

## OPERATING INSTRUCTIONS

FOR RG-100

\*\*\*\*\*

\* This Guillotine is capable of SEVERING FINGERS and/or \*  
\* inflicting serious injury if used improperly. Exercise \*  
\* EXTREME CAUTION when using this device. \*

\*\*\*\*\*

Animal guillotines are lever-operated shears for instant decapitation of small to medium size laboratory animals such as mice, rats, guinea pigs, rabbits, etc. This technique of dispatching animals is particularly useful in situations where other types of traumatic death or anesthetic overdoses would tend to alter the biochemical nature of the organs to be studied, or where immediate access to such organs is imperative. The guillotine is also a useful and humane method of dispatching diseased or surplus laboratory animals.

### OPERATION

1. Secure the base of the guillotine to a lab bench by placing through the four bolt holes provided, or by fastening sturdy "C" clamps onto the base. The guillotine must be immobile for safe

operation.

2. Raise the sliding blade by lifting the handle upward.
3. Place the animal into the diamond-shaped hole in the blade opening, taking care that your fingers are clear of the blades.
4. Lower the blade quickly, using a swift, downward thrust.
5. Leave the blades closed to prevent accidents when not in use.

CARE & MAINTENANCE:

1. After each use, the unit should be wiped clean of any biological fluids to prevent build-up of potential corrosion.
2. The entire guillotine is made of corrosion-resistant materials including stainless steel, aluminum, and paint. It can be totally immersed in detergent water for periodic cleaning.
3. After each washing, put a few drops of light machine oil (3 in 1) on the blade surfaces and blade channels, then, run the blades together several times to spread the oil evenly over all moving surfaces.
4. Any suitable carborundum stone can be used to restore the blades to their original effectiveness.

## Instructions for Replacing Blades

1. Remove the four screws that hold the bottom blade and take out the old bottom blade.
2. Remove the two screws that hold the top frame horizontal bar and remove the bar.
3. Remove the nut, spacers, and bolt that passes through the center of the handles into the top blade holder. Swing the entire handle assembly up and out of the way.
4. Carefully pull out the old upper blade. If it sticks, replace the handle assembly and bolt for use it as a lever to pull up the blade.
5. Place some light oil (3in1) in the upper blade slots. A couple of drops in each will do.
6. Install the new top blade and secure the handle assembly to it. Do not replace the top frame horizontal bar until Step #8 below.
7. Install the new bottom blade, beveled side away from top blade. Put a drop of Loctite on the end of the screw to prevent loosening in use. If the blade holes do not line up, squeeze the vertical blade supports gently until you can secure all screws, making sure the blade is flat against the frame.
8. Re-install the top frame horizontal bar with two screws, see Step #2 above. Test your guillotine for proper operation.

\* \* \* \* \*

## Instructions for Left-Hand Operation

You can easily remove & reinstall your guillotine handle so that it will be comfortable for left-handed operation. Just follow these steps:

1. Remove the nut, spacers, and bolt that passes through the center of the handles into the top blade holder.
2. Swing the handle over the frame of the guillotine so that it is free from the blade mechanism.
3. Turn the guillotine over and remove the two 6-32 socket head screws that hold the pivot block to the base plate.
4. Detach the handle and pivot block assembly from the guillotine.
5. Using the two 6-32 socket head screws (see #4 above) re-attach the pivot block to the base plate at the two holes on the other side of the blade frame. Be sure to position the pivot block so its longest side is adjacent to the blade frame.
6. Turn the guillotine over and replace the nut, spacers and bolt through the handles and top blade holder. Note: nylon spacers go inside the handles; if they appear worn, replace them with one or two flat stainless steel washers.
7. Add several drops of light oil to the blade grooves, then test your left-handed guillotine for proper operation.

\* \* \* \* \*

Braintree Scientific products are sold for laboratory and operating room use by qualified personnel who set high standards for themselves and their equipment. Under the Braintree No-Hassle Policy, the buyer is the sole judge of our products. If for *any reason* you are not satisfied with this product, just write or call us for replacement or refund. Our warranty is presented in legal terms below. Please read it.

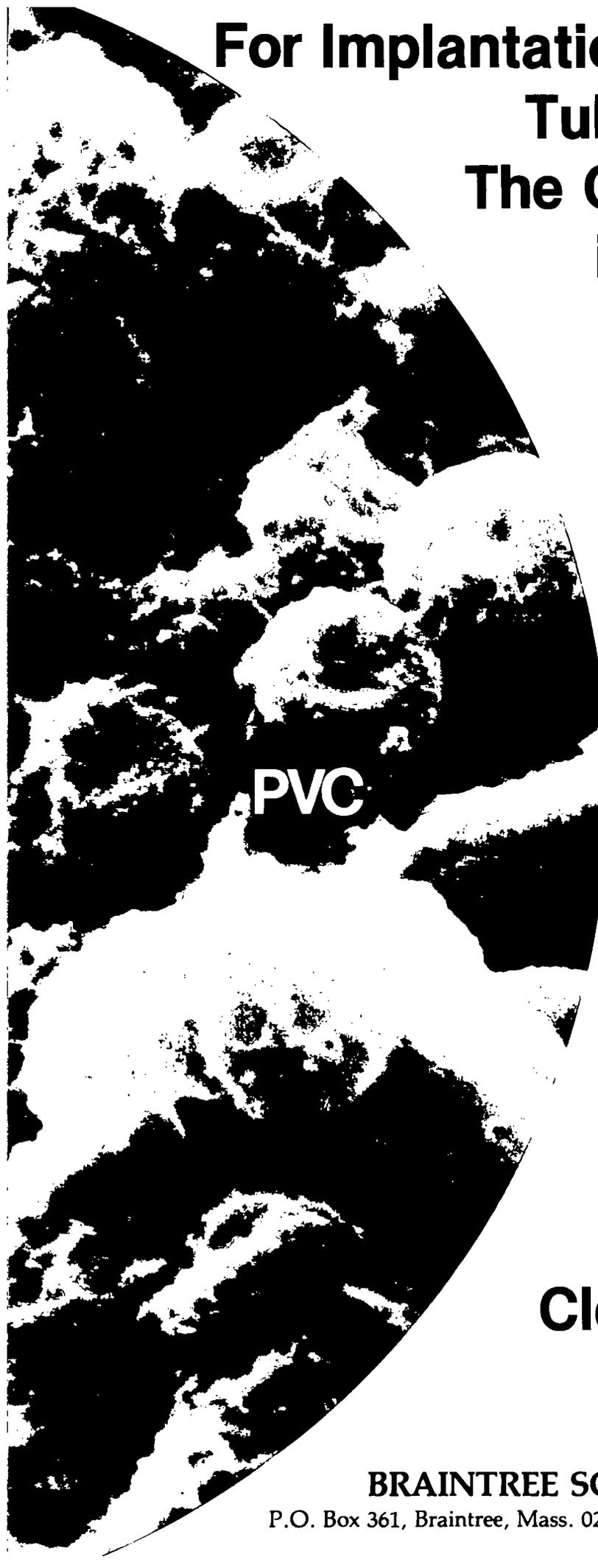
#### WARRANTY

"Braintree Scientific products are sold on the understanding that the buyer will test them in actual use and determine their applicability to the buyer's intended uses. Braintree Scientific warrants to the buyer that its products are free from defects in material and workmanship, but limits its obligation under this warranty to the replacement of, or refund of money paid for, any product which the buyer finds *unsatisfactory for any reason*. THIS WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND OF ANY OTHER OBLIGATIONS OR LIABILITY ON BRAINTREE SCIENTIFIC'S PART. UNDER NO CIRCUMSTANCES WILL BRAINTREE SCIENTIFIC BE LIABLE FOR ANY LOSS, DAMAGE, EXPENSE OR CONSEQUENTIAL DAMAGES OF ANY KIND ARISING IN CONNECTION WITH THE USE OF, OR INABILITY TO USE, ANY BRAINTREE SCIENTIFIC PRODUCT."

### **BRAINTREE SCIENTIFIC, INC.**

P.O. Box 361, Braintree, Mass. 02184 • Telephone 617-843-2202

**For Implantation and Catheter  
Tubing  
The Choice  
is**



**PVC**



**Micro-  
Renathane®**

**Clear**

**BRAINTREE SCIENTIFIC, INC.**

P.O. Box 361, Braintree, Mass. 02184 • Telephone No. 617-843-2202

# Micro-Renathane®

## Polyurethane Catheter Tubing

Braintree Scientific is proud to present a major advance in chronic catheter material. In our opinion, **Micro-Renathane®** is the most blood-compatible tubing ever made. For implantation studies in experimental animals this new tubing offers extended catheter life and reduces the probability of intravascular thrombosis.

The scanning electron micrographs (approx. 10,000X) on our cover illustrate the dramatic difference between Renathane tubing and conventional tubing. After use in hemodialysis, Renathane showed significantly less surface deposits of platelets, proteins, trapped red cells and other blood elements than other tubings.

## Micro-Renathane™ vs. PVC

Renathane is a new polyurethane based elastomer with exceptional physical and biological properties. Renathane contains no plasticizers, metallic antioxidants, tints, colorants or light stabilizers. Its color is very faintly yellow. Polymeric physical properties include high abrasion resistance, high tensile strength, and exceptional elasticity. Renathane can be autoclaved, and possesses outstanding hydrolytic stability. It is unaffected by exposure to most nonpolar solvents, formaldehyde solution, alcohols, and other common medicinal solutions. As with other materials, prolonged contact with bleach solutions or other strong oxidants is not recommended.

Conventional catheter tubing is made from PVC, poly vinyl chloride. PVC is a clear, brittle thermoplastic material made from the polymerization of vinyl chloride monomer. Recent toxicological studies have caused considerable alarm due to the carcinogenic nature of vinyl chloride monomer<sup>1</sup>. There is cause for concern on behalf of the user of PVC products since these products contain very small amounts of vinyl chloride monomer. At this time, there is no evidence to show that very low levels in finished products are harmful. The New York Academy of Sciences<sup>2</sup> has published a recent report on this subject, "The Toxicity of Vinyl Chloride — Polyvinyl Chloride."

Vinyl chloride monomer is not the only potentially toxic material present in PVC. In order to transform rigid, glassy PVC polymer into a soft, flexible device, plasticizers are added. Plasticizers impart flexibility to the polymer and allow fabrication without excessive heat. They become solubilized into the polymer's structure and act as internal lubricants. Plasticizers are of special concern to users in the medical community since they are potentially toxic and as much as 40% of a finished PVC product is plasticizer. Plasticizers can be of many different chemical structures. In medical plastics, di(2-ethyl hexyl)phthalate, DEHP is the plasticizer most often used. DEHP is a clear, viscous liquid. The oily feel of vinyl surfaces is due to this ingredient.

