GUIDE NOTES (CUSTOMER APPARATUS)

NOT TO BE SHOWN OUTSIDE BRITISH TELECOM

TGN 0026

HAWK

CORDLESS TELEPHONE

British TELECOM

TRAINING & EDUCATION DIVISION

(ISSUE 1 SEPT. 1983)

DIFFICULTIES

BTHQ relies to a large extent on the A646 procedure to show up problems which staff experience with items of equipment. Please take advantage of this procedure to inform BTHQ of difficulties, so that corrective action can be taken.

TI E1 A0091 describes the A646 procedure fully.

AUDIO VISUAL PRESENTATION

A tape slide presentation of Hawk is available, and can be viewed by arrangement with your supervising officer.

HAWK Cordless Telephone

These guide notes have been designed to assist Field Staff with the installation and maintenance of Hawk. To gain maximum benefit from them they should be read completely **before** attempting to charge the handset batteries, or carrying out an installation. **It is necessary to charge the handset batteries for 24 hours before installing Hawk.**

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The contents of this guide note have been approved by CE2.2.1 (installation) and RA1.5.2 (maintenance) to whom difficulties should be addressed via Regional Service Groups. Further copies of this Guide Note can be obtained from Regional Distribution Centres.

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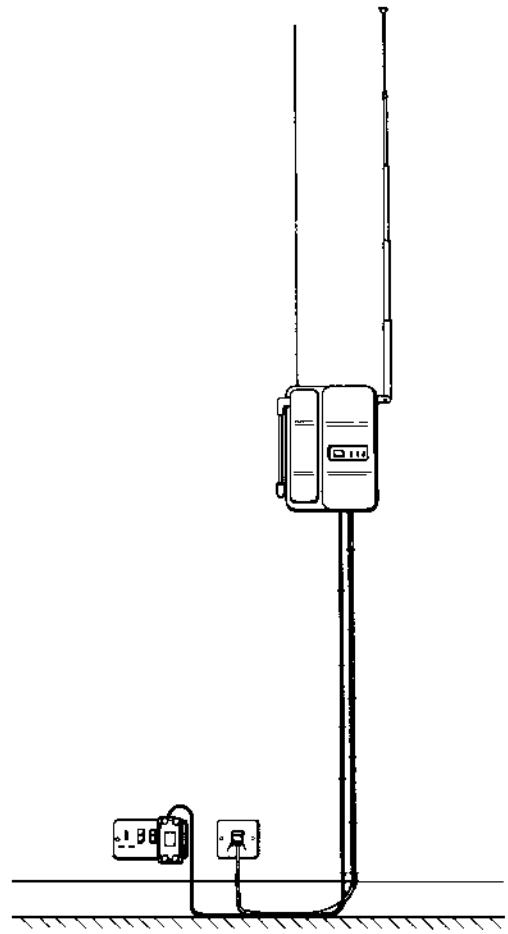
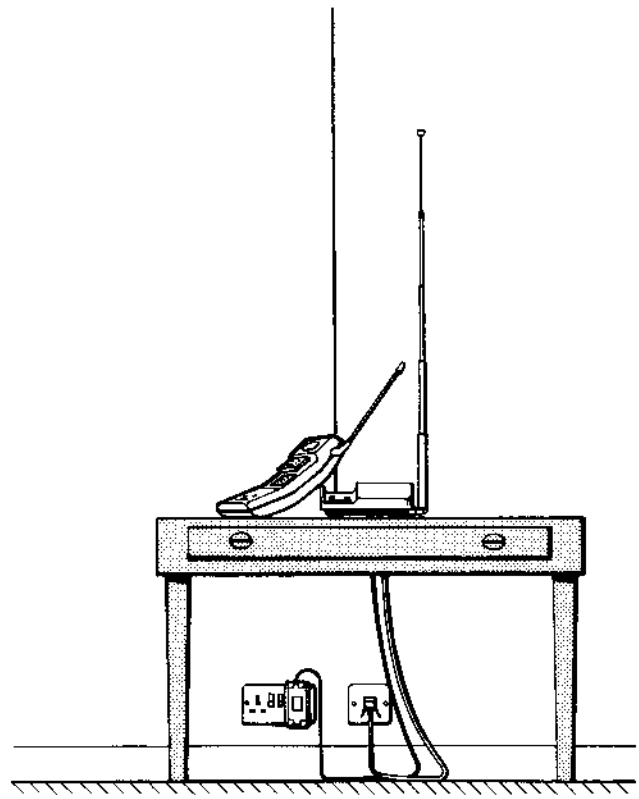
ILLUSTRATIONS TYPESETTING and PRINTING by OPPUS V Ltd.

HAWK British Telecom's first
Cordless Telephone.





1. Introduction

The HAWK (illustrated opposite) is British Telecom's first cordless telephone. Available in ivory and brown it consists of 2 parts,

a. A free standing or wall mounted **BASE UNIT** which is connected to the telephone line using Phone Socket, and . . . . . .

b. A portable **HANDSET** that can be carried around the customers premises and will give the user the same facilities as a conventional telephone. When not in use the handset is placed upon the base unit for recharging.

Speech and signalling is transmitted between the handset and base unit using 2 low-power radio links, with a range under ideal conditions of up to 100 metres. Walls and other large obstructions, particularly metal, will reduce the usable range.

Because only 8 pairs of radio channels have been provided for the whole of the UK, then it is possible that HAWK customers living near to each other and using the same radio channels may experience overhearing or other operational difficulties. This is unavoidable, but since the range of the telephone is only 100 metres it is envisaged that this will only happen occasionally.

Although difficulties may be experienced, there is only a slight chance that two adjacent customers will be able to make calls on each others line, even though they may use the same radio channels. This is because during manufacture, a security code is allocated to each base unit and handset so that they become a 'matched pair'. Whenever calls are made or received, the security code is exchanged between them, and the call only allowed to mature if the exchange of code is correct.

Because of the security code arrangements it is not possible to use the handset with other than the base unit supplied.

