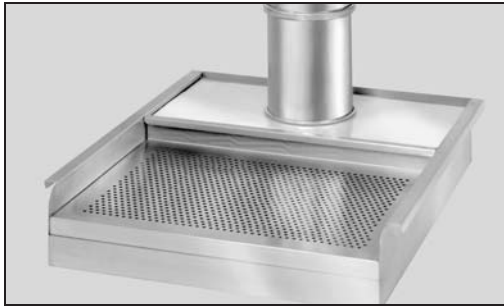


# Surgical Equipment



**NEW** Portable Down-Draft Small Animal Operating Table, see page D5



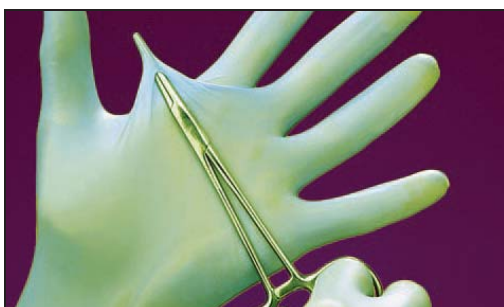
**NEW** Microprobes for Temperature Measurement, see page D16



**NEW** TCAT-2 Temperature Controller, see pages D20 and D21



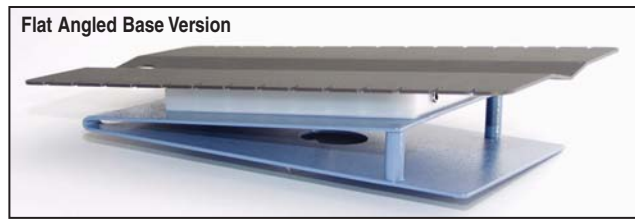
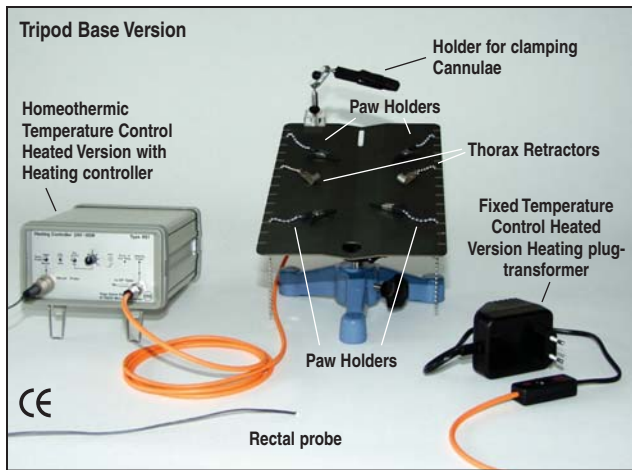
**NEW** Gemini Cautery System, see page D46



**NEW** Powder-Free A+ Aloe Gloves, see page D51

- **Small Animal Surgical Tables** .....see pages D2 - D5
- NEW** **Portable Down-Draft Small Animal Operating Table** .....see page D5
- **Small Animal Surgical Retractor and Tray** .....see page D6
- **Large Animal Surgical Tables & Thoracic Positioners** .....see pages D7 - D9
- **Surgical Lights** .....see pages D10 - D15
- NEW** **Microprobes for Temperature Measurements** .....see page D16
- **Thermocouple Thermometers and Temperature Controller** .....see pages D17 - D19
- NEW** **TCAT-2 Temperature Controller** .....see pages D20 - D21
- **Thermocouple Temperature Probes** .....see pages D22 - D25
- NEW** **Non-Contact InfraRed Thermometer** .....see page D26
- **Thermistor Thermometers and Probes** .....see pages D26 - D29
- NEW** **Harvard Ltd Homeothermic Blanket** .....see page D30
- **Heat Therapy Pump and Pads** .....see page D31
- NEW** **IMS Temperature Control Products** .....see pages D32 - D33
- NEW** **Small Animal Recovery Chamber** .....see page D34
- NEW** **Oxygen Therapy Unit** .....see page D34
- **Instant Heat Packs, Thermal Barrier and Absorbant Sheets** .....see page D35
- **Small Animal Intensive Care Units** .....see pages D36 - D37
- NEW** **SuperVu Surgical Magnification System** .....see pages D38 - D39
- NEW** **Electronic Magnification Glasses** .....see page D40
- **Spectacle Magnifiers** .....see pages D40 - D41
- **Stand Magnifiers and Other Magnification Products** .....see pages D41 - D45
- NEW** **Mini Endoscopes** .....see page D45
- NEW** **Gemini Cautery System** .....see page D46
- **Other Cautery Units** .....see pages D47 - D50
- NEW** **Powder Free A+ Aloe Gloves** .....see page D51
- NEW** **Nitrile Powder-Free Cobalt Blue Gloves** .....see page D51
- NEW** **Nitrile Powder-Free X-Long Teal Gloves** .....see page D52
- **Other Surgical and Examination Gloves** .....see pages D52 - D54
- **Books** .....see pages D55 - D56

## NEW Small Operating Table Size 5 for Rodents



These models are often used for quick surgical procedures or acute animal studies (30 minutes or less) requiring the core temperature of the animal be maintained but not tightly controlled.

The homeothermic temperature controlled heated operating tables are also feedback controlled to preserve the operating table temperature but feedback can either be maintained by the table's built-in temperature probe or via a rectal thermistor probe. A heating controller is included with this version. This unit allows the user to choose the feedback method— table or rectal probe — and if the temperature should be fixed at 37°C or can be variable from 34 to 40°C. The rate of heating can also be adjusted so the animal's temperature would be raised gradually or rapidly. The more gradual rate allows for tighter temperature control. Note: Rectal Thermistor probes must be purchased separately.

- For general surgical work on small animals
- Six different version available:
  - Tripod base
  - Flat angled base
  - Non-heated
  - Fixed temperature control heated
  - Homeothermic temperature control heated
- Includes 4 paw holders
- Capable of receiving thorax retractors and mounting ball joint holders

Six different configurations are available for the operating table, size 5, for rodents. Each configuration is equipped with four paw clamps. Experimental requirements and user's preference dictate the preferred configuration. The core components consist of a 300 x 185mm (11.8 x 7.3 in) anodized

Aluminum plate and mounting base. Both sides of the plate have multiple slots for fixing the spring-loaded paw clamps and optional thorax retractors. Numerous slots allow both large and small animals to be held firmly in position for optimal surgical access. A block clamp with ball joint holder can be fixed onto the plate for holding various probes, electrodes, or cannulae. A 4 mm banana plug outlet is available when grounding the table is required, e.g. for ECG recordings.

Two different models of the mounting base are available— the traditional Tripod stand mounted on a ball joint allowing the table to tilt in multiple directions or the new Flat Angled version with a lower profile consuming less bench space. Both mounting base models offer a non-heated and two heated versions — fixed temperature or homeothermic temperature controlled heating.

The non-heated operating table models are recommended only for necropsy studies or short term anesthetized animal experiments such as procedures calling for the removal of isolated organs or tissues. These models are not upgradeable to heated versions.

Heated operating table models have a built-in heating transformer and temperature probe to ensure the temperature of the table is maintained. Two different versions of the heated operating table are available depending on the level of temperature control required.

The fixed temperature heated models use feedback control from the built-in table temperature probe. The table can be heated and maintained up to 40°C but no adjustment to the amount of heat or heating rate is available.

Operating Table Size 5					
Base	Non-Heated	Heated Fixed Temperature		Heated Homeothermic	
		115V	230V	115V	230V
Tripod	BS4 73-2474	BS4 73-2921	BS4 73-2475	BS4 73-3009	BS4 73-2478
\$					
Flat Angled	BS4 73-2484	BS4 73-2922	BS4 73-2485	BS4 73-3017	BS4 73-2486
\$					

Specifications	
Table Plate	300 x 185mm, can be inclined in all directions (11.8 x 7.3 in)
Height with Ball Joint	From 145 to 160mm (5.7 x 6.3 in)
Height without Ball Joint	Adjustable 75 to 95mm (3.0 x 3.7 in)
Heating Element	PTC resistor for approx. 40°C. The temperature is limited by a built-in protection PTC resistor (PTC = positive temperature coefficient) to about 42°C, depending on the operating voltage
Heater Rating	12 Volt, 20 Watt
Weight	3 kg (6.6 lb)
<b>Heating Plug-Transformer</b>	
Construction	Protected against touching conforming to IEC 742 (VDE 0551). Unit is safety isolated
Secondary Voltage	12 Volt, 20 VA for table temperature of approximately 40°C
Mains Voltage	230 V/50 Hz, 115 V/60 Hz to special order
Weight	0.7 kg (1.5 lb)
<b>Heating Controller</b>	
Power Output	24 V, 40 Watt
Supply Voltage	230 V, 50–60 Hz, can be switched to 115 V
Dimensions	210 x 155 x 105mm (8.3 x 6.1 x 4.1 in)
Weight	2.5 kg (5.5 lb)

Catalog No.	\$	Product
BS4 73-1872		Rectal Themistor Probe No. 1, for Cats and Rabbits
BS4 73-1873		Rectal Themistor Probe No. 2, for Rats and Mice
BS4 73-1875		Rectal Themistor Probe No. 4, for Rats and Guinea Pigs
BS4 73-2358		Thorax Retractors with Ball Chain, 1 Pair
BS4 73-2353		Holder for Clamping Probes, Electrodes, or Cannulae

**NEW** **IMS Heated Mini-OP Table**



Animals tend to lose body temperature while undergoing surgery and it is therefore advisable to provide supplementary heat. The Heated Mini-OP Table is ideal for more demanding types of small animal surgery.

The heated area measures 300 x 200 mm and is placed centrally. It has a stainless steel surface. The outer edge of the table is made from a heavy duty plastic, machined to accommodate sliding instrument stands and to provide anchorage for retractors and other equipment.

The overall dimension is 420 x 300 mm. The whole unit is adjustable in any plane to give ideal operating maneuverability. The adjustable supports allow any working height between 115 mm and 185 mm and allows the table to be inclined to present the most suitable presentation.

The table has a mains lead and thermostat lead which plug into a central mains control unit. The control unit is supplied with the table as a package.

Each table is supplied with the following equipment:

- **Mains Control Unit**
- **Table with heated area**
- **6 x Edge Clamps**
- **4 x Crocodile Clips**
- **2 x Uprights**
- **1 x Rod**
- **3 x Bossheads**
- **1 x Clamp (Suitable for Holding a Fluovac Size 1 Mask)**

Catalog No.	\$	Model	Product
BS4 34-0313		6.39.0	IMS Heated Mini-OP Table, 230 VAC

**NEW** **IMS Mini-OP Table**

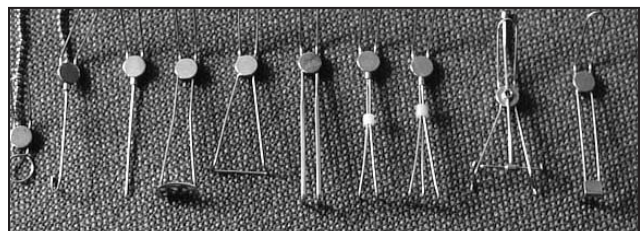
Designed specifically for operative work in small animals, the IMS Mini-OP Table tilts in any direction to ensure the patient is always presented to the best advantage. A choice of two tops is available. One contains slots to accommodate uprights so that additional equipment can be used.

The table top stands 150 mm above the base and can be height adjusted for user comfort. It is manufactured in lightweight, non-absorbent PVC, which retains heat and therefore helps to maintain body temperature. The metal base has non-slip feet.

Accessories supplied with the IMS Mini-OP Table:

- **Crocodile Clips** 4 supplied. They are used to secure the animal during necropsy. 150 mm long ball chain and connector are included.
- **Retractors** 6 supplied. These stainless steel rods measure 50 mm in length. They can be bent into the desired shape. 150 mm chain and connector included.
- **Edge Clamps** 6 supplied. They can be clamped around the edge of the table to accommodate retractors and crocodile grips.
- **Uprights** 2 supplied. They fit into the table slots to provide a 5 mm diameter bar to which equipment can be attached.
- **Bossheads** 2 supplied. They are used with the uprights and are made from tough plastic with nylon screws.
- **Rod** 1 supplied. It is useful for positioning equipment precisely where it is needed. The edge clamps can be fitted to the rods to give greater flexibility of use. They are manufactured in stainless steel and measure 200 mm long and 5 mm in diameter.

Catalog No.	\$	Model	Product
BS4 34-0294		6.30.0	IMS Mini-OP Table & Accessories



Catalog No.	\$	Model	Product
BS4 34-0314		6.39.1	Set of Retracting Instruments

# Operating Tables

## Heated Small Animal Operating Table



- This operating table is good for general surgical work on small animals

The top is a flat, heavy gauge, biologically inert piece of stainless steel measuring 23 x 33 cm (9 x 13 in). A warming chamber located beneath this top contains a small metal sheathed 40 watt heater controlled by an energy regulator. An energy regulator controls the table top surface, varying the heating cycle when necessary. The regulator is calibrated from “full” to “off” through ten marked points. This allows adequate heating control for most operating procedures. Indicator lights are visible when the heater is on and when the regulator is switching.

Uniform heat distribution is maintained over the total surface by an insulation barrier located between the resistance mat and stainless steel top. Four stainless steel 6.5 mm (1/4 in) rods are supplied with the Table. Each 20.4 cm (8-1/16) rod is mounted on a simple slotted clamp with a locking screw. The slot of this clamp fits over the edge of the Table and allows the rod to be inserted anywhere along the edge of the Table or slid along the edge into position. Four tying cleats are also supplied which have a deep slot similar to the rod clamps to fit over the edge of the table and secure with a locking screw. The top of the cleat has a tapered slot that binds any tying strings securely in place. These cleats, like the rod, can be inserted at any point around the edge of the Table or can be slid along the edge into position. Folding legs under the Table allow the Table to be used in a tilted position.

Catalog No.	\$	Product
BS4 50-1239		Heated Small Animal Operating Table, 115 VAC, 60 Hz
BS4 50-1247		Heated Small Animal Operating Table, 230 VAC, 50 Hz

## Rodent Operating Board



- Facilitates implantation of the small vascular access port in rodents, see page B30

This innovative Operating Board for small animal surgical work is constructed of 1.89 cm (3/4 in) thick, high performance acrylic resin and natural minerals, making it stain resistant, steam sterilizable and extremely durable.

Its non-porous working surface measures 20.3 x 29.2 cm (8 x 11-1/2 in) and has grooves running both its length and width for drainage or placement of the flushing line during surgery.

Four surgical rubber restraining straps can easily be adjusted to accommodate animals of various sizes by way of numerous hold-down slots located on the edges of the Board. A large central well facilitates ventral surface surgery once the port is implanted in the animal's dorsal surface. A Right Angled Huber point flushing line enables the researcher to flush the catheter and monitor patency during surgery.

This Rodent Operating Board is supplied with four adjustable length, surgical rubber restraining straps. Needle not supplied. The Board weighs 1.7 kg (3-3/4 lb).

Catalog No.	\$	Product
BS4 56-4213		Rodent Operating Board

## Plastic Operating Boards



- Provides excellent access to the entire length of the animal

These one-piece molded boards hold rodents and other small animals during surgery. They provide excellent access to the entire length of the animal. A quick-release system of restraint cords and locking cleats quickly and easily attach the animal to the Board. The large Rodent Board has a raised center for easily positioning the animal. Fluids drain to the sides and a folding

metal leg elevates one end of the board for special positioning.

The small Rodent Board has a built-in “V” design for easy positioning of the animal. Fluids drain to the center of the Board. The Rabbit Board has a “V” design for easy positioning of the animal. Suction cups on the feet hold the unit steady. A folding leg tilts the board to a 30° angle.

Each is supplied with four cleats, one mounted at each corner, and five restraining cords for quick tie-down of animals.

Plastic Operating Boards					
Catalog No.	\$	Board	Dimensions, L x W	Max. Weight Range	Length of Animal
BS4 59-6942		Rodent Large	40.6 x 13 cm (16 x 5-1/8 in)	Up to 500 g	35.6 cm (14 in)
BS4 52-0445		Rodent Small	27.9 x 11.4 cm (11 x 4-1/2 in)	Up to 125 g	20.3 cm (8 in)
BS4 52-0452		Rabbit	60 x 30 cm (24 x 12 in)	-	-

## Heated Rodent Operating Table



- Available as stand alone table or as complete homeothermic heated table
- Uniformly heated with temperature regulation

This heated rodent operating table is a sturdy piece of equipment that will stand up to daily use. The entire top portion of the table is mounted on a heavy base by means of a sturdy ball and socket joint. The socket allows

the table top to be swiveled and tilted into any convenient position and then locked securely in place.

The stand alone table has a warming chamber under the table top and contains a small, metal-sheathed 40 watt heater. An energy regulator controls the table top surface varying the heating cycle when necessary. The regulator is calibrated from “full” to “off” through ten marked points. Uniform heat distribution is maintained over the entire surface by an insulation barrier located between the woven resistance mat and stainless steel top.

The Homeothermic Rodent Operating Table includes a rigid rectal thermometer-sensing probe and a sensitive control unit. The system continuously monitors the animal's core temperature during surgery and, through the controller, automatically adjusts the table temperature. For complete details on the probe and control unit, see page D30.

These operating tables are supplied with a cork mat that has a cutout in the center for holding the animal. Four stainless steel 6.5 mm (1/4 in) diameter rods and four tying cleats are supplied with the Table. Each 20.4 cm (8-1/16 in) rod is mounted on a simple slotted clamp with a locking screw. The table is mounted on a heavy base fitted with non-slip feet. The top measures 20 x 26 cm (8 x 10 in). It weighs 4.3 kg (9-1/2 lb).

Catalog No.	\$	Product
BS4 50-1205		Heated Rodent Operating Table, 115 VAC, 60 Hz
BS4 50-1213		Heated Rodent Operating Table, 230 VAC, 50 Hz
BS4 50-1221		Replacement Cork Mat
BS4 50-7038		Homeothermic Rodent Operating Table, 115 VAC, 60 Hz
BS4 50-7046		Homeothermic Rodent Operating Table, 230 VAC, 50 Hz

## NEW Portable Down-Draft Small Animal Operating Table



- Captures anesthetic gases
- Removable stainless steel work surface
- Specifically designed anesthetic chamber
- Autoclavable

This Down-Draft Table provides an effective way to decrease operator exposure to waste anesthetic gases during rodent procedures without altering the depth of anesthesia. Optional filters for anesthetics, formalin, organic vapors, hazardous and nuisance dusts help comply with laboratory standards and regulations. The work surface contains multiple perforations which capture air that is sent either to the filter located within the unit via a blower fan or to an existing exhaust ventilation system.

The Down-Draft Table includes an anesthetic chamber specially designed for use with this table. Accessories include an anodized aluminum cart with optional drop down shelves, storage cabinet and light fixture. Please order filters separately and note that switching filter types is not recommended. Order Potassium Permanganate Filters for formaldehyde use, Carbon Filters for anesthetics use, and Carbon/Potassium Permanganate 50/50 Filters for both formaldehyde and anesthetics applications.

### Specifications

Dimensions:	
Down Draft Table, H x W x D	45.7 x 61.0 x 76.2 cm (18 x 24 x 30 in)
Work Surface, W x D	76.2 x 43.2 cm (24 x 17 in)

Catalog No.	\$	Product
BS4 72-6201		Portable Down-Draft Table with Blower
BS4 72-6202		Portable Down-Draft Table with Vent
BS4 72-6203		Accessory Package (Folding Shelves, Cabinet and Light)
BS4 72-6204		Folding Shelves only
BS4 72-6205		Anodized Aluminum Cart
BS4 72-6206		Potassium Permanganate Filter, pkg. of 2
BS4 72-6207		Carbon Filter, pkg. of 2
BS4 72-6208		Carbon/Potassium Permanganate Filter 50/50, pkg. of 2
BS4 72-6209		HEPA Filter, pkg. of 1



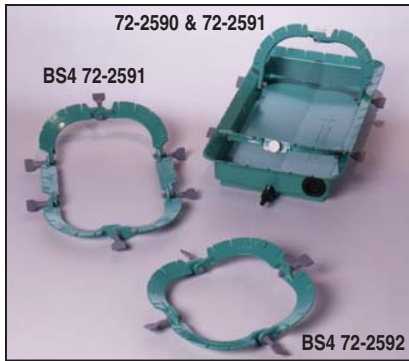
### Frog Board

To prevent warping, this 9 x 14 cm (3-1/2 x 5-1/2 in) Frog Board is made of a thick piece of cork cemented to a heavy piece of 12.5 mm (1/2 in) thick white acrylic. A clamp and locking screw are mounted on the side with an opening to fit a standard 9.5 mm (3/8 in) diameter rod (not supplied), see the Clamps, Stands and Lattices Section.

Catalog No.	\$	Product
BS4 50-3565		Frog Board

# Operating Tables

## Small Animal Surgery Tray



- Now you can perform solo surgery
- Ideal for use with Harvard Apparatus's small homeothermic blanket systems
- Easily accommodates animals in either prone or supine position

The small animal surgery tray is anatomically designed to accommodate small animals in either the prone or supine position. There are 10 slots on each of two adjustable retractor arms and 32 slots around the perimeter of the tray that accept elastic stay hooks. These ingenious devices retract the incision exactly where you need it and with exactly the right amount of tension. They do not obstruct the surgical site. See to the right for complete listing of elastic stays which are sold separately.

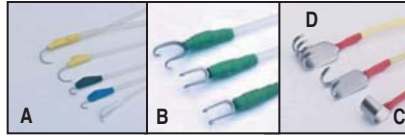
To maintain an animal's body temperature, this tray easily accommodates Harvard Apparatus's small homeothermic blanket, see page D30. It is an ideal choice when precise control of body temperature is required. The blanket and temperature probe cables easily fit through the cable port on the side of the tray. There is also a drain with collection well for fluids.

### Specifications

<b>Composition</b>	Injection-molded using GE Noryl® resins
<b>Inside Dimensions</b>	30.1 x 15.5 x 4.0 cm (11.75 x 6 x 1.5 in)
<b>Stay Slots</b>	32 perimeter slots on tray and 10 slots on each of two retractor arms
<b>Fluid Collection</b>	1.5 ml collection well (drain plugged)
<b>Drain Hole</b>	Accepts 1/4 in ID Tygon® formulation S-50-HL or equivalent
<b>Maximum Retraction</b>	Up to 1.6 kg (3.5 lb) per Tension elastic stay
<b>Packaging</b>	Disassembled, non-sterile, elastic stays sold separately
<b>Sterilization</b>	Cold sterilize only

Catalog No.	\$	Product
BS4 72-2590		Small Animal Surgery Tray

## Small Animal Retractor System



- Self-retaining design permits surgery without an assistant
- Provides fully balanced exposure — no bulky attachments or instruments to obstruct surgical site
- Versatile design — adapts to the animal anatomy during the surgery and incision closure
- Autoclavable

This small animal retractor system consists of two components; the autoclavable plastic retractor ring and the elastic stays. Different areas of the ring may be raised or lowered using the thumbscrews along the edge of the ring to permit the ring to be adapted to the anatomy of the surgical site. Available in two sizes, the larger size has 6 thumbscrews while the smaller size has 4.

The elastic stays provide precise retraction with adjustable tension without obstructing the surgical site. The stays are placed along the perimeter of the ring at preset locations. The elastic stays must be purchased separately from the retractor ring. Three types of elastic stays are available. Single hook stays (A) are for general purpose use. A new single hook stay is available. See to the right for details. You may also select from 2-finger sharp stays (B) or deep tissue blade stays, both solid (C) or with either 2 or 4 blunt fingers (D). All of the blade stays have a hook radius of 12 mm (0.5 in). Select the appropriate stay based on your surgical needs.

### Specifications

<b>Retractor Ring:</b>	
<b>Composition</b>	Injection-molded using GE Noryl® silicone and resins, does not contain latex
<b>Small Ring, L x W</b>	14.2 x 14.2 cm (5.6 x 5.6 in)
<b>Large Ring, L x W</b>	25.0 x 14.2 cm (9.8 x 5.6 in)
<b>Stays:</b>	
<b>Composition</b>	Silicone and stainless steel
<b>Overall Length</b>	16 cm (6.3 in)
<b>Tubing OD</b>	3.3 mm (0.13 in)
<b>Maximum Tension</b>	Up to 3.5 lb (1.6 kg)
<b>Sterilization</b>	Steam or cold sterilization

Catalog No.	\$	Product
BS4 72-2591		Retractor Ring, large
BS4 72-2592		Retractor Ring, small

## NEW Single Hook Stay, Solid Silicone



This hook is molded out of solid silicone, and features a 5-mm stainless steel sharp hook. The entire body of the elastic stay is molded in one piece from solid silicone, with no hollow tail or green heat shrink.

- Solid silicone-molded design provides easier re-sterilization by autoclave techniques
- Environment-friendly packaging
- Tinted a medium green color for easy recognition
- 6 hooks per package

The solid silicone-molded design provides easier re-sterilization by autoclave techniques. The design features no cracks, crevices, or cavities that might make it difficult to clean. This product is packaged NON-STERILE, ready to be sterilized prior to use.

### Single Hook Stay, Solid Silicone, pkg. of 6

Catalog No.	\$	Style	Hook Radius
BS4 72-2606		Single Hook	3 mm

### Single Hook Stays, Sterile, pkg. of 8

Catalog No.	\$	Style	Hook Radius
<b>Sharp</b>			
BS4 72-2593		Medium	3.0 mm
<b>Blunt</b>			
BS4 72-2595		Medium	5.0 mm
BS4 72-2596		Large	12 mm
BS4 72-2597		Large (Dual Tube)	12 mm

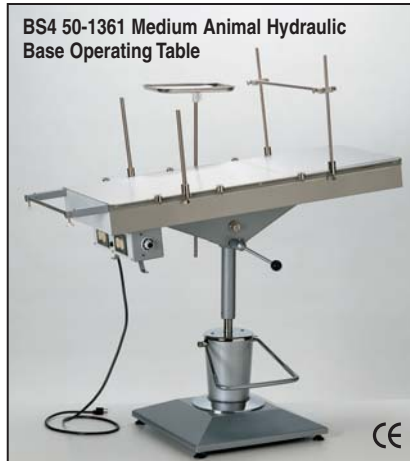
### 2-Finger Sharp Stays, Sterile, pkg. of 4

Catalog No.	Finger Spread	Hook Radius
BS4 72-2598	5 mm	3 mm
BS4 72-2599	7 mm	3 mm
BS4 72-2600	10 mm	3 mm

### Blade Stays, Sterile, pkg. of 4

Catalog No.	Style	Blade Width
BS4 72-2601	Solid Blade	6.5 mm
BS4 72-2602	Solid Blade	13 mm
BS4 72-2603	2-Finger Blunt	14 mm
BS4 72-2604	4-Finger Blunt	20 mm

## Medium Size Animal Heated Operating Tables



- For use with animals weighing up to 40 kg (88 lb)
- Choice of hydraulic or frame base
- The heated operating table with hydraulic base is ideal for dissection, post-mortem and general surgical use
- The heated operating table with frame base provides maximum rigidity required for experiments in neurophysiology and myography; for details, see below

These Heated Operating Tables consist of a flat top containing a resistive heating element mounted on either an hydraulic pedestal or heavy frame base.

