Harvard Apparatus
a division of Harvard Bioscience, Inc.

SURGICAL SOLUTIONS FOR RESEARCH

VENTILATORS

TEMPERATURE CONTROL

SURGICAL INSTRUMENTS

PHYSIOLOGICAL MONITORING

DELIVERY & SAMPLING

ANESTHESIA

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the most comprehensive line for Surgical Solutions & more!

Harvard Apparatus is pleased to offer you a comprehensive range of tools to meet your ever-changing research needs. Whether your focus involves cells, tissues, organs, or whole animal, Harvard Apparatus has the expertise to guide and support your studies. Having supplied tools for over 100 years, Harvard Apparatus and its brands have been cited over 850,000 times in Google Scholar, nearly 10,000 of those since 2015.

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SURGICAL SOLUTIONS FOR RESEARCH

Harvard Apparatus brings you a comprehensive surgical catalog dedicated to the needs of assembling and maintaining a state-of-the-art surgical suite. From surgical instruments to vital signs monitors and ventilators, we have the tools and knowledge to ensure your procedures are successful.

Harvard Apparatus has provided durable, high-quality German-made surgical tools to researchers for over a decade. Harvard Apparatus surgical tools are forged and finished in Germany under ISO 9001. Our surgical grade steel resists corrosion and maintains sharp edges for optimum precision.

Surgical equipment such as operating tables, lights and magnifiers are essential to a well-prepared surgical suite. Harvard Apparatus offers many options to meet your application needs as well as your budget. Surgical tables available include heated, homeothermic and standard, as well as specially designed tables for mice and rats. Good lighting and magnification improves surgical technique and, in turn, surgical outcomes.

Anesthesia is essential to any surgical procedure. Harvard Apparatus has manufactured and supported a full line of anesthesia products for nearly two decades. We have preconfigured the most common options, enabling you to get started faster and more easily. Should your application require a unique set-up, we continue to maintain our broad product offering to meet the specifics of your surgeries.

Vital signs monitoring plays a critical role in many surgical procedures. Surgeons rely on real-time physiological data to assess the status of their subject and progress of their surgery. Harvard Apparatus offers a wide range of equipment to enable critical monitoring for many research species. By adding comprehensive vital sign monitoring to your surgical suite you can guarantee the best possible outcomes.

Harvard Apparatus has the expertise and scientific depth to help you select the right tools when you start, as well as the commitment to provide the technical support to help you succeed.

Harvard Apparatus

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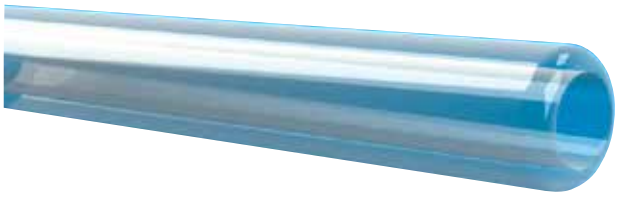
NEW VentElite Small Animal Ventilator

The Harvard Apparatus VentElite allows for pressure or volume controlled ventilation in animals ranging in size from mouse to guinea pig. The large touch screen features a real-time graphical representation of the measured pressure as well as numeric displays of pressure, tidal volume, and respiration rate. Features of the VentElite include manual or programmable Sigh, Inspiratory or Expiratory Hold, adjustable I:E, and audible alarms. For more information see page 172.

NEW Homeothermic Monitoring System

The Harvard Apparatus Homeothermic Monitoring System is a closed loop temperature control system for small rodents. It features an easy-to-use touch screen, small flexible rectal probe, and heating pads available in multiple sizes to meet all your surgical needs. The Homeothermic Monitoring System is the perfect addition to any lab utilizing anesthesia in small rodents. For more information see page 60.

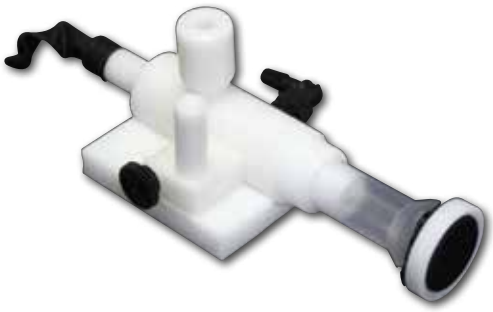


NEW Catheters for Mouse and Rat

Harvard Apparatus is proud to offer these new catheters for target vessels in mouse and rat models. These catheters are designed with rounded tips, suture collars and other features specifically for the target species and vessel. See the Delivery and Sampling section (pages 99-144) of this catalog for more information on these catheters and related products for your animal infusion needs.

NEW BravMini Small Animal Clippers

This lightweight, quiet, and easy-to-use small animal cordless clipper is ideal for removing fine hair from laboratory animals without causing damage to their delicate skin. The clipper features a superior quick detachable blade. For more information see page 92.



NEW COAX-4 Breathing Device

This co-axial breathing apparatus allows subjects to be positioned to receive gas anesthesia in a way that allows the surgical plane to be maintained. It is designed for use with animals ranging in size from mouse to rat. For more information see page 160.

NEW FISO

The FISO-LS series catheters are semi-disposable fiber optic micro-catheters pressure transducers appropriate for wide array of applications in the life sciences and small animal research. Their small size and low noise make them suitable for applications ranging from blood pressure measurement, to intracranial pressure measurements, and everything in between. For more information see page 202.

NEW Small Animal Physiological Monitoring System

The Harvard Apparatus Small Animal Physiological Monitoring System integrates monitoring of rectal temperature, electrocardiogram (ECG), respiration, oxygen saturation (SpO_2), blood pressure and exhaled CO_2 ($EtCO_2$). Designed to make surgery and other manipulations on small animals easier, the system provides superior monitoring of multiple physiological parameters on a single small platform. For more information, see page 188.

NEW Anesthesia Cart

This cart allows you to convert any table-top anesthesia set-up into a mobile station. In addition to the working surface, it contains a storage drawer and an additional shelf. For more information about the Anesthesia Cart, see page 157. For complete anesthesia set-ups, see the Anesthesia section of this catalog.

PRECISION SURGICAL INSTRUMENTS

Harvard Apparatus offers a full line of precise, high quality surgical tools ideal for animal and cellular research. These instruments are made from certified surgical grade German steel. They are forged and finished in a German ISO 9001-certified facility.

Our selection of fine surgical instruments includes a wide variety of tweezers, forceps, scissors, bone instruments, surgical and vascular clips and clamps, scalpels, retractors, wound closure systems, vascular access instruments, and more.

Harvard Apparatus surgical instruments are available in several materials including Stainless Steel, Tungsten Carbide, Titanium, Diamond and UltraEdge. Stainless Steel is a popular choice, but for your research another material may be a better option. Tungsten Carbide scissors last almost two times longer than stainless steel. Titanium is over 40% lighter than equivalent stainless steel instruments, with better flexibility and strength. Titanium is also 100% non-magnetic.

Harvard Apparatus surgical instruments are available for purchase individually, but for your convenience we have created surgical kits suitable for a wide variety of applications. We offer general purpose kits as well as kits designed for specific surgeries. These kits offer a significant cost savings over the individual purchase price.

Magnification and proper lighting in a surgical suite should not be overlooked. Magnification is essential for better alignment of incision for closure. It provides improved vision, freedom of movement and helps lessen fatigue.

Protect your investment by taking care of your surgical instruments. Properly cleaning and maintaining your surgical tools is extremely important and far less costly than replacing instruments. Proper care and maintenance includes cleaning, lubricating, sterilizing, and storing your instruments. This will ensure longevity and optimum performance.

Harvard Apparatus offers high quality and affordably priced surgical tools and accessories to meet your needs as well as the expertise to assist you in their selection.

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TUNGSTEN CARBIDE

Tungsten Carbide - TC

Tungsten carbide is tough, only a diamond edge or laser beam will work it. Therefore, over an extended period time no or negligible wear can be detected.

- The TC edge on scissors gives a soft touch. Thus, less force is required in delicate procedures, reducing trauma to the tissue.
- The Needle Holders are indestructible and firmly hold the needle, while keeping the needle surface smooth. The needle nestles into concave/convex pyramids, regardless of needle positioning, so that the needle does not rotate during surgery.

TITANIUM

Titanium

Titanium (Material No. 7035, 7165) is approximately 50% lighter than steel to minimize tissue trauma during operations. Titanium instruments are also corrosion-proof, rugged and antimagnetic.

DIAMOND

Diamond

Diamond-coated tweezers grip as no other can! Each tweezer is made of stainless steel and coated with extremely fine diamond particles on the inside tips. This tweezer should be used for special applications where gripping is essential.

ULTRA EDGE

UltraEdge

Our UltraEdge scissors warrant your careful consideration. The highest quality steel goes into forging of an extremely durable razor edge on one blade and the opposite edge has a wave serration. The result is a solid smooth cut.

Deluxe Major Surgical Kit

This deluxe kit is ideally suited for more extensive procedures and major laboratory animal surgeries.

Order #	Product
ST2 72-8941	Deluxe Major Surgical Kit
Kit Components:	
ST2 72-8350	Scalpel Handle, No. 3
ST2 72-8360	Scalpel Blades No. 10, Sterile
ST2 72-8362	Scalpel Blades No. 11, Sterile
ST2 72-8508	Vannas Eye Scissors, Spring Action Model Tübingen, 8.5 cm, Straight*
ST2 72-8899	TC Olsen-Hegar Needle Holders with Scissors with Tungsten Carbide Inserts, 14.0 cm
ST2 72-8440	Eye Scissors, 11.5 cm, Straight, Special Cut
ST2 72-8696	Jeweler's Forceps, 11.0 cm, No. 5, with Extra Delicate Points
ST2 72-8598	Graefe Iris Forceps, Serrated, 7.0 cm, Curved, Points 0.5 mm
ST2 72-8394	UltraEdge Operating Scissors, 14.5 cm, Sharp/Blunt, Straight
ST2 72-8450	Universal Clothing Scissors
ST2 72-8905	Friedman Bone Rongeurs, Delicate
ST2 72-8547	Adson Tissue Forceps, 12.0 cm, 1 x 2 Teeth
ST2 72-8919	Barraquer (Colibri) Eye Specula, Large
ST2 72-8912	Probes, 14.5 cm, Double Ended, 1 mm, Diamond

**The Tübingen model has a longer blade than the standard Vannas scissors.*

Minor Surgical Kit

This kit is ideally suited for basic procedures and minor surgery.

Order #	Product
ST2 72-8940	Minor Surgical Kit
Kit Components:	
ST2 72-8350	Scalpel Handle, No. 3
ST2 72-8360	Scalpel Blades No. 10, Sterile
ST2 72-8441	Eye Scissors, 11.5 cm, Curved, Special Cut
ST2 72-8906	Blumenthal Bone Rongeurs, Curved, 15.5 cm
ST2 72-8450	Universal Clothing Scissors
ST2 72-8393	Operating Scissors, 14.5 cm, Sharp/Blunt, Straight
ST2 72-8676	Kuehne Cover Glass Forceps, 10 cm, Angled
ST2 72-8696	Jeweler's Forceps, No. 5, 11 cm, with Extra Delicate Points
ST2 72-8912	Probe, 14.5 cm, Double Ended, 1 mm Diameter

Mouse Surgical Kit

The Mouse Surgical Kit is an ideal starting point for surgical procedures performed on laboratory mice.

Order #	Product
ST2 72-8943	Mouse Surgical Kit
Kit Components:	
ST2 72-8372	Disposable Scalpels with Plastic Handle No. 11, Sterile, pkg. of 10
ST2 72-8696	Jeweler's Forceps 11.0 cm No. 5, with Extra Delicate Points
ST2 72-8503	Vannas Eye Scissors, 8.5 cm, Straight, Spring Action
ST2 72-8604	Graefe Iris Forceps, Serrated, 10.0 cm, Curved, Points, 0.7 mm
ST2 72-8426	Eye Scissors, 10.5 cm, Straight
ST2 72-8918	Barraquer (Colibri) Eye Specula, Small
ST2 72-8826	Derf Needle Holders, 12.0 cm
ST2 72-8912	Probe, 14.5 cm, Double Ended, 1 mm Diameter

Rat Surgical Kit

The Rat Surgical Kit is an ideal starting point for surgical procedures commonly performed on laboratory rats.

Order #	Product
ST2 72-8942	Rat Surgical Kit
Kit Components:	
ST2 72-8372	Disposable Scalpels with Plastic Handle No. 11, Sterile, Box of 10
ST2 72-8696	Jeweler's Forceps 11.0 cm No. 5, with Extra Delicate Points
ST2 72-8503	Vannas Eye Scissors, 8.5 cm Straight, Spring Action
ST2 72-8604	Graefe Iris Forceps, Serrated, 10.0 cm, Curved, Points, 0.7 mm
ST2 72-8440	Eye Scissors, 11.5 cm, Straight, Special Cut
ST2 72-8919	Barraquer (Colibri) Eye Specula, Large
ST2 72-8844	Olsen-Hegar Needle Holder with Scissors, 11.5 cm
ST2 72-8912	Probe, 14.5 cm, Double Ended, 1 mm Diameter

Rodent Microsurgical Kit

This kit is an ideal starting point for anyone performing microsurgery on rodents.

Order #	Product
ST2 72-9042	Rodent Microsurgical Kit
Kit Components:	
ST2 72-0461	Jeweler's Forceps, Titanium, 11.0 cm, No. 4, Extra Delicate Tips, 45° Angle
ST2 72-0443	Micro Forceps, 18.0 cm with Suture Platform, 0.3 mm, Curved
ST2 72-0442	Micro Forceps, 18.0 cm with Suture Platform, 0.3 mm, Straight
ST2 72-0141	Dressing Forceps, 17.5 cm, Straight
ST2 72-0142	Dressing Forceps, 17.5 cm, Curved
ST2 72-0144	Vannas Microscissors with Round Handle, 12.0 cm, Sharp/Sharp, Curved
ST2 72-0145	Barraquer Needle Holder with Rachet and Round Handle, 14.0 cm, Straight
ST2 72-8898	TC Olsen-Hegar Needle Holders with Scissors with Tungsten-Carbide Inserts, 12.0 cm
ST2 72-8573	Adson Tissue Forceps, 12.0 cm, 1 x 2 Teeth, with Suture Platform, 2 Stoppings, 0.8 mm
ST2 72-8428	Eye Scissors, 11.5 cm, Straight

Rodent Microdialysis Surgical Kit

This kit is an ideal starting point for microdialysis studies on rodents.

Order #	Product
ST2 72-8994	Rodent Microdialysis Surgical Kit
Kit Components:	
ST2 72-8360	Scalpel Blades No. 10, Sterile, pkg. of 100
ST2 72-8350	Scalpel Handle, No. 3
ST2 72-8426	Eye Scissors, 10.5 cm, Straight
ST2 72-8815	Dieffenbach Vessel Clips, 35 mm, Straight, pkg. of 2
ST2 72-8393	Operating Scissors, 14.5 cm, Sharp/Blunt, Straight
ST2 72-8696	Vannas Eye Scissors, Spring Action Model Tübingen, 8.5 cm, Straight*
ST2 72-8604	Graefe Iris Forceps, Serrated, 10.0 cm, Curved, Points, 0.7 mm
ST2 72-8884	TC Derf Needle Holders with Tungsten Carbide Inserts, 12.0 cm, Extra Delicate Jaw
ST2 CMA7431058	Trephine Drill Bits, pkg. of 3
ST2 CMA8003264	Anchor Screw Drill Bits, pkg. of 3
ST2 CMA7431021	Anchor Screws, pkg. of 100

Mouse Isolated Heart Surgical Kit

This is an ideal starter kit for anyone who needs to perform surgeries for isolated heart preparation on mice.

Order #	Product
ST2 72-8999	Mouse Isolated Heart Surgical Kit
Kit Components:	
ST2 51-7680	Suture without Needle, Silk Black Braid, 5-0, 100 yards
ST2 72-8591	Graefe Iris Forceps, Serrated, 10.0 cm, Straight, Points 0.7 mm
ST2 72-8440	Eye Scissors, 11.5 cm, Straight, Special Cut
ST2 72-8688	Jeweler's Forceps, 11.0 cm, No. 5, Angled, pkg. of 2
ST2 72-8816	Vessel Clip, 4 mm Jaw Length, 0.75 mm Jaw Width, Locking Pressure 125 g
ST2 72-8993	Applying Forceps for 72-8816 Vessel Clip
ST2 72-8508	Vannas Eye Scissors, Spring Action Model Tübingen, 8.5 cm, Straight*

**The Tübingen model has a longer blade than the standard Vannas scissors.*

Rat/Guinea Pig Isolated Heart Surgical Kit

This is an ideal starter kit for anyone who needs to perform surgeries for isolated heart preparation on rats or guinea pigs.

Order #	Product
ST2 72-8998	Rat/Guinea Pig Isolated Heart Surgical Kit
Kit Components:	
ST2 51-7698	Suture without Needle, Silk Black Braid, 4-0, 100 yards
ST2 72-8402	Operating Scissors, 13.0 cm, Sharp/Sharp, Straight
ST2 72-8949	Dressing Forceps, 13.0 cm, Straight, Slender
ST2 72-8497	Castroviejo-Mini Eye Scissors Spring Action, 11.0 cm, Right Angled
ST2 72-8614	Graefe Iris Forceps, Serrated, 10.0 cm, Strongly Curved, Points 0.3 mm, pkg. of 2
ST2 72-8973	HALSTEAD-MOSQUITO, Hemostatic Forceps, 12.5 cm, Straight, pkg. of 2
ST2 72-8815	Dieffenbach Vessel Clip, 35 mm, Straight

Mouse Isolated Organ Surgical Kit

This is an ideal starter kit for anyone who needs to perform surgeries for isolated organ preparation on mice.

Order #	Product
ST2 72-8997	Mouse Isolated Organ Surgical Kit
Kit Components:	
ST2 51-7680	Suture without Needle, Silk Black Braid, 5-0, 100 yards
ST2 72-8591	Graefe Iris Forceps, Serrated, 10.0 cm, Straight, Points 0.7 mm
ST2 72-8440	Eye Scissors, 11.5 cm, Straight, Special Cut
ST2 72-8966	MICRO-MOSQUITO, Hemostatic Forceps, 10.0 cm, Curved
ST2 72-8973	HALSTEAD-MOSQUITO, Hemostatic Forceps, 12.5 cm, Straight
ST2 72-8508	Vannas Eye Scissors, Spring Action Model Tübingen, 8.5 cm, Straight*
ST2 72-8598	Graefe Iris Forceps, Serrated, 7.0 cm, Curved Points 0.5 mm

**The Tübingen model has a longer blade than the standard Vannas scissors.*

Rat/Guinea Pig Isolated Organ Surgical Kit

This is an ideal starter kit for anyone who needs to perform surgeries for isolated organ preparation on rats or guinea pigs.

Order #	Product
ST2 72-8996	Rat/Guinea Pig Isolated Organ Surgical Kit
Kit Components:	
ST2 51-7698	Suture without Needle, Silk Black Braid, 4-0, 100 yards
ST2 72-8402	Operating Scissors, 13.0 cm, Sharp/Sharp, Straight
ST2 72-8949	Dressing Forceps, 13.0 cm, Straight, Slender
ST2 72-8428	Eye Scissors, 11.5 cm, Straight
ST2 72-8600	Graefe Iris Forceps, Serrated, 7.0 cm, Curved, Points 1.0 mm, pkg. of 2
ST2 72-8976	HALSTEAD-MOSQUITO, Hemostatic Forceps, 14.0 cm, Straight
ST2 72-8960	HARTMANN, Hemostatic Forceps, 10.0 cm, Curved

Liston Bone Cutting Forceps Straight

Order #	Overall Length
ST2 72-8908	14.0 cm
ST2 72-8909	17.0 cm
ST2 72-8910	19.0 cm

Friedman Bone Rongeurs Curved

Order #	Jaw Length	Overall Length	Key Feature
ST2 72-8904	3.0 mm	13.5 cm	
ST2 72-8905	2.0 mm	14.0 cm	Delicate

Blumenthal Bone Rongeurs Curved

Order #	Jaw Length	Overall Length
ST2 72-8906	4.0 mm	14.5 cm

Blumenthal Bone Rongeurs 45° Angle

Order #	Jaw Length	Overall Length
ST2 72-8907	3.0 mm	15.0 cm

Round Knurled Chuck Handles*, pkg. of 1

Order #	Diameter	Overall Length
ST2 56-5671	5.0 mm	7.5 cm
ST2 56-5655	5.0 mm	10.0 cm
ST2 56-5630	5.0 mm	13.0 cm

**Use with Mini-Blade®, see below.*

Miniature Blade*, pkg. of 24

Order #	Cutting Edge
ST2 56-5465	1.5 mm

**Use with Chuck Handles, see above.*

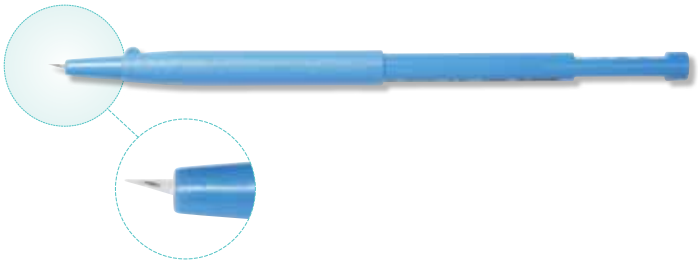
Disposable Micro Scalpels* without Handle, pkg. of 6

Order #	Blade Angle	Depth	Color
ST2 56-5754	15°	3.0 mm	Blue
ST2 56-5762	15°	5.0 mm	Green

**Use with Chuck Handles, see above.*

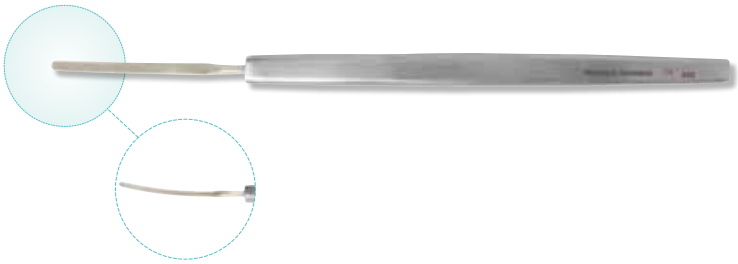
Disposable Micro Scalpels with Handle, pkg. of 6

Order #	Blade Angle	Depth	Color
ST2 56-5673	15°	3.0 mm	Blue
ST2 56-5657	15°	5.0 mm	Green



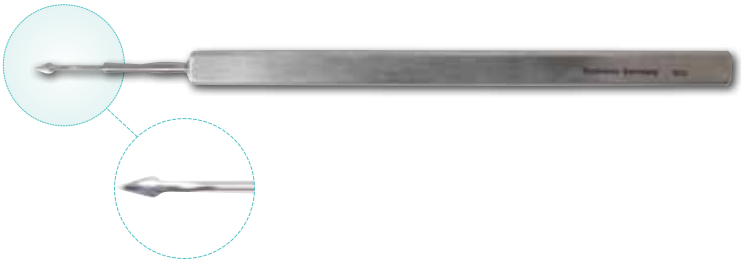
Wecker Micro Dissecting Spatula, pkg. of 1

Order #	Tip Width	Tip Thickness	Overall Length
ST2 52-2664	2.0 mm	0.3 mm	12.5 cm



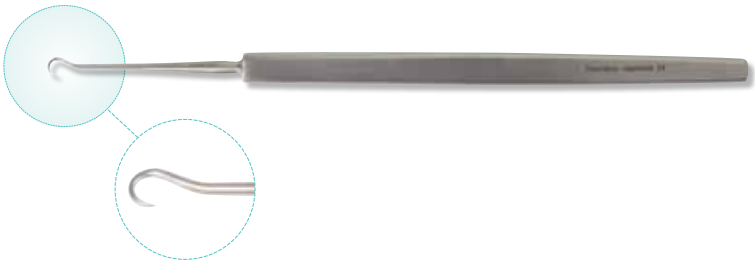
Bowman Knife, pkg. of 1

Order #	Blade Length	Overall Length	Key Feature
ST2 52-2730	3.0 mm	12.0 cm	Spear Point



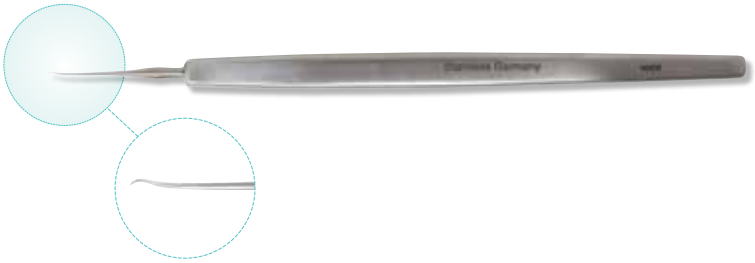
Frazier Micro Dissecting Hook, pkg. of 1

Order #	Loop Diameter	Overall Length	Key Feature
ST2 52-2706	2.0 mm	12.5 cm	Sharp
ST2 52-2714	2.0 mm	12.5 cm	Blunt



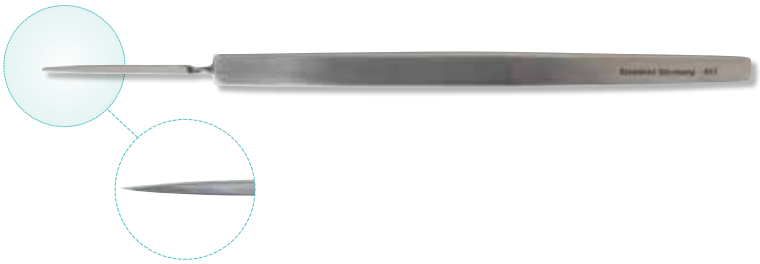
Nugent Micro Dissecting Hook Angular Sharp, pkg. of 1

Order #	Overall Length	Key Feature
ST2 52-2722	12.5 cm	Angular, Sharp



Graefe Micro Dissecting Knife, pkg. of 1

Order #	Cutting Edge	Overall Length	Key Feature
ST2 60-3979	25.0 mm	12.0 cm	No. 1
ST2 60-3980	27.0 mm	12.0 cm	No. 2



Ziegler Micro Dissecting Knife, pkg. of 1

Order #	Cutting Edge	Overall Length	Key Feature
ST2 60-3975	3.0 mm	11.0 cm	No. 0
ST2 60-3976	5.0 mm	11.0 cm	No. 1
ST2 60-3978	7.0 mm	11.0 cm	No. 3

Sterile Scalpel Blades for use with No. 3 and No. 7 Handles

Order #	Product
ST2 72-8360	No. 10, Sterile, pkg. of 100
ST2 72-8362	No. 11, Sterile, pkg. of 100
ST2 72-8364	No. 12, Sterile, pkg. of 100
ST2 75-0086	No. 12d, Sterile, pkg. of 100
ST2 72-8366	No. 13, Sterile, pkg. of 100
ST2 72-8368	No. 15, Sterile, pkg. of 100
ST2 75-0087	No. 15c, Sterile, pkg. of 100

Disposable Scalpel with Plastic Handle

Order #	Product
ST2 72-8370	No. 10, Sterile, pkg. of 10
ST2 72-8372	No. 11, Sterile, pkg. of 10
ST2 72-8373	No. 12, Sterile, pkg. of 10
ST2 72-8374	No. 13, Sterile, pkg. of 10
ST2 72-8375	No. 15, Sterile, pkg. of 10

Scalpel Handle No. 3 Solid

Order #	Overall Length
ST2 72-8350	12.0 cm

Scalpel Handle No. 7 Solid

Order #	Overall Length
ST2 72-8354	16.5 cm

Sterile Scalpel Blades for use with No. 4 Handles

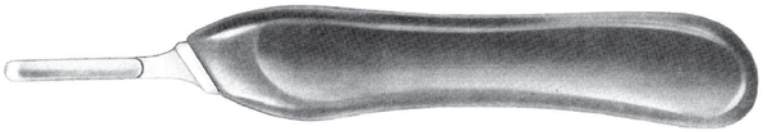
Order #	Product
ST2 75-0088	No. 18, Sterile, pkg. of 100
ST2 75-0089	No. 19, Sterile, pkg. of 100
ST2 75-0090	No. 20, Sterile, pkg. of 100
ST2 75-0091	No. 21, Sterile, pkg. of 100
ST2 75-0092	No. 22 Sterile, pkg. of 100
ST2 75-0093	No. 23, Sterile, pkg. of 100
ST2 75-0094	No. 24, Sterile, pkg. of 100
ST2 75-0095	No. 25, Sterile, pkg. of 100
ST2 75-0096	No. 36, Sterile, pkg. of 100

Scalpel Handle No. 4 Solid

Order #	Overall Length
ST2 72-8356	13.5 cm

Plastic Scalpel Handle No. 4 Solid

Order #	Overall Length
ST2 810-112-04	13.5 cm



Scalpel Blade Remover

Order #
ST2 810-199-00

Castroviejo Spring Scissors Curved, Sharp/Sharp

Order #	Cutting Edge	Tip Width	Overall Length
ST2 72-8493	13.0 mm	0.8 mm	10.0 cm

Castroviejo Spring Scissors Curved, Blunt/Blunt

Order #	Cutting Edge	Tip Width	Overall Length
ST2 72-8494	13.0 mm	1.4 mm	10.0 cm

Castroviejo Spring Scissors Angled, Sharp/Sharp

Order #	Cutting Edge	Tip Width	Overall Length	Key Feature
ST2 72-8496	11.0 mm	1.4 mm	10.5 cm	Angled Left
ST2 72-8497	11.0 mm	1.4 mm	10.5 cm	Angled Right

Vannas Spring Scissors with Round Handles Straight, Sharp/Sharp

Order #	Cutting Edge	Tip Width	Overall Length
ST2 72-0143	8.0 mm	0.6 mm	12.0 cm

Vannas Spring Scissors Straight, Sharp/Sharp

Order #	Cutting Edge	Tip Width	Overall Length
ST2 72-8503	6.0 mm	0.5 mm	8.5 cm
ST2 72-8483	9.0 mm	0.6 mm	8.5 cm

Vannas Spring Scissors with Round Handles Curved, Sharp/Sharp

Order #	Cutting Edge	Tip Width	Overall Length
ST2 72-0144	8.0 mm	0.6 mm	12.0 cm

Vannas Spring Scissors Curved, Sharp/Sharp

Order #	Cutting Edge	Tip Width	Overall Length
ST2 72-8484	3.0 mm	0.4 mm	8.0 cm
ST2 72-8504	6.0 mm	0.6 mm	8.0 cm

Vannas Spring Scissors Angled, Sharp/Sharp

Order #	Cutting Edge	Tip Width	Overall Length
ST2 72-8485	4.0 mm	0.4 mm	8.0 cm
ST2 72-8505	7.0 mm	0.4 mm	8.0 cm
ST2 72-8506	4.0 mm	0.5 mm	8.0 cm
ST2 72-8507	5.0 mm	0.7 mm	12.5 cm

Vannas Tübingen Spring Scissors* Straight, Sharp/Sharp

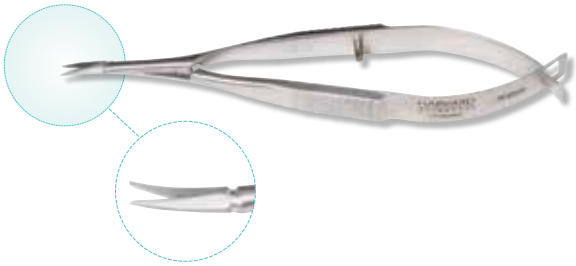
Order #	Cutting Edge	Tip Width	Overall Length
ST2 72-8508	10.0 mm	0.7 mm	8.5 cm

**The Tübingen model has a longer blade than the standard Vannas scissors.*

Vannas Tübingen Spring Scissors* Curved, Sharp/Sharp

Order #	Cutting Edge	Tip Width	Overall Length
ST2 72-8509	8.0 mm	0.6 mm	8.0 cm

**The Tübingen model has a longer blade than the standard Vannas scissors.*



Vannas Tübingen Spring Scissors* Angled to Side, Sharp/Sharp

Order #	Cutting Edge	Tip Width	Overall Length
ST2 72-8510	8.0 mm	0.4 mm	8.0 cm

**The Tübingen model has a longer blade than the standard Vannas scissors.*

Vannas Tübingen Spring Scissors* Angled Up, Sharp/Sharp

Order #	Cutting Edge	Tip Width	Overall Length
ST2 72-8511	8.0 mm	0.4 mm	8.0 cm

**The Tübingen model has a longer blade than the standard Vannas scissors.*

Troutman Spring Scissors Angled, Blunt/Blunt

Order #	Cutting Edge	Tip Width	Overall Length	Key Feature
ST2 72-8514	5.0 mm	0.5 mm	10.0 cm	Angled Left
ST2 72-8515	5.0 mm	0.5 mm	10.0 cm	Angled Right

Barraquer Spring Scissors Angled, Blunt/Blunt

Order #	Cutting Edge	Tip Width	Overall Length
ST2 72-8512	4.0 mm	0.5 mm	5.5 cm

Tungsten-Carbide Eye Scissors
Straight, Sharp/Sharp

Order #	Blade Length	Overall Length
ST2 72-8480	24.0 mm	11.5 cm

Eye Scissors
Straight, Sharp/Sharp

Order #	Blade Length	Overall Length	Key Feature
ST2 72-8438	28.0 mm	11.5 cm	Delicate

Eye Scissors
Straight, Sharp/Sharp

Order #	Blade Length	Overall Length	Key Feature
ST2 72-8426	24.0 mm	10.5 cm	
ST2 72-8428	27.0 mm	11.5 cm	
ST2 75-0080	27.0 mm	11.5 cm	Left Handed
ST2 72-8430	32.0 mm	12.5 cm	

Eye Scissors
Curved, Sharp/Sharp

Order #	Blade Length	Overall Length	Key Feature
ST2 72-8432	25.0 mm	10.5 cm	
ST2 72-8434	26.0 mm	11.5 cm	
ST2 75-0082	26.0 mm	11.5 cm	Left Handed
ST2 72-8436	32.0 mm	12.5 cm	

Eye Scissors
Angled, Sharp/Sharp

Order #	Blade Length	Overall Length
ST2 72-8437	27.0 mm	11.5 cm

Special Cut Eye Scissors*
Straight, Sharp/Sharp

Order #	Blade Length	Overall Length
ST2 72-8440	24.0 mm	11.5 cm

**Our Special Cut Scissors are especially durable and delicate, signified by a black handle.*

Special Cut Eye Scissors*
Curved, Sharp/Sharp

Order #	Blade Length	Overall Length
ST2 72-8441	24.0 mm	11.5 cm

**Our Special Cut Scissors are especially durable and delicate, signified by a black handle.*

Extra Fine Bonn Eye Scissors
Straight, Sharp/Sharp

Order #	Blade Length	Overall Length
ST2 72-8442	15.0 mm	9.0 cm

Extra Fine Bonn Eye Scissors
Curved, Sharp/Sharp

Order #	Blade Length	Overall Length
ST2 72-8443	14.0 mm	9.0 cm

Operating Scissors
Straight, Sharp/Sharp

Order #	Blade Length	Overall Length
ST2 72-8400	32.0 mm	10.5 cm
ST2 72-8402	44.0 mm	13.0 cm
ST2 72-8403	49.0 mm	14.5 cm
ST2 72-8405	55.0 mm	16.5 cm

Tungsten Carbide Operating Scissors
Straight, Sharp/Sharp

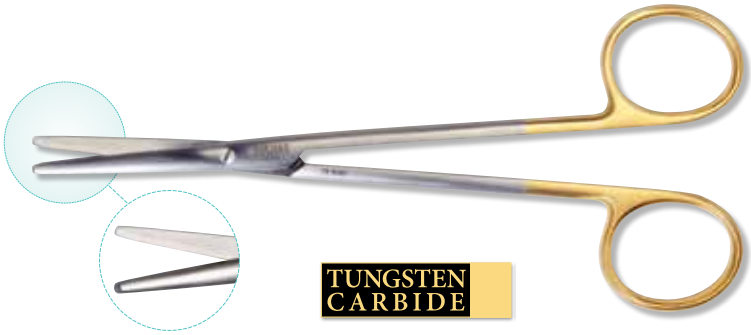
Order #	Blade Length	Overall Length
ST2 72-8456	47.0 mm	14.0 cm

Operating Scissors
Curved, Sharp/Sharp

Order #	Blade Length	Overall Length
ST2 72-8422	48.0 mm	14.5 cm
ST2 72-8424	55.0 mm	16.0 cm

Tungsten Carbide Metzenbaum
Dissecting Scissors
Straight, Blunt/Blunt

Order #	Blade Length	Overall Length
ST2 72-8481	29.0 mm	14.0 cm



Operating Scissors
Straight, Blunt/Blunt

Order #	Blade Length	Overall Length
ST2 72-8379	32.0 mm	10.5 cm
ST2 72-8380	42.0 mm	12.0 cm
ST2 72-8384	46.0 mm	14.0 cm

UltraEdge Operating Scissors
Straight, Blunt/Blunt

Order #	Blade Length	Overall Length
ST2 72-8383	48.0 mm	14.5 cm

Tungsten Carbide Mayo Operating Scissors
Straight, Blunt/Blunt

Order #	Blade Length	Overall Length	Key Feature
ST2 72-8461	41.0 mm	14.5 cm	
ST2 72-8462	41.0 mm	14.5 cm	Left Handed
ST2 72-8463	51.0 mm	17.5 cm	
ST2 72-8464	51.0 mm	17.5 cm	Left Handed

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1-800-547-6766 or 508-893-8999

Tungsten Carbide Operating Scissors Straight, Blunt/Blunt

Order #	Blade Length	Overall Length
ST2 72-8453	47.0 mm	14.0 cm

Operating Scissors Curved, Blunt/Blunt

Order #	Blade Length	Overall Length
ST2 72-8409	47.0 mm	14.5 cm
ST2 72-8411	54.0 mm	16.5 cm

Tungsten Carbide Mayo Operating Scissors Curved, Blunt/Blunt

Order #	Blade Length	Overall Length	Key Feature
ST2 72-8466	41.0 mm	14.5 cm	
ST2 72-8467	41.0 mm	14.5 cm	Left Handed
ST2 72-8468	52.0 mm	17.0 cm	
ST2 72-8469	52.0 mm	17.0 cm	Left Handed

Operating Scissors Straight, Sharp/Blunt

Order #	Blade Length	Overall Length
ST2 72-8390	33.0 mm	10.5 cm
ST2 72-8392	43.0 mm	13.0 cm
ST2 72-8393	47.0 mm	14.0 cm
ST2 72-8395	52.0 mm	15.5 cm

UltraEdge Operating Scissors
Straight, Sharp/Blunt

Order #	Blade Length	Overall Length
ST2 72-8394	49.0 mm	14.5 cm

Operating Scissors
Curved, Sharp/Blunt

Order #	Blade Length	Overall Length
ST2 72-8415	45.0 mm	14.5 cm
ST2 72-8417	51.0 mm	16.5 cm

Lister Bandage Scissors
Angled, Blunt/Blunt

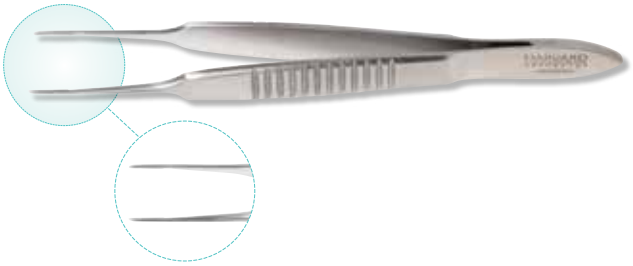
Order #	Blade Length	Overall Length
ST2 72-8448	42.0 mm	17.0 cm

Universal Clothing Scissors
Angled, Blunt/Blunt

Order #	Overall Length
ST2 72-8450	14.0 cm
ST2 72-8451	18.0 cm

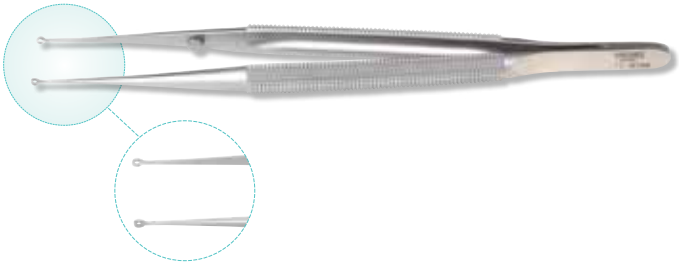
Micro Tweezer
Straight, 1 x 2 Teeth

Order #	Tip Width	Overall Length	Key Feature
ST2 72-8715	0.5 mm	8.5 cm	Suture Platform



Micro Tweezer with Round Handle
Straight, Smooth

Order #	Tip Width	Ring Dia.	Overall Length	Key Feature
ST2 72-8720	1.0 mm	2.0 mm	15.0 cm	Suture Platform & Ring



Diamond Coated Titanium Micro Tweezer with Round Handle
Straight, Smooth

Order #	Tip Width	Ring Dia.	Overall Length	Key Feature
ST2 72-8718	1.0 mm	0.5 mm	15.0 cm	Suture Platform & Ring
ST2 72-8719	1.0 mm	0.5 mm	15.0 cm	Suture Platform & Ring
ST2 72-8722	2.0 mm	0.1 mm	15.0 cm	Suture Platform & Ring
ST2 72-8726	1.0 mm	0.5 mm	18.0 cm	Suture Platform & Ring

Diamond Coated Micro Tweezer with Round Handle
Straight, Smooth

Order #	Tip Width	Ring Dia.	Overall Length	Key Feature
ST2 72-8717	1.0 mm	0.5 mm	15.0 cm	Suture Platform & Ring
ST2 72-8721	1.0 mm	0.2 mm	15.0 cm	Suture Platform & Ring
ST2 72-8725	1.0 mm	0.5 mm	15.0 cm	Suture Platform & Ring

Adson Tissue Forceps
Straight, 1 x 2 Teeth

Order #	Tip Width	Overall Length	Key Feature
ST2 72-8547	0.1 mm	12.0 cm	
ST2 72-8548	0.1 mm	12.0 cm	Lightweight

Micro-Adson Tissue Forceps
Straight, 1 x 2 Teeth

Order #	Tip Width	Overall Length	Key Feature
ST2 72-8555	0.8 mm	12.0 cm	No Finish
ST2 72-8556	0.7 mm	12.0 cm	Extra Delicate
ST2 72-8558	1.3 mm	15.0 cm	Extra Delicate

Micro-Adson Tissue Forceps
Angled, 1 x 2 Teeth

Order #	Tip Width	Overall Length
ST2 72-8557	1.0 mm	11.5 cm

Extra Fine Micro-Adson-Biemer Tissue Forceps
Straight, 1 x 2 Teeth

Order #	Tip Width	Overall Length	Key Feature
ST2 72-8575	1.0 mm	12.0 cm	Suture Platform

Adson Tissue Forceps
Straight, 1 x 2 Teeth

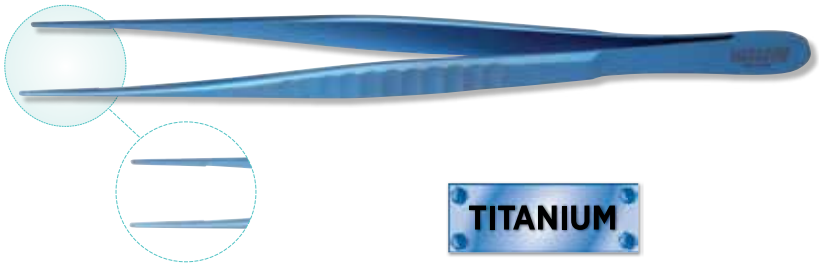
Order #	Tip Width	Overall Length	Key Feature
ST2 72-8573	0.9 mm	12.0 cm	Suture Platform

Adson Tissue Forceps
Straight, 2 x 3 Teeth

Order #	Tip Width	Overall Length	Key Feature
ST2 72-8577	2.2 mm	12.0 cm	Light Weight

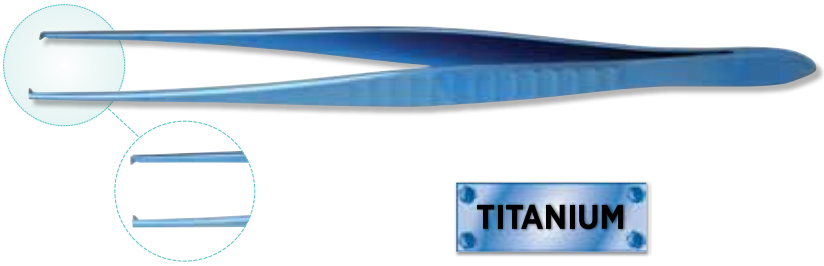
Titanium DeBakey Atraumatic Tissue Forceps
Straight, Serrated

Order #	Tip Width	Overall Length
ST2 72-8782	1.0 mm	15.0 cm
ST2 72-8783	1.0 mm	20.0 cm
ST2 72-8784	1.0 mm	24.0 cm
ST2 72-8785	1.6 mm	15.0 cm
ST2 72-8786	1.6 mm	20.0 cm
ST2 72-8787	1.6 mm	24.5 cm
ST2 72-8788	1.8 mm	15.0 cm
ST2 72-8789	1.9 mm	20.0 cm
ST2 72-8790	1.8 mm	24.5 cm
ST2 72-8791	1.9 mm	15.0 cm
ST2 72-8792	2.0 mm	20.0 cm



Titanium Gillies Tissue Forceps with Round Handles
Straight, 1 x 2 Teeth

Order #	Tip Width	Overall Length
ST2 72-8773	1.6 mm	15.0 cm



Graefe Iris Forceps*
Straight, Serrated

Order #	Tip Width	Overall Length	Key Feature
ST2 72-8590	0.7 mm	10.0 cm	
ST2 72-8591	1.0 mm	10.0 cm	Suture Platform
ST2 72-8593*	1.0 mm	10.0 cm	Non-Magnetic

**These Non-Magnetic Forceps are made of German Stainless Steel #1.4301.*

Iris Forceps
Straight, Serrated

Order #	Tip Width	Overall Length
ST2 72-8595	1.0 mm	11.5 cm

Bishop-Harmon Iris Forceps
Straight, Serrated

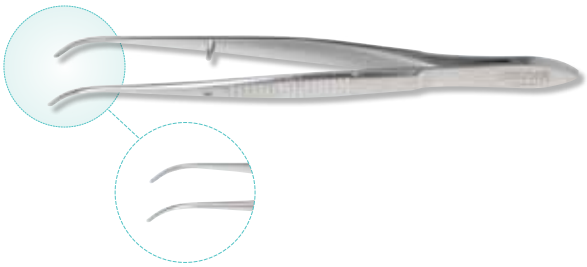
Order #	Tip Width	Overall Length
ST2 72-8649	1.3 mm	8.5 cm

Bishop-Harmon Iris Forceps
Straight, 1 x 2 Teeth

Order #	Tip Width	Overall Length
ST2 72-8650	1.3 mm	8.5 cm

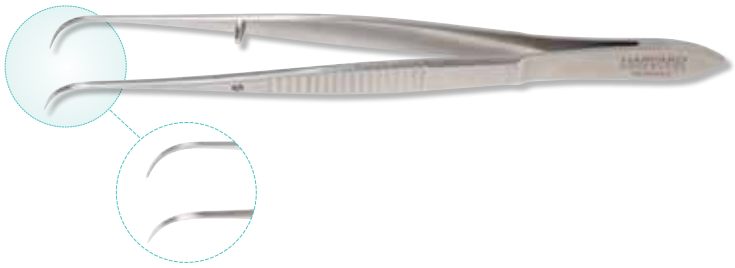
Graefe Iris Forceps
Curved, Serrated

Order #	Tip Width	Overall Length	Key Feature
ST2 72-8598	0.5 mm	7.0 cm	
ST2 72-8599	0.7 mm	7.0 cm	
ST2 72-8600	1.0 mm	7.0 cm	
ST2 72-8601	0.3 mm	10.0 cm	Suture Platform
ST2 72-8602	0.5 mm	10.0 cm	Suture Platform
ST2 72-8603	0.6 mm	10.0 cm	Stop Pin
ST2 72-8604	0.7 mm	9.5 cm	
ST2 72-8605	0.8 mm	9.5 cm	Suture Platform



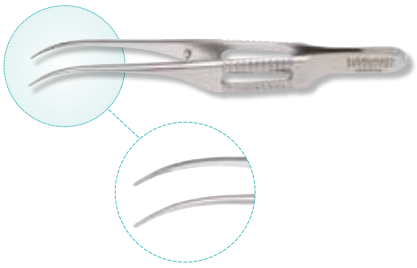
Graefe Iris Forceps
Strongly Curved, Serrated

Order #	Tip Width	Overall Length	Key Feature
ST2 72-8611	0.5 mm	7.0 cm	
ST2 72-8612	0.7 mm	7.0 cm	
ST2 72-8614	0.4 mm	9.5 cm	
ST2 72-8615	0.5 mm	19.5 cm	Suture Platform



Gill Iris Forceps
Curved, Serrated

Order #	Tip Width	Overall Length
ST2 72-8653	0.7 mm	7.5 cm



Gill Iris Forceps
Curved, 1 x 2 Teeth

Order #	Tip Width	Overall Length
ST2 72-8654	0.5 mm	7.5 cm

Nevyas Capsulorhexis Forceps with Very Delicate Grasping Tips Angled, Smooth

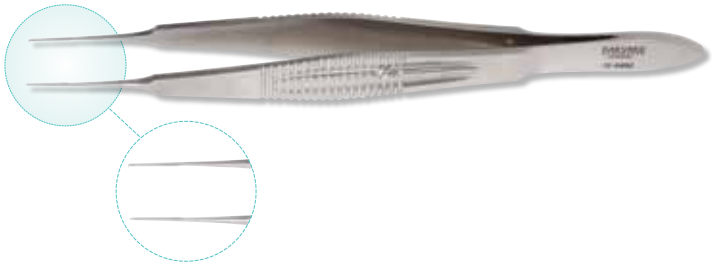
Order #	Tip Width	Overall Length	Key Feature
ST2 72-8658	0.3 mm	10.0 cm	Long Shanks

Troutman Suture Forceps Double Angled, 1 x 2 Teeth

Order #	Tip Width	Overall Length
ST2 72-8660	0.7 mm	7.5 cm

Castroviejo Suture Forceps Straight, 1 x 2 Teeth

Order #	Tip Width	Overall Length	Key Feature
ST2 72-8662	0.5 mm	11.0 cm	
ST2 72-8663	0.5 mm	10.0 cm	Suture Platform
ST2 72-8664	0.6 mm	10.0 cm	Suture Platform
ST2 72-8665	1.0 mm	10.0 cm	Suture Platform



Castroviejo Suture Forceps Angled, 1 x 2 Teeth

Order #	Tip Width	Overall Length	Key Feature
ST2 72-8669	0.5 mm	9.5 cm	
ST2 72-8670	0.8 mm	10.5 cm	Suture Platform
ST2 72-8671	1.0 mm	10.5 cm	Suture Platform

Kuehne Cover Glass Forceps Angled, Smooth

Order #	Tip Width	Overall Length
ST2 72-8676	5.7 mm	10.0 cm

Jewelers Forceps* with Extra Delicate Tips Straight, Smooth

Order #	Tip Width	Overall Length	Style	Key Feature
ST2 72-8689	0.5 mm	10.5 cm	No. 1	
ST2 72-8690	0.4 mm	10.5 cm	No. 2	
ST2 72-8691	0.3 mm	12.0 cm	No. 3	
ST2 72-8692	0.5 mm	11.0 cm	No. 4	
ST2 72-8693	0.3 mm	10.5 cm	No. 4	
ST2 72-8694	0.5 mm	10.5 cm	No. 4	Lightweight, 3 Holes
ST2 72-8696	0.5 mm	10.5 cm	No. 5	
ST2 72-8698*	0.4 mm	10.5 cm	No. 5	Non-Magnetic
ST2 72-8700	0.5 mm	11.5 cm	No. 7	

**These Non-Magnetic Forceps are made of German Stainless Steel #1.4301.*

Jewelers Forceps Straight, Smooth

Order #	Tip Width	Overall Length	Style	Key Feature
ST2 72-8678	0.5 mm	11.5 cm	No. 1	
ST2 72-8679*	0.5 mm	11.5 cm	No. 1	Non-Magnetic
ST2 72-8680	0.6 mm	12.0 cm	No. 2	
ST2 72-8681	0.6 mm	11.5 cm	No. 3	
ST2 72-8682	0.6 mm	10.5 cm	No. 4	
ST2 72-8683*	0.4 mm	10.5 cm	No. 4	Non-Magnetic
ST2 72-8684	0.4 mm	10.5 cm	No. 5	
ST2 72-8687	0.6 mm	11.0 cm	No. 3c	

Jewelers Forceps with Extra Delicate Tips Curved, Smooth

Order #	Tip Width	Overall Length	Style
ST2 72-8701	0.5 mm	11.5 cm	No. 7

Jewelers Forceps with Extra Delicate Tips Curved, 1 x 2 Teeth

Order #	Tip Width	Overall Length	Style
ST2 72-8714	1.0 mm	11.5 cm	No. 7

Jewelers Forceps Curved, Smooth

Order #	Tip Width	Overall Length	Style
ST2 72-8685	0.8 mm	11.0 cm	No. 7

Jewelers Forceps Angled, Smooth

Order #	Tip Width	Overall Length	Style	Key Feature
ST2 72-8699	0.5 mm	11.0 cm	No. 6	Extra Delicate Tips
ST2 72-8686	0.4 mm	11.5 cm	No. 1	
ST2 72-8688	0.4 mm	10.5 cm	No. 5	

Dressing Forceps Straight, Serrated

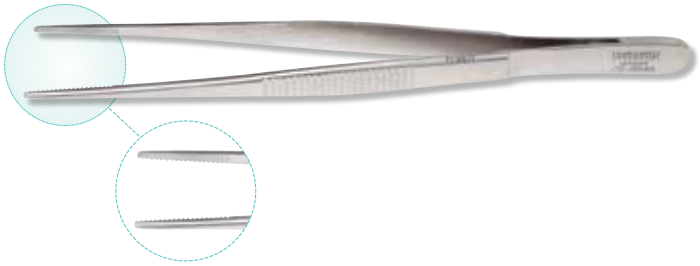
Order #	Tip Width	Overall Length
ST2 72-0141	1.1 mm	17.5 cm

Dressing Forceps Curved, Serrated

Order #	Tip Width	Overall Length
ST2 72-0142	1.2 mm	17.5 cm

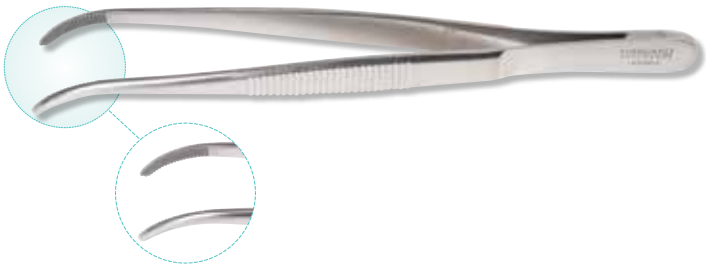
Dressing Forceps Straight, Serrated

Order #	Tip Width	Overall Length
ST2 72-8949	1.8 mm	13.0 cm
ST2 72-8950	2.2 mm	14.0 cm



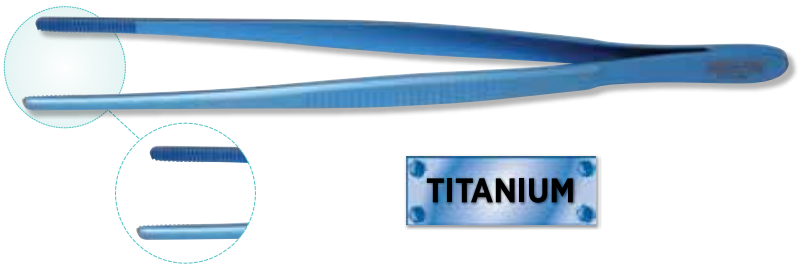
Dressing Forceps Curved, Serrated

Order #	Tip Width	Overall Length
ST2 72-8951	1.3 mm	8.5 cm
ST2 72-8952	1.7 mm	10.0 cm
ST2 72-8945	2.3 mm	11.5 cm
ST2 72-8946	1.2 mm	12.5 cm
ST2 72-8947	3.5 mm	14.0 cm
ST2 72-8948	2.7 mm	14.0 cm



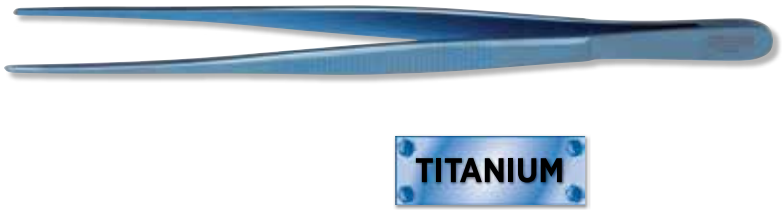
Titanium Dressing Forceps Straight, Serrated

Order #	Tip Width	Overall Length
ST2 72-8760	3.5 mm	14.0 cm
ST2 72-8761	3.5 mm	18.0 cm
ST2 72-8763	2.0 mm	18.0 cm
ST2 72-8762	3.7 mm	24.0 cm



Titanium Dressing Forceps Straight, Smooth

Order #	Tip Width	Overall Length
ST2 72-8764	1.8 mm	18.0 cm



Micro Forceps with Round Handle Straight, Smooth

Order #	Tip Width	Overall Length	Key Feature
ST2 72-0442	0.3 mm	18.0 cm	Suture Platform
ST2 72-0441	0.7 mm	18.0 cm	Suture Platform

Micro Forceps with Round Handle Curved, Smooth

Order #	Tip Width	Overall Length	Key Feature
ST2 72-0445	0.3 mm	12.0 cm	Suture Platform
ST2 72-0443	0.7 mm	18.0 cm	Suture Platform
ST2 72-0444	0.3 mm	18.0 cm	Suture Platform

Titanium Micro Forceps with Round Handle Straight, Smooth

Order #	Tip Width	Overall Length	Key Feature
ST2 72-8768	0.5 mm	15.0 cm	Suture Platform
ST2 72-8769	0.5 mm	18.0 cm	Suture Platform

Titanium Micro Forceps with Round Handle Curved, Smooth

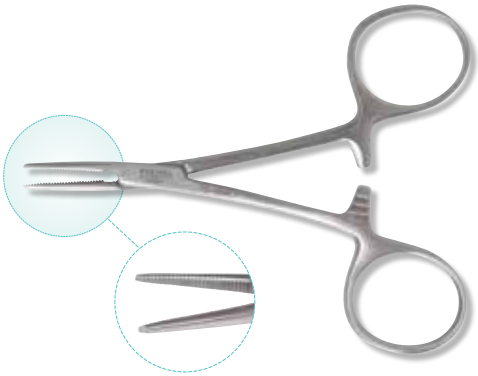
Order #	Tip Width	Overall Length	Key Feature
ST2 72-8770	0.5 mm	15.0 cm	Suture Platform
ST2 72-8771	0.5 mm	18.0 cm	Suture Platform

Hartmann Hemostatic Forceps Straight, Smooth

Order #	Tip Width	Overall Length
ST2 72-8953	1.5 mm	9.5 cm
ST2 72-8954	1.4 mm	12.5 cm
ST2 72-8959	1.7 mm	10.0 cm

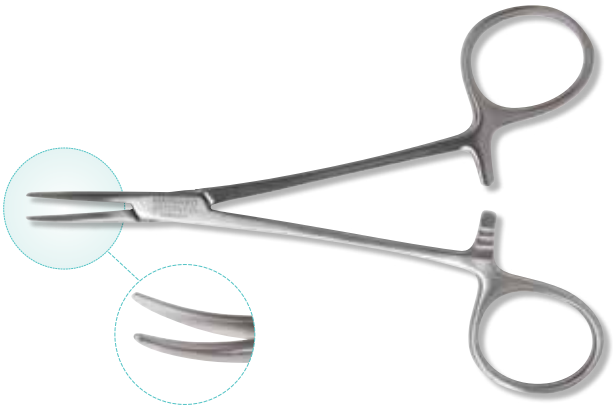
Hartmann Hemostatic Forceps Straight, Serrated

Order #	Tip Width	Overall Length	Key Feature
ST2 72-8957	1.4 mm	9.0 cm	
ST2 72-8958	0.7 mm	10.0 cm	Extra Fine



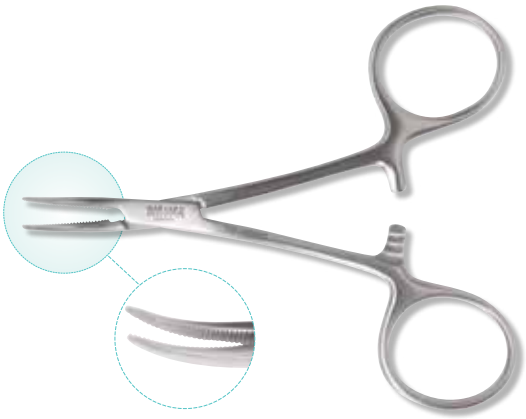
Hartmann Hemostatic Forceps Curved, Smooth

Order #	Tip Width	Overall Length
ST2 72-8955	1.5 mm	9.5 cm
ST2 72-8956	1.5 mm	12.0 cm
ST2 72-8962	1.5 mm	10.0 cm



Hartmann Hemostatic Forceps Curved, Serrated

Order #	Tip Width	Overall Length	Key Feature
ST2 72-8960	2.2 mm	9.5 cm	
ST2 72-8961	1.0 mm	9.5 cm	Extra Fine



Micro-Mosquito Hemostatic Forceps Angled Right, Serrated

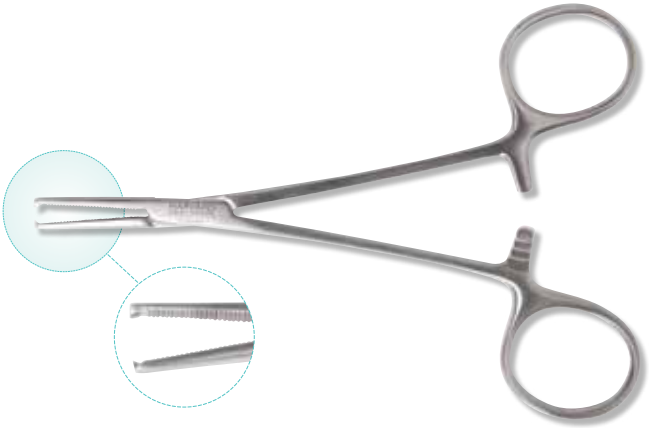
Order #	Tip Width	Overall Length
ST2 72-8963	1.3 mm	11.5 cm

Micro-Mosquito Hemostatic Forceps Straight, Serrated

Order #	Tip Width	Overall Length
ST2 72-8964	1.0 mm	9.5 cm
ST2 72-8965	1.0 mm	12.0 cm

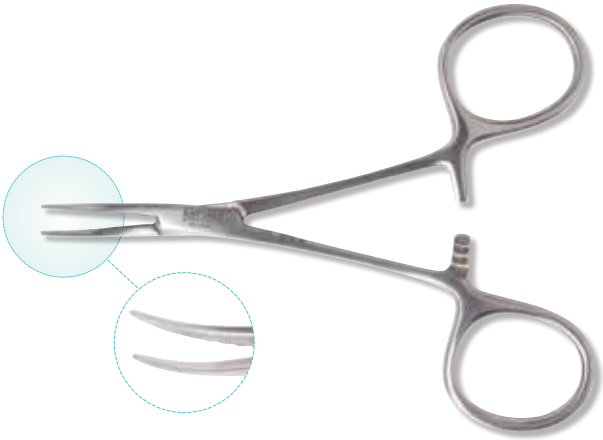
Micro-Mosquito Hemostatic Forceps Straight, Serrated, 1 x 2 Teeth

Order #	Tip Width	Overall Length
ST2 72-8968	1.6 mm	10.0 cm
ST2 72-8969	1.7 mm	12.0 cm



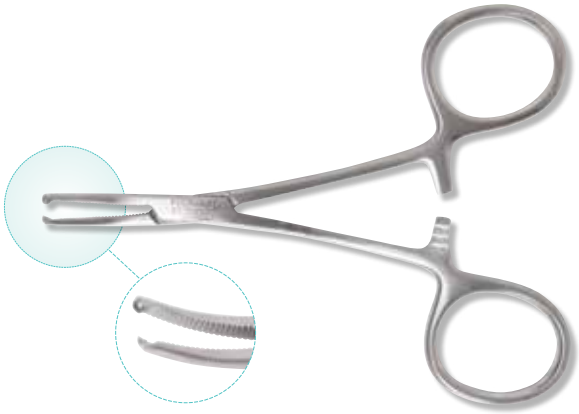
Micro-Mosquito Hemostatic Forceps Curved, Serrated

Order #	Tip Width	Overall Length
ST2 72-8966	1.4 mm	10.0 cm
ST2 72-8967	1.2 mm	12.0 cm



Micro-Mosquito Hemostatic Forceps Curved, Serrated, 1 x 2 Teeth

Order #	Tip Width	Overall Length
ST2 72-8970	1.7 mm	9.5 cm
ST2 72-8971	1.7 mm	12.5 cm



Halstead-Mosquito Hemostatic Forceps Straight, Smooth

Order #	Tip Width	Overall Length
ST2 72-8972	1.5 mm	11.5 cm
ST2 72-8975	1.5 mm	12.5 cm

Halstead-Mosquito Hemostatic Forceps Curved, Smooth

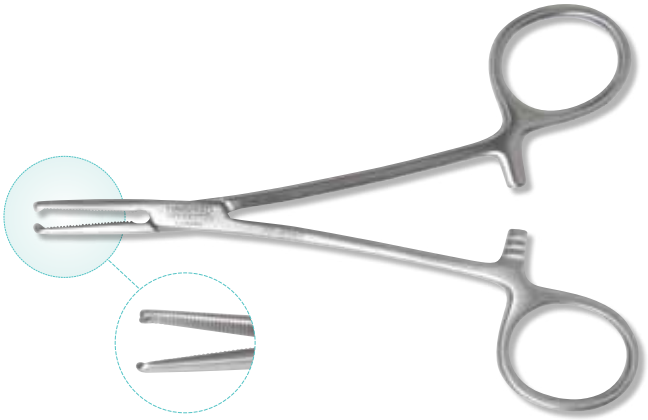
Order #	Tip Width	Overall Length
ST2 72-8980	2.0 mm	12.0 cm

Halstead-Mosquito Hemostatic Forceps Straight, Serrated

Order #	Tip Width	Overall Length	Key Feature
ST2 72-8973	1.5 mm	12.5 cm	
ST2 72-8974	0.8 mm	12.5 cm	Extra Fine

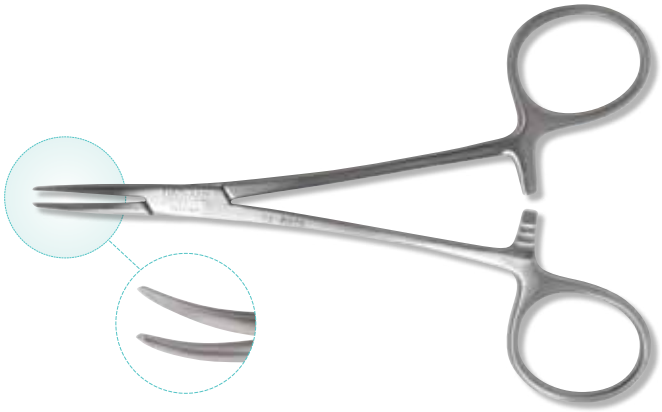
Halstead-Mosquito Hemostatic Forceps Straight, Serrated, 1 x 2 Teeth

Order #	Tip Width	Overall Length
ST2 72-8982	1.8 mm	12.0 cm
ST2 72-8983	2.2 mm	14.0 cm



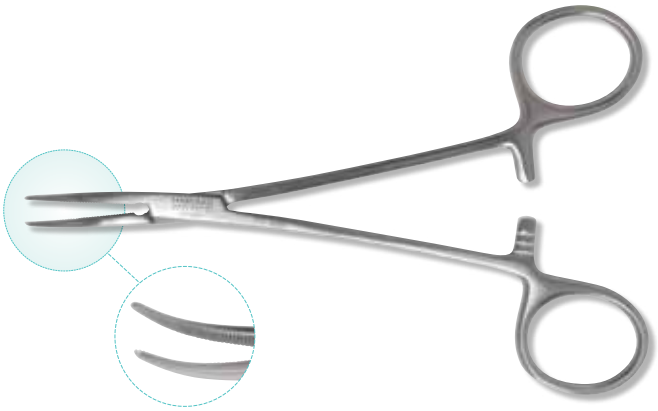
Halstead-Mosquito Hemostatic Forceps Curved, Smooth

Order #	Tip Width	Overall Length
ST2 72-8976	1.6 mm	12.5 cm
ST2 72-8977	1.9 mm	12 cm



Halstead-Mosquito Hemostatic Forceps Curved, Serrated

Order #	Tip Width	Overall Length
ST2 72-8978	1.5 mm	12.0 cm
ST2 72-8979	0.9 mm	12.0 cm
ST2 72-8981	1.4 mm	14.0 cm



Halstead-Mosquito Hemostatic Forceps Curved, Serrated, 1 x 2 Teeth

Order #	Tip Width	Overall Length
ST2 72-8984	2.0 mm	12.0 cm
ST2 72-8985	2.0 mm	14.0 cm

Barraquer Needle Holders with Round Handle Straight or Curved, Smooth

Order #	Overall Length	Key Feature
ST2 72-0145	14.0 cm	Straight, with Lock
ST2 72-0146	14.0 cm	Curved, with Lock

Micro Needle Holders with Round Handle Straight, Smooth

Order #	Overall Length	Key Feature
ST2 72-8865	18.0 cm	without Lock

Micro Needle Holders with Round Handle Curved, Smooth

Order #	Overall Length	Key Feature
ST2 72-8866	17.5 cm	without Lock

Castroviejo Needle Holders Straight, Smooth

Order #	Overall Length	Key Feature
ST2 72-8872	14.0 cm	without Lock

Derf Needle Holders with Tungsten Carbide Jaws Straight, Smooth

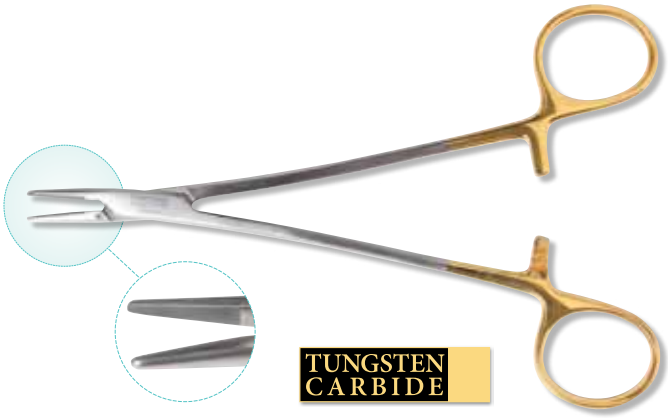
Order #	Overall Length	Key Feature
ST2 72-8884	12.0 cm	Delicate Jaw
ST2 72-8885	12.0 cm	Extra Delicate Jaw

Derf Needle Holders Straight, Serrated

Order #	Overall Length
ST2 72-8826	12.0 cm

De Bakey Needle Holders with Tungsten Carbide Jaws Straight, Serrated

Order #	Overall Length	Key Feature
ST2 72-8897	15.5 cm	
ST2 75-0081	18.0 cm	Left Hand

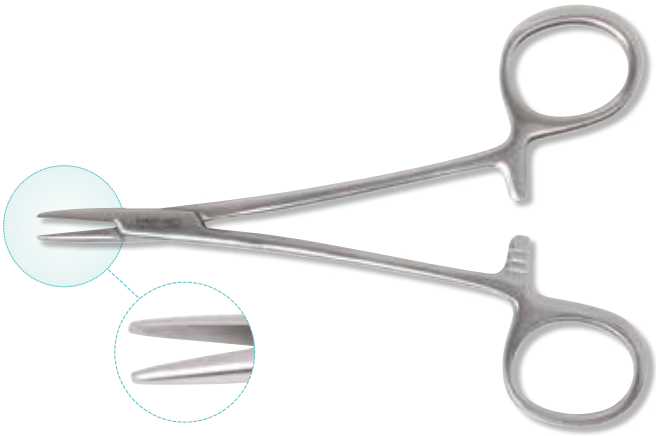


Gillies Mini Needle Holders with Scissors and Tungsten Carbide Jaws Curved, Smooth

Order #	Overall Length
ST2 72-8902	13.0 cm
ST2 72-8903	16.0 cm

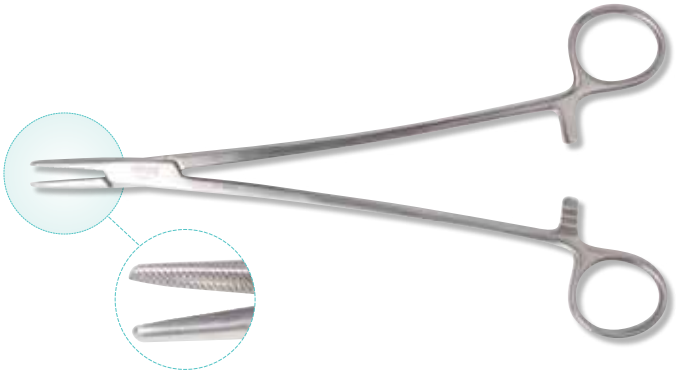
Webster Needle Holders
Straight, Smooth

Order #	Overall Length
ST2 72-8828	13.0 cm



Crile-Wood Needle Holders
Straight, Serrated

Order #	Overall Length
ST2 72-8830	15.0 cm
ST2 72-8831	18.0 cm
ST2 72-8832	20.5 cm

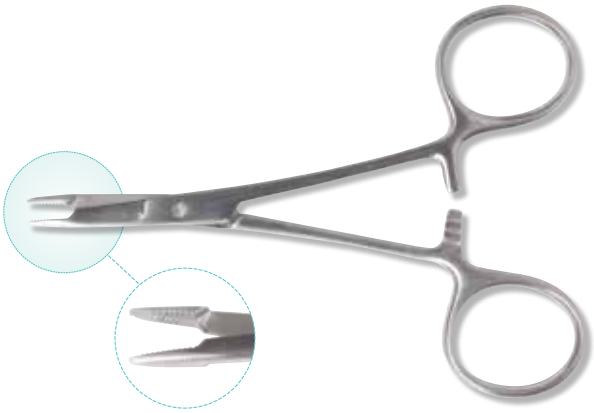


Mayo-Hegar Needle Holders
Straight, Serrated

Order #	Overall Length
ST2 72-8834	14.0 cm
ST2 72-8835	16.0 cm
ST2 72-8836	18.5 cm

Olsen-Hegar Needle Holders with Scissors
Straight, Serrated

Order #	Overall Length	Key Feature
ST2 72-8844	11.5 cm	
ST2 72-8845	11.5 cm	Extra Delicate Jaw
ST2 72-8846	14.0 cm	
ST2 72-8847	16.0 cm	
ST2 72-8848	18.0 cm	



Olsen-Hegar Needle Holders with Scissors and Tungsten Carbide Jaws Straight, Serrated

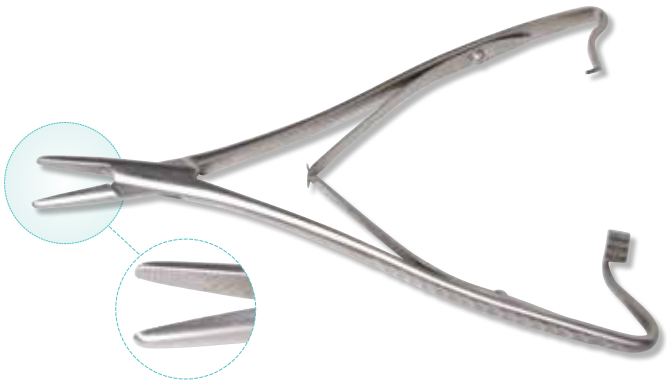
Order #	Overall Length
ST2 72-8898	12.0 cm
ST2 72-8899	13.5 cm
ST2 72-8900	16.0 cm

Castroviejo Needle Holders with Round Handle Straight, Smooth

Order #	Overall Length	Key Feature
ST2 72-8879	13.0 cm	without Lock

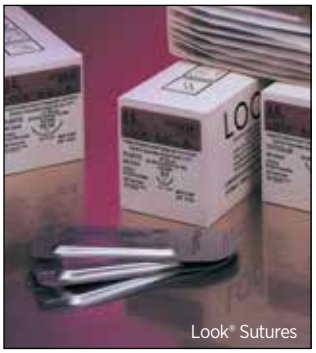
Mathieu Needle Holders Straight, Serrated

Order #	Overall Length	Key Feature
ST2 72-8851	14.0 cm	with Lock
ST2 72-8854	14.0 cm	with Lock and Groove
ST2 72-8857	16.5 cm	with Lock
ST2 72-8858	19.5 cm	with Lock



Crile Needle Holders Straight, Serrated

Order #	Overall Length
ST2 72-8850	15.0 cm


Look® Sutures

LOOK® Sutures

- Needles penetrate smoothly
- Sutures stay secure
- Superior packaging with easy to identify markings

LOOK® sutures and needles are the highest quality available. Their proprietary in-house manufacturing processes give them maximum control over the quality of all products. From the receipt of raw material to the shipping of finished products, they oversee every aspect of the production cycle and hold it to the highest standards.

Rigid inspections make certain sutures meet or exceed exacting U.S.P. standards. Indeed, LOOK® tolerances have long been considered among the tightest in the industry. The end result is a suture that performs exactly the way you expect it to!

Suture Diameter Equivalents

	European Pharmacopeia			
U.S.P. Size	**Natural Catgut**	**Non-Absorbable Materials**	**Suture Diameter Minimum**	**Suture Diameter Maximum**
6-0	1.0	0.7	0.07 mm	0.099 mm
5-0	1.5	1.0	0.10 mm	0.149 mm
4-0	2	1.5	0.15 mm	0.199 mm
3-0	3	2	0.20 mm	0.249 mm
2-0	3.5	3	0.30 mm	0.339 mm
0	4	3.5	0.35 mm	0.399 mm
1	5	4	0.40 mm	0.499 mm
2	6	5	0.50 mm	0.599 mm

Polyglycolic Acid Absorbable

This material is a synthetic absorbable suture that provides extraordinary smoothness from its proprietary coating, low friction, and reduced tissue trauma. Absorption is essentially complete in 50-90 days. Available in green and undyed versions.

Nylon Monofilament

This black and clear nylon monofilament is smooth and nonporous, resulting in excellent tensile strength and ease of passage through tissue, while reducing tissue trauma, and preventing tissue ingrowth.

Silk Black Braided

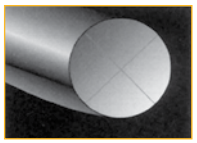
Surgical black braided silk is specially processed for optimum handling and knot security without excess capillarity.

Polyviolene® Polyester

This green and white braided Polyviolene® polyester suture material has a unique combination of strength, excellent handling, and knot-tying security. Special braiding offers a uniform surface which minimizes tissue trauma.

Plain Gut, Absorbable

Plain gut is manufactured from the highest quality raw material to ensure ease of handling, dependable absorption, and high tensile strength. All strands are precision polished to a uniform diameter.



Chromic Gut, Absorbable

Chromic gut has the same high quality characteristics as our plain gut, with special treatment to maintain tensile strength within the tissue while prolonging absorption.

	Suture Length	U.S.P. Size 6-0	5-0	4-0	3-0	2-0	0	1	2
Non-Sterile Spool*									
Silk Black Brd.	22.9 m	**ST2 72-3287**	**ST2 51-7607**	**ST2 51-7615**	**ST2 51-7623**	**ST2 51-7631**	–	–	–
Silk Black Brd.	91.4 m	**ST2 72-3288**	**ST2 51-7680**	**ST2 51-7698**	**ST2 51-7706**	**ST2 51-7714**	**ST2 51-7722**	**ST2 51-7730**	
Nylon Black Brd.	91.4 m	–	**ST2 51-7763**	**ST2 51-7771**	–	–	–	–	–
Nylon Black Mono.	91.4 m	–	**ST2 51-7821**	**ST2 51-7839**	**ST2 51-7847**	**ST2 51-7854**	**ST2 51-7862**	**ST2 51-7870**	
Polyviolene Green Brd.	91.4 m	–	**ST2 51-7896**	–	**ST2 51-7912**	**ST2 51-7920**	–	**ST2 51-7946**	**ST2 51-7953**

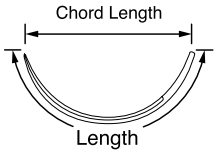
**Non-Sterile suture spools are the specified length and supplied as an individual spool.*

Polyviolene® and Look® are registered trademarks of Angiotech.

Needles

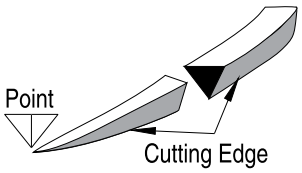
- Remarkably consistent and reliable
- Penetrates cleanly with minimal drag
- Resists bending, catching and breaking

These Harvard LOOK® Suture Needles are manufactured from top quality surgical stainless steel and are designed to stay sharp to ensure continued passage through tissue. They are attached to the suture by a swagging technique providing one continuous, even, smooth strand between the needle and suture material.



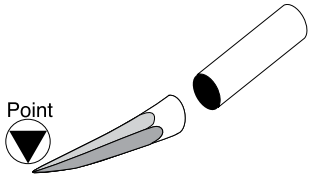
These needles are tempered to the right combination of hardness and tensile strength. They hold their fine cutting edge/point and resist bending when the necessary pressure is applied. They provide a secure attachment for the suture material. Regular tests gauge needles sharpness and ductility.

These Needles with Sutures are individually packaged in sterile, peelable, double envelopes for maximum protection. They are supplied in boxes of 12.



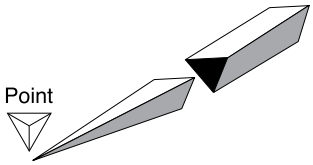
Reverse Cutting Needles

Cutting Edge on Outer Curve. For tough, difficult-to-penetrate tissues.



Cut Taper Needles

Cutting tip and taper body. For tough tissues. Like two needles in one.



Straight Cutting Needles

Smooth penetration for passage through tissues.

Sutures with Reverse Cutting ⅜ Circle Needles

Needles Shown Actual Size.

Reverse Cutting Precision Point - ⅜ Circle, pkg. of 12								
					U.S.P. Size			
Needles			Suture Material	Suture Length	7-0	6-0	5-0	4-0
C1	Curvature	130°	Silk Black Brd.	45 cm (18 in)	–	**ST2 59-6860**	–	–
	Chord Length	9.0 mm	Nylon Black Mono.	45 cm (18 in)	**ST2 72-3305**	**ST2 72-3306**	–	–
	Length	11 mm	Gut-Chromic	30 cm (12 in)	–	**ST2 72-3308**	–	–
C3	Curvature	158°	Nylon Black Mono.	20 cm (12 in)	–	–	**ST2 72-3311**	–
	Chord Length	9.6 mm	Nylon Black Mono.	45 cm (18 in)	–	**ST2 72-3312**	**ST2 72-3313**	**ST2 72-3314**
	Length	13 mm	Nylon Clear Mono.	45 cm (18 in)	–	–	**ST2 72-3317**	–
			Silk Black Brd.	45 cm (18 in)	–	–	**ST2 72-3318**	–
			Gut-Chromic	45 cm (18 in)	–	–	**ST2 72-3322**	–
			Gut-Plain	45 cm (18 in)	–	–	–	**ST2 72-3325**

Reverse Cutting Precision Point - ⅜ Circle, pkg. of 12									
					U.S.P. Size				
Needles			Suture Material	Suture Length	6-0	5-0	4-0	3-0	2-0
C3			PolyGlycolic Undyed Brd.	45 cm (18 in)	**ST2 72-3326**	**ST2 72-3327**	**ST2 72-3328**	–	–
PC31	Curvature	135°	PolyGlycolic Undyed Brd.	45 cm (18 in)	–	–	**ST2 72-3329**	**ST2 72-3330**	**ST2 72-3331**
	Chord Length	15.1 mm	–	–	–	–	–	–	–
	Length	19 mm	–	–	–	–	–	–	–
PC33	Curvature	135°	PolyGlycolic Undyed Brd.	45 cm (18 in)	–	–	–	–	**ST2 72-3332**
	Chord Length	19.6 mm	–	–	–	–	–	–	–
	Length	24 mm	–	–	–	–	–	–	–

Sutures with Reverse Cutting ⅜ Circle Needles (continued)

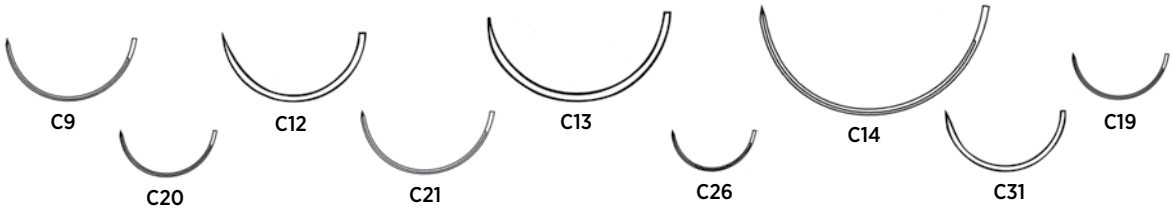
Needles Shown Actual Size.

Reverse Cutting - ⅜ Circle, pkg. of 12								
					U.S.P. Size			
Needles			Suture Material	Suture Length	5-0	4-0	3-0	2-0
C6	Curvature	135°	Silk Black Brd.	75 cm (30 in)	–	–	**ST2 72-3333**	–
	Chord Length	14.5 mm	Silk Black Brd.	45 cm (18 in)	**ST2 51-0545**	**ST2 51-0552**	**ST2 51-0560**	–
	Length	18 mm	Gut-Plain	70 cm (27 in)	**ST2 51-0578**	**ST2 51-0586**	**ST2 51-0594**	–
			Gut-Chromic	70 cm (27 in)	**ST2 51-0602**	**ST2 51-0610**	**ST2 51-0628**	–
			Nylon Black Mono.	25 cm (10 in)	**ST2 72-3334**	–	–	–
			Nylon Black Mono.	45 cm (18 in)	**ST2 51-0636**	**ST2 51-0644**	**ST2 51-0651**	–
			PolyGlycolic Undyed Brd.	70 cm (27 in)	**ST2 72-3336**	**ST2 72-3337**	**ST2 72-3338**	–
C7	Curvature	135°	Silk Black Brd.	45 cm (18 in)	–	**ST2 72-3341**	**ST2 51-0735**	–
	Chord Length	19 mm	Gut-Plain	70 cm (27 in)	–	–	**ST2 51-0743**	**ST2 51-0750**
	Length	24 mm	Gut-Chromic	70 cm (27 in)	–	–	–	**ST2 51-0768**

Needles Shown Actual Size.

Reverse Cutting - ⅜ Circle, pkg. of 12										
					U.S.P. Size					
Needles			Suture Material	Suture Length	6-0	5-0	4-0	3-0	2-0	0
C7	Length	24 mm	Nylon Black Mono.	25 cm (10 in)	–	–	**ST2 72-3342**	–	–	–
			Nylon Black Mono.	45 cm (18 in)	–	–	**ST2 51-0776**	**ST2 51-0784**	–	–
			PolyGlycolic Undyed Brd.	70 cm (27 in)	–	–	**ST2 72-3344**	**ST2 72-3345**	**ST2 72-3346**	–
C8	Curvature	135°	Silk Black Brd.	45 cm (18 in)	–	–	–	–	**ST2 51-6609**	–
	Chord Length	21 mm	Gut-Chromic	70 cm (27 in)	–	–	–	–	–	**ST2 51-6625**
	Length	26 mm	Nylon Black Mono.	45 cm (18 in)	–	–	–	–	**ST2 51-6633**	–
C10	Curvature	135°	Silk Black Brd.	45 cm (18 in)	–	–	–	**ST2 51-6674**	–	**ST2 51-6690**
	Chord Length	30 mm	Nylon Clear Mono.	70 cm (27 in)	–	–	–	–	–	–
C17	Curvature	135°	Silk Black Brd.	45 cm (18 in)	**ST2 51-0461**	**ST2 51-0479**	**ST2 51-0487**	–	–	–
	Chord Length	12 mm	Gut-Chromic	45 cm (18 in)	–	**ST2 51-6146**	–	–	–	–
	Length	12 mm	Nylon Black Mono.	45 cm (18 in)	**ST2 51-0511**	**ST2 51-0529**	**ST2 51-0537**	–	–	–
			Nylon Black Mono.	25 cm (10 in)	**ST2 72-3350**	**ST2 72-3351**	**ST2 72-3352**	–	–	–
			Gut-Plain	25 cm (10 in)	–	**ST2 72-3353**	**ST2 72-3354**	–	–	–
			PolyGlycolic Undyed Brd.	25 cm (10 in)	–	**ST2 72-3355**	–	–	–	–
C22	Curvature	135°	Nylon Black Mono.	45 cm (18 in)	**ST2 51-6203**	**ST2 51-6211**	–	–	–	–
	Chord Length	13 mm	Polyviolene Green Brd.	45 cm (18 in)	–	**ST2 51-6237**	–	–	–	–
	Length	16 mm		45 cm (18 in)	–	**ST2 72-3356**	–	–	–	–

Sutures with Reverse Cutting ½ Circle Needles



Needles Shown Actual Size.

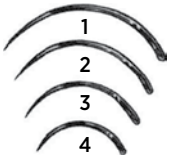
Reverse Cutting - ½ Circle, pkg. of 12							
					U.S.P. Size		
Needles			Suture Material	Suture Length	4-0	3-0	1
C9	Curvature	180°	Silk Black Brd.	45 cm (18 in)	–	**ST2 51-6955**	–
	Chord Length	16.5 mm	Nylon Black Mono.	45 cm (18 in)	–	**ST2 72-3358**	–
	Length	23 mm					
C14	Curvature	180°	PolyGlycolic Green Brd.	–	–	–	–
	Chord Length	29 mm	–	70 cm (27 in)	–	–	**ST2 72-3367**
	Length	40 mm					
C19	Curvature	180°	Silk Black Brd.	45 cm (18 in)	–	**ST2 59-6867**	–
	Chord Length	13 mm					
	Length	18 mm					
C20	Curvature	180°	Silk Black Brd.	45 cm (18 in)	**ST2 51-6930**	–	–
	Chord Length	13.5 mm					
	Length	20 mm					
C21	Curvature	180°	Silk Black Brd.	45 cm (18 in)	–	**ST2 59-6863**	–
	Chord Length	17.5 mm	Gut-Plain	45 cm (18 in)	–	**ST2 59-6864**	–
	Length	26 mm					
C31	Curvature	180°	Silk Black Brd.	45 cm (18 in)	–	**ST2 59-6861**	–
	Chord Length	16 mm	Gut-Plain	45 cm (18 in)	–	**ST2 59-6862**	–
	Length	24 mm					

Sutures with Taper Point ½ Circle Needles

Needles Shown Actual Size.

