

Telecom Commander HX Installation and Maintenance Manual

727/18
DOC-HX-IM
(Issue 2)



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- detailing
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Chapter One

System Description

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Chapter One

System Description

Introduction

This chapter describes the Telecom Commander HX308/616/ 1224, and explains the facilities and features of the systems.

General Description

The Telecom Commander HX308/616/ 1224 systems are stored program controlled analogue key systems that will support exchange lines, keystations, Single Line Telephones (SLTs) and Outdoor Extensions (ODXs). The systems offer a two digit, fixed numbering scheme that enables easy operation with access to the many features and functions.

Commander HX308

The Telecom Commander HX308 will support a maximum of:

- 3 exchange lines
- 8 stations connected to:
 - 4 dedicated keystation circuits
 - 3 Hybrid station circuits assigned as either SLTs or keystations
 - 1 dedicated SLT / ODX circuit
- 1 Door Station, including Door Unlock facility.

Commander HX616

The Telecom Commander HX616 will support a maximum of:

- 6 exchange lines
- 16 stations connected to:
 - 8 dedicated keystation circuits
 - 4 hybrid station circuits assigned as either SLTs or keystations
 - 2 dedicated SLT circuits
 - 2 dedicated SLT / ODX circuits
- 2 Door Stations.

Commander HX1 224

The Telecom Commander HX 1224 will support a maximum of:

- 12 exchange lines
- 24 stations connected to:
 - 8 dedicated keystation circuits
 - 10 hybrid station circuits assigned as either SLTs or keystations
 - 4 dedicated SLT circuits
 - 2 dedicated SLTs/ODX circuits
- 2 Door Stations

The Telecom Commander HX 1224 is expandable to the maximums shown above. The basic unit consists of the Main Board and one expansion board and accommodates:

- 8 exchange lines
- 20 stations connected to:
 - 8 dedicated keystation circuits
 - 6 hybrid station circuits assigned as either SLTs or keystations
 - 4 dedicated SLT circuits
 - 2 dedicated SLT / ODX circuits
- 2 Door Stations

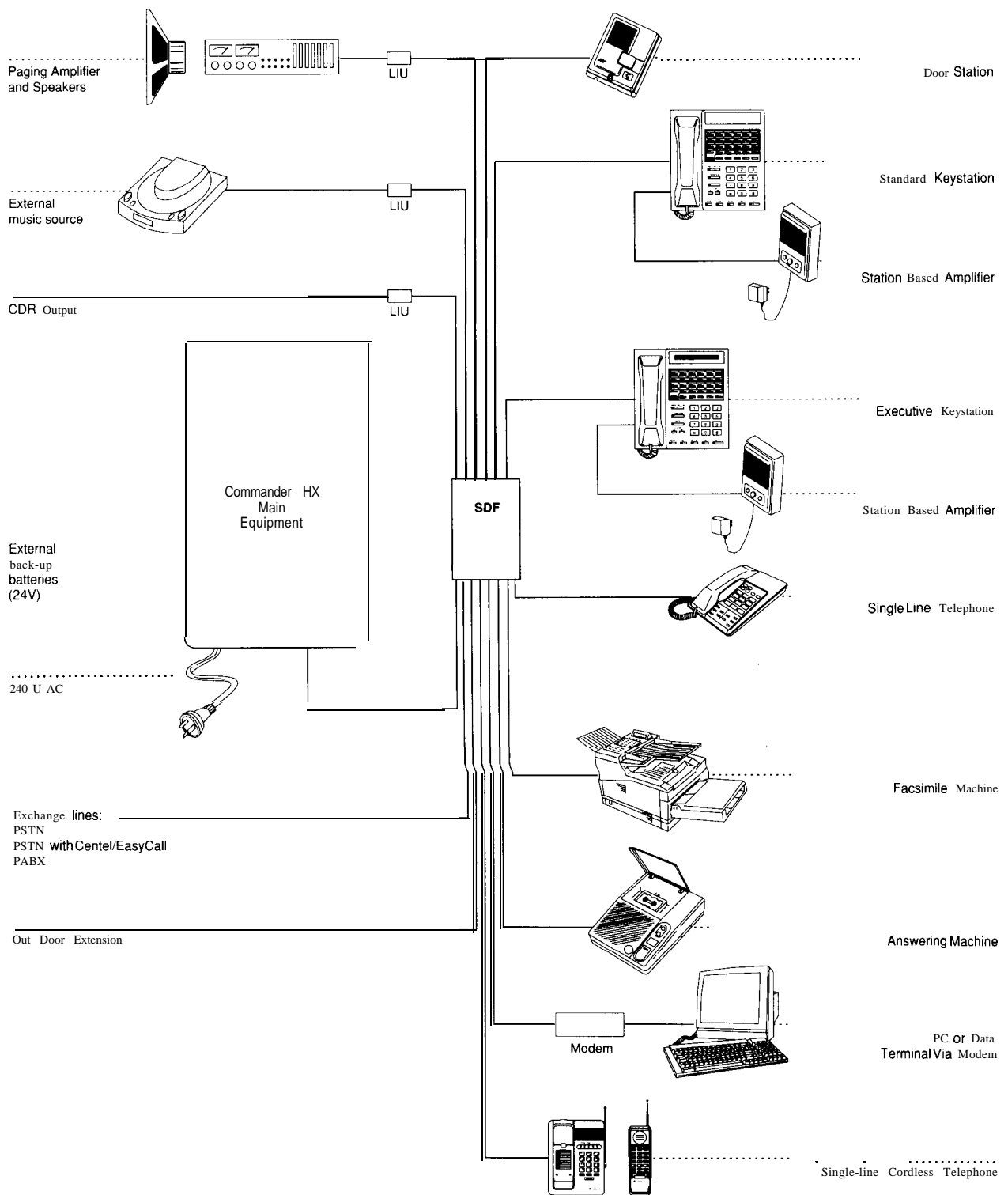
The system accommodates three identical expansion boards, each with a capacity of:

- 2 exchange lines
- and
- 2 hybrid station circuits.

System Capacities

Facility	Capacity		
	HX308	HX616	HX1224
Exchange Lines	3	6	12
Keystations	4	8	8
Hybrid stations (Either keystations or SLTs)	3	4	10
Single line Telephones	0	2	4
SLT/ODX	1	2	2
Door Stations	1	2	2
Door Unlock	1	0	0
Station Groups	4	9	9
Exchange Line Groups	2	5	5
Fax Station Assignment	2	0	0
CDR Output	0	1	1
Powerfail Lines	2	2	3

Facility	Capacity
	All Systems
Operator station	1
Internal Paging Zones	4
External Paging Zone	1
Speed Dial	
Common	80
Personal	20
Class of Restriction (Access Barring)	5
Conference participants	3 max per conference



System Block Diagram
[ILO1]

Numbering Scheme

Feature	HX308	HX616	HX1224
Station Numbering	21 to 28	21 to 36	21 to 44
Station Groups	51 to 54	51 to 59	51 to 59
Exchange Lines			
General Access	0	0	0
Direct Access	61 to 63	61 to 66	61 to 72
Group Access	80 to 81	80 to 84	80 to 84
	All Systems		
Operator		9	
Call Pick Up		11	
Toll Password		12	
Door Station		193	
SLT Operation			
Call Pick-up		11	
Access Barring Override		12+Password	
Zone Paging		13	
Last Number Redial		15	
Speed Dial		16	
Place call on Common Hold		HF 17	
Retrieve call from Hold		17	
Program Personal Sp Dial Nos		#17	
Call Back		HF 1	
Transfer		HF	
Set Message Wait		HF 191	
PABX Hook-flash		HF 18	
Paging Call Pick Up		*1+ (STN No)	

HF = Hook-flash

Hook-flash will not be recognised on an outgoing exchange line call, for up to 10 seconds after the last digit has been sent.

Note: The range of codes given for SLT operation is indicative only. In general, any keystation operation described in the System User Guide that has a dial code associated with it can be performed from an SLT.

System Hardware

The Commander HX systems should only be installed and serviced by fully trained and qualified personnel.

Main Equipment

The Main Equipment for each system is housed in a single wall mounted cabinet and consists of the Main Board, Central Processing Unit, Mains transformer and Power Supply/Ring Generator assembly.

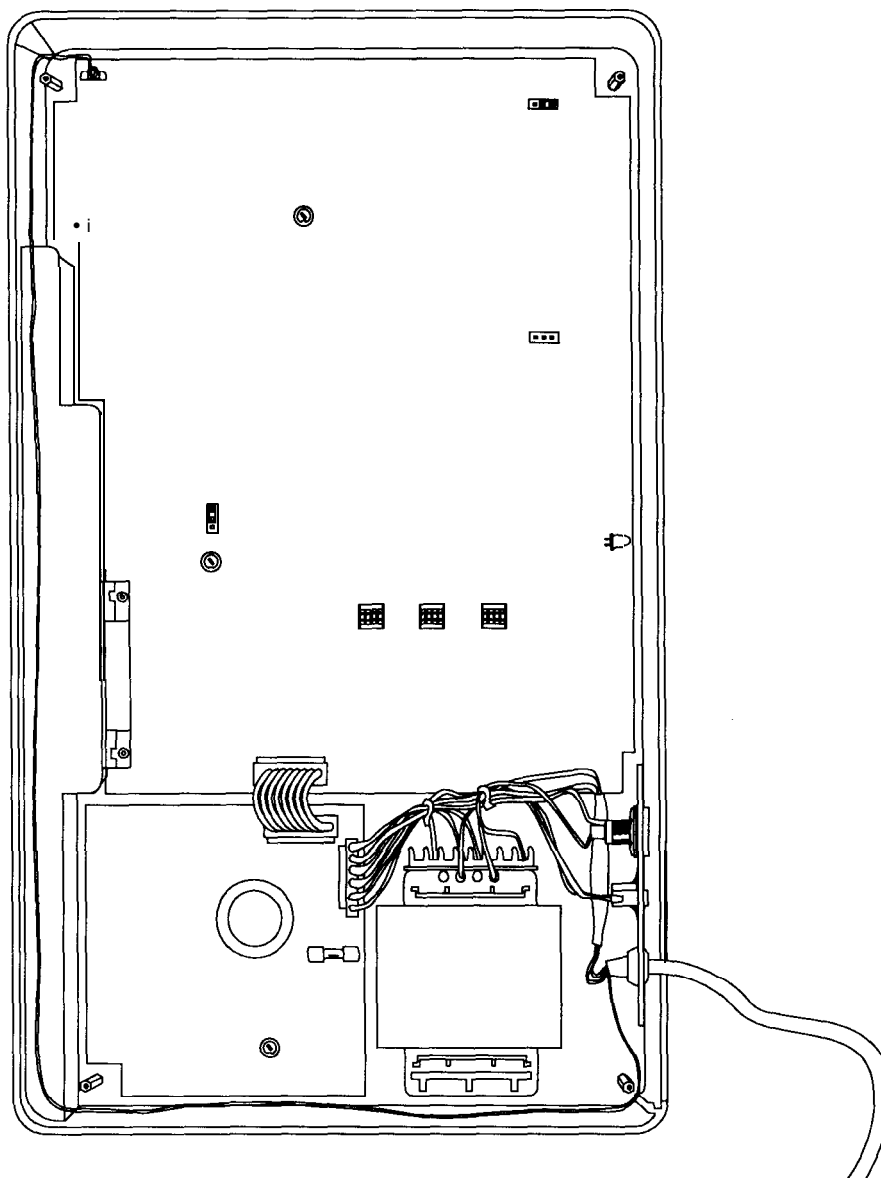
Interfaces within the Main Board permit the Telecom Commander HX 308/616/1 224 to be connected to the Public Switched Telephone Network (PSTN). The CPU provides the control and memory functions of the system while the Power Supply delivers the required DC voltages to run the system. The Power Supply also provides a Ring Generator for any SLTs connected to the system and a battery charger circuit for an external Battery Backup.

Customer data stored within the system is protected from power failure by a one Farad "Super Cap". This will hold the memory for in excess of 48 hours if the power fails. When the power is restored the capacitor is automatically recharged.

Cabling connections are made from the IDF via 25 pair cables to AMP Champ connectors located on the Main Board.

Commander HX308

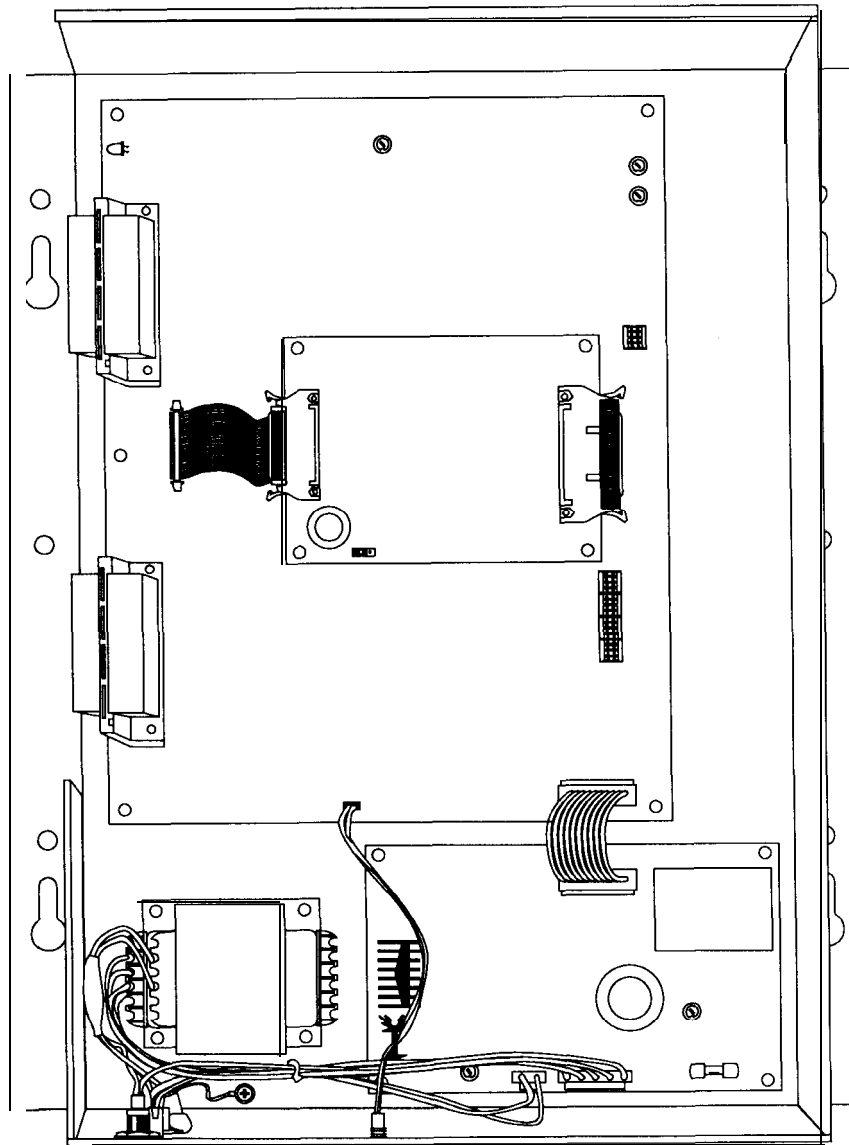
The Telecom Commander HX308 Main Equipment is housed in a 400mm x 300mm x 82mm plastic cabinet (see Illustration ILO2.) The Main Board in this system can support up to 3 exchange lines, 8 stations and one Door Station. The CPU is incorporated into the Main Board, unlike the HX616 and HX1224 systems.



Telecom Commander HX308 Main Equipment
[ILO2]

Commander HX616

The Telecom Commander HX616 Main Equipment is housed in a 525mm x 350mm x 100mm metal cabinet (see Illustration IL03). This equipment can operate 6 exchange lines, 16 stations and 2 Door Stations. The CPU is mounted on top of the Main Board and connected via ribbon cables. Cable connections to the system are via two AMP Champ connectors located on the Main Board.



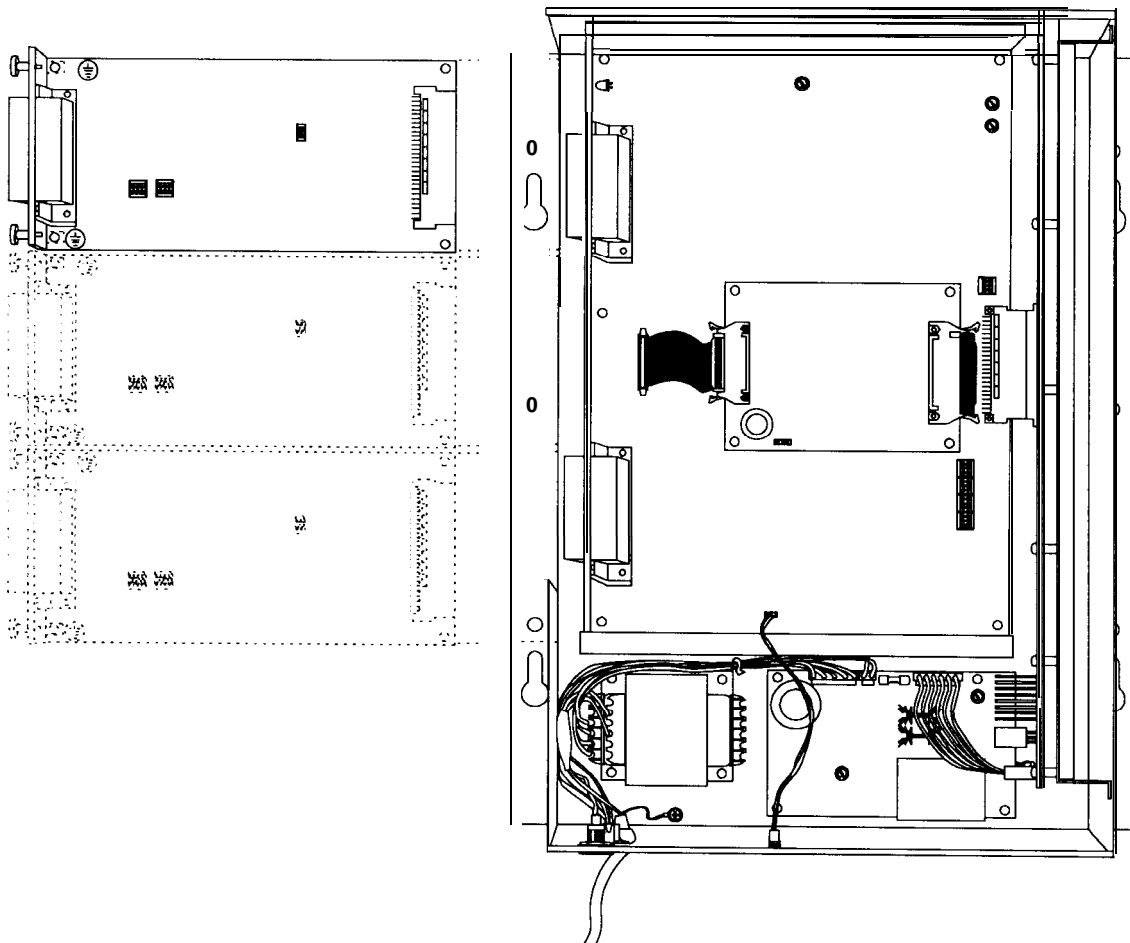
Telecom Commander HX616 Main Equipment
[IL03]

Commander HX1224

The Telecom Commander HX1224 Main Equipment is housed in a 525mm x 350mm x 100mm metal cabinet (see Illustration IL04). The Basic Unit is equipped with the Main Board and one expansion board and will operate 8 exchange lines, 20 stations and 2 Door Stations.

Space within the Main Equipment allows up to a three expansion boards to be located in slots beneath the main board. Each expansion board provides connection for a further 2 exchange lines and 2 hybrid stations (either keystations or SLTs). A fully equipped system will therefore operate a maximum of 12 exchange lines and 24 stations.

The CPU is mounted on top of the Main Board and connected via ribbon cables. Cable connections to the system are via two AMP Champ connectors located on the Main Board and one Champ connector to each expansion board.



Telecom Commander HX1224 Main Equipment
[IL04]

User Equipment

Keystations

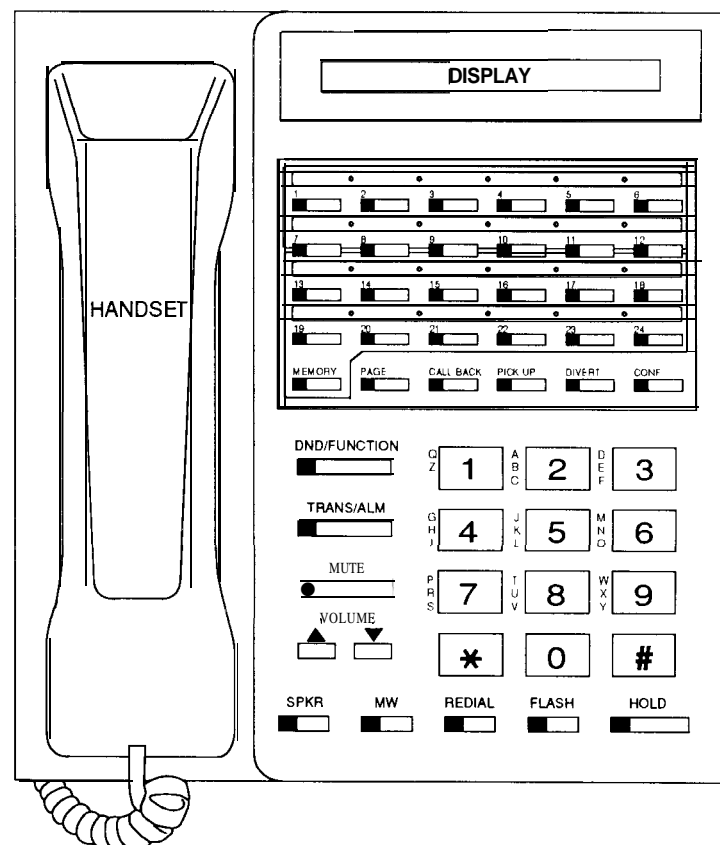
The keystations offered with the systems are available in two models:

- Standard Keystation (No display)
- Executive Keystation (1 line x 16 character display)

All keystations are handsfree and may be connected to any of the Commander HX systems. In each system the allocation of functions to the selection keys varies. The labels, indicating the key function layout for each system, are supplied with the SDF Cable Assembly Kit.

Keystations must be connected to either the dedicated keystation circuits or the hybrid station circuits. They require four wires from the station to the Main Equipment.

The keystation handset may be replaced with a headset, without the use of a headset adaptor.



Executive Keystation
[IL05]

Keystation Key Functions

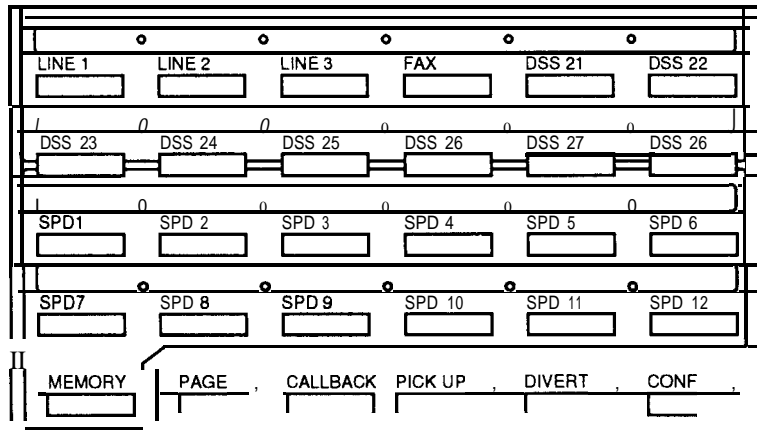
Selection Keys	The assignment of functions to these keys depends on the size of the system to which the station is connected. These keys are explained later.
Function Keys	
[DND/FUNCTION]	When the station is in the idle mode pressing this key will initiate "Do Not Disturb" and in the Off-Hook mode the key is used to prefix function codes.
[TRANS/ALARM]	In the idle mode this key is used to set up an appointment alarm. During conversation it is used to transfer a call to another station.
[MUTE]	Enables and disables the station microphone.
[Δ] and [∇]	Used to adjust the the handset, loudspeaker and ringing volume.
[SPKR]	Enables or disables the handsfree mode.
[MW]	Used in conjunction with the Message Wait Facility.
[REDIAL]	The "Redial" key is used to redial the last number called and while listening to busy tone on an exchange line call will initiate Automatic Redial.
[FLASH]	Used to recall a parent PABX or to operate Network facilities.
[HOLD]	Used to place exchange line and intercom calls on Hold. In the idle mode, pressing the Hold key will turn the Background Music on and off.
[MEMORY]	Used to access Speed Dial functions.
[PAGE]	Used to access the Paging facility.
[CALL BACK]	Provides an automatic Call-back when busy numbers become free.
[PICK UP]	Picks up calls ringing at other stations in the same group.
[DIVERT]	Used to temporarily transfer incoming calls to another station.
[CONF]	Used to set up a Conference.
Dial Keys	Used to access numbers and functions within the system and via the PSTN.
DSS Keys	Direct Station Select keys access other stations within the system. Associated LEDs indicate the status of the station, ie. Busy, Ringing or Idle.
SPD Keys	Personal Speed Dial Keys give one touch dialling facilities.
[FAX]	Used to transfer an incoming call to up to two fax machines (308 only).

Selection Keys

Commander HX308

The selection keys on the Telecom Commander HX308 keystations (see Illustration ILO6) are assigned the following functions:

- Keys 1 to 3 Exchange line keys 1 to 3
- Key 4 Fax key
- Keys 5 to 12 Direct Station Select(DSS) keys 1 to 8
- Keys 13 to 24 Personal Speed Dial keys 1 to 12
- Keys 25 to 30 Pre-set function keys 1 to 6

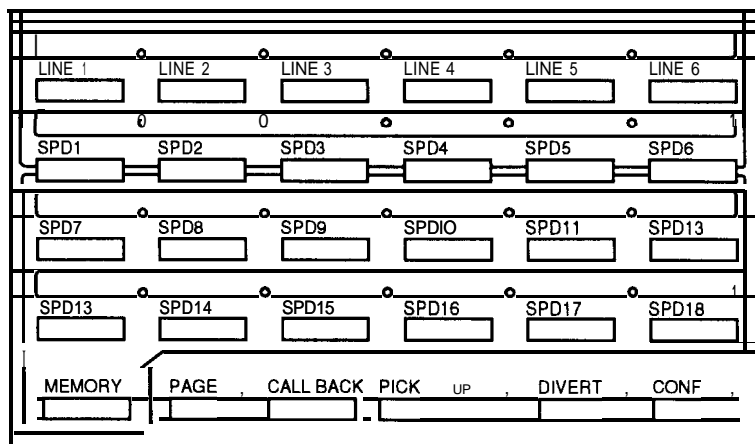


Selection Key Assignment for the HX308 Keystation
[ILO6]

Commander HX616

The selection keys on the Telecom Commander HX616 keystations (see Illustration ILO7) are assigned the following functions:

- Keys 1 to 6 Exchange Line keys 1 to 6
- Keys 7 to 22 Dual function Direct Station Select (DSS) OR
Personal Speed Dial keys 1 to 16
- Keys 23 and 24 Personal Speed Dial keys 17 and 18
- Keys 25 to 30 Pre-set function keys 1 to 6

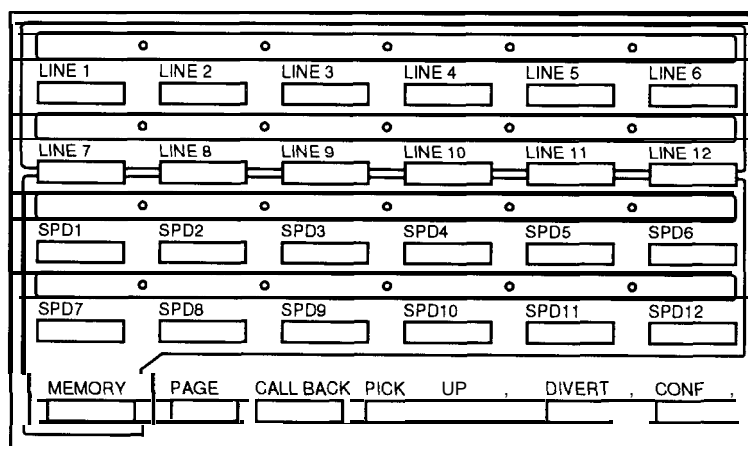


Selection Key Assignment for the HX616 Keystation
[ILO7]

Commander HX1224

The selection keys on the Telecom Commander HX1224 keystations (see Illustration IL08) are assigned the following functions.

- Keys 1 to 12 Exchange line keys 1 to 12
- Keys 13 to 24 Dual function:
 Programmable Direct Station Select (DSS)
 OR Personal Speed Dial keys 1 to 12
- Keys 25 to 30 User programmable Direct Station Select (DSS) keys
 OR Function keys



Selection Key Assignment for the HX1224 Keystation
 [IL08]

Single line Telephones

The Telecom Commander HX can also support Single Line Telephones (SLTs). These are connected by two wires to the two wire or hybrid station circuits. Most of the system features are available from an SLT by dialling access codes. Telephone answering machines and cordless telephones can be connected by two wires to the two wire or hybrid station circuits.

Hardware Features

Operator Station

Station number 2 1 in all systems is permanently assigned as an operator station. The Operator Station differs from other stations as follows:

- Programming of the system Speed Dial numbers and the Date and Time is done without password protection.
- The [DND] key is used for Night Mode switching, instead of Do Not Disturb.

Powerfall Lines

If the power fails, the first two exchange lines (three in the HX1224) are automatically switched to the SLTs connected to:

- Station circuits 3 3 and 34 in the HX616
- Station circuits 33, 34 and 37 in the HX1224
- Station circuits 27 and 28 in the HX308

However, in the HX308 these circuits may be assigned as keystations: in this case power failure switching is not available.

Battery Backup

An external Battery Backup can be connected to maintain the system functionality during periods when the mains power is off. A battery charger circuit is provided by the power supply.

ODX Lines

Two-wire Outdoor Extensions (ODXs) which are fed via network cabling can be connected to station 26 in the HX308 and stations 35 and 36 in the HX616/ 1224. These stations have the necessary interfacing required by AUSTEL for ODXs.

Door Station

A Telecom Commander HX Door Station is available to provide intercom access to the system. Up to two Door Stations can be supported by the HX616/ 1224 and one by the HX308. When activated, a call from the Door Station will ring at a preset station or stations.

Door Lock

The HX 308 provides a set of contacts that can be used to control an electric door lock. While a keystation is in conversation with the Door Station, pressing "1" will activate these contacts for a timed period. An approved Line Isolation Unit is also required.

External Paging

The system provides an interface for an External Paging Device which can then be accessed by any station user. An approved Line Isolation Unit is also required.

External Music Source

An external music source can be connected to the system for Music on Hold or Background music. An approved Line Isolation Unit is required.

Facsimile Machine

Fax machines can be connected as stations on all systems. However up to two fax machines can be connected to the HX308 and single button transfer is provided.

Headset

A keystation handset may be replaced by an Austel approved headset suitable for telephones employing *dynamic* transducers. (For example, Touchfone200 transducers are electret, hence headsets for this telephone may not be suitable for use with HX keystations.)

When connected and activated the [SPKR] key is used to perform the Off-hook function. While in Headset mode, the station cannot utilise the loud speaking facility.

C.D.R.

The Call Detail Recorder facility is used to print details in a variety of formats, depending on the system programming. This facility is not available with the HX308.

Station Based Amplifier

The circuitry of each keystation can accommodate a station based amplifier. Incoming ring tone is then heard via the amplifier as well as at the keystation.