A resistive heating element underneath the stainless steel surface, measuring 31 x 51.5 cm (12 x 20 in), produces a heating area of 1,596.5 cm<sup>2</sup> with a maximum heating density of 0.156 watts/cm<sup>2</sup> (1 watt/in<sup>2</sup>). A power regulator adjusts the power to a maximum of 250 watts. At maximum power the table top will reach 4.4°C (40°F) above ambient without an animal.

### Hydraulic Base Operating Tables

- Turns in the horizontal plane through 360°
- Tilts from end-to-end through 45° in either direction
- Height adjustment from 89 to 110 cm (34-1/2 to 42-1/2 in)

All of these adjustments can be made while an operation is in progress. The table is raised by pumping a foot pedal and lowered by depressing it. Raising the foot pedal locks the table in position. This lock also controls rotation of the table. The pedestal base is 60 cm (24 in) OD.

The tilt is controlled by a locking clamp under the table. The tilting movement acts against a friction device so that the table can be tilted slowly under control. The table does not need to be bolted to the floor.

### Frame Base Operating Tables

The heavy welded steel frame is coated with tough nylon to prevent corrosion and provide for easy cleaning. A leveling screw on each foot accommodates uneven floors. The lower

bracing of the frame supports a full-sized laminated Formica shelf (supplied). The operating table top is 103 cm (40-1/2 in) from the floor.

### Table Features

Four electrical outlets under one end of both tables provide a power source for equipment. A heavy 4 m (12 ft) long cord is provided. The two side rails are extended on the table, thus providing a holder for a removable 12.5 mm (1/2 in) diameter stainless steel rod to which an animal head holder can be securely fixed.

The table is supplied with four vertical rods, one cross rod, six tying cleats and two BS4 50-2518 Open Sided Connectors. The vertical 9.5 mm (3/8 in) diameter rods are mounted on a simple, deep slotted clamp with a locking screw. Two are 25.8 cm (10-1/8 in) long, the other two are 38.8 cm (15-1/4 in) long. The

tying cleats also have a deep slot and locking screw. The slot fits over the edge of the Table and allows the rods and cleats to be inserted anywhere along the length of the Table.

A 12.5 mm (1/2 in) cross rod is supplied and can be mounted on the two vertical rods using the Open Sided Connectors provided. This cross rod is 53.3 cm (21 in) long and is used for positioning equipment directly over the animal.

The table with hydraulic base is also supplied with a 22.5 x 30 cm (9 x 12 in) stainless steel instrument tray mounted on a fixed rod by means of a clamp. This clamp provides height adjustment and also allows the tray to be swivelled away from or over the operating area. The tray is locked in position by a thumbscrew and is mounted in such a way that it remains level even while the table top is being tilted.

### Specifications

#### Dimensions:

Table Top	47 x 107 cm (18 x 42 in), single piece, stainless steel
Heating Element	31 x 51.5 cm (12 x 20 in)
Instrument Tray	(Table with Hydraulic Base Only) 22.5 x 30 cm (9 x 12 in)

Heating Element Capacity 250 W

Weight 43 kg (95 lb)

#### Rods:

	Length	Diameter
Cross Rod	53.3 cm (21 in)	12.5 mm (1/2 in)
Small Vertical Rods (2)	25.8 cm (10-1/8 in)	9.5 mm (3/8 in)
Large Vertical Rods (2)	38.8 cm (15-1/4 in)	9.5 mm (3/8 in)
Instrument Tray Vertical Rod	61 cm (24 in)	12.5 mm (1/2 in)

Medium Animal Heated Operating Table	Power	
	115 VAC, 60 Hz	230 VAC, 50 Hz
With Hydraulic Base	BS4 50-1361	BS4 50-1387
With Frame Base	BS4 50-1320	BS4 50-1346

# Operating Tables

## Large Animal Operating Tables



BS4 59-6823  
Non-Heated Flat-Top Operating Table with Single Tilting and Hydraulic-Lift Base



BS4 59-6833  
Heated V-Top Operating Table with Single Tilting and Pedestal Base

**These sturdy operating tables are for use with animals up to 136.2 kg (300 lb) and are available with any combination of the below features:**

- V-top or flat-top
- Pedestal or hydraulic-lift base
- Tilting mechanism
- Heated or non-heated top

Specialized Tools For Bioresearch

### V-Top

The v-top table is 147.5 x 48 cm (58 x 19 in). Each panel adjusts independently from horizontal to near vertical for exact positioning without a thoracic positioner.

A 76.2 mm (3 in) trough centered under the panels can be used to collect fluids. The table has a hook for a collecting pail which is offered as an accessory. Two tie-down attachments on each side of the table slide along the table edge and lock at any position.

### Flat-Top

The extra large 152.5 x 56 cm (60 x 22 in) flat top is die-formed from one piece of heavy-gauge stainless steel with rounded corners, resulting in no welding, seams or sharp edges. The table center is slightly elevated so that fluids drain to a shallow trough around table edges. The drain outlet on the end has a hook for a collecting pail which is offered as an accessory. Two sliding tie-down attachments on each side can be locked at any position along the edge of the table.

### Hydraulic-Lift Base

The lift mechanism of the hydraulic-lift base is completely foot-operated, both up and down, allowing quick and easy adjustment of the table top to a comfortable height and position. Pumping action on a rubber pedal smoothly lifts the table top. Pressing down on a release bar causes the table top to glide down to the lowest position.

The v-top table height may be adjusted from 79 to 104 cm (31 to 41 in). The flat-top Table height may be adjusted from 75 to 100 cm (29-1/2 to 39-1/2 in). The heavy base provides real stability and includes leveling screws. The base cover is made of heavy-gauge, satin finish, type 304, non-corrosive stainless steel to provide a lifetime of service.

### Pedestal Base

This base provides a sturdy, stable support for the working surface, yet in no way interferes with your legs and feet as you move around the work surface. Four adjustable screws facilitate easy leveling. The working height of the pedestal base with a v-top table is 94 cm (37 in); with a flat-top table, it is 89 cm (35 in). The pedestal base is covered with heavy gauge, non-corrosive stainless steel.

### Tilting Mechanism

These operating tables offer a one end tilt mechanism. All tables will revolve 360° and tilt lengthwise from horizontal to near vertical and lock at any angle.

### Heated Tops

The heated table tops aid in the prevention of heat loss during surgery and are available for both v-top and flat-top tables.

Heated coils located under the table provide even heat distribution. The temperature can be adjusted from 21° to 42° C (70° to 108°F) with the heating control box which easily mounts on a tie-down/restraint rod.

The total heating area measures 40.5 x 122 cm (16 x 48 in) on the v-top tables, 20 x 122 cm (8 x 48 in) for each panel, and measures 38 x 122 cm (15 x 48 in) on the flat-top tables. These tables are UL listed, CSA approved and CE marked.

Large Animal Operating Table				
Table Style	Hydraulic-Lift Base Single Tilting	\$	Pedestal Base Single Tilting	\$
<b>V-Top</b>				
Heated 115 VAC, 60 Hz	BS4 59-6831		BS4 59-6833	
Heated 230 VAC, 50 Hz	BS4 59-6835		BS4 59-6837	
Non-Heated	BS4 59-6822		BS4 59-6824	
<b>Flat-Top</b>				
Heated 115 VAC, 60 Hz	BS4 59-6832		BS4 59-6834	
Heated 230 VAC, 50 Hz	BS4 59-6836		BS4 59-6838	
Non-Heated	BS4 59-6823		BS4 59-6825	

Catalog No.	\$	Product
BS4 59-6830		Collecting Pail, 11.9 liter (12-1/2 qt) capacity; seamless, noncorrosive stainless steel construction; 25.4 cm (10 in) deep with a 20 cm (7-7/8 in) diameter base
BS4 59-9524		Base with Casters adds mobility to Hydraulic Lift and Pedestal Base Surgery Tables; two heavy-duty plated steel caster bars attach easily to existing leveling screws in the Table base; all four casters are equipped with locks



## Operating Table and Thoracic Positioners



Table Base with  
Ridged Rubber Top

### **NEW** IMS Large Animal Operating Table

The electrically operated table can be lifted from 490mm up to a height of 970mm, enabling heavy animals to be accommodated. Operator lifting risk is kept to a minimum as it will lift a weight of 150kg. The range of tops available enable the table to be used for other lifting purposes. The lifting mechanism is controlled by pressing the simple hand held raising & lowering buttons. All tops measure 1200mm x 600mm. The table base and top must be purchased separately. A new optional feature is the top tilting device that is now available.



Table Base with Tilting Mechanism

Catalog No.	\$	Model	Product
BS4 34-0924		6.38.0	IMS Large Animal Operating Table – Base Only, finished white steel with black feet, 115V
BS4 34-0306		6.38.0	IMS Large Animal Operating Table – Base Only, finished white steel with black feet, 230V
BS4 34-0307		6.38.1	Table Top for BS4 34-0924 or BS4 34-0306 Table, Stainless Steel
BS4 34-0308		6.38.2	Table Top for BS4 34-0924 or BS4 34-0306 Table, Ridged Rubber with Aluminum Edge
BS4 34-0309		6.38.3	Table Top for BS4 34-0924 or BS4 34-0306 Table, Wood Finish
BS4 34-0310		6.38.4	Table Top for BS4 34-0924 or BS4 34-0306 Table, Laminate
BS4 34-0311		6.38.5	Castors for BS4 34-0924 or BS4 34-0306 Table. 4 Swivels, Braked
BS4 34-0312		6.38.6	Tilting Mechanism for Tops

*For a Thermal Barrier to help prevent heat loss, see page D35.*



### Stainless Steel Thoracic Positioner

This Thoracic Positioner will hold the animal in the desired operating position. Made of heavy gauge stainless steel for durability, this positioner has sure grip rubber feet to hold it in place on any flat-top surface or operating table. It measures, H x W x D, 8.25 x 30.5 x 26.7 cm (3-1/4 x 12 x 10-1/2 in) and weighs 2.25 kg (5 lb).

Catalog No.	\$	Product
BS4 59-9525		Stainless Steel Thoracic Positioner



### Plastic Thoracic Positioners

- Durable, light-weight plastic
- Transparent to light and x-rays
- Easy-to-clean
- Low heat loss

These Thoracic Positioners are designed to hold the animal in the desired operating position and are available in three sizes.

Since these positioners are constructed of plastic instead of stainless steel, the animal will lose less body heat during surgery.

Plastic Thoracic Positioners			
Catalog No.	For use with	Animal Weight	Dimensions, H x W x D
BS4 59-6435 \$	Cats and Small Dogs	Up to 9 kg (20 lb)	5.7 x 20.3 x 17.8 cm (2-1/4 x 8 x 7 in)
BS4 59-6436 \$	Medium Dogs	9 to 18 kg (20 to 40 lb)	7 x 25.4 x 20.5 cm (2-3/4 x 10 x 8 in)
BS4 59-6437 \$	Large Dogs	18 to 27.2 kg (40 to 60 lb)	7.6 x 35.6 x 22.7 cm (3 x 14 x 9 in)

# Surgical Lights and Illuminators

## Outpatient® II

Specialized Tools For Bioresearch



- 7000 footcandles (40% brighter)
- Color temperature of 3600°K; shadow-free design
- Blue filters and dichroic coatings keep beam cool
- Drift-free, self-balancing arm
- Low-voltage operation minimizes electrical hazards
- Optional wall dimmer switch
- Wide variety of mounting systems, including Fastrac and battery models
- Drop tube length for ceiling mount is 76 cm (30 in)
- UL listed, CSA certified; mounting systems meet California Seismic codes
- 3-year warranty
- Enhanced illumination, plus focusability.
- Focuses with central removable, autoclavable SteriHandle™ II
- Friction knob allows user to position self-balancing arm without a tool
- Uses three 'optically improved' 50 watt halogen bulbs — each with 2000 hour life
- Floorstand model includes foot switch, locking casters and cord wrap

Why is the Outpatient® II judged to be the 'unanimous light of choice' for surgical suites, research centers, and nearly every application where optimal light and value pricing are required? The Outpatient® II offers the features most wanted, including focusability, pure white, intense light in a flood-type pattern and guaranteed, no-drift arm. With 3600 degrees K color temperature and three halogen bulbs wired in parallel to assure continuous light output, the Outpatient® II is the one

light all researchers, veterinarians, and physicians can use for minor surgeries, procedures and exams. The Outpatient® II's SteriHandle™ is autoclavable and accepts Disposable Light Covers. Plus, Outpatient® II single ceiling, double ceiling and combo models are standard with 0.76 (30 in) drop tubes. The Outpatient® II is available in complete models only due to its unique design.

Power								
Product	115 VAC, 60 Hz	\$	220 VAC, 50 Hz	\$	230 VAC, 50 Hz	\$	240 VAC, 50 Hz	\$
Outpatient® II Floorstand	BS4 72-3780		BS4 72-3781		BS4 72-3782		BS4 72-3783	
Outpatient® II Single Ceiling	BS4 72-3784		BS4 72-3785		BS4 72-3786		BS4 72-3787	
Outpatient® II Double Ceiling	BS4 72-3788		BS4 72-3789		BS4 72-3790		BS4 72-3791	
Outpatient® II Wall Mount	BS4 72-3792		BS4 72-3793		BS4 72-3794		BS4 72-3795	
Single Outpatient® II on Fastrac™	BS4 72-3796		BS4 72-3797		BS4 72-3798		BS4 72-3799	
Double Outpatient® II on Fastrac™	BS4 72-3800		BS4 72-3801		BS4 72-3802		BS4 72-3803	

Catalog No.	\$	Product
BS4 72-3808		High Intensity 50 Watt Replacement Bulbs, set of 3
BS4 72-3809		Outpatient® II SteriHandle
BS4 72-3810		Wall Dimmer Switch
BS4 72-3811		Sterile Disposable Light Covers, set of 25
BS4 72-3838		Extension Tube for Drop Ceiling Mount

\* Note: A 76 cm drop tube will be shipped which is suitable for most 2.44 to 2.74 m (8 to 9 ft.) ceilings. The length can be adapted by the installer to a shorter length. If a longer tube is required, then BS4 72-3838 should be ordered.

# Surgical Lights and Illuminators

## CoolSpot™ II



CoolSpot™ II Single Ceiling Mount

- Up to 10,000 footcandles at 61 cm (24 in) and 4000 footcandles at 1 meter
- Up to 4700°K color temperature
- 4,800 footcandles
- Variable intensity wheel and a high intensity switch
- New, improved housing design that's easy to clean and includes a convenient removable, autoclavable SteriHandle™
- Friction knob allows user to position self-balancing arm without a tool, it's drift-free
- Variable spot size of 2 to 10 inches (5 to 25 cm) diameter
- Low voltage 150 watt halogen bulb with 500 hour life
- Integral dimming wheel
- Double heat filtration system
- UL listed, CSA certified; mounting systems meet California Seismic codes
- Made in the U.S.A.; 3-year warranty

This light is supplied with a removable, autoclavable SteriHandle™ and disposable light cover sample. It is offered with a choice of mounting options: ceiling mount drop tube, ceiling mount Fastrac™, wall mount, or floorstand.

The drop tube ceiling mount has a 0.76 m (30 in) drop tube which is suitable for most 2.44 to 2.74 m (8 to 9 ft) ceilings. The tube can be adapted by the installer to a shorter length if desired. If a longer tube is required, then order catalog number BS4 72-3838. The floorstand model includes foot switch, locking casters and cord wrap.

This light is offered in a variety of models. Select from a single floorstand model, a single or double ceiling mount, a single wall mount model, or a single or double Fastrac™ model. A unique combination unit is also available that includes a CoolSpot™ II and Outpatient II light. See below.

Do you need the intensity specifications of a surgery light but have limited space and/or a limited budget? If so, consider the CoolSpot™ II. No light in its price category can match the CoolSpot™ II's range of 10,000 footcandles at 61 cm (24 in) and color temperature of up to 4700°K. It's a sleek upgrade that offers a very compact head and extremely bright output. It is perfect for any laboratory or exam room requiring intense bright light.

Power	115 VAC, 60 Hz \$	220 VAC, 50 Hz \$	230 VAC, 50 Hz \$	240 VAC, 50 Hz \$
CoolSpot™ II Floorstand	BS4 72-3812	BS4 72-3813	BS4 72-3814	BS4 72-3815
CoolSpot™ II Single Ceiling	BS4 72-3816	BS4 72-3817	BS4 72-3818	BS4 72-3819
CoolSpot™ II Double Ceiling	BS4 72-3820	BS4 72-3821	BS4 72-3822	BS4 72-3823
CoolSpot™ II Wall Mount	BS4 72-3824	BS4 72-3825	BS4 72-3826	BS4 72-3827
Single CoolSpot™ II on Fastrac™	BS4 72-3828	BS4 72-3829	BS4 72-3830	BS4 72-3831
Double CoolSpot™ II on Fastrac™	BS4 72-3832	BS4 72-3833	BS4 72-3834	BS4 72-3835

Catalog No.	\$	Product
BS4 72-3836		EKE Replacement Bulbs for CoolSpot™ II, pkg. of 4
BS4 72-3837		Universal SteriHandle Replacement
BS4 72-3811		Sterile Disposable Light Covers, pkg. of 25
BS4 72-3838		Extension Tube for Drop Ceiling Mount

# Surgical Lights and Illuminators

## Genie™ and High Intensity Surgical Lights



### Genie™ Major O.R. Light

- 7,000 footcandles at 1 m, 4,400°K color temperature
- Removable, autoclavable handle accepts sterile covers
- Unique, easy bulb replacement and storage system; no tools necessary for bulb change
- Extra bulb, fuse, and sterile handle cover included with each unit
- 15 to 25 cm (6 to 10 in) spot size with maximum shadow reduction
- 360 degree limitless rotation around vertical axes
- Extremely lightweight and maneuverable
- Unique mounting system for maximum vertical movement and stability

The Genie™ provides superior performance and incorporates the most desired features of all compact O.R. lights.

The Genie™ Major O.R. Light features a 56 cm (22 in) diameter lighthead and four 50 Watt halogen bulbs wired in parallel to assure continuous illumination. Each bulb is rated for 1,500 hours of life. The focus adjustment is on the center positioning handle. The light includes an hours-in-use meter, continuous dimming and a special compartment in the control panel for bulb and fuse storage. It is aesthetically designed with a smooth front surface for easy cleaning and convenient bulb changing mechanism. You have a choice of single or double ceiling mounts. The Genie™ Major O.R.

Light is UL listed and CSA approved and meets UL 544, IEC 601-1. It is made in the U.S.A. and includes a 3-year parts warranty.

### Outpatient II/CoolSpot II Combination Lights

These high quality lights are offered in combination units with one each of the Outpatient II and the CoolSpot™ II. Select from either a fleximount ceiling mount or a Fastrac™ and Double Trolley. For complete details on the lights, please see above.

Catalog No.	\$	Product
BS4 72-3804		Outpatient® II/CoolSpot™ II Combo with Fleximount Double Ceiling Mount, 115 VAC, 60 Hz
BS4 72-3805		Outpatient® II/CoolSpot™ II Combo with Fleximount Double Ceiling Mount, 220 VAC, 50 Hz
BS4 72-3806		Outpatient® II/CoolSpot™ II Combo with Fleximount Double Ceiling Mount, 230 VAC, 50 Hz
BS4 72-3807		Outpatient® II/CoolSpot™ II Combo with Fleximount Double Ceiling Mount, 240 VAC, 50 Hz
BS4 72-3870		Outpatient® II/CoolSpot™ II Combo with Fastrac and Double Trolley, 115 VAC, 60 Hz
BS4 72-3871		Outpatient® II/CoolSpot™ II Combo with Fastrac and Double Trolley, 220 VAC, 50 Hz
BS4 72-3872		Outpatient® II/CoolSpot™ II Combo with Fastrac and Double Trolley, 230 VAC, 50 Hz
BS4 72-3873		Outpatient® II/CoolSpot™ II Combo with Fastrac and Double Trolley, 240 VAC, 50 Hz

Catalog No.	\$	Product
BS4 72-3861		Genie™ Single Ceiling Mount, 115 VAC, 60 Hz
BS4 72-3862		Genie™ Single Ceiling Mount, 220 VAC, 50 Hz
BS4 72-3863		Genie™ Single Ceiling Mount, 230 VAC, 50 Hz
BS4 72-3864		Genie™ Single Ceiling Mount, 240 VAC, 50 Hz
BS4 72-3865		Genie™ Double Ceiling Mount, 115 VAC, 60 Hz
BS4 72-3866		Genie™ Double Ceiling Mount, 220 VAC, 50 Hz
BS4 72-3867		Genie™ Double Ceiling Mount, 230 VAC, 50 Hz
BS4 72-3868		Genie™ Double Ceiling Mount, 240 VAC, 50 Hz
BS4 72-3869		Replacement 50 Watt Halogen Bulbs for Genie™, set of 6
BS4 72-3811		Disposable Sterile Light Covers, set of 25

# Surgical Lights and Illuminators

## Gleamer® and Nova® Exam Lights



### Gleamer®

The NEW patent pending Gleamer® is designed to the most demanding specifications: high intensity, cool operation, compact design, and value. With 3,100 footcandles of intensity, 3,300°K color temperature, and a (combination) 16 inch sturdy gooseneck and optional 15 inch extension arm, Gleamer® offers extensive reach, maximum convenience, and superior flexibility where top performance, reliability, and low cost are required.

For rugged construction, the most stringent regulatory requirement and cool operation, the Gleamer is the task light of choice. Even with the Gleamer's compact design and high illumination bulb source, its unique venting system and energy-absorbing heat exchanger assures both a cool beam and housing.

The Gleamer's advanced styling, high intensity, and superb quality is unmatched by any other light in its category. Put a Gleam in your eye and see the first 35 watt task light with UL 2601 listing... you'll select the Gleamer® for your all-purpose light.

- 3,100 footcandles
- 3,300°K color temperature
- 35 watt halogen bulb provides 4,000 hours of light
- Cool housing temperature – light can be in continuous use for hours without causing discomfort to researcher or patient
- Special housing grip for convenient handling
- Floor stand includes unique space-saving base (casters included)
- UL 2601 and CUL Listed; CE models available
- Unique patent pending design
- 3-year warranty
- 115 VAC model standard; 100 VAC, 230 VAC, and 240 VAC models available
- Designed and manufactured in the U.S.A.



### Nova® Exam Light

The new Nova® Exam Light is the industry's first exam light that delivers intensity, coolness, and the performance needed for today's research and healthcare facilities. Unlike many exam lights, the Nova® is not a 'throw-away gooseneck', but a light that will survive typical handling and usage in busy research labs. Plus, the Nova's compact base requires minimal floor space, which is especially important feature for so many facilities. For maximum illumination, ease of movement, stability, and style, nothing compares to the Nova®.

- 2,600 footcandles
- 3,100°K color temperature
- 20 watt halogen bulb with 4,000 hours average bulb life
- Lighthead swivels about gooseneck ±90°
- 71 cm (28 in.) vertical adjustment
- Cool housing temperature
- Smooth surface for easy cleaning
- Easy-grip handles for positioning
- Easy bulb changing (from top) without tools
- Unique, tilt-and-glide base with two casters
- Foot switch for hands-free operation
- Clear safety cover over bulb
- Superior arm system
- 102 cm (40 in.) upright for convenient reach
- 115 VAC model standard; 100 VAC and 230 VAC models available
- UL listed and CSA certified
- 1 year warranty

Catalog No.	\$	Product
BS4 72-3839		Gleamer® with Floor Stand, 115 VAC, 60 Hz
BS4 72-3840		Gleamer® with Floor Stand, 220 VAC, 50 Hz
BS4 72-3841		Gleamer® with Floor Stand, 230 VAC, 50 Hz
BS4 72-3842		Gleamer® with Floor Stand, 240 VAC, 50 Hz
BS4 72-3843		Gleamer® with Extension Arm and Universal Mount, 115 VAC, 60 Hz
BS4 72-3844		Gleamer® with Extension Arm and Universal Mount, 220 VAC, 50 Hz
BS4 72-3845		Gleamer® with Extension Arm and Universal Mount, 230 VAC, 50 Hz
BS4 72-3846		Gleamer® with Extension Arm and Universal Mount, 240 VAC, 50 Hz
BS4 72-3847		Gleamer® with Universal Mount, 115 VAC, 60 Hz
BS4 72-3848		Gleamer® with Universal Mount, 220 VAC, 50 Hz
BS4 72-3849		Gleamer® with Universal Mount, 230 VAC, 50 Hz
BS4 72-3850		Gleamer® with Universal Mount, 240 VAC, 50 Hz
BS4 72-3851		Replacement Bulb for Gleamer®, 35 Watt, pkg. of 4

Catalog No.	\$	Product
BS4 72-3852		Nova® Floor Stand, 115 VAC, 60 Hz
BS4 72-3853		Nova® Floor Stand, 220 VAC, 50 Hz
BS4 72-3854		Nova® Floor Stand, 230 VAC, 50 Hz
BS4 72-3855		Nova® Floor Stand, 240 VAC, 50 Hz
BS4 72-3860		Replacement Bulbs for Nova® Floor Stand, pkg. of 4

# Surgical Lights and Illuminators

## **NEW** High Intensity Fiber Optic Exam Light



- High intensity 250 W Halogen lamp
- Cool light - IR filtered
- Variable light intensity, 0 to 100%
- Easily adjustable flexible bundle
- Color temperature 3400°K, 1700 lumens

This High Intensity Fiber Optic Exam Light provides a high quality, cold light with a bright, white beam. It features a high output, 250 watt light source with focused, flexible, stay-put fiber optic bundle. The compact, stay-put fiber optic bundle easily maneuvers around any obstacle. The stay-put flexible bundle ensures the bundle remains in

place without drifting. A computer designed objective lens focuses the high output light onto the exam area. A compact halogen lamp with reflector provides bright, even illumination for all of your exam needs.

This Exam Light is a cold light source because the heat is removed from the light. An infrared filter is used to remove the IR energy from the light beam before it is transmitted through the fiber bundle. This provides a high quality, cold light with a bright, white beam. The light beam size is controlled by a focusing lens at the end of the fiber optic bundle. For portability, the light is mounted on a roller stand mount.

Catalog No.	\$	Product
BS4 72-7027		High Intensity Fiber Optic Exam Light, 120 VAC, 60 Hz
BS4 72-7028		High Intensity Fiber Optic Exam Light, 230 VAC, 50 Hz

## High Intensity Surgical Light



- 1,500 footcandles at 30.5 cm (12 in)

This is an excellent light source for performing surgery on small animals. The 250 watt quartz halogen light with a prefocused lamp assembly provides cool, efficient illumination.

The high intensity lamp and reflector are powered by a low voltage power supply to permit a compact, rugged bulb filament, which approaches the ideal point of light source. The ellipsoidal reflector focuses the light onto a lens to create a concentrated light beam. Heat is dissipated, primarily at the light source, by an infrared absorbing filter and by the unit's powerful cooling fan. The light source measures, H x W x D, 12.1 x 12.7 x 13.7 cm (4-3/4 x 5 x 5-3/8 in).

