disturb Set/Cancel   `FNC` → `65` → `FNC`

9. Security/Alarm Reset   `FNC` → `78` → `FNC`

10. Night Transfer Set/Cancel   `FNC` → `80` → `FNC`

11. Callback Request Cancel (Attendant system wide) `FNC` → `88` → `FNC`

12. Printer Test   `FNC` → `9*` → `FNC`

13. Background Music (Set/Cancel)   `FNC` → `93` → `FNC`

14. FNC Lamp Reset   `FNC` → `99` → `FNC`

15. Save   `FNC` → `#`

   Store   `FNC` → `*` → `Dial Tel No. To Be Stored` → `FNC`

   Save/Store (Repeat)   `LNR/SPD` → `*`

16. Call Pickup :

    Incoming CO/PBX line (outside of tenant group)   `60`

    Intercom (inside of tenant group)   `61`

    Incoming CO/PBX line (inside of tenant group)   `66`

    Incoming PBX line (inside of tenant group)   `68`

    Incoming CO line (inside of tenant group)   `69`

17. Call Park Retrieve (Key Telephone only)   `62`

18. Specific CO/PBX Line Seizure   `63` → | CO/PBX line Number |

19. CO/PBX Line Queuing   (Set)   `64`

                    (Cancel)   `65`

20. Internal Zone Paging :

    All Key Telephones   `70`

    Zone 1   `71`

    Zone 2   `72`

    Zone 3   `73`

    Answering (Meet-Me)   `74`

21. External Zone Paging :

    All Zones   `75`

    Zone 1   `76`

    Zone 2   `77`

    Answering (Meet-Me)   `74`

22. Doorphone Call/Answer :

    Doorphone 1   `81`

    Doorphone 2   `82`

23. Single Line Telephone (Station Speed Dial Store)   `85` → | **Telephone Number To Be Stored** |

24. Call 0 for Attendant   `0`

25. CO/PBX Line Seizure

    (CO)   `9`

    (PBX)   `80`

    (None)   `88`

    (Speed Dial Acess from SLT)   `*` → | **Speed Dial Buffer Number** |

    (Last CO/PBX Number Redial from SLT)   `#`

CHAPTER 5

MAINTENANCE

CHAPTER 5
MAINTENANCE

TABLE OF CONTENTS

SECTION 510
GENERAL

This Chapter is to be used as a **guide** for diagnoses and troubleshooting problems during and after system installation. The troubleshooting flow charts and general test procedures may help the technician to identify the cause of a problem by defining the problem area and isolating the valid symptoms.

SECTION 520
OPERATIONAL CURRENT AND VOLTAGE CHECKS

The effectiveness of this portion of the maintenance section depends upon the technician's ability to accurately answer all questions posed. Due to external factors, it is important that no answer be assumed. For example, it cannot be assumed that a power supply is working properly because it has been replaced with another power supply. It is necessary to test the output of the power supply with a volt meter. Before a technician can attempt any troubleshooting, the correct tools should be available.

A. Digital or Analog Multi-meter, capable of reading:
   1. DC current and voltage
   2. AC current and voltage
   3. DC Resistance

B. Lineman's Test Set, capable of:
   1. Termination and Monitor Modes
   2. DTMF and DP dialing

C. Hand tools:
   1. Set of screwdrivers (common and Phillips head blades)
   2. Set of pliers, long nose and diagonals
   3. Punch down tool

D. The complete *Electra 8/24 Installation Service Manual* with all the latest up to date information, as well as the **completed job specifications.**

SECTION 530
OPERATIONAL TEST PROCEDURES

530.1   GENERAL DESCRIPTION
When the Electra 8/24 Electronic Key Telephone System is first powered up, it runs through an initialization process. During this process the CPU, located on the MBD(412)-Z ( ) KTU, scans each of the twenty four station ports to determine the hardware configuration used. This information is stored in the Resident System Program memory with the system default values. This section describes test procedures to be used before, during, and after the initialization process.

530.2   BEFORE INITIALIZATION
It is important that the following steps be taken by the installation technician:

A. Cable Connections
   All wiring for the power supply, connectors, etc., should be checked for solid connections. Refer to Chapter 2 (Hardware Installation) of this manual for connection instructions.

B. AC/DC Power
   Check all power with an AC/DC multi-meter. Refer to Table 500-1 Power Requirements and Figure 500-1 Front View of the ESZ-8-( ). It is recommended that this test be run without expansion or optional ETUs installed.

C. Initialization Check
   To check if the system is initializing correctly, it is suggested that only the ESZ-8-( ) KSU be powered up with the first two terminals installed. After

initialization, the first two terminals should be able to call each other via intercom. (These stations, by default, will be assigned station numbers 10 and 11.)
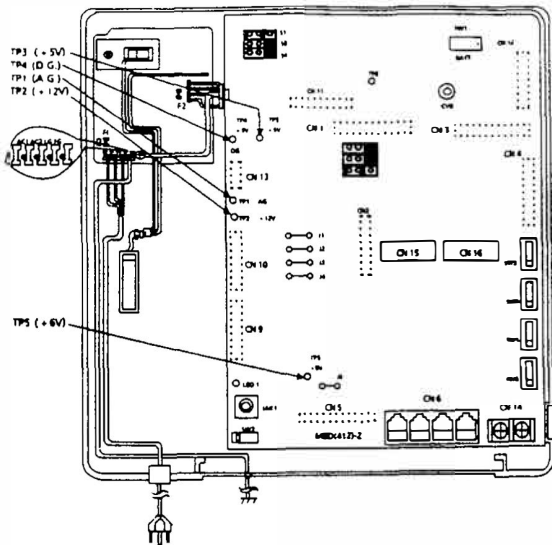
Figure 500-1 Front View of the ESZ-8-( )

530.3   SYSTEM INITIALIZATION

Once the previous steps are completed and checked, the entire system should be initialized.

With the power off, all the interface and option cards can be installed as indicated on the job specification document. It is important to check that the battery switch on the MBD(412)-Z ( ) KTU is turned off. At this point the technician can power up the system. After the initialization process, each display station will show default time and date indication. Example: 1-01 12-00A.

It is recommended that a **First Initialization** be performed from one of the system programming stations (ports 10 and 11) after powering up the system. Refer to Section 325 of Chapter 3 in this manual.

530.4   AFTER INITIALIZATION

Before any programming is attempted, the battery switch on the MBD(412)-Z ( ) KTU should be turned on. This will prevent all completed programming from being lost if the system loses power for a period of time longer than the system backup battery. The system backup battery should be connected at this time.

After all previous steps have been checked and any problems corrected, the system programming can be completed. Using Job Specification sheets (supplied with the ESZ-8-( ) KSU) helps simplify the programming process.

CAUTION: **Ensure the battery switch on the MBD(412)-Z ( ) KTU is turned ON.**

The next step for the technician is to perform a **Second Initialization** (not a First Initialization). Performing a First Initialization a second time will cause all programming memory to be lost, whereas the Second Initialization "cleans out" or "refreshes" the system RAM without any loss of memory.

This completes the installation procedure for the Electra 8/24 Electronic Key Telephone System. The

Table 500-1 Power Requirements

VOLTAGES	TOLERANCE	MEASURING POINTS
Main KSU + 5 volts + 6 volts + 12 volts	+ 5 ± 0.25 volts + 6 ± 0.25 volts + 13.7 ± 0.3 volts	ON MBD(412)-Z ( ) KTU TP3 (+5V) & TP4 (D.G.) TP5 (+6V) & TP1 (A.G.) TP2 (+12V) & TP1 (A.G.)
AC Voltage (120 VAC) Hot to Neutral Hot to Conduit Ground Neutral to Conduit Ground	120 ± 10% VAC 120 ± 10% VAC .05 VAC (MAX.)	AC TERMINAL STRIP AC1 to AC2 AC1 to LG AC2 to LG
CO/PBX Line Off-hook line current	25 to 50 mA	In series with TIP side of CO/PBX line at MDF
90 VAC	70 to 120 volts RMS	Across Single Line Telephone Tip and Ring

NOTE: Measurement of ring voltage may be lower if the meter is designed for measuring 60 Hz signals only.

technician should check the operation of each station to ensure the system is working properly.

SECTION 540
TROUBLESHOOTING FLOW CHARTS

540.1   PROBLEM SOLVING

To find the cause of a problem, first consider all the symptoms carefully. As each aspect of the problem is considered the technician is guided to a probable solution. It is imperative the problem be defined as accurately as possible, so the most efficient steps to a solution can be taken. The troubleshooting flow charts, in this section, may help define a problem and direct the technician through the troubleshooting steps.

A. System Down
    Although this term is used to describe many conditions, it will only be used in this section to describe one of the following situations:

    1. No access to intercom dial tone on any Key Telephone or Single Line Telephone installed.
    2. No LED indications or no display indications on any Key Telephone installed.
    3. No system tones are generated.

B. Partial Operation
    This term will refer to any situation which cannot be completely described under the conditions of a **SYSTEM DOWN**. (Refer to the Index Table listing these conditions.)

C. Reset Definition
    In the troubleshooting flow charts, the technician is at times directed to reset the station and/or KSU.

    1. Terminal Reset - Is accomplished by unplugging the station line cord from the station and then plugging it back in.

    2. KSU Reset - The KSU is reset by turning the ON/OFF switch on the PSZ-8-1 to the **OFF** position and then turning it back **ON**. To give capacitors in the circuit time to discharge, allow some time before turning the switch back to the **ON** position.

    3. Programming Reset - For KSU Reset, perform a second initialization (refer to Chapter 3 of this manual.)

INDEX TABLE

CONDITION	FLOW CHART NUMBER	PAGE NUMBER
A. SYSTEM DOWN		
1. No Internal Dial Tone To Any Station.	A1	500-5
2. No LED or Display Indications on Any Key Telephone.	A2	500-6
B. PARTIAL OPERATIONS		
1. Radio Frequency Interference (RFI).	B1	500-7
2. CO/PBX Line Problems:		
a. Call Dropping.	C1	500-8
b. No Outside Dial Tone Access.	C2	500-9
c. CO/PBX Signaling Problem.	C3	500-10
3. Key Telephone Problems:		
a. Key Telephone Terminal Function Problems.	D1	500-11
b. Key Telephone Terminal Ringing Problems.	D2	500-12
4. Low Volume Problems.	E1	500-13
5. Station Message Detail Recording (SMDR) Problems.	F1	500-14
6. Ringing Problems on Single Line Telephone.	G1	500-15

A1

```
┌─────────────────────────────────────────────────┐
│        No Internal Dial Tone To Any Station       │
└─────────────────────────────────────────────────┘
```

Check All DC Voltages + 12V, + 5V, + 6V — No DC Voltage or incorrect DC voltage (s) → **Check AC Power and the fuse.**

Good ↓

Turn off AC power and remove all option and expansion boards from the system. Reapply power.

AC Power ? — Bad → **Correct AC Power Problem**

Good ↓

Problem Solved ? — Yes → **Rebuild system one card at a time until problem reappears. Replace defective card.**

Check Fuses ? — Bad → **Replace Fuse(s) F1 or F2**

Good ↓

No ↓

Reseat IC 1, 2, and 3 on the MBD(412)-Z ( ) KTU.

Problem Solved ? — No → **Reseat the power supply connector cable from CN1, into CN13 on the MBD(412)-Z ( ) KTU.**

Yes ↓

Done

Problem Solved ? — Yes → **Done**

No ↓

Problem Solved ? — No → **Problem Solved ?** — Yes → **Done**

Yes ↓

Done

No →

Problem Solved ? — Yes → **Done**

No ↓

Replace the ESZ-8-( ) KSU.

┌──┐
│ **NOTE:** Ensure power is **OFF** on ESZ-8-( )   │
│   KSU before removing or inserting   │
│   expansion/optional KTU's.   │
└──┘

A2

```
╭─────────────────────────────────────────────────────────╮
│     No LED or Display Indications On Any Key Telephone    │
╰─────────────────────────────────────────────────────────╯
```

Check All DC Voltages — Good → / Bad → **Check AC Power**

Good path:
- Remove all optional/interface KTU's.
- Problem Solved ?
  - No →
  - Yes → Reinstall KTUs one at a time. Replace defective KTUs. → Done

Bad path:
- Check AC Power
- AC Power ? — Bad → Correct AC Power Problem / Good →
- Check Fuses ? — Bad → Replace Fuses(s) F1 or F2 / Good →
- Reseat the PSZ power connector cable from CN1, into CN13 on the MBD(412)-Z ( ) KTU.
- Problem Solved ? — Yes → Done / No →

Center path:
- Terminate one Key Telephone (programming station) directly on the MDF and test.
- Problem Solved ? — Yes → Recheck station cabling / No →
- Reseat IC 1, 2, and 3 on the MBD(412)-Z ( ) KTU.
- Problem Solved ? — Yes → Done / No →
- Replace the ESZ-8-( ) KSU.

```
┌──────────────────────────────────────────┐
│ NOTE:  Ensure power is OFF on ESZ-8-( )    │
│        KSU before removing or inserting    │
│        expansion/optional KTU's.           │
└──────────────────────────────────────────┘
```

Radio Frequency Interference (RFI)

Test to see if interference is only during outside calls or anytime a station is off-hook.

RFI Occurrence

— On CO Calls Only → Check CO cabling into system at MDF with CO lines removed from Electra 8/24 Electronic Key Telephone System

— Station Off-Hook ↓

RFI on CO Lines: — No → Check cable of affected Station(s)

RFI on CO Lines: — Yes → Inform TELCO

Check cable of affected Station(s) ↓

Twisted Pair Cable

— More than 2 pair Twisted → Ground all unused pairs at MDF

— No → Recable with 2-pair twisted cable

— 2 Pair Twisted ↓

RFI Cleared (left) — Yes → End
RFI Cleared (left) — No →

RFI Cleared (right) — Yes → End
RFI Cleared (right) — No →

Follow the steps below, one at a time and test after each.

1. Place a 0.01 microfarad (μF) capacitor across the receiver element in the Key Telephone handset.

2. Place a 0.01 microfarad (μF) capacitor across the handset.

3. Place a 0.01 microfarad (μF) capacitor between the transmitter and the receiver element.

4. Refer to ETI Number 007 (Eliminating RFI).

Problem Solved ?
— Yes → Done
— No → Call NEC Field Support

C1

Call Dropping

Check to see if problem occurs on all lines.

Calls Dropping on all lines ?

- No →
- Yes →

Check to see if all lines drop at the same time.

All lines together ?

- No →
- Yes →

Set Auto Release to Deny for affected lines. (Memory Block 3-20.)

Adjust Auto Release Disconnect Signal to 450 msec. (MB 1-50.)

Problem Solved ?

- Yes → Done
- No →

Problem Solved ?

- Yes → Done
- No →

Check the outside line button on key telephone indication after the call drops.

Set Auto Release to Deny for all lines (MB 3-20).

CO button line status

- Off →
- On →

Problem Solved ?

- Yes → Done
- No →

Have TELCO check line circuits

Replace the associated EXK-Z ( ) or EXS-Z (lines 5, 6, 7, and 8), KTU, or the Electra 8/24 KSU, if all lines or (lines 1, 2, 3, or 4).

Check all DC voltages with a meter + 5V, + 12V and + 6V.

All voltages good ?

- Yes →
- No →

NOTE: Ensure power is **OFF** on ESZ-8-( ) KSU before removing or inserting KTU's or KTU connectors.

CO/PBX Signaling Problem

At the MDF check lines with a test set to see if they are DTMF or Rotary. Check Memory Block 3-09 to ensure lines are programmed to match the type dialing being used.

Monitor line with a test set and verify System is sending digits.

Digits
Sent Correctly
?

Yes → No

1. If digits are DTMF, increase the DTMF duration in Memory Block 1-21.
2. If lines are Rotary, select the 10 PPS option in Memory Block 3-09.

Is CO/PBX lines with dialing problems located on expansion board (EXK-Z ( ) KTU or EXS-Z KTU) ?

No →

Change
EXK-Z ( ) KTU
or EXS-Z KTU

Problem
Solved
?

Yes ← No →
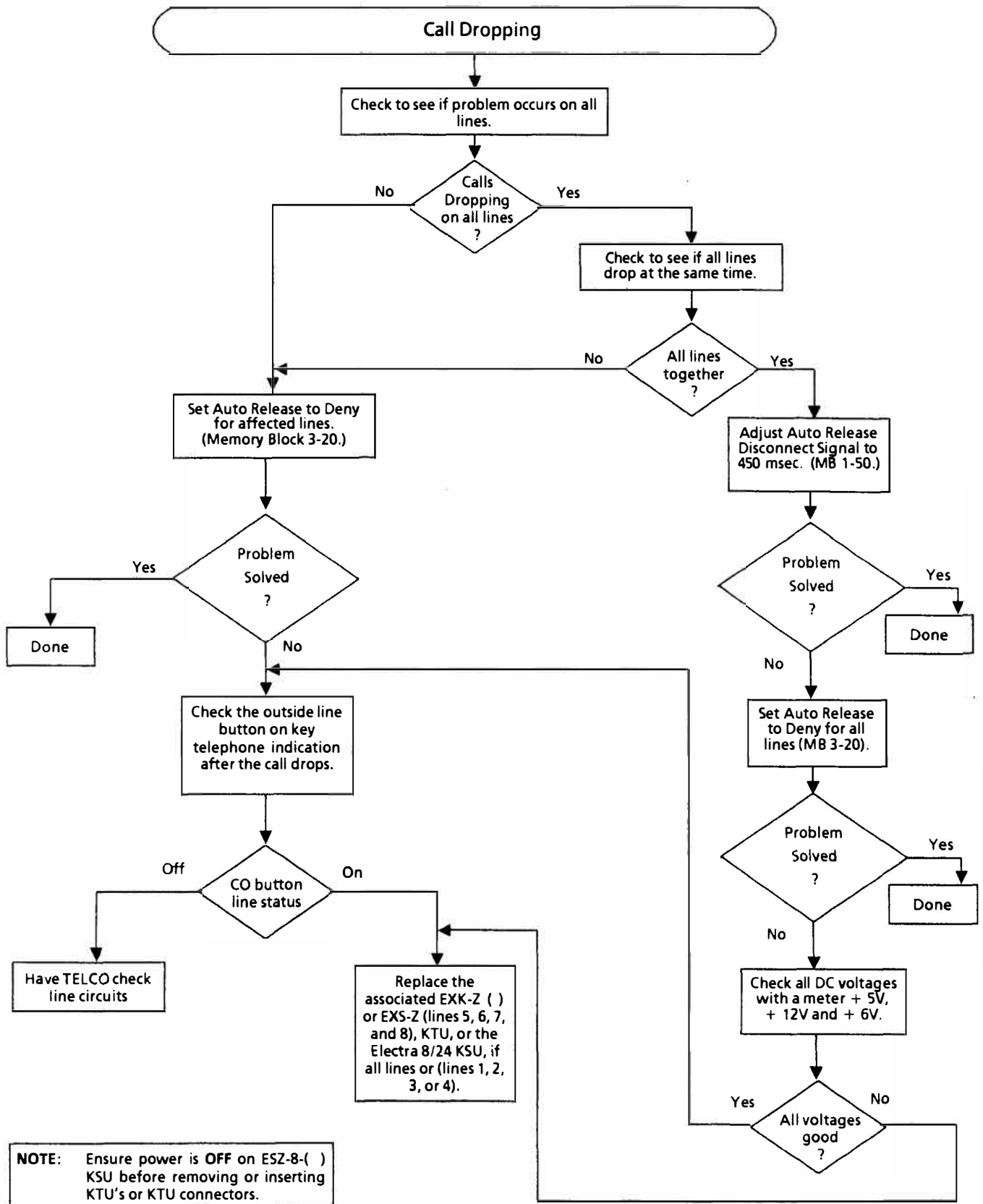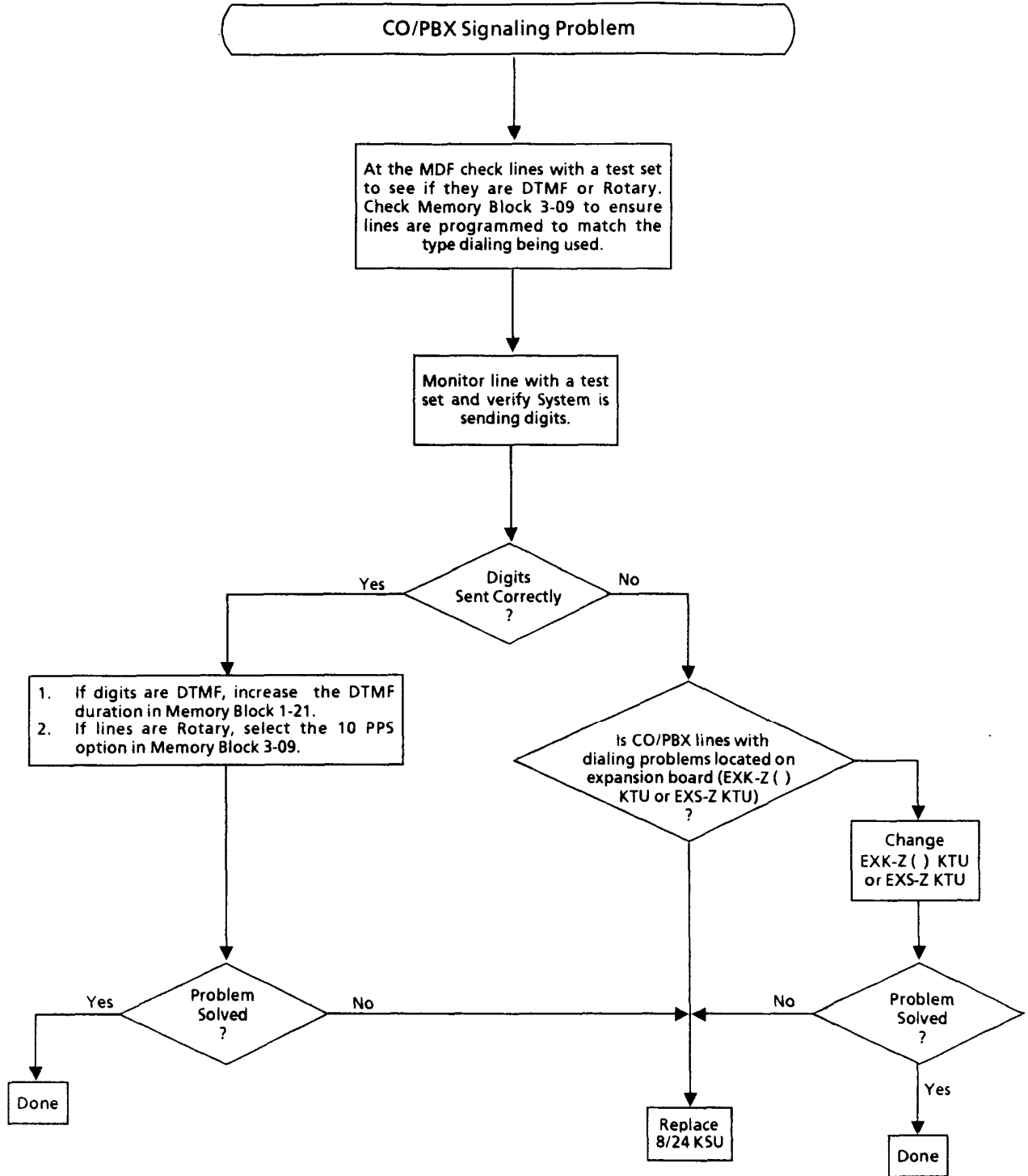
Done

Replace
8/24 KSU

Problem
Solved
?

No ←

Yes ↓

Done

NOTE: Ensure power is **OFF** on ESZ-8-( ) KSU before removing or inserting expansion/optional KTU's.

No Outside Dial Tone Access

Check MB 3-09 to insure that line is installed.

Problem Solved ?

No → Check line for outgoing restriction (MB 5-04).

Yes → Done

Problem Solved ?

No → All Stations affected

Yes → Done

All Stations affected

Yes → Check Station for Intercom Dial Tone.

No → Replace affected station and test.

Intercom Dial Tone ?

No → Go to Flowchart A 1

Yes

Problem Solved ?

Yes → Done

No → At the MDF test for CO/PBX dial tone with a test set and check the CO/PBX wiring.

CO/PBX Dial Tone ?

