Huntleigh HEALTHCARE

TABLE OF CONTENTS

1. Warnings

Before using this equipment, please study this manual carefully and familiarise yourself with the controls, display features and operating techniques. Ensure each user fully understands the safety and operation of the unit, as mis-use may cause damage to the unit or injury to the user or the patient.

This equipment has been manufactured using quality components and designed to operate safely and reliably.
If the integrity of the protective earth conductor is in doubt, the equipment should be operated from its internal electrical power source.
All modifications and repairs to the equipment must carried out by qualified service engineers, agents or hospital technicians authorised by Huntleigh Healthcare.

CE MARKING

This equipment carries a CE mark but this is only fully valid if it is used in conjunction with cables and other accessories approved by Huntleigh Healthcare Ltd.

1.1 Cautions

Note	The following are descriptions of general hazards and unsafe practices that could result in death, severe injury or product damage. Specific warnings and cautions not appearing in this section are found throughout the manual.
Possible Fire or Explosion	A possible explosion hazard exists if used in the presence of flammable anaesthetics. Explosion or fire can result.
Possible Safety Hazard	Do not mount the equipment directly above the patient. Place the equipment in a location where it cannot harm the patient should it fall from its shelf or other mount.
Possible Electrical Hazard	Do not operate the equipment using damaged cables and wires, or loose snap fittings, which may cause interference or loss of signal. Perform frequent electrical and visual inspections on cables and wires.
Possible Shock or Fire Hazard	Do not immerse any portion of the instrument in water. Fluid spills may damage the instrument's electrical components.

Possible Equipment Damage	Do not sterilise this product. Sterilisation environments can cause severe damage. Do not autoclave or gas sterilise accessories unless manufacturer instructions clearly approve it.
Possible Safety Risk	Do not substitute accessories. Use only recommended accessories listed in this manual. Substitution may cause the instrument to work improperly. The correct accessories are shielded to prevent conductive parts of the electrodes contacting other conductive parts or earth. No action should be taken which permits this to happen.
Warning	All interconnecting equipment must meet their relevant safety standards i.e. EN60959 in the case of computers, network terminals and display monitors. When several pieces of equipment of various origins are interconnected, the summation of leakage currents may constitute a hazard.
Warning	The accuracy of the readings obtained from this equipment may be affected by the presence of a pacemaker or by cardiac arrhythmia
Warning	If it is thought that interference is occurring from or with other equipment, such as that used for Diathermy, then either shut-off, or move, the offending devices, increase the separation or reduce lead lengths.
Warning	If the integrity of the protective earth conductor arrangement is in doubt, the equipment should be operated from its internal electrical power source only while connected to a patient. Use the mains supply only to re-charge the battery while not connected to a patient
Caution	Electromagnetic Compatibility (EMC). This product complies with the requirements of applicable EMC Standards. The use of accessories not specified by the manufacturer may result in increased emissions by, or decreased immunity of, the equipment, affecting its performance.

This product contains sensitive electronics; strong radio frequency fields could interfere with the operation of the system. In the event where this occurs, we suggest that the source of interference is identified and the equipment is used 'out of range'.

Do not use this equipment in the presence of flammable gases.

Do not immerse any part of the equipment in any liquids.

Do not use solvent cleaner on any part of the system.

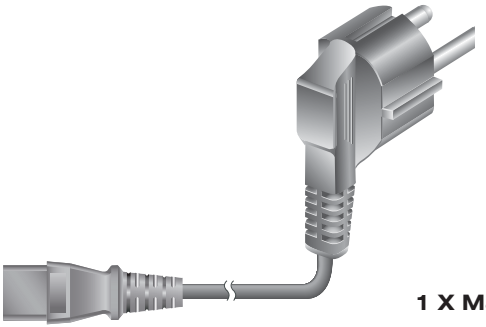
Do not use high temperature sterilising or E-beam / gamma sterilisation processes.

If any doubt exists concerning the use of this equipment, an alternative method should be used.

2. Introduction

2.1 Contents

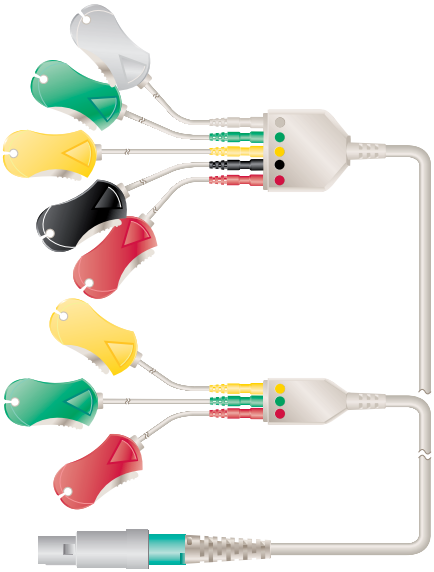
1 X SC750



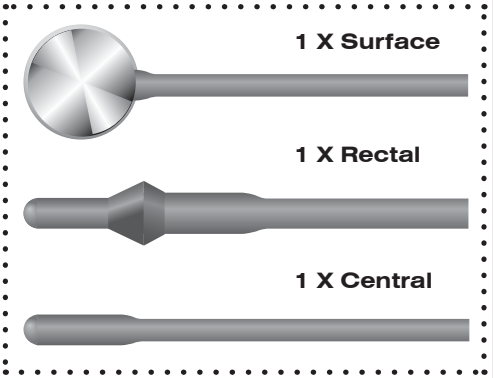
1 X Mains Lead

1 X User Manual

ECG / RESP



1 X ECG/RESP Patient Cable

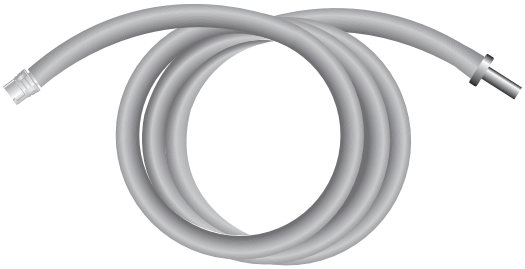


Temperature Probes (optional)

