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CHAPTER 1
SYSTEM OVERVIEW

SECTION 1
INTRODUCTION

The Express telephone system is an expandable communications system with the following characteristics:

Unitized base unit that includes all system features. The base unit is available in several line/station combinations. Each base unit is full-featured and self-contained.

Expansion modules that increase station and line capacity. Both a 4-line, 12-station expansion module and a 16-station expansion module are available. These can be added singly or in various combinations to increase the station and line capacity of existing base unit installations.

Secure off-hook voice announce (SOHVA) feature. The SOHVA feature allows a station user to talk to a busy station without being heard by the outside party at the busy station. The called user can easily send back a pre-programmed LCD message or talk to the caller without being heard by the outside party.

Programmable Buttons. Buttons can be programmed to provide functions such as direct station selection (DSS), autodial, system feature access, line access, messaging and more. Programmed buttons help station users eliminate manual dialing errors.

Service observing. Supervisors can help ensure quality of service without interrupting calls by monitoring a trainee's call without being heard by the distant party at the trainee's station.

Handset volume control on multiline stations. Handset volume can be set to a comfortable listening level for each individual user of the telephone.

Call cost display. Built-in software records all outside call costs. Special programming allows an LCD speakerphone to display the accumulating cost of a call.

Dual Intercom. A second intercom button can be provided so that station users can handle two intercom calls at once. One intercom call can be placed on hold while a second intercom call is serviced or both calls can be conferenced together.

SECTION 2
PUBLICATIONS OVERVIEW

MANUAL SCOPE

This publication contains a complete discussion of the Express telephone system. This revision of IMI 66-075 supercedes all previous issues. Included in this manual is the following information:

- **Chapter 1, System Overview**: This chapter provides a generalized understanding of the Express system, an explanation of the supporting documentation, and a summary of the equipment hardware.
- **Chapter 2, Feature Description**: This chapter provides a detailed discussion of the features provided by the model Express system.
- **Chapter 3, Installation**: This chapter provides detailed installation instructions and connection details.
- **Chapter 4, Programming**: This chapter provides detailed programming instructions for setting the operating parameters of the system.
- **Chapter 5, Operation**: This chapter summarizes operating procedures and provides special tone and indicator details.
- **Chapter 6, Maintenance**: Special maintenance details are provided in this chapter.

RELATED PUBLICATIONS

Related publications, containing additional information applicable to this 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 70-137 Attendant's Guide
- GCA 70-138 Station User's Guide
- GCA 70-141 Quick Reference Guide
- IMI 89-025 Add-On Expansion Module Installation Instructions

SECTION 3
HARDWARE SUMMARY

The Express telephone system consists of an electronic Key Service Unit (KSU) base unit, usually referred to as common equipment, optional expansion modules to extend station and line capacities as required, dedicated electronic telephones, and interconnecting wiring consisting of small, 4- or 6-conductor, twisted-pair cable.

The station and line capacity of the various base units and optional expansion modules are per the following chart.

MODEL NO.	CO/PBX CAPACITY	STATION CAPACITY
X34PT	6	12
X60PT	8	20
X80PT	16	32
M0412	4	12
M0016	0	16

The Express system is full featured, and supports the Express line of telephones.

The system is expandable in both line and station capacity with the addition of add-on expansion modules. Refer to **Figure 3-15** on page 3-26 for an illustration of the expansion configurations.

COMMON EQUIPMENT DESCRIPTION

The common equipment base unit 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 consists of a base unit, that provides complete feature support and optional expansion modules which provide extended station and line coverage.

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 base units are illustrated in **Figure 1-1.**

STATION DESCRIPTION

The telephone stations employed with the Express system are electronic, microprocessor- controlled, devices. They allow not only multiline pickup but also single button access to features available from the serving CO, PBX, or CENTREX switch as well as the common equipment. The Express telephones are available in two different images. The features of the images are as listed below and detailed in **Figure 1-2** and **Figure 1-3.**

The wide-image Express telephone provides the following features:

- Full modular connection
- 4 fixed buttons with indicators
  - SPKR
  - HOLD
  - ITCM
  - MUTE
- 2 fixed buttons without indicators
  - TAP
  - TRANS/CONF
- 16 Programmable buttons with red and green indicators
- 3 Programmable buttons with red indicators
- 5 Programmable buttons without indicators
- 7-foot, 6-conductor line cord
- 6 position, 2-conductor modular line jack
- K-type handset (hearing aid compatible)
- Headset jack
- Ringer volume control (Off, Low, and High)
- Wall mounting capability

The narrow-Image Express telephone provides the following features:

- Full modular connection
- 4 fixed buttons with indicators
  - SPKR
  - HOLD
  - ITCM
  - MUTE
- 2 fixed buttons without indicators
  - TAP
  - TRANS/CONF
- 10 Programmable buttons with red and green indicators
- 7-foot, 6-conductor line cord
- 6 position, 2-conductor modular line jack
- K-type handset (hearing aid compatible)
- Ringer volume control (Off, Low, and High)
- Wall mounting capability

Both the wide and narrow images are available with and without liquid crystal display readouts and in both speakerphone and monitor models.

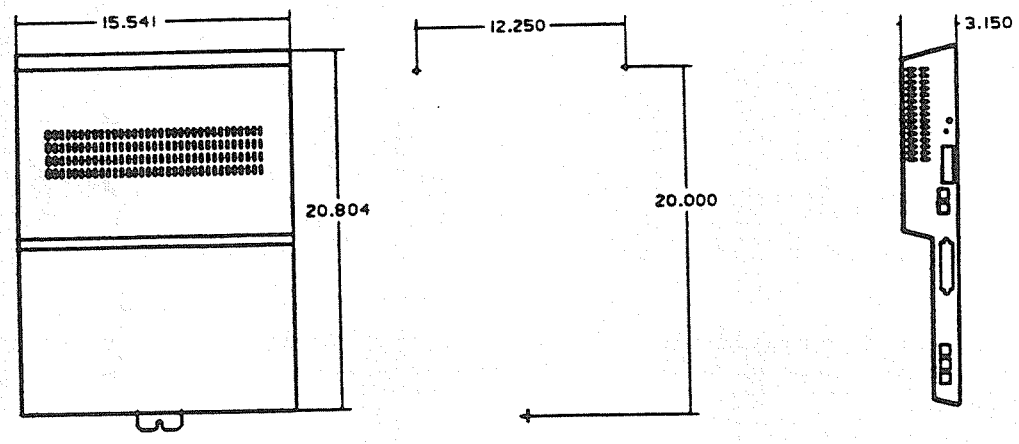
DSS/BLF CONSOLE DESCRIPTION

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-button access to all-call when that feature is available.

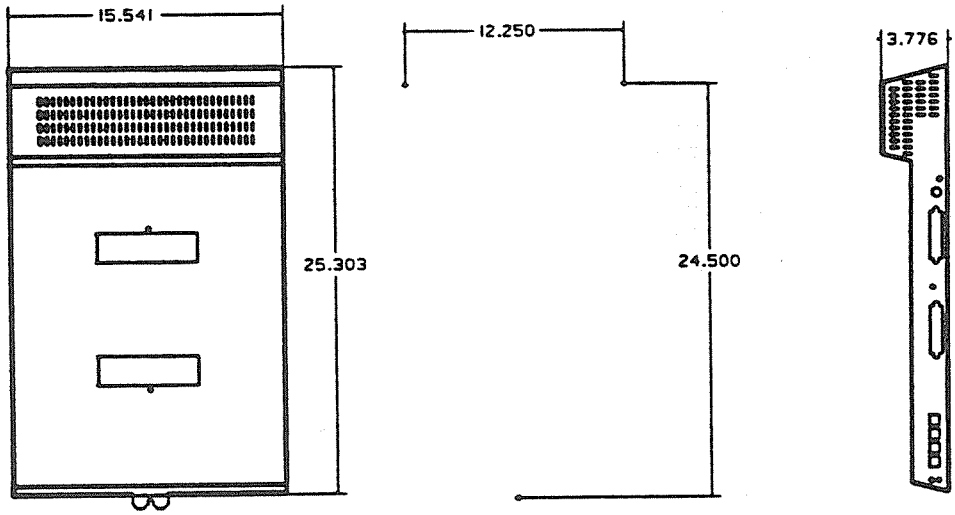
The station port to which a DSS/BLF console is connected must be programmed as a DSS/BLF console port. The 32 console buttons are user programmable as DSS buttons and/or autodial buttons. The remaining ones are fixed DSS/BLF buttons beginning with station port 42.

ADJUNCT FEATURE MODULE

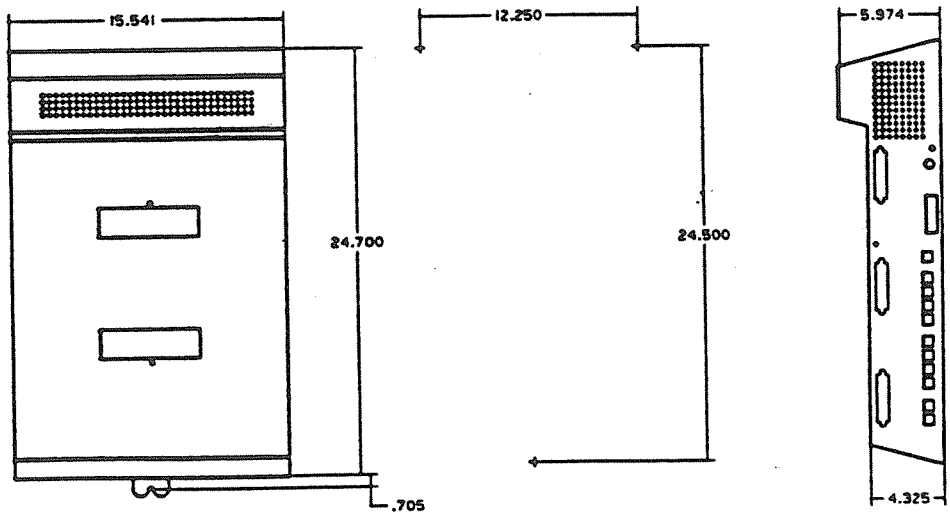
The adjunct feature module connects to the wide-image Express telephones to provide 16 additional programmable buttons with both red and green status indicators. It is a useful station addition in high call volume situations that require a dedicated call transfer location.



6-Line, 12-Station Base Unit

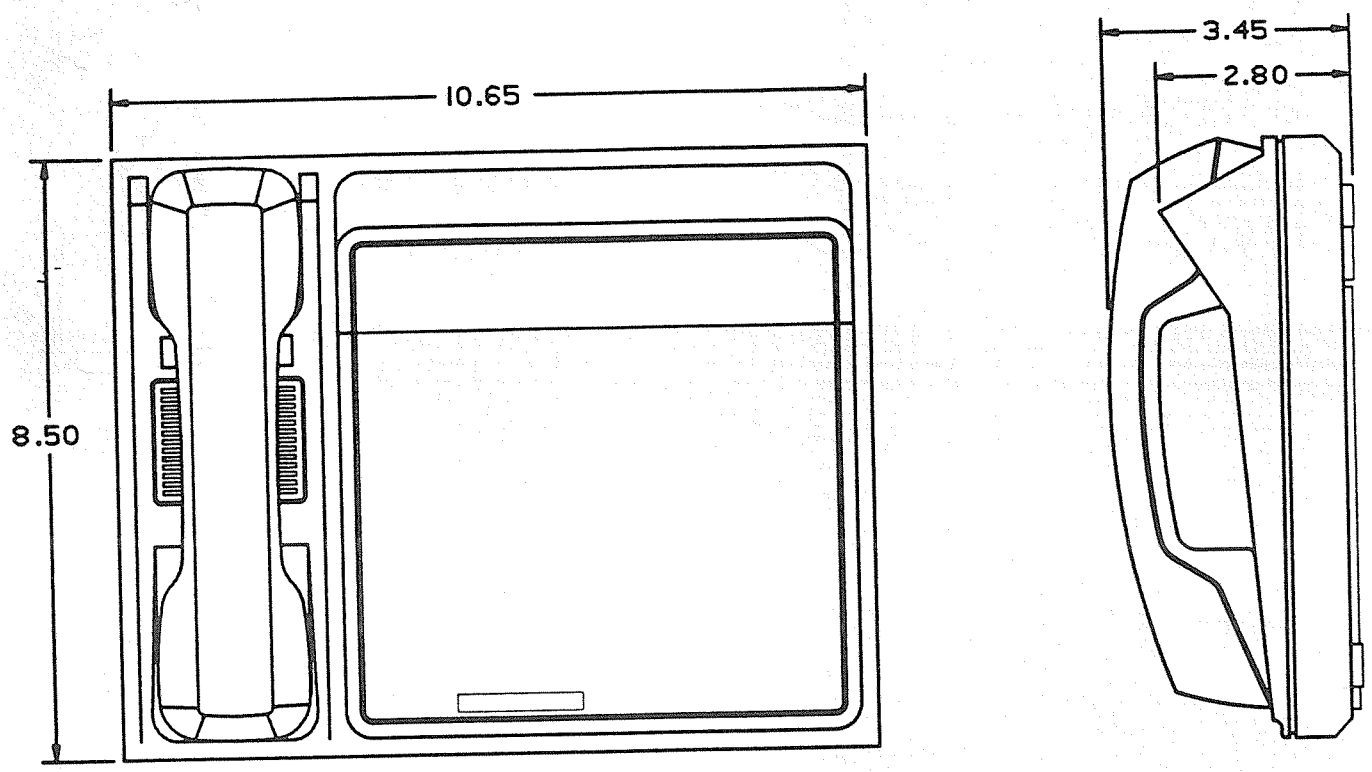


8-Line, 20-Station Base Unit

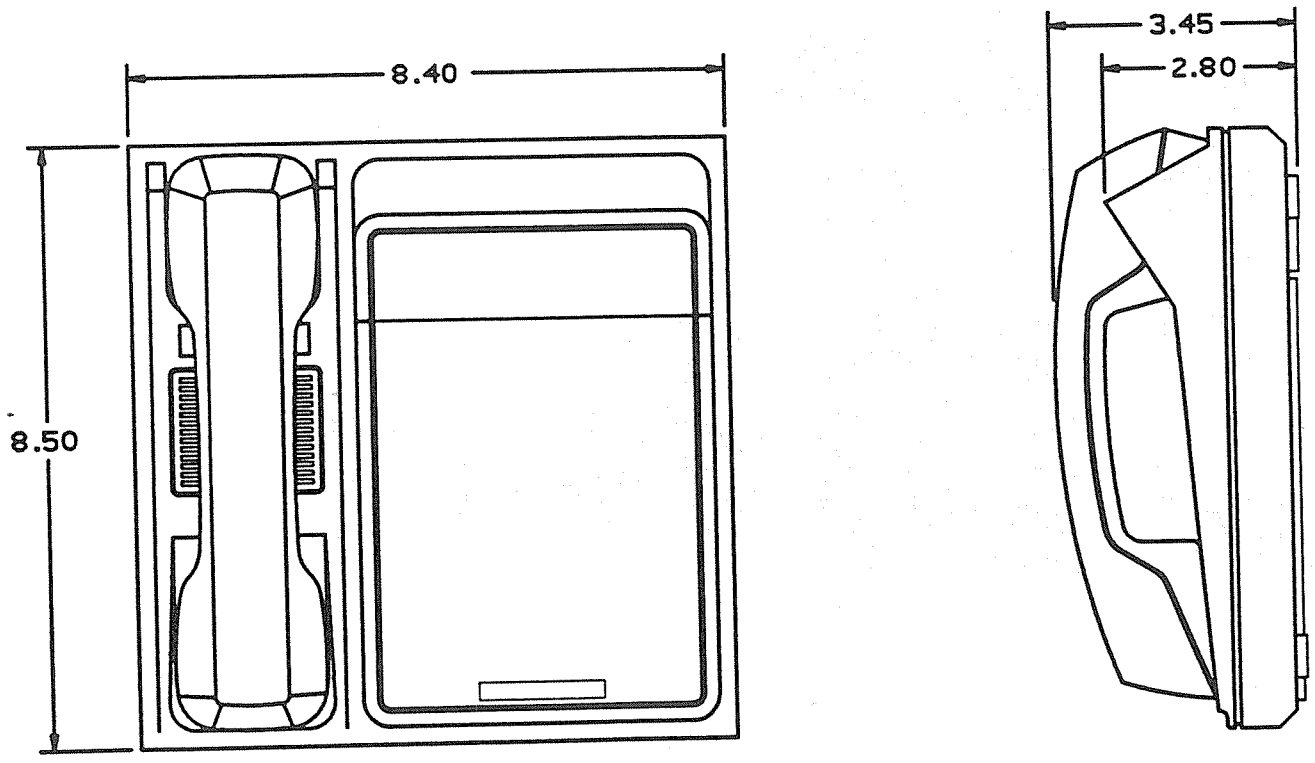


16-Line. 32-Station Base Unit

Figure 1-1. Outline Dimensions - Common Equipment

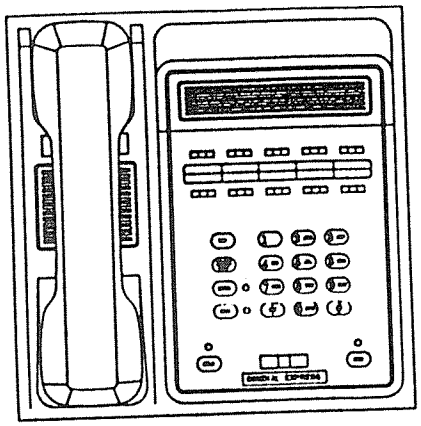


Wide-Image Express Telephone

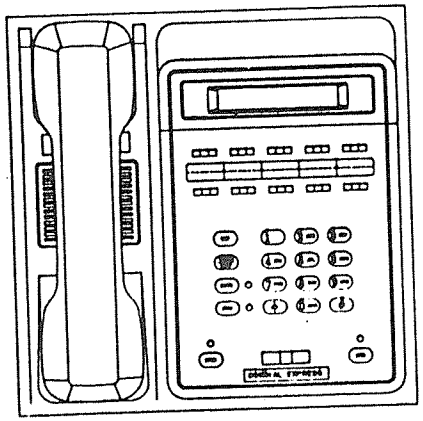


Narrow-Image Express Telephone

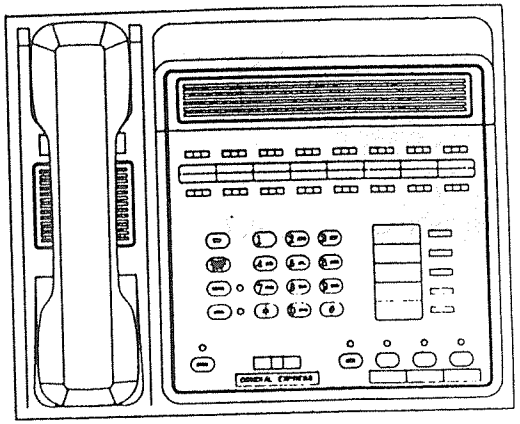
Figure 1-2. Outline Dimensions - Station Equipment



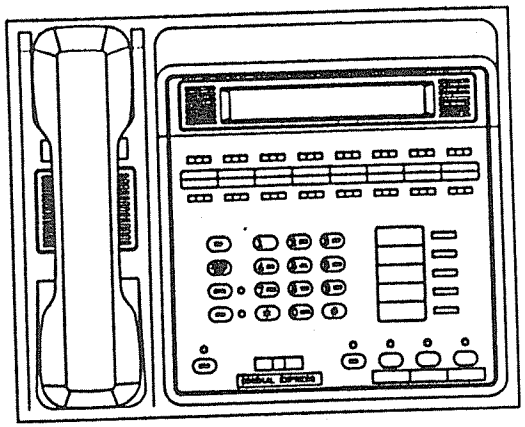
10-Button Express Telephone
(Monitor And Speakerphone)



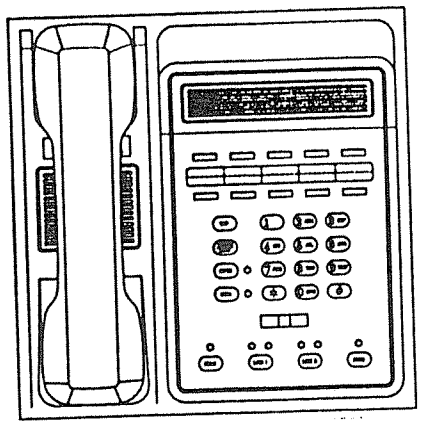
10-Button Express Telephone
(LCD Speakerphone)



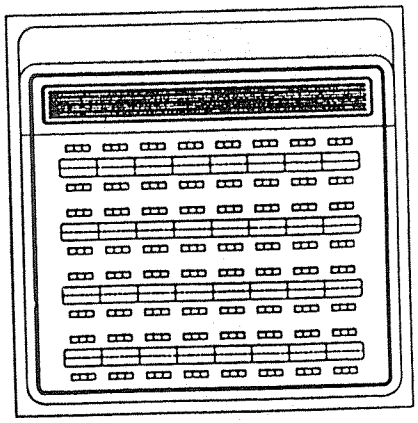
16-Button Express Telephone
(Monitor And Speakerphone)



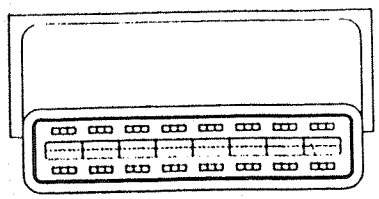
16-Button Express Telephone
(LCD Speakerphone)



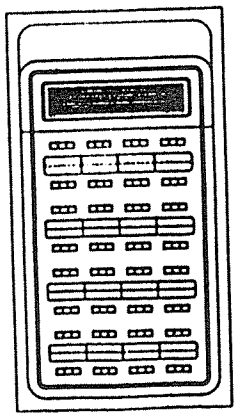
2-Line Express Telephone
(Monitor)



64-Button DSS/BLF Console



16-Button Adjunct Module



32-Button DSS/BLF Console

Figure 1-3. Station Images

SECTION 4
GENERAL SPECIFICATIONS

SPECIFICATION	BASE UNIT		
	6-LINE, 12-STATION (X34PT)	8-LINE, 20-STATION (X60PT)	16-LINE, 32-STATION (X80PT)
SYSTEM CAPACITY			
LINES:	6	8	16
STATIONS:	12	20	32
DEDICATED ATTENDANT CONSOLE PORTS:	NONE	NONE	NONE
DSS/BLF CONSOLES:	6	10	16
INTERCOM PATHS:	4	5	6
MAXIMUM SIMULTANEOUS INTERCOM CONVERSATIONS:	4	5	6
CALL COST RECORDS	900	1800	1800
POWER REQUIREMENTS (Fully loaded system)			
AC POWER:	117V +/- 10 % Singlephase - all models		
	1.0 A	1.6 A	2.0 A
	100 W	160 W	200 W
	120 VA	200 VA	240 VA
DIMENSIONS (approximate)			
COMMON EQUIPMENT			
WIDTH (inches):	15.5	15.5	15.5
HEIGHT(inches):	20.8	25.5	24.5
DEPTH (inches):	3.2	3.8	5.8
WEIGHT (pounds):	18	24	30
STATIONS	WIDE IMAGE		NARROW IMAGE
FOOTPRINT (inches):	10.65 x 8.50		8.40 x 8.50
WEIGHT (pounds):	2.9		2.1
STATION CABLE REQUIREMENTS			
TYPE:	6-wire (3-pair) twisted, non-shielded, (2-pair twisted if networking with auxiliary jack is not required)		
MAXIMUM LENGTH:	1500 feet		
SWITCHING PRINCIPLE:	Solid-state, space-division analog switching with stored program control		
OPERATING ENVIRONMENT			
TEMPERATURE:	32 to 122 degrees F (0 to 50 degrees C)		
HUMIDITY:	90 percent relative, non-condensing		
TERMINATIONS			
STATION:	Standard 50-pin female connectors for connection to external distribution field.		
LINE:'	Standard, 6-conductor mini-jack (USOC 14C)		

CHAPTER 2
DESCRIPTION OF SYSTEM FEATURES

ABANDONED HOLD RELEASE

If an on-hold party hangs up at the CO/PBX end of a connection, causing an interruption in the line current, the system will drop the line from the hold condition and return it to service. The time interval between hang-up and line-drop is programmable in line class of service programming with choices of either 50 msec or 350 msec. This feature is usually dependent upon special arrangements that must be made at the CO end of the connection. The line select indicator will turn off to indicate an idle line after a call on that line has been abandoned.

ACCESS DENIED

Access to particular lines can be denied at certain stations in the system through system programming. A station user cannot select a denied line for use. This feature is programmable on a per line/per station basis in station class of service programming.

ACCOUNT CODES WITH POSITIVE VERIFICATION

Specific account codes can be assigned by station users to specific types of calls. The account codes are used by the system to identify calls by category, or special grouping, for call recording purposes. All calls with the same account code will be reported together by the station message detail accounting feature. The system may be programmed to verify the user entered account code and sound an error tone if it is incorrect. The system may be programmed by call costing and SMDA reporting class of service programming to permit station users to enter account codes for incoming calls and/or outgoing calls if desired. Account codes are entered while on line either before an outgoing call is dialed or after the distant party on an incoming call has hung up. On outgoing calls, the user who enters the account code is associated with the call record except when the call is transferred. On transferred calls, the transferee is associated with the call record. On incoming calls, the last user active on a call is the one that is associated with the costed call record. The system can be programmed to place an appropriate message on the display to remind users of LCD speakerphones to enter an account code. Account codes may be from three to eight digits in length as set by class of service programming. The system will force the use of the programmed length, but will verify only the first three digits to determine validity.

ADJUNCT FEATURE MODULE SUPPORT

A 16-button Adjunct Feature Module can be used to enhance call handling at multiline stations. When connected to a station, it extends the programmable button field of the companion station by an additional 16 buttons and status lights. When in this configuration, it can be programmed for automatic dialing and for direct station selection (DSS) with busy light field (BLF) station status. The Module offers DSS and a BLF light for each monitored telephone.

ALL-CALL PAGING

All-call paging allows all stations to receive announcements through the station speaker at once. Origination of announcements must be via the station handset. Each station can be programmed to receive and/or originate all-call page. The ability to receive and originate all-call paging at a station is enabled by station class of service programming. Also see the discussion titled: *Zone Paging*.

ALL INTERCOM LINKS BUSY INDICATION

When all intercom paths are busy, the system causes the intercom light at each station to be on steady. No class of service programming is required to enable this feature; however, station class of service programming will allow an intercom link to be reserved for exclusive use by a particular station.

AREA PAGING INTERFACE

Refer to the discussion titled: *External Paging Interface*.

AUTOMATIC CALL-BACK

When a busy tone is encountered on an intercom call a special code number can be dialed that will cause the system to automatically ring the calling and called stations when the called station becomes idle. No class of service programming is required to enable this feature.

AUTOMATIC DIALING

The system supports up to 40 autodial positions per station. Additional autodial positions are provided by an adjunct feature module when it is installed in a companion station port.

Autodial buttons can store up to 16 digits plus an intercom or line selection. Stored digits include 9-0, * and #. A pause is stored at any point where the HOLD button is pressed and a hookflash is stored at any point where the TAP button is pressed. Automatic

dialing can be used to provide one-button access to system features. No class of service programming is required to enable autodialing. Also refer to discussions titled: *Automatic Pause Insertion, Station Speed Dial, and Programmable DSS/BLF.*

AUTOMATIC HOLD FOR INTERCOM

If the second intercom line is selected while a call is active on the first intercom line, this feature causes the first intercom call to be automatically placed on hold. Station class of service programming is required to enable this feature.

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. No class of service programming is required to enable this feature.

AUTOMATIC HOLD - TRANSFER TO LINE

This system feature is made available through programming to selected stations. When enabled, pressing any line button will cause an active line to automatically go on hold. This feature allows a user to move from line to line without having to press the HOLD button to place any current calls on hold. Station class of service programming is used to enable this feature at the desired stations.

AUTOMATIC PAUSE INSERTION

When the system stores a dialed number for later redial, it automatically stores a pause whenever the user waits between digits for at least two seconds. The automatic pause is inserted in the stored number sequence at the point where the manual pause in dialing occurred. The length of the pause is set by system class of service programming.

AUTOMATIC PRIVACY

A line can be made private or non-private through 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 the line class of service programming. Through station class of service programming, a line can be made non-private at a particular station. Also see the discussions titled: *Conference - Add-On and Privacy Release.*

AUTOMATIC REDIAL (OF BUSY NUMBER OR UNANSWERED CALL)

A busy number or unanswered call can be automatically redialed by activating this feature. 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 unless deactivated because that button or another button is pressed or the handset is lifted. The feature cycle is timed and does not have busy detection circuitry. Because of this, if operating handsfree when the called party answers, the handset must be taken off-hook to prevent the caller from being cut off by the timing cycle. Automatic redial is a designated programmable button position and must be programmed by the user to be active but no class of service programming is required.

AUXILIARY EQUIPMENT INTERFACE

A non-key system telephone device or a data device can be connected to a line ahead of the common equipment by using the auxiliary equipment interface. The system can detect an off-hook condition in the device connected to the auxiliary equipment interface, and turn on the status light for that line at the key system telephones. It does this to indicate that the line is busy and not available for station use. Auxiliary equipment interface connections provide connections to lines 2 and 4. Pressing the line button on a system station cannot interrupt an external device unless the line has been programmed to be non-private. No class of service programming is required.

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 station port 17 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. No class of service programming is required. Also refer to the discussion titled: *Common Audible Ringer Interface.*

BACKGROUND MUSIC (EXTERNAL MUSIC SOURCE REQUIRED)

If an external music source is provided, background music can be turned on and off at individual stations. The loudness of the background music is adjusted with the call monitor speaker volume control, and the background music automatically turns off during calls. No class of service programming is required to provide

this feature. Also refer to the discussion titled: *External Music Source.*

BASIC KEY SERVICE (1A2) EMULATION

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. No special class of service programming is required.

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 uninterruptable 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 uninterrupted 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.

BLOCK PROGRAMMING

A class of service assigned to a particular station or line can be assigned to an entire block of stations or lines with one programming action. This feature eliminates the need to individually program stations and lines with the same class of service. Block programming class of service can be performed after a station class of service or line class of service has been programmed for a particular station or line.

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. No class of service programming is required.

CALL COSTING AND STATION MESSAGE DETAIL ACCOUNTING REPORTS

The system provides built-in, estimated costing of all outside calls. It also provides station message detail accounting (SMDA) printout reports of all costed calls as well as displayed call costs on LCD speakerphones. Call costing, in general, provides a means of establishing costs to be applied to outside calls made from system telephones. Call costing computes charges for a call after it is completed. It does not restrict dialing as toll restriction does. Call costs are based on a two-tier time rate and includes a line surcharge cost. Allowances can be programmed for call set-up and minimum call duration. The system provides three ways of determining call costing. They are: exception tables, area/office code banding, and call cost tables. Between these three means of call costing, it is possible to apply reasonable rates for the entire country.

The system can be made to automatically generate selected reports to be printed at a specific time of day. Additionally, the system is arranged to provide the selected report whenever the costed call storage reaches 95 percent of capacity. There are five different SMDA reports which can be selected:

- Detailed report sorted by stations
- Detailed report sorted by account codes
- Line summary report
- Department summary report
- A general output of all records

Upon completion of report printing, all records used for the reports can be deleted. Any call records created between the time the report printout was started and completed will not be deleted. If the reports are not deleted after they are printed, a later command to delete records will delete all records at that point and not just the ones that were printed in the previously generated reports. Programming action can be taken to always delete the records after they have been printed. The attendant has the ability to request particular reports to be printed at any time they are required.

Account codes can be established to allow system users to identify calls by category or by any other desired grouping so that costing by that category or grouping can be reported. Department numbers can be defined and stations assigned to different departments so that call cost reports can be produced on a department-by-department basis.

Feature programming is provided in call costing and SMDA Reporting class of service programming.

Stations are assigned to specific SMDA departments through station class of service programming. The LCD speakerphone display of costed calls is also enabled through station class of service programming.

CALL FORWARDING ON ALL CALLS

This feature allows a station user to designate another station or the attendant station as the recipient of all calls normally directed to ring at the user's station. If enabled when night transfer of ringing is activated, the night ringing assignment of the station is also forwarded. Calls that are forwarded to a recipient station can be forwarded again from that station to another station. Thus, two levels of call forwarding on all calls can occur, first, from station A to station B and then, from station B to station C. For each intercom call that is received while calls are forwarded, a short tone burst will occur at the user's station as a reminder that call forwarding is enabled. When a programmable button is programmed to serve as a call forward button, the associated LED will turn on when the button is pressed to indicate that the feature is enabled. If the call forward button is programmed as a second level to a DSS/BLF button, the LED indication is always reserved for BLF indication. On LCD speakerphones that are recipients of call forwarding, the display will indicate the extension number or station name for the station from which an intercom call was forwarded from. No class of service programming is required

CALL FORWARDING - PERSONAL

Call forwarding on intercom allows a station user to designate another station number (or the attendant station number) to be the recipient of intercom calls normally directed to that user's station. For each intercom call received while call forward is enabled, a ring reminder (short tone burst) will be sounded at the forwarding station to remind the user that the calls are being forwarded. On LCD speakerphones that are recipients of call forwarding, the display will indicate the extension number or station name for the station from which an intercom call was forwarded from. No class of service programming is required.

CALL PARK

The call park feature is similar to a manual hold condition. A call that is parked from a particular station can be retrieved at any station in the system by dialing the appropriate access code. (Note: the retrieving station cannot have access denied to the line on which the call appears.) Calls are parked and retrieved within the system through the use of dialing codes. The system provides nine parking circuits (orbits). Call park, when used with the paging features, allows a system attendant to direct calls to roving personnel. A call that is left in a parking orbit for a preprogrammed length of time automatically returns to a timed hold recall condition at the station which originally parked the call. No class of service programming is required.

CALL PICKUP - DIRECTED

A station user can dial a code, followed by the extension number of a ringing station, to answer the ringing call. No class of service programming is required.

CALL PICKUP - GROUP

If a call rings to any station in a pre-programmed group and another user in the group wishes to answer the call, that user must dial the group pickup code to answer the call. Four different groups can exist with any number of stations in a group. Overlap is provided by allowing stations to be in more than one group thus enabling those stations to pick up for stations in more than one group. Stations within the system are placed in logical answering groups by programming action. Group stations together using the station class of service programming.

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 pretransfer announcement by the transferring party. Transferring calls is accomplished with the T/C (TRANS/CONF) button. No class of service programming is required. Also refer to the discussion titled: *Call Transfer - Unscreened.*

CALL TRANSFER - UNSCREENED

An active call can be transferred to another station without being announced. The transferred call will camp onto the other station where it will ring and await an answer. The call will automatically ring back to the transferring station after a programmable recall period. There is no limit as to how many calls can be camped onto another station. A transferred call will only ring if the station is idle. The system class of service programming determines the recall time for an unanswered transferred call.

CALL TRANSFER - UNSCREENED (WITH AUTOMATIC CAMP-ON TO BUSY STATION)

An active call can be transferred to another station without being announced. The transferred call will immediately ring at that station if it is idle. If the station to which an un-screened transfer is made is busy on a call, the transferred call will automatically camp-on at the busy station. If additional calls are transferred to the busy station, they are placed in a camp-on queue. When the current call is hung up, the first queued transferred call will ring. When it is hung up, the second queued call will ing. This sequence continues until all transferred calls are answered. Stations which have line appearance for a transferred line will show a "my-line" held call status indication for the transferred call. The transferred call will automatically ring back to the transferring station after a programmable recall period.

CALL WAITING TONE

The call waiting tone may be signalled to a busy station to indicate that another station or the attendant wants to contact the busy station. A special code is dialed to activate the tone. No class of service programming is required.

CALLING STATION IDENTIFICATION ON BLF

If the station number of a calling station has been programmed into the direct station select/busy lamp field (DSS/BLF) of a called station, the caller will be identified by flashing at the corresponding BLF light. The lights also indicate the status of the DSS telephones: dark = idle, steady-on = in use, flash = calling (or ringing when station monitoring is enabled), and flutter = call back request (if feature is available. No class of service programming is required for this feature. Also refer to the discussions titled: *Programmable DSS/BLF* and *Call Messaging*.

CLASS OF SERVICE PROGRAMMING (FROM MAIN STATION)

Class of service (COS) programming is used by the installer to configure and assign all system, line, station, and special purpose operating features. The installer enters COS programming by dialing an access code over the intercom line. System administrators can enter COS programming with another code to re-program any system, station, or special purpose operating feature that may require change at a later date. Line reprogramming ability is not available through system administration programming. The system attendant can reprogram certain system-wide features that require periodic change by entering COS programming with another code provided for this purpose. The station user can program individual stations for speed dial, autodial and direct station selection (DSS) by entering COS with a code provided for that purpose. Thus, COS programming is arranged with a hierarchical order from the highest (the installer) to the lowest (the station user) level with a higher level programmer having the ability to do anything a lower level programmer can do without exiting a current programming mode. However, only the station user can program the speed dial and autodial locations at telephone.

All class of service (COS) programming is performed from station 10 or 12. Any multiline station and console combination will function in this mode and provide visual feedback with the LED associated with the programming button. By employing an LCD speakerphone, however, the programmer will have the benefit of display prompts and verifications to simplify and clarify the programming procedures. Class of service programming access is as follows:

- Installer dials: ITCM * # 7 4 6 *
- Administrator dials: ITCM * # 2 3 6 *
- Attendant dials: ITCM * #0
- User dials: ITCM * *

Class of service programming can be performed using instructions provided in Chapter 4, Sections 2, 3 and 4.

CLASS OF SERVICE PROGRAMMING (VIDEO DISPLAY TERMINAL)

An asynchronous, serial data terminal with an RS-232 interface can be used to effect class of service programming through menu-driven procedures. VDT programming provides a menu-driven approach to programming as discussed in Chapter 4, Section 5.

CLASS OF SERVICE PROGRAM PRINTOUT

Connection terminals are provided to interface an RS-232 compatible, asynchronous serial data printer to the system. The connected printer will provide a printout of class of service and toll restriction records. The data printer service class of service programming determines the nature and extent of each requested printout. The system class of service programming specifies the bit-length and baud rate of the data.

CLASS OF SERVICE PROGRAM STORAGE (CASSETTE TAPE RECORDER INTERFACE)

A customer-supplied cassette tape recorder can be used to both store and load all class of service programming and station programmable button data. Control is provided from the programming station, and

connection is through the music interface jack. COS recording or loading requires approximately 15 minutes. The programming station will ring when recording or loading is complete. Follow the instructions provided in the cassette tape recorder interfacing class of service programming discussion.

COMMON AUDIBLE RINGER INTERFACE

Connections are available at the common equipment that 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 station port 15 is programmed to be a PA port, the common audible ringer interface contact points automatically become supervisory contacts that close when the PA port is called. In this configuration, they are used to enable an external PA system. No class of service programming is required. Also, see the discussion titled: *Auxiliary Station Ringer Interface.*

CONFERENCING - ADD-ON

With this feature, a station, operating in a private mode, can add another station to an outside call. No class of service programming is required.

CONFERENCING - MULTILINE

This feature will allow one multiline station to access two outside lines at the same time resulting in a conference arrangement. Conferencing is established through the use of the T/C button. Conference transmission levels are not compensated. No class of service programming is required.

CONFERENCING - UNSUPERVISED

After a conference between an internal party and two external parties has been established, this feature allows the internal party to drop out of the conference by dialing a special code. The conference between the two outside parties continues in an unsupervised condition. No class of service programming is required. Also refer to the discussion titled: *Conferencing - Multiline.*

DATA SECURITY

This data security feature will prevent any type of tone (DTMF, camp-on, barge-in, etc.) from interrupting a call that is active on a port programmed with the feature. This prevents interference to non-voice communications from occurring when the port is being used as a data port (when operating a modem through an OPX port for, example). Use station class of service programming to enable a data security port.

DEDICATED INTERCOM FOR ATTENDANT

This programmable feature ensures that an attendant at a principal call answering position will always have a free intercom link to use for announcing the incoming calls to the stations. Intercom links can also be reserved for exclusive use by any particular station in the system. An intercom link is reserved for use by a particular station through station class of service programming.

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. It can be left as a defaulted system or reprogrammed as desired. Default conditions can be reset if desired. A system can be defaulted by system, line, and station class of service programming. A master clear will default the entire system and erase all stored programmable button information.

DEFAULT TOLL RESTRICTION

Two toll restriction tables are defaulted with pre-programmed values and are pre-assigned to all lines. The tables need only be assigned to the stations by programming action to put them into effect. The defaulted tables can be reprogrammed with different information using the normal programming procedure. Assign toll tables to stations using station class of service programming. Reprogram toll tables using toll restriction table configuration class of service programming.

DELAYED RINGING

Ringing assignments are programmable. A station can be programmed to provide delayed ringing on some lines while providing immediate ringing on other lines. Delayed ringing is assigned to certain lines at each station through station class of service programming.

DESIGNATED PROGRAMMABLE BUTTONS

Station programmable buttons can be assigned to provide one-button access to a broad range of features. There are designated buttons that must be assigned at each station using station class of service programming but the auto redial button is a designated programmable button that can assigned by the station user.

DIAL 0 FOR SYSTEM ATTENDANT

The system attendant station (station 10) is signalled whenever the digit 0 is dialed on the intercom line. No class of service programming is required.

DIRECT DEPARTMENT CALLING

Direct department calling provides a means by which outside lines can be assigned to one of four different departments. Calls received on lines that are assigned to a department search for an idle station in that department. Up to four departments can be formed with up to 16 stations allowed in each department. Provision is made for one additional terminating station in each department. A station can be assigned to one, several, or all departments

An incoming call searches for the first available station that is not busy or a ring-no-answer (RNA). If all the stations in a department are busy or are RNA, the call will go to the terminating station in that department (if one has been programmed). If the terminating station is busy, the call will test the department stations again. This action will continue until the call is either answered or dropped. Subsequent calls to a department always ring at the next station in the department from whichever station serviced the last department call. The ring-no-answer time is programmable to allow a call to search rapidly through a department for an answer.

Unique access codes can be assigned to departments that can be used for making intercom calls or doing call transfers to a department. Intercom calls will test the department stations for busy or a RNA. A transferred call, however, will follow the standard direct department calling procedure.

It should be noted that the departments formed for use with this feature are different from departments used in SMDA reporting. Assign lines to departments using the line class of service programming. Assign stations to departments, access codes to departments (flexible station numbering), and busy/RNA timeout (call forward - busy), using the station class of service programming.

DIRECT STATION CALL HOLD (STATION PARK)

This feature allows a station user to park a call at a specific station where it will be held without ringing. A feature code plus a station extension number can be dialed over the intercom line to park the call or a programmable button can be programmed to provide a "directed hold" to a specific station. The parked call is picked up by directed station by dialing a feature code. It can be picked up at any station through the use of the call pickup feature. No class of service is required. Also refer to the discussions titled: *Call Pickup - Directed and Call Park.*

DIRECT STATION SELECTION (DSS) PROGRAMMABLE

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 four seconds. No class of service programming is required.

DO-NOT-DISTURB

Any station can be set to a do-not-disturb mode (DND) using the designated DND programmable button and associated indicator (indicator will light when DND is active). While in the DND 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 unless the override feature is enabled. Station class of service programming is required to enable a do-not-disturb button at a station. Refer to the discussions titled: *Do-Not-Disturb Inhibit, Do-Not-Disturb Override* and *Executive/Attendant Override.*

DO NOT DISTURB INHIBIT

The system can be programmed to inhibit any station from entering the DND mode. System class of service programming is used to program this feature.

DO NOT DISTURB OVERRIDE

Stations can be provided with DND override capability that will allow them to call a station that is set in the DND mode. The Executive/Attendant Override feature must also be active for DND override feature to function. Station class of service programming is used to assign this feature. Also refer to the discussions titled: *Do Not Disturb and Executive/Attendant Override.*

DSS/BLF CONSOLE SUPPORT

The data-paired port of a station can be used for a DSS console. The use of DSS/BLF consoles is limited only by port availability; however, since a console must be data-paired with a corresponding station, up to one-half of the available station ports can be used for consoles.

The console provides a one-button direct station selection (DSS) intercom and an associated busy lamp field (BLF). The console also provides additional auto dial capability to the station user. Station class of service programming is used to assign a station port for console use.

DUAL INTERCOM

This feature provides for two separate intercom lines at the same station. One intercom line is fixed and is accessed with the ITCM button. The other intercom line is programmable and is accessed by a programmable button selected for that purpose by class of service programming. Calls are handled on the intercom lines in much the same manner as outside calls are handled using the line buttons. Special considerations are as follows:

- Remote call pickup is not available.
- Distant party hang-up causes intercom link to drop.
- Intercom call to station already busy on intercom rings in subdued fashion and flashes indicator associated with other intercom button.
- With both intercom lines busy, a third intercom call results in off-hook voice announce at busy station.
- Pressing a DSS button while on an active intercom call will drop the distant party unless the automatic hold feature is enabled for the intercom line through class of service programming. The hold button can be used, however, to place an intercom call on hold before selecting the other intercom line for use.
- Any action taken on the intercom by a station being observed via the service observing feature will cause the observing station to return to an idle state and receive dial tone.

The station class of service button mapping procedure assigns a programmable button to serve as the second intercom button.

DYNAMIC LINE BUTTONS

Through class of service programming, certain idle line buttons can be arranged to serve as dynamic line buttons. This feature allows the system to temporarily assign a line to a station that normally does not have the line assigned to it, and have that line appear on a dynamic line button. While the call is appearing on the dynamic line button (LED on), any normal call handling operations can be performed. The station class of service button mapping procedure allows certain buttons to be programmed as dynamic line buttons.

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. No class of service programming is required.

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.

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. No class of service programming is required.

EXCLUSIVE HOLD SYSTEM-WIDE ENABLE/DISABLE

This feature allow systems that do not require exclusive hold capability to have it turned off system-wide through programming. System class of service programming is used to enable or disable exclusive hold.

EXECUTIVE/ATTENDANT OVERRIDE

This feature allows the user of a station, upon encountering a busy signal at another station, to dial a code that will override the busy signal of an call, sound a warning tone, and allow access to the existing conversation. This feature is enabled through station class of service programming.

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 line port to provide zone selection if provided by the external paging amplifier. The line class of service programming arranges a line port for external paging interface, and the station class of service arranges a station port for external paging interface.

EXTENDED DUAL TONE MULTIPLE FREQUENCY (DTMF)

The system can access answering machines, banking computers, voice mail equipment, etc. that require DTMF tones that are longer than the standard 80 msec tone. A shift to a longer tone, of pre-programmed length, is automatically made 10 seconds after a line is selected or 10 seconds after the last digit of a number is dialed. A user can shift from one tone length to the other by pressing the hold button and then re-selecting the line.

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. Delayed ringing is assigned to certain lines at each station through station class of service programming. Refer to the paragraph titled: *Delayed Ringing*.

FLEXIBLE RINGING ASSIGNMENTS OF PA PORTS

Stations ports that are programmed as PA ports can also be programmed for flexible ringing assignments. Any desired lines can be programmed to direct or delay ring at this port. A speaker can be connected to the voice pair of this port. When connected, it will sound the ringing that is generated by the system and sent to this port as if it were a regular station port. Using such an arrangement, it is possible for a user to determine that certain lines are ringing, such as in a night transfer of ringing mode, and go to the nearest telephone and answer the call. The most common use for this arrangement is as a night bell eliminating the need for external equipment as required with the common ringer and auxiliary ringer interface. Only one PA port per system can be programmed as a ringing PA port. The speaker cannot be used for voice response as the path is one-way only. Use station class of service programming to assign ringing to a PA port.