System Facilities

Incoming Calls

Incoming Ring Group	Audible signalling for each incoming line can be assigned to up to 10 stations on the system. This assignment can be different for Day and Night modes and can include SLTs.
Incoming Ring Mode	One of four modes of ringing can be assigned to each line. Calls can either ring all assigned stations or hunt through groups of stations.
Incoming Ring, Automatic Answer	A keystation will directly answer an incoming exchange line call ringing at the station by lifting the handset or pressing the [SPKR] key.
Incoming Ring, Visual Indication	Visual indication of exchange line calls is provided by LEDs associated with each line key.
Incoming Ring, Pick-up	This facility allows a station user to answer an incoming exchange line call ringing at another station by pressing the Pick-up key or dialling a code.
Incoming Ring Volume Adjustment	The incoming ring volume may be adjusted on the keystation.
Facsimile (HX308 only)	An incoming call intended for the fax machine can be forwarded by pressing the [FAX] key. If two fax machines are connected to the system the call will be connected to the first free machine.

During a Call

Off-hook Signalling	While a keystation is already engaged on a call, a second incoming exchange line call will signal with muted ring tone, if programmed.
Hold	The hold condition may be 'Exclusive', allowing only the holding station to retrieve the call, or 'Common' allowing any station to retrieve the held call.
Hold Recall	When an exchange line has been on Hold for longer than a pre-set time, usually 90 seconds, a ring signal is activated as a reminder to the holding station. After the pre-set time, a call on Exclusive Hold will revert to Common Hold, allowing any station to retrieve that call.
Transfer	An Exchange or Intercom call may be transferred to another station either with or without announcement, If the called station was ringing or busy when the transfer was made, the call will revert to the original station if not answered within a preset time, usually 90 seconds.

Transfer Number Display When a call is transferred to a keystation, the display will indicate the number of the station from which the call was transferred.

Recall Display When a call recalls to a keystation after an unsuccessful transfer, the display will indicate the number of the station to which the call was transferred.

Outgoing Calls

Access Barring The system can restrict outgoing exchange line calls on the basis of the dialled number, according to the station's class of restriction. There are 10 Deny and 10 Allow codes for each class. Each code may be up to 10 digits.

Access Barring Alternative Carrier Detection The HX systems permit up to four alternative carrier prefixes to be programmed. Each prefix may be one or two digits. If the prefix is detected, on an outgoing call, the system will ignore it when applying Access Barring restrictions.

Access Barring Override A user may override the Access Barring of a station, by dialling a password assigned by the installing technician.

Class of Restriction The system offers 5 Classes of Restriction. This establishes the Access Barring available to each station user.

Class A	No Access restriction
Class B	Local and STD Access
Class c	Local Access
Class D	Spare
Class E	Intercom and Emergency numbers only

Class A is fixed. Classes B to E are programmable and all classes have access to Emergency numbers irrespective of programming.

Conference A keystation user can set up a three-party conference consisting of three internal stations or two internal stations and one external line.

Exchange Line, DTMF/Decadic Each exchange line can be pre-set to send either DTMF or Decadic signalling on outgoing calls

Decadic to DTMF Switching When dialling out on decadic lines, the station can switch to DTMF signalling to access equipment where tones are required, such as, telephone banking and computer services networks.

Exchange Line, Direct Selection A keystation user may select a specific external line by pressing the appropriate line key. If the handset is 'on hook', the station will automatically go into hands free mode.

**Exchange Line,
General Selection**

A keystation user may select the first free exchange line by dialing "0". If the handset is 'on hook', the station will automatically go into hands free mode. Lines allocated to the last line group are excluded from General Selection.

**Exchange Line,
Group Selection**

A station user may seize the first free exchange line in an exchange line group, by dialling the exchange line group's access code.

**Exchange Line,
Request**

When an exchange line is busy, a station user may receive a call back when the line becomes available, by setting Call-back.

**Exchange Line,
External Access**

The system can be programmed to deny outgoing access to designated exchange lines on a station by station basis.

**Exchange Line,
Failure Monitoring**

If an attempt is made to access a faulty line, the system will remove that line from access when dialling '0'. When the line is restored it can be accessed by key selection, and will then be available when dialling '0'.

Last Number Redial

A keystation user may redial the last number dialled by pressing the [REDIAL] key.

Repeat Dialling

A keystation can be set to automatically redial a busy number after a specified time.

**Enhanced Network
Facilities**

To access Advanced Network facilities, such as Centel™ or EasyCall™, the system provides a 1 00ms Timed Loop Break (TLB).

**Mixed External Line
Accommodation**

The system accommodates both direct exchange lines and PABX lines. It can distinguish between these lines and automatically insert a PABX access pause, as appropriate, when dialling a stored external number on a PABX line.

PABX Recall

To access facilities from a parent PABX, the system can be programmed to provide a timed loop break of programmable duration.

Internal Calls

**Alternative Point
Answer**

An intercom call to a station can be answered by another station within the same group, by using the Call Pick-up facility.

**Automatic Release of
a Held Intercom Call**

An internal call that has been put on Hold will, after a p-e-set time, be automatically released.

Direct Station Selection

A keystation user can make a single button intercom call by pressing a pre-set DSS key on the keystation. Pressing the [DSS] key a second time will connect the call automatically in Voice mode.

Intercom Call	Any station can call another station by dialling the appropriate station number or pressing the associated DSS key.
Intercom Call-back	If a called station is busy, the calling station can initiate Call Back by pressing the [CALL BACK] key and hanging up. When the busy station is free a call is automatically set up between the two stations.
Intercom Signal/ Voice Call	Each keystation can be programmed so that incoming, intercom calls will be signalled either, by ringing until the call is answered or, by a short burst of tone, followed by the station automatically switching to hands free mode.
Paging, Internal	A Paging call can be made through the speakers of all keystations that are programmed to accept Paging calls.
Paging, External Zone	A Paging call can be made to an external paging system connected to the Main Equipment via a Line Isolation Unit.
Paging, Internal Zone	Three internal Paging Zones are available on the system. A station can be placed in one zone only.
Paging, All Zones	A Paging call can be made simultaneously through the speakers of all keystations and the external paging system connected to the Telecom Commander HX.

Station Facilities

Speed Dialling Personal	Each station can store up to 20 external telephone numbers, of 32 digits, which only that station can access. Calls are made to Personal Speed Dial numbers by dialling a Speed Dial Code.
Speed Dialling Common	Up to 80 external telephone numbers, of up to 32 digits, can be stored in the system for general use by stations. Calls are made to Common Speed Dial numbers by dialling a Speed Dial Code
Alarm Reminder	A keystation may set an alarm signal to ring at a pre-set time.
Alarm Reminder, Daily	A keystation may set a recurring alarm signal to ring at a pre-set time each day.
Background Music	Music from an external music source can be played through the speakers of the keystations when the station is idle.
Busy Lamp Field	The LED associated with a Direct Station Selection (DSS) key will indicate the status of the station assigned to that key.

Clock Display	Executive Keystations display the current time and date while idle.
Confidence Tone	To confirm the registration of each dial keypress a low level tone is heard by the user as each key is pressed. No tone will be given if the key pressed is not a valid option. The tone is enabled and disabled by Station Programming.
Divert All Calls	This facility enables a keystation user to arrange for all incoming calls to be redirected to another nominated station. Once a call has been diverted it may not be diverted from the second station.
Do Not Disturb (DND)	The DND facility blocks all intercom and paging calls station's assigned secretary. Station number 2 1 does not have this facility.
Group Listening	This facility allows the keystation speaker to be turned on while the handset is in use, so that both sides of the ongoing conversation can be heard over the loudspeaker.
Handsfree Conversation	The keystation's in-built speaker and microphone can be used to make and receive two-way intercom and exchange line calls without lifting the handset. Handsfree volume is adjusted by operating an electronic volume control on the keystation.
Exclusive Line	An exchange line may be provided for exclusive outgoing use at a particular station. Incoming Calls on this line may be answered by any station.
Handset Volume Level Adjustment	A keystation user can adjust the handset volume by operating an electronic volume control on the keystation.
Incoming Ring Tone Selection	Each station can be assigned one of four different types of ringing for incoming calls. This is station programmable.
Manager/Secretary Pairs	When a station (programmed as the "manager" station) selects DND, all calls to that station are automatically forwarded to the associated "secretary" station. The secretary is the only station that can call to the manager's station while DND is selected. Up to three managers can be assigned to the same secretary. When DND is not selected and the manager station is busy, all incoming calls to the station are diverted to the secretary.
Buzz	When a station is assigned as a "manager" station the [FLASH] key (in the idle mode) can be used to 'BUZZ' the secretary station.
Message Waiting	A station user can activate the Message Waiting lamp at an unattended keystation. On return, the keystation user can automatically call the original caller. Up to four messages can be left at a station.

Microphone Mute	When on a call (either hands free or handset), a keystation user can turn off the microphone so the external party cannot hear any local conversation.
On-hook Dialling	All keystations can make calls with the handset on-hook. Progress of the call can be heard through the keystation speaker.
Programmable DSS Keys (1224 only)	Any station within the system may be assigned to any of the 12 DSS keys on the HX1224 keystation.
Programmable Function/DSS Keys (1224 only)	Selection keys 25 to 30 on the HX1224 keystation can be programmed as either a DSS key or a Function key.
Station Self Test	Stations are able to perform self-diagnostic and performance checks. These checks are initiated by a maintenance technician.
Time and Date Setting	Station 2 1 can reset the system clock without using a password.
Two Colour LED Indication	Red and green LEDs are used on keystations to aid visual indication of external calls. The green LEDs indicate 'Activated at this keystation' while the red LEDs mean 'Activated by another station'.

Miscellaneous

Automatic Pause Insertion	When a PABX access code is included in a stored external number or an automatic redial number, the system will automatically insert a pause after the PABX access code is dialed.
Centel/Easycall Compatibility	Commander HX systems are Centel/Easycall compatible. Centel/Easycall codes can be stored in abbreviated dial numbers.
Data	Data devices may be connected to a 2-wire interface, allowing auto dial/auto answer facilities to be used. Either decadic or DTMF dialling modems may be connected to the 2-wire interface in the same way as 2-wire standard telephones. Data devices require Austel authorisation.
Data Protection	The Commander HX has built-in data protection.
Integrated Services Digital Network (ISDN)	The Commander HX systems can be connected to the ISDN network via a suitable Terminal Adaptor.
Music-on-Hold	When a call is held, either the internal or an external music source can be used to provide Music-on-Hold. An external music source must be connected via a Line Isolation Unit.
Night Service	The system has a Day Mode and a Night mode of operation. The mode is selected manually by pressing the [DND/FUNCTION] key on the operator station (number 21).

Night Service Indication When the system is switched to Night mode the LED associated with the [DND/FUNCTION] key on keystation 2 1 will flash slowly and the display will show NIGHT MODE. Calls to the station will change the display.

Programming The system provides three levels of programming:

- Station user
- Operator
- Technician (Password protected)

Programming Data Entry Programming information can be entered from any Executive Keystation.

Station Groups The system allows stations to be allocated in up to 9 groups (4 for the HX308). The station groups are programmable in one of four line-based ring modes.

System Characteristics

Electrical

AC input to Power Supply	240v AC 50Hz
Output Voltage HX308 HX616/1224	+28v, +24v, +12v, +5v, -5v +35v, +25v, +12v, +5v, -5v
Ring Voltage	65vAC
Battery Backup Cut-in when mains input drops to-	170vAC
Battery Backup Cut-out when mains input rises to-	190vAC
Battery Type	Re-chargeable 6 -24AH, 24vDC

Environmental

Operating Temperature	0°C to 45°C
Humidity (Relative)	Up to 90% Non-Condensing

Dimensions

Equipment	Height	Width	Depth
Main Equipment HX 308	400mm	300mm	82mm
Main Equipment HX 616	525mm	350mm	100mm
Main Equipment HX 1224	525mm	350mm	100mm
Keystation	91mm	195mm	229mm
Door Station	129mm	98mm	30mm

Cable Requirements

Keystation	2 pair twisted, 0.5mm 400m max. 2 pair twisted, 0.4mm 256m max.
Single Line Telephone	1 pair twisted, 0.5mm 2350m max. 1 pair twisted, 0.4mm 1500m max.
ODX Station	1 pair twisted, 0.5mm 9400m max. 1 pair twisted, 0.4mm 6000m max.
Door Station	2 pair twisted, 0.5mm 100m max. 2 pair twisted, 0.4mm 65m max.

Interface Specifications

External Music Input	Impedance 600 Ω , 350mVrms
External Amplifier Output	Impedance 600 Ω , 1.24Vrms
C.D.R.	Serial Interface; 8 Bit Data 1 Start Bit 1 Stop Bit No Parity

System Signals and Tones

Station Signals

Ring

External Line	0.4sec ON/0.2sec OFF 0.4sec ON/2secs OFF
Internal	1sec ON/2sec OFF

Tone

Busy	0.5sec ON/0.5sec OFF
Transfer Conference Confirmation	0.2sec ON/0.2sec OFF
Error	0.25sec ON/0.25sec OFF

Keystation LED Functions

Exchange Line Key

Incoming Ring	Flash green 0.1sec ON/0.1sec OFF
Line in use at this station	Steady green
Line in use at another station	Steady red
Exclusive Hold at this station	Flash green 0.1sec ON/0.1sec OFF
Common Hold this station	Flash green 0.5sec ON/0.5sec OFF

DSS Key

Incoming Ring/Hold	Flash red 0.1sec ON/0.1sec OFF
Busy	Steady red

Chapter Two

Hardware Installation

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Chapter Two

Hardware Installation

Introduction

This chapter describes the procedures that must be performed to correctly install the Telecom Commander HX hardware.

The chapter begins with a checklist that summarises the installation procedures. Each point in the checklist is then explained in detail, with additional information and full installation procedures. Where appropriate, illustrations and references are provided to amplify the text.

The Commander HX systems should only be installed by fully trained and qualified personnel.

Safety Precautions


The Telecom Commander HX equipment contains many static-sensitive components.

To reduce the incidence of premature equipment failure, observe the following precautions:

- Always discharge static from yourself before handling any Printed Board Assembly (PBA), and wear an antistatic wrist strap connected to the Main Equipment metal work.
- Always handle PBAs by the edges.
- Never touch PBA tracks or connectors. Contaminants introduced by fingers can cause corrosion and high resistance connections.
- Never touch or straighten components, especially the ceramic sub assemblies. They are physically delicate and finger pressure can fracture component leads (even if the leads do not actually break).
- To protect PBAs against physical damage and damage due to static discharge, always wrap them in an anti-static package and place them in the protective packaging provided with the new item.

System Earthing

The following connections will normally be pre-fitted.

The earth wire (Green/Yellow) of the three core mains lead must be connected to the  terminal within the Main Equipment: with the power lead plugged into a 240V GPO, this will provide the system earth for surge protection.

Surge protection for the Main Board within the HX616 is via the metal threaded stand offs on which the board is mounted.

Surge protection for the Main Board and Expansion Boards within the HX1224 is via the metal screws securing the boards to the cabinet.

Therefore it is essential that all these stand offs and screws are in place before exchange lines are connected to the system.

WARNING: The equipment must be protected against possible surges of current down connected exchange lines. This must be done in one or both of the following ways, before any exchange lines are connected to the system:

- Plug the mains lead in to the Power Outlet (GPO), ensuring that the outlet is switched off.
- Isolate the exchange lines from the system, this may be done at a distribution frame.

lightning Protection

When a Commander HX system is installed in a lightning prone area, line protection equipment, such as Lineshield™, must be fitted to all exchange lines and ODXs.

Lineshield 10 Modules are fitted to the Krone® Modules within the SDF. When Lineshield modules are used the Krone frame must be earthed.

Lineshield is available from Telecom Industries
236 East Boundary Rd
East Bentleigh Vic 3165
Fax No. [03] 563 8822

To order Lineshield 10 Modules send or fax an order form EI 53 or FAM 1.5 3 to Telecom Industries quoting TI inventory number 3 10820.

Customer Responsibilities

The customer is responsible for providing:

- Satisfactory lighting for installation and maintenance.
- A single phase, correctly earthed, 220-250V, 10 amp, 50 Hz, AC General-purpose Power Outlet (GPO) within one metre of the Main Equipment. The outlet must be easily accessible and kept clear of obstructions.

Note: A separately fused GPO is recommended.

AUSTEL Permit label

Every Telecom Commander HX Main Equipment has an AUSTEL permit label attached on the bottom right hand side of the cabinet. Any request to install equipment that does not have the permit label must be referred to local management for investigation.



AUSTEL Permit Label
[IL09]

Installation Checklist

Use the following checklist with the detailed procedures that follow to ensure that Telecom Commander HX is correctly installed .

Check that the equipment supplied is as listed on the System Order Form.

- 1 Unpack the equipment and check for any damage incurred during transit
- 2 Mount the main equipment on the wall
- 3 Mount the SDF on the wall
- 4 Install any expansion boards (HX1224 only)
- 5 Connect the mains power supply. (Do not turn on)
- 6 Connect Main Equipment to the SDF
- 7 Connect station cabling
- 8 Connect exchange lines
- 9 Connect any ancillary cabling (M.O.H., External Paging etc.)
- 10 Connect External Battery Back-Up if required
- 11 Switch on
- 12 Test station cabling
- 13 Install stations and test
- 14 Program the customer data
- 15 Final test of system and features
- 16 Complete customer records

System Order Forms

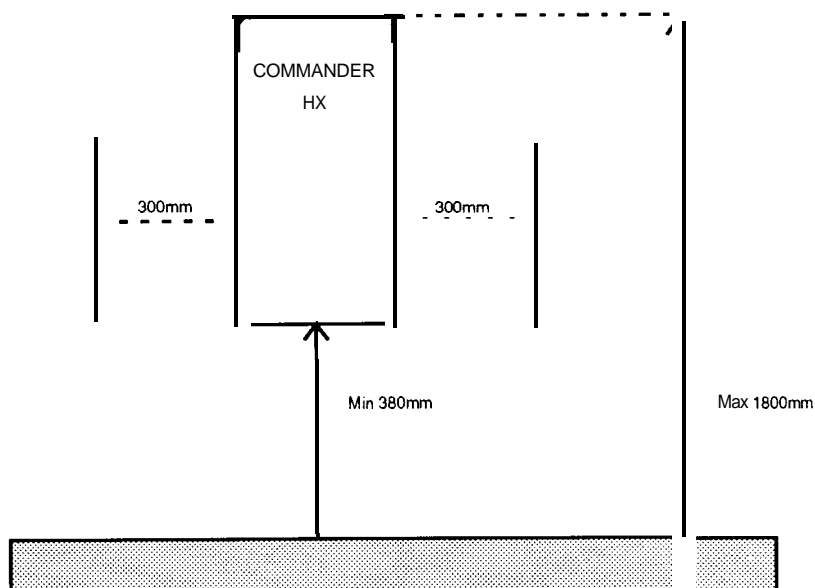
Ensure that the supplied equipment is as listed on the System Order Forms. The System Order Forms supplied with the equipment will be the most current and will directly reflect the programming required.

It is essential that any programming changes made during installation are recorded on the System Order Form programming sheets.

Section 2 of the System Order Forms (*Programming Record Sheets*) should be left with the system, stored in the SDF cover.

Main Equipment

The Main Equipment contains the Main Board, CPU, mains transformer and the power supply. The cabinet must be wall mounted using the supplied template to position the screw holes.



Wall Mounting Main Equipment [IL10]

When choosing a site for the Main Equipment, enough surrounding space must be allowed for maintenance activities. The requirements are:

- Not less than 300mm clear wall space on both sides of the Main Equipment.
- Not less than 1 metre of clear floor space in front of the Main Equipment.
- Suitable access for exchange and station cabling.
- The Main Equipment should be mounted at least 380mm and not more than 1800mm from the floor

Expansion Boards (HX1224 only)

The Main Equipment cabinet has space for three expansion boards. The expansion boards are mounted in slots beneath the Main Board. The boards are mounted with the component side towards the Main Board. Each board has an edge connector that must be pushed firmly into position. Ensure that the board is secured in position by the metal screw provided with the board. Surge protection for the board is via this screw.

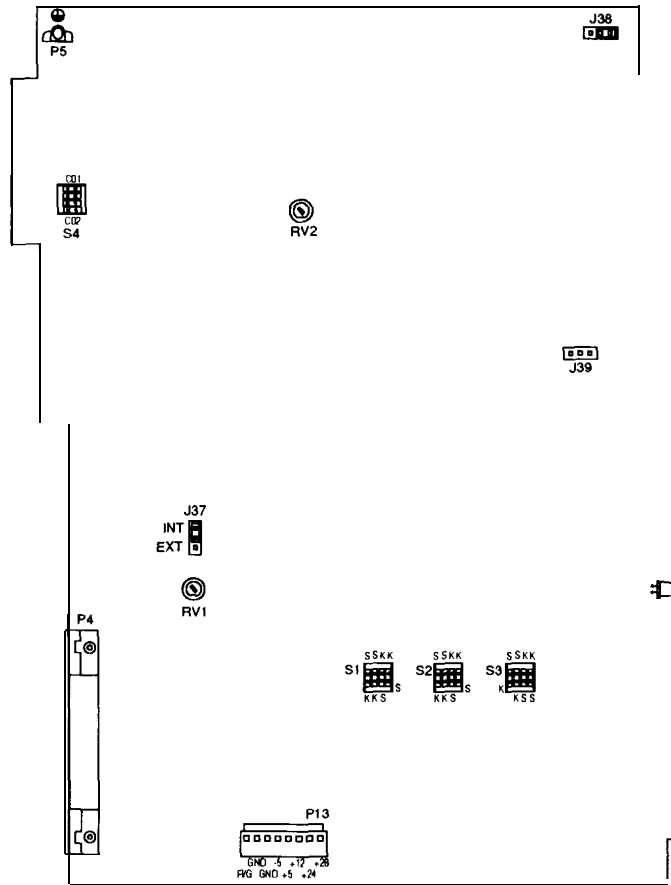
WARNING

The power must be off before inserting or removing
Expansion Boards

Hardware location

Main Board (HX308)

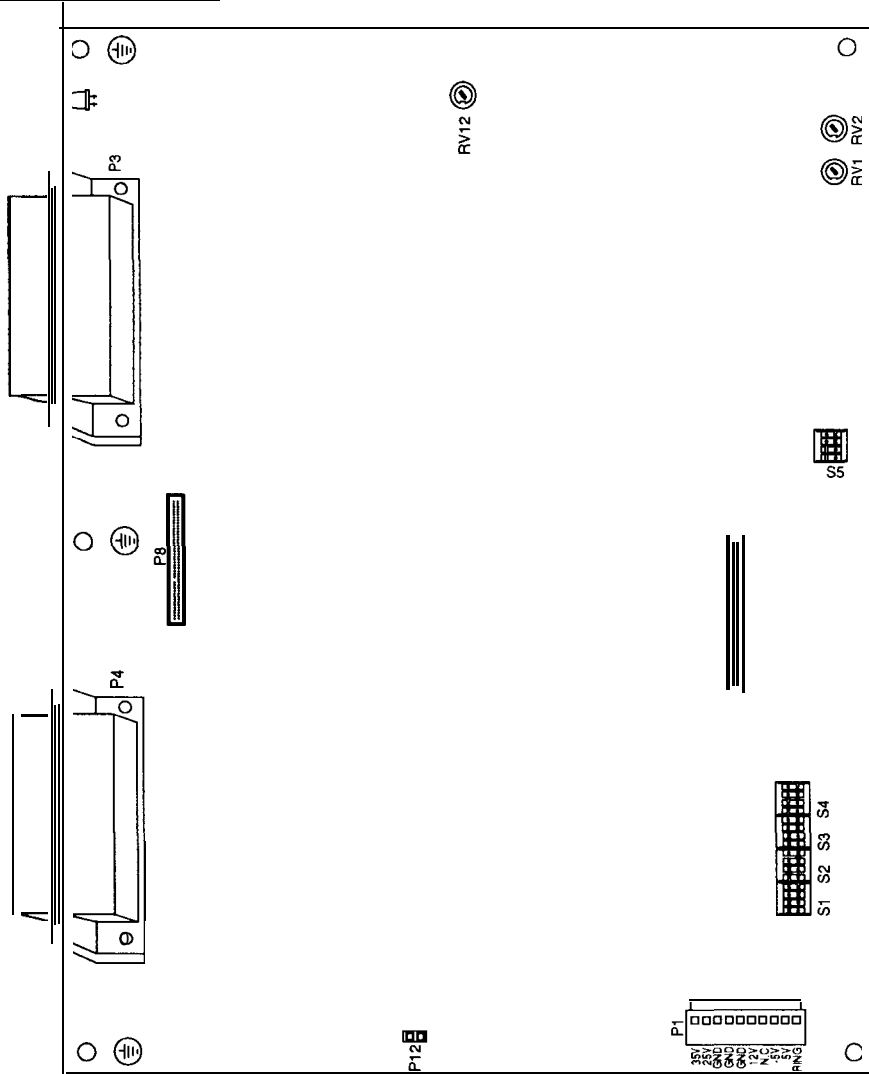
The Main Board in the HX308 contains all the circuitry required to run the system. It can support up to 3 exchange lines and 8 stations. Unlike the larger systems the CPU is an integral part of the board.



HX308 Main Board Component Location
[IL11]

P4	Provides connection to the SDF
P5	Surge earth connection
P13	Provides connection to the power supply
J37	Selects between Internal or External MOH
RV1	Adjusts the music source level
J38	Enable/disable RAM protection during power loss
J39	Not used
RV2	Factory setting, Do Not Adjust
S1, S2, s3	Configuration of 3 Hybrid Station Circuits
s4	Enables/Disables Line switching during power fail

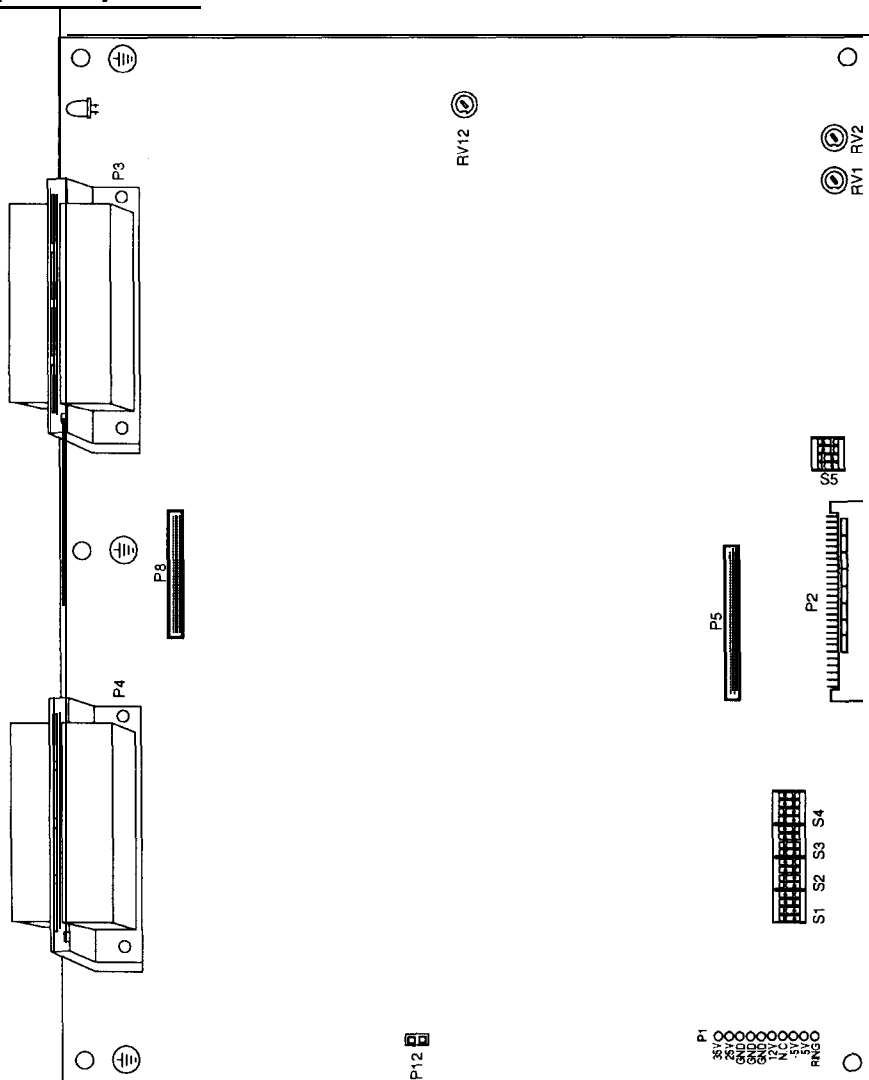
Main Board (HX616)



HX616 Main Board Component Location
[IL12]

P1	Provides connection to the power supply
P3, P4	Provides connection to the SDF
P5, P8	Provides connection to the CPU
P12	Provides connection to the power LED
S1, s2, s3, s4, S5	Configures 4 Hybrid Station Circuits
RV1	Internal MOH Volume Control
RV2	External MOH Volume Control
RV12	Factory setting do not adjust

Main Board (HX1224)

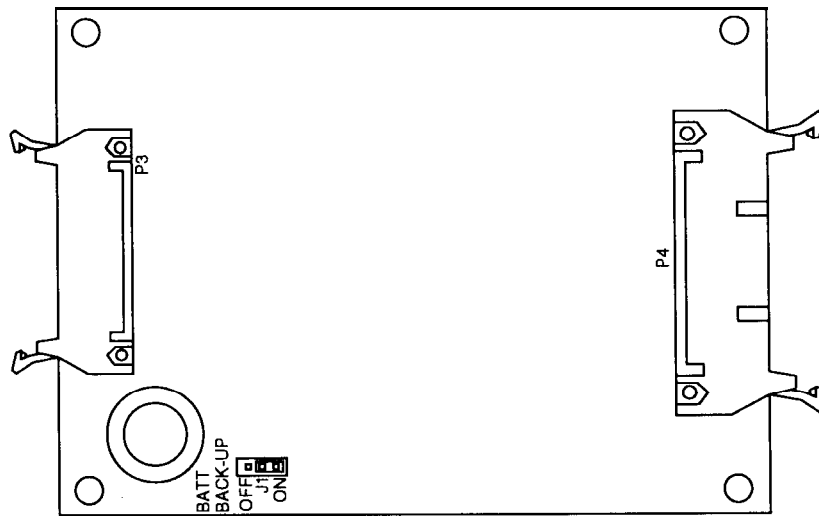


HX 1224 Main Board Component Location
[IL13]

P1	Provides test points for power supply
P2	Provides connection to the back board
P3, P4	Provides connection to the SDF
P5, P8	Provides connection to the CPU
P12	Provides connection to the power LED
S1, S2, S3, S4, S5	Configures 4 Hybrid Station Circuits
RV1	Internal MOH Volume Control
RV2	External MOH Volume Control
RV12	Factory setting do not adjust

**CPU Board
(HX616 and HX1224)**

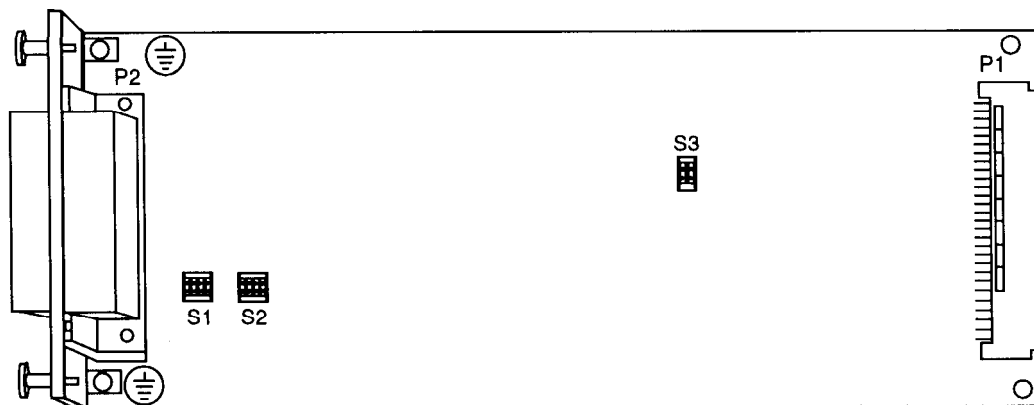
The CPU Board contains the system software and main processor and is mounted on four stand offs on the Main Board. The CPU is supplied with the system, already mounted in it's location.