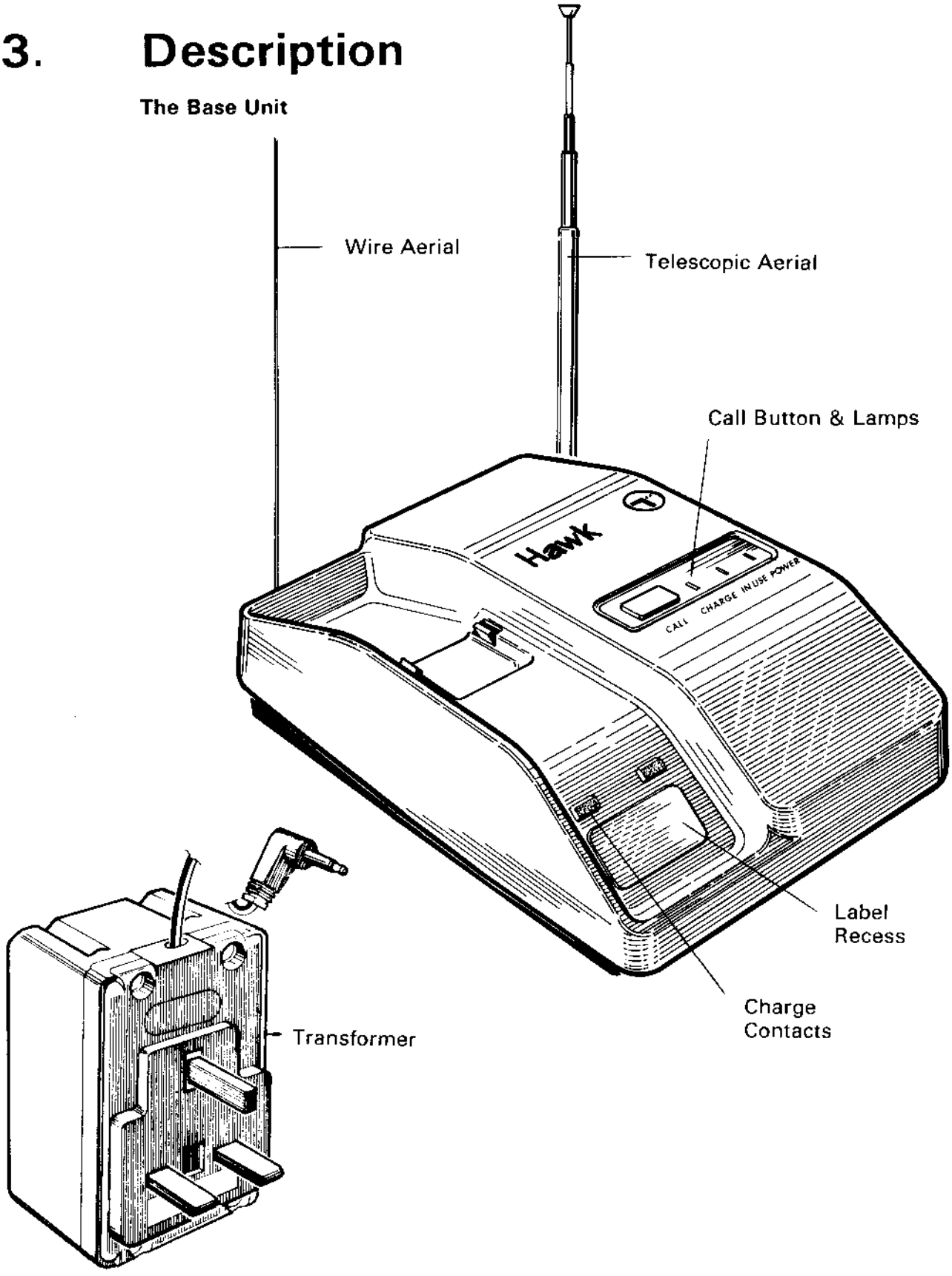
When received, the Hawk handset will require charging for approx. 24 hours before it is installed, otherwise it will not be possible to test it on site. Read through this guide note fully before attempting to charge the handset. After charging, repack Hawk carefully for transportation to the customers premises.

2. Field of Use

Initially Hawk will only be supplied as an **extension** telephone on Direct Exchange Lines that use loop disconnect signalling. It cannot be fitted on shared service lines or as a PBX extension.

3. Description

The Base Unit



The main features of the base unit are:-

a. A TELESCOPIC AERIAL which receives signals transmitted from the handset.

b. A 1.5m long WIRE AERIAL used to transmit signals to the handset.

The positioning of these aerials and the siting of the base unit is important if maximum range is to be achieved.

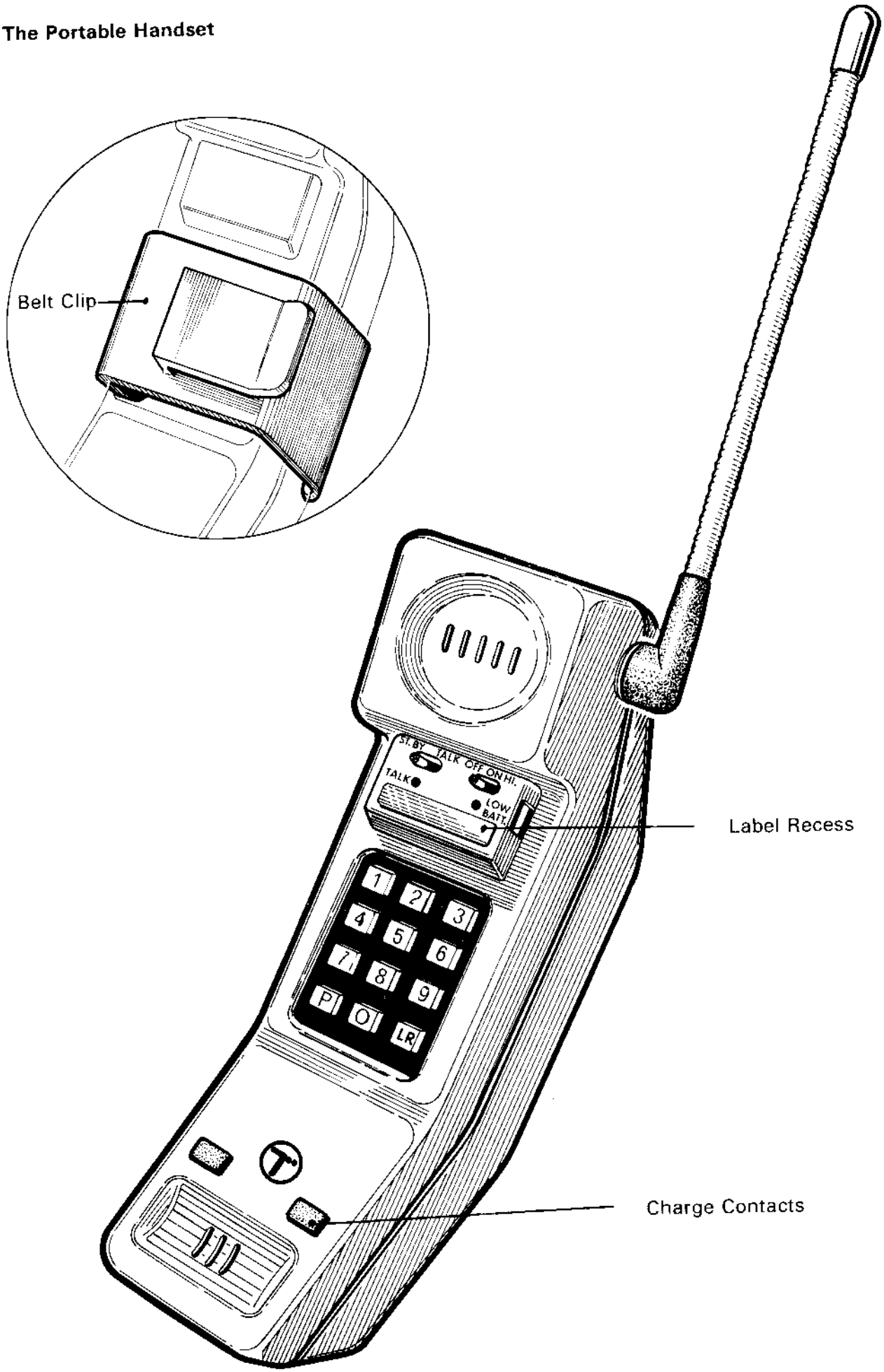
c. A CALL BUTTON which enables the handset to be called with a distinctive warbling tone. The call button has been provided so that calls answered on a cord telephone on the installation, can be passed to the portable handset.