Taper Point - ½ Circle, pkg. of 12								
					U.S.P. Size			
Needles			Suture Material	Suture Length	3-0	2-0	0	1
T14	Curvature	180°	PolyGlycolic Green Brd.	70 cm (27 in)	**ST2 72-3371**	–	–	–
	Chord Length	13.1 mm						
	Length	20.0 mm						
T5	Curvature	175°	PolyGlycolic Green Brd.	70 cm (27 in)	**ST2 72-3372**	**ST2 72-3373**	–	–
	Chord Length	18.5 mm						
	Length	26.5 mm						
T	Curvature	170°	PolyGlycolic Green Brd.	70 cm (27 in)	**ST2 72-3374**	**ST2 72-3375**	–	–
	Chord Length	18.1 mm						
	Length	26.0 mm						
T8	Curvature	175°	PolyGlycolic Green Brd.	70 cm (27 in)	–		**ST2 72-3381**	**ST2 72-3382**
	Chord Length	24.8 mm	Gut-Chromic	70 cm (27 in)				
	Length	36.6 mm						
T10	Curvature	160°	PolyGlycolic Green Brd.	70 cm (27 in)	–	–	**ST2 72-3386**	**ST2 72-3387**
	Chord Length	29.4 mm						
	Length	40.0 mm						

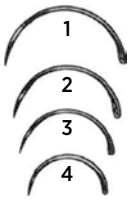
Eye Needles, ⅜ Circle, Cutting Edge



Eye of needle = 1 mm

Order #	Product
ST2 60-4157	Size 1, pkg. of 12
ST2 60-4158	Size 2, pkg. of 12
ST2 60-4159	Size 3, pkg. of 12
ST2 60-4160	Size 4, pkg. of 12

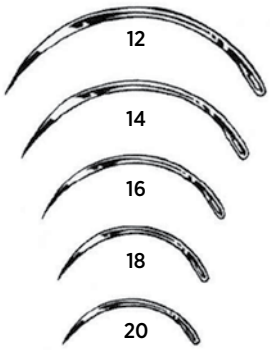
Eye Needles, ½ Circle, Cutting Edge



Eye of needle = 1 mm

Order #	Product
ST2 60-4161	Size 1, pkg. of 12
ST2 60-4162	Size 2, pkg. of 12
ST2 60-4163	Size 3, pkg. of 12
ST2 60-4164	Size 4, pkg. of 12

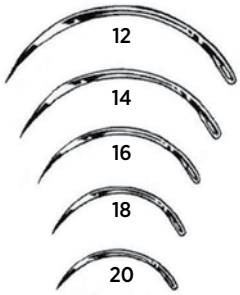
Regular Surgeon's, ⅜ Circle, Cutting Edge



Eye of needle = 2 mm

Order #	Product
ST2 60-4171	Size 12, pkg. of 12
ST2 60-4173	Size 14, pkg. of 12
ST2 60-4175	Size 16, pkg. of 12
ST2 60-4177	Size 18, pkg. of 12
ST2 60-4179	Size 20, pkg. of 12

Regular Surgeon's, ½ Circle, Cutting Edge



Eye of needle = 2 mm

Order #	Product
ST2 60-4182	Size 12, pkg. of 12
ST2 60-4184	Size 14, pkg. of 12
ST2 60-4186	Size 16, pkg. of 12
ST2 60-4188	Size 18, pkg. of 12
ST2 60-4190	Size 20, pkg. of 12

Umbilical Tape

Product	Length	⅛ inch	¼ inch	⅜ inch
Umbilical Tape	20 Yards	**ST2 72-3388**	**ST2 72-3389**	**ST2 72-3390**
Umbilical Tape	100 Yards	**ST2 72-3391**	**–**	**–**

Eye Needles, ½ Circle, Taper Point

Order #	Product
ST2 60-4165	Size 1, pkg. of 12
ST2 60-4167	Size 3, pkg. of 12
ST2 60-4168	Size 4, pkg. of 12

Reflex™ Skin Closure System

- Small 7 or 9 mm clip size
- Innovative wound clip system

The Reflex™ Skin Closure System is a fast and effective method to close wounds on animals. This system eliminates the need for suture material and a needle. The Reflex™ Clips are available in two sizes, 7 mm and 9 mm. The remover forceps will work in conjunction with all Reflex™ wound clips. Applier, remover and clips make a complete set. Each sold separately.

Order #	Product
ST2 72-6060	Reflex™ Applier for 7 mm Clips
ST2 72-6061	Reflex™ Applier for 9 mm Clips
ST2 72-6062	Reflex™ Clips, 7 mm, Box of 100
ST2 72-6063	Reflex™ Clips, 9 mm, Box of 100
ST2 72-6064	Reflex™ Remover Forceps for both 7 mm and 9 mm clips

Autoclip® Wound Closure System

- In use for over 40 years
- Provides maximum holding force with minimal trauma
- Starter Set includes 9 mm wound clips, applicator, and removal forcep
- Automatic, spring-fed applicators permit rapid, unassisted application

This Autoclip® wound closure system provides a rapid, easy to use method to securely close wounds. When the wound is healed, simply remove the clip using the handy removal forcep.
A convenient starter set is offered for first time buyers which includes an Autoclip® applicator, Autoclips®, and removal forcep. The stainless steel Autoclips® are 9 mm in size. Instruments and wound clips are supplied non-sterile, but may be autoclaved.

Order #	Product
ST2 34-0557	Autoclip® Starter Set, Includes 34-0554 Applicator, 34-0556 Removal Forcep, 100 x 9 mm clips, in a Handy Plastic Case
ST2 34-0554	Autoclip® Applicator for 9 mm Clips
ST2 34-0556	Autoclip® Removal Forcep

Order #	Product
ST2 52-3748	EZ Clips, 9 mm, Stainless Steel, Pkg. of 100
ST2 75-0340	EZ Clips, 9 mm, Stainless Steel, Pkg. of 200
ST2 34-0555	EZ Clips, 9 mm, Stainless Steel, Pkg. of 500
ST2 75-0341	EZ Clips, 9 mm, Stainless Steel, Pkg. of 1000
ST2 75-0342	EZ Clips, 9 mm, Stainless Steel, Pkg. of 5000

Autoclip is a registered trademark of Mikron Precision, Inc.

Dieffenbach Vessel Clips Straight

Order #	Overall Length
ST2 72-8815	35.0 mm

Diethrich Mini Bulldog Clamp

Order #	Overall Length	Clamp Pressure
ST2 72-8817	50.0 mm	50.0 g

Vessel Clips Straight

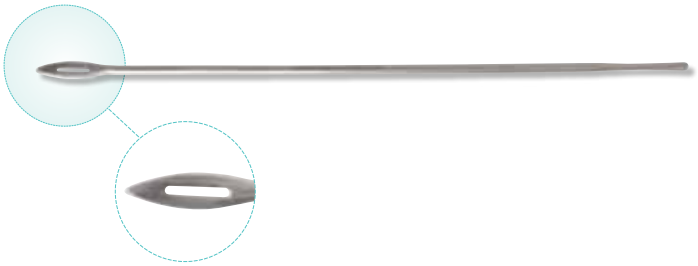
Order #	Jaw Width	Overall Length	Clamp Pressure
ST2 72-8816	0.75 mm	4.0 mm	125.0 g
ST2 72-8993	Applying Forceps		

Double Ended Probes

Order #	Tips	Overall Length
ST2 72-8911	1.0 mm	13.0 cm
ST2 72-8912	1.0 mm	14.0 cm
ST2 72-8913	1.0 mm	16.0 cm
ST2 72-8914	1.0 mm	18.0 cm

Probes

Order #	Tips	Overall Length
ST2 72-8915	2.0 mm	14.5 cm
ST2 72-8916	2.0 mm	16.0 cm
ST2 72-8917	2.0 mm	18.0 cm



Micro Vascular Clips

- For temporary occlusion of flow through a vessel
- Stainless steel

These stainless steel clips are available in three sizes. They are easy to apply using 61-0198 forcep listed below. Package of 1.

Order #	Product
ST2 61-0195	Micro Vascular Clip for 1 mm Diameter Vessels, Occlusion Pressure 30 to 35 g, 8 mm long
ST2 61-0196	Micro Vascular Clip for 1 to 2 mm Diameter Vessels, Occlusion Pressure 35 to 40 g, 11 mm long
ST2 61-0197	Micro Vascular Clip for 2 to 3 mm Diameter Vessels, Occlusion Pressure 50 to 60 g, 14 mm long
ST2 61-0198	Applying Forcep for Vascular Clips, 12.1 cm (4.75 in) Long

Micro Aneurysm Clips

- Ideal for temporary clamping of small animal vessels
- Stainless steel

These micro aneurysm clips provide an easy and secure way to stop blood flow while performing procedures on vessels. Using one of the applying forceps listed below, simply grasp the clip to open the jaw, slide it over the vessel and release. To remove, just perform the procedure in reverse. It's that simple. They do not compromise the vessel integrity. Package of 1.

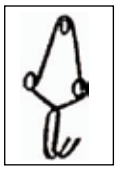
Order #	Product
ST2 61-0186	Micro Aneurysm Clip, Straight, 70 gm Pressure, 0.8 mm width, 5 mm long
ST2 61-0187	Micro Aneurysm Clip, Straight, 70 gm Pressure, 0.75 mm width, 6 mm long
ST2 61-0188	Micro Aneurysm Clip, Slight Curve, 70 gm Pressure, 1 mm Width, 6 mm Long
ST2 61-0189	Micro Aneurysm Clip, Strong Curve, 70 gm Pressure, 1 mm Width, 6 mm Long
ST2 61-0190	Micro Aneurysm Clip, 45° Angle, 85 gm Pressure, 1 mm Width, 6 mm Long
ST2 61-0191	Applying Forcep for Micro Aneurysm Clips, 14 cm (5.5 in) Long
ST2 61-0192	Applying Forcep for Micro Aneurysm Clips with Lock, 14.6 cm (5.75 in) Long

Harvard Apparatus Heart Clips

These light, spring wire heart clips are used to attach a thread to a frog or mammalian heart. Clips are made of stainless steel wire and ensure a firm grip. Package of 5.

Order #	Product	Clip Length	Clip Speed Maximum
ST2 50-5909	Frog Heart Clips	16 mm (0.6 in)	7 mm (¼ in)

Flat Serrated Hook Clip



This clip has flat serrated stainless steel hook jaws and side loops. The Flat Serrated Hook Clip is constructed from stainless steel wire which is 0.5 mm in diameter. The overall length of the clip is 17 mm.

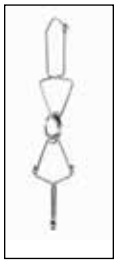
Order #	Product
ST2 73-0573	Flat Serrated Hook Clip, pkg. of 1

Pointed Jaw Clip

This clip features pointed jaws and side loops for simple operation. The Pointed Jaw Clip is constructed from stainless steel wire which is 0.5 mm in diameter. The overall length of the clip is 14 mm. An Extra Fine Pointed Jaw Clip is also available. It is constructed from stainless steel wire which is 0.4 mm in diameter. The overall length of the clip is 10 mm.

Order #	Product
ST2 73-0574	Pointed Jaw Clip, pkg. of 1
ST2 73-3563	Extra Fine Pointed Jaw Clip, pkg. of 1

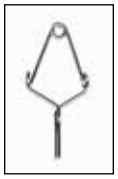
Thread Connection Clip



This clip permits simple attachment of the tension thread to the transducers. The special feature of the thread clip is that the length of the thread can easily be adjusted without having to undo or make a knot. This clip provides reliable and secure clamping even with fine threads. The Thread Connection Clip is constructed from stainless steel wire which is 0.5 mm in diameter. The over all length of the clip is 45 mm.

Order #	Product
ST2 73-0572	Thread Connection Clip, pkg. of 1

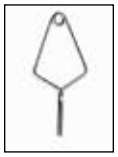
Long Flat Jaw Clip



This clip features long flat jaws and side loops for simple operation. The Long Flat Jaw Clip is constructed from stainless steel wire which is 0.5 mm in diameter. The overall length of the clip is 18 mm. The jaw size is 0.5 x 5 mm.

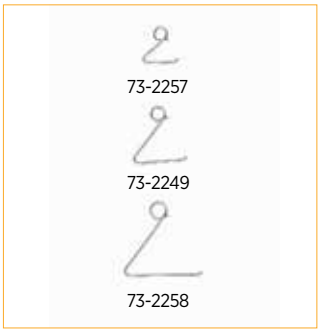
Order #	Product
ST2 73-0575	Long Flat Jaw Clip, pkg. of 1

Long Jaw Clip



This Long Jaw Clip has longer jaws. The jaw size is 0.7 x 5 mm. The Long Jaw Clip is constructed from stainless steel wire which is 0.5 mm in diameter. The overall length of the clip is 18 mm.

Order #	Product
ST2 73-3340	Long Jaw Clip, pkg. of 1



Triangular Hooks

- Three sizes available for tissue rings
- Ideal for cylindrical vessel segments and tracheal rings
- Holder for vessel segments up to 8 mm (0.3 in) in length

These Triangular Hooks are used to support tissue rings for cylindrical vessel segments and tracheal rings. All 3 sizes are constructed from stainless steel wire which is 0.3 mm in diameter.

Order #	Product
ST2 73-2257	Triangular Hook Size 0, Hook Width 5.0 mm, Height 5.4 mm, Loop Ø 2.0 mm, pkg. of 1
ST2 73-2249	Triangular Hook Size 1, Hook Width 8.0 mm, Height 9.0 mm, Loop Ø 2.5 mm, pkg. of 1
ST2 73-2258	Triangular Hook Size 2, Hook Width 12.0 mm, Height 11.0 mm, Loop Ø 3.0mm, pkg. of 1

Long Loop Clip

The Long Loop Clip is constructed from stainless steel wire which is 0.3 mm in diameter. It is similar to the 73-3340, but is finer in dimensions. The overall length of the clip is 16 mm. The jaw diameter is 2 mm.

Order #	Product
ST2 73-0577	Long Loop Clip, pkg. of 1

Organ Hook

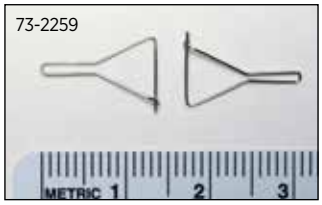
The Organ Hook Clip has a pointed hook that permits easy mounting of organs. It is constructed from stainless steel wire which is 0.5 mm in diameter. The overall length of the hook is 7.5 mm.

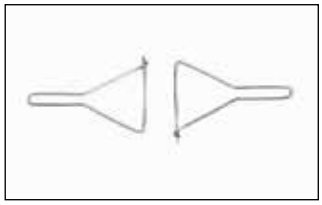
Order #	Product
ST2 73-0578	Organ Hook, pkg. of 1

Serre Fine Tip Closing Clip

This Serre Fine Tip Closing Clip features tip closing jaws for securing tissues. It is constructed from stainless steel wire which is 0.5 mm in diameter. The jaw measures 3 mm. The overall length of the clip is 17 mm.

Order #	Product
ST2 73-3339	Serre Fine Tip Closing Clip, pkg. of 1

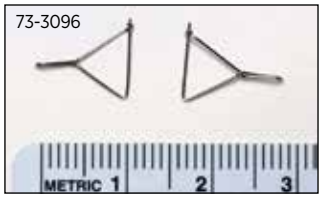


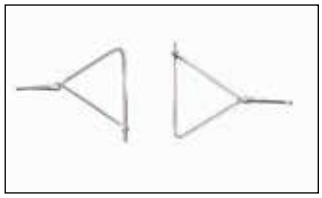


Holder for Vessel Segments

This triangular holder is used for holding vessel segments. One pair is required per vessel segment. It is constructed from stainless steel wire which is 0.3 mm in diameter. The maximum vessel segment length is 8 mm (0.3 in).

Order #	Product
ST2 73-2259	Holder for Vessel Segments, 1 pair





Holder for Vessel Segments, Twisted 90°

This triangular holder is used for holding vessel segments. One pair is required per vessel segment. The bottom triangle is twisted to hold the tissue at 90° from top holder. It is constructed from stainless steel wire which is 0.3 mm in diameter. The maximum vessel segment length is 8 mm (0.3 in).

Order #	Product
ST2 73-3096	Holder for Vessel Segments, Lower Triangle Twisted by 90°, 1 pair

Barraquer (Colibri) Retractor

Order #	Overall Length
ST2 72-8918	3.0 cm
ST2 72-8919	4.0 cm

Graefe Retractor

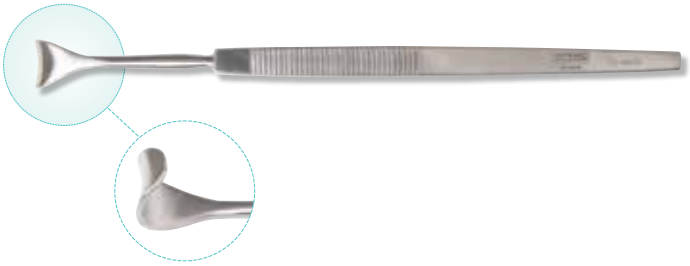
Order #	Overall Length
ST2 72-8920	6.5 cm

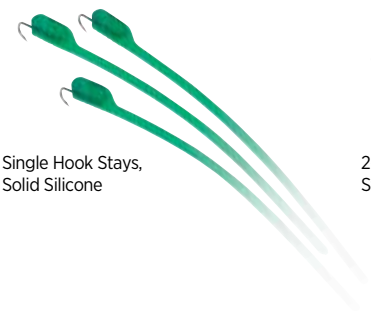
Castroviejo Retractor

Order #	Overall Length
ST2 72-8925	9.5 cm

Desmarres Lid Retractors

Order #	Tip Width	Overall Length
ST2 72-8926	12.0 mm	16.0 cm
ST2 72-8927	14.0 mm	14.0 cm
ST2 72-8928	16.0 mm	14.0 cm
ST2 72-8929	18.0 mm	14.0 cm





Single Hook Stays, Solid Silicone

2-Finger Stays

Elastic Stays

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. Four types of elastic stays are available. See below for details.

Specifications	
Stays	
Composition	Silicone and stainless steel
Overall Length	16 cm (6.3 in)
Tubing OD	3.3 mm (0.13 in)
Maximum Tension	Up to 3.5 lb (1.6 kg)
Sterilization	Steam or cold sterilization

Single Hook Stays, Solid Silicone

- 6 hook stays per package

Order #	Product
ST2 72-2606	Single Hook Stays, Solid Silicone, 5.0 mm Hook Radius Non-Sterile, pkg. of 6

2-Finger Stays

- 4 2-Finger Sharp Stays per package

Order #	Product
ST2 72-2598	2-Finger Sharp Stays, 5.0 mm Hook Radius, Sterile, pkg. of 4
ST2 72-2599	2-Finger Sharp Stays, 7.0 mm Hook Radius, Sterile, pkg. of 4
ST2 72-2600	2-Finger Sharp Stays, 10.0 mm Hook Radius, Sterile, pkg. of 4

Single Hook Stays

Deep Tissue Blade Stays

Single Hook Stays

- 8 Hook Stays per package

Order #	Product
ST2 72-2593	Single Hook Stays, Medium Style, Sharp, 3.0 mm Hook Radius, Sterile, pkg. of 8
ST2 72-2595	Single Hook Stays, Medium Style, Blunt, 5.0 mm Hook Radius, Sterile, pkg. of 8
ST2 72-2596	Single Hook Stays, Large Style, Blunt, 12.0 mm Hook Radius, Sterile, pkg. of 8

Deep Tissue Blade Stays

- 4 Blade Stays per package

Order #	Product
ST2 72-2601	Deep Tissue Blade Stays, Solid Blade Style, 6.5 mm Blade Width, Sterile, pkg. of 4
ST2 72-2602	Deep Tissue Blade Stays, Solid Blade Style, 13.0 mm Blade Width, Sterile, pkg. of 4
ST2 72-2603	Deep Tissue Blade Stays, 2-Finger Blunt Style, 14.0 mm Blade Width, Sterile, pkg. of 4
ST2 72-2604	Deep Tissue Blade Stays, 4-Finger Blunt Style, 20.0 mm Blade Width, Sterile, pkg. of 4

CARE AND MAINTENANCE

Protect your investment by taking care of your surgical instruments. It is extremely important to properly clean and maintain your surgical tools. This is far less costly than replacing instruments. Proper care and maintenance includes cleaning, lubricating, sterilizing and storing your instruments. This will ensure longevity and optimum performance.

Glass Bead Dry Sterilizer

- Quick and inexpensive way to sterilize surgical instruments
- Glass bead bath maintains constant 233°C
- Sterilize in 15 seconds
- No messy chemicals or open flames in the laboratory

This compact unit provides a quick and easy way to sterilize surgical instruments. The stainless steel, central well is filled with dry glass beads that are heated to 233°C. Simply insert an instrument into the beads and, within 15 seconds, the submerged portion of the instrument is sterilized. It's that easy! This unit is supplied ready to use. Replacement glass beads are available separately. This product is a must for any laboratory doing small animal surgery. It is recommended that you replace the beads every six months.

Specifications	
Warm Up Time	20 min
Working Temperature	233°C
Sterilization Time	15 sec
Well Size, OD x D	51 x 102 mm (2 x 4 in)
Dimensions, H x W x D	17.2 x 13.3 x 13.3 cm (6.75 x 5.25 x 5.25 in)
Weight	2 kg (4.5 lb)

Order #	Product
ST2 61-0183	Hot Bead Sterilizer, 120 VAC, 60 Hz
ST2 61-0185	Replacement Glass Beads, 1.5 mm OD, 10 oz. Bag
ST2 72-0120	Hot Bead Sterilizer, Ireland
ST2 72-0121	Hot Bead Sterilizer, UK
ST2 72-0122	Hot Bead Sterilizer, Australia & China
ST2 72-0123	Hot Bead Sterilizer, Denmark
ST2 72-0124	Hot Bead Sterilizer, Sweden
ST2 72-0125	Hot Bead Sterilizer, Netherlands
ST2 72-0126	Hot Bead Sterilizer, Belgium
ST2 72-0127	Hot Bead Sterilizer, Germany
ST2 72-0128	Hot Bead Sterilizer, Finland
ST2 72-0129	Hot Bead Sterilizer, Luxembourg
ST2 72-0130	Hot Bead Sterilizer, Austria
ST2 72-0131	Hot Bead Sterilizer, France
ST2 72-0132	Hot Bead Sterilizer, Spain
ST2 72-0133	Hot Bead Sterilizer, Portugal
ST2 72-0134	Hot Bead Sterilizer, Italy

Surgical Drapes

- Built-in moisture barrier
- Double central panel made from medical fabric that prevents outside contaminants from permeating through
- Autoclavable

These Drapes have a built-in moisture barrier. This double central panel is made from a medical fabric that prevents outside contaminants from permeating through the drape to the work area. They are manufactured of colorfast, pre-shrunk, surgical sheeting and may be safely washed and autoclaved. Supplied as a single drape or box of 12 as noted.

Overall Size	Opening Size		
	5.1 x 2.5 cm (2 x 1 in)	10.2 x 1.9 cm (4 x ¾ in)	17.8 x 3.2 cm (7 x 1¼ in)
51 x 51 cm (20 x 20 in)	–	**ST2 59-7421**	–
76 x 76 cm (30 x 30 in)	**ST2 59-7422***	**ST2 59-7423**	–
102 x 102 cm (40 x 40 in)	–	**ST2 59-7425**	**ST2 59-7426**

**Supplied in a box of 12.*

Instrument Cleaner and Lubricant (Milk)

- A must for every laboratory
- Concentrated cleaner that is pH neutral
- Instrument Milk recommended for all instruments with metal to metal action before autoclaving

This Cleaner and Lubricant are the perfect companions for all of your surgical instruments. No laboratory should be without them.

The Instrument Cleaner is a perfect cleaner for your surgical instruments. This phosphate free formula is ideal for manual or ultrasonic cleaning or soaking of surgical instrument. Supplied in an 8 ounce bottle.

The Lubricant (Milk) is ideal for lubricating all moving parts. Supplied in an 8 ounce spray bottle for easy application. Steam compatible.

Order #	Product
ST2 61-0221	Instrument Cleaner, 8 oz. Bottle
ST2 61-0222	Instrument Lubricant (Milk), 8 oz. Spray Bottle

Surgical Towels

- Ideal for surgery
- Highly absorbent

These highly absorbent, 100% cotton, durable Towels are for use in surgery and measure 46 x 84 cm (18 x 33 in). They are autoclavable and are supplied in a package of 12.

Order #	Product
ST2 59-7435	Surgical Towels, pkg. of 12

Instrument Wraps

- Autoclavable

These Instrument Wraps are manufactured of double thick, pre-shrunk, colorfast, surgical sheeting and may be safely washed and autoclaved. Supplied as a single wrap.

Order #	Product
ST2 59-7430	51 x 51 cm (20 x 20 in)
ST2 59-7431	61 x 61 cm (24 x 24 in)
ST2 59-7432	76 x 76 cm (30 x 30 in)
ST2 59-7433	102 x 102 cm (40 x 40 in)

Plastic Sterilizing Instrument Trays

- Ideal for sterilization of surgical instruments
- Includes silicone mat for safe placement of instruments
- Perforated, see-through lid for visibility of all instruments

This sterilization instrument tray is made of medical grade plastic. Perforated lid is removable and see-through so all instruments are visible.

There are several different tray options available; different sizes and different components, but all trays include at least one silicone mat for safe placement of instruments.

This sterilization instrument tray is suitable for autoclaving or gas sterilization of surgical instruments.

Order #	Product
ST2 75-0105	Plastic Sterilization Instrument Tray with Base, Lid and 1 Silicone Mat, 15.2 x 6.4 x 1.9 cm (6.0 x 2.5 x 0.75 in)
ST2 75-0106	Plastic Sterilization Instrument Tray with Base, Lid and 1 Silicone Mat, 16.5 x 10.2 x 1.9 cm (6.5 x 4.0 x 0.75 in)
ST2 75-0107	Plastic Sterilization Instrument Tray with Base, Lid, Insert and 2 Silicone Mats, 25.4 x 15.2 x 3.8 cm (10.0 x 6.0 x 1.5 in)
ST2 75-0108	Plastic Sterilization Instrument Tray with Base, Lid and 1 Silicone Mat, 38.1 x 25.4 x 1.9 cm (15.0 x 10.0 x 0.75 in)
ST2 75-0109	Plastic Sterilization Instrument Tray with Base, Lid, Insert and 2 Silicone Mats, 38.1 x 25.4 x 3.8 cm (15.0 x 10.0 x 1.5 in)

Stainless Steel Sterilizing Instrument Case

- Ideal for sterilization of surgical instruments
- Silicone rubber inserts protect instruments
- Includes two racks with silicone rubber inserts
- Includes two long-term textile filters to maintain sterility of instruments

This sterilization instrument case is a heavy duty stainless steel case built to withstand even the harshest lab conditions. The lid is hinged and can lock in place.

This case includes two removable racks with silicone rubber inserts to protect your surgical instruments. It also contains two long-term textile filters attached by removable interior plates; one on the top and one to the bottom of the case. These filters prevent contamination thus keeping the instruments sterile while inside the case.

This sterilization instrument case is suitable for autoclaving or gas sterilization of surgical instruments.

Order #	Product
ST2 75-0097	Stainless Steel Sterilization Instrument Case, 20 x 14 x 6.5 cm (7.87 x 5.51 x 2.56 in)

Micro Instrument Sterilizing Trays

- Ideal for sterilization of delicate and microsurgical instruments
- Separating pins provide instrument stability
- Silicone rubber inserts protect instruments
- Removable cover

This stainless steel instrument tray provides a convenient and effective way to protect your expensive surgical instruments during the sterilization process. Silicone rubber inserts protect the instruments, while separating pins help to keep the instruments from touching each other. Trays are available with and without adjustable cushions. Available in two sizes. All sizes are 32 mm (1.25 in) deep.

Order #	Product
ST2 61-0215	Micro Instrument Sterilizing Tray, 20.3 x 21.6 cm (8 x 8.5 in)
ST2 61-0216	Micro Instrument Sterilizing Tray with Adjustable Cushions, 20.3 x 21.6 cm (8 x 8.5 in)
ST2 61-0217	Micro Instrument Sterilizing Tray, 20.3 x 31.8 cm (8 x 12.5 in)
ST2 61-0218	Micro Instrument Sterilizing Tray with Adjustable Cushions, 20.3 x 31.8 cm (8 x 12.5 in)

Sterilizing/Instrument Trays

- Ideal for use in autoclave or chemical soak
- Can be used to clean, rinse, sterilize and lubricate instruments
- Excellent for organizing, storing and protecting instruments

These heavy-duty trays are constructed of 304 18-8 stainless steel so they will not chip or break like glass trays. They can be used for autoclaving or cold chemical soaks. Use a shallow perforated tray within a deeper tray to create a closed draining container for cleaning, rinsing, sterilizing or lubricating your instruments.

Order #	Product
ST2 61-0199	Sterilizing/Instrument Tray, solid, 22.9 x 12.7 cm (9 x 5 in), 5.1 cm (2 in) deep
ST2 61-0200	Sterilizing/Instrument Tray, perforated, 22.9 x 12.7 cm (9 x 5 in), 5.1 cm (2 in) deep
ST2 61-0201	Lid for Sterilizing/Instrument Tray, 22.9 x 12.7 cm (9 x 5 in)
ST2 61-0211	Sterilizing/Instrument Tray, solid, 25.4 x 16.5 cm (10 x 6.5 in), 1.9 cm (0.75 in) deep
ST2 61-0202	Sterilizing/Instrument Tray, solid, 25.4 x 16.5 cm (10 x 6.5 in), 5.1 cm (2 in) deep
ST2 61-0203	Sterilizing/Instrument Tray, perforated, 25.4 x 16.5 cm (10 x 6.5 in), 5.1 cm (2 in) deep
ST2 61-0204	Lid for Sterilizing/Instrument Tray, 25.4 x 16.5 cm (10 x 6.5 in)
ST2 61-0205	Sterilizing/Instrument Tray, solid, 31.1 x 19.7 cm (12.25 x 7.75 in), 5.7 cm (2.25 in) deep
ST2 61-0206	Sterilizing/Instrument Tray, perforated, 31.1 x 19.7 cm (12.25 x 7.75 in), 5.7 cm (2.25 in) deep
ST2 61-0207	Lid for Sterilizing/Instrument Tray, 31.1 x 19.7 cm (12.25 x 7.75 in)
ST2 61-0213	Sterilizing/Instrument Tray, solid, 33.7 x 24.8 cm (13.5 x 9.75 in), 1.9 cm (0.75 in) deep

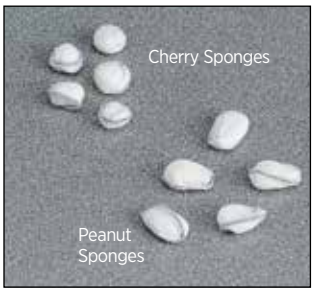
Bone Wax

- To stop bleeding during surgery and to patch holes made in the skull

Bone Wax is a sterile mixture of beeswax and isopropyl palmitate, a wax-softening agent, used to help control bleeding from bone surfaces. It can achieve local hemostasis of bone by acting as a mechanical (tamponade) barrier. It does not act biochemically and is minimally resorbable. Supplied in two sterile 2.5 g (0.09 oz) packets.

Order #	Product
ST2 59-9864	Bone Wax*

**Bone Wax should not be used where rapid osseous regeneration and fusion are desired. It may inhibit osteogenesis and act as a physical barrier to the reparative process.*

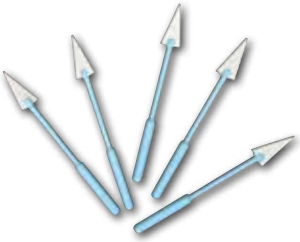


Dissecting Sponges

These small, firm, top quality gauze sponges are for use in delicate surgical procedures. They are double wrapped and have a locked-in X-Ray detectable element. They are available in peanut or cherry shapes.

The all gauze peanut sponges are 9.5 mm (⅜ in) in diameter and are used when precise sponging is necessary in delicate procedures. Cherry sponges are also all gauze and measure 12.7 mm (½ in). Both are carefully folded to encompass the X-Ray element and eliminate loose edges. These sponges are available sterile or non-sterile and are supplied 500 sponges per case.

Order #	Product
ST2 59-8431	Peanut Sponges, Sterile Standard pkg. of 5, 500 per case
ST2 59-8433	Cherry Sponges, Sterile Standard pkg. of 5, 500 per Case



Spear-Shaped Sponges

- Absorbs with only the tip immersed
- Economical and convenient
- Integral, bendable plastic handle for added flexibility
- Disposable
- 200 sponges supplied

These sterile, cellulose sponges are for the removal of fluids during microsurgery.

Order #	Product
ST2 59-8422	Spear-Shaped Sponges, pkg. of 200

Absorbable Gelatin Sponges*

- Highly absorbent
- Holds many times its weight in blood
- Completely absorbed within four to six weeks

These small, sterile, surgical sponges are prepared from specially treated, purified gelatin solution. Each sponge is a hemostatic device that is capable of absorbing and holding within its meshes many times its weight in whole blood. These sponges can be implanted during surgery and will be completely absorbed within four to six weeks.

These Gelatin Sponges measure 20 x 20 mm (¾ x ¾ in) and are 7 mm (¼ in) thick. They are supplied sterile in a jar of 12 sponges. They may be cut into smaller sizes.

**Gelatin Sponges should not be used in closure of skin incisions because they may interfere with healing of skin edges. These sponges will expand so special care must be taken when placing in a cavity or in closed tissue spaces.*

Order #	Product
ST2 59-9863	Absorbable Gelatin Sponges, pkg. of 12

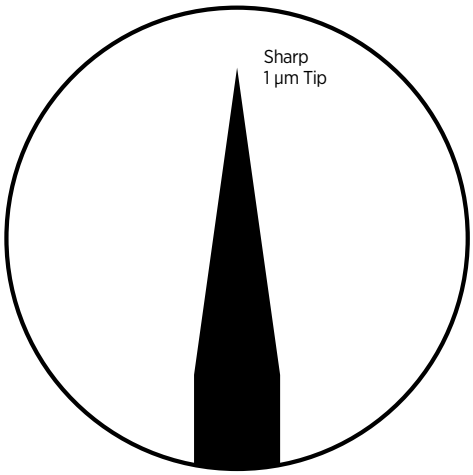
Instant Ice® Skin Refrigerant

- Topical anesthetic for use on small animals
- Non-prescription
- Non-flammable
- Mist or stream spray

This Skin Refrigerant is a vapocoolant used to control pain associated with pre-injection anesthesia, minor surgical procedures, and starting intravenous lines. Use Instant Ice® to ease animal discomfort from muscle spasms, minor pain and swelling from sprains, strains, bruising and contusions. Instant Ice® is available in a mist or stream spray in a 3.5 oz (103.5 ml) aerosol can.

Order #	Product
ST2 72-6805	Instant Ice® Skin Refrigerant Mist Spray
ST2 72-6806	Instant Ice® Skin Refrigerant Stream Spray

Instant Ice is a registered trademark of Gebaurer Company.



Etched Tungsten Micro-Needles

- For very fine micro-dissections
- Sharp or blunt tips available
- Provides lateral stability
- Minimal spring action

These micro-needles are for micro-dissections. They are made from high quality tungsten. Select from either a sharp 1 micron tip or a blunted 3 or 5 micron tip.

All micro-needles provide lateral stability as well as minimal spring action during manipulation.

These micro-needles are 12 mm (0.5 in) long and are supplied in a package of 10. Select from either a 127 or 254 micron shaft.

Order #	Product
ST2 72-0422	Etched Tungsten Micro-Needle, Sharp 1 µm Tip, 127 Micron Shaft, pkg. of 10
ST2 72-0423	Etched Tungsten Micro-Needle, Sharp 1 µm Tip, 254 Micron Shaft, pkg. of 10
ST2 72-0424	Etched Tungsten Micro-Needle, Blunted 5 µm Tip, 254 Micron Shaft, pkg. of 10
ST2 72-0425	Etched Tungsten Micro-Needle, Blunted 3 µm Tip, 127 Micron Shaft, pkg. of 10

Gemini Cautery Kit

- 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 Kit 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.

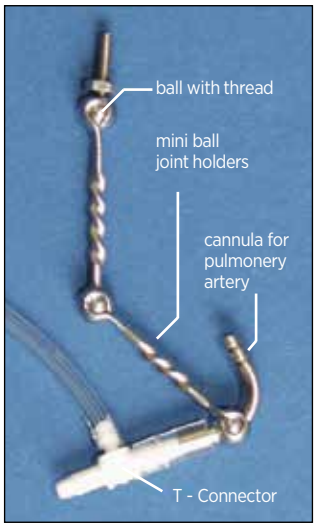
This kit includes: case, handle, two 5 mm tips and two 10 mm tips.

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

Order #	Product
ST2 72-6067	Gemini Cautery Kit
ST2 72-6068	Replacement Gemini 5 mm Cautery Tip
ST2 72-6069	Replacement Gemini 10 mm Cautery Tip

Ball Joint Holder and Cannulating System for Pulmonary Artery

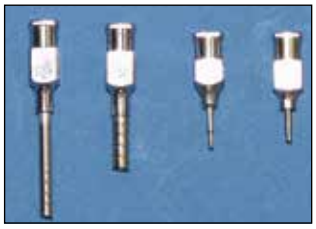
This special holder was designed to canulate the pulmonary artery on isolated perfused heart. In combination with the mini ball joint holders a precise fixation without stress load from the cannula on the heart and vessel is possible. It is used for collecting the effluate of the heart for measuring gas concentrations or metabolism analysis. It allows also to measure coronary flow on a working heart by connecting the appropriate flow sensor.



Order #	Product
ST2 73-2934	Ball Joints and Cannulating System for Pulmonary Artery on Rat / Guinea Pig Hearts to IH-SR
ST2 73-0206	Ball Joints and Cannulating System for Pulmonary Artery on Rat / Guinea Pig Hearts for any system

Aortic Cannulae to IH-SR System*

These special cannulae were designed for cannulating isolated heart to mount specifically on the IH-SR System.



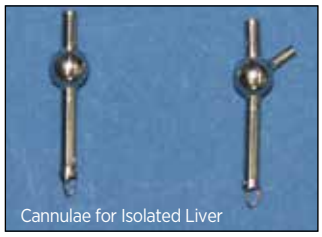
Order #	Product
ST2 73-2816	Aortic Cannula to IH-SR, OD 1.0 mm
ST2 73-2857	Aortic Cannula to IH-SR, OD 1.3 mm
ST2 73-2858	Aortic Cannula to IH-SR, OD 1.5 mm
ST2 73-2859	Aortic Cannula to IH-SR, OD 1.8 mm
ST2 73-2860	Aortic Cannula to IH-SR, OD 2.0 mm
ST2 73-2814	Aortic Cannula to IH-SR, OD 2.3 mm
ST2 73-2861	Aortic Cannula to IH-SR, OD 2.5 mm
ST2 73-2862	Aortic Cannula to IH-SR, OD 3.0 mm

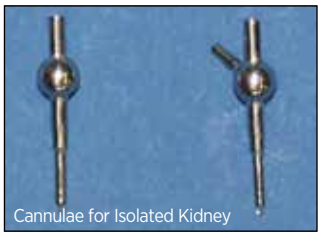
**IH-SR Cannulae are not compatible with Luer fittings*

Aortic Cannulae to IH-5 System

These special cannulae were designed for cannulating isolated heart to mount specifically on the IH-5 System.

Order #	Product
ST2 73-3065	Aortic Cannula to IH-5, OD 2.0 mm
ST2 73-2875	Aortic Cannula to IH-5, OD 2.5 mm
ST2 73-2876	Aortic Cannula to IH-5, OD 3.0 mm
ST2 73-2877	Aortic Cannula to IH-5, OD 3.5 mm
ST2 73-2878	Aortic Cannula to IH-5, OD 4.0 mm
ST2 73-2879	Aortic Cannula to IH-5, OD 5.0 mm
ST2 73-2880	Aortic Cannula to IH-5, OD 6.0 mm


Cannulae for Isolated Liver


Cannulae for Isolated Kidney

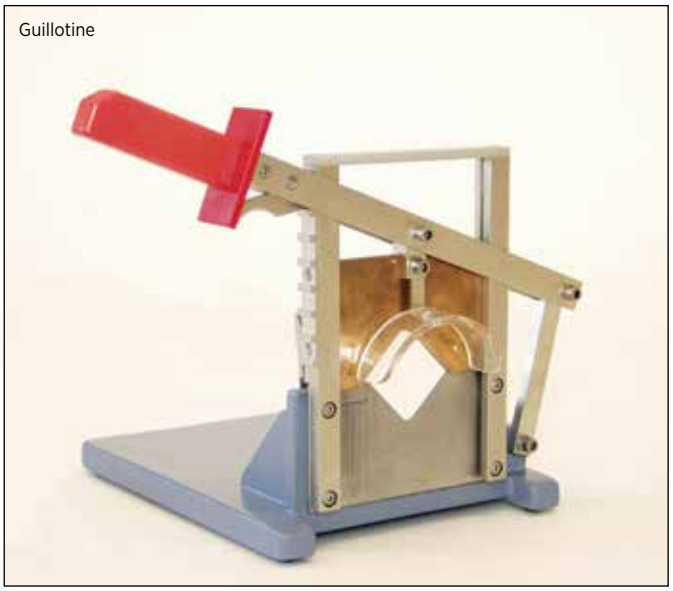
Cannulae for Isolated Liver or Kidney Perfusion

These special cannulae were designed for non traumatic cannulation of an isolated perfused liver or kidney. The cannulae are equipped with a basket like tip to avoid any occlusion of the vessel during preparation and experiment. The cannulae are available at different sizes depending on the species and with or without side port for pressure measurement or drug application.

The cannulae are also available as cannulating system to the moist chamber.

These cannulae can also be combined with Mini Ball Joint Holders to build universal perfusion cannulating systems.

Order #	Product
ST2 73-3308	In Situ Cannula with Basket OD 1.0 mm
ST2 73-3310	In Situ Cannula with Basket OD 1.3 mm
ST2 73-3312	In Situ Cannula with Basket OD 2.0 mm
ST2 73-3314	In Situ Cannula with Basket OD 2.3 mm
ST2 73-3309	In Situ Cannula with Basket and Side Port OD 1.0 mm
ST2 73-3311	In Situ Cannula with Basket and Side Port OD 1.3 mm
ST2 73-3313	In Situ Cannula with Basket and Side Port OD 2.0 mm
ST2 73-3315	In Situ Cannula with Basket Ex Vivo Cannula with Basket OD 1.0 mm and Holder to Moist Chamber
ST2 73-0729	Ex Vivo Cannula with Basket OD 1.3 mm and Holder to Moist Chamber
ST2 73-2947	Ex Vivo Cannula with Basket and Side Port OD 1.0 mm and Holder to Moist Chamber
ST2 73-2777	Ex Vivo Cannula with Basket and Side Port OD 1.3 mm and Holder to Moist Chamber
ST2 73-2778	Ex Vivo Cannula with Basket and Side Port OD 2.3 mm and Holder to Moist Chamber

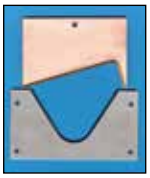

Guillotine

55-0012
Small Decapitator

Hugo Sachs Guillotines

- Two different sizes:
  - For mouse and rat
  - For guinea pig and rabbit
- Cuts through bone tissue
- Protecting sheet at handle
- Protecting plexiglas cover at knife
- Locking device prevents unintentional fall of knife
- Bolting of knife in final position
- Knife can only be moved when security trigger guard is activated

Blades for mouse and rat


Blades for guinea pig and rabbit

The Guillotine provides instant decapitation of laboratory animals. It is available in two versions. The small version has a maximum opening of 65 mm and is used for small rodents; mice and rats. The large version has a maximum opening of 85 mm and is used for guinea pigs and rabbits. A swift downward thrust of the handle dispatches rats, mice and other experimental subjects quickly and without trauma. The blades consist of two different metals - the fixed blade is stainless steel, the movable blade is bronze - ensuring excellent cut and avoiding scuffing tendency because of the excellent anti-friction properties of these two metals. Spare blades are available. A security guard ensures that the movable blade stays up when guillotine is not in use so that no unexpected movement down may take place. Protecting cover and locking devices provide a maximum of safety for the user.

The entire unit is completely washable. No need to disassemble.

Also ideal for cutting plastic tubing.

Order #	Product
ST2 73-1918	Small Guillotine for Mouse and Rat
ST2 73-1920	Large Guillotine for Guinea Pig and Rabbit
ST2 73-1919	Replacement Blades for Small Guillotine

Decapitators

- Cuts through bone tissue; sharp enough to cut hair
- Handle can be relocated for right- or left-hand use

This decapitator has two hardened, grounded and polished surgical stainless steel blades, a cast aluminum base and stainless steel hardware. The base has four holes for permanent mounting to a table top. This decapitator has a maximum blade opening of 38 mm (1½ in) square and weighs 1.8 kg (1 lb). It is used for rats, mice and other small animals.

Order #	Product
ST2 55-0012	Small Decapitator, 20 x 15 x 20 cm (8 x 6 x 8 in), Dimensions, H x W x D
ST2 55-0013	Replacement Top Blade for Small Decapitator
ST2 55-0014	Replacement Bottom Blade for Small Decapitator

SURGICAL EQUIPMENT

Surgical equipment such as operating tables, temperature control products, surgical lights and magnifiers are essential to a prepared surgical suite. Harvard Apparatus offers many different options to meet your application needs. Temperature control products include homeothermic monitoring systems and heat therapy pumps which are ideal for keeping animals warm during surgical procedures. Surgical tables are available that are heated, homeothermic or standard, as well as specially designed tables for mice and rats. Good lighting and magnification improves surgical technique and surgical outcomes.

PRODUCT	PAGE
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Homeothermic Monitoring Systems
See page 60.

Homeothermic Monitoring System

- Easy to use color touchscreen with graphical representation of real-time pressure
- Flexible rectal probe
- Easy-to-clean, flexible heating pad
- Multiple heating pad sizes available

The Harvard Apparatus Homeothermic Monitoring System is a closed-loop temperature control system for small rodents. Utilizing a small, flexible rectal probe to monitor the animal's core temperature and a heating pad to provide heat input, the subject's core body temperature can be accurately controlled. The control unit receives temperature feedback from the rectal probe and adjusts the current to the pad accordingly.

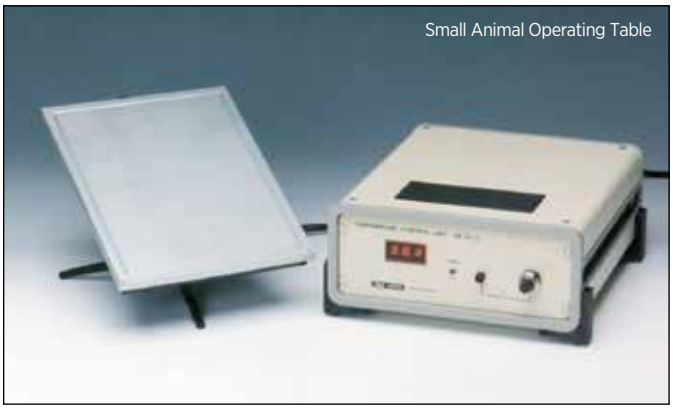
The easy-to-use color touchscreen allows users to set a target temperature and clearly view the subject's current core body temperature, as well as the set temperature, at all times. Additionally, audible alarms can be set to advise the user should the animal's core body temperature deviate from the set temperature.

Heating pads are available in four sizes to fit all your surgical needs. The standard size is appropriate for mice and small rats and fits nicely into standard stereotaxic instruments, while the large size is for rats and other like-sized rodents. Two additional sizes are available to fit common stereotaxic instrument adapters. The pads are flexible enough to fully wrap the animal, which allows the animal to be warmed from all sides rather than from just the front or back of the animal.

Specifications	
Temperature Range	20-50°C (68-122°F)
Resolution	0.1 °C/°F
Integrated Temp Sensor	Yes
Temperature Stability	±0.1°C
Temperature Display	User selectable °C and °F
Pad Material	Silicone
Probe	Flexible rectal probe
Probe Shaft Length	100 mm (3.94 in)
Probe Shaft Diameter	1.6 mm (0.06 in)
Probe Tip Diameter	1.6 mm OD flexible rectal probe
Information Displayed	Current body temperature (rectal temperature) and set temperature
Serial Communication	RS-485
Analog Output	0-5V, 20-50°C
Analog Input	0-5V, 20-50°C
Dimensions (H x W x D)	12.0 x 22.6 x 15.8 cm (4.72 x 8.91 x 6.21 in)
Weight	0.68 kg (1.5 lb)
Power	100-240 VAC, 50-60 Hz
Regulatory	CE, ETL (UL, CSA), WEEE, EU, RoHS
Warranty	1 year

Order #	Product
ST2 55-7020	Homeothermic Monitoring System, includes: Homeothermic Control Unit, Flexible Rectal Probe, Standard Size Heating Pad (12.0 x 20.5 cm), Insulation Pad and USB Cable
ST2 55-7034	Homeothermic Monitoring System Includes: Homeothermic Control Unit, Flexible Rectal Probe, Large Heating Pad (20.3 x 25.4 cm), Insulation Pad and USB Cable
ST2 55-7030	Homeothermic Monitoring System Includes: Homeothermic Control Unit, Flexible Rectal Probe, Heating Pad for Mouse Stereotaxic Adpater (7.0 x 14.5 cm), Insulation Pad and USB Cable
ST2 55-7031	Homeothermic Monitoring System Includes: Homeothermic Control Unit, Flexible Rectal Probe, Heating Pad for Stereotaxic Anesthesia Platform (3.7 x 14.5 cm), Insulation Pad and USB Cable
Replacement Parts	
ST2 55-7021	Flexible Rectal Probe, 1.6 mm OD
ST2 55-7022	Heating Pad*, standard, 12.0 x 20.5 cm
ST2 55-7032	Heating Pad*, large, 20.3 x 25.4 cm
ST2 55-7023	Heating Pad*, for Mouse Stereotaxic Adapter, 7.0 x 14.5 cm
ST2 55-7024	Heating Pad*, for Stereotaxic Gas Anesthesia Platform, 3.7 x 14.5 cm
ST2 55-7025	Insulation Pad, for Standard Heating Pad, 12.0 x 20.5 cm
ST2 55-7033	Insulation Pad, for large heating pad, 20.3 x 25.4 cm
ST2 55-7026	Insulation Pad, for Mouse Stereotaxic Adapter Heating Pad, 7.0 x 14.5 cm
ST2 55-7027	Insulation Pad, for Stereotaxic Gas Anesthesia Platform Heating Pad, 3.7 x 14.5 cm

**Heating pad includes an insulation pad.*


Small Animal Operating Table

Small Animal Operating Tables

- Non-absorbent surface
- Holds for easier fixation of animal's extremities
- Tilting platform
- Thermal control option available for OT200
- Uniform heat distribution for OT200
- Electrical noise avoided due to DC power supply for OT200

Parameters Measured

- Table temperature (OT200 model)
- Animal rectal temperature (OT200 model)

Components Included

- Table
- Tripod stand
- Four slots for holding the animal in position
- Two slots for fixing surgical accessories (OT100 model)

Options

- HB121 displays surface temperature and controls temperature probe applied to the animal under experimentation (OT200 model)

Panlab/Harvard Apparatus features a set of operating tables for general surgical work on small laboratory animals. These one-piece molded tables hold rodents and other small animals during surgery and provide excellent access to the entire length of the animal. Four slots are positioned in the corners of the platform, allowing animals to be held firmly in place. The platform has grooves running both its length and width for drainage or placement of the flushing line during surgery. The tables are mounted on a traditional tripod stand allowing the platform to easily tilt in various directions. Non-slip feet ensure a stable position of the system during the whole surgery process.

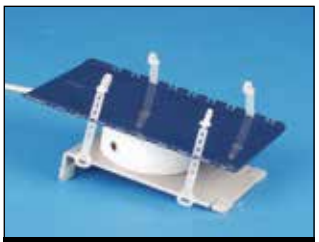
Two different models are available:

- The Panlab/Harvard Apparatus OT100 Small Animal Operating Table offers a convenient, non-absorbent and easy-to-clean PVC platform. The middle part of the platform is also provided with a set of longer slots for fixing some user-defined surgical accessories.
- The Panlab/Harvard Apparatus OT200 Small Animal Operating Table is a homeothermic table allowing the control of animal temperature during surgery. The operating table is constructed of an extremely durable anodized aluminum platform allowing a uniform heat distribution. The heat of the platform is maintained by the HB121 control unit, working with a DC power supply to minimize any AC ripple interference with the registration of some animal physiological measurements, such as electrocardiogram. The unit allows the user to adjust the body temperature between 34° to 45°C. The heat is maintained by the table-associated temperature probe or a rectal thermistor probe. Table heat and animal body temperatures can be visualized simultaneously on two different displays on the HB121 control unit. The table and control unit are purchased separately.

Specifications	
Material Composition	PVC (OT100) or anodized aluminum (OT200)
Dimensions, H x W x D	
OT100	15 x 32 x 22 cm (5.9 x 12.6 x 8.7 in)
OT200	15 x 28 x 21 cm (5.9 x 11 x 8.3 in)

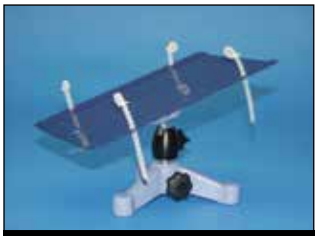
Order #	Model	Product
ST2 76-0287	OT100	Small Animal Operating Table, Tilting
ST2 76-0288	OT200	Small Animal Operating Table, Homeothermic
Options		
ST2 76-0290	HB121	Temperature Control for OT200, Includes Rectal Probe

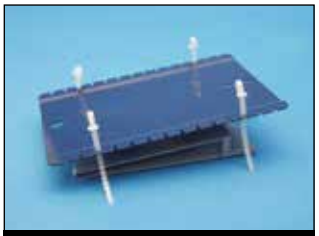
Size 1 with Tripod Stand with ball joint


Size 1 with Flat angled Stand

Size 1 with Heating Controller

Size 5 with Homeothermic Controller


Size 5 with Tripod Stand with ball joint


Size 5 with Flat angled Stand

Size 1 with Fixed Temperature

Three different versions of the heated operating table are available depending on the level of temperature control required. The heated operating table models have a built-in embedded heating element and temperature probes to ensure the temperature of the table is maintained and for safety shutoff in association with the controllers.

Operating Tables Size 1 for Mice, Size 5 for Rodents

- For general surgical work on small animals (mouse, rat, and guinea pig)
- Eight different versions available for each size:
  - Non-heated with tripod or flat angled base
  - With heating, power supply and tripod or flat
  - angled base
  - With heating controller and tripod or flat angled base
  - With heating, homeothermic temperature controller and tripod or flat angled base
- Includes paw holders
- Capable of receiving thorax retractors and mounting ball joint holders

Eight different configurations are available for each size of the operating table, size 1 for mice or size 5 for larger rodents. Each configuration is equipped with four paw holders. Experimental requirements and user's preference dictate the preferred configuration. The core component for the operating tables is a plastic coated aluminum plate measuring 160 x 100 mm (6.3 x 3.9 in) for the size 1 and 300 x 195 mm (11.8 x 7.7 in) for the size 5. Both sides of the plate have multiple slots for fixing the paw holders and optional thorax retractors. Numerous slots and dedicated paw holders 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 of 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 flat-angled version with a lower profile consuming less working height.

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.

Specifications (Operating Table)		
	Size 1	Size 5
Table Plate	160 x 95 mm, (6.3 x 3.9 in) Aluminium, Plastic coated	300 x 195 mm, (11.8 x 7.7 in) Aluminium, Plastic coated
Height with Tripod	105 mm (4.1 in) (Horizontal position)	From 160 to 180 mm (6.3 x 7.1 in) (Horizontal position)
Height with Flat Base	45 mm (1.8 in)	55 mm (2.2 in)
Heating Element	Printed circuit board	Printed circuit board
Heater Resistance	6 Ω	1.5 Ω
Weight Plate (with Heating)	0.2 kg (0.4 lb)	0.45 kg (1 lb)
Weight Plate (without Heating)	0.3 kg (0.7 lb)	0.60 kg (1.3 lb)
Weight Plate Tripod	1.55 kg (3.4 lb)	1.75 kg (3.9 lb)
Weight Flat Base	0.10 kg (0.2 lb)	0.3 kg (0.7 lb)

Advanced Fixed Temperature Heated Operating Table with Heating Controller 872/1

In this model, there is no feedback control. The table is heated and maintained at a stable temperature by controlling the amount of DC-energy to the heating element. On the controller the energy is adjustable in a range of 20-100% of the maximum energy. The controller also ensures the safety shutoff. 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.

To adjust the controller an electronic thermometer for measuring the animal body temperature is used.

Specifications (Heating Controller)	
Power Output	DC 9 Volt, 40 VA adjustable in the range 20 - 100%
Mains Voltage	230 VAC/50 Hz Version, or 115 VAC/60 Hz Version
Dimensions	125 x 95 x 210 mm (4.9 x 3.8 x 8.3 in)
Weight	2 kg (4.4 lb)

Basic Fixed Temperature Heated Operating Table with Adapter Box and Power Supply

The adapter consists of a separate box, which includes the permanent control of the operating table temperature. It controls the table temperature via the temperature sensor built into the operating table. The temperature of the operating table is fixed to 38°C.

Specifications (Heated Model with Power Supply)	
Power Output	12 V DC / 60 VA
Mains Voltage	115 VAC/60 Hz - 230 VAC/50 Hz
Dimensions	Adapter box 105 x 55 x 30 mm (4.1 x 2.2 x 1.5 in)
Power Supply	140 x 60 x 30 mm (5.5 x 2.4 x 1.5 in)
Weight	0.6 kg

Homeothermic Controlled Operating Table

The Homeothermic Operating tables consist of three parts: a probe, a control unit, and an adapter box. The flexible probe is a precision thermistor encapsulated in a bead of epoxy resin at the top of a flexible hollow plastic tube. The 1.6 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 rats and guinea pigs.

The output of the temperature sensing probe is used by the control unit to proportionally control the regulated, low-voltage DC supply to the operating table. This method of control alleviates the interference problems associated with that of non-proportional control, found with high-gain recording systems.

The control temperature is preset at 37°C at the factory, but can be adjusted from 35° to 40°C 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 operating table. When core temperature is substantially below the desired temperature, the bar graph will indicate maximum power being delivered.

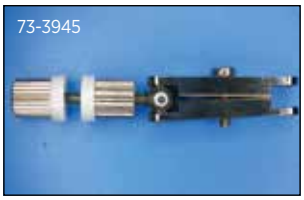
The adapter consists of a separate box, which includes the permanent control of the operating table's maximum temperature. It acts as a safety circuit by limiting the maximum temperature of the operating table to 40°C. This circuit uses a second thermistor probe built into the operating table.

The operating table 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. Special circuitry eliminates electrical noise thus permitting sensitive recordings.

Specifications (Homeothermic Controlled Model)	
Power Output	Maximum 40 VA. Supplied continuously (not switched), the level is dependent on the temperature monitored
Ripple Output	Less than 10 mV RMS
Temperature Accuracy	±1% of actual temperature (35° to 40°C)
Temperature Range	35° to 40°C monitored on the front panel LCD
Temperature Safety Limit	40°C
Analogue Output	50 mV at 35°C to 150 mV at 40°C (20 mv/°C)
Mains Voltage	230 VAC, 50 Hz Version, or 115 VAC, 60 Hz Version
Dimensions, W x H x D	274 x 320 x 94 mm (10.8 x 12.6 x 3.7 in)
Weight	3 kg (6.6 lb)

73-3748

73-3857


73-3945

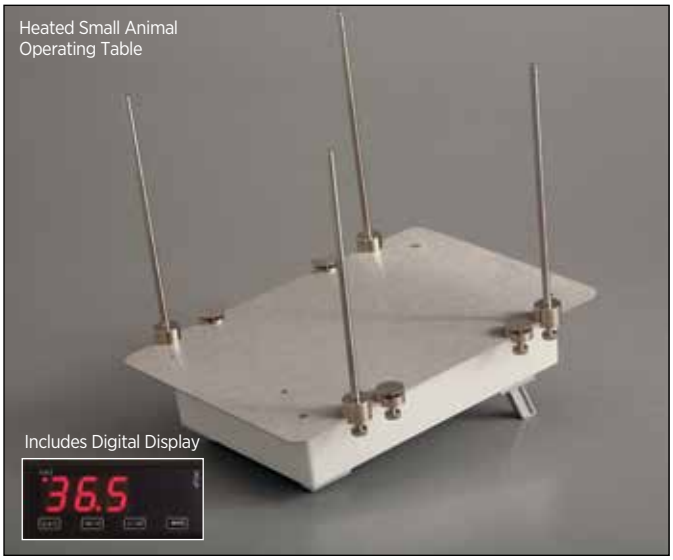
73-3856

73-3855

73-3822

73-3854

Operating Tables	Size 1	Size 5
Tripod Base, Non-Heated	**ST2 73-3754**	**ST2 73-3529**
Tripod Base, Heated with Power Supply 115/230 VAC	**ST2 73-3774**	**ST2 73-3776**
Tripod Base, Heating Controller, 115 VAC, 60 Hz	**ST2 73-3770**	**ST2 73-3584**
Tripod Base, Heating Controller, 230 VAC, 50 Hz	**ST2 73-3771**	**ST2 73-3582**
Tripod Base, Homeothermic Controller, 115 VAC, 60 Hz	**ST2 73-4231**	**ST2 73-3975**
Tripod Base, Homeothermic Controller, 230 VAC, 50 Hz	**ST2 73-4233**	**ST2 73-3979**
Flat Angled Base, Non-Heated	**ST2 73-3768**	**ST2 73-3530**
Flat Angled Base, Heated with Power Supply 115/230 VAC, 50/60 Hz	**ST2 73-3775**	**ST2 73-3777**
Flat Angled Base, Heating Controller, 115 VAC, 60 Hz	**ST2 73-3772**	**ST2 73-3586**
Flat Angled Base, Heating Controller, 230 VAC, 50 Hz	**ST2 73-3773**	**ST2 73-3585**
Flat Angled Base, Homeothermic Controller, 115 VAC, 60 Hz	**ST2 73-4232**	**ST2 73-3976**
Flat Angled Base, Homeothermic Controller, 230 VAC, 50 Hz	**ST2 73-4234**	**ST2 73-3980**
Flat Base, Non-Heated	**ST2 73-4902**	**ST2 73-4903**
Flat Base, Homeothermic Controller, 230 VAC, 50 Hz	**ST2 73-4900**	**ST2 73-4901**
Flat Base, Homeothermic Controller, 115 VAC, 60Hz	**ST2 73-4916**	**ST2 73-4917**
Accessories for Tables		
Replacement Paw Holders, pkg. of 5	**ST2 73-3753**	**ST2 73-3512**
Replacement Holder for Clamping Probes, Electrodes & Cannulae	**ST2 73-3854**	**ST2 73-3855**
Thorax Retractor with Ball Chain, 1 pair	**ST2 73-3822**	**ST2 73-3822**
Small Holder Link for Higher Loading	**ST2 73-3945**	**ST2 73-3945**
Holders for 2 Cannulae with Bubble Trap	–	**ST2 73-3857**
Holder with Ball Joint	–	**ST2 73-3856**
Holder for Anesthetic Mask	–	**ST2 73-3748**
Flexible Probe for All Systems, 1.3 mm OD	**ST2 73-7217**	**ST2 73-7217**



Heated Small Animal Operating Table

- This operating table is ideal 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 tabletop 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 (¼ in) rods are supplied with the table. Each 20.4 cm (8 3/16 in) 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. These 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.

Order #	Product
ST2 50-1247	Heated Small Animal Operating Table, 230 VAC, 50 Hz

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.

Order #	Board	Dimensions, L x W	Max. Weight Range	Length of Animal
ST2 59-6942	Large Rodent	40.6 x 13 cm (16 x 5⅛ in)	Up to 500 g (1.1 lb)	35.6 cm (14 in)
ST2 52-0445	Small Rodent	27.9 x 11.4 cm (11 x 4½ in)	Up to 125 g (0.3 lb)	20.3 cm (8 in)
ST2 52-0452	Rabbit	60 x 30 cm (24 x 12 in)	–	–

Heat Therapy Pump

Heat Therapy Pump

- Option of warm or cold therapy
- Timed temperature cycles can be set to 20 minutes, 30 minutes or continuous
- Alarms to alert user to provide action
- Low maintenance
- Lock-out switch to prevent inadvertent setting changes

The Heat Therapy Pump provides effective warming and cooling temperature therapy via water circulating pads. This pump features selectable and accurate temperature settings on an intuitive, easy-to-use LED control panel. This is designed to assist in preventing core body heat loss and hypothermia during surgery, or in recovery and cooling for heat stroke or fever.

The unit quickly warms up and reaches the desired warming set point within 11 minutes from an ambient temperature of 22.2°C. Cold therapy is initiated immediately upon adding ice and water to the reservoir and setting to Cooling mode. Select from four temperature settings: 10°C, 35°C, 38°C or 42°C. For convenience, the pump uses tap water and has a translucent reservoir with water fill indicators for easy filling and monitoring of the water level. Only periodic cleaning is necessary.

See below for selection of available pads.

Specifications	
Dimensions:	
Unit, H x W x D	29 x 20 x 20 cm (11.5 x 8 x 8 in)
Handle, H x W	1.75 x 5 in (±0.25 in)
Weight:	
Empty	3.0 kg (6.7 lb)
Filled	4.2 kg (9.3 lb)
Temperature Settings	10°C, 35°C, 38°C or 42°C
Accuracy	±1°C
Flow Rate	34 L (9 gal)/hr
Capacity	2,750 ml (93 oz)
Power	120 VAC, 60 Hz, 3.1 Amps, (18/3 SJT3), Hospital grade plug, 20 A typical leakage current

Order #	Product
ST2 72-9715	Heat Therapy Pump with Clik-Tite® Connectors with one 38.1 x 55.9 cm (15 x 22 in) pad, 120 VAC, 60 Hz
ST2 72-9716	Heat Therapy Pump with Clik-Tite® Connectors, 120 VAC, 60 Hz
ST2 72-9717	Heat Therapy Pump with Colder Connectors, 120 VAC, 60 Hz
ST2 60-3425	Heat Therapy Pump Stand with 5 Casters and Basket

Temperature Therapy Pads

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.

Order #	Product
ST2 60-3414	Disposable Polymer/Fabric Temperature Therapy Pad with Clik-Tite® Connectors, 7.6 x 58.4 cm (3 x 23 in), pkg. of 10
ST2 60-3415	Disposable Polymer/Fabric Temperature Therapy Pad with Clik-Tite® Connectors, 33 x 45.7 cm (13 x 18 in), pkg. of 20
ST2 72-2582	Disposable Polymer/Fabric Temperature Therapy Pad with Colder Connectors, 33 x 45.7 cm (13 x 18 in), pkg. of 10
ST2 60-3416	Disposable Polymer/Fabric Temperature Therapy Pad with Clik-Tite® Connectors, 38.1 x 55.9 cm (15 x 22 in), pkg. of 20
ST2 72-2583	Disposable Polymer/Fabric Temperature Therapy Pad with Colder Connectors, 38.1 x 55.9 cm (15 x 22 in), pkg. of 10
ST2 60-3417	Disposable Polymer/Fabric Temperature Therapy Pad with Clik-Tite® Connectors, 45.7 x 66 cm (18 x 26 in), pkg. of 10
ST2 72-2584	Disposable Polymer/Fabric Temperature Therapy Pad with Colder Connectors, 45.7 x 66 cm (18 x 26 in), pkg. of 10
ST2 60-3420	Reusable Heavy Duty Pliable All Polymer Pad with Clik-Tite® Connectors, 38.1 x 55.9 cm (15 x 22 in), pkg. of 1

Clik-Tite is a registered trademark of Medisearch.

TCAT-2 Temperature Controller

- Controls heat lamps or heating plate
- Use for both heating and cooling applications
- 110 to 230 VAC line operation
- Control range of -100° to +400°C
- Resolution 0.1°C

Our 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. The 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 setpoint 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 72-76, 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 110 VAC or 230 VAC supply.

The unit comes in a durable, baked enamel painted aluminum housing. Adjustable front feet allow the user to raise the front of the 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 the 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	700 watts (Does not apply to TCAT-2LV) with Resistive Load
DC Output Rating	12V DC, 2 Amps Maximum (Does not apply to TCAT-2AC)
AC Ground Leakage Current	<1 mA at 110 VAC
Dual Setpoint	TCAT-2DF and TCAT-2LV only
Protection Feature	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 (4⅓ x 7¼ x 10 in)
Weight	<2.27 kg (<5 lb)
Power Supply	110 VAC or 220 VAC, 50/60 Hz

Order #	Product
ST2 72-7559	TCAT-2AC Temperature Controller for Lamp
ST2 72-7560	TCAT-2LV Temperature Controller for Plate
ST2 72-7561	TCAT-2DF Temperature Controller for Both

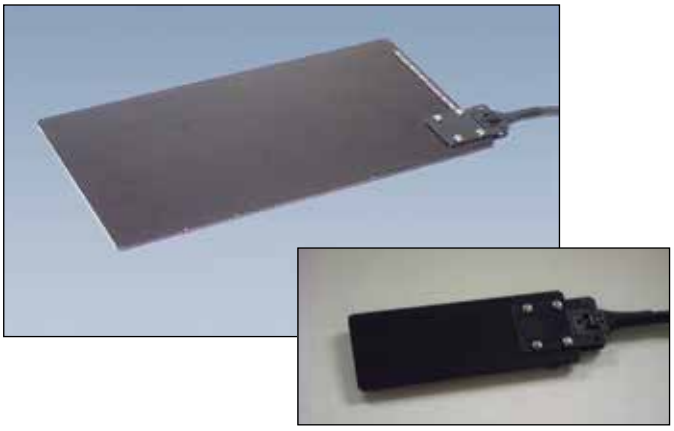
Heat Lamp HL-1

- 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 for easy adjustment of radiant heat to specimen. The lamp is supplied with a 250 W (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 VAC socket, so it can plug directly into the wall or it can be used with one of the temperature controllers on page 66.

Specifications	
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 lb)
Power	110 VAC, 60 Hz
Bulb	250 W infrared heat lamp

Order #	Product
ST2 72-7562	Heat Lamp HL-1



Heating Plates for TCAT-2

- Available in two sizes

These Heating Plates are an optional accessory for the TCAT-2 Temperature Controller. They are direct current heating plates for small rodents (mice and rats). Two sizes are available to suit your application.

The Heating Plates are made of black anodized aluminum and have small feet giving them an elevation of 6.4 mm (0.25 in) above the surface they sit on, such as a table or stereotaxic stage.

They are easily cleaned with alcohol. These Heating Plates have a feedback sensor to prevent overheating when used with our TCAT-2 series of controllers on page 66.

Specifications	
Dimensions, W x L:	
Large	11.1 x 21.6 cm (4⅜ x 8.5 in)
Small	3.8 x 10.2 cm (1.5 x 4 in)
Height Above Surface	0.65 cm (0.25 in)
Power	25 W DC
Over Temperature Protection	100 Ω RTD

Order #	Product
ST2 72-7563	Heating Plate, Large*
ST2 72-7617	Heating Plate, Small*

**Requires the TCAT-2 Controllers, see page 66.*

Digital Thermometer

D16 Digital Thermometer for Evaluating Body Temperature

Key Features

- Precalibrated and interchangeable probes
- Data transfer to PC or printer

Parameters Measured

- Current body temperature (degrees)
- Recordings by each user-defined interval of time (TMP812RS)

Components Included:

- Control unit (TMP12RS includes RS-232 communications port)
- SeDaCom Software (only TMP12RS)
- Instruction manual
- Cables, connectors
- Set of two spare fuses
- 2-year warranty

Options

- Temperature probes

The TMP812 is a multi-channel digital thermometer suitable for the measurement of animal body temperature using rectal probes. The system is designed for working with up to 12 resistive temperature probes simultaneously. Temperature is measured by using Yellow Springs (YSI) thermistor probes. The registered current value shown in the digital display of the front panel has a resolution of 0.1 degrees. There is no difference between channels or temperature probes, freely interchangeable. Standard YSI temperature probes (not supplied with the instrument; must be ordered separately) should be plugged into the jack connectors on the rear panel, while the temperature value is read from the front panel display.

The TMP812 model displays the current temperature of one channel (probe) at a time. Select the desired channel via the 12-position front panel rotary commuter.

The TMP812RS model offers a 20 x 4 LCD display for showing the current temperature of all the probes at the same time. A built-in RS-232/USB communication port allows sending (by pressing a front panel "SEND" button) the temperature values from all the probes to an external device (matrix printer with serial port or PC computer).

Additionally, the Windows-based program SeDaCom, purchased separately, allows the transfer of the current data to the PC at user-selected time intervals programmed directly from the SeDaCom application.

Specifications	
Resolution	0.1°C
Capacity	12 temperature probes simultaneously
Communications	RS-232 (USB)

Order #	Model	Product
ST2 76-0064	TMP812	12-Channel Digital Thermometer, Single Temperature Display, No Probes Included
ST2 76-0065	TMP812RS	12-Channel Digital Thermometer, Multiple Temperature Display, No Probes Included
Options		
ST2 76-0066	YS401	Temperature Probe for Rabbits (4.2 mm)
ST2 76-0067	YS402	Temperature Probe for Rats and Mice (3 mm)
ST2 76-0068	YS451	Temperature Probe for Mice (1.3 mm)
ST2 76-0069	YS409	Surface Temperature Probe (disc dia. 9.5 mm)
ST2 76-0406	-	SeDaCom Software* (2.0) for data transfer to a computer
ST2 76-0608	-	SeDaCom Accessory - RS-232/USB Adapter

** Requires ST2 76-0608 RS-232/USB Adapter.*

References

Chipana C, et al. Memantine protects against amphetamine derivatives-induced neurotoxic damage in rodents. *Neuropharmacology*. 2008;54(8):1254-1263.

Goñi-Allo B, et al. Minoxidil prevents 3,4-methylenedioxymethamphetamine-induced serotonin depletions: role of mitochondrial ATP-sensitive potassium channels, Akt and ERK. *J Neurochem.* 2008;104(4):914-925.

Goñi-Allo B, et al. Studies on the mechanisms underlying amiloride enhancement of 3,4-methylenedioxymethamphetamine-induced serotonin depletion in rats. *Eur J Pharmacol.* 2007;62(3):198-207.

Guzman A, et al. Formation of micronucleated erythrocytes in mouse bone marrow under conditions of hypothermia is not associated with stimulation of erythropoiesis, *Mutat Res Genet Toxicol Environ Mutagen*. 2008;656(1-2):8-13.

Guzman A, et al. Induction of hypothermic conditions associated with increased micronuclei formation in sigma-1 receptor knockout mice after administration of the antipsychotic compound E-5842. *Environ Mol Mutagen.*2008;49(9):727-733.

Mercader J, et al. Haploinsufficiency of the retinoblastoma protein gene reduces diet induced obesity, insulin resistance and hepatosteatosis in mice. *Am. J. Physiol. Endocrinol. Metab.* 2009 Jul;297(1):E184-93.

Puerta E, et al. Phosphodiesterase 5 inhibitors prevent 3,4-methylenedioxymethamphetamine-induced 5-HT deficits in the rat. *J. Neurochem.* 2009;108(3):755-766.

Sanchez-Mateo CC, et al. Antidepressant activity of some Hypericum reflexum L. fil. extracts in the forced swimming test in mice. *J Ethnopharmacol*. 2007;112(1):115-121.

InfraRed Thermometer for Cutaneous Tail Temperature Evaluation in Rodents

Key Features

- Allows measurements on very small surfaces
- Easy measurements even on mice tails
- Highly accurate and repetitive
- Fast reading

Parameters Measured

- Current temperature values (Celsius)

Components Included

- Instruction manual
- 1 year warranty

Options

- Calibration Certificate upon request

The 75-0046 InfraRed Thermometer was designed to measure cutaneous temperature in small rodents in a very fast and accurate manner.

With this thermometer, the optical dimension and the position of the IR sensor were adjusted in order to allow measurements on very small surfaces without influence of environment temperature, which can be the case with other industrial type infrared thermometers. This thermometer thus allows easy measurements–even on mice tails–with high accuracy and repeatability!

The InfraRed thermometer is especially accurate on a temperature range from 25° to 40°C and will prove to be useful for other lab applications as well.

The measurement taken in the animal fur may include the ambient air caught in the hair, thus creating important measurement variations. It's therefore advisable to measure on naked surfaces, like skin, tail, nose, genital area. The sensor must touch the animal to take a reading.

Specifications	
Technical Specs	For a room temperature of 15° to 25°C
Resolution	0.1°C
Accuracy	0.3°C from 25° to 40°C
Accuracy outside 24-40°C	Range 1% ±1°C
Global Measurement Range	-20° to +200°C
Distance Ratio	1:1.5
Minimum Distance to Object	From 0 mm, sensor must touch animal
Minimum Measurement Size	3 mm
Emissivity	Fixed, undisclosed value

Order #	Model	Product
ST2 75-0046	BSBIO152IRB	InfraRed Thermometer for Rodents
ST2 76-0120	-	Calibration Certificate Upon Request

Portable Digital Thermometer

- Ideal for small rodents
- Works with K-type thermocouple probes

Temperature monitoring is essential, especially in small rodents. This portable, rugged Digital Thermometer is perfect for rectal temperature measurement of any rodent from mice upwards. This thermometer can measure in Celsius, Fahrenheit, or Kelvin with an accuracy to 0.1° Celsius. It comes with a backlight for dark environments as well as one 3.0 mm OD and one 1.6 mm OD probe.

Order #	Product
ST2 34-1401	Portable Digital Thermometer including Probes
ST2 34-1402	Replacement Temperature Probe, 1.6 mm OD

Portable Thermocouple Thermometer with Temperature Probe (not included)

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 temperature from 0° to 50°C
- Analog output for strip chart recorders
- Choose from a variety of interchangeable Probes and Microprobes to meet all temperature needs, see pages 72-76.

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 Thermocouple Thermometer is completely waterproof, dustproof, 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 73-76. For Microprobes, see page 72.

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	Auto-corrected to 0.1°C
Compensation	0° to 50°C
Display	LCD, 3½ digits, 13 mm (½ 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 2½ x 6 in)
Weight	0.9 kg (2 lb) including carrying case

Order #	Product
ST2 52-1302	Portable Thermocouple Thermometer with 9 V Disposable Batteries
ST2 59-7567	Portable Thermocouple Thermometer for AC or Rechargeable Batteries, 115 VAC, 60 Hz
ST2 59-7568	Portable Thermocouple Thermometer for AC or Rechargeable Batteries, 230 VAC, 50 Hz
ST2 52-1773	Two-Way Probe Selector, see next page
ST2 52-1781	Five-Way Probe Selector, see next page
ST2 72-7564	Extension Cable for Miniature Type T Temperature Probes
ST2 52-1310	Tilt Base. Heavy metal base has a locking tilt head and omnidirectional swivel. It provides for easy positioning of the Thermocouple Thermometers.

Three Probe Thermocouple Monitoring Thermometer

Single Probe Thermo-couple Monitoring Thermometer

Tilt Base

Five-Way Probe Selector

52-1773 Two-Way Probe Selector

Thermocouple Monitoring Thermometers

- Choice of one, two, three or five probe inputs

These thermometers are for use with the Thermocouple Probes offered on pages 73-76, and Microprobes, see page 72. 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.

A two-way or five-way probe selector is available for use with any of the Thermocouple thermometers.

Specifications		
Calibration	Conforms to National Institute of Standards and Technology tables. Monograph 125	
Leakage Currents	<10 µA at 60 Hz; the instrument is isolated from ground and from mounting supports to withstand 5,000 volts; capacitance to ground is low to ensure compatibility with electrosurgical equipment	
Safety Standards	Conforms to: NFPA #56A, Inhalation Anesthetics UL #544, 1972 ANSI/AAMI Safe Current Limits for Electronics Apparatus	
Sensor(s)	Type "T" thermocouple, copper-constant	
Input Socket(s)	Miniature "T" quick disconnect, copper-constant	
Monitoring Thermometer	**Single Probe**	**Three Probe**
Temperature Range	25° to 45°C	-10° to +60°C
Resolution	0.1°C	0.1°C
Accuracy (Instrument Only)	0.1°C ±1 digit	0.1°C ±1 digit at 25°C ambient
LCD Display	3½ digits, 12.7 mm (½ in) high numerical display only	3½ digits, 18 mm (0.7 in) high displays °C
Power Supply	4 "C" cell batteries	4 "C" cell batteries
Battery Life	1,200 hrs continuous	2,000 hrs continuous
Battery Warnings	Automatic 2-stage warning indicator flahes when 8 hours of life remain; becomes continuous when batteries must be replaced	LO-BAT appears display when battery voltage is low but several hours of life remain
Faulty Probe or Input	Display reads "0"	INPUT appears on display

Order #	Product
ST2 60-1956	Single Probe Thermocouple Monitoring Thermometer
ST2 59-7569	Three Probe Thermocouple Monitoring Thermometer
ST2 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 1⅜ x 1 in)
ST2 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 (2¼ x 6 x 6⅓ in) and weighs 0.6 kg (1¼ lb)
ST2 72-7564	Extension Cable for Miniature Type T Temperature Probes
ST2 52-1310	Tilt Base. Heavy metal base has a locking tilt head and omnidirectional swivel. It provides for easy positioning of the Thermocouple Thermometers.

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 in) diameter. The extremely small mass results in fast response times with time constants as low as 0.005 seconds (this 52-1716 microprobe is rather fragile). The 52-1757 microprobe sensor bead is exposed; thus, it combines the ultra-fast response of 52-1716, but has the PTFE sheath strength of the 52-1732.

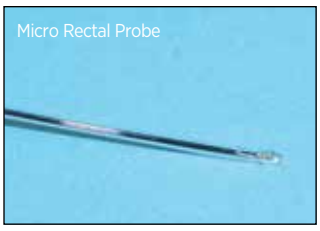
All microprobes are made with the proprietary copper thermocouple wire and are guaranteed accurate to 0.1°C within the physiological range. Probes do not require individual calibration and are completely interchangeable in any thermocouple thermometer, such as the 52-1302 Portable Thermocouple Thermometer or the 60-1956 Single Probe Thermocouple Monitoring Thermometer, see pages 70 and 71 respectively.

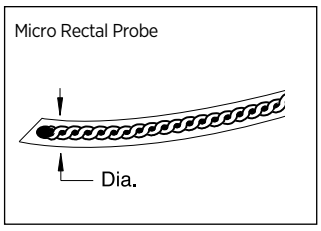
Microprobes

- Ideal for:
  - Rectal measurements in neonatal mice
  - Implantation in brain or muscle tissue
  - Insertion into blood vessels
- Small diameter 0.23 mm (0.009 in)
- Fast - Time constant of 0.005 seconds
- Flexible microprobes that are completely sealed
- Can be sterilized by autoclaving, gas (EtO) or Cidex

An extensive range of flexible PTFE microprobes are 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 52-1716).

Order #	Probe Type	Needle Gauge	Diameter	Time Constant	Lead Length
ST2 52-1724	IT-14	14	1.27 mm (0.050 in)	0.3 second	0.91 m (3 ft)
ST2 52-1732	IT-18	18	0.635 mm (0.025 in)	0.1 second	0.91 m (3 ft)
ST2 52-1740	IT-21	21	0.406 mm (0.016 in)	0.08 second	0.304 m (1 ft)
ST2 52-1716	IT-23	23	0.229 mm (0.009 in)	0.005 second	0.91 m (3 ft)
ST2 52-1757	IT-1E	18	0.635 mm (0.025 in)	0.005 second	0.91 m (3 ft)





Micro Rectal Probe For Neonatal Mice and Other Very Small Animals

This Micro Rectal Probe for very small animals (neonatal mice) has a flexible polyurethane sheath with smooth rounded tip (see inset). It measures 36 in long and has an outside diameter nominal 0.032 in (max at tip 0.04 in). Time constant 0.18 seconds with a maximum temperature of 140°C. It may be sterilized by Gas (EtO), Gluteraldehyde solution or autoclave.

Order #	Product
ST2 72-7616	RET-4 Rectal Probe for Very Small Animals

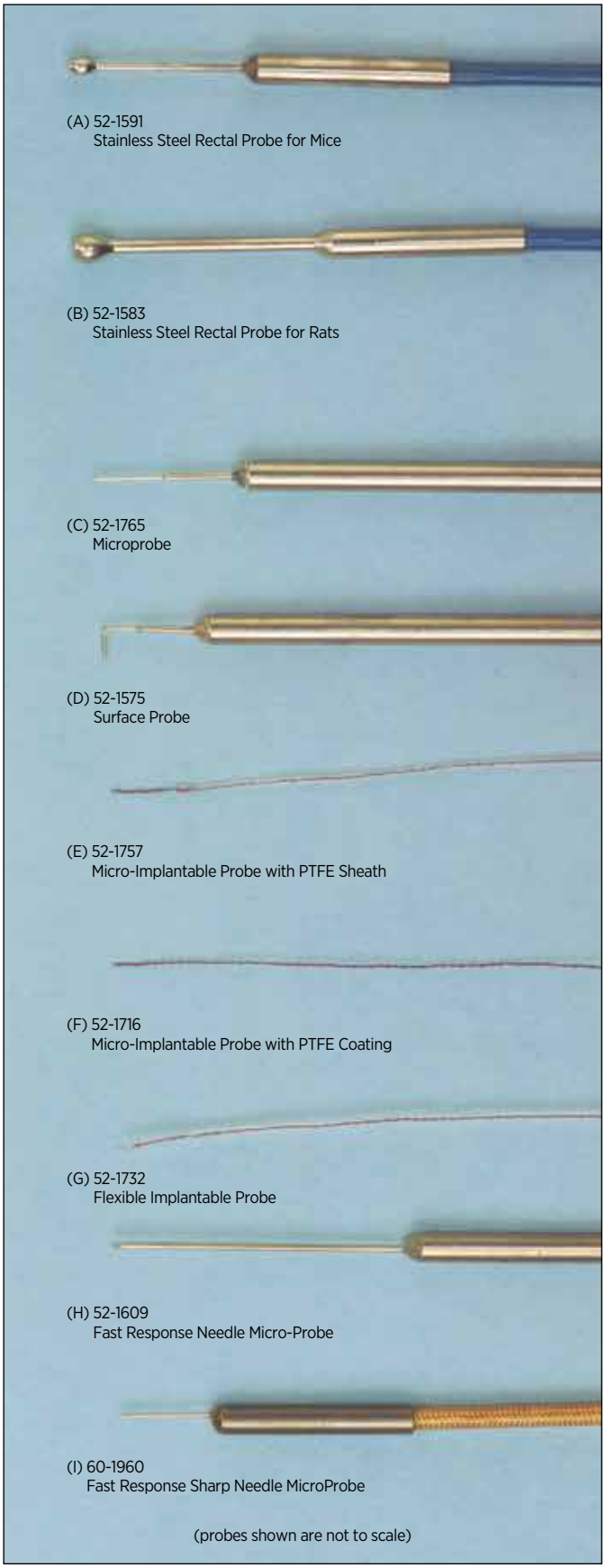
Ultra Fine IT-Series Flexible Microprobe

- 32-gauge probe

This temperature Microprobe is a 32-gauge polyurethane coated wire with polyester insulated thermocouple bead. It is ideal for research applications to measure temperature in animal brains and other tissue. This probe is fairly fragile, but is very fast responding. The wire cross section measures 0.005 x .0025 in. The insulated tip has a maximum outside diameter 0.009 in.

The probe is supplied in a standard length of 36 in. It is supplied on a 1 in diameter protective spool as shown. It has a time constant of 0.004 seconds. The maximum temperature for this probe is 70°C. It can be sterilized by gas (EtO).

Order #	Product
ST2 72-7567	Ultra Fine IT Series Flexible Microprobe

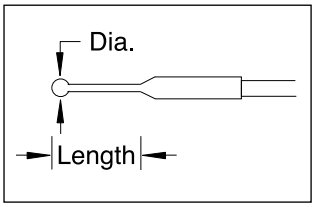


These Thermocouple Probes are made with proprietary copper thermocouple wires and are accurate to 0.1°C due to stringent wire standards. The small size of the sensor provides fast response times with time constants as low as 0.005 seconds.

These Thermocouples 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.

SURGICAL EQUIPMENT

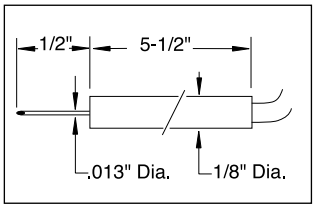
Stainless Steel Rectal Probes (A, B)



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. Not isolated. Available with two different shaft sizes. Supplied individually.

Order #	Animal	Time Constant	Ball Diameter	Shaft, D x L
ST2 52-1591	Mice (A)	0.5 sec	1.65 mm (0.065 in)	0.71 x 19.1 mm (0.025 x ¾ in)
ST2 52-1583	Rats (B)	0.8 sec	3.18 mm (0.125 in)	1.5 x 25.4 mm (0.059 x 1 in)

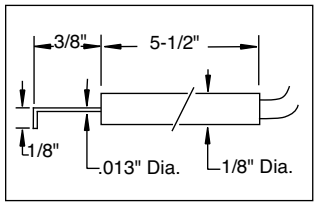
Microprobe (C)



- 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 (½ in) long stainless steel shaft to facilitate temperature probing. The 3.2 mm (⅛ in) diameter x 140 mm (5½ in) long tubular handle fits most micromanipulators for precise positioning. Maximum intermittent temperature 200°C; continuous use 100°C . Not isolated. Supplied individually. Lead length 1.5 m (5 ft).

Order #	Product
ST2 52-1765	Microprobe (C)

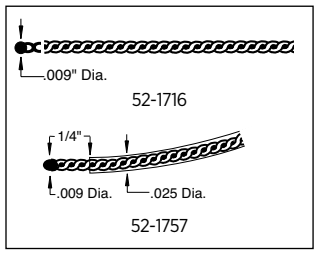


Surface Probe (D)

- 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 (⅜ in) long with a 90° bend that is 3.2 mm (⅛ in) long. The 3.2 mm (⅛ in) diameter handle is 140 mm (5½ in) long with a 1.5 m (5 ft) lead. Maximum temperature 200°C. Not isolated. Supplied individually.

Order #	Product
ST2 52-1575	Surface Probe (D)

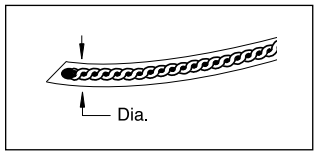


Micro-Implantable Probes (E, F)

- 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 PTFE coating or with a PTFE sheath for added durability similar to the 52-1732 Flexible Implantable Probe, see below, but with the sensor bead exposed. Maximum temperature 150°C. 0.9 m (3 ft) lead. Supplied individually. Rather fragile.

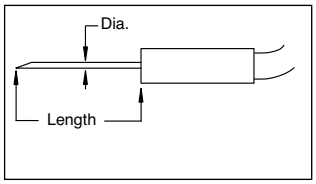
Order #	Product
ST2 52-1757	Micro-Implantable Probe with PTFE Sheath (E)
ST2 52-1716	Micro-Implantable Probe with PTFE Coating (F)



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 PTFE. Quite rugged. Maximum temperature 150°C. Supplied individually.

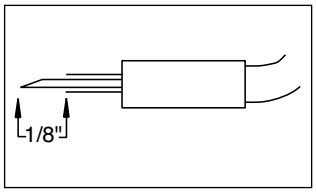
Order #	Time Constant	Tip Diameter	Lead Length
ST2 52-1740	0.08 sec	0.41 mm (0.016 in)	0.3 m (1 ft)
ST2 52-1732	0.1 sec	0.64 mm (0.025 in)	0.9 m (3 ft)
ST2 52-1724	0.3 sec	1.3 mm (0.050 in)	0.9 m (3 ft)



Fast Response Needle Microprobes (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. Available in three gauges of varying needle lengths with a 1.5 m (5 ft) lead. Not isolated. Supplied individually.

