COMDIAL

ExecuTech

Model XE Key System

System Manual

This publication is applicable for the following common equipment:
- Model N0308 (Revision B and later)
- Model N0616 (Revision B and later)
- Model N0820 (Revision C and later)
- Model N1024 (Revision C and later)

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SECTION 1
INTRODUCTION

MANUAL SCOPE

This publication contains a complete description of the ExecuTech model XE electronic key system. The manual is is divided into:

- System Description
- Feature Description
- Installation
- System Programming
- System Operation
- Maintenance

This issue of publication IMI 66-064 supercedes all previous issues.

RELATED PUBLICATIONS

Related publications, which contain additional information applicable to this electronic key system, are available from the manufacturer.

They are as follows:

GENERAL INFORMATION

- IMI 01-001 Compliance Requirements To FCC Rules and Regulations Part 68 and 15
- IMI 01-005 Handling Of Electrostatically Sensitive Components

USER INFORMATION

- GCA 70-110 Attendant Guide
- GCA 70-111 Station User Guide

INSTALLER INFORMATION

- IMI 66-065 Class Of Service Programming Chart

SECTION 2
GENERAL SPECIFICATIONS

SPECIFICATION	MODEL NUMBER			
SYSTEM CAPACITY	N0308	N0616	N0820	N1024
LINES:	3	6	8	10
STATIONS:	8	16	20	24
DSS/BLF CONSOLES:	4	8	10	12
INTERCOM PATHS:	1	3	3	2
MAXIMUM SIMULTANEOUS INTERCOM CONVERSATIONS:	2	3	3	2
POWER REQUIREMENTS (Fully loaded system)				
AC POWER:	117V +/- 10 % Singlephase - all models			
	.4 A	.5 A	.8 A	.8A
	25 W	45 W	65 W	65W
	40 VA	60 VA	80 VA	80VA
DIMENSIONS (approximate)				
COMMON EQUIPMENT:				
WIDTH (inches):	10.4	13.1	15.6	15.6
HEIGHT(inches):	14.9	19.4	21.1	21.1
DEPTH (inches):	3.0	3.0	3.0	3.0
WEIGHT (pounds):	9.0	14.0	16.5	17.0
STATIONS:				
FOOTPRINT (inches):	6.5 x 8.5			
WEIGHT (pounds):	1.9			
STATION CABLE REQUIREMENTS				
TYPE:	Twisted, non-shielded, #24AWG			
MAXIMUM LENGTH:	1500 feet for multiline stations			
SWITCHING PRINCIPLE:	Solid-state, space-division analog switching with stored program control			
OPERATING ENVIRONMENT				
TEMPERATURE:	32-122 degrees F (0-50 degrees C)			
HUMIDITY:	90 percent relative, non-condensing			
TERMINATIONS				
LINE:	Standard, 6-conductor minijack (USOC RJ14C)			
STATION:	Standard 50-pin female connectors for connection to external distribution field on models N0616, N0820, and N1024.			
	Standard 6-conductor minijack (USOCRJ14C) for model N0308.			

MUSIC INTERFACE

INPUT LEVEL:	3 Volts peak-to-peak maximum
INPUT IMPEDANCE:	Approximately 500 Ohms
CONNECTOR:	RCA phono jack

CENTRAL OFFICE LIMITS

LOOP LIMITS:	1900 Ohms maximum loop
CABLE INSULATION LEAKAGE:	15000 Ohms minimum

INDUSTRY/REGULATORY STANDARDS:

FCC Certified, part 15 (Class A)
FCC registered (fully protected)
UL listed (power supply only)
EIA RS478
Bell publication 48002 guidance
Hearing aid compatible handset

MEMORY RETENTION AFTER POWER LOSS: 30 hours minimum (typically 200 hours)

FCC REGISTRATION NUMBER: CVW7WC-12829-KF-E

RINGER EQUIVALANCE NUMBER: 0.4B

SECTION 3
GENERAL INFORMATION

CONFIGURATION

The model XE electronic key telephone system consists of an electronic Key Service Unit (KSU), also referred to as common equipment, dedicated electronic key telephones, and interconnecting wiring consisting of small, 4-- or 6--conductor, twisted-pair cable.

The station and line capacity of the various family members are per the following chart.

MODEL NO.	CO/PBX CAPACITY	STATION CAPACITY
N0308	3	8
N0616	6	16
N0820	8	20
N1024	10	24

The model XE telephone system is full featured, and supports a specially designed group of key telephones (model 67xxx-xx series) described below. In addition, it also supports the ExecuTech multiline telephone models 6614-xx, 6620-xx, and 6622-xx in both speakerphone and monitor versions. (If a model 6614S-xx is used, a moderate volume setting may be required to avoid the possibility of a squeal being sounded through the station speaker during call announce and/or background music operations.)

An optional kit supplied clock/chip socket assembly can be added to allow the model XE system to support the operation of a model 6600-xx ExecuTech LCD speakerphone in addition to the telephones mentioned above. The LCD speakerphone will provide the following feature displays for the user's convenience:

- Time and Date
- Call Duration Time
- Do Not Disturb
- Line Identification When Chosen Followed By The Numbers Dialed
- Intercom Calling Party Identification
- Intercom Number Dialed
- Re-display Of Call Time Of Last Call When HOLD Key Is Pressed
- Clock Programming From Station 10

COMMON EQUIPMENT DESCRIPTION

The common equipment is a fully electronic device. It is essentially a special purpose computer system acting as a communications controller between central office (CO), private branch exchange (PBX), or CENTREX supplied lines and the proprietary telephone stations. The software architecture of the common equipment provides complete system support and great flexibility of operation.

The common equipment is contained in a functional, modern-style metal housing of contemporary design in keeping with the needs of the modern office environment. It is engineered to be wall or rack mounted. The outline dimensions of the common equipment cabinet are illustrated in **Figure 1-1.**

STATION DESCRIPTION

The model 67xxx-xx telephone stations are electronic, microprocessor- controlled, devices. They allow not only multiline pickup but also single key access to features available from the serving CO, PBX, or CENTREX switch as well as the common equipment. The outline dimensions of the system stations are illustrated in **Figure 1-2** and the images are illustrated in **Figure 1-3**.

The stations provide the following features:

- Full modular connection
- 4 fixed keys with indicators
  - SPKR
  - MUTE
  - HOLD
  - ITCM
- 2 fixed keys without indicators
  - TAP
  - TRANS/CONF
- Programmable keys (softkeys) with and without indicators
- 7-foot, 6-conductor line cord
- 6 position, 4- or 6-conductor modular line jack
- K-type handset (hearing aid compatible)
- Ringer volume control (Off, Low, and High)
- Desk/wall reversibility

DSS/BLF CONSOLE DESCRIPTION

The DSS/BLF console is an optional device designed to be a companion to a system attendant station in high call volume situations that require a dedicated call transfer location. The Console provides a direct station selection (DSS) intercom, and an associated busy lamp field (BLF). It also provides one-key access to all-call when that feature is available.

The model EB32-xx, DB32-xx, DB32S-xx, DB40-xx, and DB70-xx DSS/BLF consoles are all compatible with the XE system. The station port to which they are connected must be programmed as a DSS/BLF console port. The console keys are fixed for DSS/BLF operation beginning with station 10 and ending with the maximum station number in the system. The remainder of the keys are blanked and are unuseable for any other purpose. For this reason it is recommended that the larger consoles (DB40 and DB70) not be used unless absolutely necessary since the XE system has a maximum station capacity of twenty-four stations thus leaving these consoles with a large quanity of blanked keys.

The DB32S-xx Adjunct Feature Module can be used as either a DSS/BLF console or as an off-hook voice announce with handsfree answerback (OHVA/HFAB) unit; however, it can not be used for both purposes at the same time. The station port must be programmed for whichever of these features that is required. The console feature allows DSS/BLF operation while the OHVA/HFAB allows voice announcing to a station already busy on a call and subsequent handsfree answering by that station user.

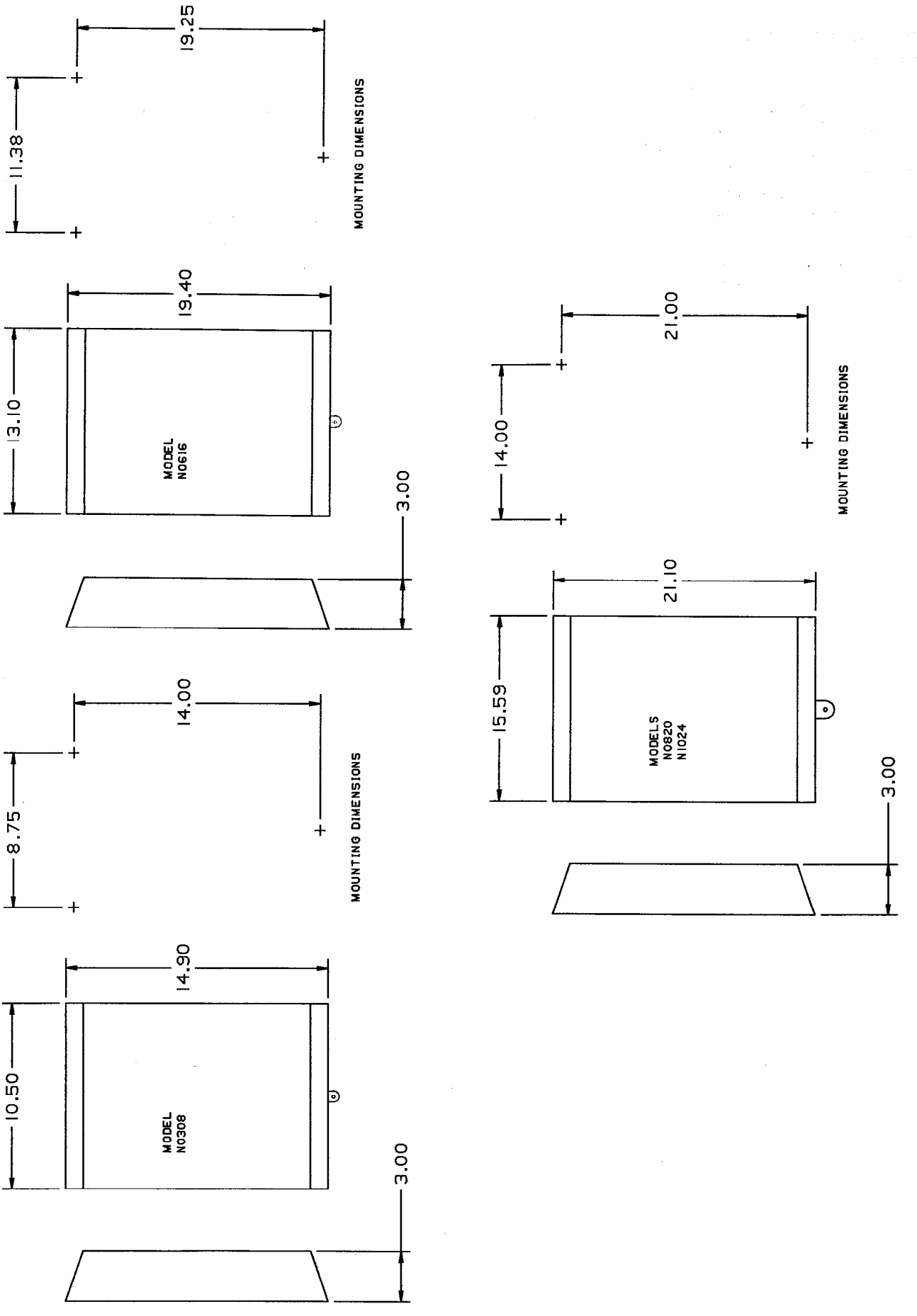


Figure 1-1. Outline Dimensions - Common Equipment

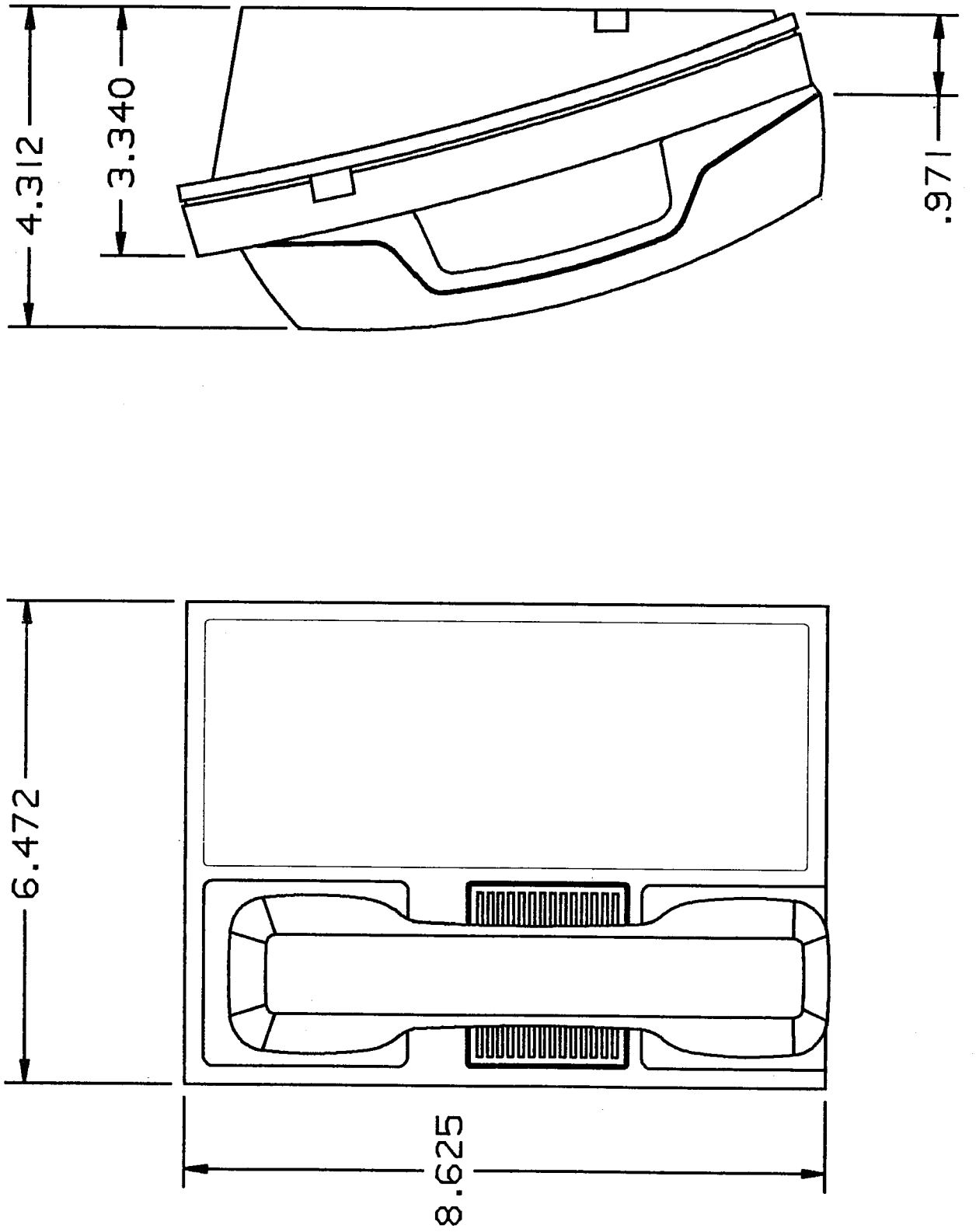


Figure 1-2. Station Outline Dimensions (Model Code 67xxx-xx)

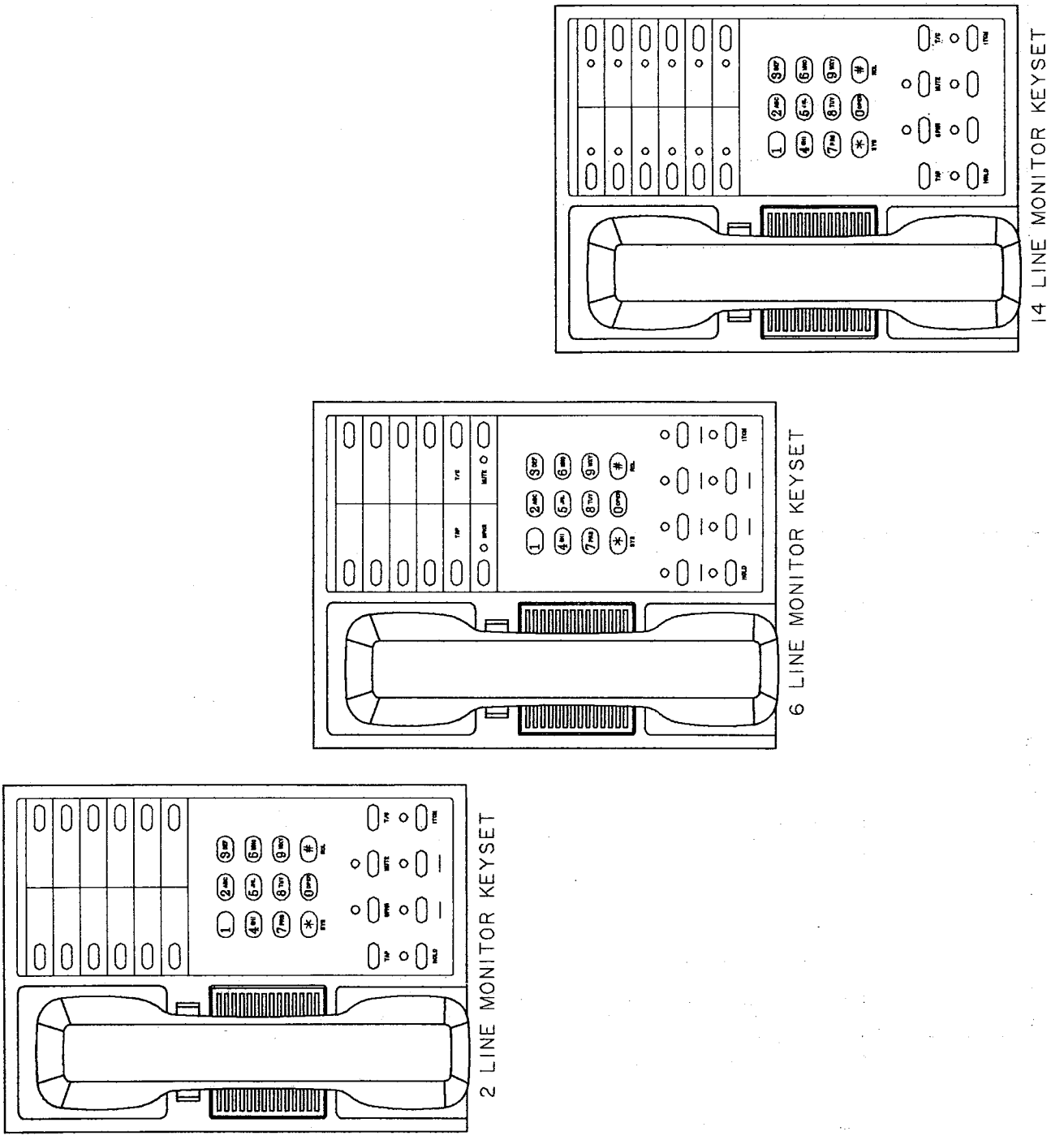


Figure 1-3. Station Images (Model Code 67xxx-xx)

CHAPTER 2
DESCRIPTION OF SYSTEM FEATURES

SECTION 1
STANDARD FEATURES

ADD-ON CONFERENCE (2 INTERNAL, 1 EXTERNAL PARTIES)

This system feature allows a station, while operating in a private mode, to add another station to an outside call.

ALL INTERCOM LINKS BUSY INDICATION

When all intercom paths are busy, the system causes the intercom light at each station to be on steady.

AUTO DIAL

Each multiline station provides programmable dialing features. Softkeys can be programmed to store numbers for automatic dialing purposes. The stored numbers can be up to fifteen digits in length and can include line or intercom selection, numbers, #, *, pauses, and flash signals. A pause is stored each time the **HOLD** key is pressed, and a flash signal is stored each time the **TAP** key is pressed. The pause and flash intervals are programmable. Any softkey that does not have a line assignment can be programmed as an auto dial. Additionally, an auto dial number can be stored as a secondary function at every key programmed for direct station selection. Often used host PBX or CENTREX feature access codes can be stored at a softkey location to provide one-key access to the features. Also refer to the discussions titled, AUTOMATIC PAUSE INSERTION, STATION SPEED DIAL, and PROGRAMMABLE DSS/BLF.

AUTOMATIC HOLD TRANSFER TO INTERCOM (ANSWER HOLD)

If the intercom line is selected while an outside line call is active, this system feature causes the outside call to be automatically placed on hold.

AUTOMATIC REDIAL (OF BUSY NUMBER OR UNANSWERED CALL)

Automatic redial of the last dialed number can be made available at every station through softkey programming (the station user must program a softkey for use as an auto redial key). With this feature, a busy number or an unanswered call can be redialed repeatedly. Once automatic redial is activated, the station will select the line, automatically dial the number, and wait for a response. It will do this once a minute for approximately 10 minutes. The user must lift the handset to take immediate control if the call is completed. Users of the optional speakerphone station can take control by pressing the SPKR key instead of lifting the handset.

AUXILIARY EQUIPMENT INTERFACE

A non-key system telephone device or data device can be connected ahead of the common equipment on certain line ports across the tip and ring leads. Special terminals in the line jack are provided for this purpose. The system can detect an off-hook condition in the connected device, and turn on the line status light at the key system telephone stations with access to the line to indicate the busy condition.

AUXILIARY STATION RINGER INTERFACE

The auxiliary station ringer interface provides "dry-contact" relay closures whenever station 17 rings. The contact closures track the ringing pattern of station 17, and can be used to control an external signalling device. When a particular station port is programmed to function as a PA port, the auxiliary ringer interface relay contacts automatically become supervisory contacts. They close when the PA port is called. In this configuration, they are used to enable an external PA system. Also refer to the discussion titled, COMMON AUDIBLE RINGER INTERFACE.

BACKGROUND MUSIC

If an external music source is provided, background music can be turned on and off at individual stations. Background music automatically turns off during calls. Also refer to the discussion titled, EXTERNAL MUSIC SOURCE.

BASIC KEY SERVICE (1A2)

The system provides all of the basic, 1A2-type, key service features. These features are: selective line pickup, common line pickup, multiline pickup, and hold.

BATTERY BACK-UP (CHASSIS, CABLE, AND BATTERIES)

Battery back-up assemblies including chassis, cable, and battery are offered as optional kits (available from

Comdial). The assemblies are designed to connect directly to the un-interruptable power source (UPS) interface located on the common equipment chassis. No user intervention is required with this feature, and no class of service programming is required.

BATTERY BACK-UP INTERFACE

Provision has been made for attaching a Comdial provided optional battery back-up kit to give full uninterruptable system power in case of an AC power loss. The switching and trickle charge circuitry are in the common equipment, while batteries, chassis, and cable are packaged as a separate option. When plugged into an active AC power source the common equipment will constantly charge the attached batteries with a trickle current. Built-in circuitry automatically switches to battery power when AC power is lost. With batteries at full charge, a fully loaded system will operate for a minimum of one hour without AC power. No class of service programming is required.

CALL ANNOUNCE WITH HANDSFREE ANSWERBACK

The internal speaker at each multiline station provides call-announce capability over the intercom link. A handsfree response to a call-announce call can be made. This response is transmitted by the microphone built into the handset. Also refer to the discussion titled, VOICE ANNOUNCE BLOCKING

CALL TRANSFER - SCREENED

Screened call transfer allows outside calls to be transferred from one station to another, via the intercom link, in one of two ways. If both stations have access to the line, a common line pickup transfer can be effected. If the other station does not have access to the incoming line, transfer can still take place using the system transfer feature. For a screened transfer, a call is transferred to another station with a pre-transfer announcement by the transferring party. Transferring of calls is accomplished with the T/C (TRANSFER/CONFERENCE) key.

CALLING STATION IDENTIFICATION

If the station number of a calling station has been programmed into the DSS/BLF of a called station, the calling station will be identified by the flashing BLF light at the called station. The lights adjacent to softkeys indicate status of DSS telephones: dark = idle, steady-on = in use, flash = calling, and flutter = call back request (if feature is available).

COMMON AUDIBLE RINGER INTERFACE

Connections are available at the key service unit which provide "dry-contact" relay closures whenever an incoming line rings. These contact closures track the ringing pattern and can be used to control an external signalling device. When a particular station port is programmed to be a PA port, the common audible ringer interface contact points automatically become supervisory contacts which close when the PA port is called. In this configuration, they are used to enable an external PA system. Also, see the discussion titled, AUXILIARY STATION RINGER INTERFACE.

DIAL 0 FOR SYSTEM ATTENDANT

The system attendant station (station 10) is signalled whenever the digit 0 is dialed on the intercom line.

DIRECT STATION SELECTION INTERCOM

Refer to the discussion titled, PROGRAMMABLE DSS/BLF.

DISTINCTIVE RINGING

The ringing cadence of an incoming call is the same as the ringing cadence of the TELCO, PBX, or CENTREX system. The ringing cadence of an intercom call presents two tone bursts sounded every 4 seconds.

DO NOT DISTURB

Any station can be set to a do-not-disturb mode using the **SPKR** key. While in this mode, the station will not ring on any incoming call nor will it accept an intercom call. A party making an intercom call to a station set in the do-not-disturb mode hears a fast busy tone. The feature cannot be overridden by the calling party.

END TO END SIGNALLING ON INTERCOM

After an intercom call has been established, the system can continue to send dialing signals (DTMF tones) through the intercom path. This feature can be performed from every station in the system, and is used by peripherals such as an OPX accessory unit and voice mail equipment. @12PT CTRD TTL = END TO END SIGNALLING
ON LINES

After an outside call has been established, the system can continue to send dialing signals (DTMF tones) through the telco network and have them received at the distant end for inward call completion (bank by phone, etc.). This conventional, off-hook dialing feature can be performed from every station in the system. No class of service programming is required.

HANDSFREE ANSWER INHIBIT

The **MUTE** key on a multiline station can be used to block all handsfree answerback response. This arran-

gement will prevent a station user from monitoring another station site using the monitoring ability of the voice announce feature. When the key is pressed, all handsfree answerback is disabled thus inhibiting any off-site monitoring. The speaker light will flash to indicate that this feature is active. Also refer to the discussion titled, **MUTE.**

HEARING AID COMPATIBLE HANDSET

The station handset is compatible with magnetically-coupled hearing aids.

I HOLD AND I USE INDICATIONS

The light associated with a line key provides a visual indication of the status of that line. When a station user has a line in-use or on-hold at a station, the light indication provided at that station is of a different flash rate than the indication provided at the other stations in the system.

