

Providing the most effective solutions
for design and use of test environments
in life science research

Infusion Ports & Catheters

UNO-LIFESCIENCE.COM

Port and Catheter selection guide

SITE and Species specific suggestions

The introduction by Access Technologies of the Vascular Access Port (V-A-P) to researchers in the early 1980's provided many new opportunities and represented a technique that has reduced animal use and minimized animal stress.

The port is located subcutaneously, and no part exits the skin. This lack of an exit site offers many advantages such as group housing to promote socialization, reduced infection rates and needle sticks, and improved animal welfare world-wide.

Vascular Access Port Selection Matrix with Suggested Catheter Sizes For Use In Major Veins & Arteries in a Variety of Species															
SPECIES	CP2/PCP-2	CP4/PCP-4	CP6/PCP-6	CP2-Grid	CP4-Grid	SP-Max	SP-Mid	SP-Grid	Inline	Phantom	GPV	SLA	ROP	MMP	CATHETER SIZE
Mice														●	1/2/3 Fr.
Rodents<350gm			●										●	●	2/3/3.5/4 Fr.
Rodents>350gm			●										●		3/3.5 Fr.
Cats		●	●		●			●		●		●			3.5/4/5 Fr.
Rabbits		●	●		●		●	●		●	●	●			3.5/4/5 Fr.
Dogs	●	●		●	●	●	●	●	●	●	●				5/7 Fr.
Primates <1-2kg			●							●					3/3.5/4 Fr.
Primates 2-5kg			●		●		●	●	●	●					3.5/4/5 Fr.
Primates > 5kg		●	●		●		●	●	●	●					5/7 Fr.
Swine/Sheep	●	●		●	●	●	●								5/7/9 Fr.
Key: CP - Titanium ClearPort CP-Grid - ClearPort Gridlock Port PCP - Plastic ClearPort SP- SwirlPort SP-Grid - SwirlPort with grid															
<i>Site & Species Specific Vascular Access Ports for laboratory animal researchers & clinical veterinarians</i>															

The Access Technologies port range represents 30 years of experience in innovative port design and manufacture, and technical and customer support. Since its introduction to the laboratory animal community in 1981, the port has evolved from being an intravascular access port into a multi-purpose access port for use in urinary, intestinal, biliary, intraspinal, cranial, ventricular, and other applications. Once a port is accessed, the fluid pathway is through the Huber needle and skin into the port reservoir/chamber. The infusate exits the reservoir and flows into the catheter and vasculature. During blood withdrawal, the flow is reversed.

When choosing the most appropriate port and catheter for the species and site, you should consider port size, profile, biocompatibility, ease of palpation, septum location, dead space volume, port chamber design, lead-time, reputation, and customer and technical support offered by the vendor. The ideal catheter is of a material that is soft, pliable, inherently chemical resistant and biocompatible, has high tensile strength and must be able to meet the flow requirements while maintaining a minimally invasive circumference.

When introduced in the early 2000's, the The ClearPort™, with its unique chamber design, revolutionized port design in both the human and veterinary arenas. In our continued effort to further improve the vascular access ports' performance, we introduced the first port with a spherical chamber in 2012. Unique features of the Swirl-Port (SP) include the ultra-low dead volume of the chamber and flow through that is independent of flushing speed, thereby mitigating user variability. This is not the case in conventional ports where variability in flushing technique can impact port patency.

Port and Catheter selection guide

TIPS and SUGGESTIONS for selection

Which **PORT** to use - consider

- size, profile & biocompatibility to minimize necrosis
- design of the chamber to avoid 'sludge' build-up
- ease of palpation of septum
- septum size and location
- septum grip to avoid needle dislodgement
- dead space volume

Benefits of a **PORT**

- obviates the need for a jacket or harness
- promotes socialization and group housing
- decreases infection rates due to closed system
- avoids repeated venipuncture and vessel damage
- can be used for infusion and blood sampling

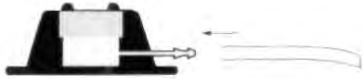
Catheter Configuration

Preattached Catheter



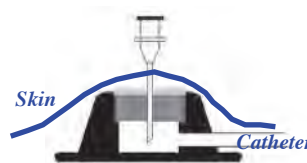
Catheter length must be trimmed from the distal tip. This catheter configuration is recommended for catheters smaller than 3.5 french.

Attachable Catheter (AC)

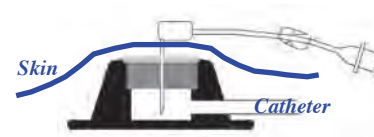


Catheter length can be trimmed from the proximal tip. This catheter configuration is essential if the distal tip is rounded or specialized.

Accessing the Port



PosiGrip Huber for bolus and sampling

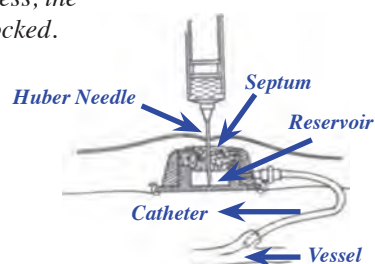


Right Angle Huber for longer-term infusion and sampling

Port Pathway: Fluid Flow through a port.

The port must be aseptically accessed using a Huber point needle. The fluid pathway is through the Huber needle and skin to enter the port reservoir/chamber. The infusate then exits the reservoir and flows out into the catheter and vasculature. During blood withdrawal, the flow is reversed.

Before use, port patency should be established. After each access, the port must be flushed and locked.



The Huber Needle A Non-Coring Needle is Essential

Huber needles are designed with a deflected/non-coring point that eliminates the potential to "core" the septum of a vascular port. The Huber needle prolongs the life of the septum and protects the catheter from being occluded by a potential silicone septum core. Once the Huber is removed, the septum reseals itself. We offer Huber Needles in a straight design, the PG series, and with a 90° bend with or without an extension line, the RA and CVRA series. Huber needles can be ordered in a variety of lengths. See further backwards in this catalog for details.

Remember - the insertable length of the Huber needle is measured from the start of the 45 degree bend, at the heel of the needle to the tip.

CLEARPORT Polysulfone specifications

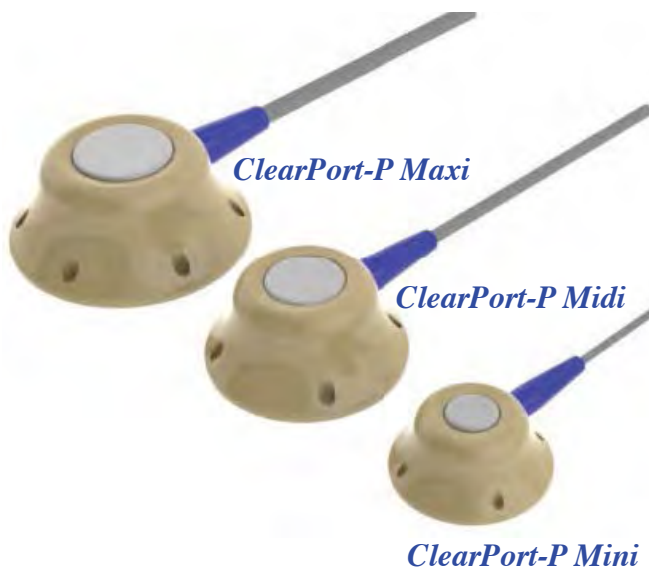
Lightweight ClearPort Alternative



Model	PCP2/PCP2AC - Maxi	PCP4/PCP4AC-Midi	PCP6/PCP6AC-Mini
Size & Material	large Polysulfone	medium Polysulfone	small Polysulfone
Applications	dog, swine, sheep	dogs, swine, primates	primates, rabbits, cats
Weight	5gm	2gm	1,5gm
Volume	0,84cc	0,36cc	0,10cc
Height	1,3cm	1,0cm	0,8cm
Septum Opening	1,2cm	0,9cm	0,6cm
Footprint	2,9cm	2,3cm	1,7cm
Catheter Configuration	Ports can be ordered with catheters preattached or attachable/AC (to be attached in surgery)		
Catheter Material	Ports can be ordered with Silicone, Polyurethane, Intisil (round tip Silicone), or Hydrocoat (round tip Hydromer coated Polyurethane catheters) in French sizes from 2-9. To minimize complications, the smallest diameter catheter feasible should be used.		
Catheter Material Key	H - Hydromer coated Polyurethane catheter with round tip I - Intisil Silicone catheter with round tip PR - Polyurethane catheter with round tip		

ClearPort-P Advantage *Light weight round chamber*

- *light-weight*
- *MRI conditional*
- *proven infusion performance*
- *round chamber reduces dead spaces and corners*
- *minimizes 'sludge' formation*
- *helps reduce occlusions and infections*



Ordering Information Info@unobv.com

Use the catalog number for the ClearPort-P model (PCP-2, PCP-4, or PCP-6), the catheter configuration (preattached or attachable) French size, material, and tip configuration required. Example: the catalog number for our Mini Polysulfone ClearPort-P with a 5 French Hydromer coated Polyurethane catheter that will be attached during surgery, is: PCP6-AC-5H. (PCP6 - Mini ClearPort, AC attachable catheter, 5H - 5 French Hydromer coated Polyurethane catheter).

Suture retention beads will be placed on catheters if requested Catheter length will be 24"/60cm unless otherwise specified See further back in this catalog for catheter materials & modifications information

CLEARPORT specifications

Titanium Vascular Access Ports



Model	CP2/CP2AC - Large	CP4/CP4AC-medium	CP6/CP6AC-small
Size & Material	large titanium	medium titanium	small titanium
Applications	dog, swine, sheep	dogs, swine, primates	primates, rabbits, cats
Weight	14gm	8gm	3gm
Volume	0,84cc	0,36cc	0,10cc
Height	1,3cm	1,0cm	0,8cm
Septum Opening	1,2cm	0,9cm	0,6cm
Footprint	2,9cm	2,3cm	1,7cm
Catheter Configuration	Ports can be ordered with catheters preattached or attachable/AC (to be attached in surgery)		
Catheter Material	Ports can be ordered with Silicone, Polyurethane, Intisil (round tip Silicone), or Hydrocoat (round tip Hydromer coated Polyurethane catheters) in French sizes from 2-9. To minimize complications, the smallest diameter catheter feasible should be used.		
Catheter Material Key	H - Hydromer coated Polyurethane catheter with round tip I - Intisil Silicone catheter with round tip PR - Polyurethane catheter with round tip		

ClearPort Advantage Improved Outcomes

The round port chamber design has been shown in human medicine to prolong patency and reduce infection. Stevens B. et.al. "A Randomized, Prospective Trial of Conventional Vascular Ports vs. The Vortex "Clear-flow" Reservoir Port in adult oncology patients." JVAD Summer 2000. (JVAD is the official publication of the Association for Vascular Access).

Ordering Information Info@unobv.com

Use the catalog number for the ClearPort model (CP2, CP4, or CP6), the catheter configuration (preattached or attachable) French size, material, and tip configuration required. Example: the catalog number for our small ClearPort CP6 with a 3.5 French Hydromer coated Polyurethane catheter that will be attached during surgery, is: CP6AC-3.5H. (CP6 - Small ClearPort, AC - attachable catheter, 3.5H - 3.5 French Hydromer coated Polyurethane catheter)

Suture retention beads will be placed on catheters if requested Catheter length will be 24"/60cm unless otherwise specified See further back in this catalog for catheter materials & modifications information

Round Chamber Design

- reduces dead spaces and corners
- minimizes 'sludge' formation*
- helps reduce occlusions and infections

Tangential CATHETER outlet

- improves flow dynamics
- cleanses the entire chamber
- results in more complete flushing

The round chamber design allows fluid to reach all surfaces of the chamber, helping eliminate dead spaces, resist sludge build-up, and reduce the incidence of occlusions and infections.



The catheter outlet is set at a tangent rather than perpendicularly, to create a swirling flushing action that hyper-cleanses the entire port chamber.



* Sludge is the accumulation of clotted blood and drug residuals in the port chamber.

