

Telecom Commander
E308/616
Installation and
Maintenance Manual

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Chapter One

About This Manual

Introduction

This chapter explains how the Commander E308/616 Installation and Maintenance Manual is structured. It describes both the overall layout, and the layout of each chapter. It also defines and illustrates the conventions used throughout the manual.

Purpose of the Manual

The purpose of the Commander E308/616 Manual is to provide you, as Telecom Technical Staff, with a complete set of clear and concise installation and maintenance procedures. It should be used when installing a Commander E308 or E616 system to ensure the process is completed correctly, safely and easily. It should also be used for maintaining the system when problems arise.

Audience

This manual is written solely for Telecom Technical Staff responsible for the installation and maintenance of the Commander E308/616 systems.

Organisation of the Manual

The Commander E308/616 Installation and Maintenance Manual is divided into twelve sections - eight chapters and four appendices.

Chapter One - About This Manual

This chapter provides a brief introduction to the Commander E308/616 Installation and Maintenance Manual.

It explains the purpose, organisation and content of the manual. It also describes the intended audience and manual conventions.

Chapter Two Introduction to the Commander E308/616 System

This chapter introduces the Commander E308/616 systems, and explains the difference between the E308 and E616 models. It also provides two descriptive lists: System Features and System Facilities.

**Chapter Three
Main Equipment**

This chapter introduces the Commander E308/616 main equipment. It begins with a general description of the main equipment. An in-depth explanation follows.

**Chapter Four
Key Stations**

This chapter introduces and describes the Commander E308/616 key stations. It begins with a general description of the two types of key stations used. An in-depth explanation follows.

**Chapter Five
Installation**

This chapter describes the procedures that must be performed in order to install the Commander E308/616 system hardware. It begins with an Installation Checklist. Each point in the checklist is then explained in detail.

**Chapter Six
System
Programming**

This chapter contains all the procedures for programming the Commander E308/616 systems. It begins with a general programming procedure and then explains how to program individual features.

**Chapter Seven
Functional Test**

This chapter explains the tests required to verify that the Commander E308 or E616 system has been installed and programmed correctly.

**Chapter Eight
Maintenance**

This chapter describes how to maintain the system after a fault has occurred during testing or normal daily operation. Fault finding procedures are documented by flow charts and step-by-step instructions.

**Appendix One
System
Characteristics**

This Appendix provides a list of all Commander E308 and E616 system limits and specifications.

**Appendix Two
Additional
Programming
Facilities**

This Appendix provides programming instructions for facilities not normally offered to customers.

**Appendix Three
Parts Item and
Code List**

This Appendix contains a list of every Item number. A description, remark and PCMS Code is provided for each item number.

**Appendix Four
Operating
Instructions**

This Appendix contains a copy of the Commander E308/616 System User Guide.

Manual Conventions

The symbols and typographic conventions used throughout this manual are as follows:

- Bullets separate items in a list of information or procedures.

Bold type is used for chapter, section and sub-section headings:

for example, **Manual Conventions**.

Bold type is also used for Illustration names:

for example, **E308/616 System Block Diagram**.

Capital letters within square brackets identify keys:

for example, 'Press [REDIAL] to enter the string of data'.

Italics emphasise important words within the text.

for example, '*Do not* overtighten the screws.'

Italics are also used for the lowest heading level.

Illustration numbers are placed below the name of each illustration:

for example
E308/616 System Block Diagram
[IL01].

Chapter Two
Introduction to the Commander
E308/616 Systems

Chapter Two

Introduction to the Commander E308/616 Systems

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Chapter Two

Introduction to the Commander E308/616 Systems

Introduction

This chapter introduces the Commander E308/616 systems, and explains the difference between them. It also explains the features and facilities associated with each system.

General Description

The Commander E308/616 systems are electronic, microprocessor-controlled, small business telephone systems.

Both systems provide a comprehensive range of features and facilities, and are designed for maximum flexibility in matching system facilities to individual customer needs.

Each system may also operate as a sub-system behind a PABX and offers full access to parent PABX facilities. Neither system supports two-wire telephones during normal operation.

The customer can connect an external paging system and/or music source to their Commander system if desired.

Both E308 and E616 key stations have a twelve-button dial pad (0-9, *, #), three or six line keys, and eight fixed function keys. Further details are provided below.

E308

The E308 system can support a maximum of three exchange lines and eight integrated key stations.

E616

The E616 system can support a maximum of six exchange lines and 16 key stations. It uses additional circuitry because of the larger number of exchange lines and extensions.

The power supply circuit for the E616 unit is located on a separate printed circuit board in the main equipment.

**Main Equipment
& System
Distribution
Frame.**

A compact wall-mounted *Main Equipment* controls the Commander E308/616 systems' switching, memory and logic functions. Key stations are connected to a separate wall-mounted *System Distribution Frame (SDF)* via two-pair cables. The SDF physically connects all key stations and lines to the main equipment, where they are terminated by connectors.

Door Stations

An integrated door station is available for the E308 system. To enable its operation, an additional print board assembly (PBA) must be mounted on the main equipment PBA. Attaching a door station does not reduce the number of system key stations.

Handsfree

Both systems support on-hook dialling and handsfree key stations. A handsfree key station is identified by a 'handsfree' graphic (shown below) on the lower edge of its control panel.



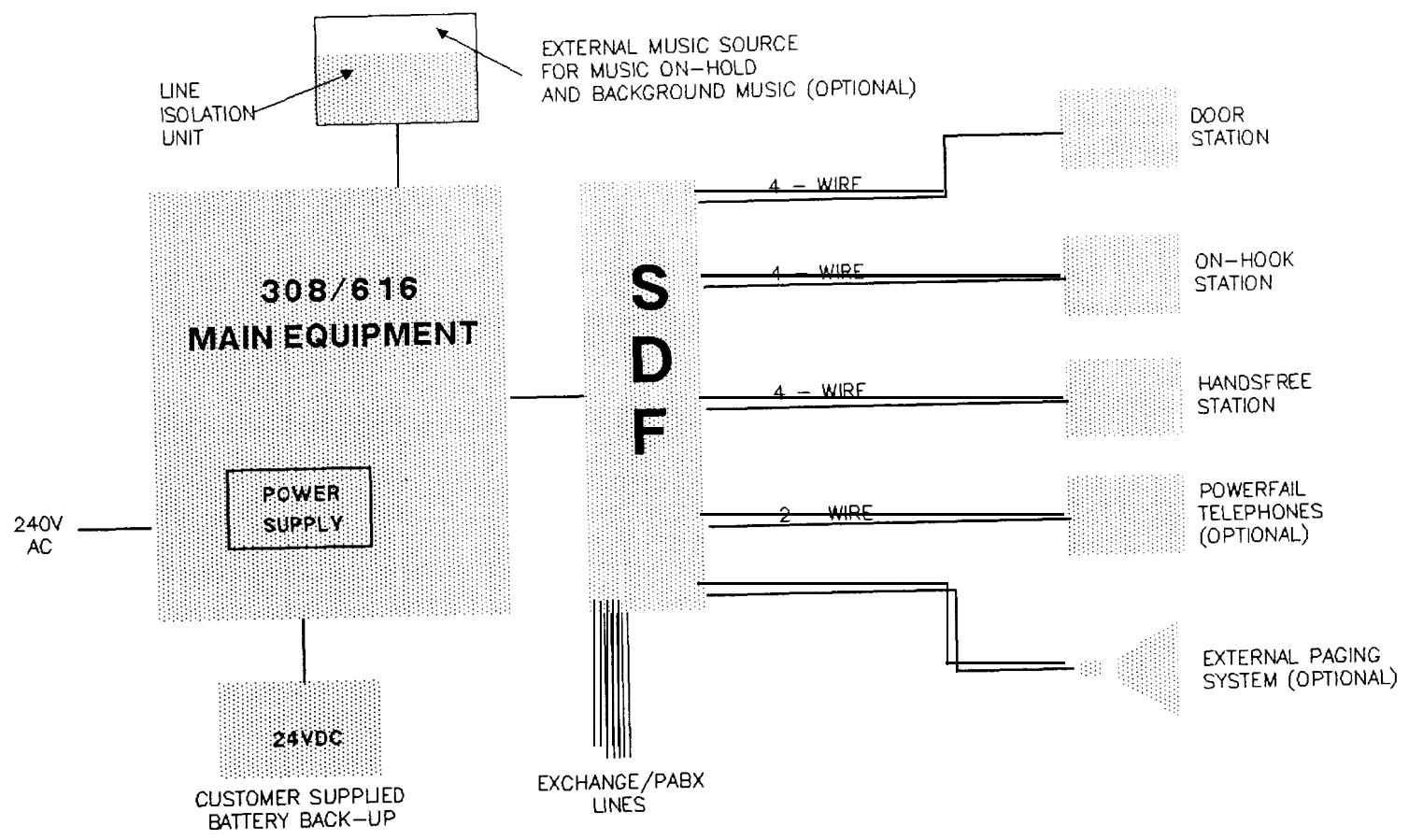
Power-Fail

An optional power-fail facility enables call handling to continue during a commercial power failure. It automatically switches lines one and two to standard telephones. A customer-supplied battery back-up may be connected to provide full system operation during power-fail operation.

Programming

Programming procedures are simple and can be completed from any key station. Programming is password-protected to prevent unauthorised access.

Refer to Illustration 1 - **E308/616 System Block Diagram** - to identify the major components of the E308/616 system.



E308/616 System Block Diagram
[1L01]

System Features

- E308 - three exchange lines and eight key stations.

Four audio paths for intercom and exchange calls.

- E616 - six exchange lines and sixteen key stations.

Eight audio paths for intercom and exchange calls.

BOTH COMMANDER E308 AND E616 SYSTEM

- Maximum 'customer participation' is offered when determining the system set-up and facilities for each key station.
- Maximum flexibility is offered in matching system facilities to individual customer needs.
- User operation is very simple, with minimum key operations required to access facilities.
- Key stations incorporate modern attractive styling.
- System architecture allows networking with a wide range of switching and non-switching business systems.
- System installation and re-programming procedures are extremely simple and cost-effective.
- Systems support on-hook and handsfree key stations.

System Facilities

Incoming Calls

| | |
|---------------------------------------|--|
| Alternative Point Answering | Calls to a particular key station can be answered at other key stations by dialling 11. |
| Audible Signalling | Different ring signals from key station speakers distinguish incoming exchange and intercom calls. |
| Automatic Incoming Call Answer | Incoming calls are automatically answered by lifting the handset or entering handsfree mode. This facility is only available at key stations that have been programmed for audible ring. |
| Call Forwarding | <p>All incoming intercom calls can be diverted to a preset key station (see Executive/Secretary) or any other key station. When a key station is programmed for 'individual ring mode', exchange line calls are also diverted.</p> <p>Refer to page 6-4 of the Commander E308 and E616 User Guide in Appendix Four of this manual.</p> |
| Do Not Disturb | When invoked, this facility blocks all audible signals from incoming exchange and intercom calls. Key station 21 can not have Do Not Disturb. |
| Executive/Secretary | Up to eight pairs of key stations can be programmed as executive/secretary pairs. (A key station can be in one pair only). When Do Not Disturb is invoked at an executive key station, all intercom calls to that key station are automatically forwarded to the secretary key station. If 'individual ring mode' is programmed at the executive key station, exchange calls are also forwarded. |
| Flexible Ring Assignment | Each key station can be separately programmed for audible signalling of incoming exchange calls. For an explanation of the various modes, refer to Line Ring Mode - page 6-19. |
| Night Service | When invoked, this facility directs all incoming calls to the programmed key station(s). |

During A Call

| | |
|----------------------------|---|
| Call Transfer | Exchange line calls can be transferred to other key stations, with or without announcing the call. |
| Call Waiting | When an exchange line call is transferred to a key station that already has an established call, a tone indicates that another call is waiting to be answered. |
| Cancel | Pressing another line key while dialling, or during an established exchange line call, disconnects the user from the line and returns the exchange dial tone. |
| Conference | Establishes a conversation with up to five parties, including a maximum of two exchange lines. |
| Handsfree | Handsfree key stations allow intercom and exchange line conversations to be held without using the handset. |
| Hold - Common | Allows any key station to retrieve a held exchange line call. |
| - Exclusive | Only the key station that put the exchange line call on hold can retrieve the call. |
| - Recall | When an exchange line call is placed on hold, a reminder ring signal is activated every 90 seconds at the key station that placed the line on hold. If a call on exclusive hold is not retrieved within ten seconds of the hold recall signal, it is placed on common hold to allow other key stations to answer it. (Recall time is programmable). |
| Music on Hold | Automatically transmits music to a caller on hold. The music may be generated internally or provided by an external source. |
| Off-Hook Signalling | <p>An audible signal at a busy key station indicates another key station is trying to contact them via intercom. This facility is programmable at each key station.</p> <p>Refer to page 6-2 of the Commander E308 and E616 User Guide in Appendix Four of this manual.</p> |
| PABX Recall | <p>When the system operates behind a PABX, this facility can:</p> <ul style="list-style-type: none">• Hold calls and transfer them to PABX extensions.• Allow access to the Host PABX facilities. |

Outgoing Calls

Abbreviated Dialling

A maximum of 90 abbreviated dialling numbers (with a maximum length of 30 digits) are available. Numbers are **dialled** using a two-digit code.

Abbreviated Dialling - Access Barring

The system-stored abbreviated dial numbers can be programmed as subject to, or not subject to, the individual key station's barring access.

Access Barring

Five classes (levels) of access barring are provided:

| | |
|---------|---|
| Class A | Unrestricted access. |
| Class B | Local call access <i>and</i> STD access <i>and</i> Up to ten allowed codes or numbers. |
| Class C | Local call access <i>and</i> The following permitted codes: 000,008, 009, 013, 016, 019, plus four allowed codes or numbers <i>or</i> Up to ten allowed codes or numbers (in place of the permitted codes). |
| Class D | Intercom call access <i>and</i> 000 access plus nine permitted codes or numbers <i>or</i> 000 can be changed to allow up to ten codes or numbers. |
| Class E | Intercom call access only. |

Automatic Pause Insertion on PABX lines

If a system is operating behind a parent PABX, a pause is automatically inserted between the PABX access code and remaining digits when using the abbreviated dial and redial facilities.

Decadic to Tone Signalling

Enables key stations programmed for decadic (pulse) signalling to access telephone banking and computer service networks which use DTMF (tone) signalling. DTMF is selected after the desired service is accessed.

| | |
|------------------------------------|--|
| Direct Exchange Line Access | Exchange lines can be accessed directly from any key station using a single key without an operator. |
| Exchange Line Request | <p>When all lines (or a specific line) are busy, a key station may request connection to any line (or a specific line) when it becomes free.</p> <p>Refer to page 3-8 of the Commander E308 and E616 User Guide in Appendix Four of this manual.</p> |
| Last Number Redial | Automatically re-dials the last number dialled on the same exchange line used previously. |
| Live Key Working | Automatically turns on the speaker when a line key is selected, allowing a call to be made on-hook, or answered handsfree. |
| On-Hook Dialling | Enables a key station to make call and monitor its progress without lifting the handset. |

Internal Calls

| | |
|---------------------------------------|--|
| Handsfree Answer Back | Allows the user to answer an intercom call at a handsfree key station by speaking, without operating the key station. |
| Intercom | Establishes an internal call between any two key stations on the system. Intercom calls are programmed at each individual key station for either signal or voice calls. |
| Intercom Call Back | When a called key station is busy, the recall facility automatically signals the calling key station when the called station becomes free. The called key station is automatically re-signalled when the caller goes off-hook. |
| Intercom Voice/Ring Signalling | <p>Allows each key station user to program the incoming intercom call signal as either a ring tone or a tone burst followed by the caller's voice through the key station speaker.</p> <p>Refer to page 6-1 of the Commander E308 and E616 User Guide in Appendix Four of this manual.</p> |
| Meet-Me Paging | <p>After a paging announcement, a specified person can immediately contact the originator of the page.</p> <p>Refer to page 5-2 of the Commander E308 and E616 User Guide in Appendix Four of this manual.</p> |

Paging - Internal Paging call through the speakers of all idle key stations. Individual key stations can be removed from incoming paging calls.

- External Paging call through an external public address system.

 Refer to page 5-2 of the **Commander E308 and E616 User Guide** in **Appendix Four** of this manual.

Equipment

Battery Back-up Optional facility that provides power to the system during a commercial power failure. A dedicated socket is provided for this purpose.

Door Station An E308 facility only. It provides two-way communications between the door station and another station, enabling visitors to be screened before entering certain premises.

 Refer to page 2-3 of the **Commander E308 and E616 User Guide** in **Appendix Four** of this manual.

Power-fail Operation If there is a commercial power failure, the system can automatically switch the first two exchange lines to pre-connected single line telephones. This is an optional facility.

 Refer to page 7-3 of the **Commander E308 and E616 User Guide** in **Appendix Four** of this manual.

Power-fail Memory Retention The system retains all programmed facilities during a power failure.

Wall Mounting Bracket Enables key stations to be wall-mounted.

Miscellaneous

Background Music Music supplied from an external source can be played through the loudspeaker of idle stations.

Call Progress Tones Tones indicate the call status to the user.

Diagnostics Each key station provides LED self-test.

Secrecy Secrecy is provided on all external and internal calls.

Chapter Three
Main Equipment

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Chapter Three

Main Equipment

Introduction

This chapter introduces and describes the Commander E308/616 main equipment. It begins with a general description of the main and attached equipment. It then provides a description of each main equipment circuit block, together with a circuit block diagram.

General Description

The Commander E308/616 main equipment controls all switching, logic and memory functions.

E308 Main Equipment

The E308 main equipment is a steel housing, encasing a single printed board assembly (PBA). This PBA contains:

- . Power supply circuit
- . Line and extension interfaces
- . Switching and memory function controls.

A power transformer is mounted separately on the housing.

E616 Main Equipment

The E616 main equipment is similar to the E308's, except that the power supply circuit is located on a separate PBA and contains additional circuitry for the extra lines and extensions.

Both E308 and E616

All lines (decadic, DTMF exchange or PABX extensions) and all key stations are physically connected to the main equipment via the SDF. The SDF unit is mounted separately and is connected to the main equipment by a combination of six-pin modular and Amphenol-type connectors.

Refer to Illustrations 3 and 4 - **Main Equipment Mechanical Drawings**.

Attached Equipment

Key/Door Stations

Commander E 308/616 systems only support integrated key stations:

E308 - Station numbers 21 - 28

E616 - Station numbers 21 - 36.

Each key station is connected to the SDF by two pairs of wires - one pair for speech transmission and one pair for data transmission.

Standard two-wire telephones can be connected, as an optional facility, to lines 1 and/or 2 to allow calls to be made or received on the line(s) during commercial power failures. Alternatively, a customer-supplied battery can be used to enable full system operation during a power failure.

A door station is available for the E308 systems. It requires an additional PBA mounted on the main equipment PBA. A door station does not reduce the number of available extensions.

Refer to Illustrations 6, 7, and 8 - **Key Station and Door Station Mechanical Drawings**.

External Paging

An external paging amplifier may be wired to the system via the SDF. An authorised line isolation unit is required to connect this device.

External Music

An external music source may be connected (via a dedicated jack in the main equipment housing) to provide background music and external music on hold. An authorised line isolation unit is required to connect this device.

Circuit Blocks

Main equipment consists of the circuit blocks listed below. Refer to Illustration 2 - **Main Equipment Block Diagram**.

Central Microprocessor

The central microprocessor controls the operation of the main equipment and works in conjunction with the key station processors to control the entire system operation. The central microprocessor controls:

- Exchange line interface
- Key station communication and operation
- Exchange line and key station interconnection
- Connection of signal tones to the key stations
- System option programming.

Memory

The main equipment memory consists of both volatile and non-volatile memory.

The central microprocessor uses volatile memory to:

- Assist in the operation of the main program
- Store the status of each key station
- Store the system option programming.

Refer to **Chapter Six - System Programming**.

The central microprocessor uses the non-volatile memory to store the main equipment operating program.

Memory back-up circuit

During a power-down situation, the memory back-up circuit provides a separate source of continuous power to volatile memory contents. This ensures programmed system options are retained for a minimum of **48** hours.

The back-up circuit consists of a supercapacitor (charged ready for use under normal main equipment operating conditions) and associated control circuitry. A switch is used to completely clear the volatile memory after a power down.

Refer to **Enable/Disable Power-fail Memory Retention**, page 5-25.

Power Supply

The power supply accepts two AC inputs from the power transformer and provides separate outputs to the analog and digital circuitry. A supply rail and control circuit charge the optional external system battery and detect power-down situations. Refer to the **System Limits and Specifications** section in Appendix One.

Exchange Line Interface

A separate interface is provided for each exchange line equipped with the following central microprocessor-controlled functions:

- Ring current detection
- Line looping
- Line hold
- Decadic dialling
- DTMF dialling
- Voice signal transmission and reception.

Protection against hazardous exchange line conditions is also provided.

Refer to **Exchange Lines** on page 5-22 and **Connect Telecom Earth on Main Equipment** on page 5-27.

Key Station Interface

The Key Station Interface consists of four wires: two provide an audio path, two provide power feed (shared). The data communication link transmits and receives data from each of the key stations under control of the central microprocessor. The audio signals are connected between key stations and exchange lines by the cross-point switch.

Exchange Line/Key Station Interconnection Circuit

The cross-point switch interconnects the audio paths between the key stations and the exchange line. The cross-point switch consists of a matrix of switches under the control of the central microprocessor. The cross point switch also accepts:

- DTMF signal inputs for connection to the exchange lines
- Tone inputs for connection to the key stations
- Music input.

Internal/External Music Circuit

This circuit block provides the signal used for background music and music on hold. The music source can be either an internal electronic chime signal or external music (radio, tape). External music is connected via a **3.5mm** phono plug.

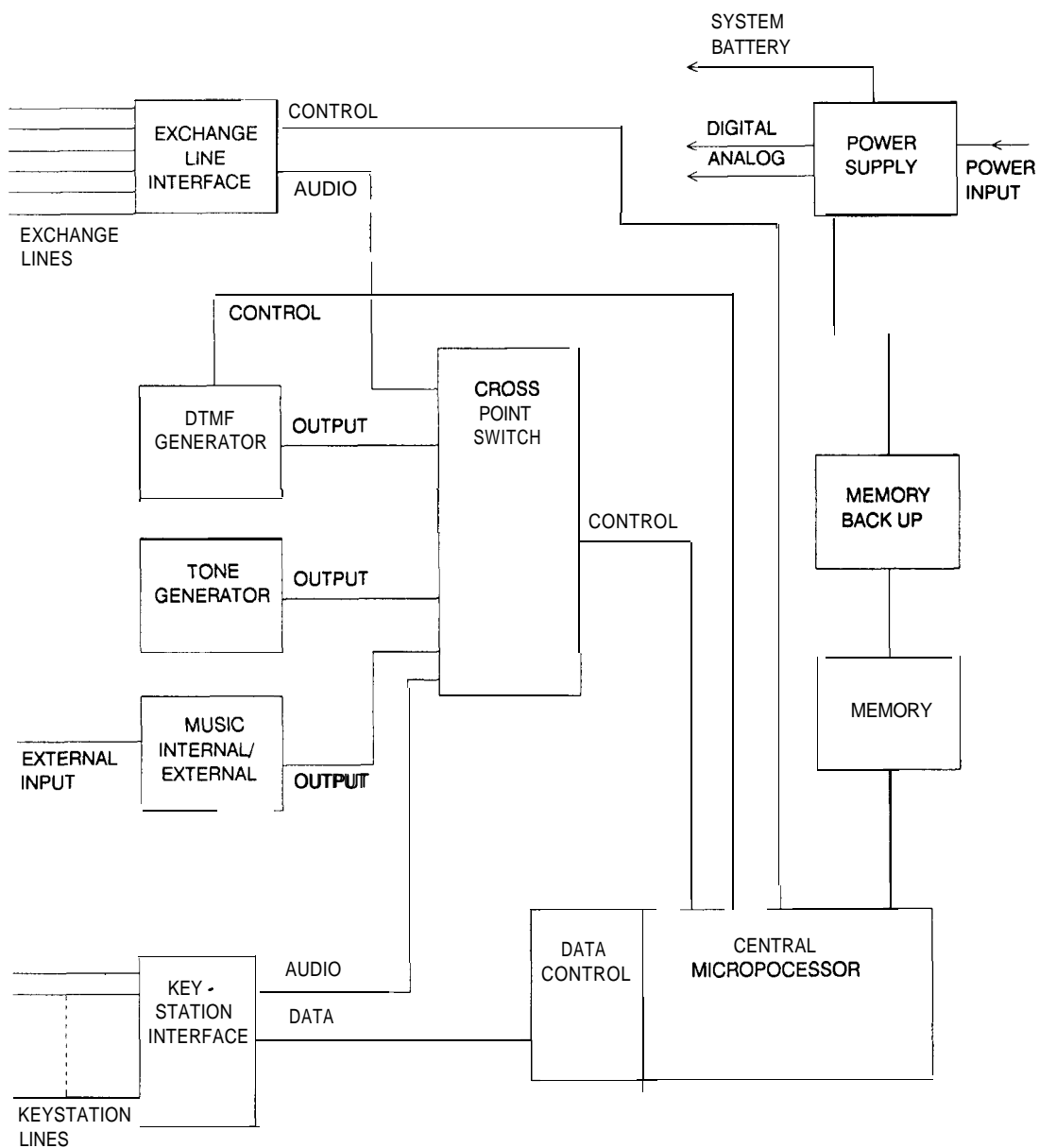
The volume is adjusted using the level control on the main equipment board. Refer to **Music On Hold**, page 5-24.

DTMF Generator

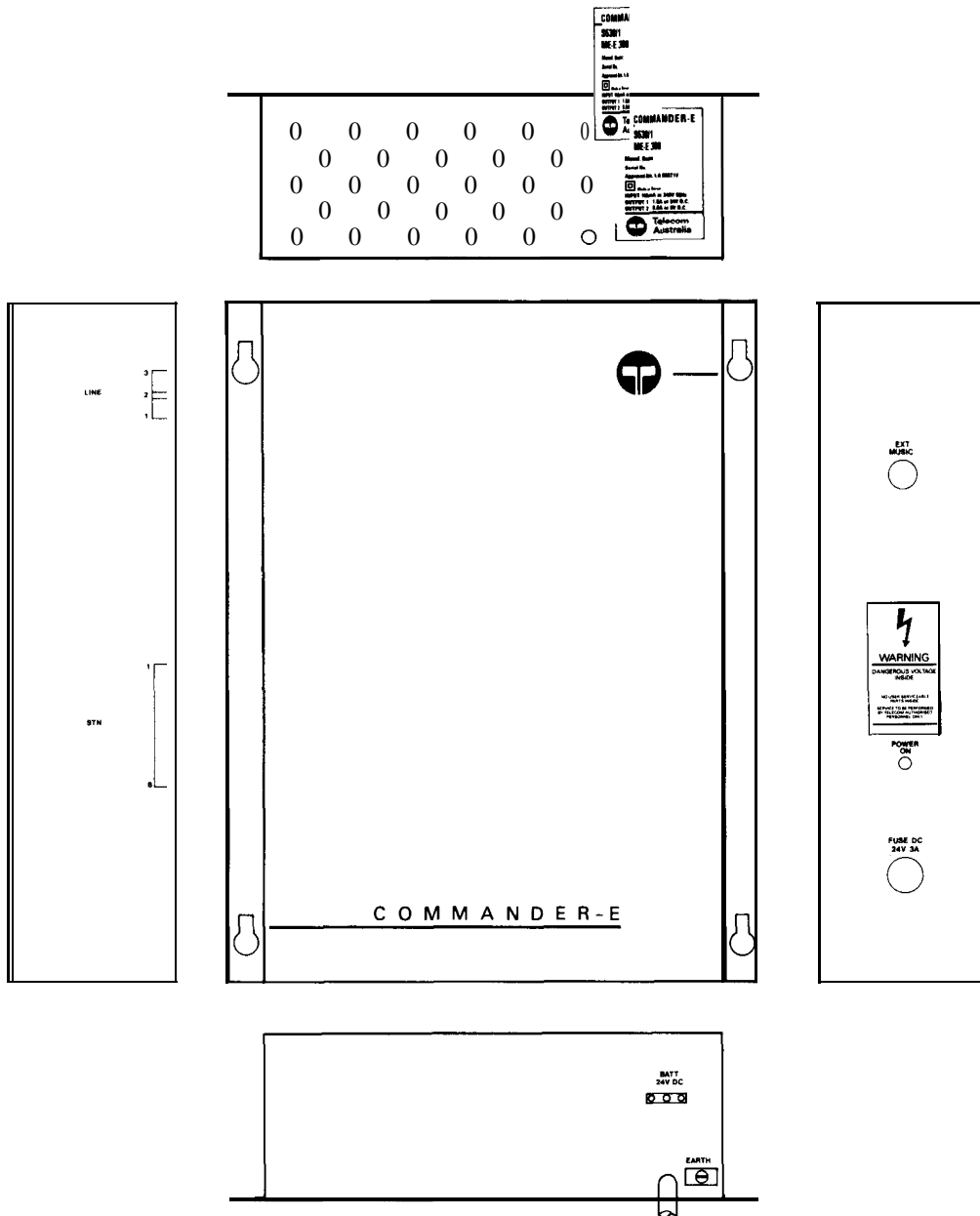
The DTMF generator connects the appropriate exchange line, via the cross point switch, to enable DTMF (tone) dialling on a previously decadic (pulse) line. The central microprocessor controls this circuit by receiving digital information from the key station, and then enabling the DTMF generator to send the corresponding analog signal.