INTERCOM CALL PROGRESS TONES

Intercom call progress is marked by special tones. A steady tone is provided for dial tone. For tone signalled intercom calls, a two-tone burst is sounded every four seconds at a called station and returned to the caller as ring back. For a voice signalled intercom call, a single tone burst is sounded at a called station and returned to the caller as ring back. When a called station is busy on an outside call, a two-tone burst is sounded every four seconds at the called station and returned to the calling station as ring-back. When a called station is busy on the intercom, a busy signal of one tone burst sounded each second is received at the calling station.

INTERCOM LINE LOCKOUT

Refer to the discussion titled, VOICE ANNOUNCE BLOCKING.

INTERCOM LINE TIMEOUT

Should the intercom line be selected with no dialing or other action taking place, the intercom will timeout after ten seconds, and return to an idle state.

LAST NUMBER REDIAL

Each station is provided with a last number redial feature. This feature will save thirty digits of the last outside number dialed. A newly dialed number will always automatically replace a previously dialed number. Upon command, the system will choose a line and redial the saved number. The system will first choose the prime line if assigned and idle. If it is busy or unavailable, the system will choose any line assigned to idle line preference. If they are unavailable, the system will chose the last line used at the station. If it is busy, no further choice is made. Also refer to the discussion titled, AUTOMATIC PAUSE INSERTION.

LINE PRESELECTION

A line can be manually selected before lifting the handset (for handsfree dialing) or after the handset is lifted.

MANUAL HOLD

A key activated feature at each station will place an outside line on hold. Pressing the **HOLD** key holds the call, provides a distinctive flash rate of the line key indicator, and allows the user to access other station features. The holding station or any other station which has access to the line can retrieve the held call.

MEMORY RETENTION WITHOUT BATTERIES

Independent of the optional battery pack, the system memory is electronically protected during AC power failures by an electronic component sometimes referred to as a "super-cap". The stored program data will remain in memory for a minimum of 30 hours provided that the system has been powered continuously for at least 30 minutes prior to the power failure or disconnection.

MESSAGE WAITING

Special dialing codes enable a station user to control the message waiting (MW) light at other stations in the system.

When the message waiting light is turned on at a station, a call can be placed to the originating station to pick up the message.

MODULAR WIRING AND JACKS/4-CONDUCTOR WIRE SYSTEM

The system can be completely interconnected by employing industry standard 50-pin connectors and modular plug/jack combinations. Station wiring is small, 4-conductor, twisted-pair cable throughout the system.

MOMENTARY KEYS WITH LED INDICATORS

The station keys are momentary contact, press and release types. They provide line selection, call monitoring, and other feature selection. Visual indication of the feature selection is provided by solid-state, long-life, light emitting diodes (LEDs).

MULTILINE CONFERENCING

This feature will allow one or more multiline stations to access two outside lines at the same time resulting in

a conference arrangement. Conference transmission levels are not compensated.

MUSIC INTERFACE (EXTERNAL SOURCE)

A jack is provided on the common equipment for the connection of a customer-provided KX registered music source. Also refer to the discussions titled, BACKGROUND MUSIC and MUSIC-ON-HOLD.

MUTE

Each station has a **MUTE** key which, when pressed, will mute the handset transmitter (or internal microphone on speakerphones) to prevent the user's voice from being heard by the distant party. The speaker light flashes to indicate a muted condition. The key provides push-on/push-off operation. Also refer to the discussion titled, HANDSFREE ANSWER INHIBIT.

ON-HOOK DIALING

Every multiline station provides manual and/or automatic dialing while the station handset is on-hook. An internal speaker monitors call progress for completion. The handset must be taken off-hook to provide the voice link on non-speakerphone stations.

PBX/CENTREX/CENTRAL OFFICE COMPATIBLE

System features and programmable keys support the requirements of most PBXs, Central Offices, and CENTREX systems. Numbers, #'s, ✳'s, programmable pauses, and flash signals can be made a part of every stored number for access to host system feature codes.

POWER FAILURE TRANSFER

A power failure line connection is available for installing an industry-standard telephone such as a Comdial model 2500-xx. The installed power-fail telephone is automatically connected directly across line 1 by the system whenever there is an AC power failure. Normal origination and reception of calls through the power-fail telephone is possible during an AC power failure. The power-fail telephone is automatically disconnected as soon as power is restored.

POWER ON, VISUAL INDICATION

The common equipment has a red LED which monitors the status of the system, and provides an "AC power-on" indication.

PROGRAMMABLE KEYS

Refer to the discussions titled, AUTO DIAL, PROGRAMMABLE DSS, and STATION SPEED DIAL.

PROGRAMMABLE DSS/BLF (DIRECT STATION SELECTION/BUSY LAMP FIELD)

A multiline station user can store true, one-key, direct station selection (DSS) at any softkey location to create a DSS key. When this key is pressed, any active outside call is automatically placed on hold and an intercom call is automatically made to that previously stored station number. The visual indicators of the stations programmed at the key locations form a busy lamp field (BLF). The BLF conveys station status to the user. An auto dial number can also be programmed as a secondary function at every DSS/BLF memory location. Also refer to the discussions titled, TONE OR VOICE SIGNALLING (INTERCOM) and AUTO DIAL.

PULL OUT DIRECTORY

Each desk mounted telephone is equipped with a pull out directory. This directory can be used for recording the system speed dial, station speed dial, or other frequently called numbers.

SELF DIAGNOSTICS

Each station can execute a self test when so enabled. This test verifies processor, indicator, and tone functions. Instructions for activating self diagnostics are provided in Chapter 5, Section 3 of this publication.

SINGLE-DIGIT STATION DIALING

Refer to the discussion titled, SYSTEM SPEED DIAL.

SPEAKERPHONE (OPTIONAL)

The optional speakerphone provides handsfree operation of all features, except voice signalled intercom calls. The handset must be lifted for this purpose.

STATION SPEED DIAL

Each station can be programmed to provide ten speed dial numbers at the keypad keys. Station speed dial numbers can be up to fifteen digits in length and can include line or intercom selection, numbers, #, ✳, pauses, and flash signals. A pause is stored each time the HOLD key is pressed, and a flash signal is stored each time the RECALL key is pressed.

SUBDUED RINGING

Subdued ringing is automatic at any station that is busy on an outside line.

VOICE ANNOUNCE BLOCKING

This feature allows the user to block voice announced intercom signalling by dialing a special code.

SECTION 2
PROGRAMMABLE FEATURES

ACCESS DENIED

Access to particular lines can be denied at certain stations in the system through system programming. This feature is programmable on a per line/per station basis as part of system or administration programming.

ALL-CALL PAGING (VIA STATION SPEAKERS)

All-call paging allows all of the stations to receive announcements at the same time through the station speaker. Origination of announcements must be via a station handset. Each station can be programmed to receive and/or to originate an all-call page. The system default condition is that all stations have both receive and originate capability. The arrangement of paging as all-call is controlled by both system and administration programming. See the discussion titled, ZONE PAGING (VIA STATION SPEAKERS).

AUTOMATIC ABANDONED HOLD RELEASE

If a distant party abandons a hold condition and disconnects, the central office (CO) will send a forward disconnect signal to the key system. When the key system detects this signal, it will drop the line from the hold condition and return it to service. The forward disconnect signal may be either 50 msec. or 350 msec. and the key system is programmable to match this time interval. Both the system and the administration programming can be used to set the time interval between hang-up and line-drop.

AUTOMATIC PAUSE INSERTION

When the system stores a dialed number for later redial, it automatically stores a pause whenever the user waits between digits. The automatic pause is inserted in the stored number sequence at the point where the manual pause in dialing occurred. The wait time is programmable between 2 sec. and 750 msec. The wait period is programmable by system or administration programming.

AUTOMATIC PRIVACY (PROGRAMMABLE)

A line can be made private or non-private through class of service programming. In the private mode, a station has exclusive use of the line during a call. No other station can access that line unless it is included through the use of the add-on conference feature. In the non-private mode, all stations with that line appearance can gain access at the same time (sometimes known as common line pickup). A line is specified as private or non-private through system or administration programming. Also see the discussion titled, ADD-ON CONFERENCE and PRIVACY RELEASE.

CALL PICKUP - DIRECTED

A user at any station can dial a special prefix code, followed by the number of a ringing station, to answer a ringing call at that station. The feature can be enabled or disabled by system or administration programming.

CALL PICKUP - SYSTEM

A user at any station can dial a special code and answer a ringing call at any station in the system. The feature can be enabled or disabled by system or administration programming.

CLASS OF SERVICE PROGRAMMING (FROM MAIN STATION)

Both system and administration class of service (COS) programming is performed from station 10 after a base level programming step is entered. System COS programming is used by the installer to configure the system and assign the line conditions. Administration COS programming is used by the on-site administrator to re-configure the system as required. Line condition assignment is not a part of administration programming. Refer to Chapter 4 for programming details.

CLASS OF SERVICE PROGRAMMING (EACH LINE AND STATION)

Each line and station in the system can be programmed with a unique class of service operating condition. Class of service programming can be performed using instructions provided in Chapter 4.

DEFAULT FUNCTIONAL PROGRAM

At initial power up of the system, the operating features are set to a specific group of operating conditions (default conditions). The default conditions provide a complete operating system for normal use. The system can be left as a defaulted system or operating conditions can be reprogrammed if desired. A system can be defaulted at any time using the master clear procedure included with the system class of service programming; however, this action also clears all user stored auto dial and speed dial numbers.

DELAYED RINGING

Refer to the paragraph titled, FLEXIBLE RINGING ASSIGNMENTS.

DSS/BLF CONSOLE (OPTIONAL)

The DSS/BLF Console is designed to be a companion to any system station. It is useful with high call volume systems which require a dedicated call transfer location. The console provides a one-key direct station selection (DSS) intercom and an associated busy lamp field (BLF). It also provides one-key access to system-wide, all-call paging. The console is designed to be connected to any station port and serve as a companion to the station connected to the adjacent data-paired port. System or administration programming is used to program a station port as a DSS/BLF port.

EXCLUSIVE HOLD

Exclusive hold prohibits a held call from being retrieved by any other station. The exclusive hold condition also links the held call to the timed hold recall timeout feature. After timeout, audible and visual signalling will occur and the exclusive hold condition will revert to a normal line hold condition. System or administration programming can enable this feature.

EXTERNAL PAGING INTERFACE

A station port or line port can be programmed to interface with an external paging amplifier. The paging amplifier can then be dial accessed through the station port or directly accessed through the line port from other stations in the system. DTMF tones can be dialed through the interface to make a zone selection if zone paging is provided by the external paging amplifier. System or administration programming can be employed to program a station port as an external paging port. Only system class of service programming can be used to program a line port as an external paging port.

FLEXIBLE LINE ASSIGNMENT

Refer to the discussion titled, SQUARE/NON-SQUARE SYSTEM.

FLEXIBLE RINGING ASSIGNMENTS

Ringing assignments are programmable on a per station/per line basis. Ringing can be controlled for every line that has an appearance at each station. Direct, or immediate, ringing can be programmed for some assigned lines and delayed ringing programmed for others. Direct or delayed ringing is programmed through system or administration programming.

HEADSET INTERFACE

A station port can be programmed to allow the operation of telephones which provide the user with a headset option. Programming for this feature is through either system or administration programming.

IDLE LINE PREFERENCE

The system can be programmed on a per station basis to enable idle line preference. When idle line preference is enabled, taking the handset off-hook will automatically connect the station to any assigned line that is idle and has been arranged for this feature. The line key will not have to be pressed. This feature is mutually exclusive with prime line automatic. Programming for this feature is through either system or administration programming.

LCD SUPPORT

The common equipment can be modified with an optional up-grade kit which allow the system to support the use of LCD speakerphones having a Liquid Crystal Display (LCD). The LCD speakerphone ports are identified by system or administration programming.

LINE TYPE

A line port is programmed as to type. The program type is chosen based upon the toll restriction that is to be applied to calls made over the line connected to that port. A line port is assigned as type 1 when any enabled toll restriction is to be applied with the first digit dialed. Such a line type is often assigned when a CO line is connected. A line port is assigned as type 2 when any enabled toll restriction is to be applied beginning with the second digit dialed. Such a line type is often assigned when a PBX or CENTREX line with any trunk access code other is connected. A line port is assigned as type 3 when any enabled toll restriction is to be applied beginning with the second digit dialed whenever that digit is a 9. If that digit is not a 9, no restriction is applied. Such a line type is often assigned when a PBX or CENTREX line with a trunk access code of 9 is connected. Line types can only be selected as part of system class of service programming.

MUSIC-ON-HOLD

Music is provided to outside lines that are placed on hold if an external music source is connected to the system and the feature is turned on from station 10. System, administration, or attendant programming can be used to program this feature.

MUSIC-ON-HOLD SYSTEM-WIDE ENABLE/DISABLE

Music is provided to outside lines that are placed on hold if an external music source is connected to the system. Music-on-hold can be disabled system-wide by attendant action. Attendant programming is used to enable/disable this feature. Also refer to the discussions titled: MUSIC INTERFACE, and MUSIC-ON-HOLD.

NIGHT TRANSFER (OF RINGING)

The day, or normal, ringing of incoming lines can be transferred to a particular station or stations (chosen through class of service programming) for off-hour or special purpose answering. The night transfer mode can only be activated from station 10. Night transfer of ringing can be assigned to specific stations using system or administration programming. It is then turned on or off by using system or administration as well as attendant class of service programming.

OFF-HOOK VOICE ANNOUNCE WITH HANDSFREE ANSWERBACK

With the off-hook voice announce (OHVA) feature, an announcement can be made from one station to another station that is off-hook or busy on a call. To receive an OHVA announcement, the OHVA station can be equipped with either a telephone and adjunct feature module combination or with a telephone that has secure off-hook voice announce (SOHVA) capability built into it. The announcement is preceded by an alerting tone and delivered through the loudspeaker in the adjunct feature module or the SOHVA equipped telephone. The called party can reply in a handsfree manner to a OHVA announcement without interrupting the active call. Reply in made through the OHVA microphone included in the adjunct feature module or in the integrated OHVA capability telephone. Stations that have the voice announce blocking feature turned on cannot receive a OHVA announcement. System or administration programming is used to enable the OHVA feature at a station port. Also refer to the discussion titled: SECURE OFF-HOOK VOICE ANNOUNCE.

OPX SUPPORT

The system will support the operation of the optional off premises extension (OPX) unit. System or administration programming is used to program a station port for OPX operation.

ORIGINATING DENIED

The ability to originate calls on certain lines can be denied at individual stations through system programming. The originating denied feature is programmed on a per station/per line basis. Originating denied does not prevent a user from answering a ringing line, retrieving a held call or receiving a transferred call. Call origination on a line is denied at a particular station by the system or administration programming.

PERSONALIZED RINGING TONE

This programmable feature enables stations to ring in a distinctive manner with one of four different tones. The ringing tones are combinations of four different frequencies and two different warble rates. Personal ringing tones can be assigned with system or administration programming.

PRIME LINE AUTOMATIC

If a station is programmed for prime line automatic, the designated outside line or intercom line will be automatically selected when the handset is taken off hook. Prime line pick up may be pre-empted by preselecting another line before lifting the handset. If the prime line is ringing, it is automatically answered by lifting the handset. Assign a prime line to a station through system or administration programming.

PRIVACY RELEASE

A line can be made non-private at a particular station while remaining private at all other stations. This arrangement allows other stations with that line appearance to join that particular station whenever it is on the privacy-released line. A line is specified as private or non-private at a particular station with system or administration programming. Also see the discussions titled, ADD-ON CONFERENCE and AUTOMATIC PRIVACY.

PROGRAMMABLE KEYS

All multiline keysets are equipped with a minimum of twelve softkeys which can be programmed a line pick-up, auto dial, station speed dial, and DSS action. Refer to the discussions titled, AUTO DIAL, PROGRAMMABLE DSS, and STATION SPEED DIAL. System or administration programming is used to assign functions to softkeys.

PULSE/TONE SWITCHABLE

When rotary dial lines are installed, the user can switch from pulse (rotary dial signals) to tone (Dual Tone Multiple Frequency signals - DTMF). This feature is useful for accessing special circuits requiring DTMF tones such as banking machines, etc. The system is programmed on a per line basis to allow this feature at all stations. The system or administration class of service programming enables this feature on a per line basis.

RINGING LINE PREFERENCE

The system can be programmed on a per station basis to provide ringing line preference on all lines programmed for ringing at a station.

When ringing line preference is enabled at a station, taking the station off-hook automatically connects it to any outside line which happens to be ringing at the station. A line key will not have to be pressed. The ability of a particular station to answer a ringing line without

line selection is enabled by the system or administration class of service programming.

SECURE OFF-HOOK VOICE ANNOUNCE

With the secure off-hook voice announce (SOHVA) feature, a secure announcement can be made from one station to another station that is off-hook or busy on a call. A station being operated in a handsfree mode cannot receive a SOHVA announcement. A station must be equipped with a telephone that includes SOHVA capability to receive an SOHVA message. With SOHVA, the announcement is delivered and responded to in a secure manner that prevents the distant party from hearing either the announcement or the response. The announcement is preceded with a tone alert and delivered to the handset receiver of the telephone. The announcing caller receives a tone alert upon calling to alert them that they are making an SOHVA call. Response to the announcement is effected by pressing and holding the MUTE key and speaking into the handset. Stations that have the voice announce blocking feature turned on cannot receive a SOHVA announcement. System or administration programming is used to enable the SOHVA feature at a station port. Also refer to the discussion titled: OFF-HOOK VOICE ANNOUNCE WITH HANDSFREE ANSWERBACK.

SQUARE/NON-SQUARE SYSTEM

A system can be programmed to be square or non-square as desired. In a square system, a specific line is assigned to the same key on every station in the system. In a non-square system, any line can be assigned to any available softkey on every station in the system. Also refer to the discussion titled, TENANT SERVICE. Key mapping for line appearance can be performed on each station using the system or administration class of service programming.

STATION BY STATION PRIVACY

Refer to the discussions titled, AUTOMATIC PRIVACY and PRIVACY RELEASE.

SYSTEM SPEED DIAL

Thirty, system-wide, speed dial numbers are provided. The system speed dial numbers can be up to fifteen digits in length, and can include numbers, #'s, ✳'s, pauses, and flash signals. System speed dial number programming can only be performed at station 10; however, once programmed, they can be used at every station in the system. System, administration, or attendant programming can be used to program system speed dial numbers.

TAP (FLASH/RECALL)

When host system custom calling features are available via a "flash" signal, the system can be programmed so that the **TAP** key will generate a "flash" signal when it is pressed. When custom calling features are not available, the **TAP** key functions as a positive disconnect or dial tone recall key. These two features are mutually exclusive. The flash/recall time is assigned through system or administration programming.

TENANT SERVICE

Two or more closely located sites can simultaneously be served by the same common equipment. Each site is provided with dedicated trunk facilities and separate feature and class of service complements. Also, refer to the discussion titled, SQUARE/NON-SQUARE SYSTEM. Key mapping for line appearance can be performed on each station using the system or administration programming.

TIMED HOLD RECALL

After a call has been on hold for a programmed length of time, the system will recall the station that placed the call on hold. It also visually signals all other stations. The audible signal is repeated at the end of each reoccurring time out period. The visual indication continues until the held call is picked up. The system or administration programming sets the timed hold recall time period.

TOLL RESTRICTION - FLEXIBLE

Flexible toll restriction can be programmed to prohibit some or all stations from calling a wide range of number combinations while allowing specific exceptions. Restrictions are specified by up to four entries on a deny table while exceptions are specified by up to four entries on an allow table. Allow entries will always override deny entries. Up to eight digits are permitted for each entry. A "match anything" digit (# symbol) can be included as part of an entry to represent any digit from 1 to 0. This is used to deny or allow a range of numbers with one entry. A separate pre-programmed 1+800 allow table permits this dialing feature to be selected regardless of any restrictions which may be specified. The dialing of 911 and 1+911 is always allowed.

Once programmed, flexible toll restriction is assigned on a per line/per station basis. In addition to flexible restriction, or as an alternative to it, stations can be restricted with 1/0 call restriction assignment. When 1/0 call restriction is selected, 1+ 7 digit dialing can be allowed if desired. Either system or administration programming is used to specify the deny and allow entries and assign the restriction to line and station.

TONE OR VOICE SIGNALLING (INTERCOM)

Intercom calls can be tone signalled or voice signalled as desired. The tone signalled intercom call must be answered by lifting the handset. The voice signalled intercom call can be responded to in a handsfree manner. The class of service programming determines which signalling method is employed as the primary method when an intercom call is made. The alternate method is available through user action at the station. Intercom call progress is marked by special tone signals. The system or administration programming determines which type of intercom signalling is first option signalling for the system. Also refer to the discussions titled, INTERCOM CALL PROGRESS TONES and VOICE ANNOUNCE BLOCKING.

ZONE PAGING (VIA STATION SPEAKERS)

Zone paging allows groups of stations to receive announcements through the station speakers. The programming can enable zone paging in up to three different zones. A station can be programmed to only receive announcements or programmed to originate announcements as well. Each station can be programmed to be in any or all zones for both receiving and originating announcements. The ability of each station to originate and/or receive a page, and the arrangement of the paging into different zones are controlled by system or administration programming. Also, refer to the discussion titled, ALL-CALL PAGING (VIA STATION SPEAKERS).

CHAPTER 3
INSTALLATION

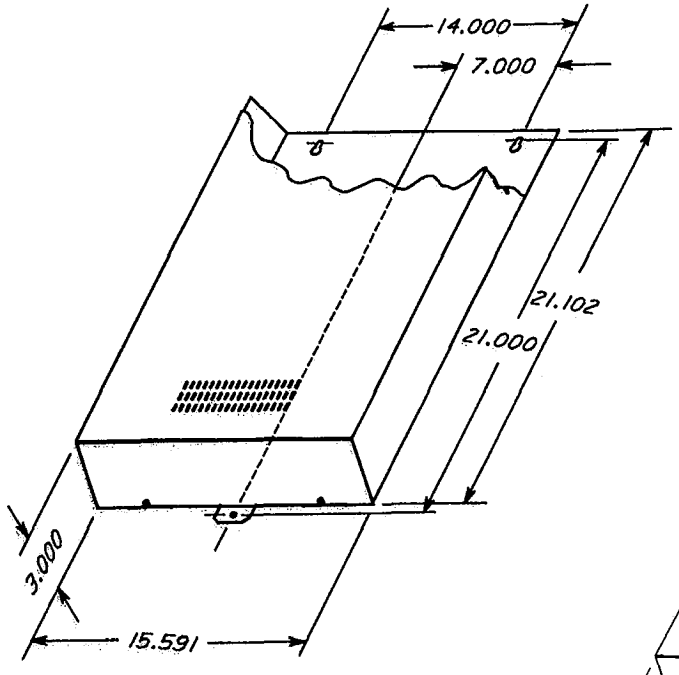
SECTION 1
STANDARD INSTALLATION DETAILS

MOUNTING CONSIDERATIONS

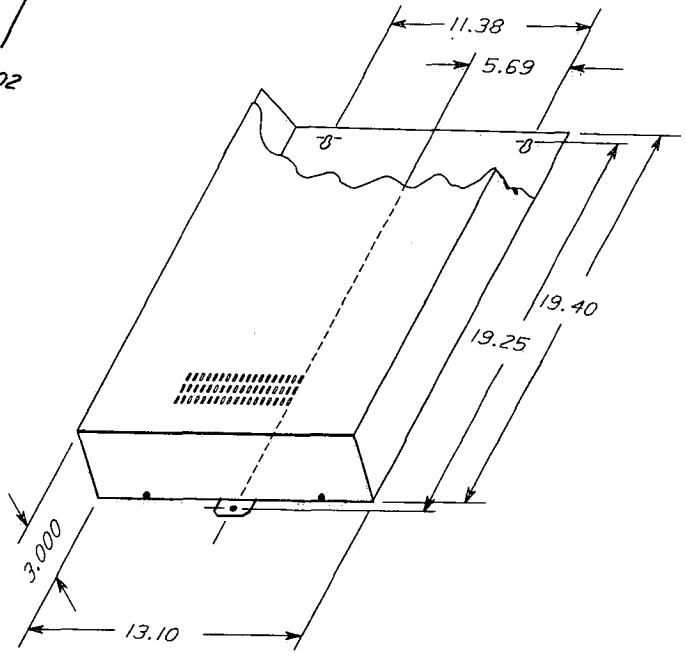
- The common equipment cabinet should be attached vertically to any sturdy, flat, surface or vertically rack mounted if desired.
- Cabinet must be located within six (6) feet of a proper electrical outlet. The system requires a dedicated 117VAC 15 AMP circuit, with a third-wire ground, supplied to a standard electrical outlet (NEMA 5-15R).
- The distance between the common equipment and the TELCO/PBX jacks must be 25 feet or less as per FCC requirements. A nominal distance of 7 feet is recommended.
- The mounting location must be secure and dry and have adequate ventilation. The temperature range of the location must be within 32-122 degrees F (0-50 degrees C), and the relative humidity must be less than 90 percent non-condensing.
- If the mounting surface is damp or if it is concrete or masonry material, a backboard must be attached to the mounting surface to be used for common equipment mounting. Suitable mounting backboards are available commercially or can be constructed out of 1/2-inch plywood cut to size.
- Tools and hardware required:
  - Fasteners - wood screws (1/4 x 1-inch round head), toggle bolts, or wall anchors
  - Screwdriver - to match fasteners
  - Electric drill - if prepared holes are required
  - Connecting tool - for fastening wires to a type-66 connector block.
  - Crimping tool - for 623-type modular plugs.

