

INSTECH SOLOMON

The equipment behind the science.



INFUSION SYSTEMS *for* LABORATORY ANIMAL RESEARCH

2012
Catalog

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Price Changes. Prices are subject to change without notice.

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Tubing Size Reference Chart

We were there at the beginning. In the late 1960s Michael Loughnane developed a fluid swivel for a researcher at the University of Pennsylvania. He founded Instech Laboratories in 1971, and since then he and his design team have developed hundreds of products for infusion research, including the swivels, tethers and automated blood sampler featured in this catalog.

NEW PRODUCTS *from* INSTECH SOLOMON

Automated Blood Sampler

16



Instech's next generation sampler, the ABS2, includes a range of enhancements for added flexibility and reliability, including the ability to collect dried blood spot samples.

'11 Elite' Syringe Pumps

22



A completely new pump series from Harvard Apparatus, the 11 Elites feature a graphical user interface and improved flow performance. Ideal for infusion and microdialysis.

Mouse VAH™

35



The Vascular Access Harness, which has revolutionized rat blood sampling and infusion, now comes in a miniature size just for mice.

Two Channel VAH™ for Rats

36



Simply plug the tether into the rat harness to connect two independent fluid channels. For bile collection or simultaneous infusion and sampling.

Instech and Solomon joined forces in 1999, bringing together complementary expertise in external and implanted components. Today, as it enters its fifth decade, Instech Solomon continues to lead the industry with innovative designs, precision manufacturing and unparalleled technical support.

37

Vascular Access Button™



This implanted button features an externalized port for quick connection and disconnection. Ideal for IV self administration. Group housing is possible when not tethered.

51

Pin Plugs

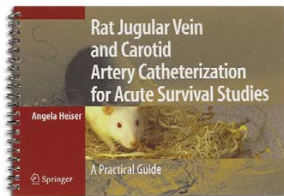


These 22ga pins have a molded plastic handle to simplify insertion and removal from catheters. Also seals DC95B buttons for transport.



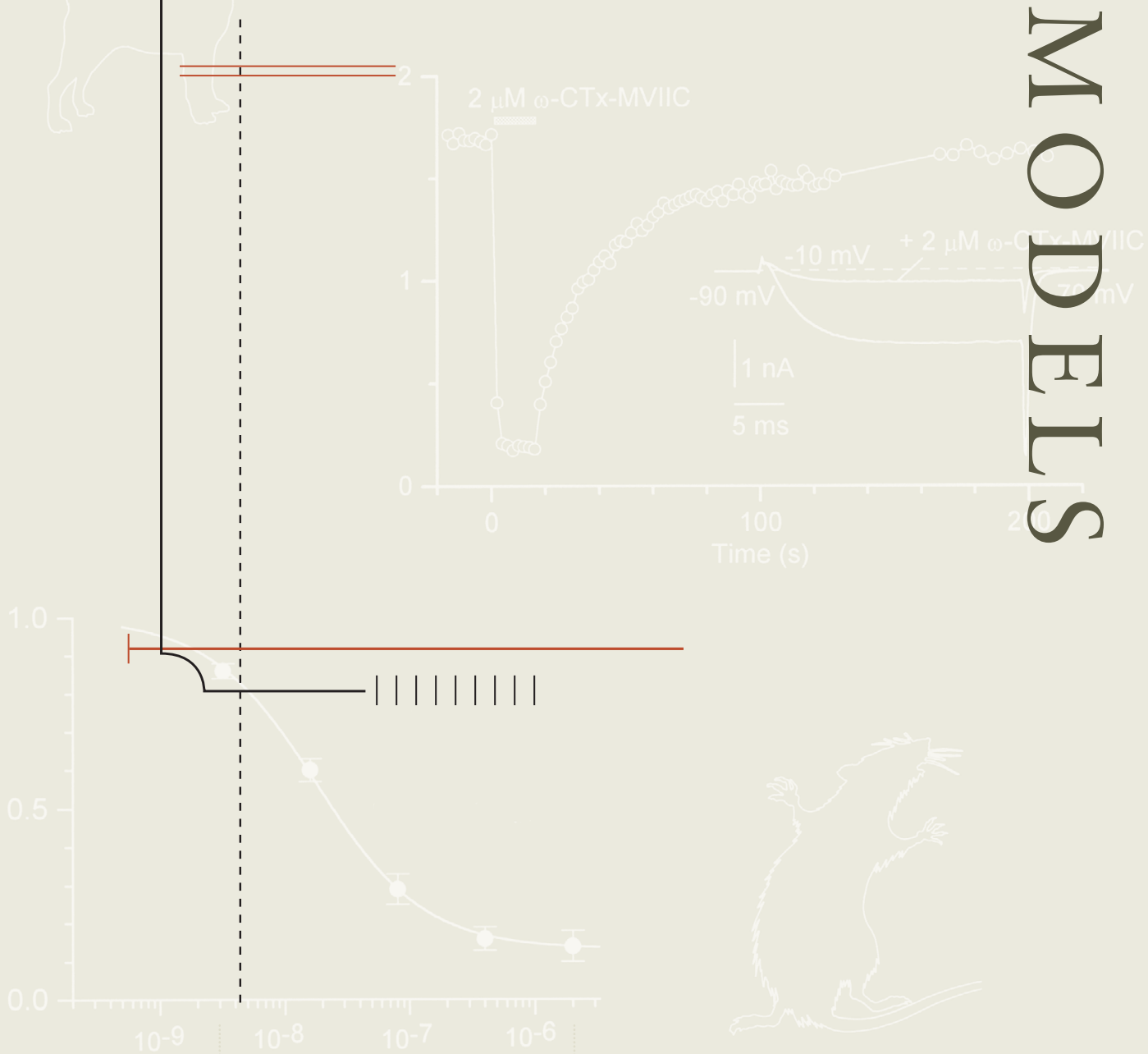
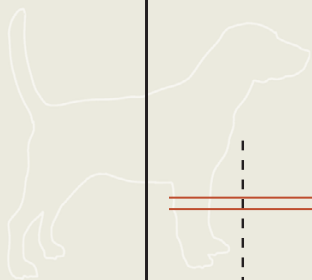
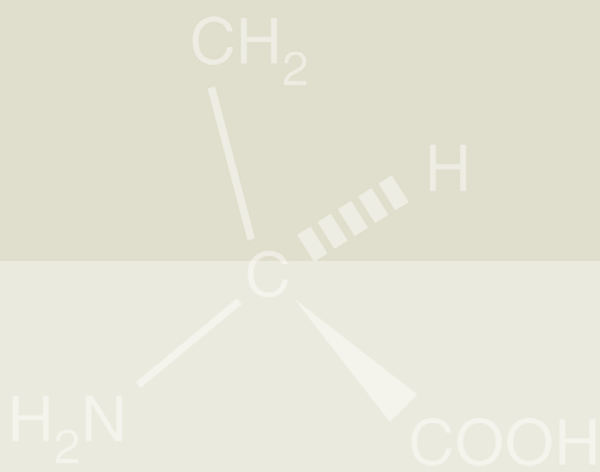
This catalog contains more than 20 products that Instech Solomon has released during the past year. To learn about new products as soon as they are available, visit www.twitter.com/instechlabs.

BOOKSTORE



Part No.	Description
BK-RJVC	Rat Jugular Vein and Carotid Artery Catheterization for Acute Survival Studies: A Practical Guide. Heiser A. 114 pages. Springer. 2007.
BK-HPCII	Handbook of Pre-clinical Continuous Intravenous Infusion. Edited by Healing G, Smith D. 330 pages. Taylor & Francis. 2000.
BK-MMLR	Manual of Microsurgery on the Laboratory Rat. van Dongen JJ, Remie R, et al. 293 pages. Elsevier. 1990.

⑤ For pricing on these books and for a list of articles and other references focused on laboratory animal infusion and sampling, see www.instechlabs.com/Support/faq/infusion.html.



MODELS

RAT INFUSION

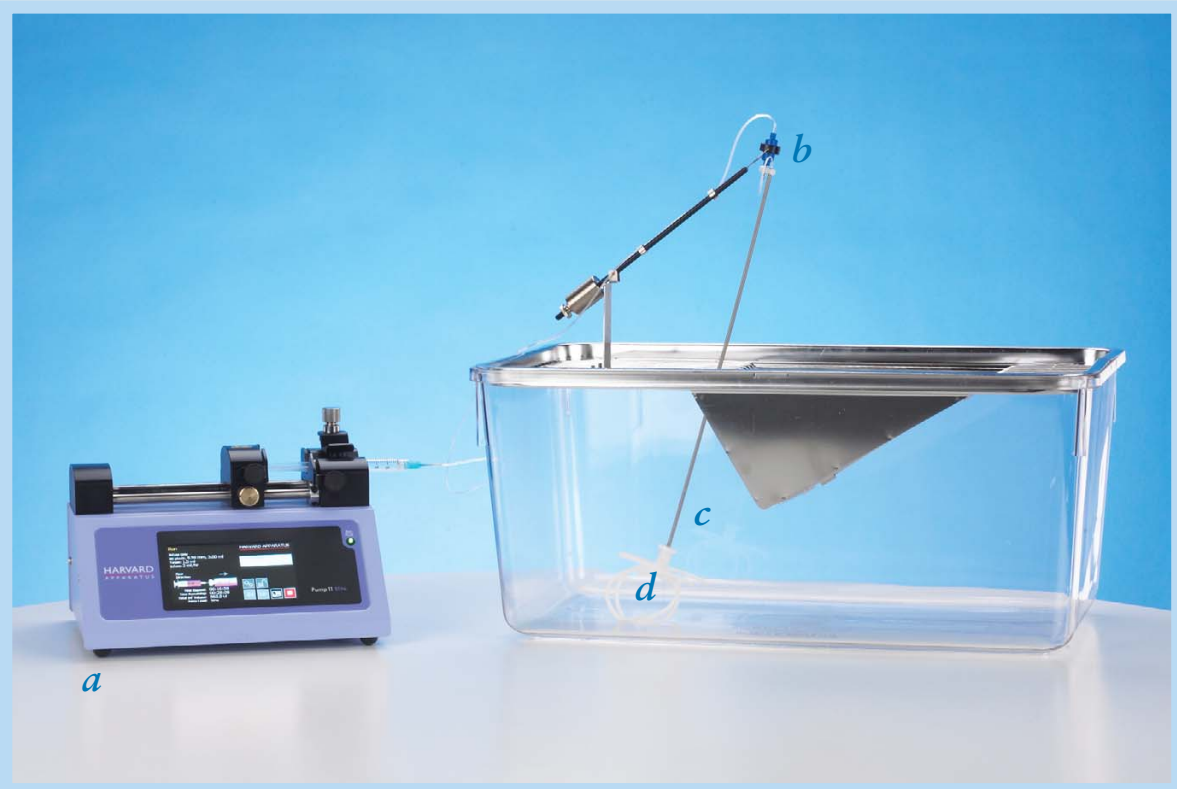


fig.1

Intravenous infusion of rats is the most common application for Instech Solomon's equipment. A basic system includes a swivel, a tether, catheter and tubing, a mount to attach the swivel to the cage and an infusion pump.

You have a number of choices to make with a rat system: swivel type – reusable stainless steel with one or two channels or disposable plastic with one channel only; swivel gauge – 22ga for most drug infusions, 20ga for thin IV diets, more rapid infusions or blood pressure measurement; tether type – non-surgical harness or implanted button tether; and swivel mount – based on the type of cage you plan to use. Rat infusion components are also available in pre-assembled, sterile kits.

fig.1 SYSTEM as SHOWN

Component	Part No.	Description	Pg
Pump	HA1100	Model 11 Elite syringe pump	22
Tubing	BC0EX-T22	CO-EX™ tubing	49
Swivel	375/22PS	22ga plastic single channel swivel	25
Swivel Mount	CM375BP	Single-axis lever arm	30
Tether	VAH95AB-C, T	Vascular Access Harness™ for rats with round-tip 3Fr PU catheter included	34

© www.instechlabs.com/Infusion/systems/single.php

AS SHOWN IN *fig.1*

a. Pump



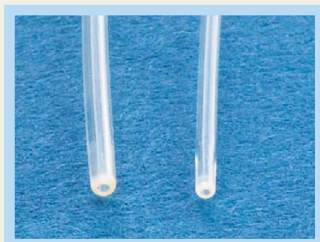
b. Swivel



c. Tether



d. Catheter



ALTERNATIVES

Orchestra™ syringe pump
(p 23)



Harvard Ultra syringe pump
(p 22)



Stainless steel single
channel (p 26)



Stainless steel dual
channel (p 27)



Mini injection port for
intermittent access (p 51)



Vascular Access Button™
(p 37)



Two Channel Vascular
Access Harness™ (p 35)



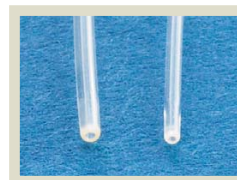
Dacron mesh button tether
(p 38)



Silicone catheter
(p 41)



CBAS® heparin-coated
polyurethane catheter (p 42)



WhiteTip™ PU catheter
(p 41)



MOUSE INFUSION

Instech Solomon offers a range of equipment for mouse infusion.

A typical mouse can turn a swivel with no more than 0.025 oz-in of frictional torque. Instech has three models that meet this specification: the industry-standard 25ga stainless steel model, a 25ga plastic model, or the 375/D/22LT dual channel model. Always use a spring counter-balanced lever arm to remove forces that could encumber the animal.

Instech Solomon's unique FunnelCath™ is designed to catheterize a mouse and attach directly to a 25ga swivel; no adapters are required. Instech offers three tether options: a harness, an implantable button, or a lightweight headblock.

fig.2 SYSTEM *as* SHOWN

Component	Part No.	Description	Pg
Pump	HA1100DU	Pico Plus dual syringe pump	22
Tubing	BCOEX-T25	CO-EX™ tubing	49
Swivel	375/25	25ga single channel swivel	26
Swivel Mount	SMCLA	Counter-balanced lever arm	30
Tether	VAH62AB, T	Vascular Access Harness™ for mice	35
Catheter	PUFC-C30-10	FunnelCath™ mouse catheter	43
Caging	STANK	Clear animal enclosure, 8.5inH	32

🌐 www.instechlabs.com/Infusion/systems/singlemice.php

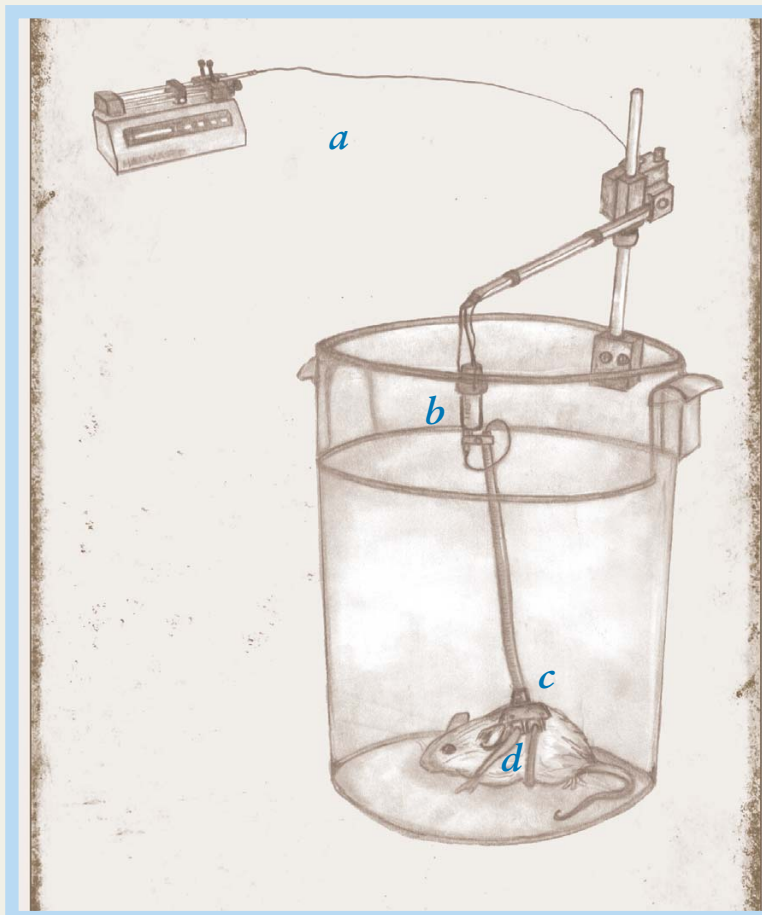


fig.2

Dan Nolan, Nolan's Illustrating

AS SHOWN IN *fig. 2*

a. Pump



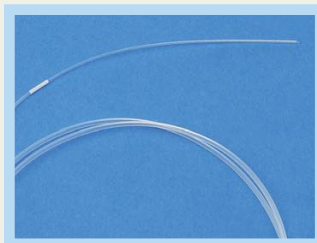
b. Swivel



c. Tether



d. Catheter



ALTERNATIVES

Ten syringe pump
(p 22)



Orchestra™ syringe pump
(p 23)



25ga plastic swivel
(p 25)



375/D/22LT two channel swivel
(p 27)



Covance Infusion Harness™
(p 33)



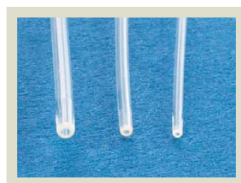
Button tether
(p 38)



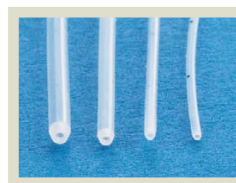
Head block tether
(p 39)



2Fr polyurethane catheter
(p 41)



2Fr silicone catheter
(p 41)



TETHERED LARGE ANIMAL INFUSION

Despite the advantages of the tetherless infusion model for large animals, tethered infusion still remains popular because it allows blood sampling and easy access to the infusate.

Use the SR750 strain relief to isolate the swivel from the forces experienced with the large animals. All of Instech's swivel models fit in this mount, including the large bore models that are often required.

Instech Solomon can combine the swivel with a jacket and tether, access port or catheter, and infusion pump to provide you with a complete large animal tethered infusion system.

fig.3 SYSTEM *as* SHOWN

Component	Part No.	Description	Pg
Pump	HA3000I	Harvard Apparatus syringe pump	22
Swivel	375/18TW	Large-bore single channel swivel	26
Swivel Mount	SR750	Large animal strain relief	31
Tether	*	Large animal jacket and tether	
Catheter	CBAS-C50	Heparin-coated PU catheter	42

* Large animal jackets are not manufactured by Instech Solomon. Please contact us for details.



fig.3



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TETHERLESS LARGE ANIMAL INFUSION

The alternative to tethering large animals for infusion is to put ambulatory pump in a jacket pocket. The tetherless model affords large animals, including non-human primates, dogs, pigs, and rabbits, significantly increased mobility. Adams et al [LAS.85(5):184-9.1994] observed that tethered nonhuman primates experienced increased stress compared to non-tethered controls.

Jacketed infusion models consist of one or two pockets to contain an ambulatory pump and the infusate bag. The pump is connected to a subcutaneous port (or externalized catheter) via extension tubing and a Huber needle (or luer lock for external catheters).

The Orchestra Model 500 pump is small and light, and offers minimal challenge to the large animal. Jackets may be custom designed for all species. Surgical preparation is generally simpler than for tethered animals since the animals can be de-instrumented more easily.