Yes → Replace the associated EXS-Z or EXK- Z ( ) (CO 5, 6 or 7, 8) or the E-8 /24 KSU for (lines 1,2,3,4 or all lines)
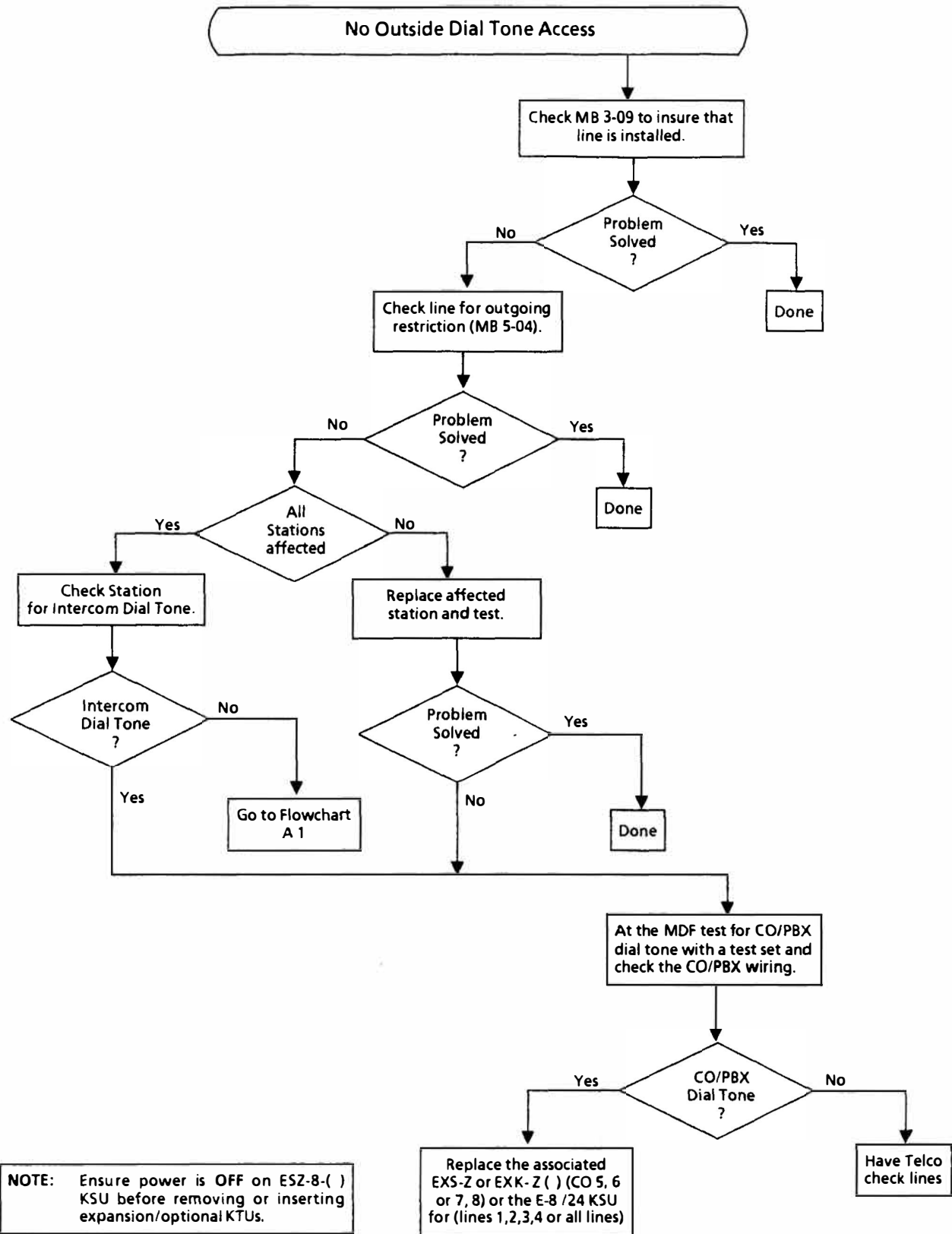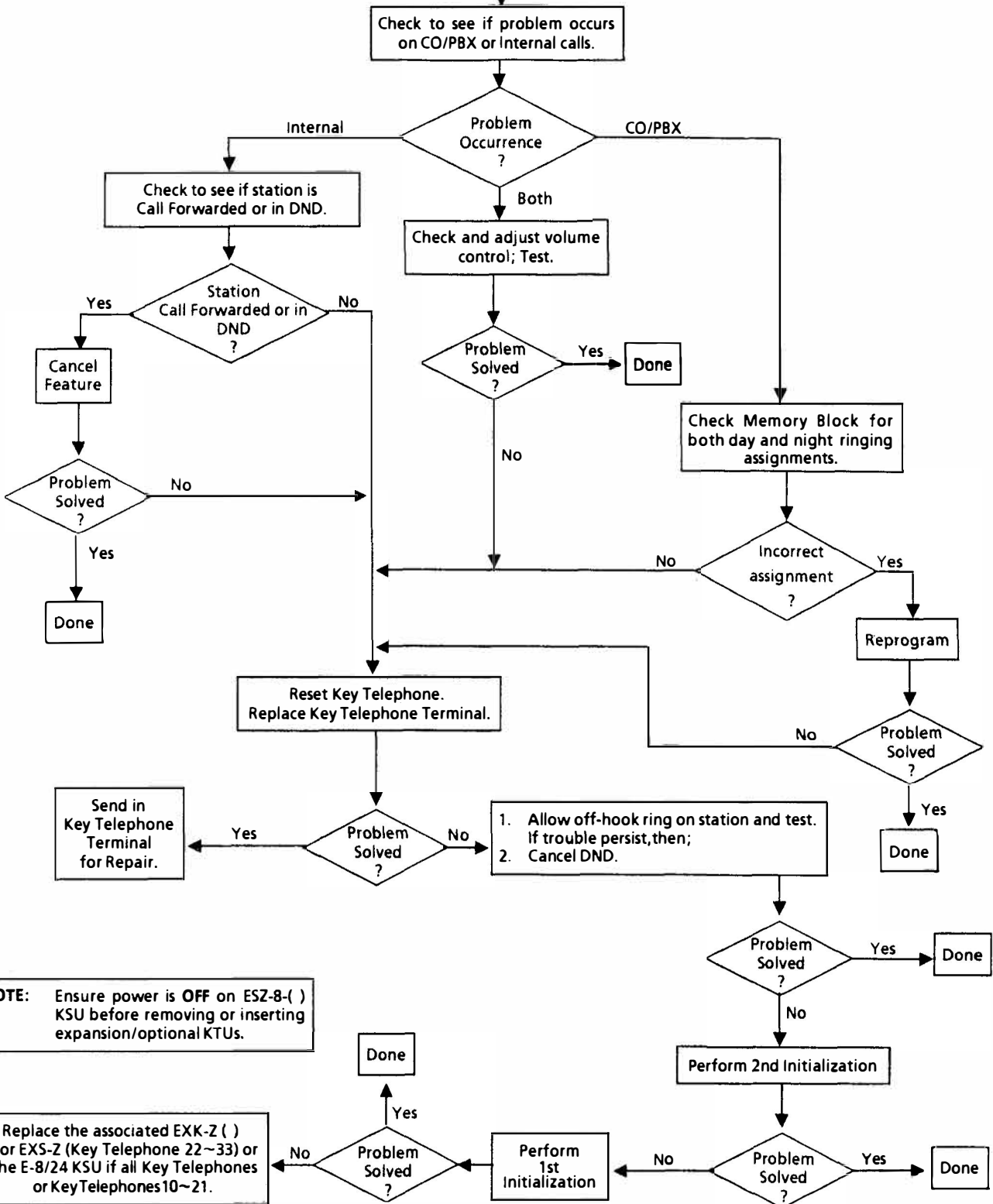
No → Have Telco check lines
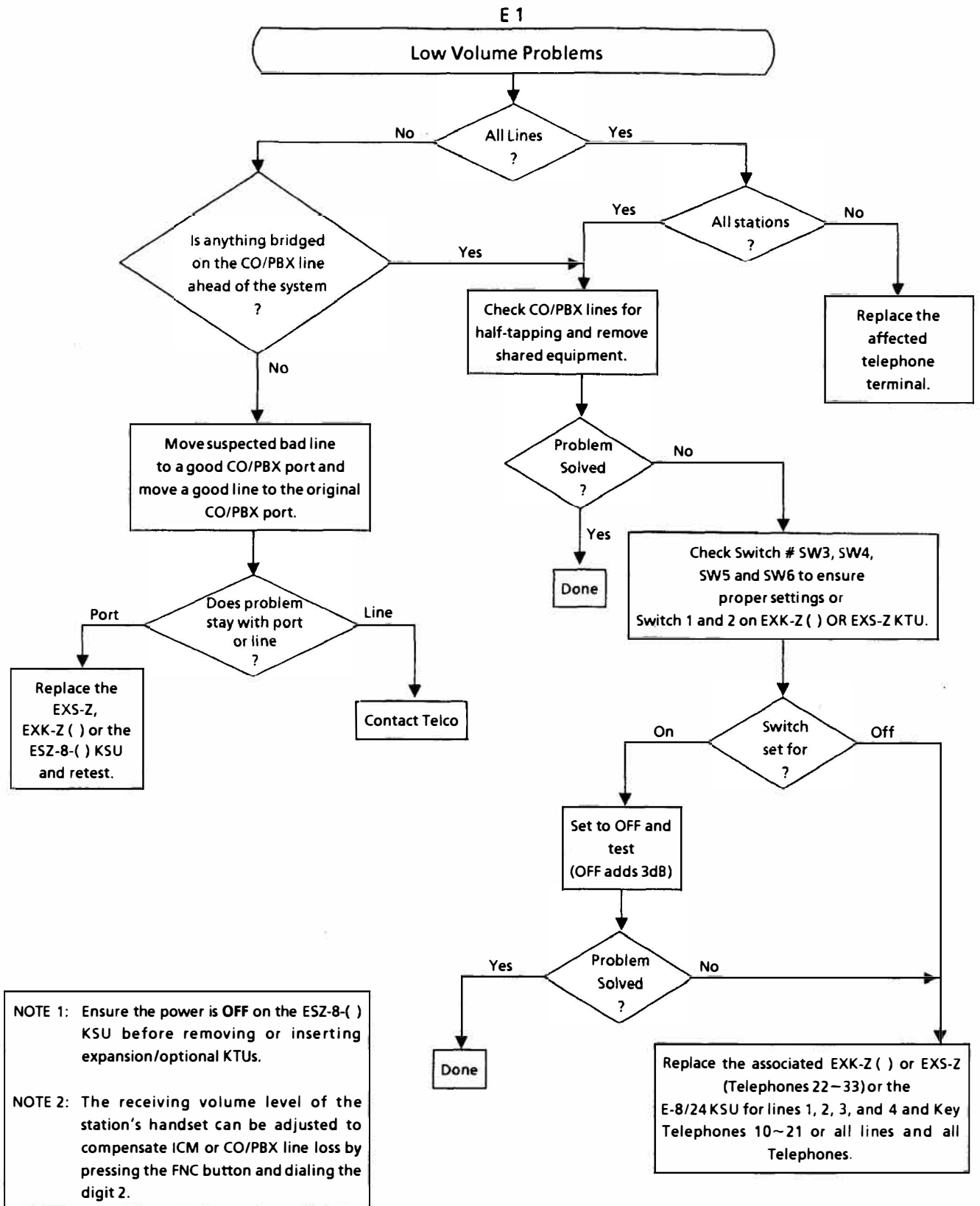
NOTE: Ensure power is OFF on ESZ-8-( ) KSU before removing or inserting expansion/optional KTUs.

D 1
Key Telephone Terminal Function Problems

All Key Telephone Terminals Affected ? — Yes → Go to Flowchart A 2

No ↓

Reset Key Telephone. Replace Key Telephone Terminal; Test.

↓

Problem Solved ? — Yes → Send Key Telephone Terminal for repair.

No ↓

Connect Key Telephone Terminal directly to MDF and Test.

↓

Problem Solved ? — Yes → Repair or Replace Station Cable

No ↓

Perform 2nd Initialization

↓

Problem Solved ? — Yes → Done

No ↓

Perform 1st Initialization

↓

No ← **Problem Solved ?** — Yes → Done

Replace associated EXK-Z ( ) or EXS-Z KTU for Key Telephone 22~33 or the E-8/24 KSU if all Key Sets or KeyTelephone 10~21.

NOTE: Ensure power is **OFF** on ESZ-8-( ) KSU before removing or inserting expansion/optional KTU's.

D 2

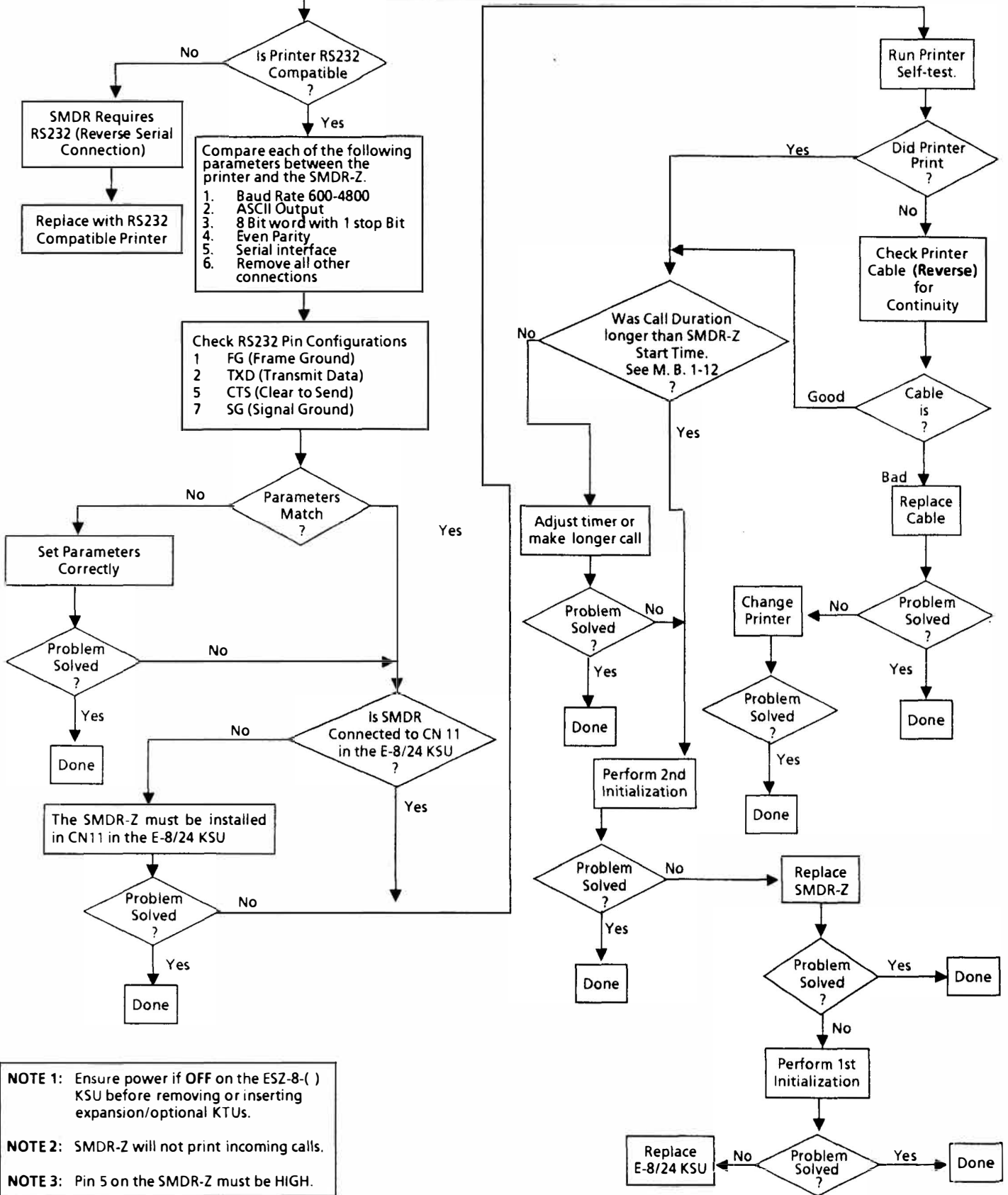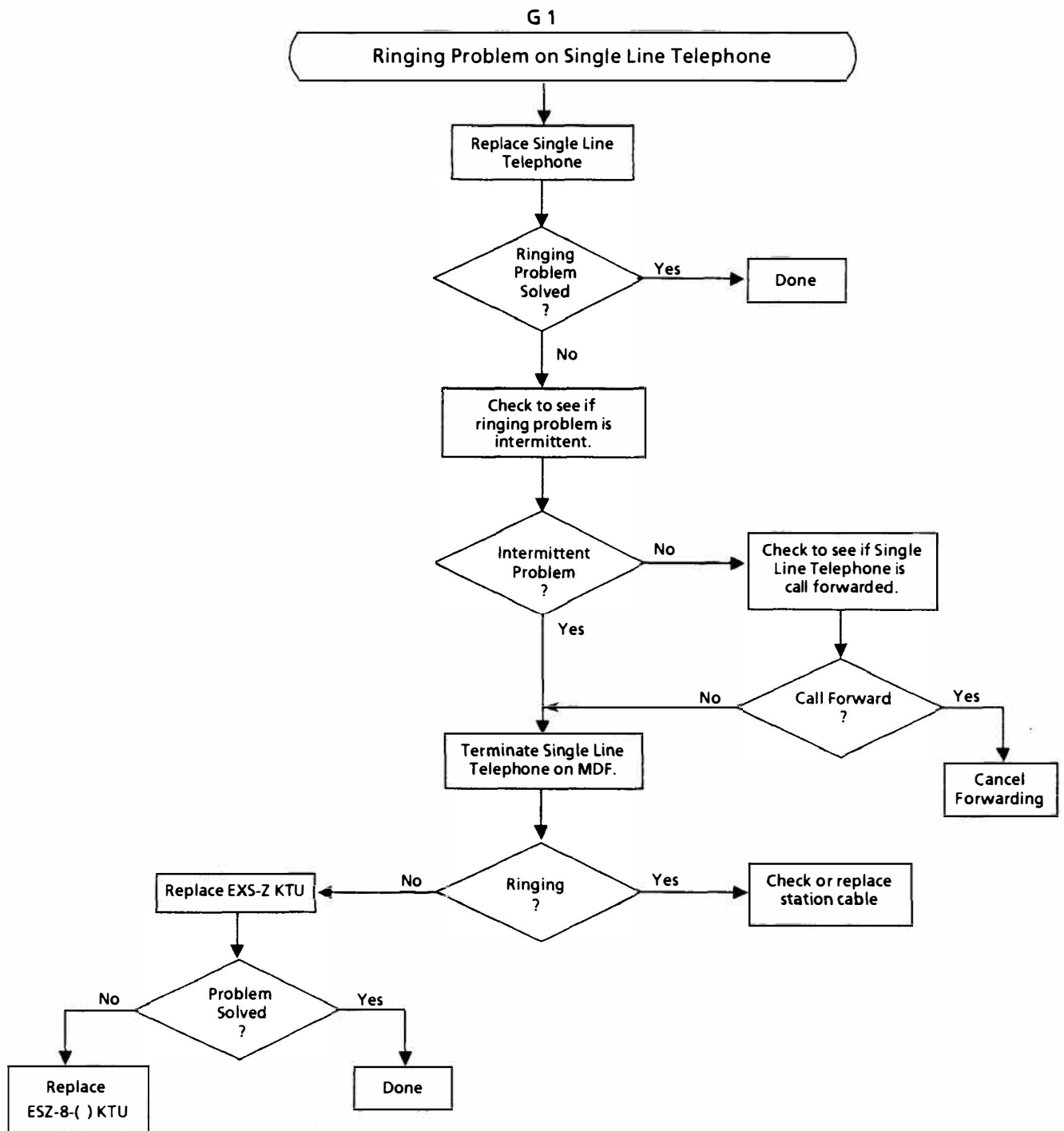## Key Telephone Terminal Ringing Problems

Check to see if problem occurs on CO/PBX or Internal calls.

Problem Occurrence ?

- **Internal** →
  - Check to see if station is Call Forwarded or in DND.
  - **Station Call Forwarded or in DND ?**
    - **Yes** →
      - Cancel Feature
      - **Problem Solved ?**
        - **No** →
        - **Yes** → Done
    - **No** →

- **Both** →
  - Check and adjust volume control; Test.
  - **Problem Solved ?**
    - **Yes** → Done
    - **No** →

- **CO/PBX** →
  - Check Memory Block for both day and night ringing assignments.
  - **Incorrect assignment ?**
    - **No** →
    - **Yes** →
      - Reprogram
      - **Problem Solved ?**
        - **No** →
        - **Yes** → Done

Reset Key Telephone. Replace Key Telephone Terminal.

Problem Solved ?
- **Yes** → Send in Key Telephone Terminal for Repair.
- **No** →
  1. Allow off-hook ring on station and test. If trouble persist, then;
  2. Cancel DND.

Problem Solved ?
- **Yes** → Done
- **No** →
  - Perform 2nd Initialization
  - **Problem Solved ?**
    - **Yes** → Done
    - **No** →
      - Perform 1st Initialization
      - **Problem Solved ?**
        - **Yes** → Done
        - **No** → Replace the associated EXK-Z ( ) or EXS-Z (Key Telephone 22~33) or the E-8/24 KSU if all Key Telephones or Key Telephones 10~21.

NOTE: Ensure power is **OFF** on ESZ-8-( ) KSU before removing or inserting expansion/optional KTUs.

E 1

Low Volume Problems

All Lines ?
- No →
- Yes →

Is anything bridged on the CO/PBX line ahead of the system ?
- Yes →
- No ↓

All stations ?
- Yes →
- No →

Replace the affected telephone terminal.

Check CO/PBX lines for half-tapping and remove shared equipment.

Move suspected bad line to a good CO/PBX port and move a good line to the original CO/PBX port.

Problem Solved ?
- No →
- Yes ↓

Done

Does problem stay with port or line ?
- Port →
- Line →

Replace the EXS-Z, EXK-Z ( ) or the ESZ-8-( ) KSU and retest.

Contact Telco

Check Switch # SW3, SW4, SW5 and SW6 to ensure proper settings or Switch 1 and 2 on EXK-Z ( ) OR EXS-Z KTU.

Switch set for ?
- On ↓
- Off →

Set to OFF and test (OFF adds 3dB)

Problem Solved ?
- Yes →
- No →

Done

Replace the associated EXK-Z ( ) or EXS-Z (Telephones 22−33) or the E-8/24 KSU for lines 1, 2, 3, and 4 and Key Telephones 10~21 or all lines and all Telephones.

NOTE 1: Ensure the power is **OFF** on the ESZ-8-( ) KSU before removing or inserting expansion/optional KTUs.

NOTE 2: The receiving volume level of the station's handset can be adjusted to compensate ICM or CO/PBX line loss by pressing the FNC button and dialing the digit 2.

F 1

SMDR Output Problems

Is Printer RS232 Compatible ?

No →

SMDR Requires RS232 (Reverse Serial Connection)

↓

Replace with RS232 Compatible Printer

Yes ↓

Compare each of the following parameters between the printer and the SMDR-Z.
1. Baud Rate 600-4800
2. ASCII Output
3. 8 Bit word with 1 stop Bit
4. Even Parity
5. Serial interface
6. Remove all other connections

↓

Check RS232 Pin Configurations
1 FG (Frame Ground)
2 TXD (Transmit Data)
5 CTS (Clear to Send)
7 SG (Signal Ground)

↓

Parameters Match ?

No →

Set Parameters Correctly

↓

Problem Solved ?

No →

Yes ↓

Done

Is SMDR Connected to CN 11 in the E-8/24 KSU ?

No →

The SMDR-Z must be installed in CN11 in the E-8/24 KSU

↓

Problem Solved ?

No →

Yes ↓

Done

Yes ↓

Run Printer Self-test.

↓

Did Printer Print ?

Yes →

No ↓

Check Printer Cable (**Reverse**) for Continuity

↓

Cable is ?

Good →

Bad ↓

Replace Cable

↓

Problem Solved ?

Yes ↓

Done

No →

Change Printer

↓

Problem Solved ?

Yes ↓

Done

Was Call Duration longer than SMDR-Z Start Time. See M. B. 1-12 ?

No ↓

Adjust timer or make longer call

↓

Problem Solved ?

No →

Yes ↓

Done

Yes →

Perform 2nd Initialization

↓

Problem Solved ?

No →

Replace SMDR-Z

↓

Problem Solved ?

Yes → Done

No ↓

Perform 1st Initialization

↓

Problem Solved ?

Yes → Done

No →

Replace E-8/24 KSU

Yes ↓

Done

NOTE 1: Ensure power if **OFF** on the ESZ-8-( ) KSU before removing or inserting expansion/optional KTUs.

NOTE 2: SMDR-Z will not print incoming calls.

NOTE 3: Pin 5 on the SMDR-Z must be HIGH.

G 1

Ringing Problem on Single Line Telephone

Replace Single Line Telephone

Ringing Problem Solved ? — Yes → **Done**

No

Check to see if ringing problem is intermittent.

Intermittent Problem ? — No → **Check to see if Single Line Telephone is call forwarded.**

Yes

Call Forward ? — Yes → **Cancel Forwarding**

No

Terminate Single Line Telephone on MDF.

Replace EXS-Z KTU ← No — **Ringing ?** — Yes → **Check or replace station cable**

Problem Solved ? — Yes → **Done**

No

Replace ESZ-8-( ) KTU

NOTE: Ensure power is **OFF** on ESZ-8-( ) KSU before removing or inserting expansion/optional KTU's.

CHAPTER 6

ENGINEERING TECHNICAL
INFORMATION

ELECTRA 8/24

ETI Bulletins

ETI NUMBER	DESCRIPTION	DATE	STATUS
E8/24-001	Plantronics JS-180 Jackset Connection to Electra 8/24 (ETZ-16D-( ) Only)	8/89	Active
E8/24-002	Northern Telecom Companion II Speakerphone Connection to Electra 8/24 ETZ-16D-1 Terminal	8/89	Active
E8/24-003	Connection of Melco S-11 and Tone Commander TA-20 to Electra 8/24 ETZ-16D-1 Terminal	8/89	Active
E8/24-004	Plantronics Phonebeam Infrared Speakerphone Connection	8/89	Active
E8/24-005	External Battery Backup	8/89	Active
E8/24-006	Not Published		
E8/24-007	Eliminating Radio Frequency Interference (RFI) on Electra 8/24 Installations	8/89	Active
E8/24-008	Internal Battery Backup Replacement	9/90	Active
E8/24-009	Viking Fax Jack III and PathFinder (Phone/Data/Fax Switch) Connections	2/91	Active
E8/24-010	Viking ACA-1 Automated Attendant	2/91	Active
E8/24-011	Connection of Proctor 46222 OPX Long Loop Adapter	4/91	Active

FEATURES AND
SPECIFICATIONS
(OPERATING PROCEDURES)

TABLE OF CONTENTS

INTRODUCTION

This addendum supplements the _Electra 8/24 Installation Service Manual_ (ND-20562). This addendum applies to any ESZ-8-( ) KSU equipped with main software version 3.3 or higher. An ESZ-8-( ) KSU equipped with version 3.0 or lower is not recommended for these features unless the main software in the KSU is upgraded.

This addendum provides information about Voice Recording Services for:

- Individual Features (Features and Specifications section)

- Access Codes and LCD Indications (Access Codes/LCD Indications section)

- Installing Hardware (Hardware Installation section)

- Programming Memory Blocks (Programming section)

- Job Specifications Instructions (Job Specifications section)

VOICE RECORDING - INTERCOM

GENERAL DESCRIPTION

This feature allows any internal station user to record and store a voice message. A user can send a recorded message to any other internal station within the system. The station receiving the message receives a visual prompt to indicate a recorded voice message has been received.

STATION APPLICATION

All Key Telephones.

OPERATING PROCEDURE

Using this feature from a station assigned for voice recording:

Setting a voice recorded message:

1. Lift the handset or press the SPKR key.
2. Press the **FNC** key.
3. Dial **77.**
4. Dial the extension number where the message will be sent.
5. Press the **FNC** key.
6. Record the message through the handset or the built-in microphone.
7. When completed, return the handset to the cradle or press the **SPKR** key to stop recording; otherwise, the message timer will automatically stop the recording.

Verifying a voice recorded message:

1. Lift the handset or press the **SPKR** key.
2. Press the **FNC** key.
3. Dial *.
4. Dial the extension number where the voice recorded message was sent.
5. Press the **FNC** key.
6. The voice recorded message plays back through the handset or the built-in speaker.
7. When completed, return the handset to the cradle or press the SPKR key.

Retrieving a voice recorded message:

1. Lift the handset or press the **SPKR** key.
2. Press the FNC key.
3. Dial #.
4. The voice recorded message plays back twice through the handset or the built-in speaker. The message automatically clears upon completion or when abandoned during playback.

Clearing a voice recorded message at the sending station:

1. Press the **FNC** key.
2. Dial **79**.
3. Dial the extension number where the voice message was sent.
4. Press the **FNC** key.

Clearing voice recorded messages system-wide (from ports 10 and 11 only):

1. Press the **FNC** key.
2. Dial **98**.
3. Press the **FNC** key.

SERVICE CONDITIONS

- This feature is available only on Key Telephones.