SwirlPort specifications

Port with a Spherical Chamber & Optional Grid



Model	SWIRL- MAX	SWIRL-MID	SWIRL-GRID
Size & Material	large titanium	medium titanium	large titanium
Applications	dog, large lab animals	rabbits, cats, non-human primates	non-human primates, dogs
Weight	9gm	5gm	9gm
Volume	0,51cc	0,18cc	0,51cc
Height	1,3cm	1,0cm	1,3cm
Septum Opening	1,5 x 1,1cm	1,0 x 0,8cm	1,5 x 1,1cm
Footprint	2,5cm	1,8cm	2,5cm
SweetSpot Area	n/a	n/a	0,6 x 0,4cm
Catheter Configuration	The Swirl-Port models can be ordered with catheters that are preattached or attachable/AC - to be attached in surgery		
Catheter Material	Swirl-Port models can be ordered with Silicone, Polyurethane, Intisil (round tip Silicone), or Hydrocoat (round tip Hydromer coated Polyurethane catheters) in French sizes from 3-9. To minimize complications, the smallest diameter catheter feasible should be used.		
Catheter Material Key	H - Hydromer coated Polyurethane catheter with round tip I - Intisil Silicone catheter with round tip PR - Polyurethane catheter with round tip		

Countoured SEPTUM design

- enlarged radiused septum, easier port location
- contoured surface, reduces skin necrosis



CONVENTIONAL



SPHERICAL

Spherical CHAMBER design

- no dead space or corners, for more complete flushing
- minimizes sludge, occlusions and infections



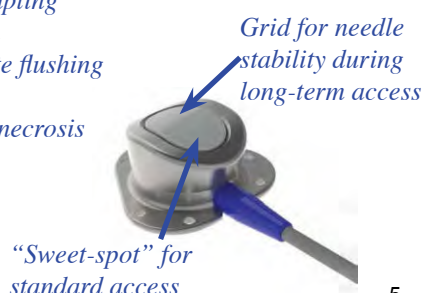
CONVENTIONAL



SPHERICAL

Swirl-Port Features *eliminates sludge reduces skin necrosis*

- Optional stainless steel gridlock
to grip the needle in place during infusion
- Optional SweetSpot with no gridlock
for effortless sampling
- Spherical chamber design
for more complete flushing
- Contoured port surface
for reduced skin necrosis



Ordering Information Info@unobv.com

Use the catalog number for the SwirlPort model (SP-Max, SPMid, SP-Grid), the catheter configuration (preattached or attachable) French size, material, and tip configuration required. Example: The catalog number for a large SwirlPort with a 5 french rounded tip silicone catheter that is to be attached during surgery, is SP-MidAC-5IS. (SP-Mid - Medium SwirlPort, AC - attachable catheter, 5IS - 5 french round tip/ Intisil Silicone Catheter)

Suture retention beads will be placed on catheters if requested Catheter length will be 24"/60cm unless otherwise specified See further back in this catalog for catheter materials & modifications information

GRIDLOCK specifications

Dual Purpose Vascular Access Ports



Model	GRIDLOCK-CP2	GRIDLOCK-CP4
Size & Material	large titanium	medium titanium
Applications	large lab animals, dogs	dogs, rabbits cats, non-human primates
Weight	16gm	10gm
Volume	0,84cc	0,36cc
Height	1,3cm	1 cm
Septum Opening	1,2cm	0,9cm
Footprint	2,9cm	2,3cm
Sweetspot	32mm ²	8mm ²
Catheter Configuration	The GridLock models can be ordered with catheters that are preattached or attachable/AC - to be attached in surgery	
Catheter Material	GridLock models can be ordered with Silicone, Polyurethane, Intisil (round tip Silicone), or Hydrocoat (round tip Hydromer coated Polyurethane catheters) in French sizes from 3-9. To minimize complications, the smallest diameter catheter feasible should be used.	
Catheter Material Key	H - Hydromer coated Polyurethane catheter with round tip I - Intisil Silicone catheter with round tip PR - Polyurethane catheter with round tip	

Gridlock Features Ensures needle stability

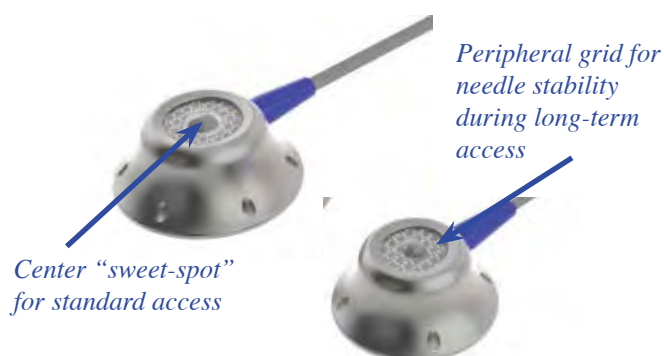
Dual stainless steel gridlock
to grip the needle in place during infusion
SweetSpot with no gridlock
for effortless sampling
Rounded ClearPort chamber design
for elimination of sludge build-up

Ordering Information Info@unobv.com

Use the catalog number for the GridLock model (G-CP2/ GCP4), the catheter configuration (preattached or attachable) French size, material, and tip configuration required.
Example: The catalog number for a medium Gridlock with a 5 french rounded tip silicone catheter that is to be attached during surgery, is GridLock-CP4AC-5IS. (G-CP4 - Medium GridLock Port, AC - attachable catheter, 5IS - 5 french round tip/Intisil Silicone Catheter)
Suture retention beads will be placed on catheters if requested Catheter length will be 24"/60cm unless otherwise specified See further back in this catalog for catheter materials & modifications information

Gridlock ADVANTAGES include

Grid septum area for improved needle grip
for use during protracted infusion to reduce the risk of inadvertent port needle dislodgement
Sweet spot with no grid
for sampling and bolus infusion
Use of a regular Huber needle
avoids damage to the port septum
requires no special needle
Accepts a right angle Huber infusion set
the choice needle for protracted infusion
Available in 2 port sizes - CP2 and CP4
suitable for a wide range of laboratory animal species including dogs, swine & non-human primates



Phantom specifications

Titanium or Polysulfone Vascular Access Ports



Model	LPH/LPHAC	SPH/SPHAC	T-LPH/T-LPHAC	T-SPH/T-SPHAC
Size & Material	large plastic	small plastic	large titanium	small titanium
Applications	dog, swine sheep	rabbits, cats primates	dog, swine sheep	rabbits, cats primates
Weight	3gm	1,75gm	6gm	3gm
Volume	0,3cc	0,1cc	0,3cc	0,1cc
Height	1,0cm	0,9cm	1,0cm	0,9cm
Septum Opening	0,8cm	0,5cm	0,8cm	1,5 x 1,1cm
Footprint	2,6x1,8cm	2,1x1,4cm	2,5x1,8cm	2,1 x 1,4cm
Catheter Configuration	Ports can be ordered with catheters preattached or attachable/AC (to be attached in surgery)			
Catheter Material	Ports can be ordered with Silicone, Polyurethane, Intisil (round tip Silicone), or Hydrocoat (round tip Hydromer coated Polyurethane catheters) in French sizes from 2-9. To minimize complications, the smallest diameter catheter feasible should be used.			
Catheter Material Key	H - Hydromer coated Polyurethane catheter with round tip I - Intisil Silicone catheter with round tip PR - Polyurethane catheter with round tip			

SIPI - - single site peripheral insertion **Unique Surgical Technique & Placement**

Local anesthesia

avoids risks associated with general anesthesia

Minimally invasive procedure

one incision site for both port and catheter
No restraint necessary when accessing

easy in-home cage access

Improved animal well-being

reduced experimental stress

PhantomPort ideal size and shape for **SIPI** placement

Available in plastic or titanium

two biocompatible materials to choose from

Tapered biocompatible design

eases port entry into the single incision SIPI Technique

Low Profile

reduces incidence of skin necroses

Ringed septum easy to palpate

provides easy access during needle insertion

Ordering Information Info@unobv.com

Use the catalog number for the Phantom model (LPH, SPH, T-LPH, or T-SPH), the catheter configuration (preattached or attachable) French size, material, and tip configuration required. Example: the catalog number for our large Titanium Phantom with a 5 french rounded tip/Intisil Silicone catheter that will be attached during surgery, is: T-LPHAC-5IS. (T-LPH- Titanium Large PhantomPort, AC- attachable catheter, 5IS - 5 french round tip/Intisil Silicone Catheter) Suture retention beads will be placed on catheters if requested Catheter length will be 24"/60cm unless otherwise specified See further back in this catalog for catheter materials & modifications information

* Graham M. et. al. "A novel alternative placement site and technique for totally implantable vascular access ports in nonhuman primates." 2009. J. Med. Primatol. 38(3):204-12.

A copy of this article that includes the surgical instructions for the SIPI insertion technique is available on request

IN-Line Port specifications

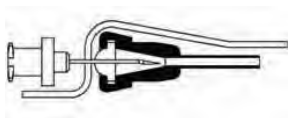
Skin Parallel Vascular Access Port



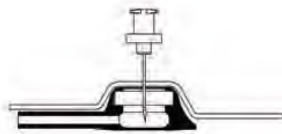
Model	IN-LINE
Size & Material	medium polysulfone
Applications	primates, dogs, rabbits
Weight	3gm
Volume	0,17cc
Height	1cm
Septum Opening	0,8 x 0,5cm
Footprint	1,7 x 1,9cm
Catheter Configuration	Ports can be ordered with catheters preattached or attachable/AC (to be attached in surgery)
Catheter Material	Ports can be ordered with Silicone, Polyurethane, Intisil (round tip Silicone), or Hydrocoat (round tip Hydromer coated Polyurethane catheters) in French sizes from 2-9. To minimize complications, the smallest diameter catheter feasible should be used.
Catheter Material Key	H - Hydromer coated Polyurethane catheter with round tip I - Intisil Silicone catheter with round tip PR - Polyurethane catheter with round tip

Access Direction Skin Parallel vs perpendicular

In a skin parallel, or side access port such as the In-Line, the needle is inserted perpendicularly to the septum; however the septum is rotated 90° with respect to the catheter outlet, so the needle once inserted lies parallel to the skin surface.



Skin Parallel/Side Access Port
the Huber needle, once inserted into the septum, lies parallel to the skin surface



Conventional Top Access
the Huber needle, once inserted into the septum, lies perpendicular to the skin surface

Ordering Information Info@unobv.com

Use the catalog number for the model (InLine, catheter configuration (preattached or attachable) French size, material, and tip configuration required. Example: The catalog number for InLine Port with a 7 french blunt tip polyurethane catheter to be attached during surgery, is INLAC-7P. Suture retention beads will be placed on catheters if requested Catheter length will be 24"/60cm unless otherwise specified See further back in this catalog for catheter materials & modifications information

IN-Line Port prevents needle "walk out"

Prevents needle 'walk-out'

skin parallel access promotes superior needle retention, due to horizontal placement of the needle/infusion set
Low profile, light weight, biocompatible shape reduces incidence of skin necrosis

Linear port pathway

for advancement of an infusion catheter, probe or guidewire through the port and into the vessel

Ability to restore patency

by the insertion of a separate, smaller *infusion catheter directly through the port and catheter to access the vessel

Smooth interior surface

offers option of infusion & sampling through a *flexible, kink resistant infusion catheter in place of a steel needle

The Infusion Catheter

Using an infusion catheter offers a number of advantages it avoids repeated surgeries to replace an occluded catheter, eliminates the problem of "needle walk-out" and improves longevity of patency

Infusion catheter specifications and instructions for use can be found further back in this catalog.

GPV & SLA Ports specifications

Polysulfone Vascular Access Ports



Model	GPV/GPVAC	SLA/SLAAC
Size & Material	large plastic/polysulfone	medium plastic/polysulfone
Applications	dogs, large lab animals	rabbits, cats, dogs
Weight	5gm	2gm
Volume	0,20cc	0,14cc
Height	1,3cm	1,0cm
Septum Opening	0,6cm	0,5cm
Footprint	3,3cm	2,5 x 1,5cm
Catheter Configuration	The GPV and SLA Models can be ordered with catheters preattached or attachable/AC (to be attached in surgery)	
Catheter Material	GPV and SLA models can be ordered with Silicone, Polyurethane, Intisil (round tip Silicone), or Hydrocoat (round tip Hydromer coated Polyurethane catheters) in French sizes from 2-9. To minimize complications, the smallest diameter catheter feasible should be used.	
Catheter Material Key	H - Hydromer coated Polyurethane catheter with round tip I - Intisil Silicone catheter with round tip PR - Polyurethane catheter with round tip	

GPV

- first port available for animal researchers



SLA

- a favorite for smaller animals since 1986



Ordering Information Info@unobv.com

Use the catalog number for the model (GPV or SLA), the catheter configuration (preattached or attachable) French size, material, and tip configuration required.
Example: The catalog number for a GPV with a 5 french rounded tip silicone catheter to be attached during surgery, is GPVAC-5IS. (GPV - Large Plastic Port, AC- attachable catheter, 5IS - 5 french round tip/ Intisil Silicone Catheter) Suture retention beads will be placed on catheters if requested Catheter length will be 24"/60cm unless otherwise specified See further back in this catalog for catheter materials & modifications information

Port ADVANTAGES include

- no external components
- no exit site
- low maintenance
- decreased infection rate
- promotes group housing
- encourages socialization
- repeated access to various internal environments
- all ports can be attached to venous, arterial, gastric, intestinal, spinal or biliary catheters or to a vascular occluder for bolus or protracted infusion & sampling

RODENT Port specifications

Polysulfone or Silicone Vascular Access Ports



Model	RAT-O-PORT Rop-AC/ROP	MOUSEPORT Pennyport
Size & Material	Plastic	silicone
Applications	all sizes of rats	all sizes of mice
Weight	1,5gm	1gm
Volume	0,11cc	100µl
Height	0,9cm	0,7cm
Septum Opening	0,8cm	1,2 x 0,4cm - 180° access
Footprint	1,7cm	2 x 1,1cm
Catheter Configuration	The Rat-O-Port/ROP models can be ordered with catheters preattached or attachable/AC (to be attached in surgery)	
Catheter Material	Rat-O-Port/ROP models can be ordered with Silicone, Polyurethane, Intisil (round tip Silicone), or Hydrocoat (round tip Hydromer coated Polyurethane catheters) in French sizes from 2-5. To minimize complications, the smallest diameter catheter feasible should be used.	
Catheter Material Key	H - Hydromer coated Polyurethane catheter with round tip I - Intisil Silicone catheter with round tip PR - Polyurethane catheter with round tip	

The MousePort Pennyport is available ONLY with preattached silicone catheters sizes 1-4

Rat-O-Port

- reduces animal experimental stress

Low profile and light weight

reduces incidence of skin necrosis

Ringed septum easy to palpate

provides easy access during needle insertion

Ideal for long-term access procedures

tested to 350 punctures with 24 ga Huber

Avoids repeated venipuncture

improves animal well-being



MousePort - Pennyport

- avoids repeated tail vein catheterization

Low Profile

small size and light weight

Biocompatible oval shape

easy port entry into the smallest mouse

Small dead volume

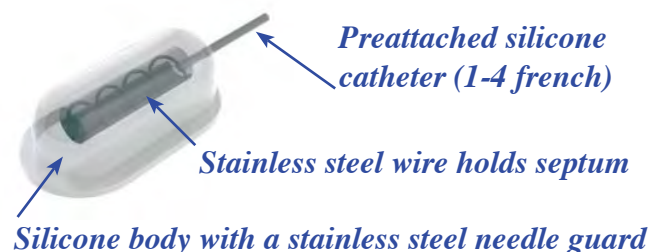
reduces infusate volume

Unique septum offering 180° access

a stainless steel needle guard protection

Ideal for venous and peritoneal access procedures

tested to 150 punctures with 25 ga Huber



Ordering Information Info@unobv.com

Use the catalog number for the model (ROP/MMP), the catheter configuration (preattached or attachable) together with the catheter size, catheter material, and tip configuration required. Example: The catalog number for a Rat-O-Port with a 3.5 french rounded tip polyurethane catheter that will be attached during surgery, is ROPAC-3.5PR. The catalog number for a MousePort with an attached 2 french silicone catheter, is MMP-2S.