Dan Nolan, Nolan's Illustrating

fig. 4



PORTHOLD™ This subcutaneous access port features a titanium plate that keeps huber needles in place (p 46).

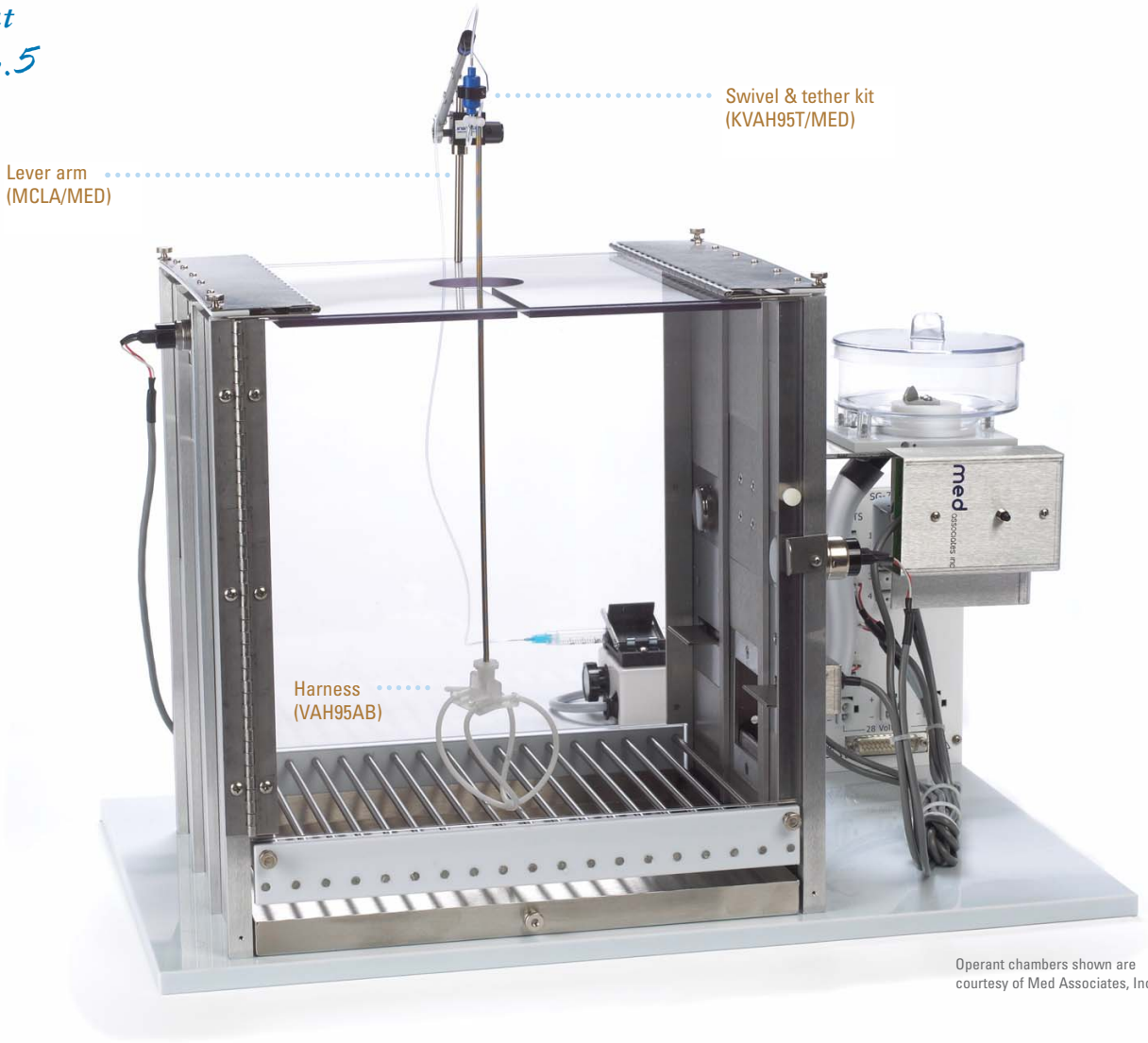
fig. 4 SYSTEM *as* SHOWN

Component	Part No.	Description	Pg
Pump	LAS-20040	Orchestra™ Model 500 ambulatory pump	23
Port	MIDA-CBAS-C70	Titanium SoloPort™ with CBAS® catheter	44
Tubing/needle	SHNRA22625-12	22ga x 5/8in right angle Huber needle set	47
Jacket	*	Small dog jacket	

* Large animal jackets are not manufactured by Instech Solomon. Please contact us for details.

IV SELF ADMINISTRATION

Rat
fig. 5



Lever arm
(MCLA/MED)

Swivel & tether kit
(KVAH95T/MED)

Harness
(VAH95AB)

Operant chambers shown are courtesy of Med Associates, Inc.

Instech swivels, tethers and balance arms are compatible with a range of operant behavior systems for IV self administration studies. A lever press or nose poke will trigger an IV dose from a syringe pump.

Instech's Vascular Access Harnesses for rats and mice and the Vascular Access Button for rats are ideal for self-administration studies because the tether can be easily connected or disconnected when moving the animal into or out of the operant chamber.

Tether Options for IV Self Administration

Rat

Harness
(p 34)



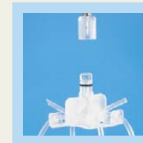
VAH95AB
- quick connecting
- closed system
- adjustable

Implanted
Button
(p 37)



VAB95AB
- quick connecting
- closed system
- group housing possible

Mouse



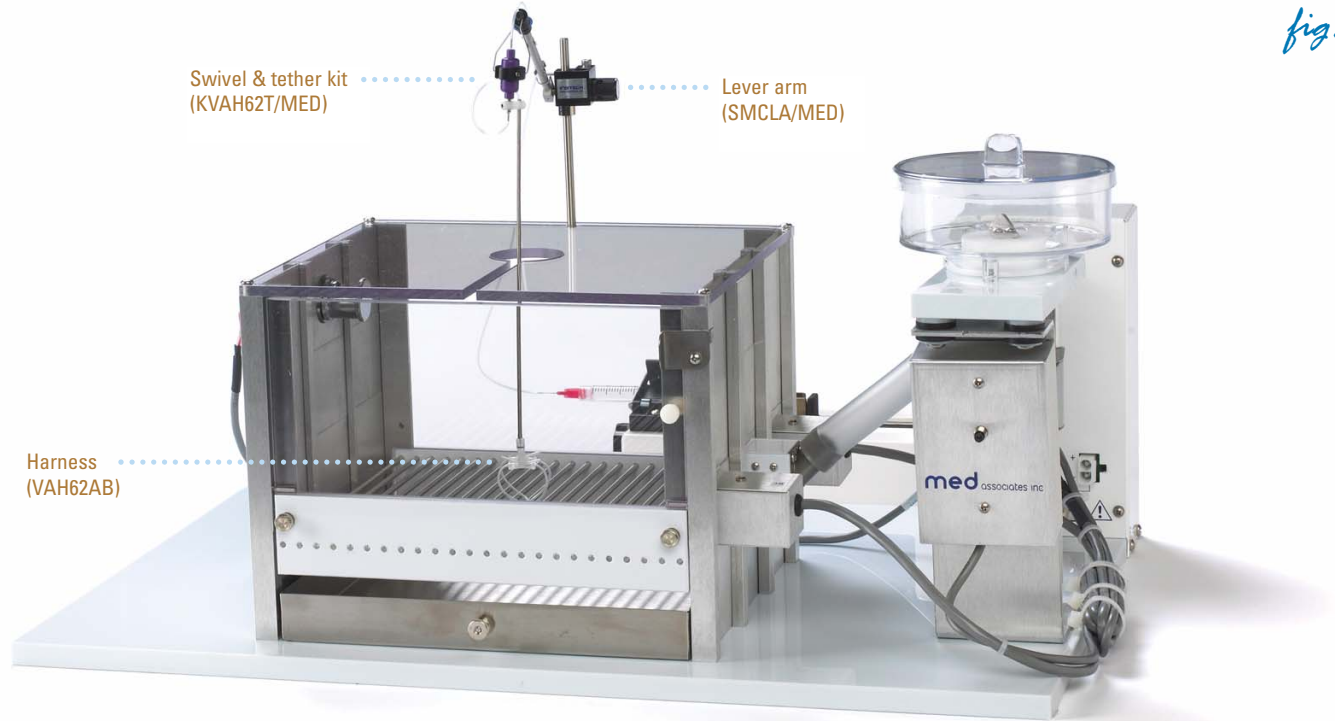
VAH62AB
- quick connecting
- closed system
- adjustable



DF62BS
- open lumen
- couplers required for connection

IV SELF ADMINISTRATION

Mouse
fig. 6



Swivel & tether kit
(KVAH62T/MED)

Lever arm
(SMCLA/MED)

Harness
(VAH62AB)

IV SELF ADMINISTRATION SYSTEMS

Operant Chamber Manufacturer	System*	Compatible Instech Equipment	
		Swivel Mount (p 30)	Swivel & Tether (p 25, 34)
Med Associates, Inc. St. Albans VT, USA www.med-associates.com	MED-008-CT-B1 Basic rat self administration test package	MCLA/MED	KVAH95T/MED, VAH95AB (fig. 5)
	MED-307A-CT-B1 Basic mouse self administration test package	SMCLA/MED	KVAH62T/MED, VAH62AB (fig. 6)
TSE Systems GmbH Bad Homburg, Germany www.tse-systems.com	PhenoMaster Behavior Operant behavior home cage monitoring system - for mice - for rats	SMCLA CM375BS	375/25, VAH62AB, VAH62T 375/22, VAH95AB, VAH95T
Coulbourn Instruments Whitehall PA, USA www.coulbourn.com	Habitest Modular Test Cages		
Panlab, S.L. Barcelona, Spain www.panlab.com	Modular Self Administration Boxes		

* Operant chamber system information provided for reference only. Order directly from the manufacturer.

MICRODIALYSIS

Instech Solomon provides the liquid swivels, head block tethers, counter-balanced lever arms and syringe pumps that have made microdialysis on awake rodents possible from the earliest days of the technique.

A range of syringe pumps will deliver the smooth low-flow rates required for microdialysis. These systems are compatible with probes, fraction collectors and other accessories from a range of manufacturers.

Rat

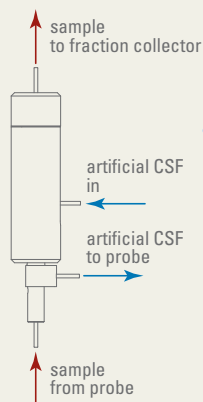
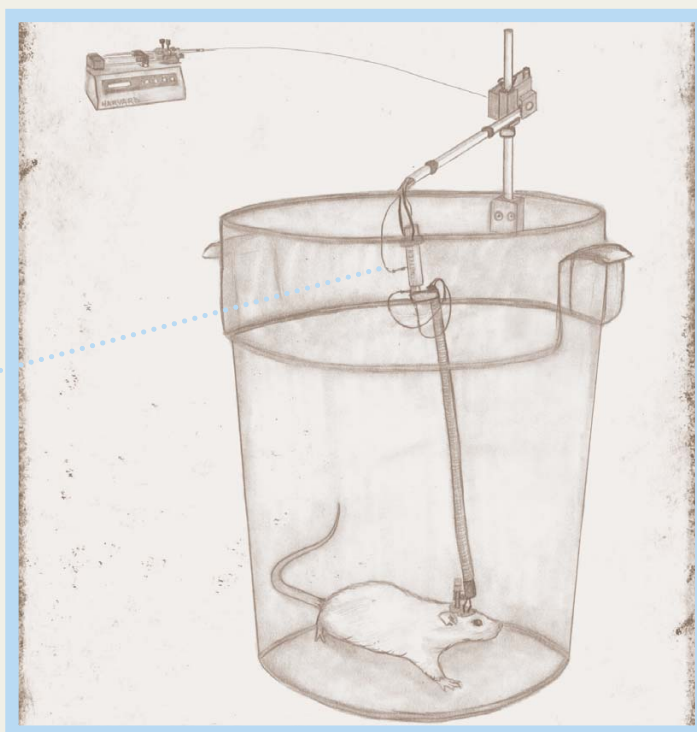


fig. 7



figs. 7 & 8 SYSTEMS as SHOWN

Component	Part No.	Description	Pg
Pump	HA1100DU	Pico Plus Elite syringe pump	22
Swivel	375/D/22QM	Dual channel microdialysis swivel	27
Swivel Mount	MCLA (SMCLA)	Counter-balanced lever arm	30
Tether	M115S (MINF)	Head block tether	39
Caging	MTANK (STANK)	Clear animal enclosure	32
Tubing Connectors	MC015/10	Silicone microdialysis connectors	49
FEP Tubing	BFEP-T22Q	FEP microdialysis tubing	49

(Mouse system part numbers shown in parentheses.)

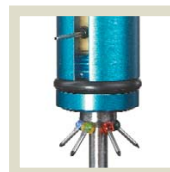
© www.instechlabs.com/Infusion/systems/microdialysisrats.php



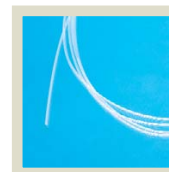
375/D/22QM
Microdialysis swivel



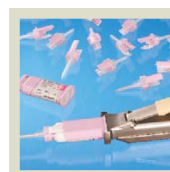
375/D/22QE
Microdialysis swivel



MCS/5A
5 channel swivel



BFEP-T22Q
FEP tubing



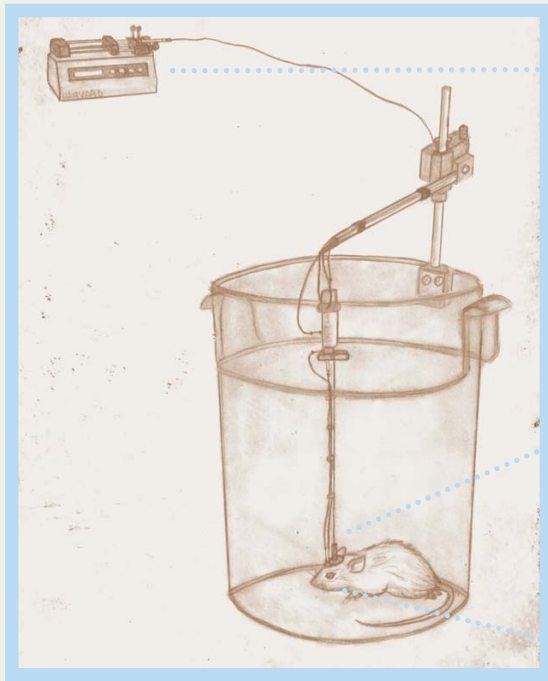
MGIG/AKIT
Glass ionomer cement



MM95
Magnetic tether

Mouse

fig. 8



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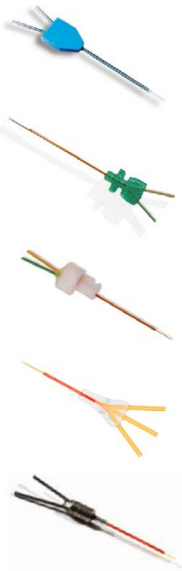
HA1100DU. The Harvard Apparatus 'Pico Plus Elite' is a modern, easy-to-use pump with flow rates that are ideal for microdialysis.



Sources for Microdialysis Probes

Manufacturer	Model	Application	Membrane	Cutoff (kD)	OD (mm)
CMA Microdialysis AB Solna, Sweden www.microdialysis.se	CMA 12	regular CNS use	PAES or PES	20 or 100	0.5
	CMA 11	small diameter probe	cuprophane	6	0.24
	CMA 7	mice	cuprophane	6	0.24
Microbiotech/se AB Stockholm, Sweden www.microbiotech.se	MAB 2	regular CNS use	PES	35	0.6
	MAB 6	CNS	PES	15	0.6
	MAB 9	CNS	PES	6	0.6
	MAB 4Cu	small diameter probe	cuprophane	6	0.2
	MAB 4PES	small diameter probe	PES	6	0.2
Bioanalytical Systems West Lafayette, IN, USA www.basinc.com	BR-2	regular CNS use	PAN	30	0.32
	MBR-1-5	mice	cellulosic	38	0.22
Brainlink B.V. Groningen, The Netherlands www.brainlink.nl	Normal	regular CNS use	PAN or RC	45 or 18	0.34 or 0.22
	MetaQuant	ultraslow MD, PK/PD	PAN or RC	45 or 18	0.34 or 0.22
Synaptech Marquette, MI USA www.synaptechnology.com	S-8020	regular CNS use	PAN	20	0.36

Note: this information is provided for reference only. Instech does not supply probes. Order directly from the manufacturer. Probe images courtesy of the listed manufacturer.



BLOOD SAMPLING

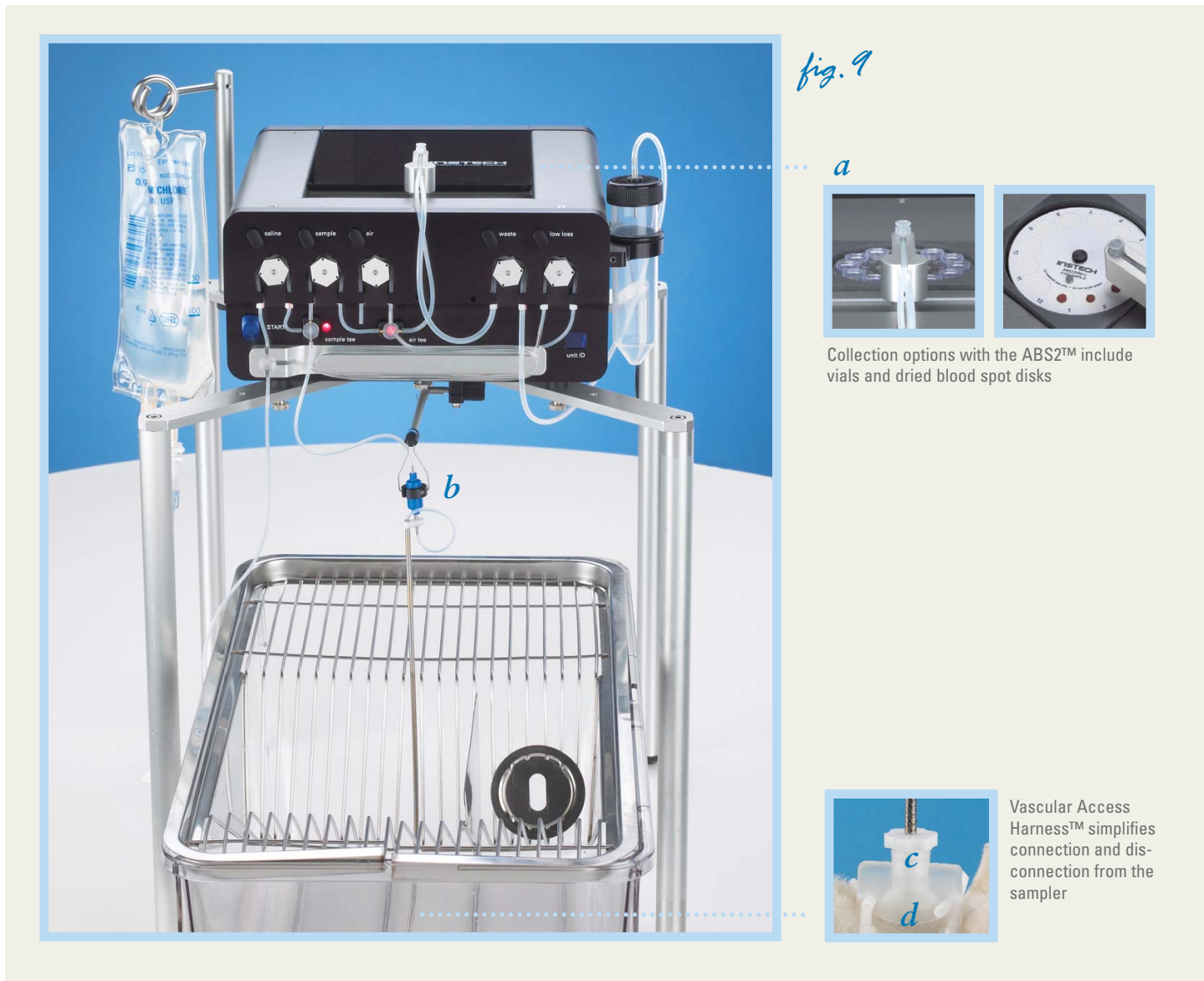


fig. 9

a



Collection options with the ABS2™ include vials and dried blood spot disks

b



Vascular Access Harness™ simplifies connection and disconnection from the sampler

Instech Solomon offers a range of equipment for laboratory animal blood sampling, from manual sampling from a catheter or port to automated sampling through a tether with the ABS2™.