d. A POWER LAMP which is lit whenever power is connected to the base unit. Power in the form of a low voltage ac. is supplied to the base unit for rectification and regulation from a double insulated plug mounted transformer. The 3m long output cable of the transformer plugs directly into the base unit.

e. An IN USE LAMP which is lit whenever the portable handset is in use or when the call button is pressed. Maximum brightness of the lamp occurs when the transmit aerial wire is correctly positioned.

f. A CHARGE LAMP which is lit whenever the handset batteries are being recharged. A current regulated output is supplied to the handset to recharge its cells from two contacts situated in the handset cradle.

The Portable Handset



The main features of the handset are:

a. A KEYPAD with last number re-dial (LR) and scratch-pad (P) facilities.

b. A FLEXIBLE AERIAL which folds into the side of the handset when not in use. This aerial is used to transmit signals to the base unit.

c. A FERRITE ROD AERIAL (not illustrated) contained within the handset body, which receives signals from the base unit.

d. ST.BY /TALK SWITCH. When in the standby position and switched 'on' (see 'e') the handset is ready to receive calls. Switching to 'talk' activates the handset and answers incoming calls. If an outgoing call is to be made, switching to 'talk' initiates the sending of the security code which ensures that the call will not be originated via someone else's base unit.

e. OFF/ON/HI SWITCH. The handset should be switched 'off' when not in use, or when it is being recharged. The 'on' position is used in conjunction with the 'standby' switch when calls are originated or received. The 'hi' position is used to amplify incoming speech.

f. A TALK LAMP which is lit whenever the handset is switched to TALK.

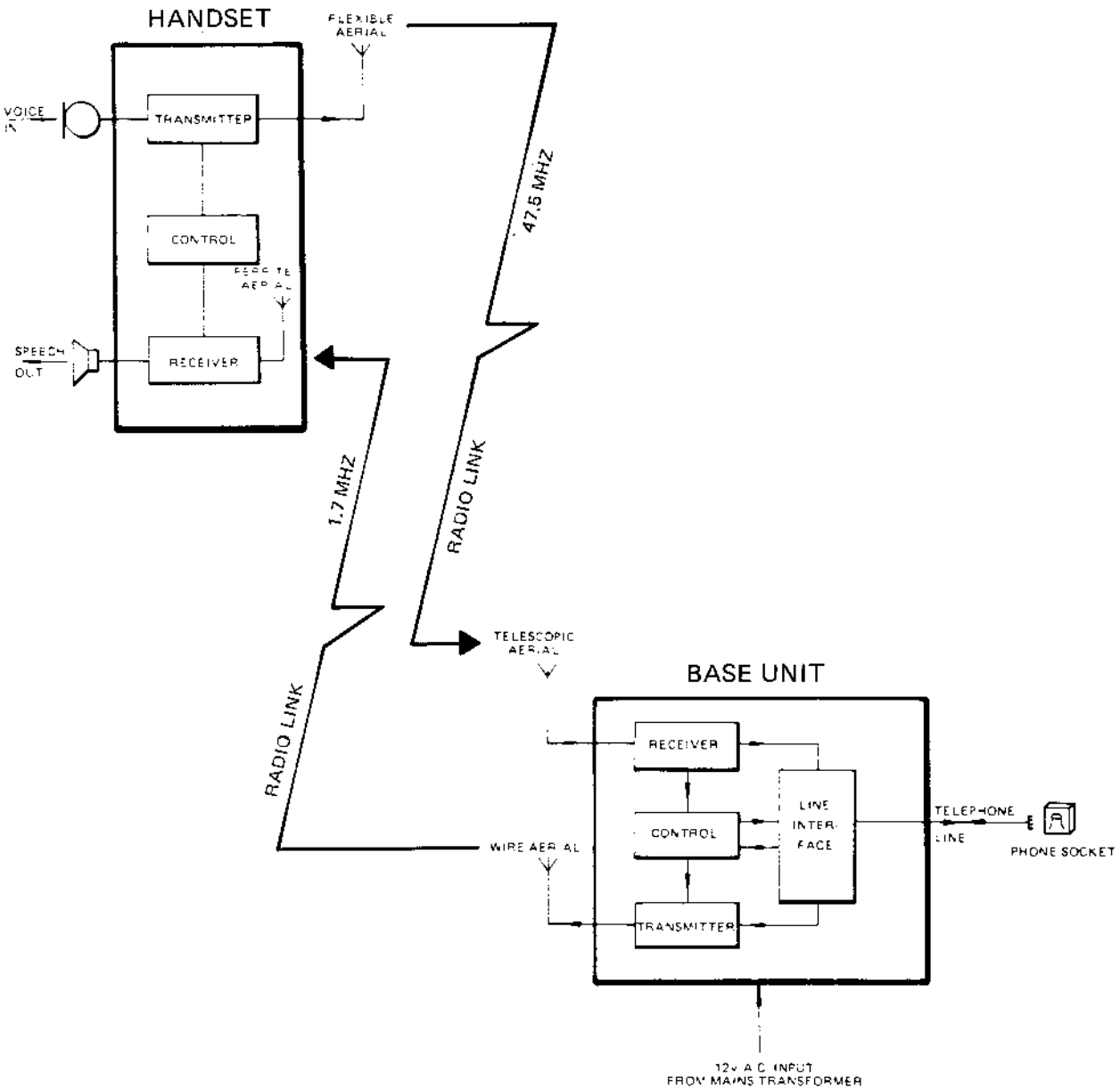
g. A LOW BATT LAMP which is lit whenever the handsets ni-cad batteries need recharging. The capacity of the cells is sufficient for 4 hours continuous use, or 12 hours intermittent use. The two contacts situated just above the microphone, engage with those in the handset cradle on the base unit to provide the charging circuit. The 2 sprung clips situated in the handset cradle of the base unit, engage 2 slots on the sides of the handsets switch panel, to help retain the handset in position when Hawk is wall mounted.

h. A BELT CLIP to facilitate carrying the handset about. Note the correct position for the clip on the illustration.

i. The EARPIECE also doubles as the tone caller. The incoming ringing gradually increases in intensity in case the handset is in the vicinity of the users ear.