MOUNTING PROCEDURE

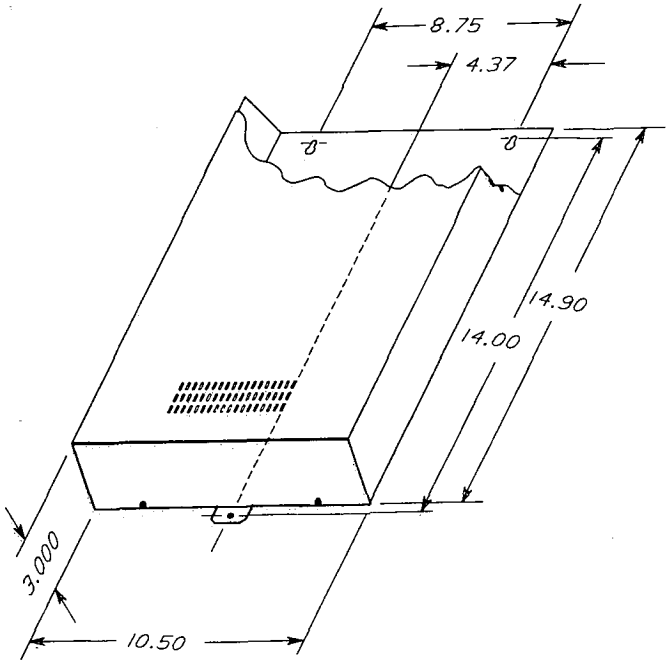
1. Unpack, and carefully inspect the common equipment and telephones for shipping damage. Notify the shipper immediately of any damages found. Verify that the packages contain all parts and accessories needed for proper installation and operation.
2. If a backboard is required at the mounting location, attach it securely to provide a stable mounting surface for the equipment.
3. The common equipment is attached using three mounting holes located as shown on **Figure 3-1**. While refering to **Figure 3-1**, measure and mark the location of the mounting holes on the mounting surface.
4. Drill holes in the mounting surface of a proper size to accommodate the hardware being used. If necessary, prepare these holes with inserts, anchors or other attachment devices as dictated by the type of mounting surface.
5. Insert the top screws into the mounting surface, and tighten them to within approximately 1/8-inch of the surface.
6. Hang the cabinet on the top screws using the mounting holes located on the rear of the cabinet. Note that these holes are elongated with an enlargement at one end. This feature allows the cabinet to snap down on the screws to secure the mounting when the cabinet is hung on them.
7. Insert a third screw through the mounting tab located on the lower edge of the cabinet and into the mounting surface, and tighten it into place
8. Place the individual telephones as desired and in keeping with accepted industry and office standards. A telephone can be wall mounted if necessary as they are desk/wall reversible.
9. Interconnect the system per the details shown in **Tables 3-1** and **3-2** and **Figure 3-3** shown at the end of this section



Models N0820 and N1024



Model N0616



Model N0308

Figure 3-1. Mounting Details

AC POWER CONNECTION

Employ a dedicated 117VAC 15 AMP circuit, with a third-wire ground, supplied to a standard electrical outlet (NEMA 5-15R) for the AC power connection. AC power connection is illustrated in **Figure 3-2**, shown on the following page

- A plug-in power line surge protector should be installed between the power cord and the AC outlet.
- Do not connect the AC power cord until the installation has been checked.
- To apply AC power, connect the power cord to the electrical outlet.

BATTERY BACK-UP

The common equipment provides an interface connector for the connection of an optional external battery assembly. This assembly is available separately as a kit.

- Connecting the optional Comdial external battery assembly to this interface provides a minimum of 1 hour of operation should the AC power to the system be interrupted.

CAUTION

Be sure that the AC power cord is connected to the electrical outlet before connecting the external battery assembly to the common equipment. This ensures that internal protection circuitry is operating to prevent damage which could result from improper connection.

- During AC operation, the common equipment provides re-charging current to maintain the external battery potential at an operational level.

NOTE: *The optional external battery assembly requires approximately ten (10) hours to completely re-charge to full potential after it has been completely discharged and, in some cases, when initially installed.*

SYSTEM GROUNDING

The common equipment has internal secondary surge protection on all line ports. In order for this protection to be effective, the common equipment cabinet **MUST** be connected to a reliable earth ground such as a metal cold water pipe or a building frame ground System grounding is illustrated in **Figure 3-2,** shown on the following page.

- The grounding wire must be of #10 or #12 insulated, solid copper and separate from the three-wire AC line cord.
- A ground stud is located on the common equipment cabinet.

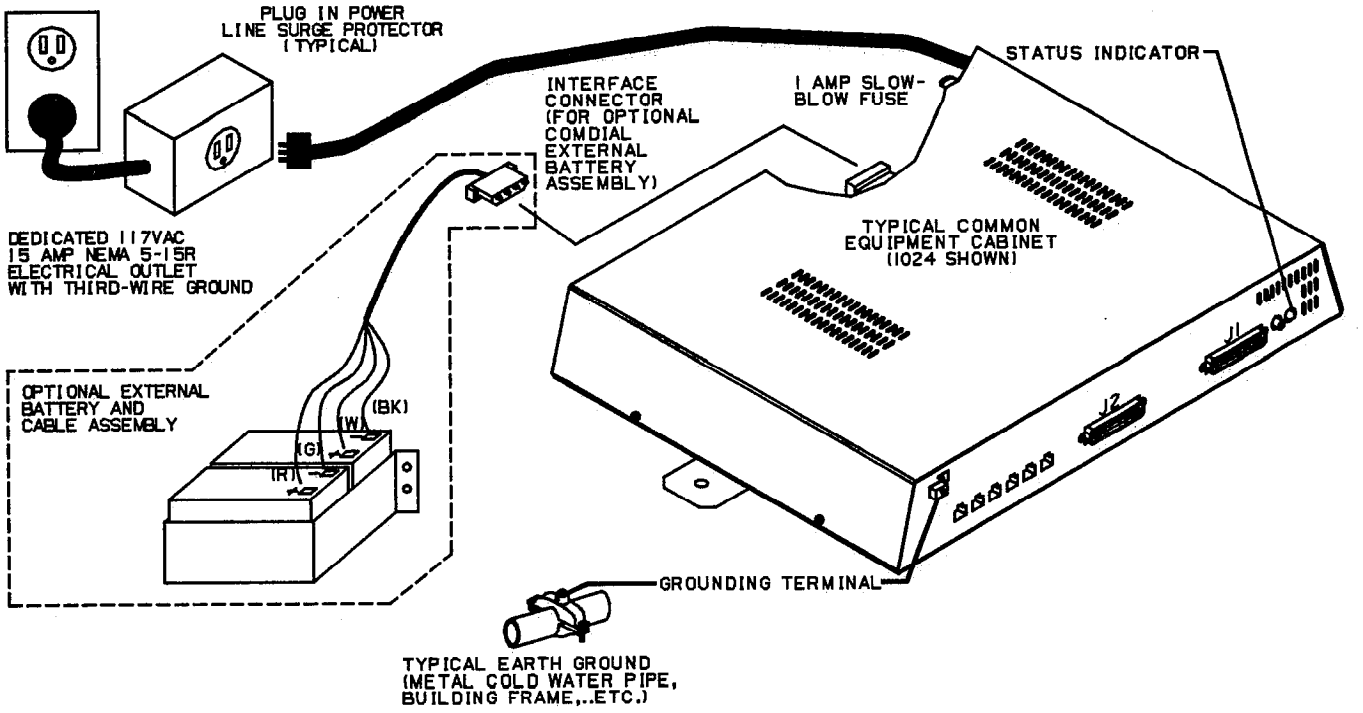


Figure 3-2. AC Power Connection and System Grounding

LINE CONNECTIONS

The common equipment cabinet line terminations are standard modular plug/jack connections. Each modular jack (2-6) provides termination for two lines. Modular jacks 2 and 3 also provide termination for an auxiliary pair in addition to the two outside lines. CO line terminations can be at a type 66M-xx connector block or at individual 6-position modular jacks. **Table 3-1**shows the line connection details.

The line cord that is routed between the CO line termination and the common equipment cabinet termination should be twisted-pair wiring.

CAUTION

To help insure that external overvoltage surges do not damage the system, verify that gas discharge tubes or similar protection devices are installed, and properly grounded, on all connected outside lines.

STATION CONNECTIONS

- Connections between the common equipment and the stations for models N0616, N0820, and N1024 are via two type 66M-xx connector blocks which are cable connected to the common equipment 50-pin male connectors. **Table 3-2a** shows the station connection detais. Station connections for the model N0308 are via standard modular plug/jack connections provided on the side of the common equipment cabinet. These jacks are labeled by station number. **Table 3-2b** details these connections.

- The maximum distance allowed from the common equipment to the station when using #24 gauge, twisted-pair cable is 1500 feet.

NOTE: *If spare conductors exist in the cables that are run between the common equipment 66M-xx connector blocks and the station jacks, it is a good practice to connect them to earth ground. Doing this may help prevent them from inducing radio frequency and/or AC interference into the system.*

CAUTION

The polarity between the individual wires in a particular voice or data pair is not critical; however, do not connect the voice circuits to the data circuits.

STATION PAIRING

Station ports are paired for both data and overload protection as follows:

10--11	14--15	18--19	22--23	26--27	30--31
12--13	16--17	20--21	24--25	28--29	

Table 3-1. Line Connections

(Model N0308)

JACK	PIN NO.	CONNECTION	TELEPHONE NUMBER
1	1	No Connection	
	2	No Connection	
	3	Power Failure Station TIP	
	4	Power Failure Station RING	
	5	No Connection	
	6	No Connection	
2	1	Auxiliary 1 TIP	
	2	Line 2 RING	
	3	Line 1 RING	
	4	Line 1 TIP	
	5	Line 2 TIP	
	6	Auxiliary 1 RING	
3	1	No Connection	
	2	Auxiliary 2 TIP	
	3	Line 3 RING	
	4	Line 3 TIP	
	5	Auxiliary 2 RING	
	6	No Connection	

(Models N0616, N0820, and N1024)

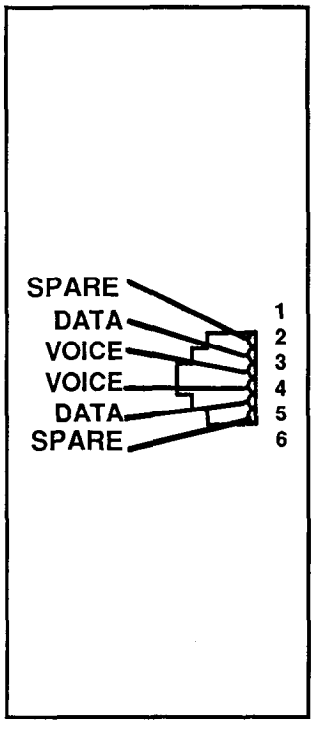
JACK	PIN NO.	CONNECTION	TELEPHONE NUMBER
1	1	No Connection	
	2	No Connection	
	3	Power Failure Station TIP	
	4	Power Failure Station RING	
	5	No Connection	
	6	No Connection	
2	1	Auxiliary 1 TIP	
	2	Line 2 RING	
	3	Line 1 RING	
	4	Line 1 TIP	
	5	Line 2 TIP	
	6	Auxiliary 1 RING	
3	1	Auxiliary 2 TIP	
	2	Line 4 RING	
	3	Line 3 RING	
	4	Line 3 TIP	
	5	Line 4 TIP	
	6	Auxiliary 2 RING	
4	1	No Connection	
	2	Line 6 RING	
	3	Line 5 RING	
	4	Line 5 TIP	
	5	Line 6 TIP	
	6	No Connection	
5	1	No Connection	
	2	Line 8 RING	
	3	Line 7 RING	
	4	Line 7 TIP	
	5	Line 8 TIP	
	6	No Connection	
6	1	No Connection	
	2	Line 10 RING	
	3	Line 9 RING	
	4	Line 9 TIP	
	5	Line 10 TIP	
	6	No Connection	

Table 3-2a. Station Connections (Model N0616, N0820, and N1024)

N0616 = Station 10 - 25
N0820 = Station 10 - 29
N1024 = Station 10 - 33

25-PAIR CABLE CONNECTIONS			4-WIRE CONNECTIONS			J-1 CONNECTIONS		J-2 CONNECTIONS	
WIRE COLOR	PAIR	PIN NO.	CLIP TERM.	PAIR	WIRE COLOR	STA	LOCATION	STA	LOCATION
WHITE-BLUE	1	26	1	VOICE	GREEN	10		22	
BLUE-WHITE		1	2		RED				
WHITE-ORANGE	2	27	3	DATA	YELLOW				
ORANGE-WHITE		2	4		BLACK				
WHITE-GREEN	3	28	5	VOICE	GREEN	11		23	
GREEN-WHITE		3	6		RED				
WHITE-BROWN	4	29	7	DATA	YELLOW				
BROWN-WHITE		4	8		BLACK				
WHITE-SLATE	5	30	9	VOICE	GREEN	12		24	
SLATE-WHITE		5	10		RED				
RED-BLUE	6	31	11	DATA	YELLOW				
BLUE-RED		6	12		BLACK				
RED-ORANGE	7	32	13	VOICE	GREEN	13		25	
ORANGE-RED		7	14		RED				
RED-GREEN	8	33	15	DATA	YELLOW				
GREEN-RED		8	16		BLACK				
RED-BROWN	9	34	17	VOICE	GREEN	14		26	
BROWN-RED		9	18		RED				
RED-SLATE	10	35	19	DATA	YELLOW				
SLATE-RED		10	20		BLACK				
BLACK-BLUE	11	36	21	VOICE	GREEN	15		27	
BLUE-BLACK		11	22		RED				
BLACK-ORANGE	12	37	23	DATA	YELLOW				
ORANGE-BLACK		12	24		BLACK				
BLACK-GREEN	13	38	25	VOICE	GREEN	16		28	
GREEN-BLACK		13	26		RED				
BLACK-BROWN	14	39	27	DATA	YELLOW				
BROWN-BLACK		14	28		BLACK				
BLACK-SLATE	15	40	29	VOICE	GREEN	17		29	
SLATE-BLACK		15	30		RED				
YELLOW-BLUE	16	41	31	DATA	YELLOW				
BLUE-YELLOW		16	32		BLACK				
YELLOW-ORANGE	17	42	33	VOICE	GREEN	18		30	
ORANGE-YELLOW		17	34		RED				
YELLOW-GREEN	18	43	35	DATA	YELLOW				
GREEN-YELLOW		18	36		BLACK				
YELLOW-BROWN	19	44	37	VOICE	GREEN	19		31	
BROWN-YELLOW		19	38		RED				
YELLOW-SLATE	20	45	39	DATA	YELLOW				
SLATE-YELLOW		20	40		BLACK				
VIOLET-BLUE	21	46	41	VOICE	GREEN	20		32	
BLUE-VIOLET		21	42		RED				
VIOLET-ORANGE	22	47	43	DATA	YELLOW				
ORANGE-VIOLET		22	44		BLACK				
VIOLET-GREEN	23	48	45	VOICE	GREEN	21		33	
GREEN-VIOLET		23	46		RED				
VIOLET-BROWN	24	49	47	DATA	YELLOW				
BROWN-VIOLET		24	48		BLACK				
VIOLET-SLATE	25	50	49			STATION17		COMMON	
SLATE-VIOLET		25	50			AUDIBLE		AUDIBLE	

Table 3-2b. Station Connections (Model N0308)



JACK	PIN NO.	CONNECTION	STATION NUMBER
4	1	No Connection	10
	2	Data	
	3	Voice	
	4	Voice	
	5	Data	
	6	No Connection	
5	1	No Connection	11
	2	Data	
	3	Voice	
	4	Voice	
	5	Data	
	6	No Connection	
6	1	No Connection	12
	2	Data	
	3	Voice	
	4	Voice	
	5	Data	
	6	No Connection	
7	1	No Connection	13
	2	Data	
	3	Voice	
	4	Voice	
	5	Data	
	6	No Connection	
8	1	No Connection	14
	2	Data	
	3	Voice	
	4	Voice	
	5	Data	
	6	No Connection	
9	1	No Connection	15
	2	Data	
	3	Voice	
	4	Voice	
	5	Data	
	6	No Connection	
10	1	No Connection	16
	2	Data	
	3	Voice	
	4	Data	
	5	Voice	
	6	No Connection	
11	1	No Connection	17
	2	Data	
	3	Voice	
	4	Voice	
	5	Data	
	6	No Connection	

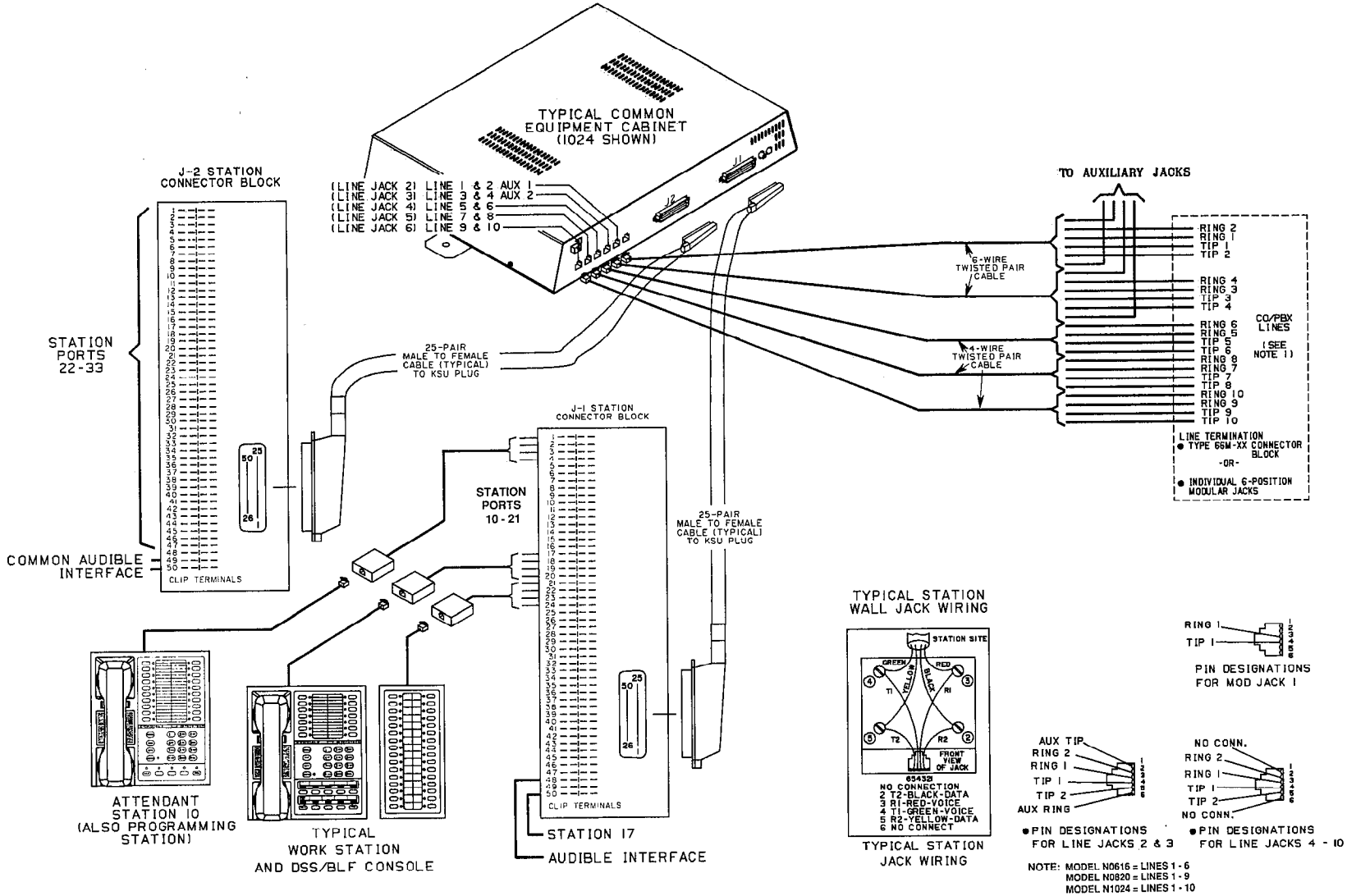


Figure 3-3a. Interconnection Details (Models N0616, N0820, and N1024)

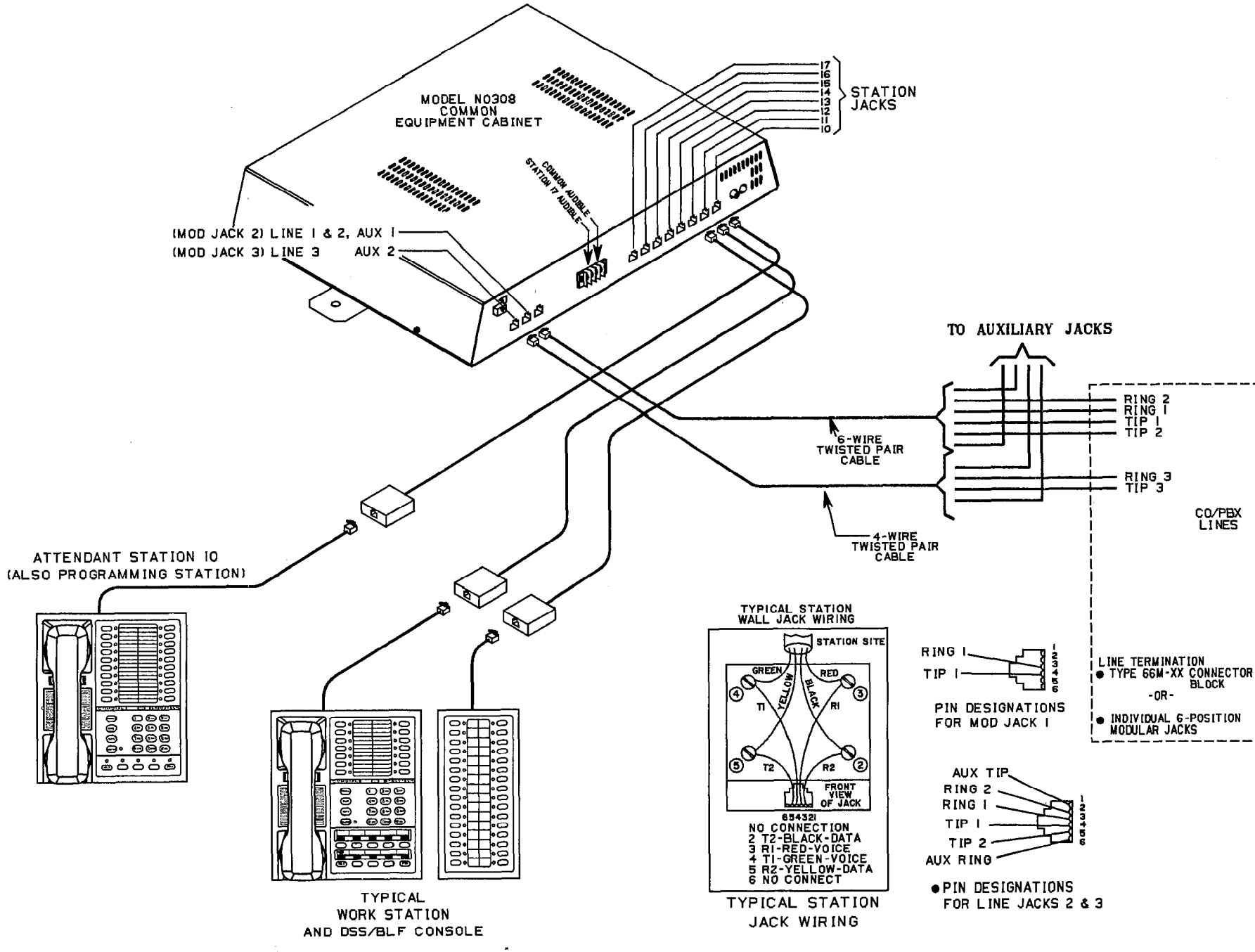


Figure 3-3b. Interconnection Details (Model N0308)

SECTION 2
OPTION INSTALLATION DETAILS

DSS/BLF CONSOLE CONNECTION

The optional DSS/BLF console may be installed at any station port to work in conjunction with a companion station connected to the adjacent port (e.g.; port 10 for station and port 11 for console). Console port installation is illustrated in **Figure 3-3a** and **3-3b**, shown on the previous pages.

The model EB32X-xx, DB32-xx, DB32S-xx, DB40-xx, and DB70-xx DSS/BLF consoles are all compatible with the XE system. The station port to which they are connected must be programmed as a DSS/BLF console port. The console keys are fixed for DSS/BLF operation beginning with station 10 and ending with the maximum station number in the system. The remainder of the keys are blanked and are unuseable for any other purpose. For this reason it is recommended that the larger consoles (DB40 and DB70) not be used unless absolutely necessary since the XE system has a maximum station capacity of twenty-four stations thus leaving these consoles with a large quanity of blanked keys.

- The installed distance limit between the common equipment and a console is the same as that specified for a regular station. Connect all four wires (voice pair and data pair) of the console cable to the station connector block.

- The voice pair connections of the console can be used simultaneously to enable a PA port function or to provide off-hook voice announce capability..

- See information headed *External Paging Interface - Station PA Port.* If an enable signal is required with the particular PA equipment being used, the console and PA equipment connections are limited to station ports 15 and 17.

- The DSS/BLF console port must be programmed as a DSS/BLF port before console operation can take place.

- The console port must be also programmed as a PA port if a PA amplifier has been connected to the voice pair as part of the system.

OFF-HOOK VOICE ANNOUNCE WITH HANDSFREE ANSWERBACK

The DB32S-xx Adjunct Feature Module can be used to provide off-hook voice announcing (OHVA) to a station already busy on a call and allow subsequent handsfree answerback (HFAB) by the station user; however, the DB32S-xx Module can not be used as a DSS/BLF console at the same time. The station port to which the Adjunct Feature Module is connected must be programmed for whichever of these features that is required. Two data-paired station ports are required to provide the OHVA/HFAB feature.

- Connect a keyset to the first data-paired port

- Connect the DB32S-xx Adjunct Feature Module to the voice pair and the data pair of the second data-paired port.

For the feature to be enabled, the port to which the Adjunct Feature Module is connected must be programmed as an Off-Hook Call Announce port.

SECURE OFF-HOOK VOICE ANNOUNCE STATION

The XE system supports the Secure Off-Hook Voice Announce (SOHVA) feature provided by the following keyset models.

- 6714X-xx
- 6800S-xx
- 6814S
- 6820X-xx
- 6820S-xx

NOTE: *If normal off-hook voice announce capability is required, it is provided by the model DB32S-xx console as described in the previous paragraph.*

Two data-paired ports are required to provide SOHVA support. The SOHVA equipped telephones contain a 6-position, 3-pair line jack. Using 6-wire, twisted-pair cable, connect the two inside pairs of the line jack to the first data-paired port and connect the outside pair to the second data-paired port. Refer to **Figure 3-4** for an illustration of this wiring.

- Connect pins 3 and 4 to the voice pair and pins 2 and 5 to data pair of the first data-paired port.

- Connect pins 1 and 6 to the voice pair of the second data-paired port.

For the feature to be enabled, the first port must be programmed as a keyset port and the second port must be programmed as an Off-Hook Call Announce port.