A great deal of physiological research has been done to determine the quantities of plasticizer which leach from vinyl surfaces into fluids and tissues. In some early work, it was found by Guess, Jacob and Autian<sup>3</sup> that significant amounts of plasticizer are leached from PVC blood bags. Many of these plasticizer extracts were toxic to mammalian cell cultures. Similar findings have been reported by Marcel and Noel<sup>4</sup>. Jaeger and Rubin<sup>5</sup> have measured the accumulation of DEHP in blood stored at 4°C in PVC blood bags. It was found to be  $0.25 \pm .03$  mg/100 ml-day. The same authors have also detected DEHP in human lung tissue in microgram amounts after cardiopulmonary bypass and blood transfusion<sup>6</sup>. In hemodialysis it has been reported that 70 mg of plasticizer is absorbed by the patient during each dialysis treatment<sup>7</sup>. Unfortunately, one cannot stop plasticizer migration from PVC into the blood. Prolonged rinsing simply increases the quantity and rate of plasticizer washout<sup>8</sup>.

Although DEHP has an extremely high oral LD<sub>50</sub> (30 g/kg in rats and rabbits<sup>9</sup>), intensive investigation of its chronic and subtle acute toxicity have linked DEHP exposure to drug inhibition<sup>10</sup>, disturbances in rat brain<sup>10</sup>, altered reticuloendothelial function<sup>10</sup>, microaggregation of platelets<sup>10, 11</sup>, teratogenic effects in chick embryos<sup>12</sup>, reduced ability for fetal implantation and adverse effects on parturition in rats<sup>13</sup>, toxic hepatitis<sup>14</sup>, hemolysis<sup>15</sup>, and disturbances in cellular replication in embryonic tissue<sup>16</sup>. Recent studies have raised questions concerning the toxicity of the metabolites of DEHP<sup>17</sup>. An excellent source of information on DEHP toxicity is the January 1973 issue of "Environmental Health Perspectives" which is entirely devoted to this subject.

In addition, PVC is relatively unstable to heat and light. Since most flexible vinyls are processed at temperature in excess of 350°F., heat stabilizers are employed, usually at levels of 0.1 to 3.0%. Heat stabilizers used in PVC medical products include alkaline earth and heavy metal organics. Guess and coworkers<sup>18</sup> have reported toxicological effects from PVC stabilizers.

Other additives less commonly used in vinyl medical products are ultraviolet stabilizers such as the hydroxybenzophenones, lubricants such as stearic acid, fatty acid amides, and tints. Bluing tints are employed to mask the discoloration of the vinyl article after processing.

In summary, flexible PVC devices contain a mass of polymer, 30 to 40% oil (plasticizer) and numerous other additives which are free to migrate from the plastic into the catheter lumen. In contrast, Renathane consists almost exclusively of high molecular weight polymer. Renathane contains no plasticizer as flexibility is an inherent property of the material. Additives are at a minimum level (below 1%) and are not as free to migrate. Therefore, it is more desirable to use Renathane and avoid potentially toxic materials that leach foreign chemicals into tissues.

**BRAINTREE SCIENTIFIC, INC.**

60 Columbian Street, P.O. Box 361, Braintree, MA 02184 • 617-843-2202 • FAX 617-843-7932

**THERE IS AN ERROR IN THIS MICRO-RENATHANE<sup>™</sup> BROCHURE.**

**MICRO-RENATHANE<sup>™</sup> TUBING CAN NOT BE AUTOCLAVED.**

**TO STERILIZE, USE GAS OR CIDEX.**

**WE ARE SORRY FOR THE MISINFORMATION.**

# "MEDICAL GRADE" PLASTICS

## REFERENCES

It is appropriate to clarify the definition of the phrases "medical grade" plastic and "FDA approved" plastic. There is no approved "medical grade" plastic or resin. Each individual supplier has his own criteria for what polymer and additive combinations constitute suitability for medical use. Similarly, there is no "FDA approved" plastic or resin. In the Code of Federal Regulations, Food and Drugs, Title 21, Part 121, the FDA has listed the additives allowable in plastics intended for food contact use. In formulating a PVC compound for medical use the manufacturer generally chooses plasticizers, stabilizers, antioxidants, colorants, etc. which are acceptable for food use. Unfortunately, there are currently no regulatory guidelines concerning materials used in medical devices.

## MEDICAL USES OF POLYURETHANE

Polyurethane based polymers are relatively new materials introduced into the United States some 25 years ago from Germany. Early biomedical applications of polyurethanes were described by Boretos and Pierce<sup>19</sup>. They reported excellent vascular acceptability in experimental heart-assist pump chambers and arterial cannulae. In subsequent work Boretos<sup>20</sup> reported the absence of acute toxicity for segmented polyurethanes. He also reported that polyurethane rings did not deteriorate or cause tissue reaction after implantation for 18 months. Lyman and coworkers<sup>21</sup> have also investigated polyurethanes for the fabrication of heart assist devices. Artificial heart devices were constructed of this material and implanted in calves. Other uses of polyurethanes as biomaterials have been described by Bruck<sup>22-23</sup>. Polyurethane based polymers are currently commercially employed in hollow fiber kidneys, vascular catheters and intra-aortic balloons<sup>24</sup>. Due to the slightly higher costs of polyurethanes, they have only been used where exceptional biologic and blood compatibility is required.

During development, Renathane has been subjected to an extensive biomaterials testing protocol to insure its safety and efficacy. A partial list of the test protocol is as follows:

### Toxicological Tests

- USP Plastics Container Tests
- Pyrogen Tests
- Intramuscular Implants with Histopathology
- Ethylene Oxide Residues

### Extraction Tests

- Tissue Culture with Human Cells
- Acute Intracutaneous Injections of Extracts into Animals
- Acute Systemic Injections of Extracts into Animals
- Heavy Metal Content
- UV Spectroscopy Scans
- Gas-Liquid Chromatography

### Tests with Human Blood

- Thrombogenicity
- Differential Cell Count
- RBC Fragility
- Hemolysis
- Electrophoresis
- Immunoelectrophoresis
- Scanning Electron Microscopy of Blood Lines Used in Hemodialysis

Overall, Renathane exhibited outstanding biocompatibility in all categories. No cytopathic or reactive effects were noted in any test.

1. Viola, P.L., Bigotti, A. and Caputo, A., "Oncogenic Response of Rat Skin, Lungs and Bones to Vinyl Chloride," *Cancer Res.*, 31, 516 (1971).
2. Selikoff, I.J. and Hammond, E.C., eds., "Toxicity of Vinyl Chloride — Polyvinyl Chloride," *Ann. N.Y. Acad. Sci.*, 246 (1975).
3. Guess, W.L., Jacob, J. and Autian, J., "A Study of Polyvinyl Chloride Blood Bag Assemblies. I. Alteration or Contamination of ACD Solutions," *Drug Intell.*, 1, 120 (1967).
4. Marcel, Y.L. and Noel, S.P., "A Plasticizer in Lipid Extracts of Human Blood," *Chem. Phys. Lipids*, 4, 417 (1970).
5. Jaeger, R.J. and Rubin, R.J., "The Migration of a Phthalate Ester Plasticizer From Polyvinyl Chloride Blood Bags Into Stored Human Blood and Its Localization in Human Tissues," *New Eng. J. of Med.*, 287, No. 22, 1114 (1972).
6. Jaeger, R.J. and Rubin R.J., "Plasticizers From Plastic Devices: Extraction, Metabolism, and Accumulation by Biological Systems," *Science*, 170, 460 (1970).
7. Gibson, T.P., Briggs, W.A. and Boone, B.J., "Delivery of Diethyl-Hexyl-Phthalate into Patients During Hemodialysis," presented at The American Society of Nephrology, 7th Annual Meeting, Washington, D.C., November 25-26, 1974.
8. Wildtbrett, G., "Diffusion of Phthalic Acid Esters From PVC Milk Tubing," *Environmental Health Perspectives*, 3, 29 (1973).
9. Krauskopf, L.G., "Studies on the Toxicity of Phthalates Via Ingestion," *Environmental Health Perspectives*, 3, 61 (1973).
10. Rubin, R.J. and Jaeger, R.J., "Some Pharmacologic and Toxicologic Effects of Di-ethylhexyl Phthalate (DEHP) and other Plasticizers," *Environmental Health Perspectives*, 3, 53 (1973).
11. Valeri, C.R., Contreras, T.J., Feingold, H., Sheibley, R.H. and Jaeger, R.J., "Accumulation of Di-2-ethylhexyl Phthalate (DEHP) in Whole Blood, Platelet Concentrates, and Platelet-Poor Plasma. 1 Effect of DEHP on Platelet Survival and Function," *Environmental Health Perspectives*, 3, 103 (1973).
12. Bower, R.K., Haberman, S. and Minton, P.D., "Teratogenic Effects In The Chick Embryo Caused by Esters of Phthalic Acid," *J. Pharm. Exp. Therap.*, 171, No. 2, 314 (1970).
13. Peters, J.W. and Cook, R.M., "Effect of Phthalate Esters on Reproduction in Rats," *Environmental Health Perspectives*, 3, 91 (1973).
14. Neergaard, J., Nielsen, B., Faubry, V., Christensen, D.H. and Nielsen, O.F., "Plasticizers in P.V.C. And The Occurrence of Hepatitis in a Hemodialysis Unit," *Scand. J. Urol. Nephrol.*, 5, 141 (1971).
15. Keith, H.B., Ginn, E., Williams, G.R. and Campbell, G.S., "Massive Hemolysis In Extracorporeal Circulation," *J. Thor. Cardiovas. Surg.*, 41, 404 (1961).
16. Dillingham, E.O. and Autian, J., "Teratogenicity, Mutagenicity and Cellular Toxicity of Phthalate Esters," *Environmental Health Perspectives*, 3, 81 (1973).
17. Petersen, R.V., Lyman, D.J., Roll, D.B. and Swinyard, E.A., "Toxicology of Plastic Devices Having Contact With Blood," Contract NIH-NHLI-73-2908-B, PB-224-558, September, 1973.
18. Haberman, S., Guess, W.L., Rowan, D.F., Bowman, R.O. and Bower, R.K., "Effects of Plastics and Their Additives on Human Serum Proteins, Antibodies and Developing Chick Embryos," *SPE Journal*, 24, 62 (1968).
19. Boretos, J.W. and Pierce, W.S., "Segmented Polyurethane: A Polyether Polymer. An Initial Evaluation for Biomedical Applications," *J. Biomed. Mater. Res.*, 2, 121 (1968).
20. Boretos, J.W., Detmer, D.E. and Donachy, J.H., "Segmented Polyurethane: A Polyether Polymer. II. Two Years Experience," *J. Biomed. Mater. Res.*, 5, 373 (1971).
21. Lyman, D.J., Kwan-Gett, C., Zwart, H.H.J., Bland, A., Eastwood, N., Kawai, J., and Kolff, W.J., "The Development and Implantation of a Polyurethane Hemispherical Artificial Heart," *Trans. Amer. Soc. Art. Int. Organs.*, 15, 456 (1971).
22. Bruck, S.D., Rabin, S., and Ferguson, R.J., "Evaluation of Biocompatible Materials," *Biomater. Med. Dev., Art. Org.*, 1, 191 (1973).
23. Bruck, S., "Polymeric Materials Current Status of Biocompatibility," *ibid.*, 1, 70 (1973).
24. Nyilas, E., "Development of Blood Compatible Elastomers, II. Performance of Avcothane Blood Contact Surfaces in Experimental Animal Implantations," *J. Biomed. Mater. Res. Symposium*, 3, 97 (1972).