- A Key Telephone can send a maximum of 16 (15 seconds allotted for each box) voice messages.

- Each voice message that is recorded reduces the total number of available voice boxes by one. The total number of voice boxes available is 16 boxes (15 seconds allotted for each box), or 8 boxes (30 seconds allotted for each box). This option is set in System Programming.

- Each internal station can receive a maximum of three recorded messages.

- This feature allows a message to be sent on a per station basis in System Programming.

- A visual indication is provided on the ETZ-16-1 terminal when a recorded message is received (flashing FNC LED).

- A visual indication is provided on the ETZ-16D-1 terminal when a recorded voice message is received (flashing FNC LED and LCD display prompt, for example, ⌈11⌋).

- The recorded voice message will playback twice to the retrieving party, then automatically clears upon completion.

- The recorded voice message will clear if abandoned during playback.

- If more than one recorded voice message is sent to a station, the first message received will be the first message to playback, *etc.*

- The voice message cannot be recorded, verified, or retrieved through the handset if all intercom paths are busy.

- Software version 3.3 (or higher level) is required to record messages using the handset.

- Using the handset ensures quality voice message recordings. Using the built-in microphone is not recommended.

- Only one recorded message can be retrieved and/or verified at a time.

- Only one VRS feature can be accessed at one time. If another VRS feature is being used, this feature is disabled during that time.

VRS AUTOMATIC/MANUAL ANSWER

GENERAL DESCRIPTION

Automatic Mode:

This feature allows (incoming) outside CO/PBX calls to be automatically answered by a voice recorded message. After the incoming call is answered, one of three voice recorded messages (day/night/holiday) is played to the outside party. After the voice recorded message is completed, the outside party is disconnected.

Manual Mode:

When the called party is busy on an (outside) call, additional incoming calls can be answered, by a voice recorded message, then placed on hold. This will allow the called party to complete the first call without interruption while the second caller is waiting on hold. This feature is manually activated (via an access code) by the station user where the CO line is flashing.

STATION APPLICATION

Automatic answer is set from the Key Telephone (ports 10, 11 only).

Manual answer is activated from any station.

OPERATING PROCEDURE

To record the individual voice messages (Attendant Only):

1. Lift the handset or press the SPKR key.
2. Press the **FNC** key.
2. Dial **70 ( )**.
   - **(1)** Message (Night)
   - **(2)** Message (Day)
   - **(3)** Message (Holiday)
   - **(4)** Message (Manual)
3. Press the **FNC** key.
4. Record the selected voice message through the handset or the built-in microphone.
5. When completed, return the handset to the cradle or press the **SPKR** key to stop recording; otherwise, the message timer will automatically stop the recording.

To verify individual voice messages (Attendant Only):

1. Lift handset or press the **SPKR** key.
2. Press the **FNC** key.
3. Dial **71 ( )**.
   - **(1)** Message (Night)
   - **(2)** Message (Day)
   - **(3)** Message (Holiday)
   - **(4)** Message (Manual)
4. Press the **FNC** key.
5. The message will playback through the handset or the built-in speaker.
6. When completed, return the handset to the cradle or press the **SPKR** key.

To set the Automatic Answer feature (ports 10 and 11 only):

1. Press the **FNC** key.
2. Dial 8 ( ).
   (1) Message (Night)
   (2) Message (Holiday)
3. Press the **FNC** key.
   (Repeat the procedure to reset.)

To activate the Manual Answer feature (any Key Telephone):

1. Receive incoming CO/PBX call while off-hook on another CO/PBX line.
2. Press the **FNC** key.
3. Press the ringing CO/PBX line key.
4. The call is answered, the VRS manual message is played, and then the call is placed on hold.

SERVICE CONDITIONS

- Single Line Telephones cannot be used to activate the Automatic/Manual answer feature.

- Night and Holiday messages can be activated from an Attendant position by entering the proper access code.

- The Automatic/Manual Answer features cannot be activated until the message(s) have been recorded.

- The VRS Automatic/Manual Answer feature only works on incoming CO/PBX lines.

- This feature can be switched from one automatic answering mode (night/day) to another by programming the VRS Automatic Answer Time Selection (System Programming is required).

- Each voice message that is recorded reduces the total number of available voice boxes by one. The total number of voice boxes available is 16 boxes (15 seconds allotted for each box), or 8 boxes (30 seconds allotted for each box). This option is set in System Programming.

- The total recording time available to the system for all voice recorded messages is four minutes.

- The Automatic Answer feature is programmed on a per CO/PBX line basis in System Programming.

- All CO/PBX lines assigned for Automatic Answer flash red at the Attendant positions when Automatic Answer is activated.

- The Automatic Answer feature answers incoming calls in approximately two ring cycles. After the voice recorded message is played, the call is disconnected.

- The VRS Manual Answer feature is only activated during an incoming CO/PBX call. To activate this feature, the station user must be off-hook on a CO/PBX line.

- The Manual Answer feature will not work on transferred/camped-on calls.

- Access code 82 (VRS Auto Answer, Holiday) overrides and resets access code 81 (VRS Auto Answer, Night). However, access code 81 does not override and reset access code 82.

- Individual messages cannot be recorded or verified through the handset if all intercom paths are busy.

- Software version 3.3 (or higher level) is required to record via the handset.

- Using the handset ensures quality voice message recordings. Using the built-in microphone is not recommended.

- Only one VRS feature can be accessed at one time. If another VRS feature is being used, this feature is disabled during that time.

- Four different message modes are available for incoming CO/PBX calls answered by the Automatic/Manual Answer Message. Each message mode has its own message. The first caller answered, hears the message from the beginning. Other callers, answered while the message is playing, only hear the remaining part of the message. The Automatic/Manual Answer Message then restarts and plays from start to finish to the other callers.

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VRS HOLD MESSAGE

GENERAL DESCRIPTION

This feature can be used to play a customized voice message, for up to 30 seconds, to all outside parties placed on hold by a station user.

STATION APPLICATION

All Stations.

OPERATING PROCEDURE

To record a hold message (ports 10 and 11 only):

1. Lift the handset or press SPKR key.
2. Press the **FNC** key.
3. Dial **700**.
4. Press the **FNC** key.
4. Record the hold message through the handset or the built-in microphone.
5. When completed, return the handset to the cradle or press the **SPKR** key to stop recording; otherwise, the message timer will automatically stop the recording.

To use this feature from a Key Telephone with a call in progress:

1. Press the **HOLD** key once for Non-Exclusive Hold.
2. Press the **HOLD** key twice for Exclusive Hold.
3. The outside party on hold hears the recorded hold message followed by MOH.
4. To retrieve a Non-Exclusive or Exclusive held call, press the flashing line key.

To use this feature from a Single Line Telephone with a call in progress:

1. Momentarily press the hookswitch, the call is placed on Exclusive Hold. (Do not return the handset to the cradle.)
2. The outside party on hold hears the recorded hold message followed by MOH.
3. To retrieve a held call, momentarily press the hookswitch. The held call is reconnected.

SERVICE CONDITIONS

- Only one hold message is available for all incoming CO/PBX calls placed on hold. For example, the first caller, placed on hold, hears the message from the beginning. Other callers, placed on hold while the message is playing, only hears the remaining part of the message. The hold message then restarts and plays from start to finish to the other callers on hold.

- When using Single Line Telephones, calls can only be placed on Exclusive Hold.

- The voice recorded message only plays once before the MOH source starts to play except when a message does not start at the beginning.

- One voice box can be dedicated for the hold message feature.

- The VRS Hold message reduces the total number of available voice boxes by one. The total number of voice boxes available is 16 boxes (15 seconds allotted for each box), or 8 boxes (30 seconds allotted for each box). This option is set in System Programming.

- The total recording time available to the system for all voice recorded messages is four minutes.

- The VRS Hold message can only be recorded from ports 10 and 11.

- Software version 3.3 (or higher level) is required to record messages using the handset.

- The VRS Hold Message feature cannot be activated until the message(s) have been recorded.

- Using the handset ensures quality voice message recordings. Using the built-in microphone is not recommended.

- Only one VRS feature can be accessed at one time. If another VRS feature is being used, this feature is disabled during that time.

ACCESS CODES/LCD INDICATIONS

FEATURE ACCESS CODE LIST

Recording VRS Messages:

1. VRS Hold Message :   Record   SPKR or HANDSET → FNC → 700 →FNC
   (Ports 10 and 11 only)   Verify   SPKR or HANDSET → FNC → 710 →FNC
                         Clear   FNC → 720 →FNC

2. VRS Message for ICM   Record   SPKR or HANDSET → FNC → 77 →Destination
   (Any Key Telephone)   Telephone No. →FNC

   (Originating Station)   Clear   FNC → 79 → Destination Telephone No. → FNC

   (Originating Station)   Verify   SPKR or HANDSET →FNC → * → Destination
                                 Telephone No. → FNC

   System-Wide   Clear   FNC → 98 →FNC
   (Ports 10 and 11 only)

   (Any Key Telephone)   Retrieve   SPKR or HANDSET →FNC →#

3. VRS Message   Record   Night   SPKR or HANDSET → FNC → 701 →FNC
   (Ports 10 and 11 only)   Day   SPKR or HANDSET → FNC → 702 →FNC
                               Holiday   SPKR or HANDSET → FNC → 703 →FNC

4. VRS Message   Verify   Night   SPKR or HANDSET → FNC → 711 →FNC
   (Ports 10 and 11 only)   Day   SPKR or HANDSET → FNC → 712 →FNC
                               Holiday   SPKR or HANDSET → FNC → 713 →FNC

5. VRS Message   Clear   Night   FNC → 721 →FNC
   (Ports 10 and 11 only)   Day   FNC → 722 →FNC
                               Holiday   FNC → 723 →FNC

6. VRS Manual Message   Record   SPKR or HANDSET → FNC → 704 →FNC
   (Ports 10 and 11 only)   Verify   SPKR or HANDSET → FNC → 714 →FNC
                         Clear   FNC → 724 →FNC

Setting the VRS Feature:

1. VRS Auto Answer   Set/Reset   Night   FNC → 81 →FNC
   (Ports 10 and 11 only)   Holiday   FNC → 82 →FNC

2. VRS Manual Answer   Activate   FNC → CO/PBX Line Key (Incoming Call)
   (Any Key Telephone)

NOTE: Software version 3.3 (or higher level) permits recording of voice messages using the handset or the built-in microphone.

LCD INDICATIONS

FUNCTION	DISPLAY	MEANING

VRS AUTOMATIC ANSWER	VoiCE rEC [ ]	• Recording
		   Automatic-Night Mode
		   Automatic-Day Mode
		   Automatic-Holiday Mode
		   Manual Mode

	VoiCE PLAY [ ]	• Verify
	VoiCE CLr [ ]	• Clear
	Auto AnS 1 SEt	• Night Mode-Set/Reset
	Auto AnS 2 SEt	• Holiday Mode-Set/Reset
HOLD MESSAGE	VoiCE rEC [0]	• Recording
	VoiCE PLAY [0]	• Verify
	VoiCE CLr [0]	• Clear
VOICE MESSAGE	VoiCE rEC [ ]	• Recording
	VoiCE PLAY [17]	• Verify
	VoiCE CLr [ ]	• Clear
	「 12 」「 14 」「 26 」	• Playback

NOTE: After activating any of the recording modes, a countdown timer will appear in the LCD indicating the time remaining for the message length.

HARDWARE INSTALLATION

INSTALLING EPROM UPGRADE CHIPS

Proper care is necessary to prevent damage to the KSU and/or the Erasable Programmable Read-Only Memory (EPROM) chips. The procedure that follows will minimize the chance of damage that could occur to the KSU or the EPROM chips due to mishandling and/or static electricity. The following equipment is needed to minimize the chance of damage to the KSU and EPROMs:

- Antistatic wristband and grounding strap -- 3M model 2213 or similar
  An antistatic wristband should always be worn when handling EPROMs or when working on an ESZ-8-( ) KSU.

- Firm, flat work surface with an antistatic mat -- 3M model 8501 or similar
  All work must be performed on an antistatic mat to prevent electrostatic discharge damage to the KSU and replacement EPROMs.

- Chip insertion/extraction kit -- OK Industries model WK-7 or similar

Before installing the VRS software, the following precautions should be observed:

- Put on an antistatic wristband and attach it to an antistatic work mat.

- The work mat should then be attached to the KSU at the FG (frame ground) screw on the power supply (refer to Figure 3-1 Installing the EPROM Upgrade Chips).

To upgrade the EPROM chips:

1. The ESZ-8-( ) KSUs should be updated (one at a time) following the procedure listed below:

   A. Turn off the power switch on the ESZ-8-( ) KSU.

   B. Remove any option/expansion board(s) that may get in the way of the chip insertion/extraction.

   C. Locate and turn off the memory backup switch (SW1) on the KSU (refer to Figure 3-1 Installing the EPROM Upgrade Chips).

   D. Remove EPROM chip (Number 0) from the IC2 socket and EPROM chip (Number 1) from the IC3 socket. (Refer to the procedures accompanying the chip insertion/extraction kit.) A total of two EPROMs should be removed from the ESZ-8-( ) KSU. (Refer to Figure 3-1 Installing the EPROM Upgrade Chips.)

   E. Insert EPROM SCT-A 3.3 (or higher revision) (Number 0) in the IC2 socket and SCT-A 3.3 (or higher level) (Number 1) in the IC3 socket, making sure that the notches on the EPROMs are lined up with the notches on the circuit board. (Refer to Figure 3-1 Installing the EPROM Upgrade Chips.) (Refer to the procedures accompanying the chip insertion/extraction kit.) A total of two EPROMs should be placed back into the ESZ-8-( ) KSU.

   F. Check to ensure all EPROM chips are mounted correctly and that no pins are bent, broken, or out of socket.

2. Verify that the new EPROM chips are installed correctly.

3. Reinstall any option/expansion board(s) that was removed.

4. Apply power to the system. Wait approximately 25 seconds for the system to initialize and check the system for proper operation. If the system does not initialize, turn it off and on again.

5.   If problems continue, reinstall the original EPROMs and contact NEC Field Support.

6.   Once the system is functional, perform a first initialization of the system, then reprogram the system data including System and Station Speed Dial using the updated Job Specifications.

7.   Return the old EPROMs to:

> NEC America, Inc.
> Attention: Cliff Taylor
> 383 Omni Drive
> Richardson, TX   75080
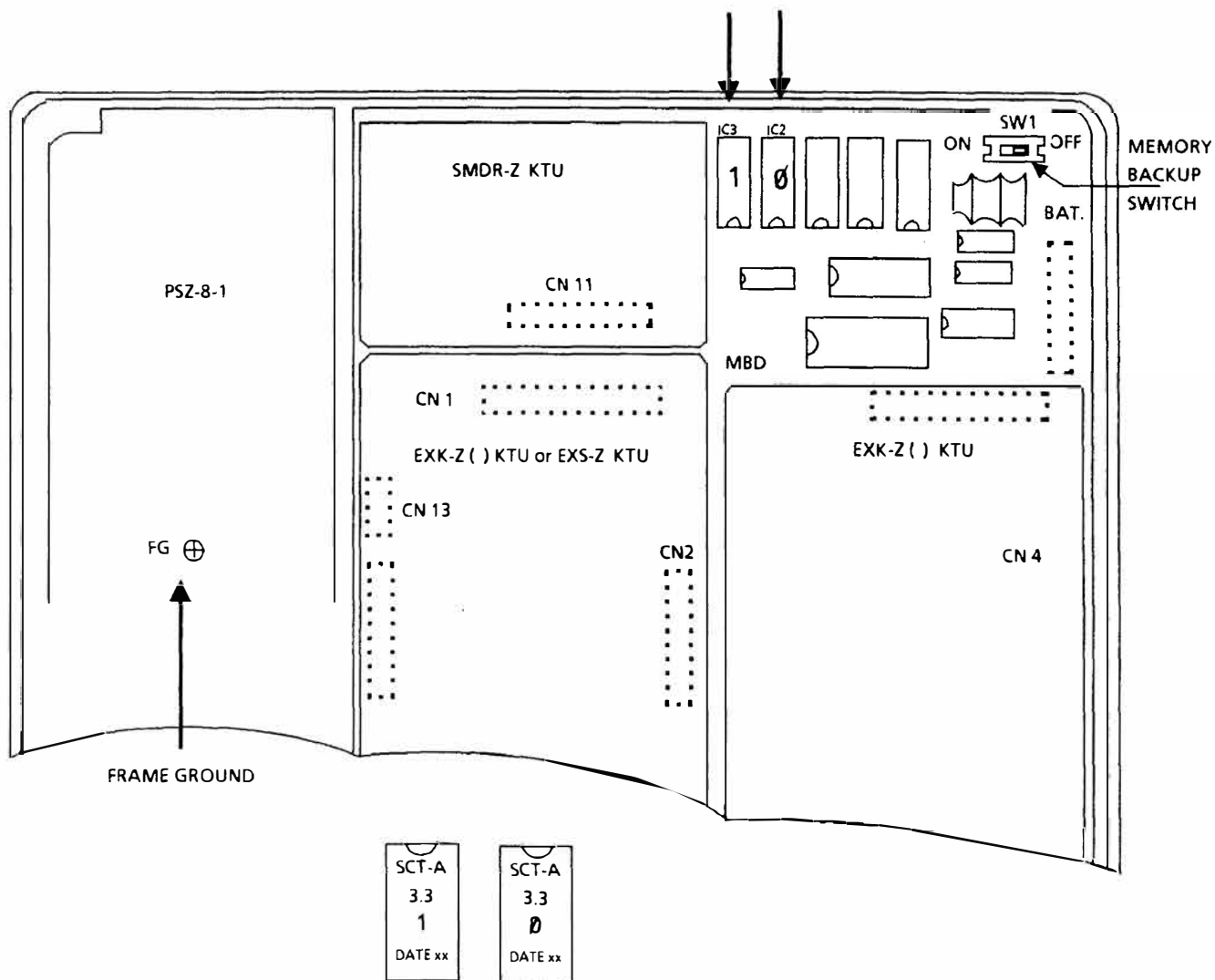
Figure 3-1   Installing the EPROM Upgrade Chips

INSTALLING THE VRS-Z KTU

To install the VRS-Z KTU:

1. Turn the system OFF.
2. Install the VRS-Z KTU onto the CN 12 connector.
3. Turn the battery switch (SW1) of the VRS-Z KTU to the ON position.
4. Turn the system ON.
5. Proceed with programming. (Refer to the Programming section for detailed instructions.)
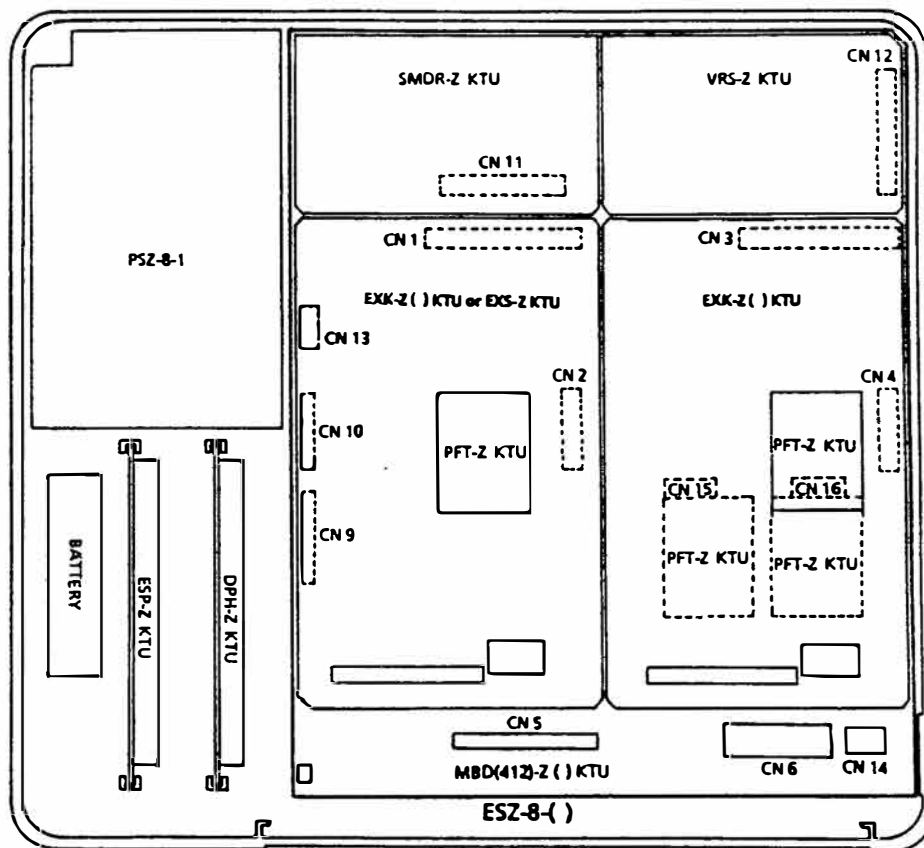
Figure 3-2   Installing the VRS-Z KTU

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PROGRAMMING

ENTERING THE PROGRAMMING MODE AND THE SELECTION OF MEMORY BLOCKS

In order to use system programming, a brief description of how to enter the programming mode and the selection of Memory Block areas is necessary.

Changes to the Resident System Program can be accomplished by either of two ETZ-16D-1 Key Telephones. These station positions are automatically assigned to the two lowest Key Telephone interface circuits on the MBD(412)-Z( ) KTU in the system (ports 10 and 11).

The first step, when entering any area of programming, is to place the programming station into the **OFF-LINE** mode.

TO GO OFF-LINE

A. Press the **FNC** Key
B. Press the **HOLD** Key
C. Dial *,# in sequence

After these three steps, the display on the Key Telephone will show.

| | o F F - L i n E | | P r o g | |

While the programming Key Telephone is **OFF-LINE**, it cannot be signaled by any station in the system. Only one programming Key Telephone can be off-line at one time.

The next step is to select the area in the system Memory Blocks which corresponds to the feature, or function, to be programmed. Selection of a Memory Block location is done by pressing the Key Telephone line keys in a predetermined sequence. The ETZ-16D-1 Key Telephone uses eight Line Keys, LK1 through LK4 and LK9 through LK12, to select Memory Block locations. The Resident System Program is set up into six Memory Block areas, each of which is designated by a number to represent a function as follows:

1. System Mode
2. Tenant Mode
3. CO/PBX Line Mode
4. Telephone Mode
5. Menu (Pattern) Selection Mode
6. Special Mode

Memory Blocks 1 through 4 can be accessed by pressing Line Keys 1 through 4, respectively. Memory Block 5 can be accessed by pressing Line Keys 9 through 12. Memory Block 6 can be accessed by pressing the FNC and the CNF keys.

	MEMORY BLOCK	**KEY**
Designation	1 ~ 4	Line Key 1 ~ 4
Designation	5	Line Key 9 ~ 12
Designation	6	**FNC** and **CNF** Key

	FUNCTION NUMBER	**KEY**
Designation	01-xx (Any number)	Dial Key 1 ~ 9

After selecting a Memory Block, enter the function number using dial keys (1 to 9). (Memory Block 6 Special Mode has no function number.)

System Data Registration Timing can be registered while telephones are in use. However, there are two types of data items. One is immediately updated upon registration operation, and the other is updated when all circuits in the system become idle.

KEY FUNCTION (OFF LINE)

* # keys	—	Shift setting position
Dial key	—	Inputs function No. and data
MIC	—	Data is Entered
SPKR	—	ON line
HOLD	—	Clear Function, Data
FNC	—	Shift to Memory Block 6A & B
CNF	—	Shift to Memory Block 6C

If any of the data items are registered while a telephone is in use, the LCD will display

| d A t A | S E t | o n | i d L E |

without returning to the time display, even though the **off-line mode** is released, by pressing the **SPKR** key. When all circuits in the system become idle, the data is updated and the on-line mode is restored.

RESIDENT SYSTEM DEFAULT VALUES

| MEMORY BLOCK	FUNCTION	DEFAULT VALUES
1-38	VRS Playback Time Selection	15 seconds
1-39	VRS Hold Message (Yes/No)	No
1-40	VRS Automatic/Manual Answer Selection (Yes/No)	No
1-41	VRS Automatic Answer Time Selection	None
3-11	VRS CO/PBX Line Automatic/Manual Answer (Yes/No)	No
4-05	Voice Message Assignment	Ports 10 and 11 only
6-C	ROM Version Confirmation	N/A

MEMORY BLOCK 1 - 38
VRS PLAYBACK TIME SELECTION

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 38		**1-39**
		1-40
		4-05

OPERATION ←————— AND —————→ DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 3, then 8, to specify Function No. 38.

4. Enter data (0 or 1) using the dial pad.
   Example: Enter 1 to select 30 seconds (see Notes 1 and 5).

5. Press **MIC** key (see Note 3 and 4).
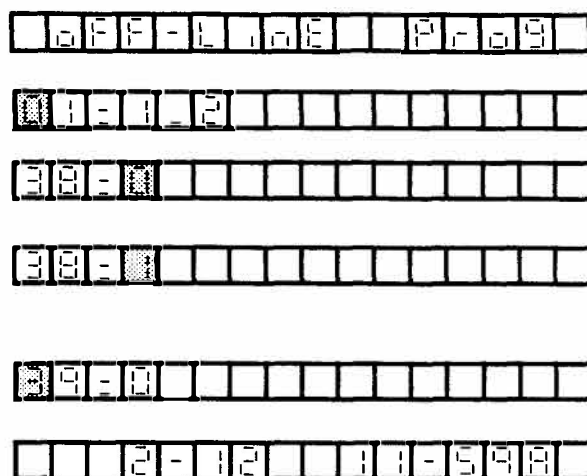
6. Press **SPKR** key to go back on line.

NOTES:

1. Dial * (←), # (→) to move the setting position then enter data or Function No.

   Function No. └─ Data setting position
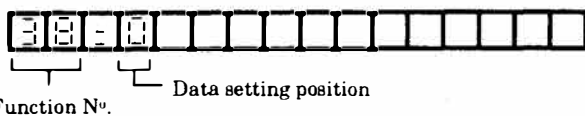
2. Data Table   Default value*

Code	Feature
* 0	15 sec. (16 messages)
1	30 sec. (8 messages)

3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.

4. When this Memory Block is changed, all messages in memory are cleared.

5. Entering code 0 enables the system to have 16 voice boxes.

   Entering code 1 enables the system to have 8 voice boxes.

GENERAL INFORMATION - VRS PLAYBACK TIME SELECTION

This Memory Block area is used to specify the length of the message playback/recording time.

MEMORY BLOCK 1 - 39
VRS HOLD MESSAGE (YES/NO)

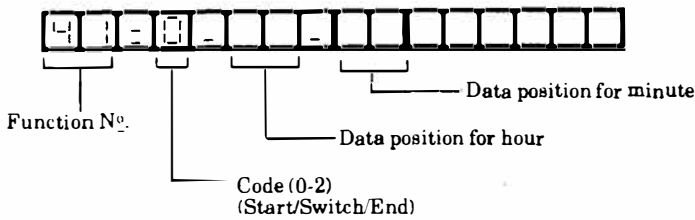| MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 39		**1-38**

OPERATION ←———— AND ————→ DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 3, then 9, to specify Function No. 39.

