



Examples of tubing connection:

HOW to CONNECT iPRECIO's Outlet Tubing to my catheter / tubing, cannula?

CONTENTS

Page

1	Standard Connection (3Fr / 22Ga)
2	1Fr / 2Fr Connection (Polyurethane)
3	PE10 / COEX Tubing Connection
4	Brain Cannula
5	Example connection images for routes of administration

Introducing Materials

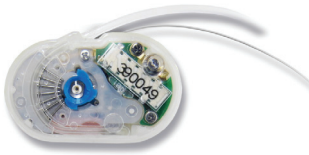
7	Catheters and tubing, Catheter Customization Examples
13	Intrathecal Catheter
14	Brain Cannula

Both iPRECIO SMP-300 and SMP-200's Outlet Tubing can be connected to typical 3Fr size catheter and tubing for laboratory small animal. We introduce several additional cases in below as well as introducing recommended unique tubing and catheter supplied by our partners.

iPRECIO's outer tubing (It is same tubing used both for SMP-300 and SMP-200.)

[SMP-300]

[SMP-200]



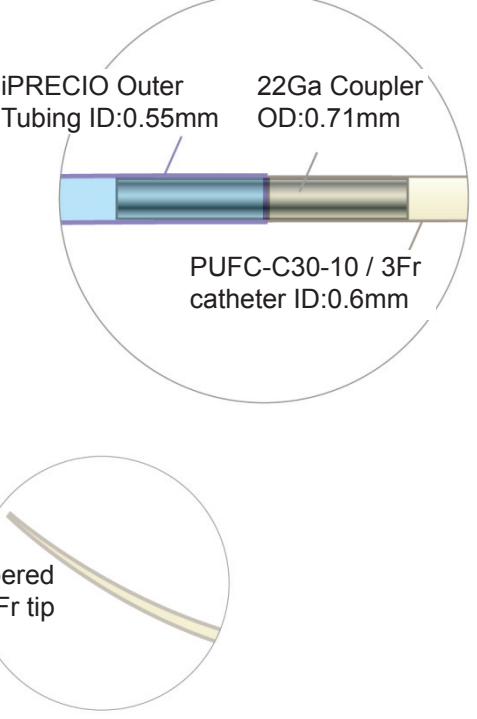
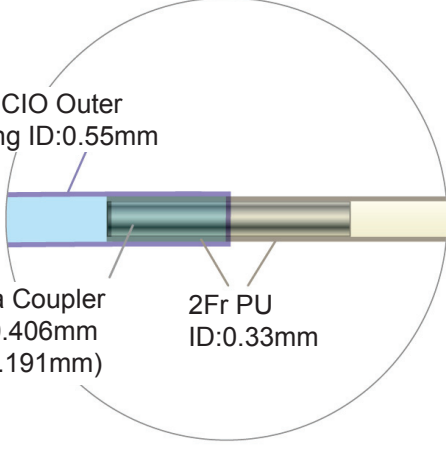
[OD] 1.2mm · [ID] 0.55mm , [Length] approx. 140mm(SMP-300), 135mm(SMP-200)

Material : SEBS Medical Grade

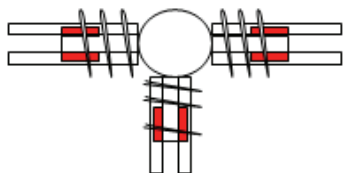
Standard Connection

Polyurethane [PU]		22Ga Coupler / Cannula	
3Fr	[OD] 0.9mm · [ID]0.6mm	22Ga	[OD] 0.71mm · [ID] 0.41mm
<p>iPRECIO Outer Tubing ID:0.55mm 22Ga Coupler OD:0.71mm</p> <p>3Fr PU ID:0.6mm</p>		<p>iPRECIO Outer Tubing ID:0.55mm 22Ga Coupler OD:0.71mm</p>	
<p>iPRECIO® catheter connects/compatible with 22 gauge size coupler and cannula. Insert 22 gauge oupler/cannula into iPRECIO® catheter by between 6-8mm to have maximum reliability. No glue required.</p>			
<p>Connection is same as 1Fr case using PUF-C30-10. See catheter modification option : page 10</p>		<p>Example tubing/coupler/catheter include:</p> <ul style="list-style-type: none"> - 22 gauge coupler - 22 Gauge coupler connects to 3Fr tubing. Insert 22 gauge into 3Fr tubing by 6-8mm of maximum reliability. - Cannula for brain infusion with 22 gauge side tube - Bi-lateral cannula for brain infusion with 22 gauge side tube 	