Suture retention beads will be placed on catheters if requested Catheter length will be 6"/15cm unless otherwise specified

BICC'S bile collection system

Two or Three Leg Systems for Hepatic Clearance Studies



SYSTEM Components - 2 Legs - BICCND	SYSTEM Components - 3 Legs - BICCNT
Port MODELS - Titanium or Plastic	Port MODELS - Titanium or Plastic
1 x Port for the occluding catheter your choice of V-A-P model	1 x Port for the occluding catheter your choice of V-A-P model
1 x Port for the sampling catheter your choice of V-A-P model	1 x Port for the sampling catheter your choice of V-A-P model
	1 x Port for the flushing catheter your choice of V-A-P model
T-TUBE CATHETER SYSTEM	T-TUBE CATHETER SYSTEM
Silicone Balloon Catheter diameter = 0.25cm; length = 1.3cm	Silicone Balloon Catheter diameter = 0.25cm; length = 1.3cm
4.5 French Silicone Occluding Catheter 0.6mm ID x 1.4mm OD x 60cm length	4.5 French Silicone Occluding Catheter 0.6mm ID x 1.4mm OD x 60cm length
Silicone Sampling Catheter - 5 or 7 French 5 Fr. - 0.7mm ID x 1.7mm OD x 60cm length 7 Fr. - 1.3mm ID x 2.4mm OD x 60cm length	Silicone Sampling Catheter - 5 or 7 French 5 Fr. - 0.7mm ID x 1.7mm OD x 60cm length 7 Fr. - 1.3mm ID x 2.4mm OD x 60cm length
	Silicone Flushing Catheter - 5 or 7 French 5 Fr. - 0.7mm ID x 1.7mm OD x 60cm length 7 Fr. - 1.3mm ID x 2.4mm OD x 60cm length
SYSTEM ACCESSORIES	SYSTEM ACCESSORIES
1x 26ga x 60cm stainless steel balloon catheter filler 1x 20ga x 45cm Huber needle sampling set - BICRA20-75 1x 100ml low vacuum collection bulb - BIC-CB100	1x 26ga x 60cm stainless steel balloon catheter filler 1x 20ga x 45cm Huber needle sampling set - BICRA20-75 1x 100ml low vacuum collection bulb - BIC-CB100

Ordering Information Info@unobv.com

Use the catalog number for the port model, the catheter size and BICCND for the 2 leg system or BICCNT for the 3 leg system. Examples: The catalog number BICCND-CP4-5S indicates a 2 leg system with a medium titanium ClearPort and a 5 French catheter. The catalog number BICCNT-CP2-7S indicates a 3 leg system with a large titanium ClearPort and a 7 French catheter.

BICCS system ADVANTAGES *include*

- low pressure system
- easy occlusion and collection of bile
- simple to restore flow on completion of collection
- quantitative fluid collection data
- selective infusion
- convenient fluid sampling
- unrestricted animal movement
- no external components, no exit site
- low maintenance, decreased infection rate

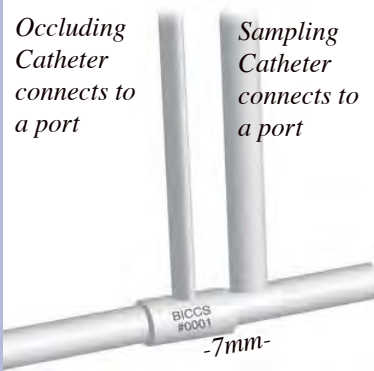


The BICCS totally subcutaneously implanted T-Tube Occluder system uses a balloon mechanism for the sampling and collection of the total volume of bile over an extended period. Available with 2 or 3 legs, in a variety of catheter and port sizes, it can be used in a variety of laboratory species including dogs and non-human primates.

BICC'S catheters

How the BICC's System Works

The BICCS™/T-Tube Occluder System uses a balloon mechanism for sampling or collection of the total volume of bile over an extended period. This system allows for easy occlusion and collection, and it is equally simple to restore proper flow through the catheter arms when collection is completed. The system is low pressure, has no externalized components, provides quantitative fluid collection, accommodates long-term use of animals, provides selective infusion, enables convenient fluid sampling, and allows unrestricted animal movement. *A Technical Sheet on the BICCS, Bile Collection System is available.*

THE BICC'S BILE COLLECTION CATHETER & COLLECTION BULB

 <p>Occluding Catheter connects to a port</p> <p>Sampling Catheter connects to a port</p> <p>BICCS #0001 -7mm-</p>	 <p>Vacuum Collection Bulbs are available in single sterile units</p>	 <p>Occluding Catheter</p> <p>Sampling Catheter</p> <p>T-tube Bile Collection Catheter with 2 legs</p> <p>Bile Collection Systems are available with 2 or 3 catheter legs.</p>
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BICC'S OPERATION

The bile duct is cannulated and the t-tube catheter is placed in the common bile duct. This T-Tube catheter has either 2 or 3 legs depending on your needs. In the 2 leg system, one catheter is the occluding catheter and the other the sampling catheter. In the 3 leg system the additional catheter serves as a separate flushing line. The catheters are tunneled to the subcutaneous port sites for connection to the vascular access ports. Once connected, the balloon catheter can be occluded for total, quantitative bile collection without any externalized components.

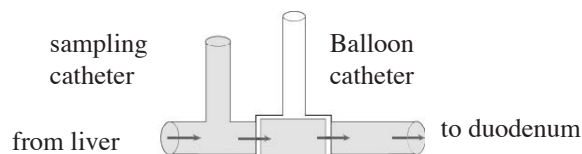
BICC'S OPERATION

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BILE COLLECTION

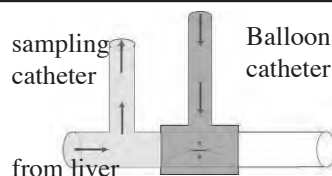
Insert the Huber needle sampling set (BICRA20-75) into the sampling vascular access port. With the balloon in the unoccluded/open position, bile will not flow through the sampling catheter. Occlude the balloon by infusing a hypertonic glucose solution into the vascular access port attached to the balloon/ occluding catheter. The balloon in the T-Tube will inflate closing off bile flow through the T-Tube. The bile is diverted into the sampling vascular access port for collection through the sampling right angle set. When collection is completed, the sampling right angle set is removed. The fluid in the balloon vascular access port is removed with a Huber needle and syringe, restoring bile flow to the duodenum.

NORMAL OPERATION OPEN BALLOON



TOTAL BILE COLLECTION CLOSED BALLOON

The bile is collected through the sampling catheter after occlusion of the T-Tube Balloon Catheter by attaching the Bile Collection Right Angle (BIC-RA) set tubing to the CollectionBulb (BIC-CB100) and inserting the needle of the BIC-RA into the port septum.



NEEDLE specifications

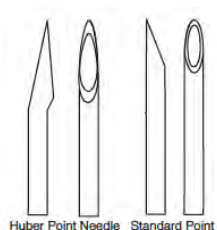
Huber Point and Blunt Needles

Huber Needles Non-Coring Needles

Huber Needles are designed with a deflected or offset 'B' bevel point. This tip has the advantage of parting rather than cutting the silicone septum of a Vascular Access Port or injection site. This eliminates coring, preserving the integrity of the septum.

PosiGrip 90° Huber Point Needles (see below) and Huber Point Right Angle and Tether Infusion Sets are available.

The bevel of the Huber point needle, the ground surface of the needle or cutting edge, is almost perpendicular to the needle shaft, deflecting the pressure from the heel, allowing the needle to part rather than core the septum as it is inserted and withdrawn.



PosiGrip Huber Point Non-Coring Needles

Feature an architecturally contoured "B" bevel needle tip and a unique knarled hub. This hub provides positive grip action when attaching the needle to a syringe or luer lock. The PosiGrip hub is color coded for easy gauge identification. Needles ship sterile (EtO) in boxes of 12.

Injection caps, needleless injection sites, or microclaves can be attached to PosiGrip needles.



Ordering Information

Needle Gauge	Hub Colour	Needle length			
		1/2"	5/8"	3/4"	1"
25	Blue	PG25-50			
24	Purple		PG24-25		
22	Black			PG22-75	PG22-100
20	Yellow			PG20-75	PG20-100
19	Brown			PG19-75	

Add C to the catalog number for PosiGrip with injection cap
Add BC to the catalog number for PosiGrip with safety or needleless injection site

Blunt Needles Luer Stub Adaptors

Blunt needle adaptors, commonly known as LSA's, are perfect for connecting infusion tubing or catheters to a syringe or other male luer device. They feature burr free, polished and passivated stainless steel tips with plastic hubs color coded for gauge identification. Luer Stub Adaptors ship sterile (EtO) in boxes of 50.. They can be ordered bulk non-sterile or with injection sites.



Ordering Information

Catalog Number	Needle Gauge	Hub Colour	OD mm	ID mm
LSA-15	15	Orange	1,80	1,35
LSA-16	16	Purple	1,60	1,19
LSA-18	18	Pink	1,20	0,84
LSA-19	19	brown	1,05	0,70
LSA-20	20	Yellow	0,90	0,60
LSA-21	21	Green	0,81	0,51
LSA-22	22	Black	0,71	0,41
LSA-23	23	Pale Blue	0,63	0,31
LSA-24	24	Red	0,55	0,28
LSA-25	25	Blue	0,51	0,26
LSA-26	26	Grey	0,46	0,23
LSA-27	27	Clear	0,41	0,21
LSA-30	30	Lilac	0,32	0,16
LSA-32	32	Straw	0,25	0,09

Add C to the catalog number for PosiGrip with injection cap
Add BC to the catalog number for PosiGrip with safety or needleless injection site

Injection Sites

Male Luer, Needleless, & Clave Accessories

Male Luer Injection Site for repeated access to a Vascular Access Port using a regular hypodermic needle.

Cat. No. MLC-100, packaged 100 per box, individually sterile

Needleless Safety Site for repeated access to a Vascular Access Port with a blunt needle, a luer stub adaptor.

Cat. No. BC-80147, packaged 100 per box, individually sterile

Microclave, a needle free design with a closed sealing mechanism to reduce accidental needle stick exposure, risk of contamination and infection due to repeat needle sticks. It provides easy connect and disconnect without compromising sterility.

Cat. No. MCC-50, packaged 50 per box, individually sterile

INFUSION SET Specifications

Right Angle, ClearView Right Angle Sets

RA Series Right Angle Block Huber Sets

Right Angle Huber Infusion Sets feature the deflected/offset 'B' bevel point needle and a grip block bonded to a Tygon extension with a female luer lock and clamp. Grip blocks are color coded for easy needle gauge identification.

Right angle sets ship sterile (EtO) in boxes of 12. The RA series is available in a variety of gauges and needle and extension lengths. These sets are available with injection sites, microclave connectors, or caps.



VCVRA Series Right Angle Huber Disk Sets

ClearView Right Angle Infusion Sets feature the deflected/offset 'B' bevel point needle attached to a clear flexible disk with a female luer lock and clamp. The advantage of the

disk is that it lies very flat against the skin improving needle stability. ClearView sets ship sterile (EtO) in boxes of 12. The CVRA series is available in a variety of gauges and needle and extension lengths. Sets are available with injection sites, microclave connectors, or caps.