When sampling blood be sure to use round-tip catheters for optimal patency; for longer-term applications consider CBAS® heparin-coated catheters.

Make sure the inner diameters of tubing and other components are large enough for the withdrawal rates required, but not so large as to create unnecessary dead volume.


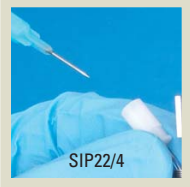




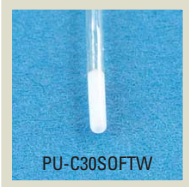
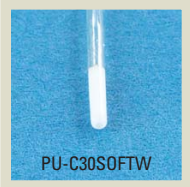
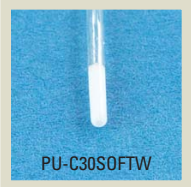
The components shown here are for rats, but variants are available for mice and large animals as well.

fig. 9 SYSTEM as SHOWN

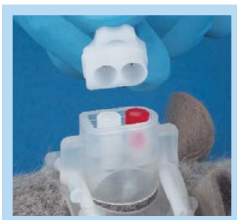
Component	Part No.	Description	Pg
Sampler	ABS212	Instech ABS2™ automated blood sampler	*
Swivel & Tether	KVAH95T/ABS	Swivel and tether kit for ABS, 22ga	34
Port	VAH95AB	Vascular Access Harness™ for rats	34
Catheter	PU-C30SOFTW	WhiteTip™ polyurethane catheter	41

* The Instech ABS2 is covered in detail in a separate brochure: www.instechlabs.com/Infusion/bloodsampling

SPECTRUM OF BLOOD SAMPLING TECHNIQUES

Technique	manual venipuncture	manual sampling from exteriorized catheter	manual sampling from port	manual sampling through tether outside cage	automated blood sampling
Equipment complexity	low				high
Stress on the animal	high				low
Labor required	high				low
<i>a. Sampler</i>					
<i>b. Swivel & Tether</i>				 SIP22/4	 375/22PS
				 VAH95T	 VAH95T/ABS
<i>c. Port</i>			 VAH95AB	 VAH95AB	 VAH95AB
				<i>or</i>	
			 SPP22/12	 PMINA-PU-C30	
<i>d. Catheter</i>		 PU-C30SOFTW	 PU-C30SOFTW	 PU-C30SOFTW	 PU-C30SOFTW

BILE SAMPLING

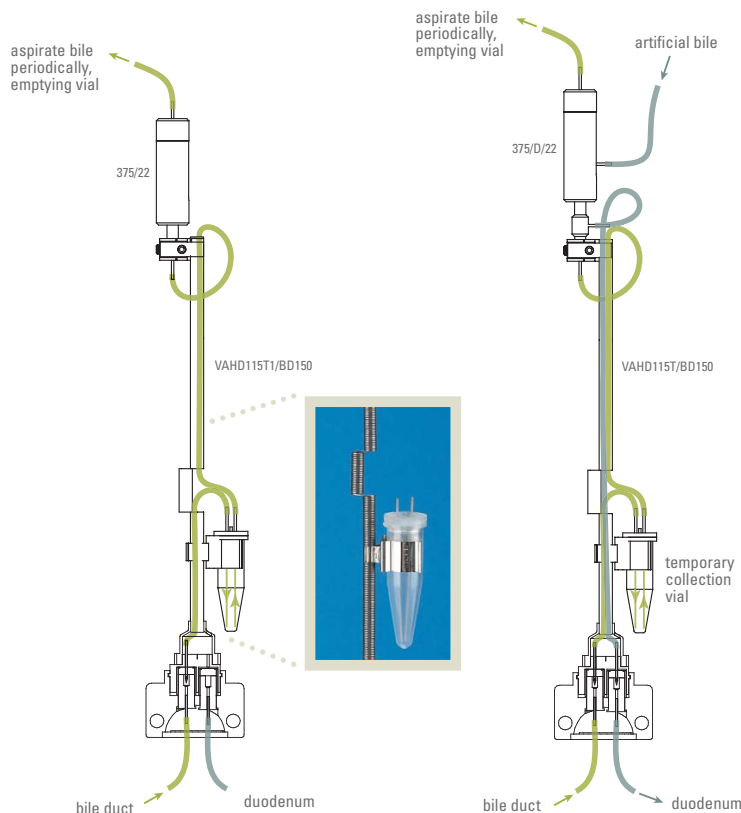
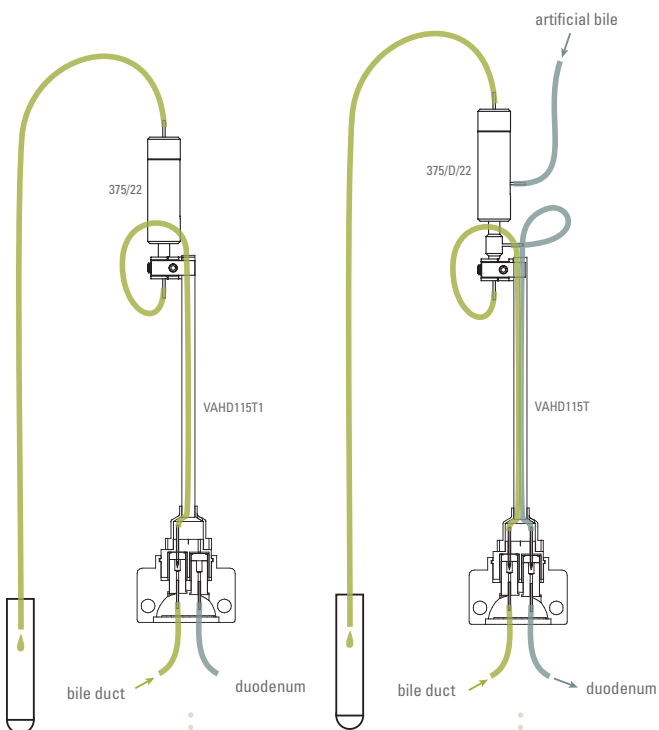
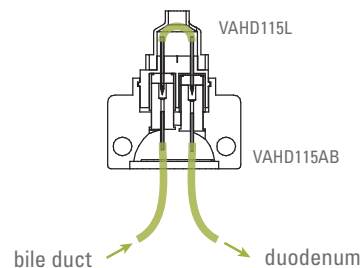


Instech's dual channel VAH™ is ideally suited for rat bile collection. Install the harness at the same time that catheters are placed in the bile duct and duodenum. Attach the VAHD115L loop connector so that bile flow, now shunted through the harness, can resume.

To collect bile, remove the loop connector and attach a tether in one of the four configurations shown below. Use a tether-mounted collection vial when good time resolution is needed. Bile will fill the tube at its natural rate with only two inches of head pressure to overcome. The short path length minimizes mixing. Collected

bile can then be pulled out as rapidly as needed. Air pulled through behind the sample will clean the exit line for the next sample. The reservoir allows for automated bile sampling using Instech's Automated Blood Sampler.

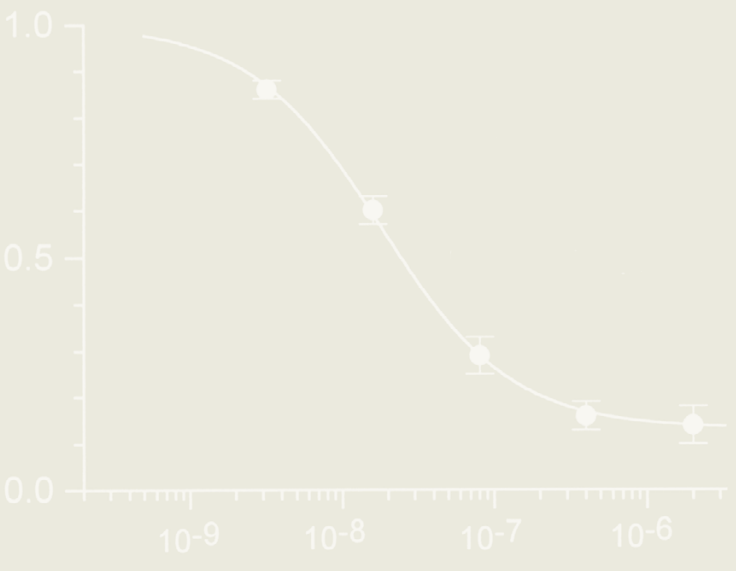
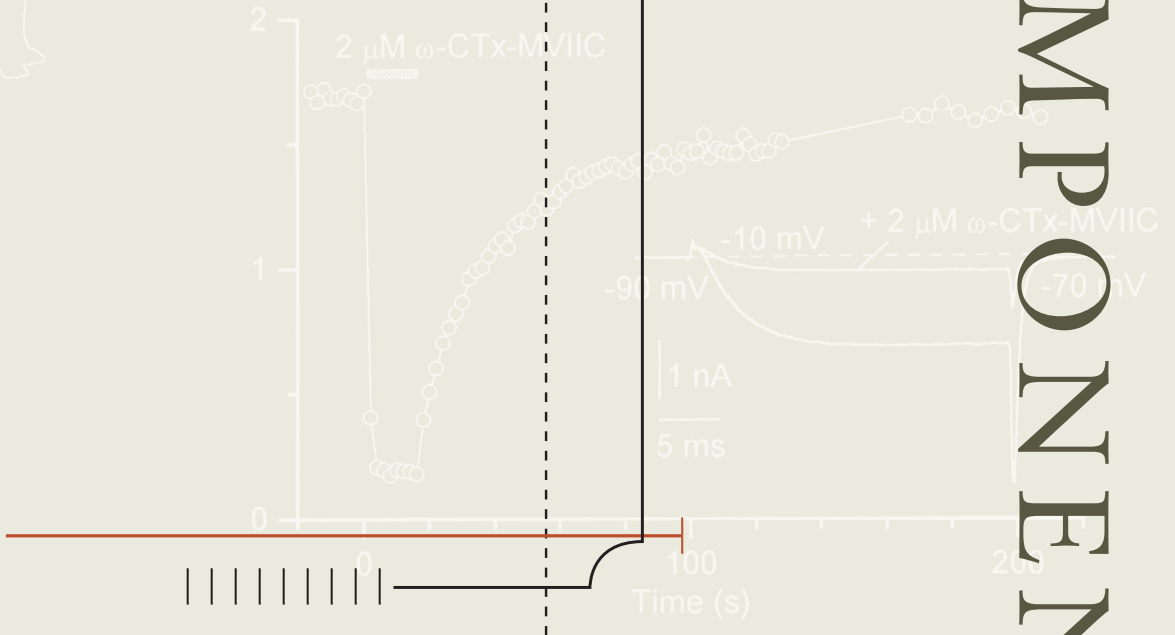
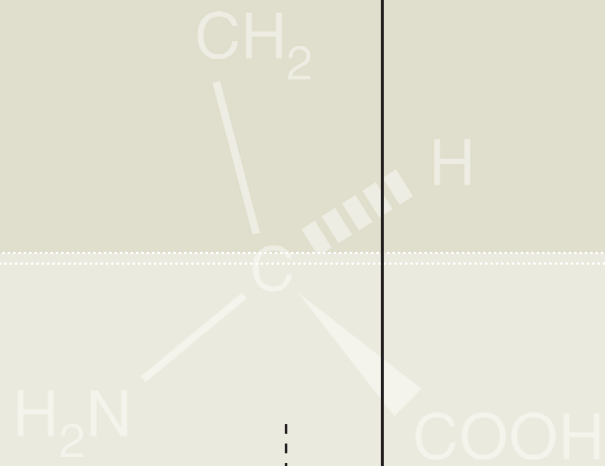
Additional configurations are available for simultaneous bile sampling, infusion and blood sampling (p 36).



	Option 1	Option 2	Option 3	Option 4
Bile collection path	Direct	Direct	Via tether-mounted vial	Via tether-mounted vial
Volume replaced	No	Yes	No	Yes
Collection period	Short	Long	Short	Long
Time resolution	Poor	Poor	Good	Good

See p 36 for more information on the components used in these models.

COMPONENTS

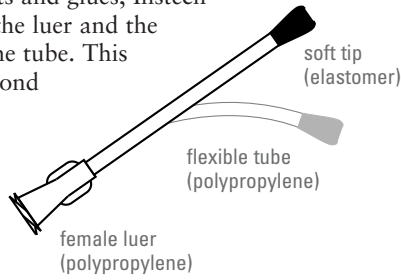


FEEDING TUBES FOR RODENTS

Plastic Feeding Tubes

Plastic feeding needles can reduce the risk of trauma and provide a simple, disposable solution for oral gavage. The soft, bulb-shaped tip is designed to minimize inadvertent placement in the trachea and the chance of perforation. The tube and luer are constructed of polypropylene, the same material used in the plastic syringes that draw up and infuse the test compound.

Instead of using solvents and glues, Instech Solomon insert-molds the luer and the rubber tip directly to the tube. This method improves the bond strength of the connections, reduces leaks and detachments, and assures more consistent results.



Materials in the plastic feeding tubes were chosen for optimal compatibility with test compounds

Part No.	Description	Hub Color	Unit
FTP-22-25	22ga (0.7mm OD x 0.4mm ID) x 25mm	black	box of 250
FTP-20-30	20ga (0.9mm OD x 0.5mm ID) x 30mm	yellow	box of 250
FTP-20-38	20ga (0.9mm OD x 0.5mm ID) x 38mm	yellow	box of 250
FTP-18-30	18ga (1.2mm OD x 0.7mm ID) x 30mm	pink	box of 250
FTP-18-38	18ga (1.2mm OD x 0.7mm ID) x 38mm	pink	box of 250
FTP-18-50	18ga (1.2mm OD x 0.7mm ID) x 50mm	pink	box of 250
FTP-18-75	18ga (1.2mm OD x 0.7mm ID) x 75mm	pink	box of 250
FTP-15-78	15ga (1.8mm OD x 1.2mm ID) x 78mm	blue	box of 250
FTP-15-100	15ga (1.8mm OD x 1.2mm ID) x 100mm	blue	box of 250
FTP-13-90	13ga (2.4mm OD x 1.6mm ID) x 90mm	purple	box of 250
FTP-13-150	13ga (2.4mm OD x 1.6mm ID) x 150mm	purple	box of 250

All sizes provided sterile in pouches of 5 ea, 50 pouches per box.

www.instechlabs.com/Infusion/feedingtubes/plastic.php

BENEFITS

- Flexibility reduces risk of perforation
- Soft tip minimizes trauma
- Eliminates labor-intensive cleaning
- Reduces risk of residual compound
- Reduces risk of cross-contamination

actual size

FEEDING TUBES FOR RODENTS

APPLICATIONS *

	FTP-22-25	FTP-20-30	FTP-20-38	FTP-18-30	FTP-18-38	FTP-18-50	FTP-18-75	FTP-15-78	FTP-15-100	FTP-13-90	FTP-13-150
Mouse, pup	•										
Mouse	•	•	•								
Rat, pup		•	•								
Rat, 100-150g				•							
Rat, 150-200g					•						
Rat, 200-250g						•	•				
Rat, 250-300g							•	•			
Rat, >300g									•		
Hamster										•	•
Guinea Pig										•	•
Rabbit										•	•

Stainless Steel Feeding Tubes



While many researchers prefer the convenience of disposable plastic feeding tubes, others may prefer to use traditional metal types. These are comprised of a stainless steel tube and ball and a nickel-plated brass hub. They comply with ISO594 specifica-

tions. All needles are sold straight, but can easily be bent for optimized use.

The needles are sold in packs of 6. They are sterilized prior to shipping, making them ready for use upon receipt.

Part No.	Description	Bulb diam.	Applications*	Unit
FTSS-24S-25	24ga (0.6mm OD x 0.4mm ID) x 25mm	1.2mm	Mouse, pup; Mouse	bag of 6
FTSS-22S-25	22ga (0.7mm OD x 0.5mm ID) x 25mm	1.2mm	Mouse, pup; Mouse	bag of 6
FTSS-20S-25	20ga (0.9mm OD x 0.6mm ID) x 25mm	2.0mm	Mouse; Rat, pup	bag of 6
FTSS-20S-38	20ga (0.9mm OD x 0.6mm ID) x 38mm	2.0mm	Mouse; Rat, pup	bag of 6
FTSS-18S-51	18ga (1.3mm OD x 1.1mm ID) x 51mm	2.0mm	Rat, 200-250g	bag of 6
FTSS-18S-76	18ga (1.3mm OD x 1.1mm ID) x 76mm	2.0mm	Rat, 200-300g	bag of 6
FTSS-16S-76	16ga (1.7mm OD x 1.3mm ID) x 76mm;	2.8mm	Rat, 250-300g	bag of 6

All sizes provided sterile in bags of 6 each.

www.instechlabs.com/Infusion/feedingtubes/ftss.php

* Species suggestions are not definitive but rather have been compiled based on published papers and anecdotal reports; try a variety of sizes to determine what works best for your application. Dosing technique is critical when using feeding tubes.

INFUSION PUMPS

Syringe pumps are the gold standard when it comes to animal infusion thanks to their ability to deliver low flow rates with high accuracy. As part of a sixteen-year-old corporate partnership, Inotech is proud to offer the complete line of pumps from Harvard Apparatus, the leading manufacturer of syringe pumps for life science research.

Harvard Apparatus has introduced two new syringe pumps: the Pump 11 Elite and the PHD Ultra™. They feature improved flow specifications and a graphical user interface that is incredibly easy to use. Legacy pumps remain available for those that must match other pumps in their lab, but anyone in the market for a new syringe pump should first consider the 11 Elite or the Ultra series.