CPU Board Component Location
[IL14]

P3 and P4	Provide connection to the Main Board
J1	Enable/Disable RAM protection during power down

Expansion Board (HX1224)



Expansion Board Component Location
[IL15]

P1	Provides connection to the connector board
P2	Provides connection to the SDF
S1, s2, s3	Configuration of 2 Hybrid Station Circuits

DIP Switch Setting

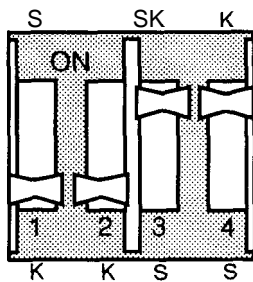
The following DIP switch settings must be made to customise each system.

When DIP switch settings have been changed, a system reset must be performed for the processor to re-read the switches. This can be done by using Command #25.

WARNING
Command #25 will clear any ongoing calls on the system.

HX308

S1, S2 and S3 are used to configure Hybrid Stations 25, 27 and 28 respectively. Each circuit can be set for either a keystation or an SLT. The switch settings are the same for all Hybrid Station Circuits.

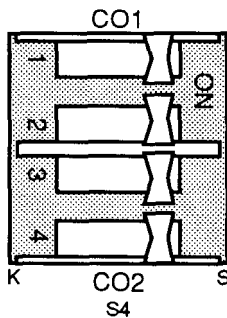


Switch No.	SLT	KST
1 and 2	Both ON	Both OFF
3 and 4	Both OFF	Both ON

DIP Switch per Hybrid Circuit (HX308)
[IL16]

During power interruptions the system can switch exchange lines 1 and 2 directly to stations 27 and 28, enabling outgoing and incoming calls to be handled at these stations. However these stations must be SLTs for the feature to function.

Stations 27 and 28 are connected to Hybrid Circuits: if they are set for keystation use then the powerfail line switching must be disabled. This is done by setting DIP switch S4 as follows:

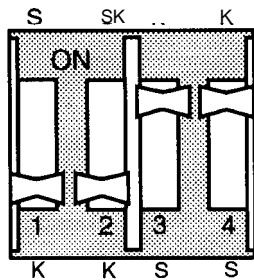


Line No.	Switch No.	SLT	KST
Line 1	1 and 2	Both ON	Both OFF
Line 2	3 and 4	Both ON	Both OFF

DIP Switch for Powerfail Lines
[IL17]

HX616 and HX1224

S1, S2 S3 and S4 are used to configure Hybrid Stations 29, 30, 31 and 32 respectively. Each circuit can be set for either a keystation or an SLT. The switch settings are the same for all Hybrid Station circuits on the Main Board.



DIP Switch per Hybrid Circuit (HX616/1224)
[IL18]

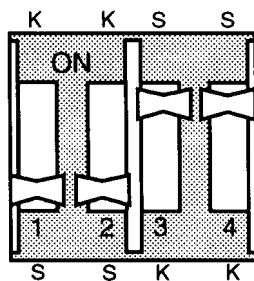
Switch No.	SLT	KST
1 and 2	Both ON	Both OFF
3 and 4	Both OFF	Both ON

Switch S5 must also be set to configure the circuits. S5 has 4 switches, one for each of the hybrid circuits.

Station No.	Switch No.	SLT	KST
29	1	ON	OFF
30	2	ON	OFF
31	3	ON	OFF
32	4	ON	OFF

Expansion Board (HX1224 only)

S1 and S2 are used to configure the two Hybrid Station circuits on this board. Each circuit can be set for either a keystation or an SLT. The switch settings are the same for both circuits.



DIP Switch Per Hybrid Circuit (Expansion Board)
[IL19]

Switch No.	SLT	KST
1 and 2	Both OFF	Both ON
3 and 4	Both ON	Both OFF

Switch S3 must also be set to configure the circuits. S3 has 2 switches, one for each of the hybrid circuits.

Circuit No.	Switch No.	SLT	KST
1	1	OFF	ON
2	2	OFF	ON

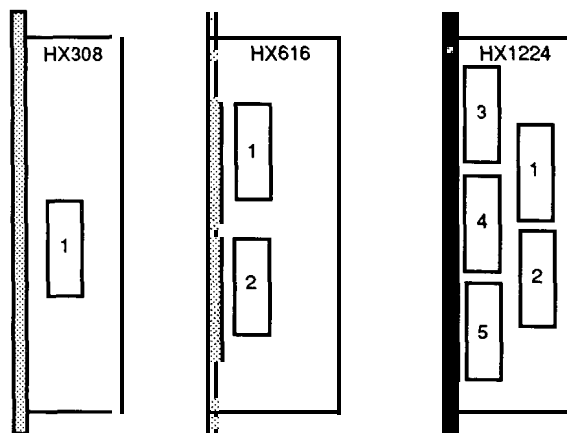
System Cabling

All cabling connections to the Commander HX systems, except the 240V AC power and Back-up Battery, are made via a System Distribution Frame (SDF).

The SDF provides a common terminating point for the Main Equipment, exchange lines, keystations and other ancillary equipment. The SDF will be of the Krone type or other AUSTEL approved connection system. SDF equipment is available as pre terminated kits (Refer to Appendix A).

The Main Equipment is connected to the SDF with 25 pair cable tails to the main boards and 10 pair tails to each expansion board. At the Main Equipment the tail is terminated onto a 50 pin AMP CHAMP connector. The number of tails required by each system is shown below.

HX308	1
HX616	2
HXI 224 Main Board	2
HX1224 Expansion Boards	1 each

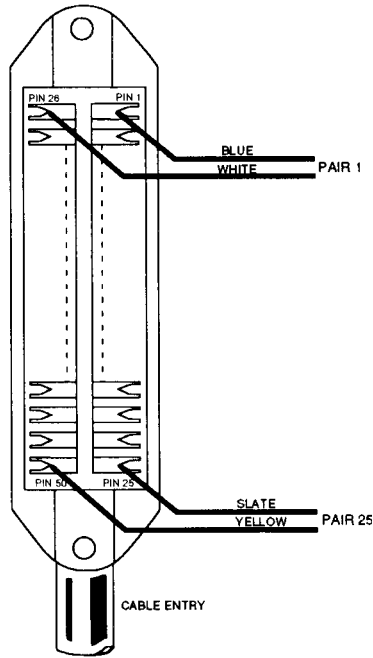


CHAMP Connector Positions
[1L20]

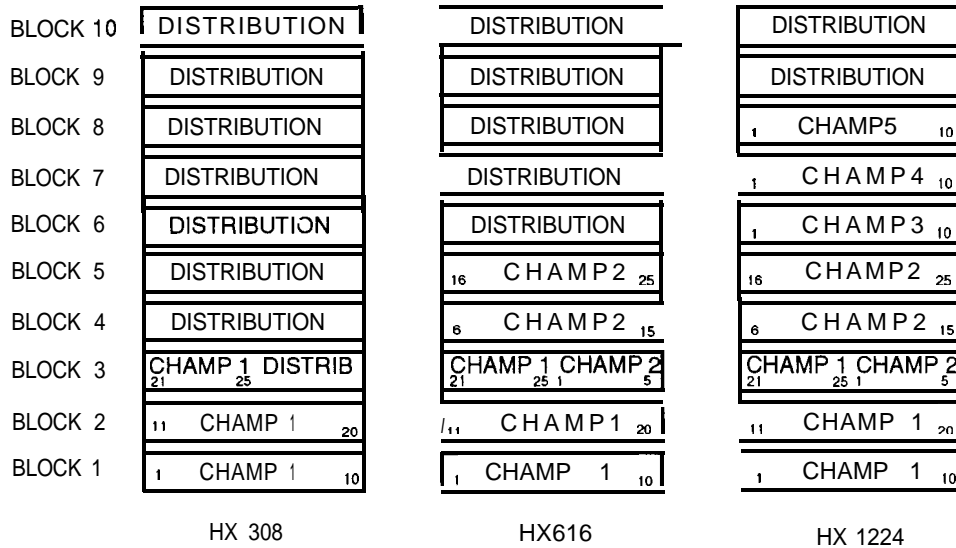
The CHAMP connectors on the Main Equipment are located on the left hand side with the tails downward, leaving through the bottom of the cabinet.

CHAMP Retaining Clips (supplied with the SDF kits) must be fitted prior to refitting the cover.

At the SDF the cable tails are connected to the lower Krone blocks with the distribution field above.



Champ Connector Wiring
[IL21]



SDF Layouts
[IL22]

HX 308 Champ Connector Wire Allocation

AMP 1 Pin No.	Colour	AMP 1 Pin No.	Colour	SDF Pair No.	Description
1	BL	26	W	1	EXCHANGE LINE 1(L+, L-)
2	O	27	W	2	EXCHANGE LINE 2 (L+, L-)
3	G	28	W	3	EXCHANGE LINE 3 (L+, L-)
4	BN	29	W	4	No Connection
5	S	30	W	5	MUSIC ON HOLD INPUT (A, B)
6	BL/W	31	W	6	EXTERNAL PAGE OUTPUT (La, Lb)
7	BL/O	32	W	7	STATION 21 SPEECH (L+, L-)
8	BL/G	33	W	8	STATION 21 DATA (D+, D-)
9	BL/BN	34	W	9	STATION 22 SPEECH (L+, L-)
10	BL/S	35	W	10	STATION 22 DATA (D+, D-)
11	O/W	36	W	11	STATION 23 SPEECH (L+, L-)
12	O/G	37	W	12	STATION 23 DATA (D+, D-)
13	O/BN	38	W	13	STATION 24 SPEECH (L+, L-)
14	o/s	39	W	14	STATION 24 DATA (D+, D-)
15	G/W	40	W	15	STATION 25 SPEECH (L+, L-)
16	G/BN	41	W	16	STATION 25 DATA (D+,D-) (HYBRID)
17	G/S	42	W	17	STATION 26 SPEECH (L+, L-) (ODX)
18	BN/W	43	W	18	No Connection
19	BN/S	44	W	19	STATION 27 SPEECH (L+, L-)
20	S/W	45	W	20	STATION 27 DATA (D+, D-) (HYBRID)
21	BL	46	Y	21	STATION 28 SPEECH (L+, L-)
22	O	47	Y	22	STATION 28 DATA (D+, D-) (HYBRID)
23	G	48	Y	23	DOOR STATION (L1, L2)
24	BN	49	Y	24	DOORSTATION(P-, Pt)
25	S	50	Y	25	DOORUNLOCK(La, Lb)

HX 616 Champ Connectors Wire Allocation

AMP 1 Pin No.	Colour	AMP 1 Pin No.	Colour	SDF Pair No.	Description
1	BL	26	W	1	EXCHANGE LINE1 (L+, L-)
2	O	27	W	2	EXCHANGE LINE 2 (Lt,L-)
3	G	28	W	3	EXCHANGE LINE 3 (L+, L-)
4	BN	29	W	4	EXCHANGE LINE 4 (L+, L-)
5	s	30	W	5	EXCHANGE LINE 5 (L+, L-)
6	BL/W	31	W	6	EXCHANGE LINE 6 (L+, L-)
7	BL/O	32	W	7	STATION 21 SPEECH (L+, L-)
8	BL/G	33	W	8	STATION 21 DATA(Dt, D-)
9	BL/BN	34	W	9	STATION 22 SPEECH (L+, L-)
10	BL/S	35	W	10	STATION 22 DATA(Dt,D-)
11	O/W	36	W	11	STATION 23 SPEECH (L+, L-)
12	O/G	37	W	12	STATION 23 DATA(Dt, D-)
13	O/BN	38	W	13	STATION 24SPEECH (L+, L-)
14	o/s	39	W	14	STATION 24 DATA (D+, D-)
15	G/W	40	W	15	STATION 25 SPEECH (L+, L-)
16	G/BN	41	W	16	STATION 25 DATA(Dt,D-)
17	G/S	42	W	17	STATION 26SPEECH (L+, L-)
18	BN/W	43	W	18	STATION 26 DATA(Dt,D-)
19	BN/S	44	W	19	STATION 27 SPEECH (L+, L-)
20	S/W	45	W	20	STATION 27 DATA(Dt, D-)
21	BL	46	Y	21	STATION 28 SPEECH (L+, L-)
22	O	47	Y	22	STATION 28 DATA(Dt, D-)
23	G	48	Y	23	DOOR STATION 1(L1, L2)
24	BN	49	Y	24	DOOR STATION 1 (P-, Pt)
25	S	50	Y	25	EXTERNALPAGEOUTPUT(La,Lb)

AMP 2 Pin No.	Colour	AMP 2 Pin No.	Colour	SDF Pair No.	Description
1	BL	26	W	26	STATION 29 SPEECH (L+, L-)
2	O	27	W	27	STATION 29 DATA (D+, D-) (HYBRID)
3	G	28	W	28	STATION 30 SPEECH (L+, L-)
4	BN	29	W	29	STATION 30 DATA (D+ D-) (HYBRID)
5	S	30	W	30	STATION 31 SPEECH (L+, L-)
6	BL/W	31	W	31	STATION 31 DATA (D+, D-) (HYBRID)
7	BL/O	32	W	32	STATION 32 SPEECH (L+, L-)
8	BL/G	33	W	33	STATION 32 DATA (D+, D-) (HYBRID)
9	BL/BN	34	W	34	STATION 33 SPEECH (L+, L-) (SLT)
10	BL/S	35	W	35	No Connection
11	O/W	36	W	36	STATION 34 SPEECH (L+, L-) (SLT)
12	O/G	37	W	37	No Connection
13	O/BN	38	W	38	STATION 35 SPEECH (L+, L-) (ODX)
14	o/s	39	W	39	No Connection
15	G/W	40	W	40	STATION 36 SPEECH (L+, L-) (ODX)
16	G/BN	41	W	41	No Connection
17	G/S	42	W	42	No Connection
18	BN/W	43	W	43	No Connection
19	BN/S	44	W	44	No Connection
20	S/W	45	W	45	No Connection
21	BL	46	Y	46	(CDR (SIG GROUND, SIG GROUND)
22	O	47	Y	47	(CDR (TX DATA, NC)
23	G	48	Y	48	(DOOR STATION 2 (LI, L2)
24	BN	49	Y	49	(DOOR STATION 2 (P-, P+)
25	S	50	Y	50	(MUSIC ON HOLD INPUT (A, B)

HX 1224 Champ Connectors Wire Allocation

AMP 1 Pin No.	Colour	AMP 1 Pin No.	Colour	SDF Pair No.	Description
1	BL	26	W	1	EXCHANGE LINE1 (L+, L-)
2	O	27	W	2	EXCHANGE LINE 2 (L+, L-)
3	G	28	W	3	EXCHANGE LINE 3 (L+, L-)
4	BN	29	W	4	EXCHANGE LINE 4 (L+, L-)
5	S	30	W	5	EXCHANGE LINE5 (L+, L-)
6	BL/W	31	W	6	EXCHANGE LINE 6 (L+, L-)
7	BL/O	32	W	7	STATION 21 SPEECH (L+, L-)
8	BL/G	33	W	8	STATION 21 DATA (D+, D-)
9	BL/BN	34	W	9	STATION 22 SPEECH (L+, L-)
10	BL/S	35	W	10	STATION 22 DATA (D+, D-)
11	O/W	36	W	11	STATION 23 SPEECH (L+, L-)
12	O/G	37	W	12	STATION 23 DATA (D+, D-)
13	O/BN	38	W	13	STATION 24 SPEECH (L+, L-)
14	o/s	39	W	14	STATION 24 DATA (D+, D-)
15	G/W	40	W	15	STATION 25 SPEECH (L+, L-)
16	G/BN	41	W	16	STATION 25 DATA (D+, D-)
17	G/S	42	W	17	STATION 26SPEECH (L+, L-)
18	BN/W	43	W	18	STATION 26 DATA (D+, D-)
19	BN/S	44	W	19	STATION 27 SPEECH (L+, L-)
20	S/W	45	W	20	STATION 27 DATA(D+,D-)
21	BL	46	Y	21	STATION 28SPEECH (L+, L-)
22	O	47	Y	22	STATION 28 DATA (D+, D-)
23	G	48	Y	23	DOOR STATION 1(L1, L2)
24	BN	49	Y	24	DOOR STATION 1 (P-, P+)
25	S	50	Y	25	EXTERNALPAGEOUTPUT(La,Lb)

AMP 2 Pin No.	Colour	AMP 2 Pin No.	Colour	SDF Pair No.	Description
1	BL	26	W	26	STATION 29 SPEECH (L+, L-)
2	O	27	W	27	STATION 29 DATA (D+, D-) (HYBRID)
3	G	28	W	28	STATION 30 SPEECH (L+, L-)
4	BN	29	W	29	STATION 30 DATA (D+, D-) (HYBRID)
5	S	30	W	30	STATION 31 SPEECH (L+, L-)
6	BL/W	31	W	31	STATION 31 DATA (D+, D-) (HYBRID)
7	BL/O	32	W	32	STATION 32 SPEECH (L+, L-)
8	BL/G	33	W	33	STATION 32 DATA (D+, D-) (HYBRID)
9	BL/BN	34	W	34	STATION 33 SPEECH (L+, L-) (SLT)
10	BL/S	35	W	35	No Connection
11	O/W	36	W	36	STATION 34 SPEECH (L+, L-) (SLT)
12	O/G	37	W	37	No Connection
13	O/BN	38	W	38	STATION 35 SPEECH (L+, L-) (ODX)
14	O/S	39	W	39	No Connection
15	G/W	40	W	40	STATION 36 SPEECH (L+, L-) (ODX)
16	G/BN	41	W	41	No Connection
17	G/S	42	W	42	STATION 37 SPEECH (L+, L-) (SLT)
18	BN/W	43	W	43	No Connection
19	BN/S	44	W	44	STATION 38 SPEECH (L+, L-) (SLT)
20	S/W	45	W	45	No Connection
21	BL	46	Y	46	CDR (SIG GROUND, SIG GROUND)
22	O	47	Y	47	CDR (TX DATA, NC)
23	G	48	Y	48	DOOR STATION 2 (L1, L2)
24	BN	49	Y	49	DOOR STATION 2 (P-, P+)
25	S	50	Y	50	MUSIC ON HOLD INPUT (A, B)

Expansion Board 1

AMP 3 Pin No.	Colour	AMP 3 Pin No.	Colour	SDF Pair No.	Description
1	BL	26	W	51	EXCHANGE LINE 7 (L+,L-)
2	O	27	W	52	No Connection
3	G	28	W	53	EXCHANGE LINE 8 (L+,L-)
4	BN	29	W	54	No Connection
5	S	30	W	55	STATION 39 SPEECH (L+,L-)
6	BL/W	31	W	56	STATION 39 DATA (D+,D-) (HYBRID)
7	BL/O	32	W	57	STATION 40 SPEECH (L+,L-)
8	BL/G	33	W	58	STATION 40 DATA (D+, D-) (HYBRID)
9	BL/BN	34	W	59	No Connection
10	BL/S	35	W	60	No Connection

Expansion Board 2

AMP 4 Pin No.	Colour	AMP 4 Pin No.	Colour	SDF Pair No.	Description
1	BL	26	W	61	EXCHANGE LINE 9 (L+,L-)
2	O	27	W	62	No Connection
3	G	28	W	63	EXCHANGE LINE 10 (L+,L-)
4	BN	29	W	64	No Connection
5	S	30	W	65	STATION 41 SPEECH (L+,L-)
6	BL/W	31	W	66	STATION 41 DATA (D+, D-) (HYBRID)
7	BL/O	32	W	67	STATION 42 SPEECH (L+,L-)
8	B U G	33	W	68	STATION 42 DATA (D+, D-) (HYBRID)
9	BL/BN	34	W	69	No Connection
10	BL/S	35	W	70	No Connection

Expansion Board 3

AMP 5 Pin No.	Colour	AMP 5 Pin No.	Colour	SDF Pair No.	Description
1	BL	26	W	71	EXCHANGE LINE 11 (L+, L-)
2	O	27	W	72	No Connection
3	G	28	W	73	EXCHANGE LINE 12 (L+, L-)
4	BN	29	W	74	No Connection
5	S	30	W	75	STATION 43 SPEECH (L+, L-)
6	BL/W	31	W	76	STATION 43 DATA (D+, D-) (HYBRID)
7	BL/O	32	W	77	STATION 44 SPEECH (L+, L-)
8	BL/G	33	W	78	STATION 44 DATA (D+, D-) (HYBRID)
9	BL/BN	34	W	79	No Connection
10	BL/S	35	W	80	No Connection

Exchange lines

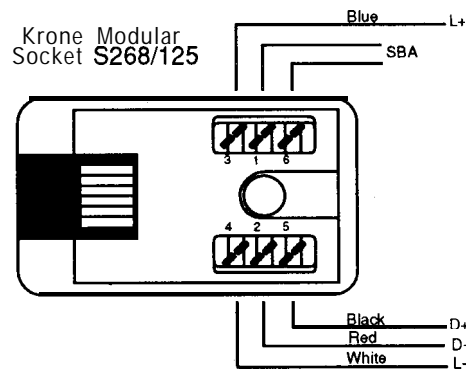
Each exchange line requires 2 wires from the SDF to the nearest distribution frame. Exchange lines are terminated within the distribution area of the SDF.

Note: Surge protection must be provided before exchange lines are connected to the system (see System Earthing).

Keystations

Each keystation requires 4 wires from the SDF to the station socket. Usual installation cabling practices should be adhered to, using 2 pair, 0.5mm wire cable. The maximum distance permitted between the keystation and the main equipment is 400m (256m if 0.4mm cable is used). If existing cabling is used a modular to 610 socket adaptor (S268/ 128) must be used.

SDF	605/610 with mod adapt	Modular Socket	Colour
L-	Pin 2	Pin 4	White
L+	Pin 6	Pin 3	Blue
D-	Pin 5	Pin 2	Red
D+	Pin 1	Pin 5	Black



Krone Modular Socket Wiring
[IL23]

Station Based Amplifier (SBA)

Under certain conditions the station software will send ring tone out on the two wires marked SBA (see IL2 3). These signals may be connected to a T105 amplifier, S361/26.

An SBA cannot be used with wall mounted stations or modular adaptors.

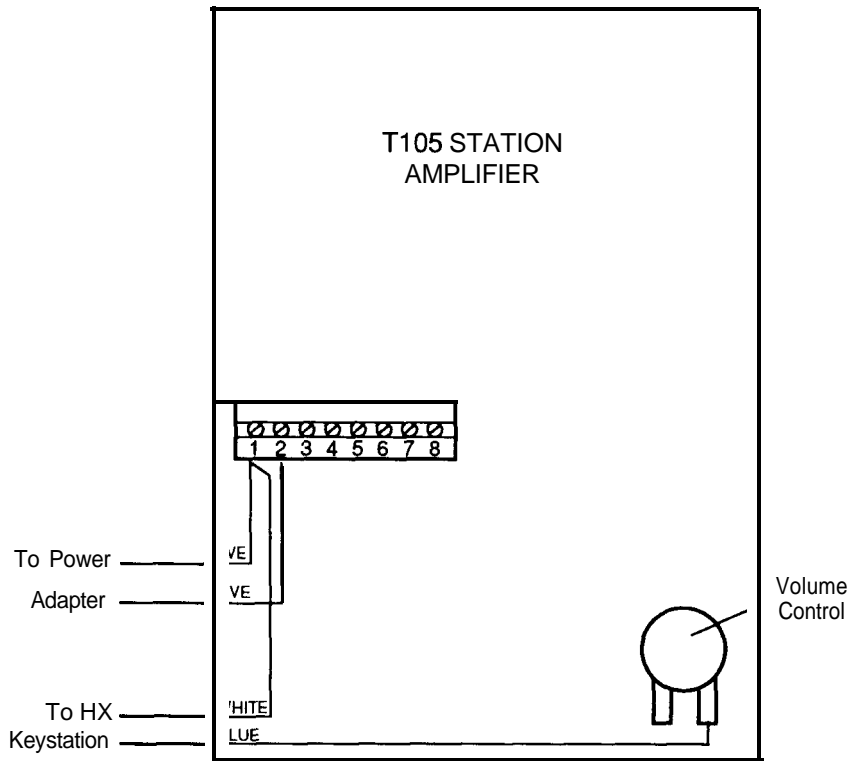
To Connect a Station Based Amplifier

- Replace the 4-wire keystation line cord with a 6-wire line cord (S546/32 LC-E-6W)
- Connect two wires of a 2pr cable to the keystation socket, the white wire to pin 1 and the blue wire to pin 6
- Connect the white wire to terminal 1 in the T105
- Solder the blue wire to the volume control (R1) in the T105 (see Illustration [IL24]).

Single line Telephones

Each SLT requires 2 wires from the SDF to the station socket. Usual installation cabling practises should be adhered to, using 2 pair, 0.5mm wire cable. The maximum distance permitted between the SLT and the Main Equipment is 2350m (1500m if 0.4mm cable is used).

SDF	605/610 Socket	Modular Socket	Colour
L-	Pin 2	Pin 4	White
L t	Pin 6	Pin 3	Blue



Station Based Amplifier Wiring
[1L24]

ODX

An ODX is an SLT that is connected to the Commander HX via network cabling. ODXs must be connected to the circuit designated as an ODX.

These circuits have the network isolation barrier that is an AUSTEL safety requirement.

The maximum allowed distance between an ODX and the main equipment is 9.4km (6km if 0.4mm cable is used).

Where Voicelink C is used to provide the ODX connection through the network, Voicelink C limits apply.

Ancillary Cabling

Music on Hold (MOH)

The Telecom Commander HX has an internal MOH facility to provide music on a line when it is placed on Hold.

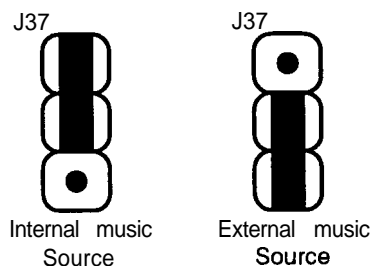
An external music source can be connected to the system to be used in place of the internal melodies.

2 wires of a 4 wire cable are connected from the external music source via a Line Isolation Unit (LIU) to the SDF. These are connected to Champ 1 in the HX308 and Champ 2 in the HX616 and 1224.

HX308

A moveable link is used to select between internal or external music sources.

The link, marked "J37", is located on the main board just to the left of centre (see IL1 1). The moveable link sits across two pins depending on which music source is required.



Music Source Selection HX308
[IL25]

Below J37 is the volume control for the music source, marked RV1.

HX616/1224

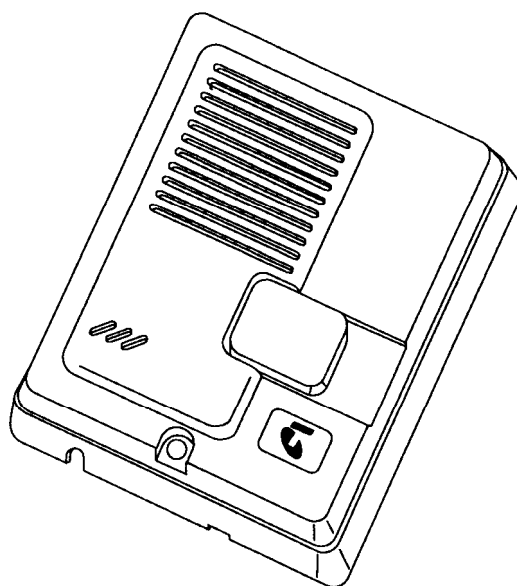
Selection of the music source is software controlled, using the programming command #2 6.

External Paging

An external paging device may be connected to the system via Champ 1 in all systems. The amplifier is connected via a Line Isolation Unit (LIU) and 605/611 plug and socket to the SDF.

Door Station

The HX616 and the HX1224 provide connections for two Door Stations. The HX308 has connections for one.



Door Station
[IL26]

4 wires are required from the main equipment to the Door Station. When terminating the cable, particular care must be taken to ensure that the polarity of the wires is correct. The door station is polarity conscious and will not operate if it is terminated incorrectly. The maximum distance permitted between the Door Station and the main equipment is 100m (65m if 0.4mm cable is used).

SDF	Wire Colour	Door Station terminal
L1	White	L1
L2	Blue	L2
P-	Red	P-
Pt	Black	Pt

The HX308 also provides a Door Unlock feature. When a keystation is in conversation with the Door Station, dialling '1' will operate a set of normally open contacts for a preset period. The door unlock contacts must be connected via an AUSTEL approved Line Isolation Unit.

	HX308		HX616/1224	
	Champ	Pair	Champ	Pair
Door Station 1	1	23 and 24	1	23 and 24
Door Station 2		N/A	2	23 and 24
Door Lock	1	25		N/A

The following programming commands must be used to provide the Door Station functions.

- #59 Defines the length of time the Door Unlock contacts will be activated
- #63 Defines which stations will ring when the Door Station is activated

Note: If the assigned stations are all busy there will be no indication that the Door Station has made a call.

Powerfail lines

In the event of a mains power failure where system batteries have not been provided or are discharged, a number of predetermined exchange lines will be switched to designated, Single Line Telephones (one exchange line per SLT) within the system. Incoming and outgoing calls will then be able to be made from the Single Line Telephone but no system facilities will be available.

Not all exchange lines are switched in the event of a power failure. The exchange lines that are switched are shown in the following table.

System	Exchange Line	Station No.
308	1	27 (see note)
	2	28 (see note)
616	1	33
	2	34
1224	1	33
	2	34
	3	37

Note: In the HX308 system, these station circuits are hybrid circuits and must be set for SLTs for this facility to function. (see *DIP Switch Settings*)

Mounting User Equipment

Keystations - Wall Mounting

To mount a Commander HX keystation on the wall:

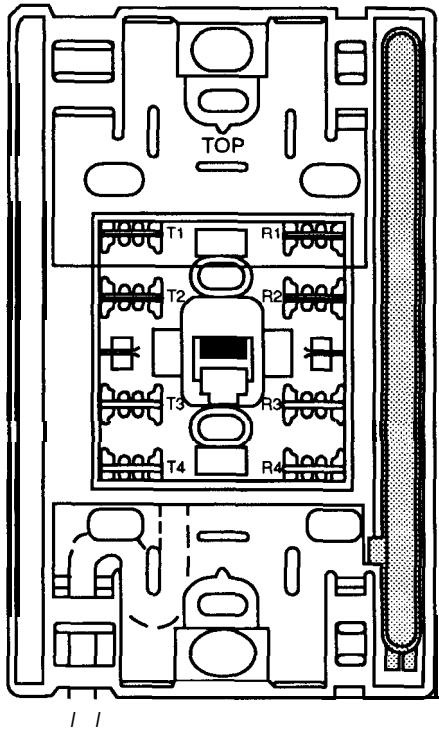
- Obtain a Wall Mounting Plate S268/87
- Remove the front cover
- Feed the cable through the plate and mount the plate on the wall.
- Terminate the cable as follows:

SDF	Cable	Wall Plate	Socket
L-	White	T1	Pin 4
L t	Blue	R1	Pin 3
D-	Red	T2	Pin 2
D t	Black	R2	Pin 5

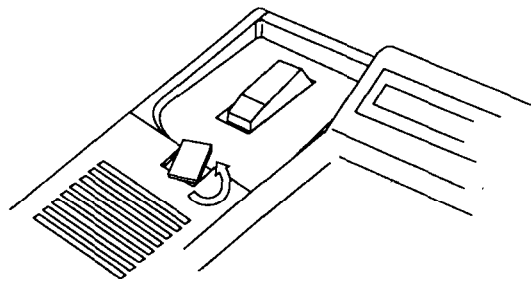
- Replace the front cover.