Specifications			
Order #	**Needle Tip/Length**	**Time Constant**	**Diameter**
Blunt Tip			
ST2 52-1708	1 cm	0.025 sec	29 G; 0.33 mm
Sharp Tip			
ST2 52-1666	1 cm	0.025 sec	29 G; 0.33 mm
ST2 52-1674	2 cm	0.025 sec	29 G; 0.33 mm
ST2 52-1633	2 cm	0.1 sec	26 G; 0.46 mm
ST2 52-1682	3 cm	0.025 sec	29 G; 0.33 mm
ST2 52-1609	3 cm	0.15 sec	23 G; 0.64 mm
ST2 52-1641	4 cm	0.1 sec	26 G; 0.46 mm
ST2 52-1690	5 cm	0.025 sec	29 G; 0.33 mm
ST2 52-1617	5 cm	0.15 sec	23 G; 0.64 mm
ST2 52-1658	6 cm	0.1 sec	26 G; 0.46 mm
ST2 52-1625	8 cm	0.15 sec	23 G; 0.64 mm

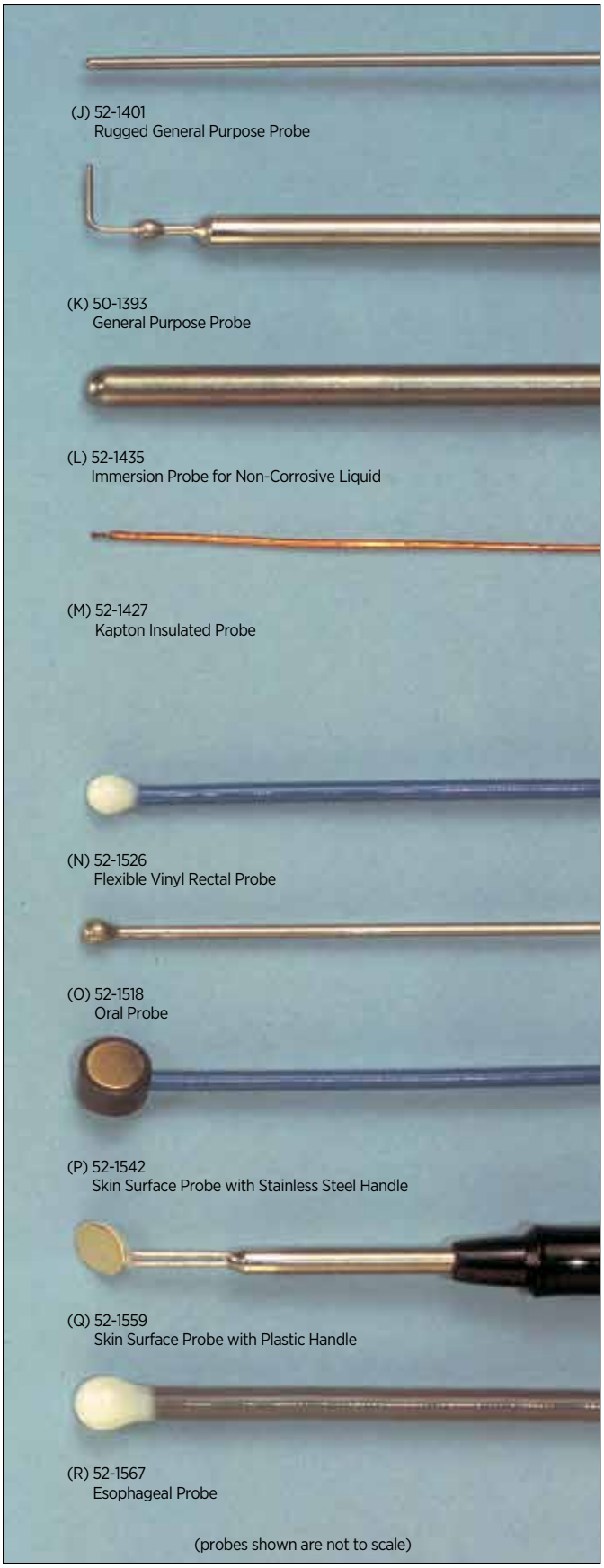


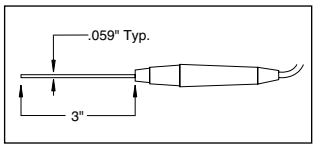
Fast Response Sharp Needle Microprobe (I)

- 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 (⅛ in). Maximum temperature 150°C. Not isolated. Lead length 1.5 m (5 ft).

Order #	Product
ST2 60-1960	Fast Response Sharp Needle MicroProbe (I)



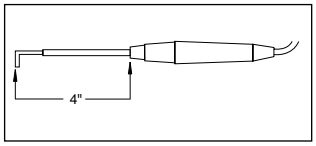


Rugged General Purpose Probes (J)

- Time constant 0.5 second

These heavy duty, immersible probes are for liquids, gases and semi-solids. Not good for surface temperature measurements, see 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. Not isolated. Supplied individually.

Order #	Product
ST2 52-1401	Rugged General Purpose Probe, 7.6 cm (3 in) Shaft (J)
ST2 52-1419	Rugged General Purpose Probe, 22.9 cm (9 in) Shaft

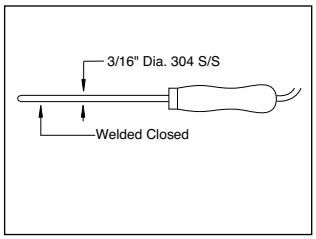


General Purpose Probe (K)

- 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.

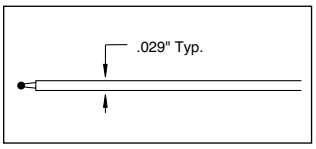
Order #	Product
ST2 52-1393	General Purpose Probe (K)



- #304 stainless steel shaft for non-corrosive liquids
- PTFE-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.

	Non-Corrosive Liquids Max. Temp.	Corrosive Liquids Max. Temp.
Shaft Length	**400°C (752°F)**	**150°C (302°F)**
30.5 cm (12 in)	**ST2 52-1435 (L)**	**ST2 52-1468**
61 cm (24 in)	**ST2 52-1443**	**ST2 52-1476**
91.4 cm (36 in)	**ST2 52-1450**	**ST2 52-1484**

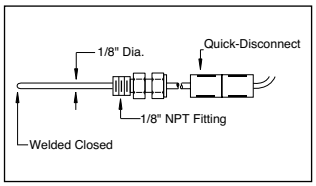


Kapton Insulated Probe (M)

- 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. Not isolated. Supplied in a package of six probes.

Order #	Product
ST2 52-1427	Kapton Insulated Probe (M)

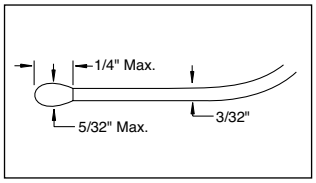


Permanent Installation Probes

- Time constant 3 seconds

These probes are for permanent installation. The 3.2 mm (⅛ 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 (⅛ in) compression fitting, quick disconnect plugs and sockets and a 3 m (10 ft) lead. Maximum temperature 400°C. Not isolated. Supplied individually.

Order #	Product
ST2 52-1492	Permanent Installation Probes, 30.5 cm (12 in) Shaft
ST2 52-7560	Permanent Installation Probes, 15.2 cm (6 in) Shaft

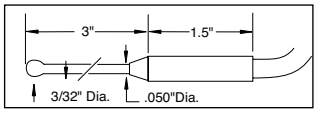


Flexible Vinyl Rectal Probe (N)

- 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 (¼ 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. Isolated. Supplied individually.

Order #	Product
ST2 52-1526	Flexible Vinyl Rectal Probe (N)
ST2 52-1534	Disposable Sheaths, pkg. of 1,000

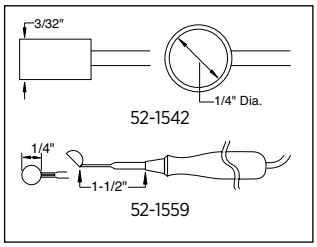


Oral Probe (O)

- 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. Not isolated. Supplied individually.

Order #	Product
ST2 52-1518	Oral Probe (O)
ST2 52-1534	Disposable Sheaths, Pkg. of 1,000

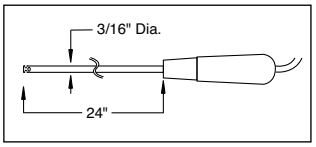


Skin Surface Probes (P, Q)

- Time constant 0.15 second

Ideal for skin surface temperature measurements. The non-allergenic, 6.4 mm (¼ 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. Supplied individually. Lead length 1.5 m (5 ft).

Order #	Product
ST2 52-1542	Skin Surface Probes with Stainless Steel Handle; Not Isolated (P)
ST2 52-1559	Skin Surface Probes with Plastic Handle; Isolated (Q)

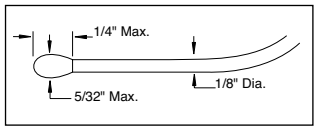


Air and Gas Probe

- 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. Supplied individually.

Order #	Product
ST2 52-1500	Air and Gas Probe



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 (¼ in) long tip mounted on a 3.2 mm (⅛ in) diameter by 1.5 m (5 ft) lead. Maximum temperature 90°C. Isolated. Supplied individually.

Order #	Product
ST2 52-1567	Esophageal Probe (R)

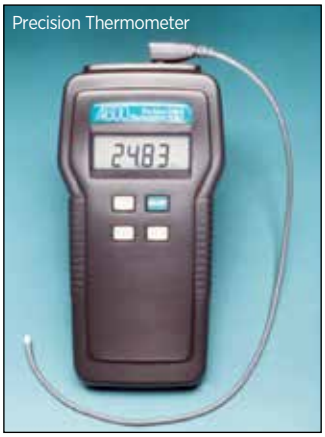
Non-Contact InfraRed Thermometer

- Excellent for verifying temperature in a non-contact manner
- Use for solvents, hot plates, and animal temperatures
- Measures to 320°C 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 320°C. 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	-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 in 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)

Order #	Product
ST2 72-5270	IR Thermometer



Precision Thermometer

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

61-0223 Precision Thermometer shown with 400 series rectal probe (not included, see page 78)

Has NIST traceability. Features temperature readout in either °F or °C, RS-232 port, menu selectable hold, min/max, DT and store modes. SoftTemp Data Acquisition Software is available.

Definitions

Thermistor

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

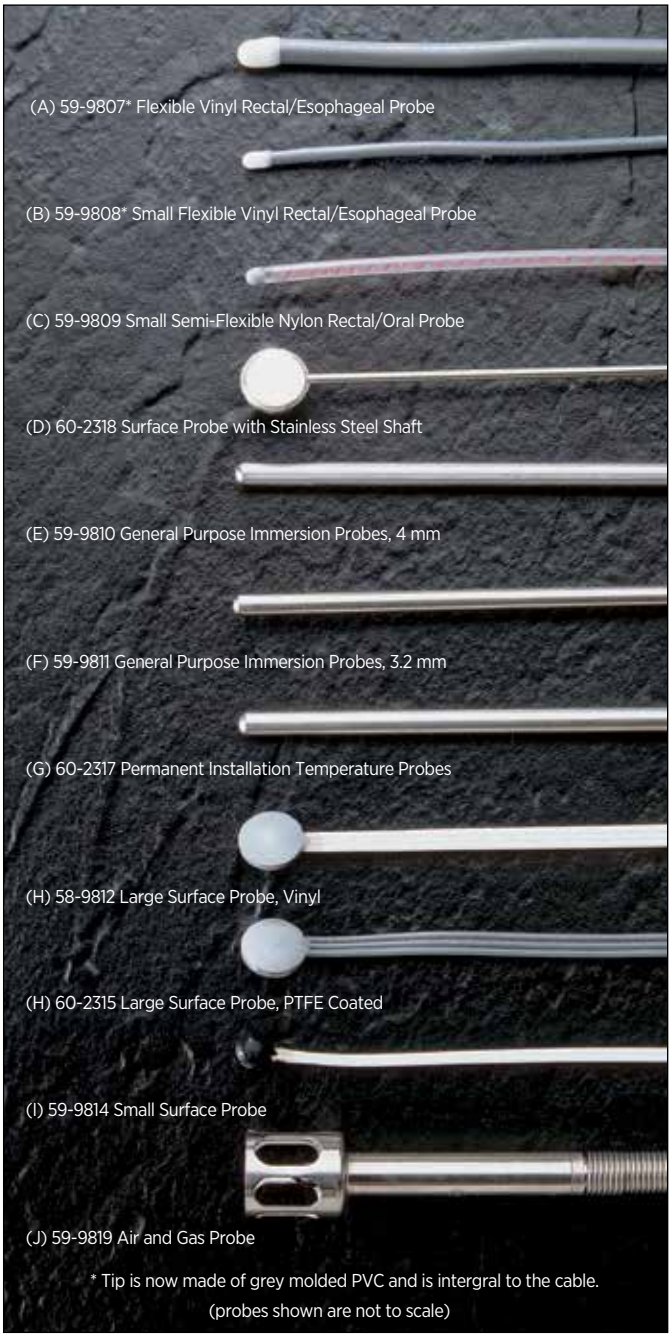
Time Constant

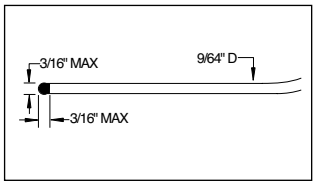
The time required to reach 63% of final temperature. An accurate reading is obtained when the reading stops changing, normally 5 to 10 time constants.

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 RS-232 communications
Mating Connector	¼-in 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)

Order #	Product
ST2 61-0223	Precision Thermometer
ST2 61-0293	RS-232 Cable
ST2 61-0294	Carrying Case
ST2 61-0295	Tripod
ST2 61-0296	Battery Adaptor

All probes in the standard 400 Series can be used interchangably with all Thermistor Thermometers (Precision Thermometer see page 77) without loss of accuracy. Interchangeability tolerance is ±0.1°C over the biological range from 32° to 42°C. They have a temperature range from -40° to +150°C, except where otherwise indicated, and have a 3.1 m (10 ft) lead terminating in a 400 Series phone jack connector. These probes are for use with the Precision Thermometer, see page 77.



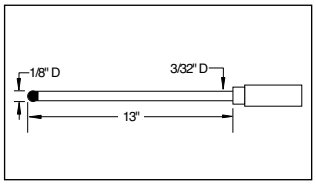


Flexible Vinyl Rectal/ Esophageal Probe (A)

- 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°C. Isolated. Supplied individually.

Order #	Product
ST2 59-9807	Flexible Vinyl Rectal/Esophageal Probe, pkg. of 1 (A)

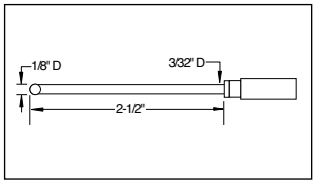


Small Flexible Vinyl Rectal/Esophageal Probe (B)

- 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°C. Isolated.

Order #	Product
ST2 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

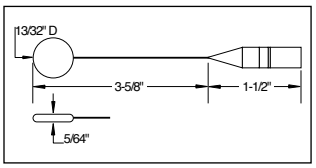
The 3.2 mm (1⁄8 in) diameter probe tip is mounted on the end of a 2.4 mm (0.09 in) diameter by 63.5 mm (2.5 in) long semi-flexible nylon tube. Maximum temperature 100°C. Isolated.

Order #	Product
ST2 59-9809	Small Semi-Flexible Nylon Rectal/Oral Probe, pkg. of 1 (C)

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.

Order #	Product
ST2 60-1908	Adhesive Patches, 28.6 mm (2⅛ in), pkg. of 100
ST2 59-9815	Adhesive Patches, 38 mm (1½ in), pkg. of 100

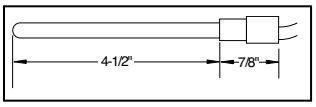


Surface Probe with SS Shaft (D)

- Time constant 0.6 second

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 (1½ in) handle. Maximum temperature 150°C. Isolated. Supplied individually.

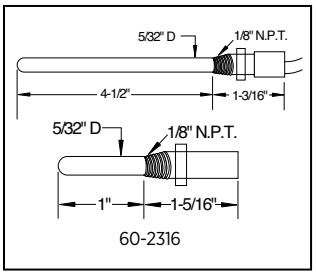
Order #	Product
ST2 60-2318	Surface Probe with Stainless Steel Shaft (D)



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 (4½ in) long stainless steel shaft. Maximum temperature 150°C. Isolated. Available in two shaft diameters. Supplied individually.

Order #	Time Constant	Product
ST2 59-9811	2.5 sec	3.2 mm (⅛ in) (F)
ST2 59-9810	3.4 sec	4 mm (3⁄16 in) (E)

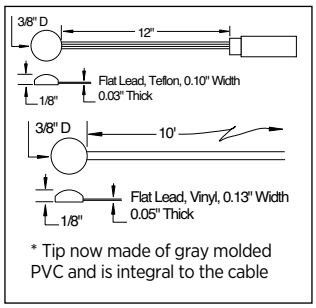


Permanent Installation Probes (G)

- Time constant 3.4 second

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 (⅛ in) National Pipe Thread compression fitting. The shorter shaft probe has a detachable lead. Maximum temperature is 150°C. Not isolated.

Order #	Product
ST2 60-2317	Temp. Probe, 11.4 cm (2½ in), pkg. of 1 (G)

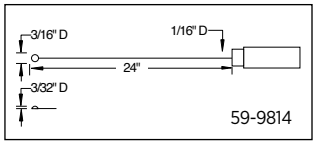


Large Surface Probes (H,I)

- Time constant 1.1 second

Ideal for cuvette, water bath, skin surface and other flat surface temperature measurements. The 9.5 mm (⅜ in) diameter by 3.2 mm (⅛ in) thick sensor disk has a stainless steel patient side and epoxy back. Two probes are available. The 59-9812 probe has a flat, vinyl covered 3.1 m (10 ft) lead terminating in a 400 series phone jack connector. The 60-2315 has a flat, 305 mm (12 in) PTFE coated lead connected to a 3.1 m (10 ft) vinyl covered lead with a 400 series phone jack connector.

Order #	Maximum Temp.	Cable	Cable Dimensions, W x Thick
ST2 60-2315	150°C	PTFE Coated	2.5 x 0.8 mm (0.1 x 0.03 in) (I)
ST2 59-9812	100°C	Vinyl	3.4 x 1.3 mm (0.13 x 0.05 in) (H)

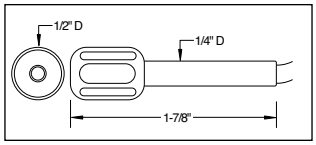


Small Surface Probe (J)

- Time constant 0.3 second

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) PTFE covered wire. Maximum temperature 150°C. Probe disk is isolated, connector is not isolated. Supplied with detachable lead. Supplied individually.

Order #	Product
ST2 59-9814	Small Surface Probe with Non-Detachable Lead (J)



Air and Gas Probe (K)

- Time constant 10 second

This probe is for temperature measurements in test rooms, incubators, environmental chambers, gas streams, etc. It has a 12.7 mm (½ in) diameter stainless steel cage around the epoxy encapsulated thermistor. Length from the tip to the shaft end is 47.6 mm (1⅞ in). Maximum temperature 150°C. Isolated. Supplied individually.

Order #	Product
ST2 59-9819	Air and Gas Probe (K)

ICU with Dome Cover

ICU with Flat Cover

Warmer Base Only

Small Animal Intensive Care Units

- Heavy gauge fire retardant plastic
- Therapeutic temperature range of 25° to 37°C is heated by thermostatic resistance control and temperature is monitored with direct water contact sensor
- Natural convection currents created in the walls of unit radiate heat, eliminating the need for pump, fan or motor
- Optional accessory kit allows for administration of oxygen, humidity or nebulization
- Small units can accommodate animals up to 20 lb, Medium and Large units can accommodate animals up to 80 lb
- Covers include vents to allow warm air and carbon dioxide to escape

For post-operative or hypothermic animals, 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 or flat cover.

Temperature Control

The water-jacketed warmer base is made of heavy gauge fire retardant plastic. The heater maintains the temperature of the water accurately through resistance heating controlled thermostatically with a direct water-contact sensor. This creates a natural thermal convection current within the walls of the unit and the heat is radiated to ensure a constant, sustainable temperature within a safe therapeutic range of 75° to 100°F wherever the animal lies. This combination of radiant heat and convection currents preclude the use of a pump, fan, or motor which may spark and ignite with the use of oxygen.

Vents on the top of the heated or unheated covered units allow warm air to rise and escape with any carbon dioxide build up. It is the combination of therapeutic heat with respiratory therapy that creates a stand-alone ICU (Intensive Care Unit).

These Intensive Care Units accommodate animals up to 20 pounds (small size) or up to 80 pounds (medium/large sizes). The optional perch facilitates treatment for birds. The domed cover provides 360° observation of the animal.

Complete Intensive Care Units with Dome or Flat cover include:

- Digital thermostat
- Temperature and humidity gauge
- Water level gauge
- Spin/Venting handport covers

Accessory Kit includes:

- Oxygen nebulizer with entrain
- 9 cc medication nebulizer
- Bubble humidifier
- Blue corrugated hose
- Metal DISS fitting
- Oxygen tubing
- Elbow
- Tip adapter
- Plastic tip
- Rubber plug

For specifications and ordering information, see facing page.

Specifications	
Warmer Base Only	
Dimensions (H x W x D):	
Small	
Exterior	19.7 x 45.1 x 67 cm (7.75 x 17.75 x 26.375 in)
Interior	16.5 x 39.4 x 56.5 cm (6.5 x 15.5 x 22.25 in)
Medium	
Exterior	33 x 75.6 x 84.5 cm (13 x 29.75 x 33.25 in)
Interior	31.1 x 63.5 x 78.7 cm (12.25 x 25 x 31 in)
Large	
Exterior	33 x 75.6 x 107.6 cm (13 x 29.75 x 42.375 in)
Interior	31.1 x 63.5 x 101 cm (12.25 x 25 x 39.75 in)
Dome Cover Only	
Small	16.5 x 39.4 x 56.5 cm (6.5 x 15.5 x 22.25 in)
Medium	31.1 x 63.5 x 78.7 cm (12.25 x 25 x 31 in)
Large	31.1 x 63.5 x 101 cm (12.25 x 25 x 39.75 in)
Flat Cover Only	
Small	16.5 x 39.4 x 56.5 cm (6.5 x 15.5 x 22.25 in)
Medium	31.1 x 63.5 x 78.7 cm (12.25 x 25 x 31 in)
Large	31.1 x 63.5 x 101 cm (12.25 x 25 x 39.75 in)
Intensive Care Unit with Dome Cover	
Dimensions (H x W x D):	
Small	
Exterior	43.18 x 47 x 67 cm (17 x 18.5 x 26.375 in)
Interior	37.5 x 39.4 x 56.5 cm (14.75 x 15.5 x 22.25 in)
Medium	
Exterior	67.3 x 75.6 x 84.8 cm (26.5 x 29.75 x 33.375 in)
Interior	61 x 63.5 x 78.7 cm (24 x 25 x 31 in)
Large	
Exterior	67.3 x 75.6 x 107.6 cm (26.5 x 29.75 x 42.38 in)
Interior	61 x 63.5 x 101 cm (24 x 25 x 39.75 in)
Intensive Care Unit with Flat Cover	
Dimensions (H x W x D):	
Small Interior	16.5 x 39.4 x 56.5 cm (6.5 x 15.5 x 22.25 in)
Medium Interior	31.1 x 63.5 x 78.7 cm) (12.25 x 25 x 31 in)
Large Interior	31.1 x 63.5 x 101 cm (12.25 x 25 x 39.75 in)
Heater Controls	
Small	90 W Heater & 1 Thermostat
Medium	2 +100 W Heaters & 2 Thermostats
Large	120 W & 210 W Heaters & 2 Thermostats
Temperature Range	25° to 37°C (75° to 100°F)

Configuration	Small	Medium	Large
Complete ICU with Dome Cover			
115 VAC, 60 Hz	**ST2 52-4777**	**ST2 52-4793**	**ST2 52-4819**
230 VAC, 50 Hz	**ST2 52-4785**	**ST2 52-4801**	**ST2 52-4827**
Complete ICU with Flat Cover			
115 VAC, 60 Hz	**ST2 75-0130**	**ST2 75-0132**	**ST2 75-0134**
230 VAC, 50 Hz	**ST2 75-0131**	**ST2 75-0133**	**ST2 75-0135**
Warmer Base Only			
115 VAC, 60 Hz	**ST2 52-4835**	**ST2 60-4875**	**ST2 524850**
230 VAC, 50 Hz	**ST2 52-4843**	**ST2 60-4876**	**ST2 52-4868**
Covers Only			
Dome Covers Only	**ST2 60-4877**	**ST2 60-4878**	**ST2 60-4879**
Flat Covers Only	**ST2 60-4882**	**ST2 75-0136**	**ST2 75-0137**
Accessories			
ST2 75-0138	Accessory Kit for Intensive Care Units		
ST2 60-4881	Metal Cage Cover for Small Warmer Base		
ST2 60-4880	Oxygen Flowmeter for Small Intensive Care Units		
ST2 60-4884	Medium Transport Cart for Medium Intensive Care Units. H x W x D, 109.2 x 106.7 x 61 cm (43 x 42 x 24 in)		
ST2 60-4885	Large Transport Cart for Large Intensive Care Units, H x W x D, 109.2 x 106.7 x 61 cm (43 x 42 x 24 in)		

Warm Air Chamber

- Digital fan assisted animal warming
- Suitable for both rats and mice
- Hysteresis eliminates temperature overshoot
- Ideal for postoperative recovery and pre-operative warming

Introducing the new Harvard Apparatus Warm Air Chamber, containing four individual animal containment chambers. This chamber is a digitally controlled, fan assisted heater and containment box. It is ideal for postoperative recovery and pre-operative warming for such applications as tail vein bleeding and cannulation for both rats and mice. This product is a perfect addition to all small animal research and/or veterinary care core facilities.

The Warm Air Chamber is made of a transparent plastic cabinet with electronically controlled heaters. A temperature sensor mounted inside the unit monitors the air temperature, which is indicated on a large easy to view red LED display. The desired temperature can be set easily on the front panel of the heater controller. The set and actual temperatures can be viewed on the LED display. The display also indicates when the chambers are being heated. A variable Hysteresis loop allows the user to tailor the heating characteristics of the unit to minimize heating overshoot.

Specifications	
Dimensions, H x W x D:	
Overall, Rear	250 x 600 x 300 mm (9.84 x 23.62 x 11.81 in)
Overall, Front	100 x 600 x 300 mm (3.94 x 23.62 x 11.81 in)
Individual Enclosure, Rear	250 x 150 x 300 mm (9.84 x 5.91 x 11.81 in)
Individual Enclosure, Front	100 x 150 x 300 mm (3.94 x 5.91 x 11.81 in)

Order #	Product
ST2 34-1066	Warm Air Chamber, 4 Divisions, 230 VAC, 50 Hz

Heated Pad

The Heated Pad was designed to reduce the heat loss suffered by small animals during surgical procedures. It can also be used for postoperative recovery.

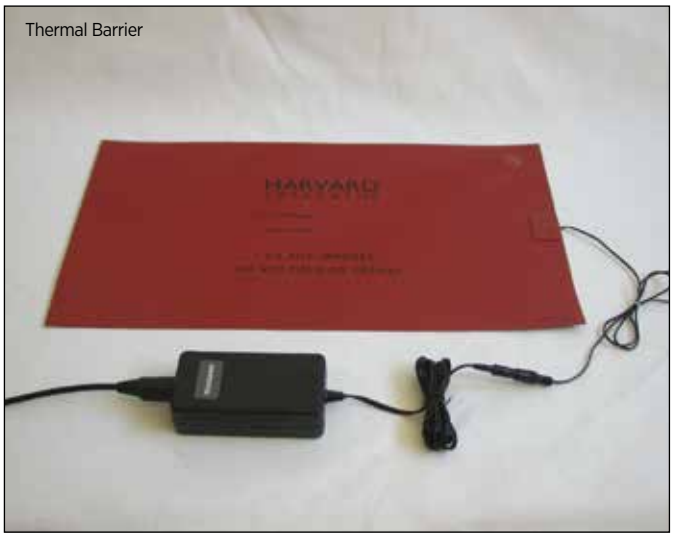
The heated pad is constructed of tough ABS plastic. The heated area is made from clear anodized aluminum to aid in cleaning and sterilization and is bonded to the top of the plastic casing.

The control unit offers a digital thermostat that allows the temperature to be adjusted between approximately 10˚C and 50˚C. Heater function is displayed via a neon light.

Control unit and heat pad must be purchased separately.

Dimensions	
Heated Pad	540 x 320 mm (21.3 x 81.3 in)

Order #	Product
ST2 34-1445	Control Unit for Heated Chamber System, 115 VAC, 60 Hz
ST2 34-1443	Control Unit for Heated Chamber System, 230 VAC, 50 Hz
ST2 34-1446	Heated Pad, 115 VAC, 60 Hz
ST2 34-1444	Heated Pad, 230 VAC, 50 Hz



Thermal Barrier

- Pads reach approximately 36°C when placed on a steel table in room with an average temperature of 21°C
- Waterproof
- Uniform heat is supplied by 5 cm (2 in) wide low voltage stainless steel heater bands that deliver 10 watts per square foot

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.

Order #	Product
ST2 72-0492	Small Thermal Barrier, 115 VAC, 60 Hz
ST2 72-0493	Small Thermal Barrier, 230 VAC, 50 Hz
ST2 72-0494	Large Thermal Barrier, 115 VAC, 60 Hz
ST2 72-0495	Large Thermal Barrier, 230 VAC, 50 Hz

34-0932
Oriented Vertically
for Use with Birds

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.

The operating temperature of the sensor is adjustable up to approximatley 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 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 27 cm (19.3 x 13 x 10.6 in)
Internal Overall	38 x 27 x 21 cm (15 x 10.6 x 8.3 in)

Order #	Product
ST2 34-0932	Small Animal Recovery Chamber/Warming Cabinet, 115 VAC, 60 Hz
ST2 34-0516	Small Animal Recovery Chamber/Warming Cabinet, 230 VAC, 50 Hz

CareFRESH® Absorbent Sheets

CareFRESH® Absorbent Sheets

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

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 (¼ in) or 3.2 mm (⅛ in) thickness. They are supplied in a plastic bag.

Order #	Product
ST2 63-0201	CareFRESH® Absorbent Sheets, 6.4 mm (¼ in) thick, 100 sheets
ST2 63-0202	CareFRESH® Absorbent Sheets, 3.2 mm (⅛ in) thick, 200 sheets

CareFRESH is a registered trademark of International Absorbants, Inc.

72-6838 Frame with 72-6814 Loupe

72-6839 Frame with 72-6816 Loupe

72-6818

72-6829

SuperVu Surgical Magnification Loupes and Frames

- Ideal for small animal surgery
- Choice of five magnifications and four 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 double 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 are 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 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.

SuperVu XL (continued)

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 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. SuperVu magnification loupes and sports frames or headbands must be purchased separately.

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

Sport Frames for Magnification SuperVu Surgical Loupes	
Order #	**Product**
ST2 72-6838	Black, Frame Temple, 135 mm (5.3 in)
ST2 72-6839	Blue, Frame Temple, 135 mm (5.3 in)
ST2 72-6840	Black, Frame Temple, 150 mm (5.9 in)
ST2 72-6841	Blue, Frame Temple, 150 mm (5.9 in)

SuperVu Surgical Magnification Loupes*				
	Working Distance			
Magnification	**34 cm (13 in)**	**42 cm (16 in)**	**46 cm (18 in)**	**50 cm (20 in)**
SuperVu SL 2.5x	**ST2 72-6811**	**ST2 72-6816**	**ST2 72-6828**	**ST2 72-6833**
SuperVu SL 3.0x	**ST2 72-6812**	**ST2 72-6817**	**ST2 72-6829**	**ST2 72-6834**
SuperVu XL 3.5x	**ST2 72-6813**	**ST2 72-6818**	**ST2 72-6830**	**ST2 72-6835**
SuperVu XL 4.5x	**ST2 72-6814**	**ST2 72-6819**	**ST2 72-6831**	**ST2 72-6836**
SuperVu XL 5.5x	**ST2 72-6815**	**ST2 72-6820**	**ST2 72-6832**	**ST2 72-6837**

** Must purchase sports frames or headbands separately- not included with loupes.*

K-LED Illumination System

- Ultra-bright clip-on light
- Provides four hours of continuous use
- Comfortable and easy to wear

The K-LED Illumination System head light produces a homogenous, long lasting white light patch of up to 18,000 lux. The 3 W LED is mounted coaxially on the loupe bar and is powered by a lithium battery pack giving four hours of continuous use. The system comes complete with two battery packs and a universal powered charging unit that can hold and charge both packs simultaneously, as well as a convenient storage container for your loupes.

The K-LED is designed to be used with the SuperVu SL or SuperVu XL Magnification Systems and can be mounted directly on a Sport Frame. Loupe and frame must be ordered separately, see facing page.

Includes LED, (2) lithium batteries, universal power supply and charging tray.

Order #	Product
ST2 72-6842	K-LED Illumination System

Leather Padded Headband

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

This Leather Padded Headband is for use with the SuperVu Magnification Loupes. It features horizontal and vertical adjustment that adds comfort and flexibility to your Magnification System. The viewing angle is fully adjustable and the magnification loupes can be flipped up when not required. The headband can easily be interchanged between users, making this truly universal.

Order #	Product
ST2 72-6821	Leather Padded Headband
ST2 72-6822	Replacement Leather Pads for Headband

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. Headband has adjustable strap and foam lining for greater comfort and ease of fitting.

These 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	
Lens	Aspheric PXM-Lightweight lens with surface coating, lens sections are interchangeable
Magnification	1.7x, 2.0x, 2.5x or 3.0x, magnification supply is gradual for varying demands and allows maximum working distance
Shipping Dimensions, H x W x D:	
Magnifier	25.4 x 20.3 x 15.2 cm (10 x 8 x 6 in)
Replacement Lens	15.2 x 10.2 x 10.2 cm (6 x 4 x 4 in)
Shipping Weight	
Magnifier	0.4 kg (0.85 lb)
Replacement Lens	0.07 kg (0.15 lb)

Order #	Product
ST2 72-5094	Headband Magnifier, 1.7x, 400 mm (15.8 in) working distance
ST2 72-5095	Headband Magnifier, 2.0x, 250 mm (9.8 in) working distance
ST2 72-5096	Headband Magnifier, 2.5x, 180 mm (7.1 in) working distance
ST2 72-5097	Headband Magnifier, 3.0x, 160 mm (6.3 in) working distance
ST2 72-5098	Replacement Lens, 1.7x, 400 mm (15.8 in) working distance
ST2 72-5099	Replacement Lens, 2.0x, 250 mm (9.8 in) working distance
ST2 72-5100	Replacement Lens, 2.5x, 180 mm (7.1 in) working distance
ST2 72-5101	Replacement Lens, 3.0x, 160 mm (6.3 in) working distance

Vario Stand Magnifier

- 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 lb) 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	
Lens	Aspheric PXM-Lightweight lens with cera-tec hard coating, ø 132 mm
Magnification/Optic	1.9x/3.55pr 2.8x/7.1 diopters usable with spectacles for near and distance
Illumination	9 W PL-Lamp
Support	Robust articulated support with integrated cable routing, maximum operating radius 900 mm, swiveling range of magnifier head: horizontal ±450°, vertical and radial ±90°
Table Clamp	For tabletop thickness from 18-74 mm, cable length 3 meters
Shipping Dimensions, H x W x D	
Magnifier	30.5 x 30.5 x 132.1 cm (12 x 12 x 52 in)
Lens Protectors	25.4 x 15.2 x 10.2 cm (10 x 6 x 4 in)
Table Stand	35.7 x 30.5 x 20.3 cm (14 x 12 x 8 in)
Shipping Weight	
Magnifier	4.8 kg (10.6 lb)
Lens Protectors	0.2 kg (0.45 lb)
Table Stand	6.7 kg (14.75 lb)

Order #	Product
ST2 72-5073	Vario Stand Magnifier with 2 Lenses, 110 VAC, 60 Hz
ST2 72-5074	Vario Stand Magnifier with 2 Lenses, 220 VAC, 50 Hz
ST2 72-5076	Replacement Lens Protectors, pkg. of 3
ST2 72-5075	Table Stand

Vario-Maxi Stand Magnifier

- 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	
Lens	Aspheric PXM-Lightweight lens with cera-tec hard coating, ø 220 mm
Magnification/Optic	1.75 x/3.0 diopters usable with spectacles for near and distance
Illumination	11 W PL-Lamp
Support	Maximum load distance 900 mm, turning range of the magnifier head: vertical ±90°, radial ±90°
Table Clamp	For tabletop thickness from 18-74 mm, cable length 3 meters
Shipping Dimensions, H x W x D	30.5 x 30.5 x 132.1 cm (12 x 12 x 52 in)
Shipping Weight	6.1 kg (13.4 lb)

Order #	Product
ST2 72-5071	Vario-Maxi Stand Magnifier, 110 VAC, 60 Hz
ST2 72-5072	Vario-Maxi Stand Magnifier, 220 VAC, 50 Hz

Stand-Mounted Magnifiers

- Provide up to 310 cm^2 (48 in^2) of viewing area
- No focusing needed
- Supplied with heavy duty metal base, vertical rods and clamp
- Light sold separately

These magnifiers are stand-mounted and provide up to 310 cm^2 (48 in^2) 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.

Order #	Lens Dimensions	Magnification
ST2 52-5485	15 x 15 cm (6 x 6 in)	3X (single lens)
ST2 52-5486	15 x 15 cm (6 x 6 in)	6X (double lens)
ST2 52-5493	15 x 20 cm (6 x 8 in)	2.5X (single lens)
ST2 52-5494	15 x 20 cm (6 x 8 in)	5X (double lens)
ST2 52-5484	Light for Magnifier, 20 W, 115 V, 60 Hz, 16-in Gooseneck, On/Off Switch, 9-in Ground Cord	

Zoom Stereo Microscope (Z850 Series)

- High performance optics at an affordable price
- Excellent zoom range 0.8X to 5.0X
- 115 mm working distance allows easy access to specimens
- Binocular viewing head is inclined 45˚ and can rotate 360˚
- Adjustable interpupillary distance, 52-75 mm
- Boom stand

The Z850 Series Stereo Zoom Microscope is a versatile, high performance, ergonomically designed zoom stereo microscope ruggedly built to withstand years of heavy use. With a zoom ratio of 6:3:1, the Z850 provides superior optical performance at an affordable price.

The boom stand features safety tracks on a horizontal arm and Delrin inserts in the focus block to ensure smooth, precise movements.

Order #	Product
ST2 64-1803	Binocular Zoom Stereo Microscope, with Boom Stand

intraLED 3

- LED light source alternative to halogen light sources
- Emits intense and uniform natural light
- Compact design
- Environmentally friendly
- Up to 50,000 hours of use
- 6000˚K color temperature

Order #	Product
72-0372	IntraLED 3 with Volpi Recepticle
72-0374	Footswitch for intraLED 3
Gooseneck Light Guides	
72-0268	Single Arm Gooseneck Light Guide, 4.7 mm x 500 mm Diameter
72-0267	Bifurcated Arm Gooseneck Light Guide, 4.7 mm x 500 mm Diameter (Each Arm)
72-0266	Bifurcated Arm Gooseneck Light Guide, 5.4 mm x 500 mm Diameter (Each Arm)
72-0269	Standard Focusing Lens
72-0304	Polarizing Cap for Standard Focusing Lens

Gleamer® Exam Lights

- 4,166 footcandles (45,000 lux)
- 3,700°K color temperature (natural coloring)
- 35 W halogen bulb; 4,000 hour life
- Easy bulb replacement without tools
- Cool housing temperature and cool light beam; light can be in continuous use for hours without causing discomfort to physician or patient
- Convenient positioning with ergonomic positioning ridges
- High quality, space-saving 4-canister base included in floorstand models; safe and flexible portable movement with locking feature in two of the four canisters
- UL 60601-1/60601-2-41 Certified
- Made in the USA

The Gleamer® is designed to the most demanding specifications: high intensity, cool operation, compact design, and value. With 4,166 footcandles of intensity, 3,700°K color temperature, and a (combination) 16-in sturdy gooseneck and optional 15-in extension arm, Gleamer® offers extensive reach, maximum convenience, and superior flexibility where top performance, reliability, and low cost are required.

Order #	Product
ST2 72-3839	Gleamer® with Floor Stand, 115 VAC, 60 Hz
ST2 72-3840	Gleamer® with Floor Stand, 230/240 VAC, 50 Hz
ST2 72-3843	Gleamer® with Extension Arm and Universal Wall Mount, 115 VAC, 60 Hz
ST2 72-3844	Gleamer® with Extension Arm and Universal Wall Mount, 230/240 VAC, 50 Hz
ST2 72-3851	Replacement Bulb for Gleamer®, 35 W, pkg. of 4

Gleamer is a registered trademark of Burton Medical.

Super Exam 50®

- High intensity of 45,750 lux at 61 cm (24 in)
- 3800°K color temperature
- CRI (Color Rendering Index) of 99
- Drift-free K-arm with 107 cm (42 in) arm range
- 50 W MR-16 bulb with 4,000 hour life
- Floorstand, wall, rail, ceiling and table mount configurations
- IEC 60601-1/ 60601-2-41/CE marked

The Super Exam 50® has a highly flexible, self-balancing arm system. The horizontal and vertical movement is the best in its class. The Super Exam 50® uses the latest halogen technology for maximum light output and color rendering. A dual lens optical system collects and concentrates the light in a precise beam. This light is suitable in ceiling, wall, floor, rail and table mounting.

Order #	Product
ST2 75-0150	Super Exam 50® Floor Stand, 120 VAC, 60 Hz
ST2 75-0151	Super Exam 50® Floor Stand, 230/240 VAC, 50 Hz
ST2 72-9573	Super Exam 50® Table Mount, 120 VAC, 60 Hz
ST2 75-0152	Super Exam 50® Table Mount, 230/240 VAC, 50 Hz
ST2 72-9574	Replacement Bulbs for Super Exam 50® Lights, pkg. of 3

Super Exam 50® LED

- High-intensity of 39,000 lux at 61 cm (24 in)
- 4000°K color temperature
- CRI (Color Rendering Index) of 92
- Natural white light
- LED light module with 40,000 hour life
- Universal input voltage
- Drift-free K-arm with 107 cm (42 in) arm range
- Rail mount bracket that can be attached to a bed rail or wall rail
- IEC 60601-1/ 60601-2-41, CE marked

The Super Exam 50® LED has a highly flexible, self-balancing arm system. The horizontal and vertical movement is the best in its class. Delivering value through longer life, lower energy consumption and versatility is where the Super Exam 50® LED really shines. The LED technology in this highly engineered optical system delivers the precisely controlled natural white light that is so important for an accurate examination.

Uses only 15 watts of power, the Super Exam 50® LED produces the light output equivalent to 50 watts of conventional lighting. Rated at 40,000 hours of life, the Super Exam 50® LED lasts 10 to 20 times as long as conventional task and examination products.

Order #	Product
ST2 75-0153	Super Exam 50® LED Floor Stand, 120 VAC, 60 Hz
ST2 75-0154	Super Exam 50® LED Floor Stand, 230/240 VAC, 50 Hz
ST2 72-9940	Super Exam 50® LED Table Mount, 120 VAC, 60 Hz
ST2 72-9941	Super Exam 50® LED Table Mount, 230/240 VAC, 50 Hz

Super Exam 50 is a registered trademark of Burton Medical.

Outpatient® II

Single Ceiling Mount Outpatient® II

- 8,000 footcandles (86,000 lux) at 61 cm (24 in)
- 3,300°K color temperature
- Focuses with central removable, autoclavable SteriHandle™
- Friction knob allows user to position self-balancing arm without a tool for drift-free positioning
- Cool operation assured with heat filters and dichroic coatings
- Shadow-free operation provided by three "optically improved" 50 W halogen bulbs, each with 2,000 hours average bulb life
- Bulbs are wired in parallel to assure continuous operation
- Design allows removal or replacement of SteriHandle™ with one hand (for assuring sterile procedures)
- UL 60601-1/IEC 60601-2-41 certified

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 3,300° 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.

	Power	
Product	115 VAC, 60 Hz	230/240 VAC, 50 Hz
Outpatient® II Floorstand*	**ST2 72-3780**	**ST2 72-3781**
Outpatient® II Single Ceiling**	**ST2 72-3784**	**ST2 72-3785**
Outpatient® II Double Ceiling**	**ST2 72-3788**	**ST2 72-3789**
Outpatient® II Wall Mount	**ST2 72-3792**	**ST2 72-3793**
Single Outpatient® II on Fastrac™	**ST2 72-3796**	**ST2 72-3797**
Double Outpatient® II on Fastrac™	**ST2 72-3800**	**ST2 72-3801**

Accessories and Replacement Parts	
Order #	Product
ST2 72-3808	Replacement Bulbs, set of 3
ST2 72-3809	Outpatient® II SteriHandle
ST2 72-3810	Wall Dimmer Switch
ST2 72-3811	Sterile Disposable Light Covers, set of 25
ST2 72-3838	Extension Tube for Drop Ceiling Mount

** Includes footswitch, locking casters and cord wrap.*
*** 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 72-3838 should be ordered.*

Outpatient is a registered trademark of Burton Medical.
SteriHandle is a trademark of Burton Medical.

CoolSpot™ II

CoolSpot™ II Single Ceiling Mount

- Up to 13,000 footcandles (140,000 lux) at 24 in (61 cm) and 5,000 footcandles (54,000 lux) at 1 m
- Up to 4300°K color temperature
- Variable intensity settings and high intensity switch
- Variable spot size of 5 to 25 cm (2 to 10 in)
- Easy to clean housing design with convenient SteriHandle™ for positioning
- Removable, autoclavable center SteriHandle™ design allows removal or replacement of SteriHandle™ with one hand (for assuring sterile procedures)
- 150 W halogen bulb provides 600 hours average bulb life on standard setting
- Friction knob allows user to position self-balancing arm without a tool for drift-free positioning
- UL 60601-1/IEC 60601-2-41 certified

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 13,000 footcandles at 61 cm (24 in) and color temperature of up to 4,300°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.

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.

	Power	
Product	115 VAC, 60 Hz	230/240 VAC, 50 Hz
CoolSpot™ II Floorstand*	**ST2 72-3812**	**ST2 72-3813**
CoolSpot™ II Single Ceiling**	**ST2 72-3816**	**ST2 72-3817**
CoolSpot™ II Double Ceiling**	**ST2 72-3820**	**ST2 72-3821**
CoolSpot™ II Wall Mount	**ST2 72-3824**	**ST2 72-3825**
Single CoolSpot™ II on Fastrac™	**ST2 72-3828**	**ST2 72-3829**
Double CoolSpot™ II on Fastrac™	**ST2 72-3832**	**ST2 72-3833**

Accessories and Replacement Parts	
Order #	Product
ST2 72-3836	Replacement Bulbs for CoolSpot™ II, pkg. of 3
ST2 72-3837	Universal SteriHandle Replacement
ST2 72-3811	Sterile Disposable Light Covers, pkg. of 25
ST2 72-3838	Extension Tube for Drop Ceiling Mount

** Includes footswitch, locking casters and cord wrap.*
*** 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 72-3838 should be ordered.*

CoolSpot, SteriHandle and Fastrac are trademarks of Burton Medical.

SURGICAL PREPARATION

Certain supplies are needed to prepare and ready animals for surgery. These supplies include fur removal, identification, and animal weighing products. Harvard Apparatus offers several options within each of these categories to meet your application needs.

PRODUCT	PAGE
NEW Trimmers & Clippers	92-94
Identification	95-96
Ear Tags	95
Ear Punches	95
Tattoo Systems & Pigment	96
Triple-Beam Balance	97
Battery Operated Portable Scale	97
Animal Weighing System	98

BravMini Cordless Clipper

- Cordless operation with approximately 1 hour, 40 minutes cordless run time
- Lightweight and quiet
- Easy to use

This clipper is ideal for removing fine hair from laboratory animals without causing damage to their delicate skin. It combines unbeatable performance and cordless operation. This permits you to achieve the results that professionals demand. The clipper features a superior quick detachable blade. Cutting length is 0.4 mm and cutting width is 32 mm.

This clipper comes complete with rechargeable/cordless trimmer, charger stand, detachable #30 blade, cleaning brush, oil, and snap on guide comb.

Order #	Product
ST2 72-9069	BravMini Cordless Clipper, 115 VAC
ST2 72-9064	Size 30 Replacement Blade for 72-9069*
ST2 34-1442	BravMini Cordless Clipper, 230 VAC
ST2 34-1418	Size 30 Replacement Blade for 34-1442*

**Size #30 replacement blades also fit the ChroMini Clipper.*

Stylique® Cordless Trimmer

- Narrow blade ideal for small animals
- Slim, space-saving design
- Lightweight

The Stylique® Cordless Trimmer is ideal for use on small laboratory animals. The slim pencil shape and narrow blade design allows accurate and precise fur removal – perfect for prepping animals for surgical procedures. On larger animals, use this trimmer on more delicate areas such as the feet, face and ears. Blade is made of high carbon precision ground steel. The trimmer comes complete with size 30 Blade, 1-AA battery, blade guard, oil, built-in cleaning brush and instructions.

Specifications	
Dimensions, H x W x D	24.1 x 8.4 x 6.4 cm (9.5 x 3.3 x 2.5 in)
Weight	0.14 kg (0.3 lb)

Order #	Product
ST2 72-9065	Stylique® Trimmer
ST2 72-9066	Replacement Blade, Size 30, ⅜ in

ChroMini is a trademark of Wahl Clipper Corporation.

Mini Cord/Cordless Small Animal Trimmer

- Compact and lightweight
- Optional cord or cordless operation
- Cool running, no spray coolant needed

This professional quality trimmer is super convenient and suitable for all your small animal fur removal needs. The powerful yet quiet rotary motor runs at 6,000 rpm and does not require a spray coolant. This Trimmer offers convenient cord or cordless operation to provide constant trimming power so you will always have a fully charged trimmer ready for use.

The trimmer comes complete with rechargeable trimmer, charging line cord, two plastic reversible attachment guides, cleaning brush and oil.

Order #	Product
ST2 72-6110	Mini Cord/Cordless Trimmer, 6.5 W, 120 VAC, 60 Hz
ST2 72-6111	Replacement Size 30 Blade for Mini Cord/Cordless

Contura™ Cordless Clipper

This new design (replaces the Minicut) has been developed ergonomically for ease of handling when clipping. Giving a close shave, it is ideal for small animal preoperative use. Supplied with blade and recharging stand.

Order #	Product
ST2 34-0243	Contura™ Cordless Clipper, 230 VAC, 50 Hz
ST2 34-0244	Replacement Blade for Contura Clipper, Fine

Contura is a trademark of Wella.

Two-Speed Small Animal Clipper

Two-Speed Small Animal Clipper

- Powerful and fast
- Quiet, lightweight and durable
- Cool running
- Impact resistant

This Two-Speed Small Animal Clipper is great for both light and heavy-duty jobs on all types of animals including dogs and cats. Special features include a snap-off air filter for easy cleaning, sealed switch, and protective blade gasket with a sixteen foot professional grounded power cord. The clipper comes complete with size 10 blade, cleaning brush, lubricating oil, and instruction manual.

Order #	Product
ST2 72-6114	Two-Speed Small Animal Clipper, 115 VAC, 60 Hz
Replacement Blades	
ST2 72-6113	Size 50 Ultra Fine, Closeness of cut 0.40 mm (0.016 in)
ST2 72-6112	Size 40 Fine, Closeness of cut 0.6 mm (0.024 in)
ST2 72-6106	Size 30 Medium, Closeness of cut 0.8 mm (0.031 in)
ST2 72-6107	Size 10 Fine, Closeness of cut 1.8 mm (0.071 in)
ST2 72-6108	Size 9 Fine, Closeness of cut 2 mm (0.079 in)
ST2 72-6109	Size 8.5 Fine, Closeness of cut 3 mm (0.118 in)
Options	
ST2 52-9703	Lubricating Oil, ⅓ oz tube

Oster® Golden A5
Single Speed Small Animal Clipper

Oster® Golden A5® Single Speed Small Animal Clipper

- Powerful yet small universal motor
- Up to 2100 SPM
- Provides coarse and fine clipping
- Insulated face plate for cooler running operation
- Storage case included

This is the finest heavy-duty clipper available. Its powerful universal motor runs at high RPMs and has a unique gear-down assembly. This feature gives the clipper greater power for its small size. New larger sized air intake/exhaust openings permit the clipper to run 20°F cooler than previous clipper models. Supplied with interchangeable blades, this clipper can cut through heavy fur quickly and then shave down to bare skin neatly.

The Cryogen-X™ blades are manufactured from fine grain, high carbon steel. The cutting teeth are machined to exact dimensions for the most precise cutting, and the blades are cryogenically treated for additional wear resistance. No tools are necessary to change the blades. The clipper has a double insulated twelve foot cord, is UL listed and meets OSHA and CSA specifications.

Supplied complete with two blades, size 10 and 40, lubricating oil, grease, cleaning brush, extra set of brush and spring assemblies. This popular, quiet, cool-running clipper has a range of 18 different blades, sold separately on page 94.

Order #	Product
ST2 52-5204	Golden A5 Small Animal Clipper, 115 VAC, 60 Hz
ST2 34-0207	Golden A5 Small Animal Clipper, 220/240 VAC, 50 Hz
Replacement Cryogen-X™ Blade	
ST2 72-9946	Size 10, Coarse, Closeness of Cut 1.6 mm (1/16 in)
ST2 72-9958	Size 40, Fine, Closeness of Cut 0.25 mm (1/100 in)
Options	
ST2 52-5208	Spare Maintenance Kit. Includes Lubricating Oil, ½ oz tube, Clipper Grease, 1-¼ oz tube and a Cleaning Brush
ST2 72-0481	Blade Wash, two 16 oz cans supplied
ST2 72-0480	Blade Lubricant, two 16 oz cans supplied

Ostar and Golden A5 are registered trademarks of Sunbeam Products, Inc.

72-9945

72-9946

72-9947

72-9948

72-9949

72-9950

72-9951

72-9952

72-9953

72-9954

72-9955

72-9956

72-9957

72-9958

72-9959

72-9960

Oster® Golden A5® Replacement Cryogen-X™ Blades

Cryogen-X™ Blades are manufactured from fine grain, high carbon steel. The cutting teeth are machined to exact dimensions for the most precise cutting, and the blades are cryogenically treated for additional wear resistance. No tools are necessary to change the blades.

Order #	Product
ST2 72-9945	Size 4, 9.5 mm (3/8 in), Lamb Trim with Slightly Longer Coat
ST2 72-9946	Size 10, 1.6 mm (1/16 in), Head, Face, Feet or sensitive skin
ST2 72-9947	Size 5/8, 0.8 mm, (1/32 in)
ST2 72-9948	Size 5F, 6.3 mm (1/4 in), Short Lamb Trim
ST2 72-9949	Size 5, 6.3 mm (1/4 in), Short Lamb Trim
ST2 72-9950	Size 15, 1.2 mm (3/64 in), Face, Feet, Tails in pet trim
ST2 72-9951	Size 7/8, 0.8 mm (1/32 in)
ST2 72-9952	Size 7F, 3.2 mm (1/8 in)
ST2 72-9953	Size 7, 3.2 mm (1/8 in)
ST2 72-9954	Size 30, 0.5 mm (1/50 in), Face, Feet & Tail in Show Trim
ST2 72-9955	Size 9, 2 mm (5/64 in), Thick Matted Coats & Close Stripping
ST2 72-9956	Size 50, 0.2 mm (1/25 in), Very fine surgical use
ST2 72-9957	Size 8.5, 2.8 mm (7/64 in), Terrier Body
ST2 72-9958	Size 40, 0.25 mm (1/100 in), Surgical Use
ST2 72-9959	Size 4F, 9.5 mm (3/8 in)
ST2 72-9960	Size 10W, 2.4 mm (3/32 in), Light Horse

Cryogen-X is a trademark of Sunbeam Products, Inc.

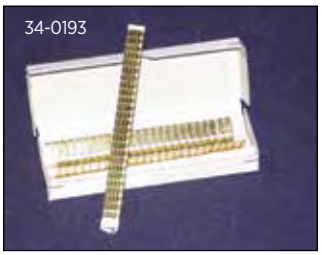
Small Animal Ear Tags and Applicator

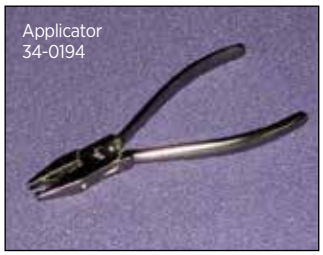
- Suitable for mice
- Custom order tags available

These Ear Tags are for use with mice, rats and similarly sized animals. Tags have a three digit numbering system. Supplied in packages of 500 numbered 001 to 500 or 501 to 1000. Other number sequences are available by special order. The Applicator is required to secure the tag. Applicator sold separately.

Laser etched ear tags may be special ordered if unique identification numbers or codes are required. Custom tags may also include special characters. Please call for more details.

Order #	Product
ST2 52-4716	Small Animal Ear Tags, pkg. of 1 to 500
ST2 52-4718	Small Animal Ear Tags, pkg. of 501 to 1,000
ST2 52-4717	Applicator for Small Animal Ear Tags





Miniature Brass Ear Tags

Can be used for guinea pigs, rats, moles and other small species. They are not suitable for mice. Tags are supplied numbered consecutively in batches of 100. The Miniature Ear Tag Applicator is required to secure the tag. Applicator sold separately. Prefix letters are manufactured by special order only.

Order #	Product
ST2 34-0194	Miniature Ear Tag Applicator
ST2 34-0193	Miniature Brass Tags, numbered 1 to 100*
ST2 34-0935	Miniature Brass Tags, numbered 101 to 200*
ST2 34-0936	Miniature Brass Tags, numbered 201 to 300*
ST2 34-0937	Miniature Brass Tags, numbered 301 to 400*
ST2 34-0938	Miniature Brass Tags, numbered 401 to 500*

**Requires 34-0194, see above.*

Biopsy Ear Punch

The Biopsy Ear Punch has a dual cutting edge that cuts rather than tears, minimizing tissue trauma. This design makes this an ideal tool for biopsy collection or earmarking of laboratory animals. The Biopsy Ear Punch is available with a tube holder allowing for hands-free sample collection.

Order #	Product
ST2 34-1061	Biopsy Punch with 1.5 mm Gap
ST2 34-1175	Biopsy Punch with 1.5 mm Gap with Tube Holder

Ear Punch

This easily operated hole punching device is suitable for marking small rodents whenever a permanent identification system is required.

Two types of punches are available. A forcep type which provides a longer handle for gripping, or the simple thumb type.

Two forcep type punches are available, select either 1.5 or 2.0 mm hole. Three thumb type punches are available, select either 1.0, 1.5 or 2.0 mm hole. These Punches are supplied individually.

Order #	Product
ST2 34-0136	Forceps Type Punch, 1.5 mm Hole
ST2 34-0137	Forceps Type Punch, 2.0 mm Hole
ST2 34-0138	Thumb Type Punch, 1.0 mm Hole
ST2 34-0139	Thumb Type Punch, 1.5 mm Hole
ST2 34-0140	Thumb Type Punch, 2.0 mm Hole

Micro-Tattoo System

Micro-Tattooing System

- Ideal for mice, rats, guinea pigs and other small animals
- Permanent mark is easily readable on pigmented or albino animals
- Rapid and easy to apply
- Inexpensive
- May be used on newborns
- Sterile and disposable hypodermic needles prevent the spread of potentially infectious disease

This tattooing system is a quick, efficient and affordable method of permanently identifying laboratory animals, particularly mice and rats as early as one day old. Designed and tested by laboratory animal technicians, the system utilizes a hypodermic needle at one end of a stainless forcep and a small metal cup containing the Green Tattoo Paste at the other side of the forcep.

By squeezing the forcep together, the needle penetrates the toe/foot pad, ear or tail of the animal and injects a deposit of green paste into the animal. This method is humane, permanent, rapid, economical, and allows unique identification of large numbers of rodents.

A complete kit includes one micro-tattoo instrument, 1 oz tube of green tattoo paste, one stainless steel planchette, one plastic holding case and two test hypodermic needles.

Recommended hypodermic needle size:

- Young mice: 30 Gauge, ½ inch
- Adult mice: 27 Gauge, ½ inch
- Rats and others: 25 Gauge, ⅝ inch

Order #	Product
ST2 72-7640	Animal Micro-Tattoo System, Complete Kit
ST2 72-7641	Green Tattoo Paste, 1 oz, pkg. of 1
ST2 72-7642	Green Tattoo Paste, 5 oz, pkg. of 1

Tattoo Set

Tattoo Set*

- Permanent identification of rodents, primates, dogs, fish, etc.
- Easy operation

This Tattoo Set can be used on a variety of animals such as rodents, primates, dogs, fish, etc. You can easily mark ears, bellies, thighs, tails, etc., with numbers or symbols large enough to be seen from a distance.

This Tattoo Set is supplied complete with tattoo machine, storage box, allen key set, spare spring set (front and back springs), wall plug DC power source, on/off footswitch, 2 tubes, 10 needles (4 x 3.1, 4 x 5.2 and 2 x 8.3), six 0.5 oz containers of ink (5 x black and 1 x red), 100 inkcups, grommets and rubber bands.

Order #	Product
ST2 72-0464	Tattoo Set, 120 VAC

**All three sizes (3.1, 5.2 and 8.3) can be used with rodents as well as large animals. The only difference between the needles is in the thickness of the letter or number produced. Size 8.3 will produce the thickest imprint of the 3 sizes supplied.*

Tattooing Pigment

This tattooing pigment is available in five colors and is supplied in a 2 ounce bottle.

Order #	Product
ST2 72-9381	Black Tattoo Pigment
ST2 72-9382	Red Tattoo Pigment
ST2 72-9383	Blue Tattoo Pigment
ST2 72-9384	Green Tattoo Pigment
ST2 72-9385	Yellow Tattoo Pigment
ST2 72-9386	White Tattoo Pigment

Triple-Beam Balance

Battery-Operated Portable Scale

Triple-Beam Balance

- Three notched and tiered beams with center reading
- Spring-loaded zero adjust compensator
- Rugged and portable

The Triple Beam Balance features three notched and tiered beams with center reading and spring-loaded zero adjust compensator and a stainless steel plate.

This balance provides the convenience of a top loading balance with the durability and versatility to accommodate a range of lab applications, making it ideal for measuring solids, liquids, powders and animals.

The balance is available in three options: with a Stainless Steel Scoop only, with a Plastic Animal Basket only or with a Plastic Animal Basket and weights. The Weight Set (two 1000 g and one 500 g is also available separately.

Specifications	
Capacity without Attachment Weights	610 g
Capacity with Attachment Weights	2,610 g
Sensitivity	0.1 g
Calibrations:	
Front Beam	10 x 0.1 g
Center Beam	500 x 100 g
Rear Beam	100 x 10 g
Dimensions, H x W x D	15 x 47 x 18 cm (6 x 18.2 x 7.1 in)
Weight	3.2 kg (7 lb)

Order #	Product
ST2 72-4597	Triple-Beam Balance with Plastic Animal Basket and weight set
ST2 51-3754	Triple-Beam Balance with Stainless Steel Scoop only
ST2 51-3746	Triple-Beam Balance with Animal Basket only (no weights included)
ST2 72-8323	Plastic Animal Basket with Lid
ST2 51-3745	Weight set

Battery-Operated Portable Scale

- Ideal for weighing small rodents directly in animal room
- Bright, easy-to-read LCD display
- Battery operated
- Optional animal container

This compact scale provides total portability in a durable, easy-to-clean housing. This scale features simple, one button operation with a high contrast LCD display reading in grams or pounds: ounces. The scale runs on three AA batteries (included).

Available in three capacities.

Specifications			
Capacity	200 g	2,000 g	5,000 g
Readability	0.1 g	1.0 g	1.0 g
Accuracy (%)*	±0.75	±0.35	±0.35
Weighing Modes	g, lb, oz		
Stabilization Time	~3 sec		
Tare Range	To capacity by subtraction		
Operating Temperature Range	18° to 25°C (64° to 75°F)		
Dimensions:			
Platform Size, L x W	14.6 x 13.3 cm (5.75 x 5.25 in)		
Balance Housing, H x W x D	3.9 x 13.5 x 19.3 cm (1.5 x 5.3 x 7.6 in)		
Weight	0.47 kg (11 lb)		

**Percentage actual load or ±3 counts, whichever is greater.*

Order #	Product
ST2 72-4585	Portable Electronic Scale, 200 g Capacity
ST2 72-4586	Portable Electronic Scale, 2,000 g Capacity
ST2 72-4587	Portable Electronic Scale, 5,000 g Capacity
ST2 72-4594	AC Adapter, 220/240 VAC, 50/60 Hz - European plug
ST2 72-4595	AC Adapter, 240 VAC, 50/60 Hz - UK plug
ST2 72-4596	AC Adapter, 240 VAC, 50/60 Hz - Australian plug
ST2 72-4592	1044 ml Small Animal Container, H x W x D, 6.4 x 12.7 x 14.7 cm (2.5 x 5 x 5.8 in)
ST2 72-4600	AC Adapter, 110/120 VAC, 50/60 Hz, US Plug

Animal Weighing Balance

Animal Containment Basket

Animal Weighing System

- Ideal for animal weighing
- User-selectable units of measure
- Vibration filters
- Percent weighing
- ISO 9001 registered, CE marked

This complete Animal Weighing System is essential when extremely accurate animal weight measurements are needed. The microprocessor-controlled balance is dual range with readabilities down to 0.01 grams. Standard features include live animal weighing and RS-232 data interface. An accurate animal weight is obtained using the time averaging mode. This mode also has a reset function allowing you to arrive at the final weight reading in seconds rather than minutes with just the push of a button.

This high performance balance can also be used for many other applications with these other standard features: GLP/GMP/ISO compatibility, automatic calibration programs, percent weighing, automatic zero tracking, system checkout sequencing, built-in security bracket, stability indicator, capacity tracker, below balance weighing for specific gravity determination, microprocessor control, parts counting, user selectable vibration filtering, floating tare, and auto-ranging.

Animal Basket

This simple, plastic lightweight basket is used to hold the animal while weighing. Simply place the basket with lid on the balance and use the tare feature. Next, take the basket to actually retrieve your animal and transport it from its cage to the balance. The basket lid keeps the animal from escaping. It also helps keep your balance clean. The basket measures 22.9 cm (9 in) in diameter and is 15 cm (6 in) high.

This system includes the balance, plastic animal basket, dot matrix printer and one roll of paper.

Specifications		
Weighing Mode	Dual weighing modes	
Weighing Ranges	1,000 g	3,000 g
Readability	0.01 g	0.1 g
Repeatability (std dev)	±0.01 g	±0.05 g
Linearity	±0.015 g	±0.05 g
Stabilization Time	~3 sec	
Dimensions:		
Pan Size	16.5 cm (6.5 in) circular	
Balance Housing, H x W x D	8.3 x 19 x 28.6 cm (3.25 x 7.5 x 11.25 in)	

Order #	Product
ST2 72-8324	Complete Animal Weighing System, 115 VAC, 60 Hz
ST2 72-8325	Complete Animal Weighing System, 220 VAC, 50 Hz
ST2 72-1361	Animal Weighing Balance Only, 115 VAC, 60 Hz
ST2 72-1391	Animal Weighing Balance Only, 220 VAC, 50 Hz
ST2 72-1364	Dust Cover for Balance
ST2 72-8323	Plastic Animal Basket with Lid
ST2 75-0049	Dot Matrix Printer

DELIVERY & SAMPLING

Harvard Apparatus is the infusion solutions expert with over 102 years of experience in physiological fluidics. From the needs of our customers we have created a line of totally integrated delivery and sampling systems including pumps, swivels, tethers, catheters and cages. We have carefully selected the highest quality components to work seamlessly together to meet the demanding needs of life sciences, pre-clinical and small animal studies. This experience and the ability to offer integrated solutions has led to peer endorsement. We have many publications, which are available for your review in the technical library on our website.

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Infusion Systems

With any tethered animal infusion there are certain pieces of equipment that are required.

Rat Continuous Infusion

Continuous intravenous infusion of rodents is the most common application for Harvard Apparatus delivery equipment.

They provide unobtrusive continuous fluid access to the animal. These systems open up a range of applications beyond drug infusion, including blood sampling, blood pressure monitoring, enteral feeding and bile duct access.

Typical System for Rat Infusion			
System Components	Order #	Description	For Complete Description
Swivel Mount	**ST2 61-0023**	6-in Counter-Balanced Lever Arm for Rats	See Page 110
Tether/ Harness	**ST2 72-9163**	Vascular Access Harness™ for Rats	See Page 107
Tubing/ Connections	**ST2 72-9165**	VAH Tether Assembly Kit: 72-9164 VAH Tether Assembly, 72-4075 22G Plastic Swivel, 60.9 cm CO-EX Tubing and Luer Stubs	See Page 107
Catheter	**ST2 75-0403**	Catheter for Rat Jugular Vein, PU, 3 Fr	See page 112
Syringe Pump	**ST2 70-3005**	PHD ULTRA™ Dual Syringe Pump, Infusion Only	See Page 103
Caging	**ST2 72-0019**	Rat Infusion Cage, Pellet Feeder and Water Bottle	See Page 101

Mouse Continuous Infusion

Harvard Apparatus offers the broadest range of equipment for the growing field of mouse infusion. With mice, the quality of the equipment you use is more important than ever; the swivel must have very low rotational friction, the lever arm/swivel mount must respond to every movement, and the catheter must be small, flexible and biocompatible.

Typical System for Mouse Infusion			
System Components	Order #	Description	For Complete Description
Swivel Mount	**ST2 61-0024**	3.5-in Counter-Balanced Lever Arm for Mice	See Page 110
Tether/ Harness	**ST2 75-0065**	Vascular Access Harness™ for mice	See Page 107
Tubing/ Connections	**ST2 75-0063**	VAH Tether Assembly Kit: 75-0062 VAH Tether Assembly, 72-4076 25 ga Plasic Swivel, 60 cm Co-EX Tubing and 25 ga Luer Stub	See Page 107
Catheter	**ST2 75-0401**	Catheter for Mouse Jugular Vein, PU, 2 Fr	See Page 112
Syringe Pump	**ST2 70-3005**	PHD ULTRA Dual Syringe Pump, Infusion Only	See Page 103
Caging	**ST2 72-0016**	Mouse Infusion Cage, Pellet Feeder and Water Bottle	See Page 101

Microdialysis

Harvard Apparatus provides the liquid swivels, head block tethers and counter-balanced lever arms that have made microdialysis on freely-moving rodents possible. Our range of syringe pumps will deliver the smooth, low-flow rates required for microdialysis. These systems require the same basic equipment as standard infusion applications. These systems are compatible with probes, fraction collectors and other accessories from Harvard Apparatus and other sources.

Typical System for Rat Microdialysis			
System Components	Order #	Description	For Complete Description
Swivel	**ST2 72-0000**	Low-Torque Dual Channel Quartz-Lined Stainless Steel Swivel	See Pages 102-103
Swivel Mount	**ST2 61-0023**	6-in Counter-Balanced Lever Arm for Rats	See Page 110
Tether	**ST2 61-0036**	Head Block Tether for Rats	See Page 109
Tubing/ Connections	**ST2 72-4426**	CO-EX™ PE/PVC Tubing for 22-ga Swivels, Non-Sterile	See Page 114
Syringe Pump	**ST2 70-4506**	Pump 11 Pico Plus Elite	See Page 103
Caging	**ST2 72-0019**	Rat Infusion Cage, Pellet Feeder and Water Bottle	See Page 101

Typical System for Mouse Microdialysis			
System Components	Order #	Description	For Complete Description
Swivel	**ST2 72-0000**	Low-Torque Dual-Channel Quartz-Lined Stainless Steel Swivel	See Pages 102-103
Swivel Mount	**ST2 61-0024**	3.5-in Counter-Balanced Lever Arm for Mice	See Page 110
Tether	**ST2 61-0037**	Head Block Tether for Mice	See Page 109
Tubing/ Connections	**ST2 72-4426**	CO-EX™ PE/PVC Tubing for 22-ga Swivels, Non-Sterile	See Page 114
Syringe Pump	**ST2 70-4506**	Pump 11 Pico Plus Elite	See Page 103
Caging	**ST2 72-0016**	Mouse Infusion Cage, Pellet Feeder and Water Bottle	See Page 101

Vascular Access Harness is a trademark of Instech Laboratories, Inc.
CO-EX is a trademark of Solomon Scientific.
PHD ULTRA is a trademark of Harvard Apparatus.
FunnelCath is a trademark of Genesis Medical International, Inc.

Mouse Infusion System
(All Components
Purchased Separately)

Rodent Infusion Cage

- No sharp corners
- Tethers less likely to tangle
- Probes less likely to dislodge
- Durable polycarbonate for long life
- Available for mice and rats

These durable polycarbonate cages are designed to house tethered rodents during short-term infusion and microdialysis experiments. Since the cage is round, tethers will not tangle as they sometimes can in shoebox-type cages. Also, animals are less likely to dislodge sensitive probes since there are no sharp corners. Handles at the top make it easy to move the cage.

These animal cages are frequently used with Counter-Balanced Lever Arms. This cage is available in two sizes and can be supplied with any combination of feeders and water bottles. Pictured above is a complete animal infusion system featuring our PHD ULTRA™ Syringe Pump, 72-0015 Mouse Cage with Water Bottle, Counter-Balanced Lever Arm, and a Stainless Steel Swivel. The pump, cage, swivel and lever arm are sold separately.

Please visit *www.harvardapparatus.com* for a complete listing of our syringe pumps.

Order #	Product
ST2 61-0046	Mouse Infusion Cage, Polycarbonate, 21.6 cm (8.5 in) High
ST2 61-0048	Mouse Infusion Cage Cover
ST2 72-0014	Mouse Infusion Cage with Pellet Feeder
ST2 72-0015	Mouse Infusion Cage with Water Bottle
ST2 72-0016	Mouse Infusion Cage with Pellet Feeder and Water Bottle
ST2 61-0047	Bottom Screen for Mouse Infusion Cage
ST2 61-0024	3.5-in Counter-Balanced Lever Arm for Mouse Infusion Cage
ST2 61-0042	Rat Infusion Cage, Polycarbonate, 38.1 cm (15 in) High
ST2 61-0044	Rat Infusion Cage Cover
ST2 72-0017	Rat Infusion Cage with Pellet Feeder
ST2 72-0018	Rat Infusion Cage with Water Bottle
ST2 72-0019	Rat Infusion Cage with Pellet Feeder and Water Bottle
ST2 61-0023	6-in Counter-Balanced Lever Arm for Rat Infusion Cage

For Surgical Instruments, see pages 1-58.
For Catheters, see pages 112 to 115.

PHD ULTRA is a trademark of Harvard Apparatus.

Instech Single and Dual Channel Stainless Steel Swivels

Key Features

- Lifetime warranty on single channel swivels
- Single and dual channel models available
- Autoclavable single channel swivels

A swivel is a device that is inserted into the fluid path so that the infusion line can rotate as the animal moves. It is a critical part of any tethered animal infusion system. The fluid swivels have been in laboratory use for forty years and have earned a reputation as the finest in the industry.

Harvard Apparatus offers a variety of complete infusion systems that contain the equipment you need to carry out an infusion study. Custom swivels available by special order. Call for details.

Single Channel Swivels

Single channel stainless steel swivels are autoclavable and may be reused hundreds of times. Self-adjusting seals, at the heart of every swivel, actually improve with use. All stainless steel models include a universal swivel-to-tether clamp which mates with any of our spring tethers.

Our standard models are typically used with rats and mice, but work with rabbits, guinea pigs, and with the (61-0026) strain relief, large animals as well.

Dual Channel Swivels

A two-channel swivel gives you the ability to infuse and withdraw simultaneously, to infuse on one channel while monitoring on the other, or to infuse on two lines independently. Dual channel swivels are a bit more delicate than single channel models, particularly the side channel. With proper care and use, dual channel swivels can last for many years.

The 75-0277 Low-Torque Dual Channel Swivel has a design similar to the 72-0000 Low-Torque Dual Channel Swivel for Microdialysis, but uses stainless steel tubing instead of quartz for improved durability. It is intended for infusion and blood sampling with mice. The OD is 22 gauge; the ID is equivalent to 25 gauge.

Microdialysis Swivels

For years, the 61-0004 Dual Channel Swivel has been the industry standard for awake animal microdialysis. It features quartz lining on the center channel to minimize dead volumes and reactivity with neurotransmitters. Otherwise it is the same as our 72-0000 Low-Torque Dual Channel Swivel model, with torques that are appropriate for rats but not mice.

The newer 72-0000 uses a completely different seal design with two significant improvements: quartz lining on both the center and side channels, and extremely low frictional torque, making it the first dual channel swivel that can be used with mice. However, the 72-0000 model is more fragile than the 61-0004 model and often cannot be repaired if clogged or damaged.

Application	Single Channel Swivels				Dual Channel Swivels			
Microdialysis for Mice and Rats						✓		
Microdialysis of Rats							✓	
Standard Infusion of Mice			✓					✓
Standard Infusion of Rats		✓			✓			
Blood Pressure Measurements	✓			✓				
Rapid Infusions	✓			✓				
IV Feeding	✓			✓				
Specifications								
Inlet & Outlet Tube Gauge	20	22	25	20	22	22	22	22
CO-EX™ External Tubing	–	**ST2 72-4426**	**ST2 72-6122**	–	**ST2 72-4426**	**ST2 72-4426**	**ST2 72-4426**	**ST2 72-4426**
Intra-Vascular Polyurethane Tubing	–	**ST2 72-4429**	**ST2 72-6130**	–	**ST2 72-4429**	**ST2 72-4429**	**ST2 72-4429**	**ST2 72-4429**
PolyE Polyethylene Tubing	**ST2 59-8330**	–	–	**ST2 59-8330**	–	–	–	–
Center Channel ID	0.58 mm (0.023 in)	0.41 mm (0.016 in)	0.25 mm (0.010 in)	0.58 mm (0.023 in)	0.41 mm (0.016 in)	0.15 mm (0.006 in)	0.15 mm (0.006 in)	0.25 mm (0.010 in)
Center Channel Dead Volume	16 µl	8 µl	3 µl	18 µl	8 µl	1.8 µl	1.4 µl	2 µl
Side Channel ID	–	–	–	0.58 mm (0.023 in)	0.41 mm (0.016 in)	0.15 mm (0.006 in)	0.41 mm (0.016 in)	0.41 mm (0.016 in)
Side Channel Dead Volume	–	–	–	18 µl	18 µl	3 µl	18 µl	4 µl
Size (OD x L)	9.5 x 57.1 mm (0.375 x 2.25 in)	9.5 x 57.1 mm (0.375 x 2.25 in)	9.5 x 57.1 mm (0.375 x 2.25 in)	9.5 x 60.4 mm (0.375 x 2.38 in)	9.5 x 60.4 mm 0.375 x 2.38 in	9.5 x 60.4 mm 0.375 x 2.38 in	9.5 x 60.4 mm 0.375 x 2.38 in	9.5 x 60.4 mm 0.375 x 2.38 in
Autoclavable	Yes	Yes	Yes	Yes	Yes	No	Yes	No
Materials in Fluid Path*	SS,T	SS,T	SS,T	SS,T (center) SS,T (side)	SS,T (center) SS,T (side)	Q,T (center) Q,T,P,PM (side)	Q,T (center) Q,T (side)	SS,T (center) SS,T (side)
Order # for Swivel	**ST2 61-0000**	**ST2 61-0001**	**ST2 56-1324**	**ST2 61-0002**	**ST2 61-0003**	**ST2 72-0000**	**ST2 61-0004**	**ST2 75-0277**

**SS is corrosion-resistant stainless steel (304 and 316); P is polysulfone plastic; T is PTFE; Q is fused silica quartz; PM is polyimide.*

HARVARD APPARATUS SYRINGE PUMPS

Harvard Apparatus Syringe Pumps are the perfect complement for Instech Swivels due to their high accuracy and legendary reliability. Single or Dual Syringe, Infusion Only, Infusion/Withdrawal or Programmable Models available. See www.harvardapparatus.com for our full line of syringe pumps.

Pump 11 Elite Series Syringe Pumps

- Ideal for Microdialysis
- Single and Dual Syringe
- Infuse only and Infusion/Withdrawal

PHD ULTRA™ Series Syringe Pumps

- Ideal for Infusion Studies
- Dual Syringe
- Infusion Only, Infusion/Withdrawal and Programmable

Instech Precision Disposable Swivels

- 25 gauge swivel is ideal for mice
- Plastic swivel-to-tether clamp included
- Single use, low cost, precision swivels
- Meets Harvard Apparatus' and Instech's strict quality standards
- Available in three sizes: 20 gauge, 22 gauge and 25 gauge

This innovative single channel swivel has been designed for researchers that require components touching the fluid path to be replaced frequently to avoid cross contamination. These plastic swivels are provided EtO sterilized. They cannot be autoclaved.

Instech Quality on the Inside

While we have used a polysulfone plastic body in order to reduce the price, we have made no compromises in terms of functionality. In fact, the critical internal components (the PTFE seal, the stainless steel seal cup, and the stainless steel spring) are common between these and our stainless steel swivels. As a result, these swivels feature our unique self-adjusting seals, which do not loosen with use (thereby preventing leaks) and have low rotational friction. This superior design has been proven reliable in many thousands of studies over the past 30 years.

As with all Instech Swivels, fluids traveling through them touch only stainless steel hypodermic tubing and a PTFE seal. Internal dead volumes in these swivels are even lower than in our stainless steel swivels.

Single Channel Configurations

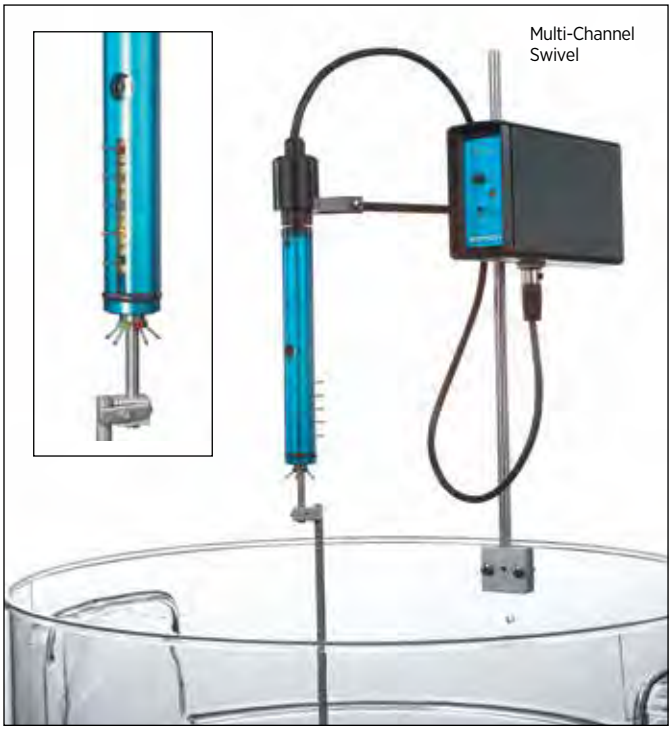
These disposable swivels are available in three sizes, with or without luer inlets. The swivel bodies are color-coded by gauge according to international standards. The 25 gauge swivel mates with standard PE20 catheter tubing and is ideal for the infusion of mice. The 22 gauge swivel is most commonly used with rats because it mates with standard PE50 catheter tubing. Use the 20 gauge version when working with more viscous solutions, or at higher flow rates. The 20 gauge swivel is ideal for use with rabbits and other animals of a similar size.

These swivels are individually packaged and EtO sterilized. They include a plastic swivel-to-tether clamp for attachment to all of our standard spring tethers.

Applications	20 Gauge	22 Gauge	25 Gauge
Standard Infusion of Mice			✓
Standard Infusion of Rats		✓	
Blood Pressure Measurement	✓		
Rapid Infusions	✓		
IV Feeding	✓		
Specifications			
Color	Pink	Blue	Purple
Inlet and Outlet Tube Gauge	20	22	25
Compatible Tubing	PE60, PE90	PE50	PE20
Channel ID	0.58 mm (0.023 in)	0.41 mm (0.016 in)	0.25 mm (0.010 in)
Internal Dead Volume	12 µl	6 µl	2.5 µl
Size: Diameter x Length	9.5 x 42.9 mm (0.375 x 1.69 in)	9.5 x 42.9 mm (0.375 x 1.69 in)	9.5 x 42.9 mm (0.375 x 1.69 in)
Order #	**ST2 61-0011**	**ST2 61-0014**	**ST2 72-4076**
Order # (with Luer Inlet)	**ST2 72-4072**	**ST2 72-4074**	-

For Rodent Infusion Cages, see page 101.

Need assistance *after hours?*
Email a customer support specialist:
support@hbiosci.com
We'll respond to your request asap!



Instech Multi-Channel Swivel

- Three standard configurations
- Five, low dead volume channels for microdialysis
- Proportional control for fine continuous movement
- Minimal stress on animal

These remarkable swivels feature five low-dead-volume channels and rotational torque as low as that of our one-channel models.

There are three standard configurations available; one with all 22 gauge infusion channels and two with a variety of combinations of microdialysis channels (low dead volume and lined to protect neurotransmitters) and standard 22 gauge infusion channels.

The practical limit on the number of lines in a traditional fluid swivel has been two; swivels with three or more channels are typically impossible for a rodent to turn and can have large dead volumes or problems with cross-channel leakage.

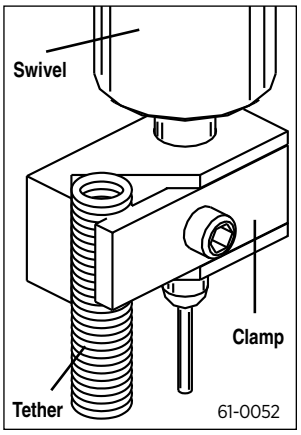
To solve these problems the seals were kept tight on the Multi-Channel Swivel and a motor was added to assist the rotation. A controller senses the animal's movement and drives the swivel core to follow the animal. Unlike switch-based systems, this swivel features a proportional control, allowing fine continuous movement to minimize stress on the animal. The torque felt by the animal is similar to that of an Instech Single Channel Swivel.

The control unit mounts to the vertical portion of the counter-balanced arm and is powered by a 12 VDC adapter. The analog motor drive signal is available as an output for rotational activity monitoring.

The Multi-Channel Swivel is counter balanced to minimize forces on the animal. While the power assist circuitry is responsive enough that a mouse can turn the swivel, use with mice is not recommended due to the negligible weight of the animal relative to the swivel.

Specifications	
Number of Channels	5
Dead Volume:	
Microdialysis Channel	6-7 µl
22 Gauge Channel	15-20 µl
Channel ID	
Microdialysis Channel	0.2 mm (0.009 in)
22 Gauge Channel	0.4 mm (0.015 in)
Channel OD	0.028 in (22 ga)
Dimensions, Length x Diameter	17.8 x 1.5 cm (7 x 0.6 in)

Order #	Product
ST2 72-6134	Powered Multi-Channel Swivel, 5 Channels, 4 Microdialysis and 1 x 22 ga Channel, pkg. of 1
ST2 72-9351	Powered Multi-Channel Swivel, 5 Channels, 2 Microdialysis and 3 x 22 ga Channels, pkg. of 1
ST2 72-9162	Powered Multi-Channel Swivel, 5 Channels all 22 ga Channels, pkg. of 1



For use with:

- Single channel stainless steel swivels
- Dual channel stainless steel swivels
- Multi-channel swivel

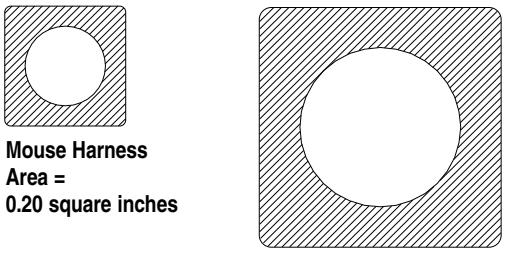
Harvard/Instech Universal Swivel-to-Tether Clamp

This Universal Swivel-to-Tether Clamp provides an offset attachment of the spring tether which effectively transmits torque from the animal's movements to the swivel. It fastens to the rotating portion of the swivel. A V-block mount accommodates spring tethers from 0.08 to 0.2 inch OD. Supplied 5 per package. (Illustration with Tether and Swivel to the left).

Order #	Product
ST2 61-0052	Replacement Universal Swivel to Tether Clamp, pkg. of 5

Swivelless Swivel is a trademark of Instech Laboratories, Inc.

Harness/Body Contact Area



Harvard/Instech Infusion Harness™

- Non-surgical
- Less animal stress than normal jackets
- Proven effective on thousands of animals

Covance Laboratories, one of the world's leaders in drug screening, and Harvard/Instech Laboratories have teamed up to bring you a tether that combines the best features of jacket and button tethers. It has been proven effective on hundreds of animals in Covance's drug screening laboratories.

The tether consists of a soft molded elastomer saddle with a vented dome that protects the catheter, adjustable belly bands to secure the saddle to the animal, and standard stainless steel tether to protect catheter and transmit torque to a swivel. When used without the spring tether, the Harness is also effective in holding down and protecting dermal patches.

Benefits

No Surgery Required

Like standard jacket tethers, the Harvard/Instech/Covance Infusion Harness™ does not need to be surgically attached. However, its unique design offers a range of benefits which, until now, have only been achieved by using a surgically implanted button.

Lower Stress Levels

This harness causes less stress to the animal because it is less abrasive than jacket tethers. As a result, mice or rats stay calmer and are less likely to chew at the harness. This also reduces replacement costs.

More Normal Body Temperatures

The Harvard/Instech/Covance Harness™ covers less surface area than traditional jackets, thereby reducing elevated body temperatures. Results obtained are therefore more accurate.

Promotes More Rapid Healing

Air circulates freely under the dome of the harness promoting rapid healing at the wound site.

Harness Grows with the Animal

This Harness is easy to adjust and grows with the animal. Just loosen the belly bands from the top as the animal gets larger. This cuts down the number of harnesses required reducing costs.

Longer Life

This Harness is washable and reusable extending its life span. Also, calmer animals tend not to chew at the harness reducing replacement costs and extending its usefulness.

Available for Rats and Mice

It is currently available for single or dual channel infusion of rats and for single channel infusion of mice. Each Harness is supplied complete with spring tether, saddle, and belly bands.

Infusion:	Rats	Rats	Mice
Single Channel	✓		✓
Dual Channel		✓	
Specifications:			
Clear Lumen	0.090 in	0.105 in	0.062 in
Body Surface Contact Area	0.82 sq in	0.82 sq in	0.20 sq in
Saddle Size	1.125 sq in	1.125 sq in	0.563 sq in
Spring	12 in	12 in	12 in
Belly Band Length	Adjustable up to 22.9 cm (9 in)	Adjustable up to 22.9 cm (9 in)	Adjustable up to 11.4 cm (4.5 in)
System Weight:			
With Spring	12 g	12 g	3.0 g
Without Spring	5 g	5 g	0.7 g
Order #	ST2 61-0041	ST2 61-0238	ST2 61-0269

Vascular Access Harness™

- Septum permits aseptic technique
- Quick connection
- Minimal backflow
- Low profile
- Single and dual channel options available

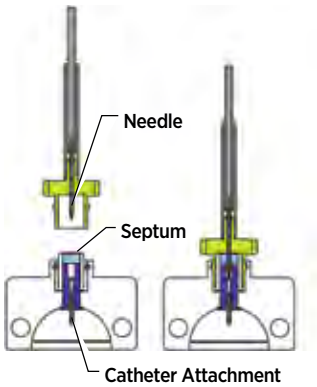
Mouse VAH Connected

The Instech Vascular Access Harness (VAH), an advancement on the original Covance Infusion Harness, permits quick and aseptic connection and disconnection of a catheterized rat or mouse and an infusion tether.

The VAH consists of a small external port (or two ports, in the case of the dual channel model) housed in a harness which is installed at the same time that the catheter is implanted. The catheter is attached to a connector built into the port under the harness dome. The port and catheter are filled with lock solution to maintain patency during transport.

