Infusion Ports • Catheters • Huber Needles
Extension & Infusion Sets • Accessories

Product Catalog

the solutions to your infusion needs are inside

infusion devices for all laboratory animal species
from rodents to non-human primates

CELEBRATING
EXCELLENCE
SINCE
1981

Established in 1981, Access Technologies is a world-wide provider of infusion devices for preclinical research and veterinary medicine. The company has grown to prominence by providing innovative and creative solutions for the challenges of research, from creating the first widely accepted V-A-P™ in 1981 to designing and manufacturing the smallest access port for mice in 2007.

CELEBRATING EXCELLENCE SINCE 1981

Located in an ISO certified and FDA registered facility, we maintain a global distribution directly and through a network of experienced distributors world-wide. With our 40+ years of experience, we have the expertise and capability to meet customer needs and deadlines.

We are proud of our history and the part we have played of reduction and refinement in animal research through the introduction of the Vascular Access Port to this community.

GENERAL INFORMATION

All patient contacting materials used in the Access Technolgies product range are medical grade. Finished products are shipped sterile (EtO exposed) unless otherwise noted. Many products can be autoclaved, with the exception of polyurethane catheters, PosiGrip needles and extension sets, but Access Technologies can not warrant product fitness and functionality when sterilized outside our facility. Huber point, non-coring needles must be used to access the septum of all vascular access ports. For your convenience, all vascular access ports are supplied with a Huber point needle for use during surgery. Additional Huber point needles and infusion sets in a variety of gauges and lengths are readily available. Products are supported by our sales and technical team who will do their utmost to provide complete and accurate information. Access Technologies specializes in customizing products to suit the needs of researchers. Samples and prototypes are available. Call 1-847-674-7131 or email info@norfolkaccess.com to request a sample.

ACCESS TECHNOLGIES DISCLAIMS ALL WARRANTIES, WHETHER EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND ACCESS TECHNOLOGIES WILL NOT BE LIABLE TO PURCHASER FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF USE OR HANDLING OF THIS PRODUCT.

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SALES POLICIES

Use of Products: All Access Technologies products are sold for laboratory animal research or veterinary medicine only and have not been approved by any governmental agency for use in humans.

Payment Terms: Net 30 days from date of invoice. Unpaid balances are subject to a late payment fee of 1.5% per month. See quotation or invoice for currency, payment information and other related charges.

Shipping and Importation Costs: Shipping charges will be added to the order. FOB origin (Skokie, Illinois). Purchaser is responsible for payment of all import duties, tariffs, taxes, insurance, and other related charges.

Returns: Standard items that have not been used or damaged may be returned within 60 days for a credit or refund. A 20% restocking charge will be deducted from the refund or credit. Special, made to order, or custom items are non-refundable.

Distributors: Products may be ordered directly or through one of our approved distributors.

Price Changes: Prices are subject to change without notice.

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ACCESS PORTS

CATHETERS

NEEDLES & INFUSION SETS

SPECIALTY ITEMS

PORT *and* CATHETER *selection guide*

SPECIES *specific suggestions*

Reduce Refine Replace

The development by Access Technologies of the Vascular Access Port (V-A-P) in the early 1980's provided many new opportunities and represents a technique in accordance with the guiding principles of animal research - the 3R's. The lack of a chronic exit site wound reduces infection risks, eliminates the need for protective devices and promotes group housing and socialization. While originally designed for intermittent bolus infusions and periodic sampling, they are now widely used in protracted and continuous infusions. **The access port has improved animal welfare by minimizing animal stress and reducing animal use.**

Vascular Access Port Selection Matrix with Suggested Catheter Sizes For Use In Major Veins & Arteries in a Variety of Species

SPECIES / MODEL	Mice	Rodents <350gm	Rodents >350gm	Cats	Rabbits	Dogs	Primates <1-2kg	Primates 2-5kg	Primates > 5kg	Swine Sheep	CATHETER SIZE
ClearPort Max						●				●	5 / 7 / 9 Fr.
ClearPort Mid				●	●	●			●	●	4 / 5 / 7 Fr.
ClearPort Min			●				●	●	●		3 / 5 / 7 Fr.
ClearPort Grid						●				●	5 / 7 / 9 Fr.
SoloPort Max						●				●	5 / 7 / 9 Fr.
SoloPort Mid				●	●	●			●	●	4 / 5 / 7 Fr.
SoloPort Min			●				●	●	●		3 / 5 / 7 Fr.
PortHold						●			●	●	5 / 7 / 9 Fr.
Swirl Max						●			●	●	5 / 7 / 9 Fr.
Swirl Mid				●	●	●		●	●	●	4 / 5 / 7 Fr.
Swirl Min			●				●	●			3 / 5 / 7 Fr.
Swirl Grid						●			●	●	5 / 7 / 9 Fr.
Lovol Mid						●			●	●	3 / 4 / 5 Fr.
Lovol Min							●	●	●		3 / 4 Fr.
InLine						●		●			5 / 7 / 9 Fr.
Phantom				●	●	●		●			3 / 5 / 7 Fr.
GPV						●					5 / 7 / 9 Fr.
SLA				●							3 / 5 / 7 Fr.
Rat-O-Port		●	●								3 / 4 / 5 Fr.
MousePort	●	●									1 / 2 / 3 Fr.

The Access Technologies port range represents over 30 years of experience in innovative port design and manufacture. While originally designed for intra-vascular access it has evolved into a multi-purpose access port for use in urinary, intestinal, billiary, intra-spinal, cranial, and ventricular applications. Ports are offered in a number of materials, configurations, shapes and sizes. Each port includes a catheter that can be pre-attached by Access Technologies or for 3 French and larger may be attached intra-operatively by the surgeon. When choosing the most appropriate port for the species and site, you should consider size, profile, biocompatibility, ease of palpation, septum location, dead space volume, and port chamber design. The ideal catheter should be 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.

TIPS *and* SUGGESTIONS *for* *access* PORT *selection*

Ports are implanted catheter devices which do not exit through the skin. They consist of an injection port with a self-sealing silicone septum covering a reservoir called the body. A catheter connects the port and reservoir to the access site. Our range includes choices for all species and access sites in titanium or plastic, a variety of sizes, configurations and profiles.

Ports are accessed though the skin using a non coring, Huber needle. These needles have a deflected point that helps avoid septum injury by slicing through the septum without coring out a tiny piece of it each time the port is accessed. A full range of Huber point needles and infusion sets to access the port are available.

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

Which CATHETER *configuration to choose*

Preattached Catheter

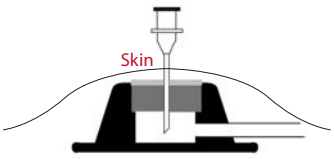
Catheter length must be trimmed from the distal tip. This catheter configuration is recommended for catheters smaller than 3.5 french.

Attachable Catheter (AC)

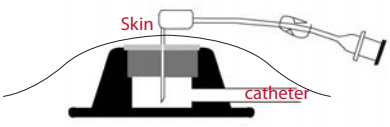
Catheter length can be trimmed from the proximal tip. This catheter configuration is essential if the distal tip is rounded or specialized.

Which ACCESSING *needle to choose*

The port must be aseptically accessed using a Huber point needle or Huber point infusion set. ***Call or email for a copy of our Vascular Access Port Accessing and Maintenance Guide.***



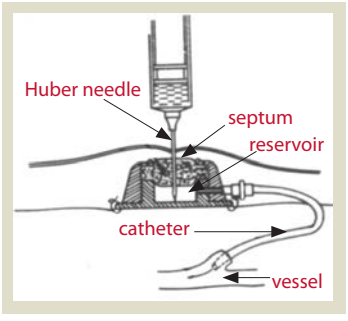
PosiGrip Huber for bolus and sampling



Right Angle Huber for longer-term infusion and sampling

Port fluid flow PATHWAY

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

About the HUBER *a non-coring needle*

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, CVRA and Softee series. Huber needles can be ordered in a variety of gauges and needle lengths. ***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.***

More about the Huber can be found on page 15

SoloPort™ *specifications*

titanium & plastic subcutaneous access ports with preattached or attachable catheters

Ports are implanted catheter devices that do not exit the skin. There is little concern about the animal disturbing the port, eliminating the need for a jacket or other protective apparatus. The lack of a chronic exit site wound reduces infection risks compared to externalized catheters. Ports are offered in a variety of sizes, shapes, materials and configurations and can be used for both bolus and continuous infusion.

Ports are provided with catheters that can be preattached by Access Technologies (ideal for catheters 3 French and smaller) or intraoperatively by the surgeon.

A molded silicone securement boot for catheter security and strain relief is provided with each port. Boots are sized according to the catheter size specified. To minimize complications, the smallest diameter catheter feasible should be used.

Model	MAX	MID	MIN	PMID	PMIN
Size	large	medium	medium	small	small
Material	titanium	titanium	titanium	plastic	plastic
Weight	10.4gm	6.7gm	2.9gm	3.1gm	2.6gm
Volume	0.65ml	0.38ml	0.13ml	0.38ml	0.13ml
Height	0.46″/1.1cm	0.39″/1.0cm	0.5″/1.3cm	0.27″/0.7cm	0.27″/0.7cm
Catheter Configuration:	Ports can be ordered with catheters preattached or attachable (to be attached in surgery)				
Catheter Material:	Silicone, Polyurethane or Hydromer coated in French sizes from 3-7				
Species/Applications	See chart on page 1				

SoloPort ORDERING *information*

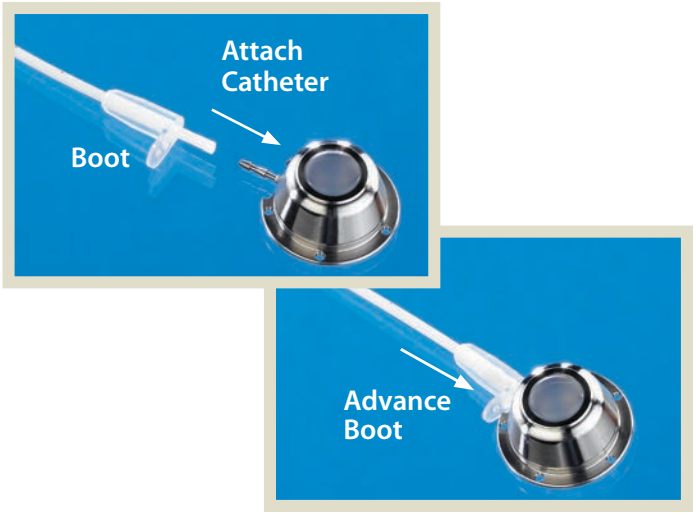
PMIN (attachable)-Cxx
Plastic MIN SoloPort; port only; xx=Fr size of mating catheter
MINA (attachable)-Cxx
Titanium MIN SoloPort; port only; xx=Fr size of mating catheter

PMIN-PU-Cxx
Plastic MIN SoloPort; port with attachable 60cm PU catheter; xx=Fr
MIN-PU-Cxx
Titanium MIN SoloPort; port with attachable 60cm PU catheter; xx=Fr

PMIN-SIL-Cxx
Plastic MIN SoloPort; port with attachable 60cm SIL catheter; xx=Fr
MINA-SIL-Cxx
Titanium MIN SoloPort; port with attachable 60cm SIL catheter; xx=Fr

* for the PMID and MID substitute MID for MIN

* for the MAX substitute MAX for MIN



Attach the catheter to the port by sliding it over the barbed connector pin. Advance the molded silicone boot over the connection.