On the keystation

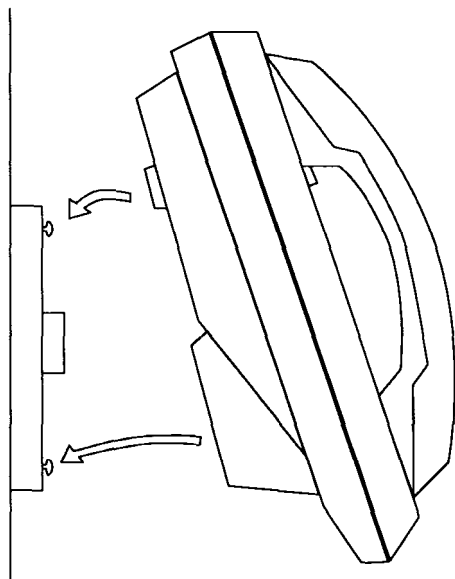
- Remove the keystation foot plate, rotate the foot plate 180 degrees and refit over the directory tray.
- Pull the spring loaded handset rest out and rotate 180 degrees to the wall mount position.
- Remove and discard the keystation line cord.
- Insert the short line cord supplied with the Wall Mounting Plate into the keystation socket.
- Insert the other end of the short line cord into the socket in the Wall Mounting Plate.
- Mount the keystation over the 2 protruding studs on the Wall Mounting Plate.



HX Wall Mounting Plate
[IL27]



Handset Rest
[IL28]



Wall Mounting the Keystation
[IL29]

Call Detail Recorder (CDR)

CDR is available on the HX616 and HX1224 systems and provides call record information. This is transmitted via an RS232 port connected to champ connector 2. A printer, a Call Management System (CMS) or a Telephone Information Management System (TIMS) can be connected to this output to print or store the information. A Data Line Isolation Unit (DLIU) may be required.

Up to 50 call records are recorded on each page. The title and column headings are printed at the top of each new page. The Commander HX does not support hardware hand-shaking or software flow control, so that if the printer etc. fails, runs out of paper or the connection is broken for some reason, then some call records will be lost.

Output Format

The following is a sample of a CDR printout for an HX616.

<< STATION MESSAGE DETAIL RECORDING >> COMMANDER HX 616									
CLASS	DATE	TIME	LINE	DUR	ST#	DIALED#	RING	AC	
00	INC	02/07/93	10:07:03	03	00:01:55	21			
01	OTG	02/07/93	10:09:43	02	00:04:34	35	8183888		
02	INC	02/07/93	10:15:07	03	00:02:10	22			
03	OTG	02/07/93	10:18:14	04	00:01:15	31	001112129792727		
04	INC	02/07/93	10:24:33	02	00:00:17	21			
05	INC	02/07/93	10:25:54	02	00:01:43	28			
06	OTG	02/07/93	10:21:19	06	00:08:27	27	092583698		
07	OTG	02/07/93	10:31:03	03	00:02:22	24	11661		

Column 1

Call Number

The call records are numbered sequentially from 00 to 49 on each page.

Column 2 (CLASS)

Class of Call

The class or type of call is shown as follows:

Incoming Call	INC
Outgoing Call	OTG

Column 3 (DATE)

Date of Call

Indicates the date the call was recorded in the format Day/Month/Year.

Column 4 (TIME)

Time of Call

Indicates the start time of the call in 24 hour format (hr:min:sec).

Column 5
(LINE)

Line Number

Indicates the number of the outgoing line in the system.

Column 6
(DUR)

Duration of the call

Indicates the duration of the call in hours, minutes and seconds (hr:min:sec).

Column 7
(ST#)

Station Number

Indicates the number of the station making or receiving the call.

Column 8
(DIALED#)

Dialled Number

Indicates the digits dialled on an outgoing call. The CDR may be programmed to strip the last two digits of a dialled number to maintain privacy.

Columns 9 and 10
RING and AC

Not Used

Note: An exchange line call that is made or answered at one station and then transferred to another, will be shown as two call records. (see items 04 and 05 in the sample printout)

Programming Options

The CDR is enabled using programming command #87. There are three options in this command:

1. CDR enabled or disabled.
2. Print incoming calls only or incoming and outgoing calls.
3. On outgoing calls print the full digits dialled or for privacy, eliminate the last two digits.

Installation

The Telecom 9100 is an AUSTEL approved Call Management System and will be the CMS most commonly connected to the Commander HX.

The following instructions are intended for the installation of the 9100, in addition to the 9100 Installation Manual. If a different device is to be connected then these instructions may be used as a guide only.

The CDR output is connected to the SDF via Champ 2.

The output requires one pair of a 2 pair, 0.5mm cable. This is terminated at the SDF and on a 9pin Female D connector at the CMS. The CMS must be as close as possible to the Main Equipment (max 5m at 2400 baud).

SDF	Colour	CMS
CDR Sig Gnd	White	Pin 2
CDR TX DATA	Blue	Pin 5

Data is transmitted on the CDR output at the end of each exchange line call (Min duration 5 secs). The data rate is 2400 baud (default). This may be changed using command code #58, remembering that the data rate at the CMS must be set to match the Commander rate. If data corruption is experienced select a lower Baud rate.

Using command code #87:

- Enable CDR output
- Select the range of calls to be recorded
- Select whether all digits should be recorded

Note: The CDR can report all digits or, for privacy, the last two digits of the dialled number can be suppressed. The Telecom 9 100 can also suppress the last two digits, so the output for the Commander HX should not be set for privacy or the last four digits will be omitted.

Set the Customer Switching System within the Telecom 9100 to 'Commander N series' (system code 2) and the Baud rate to 2400.

To confirm the operation of the CDR output, select 'immediate print' mode on the CMS. This will allow data, received by the CMS, to be printed as it is received.

Checking the Data line

Data flow to the CMS can be verified by observing the Data Flow LED on the keyboard panel of the 9100.

A second LED labelled "Loop Test" must be lit, indicating that the polarity of the pair is correct.

There are a number of ways to check that the data is being transmitted, oscilloscopes and breakout boxes are very good for displaying data flow, but these are not always available. The following tests will produce a reliable indication of whether the CDR output is functioning or not.

- Using a multimeter measure the voltage on the TX lead with respect to the Signal ground. While idle (no data flow) the following voltages should be present.

Connected to the CMS -2.5V	Not Connected to the CMS -5v
-------------------------------	---------------------------------

When data is transmitted the reading on the multimeter will change but is not present long enough to be measured.

- Listen across the TX lead and Signal Ground using a test telephone (Buttinski S5/ 100) in MONITOR mode. Data can be heard as a short burst of noise.

Chapter Three

System Programming

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Chapter Three

System Programming

Introduction

This chapter describes the commands available to control and customise the operation of the Telecom Commander HX

The first part provides general information on programming and how to enter the programming mode.

The second part describes the commands in detail.

IMPORTANT

All programming changes must be recorded in the programming sheets.

General Information

When the Commander HX is first turned on, it will automatically load the factory (default) settings for the system. This will provide a fully functional system, however some additional programming may be required to customise the system.

Any changes will be held in the system memory. To prevent these changes being lost due to a power failure, a jumper on the main board must be set in the correct position (see Chapter 2 Hardware Installation).

Programming commands may be entered from any Executive Keystation within the system, provided that the Programming Mode has been enabled. Commands are entered with the handset in the 'On-hook' position.

During programming some of the keystation keys are assigned new functions. These are explained under each command heading where necessary.

If incorrect data is entered the system will respond by displaying "PGM ERROR" momentarily and the station will return to the idle mode.

HX Programming Codes

The programming commands used to access the system memory are listed below. There are two types of codes:

#10 to #19 may be used at any time and are intended for use by the station user. These commands will only affect the station at which the programming is executed.

#21 to #99 may only be accessed when the Programming Mode has been enabled, using command **#20**.

Code	Description	Code	Description
# 10	Set Call Mode	# 50	TLB Timing
# 11	Set Divert	# 51	PABX Flash Timing
# 12	Reserved	# 52	Hold Recall Time
# 13	Ring Frequency	# 53	Transfer Recall Time
# 14	Key Tone	# 54	Alarm Duration
# 15	Headset Mode	# 55	Set Date and Time
# 16	Key Programming (1224 only)	# 56 - # 57	Reserved
# 17	Station Speed Dial	#58	RS232 Baud Rate (616/1224 Only)
# 18 - # 19	Reserved	# 59	Door Open Time (308 only)
# 20	Enable Programming	# 60	Line Ring Mode
# 21	Read Toll Password	# 61	Night Ring Station
# 22 - # 23	Reserved	# 62	Day Ring Station
# 24	Read Software Version	# 63	Door Ring Station
# 25	System Reset*	# 64 - # 70	Reserved
# 26	Music Source (616/1224 only)	# 71	Access Barring Speed Dial Exemption
# 27 - # 29	Reserved	# 72	Station Toll (Access Barring Table)
# 30	Station Class of Restriction	# 73	Boss and Secretary
# 31	Line Access	# 74 - # 75	Reserved
# 32	Page Enable	# 76	Line Group Assign
# 33	Page Include	# 77	Station Group Assign
# 34	Internal Paging Zone	# 78	Set Toll Password
# 35	Station Night Restriction	# 79 - # 80	Reserved
# 36 - # 39	Reserved	# 81	Lamp and Ring Test
# 40	Line Mode	# 82 - # 83	Reserved
# 41	Reserved	# 84	Fax Station Assign (308 only)
# 42	Line Dial Type	# 85 - # 86	Reserved
# 43	Line Type	#87	CDR Selection (616/1224 Only)
# 44	PABX access code	#88 - # 99	Reserved
# 45	2nd Carrier Code		
# 46 - # 49	Reserved		

*Not available in all versions of software.

Description of Programming Commands

#10

Set Call Mode This command is used to set the station Call Mode.

Input Data

[0]	Sets Ring mode
[1]	Sets Voice mode

Example This example sets Voice mode for this station.

Action

Display

Press the [#] key

PROGRAM CODE :

Enter the command number (10)

SET CALL MODE

Enter the Voice mode code (1)

VOICE CALL

Press [#] to return to the idle mode

DATE/TIME

Default All stations are set to Ring mode.

#11

Set Divert This command is used to initiate a call diversion at this station.

Input Data [Digits] Enters the station that will receive the diverted calls.
 [HOLD] Clears the station number and turns diversion off.

Example This example diverts all incoming calls to this station, to station number 22, and in the second example cancels the diversion.

To Set Divert:

Action	Display
Press the [#] key	PROGRAM CODE :
Enter the command number (11)	SET DIVERT
<i>After two seconds</i>	DIVERT ALL :
Enter the station number (22)	DIVERT ALL : 22
Press [#] to return to the idle mode	DATE/TIME
<i>The red LED associated with the [DIVERT] key will glow.</i>	

To Cancel the Diversion:

Press the [#] key	PROGRAM CODE :
Enter the command number (11)	SET DIVERT
<i>After two seconds</i>	DIVERT ALL : 22
Press the [HOLD] key	DIVERT ALL :
The station returns to the idle mode	DATE/TIME
<i>The red LED associated with the [DIVERT] key will go out.</i>	

Default None

#13**Ring Frequency**

This command is used to change the ringing at this station. When the command is initiated a test ringing tone will be heard, pressing the [*] key will change the test tone to the next frequency. The [#] key is pressed to confirm the tone selection.

Input Data

[*] Steps through the four ring frequencies.

Example

In this example ring frequency 2 is chosen.

Action**Display**

Press the [#] key

PROGRAM CODE :

Enter the command number (13)

RING FREQUENCY

Press the [*] key, Test tone is heard.

FREQUENCY 3

Press the [*] key, Test tone is heard.

FREQUENCY 4

Press the [*] key, Test tone is heard.

FREQUENCY 1

Press the [*] key, Test tone is heard.

FREQUENCY 2

Press [#] to return to the idle mode

DATE/TIME

Default

All stations are set to Ring Frequency 3.

#14

Key Tone

This command is used to Enable/Disable the confidence tone facility. When enabled the registration of each valid keypress is confirmed by a low level tone.

Input Data

[0] Disables the facility.
[1] Enables the facility.

Example

The following example enables the confirmation tone for this station.

Action

Display

Press the [#] key

PROGRAM CODE:

Enter the command number (14)

KEY TONE:

Enter the Enable code(1)

ENABLED

Press [#] to return to the idle mode

DATE/TIME

Default

Confirmation tone is disabled for all stations.

#15

Headset Mode

This command is used to enable or disable Headset mode.

Input Data

- [0] Disables the facility.
- [1] Enables the facility.

Example

The following example enables Headset mode for this station.

Action

Display

Press the [#] key

PROGRAM CODE :

Enter the command number (15)

HEADSET MODE

Enter the Enable code (1)

ENABLED

Press [#] to return to the idle mode

DATE/TIME

Default

Headset Mode is disabled for all stations.

#16

Key Programming (HX1224 only)

This command is used to program selection keys 13 to 30.
 Keys 13 to 24 are DSS Keys
 Keys 25 to 30 are DSS or Function Keys

Input Data

[Selection] indicates which key is to be programmed.
 [Digit] enters the required function or station number.

- 11 Memory (Speed Dial)
- 12 Page
- 13 Call-back
- 14 Pick-up
- 15 Divert
- 16 Conference
- 21 to 44 DSS keys for stations 21 to 44

Example

This example assigns selection key 25 as DSS33 and assigns key 30 as a [MEMORY] key.

Action	Display
Press the [#] key	PROGRAM CODE :
Enter the command number (16)	KEY PROGRAMMING
Press the required selection key [25]	KEY25 : SPEED DIAL
Enter the station number (33)	Y25 : SPEED DIAL 33
Press the next selection key (30)	KEY30 : CONF
Enter the Function number (11)	KEY30 : CONF 11
Press [#] to return to the idle mode	DATE/TIME

Default

Selection key	Use	Selection key	Use
13	DSS21	22	DSS30
14	DSS22	23	DSS31
15	DSS23	24	DSS32
16	DSS24	25	MEMORY
17	DSS25	26	PAGE
18	DSS26	27	CALLBACK
19	DSS27	28	PICK-UP
20	DSS28	29	DIVERT
21	DSS29	30	CONF

#17

Station Speed Dial

This command is used to store Speed Dial numbers. Each station may store up to 20 Personal Speed Dial numbers. System-Speed Dial numbers can only be stored by station number 2 1. Each Speed Dial number may contain up to 32 digits.

Input Data

- [Digit] Enters the speed dial number and the number to be stored.
- [MEMORY] Used to store the number and step to the next speed dial number.
- [HOLD] Clears an entry.

Note: As a short cut the [MEMORY] key may be pressed instead of dialing 17 to enter the command.

Example

This example stores the number (03) 555 1234 in speed dial number 05.

Action

Display

Press the [#] key	PROGRAM CODE :
Enter the command number (17) or press the [MEMORY] key.	STN SPD DIAL
Enter the Speed Dial number (05)	SPD05 :
Enter the number to be stored	SPD05:035551234
Press the [MEMORY] key	SPD06 :
Press [#] to return to the idle mode	DATE/TIME

Default

None

#20

Enable Programming

Enables or disables Technician Programming Mode.

After entering the password the display will show whether programming is enabled or disabled.

Note: If no programming is done for four minutes, the system will automatically revert to the Programming Disabled mode.

Input Data

[*] Toggles between enable and disable.

Example

Action

Display

Press the [#] key

PROGRAM CODE :

Enter the command number (20)

PASSWORD ?

Enter the Password (1234)

PRG DISABLE

Press the [*] key

PRG ENABLE

Press the [#] to return to the idle mode

DATE/TIME

Default

Programming is disabled.

#21**Read Toll Password**

This command allows you to read the toll password that is set using command **#78**.

Input Data

None

Example

Action**Display**

Press the [#] key

PROGRAM CODE :

Enter the command number (2 1)

TOLL P.WORD 0 9 8 7

Press [#] to return to the idle mode

DATE/TIME

Default

None

#24

Read Software Version

The software version of the Main Equipment and this keystation will be shown on the display.

Input Data

The [*] toggles between the current software of the Main Equipment and the keystation.

Example

Action	Display
Press the [#] key	PROGRAM CODE :
Enter the command number (24)	KSU:VERX.X
Press the [*] key	KTS : VXX
Press the [#] to return to the idle mode	DATE/TIME

Default

None

#25

System Reset

This command will initiate a system reset. The reset can either be a “warm reset” where stored customer data is loaded into the system, or a “cold reset” which will restore the default settings.

Input Data

- [*] Toggles between Warm and Cold resets.
- [RD] Pressing and holding the [RD] key for a few seconds will initiate the reset.

Example

The following example will initiate a cold reset.

Action	Display
Press the [#] key	PROGRAM CODE :
Enter the command number (25)	PASSWORD ?
Enter the system password (12 34)	SYSTEM RESET
Press the [*] key	RESET SOFT
Press the [*] key	RESET DEFAULT
Press and hold the [RD] key for 2 seconds	COMMANDER HX616
OR	
Press the [#] key to return to the idle mode	

Default

None.

WARNING
A system reset will terminate all existing calls

Note: This command may not be available in all versions of software. If not available, cycle mains power to reset system.

#26

Music Source

This command is used to select either the internal or external music source for MOH and Background Music.

This command only applies to the HX616 and 1224 systems. The music source is selected by a hardware link in the HX308.

Input Data

[*] Toggles between Internal and External music source.

Example

The external music source is chosen in this example.

Action

Display

Press the [#] key

PROGRAM CODE :

Enter the command number (26)

MUSIC SOURCE

Press the [*] key

INTERNAL

Press the [*] key

EXTERNAL

Press [#] to return to the idle mode

DATE/TIME

Default

The music source is set to Internal.

#30**Station Class of Restriction**

This command assigns a class of restriction to each station. The Class of Restriction allows or denies codes to be dialed out on exchange lines according to the tables set up in command #72.

Input Data

[*] Steps through the station numbers.

[0] CLASS A (Unrestricted)
 [1] CLASS B (Barred IDD)
 [2] CLASS C Barred IDD and STD)
 [3] CLASS D (Spare)
 [4] CLASS E (Intercom)

Example

The following will assign class of restriction B to stations 24 and 25

Action	Display
Press the [#] key	PROGRAM CODE :
Enter the command number (30)	STN CLASS
Press the [*] key	STN21:CLASS A
Press the [*] key three times.	STN24:CLASS A
Enter the class code (1)	STN24:CLASS A 1
Press the [*] key	STN25:CLASS A
Enter the class code (1)	STN25:CLASS A 1
Press [#] to return to the idle mode	DATE/TIME

Default

All stations are assigned Class of Restriction A.

#31

Exchange line Access

This command designates which exchange lines can be accessed by each station for outgoing calls. This programming does not affect incoming calls.

Input Data

- [*] Steps through the station numbers.
- [RD] Steps through the exchange lines per station.
- [0] Disables access to this line.
- [1] Enables access to this line.

Example

In this example station number 26 is barred access to exchange line 2.

Action	Display
Press the [#] key	PROGRAM CODE:
Enter the command number (3 1)	LINE ACCESS
Press the [*] key to go to STN 2 1	STN21
Press the [*] key 5 times to step through the stations to STN 26	STN26
Press the [RD] key	LINE01 : ENABLED
Press the [RD] key again	LINE02 : ENABLED
Enter the disable code (0)	LINE02 : ENABLED0
Press [#] to return to the idle mode	DATE/TIME

Note: Pressing the [*] key steps through each of the stations: then pressing the [RD] key shows whether access is enabled, for that station, to each line.

Default

All stations have access to all lines.

#32

Page Enable Enables or disables access to the paging facility for each station.

Input Data

- [*] Steps through the station numbers.
- [0] Disable Paging Access for this station.
- [1] Enable Paging Access for this station.

Example In this example station number 22 is denied access to the Paging facility.

Action	Display
Press the [#] key	PROGRAM CODE :
Enter the command number (32)	PAGE ENABLE
Press the [*] key	STN21 : ENABLED
Press the [*] key	STN22 : ENABLED
Enter the disable code (0).	STN22 : ENABLED0
Press [#] to return to the idle mode	DATE/TIME

Default All stations have access to the Paging facility.

#33

Page Include

This command defines which stations will receive Paging Calls.

Note: SLTs cannot be included in Paging Calls.

Input Data

[*] Steps through the stations.
 [0] Excludes this station from receiving Paging Calls.
 [1] Includes this station in Paging Calls.

Example

Station 2 1 will be excluded from Paging Calls.

Action

Display

Press the [#] key

PROGRAM CODE :

Enter the command number (3 3)

PAGE INCLUDE

Press the [*] key

STN21 : INCLUDE

Enter the Exclude code (0)

STN21 : INCLUDE 0

Press [#] to return to the idle mode

DATE/TIME

Default

All keystations are included in paging calls.

#34

Internal Page Zone

This command assigns keystations to one of four internal paging zones.

Zone 0 includes all stations, assigning a station to another zone does not remove that station from zone 0. To exclude a station from "all call" see command #33.

Input Data

[*] Steps through the stations.
 [0-3] Enters the zone number.

Example

This example assigns stations 25 and 27 to zone 3

Action	Display
Press the [#] key	PROGRAM CODE :
Enter the command number (34)	PAGING ZONE :
Press the [*] key	STN21 : 0
Press the [*] key 4 times	STN25 : 0
Enter the zone number (3)	STN25 : 03
Press the [*] key twice	STN27 : 0
Enter the zone number (3)	STN27 : 03
Press [#] to return to the idle mode	DATE/TIME

Default

All stations are assigned to zone 0 (All Call).

#35

Station Night Restriction

This command defines the stations that will be given class of restriction E (internal calls only) during Night Mode.

Note: Class E permits the dialling of designated emergency numbers.

Input Data

- [*] Steps through the stations.
- {0} This station will not be restricted.
- {1} This station will be restricted.

Example

In this example station number 24 is assigned dialling restrictions during Night Mode.

Action

Display

Press the [#] key

PROGRAM CODE:

Enter the command number (35)

STN NIGHT REST.

Press the [*] key

STN21:NOT REST.

Press the [*] key 3 times

STN24:NOT REST.

Enter the code for restriction (1)

STN24: **NOT REST. 1**

Press [#] to return to the idle mode

DATE/TIME

Default

No stations have night restrictions.

#40**line Mode**

This command is used to define the mode of operation for each exchange line.

Input Data

- [*]** Steps through the exchange lines.
- [0]** Assigns this line as incoming only.
- [1]** Assigns this line as a both way line.

Example

This example assigns line number 1 as incoming only.

Action**Display**

Press the [#] key

PROGRAM CODE :

Enter the command number (40)

LINE MODE

Press the [*] key

LINE01 : IN . OUT

Enter the mode number (0)

LINE01 : IN . OUT0

Press [#] to return to the idle mode

DATE/TIME

Default

All exchange lines are assigned as both way lines.

#42

line Dial Type

This command defines the type of dialling to be used for each exchange line.

Input Data

- [*] Steps through the exchange lines.
- [0] Defines this line as decadic dialling.
- [1] Defines this line as DTMF dialling.

Example

Line number 1 is defined as a decadic dialling line in this example.

Action**Display**

Press the [#] key

PROGRAM CODE:

Enter the command number (42)

LINE DIAL TYPE

Press the [*] key

LINE01 : DTMF

Enter the code for Decadic dialling (0)

LINE0 1 : DTMFO

Press [#] to return to the idle mode

DATE/TIME

Default

All lines are set for DTMF dialling.

#43

line Type This command defines lines as either PSTN or PABX lines. Lines designated as PABX lines are automatically removed from dial "0" access.

Input Data **[*]** Steps through the line numbers.
[RD] Toggles between PSTN and PABX assignment.

Example This example assigns line 3 as a PABX line.

Action	Display
Press the [#] key	PROGRAM CODE:
Enter the command number (43)	LINE TYPE
Press the [*] Key	LINE01:EXCH
Press the [RD] key	LINE01:PABX
Press [#] to return to the idle mode	DATE/TIME

Default All lines are defined as Exchange Lines.

#44

PABX Code

This command defines the exchange line access code of the parent PABX.

Note:- Assigning a code here has a functional effect on other facilities, such as speed dial, redial etc. (refer to the User Guide).

Input Data

[Digits] Enters the code to be assigned.

[HOLD] Erases the entry.

Example

In this example the digit 0 is allocated as the PABX access code.

Action

Display

Press the [#] key

PROGRAM CODE :

Enter the command number (44)

PABX ACCESS CODE

Press the [*] key

CODE :

Enter the access code (0)

CODE : 0

Press [#] to return to the idle mode

DATE/TIME

Default

None

#45

Carrier Preselection Code This command defines the second carrier preselection code.
If a carrier preselection code is dialled, the system will ignore the code when applying Access Barring to outgoing calls.

Input Data Up to four carrier codes of up to four digits may be entered.

[RD] Steps through the codes.

[Digits] Enters the codes to be assigned.

[HOLD] Erases an entry.

Example This example defines "1" as a second carrier preselection code.

Action	Display
Press the [#] key	PROGRAM CODE :
Enter the command number (45)	2ND CARRIER CODE
Press the [RD] key	CODE0 :
Enter the preselection number (1)	CODE0 : 1
Press [#] to return to the idle mode	DATE/TIME

If a station is barred access to the code XXX the system will also bar the station from dialling 1 XXX.

Default None

Note: Carrier preselection codes should be defined whenever alternative carriers are available, and any stations are assigned to Class of Restriction lower than A.

#50

TLB Timing

This command defines the duration of a Timed Loop Break (TLB) that is sent out on an exchange line.

Input Data

0000 - 9999 The duration in milliseconds in 1 00ms steps.

Example

This example sets the TLB duration to 200 milliseconds.

Action	Display
Press the [#] key	PROGRAM CODE :
Enter the command number (50)	TLB TIME
Press the [*] key	0100 MSEC
Enter the time in milliseconds (0200).	0100 MSEC 0200
Press [#] to return to the idle mode	DATE/TIME

Default

The TLB time is set to 100ms.

#51

PABX TLB Timing

This command defines the duration of the Timed Loop Break(TLB) sent out on a PABX line.

Input Data

0000 - 9999 The duration in milliseconds in 1 00ms steps.

Example

This example sets the TLB duration to 300 milliseconds.

Action

Display

Press the [#] key

PROGRAM CODE:

Enter the command number (5 1)

PABX FLASH TIME

Press the [*] key

0600 MSEC

Enter the time in milliseconds
(0300).

0600 MSEC 0300

Press [#] to return to the idle mode

DATE/TIME

Default

The TLB time is set to 600ms.

#52

Hold Recall Time

This command defines the length of time a call may be on hold before it is recalled.

Input Data

000 - 255 The time in seconds.

Example

This example sets the recall time to 4.5 seconds.

Action

Display

Press the [#] key

PROGRAM CODE:

Enter the command number (5 2)

HOLD RECALL TIME

Press the [*]key

090 SEC

Enter the length of time (045).

090 SEC 045

Press [#] to return to the idle mode

DATE/TIME

Default

The hold recall time is set to 90 seconds.

#53**Transfer Recall Time**

This command defines the length of time a transferred call will wait to be answered before it reverts to the original station.

Input Data

000 - 255 The time in seconds.

Example

This example sets the transfer recall time to 4.5 seconds.

Action**Display**

Press the [#] key

PROGRAM CODE :

Enter the command number (5 3)

TRSF RECALL TIME

Press the [*] key

090 SEC

Enter the length of time (045).

090 SEC **045**

Press [#] to return to the idle mode

DATE/TIME

Default

The transfer recall time is set to 90 seconds.

#54

Alarm Duration

This command defines the maximum length of time an alarm call will ring.

Note: Alarm calls are restricted to 3 ring bursts if the station is busy at the time of the alarm.

Input Data

000 - 25.5 The time in seconds

Example

Action

Display

Press the [#] key

PROGRAM CODE:

Enter the command number (54)

ALARM DURATION

Press the [*] key

010 SEC

Enter the new time (030)

010 SEC 030

Press [#] to return to the idle mode

DATE/TIME

Default

The alarm call duration is set to 10 seconds.

#55

Time and Date

This command is used to set the system time and date. The Operator station (number 21) may access this command at any time, without enabling programming.

Input Data

- YY Last two digits of the year
- MM The month (01 - 12)
- DD The day of the month (01-3 1)
- w The day of the week:
 - 0 - Sunday
 - 1 - Monday
 - 2 - Tuesday
 - 3 - Wednesday
 - 4 - Thursday
 - 5 - Friday
 - 6 - Saturday
- HH The hour of the day (00-23)
- MM The minute of the hour (00-59)

Example

The following sets the time and date as 2-45pm Thursday, 25th Feb 1993.

Action

Display

Press the [#] key

PROGRAM CODE :

Enter the command number (5.5)

YY MM DD W HH:MM

Enter the year (92)

MM DD W HH:MM92

Enter the month (02)

M DD W HH:MM9202

Enter the day of the month (25)

DD W HH:MM920225

Enter the day of the week (4)

D W HH:MM9202254

Enter the hour (14)

W HH:MM920225414

Enter the minutes (45)

HH:MM92022541445

Press [#] to return to the idle mode

DATE/TIME

All the display stations automatically update

Default

None.

#58

RS232 Baud Rate (616/1 224 only)

This command is used to set the Baud Rate for the RS232 port used for CDR operation.

Input Data

[*] Steps though the Baud Rates:

300

600

1200

2400

4800

9600

Example

This example sets the Baud Rate of the RS232 port at 9600.

Action

Display

Press the [#] key

PROGRAM CODE :

Enter the command number (58)

RS232 BAUD

Press the [*] key

2400 BAUD

Press the [*] key twice

9600 BAUD

Press [#] to return to the idle mode

DATE/TIME

Pressing the [*] key once displays the current setting. Subsequent presses of the [*] key will step through the options cyclically.

Default

The RS2 32 port baud rate is set at 2400 baud.

The data format is fixed and is as follows:

8 bit data

1 start bit

1 stop bit

No Parity

#59**Door Open Time**
(HX308 only)

This command defines the length of time the door open contacts will be made, when activated during conversation with the door station.

Input Data

0000 - 9999 The time in milliseconds.

Example

In this example the duration is set to one second.

Action**Display**

Press the [#] key

PROGRAM CODE:

Enter the command number (59)

DOOR OPEN TIME

Press the [*] key

0800 MSEC

Enter the length of time (1000).

0800 MSEC **1000**

Press [#] to return to the idle mode

DATE/TIME

Default

The door open time is set to 800 milliseconds.

#60

line Ring Mode

This command defines the mode of operation for ringing on incoming exchange line calls.

Four modes of ringing are available.

- 0** Hunt 10 An incoming call on a line with this mode of operation will ring the first idle station in the group (as defined in commands #61 and #62) for a period of 10 seconds. If it is not answered the call will step to the second idle station in the group and so on, working in a cyclic action until answered or the call terminated.
- 1** Hunt 30 As above but for a period of 30 seconds at each station.
- 2** Ring all An incoming call on a line with this mode of operation will ring all idle stations.
- 3** Off Hook An incoming call on a line with this mode of operation will ring all stations in the group. If a station is already busy on a call that station will ring with a muted signal.

Input Data

- [*]** Steps through the line numbers.
- [0] - [3]** Ring mode number.

Example

This example sets line number 2 to ring mode 1.

Action	Display
Press the [#] key	PROGRAM CODE:
Enter the command number (60)	LINE RING MODE
Press the [*] key	LINE01:RING ALL
Press the [*] key again	LINE02:RING ALL
Enter the ring mode number (1)	LINE02:HUNT 30
Press [#] to return to the idle mode	DATE/TIME

Default

All lines are allocated ring mode 2, Ring All.

#61

Night Ring Stations

This command designates which stations will ring, for each exchange line during the Night Mode.

The stations are entered in the order they will ring, for ring modes 0 and 1.

Up to 10 stations can be assigned to each line.

Input Data

- [*] Steps through the line numbers.
- [RD] Steps through the stations that will ring for the selected line.
- [Digits] Enters the station number to be assigned.
- [HOLD] Erases an entry.