4. Enter data (0 or 1) using the dial pad.
   Example: Enter 1 to select *Yes* (see Notes 1 and 2).

5. Press **MIC** key (see Note 3).

6. Press **SPKR** key to go back on line.
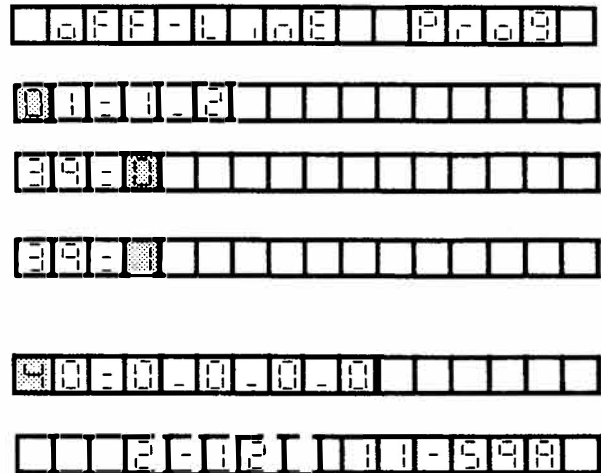
NOTES:

1. Dial * (←), # (→) to move the setting position then enter data or Function No.

   Function No. ⌐ Data setting position

2. Data Table   Default value*

Code	Feature
* 0	No
1	Yes

3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.

4. This feature dedicates one voice box for the hold message.

5. This feature reduces the total number of voice boxes by one.
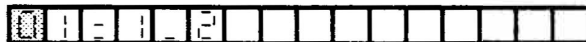
GENERAL INFORMATION - VRS HOLD MESSAGE(YES/NO)

This Memory Block area is used to specify whether to send a voice message to the outside party when a call is placed on hold when equipped with a VRS-Z KTU.

MEMORY BLOCK 1 - 40
VRS AUTOMATIC/MANUAL ANSWER SELECTION (YES/NO)

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
		1-38, 1-41
1 - 40		3-11

OPERATION ◀──────── *AND* ────────▶ **DISPLAY**

1. Go off-line.

2. Press LK1.

3. Dial 4, then 0, to specify Function No. 40.

4. Enter data (0 or 1) using the dial pad.
   Example: Enter 1 to select *Yes* (see Notes 1 and 2).

5. Press **MIC** key (see Note 3).

6. Press **SPKR** key to go back on line.

NOTES:

1. Dial * (←), # (→) to move the setting position then input data or Function No.

   Function No.
   Data setting position (Night)
   Data setting position (Day)
   Data setting position (Holiday)
   Data setting position (Manual Answer)

2.
Data Table	Default value*
Code	**Feature**
* 0	No
1	Yes
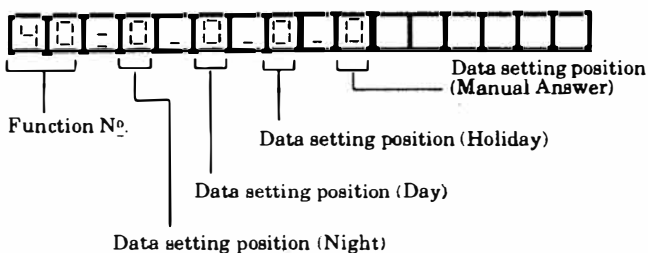
3. Pressing the **MIC** key enters the data and causes the display to increment to the next function number.

## GENERAL INFORMATION - VRS AUTOMATIC/MANUAL ANSWER SELECTION (YES/NO)

This Memory Block area is used to specify whether to automatically or manually answer incoming CO/PBX calls and send a recorded message from the VRS unit.

The message is sent only once in the automatic or manual mode. The line is disconnected after sending the message in the automatic mode, or is placed on hold after sending the message in the manual mode.

MEMORY BLOCK 1 - 41
VRS AUTOMATIC ANSWER TIME SELECTION

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
1 - 41	**1-40**	**1-38**

OPERATION ← ——— AND ———→ DISPLAY

1. Go off-line.

2. Press LK1.

3. Dial 4, then 1, to specify Function No. 41.

4. Enter data using the dial pad.
   Example: When 0 is entered for the start time:
   a. Move setting position (see Note 1).
   b. Enter start time 21:00 (see Note 2).
   c. Press MIC key (see Note 3).
   Repeat Steps a~c to enter data for switching and end time.

5. Press MIC key (see Note 3 and 4).

6. Press SPKR key to go back on line.

NOTES:

1. Dial * (←), # (→) to move the setting position then input data or Function No.
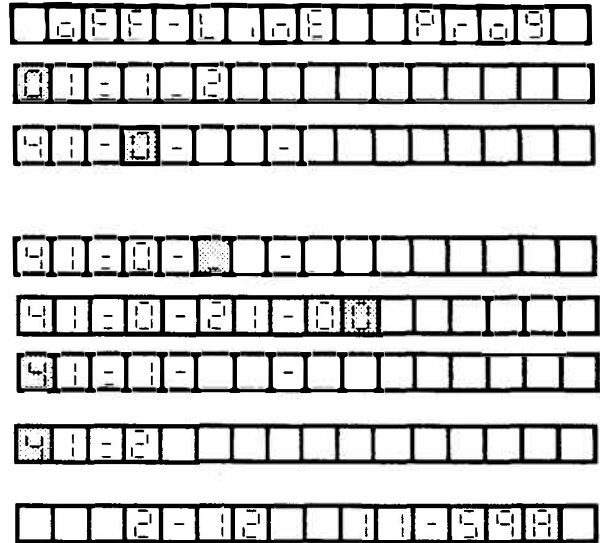
   Function No.
   Code (0-2) (Start/Switch/End)
   Data position for hour
   Data position for minute

2. Data Table

   ① Start/Switch/End

Code	Feature
0	Start (Night Message)
1	Switch (Day Message)
2	End (off)

   ② Time

Input Key	Feature
Dial Key	Start/Switch/End Time (24 Hour System)
Hold Key	Data Clear (Clears hours and minutes)

   Default Value: Start   None
   　　　　　　　　Switch None
   　　　　　　　　End   None

3. Pressing the MIC key enters the data and causes the display to increment to the next column for Start/Switch/End time.

4. Pressing the MIC key enters the end time causes the display to increment to the next function number.

GENERAL INFORMATION - VRS AUTOMATIC ANSWER TIME SELECTION

This Memory Block area is used to specify the start time, switch time, and the end time when using VRS in the automatic mode on weekdays.

MEMORY BLOCK 3-11
VRS CO/PBX LINE AUTOMATIC/MANUAL ANSWERING (YES/NO)

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
3 - 11	**1-40**	**1-38**

OPERATION ←———— *AND* ————→ **DISPLAY**

1. Go off-line.

2. Press LK3.

3. Dial 1, then 1, to specify Function No. 11.

4. Enter data (0 or 1) using the dial pad.
    Example: To specify *Yes* (Automatic Answering):
    a. Move setting position (see Note 1).
    b. Enter 1 (see Note 2).

5. Press **MIC** key (see Notes 3 and 4).
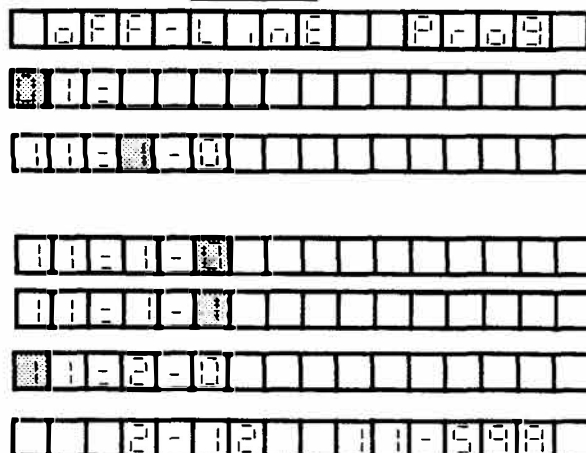
6. Press **SPKR** key to go back on line.

NOTES:

1. Dial * (←), # (→) to move the setting position then input data or Function No.

    - Function No.
    - CO/PBX line No. (1~8)
    - Data setting position
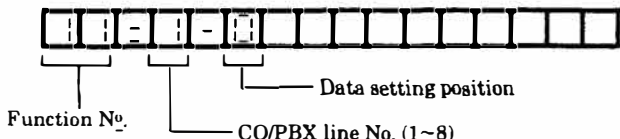
2. Data Table   Default Value *

Code	Feature
* 0	No
1	Yes

3. Pressing the **MIC** key enters the data and causes the display to increment to the next CO/PBX line number.

4. When the CO/PBX line number is 8, pressing the **MIC** key causes the display to increment to the next function number.

GENERAL INFORMATION - VRS CO/PBX LINE AUTOMATIC/MANUAL ANSWERING (YES/NO)

This Memory Block area is used to specify whether the CO/PBX line number is automatically answered.

MEMORY BLOCK 4-05
VRS VOICE MESSAGE ASSIGNMENT

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
4 - 05		**1-38**

OPERATION ◄──────── AND ────────► DISPLAY

1. Go off-line.

2. Press LK4.

3. Dial 0, then 5, to specify Function No. 05.

4. Enter data (0 or 1) using the dial pad.
   Example: When Port No. 10 is specified, no voice box.
   a. Move setting position (see Note 1).
   b. Enter 0 (see Note 2).

5. Press **MIC** key (see Notes 3 and 4).
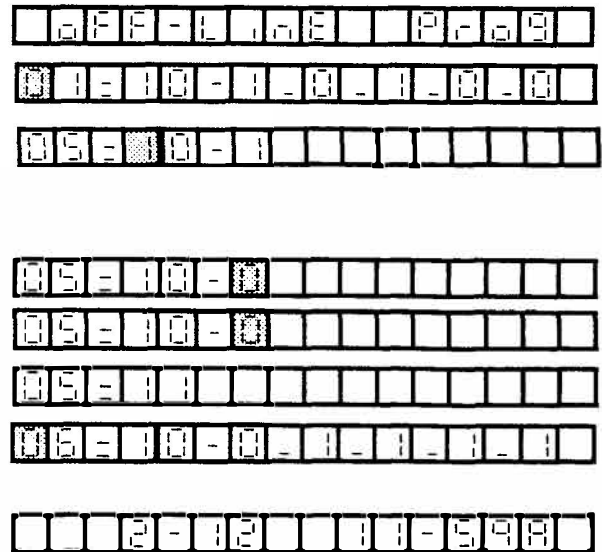
6. Press **SPKR** key to go back on line.

━━ ▪ ━━ ▪ ━━ ▪ ━━ ▪ ━━ ▪ ━━ ▪ ━━ ▪ ━━ ▪ ━━ ▪ ━━

NOTES:

1. Dial * (←), # (→) to move the setting position then input data or Function No.

   Function No. ─── Port No. (10~33) ─── Data setting position

2. Data Table

Code	Feature
0	No
1	Yes

   Default Values:
   Ports 10 and 11 = 1 (Yes)
   All other Ports = 0 (No)

3. Pressing the **MIC** key enters the data and causes the display to increment to the next Port Number.

4. After Port Number 33 is entered, the display increments to the next function number.

┌───┐
│ ## GENERAL INFORMATION - VOICE MESSAGE ASSIGNMENT │
│   │
│ This Memory Block area is used to specify whether to allow or deny voice box registration for each Key │
│ Telephone. │
└───┘

MEMORY BLOCK 6-C
ROM VERSION CONFIRMATION

MEMORY BLOCK BEING PROGRAMMED	MEMORY BLOCK THAT MUST BE PROGRAMMED	MEMORY BLOCK THAT MAY HAVE TO BE PROGRAMMED
6 - C		

OPERATION ◄——— AND ———► DISPLAY

1. Go off-line.

2. Press **CNF** key (see Note 1).

3. Press **MIC** key (see Note 2).

4. Press **MIC** key (see Note 2).

5. Press **MIC** key (see Note 3).

6. Press **MIC** key (see Note 4).

7. Press **SPKR** key to go back on line.

NOTES:

1. Meaning of Display Items

   Slot No.   Package Name   ROM Version   Not Used
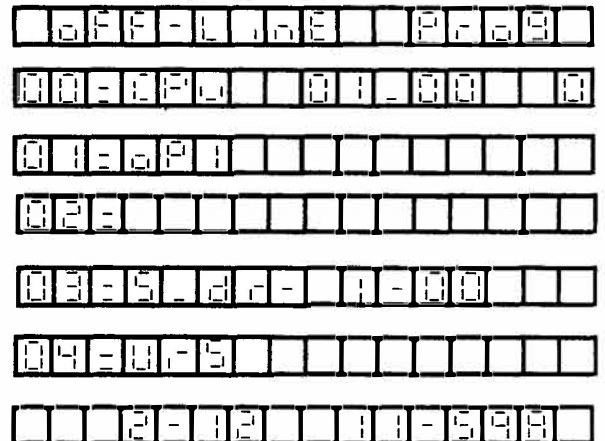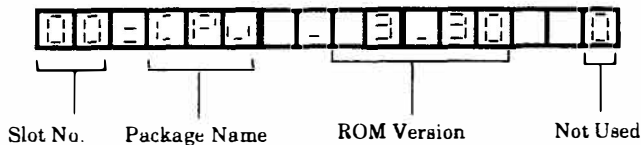
2. This display signifies whether or not the EXK-Z ( ) KTU or EXS-Z KTU is installed on the MBD(412)-( ) KTU.

Blank	=	Not Installed
OP0	=	EXK-Z ( ) KTU
OP1	=	EXS-Z KTU
S-dr	=	SMDR
VrS	=	VRS

3. The ROM version of the SMDR unit is displayed (when installed).

4. This display signifies whether or not the VRS-Z KTU is installed on the MBD(412)-Z ( ) KTU.

GENERAL INFORMATION - ROM VERSION CONFIRMATION

This Memory Block area is used to confirm the ROM version that is installed without taking the package from the slot.

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JOB SPECIFICATIONS

ITEM				DESCRIPTION	ENTRY

MEMORY BLOCK	FUNCTION (AREA)	DEFAULT		NEW		DESCRIPTION	ENTRY
1-38	PLAYBACK TIME	15 sec.		←		DURATION OF RECORDED MESSAGE PLAYBACK	15 sec. or 30 sec.
1-39	HOLD MESSAGE	NO		←		PLAYBACK OF HOLD MESSAGE WHILE A CALL IS HELD	YES or NO
1-40	VRS AUTOMATIC/MANUAL ANSWER SELECTION (YES/NO)	Automatic Answer Night Mode	NO	Automatic Answer Night Mode	←	SPECIFY IF VRS ANSWERS AUTOMATICALLY	YES or NO
		Automatic Answer Day Mode	NO	Automatic Answer Day Mode			
		Automatic Answer Holiday Mode	NO	Automatic Answer Holiday Mode			
		Manual Answer	NO	Manual Answer			
1-41	VRS AUTOMATIC ANSWER TIME SELECTION	Start Time	NIL	Start Time	←	SPECIFY START/SWITCH/END TIME OF VRS VOICE MESSAGE (24 HOUR SYSTEM)	START, SWITCH AND END TIME
		Switch Time	NIL	Switch Time	←		
		End Time	NIL	End Time			
3-11	VRS CO/PBX LINE AUTOMATIC/MANUAL ANSWER	NO		NO	YES ←	CO/PBX LINE AUTOMATIC/MANUAL ANSWER ASSIGNMENT	√ APPROPRIATE COLUMN FOR EACH CO/PBX LINE
4-05	VOICE MESSAGE ASSIGNMENT	Ports 10, 11 Only		NO	YES ←	VOICE MESSAGE ASSIGNMENT	√ APPROPRIATE COLUMN FOR EACH PORT

MEMORY BLOCKS 1 - 38 ~ 1 - 41, 3-11, 4-05 ASSIGNMENT OF SYSTEM MODE FUNCTIONS

MEMORY BLOCK	FUNCTION (AREA)	DEFAULT		NEW	
1-38	PLAYBACK TIME	15 sec.			
1-39	HOLD MESSAGE	NO			
1-40	VRS AUTOMATIC/MANUAL ANSWER SELECTION (YES/NO)	Automatic Answer Night Mode	NO	Automatic Answer Night Mode	
		Automatic Answer Day Mode	NO	Automatic Answer Day Mode	
		Automatic Answer Holiday Mode	NO	Automatic Answer Holiday Mode	
		Manual Answer	NO	Manual Answer	
1-41	VRS AUTOMATIC ANSWER TIME SELECTION	Start Time	NIL	Start Time	
		Switch Time	NIL	Switch Time	
		End Time	NIL	End Time	

3-11

ITEM	VRS CO/PBX LINE AUTOMATIC/ MANUAL ANSWER	
DEFAULT	NO	
	NO	YES
CO/PBX LINE 1		
2		
3		
4		
5		
6		
7		
8		

4-05

ITEM	VOICE MESSAGE ASSIGNMENT	
DEFAULT	PORTS 10,11 ONLY	
	NO	YES
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
DEFAULT STATION NUMBER 20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
32		
33		

NEC

Electra™ 8/24

VOICE RECORDING SERVICES
(VRS)

PLANTRONICS JS-180 JACKSET CONNECTION TO ELECTRA 8/24 (ETZ-16D-( ) ONLY)	
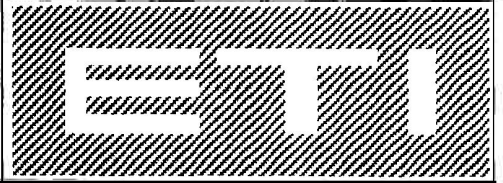
ELECTRA 8/24   ETI NUMBER: E8/24-001   DATE: AUGUST 1989

1.   DESCRIPTION

This Engineering Technical Information (ETI) Bulletin describes the steps necessary to install an ADA-Z (Ancillary Device Adapter) unit into an ETZ-16D-(1) Multiline Terminal, to provide for connection and operation of a Plantronics Jackset (Model JS-180).

2.   PARTS REQUIRED

2.1   ADA-Z Unit Adapter Kit (Stock # 710140)

2.2   JS-180-1 Jackset

2.3   Compatible Headset

2.4   Electra 8/24 ETZ-16D-(1) Multiline Terminal

3.   OPERATION

3.1   By moving the Jackset "Rocker Switch" to the **ON** position, the Electra 8/24 ETZ-16D-(1) Multiline Terminal will go into the **OFF-HOOK** condition. The operator can now talk over the headset, on a CO/PBX call or intercom path.

3.2   The call can be terminated by moving the "Rocker Switch" to the **OFF** position.

3.3   The 16D Multiline Terminal is seen as **OFF-HOOK** when the Jackset is turned on, therefore, it may be desirable to program the ETZ-16D-(1) Multiline Terminal for off-hook ringing.

4.   PROCEDURE

4.1   Turn the ETZ-16D-(1) Multiline Terminal upside down (face down) and locate the access panel, refer to Figure 1.

4.2   Disconnect the modular line cord under the telephone from the RJ-11C/W jack.

4.3   Disconnect the modular handset cord from the lower housing.

4.4   To remove the access panel, depress in, then lift up on the access panel in the two (2) positions labeled "A" (see Figure 1). Remove the access panel.

NOTE

Do not discard removed access panel.

4.5 Locate the eight pin jack labeled "ADA", as seen through the access view of the ETZ-16D-(1) Multiline Terminal housing.

4.6 Unplug the four pin connector ended harness (labeled "HAND") and extend it out from the housing access opening.

4.7 Set the Dip switches on the ADA-Z unit as shown on Table 1 (See Figure 3).

4.8 Make the jackset connections as indicated in Figure 3. Use one of the spade tipped jumper wires provided to make a connection between T6 and T8. Use tape to insulate the remaining (unused) Jackset wires which must be separately insulated to prevent short circuits.

4.9 Locate and insert the four pin connector ended harness from CN2 on the ADA-Z unit into the jack labeled "HAND".

4.10 Locate and insert the eight pin connector ended harness from CN1 on the ADA-Z unit into the jack labeled "ADA".

4.11 Insert the four pin connector ended harness (removed in step 4.6) into the four pin jack, CN3, located on the ADA-Z unit.

4.12 Install the ADA-Z unit and secure it to the terminal housing with the screw provided, as shown in Figure 2.

4.13 Remove the plastic tongue on the access panel being installed (using a pair of pliers) to provide clearance for cables in the cable exit groove (see Figure 2).

4.14 Place the Jackset cable into the cable exit groove (Figure 2) making certain that all wires are inside the terminal housing. Install the access panel.

4.15 Reinstall the modular handset and modular line cords.

4.16 Plug a compatible headset into the JS-180 and verify proper operation.

NOTE

When using a Plantronics headset, if an undesirable sidetone is present in the ear piece, position the jackset where the cable is exiting from the back. Open the Plantronics Jackset and disconnect the brown spade lug ended wire from the sixth terminal on the row of terminals closest to the rocker switch and relocate it to the last terminal (far right) on the same row. Test for proper operation.
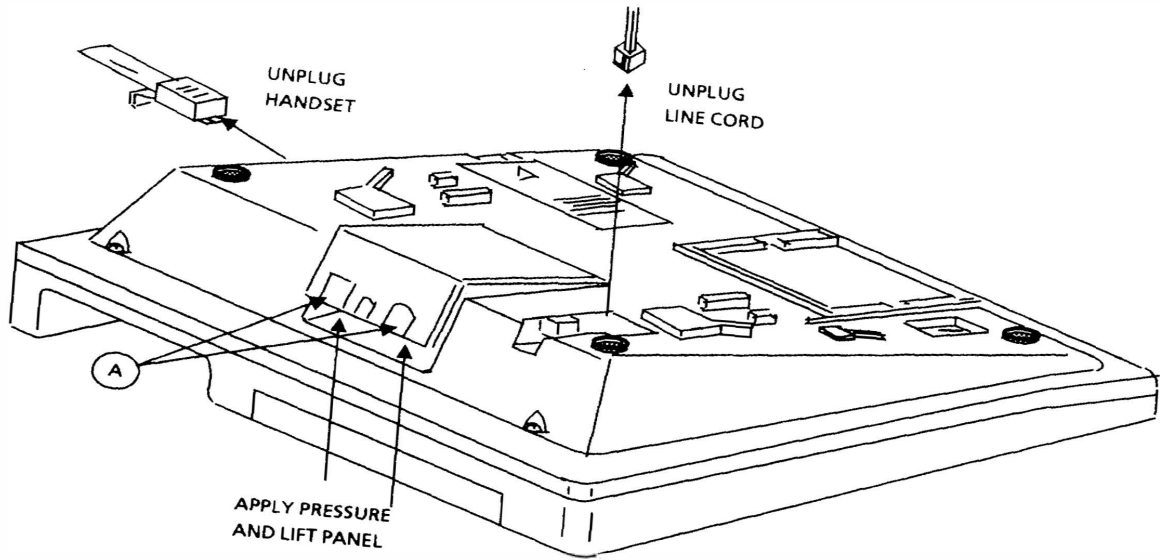
UNPLUG HANDSET

UNPLUG LINE CORD

A

APPLY PRESSURE AND LIFT PANEL

Figure 1 Access Panel Removal

ADA-Z CARD

SCREW

FROM (HAND) CN2 TO CN3 CONNECTOR (SEE STEP 4.11)

REMOVE TAB (Cable Exit Groove)

TO CN2 CONNECTOR

TO ADA CONNECTOR
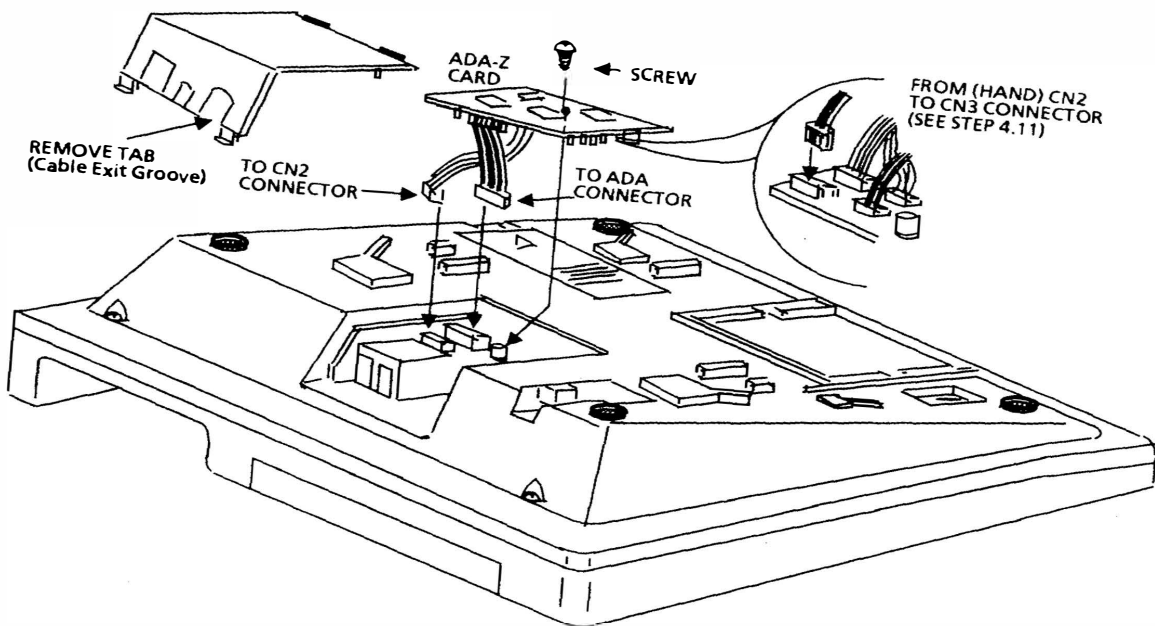
Figure 2 ADA-Z Unit Installation
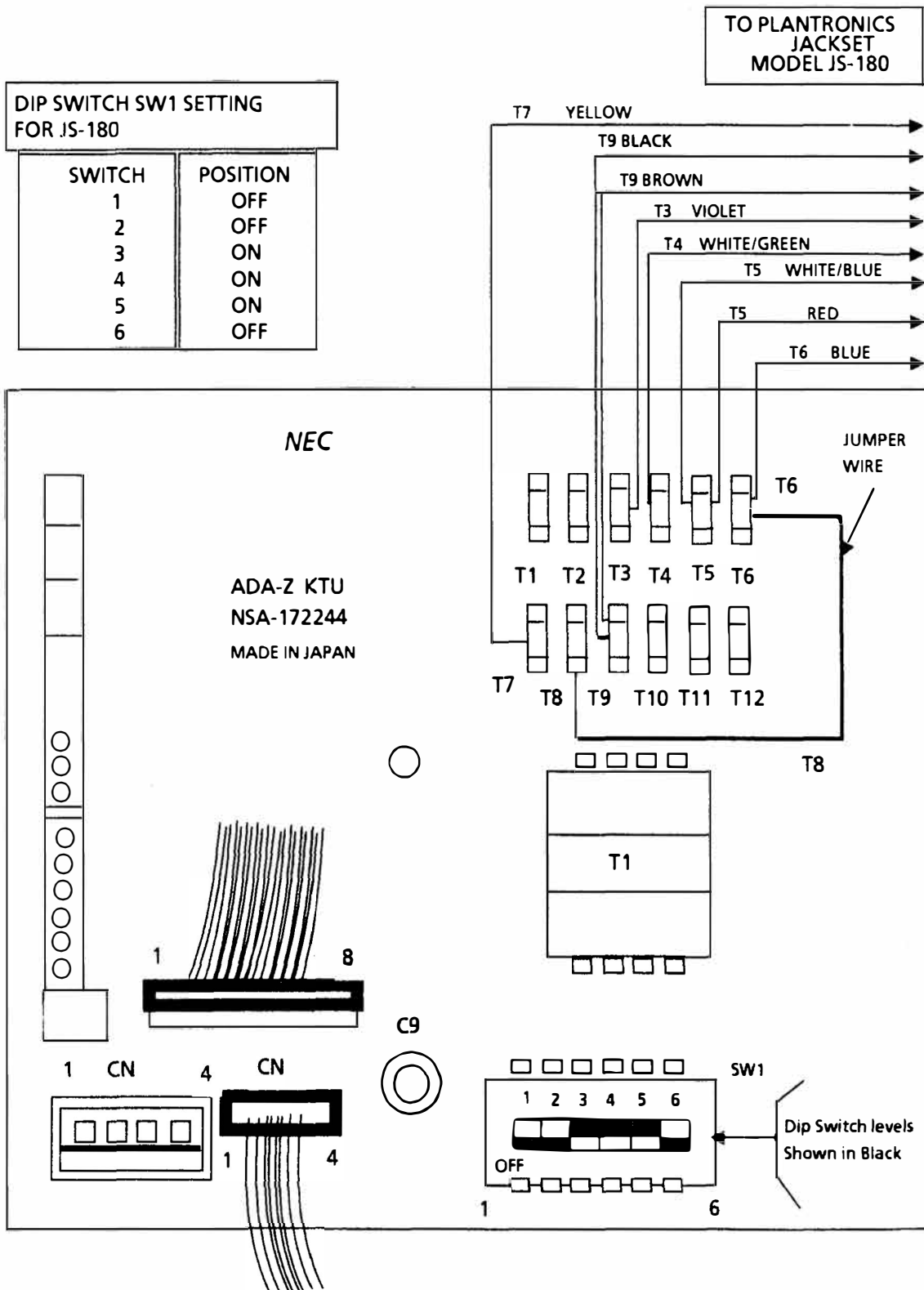
Figure 3 ADA-Z Unit Connections and DIP Switch Setting for Plantronics jackset Model JS-180

NEC America Inc. Switching Terminals Division   **Engineering Technical Information**

NORTHERN TELECOM COMPANION II SPEAKERPHONE CONNECTION TO ELECTRA 8/24 ETZ-16D-1 TERMINAL	ETI
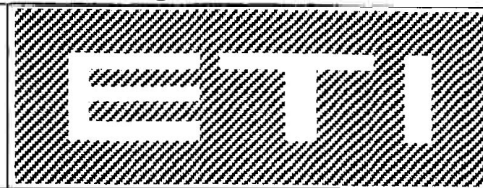
ELECTRA 8/24   ETI NUMBER: E8/24-002   DATE: AUGUST 1989

1. DESCRIPTION

This Engineering Technical Information (ETI) Bulletin describes the steps necessary to install an ADA-Z (Ancillary Device Adapter) unit into an ETZ-16D-1 Electronic Telephone Set in order to connect and operate a Northern Telecom Companion II Speakerphone.