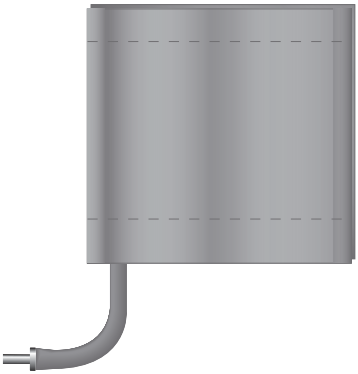
1 X Adult Finger Sensor

1 X SpO2 Interface Cable

NIBP



1 X NIBP Hose

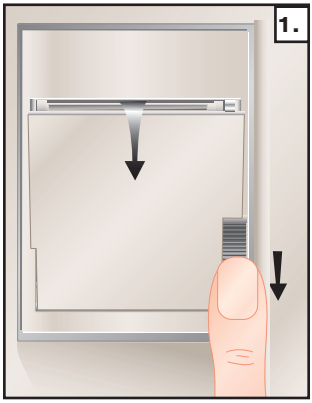


1 X Standard Adult Cuff

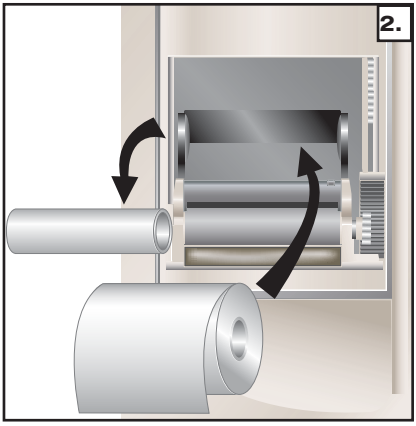
Recorder

1 X Chart Paper

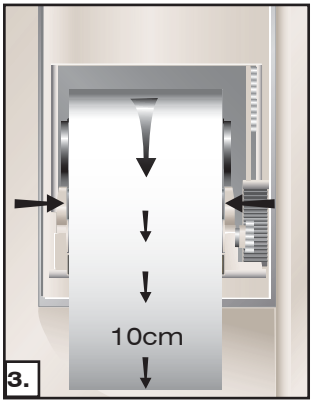
Loading Chart Paper



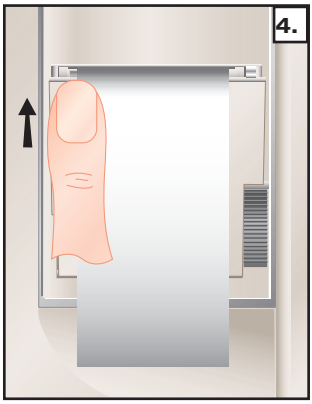
1. Open the door.



2. Insert / Replace chart paper



3. Align paper to roller.

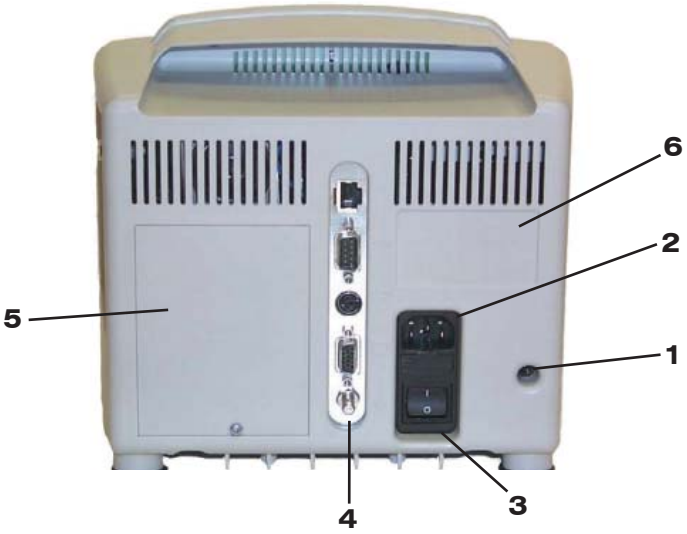


4. Close the door

2.2 Front Panel

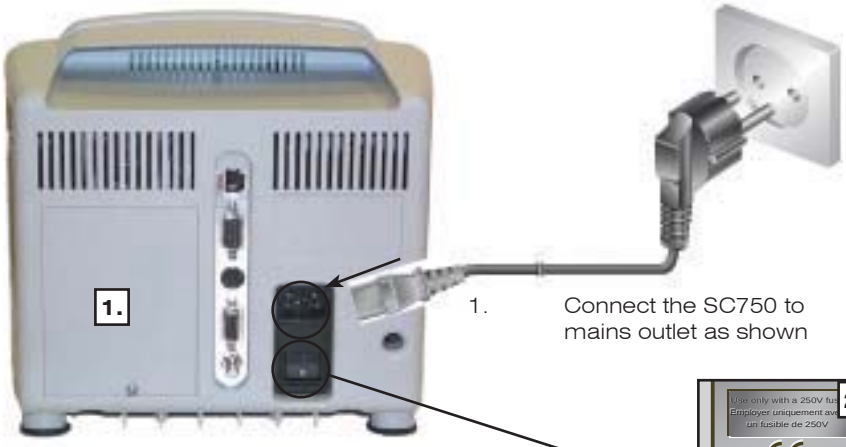
1	~	Green “~ “ ON Indicates mains power connected.
2	**CHG**	Yellow “CHG” ON Indicates that the internal battery is charging.
3	⊙	Yellow above the “On” / Off” button indicates the unit is switched on.

2.3 Rear Panel

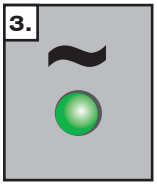


1	External DC Input 
2	Mains Input Socket
3	Mains ON/OFF Switch
4	I/O Sockets (from the top) : • Ethernet Socket  • Serial Port  • Keyboard Socket  • External Monitor Socket  • Equipotential Earth Connector 
5	Integral Battery Access Cover 
6	Rating and Serial Number Label

2.3 Switching On



1. Connect the SC750 to mains outlet as shown



2. Switch On

3. LED will illuminate

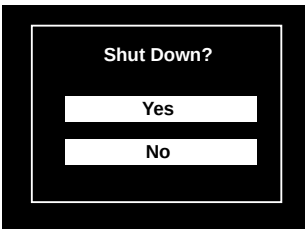
4. Press . .

5. Opening Screen will be displayed.

Press CHANGE DETAILS or CONTINUE.