FLEXIBLE STATION AND TRUNK CLASS OF SERVICE CONTROL

The extension number of a station and all other programmable attributes that are initially assigned to a particular station port and the line, along with all programmable line attributes that are initially connected to a particular line port, can be reassigned to a different port through programming action. This feature allows adds, moves, and changes without relocating the station and line wiring. Line and station class of service programming are used to reassign stations and lines.

FLEXIBLE STATION NUMBERING PLAN

The system supports a flexible station numbering plan for individual stations. Each station can be programmed to respond to the dialing of any available number between 10-79, 100-799, or 1000-7999. This feature may be used to match the calling number of a station located in a pre-numbered area to that area number. A combination of two, three, or four digit extension numbers can be assigned as long as they do not conflict. For example: If 21 is assigned as an extension number, there can not be any other extension number assigned that begins with a 21. The system class of service programming is used to assign extension numbers to individual station ports.

FULL BUTTON PROGRAMMABILITY OF FEATURES

Most Express features can be made available at programmable buttons by programming the specific access codes necessary for dialing the features. Programmable features include those that can utilize lamp (on/off) supervision (e.g., call park orbits). All feature access codes can be stored, except for those requiring T/C button action. Continuous strings of digits can be stored, including ITCM button presses, up to the maximum amount of storable digits allowed in an autodial entry (16). Individual features can be disabled system-wide by removing the access codes with class of service programming. Once removed, they can be made available once more by turning on all features at once. System class of service programming can be used to make certain operating features unavailable system-wide.

HANDSFREE ANSWER INHIBIT

The MUTE button on a multiline station can be used to block all handsfree answerback response. This arrangement will prevent a station user from monitoring another station site using the monitoring ability of the voice announce feature. When the button is pressed, all handsfree answerback is disabled thus inhibiting any off-site monitoring. The monitor light will flash to indicate that this feature is

active. No class of service programming is required. Also refer to the discussion titled: *Mute*.

HUNT GROUP ON INTERCOM

Station ports can be assigned to intercom hunt groups. When a station that is assigned to a hunt group is busy or is a ring-no-answer (RNA), a call to it will ring at the next idle station in the group. A hunt group can be terminal or circular. A call will route down a terminal group from the called station until it finds an idle station or reaches the end of the group. A call will search around a circular group until it encounters an idle station or until all stations in the circular group are searched. Up to 16 stations can be placed in one hunt group. the ringing time at any one station is programmable. Hunt groups are created through station class of service programming.

I HOLD AND I USE INDICATIONS

The light associated with a line button provides a visual indication of the status of that line. When a station user has a line in-use or on-hold at their station, the light indication provided is of a different color than the indication provided at the other stations in the system. No class of service programming is required.

IDLE LINE PREFERENCE

When a station is programmed for idle line preference, it will automatically be connected to the first assigned idle line. 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 button will not have to be pressed. If this feature is used in conjunction with prime line automatic, the user will be given prime line first when going off-hook. A idle line will be given if the prime line is in use. The station class of service programming enables this feature on a per station/per line basis.

INTERCOM CALL PROGRESS TONES

Intercom call progress is marked by special tones. A steady tone is provided for dial tone. Ring-back tone is one second on and three seconds off. 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, a busy signal of one-half second on and one-half second off is received at the calling station. A fast busy tone will be supplied when the called station is in the do-not-disturb mode. Off-Premise Extension (OPX) ports are only supplied with the regular busy tone since fast busy tones could interfere with the operation of some accessories that can be connected to this port. No class of service programming is required.

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. No class of service programming is required.

LAST NUMBER REDIAL

Each station is provided with a last number redial feature. This feature will save 32 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. No class of service is required. Also refer to the discussion titled: *Automatic Pause Insertion*.

LCD MESSAGING

Standard and system-supplied custom display messages can be set by dialing a specific code at any multiline station. Such messages are to be received and displayed by any LCD speakerphone that calls the station which set the message. When a message is set, the intercom light at the setting station will flash to indicate that the feature is active. No class of service programming is required.

LIQUID CRYSTAL DISPLAY (LCD) ALPHANUMERIC CALLING PARTY AND TRUNK DISPLAY

An LCD speakerphone receiving an inside call will have the caller's name (up to seven characters) appear on the display (e.g., "John L"). The remaining nine characters on the display will be used for status messages (e.g., "Fwd from"). Display assignments are entered through line and station class of service programming. Also see the discussion titled: *LCD Support*.

LCD SUPPORT

The system supports the use of LCD speakerphones having a Liquid Crystal Display (LCD). The LCD speakerphone ports are identified by station class of service programming. Also refer to the discussion titled: *LCD Alphanumeric Calling Party and Trunk Display.*

LINE GROUPS

Outside lines can be grouped together in up to four different groups. Each group is accessible through a unique dialing code or automatically selected with the programmable autodial feature. Grouping can reserve certain lines for certain clusters of stations as in a tenant-service arrangement or reserve certain lines for access only by single-line keysets. The assignment of line groups frees station buttons normally used for line selection thus making these buttons available for use with a feature such as personal DSS/BLF with call messaging. Lines are placed in line groups with the line class of service programming.

LINE PRESELECTION

A line can be manually selected before lifting the handset (for handsfree dialing) or after the handset is lifted. No class of service programming is required.

LINE QUEUING

With the line queuing feature, a special code number can be dialed that will place a station in a queue where it awaits the availability of a line or line group. The station is automatically signalled with five tone bursts when the line is available to it for use. Each station can queue one line at a time. No class of service programming is required.

MANUAL HOLD

A button activated feature at each station will place an outside line on hold. Pressing the HOLD button holds the call, provides a distinctive flash rate of the line button indicator, and allows the user to access other station features. The holding station or any other station that has access to the line can retrieve the held call. No class of service programming is required.

MEET-ME ANSWER PAGE

Any station user can dial a special code number in response to an all-call or zone page and be connected to the paging party in a private conversation. All-call or zone paging is provided to the stations through the station class of service programming.

MEMORY RETENTION WITHOUT BATTERIES

The system memory is electronically protected during AC power failures by an electronic device 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. Some models include a system clock. On those models, the system clock will continue to run and keep time for at least 30 minutes after an AC power failure or disconnection. No class of service programming is required.

MESSAGE WAITING

Special feature access 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 automatically placed to the station that turned it on.

Alternately, one station can be designated by COS programming as the central message desk can be arranged for exclusive message waiting control. The central message desk can be used to control message waiting lights and deliver messages to and from all other stations in the system. The ability of a station to originate a message waiting signal is enabled by programming action. Station class of service programming provides a station with the ability to originate a message waiting signal and is used to create a central message desk.

MIXED STATION CAPACITIES

The system supports a mixture of multiline and proprietary single-line telephone stations. System class of service programming identifies the type of station that will be connected to each port.

MODULAR WIRING AND JACKS/4- OR 6-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- or 6-conductor, twisted-pair cable throughout the system. No class of service programming is required.

MUSIC INTERFACE (EXTERNAL SOURCE REQUIRED)

A jack is provided on the common equipment for the connection of a customer-provided KX registered music source. No class of service programming is required. Also refer to the discussions titled: *Background Music* and *Music-On-Hold.*

MUSIC-ON-HOLD

Music is provided to outside lines that are placed on hold if an external music source is connected to the system. No class of service programming is required. Refer to the discussion titled: *Music Interface.*

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. No class of service programming is required. Also see discussions titled: *Music Interface* and *Music-On-Hold.*

MUTE

Each station has a MUTE button 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 mute light flashes to indicate a muted condition. The button provides push-on/push-off operation on speakerphones. No class of service is required. Also refer to the discussion titled: *Handsfree Answer Inhibit.*

NIGHT TRANSFER (OF RINGING)

Night transfer is an attendant-controlled feature that transfers the day ringing program of all incoming calls to a particular station or stations for off-hour or special purpose answering. The night transfer mode can only be activated from station 10 or 12. The individual lines at each station that are to be transferred with this feature are selected by station 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. The announcement is preceded by an alerting tone and delivered through the loudspeaker in the telephone. The called party can reply in a handsfree manner to an OHVA announcement without interrupting the active call. Reply is made through the OHVA microphone included in the telephone. Stations that have the voice announce blocking feature turned on cannot receive an OHVA. Station class of service programming is used to enable the OHVA feature at a station port. Also refer to the discussion titled: *Secure Off-Hook Voice Announce.*

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.) No class of service programming is required.

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 station class of service programming.

PBX/CENTREX/CO COMPATIBLE

System features and programmable buttons 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. No class of service programming is required.

PERSONALIZED RINGING TONE

This feature allows a station user to choose one of four different ring tones to aid in distinguishing one ringing station from another. No class of service programming is required.

POOLED LINE ACCESS (GROUP TRUNK ACCESS)

Users can dial a special access code instead of pushing a line button to access one of up to four different groups of trunks. Lines are arranged into groups with the line class of service programming.

POWER FAILURE TRANSFER

A power failure line connection is available for connecting industry-standard telephones such as a Comdial model 2500. These power-fail telephones are automatically connected directly to certain lines whenever there is an AC power failure. Normal origination and reception of calls on a power-fail station is possible during the power failure condition. The power-fail stations will automatically disconnect as soon as power is restored. No class of service programming is required.

PRIME LINE AUTOMATIC

If a station is programmed for prime line automatic, the designated outside line, intercom line or line group will be automatically selected when the handset is taken off hook. Prime line pickup 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 station class of service programming.

PRIVACY - DESIGNATED PROGRAMMABLE BUTTON

Stations can be programmed to provide a privacy button. If a line is private, a user can press the privacy button to change it into a non-private one. If the line is non-private, pressing the button will have no effect. Station class of service programming is used to program the programmable button function at the stations.

PRIVACY RELEASE/BROKERAGE SERVICE

See the discussion titled: *Privacy - Designated Programmable button*

PRIVATE LINES (ACCESS DENIED)

See the discussion titled: *Access Denied.*

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

A multiline station user can store one-button, direct station selection (DSS) at any programmable button location to create a DSS button. When this button 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 button locations form a busy lamp field (BLF). The BLF conveys station status to the user. An autodial number can also be programmed as a secondary function at every DSS/BLF memory location. No class of service is required. Also refer to the discussion titled: *Tone or Voice Signalling (intercom).*

PROGRAMMABLE BUTTONS

Refer to the discussions titled: *Full Button Programmability of Features, Programmable DSS/BLF, and Dedicated Programmable buttons.*

PULSE/TONE SWITCHABLE

The system can be programmed on a per line basis to allow the stations to switch from pulse to DTMF type dialing as needed. Alternately, the system can be programmed to only allow tone dialing. The line class of service programming sets the dialing mode required for a particular line.

RESPONSE MESSAGING

This feature allows a user to reply in a handsfree mode to a voice announce or tone-signalled intercom call in a non-verbal manner when the intercom caller is using an LCD speakerphone. A station user can press a programmable button in response to an intercom call and send a message to be shown on the display of the calling station. Response messages are pre-programmed by the attendant and later stored at programmable buttons on the individual stations as need dictates.

REMOTE PROGRAMMING AND ADMINISTRATION

Remote programming of the system and SMDR output for printing are both available through serial data ports. These data ports will support X-on X-off control codes for terminal control as well as a DTR signal for handshaking. They also have the popular XMODEM protocol so that the system database can be uploaded or downloaded, error free, from or to a remote computer running software that supports the XMODEM protocol. Two serial data ports allow concurrent VDT programming (either local or remote) through one port while the other is sending SMDR data for printing. VDT programming of the system is menu driven.

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 the station.

When ringing line preference is enabled at a station, taking it off-hook automatically connects it to any outside line that is ringing at the station. A line button will not have to be pressed. If a station also has prime line assigned, the prime line will always be answered first even though it may be the second line to ring. The ability of a particular station to answer a ringing line with line selection is enabled by the station class of service programming.

SAVED NUMBER REDIAL

This feature enables a button action to save the first 16 digits of the last number manually dialed from the keypad. The saved number can be redialed at a later time. The saved number is permanently available for later use until it is replaced with a new number. No class of service programming is required.

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. 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 a SOHVA call. Response to the announcement can be verbal or non-verbal. Verbal response is effected by pressing and holding the MUTE button and speaking into the handset. Non-verbal response is effected by pressing a pre-programmed button to send a message to be shown on the display of the announcing station (if it is an LCD speakerphone). The announcing station is automatically disconnected after the message is displayed. Stations that have the voice announce blocking feature turned on cannot receive a SOHVA. Station class of service 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.*

SELF DIAGNOSTICS

Each station can execute a self test when so enabled. This test verifies processor, indicator, and tone functions. No class of service programming is required.

SERVICE OBSERVING

Service observing allows a third party to enter an in-progress call in an unannounced muted mode to monitor the conversation. There will be no warning tones sounded when the call entry is made. This feature is useful in allowing a supervisor to monitor the performance of an employee during a phone conversation with a client. For a station to provide the service observing feature, that station must have the executive override feature enabled as well as the service observing feature. Use station class of service programming to program the station for both the executive override and service observing features.

SPEAKERPHONE SUPPORT

The optional speakerphone provides handsfree operation of all features, except voice-signalled intercom calls. The handset must be lifted for this purpose. No class of service programming is required.

SQUARE/NON-SQUARE CONFIGURATION

A system can be programmed to be square or non-square as desired. In a square system, the line 1 buttons of all telephone stations select line 1, the line 2 buttons select line 2, etc. In a non-square system, each line select button at every station may be assigned individually to select any line. Button mapping for line appearance can be performed on each station using the station class of service programming.

STATION BY STATION PRIVACY

See the discussion titled: *Automatic Privacy.*

STATION MESSAGE DETAIL ACCOUNTING (SMDA)

See the discussion titled: *Call Costing and SMDA Reporting.*

STATION MESSAGE DETAIL RECORDING (SMDR)

The SMDR feature generates a call record for printing as soon as the record is collected by the system. The call record is presented at an RS-232 level as ASCII transmit data in an 80-column format at the data port available for that purpose. No class of service programming is required. Refer to the discussion titled: *Call Costing and SMDA Reporting.*

STATION MONITORING WITH DSS CALL PICKUP

The busy lamp field (BLF) of a multiline station can provide visual indication of the idle, busy, and line ringing status of monitored stations. Audible indication of direct and delayed ringing can also be provided if visual ring indication is enabled.

A one-button pickup of a ringing call at a monitored station can made at the monitoring station by pressing the direct station selection (DSS) button associated with the ringing station.

The flashing BLF lights associated with visual ring indication can be enabled or disabled on a system-wide basis. When enabled, the audible indication of ringing can then be enabled on a station-by-station basis. Enable or disable visual ring indication on a system-wide basis with system class of service programming. Enable or disable audible ring indication on a station-by-station basis with station class of service programing.

STATION SPEED DIAL

Each station can be programmed to provide 10 speed dial numbers at the keypad buttons. Station speed

dial numbers can be up to 16 digits in length and can include line or intercom selection, numbers, #, *, pauses, and flash signals. A pause is stored each time the HOLD button is pressed, and a flash signal is stored each time the TAP button is pressed. No class of service programming is required.

STATION-TO-STATION MESSAGING

If a station has a DSS/BLF appearance at another station, a call-back message indication can be left at that station with the DSS/BLF appearance. By dialing a special code, the BLF light at the called station that is assigned to the calling station can be activated. This light indicates that a callback is requested. The light is automatically turned off if a successful callback is made.

If a station number is not programmed for a DSS/BLF appearance at another station, attempting to place a call-back message will cause the central message desk station to ring. If there is no central message desk assigned, no action will occur. No class of service programming is required.

SUBDUED RINGING

When a station is busy on a call and another call comes to the same station, the ringing of the second call will automatically be subdued to a lower volume. No class of service programming is required.

SYSTEM SPEED DIAL

Ninety-nine system-wide speed dial numbers are provided. The system speed dial numbers can be up to 32 digits in length and can include numbers, #'s, *'s, pauses, and flash signals. System speed dial numbers are programmed at station 10 or 12 for use at every station in the system. No class of service is required.

TANDEM ATTENDANT

When the tandem attendant feature is enabled, a recall from an unanswered call transfer or a timed hold recall will ring at the normal attendant station (station 10) that set the transfer or hold condition, and also at the tandem attendant station (station 12). System class of service programming is used to enable the tandem attendant mode.

TAP (FLASH)/RECALL

When host system custom calling features are available via a hookflash signal, the system can be programmed so that the TAP (RECALL) button will generate a "flash" signal when it is pressed. When custom calling features are not available, the TAP (RECALL) button functions as a positive disconnect, or dial tone, recall button. These two features are mutually exclusive. The flash/recall/tap time is assigned through system class of service programming.

TENANT SERVICE

One telephone system can be used for multiple tenants at a location by having flexible line appearance at each station. Button mapping for line appearance can be performed on each station using the station class of service programming. Refer to the discussion titled: *Square/Non-Square Configuration.*

TIMED HOLD RECALL

After a call has been on hold for a programmed length of time the system will re-call the station that placed the call on hold. The system class of service programming sets the timed hold recall time period.

TOLL RESTRICTION (0 AND 1)

See the discussion titled: *Toll Restriction (flexible).*

TOLL RESTRICTION (FLEXIBLE)

System toll call restriction can be configured to prohibit some or all stations from calling a wide range of number combinations. The restricted numbers are specified on up to 16 tables. The system assigns several broad-range values to two of these tables, and assigns the tables to all lines as a default condition. The default tables need only to be enabled on a per station basis to activate the default toll restriction.

In general, toll restriction works as follows:

The programmable tables of restricted numbers contain up to four entries with each entry containing up to 16 digits.

Each table of restricted numbers can be programmed to be an "allow" table or a "deny" table with entries in an "allow" table overriding entries in a "deny" table. This arrangement allows exceptions to toll restriction to be enabled. For example, the dialing of 1-800-xxx-xxxx numbers can be allowed even though the dialing of all 1-xxx-xxx-xxxx numbers is denied.

A "match anything" symbol (#) can be stored to represent any digit from 1 to 0. The programmed toll restriction tables are individually assigned to each appropriate station and line. When an outside call is dialed, the system examines the dialed number and makes a comparison between it and the toll restriction tables. Any tables assigned to BOTH the station being used and the selected line determine the restrictions to be imposed.

Dialing a restricted number on a restricted line from a restricted station will cause the line to be automatically disconnected from the station.

Toll table class of service programming is used to create the tables of restricted numbers.

TOLL RESTRICTION (NIGHT MODE)

Toll restriction tables that will only take effect when the system is in the night transfer of ringing mode, can be assigned to any or all stations in the system. These toll tables are in addition to any that may be assigned to the station to normally restrict calls made from it. For example: A station that has no other toll restriction table assigned to it can be programmed to receive a toll restriction table which will restrict everything but local calls and will only take effect when the system is placed in the night transfer of ringing mode. Therefore, even though toll calls can be made from this station during daytime operation, no toll calls can be made from it when the attendant programs the system for nighttime operation using the night transfer of ringing feature.

NOTE: This night mode toll restriction table assignment should not be confused with the night transfer of ringing feature.

Toll restriction class of service programming is used to program the night mode toll restriction tables and to assign them to the stations.

TONE OR VOICE SIGNALLING (INTERCOM)

Intercom calls can be tone signalled or voice signalled as desired.

Programming determines the signalling method 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. Also refer to the discussion titled: *Intercom Call Progress Tones.* The system class of service programming determines which type of intercom signalling is first option signalling for the system.

TRANSFER/CONFERENCE BUTTON

A fixed button is provided which gives quick, easy transferring and conferencing. No class of service programming is required.

TRUNK ACCESS RESTRICTION

Refer to the discussion titled: *Access Denied.*

TRUNK ANSWER FROM ANY STATION (NIGHT MODE)

When the attendant programs the system for nighttime operation using the night transfer of ringing feature, the trunk answer from any station feature (TAFAS) is made active. With the TAFAS feature, a user can dial an access code over the intercom line to allow him to answer any ringing outside line. The line need not be ringing at the user's station for this feature to be used. No class of service programming is required.

UNANSWERED CALL TRANSFER RECALL TIMING

A transferred call that is unanswered after a pre-programmed length of time will return to the station that transferred it. The system will return the call to both attendant stations when the tandem attendant feature is enabled. When LCD speakerphones are employed, the display will show the station number or name that as well as the line that is being re-called. The system class of service programming determines the recall time for an unanswered call transfer. Refer to the discussion titled: *Tandem Attendant.*

VOICE ANNOUNCE BLOCKING

This feature allows the user of multiline stations to block voice announced intercom signalling by dialing a special code. The ability to block voice signalling at a particular station is enabled by station class of service programming.

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 four different zones. Zone paging can be received at a station port that has been programmed as a PA port and connected to an external loudspeaker. The ability of each station to originate and/or receive a page and the arrangement of the paging into different zones are controlled by station class of service 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. It may be vertically rack-mounted if desired.
- The cabinet must be located within six 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 to 122 degrees F (0 to 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.

SPECIAL MOUNTING CONSIDERATION

When the battery back-up is to be included as part of the installation, the optional external batteries, cable assembly, the common equipment, and the wiring connections must be located in a dedicated equipment room (as defined in the *National Electric Code* published by The National Fire Protection Association, Quincy MA, 02269).

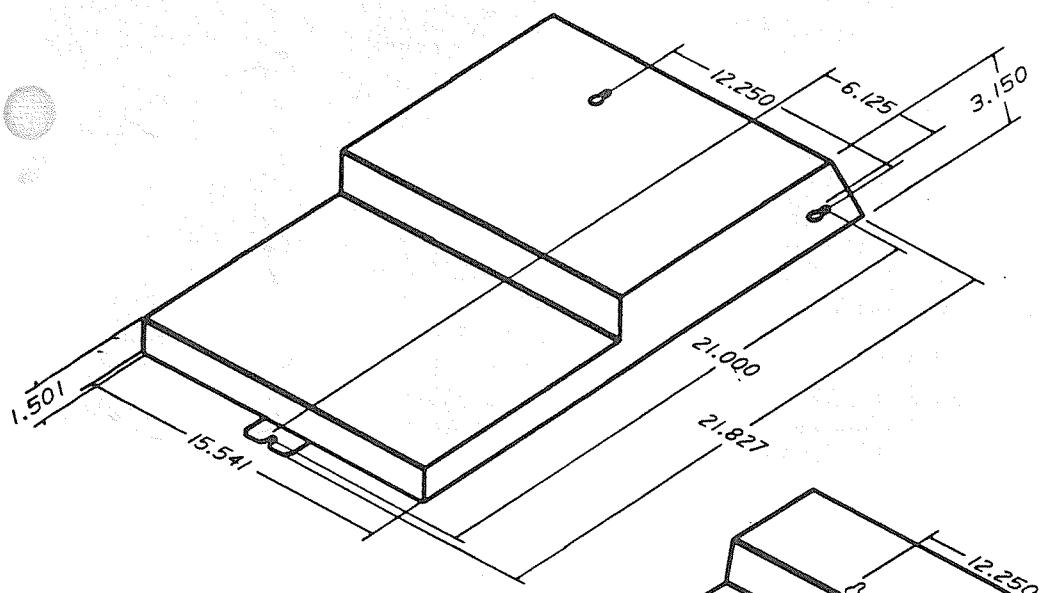
TOOLS AND HARDWARE

Tools and hardware required for mounting include:

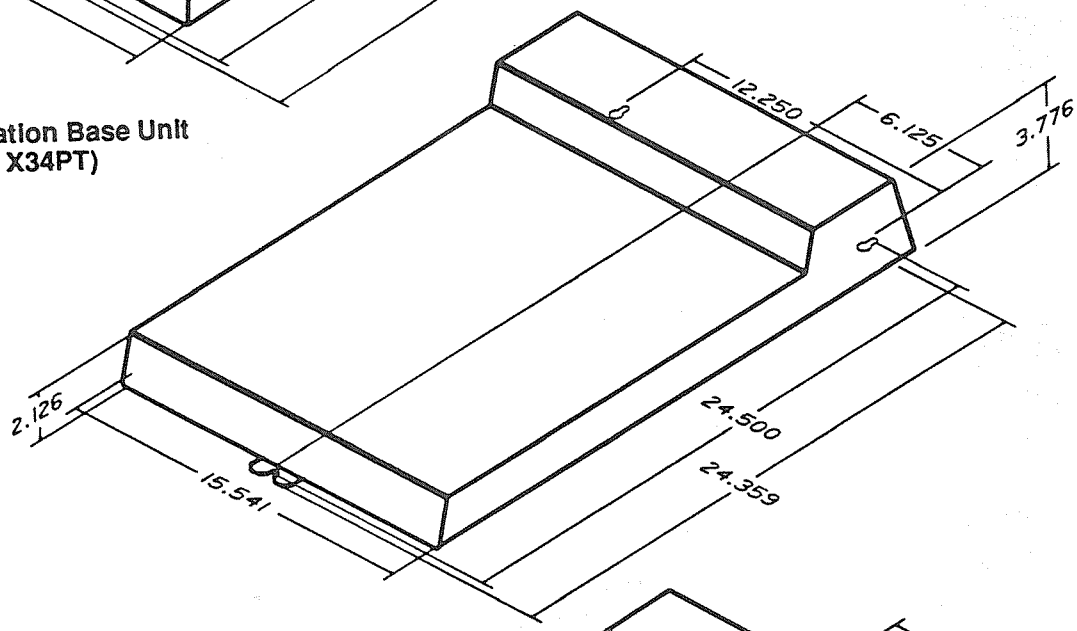
- Fasteners - wood screws (1/4 x 1-inch round head), toggle bolts, or -wall anchors
- Screwdriver - to match fasteners
- Electric drill - if prepared holes are required
- Connecting tool - for fastening wires to a type-66 connector block.
- Crimping tool - for 623-type modular plugs

MOUNTING PROCEDURE

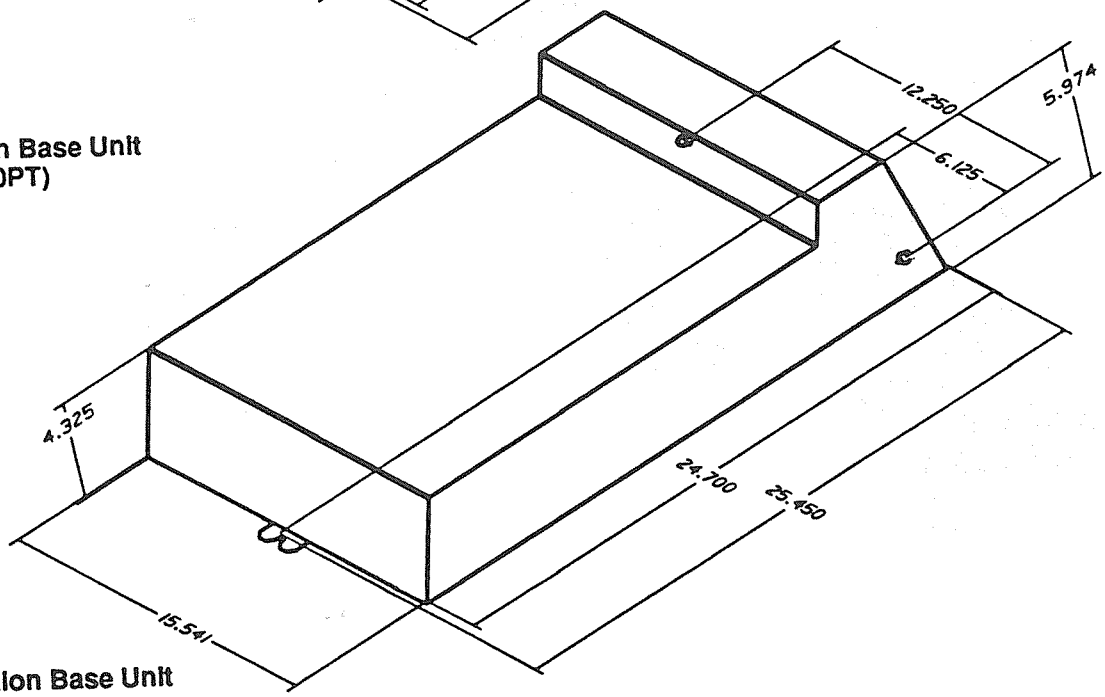
1. Unpack and carefully inspect all equipment for shipping damage. Notify the shipper immediately of any damages found. Verify that the packages contain all parts and accessories needed for proper installation and operation.
2. If a backboard is required at the mounting location, attach it securely to provide a stable mounting surface for the equipment.
3. Refer to **Figure 3-1** for the locating dimensions required for the three mounting screws, and mark their locations 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 two 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 telephone stations as desired and in keeping with accepted industry and office standards. A telephone station can be wall mounted if necessary as they are desk/wall reversible. Refer to Chapter 6, Maintenance, for instructions in preparing a desk/wall reversible station for wall mounting.



6 Line, 12 Station Base Unit
(Model X34PT)



8 Line, 20 Station Base Unit
(Model X60PT)



16 Line, 32 Station Base Unit
(Model X80PT)

Figure 3-1. Mounting Dimensions

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 below.

- 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.

CAUTION

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

- The optional Comdial model BBU02 external battery assembly provides a minimum of one hour of operation should the AC power to the system be interrupted.
  The BBU02 external battery assembly may include batteries from either of the following suppliers:
  - Model PS-12150 from Power-Sonic Corporation, Redwood City CA, 94032.
  - Model PE12V15 from GS PORTALAC, City Of Industry CA, 91748
- During AC operation, the common equipment provides re-charging current to maintain the voltage potential of the external battery assembly 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 cabinet has internal secondary surge protection on all line ports. In order for this protection to be effective, the cabinet **MUST** be connected to a reliable earth ground such as a metal cold water pipe or a building frame ground. 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 for this purpose. System grounding is illustrated in **Figure 3-2**, below.

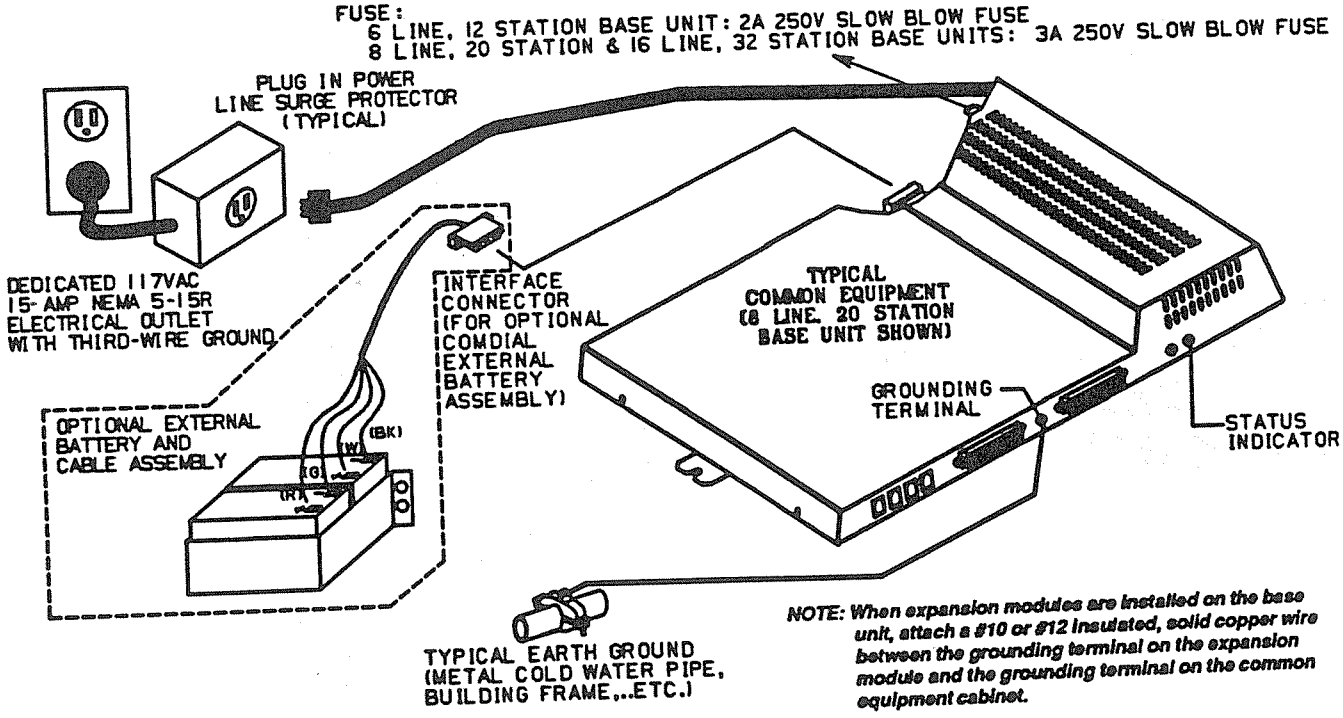


Figure 3-2. AC Power Connection And System Grounding

LINE CONNECTIONS

The line terminations for the common equipment cabinet are standard modular plug/jack connections. Each modular jack provides termination for two lines. Modular line jacks 1 and 2 also provide termination for an auxiliary pair in addition to the two outside lines. The outside line termination can be a type 66M-xx connector block or individual 6-position modular jacks. The line cord that is routed between the outside line termination and the common equipment termination should be twisted-pair wiring. **Table 3-1** shows the line connection details for all three of the common equipment base units. **Figure 3-3 and 3-4** illustrates typical line connections.

Transient voltage spikes, if induced onto CO or CENTREX lines, can travel through the cable and into the common equipment. The telephone company offers basic protection against this condition but it is usually designed to protect the central office circuits. While it will also provide some protection to the common equipment, it should not be relied upon for total protection. To help ensure that external overvoltage surges do not damage the system, it is recommended that gas discharge tubes, or similar primary protection devices, be installed and properly grounded on all lines.

The outside line that is initially connected to a particular line port along with all programmed attributes, can be reassigned to a different port by programming action. This feature allows adds, moves, and changes to be made without relocating the line wiring. For example: An initial installation connected CO line A to line 1. Line 1 was assigned to a station for use as a prime line. Also assigned for use as needed was line 5. Should line 1 become defective or cannot be accessed for some reason, the CO line A and all programmed line attributes, such as prime line, now associated with line 1 can be exchanged by programming action with the CO line and line attributes currently associated with line 5. No physical reconnection at a connector block is required to exchange this defective line for an operational one. and no line attribute reprogramming is required. Refer to Chapter 4, page 4-16 for line to line port reassignment.

Add-on expansion modules are available that can expand line capacity up to 24 lines. Refer to Section 3 on page 3-24 for complete details.

CABLE CLIPS

Each cabinet-mounted 50-pin male connector is equipped with a retaining clip. This clip is designed to secure the mated connection once it is made. The clip does this by snapping into a slot on the cable-mounted connector when it is pressed together with the cabinet-mounted connector. This retaining clip must be pulled back slightly to unsnap it before the connectors can be separated.

STATION CONNECTIONS

Connections between the common equipment and the stations are typically via type 66M-xx connector blocks which are cable connected to the common equipment 50-pin male connector. The maximum distance allowed from the common equipment to the stations is 1500 feet for multiline keysets and 3000 feet for single-line keysets using #24 gauge, twisted-pair cable.

If spare conductors exist in the cables that are run between the 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.

Table 3-2 through **Table 3-4** shows the station connection details for all three common equipment base units. **Figure 3-3 and 3-5** illustrates typical station connections.

All station ports are programmable.

- The type of equipment that is to be connected to a station port must be defined by programming. For example: A port that is to receive a DSS/BLF console is programmed as a console port.

- The extension number and all other programmable attributes of a station that is initially assigned to a particular port number can be reassigned to a different port number by programming action. This feature allows adds, moves and changes to be made without relocating the station wiring. For example: An initial installation connected station port 14 to office A and station port 15 to office B. Station configuration programming was used to assign special attributes and new extension numbers to station port 14 and station port 15. If an occupant of office A relocates to office B, the system can be programmed to exchange the extension number and station attributes originally programmed for station port 14 in office A with those of station port 15 in office B. Thus the occupant moved but no physical relocation of telephone wiring was required for him to keep his uniquely configured telephone.

Add-on expansion modules are available that can expand station capacity up to 60 stations. Refer to Section 3 on page 3-24 for complete details.

PAIRED PORTS

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

Data And Overload Pairing

10 - 11
12 - 13
14 - 15
16 - 17
18 - 19
20 - 21
22 - 23
24 - 25
26 - 27
28 - 29
30 - 31
32 - 33
34 - 35
36 - 37
38 - 39
40 - 41

Station ports are as follows:

- Ports 10 through 21 on 6- line, 12-station base unit
- Ports 10 through 29 on 8 line, 20-station base unit
- Ports 10 through 41 on 16-line, 32-station base unit

DSS/BLF CONSOLE CONNECTIONS

A DSS/BLF Console can be installed at any port in the system as a companion to a station installed at the data-paired port (e.g.; ports 20 and 21).

- The maximum number of consoles that can be installed on a system is equal to one-half of the total station capacity of the system.
- The installed distance limit between the common equipment and the console is the same as allowed for a telephone. Connect all four wires (voice and data pairs) of the console cable to the station connector block.
- When a console is installed, the port must be program defined as a console port (see page 4-21).
- The first 32 buttons of an installed console are defaulted as blank autodial buttons available for user programming. On installed 64-button consoles, the remaining 32 buttons are fixed as DSS buttons for station ports beginning with port 42 at button C42.

The voice pair connections of the station port at which a console is installed can be used simultaneously to enable a station PA port function employing an external PA system. See the discussion titled *Area Paging Interface- Station PA Port* for connection details. If this is done, the station port must be defined by programming action as a External Paging Interface (sse page 4-20).

OFF-HOOK VOICE ANNOUNCE AND SECURE OFF-HOOK VOICE ANNOUNCE

This telephone system supports both the secure and non-secure Off-Hook Voice Announce (OHVA and SOHVA) feature provided by an Express telephone. Two data-paired station ports are required to provide either the OHVA or SOHVA feature.

The Express telephone contains 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 3-3** 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.

To enable the SOHVA feature, the following programming considerations must be taken:

- The first paired-port must be programmed for SOHVA by programming it as an integrated OHVA port (see page 4-33). This is the default factory setting so programming changes need not be made here if the station port is still defaulted.
- The first paired-port must also be programmed as a multiline port (see page 4-20).
- The second paired-port must be programmed as a console with call announce port (see page 4-20).

To enable the OHVA feature, the following programming considerations must be taken:

- The first paired-port must be programmed for OHVA by programming it as a non-integrated OHVA port (see page 4-33).
- The first paired-port must also be programmed as a multiline port (see page 4-20).
- The second paired-port must be programmed as a console with call announce port (see page 4-20).

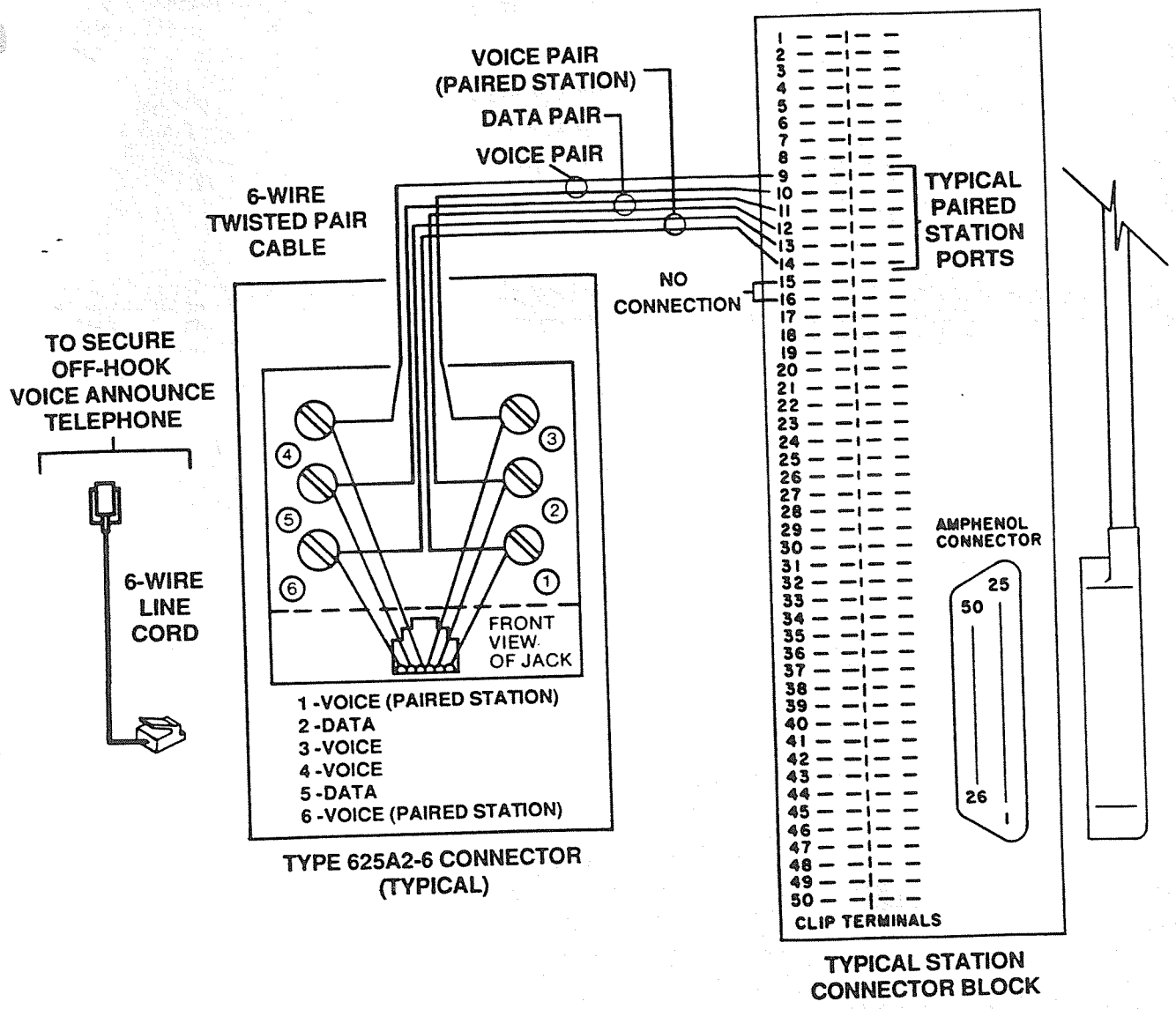


Figure 3-3. Off-Hook Voice Announce Telephone Connections

Table 3-1. Line Connections

COMMON EQUIPMENT	JACK	PIN NO.	CONNECTION	TELEPHONE NUMBER
6 Line, 12 Sta. Base Unit 8 Line, 20 Sta. Base Unit 16 Line, 32 Sta. Base Unit	1	1	Auxiliary 1 (Line 2) TIP	
		2	Line 2 TIP	
		3	Line 1 TIP	
		4	Line 1 RING	
		5	Line 2 RING	
		6	Auxiliary 1 (Line 2) RING	
	2	1	Auxiliary 2 (Line 4) TIP	
		2	Line 4 TIP	
		3	Line 3 TIP	
		4	Line 3 RING	
		5	Line 4 RING	
		6	Auxiliary 2 (Line 4) RING	
	3	1	No Connection	
		2	Line 6 TIP	
		3	Line 5 TIP	
		4	Line 5 RING	
		5	Line 6 RING	
		6	No Connection	
8 Line, 20 Sta. Base Unit 16 Line, 32 Sta. Base Unit	4	1	No Connection	
		2	Line 8 TIP	
		3	Line 7 TIP	
		4	Line 7 RING	
		5	Line 8 RING	
		6	No Connection	
16 Line, 32 Sta. Base Unit	5	1	No Connection	
		2	Line 10 TIP	
		3	Line 9 TIP	
		4	Line 9 RING	
		5	Line 10 RING	
		6	No Connection	
	6	1	No Connection	
		2	Line 12 TIP	
		3	Line 11 TIP	
		4	Line 11 RING	
		5	Line 12 RING	
		6	No Connection	
	7	1	No Connection	
		2	Line 14 TIP	
		3	Line 13 TIP	
		4	Line 13 RING	
		5	Line 14 RING	
		6	No Connection	
	8	1	No Connection	
		2	Line 16 TIP	
		3	Line 15 TIP	
		4	Line 15 RING	
		5	Line 16 RING	
		6	No Connection	

Table 3-2. Station Connections - 6-Line, 12-Station Base Unit

25-PAIR CABLE CONNECTIONS			4-WIRE CONNECTIONS			J-1 . CONNECTIONS	
WIRE COLOR	PAIR	PIN . NO.	CLIP TERM.	PAIR	WIRE COLOR	STA	LOCATION
WHITE-BLUE	1	26	1	VOICE	GREEN	10	
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	
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	
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	
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	
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	
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	
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	
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	
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	
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	
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	
GREEN-VIOLET		23	46		RED		
VIOLET-BROWN	24	49	47	DATA	YELLOW		
BROWN-VIOLET		24	48		BLACK		
VIOLET-SLATE	25	50	49	TIP	GREEN	POWER FAIL STATION	
SLATE-VIOLET		25	50	RING	RED		

Table 3-3. Station Connections - 8-Line, 20-Station Base Unit

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		NOT	
ORANGE-YELLOW		17	34		RED			USED	
YELLOW-GREEN	18	43	35	DATA	YELLOW			KEY/HYBRID	
GREEN-YELLOW		18	36		BLACK			STRAP	
YELLOW-BROWN	19	44	37	VOICE	GREEN	19		RS 232 DATA PORT A	TD
BROWN-YELLOW		19	38		RED				RD
YELLOW-SLATE	20	45	39	DATA	YELLOW				CTS
SLATE-YELLOW		20	40		BLACK				SG
VIOLET-BLUE	21	46	41	VOICE	GREEN	20		RS 232 DATA PORT B	TD
BLUE-VIOLET		21	42		RED				RD
VIOLET-ORANGE	22	47	43	DATA	YELLOW				CTS
ORANGE-VIOLET		22	44		BLACK				SG
VIOLET-GREEN	23	48	45	VOICE	GREEN	21		NOT	
GREEN-VIOLET		23	46		RED			USED	
VIOLET-BROWN	24	49	47	DATA	YELLOW			STATION 17	
BROWN-VIOLET		24	48		BLACK			AUDIBLE	
VIOLET-SLATE	25	50	49		GREEN	POWER FAIL STATION		COMMON	
SLATE-VIOLET		25	50		RED	TIP AND RING PAIR		AUDIBLE	

Table 3-4a. Station Connections - 16-Line, 32-Station Base Unit

25-PAIR CABLE CONNECTIONS			4-WIRE CONNECTIONS			J-1 CONNECTIONS	
WIRE COLOR	PAIR	PIN NO.	CLIP TERM.	PAIR	WIRE COLOR	STA	LOCATION
WHITE-BLUE	1	26	1	VOICE	GREEN	10	
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	
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	
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	
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	
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	
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	
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	
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	
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	
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	
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	
GREEN-VIOLET		23	46		RED		
VIOLET-BROWN	24	49	47	DATA	YELLOW		
BROWN-VIOLET		24	48		BLACK		
VIOLET-SLATE	25	50	49		GREEN	NOT USED	
SLATE-VIOLET		25	50		RED	NOT USED	

Table 3-4b. Station Connections - 16-Line, 32-Station Base Unit - continued

25-PAIR CABLE CONNECTIONS			4-WIRE CONNECTIONS			J-2 CONNECTIONS	
WIRE COLOR	PAIR	PIN NO.	CLIP TERM.	PAIR	WIRE COLOR	STA	LOCATION
WHITE-BLUE	1	26	1	VOICE	GREEN	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	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	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	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	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	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	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	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	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	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	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	33	
GREEN-VIOLET		23	46		RED		
VIOLET-BROWN	24	49	47	DATA	YELLOW		
BROWN-VIOLET		24	48		BLACK		
VIOLET-SLATE	25	50	49		GREEN	NOT USED	
SLATE-VIOLET		25	50		RED	NOT USED	