Needle Gauge	Tubing Length	Needle Length				
		3/8"	1/2"	5/8"	3/4"	1"
Right Angle Huber Infusion Sets - RA Series - with female luer and clamp						
22	15 cm	RA22-375-6	RA22-5-6	RA22-625-6	RA22-75-6	RA22-100-6
22	30 cm	RA22-375-12	RA22-5-12	RA22-625-12	RA22-75-12	RA22-100-12
22	45 cm	RA22-375-18	RA22-5-18	RA22-625-18	RA22-75-18	RA22-100-18
20	15 cm	RA20-375-6	RA20-5-6	RA20-625-6	RA20-75-6	RA20-100-6
20	30 cm	RA20-375-12	RA20-5-12	RA20-625-12	RA20-75-12	RA20-100-12
20	45 cm	RA20-375-18	RA20-5-18	RA20-625-18	RA20-75-18	RA20-100-18
19	15 cm	RA19-375-6	RA19-5-6	RA19-625-6	RA19-75-6	RA19-100-6
19	30 cm	RA19-375-12	RA19-5-12	RA19-625-12	RA19-75-12	RA19-100-12
19	45 cm	RA19-375-18	RA19-5-18	RA19-625-18	RA19-75-18	RA19-100-18
Right Angle Huber Disk Infusion Sets - CVRA Series - with female luer and clamp						
22	15 cm	CVRA22-375-6	CVRA22-5-6	CVRA22-625-6	CVRA22-75-6	CVRA22-100-6
22	30 cm	CVRA22-375-12	CVRA22-5-12	CVRA22-625-12	CVRA22-75-12	CVRA22-100-12
22	45 cm	CVRA22-375-18	CVRA22-5-18	CVRA22-625-18	CVRA22-75-18	CVRA22-100-18
20	15 cm	CVRA20-375-6	CVRA20-5-6	CVRA20-625-6	CVRA20-75-6	CVRA20-100-6
20	30 cm	CVRA20-375-12	CVRA20-5-12	CVRA20-625-12	CVRA20-75-12	CVRA20-100-12
20	45 cm	CVRA20-375-18	CVRA20-5-18	CVRA20-625-18	CVRA20-75-18	CVRA20-100-18
19	15 cm	CVRA19-375-6	CVRA19-5-6	CVRA19-625-6	CVRA19-75-6	CVRA19-100-6
19	30 cm	CVRA19-375-12	CVRA19-5-12	CVRA19-625-12	CVRA19-75-12	CVRA19-100-12
19	45 cm	CVRA19-375-18	CVRA19-5-18	CVRA19-625-18	CVRA19-75-18	CVRA19-100-18

Tether & Extension Set specifications

Tether Infusion Sets & Extension Sets

TIS Series Blunt Needles Tether Infusion Sets

Tether Infusion Sets feature a blunt needle bonded to a Tygon extension and are used to connect a catheter to the infusion source through a tether. They can be ordered in a variety of needle gauges with custom needle and extension tubing lengths and are fitted with a female luer unless otherwise specified. Tether

Infusion Sets ship sterile (EtO) in boxes of 20.



TISH Series Huber Needle Tether Infusion Sets

Huber Tether Infusion Sets feature a Huber needle bonded to a Tygon extension and are used to access a Vascular Access Port. The infusion line passes from the V-A-P through a tether system to the infusion source. They can be ordered in a variety of needle gauges with custom needle and extension tubing lengths and are fitted with a female luer unless otherwise specified. Huber

Tether Infusion Sets ship sterile (EtO) in boxes of 20.



Ordering Information

Needle Gauge	Tubing Length	Needle Length			
		1/2"	5/8"	3/4"	1"
TISH Series - Huber Tether Infusion Sets - with a Huber needle, female luer & clamp					
22	45 cm	TISH22-5-18	TISH22-625-18	TISH22-75-18	TISH22-100-18
22	90 cm	TISH22-5-36	TISH22-625-36	TISH22-75-36	TISH22-100-36
20	45 cm	TISH20-5-18	TISH20-625-18	TISH20-75-18	TISH20-100-18
20	90 cm	TISH20-5-36	TISH20-625-36	TISH20-75-36	TISH20-100-36
TIS Series - Tether Infusion Sets - with a Blunt needle, female luer & clamp					
22	45 cm	TIS22-5-18	TIS22-625-18	TIS22-75-18	TIS22-100-18
22	90 cm	TIS22-5-36	TIS22-625-36	TIS22-75-36	TIS22-100-36
20	45 cm	TIS20-5-18	TIS20-625-18	TIS20-75-18	TIS20-100-18
20	90 cm	TIS20-5-36	TIS20-625-36	TIS20-75-36	TIS20-100-36

Luered Extension Lines - Catheter to Swivel connection

Polyurethane or Tygon Extension Lines with catheter connectors or male luers fit a wide range of swivels. These extension sets connect the catheter from the animal to a swivel. The connection is made with a stainless steel catheter connector or a luer on the end of the catheter.

Luered Extension Lines - Male to Female

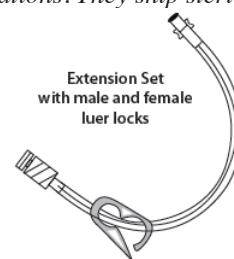
Polyurethane or Tygon Extension Lines with various luer configurations and lengths: male-male, male-female or female-female.

Luered Extension Lines - Swivel to Pump connection

Polyurethane or Tygon Extension Lines in a variety of diameters and with female luers to fit most swivel gauges.


ES Series Extension Sets

Extensions Sets are available in a variety of materials, including Polyurethane, Tygon and PE-PVC Coextruded tubing in custom lengths and configurations. They ship sterile (EtO) in boxes of 10 with male and female luers and a clamp unless otherwise specified. When ordering Extension Sets, specify the tubing material, length and luer configuration. Examples: ES-60M/M is a Tygon extension set 60" long with a clamp & male luers on both ends. ES-7P-48M/F is a Polyurethane extension set 48" long with male and female luers.



INFUSION ACCESSORIES *Selection*

Vein Pick “Hockey Stick” Catheter Introducer

 This simple vein pick catheter introducer makes the introduction of catheters into small vessels simple and easy. It holds the vessel open during the cut-down catheter insertion procedure. The tapered tip of the vein pick is inserted into an incision that is made with a micro-scissors or needle. The catheter then slides easily into the vessel by placing the catheter tip in the grooved underside of the vein pick. The vein pick is then removed and the catheter advanced to the desired position.

Injection Sites

Male Luer, Needleless & Clave Accessories

Male Luer Injection Site for repeated access to a Vascular Access Port using a regular hypodermic needle. These injection caps can be placed on PosiGrip or LSA needles as well as on any of the Huber infusion sets.



Needleless Safety Site for repeated access to a Vascular Access Port with a blunt needle, a luer stub adaptor.



Microclave, a needle free design with a closed sealing mechanism to reduce accidental needle stick exposure, risk of contamination and infection due to repeat needle sticks. The microclave has the advantage of providing easy connect and disconnect without compromising sterility.

Guide Wires 18 Ga. with a “J” Tip



This soft flexible wire with a “J” tip on one end facilitates the insertion of venous catheters

Splitable Needles Peel-Away Catheter Introducers

ClearView Right Angle Infusion Sets feature the deflected/ The Peel-Away introducer can be used for precise catheter placement. These high quality introducers are 3.75cm/1.5” long and available for catheter sizes 2-7 French. Because these introducers peel apart cleanly they are an ideal way to introduce a catheter that has a luer connection.

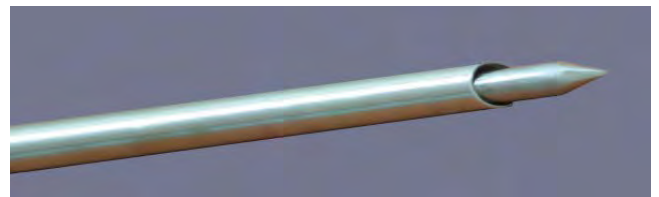


Luer Connectors



Male to Male Luer Connectors
Male to Female Luer Connectors
Male to Female Y Luer Connectors

Trocars Solid and Hollow



Skin tunneling needles, Trocars, are manufactured from medical grade stainless steel and offer a quick and easy way of keeping catheters clean as they are tunneled through the subcutaneous tissue. Solid, hollow and double Trocars are available in a variety of gauges and lengths - call for details.

StopCocks 3 Way Design



3-Way Stopcock with
2 female and one male
luer connectors

Catheter Tubing specifications

Catheter Materials Comparison

All catheter materials available have both advantages and disadvantages and the choice of catheter material is often application dependent. While both polyurethane and silicone are biocompatible and are good choices for long-term catheterization, a generalization of advantages and disadvantages as shown below may be helpful in determining which catheter material is most appropriate for your particular application. In cases where compounds show incompatibility with both polyurethane and silicone, the use of less favorable catheter materials such as polyethylene, Teflon® and PVC may be necessary.

Catheter Materials Comparison				
Characteristics	Silicone	Poluyrethane	PolyEthylene	Teflon/PTFE
ID Ratio	Thicker Wall / ID Smaller	Thinner Wall / ID Larger	Thicker Wall	Thicker Wall
Biocompatibility	Excellent	Excellent	Fair	Fair
Compatibilty	Non-Reactive	Non-Reactive	Non-Reactive	Non-Reactive
Heat Sensitivity	Excellent	Poor	Excellent	Excellent
Stiffness	Soft	Softens in Body	Stiff	Stiff
Ease of Insertion	More Difficult	Moderately Easy	Easy	Easy
Ease of Modifying	Easy	Fair	Poor	Difficult
Memory	Excellent	Poor	Poor	Poor
Tensile Strength	Fair	Excellent	Good	Excellent
Flexibility	Excellent	Moderate	Poor-Rigid	Poor-Rigid
Coefficient of Friction	Fair	Excellent	Good	Excellent
Coating Option	More Difficult	Hydromer	n/a	n/a
Sterilization method	Autoclave or EtO	EtO	Autoclave or EtO	Autoclave or EtO

Ordering Information

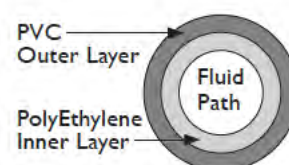
Catheter tubing can be supplied on 25 foot spools non-sterile (BC series) or in sterile cut lengths (CNC series). Sterile cut lengths are available with or without modifications as shown further back. To assist you with your catheter dimension choice, you will find a catheter specification and conversion chart

Examples: The catalog number BC - 3P indicates a 25'/7.6m spool of 3 French polyurethane tubing, non-sterile. The catalog number BC - 5S indicates a 25'/7.6m spool of 5 French silicone tubing. Examples: To order cut lengths use prefix CNC. The catalog number CNC-2S indicates a sterile cut length of 2 French silicone tubing and CNC-1P indicates a sterile length of 1 French polyurethane.

Learn more about our custom, species and site specific catheters further back.

Co-Extruded External Infusion Tubing

Co-extruded tubing is extruded with PE on the inside lumen for compound compatibility and PVC on the outside for durability. It is available in 2 sizes.



the ideal catheter MATERIAL

- high tensile strength
- soft and pliable
- inherently chemical resistant
- biocompatible
- meet flow requirements while maintaining a minimally invasive circumference or French profile.

That is a lot to ask of one material !

CATHETER TUBING Specifications

Gauge & French Size Comparison

Catheter tubing is sized according to the Charrière or french scale; a “diameter times 3” relationship, with increasing French sizes corresponding to larger diameter catheters; a linear relationship, contrary to gauge sizing where the relationship is inverse.

SILICONE /Si - Rounded (I/Intisil) or Blunt tipped - Sterile Cut Lengths or Bulk Non-Sterile								
	Gauge	Inner	Outer	Cut Lengths		Bulk tubing	Volume	Clear or Radiopa- que Cut length catheters are provided with 2 moveable suture retention beads as a standard feature. See our catheter modifications.
Size		Diameter	Diameter	Round Tip	Blunt Tip	7,6m	μl/cm	
1	27	0,2mm	0,4mm	n/a	CNC-1S	BC-1S	0,3	
2	23	0,3mm	0,6mm	CNC-2IS	CNC-2S	BC-2S	0,7	
3	20	0,5mm	0,9mm	CNC-3IS	CNC-3S	BC-3S	2,0	
4	18	0,6mm	1,2mm	CNC-4IS	CNC-4S	BC-4S	3,2	
5	16	0,7mm	1,7mm	CNC-5IS	CNC-5S	BC-5S	4,5	
7	13	1,3mm	2,4mm	CNC-7IS	CNC-7S	BC-7S	12,7	
9	11	1,6mm	3,2mm	CNC-9IS	CNC-9S	BC-9S	19,5	
POLYURETHANE /PU- Rounded, Hydrocoat or Blunt tipped - Sterile Cut Lengths or Bulk Non-Sterile								
	Gauge	Inner	Outer	Cut Lengths			Bulk tubing	Volume
Size		Diameter	Diameter	Round Tip	Blunt Tip	Hydrocoat	7,6m	μl/cm
1	27	0,2mm	0,4mm	n/a	CNC-1P	n/a	BC-1P	0,3
2	23	0,3mm	0,6mm	CNC-2PR	CNC-2P	CNC-2H	BC-2P	0,7
3	20	0,6mm	0,9mm	CNC-3PR	CNC-3P	CNC-3H	BC-3P	2,7
3,5	18	0,6mm	1,1mm	CNC-3,5PR	CNC-3,5P	CNC-3,5H	BC-3,5P	3,2
5	16	1,0mm	1,7mm	CNC-5PR	CNC-5P	CNC-5H	BC-5P	8,1
7	13	1,5mm	2,4mm	CNC-7PR	CNC-7P	CNC-7H	BC-7P	17,0
POLYethylene /PE - Blunt tipped - Sterile Cut Lengths or Bulk Non-Sterile								
Part	+/- Fr	Inner	Outer	Cut Length	Bulk tubing	Volume	The Low Density formulation of our PolyEthylene tubing does not contain plasticizers. It has excellent chemical and gas resistance, is non-radiopaque and non-reactive to tissue.	
No.	Size	Diameter	Diameter	Blunt Tip	7,6m	μl/cm		
10	2	0,2mm	0,6mm	CNC-PE10	BC-PE10	0,6		
20	3,5	0,4mm	1,1mm	CNC-PE20	BC-PE20	1,1		
50	3	0,6mm	1,0mm	CNC-PE50	BC-PE50	2,7		
60	3,5	0,7mm	1,2mm	CNC-PE60	BC-PE60	4,5		
90	3,5	0,8mm	1,3mm	CNC-PE90	BC-PE90	5,8		
100	5	0,8mm	1,5mm	CNC-PE100	BC-PE100	5,8		
160	5	1,1mm	1,6mm	CNC-PE160	BC-PE160	10,2		
190	5	1,2mm	1,7mm	CNC-PE190	BC-PE190	11,1		
TEFLON ®/Ptf E - Blunt tipped - Sterile Cut Lengths or Bulk Non-Sterile								
Part	+/- Fr	Inner	Outer	Cut Length	Bulk tubing	Volume	This medical grade Teflon®/ PTFE tubing absorbs practically no common acids, bases or sol- vents. It is chemically inert.	
No.	Size	Diameter	Diameter	Blunt Tip	7,6m	μl/cm		
T11	2	0,3mm	0,8mm	CNC-T11	BC-T11	0,7		
T21	3	0,6mm	1,1mm	CNC-T21	BC-T21	2,4		
T31	4	0,8mm	1,4mm	CNC-T31	BC-T31	5,2		
T41	5	1,1mm	1,7mm	CNC-T41	BC-T41	8,9		
T51	7	1,3mm	1,9mm	CNC-T51	BC-T51	13,7		

To order bulk catheter tubing specify the material and French size with the prefix BC (Bulk Catheter). To order sterile cut lengths, specify the material, length, tip configuration (round or blunt), and modifications required with the prefix CNC.