Example

This example designates stations 2 1, 24 and 22 to ring during Night Mode when a call is received on line 2 and also designates station 23 to be the only station that rings on line 3.

Action	Display
Press the [#] key	PROGRAM CODE :
Enter the command number (61)	NIGHT RING STN
Press the [*] key twice to go to line 2	LINE02 :
Press the [RD] key to step through the stations assigned to ring when this line is called	00: 21
Press the [RD] key again	01 :
Enter the station number (24)	01: 24
Press the [RD] key	02 :
Enter the station number (22)	02: 22
Press the [*] key to step to the next line	LINE03 :
Press the [RD] key	00: 21
Enter the station number (2 3).	00: 21 23
Press [#] to return to the idle mode	DATE/TIME

Default

Station 2 1 is assigned to ring on all lines during Night Mode.

#62

Day Ring Stations

This command designates which stations will ring, for each exchange line during the Day Mode.

The stations are entered in the order they will ring, for ring modes 0 and 1.

Up to 10 stations can be assigned to each line.

Input Data

[*] Steps through the line numbers.

[RD] Steps through the assignments for each line.

[Digits] Enters the station number to be assigned.

[HOLD] Erases an entry.

Example

This example designates stations 2 1, 24 and 22 to ring during Day Mode when a call is received on line 2 and also designates station 23 to be the only station that rings on line 3.

Action

Display

Press the [#] key

PROGRAM CODE :

Enter the command number (62)

DAY RING STN

Press the [*] Key twice to go to line 2

LINE02 :

Press the [RD] key to step through the stations assigned to ring when this line is called

00 : 21

Press the [RD] key again

01 :

Enter the station number (24)

01 : **24**

Press the [RD] key

02 :

Enter the station number (22)

02 : **22**

Press the [*] key to step to the next line

LINE03 :

Press the [RD] key

00 : 21

Enter the station number (23).

00: 21 23

Press [#] to return to the idle mode

DATE/TIME

Default

Station 2 1 is assigned to ring on all lines during Day Mode.

#63

Door Ring Station

The HX308 supports one Door Station.

The HX616 and HX1224 support two Door Stations.

This command is used to place up to ten stations into a ring group. All free stations will ring when the Door Station is activated.

Note: This feature is not affected by Command #77

Input Data

[*] Steps through the Door Stations

[RD] Steps through the assignments for each Door Station

[Digits] Enters the station number to be assigned.

[HOLD] Erases an entry.

Example

This example assigns stations 23 and 24 to ring when Door Station 1 is activated.

Action	Display
Press the [#] key	PROGRAM CODE :
Enter the command number (63)	DOOR STN RING
Press the [*] key	DOOR :
Press the [RD] key	00 : 21
Enter the first station number (23)	00 : 21 23
Press the [RD] key	01 :
Enter the second station number (24)	01 : 24
Press [#] to return to the idle mode	DATE/TIME

Default

Station 2 1 is set to receive calls from the Door Stations.

#71

Access Barring Speed Dial Exemption

This command defines whether Speed Dial numbers are to be exempt Access Barring. Only Common Speed Dial numbers in the range 20 to 59 are affected by this command. All other Speed Dial numbers are subject to Access Barring.

Input Data

[0] Speed Dial numbers are subject to Access Barring
 [1] Speed Dial numbers are exempt from Access Barring

Example

The following will exempt Speed Dial numbers 20 to 59 from Access Barring.

Action

Display

Press the [#] key

PROGRAM CODE:

Enter the command number (71)

BARRING SPD NO

Enter the Exempt code (1)

EXEMPT SPD NO

Press [#] to return to the idle mode

DATE/TIME

Default

Speed Dial numbers are subject to Access Barring.

#72

Access Barring Tables

This command defines the numbers that can and cannot be dialled from a station for each Class of Restriction.

There are five Classes of Restriction each with up to ten codes that are barred and up to ten codes/numbers that are allowed. Each code or number can have up to ten digits.

Note: Class of Restriction A is unrestricted: no codes may be entered into this table.

Input Data

[FUNC/DND] Steps through the Classes
 [RD] Steps through the positions in the table
 [Digits] Enters the codes to be assigned.
 [HOLD] Erases an entry.
 [*] Placing an * after an entry will allow exceptions to be entered in the allow column as in the following example.

Example

In the following example Class B is modified to allow IDD calls to New Zealand (code 001164).

Action	Display
Press the [#] key	PROGRAM CODE :
Enter the command number (72)	STATION TOLL
Press the [*] key	CLASS B DENY
Press the [FUNC/DND] key	CLASS B ALLOW
Press the [RD] key	00 :
Enter the code to be allowed (001164)	00 : 001164
Press [#] to return to the idle mode	DATE/TIME

Note: The above programming is possible even though “0011” has been denied for Class B (see default table below). With the * in the deny column the processor will wait for the next digit before denying the code.

#72

Default

CLASS A Unrestricted	CLASS B Barred IDD		CLASS C Barred IDD & STD		CLASS D Spare		CLASS E Intercom Only	
	Allow	Deny	Allow	Deny	Allow	Deny	Allow	Deny
		0011*	008	0*				0*
		0012*	013					1*
		0014*	016					2*
		0015*	019					3*
		0101						4*
		0108						5*
		009*						6*
								7*
								8*
								9*

#73

Boss/Secretary Assignment

This command is used to assign “secretary” stations.
 Each station may be assigned only one secretary, however the same secretary may be assigned to up to three stations.
 A secretary station may not be assigned with a secretary.
 When a station is assigned a secretary, the [FLASH] key (in the idle mode) on the boss station may be used to “Buzz” the secretary station.

Input Data

[*] Steps through the station numbers.
 [Digits] Enters the station number to be assigned.
 [HOLD] Erases an entry.

Example

This example assigns station 22 as a secretary to station 25.

Action	Display
Press the [#] key	PROGRAM CODE :
Enter the command number (73)	BOSS & SECRETARY
Press the [*] key	BOSS 21 :
Press the [*] key four times	BOSS 25 :
Enter the secretary station number (22)	BOSS 25 : 22
Press [#] to return to the idle mode	DATE/TIME

Note: When a station is assigned as a secretary it will no longer appear in the list of stations accessed by this command.

Default

No secretaries are assigned.

#76

Line Group Assignment

This command assigns each line to an outgoing group.

Up to four line groups (81 - 84) may be assigned in addition to the default group (80). A line may only be included in one group.

The HX308 has two groups (80 and 81).

Note: When a line is assigned to the last group in the system, it is automatically removed from "Dial 0" access. All other lines will still be accessible to Dial 0 access.

Input Data

[*] Steps through the line numbers.

[Digits] Enters the group number to be assigned.

Example

This example assigns lines 1 and 2 to group 81.

Action	Display
Press the [#] key	PROGRAM CODE :
Enter the command number (76)	LINE GRP ASSIGN
Press the [*] key	LINE01 : 80
Enter the group number (81)	LINE01 : 80 81
Press the [*] key	LINE02 : 80
Enter the group number (81)	LINE02 : 80 81
Press [#] to return to the idle mode	DATE/TIME

Default

All lines are assigned to group 80.

#77**Station Group Assignment**

This command is used to assign a station to a group and defines the mode of ringing for all station groups ie. all groups will have the same ring mode.

The HX308 accommodates up to 4 station groups (5 1-54).

The HX616 and HX1224 accommodate up to 9 station groups (5 1-59).

There are two options of ring mode:

- Ring All Ring all stations in the group
- Hunt Ring the first free station in the group only.

Input Data

- [*] Steps through the station numbers.
- [Digits] Enters the group number
- [RD] Switches to Ring Mode Selection.
- [0] Ring All mode
- [1] Hunt mode
- [HOLD] Erases an entry.

Example

The following assigns stations 24 and 25 to station group 52 and sets the mode of ringing to Ring All.

Action**Display**

Press the [#] key	PROGRAM CODE :
Enter the command number (77)	STN GRP ASSIGN
Press the [*] key	STN21 :
Press the [*] key three times	STN24 :
Enter the group number (52)	STN24 : 52
Press the [*] key	STN25 :
Enter the group number (52)	STN25 : 52
Press the [RD] key	RING MODE : HUNT
Enter the ring mode code (0)	RING MODE : HUNT 0
Press [#] to return to the idle mode	DATE/TIME

Default

Stations are not assigned to any groups. The default ring mode is Hunt.

#78

Toll Password Setting

This command is used to define the password used to bypass toll restriction.

Input Data

0000-9999 Used to enter the old and then the new password.

Example

This example changes the Toll password from 0987 to 6677.

Action

Display

Press the [#] key

PROGRAM CODE :

Enter the command number (78)

TOLL PASSWORD

After 2 seconds delay

OLD PASSWORD?

Enter the old password (0987)

NEW PASSWORD?

Enter the new password (6677)

NEW PASSWORD?

Press [#] to return to the idle mode

DATE/TIME

Default

The toll password is set to 0987

#81

Station Self Test

This command is used to initiate a self test procedure at this station.

Input Data

None

Example

This example initiates the self test procedure at a station

Action**Display**

Press the [#] key

PROGRAM CODE :

Enter the command number (8 1)

RING & LAMP TEST

A long burst of ringing is heard, all of the station LEDs are lit and the display is blackened.

As each key is pressed, the associated red LED is turned off and a short burst of ringing is heard.

As the dial keys are pressed, the green LED associated with the correspondingly numbered selection key is turned off and a short burst of ringing is heard. (for example, when dial key [3] is pressed the Green LED associated with selection key 3 is turned off.)

The [MUTE] key does not cause the station to ring.

Press [#] to return to the idle mode

DATE/TIME

Default

None

#84

Facsimile Station Assignment (HX308 only)

This command is used to define up to two station circuits to which facsimile machines will be connected. The circuits nominated must be two wire circuits.

Input Data

[*] Steps through the fax circuits (FAX0 and FAX1).
[Digits] Enters the station number.

Example

In this example stations 27 and 28 are defined as having Faxes connected.

Action

Display

Press the [#] key

PROGRAM CODE :

Enter the command number (84)

FAX STN ASSIGN

Press the [*] key

FAX0 :

Enter the first station number (27)

FAX0 : 27

Press the [*] key

FAX1 :

Enter the second station number (28)

FAX1 : 28

Press [#] to return to the idle mode

DATE/TIME

Default

None.

#87

CDR Selection (HX616/1224 only)

This command is used to enable the CDR operation and set its parameters.

The Baud rate for the CDR is set using command #58. Each time the CDR is disabled and then re-enabled the printer will be initialised and the headings printed ready for logging.

Input Data

- [*] Steps through the options.
- CDR Enables the CDR operation:
 - [0] Disable
 - [1] Enable
- Range Selects which type of calls should be printed:
 - [0] In
 - [1] In and Out
- All Digit Selects whether all dialled digits should be printed:
 - [0] No (The last 2 digits will be omitted)
 - [1] Yes (All digits will be printed)

Example

This example enables CDR operation and sets the range for incoming calls only.

Action	Display
Press the [#] key	PROGRAM CODE:
Enter the command number (87)	SMDR SELECTION
Press the [*] key	SMDR:DISABLED
Enter the selection code (1)	SMDR:ENABLED
Press the [*] key	RANGE:IN.OUT
Enter the selection code (0)	RANGE: IN
Press [#] to return to the idle mode	DATE/TIME

Default

CDR Operation	Disabled
Range	In and Out
All Digits	No

Chapter Four

Maintenance Procedures

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Chapter Four

Maintenance Procedures

Introduction

This chapter describes the procedures to be followed to test and evaluate the functionality of a Commander HX system. Included in this chapter are functional tests, an explanation of how to measure system voltages and a flow chart to help localise any faults that may occur.

Functional Tests

The following test sequences are designed to help technicians check either all or part of a Commander HX system.

Station Self Test

A self test function may be activated at each keystation. This will prove that the station keys and LEDs are functioning correctly and that the speaker and display (Executive Keystation) are working.

The test should be performed on each station as it is connected to the system during installation. It can also be used when an individual station is suspected of being faulty.

Programming mode must be enabled before the self test feature can be activated (see *Chapter 3 - System Programming*).

- On the station to be tested dial #81
A long burst of ringing is heard, all of the keystation function/selection key LEDs are lit and the display is blackened.

As each function/selection key is pressed, the associated red LED is turned off and a short burst of ringing is heard.

As the dial keys are pressed, the green LED associated with the correspondingly numbered selection key, is turned off and a short burst of ringing is heard. (for example, when dial key [3] is pressed the green LED associated with selection key 3 is turned off.)

The [MUTE] key does not cause the station to ring.

IMPORTANT

Each test procedure must be followed in the exact order it is set out in each section.

Each test consists of a special sequence of steps. Do not perform any other action in between the steps - for example, going on-hook. 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

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

Table 1 - System Function Tests

Test No. & Check Item	Action	Expected Result
*1. Exchange lines	Go off-hook at station A and press [Line] key Dial a digit and check whether dialling is decadic or DTMF Repeat for each line connected to the system	The associated [Line] LED glows green at station A and red at B and C Hear dial tone at station A Dialling method is as programmed for this line
*2. Incoming call	Go off-hook at station A and press [Line] key, call another line connected to the system Go on-hook and repeat for each line connected to the system	Associated [Line] LED fast flashes red at all stations and the assigned station(s) ring
*3. Answering	Make an incoming call as above Go off-hook at station B and press flashing [Line] key	The red flashing [Line] LED changes to steady green at station B and steady red at all other stations Both parties (A and B) can converse
4. Common Hold	Press [HOLD] at station B	[Line] LED slowly flashes green at station B and red at all other stations Station A hears Music on-Hold
5. Hold automatic ring back	Wait for timeout (90 sec's)	Ring signalling heard at station B for approx. 10 sec's
6. Reseizures	Respond to the held line at station B by pressing the [Line] key	[Line] LED glows red at all stations Stations A and B can converse
7. Exclusive Hold	Press [HOLD] key twice at station B	[Line] LED fast flashes green at station B and steady red at all other stations Station A hears Music on-Hold
8. Exclusive Hold automatic ring back	Wait for timeout (90 sec's)	Ring signalling heard at station B for approx. 30 sec's Call then reverts to Common Hold
9. Reseizure	Respond to the held line at station B by pressing the [Line] key	[Line] LED glows red at all stations Stations A and B can converse
10. Automatic hold of outside call	Press [TRANS] key at station B	Station B hears transfer tone Station A hears Music on-Hold
11. Automatic transfer after announcement	Dial two digits to call station C Go off-hook at station C Go on-hook at station B	Hear ring tone at station B and ringing at station C Stations B and C can converse Stations A and C can converse
12. Automatic transfer without announcement	Press [TRANS] key at station C and call station B Go on-hook at station C Go off-hook at station B	Station B rings Station B continues to ring Stations A and B can converse

Table 1 - System Function Tests (cont)

Test No. & Check Item	Action	Expected Result
13. Automatic transfer with Camp-on	Go off-hook at station C Press [TRANS] at station B and call station C Go on-hook at station B Go on-hook at station C Go off-hook at station C	Station C is busy Busy tone is heard at station B Station C rings Stations A and C can converse
14. Automatic transfer Call Park with Page	Press [PAGE] key twice at station C Make paging announcement and go on-hook at station C At station B go off-hook and dial *1 plus the number of station C	A is placed on hold and paging tone is heard at station C An all-call paging announcement is heard at all free stations Stations A and B can converse
15. Recall from transfer	Press [TRANS] key at station B and call station C Go on-hook at station B Go off-hook at station B	Station C rings Station C continues to ring for 90 SECS the call then reverts to station B Stations A and B can converse
16. Outside call conference	Press [CONF] key at station B Call station C from station B. Go off-hook at station C Press [CONF] key at station B Press [CONF] key at station B Go on-hook at stations A, B and C	Station A is placed on common hold Station B hears conference tone Stations B and C can converse Stations A and B can converse Station C is placed on common hold Stations A, B and C hear intrusion tone and can converse
*17. Intercom call	Go off-hook at station A Call station B	Hear dial tone A's [DSS] LED glows at all stations Hear ring tone at station A and ringing at station B B's [DSS] LED flashes at all stations except B B's own [DSS] LED glows steady
18. Answering	Go off-hook at station B	Stations A and B can converse A and B's [DSS] LEDs glow at all stations
19. Disconnection	Go on-hook at stations A and B	The call clears
*20. Single key intercom access	With station A on-hook, press a [DSS] key Press [SPKRI] at station A	[SPKRI] LED glows, and an intercom call is made, to that station, in handsfree mode The call clears and [SPKRI] LED goes out

Table 1 - System Function Tests (cont)

Test No. & Check Item	Action	Expected Result
'21. Single key line access	With station A on-hook, press a [Line] key Press [SPKRI] at station A	[Line] LED glows red at all stations [SPKRI] LED glows and dial tone is heard through speaker of station A [Line] LED and [SPKRI] LED go out
'22. Call Pick-up	At station A call station B At C go off-hook and press the flashing [DSS] key Go off-hook at stations A and C	Station B rings and B's [DSS] LED flashes at all other stations Stations A and C can converse The call clears
'23 Call-back	Go off-hook at station B At station A call station B At station A press [CALL BACK] and go on-hook Go on-hook at station B Go off-hook at station A Go off-hook at station B Go on-hook at stations A and C	Station B is busy Hear busy tone at station A Station A rings Station B rings Stations A and B can converse The call clears
'24 Message waiting - Setting	At station A call station B At station A press [MW] and go on-hook	Station B rings The [MW] LED glows at station A and flashes at station B
25 Message waiting - Answering	Go off-hook at station B and press [MW] Go off-hook at station A Go on-hook at stations A and B	Station A rings The [MW] LEDs at stations A and B go out Stations A and B can converse The call clears
*26 Redial	Go off-hook at station A and press [REDIAL] key Go on-hook at station A	An exchange line is seized and the last number dialled is redialled The call clears
*27 Automatic redial	Go off-hook at station A and call another line connected to the system, but do not answer the call. Press [REDIAL] key Wait for 30 secs Answer the call at station B Go off-hook at station A Go off-hook at stations A and B	The call is automatically cancelled The [Line] LED glows red. (The line appears busy to the system, but an incoming call on this line will cancel the redial) The call is automatically redialled Stations A and B can converse The call clears

Table 1 - System Function Tests (cont)

Test No. & Check Item	Action	Expected Result
*28 Speed dial -storing	At station A press #and then [MEMORY] key Dial a memory location (00) Dial the number to be stored Press the [MEMORY] key Press #	The number is stored in memory location 00
29 Speed dial - dialling	Go off-hook at station A and press [MEMORY] and dial the memory location (00) Go on-hook at station A	A free exchange line is seized and the stored number is dialled The call clears
30 Speed dial - keys	Go off-hook at station A and press [SPD 11 Go on-hook at station A	A free exchange line is seized and the stored number is dialled The call clears
*31 Access barring	Seize a line at stations in different classes and dial various codes	Refer to Chapter 3 System Programming - Access Barring
*32 Timed Loop Break	At station A seize a line and press [FLASH] key	The [FLASH] LED will glow for the set period of the loop break (100mS)

Station Test

This test sequence checks that all standard station functions operate correctly. This test should be performed at each keystation connected to the system.

Table 2 - Station Function Tests

Test No. & Check Item	Action	Expected Result
*1 Volume control - handset	Lift the handset Press the [Δ] key Press the [▽] key Replace the handset	Hear dial tone The volume increases The volume decreases
*2 Volume control - handsfree	Press [SPKR] key Press the [Δ] key Press the [▽] key Press [SPKR] key	Hear dial tone via the loudspeaker The volume increases The volume decreases
*3 Mute	Lift the handset Press [MUTE] key Press [MUTE] key Replace the handset	Side tone can be heard The [MUTE] LED glows and side tone cannot be heard The [MUTE] LED goes out and side tone can again be heard
*4 Do Not Disturb (see note 1)	Press [DND/FUNCTION] key At another station call this station Press [DND/FUNCTION] key	The [DND/FUNCTION] LED glows Busy tone is heard, unless calling from assigned secretary station. In this case the station will ring The [DND/FUNCTION] LED goes out
*5 Night service Station 21 only	Press [DND/FUNCTION] key Press [DND/FUNCTION] key	The [DND/FUNCTION] LED glows and the system is in Night Service mode The [DND/FUNCTION] LED goes out and the system reverts to Day mode
*6 Background Music (see note 2)	While the station is in the idle mode press [HOLD] key Press [HOLD] key	Music is heard via the loudspeaker The music is disconnected

- Note
1. This test cannot be performed at station number 21.
 2. If an external music source is not connected, the internal MOH chimes will be heard.

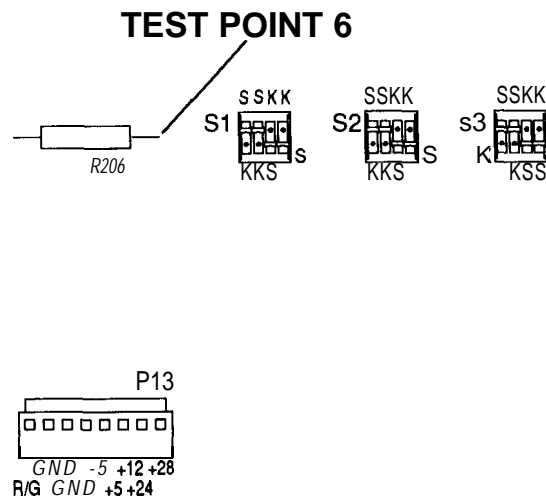
Test Points

There are seven voltages generated at the power supply for the Commander HX. The voltages can be measured at various test points on the main equipment boards. Measure all voltages with respect to ground using a multimeter, with small probes.

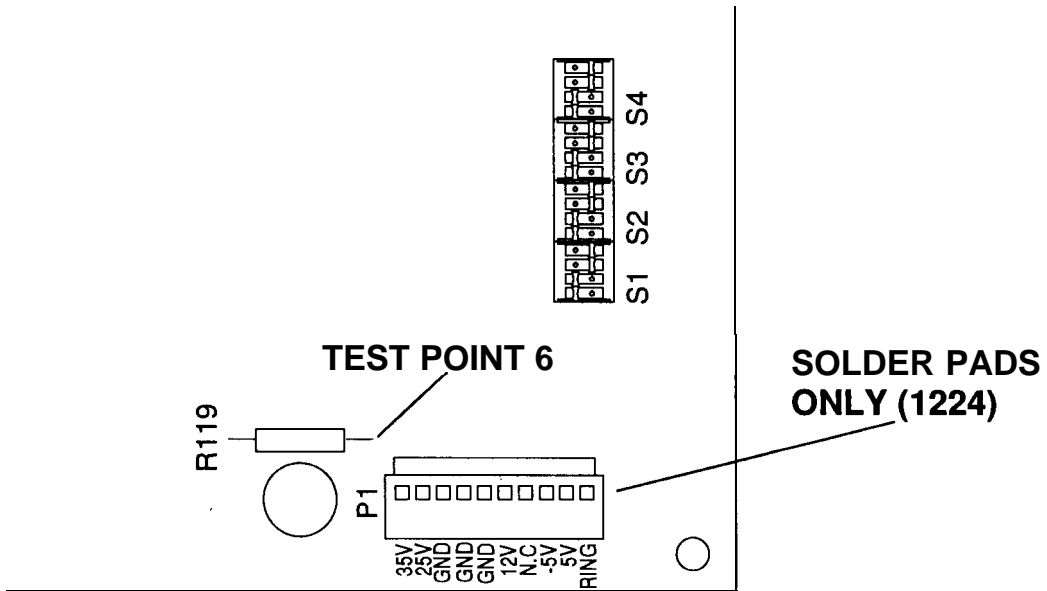
WARNING

When measuring voltages take care not to short adjacent terminals.

HX 308	HX 616/1224	Test Point	Function
+5v ± 5%	+5v ± 5%	1	Logic and misc
-5v ± 5%	-5v ± 5%	2	Logic and misc
+12v ± 5%	+12v ± 5%	3	Keystation Data
+24v ± 10%	+25v ± 10%	4	Hybrid amplifier and SLT
+28v + 10% -20%	+35v + 10% -20%	5	Keystation
+48v ± 3%	+48v ± 3%	6	ODX
65vAC ± 10%	65vAC ± 10%	7	Ring Current



Test Points - HX 308
[IL30]



Test Points - HX 616/1 224
[IL31]

Repair Procedures

General

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

When returning faulty equipment always ensure that it is placed in the protective container supplied with the new item.

Working equipment must be treated in the same manner. Careless handling, storage and transportation can cause future or secondary faults.

All faulty equipment should be returned in accordance with local procedures. Each item must be accompanied with a fault report label giving as much information as possible about the failure.

Main Equipment

If the main equipment is found to be faulty, the complete unit must be replaced with a new one.

Never attempt to repair the main equipment PBA on site or in a field depot.

Any attempt to change components on the PBA may result in further damage.

Power **Supply**

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

CAUTION:

The power supply receives power from a 240V Mains Supply.
Hazardous voltages are always present.

Keystation

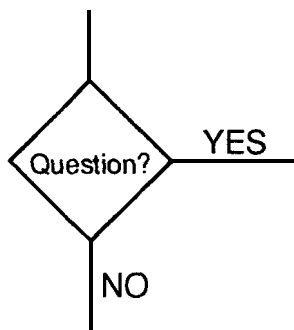
Keystation maintenance is confined to replacing handsets, cords and plugs. Faulty PBAs or key assemblies are rectified by changing the complete keystation.

Flow Charts

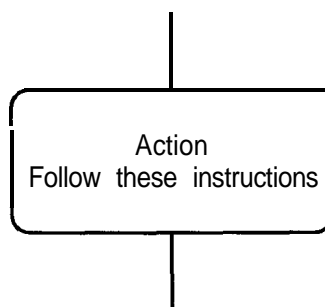
The flow charts may be used whenever a fault occurs in a Commander HX system. The charts are a means of localising a fault to one of the basic units in the system, such as main equipment or keystation.

Symbols

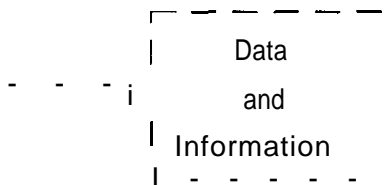
1. Decision This block contains a question. The question must be answered with a 'YES' or a 'NO'. Depending on the answer, take the appropriate exit and continue on that path.



2. Action This block contains an action that must be carried out at this point. It is essential to comply exactly with the instructions.



3. Data Block This block is not part of the fault finding sequence. It provides additional information for an action block. A dotted line joins the Data block to the relevant action block.



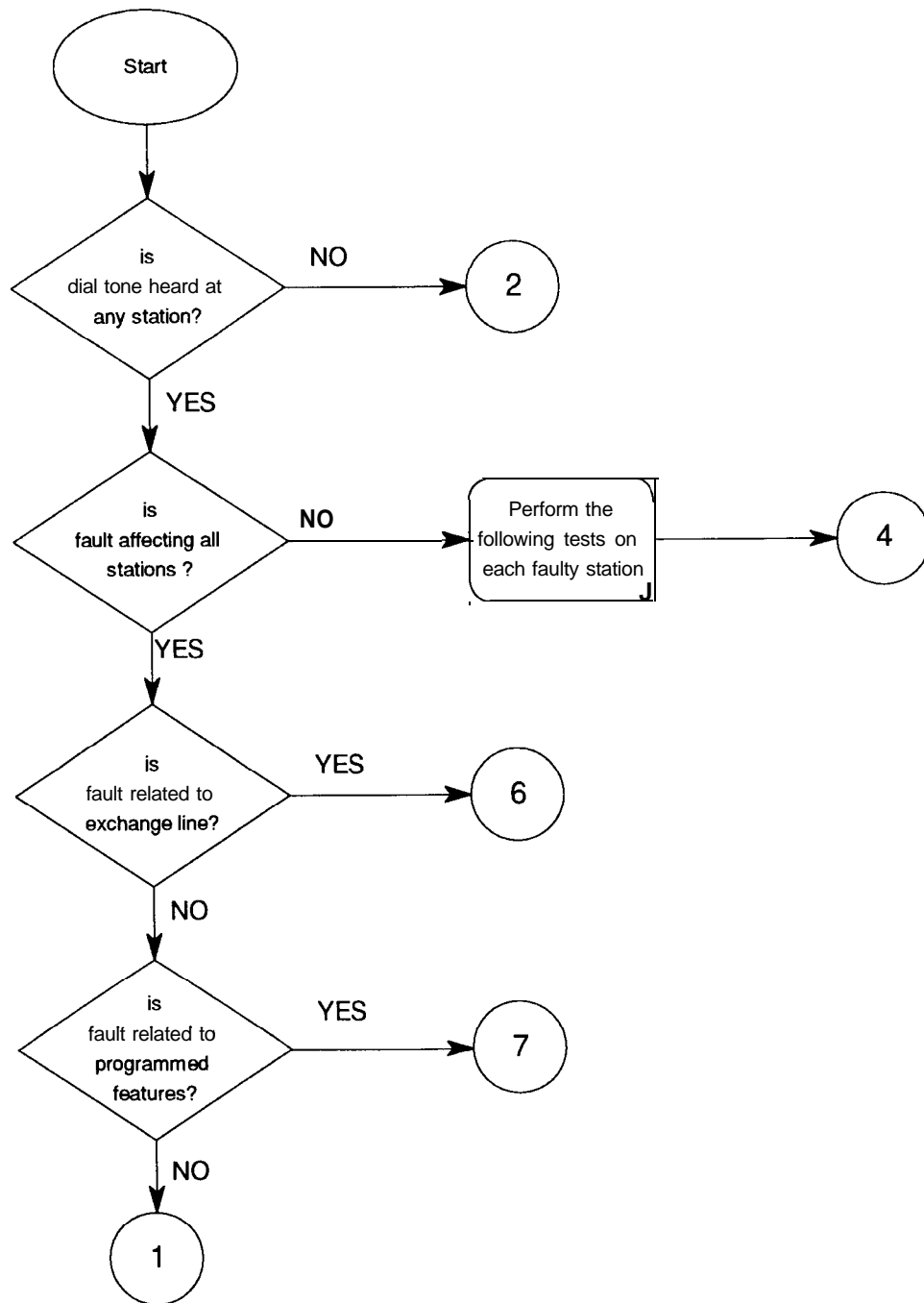
4. Circles Numbered circles connect one flowchart to another. Each circle contains a number that will direct you to the next page/step in the sequence.