2.4 Switching Off

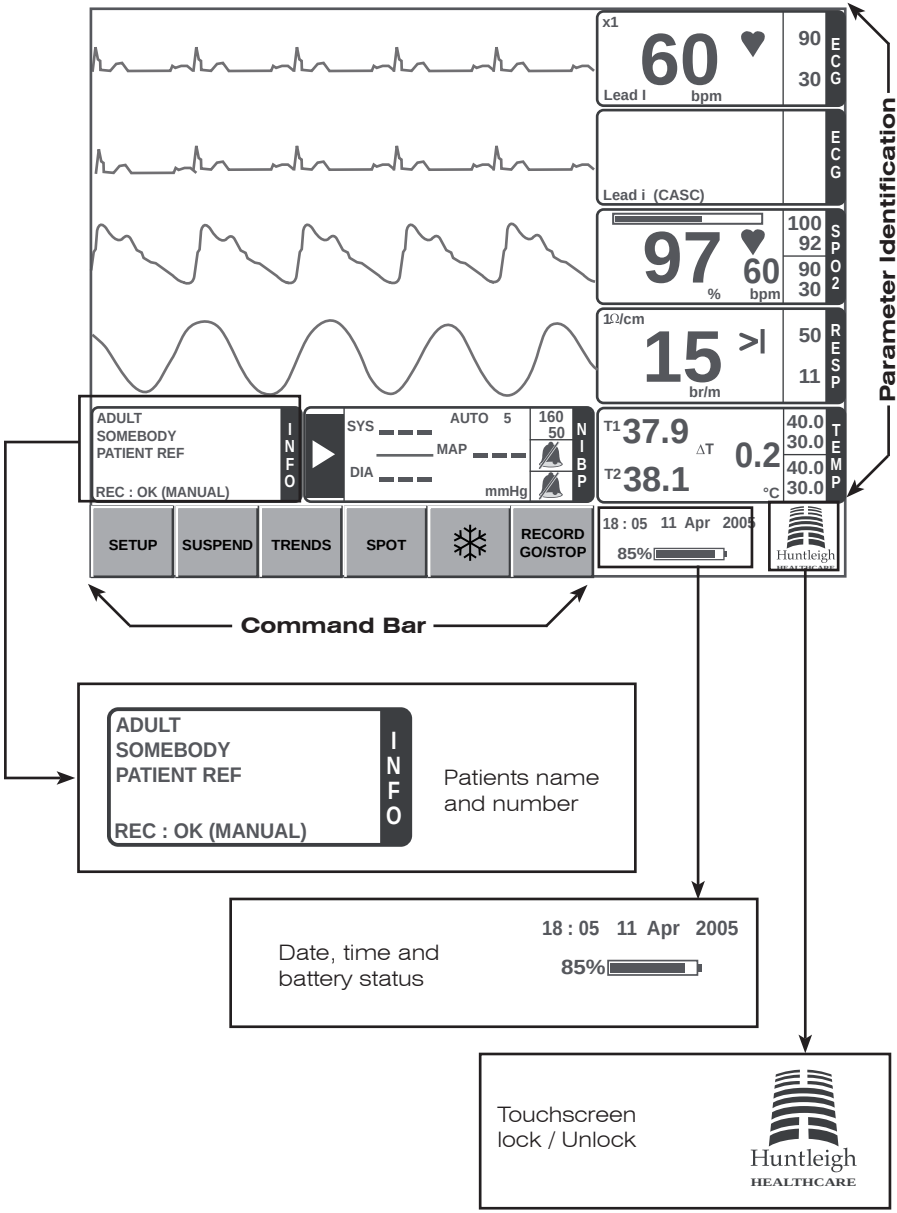
1. Press . .



3. Operation

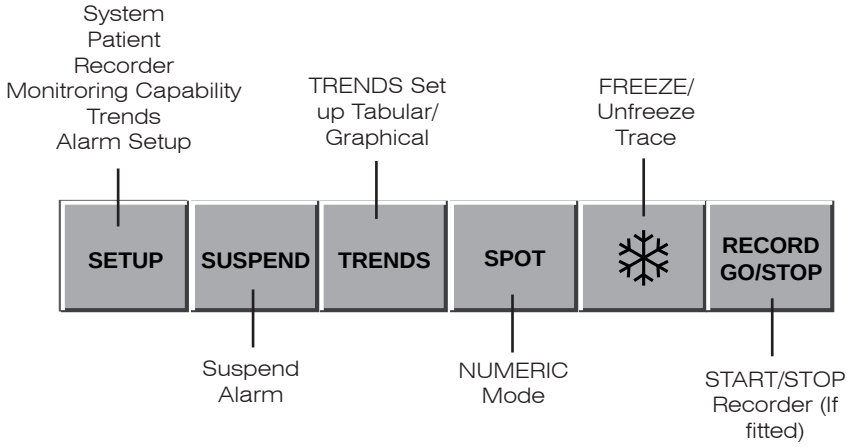
3.1 Application Screen

The screen is arranged into a series of waveforms and numercal indicators.