Light intensity and beam direction are easily adjustable. The 91.4 cm (36 in) tri-jointed extension arm allows repositioning of the light source without changing the light direction. The entire unit is completely portable. The base has rubber feet, measures 30.5 x 30.5 cm (12 x 12 in) and has a 1.8 m (6 ft) power cord.

Catalog No.	\$	Product
BS4 52-0528		High Intensity Surgical Light, 115 VAC, 60 Hz

# Surgical Lights and Illuminators

## High Intensity Illuminators



- Ideal for applications such as stereomicroscopy
- Electronic full-range intensity control allows for precise adjustment of light intensity from 0 to maximum

These High Intensity Illuminators have intensities with a single lamp head of up to 12,500, 3,200 or 600 footcandles (ftc) at 15.2 cm (6 in). Each is also available with two lamp heads which doubles the maximum intensities and is ideal for applications such

as stereomicroscopy. Electronic full-range intensity control allows for precise adjustment of light intensity from 0 to maximum.

The Illuminators are constructed of steel with durable chrome and high gloss enamel finishes and have anodized aluminum bulb guards. They have a round, 14.5 cm (5-3/4 in) diameter non-tip, weighted base 4 cm (1-1/2 in) high for stability.

The lamp heads are mounted on a 28 cm (11 in) flexible gooseneck arm with a 5 cm (2 in) all-angle swivel top. This arm allows for infinite adjustment of the lamp heads to any position.

Each Illuminator comes complete with its high intensity bulb for each lamp head and a 1.8 m (6 ft) cord with plug and switch. The 230 VAC, 50 Hz Illuminators are supplied with a Transformer with a NEMA 3-pin grounded plug 5-15P.

Bulbs, Heat Shields and a Magnifier Kit are available as accessories. They easily attach to both the Single and Dual Lamp Head Illuminators, see below.

### 12,500 ftc Single/25,000 ftc Dual Illuminators

These Illuminators use a Tungsten/Quartz/Halogen Bulb with a long bulb life of 10,000 hrs. The color temperature is 3,000°K. The Bulbs have integral, multi-facet, paraxial reflectors and offer the user pre-focused combination beam spread of 19° providing a 4.5 cm (1-3/4 in) field diameter.

### 3,200 ftc Single/6,400 ftc Dual Illuminators

These Illuminators are supplied complete with a Tungsten/Argon Spot Bulb for each lamp head. The beam spread is 15° providing a 7.5 cm (3 in) field diameter. The color temperature is 2,900°K. Flood Bulbs are also available with a beam spread of 50° providing a 30 cm (12 in) field diameter.

### 600 ftc Single/1,200 Dual ftc Illuminators

These Illuminators are supplied complete with a high intensity Tungsten/Argon Reflector Bulb with a screw base for each lamp head. The beam spread is 64° providing a 18 cm (7 in) field diameter. The color temperature is 2,600°K. Supplied complete with a Tungsten/Quartz/Halogen combination Bulb for each lamp head.



High Intensity Illuminator	Power	
	115 VAC, 60 Hz	230 VAC, 50 Hz
Illuminator	\$	\$
12,500 ftc Single Lamp Head	BS4 59-7500	BS4 59-7502
25,000 ftc Dual Lamp Head	BS4 59-7501	BS4 59-7503
3,200 ftc Single Lamp Head	BS4 59-7504	BS4 59-7506
6,400 ftc Dual Lamp Head	BS4 59-7505	BS4 59-7507
600 ftc Single Lamp Head	BS4 59-7508	—
1,200 ftc Dual Lamp Head	BS4 59-7509	—

Catalog No.	\$	Product
BS4 59-7520		Tungsten/Quartz/Halogen Combination Bulb for 125,000/25,000 ftc Illuminator
BS4 59-7521		Tungsten/Argon Spot Bulb for 3,200/6,400 ftc Illuminator
BS4 59-7522		Tungsten/Argon Flood Bulb for 3,200/6,400 ftc Illuminator
BS4 59-7523		Tungsten/Argon Reflector Bulb for 600/1,200 ftc Illuminator
BS4 59-7518		Magnifier with Wide Angle Diameter of 11.5 cm (4-1/2 in), Providing 1.25X Magnification with Central 2.5 cm (1 in) Diameter Spot for 2X Magnification, 20.5 cm (8 in) Chrome-Plated Flex Arm
BS4 59-7516		Infrared/Absorbing Heat Shield for 12,500/25,000 ftc Illuminator (Average Infrared Rejection up to 92%)
BS4 59-7517		Infrared/Absorbing Heat Shield for 3,200/6,400 ftc Illuminator (Average Infrared Rejection up to 92%)

# Thermometers and Probes

## **NEW** Microprobes for Temperature Measurement



- Ideal for:
  - Rectal Measurements in Neonatal Mice
  - Implantation in Brain or Muscle Tissue
  - Inserted into Blood Vessels
- Small diameter 0.23 mm (0.009 inches)
- Fast - Time Constant of 0.005 seconds
- Flexible Microprobes
- Completely sealed
- Can be sterilized by Autoclaving or gas (ETO) or Cidex

Specialized Tools For Bioresearch

An extensive range of flexible teflon microprobes is now available. These fast response probes are used for implantation in brain and muscle tissue, blood vessels, spectrophotometer cuvettes, rectally in neonatal mice, in water baths, etc. Custom probes are available for special applications as well. These probes are implantable in semi-solids and tissue with needle (supplied) and are quite rugged (except BS4 52-1716).

These fast reading microprobes are strong, flexible, completely sealed and can be used to measure temperatures up to 150°C. They can be autoclaved or sterilized by use of gas (ETO) or Cidex. Our flexible microprobes are available with a sensor lead as small as 0.229 mm (0.009 inch) diameter. The extremely small mass results in fast response times with time constants as low as 0.005 seconds (this BS4 52-1716 microprobe is rather fragile). BS4 52-1757 microprobe sensor bead is exposed, thus, it combines the ultra-fast response of BS4 52-1716 but has the Teflon sheath strength of the BS4 52-1732.

All microprobes are made with the proprietary copper/constantan thermocouple wire and are guaranteed accurate to 0.1°C within the physiological range. Probes do not require individual calibration and are completely interchangeable in any (copper/constant) thermocouple thermometer such as the BS4 52-1302 Portable Thermocouple Thermometer or the BS4 60-1956 Single Probe Thermocouple Monitoring Thermometer, see pages D17 and D18 respectively.

Specifications						
Probe Type	Catalog No.	\$	Needle Gauge	Diameter	Time Constant	Lead Length
IT-14	BS4 52-1724		14	1.27 mm (0.050 in)	0.3 second	0.91 m (3 ft)
IT-18	BS4 52-1732		18	0.635 mm (0.025 in)	0.1 second	0.91 m (3 ft)
IT-21	BS4 52-1740		21	0.406 mm (0.016 in)	0.08 second	0.304 m (1 ft)
IT-23	BS4 52-1716		23	0.229 0mm (0.009 in)	0.005 second	0.91 m (3 ft)
IT-1E	BS4 52-1757		180	.635 mm (0.025 in)	0.005 second	0.91 m (3 ft)



## Thermocouple Probes and Thermometers

For accurate, precise temperature measurements, Harvard Apparatus offers a range of 'T' type Thermocouple Probes and Micro-Probes, see pages D22 to D25, which can be used interchangeably with all of the Thermocouple Thermometers described on the following pages. No recalibration is required. All of the Thermometers have traceable accuracy to NIST standards. The Accessories for the Thermocouple Temperature products are listed to the right.

- The Thermocouple Monitoring Thermometers have a resolution and accuracy of 0.1°C and are available with either one probe or three probe input, see page D18.
- The Portable Thermocouple Thermometer has a wide temperature range from -100° to +200°C and a resolution and accuracy of 0.1°C, see below.
- The Temperature Controller permits accurate control of an animal's temperature during thermally sensitive procedures and can be used with all of the Thermocouple Thermometers, see page D19.



Portable Thermocouple Thermometer with Temperature Probe (not included)



### Specifications

Temperature Range	-100° to +200°C
Resolution	0.1°C of reading ±1 digit
Accuracy (Instrument Only)	0.1°C ±1 digit between 0° to 50°C
Calibration	Conforms to NBS thermocouple tables within 1 digit
Ambient Temperature Compensation	Auto-corrected to 0.1°C from 0° to 50°C
Display	LCD, 3-1/2 digits, 13 mm (1/2 in) high
Sensor	Type 'T' Thermocouple, copper-constant
Input Socket	Miniature 'T', quick disconnect, copper-constant
Analog Output	Approximately 10 mV/°C
Battery	9 V transistor
Dimensions, H x W x D	12.7 x 6.4 x 15.2 cm (5 x 2-1/2 x 6 in)
Weight	0.9 kg (2 lb) including carrying case

### Portable Thermocouple Thermometer

- Superior accuracy: 0.1°C ±1 digit in physiological range, 0.1% ±1 digit over full range
- Fast readings to 0.1°C (usually in 2 to 5 seconds)
- Auto correction feature compensates for ambient temperatures from 0° to 50°C
- Analog output for strip chart recorders
- Choose from 39 different interchangeable Probes and Microprobes to meet all temperature needs, see pages D22 to D25

This accurate digital Thermocouple Thermometer can measure surface temperatures, liquids, and solids as well as any biological temperature and is CE marked.

This Thermometer is available for use with either a disposable 9 volt transistor battery, or for AC power with battery operation using rechargeable NiCad batteries and an integral battery charger.

It will operate for 120 hours with a single 9 volt battery. Automatic warnings indicate low battery or faulty probe.

This Portable Thermometer is completely waterproof, dust-

proof, and fume-proof because of its sturdy, sealed construction. It is supplied with a heavy-duty carrying case that can be worn like a camera, leaving the hands free. Temperature Probes are not included, see pages D22 to D25.

Catalog No.	\$	Product
BS4 52-1302		Portable Thermocouple Thermometer with 9 V Disposable Batteries
BS4 59-7567		Portable Thermocouple Thermometer for AC or Rechargeable Batteries, 115 VAC, 60 Hz
BS4 59-7568		Portable Thermocouple Thermometer for AC or Rechargeable Batteries, 230 VAC, 50 Hz
BS4 52-1773		Two-Way Probe Selector, see page D18
BS4 52-1781		Five-Way Probe Selector, see page D18
BS4 73-1911		Extension Cable for Miniature T Temperature Probes
BS4 52-1310		Tilt Base, see page D18
BS4 60-1961		Temperature Controller, see page D19

# Thermometers and Probes

## Thermocouple Monitoring Thermometers



- Choice of one or three probe inputs

These Thermometers are for use with the Thermocouple Probes and Microprobes offered on pages D22 to D25. The Thermometers monitor these Probes three times per second for fast response to temperature changes.

Two models of this Thermometer are available: a single probe input or three probe input. Both are powered by four 'C' cell batteries (supplied) and have an analog output jack and mating connector for connection to a chart recorder. The Cable is not supplied.

The Single Probe Thermometer has a temperature range from 25° to 45°C readable in 0.1°C increments. It reads temperatures in Celsius only.

The Three Probe Thermometer displays the temperature reading in either Celsius or Fahrenheit. It has a temperature range from -10° to +60°C (14° to 140°F) readable in 0.1°C (0.1°F) increments. Push buttons on the front of the Thermometer are used to select which probe temperature is displayed.

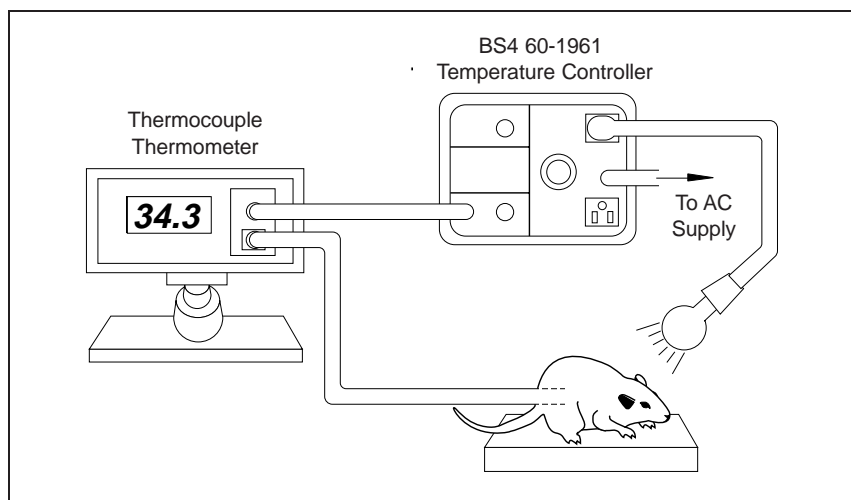


### Specifications

<b>Calibration</b>	Conforms to National Institute of Standards and Technology tables. Monograph 125	
<b>Leakage Currents</b>	< than 10 μA at 60 Hz; the instrument is isolated from ground and from mounting supports to withstand 5000 volts; capacitance to ground is low to ensure compatibility with electro surgical equipment	
<b>Safety Standards</b>	Conforms to: NFPA #56A, Inhalation Anesthetics UL #544, 1972 ANSI/AAMI Safe Current Limits for Electronics Apparatus	
<b>Sensor(s)</b>	Type 'T' thermocouple, copper-constant	
<b>Input Socket(s)</b>	Miniature 'T' quick disconnect, copper-constant	
<b>Monitoring Thermometer</b>	<b>Single Probe</b>	<b>Three Probe</b>
<b>Temperature Range</b>	25° to 45°C	-10° to +60°C (14° to 140°F)
<b>Resolution</b>	0.1°C	0.1°C (0.1°F)
<b>Accuracy (Instrument Only)</b>	0.1°C ±1 digit	0.1°C (0.2°F) ±1 digit at 25°C ambient
<b>LCD Display</b>	3-1/2 digits, 12.7 mm (1/2 in) high numerical display only	3-1/2 digits, 18 mm (0.7 in) high displays °C
<b>Power Supply</b>	4 'C' cell batteries	
<b>Battery Life</b>	1200 hrs continuous	2000 hrs continuous
<b>Battery Warnings</b>	Automatic 2-stage warning. indicator flashes when 8 hours of life remain; remain becomes continuous when batteries must be replaced	LO-BAT appears on display when battery voltage is low but several hours of life
<b>Faulty Probe or Input</b>	Display reads '0'	INPUT appears on display

Catalog No.	\$	Product
BS4 60-1956		Single Probe Thermocouple Monitoring Thermometer
BS4 59-7569		Three Probe Thermocouple Monitoring Thermometer
BS4 52-1773		Two-Way Probe Selector, Permits two probes to be monitored with one Thermometer. This small unit plugs into the probe input on any of the Thermocouple Thermometers. It measures, H x W x D, 2.5 x 3.5 x 2.5 cm (1 x 1-3/8 x 1 in), see below left.
BS4 52-1781		Five-Way Probe Selector, accepts up to five Temperature Probes. A single connector goes to any of the Thermocouples Thermometers. It measures, H x W x D, 7 x 15.2 x 16 cm (2-3/4 x 6 x 6-1/3 in) and weighs 0.6 kg (1-1/4 lb), see left.
BS4 73-1911		Extension Cable for Miniature Type T Temperature Probes
BS4 52-1310		Tilt Base, black, heavy metal Base has a locking tilt head and omnidirectional swivel. It provides for easy positioning of the Portable Thermocouple Thermometer or Thermocouple Monitoring Thermometers, see pages D17 and this page respectively
BS4 60-1961		Temperature Controller, see page D19

## Thermocouple Temperature Controller



- Works with the Thermocouple Thermometers described on pages D17 and D18
- Controls heaters or coolers (not supplied)
- Provides an audible or visual alarm when used with optional Alarm Package
- Up to 1/2 kW output
- Temperature overshoot adjustment

This Temperature Controller works with a Thermocouple Thermometer (not supplied; see preceding pages) and heating or cooling instrument (not supplied) to control the temperature of an animal. The Controller operates over the full temperature range of any of the Thermocouple Thermometers offered on the preceding pages. These Thermometers continuously monitor the system performance and specimen temperature. This Controller is easy to setup and has an accuracy of 0.1°C.

Many temperature controllers have a tendency to 'overshoot' the set temperature, especially when the specimen has large thermal mass. This Controller has a power out-put knob that works like a 'dimmer switch'. It controls the output intensity of the thermal instrument permitting heating/cooling over its full range. This control greatly minimizes temperature overshoot which is especially important when working with live animals.

When this Control Unit is used for controlling the temperature of animals, heating can be provided by either conduction or radiation. For conductive heating the animal is placed on an electrically heated plate (not supplied). A 115 volt heater element of about 25 watts is adequate for a 0.45 kg (1 lb) animal.

Most users, however, find it easier to provide radiant heat from an ordinary 60 watt light bulb or an Infrared Lamp and Adapter Cable offered as an accessory. The bulb does not contact the animal and represents very little thermal mass providing a shorter, more accurate control cycle. The Controller also provides subambient control when used with thermoelectric cold plates.

When the Controller is used for automatic temperature control of liquids, the liquid should be vigorously stirred to avoid temperature gradients of several degrees. Similarly when air or gas temperature is being controlled inside a chamber, a circulating fan (not supplied) will improve performance.

The Controller will also work with most instruments having a proportional DC output signal varying between 0 and 4 VDC.

An Alarm Package, offered as an accessory, includes an AC buzzer and flashing light bulb

adapter. The buzzer or bulb adapter plug into either of the AC outlets on the Controller. When the set high or low temperature limit is reached the buzzer will sound or the light will flash. A thermal instrument plugs into the other AC outlet to provide heating or cooling to the animal.

This Controller uses 115 V triacs. In countries which do not have 115 VAC as standard, this Controller can only be used with the use of a step-down transformer. See BS4 72-4994 below.

### Specifications

Temperature Range	Same as the thermometer in use
Control Accuracy	0.5% of range of the thermometer in use
Input Resistance	> 100 kΩ
Accuracy of Set Point	0.25% of full scale with the Thermocouple Thermometer in use
Stability:	
Temperature	-0.004% / °C
Voltage	-0.003% / % line change
Output Sockets	2, standard 3-pin grounded receptacles
Output Power	Continuously variable up to 500 W (4.5 A at 115 VAC)
Dimensions, H x W x Dz	13.3 x 17.2 x 5.7 cm (5-1/4 x 6-3/4 x 2-1/4 in)
Weight	1.02 kg (2-1/4 lb)
Power	115 VAC, 60 Hz

Catalog No.	\$	Product
BS4 60-1961		Thermocouple Temperature Controller, 115 VAC only
BS4 60-1962		Alarm Package
BS4 60-1963		Infrared Lamp and Adapter Cable, 250 W, to provide heat to the animal
BS4 72-4994		Transformer for BS4 60-1961 for 220 volt use

*For Homeothermic Blanket System, see page D30.  
For Instant Heat Packs and Accessories, see page D35.*

# Thermometers and Probes

## **NEW** TCAT-2 Temperature Controller



- Controls heating blankets, heat lamps or heating pad
- Use for both heating and cooling applications
- 110 to 230V AC line operation
- Control Range of -100 to +400°C
- Resolution 0.1°C

Our new TCAT-2 family of general purpose PID Autotuning Controllers provides accurate temperature control in a variety of laboratory applications. Combined with a heat lamp or heating pad, the TCAT-2 may be used to maintain the body temperature of anesthetized animals during surgery or stereotaxic procedures. Small animal cages

are easily warmed with a heat lamp. The TCAT-2 may also be used in cooling applications, such as to control independent perfusate cooling systems. Realizing that laboratory applications are diverse, we provide several versions of the TCAT Controller. Which model you select depends on your application. See below for model descriptions.

### **TCAT-2AC Controller**

This version controls only AC powered heating or cooling devices such as a heat lamp. It is the least costly.

### **TCAT-2LV Controller**

This model provides a low voltage DC output for electrically sensitive applications where AC frequencies might interfere with other monitoring devices. It comes standard with a built in DC power supply designed to operate with our HP-1M Heating Plate for small rodents. The TCAT-2LV utilizes a dual set point control circuit to prevent a heating element from overshooting the control point due to thermal lag in the control system. This is an important feature in preventing burns due to incorrect control settings or faulty feedback sensor. On a custom basis, we can provide a variety of DC power supplies depending on the load power requirements.

### **TCAT-2DF Controller**

This is a combination version which includes both an AC outlet for controlling primarily resistance loads such as heat-lamps, AC powered warming blankets and a low-voltage, low noise DC output for heating pads. This version allows you to control a variety of different loads.

### **Probes**

All TCAT-2 versions may be used with any of our extensive line of thermocouple probes, see pages D22 to D25, which act as the temperature feedback sensor. Most commonly used are the rectal

probes, but the implantable flexible probes and needle probes may also be used depending on the specific application. All instruments are designed to operate on a 110V or 230V AC supply.

The unit comes in a durable, baked enamel painted aluminum housing. Adjustable front feet allow the user to raise the front of controller to provide a more convenient viewing angle. A heat/cool switch is provided when using the controller with cooling devices such as small refrigeration compressors or thermoelectric stages. In the cooling mode it inverts the control function and shuts off the load when feedback sensor temperature falls below the set point. A small lamp on the front of the control unit indicates when power is being applied to the load.

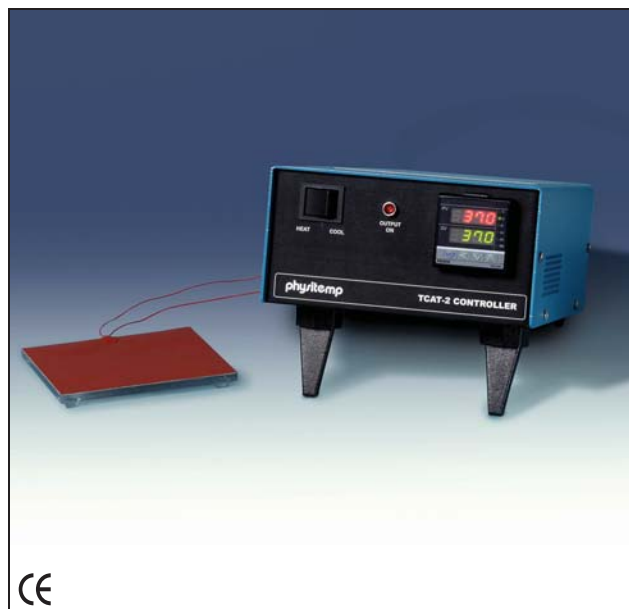
The TCAT-2 is simple to set-up; connect the feedback sensor to the animal and to the back of the controller; connect the heating pad, blanket, lamp or cooling device to the appropriate outlet on the rear of the controller. Adjust the set temperature as required (lower green display) according to the instruction label on top of the instrument. The set temperature is stored in memory after the unit is switched off.

### **Specifications**

Accuracy	±0.5°C
Resolution	±0.1°C
Range	-100 to +400°C
Readout	Dual display of Set (green) and Run (red) temperatures
Max AC Power Output with Resistive Load	700 watts (Does not apply to TCAT-2LV)
DC Output Rating	12V DC, 2 Amps Max. (Does not apply to TCAT-2AC)
AC Ground Leakage Current	< 1 mA at 110 V AC
Dual Setpoint Protection Feature	TCAT-2DF and TCAT-2LV only, additional heating pad feedback sensor prevents temperature exceeding 40°C.
Dimensions, H x W x D	11.1 x 18.4 x 25.4 cm (4 x 7 1/4 x 10 in)
Weight	< 2.27 kg (< 5 lbs.)
Power Supply	110 V or 220 V AC

Catalog No.	\$	Product
BS4 72-7559		TCAT-2AC Temperature Controller
BS4 72-7560		TCAT-2LV Temperature Controller
BS4 72-7561		TCAT-2DF Temperature Controller

## **NEW** Heat Lamp and Heating Plate for TCAT-2



### Heat Lamp HL-1

- Ideal for use with mice and rats
- Easy to use with TCAT-2 models

This infrared heat lamp is table mounted with an adjustable swing arm providing for easy adjustment of radiant heat to specimen. The lamp is supplied with a 250 Watt (infrared) heat lamp bulb and a built in reflector. A chrome bulb guard is also provided and easily snaps onto the lamp housing after the bulb is installed. This Heat Lamps fits a standard 110 V AC socket.

### Heating Plate HP-1M

This direct current Heating Plate for small rodents (mice and rats) is a standard plate made of black anodized aluminum. It measures 10.2 x 15.2 cm (4 x 6 in) with small feet giving it an elevation of 6.4 mm (0.25 in) above the surface it sits on, such as a table or stereotaxic stage. It is easily cleaned with alcohol. This Heating Plate has a feedback sensor to prevent overheating when used with our TCAT-2 series of controllers. Custom sizes are also available.

### Specifications

#### HL-1

Arm Length	2 Spring loaded arms each 45.7 cm (18 in) lengths
Table Clamp	Standard "U" screw clamp expands to fit bench up to 5.7 cm (2.25 in) deep
Weight	0.91 kg (2 lbs)
Power	110 V AC
Bulb	250 W infrared heat lamp

#### HP-1M

Dimensions, H x W x L	0.64 x 10.20 x 15.2 cm (0.25 x 4 x 6 in)
Weight	2.3 kg (5 lbs)
Power	10 W
Temperature Feedback Sensor	100 Ω RTD

Catalog No.	\$	Product
BS4 72-7562		Heat Lamp HL-1*
BS4 72-7563		Heating Plate HP-1M*

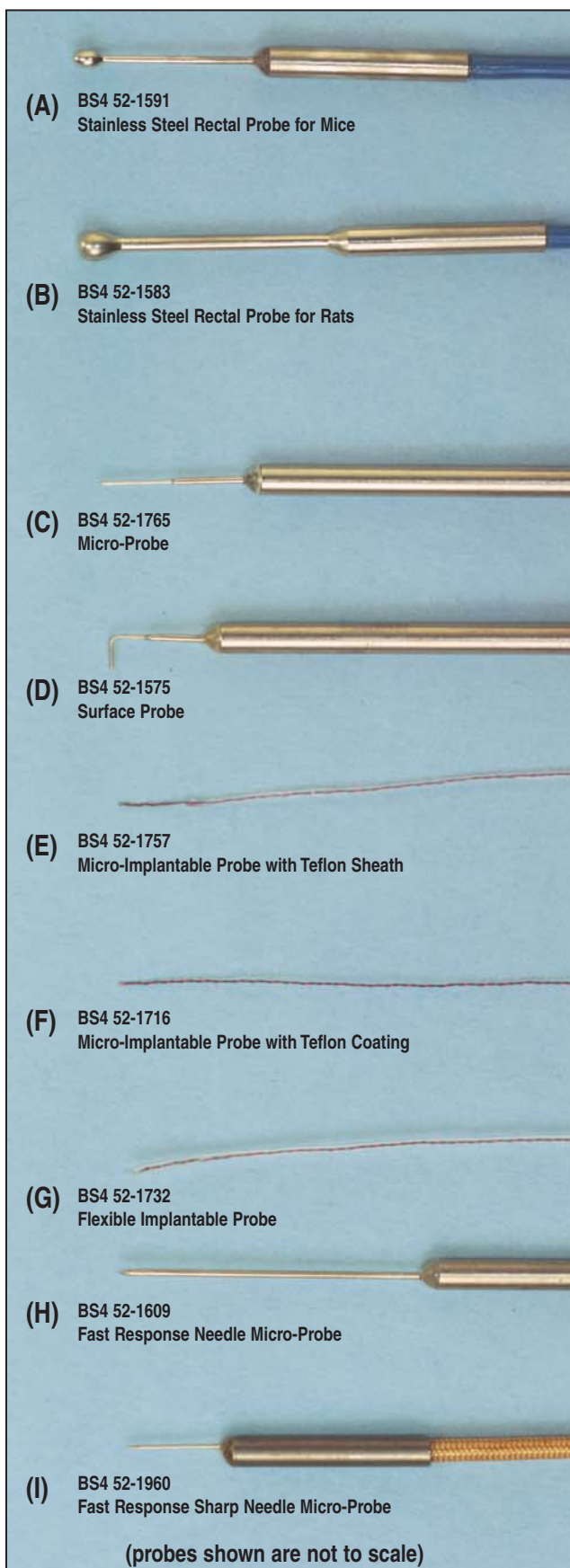
\*Note: Require one of the TCAT controllers, see page D20.

