

## 1.6 OPERATING INSTRUCTIONS

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1.6.1 MAIN EQUIPMENT

**Ring Assignment Switches**

Each of the five Ring Assignment Switches may be set as required by the customer to enable or silence the audible exchange ringing signal at each telephone station.

If a Special (2-wire) Telephone is installed instead of Telephone Station 5, then Ring Assignment Switch No. 5 controls the Special Telephone.

The operation of the Ring Assignment Switches does not affect the visual ringing indications at Telephone Stations.

**Fixed Access Barring**

Outgoing exchange line access may be barred to Telephone Stations 2, 3 and 5, or the Special (2-wire) Telephone at the time of installation, by internal microswitch settings.

All extensions will have outgoing exchange line access during power failure.

**Key Controlled Classification Change**

The Classification Change keylock may be fitted as an option to the Main Equipment. It allows key controlled classification change (trunk barring) of the exchange line.

1.6.2 TELEPHONE STATION

Note: On a T105 Telephone Station the LINE, S and INTERCOM keys may be preselected, i.e. pressed just before lifting the handset to implement the function.

**Visual Indications**

Visual display of the status of calls is given by the following flashing speeds of the LINE Lamp:

LINE LAMP	INDICATION	FLASHING RATE
Steady	Busy	Steady
Slow Flash	Call On Hold	1s ON/1s OFF
Rapid Flash	Incoming Call	0.4s ON/0.2s OFF/0.4s ON/2s OFF

Note: All LINE lamps are momentarily turned OFF when either:

- an incoming intercom call is signalled; or
- the LINE, S or INTERCOM key is pressed at any Telephone Station; or
- an All Call Page is in progress from the Special (2-wire) Telephone.

The MON lamp is ON steadily while using Monitor and On-Hook Dialling facilities.

**Audible Signals**

Exchange line call: 0.4s ON/0.2s OFF/0.4s ON/2s OFF, 500 Hz/600 Hz modulated by 16 Hz.

Intercom call: 1s ON/2s OFF, 500 Hz/600 Hz modulated by 16 Hz.

Alarm Signal: 600 Hz (See Alarm Signals p. I-I 1).

On-Hold alarm: 1s ON/1s OFF.

Off-Hook alarm: 0.5s ON/0.5s OFF.

**Placing an Exchange Line Call**

To make an exchange line call:

- Check that the LINE lamp is OFF.
- Lift the handset and press the LINE key.

The LINE lamp will come ON steadily.

- Listen for dial tone.
- Dial the number required. (If the T105 system is connected via a PABX, dial the access digits, listen for the exchange dial tone, and then dial the required number).
- To disconnect, replace the handset.

The LINE lamp will go OFF after a short time, and the line will be released.

**Last Number Redial**

The T105 system provides this facility on Decadic Telephone Stations only. For VF systems, this may be available if provided by the exchange or PABX to which the system is connected.

### Direct outside line

- Check that the LINE lamp is OFF.
- Lift the handset and press the LINE key.

The LINE lamp will come ON steadily.

- Press the Access **Pause/Redial** key (#).

After a short pause, the last number **dialled** on the telephone will automatically be redialled.

### Outside line via a PABX

Initial call:

- Check that the LINE lamp is OFF.
- Lift the handset and press the LINE key.

The LINE lamp will come ON steadily.

- Dial the PABX Access Digits (usually "0" or "81" etc) to obtain an outside line.
- Listen for the exchange dial tone.
- Press the Access **Pause/Redial** Key (#).
- Dial the required number.

The number **dialled** is now available for last number redial, whether or not the call is successful.

To redial:

- Check that the LINE lamp is OFF.
- Lift the handset and press the LINE key.

The LINE lamp will come ON steadily.

- Press the Access **Pause/Redial** key (#).
- Listen for the exchange dial tone.
- Press the Access **Pause/Redial** key (#) again.

After a short pause, the number **dialled** in the initial call will automatically be redialled.