Table 3-4c. Station Connections - 16-Line, 32-Station Base Unit - continued

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

SPARE PAIRS
NOT USED

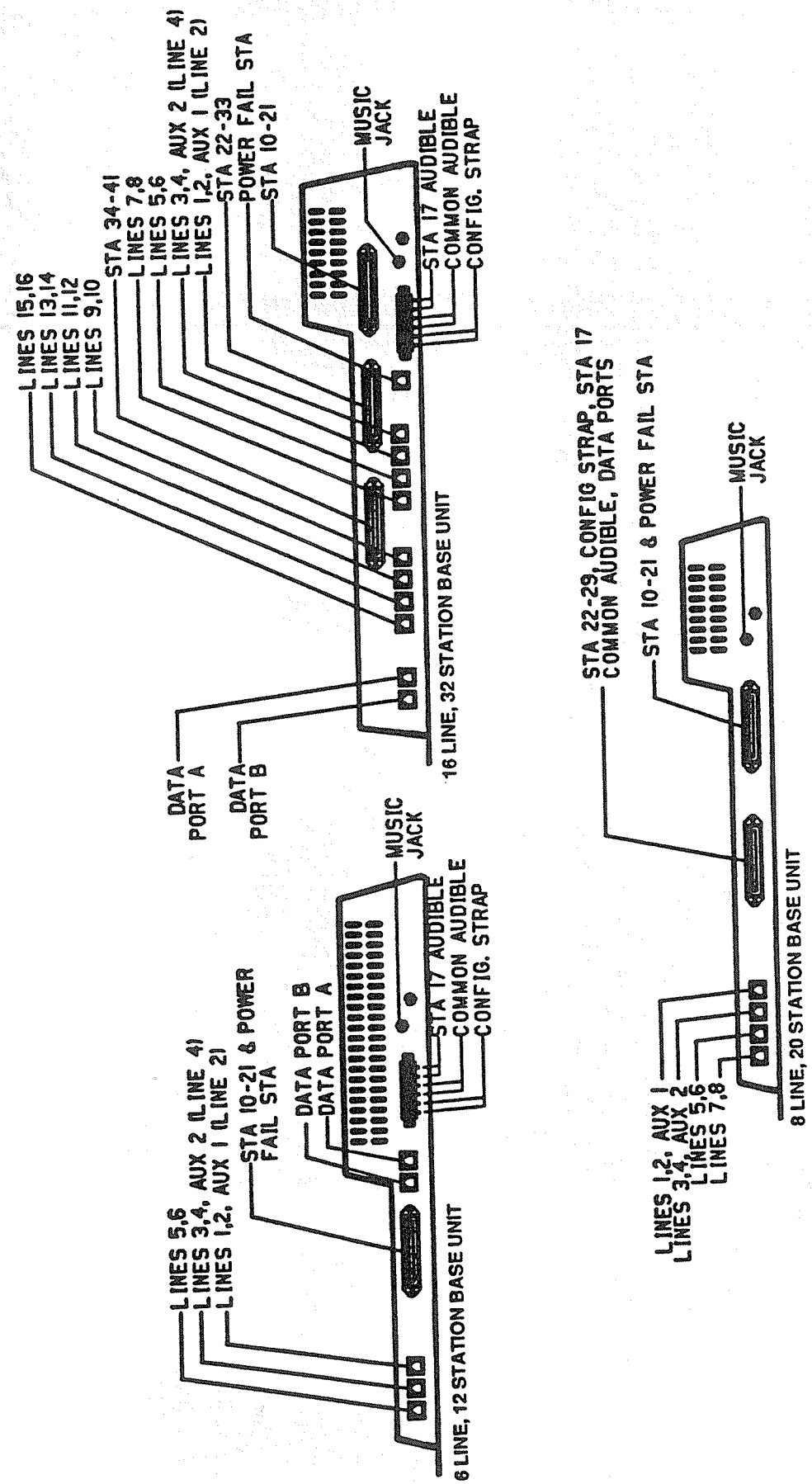


Figure 3-4. Common Equipment Station And Line Connections

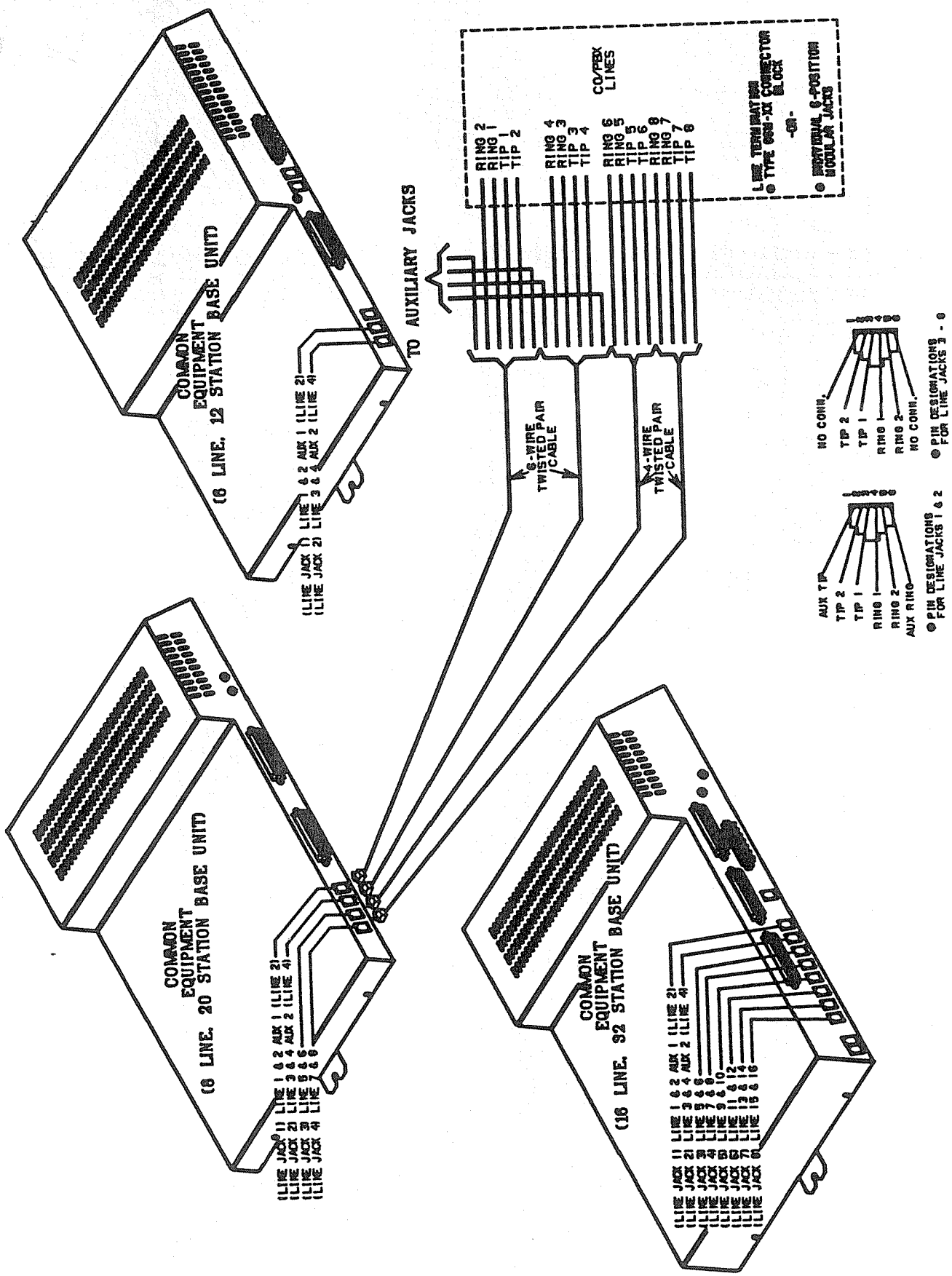


Figure 3-5. Typical Line Connections

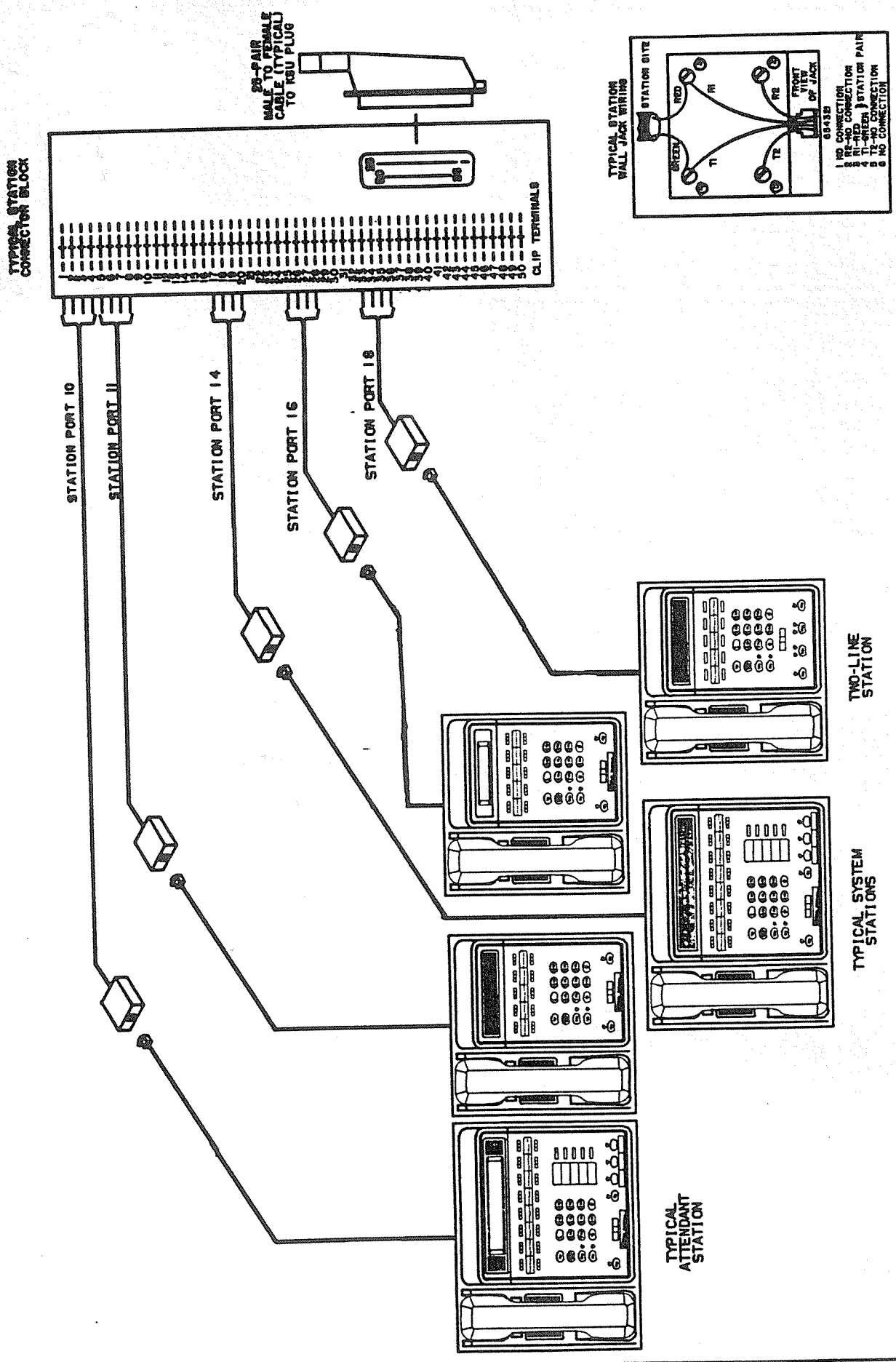


Figure 3-6. Typical Station Connections

SECTION 2
OPTION INSTALLATION DETAILS

KEY SYSTEM/HYBRID CONFIGURATION

The system can be configured to operate as either a key system or as a hybrid system. Configuration is by way of a wire strap connected as detailed below and illustrated in **Figure 3-7**.

- 6-line, 12-station and 16-line, 32-station base units: Screw terminals 5 and 6 on barrier-type terminal strip.
- 8-line, 20-station base unit: Clip terminals 35 and 36 on connector block J-2.

The common equipment is shipped from the factory as a key system (KF). To convert operation over to the hybrid (MF) system, add the strap.

The KF and MF designations are equipment type categories as stipulated in FCC rules and regulations, Part 68, and appear as part of the FCC Registration Number on the equipment label. The appropriate registration number must be reported to the telephone company at the time of connection along with other FCC mandated information. Operationally, the hybrid configuration enables a PBX feature that may incur a higher monthly tariff to the telephone company. This feature allows dial access to (automatic selection of) outgoing lines. The specific system feature that is enabled by the multifunction (hybrid) configuration is:

- Line Group (Including Dial Access)

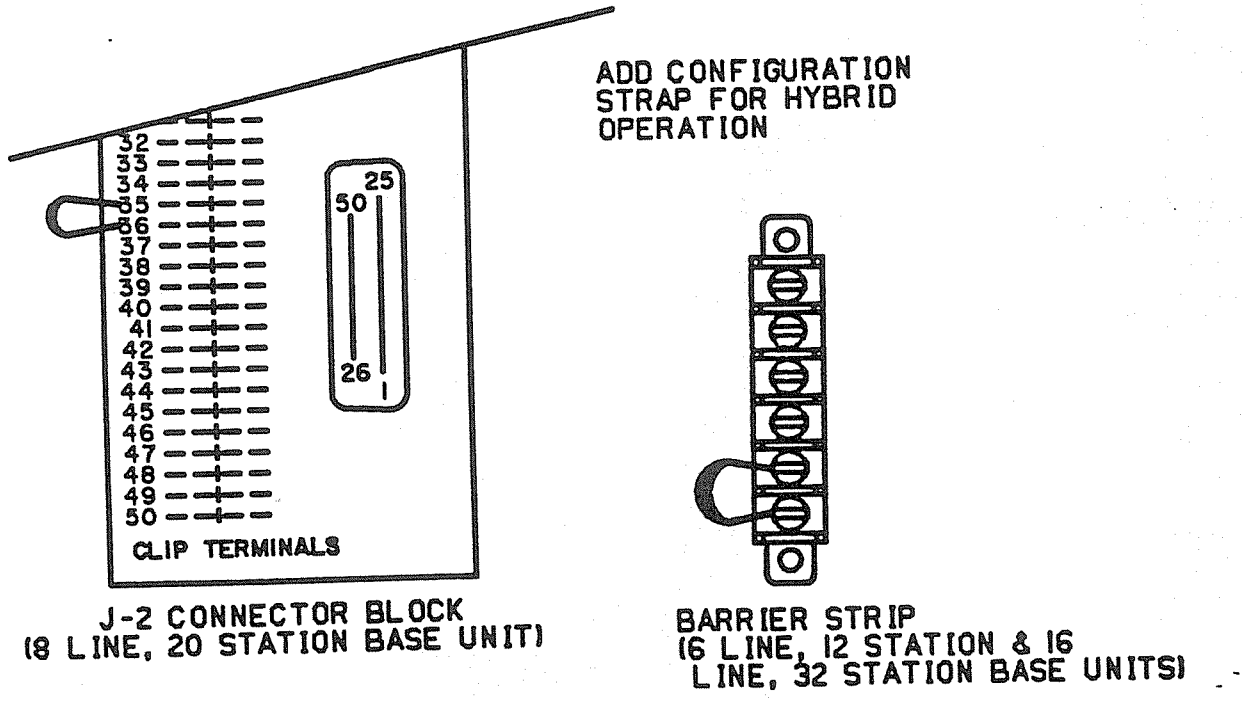


Figure 3-7. Key/Hybrid Configuration

POWER FAILURE STATION CONNECTIONS

The system provides a tip and ring pair connected to line 1 as an emergency, power failure circuit. This circuit is active during a commercial AC power failure. An industry standard, single-line telephone, such as a Comdial model 2500-xx, can be connected to a power failure pair and used to provide communications capability until the AC power to the system is restored.

The power failure pair is located as follows and as detailed in **Figure 3-8** below.

- 6-line, 12-station and 8-line, 20-station base unit: Clip terminals 49 and 50 on connector block J-1.
- 16-line, 32-station base unit: Special power failure modular jack.

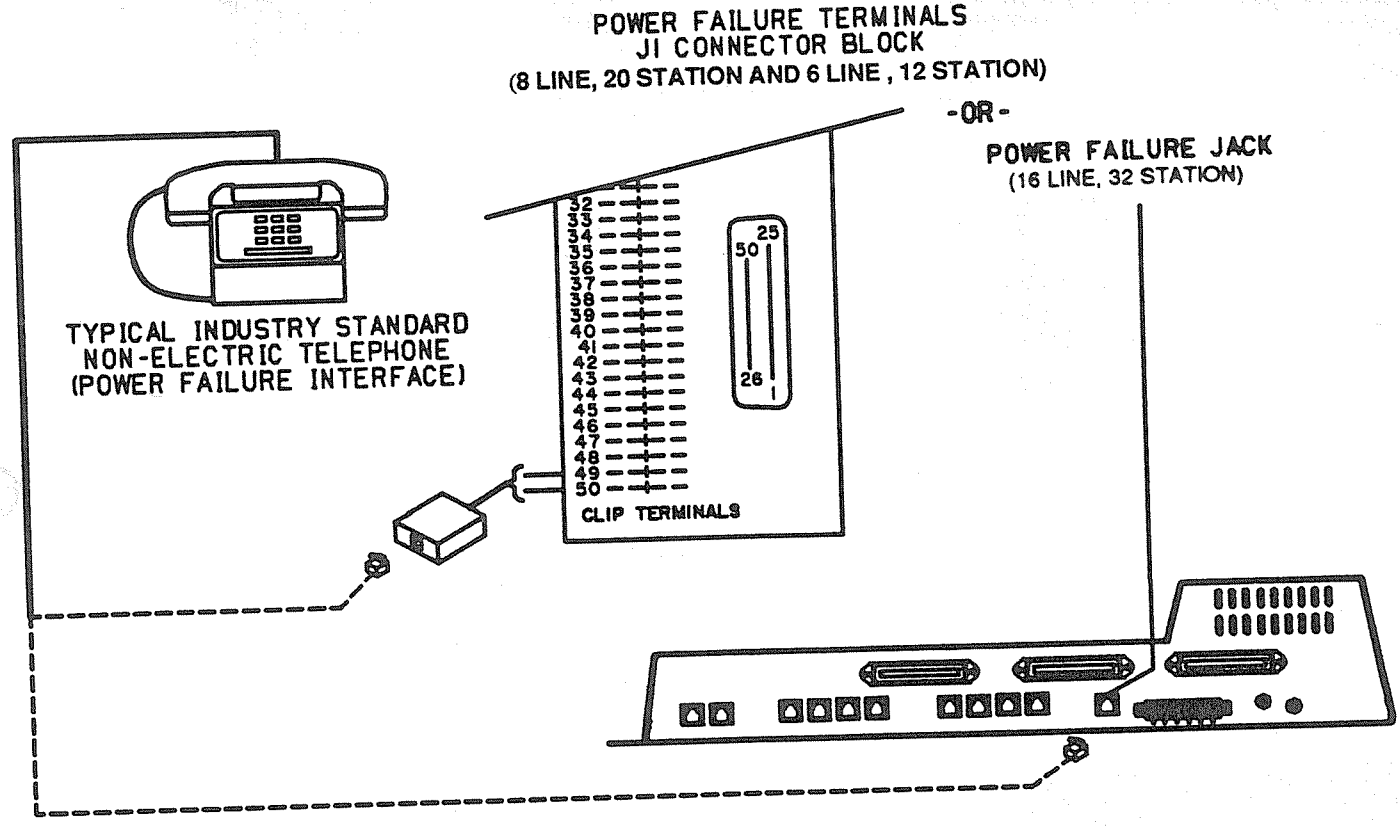


Figure 3-8. Power Failure Connection

AUXILIARY INTERFACE

A non-key system telephone device or a data device can be connected on a line ahead of the common equipment. 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. **Table 3-1** (given in Section 1) and **Figure 3-9** below detail the auxiliary interface connections.

NOTE: When the auxiliary interface feature is being employed, the line to line port reassignment as discussed on pages 3-4 and 4-16 can only be used to reassign line 2 to line port 4 and line 4 to line port 2

- Connection is across tip and ring of lines 2 (aux 1) and 4 (aux 2) using the auxiliary interface connections provided at terminals 1 and 6 of common equipment Line Jacks 1 and 2.

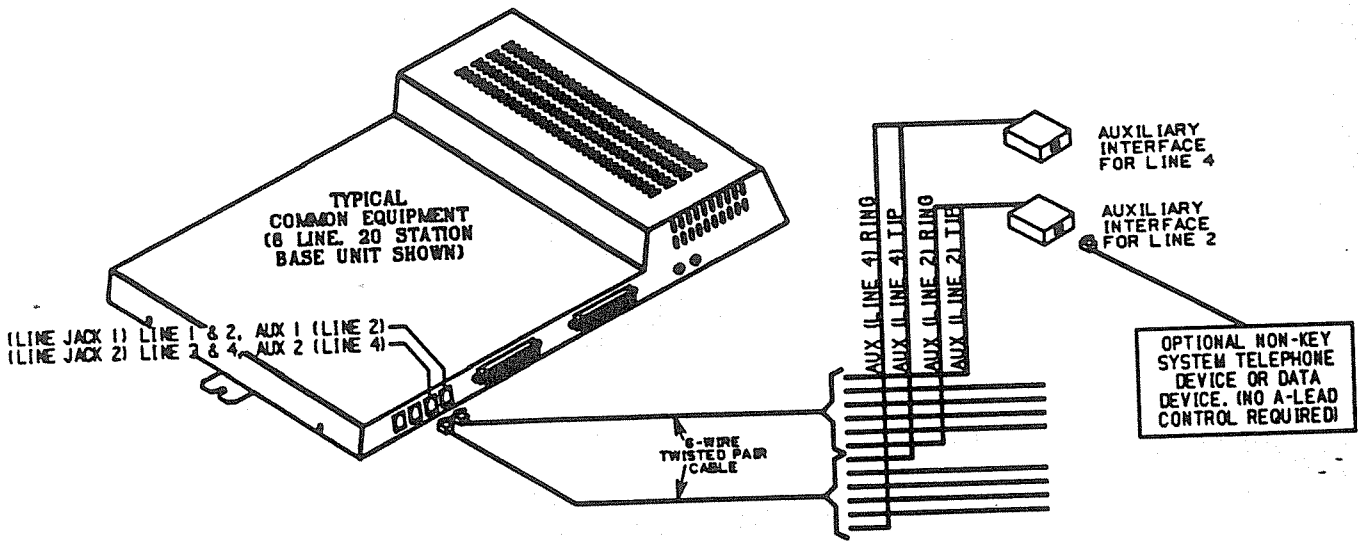


Figure 3-9. Auxiliary Interface Connections

COMMON AUDIBLE AND AUXILIARY STATION INTERFACE

Two sets of relay closure dry-contact points are available for controlling external audible equipment.

- One set (common audible) provides a dry-contact closure whenever any of the outside lines, connected to the common equipment, ring.
- The other set (station 17 audible) provides a dry-contact closure whenever system station 17 rings.

These contact closures track the ringing pattern in both cases. The contacts are closed during the ringing period and are open during the silent period.

CAUTION

Do not exceed a 1 amp at 24 volts (0.5 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.

Refer to the following paragraph headed *Area Paging Interface - Station Pa Port* for a discussion for using these terminals in an alternate paging function.

Contact closure connections are located as follows. A typical connection is illustrated in **Figure 3-10** below.

- 6-line, 12-station and 16-line, 32-station base unit: Screw terminals 1 - 2 and 3 - 4 on barrier-type terminal strip.
- 8-line, 20-station base unit: Clip terminals 47 - 48 and 49 - 50 on connector block J-2.

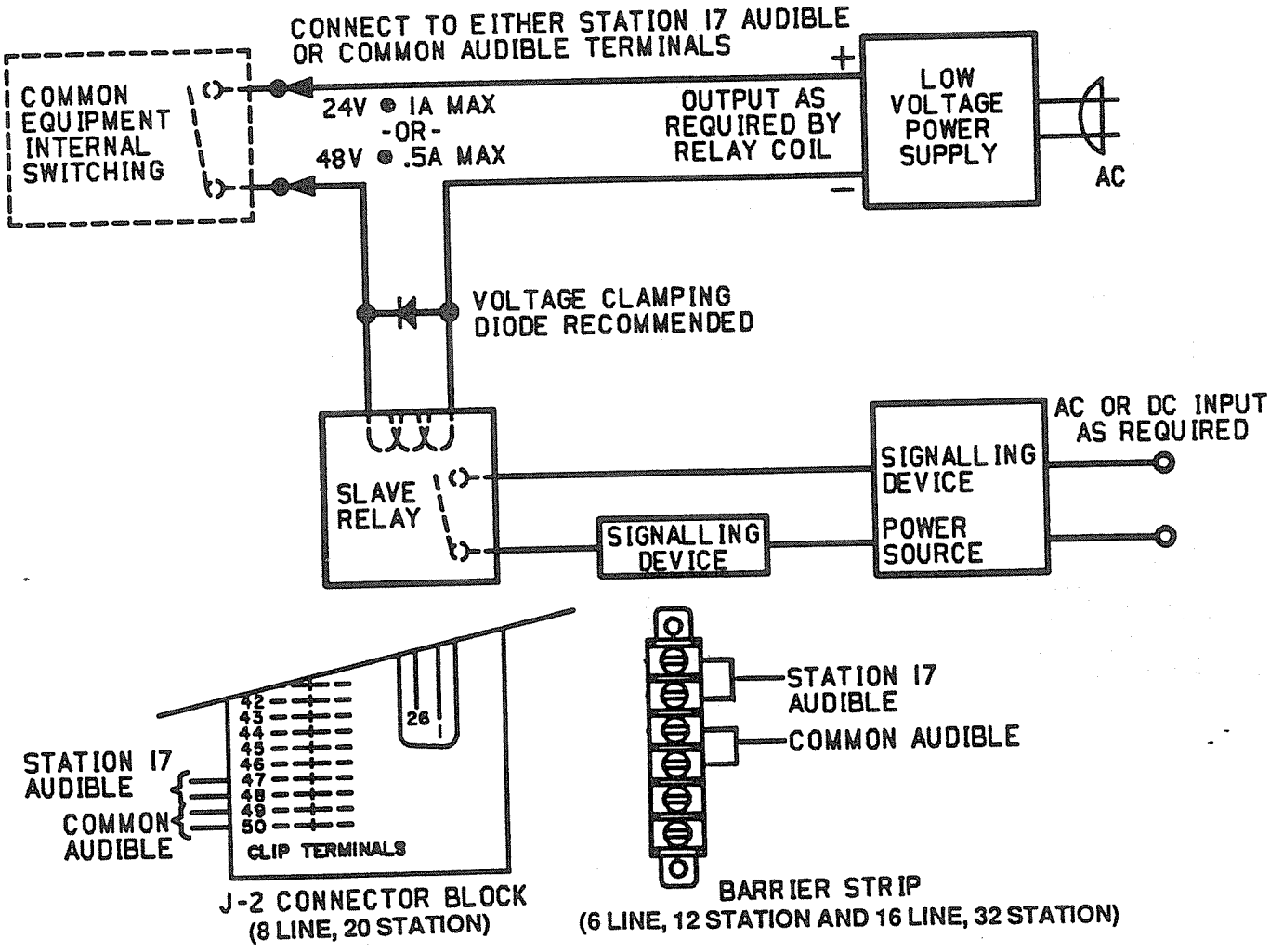


Figure 3-10. Typical Common Audible/Auxiliary Station Interface Wiring

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 4 for programming details.

- 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 620 ohm (nominal value) resistor.
- 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, as discussed previously, is disabled as long as station 17 is a PA station.

Connect the audio input of an external paging amplifier to the audio pair of the desired station port (refer to **Tables 3-2** through **3-4** in Section 1 for station connection details). If enabling is required by the paging amplifier, connect the audio input to station port 17 and the enabling leads per the following discussion and as illustrated in **Figure 3-11** below.

- 6-line, 12-station and 16-line, 32-station base unit: Screw terminals 1 - 2 on barrier-type terminal strip.
- 8-line, 20-station base unit: Clip terminals 47 - 48 on connector block J-2.

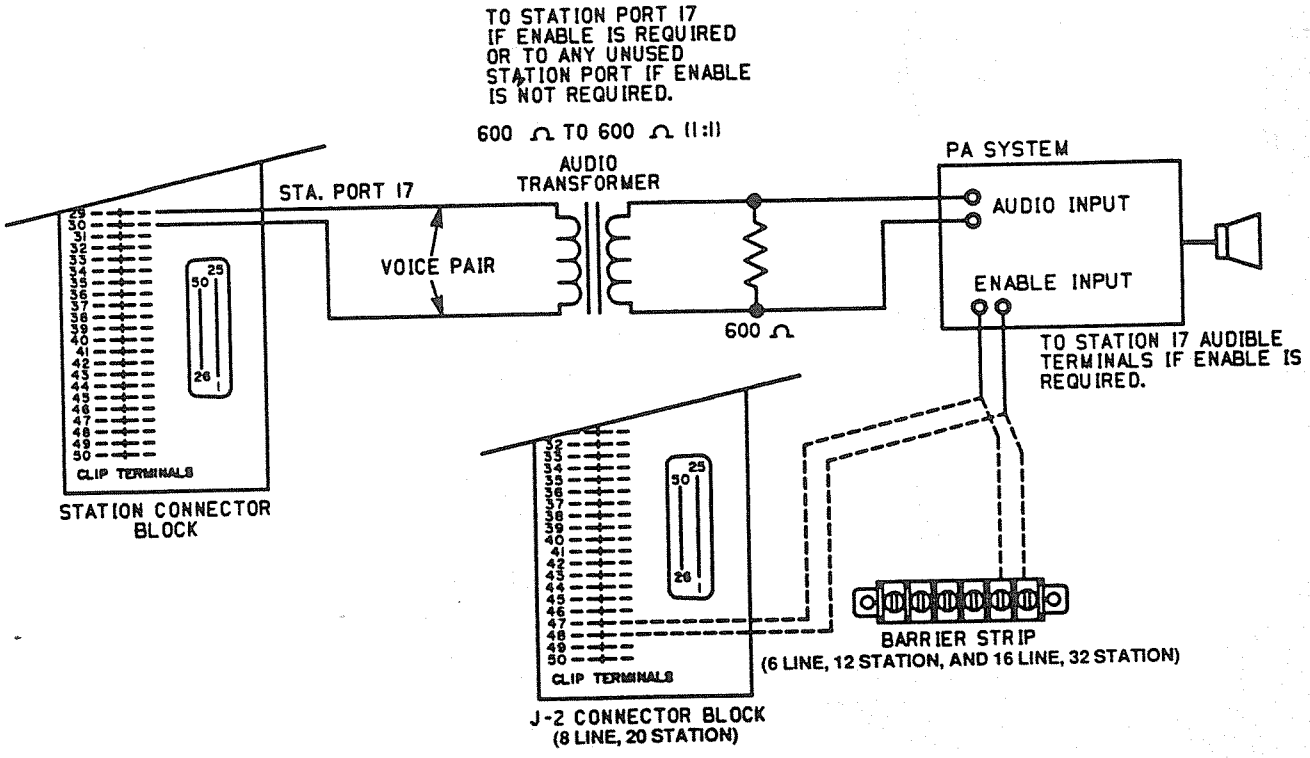


Figure 3-11. Typical PA Connection - Station Port

EXTERNAL PAGING INTERFACE - LINE PORT

A line port can be configured by class of service programming to be an AUXILIARY port. As an AUXILIARY port, it can be used to couple a station voice path to an external paging device. This coupling is done from any station with that line presence by pressing the proper line key to select the AUXILIARY port. DTMF tones or dial pulses can be dialed through the AUXILIARY port as needed.

- The audio input of an external paging amplifier can be connected to the tip and ring leads of the AUXILIARY port as shown in **Figure 3-12** below.
- A DTMF tone select, zone-paging amplifier can be employed if desired. If used, the zone-select code must be dialed after the AUXILIARY port line select key is pressed.

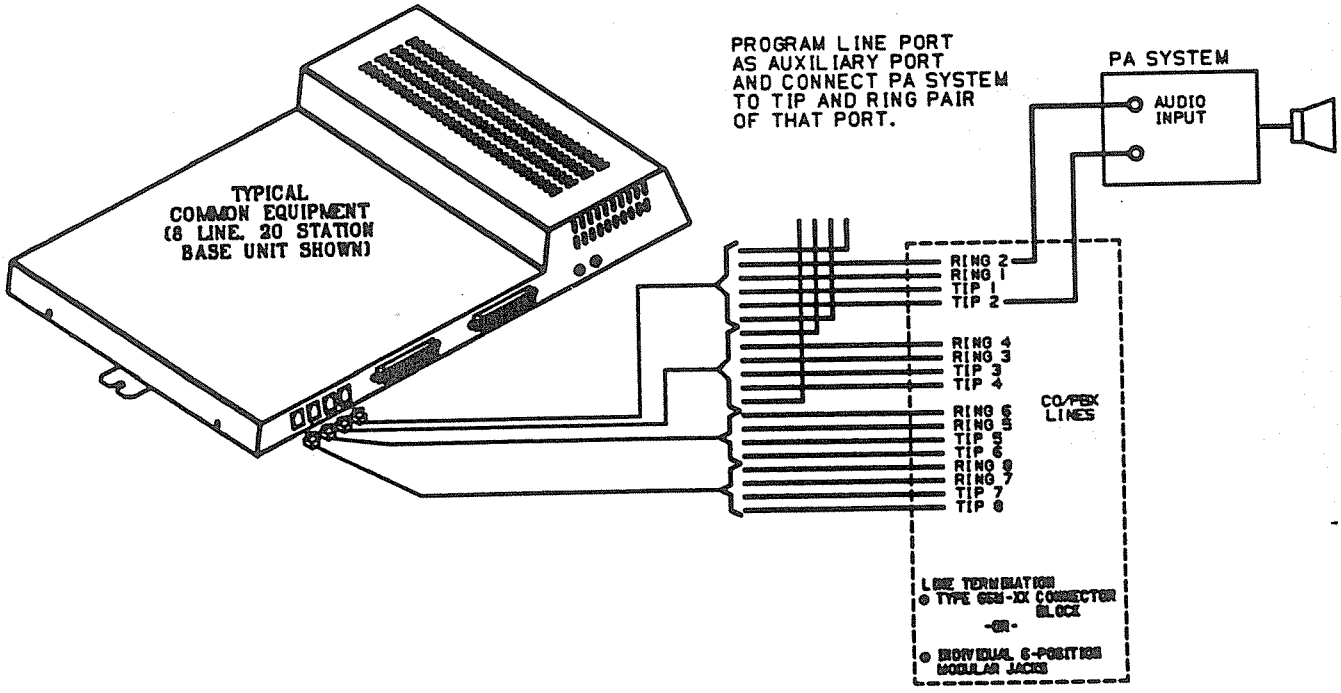


Figure 3-12. Typical PA Connection - Line Port

DATA DEVICE CONNECTIONS

The system provides two RS232 Data Ports for use.

- When a video display terminal (VDT) or a personal computer is used to perform class of service programming, connect it to RS232 Data Port A.
- When a serial data printer is used for SMDR, SMDA, and COS printout, connect it to the RS232 Data Port B.

The distance between the data device and the common equipment can be up to 500 feet in a quiet electrical environment. Shielded cable may be required at some sites for long runs. For longer distances, a limited distance modem must be used to relay the data communications between the common equipment and the data device.

When preparing a cable for connection to a data device, refer to the manufacturer's manual for the equipment being interfaced, and make the following wiring connections:

- Wire the common equipment RD (data from device to common equipment) connection to the device TD (transmit data) connection.
- Wire the common equipment TD (data to device from common equipment) connection to the device RD (receive data) connection.
- Wire the common equipment SG (signal ground) connection to the device SG (signal ground) connection.
- If required for proper operation, wire the common equipment CTS (clear-to-send status from device to common equipment) connection to the device RTS (request-to-send) connection.

NOTE: *The common equipment requires a positive voltage, with respect to signal ground, in order to send data.*

The default data format is as follows. Configure the data device to match this data format for initial operation.

- 7-bit data with 2 stop bits and no parity
- Baud rate of 300 baud

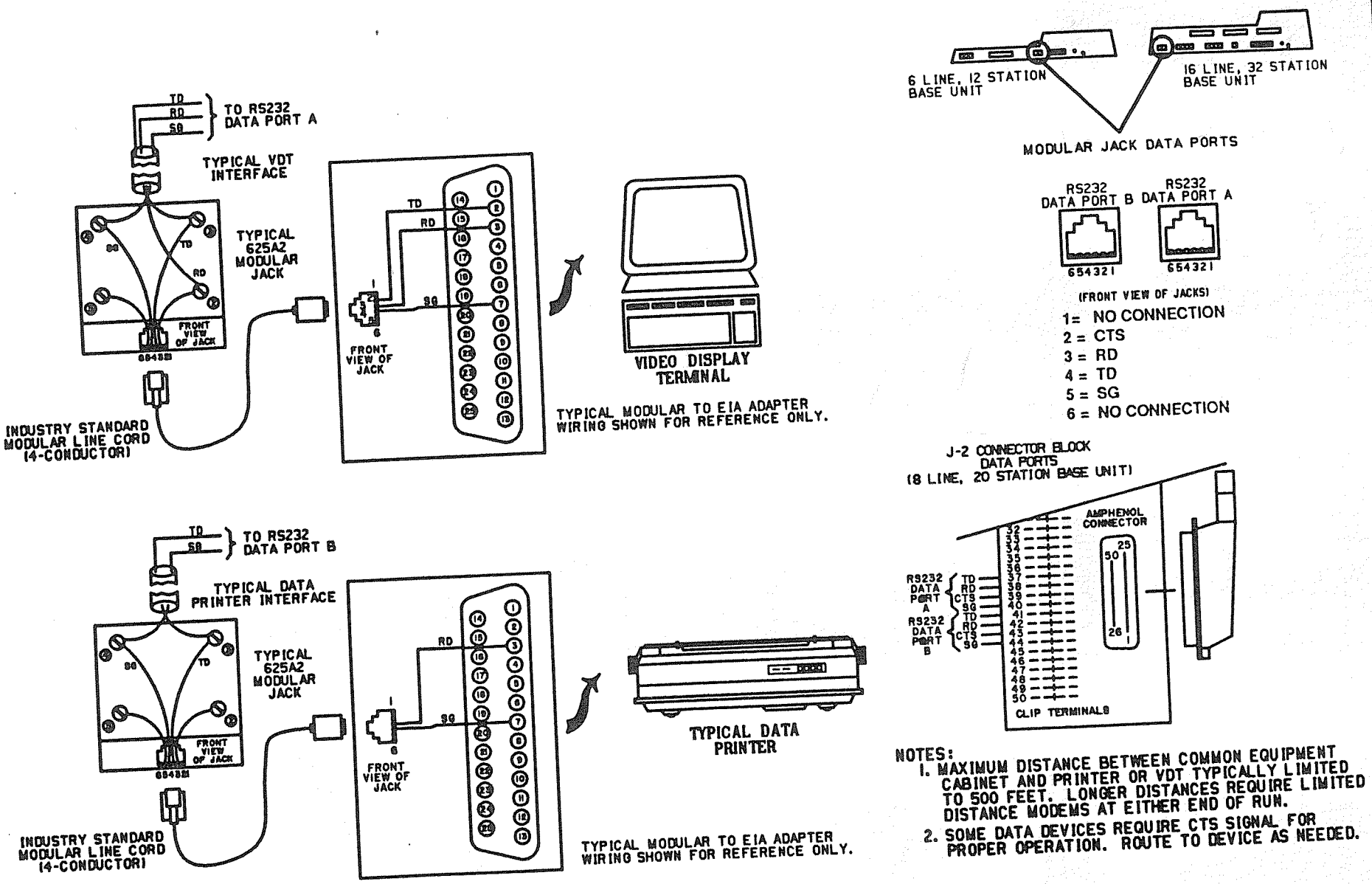
The Data Ports are located as follows and are connected as illustrated in **Figure 3-13** on the next page.

- 6-line, 12-station and 16-line, 32-station base units: Special modular jacks are available as data ports.

SIG.	JACK CONN.
none	1
CTS	2
RD	3
TD	4
SG	5
none	6

- 8-line, 20-station base unit: Clip terminals 37 - 40 (data port 1) and 41 - 44 (data port 2) on connector block J-2.

SIG.	PORT A	PORT B
TD =	TERMINAL 37	TERMINAL 41
RD =	TERMINAL 38	TERMINAL 42
CTS =	TERMINAL 39	TERMINAL 43
SG =	TERMINAL 40	TERMINAL 44



NOTES:
1. MAXIMUM DISTANCE BETWEEN COMMON EQUIPMENT CABINET AND PRINTER OR VDT TYPICALLY LIMITED TO 500 FEET. LONGER DISTANCES REQUIRE LIMITED DISTANCE MODEMS AT EITHER END OF RUN.
2. SOME DATA DEVICES REQUIRE CTS SIGNAL FOR PROPER OPERATION. ROUTE TO DEVICE AS NEEDED.

Figure 3-13. Typical Data Device Connections

MUSIC INTERFACE

If music is to be part of the system, connect a music source to the common equipment music interface jack (phono jack) provided for this purpose. 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.

CASSETTE TAPE RECORDER INTERFACE

A customer provided, audio cassette tape recorder can be connected to the music interface jack. Class of service programming can be both stored and loaded via the recorder through this interface. This action is controlled from station 10 as detailed in Chapter 4, *System Programming*.

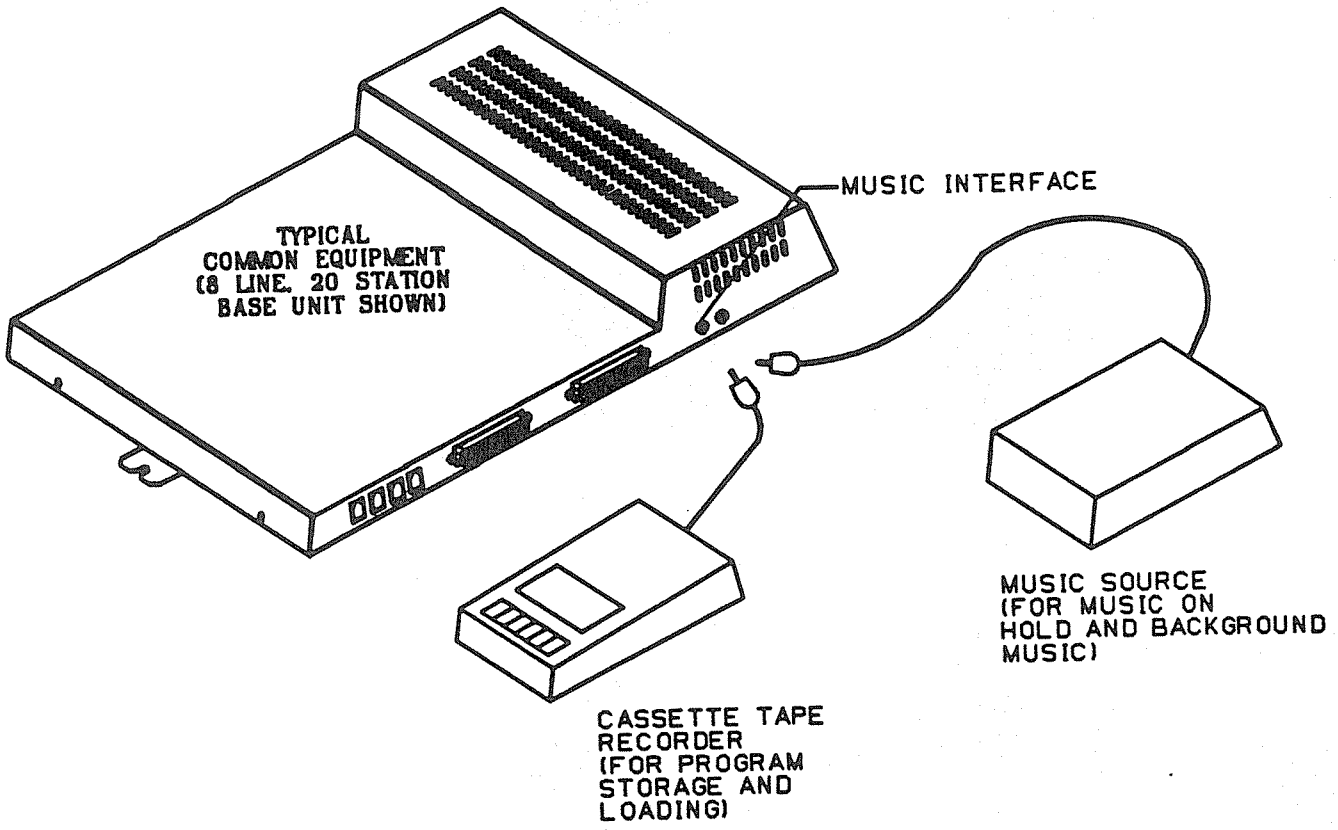


Figure 3-14. Music/Cassette Recorder Interface

SECTION 3
ADD-ON EXPANSION MODULES

INTRODUCTION

There are two optional add-on, expansion modules that can be installed on the common equipment base units in various combinations to increase the line and/or station capacity of an installed system. The add-on modules are as follows:

- 412 Expansion Module - A four-line by 12-station expansion unit
- 16 Station Expansion Module - A 16-station expansion unit

The expansion capabilities provided by the add-on modules are as shown on **Figure 3-15.**

The default numbering of the expanded lines and/or stations begin with the next higher line or station port number from that provided by the host base unit. The numbering continues sequentially from top module to bottom module if two modules are installed. For example: The defaulted 8-line, 20-station base unit provides station ports 10 through 29 and lines 1 through 8. When installed, a 412 Expansion module will provide station ports 30 through 41 and lines 9 through 12 thus creating a 12 line by 32 station system. Should two 16-station expansion modules be added to a 8-line, 20-station base unit, defaulted station port expansion numbering begins at the top unit, with station port 30, and continues through the lower unit to station port 61 thus creating an eight-line by 52 station system.

The line connections of the model 412 expansion module are available at two modular jacks. Lines 1 and 2 are provided by the jack on the right. Lines 3 and 4 are provided by the jack on the left. Line connections are detailed in **Table 3-5** below.

The station connections are available at one (412 expansion module) or two (16 station expansion module) 50-pin connectors. The port numbering begins with the connector on the right and proceeds through the left-hand connector (16 station expansion module only). **Tables 3-6** and **3-7** detail these station connections.