4. Circuit Notes

The diagram below shows the main blocks of components used in the base unit and handset.



4.1. Base Unit

The base unit has a 47.5MHz RECEIVER. A 4.5kHz detector within the receiver, continually monitors the presence of a 4.5kHz sub carrier which is transmitted by the handset to indicate that a call is in progress. Dialling information is transmitted from the handset by interrupting the same carrier at 10pps.

base unit continued . . .

The LINE INTERFACE electrically isolates the telephone line from the rest of the base unit circuitry, and performs the electrical functions of a normal telephone, i.e. impedance matching, regulation, ringing detection, dialling (by relay) and speech transfer to and from the line.

The CONTROL CIRCUIT utilizes information from the receiver and line interface to control the transmitter and access to line. A microprocessor and a read only memory (ROM) programmed with the security code are used in this control. Elements of the microprocessor are also used to 'shape' the dialling pulses from the handset.

The 1.7MHz TRANSMITTER develops some 500mW of power. The electromagnetic field near to the output coil which is connected to the transmitters wire aerial, is sensed and then amplified to drive the 'in use' lamp. Maximum brightness of the lamp indicates that the aerial is correctly aligned.

4.2 The Handset

An electronic microphone is used to feed speech to the 47.5MHz TRANSMITTER, whose output is connected to the flexible fold down aerial on the handsets side. The 4.5kHz sub carrier used for call control and dialling is generated within the transmitter and combined with the speech and security code signals before modulation and final amplification. The transmitter develops some 10mW of power, with the output being carefully filtered to remove harmonics, particularly those at 95MHz which may cause interference with FM broadcast reception.

Like the base unit, the CONTROL circuitry uses a microprocessor and associated Read Only Memory to send and receive the security code and also to generate the calling tones for the earpiece. The control circuit takes the number information from the keypad and arranged for the 4.5kHz sub carrier to be pulsed at the required rate.

The 1.7MHz RECEIVER utilizes a ferrite rod aerial similar to those found in medium /long wave broadcast receivers.

5. Planning the Installation.

Remember, HAWK can only be supplied as an extension instrument, it must not be provided as the prime or only telephone on an installation.

When adding HAWK to an existing installation, note that...

Hawk has a high impedance calling device and must conform with the rules governing Phone Socket installations. Remember, the total number of calling devices on the completed installation must not exceed 4, unless a lamp signalling unit and ringing convertor have been provided to supplement the ringing.

Siting the Base Unit

With the customer, choose a suitable position for the base unit bearing in mind the following.

** To achieve maximum range the site should be as high as possible and preferably on the side of the building that overlooks the main direction of transmission.

** Walls and other large obstructions will reduce the usable range. Avoid particularly sites where there are large expanses of metal, eg., radiators, metal walls or linings and filing cabinets.

** To avoid interference, the base unit must not be placed upon or adjacent to TV's, radio's etc. If interference is experienced, then it will probably be due to a faulty or poorly tuned TV or radio, **not** Hawk.

** A 13amp mains socket will be required within 2 to 3 metres of the base unit. The transformer gets warm and consequently needs some ventilation, avoid situations where it will come into contact with bedclothes, the backs of cupboards and the like.

** Although not essential, it is advantageous to have another telephone sited in the vicinity of the base unit. This is because calls answered or made on a conventional cord telephone, can be transfered more easily to the portable handset if the base unit with its call button is nearby. Alternatively, a second phone socket near to the base unit would allow a cord telephone to be placed there in anticipation of this. Remember to advise the customer of the additional charge if they agree to the extra work being carried out.

** Neither the base unit or the handset are waterproof, so avoid wet or damp situations. Also avoid placing Hawk in direct sunlight, otherwise the internal components may overheat.

** If the base unit is to be wall mounted agree a suitable height with the customer, and point out that the wire aerial is better fixed to the wall above the unit. The reason for this is that if the aerial wire, power lead and line cord become entangled, then a severe degradation of the signal and thus the range results. Remember to allow for the height of the telescopic aerial (700mm/27½")

6. Installation.

If a new or additional phone socket is to be provided for Hawk, then it is worthwhile proving that the site chosen is suitable before running the cable and fixing the socket. To test the site proceed as follows,

6.1. Remove Hawk from its packing and find the following.

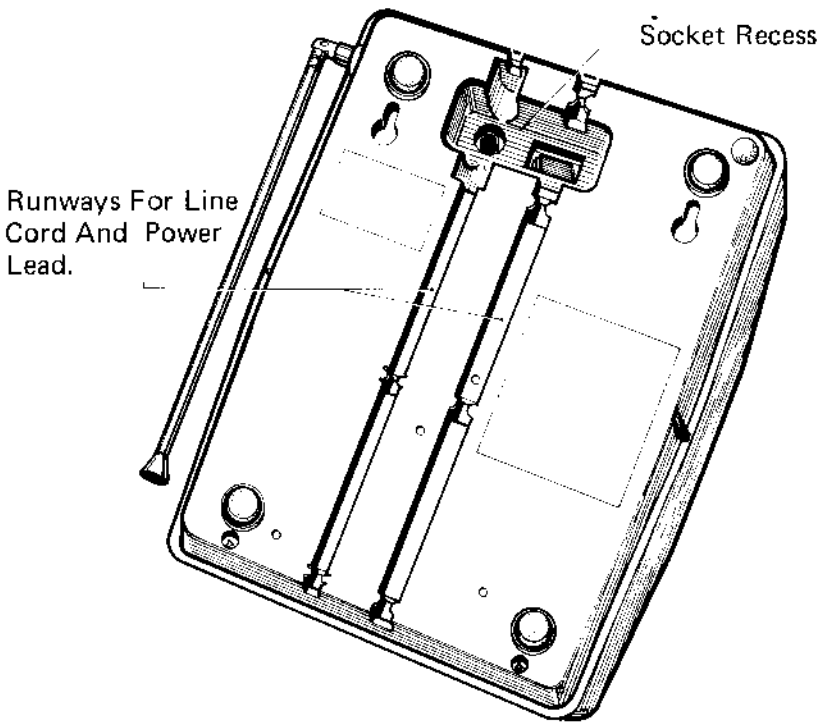
Base Unit and Handset.
Transformer
Belt Clip
Line Cord
Template for drilling the wall
User Instructions
and label pack.