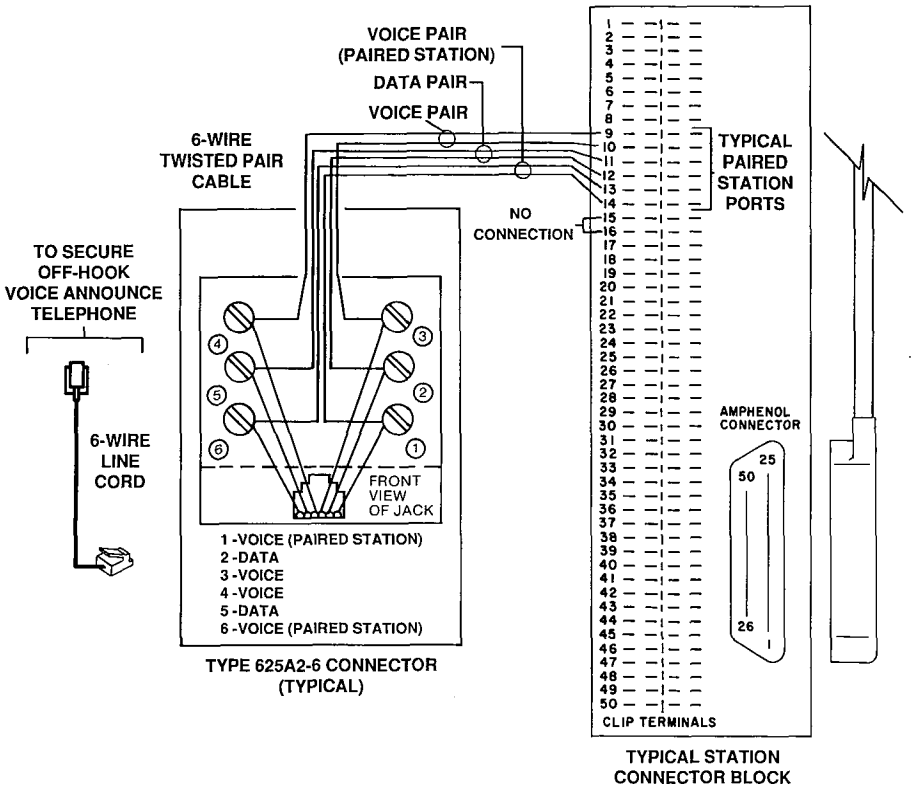


Figure 3-4 Off-Hook Voice Announce Connections

POWER FAILURE STATION

The system provides one tip and ring pair connected to line one as an emergency, power failure circuit. This power failure pair is located on Mod jack 1 for all common equipment models. This jack is the rightmost jack when facing the right side of the cabinet as shown in **Figure 3-5**. The power failure pair is only active during an AC power failure. An industry standard single-line telephone, such as a Comdial 2500-xx can be connected to the power failure pair and used to provide communications capability should the AC power to the system be interrupted.

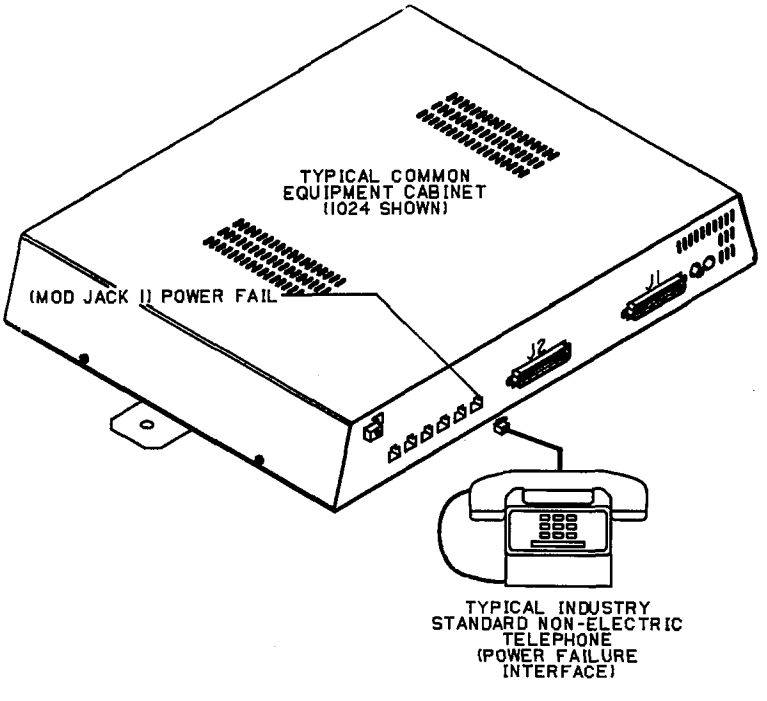


Figure 3-5. Power Failure Station Connection.

COMMON AUDIBLE AND AUXILIARY STATION INTERFACE (STATION 17 AUDIBLE)

Two sets of relay closure dry-contact points are available. These are located at the **J-1** and **J-2** connector blocks for models N0616, N0820, and N1024 and at the barrier-type terminal strip on the model N0308 common equipment cabinet. These closures track the ringing pattern. They are closed during the ringing period and open during the silent period. **Figure 3-6** shows connection details for this feature.

- **Station 17 Audible**: (J-1 connections 49 and 50) provides a dry-contact closure whenever system station 17 rings.
- **Common Audible**: (J-2 connections 49 and 50) provides a dry-contact closure whenever any of the TELCO/PBX lines, connected to the common equipment, ring.

CAUTION

Do not exceed a 1 amp at 24 volts (.5 amp at 48 volts) load on these control terminals. If the load requirements exceed this limit, connect the load through an external slave relay. DO NOT CONNECT THESE CONTROL TERMINALS DIRECTLY TO THE 117VAC LINE.

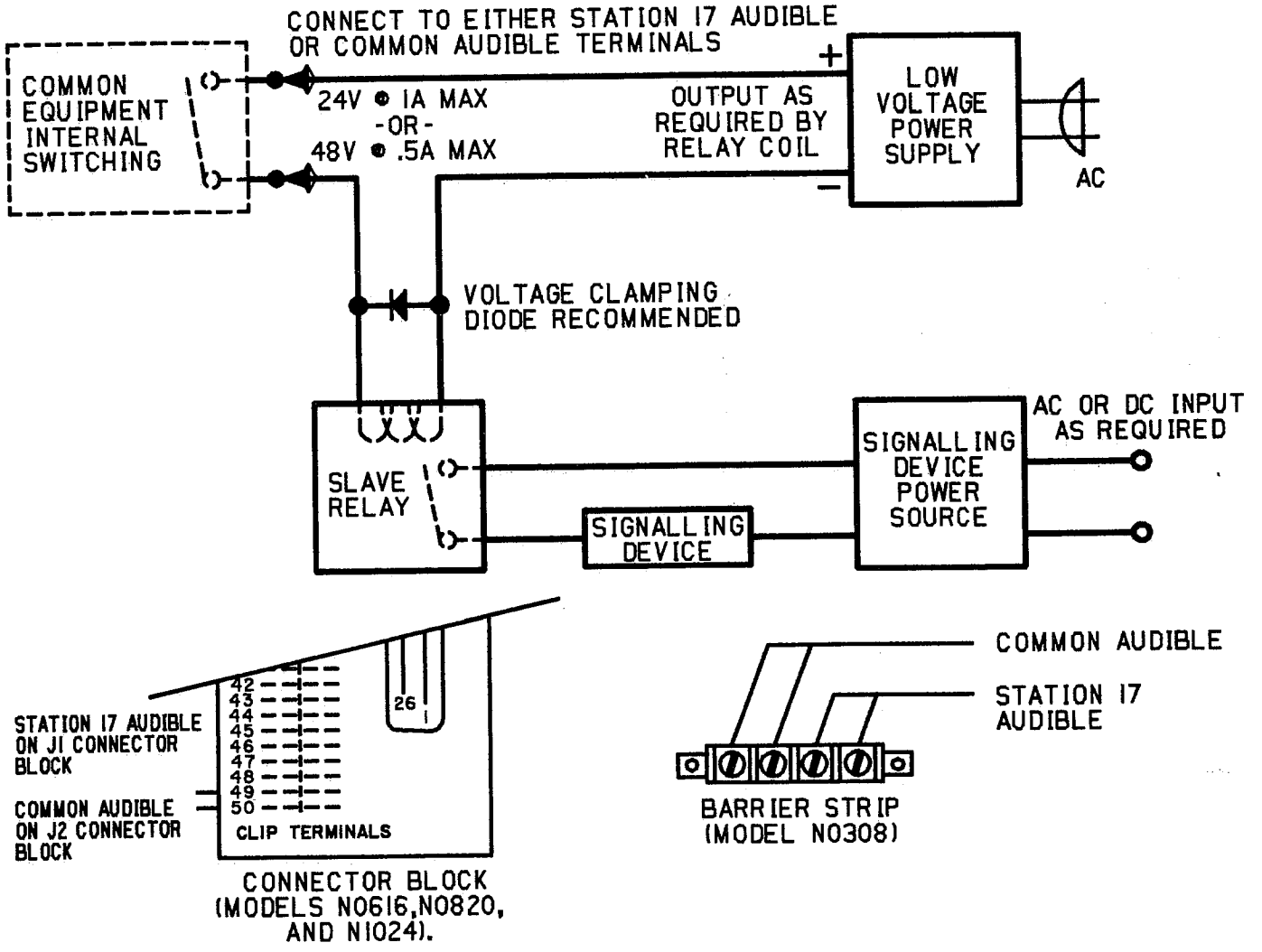


Figure 3-6. Common Audible and Auxiliary Station Interface

EXTERNAL PAGING INTERFACE - STATION PA PORT

Any station port can be programmed as a PA port and used to couple a station voice path to an external paging amplifier. Refer to Chapter for programming details. **Figure 3-7** shows connection details for this feature.

- The audio input of an external paging amplifier can be connected to the audio pair of the station port at the **J-1** or **J-2** connector blocks for models N0616, N0820, and N1024 or at the barrier-type terminal strip on the model N0308 common equipment cabinet.
- The audio input connection must be isolated with a 600 ohm to 600 ohm audio matching transformer. Terminate the audio input of the paging amplifier with a 600 ohm (nominal value) resistor.
- **If station port 15 is programmed as a PA port**, the Common Audible contact points on **J-2** are automatically reconfigured as PA enable terminals. The contact closure now occurs when PA station 15 is dialed. The normal common audible function is disabled as long as station 15 is a PA station.
- **If station port 17 is programmed as a PA port**, the Auxiliary Station Interface (station 17 audible) contact points are automatically reconfigured as PA enable terminals. The contact closure now occurs when PA station 17 is dialed. The normal auxiliary station interface function is disabled as long as station 17 is a PA station.

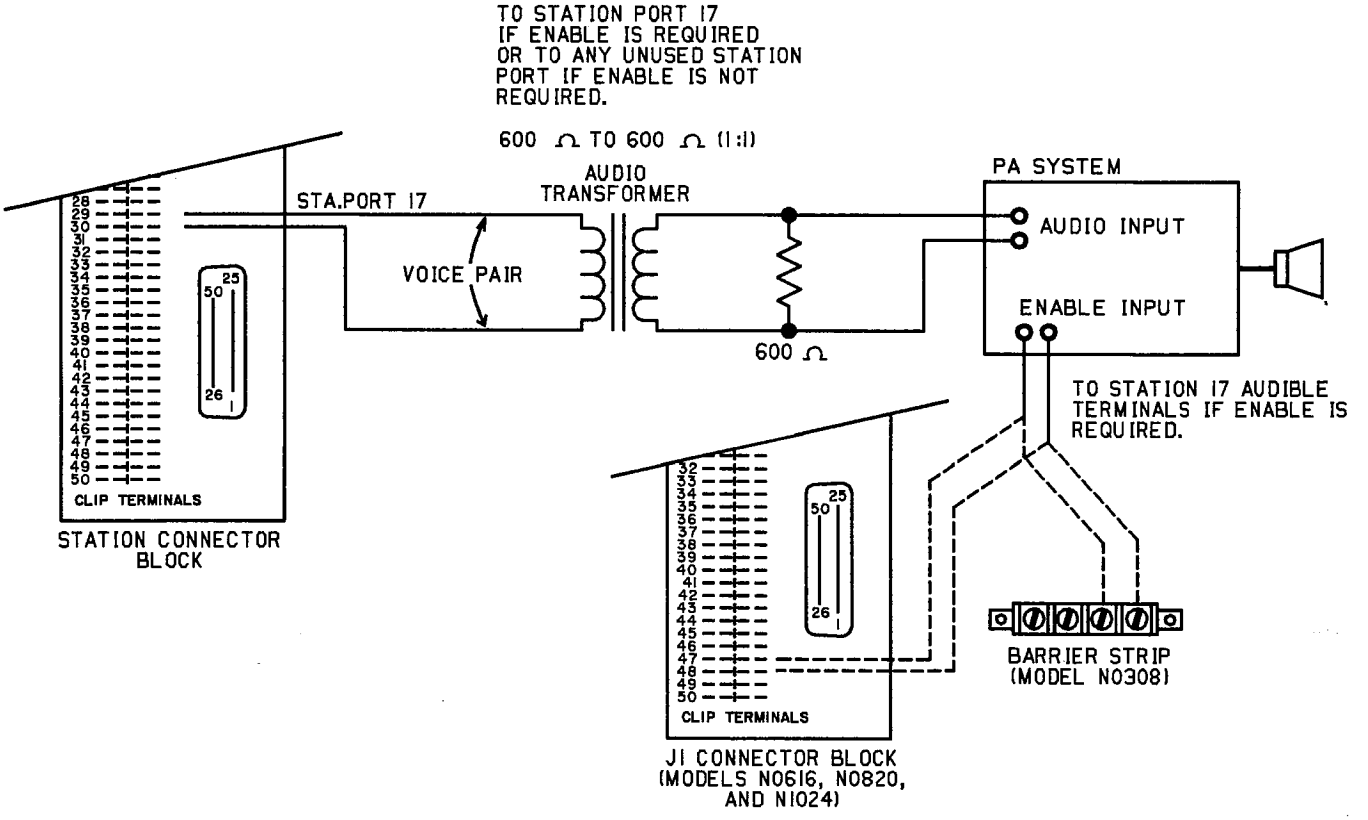


Figure 3-7. External Paging Interface - Station PA Port

EXTERNAL PAGING INTERFACE - LINE PORT

A line port can be programmed to be an AUXILIARY port and connected to an external paging amplifier. Refer to Chapter 4 for programming details. Station access to this area paging is via the line key for the AUXILIARY line. **Figure 3-8** shows connection details for this feature.

- Connect the audio input of an external paging amplifier to the tip and ring leads of the AUXILIARY (line) port.

A DTMF tone select, zone-paging amplifier can be employed if desired. If used, the zone-select code can be dialied after the AUXILIARY line select key is pressed.

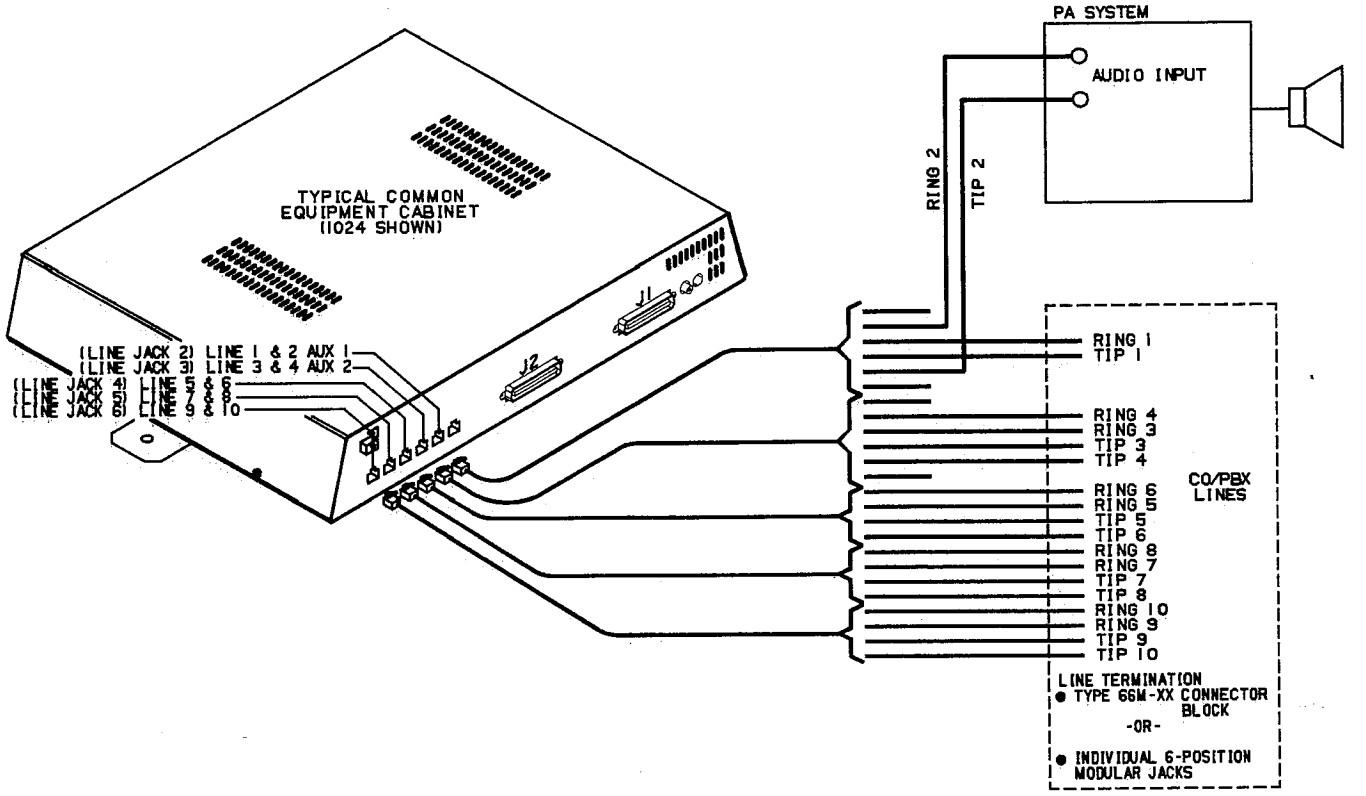


Figure 3-8. External Paging Interface - Line Port

AUXILIARY EQUIPMENT INTERFACE

A non-key system telephone device or a data device can be connected ahead of the common equipment. Refer to **Table 3-1** on page 3-4 and **Figure 3-9** below for connection details for this feature.

The system can detect an off-hook condition in the connected device, and turn on the line status light at the key system telephones to indicate that the line is busy.

- Connection is across tip and ring of lines 2 and 4 using the auxiliary interface connections.
- Auxiliary interface connections are provided at terminals 1 and 6 of common equipment Mod Jacks 1 and 2.

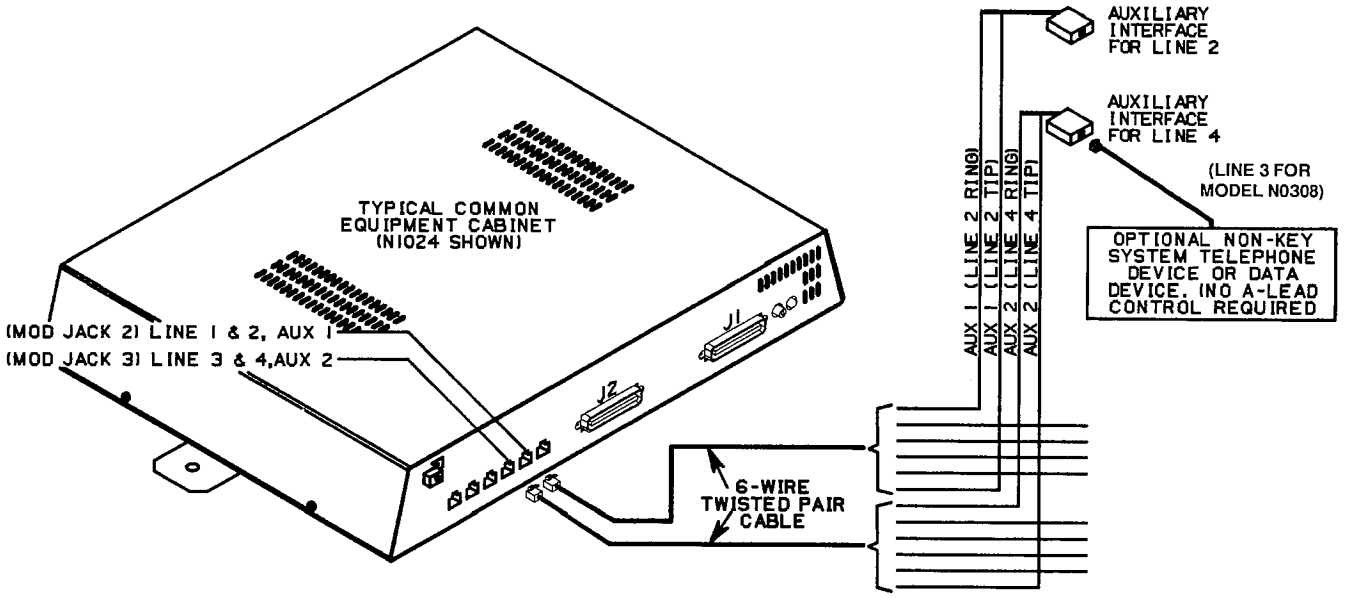


Figure 3-9. Auxiliary Station Interface Connections

MUSIC INTERFACE

If music is to be part of the system, connect a KX registered music source to the common equipment music interface jack (RCA-type phono jack) provided for this purpose. Refer to **Figure 3-10** for jack location details. The impedance of this input is approximately 500 ohms. Level adjustment of the music source may be necessary. This may be done during system checkout.

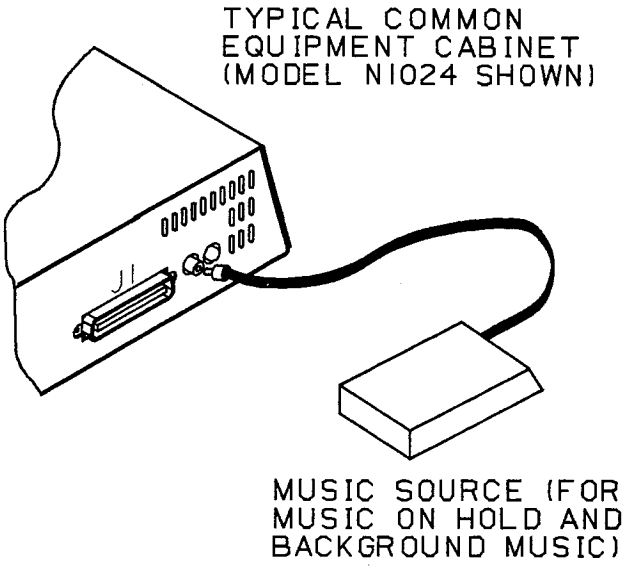


Figure 3-10. Music Interface

SECTION 3
CHECKOUT AND FAILURE ISOLATION

INSTALLATION CHECKOUT

RESISTANCE CHECK

Make the following resistance measurements at the station connector blocks under the following conditions.

- AC power cord disconnected from electrical outlet.
- Common equipment connected to station connector blocks.
- Stations wired, and wiring punched down on blocks.
- Bridging clips removed from blocks to isolate stations from common equipment.

1. Measure the resistance of each installed station and wiring from the station side of the connector blocks. Resistance values will vary with cable length and station type but should be within the following limits.

MEASURED PAIR	MEASURED STATION RESISTANCE IN OHMS
VOICE PAIR	40 - 150
DATA PAIR	0.3 - 100

2. Measure the resistance of the common equipment and cables from the common equipment side of the station connector blocks. Resistance values should be within the following limits.

MEASURED PAIR	MEASURED COMMON EQUIPMENT RESISTANCE IN OHMS
VOICE PAIR	40 - 50
DATA PAIR	0.3 - 0.5

VOLTAGE CHECK

Refer to **Table 3-3** and make the following voltage measurements at the station connector blocks under the following conditions:

- Bridging clips installed
- AC power connected to the common equipment

Measure the voltage across one voice line and one data line and then across the other voice line and the other data line for each even and odd station. The measured voltage must be as follows:

GENERAL CHECK

1. Check the red light emitting diode (LED) system status indicator. Be sure that it is on steady. If it is off or flashing, disconnect and reconnect the AC power plug.
2. Refer to the station User's Guide for operating information. Perform a general operational test of the system by exercising the system features from station port 10.

Table 3-3. Voltage Measurements

UNIT UNDER TEST	66M-xx BLOCK CONNECTION	METER LEAD POLARITY	MEASURED VOLTAGE
TYPICAL EVEN STATION (Repeat for each even sta.)	Voice 1	(+)	+34 +/- 8 VDC
	Data 3	(-)	
	Voice 2	(+)	+34 +/- 8 VDC
	Data 4	(-)	
TYPICAL ODD STATION (Repeat for each odd sta.)	Voice 5	(+)	-34 +/- 8 VDC
	Data 7	(-)	
	Voice 6	(+)	-34 +/- 8 VDC
	Data 8	(-)	
Variant readings can indicate a possible wiring, station, or common equipment problem.			

FAILURE ISOLATION

SYSTEM STATUS INDICATOR

The red LED located near the fuse holder is the system status indicator. This indicator should turn on steady when AC power or the optional external battery power is applied to the common equipment. If the indicator flashes after power up, it could be indicating a processor failure. Unplug and reconnect the AC power, and observe the LED indication. If it still shows a flashing indication, equipment replacement may be necessary. A flashing indicator when battery power is being employed is an indication of battery discharge.

STATION SELF TEST

1. Disconnect the line cord at the station base.

NOTE: *The adjacent odd or even station will be disabled during the time that the station line cord is being disconnected and reconnected..*

2. Press and hold the MUTE key, and reconnect the line cord to the station connector. The station will automatically perform a self test routine. Release the MUTE key as soon as the test begins. The sequence of the test is as follows:

   - The indicators will light in sequence.
   - Indicators will then turn off in an orderly sequence.
   - The ringer will sound - Be sure that the ringer volume control is set to the medium or high volume setting. One some telephone models, the ringer may sound before the indicators are turned off.

3. Replace any station that does not pass the self test.

DSS/BLF CONSOLE SELF TEST

1. Disconnect the console line cord plug from the line.
2. Press and hold the station 10 select key while reconnecting the line cord plug to the line.

NOTE: *The companion station will be disabled during the time that the console is being disconnected and reconnected.*

3. Release the station 10 select key, and note that the BLF indicators will each turn on in sequence beginning with the station 10 indicator. The indicators will then turn off and the console will become operational.

FAILURE INDICATIONS

If erratic light indications or ring signals occur at a paired station, an open data pair at either station may be the fault.

- A station with an open data line may work properly on a short loop but fail on a long loop.

Stations are paired for overload current protection. If a fault occurs which causes more than 300 ma. of current to be drawn, the paired stations are disabled by circuit action.

Disconnect the disabled stations and reconnect them one at a time to isolate the faulty one.