Connected Catheter/Tubing Material : **Polyurethane [PU]**

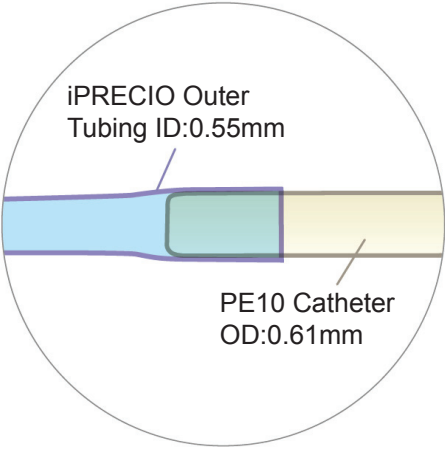
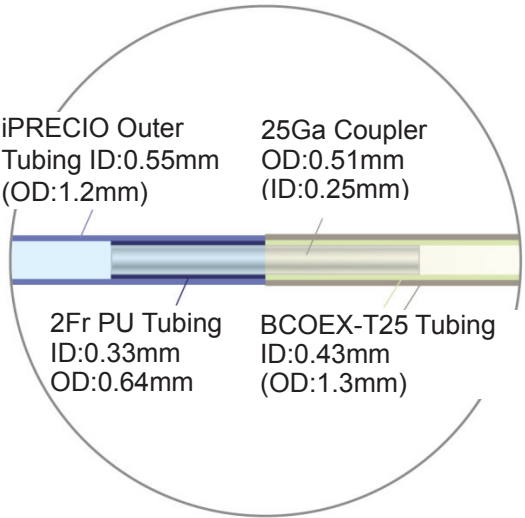
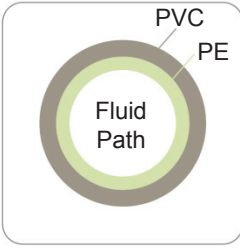
1Fr	[OD] 0.4mm • [ID] 0.305mm	2Fr	[OD] 0.64mm • [ID] 0.33mm
 <p data-bbox="188 1151 804 1263">We would recommend the 3 Fr going to 1.2 Fr funnel catheter where the 3 Fr end would fit into iPRECIO catheter.</p> <p data-bbox="188 1312 804 1424">We recommend an overlap of 6mm-8mm between the iPRECIO catheter and 3 Fr end of the funnel catheter</p> <p data-bbox="188 1473 405 1509">Glue not required.</p>		 <p data-bbox="831 1151 1251 1227">Overlap at least 6-8mm if possible. Glue not required.</p> <hr/> <p data-bbox="831 1272 1455 1388">Another option : Tapered funnel catheter PUFC-C30-20 is also one of the option to have 2Fr size.(For detail of this catheter: see page 7).</p> <p data-bbox="831 1433 1385 1509">Catheter which has various accessory options. (See page 10)</p>	

3-way valve [22Ga]



In red is the 3Fr PU 3mm length.
Oblique lines mean suture line.

- 1) Overlap the 22 gauge valve tubing with 3Fr PU (3mm) before connecting to iPRECIO® pump catheter. (3Fr PU (3mm) overlapping will improve the “sealing” and strength of the connection.)
 - 2) Then insert the valve with 3mm length 3Fr PU into iPRECIO outer tubing.
 - 3) If possible, suture as shown.
- *Glue will not be necessary.

Polyethylene [PE]		COEX Tubing	
PE10	[OD] 0.61mm · [ID]0.28mm	25Ga	[OD] 1.3mm · [ID]0.43mm
 <p>iPRECIO Outer Tubing ID:0.55mm</p> <p>PE10 Catheter OD:0.61mm</p>		 <p>iPRECIO Outer Tubing ID:0.55mm (OD:1.2mm)</p> <p>25Ga Coupler OD:0.51mm (ID:0.25mm)</p> <p>2Fr PU Tubing ID:0.33mm OD:0.64mm</p> <p>BCOEX-T25 Tubing ID:0.43mm (OD:1.3mm)</p>	
<p>As the iPRECIO catheter is flexible, the 0.61 OD tubing can be inserted into the 0.55 ID tubing and we recommend an overlap of at least 8mm to ensure a good seal. Less overlap increases risk of disconnection.</p> <p>Sharp edges of PE tubing should be rounded off especially for chronic infusions. (damage to iPRECIO catheter)</p> <p>Glue not required</p>		 <p>PVC</p> <p>PE</p> <p>Fluid Path</p> <p>CO-EX™ tubing</p> <p>Supplied by Solomon Scientific</p> <p>We recommend to use CO-EX™ tubing when iPRECIO® pump is not used in-vivo to minimize evaporation. Reduce iPRECIO Catheter to a minimum. CO-EX™ tubing has a chemically inert fluid path of Polyethylene (PE) and an outer wall of PVC thereby making it easy to bond to luers and other components and reduce kinking common with PE.</p> <p>For connection, using 25Ga stainless coupler and 2Fr short length PU tubing inside of iPRECIO catheter (outside of 25Ga coupler) to adjust the diameter.</p>	