Tone Generator

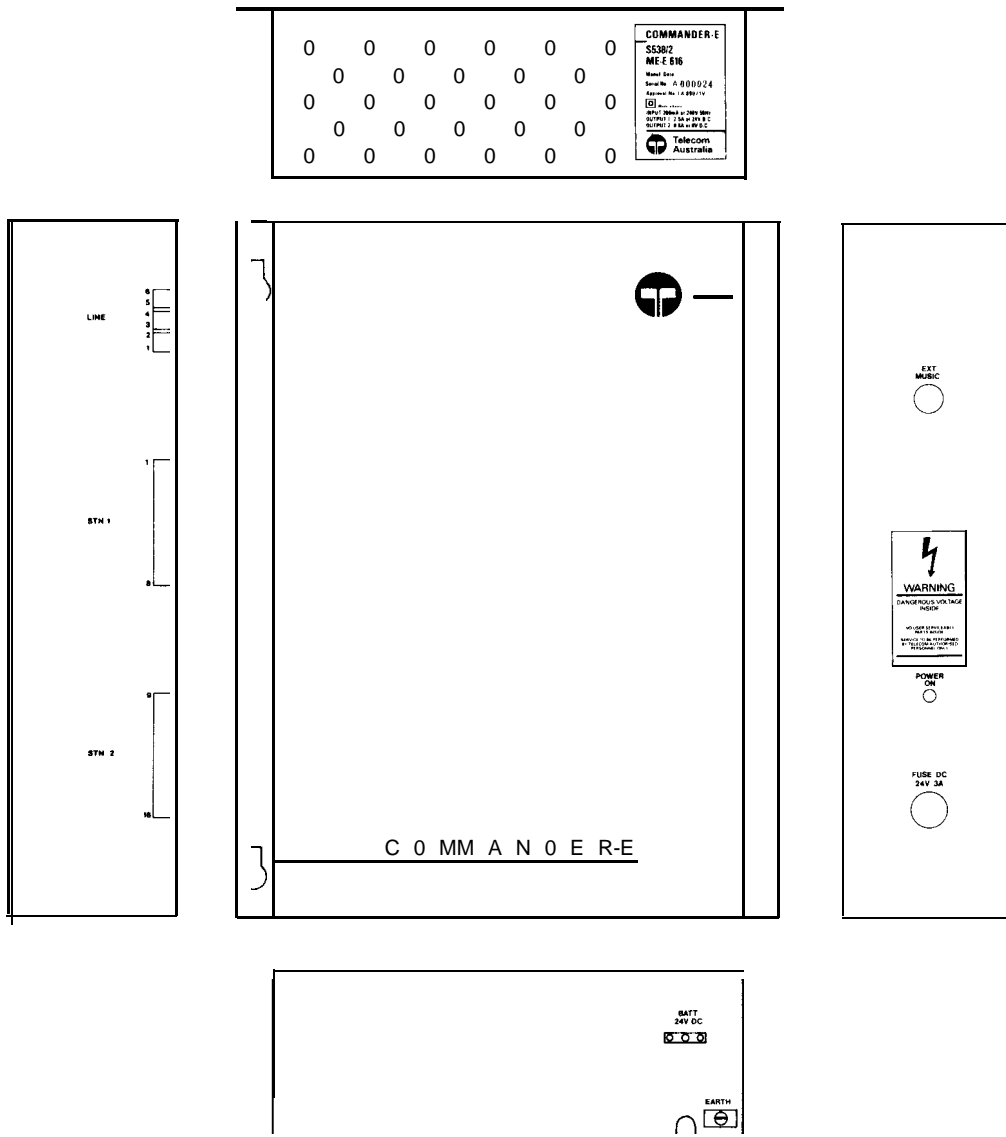
Tone signals for each key station, including main equipment dial tone and busy tone, are provided by an oscillator circuit. Tones are connected to the key stations via the cross-point switch. The central microprocessor provides connection and periodicity control.



Main Equipment Block Diagram
[IL02]



E308 Main Equipment Mechanical Drawing (ME-E308)
[IL03]



E616 Main Equipment Mechanical Drawing (ME-E616)
[IL04]

Chapter Four
Key Stations

Chapter Four Key Stations Table of Contents

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Chapter Four

Key Stations

Introduction

This chapter introduces and describes the Commander E308/616 key stations. It begins with a general description of the two types of key stations used in the system. It then provides a description of each key station circuit block, together with a circuit block diagram.

General Description

All key stations are connected to the main equipment via two-pair cable. One pair is for speech transmission. The other pair provides a signal path between the key station and main equipment.

The Commander E308/616 systems can use both standard and handsfree key stations. They are described below. Refer to Illustrations 6 and 7 - **Key Station Mechanical Drawings**.

Standard Key Station

This station is the standard station offered on 308/616 systems. It is equipped with a loudspeaker for on-hook dialling and monitoring call progress. The key station has a twelve-button keypad (O-9, *,#), three or six line keys, and the following facility keys:

| | |
|------------|----------------|
| Redial | Page |
| Transfer | Memory |
| Conference | Do Not Disturb |
| Speaker | Hold |

Handsfree Key Station

The handsfree key station incorporates all the features of the standard station with the addition of handsfree circuitry. This circuitry allows fully handsfree conversations, and handsfree answerback on intercom calls.

A handsfree station is distinguished by the 'handsfree' graphic on the lower edge of its control panel.



Circuit Blocks

A key station consists of the circuit blocks listed below. Refer to Illustration 5 - **Key Station Block Diagram** after the circuit block explanations.

Microprocessor Circuit

Key station operation is controlled by the key station microprocessor in conjunction with the main equipment microprocessor. The key station microprocessor controls the following functions:

- Enabling of handset/handsfree speech circuit
- . Main equipment communication
- Detection of handset hook switch state
- . Enabling of audio amplifier
- . Enabling of ring generator
- Control of the keyboard.

Handset Speech Circuit

The handset speech circuit provides the handset's receiver and transmitter with amplification and frequency response tailoring. A two-to-four wire hybrid incorporating sidetone circuitry for the handset is also provided. The sidetone balancing network used is selectable via a strap.

Main Equipment Interface

This interface consists of four wires: two for the audio path function and two for the serial communication function. These four wires also provide power feed to the key station. The main equipment interface circuit separates the power for the two functions for use within the key station.

Power Supply

The key station's power is supplied via the main equipment interface. The power is then divided into three separate voltage rails, one each for: audio circuitry, digital circuitry and the handset transmitter.

Handsfree Speech Circuit

This circuit incorporates a voice switching network, microphone and audio amplifier. The voice switching network is used to detect the direction of the voice signals (transmit or receive), and to switch the microphone and audio amplifier accordingly. Voice signals picked up by the microphone are transmitted to the main equipment along the audio lines. Received voice signals are channelled to the audio amplifier which drives the key station loudspeaker.

In the on-hook version of the key station, the received audio signal passes directly to the audio amplifier while the handset is on-hook.

Audio Amplifier

The audio amplifier accepts and mixes signals from the handsfree speech circuit, ringgenerator and the handset speech circuit (on-hook version). The output level sent to the key station loudspeaker is controlled by the volume control potentiometer.

**Data
Communications**

The data communications circuit controls the key station's serial data interface with the main equipment. Key station status information and controlling directives are received from the main equipment along this link.

Ring Circuit

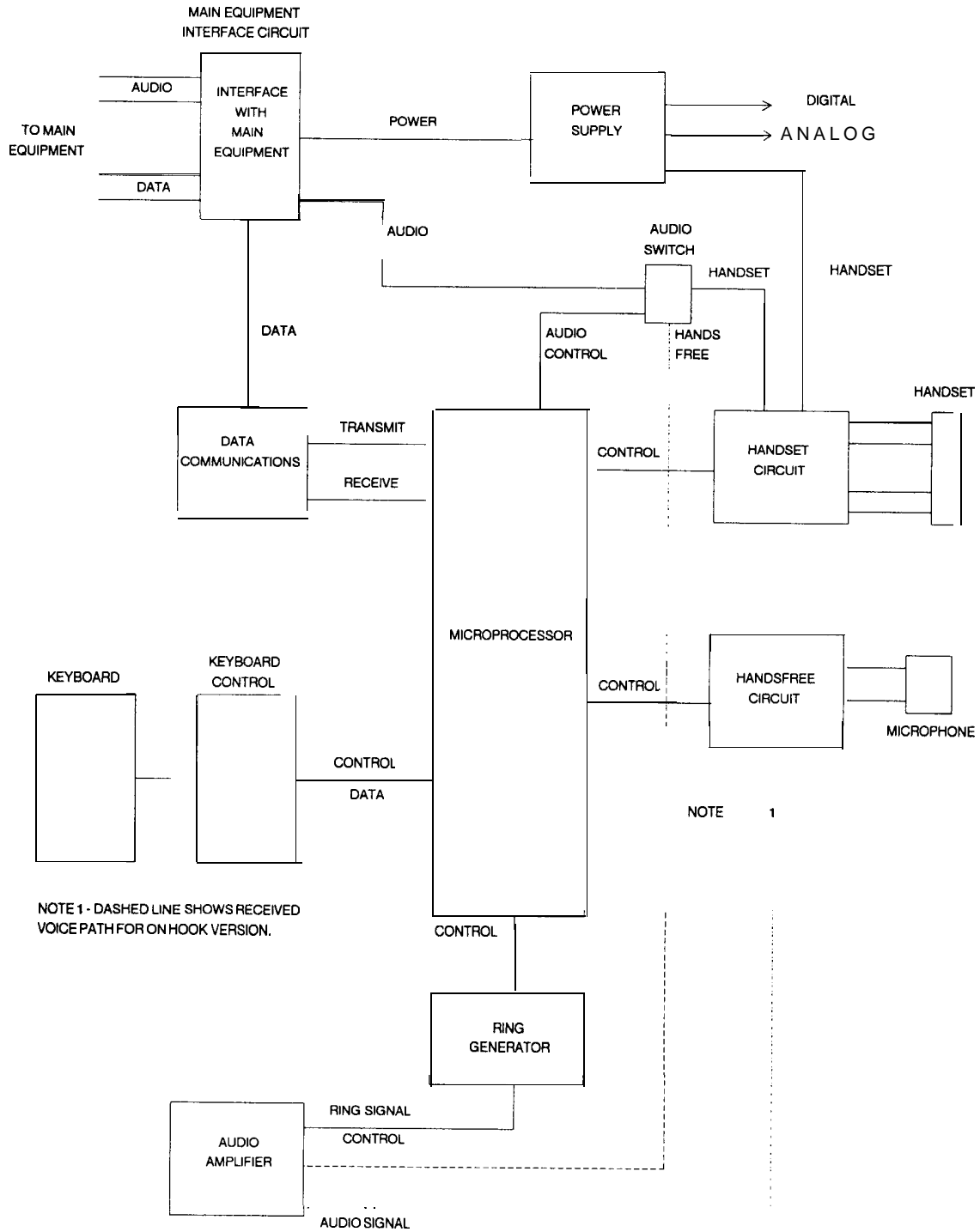
This microprocessor-controlled circuit generates a ring signal when the main equipment detects an incoming call. The signal is passed to the audio amplifier, which amplifies and directs it to the loudspeaker.

**Keyboard Control
Circuit**

The keyboard control circuit continually scans the keyboard for a key activation, then performs the multiplexing operation. Keyboard LED operations are also handled by this circuit in a multiplexed arrangement. Key debouncing is achieved by the key station microprocessor.

Keyboard Circuit

The keyboard circuit consists of a matrix of keys which interface to the keyboard control circuit.



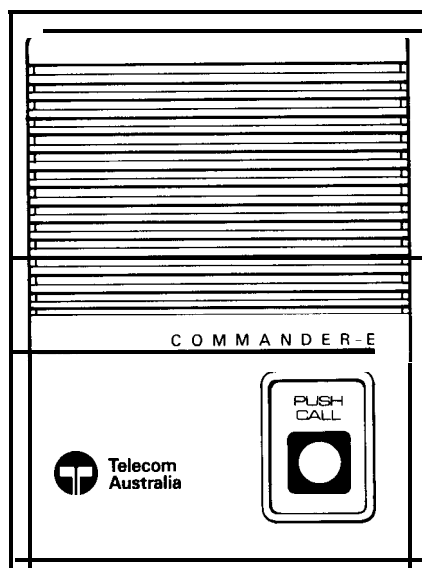
**Key Station Block Diagram
[IL05]**



E308 Key Station Mechanical Drawing (TS-E308-S)
[IL06]



E616 Key Station Mechanical Drawing (TS-E616-S)
[IL07]



Door Station (DS-E308)
[1L08]

Chapter Five
Hardware Installation

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Chapter Five

Hardware Installation

Introduction

This chapter describes the procedures that must be performed to install the Commander E308/616 system hardware.

It begins with an Installation Checklist that summarises the procedures. Each point in the checklist is then explained in detail, with additional information and full installation procedures. Where appropriate, an illustration(s) and a reference(s) are provided to amplify the text.

Component Safety Precautions

Commander E308/616 equipment contains a large number of MOS and other extremely static-sensitive components. Great care to eliminate any possible static discharges must be taken when working near these components. Components affected by static discharge nearly always fail prematurely.

The following precautions **must** be taken:

- *Always* discharge static from yourself by touching a conductive part of the main equipment before you handle a printed board assembly (PBA).
- *Always* disconnect power before handling or installing PBAs.
- *Always* handle PBAs by the edges.
- Never touch PBA tracks or edge connectors. Contaminants introduced by fingers can cause corrosion and increase connection resistance.
- Never touch components. They are physically delicate: finger pressure can fracture (but not necessarily break) component leads.

Installation Checklist

Use the following checklist in conjunction with the detailed procedures that follow to ensure that the Commander E308 or E616 system is installed correctly.

- Order equipment using System Order form details
- Locate and mount components:
 - main equipment
 - system distribution frame
 - key stations
 - power-fail telephones
 - door stations
- Connect and terminate cables:
 - main equipment
 - system distribution frame
 - exchange lines
 - external paging
 - music on hold
 - data communications equipment

Provide surge protection

- Enable/disable power-fail memory retention
- Connect Telecom earth on main equipment
- Power on
- Check cabling
- Plug in stations
- Update SDF record book
- Program the system (refer to **Chapter Six**)
- Test the system (refer to **Chapter Seven**)
- Complete customer record card
- Complete installation feedback label
- Complete and attach installation date label

Installation Procedures

Sales Form Completion/ Equipment Ordering

Sales staff, after consultation with the customer, must complete the S.B.S. System Order.

Three copies of the System Order must be forwarded to the installation area along with the Telephone Order.

Use the information on the System Order form to:

- . Order the various items required for the installation
- . Find sales/rental details
- Determine system programming details.

Upon completion of the installation, any variations to the System Order must be noted on each copy of the order.

Keep one copy of the System Order with the equipment as a record of the installation. Return the remaining two copies to the local Telecom Business Office.

Locate and Mount Equipment

Customer Responsibilities

The customer must provide:

- Satisfactory lighting for installation and maintenance activities
- A single-phase 220-250V, 10A, 50Hz AC general purpose power outlet within one metre of the main equipment location
- . A correctly earthed power outlet.

Main Equipment

Compliance Label

Every Commander E308/616 main equipment cabinet has a compliance label attached to the upper edge of its base. Any request to install main equipment that does not have the compliance label *must* be referred to local management for investigation.

Refer to Illustrations 9, 10 and 11 - **E308 Compliance Label, E616 Compliance Label and Main Equipment E308/616 Compliance Label Mounting.**

Mounting Limitations

Ensure the main equipment location allows enough surrounding space for maintenance activities. The space requirements are:

- Not less than 300 mm clear wall space on each side
- Not less than 380 mm and not more than 1.8 m from the floor
- Not less than one metre of clear floor space in front of the equipment.

Refer to Illustration 12 - Limitations to Wall Mounting E308/616.

COMMANDER-E

**S538/1
ME-E 308**

Manuf. Date:

Serial No. A 000024

Approval No. LA 89071V



Made in Korea

INPUT 200mA at 240V 50Hz
OUTPUT 1 **2.5A** at 24V D.C.
OUTPUT 2 **0.8A** at 8V D.C.



**Telecom
Australia**

**E308 Compliance Label
[IL09]**

COMMANDER-E

**S538/2
ME-E 616**

Manuf. Date:

Serial No. A 000024

Approval No. LA 89071V



Made in Korea

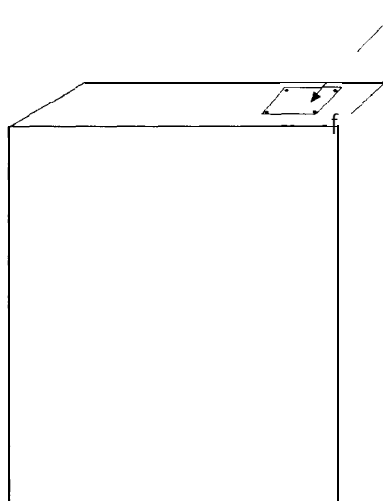
INPUT 200mA at 240V 50Hz
OUTPUT 1 **2.5A** at 24V D.C.
OUTPUT 2 **0.8A** at 8V O.C.



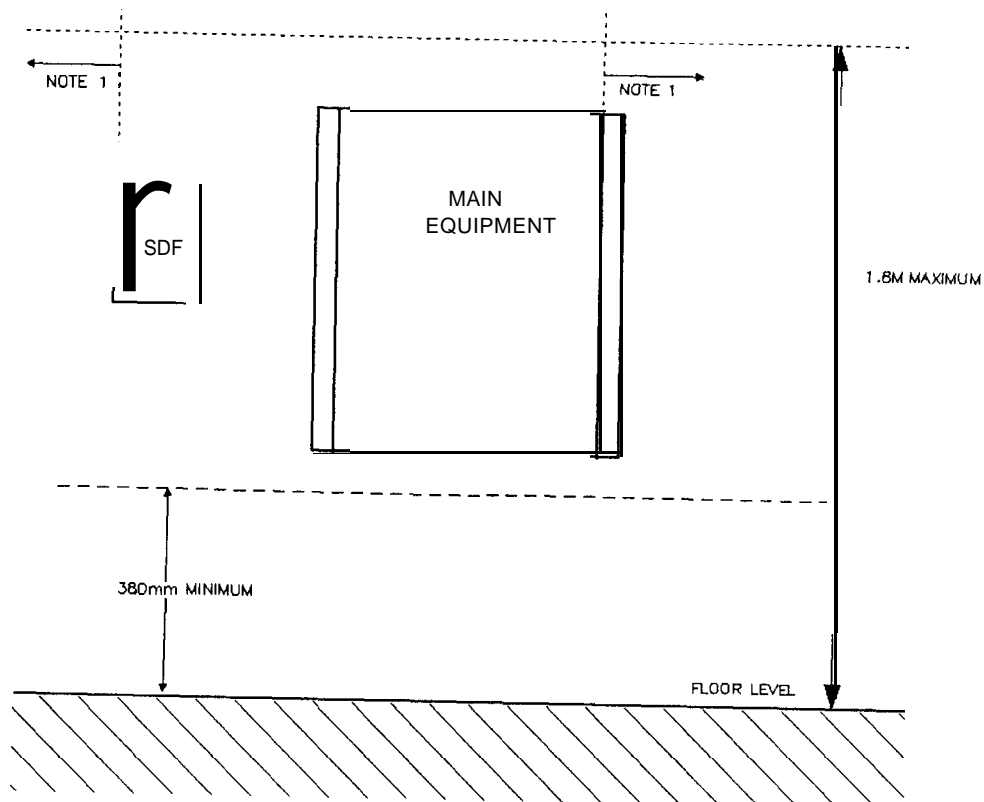
**Telecom
Australia**

**E616 Compliance Label
[IL10]**

COMPLIANCE LABEL



**Main Equipment E308/616 Compliance Label Mounting
[IL11]**



NOTES: 1. MINIMUM CLEARANCE OF 300mm ON EACH SIDE.
2. THE DRAWING IS NOT TO SCALE.

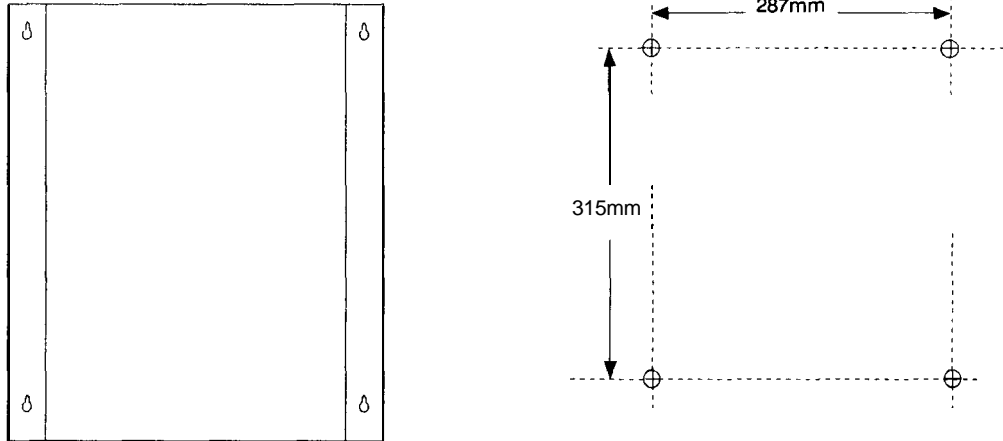
Limitations to Wall Mounting E308/616 [IL12]

Procedure

Mount the E308/616 main equipment cabinet as follows:

- Ensure that the main equipment has a compliance label and that its desired location agrees with the mounting limitations
- Measure and mark the four points for the **fixing** screws
- Insert suitable screws until they protrude from the wall surface by approximately 10mm
- Place the main equipment mounting holes over the screws and allow the main equipment to hang
- Fully tighten the screws.

Refer to Illustration 12 - **Mounting of Main Equipment Cabinet E308/616.**



Mounting of Main Equipment Cabinet E308/616 [IL13]

System Distribution Frame

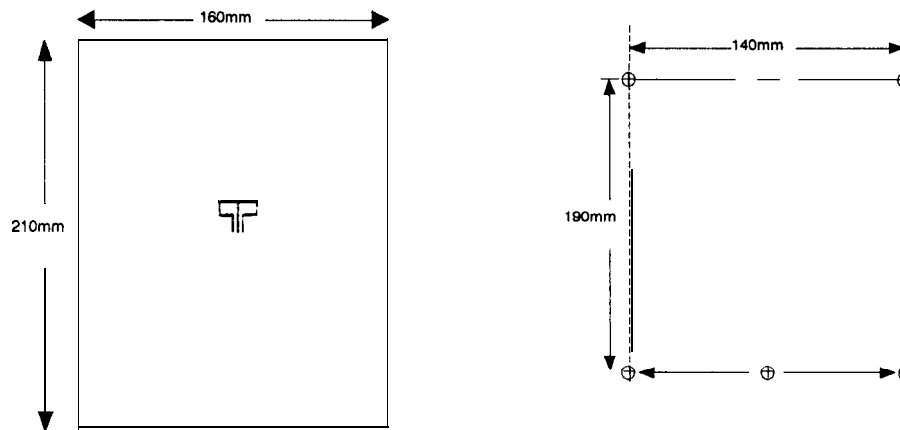
The SDF provides a common terminating point for the main equipment, exchange lines, key stations and other ancilliary equipment. Exchange lines are connected to the main equipment via the SDF through modular connector tails. Key stations and ancilliary equipment are connected to the main equipment via the SDF with 25 pair-cable tails.

The SDF should be mounted close to the main equipment to allow connection of preterminated cable tails.

Mount the E308/616 SDF as follows:

- Measure and mark the three points for the **fixing** screws on the wall
- Insert suitable screws until they protrude from the wall surface by approximately 10 mm
- Place the SDF mounting holes over the screws and allow the main equipment to hang
- Fully tighten the screws.

Refer to Illustration 14 - **Wall Mounting of System Distribution Frame.**



**Wall Mounting of System Distribution Frame
[IL14]**

Key Stations

Sale/Rental Window

Refer to the System Order Form to determine if the system is being sold or rented. Then, prior to installing each key station, identify it as follows:

- Remove the latched cover on the key station base
- for a sold system, pierce the window next to S
- For a rented system, pierce the window next to R.

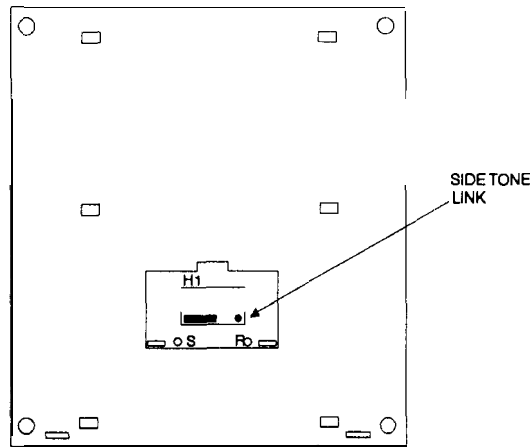
Only one window should be pierced on each key station.

Refer to Illustration 15 - **Sale/Rental Identifying Window.**

Side tone link

The link under the latched cover permits the balancing of the side tone circuit to the line. Initially, leave the link installed in the left (H1) position. Its final installation is carried out during key station testing.

For details on performing the side tone test, refer to **Sidetone Level** on page 7-8.



Sale/Rental Identifying Window [IL15]

Key Station Wall Mounting

To mount a key station on the wall:

- Obtain a Wall Mounting Kit (WMK)
- Remove the cover of the modular socket (S546/23 or S546/24) and locate the socket inside the wall bracket
- Attach the wall mounting bracket to the wall using four screws. **Do not** overtighten the screws.

Refer to Illustration 16 - Wall Mounting Dimensions for Key Stations.

- Push out the handset rest from the centre of the wall mounting bracket and insert it in the hole under the earpiece in the handset

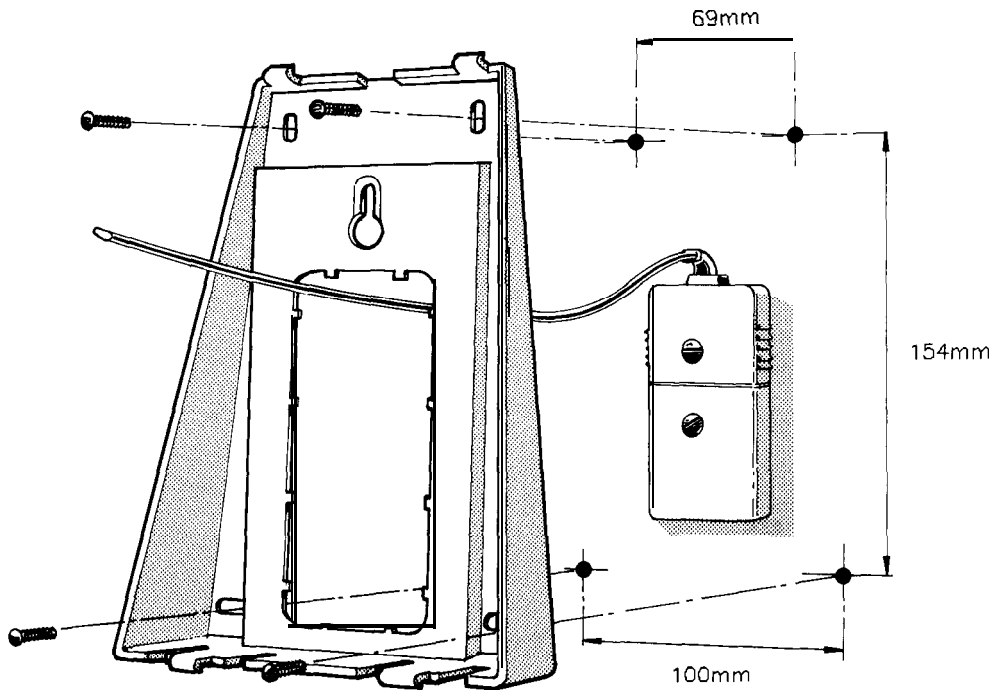
Refer to Illustration 17 - Installing the Handset Rest.

- Ensure the key station wiring is correctly terminated on the terminal block

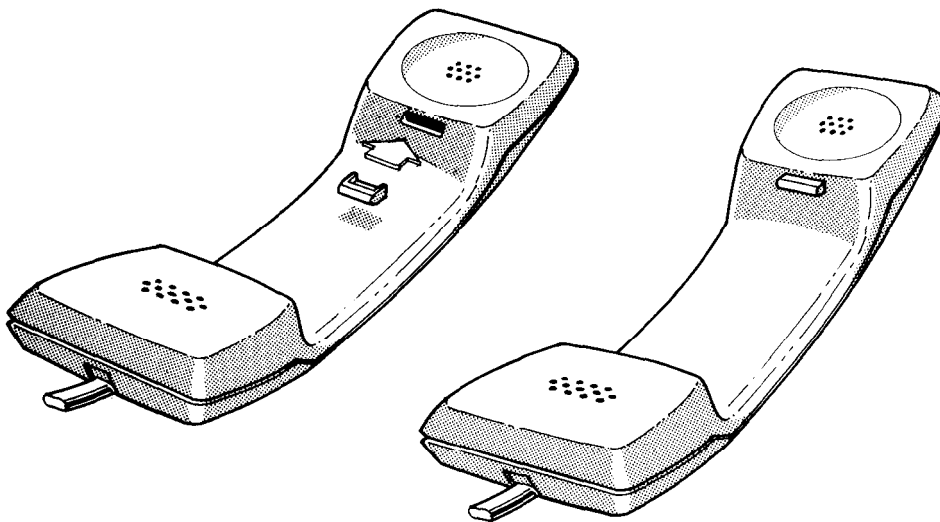
Refer to Illustration 18 - Wall Mounting Connection, or Table 6 - E308/616 Key Station Cabling on page 5-22.

- Connect the short line cord between the terminal block and the top of the key station
- Clip the key station into the wall mounting bracket.