Table 3-5. Line Connections - 412 Expansion Module

JACK	PIN NO.	CONNECTION	TELEPHONE NUMBER
1	1	No Connection	
	2	Line 2M TIP	
	3	Line 1M TIP	
	4	Line 1M RING	
	5	Line 2M RING	
	6	No Connection	
2	1	No Connection	
	2	Line 4M TIP	
	3	Line 3M TIP	
	4	Line 3M RING	
	5	Line 4M RING	
	6	No Connection	
	6	No Connection	

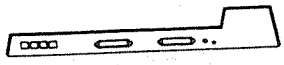
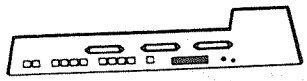
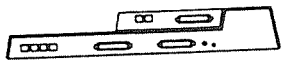
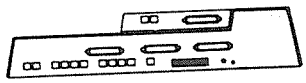
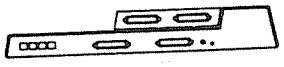
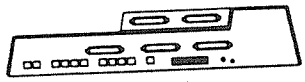
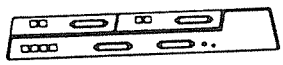
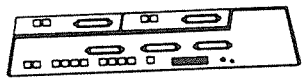
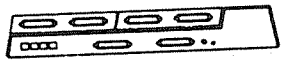
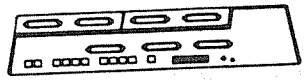
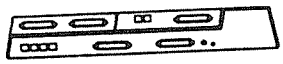
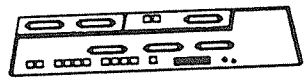
BASE UNIT	6-LINE, 12-STATION 	8-LINE, 20 STATION 	16-LINE, 32-STATION 
ONE 412 EXPANSION MODULE	34-PORT SYSTEM 	44-PORT SYSTEM 	64-PORT SYSTEM 
ONE 16-STATION EXPANSION MODULE	34-PORT SYSTEM 	44-PORT SYSTEM 	64-PORT SYSTEM 
TWO 412 EXPANSION MODULES		60-PORT SYSTEM 	80-PORT SYSTEM 
TWO 16-STATION EXPANSION MODULES		60-PORT SYSTEM 	80-PORT SYSTEM 
ONE 412 EXPANSION MODULE AND ONE 16-STATION EXPANSION MODULE		60-PORT SYSTEM 	80-PORT SYSTEM 

Figure 3-15. Add-On Expansion Module Configurations

Table 3-6. Station Connections - 412 Expansion Module

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

Table 3-7. Station Connections - 16-Station Expansion Module

25-PAIR CABLE CONNECTIONS			4-WIRE CONNECTIONS			STA. CONNECTIONS (J1)		STA. CONNECTIONS (J2)	
WIRE COLOR	PAIR	PIN NO.	CLIP TERM.	PAIR	WIRE COLOR	STA	LOCATION	STA	LOCATION
WHITE-BLUE	1	26	1	VOICE	GREEN	1M		13M	
BLUE-WHITE		1	2		RED				
WHITE-ORANGE	2	27	3	DATA	YELLOW				
ORANGE-WHITE		2	4		BLACK				
WHITE-GREEN	3	28	5	VOICE	GREEN	2M		14M	
GREEN-WHITE		3	6		RED				
WHITE-BROWN	4	29	7	DATA	YELLOW				
BROWN-WHITE		4	8		BLACK				
WHITE-SLATE	5	30	9	VOICE	GREEN	3M		15M	
SLATE-WHITE		5	10		RED				
RED-BLUE	6	31	11	DATA	YELLOW				
BLUE-RED		6	12		BLACK				
RED-ORANGE	7	32	13	VOICE	GREEN	4M		16M	
ORANGE-RED		7	14		RED				
RED-GREEN	8	33	15	DATA	YELLOW				
GREEN-RED		8	16		BLACK				
RED-BROWN	9	34	17	VOICE	GREEN	5M			
BROWN-RED		9	18		RED				
RED-SLATE	10	35	19	DATA	YELLOW				
SLATE-RED		10	20		BLACK				
BLACK-BLUE	11	36	21	VOICE	GREEN	6M			
BLUE-BLACK		11	22		RED				
BLACK-ORANGE	12	37	23	DATA	YELLOW				
ORANGE-BLACK		12	24		BLACK				
BLACK-GREEN	13	38	25	VOICE	GREEN	7M			
GREEN-BLACK		13	26		RED				
BLACK-BROWN	14	39	27	DATA	YELLOW				
BROWN-BLACK		14	28		BLACK				
BLACK-SLATE	15	40	29	VOICE	GREEN	8M			
SLATE-BLACK		15	30		RED				
YELLOW-BLUE	16	41	31	DATA	YELLOW				
BLUE-YELLOW		16	32		BLACK				
YELLOW-ORANGE	17	42	33	VOICE	GREEN	9M			
ORANGE-YELLOW		17	34		RED				
YELLOW-GREEN	18	43	35	DATA	YELLOW				
GREEN-YELLOW		18	36		BLACK				
YELLOW-BROWN	19	44	37	VOICE	GREEN	10M			
BROWN-YELLOW		19	38		RED				
YELLOW-SLATE	20	45	39	DATA	YELLOW				
SLATE-YELLOW		20	40		BLACK				
VIOLET-BLUE	21	46	41	VOICE	GREEN	11M			
BLUE-VIOLET		21	42		RED				
VIOLET-ORANGE	22	47	43	DATA	YELLOW				
ORANGE-VIOLET		22	44		BLACK				
VIOLET-GREEN	23	48	45	VOICE	GREEN	12M			
GREEN-VIOLET		23	46		RED				
VIOLET-BROWN	24	49	47	DATA	YELLOW				
BROWN-VIOLET		24	48		BLACK				
VIOLET-SLATE	25	50	49						
SLATE-VIOLET		25	50						

INSTALLATION

Each add-on expansion module measures 15.5 in. wide x 9.4 in. high x 1.6 in. wide and weighs approximately four pounds. The modules are designed to be attached to the base unit and connected to it via cabling.

- Install the expansion modules separately or in combination to extend both the line and station capacity or extend the station capacity only.
  - When only one expansion module is added, always install it at the upper location on the base unit.
  - When a 16-station expansion module and a 412 expansion module combination are installed, always install the 412 expansion module at the upper location on the base unit.

To install an expansion module to a base unit, refer to Figure 3-16 and perform the following procedure.

1. Disconnect both AC power and external battery back-up power from the system.
2. Remove and set aside nameplate from base unit. This action exposes internal cable connectors on base unit circuit board.
3. Temporarily hang expansion module on lower set of mounting holes at either top or bottom mounting location. Be sure that cables are not caught between module and base unit.
4. Reach through opening in base unit and mate module cable plugs with base unit circuit board connectors. Connections are keyed to facilitate mating.
5. Push excess cable inside base unit housing through connector opening.
6. Lift expansion module off lower set of mounting holes and install in place on all four mounting holes. Be sure excess cable is not pinched between add-on module and base unit.
7. Pull module down to latch in place.
8. Use flat-blade screw driver to tighten module securing screw into base unit threaded fastener.
9. Snap nameplate into slots on top of module housing.
10. Attach a #10 or #12 insulated, solid copper wire between the grounding terminal on the expansion module and the grounding terminal on the common equipment cabinet.
11. Refer to Chapter 4, and perform configuration programming for new station and/or line ports.

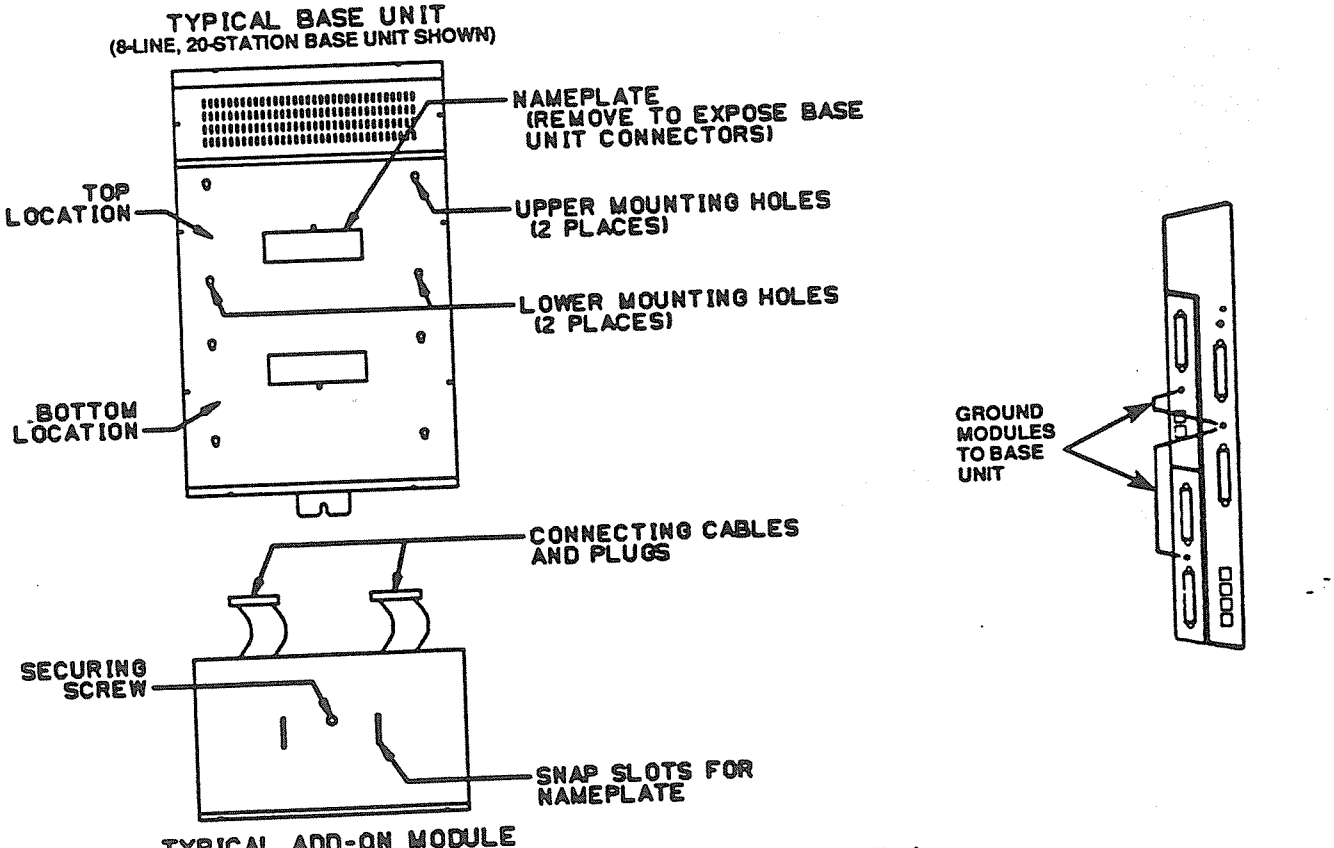


Figure 3-16. Expansion Module Installation

SECTION 4
SYSTEM CHECKOUT AND FAILURE ISOLATION

INITIAL CONDITION

The system operating features are set to default conditions at initial power-up. These conditions provide a basic operating system with a known set of parameters, and the system should be initially checked out with the default conditions in place. At any time while the system is operating, default conditions can be reset from station port 10 or 11 per the instructions provided in Chapter 4, Programming.

CHECK OUT

Check the common equipment and telephone installation for proper operation by performing the following resistance and voltage measurements.

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.
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	STATION RESISTANCE IN OHMS			
	MULTILINE KEYSET	3 AND 8 LINE KEYSET	SINGLE LINE KEYSET	DSS/BLF CONSOLE
VOICE PAIR	40 - 150	40 - 150	40 - 150	0.3 - 100
DATA PAIR	0.3 - 100	40 - 150	0.3 - 100	0.3 - 100

MEASURED PAIR	COMMON EQUIPMENT RESISTANCE IN OHMS
VOICE PAIR	40 - 50
DATA PAIR	1 - 2

VOLTAGE CHECK

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:

UNIT UNDER TEST	66M-xx BLOCK CONNECTION	METER LEAD POLARITY	MEASURED VOLTAGE
TYPICAL EVEN STATION (Repeat for each even sta.)	Voice 1	(+)	+33 +/- 8 VDC
	Data 3	(-)	
	Voice 2	(+)	+33 +/- 8 VDC
	Data 4	(-)	
TYPICAL ODD STATION (Repeat for each odd sta.)	Voice 5	(+)	-33 +/- 8 VDC
	Data 7	(-)	
	Voice 6	(+)	-33 +/- 8 VDC
	Data 8	(-)	
Variant readings can indicate a possible wiring, station, or common equipment problem.			

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, refer to the paragraph below titled, *Failure Isolation*.
2. Refer to Chapter 5 for operating information and perform a general operational test of the system by exercising the features from station port 10 or 11. Operational parameters are per the system default conditions as detailed in Chapter 4 until class of service programming is performed.
3. Once the basic system is verified as operational, perform the class of service programming as described in Chapter 4.

INSTALLATION

Each add-on expansion module measures 15.5 in. wide x 9.4 in. high x 1.6 in. wide and weighs approximately four pounds. The modules are designed to be attached to the base unit and connected to it via cabling.

- Install the expansion modules separately or in combination to extend both the line and station capacity or extend the station capacity only.
  - When only one expansion module is added, always install it at the upper location on the base unit.
  - When a 16-station expansion module and a 412 expansion module combination are installed, always install the 412 expansion module at the upper location on the base unit.

To install an expansion module to a base unit, refer to Figure 3-16 and perform the following procedure.

1. Disconnect both AC power and external battery back-up power from the system.
2. Remove and set aside nameplate from base unit. This action exposes internal cable connectors on base unit circuit board.
3. Temporarily hang expansion module on lower set of mounting holes at either top or bottom mounting location. Be sure that cables are not caught between module and base unit.
4. Reach through opening in base unit and mate module cable plugs with base unit circuit board connectors. Connections are keyed to facilitate mating.
5. Push excess cable inside base unit housing through connector opening.
6. Lift expansion module off lower set of mounting holes and install in place on all four mounting holes. Be sure excess cable is not pinched between add-on module and base unit.
7. Pull module down to latch in place.
8. Use flat-blade screw driver to tighten module securing screw into base unit threaded fastener.
9. Snap nameplate into slots on top of module housing.
10. Attach a #10 or #12 insulated, solid copper wire between the grounding terminal on the expansion module and the grounding terminal on the common equipment cabinet.
11. Refer to Chapter 4, and perform configuration programming for new station and/or line ports.

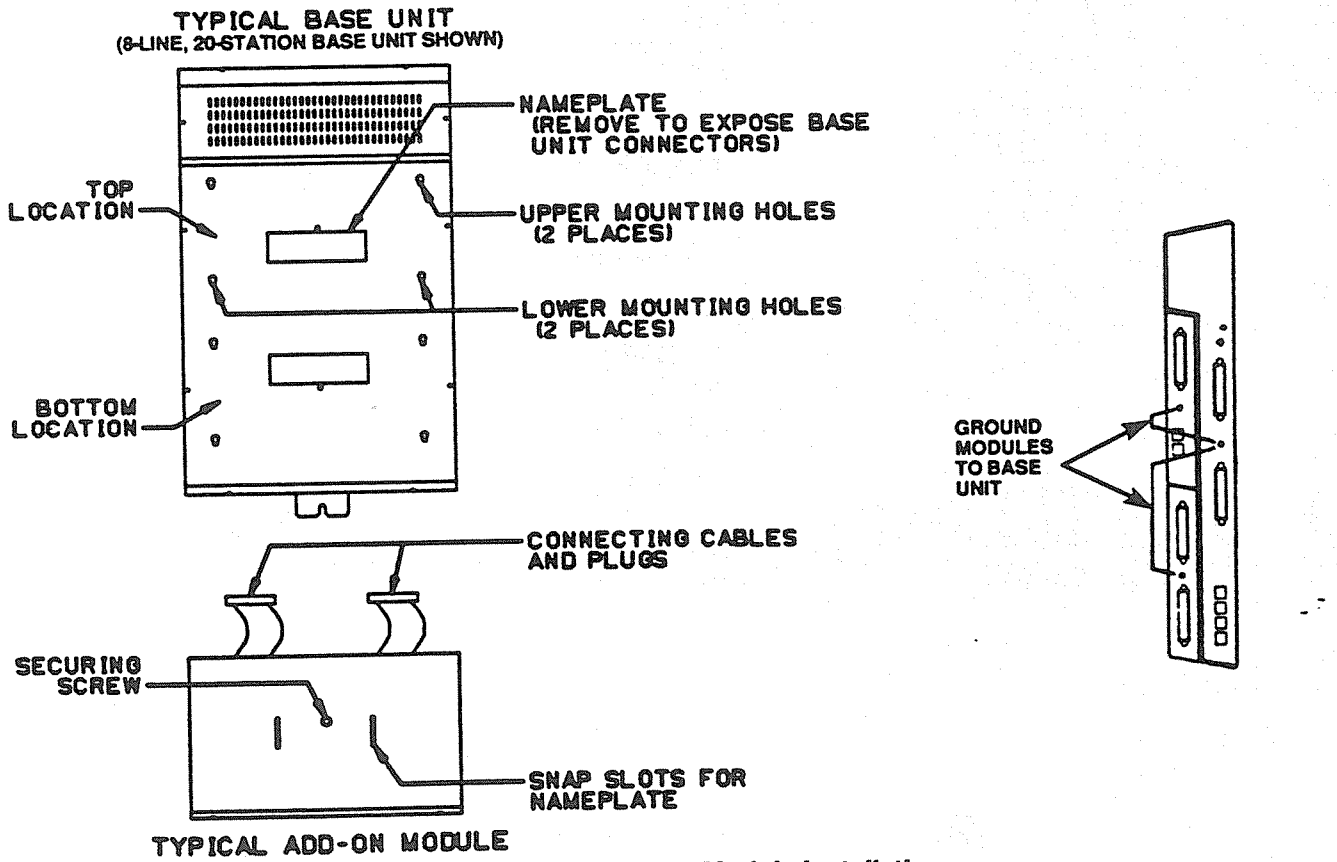


Figure 3-16. Expansion Module Installation

SECTION 5
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
GENERAL INFORMATION

Configuration programming is performed from the station port 10 or station port 12. The programming station consists of an LCD Speakerphone installed at station port 10 or 12 and a companion DSS/BLF Console or Adjunct Feature Module installed at port 11 or 13, respectively. A multiline telephone can be used for programming but display feedback of the programming operations will not be available. Programming commands will not be accepted from any other station port in the system. Station 10 or 12 configuration programming consists of the following categories:

Class Of Service Programming: This 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 into service.

Administration Programming: The administration programming can be used to program all system features except line attributes and the master clear. This procedure is usually employed by on-site personnel whenever system needs dictate.

Attendant Programming: The attendant programming is limited to those features which may need reprogramming by the system attendant, such as:

- System clock setting
- System speed dial
- Night transfer of ringing
- Music on hold
- LCD messages
- Station names
- SMDA reports

Alternately, programming can be performed from any customer-provided Video Display Terminal (VDT) with an RS-232 compatible, serial interface. VDT programming is completely menu driven and easy to follow. It is arranged somewhat differently from station port programming categories to facilitate menu usage. VDT programming is discussed in Section 4 of this chapter.

Prior to taking any programming action, determine the desired parameters and requirements. Record this data on the programming reference tables provided for this purpose along-side the station programming procedures in the following sections.

Block programming can be performed after a configuration has been programmed for a particular line or station. Block programming will program a group of lines or stations to have the same configuration as the programmed one. This feature eliminates the need to individually program every line or station that requires the same configuration.

A set of programmed values can be recorded on cassette tape from a programmed system. This data can later be reloaded into the same system or into another system of the same model number. This method of programming can be employed in lieu of using the step-by-step programming sequence.

Whenever down-loading programmed data to a cassette tape, it is a good practice to carefully record on the cassette tape label the model number and manufacturing code of the common equipment cabinet.

PROGRAMMING OVERLAYS

Programming overlays are included with each system for use in identifying the keys required for programming. The overlay fits over the keys of the LCD speakerphone and DSS console to designate the A-, B-, and C-field keys. Full size copies of the programming overlays are included at the end of this chapter for use as needed.

SECTION 2
CLASS OF SERVICE PROGRAMMING

Class of service programming is usually performed by the system installer. Class of service programming procedures provide the means for programming all of the system variables. The installer may elect 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 shown below.

❶ Mark the desired selections in the charts to record programming needs.

❷ Enter the base level programming mode.
Press: ITCM ✳ # 7 4 6 ✳.
The display will show: *"CONFIG. MODE "*

TYPICAL FEATURE PROGRAMMING SEQUENCE

Reserved Intercom Link: An intercom link can be reserved for exclusive use by a station. This feature should be used for stations that process calls such as attendant, etc. and only on systems that have high call traffic.

Dial 53. *"STATION FEATURES"*
Dial 17. *"RESERVE ITCM "*
Dial 1 - 5 for link 1 - 5. *"RESERVE ITCM X "*
Select station ports to be programmed:
- Station 10 - 73: Dial 10 - 73 or Press C10 - C73.

Dial ✳ to reserve another link.
-OR-
Dial ✳ ✳ for next station feature.
-OR-
Dial ✳ ✳ ✳ for configuration mode.

PORT	ENTRY	PORT	ENTRY	PORT	ENTRY
10		21		32	
11		22		33	
12		23		34	
13		24		35	
14		25		36	
15		26		37	
16		27		38	
17		28		39	
18		29		40	
19		30		41	
20		31			

DEFAULT = NOT AS'GND

❸ Dial a feature code to select a programming parameter.

A current program setting is indicated by a lighted LED next to the applicable programming key. When a toggle (ON/OFF) action is provided by a single key, the lighted LED indicates when the feature is active.

If a tone burst sounds three times during programming, it denotes an erronous input. Programming can be continued after an error without ending and re-entering the programming mode from base level..

❹ Press ✳ to return to the most previous programming level. Each press returns to the next previous programming level.

❺ Press SPKR to end procedure.

MASTER CLEAR

The entire programming configuration, as discussed in the following programming procedures, can be defaulted to the factory settings at once using the Master Clear procedure.

CAUTION

Not only does this action return ALL programmed variables to a known state of operation, it also clears all currently stored autodial and speed dial numbers.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Base Level: The first step in any programming sequence is to enter the base level. Once in this mode, the master clear can be performed.	Press ITCM Dial ✱ # 7 4 6 ✱ *"CONFIG. MODE"*	
Master Clear: Returns entire system to default and clears all stored auto and speed dial numbers.	Dial **90.** *"MASTER CLEAR "* Dial **5 1 6 8 4** to clear the entire system. System will return to normal operation automatically.	

SYSTEM DEFAULTS

- Mark the desired selections in the charts to record programming needs.
- Dial the feature code and then dial the selection code or press the programming button to program the selection.

NOTE: A current program setting is indicated by a lighted LED next to the programming button for that selection. When a toggle (on/off) action is provided by a single button, the lighted LED indicates an active feature.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Base Level: The first step in any programming sequence is to enter the base level. Once in this mode, any desired configuration can be set.	Press ITCM Dial ✳# 7 4 6 ✳. *"CONFIG. MODE"*	
System Default: The system configuration features can be defaulted to factory settings. These values will provide satisfactory system performance in a broad range of site applications.	Dial 10. *"SYSTEM DEFAULT"* Press # to default system features. System returns to configuration mode.	
Line Default: The line configuration features can be defaulted to factory settings. These values will provide satisfactory system performance in a broad range of site applications.	Dial 30. *"LINE DEFAULT"* Press # to default line features. System returns to configuration mode.	
Station Default: The station configuration features can be defaulted to factory settings. These values will provide satisfactory system performance in a broad range of site applications.	Dial 50. *"STATION DEFAULT"* Dial 00 to default station ports system-wide. -OR- Select station port to be defaulted: - Station 10 - 73: Dial 10 - 73 or Press C10 - C73. Dial ✳ for additional stations to default. Dial ✳ ✳ for configuration mode.	

Press SPKR to end.

SYSTEM CONFIGURATION

- Mark the desired selections in the charts to record programming needs.
- Dial the feature code and then dial the selection code or press the programming key to program the selection.

NOTE: A current program setting is indicated by a lighted LED next to the programming key for that selection. When a toggle (on/off) action is provided by a single key, the lighted LED indicates an active feature.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Base Level: The first step in any programming sequence is to enter the base level. Once in this mode, any desired configuration can be set.	Press ITCM Dial ✳ # 7 4 6 ✳. *"CONFIG. MODE "*	
System Default: The system configuration features, described in the following procedures, can be defaulted to factory settings. These values will provide satisfactory system performance in a broad range of site applications.	1. Dial 10. *"SYSTEM DEFAULT"* 2. Press # to default system features. System returns to configuration mode.	
Unanswered Call Transfer Recall Time: A transferred call that remains unanswered after a programmed length of time will return to the transferring station for answering.	1. Dial 11. *"XFER RECALL XXX"* 2. Select time. - Dial 1 or Press A1. *"XFER RECALL 10 "* - Dial 2 or Press A2. *"XFER RECALL 20 "* - Dial 3 or Press A3. *"XFER RECALL 25 "* - Dial 4 or Press A4. *"XFER RECALL 30 "* - Dial 5 or Press A5. *"XFER RECALL 45 "* - Dial 6 or Press B1. *"XFER RECALL 60 "* - Dial 7 or Press B2. *"XFER RECALL 90 "* - Dial 8 or Press B3. *"XFER RECALL 120 "* - Dial 9 or Press B4. *"XFER RECALL 180 "* - Dial 0 or Press B5. *"XFER RECALL 240 "* 3. Press ✳ for configuration mode.	

BUTTON	SEC	ENTRY
1	10	
2	20	
3	25	
4	30	
5	45	
6	60	
7	90	
8	120	
9	180	
0	240	
DEFAULT = 20 sec.		

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Recall/Flash: A line disconnect (recall) or a host system feature access signal (flash), depending upon the programmed time, can be generated when the user presses the TAP button.	1. Dial 12 *"RECALL/FLSH XXXX"* 2. Select time. - Dial 1 or Press A1. *"RECALL/FLSH 0.08"* - Dial 2 or Press A2. *"RECALL/FLSH 0.30"* - Dial 3 or Press A3. *"RECALL/FLSH 0.50"* - Dial 4 or Press A4. *"RECALL/FLSH 0.60"* - Dial 5 or Press A5. *"RECALL/FLSH 0.75"* - Dial 6 or Press B1. *"RECALL/FLSH 0.88"* - Dial 7 or Press B2. *"RECALL/FLSH 1 "* - Dial 8 or Press B3. *"RECALL/FLSH 1.50"* - Dial 9 or Press B4. *"RECALL/FLSH 2 "* - Dial 0 or Press B5. *"RECALL/FLSH 3 "* 3. Dial ✳ for configuration mode.	BUTTON / SEC / ENTRY 1 / .08 2 / .30 3 / .50 4 / 60 5 / 75 6 / 88 7 / 1.0 8 / 1.5 9 / 2.0 0 / 3.0 DEFAULT = 2.0 sec.
Pause Time: During autodials and speed dials, it is sometimes necessary to delay the sending of digits to give switching equipment time to prepare for receiving them. A pause is stored whenever the user presses the **HOLD** button. The pause length options are stored in seconds.	1. Dial 13 *"PAUSE TIME XXX "* 2. Select time. - Dial 1 or Press A1. *"PAUSE TIME 0.50 "* - Dial 2 or Press A2. *"PAUSE TIME 1 "* - Dial 3 or Press A3. *"PAUSE TIME 1.50 "* - Dial 4 or Press A4. *"PAUSE TIME 2 "* - Dial 5 or Press A5. *"PAUSE TIME 3 "* - Dial 6 or Press B1. *"PAUSE TIME 5 "* - Dial 7 or Press B2. *"PAUSE TIME 7.50 "* - Dial 8 or Press B3. *"PAUSE TIME 10 "* - Dial 9 or Press B4. *"PAUSE TIME 15 "* - Dial 0 or Press B5. *"PAUSE TIME 20 "* 3. Dial ✳ for configuration mode.	BUTTON / SEC / ENTRY 1 / .50 2 / 1.0 3 / 1.5 4 / 2.0 5 / 3.0 6 / 5.0 7 / 7.5 8 / 10 9 / 15 0 / 20 DEFAULT = 1 sec.

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
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.	1. Dial 14 *"HOLD RECALL XXXX"* 2. Select time. - Dial 1 or Press A1. *"HOLD RECALL 30 "* - Dial 2 or Press A2. *"HOLD RECALL 60 "* - Dial 3 or Press A3. *"HOLD RECALL 90 "* - Dial 4 or Press A4. *"HOLD RECALL 120 "* - Dial 5 or Press A5. *"HOLD RECALL 180 "* - Dial 6 or Press B1. *"HOLD RECALL 240 "* - Dial 7 or Press B2. *"HOLD RECALL 300 "* - Dial 8 or Press B3. *"HOLD RECALL 360 "* - Dial 9 or Press B4. *"HOLD RECALL 420 "* - Dial 0 or Press B5. *"HOLD RECALL "* 3. Dial ✳ for configuration mode.	BUTTON / SEC / ENTRY 1 / 30 2 / 60 3 / 90 4 / 120 5 / 180 6 / 240 7 / 300 8 / 360 9 / 420 0 / NEVER RECALL DEFAULT = 60 Sec.
Data Baud Rate: The speed or baud rate of the data bit stream, which carries the SMDR and configuration data between the system and an external data device, must be programmed to match the requirements of the data device. ***NOTE:*** *If XMODEM protocol is to be used for data transfer between a VDT and the common equipment, 8-bit data is required.*	1. Dial 15. *"BAUD RATE "* 2. Dial 1 for data port A. -OR- - Dial 2 for data port B. 3. Select time. - Dial 01 or Press A1. *"BAUD RATE 110"* - Dial 02 or Press A2. *"BAUD RATE 150"* - Dial 03 or Press A3. *"BAUD RATE 300"* - Dial 04 or Press A4. *"BAUD RATE 600"* - Dial 05 or Press A5. *"BAUD RATE 1200"* - Dial 06 or Press B1. *"BAUD RATE 2400"* - Dial 07 or Press B2. *"BAUD RATE 4800"* - Dial 08 or Press B3. *"BAUD RATE 9600"* - Dial 09 or Press B4. *"BAUD RATE 19200"* - Dial 10 or Press A7 for 7 data bits and 2 stop bits. *"W 7D 2S ZZZZZ"* - Dial 11 or Press B7 for 8 data bits and 1 stop bit. *"W 8D 1S ZZZZZ"* 4. Dial ✳ and program next data port. -OR- Dial ✳ ✳ for configuration mode.	BUTTON / BAUD / ENTRY 1 / 110 2 / 150 3 / 300 4 / 600 5 / 1200 6 / 2400 7 / 4800 8 / 9600 9 / 19200 7 DATA/2 STOP 8 DATA/1 STOP DEFAULT = 300 baud, 7-bit data with two stop bits **Press SPKR to end.**

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Tone or Voice Signalling: Intercom calls can be tone signalled or voice signalled. The first choice in signalling is programmable.	1. Dial 16. *"XXXXX ANN. FIRST"* 2. Press A1 to toggle between Voice To Tone. (LED On = voice signalling). -OR- Dial 1 for Voice First. *"VOICE ANN. FIRST"* Dial 2 for Tone First. *"TONE ANN. FIRST"* 3. Dial ✳ for configuration mode.	SIGNALLING | VOICE | TONE DEFAULT = VOICE
Tape Baud Rate: A customer supplied cassette tape recorder can be used to store and load all configuration data. The data speed of the bit stream defaults at the faster speed. If problems in loading occur during playback, the baud rate can be changed to 50 baud.	1. Dial 17. *"TAPE BAUD XXX "* 2. Press A1 to toggle between 50 and 100 baud (LED On = 100 baud). -OR- Dial 1 for 50 baud. *"TAPE BAUD 50 "* Dial 2 for 100 baud. *"TAPE BAUD 100 "* 3. Dial ✳ for configuration mode.	TAPE BAUD RATE | 50 | 100 DEFAULT = 100 BAUD
Delete Station Message Detail Accounting (SMDA) records by Attendant: When SMDA records exceed storage capacity, they must be deleted to make room for more. The attendant can be allowed to delete these records if enabled by this programming step.	1. Dial 18. *"ATTN DELETE XXX "* 2. Press A1 to toggle between enable and disable (LED On = Enable). -OR- Dial 1 to Enable *"ATTN DELETE ON "* (A1 LED On). Dial 2 to Disable *"ATTN DELETE OFF "* 3. Dial ✳ for configuration mode.	ATTENDANT SMDA RECORD DELETE ENABLE DISABLE DEFAULT = DISABLE
Do Not Disturb (DND) Inhibit: Any multiline station can be set to a DND condition which cannot be overridden by a caller unless calling station is programmed for DND override. The DND feature can be disabled by this programming. *NOTE: Also program a button as the DND button. See page 4-43.*	1. Dial 19. *"DND XXXXXXXX "* 2. Press A1 to toggle between enable and disable (LED On = Enable). -OR- Dial 1 to Enable *"DND ENABLED "* (A1 LED ON). Dial 2 to Disable. *"DND DISABLED "* 3. Dial ✳ for configuration mode.	DO NOT DISTURB INHIBIT ENABLED DISABLED DEFAULT = ENABLED

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFEENCE RECORD
Station Monitoring: The DSS/BLF at a multiline station provides idle, busy and line ringing status of monitored stations. If the flashing BLF lights associated with visual ring indication are deemed distracting, this visual indication can be disabled system-wide.	1. Dial 20. *"MONITOR XXXXXXX"* 2. Press A1 to toggle between enable and disable (LED On = Enable). -OR- Dial 1 to Enable *"MONITOR ENABLED"* (A1 LED ON). Dial 2 to Disable. *"MONITOR DISABLED"* 3. Dial ✳ for configuration mode.	STATION MONITORING ENABLED DISABLED DEFAULT = DISABLED
Call Park Recall Time: A call that is left in a parking orbit for a programmed length of time is automatically returned to the original parking station. It is placed in a timed hold recall condition when it is returned.	1. Dial 22. *"C. P. RECALL X "* 2. Select recall time: (LED On = Selected Time) - Press A1 or dial 1 = 1 min. *"C.P. RECALL X "* - Press A2 or dial 2 = 2 min. - Press A3 0r dial 3 = 3 min. - Press A4 or dial 4 = 4 min. - Press A5 or dial 5 = 5 min. - Press B1 or dial 6 = 6 min. - Press B2 or dial 7 = Never Recall *"NEVER RECALL"* 3. Dial ✳ for configuration mode.	CALL PARK RECALL TIME 1 2 3 4 5 6 NEVER DEFAULT = 2 MINUTES
Exclusive Hold: This feature prevents a held call from being retrieved at any other extension. It can be enabled or disabled system-wide.	1. Dial 23. *"XXXXXXX EXC HOLD"* 2. Press A1 to toggle between enable and disable (LED On = Enable). -OR- Dial 1 to enable *"ENABLE EXC HOLD "* (A1 LED on). Dial 2 to disable. *"DISABLE EXC HOLD"* 3. Dial ✳ for configuration mode.	EXCLUSIVE HOLD ENABLED DISABLED DEFAULT = ENABLED

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Tandem Attendant: When this feature is enabled, a recall from an unanswered call transfer or timed hold recall will ring at both attendant stations. When disabled, only the attendant station that transferred the call will ring.	1. Dial **24**. *"TANDEM ATTN XXX "* 2. Press **A1** to toggle between enable and disable (LED On = Enable). -OR- Dial **1** to disable. *"TANDEM ATTN OFF"* Dial **2** to enable (A1 LED is on). *"TANDEM ATTN ON "* 3. Dial ✳ for configuration mode.	TANDEM ATTENDANT ENABLE | DISABLE DEFAULT = DISABLE
Automatic Transfer of Voice Mail: When a voice mail accessory is included with the system, program the system so that a line transfer from voice mail to a station is immediate without any delay.	1. Dial **25** *"V MAIL AUTO XFER"* 2. Press **A1** to toggle between enable and disable. (LED On = Enable) **-OR-** Dial **1** to enable. (A1 LED is on) Dial **2** to disable. 3. Dial ✳ for configuration mode	AUTO VM XFER ENABLE | DISABLE DEFAULT = DISABLE
Extended DTMF: The system can access answering machines, banking computers, voice mail, etc. that require DTMF tones that are longer than standard tones. This programming option enables the programmed DTMF tone to automatically activate after the station has been off-hook 10 sec. or more.	1. Dial **26** *"DTMF DIALING XXXX"* 2. Choose DTMF tone length - Press **A1** or dial **1** = 80 msec. - Press **A2** or dial **2** = 160 msec. - Press **A3** or dial **3** = 240 msec. - Press **A4** or dial **4** = 320 msec. - Press **A5** or dial **5** = 400 msec. - Press **B1** or dial **6** = 480 msec. - Press **B2** or dial **7** = 560 msec. - Press **B3** or dial **8** = 720 msec. - Press **B4** or dial **9** = 880 msec. - Press **B5** or dial **0** = 1040 msec. 3. Dial ✳ for configuration mode	EXTENDED DTMF 80 160 240 320 400 480 560 720 880 1040 DF'LT = 80 MSEC

Press SPKR to end.

Base level ITCM * # 7 4 6 *.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Feature Inhibit Programming: Certain features can be disabled system-wide to provide a basic telephone system for use in installations where a large proportion of the stations are accessible to unauthorized users, thus, subject to tampering. These features are all enabled when item 34 is selected or when system default is performed.	1. Dial 29. *"FEATURE INHIBIT"* 2. Select feature. - Dial 01 to disable Trunk Group 1. - Dial 02 to disable Trunk Group 2. - Dial 03 to disable Trunk Group 3. - Dial 04 to disable Trunk Group 4. - Dial 05 to disable Zone 1 Paging. - Dial 06 to disable Zone 2 Paging. - Dial 07 to disable Zone 3 Paging. - Dial 08 to disable All Call. - Dial 09 to disable Meet Me Page. - Dial 10 to disable Night Transfer. - Dial 11 to disable Background Music. - Dial 12 to disable Voice Announce Block. - Dial 13 to disable Message Waiting. - Dial 14 to disable Call Pickup. - Dial 15 to disable Call Forward. - Dial 16 to disable Automatic Call Back. - Dial 17 to disable Station-to-Station Messaging. - Dial 18 to disable Trunk Group Queue. - Dial 19 to disable Directed Station Hold. - Dial 20 to disable Call Park Orbit 1. - Dial 21 to disable Call Park Orbit 2. - Dial 22 to disable Call Park Orbit 3. - Dial 23 to disable Call Park Orbit 4. - Dial 24 to disable Call Park Orbit 5. - Dial 25 to disable Call Park Orbit 6. - Dial 26 to disable Call Park Orbit 7. - Dial 27 to disable Call Park Orbit 8. - Dial 28 to disable Call Park Orbit 9. - Dial 29 to disable Call Waiting. - Dial 30 to disable LCD Messaging. - Dial 31 to disable Executive Override/Service Observing. - Dial 32 to disable Account Code. - Dial 33 to disable Personal Call Forward - Dial 34 to Enable All Features. 3. Dial * for next item. **-OR-** Dial * * for configuration mode.	

FEATURE	DISABLED	ENABLED
Trunk Group 1		
Trunk Group 2		
Trunk Group 3		
Trunk Group 4		
Zone 1 Paging		
Zone 2 Paging		
Zone 3 Paging		
All Call		
Meet Me Page		
Night Transfer		
Background Music		
Voice Announce Block		
Message Waiting		
Call Pickup		
Call Forward		
Automatic Call Back		
Station-to-Station Mesg.		
Trunk Group Queue		
Directed Station Hold		
Call Park Orbit 1		
Call Park Orbit 2		
Call Park Orbit 3		
Call Park Orbit 4		
Call Park Orbit 5		
Call Park Orbit 6		
Call Park Orbit 7		
Call Park Orbit 8		
Call Park Orbit 9		
Call Waiting		
LCD Messaging		
Executive Override/ Service Observing		
Account Code		
Personal Call Fwd.		
DEFAULT = ALL ENABLED		

NOTE: Feature status is not conveyed via an LED on/off condition.

Press SPKR to end.

LINE CONFIGURATION

- Mark the desired selections in the charts to record programming needs.
- Dial the feature code and then dial the selection code or press the programming button to program the selection.

NOTE: A current program setting is indicated by a lighted LED next to the programming button for that selection. When a toggle (ON/OFF) action is provided by a single button, the lighted LED indicates an active feature.

- Line port selection is made by pressing a corresponding programming button or by dialing a selection number on the keypad per the following reference charts.

Lines	Prog. Buttons	Keypad Buttons
1 - 8	B1 - B8	01 - 08
09 - 16	A1 - A8	09 - 16
17 - 24	HOLD, B1 - B8	17 - 24 (Eight additional lines provided by two M0412 expansion modules used with X80PT system.)

NOTE: The HOLD button is used to toggle program buttons A1 - A8 between lines 9 - 16 and ines 17 - 24. No programming action will be accepted for line ports that are not connected to lines.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Base Level: The first step in any programming sequence is to enter the base level. Once in this mode, any desired configuration can be set.	Press ITCM Dial ✳ # 7 4 6 ✳. *"CONFIG. MODE "*	
Line Default: The line configuration features, described in the following procedures, can be defaulted to factory settings. These settings will provide satisfactory system performance in a broad range of site applications.	Dial **30.** *"LINE DEFAULT "* Press # to default line features. System returns to configuration mode.	
Line Disabled: A line port can be taken out of service because of a defect or other reason. *NOTE: To enable a line port, use the central office line feature on page 4-13.*	1. Dial **31.** *"DISABLE LINES "* 2. Select line ports to be disabled (LED On = Disabled). - For line port 1-8 = Dial **01 - 08** or press **B1 - B8.** - For line port 9-16 = Dial **09 - 16** or press **A1 - A8.** - For line port 17-24 = Dial **17 - 24** or Press **HOLD, B1- B8.** 3. Dial ✳ for configuration mode.	

LINE	ENTRY	LINE	ENTRY
1		9	
2		10	
3		11	
4		12	
5		13	
6		14	
7		15	
8		16	

DEFAULT = NONE DISABLED

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Auxiliary Lines: A line port can be conditioned to serve as a port for an external paging amplifier.	1. Dial **32.** *"AUXILIARY LINES* 2. Select line ports for auxiliary (LED On = Aux). - For line port 1-8 = Dial **01 - 08** or press **B1 - B8.** - For line port 9-16 = Dial **09 - 16** or press **A1 - A8.** - For line port 17-24 = Dial **17 - 24** or press **HOLD, B1 - B8.** 3. Dial ✳ for configuration mode.	LINE / ENTRY / LINE / ENTRY 1 / 9 2 / 10 3 / 11 4 / 12 5 / 13 6 / 14 7 / 15 8 / 16 DEFAULT = NONE AS'GND
Central Office Lines: A line port can be conditioned to serve as a port for standard telephone-company-supplied central office lines.	1. Dial **33.** *"C.O. LINES"* 2. Select line ports for CO lines (LED On = CO line). - For line port 1-8 = Dial **01 - 08** or press **B1 - B8.** - For line port 9-16 = Dial **09 - 16** or press **A1 - A8.** - For line port 17-24 = Dial **17 - 24** or press **HOLD, B1 - B8.** 3. Dial ✳ for configuration mode.	LINE / ENTRY / LINE / ENTRY 1 / 9 2 / 10 3 / 11 4 / 12 5 / 13 6 / 14 7 / 15 8 / 16 DEFAULT = ALL LINES ARE CO
Line Names: Lines can be named as to their function to identify them for use. Names such as WATS, CO, etc., when appearing on the display, make locating a desired line easier for the station user to do. Up to five characters can be used to form a line name.	1. Dial **34.** *"LINE NAME"* 2. Select line port to be named. - For line port 1-8 = Dial **01 - 08** or press **B1 - B8.** - For line port 9-16 = Dial **09 - 16** or press **A1 - A8.** - For line port 17-24 = Dial **17 - 24** or press **HOLD, B1 - B8.** 3. Press **#** to clear current name. 4. Dial line name char. codes (5 char. max.). - See character code chart (Table 4-1 on Page 4-19). - Examples: - WATS = Dial **91 21 81 81 73** - CO = Dial **23 63** - 0156 = Dial **00, 01, 05, 06** *(Each character must be represented by two digits.)* 5. Dial ✳ and repeat steps 2 through 4 for next line. **-OR-** Dial ✳ ✳ for configuration mode.	LINE / ENTRY / LINE / ENTRY 1 / 9 2 / 10 3 / 11 4 / 12 5 / 13 6 / 14 7 / 15 8 / 16 DEFAULT = NONE AS'GND

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Line Groups: Outside lines of the same type can be grouped together for dial-up outgoing access. Access codes for the line groups are: Group 1 = Dial 9 Group 2 = Dial 81 Group 3 = Dial 82 Group 4 = Dial 83 *NOTE: System must be strapped for hybrid operation before this programming feature is available. See page 3-16 for details. A line group access button can be assigned on a per station basis. See page 4-47 for details.*	1. Dial 35 *"ASSIGN LINE GRPS"* 2. Dial 0 to remove lines from groups. *"NO LINE GROUP"* -OR- Select line group for line assignment (LED On = Lines as'gnd to gp.) Dial 1 for Line Group 1. *"LINE GROUP 1"* Dial 2 for Line Group 2. *"LINE GROUP 2"* Dial 3 for Line Group 3. *"LINE GROUP 3"* Dial 4 for Line Group 4. *"LINE GROUP 4 "* 3. Select line ports: - For line port 1-8 = Dial 01 - 08 or press B1 - B8. - For line port 9-16 = Dial 09 - 16 or press A1 - A8. - For line port 17-24 = Dial 17 - 24 or press HOLD, B1 - B8. 4. Dial ✳, and repeat steps 2 through 3 for next group. -OR- Dial ✳ ✳ for configuration mode.	LINE / ENTRY / LINE / ENTRY 1 / 9 2 / 10 3 / 11 4 / 12 5 / 13 6 / 14 7 / 15 8 / 16 DEFAULT = NONE AS'GND
Pulse/Tone Switchable: When rotary dial lines are installed, the user can switch from pulse (rotary dial signalling) to tone (dual tone multiple frequency - DTMF) for accessing special circuits requiring DTMF tones such as banking machines, etc. Line port dialing must be programmed as pulse for rotary dial line interfacing or tone for DTMF line interfacing.	1. Dial 37 *"TONE DIAL "* 2. Select dialing style for line ports. Programming provides toggle (tone/pulse) action. (LED On = Tone, LED Off = Pulse): - For line port 1-8 = Dial 01 - 08 or press B1 - B8. - For line port 9-16 = Dial 09 - 16 or press A1 - A8. - For line port 17-24 = Dial 17 - 24 or press HOLD, B1 - B8. -OR- Dial 00 to default all lines to tone dial. -OR- Dial ✳ 36 00 to default all lines to pulse dial. *"PULSE DIAL "* 3. Dial ✳ for configuration mode.	LINE / ENTRY / LINE / ENTRY 1 / 9 2 / 10 3 / 11 4 / 12 5 / 13 6 / 14 7 / 15 8 / 16 DEFAULT = ALL TONE DIAL

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Abandoned Hold Release: When a distant party abandons a hold condition and disconnects, the central office will send a forward disconnect signal to the system. The signal can be either 50 msec. or 350 msec. in length. Program the system to match the central office time.	1. Dial **38**. *"HOLD RELEASE 50 "* 2. Select line ports (LED On = 50 msec., LED Off = 350 msec.) - For line port 1-8 = Dial **01 - 08** or press **B1 - B8.** - For line port 9-16 = Dial **09 - 16** or press **A1 - A8.** - For line port 17-24 = Dial **17 - 24** or press **HOLD, B1 - B8.** 3. Dial ✳ for configuration mode.	LINE / ENTRY / LINE / ENTRY 1 / 9 2 / 10 3 / 11 4 / 12 5 / 13 6 / 14 7 / 15 8 / 16 **DEFAULT = 50 msec.**
Direct Departmental Calling (Lines): Outside lines can be assigned to one of four different departments. Calls received on a line assigned to a department will hunt for any idle station in that department. ***NOTE:*** *Stations are assigned to these departments per the procedure on page 4-29.*	1. Dial **39**. *"DEPT. CALLING "* 2. Dial **0** to remove lines from departments. *"NO DEPARTMENT "* **-OR-** Select department number. (LED On = Lines as'gnd to dept.) Dial **1** for dept 1. *"DEPARTMENT 1 "* Dial **2** for dept 2. *"DEPARTMENT 2 "* Dial **3** for dept 3. *"DEPARTMENT 3 "* Dial **4** for dept 4. *"DEPARTMENT 4 "* 3. Select line ports for department assignment. - For line port 1-8 = Dial **01 - 08** or press **B1 - B8.** - For line port 9-16 = Dial **09 - 16** or press **A1 - A8.** - For line port 17-24 = Dial **17 - 24** or press **HOLD, B1 - B8.** 4. Dial ✳ and repeat steps 2 through 3 for next department. **-OR-** Dial ✳ ✳ for configuration mode.	LINE / ENTRY / LINE / ENTRY 1 / 9 2 / 10 3 / 11 4 / 12 5 / 13 6 / 14 7 / 15 8 / 16 **DEFAULT = NONE AS'GND**

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
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 reprogrammed making them non-private. ***NOTE:*** *A button can be programmed as a privacy release button on a per station basis. See page 4-43 for details.*	1. Dial 40. *"PRIVACY RELEASE "* 2. Select line ports to be non-private (LED On = Non Private). - For line port 1-8 = Dial 01 - 08 or press B1 - B8. - For line port 9-16 = Dial 09 - 16 or press A1 - A8. - For line port 17-24 = Dial 17 - 24 or press HOLD, B1 - B8. 3. Dial ✳ for configuration mode.	LINE / ENTRY / LINE / ENTRY 1 / 9 2 / 10 3 / 11 4 / 12 5 / 13 6 / 14 7 / 15 8 / 16 DEFAULT = ALL LINES PRIVATE
Line To Line-Port Reassignment: The programming attributes for a line that is connected to a particular line port can be reassigned to a different line port by this programming action. This feature allows all software attributes for a line to be automatically exchanged with those assigned to another line at a different line port without physically relocating the lines or reprogramming any line attributes. ***NOTE:*** *Refer to page 3-4 for additional discussion.*	1. Dial 41. *"ASSIGN LOG/PHYS "* 2. Identify currently assigned line port number. *"PHYS LATCH XX "* - For line port 1-8 = Dial 01 - 08 or press B1 - B8. - For line port 9-16 = Dial 09 - 16 or press A1 - A8. - For line port 17-24 = Dial 17 - 24 or press HOLD, B1 - B8. 3. Select new line port number. Dial 01 - 32 to select line port 1 - 32. *"LOGICAL LINE XX "* 4. Dial # to make assignment. 5. Repeat steps 2 through 4 for another reassignment. -OR- Dial ✳ for configuration mode.	LINE / PORT / LINE / PORT 1 / 9 2 / 10 3 / 11 4 / 12 5 / 13 6 / 14 7 / 15 8 / 16 DEFAULT :1 = 1, 2 = 2, 3 = 3 , ETC

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Block Programming: Features that are assigned to a particular line can be assigned to another line or to an entire block of lines with one programming action.	1. Dial **42.** *"BLK PROGRAMMING "* 2. Select model line port with line buttons. *"MODEL LINE XX "* - For line port 1-8 = Press **B1 - B8.** - For line port 9-16 = Press **A1 - A8.** - For line port 17-24 = Press **HOLD, B1 - B8.** 3. Select lines to match model line (press buttons as detailed above). 4. Dial ✳ and repeat steps 2 through 3 for next model line. **-OR-** Dial ✳ ✳ for configuration mode. 1. Dial **42.** *"BLK PROGRAMMING "* 2. Select model line port with keypad buttons. *"MODEL LINE XX "* - For line port 1-8 = Dial **01 - 08** . - For line port 9-16 = Dial **09 - 16.** - For line port 17-24 = Dial **17 - 24.** 3. Select first line port in block (dial code as above). 4. Dial **#.** 5. Dial last line port In block (dial code as above). 6. Dial **#.** 7. Dial ✳and repeat steps 2 through 6 for next model line. **-OR-** Dial ✳ ✳ for configuration mode. ***NOTE:** The first, last and all lines in between will be block programmed like the model line. To block program an individual line, select the first line and last line to be the same.*	MODEL LINE FIRST LINE LAST LINE

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Voice Mail Line ID: When a voice mail accessory is included with the system, program the lines with identification numbers so that the voice mail accessory can identify which line it is answering. This programmed ID number must match the ID number that the voice mail accessory uses to determine how it will answer the line. That ID number is selected as part of the voice mail accessory programming.	1. Dial **43.** *'VOICE MAIL LN ID "* 2. Select line port (LED On = line assigned) - For line port 1-8 = Dial **01 - 08** or press **B1 - B8.** - For line port 9-16 = Dial **09 - 16** or press **A1 - A8.** - For line port 17-24 = Dial **17 - 24** or press **HOLD, B1 - B8.** 3. Dial **#** to clear current ID number. 4. Dial ID number (6 digits maximum). 5. Dial ✳ for next ID assignment. **-OR-** Dial ✳ ✳ for configuration mode.	