Brain Cannula

Standard Cannula with Side Arm/Port [21Ga / 22Ga]



Bilateral Cannula with Side Arm/Port [21Ga / 22Ga]



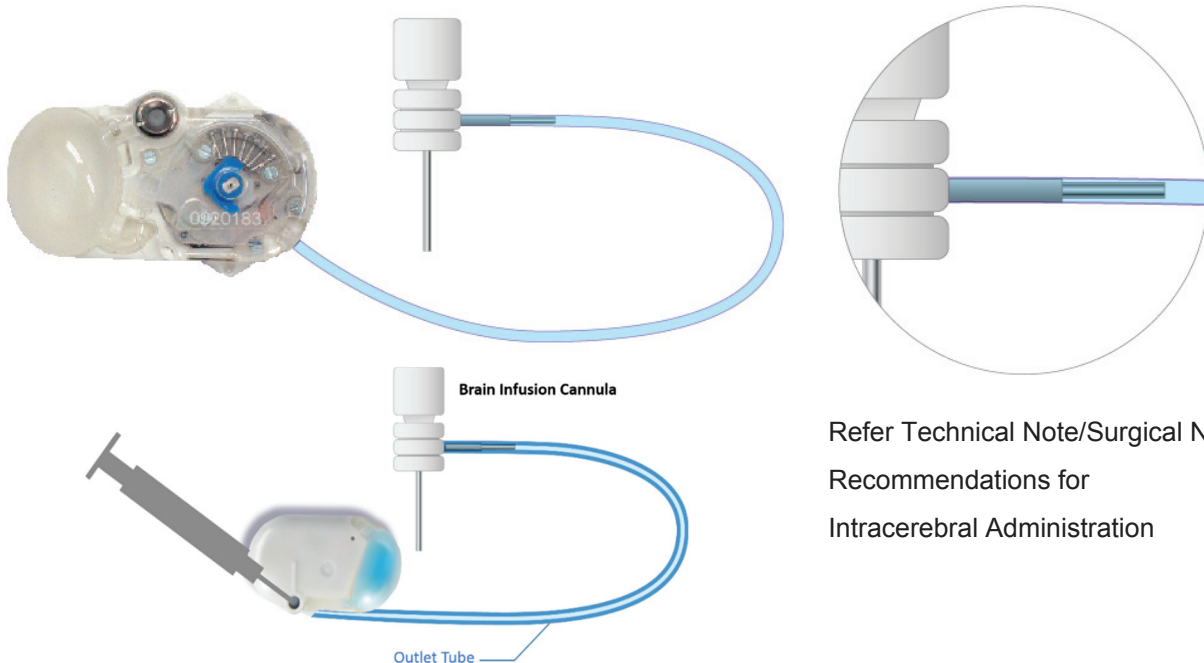
http://www.plastics1.com/Gallery-PRC.php?FILTER_CLEAR&FILTER_FCATEGORY=Infusion&FILTER_F1=Guide%20cannula&FILTER_F3=Osmotic%20cannula

Most commercially available cannula's have a side arm/port which is 22 gauge or 21 gauge.

[22 Ga] OD: 0.71mm, ID: 0.41 mm

[21 Ga] OD: 0.81mm, ID: 0.51 mm

iPRECIO® SEBS outlet tubing will fit directly to the side port. It is 1.2 mm OD 0.55 mm ID. The 0.55 mm ID will stretch over 0.71 mm OD and 0.81 mm OD of 22 gauge and 21 gauge fine. Preferred is 21 gauge with overlap of 6-8mm. Use 21 gauge SS coupler or 22gauge with iPRECIO pumps.



Refer Technical Note/Surgical Note:
Recommendations for
Intracerebral Administration

Fig. 1 Connect the brain infusion cannula to the pump

Example connection images for routes of administration

(from iPRECIO Technical Notes and Surgical Protocols)

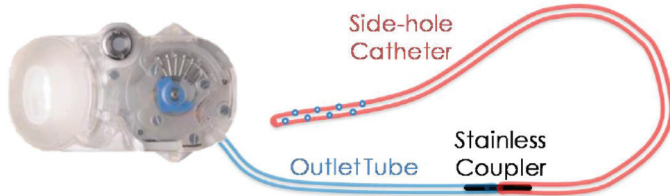
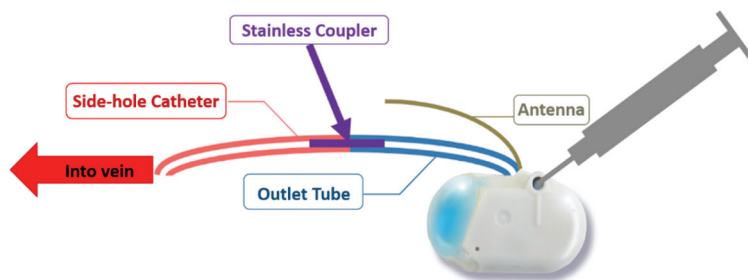


Fig. 1 Connect the side-hole catheter



iPRECIO with 22 gauge coupler with 3 Fr customized catheter.