*For compatible Thermocouple Temperature Probes see pages D22 to D25.*

# Thermometers and Probes

## Thermocouple Probes

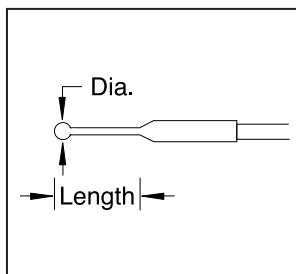
Specialized Tools For Bioresearch



(probes shown are not to scale)

These Thermocouple Probes are made with proprietary copper-constantan thermocouple wires and are accurate to 0.1°C due to stringent wire standards. The small size of the sensor provides fast response times with time constants as low as 0.005 seconds. These Thermocouple Probes can be used interchangeably with all the Thermocouple Thermometers described on the preceding pages. No recalibration is required. These Probes can be sterilized by gas (ETO) or Cidex.

### Stainless Steel Rectal Probes (A, B)

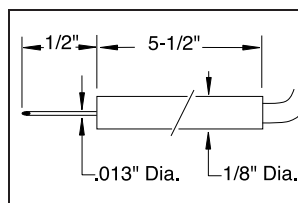


For fast intermittent measurements in mice and rats. They have a stainless steel shaft with a 1.5 m (5 ft) lead. Maximum temperature 125°C (257°F). Not isolated. Available with two different shaft sizes. Supplied individually.

#### Stainless Steel Rectal Probes

Catalog No.	\$	Animal	Time Constant	Ball Diameter	Shaft, D x L
BS4 52-1591 (A)		Mice	0.5 sec	(0.065 in)	0.71 x 19.1 mm (0.025 x 3/4 in)
BS4 52-1583 (B)		Rats	0.8 sec	(0.125 in)	1.5 x 25.4 mm (0.059 x 1 in)

### Micro Probe (C)



• Time constant 0.025 second

This Probe is for use on micro-specimens. The sensor bead slightly protrudes from the 0.33 mm (0.013 in) diameter x 12.7 mm (1/2 in) long stainless steel shaft to facilitate temperature probing. The 3.2 mm (1/8 in) diameter x 140 mm (5-1/2 in) long tubular handle fits most micromanipulators for precise positioning. The maximum intermittent temperature 200°C (392°F); continuous use 100°C (212°F). Not isolated. Supplied individually. Lead length 1.5 m (5 ft).

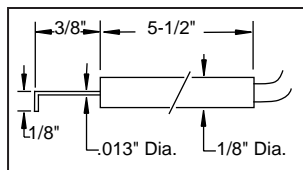
Catalog No.	\$	Product
BS4 52-1765		Micro Probe (C)

All Probes Are For use with :

Portable Thermocouple Thermometer, see page D17.  
Thermocouple Monitoring Thermometer, see page D18.  
Thermocouple Temperature Controller, see page D19.  
TCAT2 System, see pages D20 and D21.

## Thermocouple Probes

### Surface Probe (D)

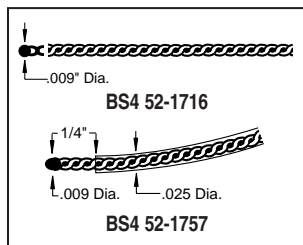


- Time constant 0.025 second

This fast response surface Probe is for locating inflammation, arteries, etc. and for dental use. The 0.33 mm (0.013 in) stainless steel shaft is 9.5 mm (3/8 in) long with a 90° bend that is 3.2 mm (1/8 in) long. The 3.2 mm (1/8 in) diameter handle is 140 mm (5-1/2 in) long with a 1.5 m (5 ft) lead. Maximum temperature 200°C (392°F). Not isolated. Supplied individually.

**Catalog No. \$ Product**  
BS4 52-1575 Surface Probe (D)

### Micro-Implantable Probes (E, F)

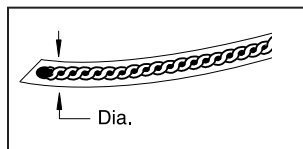


- Time constant 0.005 second
- Sensor tip and lead diameter only 0.23 mm (0.009 in)

These electrically isolated Probes are for ultra-fast measurements on micro-size specimens. They are tissue implantable with a needle (supplied). These Probes are available with either a thin Teflon coating or with a Teflon sheath for added durability similar to the BS4 52-1732 Flexible Implantable Probe, see below, but with the sensor bead exposed. Maximum temperature 150°C (302°F). 0.9 m (3 ft) lead. Supplied individually. Rather fragile.

**Catalog No. \$ Product**  
BS4 52-1757 Micro-Implantable Probe with Teflon Sheath (E)  
BS4 52-1716 Micro-Implantable Probe with Teflon Coating (F)

### Flexible Implantable Probes (G)

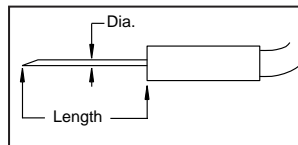


These Probes are implantable in tissues and semi-solids with a needle (supplied). They are also for immersion in various solutions and rectal measurements in small animals. These electrically isolated

Probes are totally sheathed in Teflon. Quite rugged. Maximum temperature 150°C (302°F). Supplied individually.

Flexible Implantable Probes (G)				
Catalog No.	\$	Time Constant	Tip Diameter	Lead Length
BS4 52-1740		0.08 sec	0.41 mm (0.016 in)	0.3 m (1 ft)
BS4 52-1732		0.1 sec	0.64 mm (0.025 in)	0.9 m (3 ft)
BS4 52-1724		0.3 sec	1.3 mm (0.050 in)	0.9 m (3 ft)

### Fast Response Needle Micro-Probes (H)

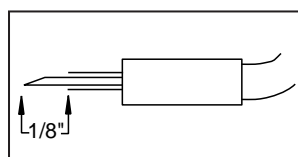


These Needle Probes are for instant temperature readings in tissue, semi-solids, liquids and very small specimens. The needle tip is sealed to ensure that only stainless steel contacts the specimen. For the fastest readings, use the smaller diameter Probes. For longer life and easier insertion, use the shorter Probes. Maximum temperature 200°C (392°F). Available in three gauges of varying needle lengths with a 1.5 m (5 ft) lead. Not isolated. Supplied individually.

#### Specifications

Time Constant	0.025 sec	0.1 sec	0.15 sec
Diameter	29 G; 0.33 mm	26 G; 0.46 mm	23 G; 0.64 m
<b>Needle Tip/Length</b>			
<b>Blunt Tip:</b>			
1 cm	BS4 52-1708 \$	—	—
<b>Sharp Tip:</b>			
1 cm	BS4 52-1666 \$	—	—
2 cm	BS4 52-1674 \$	BS4 52-1633	—
3 cm	BS4 52-1682 \$	—	BS4 52-1609 (H)
4 cm	— \$	BS4 52-1641	—
5 cm	BS4 52-1690 \$	—	BS4 52-1617
6 cm	— \$	BS4 52-1658	—
8 cm	— \$	—	BS4 52-1625

### Fast Response Sharp Needle Micro-Probe (I)



- Time constant 0.025 second

This Needle Probe is for instant, high accuracy temperature readings on very small specimens. Sensor bead is welded to a 29 gauge, 0.33 mm (0.013 in) diameter by 1 cm (0.39 in) long stainless steel needle for maximum heat transfer. Maximum insertion depth is 3.2 mm (1/8 in). Maximum temperature 150°C (302°F). Not isolated. Lead length 1.5 m (5 ft).

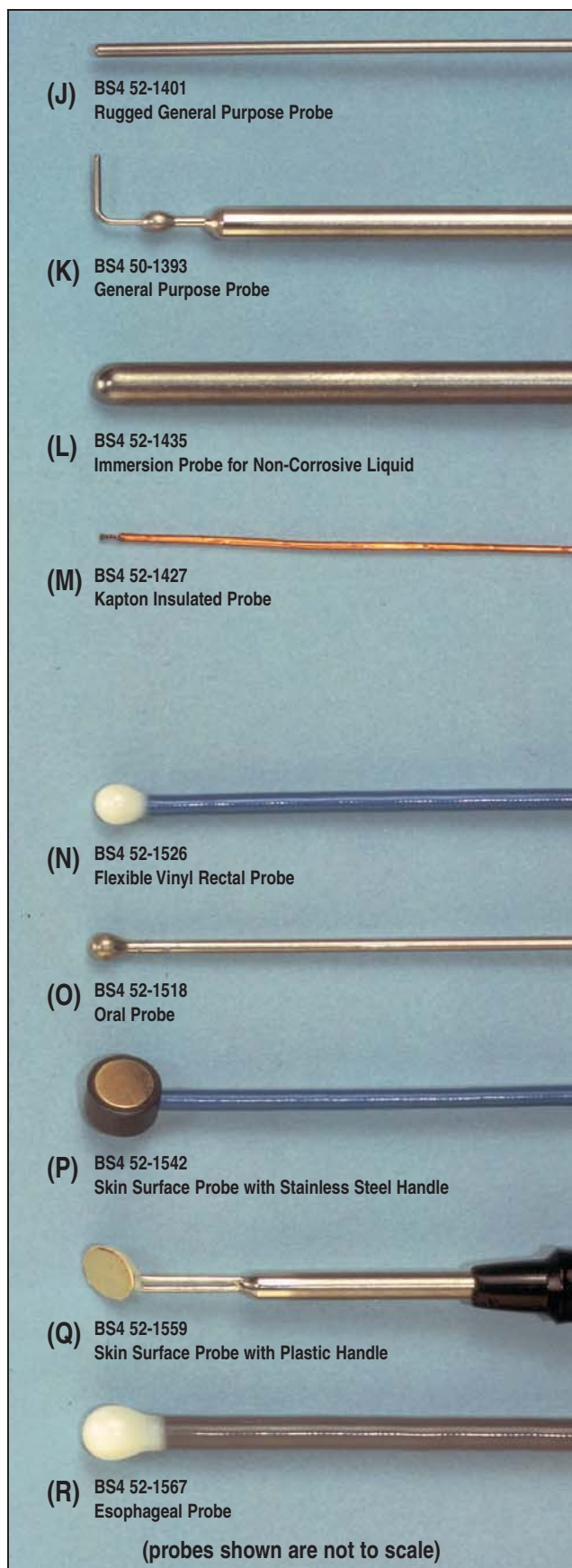
**Catalog No. \$ Product**  
BS4 60-1960 Fast Response Sharp Needle Micro-Probe (I)

Did you know ?

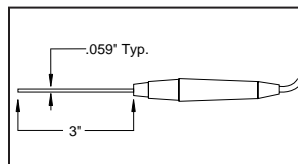
Harvard Apparatus also sells thermistor type thermometer and temperature probes, see pages D26 to D29

# Thermometers and Probes

## Thermocouple Probes



## Rugged General Purpose Probes (J)



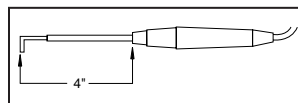
- Time constant 0.5 second

These heavy duty, immersible Probes are for liquids, gases and semi-solids. Not good for surface temperature measurements, see BS4 50-1393 General Purpose Probe below. They have a stainless steel shaft with a plastic handle and 1.5 m (5 ft) lead. Maximum temperature 400°C (752°F). Not isolated. Supplied individually.

### Catalog No. \$ Product

BS4 52-1401	Rugged General Purpose Probe, 7.6 cm (3 in) Shaft (J)
BS4 52-1419	Rugged General Purpose Probe, 22.9 cm (9 in) Shaft

## General Purpose Probe (K)



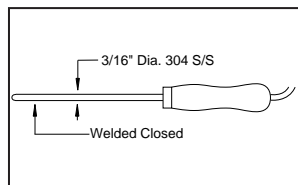
- Time constant 0.15 second

This immersible Probe is ideal for surface temperature measurements of solids; also for semi-solids, liquids and gases. The 0.51 mm (0.02 in) tip is bent at a right angle to the Probe shaft to facilitate accurate surface measurements. The Probe has a 102 mm (4 in) welded stainless steel shaft with a plastic handle and 1.5 m (5 ft) lead. Maximum temperature 240°C (464°F). Not isolated. Supplied individually.

### Catalog No. \$ Product

BS4 52-1393	General Purpose Probe (K)
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## Immersion Probes (L)



- #304 stainless steel shaft for non-corrosive liquids
- Teflon-coated #304 stainless steel shaft for corrosive liquids

These liquid Immersion Probes have a welded shaft with wooden handle and 1.5 m (5 ft) lead. The Non-Corrosive Liquid Probes have a 2 second time constant and are not isolated. The Corrosive Liquid Probes have a 3 second time constant and are isolated. Supplied individually.

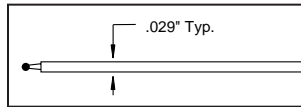
### Immersion Probes

Shaft Length	Non-Corrosive Liquids Max. Temp. 400°C (752°F)	Corrosive Liquids Max. Temp. 150°C (302°F)
30.5 cm (12 in) \$	BS4 52-1435 (L)	BS4 52-1468
61 cm (24 in) \$	BS4 52-1443	BS4 52-1476
91.4 cm (36 in) \$	BS4 52-1450	BS4 52-1484



## Thermocouple Probes

### Kapton Insulated Probe (M)

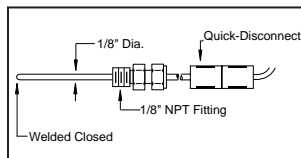


- Time constant 0.01 second

This Probe is for multi-point measurements. The sensor bead is welded to a flexible, 0.73 mm (0.029 in) diameter, 1.5 m (5 ft) lead. The lead is covered with tough Kapton which is a good insulator up to 450°C. Maximum temperature 400°C (752°F). Not isolated. Supplied in a package of 6 Probes.

Catalog No.	\$	Product
BS4 52-1427		Kapton Insulated Probe (M)

### Permanent Installation Probes

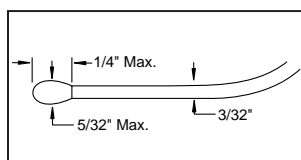


- Time constant 3 seconds

These Probes are for permanent installation. The 3.2 mm (1/8 in) diameter Iconel shaft can be formed to fit inside or outside any diameter pipe. The ungrounded sensor is supplied complete with a 3.2 mm (1/8 in) BS4T compression fitting, quick-disconnect plugs and sockets and a 3 m (10 ft) lead. Maximum temperature 400°C (752°F). Not isolated. Supplied individually.

Catalog No.	\$	Product
BS4 52-1492		Permanent Installation Probes, 30.5 cm (12 in) Shaft
BS4 52-7560		Permanent Installation Probes, 15.2 cm (6 in) Shaft (not in photograph)

### Flexible Vinyl Rectal Probe (N)



- Time constant 5 seconds

For rabbits and larger animals. This Probe is flexible, vinyl covered and soft-tipped to alleviate discomfort. The 4 mm (5/32 in) diameter by 6.4 mm (1/4 in) long Probe tip is mounted on a 2.4 mm (3/32 in) diameter by 1.5 m (5 ft) long lead. Maximum temperature 90°C (194°F). Isolated. Supplied individually.

Catalog No.	\$	Product
BS4 52-1526		Flexible Vinyl Rectal Probe (N)

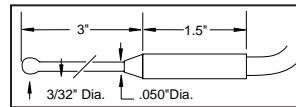
#### Accessories

BS4 52-1534		Disposable Sheaths, pkg. of 1,000
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All Probes Are For use with :

Portable Thermocouple Thermometer, see page D17.  
Thermocouple Monitoring Thermometer, see page D18.  
Thermocouple Temperature Controller, see page D19.  
TCAT2 System, see pages D20 and D21.

### Oral Probe (O)

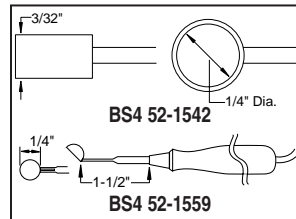


- Time constant 0.8 second

This ball-tipped Probe is for fast oral readings. It has a 76 mm (3 in) stainless steel shaft and handle with a 1.5 m (5 ft) lead. The ball tip is 2.4 mm (3/32 in). Maximum temperature 125°C (257°F). Not isolated. Supplied individually.

Catalog No.	\$	Product
BS4 52-1518		Oral Probe (O)
BS4 52-1534		Disposable Sheaths, Pkg. of 1,000

### Skin Surface Probes (P, Q)

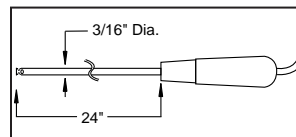


- Time constant 0.15 second

Ideal for skin surface temperature measurements. The non-allergenic, 6.4 mm (1/4 in) diameter sensor disk is 10Kt. gold for superior conductivity. The disk is 2.4 mm (3/32 in) thick and is taped on. Maximum temperature 90°C (194°F). Supplied individually. Lead length 1.5 m (5 ft).

Catalog No.	\$	Product
BS4 52-1542		Skin Surface Probes with Stainless Steel Handle; Not Isolated (P)
BS4 52-1559		Skin Surface Probes with Plastic Handle; Isolated (Q)

### Air and Gas Probe

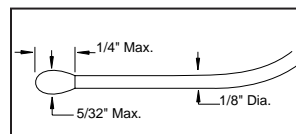


- Time constant 0.05 second

This Probe is for instant readings of temperature gradients in environmental chambers, freezer boxes, etc. It has a 4.8 mm (3/16 in) diameter by 610 mm (24 in) long #304 stainless steel shaft with a wooden handle and 1.5 m (5 ft) lead. Temperature range is from -200° to +200°C (-328° to +392°F). Supplied individually.

Catalog No.	\$	Product
BS4 52-1500		Air and Gas Probe (not in photograph)

### Esophageal Probe (R)



- Time constant 0.05 second

This flexible, vinyl covered Probe has a 4 mm (5/32 in) diameter by 6.4 mm (1/4 in) long tip mounted on a 3.2 mm (1/8 in) diameter by 1.5 m (5 ft) lead. Maximum temperature 90°C (194°F). Isolated. Supplied individually.

Catalog No.	\$	Product
BS4 52-1567		Esophageal Probe (R)

# Thermometers and Probes

## **NEW** Non-Contact InfraRed Thermometer



- Excellent for verifying temperature in a non-contact manner
- Use for solvents, hot plates, and animal temperatures.
- Measures to 600°F without contact
- Large LCD display with backlighting
- Built-in laser pointer to improve aim
- °F/°C switchable
- Fixed emissivity (0.95) covers 90% of surface applications
- Narrow field of view
- Audible and visible overrange indicators
- Automatic Data Hold
- Pocket size meter
- Comes with 9V battery

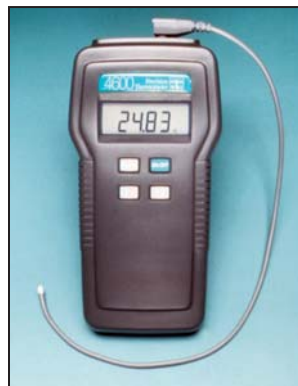
This is a non-contact InfraRed Thermometer with laser pointer which measures up to 600°F. It is ideal for measuring surface temperature of objects which are difficult to reach, unsafe to contact, or you do not wish to disturb.

### Specifications

Range	0 to 600°F or -20 to 320°C
Accuracy	±2% of reading or ±4°F/2°C (whichever is greater)
Resolution	1°F/°C
Emissivity	0.95 fixed
Display	Backlit LCD 2000
Power	9V battery
Field of view	6:1 (at 6 inch distance measure 1 in target)
Dimensions	170 x 44 x 40 mm (6.7 x 1.7 x 1.6 in)
Weight	200 g (6.4 oz)

Catalog No.	\$	Product
BS4 72-5270		IR Thermometer

## Precision Thermometer



- High precision
- Convenient, handheld thermometer with the accuracy of YSI
- Uses standard YSI 400 series probes
- Battery powered

**BS4 61-0223 Precision Thermometer** shown with 400 series rectal probe (not included, see page D28)

Has NIST traceability. Features temperature readout in either °F or °C, RS232 port, menu selectable hold, min/max, DT and store modes. SoftTemp Data Acquisition Software is available.

### Specifications

Accuracy	±0.115°C from 0 to 50°C
Range	-40 to +150°C
Resolution	0.01°C
Reading Rate	2 readings per second
Display	4.5 digit LCD
Battery Life	20 hours typical (9V alkaline cell included)
Battery Indicator	Flashing battery symbol when less than 5% of life remains
Temperature Units	°F or °C selectable from keypad
Auto Shutoff	10 minutes with battery power and no RS232 communications
Mating Connector	1/4" phone jack
Operating Conditions	10 to 40°C; 0 to 85% RH
Dimensions, H x W x D	21 x 10.2 x 3.8 cm (8.25 x 4.0 x 1.5 in)

Catalog No.	\$	Product
BS4 61-0223		Precision Thermometer
BS4 61-0293		RS-232 Cable
BS4 61-0294		Carrying Case
BS4 61-0295		Tripod
BS4 61-0296		Battery Adaptor

### Thermistors

Harvard Apparatus offers the Reusable YSI 400 Series Thermistor Probes, see pages D28 and D29.

These Probes are for use directly with the following:

- BS4 60-1906 Thermistor Thermometer, see next page
- BS4 61-0223 Precision Thermometer, see above

The Reusable Temperature Probes may be sterilized by ethylene oxide or disinfected with 3% hydrogen peroxide solution, 70% isopropanol solution or activated dialdehyde solution.

## Thermistor Thermometer



This Thermistor Thermometer has two large LCD displays for easy viewing and membrane type push buttons turning the Thermometer ON/OFF, selecting °C or °F, setting high and low temperature alarm points, and temporarily quieting the audible alarm.

Each channel provides user-selectable high and low temperature set points. The high and low points are displayed alternatively on the LCD for each channel. When the temperature rises above or falls below the set points a warning icon flashes and an audible alarm sounds. This audible alarm can be temporarily silenced for 1 minute.

This Thermometer accepts all of the Reusable Thermistor Temperature Probes on the following pages. A rotating stand permits easy positioning of the Thermometer on a tabletop. A special Mounting Bracket offered as an accessory allows the Thermometer to be mounted on a pole or cart.

Extension Cables which have a male 400 Series phone jack connector at one end and a female 400 Series phone jack connector at the other end are available as accessories in three lengths to increase the distance between the 400 Series probe site and the Thermistor Thermometer.

- Two displays permit simultaneous monitoring of two temperatures
- For use with the 400 Series Reusable Thermistor Probes, see pages D28 and D29

### Specifications

#### Temperature:

Units	°C or °F, selectable
Range	0° to 50°C (32° to 122°F)
Resolution	0.02°C (0.03°F)

#### Accuracy Over Entire Biological Range From 32° to 42°C (89.9° to 107.6°F):

Instrument Only	±0.1°C (±0.2°F)
With YSI Probes	±0.2°C (±0.3°F)

#### Alarms:

Battery Power	Low battery display when 6 to 12 hrs remain
Hi and Low	Flashing display and audible beep indicate a temperature beyond the selected set points; may be muted for 1 min
Temperature	

Power 6 'C' cell alkaline batteries

Battery Life Minimum 900 hrs

Dimensions, H x W x D 11.4 x 21.6 x 7.6 cm (4-1/2 x 8-1/2 x 3 in)

Displays LCD, 4-1/2 digits, 12.7 mm (1/2 in) high, displays °C

Weight 0.95 kg (2.1 lb)

### Catalog No. \$ Product

BS4 60-1906		Thermistor Thermometer
BS4 60-1907		Pole Mounting Bracket for mounting the Thermistor Thermometer on a pole
BS4 59-9816		Extension Cable, 3.1 m (10 ft)
BS4 59-9817		Extension Cable, 7.6 m (25 ft)
BS4 59-9818		Extension Cable, 15.2 m (50 ft)

*For Thermistor Probes  
see pages D28 and D29.*

# Thermometers and Probes

## YSI 400 Series Thermistor Probes



(A) BS4 59-9807\* Flexible Vinyl Rectal/Esophageal Probe

(B) BS4 59-9808\* Small Flexible Vinyl Rectal/Esophageal Probe

(C) BS4 59-9809 Small Semi-Flexible Nylon Rectal/Oral Probe

(D) BS4 60-2318 Surface Probe with Stainless Steel Shaft

(E) BS4 59-9810 General Purpose Immersion Probes, 4 mm

(F) BS4 59-9811 General Purpose Immersion Probes, 3.2 mm

(G) BS4 60-2317 Permanent Installation Temperature Probes

(H) BS4 59-9812 Large Surface Probe, Vinyl

(I) BS4 60-2315 Large Surface Probe, Teflon Coated

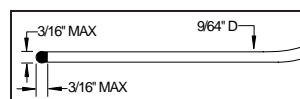
(J) BS4 59-9814 Small Surface Probe

(K) BS4 59-9819 Air and Gas Probe

\*Tip is now made of grey molded PVC and is intergral to the cable.

All Probes in the standard 400 Series are interchangeable without loss of accuracy. Interchangeability tolerance is  $\pm 0.1^{\circ}\text{C}$  over the biological range from  $32^{\circ}$  to  $42^{\circ}\text{C}$  ( $89.6^{\circ}$  to  $107.6^{\circ}\text{F}$ ). They have a temperature range from  $-40^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$  ( $-40^{\circ}$  to  $+302^{\circ}\text{F}$ ), except where otherwise indicated, and have a 3.1 m (10 ft) lead terminating in a 400 Series phone jack connector. For Extension Cables, see page D27. For Adhesive Patches for securing Skin Surface Probes to the skin, see page D29.

### Flexible Vinyl Rectal/Esophageal Probe (A)



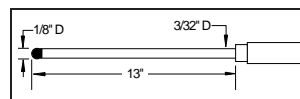
- Time constant 7 seconds

This Probe is flexible and vinyl covered to alleviate discomfort. The 4.8 mm (3/16 in) diameter by 7.9 mm (5/16 in) long Probe tip is mounted on a 3.6 mm (0.14 in) diameter lead. Maximum temperature  $100^{\circ}\text{C}$  ( $212^{\circ}\text{F}$ ). Isolated. Supplied individually.