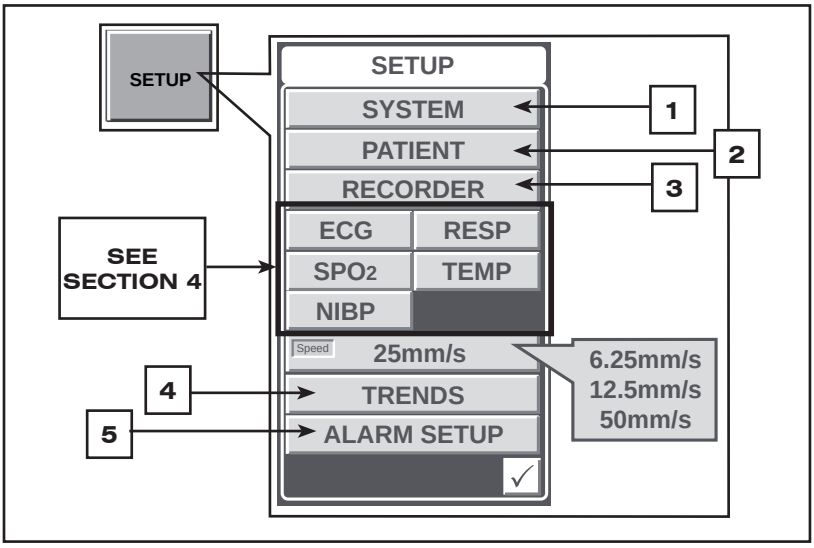


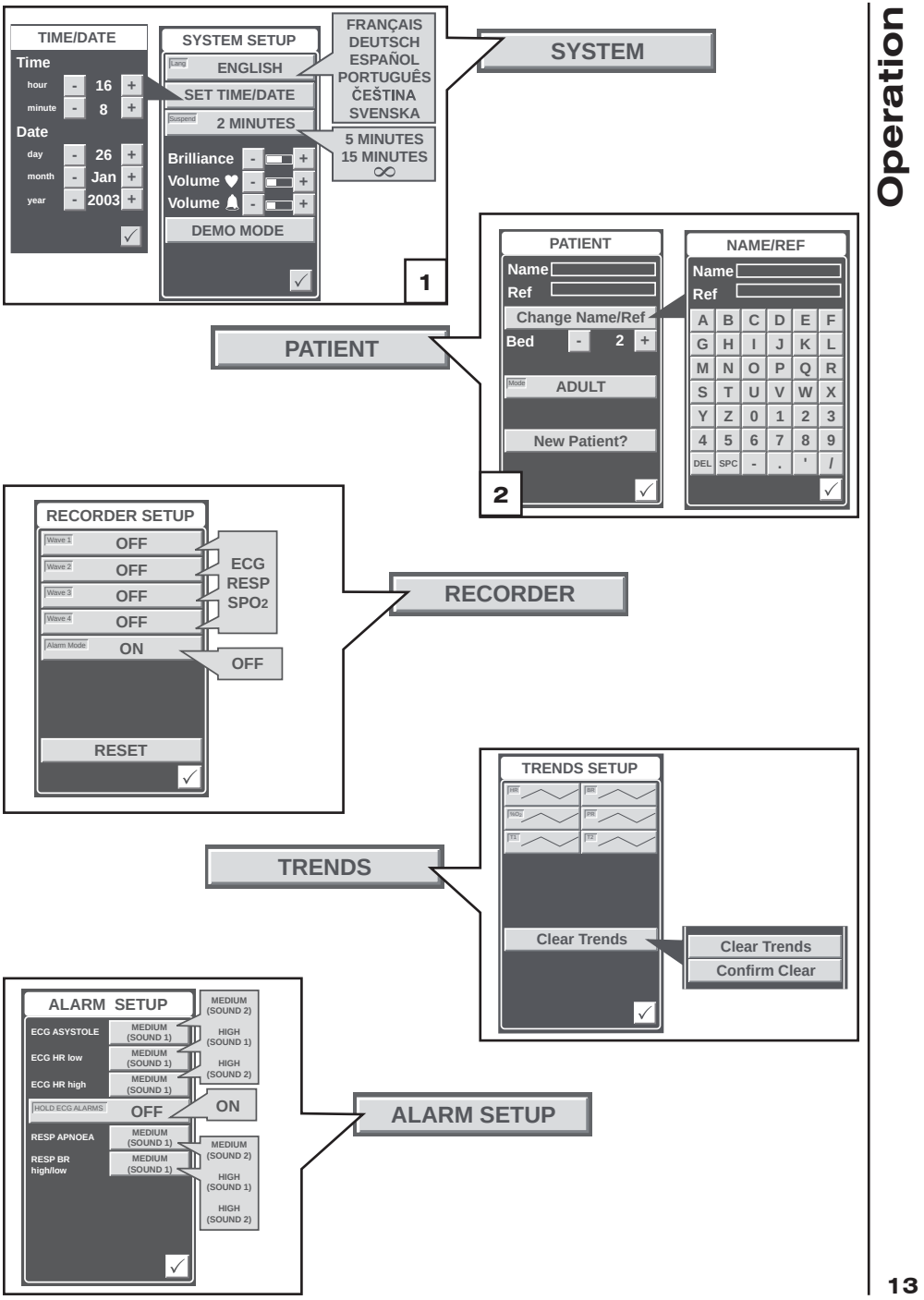
3.2 Command Bar

Press any of the command bar TABS to view or change settings:-



3.2.1 Setup




TIME/DATE
Time
hour - 16 +
minute - 8 +
Date
day - 26 +
month - Jan +
year - 2003 +
SYSTEM SETUP
Lang ENGLISH
SET TIME/DATE
Suspend 2 MINUTES
Brilliance - +
Volume - +
Volume - +
DEMO MODE
FRANÇAIS
DEUTSCH
ESPAÑOL
PORTUGUÊS
ČEŠTINA
SVENSKA
5 MINUTES
15 MINUTES
∞
SYSTEM
1
PATIENT
Name
Ref
Change Name/Ref
Bed - 2 +
Mode ADULT
New Patient?
NAME/REF
Name
Ref
A B C D E F
G H I J K L
M N O P Q R
S T U V W X
Y Z 0 1 2 3
4 5 6 7 8 9
DEL SPC - . ' /
PATIENT
2
RECORDER SETUP
Wave 1 OFF
Wave 2 OFF
Wave 3 OFF
Wave 4 OFF
Alarm Mode ON
RESET
ECG
RESP
SPO2
OFF
RECORDER
TRENDS SETUP
Clear Trends
Clear Trends
Confirm Clear
TRENDS
ALARM SETUP
ECG ASYSTOLE MEDIUM (SOUND 1)
ECG HR low MEDIUM (SOUND 1)
ECG HR high MEDIUM (SOUND 1)
HOLD ECG ALARMS OFF
RESP APNOEA MEDIUM (SOUND 1)
RESP BR high/low MEDIUM (SOUND 1)
MEDIUM (SOUND 2)
HIGH (SOUND 1)
HIGH (SOUND 2)
ON
MEDIUM (SOUND 2)
HIGH (SOUND 1)
HIGH (SOUND 2)
ALARM SETUP

3.2.2 SPOT Mode

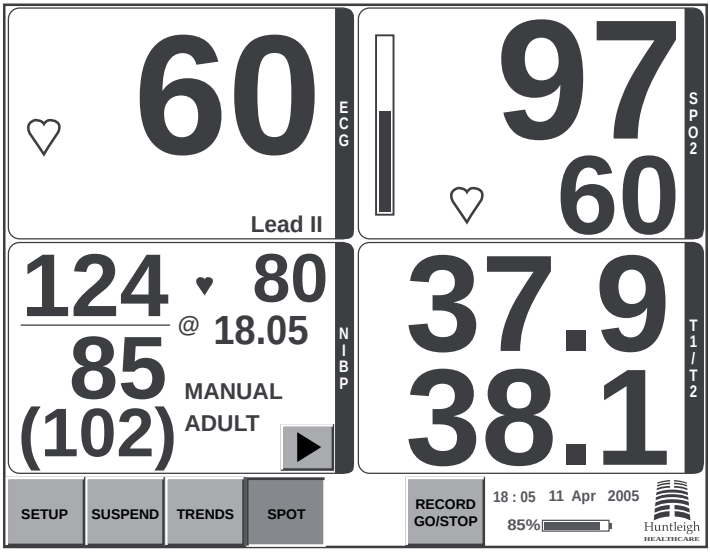
When the SPOT button is pressed on the command bar, the screen will change to display ECG/SPO2/NIBP/TEMP in a large format.