# HANDLING TECHNIQUES

## for **Micro-Renathane**<sup>®</sup>

**TAPERING:** Immerse a short loop of tubing, without tension, beneath the surface of sesame oil heated to 200-220 °C. When the heated segment is observed to "relax" (shorten and swell slightly), remove from the oil and pull steadily. Hold extended a few seconds until tubing cools. This method may be used to produce extremely fine terminal segments. The rate of taper depends on both oil temperature and pulling rate.

**END SHAPING:** To form flares or end beads, dip tubing end into hot oil. After relaxation occurs, withdraw and form with a mandrel or surgical instrument.

**BONDING and CUFF ATTACHMENT:** Cuffs for the 040 size **Micro-Renathane**<sup>®</sup> may be cut from 080 **Micro-Renathane**<sup>®</sup> and attached with silicone adhesive of the "bathtub seal" variety.

**STERILIZING:** **Micro-Renathane**<sup>®</sup> may be gas sterilized. Compatibility with chemical sterilants should be evaluated before use.

**STABILITY:** Since no ultraviolet stabilizer has been added, **Micro-Renathane**<sup>®</sup> may yellow slightly with age. Although this has no effect on its properties, you may wish to protect unused tubing from light.

### AVAILABLE IN THE FOLLOWING SIZES:

<b>TYPE MRE 033</b>	<b>.033 O.D. x .014 I.D.</b>
<b>TYPE MRE 040</b>	<b>.040 O.D. x .025 I.D.</b>
<b>TYPE MRE 080</b>	<b>.080 O.D. x .040 I.D.</b>
<b>TYPE MRE 095</b>	<b>.095 O.D. x .066 I.D.</b>
<b>TYPE MRE 160</b>	<b>.160 O.D. x .091 I.D.</b>

### ORDER FROM

## **BRAINTREE SCIENTIFIC, INC.**

P.O. Box 361, Braintree, Mass. 02184 • Telephone No. 617-843-2202

### SATISFACTION GUARANTEED

**Micro-Renathane**<sup>®</sup> is sold only for experimental use in laboratory animals. Please contact us for information on other applications.

# 1990 Catalog



**Braintree  
Scientific, Inc.**

# Micro-Renathane® Implantation Tubing

**Reduces the probability of intravascular thrombosis**

## Polyurethane Catheter Tubing

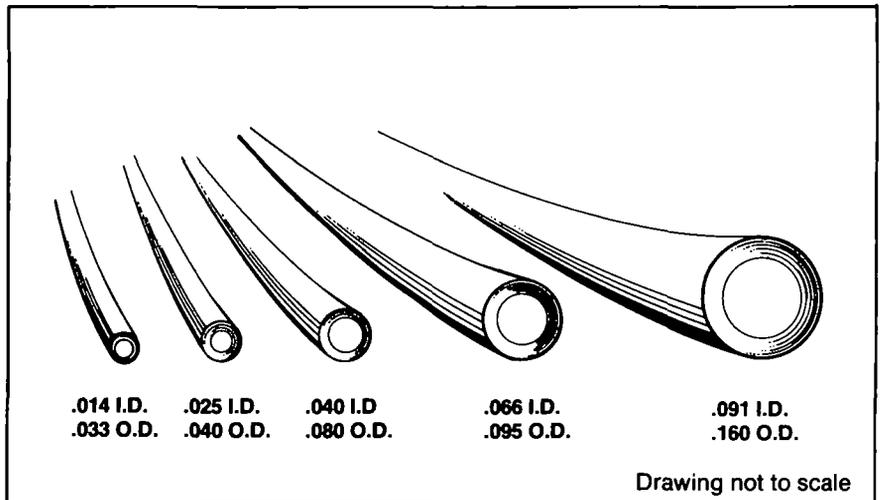
Braintree Scientific is proud to present a major advance in chronic catheter material. In our opinion, **Micro-Renathane®** is the most blood-compatible tubing ever made. For implantation studies in experimental animals this new tubing offers extended catheter life and reduces the probability of intravascular thrombosis.

The scanning electron micrographs (approx. 10,000X) (see page 9) illustrates the dramatic difference between Renathane tubing and conventional vinyl tubing. After use in hemodialysis, Renathane showed significantly less surface deposits of platelets, proteins, trapped red cells and other blood elements than other tubings.

## "Medical Grade" Plastics

It is appropriate to clarify the definition of the phrases "medical grade" plastic and "FDA approved" plastic. There is no approved "medical grade" plastic or resin. Each individual supplier has his own criteria for what polymer and additive combinations constitute suitability for medical use. Similarly, there is no "FDA approved" plastic or resin, in the Code of Federal Regulations. Food and Drugs, Title 21, Part 121, the FDA has listed the additives allowable in plastics intended for food contact use. In formulating a PVC compound for medical use the manufacturer generally chooses plasticizers, stabilizers, antioxidants, colorants, etc. which are acceptable for food use. Unfortunately, there are currently no regulatory guidelines concerning materials used in medical devices.

**Micro-Renathane® does not contain any plasticizers**



## Medical Uses of Polyurethane

Polyurethane based polymers are relatively new materials introduced into the United States some 25 years ago from Germany. Early biomedical applications of polyurethanes were described by Boretos and Pierce. They reported excellent vascular acceptability in experimental heart-assist pump chambers and arterial cannulae. In subsequent work Boretos reported the absence of acute toxicity for segmented polyurethanes. He also reported that polyurethane rings did not deteriorate or cause tissue reaction after implantation for 18 months. Lyman and coworkers have also investigated polyurethanes for the fabrication of heart-assist devices. Artificial heart devices were constructed of this material and implanted in calves. Other uses of polyurethanes as biomaterials have been described by Bruck. Polyurethane based polymers are currently commercially employed in hollow fiber kidneys, vascular catheters and intra-aortic balloons. Due to the slightly higher costs of polyurethanes, they have only been used where exceptional biologic and blood compatibility is required.

**Micro-Renathane®** is sold only for experimental use in laboratory animals. Please contact us for information on other applications.

A brief report, with references, is included with each shipment of **Micro-Renathane®**. We will be pleased to send a copy upon request.

## Micro-Renathane® vs. PVC

Renathane is a new polyurethane based elastomer with exceptional physical and biological properties. Renathane contains no plasticizers, metallic antioxidants, tints, colorants or light stabilizers. Its color is very faintly yellow. Polymeric physical properties include high abrasion resistance, high tensile strength, and exceptional elasticity. Renathane possesses outstanding hydrolytic stability. It is unaffected by exposure to most non-polar solvents, formaldehyde solution, alcohols, and other common medicinal solutions. As with other materials, prolonged contact with bleach solutions or other strong oxidants is not recommended.

Conventional catheter tubing is made from PVC, poly vinyl chloride. PVC is a clear, brittle thermoplastic material made from the polymerization of vinyl chloride monomer. Recent toxicological studies have caused considerable alarm due to the carcinogenic nature of vinyl chloride monomer. There is cause for concern on behalf of the user of PVC products since these products contain very small amounts of vinyl chloride monomer. At this time, there is no evidence to show that very low levels in finished products are harmful. The New York Academy of Scientists has published a recent report on this subject. "The Toxicity of Vinyl Chloride — Polyvinyl Chloride."

Vinyl chloride monomer is not the only potentially toxic material present in PVC. In order to transform rigid, glassy PVC polymer into a soft, flexible device, plasticizers are added. Plasticizers impart flexibility to the polymer and allow fabrication without excessive heat. They become solubilized into the polymer's structure and act as internal lubricants. Plasticizers are of special concern to users in the medical community since they are potentially toxic and as much as 40% of a finished PVC product is plasticizer. Plasticizers can be of many different chemical structures. In medical plastics, di(2-ethyl hexyl)phthalate, DEHP is the plasticizer most often used. DEHP is a clear, viscous liquid. The only feel of vinyl surfaces is due to this ingredient.

A great deal of physiological research has been done to determine the quantities of plasticizer which leach from vinyl surfaces into fluids and tissues. In some early work, it was found by Guess, Jacob and Autian that significant amounts of plasticizer are leached from PVC blood bags. Many of these plasticizer extracts were toxic to mammalian cell cultures. Similar findings have been reported by Marcel and Noel. Jaeger and Rubin have measured the accumulation of DEHP in blood stored at 4°C in PVC blood bags. It was found to be 0.25 = .03mg/100 ml-day. The same authors have also detected DEHP in human lung tissue in microgram amounts after cardiopulmonary bypass and blood transfusion. In hemodialysis it has been reported that 70 mg of plasticizer is absorbed by the patient during each dialysis treatment. Unfortunately, one cannot stop plasticizer migration from PVC into the blood. Prolonged rinsing simply increases the quantity and rate of plasticizer washout.

Although DEHP has an extremely high oral LD<sub>50</sub> (30 g/kg in rats and rabbits), intensive investigation of its chronic and subtle acute toxicity have linked DEHP exposure to drug inhibition, disturbances in rat brain, altered reticuloendothelial function, microaggregation of platelets, teratogenic effects in chick embryos, reduced ability for fetal implantation and adverse effects on parturition in rats, toxic hepatitis, hemolysis, and disturbances in cellular replication in embryonic tissue. Recent studies have raised questions concerning the toxicity of the metabolites of DEHP. An Excellent source of information on DEHP toxicity is the January 1973 issue of "Environmental Health Perspectives" which is entirely devoted to this subject.

In addition, PVC is relatively unstable to heat and light. Since most flexible vinyls are processed at temperature in excess of 350°F, heat stabilizers are employed, usually at levels of 0.1 to 3.0%. Heat stabilizers used in PVC medical products include alkaline earth and heavy metal organics. Guess and coworkers have reported toxicological effects from PVC stabilizers.