6.2. Unwind and straighten the wire aerial stored in the socket recess on the underside of the base unit. The wire aerial is of a tuned length and **must not** be extended or shortened, similarly for safety reasons the insulating sleeve at the end of the aerial must not be removed.

6.3. Looking at the underside of the base unit, note the sockets for the line cord and power lead in the recess, and the runways that retain and feed the cordage to the rear or front of the unit.

6.4. Plug the power lead into the base unit and feed the cable into the required runway. **Always plug the power lead into the base unit first to minimise the risk of a low voltage shock from the end of the power lead, and to avoid damage to the base unit.**

6.5. Plug one end of the line cord into the socket on the base unit, and place the cord into the required runway. **Always plug the line cord into the base unit first, so there is no chance of receiving a shock from ringing current on the free end of the cord that has been plugged into a phone socket.**



6.6. Plug the Transformer into the mains socket and switch on the supply, this should cause the red 'power' lamp to glow.

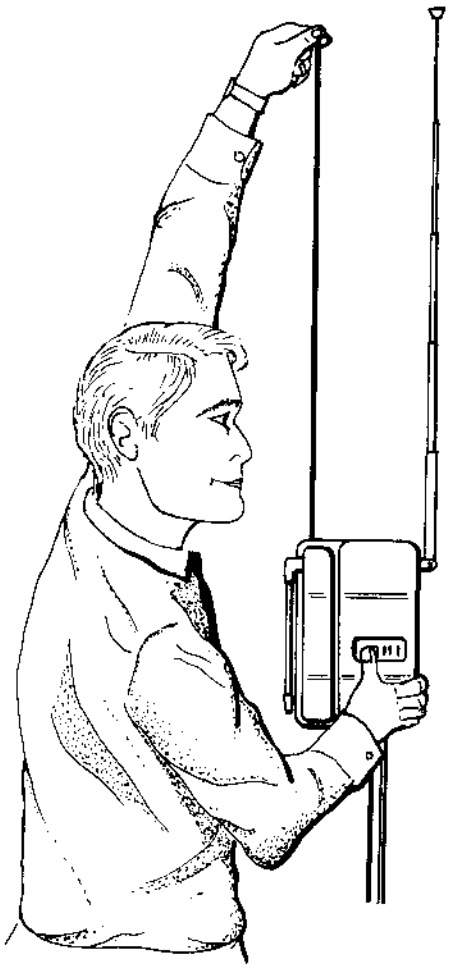
6.7. Place or hold the base unit in the position it is to occupy. Press the 'call button', and check that the 'in use' lamp glows when the wire aerial is held or placed in the position chosen for it. If the 'in use' lamp does not glow or glows dimly alter the position of the aerial wire until glows at its brightest.

If difficulty is experienced in getting the lamp to glow, then it is probably due to one of the following causes,

** The aerial wire is being gripped too tightly, and your body is interfering with the signal. Try holding the wire loosely between thumb and forefinger.

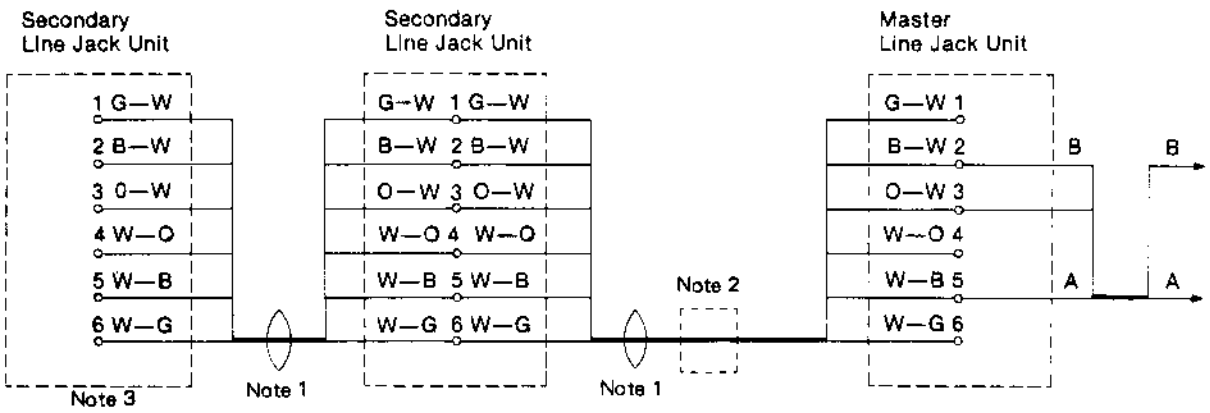
** The chosen site is masking the signal. Moving the base unit and aerial towards the centre of the room will prove this.

** The unit is faulty.



6.8. Having established the suitability of the chosen site, then the phone socket can be provided. The diagrams below are to remind you of the general wiring arrangement.

Phone Socket — Cabling Arrangements (Cable Equipment 2503)