ClearPort™ *specifications*

titanium & plastic subcutaneous access ports with preattached or attachable catheters

original CHAMBER *design*

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

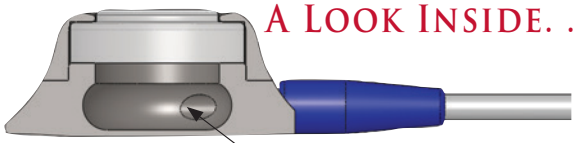
improved CATHETER *outlet placement*

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

ClearPort ADVANTAGE

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

A Look Inside. . .



rounded chamber and off-center catheter outlet position

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

** The Port Clearance Test: Why it is Important to the Clinician.

Model	CP2	P-CP2	CP4	P-CP4	CP6	P-CP6
Size	large	large	medium	medium	small	small
Material	titanium	plastic	titanium	plastic	titanium	plastic
Weight	14gm	5gm	8gm	2gm	3gm	1gm
Volume	0.84ml	0.84ml	0.36ml	0.36ml	0.10ml	0.10ml
Height	0.5"/1.3cm	0.5"/1.3cm	0.4"/1.0cm	0.4"/1.0cm	0.3"/0.8cm	0.3"/0.8cm
Septum Opening	0.47"/1.2cm	0.47"/1.2cm	0.35"/0.9cm	0.35"/0.9cm	0.23"/0.6cm	0.23"/0.6cm
Footprint	1.15"/2.9cm	1.15"/2.9cm	0.90"/2.3cm	0.90"/2.3cm	0.68"/1.7cm	0.68"/1.7cm
Catheter Configuration:	Ports can be ordered with catheters preattached or attachable/AC (to be attached in surgery)					
Catheter Material:	Silicone, Polyurethane or Hydromer coated in French sizes from 3-9					
Species/Applications	See chart on page 1					

ClearPort ORDERING *information*

P-CP6 (attachable)-Cxx
Plastic MIN ClearPort; port only; xx=Fr size of mating catheter
CP6 (attachable)-Cxx
Titanium MIN ClearPort; port only; xx=Fr size of mating catheter

P-CP6-PU-Cxx
Plastic MIN ClearPort; port with attachable 60cm PU catheter; xx=Fr
CP6-PU-Cxx
Titanium MIN ClearPort; port with attachable 60cm PU catheter; xx=Fr

P-CP6-SIL-Cxx
Plastic MIN ClearPort; port with attachable 60cm SIL catheter; xx=Fr
CP6-SIL-Cxx
Titanium MIN ClearPort; port with attachable 60cm SIL catheter; xx=Fr

* for the PCP-4 and CP4 substitute CP4 for CP6

* for the P-CP2 and CP2 substitute CP2 for CP6

GridLock - ClearPort & SwirlPort *specifications*

a solution to the problem of accidental dislodgement

GridLock FEATURES

Dual grid molded septum
promotes needle security for prolonged infusion

Dual grid molded septum
binds the Huber needle between the upper and lower grids

Dual grid molded septum
creates high resistence against accidental needle withdrawal
ensures needle stability

GridLock ADVANTAGES

Grid septum area for improved needle grip
for use during protracted infusion to reduce the risk of inadvertent port needle dislodgement

Use of a regular Huber needle or infusion set
avoids damage to the port septum
requires no special needle for protrated infusion

Available in ClearPort & SwirlPort designs
suitable for a wide range of laboratory animal species including dogs, swine & non-human primates

Model	GRIDLOCK-CLEARPORTS		GRIDLOCK-SWIRLPORTS	
	GRID-CP2	GRID-CP4	G-SW-MAX	G-SW-MID
Size & Material	large titanium	medium titanium	large titanium	medium titanium
Weight	16gm	10gm	9gm	5gm
Volume	0.84ml	0.36ml	0.51ml	0.18ml
Height	0.5″/1.3cm	0.4″/1.0cm	0.5″/1.3cm	0.4″/1.0cm
Septum Opening	0.47″/1.2cm	0.35″/0.9cm	0.58″ x 0.43″	0.41″ x 0.3″
Catheter Configuration:	Ports can be ordered with catheters preattached or attachable (to be attached in surgery)			
Catheter Material:	Silicone, Polyurethane or Hydromer coated in French sizes from 3.5-7			
Species/Applications	See chart on page 1			

offering PEACE OF MIND
for your LONG-TERM STUDIES

GridLock ORDERING *information*

G-CP4-Cxx
MID Grid-ClearPort; port only; xx=Fr size of mating catheter
G-SW-MID-Cxx
MID Grid-SwirlPort; port only; xx=Fr size of mating catheter

G-CP4-PU-Cxx
MID Grid-ClearPort; port with attachable 60cm PU catheter; xx=Fr
G-SW-MID-PU-Cxx
MID Grid-SwirlPort; port with attachable 60cm PU catheter; xx=Fr

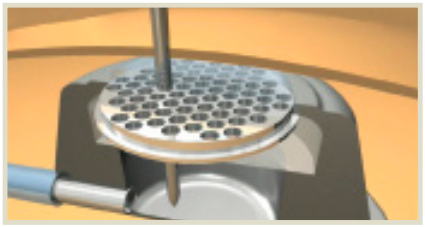
G-CP4-SIL-Cxx
MID Grid-ClearPort; port with attachable 60cm SIL catheter; xx=Fr
G-SW-MID-SIL-Cxx
MID Grid-SwirlPort; port with attachable 60cm SIL catheter; xx=Fr

* for the CP2 GridLock substitute CP2 for CP4

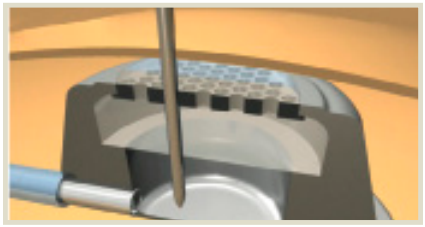
* for the MAX Swirl-GridLock substitute MAX for MID

the PORTHOLD *how it* HOLDS THE NEEDLE *in place*

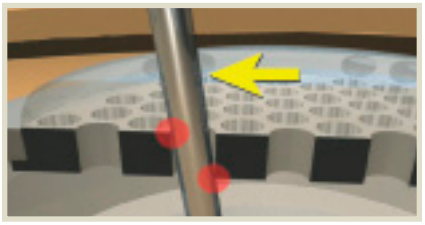
The single titanium plate with multiple precision holes molded into the septum allows easy needle insertion. When forces act on the needle laterally, the plate grips the needle in place, preventing dislodgement due to the normal tugs and pulls experienced during a study.



The PortHold is identical to the SoloPort in size and shape with the exception of the titanium plate, that is 1mm thick and is molded into the silicone septum.



Each hole in the plate is slightly larger than the needle allowing it to slide in.



The titanium plate "bits" into or grabs onto the needle when lateral force is applied preventing dislodgement.

Model	HMIDA	HMINA
Size	medium	small
Material	titanium	titanium
Weight	6.9gm	3gm
Volume	0.38ml	0.13ml
Height	0.39"/1cm	0.28"/0.7cm
Catheter Configuration:	Ports can be ordered with catheters preattached or attachable	
Catheter Material:	Silicone, Polyurethane or Hydromer coated in French sizes from 3.5-7	

PortHold ORDERING *information*

HMINA-Cxx
MIN PORTHOLD; port only; xx=Fr size of mating catheter

HMINA-PU-Cxx
MIN PORTHOLD; port with attachable 60cm PU catheter; xx=Fr

HMINA-SIL-Cxx
MIN PORTHOLD; port with attachable 60cm SIL catheter; xx=Fr

HMIDA-Cxx
MID PORTHOLD; port only; xx=Fr size of mating catheter

HMIDA-PU-Cxx
MID PORTHOLD; port with attachable 60cm PU catheter; xx=Fr

HMIDA-SIL-Cxx
MID PORTHOLD; port with attachable 60cm SIL catheter; xx=Fr

the PORTHOLD *reduces the risk of accidental* NEEDLE *dislodgement from ports*

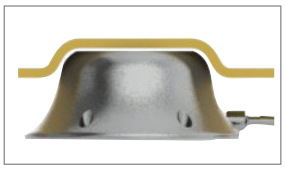
SwirlPort *specifications*

the port with a spherical chamber

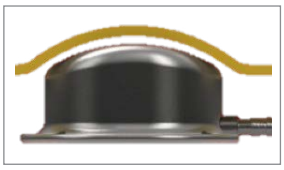
The SwirlPort offers the researchers new port chamber technology that warrants a closer look. The spherical chamber shape eliminates all corners where 'sludge' build-up has been shown to occur, simultaneously reducing the chamber volume compared to similar sized ports. This chamber shape has been shown to have a measurable effect on the Chamber Flushing Volume, the volume that must be used to 'clean' the chamber of blood and drug residuals. Compared to conventional ports, the SwirlPort has the lowest Chamber Flushing Volume and this volume is independent of the flush flow rate.*

contoured PORT SEPTUM

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



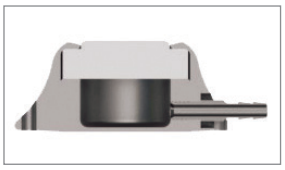
CONVENTIONAL



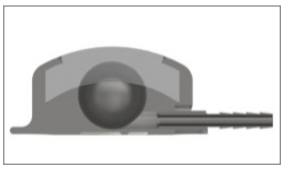
CONTOURED

no corners PORT CHAMBER

- allows for more complete flushing
- minimizes sludge, occlusions and infections



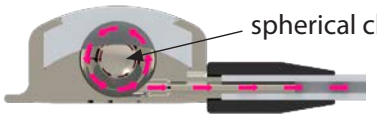
CONVENTIONAL



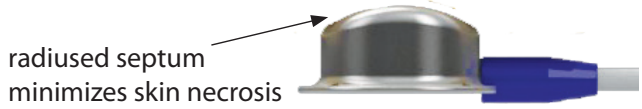
SPHERICAL

Model	SWIRL-MAX	SWIRL-MID	SWIRL-MIN
Size & Material	large titanium	low-profile titanium	mini titanium
Weight	13gm	8gm	5gm
Volume	0.53cc	0.33cc	0.18cc
Height	0.5"/1.3cm	0.4"/1.1cm	0.36"/0.91cm
Septum Opening	0.58x0.43"/1.5x1.1cm	0.48x0.36"/1.2x0.9cm	0.41x0.30"/1.04x0.76cm
Catheter Configuration:	Ports can be ordered with catheters preattached or attachable		
Catheter Material:	Silicone, Polyurethane or Hydromer coated in French sizes from 3.5-7		
Species/Applications	See chart on page 1		

A Look Inside



A Look Outside



** The Port Clearance Test: Why it is Important to the Clinician.
Covered under Patent #US9072881

SwirlPort ORDERING *information*

SWIRL-MIN-Cxx
Swirl-MIN; port only; xx=Fr size of mating catheter
SWIRL-MIN-PU-Cxx
Swirl-MIN, port with attachable 60cm PU catheter; xx=Fr
SWIRL-MIN-SIL-Cxx
Swirl-MIN, port with attachable 60cm SIL catheter; xx=Fr

SWIRL-MID-Cxx
Swirl-MID; port only; xx=Fr size of mating catheter
SWIRL-MID-PU-Cxx
Swirl-MID, port with attachable 60cm PU catheter; xx=Fr
SWIRL-MID-SIL-Cxx
Swirl-MID, port with attachable 60cm SIL catheter; xx=Fr

SWIRL-MAX-Cxx
Swirl-MAX; port only; xx=Fr size of mating catheter
SWIRL-MAX-PU-Cxx
Swirl-MAX, port with attachable 60cm PU catheter; xx=Fr
SWIRL-MAX-SIL-Cxx
Swirl-MAX, port with attachable 60cm SIL catheter; xx=Fr

SwirlPhantom & Phantom *specifications*

The SwirlPhantom, our newest port is a combination of the Swirl and Phantom; it features the SwirlPort's spherical chamber for improved patency and the Phantom's elongated base for easy insertion into the port pocket.

The oval shape of the Phantom makes it ideal for use with the single-incision, peripheral-insertion (SIPI) surgical procedure. This refinement, first described by Dr. Melanie Graham* in the non-human primate, has significantly lowered the complication rate and improved the patency of the access port. Additional advantages of the SIPI method include the simplified implantation and home cage access without sedation or restraint after appropriate training. For details on the SIPI technique, call 847-674-7131.

the SWIRL-PHANTOM *designed for the* SIPI TECHNIQUE

SwirlPort spherical chamber
for more complete port flushing

Elongated Phantom base
eases port entry into the single incision SIPI Technique

Low Contoured Profile
reduces incidence of skin necrosis

Ringed septum easy to palpate
provides easy access during needle insertion

* Graham M. et. al. J. Med. Primatol. 38(3):204-12. 2009

Model	P-LPH	P-SPH	T-LPH	T-SPH	SWIRL-PHANTOM
Size & Material	large plastic	small plastic	large titanium	small titanium	small titanium
Weight	3gm	1.75gm	6gm	3gm	3gm
Volume	0.3cc	0.1cc	0.3cc	0.1cc	0.18
Height	0.4″/1.0cm	0.36″/0.9cm	0.4″/1.0cm	0.36″/0.9cm	0.36″/0.91cm
Septum Opening	0.3″/0.8cm	0.2″/0.5cm	0.3″/0.8cm	0.2″/0.5cm	0.41x0.30″/1.04x0.76cm
Catheter Configuration:	Ports can be ordered with catheters preattached or attachable				
Catheter Material:	Silicone, Polyurethane or Hydromer coated in French sizes from 3-9				
Species/Applications	See chart on page 1				

Phantom ORDERING *information*

SW-PH (attachable)-Cxx
Titanium Swirl-Phantom; port only; xx=Fr size of mating catheter
SW-PH - PU-Cxx
Titanium Swirl-Phantom; with attachable 60cm PU catheter; xx=Fr
SW-PH - SIL-Cxx
Titanium Swirl-Phantom; with attachable 60cm SIL catheter; xx=Fr

P-SPH (attachable)-Cxx
Plastic Small Phantom; port only; xx=Fr size of mating catheter
T-SPH (attachable)-Cxx
Titanium Small Phantom; port only; xx=Fr size of mating catheter

P-SPH -PU-Cxx
Plastic Small Phantom; with attachable 60cm PU catheter; xx=Fr
T-SPH-PU-Cxx
Titanium Small Phantom; with attachable 60cm PU catheter; xx=Fr

P-SPH -SIL-Cxx
Plastic Small Phantom; with attachable 60cm SIL catheter; xx=Fr
T-SPH-Cxx
Titanium Small Phantom;with attachable 60cm SIL catheter; xx=Fr

* for the P-LPH and T-LPH substitute LPH for SPH

In-Line Port *specifications*

Skin Parallel Vascular Access Ports

the In-Line Port
for DEPENDABLE *long term* PATENCY

Prevents needle 'walk-out'
skin parallel access promotes superior needle retention, due to horizontal placement of the needle or infusion set

Low profile, light weight, biocompatible shape
reduces incidence of skin necrosis

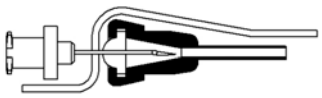
Linear port pathway
for advancement of an infusion catheter, probe or guidewire through the port and into the vessel

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*

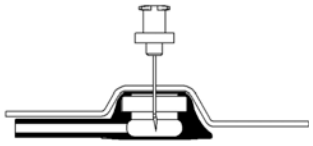
the In-Line *access direction*
skin PARALLEL *vs.* PERPENDICULAR

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.