### Catalog No. \$ Product

BS4 59-9807 Flexible Vinyl Rectal/Esophageal Probe, pkg. of 1 (A)

### Small Flexible Vinyl Rectal/Esophageal Probe (B)



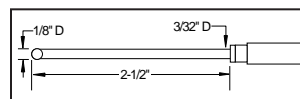
- Time constant 3.2 seconds

The 3.2 mm (1/8 in) diameter Probe tip is mounted on the end of a 33 cm (13 in) flexible vinyl tube. Maximum temperature  $100^{\circ}\text{C}$  ( $212^{\circ}\text{F}$ ). Isolated.

### Catalog No. \$ Product

BS4 59-9808\* Small Flexible Vinyl Rectal/Esophageal Probe, pkg. of 1 (B)

### Small Semi-Flexible Nylon Rectal/Oral Probe (C)



- Time constant 1.4 seconds

The 3.2 mm (1/8 in) diameter Probe tip is mounted on the end of a 2.4 mm (0.09 in) diameter by 63.5 mm (2.5 in) long semi-flexible nylon tube. Maximum temperature  $100^{\circ}\text{C}$  ( $212^{\circ}\text{F}$ ). Isolated.

### Catalog No. \$ Product

BS4 59-9809 Small Semi-Flexible Nylon Rectal/Oral Probe, pkg. of 1 (C)

### Application Note — Definitions

#### Thermistor

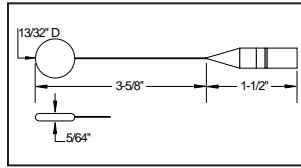
Is a thermally sensitive resistor which exhibits a change in electrical resistance with a change in its temperature.

#### Time Constant

Is defined as the time required to reach 63% of final temperature. An accurate reading is obtained when the reading stops changing, normally 5 to 10 time constants.

## YSI 400 Series Thermistor Probes

### Surface Probe with Stainless Steel Shaft (D)



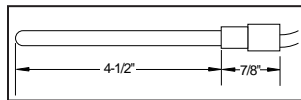
- Time constant 0.6 seconds

Ideal for water baths, skin surface, oral and other flat surface temperature measurements. Also for some air temperature applications. The 10.3 mm (0.41 in) diameter sensor disk has a stainless steel patient side and epoxy back. The 2 mm (0.08 in) thick disk is attached to a 82 mm (3.2 in) stainless steel shaft which is attached to 38.1 mm (1-1/2 in) handle. Maximum temperature 150°C (302°F). Isolated. Supplied individually.

#### Catalog No. \$ Product

BS4 60-2318 Surface Probe with Stainless Steel Shaft (D)

### General Purpose Immersion Probes (E,F)

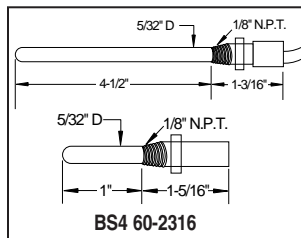


These heavy duty, immersible Probes are for liquids, gases and semi-solids. Not good for surface temperature measurements. The sensor is mounted on the end of a 114 mm (4-1/2 in) long stainless steel shaft. Maximum temperature 150°C (302°F). Isolated. Available in two shaft diameters. Supplied individually.

#### Cat. No. \$ Time Constant Shaft Diameter

BS4 59-9811 2.5 sec 3.2 mm (1/8 in) (F)  
BS4 59-9810 3.4 sec 4 mm (3/16 in) (E)

### Permanent Installation Temperature Probes (G)



- Time constant 3.4 seconds

These Probes are for permanent installation in pipes and closed vessels. The Probe's fittings can withstand 500 p.s.i. The 4 mm (0.16 in) diameter stainless steel shaft is supplied complete with a 3.2 mm (1/8 in) National Pipe Thread compression fitting. The shorter shaft Probe has a detachable lead. Maximum temperature is 150°C (302°F). Not isolated.

#### Catalog No. \$ Product

BS4 60-2316 2.5 cm (1 in), pkg. of 1  
BS4 60-2317 11.4 cm (4-1/2 in), pkg. of 1 (G)

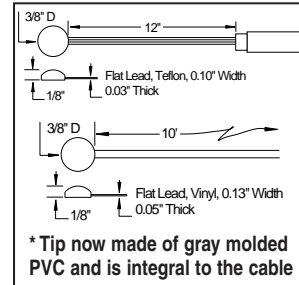
### Adhesive Patches

For holding Skin Surface Temperature Probes securely against skin for good thermal conductivity. Minimizes distortion of Probe readings. Hypo-allergenic medical grade adhesive.

#### Catalog No. \$ Patch Size

BS4 60-1908 Adhesive Patches, 28.6 mm (1-1/8 in), pkg. of 100  
BS4 59-9815 Adhesive Patches, 38 mm (1-1/2 in), pkg. of 100

### Large Surface Probes (H,I)



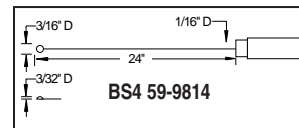
- Time constant 1.1 seconds

Ideal for cuvette, water bath, skin surface and other flat surface temperature measurements. The 9.5 mm (3/8 in) diameter by 3.2 mm (1/8 in) thick sensor disk has a stainless steel patient side and epoxy back. Two Probes are available. The BS4 59-9812 Probe has a flat, vinyl covered 3.1 m (10 ft) lead terminating in a 400 series phone jack connector. The 409A has a flat, 305 mm (12 in) Teflon coated lead connected to a 3.1 m (10 ft) vinyl covered lead with a 400 series phone jack connector.

#### Large Surface Probes

Catalog No.	Maximum Temp.	Cable	Cable Dimensions, W x Thick
BS4 60-2315 \$	150°C (302°F)	Teflon Coated	2.5 x 0.8 mm (0.1 x 0.03 in) (I)
BS4 59-9812 \$	100°C (212°F)	Vinyl	3.4 x 1.3 mm (0.13 x 0.05 in) (H)

### Small Surface Probe (J)



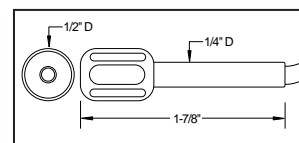
- Time constant 0.3 seconds

Ideal for cuvette, water bath, skin surface and other flat surface temperature measurements. The 4.8 mm (3/16 in) diameter sensor disk has a stainless steel patient side and epoxy back. The 2.4 mm (3/32 in) thick disk is attached to a 61 cm (24 in) Teflon covered wire. Maximum temperature 150°C (302°F). Probe disk is isolated, connector is not isolated. Supplied with a non-detachable lead. Isolated. Supplied individually.

#### Catalog No. \$ Product

BS4 59-9814 Small Surface Probe with Non-Detachable Lead (J)

### Air and Gas Probe (K)



- Time constant 10 seconds

This Probe is for temperature measurements in test rooms, incubators, environmental chambers, gas streams, etc. It has a 12.7 mm (1/2 in) diameter stainless steel cage around the epoxy encapsulated thermistor. Length from the tip to the shaft end is 47.6 mm (1-7/8 in). Maximum temperature 150°C (302°F). Isolated. Supplied individually.

#### Catalog No. \$ Product

BS4 59-9819 Air and Gas Probe (K)

# Temperature Control Products

## **NEW** Homeothermic Blanket Systems



### Simple and Easy

Wrap the animal tightly in the heating blanket, using tape if necessary. Insert the temperature-sensing probe rectally, and set the required temperature by means of the control on the front panel.

Should the animal's core temperature fall, power is automatically increased to the blanket; conversely, power will automatically reduce if the animal's temperature rises. During this process the animal's temperature is continuously displayed on a front panel LCD display.

This homeothermic blanket system consists of three parts: a probe, a control unit, and a blanket. The flexible probe is a precision thermistor encapsulated in a bead of epoxy resin at the top of a flexible hollow plastic tube. The 2 mm diameter probe is 100 mm (4 in) long and has a 2 m (6 ft) long cable with plug for attachment to the control unit. It is suitable for a wide range of laboratory animals from adult mice to large dogs.

The rigid probe is a stainless steel shaft with a diameter of 1.6 mm. The shaft attaches to a 2 m (6 ft) cable with a plug that connects to the control unit. It is suitable for use with mice, rodents, rabbits, cats and dogs. The output of the temperature sensing probe is used by the control unit to proportionally control the regulated, low-voltage DC supply to the blanket. This method of control alleviates the interference problems associated with that of non-proportional control, such as switching contacts, thus enabling the system to be used in conjunction with high-gain recording systems.

The control temperature is preset at 37°C (98.6°F) at the factory, but can be adjusted within the range of 35° to 40°C (95° to 104°F) by means of a control on the front panel. An LCD display on the control unit continuously displays the probe temperature. A horizontal LED bar graph indicates the level of power being delivered to the blanket. When core temperature is substantially below the desired temperature the bar graph will indicate maximum power being delivered.

The blanket consists of a highly flexible insulated heating element, which can be folded without risking internal damage. It is electrically floating, with respect to ground however, one end of the heating element can be grounded by a switch on the front panel of the control unit. The system operates satisfactorily whether or not the blanket is grounded. Special circuitry eliminates electrical noise thus permitting sensitive recordings.

- Animal body temperature control at its simplest — feedback loop maintains animal's temperature
- Versatile — offered in three sizes — for adult mice, rats, cats, dogs or similar sized animals
- Select from rigid or flexible probes:
  - Rigid probe for use with mice to larger animals
  - Flexible probe for use with mice to larger animals (not suitable for mice)
- New light weight package
- Improved electronic circuitry
- Suitable with high gain recording equipment
- Displays actual body temperature on Control Unit from 35° to 40°C (95° to 104°F)

Blankets are available in three sizes:

- **Small Blanket:** Measures 15 x 20 cm (6 x 8 in) and is suitable for rodents
- **Medium Blanket:** Measures 45 x 70 cm (18 x 27 in) and is suitable for rabbits and cats
- **Large Blanket:** Measures 60 x 90 cm (24 x 36 in) and is suitable for dogs

The blanket is supplied with a 2 m (6 ft) cable attached to a plug for connection to the control unit.

This system enables the researcher to maintain an animal's temperature within the preset range of 35° to 40°C (95° to 104°F). Each system is supplied complete with control unit, temperature probe, blanket and plastic cover for blanket.

### Complete Homeothermic Blanket System

Blanket Size	With Rigid Probe		With Flexible Probe	
	115 VAC, 60 Hz	230 VAC, 50 Hz	115 VAC, 60 Hz	230 VAC, 50 Hz
Small \$	BS4 50-7053-R	BS4 50-7061-R	BS4 50-7053-F	BS4 50-7061-F
Medium \$	BS4 50-7079-R	BS4 50-7087-R	BS4 50-7079-F	BS4 50-7087-F
Large \$	BS4 50-7095-R	BS4 50-7103-R	BS4 50-7095-F	BS4 50-7103-F

### Catalog No. \$ Product

BS4 50-7110	\$	Rigid Probe for all Systems, 1.6 mm
BS4 50-7145	\$	Flexible Probe for all Systems, 2 mm
BS4 50-7160	\$	Small Homeothermic Blanket Only*, 20 Watts
BS4 50-7186	\$	Medium Homeothermic Blanket Only*, 30 Watts
BS4 50-7202	\$	Large Homeothermic Blanket Only*, 50 Watts
BS4 50-7178	\$	Spare Plastic Cover for Small Blankets
BS4 50-7194	\$	Spare Plastic Cover for Medium Blankets
BS4 50-7210	\$	Spare Plastic Cover for Large Blankets

\*Note: Does not include plastic cover.

# Temperature Control Products

## Heat Therapy Pump



- Provides a temperature controlled flow of water
- Small size is ideal for laboratories
- For use with the Temperature Therapy Pads listed to right

This Pump provides the source of warm water for use with the Temperature Therapy Pads. Its small size is ideal for any laboratory setting. It can be used with any of the Temperature Therapy Pads listed to the right. The Pump is available alone or with a single

BS4 60-3419 Therapy Polymer Pad. The tubing that connects the pump to the therapy pads is 3m (10 ft) long. Select from standard plastic click-tight connectors or the new, more universal, metal Colder connectors.

A pump stand with 4 casters and a basket, which permits easy movement of the pump from animal to animal or lab to lab, is available separately.

### Specifications

Temperature Settings	85° to 107°F
Accuracy	±2°F
Flow Rate	9 to 14 gallons/hr
Dimensions, H x W x D	16.2 x 20.6 x 14.3 cm (6.25 x 8.5 x 5.6 in)
Weight	2.6 kg (5 lb, 2 oz)

Catalog No.	\$	Product
BS4 60-3411		Heat Therapy Pump with Click-Tight Connectors, 120 VAC, 60 Hz
BS4 72-4687		Heat Therapy Pump with Click-Tight Connectors, 220 VAC, 50 Hz
BS4 72-2580		Heat Therapy Pump with Colder Connectors, 120 VAC, 60 Hz
BS4 60-3412		Heat Therapy Pump, 120 VAC (BS4 60-3411) with a single Temperature Therapy Pad 38.1 x 55.9 cm, (15 x 22 in) (see BS4 60-3416 for description of pad)
BS4 60-3413		Heat Therapy Pump Stand with 4 Casters and Basket

## Temperature Therapy Pads



- Ideal for maintaining body heat after surgery
- Provides localized warming
- Both disposable and reusable pads available

These Temperature Therapy Pads provide localized warming during procedures, as well as maintaining body temperature after surgery. They work with the Heat Therapy Pump listed to the left.

Therapy pads are available in various sizes with a choice of materials. Select from standard plastic click-tight connectors or the new, more universal, metal Colder connectors. They work well with the Small Animal Surgery Tray, see page D6.

Catalog No.	\$	Product
BS4 60-3414		Disposable Polymer/Fabric Temperature Therapy Pad with Click-Tight Connectors, 7.6 x 58.4 cm (3 x 23 in), pkg. of 10
BS4 60-3415		Disposable Polymer/Fabric Temperature Therapy Pad with Click-Tight Connectors, 33 x 45.7 cm (13 x 18 in), pkg. of 20
BS4 72-2582		Disposable Polymer/Fabric Temperature Therapy Pad with Colder Connectors, 33 x 45.7 cm (13 x 18 in), pkg. of 10
BS4 60-3416		Disposable Polymer/Fabric Temperature Therapy Pad with Click-Tight Connectors, 38.1 x 55.9 cm (15 x 22 in), pkg. of 20
BS4 72-2583		Disposable Polymer/Fabric Temperature Therapy Pad with Colder Connectors, 38.1 x 55.9 cm (15 x 22 in), pkg. of 10
BS4 60-3417		Disposable Polymer/Fabric Temperature Therapy Pad with Click-Tight Connectors, 45.7 x 66 cm (18 x 26 in), pkg. of 10
BS4 72-2584		Disposable Polymer/Fabric Temperature Therapy Pad with Colder Connectors, 45.7 x 66 cm (18 x 26 in), pkg. of 10
BS4 60-3420		Reusable Heavy Duty Pliable All Polymer Pad with Click-Tight Connectors, 38.1 x 55.9 cm (15 x 22 in), pkg. of 1

*For Small Animal Surgery Tray, see page D6.*

# Temperature Control Products

## **NEW** IMS Thermopad MK II



They are constructed of a clinical white ABS Plastic with indicator light. There is a thermal cut-off built into the unit. This new style Thermopad replaces the MK I version. A number of improvements have been incorporated into the design. An added feature is the fluid retaining surround (not available on the 155mm square model).

All units are CE marked and all (except the 155mm model) can be used with the K Temp. (Please note that a specific connector is required if used for the K Temp). It is ideal for whelping and kitting, providing comfort and security for both mother and young. Sick animals will find it beneficial in their return to normal health. In use it must be covered with, for example, Vetbed or bedding but with a means of ventilation. If used as a means of maintaining body heat during surgery where direct contact with the pad is required then the temperature of both the animal and the surface of the pad must be regulated with the K-Temp, see BS4 34-0497 to the right.

## The K-Temp Heated Pad Control Unit



Heated pads are available in a variety of shapes, sizes and wattage's to accommodate the many demands made upon them. A temperature control unit is an essential precaution to monitor the animal's body temperature and ensure it is maintained at the desired level. Hot spots can occur on heated pads due to a build up of heat at points of maximum contact or where fur is very dense – heat is not lost from these areas as quickly as from other parts of the pad and can cause overheating; this needs to be controlled.

IMS has designed a temperature control unit to do exactly this. The K-temp can be used with most types of 240V heated pads, which plug directly into the unit. Operation of the K-Temp is straightforward. The unit is connected to a 240V mains supply, and the heated pad plugged into the unit. The desired maximum and minimum readings are then set for rectal temperature and the animal/pad interface.

The anesthetized animal is placed on the pad. A rectal probe is inserted and the interface probe positioned beneath the animal at the point of maximum contact. The K-Temp has two LCD displays which display the rectal and interface temperatures (accurate to within  $\pm 0.2^{\circ}\text{C}$ ). Should they move out of the pre-set ranges, audible and visible alarms are activated.

The unit can also be programmed to switch the heating pad on or off if the rectal temperature falls below or rises above the limit. Likewise, if the interface temperature rises above the pre-set limit the pad is automatically switched off, regardless of rectal temperature. This prevents the build up of localised hot spots under the animal.

The background heating rate can be manually set to within 0 to 75% of the full rate when the probe temperatures are within the programmed limits to give fine control of body temperature.

Internal power supplies are mains derived to eliminate false readings due to battery wear, although a battery is used to retain stored limit data.

Notes: The K-Temp is supplied with an interface and a small sized rectal probe. Large probes are available upon request. If ordering spare probes for K-Temp at a later date, please indicate serial number of unit to be used with probe for calibration purposes.

Please make sure the pad you choose is powerful enough to supply the heat required.

The K-Temp has an IEC 3 pin socket (250V 5A) and compatible plugs must be fitted to the heated pad lead. A plug is supplied with each K-Temp unit. Full working instructions are provided with each unit.

Catalog No.	\$	Model	Product
BS4 34-0925		9.4.0	Thermo Pad, Type 2, 380 x 380mm, 22 Watts, 115V
BS4 34-0489		9.4.0	Thermo Pad, Type 2, 380 x 380mm, 22 Watts, 230V
BS4 34-0926		9.4.1	Thermo Pad, Type 4, 380 x 380mm, 38 Watts, 115V
BS4 34-0490		9.4.1	Thermo Pad, Type 4, 380 x 380mm, 38 Watts, 230V
BS4 34-0927		9.13.0	Thermo Pad, Type 1, 375 x 185mm, 10 Watts, 115V
BS4 34-0503		9.13.0	Thermo Pad, Type 1, 375 x 185mm, 10 Watts, 230V
BS4 34-0928		9.13.1	Thermo Pad, Type 3, 375 x 185mm, 16 Watts, 115V
BS4 34-0504		9.13.1	Thermo Pad, Type 3, 375 x 185mm, 16 Watts, 230V
BS4 34-0929		9.13.2	Thermo Pad, Type 5, 155 x 155mm, 10 Watts, 115V
BS4 34-0505		9.13.2	Thermo Pad, Type 5, 155 x 155mm, 10 Watts, 230V
BS4 34-0502		9.10.0	Connector Fitting for use with K Temp

Catalog No.	\$	Model	Product
BS4 34-0497		9.8.0	K-Temp Heated Pad Control Unit
BS4 34-0498		9.8.1	Spare Probe

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11,000 Specialty Products to Enhance Your Bioresearch



## **NEW** IMS Warm Air Chamber Systems

### Warm Air Generator

The "Enviowarm" can be used when supplementary warmth is required for animals undergoing treatment and also post operatively. The "Enviowarm" System is based on a warm air generator, which supplies warm air, via tubing, to the animals housing, such as a recovery cage.

The temperature within the chamber is controlled by placing a thermocouple in the chamber and inputting the temperature requirement on the LCD on the generator.

An advanced feature of the system is that the temperature is controlled by a CAL 3200 temperature controller with a logic chip, which allows the temperature to remain constant by adjusting the power during frequent opening of the chamber.

Catalog No.	\$	Model	Product
BS4 34-0931		9.17.0	Warm Air Generator, 115V
BS4 34-0509		9.17.0	Warm Air Generator, 230V
BS4 34-0513		9.17.4	Adaptor & Tube, 1 meter

### Warm Air Chamber (Type 1)

All of these chambers are used in conjunction with a warm air generator BS4 34-0509 or BS4 34-0931. They are connected using a 2" reinforced plastic tube. The temperature probe is located within the chamber. Four chamber types are available.

Chamber Type 1A has a two vertically sliding located at each end of the chamber. It can accommodate 1 large or 2 medium cages. Chamber Type 1B can be used without cages. In this chamber the vertical doors are replaced with two stable style doors, which will contain the animals when the top part is opened. Chamber Type 2 has two doors that are top opening. It is a single chamber. Chamber Type 3 has four doors that are top opening and has four sections.

### Specifications

#### Dimensions, L x W x H:

Chamber Type 1	660 x 370 x 315mm (26 x 14.6 x 12.4 in)
Chamber Type 2	370 x 260 x 260mm (14.6 x 10.2 x 10.2 in)
Chamber Type 3	370 x 260 x 260mm (14.6 x 10.2 x 10.2 in)

Catalog No.	\$	Model	Product
BS4 34-0510		9.17.1	Warm Air Chamber Type 1A
BS4 34-0514		9.17.6	Warm Air Chamber Type 1B
BS4 34-0511		9.17.2	Warm Air Chamber Type 2
BS4 34-0512		9.17.3	Warm Air Chamber Type 3

## **NEW** The IMS "Vetcare" Heated Chamber System



(Recovery Unit and Operating Pad) The Vetcare unit has been developed to provide supplementary heat to animals whenever required such as during recovery from anesthesia. It can also be used as an incubator. All components are purchased separately.

### Chamber Recovery Unit

The chamber has a green acrylic base in which to place the animals and bedding as required. The top is clear acrylic and has a ventilation disc to control the environment.

### Vetcare Heated Pad

The new lightweight heated Vetcare Heat Pad surface is clear anodized aluminum, bonded to ABS housing. The pad is detachable from the control box to assist with storage and cleaning. The sensor for the thermostat is located on the element and therefore the pad can be completely covered without overheating.

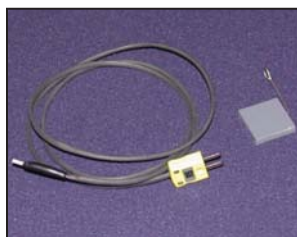
### Control Unit

The temperature can be adjusted via an electronic thermostat between approximately 16°C and 45°C.

### Specifications

Chamber Dimensions Base	160 x 305 x 425mm (6.3 x 12 x 16.7 in)
Overall	305 x 305 x 425mm (12 x 12 x 16.7 in)
Heated Pad Dimensions	540 x 320mm (21.3 x 81.3 in)

Catalog No.	\$	Model	Product
BS4 34-0930		9.14.0	Control Unit for Heated Chamber System, 115V
BS4 34-0506		9.14.0	Control Unit for Heated Chamber System, 230V
BS4 34-0507		9.15.0	Vetcare Heated Pad
BS4 34-0508		9.16.0	Chamber



### Spare Enviowarm Probe

This temperature sensing thermocouple probe is supplied with cable and fitting instructions. Please quote the serial number of the control box with which it is to be used.

Catalog No.	\$	Model	Product
BS4 34-0515		9.18.0	Spare Enviowarm Probe

## **NEW** Small Animal Recovery Chamber/Warming Cabinet



Designed specifically as a post-operative recovery chamber for small animals. This unit can also be adapted for birds and as well as for fluid warming cabinet. The casing is ABS plastic and has a clear door manufactured from Perspex. Optional

dividers can be added to create two compartments.

The operating temperature of the sensor is adjustable from approx. 16°C to 45°C. The unit can be boosted with fan assistance if required. Temperature is indicated on a digital display. There is a clear vertical panel to observe the animals.

### Small Animal Recovery

The unit is used in a horizontal position. Animals can be placed directly inside or a small type cage can be placed inside with bedding and water bottle for usage over a longer period.

### Small Avian Recovery/Hospitalization Cabinet

This is the same unit just oriented in a vertical position. It has the same operating functions for birds as for small animals. The clear panel door will support a food holder and/or a perch if required. Oxygen or humidity supply can be fed through the vent holes in the door if required.

### Specifications

Dimensions, H x W x D:	
External Overall	49 x 33 x 27cm (19.3 x 13 x 10.6 in)
Internal Overall	38 x 27 x 21cm (15 x 10.6 x 8.3 in)

Catalog No.	\$	Model	Product
BS4 34-0932		9.19.0	Small Animal Recovery Chamber/Warming Cabinet, 115V
BS4 34-0516		9.19.0	Small Animal Recovery Chamber/Warming Cabinet, 230V
BS4 34-0934		9.19.2	Divider (Creates 2 Compartments within Warming Chamber)

## **NEW** Fluid Warming Cabinet

This unit is manufactured to EN 601-1 1988. The cabinet has an 'overheat' safety device and fault test circuit built in. The unit can be used for warming fluids and infusion bags. In both medical and veterinary practices this cabinet is ideal for busy surgeries.

Maximum fluid capacity is 8 liters (infusion bags).

Catalog No.	\$	Model	Product
BS4 34-0933		9.19.1	Fluid Warming Cabinet, 115V
BS4 34-0517		9.19.1	Fluid Warming Cabinet, 230V

## Oxygen Therapy Unit



- For animals requiring aerosol medication or humidified dry therapy gases
- Low cost oxygen therapy system with maximum effectiveness

This Oxygen Therapy Unit is available in two sizes and is supplied complete with a mobile heating/cooling chamber, hydrometer/thermometer and humidifier.

The stainless steel mobile kennel is lined on the top, bottom and sides with sound-deadening insulation and rolls easily on large 12.7 cm (5 in) casters, two of which have brakes.

The 6.35 mm (1/4 in) thick Plexiglas door has a 20.3 x 27.6 x 11.4 cm (8 x 10-1/2 x 4-1/2 in) heating/cooling chamber that holds ice or heated water and provides temperature control of the gas or nebulized solutions that are supplied to the kennel.

A hygrometer/thermometer mounted on the inside of the door allows monitoring of temperature and humidity without opening the door.

Oxygen Therapy Unit		
	Small	Large
Dimensions, H x W x D	94 x 103.5 x 63.9 cm (37 x 40-3/4 x 24-3/4 in)	94 x 103.5 x 78.1 cm (37 x 40-3/4 x 30-3/4 in)
Weight	43.1 kg (95 lb)	47.7 kg (105 lb)
Catalog No.	BS4 59-8843	BS4 59-8844
\$		

## Heat Packs, Thermal Barrier and Absorbant Sheets



### Instant Heat Packs

- Non-toxic solution
- For use in surgical recovery
- Moist heat with terry pouch
- Reuse up to 150 times
- Economical — can be recharged multiple times by boiling

These heat packs combine a non-toxic and environmentally safe salt solution with a patented “trigger disk” in a vinyl enclosure. Flexing the disk activates the heat pack by triggering the solution to crystallize. This exothermic reaction peaks at 130°F within 5 seconds and maintains this temperature for approximately 30 to 90 minutes,

depending on the size of pack and the environment. Heat packs can easily be “recharged” for repeated use by boiling, which returns the solution to a fluid state. With proper care they can be reused approximately 150 times.