NOTES

1 Cable Equipment 2503

2 See Fig. below for spur cabling or extension bell.

3 Other Secondary Line Jack Units can be added in an identical manner.

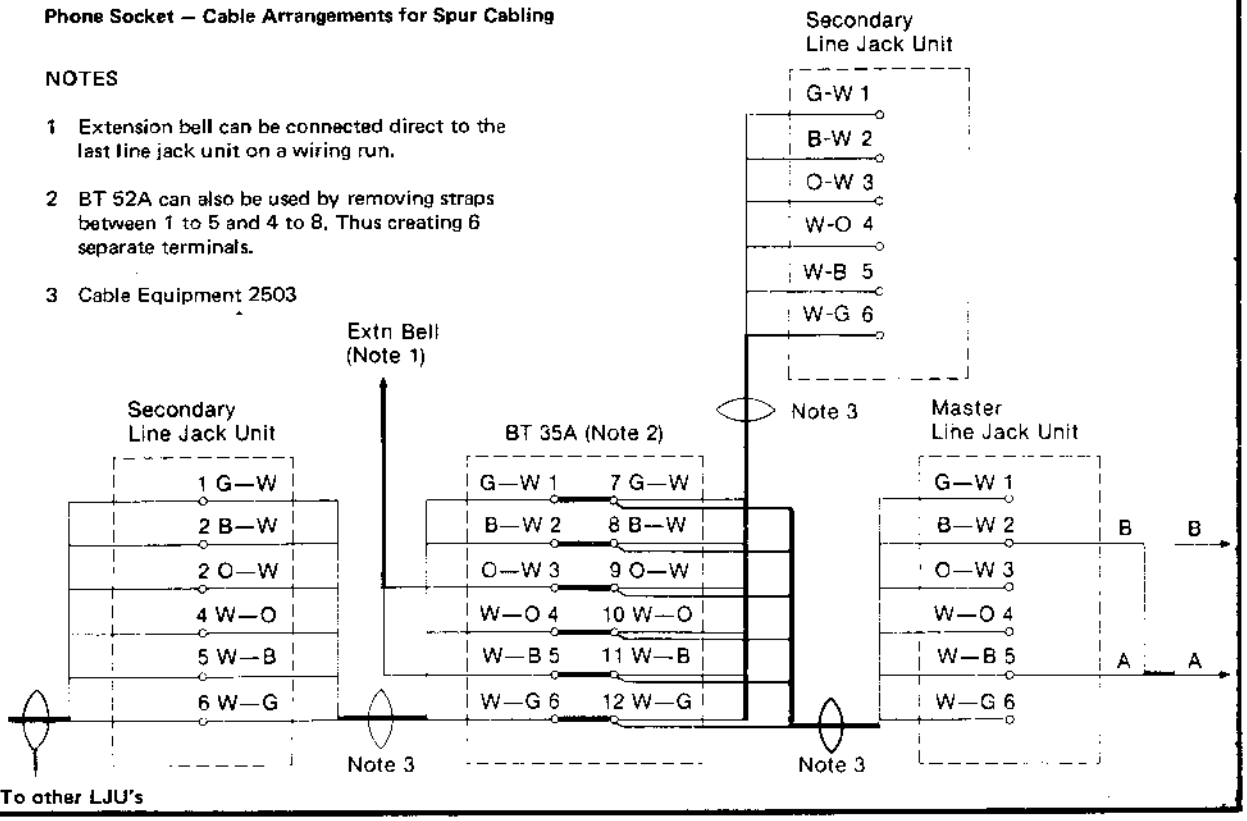
Phone Socket — Cable Arrangements for Spur Cabling

NOTES

1 Extension bell can be connected direct to the last line jack unit on a wiring run.

2 BT 52A can also be used by removing straps between 1 to 5 and 4 to 8. Thus creating 6 separate terminals.

3 Cable Equipment 2503



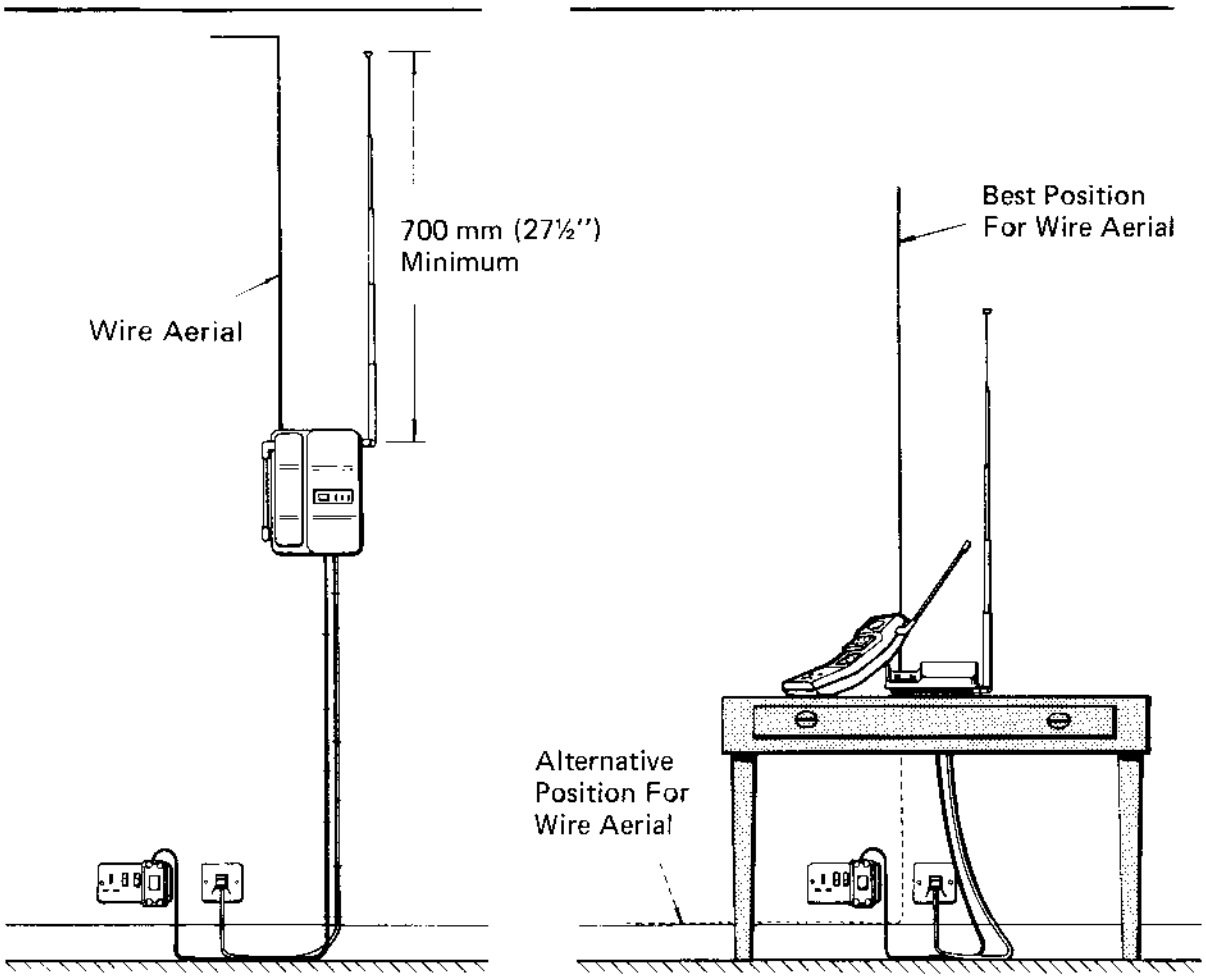
6.9. Wall mounting the base unit, (if required).....

Follow the instructions given on the template for wall mounting Hawk, taking care that before final fixing the line cord and power lead are positioned correctly in their runways, and that the aerial wire does not become trapped or looped behind the unit. The base unit is first hung on two roundhead or panhead screws placed in the wall at the correct fixing centres, and then retained in position by a third countersunk screw in the bottom left hand corner. This screw will be hidden by the label when it is fitted.

6.10. Fix the aerial wire into position. Providing there is little chance of it becoming entangled with the line cord and power lead, which would restrict the range, then the aerial wire can be left free so as to give mobility to the unit.