### Answering an Exchange Line Call

To signal an incoming call, the LINE lamp flashes rapidly at all telephone stations, and exchange ringing signal is heard.

Note that the audible ringing signal at a Telephone Station may be disabled if either:

- the appropriate RING ASSIGNMENT SWITCH is set OFF at the Main Equipment; or
- the CALL volume control is set to zero at the Telephone Station.

To answer a call:

- Lift the handset at any station, and press the LINE key.

The LINE lamp will come ON steadily at all stations.

The call is now available at the answering Telephone Station.

- To disconnect, replace the handset.

The LINE lamp will go OFF after a short time, and the line will be released.

The volume of the exchange ringing signal at the Telephone Station may be adjusted by the CALL volume control.

### Holding an Exchange Line Call

An exchange line call may be placed On Hold while internal enquiries are made.

While On Hold, the outside caller cannot hear internal conversations (if the Music On Hold feature is equipped, the caller will hear an electronic tune).

To place a call On Hold:

- Advise the caller that call is being placed On Hold.
- Press the INTERCOM key.

The LINE lamp will flash slowly.

Internal enquiries or intercom calls may now be made.

- To return to the caller, press the LINE key.

The LINE lamp will come ON steadily.

### On-Hook Dialling

The progress of a **dialled** call may be followed without lifting the handset.

- Press the MON key.

The MON lamp will come ON steadily.

- Press the LINE key and dial the required number.

The progress of the call will be audible on the station speaker. The volume may be adjusted by the MONITOR volume control.

When the call is answered:

- Lift the handset (speaker switched off).
- Press the MON key again to release it.

The MON lamp will go OFF.

- Proceed with the conversation.

If the call is unanswered, pressing the MON key again will release the line.

The On-Hook Dialling operates identically for Individual Intercom Calls also.

Note: If the MON key is not released, then call cannot be terminated.

### Placing an Intercom Call

An Intercom Call to any Telephone Station may be one of the following 3 types:

- an individual Intercom Call (signalled by intercom ringing signal at the called Telephone Station); or
- an Individual Call Page (signalled by the caller's voice at the called Telephone Station); or
- an All Call Page (signalled by the caller's voice at all Telephone Stations).

**Notes:** The following notes apply to all three types of intercom calls.

- Intercom ringing signal or voice page will sound at the called station, even if the called party is engaged on an exchange call.
- The volume of an intercom signal may be adjusted by the CALL volume control.
- When the called party answers, a normal handset to handset call may proceed.
- There is only one intercom path in the system so individual intercom calls are not secret.
- Intercom page or tone signalling will not operate if any other Telephone Station is off-hook (or with MON key depressed) but not engaged on an exchange call. In this case the calling party will be connected directly to the "off-hook" party on the common intercom link.
- A 3 minute timeout applies for signalling intercom calls. The "time-out" alarm sounds at the calling telephone station if the call is not answered. For page calls the timing commences from when the INTERCOM key is released. For an individual call, if a party other than the called party responds and a conversation continues (over ring tone for a individual ring signalled call), the "time-out" alarm activates at the calling telephone station.

### Individual Intercom Call

- Lift the handset.
- Momentarily press the INTERCOM key.
- Dial the required station (by pressing "1" or "2" or "3" etc).

### Individual Call Paging

- Lift the handset.
- Momentarily press the INTERCOM key.
- Dial the required station (by pressing "1" or "2" or "3" etc).
- After the first burst of ring tone, hold the INTERCOM key depressed and speak into the handset.

The caller's voice will be heard from the called station speaker.

### All Call Paging

To make a voice page to all Telephone Stations:

- Lift the handset.
- Hold the INTERCOM key depressed while speaking into the handset.

The voice page will be heard via the speakers at all other T105 Telephone Stations. Any number of Telephone Stations may respond by lifting their handsets to converse in an intercom mode.

### Answering an Intercom Call

If the called station is free, an intercom call (signalled either by intercom ringing signal or voice) is answered by lifting the handset.