Harvard Syringe Pumps – New Models



11 ELITE



PICO PLUS ELITE



PHD ULTRA

Accuracy / Repeatability	0.50% / 0.05%	0.35% / 0.05%	0.25% / 0.05%
Step Resolution (smoothness of flow)	0.069µm/µstep	0.013µm/µstep	0.005µm/µstep
Pusher Travel Rate			
- minimum	0.15µm/min	0.02µm/min	0.18µm/min
- maximum	159mm/min	72mm/min	191mm/min
Syringe Size Range	0.5µl-60ml (-10ml dual)	0.5µl-10ml	0.5µl-140ml
Flow Rate			
- minimum	1.28pl/min (0.5µl syringe)	0.54pl/min (0.5µl syringe)	1.56pl/min (0.5µl syringe)
- maximum	88ml/min (60ml syringe); 26ml/min (10ml)	12ml/min (10ml syringe)	221ml/min (140ml syringe)
Linear Force (at 100% force selection)	16kg	16kg	34kg ¹
Dimensions / Weight	23x18x15cm / 2.1kg	23x18x15cm / 2.1kg	31x22x18cm / 4.5kg

Part Numbers

Infuse Only			
- single syringe	HA1100	-	-
- dual syringe	HA1100D	-	HA3000I
Infuse / Withdraw			
- single syringe	-	-	-
- dual syringe	-	-	HA3000W
Programmable			
- single syringe	HA1100W	-	-
- dual syringe	HA1100WD	HA1100DU	HA3000P
Syringe Rack Upgrade Kits			
- 6/10 (10x 0.5µl-20ml or 6x 30-60ml)	-	-	HA3020A
- 4x140 (4x 30-140ml)	-	-	HA3021A
- microliter (4x 0.5µl-10ml, diff sizes possible)	-	-	HA3022A

¹ High force Ultra models are available with 90+kg linear force.

Harvard Syringe Pumps – Legacy Models



Pump 11



PHD2000



Pump 22



Pump 33

➤ Harvard Apparatus pumps are covered in detail in a separate brochure:
www.instechlabs.com/Pumps/syringe

Instech Peristaltic Pumps



➤ Instech's P720 pump series is covered in detail in a separate brochure:
www.instechlabs.com/Pumps/peristaltic

Orchestra™ Infusion System

Orchestra™ is the first laboratory animal infusion system to integrate infusion pumps, wireless hardware, and sophisticated control and monitoring software for pre-clinical toxicology studies. The system is built not around pieces of hardware and software, but rather around the process of large-scale GLP infusion studies—up to 300 animals per study.

Orchestra™ automates repeated tasks. Programming is done one time at the beginning of the study in about 15 minutes. Specific weight-based flow rates for each dose group are included in the programming. Re-programming of flow rates, if desired, is done automatically based on weight data imported from study management software or other tables.

Events associated with the pump are passively documented by the system, thereby replacing the vast majority of paper documentation with electronic data. Pump interventions are automatically documented with the date, time, and operator.

Currently there are two types of infusion pumps that can be used in the Orchestra™ system: the Model 100 syringe pump, a state-of-the-art clinical pump, and the Model 500 ambulatory pump, formerly known as Pegasus®.

BENEFITS:

- Automates and streamlines infusion studies
- Reduces labor costs
- Improves accuracy
- GLP compatible
- FDA 21 CFR 11 compatible
- For small or large animals
- A new pump design with full support and service available



Model 100



Model 500

➤ The Orchestra™ Infusion System is sold directly by Solomon Scientific. See www.orchestainfusion.com for more information.

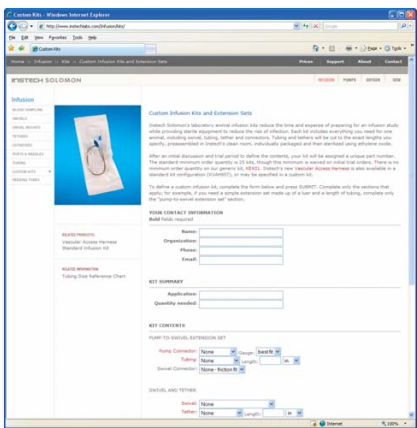
Orchestra is a trademark of Solomon Scientific. Pegasus is a registered trademark of Venner Medical.

CUSTOM INFUSION KITS & EXTENSION SETS



Instech Solomon infusion kits reduce the time and expense of preparing for an infusion study, while providing sterile equipment to reduce the risk of infection. Each kit contains everything you need, including swivel, tether, tubing, catheter and connectors. You may also use a custom kit to define a simple extension set (for example, a length of tubing with a luer). Tubing and tethers will be cut to the exact lengths you specify, assembled in a cleanroom, then sterilized using ethylene oxide.

After a discussion to define the contents, your kit will be assigned a unique part number. The standard minimum order quantity is 25 kits. This minimum is waived on initial trial orders and there is no minimum order quantity at all on our generic kit, KEX01. Kits are also available with the Vascular Access Harness™; a standard configuration (KVAH95T) is available with no minimum order quantity.

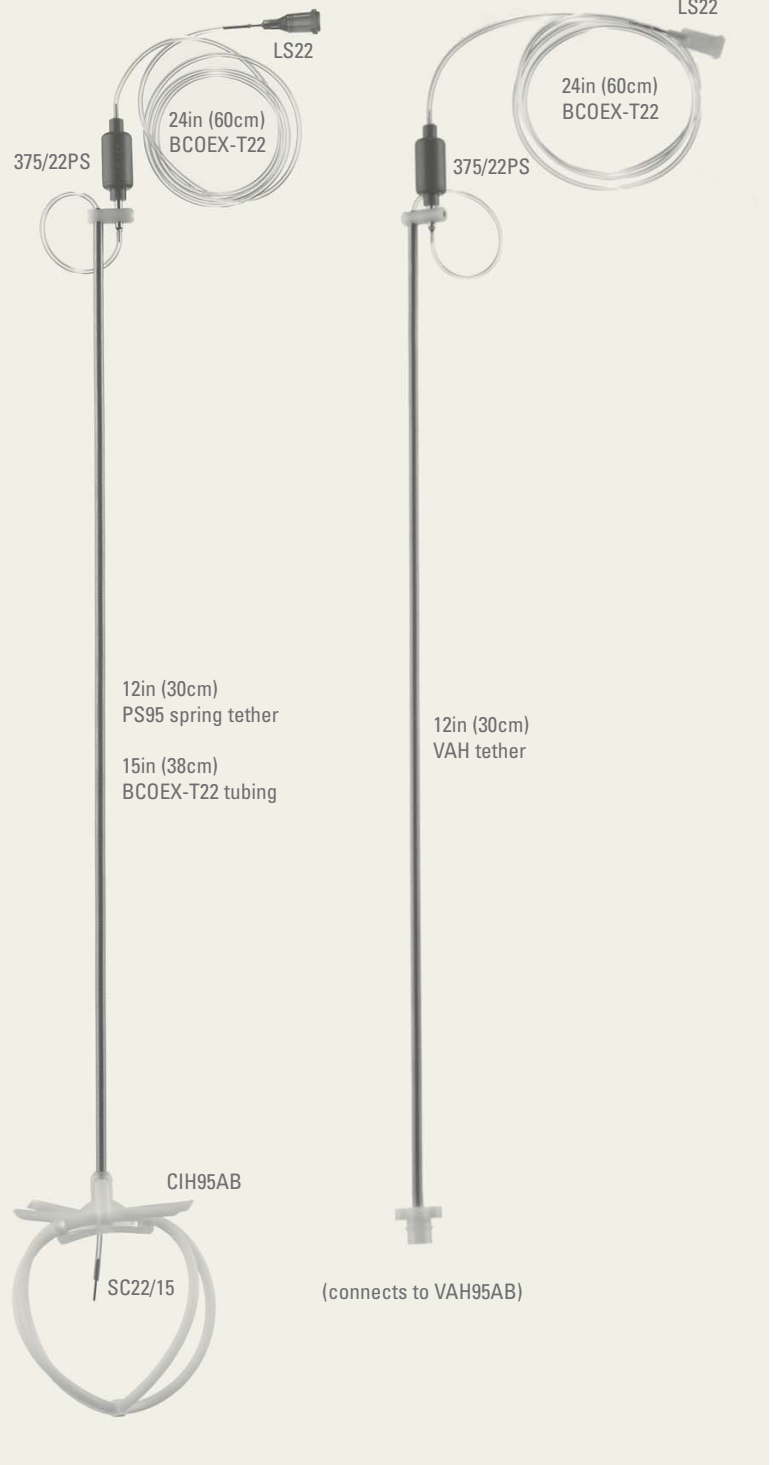


Define your own custom kit using the form at www.instechlabs.com/Infusion/kits/

EXAMPLE KITS

KEX01

KVAH95T



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

Plastic swivels are designed for researchers who prefer that the components touching the fluid path be replaced frequently to avoid cross-contamination and the cost of cleaning.

Compared to our stainless steel swivels, these models feature plastic bodies to reduce cost; however, the critical internal components are the same. For example, these swivels feature Instech's unique self-adjusting seals, a superior design that has proven reliable through tens of thousands of infusion studies.

All models include a plastic swivel-to-tether clamp for attachment to standard Instech spring tethers at no additional cost. The swivel bodies are color-coded by gauge according to international standards.

Plastic swivels are available in three sizes, with or without luer inlets, individually packaged and sterilized, or as part of pre-assembled infusion kits.



Part No.	Description	Unit
375/25PS	Single channel plastic swivel, 25ga, sterile	ea
375/22PS	Single channel plastic swivel, 22ga, sterile	ea
375/20PS	Single channel plastic swivel, 20ga, sterile	ea
375/22PLS	Single channel plastic swivel, luer inlet, 22ga, sterile	ea
375/20PLS	Single channel plastic swivel, luer inlet, 20ga, sterile	ea

www.instechlabs.com/Infusion/swivels/37520p.php

SPECIFICATIONS

	375/25PS	375/22PS	375/20PS
Channel gauge	25ga	22ga	20ga
ID	.010in (.25mm)	.016in (.41mm)	.023in (.58mm)
Dead volume	2.5 µl	6 µl	12 µl
Typical frictional torque	.020 oz-in	.035 oz-in	.045 oz-in
Materials in fluid path ¹	SS, T	SS, T	SS, T
Compatible tubing	COEX-T25, FunnelCath	COEX-T22, 3Fr catheter	PE-60, PE90
Compatible tethers ²	"62" series	"95" series	"95" series
Autoclavable	No	No	No
Dimensions (dia. x len.)	.375x1.83in (9.5x46mm)	.375x1.83in (9.5x46mm)	.375x1.83in (9.5x46mm)
Weight	2.2g	2.2g	2.3g
Body color	Purple	Blue	Pink



Luer inlet models 375/20PLS and 375/22PLS

Applications

Mouse, infusion	●		
Rat, infusion		● ³	
Rat, BP measurement			●
Rat, viscous solutions			●
Larger animals, infusion			●

¹ Material key: SS corrosion-resistant stainless steel (304 and 316); T Teflon®. In luer models, ABS plastic body is also in fluid path.
² Plastic clamps included with swivels use press fit to spring tethers. Order metal adjustable CLAMP separately to use other tethers.

STAINLESS STEEL SWIVELS

Single Channel Swivels



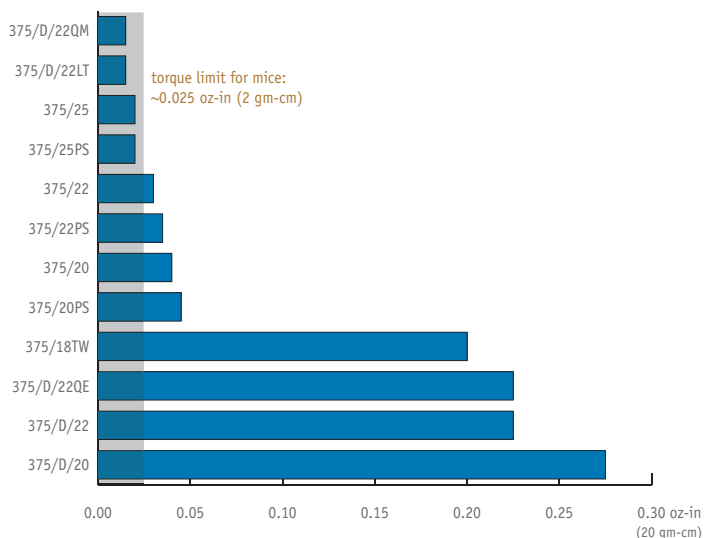
Instech single channel stainless steel swivels are autoclavable and may be reused hundreds of times. Self-adjusting seals, at the heart of every Instech swivel, actually improve with use. All stainless steel models include a universal swivel-to-tether clamp which mates with any Instech spring tether.

The standard models are typically used with rats and mice, but work with rabbits, guinea pigs and, with the SR750 strain relief, large animals as well.

Part No.	Description	Unit
375/25	Single channel swivel, 25ga	ea
375/22	Single channel swivel, 22ga	ea
375/20	Single channel swivel, 20ga	ea
375/18TW	Single channel swivel, 18ga thin wall	ea

www.instechlabs.com/Infusion/swivels/375.php

SWIVEL FRICTIONAL TORQUE BY MODEL

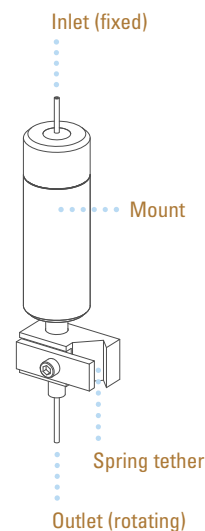


SPECIFICATIONS

	375/25	375/22	375/20	375/18TW
Tubing gauge	25	22	20	18 thin wall
ID	.010in (0.25mm)	.016in (0.41mm)	.023in (0.58mm)	.039in (1.0mm)
Dead volume	3 µl	8 µl	16 µl	40 µl
Typical torque	.02 oz-in	.03 oz-in	.04 oz-in	.20 oz-in
Materials in fluid path	SS, T	SS, T	SS, T	SS, T
Compatible tubing	BCOEX-T25, 2Fr	BCOEX-T22, 3Fr	PE90, 3.5Fr	PE160, 5Fr
Autoclavable	yes	yes	yes	yes
Dimensions (D x L)	.375x2.25in (9.5x57mm)	.375x2.25in (9.5x57mm)	.375x2.25in (9.5x57mm)	.375x2.25in (9.5x57mm)
Weight	15g	15g	15g	15g

Applications

Mouse, infusion	●			
Rat, infusion		●		
Rat, BP measurement			●	
Rat, viscous solutions			●	●
Large animals			●	●



STAINLESS STEEL SWIVELS

Dual Channel Swivels



A two channel swivel gives you the ability to infuse and withdraw simultaneously, to infuse on one channel while monitoring on the other, or to infuse on two lines independently.

Dual channel swivels are a bit more delicate than single channel models, particularly the side channel, but with proper care and use can also last for many years.

The new low torque 'LT' model has a design similar to the 'QM' microdialysis swivel but uses stainless steel tubing instead of quartz for improved durability. It is intended for infusion and blood sampling with mice. The OD is 22ga; the ID is equivalent to 2.5ga.

Microdialysis Swivels. For years, Instech's 375/D/22QE swivel has been the industry standard for awake animal microdialysis. It features quartz lining on the center channel to minimize dead volumes and reactivity with neurotransmitters. Otherwise it is the same as our 375/D/22 model, with torques that are appropriate for rats but not mice.

The newer 375/D/22QM uses a completely different seal design with two significant improvements: quartz lining on both the center and side channels, and extremely low frictional torque, making it the first dual channel swivel that can be used with mice. However, the 'QM' model is more fragile than the 'QE' and often cannot be repaired if clogged or damaged.

Part No.	Description	Unit
375/D/22	Dual channel swivel, 22ga	ea
375/D/20	Dual channel swivel, 20ga	ea
375/D/22LT NEW	Dual channel swivel, 22ga low torque	ea
375/D/22QE	Microdialysis swivel, quartz-lined center channel	ea
375/D/22QM	Microdialysis swivel, quartz-lined, low torque	ea

www.instechlabs.com/Infusion/swivels/375d.php

SPECIFICATIONS

	375/D/22	375/D/20	375/D/22LT	375/D/22QE	375/D/22QM
Inlet and outlet tube gauge	22	20	22	22	22
ID - center channel	.016in (0.41mm)	.023in (0.58mm)	.010in (0.25mm)	.006in (0.15mm)	.006in (0.15mm)
Dead volume - center channel	8 µl	18 µl	2 µl	1.4 µl	1.8 µl
ID - side channel	.016in (0.41mm)	.023in (0.58mm)	.016in (0.41mm)	.016in (0.41mm)	.006in (0.15mm)
Dead volume - side channel	18 µl	18 µl	4 µl	18 µl	3 µl
Typical frictional torque	.225 oz-in	.275 oz-in	.030 oz-in	.225 oz-in	.030 oz-in
Materials in fluid path, center ¹	SS, T	SS, T	SS, T	Q, T	Q, T
Materials in fluid path, side ¹	SS, T	SS, T	SS, T	Q, T	Q, T, P, PM
Compatible tubing	BCOEX-T22	PE90	3Fr, BCOEX-T22	BFEP-T22Q ²	BFEP-T22Q ²
Autoclavable	yes	yes	no	yes	no
Dimensions (dia. x len.)	.375x2.38in (9.53x60mm)	.375x2.38in (9.53x60mm)	.375x2.38in (9.53x60mm)	.375x2.38in (9.53x60mm)	.375x2.38in (9.53x60mm)
Weight	18g	18g	15g	18g	15g

Applications

Mouse, infusion			•		
Rat, infusion	•				
Rat, BP measurement		•			
Rat, viscous solutions		•			
Mouse, microdialysis					•
Rat, microdialysis				•	•



¹ Material key: SS corrosion-resistant stainless steel (304 and 316); P polysulfone plastic; T Teflon®; Q fused silica quartz; PM polyimide. Teflon is a registered trademark of DuPont.

² Note: traditional "blue widget" connectors may damage swivels when removing tubing. Use Instech silicone MC015/10 connectors instead (p 49).

STAINLESS STEEL SWIVELS

Custom Swivels

In addition to the standard models, Instech can manufacture swivels to user specifications within the limits allowed by the seal designs. From the outside, custom swivels look just like Instech's standard stainless steel models: they are precision machined, 3/8in in diameter (compatible with all Instech swivel mounts) and 2-1/4in (single channel) or 2-3/8in (dual channel) in length. What varies is the size of the center and side channels. The largest possible single channel swivel is 16ga; the largest dual channel model is thin-walled 18ga (18TW). See the tubing chart at the end of this catalog for IDs and ODs and call for pricing and availability.



Stainless Steel Swivel Repair and Replacement Parts



CLAMP



375R/D/22

Part No.	Description	Unit
CLAMP	Universal swivel-to-tether clamp	pkg of 5
MCLAMP	Slotted swivel clamp for looped-wire tethers	pkg of 5
375R/D/xx	Tools and parts to repair 1 dual ch swivel (xx = gauge)	ea
375R/xx	Tools and parts to repair 5 single ch swivels (xx = gauge)	ea
375R/D/TK	Tools to repair dual channel swivels (no parts)	ea
375R/CSxx	Parts to repair 5 center channel seals (xx= gauge)	ea
375R/D/SSxx	Parts to repair 5 side seals (xx= gauge)	ea
375R/BR	Replacement bearings for 5 single or dual channel swivels	ea

See www.instechlabs.com/Infusion/swivels/swivelrepair.php for repair kit contents, pricing and information on returning swivels for factory service.

Be sure to clean and dry swivels after every use. Clogged channels are often not repairable. See the instruction manual for more information on maintenance.