Reference: Technical Note - Recommendations for Intraperitoneal Administration(SMP-200)
Surgical Protocol - Recommendations for Intraperitoneal Administration(SMP-300)

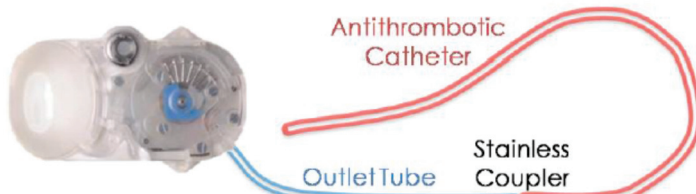


Fig. 1 Connect the antithrombotic catheter

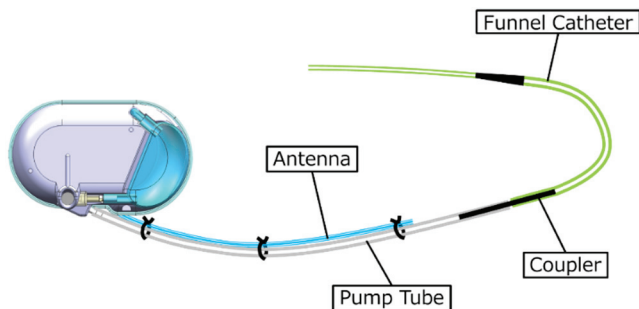


Fig.1 Antenna fixing and intravenous catheter connection

iPRECIO with 22 gauge coupler with 3 Fr Antithrombotic catheter as well as funnel catheter.

Reference: Technical Note - Recommendations for Intravenous Administration(SMP-200)
Surgical Protocol - Recommendations for Intravenous Administration in Mice(SMP-300)

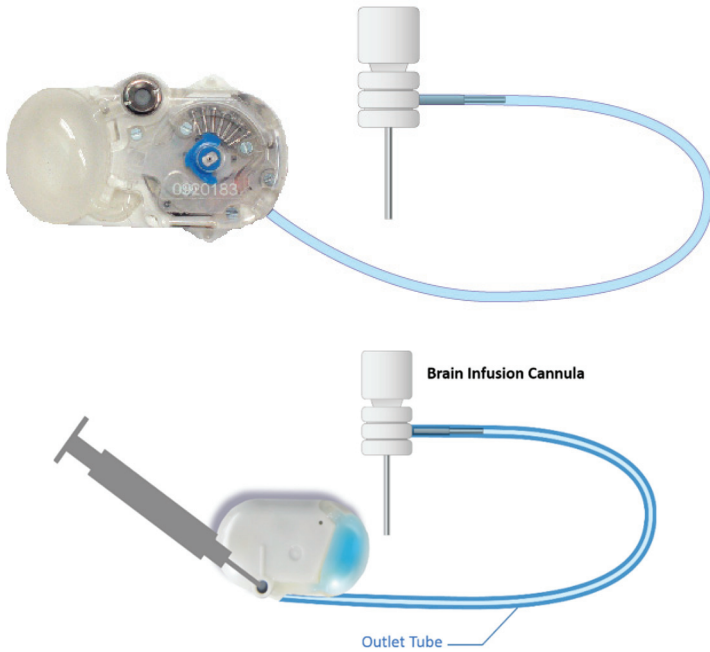


Fig. 1 Connect the brain infusion cannula to the pump

iPRECIO with 22 gauge side port cannula from Plastic One.
Direct fit.

Reference: Technical Note - Recommendations for Intracerebral Administration(SMP-200)
Surgical Note - Recommendations for Intracerebral Administration(SMP-300)

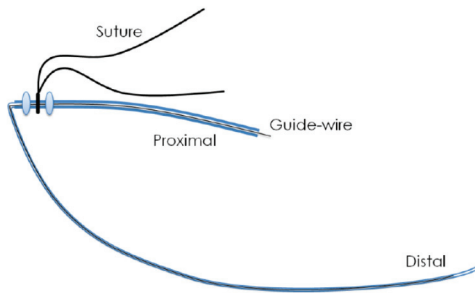


Fig. 2 Intrathecal Catheter Preparation

iPRECIO customized Intrathecal catheter from ReCathCo.