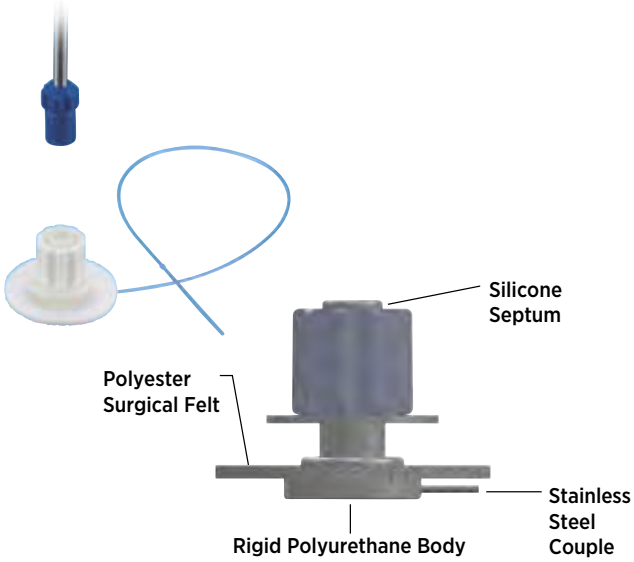
To begin an infusion or blood sampling study, simply remove the cap, wipe the septum with disinfectant and plug the mating VAH tether into the harness. A recessed septum-piercing needle built into the tether makes the fluid connection through the port. Like a subcutaneous access port, the VAH is a closed system; tether connection does not introduce contamination or air. Furthermore, retrograde flow, which can lead to occluded catheters, is virtually eliminated.

Single Channel Vascular Access Harness	
Order #	**Product**
Rat	
ST2 72-9163	VAH with Septum Cover and Septum Needle
ST2 72-9164	VAH Tether Assembly, 30.5 cm
ST2 72-9165	Tether Assembly Kit: 72-9164 VAH Tether Assembly, 72-4075 22G Plastic Swivel, 60.9 cm CO-EX Tubing and Luer Stubs
ST2 75-0291	Plug for VAH Tether, pkg. of 10
Mouse	
ST2 75-0065	VAH for Mice (Injection Set Not Included)
ST2 75-0062	VAH Assembly for Mice, 17.8 cm
ST2 75-0063	Tether Assembly Kit: 75-0062 VAH Tether Assembly, 72-4076 25 ga Plasic Swivel, 60 cm Co-EX Tubing and 25 ga Luer Stub
ST2 75-0061	Injection Set for Mouse VAH and VAB



Dual Channel Vascular Access Harness	
Order #	**Product***
Rat	
ST2 72-4454	Dual Channel VAH with Septum Needle
ST2 72-4455	Dual Channel VAH Tether Assembly, 30.5 cm
ST2 72-4456	VAHD Tether Assembly Kit: 72-4455 Dual Channel VAH Tether Assembly, 72-4070 Mini Tube Injection Port 22 ga x 4 mm, 61-0014 22 ga Single Channel Plastic Swivel, 60 cm CO-EX Tubing, 72-4439 22 ga Luer Stub
ST2 75-0293	Protective Cap for VAHD Harness
ST2 75-0294	Dual VAH with 1 Extra Injection Port and Septum Needle
ST2 75-0295	Dual VAH with 2 Extra Injection Ports and Septum Needles
Mouse	
ST2 75-0811	Dual Channel Mouse VAH, 22 ga Red, 22 ga White Ports, Injector, Sterile
ST2 75-0812	Dual Channel Mouse VAH, 25 ga Red, 22 ga White Ports, Injector, Sterile
ST2 75-0813	Dual Channel Mouse VAH, 25 ga Red, 25 ga White Ports, Injector, Sterile
ST2 75-0814	Tether Assembly for Dual Channel Mouse VAH (75-0811, 75-0812, and 75-0813)
ST2 75-0815	Spring for Dual Channel Mouse Tethers, Non-Sterile, pkg. of 5
ST2 75-0816	Tether for Mouse VAH or VAB, 7 in, Silicone Sleeve for Stainless Steel Swivel, Sterile

**All supplied individually sterilized, unless otherwise noted.*



Vascular Access Button™

- Features an external port with a septum for closed systems
- Ideal for longer-term studies
- Available for rats and mice

Button tethers are surgically implanted under the skin. In older models the catheter passes through an opening in the stalk of the button through a spring tether and up to a swivel. The Instech Vascular Access Button (VAB) features an external port with a septum to create a closed system. Compared to harnesses, buttons require a bit more work in surgery, however, there are no belly bands that require adjustment and with proper tissue ingrowth, buttons can be a good option for longer-term studies. All supplied individually sterilized, unless otherwise noted.

Order #	Product
Rat	
ST2 75-0056	VAB for Rat with Septum Needle
ST2 75-0057	VAB Tether Assembly, 30.5 cm
ST2 75-0058	Tether Assembly Kit: 75-0057 VAB Tether Assembly, 72-4075 22 ga Plastic Swivel, 60 cm CO-EX Tubing, 72-4439 Luer Stub
ST2 75-0059	Protective Metal Cap for Rat VAB
Mouse	
ST2 75-0060	VAB for Mice, 22 ga
ST2 75-0061	Injection Set for Mouse VAH and VAB
ST2 75-0062	VAB Tether Assembly for Mice, 17.8 cm
ST2 75-0063	Tether Assembly Kit: 75-0062 VAB Tether Assembly, 72-6121 25 ga Plastic Swivel, 60.9 cm PU External Infusion Tubing, 25 ga Luer Stub

PinPorts™ for Catheters and Tubing

NEW PRODUCT

- Infuse or withdraw from the catheter in a fraction of the time it takes with plugs and blunt needles
- The PinPort is a closed system that permits aseptic technique leading to reduced infection and improved patency
- The injector is recessed and provides complete needle stick protection for the user

The Instech PinPort provides fast, aseptic access to externalized rodent catheters or tubing for dosing or blood sampling. It is designed for intermittent, manual access; it is not designed to be connected to a tether and swivel for removal or continuous access (see Vascular Access Harness or Vascular Access Button). The PinPort is available in white or red with 22 ga or 25 ga couples. Colors can be used to distinguish vessels. One injector works with all PinPort varieties.

Order #	Product
ST2 75-0220	PinPorts 22 ga, White, with Injector, pkg. of 20
ST2 75-0221	PinPorts 22 ga, Red, with Injector, pkg. of 20
ST2 75-0222	PinPorts 25 ga, White, with Injector, pkg. of 20
ST2 75-0223	PinPorts 25 ga, Red, with Injector, pkg. of 20
ST2 75-0225	PinPorts Connector, Male Inlet, 22 ga, each
ST2 75-0226	PinPorts Connector, Male Inlet, 25 ga, each
ST2 75-0227	PinPort 22 ga, White, 16 mm Long Knurled with Groove for Head Attachment, 22 ga x 5 mm Tubing, with Injector, each
ST2 75-0228	PinPort 22 ga, White, Non-Magnetic Nitinol Tubes, with Injector, box of 20
ST2 75-0224	PinPort Injectors, case of 50

Head Block
Tether for Mice

Harvard/Instech Head Block Tethers

- Makes microdialysis in awake mice possible
- Ideal for microdialysis in rats
- Little risk of animal infection
- Most frequently used microdialysis tether

Our head block tether assemblies were designed for microdialysis, but also work well for standard infusion applications. In fact, we have found that the head block tether is the best option for all applications when working with mice. It provides a solid attachment to the animal with little risk of infection.

We recommend using our Counter-Balanced Lever Arms, see page 109, to remove slack in the head block tether and to give your animal the greatest possible freedom of movement.

Head Block Tether for Rats

This large lumen tether can accommodate two standard microdialysis probes allowing it to be set up in a number of configurations. A 3/4 inch slotted screw attaches to the animal's skull with Dental Acrylic as do the 59-7351 Skull Mounting Screws and Probe Guides, see our website. A blade on the end of the stainless steel spring tether slides into the head mount screw and is secured with a knurled tubular nut.

Head Block Tether for Mice

Instead of a spring, the mouse head block tether uses a fine 0.010 inch diameter looped wire making it extremely light weight and allowing it to easily transmit torque to the swivel as the mouse moves.

A small peg attaches to the animal's skull with dental acrylic. The wire tether is easily attached by inserting it into a hole in the peg and sliding a sleeve over it.

The tether can attach directly to the clamp on our low-torque single channel swivel for normal infusion applications, or to a collection tube holder mounted on the rotating portion of the swivel for microdialysis.

Applications:	Rats	Mice
Single Channel Infusion of Rats	✓	
Dual Channel Infusion of Rats	✓	
Microdialysis with Rats	✓	
Mice (All Applications)		✓
Experiment Duration	1 to 60+ days	1 to 60+ days
Specifications:		
Clear Lumen	0.115 in	0.070 in
Tether	Stainless steel 12 in	Looped wire 12 in
System Weight	10 g	0.3 g
Parts Included:	5 head block screws	5 head mount pegs
	Miniature nut	Peg sleeve
	Tether with blade	Looped wire tether
Order #	ST2 61-0036	ST2 61-0037

Order #	Product
ST2 61-0036	Head Block Tether for Rats
ST2 61-0037	Head Block Tether for Mice

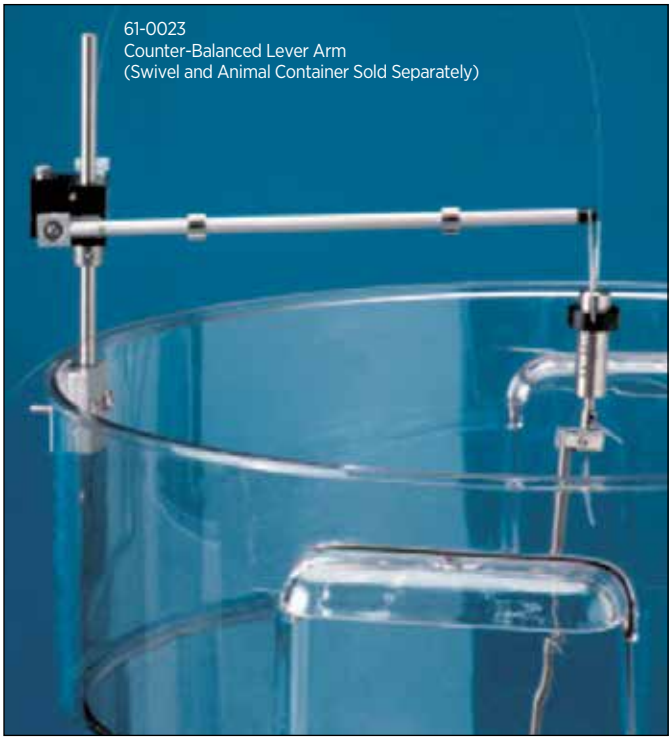
Glass Ionomer Cement

Instech Glass Ionomer Cement

This resin-based glass ionomer cement is ideal for permanent head attachment of microdialysis probes and head block tethers in rats and mice. It has significant advantages over the more commonly used methylmethacrylate cements. It bonds to bone, eliminating the need for bone screws in most cases. It has a lower temperature increase during polymerization and it hardens more quickly with no noxious fumes.

This kit includes a reusable plastic syringe-type dispenser, one 13.3 gm cartridge and 20 disposable mixing tips. The cartridges have two separate chambers so that the components of the cement are only mixed in the tips; therefore, they do not need to be used all at once. The refill kit includes two cartridges and 44 mixing tips but no dispenser. The older metal dispenser is available separately. An SOP for rodent head attachment is included. Sold for laboratory animal research applications only.

Order #	Product
ST2 75-0027	Glass Ionomer Cement Kit, Includes: 1 x 13.3 g Cement, 20 Tips and Plastic Dispenser
ST2 72-9169	Glass Ionomer Cement Automix Refills, Includes: 2 x 13.3 g Cement and 44 Tips
ST2 75-0029	Metal Dispenser for Glass Ionomer Cement


61-0023
Counter-Balanced Lever Arm
(Swivel and Animal Container Sold Separately)

Instech Counter-Balanced Lever Arm

- Minimizes stress on microdialysis probes & animal
- Unimpeded animal movement
- Available for rats and mice

Designed to minimize stress on microdialysis probes, the Counter-Balanced Lever Arm moves with the animal to prevent slack in the tether. Most other lever arms use a mass as the counterbalance; ours uses an adjustable spring, making it lighter and more responsive.

The mounting plate can be adjusted for mounting to the side or top of many types of cages, including our 61-0042 Animal Infusion Cage, see page 101. If you are using a shoebox-type cage, a counter-balanced lever arm can prevent the tether from tangling.

The 61-0023 is a 6-in arm that is typically used in studies with rats; the 61-0024 is a 3.5-in arm that is practically a requirement for any continuous infusion study involving mice.

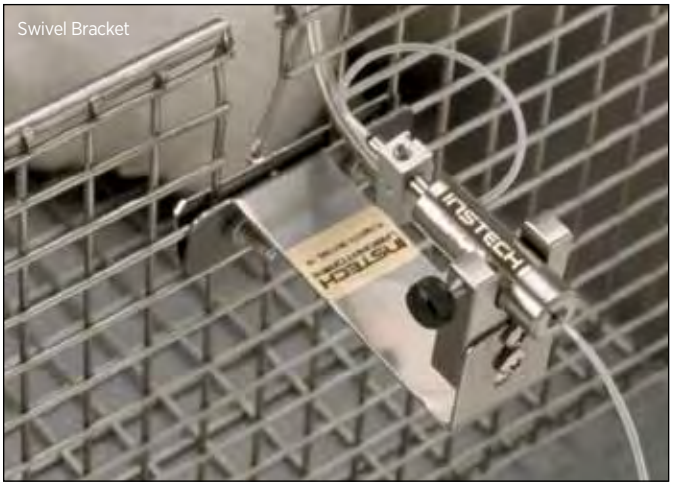
Order #	Product
ST2 61-0023	6-in Adjustable Spring Counter-Balanced Lever Arm
ST2 61-0024	3.5-in Adjustable Spring Counter-Balanced Lever Arm

72-4064
Single-Axis Lever Arms
(Swivel and Cage Sold Separately)

Instech Single-Axis Lever Arms

This mount is designed for standard infusion of rats in shoebox cages. The mount pivots in the vertical plane to remove slack from the tether but allows enough length to reach all corners of an asymmetrical cage. The adjustable counter-weight can be set to balance the weight of our swivels plus a tether. The crossbar in the wire top must be clipped in the slot that the tether is placed in for maximum travel. Supplied individually. For mouse work or microdialysis the more responsive Counter-Balanced Lever Arm is recommended.

Order #	Product
ST2 72-4063	Single-Axis Lever Arm for Polysulfone Swivels
ST2 72-4064	Single-Axis Lever Arm for Stainless Steel Swivels



Swivel Bracket

Instech Swivel Bracket

This simple swivel bracket easily mounts to most screen and solid material cages. This bracket includes an additional backing plate and swinging tether support to mount the swivel horizontally on the front of the cage (a great benefit with cage rack systems).

Order #	Product
ST2 61-0018	Swivel Bracket, Mounting Hardware, Backing Plate for Top or Side Mounting, Swinging Tether Arm

Fixed Swivel Mount

Instech Fixed Swivel Mount for Tecniplast Metabolic Cages

This mount is supplied complete with new cage top. Swivel sold separately, see page 102-104. For Metabolic Cages see pages 125-129.

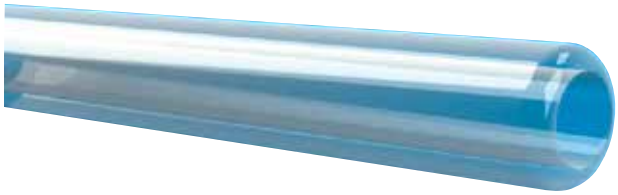
Order #	Product
ST2 61-0021	Fixed Swivel Mount for Tecniplast Metabolic Cages

Mouse Micro-Isolator Cage Mount

Instech Mouse Micro-Isolator Cage Mount

Now you can continuously infuse mice while maintaining a safe micro-environment for your nudes and transgenics. This Micro-Isolator Cage Mount is designed to attach to the standard micro-isolator cage (such as those made by Allentown Caging and Lab Products) with no modifications to the cage or cover. Simply remove the wire lid and install the swivel system. This Mount includes a spring counter-balanced lever arm attached to a bracket with holes to protect the IV lines as they enter and exit the cage. A feeder and water bottle are available separately.

Order #	Product
ST2 72-4060	Mouse Micro-Isolator Cage Mount
ST2 72-4061	Feeder for Mouse Micro-Isolator Cages
ST2 72-4062	50 ml Water Bottle for 72-4060



Catheters for Mice and Rats

Target vessels include: Jugular Vein, Femoral Vein/Artery, Carotid Artery, Tail Vein, Intrathecal, Bile Duct, Gastric, and Portal Vein

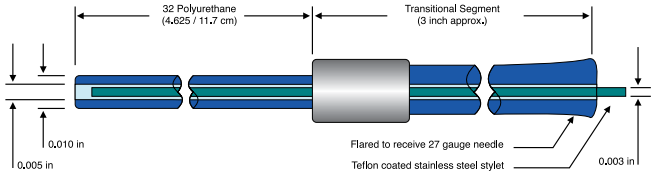
- Designed with rounded tips, suture collars and other features specifically for the indicated species and vessel
- Utilizes tubing that has been custom-extruded for an ideal fit with the Vascular Access Harness (see page 107), Buttons (see page 108), and PinPorts (see page 108)
- Made using high quality medical-grade materials and advanced catheter manufacturing equipment
- Easily customizable

Order#	Size	Length	Collars
Mouse Jugular Vein, polyurethane, fits 25 ga			
ST2 75-0831*	1-3 Fr	10.5 cm	1.2 cm
ST2 75-0401	2 Fr	10 cm	1.3 cm
ST2 75-0832	2 Fr	6 cm	1.3 cm
ST2 75-0833	2 Fr	8 cm	1.0 cm
ST2 75-0834	2 Fr	4 cm	1.3 cm
ST2 75-0835	2 Fr	6 cm	1.0 cm
Mouse Femoral Artery/Vein, polyurethane, fits 25 ga			
ST2 75-0842	1 Fr to VAH tubing	54.5 cm	2.0 cm
ST2 75-0843	1 Fr to VAH tubing	54 cm	2.0 cm
Mouse Carotid Artery, polyurethane, fits 25 ga			
ST2 75-0402*	1-3 Fr	8 cm	1.1 cm
ST2 75-0847	2 Fr	6 cm	0.9 cm
Mouse Tail Vein, Pebax tubing, includes stylet and PinPort with injector			
ST2 75-0858	29 ga	25 cm	NA
ST2 75-0859	29 ga	5 cm	NA

**Fits 22 ga.*

Order#	Size	Length	Collars
Rat Jugular Vein, polyurethane, fits 22 ga			
ST2 75-0403	3 Fr	30 cm	2.5 and 3.0 cm
ST2 75-0820	3 Fr	15 cm	3.0 cm
ST2 75-0821	3 Fr	25 cm	3.0 cm
ST2 75-0822	3 Fr	20 cm	2.5 and 2.8 cm
ST2 75-0823	3 Fr	10 cm	2.5 cm
ST2 75-0824	3 Fr	60 cm	2.5 cm
ST2 75-0825	3 Fr	21 cm	4.0 and 5.2 cm
ST2 75-0826	3 Fr	10 cm	3.0 cm
ST2 75-0827	3 Fr	12 cm	3.8 cm
ST2 75-0828	3 Fr	60 cm	4.5 cm
ST2 75-0829	3 Fr	20 cm	2.0 cm
ST2 75-0830	3 Fr	25 cm	3.0 and 15.0 cm
Rat Femoral Artery, polyurethane, fits 22 ga			
ST2 75-0836	1-3 Fr	30 cm	1.2 cm
Rat Femoral Vein, polyurethane, fits 22 ga			
ST2 75-0837	1.9-3 Fr	29.5 cm	4.5 and 7.5 cm
ST2 75-0838	1.9-3 Fr	29.5 cm	4.0, 4.5, and 7.5 cm
ST2 75-0839	3 Fr	25 cm	3.0 and 3.5 cm
ST2 75-0840	3 Fr	20 cm	3.5 and 6.0 cm
ST2 75-0841	3 Fr	30 cm	5.0 cm
Rat Carotid Artery, polyurethane, fits 22 ga			
ST2 75-0404	1.9-3 Fr	16.5 cm	3.5 and 8.0 cm
ST2 75-0844	1.9-3 Fr	13.5 cm	3.5 and 8.0 cm
ST2 75-0845	2 Fr to VAH tubing	29 cm	1.5 cm
ST2 75-0846	3 Fr	12 cm	2.0 cm
Rat Intrathecal, polyurethane, includes stylet and PinPort with injector			
ST2 75-0848	32 ga	14 cm	NA
ST2 75-0849	32 ga	14.5 cm	NA
ST2 75-0850	32 ga	18 cm	NA
Rat Bile Duct, polyurethane, fits 22 ga			
ST2 75-0851	2 Fr	69.5 cm	1.0 cm
ST2 75-0852	3 Fr	30 cm	0.7 and 5.0 cm
ST2 75-0853	3 Fr	40 cm	NA
Rat gastric, polyurethane, fits 22 ga			
ST2 75-0854	3 Fr	25 cm	2.5 cm
Rat Portal Vein, polyurethane, fits 22 ga			
ST2 75-0855	3 Fr	20 cm	0.7 and 5.0 cm
Rat Tail Vein, PE/PVC tubing, includes stylet and PinPort with injector			
ST2 75-0856	25 ga	25 cm	NA
ST2 75-0857	25 ga	6 cm	NA

Intrathecal Catheter

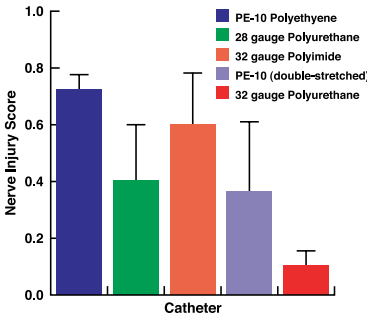


Intrathecal Catheter System, 32 Gauge

- Reduces catheter-induced histopathology
- Polyurethane catheter material causes substantially less nerve injury compared to other catheter materials
- For delivery of drugs to the brain
- Ideal for rats and other small animals

This 32 gauge Intrathecal Catheter is the key component of a delivery system specifically developed for use in the rat and other small research animals. A significant advancement over the standard polyethylene-based products generally used for such research, its material and size combine to produce a minimally reactive device, thereby reducing catheter-induced histopathology that could obscure other observations.

While studying the effects of intrathecally-injected anesthetics, researchers at the University of California at San Francisco encountered morphologic changes apparently induced by the implanted catheter. Micor was approached for its assistance in identifying a material that could reduce the nerve damage that was observed. These efforts suggested that 32 gauge polyurethane had the desired properties. (See graph.) Accordingly, a study was conducted comparing catheters composed of this material versus polyethylene or polyamide. Although sensory function did not differ significantly, nerve injury was substantially lower in animals implanted with 32 gauge polyurethane catheters.[1]



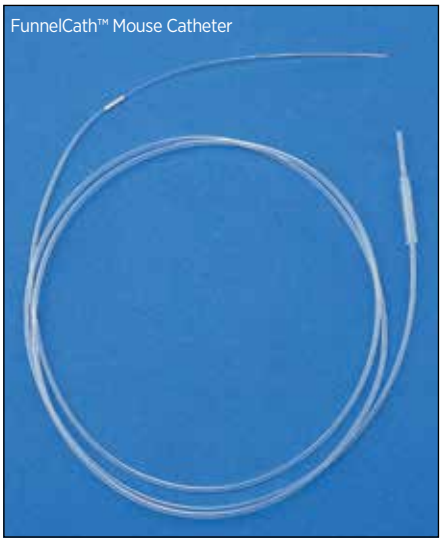
Nerve injury score for sections obtained 12 mm caudal to the conus medullaris, 7 days after an intrathecal infusion of normal saline.

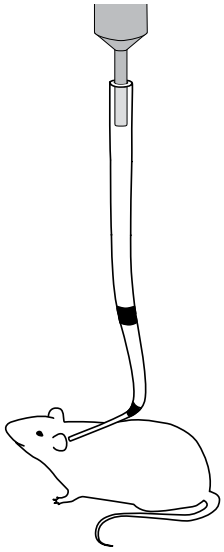
This material is now incorporated into a commercially available device, the 32 gauge Intrathecal Catheter System. This system contains an 11.7 cm (4.6 in) catheter, a bonded connection assembly, and a PTFE coated stylet to facilitate placement. It is individually packaged and sterilized.

Order #	Product
ST2 72-0484	Intrathecal Catheter System, 32 ga, pkg. of 1, Sterile

Reference

Sakura S, Hashimoto K, Bollen AW, Ciriales R, Drasner K. Intrathecal catheterization in the rat: Improved technique for morphologic analysis of drug-induced injury. *Anesthesiology*.1996;85:1184-1189.





FunnelCath™ Mouse Catheter

- Allows easy catheterization of mice
- Permits attachment to a standard 25 gauge or 22 gauge swivel
- Two sizes available:
  - 1.2 French to 2 French for use with 25 gauge swivels
  - 1.2 French to 3 French for use with 22 gauge swivels
- Extruded tube provides a seamless connection with no leaking!

The increase in catheterization of mice has brought to light a vexing problem: how to attach a tiny catheter to conventional devices such as swivels and luer stubs. The solution is the innovative FunnelCath™.

FunnelCath™ is extruded from the same implant-grade polyurethane used in our SoloCaths, see page 115, though a bit stiffer to facilitate placement in mice. We offer two sizes: (1) a 2 French proximal end for attachment to a 25 gauge swivel, tapering down to a 1.2 French intravascular segment, and (2) a 3 French proximal end for attachment to a 22 gauge swivel, also tapering down to 1.2 French.

Before the FunnelCath™ there were two ways of tapering a catheter. The first involved "pulling down", or stretching tubing using an open flame or hot oil. This method was cumbersome and the catheters were inconsistent. The second method involved bonding a smaller catheter to a larger one. Catheters produced this way were typically vulnerable to breakage and leaks. The FunnelCath™ is the first and only catheter tapered during the extrusion process, making it seamless and consistent catheter to catheter, batch to batch.

These catheters are uncoated polyurethane with a clear, rounded distal tip. Individually packaged and sterilized.

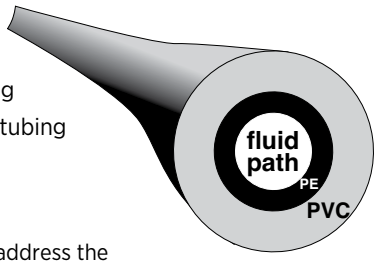
Order #	Product
ST2 72-4440	FunnelCath™ Proximal 2 Fr / Distal 1.2 Fr, 60 cm, No Beads, Sterile
ST2 72-4441	FunnelCath™ Proximal 3 Fr / Distal 1.2 Fr, 60 cm, No Beads, Sterile

FunnelCath is a trademark of Genesis Medical Intervention, Inc.
SoloCath is a trademark of Solomon Scientific.

CO-EX™ External Infusion Tubing

Protects sensitive compounds from:

- Absorption into tubing
- Evaporation through tubing
- Leaching plasticizers
- Kinked tubing



CO-EX™ was developed to address the problem in drug infusion studies whereby compounds can be lost due to absorption into the tubing, evaporation through the tubing, or the tubing is altered due to the leaching of plasticizers from the tubing. In humans, CO-EX™ is used to infuse insulin, nitroglycerine, and Taxol®– compounds which are not compatible with traditional PVC infusion tubing.

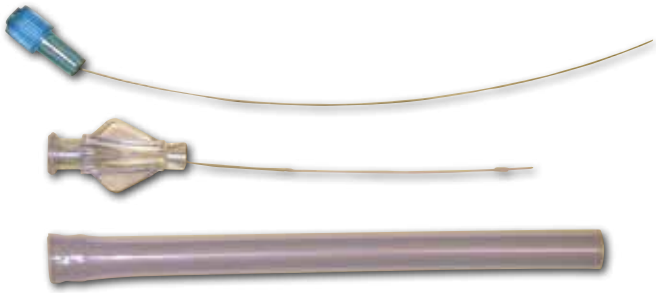
PE traditionally has been used for drug infusion studies. Unfortunately, PE is prone to kinking. CO-EX™ has PE on the ID fluid path for compatibility and PVC on the OD which adds thickness to the tubing to minimize kinking.

CO-EX™ is designed to attach to commonly used 22 and 25 gauge swivels and blunt cannula. It is ideal for attachment between swivels and pumps and between swivels and cannulae. It is not designed for intravascular use. CO-EX™ is available in bulk, non-sterile 100 ft (30.5 m) rolls. Not autoclavable. Can be ETO sterilized.

Specifications			
Compatible Swivel	Inner Diameter	Outer Diameter	Color
Inlet/Outlet 22 ga	0.61 mm (0.024 in)	1.60 mm (0.064 in)	Clear
Inlet/Outlet 25 ga	0.43 mm (0.017 in)	1.30 mm (0.051 in)	Clear

Order #	Product
ST2 72-4426	CO-EX™ External Infusion Tubing, 22 ga
ST2 72-6122	CO-EX™ External Infusion Tubing, 25 ga

Micro-Cannula



Micro-Cannula

- For insertion in very small blood vessels
- Can be used with radio labeled compounds

This Micro-Cannula has been designed for quick and easy insertion into the arteries and veins of small animals such as rats, mice and hamsters. The Cannula tip is contoured for easy insertion and is fitted with an adjustable shoulder or barb for "tie-in" to the animal to prevent accidental removal. The stainless steel trochar aids in vascular penetration and allows for a maximum range of cannula manipulation during insertion.

The Micro-Cannula tubing is made from a perflourocarbon material that is biocompatible. One end of the cannula has a female connection allowing convenient linkage to infusion lines.

This Micro-Cannula has been utilized effectively for the rapid cannulation of hamster carotid and femoral arteries and for the cannulation of mouse carotid arteries. It has also been used as an "indwelling" catheter during experiments spanning an entire day.

Projected uses include the injection of small amounts of expensive radiolabeled compounds or monoclonal antibodies intra-arterially, for more effective distribution to vital organs. It can also be used to inject drugs directly into the circulation or to measure pressure in the femoral artery without compromising blood flow to the brain.

These Micro-Cannulae are supplied individually in a non-sterile package of 1 or 50. With care, these Micro-Cannulae can be reused.

Specifications	
Tip OD	0.4 mm (0.016 in)
Tip ID	0.2 mm (0.008 in)
Material	Polyurethane

Order #	Product
ST2 72-9030	Micro-Cannula , Non-Sterile, pkg. of 1
ST2 72-9031	Micro-Cannula, Non-Sterile, pkg. of 50

Taxol is a registered trademark of Eli Lilly, Inc.
CO-EX is a trademark of Solomon Scientific.

SoloCath™ Catheters

SoloCath™ Catheters

- Most thromboresistant material
- Rounded distal tip is less traumatic to intimal lining of blood vessels

We offer a full range of silicone and polyurethane catheters in sizes for all species. With over 25 years of experience designing and manufacturing laboratory animal catheters, we can help you choose the ideal catheter for your application.

Biomaterials

Silicone rubber continues to be the most popular catheter material; however, polyurethanes have been proven to be more hemocompatible than silicone.

Round Tips

We recommend round tips for intravascular catheters as they are less traumatic to the intimal lining of blood vessels. The sharp edges on square-cut or bevel-cut catheters can irritate the vessel's intimal lining and hasten the host's thrombogenic response.

All SoloCath™ catheters are supplied EtO sterilized.

Specifications					
Silicone	**2 Fr**	**3 Fr**	**3.5 Fr**	**5 Fr**	**7 Fr**
OD (in)	0.025	0.037	0.047	0.065	0.085
OD (mm)	0.64	0.94	1.19	1.65	2.16
ID (in)	0.012	0.020	0.025	0.030	0.040
ID (mm)	0.30	0.51	0.64	0.76	1.02
PU	**2 Fr**	**3 Fr**	**3.5 Fr**	**5 Fr**	**7 Fr**
OD (in)	0.025	0.036	0.047	0.065	0.096
OD (mm)	0.64	0.91	1.19	1.65	2.43
ID (in)	0.013	0.023	0.027	0.040	0.052
ID (mm)	0.33	0.58	0.69	1.02	1.32

Applications (approximate for jugular vein, carotid artery, femoral artery/vein)					
	2 Fr	3 Fr	3.5 Fr	5 Fr	7 Fr
Mouse	✓				
Rat < 100 g	✓				
Rat 100-200 g	✓				
Rat 200-300 g	✓	✓			
Rat 300-350 g		✓	✓		
Cat			✓	✓	
Rabbit			✓	✓	✓
Dog > 8 kg				✓	✓
Mini-pig, Adult				✓	✓
Pig, Adult					✓
Nonhuman Primate < 1 kg			✓	✓	
Nonhuman Primate 1-2 kg				✓	
Nonhuman Primate 3-5 kg				✓	✓
Nonhuman Primate >5 kg				✓	✓

Polyurethane Catheters

Clear, round distal tip, two movable suture bulbs and attachment sleeve. Individually packaged and sterilized. Sold in package of 5.

Order #	Product
ST2 72-6127	Polyurethane, 2 Fr, 60 cm, No Luer
ST2 72-6128	Polyurethane, 3 Fr, 60 cm, No Luer
ST2 72-4410	Polyurethane, 3.5 Fr, 60 cm, No Luer
ST2 72-4411	Polyurethane, 5 Fr, 60 cm, No Luer
ST2 72-4412	Polyurethane, 7 Fr, 60 cm, No Luer

Silicone Catheters

Round distal tip, two movable suture bulbs, attachment sleeve and depth markings (except 2 French). Individually packaged and sterilized. Sold in package of 5.

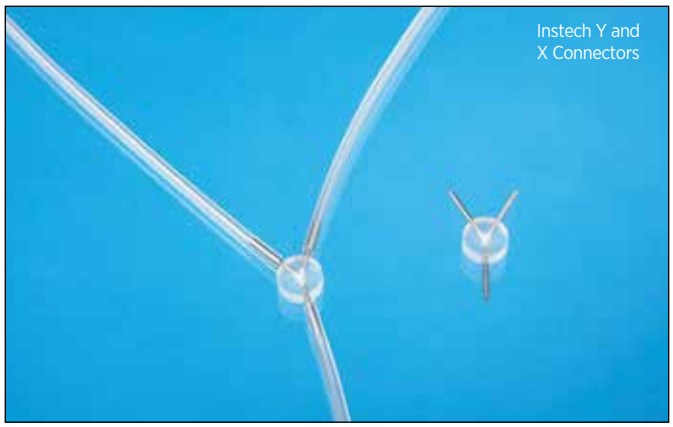
Order #	Product
ST2 72-4413	Silicone, 2 Fr, 60 cm, No Luer, No Depth Markings, Clear
ST2 72-6129	Silicone, 3 Fr, 60 cm, No Luer, Clear
ST2 72-4416	Silicone, 3.5 Fr, 60 cm, Female Luer, Clear with Stripe
ST2 72-4417	Silicone, 5 Fr, 60 cm, Female Luer, Clear with Stripe
ST2 72-4418	Silicone, 7 Fr, 60 cm, Female Luer, Clear with Stripe

SoloCath™ is a trademark of Solomon Scientific.
FunnelCath™ is a trademark of Genesis Medical Interventional, Inc.

Instech Luer Stubs (Blunt Needles)

Use these female Luer stubs to connect infusion tubing or catheters to syringes or other male Luer connectors. They are available non-sterile in quantities of 100. Other sizes may be available on request. Not for human use.

Order #	Product
ST2 72-4467	Luer stub, 14 ga (Olive) x 12 mm (0.5 in), Non-Sterile, pkg. of 100
ST2 72-2845	Luer stub, 15 ga (Amber) x 12 mm (0.5 in), Non-Sterile, pkg. of 100
ST2 72-4468	Luer stub, 16 ga (Violet) x 12 mm (0.5 in), Non-Sterile, pkg. of 100
ST2 72-2846	Luer stub, 17 ga (White) x 12 mm (0.5 in), Non-Sterile, pkg. of 100
ST2 72-6126	Luer stub, 18 ga (Green) x 12 mm (0.5 in), Non-Sterile, pkg. of 100
ST2 72-4469	Luer stub, 20 ga (Pink) x 12 mm (0.5 in), Non-Sterile, pkg. of 100
ST2 72-4470	Luer stub, 21 ga (Purple) x 12 mm (0.5 in), Non-Sterile, pkg. of 100
ST2 72-4439	Luer stub, 22 ga (Blue) x 12 mm (0.5 in), Non-Sterile, pkg. of 100
ST2 72-4471	Luer stub, 22 ga (Blue) x 6 mm 0.25 in, Non-Sterile, pkg. of 100
ST2 72-4472	Luer stub, 23 ga (Orange) x 12 mm (0.5 in), Non-Sterile, pkg. of 100
ST2 72-6125	Luer stub, 25 ga (Red) x 12 mm (0.5 in), Non-Sterile, pkg. of 100
ST2 72-2847	Luer stub, 27 ga (Gray) x 12 mm (0.5 in), Non-Sterile, pkg. of 100



Instech Y and X Connectors (3- or 4-Way Connectors)

These Y and X connectors feature three stainless steel tubes and a hub made of Kel-F® (PCTFE, chemically resistant).

The tubes extend approximately 6 mm from the hub. The dead volume of the 22 gauge version from one channel to the next is less than 3 µl.

Individually packaged and sterilized.

Order #	Product
ST2 75-0066	Y Connector, 22 ga, Sterile, pkg. of 1
ST2 75-0067	Y Connector, 25 ga, Sterile, pkg. of 1
ST2 75-0212	X Connector, 22 ga, Sterile, pkg. of 1
ST2 75-0213	X Connector, 25 ga, Sterile, pkg of 1

Kel-F is a registered trademark of 3M.

Stainless Steel Tubing Connectors

Polyurethane Intravascular Tubing

This tubing is supplied non-sterile. Can be ETO sterilized but not autoclaved.

Order #	Size (ID x OD mm)
ST2 75-0216	PU Tubing, 32 ga (0.127 x 0.254), 10 m Spool
ST2 75-0217	PU Tubing, 1 Fr (0.178 x 0.356), 10 m Spool
ST2 72-6130	PU Tubing, 2 Fr (0.33 x 0.66), 9 Pieces of 3.65 m each, 33 m Total
ST2 72-4429	PU Tubing, 3 Fr (0.61 x 0.97), 9 Pieces of 3.65 m each, 33 m Total
ST2 72-4431	PU Tubing, 3.5 Fr (0.69 x 1.20), 9 Pieces of 3.65 m each, 33 m Total

Catheter Adapter

Catheter Adapter

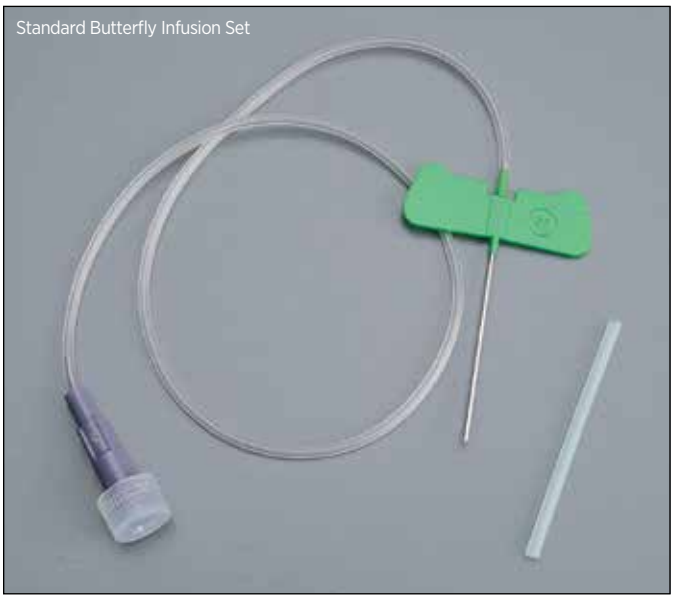
This adapter enables a Luer syringe to be inserted into a wide mouth catheter. The luer lock adaptor is fused into the connector. Fits catheters from 10 French to 28 French (3.3 to 9.3 mm OD). They are individually wrapped and are non-sterile. Supplied in packs of 10.

Order #	Product
ST2 34-0330	Catheter Adapter, pkg. of 10

Instech Stainless Steel Tubing Connectors

These tubing couplers are used to connect catheters to external infusion tubing. The plugs can be used to seal off an externalized catheter before an infusion experiment begins. The couplers and plugs are supplied non-sterile in packages of 100.

Order #	Length	Tubing	OD	ID
Coupler				
ST2 75-0051	8 mm (0.3 in)	27 ga	0.41 mm (0.016 in)	0.21 mm (0.0083 in)
ST2 72-6124	10 mm (0.4 in)	25 ga	0.51 mm (0.020 in)	0.25 mm (0.010 in)
ST2 72-4434	8 mm (0.3 in)	23 ga	0.64 mm (0.025 in)	0.33 mm (0.013 in)
ST2 75-0052	8 mm (0.3 in)	22 ga	0.71 mm (0.028 in)	0.41 mm (0.016 in)
ST2 72-4437	15 mm (0.6 in)	22 ga	0.71 mm (0.028 in)	0.41 mm (0.016 in)
ST2 72-6123	15 mm (0.6 in)	20 ga	0.91 mm (0.036 in)	0.61 mm (0.024 in)
ST2 75-0053	15 mm (0.6 in)	17 ga	1.47 mm (0.058 in)	1.07 mm (0.042 in)
Plug				
ST2 75-0054	12 mm (0.5 in)	25 ga	0.51 mm (0.020 in)	NA
ST2 72-4436	12 mm (0.5 in)	23 ga	0.64 mm (0.025 in)	NA
ST2 72-4438	12 mm (0.5 in)	22 ga	0.71 mm (0.028 in)	NA
ST2 72-6132	12 mm (0.5 in)	20 ga	0.91 mm (0.036 in)	NA


Standard Butterfly Infusion Set

Butterfly Catheter Infusion Sets

- Firm needle control for better positioning
- Small Animal Butterfly sets have the smallest butterfly needle, with outside diameters ranging from 25 to 27 gauge
- Standard Butterfly sets are available with three different needle diameters and have a 30.5 cm (12 in) length of tubing
- Intermittent Butterfly sets are for intermittent procedures. The adapter terminates in a resealing injection site which allows injection or blood sampling

These Butterfly Infusion Sets consist of a stainless steel needle with butterfly wings, a length of tubing and an adapter. This adapter fits any standard IV, blood set or syringe and contains a flange to accept secure lock.

These Butterfly Catheters make veni-puncture easier with automatic alignment of the needle in bevel-up position, eliminating needle roll during insertion. After venipuncture the wings spread flat to provide a firm anchor for taping. Since there is no bulky needle hub to tape down, there is less chance for pressure irritation to develop.

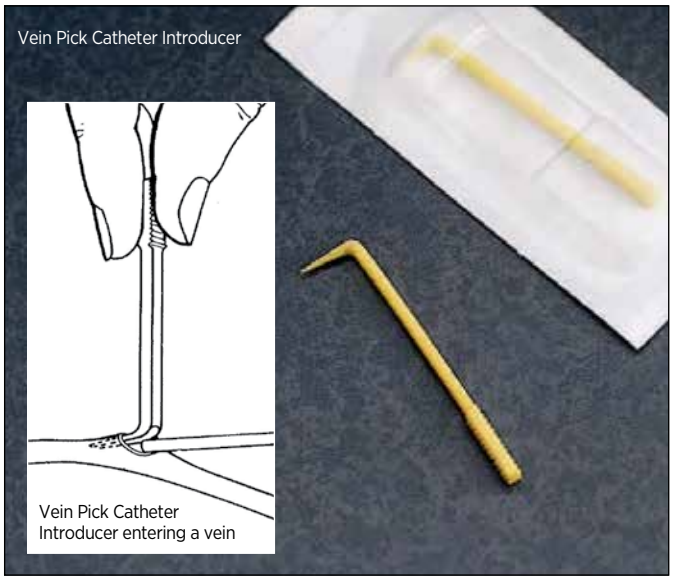
The short needle shaft, ultra-flexible tubing, and firm anchorage minimize the possibility of needle movement within the vein.

The needle has thin walls and is double bevel ground. The open-end needle guard permits priming with the guard in place so the needle can remain covered until the moment of use. A transparent cap covering the adapter keeps it sterile after the package is opened.

Harvard Apparatus offers three different Butterfly Catheter Infusion Sets. For easy recognition the adapter is color-coded according to the gauge size. Supplied in quantities noted.

Butterfly Catheter Infusion Sets

Set Type	Gauge	Needle Length	Tubing Length	Tubing Volume	Tubing Quantity Supplied
Small Animal Butterfly Sets					
ST2 72-5966	25	19.1 mm (¾ in)	30.5 cm (12 in)	0.44 ml	50
ST2 72-5965	25	12.7 mm (½ in)	20.3 cm (8 in)	0.29 ml	100
ST2 72-5967	27	12.7 mm (½ in)	20.3 cm (8 in)	0.29 ml	100
Standard Butterfly Sets					
ST2 72-5960	19	19.1 mm (¾ in)	30.5 cm (12 in)	0.46 ml	50
ST2 72-5963	21	19.1 mm (¾ in)	30.5 cm (12 in)	0.45 ml	50
ST2 72-5964	23	19.1 mm (¾ in)	30.5 cm (12 in)	0.45 ml	50
Intermittent Butterfly Sets					
ST2 72-5962	21	19.1 mm (¾ in)	8.9 cm (3½ in)	0.19 ml	100


Vein Pick Catheter Introducer

Vein Pick Catheter Introducer entering a vein

Vein Pick Catheter Introducer

- Makes catheter introduction simple and easy
- For use with the “cut-down catheter” procedure

This simple Introducer will aid researchers with the introduction of catheters into small vessels. The tapered tip of the introducer is inserted into an incision in a vessel. The catheter then easily slides into the vessel by placing the catheter tip in the grooved underside of the Introducer. The Introducer is then removed allowing the catheter to be advanced to the desired position. Supplied sterile in a package of 50.

Order #	Product
ST2 72-4169	Vein Pick Catheter Introducer, pkg. of 50

Reference

Chernoff HL, Kreidberg MB. Disposable Guide for Introducing Catheters into Small Vessels. *Am Heart J.* 1967 May;73(5):716-717.

Pillow Collar

Pillow Collars

- Combine with an infusion jacket to protect surgical sites and equipment
- To protect the animal in a post surgical or treatment situation
- Collars available for dogs and rabbits

These Pillow Collars are designed for a wide range of applications in both dogs and rabbits. These collars are available in either black or white. The dog collars range in size from small to extra large and are 3 inches thick. The rabbit collars are available in small and medium sizes and are 1.5 inches thick. All collars are fully washable.

White	Black	Size	Weight Range	Interior x Exterior Diameter
Pillow Collars for Dogs				
ST2 72-4004	**ST2 72-4008**	Sm.	5 to 7 kg	8.26 x 20.3 cm (3.25 x 8 in)
ST2 72-4005	**ST2 72-4009**	Med.	8 to 12 kg	10.2 x 20.3 cm (4 x 8 in)
ST2 72-4006	**ST2 72-4010**	Lg.	13 to 18 kg	12.7 x 24.1 cm (5 x 9.5 in)
ST2 72-4007	**ST2 72-4011**	X-Lg.	18 to 25 kg	14 x 32.4 cm (5.5 x 12.75 in)
Pillow Collars for Rabbits				
ST2 72-4012	**ST2 72-4014**	Sm.	up to 3.5 kg	6.4 x 14 cm (2.5 x 5.5 in)
ST2 72-4013	**ST2 72-4015**	Med.	over 3.5 kg	6.4 x 19.1 cm (2.5 x 7.5 in)

See page 243-244 for additional collar options.

Rat, Hamster & Mouse Jackets

- Hook and loop fasteners for simple easy closure
- Sizes available for rats, hamsters, and mice

Manufactured with Lycra®/spandex, these jackets are suitable for a wide range of continuous intravenous infusion applications. The Mouse Jackets have a double layer of Lycra®/spandex for additional durability. The jackets close by means of a hook and loop fastener and supplemental hooks provide additional security and better fit. Standard inserts are included for the rat (1.5 in L x 0.75 in W), the mouse (2.0 in L x 1.0 in W) and the hamster jackets.

Dermal inserts can be purchased separately for both the rat and mouse jackets. These inserts are for studies where test articles are dermally applied. They are a non-occlusive covering for the application site that helps prevent oral ingestion while allowing in-line investigations to be carried out with ease.

Order #	Product
ST2 62-0064	Mouse Jacket, Small, Up to 25 g
ST2 62-0065	Mouse Jacket, Medium, 25 to 30 g
ST2 62-0066	Mouse Jacket, Large, 30+ g
ST2 62-0056	Rat Jacket, X-Small, 100 to 150 g
ST2 62-0057	Rat Jacket, Small, 150 to 250 g
ST2 62-0058	Rat Jacket, Medium, 250 to 350 g
ST2 62-0059	Rat Jacket, Large, 350 to 500 g
ST2 62-0060	Rat Jacket, X-Large, 500+ g
ST2 62-0061	Hamster Jacket, Small, Up to 100 g
ST2 62-0062	Hamster Jacket, Medium, 100 to 175 g
ST2 62-0063	Hamster Jacket, Large, 175+ g
ST2 62-0067	Rat Jacket Insert for Dermal Studies
ST2 62-0068	Mouse Jacket Insert for Dermal Studies

Guinea-Pig Jackets

- Hook and loop fasteners for simple easy closure
- Edges and leg openings bound with cotton jersey for maximum comfort

For use in intravenous infusion and other applications or to accommodate portable equipment, these jackets are made of nylon canvas. The edges and leg openings are bound with cotton jersey for comfort. Hook and loop fasteners permit easy adjustment to fit the animal's size. Five hooks provide added security. Available in three sizes.

Order #	Product
ST2 62-0069	Guinea-Pig Jacket, Small, Up to 350 g
ST2 62-0070	Guinea-Pig Jacket, Medium, 350 to 600 g
ST2 62-0071	Guinea-Pig Jacket, Large, 600+ g

Ferret Jackets

- Three-quarter length design for long lean body shape
- Hook and loop fasteners for simple easy closure

These Jackets are made of double layer nylon canvas, with edges and leg openings bound by cotton jersey for comfort. Hook and loop fasteners adjust garment to the size of the animal, helping to compensate for any change in seasonal body weight. Available in three sizes.

Order #	Product
ST2 62-0072	Ferret Jacket, Small, Up to 750 g
ST2 62-0073	Ferret Jacket, Medium, 750 to 1,000 g
ST2 62-0074	Ferret Jacket, Large, 1,000+ g

Lycra® is a registered trademark of Ivista.

Dog Jacket
with Optional Zipper Pocket

Cat Jacket

Large Animal Jackets

- Double-layered 100% polyester mesh for air circulation
- Double stitched for superior strength
- Leg openings bound with cotton jersey for added comfort
- Back panel made from Lycra®/spandex for better fit and animal comfort

This wide range of jackets offers biomedical researchers the most advanced jackets using the latest manufacturing techniques and materials. They are fastened by two zippers attached to a Lycra®/spandex expansion panel which provides better fit and comfort. Equipment pockets are available separately, and must be ordered with the jacket. See page 120 for complete details.

Dog Jackets

Designed primarily for beagles and hound-type dogs. Hook and loop fasteners at the neck and/or base of the jacket provide added security and adjustment. They are available in three-quarter or full length with rear leg enclosures.

Cat Jackets

These jackets are designed for comfort and fit in three sizes to fit your size feline. All are full length with rear leg enclosures.

Rabbit Jackets

Designed to be used with the New Zealand White rabbit. They are available in three-quarter or full length with rear leg enclosures. Not pictured.

Swine Jackets

Swine Jackets are available by special order. Breeds available include micro, mini, Yucatan, as well as specific farm or market swine from juvenile through market weight. All jackets feature expandable panels made of Lycra®/spandex which permits growth of the abdominal area and ensures both comfort and fit. Please call for additional information.

Custom Jackets

Custom Jackets to fit other species are available on an individual basis. Prices are based on the complexity and quantity of the order. Please call for additional information.

Order #	Product
ST2 62-0088	Dog Jacket Full Length with Rear Leg Enclosures, X-Small, 2.5 to 5 kg
ST2 62-0089	Dog Jacket Full Length with Rear Leg Enclosures, Small, 5 to 7 kg
ST2 62-0090	Dog Jacket Full Length with Rear Leg Enclosures, Medium, 8 to 12 kg
ST2 62-0091	Dog Jacket Full Length with Rear Leg Enclosures, Large, 13 to 18 kg
ST2 62-0092	Dog Jacket Full Length with Rear Leg Enclosures, X-Large, 18 to 25 kg
ST2 62-0093	Dog Jacket ¾ Length, X-Small, 2.5 to 5 kg
ST2 62-0094	Dog Jacket ¾ Length, Small, 5 to 7 kg
ST2 62-0095	Dog Jacket ¾ Length, Medium, 8 to 12 kg
ST2 62-0096	Dog Jacket ¾ Length, Large, 13 to 18 kg
ST2 62-0097	Dog Jacket ¾ Length, X-Large, 18 to 25 kg
ST2 62-0085	Cat Jacket, Full Length, Small, Up to 2.5 kg
ST2 62-0086	Cat Jacket, Full Length, Medium, 2.5 to 4.5 kg
ST2 62-0087	Cat Jacket, Full Length, Large, 4.5+ kg
ST2 62-0075	Rabbit Jacket Full Length with Rear Leg Enclosures, X-Small, Up to 2.7 kg
ST2 62-0076	Rabbit Jacket Full Length with Rear Leg Enclosures, Small, 2.7 to 3.6 kg
ST2 62-0077	Rabbit Jacket Full Length with Rear Leg Enclosures, Medium, 3.6 to 4.5 kg
ST2 62-0078	Rabbit Jacket Full Length with Rear Leg Enclosures, Large, 4.5 to 5.4 kg
ST2 62-0079	Rabbit Jacket Full Length with Rear Leg Enclosures, X-Large, 5.4+ kg
ST2 62-0080	Rabbit Jacket ¾ Length, X-Small, Up to 2.7 kg
ST2 62-0081	Rabbit Jacket ¾ Length, Small, 2.7 to 3.6 kg
ST2 62-0082	Rabbit Jacket ¾ Length, Medium, 3.6 to 4.5 kg
ST2 62-0083	Rabbit Jacket ¾ Length, Large, 4.5 to 5.4 kg
ST2 62-0084	Rabbit Jacket ¾ Length, X-Large, 5.4+ kg
ST2 62-0105	Jacket Pocket, 3 x 7 x 2 in
ST2 62-0106	Jacket Pocket, 7 x 5.5 x 1.5 in, with 11 in Zipper
ST2 62-0107	Jacket Pocket, 6 x 4 x 2 in, with 7 in Zipper
ST2 62-0108	Jacket Pocket, 5.25 x 3.5 x 1.5 in, with 9 in Zipper

Lycra is a registered trademark of Ivista.

Small Rhesus Primate Jacket

Rhesus Primate Jackets

- Seven sizes for Rhesus primates
- Light padding at the neck opening and waist for comfort
- Hook and loop closures ensure proper fit

These jackets are double-layered, 100% polyester mesh which permits air circulation. The expandable back panel has two zippers that secure the jacket. All the zippers can be secured by a clip to help prevent the animal from tampering with the jacket. These jackets are double stitched for durability. Other primate jackets are available by special order. Please call for additional information.

Order #	Product
ST2 62-0098	Rhesus Primate Jacket, X-Small, up to 2 kg
ST2 62-0099	Rhesus Primate Jacket, Small, 2 to 3 kg
ST2 62-0100	Rhesus Primate Jacket, Medium, 3 to 5.5 kg
ST2 62-0101	Rhesus Primate Jacket, Large, 5.5 to 7 kg
ST2 62-0102	Rhesus Primate Jacket, X-Large, 7 to 8 kg
ST2 62-0103	Rhesus Primate Jacket, XX-Large, 8 to 10 kg
ST2 62-0104	Rhesus Primate Jacket, XXX-Large, 10+ kg

Jacket Pockets for Large Animal & Primate Jackets

Four standard pockets are offered as an accessory to our large animal and primate jackets. They must be ordered at the same time as the jacket. Custom size pockets are available by special order.

Order #	Product
ST2 62-0105	Jacket Pocket, 3 x 7 x 2 in
ST2 62-0106	Jacket Pocket, 7 x 5.5 x 1.5 in, with 11 in Zipper
ST2 62-0107	Jacket Pocket, 6 x 4 x 2 in, with 7 in Zipper
ST2 62-0108	Jacket Pocket, 5.25 x 3.5 x 1.5 in, with 9 in Zipper

72-0050 Sling Suit with
72-0048 Frame

Rodent Sling Suit & Frame

- Rugged sling suits withstand repeated laundering for long life
- Large animal frames constructed of stainless steel for superior quality and easy cleaning
- Large animal sling suits available for rabbits, cats and dogs

The Sling Suit is manufactured from two fabrics for durability. The underside of the suit is made from a polyester mesh fabric which allows air to circulate while the animal is being restrained. The upper portion of the suit is made from a nylon-coated canvas with hook and loop fasteners for a custom fit. The Rodent Sling Frame is manufactured with a durable high-impact plastic base and adjustable connectors and supports made of stainless steel for dependability and easy cleaning. The sling suits and frames are sold separately.

Rodent Sling Suits and Frames				
Size	Order #	Rat Weight	Order #	Rabbit Weight
X-Small	**ST2 72-0032**	100 to 150 g	**ST2 72-0038**	up to 2.7 kg
Small	**ST2 72-0033**	150 to 250 g	**ST2 72-0039**	2.7 to 3.6 kg
Medium	**ST2 72-0034**	250 to 350 g	**ST2 72-0040**	3.6 to 4.5 kg
Large	**ST2 72-0035**	350 to 500 g	**ST2 72-0041**	4.5 to 5.4 kg
X-Large	**ST2 72-0036**	500+ g	**ST2 72-0042**	5.4+ kg
Frame	**ST2 72-0031**	–	**ST2 72-0037**	–

Large Animal Sling Suits and Frames

Similar to the Rodent Sling Suits, the Large Animal Sling Suits are manufactured from a polyester mesh fabric sewn in double layers. The jacket portion of the suit is closed with two zippers attached to an expandable spandex insert allowing for an adjustable fit. All jackets are unisex and all edges and leg openings are bound with cotton jersey fabric for added comfort. The suit attaches to the frame with detachable zippered sleeves along the length of the jacket. This enables the animal to be removed from the frame without removing the jacket. The bars of the frame slip through these detachable sleeves. The frames are constructed from square stainless steel tube, which is mounted onto a UPVC base for superior quality and easy cleaning. The sling suits and frames are sold separately.

Large Animal Sling Suits and Frames				
Size	Order #	Cat Weight	Order #	Dog Weight
X-Small	–	–	**ST2 72-0049**	2.5 to 5 kg
Small	**ST2 72-0044**	Up to 2.5 kg	**ST2 72-0050**	5 to 7 kg
Medium	**ST2 72-0045**	2.5 to 4.5 kg	**ST2 72-0051**	8 to 12 kg
Large	**ST2 72-0046**	4.5+ kg	**ST2 72-0052**	13 to 18 kg
X-Large	–	–	**ST2 72-0053**	18 to 25 kg
Frame	**ST2 72-0043**	–	**ST2 72-0048**	–

Restraint Frame

Restraint Sling

Large Animal Restraint Unit

- The ideal way to immobilize large animals
- The rugged hammock provides stable, immobile support with comfort
- Frame is constructed from durable 2.5 cm^2 (1 $inch^2$) stainless steel rods for exceptional quality and long life
- Available for dogs and swine/sheep

This restraint units include two parts: the rugged sling hammock and the heavy duty restraint frame. The sling hammock is made from washable canvas type material that can withstand repeated washing. All leg and waste openings are edged with cotton jersey material for comfort. Nylon webbing is added to key points where extra strength is required. Heavy brass grommets allow the use of neck restraints to minimize the animal's head movement. Two sizes are available for use with dogs and swine/sheep.

The restraint frame is manufactured with durable 1 inch square stainless steel rods which provides exceptional strength while being light weight. Each corner has self-locking, quick release cleats for limb ropes. These cleats help to prevent entanglement or accidental release. A deep "V" opening permits unimpeded access to the head of the animal. The hammock slides onto the two upper horizontal rods. Once attached to the rods, simply load the animal into the hammock and lift the entire unit onto the frame. The frame has a deep opening on one side to minimize lifting of the animal.

Two sizes of restraint frames are available. The large restraint frame for dogs measures, H x W x D, 99 x 61 x 91.4 cm (39 x 24 x 36 in). The extra-large restraint frame for swine/sheep is slightly longer measuring, H x W x D, 99 x 61 x 121.9 cm (39 x 24 x 48 in). Both frames are mounted on four heavy duty caster for mobility. Two have foot-activated brakes.

Order #	Product
ST2 72-0054	Complete Dog Restraint Unit, Includes Large Frame and Dog Sling Hammock*
ST2 72-4033*	Complete Swine/Sheep Restraint Unit: Includes X-Large Frame and Swine/Sheep Sling Hammock*
ST2 72-0055	Dog Sling Hammock Only*
ST2 72-0058	Swine/Sheep Sling Hammock Only*

**Must specify sex of the animal.*

Mouse Metabolic Chamber

Mouse Metabolic Chamber

- Designed to house individual mice
- 200 cm^2 usable floor space
- Accurate and reliable separation of solid and liquid waste
- Special drain at drinking station separates spilled drink from liquid waste
- Autoclavable

This metabolic cage designed specifically for mice features a unique funnel and cone design that effectively separates feces and urine into tubes outside the cage. This cage is designed to allow for immediate, complete and total separation of urine and feces. The usable floor area is 200 cm^2 with an internal height of 130 mm.

The cage has a two-part feeding chamber located outside of the cage itself. The front chamber catches spilled food so there is no possibility of food/waste contamination. The water bottle has a special drain to collect overflow while the animal is drinking and diverts it into a collection tube separate from the waste collection tubes. The feeding drawers slide out easily, allowing for removal without interrupting the study.

This cage is ideal for individual mice.

The 72-9061 Mouse Metabolic Cage comes complete with the following components:

1. The cone
2. The separation cone
3. The urine collection ring
4. Two collection tubes (for feces and urine).
5. The upper chamber with lid
6. The lower chamber with closure
7. Water bottle
8. Tube for water spillage

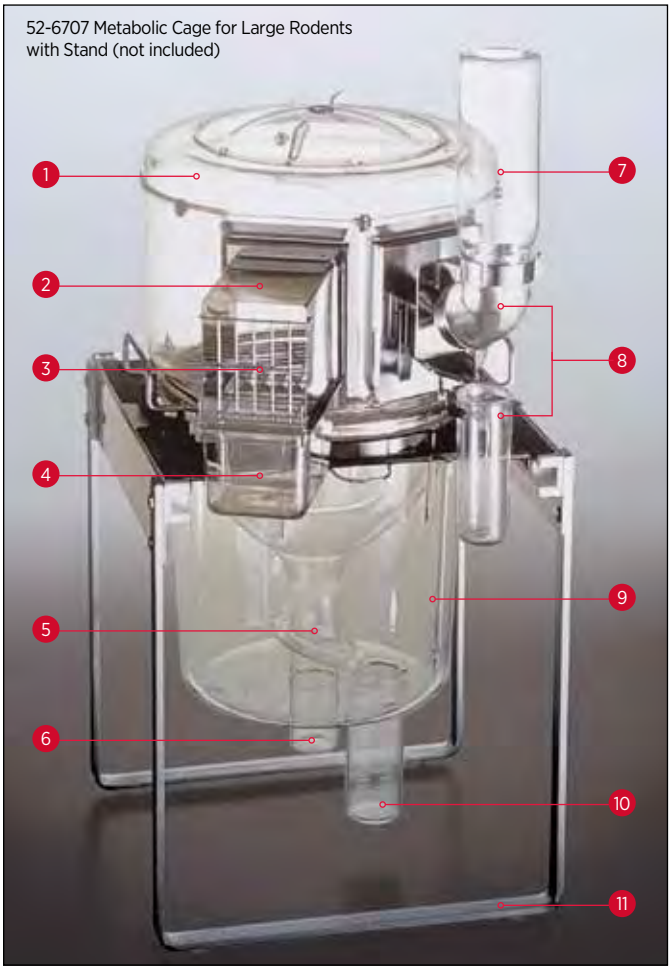
Components #1 to 4 are made of polymethylpentene (PMP) while components #5 to 8 are made of polycarbonate.

The cage can be used without a cage stand, but it is recommended that one be used. Use of a stand facilitates easy access to all of the collection tubes without having to physically lift the cage and disturb the animal. If you choose to use the cage stand or a multiple cage rack, it is necessary to also purchase the 72-9062 support plate. For information on multiple cage racks see page 129.

Order #	Product
ST2 72-9061	Single Mouse Metabolic Cage
ST2 52-6756	Single Mouse Metabolic Cage Stand*
ST2 52-6764	Multiple Cage Rack, Vertical*
ST2 72-9062	Support Plate for Cage and Stand
ST2 72-9059	Urine Collection Tube, 15 ml for Mice
ST2 72-9058	Urine Collection Tube, 70 ml for Rats and Diabetic Mice

** Requires 72-9062 support plate.*

Need assistance *after hours?*
Email a customer support specialist:
support@hbiosci.com
We'll respond to your request asap!



52-6707 Metabolic Cage for Large Rodents with Stand (not included)

Metabolic Cages for Rodents

- Provide uncontaminated, reliable samples for accurate metabolic monitoring
- Unique funnel-and-cone design completely and immediately separates feces and urine into tubes outside the cage
- Available in four sizes to accommodate mice, rats and other rodents of various weights
- Autoclavable

These metabolic cages prevent urine from washing over and entering the feces tube. Each excreta tube can be removed without disturbing the animal. Food and water systems allow the animal's intake to be easily measured and are located outside the cage to prevent spillage from contaminating the excreta. All cage components are autoclavable.

Both the Small Rodent and Large Rodent Metabolic Cages require the 52-6756 Single Cage Stand.

1. Cover:

Large, vented cover keeps animal securely contained. Removable for easy access.

2. Upper Chamber:

Made of transparent polycarbonate. Surface is smooth, gnaw-proof and noiseless. Easily cleaned with warm soapy water.

3. Feeder Chamber:

Located outside cage. Size discourages rodent from nesting or sleeping inside.

4. Feeder Drawer:

Polycarbonate drawer slides out for easy filling without disturbing the animal. Ideal for slurries, liquids or powders. Not designed for food in pellet form. Rear portion helps to catch spilled food to prevent contamination of feces.

5. Collection Funnel and Separating Cone:

Unique design and non-wetting polymethylpentene ensure immediate and complete separation of feces and urine.

6. Feces Collection Tube:

Non-wetting polymethylpentene. Pellets roll down the sides of the funnel and are collected in the tube. Unlocks from outside the cage, with a single twist, without disturbing the animal.

7. Water Bottle:

Polycarbonate, calibrated, with stainless steel cap and sipper tube; 100 ml bottle for Metabolic Cages for Small Rodents; 250 ml bottle for Metabolic Cage for Large Rodents.

8. Water Bottle Support & Spillage Collection Tube:

Designed to prevent water from entering the cage and contaminating the urine. Calibrated spill tube facilitates measurement of the actual water intake.

9. Lower Chamber:

Polycarbonate; can be removed without disturbing the animal; easily cleaned.

10. Urine Collection Tube:

Non-wetting polymethylpentene. Urine flows along the inside of the collection funnel and is directed by the urine ring into the urine tube. Graduated in cubic centimeters. Unlocks from outside the cage without disturbing the animal.

11. Stand:

A stand or rack must be used with each Rodent Metabolic Cage. The 52-6756 stainless steel Single Cage Stand (pictured) supports one cage and provides easy access to all parts. Multiple cage racks are also available, see page 129.

Metabolic Cage for Large Rodents

- For rodents weighing from 300 to 850 grams

This cage is for rats, guinea pigs, and hamsters weighing from 300 to 850 grams. It includes the same fluid collection tubes and rings as the Metabolic Cages for Small Rodents. In addition, the upper chamber, water bottle and support, feeder assembly and urine collection tube are sized for large rodents.

The Large Rodent Metabolic Cage is extremely versatile. It can be adapted to house smaller rodents by adding the 52-6819 Adapter Gate, see below, plus either the 52-6815 Mouse Kit, 52-6817 Feeder Assembly for Rats under 150 g or 52-6818 Feeder Assembly for Rats 150 to 300 g, see below.

This cage is ideal for groups of three or more rodents. Cages and racks must be purchased separately. For information on multiple cage racks see page 129.

Specifications	
Dimensions, H x W x D	52 x 28 x 36 cm (20½ x 11 x 14 in)
Domicile Portion, ID x H	24 x 18 cm (9½ x 7 in)
Area	450 cm^2 (70 in^2)

Order #	Product
ST2 52-6707	Metabolic Cage for Large Rodents
ST2 52-6756	Single Cage Stand

Replacement Feeder Chamber and Drawer

These assemblies include a polycarbonate feeder drawer and stainless steel feeder chamber. All three sizes fit the Metabolic Cages for Small Rodents. For use with the 52-6707 Large Rodent Metabolic Cage, it is necessary to add the 52-6819 Adapter Gate, see below.

Order#	Product
ST2 52-6816	For Mice: 2.4 cm (1 in) Feeder Opening
ST2 52-6817	For Rats: <150 g, 3.5 cm (1⅜ in) Feeder Opening
ST2 52-6818	For Rats: 150 to 300 g, 5 cm (2 in) Feeder Opening
ST2 52-6815	Mouse Kit. Includes 52-6816 Mouse Feeder Assembly, Mouse-Sized Grid and Two Mouse-Sized Urine Tubes. Converts 52-6723 Metabolic Cage for Rats <150 g to a Metabolic Cage for Mice
ST2 52-6819	Replacement Adapter Gate. Allows Smaller Rodents to be Housed in the 52-6707 Metabolic Cage for Large Rodents. The Adapter Gate is a Standard Part of that Cage and is Available Separately here. When the Gate is Placed in the Opening for the Cage's Feeder Chamber or Water Bottle, a Smaller Feeder or Water Bottle Support can be Substituted; Stainless Steel
ST2 52-6820	Replacement Angle Adapter. Replacement Part for the Waterbottle supplied with 52-6707 Metabolic Cage for Large Rodents; Autoclavable; Transparent
ST2 60-1932	Diuresis Cage Adapter Kit for Mice. Converts any Metabolic Cage for Rodents into a Diuresis Cage for Mice. Includes Funnel, Short Lower Chamber and Stainless Steel Screen

Metabolic and Diuresis Cages for Small Rodents

- For rodents less than 300 grams

All of the Rodent Metabolic cages are identical in size but are supplied with different components for different sized rodents.

These metabolic cages include four fluid collection tubes with funnels (two water spillage tubes and two urine collection tubes), two feces collection tubes, two urine rings and a feeder chamber and drawer sized for the animal specified. The cage for mice also has mouse-size support grid and urine collection tubes. These metabolic cages are ideal for groups of three or more rats or mice.

The Diuresis Cage for Mice is identical in size to the Metabolic Cages but has a smaller separating cone and collection funnel to minimize evaporation. It is used to collect by-products from a single mouse.

Cages and Racks must be purchased separately. For information on multiple cage racks see page 129.

Specifications	
Dimensions, H x W x D	48 x 28 x 36 cm (19 x 11 x 14 in)
Domicile Portion, ID x H	20 x 14 cm (8 x 5½ in)
Area	320 cm^2 (50 in^2)

Order #	Product
ST2 52-6731	Metabolic Cage for Mice
ST2 52-6723	Metabolic Cage for Rats <150 g
ST2 52-6715	Metabolic Cage for Rats 150 to 300 g
ST2 60-1931	Diuresis Cage for Mice
ST2 72-9413	Diuresis Cage for Rats up to 300 g
ST2 52-6756	Single Cage Stand, measures 34 x 31 x 31 cm (13¼ x 12½ x 12½ in), (Fits all of the Small Rodent Cages listed above. See Picture on page 123)
ST2 72-9060	Collection Tube Chiller

Mouse Metabolic Chamber

Mouse Metabolic Chamber

- Designed specifically to house individual mice
- Conforms to code for isolator units
- Constructed from high impact resistant acrylic
- The lid holds disposable air filter pad
- All connections are sealed with o-rings
- Urine vessel is removable and disposable

The Metabolic Chamber for Mice is designed to house individual mice for 24 hour periods or longer for the purpose of studying the animal's metabolic function or effects of intervention on the animal's metabolism. These include, but are not limited to, daily food and water intake, effects of different drug therapies, urinary protein excretion and renal function studies. This chamber is specifically designed to accurately separate urine from feces for analysis. The chamber is an isolator unit that conforms to the housing specifications in the Guide for the Care and Use of Laboratory Animals.

The chamber is constructed of gas sterilizable acrylic and all connections are sealed with O-rings. The lid holds a disposable air filter pad. The urine/feces separation cone is stainless steel, as are the floor and filter screens. The urine collection vessel is removable and disposable. The chamber is therefore suitable for use in barrier facilities. These chambers are actively used in research projects which have been reported in presentations at national scientific meetings. The chambers have proven to be particularly useful for research involving transgenic mice which must be housed individually for phenotyping and metabolic studies.

Order #	Product
ST2 72-7060	Metabolic Chamber for Mice
Metabolic Chamber Includes:	
ST2 72-7061	Stainless Steel Funnel Assembly
ST2 72-7062	Stainless Steel Screen Floor
ST2 72-7063	Assembly Cage Lid
ST2 72-7064	Acrylic Food Holder Assembly
ST2 72-7065	Acrylic Water Bottle Assembly
ST2 72-7066	Urine Collection Vessel
Replacement Parts:	
ST2 72-7067	Replacement Water Bottle for Mouse Metabolic Chamber
ST2 72-7068	Replacement O-Ring Set for Mouse Metabolic Chamber

References

Athirakul K, Kim HS, Audoly LP, Smithies O, Coffman TM. Deficiency of COX-1 causes natriuresis and enhanced sensitivity to ACE inhibition. *Kidney Int.* 2001 Dec;60(6):2324-2329.

Flemming ER, et al. Urinary concentrating function in mice lacking EP3 receptors for prostaglandin E2. *Am J Physiol.* 1998;275(6 Pt 2):F955-961.

Oliverio MI, et al. Abnormal water metabolism in mice lacking the type 1A receptor for angiotensin II. *Am J Physiol Renal Physiol.* 2000 Jan;278(1):F75-82.

Oliverio MI, Best CF, Smithies O, Coffman TM. Regulation of sodium balance and blood pressure by the AT(1A) receptor for angiotensin II. *Hypertension.* 2000 Feb;35(2):550-554.

Pace AJ, et al. Failure of spermatogenesis in mouse lines deficient in the Na(+)-K(+)-2Cl(-) cotransporter. *J Clin Invest.* 2000 Feb;105(4):441-450.

Mouse Metabolic Chamber Rack

- Holds up to 15 Metabolic Chambers for mice
- Easy assembly
- All aluminum construction
- Non-skid leveling adjusters
- Durable baked powder epoxy finish
- Zinc plated assembly hardware
- Optional stainless steel hardware
- Optional swivel casters with swivel locks and wheel brakes
- Chilled unit available

The Metabolic Chamber Rack is designed to hold up to 15 individual Metabolic Chambers for Mice (72-7060). The unique design allows easy insertion and removal of the cages by placing each chamber through a large diameter hole in the rack shelf. The base of the chamber is supported by a solid shelf. The solid base support shelf incorporates a safety plate with large diameter openings to also accept the chamber base. This design feature provides stability for the chambers without requiring any complicated holding devices or clamping mechanisms. The chambers are simply inserted or removed from the rack. Assembly is required.

Order #	Product
ST2 72-7071	Metabolic Chamber Rack (without Casters)
ST2 72-7072	Metabolic Chamber Rack (with Swivel Casters)

Vertical Multiple Cage Rack

- Saves space

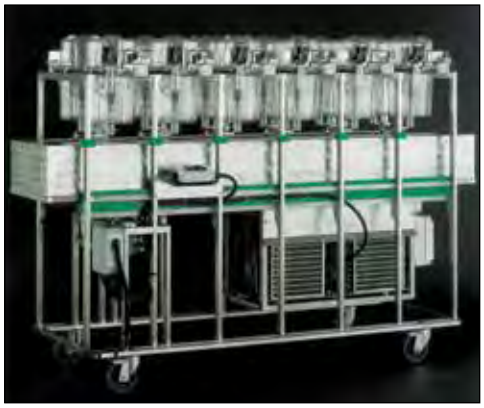
The Vertical Cage Rack holds up to 12 Single Mouse or Small Rodent Metabolic Cages in three rows of 4 cages. This rack takes up a small area in the laboratory by extending upward.

This stainless steel rack is mounted on swivel casters, two of which lock for safety. Metabolic cages are not included with the rack, see pages 125-127.

Full assembly instructions are included with each rack.

Specifications	
Dimensions, H x W x D:	
Vertical Cage Rack	187 x 126 x 50 cm (73.5 x 49.5 x 19.5 in)

Order #	Product
ST2 52-6764	Multiple Cage Rack, Vertical



Refrigerated Collection Rack

- Manual or Automatic/Manual collection
- Maintain samples down to -15°C effectively reducing enzymatic reactions until analyses can be performed

The Refrigerated Collection Racks are horizontal racks which accommodate up to 12 Rodent Metabolic Cages (not included), see pages 125-127. Urine and feces samples are collected into separate 15 ml conical tubes under each cage.

The racks come completely assembled with a compressor which controls the temperature of the samples, twelve funnels and twelve 15 ml Polymethylpentene Conical Tubes for each cage (144 tubes total).

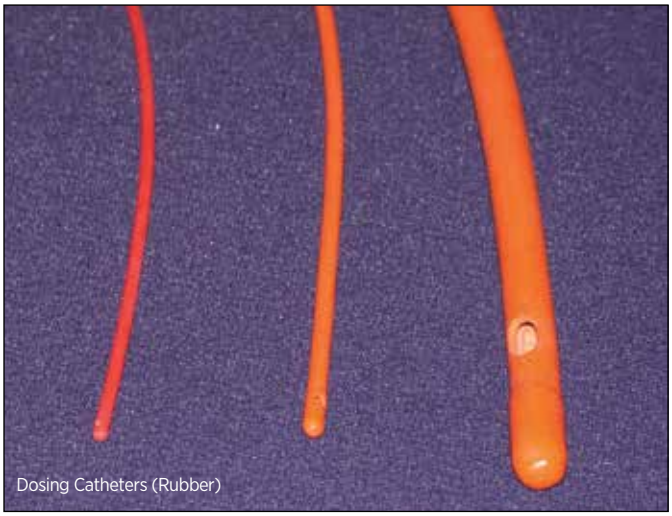
The rack framework is made of AISI 304 stainless steel. The nylon casters are extremely durable and allow easy, quiet handling. One pair of casters locks for safety and stability.

The Refrigerated Rack with Automatic Collection automatically collects and refrigerates or freezes urine samples from metabolic cages at pre-set intervals. It is ideal for automatic, unattended sample collection overnight or on weekends and for fraction collection for repeated urine sampling over a short period of time.

The Refrigerated Rack with Automatic Collection has a geared motor with microprocessor-controlled timing mechanism permitting preprogrammed collection intervals from 10 seconds to 30 hours, with a total of 12 collections. A control/power panel allows automatic or manual operation and has a central power switch and separate. ON/OFF switches for the timing mechanism and compressor. Supplied with complete instruction manual.

Specifications	
Dimensions, H x W x D:	
Rack	135 x 215 x 79 cm (53 x 31 x 85 in)
Rack, actual use, allows for lengthwise movement of center section of Rack	135 x 241 x 79 cm (53 x 31 x 95 in)
Case	160 x 234 x 86 cm (63 x 34 x 92 in)
Case Weight:	
Rack with Automatic/ Manual Collection	340 kg (750 lb)
Rack with Manual Collection	317 kg (700 lb)
Power	115 VAC, 60 Hz

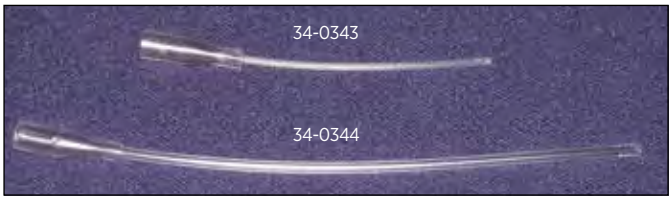
Order #	Product
ST2 52-6814	Refrigerated Collection Rack with Automatic/Manual Collection
ST2 52-6821	Refrigerated Collection Rack with Manual Collection Rack


Dosing Catheters (Rubber)

Dosing Catheters (Rubber)

Molded rubber with side eye outlets near the tip. Other sizes of rubber catheters available on request. For easy connection to a syringe, see the Catheter Adaptors on page 117.

Order #	Product
ST2 34-0334	Dosing Catheter, 8 Fr, 39 cm, 1 Eye, pkg. of 5
ST2 34-0335	Dosing Catheter, 10 Fr, 39 cm, 1 Eye, pkg. of 5
ST2 34-0337	Dosing Catheter, 12 Fr, 38 cm, 1 Eye, pkg. of 5
ST2 34-0336	Dosing Catheter, 14 Fr, 35 cm, 1 Eye, pkg. of 5



Dosing Catheters (PVC)

All catheters are individually packaged, non-sterile. Each catheter has one side eye and a Luer fitting. Minimum order of 10.

Order #	Product
ST2 34-0343	Dosing Catheter, 4.5 Fr, 60 mm, pkg. of 1
ST2 34-0345	Dosing Catheter, 6 Fr, 300 mm, pkg. of 1
ST2 34-0342	Dosing Catheter, 8 Fr, 100 mm, pkg. of 1
ST2 34-0344	Dosing Catheter, 8 Fr, 120 mm, pkg. of 1
ST2 34-0346	Dosing Catheter, 10 Fr, 100 mm, pkg. of 1

Small Dosing Catheters (PVC)

These catheters are for dosing very small animals or neonates. Each has a Luer fitting. The 1.02 mm OD catheter has a side eye. The 0.61 mm OD catheter has an open tube end, which can be cut to the required length. All catheters are individually packaged, non-sterile.

Order #	Product
ST2 34-0347	Dosing Catheter, 1.02 mm OD, 0.58 mm ID, 40 mm length, pkg. of 1
ST2 34-0348	Dosing Catheter, 0.61 mm OD, 0.28 mm ID, 40 mm length, pkg. of 1

Portex is a registered trademark of Smiths Medical ASD, Inc.

Instech Plastic Feeding Tubes

- Flexibility reduces risk of perforation
- Soft rubber tip minimizes trauma
- No labor-intensive cleaning/sterilizing
- Reduced risk of residual compound
- Reduced risk of cross-contamination
- Available in package of 50 or 250

Many researchers have converted to the plastic feeding tube for the increased tubing flexibility which reduces trauma and performation and for the simplicity of a low cost, disposable device. These tubes feature medical grade materials designed to minimize the risk of interactions with test compounds. The tube is constructed of polypropylene which is the same material used in plastic syringes. The soft, bulb-shaped tip is fabricated from elastomer (though virtually none of the tip is in the fluid path). The soft, bulb-shaped tip is designed to prevent inadvertent tube placement in the trachea and to reduce the risk of trauma and performation.

Instead of using the solvents and glues used by other plastic feeding tubes, the manufacturing process insert-molds the Luer and the rubber tip directly to the tube. This method improves the bond strength of these connections, reduces leaks and detachments and assures more consistent quality.

These feeding tubes are available in a variety of diameters and lengths to allow for use in most small laboratory animals. The package of 50 contains 10 sterile pouches of 5. The package of 250 contains 50 sterile pouches of 5.

Specifications*	
Material	Medical-grade polypropylene (Luer and tube), elastomer (tip)
Tube Sizes	22, 20, 18, 15 and 13 ga
Tube OD x ID & color	
22 ga	0.7 mm x 0.4 mm, black
20 ga	0.9 mm x 0.5 mm, yellow
18 ga	1.2 mm x 0.7 mm, pink
15 ga	1.8 mm x 1.2 mm, blue
13 ga	2.4 mm x 1.6 mm, purple

Order #	Order #	Product	Applications									
Pkg. of 50	Pkg. of 250	Plastic Feeding Tubes	Mouse	Rat Pup	Rat (100-150 g)	Rat (150-200 g)	Rat (200-250 g)	Rat (250-300 g)	Rat (>300 g)	Hamster	Guinea Pig	Rabbit
ST2 75-0266	**ST2 72-4453**	22 ga x 25 mm long	✓	✓								
ST2 75-0267	**ST2 72-4448**	20 ga x 30 mm long	✓	✓								
ST2 75-0268	**ST2 72-4449**	20 ga x 38 mm long	✓	✓								
ST2 75-0269	**ST2 72-4442**	18 ga x 30 mm long			✓							
ST2 75-0270	**ST2 72-4443**	18 ga x 38 mm long				✓						
ST2 75-0271	**ST2 72-4444**	18 ga x 50 mm long					✓					
ST2 75-0272	**ST2 72-4445**	18 ga x 75 mm long					✓	✓				
ST2 75-0273	**ST2 72-4446**	15 ga x 78 mm long						✓				
ST2 75-0274	**ST2 72-4447**	15 ga x 100 mm long							✓			
ST2 75-0275	**ST2 72-4450**	13 ga x 90 mm long								✓	✓	✓
ST2 75-0276	**ST2 72-4451**	13 ga x 150 mm long								✓	✓	✓

Tyvek is a registered trademark of: E.I. Du Pont de Nemours and Company Corp.

Instech Stainless Steel Feeding Needles

- For rodent oral gavage
- Sterile
- Autoclavable

While many researchers prefer the convenience of disposable plastic feeding tubes, others may prefer to use the traditional metal types. These feeding needles are comprised of a stainless steel tube and ball and a nick-plated brass hub. They comply with ISO594 specifications. The sizes range from 24 gauge to 16 gauge to cover rodents from mouse pups to large rats.

All needles are sold straight, but can easily be bent for optimized use. They are supplied sterile in a package of 6.

Stainless Steel Feeding Needles, pkg. of 6.					
Order #	Gauge	Bulb Diam. mm (in)	Length mm (in)	Shape	Animal Species
ST2 75-0280	24 ga	1.2 mm	25 (0.98)	Straight	Mouse
ST2 75-0281	22 ga	1.2 mm	25 (0.98)	Straight	Mouse
ST2 75-0282	20 ga	2.0 mm	25 (0.98)	Straight	Mouse, Rat Pup
ST2 75-0283	20 ga	2.0 mm	38 (1.5)	Straight	Mouse, Rat Pup
ST2 75-0284	18 ga	2.0 mm	51 (2.0)	Straight	Rat (200 to 250 g)
ST2 75-0285	18 ga	2.0 mm	76 (2.9)	Straight	Rat (200 to 300 g)
ST2 75-0286	16 ga	2.8 mm	76 (2.9)	Straight	Rat (250 to 300 g)

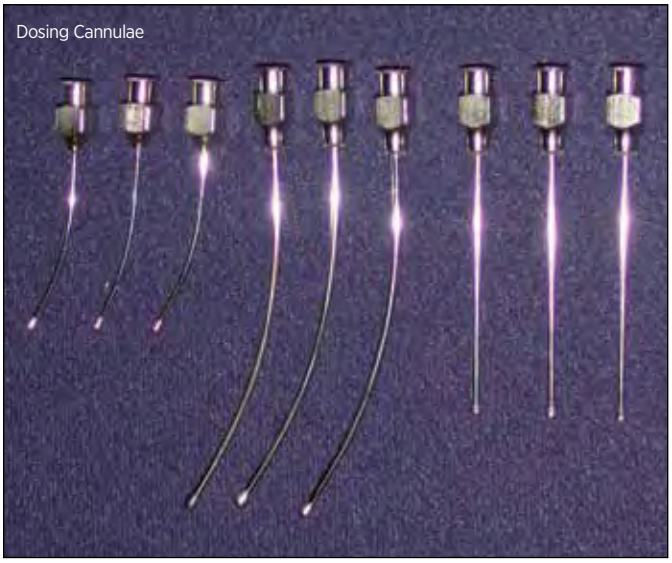
Disposable Animal Feeding Needles

Disposable Animal Feeding Needles

- Sterile, non-toxic, non-pyrogenic

These feeding needles feature plastic luer hubs and silicone tips. Supplied straight, but can be bent to desired shape. Available in three sizes. They are supplied in sterile, Tyvek® peel pouches containing five needles each.

Order #	Gauge	Length
ST2 59-8635	20 ga	38.1 mm (1½ in)
ST2 59-8636	18 ga	50.8 mm (2 in)
ST2 59-8637	15 ga	76.2 mm (3 in)



Dosing Cannulae

Dosing Cannulae

Suitable for small animals, reptiles and birds, these cannulae are made of stainless steel with a Luer fitting and a bulbous tip. They can be sterilized and reused.

Order #	Product
ST2 34-0326	Dosing Cannula, 200 mm x 12 ga, Lawton Curved, pkg. of 2
ST2 34-0327	Dosing Cannula, 125 mm x 14 ga, Lawton Curved, pkg. of 2
ST2 34-0316	Dosing Cannula, 75 mm x 16 ga, Curved, pkg. of 3
ST2 34-0317	Dosing Cannula, 75 mm x 16 ga, Straight, pkg. of 3
ST2 34-0318	Dosing Cannula, 50 mm x 18 ga, Curved, pkg. of 3
ST2 34-0319	Dosing Cannula, 50 mm x 18 ga, Straight, pkg. of 3
ST2 34-0320	Dosing Cannula, 25 mm x 20 ga, Curved, pkg. of 3
ST2 34-0321	Dosing Cannula, 25 mm x 20 ga, Straight, pkg. of 3
ST2 34-0322	Dosing Cannula, 38 mm x 20 ga, Curved, pkg. of 3
ST2 34-0323	Dosing Cannula, 38 mm x 20 ga, Straight, pkg. of 3
ST2 34-0324	Dosing Cannula, 38 mm x 22 ga, Curved, pkg. of 3
ST2 34-0325	Dosing Cannula, 38 mm x 22 ga, Straight, pkg. of 3
ST2 34-1400	Dosing Cannula, 1 of Each Size, pkg. of 12

Non-Coring Needle with Micro-Mate Hub

Non-Coring Needle with Micro-Mate® Hub

These precision made stainless steel needles with deflected (septum) point, and standard female Luer hub are extensively used with micro syringes. They are ideal for applications such as gas and liquid chromatography and nuclear magnetic resonance spectroscopy procedures as well as many others.

These deflected non-coring septum penetration needles are made from stainless steel tubing with a deflected point to minimize or eliminate coring when needles are used to penetrate septa or rubber closures. Micro-Mate® Non-Coring needles were designed with special hubs to provide an easy, secure, leak-proof mating of plastic Luers while minimizing stripping of plastic during repeated use.

These needles are available in a variety of sizes and lengths. They are supplied non-sterile, 12 per package, and can be autoclaved.

Deflected Non-Coring Septum Penetration Needles with Nickel Plated Hub, pkg. of 12										
	Needle Length (in)									
Gauge	½ in	¾ in	1 in	1½ in	2 in	4 in	6 in	8 in	10 in	12 in
26 ga	**ST2 75-0810**	-	-	-	-	-	-	-	-	-
25 ga	-	**ST2 75-0871**	-	-	-	-	-	-	-	-
22 ga	-	-	**ST2 75-0872**	**ST2 75-0874**	**ST2 75-0876**	**ST2 75-0880**	**ST2 75-0885**	-	-	-
21 ga	-	-	-	-	-	**ST2 75-0881**	**ST2 75-0886**	-	-	-
20 ga	-	-	**ST2 75-0873**	-	**ST2 75-0877**	**ST2 75-0882**	**ST2 75-0887**	**ST2 75-0891**	-	**ST2 75-0893**
19 ga	-	-	-	-	**ST2 75-0878**	**ST2 75-0883**	**ST2 75-0888**	-	-	-
18 ga	-	-	-	**ST2 75-0875**	**ST2 75-0879**	**ST2 75-0884**	**ST2 75-0889**	-	**ST2 75-0892**	**ST2 75-0894**
16 ga	-	-	-	-	-	-	**ST2 75-0890**	-	-	**ST2 75-0895**

Deflected Non-Coring Septum Penetration Needles with Micro-Mate Hub, pkg. of 12										
	Needle Length (in)									
Gauge	½ in	¾ in	1 in	1½ in	2 in	4 in	6 in	8 in	10 in	12 in
22 ga	–	–	–	–	–	–	**ST2 72-5208**	–	–	–
20 ga	–	–	**ST2 72-5204**	–	–	–	**ST2 72-5205**	**ST2 72-5206**	–	**ST2 72-5207**
18 ga	–	–	–	–	–	–	**ST2 72-5202**	–	–	**ST2 72-5203**

Micro-Mate is a registered trademark of Cadence, Inc.