FIVE CHANNEL SWIVELS

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

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

To solve these problems Instech kept the seals tight but added a motor to assist the rotation. A controller senses the animal's movement and drives the swivel core to follow the animal. Unlike switch-based systems, this swivel features a proportional control, allowing fine continuous movement to minimize stress on the animal. The torque felt by the animal is similar to that of an Instech single channel swivel. This power-assisted proportional control technology was first introduced in 2000 in Instech's patented Swivelless Swivel™, but is applied here to a swivel that hangs above caging of the researcher's choice.



Channels are color coded to match inlets and outlets

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

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


There are three standard configurations with a variety of combinations of microdialysis channels, which have low dead volume and are lined to protect neurotransmitters, and standard 22ga infusion channels. Other configurations are possible; contact Instech for more information.



SPECIFICATIONS

Number of channels	5
Dead volume - μ D channels	6-7 μ l
Dead volume - 22ga channels	15-20 μ l
ID - μ D channels	0.009in (0.2mm)
ID - 22ga channels	0.015in (0.4mm)
OD - all channels	0.028in (0.7mm) - 22ga
Materials in fluid path	Titanium, polyimide, Teflon®
Rotational activity output	Analog signal, $\pm 2V$ maximum
Lever arm length	5.75in (14.6cm)
Swivel dimensions (L x Dia)	7in x 0.6in (18x1.5cm)
Swivel weight	95 gms (counterbalanced)

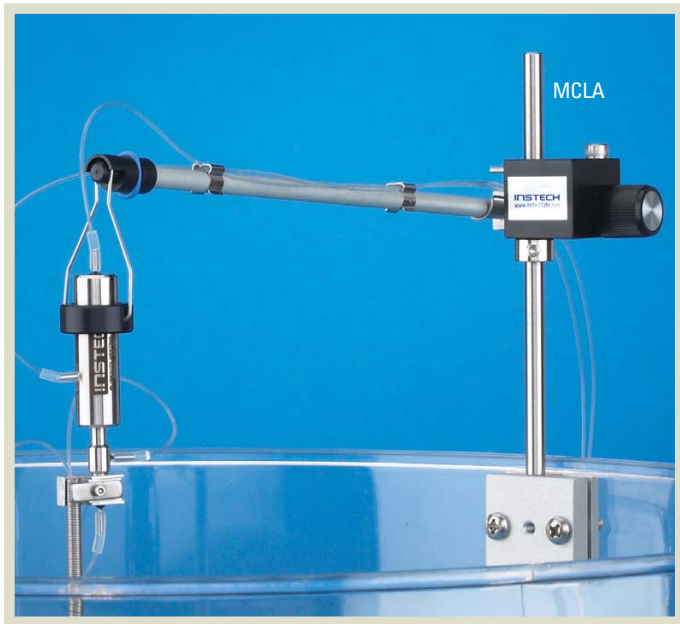
Part No.	Channel				
	1 ●	2 ●	3 ●	4 ●	5 ●
MCS/5A	μ D	μ D	μ D	μ D	22ga
MCS/5B	22ga	22ga	22ga	22ga	22ga
MCS/5C	μ D	μ D	22ga	22ga	22ga

 www.instechlabs.com/Infusion/swivels/mcs.php

SWIVEL MOUNTS

Mounting a swivel to your particular animal cage can be one of the most frustrating steps in setting up your animal infusion system. To make your life easier, Instech has pulled from its years of experience designing custom systems to create a complete line of swivel mounts—from our simple swivel brackets to our highly-responsive counter-balanced lever arms.

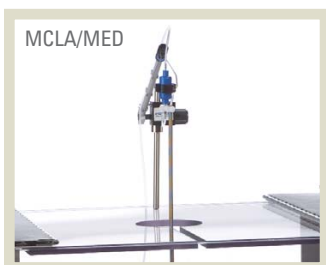
Multi-Axis Lever Arms



These counter-balanced lever arms move vertically and horizontally with the animal to prevent slack in the tether. Their sensitivity makes them ideal for awake-animal microdialysis and all types of infusion studies with mice. They feature an adjustable spring counter-balance, not a mass, which increases their responsiveness to an animal's quick movements.

The mounting plate can be adjusted for mounting to the side or top of many types of cages, including Instech's tanks. Both the 6in-long (15cm) MCLA and 3.5in (9cm) SMCLA models include the gimbal which holds the swivel and the locking mechanism to keep the gimbal in its groove at the end of the arm.

Versions of these balance arms are also available for metabolism cages and operant chambers for IV self-administration.



Part No.	Description	Unit
MCLA	6in multi-axis lever arm for rats	ea
SMCLA	3.5in multi-axis lever arm for mice	ea
SMCLA/META	Counter-balanced lever arm for metabolism cage, with 8in (20cm) diameter lid	ea
MCLA/MED	Counter-balanced lever arm, for Med Associates rat self administration cage	ea
SMCLA/MED	Counter-balanced lever arm, for Med Associates mouse self administration cage	ea

www.instechlabs.com/Infusion/swivelmounts/mcla.php

Single-Axis Lever Arms

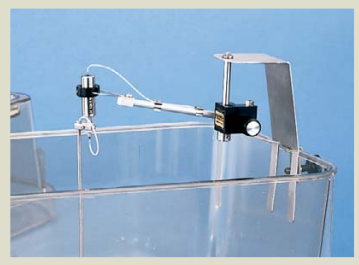


This mount is designed for standard infusion of rats in shoebox cages. The mount pivots in the vertical plane to remove slack from the tether but allow enough length to reach all corners of an asymmetrical cage. The adjustable counter-weight can be set to balance the weight of our swivels plus a tether.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

Part No.	Description	Unit
CM375BP	Single-axis lever arm for plastic swivels	ea
CM375BS	Single-axis lever arm for stainless steel swivels	ea
CM/T143	Slotted top for 10.5in x 19.8in rodent cages	ea

www.instechlabs.com/Infusion/swivelmounts/cm375bp.php

Mouse Micro-Isolator Cage Mount



Use this mount to infuse mice while maintaining a safe micro-environment for nudes and transgenics. It is designed to attach to standard micro-isolator cages, such as those made by Allentown Caging and Lab Products, with no modifications to the cage or

cover. Includes a spring counter-balanced lever arm attached to a bracket with holes to protect the IV lines as they enter and exit the cage. Feeder and water bottle are available separately.

Part No.	Description	Unit
CMMI/65	Mouse micro-isolator cage mount	ea
CMMI/F	Feeder for mouse micro-isolator cages	ea
CM/W50	50ml water bottle for CMMI/F	ea

www.instechlabs.com/Infusion/swivelmounts/cmmi65.php

Rod-Mounted Snap-in Swivel Mount



This swivel holder mounts to poles that are 3/8 to 1/2-inch (9-12mm) in diameter. It features a clip that allows for easy snap-in, snap-out installation and removal of an Instech swivel. The clip can rotate in one axis as the animal moves and includes a stop to prevent the swivel from slipping downward. The distance from the mounting pole to the swivel is approximately 10cm. Available in single- and double-sided versions.

Part No.	Description	Unit
CM375R10	Rod-mounted swivel mount, single 10cm arm	ea
CM375R10D	Rod-mounted mount for two swivels, 10cm arms	ea

www.instechlabs.com/Infusion/swivelmounts/cm375r.php

Fixed Swivel Mount for Metabolic Cages



This mount holds a swivel in a fixed position above a standard Nalgene Metabolism™ cage. Parts included: vertical and horizontal mounting bars with hardware, new cage top with pre-drilled mounting holes. A slotted version, for easier access to the animal, is also available.

Part No.	Description	Unit
METAMOUNT	Swivel mount for Nalgene Metabolism™ cages	ea
METAMOUNT/SL	Swivel mount for metabolic cages, slotted lid	ea

www.instechlabs.com/Infusion/swivelmounts/metamount.php

Swivel Mount for Large Animals



This heavy-duty swivel holder bolts to the top of the cage and allows all of Instech's single and dual channel swivels to be used with dogs, nonhuman primates and other large animals. For cleaning, simply remove the swivel and the stainless steel posts and send the rest of it through a cage washer with the cage. The mount couples directly to standard 1/2-in (12.7mm) ID jacket tethers.

Part No.	Description	Unit
SR750	Swivel mount/strain relief for large animals	ea

www.instechlabs.com/Infusion/swivelmounts/sr750.php

ANIMAL ENCLOSURES

Instech's clear animal enclosures are ideal for a tethered rodents, as they have no sharp corners where the tether can catch or tangle. Originally designed for short-term microdialysis experiments, the tanks can be ordered pre-machined to accommodate feeders and water bottles in order to house animals for longer periods. The floor areas of the two models exceed USDA regulations and NRC guidelines for the largest singly-housed rats and mice.¹

The feeders and water bottles mount outside the tank to avoid interference with the tether. The feeder pellet opening is approximately 13x20mm.

Use the 6-inch MCLA lever arm with the larger rat tank and the 3.5-inch SMCLA arm with the small mouse tank.

Part No.	Description	Unit
MTANK	Clear animal enclosure, 15in high	ea
MTANK/W	Clear enclosure, 15inH drilled for MWATER	ea
MTANK/F	Clear enclosure, 15inH drilled for MFEEDER	ea
MTANK/WF	Clear enclosure, 15inH drilled for MWATER & MFEEDER	ea
STANK	Clear animal enclosure, 8.5in high	ea
STANK/W	Clear enclosure, 8.5inH drilled for CM/W50	ea
STANK/F	Clear enclosure, 8.5inH drilled for MFEEDER	ea
STANK/WF	Clear enclosure, 8.5inH drilled for CM/W50 & MFEEDER	ea
MTOP	Slotted cover for MTANK	ea
MFEEDER	Feeder for MTANK or STANK	ea
MWATER	Water bottle for MTANK	ea
SSCREEN	Bottom screen for STANK	ea
STOP	Slotted cover for STANK	ea
CM/W50	50ml water bottle for STANK	ea

© www.instechlabs.com/Infusion/accessories/clearenclosures.php



SPECIFICATIONS

	MTANK	STANK
Height	15in (38cm)	8.5in (22cm)
Diameter	10.5in (27cm)	5.5in (14cm)
Floor area	87in ² (570cm ²)	24in ² (150cm ²)

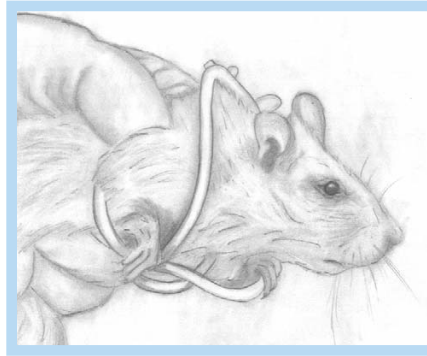
¹ "Guide for the Care and Use of Laboratory Animals." National Academy Press. 1996.



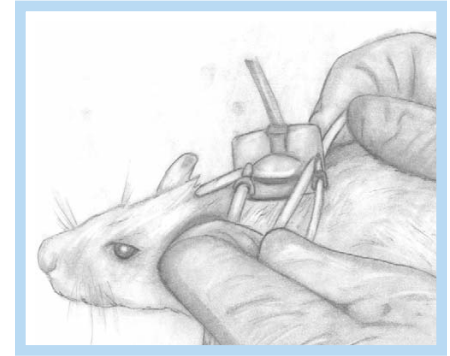
HARNESS TETHERS

Originally developed in collaboration with Danny Jack of Covance Laboratories in 1997, Instech's infusion harnesses are made of a soft elastomer saddle with a vented dome that protects the catheter exit site, adjustable belly bands to secure the saddle to the animal, and a stainless steel spring to protect the fluid line and transmit torque to a swivel.

Instech offers two types of harnesses: the original Covance Infusion Harness™ and the new Vascular Access Harness™ with built-in septum for quick connection and disconnection.



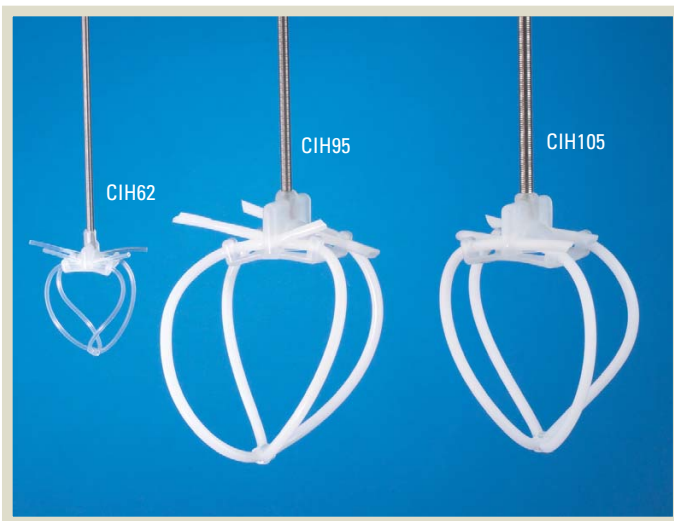
To install, orient as shown, slide on...



...then tighten bands for a proper fit.

Dan Nohr, Nohr's Illustrating

Covance Infusion Harnesses™



The original harness models feature a clear opening in the dome through which you feed catheter or infusion tubing into the spring tether and up to a swivel.

There are two sizes of the harness, one for rats and one for mice, and in both cases they can be fitted with a standard or large ID spring depending on the cross section of the catheters that need to be run through it.

CIH harnesses may be purchased individually, in bulk or as part of custom infusion kits. Custom spring lengths are available.



HARNESS BENEFITS

- Simple to install – no surgery
- Easy to adjust as animal grows
- Access to jugular vein
- Vented to promote healing of surgical wound
- Covers less of the body than jackets – better temperature regulation

Part No.	Description	Unit
CIH95	Infusion harness for rats, .090in ID	ea
CIH105	Infusion harness for rats, .105in ID	ea
CIH62	Infusion harness for mice, .062in ID	ea
CIH62/PS95	Infusion harness for mice, .090in ID	ea

Non-sterile.
www.instechlabs.com/Infusion/tethers/cih.php

SPECIFICATIONS

	CIH95	CIH105	CIH62	CIH62/PS95
Clear lumen	.090in (2.3mm)	.105in (2.7mm)	.062in (1.6mm)	.090in (2.3mm)
Saddle size	1.13x1.13in (2.9cm)	1.13x1.13in (2.9cm)	0.56x0.56in (1.4cm)	0.56x0.56in (1.4cm)
Body surface contact area	.82in ² (5.3cm ²)	.82in ² (5.3cm ²)	.20in ² (1.3cm ²)	.20in ² (1.3cm ²)
Spring type	PS95 (12in)	PS105 (12in)	PS62 (12in)	PS95 (12in)
Standard belly band length	9in (23cm)	9in (23cm)	4.5in (11cm)	4.5in (11cm)
Compatible swivels				
- plastic	375/22PS, 20PS	-	375/25PS	-
- stainless steel	any	any	any	any
Compatible catheter	any	any	any	any
Weight	12g	12g	3g	4g

Applications

Rat, 1 channel	●			
Rat, 2 channel		●		
Mouse, 1 channel			●	
Mouse, 2 channel				●

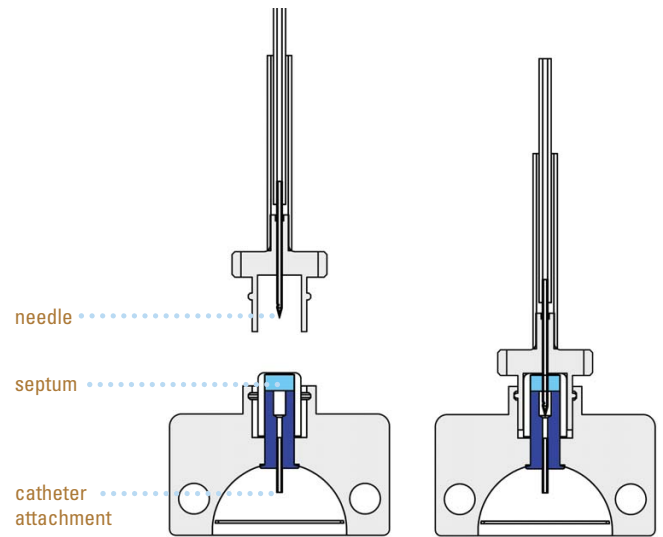
HARNESSES

Vascular Access Harnesses™

The VAH™ system is an advancement on the original Covance Infusion Harness which permits quick and aseptic connection and disconnection of a catheterized rat or mouse and an infusion tether.

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

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



Single Channel VAH™ for Rats

Install the VAH95AB harness at the time of catheterization. For best results, use a 3Fr polyurethane catheter as it makes the most reliable fit with the 22ga connector in the harness. A 2.5cm rounded-tip PU catheter, specially designed for the VAH, is available bundled with the harness in part number VAH95AB-C (see p36 for specifications).

For intermittent access for bolus injection, blood sampling or flushing, pierce the septum manually using an SN22 needle or VAHLS22/30 connector with needlestick protection.



For continuous access, connect a VAH tether. The KVAH95T kit includes the tether, a swivel and tubing with a luer stub to connect to a syringe pump (see p24 for a diagram).

The new SIP22P plug can be used to seal off the tether connector and keep it clean while the animal is disconnected.

Part No.	Description	Unit
VAH95AB-C	VAH harness for rats, round-tip catheter, SN22 needle	ea
VAH95AB	VAH harness for rats with SN22 needle	ea
VAH95T	VAH rat tether assembly	ea
KVAH95T	VAH rat tether plus 22ga swivel, 24in CoEx, luer stub	ea
SN22	Extra rat VAH septum needles, 22ga x 0.4in	pkg of 12
SIP22P	Plug for VAH tether	pkg of 10
VAHLS22/30	Rat VAH connector, 3cm tubing, luer stub	ea

Sterile.

www.instechlabs.com/Infusion/tethers/vah.php



VAH™ ADVANTAGES

- Septum permits aseptic technique
- Quick connection
- Minimal backflow
- Low profile
- Animals can be ordered with VAH and catheter pre-installed*

* See www.instechlabs.com/downloads/InstechSurgSvcVendors.pdf for a list of surgical service vendors and their level of experience with the VAH.

HARNESS TETHERS

Single Channel VAH™ for Mice NEW

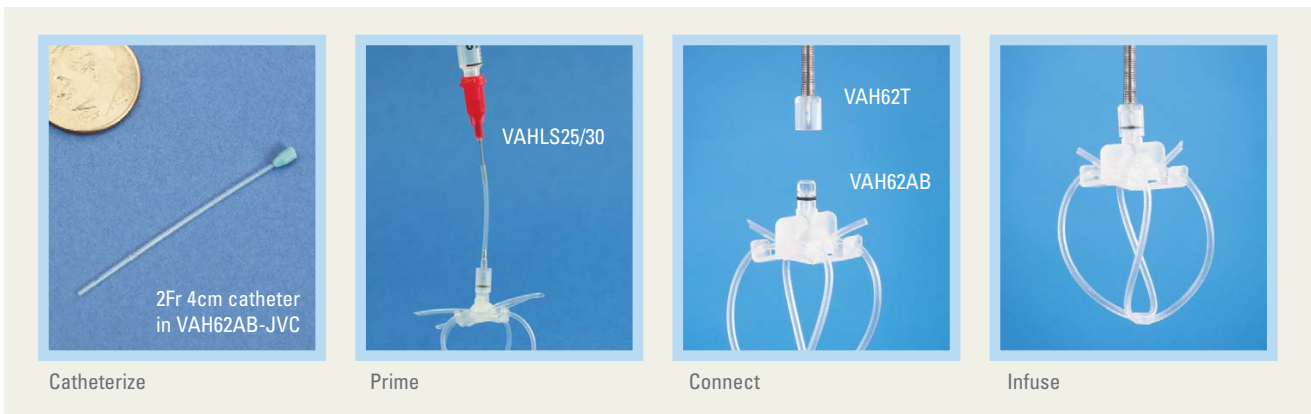
As is its larger cousin, the VAH for mice is installed at the time of catheterization. For best results, use our specially designed 2Fr catheter with a molded hub that connects to 22ga tube in the harness port (4cm version included in VAH62AB-JVC; contact us for other sizes).