Catheter customize your catheter

Selection of Availtable Modifications

To meet your particular needs, custom catheters made with a variety of materials and sizes with a wide selection of modifications are available. Some of the more common modifications requested are shown below. Whether you need a jugular, carotid, or gastric catheter for any species, from rodents - to non human primates, our catheters will be perfect and consistent from order to order. We offer expert advice to help you design the optimal catheter.

Distal Tip Options



Round Tip



Square Tip



Bevel Tip

Catheter Modifications



Retention Sleeve

to secure the catheter & port and act as a strain relief at the junction



Suture Sleeve

secure the catheter within the vessel or organ



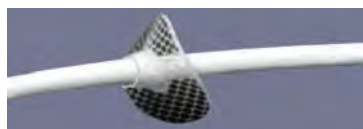
Dacron® Felt Cuff

to promote tissue ingrowth of the catheter



Perfusion Holes

for perfusion of organs



Suture Disk

to anchor the catheter in the intestines or bladder



Suture Flange

to anchor the catheter to the tissue

Catheter Coating

Hydromer anti-thrombogenic coating on polyurethane catheters

Hydromer is a hydrogel material that forms a lubricious coating on our polyurethane catheters. It is biocompatible, anti-thrombogenic & has been shown to significantly reduce platelet aggregation & protein adhesion to the catheter as compared to uncoated catheters. The coating swells instantaneously upon contact with water-containing fluids, becoming very slippery. The best way to think of this is to compare it to a raincoat - the rain just slides off. This is what happens in the blood stream - the platelets slide off the catheter rather than stick to it. Hydromer coated polyurethane catheters

exhibit significant anti-thrombogenic behavior in a vascular environment.

Stainless Steel - Plugs & Connectors

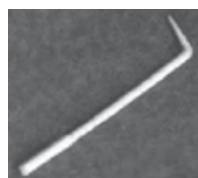


Solid Plug for Occlusion



Hollow Plug for Connection

Catheter Insertion Aids



Peel-Away Introducer



Vein Pick

Blunt Needles/Luer Stub Adaptors



LSA with Injection Cap



LSA no cap

Gastro-Intestinal Catheter Modifications



Burp Valve



Slit Valve



Open End with side holes

Catheter customize your catheter

Considerations

Custom catheter **DESIGN** options

We can design you a brand new catheter
call to discuss your needs

We can reproduce your existing design
send us a sample and we'll do the rest

We can modify your existing design
tell us what you need changed and we'll do the rest

Proper catheter **DESIGN** considerations

Proper catheter design must be based on
the study design as well as the catheter placement location

Catheters for chronic implantation should
have an atraumatic rounded tip
be of an appropriate material
preferably silicone or polyurethane
be of an appropriate French size
to suit the vessel diameter
have vessel retention beads
to secure the catheter in the vessel
have skin/subcutaneous retention beads
to secure the catheter to the skin surface

choosing the **DESIGN** considerations

Catheter Material

ideal material is soft & pliable, biocompatible, chemically resistant, with high tensile strength

Catheter Diameter

use smallest French size catheter possible that will achieve the required flow to minimize flow disruptions

Catheter Tip Geometry

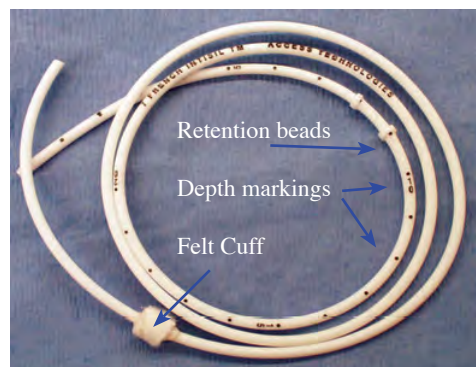
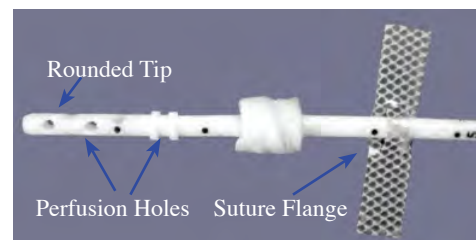
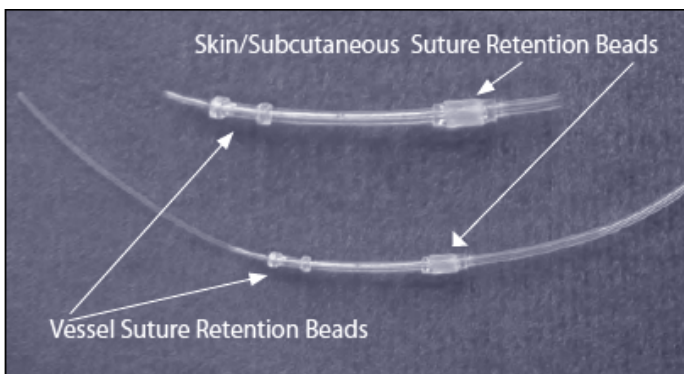
a rounded tip catheter has been shown to minimize damage to the vessel endothelium - we offer silicone and polyurethane catheters with rounded tips.

Catheter Coating

our lubricious Hydromer catheter coating, reduces the catheter surface coefficient of friction minimizing platelet aggregation and protein adhesion

Catheter Customization

for a listing of modifications see elsewhere



Consistent catheter manufacture

catheters should be consistent from animal to animal to reduce the number of study variables.

To learn more about our species and access site specific catheters or to design a new catheter give us a call.

Catheters our standard collection

Speciality and Standard Catheters

CNC Series Catheters with or without connections

These sterile 60cm catheters are available in 1-9 French silicone and polyurethane with round, bevel or blunt tips. Polyurethane catheters are available with the Hydromer coating. Moveable suture retention beads are standard on all except the Hydromer coated polyurethane. Retention beads must be permanently fixed on Hydromer coated catheters. Connectors and modifications are available on request. See elsewhere for modifications.

Ordering Information

CNC Series Silicone & Polyurethane Catheters			
Silicone	Intisil*	Polyurethane	Hydrocoat**
CNC-1S	n/a	CNC-1P	n/a
CNC-2S	CNC-2IS	CNC-2P	CNC-2H
CNC-3S	CNC-3IS	CNC-3P	CNC-3H
CNC-4S	CNC-4IS	CNC-3,5P	CNC-3,5H
CNC-5S	CNC-5IS	CNC-5P	CNC-5H
CNC-7S	CNC-7IS	CNC-7P	CNC-7H
CNC-9S	CNC-9IS		
* Intisil is a rounded tip silicone catheter			
** Hydrocoat is a rounded tip Hydromer coated polyurethane catheter			

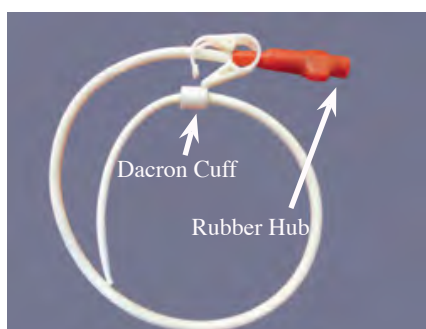
Sil-O-Cath A molded Silicone Catheter

The Sil-O-Cath's™ unique one-piece molded catheter and rubber hub creates a streamline fluid path when compared to tortuous fluid paths in catheters with conventional snap-on luer hubs. The Sil-O-Cath is available in single or dual lumen configurations.

Ordering Information

Sil-O-Cath Molded Catheter	
SOC-7S	7 Fr. single lumen silicone catheter with rubber hub
SOC-9S	9 Fr. single lumen silicone catheter with rubber hub
SOCDL-7S	7 Fr. dual lumen silicone catheter with rubber hub
SOCDL-10,5S	10,5 Fr. single lumen silicone catheter with rubber hub

All catalog numbers include a Dacron® cuff at 8cm from the rubber hub/luer as well as a pinch clamp.



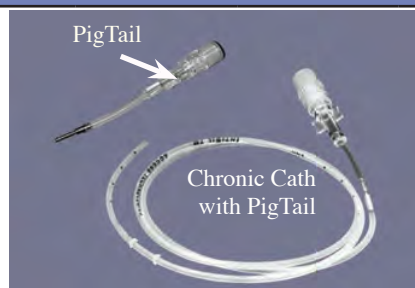
CC Series- Chronic Caths

Catheters with Pigtail connections

These 60cm silicone catheters are available in both pre-attached and attachable configurations. The Pre-attached Chronic-Cath features a female luer lock and injection cap that are attached during manufacture while, the Attachable Chronic-Cath includes a PigTail connector (female luer and injection cap attached to a 2,5cm Tygon extension) for insertion into the catheter for infusion.

Ordering Information

Chronic-Caths- Preattached or Attachable*			
Silicone	Intisil*	Polyurethane	Hydrocoat**
CC-1S	n/a	CC-1P	n/a
CC-2S	CC-2IS	CC-2P	CC-2H
CC-3S	CC-3IS	CC-3P	CC-3H
CC-4S	CC-4IS	CC-3,5P	CC-3,5H
CC-5S	CC-5IS	CC-5P	CC-5H
CC-7S	CC-7IS	CC-7P	CC-7H
CC-9S	CC-9IS		
* Add AC to the catalogue number to denote Attachable Chronic-Cath. The attachable Chronic-Cath is available for catheters 3,65- 9fr			

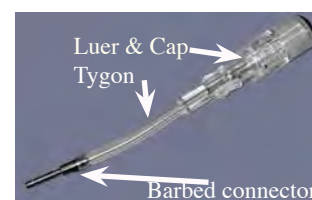


PC Series- Pigtail connections

The PigTail connector features a titanium barbed connector pin attached to 2,5cm of Tygon tubing, a female luer lock, and an injection cap. The PigTail is inserted into the catheter when an infusion is necessary.

Ordering Information

PC Series - PigTail Connectors	
PC-3	use with 3 Fr. catheter
PC-3,5	use with 3,5 Fr. catheter
PC-5	use with 5 Fr. catheter
PC-7	use with 7 Fr. catheter
PC-9	use with 9 Fr. catheter



CATHETER TUBING *our rodent selection*

Species Specific Catheters

The catheter size used for dosing and sampling in rodents depends on the access site and vessel size of the rodent. Our species specific catheters have been customized for a specific access target and tailored to animal size. They are constructed of medical grade silicone and polyurethane and are modified by length and bead location to ensure optimal catheter tip placement. The catheters shown below represent only a sampling of what is available and can all be modified to suit individual needs.

Rodent Catheter *features and benefits*

Vessel retention beads
to secure the catheter in the vessel
Subcutaneous retention beads
to secure the catheter to the skin or subcutaneous tissue
Dacron disks/suture flange
to anchor the catheter in position
Perfusion/drainage holes
fenestrations for improved perfusion/drainage
Atraumatic rounded catheter tips
to reduce intimal trauma and prolong patency
Medical grade catheter tubing
silicone, polyurethane or polyethylene
We can reproduce or modify your existing design
send us a sample or sketch and we'll do the rest

Rodent Catheter *optional extras*

Hydromer/lubricious coating on polyurethane catheters
to reduce platelets & protein adhesion on catheter surface
Blunt needles /Luer Stub adaptors
will be included in each pouch when requested
Solid Stainless steel catheter occlusion plugs
will be included in each pouch when requested
Hollow Stainless steel catheter connectors
will be included in each pouch when requested
Teflon Coated Stylette
for easy catheter introduction and advancement
Peel-Away catheter introducers
for percutaneous catheter insertion
Catheter vein picks
for a cut-down catheter insertion procedure

A Sampling of our Rodent Catheters			
Location	Cat. No.	Material	Description
MOUSE CATHETERS			
Venous	MUC-2/3P	Polyurethane	2.3cm tip with 11cm ext and 3 retention beads
Venous	MUC-1/3P	Polyurethane	1.5cm tip with 12.7cm ext and 3 retention beads
Arterial	MUC-2/3S	Silicone	2.3cm tip with 11cm ext and 3 retention beads
RAT CATHETERS			
Jugular Vein	RJC-3PR	Polyurethane	10cm Polyurethane catheter with round tip and 4 beads - dwg AT-JVC-3-0949A
Jugular Vein	RJC-3,5PR	Polyurethane	10cm Polyurethane catheter with round tip and 4 beads - dwg AT-JVC-3.5-0949A
Femoral Vein	RVC-3PR	Polyurethane	20cm Polyurethane catheter with round tip and 5 beads - dwg AT-FVC-3-0949A
Femoral Vein	RVC-3,5PR	Polyurethane	20cm Polyurethane catheter with round tip and 5 beads - dwg AT-FVC-3.5-0949A
Carotid Artery	RJC-3,5PR	Polyurethane	10cm Polyurethane catheter with 2cm extension, round tip & 5 beads -dwg AT-CAC-0949A
Femoral Artery	RJC-3,5PR	Polyurethane	20cm Polyurethane catheter with 3cm extension, round tip & 5 beads - dwg AT-FAC-0949A
Portal Vein	RPVC-2/3,5	Polyurethane	30cm Polyurethane catheter with 2.5cm intravascular tip and 5 beads - dwg AT-PVC-0949A
Bile Duct	RBDC	Polyurethane	50cm Polyurethane catheter with intravascular PE tip and 7 beads - dwg AT-BDC-0949A
Gastric	RGS-3P	Polyurethane	25cm Polyurethane catheter with closed tip, slit valve and 5 beads - dwg AT-RGS-0949A
Gastric	RGC-3,5P	Polyurethane	30cm Polyurethane catheter with fenestrations, cuff and 4 beads - dwg AT-RGC-0949A





All of our catheters can be modified by length, bead number and bead placement to ensure optimal catheter tip placement.