Reference: Technical Note - Recommendations for Intrathecal Administration(SMP-200)

Introducing Materials

Catheters and tubing:

Supplier : Access Technologies www.norfolkaccess.com

Funnel Catheter

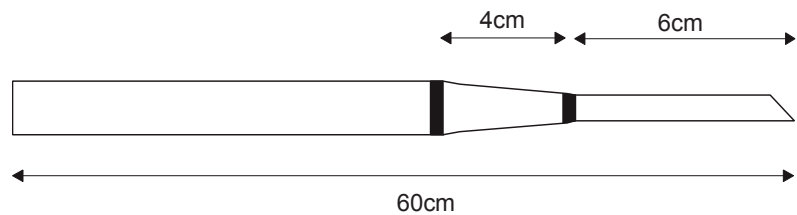


FunnelCath™ is specifically designed catheter for mice (also for rats) intravascular placement while providing a way to connect the catheter to an infusion pump. It is a single PU tube which tapers from the proximal end (connecting to 22Ga or 25Ga connector) to a very small (1.2F or 2F) intravascular distal end.

Swivel or luer end

2Fr (ID: 0.46mm, OD: 0.89mm) - connects to 25Ga

3Fr (ID: 0.66mm, OD: 1.07mm) - connects to 22Ga



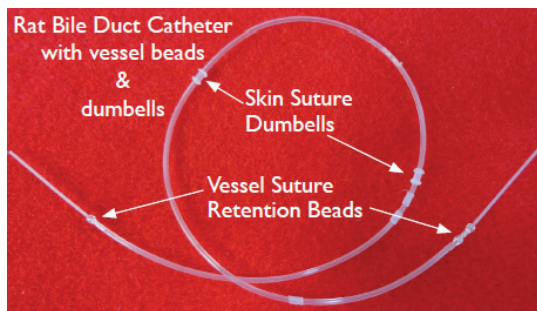
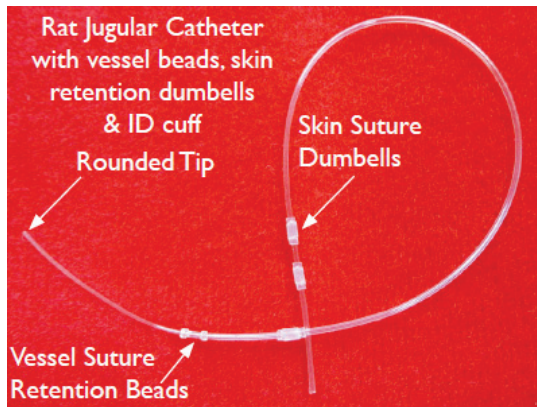
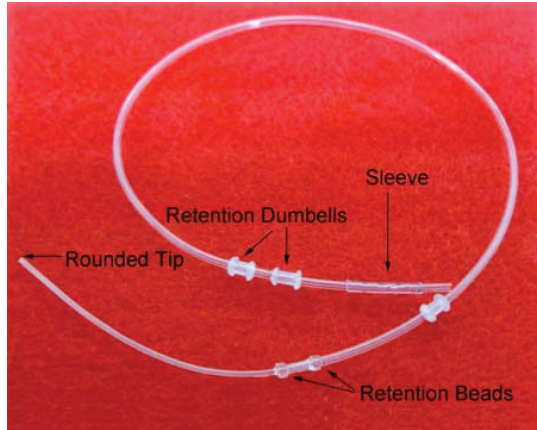
Transition zone
1.2Fr intravascular segment
(ID: 0.23mm, OD: 0.41mm)

2Fr intravascular segment
(ID: 0.46mm, OD: 0.89mm)

Lineup

Part Number	Description
PUFC-C20-10	FunnelCath™ tapered PU catheter; proximal end fits to 25Ga, distal end is 1.2F, bevel tip, STERILE
PUFC-C30-10	FunnelCath™ tapered PU catheter; proximal end fits to 22Ga, distal end is 1.2F, bevel tip, STERILE
PUFC-C30-20	FunnelCath™ tapered PU catheter; proximal end fits to 22Ga, distal end is 2F, round tip, STERILE

Rodent Catheters



From the smallest mouse to the largest rat - and for everyone in-between - Access Technologies offers an 'off-the-shelf' proven and validated catheter design for all sizes of rodents and for all access targets.

Since smaller vessels require greater precision, it only makes sense to offer you more choices in catheter size and design.

The development and validation of over 30 unique rodent catheters has been completed and they are now available to the entire research community at a competitive price.

This line of rodent catheters that has been used in the surgically modified rodents supplied by a major U.S.A. breeder for over 6 years, is now available to you.

To take advantage of our introductory pricing or to receive evaluation samples, give us a call at 1-847-674-7131.