Four sizes of heat packs are available. The small size is ideal for small animal surgical recovery, raising veins or warming small areas. The medium, large and extra-large packs can be used for maintaining body temperature during surgical procedures, surgical recovery and as a temporary incubator for neonates. The medium, large and extra-large sizes are also provided with a terry pouch with Velcro straps for securing. This pouch can be dampened when the application of moist heat is needed or it can be used for comfort and fastening.

Catalog No.	\$	Product	Dimensions
BS4 59-9402		Small Heat Pack, pkg. of 6	7.6 x 10.2 cm (3 x 4 in)
BS4 72-2221		Medium Heat Pack with Terry Pouch, pkg. of 1	10.2 x 25.4 cm (4 x 10 in)
BS4 72-2222		Large Heat Pack with Terry Pouch, pkg. of 1	17.8 x 17.8 cm (8 x 8 in)
BS4 72-2223		Extra-Large Heat Pack with Terry Pouch, pkg. of 1	17.8 x 45.7 cm (8 x 18 in)



- Pads reach approximately 36°C (97°F) when placed on a steel table in room with an average temperature of 21°C (70°F)
- For use with Large Animal Operating Tables, see pages D8 and D9

### Thermal Barrier

Place these vinyl pads on the operating table beneath the animal to reduce the risk of hypothermia caused by anesthesia and operative shock.

Uniform heat is supplied by 5 cm (2 in) wide low voltage stainless steel heater bands that deliver 10 watts per square foot. The heater bands are encased in a smooth vinyl pad making the pad completely waterproof. There are no ridges or grooves to trap dirt.

Two sizes are available. The small size measures 33 x 58.5 cm (13 x 23 in). The large size measures 33 x 102 cm (13 x 40 in). Each barrier is supplied with its own low voltage transformer with a 2 m (6 ft) grounded power cable and a 2 m (6 ft) lead to the pad. The pad disconnects from the power cable for easy cleaning and storage. The transformer is sealed in strong polybutadiene rubber to protect it from abuse.

Catalog No.	\$	Product
BS4 72-0492		Small Thermal Barrier, 115 VAC, 60 Hz
BS4 72-0493		Small Thermal Barrier, 230 VAC, 50 Hz
BS4 72-0494		Large Thermal Barrier, 115 VAC, 60 Hz
BS4 72-0495		Large Thermal Barrier, 230 VAC, 50 Hz



- Super absorbent
- Inexpensive
- Ideal for post surgery, maintaining body heat during recovery, protecting exam tables, and for cleanup of accidental spills

### CareFRESH® Absorbent Sheets

These disposable sheets are ideal for numerous applications. They help prevent body heat loss after surgery. When used under small animal cages, they help make excrement cleanup fast and easy. They can also be used to protect examination tables. Made from a super absorbent cellulose fiber, they are also ideal for cleaning up various spills and animal accidents.

An individual sheet measures 40.6 x 50.8 cm (16 x 20 in). Select from 6.4 mm (1/4 in) or 3.2 mm (1/8 in) thickness. They are supplied in a plastic bag.

Catalog No.	\$	Product
BS4 63-0201		CareFRESH® Absorbent Sheets, 6.4 mm (1/4 in) thick, 100 sheets
BS4 63-0202		CareFRESH® Absorbent Sheets, 3.2 mm (1/8 in) thick, 200 sheets

# Controlled Environments

## Small Animal Intensive Care Units



BS4 52-4777 Complete Small Intensive Care Unit



BS4 52-4835 Small Warmer Base with BS4 60-4882 Brooder Cover

- Speeds recovery for post-operative animals, convalescents or hypothermic newborns
- For use as an incubator or warming unit
- Available as complete Intensive Care Units or as individual Warmer Bases and Dome Covers
- Available in three sizes: Small (up to 20 lb dog), Medium (up to medium dog/small primate) and Large (up to large dog/medium primate)
- Small Warmer Base with optional Brooder Cover makes an ideal intensive care unit for smaller rodents up to guinea pigs
- Fluid heating method eliminates hot spots and ensures sustainable temperatures within a safe therapeutic range
- Temperature remains constant wherever the animal lies

For post-operative animals, convalescents or hypothermic newborns, these Intensive Care Units provide a warm, moist, and/or oxygen-enriched environment.

Each complete Intensive Care Unit consists of an electrically heated Warmer Base and a transparent plastic Dome Cover.

### Warmer Base

The Warmer Base has a heavy, ABS plastic double wall for circulating warm water between the walls for uniform heat distribution. Conduction of heated water between the inner and outer walls of the sides and base provides uniform heat to the animal.

The Small Warmer Base has one thermostat control and a 90 watt heater. The Medium Warmer Base has two thermostat controls and two 100 watt heaters. The Large Warmer Base has two thermostat controls and one 100 watt and one 150 watt heater.

The Warmer Base, when used alone (without the Dome Cover), is ideal for keeping newborns warm and draft-free.

### Temperature Control

The temperature of the water within the walls is accurately maintained through resistance heating and is thermostatically controlled with a direct water contact sensor. The UL-listed thermostat adjusts the water temperature to any preset point between 25° to 37°C (75° to 100°F) in any room where the temperature is 18°C (65°F) or higher.

Natural thermal convection provides reliable circulation without the need for pumps, fans or motors. Because this Intensive Care Unit is air-vented and water-heated without the use of motors, it is safe to administer anesthetic gases with or without oxygen. A carbon heating element located under the outer shell of the Warmer covers nearly three-quarters of the bottom area, heating the floor and walls of the Warmer simultaneously.

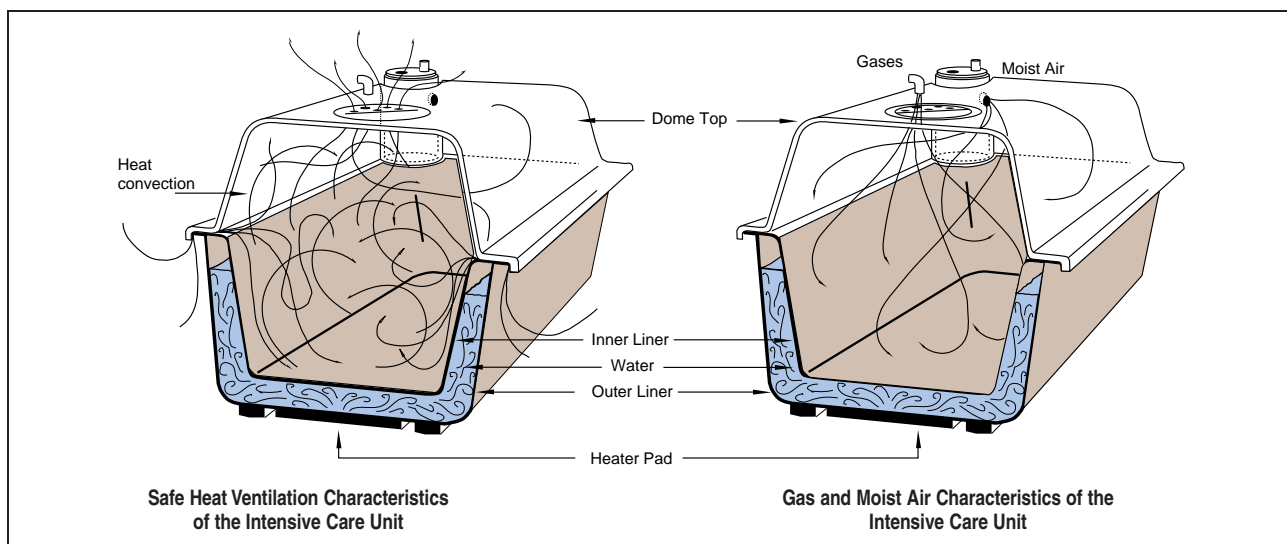
### Dome Cover

The Dome Cover is supplied with the following standard components:

- Canister-style humidifier for humidifying the internal atmosphere with an external air source
- Canister-style nebulizer for nebulizing the internal atmosphere with water particles from 1 to 3 microns
- 9 cc medication nebulizer for delivering an antibiotic aerosol mist with particles from 1 to 3 microns
- Air/oxygen blender
- Temperature and humidity gauge
- Chrome oxygen hose fitting and elbow hose connectors
- 2.1 m (7 ft) medical air supply tubing and 30.5 cm long x 2.5 cm OD (12 x 1 in) corrugated hose
- Water conditioner, fillport cap
- Cage divider

The transparent plastic dome cover permits 360° observation of the animal. It has a hinged top with handports that provide easy access. The fully adjustable ventilation ports control air circulation, internal temperature and venting of CO<sub>2</sub> and other unwanted gases.

## Small Animal Intensive Care Units



The Medium and Large Dome Covers are also supplied with an Oxygen Flowmeter as standard. An Oxygen Flowmeter is available as an accessory for the Small Dome Cover.

A Transport Cart is available as an accessory for the Medium and Large Intensive Care Units. It has four fully articulated, 12.7 cm (5 in) OD casters for easy maneuvering, a top shelf for the Intensive Care Unit and a lower shelf for supplies.

A Metal Cage Cover and Brooder Cover are available as accessories for the Small Warmer Base. The vinyl-covered Metal Cage Cover converts the Small Warmer Base into a portable, heated holding cage. The flat Brooder Cover is available with and without the listed standard components that are supplied with the Small Dome Cover. The Brooder Cover with these standard components converts the Small Warmer Base into an ideal intensive care unit for smaller rodents.

### Specifications

#### Complete Intensive Care Unit (Warmer Base and Dome Cover)

##### Exterior Dimensions, H x W x D:

Small	43.2 x 47 x 68 cm (17 x 18-1/2 x 26-3/4 in)
Medium	67.3 x 75.6 x 84.8 cm (26-1/2 x 29-3/4 x 33-3/8 in)
Large	67.3 x 75.6 x 107.6 cm (26-1/2 x 29-3/4 x 42-3/8 in)

##### Interior Dimensions, H x W x D:

Small	37.5 x 38.1 x 55.9 cm (14-3/4 x 15 x 22 in)
Medium	62.2 x 63.5 x 78.1 cm (24-1/2 x 25 x 30-3/4 in)
Large	62.2 x 63.5 x 101 cm (24-1/2 x 25 x 39-3/4 in)

##### Interior Volume:

Small	0.08 m <sup>3</sup> (2.8 ft <sup>3</sup> )
Medium	0.31 m <sup>3</sup> 10.9 ft <sup>3</sup>
Large	0.40 m <sup>3</sup> (13.7 ft <sup>3</sup> )

#### Warmer Base Only

##### Exterior Dimensions, H x W x D:

Small	19.7 x 45.1 x 67 cm (7-3/4 x 17-3/4 x 26-3/8 in)
Medium	34.3 x 75.6 x 84.5 cm (13-1/2 x 29-3/4 x 33-1/4 in)
Large	33 x 75.6 x 107.6 cm (13 x 29-3/4 x 42-3/8 in)

##### Interior Dimensions, H x W x D:

Small	16.5 x 38.1 x 55.9 cm (6-1/2 x 15 x 22 in)
Medium	30.5 x 63.5 x 78.1 cm (12 x 25 x 30-3/4 in)
Large	30.5 x 63.5 x 101 cm (12 x 25 x 39-3/4 in)

Intensive Care Unit Configuration	Unit Size		
	Small	Medium	Large
<b>Complete Unit</b>			
115 VAC, 60 Hz \$	BS4 52-4777	BS4 52-4793	BS4 52-4819
230 VAC, 50 Hz \$	BS4 52-4785	BS4 52-4801	BS4 52-4827
<b>Warmer Base Only</b>			
115 VAC, 60 Hz \$	BS4 52-4835	BS4 60-4875	BS4 52-4850
230 VAC, 50 Hz \$	BS4 52-4843	BS4 60-4876	BS4 52-4868
<b>Dome Cover Only</b>			
\$	BS4 60-4877	BS4 60-4878	BS4 60-4879

### Catalog No. \$ Product

#### Accessories

BS4 60-4880	Oxygen Flowmeter for Small Intensive Care Unit; this low range Flowmeter attaches to the top of the humidifier; 1/4 to 8 liters/min, 1/4 NPT (female), DISS1240 oxygen connection
BS4 60-4881	Metal Cage Cover for Small Warmer Base Only; converts Warmer Base into a portable, heated holding cage
BS4 60-4882	Brooder Cover with standard components that are supplied with the Small Dome Cover; for Small Warmer Base Only
BS4 60-4883	Brooder Cover without standard components; for Small Warmer Base Only
BS4 60-4884	Medium Transport Cart for Medium Intensive Care Unit; H x W x D, 109.2 x 91.4 x 61 cm (43 x 36 x 24 in)
BS4 60-4885	Large Transport Cart for Large Intensive Care Unit; H x W x D, 109.2 x 106.7 x 61 cm (43 x 42 x 24 in)

## **NEW** SuperVu Surgical Magnification System



- Ideal for small animal surgery
- Choice of 5 magnifications and 2 working distances
- Offers a clear true image
- Superior optical quality eliminates eyestrain
- Individual inter-pupillary adjustment ensures your loupes are tailored to fit to your eyes

The SuperVu System is a superb optical quality magnification system with laser designed optics and precise pupil alignment. These lenses are constructed of the highest quality lightweight optical glass and feature an ultra-lightweight metal alloy shell to offer clarity, comfort, and fit.

### **SuperVu SL**

The SuperVu SL System is a Galilean optical system encased in a metal alloy shell. The SuperVu SL is comprised of a doublet objective and high power negative lens delivering 2.5x and 3.0x magnification and provides the widest field of view and excellent working depth. The benefit of this system is ease of use. Movement while maintaining focal clarity is made possible due to a superior depth of field.

The Ultra-lightweight aluminium bar and individual interpupillary adjustment provides stability for the mounted loupes and optimal focal alignment, eliminating headache and eyestrain. High quality light-weight glass and ultra-light aluminium is combined to guarantee supreme optical clarity and optimal comfort. These lenses weigh only 40 g (1.4 oz) giving you optimal comfort.

Multi-coated optics cut down on reflection and deliver superb color rendition.

### **SuperVu XL**

The SuperVu XL System is a prismatic system that has a total of five lenses and a roof prism to deliver higher magnification for advanced surgical procedures. This system delivers 3.5x, 4.5x, and 5.5x magnification.

The prismatic quality of these lenses guarantees a crisp, true image, even at the highest magnification. This system offers edge to edge clarity and precise color rendition that is ideal for surgical applications. These precision lenses are treated with an anti-reflective coating to produce a superior image. The compact design and reduced weight provide optical stability and comfort. These lenses only weigh only 57 g (2.0 oz).

Both systems are supplied with an autoclavable Flip Lever to easily move the lenses from your line of sight, a cleaning cloth and storage case. Optional accessories include a Leather Comfort Headband and Illumination System.

Choose a 34 cm working distance for performing surgery in a seated position and a working distance of 42 cm surgery in a standing position.

SuperVu Surgical Magnification System		
Magnification	Working Distance	
	34 cm (13 in)	42 cm (16 in)
SuperVu SL 2.5x \$	BS4 72-6811	BS4 72-6816
SuperVu SL 3.0x \$	BS4 72-6812	BS4 72-6817
SuperVu XL 3.5x \$	BS4 72-6813	BS4 72-6818
SuperVu XL 4.5x \$	BS4 72-6814	BS4 72-6819
SuperVu XL 5.5x \$	BS4 72-6815	BS4 72-6820

## **NEW** SuperVu Illumination System



- Ultra-bright clip-on light
- Available in fixed or adjustable spot size
- Comfortable and easy to wear

This Illumination System is for use with the SuperVu Magnification System. This fiber optic Illuminator System provides 36,000 LUX of bright, white, quartz halogen light (measured at 34 cm working

distance using the 200 W High Q Light Source) and guarantees you brilliant images of your treatment area.

This Illumination System clips onto the Leather Padded Headband and is ultra light (only 28 g), comfortable and easy to wear. The light is fully adjustable, enabling you to position the light just where you need it. This system has been designed to ensure optical comfort while you work.

This Illumination System is available with a Fixed or fully Adjustable Spot Size fiber optic clip-on light, which allows you to concentrate the light into a sharper beam over a more specific area. The High Q Light Source is a space saving 200 W Quartz Halogen light source that is compact, portable and designed to integrate into your working environment.

The SuperVu Illumination Kit comes complete with the Fixed Spot Size Fiber Optic Light and the High Q Light Source. If ordering the Adjustable Spot Size Fiber Optic Light, please order the High Q Light Source separately.

Catalog No.	\$	Product
BS4 72-6823		SuperVu Illumination System
BS4 72-6824		SuperVu Fixed Spot Size Fiber Optic Clip-on Light
BS4 72-6825		SuperVu Adjustable Spot Size Fiber Optic Clip-on Light
BS4 72-6826		High Q Single Light Source

## **NEW** Leather Padded Headband



- Use with the SuperVu Magnification Systems
- Horizontal and vertical adjustment
- Adjustable viewing angle
- Comfortable

This Leather Padded Headband is for use with the SuperVu SL and XL Magnification and Illumination systems. It features horizontal and vertical adjustment that adds comfort and flexibility to your Magnification System. The viewing angle is fully adjustable and the Magnification

System can be flipped up when not required. The headband can easily be interchanged between users, making this truly universal.

Catalog No.	\$	Product
BS4 72-6821		Leather Padded Headband
BS4 72-6822		Replacement Leather Pads for Headband

## **NEW** Electronic Magnification Glasses



- Enlarges and enhances images
- Adjustable for surrounding light conditions
- Simple to use
- 5X and 10X magnifications to meet your viewing needs

These Electronic Magnification Glasses enlarge and enhance images through a personal display using two small LCD screens positioned directly in front of your eyes, just like eyeglasses. This gives you the peripheral vision for orientation. These glasses use a unique optical system to enlarge images up to 5x at optical infinity and 10x for reading, with added image enhancement that you can tailor to your individual needs.

These glasses also use a unique focusing system allowing you to keep your head at a comfortable angle, and your work at a comfortable distance, whatever the task. By simply rotating a single control you can maintain a comfortable head and eye position, while viewing anything from infinity to 5 inches away. This system is the most comfortable and lightest system of its kind (6 oz).

These Electronic Magnification Glasses can be plugged into an electrical outlet or used with a lightweight lithium battery for portability that can be stored in its soft shoulder bag. The battery will last up to 2 hours.

These glasses can be worn over eyeglasses and are simple to use. You can select and store up to 3 different color and contrast settings, and adjust the levels to suit different conditions. In each contrast mode you can store a combination of settings to be used at the push of a button. These glasses can also connect to a computer.

Catalog No.	\$	Product
BS4 72-6827		Electronic Magnification Glasses

## **NEW** Telescope Spectacle Magnifiers



- Superior optical quality
- This special frame allows the system to be fitted immediately so it can be used THAT DAY!
- Adjustable bars for the pupillary distance that can be locked simply by turning the screws
- Cold bend temples
- Adjustable bridge
- A perfect fit each time!

The Galilean systems are binocular spectacle magnifiers. They are ideal for all near tasks that require one's hands to be free such detailed procedures or inspection work. Galilean systems are small, light-weight optical systems similar to telescopes. They are comprised of a positive objective lens and a negative ocular lens.

These spectacle magnifiers are calculated for a fixed working distance and also for a certain angle of convergence. Additional fine focusing and diopter setting is possible. Available in 3 magnifications for close-up work: 2.5x, 3x and 4x. Each spectacle is supplied complete with a leather zippered case to store the spectacle when not in use.

### Specifications

<b>Lens</b>	Achromatic, coated, 23 mm diameter
<b>Frame</b>	Black plastic, reinforced with fiberglass
<b>PD Range</b>	54 to 74 mm
<b>Weight</b>	70 grams

Catalog No.	\$	Magnification	Lens	Field of View	Working Distance
BS4 72-5090		2.5x	Binocular	15.0°	75 to 350mm
BS4 72-5091		3x	Binocular	12.5°	45 to 200mm
BS4 72-5092		4x	Binocular	8.0°	35 to 250mm



## Spectacle Magnifiers



- Superior optical quality
- ClearImage II® lens is made of hi-index glass with anti-reflective
- Distortion-free viewing from edge to edge
- Lightweight frame with wire bridge and temples
- Comfortable fit

These spectacle magnifiers offer the ClearImage II® lenses in a fashionable, adjustable frame. They are ideal for researchers wishing to engage in extended viewing tasks requiring high magnifications and hands free usage. They are also ideal for prismatic eyewear users who find that they need to use a higher magnification due to the

diminished acuities resulting from their disease progression. They are available in two magnifications.

### Specifications

Lens	MgF2 treated silicate, ø 35 mm
Magnification	Select from either 3x or 5x, lens must be fitted by an optician
Frame Size	45 mm
Bridge Size	22 mm
Temple Size	135 mm

Catalog No.	\$	Magnification	Working Distance	Lens
BS4 72-5080		3x	83 mm	Right
BS4 72-5079		3x	83 mm	Left
BS4 72-5082		5x	50 mm	Right
BS4 72-5081		5x	50 mm	Left

## Stand-Mounted Magnifiers



These magnifiers are stand-mounted and provide up to 310 cm<sup>2</sup> (48 in<sup>2</sup>) of viewing area. The special precision ground diopter lens needs no focusing and maintains complete depth of field through all focal point depths and distances. Supplied with a heavy duty metal base, polished steel horizontal and vertical rods, and a clamp. Magnifier Light sold separately.

Catalog No.	\$	Lens Dimensions	Magnification
BS4 52-5485		15 x 15 cm (6 x 6 in)	3X (single lens)
BS4 52-5486		15 x 15 cm (6 x 6 in)	6X (double lens)
BS4 52-5493		15 x 20 cm (6 x 8 in)	2.5X (single lens)
BS4 52-5494		15 x 20 cm (6 x 8 in)	5X (double lens)
BS4 52-5484		Light for Magnifier, 20 watt; 115 V, 60 Hz; 16 inch goose neck; On/Off switch; 9 inch ground cord	

*For Videolupe, see page D44.*

*For SuperVu Magnification System, see pages D38 and D39.*

# Magnifiers

**NEW** **Vario-Maxi Stand Magnifier**



CE

- Superior optical quality

The Vario-Maxi Stand Magnifier was developed to easily magnify a larger working area. It is possible to view the detail of an entire printed page for the first time using this worldwide innovation. For laboratory use it is ideal for viewing an entire mouse.

The reading glass head is attached to the tabletop by means of a stable jointed support with integrated cable. The adjustable quality of the support and the magnifier head allow for variable positioning. Optimum illumination of the viewing area is made possible by the lamp, which is attached tilted downwards. The stand magnifier can be used with spectacles for near and distance.

### Specifications

<b>Lens</b>	Aspheric PXM-Lightweight lens with cera-tec hard coating, ø 220mm
<b>Magnification/Optic</b>	1.75x/3.0 diopters usable with spectacles for near and distance.
<b>Illumination</b>	11 Watt PL-Lamp
<b>Support</b>	Maximum load distance 900mm, turning range of the magnifier head: vertical ±90°, radial ±90°
<b>Table Clamp</b>	For tabletop thickness from 18-74mm, cable length 3 meters

Catalog No.	\$	Product
BS4 72-5071		Vario-Maxi Stand Magnifier, 110 VAC
BS4 72-5072		Vario-Maxi Stand Magnifier, 220 VAC

**NEW** **Vario Stand Magnifier**



CE

- Superior optical quality

This Stand Magnifier offers the user a high degree of flexibility when selecting working distance through its optics calculated to infinity. The lens has an integrated cover to protect against dust.

This magnifier is supplied complete with additional rotatable lens, table clamp and lens protector. A heavy cast iron stand weighing 6 kg (13.2 lbs) available as an accessory provides a solid base on which to mount the magnifier. The lens protector protects the bottom of the lens when working with rough procedures such as bone drilling.

### Specifications

<b>Lens</b>	Aspheric PXM-Lightweight lens with cera-tec hard coating, ø 132mm
<b>Magnification/Optic</b>	1.9x/3.55pr 2.8x/7.1 diopters usable with spectacles for near and distance
<b>Illumination</b>	9 Watt PL-Lamp
<b>Support</b>	Robust articulated support with integrated cable routing, maximum operating radius 900mm, swiveling range of magnifier head: horizontal ±45°, vertical and radial ±90°
<b>Table Clamp</b>	For tabletop thickness from 18-74mm, cable length 3 meters

Catalog No.	\$	Product
BS4 72-5073		Vario Stand Magnifier with 2 Lenses, 110 VAC
BS4 72-5074		Vario Stand Magnifier with 2 Lenses, 220 VAC
BS4 72-5076		Replacement Lens Protectors, pkg. of 3
BS4 72-5075		Table Stand

**NEW** **Gooseneck Stand Magnifier with Desktop Base**



CE

- Superior optical quality

Designed for vision tasks that require hands to be free. They are suitable for detailed procedures such as small animal surgery or industrial tasks such as examining or assembling small components. This magnifier is supplied with a 2x/3.2 diopter lens as standard. A second lens is available separately that provides 2.8x/7 diopters magnifications. If illumination is required, purchase the Super-Lite light-source. It easily clips on the side of the lens and provides 7 watts of light.

### Specifications

<b>Lens</b>	Comes complete with light-weight lens, 140 x 100mm with duplex coating
<b>Magnifications</b>	2x/2.6 diopters
<b>Illumination</b>	7 Watts, 220 V energy-saving PL lamp
<b>Arm</b>	Gooseneck, flexible arm
<b>Base</b>	Sturdy, round table base

Catalog No.	\$	Product
BS4 72-5104		Gooseneck Stand Magnifier
BS4 72-5105		Additional Lens, Aspheric PXM Lightweight Lens, 75 x 100mm, 2.8x/7 diopters
BS4 72-5106		Super-Lite, 110 VAC
BS4 72-5107		Super-Lite, 220 VAC
BS4 72-5108		Repl. Bulb for Super-Lite

**NEW** **Maxi Plus Round the Neck Magnifier**



- Superior optical quality

The Maxi Plus Magnifier was developed as economical, easy to use magnifiers where which is worn around the neck, freeing both hands for procedures. It has a large rectangular lens, 100 x 140mm with 2x magnification. It also has a small 35mm diameter 4x secondary magnification lens permitting very fine detail work.

The neck cord is adjustable so that it is suitable for use by different individuals.

### Specifications

<b>Lens, Primary</b>	PXM-Lightweight lens bi- aspheric, primary - 100 x 140mm, secondary - ø 35mm
<b>Magnification/Optic:</b>	
<b>Primary</b>	2x/2.6 diopters
<b>Secondary</b>	4x/11.2 diopters
<b>Mounting</b>	Transparent, made of PXM material

Catalog No.	\$	Product
BS4 72-5089		Maxi Plus Around the Neck Magnifier

**NEW** **Headband Magnifier**



- Superior optical quality

This Headband magnifier has a ratcheted hinge on lens cover so it can be raised or lowered as needed. Interchangeable lenses snap into high grade plastic housing. Head band has adjustable strap and foam lining for greater comfort and ease of fitting.