2. LIMITATIONS

2.1   With a Companion II Speakerphone connected and operating normally, lifting the handset on the Multiline Terminal will automatically switch off the speakerphone.

     2.1.1   To converse handsfree on the multiline terminal, the speakerphone must be turned off.

     2.1.2   To converse using the Speakerphone only, the Multiline Terminal handset **must** be **on-hook**.

3. PARTS REQUIRED

3.1   ADA-Z Unit Adapter Kit (Stock # 710140)

3.2   Companion II Speakerphone (Model QUS1B-4).

3.3   Four small Spade Lug terminals.

3.4   Two or Four Conductor Station Wire (long enough to reach from the Speakerphone to an AC wall socket).

3.5   Electra 8/24 ETZ-16D-1 Multiline telephone.

4. INSTALLATION

4.1   Disconnect the modular line cord from the RJ-11C and from the underside of the phone.

4.2   Disconnect the handset cord from the lower housing.

4.3   To remove the access panel, depress in, then lift up on the access panel in the two (2) positions labeled "A" (see Figure 1). Remove the access panel.

NOTE

Do not discard removed access panel.

4.4   Carefully unplug the four wire cable assembly from the receptacle marked "HAND" on the main circuit board and extend it out from the access opening.

4.5 Connect ADA-Z Unit as shown in Figure 2. Connect the larger plug into the receptacle marked "ADA" and the smaller connector into the receptacle marked "HAND". Insert the four wire handset cable assembly (removed in step 4.4) into the connector marked "CN3" on the ADA-Z (see Figure 2).

4.6 Set the Dip switches on the ADA-Z unit as shown in Table 1 (see Figure 3).

4.7 Remove about three (3) inches of outer insulation from both ends of the station wire. If using four conductor wire, two (2) of the conductors must be cut off flush with the outer insulation.

4.8 Remove about ¼ inch of inner insulation from both ends of the remaining two conductors. Fasten a spade lug terminal to one end of each conductor wire, either by crimping or soldering the lug.

4.9 Connect the spade lug end of this cable to the screw terminals on the power transformer provided. Connect the stripped conductor ends to the BR/WH and WH/BR conductors of the Companion II Speakerphone (see Figure 3).

4.10 Make the Speakerphone connections as shown in Figure 3, insulating the spade lugs and stripped conductors with the provided tubing, (or electrical tape if necessary). The remaining unused wires should also be individually insulated to prevent short circuits.

4.11 Install the ADA-Z Unit and secure it with the screw provided as shown in Figure 2.

4.12 Remove the tongue on the cover assembly to clear the cable exit groove (see Figure 1).

4.13 Place the Speakerphone Cable and power cable into the cabling groove, making certain that all wires are inside the phone housing, and install the Access Panel.

4.14 Reinstall the Handset and modular line cords.

4.15 Plug power transformer into nearest AC outlet and verify proper operation.

UNPLUG HANDSET

UNPLUG LINE CORD

Ⓐ

APPLY PRESSURE AND LIFT PANEL

REMOVE PANEL

REMOVE CABLE EXIT GROOVE
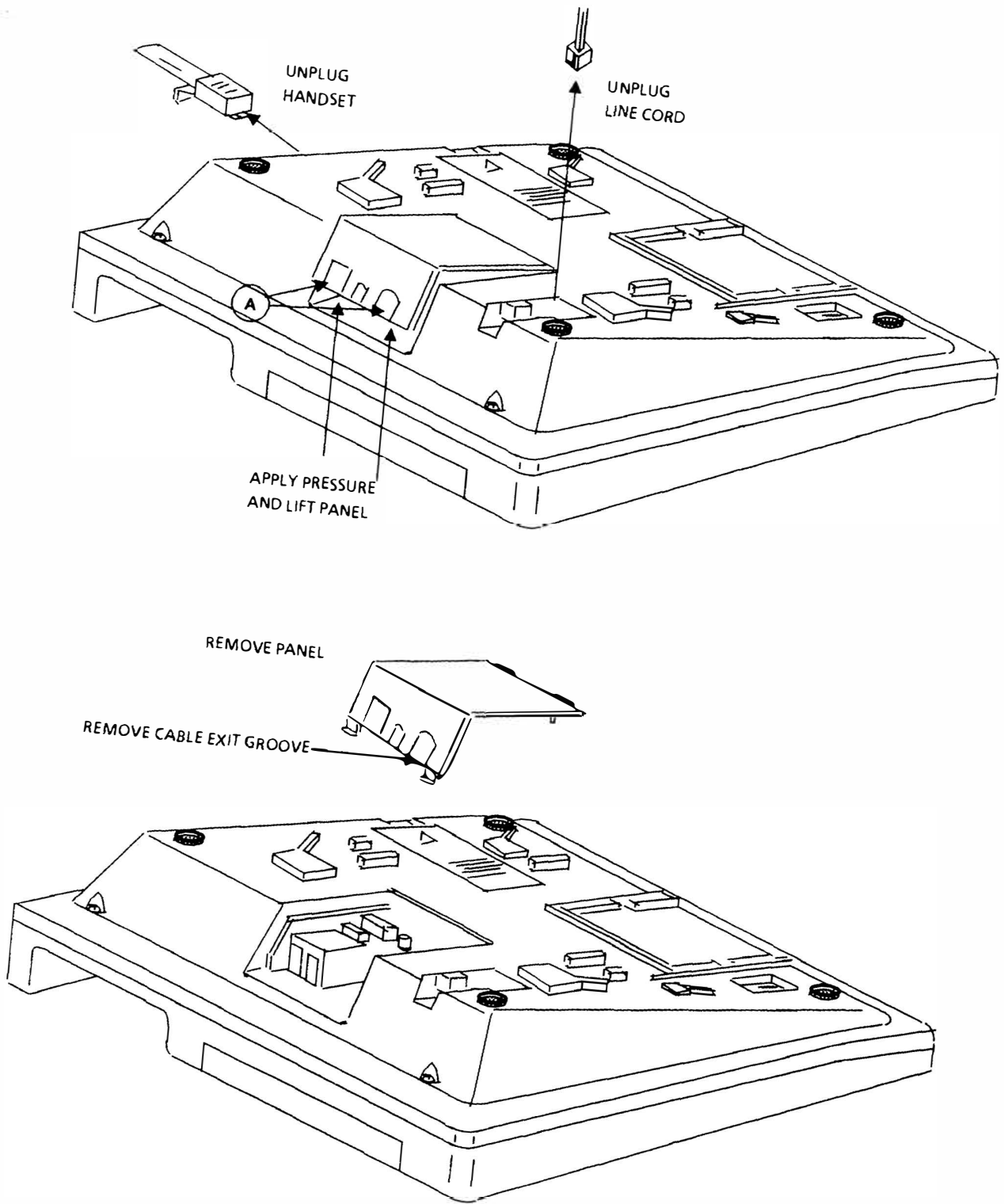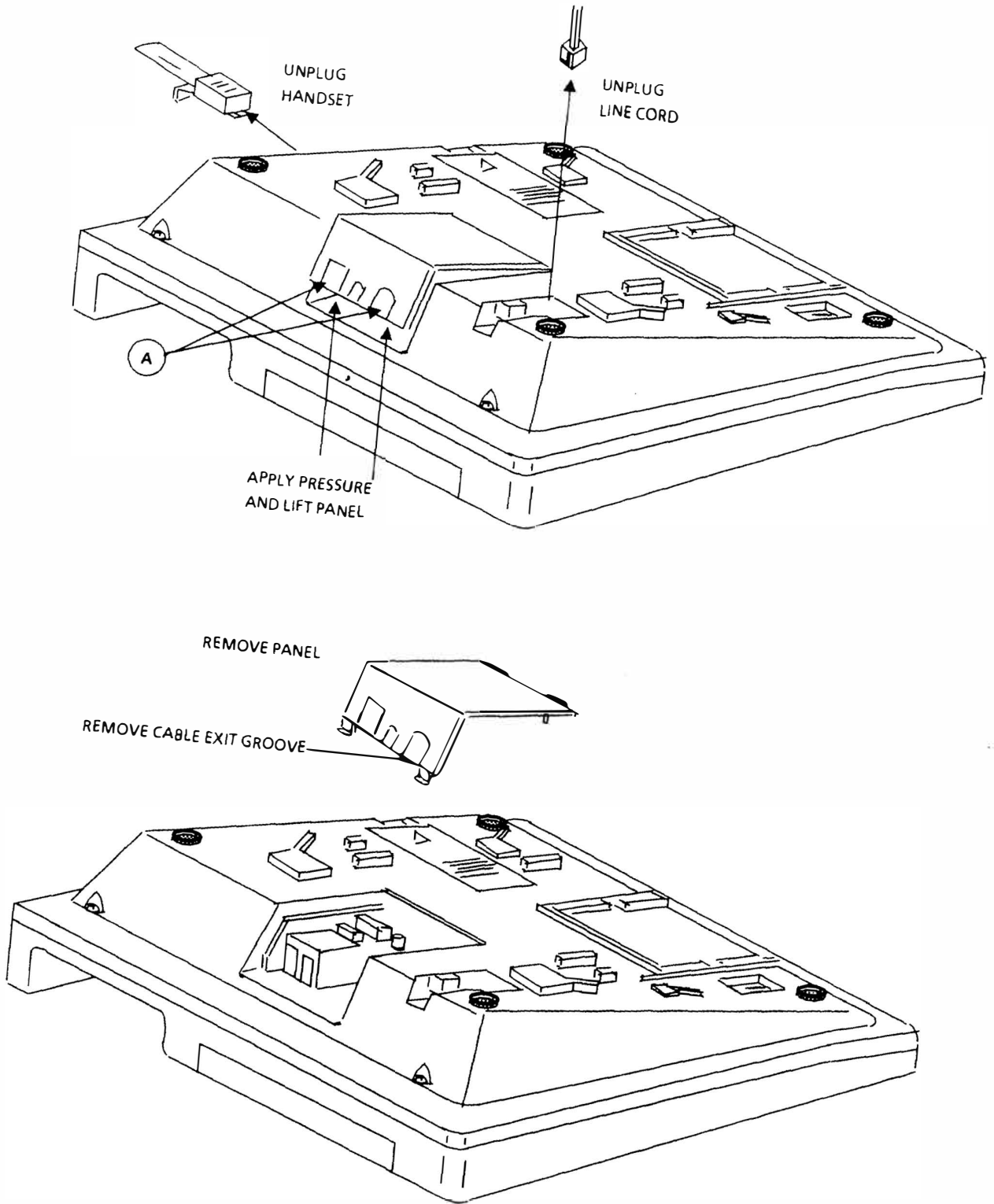
Figure 1   Access Panel Removal
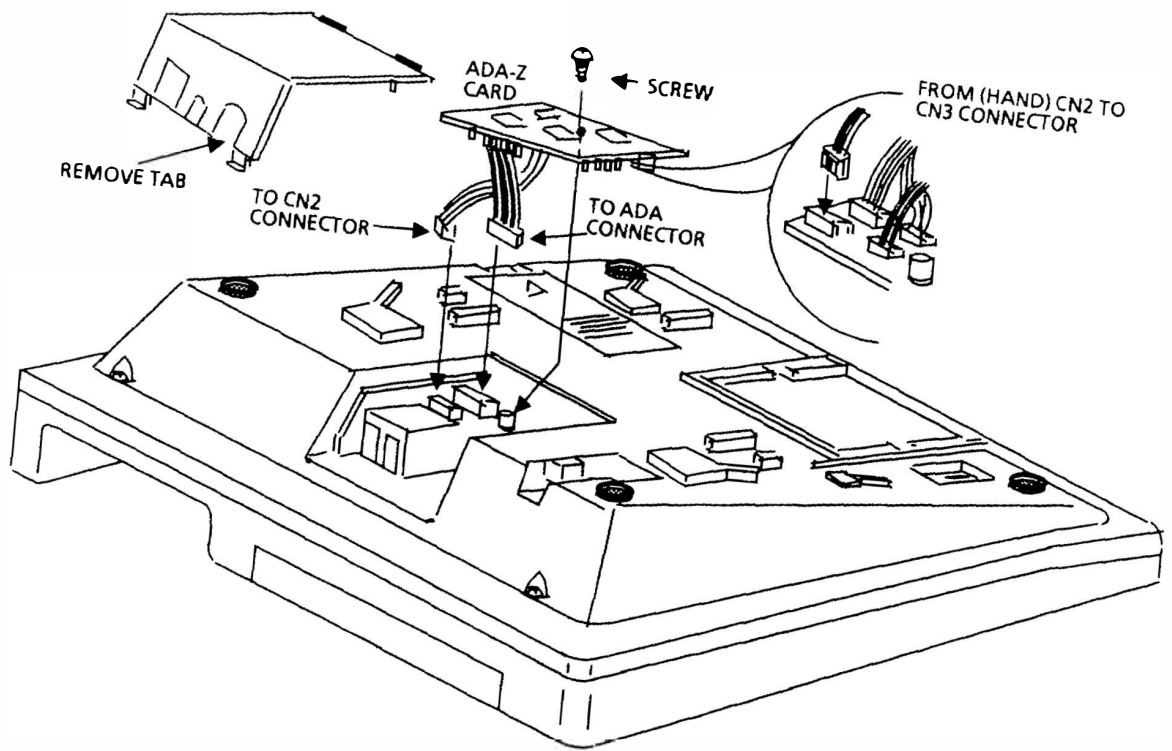
Figure 2   ADA-Z Unit Installation
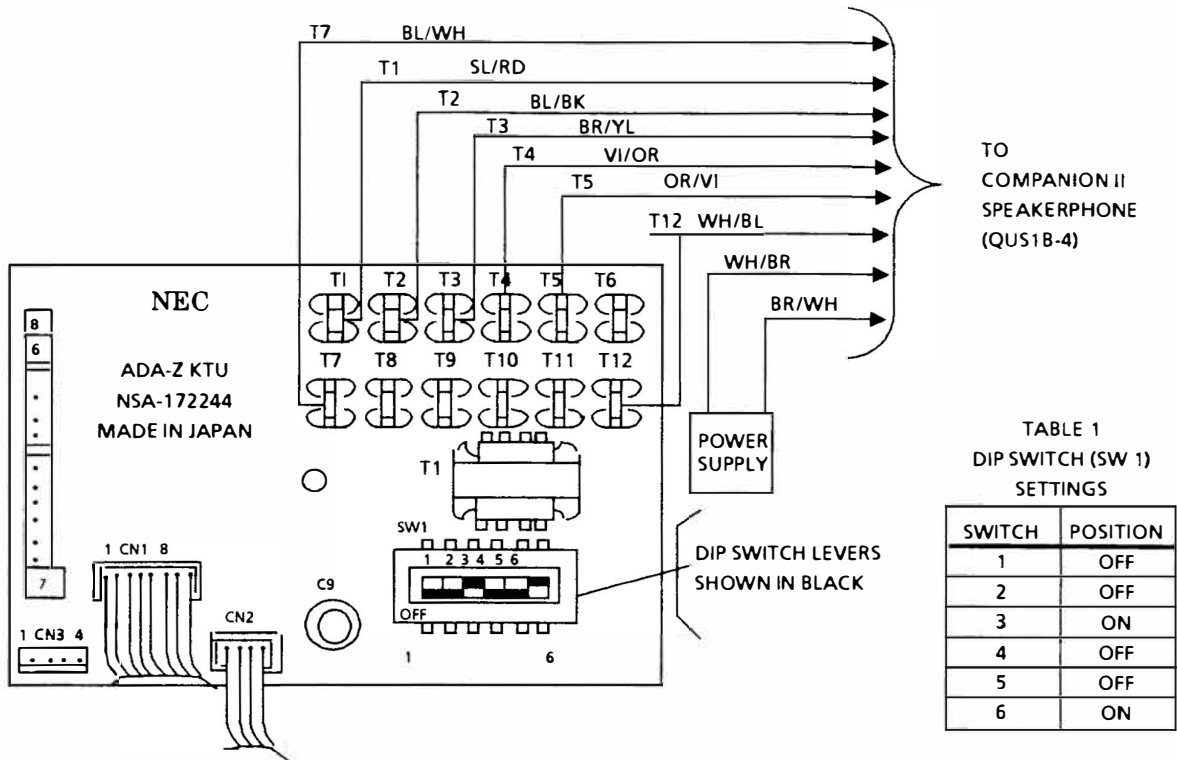
Figure 3   ADA-Z Connection to Companion II Speakerphone

CONNECTION OF MELCO S-11 AND TONE COMMANDER TA-20 TO ELECTRA 8/24 ETZ-16D-1 TERMINAL	*ETI*
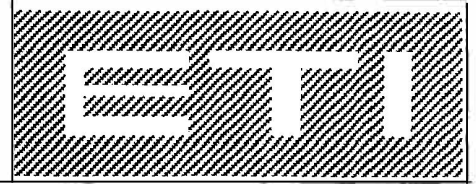
ELECTRA 8/24   **ETI NUMBER: E8/24-003   DATE: AUGUST 1989**

1. DESCRIPTION

This Engineering Technical Information (ETI) Bulletin describes the steps necessary to install an ADA-Z (Ancillary Device Adaptor) unit into an ETZ-16D-1 Multiline Terminal, to provide for connection of a MELCO Model S-11 or a Tone Commander Model TA-20 handset amplifier.

2. PARTS REQUIRED

2.1   ADA-Z Unit Adaptor kit (Stock # 710140)

2.2   Melco S-11 or Tone Commander TA-20 Handset Amplifier, locally provided. (Use the spade lug ended type only.)

2.3   Electra 8/24 Multiline Terminal (ETZ-16D-1).

3. PROCEDURE

3.1   Disconnect the modular line cord from under the terminal.

3.2   Disconnect the modular handset cord from the lower housing.

3.3   Turn the Multiline Terminal upside down (face down) and place it on a flat clean surface (refer to Figure 1).

3.4   To remove the access panel, depress in, then lift up on the access panel in the two (2) positions labeled A. Remove the access panel (see Figure 1).

NOTE

Do not discard removed access panel.

3.5   Locate the four pin connector and jack labeled HAND (as viewed from the access panel of the ETZ-16D-1 terminal). Unplug this connector and extend it out from the housing access opening.

3.6   On the ADA-Z Unit, set the DIP Switches SW 1 as shown in table 1 (see Figure 3).

3.7   Make the hand set amplifier connections as indicated in Figure 3. Use one of the spade tipped jumper wires provided to make a connection between T4 and T5. Insulate connections if necessary.

NOTE

The green lead provided in the Melco S-11 amplifier wire harness has a female connector that cannot be connected directly to the T-11 terminal of the ADA-Z unit. Use one of the double ended spade lug short jumper wires provided in the ADA-Z kit and connect one end of the jumper wire to the female connector of the green lead and the other end to the T-11 terminal. Use tape to insulate the connection.

3.8 Locate and insert the four pin connector ended harness from the ADA-Z unit into the jack labeled HAND on the ETZ-16D-1 Multiline Terminal.

3.9 Locate and insert the eight pin connector ended harness from the ADA-Z unit into the jack labeled ADA on the ETZ-16D-1 Multiline Terminal.

3.10 Insert the four pin connector ended harness (removed in step 3.5) into the four pin jack, CN3, located on the ADA-Z unit.

3.11 Install the ADA-Z unit with the component side down ensuring the wires are not pinched. Secure the ADA-Z unit to the terminal housing with the screw provided as shown in Figure 2.

3.12 Place the handset amplifier wiring into the cable exit groove (Figure 1) making certain that all wires are inside the housing.

NOTE

The handset amplifier may be mounted to the side of the Multiline Terminal with double sided foam tape or any other securing method you choose.