SECTION 4
INSTALLER/USER INFORMATION REGARDING FCC RULES AND REGULATIONS

This electronic key system complies with Federal Communications Commission (FCC) Rules, Part 68. The FCC registration label on the KSU contains the FCC registration number, the ringer equivalence number, the model number, and the serial number or production date of the system.

NOTIFICATION TO TELEPHONE COMPANY

Unless a telephone operating company provides and installs the system, the telephone operating company which provides the lines must be notified before a connection is made to them. The lines (telephone numbers) involved, the FCC registration number, and the ringer equivalence number must be provided to the telephone company. The FCC registration number and the ringer equivalence number of this equipment are provided on the label attached to the KSU.The user/installer is required to notify the telephone company when final disconnection of this equipment from the telephone company line occurs.

COMPATIBILITY WITH TELEPHONE NETWORK

When necessary, the telephone operating company provides information on the maximum number of telephones or ringers that can be connected to one line, as well as any other applicable technical information. The telephone operating company can temporarily discontinue service and make changes which could effect the operation of this equipment. They must, however, provide adequate notice, in writing, of any future equipment changes that would make the system incompatible.

INSTALLATION REQUIREMENTS

Connection of the electronic key system to the telephone lines must be through a universal service order code (USOC) outlet jack supplied by the telephone operating company. If the installation site does not have the proper outlet, ask the telephone company business office to install one. The correct outlet jack for this system is either a type RJ21X or type RJ14C.

PARTY LINES AND COIN LINES

Local telephone company regulations may not permit connections to party lines and coin lines by anyone except the telephone operating company.

TROUBLESHOOTING

If a service problem occurs, first try to determine if the trouble is in the on-site system or in the telephone company equipment. Disconnect all equipment not owned by the telephone company.

If this corrects the problem, the faulty equipment must not be reconnected to the telephone line until the problem has been corrected. Any trouble that causes improper operation of the telephone network may require the telephone company to discontinue service to the trouble site after they notify the user of the reason.

REPAIR AUTHORIZATION

FCC regulations do not permit repair of customer owned equipment by anyone except the manufacturer, their authorized agent, or others who might be authorized by the FCC. However, routine repairs can be made according to the maintenance instructions in this publication, provided that all FCC restrictions are obeyed.

RADIO FREQUENCY INTERFERENCE

The electronic key system contains incidental radio frequency generating circuitry and, if not installed and used properly, may cause interference to radio and television reception. This equipment has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules. These limits are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area may cause interference to radio and television reception; in which case the user is encouraged to take whatever measures may be required to correct the interference. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: Reorient the television or radio's receiving antenna, and/or relocate the KSU, the individual telephone stations, and the radio or TV with respect to each other. If necessary, the user should consult the manufacturer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful: "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the Government Printing Office, Washington D.C. 20402. Stock No. 004-000-00345-4.

RINGER EQUIVALENCE NUMBER

The REN of each line is 0.4B. The FCC requires the installer to determine the total REN for each line, and record it at the equipment.

CHAPTER 4
SYSTEM PROGRAMMING

SECTION 1
INTRODUCTION

System programming is divided into three areas of responsibility:

- **Class Of Service Programming**: The class of service programming is unlimited as to the features that can be programmed using it. Class of service programming is usually performed by the installer when the system is first put in service.
- **Administration Programming**: The administration programming can be used to program all system features except line attributes. This procedure is usually employed by on-site administration personnel whenever system needs dictate.
- **Attendant Programming**: The attendant programming is limited to those features which may need re-programming by the attendant on a daily basis such as:
  - night transfer of ringing
  - music on hold
  - system sped dial numbers.

Refer to **Figure 4-2** for a block diagram illustration of system programming.

All programming is performed at the station 10 keyset by dialing special codes and pressing special keys as detailed in this chapter and shown on **Figure 4-1**. It is recommended that a 14 Line Monitor keyset be used for programming since this model provides LED indicators for program status feedback.

Programming can be performed with an ExecuTech LCD speakerphone (mfg. code: 6600-xx). When this telephone is employed, the display names each feature as it is being programmed. Or, programming can be performed with an ExecuTech multiline keyset. Programming overlays for these telephone models are included at the end of this chapter.

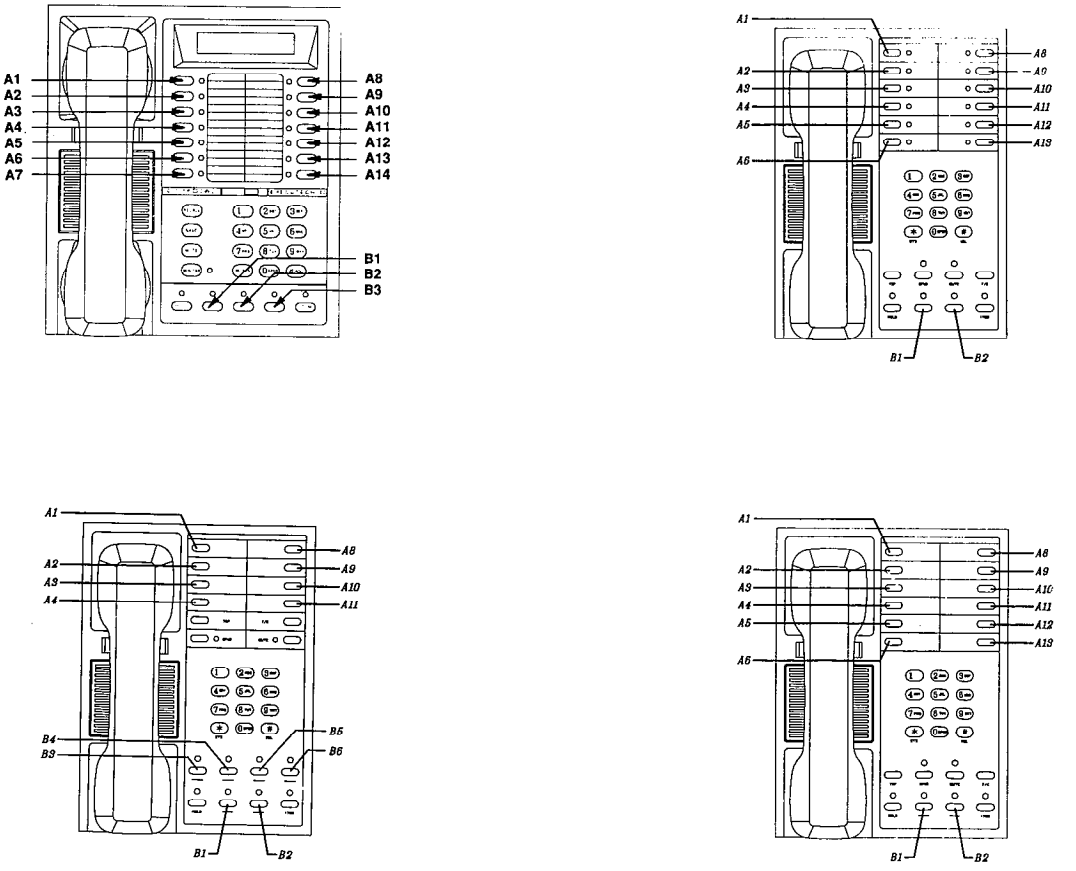
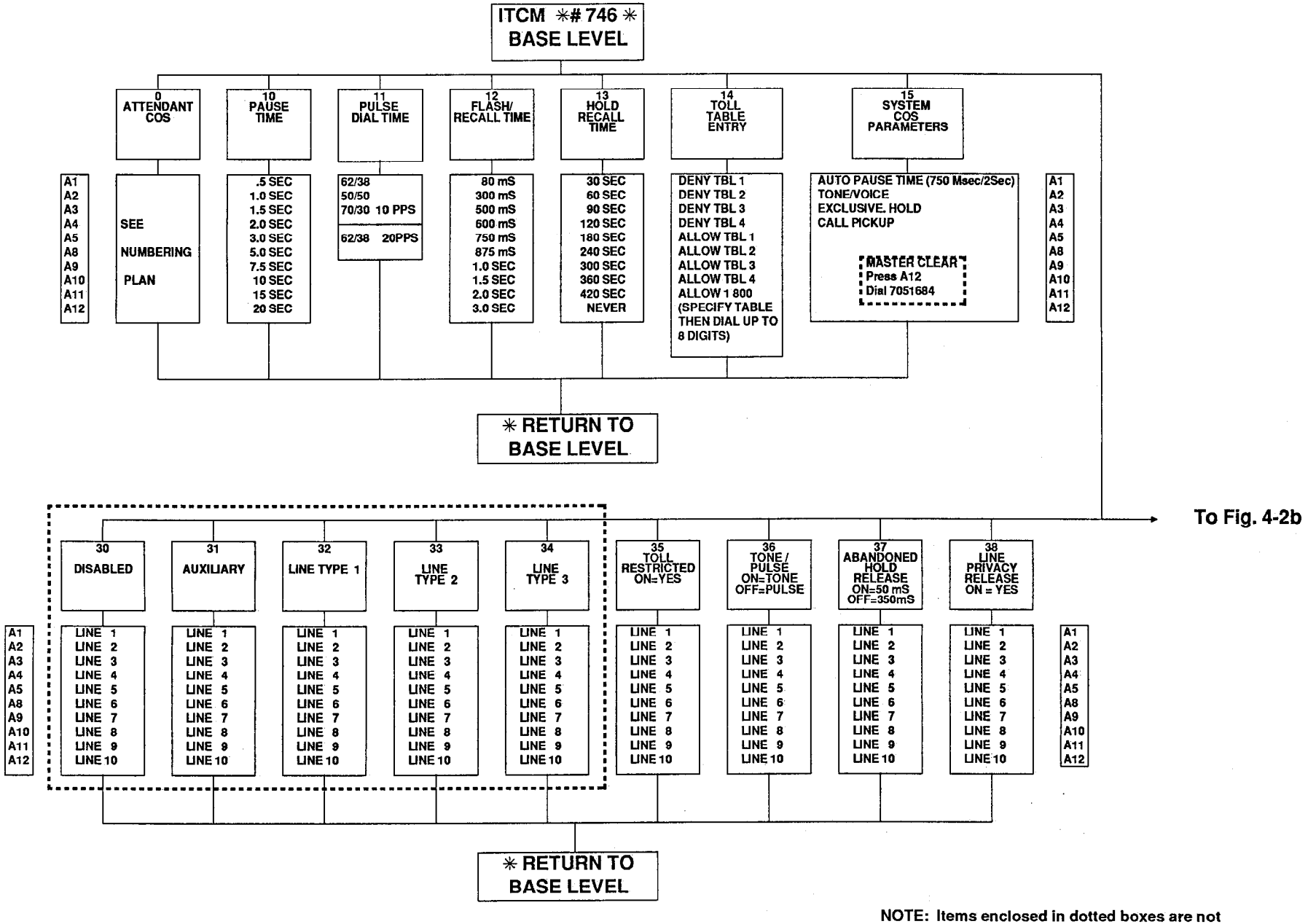


Figure 4-1. Program Key Locations



NOTE: Items enclosed in dotted boxes are not permitted for System Administrator (ITCM ✳ #236 ✳ for base level).

Figure 4-2a. System Programming Block Diagram

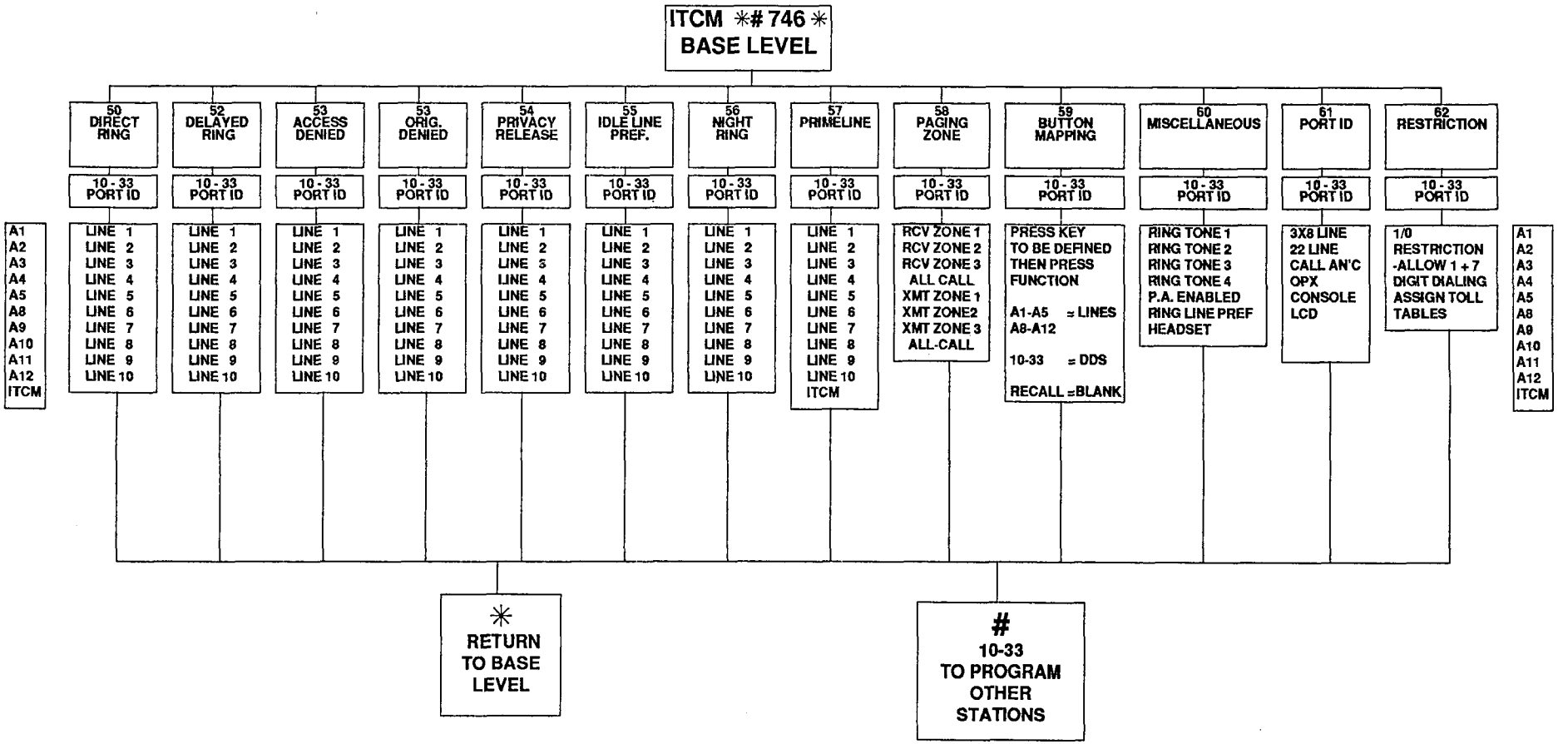


Figure 4-2b. System Programming Block Diagram

SECTION 2
CLASS OF SERVICE PROGRAMMING

Class of service programming is usually performed by the system installer. Class of service programming procedures provide a means for programming all system variables. The installer may elect, however, to program only the line attributes and allow the remainder of the system variables to remain set to their default values.

Perform class of service programming as follows:

- Enter base level: **ITCM ✳ # 7 4 6 ✳**
- **(Optional step)** Master Clear: Dial **15**, press **A12**, dial **7 0 5 1 6 8 4**

CAUTION

This step clears all memory entries, *including any previously programmed autodial numbers*, and returns system to start-up default.

- Mark the desired selections in the charts to record programming needs.
- Dial feature code.

NOTE: *A current program setting is indicated by a lighted LED next to the applicable progamming key. When a toggle (on/off) action is provided by a single key, the lighted LED indicates when the feature is active.*

- Press A-field key to choose new programming.
- Press ✳ to return to base level for next feature.

-OR-

- Press ✳ **SPKR** to end programming.

Enter Base Level: Press ITCM, then dial ✳ # 7 4 6 ✳.

SHADING = DEFAULT

Pause Time: During auto dials and speed dials it is sometimes necessary to delay the sending of digits to give switching equipment time to prepare to receive the digits. A pause can be stored to effect the delay. A pause is stored whenever the user presses the HOLD key. The pause length options are stored in seconds.	Dial **10**. Press prog. key. Press ✳ for next feature.	KEY: A1 | A2 | A3 | A4 | A5 | A8 | A9 | A10 | A11 | A12 SEC: 0.5 | 1.0 | 1.5 | 2.0 | 3.0 | 5.0 | 7.5 | 10 | 15 | 20 ENTRY: | | | | | | | | |
Pulse Dial Time: Either ten or twenty pulses per second, and three different make/break ratios for the pulse dialing signals (rotary dial signals) can be set to match CO requirements.	Dial **11**. Press prog. key. Press ✳ for next feature.	KEY: A1 | A2 | A3 | A4 RATIO: 62/38 @ 10 pps | 50/50 @ 10 pps | 70/30 @ 10 pps | 62/38 @ 20 pps ENTRY: | | |
Recall/Flash: A line disconnect (recall) or a PBX feature select signal (flash) can be generated depending upon the programmed time.	Dial **12**. Press prog. key. Press ✳ for next feature.	KEY: A1 | A2 | A3 | A4 | A5 | A8 | A9 | A10 | A11 | A12 SEC: .080 | .300 | .500 | .600 | .750 | .875 | 1.0 | 1.5 | 2.0 | 3.0 ENTRY: | | | | | | | | |
Timed Hold Recall: After a call has been on hold for a programmed length of time, the system will recall the station that placed the call on hold. The timing is in seconds.	Dial **13**. Press prog. key. Press ✳ for next feature.	KEY: A1 | A2 | A3 | A4 | A5 | A8 | A9 | A10 | A11 | A12 SEC: 30 | 60 | 90 | 120 | 180 | 240 | 300 | 360 | 420 | never ENTRY: | | | | | | | | |

Press ✳ SPKR to end programming.

Enter Base Level: Press **ITCM**, then dial ✳ **# 7 4 6** ✳.

Flexible Toll Restriction: Restricts stations from dialing a range of number combinations while allowing specific exceptions. The restrictions are specified by entries on a deny table while the exceptions are specified by entries on an allow table. In addition, a pre-programmed 1+800 allow table allows that dialing feature regardless of other restrictions which may be in effect. These programmed tables must be assigned on a per station basis before the restrictions can take effect.
- Maximum of 8 digits per line entry.
- 1+911 and 911 can never restricted.
- Allow entries override deny entries.

***NOTE**: The deny and allow entries are part of one toll table. Any stations which receive this table assignment will be subject to both deny and allow restrictions.*

Dial **14.**
Select table
- **A1** = DENY ENTRY LINE 1
- **A2** = DENY ENTRY LINE 2
- **A3** = DENY ENTRY LINE 3
- **A4** = DENY ENTRY LINE 4
- **A5** = ALLOW ENTRY LINE 1
- **A8** = ALLOW ENTRY LINE 2
- **A9** = ALLOW ENTRY LINE 3
- **A10** = ALLOW ENTRY LINE 4
- **A11** = ALLOW 1+800 calls

Dial number.
(**#** = match anything digit.)
Select next table, and repeat.
Press ✳ for next feature.

TABLE TYPE	ENTRY LINE	ENTRY DIGITS 1	2	3	4	5	6	7	8
DENY	1								
	2								
	3								
	4								
ALLOW	1								
	2								
	3								
	4								
ALLOW	1+800	YES			NO				

NONE AS GND

TYPICAL EXAMPLE

TABLE TYPE	ENTRY LINE	ENTRY DIGITS 1	2	3	4	5	6	7	8
DENY	1	9	7	6					
	2	4	1	1					
	3								
	4								
ALLOW	1	1	8	0	4	9	7	8	#
	2								
	3								
	4								

Press ✳ **SPKR** to end programming.

Enter Base Level: Press **ITCM**, then dial ✳ **# 7 4 6** ✳.

Assign restriction to lines: Lines must be programmed to accept toll restriction before the restriction that is assigned to the stations will take effect.

Dial **35.**
Press prog. keys to assign restriction to lines
Press ✳ for next feature

KEY	A1	A2	A3	A4	A5	A8	A9	A10	A11	A12
LINE	1	2	3	4	5	6	7	8	9	10
ENTRY										

NONE AS'GND

Assign restrictions to stations: Station dialing can be restricted with 1/0 toll restriction and with deny/allow toll table restriction. Either one or both methods can be assigned to restrict station dialing on a per station basis. Also, 1+7-digit dialing can be allowed if 1/0 restriction is assigned.

Dial **62.**
Dial port ID (**10-33**).
Select 1/0 toll restriction.
- **A1** = 1/0 RESTRICTION
- **A2** = ALLOW 1+7-DIGIT (if 1/0 is also restricted)

AND/OR
Select deny/allow toll table restriction (if required and programmed).
- Press **A3.**
- Dial **#** + PORT ID for next sta.

OR
Press ✳ for next feature.

STA.	ENTRIES
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	
31	
32	
33	

NONE ASSIGNED

Press ✳ **SPKR** to end programming.

Enter Base Level: Press **ITCM**, then dial ✳ **# 7 4 6** ✳.

Automatic Pause Insertion: When the system stores a dialed number for later redial, it automatically stores a pause whenever the user waits between digits. The wait period is programmable.	Dial **15.** Press prog. key **A1.** LED ON = 750 msec. Press ✳ for next feature.	KEY: A1 / A1 TIME: 750 Msec / 2 Sec ENTRY:
Tone or Voice Signalling: Intercom calls can be tone signalled or voice signalled. The first choice in signalling is programmable.	Dial **15.** Press **A2** LED ON = TONE Press ✳ for next feature.	KEY: A2 / A2 FEA.: TONE / VOICE ENTRY:
Exclusive Hold: The user can set a hold condition whereby only the station placing the call on hold can retrieve it. Exclusive hold can be disabled by programming action.	Dial **15.** Press **A3.** LED ON = ENABLED Press ✳ for next feature.	KEY: A3 / A3 FEA.: ENABLED / DISABLED ENTRY:
Call Pickup System: A call can be answered at one telephone when it is ringing at another telephone. Call pickup can be disabled by programming action.	Dial **15.** Press **A4.** LED ON = ENABLED Press ✳ for next feature.	KEY: A4 / A4 FEA.: ENABLED / DISABLED ENTRY:

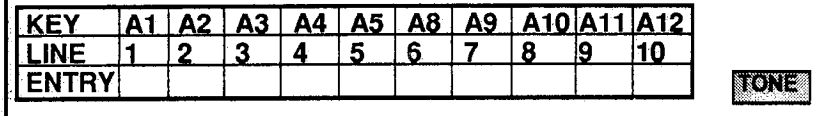
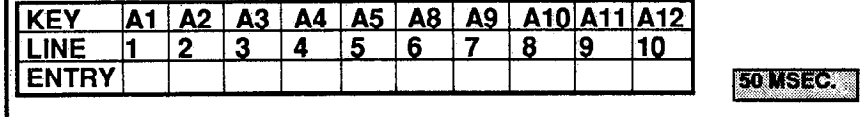
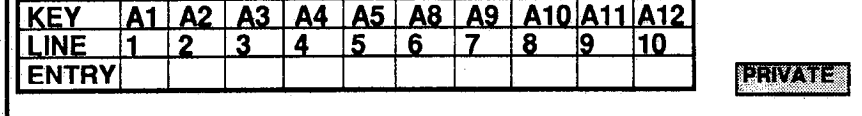
Press ✳ **SPKR** to end programming.

Enter Base Level: Press ITCM, then dial ✳ # 7 4 6 ✳.

Line Disabled: A line can be taken out of service because of line defect or other reason.	Dial **30**. Press prog. key. Press ✳ for next feature.	KEY A1 A2 A3 A4 A5 A8 A9 A10 A11 A12 LINE 1 2 3 4 5 6 7 8 9 10 ENTRY NONE
Auxiliary Line: A line can be conditioned to serve as a port for an external paging amplifier	Dial **31**. Press prog. key. Press ✳ for next feature.	KEY A1 A2 A3 A4 A5 A8 A9 A10 A11 A12 LINE 1 2 3 4 5 6 7 8 9 10 ENTRY NONE
Line Type 1: A line port is assigned as type 1 when any enabled toll restriction is to be applied with the first digit dialed. Such a line type is often assigned when a CO line is connected.	Dial **32**. Press prog. key. Press ✳ for next feature.	KEY A1 A2 A3 A4 A5 A8 A9 A10 A11 A12 LINE 1 2 3 4 5 6 7 8 9 10 ENTRY ALL LINES
Line Type 2: A line port is assigned as type 2 when any enabled toll restriction is to be applied beginning with the second digit dialed. Such a line type is often assigned when a PBX or CENTREX line with any trunk access code is connected.	Dial **33**. Press prog. key. Press ✳ for next feature.	KEY A1 A2 A3 A4 A5 A8 A9 A10 A11 A12 LINE 1 2 3 4 5 6 7 8 9 10 ENTRY NONE
Line Type 3: A line port is assigned as type 3 when any enabled toll restriction is to be applied beginning with the second digit dialed whenever that digit is a 9. If that digit is not a 9, no restriction is applied. Such a line type is often assigned when a PBX or CENTREX line with a trunk access code of 9 is connected.	Dial **34** Press prog. key. Press ✳ for next feature.	KEY A1 A2 A3 A4 A5 A8 A9 A10 A11 A12 LINE 1 2 3 4 5 6 7 8 9 10 ENTRY NONE

Press ✳ **SPKR** to end programming.

Enter Base Level: Press **ITCM**, then dial ✳ **#** 7 4 6 ✳.

Pulse/Tone Switchable: When rotary dial lines are installed, the user can switch from pulse (rotary dial signals) to tone (Dual Tone Multiple Frequency signals) for accessing special circuits requiring DTMF tones such as banking machines. This pulse/tone switchability must be programmed for the line. Lines are defaulted for tone signalling only.	Dial **36.** Press prog. key. LED ON = TONE **Press** ✳ for next feature.	
Abandoned Hold Release: When a distant party abandons a hold condition and disconnects, the central office will send a forward disconnect signal to the key system. The forward disconnect signal may be either 50 msec. or 350 msec. in length. Program the system to match the central office time.	Dial **37.** Press prog. key. LED ON = 50 msec. Press ✳ for next feature.	
Automatic Privacy: A line can be made private or non-private. In the private mode, a station has exclusive use of a line during a call. Lines are private unless re-programmed to be non-private.	Dial **38.** Press prog. key. LED ON = NON-PRIVATE **Press** ✳ for next feature	

Press ✳ **SPKR** to end programming.

Enter Base Level: Press **ITCM**, then dial ✳ **# 7 4 6** ✳.