If the called station is engaged in an exchange line call, an incoming intercom call is still announced, either by the ringing signal or voice in which case the called station may answer the intercom call after placing the exchange line call On Hold.

### Calling the Special Telephone

To call the Special (2-wire) Telephone from a T105 Telephone Station:

- Lift the handset.
- Press the S key.

If the Special Telephone is not busy, ring tone will be heard at the Telephone Station and the Special Telephone ringer will sound. If not answered within 3 minutes the "timeout" alarm will be activated at the calling telephone station.

Note: If the Special Telephone is busy, no sound will be heard at the calling station.

### Internal Conference

Once an intercom call has been established between any two Telephone Stations, people at other stations may enter the conversation simply by lifting their handsets.

During an Internal Conference, incoming exchange line calls are announced by exchange ringing signal, and visually by the LINE lamp (flashing rapidly) at all stations.

The station which accepts an incoming exchange line call is automatically excluded from the conference, and the conversation on the exchange line remains private.

Note: If two Telephone Stations are off-hook, no other extensions can be signalled. For this reason, an Internal Conference should first be announced by an All Call Page, advising all concerned parties to lift their handsets.

The Special Telephone may also be included in an Internal Conference, but only if it is one of the first two stations entering the conference.

### Do-Not-Disturb

When a Telephone Station is in the Do-Not-Disturb mode, all incoming audible signalling (i.e. ringing, voice paging, door chime and alarms) is stopped.

To set a Telephone Station to Do-Not-Disturb:

- Set the CALL volume control to the extreme left.

While in this mode, visual indication of the exchange line status is still given by the LINE lamp.

No signal is given to the other stations to indicate whether a Telephone Station is in Do-Not-Disturb mode or unattended.

### PBX Recall

If the T105 system is connected as a PBX extension, PBX recall may be effected by pressing the LINE key.

### Transferring an Exchange Line Call to another Telephone Station

An exchange line call may be transferred from one telephone station to another. This may be arranged either:

- vocally; or
- by an Intercom Call;

### Vocal Transfer

- Place the call On Hold.
- Inform the called party that a call is waiting.

When the called party presses the LINE key, the call will be transferred to that Telephone Station.

- Replace the handset.

### Intercom Call Transfer

- Place the call On Hold.
- Make an Intercom Call to the called party (Either all call page, individual page or individual tone ringing).
- The line will be automatically put On Hold.

When the called party presses the LINE key, the call will be transferred to that Telephone Station.

- Replace the handset.

When transferring a call, indication that the call has been accepted by another station is **given** by the LINE lamp changing from flashing slowly (while On Hold) to being ON steadily.

### Transferring an Exchange Line Call to the Special Telephone

At the Telephone Station:

- Press the S key.

The call will be placed On Hold, and ringing signal will sound at the Special Telephone. When the Special Telephone answers and is advised of the transfer:

- Replace the handset.
- The call will be transferred.

Note that exchange line calls cannot be transferred from the Special Telephone to a T105 Telephone Station.

#### Unsuccessful Transfer

- If the called party cannot accept the call, return to the outside caller by pressing the LINE key.

#### Exchange Conference (Secrecy Release)

To convene an Exchange Conference (if this feature has been programmed on installation):

- Answer the call at Telephone Station 1.
- Ask the caller to wait while the other parties are informed.
- Advise the other parties either vocally or by an Individual Intercom Call, to enter the conference after the LINE lamp stops flashing.

(The LINE lamp will be slowly flashing with the caller On Hold).

- Return to the caller by pressing the LINE key.
- Each other party joins the conference by pressing his LINE key after his LINE lamp has stopped flashing.

Once the Exchange Conference has been convened, Telephone Station 1 may withdraw.

Note: The Special Telephone cannot be included in an Exchange Conference.

#### Access Barring

All dialed calls may be barred by an Access Barring Keylock fitted to the Telephone Station.

Note: With the keylock closed, the only possible outgoing call is an All Call Page. Incoming calls are not affected.