3.13 Reinstall the handset and modular line cords.

3.14 Adjust the amplifier volume control and test the Multiline Terminal and amplifier for proper operation.

UNPLUG
HANDSET

UNPLUG
LINE CORD

A

APPLY PRESSURE
AND LIFT PANEL

REMOVE PANEL

REMOVE CABLE EXIT GROOVE

Figure 1   Access Panel Removal
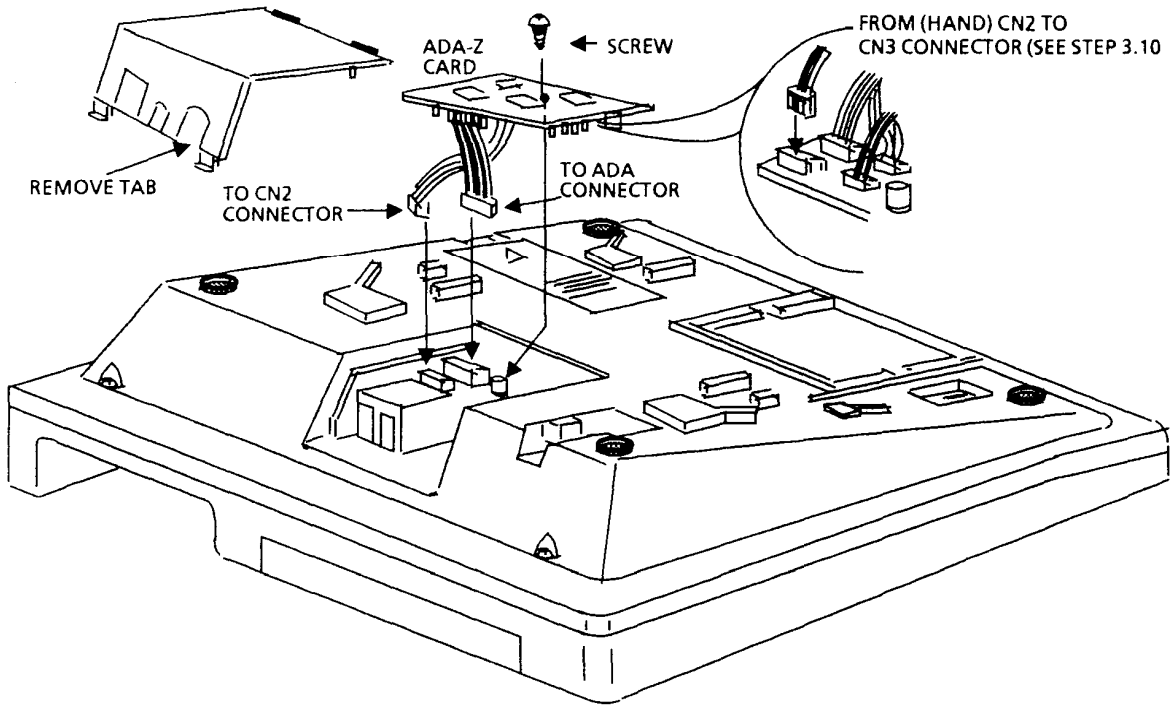
Figure 2   ADA-Z Unit Installation
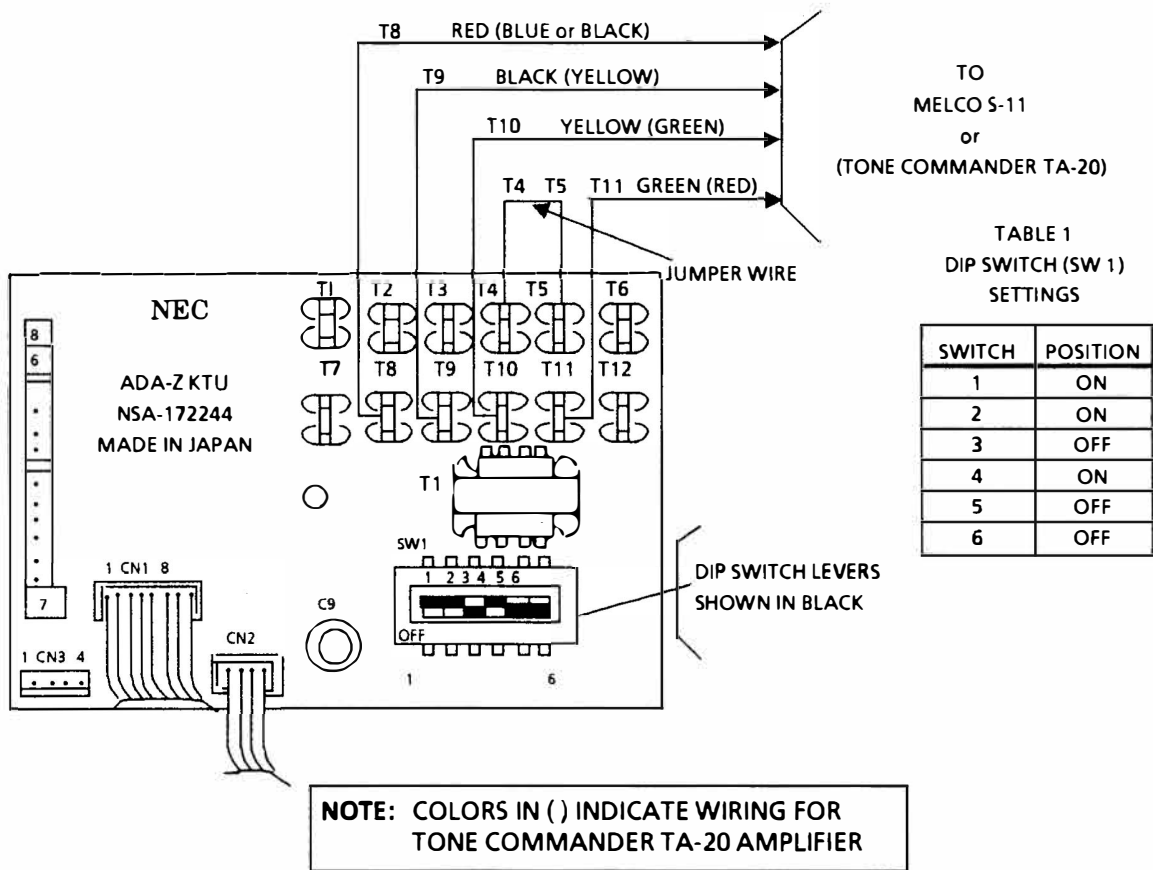
Figure 3   ADA-Z Unit Connection and DIP Switch Settings for Melco S-11 or (Tone Commander TA-20)

NEC America Inc. Switching Terminals Division   Engineering Technical Information

PLANTRONICS PHONEBEAM INFRARED SPEAKERPHONE CONNECTION	ETI
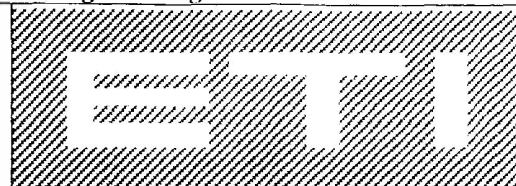
ELECTRA 8/24   ETI NUMBER: E8/24-004   DATE: AUGUST 1989

1. **DESCRIPTION**

This Engineering Technical Information (ETI) Bulletin describes the steps necessary to install an ADA-Z (Ancillary Device Adaptor) into an ETZ-16D-1 Multiline telephone, for the connection and operation of a Plantronics Phonebeam Infrared Speakerphone.

2. **LIMITATIONS**

2.1 With a Phonebeam Speakerphone connected and operating normally, lifting the handset on the Multiline telephone provides a dual connection to both the speakerphone and the handset; the speakerphone does not automatically switch off.

    2.1.1   To converse using the Multiline telephone's handset only, the speakerphone must be turned off.

    2.1.2   To converse using the Speakerphone only, the Multiline telephone's handset must be on-hook.

3. **PARTS REQUIRED**

3.1 ADA-Z Adaptor kit (Stock #710140).

3.2 Phonebeam Infrared Speakerphone, Model SPB-1003-01 with IR2 adaptor.

3.3 Electra 8/24 ETZ-16D-1 Multiline telephone.

4. **REFERENCES**

4.1 Plantronics Installation Manual.

4.2 Electra 8/24 ETZ-16D-1 Multiline telephone Users Guide.

5. **OPERATION**

5.1 Initiating Calls.

    5.1.1   Go off-hook with the Mutiline Terminal handset (Phonebeam Speakerphone turned off)

<div align="center">

OR

</div>

    5.1.2   Depress the **ON** key of the Phonebeam Speakerphone (Multiline telephone handset on-hook)

<div align="center">

OR

</div>

5.1.3 Switch the remote microphone unit of the Phonebeam Speakerphone to the **ON** position (Multiline telephone handset on-hook).

5.2 Transferring a call from handset to Speakerphone or from Speakerphone to handset:

5.2.1 To transfer a call from the Multiline telephone handset to the Phonebeam Speakerphone, depress the **ON** key of the Speakerphone (or switch the Speakerphone remote microphone unit to the **ON** position) and then hang up the Multiline telephone handset.

5.2.2 To transfer a call from the Phonebeam Speakerphone to the Multiline Telephone just lift the handset. The phonebeam will remain in "Standby". You can now either hang-up the multiline telephone handset and continue to converse using the phonebeam or terminate the call by turning the phonebeam off.

6. INSTALLATION

6.1 Disconnect the modular line cord from under the Multiline telephone.

6.2 Disconnect the modular handset cord from the lower housing.

6.3 Turn the Multiline telephone upside down (face down) and place it on a clean flat surface (refer to Figure 1).

6.4 To remove the access panel, depress in, then lift up on the access panel in the two (2) positions labeled **"A"** (see Figure 1). Remove the access panel.

NOTE

Do not discard removed access panel.

6.5 Locate the four pin connector and jack labeled **HAND** (as seen through the access view of the Multiline telephone housing). Unplug this connector and extend it out from the housing access opening.

6.6 Set the SW1 DIP switches, on the ADA-Z unit, as shown in Table 1 of Figure 3.

6.7 Using the connecting cable from the Speakerphone, make the wiring connections shown in Figure 3. If necessary, use a section of the clear plastic tubing provided in the **ADA-Z** kit to insulate the connections. Individually insulate the unused leads.

6.8 Locate and insert the four pin connector ended harness from the ADA-Z unit into the jack labeled **HAND** on the Multiline telephone.

6.9 Locate and insert the eight pin connector ended harness from the ADA-Z unit into the jack labeled **ADA** on the Multiline telephone.

6.10 Insert the four pin connector ended harness (removed in step 4.6) into the four pin jack, **CN3**, located on the ADA-Z unit.

6.11 Install the ADA-Z unit with the component side down ensuring the wires are not pinched. Secure the ADA-Z unit to the terminal housing with the screw provided as shown in Figure 2.

6.12 Route the Speakerphone wires (already connected to the ADA-Z unit) through one of the two notched cable exit grooves on the access panel (see Figure 1). Install the access panel.

6.13 Reinstall the handset line cord onto the Multiline telephone.

6.14 Plug the Speakerphone into the AC adapter.

6.15 Plug the AC adapter into a convenient AC outlet.

6.16 Refer to the Speakerphone's user guide and test both the Speakerphone and the Multiline telephone for proper operation.

UNPLUG
HANDSET

UNPLUG
LINE CORD

APPLY PRESSURE
AND LIFT PANEL

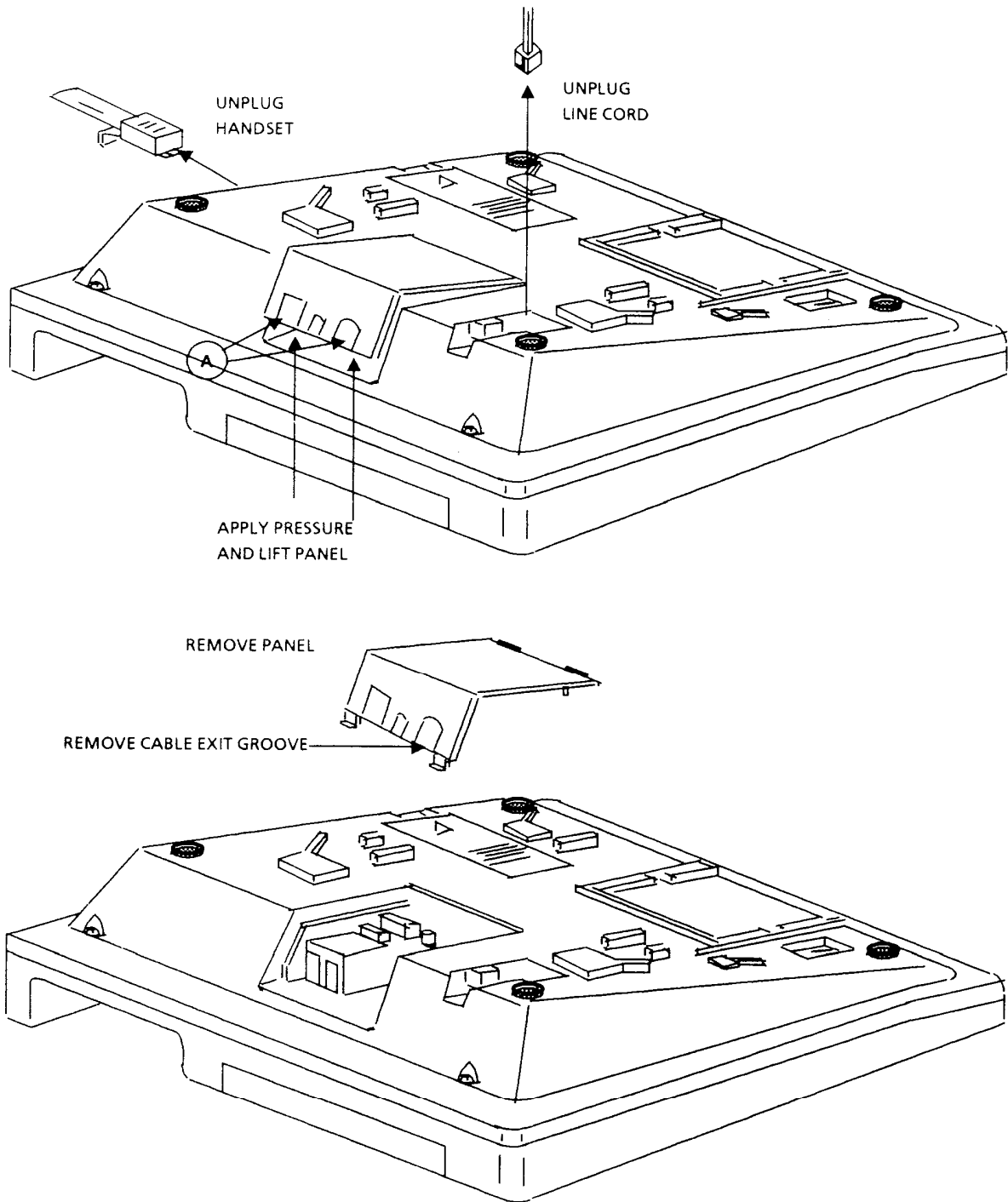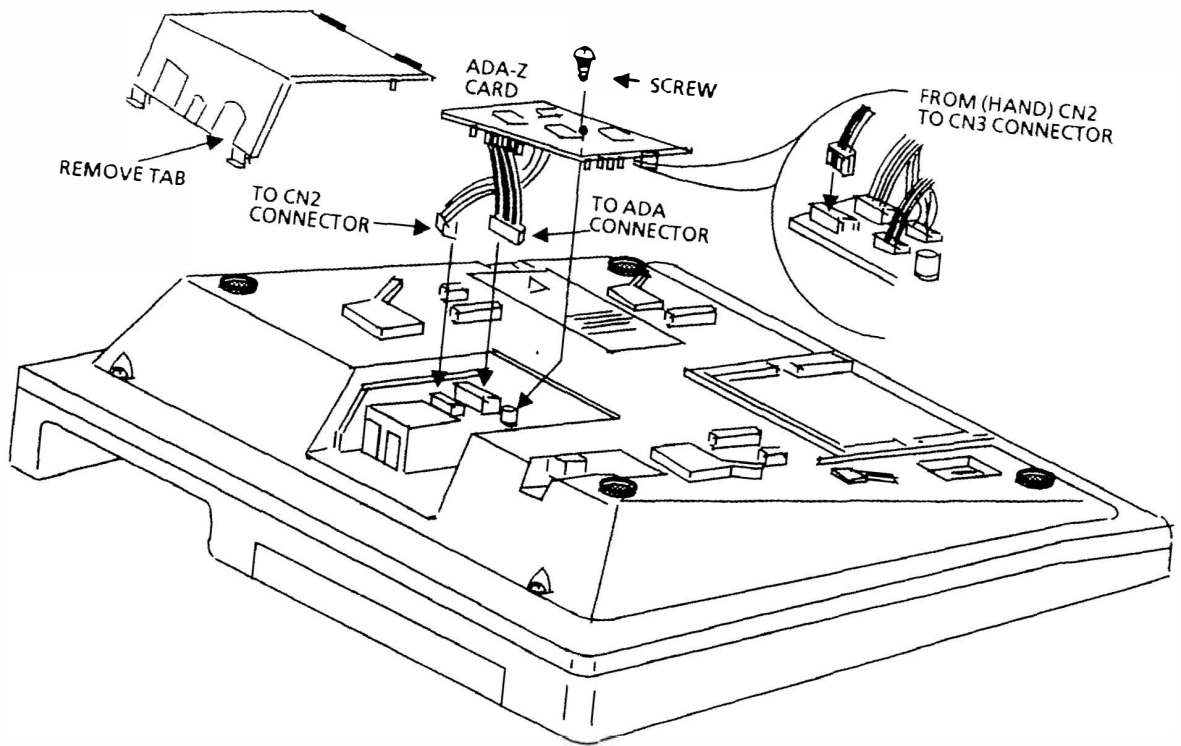REMOVE PANEL

REMOVE CABLE EXIT GROOVE

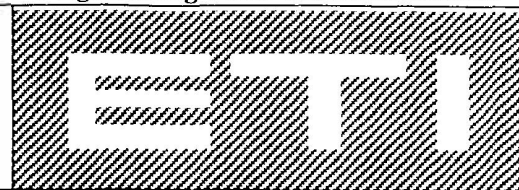Figure 1   Access Panel Removal

Figure 2   ADA-Z Unit Installation
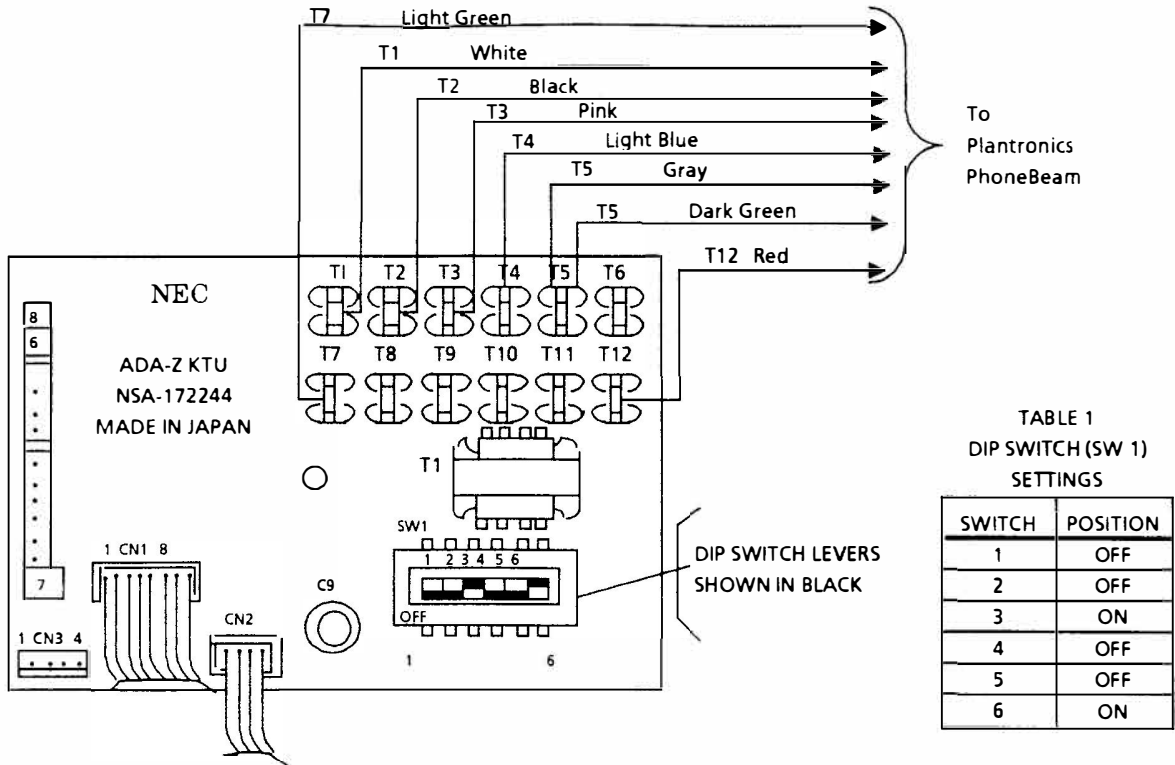
Figure 3 ADA-Z Unit Connection to Plantronics PhoneBeam Speakerphone

TABLE 1
DIP SWITCH (SW 1)
SETTINGS

SWITCH	POSITION
1	OFF
2	OFF
3	ON
4	OFF
5	OFF
6	ON

1. DESCRIPTION

This Engineering Technical Information (ETI) Bulletin describes the steps necessary to connect an external battery to keep the complete system operational for approximately two (2) hours during a commercial power failure.

2. PARTS REQUIRED

2.1   External battery backup cable (Stock # 710270).

2.2   GS Portalac battery, Model PE6. 5-12R. This part can be ordered from:

> GS Battery (USA) Inc.
> 201 Devil's Bedstead
> Ketchum, Idaho 83340
> (800) 228-8626

3. OPERATION

3.1   The Electra 8/24 comes equipped with a built in internal battery for battery backup as a standard feature. This internal battery will keep the system fully operational for approximately ten (10) minutes. The external GS Portalac battery, when fully charged, will keep the system fully operational for approximately two (2) hours. The battery will provide backup power only when the Electra 8/24 KSU's power switch is in the **ON** position. If the power switch is turned **OFF**, the battery backup will not be provided.

4. PROCEDURE

4.1   Locate and mount the external battery near the KSU (in a secure manner).

4.2   Remove the external battery conductor cable from the cable kit.

4.3   Connect the red wire (spade lug end) of the conductor cable to the red (+) terminal of the external battery.

4.4   Connect the blue wire (spade lug end) of the the conductor cable to the black(-) terminal of the external battery.

4.5   Turn the power switch on the KSU to **OFF** and remove the front cover.

4.6   Put the conductor cable (plastic connector end) through the cable exit groove of the KSU and route it through the bottom of the KSU toward the power supply (see Figure 1).

4.7 Locate the internal battery inside the KSU and disconnect the male and female connectors of the internal battery cable (see Figure 2).

4.8 Connect the male end plug of the External Battery cable to the female end of the System's internal battery cable on the power supply (see Figure 3).

4.9 Restore power to the KSU and test for proper battery backup operation.

5. TESTING

5.1 Unplug the AC power cord of the KSU from the AC outlet.

5.2 With the KSU power switch in the **ON** position, note that the KSU is fully operational with the AC cord unplugged. If the system does not pass this test, contact your NEC Regional (STD) Field Support Engineering office.
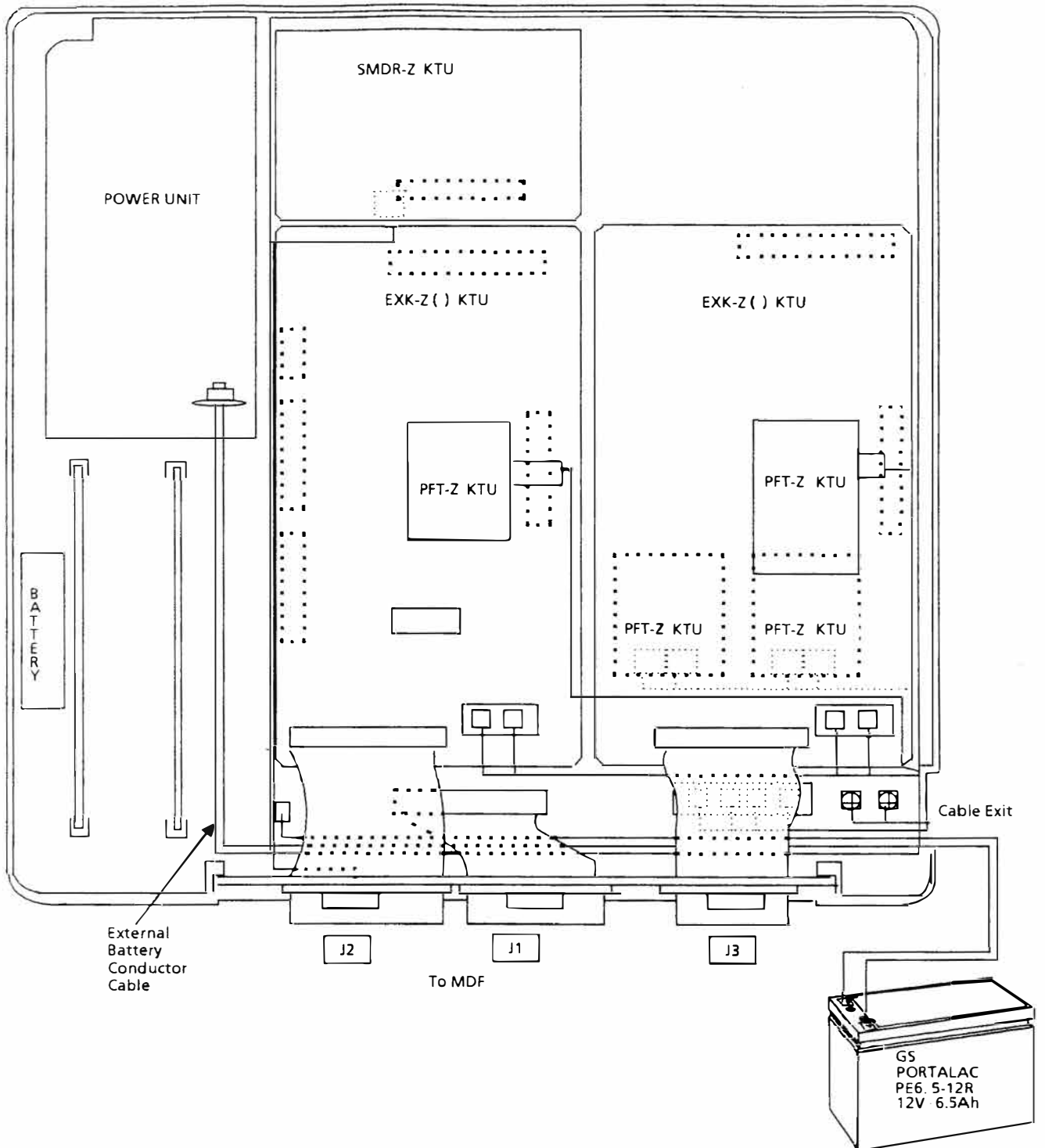
Figure 1   External Battery Conductor Cable Routing
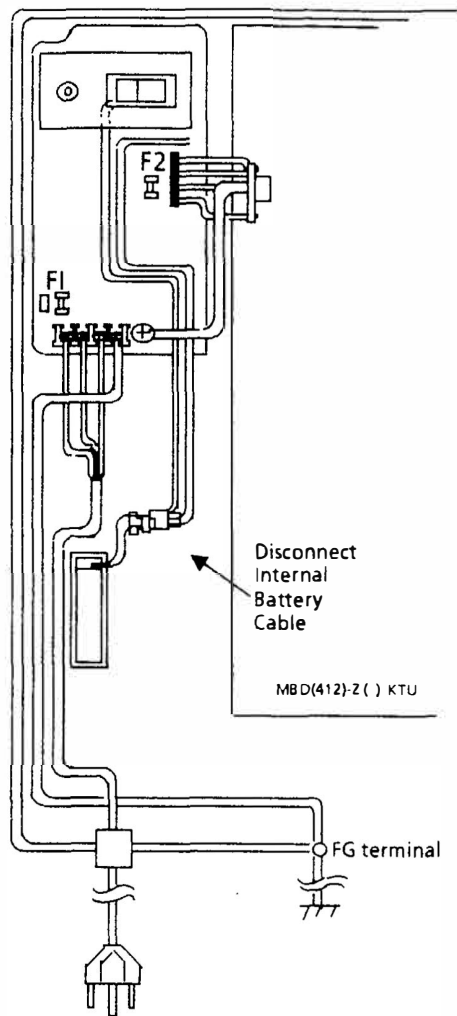
Figure 2 Disconnecting Internal Battery

connect to External Battery Cable

MBD(412)-Z ( ) KTU

GS PORTALAC
PE6. 5-12R
12V 6.5Ah

MADE IN JAPAN

FG terminal
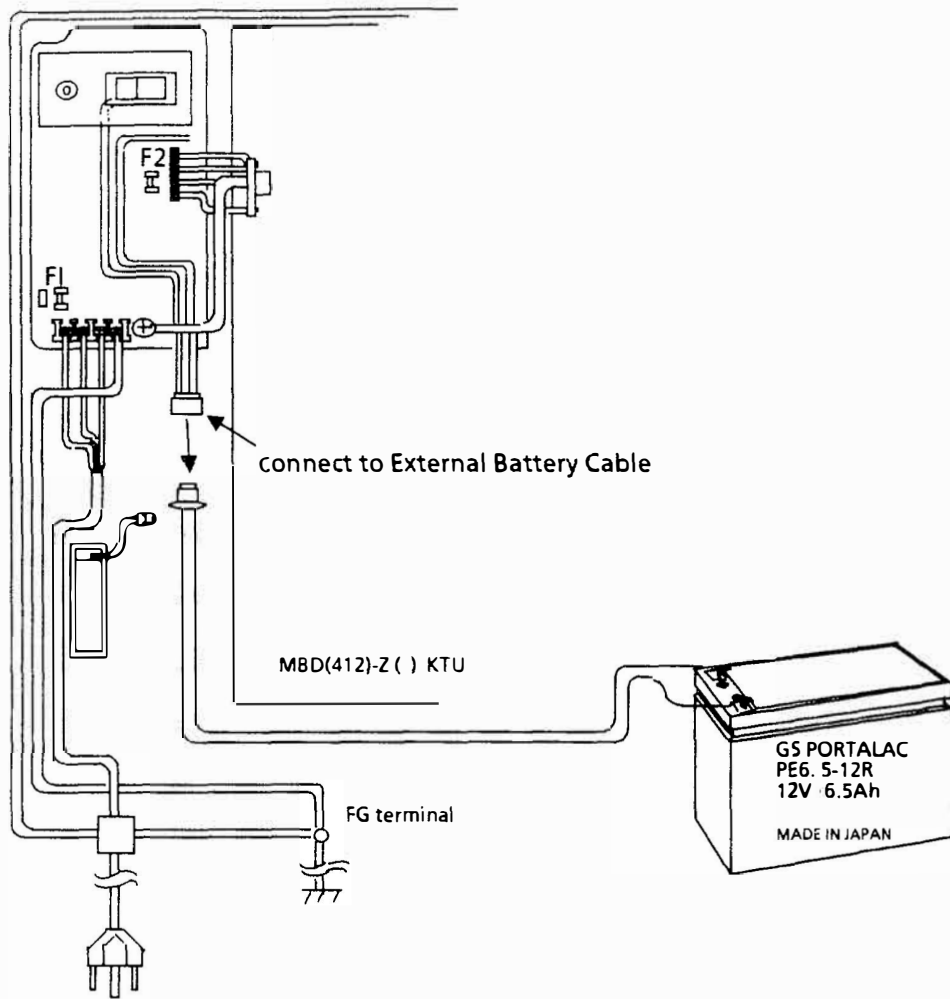
Figure 3   Connecting Conductor Cable From External Battery

ETI NUMBER: E8/24-006 DATE: JUNE 1989

IS NO LONGER APPLICABLE

AND IS INTENTIONALLY OMITTED.