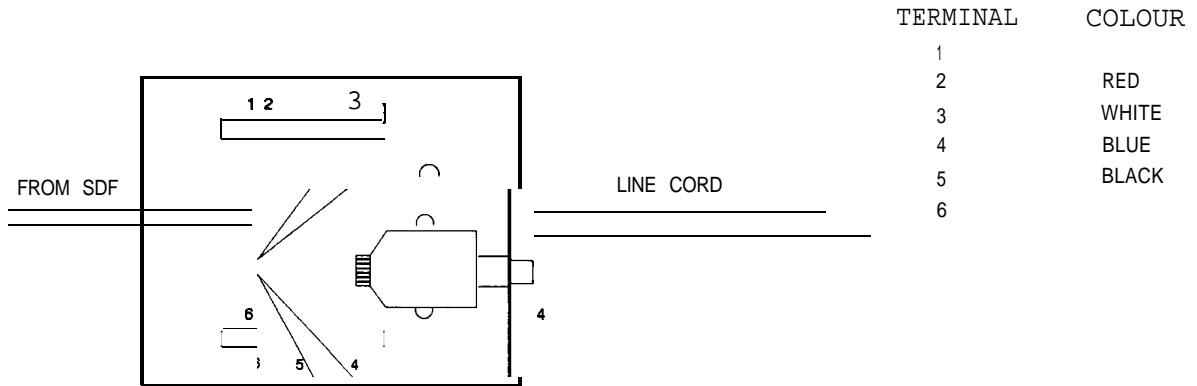
Refer to Illustration 19 - Wall Mounting the Key Station.



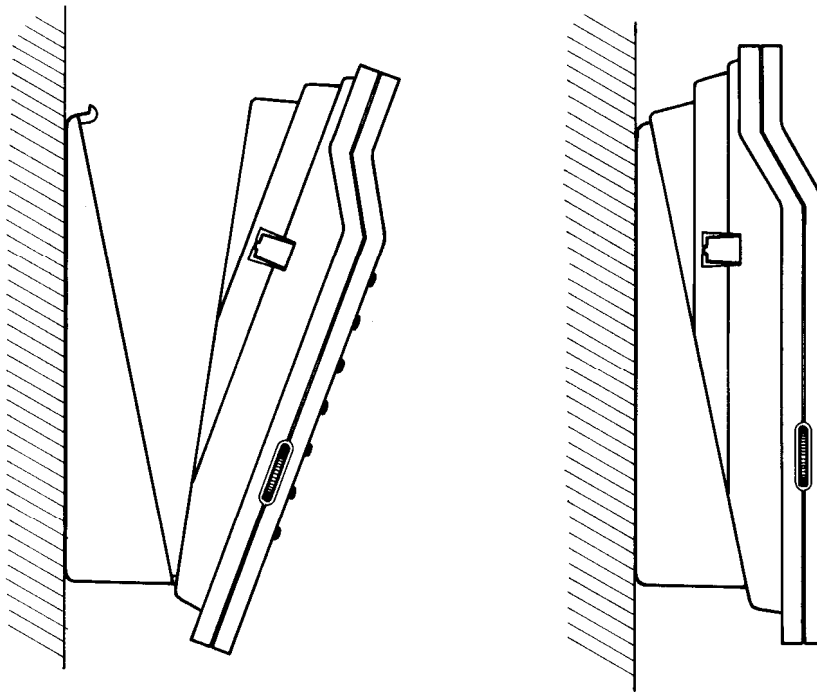
Wall Mounting Dimensions for Key Stations
[IL16]



Installing the Handset Rest
[IL17]



**Wall Mounting Connection
[IL18]**



**Wall Mounting the Key Station
[IL19]**

Power-Fail Telephones

Power-fail telephones allow lines one and two to switch to normal telephone operation during a power failure. To connect the two power-fail telephones:

E308

- Connect the 610 socket of the **first** power-fail telephone to the AMP CHAMP via pair 22 in the SDF
- Repeat this for the second power-fail telephone, but use pair 23 in the SDF.

E616

- Connect the 610 socket of the first power-fail telephone to the AMP CHAMP via pair 25 in the SDF
- Repeat this for the second power-fail telephone, but use pair 22 in the SDF.

Door Stations

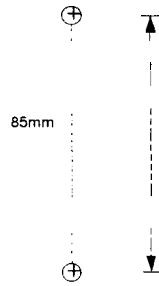
To mount a door station:

- Remove the top cover of the door station by releasing the retaining clip
- Attach the base to the wall using two screws. **Do not** overtighten the screws.
- Pass the cable through the base using the cable entry at the bottom left-hand corner of the base
- Terminate the cable in the door station. Refer to **Table 1 - Door Station Termination**.
- Insert a short circuit link between DSd and DSb
- Attach the top cover to the base.

Refer to Illustration 20 -Wall Mounting Dimensions for Door Station.

| SDF | DOOR STATION |
|------|--------------|
| 3/11 | DSc |
| 3/12 | DSa |
| 3/13 | DSd |

Table 1 - Door Station Termination



Wall Mounting Dimensions for Door Station
[IL20]

Connect and Terminate Cables

Main Equipment

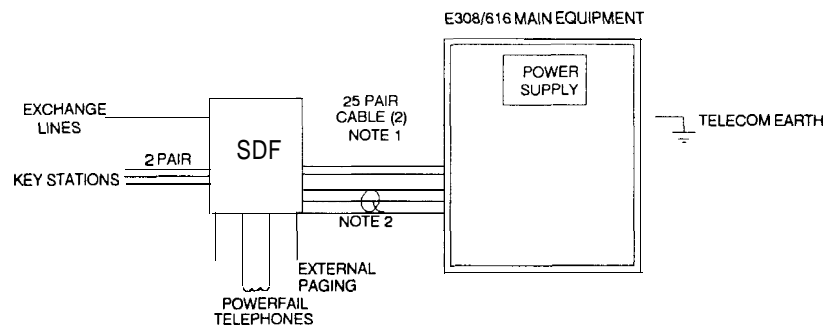
The E308 main equipment is connected to the SDF via one 2- pair cable terminated at the main equipment end by a 50 pin AMP CHAMP connector. The E616 system uses two 25-pair cables.

Where non-standard cable tails are required, cables must be terminated as follows:

- Pair one located on pin numbers 1 and 26, with the colour on pin 1 and mate on pin 26.

A bracket is provided with the main equipment to retain the AMP CHAMP connector(s) in position. It *must* be used to avoid possible damage to the conductors.

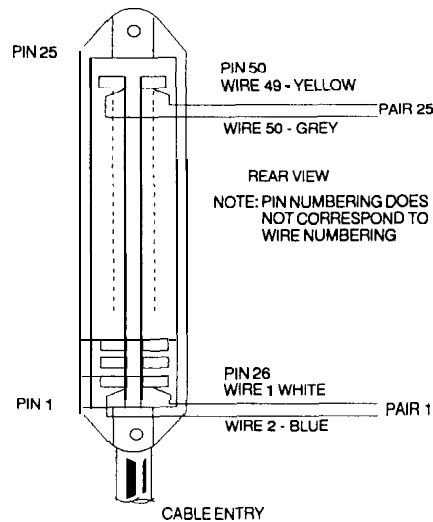
Refer to Illustrations 21 and 22 - **Cabling Scheme for E308/616, and AMP CHAMP Connector - Cable Termination.**



NOTE 1 For the E308 a single 25 pair cable is necessary, for the E616 two 25 pair cables are required.

NOTE 2 For the E308 2x2 pair tails are provided with only 3 pairs being used for exchange lines. For the E616 3x2 pair tails are used.

Cabling Scheme for E308/616
[IL21]



AMP CHAMP Connector - Cable Termination [IL22]

System Distribution Frame

The SDF uses the LSA Plus terminating system. Refer to TPH0216LSA Plus Terminating System.

Termination requirements for key stations and optional equipment cabling are detailed on the sales form.

Exchange lines are connected to the SDF by modular connectors. Tails are pre-terminated in the SDF.

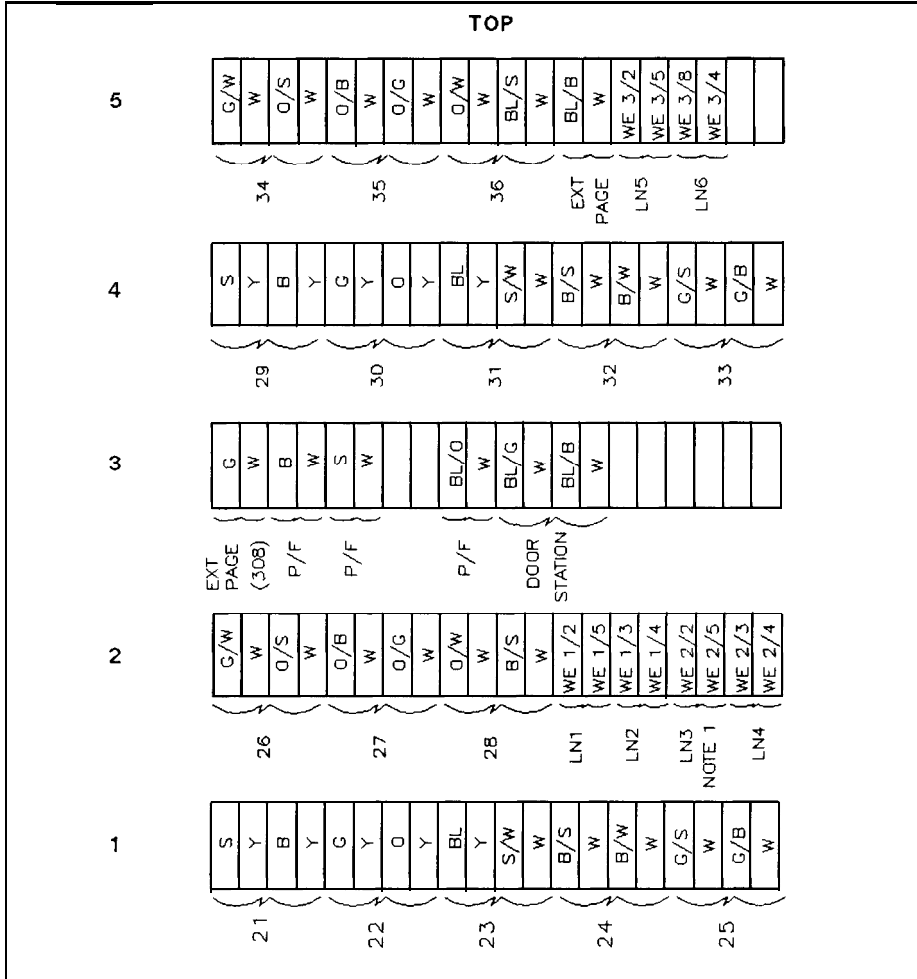
Ensure the correct terminating technique and tool are used for each termination to avoid damage to the conductors.

From Main Equipment

Main equipment cables are terminated in colour code sequence, in the *top* row of terminals in each SDF KRONE module, commencing from the bottom module.

Refer to Illustration 23 - E308 SDF Cabling, Table 2 - **E308/E616 SDF Cabling Connector 1** and Table 3 - **E616 SDF Cabling Connector 2**.

SDF KRONE BLOCK LAYOUT



CABLE ENTRY
ENTRY

NOTE 1 - FOR 616 ONLY.
FOR 308 LINE 3 APPEARS ON 2/19 AND 2/20.

E308 SDF Cabling
[IL23]

E308/616 ME - SDF CONNECTION

| AMP2 | KRONE BLOCK/WIRE | COLOUR | AMP2 | KRONE BLOCK/WIRE | COLOUA | DESCRIPTION |
|------|---------------------|--------|------|---------------------|--------|------------------------------|
| 1 | | | 26 | | | |
| 2 | | | 27 | | | |
| 3 | 3/1 | G | 28 | 3/2 | W | EXTERNAL PAGE (308) |
| 4 | 3/3 | B | 29 | 3/4 | W | POWER FAIL 1 (308) P/F2(616) |
| 5 | 3/5 | S | 30 | 3/6 | W | POWER FAIL 2 (308) |
| 6 | | | 31 | | | |
| 7 | 3/9 | BL/O | 32 | 3/10 | W | POWER FAIL 1 (616) |
| 8 | 3/11 | BUG | 33 | 3/12 | W | SPKR + VE/MIC + VE |
| 9 | 3/13 | BL/B | 34 | 3/14 | W | SPKR -VE |
| 10 | 2/11 | BUS | 35 | 2/12 | W | STATION 28 |
| 11 | 2/9 | O/W | 36 | 2/10 | W | |
| 12 | 2/7 | O/G | 37 | 2/8 | W | 27 |
| 13 | 2/5 | O/B | 38 | 2/6 | W | |
| 14 | 2/3 | O/S | 39 | 2/4 | W | 26 |
| 15 | 2/1 | G/W | 40 | 2/2 | W | |
| 16 | 1/19 | G/B | 41 | 1/20 | W | 25 |
| 17 | 1/17 | G/S | 42 | 1/18 | W | |
| 18 | 1/15 | B/W | 43 | 1/16 | W | 24 |
| 19 | 1/13 | □ II | 44 | 1/14 | W | |
| 20 | 1/11 | S/W | 45 | 1/12 | W | 23 |
| 21 | 1/9 | BL | 46 | 1/10 | Y | |
| 22 | 1/7 | O | 47 | 1/8 | Y | 22 |
| 23 | 1/5 | G | 48 | 1/6 | Y | |
| 24 | 1/3 | B | 49 | 1/4 | Y | 21 |
| 25 | 1/1 | S | 50 | 1/2 | Y | |

Table 2 - E308/E616 SDF Cabling Connector 1

616 ME - SDF CONNECTION

| AMP2 | KRONE BLOCK/WIRE | COLOUR | AMP2 | KRONE BLOCK/WIRE | COLOUR | DESCRIPTION |
|------|------------------|--------|------|------------------|--------|-------------|
| 1 | | | 26 | | | |
| 2 | | | 27 | | | |
| 3 | | | 28 | | | |
| 4 | | | 29 | | | |
| 5 | | | 30 | | | |
| 6 | | | 31 | | | |
| 7 | | | 32 | | | |
| 8 | | | 33 | | | |
| 9 | 5/3 | BL/B | 34 | 5/4 | W | EXT PAGE |
| 10 | 5/11 | BUS | 35 | 5/12 | W | STATION 36 |
| 11 | 5/8 | O/W | 36 | 5/10 | W | |
| 12 | 5/7 | O/G | 37 | 5/8 | W | 35 |
| 13 | 5/5 | O/B | 38 | 5/8 | W | |
| 14 | 5/3 | O/S | 39 | 5/4 | W | 34 |
| 15 | 5/1 | G/W | 40 | 5/2 | W | |
| 16 | 4/19 | G/B | 41 | 4/20 | W | 33 |
| 17 | 4/17 | G/S | 42 | 4/18 | W | |
| 18 | 4/15 | B/W | 43 | 4/16 | W | 32 |
| 19 | 4/13 | B/S | 44 | 4/14 | W | |
| 20 | 4/11 | S/W | 45 | 4/12 | W | 31 |
| 21 | 4/9 | BL | 46 | 4/10 | Y | |
| 22 | 4/7 | O | 47 | 4/8 | Y | 30 |
| 23 | 4/5 | G | 48 | 4/6 | Y | |
| 24 | 4/3 | B | 49 | 4/4 | Y | 29 |
| 25 | 4/1 | S | 50 | 4/2 | Y | |

Table 3 - E616 SDF Cabling Connector 2

From Key Stations

Key station cables are terminated at the **bottom** row of terminals on each SDF KRONE module.

To cable and terminate key stations to the SDF:

- Enter key station cabling for **E308/616** from the left-hand side of each SDF module
- Secure the cables on the left-hand side of the SDF cabinet using the cable clamp provided.

Ten pair-tails are formed into a goose neck to allow for possible future removal of the KRONE module. The cables enter the SDF from the key stations through the cable entry guide at the rear of the module, and are locked in position on the backmount channel. Each tail is fanned out and the wires placed in slots, ready for termination on the **bottom** row of each module.

Refer to **Table 4 - E308/616 System Distribution Frame Cabling** and **Table 5 - E616 System Distribution Frame Cabling**.

KRONE 1

| SIGNAL | SDF PAIR | DESCRIPTION |
|---------------|-----------------|--------------------|
| Station | 1 | 21 WT 21 BL |
| 21 | 2 | 21 RD 21 BK |
| Station | 3 | 22 WT 22 BL |
| 22 | 4 | 22 RD 22 BK |
| Station | 5 | 23 WT 23 BL |
| 23 | 6 | 23 RD 23 BK |
| Station | 7 | 24 WT 24 BL |
| 24 | 8 | 24 RD 24 BK |
| Station | 9 | 25 WT 25 BL |
| 25 | 10 | 25 RD 25 BK |

Table 4 - E308/616 System Distribution Frame Cabling.

KRONE 2

| SIGNAL | SDF PAIR | DESCRIPTION |
|---------------|-----------------|--------------------|
| Station | 11 | 26 WT 26 BL |
| 26 | 12 | 26 RD 26BK |
| Station | 13 | 27 WT 27 BL |
| 27 | 14 | 27 RD 27BK |
| Station | 15 | 28 WT 28BL |
| 28 | 16 | 28 RD 28BK |
| LN.1 | 17 | L1A L1B |
| LN.2 | 18 | L2A L2B |
| LN.3 | 19 (Note 1) | W A L3B |
| LN.4 | 20 | L4A L4B |

Note 1 - On the E308 system, exchange line 3 is terminated on SDF pair 20 in lieu of 19.

Table 4 continued - E308/616 System Distribution Frame Cabling

KRONE 3

| SIGNAL | SDF PAIR | DESCRIPTION |
|----------------------|-----------------|--------------------------|
| Ext Page (Note 1) | 21 | EXT 1A EXT 1B |
| P/Fail (Note 2) | 22 | P/F 1A P/F 1B |
| P/Fail (Note 3) | 23 | P/F 2A P/F 2B |
| | 24 | |
| P/Fail (Note 4) | 25 | P/F 1A P/F 1B |
| SPKR +ve MIC +ve | 26 | Door station (Note 5) |
| SPKR -ve | 27 | Door station (Note 5) |
| | 28 | |
| | 29 | |
| | 30 | |

Note 1 - Connection for E308 only

Note 2 - P/F 1 for E308, P/F2 for E616

Note 3 - Connection for E308 only

Note 4 - Connection for E616 only

Note 5 - E308 only

Table 4 continued - E308/616 System Distribution Frame Cabling

KRONE4

| <i>SIGNAL</i> | <i>I</i> | SDFPAIR | DESCRIPTION |
|---------------|----------|----------------|--------------------|
| Station | | 31 | 29 WT 29 BL |
| 29 | | 32 | 29 RD 29 BK |
| Station | | 33 | 30 WT 30 BL |
| 30 | | 34 | 30 RD 30 BK |
| Station | | 35 | 31 WT 31 BL |
| 31 | | 36 | 31 RD 31 BK |
| Station | | 37 | 32 WH 32 BL |
| 32 | | 38 | 32 RD 32 BK |
| Station | | 39 | 33 WH 33 BL |
| 33 | | 40 | 33 RD 33 BK |

Table 5- E616 System Distribution Frame Cabling

KRONE 5

| SIGNAL | SDF PAIR | DESCRIPTION |
|---------------|-----------------|--------------------|
| Station | 41 | 34WT 34BL |
| 34 | 42 | 34 RD 34 BK |
| Station | 43 | 35 WT 35 BL |
| 3.5 | 44 | 35 RD 35 BK |
| Station | 45 | 36WT 36 BL |
| 36 | 46 | 36 RD 36 BK |
| Ext Page | 47 | Ext 1A Ext 1B |
| LN.5 | 48 | L5A L5B |
| LN.6 | 49 | L6A L6B |
| | 50 | |

Table 5 continued - E616 System Distribution Frame Cabling

Exchange Lines

Exchange lines are connected to the main equipment via the SDF modular connectors.

To connect exchange lines to the SDF:

- Connect the cables as shown in Illustrations 23 or 24 - **E308 Exchange Line Connection** or **E616 Exchange Line Connection**.

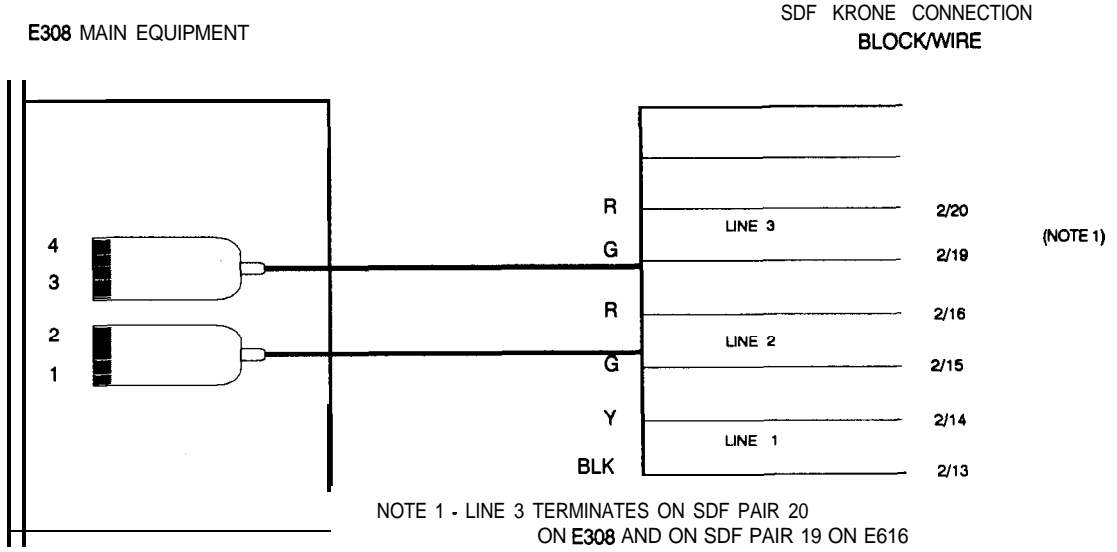
From Key Stations

To cable from the SDF to the key stations:

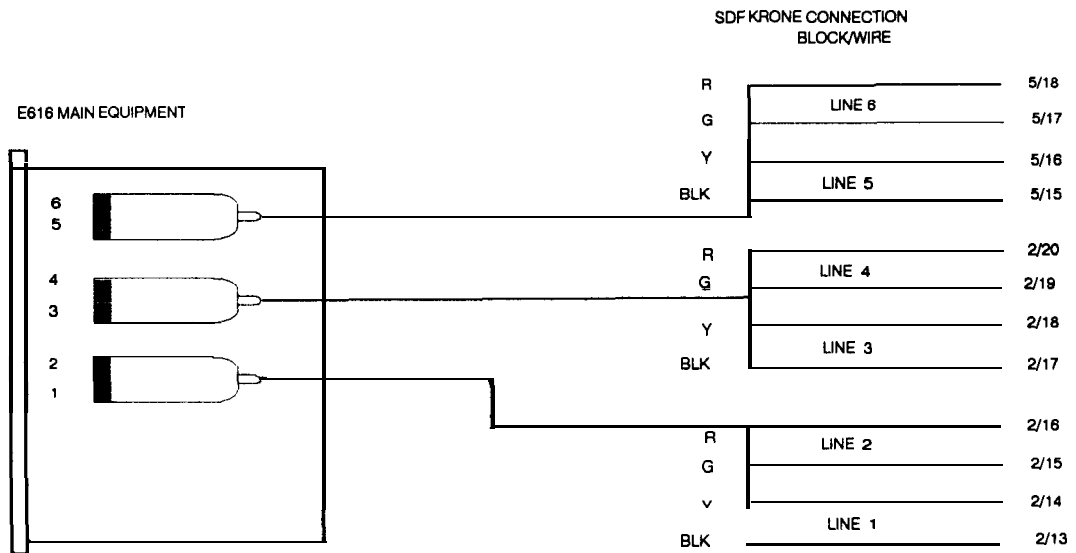
- Refer to Tables 4, 5 and 6 - **E308/616 SDF Cabling**, **E616 SDF Cabling** and **E308/616 Key Station Cabling**.
- Make sure that the cable pairs are terminated correctly and the polarity of the pair is correct. *The equipment will not operate if the system is not cabled correctly.*

| 605/610 PLUG SOCKET | WIRE | SIGNAL |
|--------------------------------|-------------|---------------|
| Pin 2 | White | Audio |
| Pin 6 | Blue | Audio |
| Pin 1 | Red | Data |
| Pin 5 | Black | Data |

Table 6 - E308/616 Key Station Cabling



**E308 Exchange Line Connection
[IL24]**



**E616 Exchange Line Connection
[IL25]**

From Door Stations

To connect a door station for the **E308** system:

- Connect the door station cable to the SDF
- When cabling from the SDF to a door station, make sure that the pairs are terminated correctly and the polarity of the pair is correct. *The equipment will not operate if the system is not cabled correctly.*

External Paging

Provision for external paging is provided in all **E308/616** systems, but should only be connected if indicated on the Sales Order Form.

To connect external paging:

E308

- Connect the external paging amplifiers via its 605 plug and the 611 socket
- Wire it from the SDF pair 21 to the main equipment AMP CHAMP.

E616

- Connect the external paging amplifiers via its 605 plug and the 611 socket
- Wire it from the SDF pair 47 to the main equipment AMP CHAMP.

SDF pair 47 is for E616 only.

NOTE: For external music sources and external paging devices, relay isolation must accord with Telecom Specification 1364. The device must be Telecom authorised apparatus only.

Music On Hold

To adjust music on hold volume:

- E308 - Adjust potentiometer VR2
- E616 - Adjust potentiometer VR1.

If music on hold is not required, adjust VR2/VR1 to minimum.

Refer to Illustration 26 - Power-Fail Memory Retention Switch.

Provide Surge Protection

The Commander E308/616 systems provide **Inbuilt** High Voltage surge protection circuitry. To use this feature, the following steps *must* be performed:

- Connect a telecommunications earth to the terminal marked ETH on the outside of the main equipment by crimping or soldering to the tag provided.
- In lightning-prone areas, protect the exchange lines at their point of entry or distribution in accordance with TPH 0265N0 “Lightning Protection at Customers Premises” and TPH0216 “LSA Plus Terminating System”.

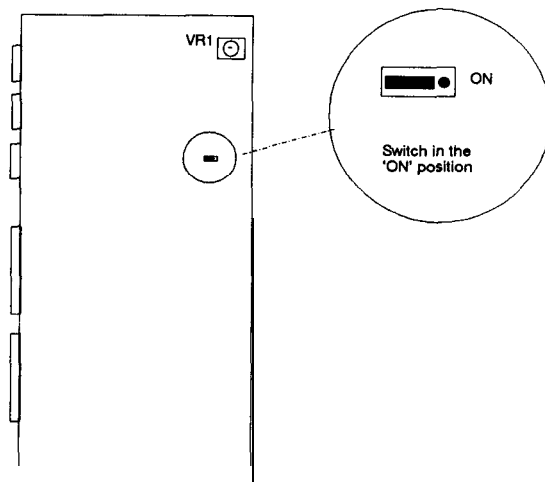
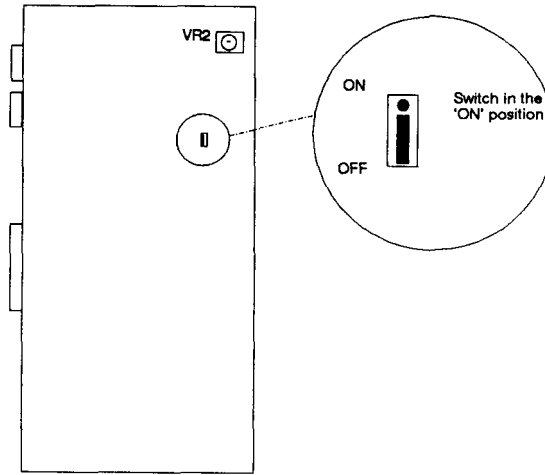
Enable/Disable Power-fail Memory Retention

Memory data is retained by an **onboard** back-up for a minimum of 48 hours during a mains power failure.

Always ensure the **onboard** back-up switch remains in the position indicated in **Illustration 26 - Power-Fail Memory Retention Switch**. It should change only when memory is to be cleared during a power down (optional).

To clear memory:

- Slide the memory retention switch on the main equipment PBA to the OFF position
 - Turn the mains power off
 - Restore the memory retention switch to its original position
- Refer to **Illustration 26 - Power-Fail Memory Retention Switch**.
- Restore power.



**Power-Fail Memory Retention Switch
[IL26]**

Connect Telecom Earth on Main Equipment

If the system has had surge protection provided, the main equipment earth is already connected. Otherwise, connect a main equipment earth as follows:

- Connect a telecommunications earth to the terminal marked ETH on the outside of the main equipment by crimping or soldering to the tag provided.

Power-On

Turn the system on after it has been cabled, terminated, and all printed circuit boards have been correctly set up and installed.

When powering up the system, the memory retention switch must be in the position indicated in **Illustration 26- Power-Fail Memory Retention Switch**.

To power on the system:

- Plug the main equipment cord into the customer-supplied 220-250V AC power outlet
- Switch the power outlet ON.

The power on indicator LED on the right-hand side of the main equipment glows.

Check Cabling

To ensure the cabling is correct before installing the stations, measure the voltages at the 610 sockets. Refer to **Table 7 - Key Station Voltages**.

| COLOUR | PIN | VOLTAGES |
|--------|-----|---------------|
| WT | 2 | 26.5 - 35 VDC |
| BL | 6 | 26.5 - 35 VDC |
| RD | 1 | REF. PIN 2 |
| BK | 5 | REF. PIN 6 |

Table 7 - Key Station Voltages

Plug in Stations

After ensuring the cabling is correct, plug in all key stations and any door stations.

**System
Distribution
Frame Records**

Update the SDF records in accordance with the Telecom Technical Publication TPH 0216 'LSA Plus Terminating System'. Keep the records inside the SDF for future reference.

**Installation
Feedback Label**

The Installation Feedback Label is supplied with the main equipment. This label enables you to record information about equipment quality. It should be filled out when installation is completed, and returned to the address provided on the label.

NOTE: When equipment is defective, a Customer Equipment Fault Report Label (E441) must be completed.