LINE	ENTRY	LINE	ENTRY
1		9	
2		10	
3		11	
4		12	
5		13	
6		14	
7		15	
8		16	
DEFAULT = NO ID ASSIGNED			

Press SPKR to end.

Table 4-1. CHARACTER DIALING CODES CHART

CHAR	CODE	CHAR	CODE	CHAR	CODE
A	21	a	24	Space	12
B	22	b	25	-	15
C	23	c	26	;	17
D	31	d	34	/	18
E	32	e	35	"	19
F	33	f	36	.	27
G	41	g	44	'	28
H	42	h	45	:	29
I	43	i	46	1	01
J	51	j	54	2	02
K	52	k	55	3	03
L	53	l	56	4	04
M	61	m	64	5	05
N	62	n	65	6	06
O	63	o	66	7	07
P	71	p	74	8	08
Q	11	q	14	9	09
R	72	r	75	0	00
S	73	s	76		
T	81	t	84		
U	82	u	85		
V	83	v	86		
W	91	w	94		
X	92	x	95		
Y	93	y	96		
Z	13	z	16		

STATION CONFIGURATION

Mark the desired selections in the charts to record programming needs. (Make copies of the pages to provide additional records if needed. Additional records may be needed when add-on expansion modules are employed to extend the station capacity of a base unit.) Dial the feature code and then dial the selection code or press the programming button to program the selection.

NOTE: *A current program setting is indicated by a lighted LED next to the programming button for that selection. When a toggle (on/off) action is provided by a single button, the lighted LED indicates an active feature. When programming without a console, repeat the procedure to disable a feature at a keypad selected station.*

Station port selection is made by pressing a corresponding programming button or by dialing a selection number on the keypad per the following reference chart.

STA	PROG. BUTTONS	KEYPAD BUTTONS
10 - 73	C10 - C73	10 - 73

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Base Level: The first step in any programming sequence is to enter the base level. Once in this mode, any desired configuration can be set.	Press ITCM Dial ✳ # 7 4 6 ✳ *"CONFIG. MODE "*	
Station Default: The station configuration features, described in the following procedures, can be defaulted to factory settings. These settings will provide satisfactory system performance in a broad range of site applications.	1. Dial **50.** *"STATION DEFAULT "* 2. Dial **00** to default station ports system-wide. 3. Dial ✳ for configuration mode. **-OR-** Select station port to be defaulted: - Station 10 - 73: Dial **10 - 73** or Press **C10 - C73.** 4. Dial ✳ for next station to default. **-OR-** Dial ✳ ✳ for configuration mode.	

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Port Definition: A station port can be programmed to accept one of several different types of station equipment. **MULTILINE** = Multiline telephones without LCD **DSS CONSOLE** = DSS/BLF Consoles **DSS CONSOLE W/CA** = OHVA and SOHVA ports (also see page 4-32) **LCD** = LCD Speakerphones **EXECUMAIL** = ExecuMail Equipment **OPX** = OPX Unit	1. Dial **51** *"PORT TYPE "* 2. Select port definition. - **03** MULTILINE *"MULTILINE "* - **05** CONSOLE *"DSS CONSOLE "* - **06** CONSOLE W/CA *"DSS CONSOLE W/CA "* - **07** LCD *"LCD "* - **08** EXECUMAIL *"EXECUMAIL "* - **09** OPX *"OPX "* 3. Select all station ports to match definition: - Station 10 - 73: Dial **10 - 73** or Press **C10 - C73** 4. Dial ✳ for next port definition and repeat steps 2 through 3. - **OR**- Dial ✳ ✳ for configuration mode.	**PORT / ENTRY / PORT / ENTRY / PORT / ENTRY** 10 07 — 21 — 32 — 11 — 22 — 33 — 12 — 23 — 34 — 13 — 24 07 — 35 — 14 — 25 — 36 — 15 — 26 — 37 — 16 — 27 07 — 38 — 17 — 28 — 39 — 18 — 29 — 40 — 19 — 30 — 41 — 20 — 31 — **DEFAULT: STA 11 - 73 = MULTILINE TELEPHONE,** **STA 10 = LCD SPEAKERPHONE**
Flexible Station Numbering: The system supports a flexible station numbering plan for calling individual stations and departments. Each station or department can be programmed to respond to the dialing of any available number between 10-79, 100-799, or 1000-7999; however, the same dialing code cannot be assigned as both a station extension number and a department access code, nor will the system allow an extension number or access code conflict such as 15 and 1500 to be assigned.	1. Dial **52.** *"ACCESS CODE "* 2. Dial **1** to assign ext. no. to station. *"ASSIGN EXT. NUM."* 3. Select station port: *"EXT. XXXX "* - Station 10 - 73: Dial **10 - 73** or Press **C10 - C73.** 4. Dial new extension number. *"EXT. XXXX YYYY "* (Extension number can be maximum of four significant digits. If less than four digits are required, leading zeros must be dialed before number to make four digits. Example: For ext. no. 15, dial 0015.) 5. Select next station port and assign ext. no. -OR- Dial ✳ for next access code assignment -OR- Dial ✳ ✳ for configuration mode. *Flexible Station Numbering - continued on next page.*	**PORT / ENTRY / PORT / ENTRY / PORT / ENTRY** 10 — 21 — 32 — 11 — 22 — 33 — 12 — 23 — 34 — 13 — 24 — 35 — 14 — 25 — 36 — 15 — 26 — 37 — 16 — 27 — 38 — 17 — 28 — 39 — 18 — 29 — 40 — 19 — 30 — 41 — 20 — 31 — **DEFAULT: STA EXT = 10 - 73** 2-UNE SETS 11,12,26,30,31 34

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD

Flexible Station Numbering - continued

Direct Department Calling (Access Codes): Department access codes can be programmed to be any number between 10-79, 100-799, or 1000-7999; however, the same dialing code cannot be assigned as both a station extension number and a department access code, nor will the system allow an extension number or access code conflict such as 15 and 1500 to be assigned. Further, with system defaulted extension numbers, assigned department access codes must start at 0074 or larger.

NOTE: See page 4-15 for line assignment and page 4-29 for station assignment.

1. Dial 52. *"ACCESS CODE "*
2. Dial 2 to assign access codes to departments. *"DEPT. CALLING "*
3. Dial 1 - 4 for dept. 1 - 4. *"DEPT X YYYY "*
4. Dial new access code. *"DEPT X YYYY ZZZZ"*
   (New code can be maximum of four significant digits. If less than four digits, leading zeros must be dialed to make four digits. Access code must not conflict with station extension numbers.)
5. Repeat steps 3 and 4 until all dept. access codes are entered.
   -OR-
   Dial ✳ for next access code feature.
   -OR-
   Dial ✳ ✳ for configuration mode.

DEPARTMENT ACCESS CODE				
DEPT.	1	2	3	4
CODE				
DEFAULT = NONE AS'GND				

External Paging Interface - Station Port: A station port can be programmed to interface with an external paging amplifier (PA port).

NOTE: Ringing can be assigned to one PA port in the system. See page 4-31.

1. Dial 53. *"STATION FEATURES"*
2. Dial 01. *"P. A. PORT"*
3. Select station port to be programmed:
   - Station 10 - 73: Dial 10 - 73 or Press C10 - C73.
4. Dial ✳ for next station feature.
   -OR-
   Dial ✳ ✳ for configuration mode.

PORT	ENTRY	PORT	ENTRY	PORT	ENTRY
10		21		32	
11		22		33	
12		23		34	
13		24		35	
14		25		36	
15		26		37	
16		27		38	
17		28		39	
18		29		40	
19		30		41	
20		31			
DEFAULT = NOT AS'GND					

Press SPKR to end.

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Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Executive Override: Selected stations can be provided with busy override. This feature allows the station to override a busy condition at a station, sound a warning tone, and gain access to the existing conversation. ***NOTE:*** *This feature must be enabled before do not disturb override can be enabled. See the following discussion and that found on page 4-25 for Service Observing.*	1. Dial **53.** *"STATION FEATURES"* 2. Dial **02.** *"EXEC. OVERRIDE "* 3. Select station ports to be programmed: - Station 10 - 73: Dial **10 - 73** or Press **C10 - C73.** 4. Dial ✳ for next station feature. **-OR-** Dial ✳ ✳ for configuration mode.	PORT / ENTRY / PORT / ENTRY / PORT / ENTRY 10 21 32 11 22 33 12 23 34 13 24 35 14 25 36 15 26 37 16 27 38 17 28 39 18 29 40 19 30 41 20 31 **DEFAULT = NOT AS'GND**
Do Not Disturb (DND) Override: Selected stations can be provided with DND override capability. This capability allows the station to override a do not disturb condition and ring a station operating in that mode. ***NOTE:*** *Executive override, described above, is automatically enabled when this feature is programmed* ***NOTE:*** *Also see the discussion on DND Inhibit on page 4-8*	1. Dial **53.** *"STATION FEATURES"* 2. Dial **03.** *"DND OVERRIDE "* 3. Select station ports to be programmed: - Station 10 - 73: Dial **10 - 73** or Press **C10 - C73.** 4. Dial ✳ for next station feature. **-OR-** Dial ✳ ✳ for configuration mode.	PORT / ENTRY / PORT / ENTRY / PORT / ENTRY 10 21 32 11 22 33 12 23 34 13 24 35 14 25 36 15 26 37 16 27 38 17 28 39 18 29 40 19 30 41 20 31 **DEFAULT = NOT AS'GND**
Voice Announce Blocking: This feature allows the user of a multiline station to block voice-announced intercom signalling at their station.	1. Dial **53.** *"STATION FEATURES"* 2. Dial **04.** *"VOICE BLOCK "* 3. Select station ports to be programmed: - Station 10 - 73: Dial **10 - 73** or Press **C10 - C73.** 4. Dial ✳ for next station feature. **-OR-** Dial ✳ ✳ for configuration mode.	PORT / ENTRY / PORT / ENTRY / PORT / ENTRY 10 21 32 11 22 33 12 23 34 13 24 35 14 25 36 15 26 37 16 27 38 17 28 39 18 29 40 19 30 41 20 31 **DEFAULT = NOT AS'GND**

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
System Speed Dial Toll Restriction: When this feature is enabled, toll restriction tables that are applied to calls made from a station are also applied to system speed dial calls when they are made from this station.	1. Dial 53. *"STATION FEATURES"* 2. Dial 05. *"SYS SPD TOLL RST"* 3. Select station ports to be programmed: - Station 10 - 73: Dial 10 - 73 or Press C10 - C73. 4. Dial ✳ for next station feature. -OR- Dial ✳ ✳ for configuration mode.	PORT / ENTRY / PORT / ENTRY / PORT / ENTRY 10 / 21 / 32 11 / 22 / 33 12 / 23 / 34 13 / 24 / 35 14 / 25 / 36 15 / 26 / 37 16 / 27 / 38 17 / 28 / 39 18 / 29 / 40 19 / 30 / 41 20 / 31 DEFAULT = NOT AS'GND
Message Wait Originate: A station that is programmed with this feature can control the message waiting light at other stations in the system. ***NOTE:*** *This feature must be programmed at a station that is programmed as a central message desk (see page 4-25 for details).*	1. Dial 53. *"STATION FEATURES"* 2. Dial 06. *"MSG. WAIT ORIG."* 3. Select station ports to be programmed: - Station 10 - 73: Dial 10 - 73 or Press C10 - C73. 4. Dial ✳ for next station feature. -OR- Dial ✳ ✳ for configuration mode.	PORT / ENTRY / PORT / ENTRY / PORT / ENTRY 10 / 21 / 32 11 / 22 / 33 12 / 23 / 34 13 / 24 / 35 14 / 25 / 36 15 / 26 / 37 16 / 27 / 38 17 / 28 / 39 18 / 29 / 40 19 / 30 / 41 20 / 31 DEFAULT = NOT AS'GND
Thru Dialing/OPX: When enabled at the OPX station port, DTMF signalling tones can be generated over the intercom line and through any line connection.	1. Dial 53. *"STATION FEATURES"* 2. Dial 07. *"OPX THRU DIALING"* 3. Select station ports to be programmed: - Station 10 - 73: Dial 10 - 73 or Press C10 - C73. 4. Dial ✳ for next station feature. -OR- Dial ✳ ✳ for configuration mode.	PORT / ENTRY / PORT / ENTRY / PORT / ENTRY 10 / 21 / 32 11 / 22 / 33 12 / 23 / 34 13 / 24 / 35 14 / 25 / 36 15 / 26 / 37 16 / 27 / 38 17 / 28 / 39 18 / 29 / 40 19 / 30 / 41 20 / 31 DEFAULT = NOT AS'GND

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Central Message Desk: One station in the system can be designated as the central message desk and be arranged for exclusive messaging waiting control. *NOTE: This station will have the message wait originate feature automatically enabled when this feature is programmed. See page 4-24 for details.*	1. Dial **53.** *"STATION FEATURES"* 2. Dial **08.** *"MSG DESK "* 3. Select station ports to be programmed: - Station 10 - 73: Dial **10 - 73** or Press **C10 - C73.** 4. Dial ✳ for next station feature. **-OR-** Dial ✳ ✳ for configuration mode.	PORT / ENTRY / PORT / ENTRY / PORT / ENTRY 10 21 32 11 22 33 12 23 34 13 24 35 14 25 36 15 26 37 16 27 38 17 28 39 18 29 40 19 30 41 20 31 DEFAULT = NOT AS'GND
Ringing Line Preference: A ringing line will automatically be answered when a station is taken off-hook.	1. Dial **53.** *"STATION FEATURES"* 2. Dial **09.** *"RING LINE PREF. "* 3. Select station ports to be programmed: - Station 10 - 73: Dial **10 - 73** or Press **C10 - C73.** 4. Dial ✳ for next station feature. **-OR-** Dial ✳ ✳ for configuration mode.	PORT / ENTRY / PORT / ENTRY / PORT / ENTRY 10 21 32 11 22 33 12 23 34 13 24 35 14 25 36 15 26 37 16 27 38 17 28 39 18 29 40 19 30 41 20 31 DEFAULT = NOT AS'GND
Service Observing: Selected stations can be given the capability to monitor, in an unannounced manner, an active call at another station. *NOTE: Executive override is automatically enabled when this feature is programmed. See page 4-23 for details.*	1. Dial **53.** *"STATION FEATURES"* 2. Dial **10.** *"SERVICE OBSERVE "* 3. Select station ports to be programmed: - Station 10 - 73: Dial **10 - 73** or Press **C10 - C73.** 4. Dial ✳ for next station feature. **-OR-** Dial ✳ ✳ for configuration mode.	PORT / ENTRY / PORT / ENTRY / PORT / ENTRY 10 21 32 11 22 33 12 23 34 13 24 35 14 25 36 15 26 37 16 27 38 17 28 39 18 29 40 19 30 41 20 31 DEFAULT = NOT AS'GND

Press SPKR to end.

Base level ITCM * # 7 4 6 *.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Automatic Hold: With this feature enabled, when the station user presses another line button while already on a line call, the system will automatically place the existing outside call on hold.	1. Dial 53. *"STATION FEATURES"* 2. Dial 11. *"AUTO HOLD "* 3. Select station ports to be programmed: - Station 10 - 73: Dial 10 - 73 or Press C10 - C73. 4. Dial * for next station feature. -OR- Dial * * for configuration mode.	PORT / ENTRY / PORT / ENTRY / PORT / ENTRY 10 21 32 11 22 33 12 23 34 13 24 35 14 25 36 15 26 37 16 27 38 17 28 39 18 29 40 19 30 41 20 31 DEFAULT = NOT AS'GND
Automatic Hold For Intercom: With this feature enabled, when the user presses another intercom button or line button while already on an intercom call, the system will automatically place the existing intercom call on hold.	1. Dial 53. *"STATION FEATURES"* 2. Dial 12. *"ITCM AUTO HOLD"* 3. Select station ports to be programmed: - Station 10 - 73: Dial 10 - 73 or Press C10 - C73. 4. Dial * for next station feature. -OR- Dial * * for configuration mode.	PORT / ENTRY / PORT / ENTRY / PORT / ENTRY 10 21 32 11 22 33 12 23 34 13 24 35 14 25 36 15 26 37 16 27 38 17 28 39 18 29 40 19 30 41 20 31 DEFAULT = NOT AS'GND
Headset Interface: A station port can be enabled to allow headset operation with a special telephone that provides this feature.	1. Dial 53. *"STATION FEATURES"* 2. Dial 13. *"HEADSET MODE "* 3. Select station ports to be programmed: - Station 10 - 73: Dial 10 - 73 or Press C10 - C73. 4. Dial * for next station feature. -OR- Dial * * for configuration mode.	PORT / ENTRY / PORT / ENTRY / PORT / ENTRY 10 21 32 11 22 33 12 23 34 13 24 35 14 25 36 15 26 37 16 27 38 17 28 39 18 29 40 19 30 41 20 31 DEFAULT = NOT AS'GND

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Personal Ringing Tones: A station can be programmed to ring in one of four distinctive tones: 1. 509/610 Hz @ 10 Hz warble 2. 763/1016 Hz @ 10 Hz warble 3. 509/610 Hz @ 19 Hz warble 4. 763/1016 Hz @ 19 Hz warble	1. Dial 53. *"STATION FEATURES"* 2. Dial 14. *"RINGING TONE "* 3. Select ringing tone. - Dial 1 for tone 1. *"RINGING TONE 1 "* - Dial 2 for tone 2. *"RINGING TONE 2 "* - Dial 3 for tone 3. *"RINGING TONE 3 "* - Dial 4 for tone 4. *"RINGING TONE 4 "* 4. Select station ports to be programmed: - Station 10 - 73: Dial 10 - 73 or Press C10 - C73. 5. Dial ✳ then repeat steps 3 through 4 for next ringing tone assignment. -OR- Dial ✳ ✳ for next station feature. Dial ✳ ✳ ✳ for configuration mode.	PORT / ENTRY / PORT / ENTRY / PORT / ENTRY 10 21 32 11 22 33 12 23 34 13 24 35 14 25 36 15 26 37 16 27 38 17 28 39 18 29 40 19 30 41 20 31 DEFAULT = TONE 1
Prime Line: A pre-programmed group of lines, one individual line, or an intercom line can be designated to a particular station where it is automatically selected for use when that station is taken off-hook.	1. Dial 53. *"STATION FEATURES"* 2. Dial 15. *"PRIME LINE "* 3a. Select individual prime line. *"PRIME LINE XX "* - Line port 1-8 = Dial 01 - 08 or Press B1 - B8. - Line port 9-16 = Dial 09 - 16 or Press A1 - A8. - Line port 17-24 = Dial 17 - 24 or press HOLD ,B1 - B8. 3b. Select prime group. - Dial 51 for group 1. *"PRIME LINE GRP X"* - Dial 52 for group 2. *"PRIME LINE GRP X"* - Dial 53 for group 3. *"PRIME LINE GRP X"* - Dial 54 for group 4. *"PRIME LINE GRP X"* 3c. Select prime intercom. - Dial 50 for intercom line. *"PRIME INTERCOM"* 4. Select station ports to receive this assignment: - Station 10 - 73: Dial 10 - 73 or Press C10 - C73. 5. Dial ✳ and repeat steps 3a, 3b, or 3c and step 4 for next prime line, group or intercom assignment. -OR- Dial ✳ ✳ for next station feature. Dial ✳ ✳ ✳ for configuration mode.	PORT / ENTRY / PORT / ENTRY / PORT / ENTRY 10 21 32 11 22 33 12 23 34 13 24 35 14 25 36 15 26 37 16 27 38 17 28 39 18 29 40 19 30 41 20 31 DEFAULT = NONE AS'GND

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Group Call Pickup: If a call rings to any station in an arranged group of stations, it can be answered at any other station in that group. A station user dials a group pickup code to answer the ringing call. Assign stations to call pickup groups with this procedure.	1. Dial 53. *"STATION FEATURES"* 2. Dial 16. *"GRP. CALL PICKUP"* 3. Dial 0 for no group alignment. -OR- Dial 1 - 4 for group 1 - 4 *"GROUP X "* 4. Select station ports to be programmed: - Station 10 - 73: Dial 10 - 73 or Press C10 - C73. Dial ✳ and repeat steps 3 and 4 for next group assignment. -OR- Dial ✳ ✳ for next station feature. -OR- Dial ✳ ✳ ✳ for configuration mode. *NOTE: To remove a station from a group assign the station to group 0.*	PORT / ENTRY / PORT / ENTRY / PORT / ENTRY 10 21 32 11 22 33 12 23 34 13 24 35 14 25 36 15 26 37 16 27 38 17 28 39 18 29 40 19 30 41 20 31 DEFAULT = ALL STA. IN GP. 1
Dedicated Intercom For Attendant (Reserved Intercom Link): An intercom link can be reserved for exclusive use by a station. This feature should be used for stations that process calls such as attendant, etc. and only within systems that have high call traffic.	1. Dial 53. *"STATION FEATURES"* 2. Dial 17. *"RESERVE ITCM "* Dial 1 - 5 for link 1 - 5. *"RESERVE ITCM X "* 3. Select station ports to be programmed: - Station 10 - 73: Dial 10 - 73 or Press C10 - C73. -OR- Dial ✳ and repeat steps 3 and 4 to reserve another link. -OR- Dial ✳ ✳ for next station feature. -OR- Dial ✳ ✳ ✳ for configuration mode.	PORT / ENTRY / PORT / ENTRY / PORT / ENTRY 10 21 32 11 22 33 12 23 34 13 24 35 14 25 36 15 26 37 16 27 38 17 28 39 18 29 40 19 30 41 20 31 DEFAULT = NOT AS'GND

Press SPKR to end.

e level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Intercom Hunt Group: Stations can be linked together to form an intercom hunt group. Calls to a busy station in a hunt group will search the group for an idle station to ring.	1. Dial 53. *"STATION FEATURES"* 2. Dial 18. *"HUNT LINK "* 3. Select first linking station. - Station 10 - 73: Dial **10 - 73** or Press **C10 - C73.** 4. Select second linking station - Station 10 - 73: Dial **10 - 73** or Press **C10 - C73.** ***NOTE:*** *Disable a link, if desired, by linking a station to itself. (Example A: 17 to 16, 18 to 16 and 19 to 16; Example B: 16 to 17, 17 to 18, and 18 to 16; Example C: 16 to 16 to disable link.)* 5. Dial S for another link **-OR-** Dial ✳ ✳ for next station feature. **-OR-** Dial ✳ ✳ ✳ for configuration mode.	PORT / ENTRY / PORT / ENTRY / PORT / ENTRY 10 / 21 / 32 11 / 22 / 33 12 / 23 / 34 13 / 24 / 35 14 / 25 / 36 15 / 26 / 37 16 / 27 / 38 17 / 28 / 39 18 / 29 / 40 19 / 30 / 41 20 / 31 DEFAULT = NONE AS'GND
Direct Department Calling (Station): Stations can be placed together in the same department. This feature allows an incoming line call or a department intercom call to search for another available station within a department whenever encountering a busy or a ring-no-answer at a departmental station. There can be up to four departments with up to sixteen stations in each department. One additional station can be placed in each department to serve as a termination station. Calls that roll to a termination station will follow a call forward if it is set at the termination station. ***NOTE:*** *See page 4-15 for department line assignment and page 4-22 for department access code assignment.*	1. Dial 53. *"STATION FEATURES"* 2. Dial 19. *"DEPT. CALLING "* 3. Dial 1 - 4 for dept. 1 - 4. *"DEPARTMENT X* 4. Select department stations: - Station 10 - 73: Dial **10 - 73** or Press **C10 - C73.** ***NOTE:*** *Remove a station from a department by selecting it again.* 5. Dial ✳ and repeat steps 3 and 4 to program next departments. 6. Dial **5 - 8** to pick termination station for dept. 1 - 4. *"DEPARTMENT X "* 7. Select termination station: - Station 10 - 73: Dial **10 - 73** or Press **C10 - C73.** 8. Dial ✳ and repeat steps 6 and 7 to program next termination station/department. **-OR-** Dial ✳ ✳ for next station feature. **-OR-** Dial ✳ ✳ ✳ for configuration mode.	PORT / ENTRY / PORT / ENTRY / PORT / ENTRY 10 / 21 / 32 11 / 22 / 33 12 / 23 / 34 13 / 24 / 35 14 / 25 / 36 15 / 26 / 37 16 / 27 / 38 17 / 28 / 39 18 / 29 / 40 19 / 30 / 41 20 / 31 DEFAULT = NONE AS'GND **Press SPKR to end.**

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Audible Monitoring: The DSS/BLF at a multiline station provides a visual indication of idle, busy and line ringing status of monitored stations. Audible indication of direct and delayed ringing can also be provided at selected stations by this programming procedure. Visual indication must be program enabled (refer to system configuration "station monitoring" procedure on page 4-9) before this audible monitoring can be enabled.	1. Dial 53. *"STATION FEATURES"* 2. Dial 20. *"AUDIBLE MONITOR "* 3. Select ringing. - Dial 1 for no audible monitoring. *"NONE "* - Dial 2 for direct ring. *"DIRECT RING "* - Dial 3 for delayed ring. *"DELAYED RING "* 4. Select stations for programming: - Station 10 - 73: Dial **10 - 73** or Press **C10 - C73.** 5. Dial ✳ and repeat steps 3 and 4 if required. **-OR-** Dial ✳ ✳ for next station feature. **-OR-** Dial ✳ ✳ ✳ for configuration mode.	PORT / ENTRY / PORT / ENTRY / PORT / ENTRY 10 21 32 11 22 33 12 23 34 13 24 35 14 25 36 15 26 37 16 27 38 17 28 39 18 29 40 19 30 41 20 31 **DEFAULT = NONE AS'GND**
Call Forward On Busy/Ring - No-Answer (RNA): Call forwarding of busy and ring-no-answer calls that are made to a particular station can be automatic. Those calls are sent to any idle station that is associated, either by intercom hunt group or by department, with the called station. Use this feature to arrange for calls to cycle rapidly through such associated stations testing each one in turn with several rings. ***NOTE:*** *Also program the system intercom signalling as tone for the first choice. See page 4-8.*	1. Dial 53. *"STATION FEATURES"* 2. Dial 21. *"CALL FWD RNA "* 3. Dial 0 - 9 for 0 - 9 rings before forwarding. *"RING = X "* 4. Select stations for which calls will be forwarded after selected number of rings: - Station 10 - 73: Dial **10 - 73** or Press **C10 - C73.** 5. Dial ✳ and repeat steps 3 and 4 for additional ring/station assignments. **-OR-** Dial ✳ ✳ for next station feature. **-OR-** Dial ✳ ✳ ✳ for configuration mode.	PORT / ENTRY / PORT / ENTRY / PORT / ENTRY 10 21 32 11 22 33 12 23 34 13 24 35 14 25 36 15 26 37 16 27 38 17 28 39 18 29 40 19 30 41 20 31 **DEFAULT = NOT AS'GND**

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Station Message Detail Account (SMDA) Department (Stations): Stations can be arranged together in one of eight different SMDA departments. This makes it possible for an SMDA report to be generated that will only include information concerning that specific station arrangement. *NOTE: Also assign SMDA department numbers. See page 4-68.*	1. Dial 53. *"STATION FEATURES"* 2. Dial 22. *"SMDA DEPARTMENTS"* 3. Dial 0 for no SMDA dept. assigned. *"DEPARTMENT 0 "* -OR- Dial 1 - 8 or press A1 - A8 for dept 1 - 8. *"DEPARTMENT X "* 4. Select stations for SMDA department: - Station 10 - 73: Dial 10 - 73 or Press C10 - C73. 5. Dial ✳ and repeat steps 3 and 4 for additional department/station assignments. -OR- Dial ✳ ✳ for next station feature. -OR- Dial ✳ ✳ ✳ for configuration mode.	PORT / ENTRY / PORT / ENTRY / PORT / ENTRY 10 / 21 / 32 11 / 22 / 33 12 / 23 / 34 13 / 24 / 35 14 / 25 / 36 15 / 26 / 37 16 / 27 / 38 17 / 28 / 39 18 / 29 / 40 19 / 30 / 41 20 / 31 DEFAULT = NOT AS'GND
Flexible Ringing Assignment Of PA Port: One station per system that is programmed as a PA port can also be programmed for ringing. This arrangement will allow the port to serve as a "night bell" when used in conjunction with the night transfer of ringing feature. *NOTE: Assign a PA port per programming instructions on page 4-21.*	1. Dial 53. *"STATION FEATURES"* 2. Dial 23 to enable ringing at PA port. *"PA RING PORT "* 3. Identify PA port: - Station 10 - 73: Dial 10 - 73 or Press C10 - C73. 4. Dial ✳ for next station feature. -OR- Dial ✳ ✳ for configuration mode.	PORT / ENTRY / PORT / ENTRY / PORT / ENTRY 10 / 21 / 32 11 / 22 / 33 12 / 23 / 34 13 / 24 / 35 14 / 25 / 36 15 / 26 / 37 16 / 27 / 38 17 / 28 / 39 18 / 29 / 40 19 / 30 / 41 20 / 31 DEFAULT = NOT AS'GND

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD

Secure Off-Hook Voice Announce Capability: With the off-hook voice announce feature, an announcement can be made from one station to another busy station. Off-hook voice announce capability is available in either a secure (SOHVA) or non-secure (OHVA) manner. The SOHVA manner prevents the distant party at the busy station from hearing the announcement or the reply. It also allows non-verbal responses via the LCD at the announcing station. The OHVA manner does not prevent the distant party from hearing the announcement or verbal reply but does allow handsfree verbal response to the announcement.

To provide SOHVA or OHVA, employ a telephone that has integrated off-hook voice announce capability.

***NOTE:** Special wiring to both ports of a pair of station ports is required to provide either OHVA or SOHVA operation. Refer to the station connection details found in Chapter 3. Station ports are defaulted to provide SOHVA (secure) operation to telephones equipped with integrated capability. If OHVA (non-secure) operation is planned, with these integrated capability telephones, this programming step must be taken.*

1. Dial 53. *"STATION FEATURES"*
2. Dial 24. *"SECURE OHVA "*
3. Select OHVA (non-secure) ports for integrated capability telephones:
   - Station 10 - 73: Dial 10 - 73 or Press C10 - C73.
   LED On = SOHVA port.
   LED Off = OHVA port
4. Dial ✳ for station feature.
   -OR-
   Dial ✳ ✳ for configuration mode.

PORT	ENTRY	PORT	ENTRY	PORT	ENTRY
10		21		32	
11		22		33	
12		23		34	
13		24		35	
14		25		36	
15		26		37	
16		27		38	
17		28		39	
18		29		40	
19		30		41	
20		31			

DEFAULT = SOHVA PORTS

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Integrated Off-Hook Voice Announce Capability: Stations can be equipped to receive off-hook voice announce messages in two different ways. The messages may be secure off-hook voice announcements (SOHVA) or non-secure off-hook voice announce (OHVA). An off-hook voice announce station consists of a telephone that has integrated off-hook voice announce capability installed at paired station ports. Station ports are defaulted to support the SOHVA feature. When the OHVA feature is to be supported, the station port must be programmed per this procedure to support a non-integrated station. ***NOTE:*** *The paired port must always be programmed as a console with call announce port (see page 4-21) regardless of whether SOHVA or OHVA is being employed. Also refer to page 3-5 for connection details.*	1. Dial **53**. *"STATION FEATURES"* 2. Dial **25**. *"INTEGRATED OHVA "* 3. Select non-integrated station ports: - Station 10 - 73: Dial **10 - 73** or Press **C10 - C73**. 4. Dial ✳ for next station feature. LED On = integrated port enabled. **-OR-** Dial ✳ ✳ for configuration mode.	

PORT	ENTRY	PORT	ENTRY	PORT	ENTRY
10		21		32	
11		22		33	
12		23		34	
13		24		35	
14		25		36	
15		26		37	
16		27		38	
17		28		39	
18		29		40	
19		30		41	
20		31			

DEFAULT = INTEGRATED CAPABILITY PORT

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
LCD Speakerphone Display Of Costed Calls: When call costing is being employed with the system, a station port can be programmed to provide the cost of a call to a station as it is being made for display at a connected LCD speakerphone.	1. Dial 53. *"STATION FEATURES"* 2. Dial 27. *"LCD CALL COST "* 3. Select station ports to receive costing: - Station 10 - 73: Dial 10 - 73 or Press C10 - C73. LED On = Call cost display enabled 4. Dial ✳ for next station feature. -OR- Dial ✳ ✳ for configuration mode.	PORT / ENTRY / PORT / ENTRY / PORT / ENTRY 10 21 32 11 22 33 12 23 34 13 24 35 14 25 36 15 26 37 16 27 38 17 28 39 18 29 40 19 30 41 20 31 DEFAULT = CALL COST DISPLAY DISABLED
Data Security Port: While port is active on a call, this feature prevents incoming tones associated with other system features from interrupting the active call.	1. Dial 53. *"STATION FEATURES"* 2. Dial 26. *"DATA SECURE PORT"* 3. Select station port for programming: - Station 10 - 73: Dial 10 - 73 or Press C10 - C73. 4. Dial ✳ for next station feature. -OR- Dial ✳ ✳ for configuration mode.	PORT / ENTRY / PORT / ENTRY / PORT / ENTRY 10 21 32 11 22 33 12 23 34 13 24 35 14 25 36 15 26 37 16 27 38 17 28 39 18 29 40 19 30 41 20 31 DEFAULT = NON ASSIGNED

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Flexible Ringing Assignments: Ringing assignments are programmed on a per station/per line basis. Ringing is controlled for every line that has appearance at a station. Immediate, or direct, ringing can be assigned to some lines and delayed ringing to others. *NOTE: Do not program direct ringing for lines that are assigned as department lines (see page 4-15).*	**Direct Ring** 1. Dial 54. *"STA/LINE CONFIG."* 2. Dial 1. *"DIRECT RING "* 3. Select line ports for direct ringing: - Line port 1-8 = Dial 01 - 08 or Press B1 - B8. - Line port 9-16 = Dial 09 - 16 or Press A1 - A8. - Line port 17-24 = Dial 17 - 24 or press HOLD,B1 - B8. 4. Dial # when all line ports are selected. 5. Select all station ports to have direct ring of selected line: - Station 10 - 73: Dial 10 - 73 or Press C10 - C73. 6. Dial ✳ and repeat steps 3 through 5 for further ring assignment. -OR- Dial ✳ ✳ for next station/line configuration . **Delayed Ringing** 1. Dial 2. *"DELAY RING "* 2. Select line ports for delayed ringing: - Line port 1-8 = Dial 01 - 08 or Press B1 - B8. - Line port 9-16 = Dial 09 - 16 or Press A1 - A8. - Line port 17-24 = Dial 17 - 24 or press HOLD, B1 - B8. 3. Dial # when all line ports are selected. 4. Select station ports to be programmed: - Station 10 - 73: Dial 10 - 73 or Press C10 - C73. 5. Dial ✳ when all station ports are selected. -OR- Dial ✳ ✳ for configuration mode.	

PORT	ENTRY	PORT	ENTRY	PORT	ENTRY
10		21		32	
11		22		33	
12		23		34	
13		24	✓	35	
14		25		36	
15		26		37	
16		27	✓	38	
17		28		39	
18		29		40	
19		30	✓	41	
20		31			

DEFAULT = ALL LINES DIRECT RING AT STA 10 & 17

RECORD DELAYED RINGING ASSIGNMENT ON FLEXIBLE RINGING ASSIGNMENT CHART

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Night Transfer (of ringing): The normal ringing (day ringing) of incoming lines can be transferred to a particular station or stations by the attendant for off-hook or special purpose answering. Stations are programmed to receive the night transfer.	1. Dial **54.** *"STA/LINE CONFIG"* 2. Dial **3.** *"NIGHT RING"* 3. Select all line ports that are to be night transferred: - Line port 1-8 = Dial **01 - 08** or Press **B1 - B8.** - Line port 9-16 = Dial **09 - 16** or Press **A1 - A8.** - Line port 17-24 = Dial **17 - 24** or press **HOLD, B1 - B8.** 4. Dial **#** when all line ports are selected. 5. Select station ports to receive night transfer ringing on selected lines: - Station 10 - 73: Dial **10 - 73** or Press **C10 - C73.** 6. Dial ✳ for further ring assignment. **-OR-** Dial ✳ ✳ for further station/line configuration. **-OR-** Dial ✳ ✳ ✳ for configuration mode.	PORT / ENTRY / PORT / ENTRY / PORT / ENTRY 10 21 32 11 22 33 12 23 34 13 24 35 14 25 36 15 26 37 16 27 38 17 28 39 18 29 40 19 30 41 20 31 **DEFAULT = ALL LINES DIRECT RING AT STA 10 & 17**
Privacy Release: A line can be made non-private at a particular station while remaining private at all other stations. This procedure programs stations to automatically release privacy while on certain lines. With this arrangement, other stations can join that particular station whenever it is on the privacy release line.	1. Dial **54.** *"STA/LINE CONFIG."* 2. Dial **4.** *"PRIVACY RELEASE"* 3. Select all line ports to have privacy released: - Line port 1-8 = Dial **01 - 08** or Press **B1 - B8.** - Line port 9-16 = Dial **09 - 16** or Press **A1 - A8.** - Line port 17-24 = Dial **17 - 24** or press **HOLD,B1 - B8.** 4. Dial **#** when all line ports are selected. 5. Select station ports to have privacy released lines: - Station 10 - 73: Dial **10 - 73** or Press **C10 - C73.** 6. Dial ✳ for further ring assignment. **-OR-** Dial ✳ ✳ for further station/line configuration. **-OR-** Dial ✳ ✳ ✳ for configuration mode.	PORT / ENTRY / PORT / ENTRY / PORT / ENTRY 10 21 32 11 22 33 12 23 34 13 24 35 14 25 36 15 26 37 16 27 38 17 28 39 18 29 40 19 30 41 20 31 **DEFAULT = ALL LINES PRIVATE**

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Access Denied: Access to particular lines can be denied to certain stations. A station user cannot select a denied line.	1. Dial 54. *"STA/LINE CONFIG."* 2. Dial 5. *"ACCESS DENY"* 3. Select line ports to have access denied: - Line port 1-8 = Dial 01 - 08 or Press B1 - B8. - Line port 9-16 = Dial 09 - 16 or Press A1 - A8. - Line port 17-24 = Dial 17 - 24 or press HOLD, B1 - B8. 4. Dial # when all line ports are selected. 5. Select station ports to be denied access to selected lines: - Station 10 - 73: Dial 10 - 73 or Press C10 - C73. 6. Dial ✳ for further access deny assignment. -OR- Dial ✳ ✳ for station/line configuration. -OR- Dial ✳ ✳ ✳ for configuration mode.	PORT / ENTRY / PORT / ENTRY / PORT / ENTRY 10 / 21 / 32 11 / 22 / 33 12 / 23 / 34 13 / 24 / 35 14 / 25 / 36 15 / 26 / 37 16 / 27 / 38 17 / 28 / 39 18 / 29 / 40 19 / 30 / 41 20 / 31 DEFAULT = ACCESS NOT DENIED
Call Origination Denied: The ability to originate calls on certain lines can be denied to individual stations. The ability to answer incoming calls on these lines is still allowed.	1. Dial 54. *"STA/LINE CONFIG."* 2. Dial 6. *"ORIGINATION DENY"* 3. Select line ports to have origination denied: - Line port 1-8 = Dial 01 - 08 or Press B1 - B8. - Line port 9-16 = Dial 09 - 16 or Press A1 - A8. - Line port 17-24 = Dial 17 - 24 or press HOLD, B1 - B8. 4. Dial # when all line ports are selected. 5. Select station ports to be denied origination to selected lines: - Station 10 - 73: Dial 10 - 73 or Press C10 - C73. 6. Dial ✳ for further origination deny assignment. -OR- Dial ✳ ✳ for station/line configuration. -OR- Dial ✳ ✳ ✳ for configuration mode.	PORT / ENTRY / PORT / ENTRY / PORT / ENTRY 10 / 21 / 32 11 / 22 / 33 12 / 23 / 34 13 / 24 / 35 14 / 25 / 36 15 / 26 / 37 16 / 27 / 38 17 / 28 / 39 18 / 29 / 40 19 / 30 / 41 20 / 31 DEFAULT = NO ORIG. DENIED AS'GND

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Idle Line Preference: With idle line preference enabled, taking a station off-hook will automatically connect it to any assigned and idle line programmed for this purpose.	1. Dial **54.** *"STA/LINE CONFIG."* 2. Dial **7.** *"IDLE LINE PREF."* 3. Select line ports to be assigned: - Line port 1-8 = Dial **01 - 08** or Press **B1 - B8.** - Line port 9-16 = Dial **09 - 16** or Press **A1 - A8.** - Line port 17-24 = Dial **17 - 24** or press **HOLD, B1 - B8.** 4. Dial **#** when all line ports are selected. 5. Select station ports to have idle line preference on selected lines: - Station 10 - 73: Dial **10 - 73** or Press **C10 - C73.** 6. Dial ✳ for further idle line preference. **-OR-** Dial ✳ ✳ for station/line configuration. **-OR-** Dial ✳ ✳ ✳ for configuration mode.	PORT / ENTRY / PORT / ENTRY / PORT / ENTRY 10 21 32 11 22 33 12 23 34 13 24 35 14 25 36 15 26 37 16 27 38 17 28 39 18 29 40 19 30 41 20 31 **DEFAULT = NONE AS'GND**
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 voice announcements with the telephone handset. Announcements can be made to certain areas of the system or to all stations in the system. ***NOTE:** A button can be assigned for paging access per the procedure on given page 4-44.*	1. Dial **55.** *"PAGING"* 2. Select paging format. - Dial **1** for zone 1 originate. *"ORIGINATE ZONE 1"* - Dial **2** for zone 2 originate. *"ORIGINATE ZONE 2"* - Dial **3** for zone 3 originate *"ORIGINATE ZONE 3"* - Dial **4** for all-call originate. *"ALL-CALL ORIG."* - Dial **5** for zone 1 receive *"RECEIVE ZONE 1"* - Dial **6** for zone 2 receive *"RECEIVE ZONE 2"* - Dial **7** for zone 3 receive *"RECEIVE ZONE 3"* - Dial **8** for all-call receive. *"ALL-CALL RECEIVE"* - Dial **9** to clear all assignments. *"CLEAR PAGING"* 3. Select station ports to receive selected paging format: - Station 10 - 73: Dial **10 - 73** or Press **C10 - C73.** 4. Dial ✳ for further paging assignment. **-OR-** Dial ✳ ✳ for configuration mode.	PORT / ENTRY / PORT / ENTRY / PORT / ENTRY 10 21 32 11 22 33 12 23 34 13 24 35 14 25 36 15 26 37 16 27 38 17 28 39 18 29 40 19 30 41 20 31 **DEFAULT = ALL-CALL TO ALL STATIONS**

Press SPKR to end.

level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Non-Square System: Each programmable button at every multiline station can be assigned individually (mapped) to select any line assigned to that station or to provide other feature selections. Programmable buttons can be assigned as direct station select (DSS) buttons to provide one-button access to system stations. Programmable buttons can be assigned as idle to provide autodial buttons for the user. Idle programmable buttons B1, B2 and B3 serve as dynamic line buttons. These buttons allow the system to temporarily assign a line appearance to a station which normally does not have that line assigned to it. That line will appear at a dynamic line button. While the line is in appearance at a dynamic line button, any normal call handling operations can be performed. Refer to **Figure 4-1** on Page 4-50 for programmable button locations.		SEE CHART AT END OF THIS PROCEDURE
Default Button Assignments	1. Dial **56.** *"BUTTON MAPPING "* 2. Dial **01.** *"BUTTON DEFAULT "* 3. Select station ports to be defaulted: - Station 10 - 73: Dial **10 - 73** or Press **C10 - C73.** 4. Dial ✳ for next default assignment. **-OR-** Dial ✳ ✳ for next button mapping assignemnt. **-OR-** Dial ✳ ✳ ✳ for configuration mode.	