For continuous access, connect a mating mouse VAH tether with tubing that mates with 25ga swivels. When accessing the harness port directly to infuse, withdraw or check patency, use the VAHLS25/30 connector rather than a septum needle for proper alignment and to avoid damage to the small septum.

The mouse VAH is ideal for serial microvolume blood sampling, IV self administration or standard IV drug infusion studies.

Part No.	Description	Unit
VAH62AB-JVC	Mouse VAH harness with 2Fr 4cm catheter	ea
VAH62AB	Mouse CVAH harness	ea
VAHLS25/30	Mouse VAH injection set	ea
VAH62T	VAH tether assembly for mice, 7in	ea
KVAH62T	VAH tether plus 25ga swivel, 24in CoEx, luer stub	ea

Sterile.
www.instechlabs.com/Infusion/tethers/mousevah.php



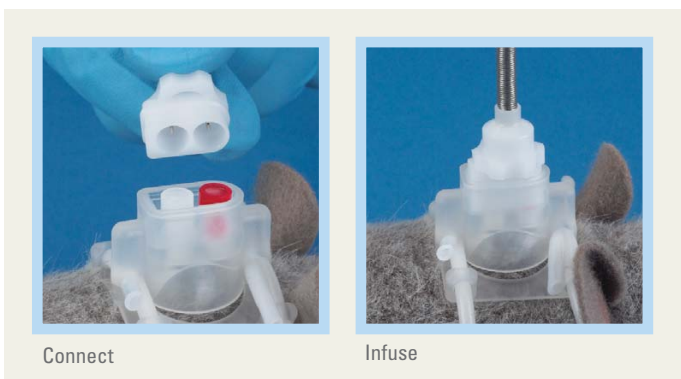
Dual Channel VAH™ for Rats

The dual channel VAH connects two independent channels as simply as the standard VAH connects one. Install the VAHD115AB harness when the catheters are implanted. For best results, use 3Fr polyurethane catheters (now available packaged with the harness; see p 36 for specifications). Access the ports directly using an SN22 needle for manual flushing, injections or sampling.

Applications include bile sampling, simultaneous infusion and blood sampling, blood pressure measurement and blood sampling and, with the -1P and -2P models with additional injection ports, all of the above at once.

Part No.	Description	Unit
VAHD115AB-C	Dual channel VAH harness, 2 catheters, needle	ea
VAHD115AB	Dual channel VAH harness with SN22 needle	ea
VAHD115T	Dual channel VAH tether assembly	ea
VAHD115T1	One channel VAH tether assembly	ea
KVAHD115T	Kit: VAHD115T, 375/22PS, SIP22/4, 24in CoEx, LS22	ea
VAHD115L	VAHD loop connector for bile sampling	ea
VAHD115CAP	Protective cap for VAHD harness	ea
VAHD115AB-1P	Dual VAH with 1 extra injection port, SN22	ea
VAHD115AB-2P	Dual VAH with 2 extra injection ports, SN22	ea
VAHD115T1/BD150	One channel VAHD tether with 1.5ml tether-mounted bile collection vial	ea
VAHD115T/BD150	Two channel VAHD tether with 1.5ml tether-mounted bile collection vial	ea
SN22	Extra septum needles, 22ga x 0.5in	pkg of 12

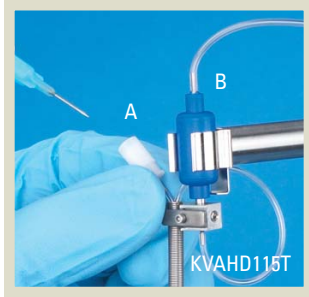
Sterile. For CIH-based bile harness, see www.instechlabs.com/Infusion/tethers/cih105bd.php



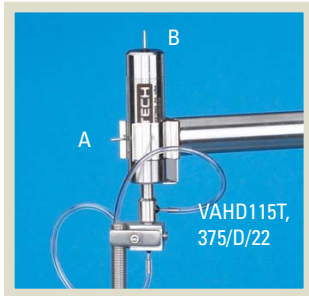
HARNESSES TETHERS

DUAL VAH APPLICATIONS AND OPTIONS

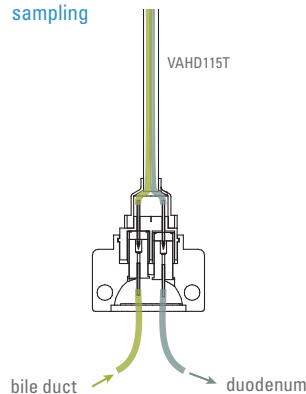
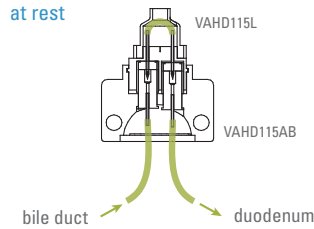
CONTINUOUS BLOOD SAMPLING AND INTERMITTENT INJECTIONS



CONTINUOUS BLOOD SAMPLING AND CONTINUOUS INFUSION



BILE SAMPLING



(see p 18 for diagrams of other bile sampling options)

BILE SAMPLING AND INTERMITTENT INJECTION AND/OR SAMPLING



AT REST / TRANSPORT



SPECIFICATIONS HARNESSES

	VAH95AB, T	VAH62AB, T	VAHD115AB, T
No. of channels	1	1	2
Port volume	8 µl	2 µl	8 µl
Septum durability	~200 sticks	~100 sticks	~200 sticks
Saddle size	1.13x1.13in (2.9cm)	0.56x0.56in (1.4cm)	1.13x1.13in (2.9cm)
Body surface contact area	.82in ² (5.3cm ²)	.20in ² (1.3cm ²)	.82in ² (5.3cm ²)
Spring type (std length)	PS95 (12in / 30cm)	PS62 (7in / 18cm)	PS115 (12in / 30cm)
Standard belly band length	9in (23cm)*	4.5in (11cm)	9in (23cm)*
Compatible plastic swivels	375/22PS	375/25PS	375/22PS
Compatible stainless swivels	375/22	375/25	375/D/22, 375/22
Tether tubing	VAHBPU-T22	VAHBPU-T25	VAHBPU-T22
Harness connector	22ga	22ga	22ga
Compatible catheter	3Fr	3Fr tapered	3Fr
Harness and tether weight	13g	3g	17g

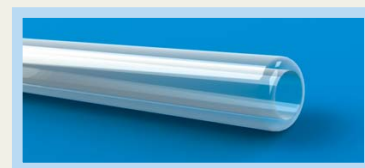
Applications

Mouse, infusion		•	
Rat infusion, 1 channel	•		
Rat infusion, 2 channel			•

* A version with extra long belly bands (14in / 36cm) is available for large rats or other larger rodent species. Part no. VAH95AB14.

BUNDLED CATHETERS

	For Rats	For Mice
Bundled part no.	VAH95AB-C VAHD115AB-C	VAH62AB-JVC
Catheter part no.	VAH-PU-C30	VAH-PU-C20
Material	PU, uncoated	PU, uncoated
Size	3Fr**	2Fr
ID / OD	.025x.040in 0.6x1.0mm	.013x.025in 0.3x0.6mm
Distal tip	Rounded	Rounded
Proximal end	Trimable	PU hub for 22ga
Length	25 cm	4cm
Suture beads	1, moveable	1, moveable
Attachment sleeve	None	None
Packaging	3x7in pouch	3x7in pouch



** Approximately 10% larger ID/OD than standard 3Fr PU SoloCaths (p41).

BUTTON TETHERS

Button tethers are surgically implanted under the skin. In older models the catheter passes through an opening in the stalk of the button through a spring tether and up to a swivel. The newer Vascular Access Button™ features an external port

with a septum to create a closed system. Compared to harnesses, buttons require a bit more work in surgery; however, there are no belly bands that require adjustment and with proper tissue ingrowth, buttons can be a good option for long-term studies.

Vascular Access Button™ for Rats NEW

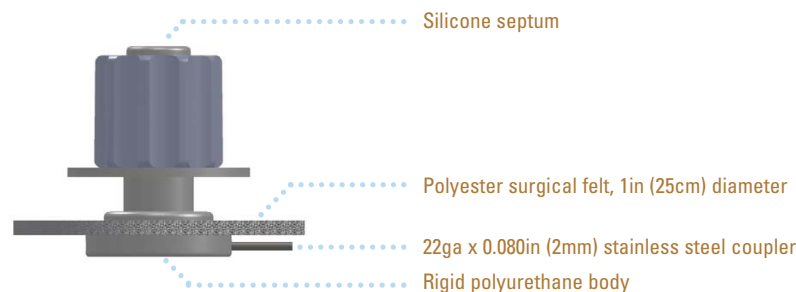


This implantable button features an external port with a septum similar to the Vascular Access Harness™ for quick, aseptic connection and disconnection of a catheterized rat and an infusion tether. They are ideal for long-term infusion studies and intermittent infusion protocols such as IV self administration.

Compared to the DC95BS, which uses a Dacron® mesh, the VAB95BS buttons feature a sturdier medical-grade polyester felt. Attach a 3Fr polyurethane catheter (included with part number VAB95BS-C) to a 22ga connector under the felt. The button is implanted at the time of catheterization; to begin an infusion study simply disinfect the septum and plug in the mating VAB95T tether. The recessed septum-piercing needle will make the fluid connection without exposing the fluid path to the environment. Group housing is possible when not tethered if the optional protective metal cap is used.

Part No.	Description	Unit
VAB95BS-C	VAB button with round-tip catheter and SN22 needle	ea
VAB95BS	VAB button with SN22 needle	ea
VAB95T	VAB tether assembly	ea
KVAB95T	VAB tether plus 22ga swivel, 24in CoEx, luer stub	ea
VAB95CAP	Protective metal cap for VAB	ea
SN22	Extra septum needles, 22ga x 0.5in	pkg of 12

Sterile.
www.instechlabs.com/Infusion/tethers/vab.php



BUTTON TETHERS

Dacron® Mesh Button Tethers for Rats



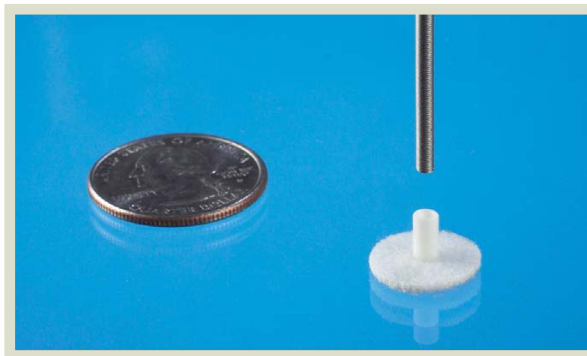
These disposable buttons are designed for longer-term implantation in rats. After seven to ten days the subcutaneous tissue will grow into the Dacron® mesh, making sutures redundant.

The Dacron mesh measures 1 inch (25mm) in diameter. The buttons are available in two sizes: a standard lumen for one catheter and a larger lumen for two catheters. The single catheter buttons include a silicone seal for 3Fr catheters which helps reduce catheter movement and bacteria ingress. Replacement buttons are also available in bulk quantities.

Part No.	Description	Unit
DC95S	Dacron® button tether for rats, .090in lumen, sterile (spring, coupler, one button, catheter seal)	ea
DC95BS	Dacron® buttons (.090in lumen) and seals, sterile	pkg of 10
DC105S	Dacron® button tether for rats, .105in lumen, sterile (spring, coupler, one button)	ea
DC105BS	Dacron® buttons (.105in lumen), sterile	pkg of 10

www.instechlabs.com/Infusion/tethers/dc95.php

Polyester Felt Button Tether for Mice NEW



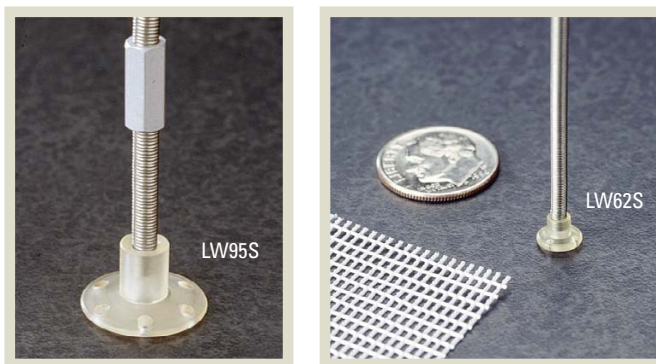
This implantable button features a 0.563in (14mm) medical-grade polyester felt disk. Catheters are exteriorized through the opening in the stalk, which mates with Instech's standard PS62 mouse tether spring with a press fit.

The felt used is the same as in the Vascular Access Button for rats and has more structure than the mesh used in the DC95 rat buttons.

Part No.	Description	Unit
DF62S	Polyester felt button tether for mice, 12in spring, sterile	ea
DF62BS	Replacement polyester felt buttons, sterile	pkg of 10

www.instechlabs.com/Infusion/tethers/df.php

Plastic Button Tethers



These buttons are designed for short- to medium-term studies. The lightweight plastic will not cause adverse tissue reactions. The miniature LW62 for mice includes Dacron® mesh which can be sutured onto the button to expand the attachment area and reduce strain on the incision site.

Part No.	Description	Unit
LW62S	Polysulfone button tether for mice, sterile	ea
LW95S	Polysulfone button tether for rats, single catheter, sterile	ea
LW105S	Polysulfone button tether for rats, dual catheters, sterile	ea

www.instechlabs.com/Infusion/tethers/lw62.php

SPECIFICATIONS

	VAB95BS, T	DC95S	DC105S	DF62BS	LW62S	LW95S	LW105S
Materials	Polyester felt Rigid polyurethane	Dacron® mesh Silicone	Dacron® mesh Silicone	Polyester felt Rigid polyurethane	Polysulfone	Polysulfone	Polysulfone
Experiment duration (recommended)	10-60+ days	10-60+ days	10-60+ days	10-60+ days	1-10 days	1-10 days	1-10 days
Clear lumen	NM	.090in (2.3mm)	.105in (2.7mm)	.062in (1.6mm)	.062in (1.6mm)	.090in (2.3mm)	.105in (2.7mm)
Dead volume	10µL	NM	NM	NM	NM	NM	NM
Button diameter	1.0in (25mm)	1.0in (25mm)	1.0in (25mm)	.563in (14mm)	.250in (6.4mm)	.625in (16mm)	.625in (16mm)
Spring	12in (30cm) PS62	12in (30cm) PS95	12in (30cm) PS105	12in (30cm) PS95	12in (30cm) PS105		
Button weight	1.5g	0.5g	0.5g	0.1g	0.2g	0.5g	0.5g
Autoclavable	No	Yes	Yes	No	No	No	No
Applications							
Mouse, infusion				•	•		
Rat infusion, 1 channel	•	•				•	
Rat infusion, 2 channel			•				•

HEAD BLOCK TETHERS

Instech's head block tether assemblies are designed for microdialysis on freely moving animals. They provide a solid attachment to the animal with little risk of infection. Always use a counter-balanced lever arm to remove slack and to give the animal the greatest freedom of movement.

Head Block Tether for Rats

This large lumen tether can accommodate up to two standard microdialysis probes. A 3/4in (1.9cm) slotted screw is attached to the animal's skull with dental cement. A blade on the end of the spring tether slides into the screw and is secured with a knurled tubular nut.



Part No.	Description	Unit
M115S	Head block tether for rats, sterile (spring with blade, 5 slotted screws, miniature nut)	ea
M115BS	Replacement screws for M115 tether, sterile	pkg of 5
M115TS	Replacement M115 spring w/ blade, nut, no screws	pkg of 5

📄 www.instechlabs.com/Infusion/tethers/M115.php

Head Block Tether for Mice



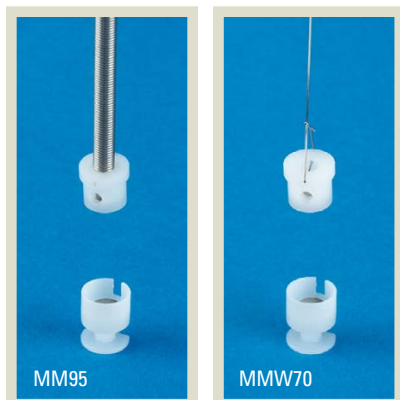
This tether uses a fine .010in diameter looped wire instead of a spring, making it lightweight and allowing it to transmit torque easily to the swivel. Attach the small peg to the animal's skull with dental cement, then connect the wire by inserting it into a hole in the peg and sliding a sleeve over it. The tether includes a special slotted clamp to attach to any of Instech's 375-series swivels.

Part No.	Description	Unit
MINF	Head block tether for mice, nonsterile (looped wire, 5 pegs & sleeves, slotted swivel clamp)	ea
MPEG	Replacement pegs and sleeves for MINF tethers	pkg of 10
MCLAMP	Slotted swivel clamp for looped-wire tethers	pkg of 5

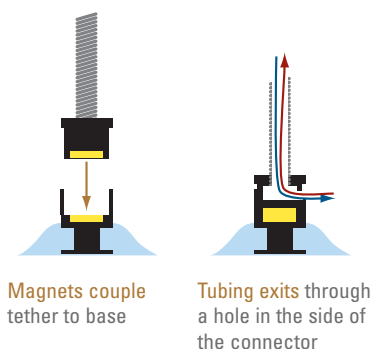
📄 www.instechlabs.com/Infusion/tethers/MINF.php

HEAD BLOCK TETHERS

Magnetic Head Block Tethers



Magnets connect this tether to a base that is cemented to the skull. Simply bring the two parts near each other and they will snap together. Designed for rats and mice, tethers are available with either a protective spring or a light-weight looped wire. Replacement bases are provided sterile; other components non-sterile.



Magnets couple tether to base

Tubing exits through a hole in the side of the connector

Part No.	Description	Unit
MM95	Magnetic head block with spring tether	ea
MMW70	Magnetic head block with looped wire tether, MCLAMP	ea
MMBS	Replacement magnetic head block bases, sterile	pkg of 10

www.instechlabs.com/Infusion/tethers/MM.php

SPECIFICATIONS

	M115S	MINF	MM95	MMW70
Clear lumen	.115in (2.9mm)	.070in (1.8mm)	.090in (2.3mm)	.070in (1.8mm)
Tether type	PS115 spring	looped wire	PS95 spring	looped wire
Tether length	12in (30cm)	12in (30cm)	12in (30cm)	12in (30cm)
Base width	0.2in	0.12in	0.25in	0.25in
Base height	0.8in (2cm)	0.46in (1.1cm)	0.5in (1.3cm)	0.5in (1.3cm)
System weight	10g	0.3g	7.5g	1.0g

Applications

Rat	•		•	
Mouse		•		•

Glass Ionomer Cement for Permanent Head Attachment in Rats and Mice



This type of cement has significant advantages over the more commonly used methylmethacrylate cements. It bonds to bone, eliminating the need for bone screws in most cases. It has a much lower temperature increase during polymerization and it hardens more quickly with no noxious fumes.