These new headband magnifiers are ideal when details must be picked up in magnified form but both hands must remain free for work purposes. This magnifier has a binocular lens which facilitates two-eye spatial depth sight. It is suitable for people wearing glasses as well as for those who are not.

The shield is close on all sides to protect the eyes from stray light and can be conveniently pushed up when not needed. For individual fitting the shield can be notched into different height adjustments. The forehead rest is discontinuous to allow air circulation. Each magnifier is supplied with a single lens. Other lenses may be purchased separately and are interchangeable.

### Specifications

<b>Lens</b>	Aspheric PXM-Lightweight lens with surface coating, lens sections are interchangeable
<b>Magnification</b>	1.7x, 2.0x, 2.5x or 3.0x, magnification supply is gradual for varying demands and allows maximum working distance

Cat. No.	\$	Product
BS4 72-5094		Headband Magnifier, 1.7x, 400mm working distance
BS4 72-5095		Headband Magnifier, 2.0x, 250mm working distance
BS4 72-5096		Headband Magnifier, 2.5x, 180mm working distance
BS4 72-5097		Headband Magnifier, 3.0x, 160mm working distance
BS4 72-5098		Replacement Lens, 1.7x, 400mm working distance
BS4 72-5099		Replacement Lens, 2.0x, 250mm working distance
BS4 72-5100		Replacement Lens, 2.5x, 180mm working distance
BS4 72-5101		Replacement Lens, 3.0x, 160mm working distance

**NEW** **Vario-Plus Prism Monoculars Microscope**



- Superior optical quality

The combination of prism monocular and magnifier stand provide up to 25x magnification. Each piece may also be used separately for different applications. The monocular has a dust proof metal housing, with a twist-up rubber eyecup, carry lug with cord. It is supplied with a magnifier in a black leather case.

### Specifications

<b>Lens</b>	Roof-prism system with multi-coating
<b>Magnification:</b>	
<b>Telescope</b>	8x
<b>Stand Magnifier</b>	3x
<b>Stand Microscope</b>	25x, combination of the telescope and stand magnifier used in combination

Catalog No.	\$	Product
BS4 72-5085		Vario-Plus Prism Monoculars Microscope

# Magnifiers

## Labo-Clip Magnifier Kit



- Lightweight
- Very comfortable to wear
- Allow both hands to be free to perform procedures
- Clip onto most eyeglass frames
- Lens is set 2-3 inches away from the eye, allowing a more comfortable working distance
- When not needed, the lens can be flipped up and out of the way
- When a different magnification is needed, simply replace the lens only, all are interchangeable (see order numbers below)

Designed to provide a complete set of binocular and monocular clip-on lenses and two different clip mechanisms. These clip on magnifiers are a very simple and effective visual aid for all people with glasses. They can be clipped onto practically any spectacle frames as a binocular system for seeing with both eyes, or as a monocular system for seeing with one

eye. One of each of the binocular and monocular clip are provided plus a selection of binocular and monocular lenses. See chart below for the lenses supplied.

Clip-on magnifiers are designed to provide spectacle wearers with hands free magnification. The universal clip element is made of high quality glass-fiber-reinforced plastic. The four rubber covers supplied protect the spectacle lenses against scratching. The lens part can simply be exchanged by the quick action clip closure. This kit is supplied in a plastic storage box.

Part No.	\$	Magnification		Lens	Working Distance
		Diopters	Lens		
BS4 72-5099		2x	4	binocular	250mm
BS4 72-5100		2.5x	6	binocular	180mm
BS4 72-5101		3x	8	binocular	160mm
BS4 72-5102		4x	16	monocular	55mm
BS4 72-5103		7x	28	monocular	32mm

### Specifications

- Lens** PXM® lightweight lenses with surface coating  
**Clip** High grade glass-fiber-reinforced plastic

*Note: Four rubber tips for the legs are included to protect the spectacle lens*

Catalog No.	\$	Product
BS4 72-5093		Labo-Clip Magnifier Kit

## Videolupe



- Two Magnifications - 3x (7.6D) lens and 9-17.5x video magnification
- Easy connection to any television.
- No focusing required
- LED illumination which provides an unlimited bulb life.
- Allows for a relaxed reading position and research applications
- Effortless orientation because the image is viewable through the magnifier and on the screen.

The first and only combined optical and electronic illuminated magnifier! The Videolupe combines the ease of an illuminated stand magnifier with the magnification of a video magnifier in one easy-to-use product.

Sometimes, simple optical devices such as hand-held or stand magnifiers do not provide the complete answer. The researcher may require higher powers of magnification, may desire binocular viewing or may want to accomplish a variety of activities. In all of these instances, electronic magnification may be the answer!

The video magnifier offers intelligent and useful support. This visual aid is an optical magnifier and, because it is fitted with a mini camera, an electronic reading device in one. Images and text can be view enlarged on your TV screen (PAL – Norm) by simply plugging the video magnifier into the TV's video input.

The video magnifier is easy to use. Just one switch operates the illumination and camera, and super-imposes the camera's video signal over the running TV program. No cables need to be replugged. The lightweight, compact design means that the video magnifier can also be used when traveling.

### Specifications

<b>Lens</b>	Aspheric PXM-Lightweight lens with cera-tec hard coating, 100 x 50mm
<b>Optical Magnification</b>	3x/7.6 diopters
<b>Electronic Magnification</b>	The electronic magnification is from 9 times to 17.5 times (screen diagonal of 70cm). The degree of magnification is dependent on the screen diagonal used. At a distance of 25cm from the screen, the magnification will be as follows: <b>35cm diagonal</b> 9.0x magnification <b>42cm diagonal</b> 10.5x magnification <b>56cm diagonal</b> 14.0x magnification <b>66cm diagonal</b> 16.5x magnification <b>70cm diagonal</b> 17.5x magnification Magnification is halved at the distance of approximately 50cm from the screen
<b>Camera</b>	1/4" chip diagonal, cmos, black-and-white display
<b>Illumination</b>	4 LEDs (light emitting Diode) provide a bright, even source of light
<b>Power Supply</b>	Via transformer plug, 12 V DC

Catalog No.	\$	Product
BS4 72-5083		Videolupe, 110 VAC
BS4 72-5084		Videolupe, 120 VAC (for PAL System)

## **NEW** Endoscopes for Small Animal Use



CE



CE

- Small size is ideal for mice, rats and other small animals
- Available in rigid and flexible formats

These small Endoscopes are ideal instruments to visualize the inner surfaces of small animals without surgery. The image of the internal surface is transmitted via video technology. For the rigid scope, a rod lens system is positioned in the distal end of the endoscope. For the flexible scope a fiber optic lens system with video chip is positioned in the distal (looking at the object to be examined) side of the endoscope and transfers an electrical signal to the video processor and monitor.

The 2.7 mm diameter Rigid Endoscopes are autoclaveable and are available in two lengths and two view angles. The Flexible Endoscope is not autoclaveable, but is soakable. Light source not included.

### Specifications

#### Flexible Endoscope

Working Length	300 mm
Working Diameter	2.8 mm
Deflection:	
Up	120°
Down	100°
Length of Movable Tip Section	30 mm
Direction of View	0°
Depth of Field	95°
Depth of Focus	3 mm to ∞

### Catalog No.    \$    Product

BS4 72-7655		Rigid Endoscope, 70 mm length, 0° view angle
BS4 72-7656		Rigid Endoscope, 70 mm length, 30° view angle
BS4 72-7657		Rigid Endoscope, 40 mm length, 0° view angle
BS4 72-7658		Rigid Endoscope, 40 mm length, 30° view angle
BS4 72-7659		Flexible Endoscope

*Smaller Endoscopes are available, please call Customer Service.*

## Aspheric Folding Pocket Magnifiers



- Plastic body encloses and protects lens
- Dust tight
- Concealed eyelet in the body for cord (provided)
- Superior optical quality



Modern manufacturing methods have allowed us to create these new aspheric folding pocket magnifiers. These magnifiers are supplied individually with a neck cord. Three different magnifiers are available. Each is color coded for easy recognition.

### Specifications

<b>Lens</b>	Aspheric PXM-Lightweight lens, $\phi$ 35mm, lens and body-part form and entity
<b>Magnifications</b>	3 available models, 4x/15 diopters, 7x/28 diopters, or 10x/38 diopters
<b>Handle</b>	Fine grained plastic

Catalog No.	\$	Product
BS4 72-5086		Aspheric Folding Pocket Magnifier, 4x/15 diopters, Red
BS4 72-5087		Aspheric Folding Pocket Magnifier, 7x/28 diopters, Anthracite
BS4 72-5088		Aspheric Folding Pocket Magnifier, 10x/38 diopters, White

## **NEW** Gemini Cautery System



- Simple tip design for easy replacement
- Uses standard AA batteries
- Easy screw cap for convenient battery replacement
- Hard plastic case with die cut foam for convenient storage
- Battery spacer for optional temperature operation

The Gemini Cautery System is the perfect tool for your cauterizing needs. The unique tip sizes combined with two different operating temperatures allow for maximum versatility. The convenient battery spacer converts the hand piece from high temperature to low temperature.

### Specifications

<b>Length</b>	160.75 mm (without tip)
<b>Weight</b>	78 g (with two AA batteries)
<b>Electrical</b>	3 V, 1.5 V
<b>Tip Sizes</b>	5 x 1 mm and 10 x 1 mm

Catalog No.	\$	Product
BS4 72-6067		Gemini Cautery Kit
BS4 72-6068		Gemini 5 mm Cautery Tip
BS4 72-6069		Gemini 10 mm Cautery Tip

*For Stand Magnifiers,  
see pages D41 and D42.*

*For Spectacle Magnifiers,  
see pages D40 and D41.*

*For SuperVu Illumination Systems,  
see pages D38 and D39.*

# Electrosurgical & Electrocautery Products

## Martin MD 62 Electrosurgical Unit



- Compact electrosurgical unit is ideal where space is limited
- Two different types of current; one for cutting and one for coagulation
- Activation by either finger switch or foot switch
- A powerful basic unit supplemented by a broad range of electrodes and accessories
- Built to high safety standards

The Martin MD 62 is a safe, reliable and cost effective electrosurgical unit suitable for most basic electrosurgical applications. It is well suited for the cutting and coagulation of delicate tissue.

### Simplicity

The user has two types of current available:

- One for cutting
- One for coagulation

These currents have been specially adapted to the different impedances associated with various tissue structures. Select from a variety of electrodes to meet your specific needs. This powerful electrosurgical device provides the reliability and high technological quality and safety the researcher requires for daily use.

### Current Activation

Two different methods are available for activation of the current. The first is by using a handle with integral finger switches. These switches are color-coded to eliminate the possibility of selecting the wrong function (cutting or coagulation).

The second method uses a basic handle (with no integral switch) and a foot switch that, in combination with a large selection of active electrodes, make this unit suitable for a wide variety of procedures. Additionally, ergonomically designed hand pieces, with or without finger switches, makes this system user friendly. It offers an individually adaptable, non-problematic approach to everyday electrosurgical techniques.

### Simple and Safe Operation

All functions are clearly indicated and designated by symbols arranged on the front panel in a straightforward manner. To make setting easy and safe for the user, an analog-value selector provides simple adjustment of the output wattage in both coagulation and cutting modes. All connector jacks are marked unambiguously in order to prevent misuse.

### Top in Terms of Hygiene

The housing is made of high-quality coated sheet steel. It is resistant to oxidative damage which can be caused by disinfecting agents. Since neither cooling slots nor fans are needed in the unit, no ingress of cleaning or disinfecting agents can occur.

This unit is supplied with a power cord unique to the intended country of use. You must purchase a Neutral Electrode to use the unit. See BS4 72-2514 or BS4 72-2515 below. All hand pieces, electrodes and accessories must be purchased separately. Two convenient sets have been created. One set is for hand switch operation and the other is for foot switch operation. Each set contains a selection of electrodes, electrode stand, and choice of switch preference. Other accessories may also be purchased separately.

### Specifications

Rated Frequency	1000 kHz
Pulse Frequency	800 kHz
LF/HF Leakage Currents	As per IEC 601, Part 2-2
<b>HF Output Power:</b>	
Cutting Type of Current	50 W at 600 Ω
Coagulation Current	30 W at 1200 Ω
Weight	2.8 kg (6.7 lb)
Dimensions, H x W x D	78 x 200 x 285 mm (3 x 7.9 x 11.2 in)
Certificate	CE mark in accordance with directive 93/42/EEC as issued by the Council on 14 June 1993
Power	110 to 120 V, 50/60 Hz; 220 to 240 V, 50/60 Hz

Catalog No.	\$	Product
BS4 72-2480		Martin MD 62 Electrosurgical Unit with Power Cord, with US Style Plug, without Accessories
BS4 72-2481		Martin MD 62 Electrosurgical Unit with Power Cord, with German Style Plug, without Accessories
BS4 72-2482		Martin MD 62 Electrosurgical Unit with Power Cord, with Swiss Style Plug, without Accessories
BS4 72-2483		Martin MD 62 Electrosurgical Unit with Power Cord, with Italian Style Plug, without Accessories
BS4 72-2514		Rubber Neutral Electrode, 8 x 16 cm
BS4 72-2515		Rubber Neutral Electrode, 15 x 26 cm
BS4 72-2509		Handle with Finger Switch, Connection Cable 3 m (9.8 ft)
BS4 72-2510		Handle without Finger Switch, Connection Cable 3 m (9.8 ft)
BS4 72-2557		Foot Switch
BS4 72-2501		Accessory Set for Hand Switch Operation, includes all of the Accessories* listed below plus the BS4 72-2509 Handle with Finger Switch
BS4 72-2500		Accessory Set for Foot Switch Operation; includes all of the Accessories* listed below plus the BS4 72-2564 Foot Switch and the BS4 72-2510 Handle without Finger Switch
BS4 72-2522		Electrode Stand*
BS4 72-2523		Needle-Type Electrode, 2 mm, Straight*
BS4 72-2524		Needle-Type Electrode, 45° Angled*
BS4 72-2528		Loop-Type Electrode, 5 mm OD Loop*
BS4 72-2530		Loop-Type Electrode, 8 mm OD Loop*
BS4 72-2531		Loop-Type Electrode, Elongated, 7.0 x 1.7 mm Loop, 45° Angled Shaft*
BS4 72-2537		Needle-Type Electrode for Coagulation, 0.6 mm OD, 10 mm Needle, 45° Angled Shaft*

\*Note: Designates accessories included in sets

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# Electrosurgical & Electrocautery Products

## Martin ME 102 Electrosurgical Unit



- Both monopolar and bipolar modes supported
- Two cutting and two coagulation current modes available
- Automatic current output adjustment dependent on tissue impedance characteristics
- Combines the most modern technology with safety

The Martin ME 102 is a safe and reliable full featured electrosurgical unit which features both monopolar and a full fledged bipolar generator. It is the ultimate choice for advanced, small and large labs performing minor surgery.

### Versatile

This unit offers four different current types to suit a wide range of applications:

- Two for cutting
- One for contact coagulation
- One for bipolar coagulation

### Performance

This electrosurgical unit offers a micro function which allows an instant reduction in output for more delicate research applications such as neurological or microsurgery. The newly developed high frequency generators automatically adjust the current output in response to the tissue impedance characteristics. This means that changes of impedance during electrosurgery are dynamically monitored and the current output is automatically adjusted. For added convenience each current mode setting (monopolar cutting, monopolar coagulation and bipolar coagulation) has its own analog output adjustment knob.

### Current Activation

Two different methods are available for activation of the current. The first is by using a handle with integral finger switches. These switches are color-coded to eliminate the possibility of selecting the wrong function (cutting or coagulation).

The second method uses a basic handle (with no integral switch) and a foot switch. That, in combination with a large selection of active electrodes, make this unit suitable for a wide variety of procedures.

### Simple and Safe Operation

All the operating controls and user connecting sockets are positioned at the front of the unit. The three control knobs are situated in such

a position as to make their function clear and obvious. Illuminated, pressure sensitive switches clearly show the functional settings of the unit. All sockets are clearly marked and will not accept false connections. The unit is not affected during the use of a defibrillator.

### Ease of Cleaning

Due to the high efficiency of these generators no cooling is necessary. The unit is a sealed cabinet making cleaning and disinfecting a breeze. The face plate has pressure sensitive switches which may be surface disinfected with a suitable damp cloth. The body is constructed from specially treated aluminum and a robust, inert plastic. The aluminum is protected against oxidation from disinfecting fluids.

### Safety

The Martin ME 102 meets all the safety requirements of basic electrosurgical standards. It is not possible for the unit to deliver a higher output than has been set on the controls and the unit is automatically switched off in the event of a malfunction.

This unit is supplied with a power cord. All hand pieces, electrodes and accessories must be purchased separately, see pages D49 and D50. Five convenient sets have been created, three for hand switch operation and two for foot switch operation. Each set contains a selection of electrodes, electrode stand, and a choice of switch preference. Products may also be purchased separately. Both standard and operating theater type (explosion proof) foot switches are available. There is also a series of forceps for bipolar use.

### Specifications

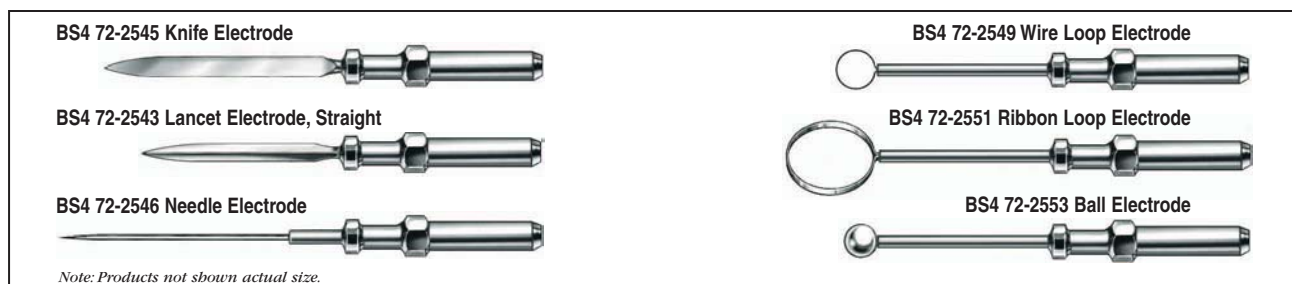
Type of Output	CF
Nominal Frequency	500 kHz
Impulse Frequency	30 kHz
Leakage LF and HF	In accordance with IEC 601 part 2.2
High Frequency Output Macro Mode:	
Current Type CUTTING I	100 W at 600 $\Omega$
Current Type CUTTING II	90 W at 600 $\Omega$
Current Type CONTACT-COAGULATION	70 W at 600 $\Omega$
Bipolar COAGULATION	80 W at 100 $\Omega$
High Frequency Output Micro Mode:	
Current Type CUTTING I	30 W at 600 $\Omega$
Current Type CUTTING II	30 W at 600 $\Omega$
Current Type CONTACT-COAGULATION	25 W at 600 $\Omega$
Bipolar COAGULATION	25 W at 100 $\Omega$
Weight	4.6 kg (10.1 lb)
Dimensions, H x W x D	97 x 256 x 320 mm (3.8 x 10.1 x 12.6 in)
CE	Unit has the CE-marking in accordance with the Council Directive 93/42/EEC of June 1993
Power	110 to 120 V / 220 to 240 V, 50/60 Hz

Catalog No.	\$	Product
BS4 72-2484		ME 102 Electrosurgical Unit with Power Cord, with US Style Plug
BS4 72-2485		ME 102 Electrosurgical Unit with Power Cord, with German Style Plug
BS4 72-2486		ME 102 Electrosurgical Unit with Power Cord, with Swiss Style Plug
BS4 72-2487		ME 102 Electrosurgical Unit with Power Cord, with Italian Style Plug



# Electrosurgical & Electrocautery Products

## Accessory Sets for Electrosurgical Units



Note: Products not shown actual size.

- Quick and convenient sets
- Full selection of electrodes

These Accessory Sets are for use with the ME 102 Electrosurgical Unit, see page D48. They make it quick and easy to outfit your lab with a variety of typically used electrodes. Select from basic, intermediate, or advanced

sets. You may also select any of the individual components. Note that the electrosurgical units are not supplied with a handle or switch. One of these must be purchased separately in order to use the unit.

### Sets for ME 102 Electrosurgical Units

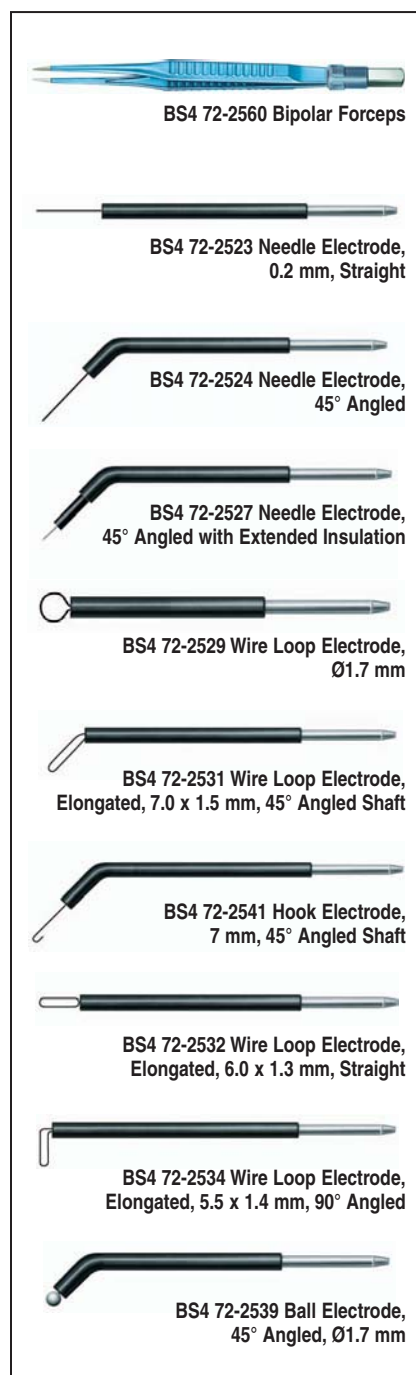
Set Components	Catalog No.	\$	Advanced		Intermediate		Basic	
			Hand Set	Foot Set	Hand Set	Foot Set	Hand I Set	Hand II Set
Electrode Handle with Double Finger Switch, 4 m connection cable	BS4 72-2511		•		•		•	•
Double Foot Switch, monopolar, 5 m cable	BS4 72-2559					•		
Electrode Handle without switch, 4 m connection cable	BS4 72-2512			•		•		
Rubber Neutral Electrode, 8 x 16 cm	BS4 72-2514				•	•		•
Rubber Neutral Electrode, 15 x 26 cm	BS4 72-2515		•	•			•	
Rubber Band, perforated, 50 cm	BS4 72-2516				•	•		
Button for Rubber Band	BS4 72-2518		•	•	•	•		
Textile Band with Velcro Strap, 90 cm	BS4 72-2519						•	•
Electrode Box for 8 electrodes	BS4 72-2520				•	•		
Electrode Box for 16 electrodes	BS4 72-2521		•	•				
Lancet Electrode, straight, see above	BS4 72-2543		•	•	•	•		
Lancet Electrode, angular	BS4 72-2544		•	•			•	•
Knife Electrode, 28 mm blade, see above	BS4 72-2545		•	•	•	•	•	•
Needle Electrode, 30 mm long, see above	BS4 72-2546		•	•	•	•	•	•
Needle Electrodes, extra fine, pkg. of 12, Require BS4 72-2548 Adapter, 4 mm to 0.8 mm	BS4 72-2547		•	•	•	•		
Adapter, 4 mm to 0.8 mm	BS4 72-2548		•	•	•	•		
Loop-Type Electrode, 5 mm OD, see above	BS4 72-2549		•	•	•	•		
Loop-Type Electrode, 10 mm OD	BS4 72-2550		•	•	•	•		
Ribbon Loop Electrode, 10 mm OD, see above	BS4 72-2551		•	•				
Ribbon Loop Electrode, 15 mm OD	BS4 72-2552		•	•				
Ball Electrode, 2 mm OD ball, see above	BS4 72-2553		•	•	•	•		
Ball Electrode, 5 mm OD ball	BS4 72-2555		•	•				
Plate Electrode, 8 x 10 mm	BS4 72-2556		•	•				
<b>Electrosurgical Set Catalog No.</b>			BS4 72-2505	BS4 72-2506	BS4 72-2502	BS4 72-2503	BS4 72-2507	BS4 72-2504
<b>\$</b>								

# Electrosurgical & Electrocautery Products

## Accessories for Electrosurgical Units

In addition to the convenient sets listed on page D49, a Bipolar Accessory set is also available (BS4 72-2508). This set includes five bipolar forceps and a connection cable. There is also a large number of other electrodes available separately. See the listing on this page. All products work with the ME 102 Electrosurgical Unit, see page D48.