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Non-Square System Programming - continued		
Assign Lines To Buttons	1. Dial **56**. *"BUTTON MAPPING "* 2. Dial **02**. *"ASSIGN LINE "* 3. Select button to be assigned to line: - Press buttons **A1 - A16, B1 - B8,** and **D1 - D16** (or dial **200 - 215** for buttons D1 - D16). 4. Assign line port to selected button. - Line port 1-8 = Dial **01 - 08** or Press **B1 - B8**. - Line port 9-16 = Dial **09 - 16** or Press **A1 - A8**. - Line port 17-24 = Dial **17 - 24** or Press **HOLD, A1 - A8**. 5. Repeat steps 3 and 4 until all lines are assigned to a button. 6. Dial **#** to finish button mapping. 7. Select all station ports to receive this selected button mapping: - Station 10 - 73: Dial **10 - 73** or Press **C10 - C73**. 8. Dial ✳ for further line/button assignment. **-OR-** Dial ✳ ✳ for next button mapping feature. **-OR-** Dial ✳ ✳ ✳ for configuration mode.	**SEE CHART AT END OF THIS PROCEDURE**

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Non-Square System Programming - Continued		
Assign DSS/BLF To Buttons	1. Dial **56.** *"BUTTON MAPPING "* 2. Dial **03.** *" ASSIGN DSS/BLF "* 3. Select button to be assigned to DSS: - Press buttons **A1 - A16, B1 - B8,** and **D1 - D16** (or dial **200 - 215** for buttons D1 - D16). 4. Assign station port to selected button: - Station 10 - 73: Dial **10 - 73** or Press **C10 - C73.** 5. Repeat steps 3 and 4 until all station ports are assigned to DSS buttons. 6. Dial **#** to end button/station port assignment. 7. Select station ports to receive these DSS assignments: - Station 10 - 73: Dial **10 - 73** or Press **C10 - C73.** 8. Dial ✳ for further button/station DSS assignment. **-OR-** Dial ✳ ✳ for next button mapping feature. **-OR-** Dial ✳ ✳ ✳ for configuration mode.	

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Non-Square System Programming - continued		
Blank Buttons For User Autodial and Dynamic Line Buttons (B1, B2 & B3) ***NOTE:*** *When blanking buttons, be sure they are currently idle (previously assigned feature not currently selected for use at a station) before they are blanked* Dynamic line buttons can be relocated from the B-field (B1, B2, B3 to the A-field (A14, A15, A16) on telephone models which provide an A16 button.	1. Dial **56.** *"BUTTON MAPPING "* 2. Dial **04.** *"BLANK/AUTODIAL "* 3. Select all buttons to blanked for user autodial purposes: - Press buttons **A1 - A16, B1 - B8,** and **D1 - D16** (or dial **200 - 215** for buttons D1 - D16). 4. Dial **#** to end button blanking assignment. 5. Select station ports to receive these blanked button assignments: - Station 10 - 73: Dial **10 - 73** or Press **C10 - C73.** 6. Dial ✳ for further button blanking. **-OR-** Dial ✳ ✳ for next feature. **-OR-** Dial ✳ ✳ ✳ for configuration mode.	**SEE CHART AT END OF THIS PROCEDURE** To reassign dynamic line key location, 1. Dial **56.** *"BUTTON MAPPING"* 2. Dial **16.** *"DYNAMIC KEYS X"* 3. Press **A1** or dial **01** for A-field locations **-OR-** Press **A2** or dial **02** for B-field location. 4. Select station port to be programmed: - Stations 10 - 73: Dial **10 - 73** or press **C10 - C73.** 5. Dial ✳ for further key blanking. **-OR-** Dial ✳ ✳ for next feature.
Dual Intercom Button: Stations can be programmed to provide a second intercom button.	1. Dial **56.** *"BUTTON MAPPING "* 2. Dial **05.** *"ASSIGN 2ND ITCM "* 3. Select button to be assigned for intercom selection: - Press buttons **A1 - A16, B1 - B8,** and **D1 - D16** (or dial **200 - 215** for buttons D1 - D16). 4. Select station ports to receive second intercom key: - Station 10 - 73: Dial **10 - 73** or Press C10 - C73. 5. Dial ✳ for further intercom button assignment **-OR-** Dial ✳ ✳ for next button mapping feature. **-OR-** Dial ✳ ✳ ✳ for configuration mode.	

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Non-Square System Programming - continued		
Privacy Button: Stations can be programmed to provide a privacy button. A user engaged in a private call can press the privacy button to change the current call into a non-private one.	1. Dial **56.** *"BUTTON MAPPING "* 2. Dial **06.** *"ASSIGN PRIVACY "* 3. Select button to be assigned for privacy release: - Press buttons **A1 - A16, B1 - B8,** and **D1 - D16** (or dial **200 - 215** for buttons D1 - D16). 4. Select station ports to receive privacy release button: - Station 10 - 73: Dial **10 - 73** or Press **C10 - C73.** 5. Dial ✳ for further privacy button assignment. **-OR-** Press ✳ ✳ for next button mapping feature. **-OR-** Press ✳ ✳ ✳ for configuration mode.	**SEE CHART AT END OF THIS PROCEDURE**
Do Not Disturb (DND) Button: Stations can be programmed to provide a do-not-disturb (DND) button. Pressing the DND button prevents other stations from calling the DND station. *NOTE: Also refer to DND inhibit on page 4-8 and DND override on page 4-23.*	1. Dial **56.** *"BUTTON MAPPING "* 2. Dial **07.** *"ASSIGN DND CODE "* 3. Select button to be assigned for DND purpose: - Press buttons **A1 - A16, B1 - B8,** and **D1 - D16** (or dial **200 - 215** for buttons D1 - D16). 4. Select station ports to receive DND button: - Station 10 - 73: Dial **10 - 73** or Press **C10 - C73.** 5. Dial ✳ for further DND button assignment **-OR-** Dial ✳ ✳ for next button mapping feature. **-OR-** Dial ✳ ✳ ✳ for configuration mode.	**SEE CHART AT END OF THIS PROCEDURE**

Press SPKR to end.

e level ITCM * # 7 4 6 *.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Non-Square System Programming - continued		
Save Button: The SAVE button is pressed by the station user to store the last number dialed at the station for later re-dial. Any idle button can be programmed to serve as the SAVE button.	1. Dial 56. *"BUTTON MAPPING "* 2. Dial 08. *"ASSIGN SAVE "* 3. Select button to be assigned the SAVE function: - Press buttons **A1 - A16, B1 - B8,** and **D1 - D16** (or dial **200 - 215** for buttons D1 - D16). 4. Select station ports to receive SAVE button: - Station 10 - 73: Dial **10 - 73** or Press **C10 - C73.** 5. Dial * for further Save button assignment **-OR-** Dial * * for next button mapping feature. **-OR-** Dial * * * for configuration mode.	SEE CHART AT END OF THIS PROCEDURE
Zone Page/All-Call Button: A button can be programmed to provide a station with one-button access to all-call and zone paging. *NOTE: All-Call and Zone paging must be enabled for access at a station as detailed on page 4-38.*	1. Dial 56. *"BUTTON MAPPING "* 2. Dial 09. *"ASSIGN ZONE "* 3. Select button to be assigned for paging access: - Press buttons **A1 - A16, B1 - B8,** and **D1 - D16** (or dial **200 - 215** for buttons D1 - D16). 4. Dial **1 - 3** for zone 1 - 3. *"ASSIGN ZONE X "* **-OR-** Dial **4** for all-call. *"ASSIGN ALL CALL "* 5. Select station ports to receive paging button: - Station 10 - 73: Dial **10 - 73** or Press **C10 - C73.** 6. Dial * for further paging button assignment. **-OR-** Dial * * for next button mapping feature. **-OR-** Dial * * * for configuration mode.	SEE CHART AT END OF THIS PROCEDURE

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Non-Square System Programming - continued		
Automatic Callback Button: A button can be programmed to be an automatic callback button. When a station user presses this button after a busy tone is encountered, the system will automatically ring the called and calling stations when the called station becomes idle.	1. Dial 56. *"BUTTON MAPPING "* 2. Dial 10. *"ASSIGN CALL BACK"* 3. Select button to assigned for callback function: - Press buttons A1 - A16, B1 - B8, and D1 - D16 (or dial 200 - 215 for buttons D1 - D16). 4. Select station ports to receive call-back button: - Station 10 - 73: Dial 10 - 73 or Press C10 - C73. 5. Dial ✳ for next auto callback button assignment. -OR- Dial ✳ ✳ for next button mapping feature. -OR- Dial ✳ ✳ ✳ for configuration mode.	SEE CHART AT END OF THIS PROCEDURE
Call Forward Button: A soft button can be programmed to provide one-button forwarding of all calls to another extension.	1. Dial 56. *"BUTTON MAPPING "* 2. Dial 11. *"ASSIGN CALL FWD "* 3. Select button to be programmed: - Press buttons A1 - A16, B1 - B8, and D1 - D16 (or dial 200 - 215 for buttons D1 - D16). 4. Select station ports to receive call forward button: - Station 10 - 73: Dial 10 - 73 or Press C10 - C73. 5. Dial ✳ for next call forward button assignment. -OR- Dial ✳ ✳ for next button mapping feature. -OR- Dial ✳ ✳ ✳ for configuration mode.	

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Non-Square System Programming - continued		
Call Park Orbit Button: When a user presses a button programmed as the call park orbit button the system will automatically park an active call in orbit.	1. Dial 56. *"BUTTON MAPPING "* 2. Dial 12. *"ASSIGN CALL PK "* 3. Select button to be assigned with call park orbit assignment: - Press buttons A1 - A16, B1 - B8, and D1 - D16 (or dial 200 - 215 for buttons D1 - D16). 4. Dial 1 - 9 for parking orbit 1 - 9. *"ASSIGN CALL PK X"* 5. Select station ports to receive call park orbit button: - Station 10 - 73: Dial 10 - 73 or Press C10 - C73. 6. Dial ✳ for next call park orbit button assignment. -OR- Dial ✳ ✳ for next button mapping feature. -OR- Dial ✳ ✳ ✳ for configuration mode.	SEE CHART AT END OF THIS PROCEDURE

Press SPKR to end.

Base level ITCM * # 7 4 6 *.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Non-Square System Programming - continued		
Line Group Button: One-button access to a line group is provided to station users by a button that is programmed as the line group button. *NOTE: Line groups must first be asigned. See page 4-14 for details.*	1. Dial 56. *"BUTTON MAPPING "* 2. Dial 13. *"ASSIGN TRK GRP "* 3. Select button to be assigned for line group access: - Press buttons A1 - A16, B1 - B8, and D1 - D16 (or dial 200 - 215 for buttons D1 - D16). 4. Dial 1 - 4 for line group 1 - 4. *"ASSIGN TRK GRP X"* 5. Select station ports to receive line group button: - Station 10 - 73: Dial 10 - 73 or Press C10 - C73. 6. Dial * for next line group button assignment. -OR- Dial * * for next button mapping feature. -OR- Dial * * * for configuration mode.	SEE CHART AT END OF THIS PROCEDURE
Voice Announce Block Button: Voice announced intercom calls and station paging can be blocked when the station user presses a button programmed as the voice announce block button.	1. Dial 56. *"BUTTON MAPPING "* 2. Dial 14. *"ASSIGN V. A. B. "* 3. Select button to be assigned as voice announce blocking: - Press buttons A1 - A16, B1 - B8, and D1 - D16 (or dial 200 - 215 for buttons D1 - D16). 4. Select station ports to receive voice announce blocking button: - Station 10 - 73: Dial 10 - 73 or Press C10 - C73. 5. Dial * for next voice announce block button assignment. -OR- Dial * * for next button mapping feature. -OR- Dial * * * for configuration mode.	SEE CHART AT END OF THIS PROCEDURE **Press SPKR to end.**

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Non-Square System Programming - continued		
Line Group Queue Button: A station user can queue for a busy line by pressing a button that is programmed as the line group queue button.	1. Dial **56.** *"BUTTON MAPPING "* 2. Dial **15.** *"ASSIGN TRK GRP Q"* 3. Select button to be assigned to line group queuing: - Press buttons **A1 - A16, B1 - B8,** and **D1 - D16** (or dial **200 - 215** for buttons D1 - D16). 4. Select station ports to receive line group queuing button: - Station 10 - 73: Dial **10 - 73** or Press **C10 - C73.** 5. Dial ✳ for next line group queue button assignment. **-OR-** Dial ✳ ✳ for next button mapping feature. **-OR-** Press ✳ ✳ ✳ for configuration mode.	

Press SPKR to end.

Non - Square System - Reference Record

Copy this chart for additional record space if add-on expansion modules are included with the system.

BUTTON	B1	B2	B3	B4	B5	B6	B7	B8	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16
STA 10	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11													
STA 24	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	30	27											
STA 27	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	〃	30	24											
STA 11																								
STA 12																								
STA 26																								
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DEFAULT SETTINGS - STATION 10 (16-button): B1-B8 = Line 1 - Line 8, A1-A8 = Line 9 - Line 16.
STATION 10 (10-button): B1-B6 = Line 1 - Line 6, A1-A6 = Line 9 - Line 13, No Default for Lines 6 - 8.
ALL OTHER STATIONS: B1-B8 = Line 1 - Line 8.

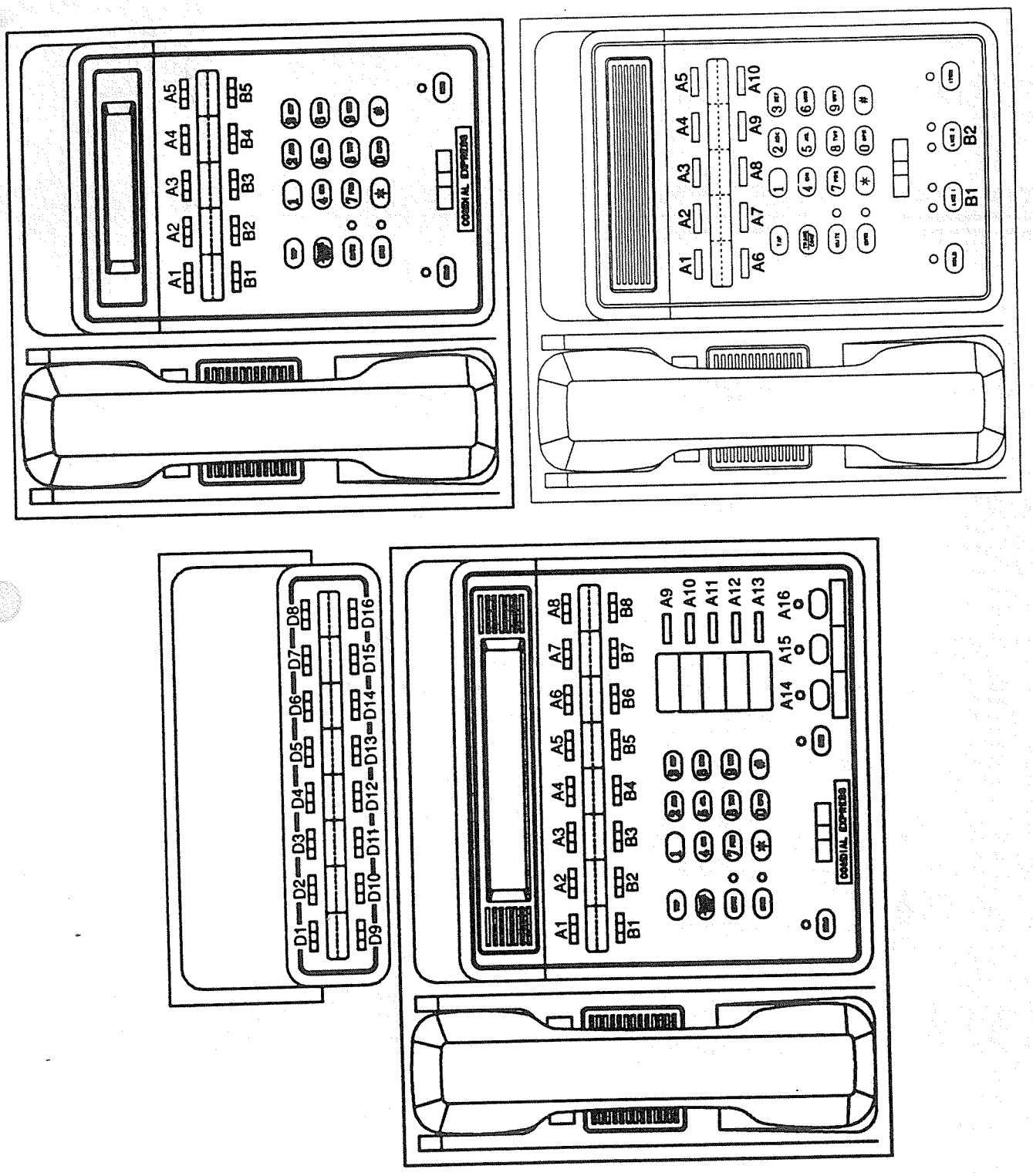


Figure 4-1. Location Of Buttons On Telephone Faceplate

level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Station-to-Station Port Reassignment: The extension number and all other programmable attributes of a station that are initially assigned to a particular port can be reassigned to a different port by programming action. This feature allows all software attributes for a particular station to be relocated when the station is relocated.	1. Dial **57** to re-assign station to port. *"ASSIGN STA/PORT "* 2. Dial station extension number. **0010 - 7999.** *"PHYS PORT XX "* 3. Dial physical port number 10 - 73. *"LOGICAL STA XX "* 4. Dial # to make assignment. 5. Dial ✳ for configuration mode.	PORT / LOC / PORT / LOC / PORT / LOC 10 / 21 / 32 11 / 22 / 33 12 / 23 / 34 13 / 24 / 35 14 / 25 / 36 15 / 26 / 37 16 / 27 / 38 17 / 28 / 39 18 / 29 / 40 19 / 30 / 41 20 / 31 **DEFAULT: LOGICAL = PHYSICAL (PORT 10 = STA 10, ETC.)**
Block Programming: A configuration assigned to a particular station can be assigned to one other station or to an entire block of stations with one programming action.	1. Dial **58.** *"BLK PROGRAMMING "* 2. Select model station port: - Station 10 - 73 = Press **C10 - C73.** *"MODEL STA XX "* 3. Select stations to match model station (press button as above). 4. Dial ✳ for further block programming. **-OR-** Dial ✳ ✳ for next feature **-OR-** 2. Select model station port using keypad buttons: - Station 10 - 73 = dial **10 - 73.** "MODEL STA XX " 3. Dial first station port in block (dial code as above). 4. Dial #. 5. Dial last station port in block (dial code as above). 6. Dial #. 7. Dial ✳ for further block programming. **-OR-** Dial ✳ ✳ for configuration mode. ***NOTE:** The first, last and all station ports in between will be block programmed like the model station port. To block program an individual station port, select the first and last port to be the same number. (For example: 25, 26# 26# programs station 26 exactly as 25 is programmed.)*	MODEL STATION FIRST STATION LAST STATION **Press SPKR to end.**

TOLL RESTRICTION TABLE CONFIGURATION

Before programming the toll restriction configuration, enter the toll restriction requirements on the programming reference tables found at the end of this procedure.

In order for toll restriction to take effect, the following three-fold process must occur.

- One or more toll tables must be entered.
- Toll tables must be assigned to all appropriate lines.
- Toll tables must be assigned to all appropriate stations.

After the toll tables are programmed, they must then be assigned to both a line and a station using that line before any programmed toll restriction will be activated at the station.

1. Determine the types of dialing restrictions that must be imposed on the system. Typically, this includes access codes that result in toll charges and certain local numbers as desired.
2. If the restricted dialing codes will be imposed consistently on most or all stations in the system, list them on one or two tables. If wide variation in the dialing restrictions is planned, spread the listing out across several tables.
3. Strategically group the listings on the tables so that a list of restrictions can be applied to a particular station or group of stations.
4. Designate each table as a DENY table or as an ALLOW table. The numbers entered in a DENY table are prevented from being dialed. ALLOW tables take precedence over DENY tables. Therefore, an entry in an allow table will provide an explicit exception to an entry in a DENY table. Note that the system always permits the dialing of any number not explicitly denied. Also, system speed dial numbers will not be toll restricted unless specified by station COS programming.

   - Example A: Provide a simple and broad toll restriction format by creating a DENY table with two entries:

   • ENTRY (1) = 1; ENTRY (2) = 0. This format prevents all long distance and operator calls.

   - Example B: Prevent the dialing of all numbers within the (804) area code, while allowing the dialing of one specific number within that area code. by entering 1804 in a DENY table and 18049782200 in an ALLOW table.

5. Press the # key in place of a particular digit to condense a range of numbers into one entry. The # character is a "match-anything" digit and can be included in an entry in either a DENY table or an ALLOW table.

   - Example A: If 357, 377, 387, and 397 dialing is to be prohibited, list one entry of 3#7 on a DENY table to cover them all.

   - Example B: Since area codes typically have a 1 or a 0 as a middle digit, prevent long distance calls to those area codes by entering 1#1# and 1#0# in a DENY table.

6. Since it is important that emergency numbers never be restricted, always create an allow table with entries of 911 and 1911 to override any DENY tables that have been created.
7. If the system is installed behind a PBX, include an access code as part of every table entry.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Base Level: The first step in any programming sequence is to enter the base level. Once in this mode, any desired configuration can be set.	Press ITCM Dial ✳ # 7 4 6 ✳ *"CONFIG. MODE ".*	
System Default: Two toll restriction tables are defaulted with preprogrammed values and are pre-assigned to the lines. They need only to be assigned to the stations to put them into effect. The defaulted tables can be reprogrammed with different information using the normal programming procedure. The preprogrammed values are as follows: TABLE 1(Deny) TABLE 2 (Allow) 1 1 1 1800 2 976 2 911 3 411 3 4 These values will provide satisfactory system performance in a broad range of site applications.	Dial 70. *"DEFAULT TOLL "* Press # to default toll tables.	

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Toll Table Entry:	1. Dial 71. "TOLL TABLE " 2. Dial 01 - 16 for toll table 1 - 16. *"XXXXX TABLE Y "* 3. Dial 5 or Press A1 to establish an allow toll table. (A1 LED on = allow) *"ALLOW TABLE Y "* -OR- Dial 6 or Press A2 to establish a deny toll table. (A2 LED on = deny) *"DENY TABLE Y "* 4. Dial 1 - 4 for entry line 1-4. *"XXXXXX "* 5. Dial # to clear curent entry. " 6. Dial keypad digits to enter numbers. *"XXXXXX ... "* 7. Press ✳ for next entry, and repeat steps 4 through 7 until all entry lines are programmed. 8. Dial ✳ ✳ for next table and repeat steps 2 through 7 until all tables are entered. 9. Dial ✳ ✳ ✳ for configuration mode.	**TOLL TABLE RECORD INCLUDED AT END OF PROCEDURE**
Assign Toll Table To Line:	1. Dial 72. *"ASSIGN TOLL-LINE"* 2. Dial 01 - 16 for all tables 1-16 to be as'gned to line. -OR- Press A1 - A14 for tables 1 - 14 and press B1 - B2 for tables 15 - 16. (LED On = Selected tables as follows: A1 - A14 = tables 1 - 14, B1 and B2 = tables 15 and 16) 3. Dial # to finish entry. 4. Select line ports to receive toll tables. - Line port 1-7 = Dial 01 - 08 or press B1 - B8. - Line port 8-14 = Dial 09 - 16 or press A1 - A8. - Line port 17-24 = Dial 17 - 24 or press HOLD, B1 - B8 (LED On = Lines as'gned to receive tables) 5. Dial ✳ and repeat steps 2 through 5 for next toll table to line assignment. -OR- Dial ✳ ✳ for configuration mode.	LINE / ENTRY / LINE / ENTRY / LINE / ENTRY 1 / 9 / 17 2 / 10 / 18 3 / 11 / 19 4 / 12 / 20 5 / 13 / 21 6 / 14 / 22 7 / 15 / 23 8 / 16 / 24 **DEFAULT = ALL TBL'S AS'GND TO ALL LINES**

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Assign Toll Table To Station	1. Dial 73. *"ASSIGN TOLL-STA."* 2. Dial 01 - 16 for toll tables 1 - 16 to be assigned to stations. -OR- Press A1 - A14 for tables 1 - 14 and press B1 - B2 for tables 15 - 16. (LED On = Selected tables as follows: A1 - A14 = tables 1 - 14, B1 and B2 = tables 15 and 16) 3. Dial # to finish entry and display stations. (LED On = Table assigned to stations) 4. Assign station ports to receive selected tables.: - Station 10 - 73: Dial 10 - 73 or Press C10 - C73. 5. Dial ✳ and repeat steps 2 through 5 for next toll table to station assignment. -OR- Dial ✳ ✳ for configuration mode.	PORT / ENTRY / PORT / ENTRY / PORT / ENTRY 10 21 32 11 22 33 12 23 34 13 24 35 14 25 36 15 26 37 16 27 38 17 28 39 18 29 40 19 30 41 20 31 DEFAULT = NONE AS'GND
Assign Toll Table to be applied when the system is programmed by the attendant for night transfer of ringing.	1. Dial 74. *"ASSIGN TOLL-NITE"* 2. Dial 01 - 16 for toll tables 1 - 16. -OR- Press A1 - A14 for tables 1 - 14 and press B1 - B2 for tables 15 - 16. (LED On = Selected tables as follows: A1 - A14 = tables 1 - 14, B1 and B2 = tables 15 and 16) 3. Dial # to finish entry and display stations. 4. Select station port to be programmed: - Station 10 - 73: Dial 10 - 73 or Press C10 - C73. 5. Dial ✳ for next toll table to night answer assignment. -OR- Dial ✳ ✳ for configuration mode.	PORT / ENTRY / PORT / ENTRY / PORT / ENTRY 10 21 32 11 22 33 12 23 34 13 24 35 14 25 36 15 26 37 16 27 38 17 28 39 18 29 40 19 30 41 20 31 DEFAULT = NONE AS'GND

Press SPKR to end.

Toll Restriction Programming Reference Tables

TOLL RESTRICTION TABLE 1

TYPE: ALLOW DENY X

ENTRY ENTRY NUMBER (16 MAXIMUM)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	1															
2	9	7	6													
3	4	1	1													
4	0															

TABLE ASSIGNMENT: LINES ALL STATIONS

TOLL RESTRICTION TABLE 2

TYPE: ALLOW X DENY

ENTRY ENTRY NUMBER (16 MAXIMUM)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	1	8	0	0												
2	9	1	1													
3																
4																

TABLE ASSIGNMENT: LINES ALL STATIONS

TOLL RESTRICTION TABLE 3

TYPE: ALLOW DENY

ENTRY ENTRY NUMBER (16 MAXIMUM)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1																
2																
3																
4																

TABLE ASSIGNMENT: LINES STATIONS

TOLL RESTRICTION TABLE 4

TYPE: ALLOW DENY

ENTRY ENTRY NUMBER (16 MAXIMUM)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1																
2																
3																
4																

TABLE ASSIGNMENT: LINES STATIONS

TOLL RESTRICTION TABLE 5

TYPE: ALLOW DENY

ENTRY ENTRY NUMBER (16 MAXIMUM)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1																
2																
3																
4																

TABLE ASSIGNMENT: LINES STATIONS

TOLL RESTRICTION TABLE 6

TYPE: ALLOW DENY

ENTRY ENTRY NUMBER (16 MAXIMUM)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1																
2																
3																
4																

TABLE ASSIGNMENT: LINES STATIONS

TOLL RESTRICTION TABLE 7

TYPE: ALLOW DENY

ENTRY ENTRY NUMBER (16 MAXIMUM)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1																
2																
3																
4																

TABLE ASSIGNMENT: LINES STATIONS

TOLL RESTRICTION TABLE 8

TYPE: ALLOW DENY

ENTRY ENTRY NUMBER (16 MAXIMUM)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1																
2																
3																
4																

TABLE ASSIGNMENT: LINES STATIONS

Toll Restriction Programming Reference Tables - continued

TOLL RESTRICTION TABLE 9

TYPE: ALLOW DENY

ENTRY ENTRY NUMBER (16 MAXIMUM)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1																
2																
3																
4																

TABLE ASSIGNMENT: LINES STATIONS

TOLL RESTRICTION TABLE 10

TYPE: ALLOW DENY

ENTRY ENTRY NUMBER (16 MAXIMUM)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1																
2																
3																
4																

TABLE ASSIGNMENT: LINES STATIONS

TOLL RESTRICTION TABLE 11

TYPE: ALLOW DENY

ENTRY ENTRY NUMBER (16 MAXIMUM)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1																
2																
3																
4																

TABLE ASSIGNMENT: LINES STATIONS

TOLL RESTRICTION TABLE 12

TYPE: ALLOW DENY

ENTRY ENTRY NUMBER (16 MAXIMUM)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1																
2																
3																
4																

TABLE ASSIGNMENT: LINES STATIONS

TOLL RESTRICTION TABLE 13

TYPE: ALLOW DENY

ENTRY ENTRY NUMBER (16 MAXIMUM)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1																
2																
3																
4																

TABLE ASSIGNMENT: LINES STATIONS

TOLL RESTRICTION TABLE 14

TYPE: ALLOW DENY

ENTRY ENTRY NUMBER (16 MAXIMUM)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1																
2																
3																
4																

TABLE ASSIGNMENT: LINES STATIONS

TOLL RESTRICTION TABLE 15

TYPE: ALLOW DENY

ENTRY ENTRY NUMBER (16 MAXIMUM)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1																
2																
3																
4																

TABLE ASSIGNMENT: LINES STATIONS

TOLL RESTRICTION TABLE 16

TYPE: ALLOW DENY

ENTRY ENTRY NUMBER (16 MAXIMUM)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1																
2																
3																
4																

TABLE ASSIGNMENT: LINES STATIONS

CASSETTE TAPE RECORDER INTERFACING

Configuration data can be down-loaded from a programmed system onto cassette tape for later reloading into the same system or into the same model of a different system.

GENERAL INFORMATION

- Connect the audio cassette tape recorder microphone connector to the music interface jack on the side of the common equipment.
- Place the cassette recorder on a stable location so that the operation of it will not be hampered by vibration or movement.
- Do not perform any other programming action while the tape system is active.
- Program the baud rate of the tape data to be either 100 or 50 baud as desired. (See System Configuration for programming details.)
- Appropriate response and error messages will be sent to data port B during the recording and loading of data. If the system includes a data printer connected to this port, it will print the response and error messages.
- When data is sent from the common equipment to an audio cassette tape recorder for recording, a lead-in tone is sent prior to the data. During playback, this lead-in tone alerts the system to receive the configuration data.
- When playing back the stored data, the tape must be started during the lead-in tone. If it is not, the system will reject the recorded data.
- To insure a successful load, comparison, or verification of recorded data, always start the tape during the lead-in tone. The following precautions will ensure that this is done.

  1. Rewind the tape to the beginning.
  2. Disconnect the cable connecting the recorder and the common equipment.
  3. Set the playback volume for approximately one-half of maximum.
  4. Play the tape and listen to the lead-in tone. Verify that it is not distorted.
  5. Rewind the tape to the point where the lead-in tone begins.
  6. Connect the cable between the common equipment and the tape recorder.
  7. Prepare the system to accept pre-recorded data.
  8. Start the tape (from the point where the lead-in tone was first heard).

- In general, a tape data transfer operation requires approximately 20 to 25 minutes to complete. When the tape data transfer operation is completed, the system will cause three quick tone bursts to sound at station 10 as an indication of completion.
- If a load is unsuccessful, repeat the load procedure with the playback volume set for approximately two-thirds of maximum.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY
Base Level: The first step in any programming sequence is to enter the base level. Once in this mode, the recording or storing of configuration data can be performed.	Press ITCM. Dial ✳ # 7 4 6 ✳. *"CONFIG. MODE "*
Load previously recorded config. data into system to replace current values (loading time is approximately 10 minutes),	Dial 80. *"LOAD DATA "*
Record current program values onto cassette tape for later use (recording time is approximately 12 minutes),	Dial 81. *"SAVE DATA "*
Abort load or record operation,	Dial 82. *"ABORT XFER "*
Exchange current program values with recorded values,	Dial 83. *"SWAP DATA "*
Compare recorded values with system values,	Dial 84. *"COMPARE DATA "*
Verify accuracy of previously recorded data,	Dial 85. *"VERIFY TAPE "*
Load previously recorded auto dial numbers into system from tape,	Dial 86. *"RECORD AUTODIAL "*
Record currently stored system and station speed dial numbers onto tape,	Dial 87. *"SAVE SPD. DIAL "*
Record currently stored auto dial numbers from individual stations onto cassette tape,	Dial 88 for stations 10 - XX. *"SAVE AUTODIAL L"*
	Dial 89. *"SAVE AUTODIAL U "* Dial ✳ for next feature.

DATA PRINTER SERVICE

When a data printer is connected to the system, the station message detail record (SMDR) for the system is printed automatically without any programming or user intervention.

The data printer can also be commanded to print the configuration data for the system. Partial or complete printouts can be obtained as desired. When the printer is being used to print the configuration data or SMDA information, SMDR printout is temporarily halted. The SMDR data collection is continued by the system during this time, but if more than two calls are logged for any one line, call records may be lost.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	
Base Level: The first step in any programming sequence is to enter the base level. Once in this mode, the printing of configuration data can be commanded.	Press **ITCM**. Dial ✳ **# 7 4 6** ✳.	*"CONFIG. MODE "*
Enable data printer operation	Dial **91**.	*"PRINT CONFIG. "*
	Dial **1** to print all configuration data.	*"PRINT ALL "*
	Dial **2** to print system data.	*"PRINT SYSTEM "*
	Dial **3** to print line data.	*"PRINT LINES "*
	Dial **4** to print data for all stations.	*"PRINT STATIONS "*
	Dial **5** to print data for selected station.	*"PRINT STA. "*
	Select station to be printed.	*"PRINT STA. XXX "*
	Press **C10 - C73**, or dial **10 - 73**, to choose station.	
	Dial **6** to print toll restriction assignment.	*"PRINT TOLL "*
	Dial **7** to abort printing	*"ABORT PRINT "*
	Dial ✳ for next feature.	

INTEGRATED CALL COSTING DESCRIPTION

Call costing, in general, provides a means of establishing costing to be applied to outside calls made from system telephones. Call costing computes charges for a call after it is completed. It does not restrict dialing as toll restriction does. The system provides three ways of establishing call costing. They are as follows:

- Exception tables
- Area/Office code banding tables
- Call cost tables

Between the exception table, code banding tables, and call cost tables, it is possible to apply reasonable rates for the entire country. Call costing is applied to a dialed number as described below. The call costing process is illustrated by the diagram shown in **Figure 4-2.**

Calls are first compared to entries in the exception tables to determine if a match can be made. The exception tables are searched on a first match basis. This means that the first programmed entry that matches the call is the one that is used. A search is not made for the best possible match. Matched calls are routed to call cost tables specially programmed to cost them.

- Calls that do not match exception tables are directed to area/office code banding tables where a comparison for a match with those table entries occurs.
- Calls that do not match exception table or code banding table entries are routed to call cost tables for comparison to those table entries.
- Once matched with a table entry, the call is costed according to the programmed rates sorted in the matched table.

CALL COST EXCEPTION TABLES

Four (4) call costing exception tables (one entry per table) provide the first priority level of costing. These exception tables are assigned special costing rates and are searched first for a match before the band tables and call cost tables are searched. This allows for costing exceptions similar to the following example.

Example: When area code such as 804 is assigned to band table 1 costing, all calls made to area code 804 are costed per the band 1 rate. An exception can be made for a number such as 804-555-1212, if desired. To do this, program exception table 1 with the number 804-555-1212. Since exception table entries take precedence over banding, the special costing rate assigned to exception table 1 will be applied to all 804-555-1212 calls.

AREA/OFFICE CODE BANDING TABLES

Area/Office code banding tables is the second priority level of costing. They provide a means of assigning area codes and local office codes into different groups, or bands, and applying a separate call costing rate table to each band.

- Any or all area/office codes nnn (200-999) can be assigned to one of seven different bands. Each band, in turn, is associated automatically by the system to a rate table. (Bands 1-7 are associated with rate tables 11-17, respectively.)
- Bands are normally constructed to group area codes with similar costing. Bands may also be used to group local office codes by cost.
- Once assigned, the band cost rate is applied to any number that matches either nnn or 1+nnn.
- Dial 0 calls are always costed by the call cost tables and never by the band tables. The table of last resort for dial 0 calls is call rate table 2. This means that if no call rate table is found to match the dial zero call, call rate table 2 is automatically used.

- If no band has been assigned for a particular area/office code that is dialed, the system will then, in turn, sequentially search call rate tables 2 through 33 for the most complete match. When neither an assigned band nor a matching rate table can be found for the area/office code, the following action takes place:
  - Calls are costed by rate table 1 (the table of last resort for costing all calls).

CALL COST TABLES

The call cost tables (2-33) provide the third priority level of costing. Calls that do not match any banded tables are costed by the remaining call cost tables.

NOTE: If calls do not match any of these rate tables, they are costed with the rates in call cost table 1.

- A maximum of thirty-two tables can be constructed (including exception tables, banding tables, and non-banding tables).
  - Call rate table 1 is the table of last resort for costing all calls if no other rate table is applicable to the call.
  - Call rate table 2 is the table of last resort for costing all dial 0 calls if no other rate table is applicable to the calls. Table 2 can be programmed to cost other dialed numbers if desired.
  - Call rate tables 11 through 17 must be used to apply rates to costing bands calls made to particular area or office codes.
  - Call cost tables 11-17 apply to bands 1-7 if assigned.
- Call rate tables 3 - 10 and 18 - 33 are used to cost calls that have special or extraordinary rates, such as: 1-800-555-1212 or 1-900-976. If exception tables and banding tables are not used to catagorize the costing, table 2-33 can be used to cost all desired calls.
  - Each call rate table can be programmed with up to 16 digits.
  - Digits are selected so that a particular dialed number or number group will be matched to a particular rate table.
- The table with the best match is used by the system to cost the call.
  - A dialed number must match all of the digits that are programmed into a table to be considered a match. A # character can be programmed into the table in place of a specific character to serve as a "match anything" digit.
  - If a number does not match all of the digits programmed into any call cost table, the system costs the call in accordance with the call rate table of last resort (table 1).

STATION MESSAGE DETAIL ACCOUNTING (SMDA) PRINTOUT

Five different call cost reports can be produced by the system for printing. They are:

1. Detailed report of all station
2. Detailed report of all accounts
3. Trunk summary report
4. Department summary report
5. All records

Reports are generated automatically for printing whenever the system detects that the records storage area is ninety-five percent full. The reports to be printed are chosen by programming action and are printed in the order of selection. The system can be programmed for these reports to be generated automatically for printing at a certain time each day. Programming action can also be taken so that all printed records are then deleted except for those collected during the printing operation. These are stored for later printing.

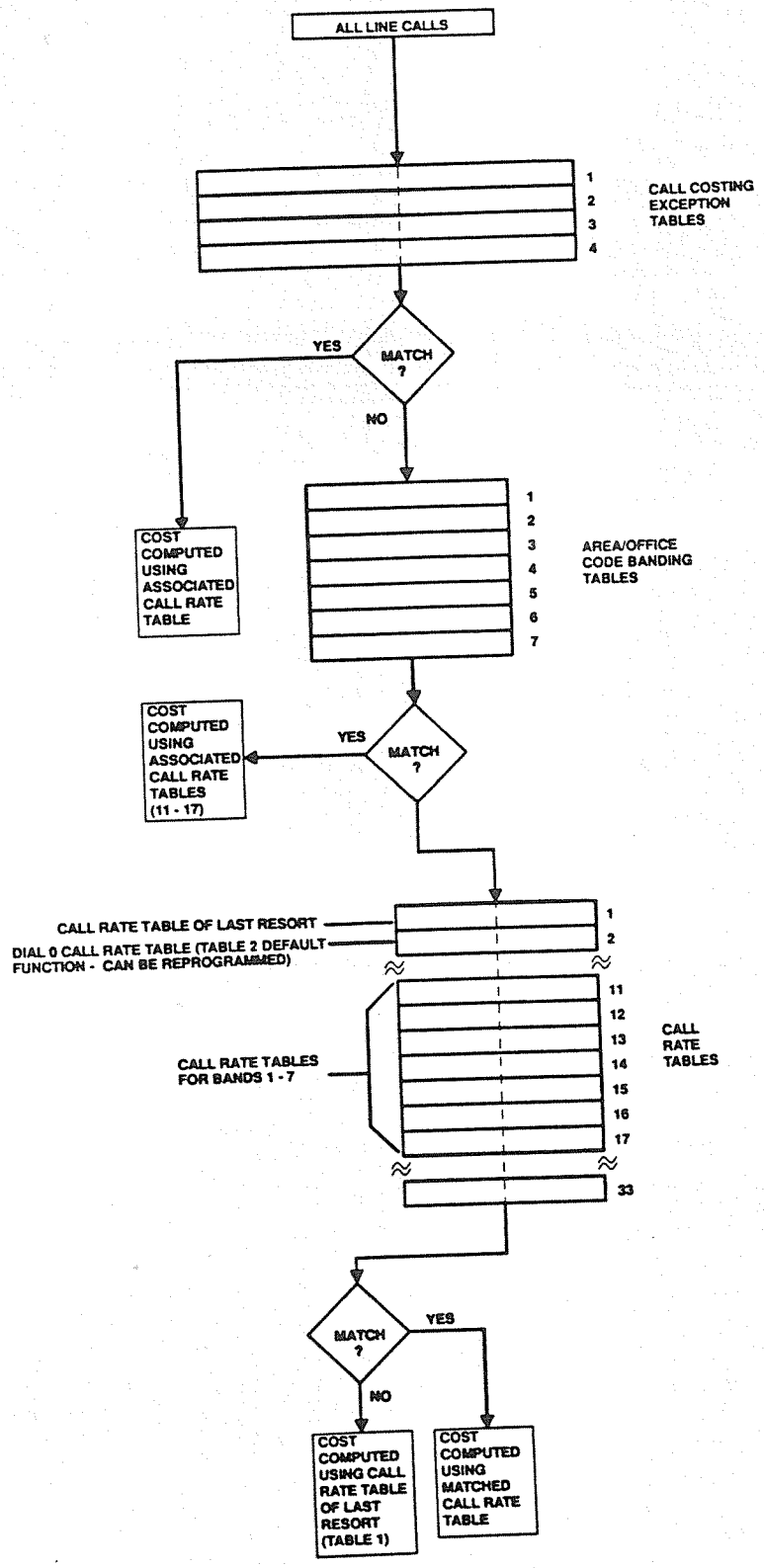


Figure 4-2. Call Costing Diagram

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Base Level: The first step in any programming sequence is to enter the base level. Once in this mode, any desired configuration can be set	Press ITCM ✳ # 7 4 6 ✳ *"CONFIG. MODE "*	
Exception Tables: Calls are first compared to entries in the call cost exception tables to determine if a match can be made. If a match is made, the call is costed at the rate programmed in the specified call cost table (see page 4-56).	1. Dial 78. *"EXCEPTION TBL "* 2. Dial 1 - 4 for entry 1 - 4. *"ENTRY X "* 3. Dial 1 to assign the call cost table. *"CALL COST TBL XX"* 4. Dial 01 - 33 for number of call rate table to be used to cost matched entries. 5. Dial ✳. 6. Dial 2 to assign matching digits. *"XXXXXXXXXXXXXXX"* 7. Dial # to clear current entry. 8. Dial matching digits (16 max. # = match anything). *"XXXXXXXXXXXXXXX"* 9. Dial ✳ ✳ for next entry, and repeat steps 2 through 9 until all entries are made. -OR- 10. Dial ✳ ✳ ✳ for configuration mode.	ENTRY TABLE / DIGITS (1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16) / COST TABLE 1 2 3 4 DEFAULT = NONE AS'GND
Area/Office Code Banding Tables: Calls that do not match exception tables are directed to code banding tables where a comparison for a match with those table entries occurs. Bands 1 through 7 are costed by the rates programmed into call cost tables 11 through 17. If banding tables are enables, program the appropriate call cost table (see page 4-56).	1. Dial 75. *"SMDA PROGRAMMING"* 2. Dial 01. *"ASSIGN BANDS "* 3. Dial 0 if no band is to be assigned. *"NO BAND "* -OR- Dial 1 - 7 for band 1 - 7 *"BAND X "* Continued on next page	

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Band Tables - continued	4. Dial area code prefix (200 - 999). 5. Dial # plus next prefix. 6. Repeat step 5 until all prefixes are assigned to band. 7. Dial ✳ to program next band. 8. Dial ✳ ✳ for next SMDA programming feature. -OR- Dial ✳ ✳ ✳ for configuration mode.	BAND / AREA CODE PREFIX(ES) 1 2 3 4 5 6 7 DEFAULT = NONE AS'GND
Call Costing Tables: Calls that do not match exception table or band table entries are routed to call cost tables for comparison to those table entries. Remember, call cost tables 11 through 17 are used to cost bands 1 through 7 and call cost table 2 is used to cost dial 0+n calls not matched elsewhere. ***NOTE : Dialing a 00 or a 000 as an entry in steps 7, 9, 11, and 13 will clear the current entry for those steps.***	1. Dial 76. *"CALL COST TBL "* 2. Dial table number (01 - 33). *"CALL COST TBL XX"* 3. Dial 1 to enter matching digits. *"XXXXXXXX "* *NOTE: Call Cost Table 1 will not accept matching digits.* 4. Dial # to clear previous digits. 5. Dial matching digits for costed number (32 max.- - # = match anything digit). *"XXXXXXXX "* 6. Dial ✳ to end matching digits. 7. Dial 2 then dial 01 - 99 for Tier 1 time in tenths of minutes. *"TIER 1 TIME XX "* 8. Dial ✳. 9. Dial 3 then dial 001 - 999 for Tier 1 rate in cents. *"TIER 1 RATE XXX "* 10. Dial ✳. 11. Dial 4 then dial 001 - 999 for Tier 2 rate in cents. *"TIER 2 RATE XXX "* 12. Dial ✳. 13. Dial 5 then dial 001 - 999 for surcharge rate in cents. *"SURCHARGE XXX "* 14. Dial ✳ ✳ to program next call cost table and repeat steps 2-14 until all tables are entered. -OR- Dial ✳ ✳ ✳ for configuration mode.	**CALL COSTING RECORDING TABLES SHOWN ON NEXT PAGES** **EXAMPLE TABLE:** PROGRAM STEPS / CALL RATE TABLE / 33 2 / NUMBER / 19009762525 5 / TIER 1 TIME / 30 (3 MIN.) 7 / TIER 1 RATE / 120 ($1.20) 9 / TIER 2 RATE / 75 (75¢) 11 / SURCHARGE / 50 (50¢) 13

Press SPKR to end.