Accessing the In-Line VAP

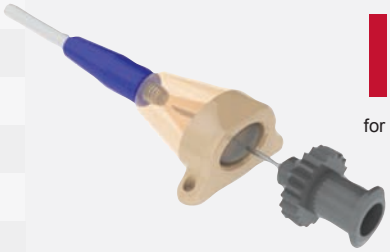
Skin Parallel/Side Access Port
the Huber needle, once inserted into the septum, lies parallel to the skin surface



Accessing a Conventional VAP

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

Model	IN-LINE
Size & Material	medium plastic
Weight	3gm
Volume	0.17cc
Height	0.4"/1.0cm
Septum Opening	0.30 x 0.2"/0.8 x 0.5cm
Catheter Configuration:	preattached or attachable
Catheter Material:	Silicone, Polyurethane or Hydromer coated in French sizes from 3.5-7



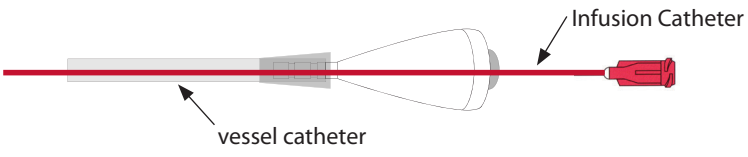
IN LINE
access port
for continuous or intermittent access

for PREVENTION *against needle* WALK-OUT

the INFUSION CATHETER
how it PREVENTS *needle* 'Walk-Out'

The Infusion Catheter is a flexible 21 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. 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



In-Line ORDERING *information*

INL-Cxx
In-Line; port only; xx=Fr size of mating catheter

INL-PU-Cxx
In-Line; port with attachable 60cm PU catheter; xx=Fr

INL-SIL-Cxx
In-Line; port with attachable 60cm SIL catheter; xx=Fr

See page 32 for Infusion Catheter specifications, instructions for use and ordering information

CSF LoVol - Port *specifications*

the ultra-low volume port for CSF access

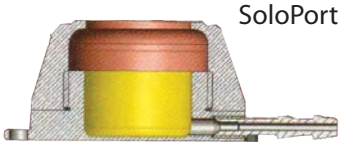
the LOVOL

the port with MINIMAL DEAD SPACE

The LoVol™ addresses implanted port applications requiring minimal dead space. With a reservoir dead volume about 10% of the amount of the standard SoloPorts, the LoVol are ideally suited for CSF infusion or withdrawal applications, or any application involving the use of a costly compound to be delivered in small volumes. Use the Lovol with the smallest catheter to achieve minimal dead volumes.

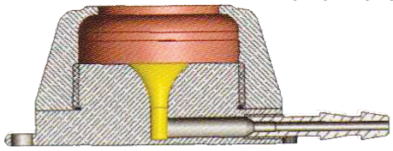
Packaged into a standard SoloPort body, the Lovol can be accessed in the conventional way with a 24 or 22 gauge Huber needle.

SoloPort



MID dead volume 380µl
MIN dead volume 130µl

LoVol Port



MID dead volume 40µl
MIN dead volume 15µl

LoVol ORDERING *information*

MINLOA-Cxx
LOVOL MIN; port only; xx=Fr size of mating catheter

MINLOA-PU-Cxx
LOVOL MIN, port with attachable 60cm PU catheter; xx=Fr

MINLOA-SIL-Cxx
LOVOL MIN, port with attachable 60cm SIL catheter; xx=Fr

MIDLOA-Cxx
LOVOL MID; port only; xx=Fr size of mating catheter

MIDLOA-PU-Cxx
LOVOL MID, port with attachable 60cm PU catheter; xx=Fr

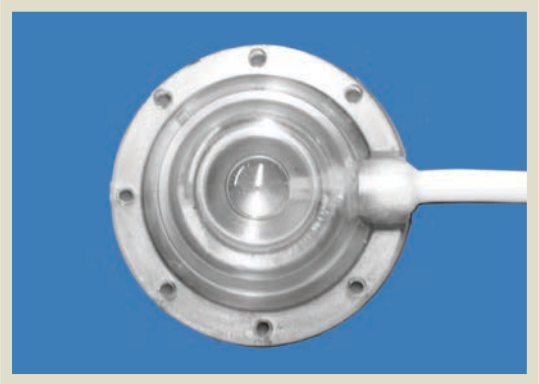
MIDLOA-SIL-Cxx
LOVOL MID, port with attachable 60cm SIL catheter; xx=Fr

Model	MIDLOA	MINLOA
Size	medium	small
Material	titanium	titanium
Weight	6.9gm	3gm
Volume	40µl	15µl
Height	0.39"/1cm	0.28"/0.7cm
Catheter Configuration:	Ports can be ordered with catheters preattached or attachable	
Catheter Material:	Silicone, Polyurethane or Hydromer coated in French sizes from 3-5	

GPV & SLA Port *specifications*

polysulfone vascular access ports

the GPV - A LARGE PLASTIC PORT
first available PORT *for animal researchers*



the SLA - A MEDIUM PLASTIC PORT
an old favorite PORT *for smaller animals*

Model	GPV	SLA
Size & Material	large polysulfone/plastic	medium polysulfone/plastic
Weight	5gm	2gm
Volume	0.20cc	0.14cc
Height	0.5"/1.3cm	0.4"/1.1cm
Septum Opening	0.3"/0.6cm	0.2"/0.5cm
Catheter Configuration:	Ports can be ordered with catheters preattached or attachable	
Catheter Material:	Silicone, Polyurethane or Hydromer coated in French sizes from 3-9	
Species/Applications	See chart on page 1	

GPV & SLA ORDERING *information*

GPV-Cxx
GPV; port only; xx=Fr size of mating catheter

GPV-PU-Cxx
GPV; port with attachable 60cm PU catheter; xx=Fr

GPV-SIL-Cxx
GPV; port with attachable 60cm SIL catheter; xx=Fr

SLA-Cxx
SLA; port only; xx=Fr size of mating catheter

SLA-PU-Cxx
SLA; port with attachable 60cm PU catheter; xx=Fr

SLA-SIL-Cxx
SLA; port with attachable 60cm SIL catheter; xx=Fr

the FEATURES & BENEFITS *of the* ACCESS PORT

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

RODENT PORT *specifications*

Vascular Access Ports for rodent research

the RAT-O-PORT (ROP)

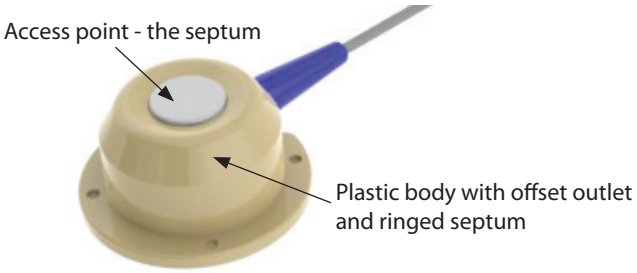
designed especially for larger rodents

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



the PENNY MOUSEPORT (MMP)

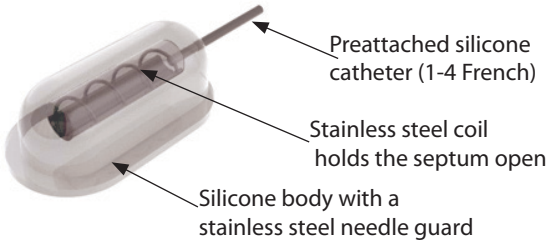
the only port designed especially for mice

Low profile with a biocompatible oval shape
easy port entry into the smallest mouse

Low 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



Model	RAT-O-PORT (ROP)	PENNY MOUSEPORT (MMP)
Size & Material	small plastic	small silicone
Weight	1.5gm	1gm
Volume	0.11cc	100µl
Height	0.35″/0.9cm	0.28″/0.7cm
Septum Opening	0.3″/0.8cm	0.5x0.13″/1.2x0.4cm - 180° access
Catheter Configuration:	preattached or attachable	preattached only
Catheter Material:	Polyurethane or Silicone	Silicone only
Catheter Size:	1-7 Fr.	1-4 Fr.

ROP & MMP ORDERING *information*

ROP-Cxx
ROP; port only; xx=Fr size of mating catheter

ROP-PU-Cxx
ROP; port with 15cm PU catheter; xx=Fr

ROP-SIL-Cxx
ROP; port with 15cm SIL catheter; xx=Fr

MMP-SIL-Cxx - *port with 15cm SIL catheter; xx=Fr*
* the MMP is available only with a preattached silicone catheter

why do MICE *studies* NEED *a port ?*

While tail vein catheters have their purpose, chronic intravenous access via the tail vein can be challenging and agents often irritate and damage the vessel resulting in leakage.

The Penny MousePort is an access port designed specifically for mice - *not a miniaturized version of a larger port* - that prevents vessel and organ damage when longer term access is needed.

The Penny MousePort is a valuable addition to our port range and can be used for both intraperitoneal and intravascular access.

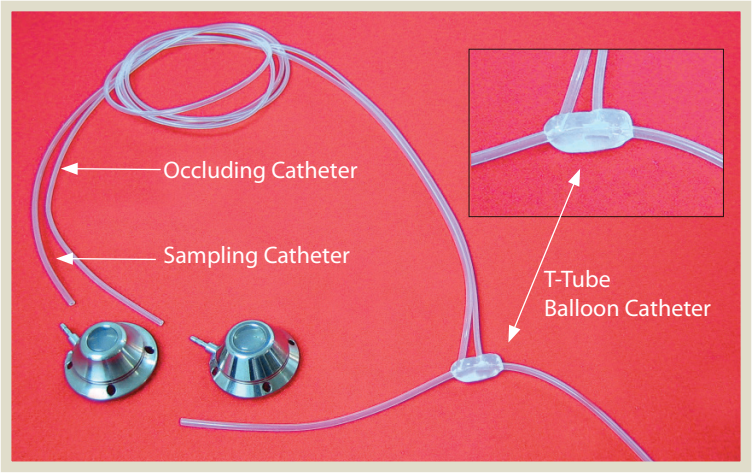
BICC's *bile collection system*

Two or Three Leg Systems for Hepatic Clearance Studies

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.

the BICC's *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



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 sampling 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 flushing catheter your choice of V-A-P model
T-TUBE CATHETER SYSTEM	**T-TUBE CATHETER SYSTEM**
Silicone Balloon Catheter diameter = 0.1"/0.25cm; length = 0.5"/1.3cm 4.5 French Silicone Occluding Catheter .023"/0.6mm ID x 0.56"/1.4mm OD x 24"/60cm length Silicone Sampling Catheter - 5 or 7 French 5 Fr. - .030"/0.7mm ID x 0.65"/1.7mm OD x 24"/60cm length 7 Fr. - .050"/1.3mm ID x 0.95"/2.4mm OD x 24"/60cm length	Silicone Balloon Catheter diameter = 0.1"/0.25cm; length = 0.5"/1.3cm 4.5 French Silicone Occluding Catheter .023"/0.6mm ID x 0.56"/1.4mm OD x 24"/60cm length Silicone Sampling Catheter - 5 or 7 French 5 Fr. - .030"/0.7mm ID x 0.65"/1.7mm OD x 24"/60cm length 7 Fr. - .050"/1.3mm ID x 0.95"/2.4mm OD x 24"/60cm length Silicone Flushing Catheter - 5 or 7 French 5 Fr. - .030"/0.7mm ID x 0.65"/1.7mm OD x 24"/60cm length 7 Fr. - .050"/1.3mm ID x 0.95"/2.4mm OD x 24"/60cm length
SYSTEM ACCESSORIES	**SYSTEM ACCESSORIES**
1 x 26ga x 24"/60cm stainless steel balloon catheter filler 1 x 20ga x 18"/45cm Huber needle sampling set - BICRA20-75 1 x 100ml low vacuum collection bulb - BIC-CB100	1 x 26ga x 24"/60cm stainless steel balloon catheter filler 1 x 20ga x 18"/45cm Huber needle sampling set - BICRA20-75 1 x 100ml low vacuum collection bulb - BIC-CB100

BICC's ORDERING *information*

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:

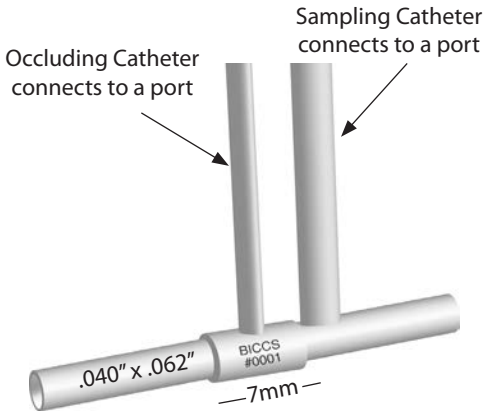
The catalog number BICCND-CP4-5S indicates a 2 leg system with a medium titanium ClearPort and a 5 French catheter.
The catalog number BICCNT-CP2-7S indicates a 3 leg system with a large titanium ClearPort and a 7 French catheter.