Custom Catheter designs are our speciality - call to discuss your needs.

Catheter Our specialty collection

Special Gastro-Intestinal Catheters

As part of our speciality catheter range, we offer three varieties of gastro-intestinal catheters, all of which can be modified to suit your application.

	Closed End Slit Valve	“Burp” Valve	Side Holes/Open End
Material	Silicone/Dacron® Mesh	Silicone/Dacron® Mesh	Silicone/Dacron® Mesh
Cath. length	60cm	60cm	60cm
Cath. Size	5, 7 or 9 french	5,7 or 9 french	5, 7 or 9 french
Position of Disc	5cm from tip	2cm from tip on 5 french 5cm from tip on 7/9 french	5cm from tip
Dacron® disc size	7mm on 5 french 15mm on 7/9 french	7mm on 5 french 15mm on 7/9 french	7mm on 5 french 15mm on 7/9 french
Cat. No	5 french - 5IGSS 7 french - 7IGSS 9 french - 9IGSS	5 french - 5IGBS 7 french - 7IGBS 9 french - 9IGBS	5 french - 5IGOS 7 french - 7IGOS 9 french - 9IGOS
			
	Slit valve allows for infusion but not aspiration. Reduces occlusions - slits remain closed until positive infusion pressure applied. Closed end prevents ingestion of intestinal contents.	Unique one way valve prevents occlusion of tip. Valve remains in the closed position until positive infusion pressure is applied on either the vascular access port or external luer connection.	Increased area is able to be perfused at one time due to numerous per fusion holes. This design is also available with a closed end.

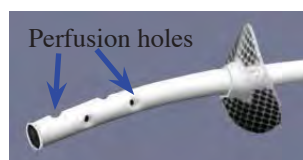
Ordering Information

To request an intestinal catheter for a vascular access port, use the above catalog numbers for the gastro-intestinal catheter in place of the catheter size and the port model you prefer.

Examples: The catalog number CP4AC-7IGSS indicates a medium titanium ClearPort with a 7 French silicone closed end slit valve catheter. The catalog number 9IGBS indicates a 9 French silicone Burp Valve catheter without a port.

the GASTRO-INTESTINAL catheter

The Burp Valve remains closed until positive pressure is exerted on the catheter. This prevents the aspiration of intestinal contents into the catheter lumen.



The Open End Intra-Gastric catheter with side perfusion holes minimizes the complication of catheter occlusion by offering a larger surface area for perfusion

Customized gastric and intestinal catheters are available.
Call to discuss your needs.

CATHETER TUBING *Specialty collection*

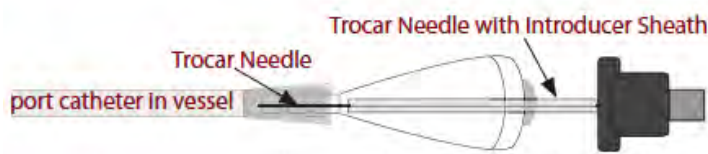
IN-Line Infusion & Locking Loop Catheters

The Infusion Catheter for use with the In-Line Port

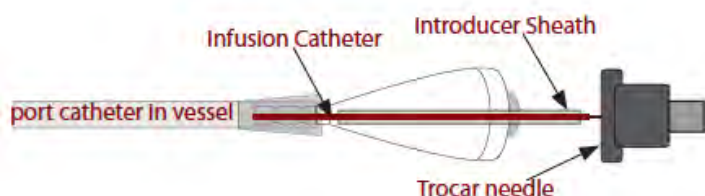
The Infusion Catheter is a flexible 18 gauge nylon catheter that can be passed straight through the septum, port chamber and catheter of the In-Line port to reside within the vessel. A luer can be connected to the proximal end of the infusion catheter for dosing or sampling. This configuration may increase longterm patency as the infusion catheter can be replaced as necessary during a procedure no more complicated than inserting a Trocar needle and new infusion catheter through the septum of the In-Line port.

How the Infusion Catheter works

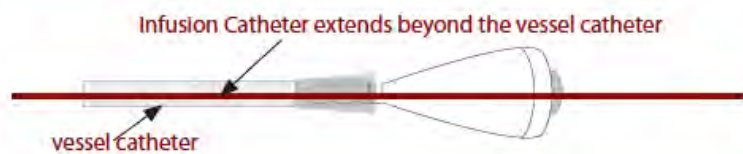
- avoids repeated surgeries to replace an occluded catheter
- improves longevity of patency
- eliminates the problem of “needle walk-out”



Insert the Trocar Needle Introducer (supplied with the infusion catheter) into the port septum making sure it is in far enough so that it lies in the outlet connector pin.



Remove only the needle and slide the infusion catheter through the introducer sheath that remains in position in the septum.

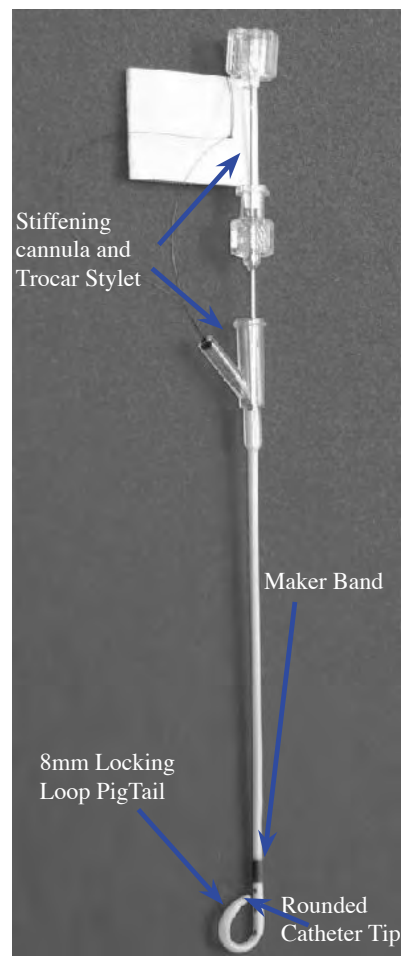


Slide the infusion catheter through the sheath and vessel catheter and into the vessel. The infusion catheter must be a longer length than the vessel catheter. Remove the sheath.



For needleless access of the port, insert a Luer Stub Adaptor into the infusion catheter and infuse or withdraw.

The Looking Loop a PigTail Drainage Catheter



The Locking Loop drainage catheter

6.5 Fr radiopaque, polyurethane Locking Loop catheter

offers high tensile elasticity and strength for secure and long-term usage

Small 8mm diameter locking pigtail allows for easy placement even in very small spaces, such as the renal pelvis of small cats, to minimize catheter tip migration

Gradually tapered catheter tip with multiple fenestrations

provides optimal and atraumatic insertion, placement and effective drainage

Stainless steel stiffening cannula and trocar stylet

affords easy insertion and placement of the catheter

Marker band at the loop heel for verification of tip placement under fluoroscopy

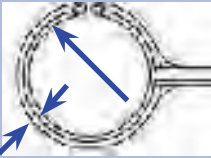


OCCLUDERS

Inflatable Silicone Cuffs

These inflatable silicone cuffs are designed for the occlusion and constriction of blood vessels and soft organs without traction or displacement of the surrounding tissue. They are soft and flexible with a smooth outer finish and offer reliable performance during chronic implantations. They achieve the full range of vascular constriction for accurate circulatory research studies and offer gentle constriction of soft organs for acute or chronic studies.

Occluders can be externalized or attached to any model of vascular access port for a totally subcutaneous system. Instructions for use are available.

Occluders are available in standard lumen sizes ranging from 1.5mm to 24mm. Lumen sizes of 10mm to 24mm are also available in a heavy duty model. Heavy Duty (HD*) occluders are designed for greater resistance to rupture with a thicker cuff and diaphragm to withstand back pressures beyond the physiological norm. They maintain a high degree of sensitivity and produce consistently excellent results.

Catalog No.	Lumen Diameter	Cuff Width	Cuff Thickness	General Information
OC 1,5	1,5mm	3,5mm	1,5mm	<p>The occluder cuff dimensions when deflated are usually the determining factor in the selection of the proper size device.</p> <p>The actuating tube length is 90cm. Longer lengths are available on request. Lengths over 2 meters are not recommended.</p> <p>Actuating tubing diameters:</p> <p>OC 1.5-10 including HD* series: ID 0.8mm x OD 1.6mm</p> <p>OC 12-24 including HD* series: ID 1.0mm x OD 2.1mm</p> <div> <p>Lumen Diameter</p>  <p>Cuff Width</p>  <p>Cuff Thickness</p>  </div>
OC 2	2mm	5mm	1,5mm	
OC3	3mm	5mm	1,5mm	
OC5	5mm	5mm	2mm	
OC8	5mm	7mm	2mm	
OC12	12mm	8mm	2,5mm	
OC14	14mm	8mm	2,5mm	
OC16	16mm	12mm	2,5mm	
OC20	20mm	12mm	2,5mm	
OC24	24mm	12mm	2,5mm	
OC10HD	10mm	9mm	3mm	
OC12HD	12mm	9mm	3mm	
OC14HD	14mm	9mm	3mm	
OC16HD	16mm	13mm	4mm	

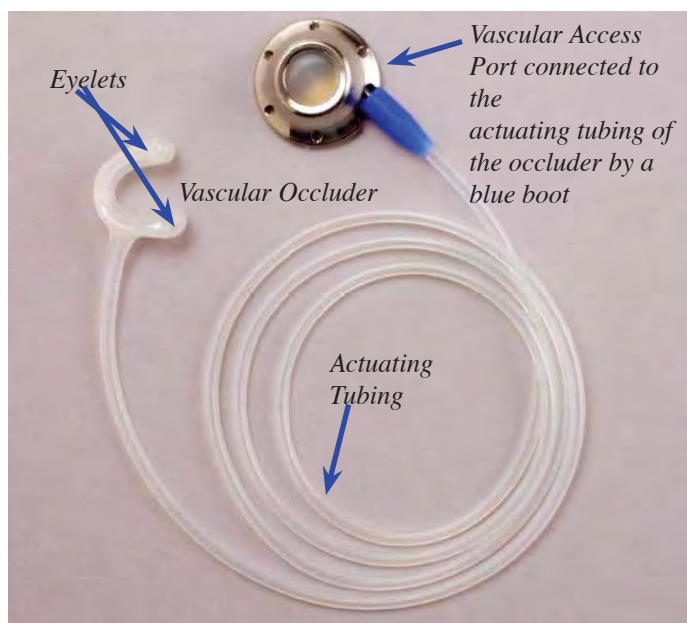
Occluder Operation

call for the occluder operation manual

Apply the Occluder cuff around the exposed blood vessel and secure in place with a suture material through the eyelets. Occlude the vessel by inflating the diaphragm with air or liquid injected into the actuating tube using a syringe and blunt needle. Clamp the tubing to maintain occlusion of the vessel over time. To deflate, simply withdraw the air or liquid.

Ordering Information

To order an occluder with a vascular access port, specify the port model and occluder lumen size you require. If you require only the occluder, just specify the lumen diameter. Examples: The catalog number CP4-OC12 indicates a medium titanium ClearPort with an occluder whose lumen size is 12mm. If you require a heavy duty occluder model, use the suffix HD after the lumen size - CP4-OC12HD



***TCS** providing patency and infection control*

Anti-Microbial Lock Solution

Like no other product available today, TCS, a catheter lock solution, combines two active ingredients vital to the effective management of vascular access catheters; Taurolidine and Citrate. When TCS is instilled in device lumens, their internal flow passages are resistant to clot formation and hostile to bacterial and fungal growth.

TCS is non-toxic and there are no known systemic effects.