Please note that no traces are displayed in SPOT mode.

Press 

.

The screen will enter SPOT mode. All monitor functions, except 'Freeze trace' are active in SPOT mode.



SPOT Mode

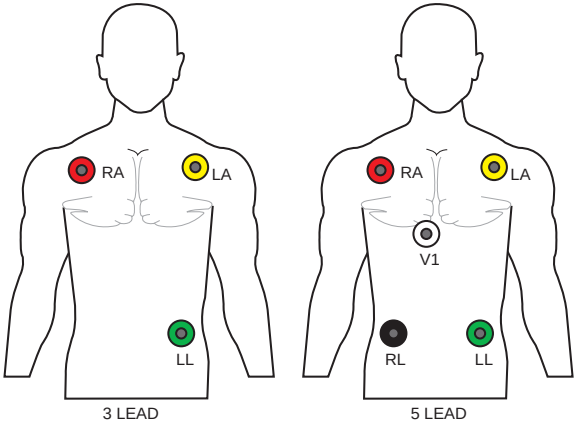
Press 

to return to normal mode.

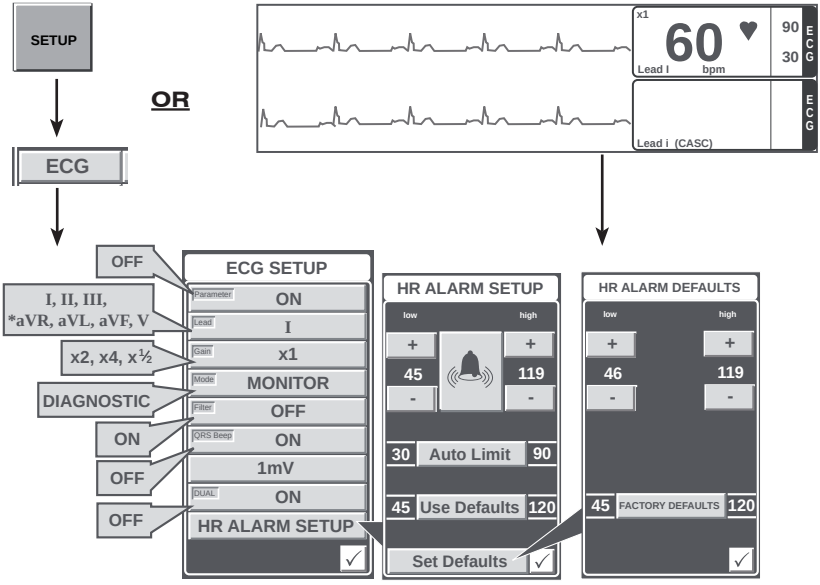
4. Patent Monitoring

4.1 ECG Monitoring

1. Apply elecrodes to patient.



2. Press . . .



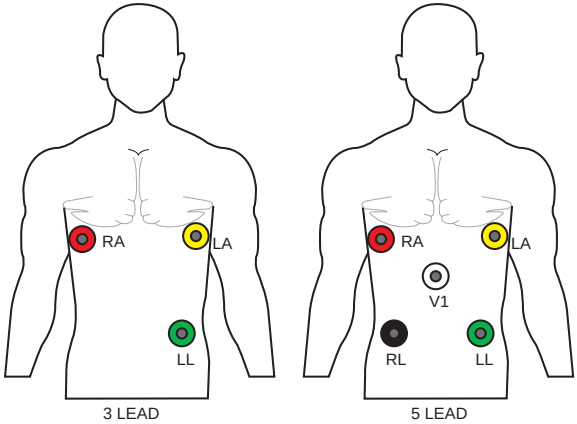
3. Change as required.

4. Press √ to save any changes.

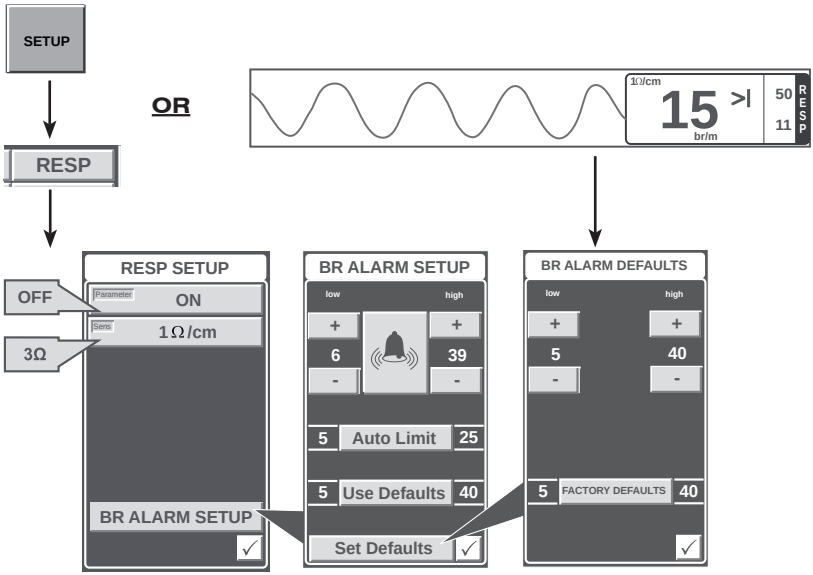
** 5 Lead ECG option*

4.2 Respiration Monitoring

Respiration is detected via the ECG electrodes. In some situations it may be necessary to reposition the electrodes as shown.



2. Press . . .

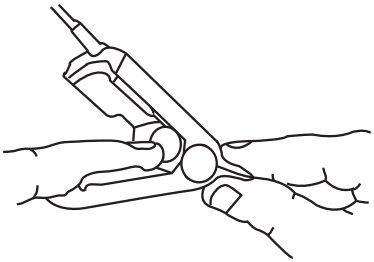


3. Change as required.

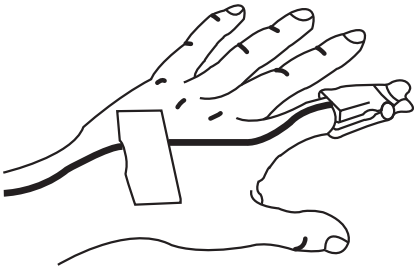
4. Press √ to save any changes.