Other additives less commonly used in vinyl medical products are ultraviolet stabilizers as the hydroxybenzophenones, lubricants such as stearic acid, fatty acid amides,



### Researchers are using Renathane® at:

Texas A&M Research Center  
Duke University  
Harvard University  
University of North Carolina  
Dartmouth College  
University of Arizona  
Walter Reed Medical Center  
Iowa State University  
Johns Hopkins University  
Oregon Health Sci. University  
Virginia Commonwealth University  
University of Texas  
Medical College of Wisconsin  
Wright Patterson AFB  
National Institute of Health  
Howard University  
University of Tennessee  
Northeastern University  
University of Minnesota  
University of Chicago  
University of New Hampshire  
Montana State University  
University of Kansas Med. Center

This is only a partial list! No institutional endorsement is implied.

## References

- Boretos, J.W. and Pierce, W.S., J. Biomed. Mater. Res., 2:121 (1968).  
Boretos, J.W. Delmer, D.E. and Donachy, J.H., J. Biomed. Mater. Res., 5:373 (1971).  
Lyman, D.J., Kwan-Gett, C., Zwart, H.H.J., Bland, A., Eastwood, N., Kawai, J., and Koff, W.J. Trans. Amer. Soc. Art. Int. Organs. 15: 456 (1971).  
Bruck, S.D., Rabin S. and Ferguson, R.J. Biomat., Med. Dev., Art. Org., 1: 191 (1973).  
Bruck, S., *ibid.*, 1: 70 (1973).  
(This is only a partial list)

and tints. Bluing tints are employed to mask the discoloration of the vinyl article after processing.

In summary, flexible PVC devices contain a mass of polymer, 30 to 40% oil (plasticizer) and numerous other additives which are free to migrate from the plastic into the catheter lumen. In contrast, Renathane consists almost

### Available in the following sizes:

Model	Size
<b>MRE 033</b>	<b>.033 O.D. x .014 I.D.</b>
<b>MRE 040</b>	<b>.040 O.D. x .025 I.D.</b>
<b>MRE 080</b>	<b>.080 O.D. x .040 I.D.</b>
<b>MRE 095</b>	<b>.095 O.D. x .066 I.D.</b>
<b>MRE 160</b>	<b>.160 O.D. x .091 I.D.</b>
<b>MRE COMBO</b>	<b>3 Lengths each size</b>

**Kit of 12** **\$54.00**  
Individually packaged 3 foot lengths.  
Supplied non-sterile

exclusively of high molecular weight polymer. Renathane contains no plasticizer as flexibility is an inherent property of the material. Additives are at a minimum level (below 1%) and are not as free to migrate. Therefore, it is more desirable to use Renathane and avoid potentially toxic materials that leach foreign chemicals into tissues.

## NEW

# Renathane/RenaPulse Catheter Assembly Kit

Braintree now makes it easy to assemble custom polyurethane catheters! Our catheter Construction Kit includes all you need to attach luer or stopcock terminations (male or female) to Renathane or RenaPulse tubing. The kit includes:

- 12 female luer lock hubs for .080" O.D.(2mm) tubing
- 12 male luer lock hubs for .080" O.D.(2mm) tubing
- 12 inches of Micro-Renathane adapter tubing .080" to .040" O.D
- Adhesive

Instruction sheet

Model	Price
<b>CK</b>	<b>\$16.00</b>

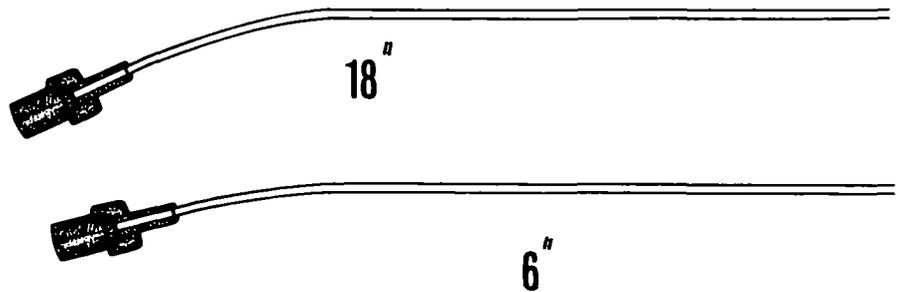
(Order stopcocks and connective tubing separately.)

**NEW**

# Pre-Assembled Micro-Renathane® Infusion Catheters and Extension Catheters

In response to your requests, Braintree Scientific now has, IN STOCK, catheters and extenders made of Micro-Renathane Polyurethane tubing. These assemblies all have Renathane's superb biocompatibility. In addition, they save you the time and trouble of finding tubing adaptors and hubs to fit. We offer different lengths, tubing types, and diameters. We can also make up special catheters for you, in any quantity and at reasonable prices. Call for information

## Catheters



*Drawing not to scale.*

### Micro-Renathane Infusion Catheters

Micro-Renathane tubing with bonded female luer-lock hub

Model	Price
Diameter .040" O.D. x .025" I.D. (1 x .6mm)	
<b>MRP-040-6</b> 6" (15cm) Overall length	<b>\$12.50/kit of 10</b>
<b>MRP-040-18</b> 18" (45cm) Overall length	<b>\$27.50/kit of 10</b>

Diameter	.080" O.D. x .040" I.D. (2 x 1mm)
<b>MRP-080-6</b> 6" (15cm) Overall length	<b>\$12.50/kit of 10</b>
<b>MRP-080-18</b> 18" (45cm) Overall length	<b>\$27.50/kit of 10</b>

Supplied non-sterile

**NEW**

# Micro-Renathane® Extension Catheters

Braintree polyurethane extension catheters have small lumens (0.6 or 1 mm diameter) to allow rapid filling when used with syringe pumps. Their small dead-space conserves expensive or scarce test agents, and they can be flushed without over-hydrating the test subject. These extension catheters have luer lock male and female terminations

## Extension Catheters



*Drawing not to scale.*

### Micro-Renathane Extension Catheters

Eighteen inch (45cm) Micro-renathane tubing with bonded female and male luer lock hubs

Model	Price
<b>MRX-040</b> .040" (1 mm) O.D. x .025" (.6 mm) I.D.	<b>\$16.25/kit of 5</b>
<b>MRX-080</b> .080" (2 mm) O.D. x .040" (1 mm) I.D.	<b>\$16.25/kit of 5</b>

Supplied non-sterile

NEW

# RenaPulse™ High Fidelity Pressure Tubing

**Measure blood pressure and waveforms more accurately, while keeping superb biocompatibility**

New RenaPulse tubing, exclusively from Braintree Scientific, is made from a new material which transmits pulse waveforms with high fidelity.

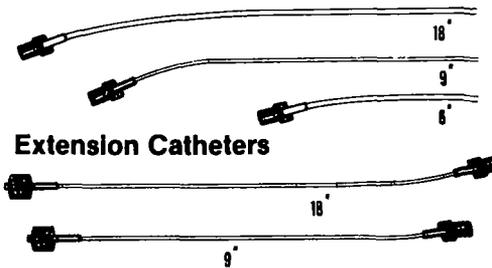
During pressure pulses, fluid flows into the catheter and depresses the diaphragm of a pressure transducer. However, the same pressure wave that reaches the transducer also causes the pressure catheter to bulge slightly. This bulging may allow a significant volume of fluid to flow in and out of the catheter with each pulse. Given the resistance of the catheter, this small flow can lead to pressure drop along the catheter and inaccurate pressure readings from the transducer. RenaPulse is a stiffer tubing which allows high fidelity measurement of systolic and diastolic pressures.

Because air bubbles in pressure catheters are very "soft", they can completely distort the pulse wave. We make RenaPulse tubing transparent to help you locate and remove such bubbles. Small clots can block pressure catheters, and prevent pulse waves from reaching the transducer. Since RenaPulse has the superb blood compatibility of Micro-Renathane, the chance of clot formation is much reduced. These features make RenaPulse the tubing of choice for high fidelity pressure measurements in small animals.

Available in the popular .080" O.D. x .040" I.D. (2 x 1mm) and .040" O.D. x .025" I.D. (1 x .6mm) sizes, RenaPulse is flexible enough for direct vessel insertion. It can be directly bonded to our luer lock terminations and stopcocks. RenaPulse can be also used with standard compression adapters or needle stubs.

Braintree also offers assembled catheters and extension tubes made with RenaPulse tubing, including a unique

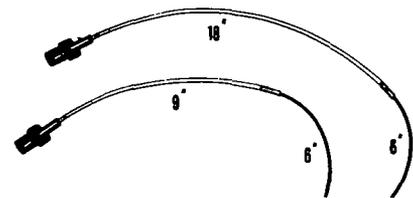
## Catheters



## Extension Catheters



## Stepdown Catheters



*Drawing not to scale.*

StepDown catheter featuring a thin Micro-Renathane tip.

All models supplied non-sterile.

Model	Size
RPT-040	.040 O.D. x .025 I.D. (1 x .6mm)
RPT-080	.080 O.D. x .040 I.D. (2 x 1mm)

**Kit of 12** **\$72.00**  
(Individually packaged 3 ft lengths)

## Assembled RenaPulse High Fidelity Pressure Catheters

RenaPulse Pressure catheters are offered in both "single diameter" and "StepDown" versions. These catheters have a bonded female luer lock hub. We recommend that you always use the shortest possible catheters for systolic and diastolic pressure measurements. Except for mean pressure measurements, you will always do better with no extension. Consider first using a longer RenaPulse pressure catheter or a RenaPulse two-step catheter. If this is not possible, use a RenaPulse extension.

## Single diameter RenaPulse Catheters (with bonded female luer lock hub)

Model	Price
RPC-080-6	.080" O.D. x .040" I.D. (2 x 1mm) 6" (15cm) long <b>\$15.00/kit of 10</b>
RPC-080-18	.080" O.D. x .040" I.D. 18" (45cm) long <b>\$35.00/kit of 10</b>
RPC-040-9	.040" O.D. x .025" I.D. (1 x .6mm) 9" (15cm) long <b>\$20.00/kit of 10</b>

## RenaPulse StepDown Catheter is a Braintree Exclusive!

This new High Fidelity pressure

catheter has a 6 inch long Micro-Renathane tip (.040" O.D. x .025" I.D.) bonded to the end of a length of RenaPulse pressure tubing. The thin, soft tip section allows flexible access to smaller arteries. You can trim or taper the tip to meet your specific needs. The StepDown pressure catheter has a female luer lock hub for direct connection to your pressure transducer. For highest fidelity, always use the shortest catheter possible.

## RenaPulse StepDown High Fidelity pressure catheter.

.080 O.D. x .040 I.D. (2 x 1mm) with a female luer lock hub (add 6" for overall length).

Model	Price
RSD-9	9" (23cm) length <b>\$16.00/kit of 6</b>
RSD-18	18" (45cm) length <b>\$25.00/kit of 6</b>

## RenaPulse Extension Catheters

These high fidelity extension catheters are for use when the transducer cannot be brought close to the animal. These catheters have bonded female and male luer lock hubs.