When it is better to permanently fix it into position, eg., wall mounting, then a suitable method of fixing should be **agreed with the customer.**

If the unit is to stand on a table and the aerial wire must be fixed permanently in position, then leave some slack in order to give some mobility to the unit.



6.11. Fit the labels and their protectors from the label pack to the handset and base unit.

6.12. Finally, plug the line cord into the phone socket, check that the power is on and Hawk is ready to be tested.

7. Testing the Installation.

Remember to credit the customer with any metered test calls. Use the operator or the test facilities that exist in your Area wherever possible. Faultsmans Ring Back and S.A.L.T. may not work with Hawk.

After familiarizing yourself with the operating instructions, the following tests should be made in the sequence shown.

a. Make an outgoing call to check that line seizure, dialling, speech transmission (including high amplification) and call cleardown are satisfactory.

b. Use the LR button to obtain a ring back from the test number dialled previously, to check that the tone caller (increasing volume) and ring trip (call answer) are satisfactory. During the call enter the test number again using the 'P' button.

c. Use the 'LR' button to obtain the test number, to check that the number stored using the 'P' button is correct.

d. Press the call button to check that the handset can be called from the base unit.

e. Check that dial tone can be received satisfactorily in rooms adjacent to the one in which the base unit is sited. Apart from this simple test no other check of Hawk's range should be attempted.

8. Operating Hawk

Before using Hawk check the base unit for the following,

** The red POWER lamp is lit.

** The telescopic aerial has been extended to its full height.

** The green IN USE lamp lights when the base units CALL button is pressed.

Take care when making or receiving a call not to stray too far from where the call originated otherwise one-way transmission may be experienced. It is also better to remain still whilst dialling out.

Making an outgoing call.

1. Turn the handset aerial to its vertical position.

2. Switch the handset to ON and TALK. The 'talk' lamp should glow and the 'low batt' lamp should be out.

3. Listen for dial tone. The OFF/ON/HI switch can be switched to HI if extra volume is required.

4. Dial the number required on the keypad. **Take care not to touch the 'P' button during dialling otherwise wrong numbers will result.**

The LR button on the keypad can be used to recall the last number dialled should it be engaged.

The 'P' button can be used to store a telephone number given during the call as follows,

a. PRESS 'P' and enter the number given using the keypad.

b. Return to the conversation. After CLEARDOWN, the number can be obtained using the 'LR' button.

To cleardown an outgoing call.

5. Switch the handset to STANDBY.

6. Wait 3 seconds.

7. Switch the handset back to TALK, listen for dial tone which confirms that the call has cleared and then return the switch to the STANDBY position. If dial tone is not received, move the handset nearer to the base unit and repeat the cleardown procedure.

8. Turn the handset aerial back into the side of the handset.

If Hawk is no longer needed, or it is not desired to receive incoming calls, then the OFF/ON/HI switch should be placed in the OFF position to conserve battery energy.

To receive incoming exchange calls (or calls from the base unit)

1. Switch the handset to ON and STANDBY.

Note With the handset switched to OFF, the tone caller is rendered inoperative and consequently calls from any source will not be received. This gives an 'opt out of service' facility.

Incoming calls from the exchange line are signalled on the handset by a single tone repeated at the familiar exchange ringing periodicity.

Incoming calls passed to the handset using the base units call button are signalled by a warbling tone repeated at regular intervals.

To answer an incoming call.

2. Turn the handset aerial to its vertical position.

3. Switch the handset to TALK. The HI position may be used if extra volume is required.

To clear the call.

4. Switch the handset to STANDBY and ON.

5. Turn the aerial into the side of the handset.

The handset is now ready to receive the next incoming call.

To pass calls answered on a cord telephone to the portable handset.

1. Press the 'call' button on the base unit for 5-10 seconds. **Note:** there is some delay before the sounder operates, and it will stop as soon as the call button is released.

2. Release the call button and the green 'in use' lamp will light when the handset user answers. If the handset has already answered, then the 'in use' lamp will remain alight when the call button is released.

3. Check that the conversation has passed to the handset and then replace the handset on the cord telephone.

Charging the Handset Batteries.

Although the handset is equipped with a 'low battery' lamp to indicate when re-charging is necessary, it is better if it kept fully charged by placing it on the base unit whenever it is not in use, for example, overnight. Occasionally it should be allowed to run down naturally to help prolong battery life. The capacity of the cells is sufficient for approx. 4 hours continuous use, or 12 hours intermittent use.

Re-charging

1. Set the handset switches to OFF and STANDBY. If left in the ON position calls will still be received but the batteries will take much longer to become fully charged.

2. Place the handset in the base unit cradle checking that the red CHARGE lamp lights.

9. Customer Instruction.

Show the customer how to.....

a. Check that the wire aerial is correctly positioned for good transmission.

b. Make outgoing calls.

c. Receive incoming calls.

d. Transfer calls from a cord telephone to the portable handset..

e. Use the LR and P buttons on the keypad.

f. Re-charge the handset when necessary.

g. Fit the belt clip to the handset.

Give the customer the 'Instructions and User Guide'. Point out the registration card that must be sent to the Sales Office, making certain that it is correctly addressed and that the serial number and channel letter of the Hawk supplied have been entered. These will be found on the bottom of the base unit, the channel letter is the one following the type number and will be within the range A to H.

10. Maintenance.

Maintenance engineers should read the previous sections of this guide note entitled 'Planning the Installation' and 'Installation'.

It is anticipated that the design and method of operation of Hawk may result in fault reports due to customer misoperation or misunderstanding of the facilities. **To minimise abortive maintenance visits, Fault Distribution Officers should check the following points before incurring a Faultsman visit.**

a. Confirm that the Hawk is rented from BT or covered by Phonecare, if not then refer customer to the point of sale.

b. Confirm that the other telephones on the installation are working correctly and are not affecting the operation of Hawk. Note that Hawk is intended for use as an **extension** instrument on DEL's only.

c. Confirm that the red 'Power' lamp on the base unit is glowing, if not, ask the customer to check that the transformer is plugged in and that the mains supply is switched on. Hawk will not work if the mains supply fails to the base unit (rushing noise on Hawk handset).

d. Confirm that the problem is not due to discharged batteries in the handset. The red 'Low Batt' lamp will glow to indicate this unless the batteries are completely discharged. If discharged batteries are suspected, then ask the customer to put the handset on charge *(see page 17)* for at least 2 hours before re-testing, which will provide enough power for approx. 1/2 hours use.

e. Confirm whether the fault may be due to interference from other electrical apparatus, radio/TV equipment or other cordless telephone installations *(see the notes on site mtce.)* If the interference is due to other electrical equipment, then offer any available advice to assist the customer in identifying the problem. If the problem appears to be persistent interference from another cordless telephone in the neighbourhood working on the same channel, refer the customer to Area Sales.

f. Confirm whether the customer appreciates the limitations and method of operation of Hawk *(see 'limitations' on page 22)*, if not, refer the customer to the User Instructions for Hawk. **Advise the customer that a charge may be made for an abortive visit.**

   Check as to whether Hawk works satisfactorily in the same or adjacent rooms to the base unit, if it does then advise the customer of the limitations of the system.