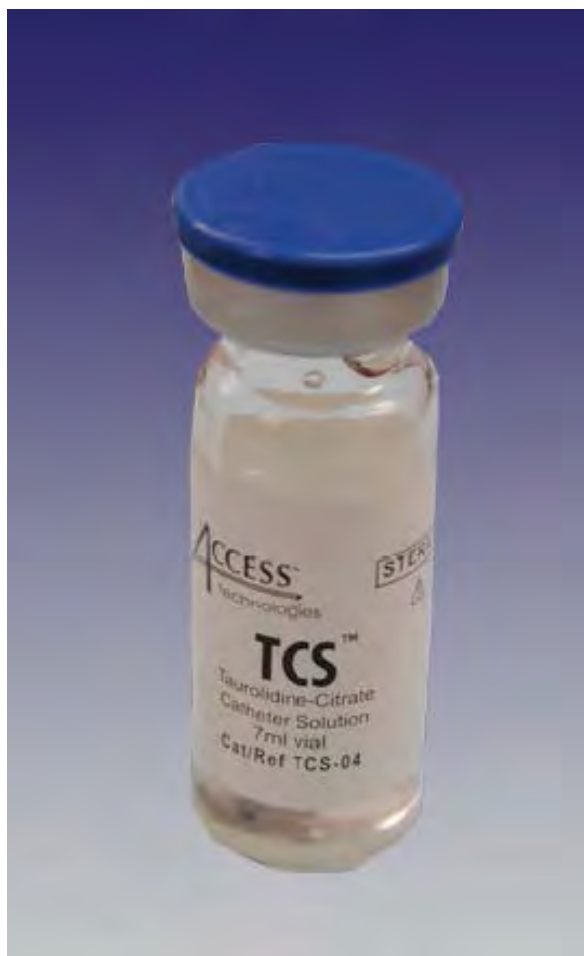
Taurolidine, an anti-microbial agent, promotes catheter patency by preventing Biofilm formation while Citrate, acts as the anticoagulant.

the TAUROLIDINE component

*offers broad spectrum antimicrobial activity against aerobic & anaerobic gram-positive & gram-negative bacteria, yeast & fungi
interacts with the components of microbial cell walls, resulting in irreparable injury
prevents biofilm development and consequently bacterial and fungal colonization, decreasing the risk of infection
does not induce the development of resistant microbes*

the CITATE component

*forms a complex with calcium, disrupting the normal coagulation cascade, precipitating it into an unusable form
inhibiting blood coagulation with no systemic effect*



Taurolidine-Citrate

the efficient solution for locking catheters

TCS is effective in the prevention of catheter associated infections and occlusions in all laboratory species from rodents to non-human primates.

TCS has a favorable safety profile. It is non-toxic and has no known topical or systemic effect.

No development of resistance to TCS has been reported.

Ordering Information


TCS is packaged in boxes of 10 vials. Each vial contains 7mls of Taurolidine Citrate in solution.

SPECIALTY Products

Items You May Not Know We Offer


Brain Screw for CSF Access

Available with or without a threaded ventricular guide stem, the Brain Screw provides repeated access to the lateral ventricle for Cerebro-Spinal Fluid sampling.

Height	1 cm	
Diameter top	0,5 cm	
Diameter base	0,4cm	
Weight	0,5gm	
Cannula Length	3,5 mm	
Material	316L Stainless Steel	

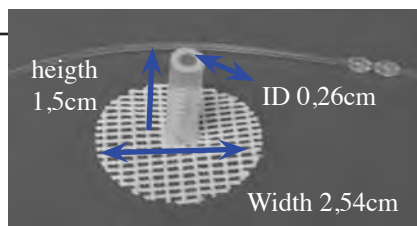
BonePort for Marrow Access

This unique stainless steel port with a silicone septum, provides an efficient alternative route for the delivery of test substances to the intraosseous tissue and repeated bone marrow sampling. It is quick to implant and easy to find and access. A BonePort kit with a battery operated drill, appropriate drill bit, thread forming tap, and nut hub is an option.

Height	1,5 cm	
Diameter Top	9,6 cm	
Diameter Base	1,3 cm	
Weight	2 gm	
Volume	0,07cc	
Cannula length	2,5 mm	
Material	316L Stainless Steel	

Dacron SkinButton a catheter exit Site Option

The Dacron® Mesh SkinButton can be used as an alternative to harness or jacket for rodents with externalized catheters. These disposable buttons are perfect for longer term studies as the subcutaneous tissue will grow into the mesh ensuring stability. The catheter passes through the stalk and can be attached to a tether.



Collection Bulb

These 100cc resilient silicone reservoirs provide constant, effective, gentle, positive suction drainage and permit accurate measurement and analysis of the drainage fluid. Reverse flow is prohibited by the anti-reflux valve. Available in single units in a sterile Tyvek pouch.



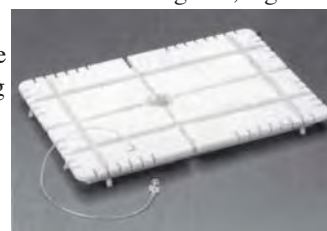
Rodent Table for Rodent Surgery

The non-porous, stain resistant, autoclavable, and durable Corian working surface of the rodent surgical table measures 20,3 x 29,2cm, is 1,3cm thick and weighs 1,5kgs.

Grooves radiate from a central well for the drainage or placement of the flushing line during surgery.

A right angle Huber point flushing line enables flushing of the catheter and

monitoring of catheter patency during surgery. Four adjustable surgical rubber restraining straps and numerous hold-down slots along the perimeter of the table allow for the accommodation of various size rodents.



“No Metal port” PEEK Catheter Connectors

For MRI or other applications where metal is contraindicated, PEEK connectors provide an alternative to the stainless steel connectors on vascular access ports.

A PEEK catheter connector pin on any of our polysulfone ports; ClearPort-P, Phantom, GPV, SLA or ROP, provides a MR safe port.

PEEK, is a light weight, biocompatible thermoplastic used in medical implants.



CONVERSION Charts
a Handy Reference Sheet

FRENCH SIZE EQUIVALENTS		
French Size	O.D. MM	O.D. Inches
1	0,33	0,013
2	0,67	0,026
3	1,00	0,039
4	1,35	0,053
5	1,67	0,066
6	2,00	0,079
7	2,30	0,092
8	2,70	0,105
9	3,00	0,118
10	3,30	0,131
11	3,70	0,144
12	4,00	0,158
measurements refer to outer diameters		

NEEDLE GAUGE CHART				
Needle Gauge	O.D. MM	I.D. MM	O.D. inches	I.D. Inches
14	2.108	1,372	0,083	0,054
16	1.651	1,194	0,065	0,047
18	1,270	0,838	0,05	0,033
19	1,067	0,686	0,042	0,027
20	0,902	0,584	0,035	0,023
21	0,813	0,495	0,032	0,019
22	0,711	0,394	0,028	0,015
23	0,635	0,318	0,025	0,013
24	0,559	0,292	0,022	0,011
25	0,457	0,241	0,018	0,009
27	0,406	0,191	0,016	0,007
28	0,356	0,165	0,014	0,006
30	0,305	0,140	0,012	0,005
32	0,229	0,089	0,009	0,003

Ports previously Solomon Scientific

Soloport



Ports are totally 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 refinements which have reduced animal use and minimized stress.

The SoloPort™ represents thirty years of experience in port design, service, innovation, and hands-on use in research. The port has evolved from being an intravascular access port into a multi-purpose access port for use in gastric, intestinal, bile, csf, peritoneal, and other applications. Choose the SoloPort™ model based on your animal species and application.

Porthold Port



PortHold™ reduces 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 needles 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. The PortHolds are available in two sizes: MID (for rabbits, dogs, and larger NHPs) and MIN (for small NHPs). Compatible with catheters from 3-7Fr. Use only pencil-point needle sets to access these ports.



CSF LoVol Port



The LoVol™ ports comprise ultra-low dead volumes to facilitate enhanced CSF (cerebrospinal fluid) access. These LoVol™ products are based on the MID and MIN port designs but reduce fluid dead volume under the septum by about 90%. The LoVol™ MIN has a dead volume of approximately 15uL while the LoVol™ MID is approximately 40uL.



Also consider LoVol™ ports for any application requiring minimal dead volume, i.e., unusually expensive test article studies.



LoVol™ Reservoir

For CSF Sampling in large animals, use the MIN-CSF-SAM, a specialized port device which provides a subcutaneous guide cannula which is accessed via the port septum using a standard spinal needle.

CSF Sampling Port

For CSF Sampling in large animals, use the MIN-CSF-SAM, a specialized port device which provides a subcutaneous guide cannula which is accessed via the port septum using a standard spinal needle.



The schematic above shows the device's cranial placement which is accomplished with stereotactic technique in order to orient the guide cannula to the proper CSF space.



TuBo Epidural Intrathecal Port



The TuBo™ Port allows researchers to utilize standard (human-use) 19g epidural / intrathecal catheters with ports.

Mouseport



The SoloPort™ MICRO is the smallest conventional style port... small enough for subcutaneous implantation in mice.

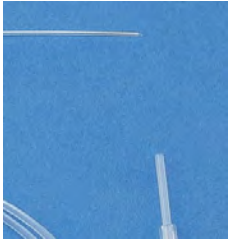
SPECIFICATIONS	LOVOL		PORTHOLD	
	MINLO	MIDLO	HMIN	HMID
Body Material	Titanium	Titanium	Titanium	Stainless Steel
Height	7,0mm	10,0mm	7,0mm	10,0mm
Weight	3gr	6,9gr	3gr	6,9gr
Dead Volume*	15 μ l	40 μ l	0,13ml	0,38ml
Catheter Sizes	3-5fr	3-5fr	3-7fr	3-7fr
Sterilization	EtO	EtO	EtO	EtO
Needle type	24g (or22g) Huber	24g (or22g) Huber	Nuber or Pencil Pt	Nuber or Pencil Pt
APPLICATIONS				
CSF or Ultra-low volume	✓	✓		
Mouse				
Rat	✓		✓	
Ferret	✓		✓	
Rabbit	✓	✓		✓
NHP (<4kg)	✓		✓	
NHP (>4kg)	✓	✓	✓	✓
Dog (<14kg)	✓	✓		✓
Dog (>14kg)	✓	✓		✓
Pig	✓	✓		✓
All available with catheters in a range of materials. Specifics on catheters and needles (-sets) can be found on the next pages!				

SPECIFICATIONS	SOLOPORT					
	MICRO	PMIN	MIN	PMID	MID	MAX
Body Material	Titanium	Polysulphone	Titanium	Polysulphone	Titanium	Titanium
Height	4,4mm	7,0mm	7,0mm	10,0mm	10,0mm	11,7mm
Weight	1,4gr	2,6gr	2,9gr	3,1gr	6,7gr	10,4gr
Dead Volume*	0,03ml	0,13ml	0,13ml	0,38ml	0,38ml	0,65ml
Catheter Sizes	1,2fr	2-7fr	3-7fr	3-7fr	3-7fr	3-7fr
Sterilization	EtO	EtO	EtO	EtO	EtO	EtO
Needle type	25g /28g Hypo	24g (or22g) Huber	24g (or22g) Huber	24g (or22g) Huber	24g (or22g) Huber	24g (or22g) Huber
APPLICATIONS						
CSF or Ultra-low volume						
Mouse	✓					
Rat		✓				
Ferret		✓	✓			
Rabbit				✓	✓	
NHP (<4kg)			✓			
NHP (>4kg)			✓	✓	✓	
Dog (<14kg)				✓	✓	
Dog (>14kg)				✓	✓	✓
Pig				✓	✓	✓
All available with catheters in a range of materials. Specifics on catheters and needles (-sets) can be found on the next pages!						

* Dead volumes are approximate; please, test in your facility before use.

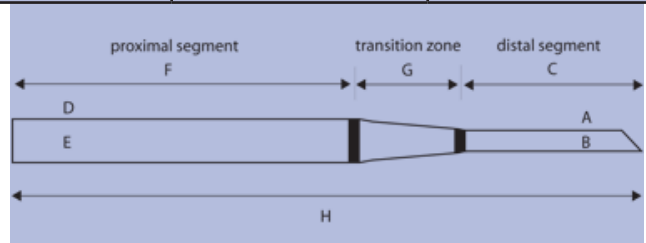
Catheters & Needles *previously Solomon Scientific*

Funnel-Cath



FunnelCath™ for mice is another innovation from Solomon Scientific. The challenge was to have a very small catheter for intravascular placement in mice (and rats) while providing a way to connect the catheter to an infusion pump. The solution is FunnelCath™, a single PU tube which tapers from the proximal end (connecting to 22g or 25g connector) to a very small (1.2F or 2F) intravascular distal end.

SPECIFICATIONS	PUFC-C30-10	PUFC-C20-10	PUFC-C30-20
Material	Polyurethane		
Proximal Ends Connects to	22ga	25ga	22ga
Distal Outer Diameter (A)	1,2F / 0,41mm	1,2F / 0,41mm	2F / 0,51mm
Distal Inner Diameter (B)	0,23mm	0,23mm	0,33mm
Distal Segment Length (C)	6cm	6cm	
Proximal Outer Diameter (D)	1,07mm	0,89mm	
Proximal Inner Diameter (E)	0,66mm	0,46mm	
Proximal Segment Length (F)	50cm	50cm	
Transition Zone length (G)	4cm	4cm	
Overall Length (H)	60cm	60cm	60cm
Stiffness	Typical	Typical	Soft



Silicone SIL-Cath



For most of the late 1990s, Silicone (SI) was the preferred material for long-term intravascular use. Currently Polyurethane (PU) is thought to be the most hemocompatible commercial polymer. However, Silicone remains well regarded as a hemocompatible long-term catheter and the material of choice for intestinal and other non-blood applications. Choose from sizes ranging from 2 French - 7 French...for mice to large animals.