ELIMINATING RADIO FREQUENCY INTERFERENCE (RFI) ON ELECTRA 8/24 INSTALLATIONS	*ETI*
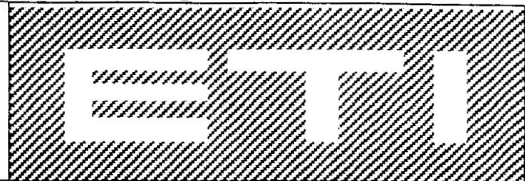
ELECTRA 8/24   ETI NUMBER: E/824-007   DATE: AUGUST 1989

1. DESCRIPTION

The Electra 8/24 is an analog communications system, and under normal conditions is immune to radio frequency interference. However, in areas with very strong RFI fields, the Electra 8/24 may be affected. This Engineering Technical Information (ETI) Bulletin describes the steps necessary to eliminate radio frequency interference. This modification procedure should be implemented only to the portion of the system experiencing RFI.

2. INSTALLATION CONSIDERATIONS

2.1 **AC GROUNDING:** The AC circuit used to power the Electra 8/24 system must be a dedicated circuit with a ground provided through the AC outlet wiring, back to the main power panel. This method of grounding prevents certain types of equipment (such as arc welders, which may generate RFI) from coupling RFI to the Electra 8/24 system via the AC wiring.

2.2 **OTHER GROUND:** If a suitable ground is not available at the AC outlet, an earth ground rod or cold water pipe ground must be used. This ground must be connected to the ground lug provided on the ESZ-8-( ) KSU via 12AWG wire, *minimum*. When using a cold water pipe for ground, ensure that the water pipe is providing earth ground. If the water pipe is not common to earth ground, it may act as an antenna, coupling RFI to the system. If there is any doubt about the available ground, an earth ground rod should be installed in accordance with local Telephone Operating Company procedures.

NOTE
Grounding the Electra 8/24 system, to both AC circuit ground and cold water pipe ground or a ground rod, may cause a ground loop, leading to sporadic system operation if the two grounds are at different potentials. Multiple ground connections are not recommended.

2.3 **UNUSED WIRE PAIRS:** Any unused wire pairs in the station cables (and the 25 pair J cable) should be connected to a confirmed earth ground, at the MDF side. Grounding the spare wires (in the station cable) at both ends of the cable run may cause the spare wires to act as an antenna, if the two grounds are at different potentials, and is therefore not recommended.

3. LOCATING THE RFI SOURCE

Prevailing conditions at each site are rarely the same, therefore, there are no specific guidelines to follow in locating RFI sources. The primary task is to identify the area(s) where RFI is being induced to the Electra 8/24 System. In some instances, RFI may be introduced into the system at more than one place. The major areas in the Electra 8/24 to be investigated, to locate RFI input, are:

Station handset	Grounding
Station line cord	Outside lines
Cabling	

Some RFI conditions cannot be addressed in this bulletin due to the many possible variables involved. These variables are generally particular to each site and require that pertinent data be known, such as the frequencies involved. In situations where RFI is still present after following the instructions provided in this bulletin, contact your local NEC America, Inc. STD Field Support Engineer for further assistance in resolving the RFI condition.

If RFI is present during CO (outside) calls, check for RFI at the Telephone Company on site demarcation terminal, using an SLT with the Electra 8/24 System isolated from the demarcation terminal. If RFI is present at the demarcation terminal, contact the local Telephone Operating Company.

If RFI is not present at the demarcation terminal, reconnect the Electra 8/24 System and go off-hook at a multiline Terminal with RFI present in the handset and stretch the handset cord. If RFI changes (increases or decreases in amplitude) when the handset cord is stretched, modify the Multiline Terminal as outlined in step 4. If RFI does not change, contact your local NEC America, Inc., STD Field Support Engineer.

4. **PROCEDURE - RFI LOCALIZED TO THE HANDSET**

    4.1   Disconnect the modular cord from the handset.

    4.2   Opening the handset.

        4.2.1   Remove the plastic plugs from the two screw holes on the inside grip of the handset.

        4.2.2   Remove two screws from the inside grip of the handset.

        4.2.3   Set the handset face down (transmitter and receiver facing down) over a solid, clean surface. Place the fingers of one hand under the transmitter end and with the thumb of the same hand apply downward pressure to the center of the handset grip. With the other hand, at the receiver end, separate the handset halves.

    4.3   Obtain two .01µF ceramic disk capacitors and cut both capacitor leads approximately $\frac{1}{2}$ inch in length as shown in Figure 1. Inside the handset half which contains the receiver and transmitter elements, solder one .01µF ceramic disk capacitor across the receiver element and another .01µF ceramic disk capacitor across the transmitter element. Use plastic sleeving over the capacitor leads to prevent electrical shorts (see Figure 1).

    4.4   Join both halves of the handset and secure with two screws (Reverse Procedures 4.2.2 and 4.2.1).

    4.5   Connect the modular handset cord and test the station for RFI and normal audio levels. If RFI is still present, continue to step 4.6.

    4.6   Open the handset (refer to steps 4.2.1, 4.2.2, and 4.2.3).

    4.7   Solder a length of insulated, single strand wire to each lead of the .01µF ceramic disk capacitors. Ensure the wire is the same gauge as the capacitor leads and long enough for one capacitor lead to reach one of the transmitter element screws and the other capacitor lead to reach one of the receiver element screws inside the handset (see Figure 1). Use shrink sleeving over the prepared capacitor leads to prevent electrical shorts. Inside the handset half which contains the receiver and transmitter elements, solder one lead of the .01 µF capacitor to one lead of each element (transmitter and receiver).

    4.8   Join both halves of the handset and secure with two screws (Reverse Procedures 4.2.2 and 4.2.1).

    4.9   Connect the modular handset cord and test the station for RFI and normal audio levels. If RFI is still present, open the handset, remove the capacitor between the transmitter and receiver elements, and join both handset halves. Continue to step 4.10.

    4.10 Disconnect the modular line cord from under the Multiline Terminal.
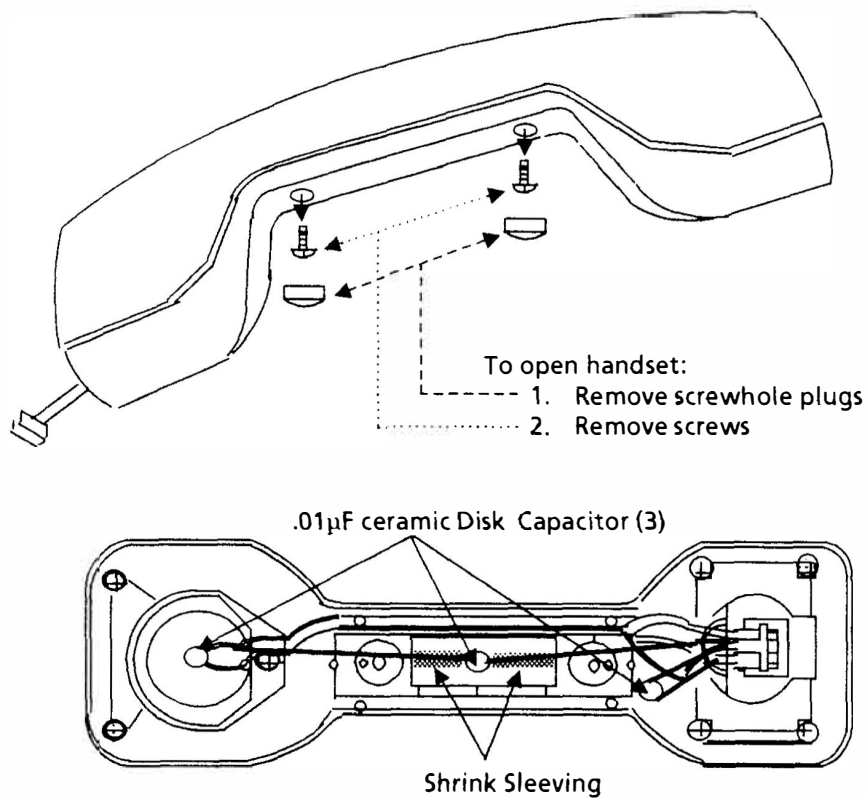
To open handset:
1. Remove screwhole plugs
2. Remove screws

.01μF ceramic Disk Capacitor (3)

Shrink Sleeving

Figure 1

4.11 Disconnect the modular handset cord from the lower housing.

4.12 Turn the Multiline Terminal upside down (face down) and place it on a flat clean surface.

    4.12.1   From the bottom of the lower housing, loosen the four (4) captive screws and separate the upper and lower housings. Set the lower housing aside.

    4.12.2   From the upper housing, remove the volume slide control handle and set it aside.

    4.12.3   Disconnect the flat ribbon cable at the main PC board connector.

    4.12.4   Remove the three (3) screws securing the main PC board to the housing; lift and turn the main PC board over (with solder side facing up) and place it on top of the speaker.

    4.12.5   Solder two .01μF ceramic disk capacitors on the solder side of the *handset connector* designated HAND on the main PC board; one capacitor across pins 1 & 2 and the other across pins 3 & 4. Use plastic sleeving over the capacitor leads to prevent electrical shorts. KEEP THE LEADS AS SHORT AS POSSIBLE (see Figure 2).

    4.12.6   Position the PC board in place and secure with three screws (reverse step 4.12.4).

4.12.7 Connect the flat ribbon cable to the PC board connector (reverse step 4.12.3).

4.12.8 Position the volume slide control in place; ensure the modular line cord connector and hookswitch levers are positioned properly. Join the upper and lower housings and secure with four (4) captive screws (reverse step 4.12.1).

4.13 Install the handset and modular line cords into the Multiline Terminal and RJ-11C/W jack.

4.14 Ensure that the station operates normally. If RFI is still present, contact your local NEC America Inc., STD Field Support Engineer.

.01μ F Ceramic Disk Capacitor

Plastic Sleeve

Handset Connector

(Solder Side) of (TMB) Telephone Main Board
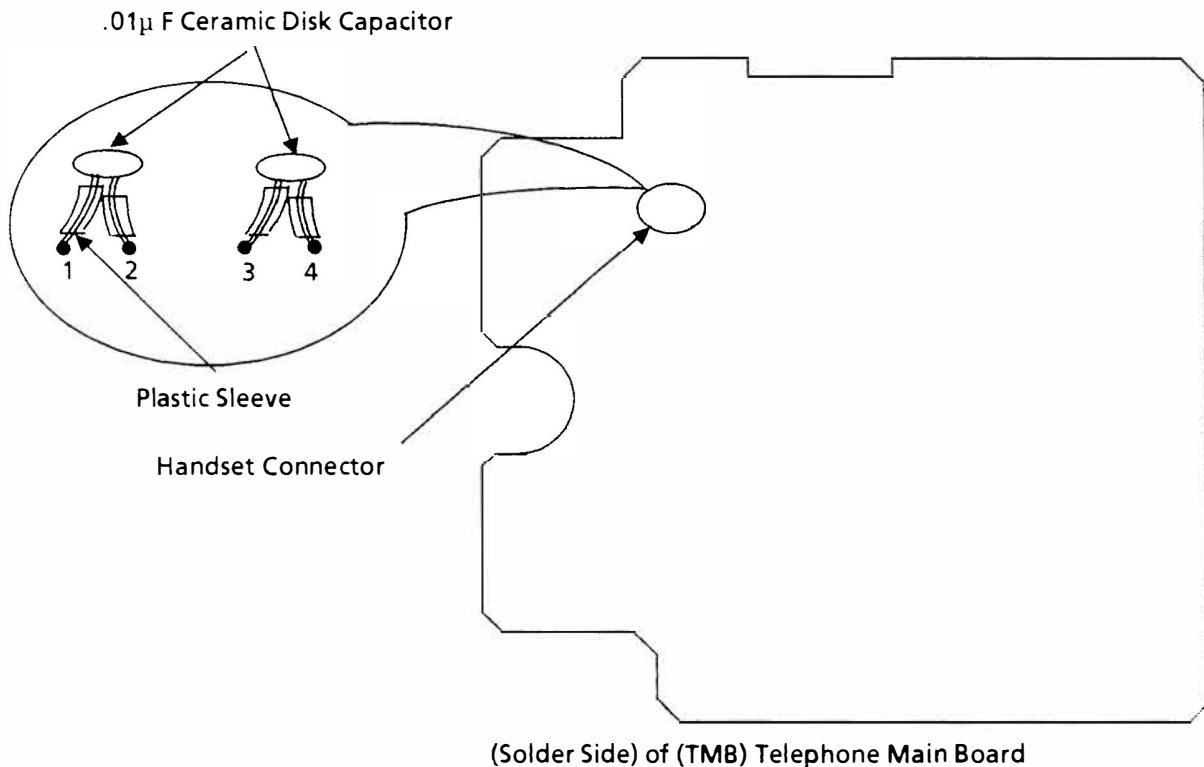
Figure 2   ETZ-16()-1 PCB

NOTE

This ETI assumes the RFI, that is encountered, is in the **KHz** bandwidth (**AM**) and therefore recommends the use of .01μf capacitors. If the RI, that is encountered, is in the **MHz** bandwidth (**FM**), it is recommended that .001 μf capacitors be used instead.

INTERNAL BATTERY BACKUP REPLACEMENT

ELECTRA 8/24   ETI NUMBER: E8/24-008   DATE: SEPTEMBER 1990

1. **DESCRIPTION**

   This Engineering Technical Information (ETI) Bulletin describes the steps necessary to replace the internal battery that keeps the complete system operational for approximately 10 minutes during a commercial power failure.

2. **PARTS REQUIRED**

   2.1   Phillipshead screwdriver.

   2.2   GS Portalac battery, Model PE0.7-12R or PE12V0.7. This part can be ordered from:

   > GS Battery (USA) Inc.
   > 201 Devil's Bedstead
   > Ketchum, Idaho 83340
   > (800) 228-8626

3. **OPERATION**

   3.1   The Electra 8/24 comes equipped with a built in internal battery for battery backup (system power) as a standard feature. This internal battery will keep the system fully operational for approximately ten (10) minutes. The battery will provide backup power only when the Electra 8/24 KSU's power switch is in the **ON** position. If the power switch is turned **OFF**, the battery backup will not be provided.

4. **PROCEDURE**

   4.1   Turn the power switch on the KSU to **OFF** and remove the front cover.

   4.2   Locate the internal battery inside the KSU (see Figure 1) and disconnect the male and female connectors of the internal battery cable (see Figure 2).

   4.3   Remove the Phillipshead **screw** and the metal plate holding the battery in place (see Figure 2).

   4.4   Remove the used internal battery from the KSU and replace with the new internal battery.

   4.5   Replace the Phillipshead screw and the metal plate to secure the new battery.

   4.6   Connect the male end plug of the Internal Replacement Battery cable to the female end of the System's internal battery cable on the power supply.

   4.7   Restore power to the KSU and test for proper battery backup operation.

5. TESTING

5.1 Unplug the AC power cord of the KSU from the AC outlet.

5.2 With the KSU power switch in the **ON** position, note that the KSU is fully operational with the AC cord unplugged. If the system does not pass this test, contact your NEC Regional (STD) Field Support Engineering office.
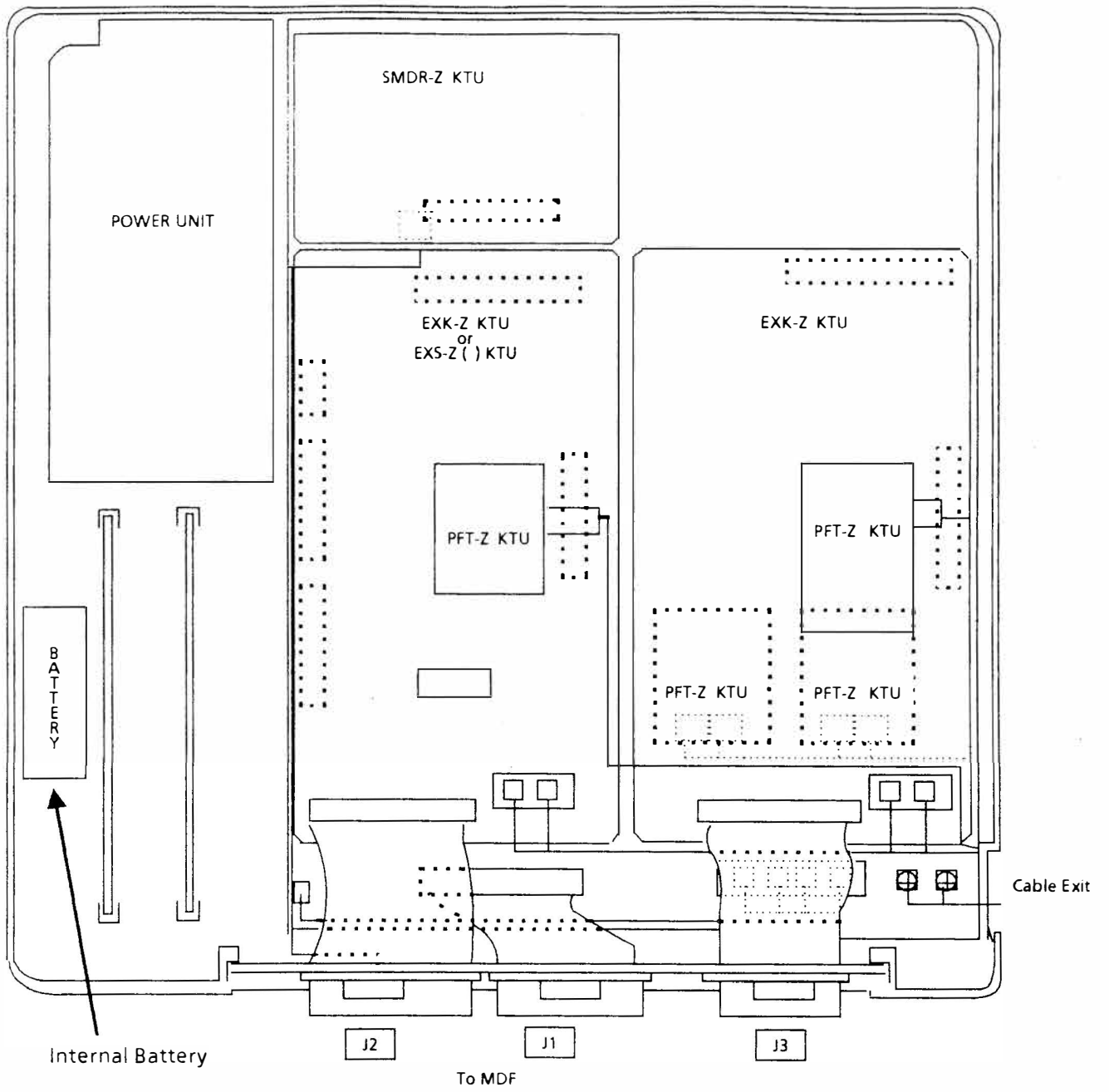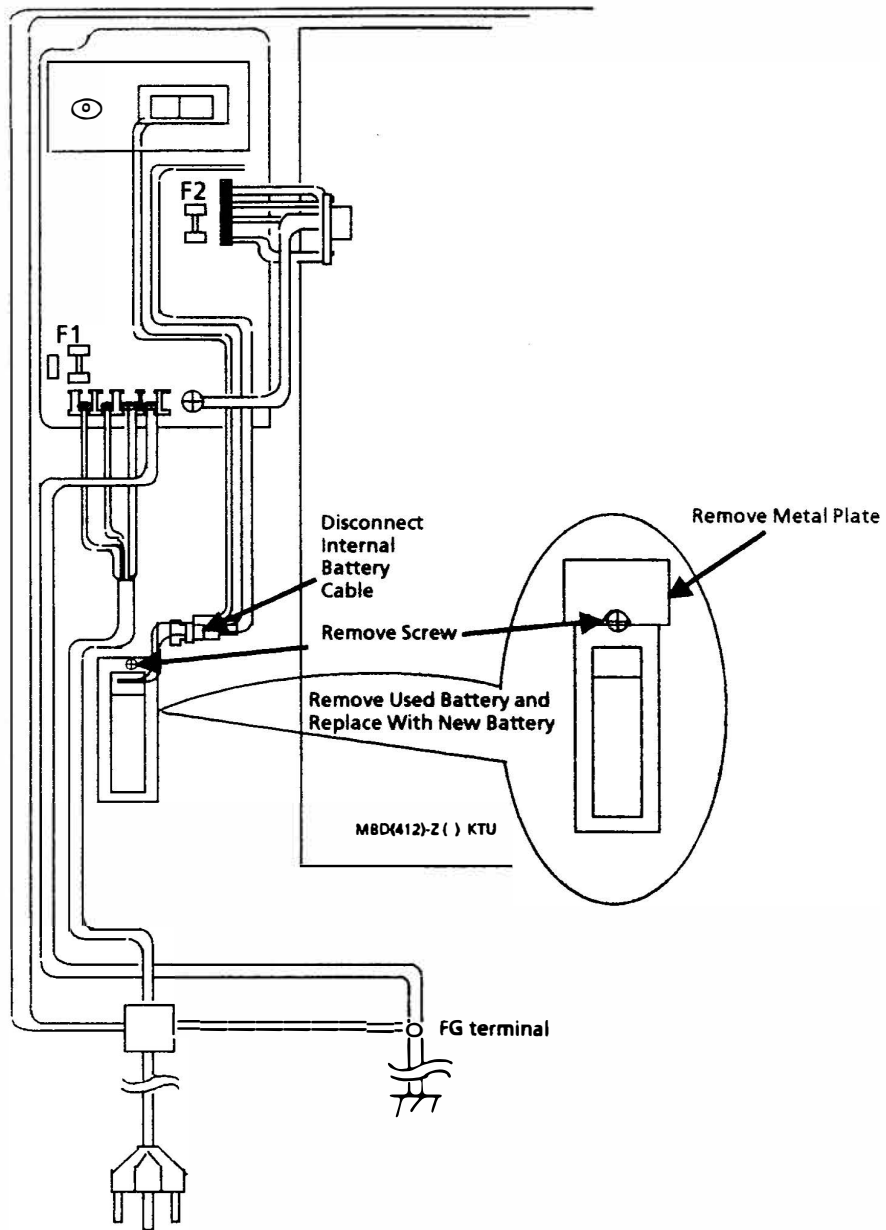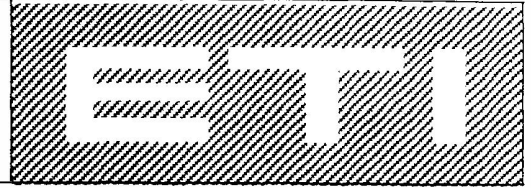
Figure 1   Electra 8/24 KSU

Figure 2 Internal Battery Replacement Procedure

VIKING FAX JACK III and PATHFINDER (PHONE/DATA/FAX SWITCH) CONNECTIONS	ETI

ELECTRA 8/24   ETI NUMBER: E8/24-009   DATE: FEBRUARY 1991

1. **DESCRIPTION**

This Engineering Technical Information (ETI) Bulletin describes the steps necessary for connection and operation of a Viking Fax Jack III and a Viking PathFinder (Phone/Data/Fax Switch) with the Electra 8/24. Both products can be used for the connection of fax machines, modems, and other data transmission devices. By connecting these units to an incoming CO/PBX line, Voice calls can be routed to the Electra 8/24. However, Fax/Data calls will be directed to appropriate devices. This allows multi-use of a CO/PBX line.

2. **CONFIGURATIONS**

Both products must be connected to the Electra 8/24 via a CO/PBX port. Fax machines, modems, and other data transmission devices are then connected directly to the Viking products. Fax machines may be G1, G2, G3, *etc.*, type machines. An incoming call from a fax machine, that provides a calling tone, will be automatically routed to the fax connected to the Viking product. An incoming call from a fax machine that does not provide a calling tone will not be routed automatically. The call must be taken via telephone and transferred to the fax machine by pressing "#,1" on the same line where the call was received. Refer to the Viking Technical Practice Notes that are provided with each of these products.

NOTE : Certain modems can send a carrier tone after initiating an outgoing call. In this case, the Viking product can detect the incoming carrier tone and route the call to the receiving modem. If, after initiating an outgoing call, the particular modem being used cannot send a carrier tone, the data call must be answered manually and transferred to the receiving modem (data port) by pressing "#2" on the same line where the call was received.

OR

During a data call, the party initiating the call can dial the telephone number followed by three pauses, then a string of 2's (a minimum of three 2's is recommended). The string must be longer than the time required by the Telco to connect and ring the line.

3. **PARTS REQUIRED**

For connection of either the Viking Fax Jack III or the Viking PathFinder:

- Viking Fax Jack III (Model FAXJ-300) or Viking PathFinder (Model PDF-1, version 1.3 software or Model PDF-2).

- Modular Line Cords with RJ11 Connectors

NOTE 1: The Fax Jack III comes with a line cord to connect to the CO/PBX port. Two additional line cords with RJ11 connectors, allow connection of additional devices.