Port Definition: A station port can be programmed to accept one of several different types of station equipment or to support off-hook call announce connections.	Dial **61**. Dial port ID (**10-33**). Press prog. key. • **A1** = 3/8 LINE KEYSET • **A2** = 22 LINE KEYSET • **A3** = OFF-HOOK CALL ANNNOUCE • **A4** = OPX UNIT • **A5** = DSS/BLF CONSOLE • **A8** = LCD SPEAKERPHONE Press **#** + PORT ID for next sta **OR** Press ✳ for next feature.	STATION 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 22 LINE KEYSET
Flexible Ringing Assignment: Ringing assignments are programmable on a per line/per station basis. Delayed ringing can be program enabled for some lines and direct, or immediate, ringing can be program enabled for others.	**Direct ringing** Dial **50**. Dial port ID (**10-33**). Press **A1-A5, A8-A12** (for lines 1-10) Press **#** + PORT ID for next sta **OR** Press ✳ for next feature.	ALL LINES AS GND AT STA 10, 17,& 32
	Delayed ringing Dial **51**. Dial port ID (**10-33**). Press **A1-A5, A8-A12** (for lines 1-10). Press **#** + PORT ID for next sta **OR** Press ✳ for next feature.	NO LINES AS GND

Press ✳ **SPKR** to end programming.

Enter Base Level: Press ITCM, then dial ✳ # 7 4 6 ✳.

		STATION 10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
Night Transfer (of ringing): The day, or normal, ringing of incoming lines can be transferred to a particular station or stations by the attendant for off-hour or special purpose answering. Stations are assigned to receive night transfer by programming action.	Dial **56**. Dial port ID (**10-33**). Press **A1-A5**, **A8-A12** (for lines 1-10). Press **#** + PORT ID for next sta **OR** Press ✳ for next feature.																								
		ALL LINES AS GND AT STA 10, 17,& 32																							
Access Denied: Access to particular lines can be denied at individual stations.	Dial **52**. Dial port ID (**10-33**). Press **A1-A5**, **A8-A12** (for lines 1-10). LED ON = DENIED Press **#** + PORT ID for next sta **OR** Press ✳ for next feature.																								
		DISABLED																							
Originating Denied: The ability to originate calls on certain lines can be denied at individual stations.	Dial **53**. Dial port ID (**10-33**). Press **A1-A5**, **A8-A12** (for lines 1-10). LED ON = DENIED Press **#** + PORT ID for next sta **OR** Press ✳ for next feature.																								
		DISABLED																							
Privacy Release: A line can be made non-private at a particular station while remaining private at all other stations. Stations can be programmed to automatically release line privacy when on certain lines.	Dial **54**. Dial port ID (**10-33**). Press **A1-A5**, **A8-A12** (for lines 1-10). LED ON = RELEASED Press **#** + PORT ID for next sta **OR** Press ✳ for next feature.																								
		NOT RELEASED																							

Press ✳ SPKR to end programming.

Enter Base Level: Press **ITCM**, then dial ✳ **# 7 4 6** ✳.

		STATION 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33
Idle Line Preference: Going off-hook automatically selects an idle line for use. Lines available for selection are assigned by programming.	Dial **55**. Dial port ID (**10-33**). Press **A1-A5**, **A8-A12** (for lines 1-10). Press **#** + PORT ID for next sta **OR** Press ✳ for next feature.	DISABLED
Ringing Line Preference: A ringing line will automatically be answered when a station is taken off-hook. 	Dial **60**. Dial port ID (**10-33**). Press prog. key **A8**. LED ON = AS'GND Press **#** + PORT ID for next sta **OR** Press ✳ for next feature.	DISABLED
Prime Line: A line designated to a particular station is automatically selected for use when that station is taken off-hook.	Dial **57**. Dial port ID (**10-33**). **Press A1-A5**, **A8-A12** (for lines 1-10) or press **ITCM**. Press **#** + PORT ID for next sta **OR** Press ✳ for next feature.	NOT ASSIGNED

Press ✳ **SPKR** to end programming.

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Enter Base Level: Press ITCM, then dial ✳ # 7 4 6 ✳.

		STATION 10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
All-Call and Zone Paging: Stations can receive voice announcements through the telephone speaker, or through an external paging speaker connected to a PA port, and transmit them with the telephone handset. Announcements can be to certain areas of the system or to all stations in the system.	Dial **58**. Dial port ID (**10-33**). Press prog. key. • **A1** = RECEIVE ZONE 1 • **A2** = RECEIVE ZONE 2 • **A3** = RECEIVE ZONE 3 • **A4** = RECEIVE ALL-CALL • **A5** = XMIT ZONE 1 • **A8** = XMIT ZONE 2 • **A9** = XMIT ZONE 3 • **A10** = XMIT ALL-CALL Press **#** + PORT ID for next sta **OR** Press ✳ for next feature.											ALL CALL AS'GND													
Personal Ringing Tones: A station can be programmed to ring in one of four distinctive tones.	**Dial 60**. Dial port ID (**10-33**). Press prog. key. • **A1** = TONE 1 • **A2** = TONE 2 • **A3** = TONE 3 • **A4** = TONE 4 Press **#** + PORT ID for next sta **OR** Press ✳ for next feature.											TONE 1													
External Paging Interface - Station Port: A station port can be programmed to interface with an external paging amplifier (PA port).	Dial **60**. Dial port ID (**10-33**). Press prog. key **A5**. Press **#** + PORT ID for next sta **OR** Press ✳ for next feature.											NOT ASSIGNED													
Headset Interface: A station port can be programmed to allow headset operation.	Dial **60**. Dial port ID (**10-33**). Press prog. key **A9**. Press **#** + PORT ID for next sta **OR** Press ✳ for next feature.											NOT ASSIGNED													

Press ✳ SPKR to e ogramming.

Enter Base Level: Press **ITCM**, then dial ✳ **# 7 4 6** ✳.

Non-Square System: Each soft key at every station can be assigned individually (mapped) to select any line assigned to that station or to provide other key functions. Soft keys can be assigned as direct station select (DSS) keys to provide one-key access to system stations. Soft keys can be assigned as idle to provide autodial keys for the user.

- Dial **59**.
- Dial port ID (**10-33**)
- Press station key **A1-A14, B1-B8**

-OR-

- Dial code for key per following list:

1 = B1
2 = B2
3 = B3
4 = B4
5 = B5
6 = B6
7 = B7
8 = B8
9 = A7
0 = A14

Press prog. key.

- **A1-A5** = LINES 1-5
- **A8-A12** = LINES 6-10
- **10-33** = DSS STA.
- **TAP** = IDLE

Press **#** + PORT ID for next sta

-OR-

Press ✳ for next feature.

SOFTKEY	B1	B2	B3	B4	B5	B6	B7	B8	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14
STA 10																						
STA 11																						
STA 12																						
STA 13																						
STA 14																						
STA 15																						
STA 16																						
STA 17																						
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STA 30																						
STA 31																						
STA 32																						
STA 33																						

DEFAULT SETTINGS

B1 = Line 1 B6 = Line 6
B2 = Line 2 B7 = Line 7
B3 = Line 3 B8 = Line 8
B4 = Line 4 A7 = Line 9
B5 = Line 5 A14 = Line 10

Press ✳ **SPKR** to end programming.

SECTION 3
SYSTEM ADMINISTRATION PROGRAMMING

System administration programming is usually performed by on-site personnel. This programming procedure provide a means for programming all system variables, except line attributes, to match site requirements.

Perform administration programming as follows:

- Enter base level: **ITCM ✳ # 2 3 6 ✳**
- Mark the desired selections in the charts to record programming needs.
- Dial feature code.

NOTE: *A current program setting is indicated by a lighted LED next to the applicable progamming key. When a toggle (on/off) action is provided by a single key, the lighted LED indicates when the feature is active.*

- Press A-field key to choose new programming.
- Press ✳ to return to base level for next feature.

-OR-

- Press ✳ **SPKR** to end programming.

Enter Base Level: Press ITCM, then dial ✳ # 2 3 6 ✳.

SHADING = DEFAULT

Pause Time: During auto dials and speed dials it is sometimes necessary to delay the sending of digits to give switching equipment time to prepare to receive the digits. A pause can be stored to effect the delay. A pause is stored whenever the user presses the HOLD key. The pause length options are stored in seconds.

Dial **10**.
Press prog. key.
Press ✳ for next feature.

KEY	A1	A2	A3	A4	A5	A8	A9	A10	A11	A12
SEC	0.5	1.0	1.5	2.0	3.0	5.0	7.5	10	15	20
ENTRY										

Pulse Dial Time: Either ten or twenty pulses per second, and three different make/break ratios for the pulse dialing signals (rotary dial signals) can be set to match CO requirements.

Dial **11**.
Press prog. key.
Press ✳ for next feature.

KEY	A1	A2	A3	A4
RATIO	62/38 @ 10 pps	50/50 @ 10 pps	70/30 @ 10 pps	62/38 @ 20 pps
ENTRY				

Recall/Flash: A line disconnect (recall) or a PBX feature select signal (flash) can be generated depending upon the programmed time.

Dial **12**.
Press prog. key.
Press ✳ for next feature.

KEY	A1	A2	A3	A4	A5	A8	A9	A10	A11	A12
SEC	.080	.300	.500	.600	.750	.875	1.0	1.5	2.0	3.0
ENTRY										

Timed Hold Recall: After a call has been on hold for a programmed length of time, the system will recall the station that placed the call on hold. The timing is in seconds.

Dial **13**.
Press prog. key.
Press ✳ for next feature.

KEY	A1	A2	A3	A4	A5	A8	A9	A10	A11	A12
SEC	30	60	90	120	180	240	300	360	420	never
ENTRY										

Press ✳ **SPKR** to end programming.

Enter Base Level: Press **ITCM**, then dial ✳ **# 2 3 6** ✳.

Flexible Toll Restriction: Restricts stations from dialing a range of number combinations while allowing specific exceptions. The restrictions are specified by entries on a deny table while the exceptions are specified by entries on an allow table. In addition, a pre-programmed 1+800 allow table allows that dialing feature regardless of other restrictions which may be in effect. These programmed tables must be assigned on a per station basis before the restrictions can take effect.
- Maximum of 8 digits per line entry.
- 1+911 and 911 can never restricted.
- Allow entries override deny entries.

***NOTE**: The deny and allow entries are part of one toll table. Any stations which receive this table assignment will be subject to both deny and allow restrictions.*

Dial **14.**
Select table
- **A1** = DENY ENTRY LINE 1
- **A2** = DENY ENTRY LINE 2
- **A3** = DENY ENTRY LINE 3
- **A4** = DENY ENTRY LINE 4
- **A5** = ALLOW ENTRY LINE 1
- **A8** = ALLOW ENTRY LINE 2
- **A9** = ALLOW ENTRY LINE 3
- **A10** = ALLOW ENTRY LINE 4
- **A11** = ALLOW 1+800 calls

Dial number.
(**#** = match anything digit.)
Select next table, and repeat.
Press ✳ for next feature.

TABLE TYPE	ENTRY LINE	ENTRY DIGITS 1	2	3	4	5	6	7	8
DENY	1								
	2								
	3								
	4								
ALLOW	1								
	2								
	3								
	4								
ALLOW	1+800	YES			NO				

NONE AS GND

TYPICAL EXAMPLE

TABLE TYPE	ENTRY LINE	ENTRY DIGITS 1	2	3	4	5	6	7	8
DENY	1	9	7	6					
	2	4	1	1					
	3								
	4								
ALLOW	1	1	8	0	4	9	7	8	#
	2								
	3								
	4								

Press ✳ **SPKR** to end programming.

Enter Base Level: Press **ITCM**, then dial ✳ **# 2 3 6** ✳.

Assign restriction to lines: Lines must be programmed to accept toll restriction before the restriction that is assigned to the stations will take effect.	Dial **35**. Press prog. keys to assign restriction to lines Press ✳ for next feature	

KEY	A1	A2	A3	A4	A5	A8	A9	A10	A11	A12
LINE	1	2	3	4	5	6	7	8	9	10
ENTRY										

NONE AS'GND

Assign restrictions to stations: Station dialing can be restricted with 1/0 toll restriction and with deny/allow toll table restriction. Either one or both methods can be assigned to restrict station dialing on a per station basis. Also, 1+7-digit dialing can be allowed if 1/0 restriction is assigned.	Dial **62.** Dial port ID (**10-33**). Select 1/0 toll restriction. • **A1** = 1/0 RESTRICTION • **A2** = ALLOW 1+7-DIGIT (if 1/0 is also restricted) **AND/OR** Select deny/allow toll table restriction (if required and programmed). • Press **A3.** • Dial **#** + PORT ID for next sta. **OR** Press ✳ for next feature.	

STA.	ENTRIES
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	
31	
32	
33	

NONE ASSIGNED

Press ✳ **SPKR** to end programming.

Enter Base Level: Press **ITCM**, then dial ✳ **#** **2 3 6** ✳.

Automatic Pause Insertion: When the system stores a dialed number for later redial, it automatically stores a pause whenever the user waits between digits. The wait period is programmable.	Dial **15.** Press prog. key **A1**. LED ON = 750 msec. Press ✳ for next feature.	**KEY** | **A1** | **A1** **TIME** | **750 Msec** | **2 Sec** **ENTRY** | |	
Tone or Voice Signalling: Intercom calls can be tone signalled or voice signalled. The first choice in signalling is programmable.	Dial **15.** Press **A2** LED ON = TONE Press ✳ for next feature.	**KEY** | **A2** | **A2** **FEA.** | **TONE** | **VOICE** **ENTRY** | |	
Exclusive Hold: The user can set a hold condition whereby only the station placing the call on hold can retrieve it. Exclusive hold can be disabled by programming action.	Dial **15.** Press **A3**. LED ON = ENABLED Press ✳ for next feature.	**KEY** | **A3** | **A3** **FEA.** | **ENABLED** | **DISABLED** **ENTRY** | |	
Call Pickup System: A call can be answered at one telephone when it is ringing at another telephone. Call pickup can be disabled by programming action.	Dial **15.** Press **A4**. LED ON = ENABLED Press ✳ for next feature.	**KEY** | **A4** | **A4** **FEA.** | **ENABLED** | **DISABLED** **ENTRY** | |	

Press ✳ **SPKR** to end programming.

Enter Base Level: Press **ITCM**, then dial ✳ **#** **2 3 6** ✳.

Pulse/Tone Switchable: When rotary dial lines are installed, the user can switch from pulse (rotary dial signals) to tone (Dual Tone Multiple Frequency signals) for accessing special circuits requiring DTMF tones such as banking machines. This pulse/tone switchability must be programmed for the line. Lines are defaulted for tone signalling only.	Dial **36.** Press prog. key. LED ON = TONE **Press** ✳ for next feature.	KEY | A1 | A2 | A3 | A4 | A5 | A8 | A9 | A10 | A11 | A12 LINE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 ENTRY | **TONE**
Abandoned Hold Release: When a distant party abandons a hold condition and disconnects, the central office will send a forward disconnect signal to the key system. The forward disconnect signal may be either 50 msec. or 350 msec. in length. Program the system to match the central office time.	Dial **37**. Press prog. key. LED ON = 50 msec. Press ✳ for next feature.	KEY | A1 | A2 | A3 | A4 | A5 | A8 | A9 | A10 | A11 | A12 LINE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 ENTRY | **50 MSEC.**
Automatic Privacy: A line can be made private or non-private. In the private mode, a station has exclusive use of a line during a call. Lines are private unless re-programmed to be non-private.	Dial **38.** Press prog. key. LED ON = NON-PRIVATE **Press** ✳ for next feature	KEY | A1 | A2 | A3 | A4 | A5 | A8 | A9 | A10 | A11 | A12 LINE | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 ENTRY | **PRIVATE**

Press ✳ **SPKR** to end programming.

Enter Base Level: Press **ITCM,** then dial ✳ **# 2 3 6** ✳.

Port Definition: A station port can be programmed to accept one of several different types of station equipment or to support off-hook call announce connections.	Dial **61**. Dial port ID (**10-33**). Press prog. key. • **A1** = 3/8 LINE KEYSET • **A2** = 22 LINE KEYSET • **A3** = OFF-HOOK CALL ANNNOUCE • **A4** = OPX UNIT • **A5** = DSS/BLF CONSOLE • **A8** = LCD SPEAKERPHONE Press **#** + PORT ID for next sta **OR** Press ✳ for next feature.	STATION 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 22 LINE KEYSET
Flexible Ringing Assignment: Ringing assignments are programmable on a per line/per station basis. Delayed ringing can be program enabled for some lines and direct, or immediate, ringing can be program enabled for others.	**Direct ringing** Dial **50**. Dial port ID (**10-33**). Press **A1-A5, A8-A12** (for lines 1-10) Press **#** + PORT ID for next sta. **OR** Press ✳ for next feature.	ALL LINES AS GND AT STA 10, 17, & 32
	Delayed ringing Dial **51**. Dial port ID (**10-33**). Press **A1-A5, A8-A12** (for lines 1-10). Press **#** + PORT ID for next sta. **OR** Press ✳ for next feature.	NO LINES AS GND

Press ✳ **SPKR** to end programming.

Enter Base Level: Press **ITCM**, then dial ✳ **# 2 3 6** ✳.

		STATION 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33
Night Transfer (of ringing): The day, or normal, ringing of incoming lines can be transferred to a particular station or stations by the attendant for off-hour or special purpose answering. Stations are assigned to receive night transfer by programming action.	Dial **56**. Dial port ID (**10-33**). Press **A1-A5**, **A8-A12** (for lines 1-10). Press **#** + PORT ID for next sta **OR** Press ✳ for next feature.	ALL LINES AS GND AT STA 10, 17,& 32
Access Denied: Access to particular lines can be denied at individual stations.	Dial **52**. Dial port ID (**10-33**). Press **A1-A5**, **A8-A12** (for lines 1-10). LED ON = DENIED Press **#** + PORT ID for next sta **OR** Press ✳ for next feature.	DISABLED
Originating Denied: The ability to originate calls on certain lines can be denied at individual stations.	Dial **53**. Dial port ID (**10-33**). Press **A1-A5**, **A8-A12** (for lines 1-10). LED ON = DENIED Press **#** + PORT ID for next sta **OR** Press ✳ for next feature.	DISABLED
Privacy Release: A line can be made non-private at a particular station while remaining private at all other stations. Stations can be programmed to automatically release line privacy when on certain lines.	Dial **54**. Dial port ID (**10-33**). Press **A1-A5**, **A8-A12** (for lines 1-10). LED ON = RELEASED Press **#** + PORT ID for next sta **OR** Press ✳ for next feature.	NOT RELEASED

Press ✳ **SPKR** to end programming.

Enter Base Level: Press **ITCM**, then dial ✳ **#** 2 3 6 ✳.

		STATION 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33
Idle Line Preference: Going off-hook automatically selects an idle line for use. Lines available for selection are assigned by programming.	Dial **55**. Dial port ID (**10-33**). Press **A1-A5, A8-A12** (for lines 1-10). Press **#** + PORT ID for next sta **OR** Press ✳ for next feature.	DISABLED
Ringing Line Preference: A ringing line will automatically be answered when a station is taken off-hook.	Dial **60**. Dial port ID (**10-33**). Press prog. key **A8**. LED ON = AS'GND Press **#** + PORT ID for next sta **OR** Press ✳ for next feature.	DISABLED
Prime Line: A line designated to a particular station is automatically selected for use when that station is taken off-hook.	Dial **57**. Dial port ID (**10-33**). **Press A1-A5, A8-A12** (for lines 1-10) or press **ITCM**. Press **#** + PORT ID for next sta **OR** Press ✳ for next feature.	NOT ASSIGNED
All-Call and Zone Paging: Stations can receive voice announcements through the telephone speaker, or through an external paging speaker connected to a PA port, and transmit them with the telephone handset. Announcements can be to certain areas of the system or to all stations in the system.	Dial **58**. Dial port ID (**10-33**). Press prog. key. • **A1** = RECEIVE ZONE 1 • **A2** = RECEIVE ZONE 2 • **A3** = RECEIVE ZONE 3 • **A4** = RECEIVE ALL-CALL • **A5** = XMIT ZONE 1 • **A8** = XMIT ZONE 2 • **A9** = XMIT ZONE 3 • **A10** = XMIT ALL-CALL Press **#** + PORT ID for next sta **OR** Press ✳ for next feature.	ALL CALL AS'GND

Press ✳ **SPKR** to end programming.

Enter Base Level: Press **ITCM**, then dial ✳ **#** 2 3 6 ✳.

		STATION 10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
Personal Ringing Tones: A station can be programmed to ring in one of four distinctive tones.	**Dial 60.** Dial port ID (**10-33**). Press prog. key. • **A1** = TONE 1 • **A2** = TONE 2 • **A3** = TONE 3 • **A4** = TONE 4 Press **#** + PORT ID for next sta. **OR** Press ✳ for next feature.												TONE 1												
External Paging Interface - Station Port: A station port can be programmed to interface with an external paging amplifier (PA port).	Dial **60.** Dial port ID (**10-33**). Press prog. key **A5**. Press **#** + PORT ID for next sta. **OR** Press ✳ for next feature.												NOT ASSIGNED												
Headset Interface: A station port can be programmed to allow headset operation.	Dial **60.** Dial port ID (**10-33**). Press prog. key **A9**. Press **#** + PORT ID for next sta. **OR** Press ✳ for next feature.												NOT ASSIGNED												

Press ✳ **SPKR** to end programming.

Enter Base Level: Press **ITCM**, then dial ✳ **# 2 3 6** ✳.

Non-Square System: Each soft key at every station can be assigned individually (mapped) to select any line assigned to that station or to provide other key functions. Soft keys can be assigned as direct station select (DSS) keys to provide one-key access to system stations. Soft keys can be assigned as idle to provide autodial keys for the user.

- Dial **59**.
- Dial port ID (**10-33**)
- Press station key **A1-A14, B1-B8**

-OR-

- Dial code for key per following list:

1 = B1
2 = B2
3 = B3
4 = B4
5 = B5
6 = B6
7 = B7
8 = B8
9 = A7
0 = A14

Press prog. key.

- **A1-A5** = LINES 1-5
- **A8-A12** = LINES 6-10
- **10-33** = DSS STA.
- **TAP** = IDLE

Press **#** + PORT ID for next sta.

-OR-

Press ✳ for next feature.

SOFTKEY	B1	B2	B3	B4	B5	B6	B7	B8	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14
STA 10																						
STA 11																						
STA 12																						
STA 13																						
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STA 27																						
STA 28																						
STA 29														FLK								
STA 30																						
STA 31																						
STA 32																						
STA 33																						

DEFAULT SETTINGS

B1 = Line 1 **B6 = Line 6**
B2 = Line 2 **B7 = Line 7**
B3 = Line 3 **B8 = Line 8**
B4 = Line 4 **A7 = Line 9**
B5 = Line 5 **A14 = Line 10**

Press ✳ **SPKR** to end programming.

SECTION 4
ATTENDANT PROGRAMMING

Attendant programming can be performed from station 10 at any time during system operation.

NIGHT TRANSFER (of ringing)

The day, or normal, ringing of incoming lines can be transferred to a particular station or stations by the attendant for off-hour or special purpose answering.

- Press **ITCM** ✳ **#** .
- Dial **03**.
- Press prog. key **A1** to toggle feature on or off. The light next to program key **A1** will turn on when night transfer is active.
- Press ✳ for next feature.

MUSIC ON HOLD

Music is provided to outside lines that are placed on hold if an external music source is connected to the system. Music on hold can be disabled by attendant action.

- Press **ITCM** ✳ **#** .
- Dial **04**.
- Press prog. key **A1** to toggle feature on or off. The light next to the program key **A1** will turn on when music on hold is active.
- Press ✳ for next feature.

SYSTEM SPEED DIALING

A special system-wide list of numbers can be programmed for automatic dialing by all users.

- Press **ITCM** ✳ **#.**
- Dial **02.**
- Dial location **(01-30)**.
- Press line key for pre-select (if desired).
- Dial number (up to 15 digits).
- Press **T/C** key for next location and repeat procedure.

  -OR-
- Press **SPKR** to quit.

  -OR-
- Press **T/C** key, then press ✳ for next feature.

LOC	NUMBER	LOC	NUMBER	LOC	NUMBER
01		11		21	
02		12		22	
03		13		23	
04		14		24	
05		15		25	
06		16		26	
07		17		27	
08		18		28	
09		19		29	
10		20		30	

SYSTEM CLOCK

If the system has been modified to provide LCD speakerphone support, the system clock can be programmed to maintain current date and time information.

Press **ITCM** ✳ **#.**

Dial **01**.

Dial two digits (**00-99**) for year.

Dial two digits (**01-12**) for month.

Dial two digits (**01-31**) for day.

Dial two digits (**00-23**) for hour.

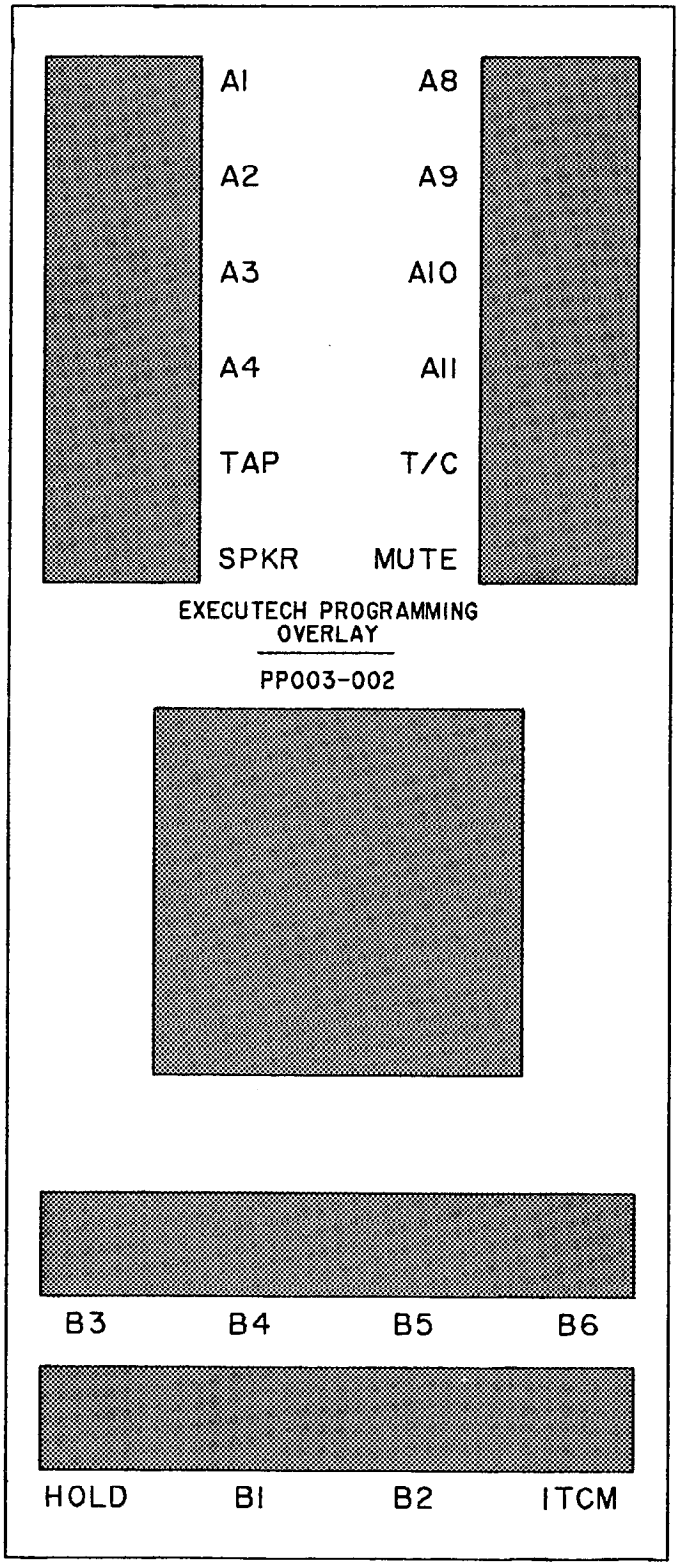
Dial two digits (**00-59**) for minute.