BICC'S *catheters*

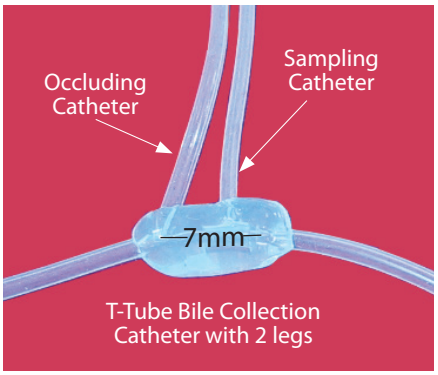
How the BICC's System Works

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 - call for a copy.*

THE BICC'S BILE COLLECTION CATHETER & COLLECTION BULB



Vacuum Collection Bulbs are available in single sterile units



Bile Collection Systems are available with 2 or 3 catheter legs

BICC'S OPERATION

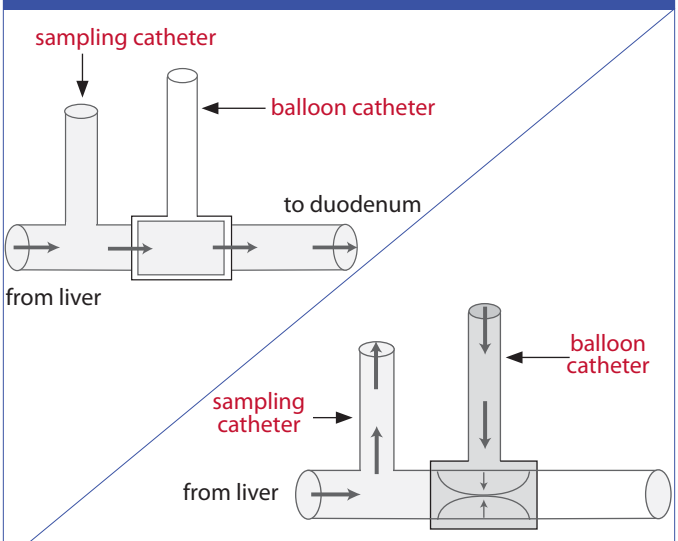
The bile duct is cannulated and the t-tube catheter is placed in the common bile duct. This T-Tube catheter has either 2 or 3 legs depending on your needs. In the 2 leg system, one catheter is the occluding catheter and the other the sampling catheter. In the 3 leg system the additional catheter serves 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.

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.

This is accomplished by attaching the Bile Collection Right Angle (BIC-RA) set tubing to the Collection Bulb (BIC-CB100) and inserting the needle of the BIC-RA into the port septum.

** Additional Collection Bulbs -Cat. No BIC-CB100 may be ordered*
** Right Angle Collection Sets - BICRA 20-75-18 may be ordered*

NEEDLE *specifications*

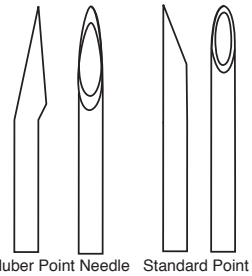
Huber Needles

Non-Coring Needles

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

Why the huber point preserves the port septum:

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. Because the port septum is fitted under pressure, it closes up around the needle. Once the needle is removed you see only an impression of where the needle entered, no hole was made.

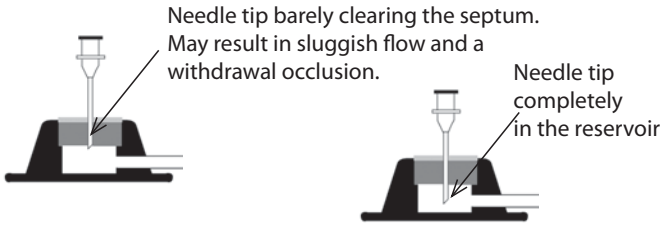


Needle Size - how is it measured:

Needle sizes are referred to as 'gauge' size. Gauge sizes have an inverse relationship to their number; the larger the gauge the smaller the needle (a 25ga needle is smaller than the 19ga needle).

Needle Length - why it is important:

The needle opening/eye must clear the thick port septum to prevent sluggish flow and withdrawal occlusion. If the needle is too long, part of the eye may reside in the septum.



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.

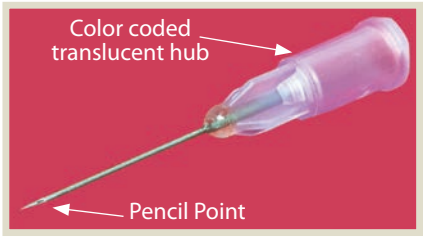
Injection caps, *(add C to the end of catalog number)* or needleless injector sites *(add BC to the end of catalog number)* can be attached. Insert the Huber needle with the cap into the port and when you need to change syringes, leave the needle in place and access the cap.

Catalog No.	Needle Gauge	Needle Length	Hub Color
PG25-500	25ga	1/4" (1.3cm)	blue
PG24-625	24ga	5/8" (1.6cm)	purple
PG22-75	22ga	3/4" (1.6cm)	black
PG22-100	22ga	1" (2.5cm)	black
PG20-75	20ga	3/4" (1.6cm)	yellow
PG20-100	20ga	1" (2.5cm)	yellow
PG19-75	19ga	3/4" (1.6cm)	brown

PortHold™

Non-Coring Needles

The tips of these needles are specially designed to access the PortHold port sliding easily through the titanium plate of the PortHold. The female hub permits direct attachment to a syringe for bolus injection, flushing, locking and blood sampling.

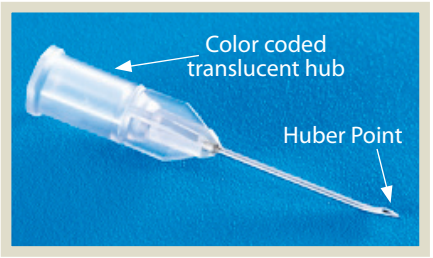


Catalog No.	Needle Gauge	Needle Length	Hub Color
PHN22750	22ga	3/4"	pale grey
PHN24750	24ga	3/4" (1.9cm)	pale pink

Solomon Huber

Non-Coring Needles

This basic "B" bevel Huber needle features a color coded translucent female luer for direct attachment to a syringe for routine flushing, bolus injection and other short term access. Ideal for use in smaller vascular access ports.



Catalog No.	Needle Gauge	Needle Length	Hub Color
HN22750	22ga	3/4" (1.9cm)	gray
HN24750	24ga	3/4" (1.9cm)	pink

TETHER INFUSION SET *specifications*

TIS Series

Blunt Needle 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 in boxes of 20.

Catalog No.	Needle Gauge	Needle Length	Tubing Length
TIS 22-5-18	22ga	1/2" (1.3cm)	18"/45cm
TIS 22-75-24	22ga	3/4" (1.9cm)	24"/60cm
TIS 22-100-36	22ga	1" (2.5cm)	36"/90cm
TIS 20-5-18	20ga	1/2" (1.3cm)	18"/45cm
TIS 20-75-24	20ga	3/4" (1.9cm)	24"/60cm
TIS 20-100-36	20ga	1" (2.5cm)	36"/90cm

needle gauge *tubing length*

TIS 22-75-24

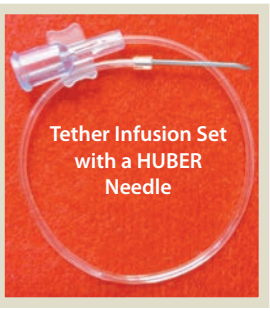
needle length

or specify your own configuration

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 in boxes of 20.



Catalog No.	Needle Gauge	Needle Length	Tubing Length
TISH 22-5-18	22ga	1/2" (1.3cm)	18"/45cm
TISH 22-75-24	22ga	3/4" (1.9cm)	24"/60cm
TISH 22-100-36	22ga	1" (2.5cm)	36"/90cm
TISH 20-5-18	20ga	1/2" (1.3cm)	18"/45cm
TISH 20-75-24	20ga	3/4" (1.9cm)	24"/60cm
TISH 20-100-36	20ga	1" (2.5cm)	36"/90cm

needle gauge *tubing length*

TISH 22-75-24

needle length

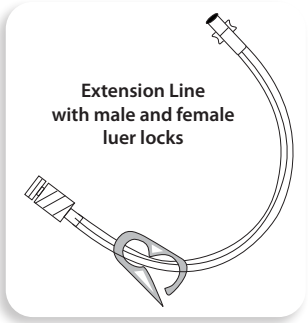
or specify your own configuration

EXTENSION SET *specifications*

ES Series

Tygon or Polyurethane Sets

Extensions Lines are available in a variety of materials, including Polyurethane, Tygon, PE-PVC co-extruded tubing or Back Light Shielding tubing in custom lengths and configurations. Sets ship sterile in boxes of 10.



Luered Extension Lines - Male-Female with various lengths and luer configurations: male-male, male-female or female-female are available.

Catheter to Swivel Connection Luered extension Lines with a single luer and catheter connector to fit a wide range of swivels are available.

Catalog No.	Tubing Length	Luers
ES -4 M/F	4"/10cm	1 x Male & 1 x Female
ES-6 M/F	6"/15cm	1 x Male & 1 x Female
ES-12 M/F	12"/30cm	1 x Male & 1 x Female
ES-36 M/F	36"/99cm	1 x Male & 1 x Female
ES-60 M	60"/152cm	1 x Male
ES-72F	72"/182cm	1 x Female

tubing length

ES -36 M/F

luer connections

or specify your own configuration

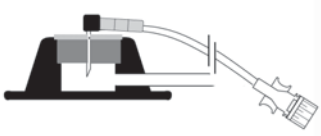
INFUSION SET *specifications*

Right angle Huber infusions sets are perfect for longer-term infusion and sampling. They can be ordered in the more traditional grip block style - the RA Series, or the newer flexible disk model, the CVRA/ClearView Series. The flexible disk sets lie flat against the skin,providing a lower profile for improved needle retention and a clear vision of the insertion site. Ideal for the jacketed or tethered model. We manufacture our infusion sets, both the RA and CVRA series, in a variety of needle gauges and needle lengths with your choice of extension tubing length so that you can choose the most appropriate combination for your study. All sets are fitted with a female luer and clamp unless otherwise requested.

CATALOG NUMBER KEY
to assist you in ordering what you need

RA 24-100-36
1 2 3 4

1 - style - RA or CVRA
2 - needle gauge eg. 24ga
3 - needle length eg. 1"
4 - extension tubing length eg. 36"



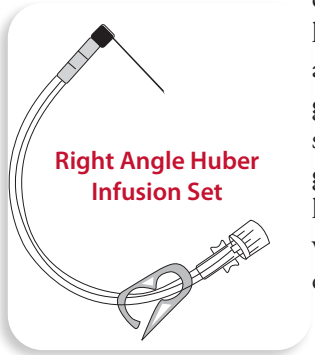
Accessing the port with the RA infusion set

Accessing the port with the CVRA infusion set

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. The RA series is available in a variety of gauges and needle and extension lengths. RA Sets are available with injection sites, microclave connectors, or caps.



Catalog No.	Needle Gauge	Needle Length	Tubing Length
RA 24-5-12	24ga	1/2" (1.3cm)	12"/30cm
RA 20-5-12	20ga	1/2" (1.3cm)	12"/30cm
RA 20-75-12	20ga	3/4" (1.9cm)	12"/30cm
RA 22-5-12	22ga	1/2" (1.3cm)	12"/30cm
RA 22-75-12	22ga	3/4" (1.9cm)	12"/30cm
RA 19-100-12	19ga	1" (2.5cm)	12"/30cm

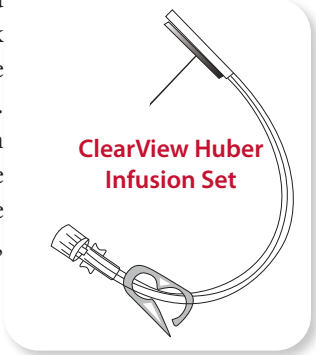
needle gauge *tubing length*
RA 22-75-12
needle length

or specify your own configuration

CVRA Series

ClearView Right Angle Disk Huber 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. 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.



Catalog No.	Needle Gauge	Needle Length	Tubing Length
CVRA 24-5-12	24ga	1/2" (1.3cm)	12"/30cm
CVRA 20-5-12	20ga	1/2" (1.3cm)	12"/30cm
CVRA 20-75-12	20ga	3/4" (1.9cm)	12"/30cm
CVRA 22-5-12	22ga	1/2" (1.3cm)	12"/30cm
CVRA 22-75-12	22ga	3/4" (1.9cm)	12"/30cm
CVRA 19-100-12	19ga	1" (2.5cm)	12"/30cm

needle gauge *tubing length*
CVRA 22-75-12
needle length

or specify your own configuration

SOFTEE *specifications*

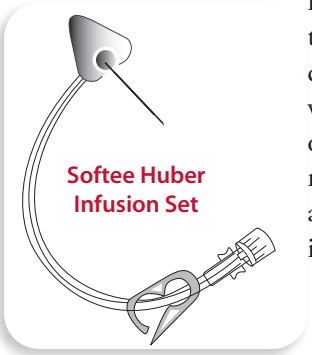
Flexible Infusion Sets - Huber & Pencil point

The SOFTEE™ series of infusion sets feature an innovation intended to provide a softer needle base for contact with the animal's skin while offering an enhanced gripping surface for easy insertion and removal of the infusion set. The soft construction, low profile and gripping ease of the Softee sets have made these an important addition to our infusion product range. They are available in both the Huber and Pencil Point needle designs in a variety of needle gauges and needle and extension tubing lengths. All sets are provided with a clamp unless otherwise requested.