Model	Price
RPX-9	RenaPulse extension catheter .080" O.D. x .040" I.D. 9" (23cm) long <b>\$12.50/kit of 5</b>
RPX-18	RenaPulse extension catheter 080" O.D. x .040" I.D. 18" (45cm) long <b>\$20.00/kit of 5</b>

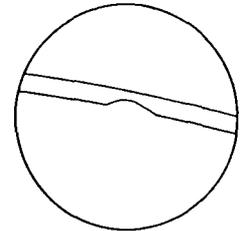
**NEW****Double Lumen Catheters**

Now a single vessel puncture or cutdown can provide two access points! These catheters allow you to infuse incompatible drugs simultaneously, or to maintain an IV drip while injecting test agents. You can draw blood samples from one lumen while infusing downstream without interference, interruption or dilution of the sample. When you can only get into one vessel, Braintree's double lumen polyurethane catheters may save your experiment. Available in two diameters with luer lock hubs, these catheters are 6" (15 cm) long and have tie-down tabs. One lumen opens at the tapered tip. The second lumen opens about 1/2 inch (1 cm) behind the tip.

Larger sizes and triple lumens can also

be supplied. Please call for information.

Model	Price
<b>DLR-4</b> Double lumen Renathane catheter 4 French diameter (about .050" (1.25 mm) O.D	<b>\$45.00/kit of 3</b>
<b>DLR-6</b> Double lumen Renathane catheter 6 French diameter (about .080" (2.0 mm) O.D	<b>\$45.00/kit of 3</b>

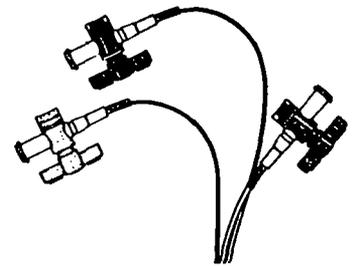
**Double Lumen**

*Drawing not to scale.*

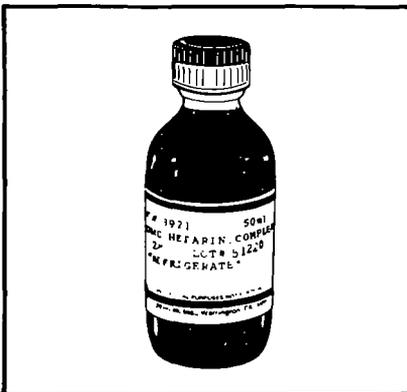
**NEW****Color-coded Plastic Stopcocks**

Braintree Scientific is pleased to bring you Color-coded plastic stopcocks. These are two-way (on-off), and three-way provided in 5 different colors. Use these with infusion, blood sampling or pressure catheters having standard luer connections. The colors can help you remember which is which! These stopcocks can also be bonded directly to Renathane or RenaPulse tubing using materials in our Catheter Assembly Kit.

Model	Price
<b>CCPS-2</b> Kit of 25 (5 ea. clear, red, yellow, green, blue)	<b>\$20.00</b>
<b>SCS-2</b> Kit of 10 single color (please specify)	<b>\$8.00</b>
<b>CCPS-3</b> Kit of 25 (5 ea. clear, red, yellow, green, blue)	<b>\$25.00</b>
<b>SCS-3</b> Kit of 10 single color (please specify)	<b>\$10.00</b>



*Drawing not to scale.*

**TDMAC-Heparin****For preparing Non-thrombogenic Plastic Surfaces**

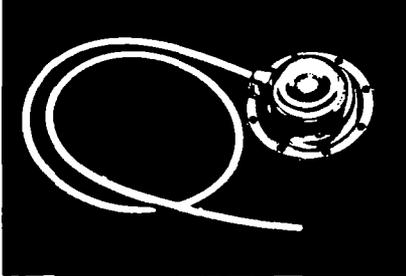
TDMAC (Tridodecylmethyl Ammonium Chloride) is an activated complex which is used to impregnate plastic surfaces with the natural anti-thrombogenic, Heparin. TDMAC-Heparin reduces fibrinogen absorption and lowers the thrombogenic potential of plastic surfaces in contact with blood. TDMAC-Heparin can prolong

catheter life by reducing the potential for thrombus formation in catheter lumens.

Supplied as a 2% solution (WT/WT) in toluenepetroleum ether (1:). General instructions are supplied for treating polyurethane (as well as most other plastics).

Model	Price
<b>TDMAC-2</b> 50ml.	<b>\$78.00</b>

## Large Animal Vascular-Access-Port™



**Vascular-Access-Port (with retention beads)**

The beads facilitate retention sutures in the arterial system of the animal.

### Totally Implantable

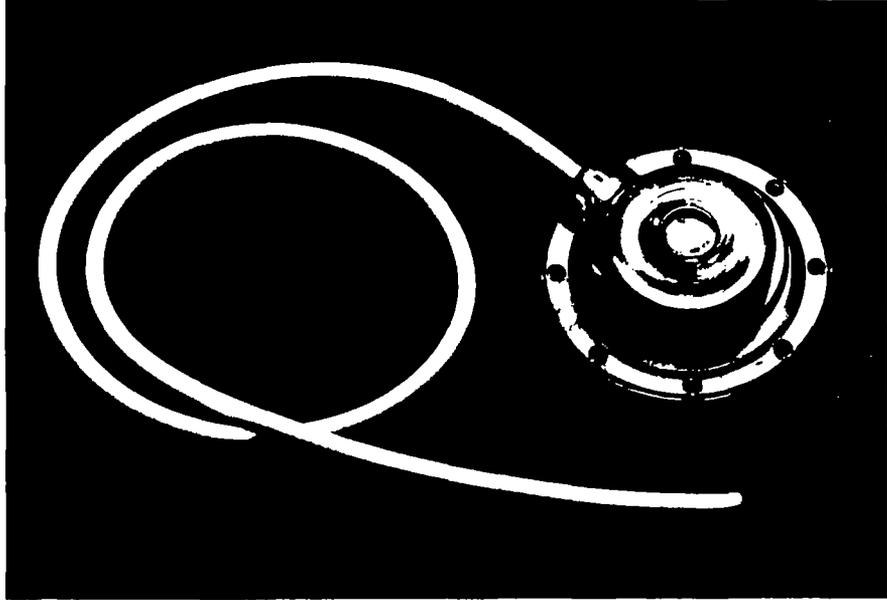
For use in chronic:

- Blood sampling
- Intra-arterial blood pressure monitoring
- Drug delivery

The Vascular-Access-Port™ is a totally implantable catheter system to be used where repeated access to arteries and veins is desired. The model BS-VAP was designed to provide both convenient and cost effective percutaneous access to the cardiovascular system of research animals. Implanted in the subcutaneous tissue of the animal, the catheter port reduces the trauma to the animal and inconvenience to the investigator associated with repeated venipuncture to withdraw blood or to administer drugs, fluid samples or test substances or with arteriopuncture to monitor blood pressures. The catheter may also be placed in a remote organ or body cavity where selective regional perfusion is desired. The Vascular-Access-Port eliminates the accidental damage and infection associated with externalized catheters.

The subcutaneously mounted self-sealing rubber septum is easily located and is designed to accept over 500 needle punctures without leaking. The contoured port body protrudes slightly from the animal facilitating location of the septum. The unique construction of the port utilizing a biocompatible plastic polysulfone, permits autoclave sterilization and reuse.

The Vascular-Access-Port model BS-VAP is used in dogs, various monkeys including baboons, rabbits, pigs and horses. The Port has found numerous applications and has functioned properly in each. The Vascular-Access-Port is a proven valuable and cost effective research tool.



*Drawings not to scale.*

### Silicone Catheter Sizes

4 French	.025" I.D. x .047" O.D.
5 French	.030" I.D. x .065" O.D.
6 French	.023" I.D. x .079" O.D.
7 French	.040" I.D. x .090" O.D.
9 French	.060" I.D. x .120" O.D.

Length 18 inches

Each port includes 2 Huber Point Needles.

Model	Price
<b>BS-VAP</b>	<b>\$72.50</b>
<b>BS-VAP-RB* (with retention beads)</b>	<b>\$74.50</b>

*\*Specify size, length, and spacing for retention beads upon ordering.*

## Rodent Vascular-Access-Port

The same construction as the Vascular-Access-Port™ but sized down for application in small laboratory animals. The Rodent Vascular-Access-Port is elliptical in shape (15 x 26 x 10mm) and is available in three different size silicone rubber catheters. The Vascular-Access-Port is mounted on the back of the animal. Scientists may wish to "customize" one of our rat restrainers (model 700R pg 5) to facilitate use of the Rodent Vascular-Access-Port. Catheters are available with retention beads to facilitate securing of the catheter.

### Catheter Sizes

2 French	.012 I.D. x .025 O.D.
3 French	.020 I.D. x .037 O.D.
4 French	.025 I.D. x .047 O.D.

Length per customers request

Each port includes 2 Huber Point Needles.

Model	Price
<b>BS-RVAP4 (Package of 4)</b>	<b>\$140.00</b>
<b>BS-RVAP (Each)</b>	<b>\$45.00</b>
<b>BS-RVAPRB4 *(Package of 4 w/retention beads)</b>	<b>\$150.00</b>

# Deltaphase™ Isothermal Pad

**maintains animals  
or cultures at  
37°C for hours.  
Ideal for NMR!**

Based on fundamental thermodynamics, completely safe even with flammable gases, uses no electricity, no wires, no control box, and they are reusable.

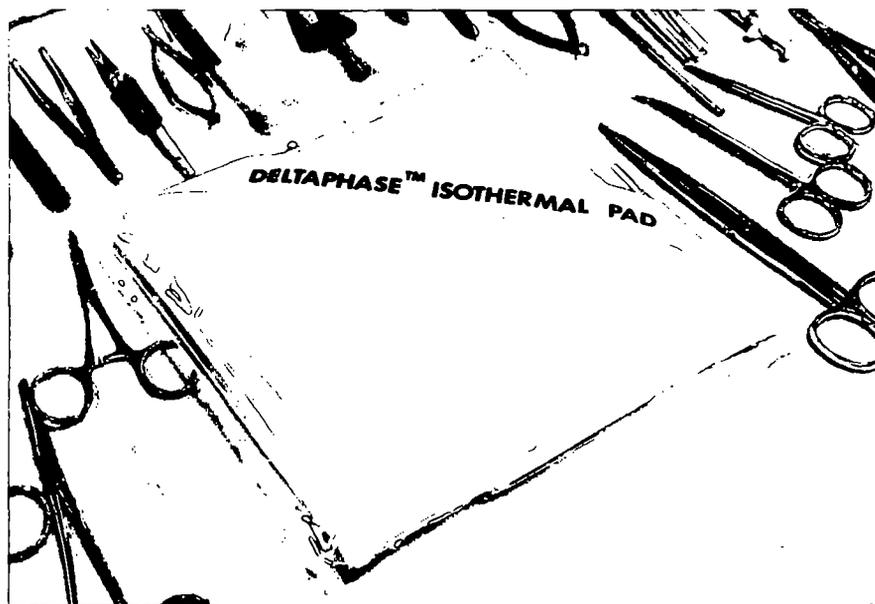
## Why you need them

Normal biochemical functions are based on the temperature of 37°C. In conscious animals, core temperature is maintained. During anesthesia, body temperature falls. Normal chemistry is disturbed, surgical tolerance is reduced, and recovery is slow.