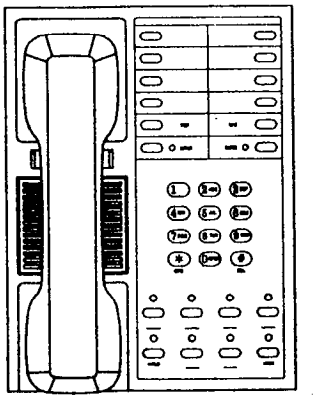
Dial one digit (**1-7**) for day of week -- Sun. = 1, Sat. = 7.

Press **SPKR.**

STATION 10 - PROGRAMMING OVERLAY

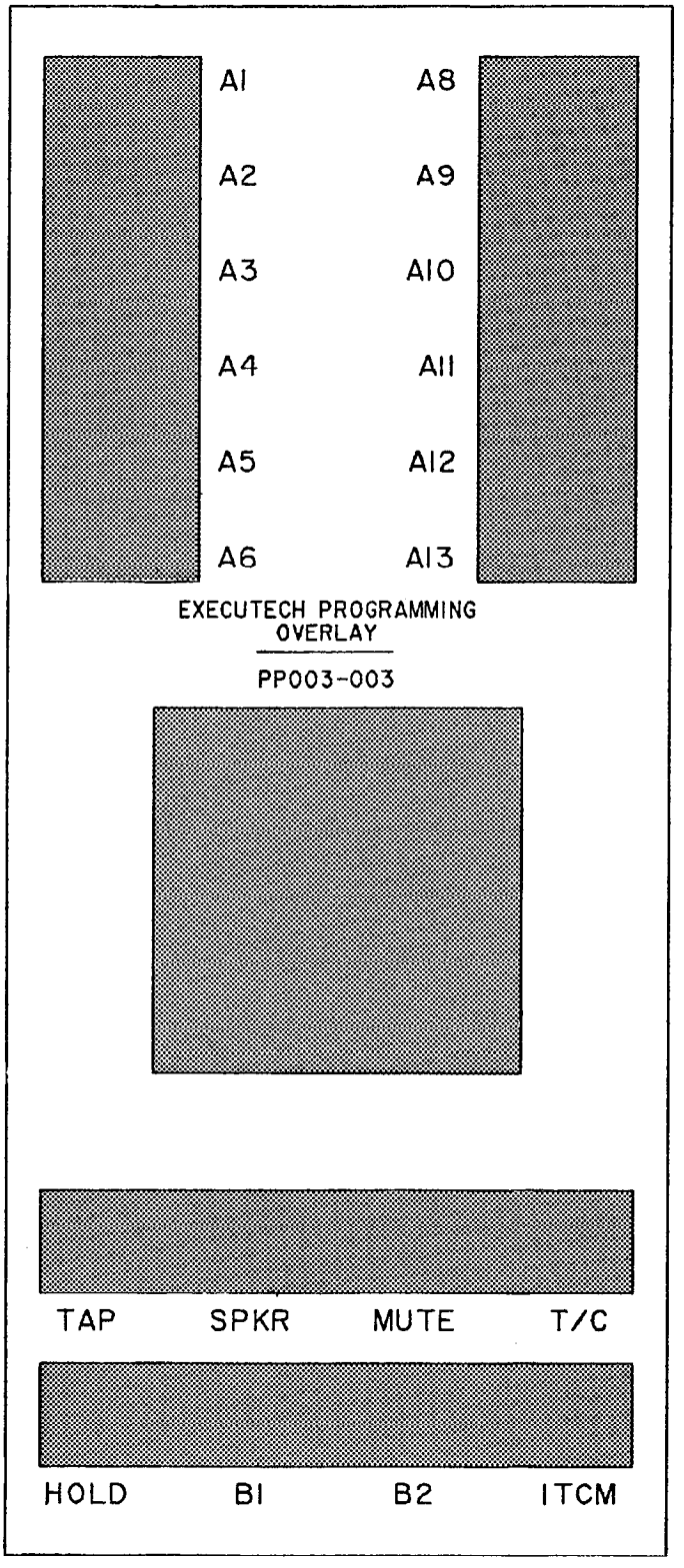
- Cut out along border.
- Cut out shaded openings.
- Fit over station faceplate.

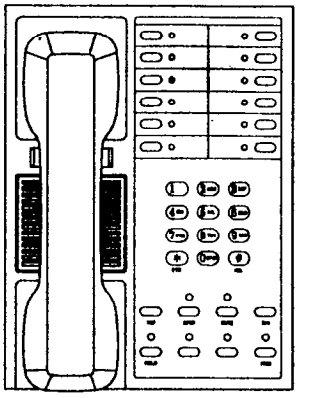




STATION 10 - PROGRAMMING OVERLAY

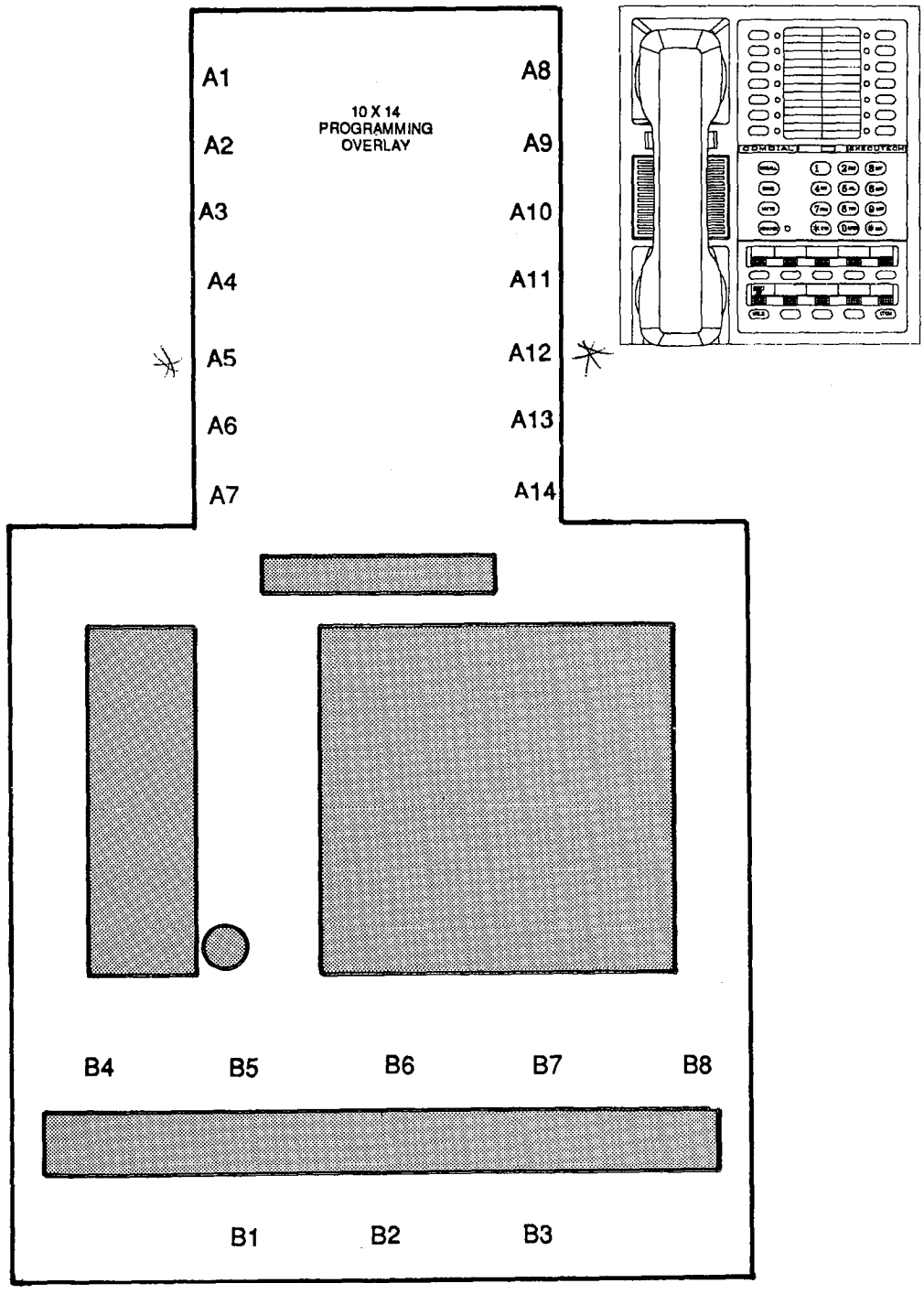
- Cut out along border.
- Cut out shaded openings.
- Fit over station faceplate.





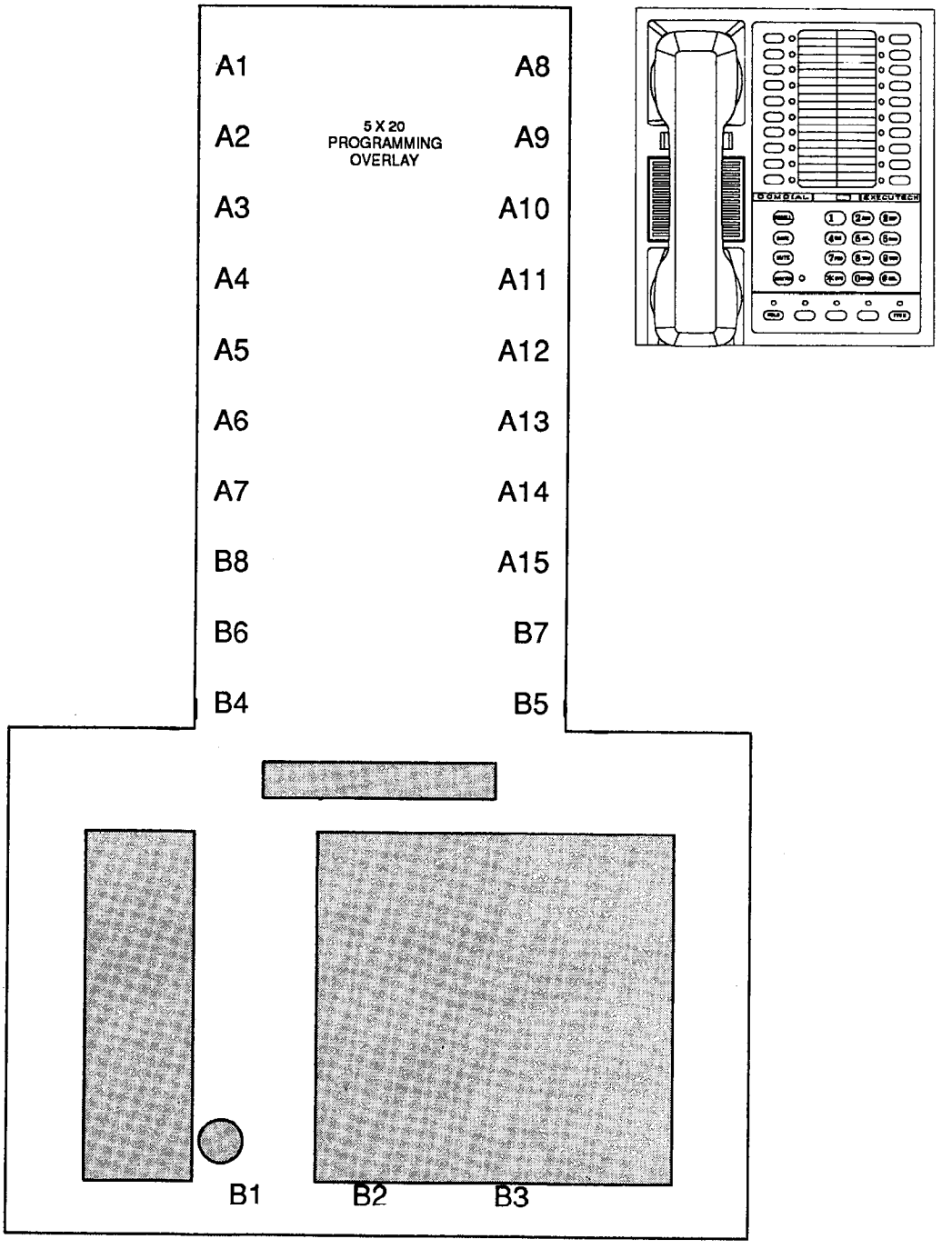
STATION 10 - PROGRAMMING OVERLAY

- Cut out along border.
- Cut out shaded openings.
- Fit over station faceplate.



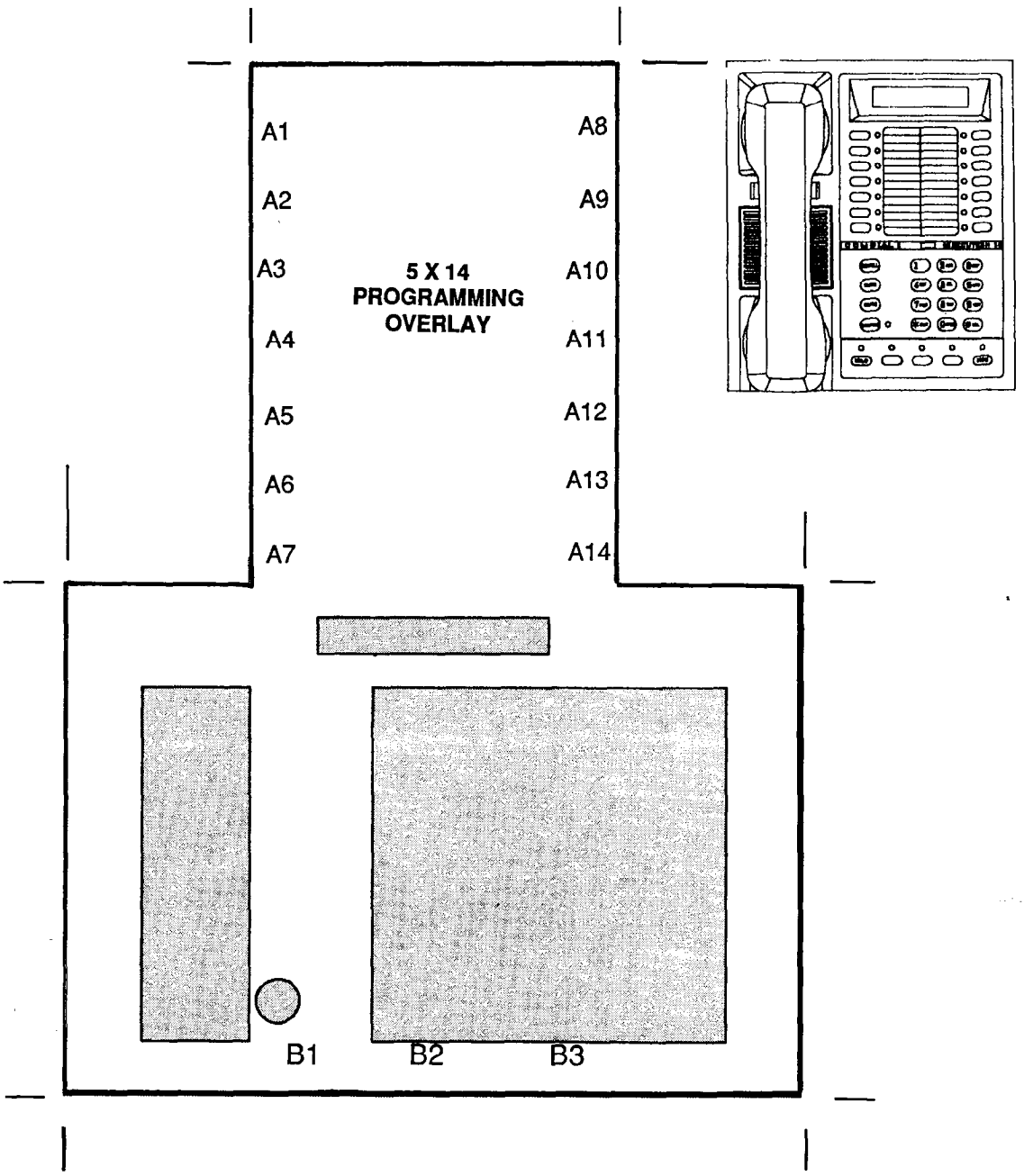
STATION 10 - PROGRAMMING OVERLAY

- Cut out along border.
- Cut out shaded openings.
- Fit over station faceplate.



STATION 10 - PROGRAMMING OVERLAY

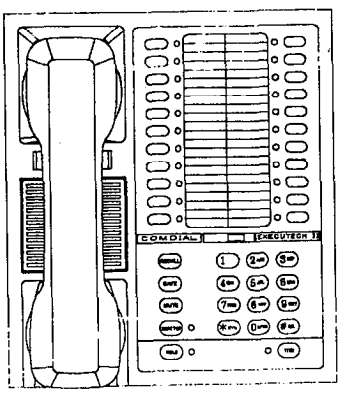
- Cut out along border.
- Cut out shaded openings.
- Fit over station faceplate.



STATION 10 - PROGRAMMING OVERLAY

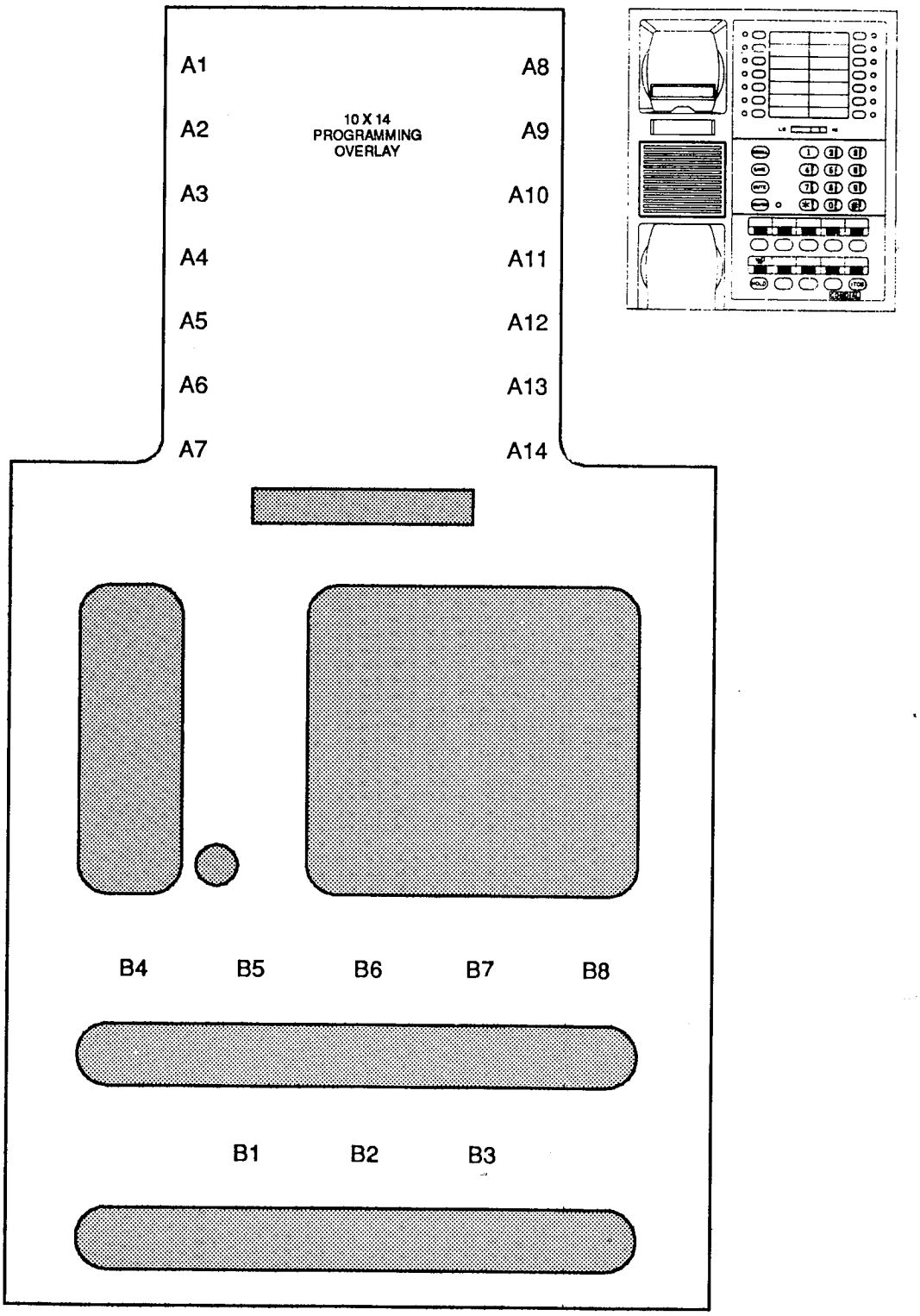
- Cut out along border.
- Cut out shaded openings.
- Fit over station faceplate.

A1		A8
A2	2 X 22 PROGRAMMING OVERLAY	A9
A3		A10
A4		A11
A5		A12
A6		A13
A7		A14
B7		B8
B5		B6
B3		B4
B1		B2



STATION 10 - PROGRAMMING OVERLAY

- Cut out along border.
- Cut out shaded openings.
- Fit over station faceplate.



CHAPTER 5
SYSTEM OPERATING PROCEDURES

SECTION 1
STATION OPERATION

BASIC OPERATION

CALLING

- Press line key to select line.

NOTE: Selecting a line is not necessary if:

- *A priority line has been assigned to a telephone (prime line feature enabled),*
- *The telephone automatically picks an idle line for use when the handset is lifted (idle line preference feature enabled).*

- Listen for dial tone.
- Dial number.

When party answers,

- Lift handset.

To end call,

- Hang up handset.

ANSWERING A CALL

Calls appear at keys that have actual line assignments.

- Press line key of ringing line (line key with flashing light).

NOTE: If the priority line assigned to a station (prime line enabled) is ringing, or if the telephone can answer any ringing line (ringing line preference enabled), do not press the line key of the ringing line.

- Lift handset.

PLACING A CALL ON HOLD

Manual hold (Any telephone with line appearance can retrieve held call.)

- Press **HOLD**.

To return to call,

- Press line key with flashing light.

Exclusive hold (Only your telephone can retrieve held call.)

- Press **HOLD** twice.

Hold Recall Feature

After a preprogrammed length of time, a call placed on hold will automatically ring back to the telephone which placed it on hold. If the call is on exclusive hold, it will revert to manual hold after the hold recall time period. The call can then be retrieved by anyone with that line appearance.

PLACING INTERCOM CALLS

Intercom calls may be manually dialed as described below or automatically dialed as described in the paragraph provided later titled Direct Station Selection/Busy Lamp Field.

Voice Announce Calling

- Lift handset.
- Press **ITCM**.
- Dial extension number. (To call system operator, dial **0**.)
- Speak to called party.

Tone Calling

- Lift handset.
- Press **ITCM**.
- Dial extension number.
- Press **ITCM** again. Called telephone will ring.

NOTE: Some systems may be programmed to tone signal as the first option. In that case, pressing the ITCM key a second time is not necessary.

ANSWERING INTERCOM CALLS

To answer a voice announce call,

- Speak toward the telephone.
- Lift handset if privacy is desired.

NOTE: Voice calling can be blocked. See the discussion titled, Voice Announce Blocking for details.

To answer a tone call,

- Lift handset to talk.

DIRECT STATION SELECTION/BUSY LAMP FIELD - DSS/BLF (One-key intercom calling with visual indication of telephone status)

To program DSS,

- Press **ITCM.**
- Dial ✳ ✳ 3.
- Press softkey.
- Dial extension number.
- Repeat last two steps for all desired telephones.
- Press **SPKR**.

NOTE: An autodial number can also be programmed as a secondary function at every DSS/BLF memory location. See Automatic Dialing instructions for details.

To voice call a DSS number,

- Lift handset.
- Press softkey.
- Voice announce.

NOTE: When transferring a call, the outside line is automatically placed on hold when a DSS key is pressed.

To tone call a DSS number,

- Lift handset.
- Press softkey.
- Press **ITCM**. When intercom party answers, two-way conversation can take place.

NOTE: The lights (LEDs) adjacent to softkeys indicate status of DSS telephones:

- ***DARK** indicates idle telephone*
- ***STEADY**-ON indicates telephone in use*
- ***FLASHING** indicates another station is calling this station.*

TRANSFERRING OUTSIDE CALLS

- Answer outside call.
- Press **T/C.** (Outside call is placed on hold automatically.)
- Dial extension number of party to be transferred to.
- When intercom party answers, announce call and line number.
- Hang up handset.

To return to outside call (busy or no answer),

- Press flashing line key.

CONFERENCE CALLS

Conference transmission levels are not compensated and are dependent upon the quality of the external lines.

Multiline conference (2 external parties, 1 internal party)

To set up a multiline conference,

- Establish first outside call and press **T/C.**
- Establish second outside call and press **T/C.**

To drop one conferee and remain active in conference with other conferee,

- Press **HOLD.** Both lines placed on hold.
- Press line key of party to be dropped.
- Press and release hookswitch.
- Press line key of party to be retained.
- Resume conversation.

Alternately, remain on line while one conferee hangs up.

Add-on conference (1 external party, 2 internal parties)

- Establish outside call.
- Press **T/C** (outside call placed on hold automatically).
- Dial extension number of intercom party.
- Wait for answer.
- Press **T/C** (a three-way connection is established).

FEATURE OPERATION

REDIALING

Last Number Redial

The last number previously dialed can be redialed.

- Press **#**. (If on line listening to dial tone, press **HOLD #**.)
- Listen for ringing or busy tone.
  - Ringing tone: When party answers, pick up handset.
  - Busy tone: Press **SPKR** to disconnect.