Specialized Tools For Bioresearch



Catalog No.	\$	Product
BS4 72-2508		Bipolar Accessory Set for ME 102
BS4 72-2579		Bipolar Foot Switch
BS4 72-2513		Connection Cable for Bipolar Forceps*
BS4 72-2560		Bipolar Forceps, straight, blunt, 16 cm (6.25 in)*
BS4 72-2561		Bipolar Forceps, straight, blunt, 20 cm (8 in)*
BS4 72-2562		Bipolar Forceps, angled, blunt, 16 cm (6.25 in)*
BS4 72-2564		Bipolar Forceps, bayonet-shaped, blunt, 20 cm (8 in)*
BS4 72-2572		Bipolar Forceps, straight, pointed, 7 cm (2.75 in)
BS4 72-2573		Bipolar Forceps, straight, pointed, 12 cm (4.75 in)
BS4 72-2574		Bipolar Forceps, straight, blunt, 12 cm (4.75 in)
BS4 72-2575		Bipolar Forceps, angled, pointed, 7 cm (2.75 in)
BS4 72-2576		Bipolar Forceps, angled, pointed, 12 cm (4.75 in)
BS4 72-2577		Bipolar Forceps, angled, blunt, 12 cm (4.75 in)
BS4 72-2509		Handle with Finger Switch, connection cable 3 m (9.8 ft)
BS4 72-2510		Handle without Finger Switch, connection cable 3 m (9.8 ft)
BS4 72-2522		Electrode Stand
BS4 72-2523		Needle-Type Electrode, 0.2 mm OD, straight, 22 mm shaft
BS4 72-2524		Needle-Type Electrode, 0.2 mm OD, 45° angled shaft
BS4 72-2525		Needle-Type Electrode, 0.6 mm OD, straight, 22 mm shaft
BS4 72-2526		Needle-Type Electrode, 0.6 mm OD, 45° angled shaft
BS4 72-2527		Needle-Type Electrode with Extended Insulation, 0.6 mm OD, 45° angled shaft
BS4 72-2528		Loop-Type Electrode, 5 mm OD loop, 32 mm shaft
BS4 72-2529		Loop-Type Electrode, 3 mm OD loop, 32 mm shaft
BS4 72-2530		Loop-Type Electrode, rhombic loop, 32 mm shaft
BS4 72-2531		Loop-Type Electrode, elongated, 7.0 x 1.7 mm loop, 45° angled shaft
BS4 72-2532		Loop-Type Electrode, elongated, 6.0 x 1.3 mm loop straight, straight shaft
BS4 72-2533		Loop-Type Electrode, elongated, 7.0 x 1.7 mm loop, 45° angled tip, straight shaft
BS4 72-2534		Loop-Type Electrode, elongated, 5.5 x 1.4 mm loop, 90° angled tip, straight shaft
BS4 72-2535		Loop-Type Electrode, elongated, 7.0 x 1.4 mm loop, 45° angled tip, straight shaft
BS4 72-2536		Loop-Type Electrode, elongated, 7.0 x 1.3 mm loop straight, straight shaft
BS4 72-2537		Needle-Type Electrode for Coagulation, 0.6 mm OD, 10 mm needle, 45° angled shaft
BS4 72-2538		Loop-Type Electrode, elongated, 12.0 x 1.0 mm loop straight
BS4 72-2539		Ball-Type Electrode for Coagulation, 1.7 mm OD ball, 45° angled shaft
BS4 72-2541		Hook Electrode, 7 mm, 45° angled shaft
BS4 72-2542		Adapter from 4 mm to 1.6 mm
BS4 72-2579		Adapter from 1.6 mm to 0.8 mm
BS4 72-2548		Adapter from 4 mm to 0.8 mm
BS4 72-2565		Loop-Type Electrode, 3 mm OD loop
BS4 72-2566		Loop-Type Electrode, 5 mm OD loop
BS4 72-2567		Loop-Type Electrode, 8 mm OD loop
BS4 72-2568		Epilation Needle, insulated**
BS4 72-2569		Couperosis Electrode, 45° angled**
BS4 72-2570		Epilation Needle, K35 short, shaft of 0.8 mm, pkg. of 50**
BS4 72-2496		Power Cord for Cautery Units, Germany Style Plug
BS4 72-2497		Power Cord for Cautery Units, Swiss Style Plug
BS4 72-2498		Power Cord for Cautery Units, US Style Plug
BS4 72-2499		Power Cord for Cautery Units, Italian Style Plug

\*Note: Indicates products included in Bipolar accessory set

\*\*Note: These products require the BS4 72-2548 Adapter, 4 mm to 0.8 mm

## **NEW** Powder-Free A+ Aloe Gloves



- Aloe coated inner surface to help protect hands from drying and cracking
- Available in Latex or Nitrile
- Powder-free
- Fully textured outer surface
- Low protein 510K
- 240 mm (9 1/2 in) length
- Ambidextrous / Non-Sterile

A+ Aloe Gloves help protect your hands from drying and cracking. They are coated on the inner surface with skin protecting Aloe. These HIGH FIVE powder-free exam gloves are produced using state-of-the-art manufacturing, minimizing extractable chemicals and reducing water soluble proteins to nearly undetectable levels which reduces the risk of allergic reactions and skin irritation. The subtle texturing offers exceptional gripping power with out compromising tactile sensitivity. Manufactured to the highest levels of quality assurance these gloves meet or exceed federal and ASTM tear and puncture-resistance standards. Other features include: 100% tested for pinholes and defects, ISO 9002 certification, 1.5 AQL pinhole rating, non-sterile and ambidextrous, beaded cuff for easing donning. These gloves are ideal for laboratory applications. They are available in four sizes and are supplied in a box of 100 gloves.

### Specifications

<b>Shape</b>	Ambidextrous	
<b>Cuff</b>	Beaded	
<b>Length</b>	240 mm (9 1/2 in)	
<b>Thickness:</b>		
<b>Cuff</b>	0.12 mm (±0.01mm)	
<b>Palm</b>	0.14 mm (±0.01mm)	
<b>Finger</b>	0.15 mm (±0.01mm)	
<b>Material</b>	<b>Natural Rubber Latex</b>	<b>100% Low Modulus Nitrile</b>
<b>Tensile Strength:</b>		
<b>Before Aging</b>	24 MPa	20.5 MPa
<b>After Aging</b>	20 MPa	22 MPa
<b>Elasticity/Elongation:</b>		
<b>Before Aging</b>	750%	700%
<b>After Aging</b>	700%	600%

Catalog No.	\$	Product
BS4 72-6450		Latex Powder-Free A+ Aloe Gloves, Small, box of 100
BS4 72-6451		Latex Powder-Free A+ Aloe Gloves, Medium, box of 100
BS4 72-6452		Latex Powder-Free A+ Aloe Gloves, Large, box of 100
BS4 72-6453		Latex Powder-Free A+ Aloe Gloves, X-Large, box of 100
BS4 72-6454		Nitrile Powder-Free A+ Aloe Gloves, Small, box of 100
BS4 72-6455		Nitrile Powder-Free A+ Aloe Gloves, Medium, box of 100
BS4 72-6456		Nitrile Powder-Free A+ Aloe Gloves, Large, box of 100
BS4 72-6457		Nitrile Powder-Free A+ Aloe Gloves, X-Large, box of 100

## **NEW** Nitrile Powder-Free Cobalt Blue Gloves



- 100% Latex-free / Powder-free
- Cobalt blue colored / textured finish
- Superior puncture and chemical resistance
- Proprietary low modulus formulation reduces hand fatigue
- 240 mm (9 1/2 in) cuff length
- 5 mil thickness
- Non-Sterile / Ambidextrous

The HIGH FIVE nitrile gloves are 100% Latex-Free and contain no natural rubber proteins. This soft and supple glove is easy to don, odor-free, and offers an unequaled fit and feel compared to conventional exam gloves. Unique synthetic formulation reduces hand fatigue and offers superior puncture resistance and chemical resistance compared to latex or vinyl gloves.

The HIGH FIVE powder-free nitrile is the ideal solution for individuals allergic to latex. These gloves are ideal for laboratory applications. They are available in four sizes and are supplied in a convenient dispenser box containing 100 gloves.

### Specifications

<b>Material</b>	100% Low Modulus Nitrile
<b>Shape</b>	Ambidextrous
<b>Color</b>	Cobalt blue
<b>Cuff</b>	Beaded
<b>Length</b>	240 mm (9 in) long cuff
<b>Thickness:</b>	
<b>Cuff</b>	0.11 to 0.14 mm .01mm)
<b>Palm</b>	0.11 to 0.15 mm .01mm)
<b>Finger</b>	0.12 to 0.17 mm Strength
<b>Tensile Strength:</b>	
<b>Before Aging</b>	14 MPa
<b>After Aging</b>	14 MPa
<b>Elasticity/Elongation:</b>	
<b>Before Aging</b>	500% minimum
<b>After Aging</b>	400% minimum

Catalog No.	\$	Product
BS4 72-6458		Nitrile Cobalt Blue Powder-Free Gloves, Small, box of 100
BS4 72-6459		Nitrile Cobalt Blue Powder-Free Gloves, Medium, box of 100
BS4 72-6460		Nitrile Cobalt Blue Powder-Free Gloves, Large, box of 100
BS4 72-6461		Nitrile Cobalt Blue Powder-Free Gloves, X-Large, box of 100

# Examination Gloves

## **NEW** Nitrile Powder-Free X-Long Teal Gloves



- 100% Latex-free / Powder-free
- Superior puncture and chemical resistance
- Proprietary low modulus formulation reduces hand fatigue
- Teal colored / textured finish
- 305 mm (12 in) extended cuff for extra protection
- 6 mil thickness
- Non-Sterile / Ambidextrous
- Approved for medical use

The HIGH FIVE nitrile gloves are 100% Latex-Free and contain no natural rubber proteins. This soft and supple glove is easy to don, odor-free, and offers an unequalled fit and feel compared to conventional exam gloves. Our unique synthetic formulation reduces hand fatigue and offers superior puncture resistance and chemical resistance compared to latex or vinyl gloves. The HIGH FIVE powder-free nitrile is the ideal solution for individuals allergic to latex. These gloves are ideal for laboratory applications. They are available in four sizes and are supplied in a convenient dispenser box containing 50 gloves.

### Specifications

<b>Material</b>	100% Low Modulus Nitrile
<b>Shape</b>	Ambidextrous
<b>Color</b>	Teal
<b>Cuff</b>	Beaded
<b>Length</b>	305 mm (12 in) extra long cuff
<b>Thickness:</b>	
Cuff	0.14 mm (±0.03mm)
Palm	0.18 mm (±0.03mm)
Finger	0.21 mm (±0.03mm)
<b>Tensile Strength:</b>	
Before Aging	14 MPa
After Aging	14 MPa
<b>Elasticity/Elongation:</b>	
Before Aging	700% minimum, average 850%
After Aging	700% minimum, average 750%

Catalog No.	\$	Product
BS4 72-6462		Nitrile Teal X-Long Powder-Free Gloves, Small, box of 50
BS4 72-6463		Nitrile Teal X-Long Powder-Free Gloves, Medium, box of 50
BS4 72-6464		Nitrile Teal X-Long Powder-Free Gloves, Large, box of 50
BS4 72-6465		Nitrile Teal X-Long Powder-Free Gloves, X-Large, box of 50

## Supreno™ Gloves



- Nitrile examination gloves
- A technologically advanced synthetic glove that's a genuine performer
- Powder-free to help reduce the risk of skin irritation or contamination by glove powders
- Fully textured surface for superior tactility and grip with beaded cuffs

Introducing Supreno: A powder-free medical nitrile from the most trusted name in gloves. Now, those who prefer a non-latex exam glove have a brand they can trust. It took Microflex to design a nitrile glove this good. These Gloves are ambidextrous, non-sterile, and are intended for single time use only. They are available in five sizes and are supplied 100 per dispenser box (by weight).

### Specifications

<b>Material</b>	Nitrile; not made from natural rubber latex	
<b>Glove Exterior</b>	Textured	
<b>Glove Interior</b>	Powder-free	
	<b>Supreno*</b>	<b>ASTM**</b>
<b>Palm Thickness</b>	6.1 mils	3.15 min.
<b>Finger Thickness</b>	6.8 mils	3.15 min.
<b>Tensile Strength:</b>		
<b>Before Aging</b>	17 Mpa	9 min.
<b>After Aging</b>	18 Mpa	9 min.
<b>Elasticity/Elongation:</b>		
<b>Before Aging</b>	700% to 750% min.	–
<b>After Aging</b>	700% to 750% min.	–
<b>Length (mils)</b>	248 min.	230 min.

Catalog No.	\$	Product
BS4 72-3410		Supreno™ Gloves, X-Small, box of 100
BS4 72-3411		Supreno™ Gloves, Small, box of 100
BS4 72-3412		Supreno™ Gloves, Medium, box of 100
BS4 72-3413		Supreno™ Gloves, Large, box of 100
BS4 72-3414		Supreno™ Gloves, X-Large, box of 100

\* Note: Test results from randomly sampled gloves TSR 98.0362

\*\* Note: ASTM D 5250-92

## Diamond Grip Plus™ Gloves



- Fully textured for extraordinary performance
- Powder-free latex examination gloves to help reduce the risk of skin irritation
- Advanced polymer technology for greater film integrity
- Fully textured surface for a more secure grip
- Tapered fingertips for greater comfort
- Advanced glove processing for easier donning

For those who prefer the grip of a fully textured glove, Diamond Grip Plus™ is the glove of choice. These Gloves are ideal for those researchers who require greater tactile sensitivity for instrument manipulation. The tapered fingertips provide greater comfort, while the fully textured surface provide superior gripping. The beaded cuff makes for easier donning and adds strength.

These Gloves are ambidextrous, non-sterile, and are intended for single time use only. They are available in five sizes are supplied 100 per dispenser box (by weight).

### Specifications

<b>Material</b>	Natural latex rubber	
<b>Glove Exterior</b>	Textured	
<b>Glove Interior</b>	Powder-free	
	<b>Diamond Grip Plus*</b>	<b>ASTM**</b>
<b>Cuff Thickness</b>	5.5, beaded mils	n/a
<b>Palm Thickness</b>	7.2 mils	3.15 min.
<b>Finger Thickness</b>	7.9 mils	3.15 min.
<b>Tensile Strength:</b>		
<b>Before Aging</b>	22 Mpa	14 min.
<b>After Aging</b>	17 Mpa	14 min.
<b>Elasticity/Elongation:</b>		
<b>Before Aging</b>	733% min.	700% min.
<b>After Aging</b>	811% min.	500% min.

Catalog No.	\$	Product
BS4 72-3400		Diamond Grip Plus™ Gloves, size X-Small, box of 100
BS4 72-3401		Diamond Grip Plus™ Gloves, size Small, box of 100
BS4 72-3402		Diamond Grip Plus™ Gloves, size Medium, box of 100
BS4 72-3403		Diamond Grip Plus™ Gloves, size Large, box of 100
BS4 72-3404		Diamond Grip Plus™ Gloves, size X-Large, box of 100

\* Note: Test results from randomly sampled gloves TSR 98.0362  
 \*\* Note: ASTM D 5250-92

## NeoPro™ Gloves



- Announcing a revolutionary breakthrough in glove technology
- Powder-free chloroprene examination gloves
- Help reduce the risk of skin irritation or contamination by glove powders
- The barrier performance of a completely synthetic glove with the fit and feel typical of natural latex
- Beaded, tear-resistant cuffs
- Textured for secure grip

Introducing a revolution in non-latex hand protection. NeoPro is a proprietary formulation of completely synthetic polymers. This unique glove combines the barrier performance of a synthetic with the superior comfort typically found in natural latex. Powder-free NeoPro also provides exceptional tactile sensitivity and is textured for a more secure grip.

These Gloves are ambidextrous, non-sterile, and are intended for single time use only. They are available in five sizes are supplied 100 per dispenser box (by weight).

### Specifications

<b>Material</b>	Chloroprene; not made from natural rubber latex	
<b>Glove Exterior</b>	Textured	
<b>Glove Interior</b>	Powder-free	
	<b>NeoPro*</b>	<b>ASTM**</b>
<b>Cuff Thickness</b>	4.1 mils	n/a
<b>Palm Thickness</b>	4.7 mils	3.15 min.
<b>Finger Thickness</b>	6.4 mils	1.97 min.
<b>Tensile Strength:</b>		
<b>Before Aging</b>	16 Mpa	9 min.
<b>After Aging</b>	19 Mpa	9 min.
<b>Elasticity/Elongation:</b>		
<b>Before Aging</b>	500% min.	300% min.
<b>After Aging</b>	500% min.	300% min.
<b>Length (mils)</b>	250 min.	230 min.

Catalog No.	\$	Product
BS4 72-3405		NeoPro™ Gloves, size X-Small, box of 100
BS4 72-3406		NeoPro™ Gloves, size Small, box of 100
BS4 72-3407		NeoPro™ Gloves, size Medium, box of 100
BS4 72-3408		NeoPro™ Gloves, size Large, box of 100
BS4 72-3409		NeoPro™ Gloves, size X-Large, box of 100

\* Note: Test results from randomly sampled gloves TSR 98.0362  
 \*\* Note: ASTM D 5250-92

# Examination Gloves

## Gloves



BS4 59-8429 Micro-Touch®  
Latex Surgical Gloves



The below listed latex gloves are made from medium modulus natural latex. They exceed ASTM D3578-91 (reapproved 1988) standards for major defects. Sampled in accordance with MILS STD 105D. They have a tensile strength before aging minimum of 21 MPa; after aging minimum of 16 MPa. Elongation properties before aging minimum of 700%; after aging minimum of 500%.

Specialized Tools For Bioresearch

- Accu-Grip™ micro-roughened surface provides extra gripping power even when wet
- Superior ease of donning compared to other powder free latex gloves
- Micro-Contouring™ varies glove thickness for maximum sensitivity

### Synetron™ Powder Free Latex Gloves

These outstanding latex gloves provide hand protection while allowing superior gripping power. Available in four sizes and supplied in a box of 50. Non-sterile.

#### Specifications

Cuff	Beaded; minimum length 290 mm (±8 mm)
Thickness:	
Finger	13.8 mils ±1.5 mils
Palm	10.6 mils ±1.5 mils
Cuff	7.9 mils ±1.5 mils

Catalog No.	\$	Product
BS4 60-5157		Synetron™ Gloves, Small, box of 50
BS4 60-5158		Synetron™ Gloves, Medium, box of 50
BS4 60-5159		Synetron™ Gloves, Large, box of 50
BS4 60-5160		Synetron™ Gloves, X-Large, box of 50

- Secure-Grip™ textured surface ensures better handling even when wet
- Superior ease of donning
- Micro-Contouring™ varies glove thickness for maximum sensitivity

### Evolution One™ Powder Free Latex Exam Gloves

These latex gloves provide superior protection while allowing outstanding gripping power. Available in five sizes and supplied in a box of 100. Non-sterile.

#### Specifications

Cuff	Beaded; minimum length 245 mm (±8 mm)
Thickness:	
Finger	7.1 to 10.2 mils
Palm	5.1 to 8.3 mils
Cuff	3.2 to 6.3 mils

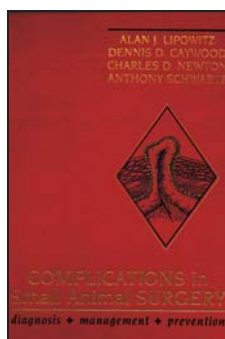
Catalog No.	\$	Product
BS4 60-5161		Evolution One™ Latex Exam Gloves, X-Small, box of 100
BS4 60-5162		Evolution One™ Latex Exam Gloves, Small, box of 100
BS4 60-5163		Evolution One™ Latex Exam Gloves, Medium, box of 100
BS4 60-5164		Evolution One™ Latex Exam Gloves, Large, box of 100
BS4 60-5165		Evolution One™ Latex Exam Gloves, X-Large, box of 100

### Micro-Touch® Latex Surgical Gloves

These sterile Surgical Gloves have curved and tapered fingers, are naturally contoured for comfort and fit and have excellent touch sensitivity. Relaxed latex formulation helps eliminate hand fatigue. Calcium carbonate, not talc, is used to promote safety. These gloves are packaged in individual poly-peelable envelopes that are impervious to moisture and eliminate tearing. These gloves are available in 4 sizes and are supplied in a box of 50.

Catalog No.	\$	Product
BS4 59-8427		Micro-Touch® Latex Surgical Gloves, size 6, box of 50
BS4 59-8428		Micro-Touch® Latex Surgical Gloves, size 7, box of 50
BS4 59-8429		Micro-Touch® Latex Surgical Gloves, size 8, box of 50
BS4 59-8430		Micro-Touch® Latex Surgical Gloves, size 9, box of 50

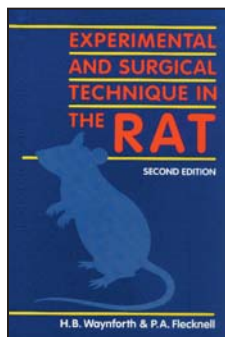
## Books



### Complications in Small Animal Surgery- Diagnosis, Management, Prevention

A. J. Lipowitz, D. D. Caywood, C. D. Newton, and A Schwartz. An absolute must for anyone in small animal practice, this book begins with an orientation to the principles of surgical complications, which are often correctable or preventable. The authors move to targeted discussions on the types of problems associated with different kinds of surgical procedures, organized according to region for fast reference. Effective illustrations emphasize maneuvers to avoid problems and how to respond quickly and effectively if they occur. (500 pp; 1996)

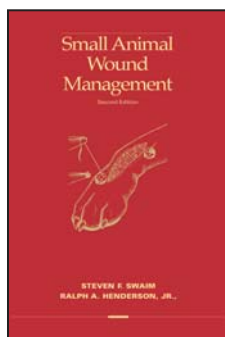
Catalog No.	\$	Product
BS4 72-2610		Complications in Small Animal Surgery



### Experimental and Surgical Techniques in the Rat, 2nd Edition

H. B. Wayforth and P.A. Flecknell. This second edition covers the progress that has been made in recent years in regards to the rat, such as use of new anesthetics and analgesics, new standards of surgery, new techniques and new illustrations. It is still the only source which provides a detailed and up-to-date compilation of illustrated experimental methods for work with the rat. It will continue to be an invaluable reference to specific information for laboratory workers and will help considerably in training new investigators in the proper and considerate use of this species. (368 pp; 1992)

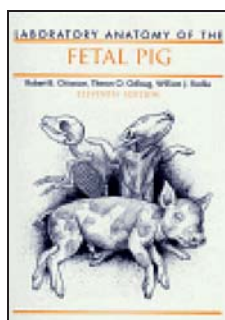
Catalog No.	\$	Product
BS4 51-5031		Experimental and Surgical Techniques in the Rat, 2nd Ed.



### Small Animal Wound Management, 2nd Edition

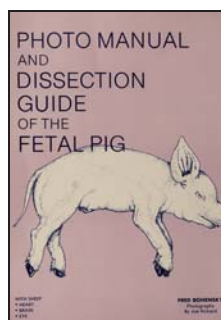
Steven F. Swaim et al. Practical and clinically oriented, this is an excellent guidebook to all aspects of small animal wound management, including definitions and indications, surgical and treatment techniques, and aftercare. Copiously illustrated, with diagrams explaining wound healing stages and step-by-step surgical procedures. This text includes chapters on wound healing, wound management, wound dressing materials and topical medications, specific wounds, management of skin tension, wounds of the head, various shaped wounds, perineal wounds, limb wounds, and cutaneous surgical oncology. (444 pp; 1997)

Catalog No.	\$	Product
BS4 60-1773		Small Animal Wound Management, 2nd Ed.



### Laboratory Anatomy Series

Theron O. Odlaug et al. This Series includes clear dissection guides for all of the most commonly dissected animals. Clear and precise line drawings help guide students through the proper methods of study and dissection. Consistent, logical coverage lets you teach the systems in coherent order, and the text also give ample space for sketches and note-taking.



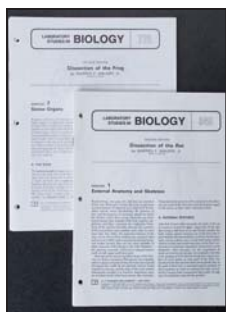
### Photomanual and Dissection Guides

Fred Bohensky. Fully labelled, 8 x 10 inch photographs of dissections are presented to help the biology student visualize anatomical structures as they appear in the laboratory. A self-quiz is included at the end of each section.

Catalog No.	\$	Product
BS4 60-1394		Cat (160 pp; 1996)
BS4 60-1395		Fetal Pig (160 pp; 1997)
BS4 60-1396		Frog and Toad (80 pp; 1994)
BS4 60-1398		Perch (93 pp; 1991)
BS4 60-1399		Pigeon (104 pp; 1985)
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BS4 60-1401		Shark (96 pp; 1988)
BS4 52-7226		White Rat (144 pp; 1988)

Catalog No.	\$	Product
BS4 60-1339		Cat (167 pp; 1979)
BS4 51-5825		Fetal Pig (128 pp, 1989)

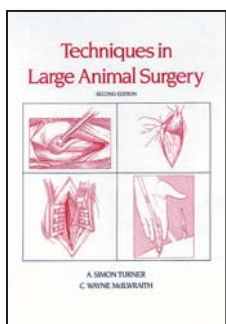
## Books



### Laboratory Studies in Biology, 2nd Edition

Warren F. Walker, Jr. These dissection guides feature clear and complete text. The drawings are large and well labelled. Sections include: external anatomy and skeleton, muscles, digestive, respiratory, circulatory, urogenital and nervous systems including sense organs.

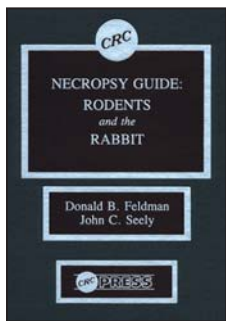
Catalog No.	\$	Product
BS4 60-1509		Frog Dissection (7-loose leaf pamphlets; 1981)
BS4 60-1510		Rat Dissection (6-loose leaf pamphlets; 1981)



### Techniques in Large Animal Surgery, 2nd Edition

A. Simon Turner and C. Wayne McIlwraith. This book presents some fundamental techniques in large animal surgery for both large animal practitioners and veterinary students. It discusses major steps in particular operations and includes appropriate illustrations. (381 pp; 1989)

Catalog No.	\$	Product
BS4 60-1774		Techniques in Large Animal Surgery, 2nd Ed.

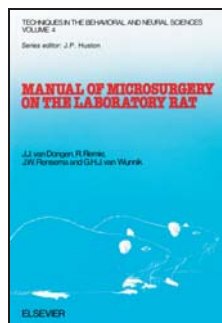


### Necropsy Guide: Rodents and the Rabbit

Donald B. Feldman and John C. Seely. This laboratory guidebook provides step-by-step procedures that aid in the dissection and collection of major organs and tissues of the most common species of small animals used in biomedical research. The techniques described will enable the technician to perform necropsies on almost any mammal in a precise,

logical sequence, and to properly collect tissue in order to avoid diagnostic errors. (176 pp; 1988)

Catalog No.	\$	Product
BS4 60-1474		Necropsy Guide: Rodents and the Rabbit

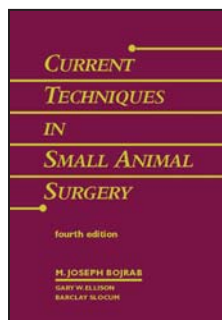


### Manual of Microsurgery on the Laboratory Rat

J.J. van Dongen. This book is a must for any researcher performing or teaching microsurgical techniques. It provides comprehensive text and clear illustrations on many methods of microsurgery. Part I includes the rat as an experimental animal, use of different strains, general principles of microsurgery, operation microscope operation, rat anatomy, and

anesthesia of the laboratory rat. Part II includes cannulation procedures for jugular and renal veins, iliolumbar artery, and thorocid duet, portacaval anastomosis, permanent double bile fistula (with intact enterohepatic circulation), perfusion of the isolated gut in vivo, and intra-uterine operations.

Catalog No.	\$	Product
BS4 72-2620		Manual of Microsurgery on the Laboratory Rat



- Latest advances in small animal surgery
- Clear and concise text that is easy to use
- Over 500 new illustrations

### Current Techniques in Small Animal Surgery, 4th Edition

M. Joseph Bojrab, ed. G. W. Ellison and B. Slocum assistant ed. For years, Current Techniques in Small Animal Surgery has been a recognized standard for practitioners and researchers who need an exemplary guide to both common and complex surgical procedures. This practical "hands-on" definitive resource has been extensively revised and updated. It is easily used, explicit, concise, and provides anatomically correct descriptions of surgical procedures for small animal surgeons. It contains 75% completely new materials, including the latest technologies such as laser, cryo, cautery, endoscopy, and plating and pinning procedures. It also includes new technologies for both hard and soft tissue procedures. This compilation of advances and innovative techniques is complemented by approximately 500 new illustrations. (1,300 pp; 2,100 illustrations; 1997)

Catalog No.	\$	Product
BS4 61-0280		Current Techniques in Small Animal Surgery, 4th Ed.