The automixing configuration includes a dispenser, two 13.3gm cartridges (80 times the volume of the single use capsules) and 44 disposable mixing tips. The cartridges have two chambers so that the components of the cement are only mixed in the tips; therefore, they do not need to be used all at once. An SOP for rodent head attachment is included.

Part No.	Description	Unit
MGIG/AKIT	Glass ionomer cement automix kit (2 cartridges, 44 tips, dispenser)	ea
MGIG/ARFL	Glass ionomer cement automix refills (2 cartridges, 44 tips)	ea

www.instechlabs.com/Infusion/tethers/MGIG.php

Sold for laboratory research applications only.

Collection Tube Holders

Tether Mounted. The small end of these clips attaches to M115 head block tethers. The other end holds a standard 1/4- or 1/2-ml collection tube. This allows samples to be collected close to the animal and does not require an extra swivel channel for exiting fluid. Primarily used for multi-probe microdialysis.



Swivel Mounted. The MTUBE is most commonly used for mouse microdialysis with a one channel swivel. The bracket attaches to the rotating portion of a swivel using a set screw. A smaller set screw holds the mouse head block tether wire. Holds standard 1/4-ml collection tubes.

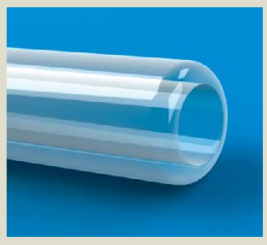


Part No.	Description	Unit
MCTHH	Tether-mounted holder for 1/2 ml collection tubes	pkg of 5
MCTHQ	Tether-mounted holder for 1/4 ml collection tubes	pkg of 5
MTUBE	Swivel-mounted holder for 1/4 ml collection tubes	ea

www.instechlabs.com/Infusion/tethers/tubeholders.php

SOLOCATH™ CATHETERS

Instech Solomon has over 25 years experience designing and manufacturing laboratory animal catheters. This expertise translates into dependable designs, high-quality manufacturing and strong technical support.



A critical feature of an Instech Solomon finished catheter is the rounded distal tip. Rounded tips have been shown to be less traumatic to the intimal lining of blood vessels, whereas square cut or bevel cut tips have edges which irritate the intimal lining and hasten the thrombogenic response.

SoloCath catheters are available in silicone, polyurethane or heparin-coated polyurethane and in sizes for mice to large animals. Most models include moveable suture bulbs as a standard feature; other options are available on a customized basis.

SPECIFICATIONS

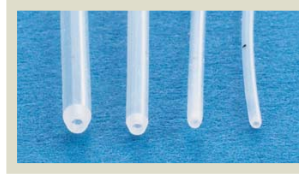
Silicone	2Fr	3Fr	3.5Fr	5Fr	7Fr	
OD (inches)	.025	.037	.047	.065	.085	
ID (inches)	.012	.020	.025	.030	.040	
OD (mm)	0.64	0.94	1.19	1.65	2.16	
ID (mm)	0.30	0.51	0.64	0.76	1.02	
PU / CBAS	1.2Fr ¹	2Fr	3Fr	3.5Fr	5Fr	7Fr
OD (inches)	.016	.025	.036	.047	.065	.096
ID (inches)	.009	.013	.023	.027	.040	.052
OD (mm)	0.41	0.64	0.91	1.19	1.65	2.43
ID (mm)	0.23	0.33	0.58	0.69	1.02	1.32

Applications

Mouse	●	●				
Rat <100g	●	●				
Rat 100-200g		●				
Rat 200-300g		●	●			
Rat 300-350g			●	●		
Cat				●	●	
Rabbit				●	●	●
Dog >8kg					●	●
Mini-Pig, adult					●	●
Pig, adult						●
NHP <1kg		●				
NHP 1-2kg			●			
NHP >2kg			●	●		

Catheter application guide approximate for jugular v, carotid a, femoral a/v.
¹ 1.2Fr indicates dimensions of distal end of PU FunnelCath.

Silicone Catheters



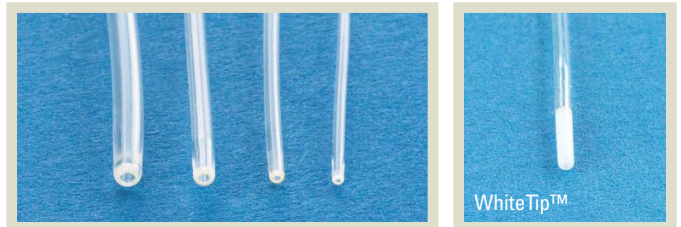
Silicone is the old standard for long-term indwelling central venous catheters in laboratory animals due to its softness and biocompatibility.

Part No.	Description	Unit
SIL-C20	2 French, 60 cm, no luer, no depth markings	ea
SIL-C30	3 French, 60 cm, no luer	ea
SIL-C35	3.5 French, 60 cm, female luer	ea
SIL-C50	5 French, 60 cm, female luer	ea
SIL-C70	7 French, 60 cm, female luer	ea

Clear with round tips, 2 moveable suture bulbs and depth markings (except 2Fr). Individually packaged and EtO sterilized. Minimum order quantity is 5 pieces.

www.instechlabs.com/Infusion/catheters/silicone.php

Polyurethane Catheters



Polyurethane has supplanted silicone as the catheter material of choice for chronic vascular access because of its ease of insertion, durability and biocompatibility.

The new WhiteTip™ catheter features a soft polyurethane tip. Studies have shown that soft round catheter tips result in improved patency. Furthermore, the tip can be viewed under radiographic imaging to confirm proper placement. Currently available in 3 French.

Part No.	Description	Unit
PU-C20	2 French, 60 cm	ea
PU-C30	3 French, 60 cm	ea
PU-C30SOFTW	3 French WhiteTip™, 60 cm	ea
PU-C35	3.5 French, 60 cm	ea
PU-C50	5 French, 60 cm	ea
PU-C70	7 French, 60 cm	ea

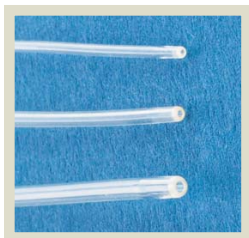
Clear with round tips, 2 moveable suture bulbs and attachment sleeve. No luers or depth markings. Individually packaged and EtO sterilized. Minimum order quantity is 5 pieces.

www.instechlabs.com/Infusion/catheters/PU.php

SoloPort and WhiteTip are trademarks of Solomon Scientific

SOLOCATH™ CATHETERS

CBAS® Heparin-Coated Polyurethane Catheters



CBAS FEATURES

- Heparin bound to catheter – non-leaching
- Remains bioactive for months
- Provided EtO sterilized (do not resterilize)
- Available on polyurethane catheters only

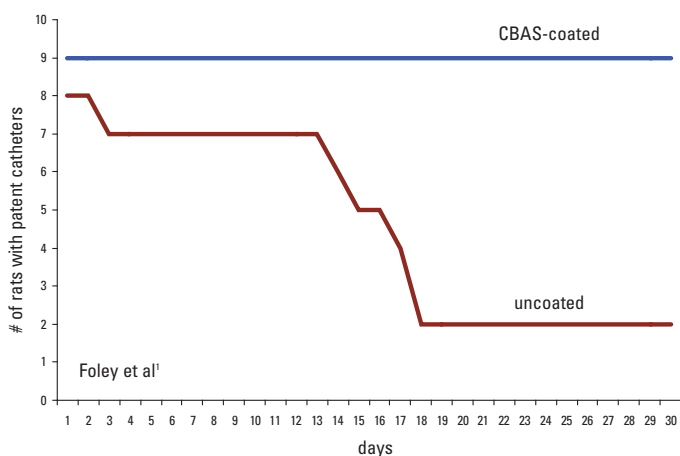
Consider using CBAS® heparin-coated catheters for improved patency in studies lasting two weeks or longer, blood sampling applications, and when working with high-value animals.

CBAS is a patented process from Carmeda® for applying heparin to the surfaces of biomaterials. The active sequence of the heparin molecule serves to halt the clotting cascade. One of the most respected thromboresistant coatings available, CBAS has been used in a number of human medical devices including coronary stents, vascular grafts, oxygenator circuits and artificial hearts.

Foley et al describe longer patency and fewer positive blood cultures from CBAS-coated catheters in rats.¹ While heparin itself is not antimicrobial, it does reduce the aggregation of blood proteins on catheters, thereby minimizing the nutrients and binding sites for many microorganisms. Appelgren et al demonstrated a substantial reduction in infections from CBAS-coated catheters in humans.²

CBAS has also shown benefits in ophthalmic, urinary, lymphatic and intraperitoneal applications. For example, Zareie describes improved patency of intraperitoneal catheters coated with CBAS (80% catheter survival in rats at 5 weeks with CBAS coated catheters, versus 43% with uncoated silicone).³

PERFORMANCE OF CBAS VS. UNCOATED POLYURETHANE CATHETERS IN RATS



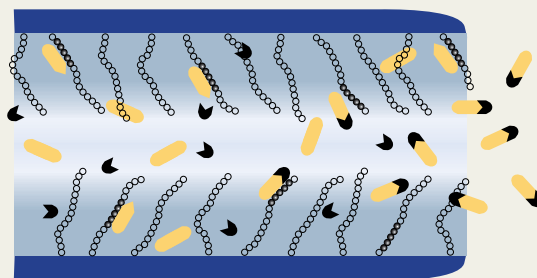
Part No.	Description	Unit
CBAS-C30	3 French, 60 cm	ea
CBAS-C35	3.5 French, 60 cm	ea
CBAS-C50	5 French, 60 cm	ea
CBAS-C70	7 French, 60 cm	ea

Clear with round tips, 2 moveable suture bulbs and attachment sleeve. No luers or depth markings. Individually packaged and EtO sterilized. Minimum order quantity is 5 pieces.

www.instechlabs.com/Infusion/catheters/CBAS.php

CBAS and Carmeda are registered trademarks of Carmeda AB, a subsidiary of W. L. Gore & Associates, Inc. The CBAS coating is under license to Solomon Scientific for laboratory animal applications.

HOW CBAS WORKS



1. CBAS heparin active sequence is available to bind with antithrombin.
2. Antithrombin conforms to accelerate binding with thrombin and other coagulation factors.
3. Coagulation effect of thrombin is neutralized by formation of thrombin-antithrombin complex.
4. Thrombin-antithrombin complex washes away. CBAS heparin "active sequence" remains intact and is available repeatedly to bind with antithrombin.

Selected CBAS Bibliography

1. Foley P, et al. Effect of covalently bound heparin coating on patency and biocompatibility of long-term indwelling catheters in the rat jugular vein. *Comparative Medicine*. 52:243-8.
2. Appelgren P, et al. Surface heparinization of central venous catheters reduces microbial colonization in vitro and in vivo: results from a prospective, randomized trial. *Crit Care Med*. 24(9):1482-9. 1996.
3. Zareie M, et al. Improvement of a chronic rat model for peritoneal dialysis by using heparin-coated catheters. *Advances in Peritoneal Dialysis*. 20:150-4. 2004.
4. Armander C, et al. Long-term stability in vivo of a thromboresistant heparinized surface. *Biomaterials*. 8:496-9. 1987.
5. Riesenfeld R, et al. Analysis of the heparin coating of EXCOR® ventricular assist device after 855 days in a patient. *Transactions of the 32nd Annual Meeting of the Society for Biomaterials*. 2007.
6. Begovac P, et al. Improvements in GORE-TEX® [WL Gore & Associates] vascular graft performance by Carmeda BioActive Surface heparin immobilization. *Eur J Vasc Endovasc Surg*. 25:432-7. 2003.
7. Jain, G et al. Does Heparin Coating Improve Patency or Reduce Infection of Tunneled Dialysis Catheters. *Clin J Am Soc Nephrol*. 4(11): 1787-1790. 2009.

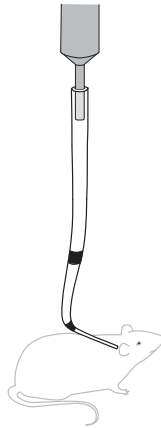
SOLOCATH™ CATHETERS

FunnelCath™ Mouse Catheter

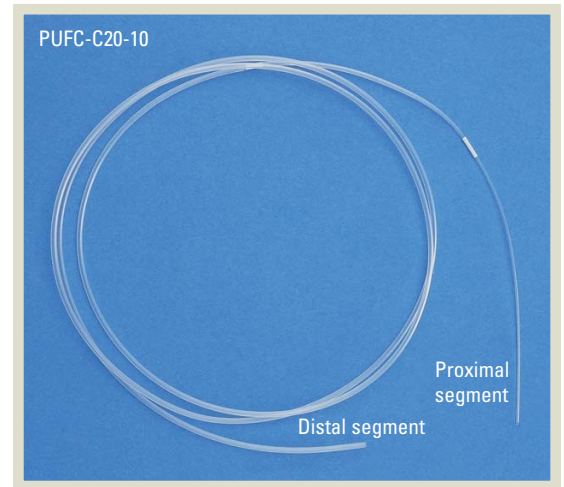
The FunnelCath solves a common problem in mouse infusion: attaching a tiny intravascular catheter to conventional swivels or luer stubs.

In contrast to other methods of producing a tapered catheter, such as stretching heated tubing (which is inconsistent and cumbersome) or bonding a small tube inside a larger tube (which can break or leak), FunnelCaths are tapered during the extrusion process. As a result they are seamless and consistent, catheter to catheter, batch to batch.

FunnelCaths are extruded from the same implant-grade polyurethane used in other SoloCaths, though a bit stiffer to facilitate placement in mice. They are available in two sizes. Both have intravascular segments of approximately 1.2 Fr; one has a 2Fr proximal end that connects to a 25ga swivel or coupler; the other a 3Fr end to connect to a 22ga swivel or coupler.



Attach a 1.2Fr catheter to a 22 or 25ga swivel



Part No.	Description	Unit
PUFC-C20-10	Polyurethane catheter, tapers from 2Fr to 1.2Fr	ea
PUFC-C30-10	Polyurethane catheter, tapers from 3Fr to 1.2Fr	ea

Individually packaged and EtO sterilized. Minimum order quantity is 5 pieces.

www.instechlabs.com/Infusion/catheters/funnel.php

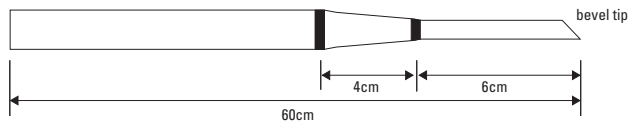
FunnelCath is a trademarks of Solomon Scientific

SPECIFICATIONS

Swivel or luer end Transition zone 1.2Fr intravascular segment

2Fr (ID: 0.46mm, OD: 0.89mm) - connects to 25ga (ID: 0.23mm, OD: 0.41mm)

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



SoloCath™ Customization

	DISTAL TIP	ATTACHMENTS	MODIFICATIONS	Attachment sleeve
STANDARD *	Round 	None 	Moveable suture bulbs 	
ALTERNATIVES	Square 	Luers 	Fixed suture bulbs 	Suture disk
	Bevel 	Ports 	Suture flange 	Dacron® felt
				Perfusion holes
				Slit valve

* Unless otherwise indicated in catheter description. To define a custom catheter call us or visit www.instechlabs.com/Infusion/catheters/customcatheter.php

SOLOPORT™ SUBCUTANEEOUS ACCESS PORTS

Ports are implanted catheter devices which do not exit through the animal's 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. The port was originally intended for intermittent bolus infusions and periodic sampling and access, but it is now widely used in protracted and continuous infusions.

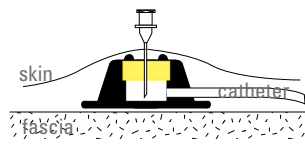
PORT ADVANTAGES

- Decreased infections
- No externalized components
- Jacket/harness not required
- Permits common housing

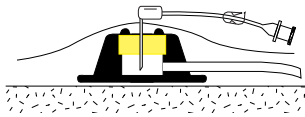
SoloPorts come in a variety of configurations for most species and catheter sizes, including the MICRO, the smallest top-access mouse port available.

The ports are made from the highest quality biomaterials. The MICRO is made of stainless steel; the MIN and MID sizes are available in either titanium or plastic; the MAX is made of titanium.

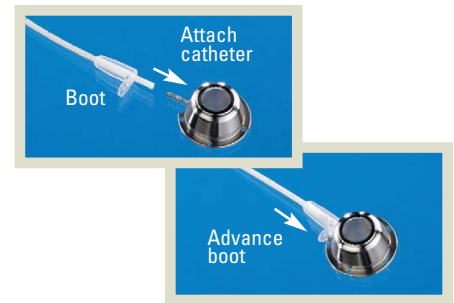
Each port includes a catheter which can be pre-attached by Instech Solomon or, for 3Fr and larger, attached intraoperatively by the surgeon. SoloPort catheters are also available with CBAS® heparin coating for optimal hemocompatibility.



Huber needle for bolus and quick sampling



Right angle Huber needle for longer-term infusion and sampling



A molded silicone securement boot for strain relief is included with titanium SoloPorts and PMIDs with attachable catheters. Boots match the catheter size.