Automatic Redial

The last number previously dialed can be redialed repeatedly.

To program a softkey for automatic redial,

- Press **ITCM.**
- Dial ✳ ✳ **1.**
- Press desired softkey.
- Press **#.**
- Press **SPKR.**

To activate automatic redial,

- Press softkey programmed for that purpose (if on line listening to dial tone or busy tone, press **HOLD** then press auto redial key). Intercom light will flash rapidly to indicate feature is active.
- Number will be dialed once a minute for ten minutes.

If call is answered,

- Take control by lifting handset.

To cancel automatic redial,

- Press auto redial key, lift and replace handset, or press any station key. Any user originated station act will cancel this feature.

AUTOMATIC DIALING

An autodial number can be programmed at any softkey location that does not have a line assigned to it. An autodial number can also be programmed as a secondary function at every DSS/BLF memory location.

To program autodial numbers,

- Press **ITCM.**
- Dial ✳ ✳ 1.
- Press desired softkey. Listen for fast tone bursts.
- Listen for fast tone bursts.
- Press specific line key or **ITCM** for circuit pre-selection storage (optional).

NOTE: *When automatic dialing is used and no circuit pre-selection is programmed, the system will automatically pick the prime line assigned to the telephone (if enabled) or pick the most previously used line at that station.*

- Dial the number sequence to be stored. (Up to 15 digits can be stored. Digits can be **1-0**, **#**, and ✳)
  - To store a pause, press **HOLD.**
  - To store a flash, press **TAP.**

To store another number,

- Press **T/C.**
- Press next softkey.
- Repeat above programming procedure beginning from softkey selection step.

To end programming,

- Press **SPKR**

HINT: Store intercom line pre-selection plus often-used, host PBX or CENTREX feature access dialing codes at memory locations to provide one-key access to system features.

To automatically dial numbers,

- Press desired softkey.

-OR-

- If desired softkey is also programmed for one-key intercom calling,
- Press **HOLD** and then press desired softkey.

When party answers,

- Lift handset.

STATION SPEED DIALING

To program numbers,

- Press **ITCM.**
- Dial ✳ ✳ **2.**
- Follow same steps given for Automatic Dialing using the keypad digits **0 - 9** as ten softkey locations.

To dial numbers

- Press desired dial pad digit **0 - 9.**

-OR-

- If on line listening to dial tone,
  - Press **HOLD** and then press desired keypad digit **0 - 9.**

SYSTEM SPEED DIALING

To dial numbers,

- Press ✳.
- Press desired keypad digits **01 - 30** for memory locations 1 through 30.

-OR-

- If on line listening to dial tone.
  - Press **HOLD** ✳ and then press desired keypad digits **01 - 30**.

VOICE ANNOUNCE BLOCKING

To block voice calls,

- Press **ITCM**.
- Dial ✳ **2**

To un-block voice calls,

- Press **ITCM**.
- Dial **# 2.**

LINE MONITORING

To activate while using handset on a call,

- Press **SPKR**. Speaker light will turn on.
- Hang up handset.

NOTE: If a distant party places a station user on hold, the station user can monitor in a handsfree manner until the party returns, and then lift the station handset to resume the call.

To cancel,

- Lift handset to resume conversation

-OR-

- Press **SPKR** to disconnect. Speaker light will turn off.

TAP (RECALL/FLASH)

Flash (PBX, CENTREX and custom calling services may require this feature.)

If a system has been configured for flash,

- Press **TAP** to generate a timed flash signal.

Recall

If a system has been configured for recall,

- Press **TAP** to disconnect current line call and receive a new dial tone for another line call.

NOTE: A system can be configured for either flash or recall but not for both.

EXTERNAL PAGING (requires external paging unit)

- Press line key dedicated to paging.

-OR-

- Lift handset.
- Press **ITCM** and dial paging code.

HINT: Program a softkey with ITCM plus the paging code to provide one-key access to paging.

- Dial code for zone paging if required (refer to paging equipment instructions).
- Lift handset, make announcement, and hang up.

ALL-CALL AND ZONE PAGING

To page,

- Press **ITCM**.
- Lift handset.
- Dial zone number - (**4**, **5**, **6**, or **7** for all-call).
- Make announcement.
- Hang up handset.

DO NOT DISTURB

To silence a station ringer and appear busy to intercom calls,

- Press **SPKR**. Speaker light will turn on.

NOTE: The calling party will hear two quick tone bursts every three seconds. The feature cannot be overridden by the calling party.

To cancel,

Press **SPKR** again. Speaker light will turn off.

MUTE / HANDSFREE ANSWER INHIBIT

The MUTE key is in a non-latching mode when the station handset is lifted and in a latching mode when the station is operated in a hands-free manner.

To prevent distant party from hearing while handset is lifted on a call,

- Press and hold **MUTE**. SPKR light will flash.

To resume two-way conversation,

- Release **MUTE**. SPKR light will turn off.

To prevent distant party from hearing while station is being operated in a hands-free manner,

-OR-

To inhibit handsfree answer of intercom calls,

- Press and latch **MUTE**. SPKR light will flash.

To resume two-way conversation,

- Press and release **MUTE**. SPKR light will turn off.

PULSE/TONE SWITCHING

If the local telephone service is pulse (rotary) but tone generation is required during the call, convert to tone while dialing as follows:

- Press # at point in dialing sequence where conversion to tone is required. (System will switch back to pulse dialing when call is ended.)

NOTE: Pulse/Tone switching can be programmed into softkeys by pressing # during number storage.

MESSAGE WAITING

The message waiting light, located above the **HOLD** key, is controlled by other stations in the system. The light will flash when a message for the station awaits pick up.

To receive messages,

- Press **ITCM HOLD**. (Station that turned on MW light will be automatically called.)

To turn on MW light,

- Press **ITCM**.
- Dial ✳ **3**.
- Dial station number. (MW light of called station will flash.)

To turn off MW light,

- Press **ITCM**.
- Dial **# 3.**
- Dial station number. (MW light of called station will turn off.)

To turn off MW light while delivering message,

- Press **HOLD**.

BACKGROUND MUSIC

Music must be supplied by the system before it can be turned on at a telephone.

To turn music on,

- Press **ITCM**.
- Dial ✳ **1. Speaker light will turn on.**
- Adjust loudness of music with call monitor speaker volume control.

To turn music off,

- Press **ITCM**.
- Dial **#** 1. Speaker light will turn off.

NOTE: Background music automatically turns off during calls.

CALL PICKUP

To answer a call that is ringing at another telephone,

- Lift handset.
- Press **ITCM**.
- Dial ✳ **4**.
- Dial extension number of ringing telephone.

-OR-

- Dial **# 4 and answer ringing at any telephone in system.**

PERSONAL RINGING TONES (allows selection of one of four distinctive tones for ring signals)

To program tones,

- Press **ITCM**.
- Dial ✳ ✳ **4**.
- Dial 1, **2**, **3**, or **4** (selects tones 1, 2, 3, or 4)

TONE	FREQUENCY PAIR	WARBLE RATE
TONE 1	509/610 Hz	10 Hz
TONE 2	763/1016 Hz	10 Hz
TONE 3	509/610 Hz	19 Hz
TONE 4	763/1016 Hz	19 Hz

SPEAKERPHONE OPERATION

The optional speakerphone can exercise the previously described features in a handsfree manner. Handsfree calling and call answering is as described below.

To place a call,

- Press line key.
- Dial number or press softkey.
- When party answers, speak toward the telephone.

To answer a call,

- Press line key.
- Speak toward the telephone.

To end a call,

- Press **SPKR.**

To switch from speakerphone to handset,

- Lift handset.

To switch from handset to speakerphone,

- Press **SPKR.**
- Hang up handset.

SECTION 2
ATTENDANT STATION OPERATION

The attendant station provides additional operating features that are not available from other stations in the system.

SYSTEM SPEED DIAL PROGRAMMING

A special system-wide list of numbers can be programmed for automatic dialing by all users.

To program numbers,

- Press **ITCM** ✳ **#** .
- Dial **02**.
- Press desired keypad digits **01 - 30** for memory location 1 - 30. Listen for fast tone bursts.
- Press line key for pre-selected line storage (optional).

NOTE: *When no line is pre-selected and system speed dialing is used, the system will automatically pick the prime line assigned to the telephone (if enabled) or pick the most previously used line at that station.*

- Dial the number to be stored. (Up to fifteen digits.)
  - Press **HOLD** to store pause (if required).
  - Press **TAP** to store flash (if required).
- Press **T/C** for next location and repeat procedure from point where number is to be stored.
- Press **SPKR** key to end programming.

NIGHT TRANSFER (of ringing)

The day, or normal, ringing of incoming lines can be transferred to a particular station or stations (chosen through class of service programming) for off-hour or special-purpose answering.

To turn on or turn off the feature,

- Press **ITCM** ✳ **#** .
- Dial **03**.
- Press A1 (top, left-hand softkey) to toggle feature on and off. Associated light will turn on when night transfer is active and turn off when it is inactive.
- Press **SPKR**.

MUSIC ON HOLD

Music that is provided to outside lines while they are on hold can be controlled by attendant action.

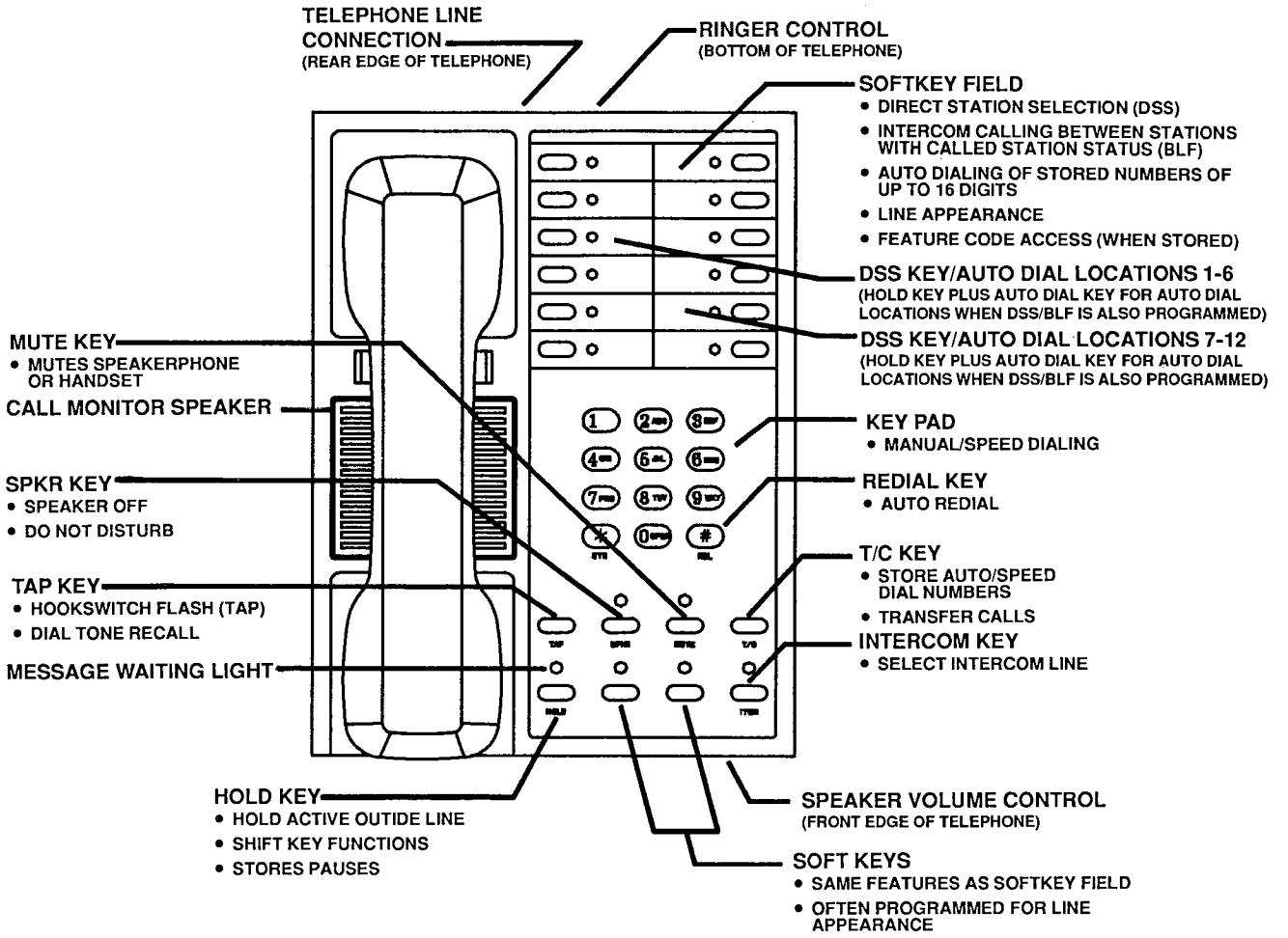
To turn on or turn off music on hold,

- Press **ITCM** ✳ **#** .
- Dial 04.
- Press **A1** (top, left-hand softkey) to toggle feature on and off. Associated light will turn on when music on hold is provided and turn off when it is turned off.
- Press **SPKR**.

SYSTEM CLOCK

If the system has been modified to provide LCD speakerphone support, the system clock can be programmed to maintain current date and time information . This information is provided to the LCD speakerphone for display.

- Press **ITCM** ✳ **#** .
- Dial **01**.
- Dial two digits (**00-99**) for yr.
- Dial two digits (**01-12**) for mo.
- Dial two digits (**01-31**) for day.
- Dial two digits (**00-23**) for hr.
- Dial two digits (**00-59**) for min.
- Dial one digit (**1-7**) for day of week -- Sun. = 1, Sat. = 7.
- Press **SPKR**.



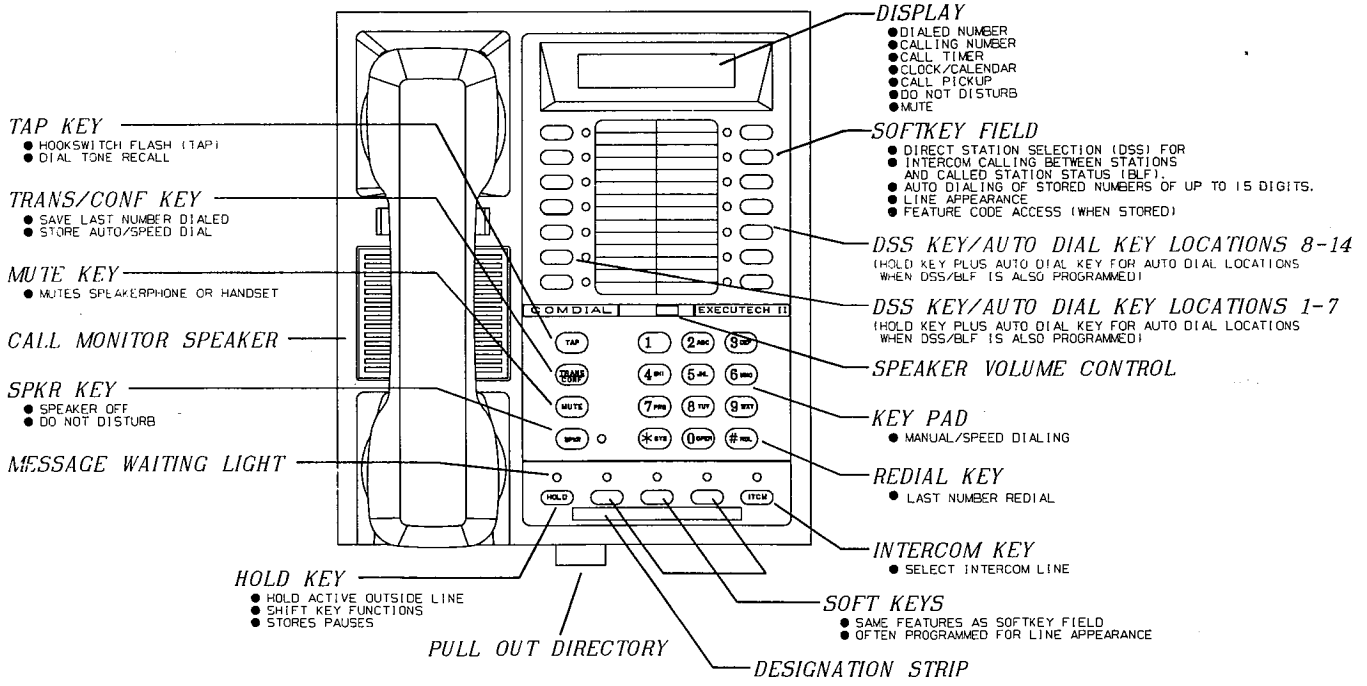


Figure 5-1. Controls and Indicators.

SECTION 3
SYSTEM OPERATING CHARACTERISTICS

FEATURE DIALING CODE NUMBERING PLAN

FEATURE DESCRIPTION		DIALING CODES
All Call Page		**ITCM 7**
Attendant Calling		**ITCM 10** or **0**
Automatic Redial		PROGRAMMED SOFTKEY To program: **ITCM**, ✳ ✳ **1**, SOFTKEY, **#**, **SPKR**
Background Music	On Off	**ITCM ✳ 1** **ITCM # 1**
Call Pickup	Directed System	**ITCM ✳ 4** + Ext. No. **ITCM # 4**
Do Not Disturb	Set Cancel	**SPKR** **SPKR**
Handsfree Answer Inhibit	Set Cancel	**MUTE** **MUTE**
Message Waiting	Set Cancel From Idle Cancel On Line Retrieve Message	**ITCM ✳ 3** + Ext No. **ITCM # 3** + Ext. No. **HOLD** **ITCM HOLD**
Night Transfer (Station 10 only)	On Off	**ITCM ✳ # 03 A1** **ITCM ✳ # 03 A1**
Personal Ringing Tones	Set Tone 1 Set Tone 2 Set Tone 3 Set Tone 4	**ITCM ✳ ✳ 41** **ITCM ✳ ✳ 42** **ITCM ✳ ✳ 43** **ITCM ✳ ✳ 44**
Pulse/Tone Switching		**#**
Speed Dial	Station System	**1 - 0** (**HOLD 1 - 0** when on line) **01 - 30** (**HOLD 01 - 30** when on line)
Redial (Last number dialed)		**#** (**HOLD #** when on line)
Voice Announce Block	On Off	**ITCM ✳ 2** **ITCM # 2**
Zone Page	Zone 1 Zone 2 Zone 3	**ITCM 4** **ITCM 5** **ITCM 6**

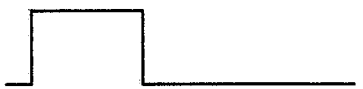
RINGER VOLUME CONTROL

The station ringer volume control is located on the front edge of the telephone. Adjust the control lever to OFF, LOW or HIGH volume as desired.

STATUS INDICATORS AND TONE SEQUENCES

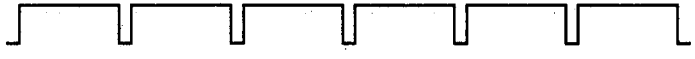
The following pages describe the light and ring patterns associated with system operation. The values shown are typical and are provided for illustration only.

SYSTEM RINGING PATTERNS

CO/PBX Line Ring	Host system ring cadence	**RING CADENCE DEPENDENT UPON HOST SYSTEM**
Intercom Tone Signalling	Two 140 msec. tone bursts sounded every four seconds	
Voice Signalling alert	One 210 msec. tone burst	
Timed hold recall at station that put call on hold	Three 140 msec. tone bursts sounded at the end of each timeout period	

INTERCOM CALL PROGRESS TONES
(Heard through handset receiver or over monitor speaker)

Dial Tone Base Level Tone	Continuous on	
Called station ring-back Called station busy on outside line	560 msec. tone burst sounded twice every 4 sec.	
Base level program entry Programming confirmation System speed dial entry confirmation Memory dial intercom, line, group and/or recall selection confirmed All-call page selection confirmed PA station port selection confirmed	70 msec. tone burst sounded once	

Error tone - incorrect entry	560 msec. tone burst sounded three times	
Busy tone - intercom	560 msec. tone bursts	
Called station in do-not-disturb mode Fasy busy tone	140 msec.tone burst sounded twice every sec.	
System is awaiting memory dial number or key mapping entry after location is specified	70 msec. tone bursts sounded continuously	

LINE SELECT LIGHTS

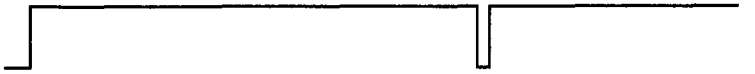
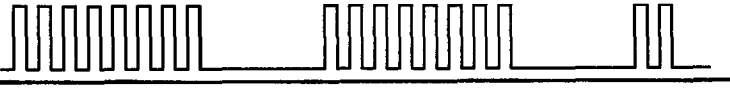
Idle	Steady off	
Ringing	Continuous flash (560 msec. on - 560 msec. off)	
In use-your station	Steady on with wink off (2.3 sec. on - 70 msec. off)	
In use-other station	Steady on	
On hold-your station	Winking with repeative off periods (winking rate - 560 msec. off)	
On hold-other station	Continuous winking (490 msec. on - 70 msec. off)	

Exclusive hold	Steady on	
Held call timeout your station	Flutter with repeative off periods (flutter rate - 560 msec. off)	
Held call timeout other station	Continuous flutter (70 msec. on - 70 msec. off)	

MESSAGE WAITING LIGHT

Message Waiting	Continuous flash (560 msec. on - 560 msec. off)	

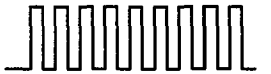
INTERCOM LIGHT

In use-your station	Steady on with wink off (2.3 sec. on - 70 msec. off)	
All links busy	Steady on	
Auto redial active	Continuous flutter (70 msec. on - 70 msec. off)	
Night mode - Station 10	Flutter with repeative off periods (flutter rate - 560 msec. off)	

BLF LIGHTS

DSS station idle	Steady off	
DSS station busy on intercom calling you	Continuous flash (560 msec. on - 560 msec. off)	
DSS station busy on outside line or intercom line DSS station in do not disturb mode.	Steady on	

SPEAKER LIGHT

On line and speaker on (mike also on if speakerphone) Do not disturb mode Background music on	Steady on	
Mute **-OR-** Handsfree answer inhibit	Continuous flutter (70 msec. on - 70 msec. off)	
Do not disturb plus Mute **-OR-** Active line plus Mute	Flutter with repeative on periods (flutter rate - 560 msec. on)	

CHAPTER 6
MAINTENANCE

TECHNICAL ASSISTANCE AND REPAIR SERVICE

TECHNICAL ASSISTANCE

Should you experience difficulty with installation, checkout, or programming, and have made an attempt to isolate the problem using information provided herein; or should you encounter problems at a later date which cannot be resolved by referring to this manual, call the Comdial Technical Service staff. They can be reached at 1-800-366-8224 between the hours of 8:00 AM and 8:00 PM Eastern time, Monday through Friday.

When calling for technical assistance, you should be at the job site and you should have in your possession, as a minimum, an accurate volt-ohm meter and a copy of this manual.

REPAIR SERVICE

If your common equipment cabinet or an individual station needs repair, it may be returned to Comdial. Comdial will, at their option, either repair the defective equipment or replace it with a remanufactured unit. This repair will be done for a fixed charge. For information on this charge, please call or write to the address given below.

Comdial
P.O. Box 7266
Charlottesville, VA 22906
Attention: Repair Department
Telephone: (804) 978-2400
1-800-877-4448

When returning equipment for repair, pack it carefully to prevent damage. Any damages during shipment will be the responsibility of the purchaser. The equipment should be shipped freight or postage prepaid. The shipping address is:

Comdial
1180 Seminole Trail
Charlottesville, VA 22901
Attention: Repair Department

FUSE LOCATION

The system is protected against short circuit damage by a 1 amp slow-blow fuse located on the left side of the common equipment cabinet. Always replace the fuse with one of the same value and type, otherwise, equipment damage could result.

WIRING

Refer to **Chapter 2**, **Section 3**, *Checkout and Failure Isolation*, for instructions for testing the system wiring and components for possible failure.

PUBLICATION INDEX

LIMITED WARRANTY

Comdial Corporation (Comdial) warrants that under normal operating conditions, this Equipment (except for fuses, lamps, and other consumables) will be free from defects in material and workmanship for a period of twenty-four (24) months from the manufacturing date stamped on the Equipment. Comdial's sole obligation under this warranty or under any other legal obligation with respect to the Equipment is to repair or replace, at its option, the Equipment if it is deemed defective by Comdial during the warranty period free of charge with new or refurbished equipment or parts, at Comdial's option, when the Equipment is returned to Comdial, freight or postage prepaid, during the warranty period. This warranty does not apply if, in the sole judgement of Comdial, the Equipment has been installed or used in combination or in assembly with products not supplied by Comdial and which are not compatible or inferior quality, design or performance, or the Equipment *has been otherwise misused, abused, accidentally damaged, or damaged or malfunctions or fails to function as a result of acts of God such as* fire, flood, or lightning or other incidence of excessive or insufficent voltage or failure to follow instructions. Repair or alteration of this Equipment other than as specifically authorized by Comdial or its authorized repair agent is prohibited and will void this warranty. This warranty does not cover costs associated with installation, removal, or reinstallation of the Equipment. Comdial does not warrant that the Equipment is compatible with all telephone or switching systems. THIS WARRANTY IS EXCLUSIVE, BEING IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. WITHOUT EXPANDING UPON THE FOREGOING WARRANTY, THE MAXIMUM LIABILITY OF COMDIAL UNDER ANY WARRANTY, STATUTORY, EXPRESS OR IMPLIED, IS LIMITED TO THE PURCHASE PRICE OF THE EQUIPMENT. COMDIAL SHALL HAVE NO RESPONSIBILITY FOR DAMAGE TO PROPERTY OR ANY OTHER LOSS OR INJURY, INCLUDING CONSEQUENTIAL AND/OR INCIDENTAL DAMAGES, RESULTING FROM THE POSSESSION, OPERATION OR USE OF THE EQUIPMENT, ALL SUCH CLAIMS BEING HEREBY EXPRESSLY WAIVED. THE PURCHASER'S EXCLUSIVE WARRANTY AND REMEDY SHALL BE ONLY AS STATED HEREIN.

This warranty gives you specific legal rights and you may also have other rights which may vary from state to state. Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitations may not apply to you.

If the Magnuson-Moss Act should be held to apply to the sale of the Equipment by a court of competent jurisdiction, the implied warranty of fitness for a particular purpose shall extend for one year from the date of manufacture.

No Comdial dealer nor any other person or entity other than Comdial may extend or modify this warranty, and no such modification or extension shall be effective unless it is in writing.

COMDIAL

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