Chapter Six

System Programming

Chapter Six

System Programming

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Chapter Six

System Programming

Introduction

This chapter contains all the procedures for programming the Commander E308/616 system.

It begins with an overview of the basic programming requirements. The remainder of the chapter explains how to program the E308/616 system for individual features offered to the customer.

A summary of programming codes is also provided at the end of the chapter.

General Procedure

Various system parameters can be modified from any key station by entering the appropriate codes and values.

The general procedure for system programming is described below.

To Enter Programming Mode

- While on-hook, press [#]
- Dial 1234 - the 4-digit password
- Press [REDIAL].

The system checks the password to ensure its validity.

An error tone is heard if an incorrect password has been entered.

To Enter Data

- Enter the relevant programming code
- Enter the data to be modified
- Press [REDIAL] to enter data.

A confirmation tone is heard if data is accepted.

An error tone is heard if data is rejected. In this case, return to the programming tone by pressing [REDIAL]. Re-enter programming code and data.

NOTE: Obtain the data to enter from the System Order Form. The relevant section of the form is shown after each programming procedure.

Refer to Form 1 and 2 CommanderE308/616 System Order.

To select next programming code

- Press [PAGE] to enter the next programming code number in sequence - for example, moving from 44 to 45
- or*
- Dial the desired 2-digit program code number - for example, moving from 44 to 56.

To Exit Programming Mode

- Press [#].
- All new data becomes effective.*

Automatic Program Exit

If no programming is initiated within four minutes of entering programming mode, the system automatically exits programming mode. To re-enter programming mode:

- Press [#]
- Dial 1234 - the 4-digit password
- Press [REDIAL] to enter data.

COMMANDER E308\616 SYSTEM ORDER

REFER MODEL cl E308 E616 Tick required boxes
instructions on reverse

CUSTOMER'S NAME

| |
|--|
| |
|--|

ADDRESS

| |
|--|
| |
|--|

TOWN OR SUBURB

POSTCODE

| |
|--|
| |
|--|

NATURE a BUSINESS

| |
|--|
| |
|--|

CUSTOMER CONTACT

TELEPHONE

| | |
|--|--|
| | |
|--|--|

SALES CONTACT

TELEPHONE

| | |
|--|--|
| | |
|--|--|

SALES REP I.D.

| |
|--|
| |
|--|

STD CODE

| |
|--|
| |
|--|

SERVICE NUMBER

| |
|--|
| |
|--|

IF OFF PBX

| |
|--|
| |
|--|

PBX EXTN.

| |
|--|
| |
|--|

CUST. REQ. DATE

| |
|--|
| |
|--|

APPN DATE

| |
|--|
| |
|--|

SERVICE ORDER NO.

| |
|--|
| |
|--|

DATE ORDER ISSUED

| |
|--|
| |
|--|

| |
|--|
| |
|--|

NO

YES please specify _____

PAYMENT METHOD

SALE: Outright Lease Deferred
 RENTAL: Standard Fixed Temporary

TYPE OF ACTIVITY

1. Supply & install either
 a. Complete New System
 b. Additional Equipment for Existing System
 2. Other (please specify) _____

| TARIFF SECTION | Qty. | PRODUCT CODE | ITEM NO. (Serial: 538) | NOTES | PRODUCT TARIFF CODE |
|---------------------------|------|--------------|------------------------|--|---------------------|
| EQUIPMENT | | | | (Enter Tariff Details on BUSINESS OFFICE COPY 3) | |
| E308 | | | | | |
| Basic Package..... | | E3BP | NA | | |
| Main Equipment..... | | E3ME | 1 | | |
| Standard Key Station..... | | E3KS | 11 | | |
| Handfree Key Station..... | | E3HFKS | 12 | | |
| Door Station..... | | E3DS | 15 | | |
| Wall Mounting Kit..... | | E3WVK | 21 | | |
| E616 | | | | | |
| Basic Package..... | | E4BP | NA | | |
| Main Equipment..... | | E4ME | 2 | | |
| Standard Key Station..... | | E4KS | 13 | | |
| Handfree Key Station..... | | E4HFKS | 14 | | |
| Wall Mounting Kit..... | | E4WVK | 21 | | |

EXCHANGE/TIE LINE CONNECTIONS

| | | | |
|--|--|----------------------|--|
| | | Exchange Line | |
| | | Tie Lines - Non PABX | |
| | | - PABX | |

| | | | |
|-----------------|-----------------------|------------|-------------------|
| Tick Y Required | | Permit No. | Service Order No. |
| | External Music Source | | |

PROGRAMMABLE OPTIONS

EXCHANGE LINE BASED OPTIONS

| EXCH LINE | SERVICE NO | SERVICE ORDER NO. | LINE TYPE | | 41 SIGNALLING TYPE |
|-----------|------------|-------------------|---------------------|--------------|--------------------|
| | | | 42 Trunk/Non Equip. | 43 Exch/PABX | |
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |

0 = Non Equipped (1)
 1 = Equipped (1)

0 = Exch (0)
 1 = PABX (0)

0 = Decadic (0)
 1 = DTMF (0)

| |
|-------------------------|
| 44 PABX Access Codes |
| 1. 0- |
| 2. 1- |
| 2 Digits Max |

| |
|----------------------|
| 50 Line Ring Mode |
| 0' Individual |
| 1' Normal |
| 2' Off-Hook |
| (1) |

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S 53/476

(Parenthesis = Default Condition)

Sheet 1 of 2 sheets

INSTALLING OFFICER'S COPY 1

Form 1

COMMANDER TELEPHONE SYSTEM ORDER MODEL E308 E616

| | | |
|------|-------------|-------------------|
| Name | Service No. | Service Order No. |
|------|-------------|-------------------|

STATION BASE PROGRAMMING

| STN | Designation #/ or Location | Stn Type | 32. Access Barring Class | 31. Internal Page | 30. Line Access | | | | | | |
|-----|----------------------------|----------|--------------------------|-------------------|-----------------|---|---|---|---|---|--|
| | | | | | 1 | 2 | 3 | 4 | 5 | 6 | |
| 21 | | | | | | | | | | | |
| 22 | | | | | | | | | | | |
| 23 | | | | | | | | | | | |
| 24 | | | | | | | | | | | |
| 25 | | | | | | | | | | | |
| 26 | | | | | | | | | | | |
| 27 | | | | | | | | | | | |
| 28 | | | | | | | | | | | |
| 29 | | | | | | | | | | | |
| 30 | | | | | | | | | | | |
| 31 | | | | | | | | | | | |
| 32 | | | | | | | | | | | |
| 33 | | | | | | | | | | | |
| 34 | | | | | | | | | | | |
| 35 | | | | | | | | | | | |
| 36 | | | | | | | | | | | |

| | | |
|-------------------------------|--|---|
| OH = On-hook HF = Handfree | 0 = Unrestricted - A 1 = STD - B 2 = Local Only - C 3 = ICM (No 000) - D 4 = ICM only - E (R) | 0 = Disabled 1 = Enabled (1) |
| | | 0 = Unable to Access Line 1 = Able to Access Line (1) |

34. Allowed Codes Class 'B'

| |
|-----|
| 0 - |
| 1 - |
| 2 - |
| 3 - |
| 4 - |
| 5 - |
| 6 - |
| 7 - |
| 8 - |
| 9 - |

12 Digits Max

35. Allowed Codes Class 'C'

| |
|-----------|
| 0 - (000) |
| 1 - (000) |
| 2 - (000) |
| 3 - (013) |
| 4 - (016) |
| 5 - (016) |
| 6 - |
| 7 - |
| 8 - |

12 Digits Max

37. Allowed Codes Class 'D'

| |
|-----------|
| 0 - (000) |
| 1 - |
| 2 - |
| 3 - |
| 4 - |
| 5 - |
| 6 - |
| 7 - |
| 8 - |
| 9 - |

12 Digits Max

| 63. STN(S) receiving Door Stn Call | 73. Executive/Secretary Parts | |
|------------------------------------|-------------------------------|---------------|
| STN NO. | STN NO. (Exec) | STN NO. (Sec) |
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |

Nominate Station No. (Max 8)

72. Door Station

| | |
|-----------------|--|
| 0: Not Equipped | |
| 1: Equipped | |

(0)

| | LINES | 1 2 3 4 5 6 | | | | | |
|------------------------|-------|-------------|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 |
| 62. Audible Signaling | 1 | | | | | | |
| | 2 | | | | | | |
| | 3 | | | | | | |
| | 4 | | | | | | |
| | 5 | | | | | | |
| | 6 | | | | | | |
| 61. Night Service Ring | 1 | | | | | | |
| | 2 | | | | | | |
| | 3 | | | | | | |
| | 4 | | | | | | |
| | 5 | | | | | | |
| | 6 | | | | | | |

Nominate Station No. (Max 8)
Parentheses - Default Condition

TIMERS

| Timer | Initial | Required |
|-------------------------------|---------------------------|----------|
| 30. Exchange Line Recall Time | 600m Sec. (500m Sec. Max) | |
| 31. PABX Line Recall Time | 90m Sec. (500m Sec. Max) | |
| 32. Hold Recall Time | 90 Sec. (200 Sec. Max) | |
| 33. Transfer Recall Time | 30 Sec. (200 Sec. Max) | |

71. Access Barring Abbreviated Dial No's

| | |
|--------------------|--|
| 0: No's Barred | |
| 1: No's Not Barred | |

(1)

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Sheet 2 of 2 sheets

INSTALLING OFFICER'S COPY



Form 2

Key Station Allocation

External Line Access

Each line on every key station is programmed for either access or no access to an available external line.

1. In programming mode, dial 30.
2. Dial the number of the key station to be programmed.
3. E308: dial a 0 or 1 for each of the three lines - for example, 010.
E616: dial a 0 or 1 for each of the six lines - for example, 010110.

0 = no access to line

1 = access to line

Default value is 1.

4. Press [TRANS] to enter data.
5. Repeat steps 2, 3, and 4 for every key station in the system.
6. Press [REDIAL] to exit programming code.

NOTE: Some systems may have less external lines connected than the system can handle. In this case, *all line positions must still be programmed.*

For example, if an E616 system (capable of six lines) has only four external lines attached, the two vacant lines must also be programmed. (The value used does not matter.)

STATION BASE PROGRAMMING

| STN | Designation &/or Location | Stn Type | 32. Access Barring Class | 31. Internal Page | 30. Line Access | | | | | |
|-----|---------------------------|-------------------------------|---|------------------------------------|---|---|---|---|---|---|
| | | | | | 1 | 2 | 3 | 4 | 5 | 6 |
| 21 | | | | | | | | | | |
| 22 | | | | | | | | | | |
| 23 | | | | | | | | | | |
| 24 | | | | | | | | | | |
| 25 | | | | | | | | | | |
| 26 | | | | | | | | | | |
| 27 | | | | | | | | | | |
| 28 | | | | | | | | | | |
| 29 | | | | | | | | | | |
| 30 | | | | | | | | | | |
| 31 | | | | | | | | | | |
| 32 | | | | | | | | | | |
| 33 | | | | | | | | | | |
| 34 | | | | | | | | | | |
| 35 | | | | | | | | | | |
| 36 | | | | | | | | | | |
| | | OH = On-Hook HF = Handfree | 0 = Unrestricted - A 1 = STD - B 2 = Local Only - C 3 = ICM (inc 000) - D 4 = ICM only - E (1) | 0 = Disabled 1 = Enabled (1) | 0 = Unable to Access Lines 1 = Able to Access Lines (1) | | | | | |

Audible Line Ring

Each key station can be programmed to receive an audible ring signal from one or more external lines. A maximum of eight key stations can be programmed to ring for one line.

1. In programming mode, dial 62.
2. Press [LINE 1] key.
3. Dial a key station to ring on that line.

Do not enter key station numbers that are not to ring on that line.

4. Dial [*].
5. Repeat steps 3 and 4 until all key stations required to ring on that line have been entered.

Default key station is 21 for each line.

6. Press [TRANS] to enter data.
7. Press the next [LINE] to be programmed.
8. Repeat steps 3, 4, 5, 6 and 7 until all lines in the system have been programmed.
8. Press [REDIAL] to exit programming code.

| | | LINES | | | | | |
|------------------------|---|-------|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 |
| 62. Audible Signalling | 1 | | | | | | |
| | 2 | | | | | | |
| | 3 | | | | | | |
| | 4 | | | | | | |
| | 5 | | | | | | |
| | 6 | | | | | | |
| | 7 | | | | | | |
| | 8 | | | | | | |
| 61. Night Service Ring | 1 | | | | | | |
| | 2 | | | | | | |
| | 3 | | | | | | |
| | 4 | | | | | | |
| | 5 | | | | | | |
| | 6 | | | | | | |
| | 7 | | | | | | |
| | 8 | | | | | | |

Nominate Station No.s (Max 8)

Night Service Ring

This feature allows a maximum of eight key stations to ring on each line when the system is placed in night service mode.

1. In programming mode, dial 61.
2. Press [LINE] to be programmed.
3. Dial a key station number to ring on that line.
4. Dial [*].
5. Repeat steps 3 and 4 until all key stations required to ring on that line have been entered.

Default key station is 21 for each line.

6. Press [TRANS] to enter data.
7. Repeat steps 2, 3, 4, 5, and 6 until all lines in the system have been programmed.
8. Press [REDIAL] to exit programming code.

| | | LINE | 1 | 2 | 3 | 4 | 5 | 6 |
|------------------------|------|------|---|---|---|---|---|---|
| 62. Audible Signalling | 1 | | | | | | | |
| | 2 | | | | | | | |
| | 3 | | | | | | | |
| | 4 | | | | | | | |
| | Stns | | | | | | | |
| | 5 | | | | | | | |
| | 6 | | | | | | | |
| | 7 | | | | | | | |
| 61. Night Service Ring | 1 | | | | | | | |
| | 2 | | | | | | | |
| | 3 | | | | | | | |
| | 4 | | | | | | | |
| | Stns | | | | | | | |
| | 5 | | | | | | | |
| | 6 | | | | | | | |
| | 7 | | | | | | | |

Nominate Station No.s (Max 8)

Door Station Ring

A maximum of eight key stations can be programmed to receive the ring tone from a door station.

1. In programming mode, dial 63.
2. Dial the first key station number that is to receive the door station ring.
3. Dial [*]
4. Repeat steps 2 and 3 until all key stations required to receive the door station ring have been entered.
5. Press [TRANS] key to enter the data.
6. Press [REDIAL] to exit programming code.

| |
|------------------------------------|
| 63. |
| STN(S) receiving Door Stn. Call |
| STN NO. |
| 1 |
| 2 |
| 3 |
| 4 |
| 5 |
| 6 |
| 7 |
| 8 |

Access Barring Class

Each key station can be allocated an access barring class to restrict certain types of outgoing calls. The access barring class allocation covers all lines on a key station.

1. In programming mode, dial 32.

The system automatically selects the lowest key station extension number, ready for the next step.

2. Dial 0, 1, 2, 3 or 4.

0 = Class A Unrestricted access.

1 = Class B Local access.
STD access.
Up to 10 allowed codes or numbers.

2 = Class C Local call access.
The following permitted codes: 000, 008, 009,
013, 016, 019, plus any four allowed codes or
numbers.
Up to 10 allowed codes or numbers (in place
of the permitted codes).

3 = Class D Intercom call access.
 000 access plus nine permitted codes or numbers.
 000 can be changed to allow up to 10 codes or numbers.

4 = Class E Intercom call access only.

Default value is 0.

The system automatically selects the next key station extension ready for programming.

3. E308 - Repeat step 2 for all eight extensions.
 E616 - Repeat step 2 for all sixteen extensions.
4. Press [REDIAL] to enter the string of data and exit programming code.

STATION BASE PROGRAMMING

| STN | Designation &/or Location | Stn Type | Stn Access Barring Code |
|-----|---------------------------|----------|-------------------------|
| 21 | | | |
| 22 | | | |
| 23 | | | |
| 24 | | | |
| 25 | | | |
| 26 | | | |
| 27 | | | |
| 28 | | | |
| 29 | | | |
| 30 | | | |
| 31 | | | |
| 32 | | | |
| 33 | | | |
| 34 | | | |
| 35 | | | |
| 36 | | | |

OH = On-Hook
 HF = Handfree

0 = Unrestricted ~ A
 1 = STB ~ B
 2 = Loop Only ~ C
 3 = ICM (Inc. 000) ~ D
 4 = ICM only ~ E
 ()

**Allowed Codes for
Access Barring
Class B**

Key stations programmed for access barring class B can only access a maximum of ten programmed ISD codes or numbers, and are barred from all other ISD access.

This function is programmed from one key station into the main equipment memory. Data entered becomes valid for every access barring class B key station.

1. In programming mode, dial 34.
2. Dial main equipment memory location code from 0 to 9.
3. Dial allowed ISD code or number.

Maximum of 12 digits allowed.

Enter [] at the end of a string of digits to enable any digit to be dialled after the string. For example, 001162* in a location allows access to any number that begins with those digits, and has any 6 digits after the [*].*

Enter [HOLD] to prevent any further digits to be dialled after a set string of numbers. For example, 001162356118 [HOLD] in a location allows access to that number only.

Default values:

Locations 0 - 9 : Vacant (ISD access barred)

4. Press [TRANS] to validate data change.

If data is correct, confirmation tone is heard.

If data is incorrect, error tone is heard.

5. Dial next location code, *or*
Press [PAGE] to go directly to the next location code.
6. Repeat steps 3, 4, and 5 until all memory locations have been programmed.
7. Press [REDIAL] to exit programming code.

To clear a location

1. In programming mode, dial 34.
2. Dial location code.
3. Press [HOLD] to clear the number in the location.
4. Press [TRANS] to validate the data change.
5. Press [REDIAL] to exit programming code.

| 34. Allowed Codes | |
|-------------------|---|
| Class B | |
| 0 | - |
| 1 | - |
| 2 | - |
| 3 | - |
| 4 | - |
| 5 | - |
| 6 | - |
| 7 | - |
| 8 | - |
| 9 | - |

12 Digits Max

**Allowed Codes for
Access Barring
Class C**

Key stations programmed for access barring class C have access to local calls and the following permitted codes: 000, 008, 009, 013, 016, 019, plus four allowed codes or numbers. Alternatively, up to ten allowed codes or numbers can be accessed by programming over the permitted codes.

This function is programmed from one key station into the main equipment memory. Data entered becomes valid for every access barring class C key station.

1. In programming mode, dial 36
2. Dial main equipment memory location code from 0 to 9

3. Dial allowed code or number.

Maximum of 12 digits allowed.

Enter [] at the end of a string of digits to enable any digit to be dialled after the string. For example, 02* in a location allows access to all numbers with an 02 STD prefix.*

Enter [HOLD] to prevent any further digits to be dialled after a set string of numbers. For example, 023086195 [HOLD] in a location allows access to that number only.

Default values:

- 0 : 000
- 1 : 008
- 2 : 009
- 3 : 013
- 4 : 016
- 5 : 019
- 6-9 : Vacant (STD access barred).

4. Press [TRANS] to validate data change.

If data is correct, confirmation tone is heard.

If data is incorrect, error tone is heard. Press [TRANS] again to return the programming tone, and repeat the procedure from step 1.

5. Repeat steps 2, 3, and 4 until all memory locations have been programmed.
6. Press [REDIAL] to exit programming code.

To clear a location

1. In programming mode, dial 36.
2. Dial location code.
3. Press [HOLD] to clear the number in the location.
4. Press [TRANS] to validate data change.
5. Press [REDIAL] to exit programming code.

| 36. Allowed Codes | |
|-------------------|-------|
| Class 'C' | |
| 0 | (000) |
| 1 | (008) |
| 2 | (009) |
| 3 | (013) |
| 4 | (016) |
| 5 | (019) |
| 6 | |
| 7 | |
| 8 | |
| 9 | |

12 Digits Max

**Allowed Codes for
Access Barring
Class D**

Key stations programmed for access barring class D have intercom call access, 000 access and nine permitted codes or numbers. Alternatively, up to ten codes or numbers can be accessed by programming over 000.

This function is programmed from one key station into the main equipment memory. Data entered becomes valid for every access barring class D key station.

1. In programming mode, dial 37.
2. Dial main equipment memory location code from 0 to 9.
3. Dial allowed code or number.

Maximum of 12 digits allowed.

Both [] (allowing any digits to be dialled) and [HOLD] (no more digits to be dialled) can be used.*

Default Values

0 : 000
1-9 : Vacant.

4. Press [TRANS] to validate data change.

If data is correct, confirmation tone is heard.

If data is incorrect, error tone is heard. Press (TRANS) again to return the programming tone, and repeat the procedure from step 1.

5. Repeat steps 2, 3 and 4 until all locations have been programmed.
6. Press [REDIAL] to exit programming code.

To clear a location

1. In programming mode, dial 37.
2. Dial location code.
3. Press [HOLD] to clear the number in the location.
4. Press [TRANS] to validate data change.
5. Press [REDIAL] to exit programming code.

| 37. Allowed Codes Class 'D' | |
|--------------------------------|-------|
| 0 - | {000} |
| 1 - | |
| 2 - | |
| 3 - | |
| 4 - | |
| 5 - | |
| 6 - | |
| 7 - | |
| 8 - | |
| 9 - | |

12 Digits Max

Internal Page Access

Key stations can be programmed to receive internal page calls.

1. In programming mode, dial 31.

The system automatically selects the lowest key station number, ready for the next step.

2. Dial 0 or 1.

0 = Internal page not receivable

1 = Internal page receivable

Default value is 1.

The system automatically selects the next key station ready for programming.

3. E308: repeat step 2 for all eight key stations.
E616: repeat step 2 for all sixteen key stations.
4. Press [REDIAL] to enter the string of data and exit programming code.

STATION BASE PROGRAMMING

| STN | Designation &/or Location | Stn Type | 32. Access Barring Class | 31. Internal Page |
|-----|---------------------------|-------------------------------|---|------------------------------------|
| 22 | | | | |
| 23 | | | | |
| 24 | | | | |
| 25 | | | | |
| 26 | | | | |
| 27 | | | | |
| 28 | | | | |
| 29 | | | | |
| 30 | | | | |
| 31 | | | | |
| 32 | | | | |
| 33 | | | | |
| 34 | | | | |
| 35 | | | | |
| 36 | | | | |
| | | CH = On-Hook HF = Handfree | 0 = Unrestricted - A 1 = STD - B 2 = Local Only - C 3 = ICM (inc COO) - D 4 = ICM only - E (0) | 0 = Disabled 1 = Enabled (1) |

Line Designation

Line Dial Type

Each line is designated in the main equipment as either decadic or DTMF.

1. In programming mode, dial 41.
2. **E308**: dial a 0 or 1 for all three lines.

E616: dial a 0 or 1 for all six lines.

0 = Decadic (Pulse)

1 = DTMF (Tone)

Default value is 0.

3. Press [REDIAL] to enter the string of data and exit programming code.

EXCHANGE LINE BASED OPTIONS

| EXCH LINE | SERVICE NO | SERVICE ORDER NO. | LINE TYPE | | *1 SIGNALING TYPE |
|-----------|------------|-------------------|---|-----------------------------|--------------------------------|
| | | | 42 Trunk/Non Equip. | 43 Exch/PABX | |
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| | | | 0 = Non Equipped 1 = Equipped (1) | 0 = Exch 1 = PABX (0) | 0 = Decadic 1 = DTMF (0) |

(Parenthesis = Default Condition)

Exchange Line

Each line is designated in the main equipment as equipped or not equipped.

1. In programming mode, dial 42.
2. E308: dial a 0 or 1 for all three lines.
E616: dial a 0 or 1 for all six lines.

0 = Line not equipped

1 = Line equipped

Default value is 1.

3. Press [REDIAL] to enter the string of data and exit programming code.

EXCHANGE LINE BASED OPTIONS

| EXCH LINE | SERVICE NO | SERVICE ORDER NO. | LINE TYPE | | 41 SIGNALLING TYPE |
|-----------|------------|-------------------|---------------------|-----------------------------|--------------------------------|
| | | | 42 Trunk/Non Equip. | 43 Exch/PABX | |
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| | | | 1 = Equipped (1) | 0 = Exch 1 = PABX (0) | 0 = Decadic 1 = DTMF (0) |

(Paranthesis = Default Condition)

Exchange or PABX Line

Each Line is designated in the main equipment as an exchange line or PABX line.

PABX lines have a pause automatically inserted between the access code and telephone number when using the redial facility.

1. In programming mode, dial 43.
2. **E308:** dial a 0 or 1 for all three lines.

E616: dial a 0 or 1 for all six lines.

0 = Exchange line

1 = PABX line

Default value is 0.

3. Press [REDIAL] to enter the string of data and exit programming code.

EXCHANGE LINE BASED OPTIONS

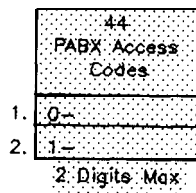
| EXCH LINE | SERVICE NO | SERVICE ORDER NO. | LINE TYPE | | 41 SIGNALLING TYPE |
|-----------|------------|-------------------|---|-----------------------------|--------------------------------|
| | | | 42 Trunk/Non Equip. | 43 Exch/PABX | |
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| | | | 0 = Non Equipped 1 = Equipped (1) | 0 = Exch 1 = PABX (0) | 0 = Decadic 1 = DTMF (0) |

(Parenthesis = Default Condition)

PABX Access Code

If the Commander E308 or E616 system is connected behind a PABX, the system must be programmed to automatically insert the PABX access code.

1. In programming mode, dial 44.
2. Dial main equipment memory location code 0.
3. Dial access code (maximum 2 digits).
4. Press [TRANS] to enter data.
5. Dial main equipment memory location code 1.
6. Repeat steps 3 and 4.
7. Press [REDIAL] to exit program code.



Line Ring Mode

This feature allows you to designate the key station ring mode for incoming exchange line calls.

1. In programming mode, dial 60.
2. Press 0, 1 or 2.

| | | |
|---|---|----------------------------------|
| 0 | = | Individual ring mode (Note 1) |
| 1 | = | Normal ring mode (Note 2) |
| 2 | = | Off-hook ring mode (Note 3) |

Default value is 1.

3. Press [REDIAL] to enter the data and exit programming code.

Note 1 - Individual ring mode.

Lines will ring at the first key station entered when line ring was programmed. Refer to section **Key Station Allocation - Audible Line Ring**, page 6-5.

However, if this key station is busy or in DND mode, the ring will step to the next programmed key station. If all key stations are busy or in DND mode, the first key station receives an off-hook ring.

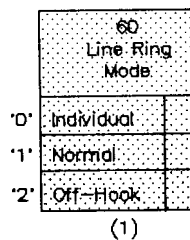
Note 2 - Normal ring mode.

Lines will ring at all idle key stations programmed to ring, as long as they are not in DND mode.

However, the first key station always rings (whether it is idle or off-hook), except when it is in DND mode.

Note 3 - Off-hook ring mode.

Ring is provided to key stations that are programmed to ring while they are idle or off-hook (and not in DND mode).



Timing

Exchange Line Recall

This feature allows the exchange line recall time (the time between the break in the loop and the exchange **line** dropping out) to be programmed.

1. In programming mode, dial 50.
2. Press four digits.

Limits: 0000 (0msec) to 5000 (5,000 m/sec)

minimum of 20 msec increments

If a value over 5,000 is entered, 5,000 msec will be saved.

Default value is 600 msec.

3. Press [REDIAL] to enter data and exit programming code.

TIMERS

| Timer | Initial | Required |
|-------------------------------|----------------------------|----------|
| 50. Exchange Line Recall Time | 600m Sec. (5000m Sec. Max) | |
| 51. PABX Line Recall Time | 90m Sec. (5000m Sec. Max) | |
| 52. Hold Recall Time | 90 Sec. (200 Sec. Max) | |
| 53. Transfer Recall Time | 30 Sec. (200 Sec. Max) | |

PABX Line Recall

This feature allows you to designate the flash time of PABX lines.

1. In programming mode, dial 51.
2. Press four digits to select the flash time.

Limits: 0000 (0msec) to 5000 (5,000 m/sec)

minimum of 20 msec increments

If a value over 5,000 is entered, 5,000 m/sec will be saved.

Default value is 100 m/sec.

3. Press [REDIAL] to enter data and exit programming code.

TIMERS

| Timer | Initial | Required |
|-------------------------------|----------------------------|----------|
| 50. Exchange Line Recall Time | 600m Sec. (5000m Sec. Max) | |
| 51. PABX Line Recall Time | 90m Sec. (5000m Sec. Max) | |
| 52. Hold Recall Time | 90 Sec. (200 Sec. Max) | |
| 53. Transfer Recall Time | 30 Sec. (200 Sec. Max) | |

Hold Recall

This feature allows the hold recall time to be programmed.

1. In programming mode, dial 52.
2. Press three digits to select the required recall time.

Limits: 000 (0 sec) to 200 (200 sec)

If a value over 200 is entered, 200 will be saved.

Default value is 90 sec.

3. Press [REDIAL] to enter data and exit programming code.

TIMERS

| Timer | Initial | Required |
|-------------------------------|---------------------------|----------|
| 50. Exchange Line Recall Time | 600m Sec. (500m Sec. Max) | |
| 51. PABX Line Recall Time | 90m Sec. (500m Sec. Max) | |
| 52. Hold Recall Time | 90 Sec. (200 Sec. Max) | |
| 53. Transfer Recall Time | 30 Sec. (200 Sec. Max) | |

Transfer Recall

This feature allows the transfer recall time to be programmed.

1. In programming mode, dial 53.
2. Press three digits to select the desired recall time.

Limits: 000 (0 sec) to 200 (200 sec)

If a value over 200 is entered 200 (200 sec) will be saved.

Default value is 30 sec.