LAST RESORT TABLE

0 + DIALING TABLE

CALL COST TABLE 1	
TIER 1 TIME	
TIER 1 RATE	
TIER 2 RATE	
SURCHARGE	

CALL COST TABLE 2	
NUMBER	
TIER 1 TIME	
TIER 1 RATE	
TIER 2 RATE	
SURCHARGE	

CALL COST TABLE 3	
NUMBER	
TIER 1 TIME	
TIER 1 RATE	
TIER 2 RATE	
SURCHARGE	

CALL COST TABLE 4	
NUMBER	
TIER 1 TIME	
TIER 1 RATE	
TIER 2 RATE	
SURCHARGE	

CALL COST TABLE 5	
NUMBER	
TIER 1 TIME	
TIER 1 RATE	
TIER 2 RATE	
SURCHARGE	

CALL COST TABLE 6	
NUMBER	
TIER 1 TIME	
TIER 1 RATE	
TIER 2 RATE	
SURCHARGE	

CALL COST TABLE 7	
NUMBER	
TIER 1 TIME	
TIER 1 RATE	
TIER 2 RATE	
SURCHARGE	

CALL COST TABLE 8	
NUMBER	
TIER 1 TIME	
TIER 1 RATE	
TIER 2 RATE	
SURCHARGE	

CALL COST TABLE 9	
NUMBER	
TIER 1 TIME	
TIER 1 RATE	
TIER 2 RATE	
SURCHARGE	

CALL COST TABLE 10	
NUMBER	
TIER 1 TIME	
TIER 1 RATE	
TIER 2 RATE	
SURCHARGE	

CALL COST TABLE 11	
NUMBER	
TIER 1 TIME	
TIER 1 RATE	
TIER 2 RATE	
SURCHARGE	

CALL COST TABLE 12	
NUMBER	
TIER 1 TIME	
TIER 1 RATE	
TIER 2 RATE	
SURCHARGE	

CALL COST TABLE 13	
NUMBER	
TIER 1 TIME	
TIER 1 RATE	
TIER 2 RATE	
SURCHARGE	

CALL COST TABLE 14	
NUMBER	
TIER 1 TIME	
TIER 1 RATE	
TIER 2 RATE	
SURCHARGE	

CALL COST TABLE 15	
NUMBER	
TIER 1 TIME	
TIER 1 RATE	
TIER 2 RATE	
SURCHARGE	

CALL COST TABLE 16	
NUMBER	
TIER 1 TIME	
TIER 1 RATE	
TIER 2 RATE	
SURCHARGE	

CALL COST TABLE 17	
NUMBER	
TIER 1 TIME	
TIER 1 RATE	
TIER 2 RATE	
SURCHARGE	

CALL COST TABLE 18	
NUMBER	
TIER 1 TIME	
TIER 1 RATE	
TIER 2 RATE	
SURCHARGE	

CALL COST TABLE 19	
NUMBER	
TIER 1 TIME	
TIER 1 RATE	
TIER 2 RATE	
SURCHARGE	

CALL COST TABLE 20	
NUMBER	
TIER 1 TIME	
TIER 1 RATE	
TIER 2 RATE	
SURCHARGE	

CALL COST TABLE 21	
NUMBER	
TIER 1 TIME	
TIER 1 RATE	
TIER 2 RATE	
SURCHARGE	

CALL COST TABLE 22	
NUMBER	
TIER 1 TIME	
TIER 1 RATE	
TIER 2 RATE	
SURCHARGE	

CALL COST TABLE 23	
NUMBER	
TIER 1 TIME	
TIER 1 RATE	
TIER 2 RATE	
SURCHARGE	

CALL COST TABLE 24	
NUMBER	
TIER 1 TIME	
TIER 1 RATE	
TIER 2 RATE	
SURCHARGE	

CALL COST TABLE 25	
NUMBER	
TIER 1 TIME	
TIER 1 RATE	
TIER 2 RATE	
SURCHARGE	

CALL COST TABLE 26	
NUMBER	
TIER 1 TIME	
TIER 1 RATE	
TIER 2 RATE	
SURCHARGE	

CALL COST TABLE 27	
NUMBER	
TIER 1 TIME	
TIER 1 RATE	
TIER 2 RATE	
SURCHARGE	

CALL COST TABLE 28	
NUMBER	
TIER 1 TIME	
TIER 1 RATE	
TIER 2 RATE	
SURCHARGE	

CALL COST TABLE 29	
NUMBER	
TIER 1 TIME	
TIER 1 RATE	
TIER 2 RATE	
SURCHARGE	

CALL COST TABLE 30	
NUMBER	
TIER 1 TIME	
TIER 1 RATE	
TIER 2 RATE	
SURCHARGE	

CALL COST TABLE 31	
NUMBER	
TIER 1 TIME	
TIER 1 RATE	
TIER 2 RATE	
SURCHARGE	

CALL COST TABLE 32	
NUMBER	
TIER 1 TIME	
TIER 1 RATE	
TIER 2 RATE	
SURCHARGE	

CALL COST TABLE 33	
NUMBER	
TIER 1 TIME	
TIER 1 RATE	
TIER 2 RATE	
SURCHARGE	

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Dial Time Limit: Dialing time is not costed as part of a call. The amount of time that the system ignores for dialing purposes is programmable.	1. Dial 75. *"SMDA PROGRAMMING"* 2. Dial 02 to program dial time limit. *"DIAL TIME XXX "* 3. Dial time in tenths of a minute (001 - 999. or dial 000 to clear. *"XXXX "* 4. Dial ✳ for next SMDA programming feature. 5. Dial ✳ ✳ for configuration mode.	DIAL TIME LIMIT DEFAULT = 0 SEC.
Answer Time Limit: The system can be programmed to wait for a period of time before beginning to cost a call. This time will allow for a call to ring and be answered before being costed.	1. Dial 75. *"SMDA PROGRAMMING"* 2. Dial 03 to program answer time limit. *"ANSWER TIME XXX "* 3. Dial time in tenths of a minute (001 - 999 or dial 000 to clear. *"XXX "* 4. Dial ✳ for next SMDA programming feature. 5. Dial ✳ ✳ for configuration mode.	ANSWER TIME LIMIT DEFAULT = 0 SEC.
Station Message Detail Accounting Department Numbers: Eight different department numbers can be defined so that SMDA call cost reports can be produced on a department by department basis. ***NOTE:*** *Each station in the system can be assigned to a particular department for call costing purposes although no assignment is required. Refer to the procedure given on page 4-29 for station assignment details.*	1. Dial 75. *"SMDA PROGRAMMING"* 2. Dial 04 to define department numbers. *"SMDA DEPARTMENTS"* 3. Dial 1 - 8 for dept. 1-8. *"DEPT X "* 4. Dial 0000 - 8999 to assign dept. number for report. *"DEPT X YYYY "* 5. Dial ✳ for next department, and repeat steps 3 - 7 until all departments are numbered. 6. Dial ✳ ✳ for next SMDA programming feature. 7. Dial ✳ ✳ ✳ for configuration mode.	DEPT / DEPT. NUMBER 1 2 3 4 5 6 7 8 DEFAULT = NONE AS'GND

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Account Codes: Account codes are used to identify calls by category, or by any other desired grouping, so that costing by that category or grouping can be recorded. An account code can be a minimum of three numbers and a maximum of eight numbers.	**To configure account codes,** 1. Dial **75.** *"SMDA PROGRAMMING"* 2. Dial **05.** *"SET ACCT. CODE "* 3. Dial account code number (**000 - 999**). 4. Dial **#** plus next account number. Repeat this step until all account numbers are assigned. 5. Dial ✳ for next SMDA programming feature. **-OR-** Dial ✳ ✳ for configuration mode.	
	To clear account codes, 1. Dial **75.** *"SMDA PROGRAMMING"* 2. Dial **06 .** *"CLEAR ACCT. CODE"* 3. Dial account code number (**000 - 999**). 4. Dial **#** plus next account number. Repeat this step until all account numbers are cleared. 5. Dial ✳ for next SMDA programming feature. **-OR-** Dial ✳ ✳ for configuration mode.	
	To enable account codes for use, 1. Dial **75.** *"SMDA PROGRAMMING"* 2. Dial **07.** *"XXXXXXX ACCOUNT"* 3. Press **A1** to toggle between enable and disable (LED On = Enabled). **-OR-** - Dial **1** to enable (A1 LED On). *"ENABLE ACCOUNT"* - Dial **2** to disable. *"DISABLE ACCOUNT"* 4. Dial ✳ for next SMDA programming feature. **-OR-** Dial ✳ ✳ for configuration mode.	

Continued on next page

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Account Codes; - continued	**To enable system to compare user account code entry with programmed account code.** 1. Dial 75. *"SMDA PROGRAMMING"* 2. Dial 08. *"VERIFICATION XXX"* 3. Press A1 to toggle between enable and disable (LED On = Enabled). -OR- - Dial 1 to enable comparison. (A1 LED On) *"VERIFICATION ON "* - Dial 2 to disable comparison. *"VERIFICATION OFF"* 4. Dial ✳ for next SMDA programming feature. -OR- Dial S S for configuration mode. **To program the account code length,** 1. Dial 75. *"SMDA PROGRAMMING"* 2. Dial 09. *"MAX ACCT. CODE X"* 3. Dial 3 - 8 for number of digits (3 min.; 8 max.). *"MAX ACCT. CODE X"* 4. Dial ✳ for next SMDA programming feature. -OR- Dial ✳ ✳ for configuration mode.	ACCOUNT CODE ENTRIES | CATEGORIES ACCOUNT CODES | ENABLED | DISABLED VERIFICATION | ON | OFF ACCOUNT CODE LENGTH DEFAULT = NO ACCOUNT CODE AS'GND DEFAULT = VERIFICATION OFF DEFAULT = 3-DIGIT ACCOUNT CODE

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Account Code Display: As a feature for users of LCD speakerphones, a reminder mesage can be programmed to appear on the station display to prompt the user to enter an account code during incoming and/or outgoing calls. The message display time is programmable.	**To select display time in seconds,** 1. Dial 75. *"SMDA PROGRAMMING"* 2. Dial 10. *"DISPLAY TIME XX "* 3. Dial 01 - 20 for time. *"DISPLAY TIME YY "* 4. Dial ✳ for next SMDA programming feature. **-OR-** Dial ✳ ✳ for configuration mode. **To disable message on incoming calls,** 1. Dial 75. *"SMDA PROGRAMMING"* 2. Dial 11. *"XXXXXXX INCOMING"* 3. Press A1 to toggle between enable and disable (LED On = Enabled). **-OR-** - Dial 1 to enable. *"ENABLE INCOMING "* (A1 LED on). - Dial 2 to disable *"DISABLE INCOMING"* 4. Dial ✳ for next SMDA programming feature. **-OR-** Dial ✳ ✳ for configuration mode. **To disable message on outgoing calls,** 1. Dial 75. *"SMDA PROGRAMMING"* 2. Dial 12. *"XXXXXXX OUTGOING"* 3. Press A1 to toggle between enable and disable (LED On = Enabled). **-OR-** - Dial 1 to enable. *"ENABLE OUTGOING "* (A1 LED On). - Dial 2 to disable *"DISABLE OUTGOING"* 4. Dial ✳ for next SMDA programming feature. **-OR-** Dial ✳ ✳ for configuration mode.	**DISPLAY TIME IN SEC:** INCOMING CALLS ENABLE DISABLE OUTGOING CALLS ENABLE DISABLE **DEFAULT = BOTH DISPLAYS ENABLED FOR 5 SEC.**

Press SPKR to end.

Base level ITCM * # 7 4 6 *.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Station Message Detail Accounting (SMDA) Printout: Call cost reports can be produced by the system for printing. Reports are generated automatically for printing whenever the system detects that the records storage area is ninety-five percent full. The system can be programmed for these reports to be generated automatically for printing at a certain time each day.	**For automatic report time** 1. Dial 75. *"SMDA PROGRAMMING"* 2. Dial 13. *"AUTO TIME XXXX "* 3. Dial time in hours and minutes (HH MM in 24 hour time). -OR- Dial * to accept current time. 4. Dial * for next SMDA programming feature. -OR- Dial * * for configuration mode.	AUTOMATIC REPORT TIME HOURS: MINUTES: SELECTED RECORD STATION REPORT ACCOUNT REPORT TRUNK REPORT DEPARTMENT REPORT PRINT ALL RECORDS DEFAULT = NONE AS'GND
	To define reports to be printed 1. Dial 75. *"SMDA PROGRAMMING"* 2. Dial 14. *"AUTO REPORT "* 3. Choose reports for printing. - Dial 1 for sta. report. *"STATION REPORT "* - Dial 2 ac't. report. *"ACCOUNT REPORT "* - Dial 3 line report. *"LINE REPORT "* - Dial 4 dept. report. *"DEPT. REPORT "* - Dial 5 print all. *"PRINT RECORDS "* - Dial 6. Delete Records. *"DELETE RECORDS "* 4. Dial * for next SMDA programming feature. -OR- Dial * * for configuration mode.	

Press SPKR to end.

Base level ITCM ✳ # 7 4 6 ✳.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Station Message Detail Reporting (SMDR) Printout: The SMDR can be turned on by programming action to provide continuous printout of system-wide station call activity as it is collected by the system. Additional programming action can be taken which will cause the printing of the cost of each reported call to be included when the printout occurs.	**To program SMDR cost reporting:** 1. Dial 77. *"SMDR PRINT "* 2. Dial 1 *"XXXXXXX COSTING "* 3. Press A1 to toggle between enable and disable (A1 LED On = Enabled). -OR- - Dial 1 to enable . (A1 LED on) *"WITH COSTING "* - Dial 2 to disable. *"WITHOUT COSTING "* 4. Dial ✳ for configuration mode.	COST REPORTING | ENABLE | DISABLE SMDR PRINTOUT | ENABLE | DISABLE DEFAULT = NO COST REPORTED DEFAULT =PRINTOUT ENABLED
	To program for SMDR printout: 1. Dial 77. 2. Dial 2 . *"SMDR PRINT XXX "* 3. Press A1 to toggle between enable and disable (A1 LED On = Enabled) -OR- - Dial 1 to enable printing.*"SMDR PRINT ON "* (A1 LED on). - Dial 2 to disable printing *"SMDR PRINT OFF"* 4. Dial ✳ for configuration mode.	

Press SPKR to end.

ATTENDANT CONFIGURATION

- Mark the desired selections in the charts to record programming needs.
- Dial the feature code and then dial the selection code or press the programming key to program the selection.

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

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
Base Level: The first step in any programming sequence is to enter the base level. Once in this mode, attendant programming can be performed.	Press ITCM * #. *"CONFIG. MODE "*	
System Clock: The system clock maintains current date and time information. This information is provided to an LCD speakerphone for display.	1. Dial 01. *"SET CLOCK "* LONG FORM - Dial 00 - 99 for yr. - Dial 01 - 12 for mo. - Dial 01 - 31 for day - Dial 00 - 23 for hr. - Dial 00 - 59 for min. SHORT FORM - Dial 00-23 For hr. - Dial 00-59 for min. - Dial # to assign hours and minutes. 2. Dial * for configuration mode.	
System Speed Dial: A special system-wide list of numbers can be programmed for automatic dialing by all users.	1. Dial 02. *"SYS SPEED DIAL "* 2. Dial 01 - 99 for storage location. *"XXXXXXXX..."* 3. Dial # to clear current entry. *"LINE: "* 4. Choose line, line group, or intercom to be used with speed dial number. *"LINE XX "* - Line port 1-8 = Dial 01 - 08 or press B1 - B8. - Line port 9-16 = Dial 09 - 16 or press A1 - A8. - Line port 17-24 = Press HOLD, dial 01- 08 or press HOLD, B1 - B8. - Dial 90 for last line used or prime line. *"PRIME LINE "* Continued on next page	RECORD SPEED DIAL NUMBERS ON NEXT PAGE Press SPKR to end.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY	REFERENCE RECORD
System Speed Dial - continued	- Dial 91 - 94 for line group 1-4. *"LINE GROUP 1 "* - Press **ITCM** key for intercom line. *"INTERCOM "* 5. Dial number for storage (32 digits max). *"XXXXX... "* - If required, press **HOLD** key to store a pause. - If required, press **TAP** key to store a hookflash. 6. Press **TRANS/CONF** key to save the number. 7. Repeat steps 2-6 for all speed dial numbers. -OR- Press * for configuration mode.	

Press SPKR to end.

SYSTEM SPEED DIAL RECORD							
LOC	NUMBER	LOC	NUMBER	LOC	NUMBER	LOC	NUMBER
01		26		51		76	
02		27		52		77	
03		28		53		78	
04		29		54		79	
05		30		55		80	
06		31		56		81	
07		32		57		82	
08		33		58		83	
09		34		59		84	
10		35		60		85	
11		36		61		86	
12		37		62		87	
13		38		63		88	
14		39		64		89	
15		40		65		90	
16		41		66		91	
17		42		67		92	
18		43		68		93	
19		44		69		94	
20		45		70		95	
21		46		71		96	
22		47		72		97	
23		48		73		98	
24		49		74		99	
25		50		75			

DEFAULT = NONE AS'GND

Press ITCM * #

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY'	REFERENCE RECORD
Night Transfer (of ringing): The day, or normal ringing of incoming lines can be transferred to a station or stations by the attendant for off-hour or special purpose answering. Stations are arranged to receive night transfer through class of service programming.	1. Dial 03. *"NIGHT XFER XXX "* 2. Press A1 to toggle between enable and disable (LED On = Enabled). -OR- Dial 1 to enable (A1 LED on). *"NIGHT XFER ON "* Dial 2 to disable. *"NIGHT XFER OFF "* 3. Dial * for configuration mode.	ENABLE DISABLE DEFAULT = DISABLED
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.	1. Press 04. *"MOH XXXXXXXX "* 2. Press A1 to toggle between enable and disable (LED On = Enabled). -OR- Dial 1 to enable. *"MOH ENABLED "* (A1 LED on). Dial 2 to disable *"MOH DISABLED "* 3. Dial * for configuration mode.	ENABLE DISABLE DEFAULT = ENABLED
LCD Messaging: A message can be set at any system station and displayed by any LCD speakerphone that calls it on the intercom line. Two standard messages are provided for use but the attendant can create up to 10 custom messages if needed. For example, the message "Staff Meeting" = 73 84 24 36 12 61 35 35 84 46 65 44.	1. Dial 05. *"LCD MESSAGES "* 2. Dial 0 - 9 for message number. "XXXX... " 3. Dial # to clear current message. 4. Refer to Table 4-1 (page 4-17), and compose message (16 digits max.). 5. Dial all two-digit codes necessary to enter the message. "YYYYYYY... " -OR- Dial 10 for pre-programmed message *"BACK AT "* -OR- Dial 20 for pre-programmed message *"CALL "* 6. Dial * for next message location and repeat steps 2 - 5. 7. Dial * * for configuration mode.	MSG. / LOCATION (01 02 03 04 05 06 07 08 09 10) × (1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16) DEFAULT: 1 = BACK AT, 2 = CALL

Press SPKR to end.

FEATURE DESCRIPTION	ENTRY CODE AND PROMPTING DISPLAY'	REFERENCE RECORD
Station Names: Stations can be assigned individual names or category names that will be displayed by an LCD speakerphone when it is called by the station. Typical names could be TEC SER, MKT 1, J Smith.	1. Dial 06. *"STATION NAMES "* 2. Select station port to be programmed: *"XXXXXX "* - Station 10 - 73: Dial 10 - 73 or Press C10 - C73. 3. Dial # to clear current station name. 4. Refer to Table 4-1 (page 4-17), and compose station name (7 digits max.). 5. Dial all two-digit codes necessary to enter a new station name. *"XXXXXXX YYYYYYY"* 6. Dial * for next station and repeat steps 2-5. 7. Dial * * for configuration mode.	
Station Message Detail Accounting (SMDA) Printout: The attendant can command the system to print several different types of SMDA reports and to delete all stored SMDA records. *NOTE: The attendant station must be enabled to delete SMDA records (see page 4-8) before the 7 # command will generate a response.*	1. Dial 07. *"SMDA REPORTS "* 2. Select report type.- Type 1 # for station report. *"STATION REPORT "* - Type 2 # for trunk report. *"TRUNK REPORT "* - Type 3 # for department report. *"DEPT. REPORT "* - Type 4 # for account code report. *"ACCOUNT REPORT "* - Type 5 # for automatic report. *"AUTO REPORT "* - Type 6 # to print all records. *"PRINT RECORDS "* - Type 7 # to delete SMDA records. *"DELETE RECORDS "* - Type 8 to obtain the number of free records remaining in system. *"FREE RECS XXXXX "* - Type 9 to abort printout. *"ABORT PRINT "* 3. Dial * for configuration mode.	

PORT	NAME	PORT	NAME	PORT	NAME
10		21		32	
11		22		33	
12		23		34	
13		24		35	
14		25		36	
15		26		37	
16		27		38	
17		28		39	
18		29		40	
19		30		41	
20		31			

DEFAULT = NONE AS'GND

Press SPKR to end.

SECTION 3
VIDEO DISPLAY TERMINAL PROGRAMMING

INTRODUCTION

The class of service can be programmed from a video display terminal (VDT) instead of from the programming station. The VDT that is used must be a serial-data, RS-232 type, asynchronous device. A keyboard send/receive (KSR) hard-copy printer can be used instead of a VDT if preferred.

A personal computer (PC) can be employed if it will run a communications software program which allows it to emulate a data terminal device (DTE equipment). Many effective communications software programs are available for this purpose. Any that can be arranged to match the following data communications parameters can be used:

- Full Duplex
- XMODEM communication protocol (8 bit data required)

Regardless of the type of programming terminal employed, it is connected to the common equipment data port A.. Refer to the Chapter 3, Section 2 paragraph titled, *DATA DEVICE CONNECTIONS* for complete connection details.

The information provided below is applicable for programming any model 2000 system. Menu illustrations that are shown herein are typical of those that are displayed by the system.

VDT PROGRAMMING PROCEDURE

INTRODUCTION

The programming procedure is menu driven.

- A list of selections are presented for consideration which differ in content and required response.
- Each selection, when responded to, either causes a further breakdown of selections to be presented or causes a particular COS programming action to take place.
- This menu system prompts the programmer for the required response and, where appropriate, will repeat prompts to allow programming of more than one device without having to make another menu selection.
- All of the menus operate in the same manner. They differ in only the required response.
- Each prompt requires a response followed by a Carriage Return (RETURN). The responses usually consist of a one or two-digit number or a string of numbers or alpha-numeric characters when programming names and messages. Successive entries are separated by a space or a comma.

GENERAL INFORMATION

There are two responses which allow a programmer to quit a procedure.

- **RETURN** (ENTER on some keyboards) - This action returns the user to the top of the current menu.
- **CONTROL C** - This action returns the user to the top of the main menu.

There are certain other responses which have special functions.

- Responding with the @ key will print or display the menu that the programmer is currently using. The system is waiting at the same prompt line as it was before the menu was repeated.
- Responding with the ? key will cause a help menu to be printed if one is available. The system is waiting at the same prompt line as it was before the help menu was requested.

There are special line edit characters.

- **Backspace, Delete, Rub-out** - Used to delete characters from the response line as they are being typed.
- **CONTROL R** - Causes the current response line to be echoed for review.
- **CONTROL D** - Causes the current response line to be deleted.
- **CONTROL S** - Causes printing or display action stop.
- **CONTROL Q** - Causes the printing or display to resume.

There are two system acknowledgement messages to a response line.

- COMMAND ACCEPTED - Response accepted.
- ***COMMAND REJECTED*** - Response not accepted. The terminal bells also sounded.

PROCEDURE

1. Determine the system programming parameters, and record them for future reference.
2. Turn on the AC power to the system and the VDT.
3. Press the **RETURN** (ENTER) key. The system enters an approximate 20 second timeout cycle. Step 4 must be performed within this timeout period or the programming sequence will be aborted.
4. Type the password: **l ✳ 7 4 6 ✳**, and press **RETURN** (ENTER). The VDT will display the main programming menu. The system enters an approximate 3 minute timeout cycle. A selection or response must be entered within this timeout period, otherwise; the programming sequence is aborted.
5. Execute the programming procedures by responding to the prompts listed in first the main menu and then in subsequent menus.

REMOTE PROGRAMMING

The telephone system can be programmed remotely using the following equipment:
- A VDT or a PC and appropriate software program,
- An Executech OPX unit (product code OPX-2)
- A pair of data modems.

The data modems can be any commercially available 300 or 300/1200 baud type with auto-answer capability. Be sure to verify the auto-answer capability before purchasing the units. It is recommended that the same make and model of modem be used at both the installation site and the remote programming site.

INSTALLATION

The equipment connections at the customer location will require an OPX unit connected between an unused station port of the common equipment and the network side of the data modem. Refer to Figure 4-2 on page 4-72, and connect the equipment for remote programming as illustrated therein and discussed below.

- Determine the signal needs of the modem from the user's manual for it.
- Wire the proper connector (to match the DATA jack) on one end of a length of multiline cable.
- Punch down the appropriate leads on the connector block. Refer to Chapter 3 for connection details as needed.
- Connect the NETWORK jack of the data modem to the OPX jack on the OPX unit using a standard two-wire line telephone cord.
- Connect the KSU jack on the OPX unit to a station port at common equipment station connector block using four-wire cable.

NOTE: The station port where the OPX unit is connected must be programmed with the ringing line preference feature.

- Refer to the user's manual for the modem, and program the modem to automatically answer after the first ring.
- Interface the VDT or PC with the modem at the programming site per the user's manuals for the equipment be used.
- Also refer to the manual associated with the OPX unit as needed.

OPERATION

To establish a communications link for programming the system from a remote site, proceed as follows:

- Call the attendant at the customer site, and ask for a transfer to the station port that the OPX unit is connected to.
- The OPX unit will ring the modem. (The modem must be programmed to automatically answer on the first ring.)
- After the modem answers the call, the data link can be made between the originating and the remote modems.

Programming can then be performed from the remote site just as if the VDT or PC was connected directly to the system.

TYPICAL PC OPERATION

The following procedure is given as a typical example for using a PC and a communications software program to program the model 2000 telephone system. It is only provided for illustration and reference purposes and describes a set-up using a typical communications software program known as *PROCOM* (produced by Datastorm Technologies, Inc.). Individual procedures may vary with other communications software programs but the general process is similar to this.

1. Perform turn-on and program-load procedures. If operating through modems, take action, as described in the previous discussion, to establish a communications link between the PC and the common equipment.

2. If the PC is directly connected to the common equipment, match the data communications parameters of the software program to those now programmed at the model 2000 telephone system.

   -OR-

   If remote programming is being employed, the data parameters of the PC must match the modem connected to it, the modem connected to the common equipment must match the data parameters of it as well.

NOTE: Remember, 8-bit data is required for XMODEM protocol. If the common equipment is not now programmed to provide 8-bit data, it will have to be re-programmed from station 10 (see page 4-7 for details) before data communications can take place. The baud rate to match the modem or the PC should be set at the same time.

Set the data communication parameters as follows:

- Press **ALT P**.
- Type **11** the press **ENTER**. This action selects a baud rate of 9600 baud.
- Type **17** then press **ENTER**. This action selects 8-bit data.
- Type **18** the press **ENTER**. This action selects one stop bit.
- Type **24** then press **ENTER**. This action saves the data parameters.

3. Set the terminal parameters as follows:.
   - Press **ALT S**.
   - Type **2** then press **ENTER**.
   - Type **1** then press **ENTER**.
   - Use arrow keys to select VDT-100 or similar emulation then press **ENTER**.

NOTE: Setting the terminal emulation for a Wyse-50 or VT-100 emulation will provide a compatible set of default values; however, any emulation which provides full duplex operation is satisfactory.

   - Press **ESC** to finish.
   - Press **S** then press **ENTER**. This action saves the terminal parameters.
   - Press **ESC** then press **ENTER** to end the terminal parameter set up.

4. When computer screen displays a prompt for password, type **! * 7 4 6 *** then press **ENTER**. This causes main COS programming menu to be displayed.
5. From main menu, type **1** then press **ENTER**. This causes system COS programming menu to be displayed.
6. From system menu, make all selections necessary to perform class of service programming then return to the main menu.
7. From the main menu, type **4** then press **ENTER**. This causes load/save menu to be displayed.
8. From load/save menu, down-load COS data from common equipment to computer or up-load COS data from computer to common equipment,

   Down-Load COS Data From Common Equipment To Computer

   - Type **12** then press **ENTER**.
   - Press **PAGE DOWN**.
   - Type **1** to choose XMODEM protocol.
   - Type file name for down-loaded COS data to save into.
   - Press **ENTER**. The COS data, as programmed in the common equipment, is automatically down-loaded to the computer file.

   Up-Load COS Data From Computer To Common Equipment

   - Type **13** then press **ENTER**.
   - Press **PAGE UP**.
   - Type **1** to choose XMODEM protocol.
   - Type file name of saved COS data.
   - Press **ENTER**. The COS data, as stored in the computer file, is automatically up-loaded to the common equipment.

9. Repeat step 8 except type 14 to down-load currently stored auto dial and speed dial numbers or type 15 to up-load them.
10. Return to main menu and log off.

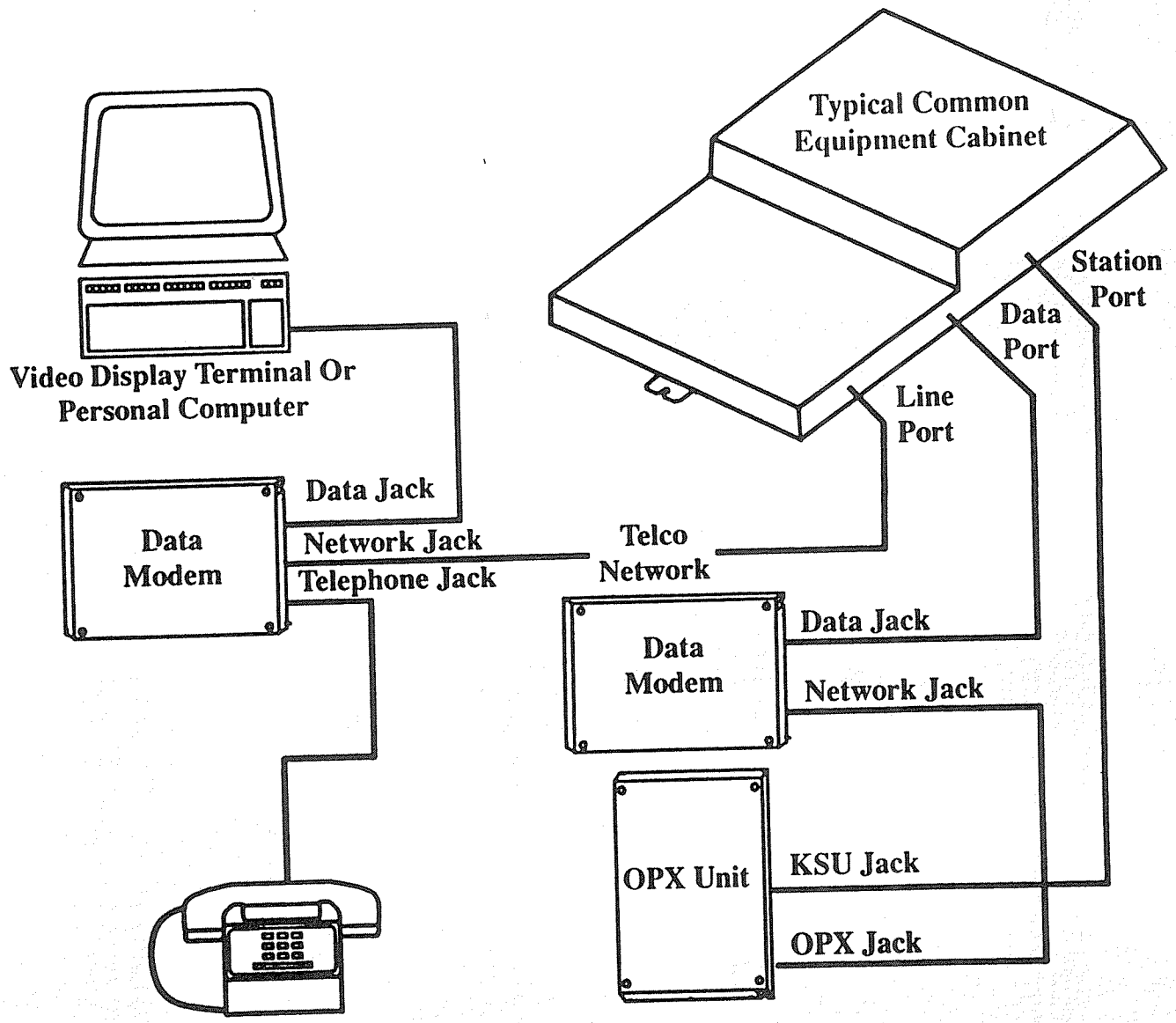


Figure 4-3. Remote Programming Block Diagram

MENU DESCRIPTIONS

```
C.O.S. Programming
1. System C.O.S.
2. Line C.O.S.
3. Station C.O.S.
4. Toll Restriction Table Administration
5. Information
6. Logoff

Enter Selection:
```

MAIN MENU SELECTIONS

- **Selection 1:** Chooses system COS programming.
- **Selection 2:** Chooses line COS programming.
- **Selection 3:** Chooses station COS programming.
- **Selection 4:** Chooses toll restriction table administration programming.
- **Selection 5:** Chooses an information menu to provide assistance with VDT programming.

```
System C.O.S. Programming
1. System Defaults
2. Phone Programming
3. System Timing
4. Load / Save C.O.S. Data
5. Serial Communication Parameters
6. C.O.S. Data Printout
7. Set Clock Date / Time
8. SMDA Programming
9. SMDR Print Parameters
10. Logical / Physical Assignments - Stations
11. Logical / Physical Assignments - Lines
12. Feature Inhibit Programming
13. Enable All Inhibited Features
14. LCD Messages
15. Software Version Number
16. Return To Previous Menu

Enter Selection
```

SYSTEM COS MENU SELECTIONS

- **Selection 1:** System defaults
  - Default All System Data
  - Default All Line Data
  - Default All Station Data
  - Default Selected Station Data
  - Pulse Dial on All Lines
  - Tone Dial on All Lines
  - Default key Mapping on all Stations
  - Master Clear System Data
  - Default Toll Restriction Tables

On each default selection, the system questions the user as to whether the default should be made. If response to the question is yes (Y), the default is performed.

When defaulting selected station data, the station to be defaulted must be identified by port number (10 - 73)

- **Selection 2:** Phone programming
  - Phone Type (Type of telephone assigned to each station port)
  - Voice/Tone Announce First on Intercom (Choose either Voice or Tone signalling as standard intercom signalling method.)
  - Station Message Desk (Assign or clear one station port as the central message desk.)
  - Assign Extension Number to Port (Gives a station flexible extension numbers from 2 - 4 digits.)
  - Assign Extension Number to Department (Gives an entire department one extension number.)
  - Music on Hold
  - Do Not Disturb Inhibit
  - Station Monitoring (Visual ring indication for station with BLF appearance at programmed station can be enabled or disabled.)
  - Tandem Attendent (One or both attendants can receive timed hold recall and recall from transfer.)
  - Voice Mail Auto Transfer (Enables immediate line transfer when voice mail unit is included with system.)

The station to be programmed must be identified by port number (10 - 73).

When assigning extension numbers, enter station port or department number, then make extension number entry.

- **Selection 3 :** System timing (system timing requirements)
  - Recall / TAP Time
  - Pause Time
  - Timed Hold Recall Time
  - Transfer Recall Time
  - Department Transfer Recall Tme
  - Call Park Recall Time
  - Extended DTMF Dialing Tones

- **Selection 4:** Load/Save COS data (on cassette tape and the transfer of this data through remote programming)
- **Selection 5 :** Serial communication parameters (for data port A and data port B)
- **Selection 6:** COS data printout
- **Selection 7**: Set clock date/time.
- **Selection 8**: SMDA programming (Configures the Station Message Detailed Accounting feature. Also refer to page 4-55 for an explaination of call costing and SMDA reporting.)
  - Assign Area Codes / Prefixes to Bands
  - Enter band number 0-7, enter 0 for no band, or enter area codes or prefixes as 200-999.
  - Set Dial Time Limit (non-costed time allowed for dialing to take place in 1/10 min)
  - Set Answer Time Limit (non-costed time allowed for call to ring and be answered in 1/10 min)
  - Define Department Numbers (Calls can be costed on a department basis by department basis.)
  - Assign Stations to Departments (for costing by department)
  - Set Account Codes (Calls can be identified by account code for costing by catagory.)
  - Clear Account Codes
  - Enable Account Codes With Verify (User account code entry is compared with programmed account code.)
  - Enable Account Codes Without Verify (User account code entry is not compared with programmed account code.)
  - Disable Account Codes
  - Account Code Message Display Parameters (LCD speakerphones can prompt users for account code entry on incoming and/or outgoing calls.)
  - Account Code Message Display Time
  - Maximum Account Code Length
  - Call Cost Tables
  - Call Cost Exception Tables
  - Automatic Reports (Call cost reports can be produced for printing.)
  - SMDA Delete By Attendant (allows attendant to delete SMDA records)
- **Selection 9**: SMDR print parameters (enables or disables call cost reporting along with a Station Message Detail Report).
- **Selection 10**: Logical/physical assignments - stations (For example; assign station extension 25 to station port 25. Also refer to the discussioin provided on page 3-4.)
- **Selection 11:** Logical/physical assignments - lines (For example; assign line 1 to line port 1. Also refer to the discussion on page 3-4.)
- **Selection 12**: feature inhibit programming (allows individual features to be inhibited)
- **Selection 13**: Enable all inhibited features (will enable all features inhibited with selection 12)
- **Selection 14**: LCD messages (programs the messages for the LCD messaging feature)
- **Selection 15**: Software version number (identifies the software release version of the system)

Line C.O.S. Programming
1. Line Type
2. Line Group Assignment (Reserved - if no hybrid strap installed)
3. Line Dialing Mode
4. Line Privacy Release
5. Line Toll Restriction Table Assignments
6. Line Abandoned Hold Release Time
7. Set Up a Line (Using a Model Line)
8. Assign Name to Line
9. Assign Line to Department
10. Exclusive Hold
11. Return To Previous Menu

Enter Selection:

LINE COS MENU SELECTIONS

In each line COS menu selection, after choosing the feature, enter all line port numbers which are to be assigned to it.

- **Selection 1**: Line type (specifies the characteristics of the line port)
  - Disabled
  - Auxiliary (Configures port for installation of external paging amplifier.)
  - CO/PABX (Typical line connection)
- **Selection 2**: Line group assignment (assigns line to line groups, will be reserved if the hybrid/key strap is not installed)
- **Selection 3**:Line dialing mode (pulse or tone to match the connected line)

- **Selection 4:** Line privavy release (releases privacy on a line)
- **Selection 5:** Line toll restriction table assignment
- **Selection 6:** Line abandoned hold release time
- **Selection 7: Set up a line** (Using a model line) (provides a means of programming a group of lines to match the programming of a model line)
- **Selection 8:** Assign name to line.
- **Selection 9:** Assign line to department.
- **Selection 10:** Exclusive hold.
- **Selection 11:** Voice mail line ID (identifies line and extension for ExecuTech personalized call coverage)

Station C.O.S. Programming
1. Set Up a Station (Using a Model Station)
2. Assign Name to Station
3. Assign Station to Department
4. Line/ Intercom Features
5. Ringing Assignment
6. Button Mapping
7. Toll Restriction Administration
8. Automatic Busy/ RNA Call Forwarding
9. Miscellaneous Feature Programming
10. Return To Previous Menu

Enter Selection:

STATION COS MENU SELECTION

In each station COS menu selection, after choosing the feature, enter a station port number which is to be assigned to it and enter line port numbers where prompted. Multiple station number entries are allowed for some features as prompted.

- **Selection 1:** Set up a station (Using a model station) (program a group of stations to match the programming of a model station)
- **Selection 2:** Assign name to station
- **Selection 3:** Assign station to department
- **Selection 4:** Line intercom features
  - Prime Line (assign prime line, prime group, prime intercom, or clear all)
  - Ringing Line Preference (enable or disable)
  - Line Access Deny (enable or disable station access to a line)
  - Line Originate Deny (enable or disable station ability to originate a call on a line)
  - Idle Line Preference (enable or disable access to an idle line when station is taken off hook)
  - Reserve Intercom Link (exclusive use of intercom link reserved for programmed station)
  - Block Voice Announce Intercom Call
  - Audible Monitoring (audible ringing sounded for stations with BLF appearance at programmed station)
- **Selection 5:** Ringing assignment
  - Personal Ringing Tones (One of four different tones can be chosen. Refer to page 4-25 for frequencies if required.)
  - Direct/Delayed Ringing (of each line assigned to programmed station)
  - Night Ringing (enable or disable night transfer of ringing to programmed station for programmed lines)
- **Selection 6:** Button mapping (assign functions to keys)
  - Keys are identified by Ax and Bx codes as shown in **Figure 4-1** on page 4-44 or by the programming overlay supplied with the system.
  - Functions that can be assigned are identified per the following list. To display list, enter ?. Return to key mapping with Control z.
    BLK = Blank
    Lxx = Line xx
    Sxx = Station xx
    DND = Do Not Disturb
    PRI = Privacy
    IC2 = 2nd Intercom
    SAV = Save
    ZPx = Zone Page (1-3)
    AC = All Call
    ACB = Auto Callback
    CF = Call Forward
    CPx = Call Park (1-9)
    TGx = Trunk Group (1-4)
    VAB = Voice Announce Block
    TGQ = Trunk Group Queue
    EX = Exit Button Mapping

System displays list of current key mapping at station. Provision is made in the menu display for every type of telephone supported by the Express system. Some keys listed may not be present on the station being programmed.

Enter new function for key and press ENTER, or press ENTER to accept current function.

- **Selection 7:** Toll restriction administration (assigns toll tables to station)
  - Toll Restriction Table Assignment (assign pre-programmed toll restriction tables to be applied to all regular calls)

- Night Mode Toll Restriction Table Assignment (assign pre-programmed table to be applied to calls on night transferred line)
- System Speed Dial Toll Restriction (assign pre-programmed toll restriction tables applied to system speed dial numbers)

- **Selection 8:** Automatic busy/RNA forwarding (Links programmed station to another one to form hunt group. Also, selects number of rings to occur at programmed station before ring-no answer (RNA) call is forwarded to linked station.

- **Selection 9:**Miscellaneous feature programming (programs a variety of features for the station)
  - P.A. Port (station port as external paging amplifier interface, one port as ringing PA port for "night bell" application in conjunction with night transfer of ringing)
  - Automatic Privacy Release (Enable or disable automatic privacy release or a per line basis.)
  - Line Auto Hold (active line automatically held when new line is selected)
  - Intercom Auto Hold (intercom automatically held when new line is selected)
  - Thru Dialing/ OPX (arrange port to allow DTMF tones to pass through to connected equipment)
  - Executive Override
  - Do Not Disturb Override
  - Service Observing
  - All-Call and Zone Paging
  - Message Wait Originate
  - Head Set Mode
  - Group Call Pickup
  - Secure off Hook Voice Announce
  - Integrated off Hook Voice Announce
  - Data Security Ports
  - LCD Call Costs (display of cost for current call)
  - Assign dynamic line keys

Toll Restriction Table Administration
1. Build / Modify an Allow Table
2. Build / Modify a Deny Table
3. Clear a Table / Entry
4. Return To Previous Menu

Enter Selection

TOLL RESTRICTION TABLE ADMINISTRATION

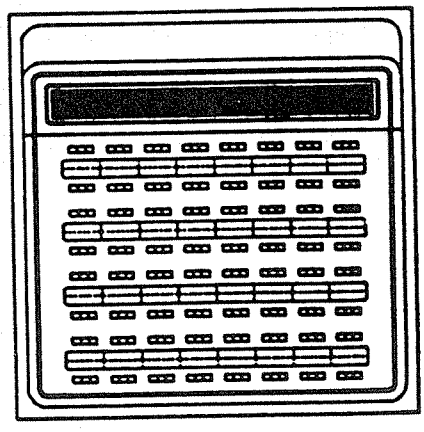
Use the toll restriction table administration menu to build toll restriction tables for line and station assignment. Refer to page 4-46 for a discussion concerning toll restriction table construction and assignment.