To complete the information they will require RSC staff should continue to read the following sections which concern on site maintenance.

On site Maintenance.

On site maintenance of Hawk is limited to functional testing, aerial positioning or unit changeout. There are no internal adjustments and apart from the line cord (4/500...), transformer and belt clip (when available) there are no field replaceable items.

Before exchanging a Hawk Cordless Telephone, Faultsmen should check the following points.

a. **If Hawk appears Out Of Order (000), handset dead.**

** Check that it has been installed correctly.

** Check that the POWER lamp is lit.

** Check that the CHARGE lamp glows when the handset is placed on the base unit. It is worth noting whether the handset was on charge when you called, since if the handset batteries are completely discharged then the handset will sound dead, and the LOW BATT lamp will not light.

** Check that the IN USE lamp glows brightly when the CALL button is pressed (handset removed), adjust the position of the wire aerial if necessary.

b. **If there are intermittent i/c or o/g difficulties with Hawk when it is being used in the same or an adjacent room to the base unit.**

** Check the Line Jack and cords.

** Check that the LOW BATT lamp on the handset is not glowing.

** Check that the CHARGE lamp glows when the handset is placed on the base unit.

** Check that the customer is allowing sufficient time for the batteries to charge *(see page 17)*.

** Check that the aerials on the base unit are properly aligned. The telescopic aerial should be fully extended vertically, and the wire aerial should preferably be as near vertical as possible, although its position may be varied.

** Check that i/c and o/g calls can be made when the handset is next to the base unit. Test the keypad speed and ratio and the incoming ring with the aid of the Test Desk. **Do not rely upon SALT as this may give misleading results.**

** Check that the customer is using Hawk correctly.

** Check whether the customer is in the habit of moving around whilst making calls, as this may cause the 'dialled' pulses to be distorted if the user walks through an area of interference or screening.

** Check whether the customer is allowing sufficient cleardown time between calls, or when the first attempt to seize or release the line has been unsuccessful.

** Check that the customer is not inadvertantly pressing the 'P' button as this will affect the keypad operation *(see page 15)*.

c. **If Hawk does not work at sufficient range to satisfy the customer.**

** Check that the aerials are correctly positioned and that Hawk works correctly at close range (ie. in the same or next room to the base unit).

** Check that the customer is using Hawk correctly.

** Check that the customer is aware of Hawk's limitations as detailed in the Customers Instructions *(see also page 22)*.

** Check whether the base unit could be repositioned to improve the range *(see Planning the Installation on page 9)*.

d. **If Hawk is being affected by other equipment.**

** Check whether the base unit is near to fluorescent lamps, TV sets, radio sets or equipment with electric motors.

** Check whether the handset is being used near to the above types of interfering equipment.

** Check whether Hawk is being affected by another cordless telephone in the neighbourhood. If so remind the customer of the limitations *(see page 22)* and advise that secrecy cannot be guaranteed. **Hawk should not be changed for another with a different channel code letter to overcome this problem without the authority from Area Sales.**

** Check whether CB or amateur radio is being used locally.

** Check that the customer is not using the handset in an interference prone location.

e. **If noisy transmission is being experienced with Hawk.**

** Check that this is not due to line noise by making a test call from an ordinary telephone on the same line as Hawk.

** Check that the customer is not using the handset near the limit of its range, when Hawk will normally be noisy.

** Check that the base unit is not sited in an interference prone location.

** Check that the customer is allowing sufficient charging time. When the battery power is low, the range of Hawk is reduced causing noisy reception.

Maintenance Changeout.

Whenever it is necessary to maintenance exchange a Hawk, the handset and base unit must be carefully packed and returned together, ideally in the packaging of the replacement unit. The handset switch should be set to OFF and the cords packed so that they are not touching the handset or base unit case mouldings.

The existing wire aerial may be connected to the replacement Hawk if to remove it would damage the customers decorations. The new aerial wire should then be returned with the old Hawk so that a complete unit is returned. To change the aerial wires over it will be necessary to remove the base units cover, which is held in position by two lugs at the rear and two Phillips screws adjacent to the front feet.

To remove the cover,

a. fold the telescopic aerial to the side of the base unit,

b. remove the two Phillips screws

c. place the unit the correct way up

d. ease the cover gently upwards at the front and then backwards to avoid damaging the aerial coil. The cover is linked to the base by a wire so it will not become completely free.

e. the wire aerial is connected by a slide on spade terminal. **Do not touch any internal components (electro-static damage) or make alterations to adjustments**

To replace the cover,

a. position the aerial wire so that it will not be trapped by the lugs on the cover.

b. replace the cover being extremely careful not to damage the aerial coil.

Whenever possible the replacement Hawk should have the same channel code as the unit it is replacing, unless it has been agreed locally that a channel change is necessary to overcome interference problems.

Limitations

The radio power of Hawk is restricted by Department of Industry regulations as stated in the User Guide. The Dept, of Industry has allocated 8 channels nationally, for use by all cordless telephones whether supplied by British Telecom or by other suppliers. Cordless telephone users are also required by the Dept. of Industry to register their channel codes with Telephone Area Offices, which will help to identify cordless telephones in the same location on the same channel. Should it be necessary to change a Hawk for one with a different channel, the tear off portion of the Users Guide should be sent to the Area Sales office showing the change of channel code. Channel codes are identified by a letter in the range A to H on a label on the base of the unit.

Hawk has been designed to work effectively within a 100 metres radius under ideal conditions, the 200 metre range referred to in the User Guide is an absolute maximum, and it is anticipated that not many customers will be able to achieve this. The range of Hawk will be reduced by walls or other obstructions, as these weaken or distort radio signals. Consequently, the base unit should be sited so that there is the minimum number of obstructions or walls between it, and the area in which the handset will be used. The effects of ground level obstructions may be minimised by siting the base unit at first floor level. Holding the handset at the mouthpiece end helps to increase the range, since the hand will not be screening the ferrite rod aerial inside.

When the handset is switched to TALK, a security code signal is transmitted to the base unit. If this signal is distorted by interference or low battery power then the base unit will not respond, the handset must then be switched back to standby for approx. 3 seconds (until the handset can be heard to clear) before attempting to call the base unit again.

There are various other cordless telephones currently available that advertise greater range than Hawk and work on other frequencies, these do not conform to Dept. of Industry requirements and their use is illegal.

PERSONAL NOTES