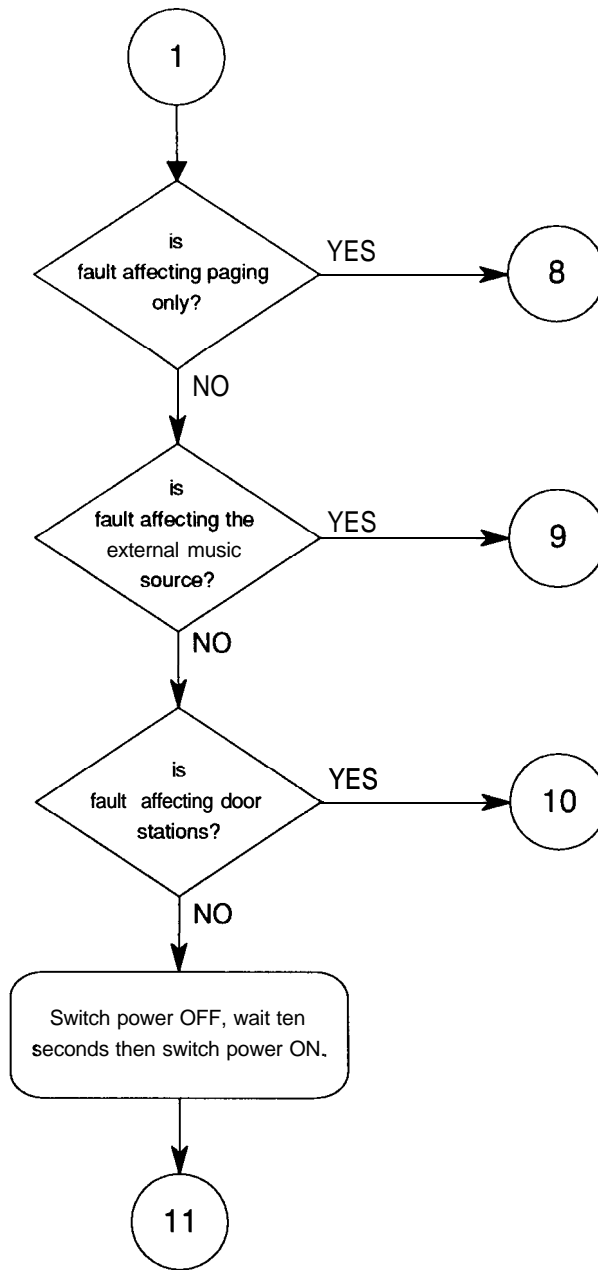
5. Arrows Arrows on each line point to next step in the procedure



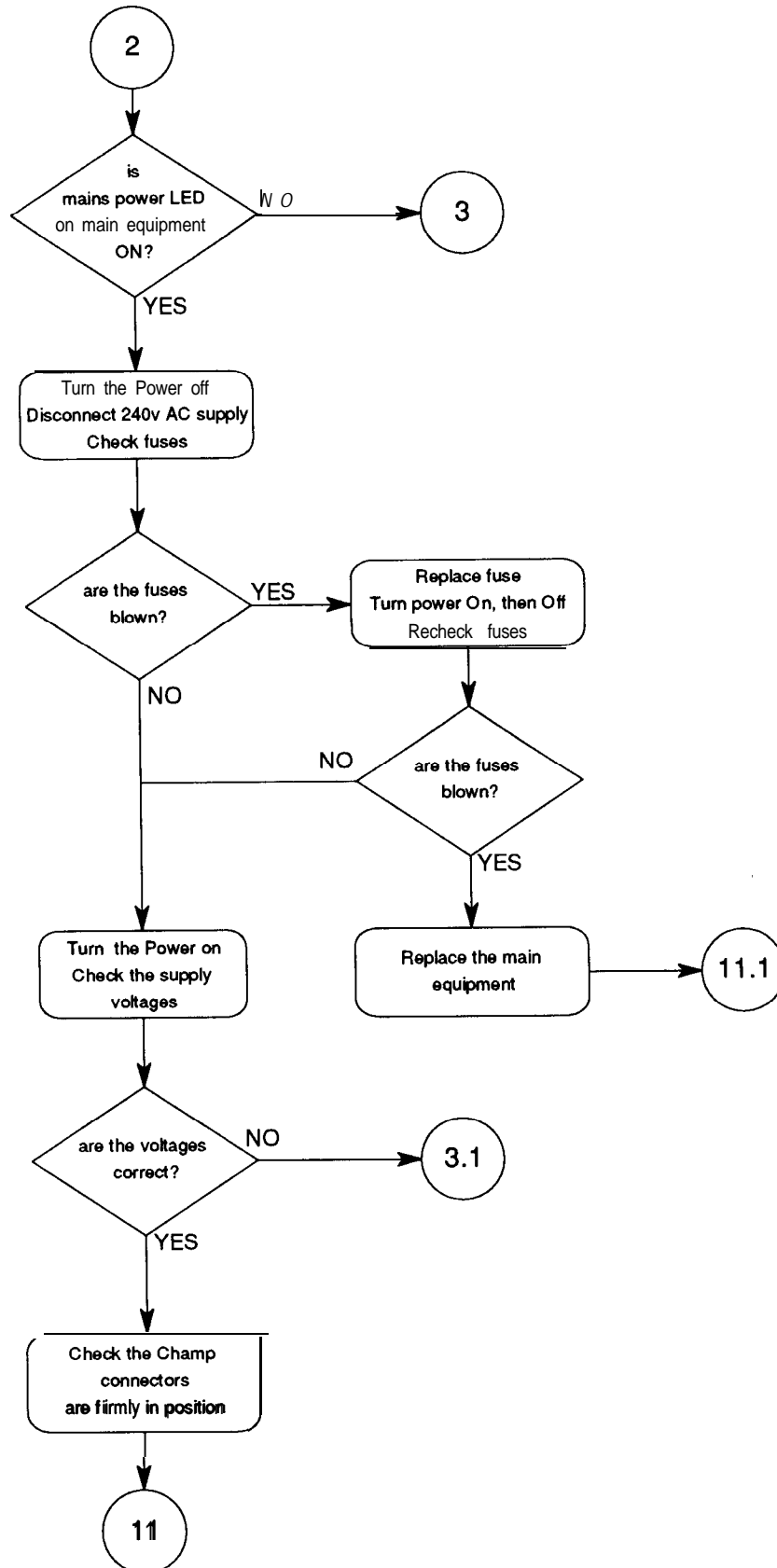
Localise the Fault



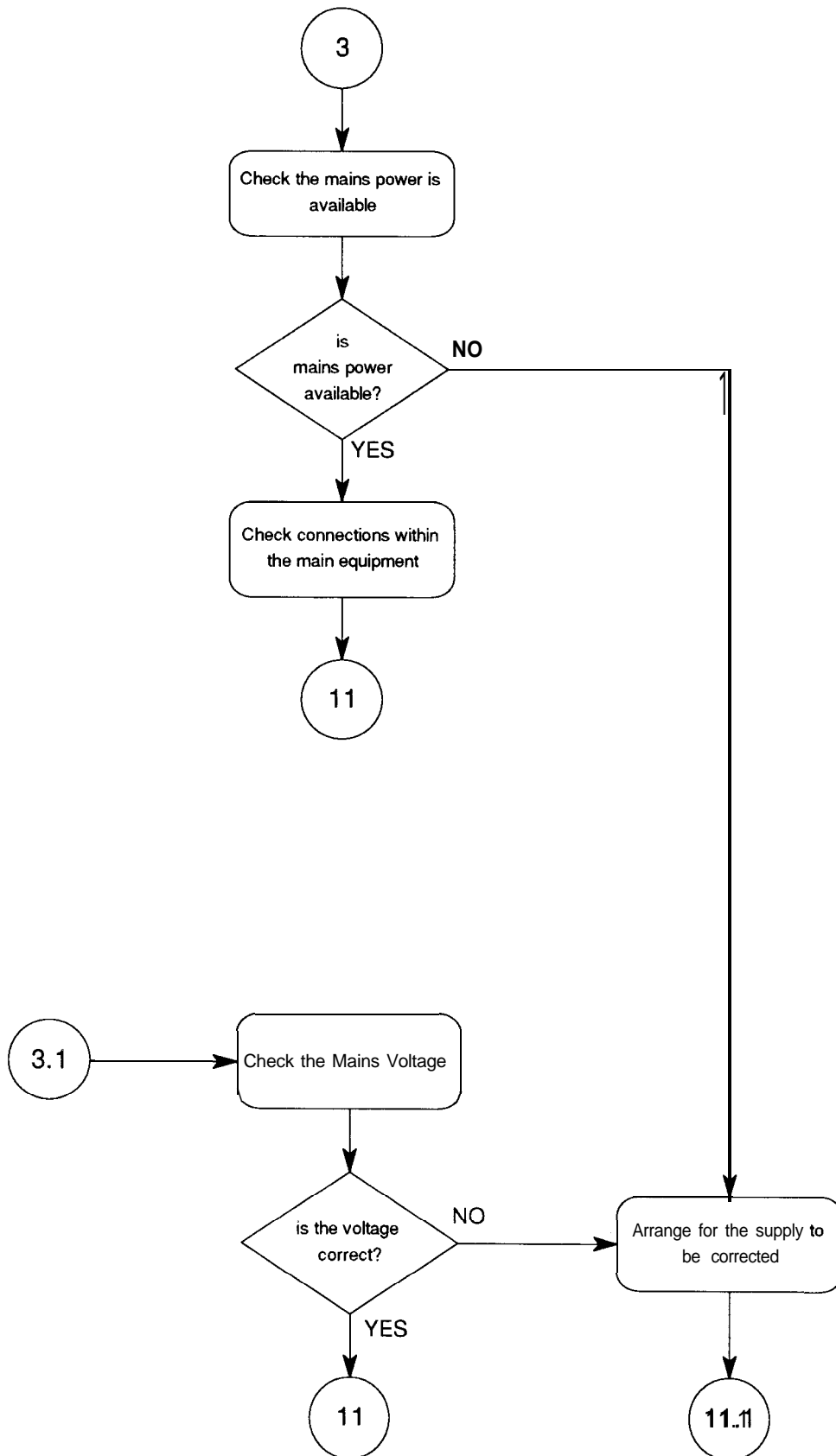
Localise the Fault (cont)



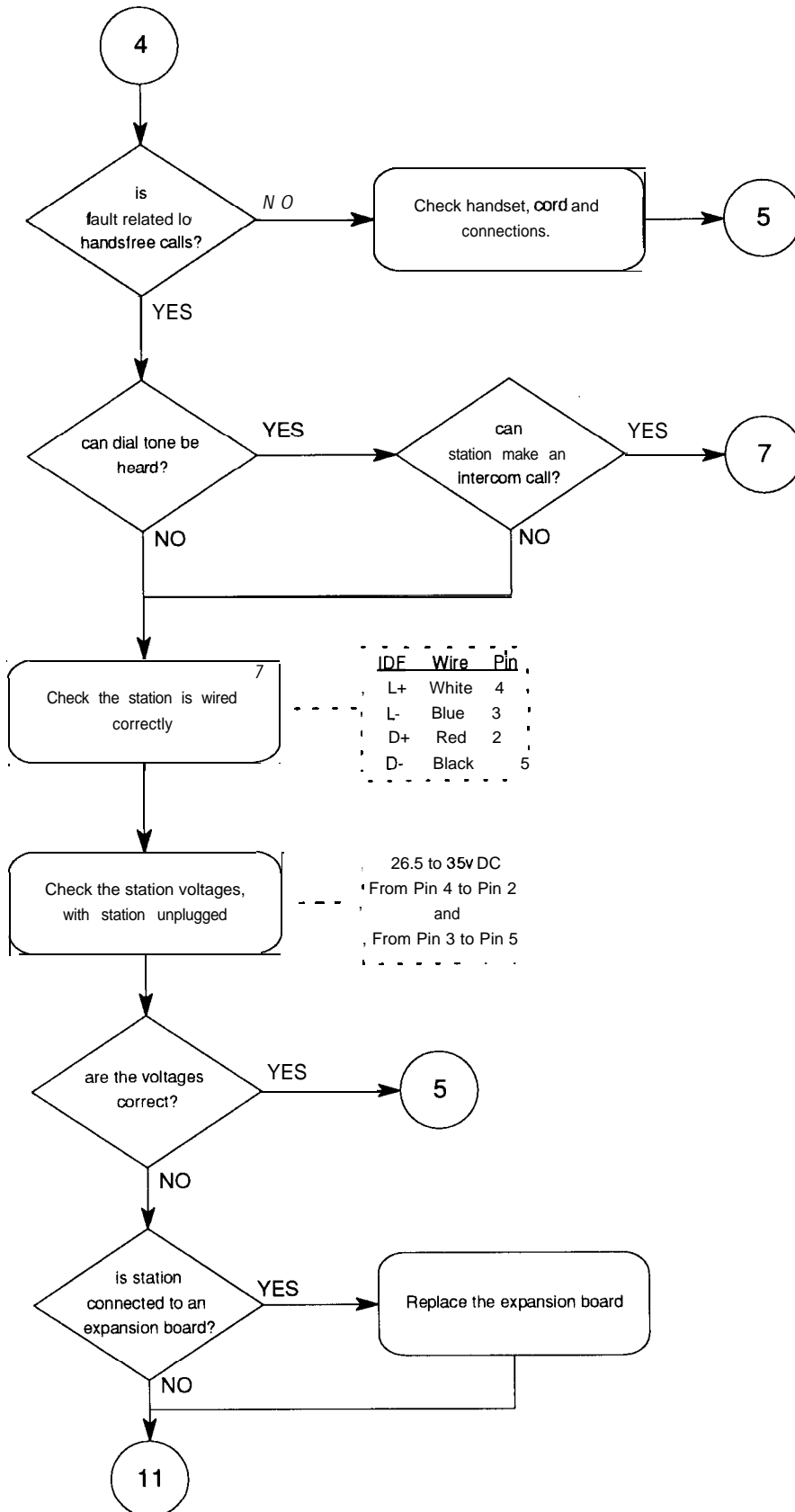
System Fault



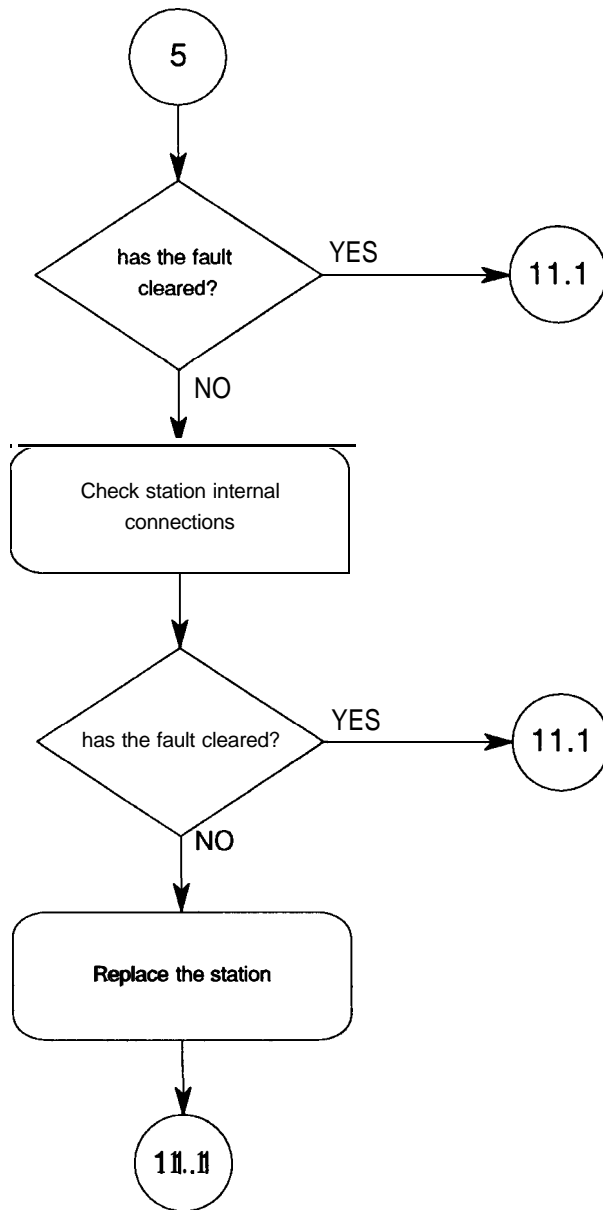
System Fault (cont)



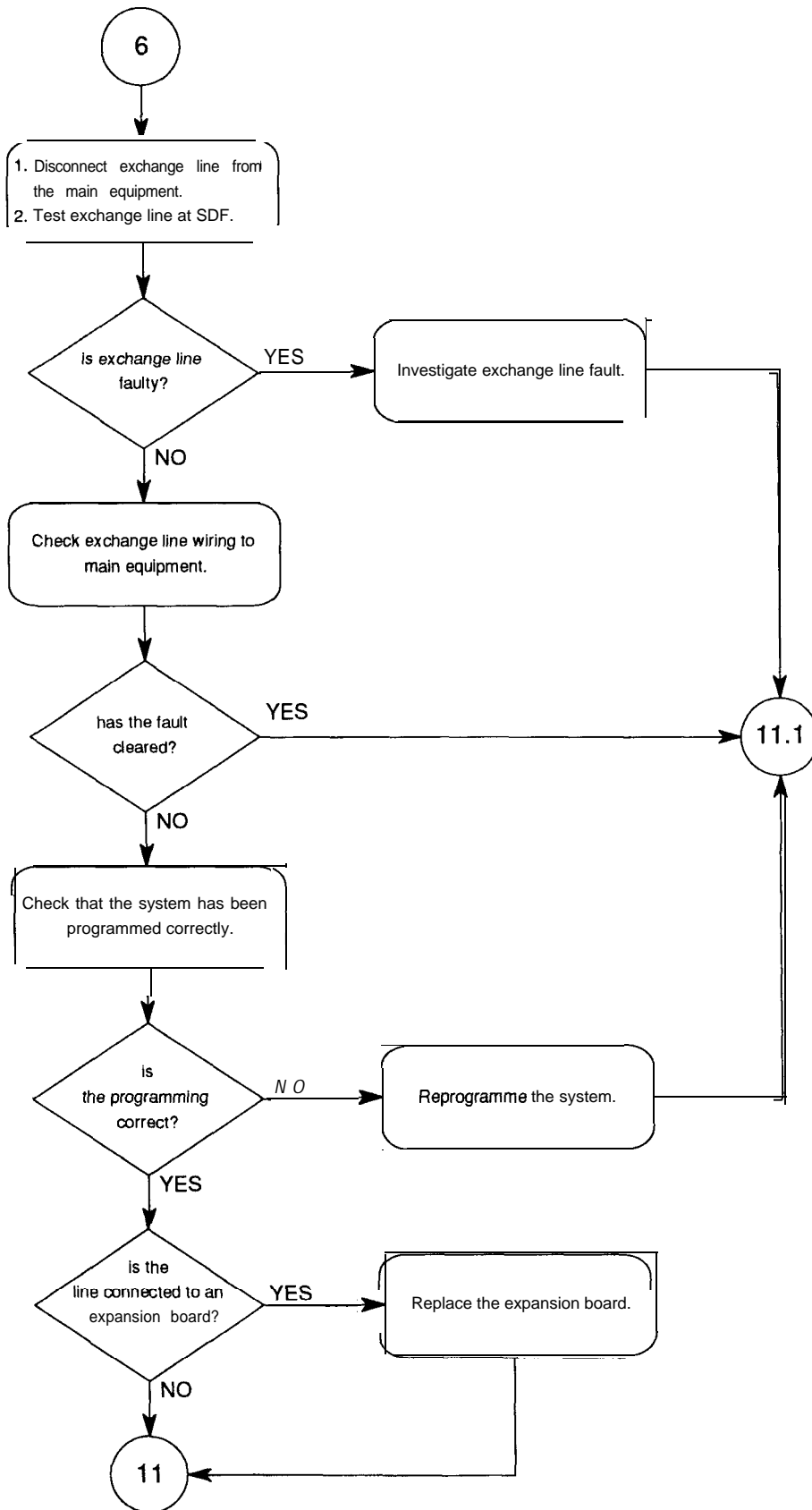
Keystation Fault



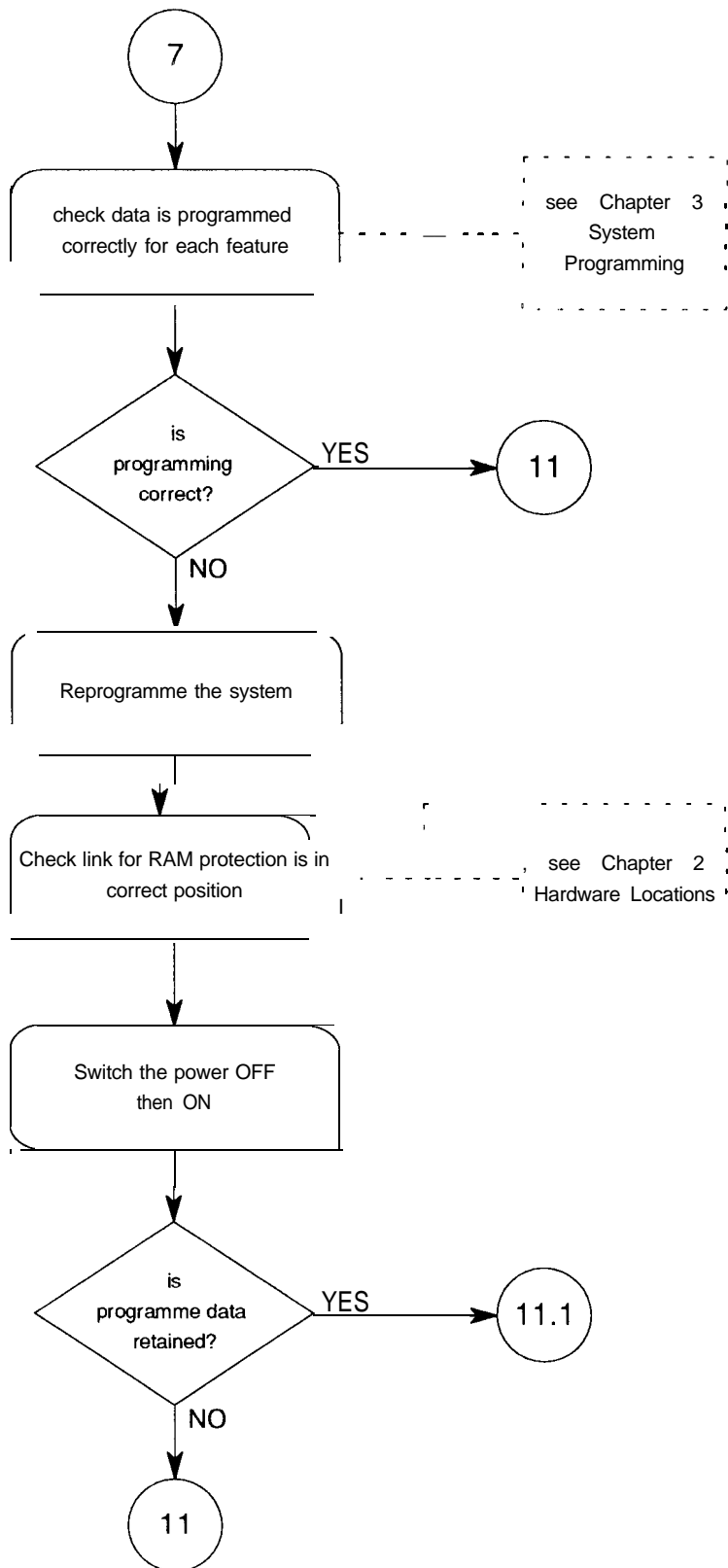
Keystation Fault (cont)