3. Press [REDIAL] to enter data and exit programming code.

TIMERS

| Timer | Initial | Required |
|-------------------------------|------------------------------|----------|
| 50. Exchange Line Recall Time | 600m Sec. (500m Sec. Max) | |
| 51. PABX Line Recall Time | 90m Sec. (500m Sec. Max) | |
| 52. Hold Recall Time | 90 Sec. (200 Sec. Max) | |
| 53. Transfer Recall Time | 30 Sec. (200 Sec. Max) | |

Other System Programming

Executive/Secretary Pairs Designation

Up to eight pairs of key stations can be specified as executive/secretary pairs. (A key station can be in one pair only).

1. In programming mode, dial 73.
2. Dial the key station number selected to be the executive.
3. Dial the key station number selected to be the executive's secretary.
4. Press [TRANS] to enter data.
5. Repeat steps 3, 4 and 5 for each remaining pair.
7. Press [REDIAL] to exit program code.

| 73 Executive/Secretary Pairs | |
|------------------------------------|------------------|
| STN NO. (Exec) | STN NO. (Sec) |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

Access Barring for System Abbreviated Dial

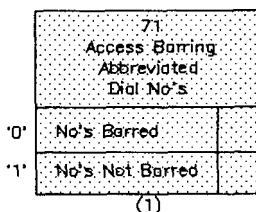
This feature determines if the system-stored abbreviated dial numbers are subject to the individual key stations barring access. That is, this feature allows the abbreviated dial numbers to be specified as subject, or not subject, to the access barring class of each key station.

1. In programming mode, dial **71**.
2. Dial a **0** or **1**.

| | | |
|----------|---|---|
| 0 | = | Abbreviated dial will be subject to the key station barring class |
| 1 | = | Abbreviated dial will not be subject to the key station barring class |

Default value is 1.

3. Press [REDIAL] to enter the data and exit programming code.



Door Station Equipped

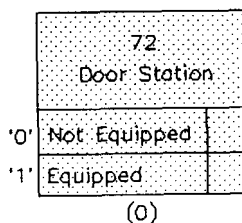
When a door station is connected, the system must be programmed to **recognise** the door station.

1. In programming mode, dial **72**.
2. Dial a **0** or **1**.

| | | |
|----------|---|--------------------------------|
| 0 | = | Not equipped with door station |
| 1 | = | Equipped with door station |

Default value is 0.

3. Press [REDIAL] to enter the data and exit programming code.



Station Key Test

This feature allows you to test the status of keys and lamps.

1. In programming mode, dial 80.

All LED's will turn on for three seconds, then turn off.

Test individual keys

1. Follow the procedure below.

| | |
|----------------|--------------------------|
| Press line 1 | LED flashes |
| Press line 2 | LED flashes |
| Press line 3 | LED flashes |
| Press line 4 | LED flashes |
| Press line 5 | LED flashes |
| Press line 6 | LED flashes |
| Press [HOLD] | LED flashes |
| Press [SPKR] | LED flashes |
| Press [DND] | LED flashes |
| Press [CONF] | LED flashes |
| Press [REDIAL] | Turns conference LED off |
| Press [PAGE] | Turns DND LED off |
| Press [TRANS] | Turns Speaker LED off |
| Press [MEMORY] | Turns Hold LED off |
| Press line 1 | LED turns off |
| Press line 2 | LED turns off |
| Press line 3 | LED turns off |
| Press line 4 | LED turns off |
| Press line 5 | LED turns off |
| Press line 6 | LED turns off |

2. Lift and replace handset.

System Abbreviated Dial Programming

This feature allows you to program the system abbreviated dial numbers.

1. In programming mode, press [MEMORY].
2. Dial a memory location from 10 to 99.
3. Dial the telephone number to be stored.

Limits: Maximum of 30 digits can be programmed.

4. If a pause (three seconds) is necessary, press [HOLD] after the PABX access number to insert the pause.

If you press [HOLD] first, a previously memorised number will be erased. Re dial the memory location number to program a new number.

5. Press [TRANS] to enter data.
6. Press [PAGE] to move to the next memory location - for example, to move from 24 to 25

or

Dial a memory location number - for example, to move from 24 to 30.

7. Repeat steps 3, 4, 5 and 6 until all numbers are entered.
8. Press [MEMORY] to exit abbreviated dial programming.

To add further abbreviated dial numbers

System Initialisation

To initialise the system:

1. Press [#].
2. Dial password.
3. Press [REDIAL] to enter data.
4. Dial 00.
5. Enter a 0 or 1.

| | | |
|---|---|---|
| 0 | = | Initialise system except the back-up RAM. |
| 1 | = | Initialise the whole system. Parameters will revert to default setting. |
6. Press [REDIAL] to enter data.

Programming Codes Summary

| FACILITY CODE & FACILITY | ASSIGNMENT | DEFAULT | PROGRAMMING DETAILS PAGE |
|---------------------------------------|---|---|--------------------------|
| 00 System Initialisation | 0-Initialise system except back-up RAM. 1-Initialise whole system. Parameters will revert to default settings | | 6-26 |
| 30 External line access | Dial key station number, then 0 or 1 for 3 lines (6 lines for 616) 0-No line access 1-Access to line | 111 for every station | 6-5 |
| 31 Internal page access | Dial 0 or 1 for 8 key stations (16 for 616) 0-Internal page not available 1-Internal page available | 1 for all key stations | 6-14 |
| 32 Access barring class of service | Dial 0-4 for 8 key stations (16 for 616) 0-Class A 1-Class B 2-Class C 3-Class D 4-Class E | 0 for all key stations | 6-8 |
| 34 Allowed codes for Class B | Dial location code 0-9 Dial allowed number | 0-9 Vacant | 6-10 |
| 36 Allowed codes for Class C | Dial location code 0 - 9. Dial allowed number | 0 - 000 1-008 2 - 009 3 - 013 4-016 5 - 019 6 - 9 Vacant | 6-11 |
| 37 Allowed codes for Class D | Dial location code 0 - 9. Dial allowed number | 0 - 000 1 - 9 Vacant | 6-13 |

| FACILITY CODE & FACILITY | PROGRAMMING DETAILS PAGE | ASSIGNMENT | DEFAULT |
|--|---|----------------------------------|---------|
| 41 Line dial type (pulse/tone) | Dial 0 or 1 for 3 lines (6 for 616). 0 - Decadic (pulse) 1 - DTMF (tone) | 000 | 6-15 |
| 42 Exchange lines equipped | Dial 0 or 1 for 3 lines (6 for 616). 0 - Line not equipped 1 - Line equipped | 1 for all lines | 6-16 |
| 43 Line type (exchange/ PABX) | 0 - Exchange 1 - PABX | 0 for all lines | 6-17 |
| 44 PABX access code | Dial location code 0 or 1. Dial access code (2 digits max.) | 0 for both locations | 6-18 |
| 50 Exchange line recall time | Enter time up to 5,000 m/sec in multiples of 20 m/sec | 600 m/sec | 6-20 |
| 51 PABX line recall time | Enter time up to 5,000 m/sec in multiples of 20 m/sec | 100 m/sec | 6-21 |
| 52 Hold recall time | Enter time up to 200 seconds in multiples of one second | 30 seconds | 6-21 |
| 53 Transfer recall time | Enter time up to 200 seconds in multiples of one second | 90 seconds | 6-22 |
| 60 Line ring mode | Dial 0 - 2 0 - Individual ring mode 1 - Conditional universal ring mode 2 - Unconditional universal ring mode | 1 for all key stations | 6-19 |
| 61 Night service ring | Press [LINE] Dial key station number followed by [*] for each key station with night ring (max 8) | Key station 24 for every line | 6-7 |
| 62 Audible ring to key stations | Press [LINE] Dial key station number followed by [*] for each key station with day ring (max 8) | Key station 21 for every line | 6-6 |
| 63 Door station ring | Dial key station number followed by [*] for each key station with door station ring (max 8) | Key Station 21 | 6-8 |
| 71 Access barring for system abbreviated dial | Dial 0 or 1 0 - Abb. dial subject to key station barring class 1 - Abb. dial not subject to key station barring class | 1 for all key stations | 6-24 |

| FACILITY CODE & FACILITY | PROGRAMMING DETAILS PAGE | ASSIGNMENT | DEFAULT |
|---------------------------------|---|--------------------------------------|---------|
| 72 Door station equipped | Dial 0 or 1 0 - Door station not equipped 1 - Door station equipped | 0 | 6-24 |
| 73 Executive/Secretary pairs | Dial key station number of executive | Dial key station number of secretary | 6-23 |
| 80 Station key test | | | 6-25 |

Software Programming Records

After installing and programming the system, a copy of the E308/616 Customer System Record must be placed in the SDF as a record of how the system has been programmed.

Chapter Seven
Functional Test

Chapter Seven
Functional Test
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Chapter Seven

Functional Test

Introduction

This chapter explains the tests that must be conducted to verify that the Commander E308/616 hardware installation and system programming have been performed correctly.

Caution

The test procedures *must* be followed in the exact order set out in the following sections.

Each test consists of a special sequence of steps. Do not perform any other action in between the steps - for example, going on-hook. If a fault interrupts the test, note the repair suggestion number and refer to it in Chapter 8 - Maintenance. After repairing a fault, restart the test at the beginning of a section or at any entry point marked * in the Test No. column.

System Test

The tests in **Table 8 - System Function Tests**, and **Table 9 - System Operating Tests** require three key stations which are referred to as key stations A, B, and C.

System Function Tests

This test sequence checks that all standard system functions operate correctly.

Table 8 - System Function Tests

| TEST NO. & CHECK ITEM | ACTION | EXPECTED RESULT | REPAIR SUGGESTIONS (In Chapter 8) |
|--|--|--|-----------------------------------|
| <p>*1. Exchange lines</p> <p>2. Incoming call</p> <p>3. Answering</p> <p>4. Hold</p> | <p>Go off-hook at station A and press line key.</p> | <p>The associated line LED glows steadily at stations A, B and C.</p> <p>Hear dial tone at station A.</p> | <p>A</p> <p>B</p> |
| | <p>Repeat for each line connected to the system.</p> | | |
| | <p>Call another line using station A.</p> | <p>Associated line LED flashes slowly at stations A, B and C.</p> <p>Only assigned stations receive ring signalling.</p> | <p>C</p> <p>D</p> |
| | <p>Go off-hook at station B and press flashing line key.</p> | <p>The slow flashing line LED changes to glowing at all stations.</p> <p>Both parties (A and B) can converse.</p> | <p>E</p> <p>F</p> |
| | <p>Press [HOLD] at station B.</p> | <p>Line LED flashes quickly at all stations.</p> <p>Station A hears music on-hold.</p> | <p>G</p> <p>H</p> |
| | | | |
| | | | |
| | | | |

Table 8 - System Function Tests cont.

| | | | |
|--|--|--|---------------------|
| <p>5. Hold automatic ring back</p> | <p>Wait for timeout (90 sec's).</p> | <p>Ring signalling heard at station B for approx. 10 sec's.</p> | <p>I</p> |
| <p>6. Reseizures</p> | <p>Respond to the held line at station B by pressing the line key.</p> | <p>Line LED changes to glow. Stations A and B can converse.</p> | <p>O F</p> |
| <p>7. Exclusive hold</p> | <p>Press [HOLD] twice at station B.</p> | <p>Line LED flickers at station B and glows at all other stations. Station A hears music on-hold.</p> | <p>G H</p> |
| <p>8. Exclusive hold release time and recall signalling duration</p> | <p>Wait for timeout (release time)</p> | <p>Audible signalling heard at station B for length of time programmed for the recall signalling duration. Line LED flashes at all stations when ring signalling stops at station B.</p> | <p>J</p> |
| <p>9. Reseizure</p> | <p>Respond to the held line at station B by pressing the line key.</p> | <p>Line LED glows at all stations. Stations A and B can converse.</p> | <p>E F</p> |
| <p>10. Automatic hold of outside call</p> | <p>Press [TRANS] at station B.</p> | <p>Station B hears transfer tone. Station A hears music on-hold.</p> | <p>K H</p> |
| <p>11. Automatic transfer after announcing</p> | <p>Dial two digits to call station C. Go off-hook at station C. Go on-hook at station B.</p> | <p>Hear intercom tone through the handset of station B and ring through speaker of station C. Line LED glows at all stations. B and C can converse. A and C can converse.</p> | <p>L F</p> |

Table 8 - System Function Tests cont.

| | | | |
|--|---|--|--|
| <p>12. Outside call conference</p> | <p>Press [CONF] at station A.</p> <p>Call station B from station A.</p> <p>Go off-hook at station B and converse through handset.</p> <p>Press [CONF] at station A.</p> <p>Press [CONF] at station A.</p> <p>Go on-hook at stations A, B and C.</p> | <p>Line LED glows at all other stations. CONF LED glows at station A.</p> <p>Station C hears music on-hold. A hears conference tone.</p> <p>Hear intercom tone through the handset of station A and ring through speaker of station B.</p> <p>Stations A and B can converse through handset</p> <p>Station B hears music on-hold. Station A hears conference tone.</p> <p>Stations A, B and C can converse through their handsets.</p> | <p>G</p> <p>H</p> <p>K</p> <p>M</p> <p>N</p> |
| <p>*13. Intercom call</p> | <p>Dial station B while off-hook.</p> | <p>Hear intercom tone through handset at station A.</p> <p>Hear ring through speaker of station B.</p> | <p>K</p> |
| <p>Answering</p> | <p>Go off-hook at station B.</p> | <p>Stations A and B can converse through handset.</p> | |
| <p>14. Disconnection</p> | <p>Go on-hook at stations A and B.</p> | <p>Call clears.</p> | <p>0</p> |
| <p>*15. Single key access dialling.</p> | <p>With station A on-hook, press a line key.</p> <p>Press [SPKR] at station A.</p> | <p>Line LED glows at all stations.</p> <p>SPKR LED glows.</p> <p>Dial tone is heard through speaker of station A.</p> <p>Line LED and SPKR LED go out.</p> | <p>P</p> |

System Operating Tests

The following test sequence checks that the system options operate correctly. Only test the facilities that have been provided for the particular system. Ignore unrelated tests.

Table 9 - System Operating Tests

| TEST NO. & CHECK ITEM | ACTION | EXPECTED RESULT | REPAIR SUGGESTIONS (Chapter 8) |
|--|---|---|--------------------------------|
| <p>*1. Background music</p> | <p>With station A on-hook, press [HOLD].</p> <p>Press [HOLD].</p> | <p>Background music can be heard through speaker of station A.</p> <p>Background music turns off.</p> | <p>Q</p> |
| <p>*2. Decadic or DTMF dial exchange line</p> | <p>Seize each exchange line in succession and check whether line dialling connected to the system is decadic or DTMF.</p> | <p>Appropriate line LED glows.</p> <p>Dialling method is as programmed for each station</p> | <p>A</p> <p>R</p> |
| <p>*3. Incoming signalling assignment</p> | <p>Seize one line at station A.</p> | <p>Line LED glows.</p> <p>Dial tone is heard at station A.</p> | <p>A</p> <p>B</p> |

Table 9 - System Operating Tests cont.

| | | | |
|---|---|--|----------|
| | <p>Dial another number on the system.</p> <p>Repeat for all lines connected to the system.</p> | <p>only assigned stations receive audible signalling.</p> | <p>I</p> |
| <p>4. Access barring by digit analysis</p> | <p>Seize a line at stations in different classes and dial various codes.</p> | <p>Refer to Chapter 6, System Programming - Access Barring Class, on page 6-8.</p> | <p>T</p> |
| <p>5. External paging</p> | <p>Lift handset and dial 14 at any station.</p> | <p>A paging call can be heard through all the external speakers.</p> | <p>U</p> |
| <p>6. PABX recall (if system located behind a PABX)</p> | <p>Seize a PABX line at station A and dial another line on the system.</p> <p>Answer the call at station B.</p> <p>Press another Line key.</p> <p>Press original line key.</p> <p>Go on-hook at stations A and B.</p> | <p>An incoming call is signalled at assigned stations.</p> <p>Station A and B can converse.</p> <p>Station B is placed on hold.</p> <p>Station A and B can converse.</p> | <p>V</p> |

Key Station Test

The test sequences specified *must* be performed on all key stations.

The tests are divided into two parts: Key Station Key Test and Key Station Function Test.

Key Station Key Test

To test the keys and LEDs on a key station requires access to programming mode. Refer to **Station Key Test** on page 6-25.

Key Station Function Tests

This test sequence checks each key station's basic functions.

Table 10 - Key Station Function Tests

| NO. & CHECK ITEM | ACTION | EXPECTED RESULT | REPAIR SUGGESTION (Chapter 8) |
|---------------------------|---|---|-------------------------------|
| 1. Line Keys | Go off-hook and press each line key. | Line LED glows. | Y |
| | | Dial tone is heard if line is connected and free. | W |
| | | Station has sidetone. | |
| 2. Dialling | Seize a line and dial. | Destination is reached. Parties can converse. | X |
| 3. Intercom - outgoing | Go off-hook and dial another extension. | Intercom tone heard in handset. Ring heard at destination station speaker. | Z |
| | Answer call at destination station. | Parties can converse. | |
| 4. Intercom - incoming | Dial station under test from another station. | Ring tone is heard on speaker. | Z |
| | Answer call at station under test. | Parties can converse. | Z |

| | | | |
|--|--|---|-------------------|
| <p>5. Incoming Exchange Line call</p> | <p>Make an incoming call to the system from another station.</p> <p>Answer call.</p> | <p>Station rings and line LED flashes rapidly.</p> <p>Parties can converse.</p> | <p>Y</p> <p>Z</p> |
| <p>6. Handsfree operation (Handsfree station only)</p> | <p>Press [SPKR] and seize a line.</p> <p>Dial an outside number.</p> <p>Press [SPKR] again.</p> | <p>SPKR LED glows.</p> <p>Line LED glows.</p> <p>Hear dial tone through speaker.</p> <p>Destination is reached.</p> <p>Both parties can converse.</p> <p>SPKR and line LEDs turn off.</p> <p>Both parties can converse.</p> | <p>AD</p> |
| <p>7. Sidetone Level</p> | <p>Go off-hook and test for sidetone by speaking into transmitter.</p> <p>Select one exchange line and repeat test.</p> <p>Set sidetone link to obtain optimum sidetone performance. Refer to Illustration 14 - Sale/Rental Identifying Window on page 5-8 to locate the sidetone link.</p> | <p>Sidetone heard in receiver.</p> <p>Sidetone heard in receiver.</p> | <p>Z</p> |

**Key Station
Operating Tests**

These tests check that the additional key station features operate correctly.

Only test the key stations that have the facilities programmed into them. Ignore unrelated tests.

Table 11 - Key Station Operating Tests

| NO. & CHECK ITEM | ACTION | EXPECTED RESULT | REPAIR SUGGESTION (Chapter 8) |
|--|--|---|-------------------------------------|
| *1. Line access restrictions (if programmed) | Go off-hook and seize each line in succession. | Each station can only access the allowed lines. | AE |
| *2. Do Not Disturb | Press [DND]. Press [DND] again. | DND LED glows. DND LED turns off. | Y |
| *3. Call forwarding | With the handset on-hook, press [DND] Press [DND] at executive station again. | DND LED glows at executive station DND LED slow flashes at secretary station. Both DND LEDs turn off. | AF |

Chapter Eight

Maintenance

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Chapter Eight

Maintenance

Introduction

This chapter begins with a list of equipment required to test the Commander E308/616 systems and carry out repairs.

A description of how to measure system voltages and required voltage levels is then provided.

The next section contains a number of flowcharts. They are used to localise and repair any faults that may arise in a working system.

A list of fault-finding procedures follows the flowcharts. These procedures are used to localise and repair any faults that arise from running the system function tests.

Test Equipment

The following equipment is required to carry out maintenance on the Commander E308/616 systems:

- A multimeter with small test probes
Used to measure various test voltages and to test wiring continuity between the main equipment and key stations.
- An AMP-CHAMP connector insertion tool
Used to terminate wires in the AMP-CHAMP connector.
- Normal maintenance tools such as: long-nose pliers, angle cutters, a Phillips screwdriver and a flat-blade screwdriver.

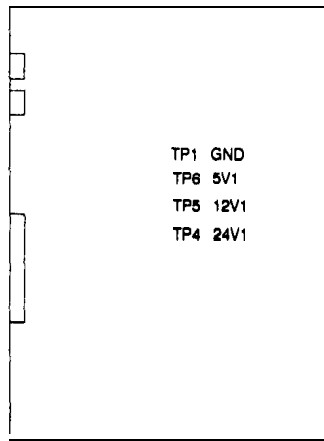
Test Points

Power Supply

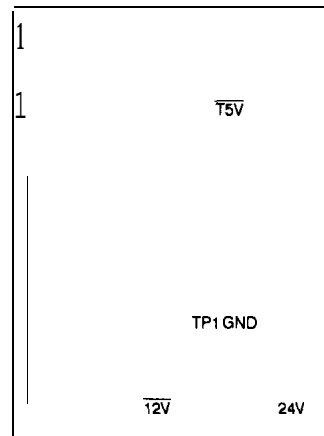
There are three DC voltages supplied for Commander E308/616 systems. The voltages are accessed at test points on each of the main equipment circuit boards.

Refer to Illustrations 27 and 28, **E308 Main Equipment (component side)** and **E616 Main Equipment (component side)**.

Refer to **Table 12 - Summary of E308/616 Voltage Levels**.



E308 Main Equipment (component side)
[IL27]



E616 Main Equipment (component side)
[IL28]

| TEST POINT | VOLTAGE |
|------------|---------|
| 1 | Earth |
| 4 | 24V |
| 5 | 12v |
| 6 | 5 v |

Table 12 - Summary of E308/616 Voltage Levels

Key Stations

Key station voltages can be accessed at the 605 plug pairs. The voltages measured at each pair must be within the specified limits.

Refer to **Check Cabling** on page 5-27. Key station voltages are shown in **Table 13 - Key Station Voltages**.

| COLOUR | PIN | VOLTAGES |
|-----------|-----|---------------|
| WT | 2 | 26.5 - 35 VDC |
| BL | 6 | 26.5 - 35 VDC |
| RD | 1 | REF. PIN 2 |
| BK | 5 | REF. PIN 6 |

Table 13 - Key Station Voltages

Maintenance Procedures

General

The amount of maintenance carried out on main equipment and key stations is limited by component sensitivity (especially to static discharge).

When returning faulty assemblies, items and/or components, **always** ensure that they are placed in the protective containers supplied with the new item. When returning faulty **PBAs** and other items of equipment, refer to **Repair Procedures** on page g-30.

Main Equipment

If the main equipment is found to be faulty, the complete unit must be replaced with a new one. **Never repair the main equipment PBA on site or in field depots.** Any attempt to repair the PBA in the field may result in further damage.

Power Supply

When a power supply is faulty, replace the complete main equipment assembly.

CAUTION: The power supply receives power from a 240 V mains supply. Hazardous voltages are continually present.

Key Stations

Key station maintenance is confined to replacing handsets, cords and plugs. Faulty **PBAs** or pushbutton assemblies are rectified by replacing the complete key station.

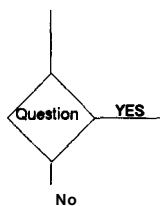
Fault Finding Procedures

Use the diagnostic flowcharts whenever a failure occurs. The charts are a means of **localising** a fault occurrence in one of the printed board assemblies (PBA) in an established working system. Always commence at the 'Start' block.

Flowchart Symbols

Decision & Function

This block contains a question. The question must be answered with a 'YES' or 'NO'. Depending on the answer, take the appropriate exit and continue on that path.



Action/Operation

This block contains instructions that either:

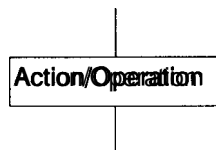
- **define** an action to be taken

or

- **define** a test to be made.

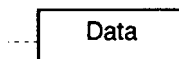
(This precedes a decision function.)

It is essential to comply exactly with the instructions.



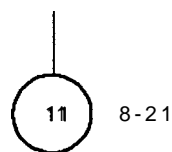
Data Block

This block is not part of the fault-finding sequence. It provides information required by an action or decision block - for example, connector points or terminal allocations. A broken line attaches the data block to the relevant action or decision block.



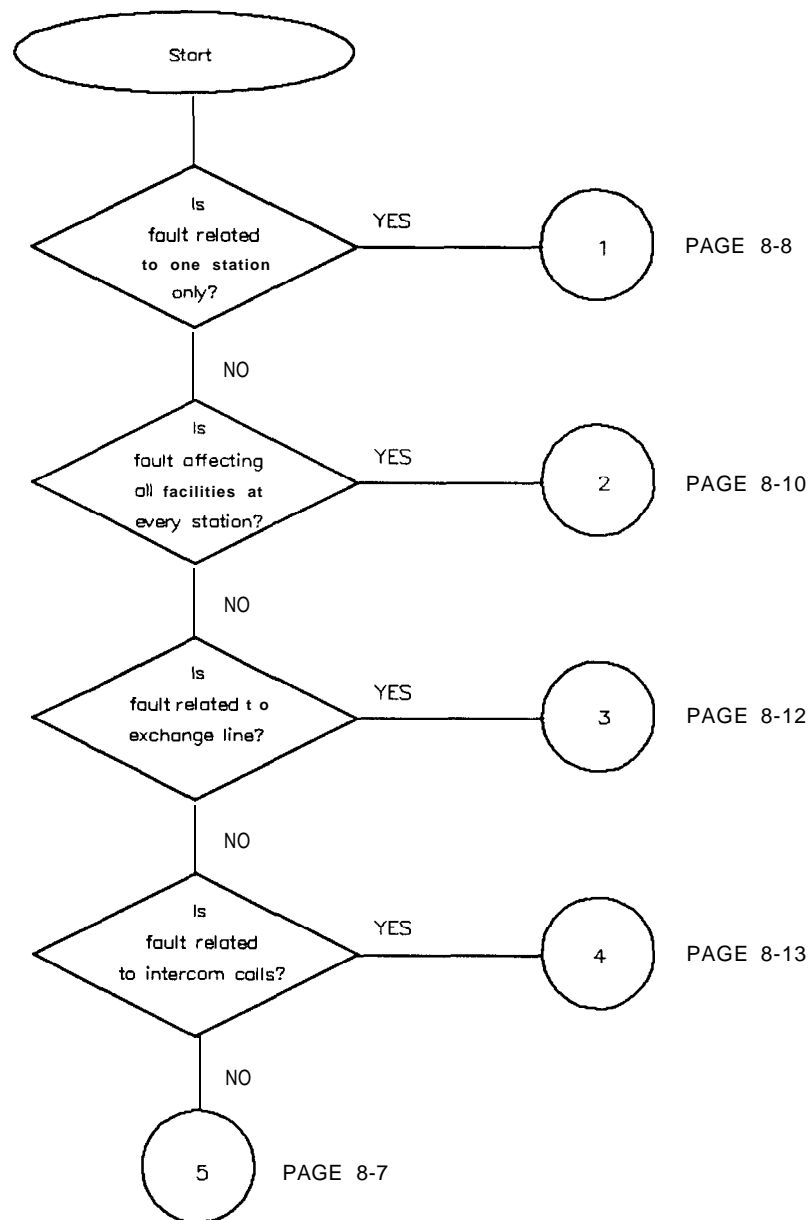
Numbered Circles

Numbered circles connect one flowchart with another. Each circle has its destination or origin page number(s) noted beside it.

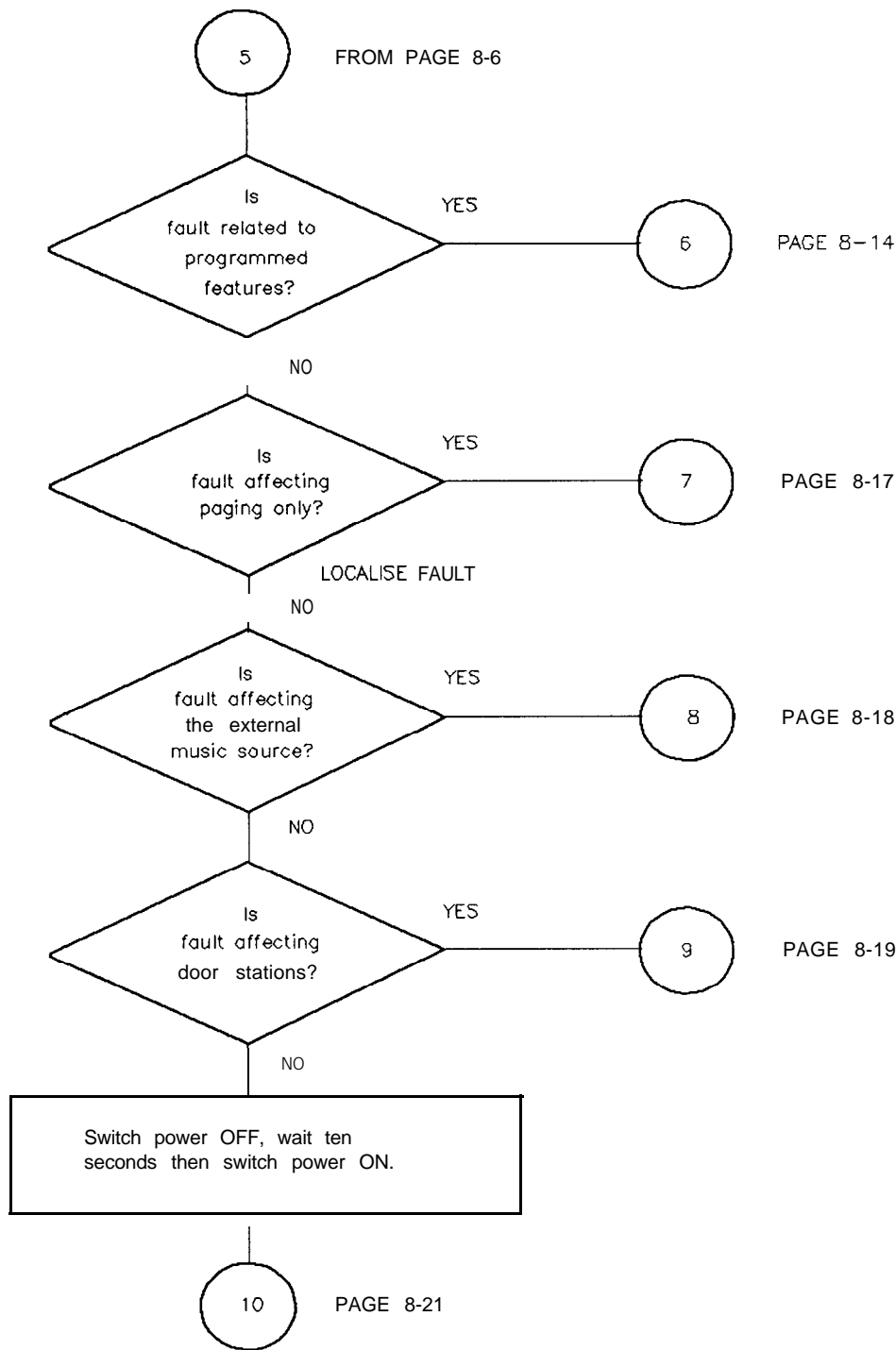


Flowcharts

Identify and localise the fault



Identify and localise the fault (cont'd)



Single station fault

0

FROM PAGE 8-6

1. Check that the station is wired correctly (Table 6)
2. Check that the 610 socket is cabled correctly from the SDF.

| WIRE | PIN |
|------|-----|
| WT | 2 |
| BL | 6 |
| RD | 1 |
| BK | 5 |

Check voltages of faulty stations at the 610 socket with the station unplugged.

| | |
|-------|---------------|
| PIN 2 | 26.5 - 35 VDC |
| 6 | 26.5 - 35 VDC |
| 1 | Ref PIN 2 |
| 5 | Ref PIN 6 |

Are voltages correct?