#### Alarm Signals

The "off-hook" and "on-hold" alarms as detailed below are 600 Hz tones with cadence of 0.5s ON / 0.5s OFF and 1 s ON/ 1 s OFF respectively.

#### Off-Hook Alarm

A Telephone Station left off-hook prevents any other station signalling an internal call, necessitating the need for an "off-hook" alarm.

The off-hook alarm sounds at the Telephone Station when:

- a Telephone Station is left off-hook for more than 30 seconds and not initiating or receiving an intercom call or engaged on an exchange call.
- an intercom call is being signalled and not answered within 3 minutes.
- a door station call is not terminated within 3 minutes.

This alarm will not sound when a station handset is being used for room monitoring, or when more than one handset is off-hook and engaged on an intercom call.

The Off-Hook Alarm will be overridden by any of the following tone signals:

- incoming exchange line call; or
  - door chime signal; or
  - On Hold Alarm.
- To stop the Off-Hook Alarm, replace the handset.

#### On Hold Alarm

To avoid the possibility of an exchange line being left on hold indefinitely, an On Hold Alarm is generated. If a Telephone Station holds the exchange line and goes on-hook, after 3 minutes an On Hold Alarm sounds at all Telephone Stations.

If the call is left on hold for a further 3 minutes, then the call will be terminated and the On Hold Alarm will cease.

- To stop the On Hold Alarm, retrieve the call from hold by pressing the LINE Key at any Telephone Station.

Note: If any station is off-hook then the alarm will not sound (until all stations are on-hook) but the timing will continue and the call will be terminated 6 minutes after the holding station went on-hook.



### 1.6.3 SPECIAL (2-wire) TELEPHONE

#### General Description

A 2-wire telephone interface provides the option of connecting a 2-wire telephone circuit to the system. This telephone displaces Telephone Station 5 in the system configuration. To the user it appears not as extension 5, but rather as extension "S", denoting Special Telephone.

The Special (2-wire) Telephone may be a Telecom premium or feature telephone, a permitted attachment, a 2-line telephone, or a remote extension. It is accessed with the "S" Key from any Telephone Station.

The Special (2-wire) Telephone has most T105 facilities, with the following limitations:

- no hold of exchange line calls (and hence no enquiry calls);
- no transfer of exchange line calls from the Special Telephone;
- no door chime signalling or access to the Door Station;
- no facility for receiving page announcements; and
- no facility for initiating Individual Call Page announcements.

#### Answering an Exchange Line Call at the Special Telephone

If the RING ASSIGNMENT SWITCH corresponding to the Special Telephone (i.e. switch 5) is in the ON position, incoming calls will cause ringing signal to sound at the Special Telephone.

Calls may be answered at the Special Telephone by lifting the handset.

#### Placing an Exchange Line Call from the Special Telephone

- Lift the handset.
- Dial "7".

If the exchange line is available for dialling, dial tone will be heard and the LINE lamp will come ON at all T105 Telephone Stations.

- Dial the call as usual.
- Replace the handset to disconnect.

If the exchange line is in use, busy tone will be heard after the "7" is dialled.

Note: Busy tone will also be heard if any T105 Telephone Station is off-hook (e.g. engaged in an intercom conversation), even though the exchange line may be free. This condition may be checked by depressing (for approximately one second) and releasing (i.e. flashing) the Special Telephone switch-hook. If the exchange line is free, dial tone will then be heard and the call may proceed.

#### Placing an Intercom Call from the Special Telephone

- Lift the handset.
- Dial the required Telephone Station (by dialling "1" or "2" or "3" etc).

The Intercom call proceeds as a normal Individual Intercom Call for T105 Telephone Stations. If the call is not answered after 3 minutes then the signalling will cease and busy tone will sound at the Special Telephone.

The Special Telephone will receive busy tone if any T105 Telephone Station is off-hook. This means that if an intercom call is in progress, the Special Telephone cannot join it to form an Internal Conference.

The only way for the Special Telephone to take part in an Internal Conference is for it to be either the originator of the conference or the first station to go off-hook when an Internal Conference is announced.