REUSABLE HYPODERMIC NEEDLES

These Hypodermic Needles are precision made and designed to ensure strict adherence with U.S. Government specification GG-N-196. Points are machine ground to assure uniform sharpness and minimal discomfort due to tearing of the skin. Precision grinding, micro-bead jet blasting and ultrasonic cleaning assure freedom from burrs and debris. All needle cannulae are fabricated of Type 304 Stainless Steel Tubing. They are regular walled needles.

The needle hubs are nickel plated brass. These needles can be used with TLL syringes and LT or TLL connectors.

Reusable Standard Hypodermic Needles

These regular medical point needles have standard walls and a medical style point. They are for intramuscular, subcutaneous, and other injections and are available in a wide range of gauges and lengths. They have an oversized chrome plated Luerlock hub and are supplied 6 per package. Needles are supplied non-sterile and are autoclavable.

Specifications for Needles

Standard Hypodermic, Fine Gauge, Probe Point (Blunt) and Huber Point

Needle Gauge	OD (in)	OD (mm)	ID (in)	ID (mm)	Volume µl/in	Volume µl/mm
33 ga	0.0083	0.21	0.0040	0.11	0.20	0.01
32 ga	0.0093	0.24	0.0043	0.11	0.20	0.01
31 ga	0.0103	0.26	0.0053	0.13	0.34	0.01
30 ga	0.0123	0.31	0.0063	0.16	0.45	0.02
28 ga	0.0143	0.36	0.0073	0.18	0.63	0.02
27 ga	0.0163	0.41	0.0083	0.21	0.80	0.03
26 ga	0.0183	0.46	0.0103	0.26	1.25	0.05
25 ga	0.0225	0.51	0.0103	0.26	1.25	0.05
24 ga	0.0223	0.57	0.0123	0.31	1.80	0.07
23 ga	0.0253	0.64	0.0133	0.34	2.17	0.09
22 ga	0.0283	0.72	0.0163	0.41	3.35	0.13
21 ga	0.0323	0.82	0.0203	0.51	5.19	0.20
20 ga	0.0358	0.91	0.0238	0.60	6.71	0.26
19 ga	0.0420	1.07	0.0270	0.69	-	-
18 ga	0.0500	1.27	0.0330	0.84	14.08	0.55
17 ga	0.0578	1.47	0.0420	1.07	22.84	0.90
16 ga	0.0650	1.65	0.0470	1.19	28.25	1.11
15 ga	0.0720	1.83	0.0540	1.37	-	-
14 ga	0.0830	2.11	0.0630	1.60	51.07	2.01
13 ga	0.0950	2.41	0.0710	1.80	64.63	2.54
12 ga	0.1090	2.77	0.0850	2.16	93.07	3.66
11 ga	0.1200	3.05	0.0940	2.39	113.00	4.45
10 ga	0.1340	3.40	0.1060	2.69	143.28	5.64

Reusable Standard Hypodermic Needles, pkg. of 6

	Length							
Needle Gauge	9.5 mm (0.375 in)	12.7 mm (0.5 in)	19.0 mm (0.75 in)	25.4 mm (1.0 in)	31.8 mm (1.25 in)	38.2 mm (1.5 in)	50.8 mm (2.0 in)	76.2 mm (3.0 in)
28 ga	**ST2 72-5737**	**ST2 72-5738**	**ST2 72-5739**	**ST2 72-5740**	**ST2 72-5741**	**ST2 72-5742**	–	–
27 ga	**ST2 72-5731**	**ST2 59-8523**	**ST2 59-8525**	**ST2 59-8526**	**ST2 72-5735**	**ST2 72-5736**	–	–
26 ga	**ST2 72-5725**	**ST2 59-8529**	**ST2 59-8531**	**ST2 59-8532**	**ST2 72-5729**	**ST2 59-8533**	–	–
25 ga	**ST2 72-5719**	–	–	**ST2 59-8538**	**ST2 72-5723**	–	–	–
24 ga	**ST2 72-5712**	**ST2 59-8541**	**ST2 59-8543**	**ST2 59-8544**	**ST2 59-8545**	**ST2 59-8546**	**ST2 72-5718**	–
23 ga	**ST2 72-5705**	**ST2 59-8547**	**ST2 59-8549**	**ST2 59-8550**	**ST2 59-8551**	**ST2 59-8552**	**ST2 59-8553**	–
22 ga	**ST2 72-5697**	**ST2 72-5698**	**ST2 72-5699**	**ST2 59-8554**	**ST2 59-8555**	**ST2 59-8556**	**ST2 59-8557**	**ST2 72-5704**
21 ga	**ST2 72-5689**	**ST2 72-5690**	**ST2 72-5691**	**ST2 59-8559**	**ST2 59-8560**	**ST2 59-8561**	**ST2 59-8562**	**ST2 72-5696**
20 ga	**ST2 72-5681**	**ST2 72-5682**	**ST2 72-5683**	**ST2 59-8563**	**ST2 59-8564**	**ST2 59-8565**	**ST2 59-8566**	**ST2 72-5688**
19 ga	–	–	–	–	**ST2 59-8569**	**ST2 59-8570**	**ST2 59-8571**	–
18 ga	**ST2 72-5673**	**ST2 72-5674**	**ST2 72-5675**	**ST2 59-8573**	**ST2 72-5677**	**ST2 59-8574**	**ST2 59-8575**	**ST2 72-5680**
17 ga	**ST2 72-5665**	**ST2 72-5666**	**ST2 72-5667**	**ST2 72-5668**	**ST2 72-5669**	**ST2 72-5670**	**ST2 59-8576**	**ST2 72-5672**
16 ga	**ST2 72-5657**	**ST2 72-5658**	**ST2 72-5659**	**ST2 59-8590**	**ST2 72-5661**	**ST2 72-5662**	**ST2 59-8593**	**ST2 59-8595**
15 ga	–	–	–	**ST2 59-8598**	–	–	**ST2 59-8601**	**ST2 59-8603**
14 ga	**ST2 72-5649**	**ST2 72-5650**	**ST2 72-5651**	**ST2 59-8606**	**ST2 72-5653**	**ST2 72-5654**	**ST2 59-8609**	**ST2 59-8611**
13 ga	–	–	**ST2 72-5643**	**ST2 72-5644**	**ST2 72-5645**	**ST2 72-5646**	**ST2 72-5647**	**ST2 72-5648**
12 ga	–	–	**ST2 72-5637**	**ST2 59-8614**	**ST2 72-5639**	**ST2 72-5640**	**ST2 59-8617**	**ST2 59-8619**
11 ga	–	–	**ST2 72-5631**	**ST2 72-5632**	**ST2 72-5633**	**ST2 72-5634**	**ST2 72-5635**	**ST2 72-5636**
10 ga	–	–	**ST2 72-5625**	**ST2 72-5626**	**ST2 72-5627**	**ST2 72-5628**	**ST2 72-5629**	**ST2 72-5630**

Reusable Fine Gauge Needles with Sharp Hypodermic or Blunt Tip

These fine gauge needles are regular walled with either a sharp hypodermic tip or blunt tip. Their small size allows insertion into very fine vessels or tubing. These needles are available in four gauges of several lengths and are packaged with a special protector. The needles also have an oversized chrome plated Luer lock hub. They are supplied 12 per package. These needles are supplied non-sterile and are autoclavable.

Sharp Hypodermic Tip

Blunt Tip

Reusable Fine Gauge Needles, pkg. of 6						
		Length				
Needle Type	Needle Gauge	9.5 mm (0.375 in)	12.7 mm (0.5 in)	15.9 mm (0.625 in)	19.0 mm (0.75 in)	25.4 mm (1.0 in)
Sharp, Hypodermic	33 ga	**ST2 72-5526**	**ST2 72-5527**	**ST2 72-5528**	**ST2 72-5529**	**ST2 72-5530**
Sharp, Hypodermic	32 ga	**ST2 72-5521**	**ST2 72-5522**	**ST2 72-5523**	**ST2 72-5524**	**ST2 72-5525**
Sharp, Hypodermic	31 ga	**ST2 72-5516**	**ST2 72-5517**	**ST2 72-5518**	**ST2 72-5519**	**ST2 72-5520**
Sharp, Hypodermic	30 ga	**ST2 72-5511**	**ST2 72-5512**	**ST2 72-5513**	**ST2 72-5514**	**ST2 72-5515**
Blunt	33 ga	**ST2 72-5506**	**ST2 72-5507**	**ST2 72-5508**	**ST2 72-5509**	**ST2 72-5510**
Blunt	32 ga	**ST2 72-5501**	**ST2 72-5502**	**ST2 72-5503**	**ST2 72-5504**	**ST2 72-5505**
Blunt	31 ga	**ST2 72-5496**	**ST2 72-5497**	**ST2 72-5498**	**ST2 72-5499**	**ST2 72-5500**
Blunt	30 ga	**ST2 72-5491**	**ST2 72-5492**	**ST2 72-5493**	**ST2 72-5494**	**ST2 72-5495**

Reusable Probe Point Needles

These needles have a flat blunt tip which is ideal for dispensing, aspirating, and obtaining liquid samples. They are also useful for making cannulae when inserted into polyethylene tubing and other tubing. The needles are regular walled with oversized chrome plated Luer lock hubs. They are supplied 12 per package, non-sterile, and can be autoclaved.

Blunt Tip

Reusable Probe Point Needles, pkg. of 6								
	Needle Length							
Needle Gauge	9.5 mm (0.375 in)	12.7 mm (0.5 in)	19.0 mm (0.75 in)	25.4 mm (1.0 in)	31.8 mm (1.25 in)	38.2 mm (1.5 in)	50.8 mm (2.0 in)	76.2 mm (3.0 in)
28 ga	**ST2 72-5483**	**ST2 72-5484**	**ST2 72-5485**	**ST2 72-5486**	**ST2 72-5487**	**ST2 72-5488**	**ST2 72-5489**	**ST2 72-5490**
27 ga	**ST2 72-5475**	**ST2 72-5476**	**ST2 72-5477**	**ST2 72-5478**	**ST2 72-5479**	**ST2 72-5480**	**ST2 72-5481**	**ST2 72-5482**
26 ga	**ST2 72-5467**	**ST2 72-5468**	**ST2 72-5469**	**ST2 72-5470**	**ST2 72-5471**	**ST2 72-5472**	**ST2 72-5473**	**ST2 72-5474**
25 ga	**ST2 72-5459**	**ST2 72-5460**	**ST2 72-5461**	**ST2 72-5462**	**ST2 72-5463**	**ST2 72-5464**	**ST2 72-5465**	**ST2 72-5466**
24 ga	**ST2 72-5451**	**ST2 72-5452**	**ST2 72-5453**	**ST2 72-5454**	**ST2 72-5455**	**ST2 72-5456**	**ST2 72-5457**	**ST2 72-5458**
23 ga	**ST2 72-5443**	**ST2 72-5444**	**ST2 72-5445**	**ST2 72-5446**	**ST2 72-5447**	**ST2 72-5448**	**ST2 72-5449**	**ST2 72-5450**
22 ga	**ST2 72-5435**	**ST2 72-5436**	**ST2 72-5437**	**ST2 72-5438**	**ST2 72-5439**	**ST2 72-5440**	**ST2 72-5441**	**ST2 72-5442**
21 ga	**ST2 72-5427**	**ST2 72-5428**	**ST2 72-5429**	**ST2 72-5430**	**ST2 72-5431**	**ST2 72-5432**	**ST2 72-5433**	**ST2 72-5434**
20 ga	**ST2 72-5419**	**ST2 72-5420**	**ST2 72-5421**	**ST2 72-5422**	**ST2 72-5423**	**ST2 72-5424**	**ST2 72-5425**	**ST2 72-5426**
18 ga	**ST2 72-5411**	**ST2 72-5412**	**ST2 72-5413**	**ST2 72-5414**	**ST2 72-5415**	**ST2 72-5416**	**ST2 72-5417**	**ST2 72-5418**
17 ga	**ST2 72-5403**	**ST2 72-5404**	**ST2 72-5405**	**ST2 72-5406**	**ST2 72-5407**	**ST2 72-5408**	**ST2 72-5409**	**ST2 72-5410**
16 ga	**ST2 72-5395**	**ST2 72-5396**	**ST2 72-5397**	**ST2 72-5398**	**ST2 72-5399**	**ST2 72-5400**	**ST2 72-5401**	**ST2 72-5402**
14 ga	**ST2 72-5387**	**ST2 72-5388**	**ST2 72-5389**	**ST2 72-5390**	**ST2 72-5391**	**ST2 72-5392**	**ST2 72-5393**	**ST2 72-5394**
13 ga	**ST2 72-5379**	**ST2 72-5380**	**ST2 72-5381**	**ST2 72-5382**	**ST2 72-5383**	**ST2 72-5384**	**ST2 72-5385**	**ST2 72-5386**
12 ga	**ST2 72-5371**	**ST2 72-5372**	**ST2 72-5373**	**ST2 72-5374**	**ST2 72-5375**	**ST2 72-5376**	**ST2 72-5377**	**ST2 72-5378**
11 ga	**ST2 72-5363**	**ST2 72-5364**	**ST2 72-5365**	**ST2 72-5366**	**ST2 72-5367**	**ST2 72-5368**	**ST2 72-5369**	**ST2 72-5370**
10 ga	**ST2 72-5355**	**ST2 72-5356**	**ST2 72-5357**	**ST2 72-5358**	**ST2 72-5359**	**ST2 72-5360**	**ST2 72-5361**	**ST2 72-5362**

Reusable Huber Point Needles

Huber point needles have a deflected bevel top making the cutting surface approximately perpendicular to the needle shaft. This design reduces the coring of tissue and septa samples. The needles are regular walled with oversized chrome plated Luer lock hubs. They are supplied 12 per package, non-sterile, and can be autoclaved.

Huber Tip

Reusable Huber Point Needles, pkg. of 6								
	Needle Length							
Needle Gauge	9.5 mm (0.375 in)	12.7 mm (0.5 in)	19.0 mm (0.75 in)	25.4 mm (1.0 in)	31.8 mm (1.25 in)	38.2 mm (1.5 in)	50.8 mm (2.0 in)	76.2 mm (3.0 in)
28 ga	**ST2 72-5619**	**ST2 72-5620**	**ST2 72-5621**	**ST2 72-5622**	**ST2 72-5623**	**ST2 72-5624**	–	–
27 ga	**ST2 72-5613**	**ST2 72-5614**	**ST2 72-5615**	**ST2 72-5616**	**ST2 72-5617**	**ST2 72-5618**	–	–
26 ga	**ST2 72-5607**	**ST2 72-5608**	**ST2 72-5609**	**ST2 72-5610**	**ST2 72-5611**	**ST2 72-5612**	–	–
25 ga	**ST2 72-5601**	**ST2 72-5602**	**ST2 72-5603**	**ST2 72-5604**	**ST2 72-5605**	**ST2 72-5606**	–	–
24 ga	**ST2 72-5594**	**ST2 72-5595**	**ST2 72-5596**	**ST2 72-5597**	**ST2 72-5598**	**ST2 72-5599**	**ST2 72-5600**	–
23 ga	**ST2 72-5587**	**ST2 72-5588**	**ST2 72-5589**	**ST2 72-5590**	**ST2 72-5591**	**ST2 72-5592**	**ST2 72-5593**	–
22 ga	**ST2 72-5579**	**ST2 72-5580**	**ST2 72-5581**	**ST2 72-5582**	**ST2 72-5583**	**ST2 72-5584**	**ST2 72-5585**	**ST2 72-5586**
21 ga	**ST2 72-5571**	**ST2 72-5572**	**ST2 72-5573**	**ST2 72-5574**	**ST2 72-5575**	**ST2 72-5576**	**ST2 72-5577**	**ST2 72-5578**
20 ga	**ST2 72-5563**	**ST2 72-5564**	**ST2 72-5565**	**ST2 72-5566**	**ST2 72-5567**	**ST2 72-5568**	**ST2 72-5569**	**ST2 72-5570**
18 ga	**ST2 72-5555**	**ST2 72-5556**	**ST2 72-5557**	**ST2 72-5558**	**ST2 72-5559**	**ST2 72-5560**	**ST2 72-5561**	**ST2 72-5562**
17 ga	**ST2 72-5547**	**ST2 72-5548**	**ST2 72-5549**	**ST2 72-5550**	**ST2 72-5551**	**ST2 72-5552**	**ST2 72-5553**	**ST2 72-5554**
16 ga	**ST2 72-5539**	**ST2 72-5540**	**ST2 72-5541**	**ST2 72-5542**	**ST2 72-5543**	**ST2 72-5544**	**ST2 72-5545**	**ST2 72-5546**
14 ga	–	**ST2 72-5532**	**ST2 72-5533**	**ST2 72-5534**	**ST2 72-5535**	**ST2 72-5536**	**ST2 72-5537**	**ST2 72-5538**

Blunt Needles with Aluminum Hub

Blunt Needles with Aluminum Hub

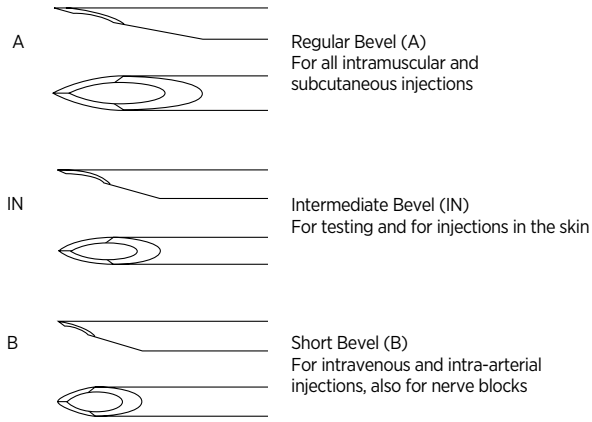
- Stainless steel cannula
- Aluminum Luer lock hub
- Color-coded needle sheath with charcoal grey cap
- Autoclavable in rigid pack for use in OR/procedure packs
- Sterile

These cannulae have a blunt tip and are available in 9 sizes. Select from a box of 25 or a case of 100.

Blunt Needles with Aluminum Hub				
	Length	Bevel	Box 25	Case 100
Gauge	(in)	Type	Order #	Order #
15 ga	1.5	Blunt	**ST2 72-2341**	**ST2 72-2350**
16 ga	1.5	Blunt	**ST2 72-2342**	**ST2 72-2351**
17 ga	1.5	Blunt	**ST2 72-2343**	**ST2 72-2352**
18 ga	1.0	Blunt	**ST2 72-2344**	**ST2 72-2353**
19 ga	1.5	Blunt	**ST2 72-2345**	**ST2 72-2354**
20 ga	1.5	Blunt	**ST2 72-2346**	**ST2 72-2355**
21 ga	1.0	Blunt	**ST2 72-2347**	**ST2 72-2356**
22 ga	1.5	Blunt	**ST2 72-2348**	**ST2 72-2357**
23 ga	1.0	Blunt	**ST2 72-2349**	**ST2 72-2358**

Sterile Single Use Needles

A wide range of sizes and styles of Monoject™ Needles are available. Each needle is packaged in a rigid pack with a tamper-evident sword. All hypodermic needles feature an ultrasharp tri-beveled anti-coring stainless steel needle and are available in one of three bevels: regular hypodermic bevel (A), intermediate bevel (IN) and short bevel (B). See page 136 for available needle bevels and sizes.



Monoject is a registered trademark of Covidien.

Hypodermic Needles with Aluminum Hub

Hypodermic Needles with Aluminum Hub

- Ultra-sharp, tri-beveled, anti-coring, stainless steel needle
- Precision machined Luer lock hub
- Autoclavable in rigid pack for use in OR/ procedure packs
- Sterile

These needles are available with either a regular (A), intermediate (IN) or short (B) bevel tip type in various sizes. Regular (A) bevel is for intramuscular and subcutaneous injections. Intermediate (IN) bevel is for intradermal injections. Short (B) bevel is for intravenous or intrarterial applications and nerve blocks. A selection of thin-walled needles is also available. Supplied sterile in a box of 100 or a case of 1,000.

Hypodermic Needles with Aluminum Hub				
Gauge	Length (in)	Bevel Type	Box 100 Order #	Case 1000 Order #
14 ga	1.0	IN	**ST2 72-2277**	**ST2 72-2309**
14 ga	1.5	IN	**ST2 72-2278**	**ST2 72-2310**
14 ga	2.0	IN	**ST2 72-2279**	**ST2 72-2311**
15 ga	1.5	B	**ST2 72-2280**	**ST2 72-2312**
16 ga	0.625	B	**ST2 72-2281**	**ST2 72-2313**
16 ga	1.0	A	**ST2 72-2282**	**ST2 72-2314**
16 ga	1.5	A	**ST2 72-2283**	**ST2 72-2315**
16 ga	1.5	B	**ST2 72-2284**	**ST2 72-2316**
18 ga	1.0	A	**ST2 72-2285**	**ST2 72-2317**
18 ga	1.0	B	**ST2 72-2286**	**ST2 72-2318**
18 ga	1.5	A	**ST2 72-2287**	**ST2 72-2319**
18 ga	1.5	B	**ST2 72-2288**	**ST2 72-2320**
20 ga	1.0	A	**ST2 72-2289**	**ST2 72-2321**
20 ga	1.0	B	**ST2 72-2290**	**ST2 72-2322**
20 ga	1.5	A	**ST2 72-2291**	**ST2 72-2323**
20 ga	1.5	B	**ST2 72-2292**	**ST2 72-2324**
20 ga	3.0	A	**ST2 72-2293**	–
21 ga	1.0	A	–	–
21 ga	1.5	A	–	–
21 ga	2.0	A	–	–
22 ga	1.0	A	**ST2 72-2297**	**ST2 72-2329**
22 ga	1.5	A	**ST2 72-2298**	**ST2 72-2330**
23 ga	1.0	A	**ST2 72-2299**	**ST2 72-2331**
25 ga	0.625	A	**ST2 72-2300**	**ST2 72-2332**
25 ga	1.25	A	**ST2 72-2301**	**ST2 72-2333**
25 ga	2.0	A	**ST2 72-2302**	**ST2 72-2334**
27 ga	0.5	IN	**ST2 72-2303**	**ST2 72-2335**
27 ga	1.25	A	**ST2 72-2304**	**ST2 72-2336**

Hypodermic Needles with Polypropylene Hub

Hypodermic Needles with Polypropylene Hub

- Ultra-sharp, tri-beveled, anti-coring, stainless steel needle
- Translucent, color coded Luer lock hub shows blood "flashback"
- Epoxy attachment of needle to hub assures compatibility with specialized drugs
- Color-coded cap on rigid pack with clear needle sheath
- Autoclavable in rigid pack for use in OR/procedure packs
- Sterile

These needles are available with two different tip types and various sizes. Regular (A) bevel is for intramuscular and subcutaneous injections. Short (B) bevel is for intravenous or intrarterial applications and nerve blocks. A selection of thin-walled (TW) needles is also available. Select from a box of 100 or a case of 1,000.

Hypodermic Needles with Polypropylene Hub				
Gauge	Length (in)	Bevel Type	Box 100 Order #	Case 1000 Order #
18 ga	1.0	A	**ST2 72-2231**	**ST2 72-2254**
18 ga	1.0	B	**ST2 72-2232**	**ST2 72-2255**
18 ga	1.5	B	**ST2 72-2233**	**ST2 72-2256**
19 TW*	1.0	B	**ST2 72-2234**	**ST2 72-2257**
19 TW*	1.5	B	**ST2 72-2235**	**ST2 72-2258**
19 TW*	1.0	A	**ST2 72-2236**	**ST2 72-2259**
20 ga	1.0	A	**ST2 72-2237**	**ST2 72-2260**
20 ga	1.5	A	**ST2 72-2238**	**ST2 72-2261**
20 ga	1.0	B	**ST2 72-2239**	**ST2 72-2262**
20 ga	1.5	B	**ST2 72-2240**	**ST2 72-2263**
21 ga	1.0	A	**ST2 72-2241**	**ST2 72-2264**
21 ga	1.5	A	**ST2 72-2242**	**ST2 72-2265**
21 ga	1.5	B	**ST2 72-2243**	**ST2 72-2266**
22 ga	1.0	A	**ST2 72-2244**	**ST2 72-2267**
22 ga	1.5	A	**ST2 72-2245**	**ST2 72-2268**
22 ga	1.5	B	**ST2 72-2246**	**ST2 72-2269**
23 ga	0.75	A	**ST2 72-2247**	**ST2 72-2270**
23 ga	1.0	A	**ST2 72-2248**	**ST2 72-2271**
25 ga	0.625	A	**ST2 72-2249**	**ST2 72-2272**
25 ga	1.0	A	**ST2 72-2250**	**ST2 72-2273**
25 ga	1.5	A	**ST2 72-2251**	**ST2 72-2274**
26 ga	0.5	B	**ST2 72-2252**	**ST2 72-2275**
30 ga	0.75	A	**ST2 72-2253**	**ST2 72-2276**

** Package of 300 Needles*

35 ga Ultra Fine Injection Needle

Ultra Fine Injection Needles

These Ultra Fine Injection Needles substantially reduce pain and trauma. The beveled tip needles can be used for direct injection. The blunt needles can be use for connecting micro-catheters for tubing. Available sterile or non-sterile in packages of 20 needles.

Order #	Gauge	Type	Dia. (mm)	Length (mm)	Hub &Cap	Packaged
Sterilized						
ST2 72-0079	34	Beveled	0.20	7	Yes	Individually Packed, pkg. of 20
ST2 72-0080	35	Beveled	0.15	5	Yes	Individually Packed, pkg. of 20
Non-Sterilized						
ST2 72-0081	34	Beveled	0.20	7	Yes	Pkg. of 20
ST2 72-0082	34	Blunt	0.20	7	Yes	Pkg. of 20
ST2 72-0083	34	Blunt	0.20	15	No	Pkg. of 20
ST2 72-0084	35	Beveled	0.15	5	Yes	Pkg. of 20
ST2 72-0085	35	Blunt	0.15	10	Yes	Pkg. of 20
ST2 72-0086	35	Blunt	0.15	10	No	Pkg. of 20

Instech Septum Needles

The special non-coring "pencil point" tip on these needles is designed to pierce the septum of Instech's Vascular Access Harness™, Vascular Access Button™, Miniature Tubing Injection Ports and the PortHold™ (75-0278 only). The female Luer attaches directly to a syringe. Use these needles to inject lock solution flush, bolus or withdraw blood samples.

Order #	Product
ST2 72-4071	VAH™ septum needles, 22 ga x 0.4 in, Sterile, Individually Packaged, pkg. of 12
ST2 72-4473	Pencil Point Needle with Luer, 22 ga x 0.4 in, 50 per Sterile Pack, pkg. of 50
ST2 75-0278	VAH™ Septum Needles, 24 ga x 0.64 in, Sterile, Individually Packaged, pkg. of 12

Vascular Access Harness, VAH and Vascular Access Button are trademarks of Instech Laboratories, Inc.
SOFTEE and PortHold are trademarks of Solomon Scientific.

Micro Injection Needles

Micro Injection Needles

- Reduces clotting & trauma
- Micro size is ideal for working with smaller species
- Provides greater volume control
- Stainless steel needle with 12° bevel point at tip
- Autoclavable

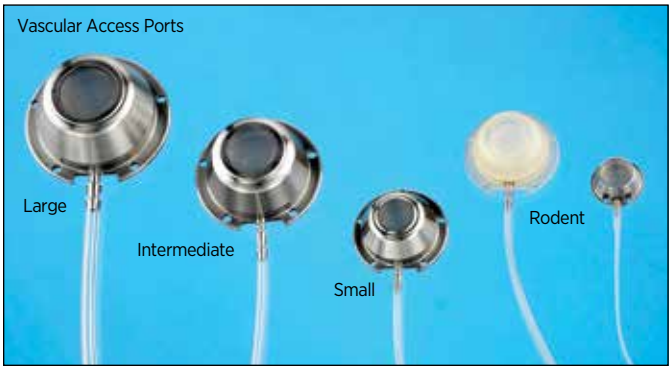
These Micro Injection Needles are ideal for portal vein, thymus, and bile duct injections. They can also be used for blood/fluid extractions. Their small size helps to reduce blood clotting and trauma at the injection site. They should be used with the 62-0044 1 cc Plastic Syringe listed below. Needles and syringe are supplied individually.

Order #	Product
ST2 62-0042	Micro Injection Needle, 32 ga, Straight, 0.009 x 0.003 in (OD x ID), 10 mm Long, pkg. of 1
ST2 62-0043	Micro Injection Needle, 32 ga, 45° Angled, 0.009 x 0.003 in (OD x ID), 10 mm Long, pkg. of 1
ST2 62-0044	Plastic Syringe, 1 cc, For Use with ST2 62-0042 & ST2 62-0043 Micro Injection Needles, pkg. of 1

Instech Miniature Tubing Injection Port

Use this small injection port to terminate infusion tubing or catheters. Inject, flush or sample by piercing the septum in the port with a syringe fitted with a 72-4071 needle or the 72-4080 male connector with needlestick protection. The septum is good for over 200 sticks. The port measures 6 mm in diameter by 6 mm long and weighs 360 mg. Dead volume is only 8 µl. The 22 gauge tubing inlet is 4 mm long and makes a reliable friction fit with three French PU tubing catheters or three French PU or PE50 tubing.

Order #	Product
ST2 72-4070	Miniature Tubing Injection Port, 22 ga x 4 mm, Sterile, pkg. of 12
ST2 72-4071	VAH™ Septum Needles, 22 ga x 0.5 in, Sterile, Individually Packaged
ST2 72-4080	Male VAH™ Connector with Luer Stub, 3 cm PU Tubing, Sterile



Soloport™ Vascular Access Ports

- Easy to Use
- MRI compatible

The vascular access port has evolved from being an intravascular access port into a multi-purpose access port for use in intestinal, biliary, intraspinal, cranial, ventricular, and other applications. It is available in a variety of configurations for most species and catheter sizes. The catheter may be pre-attached during manufacture or attached intraoperatively by the surgeon. These ports are fabricated from the highest quality biomaterials.

Ports are entirely implanted catheter devices which do not exit through the animal's skin. There is little concern about the animal disturbing the port thereby obviating the need for a jacket or other protective apparatus. Because there is no chronic exit site wound, infection risks associated with ports are considerably lower than with external catheters. The use of ports has provided many new research opportunities, and it represents a refined technique which has reduced animal use and minimized stress.

The port was originally intended for intermittent bolus infusions and periodic sampling and access, but it is now widely used in protracted and continuous infusions. The port is also used in a tethered model for longer boluses (one hour, for example) or for intermittent periods of blood pressure monitoring.

Catheter Biomaterials

The field of biomaterials for intravascular catheters has moved relatively slowly over the past three decades. Silicone rubber continues to be the most common material; however, polyurethanes have proven to be more hemocompatible than silicone. This catalog offers a full range of silicone and polyurethane catheters in sizes for all species.

Round Tips

Another vital catheter feature is the round distal tip. Both data and intuition confirm the benefits. The round tip is less traumatic to the intimal lining of blood vessels. Square cut or bevel cut catheters have sharp edges which irritate the blood vessel's intimal lining thus hastening the host's thrombogenic response. Round tips are available on polyurethane catheters.

Applications				
Vascular Access Port Size				
Species	Rodent	Small	Intermediate	Large
Mouse	✓			
Rat	✓			
Ferret		✓		
NHP (< 4 kg)		✓		
NHP (> 4 kg)			✓	
Rabbit			✓	
Dog (< 14 kg)			✓	
Dog (> 14 kg)			✓	✓
Pig (ear)			✓	
Pig (scapulae)				✓

Rodent Vascular Access Ports

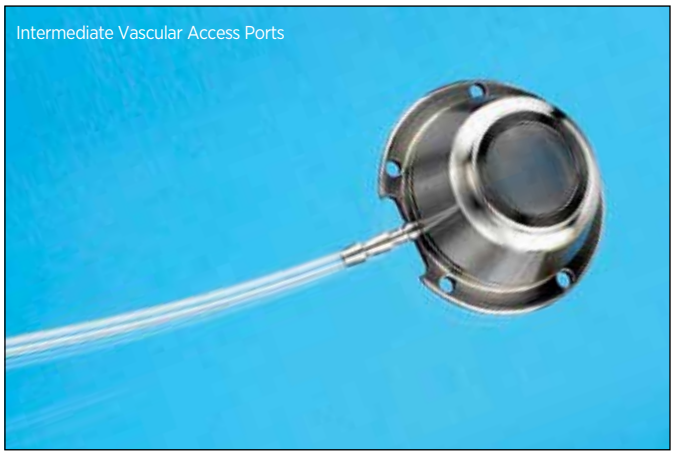
- For use with rodents and other small species
- 1 French Catheter with small stainless steel port for mice

Specifications	
Port Model	Polysulfone or stainless steel (72-4452 only)
Port Volume	0.13 ml
Dimensions:	
Height	0.7 cm (0.3 in)
Top Diameter	1.0 cm (0.4 in)
Base Diameter	1.7 cm (0.7 in)
Weight (port body)	2.6 g
Punctures with 22 Ga Huber Point Needle	1000
Catheter Length	30 cm (12 in), with 2 retention beads
Sterilization	Sterilization EtO; PU is sterilizable by EtO only

Rodent Vascular Access Ports, pkg. of 1		
Size, Fr	Silastic® Catheters	Uncoated PU
Pre-Attached Catheters		
1 Fr	–	**ST2 72-4452****
2 Fr	**ST2 72-4375***	–
3 Fr	**ST2 72-4376**	**ST2 72-4386**
3.5 Fr	**ST2 72-4377**	**ST2 72-4387**
5 Fr	**ST2 72-4378**	**ST2 72-4388**
7 Fr	–	**ST2 72-4389**
Detachable Catheters		
3 Fr	**ST2 72-4390**	**ST2 72-4398**
3.5 Fr	**ST2 72-4391**	**ST2 72-4399**
5 Fr	**ST2 72-4392**	**ST2 72-4400**
7 Fr	**ST2 72-4393**	**ST2 72-4401**

**Catheter has a bevel tip.*
***This model is specially made for mice from stainless steel. It is not MRI compatible.*

Soloport is a trademark of Solomon Scientific.
Silastic is a registered trademark of Dow Corning Corporation.



Small Vascular Access Ports

- For use with small primates, rodents and other small species

Specifications	
Port Model	Titanium
Port Volume	0.13 ml
Dimensions	
Height	0.7 cm (0.3 in)
Top Diameter	1.0 cm (0.4 in)
Base Diameter	1.7 cm (0.7 in)
Weight (port body)	2.9 g
Punctures with 22 Ga Huber Point Needle	1,000
Catheter Length	60 cm (24 in), with 2 retention beads
Sterilization	Sterilization EtO; PU is sterilizable by EtO only

Small Vascular Access Ports, pkg. of 1		
Size, Fr	Silastic® Catheters	Uncoated PU
Pre-Attached Catheters		
2 Fr	**ST2 72-4348**	-
3 Fr	**ST2 72-4349**	**ST2 72-4359**
3.5 Fr	**ST2 72-4350**	**ST2 72-4360**
5 Fr	**ST2 72-4351**	**ST2 72-4361**
7 Fr	**ST2 72-4352**	**ST2 72-4362**
Detachable Catheters		
3 Fr	**ST2 72-4363**	**ST2 72-4371**
3.5 Fr	**ST2 72-4364**	**ST2 72-4372**
5 Fr	**ST2 72-4365**	**ST2 72-4373**
7 Fr	**ST2 72-4366**	**ST2 72-4374**

Intermediate Vascular Access Ports

- For use with small primates and small animals including large rodents and rabbits

Specifications	
Port Model	Titanium
Port Volume	0.38 ml
Dimensions	
Height	1.0 cm (0.4 in)
Top Diameter	1.2 cm (0.5 in)
Base Diameter	2.3 cm (0.9 in)
Weight (port body)	6.7 g
Punctures with 22 Ga Huber Point Needle	2,000
Catheter Length	60 cm (24 in), with 2 retention beads
Sterilization	Sterilization EtO; PU is sterilizable by EtO only

Intermediate Vascular Access Ports, pkg. of 1		
Size, Fr	Silastic® Catheters	Uncoated PU
Pre-Attached Catheters		
3 Fr	**ST2 72-4324**	**ST2 72-4332**
3.5 Fr	**ST2 72-4325**	**ST2 72-4333**
5 Fr	**ST2 72-4326**	**ST2 72-4334**
7 Fr	**ST2 72-4327**	**ST2 72-4335**
Detachable Catheters		
3 Fr	**ST2 72-4336**	**ST2 72-4344**
3.5 Fr	**ST2 72-4337**	**ST2 72-4345**
5 Fr	**ST2 72-4338**	**ST2 72-4346**
7 Fr	**ST2 72-4339**	**ST2 72-4347**

Silastic is a registered trademark of Dow Corning Corporation.
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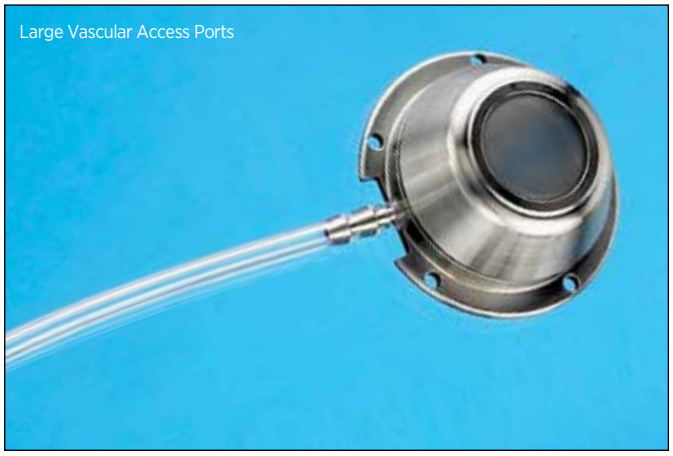

Large Vascular Access Ports

- For use with dogs, pigs, large primates and other large animals

Specifications	
Port Model	Titanium
Port Volume	0.65 ml
Dimensions	
Height	1.2 cm (0.5 in)
Top Diameter	1.5 cm (0.6 in)
Base Diameter	2.7 cm (1.1 in)
Weight (port body)	10.4 g
Punctures with 22 ga Huber Point Needle	2,000
Catheter Length	60 cm (24 in), with 2 retention beads
Sterilization	Sterilization EtO; PU is sterilizable by EtO only

Large Vascular Access Ports, pkg. of 1		
Size, Fr	Silastic® Catheters	Uncoated PU
Pre-Attached Catheters		
3 Fr	**ST2 72-4300**	**ST2 72-4308**
3.5 Fr	**ST2 72-4301**	**ST2 72-4309**
5 Fr	**ST2 72-4302**	**ST2 72-4310**
7 Fr	**ST2 72-4303**	**ST2 72-4311**
Detachable Catheters		
3 Fr	**ST2 72-4312**	**ST2 72-4320**
3.5 Fr	**ST2 72-4313**	**ST2 72-4321**
5 Fr	**ST2 72-4314**	**ST2 72-4322**
7 Fr	**ST2 72-4315**	**ST2 72-4323**

NOTE: For Septum Needle for use with Vascular Access ports, see page 139.

PortHold™ Subcutaneous Access Ports

The PortHold™ was developed to reduce the risk of inadvertent needle dislodgement from implanted ports. The port features a titanium plate under the septum with holes that are slightly larger than the 22 gauge needle used to access it. The plate grips the needle and prevents it from becoming dislodged due to the normal pulls and tugs experienced during an animal study. Use only pencil-point needles to access these ports.

Specifications	
Body & Plate Material	Titanium
Dead Volume	0.38 ml
Height	10.0 mm (0.395 in)
Weight	6.9 g
Catheter Length	3.5 to 7 Fr
Sterilization	Sterilization EtO; PU is sterilizable by EtO only

PortHold™ Subcutaneous Access Ports, pkg. of 1		
Size, Fr	Silastic® Catheters	Uncoated PU
Detachable Catheters		
3.5 Fr	**ST2 72-2839**	**ST2 72-2836**
5 Fr	**ST2 72-2840**	**ST2 72-2837**
7 Fr	**ST2 72-2841**	**ST2 72-2838**

PortHold™ Non-Coring Needle Sets

The tips of these needle sets are specially designed to access Solomon's PortHold™ Access Ports. The needle sets include PVC tubing, a female Luer and a mini-clamp. The SOFTEE™ hub is designed to increase animal comfort and improve grip. They are supplied sterile in packages of 12.

PortHold™ Non-Coring Needle Sets, pkg. of 12	
Order #	Product
ST2 72-2829	22 ga x 9/16 in Needle, 6 in Tubing
ST2 72-2830	22 ga x 9/16 in Needle, 12 in Tubing
ST2 72-2831	22 ga x 5/8 in Needle, 6 in Tubing
ST2 72-2832	22 ga x 5/8 in Needle, 12 in Tubing
ST2 72-2872	22 ga x 1/2 in Needle, 6 in Tubing

Silastic is a registered trademark of Dow Corning Corporation.
CBAS is a registered trademark of Carmeda AB.
PortHold is a trademark of Solomon Scientific.

Mini Gelatin Drug Delivery Capsules shown with Dosing Syringe and Single Capsule Filling Funnel

Mini Gelatin Capsule Filling Funnel

Mini Gelatin Drug Delivery Capsule

- Two mini sizes are available and are the only capsules small enough for use with rats
- Ideal for encapsulating and dosing materials that are insoluble, form poor suspensions, are effected by excepients, or are odorous and distasteful to the animal
- Saves time and money by eliminating validation of suspension/solution homogeneity
- Excellent alternative to gavage
- Release of dose within 10 minutes of reaching stomach
- For use with:
  - Rats that are 200 grams and larger
  - Guinea pigs that are 300 grams and larger
- Oral delivery of dry materials (powder, beadlets, crystals, paint flakes), pastes, and non-aqueous liquids

These are the only capsules on the market today that are small enough for dosing rats. They are also suitable for guinea pigs. They are ideal for the delivery of dry materials (powder, beadlets, crystals, paint flakes, etc.), pastes, and non-aqueous liquids. They can also be used to encapsulate and dose materials that are insoluble, form poor suspensions, are effected by excepients, or are odorous and distasteful to the animal. The capsules are made from hard gelatin. It is the same process and substance used for capsules manufactured for human use. They meet all FDA standards as well as US, European, and Japanese Pharmacopeia standards. Additionally, with an enteric coating they are suitable for lower GI drug delivery in guinea pigs.

Easy-to-Fill

The small size capsules are filled with the desired substance using the convenient filling funnel. Simply place the capsule body into the holder, place the funnel over the holder and fill. They can be filled either with a premeasured dose or by weight. To fill by weight, simply place the whole setup on a precision balance prior to filling. Tare it and then fill the capsule. When the desired amount of the substance is in the capsule, remove the funnel and place the capsule cap onto the body. You are now ready to administer the capsule to the animal. A multiple capsule filler is available which will accommodate 40 capsules simultaneously.

Simple Delivery

Delivery of these capsules is simple and easy. The filled capsule is placed in the dosing syringe. The delivery tube of the dosing syringe is inserted into the animal's esophagus. When in place, the syringe plunger is pressed and placement of the capsule is complete. Regardless of the location of the capsule in the esophagus, provided normal peristaltic action occurs, the capsule will reach the stomach and then discharge its contents within 10 minutes. The capsules may also be used for dosing rectally, vaginally, or subcutaneously. For first time users it is recommended that you practice with empty capsules. This allows both the researcher and the animal to acclimate to the procedure.

These drug delivery capsules are clear and supplied in a package of 100. The dosing syringe and filler funnels must be purchased separately. Large size delivery capsules available, see page 144.

Specifications		
Fill Material	Dry materials (powder, beadlets, crystals, paint flakes), pastes, non-aqueous liquids	
Capsule Capacity	Holds 25 mg per capsule with density of 1 g/ml	
Capsule Disintegration Time	Within 10 mins. of reaching stomach	
Dosing Time	<1 min. per animal	
Acceptance	>98% successful dosing after minimal experience (3 to 4 placebo doses per rat)	
Capsule Dimensions:	**Size 9**	**Size 9el**
Capacity	0.025 ml	0.08 ml
Fill Weight	25 mg	80 mg
External Diameter	2.65 mm	2.65 mm
Locked Length	8.6 mm	23.2 mm
Dosing Syringe:		
Material	Stainless steel, stiff	
OD End Cup	3.5 mm (0.13 in)	
Length	125 mm (4.9 in) from hub to tip	

Order #	Product
ST2 72-1690	Drug Delivery Capsule, Size 9
ST2 72-4160	Drug Delivery Capsule, Size 9el
ST2 72-1691	Dosing Syringe for Size 9 Capsules
ST2 72-4161	Dosing Syringe for Size 9el Capsules
ST2 72-1692	Filling Funnel for Size 9 Capsules
ST2 72-4162	Filling Funnel for Size 9el Capsules
ST2 72-4158	Complete Kit with Size 9 Capsules*
ST2 72-4159	Complete Kit with Size 9el Capsules*
ST2 72-1693	Multiple Capsule Filler for Size 9, pkg. of 1
ST2 72-4163	Multiple Capsule Filler for Size 9el, pkg. of 1

**Dosing Kit includes: 1 dosing syringe, 1 filling funnel and stand, 1 tamper, 100 capsules and an instructional video*

Reference

Lax ER, et al. A Simple Method for Administration of Drugs in Solid Form to Fully Conscious Rats. *Laboratory Animals*. 1983 Jan;17(1):50-54.

Small Animal Drug Delivery Capsules
72-1694 – 72-1701

Small Animal Gelatin Drug Delivery Capsules

- 8 sizes available for use with kittens and dogs
- Ideal for encapsulating materials that are insoluble, form poor suspensions, are effected by excepients, or are odorous and distasteful
- Saves time and money by eliminating validation of suspension/solution homogeneity
- An excellent alternative to gavage
- In compliance with US, European and Japanese Pharmacopeias
- Fillable with almost any dry materials, pastes, and non-aqueous liquids
- Machine fillable

These drug delivery capsules are similar to the Mini Drug Delivery Capsule on page 143, just larger in size. They are ideal for the delivery of dry materials (powder, beadlets, crystals, paint flakes, etc.), pastes, and non-aqueous liquids. They can also be used to encapsulate and dose materials that are insoluble, form pore suspensions, are effected by excepients, or are odorous and distasteful to the animal. The capsules are made from hard gelatin. It is the same process and substance used for capsules manufactured for human use. They meet all FDA standards as well as US, European, and Japanese Pharmacopeia standards.

These gelatin capsules are designed to dissolve *in vivo* at 37°C within 15 minutes. Gelatin is physiologically inert so it will not react with most test materials or effect their bioavailability. When using capsules for dosing animals, you can be sure that the exact and complete dose has been administered. And unlike gavage, when you use capsules you don't have the problem of solution validation or the possibility of lung aspiration. Capsules are convenient and easy to handle and in most cases it takes only one person to dose an animal.

These drug delivery capsules are clear and available in 8 sizes. They are supplied in a package of 100. Larger sizes are available by special order. Please call for details.

The following capsule size chart and table of specifications will aid in determining which size capsule is appropriate for the specific animal being dosed and the amount of test material to be administered.

A filling funnel is available separately for each size capsule. They are supplied individually and make filling the capsules simple and fast.

Small Animal Gelatin Drug Delivery Capsules

Capsule Size	5	4	3	2	1	0	00	000
Species	Dog, Cat, Rabbit, Fish, Bird	Dog, Cat, Rabbit, Fish, Bird	Dog, Cat, Rabbit, Fish	Dog, Rabbit, Fish	Dog, Rabbit, Fish	Dog, Cat, Rabbit	Dog, Rabbit	Dog, Cat
Volume	0.13 ml	0.21 ml	0.30 ml	0.37 ml	0.50 ml	0.68 ml	0.95 ml	1.37 ml
Fill Weight Range	60 -130 mg	95 - 210 mg	135 - 300 mg	165- 370 mg	225 - 500 mg	305 - 680 mg	430 - 950 mg	615 - 1370 mg
External Diameter:								
Cap	4.83 mm	5.31 mm	5.82 mm	6.35 mm	6.91 mm	7.65 mm	8.53 mm	9.91 mm
Body	4.64 mm	5.05 mm	5.56 mm	6.07 mm	6.63 mm	7.34 mm	8.18 mm	9.55 mm
Locked Length	11.0 mm	13.9 mm	15.5 mm	17.5 mm	19.0 mm	21.2 mm	23.3 mm	26.1 mm
Drug Delivery Capsule	**ST2 72-1694**	**ST2 72-1695**	**ST2 72-1696**	**ST2 72-1697**	**ST2 72-1698**	**ST2 72-1699**	**ST2 72-1700**	**ST2 72-1701**
Filling Funnel	**ST2 72-4150**	**ST2 72-4151**	**ST2 72-4152**	-	**ST2 72-4154**	**ST2 72-4155**	**ST2 72-4156**	**ST2 72-4157**
Dosing Syringe	**ST2 72-7475**	**ST2 72-7474**	**ST2 72-9170**	**ST2 72-7477**	**ST2 72-7476**	**ST2 72-9171**	**ST2 72-9172**	**ST2 72-9173**

ANESTHESIA

Harvard Apparatus has a proven track record of providing and supporting top quality anesthesia equipment. Anesthesia is a vital part of surgery and we offer a wide array of products for your surgical needs. We are now pleased to offer several complete systems. These systems are based on the most widely used configurations we see in our customers' laboratories. Our preconfigured packages ensure you have all of the parts, regulators, tubing and connectors you need to get started. If you do not see a combination that is suitable for you, a unique system can be created for you. Please see page 152 for custom configurations or feel free to contact us at support@hbiosci.com

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ANESTHESIA SYSTEMS

Harvard Apparatus has a long history of carrying and supporting top quality anesthesia equipment. We have taken our knowledge and created easy-to-order, complete systems. We have based these systems on what our customers are using in their laboratories. Our preconfigured packages ensure you have all the parts, regulators, tubing and connectors you need to get started right away. If you do not see a combination that is suitable for you, a unique system can be created for you. Please see pages 152 for custom configurations or feel free to contact us at support@hbiosci.com.

Table-Top Systems: Suitable for Small Rodents

Single Animal Anesthesia System

- Our most popular set-up
- Suitable for mice, rats and other small animals under 10 lb
- Features a new Funnel-Fill Isoflurane Vaporizer with 3-year warranty
- Can be expanded for animals over 10 lb
- Passive scavenging system

Item #	Product
ST2 72-6419	Single Animal Anesthesia System, Table-Top*
System Includes:	
ST2 72-3100	H-Tank Regulator
ST2 72-3115	Oxygen Hose, 3 m (10 ft)
ST2 72-3011	Table-Top Anesthesia Machine 0.2-4 LPM Flowmeter, Circuit Set and End Caps
ST2 34-1040SV	Isoflurane Funnel-Fill Vaporizer
ST2 34-0415	Fluosorber Canisters
ST2 34-0400	Halovet Connector
ST2 72-1024	3/16 in ID tubing
ST2 72-2889	Connector 22 mm-6 mm, pkg. of 10
ST2 72-3054	Anti-Spill Adapter

Harvard Apparatus Single Animal Isoflurane System

- Ideal flowmeter range for rodents
- Small footprint
- Suitable for mice, rats and other small animals under 10 lb
- Brand new Funnel-Fill Isoflurane Vaporizer with 3-year warranty
- Passive scavenging system

Item #	Product
ST2 72-6467	Harvard Apparatus Single Animal Isoflurane System*
System Includes:	
ST2 72-3100	H-Tank Regulator
ST2 34-1375	Oxygen Hose, 4 m (13.1 ft)
ST2 34-1352	Small Bracket 1-2 gases
ST2 34-1420	Flowmeter 0.2-2 LPM
ST2 34-1040	Isoflurane Funnel-Fill Vaporizer
ST2 72-3043	Male End Cap
ST2 72-3044	Female End Cap
ST2 72-3026	Rodent Circuit Set
ST2 34-0415	Fluosorber Canisters
ST2 34-0400	Halovet Connector
ST2 72-1024	3/16 in ID tubing
ST2 72-2889	Connector 22 mm-6 mm, pkg. of 10
ST2 72-3054	Anti-Spill Adapter

International versions are available and do not include regulators. Please use 72-6419INT and 72-6467INT.

Table-Top Systems: Systems with an Induction Box

Single Animal Anesthesia System with Small Induction Box

- Our most popular set up configured with a small induction box
- Suitable for mice, rats and other small animals under 10 lb
- Features a new Funnel-Fill Isoflurane Vaporizer with 3-year warranty
- Passive scavenging system
- Can be expanded for animals over 10 lb

Item #	Product
ST2 72-6420	Single Animal Anesthesia System with Small Induction Box*
System Includes:	
ST2 72-3100	H-Tank Regulator
ST2 72-3115	Oxygen Hose, 3 m (10 ft)
ST2 72-3011	Table-Top Anesthesia Machine 0.2-4 LPM Flowmeter, Circuit Set, and End Caps
ST2 34-1040SV	Isoflurane Funnel-Fill Vaporizer
ST2 34-0415	Fluosorber Canisters
ST2 34-0400	Halovet Connector
ST2 72-1024	3/16 in ID tubing
ST2 72-2889	Connector 22 mm-6 mm, pkg. of 10
ST2 72-3054	Anti-Spill Adapter
ST2 60-5242	Manifold for Two Devices
ST2 50-0108	Small Induction Box, H x W x D, 10.7 x 25.7 x 11 cm (4 x 10 x 4.5 in)

Harvard Apparatus Single Animal Isoflurane System with Small Induction Box

- Ideal flowmeter range for rodents
- Includes Small Induction Box for mice and rats
- Small footprint
- Brand new Funnel-Fill Isoflurane Vaporizer with 3-year warranty
- Passive scavenging system

Item #	Product
ST2 72-6468	Harvard Apparatus Single Animal Isoflurane System with Small Induction Box*
System Includes:	
ST2 72-3100	H-Tank Regulator
ST2 34-1375	4 m Oxygen Hose
ST2 34-1352	Small Bracket 1-2 gases
ST2 34-1420	Flowmeter 0.2-2 LPM
ST2 34-1040	Isoflurane Funnel Fill Vaporizer
ST2 72-3043	Male End Cap
ST2 72-3044	Female End Cap
ST2 72-3026	Rodent Circuit Set
ST2 34-0415	Fluosorber Canisters
ST2 34-0400	Halovet Connector
ST2 72-1024	3/16 in ID tubing
ST2 72-2889	Connector 22 mm-6 mm, pkg. of 10
ST2 72-3054	Anti-Spill Adapter
ST2 60-5242	Manifold for Two Devices
ST2 50-0108	Small Induction Box, H x W x D, 10.7 x 25.7 x 11 cm (4 x 10 x 4.5 in)

**International versions are available and do not include regulators. Please use 72-6420INT and 72-6468INT.*

Mobile Systems: Suitable for Small Rodents

Mobile Single Animal Anesthesia System*

- Suitable for mice, rats and other small animals under 10 lb
- Features a new Funnel-Fill Isoflurane Vaporizer with 3-year warranty
- Can be expanded for animals over 10 lb
- Passive scavenging system

Item #	Product
ST2 72-6421	Single Animal Mobile Anesthesia System
System Includes:	
ST2 72-3018	Single O_2 E-Cylinder Regulator & Yokes
ST2 72-3007	Vaporstick
ST2 72-3026	Rodent Circuit Set
ST2 34-1040SV	Isoflurane Funnel-Fill Vaporizer
ST2 72-1294	F/Air Canisters, case of 8
ST2 60-5251	Connector for F/Air Canister
ST2 72-1024	3⁄16 in ID tubing
ST2 72-2889	Connector 22 mm-6 mm, pkg. of 10
ST2 72-3054	Anti-Spill Adapter

**Mayo Tray not included.*

Mobile Single Animal System*

- Suitable for mice, rats and other small animals under 10 lb
- Ideal flowmeter range for rodents
- Features a new Funnel-Fill Isoflurane Vaporizer with 3-year warranty
- Passive scavenging system

Item #	Product
ST2 72-6469	Harvard Apparatus Mobile Single Animal System for Isoflurane
System Includes:	
ST2 34-1060	O_2 Pin Index Regulator E-Cylinder
ST2 34-1354	Oxygen Hose 4 m (13.1 ft)
ST2 34-1384	Mobile Anesthesia Post
ST2 34-1352	Small Bracket 1-2 gases
ST2 34-1420	Flowmeter 0.2-2 LPM
ST2 34-1040	Isoflurane Funnel Fill Vaporizer
ST2 72-3043	Male End Cap
ST2 72-3044	Female End Cap
ST2 72-3026	Rodent Circuit Set
ST2 72-1294	F/Air Canisters, case of 8
ST2 60-5251	Connector for F/Air Canister
ST2 72-1024	3⁄16 in ID tubing
ST2 72-2889	Connector 22 mm-6 mm, pkg. of 10
ST2 72-3054	Anti-Spill Adapter

**Mayo Tray not included.*

Mobile Systems: Systems with an Induction Box

Mobile Single Animal Anesthesia System with Small Induction Box

- Suitable for mice, rats and other small animals under 10 lb
- Includes Small Induction Box
- Features a new Funnel-Fill Isoflurane Vaporizer with 3-year warranty
- Can be expanded for animals over 10 lb
- Passive scavenging system

Item #	Product
ST2 72-6422	Mobile Single Animal Isoflurane System with Small Induction Box
System Includes:	
ST2 72-3018	Single O_2 E-Cylinder Regulator & Yokes
ST2 72-3007	Vaporstick
ST2 72-3026	Rodent Circuit Set
ST2 34-1040SV	Isoflurane Funnel-Fill Vaporizer
ST2 60-5242	Manifold for Two Devices
ST2 50-0108	Small Induction Box
ST2 72-3017	Mayo Tray
ST2 72-1294	F/Air Canisters, case of 8
ST2 60-5251	Connector for F/Air Canister
ST2 72-1024	3/16 in ID tubing
ST2 72-2889	Connector 22 mm-6 mm, pkg. of 10
ST2 72-3054	Anti-Spill Adapter

Mobile Anesthesia System with Small Induction Box

- Suitable for mice, rats and other small animals under 10 lb
- Ideal flowmeter range for rodents
- Includes small Induction box for mice and rats
- Features a new Funnel-Fill Isoflurane Vaporizer with 3-year warranty
- Passive scavenging system

Item #	Product
ST2 72-6470	Harvard Apparatus Mobile Anesthesia System with Small Induction Box
System Includes:	
ST2 34-1060	O_2 Pin Index Regulator E-Cylinder
ST2 34-1354	Oxygen Hose 4 m (13.1 ft)
ST2 34-1384	Mobile Anesthesia Post
ST2 34-1352	Small Bracket 1-2 gases
ST2 34-1420	Flowmeter 0.2-2 LPM
ST2 34-1040	Isoflurane Funnel Fill Vaporizer
ST2 72-3043	Male End Cap
ST2 72-3044	Female End Cap
ST2 72-3026	Rodent Circuit Set
ST2 60-5042	Manifold for Two Devices
ST2 50-0108	Small Induction Box
ST2 72-3017	Mayo Tray
ST2 72-1294	F/Air Canisters, case of 8
ST2 60-5251	Connector for F/Air Canister
ST2 72-2889	Connector 22 mm-6 mm, pkg. of 10
ST2 72-3054	Anti-Spill Adapter

MINIVAC SYSTEMS

The MiniVac Gas Evacuation System is an active delivery and scavenging device that substantially reduces the risk of exposure to anesthetic vapors from your surgical area. The MiniVac is self-contained, remedying the need for ducting or special ventilation that is traditional with active scavenging. The complete systems include all of the components of a full anesthesia system from regulators, gas hose, and tubing, to vaporizers, flowmeters and nose cones.

MiniVac Complete Anesthesia System

- Suitable for mice, rats, and over small animals under 10 lb
- Active scavenging system
- Small footprint

Item #	Product
ST2 75-0230	MiniVac Complete Anesthesia System
System Includes:	
ST2 72-3100	H-Cylinder Regulator
ST2 72-3115	O_2 Hose
ST2 72-3011	Table Top Anesthesia Machine
ST2 34-1040SV	Isoflurane Funnel Fill Vaporizer
ST2 73-4910	MiniVac Gas Evacuation System
ST2 73-4911	MiniVac Adapter for Fluosorber Canister
ST2 34-0415	Fluosorber Canisters, case of 6
ST2 34-0400	Halovat Tube Mount
ST2 72-1024	Tygon R-3606 tubing, 3/16 in ID
ST2 72-2889	Connector, 6-22 mm, pk/10
ST2 72-3054	Anti-Spill Device, Isoflurane

MiniVac Complete Anesthesia System

- Ideal flowmeter range for rodents
- Suitable for mice, rats, and over small animals under 10 lb
- Active scavenging system
- Small footprint

Item #	Product
ST2 75-0232	MiniVac Complete Anesthesia System
System Includes:	
ST2 72-3100	H-Cylinder Regulator
ST2 34-1375	O_2 Hose
ST2 34-1352	Small Bracket 1-2 gases
ST2 34-1420	Flowmeter 0.2 – 2 LPM
ST2 72-3011	Table Top Anesthesia Machine
ST2 34-1040	Isoflurane Funnel Fill Vaporizer
ST2 72-3043	Male End Cap
ST2 72-3044	Female End Cap
ST2 72-3026	Rodent Circuit Set
ST2 73-4910	MiniVac Gas Evacuation System
ST2 73-4911	MiniVac Adapter for Fluosorber Canister
ST2 34-0415	Fluosorber Canisters, case of 6
ST2 34-0400	Halovat Tube Mount
ST2 72-1024	Tygon R-3606 tubing, 3/16 in ID
ST2 72-2889	Connector, 6-22 mm, pk/10
ST2 72-3054	Anti-Spill Device, Isoflurane

International versions available and do not include regulators. Please use 75-0230INT and 75-0232INT.

MiniVac Complete Anesthesia System with Induction Box

- Suitable for mice, rats, and other small animals under 10 lb
- Active scavenging system
- Small footprint

Item #	Product
ST2 75-0231	MiniVac Complete Anesthesia System with Induction Box
System Includes:	
ST2 72-3100	H-Cylinder Regulator
ST2 72-3115	O_2 Hose
ST2 72-3011	Table Top Anesthesia Machine
ST2 34-1040SV	Isoflurane Funnel Fill Vaporizer
ST2 73-4910	MiniVac Gas Evacuation System
ST2 73-4911	MiniVac Adapter for Fluosorber Canister
ST2 34-0415	Fluosorber Canisters, case of 6
ST2 34-0400	Halovat Tube Mount
ST2 72-1024	Tygon R-3606 tubing, 3/16 in ID
ST2 72-2889	Connector, 6-22 mm, pk/10
ST2 72-3054	Anti-Spill Device, Isoflurane
ST2 60-5242	Manifold for 2 Anesthetic Devices
50-0108 ST2	Induction Box, Small

MiniVac Complete Anesthesia System with Induction Box

- Ideal flowmeter range for rodents
- Suitable for mice, rats, and other small animals under 10 lb
- Active scavenging system
- Small footprint

Item #	Product
ST2 75-0233	MiniVac Complete Anesthesia System
System Includes:	
ST2 72-3100	H-Cylinder Regulator
ST2 34-1375	O_2 Hose
ST2 34-1352	Small Bracket 1-2 gases
ST2 34-1420	Flowmeter 0.2 – 2 LPM
ST2 72-3011	Table Top Anesthesia Machine
ST2 34-1040	Isoflurane Funnel Fill Vaporizer
ST2 72-3043	Male End Cap
ST2 72-3044	Female End Cap
ST2 72-3026	Rodent Circuit Set
ST2 73-4910	MiniVac Gas Evacuation System
ST2 73-4911	MiniVac Adapter for Fluosorber Canister
ST2 34-0415	Fluosorber Canisters, case of 6
ST2 34-0400	Halovat Tube Mount
ST2 72-1024	Tygon R-3606 tubing, 3/16 in ID
ST2 72-2889	Connector, 6-22 mm, pk/10
ST2 72-3054	Anti-Spill Device, Isoflurane
ST2 60-5242	Manifold for 2 Anesthetic Devices
ST2 50-0108	Induction Box, Small

International versions available and do not include regulators. Please use 75-0231INT and 75-0233INT.

CUSTOM CONFIGURATIONS

Can't find a set-up that is right for you? Need replacement parts? The following pages will allow you to choose what is right for your experiment. As well as provide answers to your gas delivery needs outside of your anesthesia system.

For a full system you will need:

- Regulator
- Anesthesia Machine that includes a Bracket and Flowmeter
- Vaporizer
- Delivery System, i.e. nosecone, ventilator, and/or induction box
- Scavenging, active or passive

72-3100
O_2 Regulator for H-Cylinder

72-3104
O_2 Regulator for H-Cylinder
with 0 to 15 LPM Flowmeter

72-3018
Single O_2 E-Cylinder Regulator
& Double Tank Holder

72-3020
Dual E-Cylinder O_2 Tank
Yokes Holder and Regulator

72-2216
E-Cylinder Stabilizer

Regulators, Hoses, and Flowmeters

All of these products are based on the Diameter Index Safety System (DISS), developed to increase hospital safety in the United States. Regulators are typically specific for country, the type of gas and tank size. E-Tanks and H-Tanks are two of the most common sizes in the United States. All regulators terminate in a gas-specific connection. The E-tank or Pin-Index regulators are not country specific, however these use DISS fittings as their mating connection.*

Order #	Product
ST2 72-3099	O_2 Regulator for E-Cylinder (Includes 2 ft O_2 Hose)
ST2 72-3100	O_2 Regulator for H-Cylinder (O_2 Hose sold separately)
ST2 72-3019	Single N_2O E-Cylinder Regulator & Double Tank Holder
ST2 72-3103	O_2 Regulator for E-Cylinder with 0 to 15 LPM Flowmeter
ST2 72-3104	O_2 Regulator for H-Cylinder with 0 to 15 LPM Flowmeter
ST2 72-3018	Single O_2 E-Cylinder Regulator & Double Tank Holder
ST2 72-3020	Dual E-Cylinder O_2 Tank Yokes Holder and Regulator (should be ordered with 72-2216)
ST2 72-2216	Dual E-Cylinder Stabilizer (should be ordered with 72-3020)
ST2 72-7458	O_2 Regulator for H-Cylinder with 0 to 3 LPM Flowmeter
ST2 72-3112	0 to 3 LPM O_2 Flowmeter**
ST2 72-3113	0 to 5 LPM O_2 Flowmeter**
ST2 72-3114	0 to 15 LPM O_2 Flowmeter**
ST2 72-3115	O_2 Hose 10 ft†
ST2 72-3116	O_2 Hose 15 ft†
ST2 72-3117	O_2 Hose 20 ft†
ST2 72-3118	N_2O Hose 10 ft†
ST2 72-3119	N_2O Hose 15 ft†
ST2 72-3120	N_2O Hose 20 ft†
ST2 72-5810	DISS Female Hose Barb—O_2
ST2 72-5811	DISS Female Hose Barb—N_2O

**Anesthesia machines come complete with flowmeters, please see pages 154-157.*
***Flowmeter with Female DISS inlet and Male DISS outlet*
†Connectors on both ends are Female DISS

Regulators, Hoses, and Flowmeters

These products are supplied by Harvard Apparatus LTD primarily for customers in the UK. Where indicated they use DISS fittings. Choose the appropriate regulator for your compressed gas, hose and flowmeter to complete your system. Flowmeters include tube mounts. When ordering flowmeters, please specify in which country they will be used. For anesthesia bracket flowmeters please see page 155.

Order #	Product
ST2 34-1059	Nitrous Oxide Pin Index Regulator
ST2 34-1060	Oxygen Pin Index Regulator, Bull Nose
ST2 34-1257	Air Pin Index Regulator
ST2 34-1137	CO_2 Pin Index Regulator
ST2 34-1392	Oxygen Threaded Regulator
ST2 34-1395	Nitrous Threaded Regulator
ST2 34-1393	Air Threaded Regulator
ST2 34-1394	CO_2 Threaded Regulator
ST2 34-0443	Regulator Tube Mounts, for any F-Cylinder Regulator
ST2 34-1354	O_2 Hose 4 m (13.1 ft)
ST2 34-1357	N_2O Hose 4 m (13.1 ft)
ST2 34-1375	O_2 Hose DISS Fittings to Flowmeter 4 m (13.1 ft)

CDS9000 Small Anesthesia Machine

CDS9000 is a versatile machine suitable for small and large animal anesthesia (rebreathing and non-rebreathing). It can be configured as a table-top or mobile system.

- Rebreathing (>10 lb) and non-rebreathing (<10 lb) machine
- Universal anodized aluminum block with built in inhalation/exhalation valves
- Powder coated for quick and easy cleaning
- Pop-off valve designed to interface with active waste system for maintaining a passively full breathing bag
- Quick and easy change for absorber canister
- Adaptable to all vaporizer styles
- Optional monitor bracket
- Flexibility of design allowing for Table-Top or Mobile set-up
- All units are supplied complete with F-circuit with two liter bag, Modified Jackson Rees with ½ liter bag, Sodasorb® CO_2 Absorbent refill bag (2.2 lb), pop-off occlusion valve, end-caps and operation manual
- Vaporizer sold separately
- Reliable, easy to service and maintain, plus a 5-year warranty

Specifications	
Performance Characteristics:	
Absorber Canister	900 cc
Pop-off Valve	19 mm, relieves at 2 cmH_2O
Inhalation/ Exhalation Valves	Tapered, 22 mm
Flowmeter:	
Single	0.2-4 LPM
Dual	0-1000 ml; 0.2-4 LPM
Flush Valve	10-15 LPM
Pressure Manometer	0-60 cmH_2O, 0-30 cmH_2O vacuum
Gas Inlets	DISS male for all gases
Vaporizer Connection	Tapered, 23 mm
Environmental:	
Operating Temperature	15°C to 32°C
Storage Temperature	-1°C to +48°C
Dimensions & Weight:	
Pole Mount (H x W x D)	135 x 66 x 66 cm (53.25 x 26 x 26 in); 10.4 kg (23 lb)
Table-Top (H x W x D)	36.8 x 36.2 x 26.7 cm (14.5 x 14.25 x 10.5 in); 6.8 kg (15 lb)
Calibration	Daily pressure test recommended

Order #	Product
ST2 72-7992	CDS9000 Pole Mount Anesthesia Machine with Single O_2 Flowmeter 0.2-4 LPM
ST2 72-7993	CDS9000 Pole Mount Anesthesia Machine with Dual O_2 Flowmeter 0-1000 ml/min; 0.2-4 LPM
ST2 72-7994	CDS9000 Pole Mount Anesthesia Machine with N_2O/O_2 Flowmeter 0.2-4 LPM
ST2 72-6081	CDS9000 Table-Top Anesthesia Machine with Single O_2 Flowmeter 0.2-4 LPM
ST2 72-6082	CDS9000 Table-Top Anesthesia Machine with Dual O_2 Flowmeters 0-1000 ml/min; 0.2-4 LPM
ST2 72-6083	CDS9000 Table-Top Anesthesia Machine with N_2O/O_2 Flowmeter 0.2-4 LPM
Optional Conversion Kits & Brackets:	
ST2 72-6073	Table-Top Kit
ST2 72-6074	Wall-Mount Kit
ST2 72-6075	Pole-Mount Kit
ST2 72-6076	Monitor Bracket

Basic Tabletop Anesthesia Machine

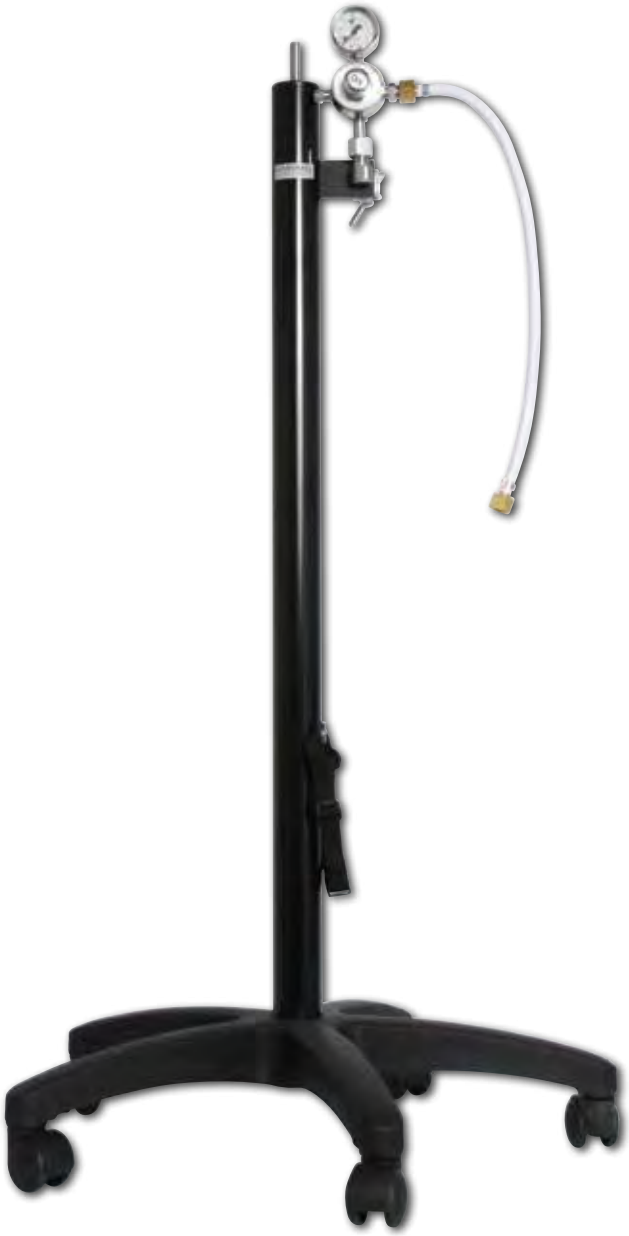
- Our most popular anesthesia machine
- Non-rebreathing machine
- 20.3 x 20.3 x 33 cm (8 x 8 x 13 in), L x W x H
- Powder coated for quick and easy cleaning
- Supplied with, Rodent Circuit Set, Modified Jackson Rees with ½ liter bag, end-caps and operation manual
- Can be upgraded to rebreathing system with free standing CO_2 system
- Adaptable to all vaporizer styles, vaporizer not included, see page 158

Order #	Product
ST2 72-3011	Tabletop Research System with 0.2-4 LPM O_2 Flowmeter
ST2 72-3012	Tabletop Research System with 0-1,000 cc/min Flowmeter
ST2 72-3013	Tabletop Research System with Dual O_2 Flowmeters 0-1,000 cc/min; 0.2-4 LPM
Options:	
ST2 72-3010	Freestanding O_2 Absorber System
ST2 72-3074	Add-On Non-Rebreathing Adapter (Replacement)

Small Anesthesia Bracket

- Small, non-rebreathing table-top system
- Flexible design allows user to define options
- Can be added to Mobile Post System (see page 156)
- Vaporizer not included (see page 158)
- Complete anesthesia machine will include bracket, 1-2 flowmeter(s), inlet and outlet mount.
- 27.5 x 27.0 x 18.0 cm (10.8 x 10.6 x 7.1 in), H x W x D

Order #	Product
ST2 34-1352	Small Bracket System for 1-2 gases
ST2 34-1420	O_2 Flowmeter 0.2-2 LPM
ST2 72-3043	Male Endcap
ST2 72-3044	Female Endcap



Mobile Post System

- Stable 5-wheel spider base
- Adapts to Anesthesia Bracket System, see page 155
- Easily modified for room air or oxygen E-sized cylinders

Order #	Product
ST2 34-1384	Basic Mobile Anesthetic Post
ST2 34-1060	O_2 Pin Index Regulator for E-sized Compressed Gas Cylinders
ST2 34-1257	Medical Grade Room Air Regulator for E-sized Compressed Gas Cylinders

Vaporstick Anesthesia Machine

- Non-rebreathing single animal anesthesia machine
- 5-wheel spider base for increased stability
- Supplied with Modified Jackson Rees with ½ liter bag, universal mounting bracket for vaporizers, end-caps and operation manual
- Can be upgraded to a rebreathing system
- Vaporizer sold separately, see page 158

Order #	Product
ST2 72-3007	Vaporstick Anesthesia Machine Single O_2 Flowmeter 0.2-4 LPM
ST2 72-3009	Vaporstick Anesthesia Machine O_2 and N_2O Flowmeters 0.2 - 4 LPM
Accessories and Replacement parts:	
ST2 72-3010	Freestanding CO_2 Absorber System
ST2 72-3018	Single-O_2 E-Cylinder Regulator and Double Tank Holder, see page 152
ST2 72-3020	Dual E-Cylinder O_2 Tank Yokes Holder and Regulator (must be ordered with 72-2216), see page 152
ST2 72-2216	E-Cylinder Stabilizer (must be ordered with 72-3020), see page 152
ST2 72-3017	Add-on Mayo Tray
ST2 72-3074	Add-On Non-Rebreathing Adapter (Replacement)
ST2 72-3049	Z-Bracket Universal Vaporizer Mounting Bracket

Anesthesia Cart*

- Pair with a standard table-top set up for easy mobility
- Features a block of drawers with handle as well as a secondary shelf
- Contains four lockable castors
- Can hold up to 65 kg (143 lb)
- Overall dimensions: 54 x 58 x 114.5 cm (21.26 x 22.83 x 45.08 in)

Order #	Product
ST2 73-4866	Mobile cart for anesthesia

**This contains the cart only. All other components necessary for a fully functional anesthesia set up must be purchased separately.*

Multiple Animal Systems

The best way to work with multiple animals is with our Multi-Station Anesthesia System. There are three models available for 2, 4 or 6 animals. Each station is independently controlled providing you with exact anesthetic depth for each animal.

- One anesthesia machine for controlled anesthetic delivery for up to 6 animals at one time
- Ideal for high throughput small animal surgery
- Mobile system on stable 5-wheel spider base for increased flexibility
- Vaporizer not included
- 2-year limited warranty
- Pair with Lab Animal Evacuation System, see page 164

Order #	Product
ST2 72-3023	2-Station Multi-Station Lab Animal Anesthesia Machine
ST2 72-3024	4-Station Multi-Station Lab Animal Anesthesia Machine
ST2 72-3025	6-Station Multi-Station Lab Animal Anesthesia Machine

Harvard Apparatus Anesthetic Vaporizers

- All Harvard Apparatus vaporizers are new and never refurbished
- All vaporizers come with a 3-year limited warranty
- Annual service available

Specifications	
Temperature Range Compensation	18° to 35°C
Calibration	21° and 35°C
Accuracy	Within 10% when used in nominal working range
Halogenated Gas Consumption	15.5 ml consumed over 30 minutes at 5 lpm and 2%
Liquid Capacity	160 ml liquid capacity, 66 ml absorbed by wick
Dimensions (H x W x D) & Weight:	
Funnel Fill	190 mm x 140 mm x 170 mm; 6.15 kg (13.56 lb)
Key Fill	210 mm x 140 mm x 170 mm; 6.10 kg (13.45 lb)

Order #	Product
ST2 34-1040	Harvard Apparatus Isoflurane Funnel-Fill Vaporizer*
ST2 34-1041	Harvard Apparatus Isoflurane Key-Fill Vaporizer*

**When ordering a Harvard Apparatus Vaporizer with any system other than the 34-1352. please add SV to the part number, i.e. 34-1040SV.*

Classic T³ Anesthetic Vaporizers

- Precision style, cut of circuit, single-agent vaporizer
- Temperature and flow compensated
- Fill assembly is a one piece design with no solder joints
- 3 year limited warranty

Specifications	
Inlet Flow Compensation	50 ml to 10 lpm with minimal change in output concentration
Temperature Range Compensation	15° to 35°C
Calibration	21°C
Accuracy	15% (within above flow and temperature range)
Duration of Use	approximately 1.0 ml of liquid anesthetic is required to provide 200 ml of vapor
Liquid Capacity	125 ml liquid capacity, 35 ml absorbed by wick
Dimensions (H x W x D) & Weight:	
Funnel Fill	18.4 x 12.7 x 14 cm (7.25 x 5 x 5.5 in); 7.27 kg (16 lb)
Key Fill	18.4 x 12.7 x 15.2 cm (7.25 x 5 x 6 in); 7.27 kg (16 lb)

Order #	Product
ST1 72-8132	Classic T³™ Isoflurane Funnel-Fill Vaporizer
ST1 72-7995	Classic T³™ Sevoflurane Funnel-Fill Vaporizer
ST1 72-7997	Classic T³™ Isoflurane Key-Fill Vaporizer
ST1 72-7996	Classic T³™ Sevoflurane Key-Fill Vaporizer

NOTE: When ordered without an anesthesia machine, vaporizers do not come with end-caps.

Vaporizer Accessories

Order #	Product
ST2 72-3051	Key-Fill Adapter Isoflurane
ST2 72-3053	Key-Fill Adapter Sevoflurane
ST2 34-0401	Harvard Apparatus Isoflurane Key Fill Applicator
ST2 34-1391	Harvard Apparatus Sevoflurane Key Fill Applicator
ST2 72-3054	Anti-Spill Device Isoflurane
ST2 72-3056	Anti-Spill Device Sevoflurane
ST2 72-3043	Male Endcap—Outlet
ST2 72-3044	Female Endcap—Inlet

Rodent Circuit Set and Mask

- Unique circuit designed specifically for rodent anesthesia
- Designed to eliminate rebreathing CO_2
- Inlet tubing 6.25 mm (0.25 in), outlet is 22 mm (0.866 in) respiratory fitting
- Works with any non-rebreathing anesthesia machine

Order #	Product
ST2 72-3026	Rodent Circuit Set (hose, mask and uncut diaphragm)
ST2 72-3027	Rodent Mask (no diaphragm)
ST2 72-3028	Rodent Mask Diaphragm Small, 7/16 in Diameter
ST2 72-3029	Rodent Mask Diaphragm Medium, 9/16 in Diameter
ST2 72-3030	Rodent Mask Diaphragm Large, ¾ in Diameter
ST2 72-8131	Rodent Mask Diaphgram Uncut

Modified Jackson Rees (MJR) Non-Rebreathing Anesthesia Circuit

- Built-in relief valve
- Works with any size breathing bag
- Does not require a bain block

Order #	Product
ST2 72-3073	Modified Jackson Rees (Non-Rebreathing) with ½ Liter Bag
ST2 72-3075	Modified Jackson Rees Avian/Research Circuit with ¼ Liter Bag

Universal Rebreathing Anesthesia F-Circuit

- The universal F-Circuit is designed to maintain humidity and prevent heat loss
- The F-circuit fits almost any anesthesia machine designed to deliver rebreathing anesthesia

Order #	Product
ST2 72-3071	F-Circuit with 2 L Bag, 101.6 cm (40 in)
ST2 72-3072	F-Circuit without Bag, 152.4 cm (60 in)
ST2 72-3082	F-Circuit Elbow

Small Animal Anesthesia Masks

- For rats, guinea pigs, birds and mice
- Simple, effective design
- Simple cylinder with rubber diaphragm that tapers to 15.3 OD x 11.9 mm ID port

Order #	Product
ST2 59-8254	Mouse Anesthesia Mask
ST2 59-8255	Rat, Guinea Pig, and Bird Anesthesia Mask
ST2 72-3923	Replacement Diaphragms, pkg. of 10

COAX-4 Breathing Device

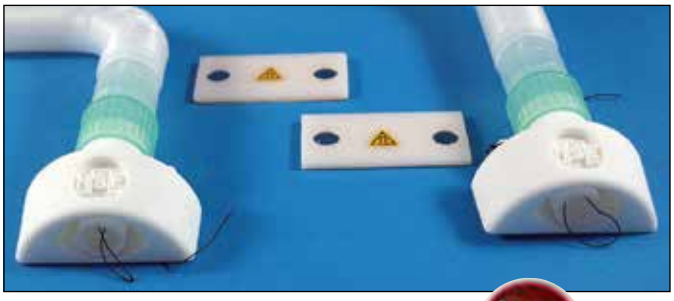
- Co-axial anesthesia breathing apparatus for maintaining the surgical plane
- For use with mouse- to rat-sized animals
- Made of durable Delrin
- Includes 2 masks

Order #	Product
ST2 75-0410	COAX-4, with 2 Mouse-Sized Masks
ST2 75-0411	COAX-4, with 2 Rat-Sized Masks
ST2 75-0412	COAX-4, with 2 Mouse- and 2 Rat-Sized Masks
ST2 75-0413	Replacement Transparent Silicone Diaphragms, cs/7
ST2 75-0414	Replacement Mouse-Sized Mask (Mask Only) pk/2
ST2 75-0415	Replacement Rat-Sized Mask (Mask Only) pk/2

Cat Ventilation/Anesthesia Masks

- Suitable for cats or other small animals
- Made from soft, pliable, transparent, vinyl plastic compound
- Small and medium sizes have molded on 15 mm standard male connections
- Large Mask has standard 22 mm female connection which fits mask elbow or "Y" piece
- Small Mask– 5.1 cm (2 in) diameter
  Medium Mask– 6.4 cm (2.5 in) diameter
  Large Mask– 7.6 cm (3 in) diameter

Order #	Product
ST2 59-8201	Cat Ventilation/Anesthesia Mask, Small
ST2 59-8202	Cat Ventilation/Anesthesia Mask, Medium
ST2 59-8203	Cat Ventilation/Anesthesia Mask, Large
ST2 59-8204	Set of 3 Masks, one of each size



Small Rodent Anesthesia Mask

NEW PRODUCT

- Ideal for mouse or rat
- Available with either tape or a magnetic base to secure positioning
- Coaxial design
- Easily interfaces with the Fluosorber or F/Air canisters
- Suture included to secure the animal's head around incisors

Order #	Product
ST2 73-4860	Dual Arm Anesthesia Mask, Mouse
ST2 73-4864	Dual Arm Anesthesia Mask, Magnetic, Mouse
ST2 73-4861	Dual Arm Anesthesia Mask, Rat
ST2 73-4865	Dual Arm Anesthesia Mask, Magnetic, Rat

Single arm and mask only options also available. To see all available options please visit our website.

Anesthetizing Boxes

- Our most popular choice
- Transparent 6 mm (¼ in) thick plastic for easy animal monitoring and cemented joints
- Comes with two 7.9 mm (5⁄16 in) ports for introducing and removing gases
- Small box opens lengthwise along machined grooves and is ideal for rodents
- Large box is hinged for easy opening and fasteners squeeze the top against a rubber gasket for a tight seal
- Large box is ideal for rabbits, cats and small non-human primates
- Small box (H x W x D) 10.7 x 25.7 x 11 cm (4 x 10 x 4.5 in)
- Large box (H x W x D) 29 x 44 x 29 cm (11.5 x 19.5 x 11.5 in)

Order #	Product
ST2 50-0108	Anesthetizing Box, Small
ST2 50-0116	Anesthetizing Box, Large

CO_2 Chambers with Dump Door

- Dump door enables CO_2 to be cleared from the chamber easily
- Dump door is located below a false bottom for easy cleaning
- Top of the chamber closes with a latch against a foam seal

Specifications	
Dimensions, H x W x D:	
Large Chamber	305 x 305 x 455 mm (12 x 12 x 17.9 in)
Medium Chamber	200 x 200 x 200 mm (7.9 x 7.9 x 7.9 in)
Small Chamber	150 x 100 x 255 mm (5.9 x 3.9 x 10 in)

Order #	Product
ST2 34-0434	CO_2 Chamber with Dump Door, Large
ST2 34-0435	CO_2 Chamber with Dump Door, Medium
ST2 34-0436	CO_2 Chamber with Dump Door, Small

Induction Chambers

- Clear Acrylic for easy animal monitoring
- Ideal for rodents
- Stainless steel false bottom for easy clean up
- ¼ in barbed inlet and outlet

Specifications	
Inner, Height x Diameter:	
Small	8.89 x 13.3 cm (3.5 x 5.25 in)
Large	20.3 x 20.3 cm (8 x 8 in)
Overall, Height x Diameter:	
Small	17.8 x 17.8 cm (7 x 7 in)
Large	30.5 x 27.9 cm (12 x 11 in)

Order #	Product
ST2 72-7110	Induction Chamber, Small
ST2 60-5246	Induction Chamber, Large

Anesthetic/CO_2 Chambers

- White 6 mm (0.24 in) Perspex walls, clear Perspex available by special order
- 10 mm (0.4 in) thick clear Perspex lid that latches against a foam seal
- Chamber has false aluminum floor for easy cleaning
- Brass straight fittings are supplied for the inlet (below false floor) and outlet (top of chamber), and fit with 3⁄16 in ID tubing

Specifications	
Dimensions, H x W x D:	
Large Chamber	315 x 305 x 455 mm (12.4 x 12 x 17.9 in)
Medium Chamber	210 x 200 x 305 mm (8.3 x 7.9 x 12 in)
Small Chamber	160 x 100 x 255 mm (6.3 x 3.9 x 10 in)

Order #	Product
ST2 34-0429	Anesthetic/CO_2 Chamber, Large
ST2 34-0430	Anesthetic/CO_2 Chamber, Medium
ST2 34-0431	Anesthetic/CO_2 Chamber, Small

Pneumatic Fittings for CO_2 Chambers

Order #	Product
ST2 34-0451	¼ in UNC Thread, Female Quick Release fitting for CO_2/Anesthetic Chambers
ST2 34-0452	Male Quick Release with Push in Fitting for 6 mm (0.24 in) OD Pneumatic Tubing
ST2 34-0453	Coiled Tubing 6 mm (0.24 in) OD
ST2 34-0454	Pneumatic Tubing 6 mm (0.24 in) OD, Natural Color, sold per meter

Manifolds

- Economical
- Permits more than one breathing device to be used with one vaporizer and one scavenging system
- Additional stopcocks can be added to expand manifolds*
- Fits with 8 mm (0.25 in) ID tubing
- Additional manifolds are available upon request

Order #	Product
ST2 60-5242	Manifold with 4 Ports for Two Anesthetic Devices
ST2 60-5243	Manifold with 6 Ports for Three Anesthetic Devices
ST2 60-5244	Manifold with 8 ports for Four Anesthetic Devices
ST2 60-5245	Stopcocks for use with Manifolds, pkg. of 2

**Two stopcocks required to expand manifold by one device.*

NOTE: Not suggested for use with multiple animals simultaneously.