Studies of mammalian cell biology are conducted at 37°C. in expensive incubators in order to maintain normal function. However, the manipulation of cultures in a clean hood or on the bench top almost always leads to significant cooling. At the least, this results in the displacement of growth curves. At worst it can lead to significant cell mortality.

To maintain temperature during experimental procedures, many methods are used. Coverings help, but are impractical during most procedures and cannot replace heat already lost. Electrical heaters must be carefully monitored to prevent over heating or oscillation. Electrical devices often interfere with recording equipment. They are a shock hazard in the presence of urine, blood, or culture media, and the spark of a thermostat might ignite a flammable anesthetic or solvent.

The **Deltaphase Isothermal Pad** is a unique approach to temperature stabilization. It is a source of heat which cannot overheat. It is economical in that it needs no tubes, wires or electricity. It is also safer than other devices because it needs no thermostat or controller and does not generate electrical signals. But it **can** maintain a small animal or a culture bottle at near normal and constant temperature for several hours.



The concept of the **Deltaphase Isothermal Pad** is derived from the basic thermodynamic principles that a phase change occurs at constant temperature. A unique chemical solution, contained within a durable pouch, is in solid form at room temperature. When heated, the solution becomes fluid and the pad is ready to use.

When an animal or container is placed in contact with an activated pad, heat is transferred and the solution slowly undergoes a phase change. During this change, over 30 calories are available per gram of

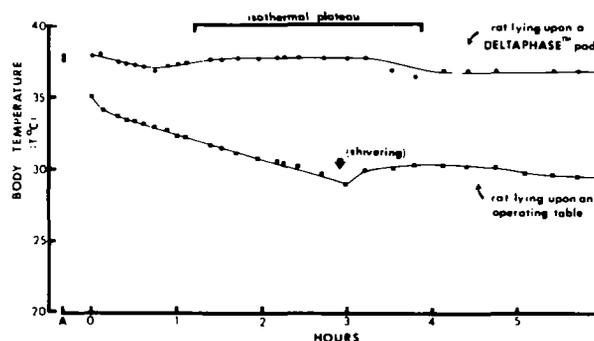
solution, and the temperature remains constant. The pad remains isothermal until all of the liquid phase has solidified.

Experimental studies have shown that the pad temperature of 39°C is ideal for maintaining animal or cultures at 37°C. If desired, one or more pads may be placed within a foam box to create a bench top or portable incubator.

Model	Price
<b>39 DP</b> (Includes 3 Pads and 3 Insulators)	<b>\$56.00</b>

## Laboratory Evaluation

Rectal temperatures of two rats during 6-hour experiment. (Animal weights 350 g. room temperature 24.5°C.) Animal on **Deltaphase™ Pad** maintained near normal temperature for more than three hours.



The **Deltaphase™ Isothermal Pad** has been evaluated by researchers at a major medical center. Anesthetized rats (pento-barbital 45 mg/kg) were placed on either an operating table or a **Deltaphase™ Pad**, and rectal temperature was monitored for 6 hours. The temperature of the rats on the

conventional table fell rapidly and stabilized only near 30°C when pronounced shivering began. The rats on **Deltaphase™ Pads** maintained body temperature near a constant 37°C for 4 hours. Typical observations are shown in Figure 2.

## Metal Mesh Gloves

**protects hands from teeth and claws**

Protect your hands from teeth and claws when handling small animals.

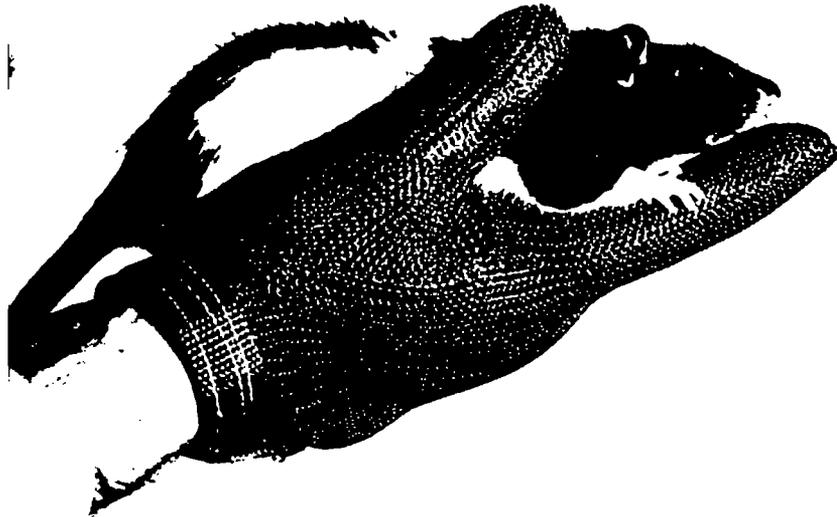
Braintree Scientific's Metal Mesh Gloves provide security and a sure grip. This is the original and only Metal Mesh Glove for rodent handling.

Experience shows that animals are easier to control when handlers are relaxed and confident. Much better than leather since metal mesh is more flexible, is readily cleaned, won't stain or corrode and doesn't carry odors.

These gloves may be worn over surgical gloves, if desired. Adjustable Velcro® wrist band prevents slipping. Convert right to left and vice versa by turning inside out. Order by size, and left or right hand.

YES! You have seen this material used for anti-shark suits.

Do not be fooled by imitations.



Model	Price
MMG-100	\$90.00
Size	
Extra Small	7
Small	8
Medium	9
Large	10
(surgical glove size)	
SPECIFY LEFT OR RIGHT HAND GLOVE	

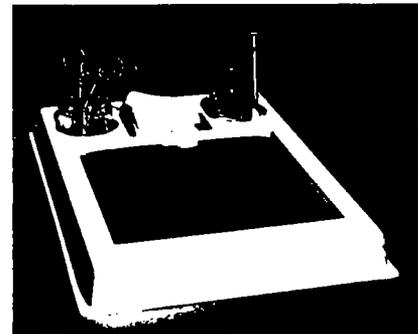


## Deltaphase™ operating board

This compact operating board takes advantage of the DELTAPHASE™ principle to maintain animal body temperature during surgical or experimental procedures. An eight and one half inch square stainless steel operating surface lies in contact with an activated DELTAPHASE isothermal pad. The underside of the pad is insulated to provide a longer isothermal period. Molded wells are provided for sponges, instruments and anesthetic apparatus.

This board was designed by research

scientists to be functional, durable, and easy to clean. Its low cost and safety make it appropriate for use in student laboratories. The unit is supplied with two DELTAPHASE pads.



Model	Price
39 OP	\$67.00

*Instruments Shown Not Included.*

## DecapiCones™

### The economical and simple rodent restrainer

Make injections and decapitation quicker and easier with Braintree's DecapiCones™. These tapered plastic film tubes provide quick and easy restraint of rats and other small animals. I.P. injections can be made directly through the film! DecapiCones restrain post-decapitation kicking and prevent personal contact with feces or urine.

A unique dispenser holds DecapiCones open and ready for use. Simply hold the DecapiCone in one hand and introduce the animal with the other. Animals enter readily, heading for the



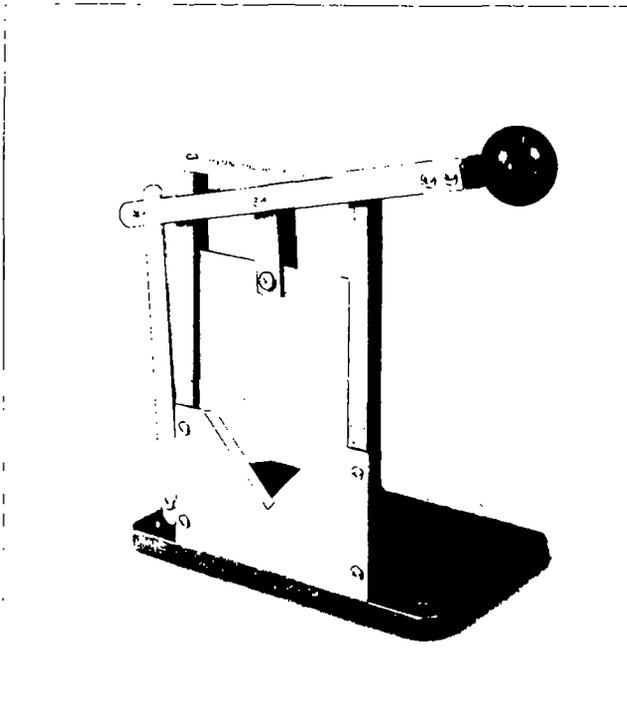
breathing hole at the small end. Then you simply roll and squeeze the large end closed.

They may be used repeatedly for injections and simply discarded when soiled. For decapitation, hold at the rear and insert the small end into the decapitator.

Model	Price
<b>DC-200</b>	<b>\$52.00</b>

(Includes: 4 Dispensers, 50 bags each)  
(Total 200 cones)

## The Classic Guillotine



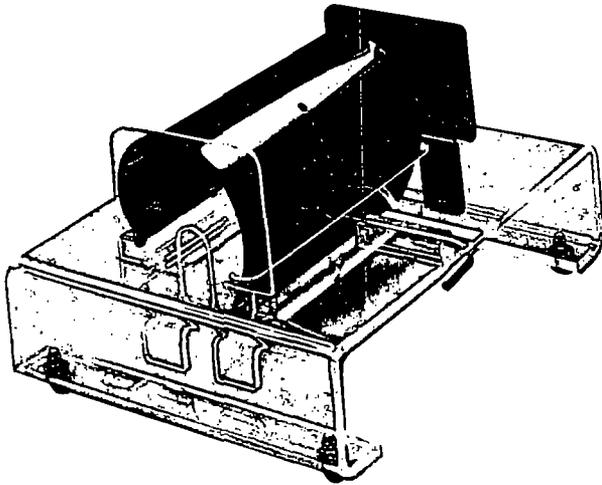
One stroke instantly decapitates rats, mice and other small animals. The blades are hand-honed stainless steel and form an opening  $1\frac{3}{4}$  along each side. All surfaces are accessible to allow washing without disassembly.

The base can be mounted to a bench or board, and the handle can be easily reversed for operation with either hand.

We recommend the use of DecapiCones™ to ensure additional safety when dispatching rats or mice.