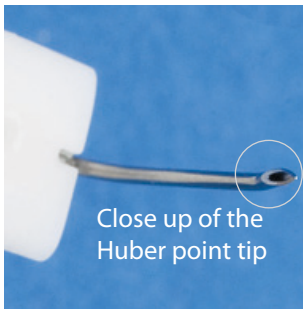
Softee™ Huber Series

Right Angle Flexible Huber Sets

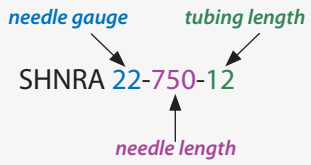
The Softee Huber right angle infusion set provides a softer needle base for contact with the skin. The "flexible delta" design of the base combined with the knurling near the tip of the flexible delta enhances the researchers grip during insertion and removal of the Softee Huber into an access port.



This Huber tip on these sets is a short 'B' bevel that is non coring and allows for the proper clearance of the needle tip especially in the lower profile ports.



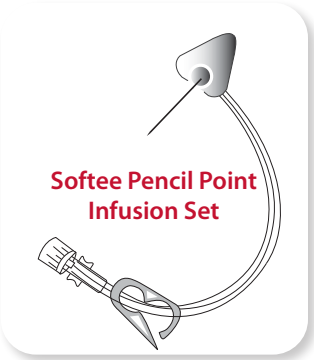
Catalog No.	Needle Gauge	Needle Length	Tubing Length
SHNRA 22-500-6	22ga	1/2" (1.3cm)	6"/15cm
SHNRA 22-500-12	22ga	1/2" (1.3cm)	12"/30cm
SHNRA 22-625-6	22ga	5/8" (1.6cm)	6"/15cm
SHNRA 22-625-12	22ga	5/8" (1.6cm)	12"/30cm
SHNRA 22-750-6	22ga	3/4" (1.9cm)	6"/15cm
SHNRA 22-750-12	22ga	3/4" (1.9cm)	12"/30cm
SHNRA 22-100-6	22ga	1" (2.5cm)	6"/15cm
SHNRA 22-100-12	22ga	1" (2.5cm)	12"/30cm

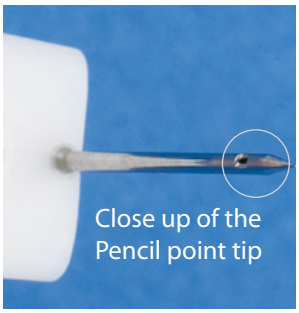


Softee™ Pencil Point Series

Pencil Point Infusion Sets

The Softee Pencil Point/non coring infusion set provides a softer needle base for contact with the skin. The "flexible delta" design of the base combined with the knurling near the tip of the flexible delta enhances the researchers grip during insertion and removal of the Softee Pencil Point infusion set.





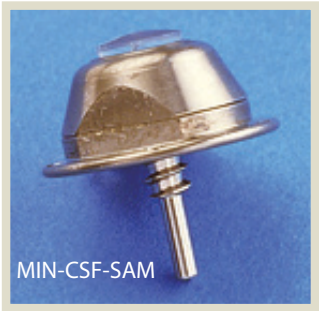
This non coring infusion set must be used when accessing the PortHold access port.

Catalog No.	Needle Gauge	Needle Length	Tubing Length
HSRA 22-437-6	22ga	7/16 (1.1cm)	6"/15cm
HSRA 22-437-12	22ga	7/16" (1.3cm)	12"/30cm
HSRA 22-500-6	22ga	1/2" (1.3cm)	6"/15cm
HSRA 22-500-12	22ga	1/2" (1.3cm)	12"/30cm
HSRA 22-563-6	22ga	9/16" (1.4cm)	6"/15cm
HSRA 22-563-12	22ga	9/16" (1.4cm)	12"/30cm
HSRA 22-625-6	22ga	5/8" (1.6cm)	6"/15cm
HSRA 22-625-12	22ga	5/8" (1.6cm)	12"/30cm
HSRA 22-688-6	22ga	11/16" (1.7cm)	6"/15cm
HSRA 22-688-12	22ga	11/16" (1.7cm)	12"/30cm

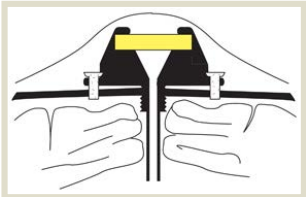
CSF Sampling Port

for ventricular sampling in larger species

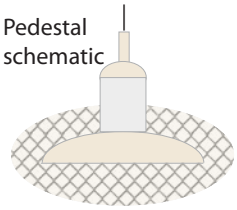
The MIN-CSF-SAM, is a specialized port that provides access to the lateral ventricle for CSF sampling in larger research animals. The port chamber is connected to a subcutaneous guide cannula and the port is accessed via the septum using a standard spinal needle.



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



Pedestal Infusion Systems



A catheter of your choice can be fitted to a pedestal with a mesh base for your rodent infusion and self administration studies.

BonePort

for bone 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.

Height:	1.5 cm
Diameter top:	9.6 cm
Diameter base:	1.3cm
Weight:	2 gm
Volume:	0.07cc
Cannula length:	2.5mm
Material:	316 L Stainless Steel

TuBo Port

for intrathecal/epidural access

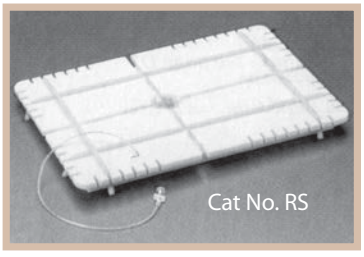
The TuBo™ Port is the latest port innovation for epidural and intrathecal access. It allows researchers to utilize standard 19G/20G epidural/intrathecal nylon catheters with access ports. The body has the dimensions of the SOLO ports, making it easy to access.

Rodent Surgical Table

for rodent surgery

The non-porous, stain resistant, autoclavable, and durable Corian working surface of the rodent surgical table measures 8" x 11½", is ¾" thick and weighs 3½ lbs. 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.



BrainScrew

for CSF access

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

Height:	1 cm
Diameter top:	0.5 cm
Diameter base:	0.4 cm
Weight:	0.5 gm
Cannula length:	3.5 mm
Material:	316 L Stainless Steel

INFUSION ACCESSORIES *specifications*

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.

Luer Connectors

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

Connectors ship sterile in boxes of 10.

StopCocks

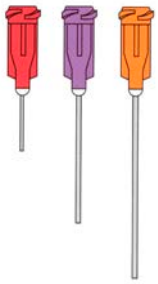
3 Way Design

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

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 to prevent inadvertent damage to the intimal lining of the catheter. The plastic hubs are color coded for easy gauge identification. Luer Stub Adaptors ship sterile in boxes of 50 or bulk non sterile. Blunt needles can be fitted with an injection cap or needless cap.



Catalog Number	Needle Gauge	Hub Color	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	055	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	20	Lilac	0.32	0.16
LSA-32	32	Straw	O.25	0.09

Catheter Plugs & Couplers

Solid & Hollow

Manufactured of high quality stainless steel, our stainless steel plugs they are burr free and passivated to prevent damage to the during insertion and removal.
Available in 21ga, 22ga and 23ga.

Solid Stainless Steel Catheter Plugs

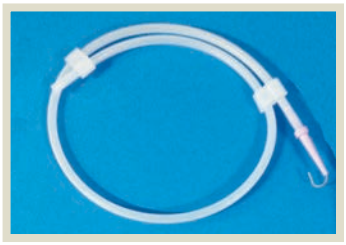
Hollow Stainless Steel Catheter Couplers

INFUSION ACCESSORIES *specifications*

Guide Wires

with a "J "Tip

These soft flexible wires with a "J" tip on one end facilitate the insertion of venous catheters.

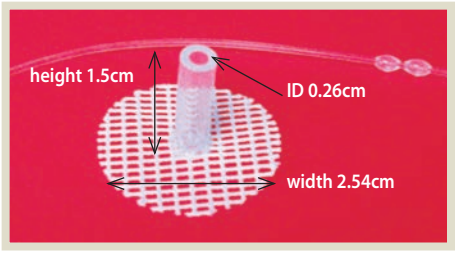


Cat. Number	Tip Configuration	Diameter	Length
GW-18-45	Soft flexible /J - Tip	0.18"	45cm
GW-18-80	Soft flexible /J - Tip	0.18"	80cm
GW-35-45	Soft flexible /J - Tip	0.35"	45cm

Dacron SkinButton

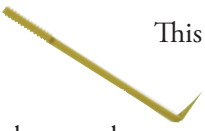
a Catheter Exit Site Option

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.



Vein Pick

"Hockey Stick" Catheter Introducer

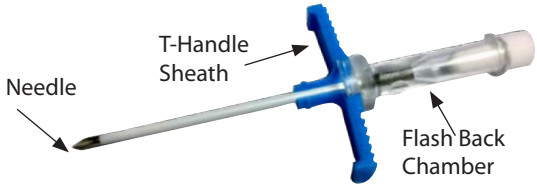


This simple vein pick catheter introducer makes the introduction of catheters into small vessels simple and easy. It holds the vessel open during the cut-down catheter insertion procedure. The tapered tip of the vein pick is inserted into an incision that is made with a micro-scissors or needle. The 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. Sold individually.

Splitable Needles

Peel-Away Catheter Introducers

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.



Catalog No.	Introducer Gauge	Use to Introduce
DPX-2	23	2 French catheter
DPX-3	20	3 French catheter
DPX-4	18	3.5 / 4 French catheter
DPX-5	16	5 French catheter
DPX-7	13	7 French catheter

J-Wire Introducer Kit

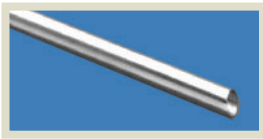
Used when introducing a catheter by the Seldinger Technique.

The guidewire catheter introducer kit includes an introducer needle, 10cc syringe, vessel dilator and a soft, flexible J-Tip guidewire in a dispenser. Available for 5, 7 and 9 French catheters.

Cat. Number	Guide Wire Diam & Length	Needle Gauge	Use to Introduce
NPX-10	.035" x 45cm	18 ga	9 French
NPX-8	.035" x 45cm	18 ga	7 French
NPX-6	.035" x 45cm	18 ga	5 French

Trocars

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. Available in a variety of gauges and lengths.



TCS *providing patency and infection control*

anti-microbial lock solution

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 effective in the prevention of catheter associated infections and occlusions and has been used in all laboratory animal species. TCS is non-toxic and there are no known systemic effects.

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

No development of resistance to TCS as been reported.

TAUROLIDINE

how it works

offers broad spectrum antimicrobial activity against aerobic and anaerobic gram-positive and gram-negative bacteria, yeast and 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

CITRATE

how it works

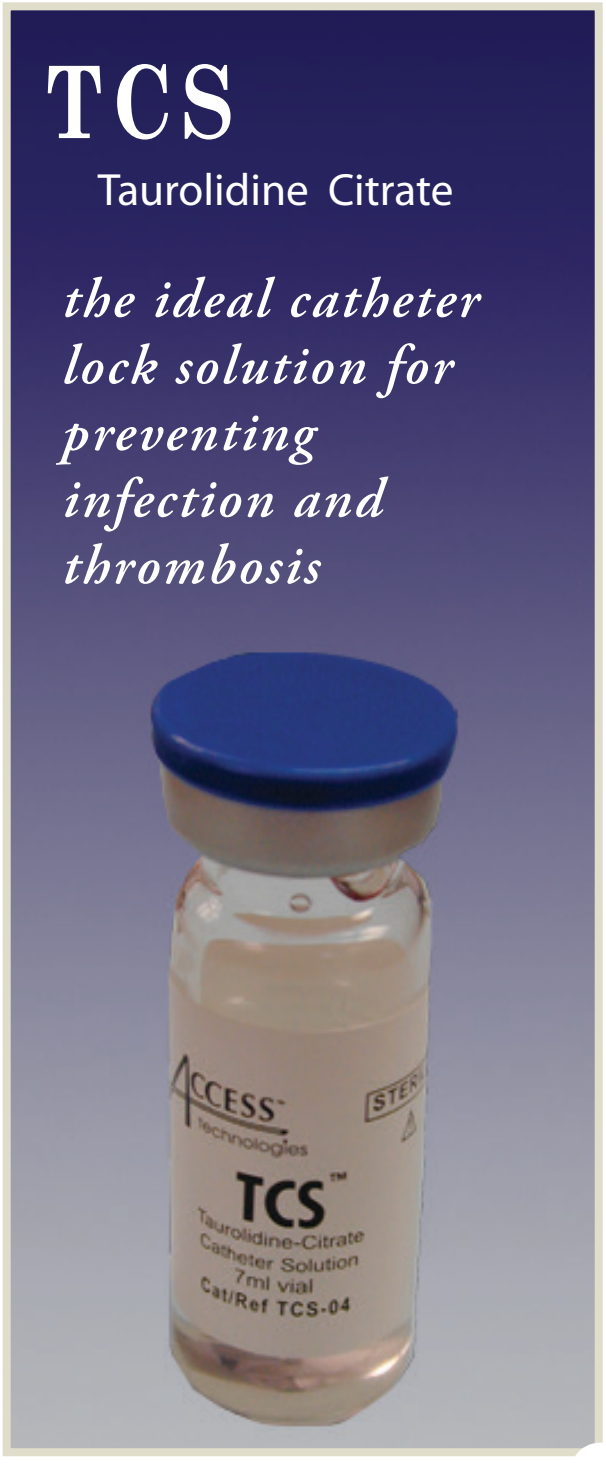
forms a complex with calcium, disrupting the normal coagulation cascade, precipitating it into an unusable form

inhibiting blood coagulation with no systemic effect

TO IMPROVE CATHETER PATENCY
TO REDUCE THE RISK OF INFECTIONS
SWITCH YOUR LOCK SOLUTION TO
TAUROLIDINE CITRATE - TCS

Ordering information

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



CATHETER MATERIALS *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.