Directional Manifolds

- Economical
- Organizational tool for reducing tubing clutter
- When two are purchased they permit more than one breathing device to be used with one vaporizer and one scavenging system
- Custom sizes available

Order #	Product
ST2 75-0346	One Directional Manifold for Two Anesthetic Devices
ST2 75-0347	One Directional Manifold for Three Anesthetic Devices
ST2 75-0348	One Directional Manifold for Four Anesthetic Devices

Gas Flow Directavalve, Vaporizer Mounted

- Effective and simple connector to swap between two devices
- Connects directly to outlet of vaporizers
- Fits with 6 mm (0.24 in) ID tubing

Order #	Product
ST2 34-1456	Gas Flow Directavalve, Vaporizer Mounted

AES Gas Evacuation System

- Waste gas is collected by passive flow to the AES, then is actively pushed up to 150 feet
- Push blower can move collected waste gas up to 12 cubic feet/minute
- Two 19 mm inlets and one exhaust port allows for easy installation
- Can be mounted onto a wall or anesthesia machine pole
- System is supplied with 18 in and 10 ft length of 19 mm ID hose and 12.5 mm (0.5 in) PVC Adapter.
- An optional outlet line ceiling plate cover is available to connect to inside ventilation system.
- AES is 14 in tall x 5 in diameter (35.6 x 12.7 cm), 5 lb

Order #	Product
ST2 72-3064	AES Gas Evacuation System, 110 VAC, 60Hz
ST2 72-3065	AES Gas Evacuation System, 220 VAC, 50Hz
Accessories:	
ST2 72-3093	19 mm (0.75 in) ID Hose, 3 m (10 ft)
ST2 72-3085	Male Union Adapter 19 mm x 19 mm
ST2 72-3070	Ceiling Plate Cover
ST2 72-6001	19-22 mm Adapters

F/Air Filter Canister

- Our most popular scavenging choice
- Easy and economical
- Removes up to 50 g of halogenated gas
- Gas can be thrown away in regular trash
- Each canister is 15.2 cm (6 in) high x 8.3 cm (3¼ in) diameter and 200 g before use

Order #	Product
ST2 60-0979	F/Air Filter Canister, pkg. of 1
ST2 72-1294	F/Air Filter Canisters, case of 8
ST2 60-5251	Connector to Standard 3⁄16 in ID tubing
ST2 75-0345	F/Air Filter Canister Holder

Lab Animal Evacuation System

- Designed to be used with the multistation in facilities that do not have built-in, dedicated evacuation
- Built-in fan draws halogenated gases through activated charcoal allowing air to be recirculated
- Option to connect 2 in-exhaust ports port to ventilation system or directly outside the laboratory
- Charcoal typically lasts for 8-10 hrs of surgery

Order #	Product
ST2 72-3066	Lab Animal Evacuation System, 110 VAC, 60Hz
ST2 72-3046	Lab Animal Evacuation System, 230 VAC, 50Hz
ST2 72-3067	Charcoal Refill
ST2 72-6000	Supply Line Adapter*
ST2 72-8209	Silicone Adapter*

**To adapt part to 3/16 - 1/4 in ID tubing*

Scavenger Interface Valve for Active Systems

- The Scavenger Interface Valve is a central manifold designed to channel waste gas from your anesthesia system to your active scavenging system of choice
- Manifold allows for easy regulation of the amount of scavenging taking place allowing for proper balance of your set-up
- Includes pair of relief valves for balancing positive and negative pressure, an adjustable needle valve to control active scavenging, two 19 mm-nominal-male connectors, and reservoir bag
- Intended to be post mounted

Order #	Product
ST2 72-2217	Scavenger Interface Valve for Active Systems
ST2 72-6000	Supply Line Adapter*
ST2 72-8209	Silicone Adapter*

**To adapt connector to 3/16 - 1/4 in ID tubing.*

MiniVac Gas Evacuation Unit

- Actively absorbs anesthetic vapors from work area to protect personnel from exposure
- Small footprint
- Easy to use
- Adjustable flow
- Compatible with multiple filter canister options

Specifications	
Input	22 mm OD
Output	22 mm OD
Flow	~ 8 LPM to ~30 LPM
Speed	Adjustable from 1 to 10
Overall Dimensions (W x H x D)	12.5 x 9 x 12.8 cm
Power	100-240 VAC, 50-60 Hz
Regulatory	CE
Warranty	1 year

Order #	Product
ST2 73-4910	MiniVac Type 812 Gas Evacuation Unit
ST2 73-4911	Adapter for Fluosorber Canisters
ST2 73-4915	Adapter for F/Air Canister

34-0415

Fluosorber

- Activated charcoal canister that is packed to optimize halogenated gas absorption
- Stand-alone for passive scavenging or used with the Fluovac for efficient active scavenging
- Canister weighs 1,200 g (2.65 lb) before use and 1,400 g (3.1 lb) when full
- Canister is designed to scavenge 200 g of anesthetic agent and then can be thrown away in regular trash or incinerated in supplied bags
- Fluosorber is factory tested with an air flow of 60 LPM to ensure resistance is not above 2 cmH_2O

Order #	Product
ST2 34-0415	Fluosorber Canisters, case of 6

34-0392

Fluovac Exhaust Tube Mount

- 22 mm tapered adapter that fits into the exhaust port on the Fluovac Base Unit in order to adapt to tubing allowing the user to vent gases like nitrous oxide
- Fits with item 34-0426 corrugated plastic tubing

Order #	Product
ST2 34-0392	Fluovac Exhaust Tube Mount

Fluovac Mask Support

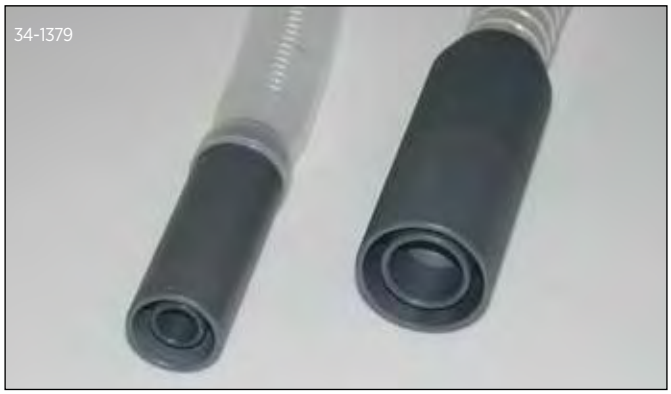
Fluovac Mask Support

- Used to hold Fluovac Masks in place on a flat surface

Order #	Product
ST2 34-0394	Fluovac, Mask Support for Size 1 Masks
ST2 34-0395	Fluovac, Mask Support for Size 2 Masks

34-0389

34-0391



Fluovac Mask

- Specially designed double mask sets that allow for proper fresh anesthetic gas delivery and proper waste gas removal
- Sized specifically for rodents

Order #	Product
ST2 34-1379	Fluovac Mask Size 0.5, Single Arm (Mouse)
ST2 34-1421	Fluovac Mask Size 0.5, Dual Arm (Mouse)*
ST2 34-0389	Fluovac Mask Size 1, Dual Arm (Rat)
ST2 34-0390	Fluovac Mask Size 2, Dual Arm (Guinea Pig)
ST2 34-0391	Fluovac Mask Size 3, Single Arm (Rabbit)

34-0402

Fluovac Isolator Valve

- Redirects gas from a Fluovac Mask when the mask is no longer in use
- Alleviates need to change the flowmeter or vaporizer setting to compensate
- Keeps Fluovac balanced when an animal is removed by opening a channel to room air and directing gas to scavenging system
- Valve works by a push-pull control knob that you set to the appropriate setting
- Please state which size masks are in use at time of order

Order #	Product
ST2 34-0402	Fluovac Isolator Valve*

**This valve is a registered design.*

Fluovac Anesthetizing Chambers and Systems

- Fluovac Anesthetizing Chambers are designed to work specifically with the Fluovac
- Made of clear Perspex with false floor for easy cleaning
- 6 mm inlet located below false floor and outlet is specially designed to include air bleeds to optimize scavenging
- Fluovac Anesthetizing Systems come complete with inlet tube mount, outlet tube mount, 6 mm ID PVC tubing, Directavalve gas flow director, and 22 mm ID tubing, plus large or small chamber

Specifications	
Dimensions, H x W x D:	
Large	200 x 200 x 305 mm (7.9 x 17.9 x 12 in)
Small	134 x 128 x 170 mm (5.3 x 5 x 6.7 in)

Order #	Product
ST2 34-0460	Anesthetizing Chamber, Large
ST2 34-0462	Anesthetizing Chamber, Small
ST2 34-0458	Fluovac Anesthetizing Chamber with Gas Scavenging System, Large
ST2 34-0461	Fluovac Anesthetizing Chamber with Gas Scavenging System, Small

Scavenged Anesthetizing Chambers

- Simply plug a size 1 mask into the rear socket and turn on the Fluovac and gas supply
- Enables researcher to keep an animal induced while performing a procedure on another
- Large and small chambers fit with size 1 masks
- Made from clear Perspex enabling end user to see when animal has been anesthetized, then the inner chamber slides forward and gas supply is diverted and scavenged

Specifications	
Dimensions, H x W x D (Inner Chamber Only):	
Large	110 x 160 x 260 mm (4.3 x 6.3 x 10.2 in)
Small	98 x 106 x 130 mm (3.9 x 4.2 x 5.1 in)

Order #	Product
ST2 34-0455	Scavenged Anesthetizing Chamber, Large
ST2 34-0456	Scavenged Anesthetizing Chamber, Small

Perspex is a trademark of Lucite International.

One-Way Respiratory Valves

- One-way respiratory valves (check valves) are designed to be used for uni-directional respiratory circuits
- Function in any position and are not gravity dependent
- Very sensitive to low flows
- Unique non-sticky Spiral-Type™ diaphragm with excellent elastic memory
- Transparent outlet port tube for visibility of diaphragm
- Threaded construction provides convenient disassembly and cleaning
- All 15 mm and 22 mm taper male and female connectors are ISO certified

One-Way Non-Rebreathing Valves														
				Resistance to Flow, Differential Pressure (dP) in cmH_2O										
				Flow lpm										
Order #	**Valve Size**	**OD (mm)**	**ID (mm)**	**2**	**4**	**6**	**8**	**10**	**15**	**20**	**25**	**30**	**35**	
ST2 60-3164	Miniature	10.5	7.5	0.5	0.6	0.7	0.8	1	1.8	3	4.6	6.4	8.5	
ST2 60-3165	Miniature	15	10.5	0.4	0.5	0.6	0.7	1.1	2.2	3.8	5.7	8.1	10.8	
ST2 60-3166	Miniature	22	15	0.6	0.7	0.8	0.9	1.1	2.2	3.8	5.6	7.7	10.3	
ST2 60-3167	Extra Small	10.5	7.5	0.6	0.8	0.9	1	1.2	1.6	2.1	2.6	3.4	4.1	
ST2 60-3168	Extra Small	15	10.5	0.5	0.6	0.7	0.7	0.8	1.1	1.3	1.7	2.1	2.5	
ST2 60-3169	Extra Small	22	15	0.4	0.5	0.6	0.7	0.8	1	1.2	1.5	1.8	2.2	
Order #	**Valve Size**	**OD (mm)**	**ID (mm)**	**20**	**60**	**100**	**140**	**180**	**200**	**300**	**400**	**500**	**600**	**700**
ST2 60-3170	Small	22	15	0.5	0.9	1.7	2.9	5	6.3					
ST2 60-3171	Small	25.4	22	0.6	1	1.7	3	5	6.3					
ST2 60-3172*	Small	22	15	0.5	0.9	1.7	2.9	5	6.3					
ST2 60-3173	Medium	35	28.6			1.6			4.7	8.8				
ST2 60-3174	Large	35	28.6			0.5		0.8	1.3	2	3	4.1	5.5	6.9

**Autoclavable One-Way Respiratory Valve*

Spiral-Type is a trademark of Hans Rudolph, Inc.

Two-Way Non-Rebreathing Valves

These are available in T or Y-shaped configurations and allow for separation of expired air for collection or use with pneumotachometers. Additional sizes are available. Please call.

- Inhalation and exhalation ports use a Spiral-Type™ diaphragm to direct flow, which is a patented uni-directional diaphragm
- Function in any position
- Not gravity dependent
- Very sensitive to low flows
- Spiral-Type™ diaphragm has a patented long life, is non-sticking and maintains excellent elasticity and sensitivity
- Easily customized

Two-Way Non-Rebreathing Valves for Small Animals

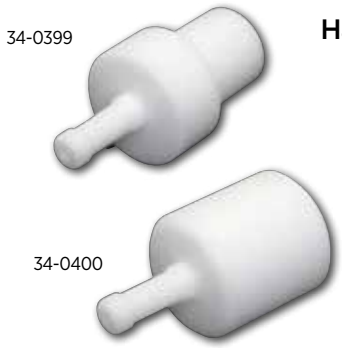
		Inhalation, Exhalation and Mouth Ports				Resistance to Flow, Differential Pressure (dP) in cmH_2O Flow in Liters/Min						
Order #	**Size/Shape**	**OD**	**ID**	**Flow Path****	**Dead Space†**	**2**	**4**	**6**	**8**	**10**	**20**	**26**
ST2 59-9370	Miniature T	3.2 mm diameter hole in valve body	-	I	0.5 ml	0.7	1.2	2.0	3.2	5.1	–	–
		7.9 mm	6.4 mm*	E	0.5 ml	0.7	1.4	2.3	3.4	4.9	–	–
ST2 59-9371	Miniature T	Female Luer Lock with 2.8 mm flow orifice	-	I	0.8 ml	0.9	1.6	2.8	4.3	6.2	–	–
		7.9 mm	6.4 mm*	E	1.0	2.2	4.0	6.2	9.2	–	–	
ST2 59-9372	Miniature T	7.9 mm	5.1 mm	I	1.3 ml	0.5	0.8	1.0	1.4	1.9	6.3	–
		7.9 mm	6.4 mm*	E	1.3 ml	0.5	1.0	1.5	2.2	3.0	9.3	–
ST2 59-9373	Miniature T	22 mm	15 mm	I	3.6 ml	0.6	0.8	1.2	1.7	2.3	8.4	–
		7.9 mm	6.4 mm*	E	3.6 ml	0.6	0.9	1.4	2.0	2.9	9.8	–
ST2 59-9377	Miniature Y	7.9 mm	6.4 mm	I	1.4 ml	0.5	0.6	0.8	1.1	1.5	5.2	9.1
		7.9 mm	6.4 mm	E	1.4 ml	0.5	0.6	0.7	0.9	1.2	3.8	6.2
ST2 59-9374	Miniature Y	10.5 mm	7.5 mm	I	1.7 ml	0.6	0.8	1.0	1.3	1.8	5.5	9.0
		10.5 mm	7.5 mm	E	1.7 ml	0.4	0.6	0.7	1.0	1.2	3.9	6.1
ST2 59-9375	Miniature Y	15 mm	10.5 mm	I	2.1 ml	0.5	0.7	1.0	1.3	1.8	6.0	9.7
		15 mm	10.5 mm	E	2.1 ml	0.4	0.6	0.8	1.1	1.5	4.7	7.4
ST2 59-9376	Miniature Y	22 mm	15 mm	I	3.4 ml	0.5	0.8	1.0	1.3	1.7	5.9	9.3
		22 mm	15 mm	E	3.4 ml	0.5	0.7	0.9	1.2	1.5	4.4	7.0
ST2 60-3121	Extra Small T	10.5 mm	7.5 mm	I	3.8 ml	0.6	0.6	0.8	0.9	1.0	2.0	2.7
		10.5 mm	7.5 mm	E	3.8 ml	0.6	0.7	0.8	1.0	1.2	2.5	3.4
ST2 60-3122	Extra Small T	15 mm	10.5 mm	I	4.2 ml	0.5	0.6	0.7	0.8	0.9	1.5	1.8
		15 mm	10.5 mm	E	4.2 ml	0.5	0.6	0.7	0.8	0.9	1.6	2.1
ST2 60-3123	Extra Small T	22 mm	15 mm	I	5.8 ml	0.5	0.6	0.7	0.8	0.9	1.6	2.0
		22 mm	15 mm	E	5.8 ml	0.5	0.6	0.7	0.8	1.0	1.7	2.2
ST2 59-9378	Extra Small Y	10.5 mm	7.5 mm	I	3.3 ml	0.3	0.5	0.6	0.8	1.0	2.1	2.8
		10.5 mm	7.5 mm	E	3.3 ml	0.4	0.6	0.8	0.9	1.1	2.2	2.9
ST2 59-9379	Extra Small Y	15 mm	10.5 mm	I	3.8 ml	0.5	0.6	0.7	0.8	1.1	1.7	2.1
		15 mm	10.5 mm	E	3.8 ml	0.5	0.6	0.7	0.8	0.9	1.5	1.8
ST2 59-9380	Extra Small Y	22 mm	15 mm	I	5.3 ml	0.5	0.6	0.7	0.8	0.9	1.6	2.1
		22 mm	15 mm	E	5.3 ml	0.5	0.6	0.7	0.8	0.9	1.6	2.0

**Inhalation and exhalation port measurements.*
***(I) is inspired and (E) is expired.*
†Dead space volume includes housing and mouth port tube.

Respiratory Adapters

- Polypropylene adapters used to connect common size respiratory tubing

Order #	Product
ST2 72-2889	Respiratory Adapter, 6 to 22 mm (0.24 to 0.87 in), pkg. of 10
ST2 72-2890	Respiratory Adapter, 8 to 22 mm (0.31 to 0.87 in), pkg. of 10
ST2 72-2891	Respiratory Adapter, 10 to 22 mm (0.39 to 0.87 in), pkg. of 10
ST2 72-2892	Respiratory Adapter, 12 to 22 mm (0.47 to 0.87 in), pkg. of 10
ST2 72-2893	Respiratory Adapter, 15 to 22 mm (0.59 to 0.87 in), pkg. of 10
ST2 72-2894	Respiratory Adapter, 18 to 22 mm (0.71 to 0.87 in), pkg. of 10



Halovet Tube Mounts

- Convenient tube mounts used with Fluovac systems and Fluosorber canisters
- Also can be used for 22 mm ports on vaporizers

Order #	Product
ST2 34-0399	Halovet Inlet Tube Mount for 22 mm Vaporizers
ST2 34-0400	Halovet Outlet Tube Mount for 22 mm Vaporizers
ST2 34-1067	Endcap for 34-1246
ST2 34-1068	Outlet Endcap for 34-1246

Tygon® Laboratory Tubing (E-3603)

- Less permeable than rubber tubing
- Autoclavable, durometer hardness: Shore A, 55
- More sizes available. Please call

Order #	ID (mm)	OD (mm)	ID (in)	OD (in)	Length (m)	Length (ft)
ST2 72-1015	1.6	3.2	1/16	1/8	15.2	50
ST2 72-1020	3.2	6.4	1/8	1/4	15.2	50
ST2 72-1024	4.8	7.9	3/16	5/16	15.2	50
ST2 72-1026	6.4	9.5	1/4	3/8	15.2	50

Flexible Tubing

Corrugated tubing to fit all 22 mm tapered male tube mounts. Supplied as 10 m roll, which is sectioned every 38 cm.

Order #	Product
ST2 34-0426	Plastic Tubing, 22 mm Taper, 10 m

Platinum Cured Silicone Tubing

- Ultra-pure biocompatible tubing
- Autoclavable, durometer hardness: Shore A, 61
- More sizes available. Please call

Order #	ID (mm)	OD (mm)	ID (in)	OD (in)	Length (m)	Length (ft)
ST2 72-1049	1.6	4.8	1/16	3/8	7.6	25
ST2 72-1068	3.2	4.8	1/8	3/16	7.6	25
ST2 72-1079	4.8	7.9	3/16	5/16	7.6	25
ST2 72-1085	6.4	9.5	1/4	3/8	7.6	25

VENTILATORS

Harvard Apparatus has manufactured high quality animal ventilators for more than 75 years. These ventilators are based on designs of Dr. William T. Porter, a Professor of Physiology at Harvard Medical School. Dr. Porter was a strong proponent of physiology education and training through The American Physiological Society and the founder of Harvard Apparatus. Our range of animal ventilators covers neonatal mice through large dogs.

PRODUCT **PAGE**

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- Model 687 Mouse Ventilator 173
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VentElite Small Animal Ventilator
See page 172

MiniVent Ventilator for Mice
See page 174

VentElite Small Animal Ventilator

- Ideal for mice to guinea pigs (10 g to 1 kg)
- Real time graphical display of tracheal pressure
- Easy to use color touchscreen
- Interchangable between volume and pressure modes
- Internal pressure monitoring for detection of over and under pressure conditions
- Manual or programmable Sigh
- Inspiratory or Expiratory Hold
- Adjustable I:E

The VentElite was designed for animals ranging in size from mice to guinea pigs. The design goal of this ventilator was to maintain versatility and ease of use while fostering safe and physiologically accurate mechanical ventilation conditions.

The VentElite utilizes advanced technologies to precisely control respiration profiles. It has two operating modes, Volume Control and Pressure Control, and allows users to easily toggle between these two modes via the Settings button on the large touch screen. The Volume Control mode delivers the desired tidal volume to the subject by precisely controlling the stroke of the piston. Since the actual stroke length, and therefore tidal volume, may be modified for a given stroke, sigh breaths are supported. Similarly, since stroke speed is precisely controllable during inspiration and expiration, variable inspiration-to-expiration (I:E) ratios are also supported. A pressure sensor continuously monitors the airway pressure to alert the user of over- and under-pressure conditions.

The Pressure Control mode of the VentElite allows the user to set the peak inspiratory pressure (PIP) value. Flow rates are automatically adjusted by changing the tidal volume while keeping the respiration rate constant. The stroke is adjusted in a manner in which the PIP is reached near the end of the piston stroke. This ensures that the subject, which has a higher airway resistance than the airway path within the ventilator, receives the majority of the expected tidal volume and that the unit does not prematurely terminate the piston stroke. Manual adjustment of the inspiratory flow rate is not required. The VentElite offers built-in Positive End Expiratory Pressure (PEEP) capability, allowing a PEEP setting via the touch screen user interface of up to 10 cmH_2O. Another feature of the VentElite is the ability to perform Inspiratory or Expiratory Hold. The user can enter the desired hold time and initiate inspiratory or expiratory hold by simply pressing the Insp. Hold/Exp. Hold button on the user interface.

Specifications	
Suggested Weight Range	10 g to 1 kg
Species	Mouse to Guinea Pig
Port Sizes	
To Animal and Source	3.6-3.8 mm (0.14-0.15 in)
From Animal and Exhaust	4.0 mm (0.16 in)
Control Modes	Volume or Pressure
Tidal Volume Range	50 µl to 5 ml
Peak Inspiratory Pressure (PIP)	0-50 cmH_2O
Breath Rate	10 to 300 bpm
I:E Ratio	20-80%
Gas Supply	Room air or nonflammable mixed gas*
Sigh Frequency	Every 10-999 breaths or manual
Sigh Breath	0-20% of tidal volume (in Volume mode) or PIP (in Pressure mode)
Safety Alarms	Over- and under-pressure
Signal Input	TTL, 0.5 V DC
Signal Output	TTL, 0.5 VDC, 5mA
Remote Communication	RS-485
Display	7 in LCD touchscreen, resistive
Power Supply	100-240 VAC, 50/60 Hz
Input Power	12 VDC, 25 W
Dimensions (W x D x H)	31.8 x 20.3 x 17.8 cm (12.5 x 8.0 x 7.0 in)
Weight	3.4 kg (7.6 lb)

**Use of a pressurized gas source with the VentElite requires the use of a connection kit.*

Order #	Product
ST2 55-7040	VentElite Small Animal Ventilator*
ST2 73-4876	Respiratory Tube Kit for VentElite, Rat, for tracheal or intubation cannula with female luer adapter
ST2 73-4899	Respiratory Tube Kit for VentElite, Mouse, for tracheal or intubation cannula with female luer adapter
ST2 73-4872	Connection Kit for VentElite for Pressurized Gas

**Requires the use of the 73-4872 Anesthesia Connection Kit when used with a high pressure gas source.*

Specifications		
Model	683	687
Rate	Adjustable from 30 to 150 strokes/min while the ventilator is running	
Phase Ratio	1:1 Fixed	
Dimensions, H x L x W	25 x 32.5 x 20 cm (10 x 13 x 7.9 in)	
Weight	9.5 kg (21 lb)	
Power	115/230 VAC, 50/60 Hz	
Ventilator	Small Animal	Mouse
Tidal Volume	Adjustable from 0.2 to 30 ml/stroke while the ventilator is running	Adjustable from 0.05 to 1 ml/stroke while the ventilator is running
Port Size, ID	3/16 in, 1/8 in	1/16 in

683 Small Animal and 687 Mouse Ventilators

- Ability to administer PEEP
- Permanent etched volume graduations on the cylinder
- Linear volume and rate control
- CE Approved

The Model 683 Small Animal Ventilator comes standard with two piston and cylinder assemblies (5 cc and 30 cc). The smaller piston (which comes installed) allows tidal volumes to be set from 0.5 to 5.0 cc in 0.5 cc increments and the larger cylinder allows tidal volumes of 3.0 to 30 cc in 0.3 cc increments. Setting the cylinder stroke between gradations it is possible to achieve finer resolution in tidal volume settings.

The Model 687 Mouse Ventilator has a single piston and cylinder assembly (1 cc). The tidal volume range is 0.1 to 1 cc in 0.1 cc increments. Setting the cylinder stroke between gradations it is possible to achieve finer resolution in tidal volume settings. For both ventilator models, the piston travels to the end of the cylinder completely emptying the cylinder and minimizing the dead space of the breathing circuit.

Both models feature a numerical LED to display the respiratory rate which can be set from 18 to 150 strokes/minute. Volume and rate settings can be adjusted while the ventilator is running. Both ventilators have four gas inlet and outlet ports: supply gas in, gas out (to animal), gas return (from animal) and ventilator exhaust. The ventilator exhaust can be attached to a column of water to achieve PEEP (positive end expiratory pressure) when long term animal ventilation is necessary.

Overhaul kits are available for both ventilator models and are specific for the type of cylinder used. Overhaul kits include complete instructions and replacement parts, but do not include replacement cylinders. Replacement cylinders must be purchased separately.

Order #	Product
ST2 55-0000	Model 683, Small Animal Volume Controlled Ventilator
ST2 55-0001	Model 687, Mouse Volume Controlled Ventilator
ST2 55-0006	Retrofit Model 683, for models pre-2008
ST2 55-0007	Retrofit Model 687, for models pre-2008
Accessories:	
ST2 73-3076	Connection Kit for 683 for Pressurized Gas
ST2 73-3077	Connection Kit for 687, MicroVent, MiniVent and MidiVent Ventilators for Pressurized Gas
Replacement Parts*:	
ST2 55-5281	Overhaul Kit for 687 Ventilator 1 cc Cylinder
ST2 55-5282	Overhaul Kit for 683 Ventilator 5 cc Cylinder
ST2 55-5283	Overhaul Kit for 683 Ventilator 30 cc Cylinder

**Overhaul kits do not include replacement cylinder. For models older than 2008, please call.*

MiniVent Ventilator for Mice

- Ideal ventilator for mice, prenatal rats, or small birds (<50 g)
- Stroke volume range from 30 to 350 µl
- Ventilation rate from 60 to 400 breaths/minute
- Valveless piston pump
- Very small instrument/circuit dead space volume
- Compact construction
- Silent operation, no vibrations
- Optional multi-gas inlet adapter available for gas mixtures and nebulized substances, see page 178
- Supplied with:
  - Silicone Tubing, 1.5 mm ID, 3.0 mm OD, 14 cm length, pkg. of 2
  - 73-2730 1.3 mm OD Tracheotomy Cannula, pkg. of 1
  - 73-2844 1.2 mm OD Intubation Cannula, pkg. of 1

The MiniVent Model 845 Ventilator is a quiet, compact and light weight ventilator. While it was designed specifically for mice, the MiniVent can be used for any animal (e.g. birds and perinatal rats) which requires tidal volumes in the range of 30 to 350 µl and respiratory rates of 60 to 400 breaths per minute.

The MiniVent Ventilator is a constant-volume respiration pump operating on the Starling principle. Unlike conventional units for larger animals, this ventilator employs a rotary plunger and has no valves. During each ventilation cycle, the plunger performs a synchronized forward and rotating movement. Cleverly arranged bores and channels in the cylinder and plunger control inspiration and expiration during each stroke of the plunger.

The extremely light weight and compact construction, in addition to the convenient rod clamp, allow the MiniVent ventilator to be positioned directly next to the animal. Typical setups with larger ventilators produce large tubing and instrument dead space volumes. These larger volumes introduce greater system compliance which can affect the accuracy with which the full tidal volume is introduced into the animal's lungs. With the MiniVent, the tidal volume error due to system compliance is reduced to 3 µl.

Tidal volume and respiration rate can be set exactly to the values required for mouse ventilation. The level of precision and control available to the investigator minimizes the danger of hyperventilation or hypoventilation. The tidal volume can be varied continuously from 30 to 350 µl during operation without having to interrupt ventilation. The respiration rate is also continuously adjustable from 60 to 400 strokes/min. The expired air can be recovered at the collection port for sampling, recycling or for the generation of a positive end-expiratory pressure (PEEP). Room air or any non-explosive gas mixture can be used to feed the pump intake.

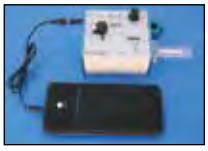
A multi-gas inlet adapter is available for the MiniVent so that alternate gas mixtures and nebulized substances are delivered to the MiniVent inlet port at atmospheric pressure. The adapter provides ports for multiple selectable gas mixtures (hypoxic, anesthetic...) and a port for the Aerosol Nebulizer.

Specifications	
Stroke Volume	Continuously adjustable from 30 to 350 µl
Respiratory Rate	Continuously adjustable from 60 to 400 breaths/minute
Power	12 VDC, 0.5A through external mains adapter
Dimensions, H x W x D	8 x 10 x 20 cm (3.2 x 3.9 x 7.9 in)
Weight:	
MiniVent	1 kg (2.2 lb)
AC Adapter	0.3 kg (0.7 lb)

Order #	Model	Product
ST2 73-0043	845	MiniVent Ventilator, 115 VAC, 60 Hz
ST2 73-0044	845	MiniVent Ventilator, 230 VAC, 50 Hz
Options:		
ST2 73-3077		Connection Kit for MicroVent, MiniVent and MidiVent Ventilators for Pressurized Gas
ST2 73-4008		Trigger Output Option for End of Inspiration*
ST2 73-4013		Trigger Output Option for End of Expiration*

**Must be ordered at time of MicroVent or MidiVent Purchase, or requires an RMA.*

Battery Pack for MicroVent, MiniVent, MidiVent



- Provides transportability while under ventilation
- Up to 100 hrs of use from a single charge
- Lithium Polymer Battery 6,600 mAh capacity

Order #	Product
ST2 73-4127	Battery Pack for MicroVent, MiniVent, and MidiVent

Replacement Parts

Order #	Product
ST2 73-0049	Replacement Y-piece with 1.3 mm OD tracheal cannula and connecting tubes
ST2 73-2730	Replacement Tracheotomy Cannula, 1.3 mm OD
ST2 73-2844	Replacement Intubation Cannula, 1.2 mm OD
ST2 73-4112	Replacement Tracheotomy Cannula, 1.5 mm OD
ST2 73-4115	Replacement Intubation Cannula, 1.5 mm OD
ST2 73-0027	Small Y Adapters, each with 2x silicone tubing 1.5 mm ID, mm OD, pkg. of 10
ST2 73-0032	Medium Y Adapters, each with 2x silicone tubing 6 mm ID, 9 mm OD, 80 cm long, pkg. of 5

MicroVent Prenatal Mouse Ventilator Model 848

- Ideal for very small animals; perinatal mice, small birds (<18 g)
- Stroke volume 0-130 µl
- Ventilation rate from 60-400 breaths/minute
- Valveless piston pump
- Very small instrument and circuit dead space (<3 µl)
- Compact construction
- Silent operation and no vibrations
- Optional multi-gas inlet adapter available for gas mixtures and nebulized substances, see page 176
- Supplied with:
  - Silicone Tubing, 1.5 mm ID, 3.0 mm OD, 14 cm length, pkg. of 2
  - 73-2731 1.5 mm OD Tracheotomy Cannula, pkg. of 1
  - 73-2737 1.5 mm OD Intubation Cannula, pkg. of 1

Specifications	
Stroke Volume	Continuously adjustable from 0 to 130 µl
Respiratory Rate	Continuously adjustable from 60 to 400 breaths/minute
Power	12 VDC, 0.5A through external mains adapter
Dimensions, H x W x D	8 x 10 x 20 cm (3.2 x 3.9 x 7.9 in)
Weight	
MicroVent	1 kg (2.2 lb)
AC Adapter	0.3 kg (0.7 lb)

Order #	Model	Product
ST2 73-3591	848	MicroVent Ventilator, 115 VAC, 60 Hz
ST2 73-3590	848	MicroVent Ventilator, 230 VAC, 50 Hz
Options:		
ST2 73-3077		Connection kit for MicroVent, MiniVent and MidiVent Ventilators for Pressurized Gas
ST2 73-4008		Trigger Output Option for End of Inspiration*
ST2 73-4013		Trigger Output Option for End of Expiration*
Replacement Parts:		
ST2 73-2731		Replacement Tracheotomy Cannula, 1.0 mm OD
ST2 73-2737		Replacement Intubation Cannula, 1. 0 mm OD
ST2 73-0027		Small Y adapters, each with 2x silicone tubing 1.5 mm ID, 3 mm OD, 14 cm Long, pkg. of 10

**Must be ordered at time of MicroVent Purchase, or requires an RMA.*

MidiVent Ventilator for Large Mice and Small Rats

- Ideal ventilator for large mice and small rats (<100 g)
- Stroke volume range from 60 to 700 µl
- Ventilation rate from 60 to 400 breaths/minute
- Valveless piston pump
- Very small instrument/circuit dead space volume
- Compact construction
- Silent operation, no vibrations
- Optional multi-gas inlet adapter available for gas mixtures and Nebulized substances, see page 176
- Supplied with:
  - Silicone Tubing, 1.5 mm ID, 3.0 mm OD, 14 cm length, pkg. of 2
  - 73-4112 1.5 mm OD Tracheotomy Cannula, pkg. of 1
  - 73-4115 1.5 mm OD Intubation Cannula, pkg. of 1

Specifications	
Stroke Volume	Continuously adjustable from 60 to 700 µl
Respiratory Rate	Continuously adjustable from 60 to 400 breaths/minute
Power	12 VDC, 0.5A through external mains adapter
Dimensions, H x W x D	8 x 10 x 20 cm (3.2 x 3.9 x 7.9 in)
Weight:	
MidiVent	1 kg (2.2 lb)
AC Adapter	0.3 kg (0.7 lb)

Order #	Model	Product
ST2 73-4120	849	MidiVent Ventilator for Mice, 115 VAC, 60 Hz
ST2 73-4119	849	MidiVent Ventilator for Mice, 230 VAC, 50 Hz
Options:		
ST2 73-3077		Connection Kit for MicroVent, MiniVent and MidiVent Ventilators for Pressurized Gas
ST2 73-4008		Trigger Output Option for End of Inspiration*
ST2 73-4013		Trigger Output Option for End of Expiration*

**Must be ordered at time of MicroVent Purchase, or requires an RMA.*

HSE-HA Pressure Monitor & Limiter for Small Animal

- Set peak pressure range anywhere between 10-50 cmH_2O
- Reduces animal mortality and lung damage
- Continuous pressure measurement during ventilation
- Pressure is released by an overpressure valve
- Analog pressure signal output to record with DAQ software and TTL output of valve status
- Audible alarm

The HSE-HA Pressure Monitor and Limiter is placed between the ventilator and animal. Excessive pressures are released by an overpressure valve, protecting the ventilator and animal. It is an ideal control tool for controlling pressure on mechanical ventilators, such as MicoVent, MiniVent, MidiVent, Model 687 and Model 683.

Specifications	
Valve Opening Delay	10 msec max
Pressure Range	10-50 cmH_2O
Recording Output for pressure	0-4 V (50 mV/cmH_2O)
Adjustable Valve Open Time	50-500 msec
Trigger Output	TTL (Low for valve open)
Connectors:	
Pressure Recording	BNC
TTL Output	BNC
Port Sizes:	
Mouse Actuator	ID = 1.5 mm, OD = 2.0 mm
Rat Actuator	ID = 3.5 mm, OD = 4.0 mm
Power Supply	12 VDC through external main adapter 100-240 VAC
Dimensions (W x D x H):	
Pressure Monitor & Limiter	150 x 100 x 55 mm (5.9 x 3.9 x 2.2 in)
Actuator Head Mouse	65 x 42 x 25 mm (2.6 x 1.7 x 1 in)
Actuator Head Rat	80 x 48 x 28 mm (3.1 x 1.9 x 1.1 in)
Certifications	CE

Order #	Product
ST2 73-4329	Respiratory Pressure Monitor & Limiter for Mouse, including Actuator Head Mouse type 384/I and Respiratory Pressure Monitor & Limiter type 870/I and bar with magnet holder, 100-240 VAC, 50/60 Hz
ST2 73-4330	Respiratory Pressure Monitor & Limiter for Rat, including Actuator Head Rat 384/2 and Respiratory Pressure Monitor & Limiter type 870/I and bar with magnetic holder, 100-240 VAC, 50/60 Hz.
Accessories:	
ST2 73-4336	Ball Holder to MicroVent, MiniVent and MidiVent
ST2 73-4337	Bar with magnetic ball for positioning and mounting the actuator head
ST2 73-0566	Plexiglass Block Clamp for mounting bar with magnetic ball on lab stand
ST2 73-0500	Lab stand with Triangular Base Plate (one block clamp included)

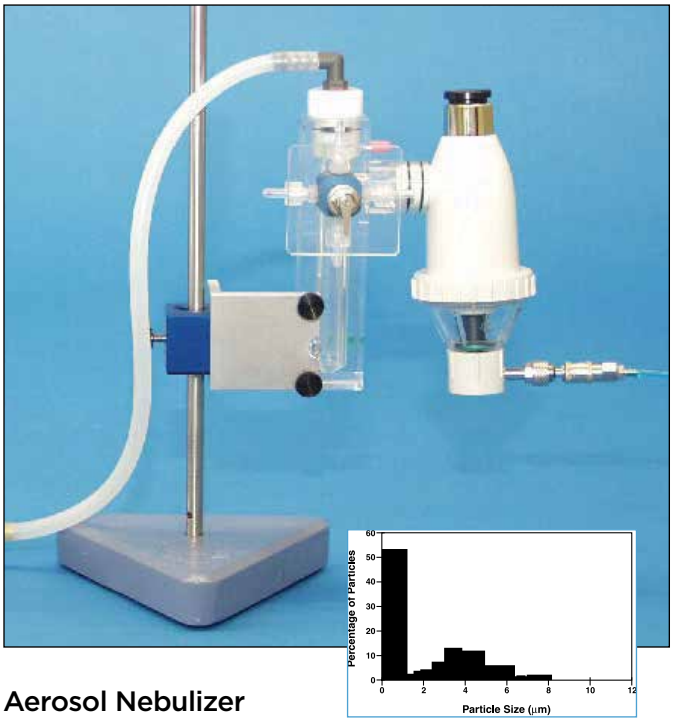
Large Animal Ventilators, Model 613

- For animals from 1.5 to 50 kg (3.3 to 110 lb)
- Volume adjustable from 30 to 750 cc/stroke while running
- Variable Inspiratory: Expiratory ratio

Specifications	
Volume	Adjustable from 30 to 750 cc/stroke. Note that the volume adjustment is made on the crank and therefore accurate volume adjustments cannot be made while ventilator is running
Rate	Adjustable from 7 to 50 strokes/min while the ventilator is running
Phase	Adjustable from 25 to 50% of a single stroke cycle continuously variable while the pump is in operation

Order #	Product
ST2 55-0715	Large Animal Volume Controlled Ventilator, Model 613, 115 VAC, 60 Hz
ST2 55-0723	Large Animal Volume Controlled Ventilator, Model 613A, 230 VAC, 50 Hz
ST2 55-0731	Overhaul Kit for Large Animal Ventilator*

**Overhaul kit does not include cylinder.*

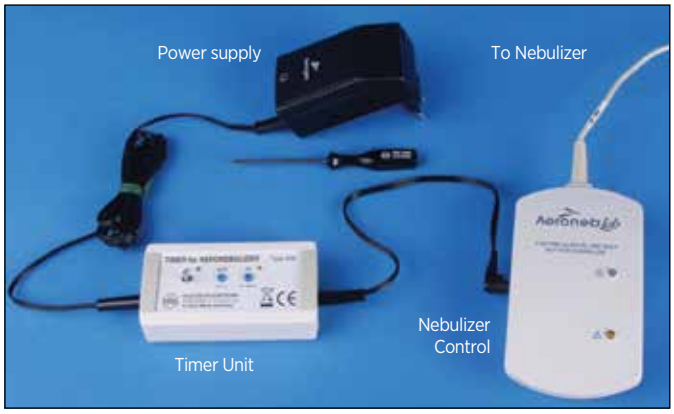


Aerosol Nebulizer

- Low particle sizes (100% when particles are below 10 µm)
- No solution warming required
- Ideal for nebulizing drugs sensitive to ultrasonic cavitation
- Aerosol is automatically transported by compressed air
- Connecting block required to attach Nebulizer to HSE-HA single/double chamber plethysmograph or mouse plethysmograph
- Multigas Inlet Adapter (73-2919) required for use with MicroVent, MiniVent, or MidiVent*
- Available with Multi-Gas Adapter Kit for Chamber/Box use

Size Micron	Below	Band in Micron	% in Band
10.5	100	**13.6 to 10.5**	0
8.19	99.7	**10.5 to 8.19**	0.2
6.37	98	**8.19 to 6.37**	1.7
4.97	92.2	**6.37 to 4.97**	5.8
3.88	80.9	**4.97 to 3.88**	11.3
3.04	68.3	**3.88 to 3.04**	12.6
2.40	61.5	**3.04 to 2.40**	6.8
1.90	57.7	**2.40 to 1.90**	3.8
1.52	54.5	**1.90 to 1.52**	3.2
1.22	52	**1.52 to 1.22**	2.5
		1.22 to 0	52.0

Order #	Product
ST2 73-1963	Aerosol Nebulizer
ST2 73-3433	Aerosol Nebulizer with Multi-Gas Adapter Kit for Chamber/Box Use*
ST2 73-2919	Multi-Gas Inlet Adapter for MicroVent, MiniVent and MidiVent, see page 174-175
ST2 73-3300	Tubing Connection Kit for Aerosol Nebulizer



Ultrasonic Aerosol Nebulizer System

- Nebulizer does not alter formulation's molecular integrity
- High quality aerosol, precise particle size 2.5 to 4 µm
- Low flow rate approximately 0.1 ml/min
- Low residual volume <0.2 ml
- Nebulized substance does not contaminate the inspiration path of the ventilator
- Suitable for rats, guinea pigs or rabbits
- Low dead volume adapter keeps system compliance to 1.5 ml
- System does not exceed 30˚C after 15 min of use
- System includes Nebulizer, filler cap, control and timing unit with power supply, and low dead volume adapter

Order #	Product
ST2 73-3948	Ultrasonic Aerosol Nebulizer System
Replacement Parts:	
ST2 73-3732	Ultrasonic Nebulizer with Filler Cap
ST2 73-3733	Ulrasonic Nebulizer Control Unit with Power Supply and Timer
ST2 73-3734	Low Dead Volume Adapter for Nebulizer

Anesthesia Connection Kit

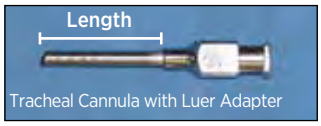
- Necessary for connection of your small animal ventilator to anesthesia system
  - Directly connect anesthesia to ventilator for appropriate delivery to intubated or tracheotomized animal
  - Removes pressurized gas to waste port preventing lung and ventilator damage

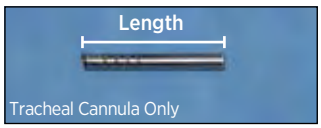
Order #	Product
ST2 73-3076	Anesthesia Connection Kit for 683 Ventilator
ST2 73-3077	Anesthesia Connection Kit for MicroVent, MiniVent, MidiVent and 687 Ventilators
ST2 73-4872	Anesthesia Connection Kit for VentElite Ventilator

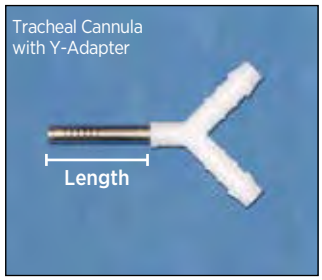
Endotracheal Tubes

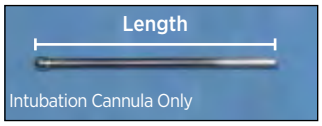
- Uncuffed (cuffed available, please call)
- Graduated radiopaque PVC tubing
- Suitable for oral or nasal intubation
- Supplied sterile in boxes of 10
- Endotracheal Tube Connector Kit available for easy connection to ventilators
- Large Animal Endotracheal tubes available (please call)

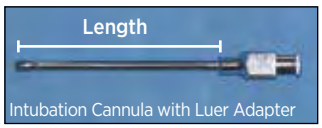
Order #	OD	ID
ST2 59-9070	3.36 mm (0.13 in)	2.5 mm (0.10 in)
ST2 59-9071	4.0 mm (0.16 in)	3.0 mm (0.12 in)
ST2 59-9072	4.7 mm (0.19 in)	3.5 mm (0.14 in)
ST2 59-9073	5.3 mm (0.21 in)	4.0 mm (0.16 in)
ST2 59-9074	6.0 mm (0.24 in)	4.5 mm (0.18 in)
Accessories:		
ST2 72-8331	15 mm Endotracheal Tube Connector Kit	

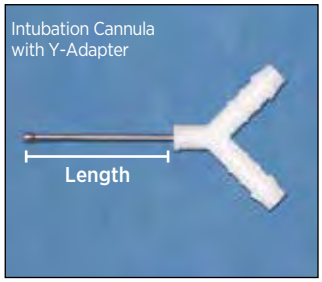












Tracheal Cannulae

The tracheal cannula is used in a tracheotomy for general ventilation or respiratory mechanics studies. The outside diameter of the cannula must ensure a tight fit to the inside diameter of the animal's trachea. The cannulae are available in three versions:

- Cannula only, for your own assembly
- With Y-adapter for connecting to a ventilator, the outside diameter of the Y-adapter matches to most of the ports diameter of the ventilators
- Luer-adapter for use with any Luer style connections, such as the Y-Luer Adapters described below

Intubation Cannulae

The intubation cannula is used in chronic studies where the animal will be intubated. The outside diameter of the cannula must ensure a tight fit to the animal's trachea. These cannulae are also available in the three versions.

- Cannula only, for your own assembly
- With Y-adapter for connecting to a ventilator, the outside diameter of the Y-adapter matches to most of the ports diameter of the ventilators
- Luer-adapter for use with any Luer style connections, such as the Y-Luer Adapters described below

		Tracheotomy Cannulae						Intubation Cannulae					
OD (mm)	Animal	Cannula Only	Length	with Y-Adapter	Length	with Luer Adapter	Length	Cannula Only	Length	with Y-Adapter	Length	with Luer Adapter	Length
1.0	Mouse	**ST2 73-0029**	15	**ST2 73-2731***	13	**ST2 73-2835**	8	**ST2 73-0030**	28	**ST2 73-2737***	24	**ST2 73-2848**	26
1.1	Mouse	–	–	–	–	–	–	**ST2 73-2838**	28	**ST2 73-2843***	24	**ST2 73-2849**	26
1.2	Mouse	**ST2 73-2825**	15	**ST2 73-2830***	13	**ST2 73-2836**	8	**ST2 73-2839**	30	**ST2 73-2844***	27	**ST2 73-2850**	27
1.3	Mouse	**ST2 73-0028**	15	**ST2 73-2730***	13	**ST2 73-2837**	9	–	–	–	–	–	–
1.5	Small Rat	**ST2 73-2826**	20	**ST2 73-4112+**	15	**ST2 73-2729**	10	**ST2 73-2840**	37	**ST2 73-4115+**	32	**ST2 73-2851**	32
1.8	Small Rat	**ST2 73-2827**	20	**ST2 73-4113+**	15	**ST2 73-2728**	13	**ST2 73-2841**	40	**ST2 73-4116+**	35	**ST2 73-2852**	35
2.0	Small Rat	**ST2 73-2828**	25	**ST2 73-4114+**	20	**ST2 73-2727**	13	**ST2 73-0038**	50	**ST2 73-4117+**	45	**ST2 73-2853**	45
2.3	Rat/Guinea Pig	**ST2 73-2829**	25	**ST2 73-2834#**	20	**ST2 73-2726**	14	**ST2 73-2842**	50	**ST2 73-2847#**	45	**ST2 73-2854**	45
2.5	Rat/Guinea Pig	**ST2 73-0033**	25	**ST2 73-2732#**	20	**ST2 73-2725**	17	**ST2 73-0039**	50	**ST2 73-2739#**	45	**ST2 73-2855**	45
3.0	Rat/Guinea Pig	**ST2 73-0034**	25	**ST2 73-2733#**	20	**ST2 73-2724**	20	**ST2 73-0040**	60	**ST2 73-2740#**	53	**ST2 73-2856**	53
3.5	Rat/Guinea Pig	**ST2 73-0035**	30	**ST2 73-2734#**	25	**ST2 73-2723**	24	**ST2 73-0041**	63	**ST2 73-2741#**	56	**ST2 73-3112**	56
4.0	Rabbit	**ST2 73-0036**	32	**ST2 73-2735§**	25	–	–	–	–	–	–	–	–
4.0	Rabbit	–	–	–	–	–	–	**ST2 73-0042**	74	**ST2 73-0042§**	62	–	–
4.0	Rabbit	**ST2 73-0037**	35	**ST2 73-2736§**	30	–	–	–	–	–	–	–	–
4.0	Rabbit	**ST2 73-3319**	40	**ST2 73-2819§**	30	–	–	–	–	–	–	–	–

* *Micro Y-adapter for Minivent and MicroVent, for tubing ID 1.5 to 2.2 mm*
\# *Medium Y-adapter, for tubing ID 6 to 7.4 mm*
\+ *Miniature Y-adapter, for tubing ID 2.5 to 3.4 mm*
§ *Large Y-adapter, for tubing ID 7 to 10 mm*

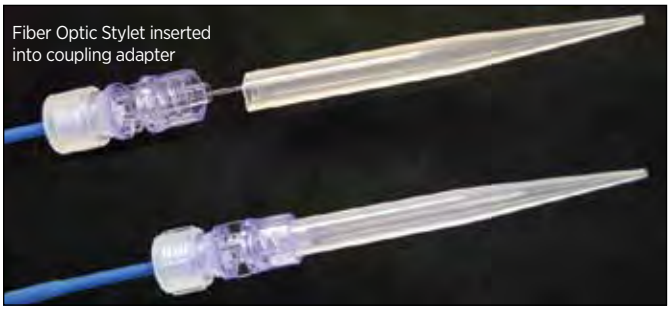
Y-Luer Adapter

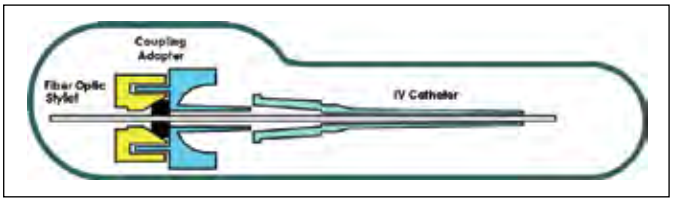
These Y-Luer Adapters are for use in general ventilation or respiratory mechanics studies. Five sizes available.

Order #	Product
ST2 73-4118	Adapter for Luer cannulae with Miniature Y-adapter for tubing ID 1.5 to 2.2 mm (e.g. MicroVent and MiniVent)
ST2 73-4121	Adapter for Luer cannulae with Y-adapter for tubing ID 2.5 to 3.4 mm (e.g. MidiVent)
ST2 73-4122	Adapter for Luer cannulae with Y-adapter for tubing ID 3.3 to 4.6 mm
ST2 73-4123	Adapter for Luer cannulae with Y-adapter for tubing ID 4.1 to 4.9 mm
ST2 73-4065	Adapter for Luer cannulae with medium Y-adapter for tubing ID 6 to 7.4 mm

Fiber Optic Stylet (FOS)

Fiber Optic Stylet illuminated


Fiber Optic Stylet inserted into coupling adapter



Lung Inflation Bulb (Shown with Endotracheal Tube)

Illuminator

Small Animal Intubation Kits

- Three kits available depending on your animal size
- Intubation kits supplied with: Fiber optic stylet size dependent on kit ordered, endotracheal tubes (pkg. of 5) size dependent on kit ordered, illuminator and carrying case

Order #	Product
ST2 72-9085	Mouse Intubation Kit
ST2 72-9086	Small Rat Intubation Kit
ST2 72-9087	Large Rat Intubation Kit
ST2 72-9088	Stylet Kit - includes one of each stylet, illuminator and carrying case
ST2 72-9089	Complete Kit - includes one of each stylet, each size of endotracheal tube (pkg. of 5 for each size), illuminator

Fiber Optic Stylet (FOS)

- Fiber optic light allows greater visibility during intubation procedure
- Semi-rigid guidance for intubation of small animals
- Illumination end is stripped and reinforced fiber optic wire and inserted into trachea through IV catheters
- Coupling adapter is included to couple the IV catheters to the FOS

Order #	Description	Weight Range	Catheter Sizes
ST2 72-9075	Stylet for Mice	10+ g	10-20 g-22 ga (1.0 in) 20+ g-22 ga (1.0 in)
ST2 72-9076	Stylet for Rats	100-200 g	18 ga (1.25 in)
ST2 72-9077	Stylet for Rats	200-300+ g	200-300 g-16 ga (1.25 in) 300+g-14 ga (1.5 in)
ST2 72-9078	Illuminator for Fiber Optic Stylets		

Lung Inflation Bulb

- Safe and reliable method for verification of endotracheal tube placement
  - Squeezing bulb creates obvious distension of chest when endotracheal tube is placed properly
- Reduces time off ventilator
- Reduces animal distress
- Distal end is a male Luer that mates with female Luer connector on endotracheal tube
- Semi-disposable as needed

Order #	Product
ST2 72-9083	Lung Inflation Bulb, pkg. of 3
ST2 72-9084	Lung Inflation Bulb, box of 50

Small Animal Endotracheal Tubes

- Flexible design minimizes trauma
- Urethane IV Catheter
- Available in two sizes

Order #	Product
ST2 72-9079	Endotracheal Tube 20 ga x 1 in for Mice, pkg. of 5
ST2 72-9080	Endotracheal Tube 20 ga x 1 in for Mice, pkg. of 50
ST2 72-9081	Endotracheal Tube 16 ga x 1.25 in for Rats, pkg. of 5
ST2 72-9082	Endotracheal Tube 16 ga x 1.25 in for Rats, pkg. of 50

Fiber Optic Laryngoscope Sets

- Removable fiber optic light pipe for easy cleaning and quick replacement
- Durable one-piece stainless steel construction; knurled finish for positive grip
- Brilliant halogen illumination provides twice the light intensity of ordinary laryngoscope lamps
- Wireless blades eliminate electrical contact
- MacIntosh and Miller style fiber optic blades available

Miller Fiber Optic Laryngoscope Set

- Includes 5 Miller laryngoscope blades from 0-4 with small and medium handle, with zippered case

Order #	Product
ST2 59-6569	Miller Fiber Optic Laryngoscope Set

MacIntosh Fiber Optic Laryngoscope Set

- Includes four MacIntosh laryngoscope blades with a small and medium handle, with zippered case

Order #	Product
ST2 59-6563	MacIntosh Fiber Optic Laryngoscope Set

Fiber Optic Laryngoscope Blades

Order #	Size	Overall Length	Inside Length (Base to Tip)
MacIntosh Laryngoscope Blades:			
ST2 59-6559	1	89 mm (3.5 in)	63 mm (2.4 in)
ST2 59-6560	2	108 mm (4.3 in)	82 mm (3.2 in)
ST2 59-6561	3	126 mm (4.9 in)	101 mm (3.9 in)
ST2 59-6562	4	160 mm (6.3 in)	135 mm (5.3 in)
Miller Laryngoscope Blades:			
ST2 72-6390	00	8 mm (0.32 in)	36 mm (1.42 in)
ST2 59-6564	0	8 mm (0.32 in)	53 mm (2.0 in)
ST2 59-6565	1	8 mm (0.32 in)	79 mm (3.1 in)
ST2 59-6566	2	79 mm (3.1 in)	132 mm (5.2 in)
ST2 59-6567	3	11 mm (0.4 in)	172 mm (6.8 in)
ST2 59-6568	4	13 mm (0.5 in)	182 mm (7.2 in)

Laryngoscope Handles for Fiber Optic Blades

- Available with disposable batteries or rechargeable 2.5 V nickel-cadmium battery (batteries supplied with handles)
- Disposable battery styles come in two sizes:
  - AA Penlight, Small
  - C, Medium
- Rechargeable is available in medium size only
- Recharger base can hold two handles and is sold separately

Order #	Product
ST2 59-6572	Laryngoscope Handle, Small with Disposable Battery (AA Penlight)
ST2 59-6571	Laryngoscope Handle, Medium with Disposable Battery (C)
ST2 59-6718	Laryngoscope Handle, Medium with Rechargeable Battery
ST2 59-6719	Recharger Base, 115 VAC, 60 Hz
ST2 59-6721	Replacement 2.5 V Nickel-Cadmium Battery
ST2 59-6570	Replacement Halogen Lamp for 59-6572, 59-6571 and 59-6718 Laryngoscope Handles, pkg. of 1

Small Animal Laryngoscope

NEW PRODUCT

- Suitable for mouse and rat
- Contains notch for guiding catheters

Order #	Product
ST2 73-4867	Small Animal Laryngoscope, includes: blade, handle, 1x AAA battery, and package of disinfectant wipes
ST2 73-4868	Disinfectant wipes, pkg of 48

VITAL SIGNS

Vital signs monitoring is required for veterinary and large animal surgeries in order to ensure the best surgical outcome, but is just as important in small animal surgeries. Harvard Apparatus offers a wide variety of equipment which enables the monitoring and recording of vital signs for small and large animals, providing a means to ensure subjects stay within normal physiological parameters.

Vital signs monitoring of the cardiopulmonary system reflects not only the health of the animal but the depth of anesthesia. Historical methods for small animals include reflex monitoring, which is crude and not always appropriate; for instance, the use of paralytics invalidates the toe pinch method. Traditional vital signs include blood pressure (invasive or non-invasive), end-tidal carbon dioxide ($ETCO_2$), arterial blood oxygen saturation (SpO_2), ECG, heart rate, respiration rate and temperature. Combining the vital signs monitors with data acquisition adds a new level of data preservation and analytics that any lab can appreciate.

PRODUCT **PAGE**

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73-3330 HSE USB Data Acquisition Hardware

HSE Data Acquisition Hardware

- Available as stand-alone or a PLUGSYS module
- USB stand-alone option allows DAQ to be interfaced with any computer
- 16 channels of raw data with the USB stand-alone option
- Option for PLUGSYS module available in 8 or 16 channels

HSE HAEMODYN Software

- Easy to use
- Predefined settings for fast and easy set up
- Ability to edit settings to fit the experimental needs of the user
- Up to 16 channels of raw data, with additional derived parameters
- Numerical and graphical representation of data
- Ability to add notes on data readout
- Runs on Windows 2000, Windows XP, Windows 7 and higher
- Modular add on options available for expanded functionality

The HSE HAEMODYN software can be adapted to fit virtually any experiment. Signals such as blood pressures and flows, temperature, and blood gas levels can be monitored and various parameters can be derived from these signals. While the software is running, all acquired signals and derived parameters are displayed on the screen and can be saved.

The HSE HAEMODYN software is easy to use and adaptable. The basic HAEMODYN software includes the minimum necessary algorithms for basic pressure and flow parameters. Additional modules are available to increase functionality. In all cases, the software is preconfigured for the application in an effort to reduce the amount of time the user spends setting it up. This allows for the user to calibrate the signals, alter the graphic scaling as needed, and start their experiment. The user does have the ability to alter the predefined set up should they wish to do so.

Acquired Signals:

- Aortic Pressure
- Aortic Flow
- Arterial Pressure
- Arterial Flow
- Coronary Flow
- pO_2
- pCO_2
- pH
- Temperature

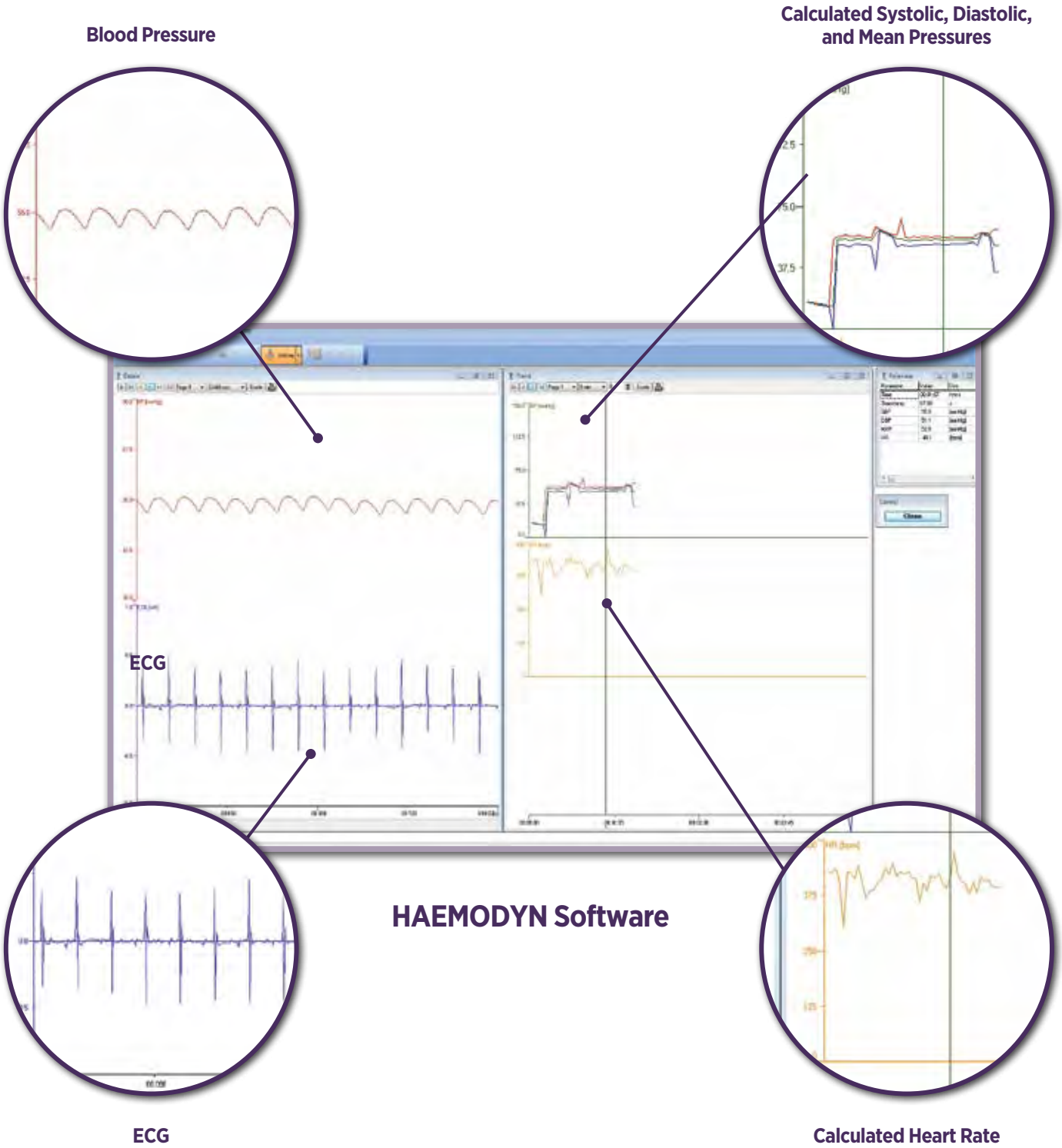
Derived Parameters:

- Systolic Pressure
- Diastolic Pressure
- Mean Pressure
- Pulse Rate
- dp/dt
- Contractility Index (CI)
- Minimal Flow
- Maximal Flow
- Mean Flow

Other Modules

Additional modules are available for expanded functionality. The Respiration Module allows you to monitor respiratory rate, maximum inspiratory flow, maximum expiratory flow, and tidal volume. The Advanced Respiration Module allows you to monitor all the parameters that are monitored in the Respiration Module with the addition of dynamic resistance, compliance, and conductance. Other modules are available for the collection of data related to LVP and MAP measurements.

HSE offers additional software for other specialized applications. Other software available includes BDAS, ACAD, ISOHEART, PULMODYN, NEURO-DYN, and PENNOCK. Please contact us at support@hbiosci.com for more information.



Order #	Product
Hardware	
ST2 73-3330	HSE-USB Data Acquisition Hardware, stand-alone USB box
ST2 73-4817	USB-C Module for PLUGSYS, 8 channel
ST2 73-4818	USB-C Module for PLUGSYS, 16 channel
Software	
ST2 73-4793	HSE Haemodyn Software

Order #	Product
Optional Software Modules	
ST2 73-0239	Respiration Software Module
ST2 73-3613	Advanced Respiration Software Module
ST2 73-0237	LVP Advanced Software Module
ST2 73-2715	Monophasic Action Potential Module

Research Surgical Monitoring Suites Powered by PowerLab®

Powerful research surgical monitoring systems can be built around the PowerLab® Data Acquisition System with LabChart software. Harvard Apparatus provides a wide variety of surgical monitors featuring analog data output, allowing all of your surgical and research data to be recorded right into your computer.

PowerLab Data Acqusition System

LabChart Software

PowerLab® Data Acqusition System

High-performance data acquisition hardware trusted for a wide range of life science research.

PowerLab is engineered for precise, consistent, reliable data acquisition, giving you the reproducible data you need while meeting the strictest international safety standards.

LabChart™ 8 Software

Intuitive and powerful software allows researchers to concentrate on the science. With no programming required, the software is mastered quickly and provides comprehensive recording, display and analysis features.

The PowerLab® Advantage

PowerLab® Data Acquisition Systems are complete data acquisition and analysis solutions for academic institutions, government organizations and private industry. Supplied with LabChart™ and Scope™ software, PowerLab® systems offer comprehensive data recording, display and analysis features for a wide variety of research applications.

Around the PowerLab® system we provide a range of amplifiers, instruments and specialized analysis software to provide a complete research solution.

Computer System Compatibility

- LabChart 8.0.10 or later requires Microsoft Windows 10, Microsoft Windows 8, 7, or Vista SP1 (32-bit and 64-bit editions)
- Microsoft .NET Framework 4 or later
- Google Chrome 24.0 or later; Mozilla Firefox 18.0 or later; Internet Explorer 9 or later; Safari 6 or later
- USB interface for operation with PowerLab
- Minimum screen resolution of 1280 x 768 to support common projector settings

All PowerLab Data Acquisition Systems are Supplied with

- LabChart or LabChart Pro software
- Cable kit including power cord, BNC to BNC test cable, USB cable
- Finger pulse transducer

Specifications (subject to change)	
Analog Inputs:	
Number of Inputs	4, 8 or 16 channels
Input Configuration:	
4 Inputs PL3504	4 single-ended or 4 differential Pod and 4 single-ended
8 Inputs PL3508	4 dedicated single-ended inputs, 4 inputs configurable as single-ended or differential (through Pod port)
16 Inputs PL3516	12 dedicated single-ended inputs; 4 inputs configurable as single-ended or differential (through Pod port)
Amplification Range	±2 mV to ±10 V full scale in 12 steps
Maximum Input Voltage	±15 V
Sampling:	
ADC Resolution	16 bit (313 µV resolution on 10 V range)
Linearity Error	2.5 LSB (from 0 to 70°C)
Maximum Sampling Rates	200 kHz on one or two inputs
	100 kHz on 3 or 4 inputs
	40 kHz on 5 to 8 inputs
	20 kHz on 9 to 16 inputs
Analog Outputs:	
Quantity	Number of outputs 2
Output Configuration	Single-ended (outputs can be used as one differential output)
Output Range	±200 mV to ±10 V full scale in six steps
Output Resolution	16 bit (313 µV resolution on 10 V range)
External Trigger:	
Mode	TTL level (isolated) or contact closure (non-isolated)
Digital Output	8 independent lines, TTL output level (8 mA maximum load per line)
Digital Input	8 independent lines, TTL input level, threshold 1.2 V, 10 kΩ input impedance, 5 V maximum
Physical Configuration:	
Dimensions, H x W x D	60 x 300 x 300 mm (2.4 x 11.8 x 11.8 in)
Weight	4.8 kg (10.58 lb)
Operating Voltage	90 to 250 V (automatic)
Maximum Power Needs	80 VA (full complement of Front-ends and Pods)
Operating Temperature	10 to 35°C, 0 to 90% humidity (non-condensing)

Order #	Product
ST2 77-0239	PL3504 PowerLab 4/35 – 4 Channels with LabChart Software
ST2 77-0241	PL3508 PowerLab 8/35 – 8 Channels with LabChart Software
ST2 77-0243	PL3516 PowerLab 16/35 – 16 Channels with LabChart Software
ST2 77-0240	PL3504/P PowerLab 4/35 – 4 Channels with LabChart Pro Software
ST2 77-0242	PL3508/P PowerLab 8/35 – 8 Channels with LabChart Pro Software
ST2 77-0244	PL3516 PowerLab 16/35 – 16 Channels with LabChart Pro Software

PowerLab is a registered trademark of ADInstruments, Inc.
LabChart is a trademark of ADInstruments, Inc.

Small Animal Physiological Monitoring System

- Small footprint
- Real-time numeric and graphic display
- Add notes, save and export data for easy analysis
- Controlled heating platform maintains the animal's body temperature at the desired level

The Small Animal Physiological Monitoring System is an instrument integrating multiple physiology parameters on one single small platform.

The objective behind this new instrument is to provide superior monitoring results, while making surgery and other manipulations on small animals easier.

The platform integrates monitoring of the rectal temperature, electrocardiogram (ECG), respiration, oxygen saturation (SpO_2), blood pressure and exhaled CO_2 ($EtCO_2$). It also includes a controlled heating surface to maintain the animal's body temperature at the desired level.

The system has many benefits regarding surgery procedures. It demands less installation time at the beginning of procedures and it reduces the required space and the number of wires around the animal. A single data/power cable connects to a small wireless communication module. All data is transferred to an Android tablet by Bluetooth for display and saving.

The Physiological Monitoring System features a real-time display which provides numeric values as well as waveforms that can be customized by the user. Multiple signals can be displayed on each of the three graphs.

The Physiological Monitoring System is available with a stereotaxic adaptor option, which includes ear bars, a tooth bar and either a nose bar or an anesthesia mask. The stereotaxic device is fixed to the platform, but can easily be removed depending upon the application.

The Physiological Monitoring System comes complete with a heated platform (for rats or mice), an Android tablet with case and stand, Bluetooth communication module, a rectal probe and electrode gel.

At the end of experiments, recorded data can easily be transferred to any computer for analysis. Scripts and utilities are provided to convert data in LabChart or csv format and to display signals in Excel and Matlab.

Physiological Parameters

ECG

- Integrated electrodes under the paws & external electrodes

Respiration

- Waveform acquired with a sensor under the animal

Heart & Breath Rate

- Real-time display from the ECG and respiration waveform

Warming & Temperature

- Heated platform and rectal probe for precise control and monitoring

Blood Pressure (option)

- Connection for a pressure transducer

SpO_2 (option)

- Pulse oximetry and oxygen saturation with a paw/tail sensor

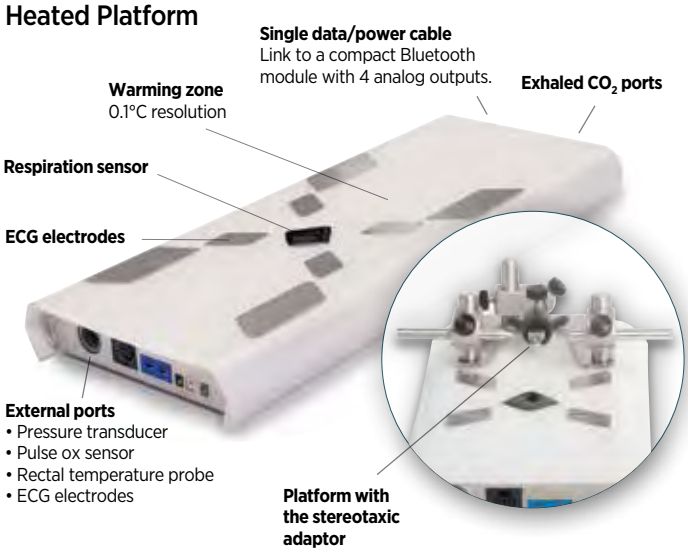
Exhaled CO_2 (option)

- Gas ports for precise CO_2 measurements (with an external ventilator)

Order #	Product*
ST2 75-1500*	Physiological Monitoring System for Mouse
ST2 75-1501*	Physiological Monitoring System for Rat and Mouse
ST2 75-1502	Blood Pressure Option (BP Transducer purchased separately)
ST2 75-1503	End Tidal CO_2 Option
ST2 75-1504	SpO_2 Option (Pulse Ox Sensor included with option)
ST2 73-4905	APT300 Pressure Transducer for Physiological Monitoring System
ST2 77-0207	ECG 3-Needle Electrodes, 2 mm pin
ST2 75-1540	Stereotaxic Kit with Gas Anesthesia Mask for 75-1500 Mouse Platform
ST2 75-1541	Stereotaxic Kit with Nose Clamp for 75-1500 Mouse Platform
ST2 75-1542	Stereotaxic Kit with Gas Anesthesia Mask for 75-1501 Rat/Mouse Platform
ST2 75-1543	Stereotaxic Kit with Gas Anesthesia Mask for 75-1501 Rat/Mouse Platform
ST2 75-1539	Anesthesia Nose Cone Holder for Physiological Monitoring System

**At the end of the part number add EU for Europe, UK for United Kingdom and CN for China models.*

Heated Platform



Advanced Display Interface

Detailed Specifications

ECG

- Display Leads I, II, III, aVL, aVR & aVF
- Supine or prone position
- 1 kHz, 24-bit acquisition
- 3 external electrodes connections (2 mm)

Respiration

- 250 Hz acquisition

Heart & Breath Rate

- 200 to 800 beats/min
- 25 to 330 breaths/min
- Calculated every second

Warming & Temperature

- Heated surface up to 45°C
- 0.1°C resolution
- Closed loop PID controller keeps the animal within ±0.1°C of set temperature

Blood Pressure

- Full waveform display
- Systolic and diastolic numeric values
- Comes standard with Redel 5-pin connector
- Adaptor available for 8-pin DIN connector
- 250 Hz acquisition, 24-bit bridge amplifier

Exhaled CO_2

- Connect ventilator directly to the platform (1/8" tubing)
- 1 Hz refresh rate
- 0.1% accuracy

SpO_2

- 80 to 100% saturation
- 250 Hz, 24-bit acquisition
- Red & infrared channel display

System Information

Heated Platform

- Easy to clean surface
- 10 cm x 21 cm x 2.5 cm (mice)
- 12 cm x 30 cm x 2.5 cm (rat and mouse)

Tablet

- 8" Android tablet (10.1" available)
- High resolution touchscreen display
- Capacity of over 400 hours of saved data
- 5-8 hours battery life
- USB cable and charger

Communication Module

- Bluetooth and analog outputs are in a separate enclosure to avoid interferences
- 9 cm x 11 cm x 2.5 cm
- 100-240V power supply

Bluetooth

- 15 to 25 meters typical range between the communication module and the display unit

Analog Outputs

- 4 configurable outputs
- BNC connectors, ±5V range
- 1 kHz, 16-bit refresh rate

Data Analysis

- .csv conversion tool
- MATLAB® & Excel® import and display scripts
- Compatible with third-party analysis software (LabChart)

PULSE OXIMETRY

Pulse oximetry measures arterial blood oxygen saturation levels (SpO_2%). This is accomplished by looking at the relative absorptions of red and infared lights. The differential absorptions correspond to the ratio of oxyhemoglobin deoxyhemoglobin (Alexander, Teller and Gross, 1989). Pulse oximetry is the most common vital signs monitor and is used to pick up problems in anesthesia such as hypoventilation, airway obstructions and equipment related problems.

MouseOxPlus® Pulse Oximeter for Rodents

- Provides the following measurements:
  - Arterial Oxygen Saturation
  - Heart Rate
  - Breath Rate
  - Temperature (optional)
  - Pulse Distention
  - Breath Distention
  - Activity (optional)
- Standard software for monitoring anesthetized animals included in all systems
- Option for Premium software or DAQ interface box for data collection and analysis
- Conscious Monitoring option
- Option for multiple animal monitoring from one MouseOx Plus system

This non-invasive pulse oximeter is designed to work with neonatal mice through adult rats. It has a patented design to detect heart rates of 90-900 bpm. The MouseOxPlus® easily allows researchers to titrate mechanical ventilation and monitor depth of anesthesia.

A complete system for anesthetized animals consists of the MouseOx Plus, software, and a sensor. A complete System for conscious animals consists of the MouseOx Plus, software with Conscious Monitoring module, conscious monitoring equipment and a collar clip sensor.

All MouseOx Plus® systems come with two sensors of your choice.

Specifications		
Oxygen Saturation (SpO_2):		
Range	0 to 100% Arterial Blood Oxygen Saturation	
Resolution	≤1.5% across entire measurement range	
Response Time	Reported after every heartbeat; screen refreshed every 0.72 seconds	
Pulse Rate (BPM):		
Range	90 to 900 BPM	
	Pulse Rate (BPM)	**Resolution (BPM)**
	210	2.4
	300	4.9
	400	8.7
	500	13.5
	600	19.4
	700	26.2
	800	34
	900	42.9
Response Time	Reported after every heartbeat; screen refreshed every 0.72 seconds	
Breath Rate (BrPM):		
Range	25 to 450 BrPM	
	Breath Rate (BrPM)	**Resolution (BrPM)**
	25	0.1
	100	0.6
	200	2.2
	300	4.9
	400	8.7
Response Time	Reported every 1.7 seconds as a moving average of the rate of breathing for the previous 10 breath rate measurements. The screen updates every 0.72 seconds, but new breath rate data is presented at the lower rate.	
Pulse Distension:		
Range	0 to 800 mm	
Resolution	≤2.4% of measurement	
Response Time	Reported after every heartbeat — screen refreshed every 0.72 seconds	
Breath Distension:		
Range	0 to 800 mm	
Resolution	≤2.4% of measurement	
Response Time	Reported every 1.7 seconds	
Temperature Range	15° to 50°C	
Resolution	±0.1 °C	
Response Time	Reported every 0.72 seconds	

**MRI compatible with purchase of MRI module.*
***Multiple subject monitoring with purchase of a multiplexer.*

MouseOx and MouseOxPlus are registered trademarks of Starr Life Sciences.
ThroatClip, STARR-link and CollarClip are trademarks of Starr Life Sciences.

Order #	Order #	Product
115VAC	**230VAC**	
Bundles		
ST2 72-8010	**ST2 72-8011**	MouseOx®Plus with Standard Software (for monitoring only)
ST2 72-8018	**ST2 72-8019**	MouseOx®Plus with Premium Software
ST2 72-8020	**ST2 72-8021**	MouseOx®Plus with Starr-Link
Additional Items Needed For Multiple Animals		
ST2 72-8013	**ST2 72-8014**	MouseOx®Plus Multiplexer, 16 channels
ST2 72-8083	**ST2 72-8084**	MouseOx®Plus Multiplexer, 8 channels
ST2 72-8008	**ST2 72-8009**	MouseOx®Plus Multiplexer, 8 channels with temperature
ST2 72-8080*	**ST2 72-8080***	Universal Cable, 1.8 m (6 ft)
ST2 72-8081*	**ST2 72-8081***	Universal Cable, 3.7 m (12 ft)
Additional Items Needed for Consious Animals (Collar Clip sensor needed)		
ST2 72-8012**	**ST2 72-8012****	MouseOx®Plus Premium Software
ST2 72-9709	**ST2 72-9709**	MouseOx®Plus Conscious Monitoring Module
ST2 75-0550	**ST2 75-0550**	MouseOx®Plus Mouse Conscious Monitoring Equipment, to mount onto 61-0046 (see page 101)
ST2 72-0139	**ST2 72-0139**	MouseOx®Plus Rat Conscious Monitoring Equipment, to mount onto 61-0042 (see page 101)
Software Additions/Upgrades		
ST2 72-8012	**ST2 72-8012**	MouseOx®Plus Premium Software
ST2 72-8016	**ST2 72-8016**	MouseOx®Plus Temperature Module, includes sensor and cable
ST2 72-8017	**ST2 72-8017**	MouseOx®Plus MRI Temperature Module, includes sensor and cable
ST2 72-9709	**ST2 72-9709**	MouseOx®Plus Conscious Monitoring Module
ST2 72-8022	**ST2 72-8023**	MouseOx®Plus Starr-Link

**One cable of either the 1.8 m or 3.7 m length needed per channel*
***Required if adding Conscious monitoring to a system with the basic software*

Pulse Oximetry Sensors

All sensors are for MouseOx®Plus. Please call if you have the previous generation MouseOx.

- CollarClip™ is a non-invasive clip for awake-behaving subjects
- ThroatClip™ is a non-invasive clip for anesthetized subjects

Order #	Order #	Product
Pkg of 5	**Pkg of 1**	
ST2 72-8085	**ST2 73-4742**	Collar Clip™ XS with Blank Clip: Mouse 1 to 15 g, Conscious Mice and Young Rats
ST2 72-8086	**ST2 73-4743**	Collar Clip™ S with Blank Clip: Mouse >15 g, Rag 5 to 30 g
ST2 72-8087	**ST2 73-4744**	Collar Clip™ M with Blank Clip: Mouse and Rat 30 to 100 g
ST2 72-8092	**ST2 73-4746**	Collar Clip™ L with Blank Clip: Rat 101 to 300 g
ST2 72-8093	**ST2 73-4747**	Collar Clip™ XL with Blank Clip: Rat 301 to 500 g
ST2 72-8094	**ST2 73-4748**	Collar Clip™ 2XL with Blank Clip: Rat > 500g
ST2 72-8088	**ST2 72-4725**	Throat Clip™ XS with Blank Clip: Mouse 1 to 15 g, Conscious Mice and Young Rats
ST2 72-8089	**ST2 73-4724**	Throat Clip™ S with Blank Clip: Mouse >15 g, Rat 5 to 30 g
ST2 72-8090	**ST2 73-4745**	Throat Clip™ M with Blank Clip: Mouse and Rat 30 to 100 g
ST2 72-8095	**ST2 73-4749**	Throat Clip™ L with Blank Clip: Rat 101 to 300 g
ST2 72-8096	**ST2 73-4750**	Throat Clip™ XL with Blank Clip: Rat 301 to 500 g
ST2 72-8097	**ST2 73-4751**	Throat Clip™ 2XL with Blank Clip: Rat > 500g
ST2 72-8091	**ST2 73-4557**	Mouse Thigh Sensor
ST2 72-8098	**ST2 73-4752**	Rat Foot Sensor
ST2 72-8100	**ST2 73-4886**	Mouse Foot Sensor
Module Sensors:		
ST2 72-8015		MouseOx® Plus MRI sensor
ST2 75-0558		Temperature Sensor with 1.8 m (6 ft) Cable
Cables:		
ST2 72-9670		1.8 m (6 ft) Universal Connector Cable for CollarClip®/SubQ™ Sensors
ST2 72-9604		USB Cable for MouseOx
ST2 72-8080		Universal Cable, 1.8 m (6 ft)
ST2 72-8081		Universal Cable, 3.7 m (12 ft)
ST2 72-8082		Multiplexer Patch Cable 0.3 m (1 ft)
Replacement Parts:		
ST2 72-9605		Power Supply for MouseOx®
ST2 72-9606		Int'l Power Supply/MouseOx®

**Please order item 72-8081 for each subject you intend to use with the Mulitplexer. You must order at least one.*

V1030 Hand Held Pulse Ox for Large Animals

V1030 Hand Held Pulse Ox for Large Animals

- Low perfusion performance
- Motion tolerance
- Pulse amplitude Index (PI) bar-graph indicator to help identify and maintain a good test site
- Quick selection of default alarm limit values by patient type: cat, dog, horse, factory and custom
- Large bright LED display
- Memory storage for up to 99 patients
- Audible visual alarms
- 3-year warranty
- System includes:
  - 1.5 m (5 ft) oximetry extension cable
  - Reflectance oximetry sensor
  - Universal "Y" oximetry sensor
  - Four AA Alkaline batteries (17 hrs of use)

Order #	Product
ST2 72-3126	V1030 Pulse Oximeter
Accessories	
ST2 75-0250	Custom Lithium Ion Rechargeable Battery, 30 hrs of use, 3-hr charge
ST2 75-0251	Power Supply Universal with US/Japan Adapter 30 Watt, 100-240 VAC, 50 Hz
ST2 75-0252	Power Supply Universal with International Blades, 30 Watt, 100-240 VAC, 60 Hz
ST2 75-0253	AC Power and Rechargeable Lithium Ion Battery System
ST2 75-0254	AC Power and Rechargeable Lithium Ion Battery System (OUS*)
ST2 75-0255	Universal Mounting Bracket
ST2 75-0256	Universal Mounting Bracket with IV Pole Clamp
ST2 75-0257	Docking Station to convert V1030 to Tabletop Unit
ST2 75-0258	Docking Station (OUS*)

*Note *OUS = Outside US.*

V3304 Pulse Oximeter with SAC Technology

V3304 Pulse Oximeter with SAC Technology

- Reliably measure SpO_2 and pulse rate
- Internal rechargeable battery
- Easy-to-read LED display with adjustable brightness
- Variety of reusable sensors designed for animal applications
- Quantitative pulse strength bar
- Visual and audible alarm signals
- Advanced digital oximetry
- 99 patient memory
- Veterinary specific SpO_2 sensors to accommodate a variety of species, e.g., rabbits, cats and dogs

Specifications	
SpO_2 & Pulse Rate	3-digit LED display, 10.9 mm (0.43 in) high
SpO_2:	
Range	0 to 100%
Accuracy	±2% at 70 to 100% ±3% at 50 to 69%
Alarm Range	High: 50 to 100% and Off (1% steps)
	Low: 50 to 99% and Off (1% steps)
Averaging	4, 8, or 16 pulse beat average
Pulse Rate:	
Range	20 to 350 BPM
Accuracy	±1 beat or 2% whichever is greater
Alarm Range	High: 5 to 350 BPM and Off (5 BPM steps)
	Low: 5 to 350 BPM and Off (5 BPM steps)
Averaging	8 or 16 sec average
Battery Life	Standard lead-acid battery: Internal rechargeable; not user replaceable. Fully charges in about 6 hrs. Approximately 4.5 hrs continuous use.
Printer Output	SpO_2 and pulse rate can be printed every 5 seconds (data log). Data saved every 4 to 30 seconds can be printed (trend) analog output (optional) digital output (optional).
Safety Approvals	Designed to meet IEC-601-1, CSA 125, UL 544, and CE (EMC)
AC Charger Voltage Requirement	105 to 125 VAC, 60 Hz, 100 V
	230 VAC, 50/60 Hz (Optional)
Dimensions, H x W x D	216 x 82 x 140 mm (3.4 x 8.5 x 5.5 in)
Weight	810 grams (1.8 lb)

Order #	Product		
ST2 72-3174	V3304 Digital Table Top Pulse Oximeter, 110 VAC, 60 Hz		
ST2 72-3264	V3304 Digital Table Top Pulse Oximeter, 220 VAC, 50 Hz		
Sensors and Sensor Accessories		**Optional Accessories**	
ST2 72-3256	Universal "Y" Sensor	**ST2 72-3178**	Digital Output Adapter
ST2 72-3254	Reflectance Sensor	**ST2 73-4896**	Analog Output Adapter
ST2 72-3157	Oximetry Cable, 1.5 m (5 ft)	**ST2 72-3175**	IV Pole Bracket
ST2 72-3163	Oximetry Simulator 1.5 m (5 ft)		

Advisor® Vital Signs Monitor

Advisor® Vital Signs Monitor

- Four waveform color display
- Point and click interface
- View all parameter trending information on screen
- 2-year warranty
- All Advisor models come complete with power cord, reflectance Y sensor, oximetry extension cable, 3 lead ECG, NIBP cuff set and manual.

The Advisor® Vital Signs Monitor is the leading choice in multi-parameter monitoring and is ideal for larger animals such as cats, dogs, pigs, horses, and non-human primates. It has a large easy-to-read display, intuitive design, and is available in multiple configurations. Standard parameters include ECG, pulse oximetry, heart rate, non-invasive blood pressure. Optional parameters include end tidal CO_2, respiratory rate, 2-channel temperature, and 2-channel invasive blood pressure (IBP).

Specifications	
Displays & Controls:	
Main Display	10.4 in diagonal LCD, 640 x 480 pixels
ECG:	
Heart Rate Range	20-350 BPM
Heart Rate Accuracy	±2 BPM or ±2% whichever is greater
QRS Detection Range:	
Normal	0.5 to 5 mV
High Sensitivity	0.1 to 5 mV
Alarm Ranges Heart Rate	20-350 BPM and Off
Lead Selection	I, II, or III
Display Gain Settings	X0.5, X1, X2, X4
SpO_2:	
SpO_2 Range	0-100% functional saturation
SpO_2 Accuracy	±2% @ 70-100%, <70% unspecified
Pulse Rate Range	20-350 BPM
Pulse Rate Accuracy	±2 BPM or ±2% whichever is greater
SpO_2 Alarm Ranges	50-100% and Off
NIBP:	
Method of Measurement	Oscillometric with step-down deflation
Systolic Pressure	40 to 265 mmHg
Mean Arterial	27-222 mmHg
Disastolic Pressure	20-200 mmHg
Pulse Rate Range	25 to 350 BPM
Pulse Rate Accuracy	25-250 BPM ±2% or 3 BPM whichever is greater 251-300 BPM ±5%, <25 or >300 unspecified
Inflation Pressure Settings	200 mmHg Cat, 150 mmHg Dog, 120 mmHg Horse
Adjustment Range	60-280 mmHg Cat, 120-280 mmHg Dog/Horse
NIBP Clinical Accuracy	Based on human algorithm and meets accuracy requirements for ANSI/AAMI SP10: 1992 and 2002
Auto Interval Times	1-10, 15, 20, or 30 minutes; 1, 2, 4 or 8 hrs
Alarm Range	1 mmHg Steps and Off
Patient Safety	Max cuff inflation time is 75 sec; max blood pressure reading time is 120 sec
Capnography:	
Measurement	Non-Dispersive IR Absorption
Measurement Range	0-10% CO_2 STPD
Display Range	0 to 100 mmHg; 0 - 14kPa; 0-10% CO_2
Accuracy	±2 mmHg or 4% of reading whichever is greater

Advisor is a registered trademark of Smiths Medical.