NO

Replace main equipment

11

PAGE 8-21

YES

Has the fault cleared?

YES

11

PAGE 8-21

NO

Does station have sidetone?

NO

Check handset cord, line cord

YES

Has the fault cleared?

YES

11

PAGE 8-21

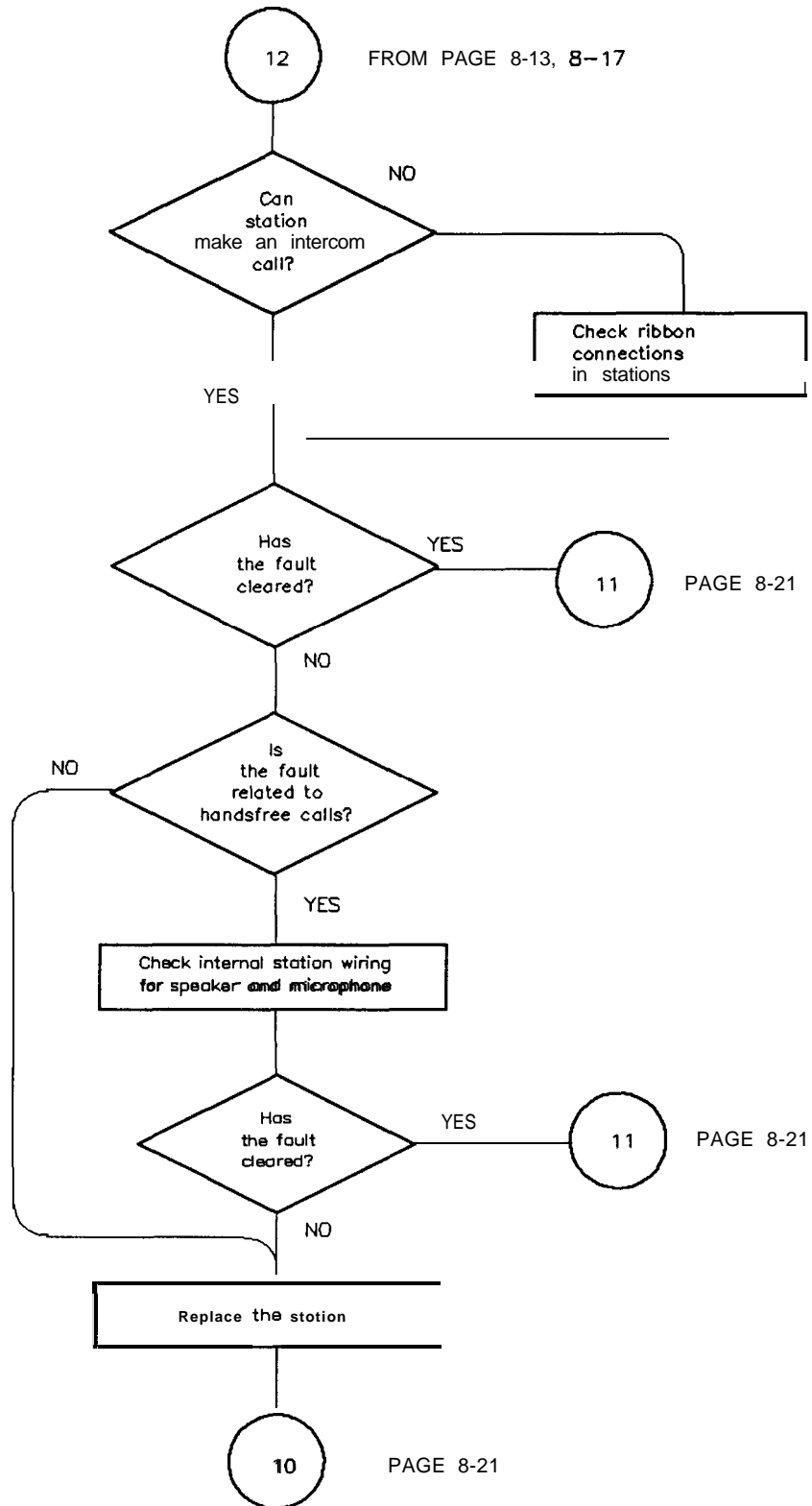
NO

Replace station

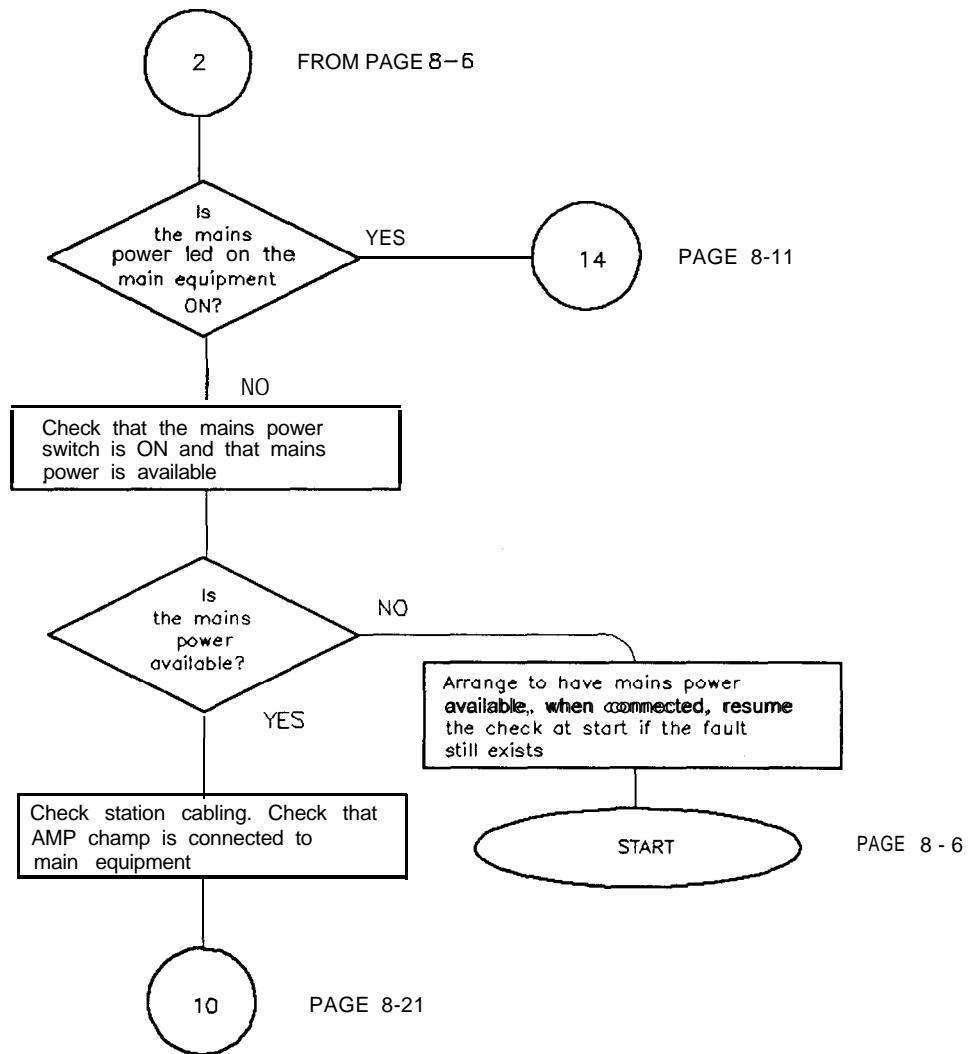
11

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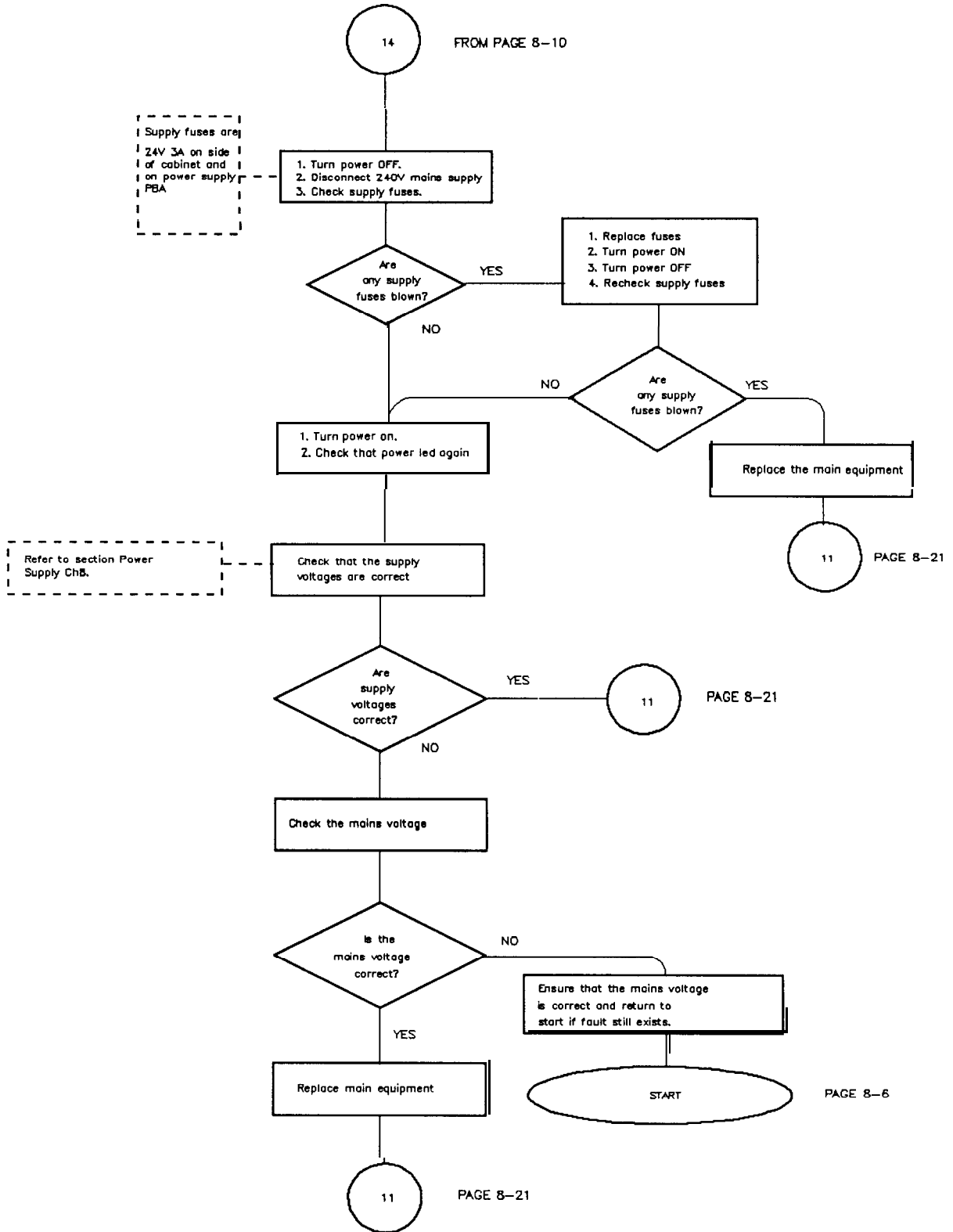
Intercom test (sequence)



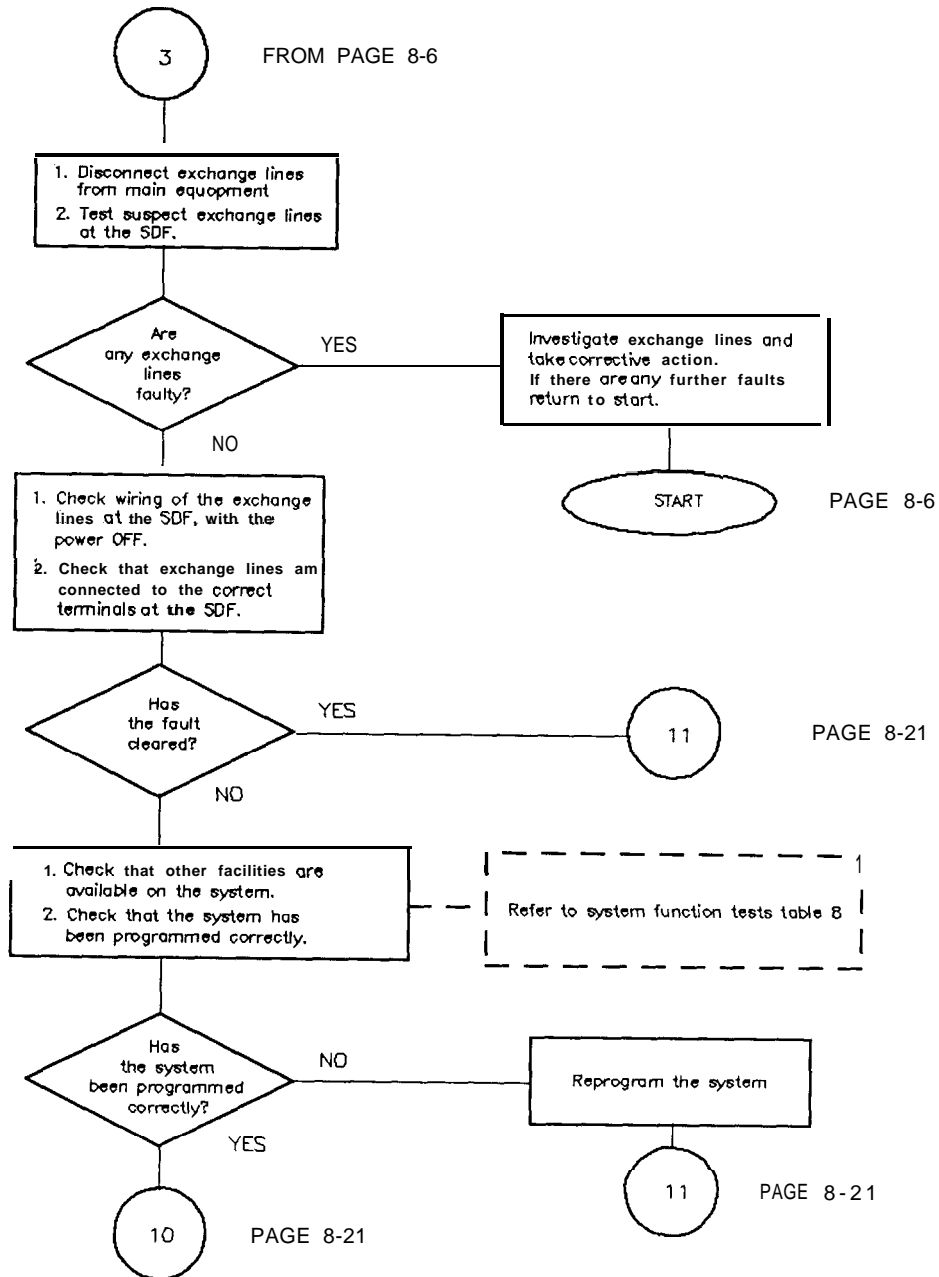
System failure



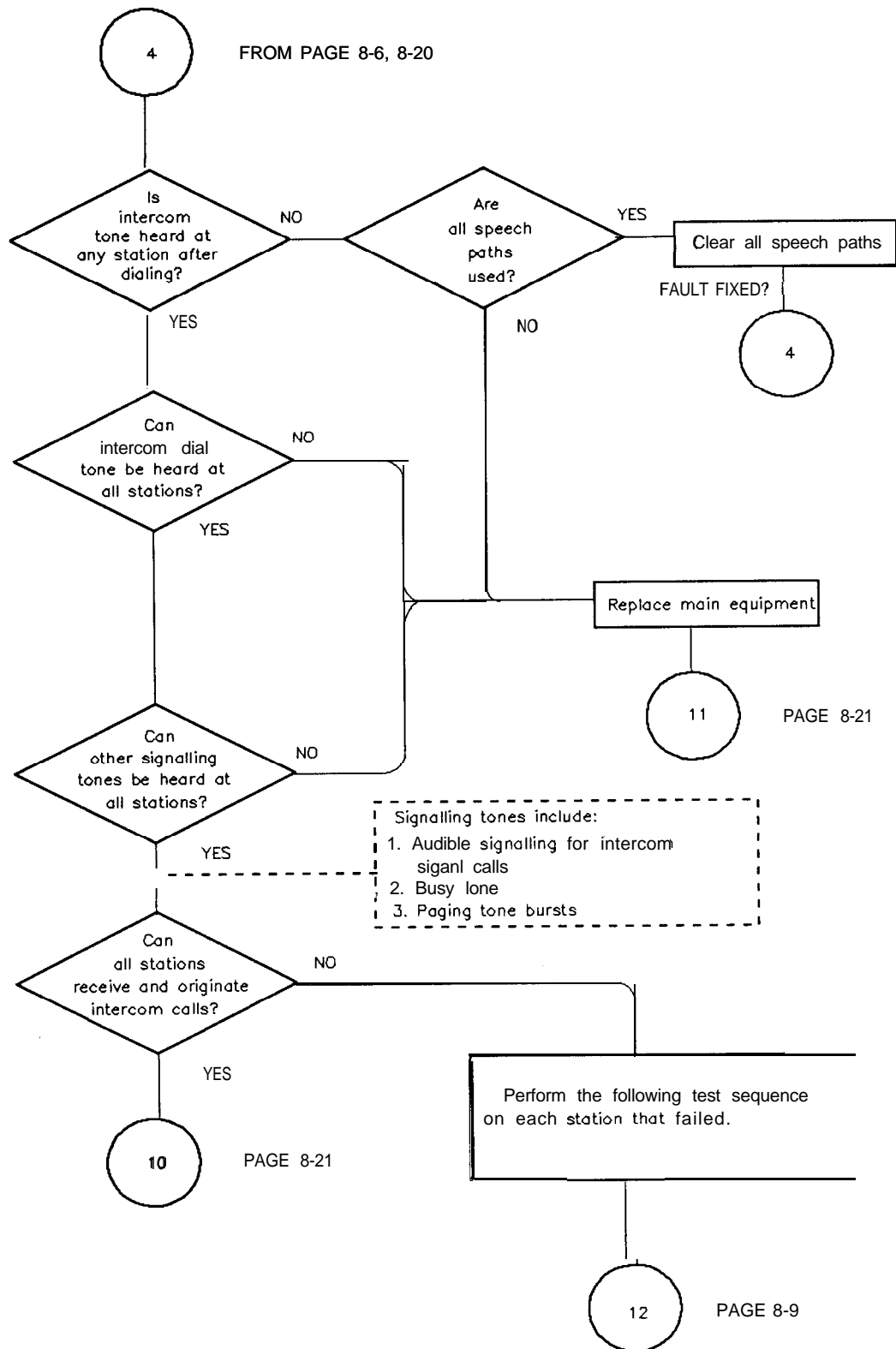
Power supply failure



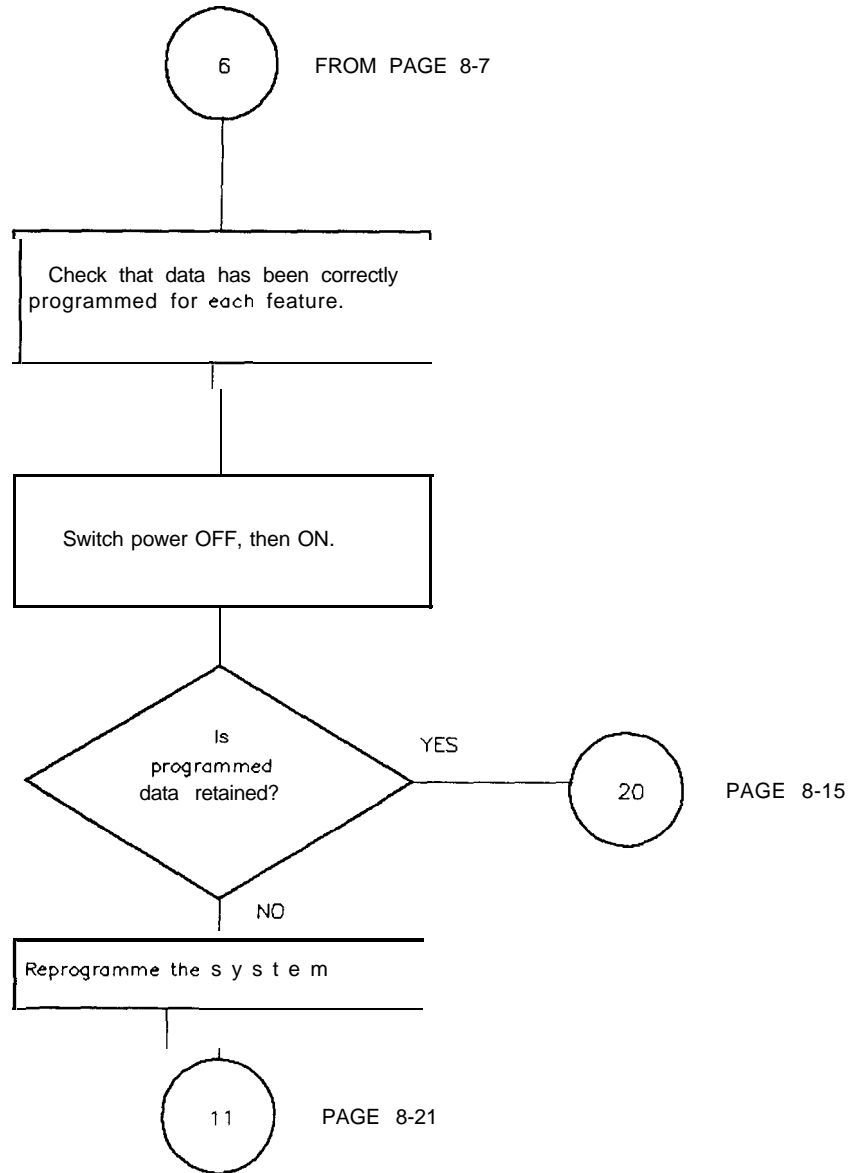
Exchange line fault



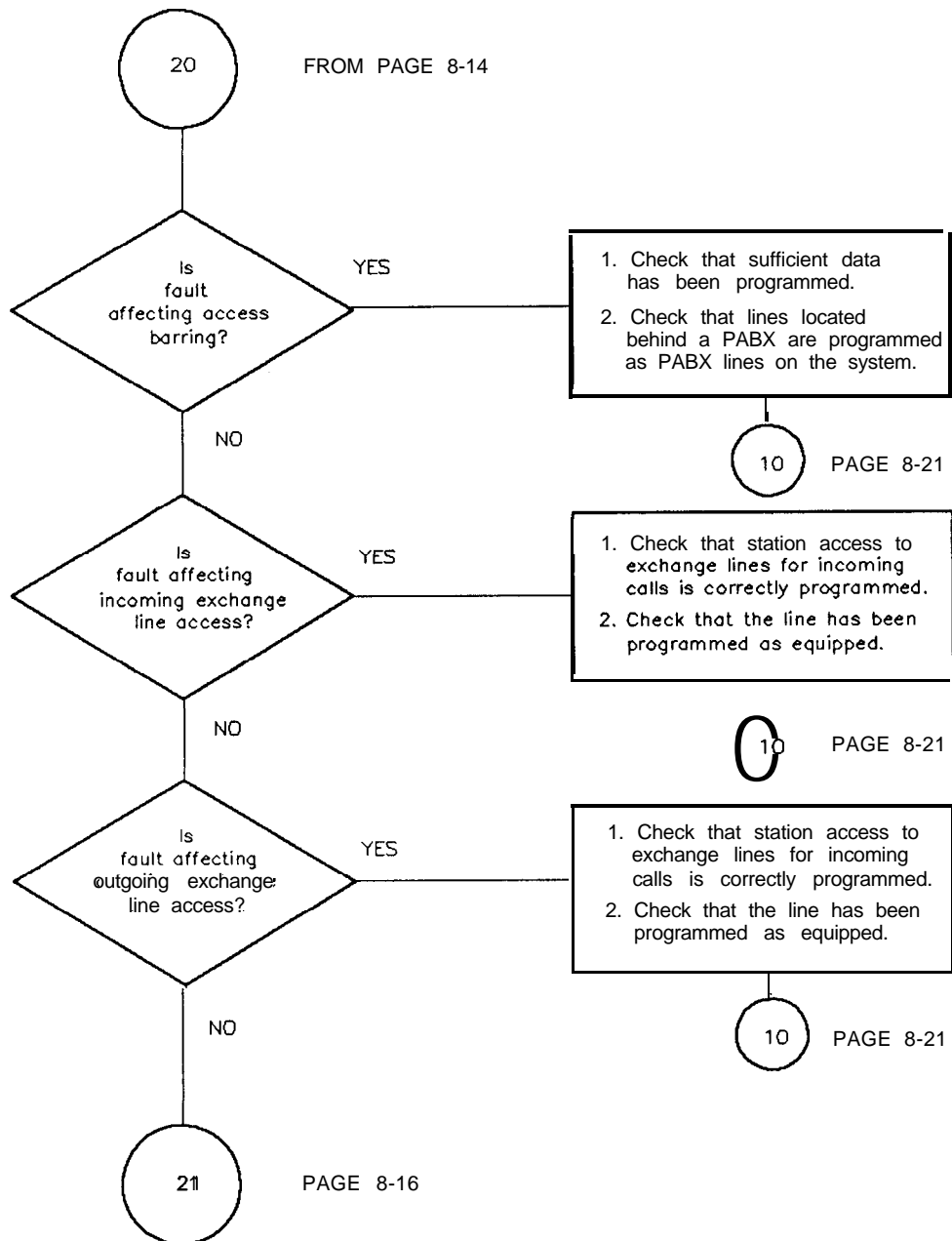
Intercom fault



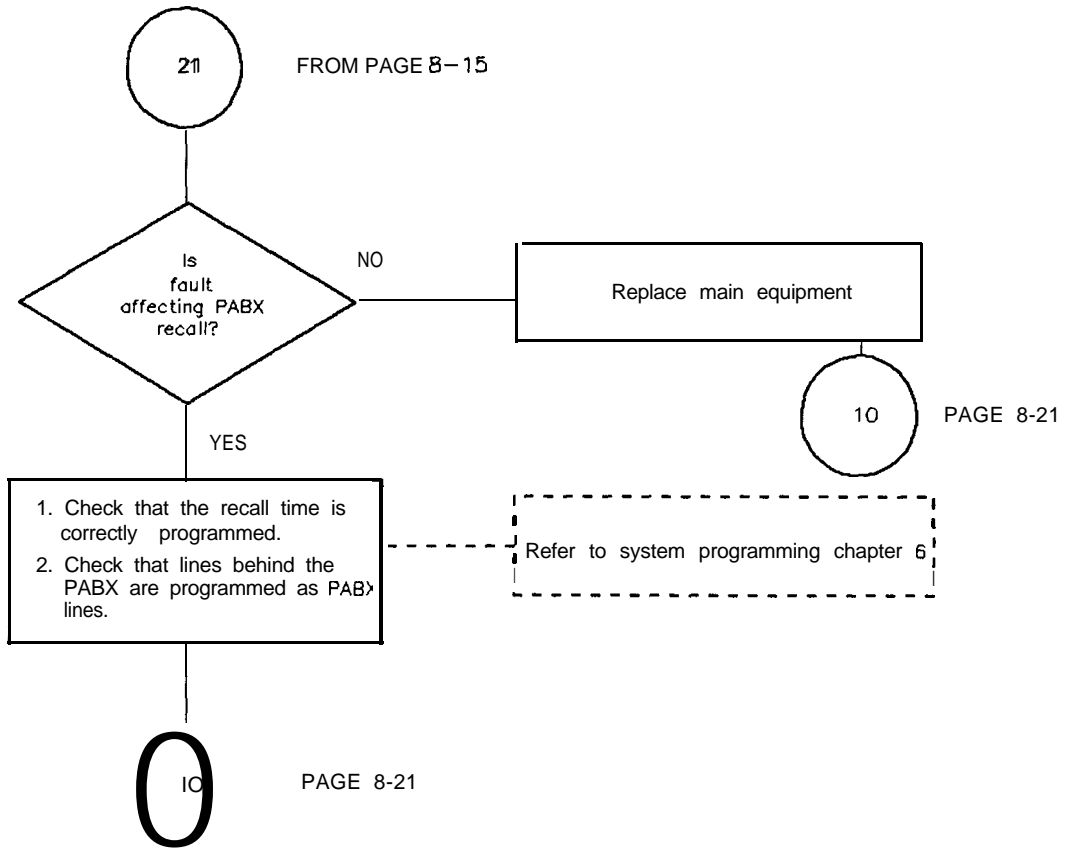
Programmed facility fault



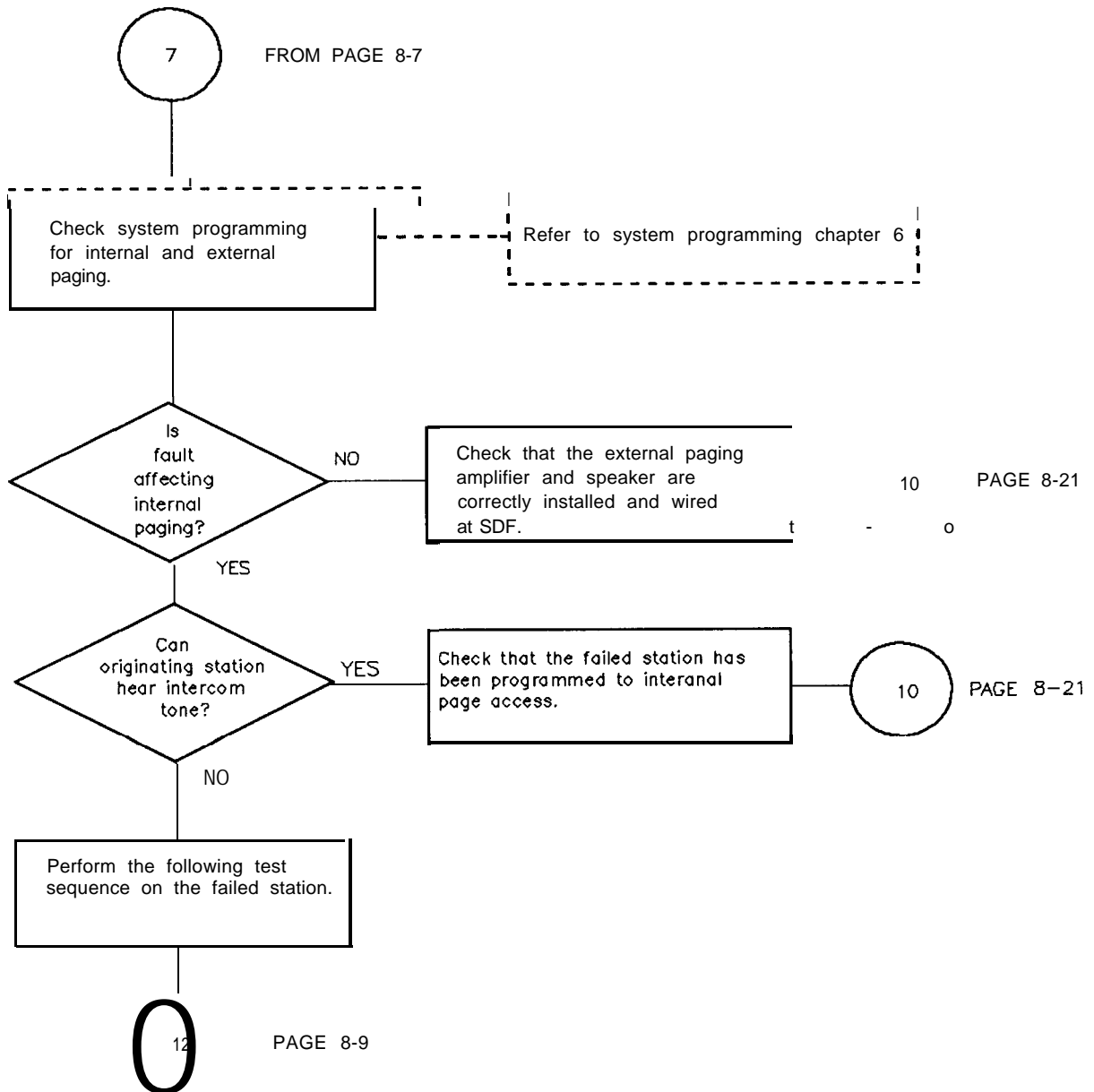
Programmed facility fault (cont'd)