Ordering Code	
SIL-C20	Silicone Catheter; 2F x 60cm, .012"/0.3mm ID x .025"/0.64mm OD; no luer, clear, round tip, STERILE
SIL-C30	Silicone Catheter; 3F x 60cm, .020"/0.51mm ID x .037"/0.94mm OD; no luer, clear, round tip, STERILE
SIL-C35	Silicone Catheter; 3.5F x 60cm, .025"/0.64mm ID x .047"/1.19mm OD; female luer, clear, round tip, STERILE
SIL-C50	Silicone Catheter; 5F x 60cm, .030"/0.76mm ID x .065"/1.65mm OD; female luer, clear, round tip, STERILE
SIL-C70	Silicone Catheter; 7F x 60cm, .040"/1.0mm ID x .085"/2.2mm OD; female luer, clear, round tip, STERILE

Intestinal Catheters



Ordering Code	
SIL-INT-C30	Silicone GI Catheter; 3F x 60cm; clear; suture disc; choose slit or burp valve; infusion only
SIL-INT-C35	Silicone GI Catheter; 3.5F x 60cm; clear; suture disc; choose slit or burp valve; infusion only
SIL-INT-C50	Silicone GI Catheter; 5F x 60cm; clear; suture disc; choose slit or burp valve; infusion only
SIL-INT-C70	Silicone GI Catheter; 7F x 60cm; clear; suture disc; choose slit or burp valve; infusion only

Silicone SIL-Cath



Over the years, Polyurethane (PU) has emerged as the preferred material for long-term intravascular use. Polyurethane is thought to be among the most hemocompatible commercial polymers. Choose from sizes ranging from 1.6 French - 7 French...for mice to large animals. Consider also...a PU lab animal catheter with a permanently molded luer.

Another innovation is the WhiteTip™ catheter, the first of its kind for animal use. The distal tip is rounded, fabricated from a soft PU material, and radiopaque.

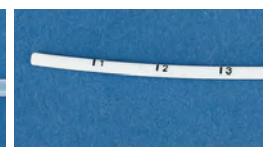


Ordering Code	
PU-C20	Uncoated PU catheter; 2F x 60cm; no luer; round tip; clear; STERILE
PU-C30	Uncoated PU catheter; 2F x 60cm; no luer; round tip; clear; STERILE
PU-C30SOFTW	Uncoated PU catheter; 3F x 60cm; no luer; soft, white round tip; clear; STERILE
PU-C35	Uncoated PU catheter; 3.5F x 60cm; no luer; round tip; clear; STERILE
PU-C50	Uncoated PU catheter; 5F x 60cm; no luer; round tip; clear; STERILE
PU-C70	Uncoated PU catheter; 7F x 60cm; no luer; round tip; clear; STERILE

Catheter Customization

We have an array of in-house equipment and expertise to effect a vast array of catheter customization. See the images on this page for examples of custom catheter capabilities:

- Dumbbells (molded not thermoformed)
- Rounded tips
- Intestinal catheter valves
- Dacron® cuffs
- Perfusion holes / fenestrations
- Luer options
- Custom catheter printing
- Depth markings
- Suture flanges
- Suture beads
- Suture flags (molded)



Silicone SIL-Cath



These high-quality B-bevel Huber needles (low bevel height for lab animal applications) are used for routine flushing, bolus injections, and other short-term access.

Huber needles and other non-coring needles can be nuanced in the research field, particularly as many ports are smaller than human use ports and do not have the large height under the septum that human-use ports have. As such, the height of the distal needle opening should be as short as possible to provide proper clearance of the needle tip under the smaller animal-use ports. Solomon Scientific Huber needles are made with customized (and more costly) B-bevel tips which are shorter than the human-use industry standard (cheaper) A-bevels. Solomon has developed other customized non-coring needle solutions as well.

Ordering Code	
HN22-750	Straight Huber Needle; 22g x 3/4" sold per dozen
HN22-100	Straight Huber Needle; 22g x 1" sold per dozen
HN24-750	Straight Huber Needle; 24g x 3/4" sold per dozen
PHN-24750	Straight Pencil-point Needle; 24g x 3/4" sold per dozen

Catheters & Needles

previously Solomon Scientific

Silicone SIL-Cath



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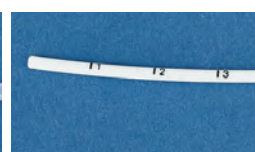
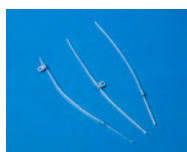


Ordering Code	
PU-C20	Uncoated PU catheter; 2F x 60cm; no luer; round tip; clear; STERILE
PU-C30	Uncoated PU catheter; 2F x 60cm; no luer; round tip; clear; STERILE
PU-C30SOFTW	Uncoated PU catheter; 3F x 60cm; no luer; soft, white round tip; clear; STERILE
PU-C35	Uncoated PU catheter; 3.5F x 60cm; no luer; round tip; clear; STERILE
PU-C50	Uncoated PU catheter; 5F x 60cm; no luer; round tip; clear; STERILE
PU-C70	Uncoated PU catheter; 7F x 60cm; no luer; round tip; clear; STERILE

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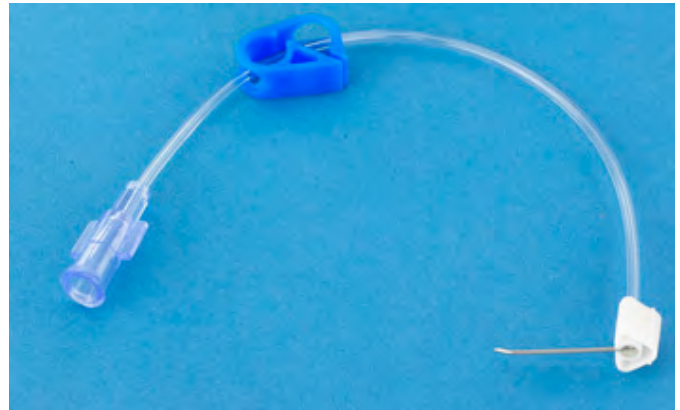
Ordering Code	
HN22-750	Straight Huber Needle; 22g x 3/4" sold per dozen
HN22-100	Straight Huber Needle; 22g x 1" sold per dozen
HN24-750	Straight Huber Needle; 24g x 3/4" sold per dozen
PHN-24750	Straight Pencil-point Needle; 24g x 3/4" sold per dozen

Softee Huber Needle Sets

The Softee™ needle infusion set is an industry favorite due to its soft construction, low profile, and gripping ease.

These Huber needle sets are for protracted infusions and other access.

They are available in a variety of lengths and configurations typically comprising the needle, pvc extension tubing, female luer, and tubing clamp.



Huber needles and other non-coring needles can be nuanced in the research field, particularly as many ports are smaller than human use ports and do not have the large height under the septum that human-use ports have.

As such, the height of the distal needle opening should be as short as possible to provide proper clearance of the needle tip under the smaller animal-use ports. Solomon Scientific Huber needles are made with customized (and more costly) B-bevel tips which are shorter than the human-use industry standard (cheaper) A-bevels. Solomon has developed other customized non-coring needle solutions as well.



Ordering Code	
HSRA22437-6	SOFTEE™ pencil-point right angle needle set; 22ga x 7/16" x 6" tubing / sold per dozen
HSRA22437-12	SOFTEE™ pencil-point right angle needle set; 22ga x 7/16" x 12" tubing / sold per dozen
HSRA22500-6	SOFTEE™ pencil-point right angle needle set; 22ga x 1/2" x 6" tubing / sold per dozen
HSRA22500-12	SOFTEE™ pencil-point right angle needle set; 22ga x 1/2" x 12" tubing / sold per dozen
HSRA22563-6	SOFTEE™ pencil-point right angle needle set; 22ga x 9/16" x 6" tubing / sold per dozen
HSRA22563-12	SOFTEE™ pencil-point right angle needle set; 22ga x 9/16" x 12" tubing / sold per dozen
HSRA22625-6	SOFTEE™ pencil-point right angle needle set; 22ga x 5/8" x 6" tubing / sold per dozen
HSRA22625-12	SOFTEE™ pencil-point right angle needle set; 22ga x 5/8" x 12" tubing / sold per dozen
HSRA22688-6	SOFTEE™ pencil-point right angle needle set; 22ga x 11/16" x 6" tubing / sold per dozen
HSRA22688-12	SOFTEE™ pencil-point right angle needle set; 22ga x 11/16" x 12" tubing / sold per dozen
SHNRA22500-6	SOFTEE™ right angle needle set; 22ga x 1/2" x 6" tubing / sold per dozen
SHNRA22500-12	SOFTEE™ right angle needle set; 22ga x 1/2" x 12" tubing / sold per dozen
SHNRA22625-6	SOFTEE™ right angle needle set; 22ga x 5/8" x 6" tubing / sold per dozen
SHNRA22625-12	SOFTEE™ right angle needle set; 22ga x 5/8" x 12" tubing / sold per dozen
SHNRA22750-6	SOFTEE™ right angle needle set; 22ga x 3/4" x 6" tubing / sold per dozen
SHNRA22750-12	SOFTEE™ right angle needle set; 22ga x 3/4" x 12" tubing / sold per dozen
SHNRA22100-6	SOFTEE™ right angle needle set; 22ga x 1" x 6" tubing / sold per dozen
SHNRA22100-12	SOFTEE™ right angle needle set; 22ga x 1" x 12" tubing / sold per dozen

BULK Tubing

previously Solomon Scientific

CoEx Tubing (PE i.d., PVC o.d.)



Solomon Scientific was the first supplier to offer co-extruded (CoEx™) tubing to lab animal researchers. The tubing has a chemically inert fluid path of Polyethylene (PE) and an outer wall of PVC thereby making it easy to bond to luers and other components and reduce kinking common with PE.



Ordering Code	
BCOEX-T25	CoEx™ PE/PVC tubing; for 25ga swivels; .017" ID x .051 OD; non-sterile / sold per 30,5m
BCOEX-T22	CoEx™ PE/PVC tubing; for 22ga swivels; .024" ID x .064 OD; non-sterile / sold per 30,5m
BCOEX-T22BLK	Black CoEx™ PE/PVC tubing; for 22ga swivels; .024" ID x .064 OD; non-sterile / sold per 30,5m

Polyethylene (PE) Tubing



The tubing on this page is manufactured for use specifically in preclinical infusion studies and laboratory animal use. The PE is for implantation or for extracorporeal use. Note that for long-term intravascular use, PU and SIL are widely considered to be superior to PE. PE tubing remains a mainstay in the life sciences--in vitro and in vivo.

Ordering Code	
BPE-T10	Polyethylene tubing; .011" ID x .024" OD; non-sterile / sold per 30,5m
BPE-T20	Polyethylene tubing; .015" ID x .043" OD; non-sterile
BPE-T25	Polyethylene tubing; for 25ga swivels; .018" ID x .036" OD; non-sterile / sold per 30,5m
BPE-T50	Polyethylene tubing; for 22ga swivels; .023" ID x .038" OD; non-sterile / sold per 30,5m
BPE-T60	Polyethylene tubing; for 20ga swivels; .030" ID x .048" OD; non-sterile / sold per 30,5m
BPE-T90	Polyethylene tubing; .034" ID x .050" OD; non-sterile / sold per 30,5m

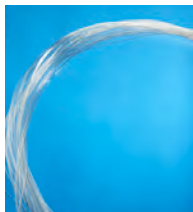
Polyurethane (PU) Tubing



The tubing on this page is manufactured for use specifically in preclinical infusion studies and laboratory animal use. The Polyurethane (PU) from Solomon Scientific is intended for intravascular use in research animals. It is manufactured by the same companies which produce human-use long-term catheters and uses the same raw materials.

Ordering Code	
BPU-T20	Polyurethane medical grade tubing; 2Fr; .013" ID x .025" OD; non-sterile / sold per 9pcs ea 3,7m rolls total 33,3m
BPU-T30	Polyurethane medical grade tubing; 3Fr; .023" ID x .036" OD; non-sterile / sold per 9pcs ea 3,7m rolls total 33,3m
BPU-T30A	Polyurethane medical grade tubing; 3Fr; .025" ID x .040" OD; non-sterile / sold per 10pcs ea 3m rolls total 30m
BPU-T35	Polyurethane medical grade tubing; 3.5Fr; .027" ID x .047" OD; non-sterile / sold per 9pcs ea 3,7m rolls total 33,3m
BPU-T50	Polyurethane medical grade tubing; 5Fr; .040" ID x .065" OD; non-sterile / 60cm lengths /30m total
BPU-T70	Polyurethane medical grade tubing; 7Fr; .052" ID x .096" OD; non-sterile / 60cm lengths /30m total

PVC Tubing



While PVC (polyvinyl chloride) tubing historically was used for intravascular applications, it is now almost completely replaced by silicone and polyurethane for such usage. However, for acute use in certain settings, it may be satisfactory for intravascular placement. Typically PVC tubing is used for infusion and access applications on the external parts (non-implanted) of a fluid circuit.

Ordering Code	
BPVC-T30	PVC medical grade tubing; .025" ID x .035" OD; non-sterile / sold per 30,5m
BPVC-T35	PVC medical grade tubing; .030" ID x .047" OD; non-sterile / sold per 30,5m
BPVC-T077	PVC medical grade tubing; .027" ID x .077" OD; non-sterile / sold per 30,5m

PVC Tubing



This line of silicone tubing is extruded from Dow Corning Silastic®. This clear, platinum cured tubing has been an industry standard amongst investigators in lab research for years. Sterilize using EtO gas or steam/autoclave.

Ordering Code	
BTSIL-T025	Silicone medical grade tubing; .012" ID x .025" OD; non-sterile / sold per 15,2m
BTSIL-T037	Silicone medical grade tubing; .020" ID x .037" OD; non-sterile / sold per 15,2m
BTSIL-T047	Silicone medical grade tubing; .025" ID x .047" OD; non-sterile / Sold per 15,2m
BTSIL-T065	Silicone medical grade tubing; .030" ID x .065" OD; non-sterile/ Sold per 15,2m
BTSIL-T085	Silicone medical grade tubing; .040" ID x .080" OD; non-sterile / sold per 15,2m

Should you, in the past have bought a Solomon Product that is not in this catalog, please give us a call.



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