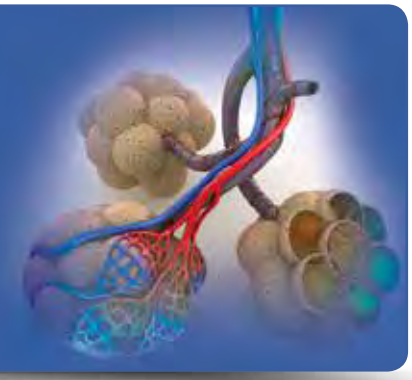
Specifications (continued)	
Capnography (continued):	
N_2O Compensation	Selectable 40%
Averaging	4 breaths
Flow Rate	150 ml/min ±20 ml
$ETCO_2$ Alarm Range	0-100 mmHg, 0-14 kPa, 0-10% CO_2 and Off
Respiration Rate:	
Range	0-150 BPM
Accuracy	±1 BPM
Alarm Range	3-120 BPM and off
2-Channel IBP:	
Measuring Range	-50-300 mmHg
Accuracy	±1 mmHg or ±1%, whichever is greater
Alarm Limits	-50-300 mmHg
Pulse Rate:	
Range	20-350 BPM
Accuracy	±2 BPM or ±2% whichever is greater
Averaging	8 sec
2-Channel Temperature:	
Range	0° - 50°C
Accuracy	±0.1°C plus temperature sensor tolerance
Resolution	0.1°C
Alarm Limits	20° to 50°C and Off
Sensor Compatibility	YSI 400 Series Temperature Sensors, see pages 78-79
Power Requirements:	
AC Input	100-240 VAC, 0.8 A, 50/60 Hz
Battery Operating Time	60-120 min
Dimensions (H x W x L)	30.5 x 18.0 x 34.0 cm (12.0 x 7 x 13.25 in)
Weight	4.1 - 5 kg (9-11 lb)

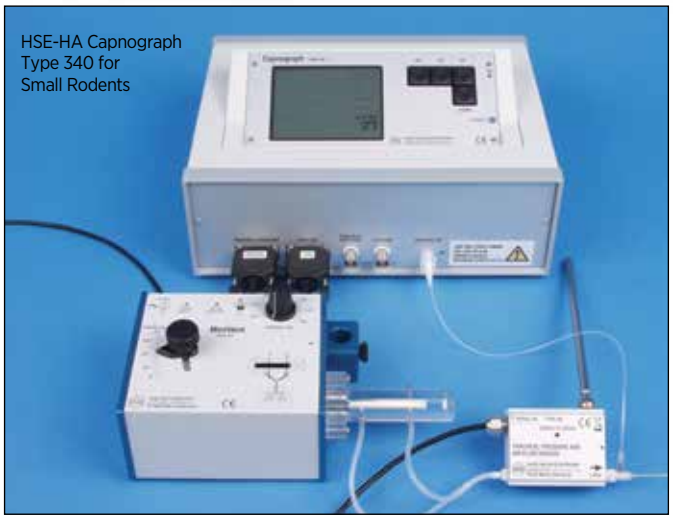
Order #	Product
ST2 72-6077	Advisor® 3 Lead ECG, SpO_2, Heart Rate and NIBP
ST2 75-0259	Advisor® 3-Lead ECG, SpO_2, Heart Rate, NIBP, IBP, and Temperature; includes Temperature Probe and Cable, IBP Transducer and Cable.
ST2 75-0260	Advisor® 3 Lead ECG, SpO_2, Heart Rate, NIBP, End Tidal CO_2 and Respiration Rate
ST2 75-0261	Advisor® 3 Lead ECG, SpO_2, Heart Rate, NIBP, 2-Channel IBP, End Tidal CO_2, 2-Channel Temperature and Respiration Rate; includes Temperature Probe and Cable, Reusable Esophageal/ Rectal Temperature Probe, IBP Transducer and Cable, and Capnograph start-up kit
Accessories and Replacement Products	
ST2 72-3233	CO_2 Calibration Kit
ST2 72-3246	Moisture Trap
ST2 72-3254	Reflectance Sensor
ST2 72-3256	Universal "Y" Sensor
ST2 72-3258	"C" Sensor for cats, dogs and horses.
ST2 72-6003	Mini Clip Sensor for small dogs, small cats and small non-human primates
ST2 72-3157	5-ft Oximetry Extension Cable
ST2 75-0264	3-Lead ECG Wires with Alligator Clips, 40 in
ST2 72-6079	3-Lead ECG Wires with Alligator Clips, 60 in
ST2 72-6080	3-Lead ECG Cable (Can be used with 75-0264, 75-0265)
ST2 72-6011	Temperature Cable
ST2 59-9808	Small Flexible Vinyl Rectal/Esophageal Probe, pkg. of 1
ST2 75-0249	Invasive Blood Pressure Transducer Cable
ST2 75-0248	Invasive Blood Pressure Transducer
ST2 72-3253	CO_2 Monitor Exhaust Kit for Scavenging Halogenated Gases

CAPNOGRAPHY

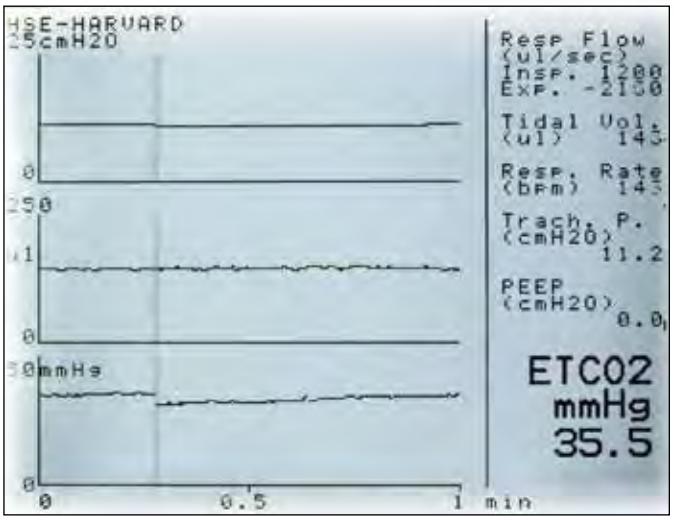
Capnography is the first indicator of the quality of anesthesia and the health of the subject. The lungs are very susceptible to anesthesia and a good common indicator for metabolic function. Capnography can easily indicate if the anesthetic conditions are non-optimal through the shape of the capnograph. For instance, rebreathing is indicated by a continuously rising CO_2 level. In disease models, the alveolar plateau indicates healthy lungs have disappeared.

The level of carbon dioxide at the end of expiration (end tidal carbon dioxide, $ETCO_2$) is normally within a few mmHg of the arterial carbon dioxide level. $ETCO_2$ is very useful for assessing adequacy of ventilation both during spontaneous respiration and when using a ventilator.





HSE-HA Capnograph Type 340 for Small Rodents



HSE-HA Capnograph Type 340 for Small Rodents

- Capnography for mice and rats
- Built-in highly sensitive temperature and pressure compensated infrared spectroscopy CO_2 sensor
- Very low system compliance
- Basic evaluated parameters are CO_2 and respiration rate
- Optional flow heads to extend function to create a complete respiratory survey and monitoring system.
  - Peak Inspiratory Flow
  - Peak Expiratory Flow
  - Peak Inspiratory Pressure
  - Positive End-Expiratory Pressure
  - Tidal Volume
  - Respiratory Rate
- Analog output of CO_2 waveform and end tidal CO_2 for data collection on all versions.
- Analog output of CO_2 waveform, end-tidal CO_2, respiratory flow, tracheal pressure, respiratory rate and tidal volume in extended version.

Specifications	
CO_2 Range	0 to 10%
Tracheal Pressure Range	-10 to +80 cmH_2O
Airflow Range	
Mouse	±3.00 ml/sec
Rat	±30.00 ml/sec
Tidal Volume Range	
Mouse	1.0 ml
Rat	5.0 ml
Respiratory Rate Range	0 to 300 BPM
Output Signal Range	±4 V
Sample Rate	
Mouse	~10 ml/min
Rat	~15 ml/min

Order #	Product
ST2 73-3809	Capnograph Type 340, 100-240 VAC, 50/60 Hz
ST2 73-3816	Flow Pressure Sensor for Mouse to Capnograph Type 340
ST2 73-3817	Flow Pressure Sensor for Rat to Capnograph Type 340
Accessories	
ST2 73-0500	Lab Stand with Triangular Base Plate
ST2 73-4166	Mouse Cannulating Kit
ST2 73-4165	Rat Cannulating Kit
ST2 73-4164	CO_2 Inlet Tube Set for Capnograph Type 340

V8401 Capnocheck

V8401 Capnocheck

- Hand-held Capnograph for small animal veterinary facilities (e.g., Cat)
- Highly portable unit that measures capnography, respiration rate and $ETCO_2$
- Side-stream technology for use on intubated and non-intubated subjects
- One-touch function keys for easy operation

Specifications	
Display	LCD, with electroluminescent back light
Indicators	High, medium and low priority alarm
	Alarm mute
	AC power
Graphic Trends	$ETCO_2$ and respiration rate
Waveforms	CO_2 waveforms
Numerical Data and Messages	$ETCO_2$, respiration rate and status messages
Sidestream Capnography:	
Measurement	Non-dispersive IR absorption
Measurement Range	0 to 10% CO_2, STPD
Units	User-selectable: mmHg, Vol. %, kPa
Display Range	0 to 100 mmHg, 0 to 13.3 kPa, 0 to 10% CO_2
Accuracy	±2 mmHg or 4% (<50breaths/min) whichever is greater
	51 to 80 breaths/min: +4/-10% of reading
	81 to 150 breaths/min: +4/-20% of reading
Averaging	4 breath average
N_2O Compensation	Selectable 40% (default = off)
System Response Time	2.46 sec to 90% with 8 ft patient time
Flow Rate	120 ±20 ml/min
Calibration	Manual 2 point
Respiration rate	0-150 BPM
Averaging	4 BPM
Serial Output	Infrared port for printer
Battery	Lithium Ion, 7.4 VDC User Replaceable Rechargeable Continuous life of 6 hrs 2.5 hrs charging time
Dimensions, H x W x D	12.7 x 11.1 x 7.4 cm (5 x 4.38 x 2.9 in)
Weight	0.63 kg (22 oz)

Order #	Product
ST2 72-6016	Hand Held Capnometer, 120 VAC, 60 Hz
ST2 72-6017	Hand Held Capnometer, 220 VAC, 50 Hz
ST2 72-3253	CO_2 Monitor Exhaust Kit
ST2 72-3232	Patient Attachment Kit

SAC is a trademark of Smiths Medical.

V3395 Temperature SpO_2 and Respiration Monitor with SAC™ Technology

V3395 Temperature SpO_2 and Respiration Monitor with SAC™ Technology

- Portable temperature, SpO_2, pulse rate and respiration monitor
- Ideally suited for veterinary clinical settings, large rodents through horses
- Advanced digital oximetry with SAC™ technology
- Plethysmograph waveform displayed
- Adjustable and visible audible alarm limits
- 99-patient memory

Specifications	
SpO_2:	
Range	50% to 100%
Accuracy	±2% at 70% to 100%
Calibration	Factory calibrated
Alarm Ranges	50% to 100% (1% increments), and OFF
Pulse Rate:	
Range	2 to 350 BPM
Accuracy	Greater of ±2% or ±2 BrPM over full range
Temperature:	
Range	0° to 60°C
Accuracy	±1°C
Alarms	No alarms for temperature
Respiration:	
Range	5 to 150 BPM
Sensitivity	7 levels
Accuracy	<±2% or ±2% BrPM over full range
Dimensions, H x W x D	12.7 x 11.1 x 7.4 cm (5.0 x 4.38 x 2.9 in)
Weight	624 g (22 oz)
Battery Life	NiMH rechargeable battery allow for 2 hrs of continuous use

Included Components:

- AC charger
- Refractance Sensor
- Temperature Cable and Probe
- Respiration Cable and Probe
- 1 5-foot Oximetry Extension Cable
- Operations Manual
- Protective Boot

Order #	Product
ST2 72-6008	Temperature, SpO_2 and Respiration Monitor
Replacement Parts	
ST2 72-3254	Reflectance Sensor
ST2 72-6009	AC Charger, 110 VAC, 60 Hz
ST2 72-6012	Temperature Probe
ST2 72-6011	Temperature Cable
ST2 72-6013	Respiration Cable/Probe
ST2 72-3256	Universal "Y" Sensor
Accessories	
ST2 72-6010	AC Charger, 220 VAC, 50 Hz

V9004 Series Intelligent Capnography

V9004 Series Intelligent Capnography

V9004 Series Capnograph monitor provides capnography, $ETCO_2$, inspired CO_2 and respiration rate.

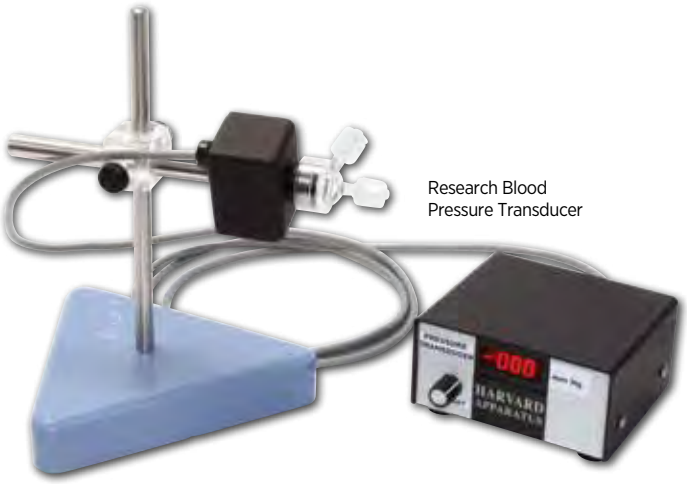
- Incorporates sidestream technology for application with intubated and non-intubated patients
- End-tidal CO_2 numeric value
- End-tidal CO_2 wave form
- Inspired CO_2 and respiration rate
- High resolution vacuum fluorescent display
- Simplified menu structure
- Flexibility to incorporate SpO_2 and FiO_2
- Patented moisture removal system

Specifications	
Display:	
Displayed Trends	Graphical display, factory selectable sample rate, user selectable trend
CO_2:	
Measurement	Non-dispersive IR absorption
Measurement Range	0 to 10% CO_2
Units	User-selectable: mmHg, Vol. %, kPa
Display Range	0 to 100 mmHg or 0 to 10.0% or 0 to 13.3 kPa
Accuracy	±2 mmHg; ±0.3%; ±kPa or 4% of reading whichever is greater (0 to 10% CO_2)
N_2O Compensation	User-selectable 40% (default = off)
Averaging	4-breath average
Respiration Rate:	
Range	0 to 120 ±BPM
Averaging	4-breath average
SpO_2 (optional):	
Range	0 to 100%
Accuracy	±2% at 70 to 100%; ±3% at 50-69%
Averaging	4, 8, 16 beat, user selectable
FiO_2 (optional):	
Range	0 to 100%
Accuracy	±2%
Response Time	<10 sec to 90%
Pulse Rate (optional):	
Range	20 to 350 BPM
Accuracy	2% over full range
Averaging	8 or 16 seconds; user-selectable
Drift	<2% of full scale per month
Battery Requirements	Nickel cadmium battery, 6 VDC internal rechargeable, not replaceable, fully charged continuous-use life 2 hrs approximately, maximum full charge time 4 hrs
Serial Output	RS-232C: tabular trends, patient data
Analog Output	Any three of: CO_2 waveform, Plethysmogram, End Tidal CO_2, Respiration Rate, Inspired CO_2, % SpO_2, Pulse Rate, Fractional Inspired Oxygen, 0 V or 1 V Cal signal, Range 0 to 1 VDC full scale
Safety Approvals	Designed to meet IEC 601-1, CSA 125, UL 544 and IEC 601-1-2 (EMC CE), ISO 9001 Certified
Dimensions, H x W x D	88.9 x 254 x 139.8 mm (3.5 x 10.0 x 5.5 in)
Weight	2.27 kg (5 lb)

Order #	Product
ST2 72-3240	Table Top Capnograph, 110 VAC, 60 Hz
ST2 72-5807	Low Flow Capnograph, 110 VAC, 60 Hz
ST2 72-3276	Table Top Capnograph, 220 VAC, 50 Hz
ST2 72-3241	TT Capnograph and Oximeter, 110 VAC, 60 Hz
ST2 72-3277	TT Capnograph and Oximeter, 220 VAC, 50 Hz
ST2 72-3242	TT Capnograph, Oximeter and FiO_2, 110 VAC, 60 Hz
ST2 72-3278	TT Capnograph, Oximeter and FiO_2, 220 VAC, 50 Hz
ST2 72-3138	Adapter T, FiO_2
ST2 72-3139	FiO_2 Sensor
ST2 72- 3140	FiO_2 Sensor Cable
ST2 72- 3279	V3408 Graphics Printer and Cable
ST2 72-8210	Universal Power Supply
ST2 72- 3205	Printer Paper, pkg. of 4
ST2 72- 3179	PC/Printer Interface Cable
ST2 72- 3175	IV Pole Bracket
ST2 72- 3254	Reflectance Sensor
ST2 72- 3256	Mini Clip Universal Y Sensor
ST2 72- 6003	Mini Clip

BLOOD PRESSURE

Blood pressure is the most common diagnostic tool for determining the health and well-being of a subject during surgery. It is a critical measurement for cardiovascular research, providing heart rate, systolic and diastolic pressures and mean aterial pressure (MAP). Monitoring blood pressure allows the assessment of the quality of circulation, indications of how well the blood is perfusing organs. It is also one of the variables that enables determination of the depth of anesthesia. Blood pressure can be measured invasively (fluid-filled catheter inserted into a vessel or a miniature pressure catheter in the vessel) or non-invasively (using an occluding pressure cuff). All commercial non-invasive blood pressure systems (NIBP) for rodents tend to monitor blood pressure at the tail of the animal.



Research Blood Pressure Transducer

Manual Pressure Calibrator

Specifications	
Output Voltage	Factory set at 1.0 V/100 mmHg via BNC connector; calibrated up to 300 mmHg
Linearity	±1.5% of full scale
Compliance	14 µl displacement/100 mmHg, including 305 mm (12 in) of standard 3 mm (⅛ in) ID vinyl tubing
Dome Volume	300 µl
Pressure Range	-50 to +300 mmHg
Overload Pressure	3000 mmHg
Zero Offset Control	-50 to +100 mmHg
Natural Frequency	>500 Hz, dry
Electrical Isolation	>1 kV
Carrier Frequency	2 MHz
Output Impedance	2 kΩ
Input Liquid Connectors	Dual transparent female Luer lock
Drift	Negligible after 5 minute warm-up
Sterilization of Transducer	Chemical: Alcide, Cidex, etc.
Dimensions:	
Transducer, H x W x D	43 x 30 x 55 mm (1½ x 1⅛ x 2¼ in)
Handle, OD x L	9.7 x 76.2 mm (⅜ x 3 in)
Amplifier, H x W x D	51 x 95 x 86 mm (2 x 3¾ x 3⅜ in)
Display LCD	7.6 mm (0.3 in) high numbers
Weight	908 g (2 lb)

Order #	Product
ST2 72-4496	Research Blood Pressure Transducer, 115 VAC, 60 Hz
ST2 72-4497	Research Blood Pressure Transducer, 230 VAC, 50 Hz
ST2 72-4498	Replacement Dome, pkg. of 1
Accessories	
ST2 73-4479	Manual Pressure Calibrator Kit, Range 0 to 300 mmHg
ST2 73-0096	Three-Way Stopcock Type 956R Stainless Steel
ST2 73-0097	One-Way Stopcock Type 9500 Stainless Steel
ST2 75-0030	One-Way Stopcock Sterile, FLL to MLL, pkg. of 100
ST2 75-0039	Three-Way Stopcock Sterile, pkg. of 100
ST2 73-4140	Lab Stand with Triangular Base Plate with 16 cm (6.3 in) Rod

Research Grade Blood Pressure Transducer (RGBP)

Ideal for monitoring blood pressure during surgery. Sensitive enough for research applications.

- Versatile and accurate pressure transducer and amplifier
- Simple to use and robust
- BNC output for connection to data acquisition system
- Easy to read 3-digit display in mmHg
- Domes are supplied sterile and are semi-disposable. Blood only contacts the diaphragm and it can be resterilized (EtO, Cidex).

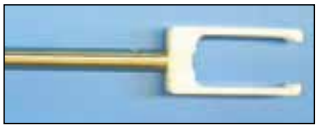
Pressure transducer APT300 with 3 m cable and connector for PLUGSYS TAM Amplifier

Replacement APT300 transducer head

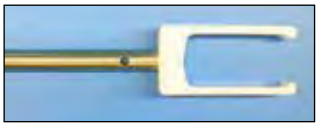
Specifications	
Operating Pressure	-300 to +300 mmHg
Overpressure	4000 mmHg
Sensitivity	5 µV/V/mmHg (±1%)
Temperature Coefficient	0.1%/°C
Zerodrift	<0.2 mmHg/°C
Zero Offset	<25 mmHg
Excitation Voltage	2 to 15 VDC (or AC up to 5kHz)
Isolation Against Fluid	>5,000 V
Operating Temperature	15° to 40°C
Storage Temperature	-25° to 70°C
Volume Displacement	<0.04 mm^3/100 mmHg
Output Impedance	365 Ω ±1%
Frequency Response	>1 kHz
Cable Length	3 m (9.8 ft)

Order #	Product
ST2 73-3862	APT300 Pressure Transducer for PLUGSYS TAM Amplifier
ST2 73-4905	APT300 Pressure Transducer for HA Physiological Monitoring System
ST2 73-3863	APT300 Pressure Transducer for Harvard UK Transducer Interface
ST2 73-3864	APT300 Pressure Transducer for Grass Amplifiers
ST2 73-3865	APT300 Pressure Transducer for Gould 6600 Series
ST2 73-3866	APT300 Pressure Transducer for ADInstruments Bridge Amp
ST2 73-3878	APT300 Pressure Transducer for DSI/Ponemah 7700 Amplifier
Accessories	
ST2 73-3860	Replacement Cable with Contact Plate for PLUGSYS TAM Amplifier
ST2 73-3861	Replacement APT300 Transducer Head
ST2 73-3868	Holder for APT300 Transducer, 8 mm Rod, Length 160 mm (6.3 in)
ST2 73-3869	Holder for APT300 Transducer, 8 mm Rod, Length 75 mm (2.95 in)
ST2 73-0566	Perspex Block Clamp to Mount Transducer on a Rod
ST2 73-0500	Stand with Block Clamp
ST2 73-4479	Manual Pressure Calibrator Kit, Range 0 to 300 mmHg

Replacement cable with contact plate



Holder for APT300 transducer, 8 mm rod, length 160 mm



Holder for APT300 transducer, 8 mm rod, length 75 mm

APT300 Blood Pressure Transducer

Ideal for sensitive arterial pressure monitoring *in vivo* as well as for perfusion pressures in isolated organs.

- Inexpensive
- Reliable
- Accurate
- Low volume displacement
- Suitable for all arterial pressure applications, including mouse arterial pressure
- Easy to fill
- Stopcocks included
- Simple holder for rod mounting*

**When ordering an APT300 please add Holder.*

Reusable TRA021 Pressure Transducer

Reusable TRA021 Pressure Transducer

Panlab's TRA021 is a rugged, economical, reusable blood pressure transducer suitable for routine laboratory arterial and venous blood pressure.

- Dome-type design makes for good general use blood pressure transducer
- Ideal for arterial or venous pressures

Specifications	
Range	-50 to +300 mmHg
Sensitivity	4 µV/V/mmHg
Bridge Resistance	350 W
Excitation Voltage	5 to 10 VDC
Volume Displacement	0.05 mm^3/100 mmHg
Total Volume	0.25 ml
Weight	85 g (2.99 oz)
Dimensions	18 x 24 x 74 mm (0.7 x 0.95 x 2.9 in)

Order #	Model	Product
ST2 76-0578	TRA021A	Reusable Research Pressure Transducer for ISO510A
ST2 76-0580	TRA021HS	Reusable Research Pressure Transducer for Hugo Sachs PLUGSYS TAM Amplifiers
ST2 76-0582	TRA021AD	Reusable Research Pressure Transducer for ADInstruments Bridge Amplifiers
Accessories		
ST2 76-0384	TRA021	Replacement Dome
ST2 73-4479	Manual Pressure Calibrator Kit, Range 0 to 300 mmHg	
ST2 73-0096	Three-Way Stopcock Type 956R Stainless Steel	
ST2 73-0097	One-Way Stopcock Type 9500 Stainless Steel	
ST2 75-0030	One-Way Stopcock Sterile, FLL to MLL, pkg. of 100	
ST2 75-0039	Three-Way Stopcock Sterile, pkg. of 100	

Sterile Single Use Wide Range Pressure Sensors

Sterile Single Use Wide Range Pressure Sensors

These are small-scale in-line sterile pressure sensors suitable for a variety of applications, i.e. *in vivo*, *ex vivo*, *in situ* and regenerative organ and cellular applications.

- Male/Female Luer lock with port cover for female Luer lock end for dead-end applications.
- In-line pressure transducers for low flow rates when used with ⅛ in or 1⁄16 in barbed connectors
- May be paired with adapter Tee-connectors, ¼ in or ⅜ in, for non-in-line applications

Specifications	
Accuracy	Better than ±2% of reading in the range of 0 to 6 psi (0 to 0.41 bar or 0 to 310 mmHg)
	Better than ±3% of reading in the range of 6 to 30 psi (0.41 to 2.07 bar)
	In range of 30 to 60 psi (2.07 to 4.14 bar) typically better than ±5% of reading
Pressure Range	-7 to +75 psi (-0.48 to +5.2 bar)
Biocompatibility	All materials in contact with product fluid path meet USP Class VI requirements
Manufacturing Environment	FDA Registered ISO 13485-certified facility; Class 100,000 clean room
Gamma Irradiation	Up to 50 kGy
Operating Temperature	15 to 40°C (other ranges with process qualification)
Storage Temperature	-25° to 65°C
Input/Output Impedence	270 to 4,000 Ω
Excitation Voltage	2.5 to 10 VDC
Sensor Output	0.2584 mV/psi/Volt
Connector	Custom molded water-tight 4 pin connector; signal ± and excitation ±

Order #	Product
ST2 88-0360	Sterile Pressure Sensor, pkg. of 10
ST2 88-0361	¼ x ¼ in Barbed Straight Connector with Female Luer Port, Polycarbonate, pkg. of 10
ST2 88-0362	⅜ x ⅜ in Barbed Straight Connector with Female Luer Port, polycarbonate, pkg. of 10
ST2 88-0363	½ x ½ in Barbed Straight Connector with Female Luer Port, Polycarbonate, pkg. of 10
ST2 88-0364	Luer Polysulphone 3-way Stopcock, pkg. of 10
ST2 88-0365	Reusable Shielded Cable, 12 ft, Unterminated, Colored Leads, Connector for Amplifier, Supplied by Customer
ST2 88-0366	Interface Cable to Work with Sterile Pressure Sensors (ST2 88-0360) Connecting to ORCA Bioreactor Controller. This Connects Up to 4 Pressure Transducers to the ORCA Bioreactor Controller
ST2 88-0367	Interface Cable to Work with Sterile Pressure Sensors (ST2 88-0360) Connecting to Hugo Sachs PLUGSYS TAM Amplifier Modules
ST2 88-0368	Interface Cable to Work with Sterile Pressure Sensors (ST2 88-0360) Connecting to ADInstruments Bridge Amp
ST2 88-0369	Interface Cable to work with Sterile Pressure Sensors (ST2 88-0360) Connecting to Harvard Apparatus Transducer Amplifier Interface
ST2 73-4479	Manual Pressure Calibrator Kit, Range 0 to 300 mmHg

DTXPlus Sterile Disposable
Pressure Transducer

DTXPlus Sterile Disposable Pressure Transducer

Blood pressure monitoring is an essential component for care of subjects. These new DTXPlus blood pressure transducers minimize distortion in the pressure waveform and maximize accuracy.

- Individually packaged, sterile, disposable blood pressure transducers
- Shelf life of 5 years
- Stopcocks must be purchased separately
- Class III according to European Medical Devices Directive 93/42/EEC

Specifications	
Pressure Range	-30 to +300 mmHg
Over Pressure Tolerance	-700 to +7,800 mmHg
Frequency Response	>1,200 Hz, 15 bandwidth shall be >200 Hz
Transducer Excitation	1 to 10V RMS
Transducer Excitation Input Impedance	1,100 to 3,450 Ω
Transducer Signal Output Impedance	270 to 330 Ω
Nominal Sensitivity (gain)	5 µV/V/mmHg
Unbalance (Zero Balance)	±40 mmHg
Accuracy	2% of the reading or ±1 mmHg, whichever is greater over the operating range
Operating Temperature	15° to 40°C

Order #	Product
ST2 72-4293	DTXPlus Sterile Disposable Single-Use Transducer, pkg. of 10, with HAI Interface Cable
ST2 72-4297	DTXPlus Sterile Disposable Single-Use Transducer, pkg. of 10, with Hugo-Sachs PLUGSYS Interface Cable
ST2 72-4294	DTXPlus Sterile Disposable Single-Use Transducer, pkg. of 10, with Grass Amplifiers Interface Cable
ST2 72-4295	DTXPlus Sterile Disposable Single-Use Transducer, pkg. of 10, with PROPAQ Interface Cable
ST2 72-4296	DTXPlus Sterile Disposable Single-Use Transducer, pkg. of 10, with GOULD 600 Interface Cable
Accessories	
ST2 73-4479	Manual Pressure Calibrator Kit, Range 0 to 300 mmHg
ST2 73-0096	Three-Way Stopcock Type 956R Stainless Steel
ST2 73-0097	One-Way Stopcock Type 9500 Stainless Steel
ST2 75-0030	One-Way Stopcock Sterile, FLL to MLL, Box of 100
ST2 75-0039	Three-Way Stopcock Sterile, pkg. of 100
ST2 72-4292	Replacement DTXPlus Disposable Single-Use BP Transducer, pkg. of 10 (Interface Cable not included)
ST2 60-0298	Interface Cable for HAI Transducer Interface
ST2 72-2882	Interface Cable for HA-HSE TAM Amplifier Modules
ST2 88-0368	Interface for ADInstruments
ST2 60-0297	Interface Cable for Propaq Monitors
ST2 72-2883	Interface Cable, Universal Connector to Tinned Leads (No Connector) for Use with Other Equipment, Mating Connector Supplied by Customer

P75 Venous Pressure Transducer

P75 Venous Pressure Transducer

Hugo Sachs' rugged low pressure transducer is highly sensitive for research and surgical applications involving liquids or gases.

- For low pressure applications with liquids and gases ±75 mmHg
- Excellent sensitivity and baseline stability
- Applications include:
  - Venous blood pressure
  - Esophageal pressure with fluid filled catheter
  - Perfusion pressure in isolated lung and liver
  - Perfusion pressure on perfused hollow organs, such as the esophagus
- Robust construction with a removable Macrolon® dome, easy to fill, bubble free
- Transducer is a metal housing with ceramic pressure sensor giving the P75 excellent resistance to a variety of media

Specifications	
Pressure Range	±75 mmHg (±100 cmH_2O)
Volume Displacement	0.06 mm^3/10 mmHg
Linearity	±0.15 mmHg
Long Term Drift	±0.04 mmHg
Overload	-760 (=vacuum) to 4,000 mmHg
Measurement Media	All gases and liquids which are compatible with Macrolon®
Temperature Range	0 to 50°C
Zero Drift	±0.04 mmHg/10°C (0 to 50°C)
Range Drift	±0.04 mV/10°C (±0.04 mmHg/10°C) (0 to 50°C)
Electrical Data:	
Supply Voltage	5 V (4.5 to 5.5 V) DC Only
Current Loading	15 mA max.
Sensitivity	1 mV/mmHg, Nominal
Output Resistance	300 Ω, nominal
Frequency Range	0 to 100 Hz
Connection Cable	Approximately 1.5 m (4.9 ft) Long
Suitable Amplifiers	Any Bridge Amp providing 5 VDC excitation voltage
Mechanical Data:	
Pressure Connections	Luer Taper, Male
Weight	0.35 kg (0.8 lb)
Dimensions, H x W x D	40 x 40 x 35 mm (1.57 x 1.57 x 1.38 in)
Mounting Rod	8 x 70 mm (0.31 x 2.76 in)

Order #	Product
ST2 73-0020	Blood Pressure Transducer P75 for PLUGSYS TAM Amplifier
ST2 73-0021	Blood Pressure Transducer P75 for Harvard Apparatus Transducer Interface
ST2 73-0022	Blood Pressure Transducer P75 for Grass Amplifiers
ST2 73-0023	Blood Pressure Transducer P75 for Gould 6600 Series
ST2 73-3738	Blood Pressure Transducer P75 for ADInstruments
ST2 73-0025	Replacement Dome for Venous Blood Pressure
Accessories	
ST2 73-4479	Manual Pressure Calibrator Kit, Range 0 to 300 mmHg
ST2 73-0096	Three-Way Stopcock Type 956R Stainless Steel
ST2 73-0097	One-Way Stopcock Type 9500 Stainless Steel
ST2 75-0030	One-Way Stopcock Sterile, FLL to MLL, pkg. of 100
ST2 75-0039	Three-Way Stopcock Sterile, pkg. of 100

Macrolon® is a registered trademark of Bayer.

FISO-LS Series
Fiber Optic Micro-Catheter Pressure Transducers

FISO-LS Series
Fiber Optic Micro-Catheter Pressure Transducers

- Low Noise
- Accurate
- Sensor located at tip of fiber
- Easy to use
- Pre-calibrated sensors
- Suitable for a ride range of applications: neuroscience, cardiovascular, ocular tonometry, intraocular pressure, urology and more

The FISO-LS series catheters were designed as semi-disposable for multi-use applications in the life sciences and small animal research. Unlike its disposable counterpart in clinical applications, this sensor is more robust with a protected tip. The standard transducers have 1 meter of nylon sheathing to protect the fiber, where the 10 m transducers have 9.3 to 9.8 m of nylon sheath, further protecting the glass fiber. With proper use and care these sensors can be used many times.

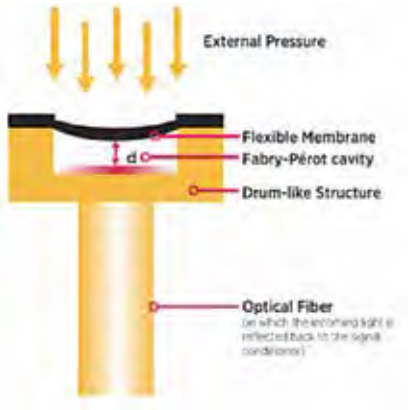
The FISO catheters utilize a Fabry-Pérot etalon which is comprised of two parallel reflecting mirrors on either side of a transparent medium, where the distance between the mirrors is known as the etalon cavity length. The transmission characteristic for the F-P etalon has distinct transmission peaks in wavelength as a function of the cavity length, physically corresponding to resonances of the etalon.

FISO's pressure sensors are a flexible embodiment of the F-P etalon. A deformed membrane is assembled over a vacuumed cavity, thus forming a small drum-like structure. The sensing F-P cavity is located between the base of the drum and the flexible membrane. When pressure is applied, the membrane is deflected toward the bottom of the drum, thus reducing cavity length. After appropriate sensor calibration, completed at the factory, each etalon cavity length corresponds to a specific pressure value. The signal conditioner is designed to determine the cavity length to the nanometer level, providing the researcher with an extremely accurate and repeatable pressure measurement system.

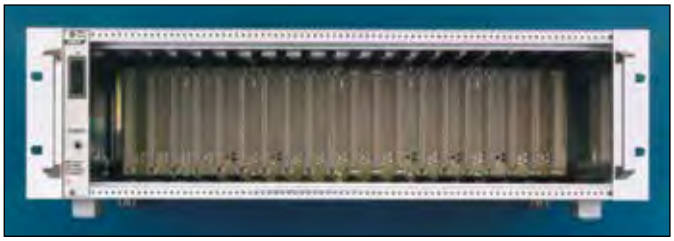
A complete system included a pressure transducer, a signal conditioner, chassis (with power supply), and software. Computer interface to run software must be purchased separately.

Transducer Specifications

	Model	Bare Fiber Length	Total Length	Pressure Range	Tip Diameter	
ST2 75-0706	FISO-LS-PT9-10	20 cm	1.2 m	±300 mmHg	300 mm	0.9 Fr
ST2 75-0715	FISO-LS-PT9-20	20 cm	10 m	±300 mmHg	300 mm	0.9 Fr
ST2 75-0707	FISO-LS-2FR-10	70 cm	1.7 m	±300 mmHg	640 mm	2 Fr
ST2 75-0716	FISO-LS-2FR-20	70 cm	10 m	±300 mmHg	640 mm	2 Fr
ST2 75-0714	FISO-LS-2FR-30	70cm	1.7 m	0 to 10 bar	640 mm	2 Fr



Order #	Model	Product
Transducers		
ST2 75-0706	FISO-LS-PT9-10	Physiological Microcatheter Pressure Sensors, 0.9 Fr
ST2 75-0715	FISO-LS-PT9-20	MRI Microcatheter Pressure Sensors, 0.9 Fr
ST2 75-0707	FISO-LS-2FR-10	Physiological Microcatheter Pressure Sensors, 2 Fr
ST2 75-0716	FISO-LS-2FR-20	MRI Microcatheter Pressure Sensors, 2 Fr
ST2 75-0714	FISO-LS-2FR-30	High Pressure Microcatheter Pressure Sensor, 2 Fr
Signal Conditioner		
ST2 75-0704	FPI-LS-10	FISO-LS Signal Conditioner, 1 Channel, 15 kHz, Analog output
ST2 75-0713	CFO-LS-10	FISO-LS Catheter Extension Cable and Remote Connect Adapter
Chassis		
ST2 75-0700	EVO-SD-2	FISO Evolution Chassis, 2 Channels
ST2 75-0701	EVO-SD-5	FISO Evolution Chassis, 5 Channels



Model 603 PLUGSYS Main Frame Case

MiniCase 73-1523 and PLUGSYS Module TAM-A

Model 601 with 5 PLUGSYS Modules

Hugo-Sachs Electronik Transducer Amplifier Modules*

Universal DC bridge amplifier used to amplify physiological signals like blood pressure, contraction force or contraction displacement using transducers based on a resistive Wheatstone bridge. Transducers with a built-in preamplifier which have a high level DC output voltage can also be connected.

The TAM-A is equipped with an analog LED bar graph signal indicator and is best suited for pulsatile applications which require the monitoring of dynamic signals, e.g., blood pressures, respiratory air flow, respiratory pressures, force etc. The TAM-D Amplifier is equipped with a digital LED display and is best used when measuring constant or minimally changing, non-pulsatile pressures.

Recommended Transducers

- Arterial blood pressure APT300
- Intracardial LVP Millar Tip catheters
- Venous blood pressure P75
- Respiratory air flow DLP2.5**
- Tracheal pressure MPX**
- Respiratory pressures P75

**Modular units please add housing.*
***For more information about tracheal pressure and air flow contact Harvard Apparatus technical support.*

Specifications	
Transducer Input	6-pin socket with screw lock (binder, Amphenol Tuchel) differential input circuit, input impedance 10^{10} Ω
Gain	Selectable ranges by internal jumper: 0.2 to 10, 0.4 to 20, 1 to 50, 2 to 100, 4 to 200, 10 to 500, 20 to 1,000. Fine adjustment through 10-turn trimmer.
Signal Output	a) On front panel through BNC socket = 10 V pulsatile filtered or mean signal output internally selectable b) Through bus connector to PLUGSYS measuring system through links= 10 V pulsatile filtered and mean signal voltage
Output Low-Pass Filter	a) Selectable by switch on front panel for pulsatile output signal: 30, 100, 300 Hz b) Selectable by internal jumper for mean output signal: 0.1, 0.3 Hz
Electrical Calibration	Selectable by switch on front panel: a) 0 V output signal with switch in position '0' b) Positive or negative calibration output voltage adjustable with 10-turn trimmer if switch is in position 'CAL'
PLUGSYS Width	2 slot units

Order #	Product		
ST2 73-0065	Transducer Amplifier Module TAM-A		
ST2 73-1793	Transducer Amplifier Module TAM-D		
Housing for Hugo Sachs Elektronik-Harvard Apparatus TAM Amplifiers			
	PLUGSYS Case Type	**Slots**	**Dimensions, H x W x D**
ST2 73-0045	603	20	132 x 483 x 435 mm (5.2 x 19 x 17.1 in)
ST2 73-1521	601	10	150 x 235 x 420 mm (5.9 x 9.25 x 16.5 in)
ST2 73-1523	609	4†	160 x 160 x 250 mm (6.3 x 6.3 x 9.8 in)

†HSE-HA Type 609 Minicase is not modular, amplifier units are factory installed.

ISO510A
Transducer Amplifier

Specifications	
Gain	0 to 2,000
Input Impedance	1.5 kΩ
Output Impedance	< 100 Ω
Feed Power	18 VDC
Output Voltage	10 V
Transducer Power Supply	10 VDC
Band Frequency	0 to 5 KHz
Filters	>3 Hz or >20 Hz
Filter AC	0.16 Hz
Certification	CE Compliance

Order #	Model	Product
ST2 76-0627	ISO510A	ISO510A Transducer Amplifier
ST2 76-0586	BR4740A	Power Supply Box for up to 4 Amplifiers ISO510A

Panlab's ISO510A Transducer Amplifier

- High gain differential AC/DC amplifier
- Includes adjustable filter for suppression of background noise
- Transducer balance allows a fine adjustment of the signal baseline
- Allows external monitoring of the output signal
- On-board analog to digital conversion integrated into Power Supply Box
- A simple single USB Connection to a PC
- Ideal for use in pressure, force or respiration research areas

The Panlab Coupler Module ISO510A is an Amplifier for bridge-system designed to work with a wide range of different transducers for evaluating pressure, strength or respiration in various research areas. As an example, the ISO510 model is currently associated with the isometric or isotonic transducers for the study of in vitro tissues preparations using Organ Baths.

The Panlab ISO510A Amplifier can work in both AC and DC and amplifies signal up to 2,000 times. The Amplifier contains a filter allowing the suppression of the noise produced by electrical or mechanical artifacts associated with the experiment running (for instance, ventilation and heating pump systems in Organ Baths) and then eliminates vibrations that may affect the signal received from the biological preparations. A Transducer Balance option allows a fine adjustment of the signal baseline ("zero") when the transducer is not excited by the variable to be measured. The ISO510A amplifier also allows the external monitoring of its output signal, for instance to an oscilloscope.

The ISO510A Amplifier is available in two versions: individual Amplifiers accompanied with the corresponding external Power Supply Box or individual Amplifiers integrated into the Power Supply Box.

Electronic Pressure Calibrators

Electronic Pressure Calibrators

- Maintenance-free precision pressure generation
- 4 units available:
  - 0 to 200 mmHg
  - 0 to 300 mmHg
  - 0 to 20 mmH_2O
  - 0 to 200 mmH_2O
- Calibration certificate on request

The calibrator KAL 84 is used for calibrating pressure sensors. It represents a combination of a pressure generator (hand pump) and a pressure meter with digital display. The instrument provides a simple means for testing and calibrating both pressure sensors and complete pressure measuring equipment. High accuracy and excellent reproducibility together with an especially rugged construction provide the unit with all the properties required for laboratory applications.

After the unit has been switched on and connected to the pressure sensor to be calibrated (test object), the required pressure is set with the small hand-wheel. The built-in pressure meter measures the set pressure accurately and indicates it in digital form. Since the generated pressure is identical at the built-in pressure meter and at the test object, the pressure measured by the test object corresponds exactly to the pressure indicated by the KAL 84.

Models with different pressure ranges are available. Each model has an application-specific range (range 1) and can be switched to a corresponding SI range (range 2) in Pascal (Pa) or Kilopascal (kPA).

Specifications				
Model	**KAL 84 H**	**KAL 84 SH**	**KAL 84 L**	**KAL 84 M**
Range 1	0 to 199.9 mmHg	0 to 300.0 mmHg	0 to 19.99 mmH_2O	0 to 199.9 mmH_2O
Range 2	0 to 26.66 kPa	0 to 39.99 kPa	0 to 199.9 mmH_2O	0 to 1960 Pa
Linearity	±0.5% FS ±1 digit for mercury models, ±1% FS ±1 digit for water models			
Hysteresis	0.1% FS			
Overpressure Limit	200% FS for mercury models 500% FS for water models			
Response Time	TE = 20 ms, time constant can be switched to 0.1 sec or 1 sec			
Liquid	Mercury	Mercury	Water	Water
Analog Output	0 to 1 V for 100% nominal range, load resistance at least 2 kΩ			
Temperature Range:				
Nominal	+10° to +50°C			
Operating	0° to +60°C			
Pressure Connections	6.5 mm OD for 5 mm ID tubing			
Power Supply	9 V rechargeable battery, mains adapter			
Dimensions, H x W x D	100 x 260 x 180 mm (3.9 x 10.2 x 7.1 in)			
Weight	Approx. 3 kg (6.6 lb)			
Optional Certificate	Linearity test certificate, DKD (German calibration service, see below)			
Applications	Blood Pressure Transducers	Blood Pressure Transducers	Low-Range Differential Pressure Transducers	
Order # for 115 VAC, 60 Hz	**ST2 73-0012**	**ST2 73-0014**	**ST2 73-0016**	**ST2 73-0018**
Order # for 230 VAC, 50 Hz	**ST2 73-0013**	**ST2 73-0015**	**ST2 73-0017**	**ST2 73-0019**

Manual Pressure Calibrator

Manual pressure calibrator from Hugo Sachs makes use of a one-way valve in the bulb and is appropriate for blood pressure calibration for both arterial and venous pressure ranges.

Order #	Product
ST2 73-4479	Manual Pressure Calibrator

Manual Pressure Calibrator

Non-Invasive Blood Pressure System for Rodents

Non-Invasive Blood Pressure System for Rodents

Key Features

- Total reliability to realize consecutive measurements on the same animal
- Analog signal output for recording cuff pressure and pulse signals in a PC
- Automated deflation driven separately for each animal (minimize tail lesions)
- Automated cuff inflation/deflation at a very constant rate
- The same system can be used for mouse/rat/dog
- Real values provided (without any linear regression calculation)
- Easily traceable data (using data acquisition software)
- Parameters evaluated can be visualized on-line on the digital display

Parameters Measured

- Systolic blood pressure
- Diastolic blood pressure
- Mean blood pressure
- Heart rate

Included Components:

Basic Unit for NIBP 76-0173 (LE5001)

- Control unit with LCD display
- Pressure and pulse BNC analog signal output
- RS-232 serial port
- Cables
- Spare fuses
- Instruction manual

Standard Unit for NIBP 76-0174 (LE5002)

- Includes all components of 76-0173 plus
- Raw data internal memory (up to 4,000 successive trials)

Complete Unit for NIBP 76-0175 (LE5007)

- Includes all components of 76-0174 plus
- Statistical calculations (average, deviation, number of samples for all animals)
- Connection to the Heater and Scanner device for automatic measurement of up to 12 animals

Accessories

- SeDaCom Software*
- Chart™ Software for monitoring of pressure and pulse wave signals
- Single or multiple animal heating units
- Pulse Transducer & Cuff*
- Specimen holders

The Panlab NIPB system provides an easy and reliable technique to measure systemic blood pressure and cardiovascular parameters in rodents without any invasive catheterization.

The pulse signal level (heart rate) is continuously monitored on the LCD display while an internal pressure transducer is constantly measuring the current pressure applied on the cuff. Systolic and diastolic blood pressures are displayed after a series of automatic processes finish.

A warm environment is critical for accurate blood pressure measurement. For optimal conditions the Panlab Warming Chamber or the Automatic Heater & Scanner provides a comfortable heated environment. The requirement of a warm environment for the animals is critical for accurate blood pressure measurements. To provide adequate conditions for NIBP measurement, the system can be used in association with a warming chamber which provides a comfortable and heated environment necessary to produce peripheral vasodilatation and isolate the animal from external noise.

Specifications	
Dimensions LE5001 Control Unit	360 (W) x 340 (D) x 120 (H) mm
Dimensions LE5002 and LE5007 Control Units	60 (W) x 340 (D) x 170 (H) mm
Computer Requirements (only if SeDaCom is used)	Windows™ XP (SP2 or higher), Vista 32, Windows 7 or Windows 8 compatible operating system.
Power Supply	220/110 VAC, 50/60 Hz
Certifications	CE Compliant

**Pulse Transducer & Cuff and SeDaCom software must be ordered separately.*

Order #	Model	Product
ST2 76-0173	LE5001	Basic Unit for NIBP with RS-232 Serial Port. Cuff and Transducer must be Ordered Separately.
ST2 76-0174	LE5002	Standard Unit for NIBP with Memory and RS-232 Serial Port. Cuff and Transducer must be Ordered Separately.
ST2 76-0175	LE5007	Complete Unit for NIBP with Scheduled Data Acquisition (up to 12 Animals) Memory and RS-232 Serial Port. Cuff and Transducer must be Ordered Separately.
Accessories		
ST2 76-0406	-	SeDaCom Software*
ST2 76-0466	NIBPCHART	Panlab NIBP System Software for the Traceability and Graphical Validation of the Data Supplied by Either LE5001, LE5002 or LE5007.
ST2 76-0608	-	RS-232/USB Converter
ST2 76-0177	LE5090	Electronic Rat Simulator
ST2 76-0178	LE5610	Heater for Single Animal
ST2 76-0179	LE5650-6	Automatic Heater & Scanner for Six Rats or Six Mice
ST2 76-0401	LE5095	Transducer & Holder Fixing Plate
ST2 76-0432	LE5160-MM	Pulse Transducer & Cuff for Mice (Diameter 6 mm)
ST2 76-0183	LE5016	Mouse Holder, Small, Approximately 15 to 25 grams
ST2 76-0184	LE5018	Mouse Holder, Large, Approximately 25 to 40 grams
ST2 76-0185	LE5020	Rat Holder (150 grams)
ST2 76-0186	LE5022	Rat Holder (250 grams)
ST2 76-0187	LE5024	Rat Holder (400 grams)
ST2 76-0188	LE5025	Rat Holder (500 grams)

**Requires 76-0608 RS-232/USB adapter.*

Blood Pressure Tranducer

Order #	Model	Product
ST2 76-0012	LE5160M	Pulse Transducer & Cuff for Mice and Rats up to 150 Grams
ST2 76-0013	LE5160R	Pulse Transducer & Cuff for Rat
ST2 76-0014	LE5015	Dog Pulse Transducer (18 mm Diameter)
ST2 76-0015	LE5012	Pressure Cuff for Dog
Options		
ST2 76-0016	MB5160R	Set of 100 Spare Membranes for Rat Cuff
ST2 76-0017	MB5160M	Set of 10 Spare Membranes for Mouse Cuff
ST2 76-0018	LE5180M	Mouse Cuff
ST2 76-0019	LE5180R	Rat Cuff

References:

Alfany-Fernandez I et al. Therapeutic Targets in Liver Transplantation: Angiotensin II in Nonsteatotic Grafts and Angiotensin-(1–7) in Steatotic Grafts. *Am. J. Transplantation*. 20009:9(3)-439- 451.

Bhandari U et al. Beneficial effect of Embelia ribes ethanolic extract on blood pressure and glycosylated hemoglobin in streptozotocin-induced diabetes in rats. *Fitoterapia*. 2008;79(5): 351- 355.

Canicer R et al. Simvastatin reverses the hypertension of heterozygous mice lacking cystathionine α-synthase and apolipoprotein A-I. *Naunyn-Schmiedeberg's Archives of Pharmacology*. 2008;377(1):35-43.

Casillas-Ramirez A et al. Inhibition of angiotensin II action protects rat steatotic livers against ischemia-reperfusion injury. *Critical Care Medicine*. 2008;36(4):1256-1266.

Choi JH et al. Comparative antihypertensive activities of losartan and HM70186 in rats with hepatic dysfunction. *Arch. Pharmacal Res.* 2009;32(7):1005-1011.

Kim DW et al. (2009) Germinated Buckwheat extract decreases blood pressure and nitrotyrosine immunoreactivity in aortic endothelial cells in spontaneously hypertensive rats. *Phytotherapy Research*. 2009;23(7):993-998.

Ramalho FS et al. Are Angiotensin II Receptor Antagonists Useful Strategies in Steatotic and Nonsteatotic Livers in Conditions of Partial Hepatectomy under Ischemia-Reperfusion? *J. Pharmacol. Exp. Ther*. 2009;329:130-140.

SC1000 NIBP for Mouse

72-7073 SC1000 NIBP for Mouse
with 72-7075 Rat Platform

Order #	Product
ST2 72-7073	SC1000 Blood Pressure Analysis System for Mice, 85 to 240 VAC, 50/60 Hz*
ST2 72-7074	SC1000 Blood Pressure Analysis System for Rats, 85 to 240 VAC, 50/60 Hz*
ST2 72-7075	Additional Mouse Platform with Size 1 Mouse Holder and CAT5 Cable
ST2 72-7076	Additional Rat Platform with Size 1 Rat Holder and CAT5 Cable
ST2 72-7078	SC1000 Comm for Windows® Software
Accessories	
ST2 72-7084	Specimen Holder for Mice, Size 1, for Mice Up to 30 Grams
ST2 72-7085	Specimen Holder for Mice, Size 2, for Mice 30 to 45 Grams
ST2 72-7086	Specimen Holder for Mice, Size 3, for Mice 45 to 60 Grams
ST2 72-7087	Specimen Holder for Mice, Size 4, for Mice Over 60 Grams
ST2 72-7102	Specimen Holder for Rats, Size 1, for Rats Up to 250 Grams
ST2 72-7103	Specimen Holder for Rats, Size 2, for Rats 250 to 400 Grams
ST2 72-7104	Specimen Holder for Rats, Size 3, for Rats 400 to 550 Grams
ST2 72-7105	Specimen Holder for Rats, Size 4, for Rats 550 to 700 Grams
ST2 72-7106	Specimen Holder for Rats, Size 5, for Rats 700 to 850 Grams
ST2 72-7107	Specimen Holder for Rats, Size 6, for Rats 800 to 1,000 Grams

**All units are supplied with USA standard power cords.*

SC1000 Blood Pressure Analysis System for Mice and Rats (NIBP)

The SC1000 is a non-invasive tail cuff system dedicated to detecting blood pressure in mice or rats. The SC1000 can be used for one or two animals and includes restrainers, heater and software.

- Single or dual channel, non-invasive, tail-cuff blood pressure analysis system
- Fast, easy, accurate results for one or two animals
- Measures systolic, diastolic, mean arterial pressure, and pulse rate
- Results correlate with telemetry
- Software operated
- Easy to assemble, use, and clean
- One system can accommodate mice and rats. For use with mice and rats from neonatal to over 1,000 grams
- Sensory assembly includes “V-notch” stabilizer and single tail-cuff
- All metal construction with baked epoxy finish
- Intra-arterial option available

SC1000 Blood Pressure Analysis System Includes:

- Master Control Unit
- Mouse or Rat Specimen Platform
- Size 1 Mouse or Rat Holders
- Software

Additional platform and holders are available for individual purchase.

MC4000 Blood Pressure Analysis System for Multiple Mice and Rats (NIBP)

MC4000 Blood Pressure Analysis System for Multiple Mice and Rats (NIBP)

The MC4000 Multi Channel Blood Pressure Analysis System is a non-invasive instrument designed to help researchers efficiently and effectively obtain accurate blood pressure measurements on mice and rats.

- Tail cuff system for mouse blood pressure and rat blood pressure
- Four to eight channels
- Computer controlled, software operated
- Easy to assemble, clean, and maintain
- Results in systolic, diastolic, mean arterial pressure, and pulse rate
- Waveforms display measurements in real time
- Unique “V-notch” sensory assembly
- Rodent holders secure untrained animals
- Holders specially designed to reduce stress
- Systolic and diastolic pressures are measured, not calculated
- Obtains fifteen measurements per mouse or rat in less than fifteen minutes

MC4000 Components

- Specimen Platform: Mouse or Rat
- Specimen Holders: Size 1 Mouse or Rat
- Specimen Tray
- Power/Utility Unit
- MC4000 Software

Additional platform and holders are available for individual purchase.

Specifications	
Dimensions, H x W x D:	
Mouse Platform	10.2 x 43.2 x 27.9 cm (4 x 17 x 11 in)
Rat Platform	10.2 x 50.8 x 35.6 cm (4 x 20 x 14 in)
Power	85 to 240 VAC, 50/50 Hz*

**All units are supplied with USA standard power cords*

Order #	Product
ST2 72-7080	MC4000 Blood Pressure Analysis System for Mice
ST2 72-7081	MC4000 Blood Pressure Analysis System for Rats
ST2 72-7082	Additional Specimen Platform for Mice, Includes Multi-Channel Specimen Platform, Four Size 1 Mouse Holders, Necessary Power and Communications Cables and Accessory Kit
ST2 72-7083	Additional Specimen Platform for Rats, Includes Multi-Channel Specimen Platform, Four Size 1 Rat Holders, Necessary Power and Communications Cables and Accessory Kit
Accessories	
ST2 72-7084	Specimen Holder for Mice, Size 1, for Mice up to 30 g
ST2 72-7085	Specimen Holder for Mice, Size 2, for Mice 30 to 45 g
ST2 72-7086	Specimen Holder for Mice, Size 3, for Mice 45 to 60 g
ST2 72-7087	Specimen Holder for Mice, Size 4, for Mice over 60 g
ST2 72-7102	Specimen Holder for Rats, Size 1, for Rats up to 250 g
ST2 72-7103	Specimen Holder for Rats, Size 2, for Rats 250 to 400 g
ST2 72-7104	Specimen Holder for Rats, Size 3, for Rats 400 to 550 g
ST2 72-7105	Specimen Holder for Rats, Size 4, for Rats 550 to 700 g
ST2 72-7106	Specimen Holder for Rats, Size 5, for Rats 700 to 850 g
ST2 72-7107	Specimen Holder for Rats, Size 6, for Rats 800 to 1,000 g

BLOOD FLOW, BLOOD PRESSURE & ECG RESEARCH GRADE MONITORING SYSTEMS

Introducing packaged system options for the measurement of blood flow while simultaneously monitoring blood pressure and single- or multi-lead ECG from rodent to large animal subjects. Choose a research grade system when you wish to record and collect data in an automated fashion as opposed to recording values by hand every few minutes. Veterinary-grade surgical monitors often do not have a user-friendly data output and are not always suitable for the application at hand.

Building a System

For a basic system, we recommend a smaller amplifier housing (PLUGSYS 601 Case, 10 Slot Units). For an advanced system with upgradable or multi-animal functionality a larger amplifier housing is recommended (PLUGSYS 603 Case, 20 Slot Units).

Slot Units (SU) are the designation of the width of the various PLUGSYS Modules available to fit into the PLUGSYS case options. Each case has a fixed capacity (10 or 20 SU) and the appropriate case is chosen based on the total number of modules the researcher will plug into the case now or for future expansion. For example, the TTFM-2 is 4 SU wide, while the TAM-A and ECGA modules are each only 2 SU wide. A 10 SU case can hold 1 TTFM-2 and 3 TAM-A amplifiers or 2 TTFM-2 and 1 TAM-A amplifier. For the researcher who wishes to have Blood Flow, Blood Pressure, and 12-Lead ECG Measurement, the advanced system case would be chosen as the setup would require a minimum of 12 SU.

All package options can be interfaced with a data acquisition system.

STEP 1: Choose your PLUGSYS Amplifier Housing

PLUGSYS 603 Case, 20 Slot Units (Advanced)

PLUGSYS 601 Case, 10 Slot Units (Basic)

STEP 2: Choose your add-on options for a customized system from the following pages

Blood Pressure and Blood Flow

6 Lead ECG

12 Lead ECG

TAM-A Transducer Amplifier Module and TTFM-2 Tansit Time Flowmeter Module

Option for Blood Pressure and Blood Flow

Order #	Product
ST2 73-4892	Option for Blood Pressure and Blood Flow
Includes:	
• TTFM-2 Transit Time Flowmeter Module (4 SU) with Flowprobe Extension Cable and BNC Cable, 2 m (6.6 ft)	
• TAM-A Transducer Amplifier Module with BNC Cable, 2 m (6.6 ft)	

See page 213 for available Flowprobes
See page 214 for available Blood Pressure Transducers

Option for Single Lead ECG (Lead II)

Order #	Product
ST2 73-0149	Single Lead ECG (Lead II)
ST2 73-1494	ECG cables, with needles for ECGA
Includes:	
• ECGA Module (2 SU)	
For use with SNAP electrodes for large animals (see page 213 for electrode options):	
• Connection Cable to ECGA Amplifier with 4 mm Banana Jacks	
• 4 mm Banana to Standard Snap, pkg. of 2	

6-Lead Einthoven

Option for 6-Lead Einthoven Leads I, II, III, aVI, aVr, and aVf

Order #	Product
ST2 73-4537	6-Lead Einthoven Leads I, II, III, aVI, aVr, and aVf
Includes:	
• EGM Module (2 SU)	
• BNC Output, 6-fold (1 SU)	
• BNC Cable (6 are required)	

	Reusable Electrodes	Disposable Electrodes*	
	28 Gauge Needle	**Tabs**	**Snaps**
Order #	**ST2 72-5740**	**ST2 72-7092**	**ST2 72-7090**
Supplied as	Pkg. of 12	Pkg. of 100	Pkg. of 60
Qty. Required	1 Pkg.	1 Pkg.	1 Pkg.
Required Adapter	**N/A**	**Alligator Clip**	**Pinch Clamp**
Order #	**–**	**ST2 60-2394**	**ST2 73-3383**
Supplied as	–	Pkg. of 10	Each
Qty. Required	–	1 Pkg.	4
Direct Connection Cable to Amplifier			
Small Animal	**ST2 73-1786**	**N/A**	**N/A**
Large Animal	**ST2 73-3381**	**ST2 73-3381**	**ST2 73-3381**

**Small animal cable for disposable electrodes are not available. This type of electrode is difficult or impossible to be placed on such species.*

For Small Animals the total monitoring cable lengths is 2.00 m the ending leads have a length of 30 cm.

For Large Animals the total monitoring cable lengths is 2.50 m the ending leads have a length of 75 cm.

Order #	Product
Accessories for Reusable Needles	
ST2 72-1872	Needle Cleaning Kit
ST2 72-1875	Cleaning Wires for 28 to 30 G Needles, pkg. of 10
ST27 2-1880	Cleaning Concentrate, 500 ml
Accessories for Disposable Electrodes	
ST2 60-2395	Preparatory Pads (70% Isopropanol), pkg. of 1000

See page 215 for Additional Large Animal Electrodes and Electrode Accessories

Options for 12-Lead Einthoven (Leads I, II, III, aVI, aVr, and aVf) and Wilson Leads (V1-V6)

Order #	Product
ST2 73-4538	12-Lead Einthoven (Leads I, II, III, aVI, aVr, and aVf) and Wilson Leads (V1-V6)
Includes:	
• EGM Module (2 SU)	
• WLA Module (2 SU)	
• Input box for 12-Lead ECG	
• Connection Cable for EGM for Needle or Tab/Snap Fastener	
• Connection Cable for WLA for Needle or Tab/Snap Fastener	
• BNC Output, 6-fold (2 are required, 1 SU each)	
• BNC Cable (12 are required)	

Choose the appropriate Electrodes and Adapters from the table below:

	Reusable Electrodes	Disposable Electrodes*
	28 Gauge Needle	**Snaps**
Order #	**ST2 72-5740**	**ST2 72-7090**
Supplied as	Pkg. of 12	Pkg. of 60
Qty. Required	1 Pkg.	1 Pkg.
Required Adapter	**N/A**	**Pinch Clamp**
Order #	**–**	**ST2 73-3383**
Supplied as	–	Each
Qty. Required	–	10

**Small animal cables for disposable electrodes are not available.*

For Small Animals the total monitoring cable lengths is 2.00 m the ending leads have a length of 30 cm.

For Large Animals the total monitoring cable lengths is 2.50 m the ending leads have a length of 75 cm.

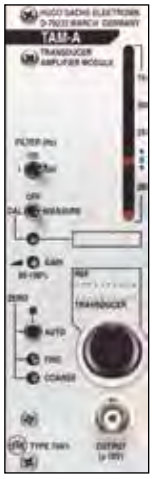
Order #	Product
Accessories for Reusable Needles	
ST2 72-1872	Needle Cleaning Kit
ST2 72-1875	Cleaning Wires for 28 to 30 G Needles, pkg. of 10
ST2 72-1880	Cleaning Concentrate, 500 ml
Accessories for Disposable Electrodes	
ST2 60-2395	Preparatory Pads (70% Isopropanol), pkg. of 1000

TTFM-2 Transit Time Flowmeter Module

Options for Second Flowmeter Channel

Order #	Product
ST2 73-4617	TTFM-2 Transit Time Flowmeter Module (4SU) with Flowprobe Extension Cable and BNC Cable, 2 m
	Additional items required: • Flowprobe of your choice (see page 213)
Optional Accessories	
ST2 73-4102	15-Pin Shielded Extension Cable, 1.5 m

TAM-A Transducer Amplifier Module

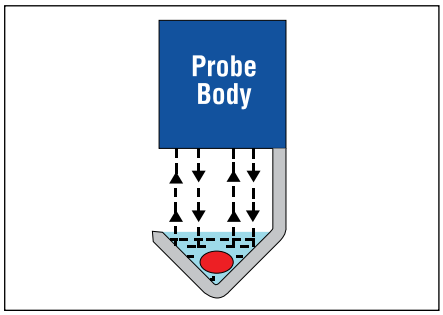


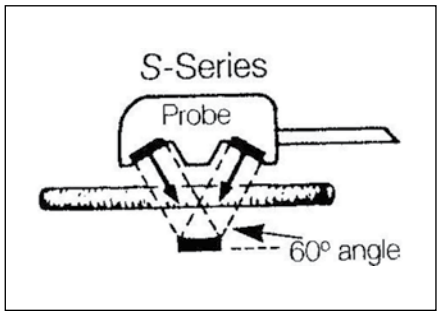
Options for Additional Blood Pressure Channel

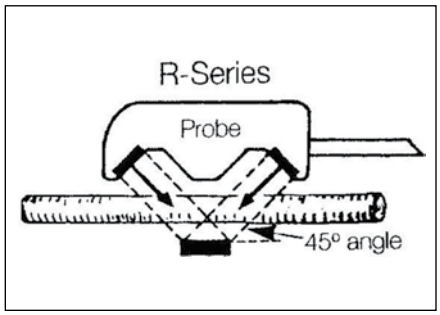
Order #	Product
ST2 73-0065	TAM-A Transducer Amplifier Module with BNC, 2m
	Additional items required: • Pressure Transducer of your choice, see table on page 214

NOTE: Do you need more than just Flow, Pressure, and ECG? For our full range of amplifier options, please contact Technical Support at 800-547-6776.

Flow Probe Options for the PLUGSYS TTFM Transit Time Flowmeter Module







Microcirculation Probes (V-Series)

0.5 to 0.7 mm for direct volume flow measurement in vessels down to 250 µm in rat or mouse.

Standard Probes (S-Series) 2 to 20 mm

For direct measurement of volume flow for vessels from 2 to 20 mm diameter. These probes have the transducers positioned at an 60° angle to the vessel. This reduces the flow probe body size and reflector width for placement of the probe in applications where space is limited.

Standard Probes (R-Series) 1 to 1.5 mm

For direct measurement of volume flow for vessels from 1 to 1.5 mm diameter. These probes have the transducers positioned at an 45° angle to the vessel.

Order #	Probe Type	Diameter	OD Vessel Acute	Resolution ml/min	Range ml/min			Probe Length	Probe Width	Cable Length	Cable Exit
					Sc. Low	Sc. Norm	Max				
V-Series - with Flexible Handle											
ST2 73-4640	MC0.5VB	0.5 mm	0.25-0.5	0.05	2.5	10	50	6.5 mm	4 mm	60 cm	Back
ST2 73-4641	MC0.7VB	0.7 mm	0.35-0.7	0.075	5	20	100	7.6 mm	3.5 mm	60 cm	Back
S-Series - J Reflector with Slide Cover											
ST2 73-4644	MC2PSB	2 mm	1.5 - 2.0	0.1	25	100	500	8.7 mm	3.3 mm	100 cm	Back
ST2 73-4646	MC2PSS	2 mm	1.5 - 2.0	0.1	25	100	500	8.7 mm	3.3 mm	100 cm	Side
ST2 73-4617	MC2.5PSB	2.5 mm	1.8 - 2.5	0.1	25	100	500	8.7 mm	3.3 mm	100 cm	Back
ST2 73-4648	MC2.5PSS	2.5 mm	1.8 - 2.5	0.1	25	100	500	8.7 mm	3.3 mm	100 cm	Side
ST2 73-4649	MC2.5PSL	2.5 mm	1.8 - 2.5	0.1	25	100	500	8.7 mm	3.3 mm	100 cm	Lateral
S-Series - L Reflector with Slide Cover											
ST2 73-4650	MC3PSB	3 mm	2.5 - 3.7	0.4	50	200	1L	9 mm	5 mm	100 cm	Back
ST2 73-4651	MC3PSS	3 mm	2.5 - 3.7	0.4	50	200	1L	9 mm	5 mm	100 cm	Side
ST2 73-4652	MC4PSB	4 mm	3.3 - 4.4	0.8	100	400	2L	13.3 mm	6 mm	100 cm	Back
ST2 73-4653	MC4PSS	4 mm	3.3 - 4.4	0.8	100	400	2L	13.3 mm	6 mm	100 cm	Side
ST2 73-4654	MC6PSB	6 mm	4.4 - 6.6	2 2	50	1L	5L	13.5 mm	6.7 mm	100 cm	Back
ST2 73-4655	MC6PSS	6 mm	4.4 - 6.6	2 2	50	1L	5L	13.5 mm	6.7 mm	100 cm	Side
ST2 73-4656	MC8PSB	8 mm	6.6 - 8.8	4	500	2L	10L	18.8 mm	7.5 mm	100 cm	Back
ST2 73-4657	MC8PSS	8 mm	6.6 - 8.8	4	500	2L	10L	18.8 mm	7.5 mm	100 cm	Side
ST2 73-4658	MC10PSB	10 mm	8.3 - 11.0	8	500	2L	10L	18.7 mm	8.5 mm	100 cm	Back
ST2 73-4659	MC10PSS	10 mm	8.3 - 11.0	8	500	2L	10L	18.7 mm	8.5 mm	100 cm	Side
ST2 73-4660	MC12PSB	12 mm	9.8 - 13	8	1L	4L	20L	22.5 mm	8.5 mm	100 cm	Back
ST2 73-4661	MC12PSS	12 mm	9.8 - 13	8	1L	4L	20L	22.5 mm	8.5 mm	100 cm	Side
ST2 73-4662	MC14PSB	14 mm	11.3 - 15.0	16	1L	4L	20L	26.2 mm	8.5 mm	100 cm	Back
ST2 73-4663	MC14PSS	14 mm	11.3 - 15.0	16	1L	4L	20L	26.2 mm	8.5 mm	100 cm	Side
ST2 73-4664	MC16PSB	16 mm	13.3 - 17.7	20	2.5L	10L	50L	36 mm	10 mm	100 cm	Back
ST2 73-4665	MC16PSS	16 mm	13.3 - 17.7	20	2.5L	10L	50L	36 mm	10 mm	100 cm	Side
ST2 73-4666	MC20PSB	20 mm	16.0 - 21.0	40	2.5L	10L	50L	31 mm	9 mm	100 cm	Back
ST2 73-4667	MC20PSS	20 mm	16.0 - 21.0	40	2.5L	10L	50L	31 mm	9 mm	100 cm	Side
R-Series - J Reflector with Slide Cover											
ST2 73-4668	MC1PRB	1 mm	0.7 -1.2	0.05	5	20	100	6.5 mm	4 mm	60 cm	Back
ST2 73-4669	MC1PRS	1 mm	0.7 -1.2	0.05	5	20	100	6.5 mm	4 mm	60 cm	Side
ST2 73-4670	MC1.5PRB	1.5 mm	1.2 - 1.8	0.075	10	40	200	7.6 mm	3.5 mm	60 cm	Back

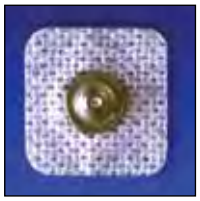
Blood Pressure Transducer Options for use with the PLUGSYS TAM-A Amplifier Module

Order #	Model	Description	Pressure Range (mmHg)	Additional Items Required	Specifications
ST2 73-3862	APT300	Reusable Pressure Transducer f/ TAM Amplifier Cable	-300 to +300	73-3869 Holder f/APT300	see page 198
ST2 73-4254	APT300, Sterile	Sterile Replacement Transducer Head, pkg. of 1	-300 to +300	73-3860 Interface Cable for APT300 to TAM Amplifier	see page 198
ST2 76-0582	TRA021HS	Reusable Research Pressure Transducer*	-50 to +300	-	see page 199
ST2 72-4297	DTXPlus	Sterile Disposable Pressure Transducer, with TAM Interface Cable, pack of 10*	-50 to +300	-	see page 200
ST2 88-0360	PRESS-S	Sterile Disposable Pressure Transducer, pack of 10 (-7 to 75 PSI)*	-300 to +300 (±2%)	88-0367 Interface Cable to TAM Amplifier	see page 199
ST2 73-0020	P75	Reusable Venous Blood Pressure Transducer*	-75 to +75	73-0096 3-Way Stopcock 73-0097 1-Way Stopcock	see page 201

**Stopcocks sold separately. See Accessories, below.*

Order #	Product
Accessories	
ST2 75-0039	3-way FLL to MLL with port covers, sterile, box of 50
ST2 75-0030	1-way FLL to MLL with port covers, sterile, box of 50
ST2 73-0096	3-way metal reusable stopcock FLL/FLL/MLL (non-rotating), pkg. of 1
ST2 73-0097	1-way metal reusable stopcock FLL/FLL (non-rotating), pkg. of 1
ST2 72-2662	3-way stopcock, FLL/FLL/MLL (rotating), pkg. of 25
ST2 72-8326	1-way stopcock, FLL/MLL (rotating), pkg. of 25
ST2 73-4479	Manual Pressure Calibration Kit

Disposable ECG Electrodes

	Order #	Description	Diameter	Supplied As	Features
	ST2 72-7093	Solid Gel General Purpose Electrode	1⅞ in (48 mm)	Pkg. of 60 (5/Strip)	• Suitable for all types of studies • Solid gel for improved adhesion and application
	ST2 72-7095	Disposable Foam Electrode	1½ in (38 mm)	Pkg. of 60 (5/Strip)	• Ag/AgCl high chloride wet gel for fast, clear traces • For active subjects, no movement artifact • Latex free/hypoallergenic
	ST2 72-7090	Aggressive Adhesive Small Disposable Electrode	1.0 in^2 (2.5 cm^2)	Pkg. of 30 (3/Strip)	• Small size for easy placement on difficult locations • Hypoallergenic • Comfortable cloth base • Ag/AgCl for clear signal • ECG and EMG • Superior adhesion • Solid gel
	**ST2 72-7091**	Gentle Adhesive Small Disposable Electrode	0.78 in^2 (20 mm^2)	Pkg. of 60 (3/Strip)	• Small size for easy placement on difficult locations • Hypoallergenic • Comfortable cloth base • Ag/AgCl for clear signal • ECG and EMG • Gentle solid gel adhesive for sensitive areas

Tube of Electrode Gel

ECG Electrode Accessories

Preparatory Pads

These individually packaged, 5.1 x 2.5 cm (2 x 1 in), textured cloth pads are soaked with 70% isopropanol solution with pumice. These should be used to prepare the skin to receive both reusable and disposable type electrodes.

Electrode Gel and Applicator

This electrode gel provides a good contact between reusable suction electrodes (50-9604) or reusable Ag/AgCl cup electrodes (50-9265) and the skin of subject. Use the gel applicator syringe (50-8309) for dispensing the small amounts of gel required.

Order #	Product
Accessories for Disposable Electrodes	
ST2 60-2395	Preparatory Pads (70% Isopropanol), Pkg. of 1,000
ST2 60-2394	Alligator Clip, Connects to an 4 mm Banana Plug for Tab Electrodes, pkg. of 10
ST2 73-3383	Pinch Clamp Adapter to 4mm Banana Plug for ECG Snap Electrodes, pkg. of 2
ST2 50-5313	Tube of Electrode Gel
ST2 50-9273	Small Double-Sided Adhesive Discs to hold reusable Ag/AgCl Cup Electrodes, roll of 100

Reusable Suction Cup Electrode

Non-Disposable Electrodes

Order #	Product
ST2 50-9604	Reusable Suction Cup Electrode, 4 mm Connector
ST2 50-9265	Reusable Ag/AgCl Cup Electrodes, 1 mm Connector

NEUROSCIENCE

Neuroscience research depends on having the utmost quality and precision in your work and in your equipment. Harvard Apparatus is proud to carry a line of stereotaxic instruments long recognized for their high quality. Our Ultra-Precise range brings you the ultimate in precision and resolution.

Harvard Apparatus also carries all the associated equipment for your stereotaxic surgery such as decapitators (see page 58), brain matrices, bone drills and artificial CSF.

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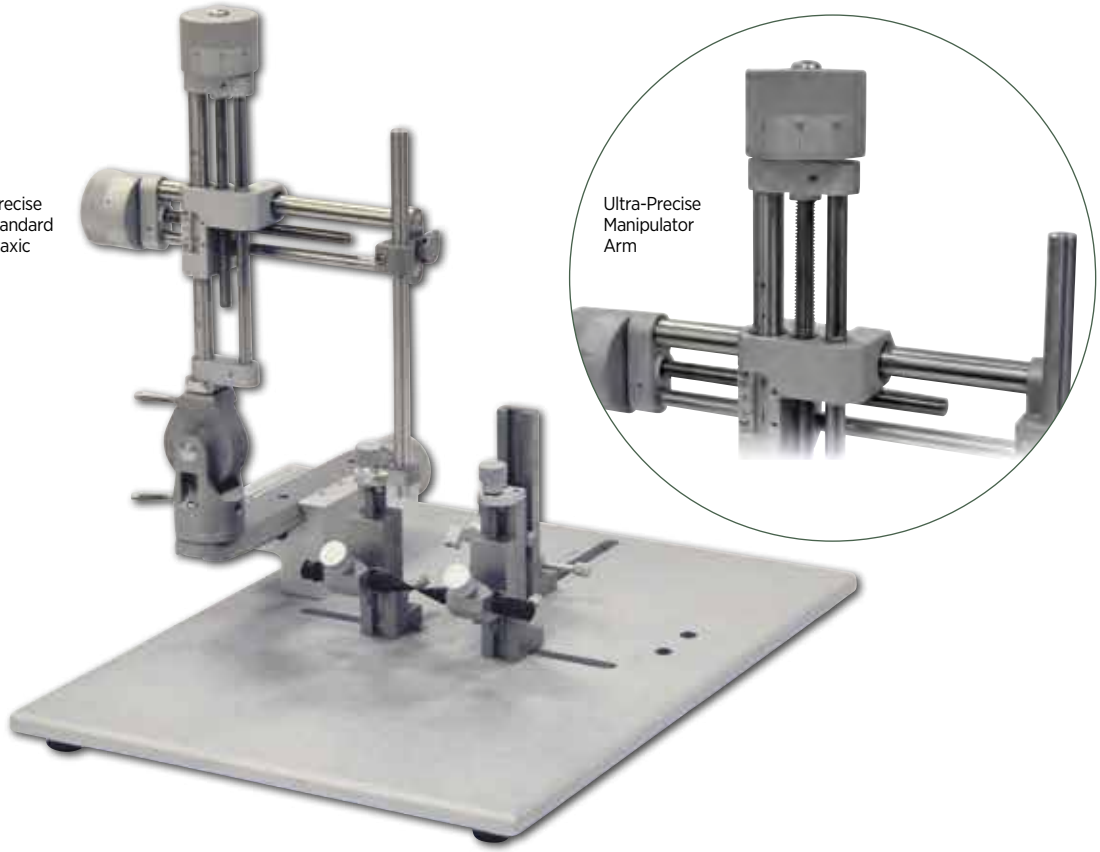


Ultra-Precise Stereotaxic Instruments

- Precision like never before
- 10 µm resolution
- Target small brain regions with confidence
- Upgrade existing manipulators

These ultra-precise manipulators offer increased resolution. They are ideal for use in rat and mouse stereotaxic surgery where high-accuracy positioning is required. Up to 80 mm of ventral-dorsal, medial-lateral and anterior-posterior travel with up to 90° angle adjustment in either the anterior-posterior or medial-lateral planes.

Ultra-precise manipulators are compatible with stereotaxic instruments including the New Standard (see page 219), Lab Standard (see page 220), Just for Mouse (see page 222) and Just for Mice (see page 223).

Included Components

Base, manipulator arm(s), standard probe holder(s) with corner clamp, nose clamp assembly (adaptor) and ear bars

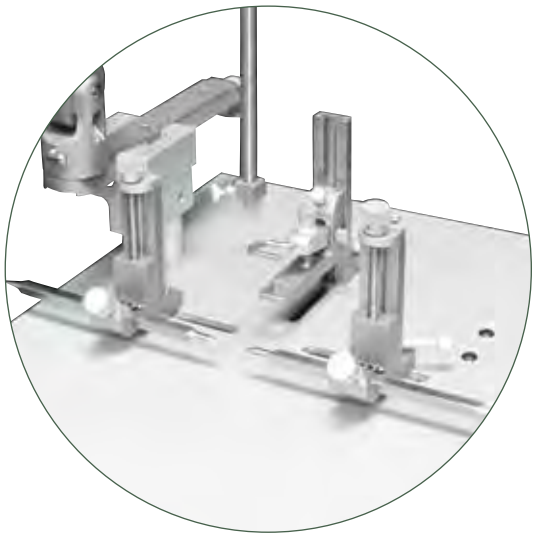
Purchase a complete Ultra-Precise Stereotaxic Instrument or upgrade your existing stereotaxic instrument (see page 226).

NOTE: Upgrade your stereotaxic instrument, see page 226.

Delrin is a registered trademark of E.I. du Pont de Nemours and Company.

Order #	Model	Product
New Standard Stereotaxic		
ST2 72-6348	51500U	Ultra-Precise New Standard Stereotaxic for Rats and Mice with Rat and Mouse Adaptors, Dual Tip Rat and Delrin® Mouse Ear Bars
ST2 72-6351	51503U	Ultra-Precise Dual New Standard Stereotaxic for Rats and Mice with Rat and Mouse Adaptors, Dual Tip Rat and Delrin® Mouse Ear Bars
Lab Standard Stereotaxic		
ST2 72-6353	51600U	Ultra-Precise Lab Standard Stereotaxic for Rats with Rat Adaptor and 18° Ear Bars
ST2 72-6349	51650U	Ultra-Precise Lab Standard Stereotaxic for Rats with Rat Adaptor and 45° Ear Bars
ST2 72-6350	51615U	Ultra-Precise Lab Standard Stereotaxic for Mice with Mouse and Neonatal Rat Adaptor and Delrin® Ear Bars
ST2 75-0330	51670U	Ultra-Precise Lab Standard Stereotaxic for Rats and Mice with Rat and Mouse Adaptors, 18° and Delrin® Ear Bars
ST2 72-6354	51603U	Ultra-Precise Dual Lab Standard Stereotaxic for Rats with Rat Adaptor and 18° Ear bars
ST2 72-6352	51653U	Ultra-Precise Dual Lab Standard Stereotaxic for Rats with Rat Adaptor and 45° Ear Bars
ST2 72-6164	51618U	Ultra-Precise Dual Lab Standard Stereotaxic for Mice with Mouse and Neonatal Rat Adaptor and Delrin® Ear Bars
ST2 75-0331	51673U	Ultra-Precise Dual Lab Standard Stereotaxic for Rats and Mice with Rat and Mouse Adaptors, 18° and Delrin® Ear Bars
Just for Mouse Stereotaxic		
ST2 72-6165	51730U	Ultra-Precise Just for Mouse Stereotaxic
ST2 72-6166	51733U	Ultra-Precise Dual Just for Mouse Stereotaxic
Just for Mice Stereotaxic		
ST2 72-6167	51725U	Ultra-Precise Just for Mice Stereotaxic

New Standard Stereotaxic



New Standard Stereotaxic Instruments

- No U-frame, maximizing operating space
- Designed for both rats and mice all on the same base
- Vertical and horizontal adjustment of ear and nose posts accommodates rodents of all sizes
- Scales are laser engraved and accurate to 100 µm
- Traditional and non-traumatic rat ear bars
- Manual, digital, motorized and ultra-precise versions available

The innovative design of the New Standard Stereotaxic Instrument provides users with the ability to perform surgeries on both mice and rats all on the same base.

The New Standard Stereotaxic is available in manual, digital (see page 224), motorized (see page 225) and ultra-precise (see page 218) versions.

Maximum Versatility

Revolutionary new design has eliminated the U-frame allowing for greater flexibility and access to the animal. The New Standard Stereotaxic Instruments enable you to vertically and horizontally adjust both the ear and nose posts allowing you to accommodate rodents of all sizes.

Like the classic Lab Standard™, the New Standard Stereotaxic has larger laser engraved vernier scales (accurate to 100 µm), 80 mm of ventral-dorsal, medial-lateral and anterior-posterior travel, absolute lock at 90° ventral-dorsal and brass-bushings for electrical grounding.

Included Components

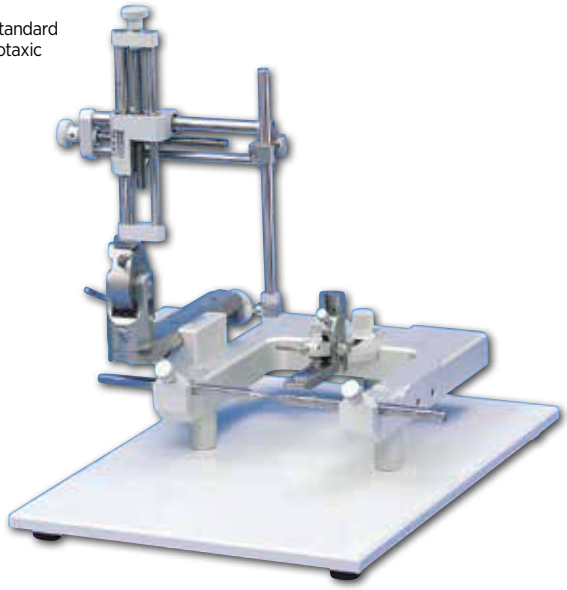
Base, manipulator arm(s), standard probe holder(s) with corner clamp, rat and mouse nose clamp assemblies (adaptors), lightweight Delrin® mouse ear bars and dual tip rat ear bars; one side is 18° and the other side is 45°

Order #	Model	Product
ST2 72-6335	51500	New Standard Stereotaxic for Rats and Mice
ST2 72-6336	51503	Dual New Standard Stereotaxic for Rats and Mice
ST2 72-6337	51501	New Standard Base without Manipulator Arms

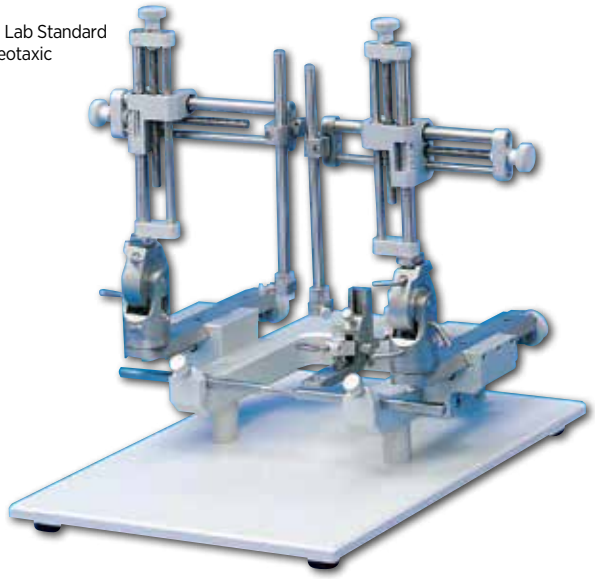
NOTE: Upgrade your stereotaxic instrument, see page 226.

Lab Standard is a trademark of Stoelting Co.

Lab Standard Stereotaxic



Dual Lab Standard Stereotaxic



Lab Standard™ Stereotaxic Instruments

- Large, easy to read vernier scales
- Scales are laser engraved–accurate to 100 µm
- Triple lead screws for fast positioning 80 mm of vertical, lateral and anterior-posterior travel
- Absolute lock at 90° (vertical)
- Manual, digital, motorized and ultra-precise versions available

The Lab Standard™ Stereotaxic Instrument, is ideal for researchers in need of a versatile, reliable instrument for stereotaxic procedures with small animals. Precision alignment when using the Lab Standard™ ensures accurate placement of electrodes, micropipettes, and other devices.

The time-proven 'U'-Frame design concept, sturdy construction, and adaptability to most model species make this a best choice for a stereotaxic instrument.

The Lab Standard™ Stereotaxic is available in manual, digital (see page 224), motorized (see page 225) and ultra-precise (see page 218) versions.

Easily Read Scales

All scales are oriented to be read easily from the open end of the 'U'. This is the position from which most scientists prefer to work. The numerals on the scales are larger, and therefore more easily read. The scale lines are laser engraved, to allow finest possible permanent marking of scales on all three axes. Precise alignment with facing vernier scales gives accurate resolution to 100 µm.

Versatility of Positioning

The manipulator arm controls medial-lateral and ventral-dorsal positioning using exclusive triple lead screws for faster positioning, and anterior-posterior movement via dovetail slide movement, with 80 mm of travel possible in each direction. A universal joint allows the investigator to change the angle of the probe up to 90° in either the anterior-posterior or medial-lateral planes. The improved locking mechanism on the Lab Standard™ will hold any angle position without slippage. And of course, it also provides an absolute lock at 90° vertical.

In addition, a swing joint allows the investigator to conveniently swing the manipulator arm and probe out of the way for performing a procedure — then reliably return the probe to the same point.

Included Components

U-frame base, manipulator arm(s), standard probe holder(s) with corner clamp, nose clamp assembly (adaptor) and ear bars

Order #	Model	Product
ST2 72-4790	51600	Lab Standard Stereotaxic for Rats with Rat Adaptor and 18° Ear Bars
ST2 72-4791	51650	Lab Standard Stereotaxic for Rats with Rat Adaptor and 45° Ear Bars
ST2 72-9568	51615	Lab Standard Stereotaxic for Mice with Mouse and Neonatal Rat Adaptor and Delrin® Ear Bars
ST2 72-6342	51670	Lab Standard Stereotaxic for Rats and Mice with Rat and Mouse Adaptors, 18° and Delrin® Ear Bars
ST2 72-4792	51603	Dual Lab Standard Stereotaxic for Rats with Rat Adaptor and 18° Ear Bars
ST2 72-4793	51653	Dual Lab Standard Stereotaxic for Rats with Rat Adaptor and 45° Ear Bars
ST2 72-9569	51618	Dual Lab Standard Stereotaxic for Mice with Mouse and Neonatal Rat Adaptor and Delrin® Ear Bars
ST2 72-6343	51673	Dual Lab Standard Stereotaxic for Rats and Mice with Rat and Mouse Adaptors, 18° and Delrin® Ear Bars
ST2 72-4796	51601	Lab Standard without Manipulator Arms
ST2 72-4240	–	Stereotaxic Surgery in the Rat

Lab Standard is a trademark of Stoelting Co.
Delrin is a registered trademark of E.I. du Pont de Nemours and Company.

Rotating Elliptical Stereotaxic Instruments

- 360° Turntable rotation provides unlimited positioning options
- Absolute lock at each 45° position
- Accurate to 100 µm
- Classic U-frame design
- Manual, digital and motorized versions available

The Rotating Elliptical Stereotaxic Instruments allow for 360° rotation of the entire U-frame stereotaxic instrument providing researchers with greater accessibility without compromising surgical positioning. A locking screw allows researchers to secure position at 45 degree increments.

The rotating capacity can be of major benefit when teaching. Imagine one person performing the surgery with others gathered around. Instead of having students looking over one's shoulders, you can unlock the frame and swivel it in their direction.

Easily Read Scales

All scales are oriented to be read easily from the open end of the 'U'. This is the position from which most scientists prefer to work. The numerals on the scales are larger, and therefore more easily read. The scale lines are laser engraved, to allow finest possible permanent marking of scales on all three axes. Precise alignment with facing vernier scales gives accurate resolution to 100 µm.

Versatility of Positioning

The manipulator arm controls medial-lateral and ventral-dorsal positioning using exclusive triple lead screws for faster positioning, and anterior-posterior movement via dovetail slide movement, with 80 mm of travel possible in each direction. A universal joint allows the investigator to change the angle of the probe up to 90° in either the anterior-posterior or medial-lateral planes. The improved locking mechanism on the Lab Standard™ will hold any angle position without slippage. And of course, it also provides an absolute lock at 90° vertical.

In addition, a swing joint allows the investigator to conveniently swing the manipulator arm and probe out of the way for performing a procedure — then reliably return the probe to the same point.

The Rotating Elliptical Stereotaxic is available in manual, digital (see page 224), and motorized (see page 225) versions.

Included Components

Base, manipulator arm(s), standard probe holder with corner clamp, nose clamp assembly (adaptor) and ear bars

Order #	Model	Product
ST2 72-6391	51600E	Rotating Elliptical Stereotaxic for Rats with Rat Adaptor and 18° Ear Bars
ST2 75-0320	51615E	Rotating Elliptical Stereotaxic for Mice with Mouse and Neonatal Rat Adaptor and Delrin® Ear Bars
ST2 75-0321	51670E	Rotating Elliptical Stereotaxic for Rats and Mice with Rat and Mouse Adaptors, 18° and Delrin® Ear Bars
ST2 72-6392	51603E	Dual Rotating Elliptical Stereotaxic for Rats with Rat Adaptor and 18° Ear Bars
ST2 75-0322	51618E	Dual Rotating Elliptical Stereotaxic for Mice with Mouse and Neonatal Rat Adaptor and Delrin® Ear Bars
ST2 75-0323	51673E	Dual Rotating Elliptical Stereotaxic for Rats and Mice with Rat and Mouse Adaptors, 18° and Delrin® Ear Bars

NOTE: Upgrade your stereotaxic instrument, see page 226.