STATION 10 - PROGRAMMING OVERLAY

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

C66	C67	C68	C69	C70	C71	C72	C73
C58	C59	C60	C61	C62	C63	C64	C65
C50	C51	C52	C53	C54	C55	C56	C57
C42	C43	C44	C45	C46	C47	C48	C49
C34	C35	C36	C37	C38	C39	C40	C41
C26	C27	C28	C29	C30	C31	C32	C33
C18	C19	C20	C21	C22	C23	C24	C25
C10	C11	C12	C13	C14	C15	C16	C17

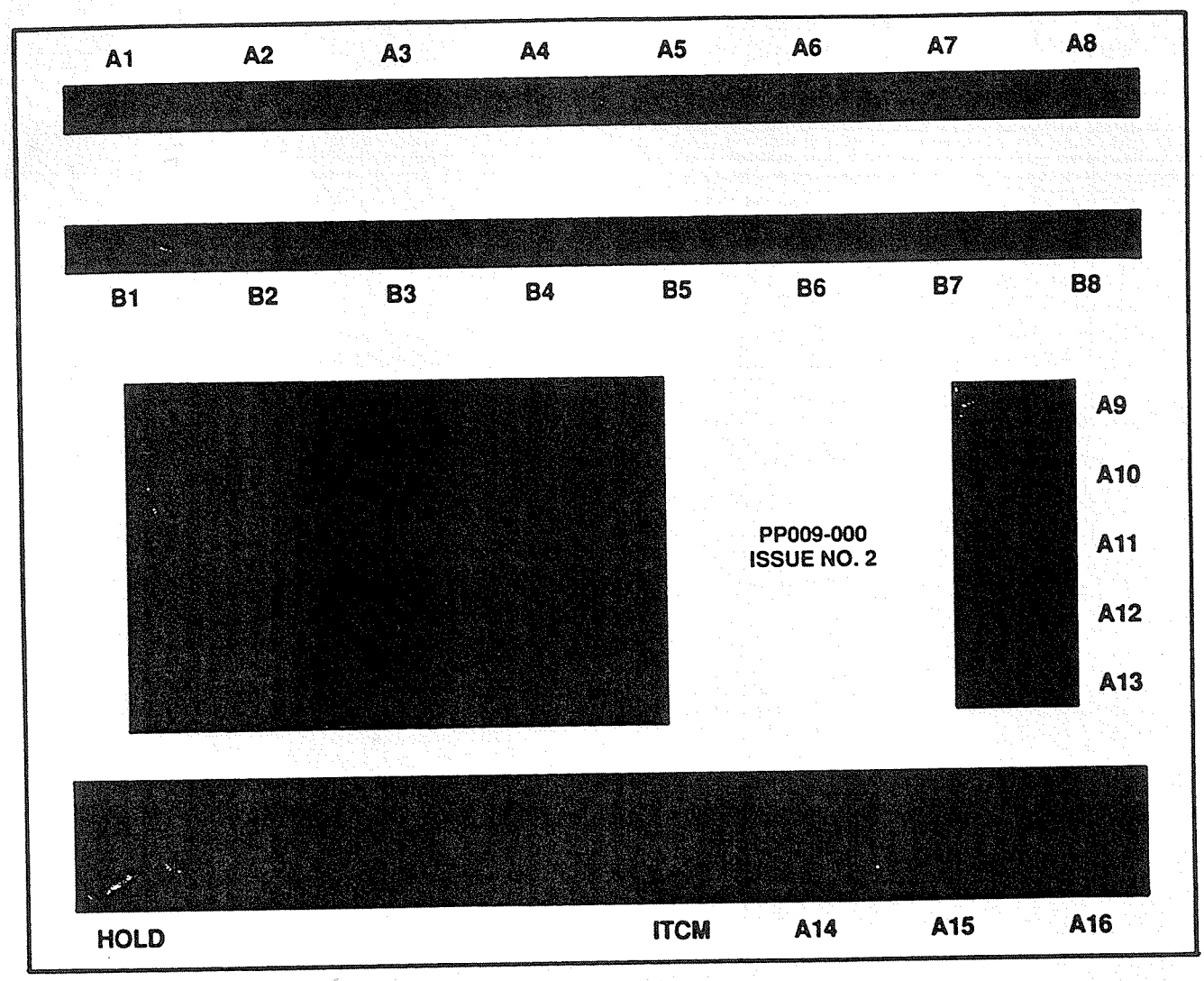
PP003A000

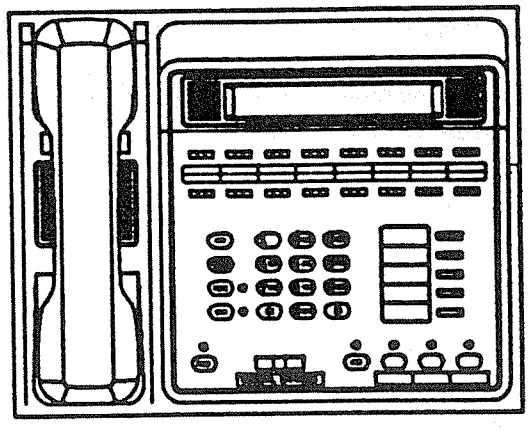


64-BUTTON DSS/BLF
EXPRESS CONSOLE

STATION 10 - PROGRAMMING OVERLAY

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

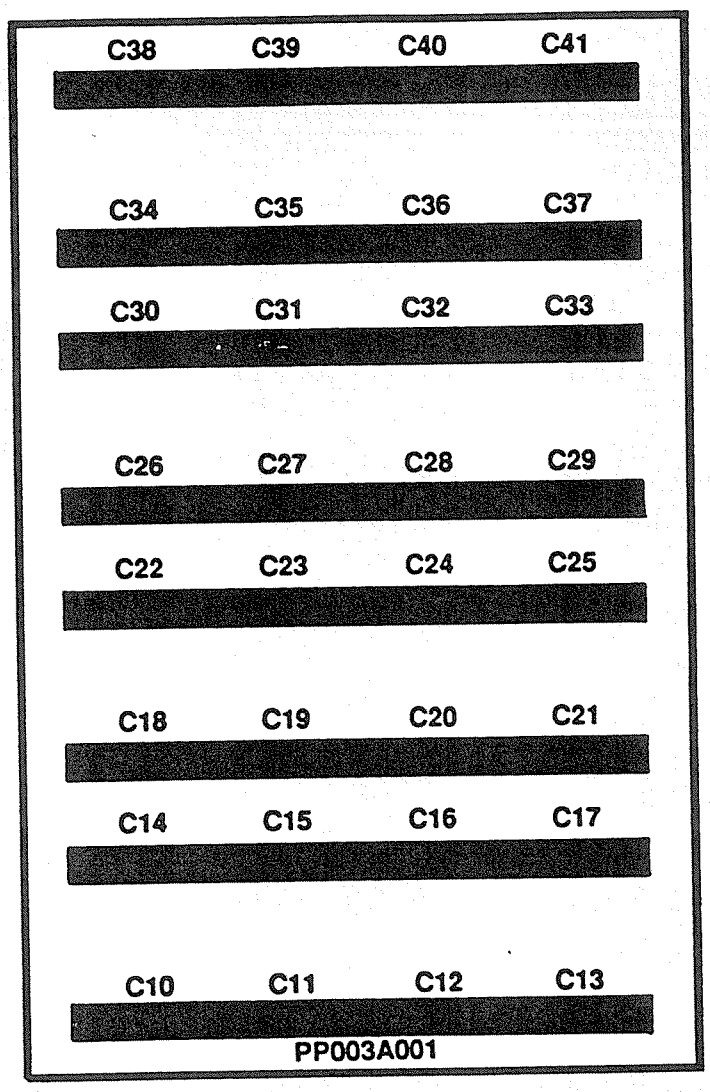


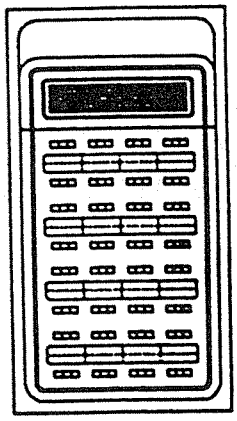


16-BUTTON LCD
EXPRESS TERMINAL

STATION 10 - PROGRAMMING OVERLAY

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





32-BUTTON DSS/BLF EXPRESS CONSOLE

CHAPTER 5
SYSTEM OPERATING PROCEDURES

SECTION 1
MULTILINE STATION OPERATION

ANSWERING CALLS

ANSWERING OUTSIDE CALLS

Calls appear at buttons that have actual line assignments.

- Press line button of ringing line (line button with flashing light).
- Lift handset.

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

ANSWERING INTERCOM CALLS

To answer a voice 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.

CALL PICKUP ANSWERING

DIRECT

To answer a call that is ringing at another telephone,

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

GROUP

To answer a call that is ringing at any station in a group,

- Lift handset.
- Press **ITCM**.
- Dial # 4.

LINE ANSWER FROM ANY STATION

When the attendant station has enabled the night transfer (of ringing) feature (denoted by a flashing ITCM light at stations 10 and 12), an outside call can be answered from any station in the system.

- Hear ringing (loud ringer, night transfer station, etc.).
- Press **ITCM**.
- Dial **80**
- Answer call.

STATION MONITORING

With station monitoring enabled, a call ringing at a monitored station can be answered at a monitoring station.

- See flashing BLF light, then press DSS button. Light turns off and call is answered.

To return to call from hold or an unanswered transfer,

- Press **TAP** button

HANDSFREE ANSWERBACK (HFAB)

While a station is busy on a call, an off-hook voice announcement may be received either as a non-secure off-hook voice announcement (OHVA) or as a secure off-hook voice announcement (SOHVA). An OHVA announcement is sounded through the monitor speaker on the Express telephone while a SOHVA announcement is sounded through the handset receiver.

To respond to an OHVA announcement,

- Hear alerting tone (five quick tone bursts) and announcement sounded from monitor speaker.
- Speak toward microphone opening in front edge of the telephone housing to reply.

NOTE While the distant party cannot be prevented from overhearing the announcement, the user can press and hold MUTE button to prevent distant party from hearing the response.

To respond to a SOHVA announcement,

- Hear tone alert and announcement in handset receiver. Distant party cannot hear announcement.
- Respond in a verbal manner: Press and hold MUTE button, and reply by speaking into handset transmitter. Distant party cannot hear response.
- Respond in a non-verbal manner: Press pre-programmed button to cause a set message to appear in display of an announcing station (if it is an LCD speakerphone). This action also disconnects the announcing station.

- Respond in a non-verbal manner: Press pre-programmed button to cause a set message to appear in display of an announcing station (if it is an LCD speakerphone). This action also disconnects the announcing station.

MAKING CALLS

OUTSIDE LINE CALLING

- Press line button 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.

LINE GROUP ACCESS

If the system provides line groups,

- Press **ITCM.**
- Dial line group access code
  9 = main line group
  81 = secondary line group 1
  82 = secondary line group 2
  83 = secondary line group 3
- Listen for dial tone.
- Dial number.

LINE AND LINE GROUP QUEUING

A station can be placed in a queue to await the availability of an idle line or idle line group if all available lines or all line groups are busy.

To queue for an idle line,

- Press **HOLD.**
- Press line button of busy line and hang up. When line is free, station will ring.

To queue for an idle line group,

- Press **ITCM.**
- Dial line group access code (**9. 81, 82, 83**).
- Hear busy tone.
- Dial *** 8** and hang up. When line group is free, station will ring.

To answer queue ring back,

- Lift handset, hear line dial tone, and place call.

To cancel queuing,

- Press **ITCM.**
- Dial **# 8, and hang up.**

INTERCOM CALLING

Intercom calls may be manually dialed or automatically dialed using a pre-programmed Direct Station Selection (DSS) button.

VOICE CALLING

To voice call an intercom station,

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

To voice call a DSS number,

- Lift handset.
- Press programmable button that is programmed for desired station.
- Speak to called party.

NOTE: The outside line is automatically placed on hold when a DSS button is pressed or when the ITCM button is pressed prior to manually dialing an intercom extension number.

TONE CALLING

To tone call an intercom station,

- 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. Pressing ITCM a second time is not necessary in this case

To tone call a DSS number,

- Lift handset.
- Press programmable button that is programmed for desired station.
- Press **ITCM.** Called telephone will ring.

*NOTE: The lights (LEDs) adjacent to programmable buttons indicate status of DSS telephones: **DARK** indicates idle telephone, **STEADY-ON** indicates telephone in use. **FLASHING** indicates station is ringing.*

OFF-HOOK VOICE ANNOUNCE

To make a voice announcement to another station that is off-hook or busy on a call,

- Make intercom call.
- Hear OHVA warning tone (five quick tone bursts), and make announcement. If busy tone is heard, announcement cannot be made.
- Wait on line for reply. If announcement is made from an LCD speakerphone, called station may send non-verbal reply for display. As non-verbal message is displayed, station is disconnected.

NOTE: The announcement may be received as an off-hook voice announcement (OHVA) or as a secure off-hook voice announcement (SOHVA). The method in which the announcement is received is not controlled by the caller. Rather, it is dependent upon how the system is wired and programmed. If the telephone is being operated with the handset lifted, the announcement will be received in either an OHVA or SOHVA manner. If it is being operated in a handsfree manner, the announcement will not be received.

SPEED DIALING

To dial station speed dial numbers,

- Press keypad digit **0 - 9** for desired personal speed dial number.

-OR-

If on line listen to dial tone,

- Press **HOLD** and then press desired keypad digit **0 - 9**.

To dial system speed dial numbers,

- Press ✳.
- Press keypad digits **01 - 99** for desired system speed dial number.

-OR-

If on line listen to dial tone,

- Press **HOLD** ✳ and then press desired keypad digits **01 - 99**.

AUTOMATIC DIALING

To automatically dial numbers,

- Press desired programmable button.
- If desired programmable button is also programmed for DSS (one-button intercom) calling.
- Press **HOLD** and then press desired programmable button.

AUTOMATIC REDIALING

To activate automatic redial,

- Press programmable button pre-programmed for that purpose.
- Number will be dialed once a minute for ten minutes.

If called number is busy,

- Press automatic redial programmable button to immediately start the redial cycle.

If call is answered,

- Take control by lifting handset. If control is not taken, call will drop.

To cancel automatic redial,

- Press automatic redial button, lift and replace handset, or press any station button.

NOTE: Any user-originated station activity during automatic redial will cancel the feature.

LAST NUMBER REDIAL

The last number previously dialed can be automatically redialed with one-button or two-button action.

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

SAVED NUMBER REDIAL

The first 16 digits of the last manually dialed number can be saved for later redial.

To save the number,

- Press button preprogrammed for this purpose.

To dial a saved number,

- Lift handset. Listen for dial tone.
- Press **HOLD**, then press pre-programmed button.

EXTENDED DTMF

The length of the DTMF tone can be extended from the standard length to a pre-programmed longer length.

To extend tone length,

- Take station off-hook (lift handset or press SPKR).
- Press line button to select line if not automatically selected by going off-hook.
- Wait 10 seconds, and dial number. System will then generate long DTMF tones when dialing

-OR-

- Immediately press HOLD, then press line button of selected line to set the system to generate long DTMF tones without waiting for delay conversion.

To alternate between long length and standard length DTMF tones during a call,

- Press HOLD, then press line button for selected line.

ACCOUNT CODE ENTRY

The system can be programmed to detect an account code if one is entered after the line is selected and before the number to be called is dialed. Account code entry is voluntary and may be ignored if not required.

- Select Line. Display on LCD speakerphones will prompt for account code entry if feature is active.
- Enter account code.
  - Press ITCM.
  - Dial * 0 4.
  - Dial account code.
- Dial number to be called.

HOLDING CALLS

MANUAL HOLD

To place call on hold while on line,

- Press HOLD.

To retrieve held call,

- Press line button with flashing light.

-OR-

- Press TAP if station does not have line appearance.

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 that 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.

DIRECT STATION HOLD

To place a call on direct hold (park a call at a particular station),

- While on line, press ITCM (outside call placed on hold).
- Dial * 9 0 plus extension number of station to receive parked call.

To retrieve held call,

- From the hold receiving extension, dial # 9 0.

To cancel a held call,

- From the station that placed call on hold,
  - Dial * 4 plus the extension number of hold receiving station.

CALL PARK

To park a call,

- While on line, press ITCM.
- Dial *.
- Dial a park orbit access code (91 - 99).

NOTE: If a parked call is not retrieved within a programmable limit (0 -6 minutes), it reverts to the parking station as a standard held call.

To retrieve a parked call,

- From any extension, press ITCM.
- Dial #.
- Dial a park orbit access code (91 - 99).

UNSCREENED TRANSFER (With Automatic Camp-On To Busy Station)

To transfer an outside call to another station in the system,

- Answer outside call. (Do not press HOLD.)
- Press **TRANS/CONF**. (Outside call is placed on hold automatically.)
- Dial extension number of party to be transferred (or press **DSS** button for one-button intercom calling).
- Hang up handset.

NOTE: If the station to which unscreened transfers are made is busy, the transferred calls will camp-on at the station. Each call will automatically ring the station when it become idle. If a transferred call is not answered after a preprogrammed time, it will ring back to the transferring station.

To answer recall of transferred call,

- Press **TAP** button.

CONFERENCING

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. (Do not press HOLD.)
- Press **TRANS/CONF**. (Outside call is placed on hold automatically.)
- Establish second outside call. (Do not press HOLD.)
- Press **TRANS/CONF**. Conference is established.

To remain active in conference with one conferee,

- Press line button of party to keep.

To drop out of established conference,

- Dial # and hang up.

ADD-ON CONFERENCE (1 external party, 2 internal parties)

- Establish outside call. (Do not press HOLD.)
- Press **TRANS/CONF**. (Outside call placed on hold automatically.)
- Dial extension number of intercom party.
- Wait for answer.
- Press **TRANS/CONF** (A three-way connection is established).

THREE-PARTY INTERNAL CONFERENCE

To set up a three-party internal conference,

- Establish first internal call. (Do not press HOLD.)
- Press **TRANS/CONF**. (Internal call placed on hold automatically.)
- Establish second internal call. (Do not press HOLD.)
- Press **TRANS/CONF**. Conference is established.

To remain active in conference with one conferee,

- Stay on line when one party hangs up.

MESSAGING

MESSAGE WAITING CONTROL

The message waiting light at any telephone can be turned from another telephone to alert the user that a message awaits pickup. The ability to control message waiting lights is enabled by class of service programming and is usually limited to one station in the system. This station is designated as a central message desk.

To turn on MW light from central message desk,

- Press **ITCM**.
- Dial *** 3**.
- Dial extension number of station to be alerted. (The MW light of called station will flash.)

To turn off MW light from central message desk,

- Press **ITCM**.
- Dial **# 3**.
- Dial extension number of station that was alerted. (The MW light of called station will turn off.)

To turn off MW light while delivering message,

- Press **ITCM**.

To receive message at an alerted station,

- Observe flashing MW light.
- Lift handset.
- Press **ITCM HOLD**.

MESSAGING

MESSAGE WAITING CONTROL

The message waiting light at any telephone can be turned from another telephone to alert the user that a message awaits pickup. The ability to control message waiting lights is enabled by class of service programming and is usually limited to one station in the system. This station is designated as a central message desk.

To turn on MW light from central message desk,

- Press ITCM.
- Dial ✳ 3.
- Dial extension number of station to be alerted. (The MW light of called station will flash.)

To turn off MW light from central message desk,

- Press ITCM.
- Dial # 3.
- Dial extension number of station that was alerted. (The MW light of called station will turn off.)

To turn off MW light while delivering message,

- Press ITCM.

To receive message at an alerted station,

- Observe flashing MW light.
- Lift handset.
- Press ITCM HOLD.
- Connection to message desk is automatic.

LCD MESSAGING

System-supplied messages can be set at a station to be displayed by a calling LCD speakerphone

To turn on message,

- Press ITCM.
- Dial ✳ 02
- Dial message code number (0 - 9). See attendant for list of messages available.

The default messages of "BACK AT" and "CALL" may be provided for use:

If "BACK AT" is provided as message 1, then dial time in twelve-hour format after dialing message access code 1.

If "CALL" is provided as message 2, then dial forwarded-to extension after dialing message access code 2.

To turn off message,

- Press ITCM.
- Dial # 02.

STATION-TO-STATION MESSAGING

If a station has BLF appearance at another station, a call-back message indication can be left at that station.

To activate messaging,

- Make intercom call and hear ring-back tone.
- Dial ✳ 7. BLF light at called station turns on.

To cancel messaging,

- Press ITCM.
- Dial # 7.
- Dial extension number of station at which message call-back indication was left.

To answer messaging,

- Press DSS button associated with lighted BLF light..

VOICE ANNOUNCE BLOCKING

To block voice calls,

- Press ITCM.
- Dial ✳ 2.
- Hang up.

To un-block voice calls,

- Press ITCM.
- Dial # 2.
- Hang up.
-

LINE MONITORING

To activate while on a call,

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

NOTE: If a distant party places the call 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. Monitor light will turn off.

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

This feature provides disconnect and dial tone recall.

If a system has been configured for recall,

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

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

PAGING

EXTERNAL PAGING

Requires external paging unit.

- Press line button dedicated to paging.

-OR-

- Press button programmed for paging access or dial extension number of paging port..

ALL-CALL AND ZONE PAGING

To page,

- Lift handset.
- Press **ITCM.**
- Dial zone number - (**84, 85, 86,** or **87** for all-call).
- Make announcement.
- Hang up handset or wait on line for an answer.

MEET-ME PAGE (Answerback of Page)

To answer all-call or zone page from any telephone,

- Lift handset.
- Press **ITCM.**
- Dial **88.**
- Meet paging party on line for private conversation.

DO NOT DISTURB

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

- Press button pre-programmed for this purpose. (Associated 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 programmable button again. (Associated light will turn off.)

MUTE / HANDSFREE ANSWER INHIBIT

To prevent distant party from hearing while handset is lifted,

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

To resume two-way conversation,

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

To inhibit handsfree answer of intercom calls,

- Press and latch **MUTE**. Speaker light will flutter.

To enable handsfree answer of intercom calls,

- Press and release **MUTE**. Speaker 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 stored at a programmable button by pressing # during number storage.

PERSONAL RINGING TONES

A station user can select one of four different ringing tones for use at a station.

- 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

BACKGROUND MUSIC

Music must be supplied by the system before it can be turned on at a telephone. Background music, when supplied, automatically turns off during calls.

To turn music on,

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

To turn music off,

- Press **ITCM**.
- Dial **# 1**. **(SPKR light will turn off.)**

CALL FORWARD

A station user can designate another station to be the recipient of just the intercom calls and prime line calls that are directed to the user's station or the recipient of all calls that are directed to the user's station.

CALL FORWARD - PERSONAL

To forward intercom calls and prime line to another telephone,

- Press **ITCM**.
- Dial * **0 5**.
- Dial extension number of telephone to which calls are to be forwarded.

To cancel intercom call and prime line forwarding,

- Press **ITCM**.

- Dial # 0 5.

CALL FORWARD - ALL

To forward all calls to another telephone,
Press ITCM.

Dial * 5.

Dial extension number of station to which calls are to be forwarded.

To cancel all call forward,
Press ITCM.

Dial # 5.

NOTE: For each intercom call received during call forward, a ring reminder (short tone burst) will be heard at the called station to remind the user that calls are being forwarded.

AUTOMATIC CALL BACK

To arrange for the system to call back when a busy telephone becomes idle,

- Make intercom call. Hear busy signal.
- Dial * 6.
- Hang up. Calling telephone will ring when called telephone becomes idle.

To answer call back ring,

- Lift handset. Called telephone will ring.

NOTE: Call back is cancelled if handset is not lifted.

To cancel automatic call back before it rings,

- Press ITCM.
- Dial # 6.
- Hang up.

CALL WAITING

A call waiting tone can be sent to a busy station while the calling station waits on line for an answer.

To activate call waiting,

- Make intercom call and receive busy signal.
- Dial * 0 1. (Called party hears tone.)
- Wait on line for an answer.

To cancel call waiting.

- Hang up handset.

To answer a call waiting tone,

- Hear short tone burst in handset receiver.
- Complete present call, and hang up. Waiting call will begin ringing.
- Lift handset to answer.

SERVICE OBSERVING

A station can be programmed by system class of service to allow the user to monitor a conversation at another station in an unannounced and muted manner.

- While on-hook, press ITCM.
- Dial # 0 3.
- Dial extension number of station to be monitored.
- Monitor the in-progress call in a handsfree manner.

To end observation,

- Press SPKR or hang up handset if off-hook.

EXECUTIVE OVERRIDE

A station can be programmed by system class of service to allow the user to break into a conversation at another station.

- Make an intercom call, and hear busy signal.
- Dial * 0 3. A warning tone will sound at the called station.
- Join in-progress call.

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 button or ITCM.
- Dial number or press programmable button.
- When party answers, speak toward the telephone.

To answer a call,

- Press a 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.

STATION USER PROGRAMMING

AUTODIAL PROGRAMMING

Autodial numbers can be stored at any programmable button locations that do not have a line assigned to them. They can also be programmed as a secondary function at every DSS/BLF memory location. Typical autodial numbers are: frequently dialed telephone numbers or extension numbers, or frequently used host system or key system feature codes. When programming an autodial number, first decide over which circuit the call must be made. Then, determine the digits that normally have to be manually dialed to reach the called party or feature. This circuit selection and digit sequence can be stored as an autodial for later one or two-button access. If line pre-selection is not programmed, the system will automatically pick the prime line assigned to the telephone (if enabled), or pick the last used line at that station and place the call over that selection.

To program autodial numbers,

- Press ITCM * * 1.
- Press desired programmable button. Listen for fast tone bursts. If desired programmable button is also programmed for DSS/BLF, press HOLD and then press the programmable button.
- Press specific line button, ITCM button, or dial 1 - 4 for line groups, to store a line, line group, or intercom pre-selection.

  -OR-

- If no pre-selection is desired, dial 0 (system will choose last line used at calling station).
- Dial the number sequence to be stored. (Up to sixteen digits can be stored. Valid digits include 0 - 9, #, and *.)
  - To store a pause if required, press HOLD.
  - To store a hookflash if required, press TAP.

To store another number,

- Press TRANS/CONF.
- Press next programmable button.
- Make line pre-selection if desired.
- Dial number for storage.
- Repeat this procedure until all desired numbers are stored.

To end autodial programming,

- Press SPKR.

STATION SPEED DIAL PROGRAMMING

Station speed dial numbers can be stored by the station user for later redial. The storage locations are keypad digits 0 through 9 on the station. Before attempting to program, decide on the following items: (1) the number or feature to be stored, (2) which storage location will be used (0 - 9), (3) the circuit that the call will go over (individual line or intercom).

To program numbers,

- Press ITCM * * 2.
- Dial a memory location (0 through 9).
- .Press specific line button, ITCM button, or dial 1 - 4 for line groups, to store line, line group or intercom pre-selection.

  -OR-

- If no pre-selection is desired, dial 0 (system will choose last line used at calling station).
- Dial the number sequence to be stored. (Up to sixteen digits can be stored. Valid digits include 0 - 9, #, and *.)
  - To store a pause if required, press HOLD.

- To store a hookflash if required, press **TAP**.

Example: Store a telephone number under location 0. The sample number is 1(804)555-2222. Program it as follows:

ITCM, ✳, ✳, 2, 0, Line Button, 1, 8, 0, 4, 5, 5, 5, 2, 2, 2, 2.

To store another number,

- Press **TRANS/CONF**.
- Press next speed dial location.
- Make line pre-selection if desired.
- Dial number for storage.
- Repeat this procedure until all desired numbers are stored.

To end station speed dial programming,

- Press **SPKR**.

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

One-button intercom calling with visual indication of telephone status can be programmed at buttons not assigned to lines.

To program DSS,

- Press **ITCM ✳ ✳ 3**.
- Press button to be programmed as DSS button.
- Dial extension number.
- Repeat last two steps for all desired extension numbers.

To end DSS programming,

- 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 programming details.

PROGRAMMING AUTOMATIC REDIAL BUTTON

The system will allow the last previously dialed number to be automatically and repeatedly redialed for approximately ten minutes. A button must be programmed to provide this feature.

To program a programmable button for use as an automatic redial button,

- Press **ITCM ✳ ✳ 1**.
- Press desired programmable button.
- Press **#**.
- Press **SPKR**.

PROGRAMMING SECURE OFF-HOOK VOICE ANNOUNCE RESPONSE BUTTON

The system will allow a station user to make a non-verbal response to a secure off-hook voice announcement. This response will provide a pre-programmed message for display at the calling station if it is an LCD speakerphone.

To assign programmable button for non-verbal one-button response,

- Press **ITCM ✳ ✳ 1**.
- Press programmable button of choice.
- Dial **5** at the line prompt.
- Dial message location number (**1-0**).

NOTE: This is a pre-programmed message made available for use by attendant programming.

- Press **SPKR** to end.

SECTION 2
ATTENDANT STATION OPERATION

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

SYSTEM CLOCK

The system clock can be programmed to maintain current date and time information . This information is provided to the LCD speakerphone for display.

1. Press **ITCM.**
2. Dial ✳ **# 0 1.**
3. Dial two digits (**00-99**) for yr.
4. Dial two digits (**01-12**) for mo.
5. Dial two digits (**01-31**) for day.
6. Dial two digits (**00-23**) for hr.
7. Dial two digits (**00-59**) for min.
8. Press **SPKR** to end.

SYSTEM SPEED DIAL PROGRAMMING

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

1. Press **ITCM**
2. Dial ✳ **# 0 2.**
3. Dial **01 - 99** to chose storage location.
4. Dial **#** to clear current entry.
5. Choose circuit to be used:
   - Dial **90** for system to choose prime line or last line used at the calling station.
   - Dial **01 - 08** (or press **B1 - B8**) for lines 1 - 8.
   - Dial **09 - 16** (or press **A1 - A8**) for lines 9-16.
   - Dial **17 - 24** (or press **HOLD, B1 - B8**) for lines 17 - 24.
   - Dial **91 - 94** for line groups 1 - 4.
   - Press **ITCM** for intercom line.
6. Dial the number to be stored (32 digits maximum).
   - Press **HOLD** to store pause (if required).
   - Press **TAP** to store flash (if required).
7. Press **TRANS/CONF** to save number.
8. Repeat steps 3 - 7 to store next number.
9. Press **SPKR** to end.

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. Additionally, stations can be arranged through class of service programming, to be able to answer any ringing outside line. The night transfer of ringing also enables this line answer from any station (TAFAS) action.

1. Press **ITCM.**
2. Dial ✳ **# 0 3.**
3. Press **A1** (top, left-hand programmable button) to toggle feature on or off. Associated light will turn on when night transfer is active and turn off when it is inactive.

   OR

   - Dial **1** to enable (A1 LED turns on).
   - Dial **2** to disable (A1 LED turns off).
4. Press **SPKR** to end.

***NOTE:** When this feature is on, the ITCM light will flash.*

MUSIC ON HOLD

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

1. Press **ITCM.**
2. Dial ✳ **# 0 4.**
3. Press **A1** (top, left-hand programmable button) to toggle feature on and off. Associated light will turn on when music on hold is provided and turn off when it is disabled.

   OR

   - Dial **1** to enable (A1 LED turns on).
   - Dial **2** to disable (A1 LED turns off).
4. Press **SPKR** to end.

LCD MESSAGING

A message can be set at any station in the system to be displayed by any calling LCD speakerphone. Two standard messages are provided for use by system default. The attendant can create up to eight custom messages in addition to the default messages or overwrite the default messages to create up to ten custom messages total. If a non-verbal response to secure off-hook voice announce (SOHVA) is to be provided for station use, one LCD message must be styled as a SOHVA response message.

1. Press **ITCM.**
2. Dial ✳ **# 0 5.**
3. Dial **0** - 9 for message number.
4. Dial **#** to clear current message.
5. Refer to **Table 5-1**, and compose the message (16 digits maximum).
6. Dial all two-digit codes necessary to enter the message.

   OR

   - Dial **10** to obtain default message 1 "BACK AT".
   - Dial **20** to obtain default message 2 "CALL".
7. Dial ✳ and repeat steps 3 - 7.
8. Press **SPKR** to end.
9. Make list of stored messages and location numbers to station users.

STATION NAMES

Stations can be assigned individual names or category names which will be displayed by a calling LCD speakerphone. Typical names could be TEC SER, MKT 1, J. Smith

1. Press **ITCM.**
2. Dial ✳ **# 0 6**
3. Select station to be programmed by dialing station port number **10 - 73.**
4. Dial **#** to clear current name.
5. Refer to **Table 5-1**, and compose station name (7 digits maximum).
6. Dial all two-digit codes necessary for new station name.
7. Dial ✳ for next station and repeat steps 3 - 7.
8. Press **SPKR** to end.

STATION MESSAGE DETAIL ACCOUNTING (SMDA) PRINTOUT

The attendant can command the system to print several different types of reports and to delete all stored SMDA records.

1. Press **ITCM**.
2. Dial *** # 0 7.**
3. Choose report to be printed.
   - Dial **1 #** for station report.
   - Dial **2 #** for line report.
   - Dial **3 #** for department report.
   - Dial **4 #** for account code report.
   - Dial **5 #** for automatic reports.
   - Dial **6 #** to print all records.
   - Dial **7 #** to delete SMDA records.
   - Dial **8** to obtain the number of free records remaining in the system.
   - Dial **9** to abort printing.
4. Press **SPKR** to end.

Table 5-1. Character Codes

CHAR	CODE	CHAR	CODE	CHAR	CODE
A	21	a	24	Space	12
B	22	b	25	-	15
C	23	c	26	;	17
D	31	d	34	/	18
E	32	e	35	"	19
F	33	f	36	.	27
G	41	g	44	'	28
H	42	h	45	:	29
I	43	i	46	1	01
J	51	j	54	2	02
K	52	k	55	3	03
L	53	l	56	4	04
M	61	m	64	5	05
N	62	n	65	6	06
O	63	o	66	7	07
P	71	p	74	8	08
Q	11	q	14	9	09
R	72	r	75	0	00
S	73	s	76		
T	81	t	84		
U	82	u	85		
V	83	v	86		
W	91	w	94		
X	92	x	95		
Y	93	y	96		

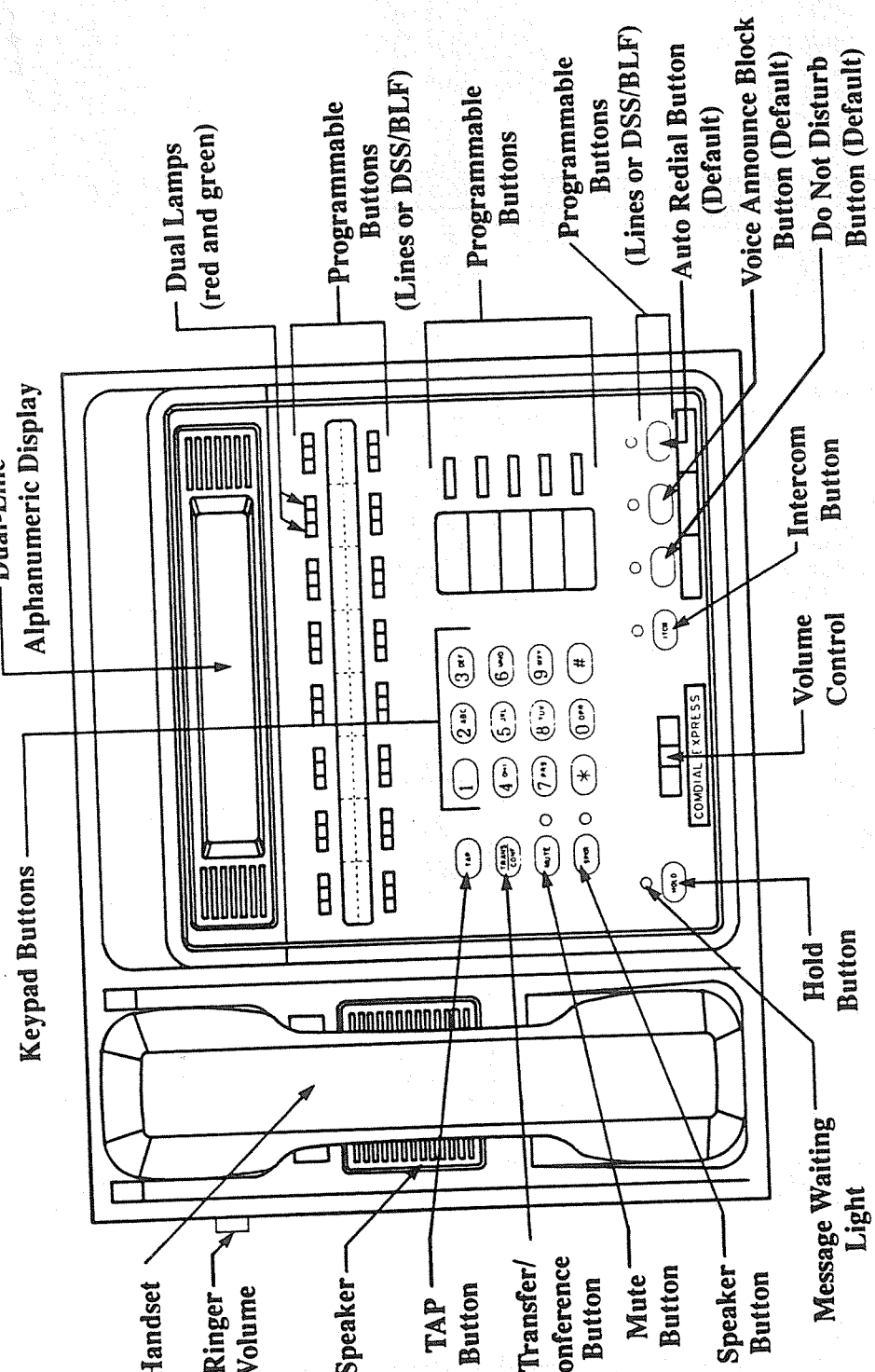


Figure 5-1. Controls and Indicators

SECTION 3
SYSTEM OPERATING CHARACTERISTICS

FEATURE DIALING CODE NUMBERING PLAN

FEATURE			EXPRESS MULTILINE TELEPHONES
All-Call Page			ITCM 87
Attendant Calling			ITCM 0
Automatic Callback		Activate	ITCM, Ext., *, 6
		Cancel	ITCM # 6
Automatic Redialing			Programmed Button
Background Music		On	ITCM * 1
		Off	ITCM # 1
Call Forward		Personal	ITCM * 05, Ext.
		Cancel	ITCM # 05
		All Calls	ITCM * 5, Ext.
		Cancel	ITCM # 5
Call Park	Park	Orbit 91 - 99	ITCM * (91 - 99)
	Pick Up		ITCM # (91 - 99)
Call Pickup		Directed	ITCM, * 4, Ext.
		Group	ITCM # 4
Call Waiting Tone		Send	ITCM, Ext., * 01
		Cancel	Hang up
Do Not Disturb		Set	Programmed Button
		Cancel	Programmed Button
Executive Override			ITCM, Ext., * 03
Hold		Manual	HOLD
		Exclusive	HOLD, HOLD
		Direct	ITCM * 90, Ext.
		Direct Hold Pickup	ITCM # 90
Line Answer From Any Station (Night Transfer)			ITCM 80
Line Group Access		Group 1	ITCM 9
		Group 2	ITCM 81
		Group 3	ITCM 82
		Group 4	ITCM 83
LCD Messaging		Set	ITCM * 02 (0 - 9)
		Cancel	ITCM # 02

Continued on next page

EATURE DIALING CODENUMBERING PLAN - continued

Line Queuing	Enable	ITCM (Group code) * 8
	Cancel	ITCM # 8
Meet-Me Answer (Paging)		ITCM 88
Message Waiting	Set	ITCM, * 3, Ext.
	Cancel From Idle	ITCM, # 3, Ext.
	Cancel On Line	ITCM
	Retrieve Message	ITCM, HOLD
Night Transfer (Attendant Station Only)	On	ITCM * # 03 (A1)
	Off	ITCM * # 03 (A1)
Personal Ringing Tones	Set Tone 1 - 4	ITCM * * 4 (1 - 4)
Pulse/Tone Switching		#
Redial (Last number dialed)		#
Saved Number Redial	Use	HOLD, Progr. Button
	Store	Programmed Button
Service Observing (On-hook)		ITCM # 03, Ext.
Speed Dial	Station	1-0
	System	* 01-99
Station-to-Station Messaging	Activate	ITCM, Ext., * 7
	Cancel	ITCM, # 7, Ext.
Voice Announce Block	On	ITCM * 2
	Off	ITCM # 2
Zone Page	Zone 1	ITCM 84
	Zone 2	ITCM 85
	Zone 3	ITCM 86

RINGER VOLUME CONTROL

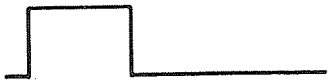
Each station has a ringer volume control. Depending upon the model, the ringer control is located on the front edge, rear edge, or bottom of the telephone. Adjust the control lever to OFF, LOW or HIGH volume as desired.

STATUS INDICATORS AND TONE SEQUENCES

The following pages describe the light and ring patterns associated with system operation.

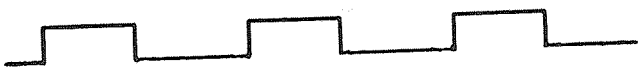
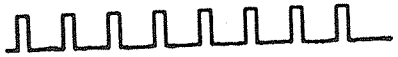
NOTE: *The values shown are typical. They are provided for illustration purposes only.*

SYSTEM RINGING PATTERNS

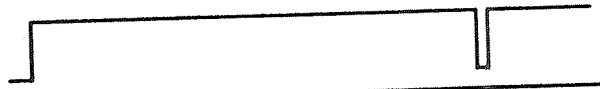
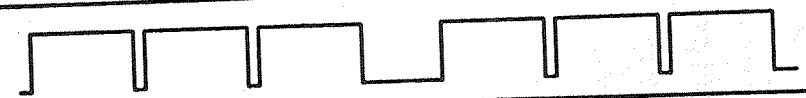
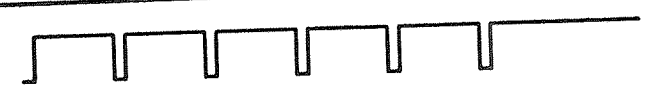
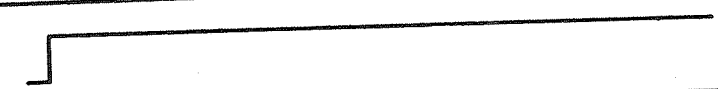
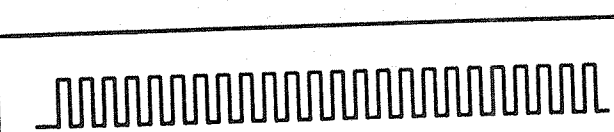
CO/PBX Line Ring	Host system ring cadence	RING CADENCE DEPENDENT UPON HOST SYSTEM
Intercom Tone Signalling	Two 150 msec. tone bursts sounded every four seconds	
Voice Signalling alert	One 215 msec. tone burst	
Timed hold recall at station that put call on hold	Three 150 msec. tone bursts sounded at the end of each timeout period	
Call back alert	One 80 msec. tone burst followed by three 150 msec. tone bursts and one 80 msec. tone burst	
Call forward alert	One 80 msec. tone burst	

INTERCOM CALL PROGRESS TONES
(As Heard Through Handset Receiver Or Over Monitor Speaker)

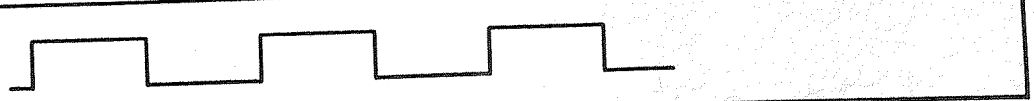
Dial Tone	Continuous on	
Called station ring-back	One sec. on and 3 sec. off.	
Base level program entry	80 msec. tone burst sounded once	
System speed dial entry confirmation		
Night transfer active confirmation		
Memory dial intercom, line, group and/or recall selection confirmed		
All-call page selection confirmed		
PA station port/line port selection confirmed		
Error tone - incorrect entry	500 msec. tone burst sounded three times	

Busy tone Override feature not allowed Night transfer feature not allowed	500 msec. tone bursts sounded continuously	
Called station in do-not-disturb mode	140 msec.tone burst sounded twice every sec.	
Call-back busy feature on	320 msec. tone burst sounded once	
System is awaiting memory dial number or key mapping entry after location is specified	80 msec. tone bursts sounded continuously	
Override feature on - warning tone	80 msec tone bursts sounded for 1.5 sec.	

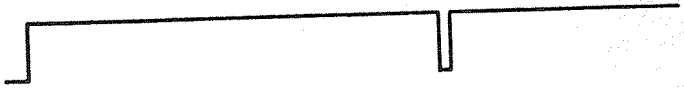
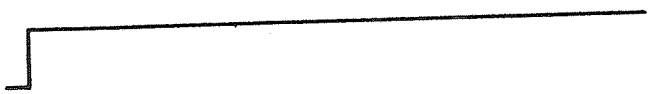
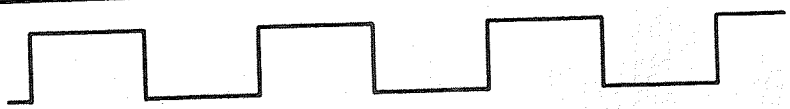
LINE SELECT LIGHT

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)	

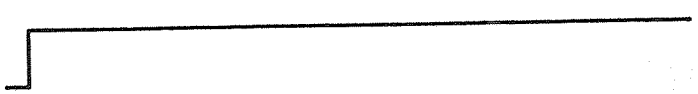
MESSAGE WAITING LIGHT

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

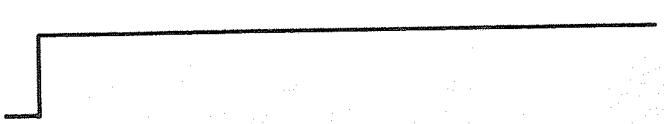
INTERCOM LIGHT

In use-your station	Steady on with wink off (2.3 sec. on - 70 msec. off)	
All links busy	Steady on	
Auto redial active Messaging display	Continuous flutter (70 msec. on - 70 msec. off)	
Night mode - Station 10 and 12	Flutter with repeative off periods (flutter rate - 560 msec. off)	

BLF LIGHTS

Call messaging	Continuous flutter (70 msec. on - 70 msec. off.	
DSS station idle	Steady off	
DSS station busy on outside line or intercom line	Steady on	
DSS station in do not disturb mode.		

SPEAKER LIGHT

On line and speaker on (mike also on if speakerphone)	Steady on	
Do not disturb mode		
Background music on		
Mute -OR- Handsfree answer Inhibit	Continuous flutter (70 msec. on - 70 msec. off)	
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 slow-blow fuse located on the right side of the common equipment cabinet. Always replace the fuse with one of the same value and type, otherwise, equipment damage could result.

- 6-Line, 12-Station Base Unit - 2A, 250V slow-blow type
- 8-line, 20-station and 16-line, 32-station Base Unit - 3A, 250V slow-blow type

WIRING

Refer to **Chapter 3, Section 4**, *Checkout and Failure Isolation*, for instructions for testing the system wiring and components for possible failure.

STATION WALL MOUNTING

No conversion is required to prepare an Express telephone to be hung on the wall. Two keyhole shaped slots are available on the bottom housing which enables an Express telephone to be either mounted directly on a wall using two, #10, panhead screws (obtained locally), or mount ion a wall jack cover plate. **If mounted using a wall jack cover plate, an AT&T type 630B wall plate is recommended for best results.**

1. If #10 screws are used, thread them into the wall within 1/8-inch of the surface. Refer to **Figure 6-1** for the spacing dimensions.
2. Turn the telephone over and remove the plastic tab that is molded into the housing. It is located at the lower right-hand corner of the housing.
3. Position the keyhole shaped holes in the bottom of the station over the #10 screws or the cover plate studs. Slide the station down until a slight click is felt.
4. Insert the plastic tab that was removed from the lower housing in step 2 into the handset cavity. This tab provides a secure retention for the handset when it is hung up.
5. To remove the station, lift up to unsnap both screws or studs from the bottom housing, and lift the station away from the wall.

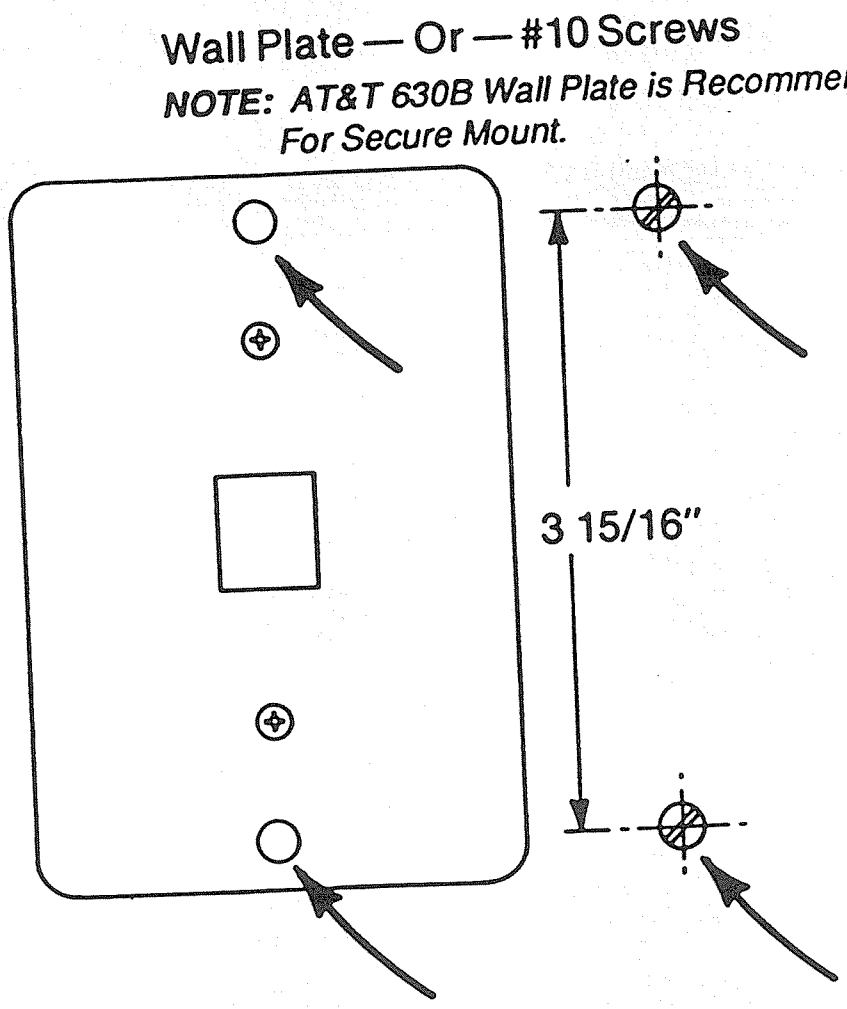


Figure 6-1. Station Wall Mounting Details

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