Specialty Catheters for Rats : Linup

Jugular Catheter	AT-RJVC-0612A
Femoral Venous Catheter	AT-RFVC-0612A
Femoral Arterial Catheter	AT-RFAC-0612A
Carotid Arterial Catheter	AT- RCAC-0612A
Portal Vein Catheter	AT -RPVC-0612A
Bile Duct Catheter	AT- RBDC-0612A

<http://www.norfolkaccess.com/rodent%20catheters.html>

Hydromer Coating Catheter

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

Line up

Model	Fr. Size	Ga	ID(mm)	OD(mm)	Volume µl/cm
CNC-2H	2	23	.012"/0.3mm	.025"/0.6mm	0.7 µl/cm
CNC-3H	3	20	.023"/0.6mm	.037"/0.9mm	2.7 µl/cm
CNC-3.5H	3.5	18	.025"/0.6mm	.044"/1.1mm	3.2 µl/cm
CNC-5H	5	16	.040"/1.0mm	.065"/1.7mm	8.1 µl/cm
CNC-7H	7	13	.058"/1.5mm	.095"/2.4mm	17.0 µl/cm

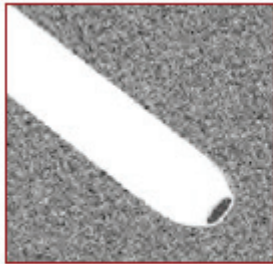
<http://www.norfolkaccess.com/catheters.html>

Access Technologies can also supply non-coating with round tip polyurethane catheter (model code: CNC-xPR) and bulk tubing(model code: BC-xP).

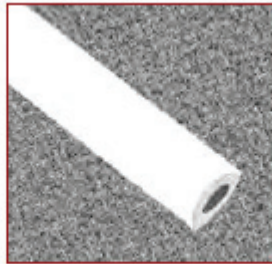
Catheters Customization Examples

Supplier : Access Technologies www.norfolkaccess.com

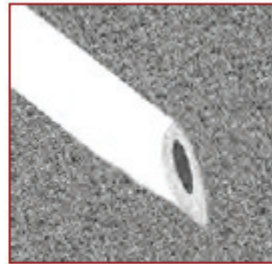
Catheter Tip Options:



Round Tip



Square Tip



Bevel Tip

Catheter Modifications Options:



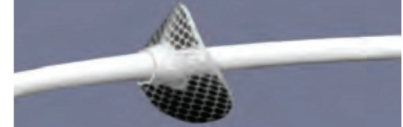
Retention Sleeve

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



Suture Beads

to secure the catheter within the vessel or organ



Suture Disk

to anchor the catheter in the intestines or bladder



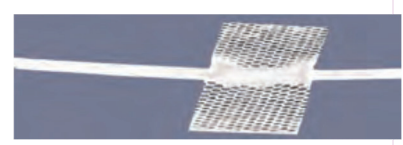
Dacron® Felt Cuff

to promote tissue in growth of the catheter



Perfusion Holes

for perfusion of organs



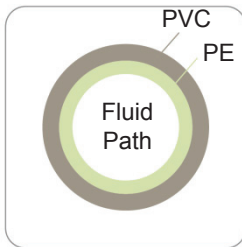
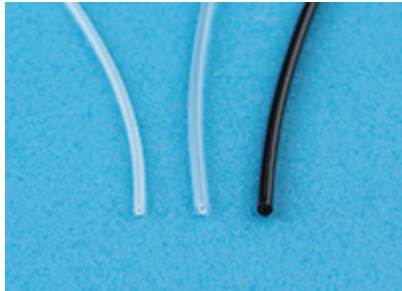
Suture Flange

to anchor the catheter to the tissue

Catheters and tubing:

Supplier : Instech Laboratories www.instechlabs.com

Co-Extruded PE/PVC Tubing



The tubing has a chemically inert fluid path of Polyethylene (PE) and an outer wall of PVC thereby making it easy to bond to luers and other components and reduce kinking common with PE.

Lineup

Part Number	Description
BCOEX-T25	Co-extruded PE/PVC tubing for 25ga, .017x.051in, spool, non-sterile (Unit: 100ft/30.5m)
BCOEX-T22	Co-extruded PE/PVC tubing for 22ga, .024x.064in, spool, non-sterile (Unit: 100ft/30.5m)
BCOEX-T22B	Co-extruded PE/PVC tubing for 22ga, black, .024x.072in, spool, non-sterile (Unit: 50ft/15m)

<http://www.instechlabs.com/Infusion/tubing/coex.php>

Tubing Coupler



Couplers are used to connect catheters to external infusion tubing. Plugs may be used to seal off a catheter before an infusion experiment begins. Couplers and plugs are available non-sterile in packages of 100. They may also be ordered sterile either individually packaged.