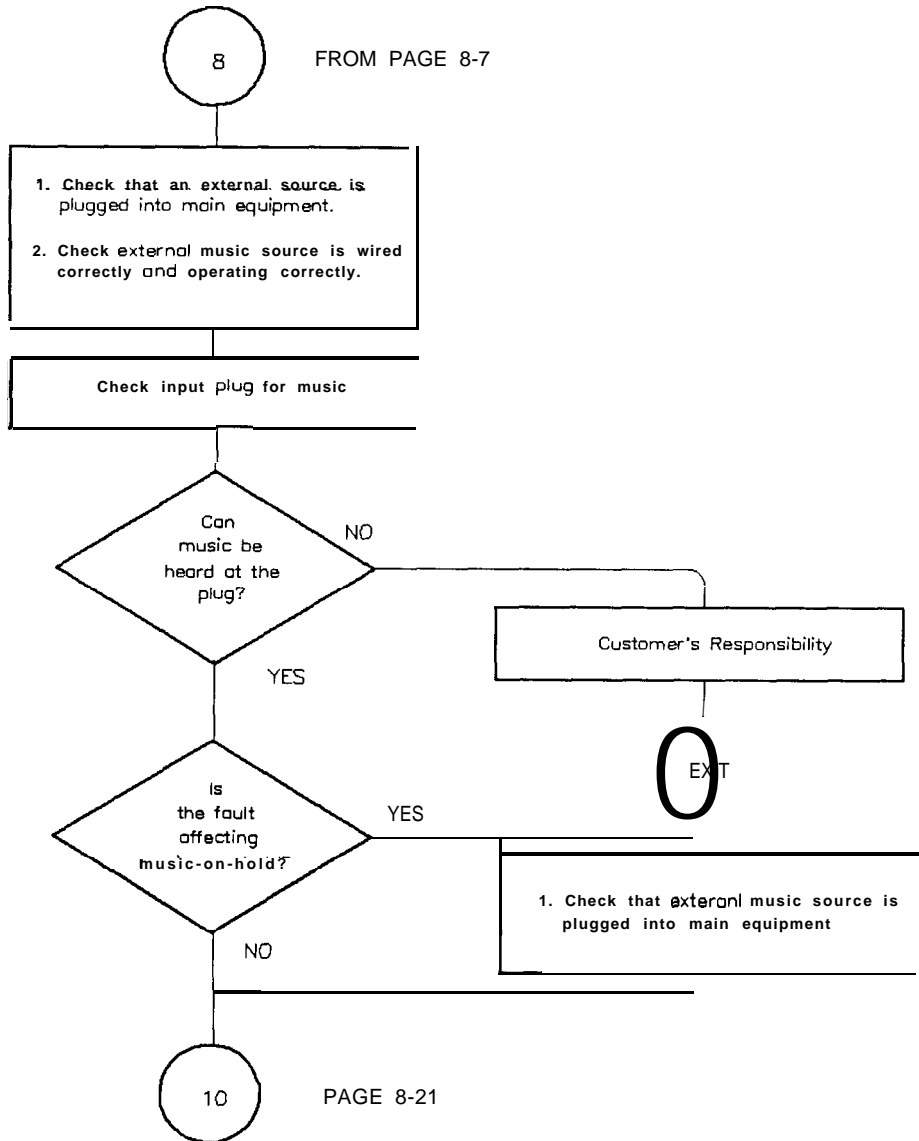
Programmed facility fault (cont'd)



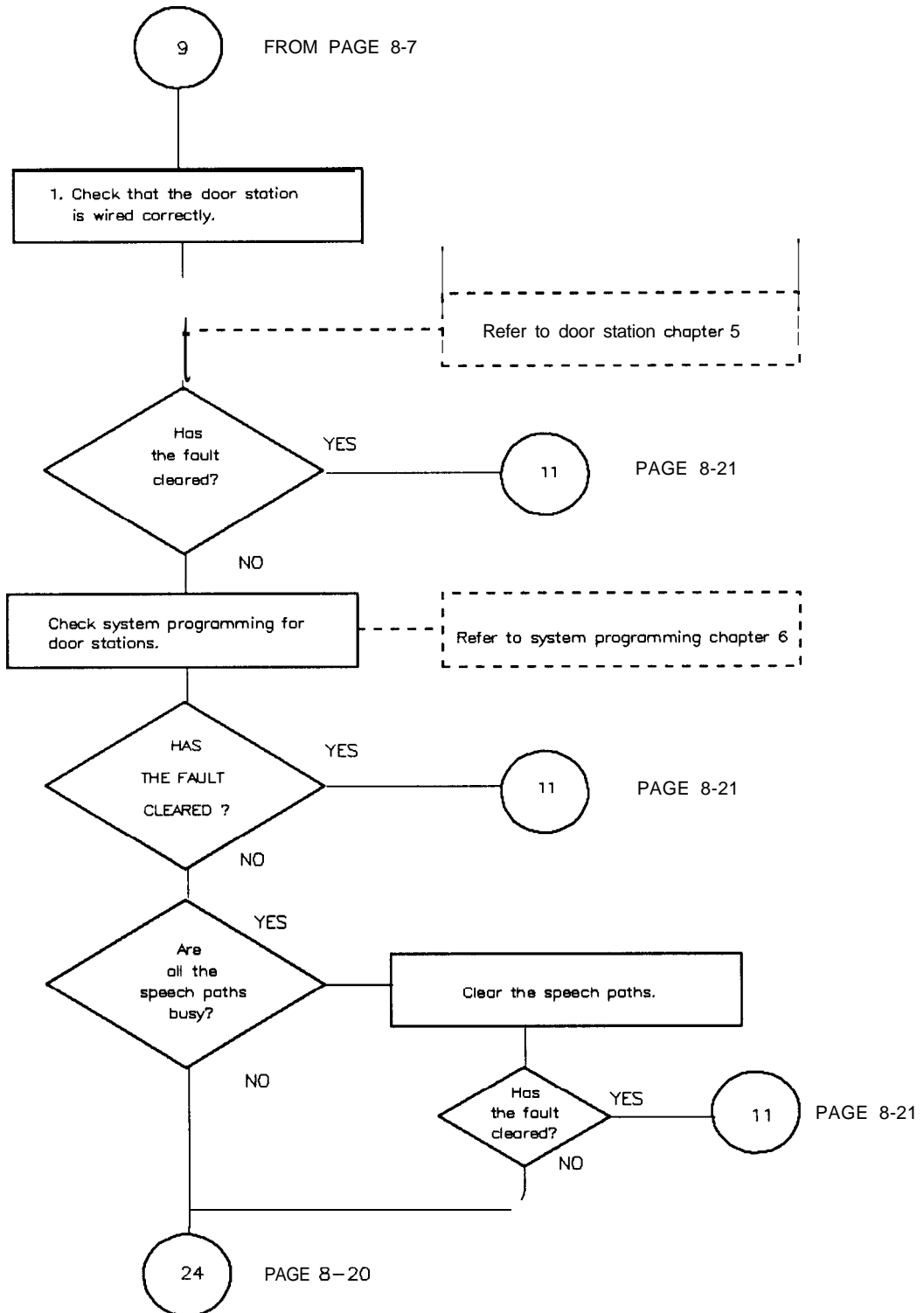
Paging fault



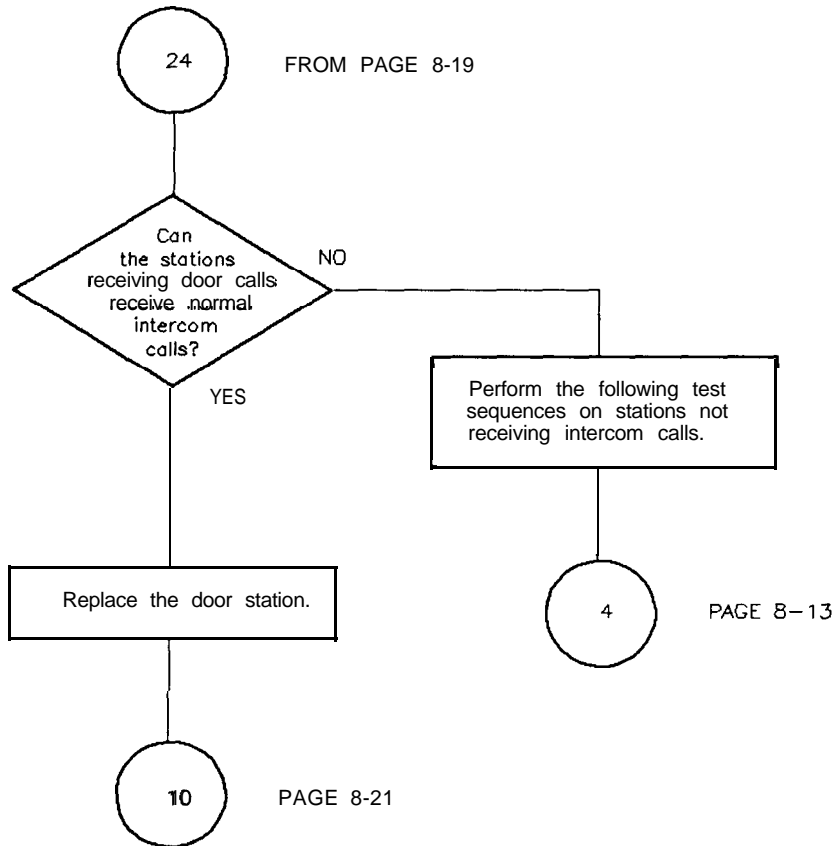
External music fault

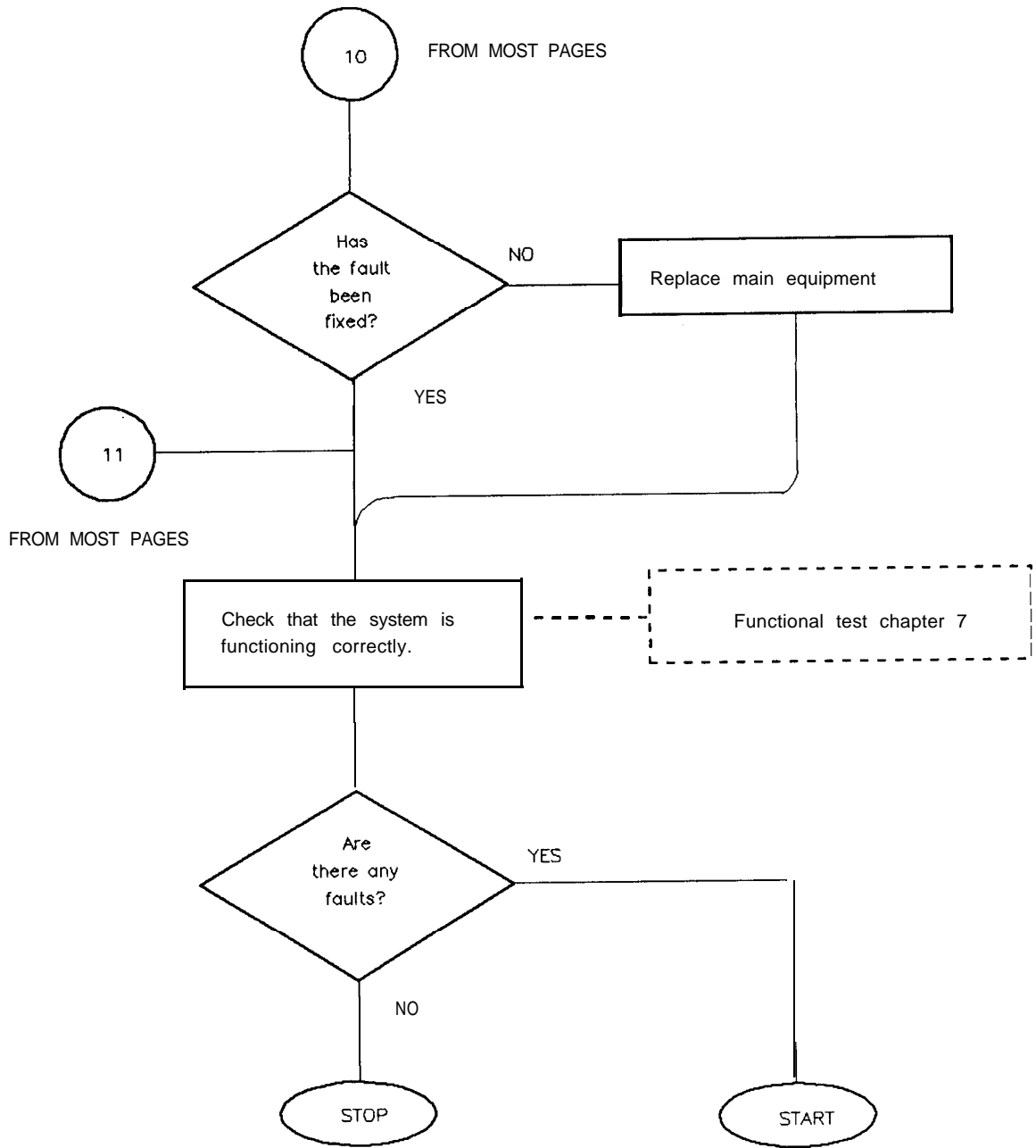


Door station fault



Door station fault (cont'd)





Suggested Repair Actions

This section contains repair actions to be taken when a fault is found during functional testing of a Commander E308 or E616 system. Refer to **Chapter Seven - Functional Test**.

If the repair action(s) does not rectify the fault, refer to the maintenance flowcharts.

System Tests

A Exchange Line Led

1. Check:
 - Power is applied to the system
 - Key station A is connected
 - Wiring between the main equipment and key station
 - Socket connections at the key station

Refer to Table 14 - Cable connections.

 - Voltages on the wires to the key station

Refer to Table 14 - Cable connections.

If the voltages do not match those in Table 14, change the main equipment.

 - Ribbon connector between the keypad assembly and the key station PBA.
2. If the fault still exists, change the key station.

| WIRE | 610 SOCKET PIN NUMBER | VOLTAGE |
|------|-----------------------|-------------|
| WT | 2 | 26.5-35 VDC |
| BL | 6 | 2653.5 VDC |
| RD | 1 | Ref.Pin 2 |
| BK | 5 | Ref. Pin 6 |

Table 14 - Cable Connections

B
Exchange Line

1. Check:
 - . Wiring from the main equipment to the exchange line.
2. Test the exchange line.
3. Check:
 - . Receiver and its connections in the key station.
4. If the fault still exists, change the key station.

C
Incoming Call

1. Check:
 - . Connections from the SDF to the exchange line.
2. Test the exchange line.
3. Check:
 - . System is dialling correctly.

If not, check that it has been programmed for the correct form of signalling - decadic or DTMF.
4. Replace called key station.

D
Incoming Call

1. Check:
 - . System programming data for exchange line ring signalling
 - . Wiring from the main equipment to the key stations

Refer to Table 14 - Cable Connections.
 - . Key stations are connected to the correct SDF terminals
 - Exchange lines are connected in the correct sequence.

E
Answering

1. Check:
 - Wiring from the main equipment to station B.
Refer to Table 14 - Cable Connections.
2. If voltages are incorrect, replace main equipment.
3. If the fault still exists, replace key station B.

F
Answering

1. Check:
 - A-pair wiring (and DC voltages) to stations A and B
 - Key stations A and B for sidetone.
If there is no sidetone, check the transmitter and receiver wiring.
2. Change key station.
3. Change main equipment.

G
Hold

1. Change station B.

H
Music On Hold

1. Remove external music source.
2. If fault still exists, replace main equipment.
If internal music on hold is heard, liability to repair external source lies with customer.

I
Hold Automatic
Ring Back

1. Check the system programming data for Hold automatic ring back timer.

J
Exclusive Hold
Release
Time and Recall
Signalling
Duration

1. Check:
 - System programming data for exclusive hold release timer and exclusive hold automatic **ringback** timer.

K
Intercom Seizure

1. If there is no tone, replace the relevant station.
2. If there is still no intercom tone, replace main equipment.

L
Talkback
(Optional)

1. Check:
 - Speaker for station C microphone is turned on.
2. If there is no tone heard at key station B, replace station.
3. If there is still no tone burst, replace main equipment.
4. If ring is not heard at key station C, replace the station.

M
Intercom
Answering

1. If there is no conversation, check:
 - System programming is correct
 - Wiring for stations is correct
2. If there is still no conversation, replace key stations.
3. Replace main equipment.

N
Exchange Line
Conference

1. Replace main equipment.

O
Intercom
Disconnection

1. Check:
 - Both key stations are on-hook properly.

P
Single Access
On-hook Dialling

1. Check:
 - System programming for single access on-hook dialling is correct
 - Key station has outgoing access to the line.
2. Replace **key** station A.
3. Check key station wiring.

Q
Background Music

1. Check:
 - Music can be heard at the input plug.

If the music is not heard, the responsibility for repair lies with the customer.
2. Replace key station A.
3. Replace main equipment.

R
Dialling

1. Check:
 - Key station is allowed access to all lines
 - System programming data for each line is correct.
2. Replace main equipment.

S
Incoming
Signalling
Assignment

1. Check:
 - Incoming **signalling** assignment data is correct
 - None of the key stations are in call forwarding mode
 - None of the key stations are in Do Not Disturb mode - that is, DND LED is off.

T
Access Barring by
Digit Analysis

1. Check:
 - Programming
 - Key station allocation to class of service and data needed for barring
 - Programmed data agrees with the sales form.

U
External paging

1. Check:
 - Paging signals appear at the SDF
 - Control lines operate correctly at the SDF.

If the lines operate correctly, the fault is in the paging amplifier or external speakers. The repair is the customer's responsibility.
2. Replace the main equipment.

V
PABX Recall

1. Check:
 - System is programmed for the type of recall required by the PABX line.
2. If earth recall is required, check:
 - Earth is provided and has been wired up correctly on the SDF.
3. If switchhook flash is required, check:
 - Switchhook flash timer has been programmed correctly.
4. If 2 and 3 are correct and the problem still exists, replace the main equipment.

Station Test

W Line Keys

1. Check:
 - Wiring from the main equipment
 - Station voltages are correct

Refer to Table 14 - Cable Connections.

 - Line cord connection and plug wiring according to Table 3.5.1.

Refer to Table 14 - Cable Connections.
2. If the LED doesn't light, check the ribbon cable between the keyboard assembly and the main PBA in the key station.
 3. If no dial tone is heard, check the receiver and transmitter wiring.
 4. If no **sidetone** is heard, replace the key station.
 6. Replace the main equipment.

X Dialling

1. Check:
 - All digits were **dialled**
 - Transmitter and receiver wiring.
2. Replace the key station.
3. Replace the main equipment.

• Y LED Operation

1. If the LED doesn't light, check:
 - Ribbon cable between the keyboard and the main PBA in the key station.
2. Replace the key station.

Z

Intercom

1. Check:
 - Whether the key station has **sidetone**
If not, check the receiver and transmitter wiring.
 - Plug and socket wiring.
Refer to Table 14 - Cable Connections.
3. Replace the key station.

AB

On-hook Operation

1. Check:
 - Speaker wiring in the key station.
2. Replace the key station.

AC

Display

1. Check:
 - Key station wiring at the plug and socket.
Refer to Table 14 - Cable Connections.
2. Replace the key station.

AD

**Handsfree
Operation**

1. Check:
 - Ribbon connector between the sub-base board and the main board in the key station.
2. Replace the key station.

AE

Line Access

1. Check:
 - Programming data is correct
 - Ribbon connector between the keyboard and main key station board.
2. Replace the key station.

**AF
Call Forwarding**

1. Check:
 - System programming for executive and secretary stations is correct
 - Ribbon connector between the keyboard and the main station board.

Check first on the executive station, then on the secretary station if necessary.
2. Replace the executive station.
3. Replace the secretary station.

Repair Procedures

All Items

Never attempt to repair a Commander E308/616 PBA or item on-site or in a field depot. If a PBA is faulty, replace the entire PBA assembly.

Packaging

All faulty PBAs must be suitably packaged. *Always* pack PBAs in the conductive ANTI-STATIC bag and protective container that the new PBA was packed in. This ensures it is protected from further physical and/or static discharge damaged.

Working PBAs must be packed in the same manner. Careless handling, storage or transportation can cause future or secondary faults.

All other faulty items must be packed in the same carton that was supplied with the new item.

Returning items

Packaged PBAs and other items are to be returned promptly to your Region Store on a changeover basis.

A separate Customer Equipment Fault Report Label (E441), with a fault description written on it, *must* be attached to each faulty PBA package. *Write as much detail as possible about the faulty condition.*

Each Region Store keeps an accurate record of all PBAs dispatched and received to ensure that replacements are obtained on a one-for-one basis.

Appendix One

System Characteristics

Appendix One

System Characteristics

System Capacity

| | 308 | 616 |
|---|-----|-----|
| Exchange Lines | 3 | 6 |
| Key Stations | 8 | 16 |
| Door Stations | 1 | 0 |
| Speech paths | 4 | 8 |
| System Abbreviated Dial (30 digits max) | 90 | 90 |
| Access Barring Classes | 5 | 5 |
| Executive/ Secretary pairs | 4 | 8 |
| Paging zones | 1 | 1 |
| Conference calls | | |
| Simultaneous conferences | 4 | 8 |
| Number of parties (max) | 5 | 5 |

System Limits and Specifications

| ITEM | SPECIFICATION |
|---------------------------------|--|
| Maximum Loop Limits | |
| Key Stations | 140 ohms (500m of 0.5 mm cable) |
| Powerfail telephones | 50 ohms (200m of 0.5 mm cable) |
| Door Stations | 140 ohms (500m of 0.5 mm cable) |
| External Music Input | |
| Input impedance | 3K ohms at max. volume |
| Input level | IV RMS |
| External Paging Output | |
| Output impedance | Complex 800 at 1 KHz |
| Output level | IV RMS |
| Power Requirements | |
| Mains input | 110 mA at 240V 50 Hz |
| External Battery Back-Up | |
| Voltage | 24V DC |
| Battery Type | Re-chargeable |
| Recharge Current | Fastcharge - 1A max into 24V |
| | Slowcharge - (Trickle) 3mA (nominal) |
| Max. load current | E308 -1.5A at 24V DC |
| | E616 -2.5A at 24V DC |

| Operating Temperature | | | | | |
|------------------------------|--------------|--------|--------|-------|-------|
| Main Equipment | 0c to 50c | | | | |
| Key Stations | 0c to 50c | | | | |
| Relative Humidity | 10 - 90% | | | | |
| System Dimensions | | Weight | Height | Width | Depth |
| E308 Main Equipment | 4kg | 390mm | 310mm | 90mm | |
| E616 Main Equipment | 5kg | 390mm | 310mm | 90mm | |
| Key Stations | 0.9kg | 85mm | 185mm | 235mm | |

Appendix Two
Additional Programming Facilities

Appendix Two

Additional Programming Facilities

Introduction

This appendix contains programming procedures that are not generally offered to the customer.

Password Change

The system programming password can be altered.

1. In programming mode, dial 20.
2. Dial current four-digit password.
3. Dial new four-digit password.
(Any combination of numbers between 0 - 9).
4. Press REDIAL to enter data and exit programming code.

Automatic Line Selection Enable/Disable

Automatic line selection may be disabled.

1. In programming mode, dial 21.
2. Dial 0 or 1.

| | | |
|---|---|-----------------------------------|
| 0 | = | Automatic line selection disabled |
| 1 | = | Automatic line selection enabled |

Default value is 1.
3. Press REDIAL to enter data and exit programming code.

DTMF Tone Mute

The DTMF tones may be muted.

1. In programming mode, dial 22.
2. Dial 0 or 1.

| | | |
|---|---|-------------------|
| 0 | = | DTMF tone muted |
| 1 | = | DTMF tone audible |

Default value is 0.

3. Press REDIAL to enter data and exit programming code.

**Dial Pulse
Make/Break Time
Change**

1. In programming mode, dial 23.
2. Dial make time (two digits).

Default value is 33 m/sec.

3. Dial break time (two digits).

Default value is 66m/secs.

4. Press [REDIAL] to enter data and exit programming code.

**Incoming Lines
Only**

Lines may be programmed to accept incoming calls only.

1. In programming mode, dial 40.
2. Dial 0 or 1 for three lines (six for 616).

| | | |
|---|---|---------------------------------------|
| 0 | = | Incoming and outgoing calls available |
| 1 | = | Incoming calls only available |

Default value is 0.

3. Press [REDIAL] to enter data and exit programming code.

Access Barring

Key stations may be placed in one of **five** access barring classes of service (refer to the programming guide for programming instructions).

The definition of each class is as follows:

| | |
|-----------|--|
| Class A : | Unrestricted access |
| Class B : | Unrestricted access except for numbers in toll restriction table for Class B |
| Class C : | Unrestricted access except for numbers in toll restriction table for Class C |
| Class D : | No external access except for numbers in toll allowance table for Class D |
| Class E : | Intercom calls only. |

Toll restriction table for Class B

This restriction table is used to restrict key stations programmed for barring Class B from dialling numbers starting with digits in this table.

1. In programming mode, dial 33.
2. Dial a location code 0 to 9.
3. Dial barred code or number.

Maximum of 12 digits including [] (any number).*

Default values:

| | | |
|---|---|-------|
| 0 | : | 0011* |
| 1 | | 0014* |

4. Press [HOLD] to clear the number in the location.
5. Press [TRANS] to enter data.

If data is correct, confirmation tone is heard.

If data is incorrect, error tone is heard. Press [TRANS] again, and confirmation tone will be heard.

6. Dial next location code to enter more data.
7. Press [REDIAL] to exit programming code.

Toll allowance table for Class B

Refer to Chapter Six - **Allowed Codes for Access Barring Class B**, page 6-10.

Toll restriction table for Class C

This is similar to the toll restriction table for Class B.