4.3 SpO2 Monitoring

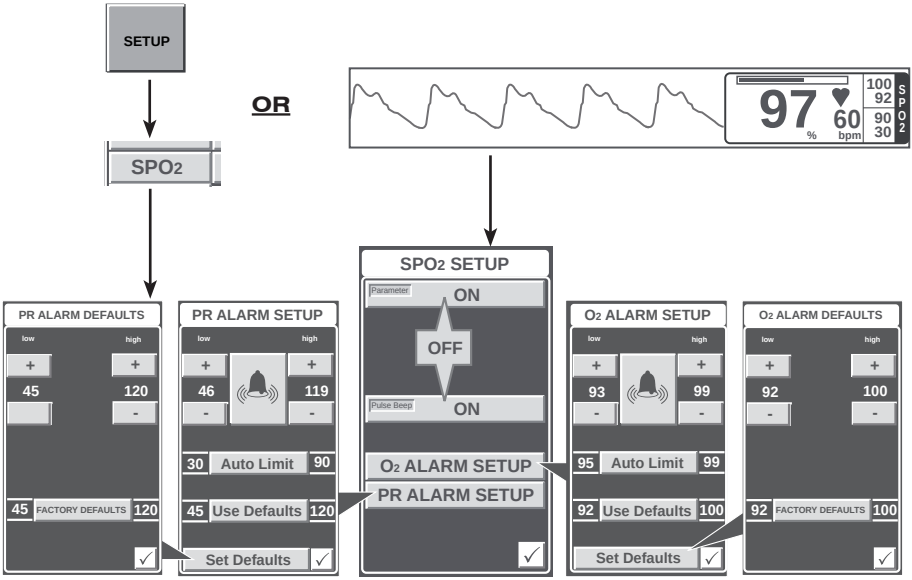
1. Apply sensor.



2. Fix cable.



3. Press . . .



4. Change as required.

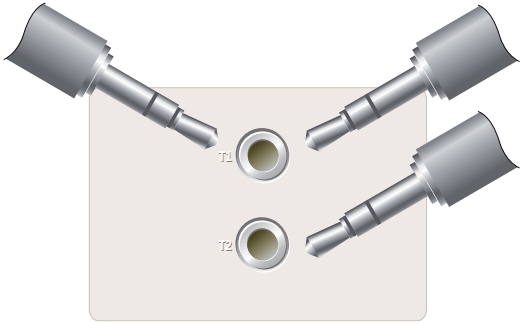
5. Press √ to save any changes.

4.4 Temperature Monitoring

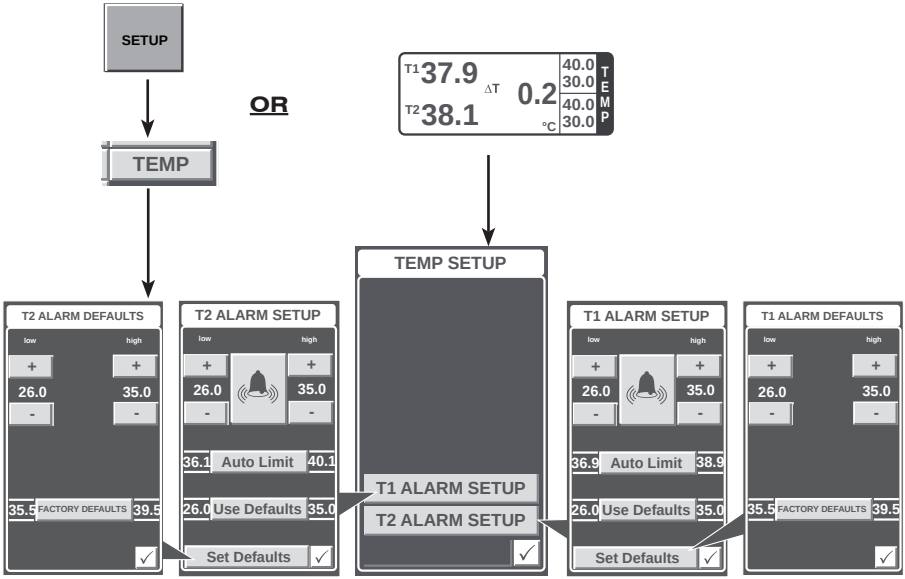
The system accepts a range of YSI 400 compatible temperature sensors.

These can be used for surface, central, oesophageal, nasopharyngeal and rectal measurements.