Model	Price
<b>RG-100</b>	<b>\$325.00</b>

## Rat experiments are easier with this universal rat restrainer



The Restrainer consists of a unique spiral grip attached to a strong, slotted base by a stainless steel hinge. The grip is made of optically dense plastic so that a dark restraint tunnel is formed. The base is optically clear to allow adequate light for intraperitoneal injections. By rotating the spiral grip, the height and width of the tunnel are reduced to conform closely to the size of the animal. The grip is held in the desired position by a stainless steel latch. Head and tail plates (tail plate has the deeper slot) close the ends of the restraint tunnel. These plates are easily inserted into milled slots in the base. A special head plate incorporating a calibrated watering system is available as an option.

### Procedures

**Acute:** The animal's back, chest, abdomen, hind quarters and tail are accessible for observation or experimental manipulations. Some examples include: Intraperitoneal, intramuscular, and subcutaneous injections • Intravenous (tail vein) injections • Tail blood sampling • Heart and bladder punctures.

**Chronic:** The Universal Rat Restrainer makes practical the study of physiological

parameters in conscious rats. For long experiments, and optional calibrated watering assembly is available. Chronically implanted indwelling catheters and other experimental devices may be serviced, monitored, or sampled. Examples include: Arterial and Venous Catheters • Bladder Catheters • ECG, EEG and other electronic devices • Vascular cuffs • Tail blood pressure.

**Adjustable:** Unique spiral grip makes single-size restrainers obsolete.

**Low Stress:** Gentle, but secure. Rats can not turn or escape, natural posture maintained.

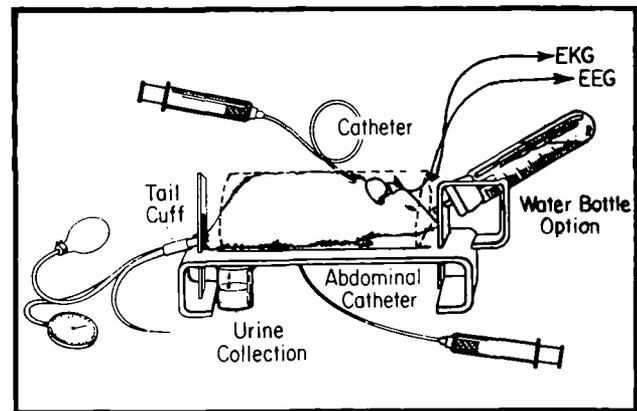
**Easy to Use:** Complete experimental access.

**Stable and Strong:** Wide base stands up to daily use, heavy construction.

**Easy to Clean:** Opens fully, won't corrode, no blind ends. Made of plastic and stainless steel.

**Improved Technique:** Save time and effort whenever you handle laboratory rats. Have both hands free. Relax and avoid accidents, knowing your animals are gently but firmly restrained.

### unique spiral grip Optional Calibrated Watering System



Model	Price
700R Rat Restrainer.	\$125.00
800R Rat Restrainer with calibrated watering system.	\$145.00

# Rat ECU™

## conditions rats for long experiments

BRAINTREE SCIENTIFIC Rat ECU™ is a new concept in small rodent experimental research.

The Rat ECU provides comfortable containment of experimental animals to facilitate repeated measurements of physiological and pharmacological parameters. NOT A RESTRAINER: rats are preconditioned (trained) to accept appropriate periods of confinement in the ECU. Blood pressure, clearance, and metabolism studies are better and easier using Rat ECU's.

### Description

The Braintree Scientific Rat ECU consists of a molded plexiglass canopy hinged to a plexiglass base. The canopy has a tapered opaque plastic hood to protect the rat from visual disturbances. Multiple

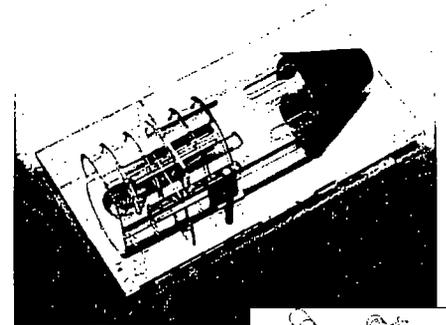
slots and an end plate allow adjustment of the canopy length for rat size and easy access to dorsal catheters and electrical leads. The base has a large through-drilled slot for accessing ventral catheters, feces and urine. Four comfortable slots are provided to support the feet.

The Braintree Scientific ECU is set up in position with the required equipment. The rat is placed in the ECU and the catheters and leads connected to the appropriate devices. The Braintree Scientific Rat ECU has been used for studies of anti-hypertensive drugs; development of hypertension as a function of age, renal and drug clearance studies, metabolism studies, and endocrinological studies.

ECU units are tailored for different sizes of rats as a function of body weight.

### Conditioning

For the best results rats should be conditioned to appropriate periods of confinement in the Braintree Scientific Rat ECU. This is easily achieved by introducing animals to the ECU daily for increasing periods of time.



Models	Price
<b>G-1</b> (50 to 120 grams)	<b>\$105.00</b>
<b>G-2</b> (120 to 250 grams)	<b>\$125.00</b>
<b>G-3</b> (250 to 350 grams)	<b>\$125.00</b>
<b>G-4</b> (350 to 400 grams)	<b>\$125.00</b>

## Non-absorbable

SIZE	MATERIAL	LENGTH	MODEL	PRICE/ PACKING
<b>SPOOLS</b>				
7-0	Silk	100 yds.	103-S	32.00/spool
6-0	Silk	100 yds.	104-S	32.00/spool
5-0	Silk	100 yds.	106-S	32.00/spool
4-0	Silk	100 yds.	108-S	32.00/spool
2-0	Silk	100 yds.	113-S	32.00/spool
0	Silk	100 yds.	116-S	38.00/spool
1	Silk	100 yds.	119-S	38.00/spool

### WITH SWAGED NEEDLES

<b>3/8 circle reverse cutting</b>				
4-0	Silk	18"	S-625	30.00/doz.
2-0	Silk	30"	S-5012	30.00/doz.
<b>3/8 circle reverse cutting double needle</b>				
6-0	Silk	18"	S-656	70.00/doz.
<b>1/2 circle taper point</b>				
3-0	Silk	18"	RNS-3713	35.00/doz.
<b>1/2 circle taper point double needle</b>				
5-0	Silk	24"	S-7115	65.00/doz.
4-0	Silk	24"	S-7116	65.00/doz.
3-0	Silk	24"	S-7118	65.00/doz.
<b>straight taper</b>				
3-0	Silk	30"	S9-403	46.00/doz.

# Basic Sutures for Small Animal Surgery

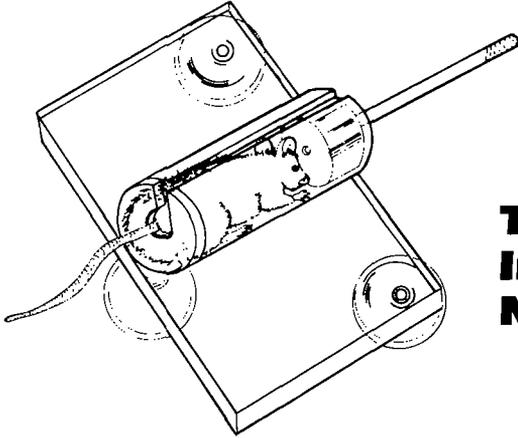
## Absorbable

SIZE	MATERIAL	LENGTH	MODEL	PRICE/ PACKING
<b>WITH SWAGED NEEDLES</b>				
<b>1/2 circle reverse cutting</b>				
3-0	Gut. chromic	36"	G-509	36.00/doz.
2-0	Gut. chromic	36"	G-510	36.00/doz.
<b>1/2 circle taper point</b>				
3-0	Gut. chromic	27"	G-340	33.00/doz.

**SILK** - The natural softness of silk has been preserved in this high-grade natural suture.

**GUT, CHROMIC** - Finely machined to guarantee consistent quality and smoothness.

## Tailveiner™

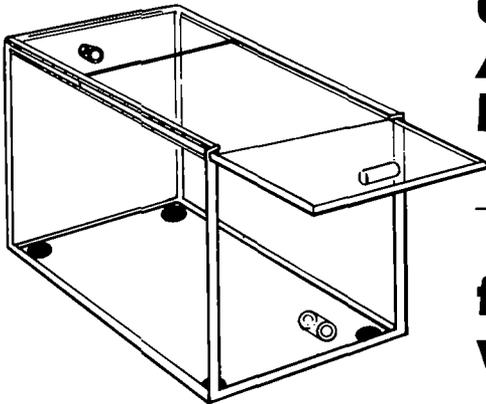


**Tail Vein  
Injection is  
Now Easier!**

The TAILVEINER™ is the first easy to use mouse restrainer specifically designed for tail vein injections. The slotted tube permits the mouse to be quickly pulled in by the tail. The animal is then restrained by a tapered plug which slides easily to accommodate any size mouse, but locks automatically when handle is released. After dosing, the handle is lifted and the plug is easily removed. The TAILVEINER™ is the fastest restrainer yet for intravenous injections in mice. Try it!!

Model	Price
TV-150	\$42.00

## Gas Anesthetizing Box



**for use  
with Rodents**

The 1/4 inch thick transparent plastic anesthetizing box allows for constant observation while anesthetizing. Helps protect against accidental overdosing.

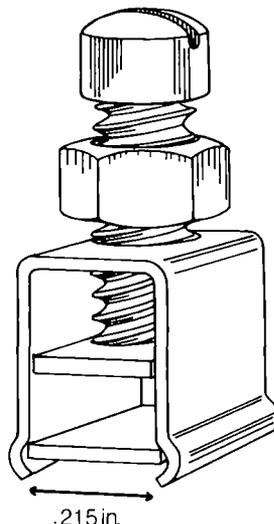
For use with rats and mice. Has an easy to move machine tooled sliding top. Made of durable plastic, this box should last for years.

Not for use with liquid organic solvents.

Model	Price
AB-1 (SMALL BOX) 10x4x4	\$80.00
Larger box available, call for quote.	

## Goldblatt Style Arterial Clamps

**Induce  
Renovascular  
Hypertension**



These Surgical stainless steel clamps are used to create selective regional arterial stenosis, specifically, renal ischemia leading to renal hypertension. These clamps are 4mm inside dimension and have a removable throat plate for implantation. Stenosis is accomplished by advancing the movable plate by means of a screw at the back of the clamp. A locking nut is provided to insure against slippage.

Model	Price
GB-4 Goldblatt-Style Arterial Clamp	\$80.00 ea.

# Syringe Pumps

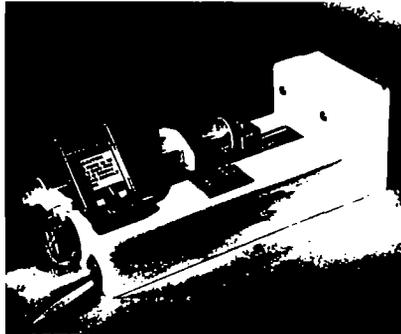
BRAINTREE SCIENTIFIC has *Low Cost* syringe pumps *in stock* for use in Biomedical Research Laboratories! You can probably buy these from your supplies budget.