#### All Call Paging from the Special Telephone

- Lift the handset.
- Dial "5".
- Speak into the handset.

The voice message will be heard at all Telephone Stations until a Telephone Station goes off hook to respond. If no Telephone Station responds within 3 minutes then busy tone will sound at the Special Telephone.

Note: an All Call Page will not operate if any other Telephone Station is off-hook.

### 1.6.4 ROOM MONITOR STATION

#### Room Monitoring

The Telephone Station performing the monitoring may do so on-hook (via the speaker) or off-hook (via the handset for privacy).

- Move the Room Monitor Switch to ON at the Room Monitor Station.

### On-Hook Monitoring

- Press the MON key at the monitoring Telephone Station.

The MON lamp will come ON.

- Momentarily press the INTERCOM key.
- Dial "4".

Sounds at the Room Monitor Station will be heard via the Telephone Station speaker.

- Press the MON key again to stop monitoring.

The MON lamp will go OFF.

### Off-Hook Monitoring

- Lift the handset at the monitoring Telephone Station.
- Momentarily press the INTERCOM key.
- Dial "4".

Sounds at the Room Monitor Station will be heard via the Telephone Station handset.

- Replace the handset to stop monitoring.
- Move the Room Monitor Switch to OFF at the Room Monitor Station.

### Monitoring from the Special Telephone

From the Special Telephone, only off-hook monitoring can be performed (by dialling "4").

## 1.6.5 DOOR STATION

### Door Chime Operation

When a visitor presses the Door Station Chime Key, a distinctive 3 second tone is heard at all T105 Telephone Stations.

This chime overrides the tone indicating an Individual Intercom Call as well as the On Hold and Off-Hook Alarms.

The chime is audible at the same time as exchange ringing signal, and also while calls are in progress.

### Communicating with the Door Station

Any Telephone Station may converse with the Door Station.

If the station is engaged in an exchange line call, the outside party must first be placed On Hold.

- Lift the handset.
- Momentarily press the INTERCOM key.
- Dial "6".

The T105 system can handle an exchange line call and a Door Station call simultaneously (from different telephone stations).

If an intercom conversation is in progress, all stations must go on-hook before the Door Station can be answered.

A Door Station conversation may only last 3 minutes. After 3 minutes, the Door Station call is terminated, and the Off-Hook Alarm sounds at the telephone station. The call may be resumed by placing the handset on-hook and recalling the Door Station.

## 1.6.6 P-LINE STATION, HANDSFREE STATION AND STATION AMPLIFIER

Refer to Supplement Section.

## 1.7 SYSTEM LINE LIMITS

### 1.7.1 INTERNAL CABLING

#### T105 Telephone Station Loop Resistance

35 ohms (200 m 0.5 mm cable)

#### Special (2-wire) Telephone Loop Resistance

700 ohms (2.6 km 0.4 mm U/g cable)  
(4.0 km 0.5 mm internal cable)

#### Door Station Loop Resistance

40 ohms (235 m 0.5 mm cable)

#### Room Monitor Loop Resistance

35 ohms (200 m 0.5 mm cable)

#### Station Amplifier Loop Resistance

200 ohms (1100 m 0.5 mm cable)

#### Horn Loudspeaker Loop Resistance

1 ohm (5.5 m 0.5 mm cable)

#### P-Line Station Loop Resistance

Line 1 35 ohms (200 m 0.5 mm cable)  
Line 2 Exchange loop

#### Handsfree Station Loop Resistance

Line 1 35 ohms (200 m 0.5 mm cable)  
Line 2 Exchange loop

### 1.7.2 REMOTE EXTENSION LIMITS

#### Special (2-wire) Telephone

Special (2-wire) Telephone line signalling limits are provided in Table 1.1.

For additional information on the planning of outdoor or remote extension lines refer to Engineering Instruction, PLANNING, Transmission, E7210, "Private Telephone Networks, Definitions and Limits".