Lineup

Part Number	Description	Size
SC17/15	17ga x 15mm	[OD] 1.47mm • [ID]1.07mm
SC20/15	20ga x 15mm	[OD] 0.91mm • [ID] 0.61mm
SC22/15	22ga x 15mm	[OD] 0.71mm • [ID] 0.41mm
SC22/8	22ga x 8mm	[OD] 0.71mm • [ID] 0.41mm
SC23/8	23ga x 8mm	[OD] 0.64mm • [ID] 0.33mm
SC25/10	25ga x 10mm	[OD] 0.51mm • [ID] 0.25mm
SC27/8	27ga x 8mm	[OD] 0.41mm • [ID] 0.20mm

<http://www.instechlabs.com/Infusion/tubing/connectors.php>

Catheters for Rats and Mice




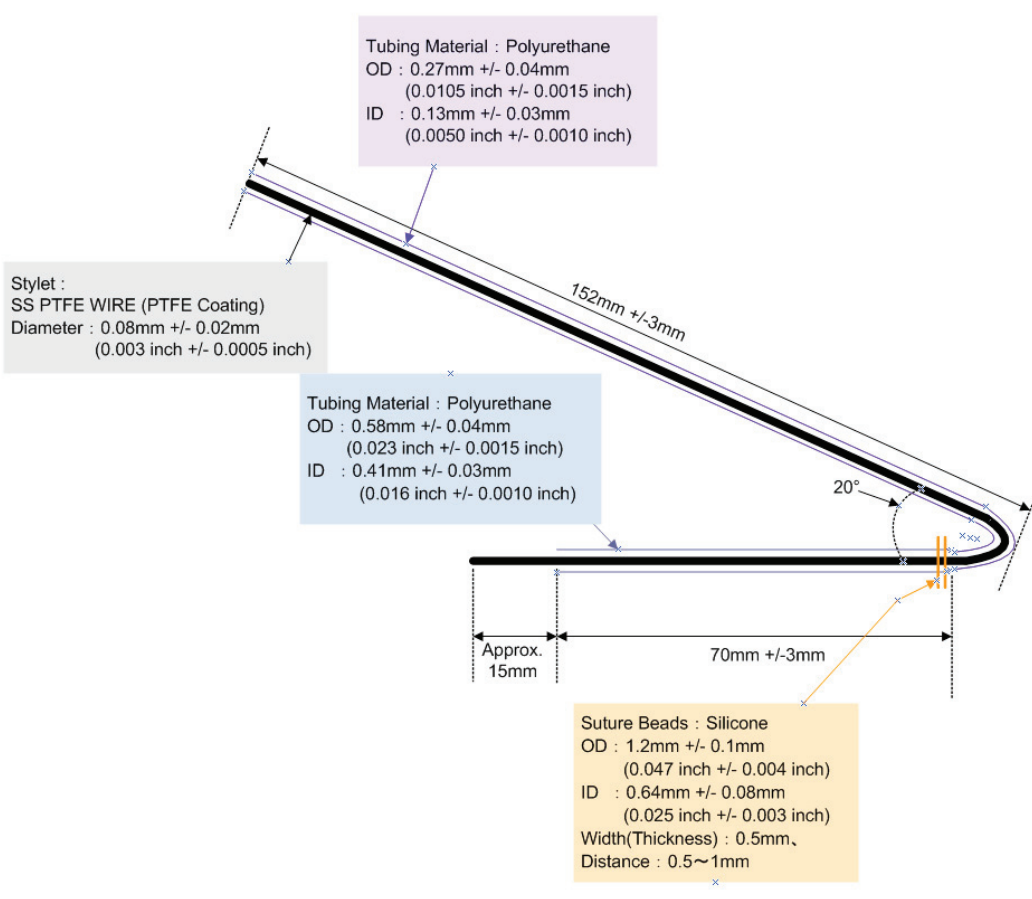
Instech introduce rodent catheters developed and manufactured in collaboration with ReCathCo. They have been designed with rounded tips, suture collars and other features specifically for the indicated species and vessel. Also they are made using high quality medical-grade materials.

Lineup	
For Rats	Rat Jugular Vein Catheters
	Rat Femoral Vein Catheters
	Rat Femoral Artery Catheters
	Rat Carotid Artery Catheters
	Rat Portal Vein Catheters
	Rat Bile Duct Catheters
	Rat Gastric Catheters
	Rat Intrathecal Catheters
	Rat Tail Vein Cannulae
For Mice	Mouse Jugular Vein Catheters
	Mouse Femoral V/A Catheters
	Mouse Carotid Artery Catheters
	Mouse Tail Vein Cannulae