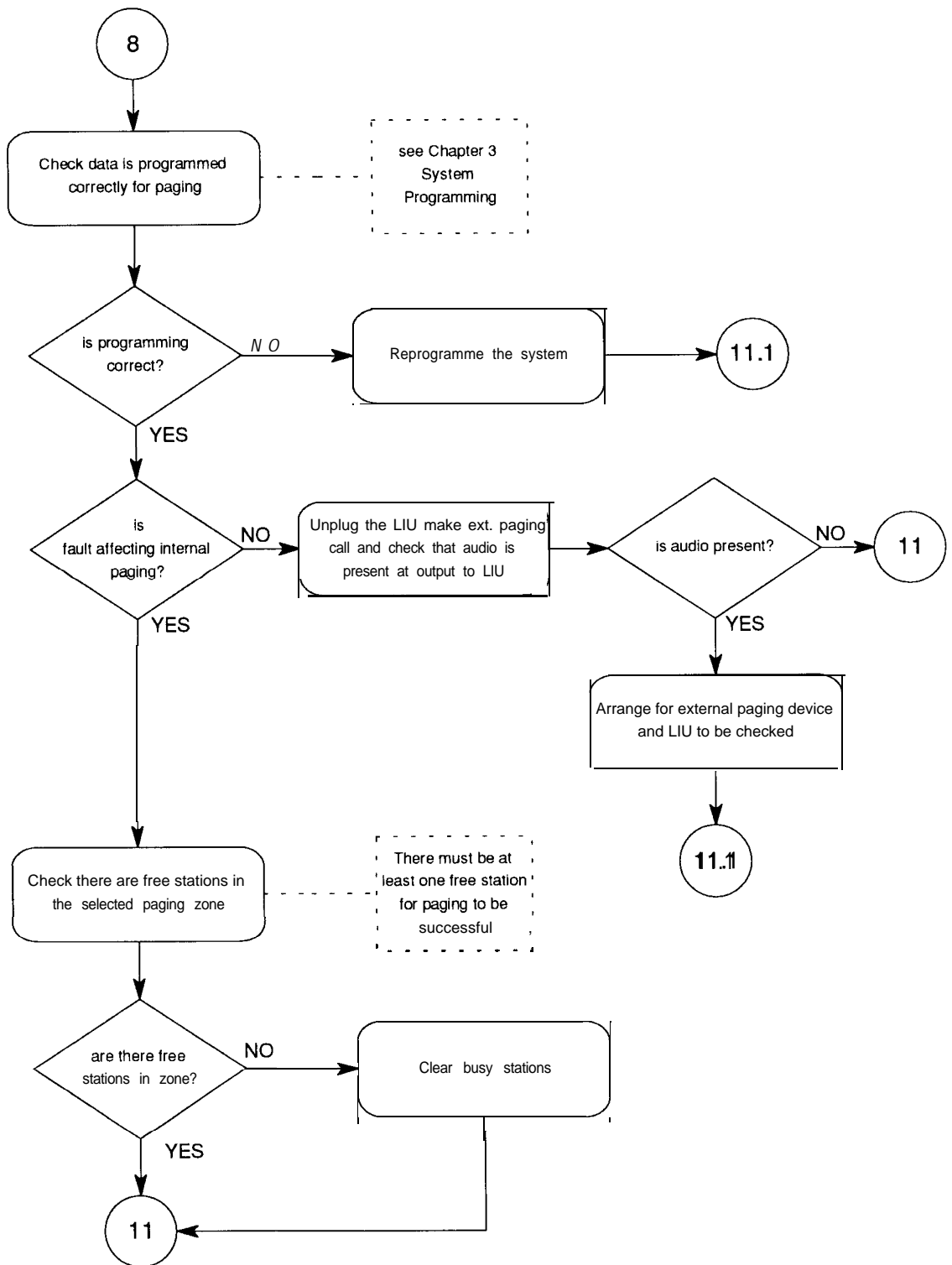
Exchange Line Fault



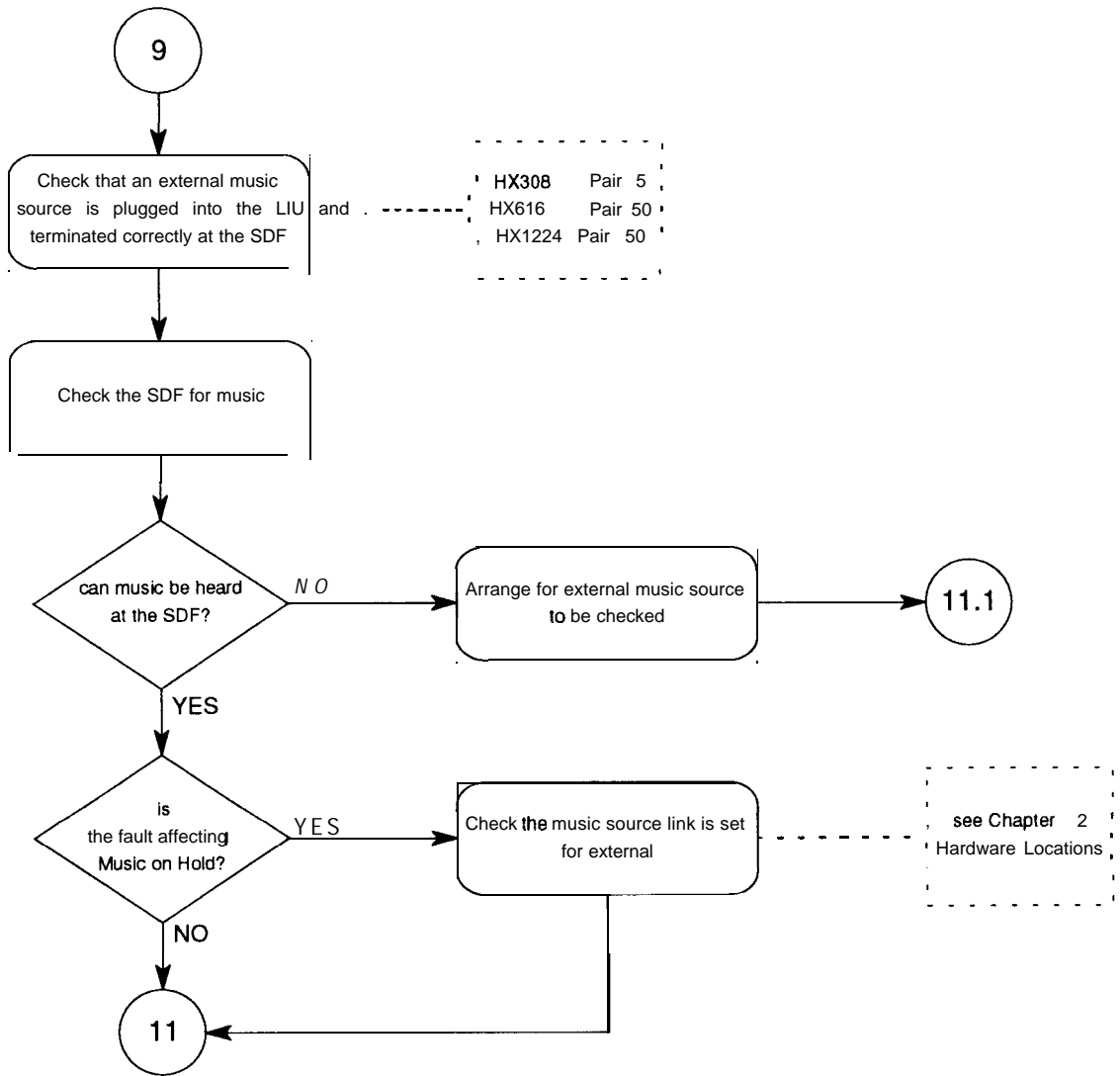
Programming Fault



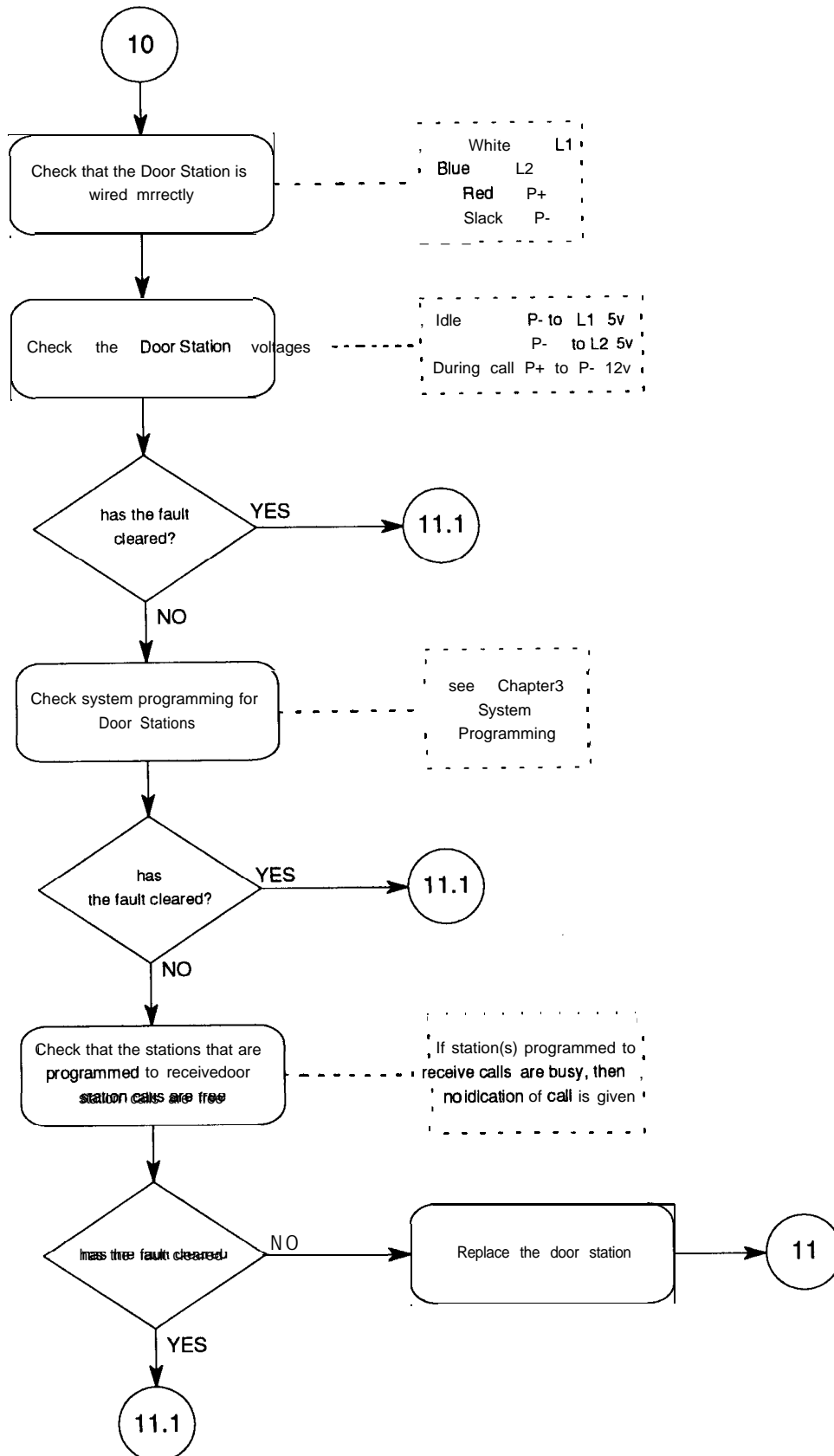
Paging Fault



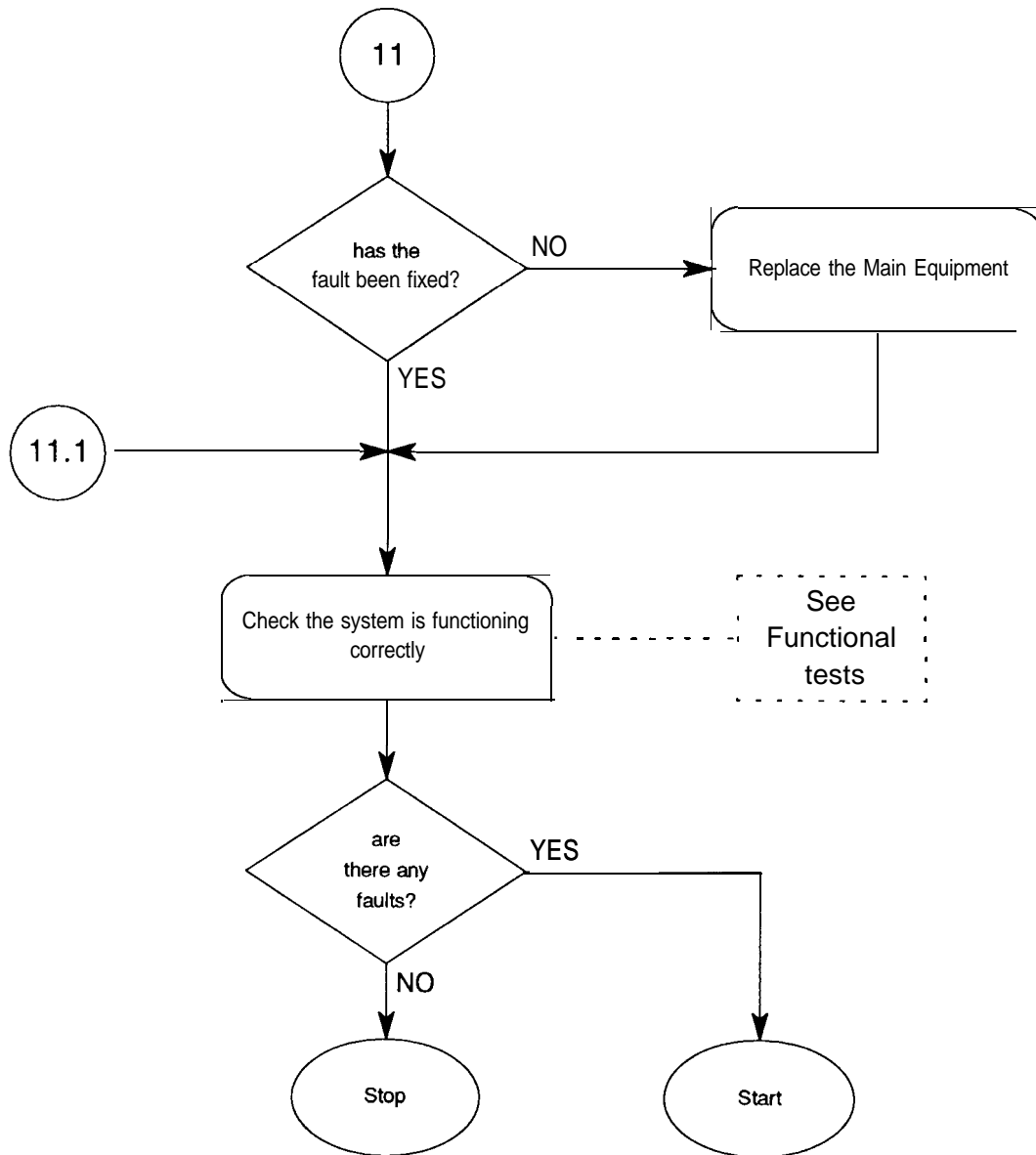
External Music Source Fault



Door Station Fault



Conclusion



Appendix A
Parts Serial Item and Codes list

Appendix A

Parts Serial Item and Codes list

Main Equipment

Serial 727

Item & Code	Description	Remarks
1 ME-HX308	HX308 Main Equipment	
2 ME-HX616	HX616 Main Equipment	
3 ME-HX1224	HX1224 Main Equipment	Includes 1 x HX-EXPB Expansion Board
4 HX-EXPB	HX1224 2 + 2 Expansion Board	

Stations

Serial 727

Item & Code	Description	Remarks
5 TS-HX-STD	HX Standard Station	
6 TS-HX-EXEC	HX Executive Station	Standard Station plus display
7 DS-HX	HX Door Station	Includes a wall mounting plate

Miscellaneous

Serial 727

Item & Code	Description	Remarks
8 LC-HX	HX Line Cord	
9 HC-HX	HX Handset Cord	
10 HS-HX	HX Handset Assembly	
21 SDF-HX308	SDF Cable Kit for HX308	Includes Cable Tails, Cable Connectors, System User Guide and DSS Label Kit
22 SDF-HX616	SDF Cable Kit for HX616	Includes Cable Tails, Cable Connectors, System User Guide and DSS Label Kit
23 SDF-HX1224	SDF Cable Kit for HX1224	Includes Cable Tails, Cable Connectors, System User Guide and DSS Label Kit
24 SDF-EXP-HX	SDF Cable Kit for HX1224 Expansion Board	Includes Cable Tail and Cable Connector for one expansion board

Documentation

Serial 727

Item & Code	Description	Remarks
11 DOC-HX308-KL	HX308 Station Key Label	Pack of 8
12 DOC-HX616-KL	HX616 Station Key Label	Pack of 16
13 DOC-HX1224-KL	HX1224 Station Key Label	Pack of 24 plus 2 Operator Labels
14 DC-HX	HX Directory Card Set	Pack of 50
15 DOC-HX-SB	HX Sales Brochure	
16 DOC-HX-SOF	HX System Order Forms	
17 DOC-HX-PSRM	HXPSRM	
18 DOC-HX-IM	HX I & M Manual	
19 DOC-HX-SUG	HX User Guide	
20 DOC-HX-ORUG	HX Quick Reference Card	

Related Items NOT in Serial 727

Item & Code	Description	Remarks
S546/32 LC-E-6W	Line Cord 6 wire	Used when station based amplifier is required
S268/87	Wall Mounting Telephone Outlet Plate	Required for wall mounting of HX Keystations
S268/125	Krone Modular Socket	
S268/128	Modular Socket Adaptor	Modular socket to 600 type plug
S11/110	Fuse M205 3 Amp Fast Blow	
S361/26 SA-T105	Station Based Amplifier T105	Requires a Line Cord 6 wire

Appendix B
System Order Forms



COMMANDER HX SYSTEM ORDER FORM

System Order No.
(Service Plus)

Section 1 **MODEL** HX308 HX616 • **I HX1224** *Tick Required Box*

Customer's Name _____

Address _____

Town or Suburb _____ Postcode _____

Nature of Business _____

Customer Contact _____ Telephone _____

Sales Contact _____ Telephone _____

Type of Payment (✓)

Lease Outright Purchase

Standard Rental Short Term Rental

Temporary Rental Other

Division (J)
C o m m C + G Cons

Instal Req. Date

STD Code _____ Service No. _____ PBX Ext _____ D D M M Y Y
If off PABX

App'n Date _____ Date Order Issued _____ Date Completed _____
D D M M Y Y D D M M Y Y D D M M Y Y

PCMS Code | Exp | Technical Code | **Serial/Item Qty** | **Comments/Installer Notes**

Main Equipment

HX308 Main Equipment	HX3BU	ME-HX308	727/1	
HX616 Main Equipment	HX6BU	ME-HX616	727/2	
HX1224 Main Equipment (includes 1 Expansion Board providing 8 exch lines/20 stns)	HX12BU	ME-HX1224	727/3	

Stations

Standard Keystation	HXSXS	TS-HX-STD	727/5	
Executive Keystation	HXEKS	TS-HX-EXEC	727/6	
Stn Quick Reference Card (for SLT Stations)	HXQRC	DOG-HX-QRUG	727/20	
Door Station	HXDS	DS-HX	727/7	

Extras

Wall Mounting Plate (TF200) (Station Amp not available if station is Wall Mounted.)	WMP	WMP	268187	
Station Amplifier	HXSAM	SA-T105	361/26	
Expansion Board HX1224 (Max 2) (2 exch lines/2 Hybrid stns)	HX12EB	HX-EXPB	727/4	
HX308 SDF Cable Kit (Price included in ME)		SDF-HX308	727/21	1
HX616 SDF Cable Kit (Price included in ME)		SDF-HX616	727/22	
HX1224 SDF Cable Kit (Price included in ME)		SDF-HX1224	727/23	
HX1224 Expansion SDF Cable Kit (Price included in Expansion Card)		SDF-EXP-HX	727/24	

(see also Technicians Ordering Options - Section 2.2)

Note: Insert an X in Exp column to order expansions.

Summary of System Requirements

Exchange Lines
PABX Lines
Stations (Total)

Tick if required

	Permit No.	Service Order No.
External Music Source (L.I.UReq'd)		
External Paging (L.I.UReq'd)		
Private CDR Printer (Data L.I.UReq'd)		

Permit No. MUST accompany Service Order No.

Ensure Section 2 is completed to suit customer requirements
727/16

COMMANDER HX DETAILING FORM

System Order No.
(Service Plus)

--	--	--	--	--	--	--	--	--	--

Section 2.1

MODEL **HX308** **HX616** **HX1224** *Tick Required Box*

Customer's Name _____

Address _____

Town or Suburb _____ Postcode _____

Type of Payment (✓)

Lease Outright Purchase

Standard Rental Short Term Rental

Temporary Rental Other

STATION OPTIONS

STN NO	DESIGNATION AND/OR LOCATION	STN TYPE	#30	#32	#33	#34	#35	#73	#77		#84	
			STN CLASS (0)	PAGE ENABLE (1)	PAGE INCLUDE (1)	PAGE ZONING (0)	STN NIGHT RESTRICTION (0)	BOSS/SEC ASSIGN (0)	GROUP NO (0)	RING MODE (1)	FAX 0 (0)	FAX 1 (0)
21												
22												
23												
24												
25												
26												
27												
(308 max.) 28												
29												
30												
31												
32												
33												
34												
35												
(616 max.) 36												
37												
38												
39												
40												
41												
42												
43												
(1224 max.) 44												
	E=Exec Keystn S=Std Keystn SLT=2W Analogue	0 = Class A 1 = Class B 2 = Class C 3 = Class D 4 = Class E (see below)	0 = Disable Paging 1 = Enable Paging	0 = Exclude from rec. pages 1 = Include in paging calls	0 = Zone 0 1 = Zone 1 2 = Zone 2 3 = Zone 3	0 = Unrestricted 1 = Restricted	Enter Sec. Station Number (Max 3 per sec.)	Enter Group Number (51-54: 308) (51-59: 616/1224)	0 = Ring All 1 = Hunt	Enter Station Number Hybrid or 2W only (Max 2 fax stns.)		

SYSTEM OPTIONS

CLASS A Unrestricted	CLASS B Barred IDD		CLASS C Barred IDD & STD		CLASS D Spare		CLASS E Intercom Only	
	ALLOW	DENY	ALLOW	DENY	ALLOW	DENY	ALLOW	DENY
	(-)	(0011*)	(008)	(0*)	(-)	(-)	(-)	(0*)
	(-)	(0012*)	(013)	(-)	(0*)	(-)	(-)	(1*)
	(-)	(0014*)	(016)	(-)	(0*)	(-)	(-)	(2*)
	(-)	(0015*)	(019)	(-)	(0*)	(-)	(-)	(3*)
	(-)	(0101*)	(-)	(-)	(0*)	(-)	(-)	(4*)
	(-)	(0108*)	(-)	(-)	(0*)	(-)	(-)	(5*)
	(-)	(009*)	(-)	(-)	(-)	(-)	(-)	(6*)
	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(7*)
	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(8*)
	(-)	(-)	(-)	(-)	(-)	(-)	(-)	(9*)
	10 digits max	10 digits max	10 digits max	10 digits max	10 digits max	10 digits max	10 digits max	10 digits max

COMMANDER HX DETAILING FORM

System Order No.
(Service Plus)

--	--	--	--	--	--	--	--

Section 2.2

MODEL

HX308

HX616

HX1224

Tick Required box

SYSTEM OPTIONS

#26 MUSIC SOURCE 616 & 1224 only	#44 PABX CODE	#50 TLB TIMING	#51 PABX TLB TIMING	#52 HOLD RECALL TIME	#53 TRANSFER RECALL TIME	#54 ALARM DURATION	#58 RS232 BAUD RATE (616 & 1224 only)	#59 DOOR OPEN TIME (308 ONLY)	#71 ACCESS BARRING SPEED DIAL EXEMPTION	#78 TOLL PASSWORD SETTING
(Internal)	(-)	(0100)	(0600)	(090)	(090)	(010)	(2400)	(0800)	(0)	(0987)
[*] key toggles between internal and external music	Enter Access Code	Enter TLB duration (millisec) (4 digits) (100ms/Step)	Enter PABX TLB duration (millisec) (4 digits) (100ms/Step)	Enter Hold Recall time (Sec) (3 digits 000 to 255)	Enter Transfer Recall time (Sec) (3 digits 000 to 255)	Enter Alarm cdl time (Sec) (3 digits 00 to 255)	[*] key steps through the Baud Rates, order (300,600, 1200, 2400, 4800, 9600)	Enter Door Open time (millisec) (4 digits)	0 = Speed Dial subject to Access Barring 1 = Speed Dial exempt from Access Barring	Enter Toll Password (4 digits)

#45
CARRIER
PRESELECTION
CODE
(-)

Enter codes to be
assigned
(Max. of 4 digits)

#87
CDR SELECTION (616 & 1224 only)

SMDR (0)	RANGE (1)	ALL DIGIT (0)
0 = Disable 1 = Enable	0 = In 1 = In and Out	0 = No 1 = Yes

#55
TIME AND DATE
(-)

YY Last 2 digits of year (00-99)

MM Month of year (01-12)

DD Day of month (M-31)

W Day of week
0 - Sunday
1 - Monday
2 - Tuesday
3 - Wednesday
4 - Thursday
5 - Friday
6 - Saturday

HH Hour of day
(00 - 23)

MM Minute of hour
(00 - 59)

TECHNICIANS INSTALLATION CHECK LIST (Ordering Options)

	Serial/Item
Modular to 605 Adaptor (for existing wiring)	268/128
Modular Socket (for new wiring)	268/125
SDF Frame 11-Way (HX308/616)	537/102
SOF Cover 11 -Way	537/20
SDF Frame 27-Way (HX616/1224)	537/103
SDF Cover 27-Way (HX616/1224)	537/19
System User Guide (DOC-HX-SUG) (order if SDF Kit is not taken)	727/19
Six wire Line Cord (for use with station amplifier)	546/32

#63
DOOR STATION RINGS

DOOR STN	RINGING STATION(S) (21)
1	
2	

616/1224 only

Enter Station numbers (max 10)
for each Door Station

EXCHANGE LINE OPTIONS

EXCH LINE	#31 EXCHANGE LINE ACCESS (ALL STNS)	#40 LINE MODE (1)	#42 SIGNALLING TYPE (1)	#43 LINE TYPE (EXCH)	#60 LINE RING MODE (2)	#61 NIGHT RING STATIONS (21)	#62 DAY RING STATIONS (21)	#76 LINE GROUP ASSIGNMENT (80)
01								
02								
(308 max.) 03								
04								
05								
(616 max.) 06								
SLOT 1 07								
08								
SLOT 2 09								
10								
SLOT 3 11								
12								
	Enter Station Numbers for each line	0 = Incoming 1 = Both way	0 = Decadic 1 = DTMF	EXCH or PABX (Toggle type with [RD] key)	0 = Hunt 10 1 = Hunt 30 2 = Ring All 3 = Off Hook	Enter Station Numbers (Max 10) for each line	Enter Station Numbers (Max 10) for each line	80, 81 (308) 80-84 (616, 1224) Enter Group No. for each line

EXCHANGE LINE - SERVICE NUMBERS

01		02		03		04		05		06	
07		08		09		10		11		12	

Appendix C

System User Guide

Telecom Commander HX System User Guide

Congratulations on selecting a Telecom Commander HX Small Business System.

The Telecom Commander HX combines the best features of the existing Commander range with exciting new facilities.

Please read this User Guide carefully. It **provides** detailed step-by-step instructions for operating the Telecom Commander HX **308/616/ 1224** Systems.

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

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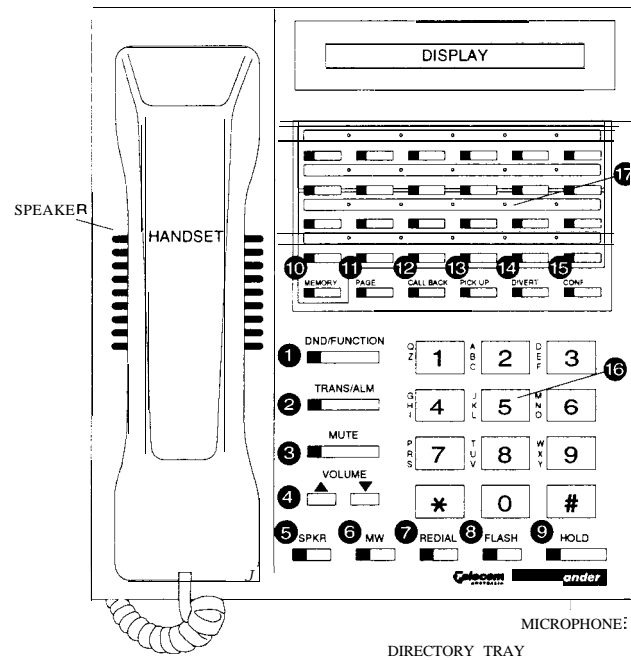
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**1. Getting to Know
Your Commande**

Keystations

There are two Keystation models:

- Standard Keystation (No display)
- Executive Keystation (1 line x 16 character display)



Keystation Diagram
[IL01]

Keystation Key Description

Function Keys

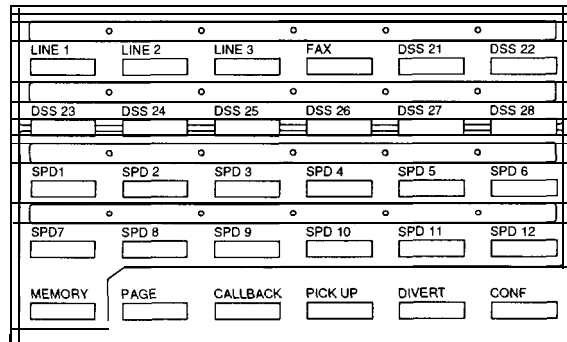
- [DND/FUNCTION]**
When the station is in the idle mode this key will initiate "Do Not Disturb". In the Off-Hook mode it is used to prefix function codes.
- [TRANS/ALARM]**
In the idle mode this key is used to set up an appointment alarm. During conversation it is used to transfer a call to another station.
- [MUTE]**
Enables and disables the station microphone.
- [Δ] and [∇]**
Increases or decreases the handset, loudspeaker and ringing volume.
- [SPKK]**
Enables or disables the handsfree mode.
- [MW]**
Used in conjunction with the Message Wait Facility.
- [REDIAL]**
The [Redial] key is used to redial the last number called or while listening to ring/busy tone on an outside-line call will initiate Automatic Redial.
- [FLASH]**
Used to recall a parent PABX. Also with network facilities, such as Telecom's Centel™ and EasyCall™.
- [HOLD]**
Used to place outside line and intercom calls on hold. Also in the idle mode, pressing the [Hold] key will turn the Background Music on and off.
- [MEMORY]**
Used to access memory functions.
- [PAGE]**
Used to access the paging facility.
- [CALL HACK]**
Provides an automatic call back when busy stations or lines become free.
- [PICK UP]**
Picks up calls ringing at other stations in the same station group.
- [DIVERT]**
Used to temporarily transfer incoming calls to another station.
- [CONF]**
Used to set up a conference.
- Dial Keys**
Used to access numbers and functions within the system and via the PSTN.
- Selection Keys**
[DSS] Direct Station Select keys access other stations within the system. Associated LEDs indicate the status of the station, i.e. Busy, Ringing or Idle.
[SPD] Personal Speed Dial keys give one touch dialling facilities.

Selection Keys

For each system the allocation of functions to the selection keys varies. The following layouts show the functions allocated to each selection key.

Keystation labels are supplied with each system indicating the key function layout for that system. The HX1224 also has supplied two labels for the "Operator" station, station 2 1. On these labels the last 18 keys are blank.

Commander HX308

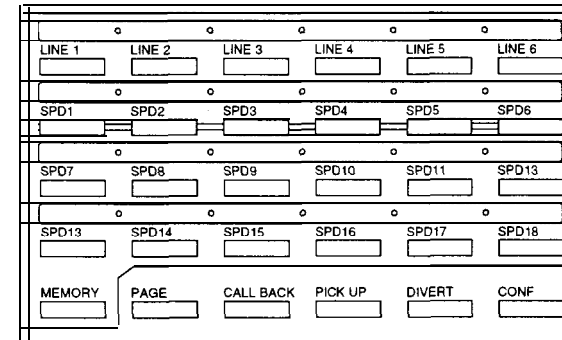


Selection Key Assignment for the **HX308** Keystation
[IL02]

The selection keys on the Telecom Commander HX308 keystations are assigned the following functions:

- Keys 1 to 3 Outside line keys 1 to 3
- Key 4 Fax key
- Keys 5 to 12 Direct Station Select (DSS) keys 1 to 8
- Keys 13 to 24 Personal Speed Dial keys 1 to 12
- Keys 25 to 30 Preset function keys 1 to 6

Commander HX616

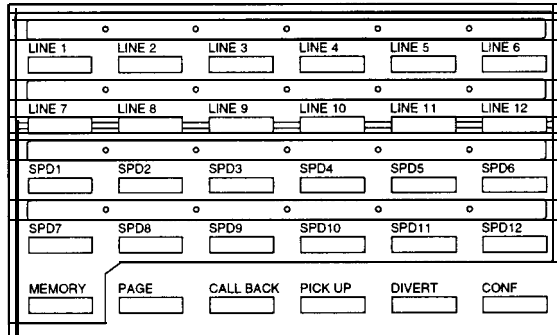


Selection Key Assignment for the HX616 Keystation
[IL03]

The selection keys on the Telecom Commander HX6 16 keystations are assigned the following functions:

- Keys 1 to 6 Outside line keys 1 to 6
- Keys 7 to 22 Dual function:
Direct Station Select (DSS) keys
OR
Personal Speed Dial keys 1 to 16
- Keys 23 and 24 Personal Speed Dial keys 17 and 18
- Keys 25 to 30 Preset function keys 1 to 6

Commander HX1224



Selection Key Assignment for the **HX1224** Keystation
[IL04]

The selection keys on the Telecom Commander HX1224 keystations are assigned the following functions:

- Keys 1 to 12 Outside line keys 1 to 12
- Keys 13 to 24 Dual function:
Programmable Direct Station Select (DSS) keys
OR
Personal Speed Dial keys 1 to 12
- Keys 25 to 30 User programmable:
Direct Station Select (DSS) keys
OR
Function keys

Programmable Selection Keys (HX1224 only)

Selection keys 13 to 24 are dual function keys: the DSS facility can be programmed to access any station.

Selection keys 25 to 30 are programmable as either DSS keys or Function keys.

The following codes are used during programming.

- 11 Memory (Speed Dial)
- 12 Page
- 13 Call-back
- 14 Pick-up
- 15 Divert
- 16 Conference
- 21 to 44 DSS keys for stations 21 to 44

To Assign a Station to a DSS Key:

- Press the [#] key PROGRAM CODE:
- Enter the Command number(16) KEY PROGRAMMING
- Press the required selection key (13 to 30) KEY26: PAGE
For example 26
The display shows the station/function already assigned to that key
- Enter the required station number (21 to 44) KEY26: PAGE35
For example 35
- Press the [#] key to return to Idle mode Mon, 11 Jan 09: 43

To Assign a Feature to a Function Key:

- Press the [#] key PROGRAM CODE:
 - Enter the Command number (16) KEY PROGRMMING
 - Press the required selection key (25 to 30)
For example 26 KEY26: 35
- The display shows the station /unction already assigned to that key.*
- Enter the required station number (11 to 16)
For example **12** (PAGE) KEY18: 2612
 - Press the [#] key to return to Idle mode Mon, 11 Jan 09:43

Handstree and Off -hook Operation

The Commander HX keystations have a built-in loudspeaker and an additional microphone that enables the keystation to be used in either Off-hook mode or Handsfree mode.

In the Off-hook mode the handset is used and the loudspeaker is turned off.

In the Handsfree mode the handset is left On-hook and the [SPKR] key is used to activate the station. Progress of the call and conversations is heard through the loudspeaker.

To return to the Idle mode, from Handsfree mode, press the [SPKR] key.

- In the following instructions for use of your keystation, the term “Lift the handset” may also be read as ‘Press the [SPKR] key’ to proceed in Handsfree mode.

Direct Station Select Keys

Direct Station Select [DSS] keys provided single button access to other stations on the system. Each (DSS) key has an associated red LED which shows the station status.

Attribute	Meaning
Off	Free
On Flashing	Ringling
Red	Busy

The Commander HX308 and HX616 systems have one [DSS] key for each station.

The 12 [DSS] keys on the Commander HX1224 keystation have, at default, the first 12 stations assigned to them. These may be changed by programming.

The [DSS] keys can be used in either Handsfree or Off-hook mode. Pressing a [DSS] key while the keystation is idle activates your keystation in Handsfree mode and connects you to the desired station.

line Keys

Each outside line has a dedicated [LINE] key, which provides single button access to that line. Each [LINE] key has an associated two colour LED that shows the status of that line.

Colour	Attribute	Meaning
Off		Free
Red	Steady	In use at another station
Red	Flashing	On Common Hold at another station
Green	Steady	In use at this station
Green	Slow Flashing	On Common Hold at this station
Green	Fast Flashing	Ringling or on Exclusive Hold at this station

The [LINE] keys can be used in either Handsfree or Off-hook mode. Pressing the key while the station is idle will activate the station and connect you to the line, in Handsfree mode.

Single line Telephones

Single Line Telephones (SLTs) may be connected to Commander HX systems up to 4 on the HX308, up to 8 on the HX616 and up to 16 on the HX1224.

If you have an SLT, the facilities and features explained in the following sections can be accessed by dialling the following codes:

Feature	Code
Call Pick-up	11
Access Barring Override	12+Password
Zone Paging	13
Last Number Redial	15
Speed Dial	16
Place call on Common Hold	HF 17
Retrieve call from Hold	17
Program Personal Speed Dial Numbers	#17
Call-back	HF 1
Transfer	HF
Set Message Wait	HF 191
PABX Hook-flash	HF 18
Paging Call Pick-up	*1+(STN No.)

HF = Hook-flash

- ☛ Hook-flash will not be recognised on an outside line call for up to 10 seconds after the last digit has been sent.
- ☛ The range of codes in this table is indicative only. Any keystation operation described in this user guide that has a dial code associated can be performed from an SLT

Audible Signals

Signal	Meaning
Normal ring	Outside call
Long repeating ring	Intercom call
Normal ring for ten seconds repeated every 9 seconds	Hold Recall
Short burst of ring	Call Waiting OR Incoming intercom call in Voice mode

Service Tones

Tone	Meaning
Continuous tone	System dial tone
Long repeating tone	Intercom ring tone
Short repeating tone	Error tone
Slow repeating tone	Busy tone
Rapid repeating tone	Transfer tone OR Hold confirmation tone

2. Answering Calls

Answering Calls

Intercom Calls

To Answer an Intercom Call Ringing at Your Station:

- Hear ringing CALL FROM STN25
- Lift the handset CALL FROM STN25
- Replace the handset at the end of the call Mon,11 Jan 09:43

■ If a call is made to your station while you are on another call, you will hear a short burst of ringing and the display will show:

CALL FROM STN25

To Answer an Intercom Call Ringing at Another Station:

- Press the flashing [DSS] key CALL FROM STN25

To Answer an Intercom Call Ringing at Another Station within Your Station Group:

- Press the flashing [DSS] key CALL FROM STN25
OR
Lift the handset
- Press the [PICKUP] key CALL FROM STN25
OR
Dial 11

Outside Calls

To Answer an Outside Call Ringing at Your Station:

- Hear ringing LINE02RINGING
- Lift the handset LINE02:

To Answer an Outside Call Ringing at Another Station:

- Press the flashing red [LINE] key LINE02:

To Answer an Outside Call Ringing at Another Station within Your Station Group:

- Press the flashing red [LINE] key LINE02:
OR
Lift the handset
- Press the [PICKUP] key LINE02:
OR
Dial 11

Door Station Calls

To Answer a Door Station Call Ringing at Your Station:

- Hear ringing
- Lift the handset

To Answer a Door Station Call Ringing at Another Station within Your Station Group:

- Lift the handset
- Press the [PICKUP] key
OR
Dial 11

■ After the call button is pressed on the Door Station, Music On Hold is heard at the Door Station for up to 5 seconds. If the call is not answered during this period the call is cancelled.

■ The display on the HX308 indicates 'DOOR' only.

Door Unlock (HX308 only)

If an electronic door lock has been connected, it can be operated from your station.

While You are Connected to the Door Station:

- Dial 1 to unlock the door

3. Making Calls

Making Calls

Intercom Calls

To Make an Intercom Call:

- Lift the handset

- Dial the station number
OK

Press the appropriate [DSS] key

If the station is free and ringing is heard, the [DSS] key may be pressed again. The call is converted from a Signal call to a Voice call. The called station is automatically activated in Handsfree mode and two-way conversation may take place.

Intercom Call-back

If the station you call is bus>-, you can activate this feature to call you back when that station becomes free.

To Set Intercom Call-back when a Called Station is Busy:

- Hear the busy tone

- Press the [CALL BACK] key

- Replace the handset

*When the called station is free,
your station rings*

- Lift the handset

- The called station will not ring until you lift the handset. If you do not lift the handset within 10 seconds, the Call-back is cancelled.