These pumps have all necessary features. They accommodate syringes from 1 to 50 ml in volume. Single speed pumps give you from 40 minutes to 3 days of continuous infusion with flow rate dependent on syringe size. The multi-speed pumps infuse for times ranging from 20 minutes to 2 weeks! Why wait? Why pay more? Your satisfaction is guaranteed.

**Ideal for clinical medicine and repetitive experimentation**

**Introduces a fluid at an exact reproducible flow rate**

**Satisfaction Guaranteed**



## Single-Speed BSP

The Model BSP Single Speed syringe pump is specifically designed to infuse fluids at an exact and reproducible flow rate from either glass or plastic syringes.

Model BSP syringe pumps are equipped with:

- Automatic shutoff switch (disconnects power at end of syringe)
- Indicator On Light

A calibration index is provided for infusion rates with different size syringes.

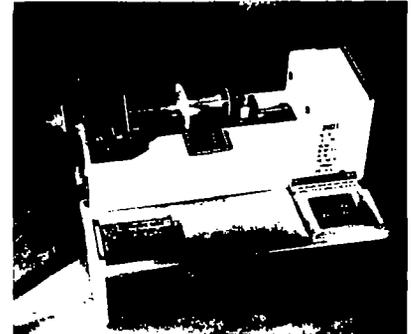
Model	Price
<b>BSP-1</b> 0.01 ml/min; duration = 3 days +	<b>\$208.00</b>
<b>BSP-2</b> 0.12 ml/min; duration = 6.9 hrs. +	<b>\$208.00</b>
<b>BSP-3</b> 1.21 ml/min; duration = 41 minutes +	<b>\$208.00</b>

### NEW

<b>BSP-4</b> .04 ml/min; duration = 20 hrs. +	<b>\$208.00</b>
<b>BSP-5</b> 6.0 ml/min; duration = 8 minutes +	<b>\$208.00</b>
<b>BSP-6</b> 36.2 ml/min; duration = 1 minute +	<b>\$208.00</b>

\* **Note:** Above rates obtained with a 50 ml syringe

If these rates do not meet your specific needs, please inquire about other rates which are available for \$40 extra on special order.



## Multi-Speed BSP-99

The Model BSP-99 syringe pump has 99 speeds and is designed for use with readily available glass and plastic syringes (up to 50 ml).

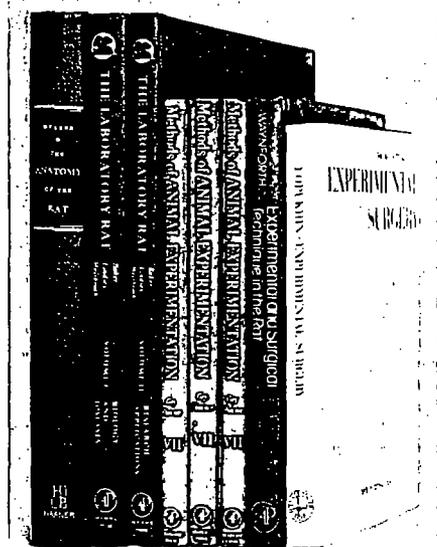
Model BSP-99 syringe pumps are equipped with:

- Built in flow chart
- 99 equally spaced infusion speeds
- A calibrated sheet providing flow rates for the major brand syringes
- Automatic shut off
- Sound alarm to signal an empty syringe

Model	Price
<b>BSP-99M</b> (0.145 to 140 ml/hr)	<b>\$525.00</b>

**Note:** Above rate obtained with a 50 ml syringe.

## Reference Books



### NEW

#### Research Surgery and care of the Research Animal

Edited by William I Gay, James E. Heavner

These new books are the first in twenty years to cover experimental surgery in both breadth and depth. New technologies and more complex procedures allow much better information to be obtained from each animal used. This is especially important in today's regulatory and social environment. Chapters on anesthesia and post-operative care will help you insure that the best current standards are being maintained in your lab. General reviews are supported by chapters devoted to single organ systems. Even experimental approaches to the immune system are included.

Edited in 1986-1989, these volume will be in constant use in your laboratory. They will serve both as reference sources and as practical handbooks at the lab bench. Available singly, but discounted as a set.

Research Surgery and Care of the Animal

Part A: Patient Care, Vascular Access, and Telemetry

Contents: Anesthesia, analgesia and

restraint; Implantable telemetry; Post-operative care; Indwelling vascular cannulas for remote blood sampling, infusion and long-term instrumentation of small laboratory animals; Vascular access in large laboratory animals.

Research Surgery and Care of the Animal

Part B: Surgical Approaches to Organ Systems

Contents: Respiratory system; Cardiovascular surgery for chronic instrumentation in conscious animals; Skeletal system; Gastrointestinal tract; Genital System; Peripheral and central nervous systems.

Research Surgery and Care of the Animal

Part C: Surgical Approaches to Organ Systems

Contents: Oral and maxillofacial surgery; Ophthalmic surgery; Skin surgery; Experimental techniques used to study the immune system; application of microsurgery to laboratory research; Neurotransplantation; experimental surgery using lasers.

**Vol. 7 Part A \$ 75.00**

**Vol. 7 Part B \$ 75.00**

**Vol. 7 Part C \$ 75.00**

**Complete Set \$200.00**

#### The Laboratory Rat

A compendium on the laboratory rat. Volume 1 (Biology and Diseases) details historical foundations, taxonomy, genetics, inbred strains, morphophysiology, hematology and clinical biochemistry, nutrition, reproduction and breeding, and diseases. Volume 2 (Research Applications) details research methodology, toxicology, experimental oncology, gerontology, immunology and parasitology, cardiovascular research and models of human disease. Selected normative data and drug dosages are also included. **The Laboratory Rat** is the modern companion for the classic **Anatomy of the Rat**.

Volume 1 Edited by: Henry J. Baker, Russell Lindsey, Steven Weisbroth

Volume 2 Edited by: Henry J. Baker, Russell Lindsey, Steven Weisbroth

**Vol. 1 \$95.00**

**Vol. 2 \$95.00**

**Vol. 1&2 \$180.00**

#### Experimental and Surgical Technique in the Rat

by: H.B. Waynforth

This excellent recent text comes from the Middlesex Hospital Medical School and Courtauld Institute of Biochemistry in London. It explains all of the methods most commonly used in research. Includes detailed descriptions of methods of obtaining body fluids and performing injections; surgical techniques — including many specific operations; and a compendium of laboratory values and useful information. The text is supplemented by references to the original literature. This book can save hours of your time! **\$60.00**

#### Anatomy of the Rat

by: Eunice Chase Greene

This basic reference for all researchers using laboratory rats includes 339 precisely detailed drawings, most full page and in color. The large format (8½ x 11") and clarity of the presentations make this book as valuable on the laboratory bench as in the library. In our opinion, no other text even comes close. Satisfaction is, of course, guaranteed. BRAINTREE SCIENTIFIC, INC. will refund complete purchase price and shipping cost to any customer who feels any book does not live up to expectations. **\$90.00**

#### Experimental Surgery

by: Yurii M. Lopukhin

Many advances in medical science have resulted from studies involving experimental surgery. Although the skill of Russian surgeons has been long known, based on hearsay and fragmentary reports, little authoritative information regarding their techniques has come to the West. Now, BRAINTREE SCIENTIFIC has obtained an English edition of the standard Soviet text on experimental surgery. In 472 pages, with 257 illustrations, experimental approaches to all organ systems are described in detail. Over 700 citations of original sources are included. This rare and valuable reference source belongs in the library of every well informed biomedical scientist. **\$35.00**

**NEW****SUPER STIC-KIT****Every Glue You'll Ever Need  
Save Time, Save Trouble!**

Our customers tell us that whenever something breaks in the lab they never have the right adhesive for a quick repair. What they have on the shelf is too runny or too gooey; too fast or too slow; or chemically incompatible with the material that needs fixing. Braintree Scientific now offers a kit that contains a reasonable quantity of every kind of glue you are likely to need. It's even got adhesive to stick graphs into that grant application you are finishing at midnight! Everything is packed conveniently in a durable box which will fit neatly into a cabinet or a deep drawer.

## The kit includes:

Regular Epoxy	Five Minute Epoxy
Epoxy Putty	Epoxy Gel
Super Glue	Thick Super Glue
Super Glue Debonder	Silicone Sealer
Plastic Cement	Glue Stick for Paper
Contact Cement	Rubber Cement
Glass Cement	Wood Glue
Model Cement	Plastic Gloves
Mixing Dishes	Mixing Sticks
Sandpaper	Storage Case

Just one quick fix may gain you more in time saved than the cost of the kit. Sooner or later you will use everything supplied. All materials are well-known brands and replacement supplies can be purchased through Braintree Scientific. Your laboratory can't afford not to have one of these kits on hand.



Model	Price
SSK Super Stic-Kit	\$70.00

**NEW****Reversing Magnetic Stirrer**

Braintree Scientific offers the first magnetic stirrer that stirs the way you do. If you were mixing with a stirring rod, you would stir in one direction until a good vortex developed and then create maximum shearing action and turbulence by reversing your stirring direction. As soon as a new vortex developed you would reverse again, and so on. Your experience in the laboratory has taught you that this reversing action results in most rapid dissolution and complete mixing.

Now there is a magnetic stirrer which does it your way! Braintree's new model 302N will accommodate up to 2.5 liters. It will turn a stirring bar at a selectable speed from 100 to 1000 rpm. The stirring

direction reverses automatically every 30 seconds (adjustable up to 3 minutes). The unit has a chemically resistant stainless steel cover. Despite its compact size, just 8 inches square and 3 inches high, the unit contains a sophisticated pulse-driven motor system which provides full power operation even at low rpm.

This new Magnetic Stirrer makes one-way models obsolete. Braintree has it in stock for immediate delivery. Operates on 110/220V, 50/60 Hz.

Model	Price
302N Reversible Magnetic Stirrer	\$185.00
502 Stir bar kit 2 each 1" (25mm)	\$22.50
2 each 2" (50mm)	

**Ordering Information**

**Terms:** Net 30 days for accounts with approved credit. U.S. Funds only.

**Freight:** F.O.B. Braintree, MA. Freight is prepaid and added to invoice.

**Satisfaction Guaranteed!** If for any reason you are not fully satisfied, call or write for return instructions. Be sure to include your tax exempt number where applicable.

**BRAINTREE SCIENTIFIC, INC.,** P.O. Box 361, Braintree, MA 02184, Telephone No. 617-843-2202

Copyright© 1990 Braintree Scientific, Inc.

All Rights Reserved.