Just For Mouse™ Stereotaxic Instruments

- 25 x 25 cm footprint
- Ear and tooth bar post height adjustment to accommodate animals between 10-75 grams
- Delrin® ear bars; tapered points on one end and rubber pads on the other
- Triple lead screw in manipulator arm for fast positioning
- Accurate to 100 µm
- Manual, digital, motorized and ultra-precise versions available

The Just For Mouse™ Stereotaxic Instrument was specifically developed for the expanding growth of research being conducted in laboratories using knock-out and transgenic mice. This stereotaxic instrument is ideal for researchers in need of a versatile, reliable instrument for stereotaxic procedures with mice and other small rodents. Precision alignment when using the Just For Mouse™ ensures accurate placement of electrodes, micropipettes, cannula, and other devices. Just For Mouse™ is the only instrument built especially for mice, and offers several advantages over competing "made for rat" instruments.

The Just For Mouse™ Stereotaxic is available in manual, digital (see page 224), motorized (see page 225) and ultra-precise (see page 218) versions.

Small Footprint

The small size, one of the smallest on the market, is ideal for laboratories with small spaces or for use in surgical suites that require transportation of equipment to and from surgical facilities.

Dual Manipulator Arms

Add another manipulator arm for increased versatility. Often used for electrophysiology studies that requires both recording and stimulation.

Unique, Light Ear Bars

Ear bar posts may be independently adjusted in height—a unique feature of this stereotaxic instrument—to level the skull. Ear bars are composed of light Delrin® material with tapered points, non-invasive rubber pads or jaw holder cuffs. Laser engraved scales show the vertical positions of the ear bars. Model organisms with soft skulls, such as the mouse and the neonatal rat, are difficult to secure firmly in a traditional stereotaxic instrument. The stainless steel ear bars used for adult rats are too heavy to provide a secure hold without compressing the sides of the skull inward (which closes the airways and impedes blood flow).

Included Components

Base, manipulator arm(s), standard probe holder(s) with corner clamp, Delrin® nose clamp assembly and Delrin® ear bars

Order #	Model	Product
ST2 72-9564	51730	Just for Mouse Stereotaxic
ST2 72-9565	51733	Dual Just for Mouse Stereotaxic

NOTE: Upgrade your stereotaxic instrument, see page 226.

Just for Mouse is a trademark of Stoelting Co.
Delrin is a registered trademark of E.I. du Pont de Nemours and Company.

Just For Mice™ Stereotaxic Instrument

- Ideal for neonatal rats and mice
- Dual workstations
- Accurate to 100 µm
- Ear and tooth bar post height adjustment to accomodate animals between 10-75 grams
- Delrin® ear bars; tapered points on one end and rubber pads on the other
- Triple lead screw in manipulator arm for fast positioning
- Manual, digital, motorized and ultra-precise versions available

The Just For Mice™ Stereotaxic Instrument was specifically developed for the expanding growth of research being conducted in laboratories using knock-out and transgenic mice. The Just For Mice™ is ideal for researchers in need of a versatile, reliable instrument for stereotaxic procedures with mice and other small rodents. This innovative instrument allows the user to perform surgical procedures on two mice at one time. Precision alignment when using the Just For Mice™ ensures accurate placement of electrodes, micropipettes, cannula, and other devices. Just For Mice™ is the only instrument built especially for mice, and offers several advantages over competing "made for rat" instruments.

The Just For Mice is available in manual, digital (see page 224), motorized (see page 225) and ultra-precise (see page 218) versions.

Saves Time

Waiting time can be virtually eliminated. For example, in applications that require drying time for cranial plaster, surgery can be performed on one mouse while the cranial cement is drying on the other mouse. Or, one person can perform surgery while another person installs another mouse or neonatal rat.

Dual Workstations

Two stereotaxic instruments on a single base. The base is 10 in x 10 in and has two ear bar and tooth holder slots located on each side. A tooth bar and nose clamp secures the nose. A single manipulator arm controls medial-lateral and dorsal-ventral positioning via triple-lead screws, and anterior-posterior movement via dovetail slide movement, with 80 mm of travel possible in each direction, allowing access to both ear bar locations.

Unique, Light Ear Bars

Ear bar posts may be independently adjusted in height—a unique feature of this stereotaxic instrument—to level the skull. Ear bars are composed of light Delrin® material with tapered points, non-invasive rubber pads or jaw holder cuffs. Laser engraved scales show the vertical positions of the ear bars. Model organisms with soft skulls, such as the mouse and the neonatal rat, are difficult to secure firmly in a traditional stereotaxic instrument. The stainless steel ear bars used for adult rats are too heavy to provide a secure hold without compressing the sides of the skull inward (which closes the airways and impedes blood flow.) Further, the neonatal rat pup has no external opening of the auditory canal for inserting the ear bar points.

Included Components

Base, manipulator arm, standard probe holder with corner clamp, Delrin® nose clamp assembly and Delrin® ear bars

Order #	Model	Product
ST2 72-6049	51725	Just for Mice Stereotaxic

NOTE: Upgrade your stereotaxic instrument, see page 226.

For Bone Drills, see page 233 for Bone Rongeurs and other Surgical Instruments, see pages 1-58.

Just for Mice is a trademark of Stoelting Co.
Delrin is a registered trademark of E.I. du Pont de Nemours and Company.

Digital New Standard Stereotaxic

Digital Rotating Elliptical Stereotaxic

Digital Stereotaxic Instruments

- Saves time, improves accuracy
- Zeroing function for targeting specific coordinates
- Easy-to-read digital display offers 10 µm resolution in all three axes
- Triple-lead screws for fast positioning
- 80 mm of dorsal-ventral, medial-lateral and anterior-posterior travel
- Absolute lock at 90° vertical
- Easily cleaned, durable surface

The classic design and high quality of our conventional stereotaxic manipulators are exactly the same on the digital stereotaxic, with no drift and smooth movements. The digital stereotaxic keeps the custom triple lead screws to allow fast positioning, while maintaining consistently smooth movement. The thin cords from the sensors do not interfere with movements, allowing the arm to move freely and be set at any angle.

The sealed electronic sensor is immune to interference and environmental conditions. Measurements are accurate to 10 µm in all directions and easily read on the large LED display.

Memory

Target coordinates can be programmed into the memory of the digital stereotaxic.

Zeroing Function for Targeting Specific Coordinates

A zeroing function makes setting a reference point for targeting specific coordinates on the animal's skull as easy as 1-2-3:

1. Find reference point, e.g. Bregma
2. Reset zero on LED display
3. Move manipulator arm to the desired coordinates

Included Components

Base, manipulator arm(s), LED digital display, standard probe holder(s) with corner clamp, nose clamp assembly (adaptor) and ear bars

Order #	Model	Product
New Standard Stereotaxic		
ST2 72-6338	51500D	Digital New Standard Stereotaxic for Rats and Mice with Rat and Mouse Adaptors, Dual Tip Rat and Delrin® Mouse Ear Bars
ST2 72-6339	51503D	Digital Dual New Standard Stereotaxic for Rats and Mice with Rat and Mouse Adaptors, Dual Tip Rat and Delrin® Mouse Ear Bars
Lab Standard Stereotaxic		
ST2 72-6035	51900	Digital Lab Standard Stereotaxic for Rats with Rat Adaptor and 18° Ear Bars
ST2 72-6036	51950	Digital Lab Standard Stereotaxic for Rats with Rat Adaptor and 45° Ear Bars
ST2 72-9570	51925	Digital Lab Standard Stereotaxic for Mice with Mouse and Neonatal Rat Adaptor and Delrin® Ear Bars
ST2 72-6344	51970	Digital Lab Standard for Rats and Mice with Rat and Mouse Adaptors, 18° and Delrin® Ear Bars
ST2 72-6037	51903	Digital Dual Lab Standard Stereotaxic for Rats with Rat Adaptor and 18° Ear bars
ST2 72-6038	51953	Digital Dual Lab Standard Stereotaxic for Rats with Rat Adaptor and 45° Ear Bars
ST2 72-9571	51928	Digital Dual Lab Standard Stereotaxic for Mice with Mouse and Neonatal Rat Adaptor and Delrin® Ear Bars
ST2 72-6345	51973	Digital Dual Lab Standard for Rats and Mice with Rat and Mouse Adaptors, 18° and Delrin® Ear Bars
Rotating Elliptical Stereotaxic		
ST2 72-6393	51900E	Digital Rotating Elliptical Stereotaxic for Rats with Rat Adaptor and 18° Ear Bars
ST2 75-0324	51925E	Digital Rotating Elliptical Stereotaxic for Mice with Mouse and Neonatal Rat Adaptor and Delrin® Ear Bars
ST2 75-0326	51970E	Digital Rotating Elliptical Stereotaxic for Rats and Mice with Rat and Mouse Adaptors, 18° and Delrin® Ear Bars
ST2 72-6394	51903E	Digital Dual Rotating Elliptical Stereotaxic for Rats with Rat Adaptor and 18° Ear Bars
ST2 75-0325	51928E	Digital Dual Rotating Elliptical Stereotaxic for Mice with Mouse and Neonatal Rat Adaptor and Delrin® Ear Bars
ST2 75-0327	51973E	Digital Dual Rotating Elliptical Stereotaxic for Rats and Mice with Rat and Mouse Adaptors, 18° and Delrin® Ear Bars
Just for Mouse Stereotaxic		
ST2 72-9563	51730D	Digital Just for Mouse Stereotaxic
ST2 72-9566	51733D	Digital Dual Just for Mouse Stereotaxic
Just for Mice Stereotaxic		
ST2 72-6048	51725D	Digital Just for Mice Stereotaxic

Motorized Lab Standard Stereotaxic

Motorized Stereotaxic Instruments

- Digital atlas integration
- Frame representation
- Calibration of frame coordinates
- Setting of logical coordinate system (Bregma)
- Coordinates and Atlas visualization of the probe
- Advanced 3D visualization options
- Spatial atlas representation
- Intuitive probe control
- Intuitive navigation

The Motorized Stereotaxic Instrument combines the classic design of our stereotaxic frames with customized motors and state-of-the-art software. Designed to adapt conventional stereotaxic systems, the StereoDrive software allows motorized, computer controlled stereotaxic positioning in all three orthogonal axes.

Integrated with Paxinos and Watson's *Rat Brain in Stereotaxic Coordinates*, for either rat or mouse, the intuitive movement control enables unprecedented accuracy and higher throughput in all stereotaxic applications.

Image manipulations include:

- Spatial Rotation
- Fixed Rotation
- Zooming
- Panning

Delrin is a registered trademark of E.I. du Pont de Nemours and Company.

StereoDrive software is included with Motorized Stereotaxic Instruments. StereoDrive software integrates seamlessly with the precision controlled motors. Motor movement can be executed by using the keyboard arrow keys or clicking on the screen with the mouse.

The software coordinates motor movement of all three axes (anterior-posterior, medial-lateral, and dorsal-ventral) probe placement in relation to a 3-dimensional visual representation of a rat (Paxinos & Watson, 6th Edition) or mouse (Watson, 3rd edition) brain atlas.

Included Components

- Base
- Nose clamp assembly
- Ear bars
- Data acquisition control box
- Motorized dovetail A-P drive
- Motorized M-L and D-V drives
- Connection cables
- USB cable
- StereoDrive Software, rat and mouse CD
- Operating manual for StereoDrive Software
- Rat Brain in Stereotaxic Coordinates, Compact 6th Edition
- Mouse Brain in Stereotaxic Coordinates, Compact 3rd Edition
- Power cord

Order #	Model	Product
New Standard Stereotaxic		
ST2 72-6340	51500M	Motorized New Standard Stereotaxic for Rats and Mice with Rat and Mouse Adapters, Dual Tip Rat and Delrin® Mouse Ear Bars
Lab Standard™ Stereotaxic		
ST2 72-9552	51700	Motorized Lab Standard Stereotaxic for Rats with Rat Adaptor and 18° Ear Bars
ST2 72-9553	51750	Motorized Lab Standard Stereotaxic for Rats with Rat Adaptor and 45° Ear Bars
ST2 75-0328	51715	Motorized Lab Standard Stereotaxic for Mice with Mouse and Neonatal Rat Adaptor and Delrin® Ear Bars
ST2 75-0329	51770	Motorized Lab Standard Stereotaxic for Rats and Mice with Rat and Mouse Adaptors, 18° and Delrin® Ear Bars
Rotating Elliptical Stereotaxic		
ST2 72-6395	51700E	Motorized Rotating Elliptical Stereotaxic for Rats with Rat Adaptor and 18° Ear Bars
ST2 75-0332	51715E	Motorized Rotating Elliptical Stereotaxic for Mice with Mouse and Neonatal Rat Adaptor and Delrin® Ear Bars
ST2 75-0333	51770E	Motorized Rotating Elliptical Stereotaxic for Rats and Mice with Rat and Mouse Adaptors, 18° and Delrin® Ear Bars
Just for Mouse Stereotaxic		
ST2 72-9567	51730M	Motorized Just for Mouse Stereotaxic
Just for Mice Stereotaxic		
ST2 72-9560	51725M	Motorized Just for Mice Stereotaxic

Digital
New Standard
Stereotaxic

Motorized Lab Standard
Stereotaxic

Digital Upgrade or Conversion

Upgrading or converting to digital will reduce the risk of human error and increase accuracy (10 µm resolution instead of 100 µm resolution).

Your choice of two service options:

- Keep your existing arm. We will ship you a new digital manipulator arm and LED Display.
- Send us your existing arm. We will convert your existing manipulator arm to digital for you. RMA required.

Order #	Model	Product
Option 1: New Digital Manipulator Arm and LED Display		
ST2 72-6039	51904	LED Display and 3-Axis Manipulator Arm ADD-ON, Left
ST2 72-6040	51906	LED Display and 3-Axis Manipulator Arm ADD-ON, Right
Option 2: Digital Conversion of Existing Manipulator Arms		
ST2 72-6041	51914	Factory CONVERSION to Digital Plus LED Display and 3-Axis Manipulator Arm, Left
ST2 72-6042	51916	Factory CONVERSION to Digital Plus LED Display and 3-Axis Manipulator Arm, Right

Motorized Upgrade or Conversion

Upgrading or converting to motorized will provide you with automated movement in all three orthogonal axes.

Your choice of two service options:

- Keep your existing arm. We will ship you a new motorized manipulator arm and StereoDrive Software.
- Send us your existing arm. We will convert your existing manipulator arm to motorized and send you StereoDrive Software. RMA required.

Order #	Model	Product
Option 1: New Motorized Manipulator Arm and StereoDrive Software		
ST2 72-9556	51704	StereoDrive Software and 3-Axis Manipulator Arm ADD-ON, Left
Option 2: Conversion to Motorized Manipulator Arm and StereoDrive Software		
ST2 72-9558	51714	StereoDrive Software and Factory CONVERSION to Motorized 3-Axis Manipulator Arm, Left

Ultra-Precise Upgrade

Upgrading to ultra-precise increases precision (from 100 µm to 10 µm resolution) and allows you to confidently target small regions of the brain. Ideal for mice and neonatal animals.

Order #	Model	Product
ST2 72-6168	51604U	Ultra-Precise 3-Axis Manipulator Arm ADD-ON, Left
ST2 72-6169	51606U	Ultra-Precise 3-Axis Manipulator Arm ADD-ON, Right

Large Animal Stereotaxic Instruments

- For use with rats, cats, monkeys and dogs
- Laser engraved scales
- Exceptionally accurate
- Versatile
- Holds up to six manipulator arms

The Parallel Rail Animal Stereotaxic Instrument provides superior performance. Up to six (72-4798) or eight (72-4800) manipulator arms may be conveniently positioned on the two parallel rails. Thus, several probes may be independently positioned in one animal.

Easily Read Scales

Precise, laser engraved graduations allow vernier scales to be aligned to 0.1 mm. The scales are oriented to enhance readability from common user positions. Standard manipulator arms have 100 µm resolution, while high-quality digital arms have a resolution of 10 µm.

Versatile

Other species adaptors, probe holders and ear bars may be used allowing the stereotaxic instrument to be used with a wide range of animals and procedures.

A/P Microdrive Available

The optional 72-4806 Anterior/Posterior Microdrive provides fine movement control in the A/P dimension with 25 mm range and 10 µm graduations. The A/P Microdrive mounts between the rail and the manipulator and it includes a longer probe holder shaft for the extra height.

Included Components:

The 72-4798 Parallel Rail Stereotaxic for cats and monkeys comes equipped with:

- Two 72-4804 LH Manipulators
- Two 72-4805 RH Manipulators
- One 72-4799 Parallel Rail Frame
- One 72-4824 Cat/Monkey Head Holder with 20° Ear Bars
- One 72-4797 Universal Swivel Stand with 102 x 102 mm (4 x 4 in) Mounting Support Stand
- One 72-4802 Base Plate, Plain 330 x 432 mm (17 x 13 in)
- Four 72-4829 Standard Probe Holder with Corner Clamp

The 72-4799 Parallel Rail Frame Assembly Only for cats and monkeys comes equipped with:

- One 72-4799 Parallel Rail Frame
- One 72-4824 Cat/Monkey Head Holder with 20° Ear Bars
- One 72-4797 Universal Swivel Stand with 102 x 102 mm (4 x 4 in) Mounting Support Stand
- One 72-4802 Base Plate, Plain 330 x 432 mm (17 x 13 in)

The 72-4800 Large Parallel Rail Stereotaxic for dogs comes equipped with:

- Two 72-4804 LH Manipulators
- Two 72-4805 RH Manipulators
- One 72-4801 Large Parallel Rail Frame
- One 72-4826 Highly Adjustable Dog/Monkey Head Holder with 20° Ear Bars
- One 72-4797 Universal Swivel Stand with 102 x 102 mm (4 x 4 in) Mounting Support Stand
- One 72-4802 Base Plate, Plain 330 x 432 mm (17 x 13 in)
- Four 72-4829 Standard Probe Holder with Corner Clamp

The 72-4801 Large Parallel Rail Frame Assembly Only for dogs comes equipped with:

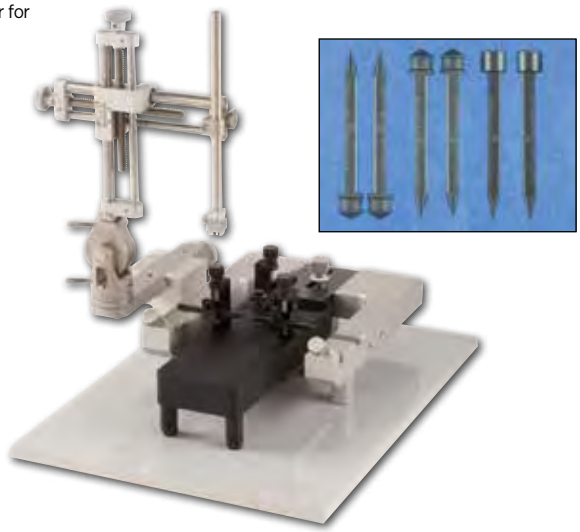
- One 72-4801 Large Parallel Rail Frame
- One 72-4826 Highly Adjustable Dog/Monkey Head
- One 72-4797 Universal Swivel Stand with 102 x 102 mm (4 x 4 in) Mounting Support Stand
- One 72-4802 Base Plate, Plain 330 x 432 mm (17 x 13 in)

Optional Mounting Plates

The optional 72-4803, mounting plate 305 x 914 mm (12 x 36 in) base plate has four, full-length tee slots for mounting other instruments on the same base with a 72-4798 or 72-4800 stereotaxic.

Order #	Model	Product
ST2 72-4798	51800	Parallel Rail Stereotaxic for Cat/Monkey, Complete with 4 Manipulators
ST2 72-4799	51801	Parallel Rail Frame Assembly Only, Cat/Monkey
ST2 72-4800	51850	Large Parallel Rail Stereotaxic for Dog, Complete with 4 Manipulators
ST2 72-4801	51851	Large Parallel Rail Frame Assembly Only, Dog
ST2 72-4802	51871	Base Plate, 330 x 432 mm (13 x 17 in)
ST2 72-4803	51872	Base Plate, Slotted, 305 x 914 mm (12 x 36 in)
ST2 72-4804	51804	Manipulator, LH
ST2 72-4805	51806	Manipulator, RH
ST2 72-4806	51858	A/P Microdrive
ST2 72-4797	51680	Universal Mounting Support Stand
ST2 72-4864	51902	LED Display +2-Axis Manipulator, ADD-ON, RH
ST2 72-4865	51905	LED Display +2-Axis Manipulator, ADD-ON, LH

Mouse and Neonatal Rat Adaptor for Stereotaxic Instruments (frame not included)



Mouse and Neonatal Rat Adaptor

- Independent height adjustment of ear bars to level the skull
- Delrin® ear bars; tapered points on one end and rubber pads on the other
- Triple point securing of the animals head
- Laser engraved scales show vertical position of ear bars
- Clamps securely to stereotaxic frame

Model organisms with soft skulls, such as the mouse and the neonatal rat, have traditionally been difficult to secure firmly in a stereotaxic instrument. The stainless steel ear bars used for adult rats are too heavy to position precisely enough to provide a secure hold while still avoiding flexing the sides of the skull inward (which compresses the airways and impedes blood flow). Further, the neonatal rat pup has no external opening of the auditory canal into which to insert the ear bar points.

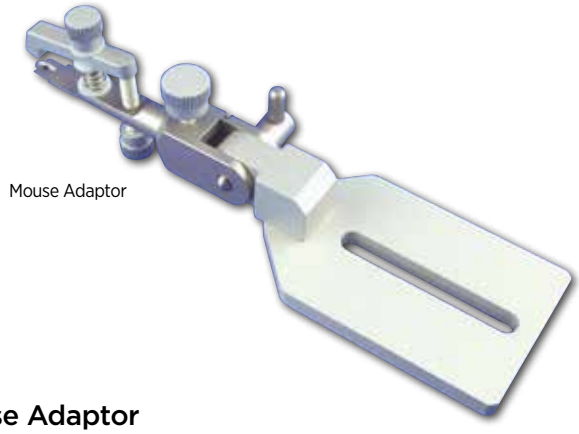
The Mouse and Neonatal Rat Adaptor

The Mouse and Neonatal Rat Adaptor employs light, Delrin® ear bars with tapered points on one end, and rubber pads on the other, to facilitate surgery on such animals. Neonatal surgery may be accomplished with minimally invasive procedure by using the rubber pad ends of the ear bars. Ear bars may be independently adjusted in height, a unique feature to this stereotaxic instrument, to level the skull. Laser engraved scales shows the vertical position of the ear bars. A tooth bar and nose clamp secures the nose.

A set of two specialized Jaw Holder Cuffs (72-4795), which securely clamp the zygomatic processes of the skull, are included with this adaptor. The jaw holder cuffs fit over the ends of the ear bars, replacing the rubber pads, providing an alternative non-invasive means of securing the animal's head in the stereotaxic stage. These options for "triple point" securing of the animal's head in this adaptor make it the most versatile mouse stereotaxic available.

Order #	Model	Product
ST2 72-4794	51625	Mouse and Neonatal Rat Adaptor
ST2 72-4795	51647	Replacement Jaw Holder Cuffs, Set of 2
ST2 72-6170	51648	Replacement Ear Bars, Set of 2
ST2 75-0334	51629	Replacement Snout Clamp

Mouse Adaptor



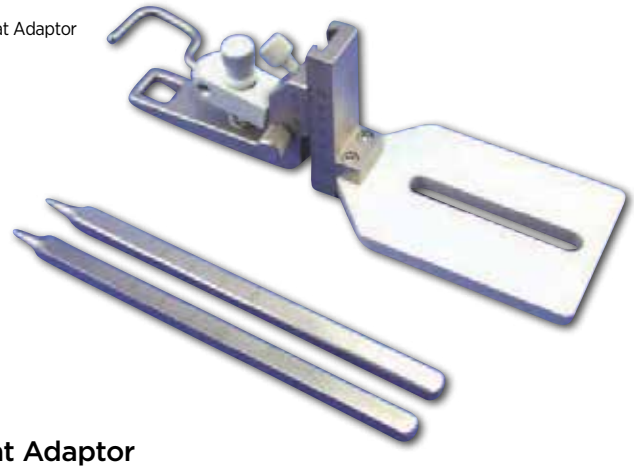
Mouse Adaptor

Ear bars can cause breathing difficulties and bleeding in mice. The Mouse Adaptor holds the mouse head by means of a palate bar and nose clamp, without ear bars. Head angle may be adjusted to achieve flat skull or other approach angles. Since there are no earbars, the Mouse Adaptor fits 51600, 51800 and 51900 Series stereotaxic instruments.

If you want to use ear bars to perform stereotaxic surgery on mice, we offer the perfect miniature stereotaxic stage surgery: the Mouse and Neonatal Rat Adaptor, pictured to the left.

Order #	Model	Product
ST2 72-4819	51624	Mouse Adaptor for 51600, 51800 and 51900 Series Stereotaxic Frames

Rat Adaptor



Rat Adaptor

The Rat Adaptor includes the nose clamp assembly and ear bars. It is an optional extra for the 72-4798 and 72-4800 Large Animal Stereotaxic Instruments.

Order #	Model	Product
ST2 72-4815	51621	Rat Adaptor with 18° Ear Bars for 51600 and 51900 Series Stereotaxic Frames
ST2 72-4816	51620	Rat Adaptor with 45° Ear Bars (Non-Puncture) for 51600 and 51900 Series Stereotaxic Frames
ST2 72-4817	51821	Rat Adaptor with 18° Ear Bars for 51800 Series Stereotaxic Frame
ST2 72-4818	51820	Rat Adaptor with 45° Ear Bars (Non-Puncture) for 51800 Series Stereotaxic Frame

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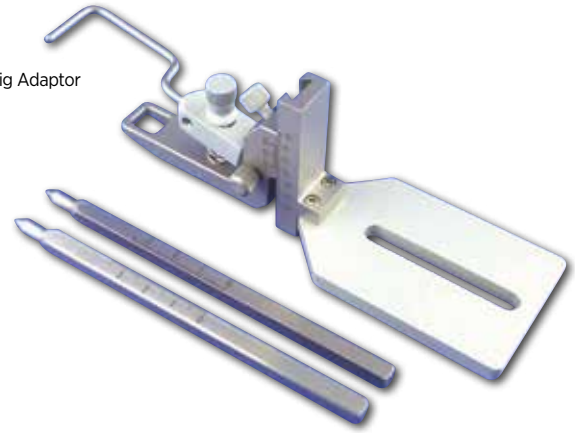
Guinea Pig Adaptor



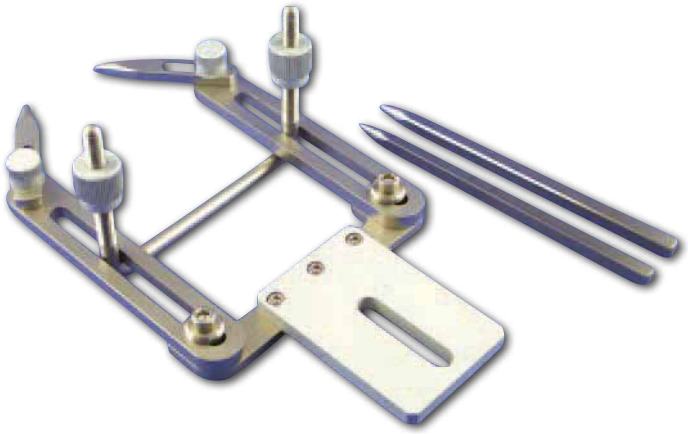
Guinea Pig Adaptor

The Guinea Pig Adaptor includes the nose clamp assembly and 45° ear bars required for guinea pigs. The nose clamp reaches further back behind the incisors than on the rat adaptors.

The Guinea Pig Adaptor is available for the 51600, 51800 and 51900 series stereotaxic instruments.

Order #	Model	Product
ST2 72-4820	51622	Guinea Pig Adaptor with 45° Ear Bars for 51600 and 51900 Series Stereotaxic Frame
ST2 72-4821	51822	Guinea Pig Adaptor with 45° Ear Bars for 51800 and 51900 Series Stereotaxic Frame

Dog/Monkey Adaptor



Dog/Monkey Adaptor

The Dog/Monkey Adaptor is available only for the 51800 Series stereotaxic instruments. It should be used with the 72-4800 or 72-4801 Parallel Rail Stereotaxic Frames which have two sets of ear bar holders at different spacings from the front to accommodate a wide size range of dogs.

Order #	Model	Product
ST2 72-4826	51852	Dog/Monkey Adaptor with 20° Ear Bars for 51800 Series Stereotaxic Frame

Cat/Monkey Adaptor

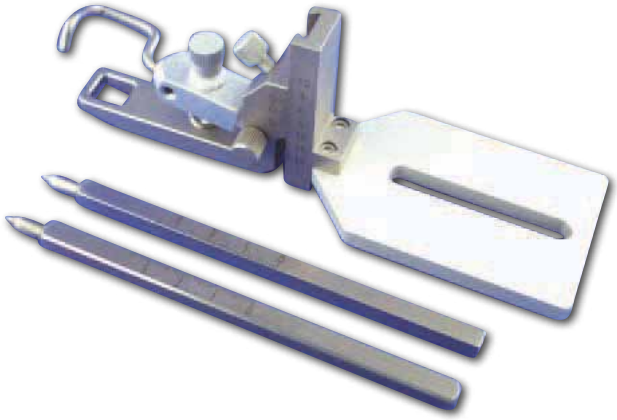
Cat/Monkey Adaptor

The Cat/Monkey Adaptor for the 51600 Series includes spacers and bolts to raise the 'U' frame 64 mm (2.5 in) above the base plate, as well as the eye socket/palate holder and 20° ear bars used for cats and monkeys.

The Cat/Monkey Adaptor is available for the 51600 and 51800 Series Stereotaxic instruments.

Order #	Model	Product
ST2 72-4822	51626	Cat/Monkey Adaptor with 20° Ear Bars for 51600 Series Stereotaxic Frame
ST2 72-4823	51627	Cat/Monkey Adaptor with 45° Ear Bars for 51600 Series Stereotaxic Frame
ST2 72-4824	51826	Cat/Monkey Adaptor with 20° Ear Bars for 51800 Series Stereotaxic Frame
ST2 72-4825	51827	Cat/Monkey Adaptor with 45° Ear Bars for 51800 Series Stereotaxic Frame

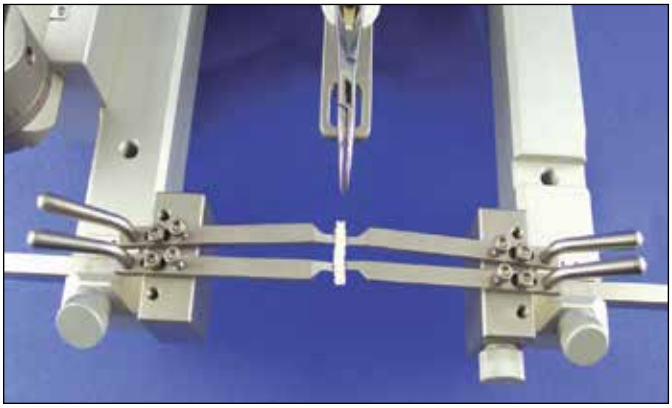
Small Bird Adaptor



Small Bird Adaptor

The Small Bird Adaptors include the nose clamp assembly and 45° ear bars required for birds. The Small Bird Adaptor uses a beak support and "V" shaped beak clamp to hold the beak down and centered. This is in place of the incisor bar/nose clamp arrangement used for rats.

Order #	Model	Product
ST2 72-4827	51623	Small Bird Adaptor with 45° Ear Bars for 51600 Series Stereotaxic Frame
ST2 72-4828	51823	Small Bird Adaptor with 45° Ear Bars for 51800 Series Stereotaxic Frame



Spinal Adaptor

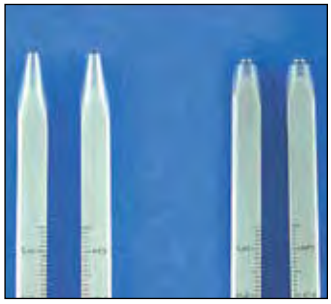
- Models to hold mice or rats for stereotaxic spinal surgery

The design of this instrument was inspired by the need for a practical, versatile, and economical instrument for reliably stabilizing the rodent spinal column. The Spinal Adaptor is an accessory to be mounted on either the 51600 or the 51800 Series stereotaxic instruments or other brands of stereotaxic instruments, converting them for spinal surgery applications. It utilizes the manipulator and base plate of the stereotaxic instrument, thus enabling precision spinal preparations. The spinal column is secured by up to four independent transverse process clamps, as well as a spinous process clamp. The transverse process clamps are designed to minimize trauma while providing motionless support.

The instrument is engineered for one-handed control of gross and fine adjustment of the surgical preparation in the AP, ML, and DV planes.

Transverse process clamps are available to accommodate either the rat or the mouse. To work with both species, order the Spinal Adaptor for one species, and one set of transverse clamps for the other.

Order #	Model	Product
ST2 72-4811	51690	Mouse Spinal Adaptor
ST2 72-4812	51695	Rat Spinal Adaptor
ST2 72-4813	51691	Mouse Transverse Clamps, Set of Four
ST2 72-4814	51692	Rat Transverse Clamps, Set of Four



Lab Standard™ Ear Bars

- For rats in a stereotaxic instrument

Lab Standard Ear Bars have laser engraved scales. These ear bars are 6.2 mm square. Ear bars for the 51600 series of stereotaxic instruments have a different zero point than do those for the 51800 series.

Standard ear bars have an 18° taper at the tip to penetrate far into the ear canal for a more secure hold. They puncture the tympanic membrane. Non-puncture ear bars have a 45° taper, and do not puncture the tympanic membrane, but offer a slightly less stable hold.

Order #	Model	Product
ST2 72-4838	51611	Ear Bars, Rat, 18° for 51600 Series Stereotaxic Frame
ST2 72-4839	51612	Ear Bars, Rat, 45° Non-Puncture for 51600 Series Stereotaxic Frame
ST2 72-4840	51811	Ear Bars, Rat, 18° for 51800 Series Stereotaxic Frame
ST2 72-4841	51812	Ear Bars, Rat, 45° Non-Puncture for 51800 Series Stereotaxic Frame
ST2 72-4842	51613	Ear Bars, Cat, 20° for 51600 Series Stereotaxic Frame
ST2 72-4843	51614	Ear Bars, Cat, 45° Non-Puncture for 51600 Series Stereotaxic Frame
ST2 72-4844	51813	Ear Bars, Cat, 20° for 51800 Series Stereotaxic Frame
ST2 72-4845	51814	Ear Bars, Cat, 45° Non-Puncture for 51800 Series Stereotaxic Frame

Lab Standard is a trademark of Stoelting Co.

StereoDraft

The StereoDraft is a heating and scavenging system designed to fit on a stereotaxic frame. It is a precisely machined apparatus which maintains the surgical plane. The StereoDraft brings fresh gas to the nose cone while the waste gas is evacuated via a vacuum source, allowing the animal to be anesthetized while maintaining a safe environment for the researcher.

This platform will also keep the animal warm while in the stereotaxic frame. Two side ports include tubing with clik-tite® connectors for easy connection to either a Heat Therapy Pump, see page 65 or a Thermocirculator, please call for more information.

Order #	Product
ST2 75-0349	StereoDraft, Mouse
ST2 75-0350	StereoDraft, Rat

Gas Anesthesia Platform for Mice

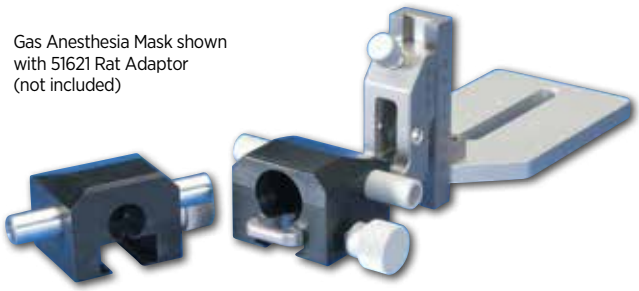
Gas Anesthesia Platform for Mice

- Holds mice during anesthesia and surgery
- Precise and secure positioning
- MRI compatible option

This Gas Anesthesia Platform and Mask for mice provides precise and secure positioning of an animal during anesthesia and surgery. The platform provides positioning of the animal that is perfect, automatic and effortless. After removing the animal from the induction chamber, it can be quickly mounted on the platform. The animal's teeth are placed over the incisor bar and the mouse mask slides forward until the cone is snug around the animal's nose, thereby substituting for the nose clamp. The gas anesthesia platform and mask is also useful for non-stereotaxic related experimental applications. With the platform placed on your bench top, simply fix the head of the mouse or rat in the mask, attach appropriate tubing (¼ in ID) to the gas mask, and you're ready to perform surgery, injections, or implantations under gas anesthesia.

72-6044 Gas Anesthesia Platform Plus Mouse Gas Mask Adaptor can be used with Just for Mouse and Just for Mice Stereotaxic Instruments as well as the Mouse and Neonatal Rat Adaptor.

Order #	Model	Product
ST2 72-6044	50264	Gas Anesthesia Platform plus Mouse Gas Mask Adaptor
ST2 72-6171	50264MR	MRI Compatible Gas Anesthesia Platform plus Mouse Gas Mask Adaptor



Gas Anesthesia Mask shown with 51621 Rat Adaptor (not included)

Gas Anesthesia Mask Adaptors

- For rats and mice in a stereotaxic instrument

The Gas Anesthesia Mask Adaptors enable gas anesthesia of rats and mice in a stereotaxic instrument, without exposing the researcher to the anesthetic gas. The Gas Anesthesia Mask Adaptor is installed by removing the nose clamp from the standard rat or mouse adaptor, sliding the mask over the incisor bar, with the cone opening toward the open 'U'. The animal's teeth are placed over the incisor bar and the adaptor is slid forward until the cone is snug about the animal's nose. The mask substitutes for the nose clamp. The teeth and the cone provide a very stable hold. Gas flows in the tubing connector on one side, past the animal's nose, and out the tubing connector on the other side. From there, spent gas may be routed to recycling, exhaust, or gas analysis instruments.

The 72-4852 Gas Anesthesia Mask Adaptor for mice can only be used with the New Standard Stereotaxic Equipment. When working with mice, all other Stereotaxic Instruments require the use of Gas Anesthesia Platform plus Mouse Gas Mask Adaptor.

72-4853 Gas Anesthesia Mask Adaptor for Rats can be used with the Lab Standard, the New Standard and the Elliptical Stereotaxic Instruments.

Order #	Model	Product
ST2 72-4853	51610	Gas Anesthesia Mask Adaptor, Rats
ST2 72-4852	51609	Gas Anesthesia Mask Adaptor, Mice

Standard Probe Holders

Standard Probe Holder

Standard Probe Holders come complete with mounting "V" blocks. The 11 mm square acrylic block on the bottom has grooves spaced 1 mm apart. Three bottom clamp options are available. The corner clamp holds shafts from 0.2 to 2.0 mm. The side clamp holds probes from 0.2 to 4.5 mm, as does the "C" clamp, which is useful to release implanted probes. The 72-4829 Standard Probe Holder with Corner Clamp is included with each manipulator on complete instruments.

Order #	Model	Product
ST2 72-4829	51631	Holder with Corner Clamp
ST2 72-4830	51632	Holder with Side Clamp
ST2 72-4831	51634	Holder with "C" Clamp

Large Probe Holder

Large Probe Holder

- Holds glass syringes

Large Probe Holders support shafts with diameters from 6.5 mm up to 13 mm (0.5 in). This will hold Hamilton™ microsyringes, and any accessories designed for stereotaxic instruments.

A threaded drive pulls the sliding 'U' holder against the outside of the probe, pulling the probe into a "V" notch for straight and reproducible positioning.

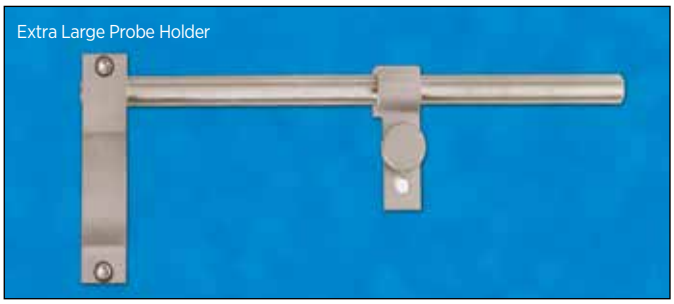
Order #	Model	Product
ST2 72-4832	51633	Large Probe Holder

Microdialysis Holder

Microdialysis Holder

The Microdialysis Probe Holder is designed to fit a specific size probe. The hole in the stainless steel foot may be drilled to fit probes from 1.5 to 6.0 mm. Our standard sizes are 1.5 and 2.0 mm holes. Other sizes are available by special order.

Order #	Model	Product
ST2 72-4835	51637	Microdialysis Holder with 1.5 mm Hole
ST2 72-4836	51637-2.0	Microdialysis Holder with 2.0 mm Hole


Extra Large Probe Holder

Extra Large Probe Holder

- Holds Micro Drill hand piece

Extra Large Probe Holders support shafts with diameters with diameters of 28 mm. This will hold the hand piece of the 72-4950 and 72-4951 Bone Micro Drill, allowing you to attach the Micro Drill to a Stereotaxic Instrument. See page 233.

Order #	Model	Product
ST2 72-4860	51630	Extra Large Probe Holder

Cannula Holder

Cannula Holder

Holds standard 3.4 mm diameter cannula heads, as manufactured by Plastics One™, for cannula sets, and Alzet® for minipumps. Tapered non-intrusive for easily cementing cannulae in place.

Order #	Model	Product
ST2 72-4837	51636	Cannula Holder

Hamilton is a trademark of Hamilton Co.
Plastics One is a trademark of Plastics One Inc.
Alzet is a registered trademark of Durect Corp.

Bone Micro Drll System

Bone Micro Drill System For Brain Surgery

- Quick change chuck for easy bit replacement
- Versatile forward, reverse, and variable speeds
- Small, lightweight, ergonomically designed hand piece reduces fatigue

This Micro Drill is a workhorse in a kit. This versatile powerhouse is ideal for milling, drilling, grinding and cutting. This drill quickly cuts through bone and other materials. It may also be used for general purpose work such as removing coatings, cutting, drilling holes, cutting slots, as well as performing many other procedures using various interchangeable bits. Unlike most hand-held tools, the Micro Drill has a tiny, high speed DC motor in the hand piece, eliminating bothersome drive cables and giving the researcher better control. A separate power supply keeps the hand piece lightweight and reduces fatigue. Power is supplied by a panel switch or foot switch for ease of use.

This Micro Drill System is supplied complete with hand piece, cord, power supply, hand piece stand and 72-4967 Accessory Kit.

With the addition of 72-4860 Extra Large Probe Holder, you can attach the Micro Drill to a Stereotaxic Instrument, see page 218-227.

Order #	Product
ST2 72-4950	Complete Bone Micro Drill System, 120 VAC*
ST2 72-4951	Complete Bone Micro Drill System, 230 VAC*
ST2 72-4967	Accessory Kit for Micro Drill
ST2 72-4952	Abrading Tip, Rubber, pkg. of 20
ST2 72-4953	Abrading Tip, Stone, pkg. of 5
ST2 72-4954	Accessory Stand
ST2 72-4955	Ball Mill, Carbide, #1, .031 in Diameter, pkg. of 5
ST2 72-4956	Ball Mill, Carbide, #2, .039 in Diameter, pkg. of 5
ST2 72-4957	Ball Mill, Carbide, #3, .047 in Diameter, pkg. of 5
ST2 72-4958	Ball Mill, Carbide, #4, .055 in Diameter, pkg. of 5
ST2 72-4959	Ball Mill, Carbide, #5, .063 in Diameter, pkg. of 5
ST2 72-4960	Ball Mill, Carbide, #6, .071 in Diameter, pkg. of 5
ST2 72-4961	Ball Mill, Carbide, #7, .083 in Diameter, pkg. of 5
ST2 72-4962	Ball Mill, Carbide, #¼, .019 in Diameter, pkg. of 5
ST2 72-4963	Ball Mill, Carbide, #½, .027 in Diameter, pkg. of 5
ST2 72-4964	Cutoff Disk, pkg. of 20
ST2 72-4965	Mandrel, Screw, pkg. of 5
ST2 72-4966	Mandrel, Threaded, pkg. of 5

**Includes Accessory Kit.*

Accessory Kit for Bone Micro Drill System	
Order #	**Product**
ST2 72-4967	Accessory Kit for Bone Micro Drill System
Kit Components:	
Abrading Tip, Rubber, pkg. of 4	
Abrading Tip, Stone, pkg. of 1	
Accessory Stand, pkg. of 1	
Ball Mill, Carbide, #1, .031 in Diameter, pkg. of 1	
Ball Mill, Carbide, #2, .039 in Diameter, pkg. of 1	
Ball Mill, Carbide, #3, .047 in Diameter, pkg. of 1	
Ball Mill, Carbide, #4, .055 in Diameter, pkg. of 1	
Ball Mill, Carbide, #5, .063 in Diameter, pkg. of 1	
Ball Mill, Carbide, #6, .071 in Diameter, pkg. of 1	
Ball Mill, Carbide, #7, .083 in Diameter, pkg. of 1	
Ball Mill, Carbide, #¼, .019 in Diameter, pkg. of 1	
Ball Mill, Carbide, #½, .027 in Diameter, pkg. of 1	
Cutoff Disk, pkg. of 4	
Mandrel, Screw, pkg. of 1	
Mandrel, Threaded, pkg. of 1	

Ideal Micro-Drill

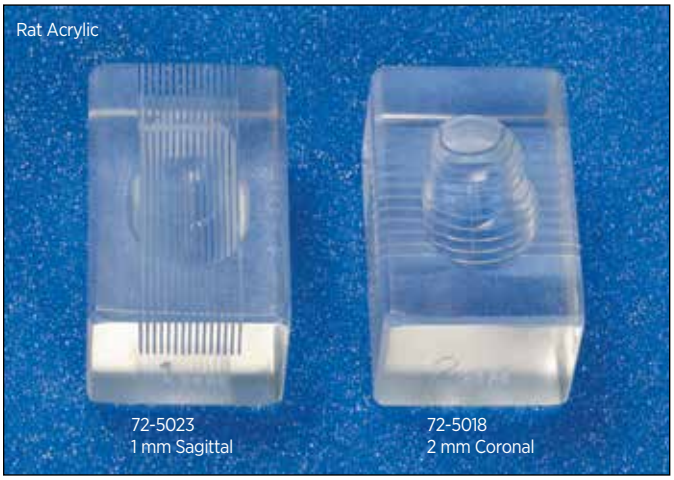
Ideal Micro-Drill™

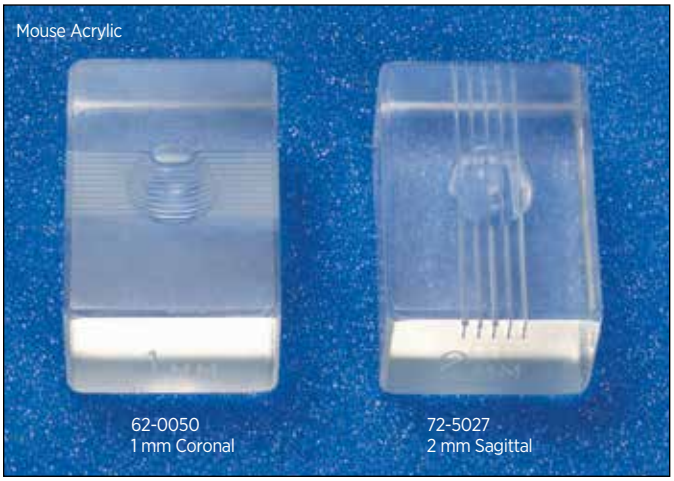
- Rechargeable
- Light-weight design
- No special tools needed to charge burrs
- Excellent balance and handling
- Appropriate for mice

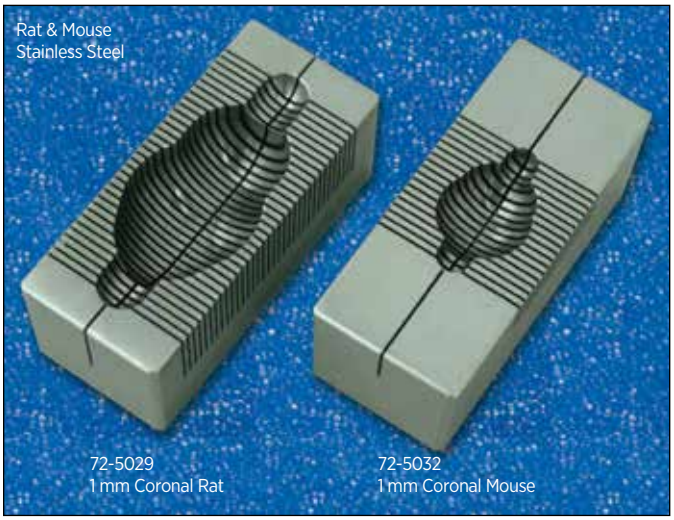
The Ideal Micro-Drill™ is designed for research applications that require surgical burrs and trephines. The drill is constructed of light-weight aluminum alloy for balance and control and is powered by a rechargeable 6-volt nickel cadmium battery (charger included). Under normal operating conditions the unit will function for 8 hours between recharging.

Specifications	
Length	17.5 cm (without burr)
Diameter	1.9 cm
Power	6 V DC
Speed	12,000 rpm
Stall Torque	1.25 oz/in

Order #	Product
ST2 72-6065	Ideal Micro-Drill™ Complete Kit, US
ST2 72-6071	Ideal Micro-Drill™ Complete Kit, EU
ST2 72-6072	Ideal Micro-Drill™ Complete Kit, UK
ST2 72-6066	Ideal Burr Set, 5 each







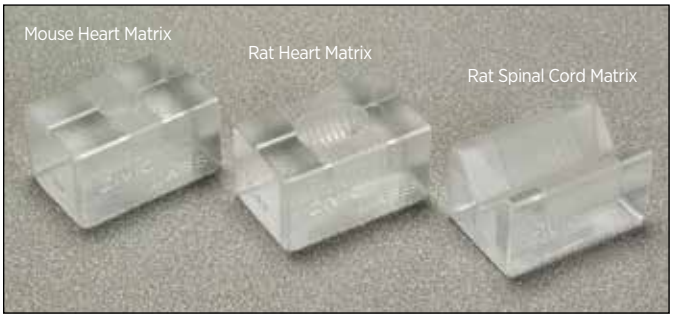
Rodent Brain Matrices

- Repeatable slices from 0.50 to 3.00 mm
- Coronal or sagittal sectioning
- Available in acrylic or stainless steel (other materials upon request)
- Custom sizes and shapes
- Slices can be made with razor blades (included)

These Rodent Brain Matrices aid in the dissection of discrete regions of a rodent brain or comparably sized organ. They allow the investigator to slice repeatable coronal or sagittal sections of the sample, enabling precise blocking prior to microtome sectioning and the removal of small, reproducible brain regions (i.e. discrete terminal fields or nuclei) for biochemical analysis, such as the determination of neurotransmitter and metabolite concentrations. Individual brain areas may be stained, dissected or micropunched (using micron biopsy punches, see page 235) from the slices formed.

All matrices are designed for long-term use, and matrices of any given type are identical to ensure reproducible sections. Channels are cut at precise intervals ranging from 0.50 mm to 3.00 mm and are 0.3 mm wide. Other species, sizes, and materials are available upon request. Please contact technical support for more information.

Coronal Order#	Sagittal Order#	Animal	Slice Width
Stainless Steel Brain Matrices			
ST2 72-5051	**ST2 72-5053**	Neonatal Mouse	0.5 mm
ST2 72-5052	**ST2 72-5054**	Neonatal Mouse	1 mm
ST2 72-6225	**ST2 72-6229**	Neonatal Rat	0.5 mm
ST2 72-6226	**ST2 72-6230**	Neonatal Rat	1 mm
ST2 72-6227	**ST2 72-6231**	Neonatal Rat	2 mm
ST2 72-6228	**ST2 72-6232**	Neonatal Rat	3 mm
ST2 72-6235	**ST2 72-6236**	Mouse	0.5 mm
ST2 72-5032	**ST2 72-5038**	Mouse	1 mm
ST2 72-5033	**ST2 72-5039**	Mouse	2 mm
ST2 72-5034	**ST2 72-5040**	Mouse	3 mm
ST2 72-5055	**ST2 72-5057**	Rat Pup 15-35 g	0.5 mm
ST2 72-5056	**ST2 72-5058**	Rat Pup 15-35 g	1 mm
ST2 72-5059	**ST2 72-5061**	Young Rat 35-175 g	0.5 mm
ST2 72-5060	**ST2 72-5062**	Young Rat 35-175 g	1 mm
ST2 72-6233	**ST2 72-6234**	Adult Rat 175-350 g	0.5 mm
ST2 72-5029	**ST2 72-5035**	Adult Rat 175-350 g	1 mm
ST2 72-5030	**ST2 72-5036**	Adult Rat 175-350 g	2 mm
ST2 72-5031	**ST2 72-5037**	Adult Rat 175-350 g	3 mm
ST2 72-5042	**ST2 72-5047**	Large Rat 350-650 g	0.5 mm
ST2 72-5045	**ST2 72-5048**	Large Rat 350-650 g	1 mm
ST2 72-6250	**ST2 72-5049**	Large Rat 350-650 g	2 mm
ST2 72-5046	**ST2 72-5050**	Large Rat 350-650 g	3 mm
Acrylic Brain Matrices			
ST2 72-6216	**ST2 72-5063**	Neonatal Rat	1 mm
ST2 72-6217	**ST2 72-5064**	Neonatal Rat	2 mm
ST2 72-6218	**ST2 72-5065**	Neonatal Rat	3 mm
ST2 62-0050	**ST2 72-5026**	Mouse	1 mm
ST2 62-0051	**ST2 72-5027**	Mouse	2 mm
ST2 72-5022	**ST2 72-5028**	Mouse	3 mm
ST2 62-0047	**ST2 72-5023**	Adult Rat 175-350 g	1 mm
ST2 62-0048	**ST2 72-5024**	Adult Rat 175-350 g	2 mm
ST2 62-0049	**ST2 72-5025**	Adult Rat 175-350 g	3 mm



Rodent Heart, Spinal Cord & Tumor Matrices

- Repeatable slices from 0.50 to 3.00 mm
- Mouse and rat
- Custom sizes and shapes available upon request

These Rodent Heart and Spinal Cord Matrices aid in the dissection of discrete regions of a rodent heart, spinal cord, or comparably sized organ. They allow the investigator to slice repeatable sections of the sample, enabling precise blocking prior to microtome sectioning and the removal of small, reproducible brain regions (i.e. discrete terminal fields or nuclei) for biochemical analysis.

All matrices are designed for long-term use, and matrices of any given type are identical to ensure reproducible sections. Channels are cut at precise intervals ranging from 0.50 to 3.00 mm and are 0.3 mm wide. Other species, sizes and materials are available upon request.

Coronal Order #	Sagittal Order#	Animal	Slice Width
Stainless Steel Heart Matrices			
ST2 72-6248	**ST2 72-6249**	Mouse	0.5 mm
ST2 72-6243	**ST2 72-6251**	Mouse	1.0 mm
ST2 72-9466	**ST2 72-6252**	Mouse	2.0 mm
ST2 72-6253	**ST2 72-6256**	Rat	0.5 mm
ST2 72-6244	**ST2 72-6257**	Rat	1.0 mm
ST2 72-6254	**ST2 72-6258**	Rat	2.0 mm
ST2 72-6255	**ST2 72-6259**	Rat	3.0 mm
Acrylic Heart Matrices			
ST2 72-6210	**ST2 72-6260**	Mouse	1.0 mm
ST2 72-6211	**ST2 72-6261**	Mouse	2.0 mm
ST2 72-6212	-	Mouse	3.0 mm
ST2 72-5014	**ST2 72-6247**	Rat	1.0 mm
ST2 72-5015	**ST2 72-6262**	Rat	2.0 mm
ST2 72-5016	**ST2 72-6263**	Rat	3.0 mm
Acrylic Spinal Cord Matrices			
ST2 72-6213	-	Rat	1.0 mm
ST2 72-6214	-	Rat	2.0 mm
ST2 72-6215	-	Rat	3.0 mm

Micron Biopsy Punches

- Stainless steel tips
- Circular sectioning diameters from 0.30 mm
- Expulsion tube and syringe provided
- Can be used with sections from brain slicers and tissue matrices

These Micron Punches are ideal for dissection or removal ("punch") of discrete brain regions. Enabling the removal of specific brain nuclei, tracts and other subdivisions, Micron Biopsy Punch applications include dissection for analysis of neurotransmitter concentrations of mRNA levels, preparation of regions prior to acute dissociation for patch recording, and tissue preparation for pharmacological analysis of neurotransmitters and metabolite changes in response to different pharmacological agents.

The Micron Punch has a stainless steel tip, brass handle, and punch diameters ranging from 0.30 mm to 5.0 mm.

Order #	Product
ST2 72-6246	5000 Micron Punch, 5.0 mm
ST2 72-6245	3000 Micron Punch, 3.0 mm
ST2 72-5041	2000 Micron Punch, 2.0 mm
ST2 62-0052	1000 Micron Punch, 1.0 mm
ST2 62-0053	750 Micron Punch, 0.75 mm
ST2 62-0054	500 Micron Punch, 0.50 mm
ST2 62-0055	300 Micron Punch, 0.30 mm

Pump 11 Elite Nanomite

Pump 11 Elite Nanomite

- Easy-to-use LCD color touch screen with GUI interface
- Light weight making it ideal for hand-held or stereotaxic injection
- Easily program simple to complex methods without a PC
- Create and store up to 2 methods

The Pump 11 Elite Nanomite is a single syringe infusion/withdrawal programmable syringe pump. This pump allows you to create, save and run simple to complex Methods without a PC. The flow rate range is 3.66 pl/min to 3.82 ml/min with 11 lb of adjustable force across the entire flow rate range.

The Pump 11 Elite Nanomite has a footswitch input, USB serial port for computer control, RS-485 ports for daisy chaining pumps and Digital I/O for external control via an independent computer or device. There is also an option for daisy chaining pumps through the RS-232 (RJ-11) ports. This option must be ordered at the time the pump is ordered.

This pump consists of a control unit, an injection unit, a 6 foot cable to connect the two units and a footswitch. For more information on the Pump 11 Elite Nanomite including features and programming.

Specifications	
Type	Microprocessor single syringe, infusion/withdrawal programmable
Accuracy	±0.5%
Reproducibility	±0.05%
Syringes (Min./Max.)	0.5 µl / 1 ml
Flow Rate:	
Minimum	3.66 pl/min
Maximum	3.82 ml/min
Display	4.3" WQVGA TFT color display with touch screen
Connectors:	
RS-485	IEEE-1394, 6 Position
USB	Type B
I/O & TTL	15-pin D-Sub Connector
Footswitch	Mini Phono Jack
Average Linear Force	5 kg (11 lb) @ 100% Force Selection
Step Resolution	0.198 µm/µstep
Input Power	12-30 VDC
Input Power Connection	2.5 mm ID x 5.5 mm OD Male Plug
Power Supply	100-240 VAC, 50/60 Hz, 8 Watts Universal Power Supply, Use Only a Harvard Apparatus Approved Power Supply and Line Cord
Dimensions, H x W x D:	
Control Box	22.6 x 17.78 x 9.32 cm (9 x 7 x 3.67 in)
Mechanism	6.35 x 5.08 x 19.05 cm (2.5 x 2.0 x 7.5 in)
Weight	1.96 kg (4.32 lb)
Regulatory Certifications	CE, ETL (UL, CSA), WEEE, EU ROHS & CB Scheme

Order #	Product
ST2 70-4507	Pump 11 Elite Nanomite

GENERAL SURGICAL

Every surgery or procedure requires accessory equipment to help get the job done. With this in mind, Harvard Apparatus has compiled a few of our more popular accessories, such as our rodent restrainers, collars and animal handling gloves.

PRODUCT	PAGE
Restrainers	238-242
Rodent Restrainers	238
Rodent Restraint Bags & Cones	239
Universal Rodent Restrainers	240
Tube Type Holders	240
Flat Bottom Restrainers	241
Small Animal Snuggle	241
Rabbit Restrainers	241-242
Collars	243-244
Elizabethan Collars	243
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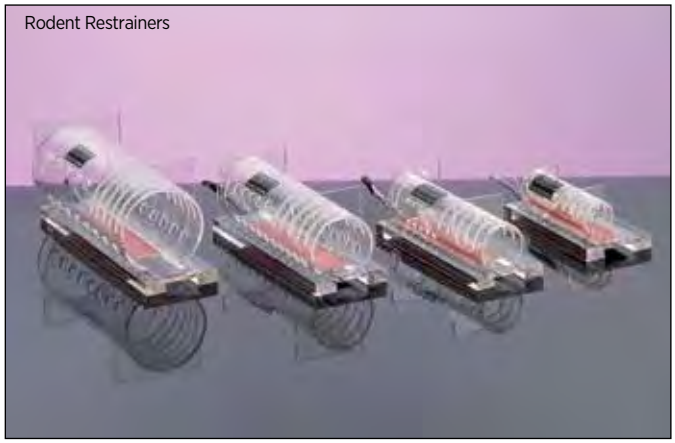
Cervical Collars	244
Pillow Collars	244
Animal Handing Gloves	245-246


Rodent Restrainers

Broome Rodent Restrainers

Rodent Restrainers

- Adjustable headgate and removable tailgate
- Four sizes, from mice to 700 g rats

This line of restrainers is made of clear acrylic and is not autoclavable.

The restrainers are cylindrical and are mounted onto a flat sturdy base. They have a series of holes on each side to facilitate injections. The length is adjustable by inserting a removable headgate into one of several slots.

Order #	Weight Range	Restraining Barrel ID	Length Min x Max
ST2 52-0317	70 to 125 g	28.5 mm (1⅛ in)	51 x 89 mm (2 x 3½ in)
ST2 52-0291	125 to 250 g	44.5 mm (1¾ in)	83 x 146 mm (3¼ x 5¾ in)
ST2 52-0292	250 to 500 g	63.5 mm (2½ in)	102 x 165 mm (4 x 6½ in)
ST2 52-0293	350 to 700 g	82.6 mm (3¼ in)	133 x 197 mm (5¼ x 7⁹⁄₁₀ in)

Broome Rodent Restrainers

- Perfect for injections or blood sampling
- Entire tail is completely exposed for injections or sampling

These popular Broome Rodent Restrainers provide fast and easy animal insertion. The cylindrical design of these restrainers solves the problem of the rodents turning once they are introduced into the restrainer.

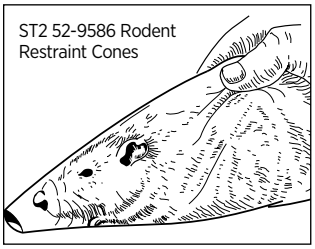
Order #	Weight Range	Restraining Barrel ID	Length Min x Max
ST2 52-0460	15 to 30 g	25.4 mm (1 in)	41 x 83 mm (1.6 x 3.3 in)
ST2 52-0470	30 to 70 g	31.75 mm (1¼ in)	50 x 100 mm (2 x 3.9 in)
ST2 52-0478	70 to 125 g	38 mm (1½ in)	73 x 124 mm (2.9 x 4.9 in)
ST2 52-0486	125 to 250 g	50.8 mm (2 in)	70 x 178 mm (2.8 x 7 in)
ST2 52-0494	250 to 500 g	63.5 mm (2½ in)	58 x 195 mm (2.3 x 7.7 in)

Rodent Injection Cone

Rodent Injection Cone

This Injection Cone is useful for large quantity sampling where speed and efficiency are required. It is transparent, durable and easy-to-clean. Suction cup feet prevent the Cone from slipping on the work surface. The Cone opening is 10.2 cm (4 in) in diameter and is 14.6 cm (5¾ in) long. Restrains animals from 15 to 600 grams.

Order #	Product
ST2 59-6409	Rodent Injection Cone


ST2 52-9586 Rodent Restraint Cones

Rodent Restraint Cones

These clear polyfilm disposable Rodent Restraint Cones are an economical way to hold and restrain rodents. Place the animal into the cone and close the large end. The animal breathes through an opening in the small end. Animal waste is contained in the cone. Deliver injections directly through the plastic. Restraint cones can be reused. Sold in packages of 100.

Order #	Product
ST2 52-9586	Rodent Restraint Cones, pkg. of 100

Triangle Rodent Restraint Bag

Body Contour™ Rodent Restraint Bag

Rodent Restraint Bags

- Variety of sizes and shapes
- Multiple colors
- Safe, humane and disposable
- Includes twist ties to secure bags
- Multi-use

These Rodent Restraint Bags constructed of Easy-Flex-PE™ provide effortless wrapping and added animal comfort. Pre-cut sizing eliminates the need for cutting down larger bags for smaller animals, and the optional Body-Contour™ cone shape provides easier animal capture and restraint and increased animal comfort. Optional black- and rose-colored bags reduce natural light to provide an environment that aids in reducing animal agitation and stress. Restraint bags can be used in a variety of procedures including tail tattooing and injections, IP injections, oral dosing and decapitation.

Clear Order #	Black Order #	Rose Order #	Size	Animal Weight
Body-Contour™ Shape, pkg. of 40:				
ST2 72-6400	**ST2 72-6401**	**ST2 72-6402**	Small	120 g
ST2 72-6403	**ST2 72-6404**	**ST2 72-6405**	Medium	225 g
ST2 72-6406	**ST2 72-6407**	**ST2 72-6408**	Large	450 g
Traditional Triangle Shape, pkg. of 50:				
ST2 72-6409	–	–	X-Small	<20 g
ST2 72-6410	**ST2 72-6411**	**ST2 72-6412**	Small	120 g
ST2 72-6413	**ST2 72-6414**	**ST2 72-6415**	Medium	225 g
ST2 72-6416	**ST2 72-6417**	**ST2 72-6418**	Large	450 g

Universal Rodent Restrainers

Tube Type Holders

Universal Rodent Restrainers

- Restrain mice weighing as little as 10 grams!
- Removable raised inner floor
- Adjustable headgate and removable tailgate
- Headgate fits into any of four positions for rodents of various sizes
- Tailgate allows maximum closeness of occluding cuff to body when testing indirect blood pressure

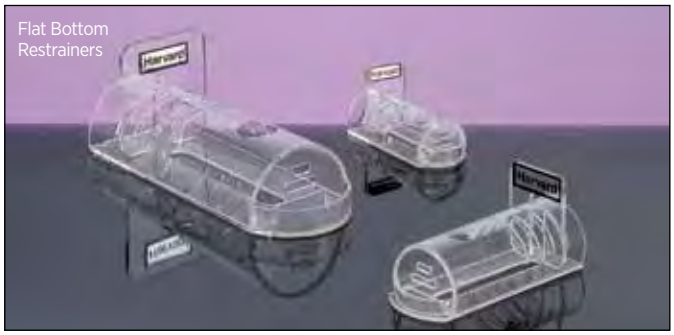
These Universal Rodent Restrainers have a unique raised inner floor. This provides a better fit for smaller rodents and can be removed for larger rodents. The inner floor is attached to the bottom by two nylon screws. Knurled, nickel-plated brass screws serve as base fasteners and legs. These Universal Rodent Restrainers are constructed of 6.4 mm (¼ in) thick, rigid, clear acrylic plastic. Openings in the headgate reduce restrictions on the rodent's breathing. Not autoclavable.

Order #	Weight Range	Restraining Area, Minimum	H x L Maximum
ST2 56-4499	10 to 40 g	28.6 x 51 mm (1⅛ x 2 in)	41.3 x 102 mm (1⅝ x 4 in)
ST2 56-4500	150 to 300 g	41.3 x 124 mm (1⅝ x 1⅞ in)	54 x 171 mm (2⅛ x 6¾ in)
ST2 56-4501	250 to 600 g	47.6 x 152 mm (1⅞ x 6 in)	60.3 x 216 mm (2⅜ x 8½ in)

Tube Type Holders

Order #	Weight Range	Outer Tube Diameter	No. of Inner Tubes	Diameter of Inner Tubes
ST2 34-0012	20 to 50 g	30 mm (1.2 in)	1	24 mm (0.95 in)
ST2 34-0007	150 to 300 g	57 mm (2.2 in)	1	44 mm (1.7 in)
ST2 34-0008	150 to 400 g	68 mm (2.7 in)	2	57 mm, 44 mm (2.3 in, 1.7 in)

**Replacement thumb screws are available, please call. There are no holes on the bottom of tube type holders. Holes can be drilled for IP or tail vein injections by special order. These holders have a removable inner tube.*


Flat Bottom Restrainers

Flat Bottom Restrainers

- Adjustable tail gate; fixed head gate
- Feeding pocket
- Bottom slot for easy access for injections

These Flat Bottom Restrainers have one circular opening on top and a slot on the bottom for easy intramuscular, intraperitoneal and intravenous injections and drainage of wastes. The adjustable tail gate fits in one of four slots, allowing the restrainer to accommodate different sized animals. The front of the restrainer has two slots for easy breathing and anesthetizing. The bottom extends past the front part of the restrainer forming a pocket for animal feeding.

Order #	Weight Range	Restraining Height	Restraining Minimum	Length Maximum
ST2 52-0882	15 to 30 g	25.4 mm (1 in)	44.5 mm (1¾ in)	76.2 mm (3 in)
ST2 52-0890	30 to 125 g	38.1 mm (1½ in)	63.5 mm (2½ in)	101.6 mm (4 in)
ST2 52-0908	125 to 250 g	44.5 mm (1¾ in)	76.2 mm (3 in)	127 mm (5 in)
ST2 52-0916	250 to 500 g	50.8 mm (2 in)	108 mm (4¼ in)	171.5 mm (6¾ in)

Fully Adjustable Acrylic Rabbit Restrainers

Fully Adjustable Acrylic Rabbit Restrainer

- Extra long curved back plate with adjustable height
- For 3 to 7.5 kg (6.6 to 16.5 lb) rabbits

The back plate of this restrainer is divided into two separate adjustable pieces, a curved back plate and a rear plate, providing a perfect fit with no gaps. The back height is adjustable from a minimum of 11.4 cm (4½ in) to a maximum of 17.8 cm (7 in) and is secured by tightening 4 knobs. The rear plate has an extra extension plate that can slide up to match the height of the back plate for securely restraining the animal.

Order #	Product
ST2 59-6947	Fully Adjustable Acrylic Rabbit Restrainer

Bunny Snuggle

Small Animal Snuggle

- Less stress than rigid restrainers
- Effective yet comfortable restraint
- Multiple flaps facilitate many restraint configurations for various procedures such as blood collection, vaginal samples, veterinary exams, gavage, eye movement and transportation
- Velcro fasteners for quick and easy application and removal

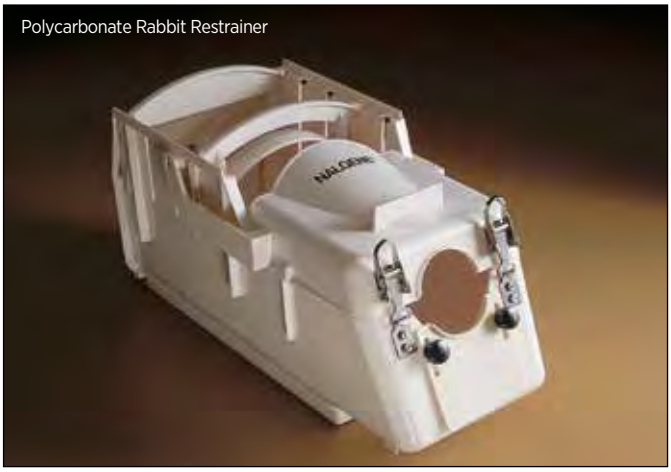
Introducing the safest form of small animal restraint to date, the Snuggle! Manufactured of flexible yet durable nylon-coated canvas, the Snuggle is rugged enough for repeated laundering and reuse. It may be gas sterilized if desired. Wide flaps with hook and loop fasteners provide maximum flexibility and ease of use allowing for a custom fit between individual subjects.

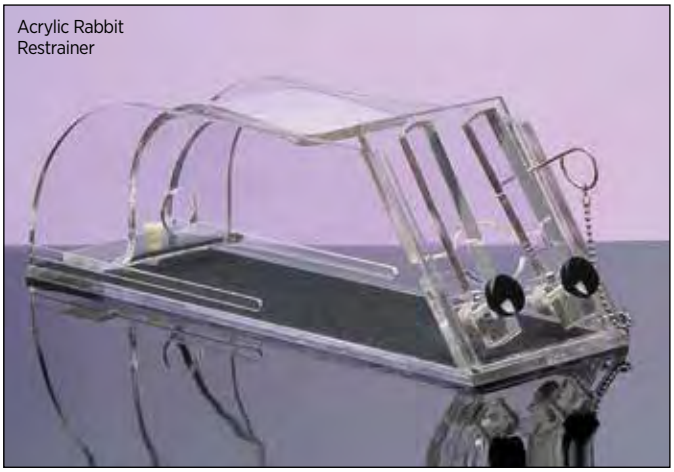
A fragile bone structure coupled with the high tendency of stress in small animals lends to the continuous risk of fractures with the use of traditional rigid restraints. Mechanical restraints also frequently require the involvement of two personnel; one to restrain and one to perform the procedure. The resulting stress and discomfort for the animal can often jeopardize the efficiency of the procedure and consistency of results.

The Snuggle acts as a swaddling for an effective yet comfortable restraint, rather than a rigid structure for immobilization. The multiple flaps enable many restraint configurations, providing access where needed for the particular procedure. One handler can carry out both restraint and procedures easily with the Snuggle.

The Snuggle is available for rodents, guinea pigs and rabbits. Order according to the weight range of the animals.

Order #	Product
ST2 72-0020	Bunny Snuggle, Small, up to 3.5 kg
ST2 72-0021	Bunny Snuggle, Medium, 3.0 kg to 5.0 kg
ST2 72-0022	Bunny Snuggle, Large, 5.0 to 7.0 kg
ST2 72-6274	Bunny Snuggle, X-Large, over 7.0 kg
ST2 72-6270	Guinea Pig Snuggle, Small, up to 350 g
ST2 72-6271	Guinea Pig Snuggle, Medium, 350 g to 600 g
ST2 72-6272	Guinea Pig Snuggle, Large, 600 g to 750 g
ST2 72-6273	Guinea Pig Snuggle, X-Large, over 750 g
ST2 72-6265	Rodent Snuggle, X-Small, 100 g to 150 g
ST2 72-6266	Rodent Snuggle, Small, 150 g to 250 g
ST2 72-6267	Rodent Snuggle, Medium, 250 g to 350 g
ST2 72-6268	Rodent Snuggle, Large, 350 g to 500 g
ST2 72-6269	Rodent Snuggle, X-Large, over 500 g


Polycarbonate Rabbit Restrainer


Acrylic Rabbit Restrainer

Polycarbonate Rabbit Restrainer

- Completely autoclavable polycarbonate with stainless steel parts
- Adjustable neck support, rear plate and unique top plate which protects rabbit's spine
- This restrainer is only for rabbits weighing from 3 to 4.5 kg (5½ to 10 lb)

Six-Cage Stand

The rabbit is secured as follows: Remove rear plate and top plate. Open hinged top and place rabbit inside. Each side of the restrainer has five 7.6 cm (3 in) slots separated by approximately 3.2 cm (1¼ in). Slide rear plate in appropriate slots for size of animal. The rear plate has a slotted opening for pyrogen testing. Slide and lock in place curved 2.5 cm (1 in) wide top plate in appropriate slot over animal's back to prevent injury. Close the hinged top; latch the front of the restrainer.

Slide the neck plate up and secure by turning two black knobs to adjust the 5.8 cm (2¼ in) wide neck opening from a minimum of 5.1 cm (2 in) to a maximum height of 7.5 cm (3 in). To protect the animal's neck, install the polypropylene half neck collar (supplied) on the upper part of the neck opening. This further reduces the height of the neck opening to 4.1 cm (1.6 in). The minimum restraining length is approximately 23 cm (9 in) and the maximum restraining length is 38 cm (15 in).

The base has a 26.7 x 10.8 cm (10½ x 4¼ in) stainless steel floor grid insert with inverted 'U' shaped bars for paw comfort and firm footing. Animal wastes drop into either the 12.7 x 29.8 cm (5 x 11¾ in) plastic tray provided or tray in Six-Cage Stand, listed below.

Order #	Product
ST2 52-6673	Polycarbonate Rabbit Restrainer
ST2 52-6681	Six-Cage Stand for up to six 52-6673 Restrainers (not included); a front shelf holds instruments; front casters lock for added security; W x L x H, 50 x 174 x 75 cm (19.7 x 68.5 x 29.5 in); 22.7 kg (50 lb)

Acrylic Rabbit Restrainers

- Curved back plate minimizes injury
- Adjustable vertical head restraint bars prevent rabbit from moving head from side-to-side during ophthalmological studies

These transparent Acrylic Rabbit Restrainers have highly polished edges to prevent chaffing, especially at the neck. A durable, non-slip floor provides firm footing yet doesn't tear foot pads upon removal.

The neck plate is bisected horizontally. The top half of the neck plate vertically slides within slots and locks into place. The neck opening adjusts from 4.4 to 6.4 cm (1¾ in to 2½ in) diameter.

Two 19 cm (7½ in) high, 2.9 cm (1⅛ in) thick head restraint bars slide horizontally to restrain the head from 3.5 to 7.3 cm (1⅜ in to (2⅞ in). They are secured by tightening two large knobs and are removable if needed.

The sliding back plate has a 4.1 cm (1⅝ in) access hole and is secured by tightening a nylon screw against the floor. Not autoclavable; sterilize chemically or wash up to 82°C (180°F).

The overall length for each restrainer is 45.7 cm (18 in).

Order #	Weight Range	Restraining Width	Restraining Minimum	Length Maximum
ST2 52-0924	Up to 4 kg (8.8 lb)	15.2 cm (6 in)	34 cm (13½ in)	38 cm (15 in)
ST2 52-0932	4 to 7 kg (8.8 to 15.4 lb)	15.2 cm (6 in)	36.3 cm (14¼ in)	48.9 cm (19¼ in)

Elizabethan Collars

- Prevents animals from grooming and dislodging implants, saving time and money
- Easily adjustable to properly fit different animals
- Tried and true – thousands in use today

These low density polyethylene Elizabethan Collars are tough for durability yet soft and pliable enabling the animal to eat, drink, and move about comfortably. The neck opening is padded with soft vinyl foam.

Three types are available:

- Lightweight, 0.5 mm (0.020 in) thick collars for rodents with hook and loop closure
- Lightweight, 0.5 mm (0.020 in) thick collars for rabbits with one row of snap fasteners
- Standard, 1.5 mm (0.060 in) thick collars for rabbits, cats, and dogs with two rows of snap fasteners

The lightweight Collars for rodents have a hook and loop closure, allowing the collar to be fitted snugly. (Not suitable for mice.) The lightweight collars for rabbits have one row of three rustproof snap fasteners mounted halfway between the inner and outer edge of the collar. These fasteners provide adjustment of the neck opening.

The standard collars for rabbits, cats and dogs have six rustproof snap fasteners, three mounted on the inner edge and three on the outer edge of the collar, to adjust the neck opening. Select a collar based on the animal's neck circumference and desired collar width.

Order #	Neck Circumference	Collar Depth	Weight
Lightweight Collars with Hook and Loop Closure for Rodents:			
ST2 59-6412	5.7 to 7.6 cm (2¼ to 3 in)	3.2 cm (2¼ in)	5.7 g
ST2 59-6413	5.7 to 7.6 cm (2¼ to 3 in)	3.5 cm (1⅛ in)	7.0 g
ST2 59-6414	7.6 to 10.2 cm (3 to 4 in)	3.8 cm (1½ in)	7.0 g
Lightweight Collars with Snap Fasteners for Rabbits:			
ST2 59-6427	5.7 to 7.6 cm (2¼ to 3 in)	5.7 cm (2¼ in)	14.2 g
ST2 59-6428	7.6 to 10.2 cm (3 to 4 in)	5.4 cm (2⅛ in)	14.2 g
ST2 59-6429*	7.6 to 10.2 cm (3 to 4 in)	7.9 cm (3⅛ in)	21.3 g
ST2 59-6430	10.2 to 13.3 cm (4 to 5¼ in)	7.3 cm (2⅞ in)	21.3 g
ST2 59-6431*	10.2 to 13.3 cm (4 to 5¼ in)	9.8 cm (3⅞ in)	35.4 g
ST2 59-6432	11.4 to 15.9 cm (4½ to 6¼ in)	8.9 cm (3½ in)	35.4 g
ST2 59-6433*	11.4 to 15.9 cm (4½ to 6¼ in)	11.1 cm (4⅜ in)	42.5 g
ST2 59-6434	15.9 to 23.5 cm (6¼ to 9¼ in)	10.5 cm (4⅛ in)	42.5 g

These collars have two rows of snap fasteners.

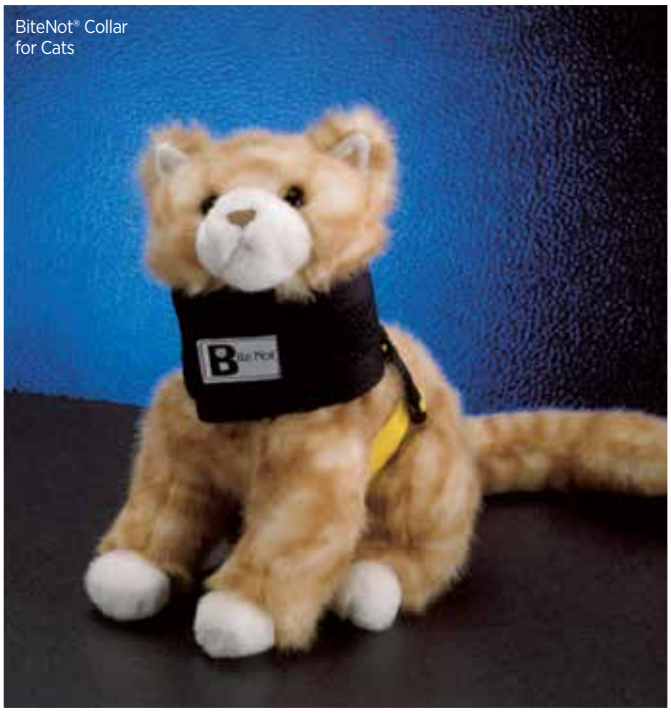
Mouse Elizabethan Collar

- Specially designed for mice

Designed specifically for a mouse, this collar is low-density, light-weight polyethylene. The neck is bound with cotton jersey material for added comfort. Hook and loop fasteners ensure full adjustment for mice weighing ≥15 grams.

Order #	Product
ST2 72-0056	Mouse Elizabethan Collar ½ in ID, OD 3 in, Thickness 0.2 in

For jackets and slings, see pages 120-123.


BiteNot® Collar for Cats

BiteNot® Collars

- More comfortable than Elizabethan Collars
- Less restrictive to the animal's natural behavior so animal stays calmer

Introducing the first alternative to the Elizabethan Collar that is a comfort to wear. These BiteNot® Collars are a revolutionary product that allow dogs and cats to eat, drink, sleep and play, comfortably. Peripheral vision is unimpeded so dogs and cats are calmer and happier.

The BiteNot® Collar wraps snugly around the animal's neck and should be wide enough to extend from behind the ear to the top of the shoulder. These collars protect the back, rump, base of the tail, flanks, chest, abdomen, genitals and even the feet (not recommended for protecting the eyes or ears). They are made of flexible, polyethylene plastic covered in foam on one side for comfort and to prevent slippage. They are secured by hook and loop strips along the edges and have an elastic wraparound strap.

Order #	Collar Size	Weight of Animal	Collar, W x L*
ST2 61-0224	Dog, Size 1	Under 10 lb	89 x 406 mm (3.5 x 16 in)
ST2 61-0225	Dog, Size 2	10 to 17 lb	102 x 457 mm (4 x 18 in)
ST2 61-0226	Dog, Size 3	18 to 30 lb	127 x 533 mm (5 x 21 in)
ST2 61-0231	Dog, Size 3	31 to 45 lb	127 x 610 mm (5 x 24 in)
ST2 61-0232	Dog, Size 4	46 to 70 lb	152 x 686 mm (6 x 27 in)
ST2 61-0227	Dog, Size 5	71 to 100 lb	178 x 711 mm (7 x 28 in)
ST2 61-0228	Dog, Size 6	101 to 140 lb	203 x 813 mm (8 x 32 in)
ST2 61-0229	Cat, Size Small	Under 10 lb	63.5 x 356 mm (2.5 x 14 in)
ST2 61-0230	Cat, Size Large	Over 10 lb	76 x 381 mm (3 x 15 in)

**The bottom of the collar must touch the animal's shoulder joint for maximum protection. For proper sizing measure from the back of the ear to the shoulder joint and select the collar with a corresponding width.*

BiteNot is a registered trademark of Bite Not Products Inc.

Cervical Collars for Cats and Dogs

Cervical Collars

- For canines and cats
- Similar in function to Elizabethan Collars but more effective for housing space

These Cervical Collars restrict the movement of the animal's head from side-to-side while permitting downward motion for feeding. These pliable Collars are made from low density polyethylene with light padding around the edges to soften the contours.

Available with a choice of widths to accommodate different neck heights. The hook and loop strip provides continuous adjustment to securely fit the neck.

Order #	Collar Size	Width	Circumference*
Canines:			
ST2 59-9194	Sm (3¼ in)	8.25 cm (12½ in)	31.8 cm (12.5 in)
ST2 59-9195	Med (3¾ in)	9.5 cm (14 in)	35.6 cm (14 in)
ST2 59-9196	Lg (5 in)	12.7 cm (15 in)	38.1 cm (15 in)
Cats:			
ST2 59-9197	Sm (1¼ in)	3.2 cm (5 in)	12.7 cm (5 in)
ST2 59-9198	Med (1½ in)	3.8 cm (5½ in)	14.0 cm (5.5 in)
ST2 59-9199	Lg (1¾ in)	4.4 cm (6 in)	15.2 cm (6 in)

**Other Collar circumferences available upon request.*

Pillow Collar

Pillow Collars

These Pillow Collars are designed for a wide range of applications in both dogs and rabbits. They are manufactured from an extremely durable "ballistic" canvas fabric with a foam pillow inside the casing. These collars are available for use with dogs and rabbits in either black or white. For complete details and ordering information, see page 119.

T/Flex® Plus Animal Handling Gloves

Triple-Strength Gloves

T/Flex® Plus Animal Handling Gloves

- Highest cut resistance
- Elastic wrist band allows for an accurate, comfortable and safe fit
- Comfortable and safe

The T/Flex® Plus Small Animal Handling Gloves are a unique and innovative integration of comfort and technology. These gloves are a 13-gauge seamless knit shell. The material is Dyneema® engineered fibers plated with Lycra®. Spandex®, Thermax® and the antimicrobial treatment Alphasan® combine to provide a comfortable glove featuring the highest cut resistance. Gloves conform to international safety standards for cut resistance, with a 4 out of 5 slash-resistance score.

These gloves are designed and fabricated for flexibility, accurate touch control, comfort and safety during long periods of wear. Elastic wrist band allows for an accurate, comfortable and safe fit.

Order #	Product
ST2 72-6281	T/Flex Plus Animal Handling Gloves, X-Small, Pair
ST2 72-6275	T/Flex Plus Animal Handling Gloves, Small, Pair
ST2 72-6282	T/Flex Plus Animal Handling Gloves, Medium, Pair
ST2 72-6276	T/Flex Plus Animal Handling Gloves, Large, Pair
ST2 72-6283	T/Flex Plus Animal Handling Gloves, X-Large, Pair

Triple-Strength Gloves

- Improved cut resistance
- Comfortable and lightweight
- Unmatched durability
- Not puncture proof

These gloves provide excellent protection, less weight and greater dexterity. They are seamless and are knit from a yarn that has a central core of stainless steel wire covered in Kevlar (the material used in bullet proof vests). An additional layer of Spectra nylon increases strength, comfort and durability, while decreasing skin chafing. They are not puncture proof, but are highly cut-resistant. They are machine washable.

These five-finger gloves have a snug, 7.5 cm (3 in) cuff for protection. They are offered in three sizes and are sold in pairs.

Wear these gloves over a pair of leather gloves for the utmost protection.

Order #	Product
ST2 52-6780	Triple-Strength Gloves, Small, Pair
ST2 52-6798	Triple-Strength Gloves, Medium, Pair
ST2 52-6806	Triple-Strength Gloves, Large, Pair

Stainless Steel
Mesh Gloves

Stainless Steel Mesh Gloves

- 3-step reversible design to make glove suitable for right or left hand
- Ergonomic design for optimal comfort and fit
- Highest level of protection in cutting operations
- Hygienic and easily sanitized
- Straps are made from anti-microbial polypropylene fibers
- Replaceable polypropylene straps

These five-finger Stainless Steel Mesh Gloves offer protection against animal bites and knife cuts. Sharp teeth longer than 3.2 mm (⅛ in) will penetrate the Glove. Constructed from individually welded stainless steel links, these Gloves are extremely rugged and durable while allowing full mobility of the hand and wrist. The Gloves are secured by quick-releasing hook and loop straps. These straps can be removed for autoclaving, or the entire Glove may be cleansed with soap and water.

These Gloves are offered in two styles. The first style has a single hook and loop strap at the wrist. The second style has an additional hook and loop strap and a 8.9 cm (3 in) safety cuff for added wrist protection. Both styles are reversable. They are sold individually.

Glove Size	Without Safety Cuff	With Safety Cuff
X-Small	**ST2 72-9966**	**ST2 72-9972**
Small	**ST2 72-9967**	**ST2 72-9973**
Medium	**ST2 72-9968**	**ST2 72-9974**
Large	**ST2 72-9969**	**ST2 72-9975**
X-Large	**ST2 72-9970**	**ST2 72-9976**
2X-Large	**ST2 72-9971**	**ST2 72-9977**

Small Animal Handling Deerskin Gloves

- Deerskin leather, thin yet strong and durable
- Lined with Kevlar for slash resistance
- Adjustable hook and loop wrist strap
- Soft and form fitting, will not crack or harden after wetting

These Small Animal Handling Deerskin Gloves offer a smart solution for protection during long periods of wear. When handling small animals, dexterity coupled with protection is vital for the security of both the subject and handler. Manufactured from a soft yet durable deerskin, these gloves are adjustable for a secure and comfortable fit and lined with knitted Kevlar to provide extra protection and slash resistance.

Order #	Product
ST2 72-6277	Deerskin Gloves, Small Pair
ST2 72-6278	Deerskin Gloves, Medium Pair
ST2 72-6279	Deerskin Gloves, Large Pair
ST2 72-6280	Deerskin Gloves, X-Large Pair

Primate Handling Leather Gloves with Kevlar Lining

- Largest range of sizes of animal handling gloves
- Kevlar lining provides unparalleled protection against punctures

These 100% full grain cowhide gloves have split grain cuffs that are 25.5 cm (10 in) long. These rugged gloves are available in five sizes either with or without the Kevlar lining. They are provided in pairs. Full grain leather Snap-On Over Gloves are available separately and easily attach to the glove via sturdy snaps. These over gloves provide a second layer of leather over the thumb and index finger for additional protection when working with primates.

Glove Size	With Kevlar Lining	Without Kevlar Lining	Snap-On Over Glove
Small	**ST2 72-4016**	**ST2 72-4020**	**ST2 72-4024**
Medium	**ST2 72-4017**	**ST2 72-4021**	**ST2 72-4025**
Large	**ST2 59-9186**	**ST2 59-9187**	**ST2 59-9188**
X-Large	**ST2 72-4018**	**ST2 72-4022**	**ST2 72-4026**
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