All tubing is availabe in cut lengths (sterile) or bulk packaged (non-sterile).

CATHETER MATERIALS COMPARISON

Characteristics	Silicone	PolyUrethane	PolyEthylene	Teflon/PTFE
ID Ratio	Thicker Wall/ID Smaller	Thinner Wall/ID Larger	Thicker Wall	Thicker Wall
Biocompatibility	Excellent	Excellent	Fair	Fair
Compatibility	Possible Reactivity	Possible Reactivity	Inert	Possible Reactivity
Heat Sensitivity	Excellent	Poor	Excellent	Excellent
Stiffness	Soft	Softens in body	Stiffer	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	Excellent	Excellent
Flexibility	Excellent	Moderate	Poor-Rigid	Poor-Rigid
Coefficient of Friction	Fair	Excellent	Good	Excellent
Coating Option	n/a	Hydromer	n/a	n/a
Sterilization Method	Autoclave or EtO	EtO	Autoclave or EtO	Autoclave or EtO

Polyurethane

intravascular tubing

The favorable properties of polyurethane have made it the popular choice for long-term catheterization by laboratory animal researchers. It has excellent biocompatibility and is easier to insert and advance especially in smaller sizes due to its initial stiffness. Polyurethane softens at body temperature. The larger internal diameter, due to the thinner wall needed for strength, compared to the same size silicone catheter increases the flow rate. EtO sterilize only.

Silicone

silastic intravascular tubing

The biocompatibility of platinum cured silicone has been touted as "the most biocompatible and biostable material currently available for catheter manufacture." In extensive testing silicone has exhibited superior compatibility with tissue and body fluids and an extremely low tissue response when implanted. Silicone is easily modified and its softness minimizes vessel trauma. Sterilize by EtO gas or steam.

Polyethylene

intravascular tubing

Micro medical grade Polyethylene has excellent chemical and gas resistance. Its stiffness makes it easier it insert but may damage the vessel lining. It contains no plastizers and may be sterilized by EtO or electron beam.

PTFE

intravascular tubing

PTFE has the lowest coefficient of friction of any polymer and is resistsnt to most chemicals. Its stiffness makes it easier it insert but may damage the vessel lining. Sterilize by EtO gas or steam.

Co-extruded

external infusion PE/PVC tubing

Co-extruded with PE on the inside lumen for compound compatibility and PVC on the outside to resist kinking and prevent evaporation. CO-EX minimizes absorption, evaporation and kinking. Available in 2 sizes for 22ga and 25ga swivels, luer stubs and couplers and plugs.

CATHETER TUBING *specifications*

Gauge & French Size Comparison

Polyurethane

intravascular tubing

Polyurethane is available in sterile cut lengths or bulk non-sterile (25'/roll). Cut lengths can be ordered with blunt or round tips (1 Fr - blunt tip only), uncoated or with our Hydromer coating. Hydromer coated catheters are only in cut lengths and have a round tip and a radiopaque stripe. See page 23 for a list of modifications.

French Gauge	1Fr 27	2Fr 23	3Fr 20	3.5Fr 18	5Fr 16	7Fr 13
ID (inches)	.008	.012	.023	.025	.040	.058
OD (inches)	.017	.025	.037	.044	.065	.095
ID (mm)	0.2	0.3	0.6	0.6	1.0	1.5
OD (mm)	0.4	0.6	0.9	1.1	1.7	2.4
Vol (µl/cm)	0.3	0.7	2.7	3.2	8.0	17.0

Silicone

silastic intravascular tubing

Silicone is available in sterile cut lengths or bulk non-sterile (25'/roll). Cut lengths can be ordered with blunt or round tips (1 Fr - blunt tip only), clear or white/radiopaque. Cut length catheters are provided with 2 moveable beads as a standard feature. See page 23 for a list of modifications.

French Gauge	1Fr 27	2Fr 23	3Fr 20	4Fr 18	5Fr 16	7Fr 13	9Fr 11
ID (inches)	.007	.012	.020	.025	.030	.050	.062
OD (inches)	.016	.025	.037	.047	.065	.095	.125
ID (mm)	0.2	0.3	0.5	0.6	0.7	1.3	1.6
OD (mm)	0.4	0.6	0.9	1.2	1.7	2.4	3.2
Vol (µl/cm)	0.3	0.7	2.0	3.2	4.5	12.7	19.5

PTFE/Teflon

intravascular tubing

Medical grade Teflon® /PTFE is available on 25' spools - non sterile. Sterile cut lengths are available.

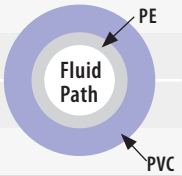
Part No. ±French	T11 2	T21 3	T31 4	T41 5	T51 7
ID (inches)	.012	.022	.032	.042	.052
OD (inches)	.030	.042	.056	.066	.076
ID (mm)	0.3	0.6	0.8	1.1	1.3
OD (mm)	0.8	1.1	1.4	1.7	1.9
Vol (µl/cm)	0.7	2.4	5.2	8.9	13.7

CO-EX™

Co-extruded extravascular tubing

Available in 100' lengths - clear or black for light sensitive compounds.

Part No.	CoEx T22	CoEx T22BLK	CoEx T25
Fits	22ga	22ga	25ga
Color	Clear	Black	Clear
ID (inches)	.024	.024	.017
OD (inches)	.064	.064	.051
ID (mm)	.061	.061	.043
OD (mm)	1.60	1.60	1.30



Polyethylene

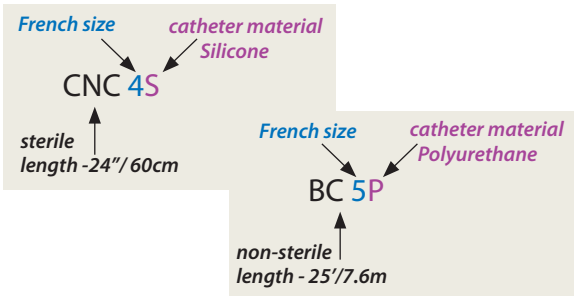
intravascular tubing

Our Low Density Polyethylene is available on 25' spools - non sterile. Sterile cut lengths are available.

Part No. ±French	10 2	20 3.5	50 3	60 3.5	90 3.5	100 5	160 5	190 5
ID (inches)	.011	.015	.023	.030	.034	.034	.045	.047
OD (inches)	.025	.038	.039	.048	.052	.060	.062	.067
ID (mm)	0.2	0.4	0.6	0.7	0.8	0.8	1.1	1.2
OD (mm)	0.6	1.1	1.0	1.2	1.3	1.5	1.6	1.7
Vol (µl/cm)	0.6	1.1	2.7	4.5	5.8	5.8	10.2	11.1

Ordering Information

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 any modifications required with the prefix CNC.

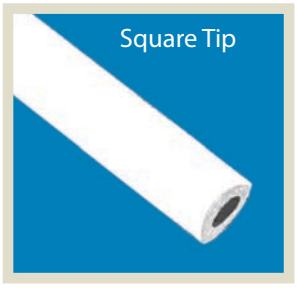


CATHETERS *modifications*

customize your catheter

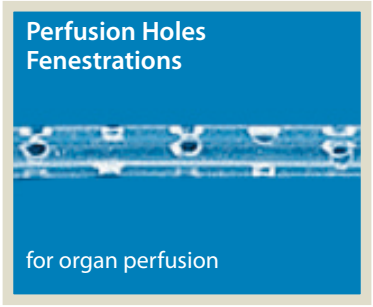
To meet your needs, custom catheters made with a variety of materials and sizes with a wide selection of modifications are available. Some of the more common modifications requested are shown below. Whether you need a jugular, carotid, or gastric catheter for any species, from rodents - to non human primates, our catheters will be perfect and consistent from order to order. We offer expert advice to help you design the optimal catheter. Our standard range of species and site specific catheters can be found on pages 28-30.

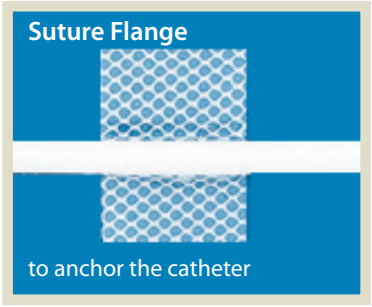
DISTAL TIP OPTIONS

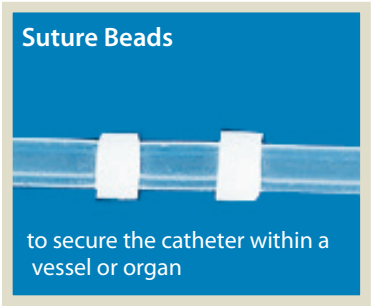


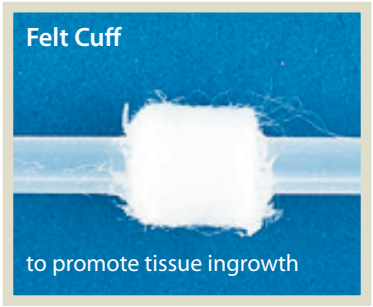
Choose rounded tip catheters for intravascular as they have been shown to be less traumatic to the intimal lining of blood vessels. The sharp edges on square or bevel cut catheters can irritate the lining and hasten the thrombogenic response.

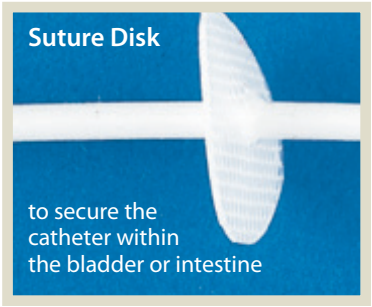
CATHETER MODIFICATIONS

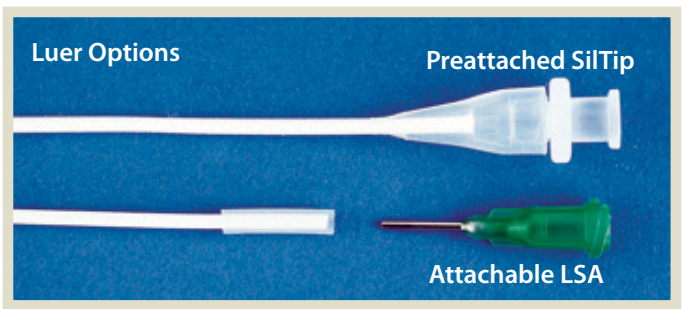












CUSTOM DESIGN A CATHETER *specifications*

Design Considerations

Catheter design should be:

dependent on the **Species** receiving the catheter
and the **Access Site**, the catheter tip location

Selection criteria to consider include:

Material for Catheter Construction

should have high tensile strength
should be soft and pliable
should be chemically resistant
should be biocompatible

stiffer tubing is easier to insert but may promote endothelial injury during insertion and advancement promoting tissue proliferation and microthrombi formation.

Distal Tip Configuration

preferably an atraumatic rounded tip

while bevel and blunt tips may be easier to insert they can cause friction and endothelial irritation during insertion and advancement that may result in thrombi formation & occlusion

French Size

to meet flow requirements
to suit the vessel diameter
to maintain minimally invasive profile

in general a catheter diameter that permits continuous blood flow around it has a decreased chance of inducing a clot

catheter diameter relative to vessel diameter is a balancing act too large a catheter takes up to much space in the vessel and too small a catheter increases the resistance to infusion and withdrawal.

Modifications

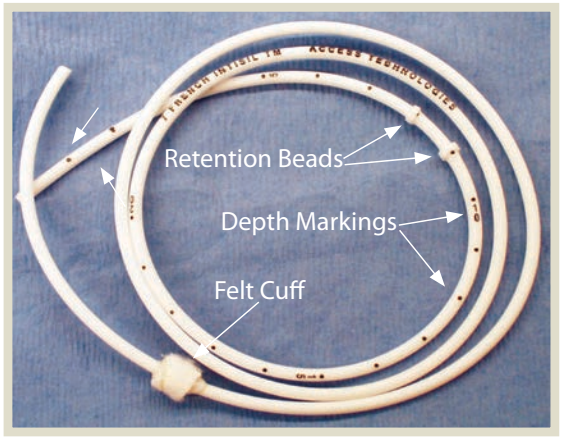
to suit the access location
vascular, tissue, organ or skin

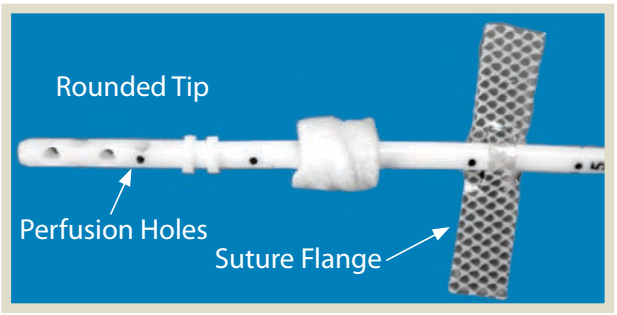
Coating on Polyurethane Catheters

Hydromer lubricious coating
reduces catheter platelet aggregation
reduces catheter protein adhesion

Exit Site Options

access port, luer adaptor, pigtail, cuff or plug
to allow repeated access to the catheter





If you cannot find exactly what you need in our library of catheters .....