Single Channel **Dual Channel**



1. Press . . .

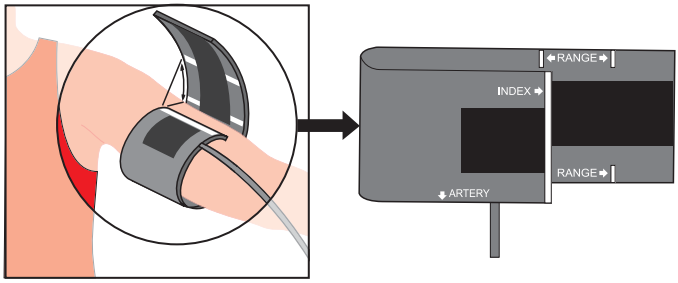


2. Change as required.

3. Press √ to save any changes.

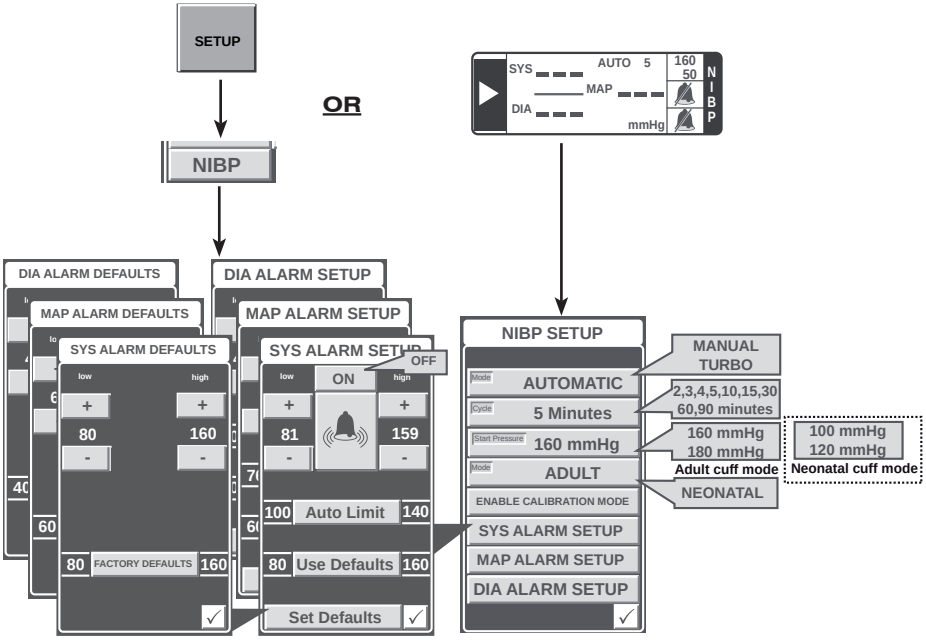
4. Follow the manufacturers user instructions for placement details.

4.5 NIBP Monitoring



1. Apply Cuff to patient.

2. Press . . .



3. Change as required.

4. Press √ to save any changes.

5. Press 

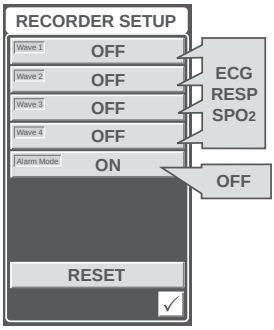
5. Recorder Set-up

1. Press . . . RECORDER

2. Change as required.

3. Press . . . RESET

4. Press √ to save any changes.



Alarm Mode

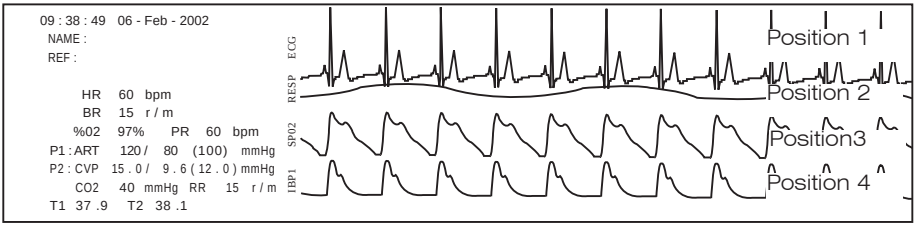
Alarm mode provides two options , ON or OFF.

ON

Recorder will print automatically in the event of an alarm.

OFF

Press . . . RECORD GO/STOP



6. Technical Data

Equipment Classification

Type of protection against electric shock.	Class 1 and Internally powered equipment
Degree of protection against electric shock 	Type CF - equipment with an applied part, intended for direct electrical connection to the heart. The equipment is defibrillation discharge protected. The SpO2 and non-invasive blood pressure defibrillation discharge protection is provided by the applied parts themselves and intrinsically by the probe and blood pressure cuff. The ECG module is designed with spark gaps to minimise problems associated with stray currents generated by defibrillation, diathermy etc.
Mode of operation.	Continuous
Degree of protection against harmful ingress of water.	IPX1
Degree of safety of application in the presence of a flammable anaesthetic	Equipment not suitable for use in the presence of a FLAMMABLE ANAESTHETIC MIXTURE WITH AIR, OXYGEN OR NITROUS OXIDE
Electrosurgery Surgical Equipment	This unit does not provide protection against HF burning from other surgical equipment.

General

Supply voltage	100 to 240V 50/60Hz.
Fuse Type	T1A - 250VAC Littelfuse 0213001
Power input	120 VA
Optional DC input	12.5 - 15VDC @1.5Amps. Note: Equipment must comply with the safety requirements of EN60601-1-1 Medical Electrical Equipment, General Requirements for Safety.
Screen	8.4 inch diagonal high brightness TFT SVGA flat panel display
Trace speed	50, 25, 12.5 and 6.25mm per second for ECG and SpO2 waveforms. The Respiration waveform trace speed is 6.25mm per second.
Trace freeze	On all traces.
Battery	12V NiMH type with smart charger and fuel gauge type indication of battery status. Approximately 3 hours of continuous monitoring is available from a fully charged battery.
Size	240mm wide, 223mm high (including feet), 160mm deep (including equipotential earth connector
Weight	3.3kg
Outputs	10/100 Ethernet socket (RJ45) for connection to Smartsigns Central Nurse Station, Serial port (9 pin 'D') for software upgrade or connection to Huntleigh Healthcare BD4000, 6 way mini DIN for external keyboard and a VGA socket for a slave monitor.

Environmental

Operating		Storage
10°C to 40°C	**Temperature range**	-10°C to 50°C
30% to 90% (non condensing)	**Relative Humidity**	0% to 99% (non condensing)
860mb to 1060mb	**Pressure**	860mb to 1060mb

ECG

Heart Rate range	15 – 300 BPM
Selectable leads	I, II, or III with the standard 3 lead option. I, II, III, aVR, aVL, aVF and V with the 5 lead option.
Selectable display gain	0.5, 1, 2 or 4 times.
Lead fault detection	Displays LEAD OFF warning for any of the 3/5 leads.
QRS indication	Flashing heart symbol. Audible tone with volume control / off
Pacemaker indication	'P' symbol appears by the QRS 'Heart' and the trace displays a positive 2cm pulse.
Esis/defibrillator protection	Yes
Bandwidth	0.5 – 30 Hz (monitor mode), 0.05 – 100Hz (diagnostic mode)
Filter	50Hz and 60Hz notch
Input impedance	> 20MΩ at 10Hz
Trend	1, 8 or 24 hour trend of ECG heart rate
Alarms	High and Low heart rate, Asystole. Visual and audible warning with optional latching.

SpO2

Range	0 – 99%
Resolution	1%
Accuracy	Adult 70 - 99% ±2% Less than 70% undefined Neonate 70 - 99% ±3% Less than 70% undefined
Averaging	8 beat average
Pulse rate range	30 – 254bpm, ±2bpm or ±2%
Patient input leakage	< 10 μA
Trends	1, 8 or 24hour trend of SpO2%, and Pulse Rate.
Alarms	SpO2 saturation, High (55 - 100%), and Low (50-95%). Pulse Rate, High (250 - 35 BPM), and Low rate (245 - 30 BPM)

Respiration

Method	Impedance measurement via the ECG chest electrodes.
Accuracy	±2% ±1 digit
Sensitivity	1Ω/cm; 3Ω/cm selectable.
Range	4 – 150 Resp/min.
Trends	1, 8 or 24 hour trend of respiration rate
Alarms	Apnea, high and low rate.