1. In programming mode, dial 35.

Default values:

| | |
|-----|--------|
| 0 | 0* |
| 1-9 | Vacant |

Toll allowance table for Class C

Refer to Chapter Six - **Allowed Codes for Access Barring Class C**, page 6-11.

Toll allowance table for Class D

Refer to Chapter Six - **Allowed Codes for Access Barring Class D**, page 6-13.

Designation of Attendant Key Station

Any extension may be specified as the attendant key station.

NOTE: The attendant key station does not have the Do Not Disturb facility. Pressing DND at the attendant key station invokes night service.

1. In the programming mode, dial 70.
2. Dial key station number to be assigned as new attendant key station.

Default key station is 21.

3. Press [REDIAL] to enter data and exit programming code.

Appendix Three
Parts Item and Code List

Appendix Three Parts Item and Code List

Main Equipment & Packages

Serial 538

| ITEM & CODE | DESCRIPTION | REMARKS | PCMS CODES |
|-------------------|--|---|------------|
| 1 ME-E308 | Main Equipment for COMMANDER E308. | Incorporates Control Model, Power Supply and provides terminations for exchange lines and Key Stations. | E3ME |
| 2 ME-E616 | Main Equipment for COMMANDER E616 | Incorporates Control Model, Power Supply and provides terminations for exchange lines and Key Stations. | E4ME |
| 5 SDF-E308 | System Distribution Frame for Commander E308 | Includes AMP plug and 75cm cable and provides sytem distribution for the E308 system. | |
| 6 SDF-E616-EXP | System Distribution Frame Expansion Kit for Commander E616 | Used with SDF-E308 to provide expansion for system distribution for the E616 system. Includes additional AMP plug and 75cm cable. | |

Key Stations **Serial 538**

| ITEM & CODE | DESCRIPTION | REMARKS | PCMS CODES |
|------------------|--------------------------------------|---|------------|
| 11 TS-E308-S | E308 3-Line Standard Key Station | Standard 3-Line Key Station. Contains Key Station User Guide (item 60), and Key Station Directory Label. | E3KS |
| 12 TS-E308-HF | E308 3-Line Standard Key Station | Handsfree 3-Line Key Station. Contains Key Station User Guide (item 60), and Key Station Directory Label. | E3HFKS |
| 13 TS-E616-S | E616 6-Line Standard Key Station | Standard 6-Line Key Station. Contains Key Station User Guide (item 60), and Key Station Directory Label. | E4KS |
| 14 TS-E616-HF | E616 6-Line Handsfree Key Station | Handsfree 6-Line Key Station. Contains Key Station User Guide (items 60), and Key Station Directory Label. | E4HFKS |
| 15 DS-E308 | Door Station | Door Station for E308 systems | E3DS |
| 16 DSIB-E308 | Door Station Interface Board | Door Station Interface Board for E308 System | E3DSIB |

Miscellaneous Items **Serial 538**

| ITEM & CODE | DESCRIPTION | REMARKS | PCMS CODES |
|-----------------------|--|--|----------------|
| 21 (S546) WMK-E308 | Wall Mounting Kit for E308 & E616 Key Stations | Includes handset rest piece. Required to wall mount Key Stations (items 11, 12, 13, 14). | E3WMK E4WMK |

Maintenance Parts**Serial 538**

| ITEM & CODE | DESCRIPTION | REMARKS | PCMS CODES |
|---------------------------|---|---|--------------|
| 31 LC-E-4W | Line Cord, 4-wire | 4-conductor line cord. Maintenance part for Key Stations (items 11, 12, 13, 14). | E3LC E2LC |
| 35 DC-E | Directory Label for E308 Key Stations & E616 Key Stations | | E3DC E4DC |
| *33 (S546) HS-E | Handset with Cord | Handset with integral handset cord. Maintenance part for all S538 and S546 key stations (items 11, 12, 13, 14) | E4HS E3HS |

Documents**Serial 538**

| | | | |
|-------------------------|--|---|----------------|
| 60 DOC-E-UG | Key Station User Guide for E308 & E616 | Brief Key Station user guide; included with Key Stations (items 11-14) | E3UG E4UG |
| 61 DOC-E-SUG | System User Guide for E308 & E616 | Complete user guide; included with Main Equipment (items 1 & 2). | E3SUG E4SUG |
| 62 DOC-E-IM | Installation and Maintenance Manual | Complete Installation and Maintenance procedures for the Commander E308 & E616 Small Business system. | |
| 63 DOC-E-PSRM | Product Reference Manual | Complete Product Reference Manual for the Commander E308 & E616 Small Business systems. | E3PRM E4PRM |
| 64 DOC-E-SB | Sales Brochure | Sales aid brochure to provide customer information on Commander E308 & E616. | |
| 476 DOC-E-SOF | Sales Order Form | Book of Sales Order Forms for Commander E308 & E616 Small Business systems. | |

Appendix Four
Commander E308\616
System User Guide

*Congratulations on selecting a Telecom
Commander Small Business Telephone
System.*

*Your Commander system offers a wide
range of features specifically designed to
improve your business efficiency. To
obtain the maximum return on your
investment, please read this User Guide
carefully. **It** provides detailed
step-by-step instructions for operating the
Commander **E308** and E616 Systems.*

*As a support to this User Guide, a Quick
Reference Card **has** been provided
separately with each key station.*

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Storina Abbreviated Dial Numbers

(For security reasons, these instructions are provided on the perforated page at the back of this User Guide.)

v

1. Getting to Know Your Commander

Types of Handsets

Commander E308 and E616 key stations are available with two types of handsets – on-hook or handsfree.

On-hook

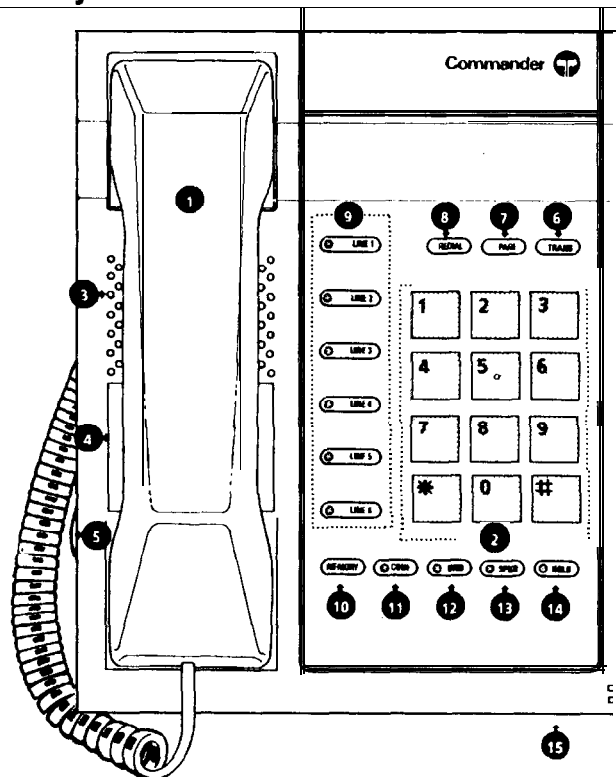
On-hook stations, in addition to providing normal telephone facilities, permit calls to be initiated without lifting the handset.

Handsfree

Optional handsfree stations provide all of the facilities of on-hook stations as well as a microphone facility which permits calls to be initiated and answered without lifting the handset.

This guide concentrates on describing the operation of the on-hook station. Explanation of the operation of the handsfree station can be found on page 6 - 6.

The Keystation



- | | | | |
|---|---|---|---|
| ① HANDSET | ⑦ PAGE To make announcements through the speakers of all stations. | ⑩ MEMORY To store and access frequently called numbers. | ⑬ SPKR Handsfree model To activate the speaker and microphone so that calls can be made and answered without lifting the handset. On-hook model To activate the speaker so that calls can be initiated without lifting the handset. |
| ② DIAL | ⑧ REDIAL To automatically redial the last number dialed. | ⑪ CONF To establish a conference with a maximum of five parties, including one or two outside lines. | ⑭ HOLD To place calls on hold. |
| ③ SPEAKER | ⑨ LINE To access outside lines E308 System: Lines 1-3 E616 System: Lines 1-6 | ⑫ DND [Do Not Disturb] To block all audible signals for incoming intercom and outside calls | ⑮ MICROPHONE Handsfree model only. |
| ④ DIRECTORY LABEL To list line and intercom numbers. | | | |
| ⑤ VOLUME CONTROL | | | |
| ⑥ TRANS To transfer calls to another station | | | |

Page 7-2

Visual Signals

| Lamp | Lamp Status | Meaning |
|--------|--------------------------------|---|
| [LINE] | Off | Line free |
| | Slow flash | Line on hold |
| | Steady glow | Line busy |
| | Rapid flash | Line ringing |
| [CONF] | Steady glow | Conference in progress |
| [DND] | Steady glow | Do Not Disturb activated Executive / Secretary call forwarding activated |
| | Rapid flash at station 21 only | Night service activated |
| [SPKR] | Steady glow | On-hook stations: on-hook dialling activated |
| | | Handsfree stations: handsfree facility activated |
| | Slow flash | Station programmed for voice signalling |
| | Rapid flash | Call forwarding activated |
| [HOLD] | Steady glow | Hold activated |

Page I-3

Audible Signals

| Signal | Meaning |
|--|--|
| Normal ring | Outside call |
| Continuous short ring | Intercom call Intercom call-back |
| Three short bursts of ring repeated every 1.6 seconds | Door station call |
| Normal ring for ten seconds, repeated every 90 seconds | Hold recall |
| Short burst of ring | Call waiting |

Service Tones

| Tone | Meaning |
|---|--|
| Continuous tone | System dial tone |
| Long burst of tone repeated every 2 seconds | Intercom ring tone |
| Short burst of tone repeated every 2.5 seconds | Error tone Not-in-use tone |
| Slow repeating tone | Busy tone Transfer tone Confirmation tone |
| Fast repeating tone | Conference tone |

Page I-4

Access Barring

During installation each station will be allocated one of five classes of call barring. These classes are:

Class A Unrestricted access

Class B Local and STD access and permitted ISD codes if programmed

Class C Local call access and these **permitted** codes:

000 Emergency

008 008 service prefix

009 Reserved for future service

013 Directory assistance

016 Radio paging **prefix**

019 Data service prefix

Class D Intercom calls and 000 only

Class E Intercom calls only

Note: **if** you dial a barred number, your station will interrupt dialling and emit an error tone. Press a free [LINE] to cancel the tone.

2. Answering Calls

Intercom Calls

Ringling at your station

To answer an intercom call ringling at your station:

- Hear the intercom ring signal
- Lift the handset.

Ringling at another station

To answer an intercom call ringling at another station:

- Hear the intercom ring signal at another station
- Lift the handset at your station
- Dial 11.

Outside Calls

Ringling at your station

To answer an outside call ringling at your station:

- Hear the normal ring signal
- Lii the handset.

Ringling at another station

To answer an outside call ringling at another station:

- Hear the normal ring signal
- Lii the handset
- Press the appropriate rapidly flashing [LINE]

OR

- Dial 11.

Door Station Calls

Ringling at your station

To answer a call from the door station ringling at your station:

- Hear the door station chime
- Lii the handset.

Ringling at another station

To answer a call from the door station ringling at another station:

- Hear the door station chime
- Lii the handset
- Dial 13.

3. Making Calls



Intercom Calls

Off-hook dialling

To make an intercom call with the handset off-hook:

- Lift the handset
- Dial the required station number
 - 21-28 for E308
 - 2136 for E616
- Speak when the called party answers.

On-hook dialling [SPKR]

initiating on-hook dialling

To initiate an intercom call using the on-hook facility:

- Press [SPKR] without lifting the handset
The [SPKR] lamp glows steadily at your station
- Dial the required station number
 - 21-28 for E308
 - 21-36 for E616
- Lift the handset to speak when the called party answers
The [SPKR] lamp extinguishes.

Cancelling on-hook Calling

To cancel a call made with the on-hook facility if the called party is busy or does not answer:

- Press [SPKR]
The [SPKR] lamp extinguishes.

Intercom call back

If a called station is busy, the system automatically calls you back when the station becomes free.

Initiating a call back

To **initiate** an intercom call back:

- **Lift** the handset or press [SPKR]
- Dial a station number
- Hear the busy tone for five seconds
- Hear the confirmation tone
- Replace the handset
Your station rings when the busy station becomes free
- **Lift** the handset
- Speak when the called party answers.

Note: if you do not answer the call back within ten seconds, the call is automatically cancelled.

Canceling a call back

To cancel an intercom call back:

- Lift the handset
- Dial the number of the called station again
- Replace the handset within five seconds.

Outside Calls

Off-hook dialing

To make an outside call with the handset off-hook:

- Lift the handset
- Press a free [LINE]
The selected [LINE] lamp glows steadily at all stations
- Hear the dial tone

Note: if you select a line that your station cannot access or a line that is not equipped, you hear the not-in-use tone.

- Dial the required number
- Speak when the called party answers.

Note: Line Skipping

While connected to a line, you can select other lines directly without replacing the handset. To terminate the call in progress and connect to a new line: press another **[LINE]**.

On-hook dialling **[SPKR]**

Initiating on-hook dialling

To initiate an outside call using the on-hook facility:

- Press a free **[LINE]** without **lifting** the handset
*The **[SPKR]** lamp glows steadily at your station
The selected **[LINE]** lamp glows steadily at all stations*
- Hear the dial tone through the station speaker
- **Dial** the required number
- Lift the handset and speak when the called party answers
*The **[SPKR]** lamp extinguishes.*

Canceling on-hook dialing

To cancel an outside call made with the on-hook facility if the called party is busy or does not answer:

- Press the [SPKR] key
*The [SPKR] lamp extinguishes
The selected [LINE] lamp extinguishes.*

Last number redial [REDIAL]

Off-hook

To initiate automatic redialing of the last number **dialled** with the handset off-hook:

- Lift the handset
- Press a free [LINE]
The selected [LINE] lamp glows steadily at all stations
- Hear the dial tone
- Press [REDIAL]
*The last number **dialled** is automatically redialled.*

On-hook

To initiate automatic redialling with the handset on-hook:

- Press a free [LINE] without **lifting** the handset
*The [SPKR] lamp glows steadily at your station
The selected [LINE] lamp glows steadily at all stations*
- Hear the dial tone through the speaker
- Press [REDIAL]
*The last number **dialled** is automatically redialled.*

Note: **If** the line used to dial the last number is available, pressing a free [LINE] is unnecessary. The last number **dialled** is then automatically redialled on the last line used.

Reserving an outside line

A busy line can be reserved to make a call.

Reserving any available line

To reserve any available outside line:

- Lift the handset
- Dial 9
- Hear the busy tone for five seconds
- Hear the confirmation tone
- Replace the handset
When a line becomes available, your station is recalled.

Note: if you do not answer the recall within ten seconds, your reservation is cancelled.

To cancel your reservation:

- **Lift** the handset
- Dial 9
- Replace the handset within five seconds.

Reserving a specific line

To **reserve** a specific outside line:

- Lift the handset
- Press the desired [UNE] that is busy and glowing
The selected [LINE] lamp will continue to glow steadily at all stations
- Hear the busy tone for five seconds
- Hear the confirmation tone
- Replace the handset
When the line becomes available, your station is recalled.

Note: if you do not answer the recall within ten seconds, your reservation is cancelled.

To cancel your reservation:

- **Lift** the handset
- Press the reserved [LINE]
*The [LINE] lamp will continue to glow **steadily** at all stations*
- Replace the handset within five seconds.

Abbreviated dialing [MEMORY]

This facility allows all stations to access **90** abbreviated dial numbers previously stored in the system.

Note: for abbreviated dial number storing procedures, see the perforated sheet at the back of this User Guide.

To dial a stored number:

- Lift the handset
- Press a free [LINE]
The [LINE] lamp glows steadily at all stations
- Hear the dial tone
- Press [MEMORY]
- Dial the memory code from within the range 10 - **99** which corresponds to the number you wish to dial
*The stored number is **dialled** automatically.*

Note: you can also initiate abbreviated dialling using the on-hook facility.

Note: Chain Dialling.

You can dial a telephone number by lifting the handset, selecting a free line and dialling the number using the key pad and the abbreviated dial facility in any combination.

Door Station Calls

To call the door station:

- Lift the handset
- Dial 13
- Speak when someone at the door station answers.

4. Holding and Transferring Calls

Holding Calls [HOLD]

Any outside call can be placed on common or exclusive hold.

Common hold

Calls on common hold can be retrieved at any station.

To place an outside call on common **hold**:

- Ask the outside party to wait
- Press [HOLD]
 - Your [HOLD] lamp glows steadily*
 - The [LINE] lamp flashes slowly at all stations*
 - The outside **party** hears music*
 - The hold confirmation tone will be heard for three seconds, followed by the dial tone*
- The handset can be replaced.

Exclusive hold

Calls on exclusive **hold** can be retrieved only at the station where the call was placed on **hold**.

To place an outside call on exclusive **hold**:

- Ask the outside party to wait
- Press [HOLD]
- Press [HOLD] again while listening to the **confirmation** tone
Your [HOLD] lamp glows steadily
- Hear the dial tone
*Your [LINE] lamp **flashes slowly***
The [LINE] lamp glows steadily at all other stations
The outside party hears music
- The handset can be replaced.

Retrieving from hold

To retrieve a call from common or exclusive hold:

- Press the appropriate **slowly** flashing [LINE].

Note: if a call on hold is not retrieved within 90 seconds, a recall signal will alert the station where the call was placed on hold.

if a call on exclusive hold is not retrieved within 10 seconds of the recall signal, the call reverts to common hold and can be answered at other stations.

Making an inquiry call

To make an inquiry call while a call is on hold:

- Ask the outside party to wait
- Press [HOLD]
Your [HOLD] lamp glows steadily
The [LINE] lamp flashes slowly at all stations
The outside party hears music
- Dial another station or make an outside call
- Make your inquiry
- Press the appropriate slowly flashing [LINE] to return to the held call
The [HOLD] lamp extinguishes.

Transferring Calls [TRANS]

Any outside call can be transferred to another station after announcement, without announcement or by paging.

Announced transfer

To transfer a call after announcing it:

- Ask the outside party to wait
- Press **[TRANS]**
The outside party is automatically placed on hold and hears music
- Hear the transfer tone
- Dial the required station number
- Announce the call
- Replace the handset
The call is automatically transferred to the second station.

if the person at the station to which you wish to transfer the call does not want to accept it, the call will automatically return to you when the second station replaces the handset.

Note: a three-party call can be established by pressing **[TRANS]** again while talking to the second station.

if the station you wish to transfer the call to is busy, you will hear no change from the transfer tone. You can then return to the outside party or camp (that is, queue) the call on the busy station.

To return to the outside party:

- Press **[TRANS]**.

To camp the call on the busy station:

- Hear the busy tone
- Replace the handset
The call waiting signal is heard through the speaker of the busy station. If the station does not then become free, the call will revert to the transferring station after a pre-programmed interval.

Unannounced transfer

To transfer a call without announcing it:

- Ask the outside party to wait
- Press **[TRANS]**
The outside party is automatically placed on hold and hears music
- Hear the transfer tone
- Dial the required station number
- Replace the handset
The call is automatically transferred to the second station.

if the station you have transferred the call to does not answer within a predetermined period, your station is recalled.

With internal page

To transfer a call after a paging announcement:

- Ask the outside party to wait
- Press [PAGE]
Your [HOLD] lamp glows steadily
The call is automatically placed on hold
The [DND] lamp glows steadily at all idle stations
Three bursts of tone are heard through the speakers of all idle stations
- Announce the call
- Replace the handset
The call can be answered from any station by pressing the appropriate slowly flashing [LINE]
Your [HOLD] lamp extinguishes when the call is answered.



5. Paging and Conference Calls

Paging [PAGE]

Announcements can be made through the speakers of all idle stations and, as an optional facility, through an external public address system.

Internal page

To make a general announcement to all stations:

- Lift the handset
- Press [PAGE]
Three bursts of paging tone are heard through your handset and the speakers of all idle stations
- Make the announcement
- Replace the handset.

Meet-me page

To request a specific person to contact the originator of a page immediately after an announcement:

- Lift the handset
- Press [PAGE]
- Make the announcement, specifying the person
- Press [PAGE] again
- Leave the handset off-hook
 - Music is heard*
 - The paged person dials 12 to automatically connect to your station.*

External page (if available)

To make an announcement through an external public address system connected to the telephone system:

- **Lift** the handset
- Dial 14
 - Hear the confirmation tone*
- Make the announcement
- Replace the handset.

Conference Calls [CONF]

Conference calls can be conducted with a maximum of **five** parties, including one or two outside lines.

Establishing a conference call

To set up a conference call:

- Establish an outside or intercom call
- Ask the party to wait
- Press [CONF]
*The [CONF] lamp glows steadily at your station
The **party** is placed on hold and hears music*
- Hear the conference tone
You may now add further outside parties or stations.

Adding an outside party

To add an outside party:

- Press a free [LINE]
The selected [LINE] lamp glows steadily at all stations
- Dial the new Party
- Ask the new party to wait
- Press [CONF]
The new party is placed on hold and hears music
- Hear the conference tone
- Press [CONF] again to begin the conference

OR

- Add further outside Parties or stations.

Note: when five Parties (including the initiator) are connected, the conference begins automatically without your pressing [CONF] again.

if an intended new party is busy, does not answer or does not wish to join the conference, you can return to the conference parties.

To do so:

- Press the [LINE] of the intended new party
The [LINE] lamp of the intended new party extinguishes
- Hear the conference tone again
- Press [CONF] to return to the conference parties.

Adding a station

To add a station:

- Dial the new station
- Ask the person at the new station to wait
- Press [CONF]
The person at the new station is placed on hold and hears music
- Hear the conference tone
- Press [CONF] again to begin the conference

OR

- Add further outside parties or stations.

Note: when five parties (including the initiator) are connected, the conference begins automatically without your pressing [CONF] again.

if the person at the intended new station is busy, does not answer or does not wish to join the conference, you can return to the conference parties.

To do so:

- Press [CONF]
- Hear the conference tone
- Press [CONF] again to return to the conference parties.

Excluding an outside party while a conference is in progress

To exclude an outside party:

- Press [CONF]
 - Press the [LINE] of the party to be excluded
 - Press [CONF] again to return to the other parties
The [LINE] lamp of the excluded party extinguishes.
- A person at a station who wishes to leave the conference should replace the handset.

6. Other Facilities



Intercom Answer Mode

To programme incoming intercom calls to be signalled by the intercom ring signal, or by a burst of intercom ring signal followed by the caller's voice through the station speaker:

- Dial [*] with the handset on-hook
- Hear the confirmation tone
- Dial 10
- Dial 0 or 1
 - 0 for intercom ring signal only
 - 1 for burst of Intercom ring signal followed by caller's voice

Note: the default value is 0.

- Dial [*] again.

Note: If a station is programmed for voice **signalling**, the [SPKR] lamp flashes slowly while the station is **idle**.

Station Off-Hook Signal

To programme incoming Intercom calls to be signalled while another call is in progress:

- Dial **[*]** with the handset on-hook
- Hear the confirmation tone
- Dial 1 2
- **Dial 0** or 1
 - 0 for no off-hook signal
 - 1 for off-hook signal

Note: the default value is 0.

- Dial **[*]** again.

Decadic to Tone Signalling

If your system is programmed for decadic **signalling**, you can change to tone signalling to access services such as telephone banking and personal remote paging.

To do this:

- Access the desired service
- Dial [*] to change from decadic to tone signalling
- Dial the numbers required by the service
- Complete your transaction
- Replace the handset
Decadic signaling automatically resumes on the next call.

Background Music

If your system has access to music from an external source, this **music** can be played through your station speaker when your station is **idle**.

To initiate or cancel the background music:

- Press [HOLD] without lifting the handset.

Note: background music is automatically cancelled if the handset is lifted or a call received.

Call Forwarding

This facility allows intercom calls to be redirected to another station.

Initiating

To initiate call forwarding:

- Dial [*] without lifting the handset
- Dial 1 1
- Dial the station number to which you wish to forward your calls
- Dial [*] again
The [SPKR] lamp flashes rapidly while the station is idle
Intercom calls to your station are forwarded to the designated station.

Note: you can make intercom or outside calls from your station while call forwarding is activated.

Cancelling

To cancel call forwarding (from your station):

- Dial [*] without lifting the handset
- Dial 1 1
- Dial your own station number
- Dial [*] again.

Do Not Disturb [DND]

This facility allows you to programme your station to block all audible signals from incoming calls.

Initiating

To initiate Do Not Disturb:

- Press [DND] without lifting the handset
*The [DND] lamp glows steadily at your station
All audible signals from incoming calls are blocked at your station
Stations calling your station hear a busy tone.*

To answer an outside call while Do Not Disturb is activated:

- Lift the handset
- Press the appropriate rapidly flashing [LINE]
The [LINE] lamp glows steadily at all stations
- Replace the handset when you have completed the call
*The [LINE] lamp extinguishes
Do Not Disturb resumes.*

Note: the Do Not Disturb facility is not available at Station 21.

Cancelling

To cancel Do Not Disturb:

- Press [DND] again without lifting the handset
The [DND] lamp extinguishes
Audible signals from incoming calls will be heard at your station.

Executive/Secretary

A maximum of eight pairs of stations can be programmed at installation as Executive/Secretary pairs. When Do Not Disturb is activated at an executive station, intercom calls to that station are automatically forwarded to the secretary station and all audible signals are blocked.

Note: a particular station can belong to one Executive/Secretary pair only.

Forwarding intercom calls from an executive station

To forward intercom calls from an executive station:

- Press [DND] without lifting the handset
The [DND] lamp glows steadily at your station
All incoming intercom calls will be forwarded to the programmed secretary station.

Cancelling forwarding

To cancel call forwarding from the executive station:

- Press [DND] again
*The [DND] lamp extinguishes
Incoming intercom calls will be heard at your station.*

Calling an associated executive or secretary

To call your associated executive or secretary:

- Lift the handset
- Dial 6
- Speak when the called party answers.

Handsfree Operation [SPKR]

If your station possesses this optional facility, you can make and answer calls without using the handset.

To make or answer a call handsfree:

- Press [SPKR] without lifting the handset
The [SPKR] lamp glows steadily at your station
- Make or answer the call.

To continue the call through the handset:

- **Lift** the handset
The [SPKR] lamp extinguishes.

To return to handsfree mode:

- Press [SPKR]
The [SPKR] lamp glows steadily at your station
- Replace the handset.

To temporarily block the microphone during a handsfree conversation:

- Press [DND]
The caller cannot hear you
The [DND] lamp glows steadily at your station
- Press [DND] again
Communication is restored
The [DND] lamp extinguishes.

PABX Recall

If your system is an extension of a PABX, you can transfer calls to other stations on the PABX, or access other PABX facilities.

To contact the host PABX while connected to a line:

- Press the [LINE]
- Hear the PABX dial tone
- Follow the instructions in your PABX user guide.

Night Service

This facility transfers calls coming in after business hours to pre-programmed stations.

To activate night service:

- Press [DND] at station 21
The [DND] lamp flashes rapidly at station 21 only.

To cancel night service:

- Press [DND] at station 21
The [DND] lamp extinguishes.

7. General Information

Access Codes

| CODE | FACILITY |
|----------------|--|
| 6 | Call associated executive/secretary |
| 9 | Reserve outside line automatically |
| 11 | Answer Intercom or outside call ringing at another station |
| 12 | Answer a meet-me page |
| 13 | Call door station Answer door station call ringing at another station |
| 14 | External page (ii available) |
| 21 - 28 | Station numbers E308 |
| 21 - 36 | Station numbers E616 |
| On-hook [*] 10 | Program Intercom answer mode |
| On-hook [*] 11 | Program call forwarding |

Care of Your Commander

Commander telephone systems are manufactured to meet the highest quality standards.

Follow these common-sense guidelines to help maintain trouble-free service.

- Handle your key station with care: avoid dropping or knocking it.
- Avoid subjecting the equipment to temperature extremes or damp, steamy or greasy conditions.
- Never immerse the equipment in water. Clean the surface with a slightly damp cloth. Do not use detergents, polishes or commercial cleaners.
- Do not tamper with your Commander in any way: interference with its sensitive electrical components could render it unsafe to use.

Service Problems

Power failure

To prevent loss of service during a power failure:

- A customer-supplied battery backup facility can be connected to maintain full system operation

OR

- an optional facility of the system will automatically connect the first two outside lines to single-line telephones.

If neither of these facilities are connected, no calls can be received or made.

In the event of a power failure, the system will retain all programmed data for a minimum of 48 hours.

Other difficulties

If operating difficulties occur, first determine if power is available. If difficulties persist, and your equipment is covered by a Telecom Maintenance Agreement, call Service Difficulties (1100).

System Enhancement

If you require additional key stations or a larger system, please contact your local Telecom Representative or call the nearest Telecom Business Office listed in the information pages of the telephone directory.

Storing Abbreviated Dial Numbers

You can programme and store up to 90 abbreviated dial numbers in the system. These numbers can be accessed from any station by dialling appropriate two-digit memory codes.

In order to avoid misuse of this facility, it is recommended that this page be stored separately from the remainder of the System User Guide.

Note: for abbreviated dialling procedures, see page 3 - 10.

To store an abbreviated **dial** number at any station:

- Dial [#] without lifting the handset
- Dial 1234
- Press [REDIAL]
- Hear the confirmation tone
- Press [MEMORY]
- Dial a memory code from 10 to **99**
- Hear the confirmation tone
- Dial the telephone number to be stored

Note: a maximum of 30 digits can be programmed for each telephone number.

- Press [TRANS] to enter the data
- Hear the confirmation tone again

Note: if you enter incorrect data your station will **emit** an error tone.

To add further abbreviated dial numbers:

- Dial another memory code or press [PAGE] to move to the next sequential memory code
- Hear the confirmation tone
- Complete the changes.

When you have finished entering data:

- Press [MEMORY]
- Press [#].

If a three-second pause is required while programming — for example, with PABX extensions:

- Press [HOLD] when appropriate.