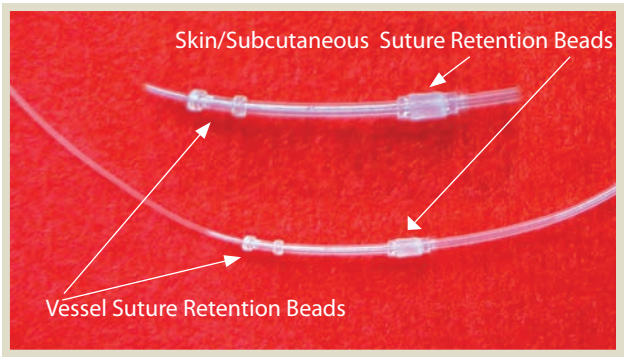
We can design you a brand new catheter
We can modify your existing design

or if you like your we can.....

We can reproduce your existing design

Built to Order Option

custom designs are our speciality
call to discuss your needs



RODENT *catheter design considerations*

Since smaller vessels require greater precision, it only makes sense to offer you more choices in catheter size and design. Our "Off the Shelf" range of rat and mouse catheters are customized for specific access targets can easily be modified suit your needs.

Catheter Size

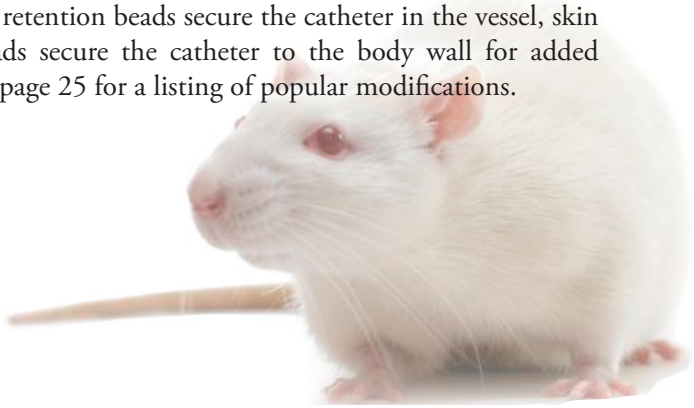
Catheter tubing is sized according to the Charriére or French scale. This is a measurement of the catheter's circumference with increasing French sizes corresponding to larger diameter catheters. (*For convenience you will find a handy catheter reference sheet on the inside back cover.*) The optimal proportion between the inner diameters of the catheter and vessel is a balancing act. The catheter should be large enough to optimize administration and sampling while small enough to minimize complications. In general a catheter that permits continuing blood flow around it has a decreased chance of inducing a clot. Because catheters have similar properties to vessels in terms of fluid flow and resistance, the properties of the infusate should be considered. Injection resistance is directly proportional to the viscosity and inversely proportional to the forth power of the catheter radius. For example a 2 fold increase in the catheter radius reduces the injection resistance 16 fold. Therefore too small a catheter offers increased resistance to infusion or aspiration and increases the chance of clotting, because of reduced flow.

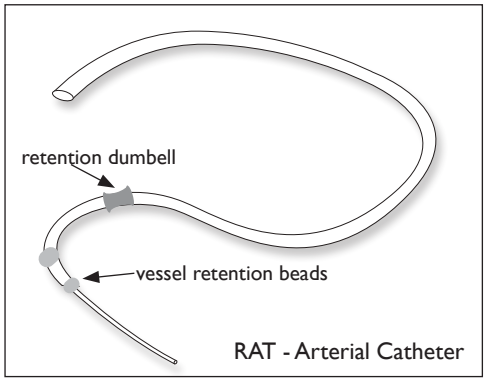
Catheter Material

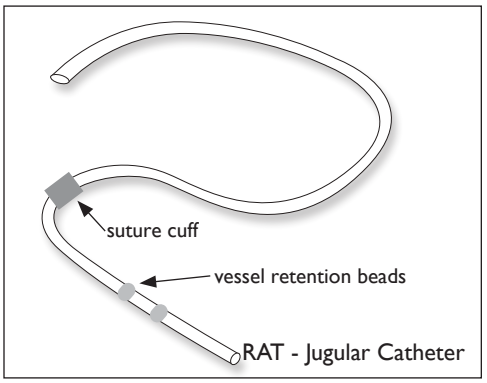
Catheter material choice should be such that minimizes vessel trauma and phlebitis that occurs secondary to mechanical vessel trauma. The stiffness of the catheter, surface texture and shape of the catheter tip play important roles in determining irritation to the vascular intima. Stiffer tubing and bevelled tips are easier to insert into small vessels, however, ensuing friction and endothelial irritation promotes tissue proliferation and formation of microthrombi. Catheter materials that soften at body temperature and have tapered/rounded catheter openings tend to cause the least vessel damage and remain patent longer. It should be remembered that catheters are foreign bodies and no matter how biocompatible elicit a response.

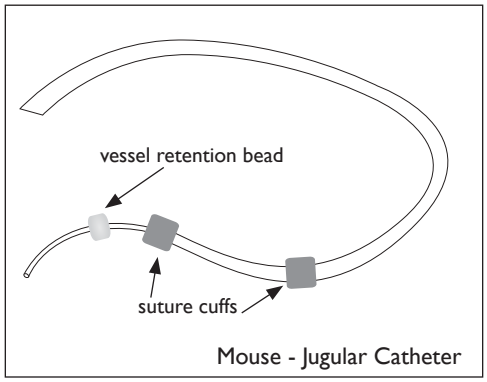
Catheter Modifications

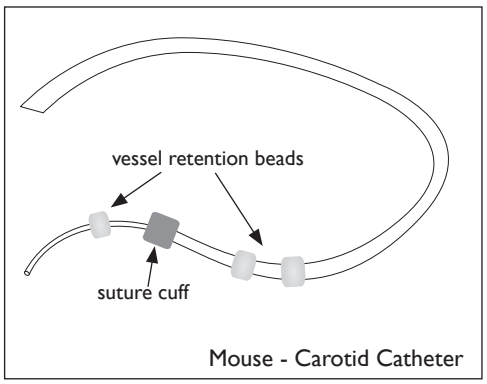
While suture retention beads secure the catheter in the vessel, skin retention beads secure the catheter to the body wall for added security. See page 25 for a listing of popular modifications.











CATHETERS *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. Catheters are provided sterile.

Design Considerations

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

Optional Extras

Hydromer coating on polyurethane catheters
to reduce platelet adhesion on catheter surface
to reduce protein adhesion on cathter 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

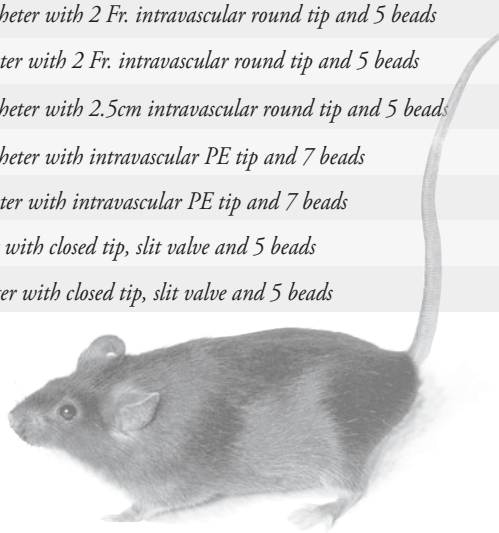
Catheter vein picks
for a cut-down catheter insertion procedure

A Sampling of our Rodent Catheters

Location	Cat. No.	Material	Description
Mouse Catheters			
Jugular Vein	CNC- 2/3S-082109E	Silicone	*2.2cm 2Fr. intravascular tip with 11cm 3 Fr. extension and 3 retention beads*
Carotid Artery	CNC-1/3P-081009C	Polyurethane	*2.3cm 1 Fr. intravascular tip with 11cm extension and 3 retention beads*
Rat Catheters			
Jugular Vein	AT-JVC-0912A	Polyurethane	*15cm 3 Fr. Polyurethane catheter with intravascular round tip and 4 beads*
Jugular Vein	AT-JVC-0612A	Polyurethane	*15 cm 3.5 Fr. Polyurethane catheter with intravascular round tip and 4 beads*
Femoral Vein	AT-FVC-0912A	Polyurethane	*24 cm 3 Fr. Polyurethane catheter with intravascular round tip and 5 beads*
Femoral Vein	AT-FVC-0612A	Polyurethane	*24 cm 3.5 Fr. Polyurethane catheter with intravascular round tip and 5 beads*
Carotid Artery	AT-CAC-612A	Polyurethane	*12.5 cm 3.5 Fr. Polyurethane catheter with 2 Fr. intravascular round tip and 5 beads*
Femoral Artery	AT-FAC-0612A	Polyurethane	*24 cm 3.5 Fr. Polyurethane catheter with 2 Fr. intravascular round tip and 5 beads*
Portal Vein	AT-PVC-0612A	Polyurethane	*28.5 cm 3.5 Fr. Polyurethane catheter with 2.5cm intravascular round tip and 5 beads*
Bile Duct	AT-BDC-0612A	Polyurethane	*32.5 cm 3.5 Fr. Polyurethane catheter with intravascular PE tip and 7 beads*
Bile Duct	AT-BDC-0612B	Polyurethane	*45 cm 3.5 Fr. Polyurethane catheter with intravascular PE tip and 7 beads*
Intra-colonic	AT-ICC-0912A	Polyurethane	*25cm 3 Fr. Polyurethane catheter with closed tip, slit valve and 5 beads*
Intra-colonic	AT-ICC-0612A	Polyurethane	*25cm 3.5 Fr. Polyurethane catheter with closed tip, slit valve and 5 beads*

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

Rodent catheters can be packaged with a Luer Stub Adaptor (LSA) and stainless steel plug.



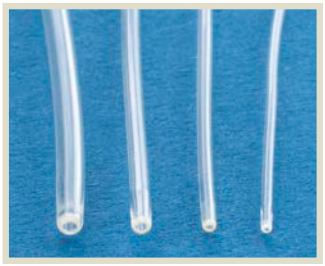
CATHETERS *our standard selection*

for larger species

CNC SERIES

sterile catheters without connectors

These sterile 24"/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 page 23 for modifications.



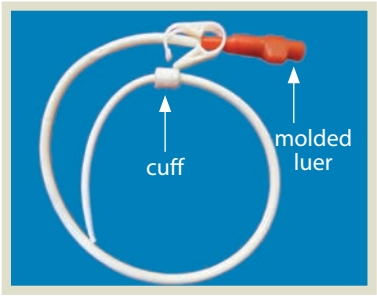
CNC Series: Silicone & Polyurethane Catheters			
Silicone	IntiSil*	Polyurethane	Hydrocoat**
CNC-1S	n/a	CNC-1P	n/a
CNC-2S	CNC-2IS	CNC-2P	CNC-2H
CNC-3S	CNC-3IS	CNC-3P	CNC-3H
CNC-4S	CNC-4IS	CNC-3.5P	CNC-3.5H
CNC-5S	CNC-5IS	CNC-5P	CNC-5H
CNC-7S	CNC-7IS	CNC-7P	CNC-7H
CNC-9S	CNC-9IS		

* Intisil is a rounded tip silicone catheter
** Hydrocoat is a rounded tip Hydromer coated polyurethane catheter

SIL-O-CATH

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 catheter features a Dacron® cuff, 3"/8cm from the rubber hub/luer and a pinch clamp. The position of the cuff can be modifed to suit your needs.
The Sil-O-Cath is available in single or dual lumen configurations.



Sil-O-Cath Molded Catheter- single or dual lumen	
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. dual lumen silicone catheter with rubber hub

All catalog numbers include a Dacron® cuff at 3"/8cm from the rubber hub/luer as well as a pinch clamp.

CC SERIES

sterile catheters with connectors

These 24"/60cm catheters are available in both preattached 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 1" Tygon extension) for insertion into the catheter for infusion.

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 catalog number to denote Attachable Chronic-Cath
The attachable Chronic-Cath is available for catheters 3.5-9Fr

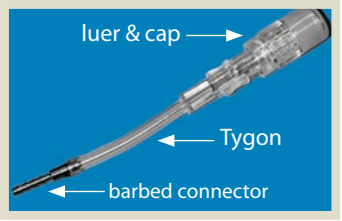
CCAC - a catheter with a attachable pigtail

CC- a catheter with a preattached luer

PC SERIES

PigTail connectors

The PigTail connector features a titanium barbed connector pin attached to 1" of Tygon tubing, a female luer lock, and an injection cap. The PigTail is inserted into the catheter when an infusion is necessary.