NOTE 2: The PathFinder requires one line cord to connect the unit to an CO/PBX port. A maximum of three additional line cords, with RJ11 connectors, allow connection of additional devices.

NOTE 3:   Calls from Fax machines may require longer timers for calling tones.
NOTE 4:   In house Fax machines may require a minimum time (number of rings) before a Fax to Fax connection can be made.

4.   **REFERENCES**
Viking Technical Practice notes (included with product).

Viking Electronics, Inc.
1531 Industrial Street
Hudson, WI 54016
Sales: (715) 386-8861

5.   **SITE REQUIREMENTS**

Both products must be mounted near a 120V AC source. Site location is limited only by the location of the CO/PBX port on the E-8/24 KSU and the additional devices.

6.   **PROCEDURE**

6.1   For connection of the Viking Fax Jack III: (Refer to Figure 1 Connecting the Viking Fax Jack III.)

6.1.1   Determine the location for mounting the Viking Fax Jack III. Ensure that the ESZ-8-( ) KSU power source is nearby.

6.1.2   Insert the RJ11 connector from the Fax Jack III to the selected incoming CO/PBX line port.

6.1.3   Using a modular line cord with RJ11 connectors, connect the selected CO/PBX line to the Phone Connector on the Fax Jack III.

6.1.4   Using another modular line cord with RJ11 connectors, connect the data port on the Fax Jack III to either a fax machine, modem, or other data transmission device.

NOTE: Switch 1 (located on the rear of the Fax Jack III) determines whether a fax machine or a modem will be connected to the data port.

6.1.5   Plug the AC adaptor into the Fax Jack III and the 120V AC power source. Refer to the Viking Technical Practice notes for proper switch setting.

6.2   Electra 8/24 Programming

6.2.1   No special programming is required for the Electra 8/24.

6.2.2   Refer to the Viking Technical Practice notes for programming the Fax Jack III to your particular application.

6.2.3   Test the Viking Fax Jack III for proper operation with the Electra 8/24.

6.3   For connection of the Viking PathFinder: (Refer to Figure 2 Connecting the Viking PathFinder PDF-1 or Figure 3 Connecting the Viking PathFinder PDF-2.)

6.3.1   Determine the location for mounting the Viking PathFinder. Ensure that the designated ESZ-8-( ) KSU and 120V AC power source are nearby.

6.3.2   Insert a modular line cord with RJ11 connectors from the Telco or CO in connector of the PathFinder to the selected incoming CO/PBX line port.

6.3.3   Using a modular line cord with RJ11 connectors, connect the selected CO/PBX lines to the phone connector on the PathFinder.

6.3.4   Using other modular line cords with RJ11 connectors, connect a fax machine to the fax connector on the PathFinder and/or a modem to the modem connector on the PathFinder.

NOTE: These ports can be used to connect other fax machines, modems, or data transmission devices.

6.3.5   Plug the AC adaptor from the PathFinder to the 120V AC power source.

6.4   Electra 8/24 Programming

6.4.1   No special programming is required for the Electra 8/24.

6.4.2   Refer to the Viking Technical Practice notes for programming the PathFinder to your particular application.

6.4.3   Test the Viking PathFinder for proper operation with the Electra 8/24.

7.   LIMITATIONS

No LED indications will be displayed on the associated line key of the Multiline Terminals. The line key LED, associated with the particular CO/PBX line being used by the Viking product, will not illuminate when the line is being used for fax or data connections.
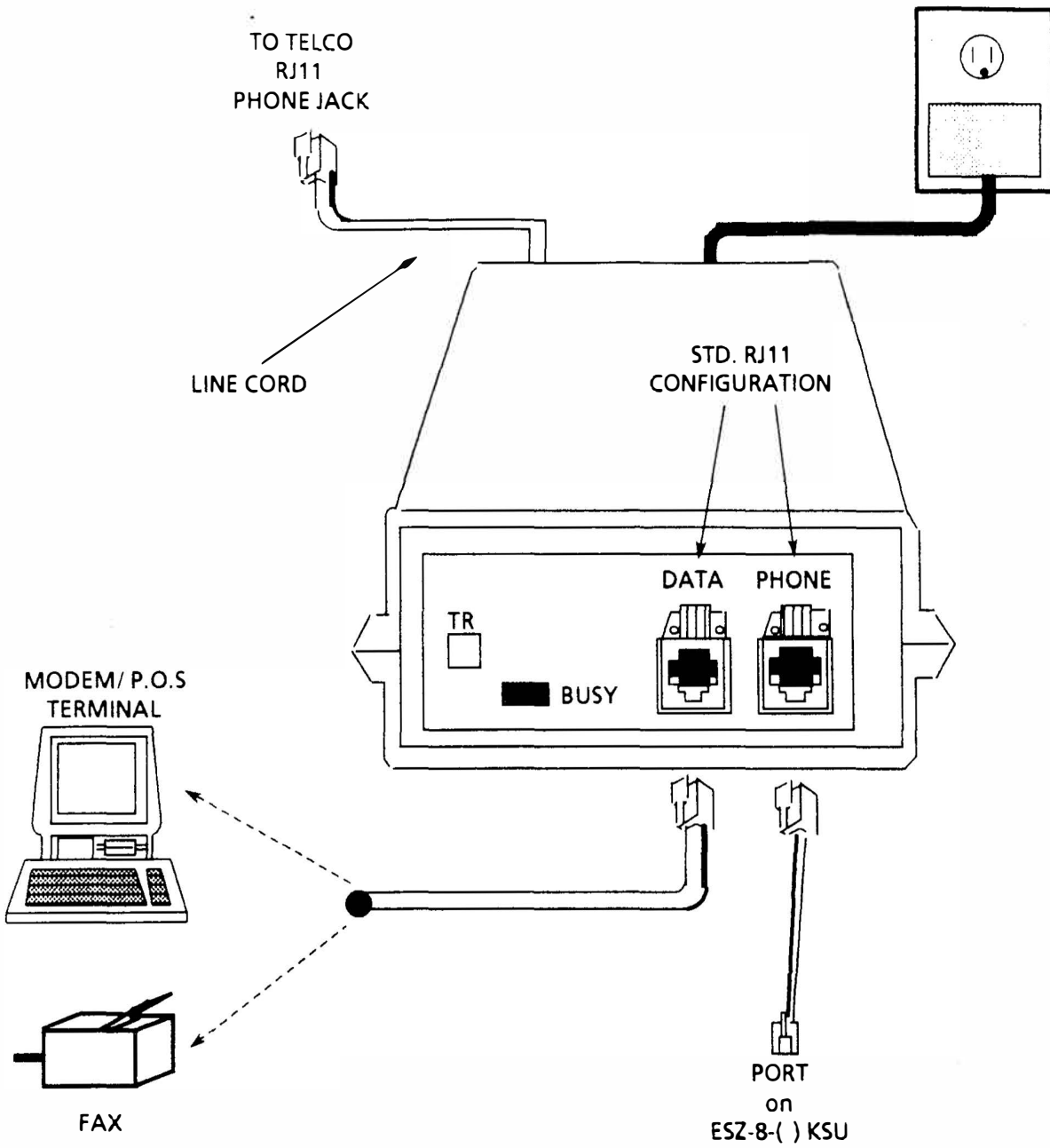
TO TELCO
RJ11
PHONE JACK

LINE CORD

STD. RJ11
CONFIGURATION

DATA   PHONE

TR

BUSY

MODEM/ P.O.S
TERMINAL

FAX

PORT
on
ESZ-8-( ) KSU

Figure 1   Connecting the Viking Fax Jack III
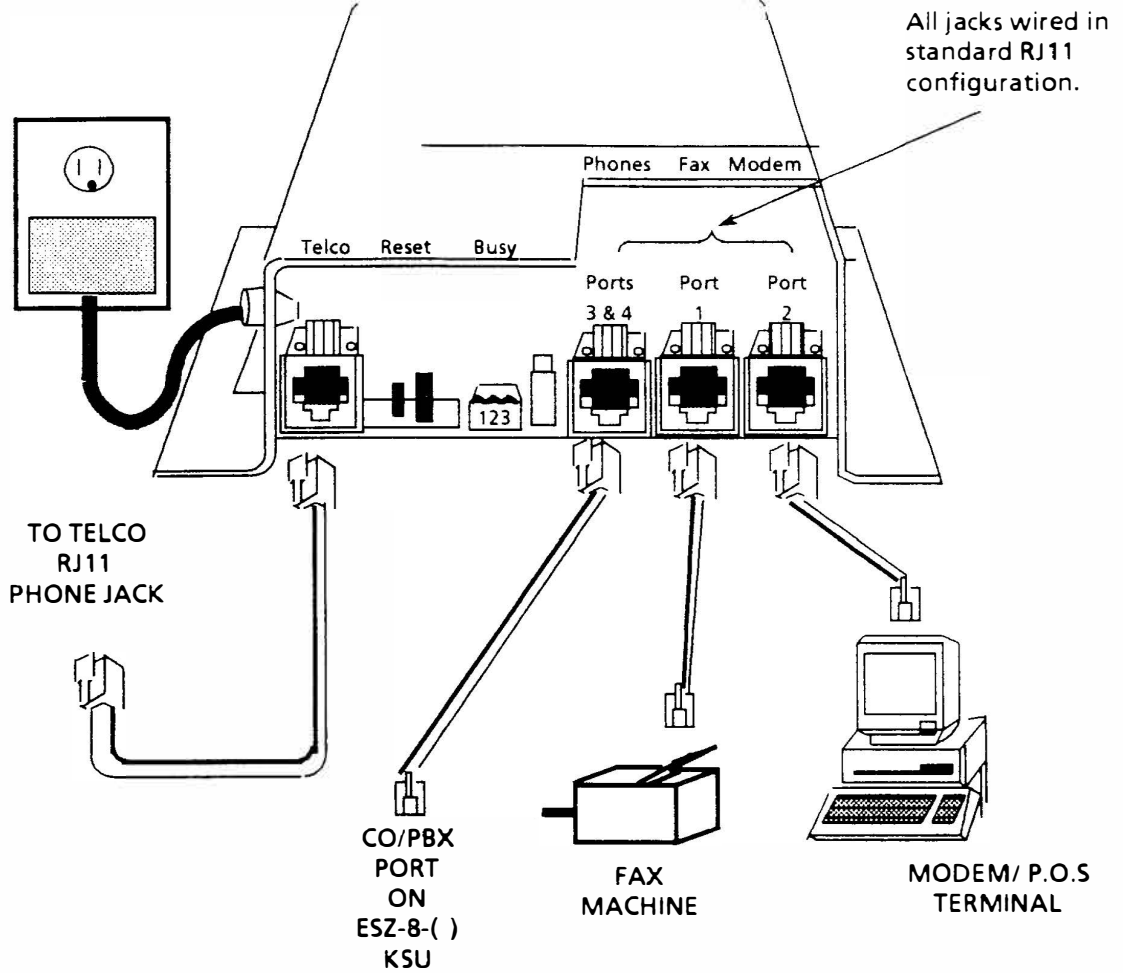
Figure 2   Connecting the Viking PathFinder PDF-1
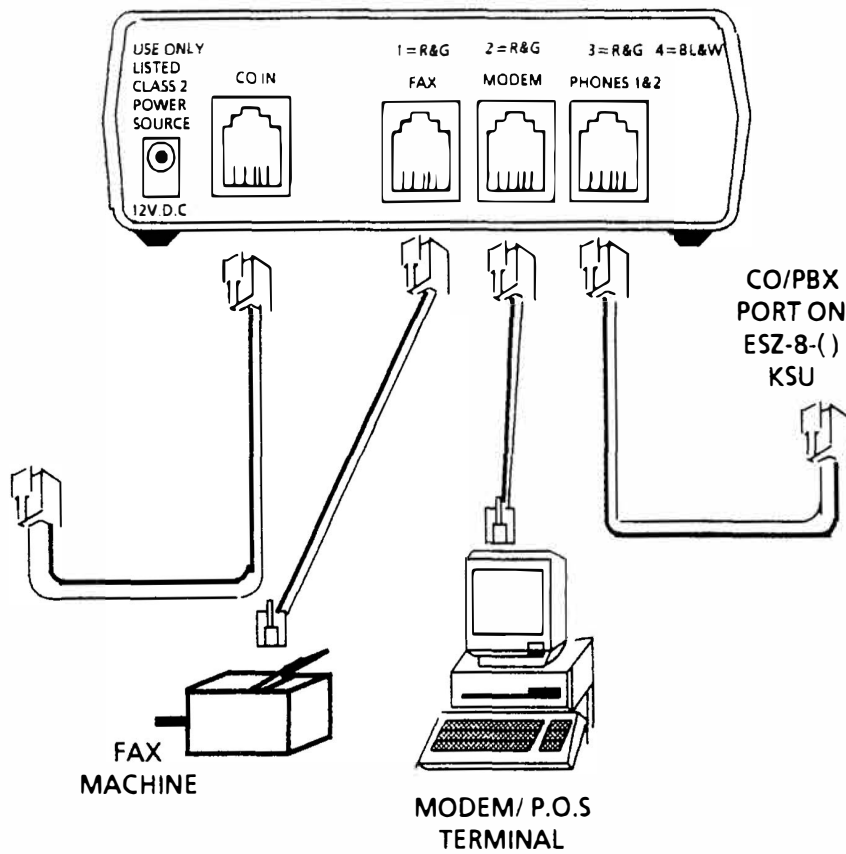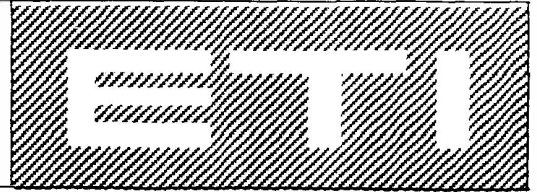
Figure 3   Connecting the Viking PathFinder PDF-2

VIKING ACA-1 AUTOMATED ATTENDANT

ETI

ELECTRA 8/24   ETI NUMBER: E8/24-010   DATE: FEBRUARY 1991

1. **DESCRIPTION**

   This Engineering Technical Information (ETI) Bulletin describes the steps necessary for connection and operation of the Viking Automated Attendant with the Electra 8/24. The product is used to answer and route incoming CO/PBX calls to the appropriate extension, eliminating the need for a designated receptionist.

2. **CONFIGURATION**

   The ACA-1 Unit must be connected via a single line interface port. Each CO/PBX line that is to be answered by the automated attendant must be direct inward terminated to the single line port that is connected to the ACA-1 Unit. Each incoming call is answered and routed automatically.

3. **PARTS REQUIRED**

   - Viking ACA-1 Automated Attendant Unit with **ASD824 version 1.0 software**. (See Figure 1 Front View of the ACA-1 Unit).
   - Modular line cord with RJ11 connector.
   - EXS-Z KTU expansion interface card.
   - E-8/24 main software, version 3.0 or higher.

4. **REFERENCES**

   Viking Technical Practice notes (included with product).

   > Viking Electronics, Inc.
   > 1531 Industrial Street
   > Hudson, WI 54016
   > Sales Line: (715) 386-8861
   > Demo Line: (715) 386-6643

5. **SITE REQUIREMENTS**

   The product must be mounted near a 120V ac source. Site location is limited only by the location of the single line port on the Electra 8/24 KSU.

6. **PROCEDURE**

   6.1 To connect the ACA-1 follow the steps below: (See Figure 2 Rear View of the ACA-1 Unit.)

       6.1.1 Determine the location for mounting the ACA-1.

       6.1.2 Insert the RJ11 connector from the ACA-1 to the selected single line port of the Electra 8/24 Key System.

6.1.3 Assign each CO/PBX line that will be answered by the Automated Attendant to Direct Inward Terminate (DIT) at the selected single line port (refer to Memory Block 3-10 in the Programming section of the *Electra 8/24 Installation Service Manual*).

6.1.4 Program and operate the Automated Attendant according to the instructions provided with the ACA-1 Unit.

7. LIMITATIONS

7.1 Only one MFR circuit is available for all three single line telephone ports within the Electra 8/24 System. Some incoming calls may ring several times before being answered by the Automated Attendant.

7.2 The ACA-1 Unit only accepts DTMF signaling (touch-tone). Rotary dial signals do not activate the Automated Attendant.

7.3 Incoming calls should not be routed to the ACA-1 Unit after hours. Transferred calls that go unanswered will continue to recall indefinitely and transfer between the ACA-1 Unit and the unanswered station.

8. RECOMMENDATION

8.1 Turn off the ACA-1 Unit after hours and/or reroute the incoming calls to an alternate ringing position (answering machine).
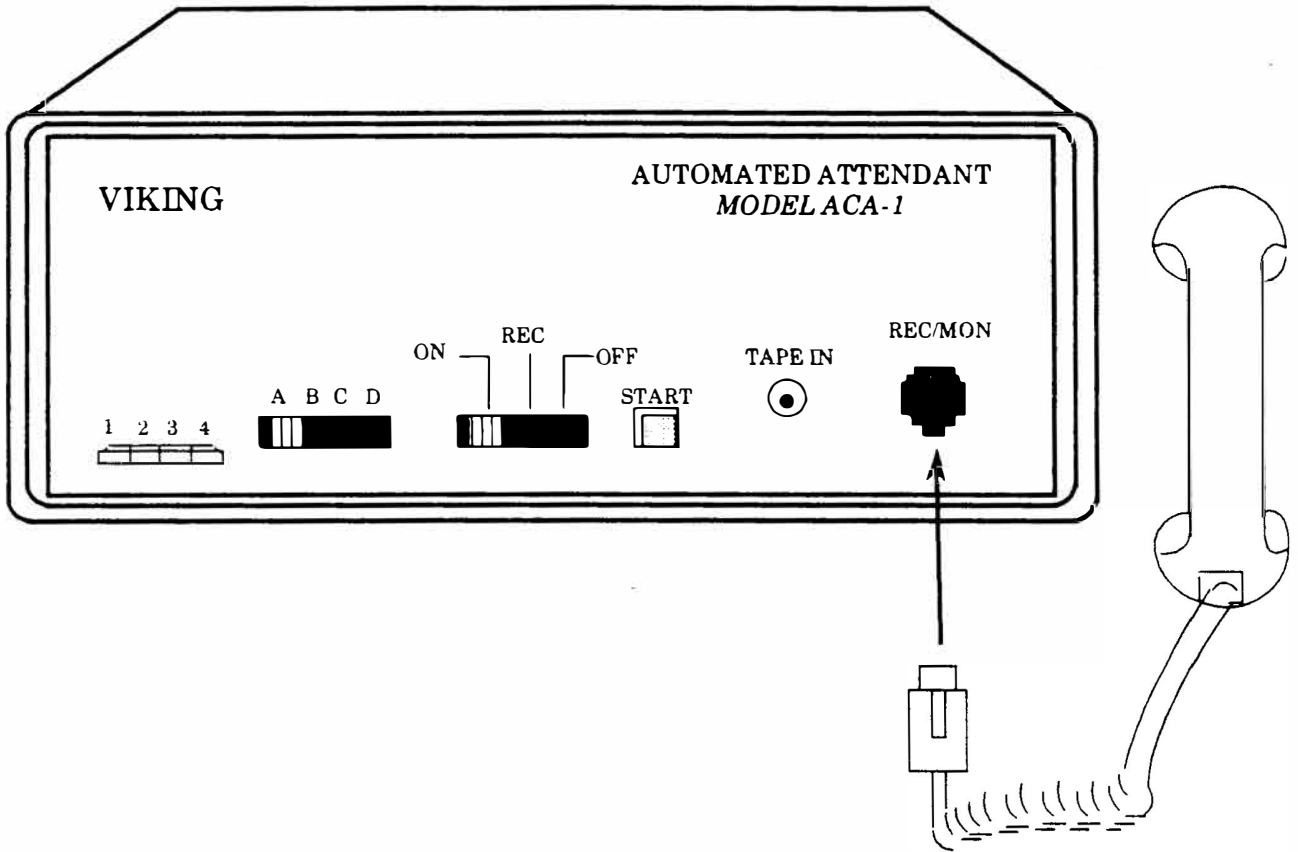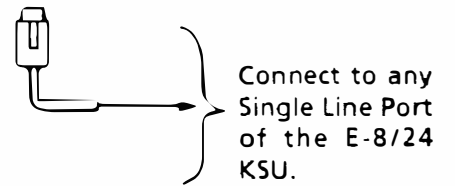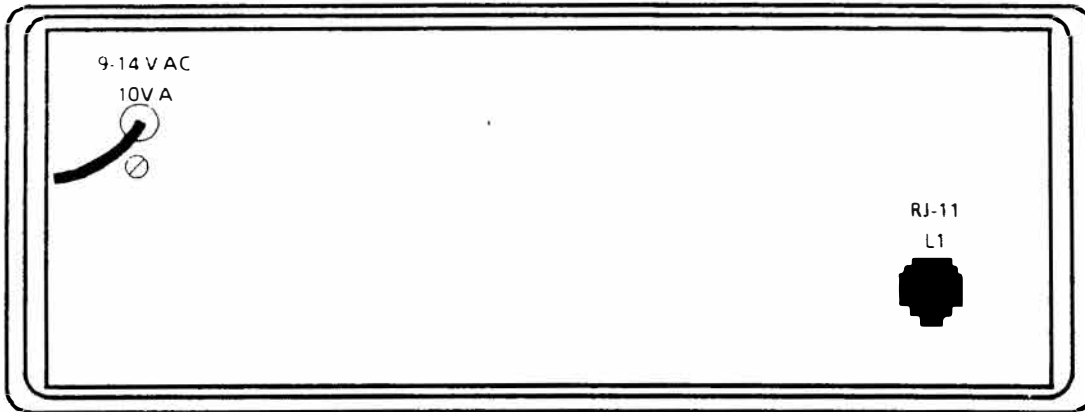
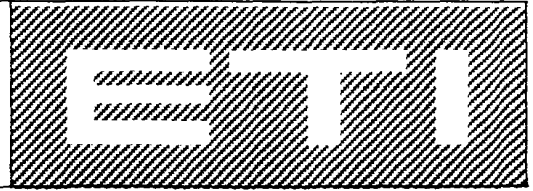Figure 1   Front View of the ACA-1 Unit

9-14 V AC
10V A

RJ-11
L1

Connect to any
Single Line Port
of the E-8/24
KSU.

Figure 2   Rear View of the ACA-1 Unit

NEC America Inc. Switching Terminals Division   **Engineering Technical Information**

CONNECTION OF PROCTOR 46222 OPX LONG LOOP ADAPTER

ELECTRA 8/24   **ETI NUMBER: E8/24-011**   **DATE: APRIL 1991**

1. GENERAL

This Engineering Technical Information (ETI) Bulletin provides connection instructions for the Proctor 46222 OPX Long Loop Adapter to increase the loop range of a Single Line Telephone that is connected to an Electra 8/24 Electronic Key Telephone System.

2. DESCRIPTION

When the loop cable resistance of a Single Line Telephone exceeds 600 ohms, it is necessary to treat the line to increase the permissible loop range. In the Electra 8/24 Electronic Key Telephone System, loop cable resistance for a Single Line Telephone is 600 ohms.

The maximum signaling range of the 46222 is 1900 ohms loop resistance (including instrument).

3. LIMITATIONS

The OPX Long Loop Adapter must be mounted within a 600 ohm loop from the KSU.

4. REFERENCES

Proctor System Practice PSP-46222 (furnished with Proctor 46222 OPX Long Loop Adapter).

> Proctor & Associates Company
> 15050 N.E. 36th
> Redmond, WA 98052
> (206) 881-7000

In order to use the Proctor 46222 OPX Long Loop Adapter in conjunction with the E-8/24 single line port(s), the following information, on the Proctor OPX Long Line Adapter, must be provided to the telephone company:

Facility Interface Code:	OL13C
Service Order Code:	8.0X
Ringer Equivalence:	0.3B
FCC Registration Number:	BM885D-72312-OT-N

5. **PARTS REQUIRED**

    1.   Proctor 46222 OPX Long Loop Adapter (one per Single Line Telephone).

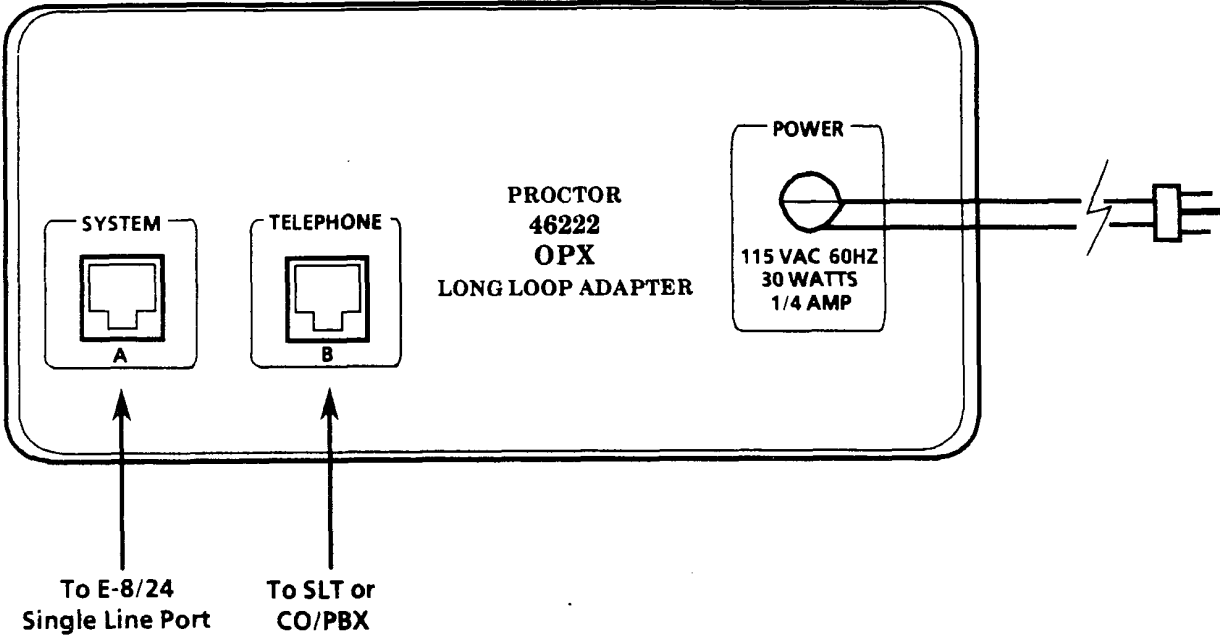6. **APPLICATION**

    6.1   Make the following connections. (Refer to Figure 1 Proctor 46222 OPX Long Loop Adapter Installation.)

SYSTEM

A

TELEPHONE

B

PROCTOR
46222
OPX
LONG LOOP ADAPTER

POWER

115 VAC 60HZ
30 WATTS
1/4 AMP

To E-8/24
Single Line Port

To SLT or
CO/PBX

Figure 1   PROCTOR 46222 OPX Long Loop Adapter Installation