Non-Invasive Blood Pressure

Range	30 to 280mmHg. Cuff over-pressure 300mmHg
Accuracy	±5mmHg with a standard deviation no greater than ±8mmHg
Display	Systolic/diastolic and mean numerical display; graphical manometer display during cuff inflation/deflation also graphical bar display, with mean, on trend screen.
Automatic repeat interval	In 'Turbo' mode continuous measurements are taken for a period of five minutes. In 'Automatic' mode measurements can be programmed to start at intervals of 2, 3, 4, 5, 10, 15, 30, 60 or 90 minutes.
Trends	Graphical and tabular display of last 24 systolic, diastolic and MAP readings.
Alarms	Systolic, diastolic, MAP, High, and Low pressure with visual and audible warning.

Temperature

Method	Thermistor (YSI 400 series compatible)
Accuracy	±0.1°C ±1 digit
Display	T1, T2 or T1, T2 & ΔT
Range	13 – 47°C
Trends	1, 8 or 24 hour trend of T1 and T2
Alarms	High and Low temperature on T1 and T2.

Recorder

Type	Thermal array up to 24 dots/mm horizontally, 8 dots/mm vertically
Paper	50mm width x 30m long thermal roll
Speed	50, 25, 12.5, 6.25mm/s
Waveform	Up to 4 as selected in the menu function.
Alarms	Recorder will record on alarm if required

7. Care of your Equipment

Although the SC750 is robust and has been designed to withstand normal clinical use, the unit contains delicate components such as the display and the accessories, which should be handled and treated with care.

We recommend that the system is included into the annual calibration programme where the accuracy of the system is checked against the manufacturers' specifications.

If any part of the system apprears to be damaged, the system should be returned to your service centre for repair.

The system, excluding the display can be wiped with a soft disposable cloth dampened with a mild detergent and warm water solution. Avoid the electrical contacts and connectors. Do not allow any fluid to seep into the system.

Ensure the unit is completely dry before use.

The display can be wiped with a soft dry tissue.

7.1 Cleaning and Disinfecting

It is recommended that the unit and accessories are tested on a regular basis.

The monitor

The unit and power lead should be kept clean and checked for signs of damage. It is recommended that it is wiped clean with a cloth or tissue dampened with water and detergent.

Check mains power connections weekly, and examine outer sheath of power lead for signs of damage. If signs of damage are found, consult or refer to a qualified technician for repair.

Functional checks - If the unit is not in constant use, the battery chargew level should be checked monthly and recharged if necessary.

Recharging a flat battery will take 3 hours and is achieved by connecting the unit to the mains power and switching the rear power awitch to I (on)

Observe that the green '~' indicator and amber "CHG" are illuminated.

NOTE: The monitor does not have to be running for battery charging.

Phenolic, detergent based disinfectants containing cationic surfactants, ammonia based compounds, or antiseptic solutions such as Steriscol or Hibiscrub should never be used on any part of the system, as permanent damage will result.

SpO2 equipment cleaning

Unplug the device before cleaning or disinfecting. Do not autoclave or ethylene oxide sterilise, or immerse in any liquid. Clean with soapy water and dry.

Patient ECG leads

The patient leads should be cleaned with warm water or a neutral cleaner and wiped dry.

To disinfect use chemical disinfectants containing ethanol (70% - 80%), propanol (70% - 80%) or alderhydes (2% - 4%).

Do not autoclave the patient cable.

Electrical connectors must not be immersed in any fluid

Temperature probe cleaning and sterilisation

After use, the probe should be cleaned with warm water and wiped clean and dry. Sterilisation may be achieved by:

1. Low temperature steam 73°C ±2°C

2. Ethylene oxide

3. Cold sterilisation fluids under medical supervision

Under no circumstances should probes be boiled, autoclaved or cleaned with chlorhexidine based fluids.

The accessories can be cleaned between uses.

Disinfect sensors and cables by following local infection control policies or wipe with a wipe or swab dampened with Isopropyl alcohol 70% w/v.

Cleaning the NiBP cuffs

Gently wipe the cuff with a cloth dampened with a suitable cleaning solution.

Thoroughly wipe off excess cleaning solutions.

Do not allow water to enter into the cuff.

Approved cleaning solutions include: -

Common hospital disinfectants including, Clorox®, liquid bleach (1:10 solution of Clorox® /water), isopropyl alcohol. Lysol® solution, Phisorex®, Quatricide®, Virex® and Vesphene®.

Cleaning the NiBP Tubing

Gently wipe the tube with a cloth dampened with a suitable cleaning solution (mild detergent solution).

Thoroughly wipe off excess cleaning solutions.

DO NOT use any of the following cleaning solutions as they may cause permanent damage to the hose assembly: -

Butyl alcohol, Denatured ethanol, Freon™, Mild chlorine bleach solution, Isopropyl alcohol, Trichloroethane, Trichloroethylene, Acetone, Vesphene II, Enviroquat®, Staphene®, Misty®, Glutaraldehyde.

8. Warranty & Service

Huntleigh Healthcare Diagnostic Products Divisions' standard terms and conditions apply to all sales. Copies are available on request. These contain full details of warranty terms and do not limit the statutory rights of the consumer.

- If for any reason the system has to be returned, please
- Clean the product following the instructions in this manual.
- Pack it in suitable packing.
- Attach a decontamination certificate (or other statement declaring that the product has been cleaned) to the outside of the package.
- Mark the package 'Service Department - Compact'.

For further details, refer to NHS document HSG(93)26 (UK only). Huntleigh Healthcare reserve the right to return product that does not contain a decontamination certificate.

A service manual is available for the system and contains service information, parts lists and faultfinding guidelines.

The service manual can be obtained by contacting your local supplier or: -

Customer Care Department.
Huntleigh Healthcare,
Diagnostic Products Division,
35, Portmanmoor Rd.,
Cardiff. CF24 5HN
United Kingdom.

Tel: +44 (0) 29 20496793 - Service (24hr answer machine)
Tel: +44 (0) 29 20485885
Fax: +44 (0) 29 20492520

Email: sales@huntleigh-diagnostics.co.uk

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