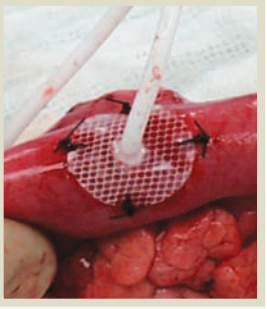
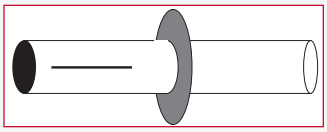
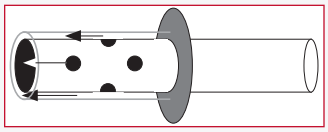
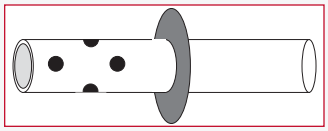


PC Series - PigTail Connectors	
PC-3	use with 3 Fr. catheters
PC-3.5	use with 3.5 or 4 Fr. catheters
PC-5	use with 5 Fr. catheters
PC-7	use with 7 Fr. catheters
PC-9	use with 9 Fr. catheters

SITE SPECIFIC CATHETERS

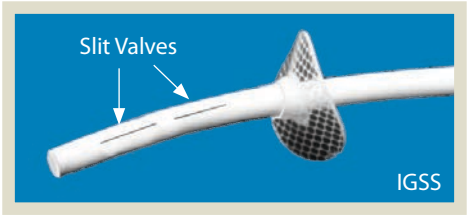
gastro-intestinal & bladder catheters

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	24"/60cm	24"/60cm	24"/60cm
Cath. size	5 or 7 French	5 or 7 French	5 or 7 French
Position of disc	5cm from tip	2cm from tip on 7 French 5mm from tip on 5 French	5cm from tip
Dacron® disc size	7mm on 5 French 15mm on 7 French	7mm on 5 French 15mm on 7 French	7mm on 5 French 15mm on 7 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 perfusion holes. This design is also available with a closed end.

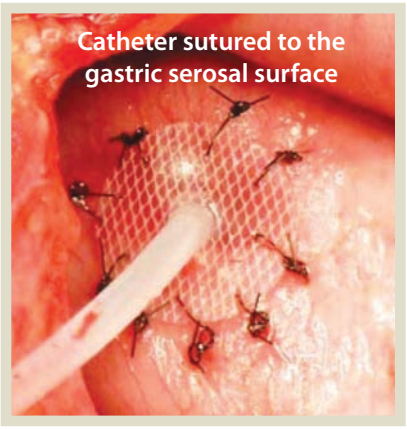
GASTRO-INTESTINAL *catheters*

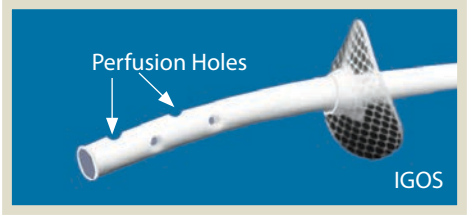
can be attached to an access port or can be externalized.



The IGSS, closed end with slit valves, is suitable for blader infusion.

The IGOS, open end with perfusion holes, is suitable for bladder infusion and aspiration.





HYDROCOAT Catheters

Hydromer coated polyurethane

Hydromer, a highly lubricious, non-eluting surface coating for the reduction of biofilm adhesion and bacterial colonzation is available on our polyurethane catheters.

This biocompatible, hydrophilic medical coatings swells instantaneously upon contact with water-containing fluids to form a waxy surface texture that is highly lubricious. This allows the catheter to slide easily through the vessel improving the ease of delivery of catheters through the difficult vascular pathways.

The slippery surface of the Hydrocoated catheter exhibits significant antithrombogenic behaviour in the vascular environment by reducing biofilm adhesion & bacterial colonization.

Hydromer coated catheter in the right femoral artery of a dog, showing no vessel thickening, and no clot formation

SilTip™ Catheter

silicone with attached female luer

This 60cm Silicone catheter with a preattached luer and rounded intravascular tip is provided with moveable beads and an injection cap.
Available in 5 and 7 French.

WhiteTip™ Catheter

polyurethane with a white tip

This radiopaque catheter is made from a special soft polyurethane and has a rounded tip. Soft round tips likely are more thromboresistant than other catheter designs. Available in 3 French.

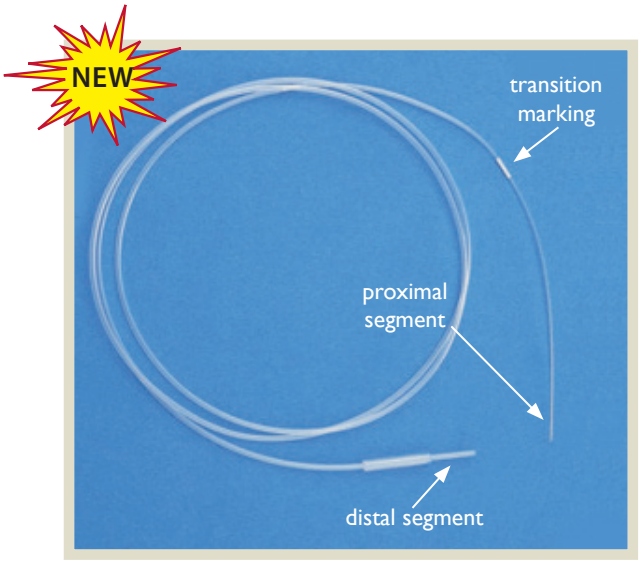
FUNNEL Catheters

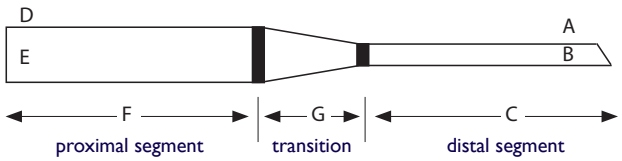
Tapered polyurethane catheter

The FunnelCath™ offers a very small distal catheter tip for intravascular placement in rodents while providing a way to connect these catheters to an infusion source requiring a large ID - an access port, luer stub adaptor or pump.

FunnelCaths are tapered during the extrusion process for a smooth transition from a 2 or 3 French proximal end (connecting to a 25 or 22 gauge connector) to a 1.2 French intravascular tip.

Transition points are marked for easy identification.





	PUFC C30-10	PUFC C20-10	PUFC C30-20
proximal end connect 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)	4ccm	4cm	
overall length (H)	60cm	60cm	60cm

SPECIALTY CATHETERS

Nylon INFUSION Catheter

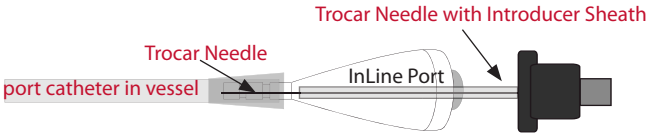
use with the In-Line Port

The Infusion Catheter is a flexible 21G 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 long-term 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. *See page 9 for the InLine Port specifications.*

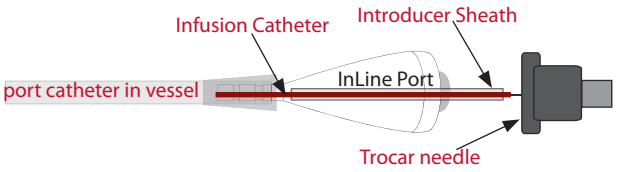

The InLine Port

using the INFUSION *catheter with the InLine Port*

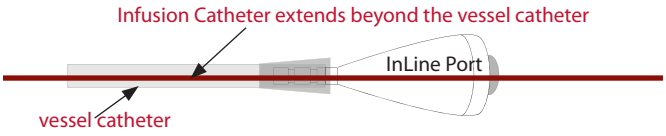
- avoids repeated surgeries to replace an occluded catheter
- improves longevity of patency
- eliminates the problem of "needle walk-out"



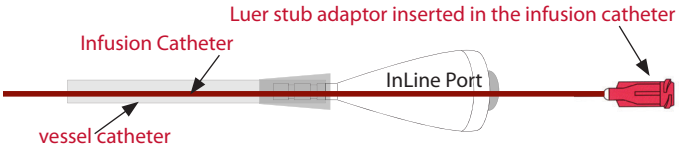
Insert the Trocar Needle Introducer (supplied with the infusion catheter) into the port septum making sure it is in far enough so that it lies in the outlet connector pin.



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 InLine port, insert a Luer Stub Adaptor into the infusion catheter and infuse or withdraw.

Nylon INFUSION Catheter

use with the TuBo Port

The Infusion Catheter is a flexible 19G or 20G nylon catheter that can be attached to the TuBo Port for epidural/intrathecal access.

The TuBo Port specifications can be found on page 19.


TuBo Port attached to a nylon catheter

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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 consistent results.

Catalog No.	Lumen Diameter	Cuff Width	Cuff Thickness
OC 1.5	1.5mm	3.5mm	1.5mm
OC 2	2mm	5mm	1.5mm
OC 3	3mm	5mm	1.5mm
OC 5	5mm	5mm	2mm
OC 8	8mm	7mm	2mm
OC 12	12mm	8mm	2.5mm
OC 14	14mm	8mm	2.5mm
OC 16	16mm	12mm	2.5mm
OC 20	20mm	12mm	2.5mm
OC 24	24mm	12mm	2.5mm
OC 10HD	10mm	9mm	3mm
OC 12HD	12mm	9mm	3mm
OC 14HD	14mm	9mm	3mm
OC 16HD	16mm	13mm	4mm

Call for additional sizes and operation manual

General Information

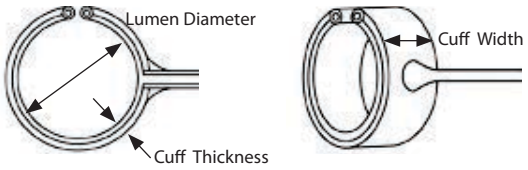
The occluder cuff dimensions when deflated are usually the determining factor in the selection of the proper size device. Occluders may be attached to an access port or externalized.

The actuating tube length is 90cm. Longer lengths are available on request. Lengths over 2 meters are not recommended.

Actuating tubing diameters:

OC 1.5-10 including HD* series:
ID 0.03"/0.8mm x OD 0.06"/1.6mm

OC 12-24 including HD* series:
ID 0.04"/1.0mm x OD 0.08"/2.1mm



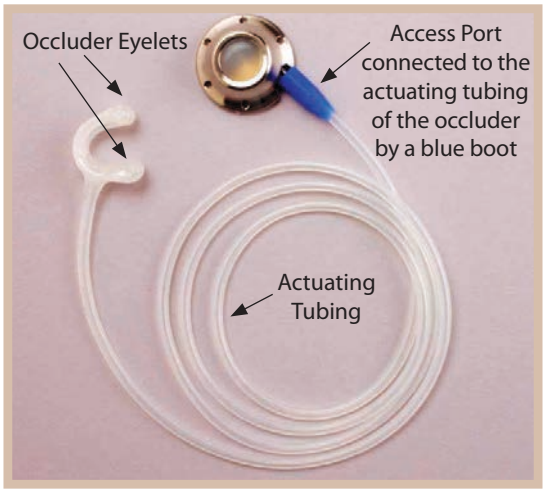
Occluder Instructions

a complete manual is available

The occluder cuff is wrapped around the exposed vessel and secured inplace using suture material passed through the eyelets. Air or liquid is then injected into the actuating tubing by syringe inflating the diaphragm and compressing the vessel to occlusion. To deflate, simply withdraw the air or liquid.

The occluder may be activated by either pneumatic or hydraulic methods. Satisfactory results can be expected by injecting air, inert gas, or various liquids into the actuating tube. Some researchers prefer air because of its simplicity, availability, and ease of pressure control. Others prefer water of saline solution, especially for occlusions of longer duration (up to one hour). As a precaution, sterile normal saline solution or sterile distilled water are recommended for use with this device in case fluid is accidentally injected into the animal under study.

For procedures requiring occlusion times in excess of one hour, sterile glycerin has been used successfully by researchers. Glycerin does not transpire through silicone rubber, does not evaporate, and is generally biocompatible.



Ordering Information

To order specify both the access port preferred as well as the occluder diameter.

Access Port *Occluder size*

CP4AC-OC10

CONVERSION *charts*

a Handy Reference Sheet

FRENCH SIZE EQUIVALENTS

French Size	O. D. inches	O. D. mm
1	0.013	0.33
2	0.026	0.67
3	0.039	1.00
4	0.053	1.35
5	0.066	1.67
6	0.079	2.00
7	0.092	2.30
8	0.105	2.70
9	0.118	3.00
10	0.131	3.30
11	0.144	3.70
12	0.158	4.00

measurements refer to outer diameters

NEEDLE GAUGE CHART

Needle Gauge	O. D. inch	O. D. mm	I. D. inch	I. D. mm
14	0.083	2.108	0.054	1.372
16	0.065	1.651	0.047	1.194
18	0.05	1.270	0.033	0.838
19	0.042	1.067	0.027	0.686
20	0.035	0.902	0.023	0.584
21	0.032	0.813	0.019	0.495
22	0.028	0.711	0.015	0.394
23	0.025	0.635	0.013	0.318
24	0.022	0.559	0.011	0.292
25	0.018	0.457	0.009	0.241
27	0.016	0.406	0.007	0.191
28	0.014	0.356	0.006	0.165
30	0.012	0.305	0.005	0.140
32	0.009	0.229	0.003	0.089

EQUIVALENTS

LENGTH

1 centimeter	= 10 millimeters
1 centimeter	= 0.39 inches
1 millimeter	= 0.039 inches
1 inch	= 2.54 centimeters
1 inch	= 25.4 millimeters
6 inches	= 15.24 centimeters
12 inches/1 foot	= 30.48 centimeters
1 meter	= 100 centimeters
25 feet	= 7.62 meters

WEIGHT

1 milligram	= 0.001 grams
1 gram	= 0.001 kilograms
1 gram	= 0.035 ounces
1 kilogram	= 1000 grams
1 kilogram	= 35.27 ounces

TEMPERATURE

To °Celsius	To °Fahrenheit
°C = (°F - 32) x 5/9	°F = (°C x 9/5) + 32