<http://www.instechlabs.com/Infusion/catheters/>

Intrathecal Catheter

Supplier : ReCathCo www.recathco.com

<p>Model : 0220EO</p>	<p>32Ga Catheter for use w/iPRECIO Pump http://www.recathco.com/catheters/32Guage_Intrathecal.html</p>
	<p>(Specialized for iPRECIO)</p> <p>This specialized catheter is unique shape having stylet.</p>
 <p>Tubing Material : Polyurethane OD : 0.27mm +/- 0.04mm (0.0105 inch +/- 0.0015 inch) ID : 0.13mm +/- 0.03mm (0.0050 inch +/- 0.0010 inch)</p> <p>Stylet : SS PTFE WIRE (PTFE Coating) Diameter : 0.08mm +/- 0.02mm (0.003 inch +/- 0.0005 inch)</p> <p>Tubing Material : Polyurethane OD : 0.58mm +/- 0.04mm (0.023 inch +/- 0.0015 inch) ID : 0.41mm +/- 0.03mm (0.016 inch +/- 0.0010 inch)</p> <p>Suture Beads : Silicone OD : 1.2mm +/- 0.1mm (0.047 inch +/- 0.004 inch) ID : 0.64mm +/- 0.08mm (0.025 inch +/- 0.003 inch) Width(Thickness) : 0.5mm Distance : 0.5~1mm</p>	

Brain Cannula

Supplier : Plastic One www.plastics1.com

Standard Cannula



Has a plastic pedestal molded around an L-shaped stainless steel tube that extends below the pedestal and to the side to connect to the pump. A break-off segment fits in the MH-300 mounting holder for placement. After the Cerebond, dental cement or cyanoacrylate gel has set, the segment is cut off. The remaining pedestal is then covered with skin and sutured for a subcutaneous mounting. 3280P and 3300P have a 21 gauge side arm. 3220P has a 22 gauge side arm.

All side connector tubes are 5 mm (.20") long.

Pedestal height: 3.0 mm (.118").

Pedestal diameter: 3.5 mm (. 138").

Break-off Post diameter: 3.5 mm (. 138")

Line up

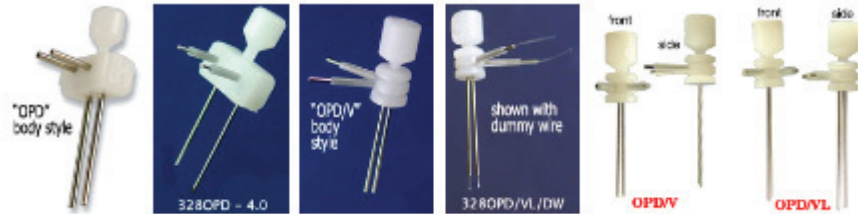
OP CANNULA PART NUMBER	TUBING SIZE (GAUGE)	TUBING LENGTH BELOW PEDESTAL MM (IN.)	MATES W/ DUMMY CANNULA	MATES W/ DUST CAP
322OP/SP	22	SPECIFY	322ID	322DC
328OP/SP	28	SPECIFY	NONE	321DC
328OP/DW/SP	28	SPECIFY	WITH REMOVABLE DUMMY WIRE	321DC
330OP/SP	30	SPECIFY	NONE	321DC
330OP/DW/SP	30	SPECIFY	WITH REMOVABLE DUMMY WIRE	321DC

http://www.plastics1.com/Gallery-PRC.php?FILTER_CLEAR&FILTER_FCATEGORY=Infusion&FILTER_F1=Guide%20cannula&FILTER_F3=Osmotic%20cannula

Bilateral Cannula



There are various body style types Plastics One can supply.



The 328OPD has 21 gauge side arms - 5mm (0.20") long.

The 322OPD-2.0 has 22 gauge side arms - 5mm (0.20") long.

The OPD body style dimensions are:

length= 7.5mm (.295"), height= 3.7mm (.146"), width = 3.8mm (.150")

Line up

OP DOUBLE CANNULA Part NUMBER	TUBING SIZE (Ga)	TUBING LENGTH BELOW PEDESTAL MM (IN.)	C/C DIST. MM (IN.)	BREAK-OFF POST MM(IN.)
3220PD-2.0/SP	22	SPECIFY	2 (.079)	5.1 (.201)
3280PD/V/SP	28	SPECIFY	0.4 (.016)	4.4 (0.173)
3280PD/VL/SP	28	SPECIFY	0.6 (.024)	4.4 (0.173)
3280PD-1.5/SP	28	SPECIFY	1.5 (.059)	5.1 (0.201)
3280PD-2.0/SP	28	SPECIFY	2 (.079)	5.1 (0.201)
3280PD-2.8/SP	28	SPECIFY	2.8 (.011)	5.1 (0.201)
3280PD-3.0/SP	28	SPECIFY	3 (.118)	5.1 (0.201)
3280PD-4.0/SP	28	SPECIFY	4 (.158)	5.1 (0.201)
3280PD-6.0/SP	28	SPECIFY	6 (.236)	5.1 (0.201)

http://www.plastics1.com/Gallery-PRC.php?FILTER_CLEAR&FILTER_FCATEGORY=Infusion&FILTER_F1=Guide%20cannula&FILTER_F3=Osmotic%20cannula