Outside Calls

To Make an Outside Call:

- Lift the handset

- Dial 0 and listen for dial tone

- Dial the required number

OR

- Lift the handset

- Press a free [LINE] key and listen for dial tone

- Dial the required number

- In the Idle mode pressing a [LINE] key or dialling 0 will activate the keystation and connect you to a free line in Handsfree mode. Then continue as above.

Outside Line Call-back

If all outside lines are busy you can activate this feature to queue on one particular line and call you back when it becomes free.

To Set Outside Line Call-back when All Lines are Busy:

- Hear the busy tone

- Press the [CALL BACK] key

- Replace the handset

When the line becomes free
your station rings

- Lift the handset

You are connected to the free line and may continue dialling the
required number

- ☛ If you dial 0 to access a line, the system monitors the last line and you will only receive a Call-back when it becomes free.

Door Station Calls

When a call is made to a Door Station, no tones are heard at the Door Station. This feature can be used to monitor activity in the vicinity of the Door Station. To ensure that no sound is sent from your keystation use the [MUTE] key.

Door Station on the Commander **HX308**

To Make a Door Station Call:

- Lift the handset

- Dial 193

Door Stations on the Commander **HX616/1224**

To Make a Door Station Call:

- Lift the handset

- Dial 193

- Dial the Door Station
number 0 or 1

Door Unlock (HX308 only)

If an electric door lock has been connected, it can be operated from your station.

While You are Connected to the Door Station:

- Dial 1 to unlock the door
- ☛ This feature is not available from Single Line Telephones.

4. Automatic Dialling

Last Number Redial

To Automatically Redial the Last Outside Number Dialed from Your Station:

- Lift the handset
- Press the [REDIAL] key

LINE02:8183888

The system automatically redials the last outside number

- You can use the [REDIAL] key after pressing the [SPKR] key or a free [LINE] key, or after dialling 0. If you press the [REDIAL] key while the station is in the Idle mode, a free outgoing line is automatically selected and the last number redialled.

Repeat Dialling

If you receive a busy signal or your call is unanswered after making an outside call, you can set your station to automatically retry the number up to 3 times at 30 seconds intervals

During this waiting period, the outside line that was selected is reserved for you and appears busy to all other stations. However an incoming call on this line takes priority and the automatic redial will be cancelled.

When Repeat Dialling is activated the [REDIAL] LED flashes slowly.

To Set Repeat Dialling:

- Listen to Busy or Ring tone
- Press the [REDIAL] key and hang up
- Wait 30 seconds

LINE02:8183888

AUTO REDIRL 1

Your call is automatically redialled.

LINE02:8183888

If there is still no answer or the number is still engaged the call is released and retried in 30 seconds.

When the called person answers:

- Lift the handset

The call is released if not answered within 10 seconds

- Automatic redial is attempted three times and then cancels

To Cancel Repeat Dialling:

- Lift and replace the handset

Speed Dialling

This facility allows you to access previously stored numbers by dialling a short code. Speed Dial numbers fall into two categories:

- Personal Up to 20 numbers may be stored for each station. These numbers are stored by you at your station.
- Common Up to 80 numbers may be stored for use by any station within the system. These numbers can only be stored by station 2 1.

Speed Dial numbers are numbered from 00 to 99:

- 00 to 19 are Personal (for each station)
- 20 to 99 are Common

To Store Speed Dial Numbers:

- Press the [#] key
- Press the [MEMORY] key
OK
Dial 17
- Dial a Speed Dial number
(00 to 19)
- Dial the number to be stored
and press the [MEMORY] key
- Enter the next number to
be stored
OK
- Press the [#] key to return
to Idle mode

■ Use the [HOLD] key to delete an entry.

When storing numbers the following keys may also be used:

- # places a DTMF # in the Speed Dial number
- * places a DTMF * in the Speed Dial number
- [FLASH] places a Timed Loop Break (TLB) in the Speed Dial number
- [REDIAL] places a pause in the Speed Dial number

To Call a Speed Dial Number:

- Lift the handset
- Press the [MEMORY] key
Hear the confirmation tone
- Dial the speed dial code (00
to 99)
- The number is automatically*
dialled

Speed Dial Keys

The Speed Dial [SPD] keys provide single button access to Personal Speed Dial numbers.

Each keystation has a number of [SPD] keys: the allocation and use of these keys depends on the system model to which the station is connected.

Commander HX308

Selection keys 13 to 24 (secIL02) are allocated as Speed Dial keys. Personal Speed Dial numbers 00 to 11 are assigned to these keys.

To make a call using one of these keys simply press the [SPD] key. An outgoing line will be selected and the number dialled.

Commander HX616

Selection keys 7 to 24 (see ILO3) are allocated as Speed Dial keys. Personal Speed Dial numbers 00 to 17 are assigned to these keys.

To make a call using one of these key, select a free Outside line and then press the required [SPD] key. The stored number will be dialled.

- Selection keys 7 to 22 are dual function keys. When one of these keys is pressed without selecting an Outside line, it will function as; [DSS] key.

Commander HX1224

Selection keys 13 to 24 (see ILO4) are allocated as Speed Dial Keys. Personal Speed Dial numbers 00 to 11 are assigned to these keys.

To make a call using one of these key, select a free Outside line and then press the required [SPD] key. The stored number will be dialled.

- Selection keys 13 to 24 are dual function keys. When one of these key is pressed, without selecting an Outside line, it will function as a [DSS] key.

To Use [SPD] Keys with Automatic Line Selection:

- Lift the handset
- Press the [MEMORY] key

SPEED DIAL

Hear the confirmation tone

- Press the [SPD] key

LINE02:8183888

An outside line is automatically selected and the number dialled

PABX Access

When PABX lines are connected to the Commander HX as well as ordinary PSTN lines, special consideration must be given when storing and using Speed Dial numbers.

All Speed Dial numbers must be stored **with** the PABX access code. The system will recognise the type of line selected and will either:

- Ignore the PABX access code if a PSTN line is selected
- OR
- Insert a pause after the PABX access code if a PABX line is selected.

**5. Holding and
Transferring Calls**

Holding Calls

Outside Calls

An outside call may be placed on Hold. The keystation is then free to make a second call. The held caller will hear music while on Hold.

Calls may be placed on either Common or Exclusive Hold:

Common Hold - any keystation can retrieve the held call.

Exclusive Hold - only the holding keystation can retrieve the held call.

Common Hold

To Place a Call on Common Hold:

- Ask the person to wait
- Press the [Hold] key

Hear confirmation tone then internal dial tone. The display will go blank after 2 seconds

- The [Hold] LED will be lit while the call is held. The [LINE] key on your keystation will slowly flash green to indicate that this keystation is holding the call. At all other keystations the [LINE] key will slowly flash red.

To Retrieve a Call from Common Hold:

- Press the slowly flashing green [LINE] key at your keystation
OR
Press the slowly flashing red [LINE] key at any other keystation

- A call on Common Hold may be retrieved at any station.

Exclusive Hold

To Place a Call on Exclusive Hold:

- Ask the person to wait
- Press the [Hold] key **twice**

Hear confirmation tone then internal dial tone. The display will go blank after 2 seconds

- The [Hold] LED will be lit while the call is held. The [LINE] key on your keystation will fast flash green to indicate that this keystation is holding the call. At all other keystations the [LINE] key will be steady red.

To Retrieve a Call from Exclusive Hold:

- Press the fast flashing green [LINE] key at your keystation

Recall from Hold

If a call is not retrieved from Hold within a preset period, usually 90 seconds, a reminder signal is given:

- The station will ring for 10 seconds
- Lift the handset

- If the call is not answered another timeout period will begin. If the call was on Exclusive Hold the call will revert to Common Hold.

Intercom Calls

An Intercom call may be placed on Hold. Your keystation is then free to make a second call. The held caller will hear music while on hold. If the held station hangs up, the Hold will be cancelled. Intercom Calls can only be placed on Common Hold, allowing any station to retrieve the held call.

To Place a Call on Common Hold:

- Ask the person to wait
- Press the [Hold] key

Hear confirmation tone then internal dial tone. The display will go blank after 2 seconds

☛ The [Hold] LED will be lit while the call is held. The [DSS] key on all keystations will slowly flash red to indicate the keystation is being held.

To Retrieve a Call from Common Hold:

- Press the slowly flashing red
(DSS) key at any keystation

Recall from Hold

If a call is not retrieved from Hold within a preset period, usually 90 seconds, a reminder signal will be given:

- The station will ring for 30
seconds
- Lift the handset

☛ If the call is not answered within the 30 seconds the held call will be cancelled.

Transferring Calls

An outside call may be transferred to another station, either with or without announcement. If the call is transferred without announcement and is not answered within a preset period, the call will revert to the original station.

To Transfer a Call to a Free Station:

- Ask the caller to wait
- Press the [TRANS] key

Hear the transfer tone

- Press the required [DSS] key
OR
Dial the station number

Hear ringing tone

- Replace the handset
OR
Wait until the station answers announce the call and then replace the handset

To Return to the Call Without Completing the Transfer:

- Press the [LINE] key the
caller is waiting on
OR
Press the [TRANS] key

To Transfer a Call Using Voice Call:

- Ask caller to wait
- Press the [Hold] key
- Press required [DSS] key twice
- When called person responds, advise which line key to press.

Transfer to a Busy Station

To Transfer a Call to a Busy Station:

- Ask the caller to wait
- Press the [TRANS] key

Hear the transfer tone

- Press the required [DSS] key
OR
Dial the station number

Hear the busy tone

- Replace the handset

When the called station becomes free the call will be connected to that station.

- If an outside line call is transferred to your station while you are engaged on another call, you will hear a short burst of ringing and the display will show "TRSF CALL BACK 2 1".

Transfer with Page

To Transfer a Call After a Paging Announcement:

- Ask the caller to wait
- Press the [PAGE] key

Hear the Paging tone.

The incoming call is automatically placed on Common Hold and your [HOLD] LED will glow

- Dial the required Zone number
- Make the Paging announcement including the station number

- Replace the handset

To Retrieve a Call After Hearing a Paging Announcement:

- At any station press the
slowly flashing [LINE] key
OR
Dial * 1 followed by the station number that made the Paging Call

Direct Transfer (**HX308** Only)

A call may be transferred directly to another station using the [DSS] keys.

To Transfer a Call Using the [DSS] Keys:

- Ask the caller to wait
- Press the required [DSS] key

Hear the ringing tone

- Replace the handset
OR
Wait until the station answers, announce the call and replace the handset

To Return to the Call Without Completing the Transfer:

- **Press** the [LINE] key the
caller is waiting on

Recall from Transfer

If the call was transferred without announcement and is not answered within a preset period, (usually 90 seconds) the call will revert to the station that made the transfer.

To Answer a Recall From Transfer:

- Hear the ringing tone*
- Lift the handset

**6. Paging and
Conference Calls**

Paging Calls

Paging calls can be made through the speakers of idle keystations or, if connected, through an external public address system.

Paging calls can be directed to:

- 1 of 3 Internal Zones
 - All Internal Zones
 - 1 External Zone
 - All Zones

To Make a Paging Announcement:

- Lift handset
- Press the [PAGE] key

Hear the confirmation tone
- Dial required zone number:
 - 0 = All Internal Zones
 - 1 = Internal Zone 1
 - 2 = Internal Zone 2
 - 3 = Internal Zone 3
 - 4 = External Zone
 - 5 = All Zones (see Note 1)

Hear the Paging tone (see Note 2)
- Make your announcement
- Replace the handset

Note 1: Pressing the [PAGE] key twice will select All Zones paging.

Note 2: If no Paging Tone is heard, the paging call will not be successful. This will happen if all the stations in a zone are busy. If a station is busy the Paging call will not be heard over that station's speaker.

■ SLTs cannot receive Paging calls.

Conference Calls

You can set up a Conference call with up to three people. This can include one outside party and/or one Single Line Telephone.

Internal Conference

To Make a Conference Call with Three Internal Parties:

- Call first station
- Press [CONF] key

First station is placed on Hold and the confirmation tone is heard
- Call second station
- Press [CONF] key

Second station is placed on Hold and the confirmation tone is heard
- Press [CONF] key
- The conference can now proceed

■ While in conference, only the convenor has 'CONF 25 27' displayed, other stations have 'CALL FROM 22' displayed.

External Conference

To Make a Conference Call with One External and Two Internal Parties:

- Call the outside party and advise of conference call LINE02: 8 1 8 3 8 8 8

- Press the [CONF] key CONF

Confirmation tone is heard and the outside party is placed on Hold

- Call the internal party STN25:

- Press the (CONF) key CONF

Confirmation tone is heard and the 2nd station is placed on Hold

- Press the [CONF] key CONF 62 25 27

All parties hear the intrusion tone

- The conference can now proceed

7. Other Facilities

Access Barring Override

At installation, stations are allocated a Class of Restriction. This limits the numbers that can be dialled from each station and is called Access Barring. Access Barring Override is used to bypass this restriction.

To Override Access Barring:

- Press the [SPKR] key

- Dial 12

- Enter the Password

Internal dial tone is heard

- Access an outside line

- Dial the required number

The call will not be subject to Access Barring. The override will only be valid for one call: the above procedure must be repeated to make a second call.

Alarm Reminder

You can set a reminder alarm to sound at a preset time. There are two types of alarms available:

- The first alarm is used for a single occasion and is cancelled automatically after the alarm rings.
- The second type of alarm is used for a daily reminder and operates each day at the same time, until it is changed.

Single Alarm

To Set the Single Alarm:

- Press the [TRANS/ALARM] key

- Dial 1

- Dial the required time
(24hr format)

Four digits must be entered.

The display scrolls left as the digits are entered

- Press the [TRANS/ALM] key

The [TRANS/ALM] LED will glow.

At the required time rapid ringing is heard for 10 seconds, or three bursts if the station is busy. The station returns to idle and the [TRANS/ALM] LED goes out.

To Reset the Alarm Before the 10 seconds:

- Lift the handset

Daily Alarm

To Set a Daily Alarm:

- Press the [TRANS/ALM] key ALARM :

- Dial 0 DAILY R L M HH:MM

- Dial the required time (24hr format)

Four digits must be entered.

The display scrolls to the left as digits are entered.

- Press the [TRANS/ALM] key Man.1 1 Jan 89: 43

The [TRANS/ALM] LED glows.

At the set time rapid ringing is heard for 10 secs, or three bursts if the station is busy. The station returns to idle and the [TRANS/ALM] LED continues to glow while the Daily Alarm is set.

The alarm is cancelled, the station returns to idle and the [TRANS/ALM] LED goes out

Cancelling an Alarm

To Cancel a Reminder Alarm:

- Press the [TRANS/ALM] key ALARM :

- Dial 1 to cancel Single Alarm (DRY RLM 12:30

OR

Dial 0 to cancel Daily Alarm

The current Alarm set time is displayed

- Press the [Hold] key Mon,11 J a n 09:43

The alarm is cancelled, the station returns to idle and the [TRANS/ALM] LED goes out

Background Music

If your system has access to music from an external source, this music can be played through your keystation speaker while the station is idle. If an external music source is not available then the internal Music On Hold chimes will play.

To Activate Background Music:

While the station is idle,

- Press the [HOLD] key Mon,11 J a n 09:43

Music is heard through the loudspeaker.

Background Music is cancelled if the station is used to make or receive a call.

To Cancel Background Music:

- Press the [HOLD] key Mon,11 J a n 09:43

Call Detail Recorder (CDR)

Call Detail Recorder (CDK) output is available on the HX6 16 and HX1224 systems and provides call record information. A printer, Call Management System (CMS) or Telephone Information Management System (TIMS) can be connected to this output to print or store the information.

CDR Output Format

The following is a sample of a CDK printout for an HX616.

Each page contains up to 50 call records. The title and column headings are printed at the top of each new page.

☛ If the printer etc. fails, runs out of paper or the connection is broken for some reason, then some call records will be lost.

<< STATION MESSAGE DETAIL RECORDING >> COMMANDER HX 616							
CLASS	DATE	TIME	LINE	DUR	ST#	DIALED#	RING AC
00	INC	02/07/93	1007.03	03	00.01.55	21	
01	OTG	02/07/93	10.09.43	02	000434	35	8183888
02	INC	02/07/93	10 1507	03	00:02:10	27	
03	OTG	02/07/93	10:18:14	04	00:01:15	31	001112129792727
04	INC	02/07/93	10 24.33	02	00:00:17	21	
05	INC	02/07/93	10:25:54	02	00.01.43	28	
06	OTG	02/07/93	10:21:19	06	00:08:27	27	092583696
07	OTG	02/07/93	10:31:03	03	00:02:22	24	11661

Column 1 Call Number
The call records are numbered sequentially from 00 to 49 on each page.

Column 2 Class of Call
(CLASS) The Class or type of call is shown as follows:

Incoming Call	INC
Outgoing Call	OTG

Column 3 Date of Call
(DATE) Indicates the date the call was recorded in the format Day/Month/Year.

Column 4 Time of Call
(TIME) Indicates the start time of the call in 24 hour format (hr:min:sec).

Column 5 Line Number
(LINE) Indicates the number of the outgoing line in the system

Column 6 Duration of the call
(DUR) Indicates the duration of the call in hours, minutes and seconds (hr:min:sec).

Column 7 Station Number
(ST#) Indicates the number of the station making or receiving the call.

Column 8 Dialed Number
(DIALED#) Indicates the digits dialed on an outgoing call. The CDR may be programmed to strip the last two digits of a dialed number to maintain privacy.

Column 9 Not Used.
(RING)

Column 10 Not Used
(AC)

Confidence Tone

This facility confirms the registration of each valid key press at a keystation. When activated, a low level tone is heard by the user as each key is pressed. A tone is not given if the pressed key is not a valid option.

To Activate ConfidenceTone:

- Press the [#] key
- Dial 14
- Dial 1
- Press the [#] key

PROGRAM CODE:
KEY TONE:
ENABLED
Mon,11 J a n 09:43

To Disable ConfidenceTone:

- Press the [#] key
- Dial 14
- Dial 0
- Press the [#] key

PROGRAM CODE:
KEY TONE:
DISABLED
Mon.11 Jan 69: 43

Decadic to Tone Dialling

When dialling out on a Decadic (pulse) line, you can switch the station to tone (DTMF) dialling. This allows access to facilities such as telephone banking, computer services networks etc.

To Change From Decadic toTone Dialling:

- Call the required service
- When the service answers,
- Press the [#] key

Any digits dialled now will be sent intone format.

Decadic dialling automatically resumes on the next call.

- When a CDR is connected to the system **all** dialled digits, including any passwords, are recorded.

Divert All Calls

Divert All Calls allows a keystation user to divert all incoming calls to another nominated station.

To Divert All Calls to Another Station:

- Press the [DIVERT] key and wait 2 seconds SET DIVERT:
- Dial the station number to receive your calls DIVERT ALL:25
- Press the [#] key Mon,11 J a n 09:43

While divert is set, the [DIVERT] LED will glow and interrupted dial tone is heard when the handset is lifted.

To Cancel Divert All Calls:

- Press the lit [DIVERT] key and wait 2 seconds SET DIVERT
- *The display will change after one second* DIVERT ALL:25
- Press [HOLD] MON,11 J R N 09:43

The [Divert] LED goes out and Divert All Calls is cancelled

Do Not Disturb

Do Not Disturb (DND) allows you to block all intercom and Paging calls to your station

To Set Do Not Disturb:

- Press the DO NOT DISTURB [DND/FUNCTION] key
- *The [DND/FUNCTION] LED will glow while DND is set and callus will receive busy tone*

To Cancel Do Not Disturb:

- Press the lit Mon,11 J a n 09:43 [DND/FUNCTION] key

☛ If your station is a 'manager' station and has a 'secretary' assigned, when DND is activated any calls to your station will be diverted to the 'secretary' station. The 'secretary can still call the 'manager' even when DND is set.

☛ Station number 2 1 does not have this facility

Facsimile

Facsimile machines may be connected, as stations, to any of the HX systems. The HX308 provides extra facilities as detailed below. For the larger systems, calls intended for the facsimile machine must first be answered and then transferred in the normal way.

HX308 Only

On the Telecom Commander HX308 up to two facsimile machines may be allocated for one touch transfer. An incoming call intended for the facsimile machine can be transferred by pressing the [FAX] key. If two facsimile machines are used, the call will be connected to the first free machine.

To Forward an Incoming Call Intended for the Facsimile Machine:

- Answer the incoming call

Hear the fax tones

- Press the [FAX] key

- Replace the handset

The [FAX] **LED** indicates the status of the facsimile machines as follows:

Attribute	Meaning
Off	Both facsimile machines free
On	Both facsimile machines busy
Flashing	1 of 2 facsimile machines busy

Group listening

This facility enables the keystation speaker to be turned on while the handset is in use. This allows both sides of a conversation to be heard over the loudspeaker.

To Activate Group Listening:

- Make a call using the handset

- Press the [DND/FUNCTION] key

- Dial * 0

The keystation speaker turns on

- Continue the conversation using the handset

Group listening is de-activated automatically when the call is terminated.

To De-activate Group Listening While a Conversation is in Progress:

- Press the [DND/FUNCTION] key

- Dial * 0

The keystation speaker turns off and the conversation may be continued as normal

Headset Operation

A keystation handset may be replaced by an Austel approved headset. When connected and activated the [SPKR] key is used to perform the Off-hook function.

To Activate Headset Mode:

- Press the [#] key

PROGRAM CODE

- Dial 15

HEADSET MODE

- Dial 1

ENABLED

- Press the [#] key

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To De-activate Headset Mode:

- Press the [#] key

PROGRAM CODE

- Dial 15

HEADSET MODE

- Dial 0

DISABLED

- Press the [#] key

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☛ While in Headset mode, the station cannot operate Handsfree

Intercom Answer Mode

A keystation user may choose to have incoming intercom calls signalled by one of the following modes:

Ring incoming intercom calls ring at the keystation until the call is answered.

Voice incoming intercom calls are signalled by a short burst of ringing, then the keystation automatically enters Handsfree mode. The caller's voice is heard through the loudspeaker and conversation can take place Handsfree. If required you can lift the handset to change to Off-hook mode.

To Set Intercom Answer Mode:

- Press the [#] key

PROGRAM CODE:

- Dial 10

SET CALL MODE

- Dial the required code

VOICE CALL

Voice Mode = I
Ring Mode = 0
- Press the [#] key

Mon,11 J a n 09:43

☛ Ring mode may be overridden by callers pressing their [DSS] key twice. See page 3-2 *Making Intercom Calls*.

Incoming Ring Tone

You can select one of four different ringing pitches for incoming calls to your keystation.

To Change the Ringing Tone of Your Keystation:

With the handset on the keystation;

- Press the [#] key
- Dial 13
- Press the [*] key

PROGRAM MODE

RING FREQUENCY

FREQUENCY 2

Hear test tone

- Continue pressing the [*] key until the required tone is heard

FREQUENCY 3

- Press the [#] key to select

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The station returns to Idle mode.

■ Four different ring frequencies are available

Line Failure Monitoring

If an attempt is made to access an outside line that has failed or is not connected to the system an error tone is heard and the display shows 'NOT CONNECTED'.

This line is then taken out of service and cannot be accessed by dialling 0. When the fault has been rectified and the line is successfully accessed by pressing the [LINE] key, the system will return the line to service.

HX1224 Only

If a non equipped [LINE] key is pressed the display shows:

LINE ■■: NOT EXIST

Manager - Secretary Pairs

When a station (programmed as the 'manager' station) selects DND, all calls to that station *are* automatically forwarded to *the* associated 'secretary' station. The secretary is the only station that can call to the manager's station while DND is selected.

While DND is not selected and the 'manager' station is busy, incoming calls will be transferred to the 'secretary'.

When the manager station is in Idle mode the [FLASH] key can be used to signal or "Buzz" the secretary station. This is an audible indication only: no connection is made.

Message Waiting

Message Waiting allows you to notify a busy or unattended keystation that you would like that person to contact you. A visual indication is left at the called keystation.

To Set a Message Waiting Signal at a Keystation:

- Make a call to the station
- Press [MW]

The [MW] LED at your keystation lights and the called keystation [MW]LED flashes. The display goes blank after 2 seconds, the call is cancelled and dial tone is heard.

If a Message Waiting Signal is left on Your Keystation:

- Press the [MW] key

The display shows the number of the station(s) that set Message Wait.

To Return a Call to the Station that Set Message Wait:

- Lift the handset
- Press [MW]

A call is made to the keystation that left the message. The [MW] LED on each keystation only goes out when the call is answered.

To Cancel a Message Waiting on Your Station Without Calling Back:

- Press the lit [MW] key **twice**

☛ Single Line Telephones cannot receive messages and cannot leave messages at busy stations.

Microphone Mute

The [MUTE] key on your keystation is used to temporarily mute the station microphone during a conversation. This facility may be required if you do not wish the caller to overhear a conversation taking place in the vicinity of the station.

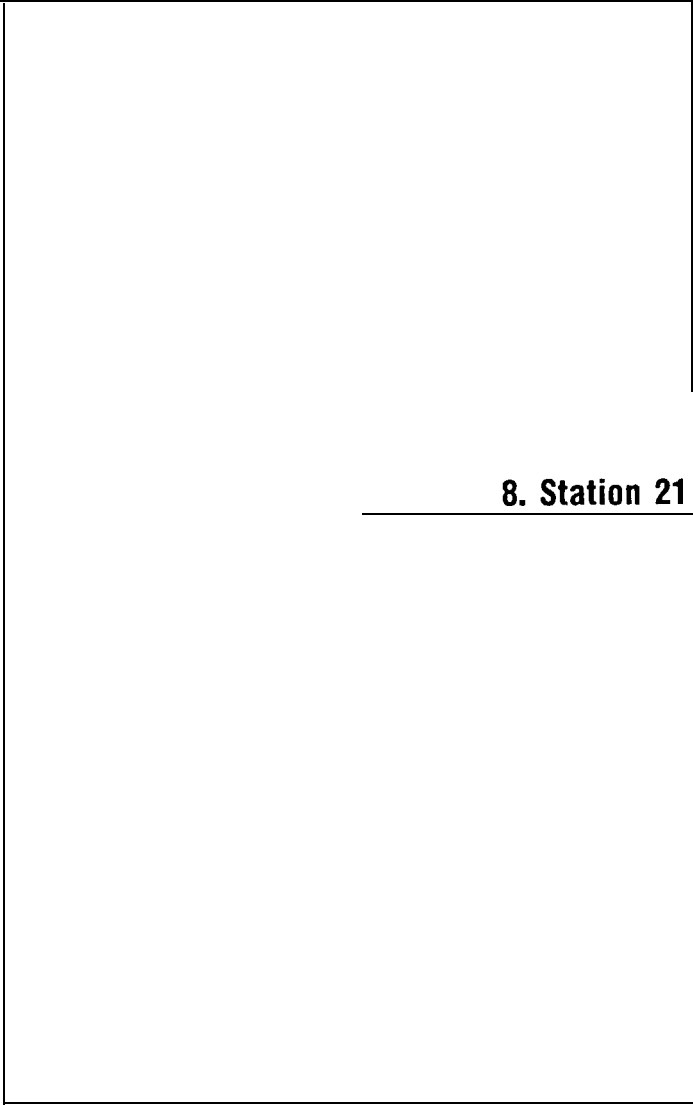
To Mute the Microphone:

- Press the [MUTE] key

The microphone is disabled and the [MUTE] LED glows.

- Press the [MUTE] key again to enable the microphone.

☛ [MUTE] can be used in either Handsfree or Off-Hook mode.



8. Station 21

Date and Time

The system date and time can be reset at Station 2 1.

To Set Date and Time:

- Press the [#] key

PROGRAM CODE :

- Dial 55

YY MM DD W HH:MM

- Dial the new Date and Time.

The display scrolls left as the digits are entered:

YY Last two digits of the year
 MM The month (01-12)
 DD The day of the month (0 1 3 1)
 W The day of the week
 0 Sunday
 1 Monday
 2 -Tuesday
 3 Wednesday
 4 - Thursday
 5 - Friday
 6 - Saturday
 HH The hour of the day (00-23)
 MM The minute of the hour (00-59)

- Press the [#] key

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The system automatically updates all the display stations.

Night Service

The Night Service function, which is assigned by the installing technician, allows the following programmable facilities to be changed for different parts of the day:

- The ring allocations for incoming outside line calls.
- The class of restriction for each station.

To Activate Night Service at Station 21:

- Press the

NIGHT MODE

[DND/FUNCTION] key

The [DND/FUNCTION] LED flashes.

To Return to Day Mode:

- Press the

Mon.1 1 Jan 09:43

[DND/FUNCTION] key

Storing Common Speed Dial Numbers

Station 2 1 can store the Common Speed Dial numbers that are accessed by all stations.

To Store Station Speed Dial Numbers:

- Press the [#] key
- Press the [MEMORY]key
OR
Dial 17
- Dial a Speed Dial number
(20 to 99)
- Dial the number to be stored and press the [MEMORY]key
- Enter the next number to be stored
OR
Press the [#]key to return to Idle mode

■ Use the [HOLD] key to erase an entry.

If required, Common Speed Dial numbers 00 to 59 can be exempt from Access Barring.

9. General Information

Care of Your Commander

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

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

- Handle your keystation 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 Back-up facility can be connected to maintain full system operation

OR

An optional facility of the system will automatically connect the first two or three outside lines to Single Line Telephones.

Unless one of these facilities is provided, calls cannot be made or received under powerfail conditions.

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

Other Difficulties

If operating difficulties occur, first check if power is available.

If difficulties persist, call Service Difficulties on 132999.

Revision History

Issue	Page	Item	Amendment
2	1-4	Selection Keys	[IL02] labelling amended
2	1-6	Selection Keys	[IL03] labelling amended
2	1-10	Direct Station Select Keys	Attribute/Meaning table revised
2	1-12	Single Line Telephones	Extra features/codes included in table Second note added
2	1-13	Service Tones - Rapid Repeating	Second meaning added
2	3-5	Door Unlock (HX308 only)	Note re Single Line Telephones added
2	5-5	Transferring Call	Transferring in Voice Call added
2	7-10	Divert All Calls	2 sec wait added to procedure
2	7-17	Manager Secretary Pairs	Use of [FLASH] key amended

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Addendum 1

Page	Item	Change
I-4	Numbering Scheme	Revised table Note re SLTs added
I-11	[IL06]- Key Assignment HX308	Revised drawing - labelling change
I-11	[IL07]- Key Assignment HX616	Revised drawing - labelling change
1-12	[IL08]- Key Assignment HX1224	Revised drawing - labelling change
I-13	Door Lock	Text revised
1-14	Headset	Headset must suit telephones with dynamic transducers
1-16	Alternative Carrier	Preselection code may be up to four digits
1-19	Buzz	Use of [FLASH] key by manager station to 'buzz' secretary
1-19	Do Not Disturb	DND blocks ALL intercom and paging calls including assigned secretary
1-22	Interface Specifications	Add <i>NO PARITY</i> to Serial Interface
1-23	Keystation LED functions - DSS Key	Revised Table
2-11	[IL19]- DIP switch	Revised drawing - labelling change
2-11	Expansion Board	Switch setting tables revised
2-20	Station Based Amplifier	Revised wording - <i>RINGTONE</i>
2-21	Station Based Amplifier	Incoming ring tone n/a for paging announcements
2-21	Single Line Telephones	Modular socket pin numbers revised
2-24	Door Station	Door unlock from keystation clarified
2-26	Keystations - Wall Mounting	Revised Table
3-2	Programming Codes	System Reset not available in all versions of software
3-4	Set Divert - Example - Cancel	Revised procedure
3-13	System Reset	Note added-
3-25	Carrier Preselection Code	Revised text reapplication of Access Barring Code may be up to four digits Note re Class of Restriction added
3-28	Hold Recall Time	Input Data range revised to 0-255
3-29	Transfer Recall Time	Input Data range revised to 0-255
3-30	Alarm Duration Time	Input Data range revised to 0-255
3-32	RS232 Baud Rate - Default	Add <i>NO PARITY</i>
3-41	Boss/Secretary Assignment	Use of [Flash] key on Boss station