SPECIFICATIONS







	MICRO	PMIN	MIN	PMID	MID	MAX
Body material	stainless steel	polysulfone	titanium	polysulfone	titanium	titanium
Height	.175in (4.4mm)	.275in (7.0mm)	.275in (7.0mm)	.395in (10.0mm)	.395in (10.0mm)	.460in (11.7mm)
Weight	1.4g	2.6g	2.9g	3.1g	6.7g	10.4g
Dead volume	.03ml	.13ml	.13ml	.38ml	.38ml	.65ml
Catheter sizes	1.2Fr	2-7Fr	3-7Fr	3-7Fr	3-7Fr	3-7Fr
Sterilization	EtO	EtO, steam ¹	EtO, steam ¹	EtO, steam ¹	EtO, steam ¹	EtO, steam ¹

Applications

Mouse	•					
Rat		•				
Ferret		•	•			
Rabbit				•	•	
NHP (<4kg)			•			
NHP (>4kg)				•	•	
Dog (<14kg)				•	•	
Dog (>14kg)				•	•	•
Pig				•	•	•

SOLOPORT™ SUBCUTANEOUS ACCESS PORTS

ORDERING INFORMATION

	MICRO	PMIN	MIN	PMID	MID	MAX
CBAS Heparin-Coated PU (attachable) 		PMINA-CBAS-C30 PMINA-CBAS-C35 PMINA-CBAS-C50 PMINA-CBAS-C70	MINA-CBAS-C30 MINA-CBAS-C35 MINA-CBAS-C50 MINA-CBAS-C70	PMIDA-CBAS-C30 PMIDA-CBAS-C35 PMIDA-CBAS-C50 PMIDA-CBAS-C70	MIDA-CBAS-C30 MIDA-CBAS-C35 MIDA-CBAS-C50 MIDA-CBAS-C70	MAXA-CBAS-C30 MAXA-CBAS-C35 MAXA-CBAS-C50 MAXA-CBAS-C70
Polyurethane (attachable) 		PMINA-PU-C30 PMINA-PU-C35 PMINA-PU-C50 PMINA-PU-C70	MINA-PU-C30 MINA-PU-C35 MINA-PU-C50 MINA-PU-C70	PMIDA-PU-C30 PMIDA-PU-C35 PMIDA-PU-C50 PMIDA-PU-C70	MIDA-PU-C30 MIDA-PU-C35 MIDA-PU-C50 MIDA-PU-C70	MAXA-PU-C30 MAXA-PU-C35 MAXA-PU-C50 MAXA-PU-C70
Silicone (attachable) 		PMINA-SIL-C30 PMINA-SIL-C35 PMINA-SIL-C50 PMINA-SIL-C70	MINA-SIL-C30 MINA-SIL-C35 MINA-SIL-C50 MINA-SIL-C70	PMIDA-SIL-C30 PMIDA-SIL-C35 PMIDA-SIL-C50 PMIDA-SIL-C70	MIDA-SIL-C30 MIDA-SIL-C35 MIDA-SIL-C50 MIDA-SIL-C70	MAXA-SIL-C30 MAXA-SIL-C35 MAXA-SIL-C50 MAXA-SIL-C70
Silicone Intestinal (attachable)					MIDA-SIL-C70-INT	MAXA-SIL-C70-INT
CBAS Heparin-Coated PU (pre-attached) 		PMINP-CBAS-C30 PMINP-CBAS-C35 PMINP-CBAS-C50 PMINP-CBAS-C70	MINP-CBAS-C30 MINP-CBAS-C35 MINP-CBAS-C50 MINP-CBAS-C70	PMIDP-CBAS-C30 PMIDP-CBAS-C35 PMIDP-CBAS-C50 PMIDP-CBAS-C70	MIDP-CBAS-C30 MIDP-CBAS-C35 MIDP-CBAS-C50 MIDP-CBAS-C70	MAXP-CBAS-C30 MAXP-CBAS-C35 MAXP-CBAS-C50 MAXP-CBAS-C70
Polyurethane (pre-attached) 	MICP-PU-C10 ²	PMINP-PU-C30 PMINP-PU-C35 PMINP-PU-C50 PMINP-PU-C70	MINP-PU-C30 MINP-PU-C35 MINP-PU-C50 MINP-PU-C70	PMIDP-PU-C30 PMIDP-PU-C35 PMIDP-PU-C50 PMIDP-PU-C70	MIDP-PU-C30 MIDP-PU-C35 MIDP-PU-C50 MIDP-PU-C70	MAXP-PU-C35 MAXP-PU-C50 MAXP-PU-C70
Silicone (pre-attached) 		PMINP-SIL-C20 ² PMINP-SIL-C30 PMINP-SIL-C35 PMINP-SIL-C50	MINP-SIL-C30 MINP-SIL-C35 MINP-SIL-C50 MINP-SIL-C70	PMIDP-SIL-C30 PMIDP-SIL-C35 PMIDP-SIL-C50 PMIDP-SIL-C70	MIDP-SIL-C30 MIDP-SIL-C35 MIDP-SIL-C50 MIDP-SIL-C70	MAXP-SIL-C30 MAXP-SIL-C35 MAXP-SIL-C50 MAXP-SIL-C70

Catheters feature rounded tip unless otherwise noted. C10=1Fr, C20=2Fr, C30=3Fr, C35=3.5Fr, C50=5Fr, C70=7Fr. Attachable catheter preferred as it can be trimmed from the proximal end during surgery, preserving the tip.
¹CBAS® and PU catheters can be sterilized only by EtO at Instech Solomon. ²Catheter has a bevel tip. SoloPort is a trademark of Solomon Scientific.

www.instechlabs.com/Infusion/ports/

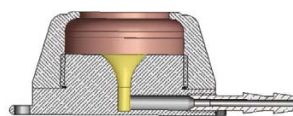
LOVOL™ Ports for CSF NEW

To address implanted port applications requiring minimal dead space, Instech Solomon has developed the LOVOL ports in the MIN and MID port housing sizes. Each port has a reservoir dead volume about 10% of the amount of the standard SoloPorts™. These LOVOL ports are ideally suited for CSF infusion or withdrawal applications, or any application involving the use of a costly compound to be administered in small volumes. Access these ports with standard 22ga and 24ga Huber point needles and infusion sets.

Standard ports

MIN dead volume: 130µL
MID dead volume: 380µL

LOVOL™ ports



MIN dead volume³: 15µL
MID dead volume³: 40µL

LOVOL is a trademark of Solomon Scientific

SPECIFICATIONS

	MINLO	MIDLO
Body material	titanium	titanium
Height	.275in (7.0mm)	.395in (10.0mm)
Weight	3.0g	6.9g
Dead volume ³	15µL	40µL
Catheter sizes	3-5Fr	3-5Fr
Sterilization	EtO, steam ¹	EtO, steam ¹

Ordering Information

CBAS Heparin-Coated PU (attachable)	MINLOA-CBAS-C30 MINLOA-CBAS-C35 MINLOA-CBAS-C50	MIDLOA-CBAS-C30 MIDLOA-CBAS-C35 MIDLOA-CBAS-C50
Polyurethane (attachable)	MINLOA-PU-C30 MINLOA-PU-C35 MINLOA-PU-C50	MIDLOA-PU-C30 MIDLOA-PU-C35 MIDLOA-PU-C50
Silicone (attachable)	MINLOA-SIL-C30 MINLOA-SIL-C35 MINLOA-SIL-C50	MIDLOA-SIL-C30 MIDLOA-SIL-C35 MIDLOA-SIL-C50
No catheter	MINLOA-C30 MINLOA-C35 MINLOA-C50	MIDLOA-C30 MIDLOA-C35 MIDLOA-C50

¹CBAS® and PU catheters can be sterilized only by EtO at Instech Solomon.

³Dead volumes are approximate. Please calculate in your facility before use.

PORTHOLD™ SUBCUTANEOUS ACCESS PORTS

PORTHOLD™ The problem of needle dislodgement from ports is as old as ports themselves. In studying the problem, we discovered that it is the lateral forces, such as the jacket rubbing over the needle, or the animal rubbing against cage bars, that cause most dislodgements.

Our solution is the PortHold™, in which a titanium plate with a grid of precision holes is molded into the septum of an otherwise standard SoloPort. Access the port with a 24ga non-coring pencil point needle (part no. PHN-24750) in a manner similar to that used with standard ports and huber needles. The needle slides easily through the holes. However, when lateral forces tug on the needle, the plate holds it in place.

The ports have performed well in dogs and nonhuman primates during long-term ambulatory infusions. They are available in MIN and MID sizes to cover a range of species from rabbits to NHPs to dogs.



Part No. 3.5Fr cath	5Fr catheter	7Fr catheter	Description
HMINA-PU-C35	HMINA-PU-C50	HMINA-PU-C70	MIN PortHold™ with attachable PU catheter (60cm)
HMINA-CBAS-C35	HMINA-CBAS-C50	HMINA-CBAS-C70	MIN PortHold™ with attachable CBAS® catheter (60cm)
HMINA-SIL-C35	HMINA-SIL-C50	HMINA-SIL-C70	MIN PortHold™ with attachable SIL catheter (60cm)
HMIDA-PU-C35	HMIDA-PU-C50	HMIDA-PU-C70	MID PortHold™ with attachable PU catheter (60cm)
HMIDA-CBAS-C35	HMIDA-CBAS-C50	HMIDA-CBAS-C70	MID PortHold™ with attachable CBAS® catheter (60cm)
HMIDA-SIL-C35	HMIDA-SIL-C50	HMIDA-SIL-C70	MID PortHold™ with attachable SIL catheter (60cm)

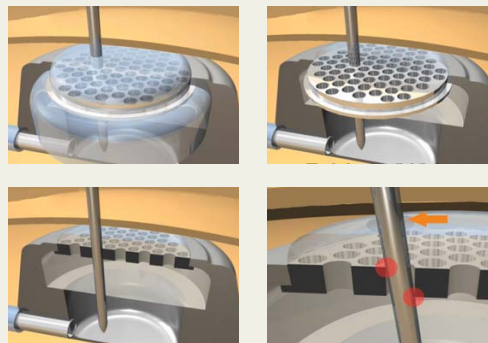
🌐 www.instechlabs.com/Infusion/ports/porthold.php

SPECIFICATIONS

	HMIN	HMID
Body and plate material	Titanium	Titanium
Height	0.275in (7.0mm)	0.395in (10.0mm)
Weight	3.0g	6.9g
Dead volume	0.13ml	0.38ml
Catheter sizes	3.5-7 Fr	3.5-7 Fr
Sterilization	EtO, steam ¹	EtO, steam ¹

¹ CBAS and PU catheters can be sterilized by EtO only.

THE HOLES HOLD TO PREVENT NEEDLE DISLODGMET



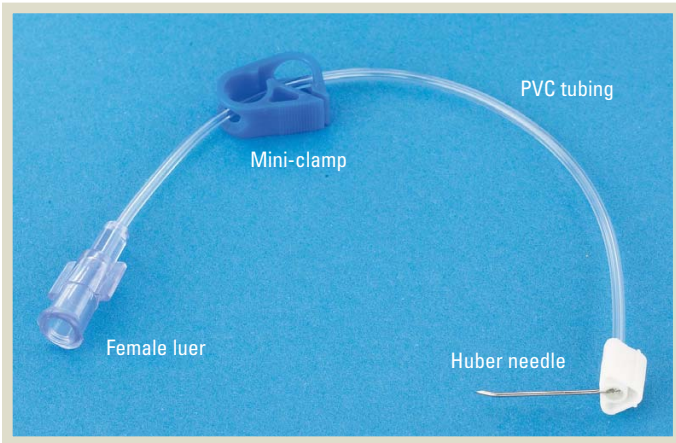
The PortHold design is identical to a conventional port with the exception of a titanium plate molded into the silicone septum.

Holes in the plate are slightly larger than the pencil point needle use to access the port. When the needle is tugged to the side the plate edges grab it, as shown in this exaggerated view.

PortHold is a trademark of Solomon Scientific

HUBER NEEDLES AND SETS

SOFTEE™ Right Angle Huber Needle Infusion Set



The SOFTEE™ Huber right angle infusion set is an innovation intended to provide a softer needle base for contact with an animal's skin and to offer an enhanced gripping surface for ease of insertion and removal.

The special “flexible delta” design of the SOFTEE Huber base provides a compact improvement on the “wings” design commonly seen in butterfly IV needle sets. The flexible needle block material combined with the special knurling near the top of the flexible delta enhances the researcher's grip during insertion and removal of the SOFTEE Huber.

All Instech Solomon Huber needles and sets feature the lower profile B-bevel grind on the tip.

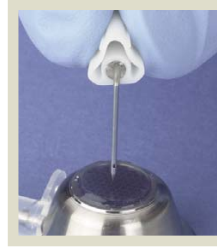


Part No.	Needle Size	Needle Length	Tubing Length
SHNRA22500-6	22ga	1/2" (1.3cm)	6" (15cm)
SHNRA22500-12	22ga	1/2" (1.3cm)	12" (30cm)
SHNRA22500-24	22ga	1/2" (1.3cm)	24" (61cm)
SHNRA22625-6	22ga	5/8" (1.6cm)	6" (15cm)
SHNRA22625-12	22ga	5/8" (1.6cm)	12" (30cm)
SHNRA22625-24	22ga	5/8" (1.6cm)	24" (61cm)
SHNRA22750-6	22ga	3/4" (1.9cm)	6" (15cm)
SHNRA22750-12	22ga	3/4" (1.9cm)	12" (30cm)
SHNRA22750-24	22ga	3/4" (1.9cm)	24" (61cm)

Provided sterile in packages of 12. Sets include female luer and mini-clamp. Add “NC” to the end of the part number to order without a clamp (e.g., SHRNA-22500-6NC). Custom PVC tubing lengths available. SOFTEE is a trademark of Solomon Scientific.

www.instechlabs.com/Infusion/ports/hn.php

PortHold™ Non-Coring Needle Sets



The tips of these needles sets are specially designed to access Instech Solomon's PortHold™ ports. The sets include PVC tubing, a female luer and a mini-clamp. The SOFTEE™ hub is designed to increase animal comfort and improve grip. Use PHN-24750 (below) for direct flushing with a syringe.

Part No.	Needle Size	Needle Length	Tubing Length
HSRA22563-6	22ga	9/16" (1.4cm)	6" (15cm)
HSRA22563-12	22ga	9/16" (1.4cm)	12" (30cm)
HSRA22625-6	22ga	5/8" (1.6cm)	6" (15cm)
HSRA22625-12	22ga	5/8" (1.6cm)	12" (30cm)

Provided sterile in packages of 12. Sets include female luer and mini-clamp.

www.instechlabs.com/Infusion/ports/pencil.php

Huber Needles

The basic Instech Solomon Huber needle features a female luer for direct attachment to a syringe. It has a B-bevel tip. They are available sterile in packs of twelve.



Part No.	Needle Size	Needle Length	Hub color
HN22750	22ga	3/4" (1.9cm)	gray
HN24750	24ga	3/4" (1.9cm)	pink

Provided sterile in packages of 12. Not for use with Vascular Access Harness or PortHold.

www.instechlabs.com/Infusion/ports/hn.php

Pencil Point Septum Needles

The special pencil point tips on these needles are designed to pierce the septa in the Vascular Access Harness™, Vascular Access Button™, SIP22/4 Miniature Tubing Injection Port and PortHold™ (24ga x 0.75in only). The female luer hub permits direct attachment to a syringe. Use the needles to inject lock solution, flush, bolus or withdraw blood samples.



Part No.	Needle Size	Needle Length	Hub color
SN22	22ga	0.4in (1.0cm)	light blue
PHN-24750	24ga	0.75in (1.9cm)	light purple

Provided sterile in packages of 12. SN22 also available in bulk: 50 pieces in one sterile pouch; part no. SN22/BULK50. SN22 not for use with PortHold.

www.instechlabs.com/Infusion/tethers/sn.php

BULK TUBING

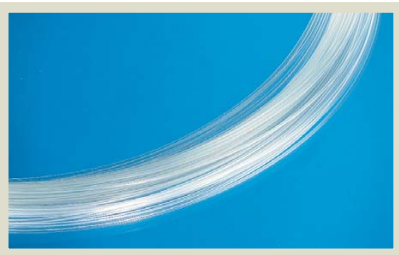
Instech Solomon offers a range of bulk tubing for laboratory animal infusion and microdialysis, including co-extruded PE/PVC, polyethylene, polyurethane, PVC and FEP tubing.

See *Tubing Size Reference Chart and Guide to Tubing Fit at the end of this catalog.*

TUBING MATERIAL COMPARISON

	Silicone	Polyurethane	Polyethylene	Polyvinyl-chloride
Hemocompatibility	Excellent	Excellent	Fair	Fair
Compound Compatibility	Possible reactivity	Possible reactivity	Inert	Possible reactivity
Stiffness	Soft	Soft	Stiff	Soft or stiff
Ease of Insertion	Difficult	Moderately easy	Easy	Moderately easy
Sizes Available	Many	Many	Many	Few
Ease of Bonding	Excellent	Fair	Poor	Fair
Memory	Excellent	Poor	Poor	Poor
Tear Strength	Poor	Excellent	Excellent	Excellent
Sterilization	EtO or steam	EtO	EtO	EtO

Polyethylene Tubing



Instech Solomon's PE tubing solves one of the biggest problems with PE—the price. The low density formulation (LDPE) is comparable to the product offered by the large catalog suppliers.

Part No.	Compare	Fits	OD (in)	OD (mm)	ID (in)	ID (mm)
BPE-T10	PE-10		.024	0.60	.011	0.28
BPE-T20	PE-20		.043	1.09	.015	0.38
BPE-T25		25ga	.036	0.91	.018	0.46
BPE-T50	PE-50	22ga	.038	0.97	.023	0.58
BPE-T60	PE-60	20ga	.048	1.22	.030	0.76
BPE-T90	PE-90		.050	1.27	.034	0.86

Milky, 100 ft. (30.5 m) per bag, non-sterile. Do not autoclave.

www.instechlabs.com/Infusion/tubing/polyethylene.php

Silicone (SILASTIC®) Tubing



This tubing, made from Dow Corning SILASTIC®, is the same platinum-cure material that has been implanted in laboratory animals for years. Sterilize by EtO gas or steam/autoclave.

Part No.	Approx. Size	OD (in)	OD (mm)	ID (in)	ID (mm)
BTSIL-T025	2 French	.025	0.64	.012	0.31
BTSIL-T037	3 French	.037	0.94	.020	0.51
BTSIL-T047	3.5 French	.047	1.2	.025	0.64
BTSIL-T065	5 French	.065	1.7	.030	0.76
BTSIL-T085	7 French	.085	2.2	.040	1.0

Clear, 50ft (15m) length, non-sterile

www.instechlabs.com/Infusion/tubing/silastic.php

Polyurethane Intravascular Tubing



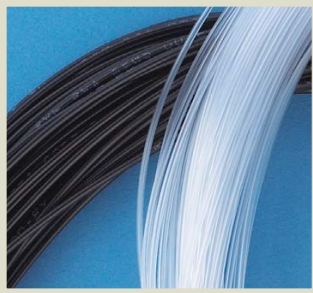
This is the most commonly used formulation of polyurethane for laboratory animal research. This same tubing is used to manufacture SoloCath PU and CBAS finished catheters. Sterilize by ethylene oxide gas.

Part No.	Size	OD (in)	OD (mm)	ID (in)	ID (mm)
BPU-T20	2 French ¹	.025	0.64	.013	0.33
BPU-T30	3 French ¹	.036	0.91	.023	0.58
BPU-T35	3.5 French ¹	.047	1.20	.027	0.69
BPU-T50	5 French ²	.065	1.65	.040	1.02
BPU-T70	7 French ²	.096	2.44	.052	1.32

¹ Clear, 108ft (33m) per bag, 9ea of 12ft (3.65m) lengths, non-sterile
² Clear, 100ft (30.5m) per bag, 24in (60cm) lengths, non-sterile

www.instechlabs.com/Infusion/tubing/polyurethaneIntra.php

CO-EX™ External Infusion Tubing

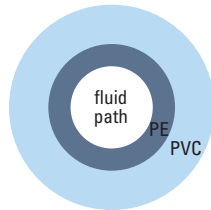


Instech Solomon's CO-EX™ tubing is co-extruded with PE on the inside for compound compatibility and PVC on the outside for durability.

It is available in two sizes to mate with 22ga or 25ga swivels, couplers and luer stubs. A version with black PVC is available for protection of light sensitive compounds. Not for intravascular use.

CO-EX MINIMIZES:

- Absorption into tubing
- Adsorption onto tubing
- Evaporation through tubing
- Leaching plasticizers
- Kinks



Part No.	Fits	Color	OD (in)	OD (mm)	ID (in)	ID (mm)
BCOEX-T22	22ga	Clear	.064	1.60	.024	0.61
BCOEX-T22BLK NEW	22ga	Black	.064	1.60	.024	0.61
BCOEX-T25	25ga	Clear	.051	1.30	.017	0.43

Clear, 100 ft. (30.5 m) per bag, non-sterile

www.instechlabs.com/Infusion/tubing/coex.php

CO-EX is a trademark of Solomon Scientific

Polyurethane External Infusion Tubing



This PU tubing is designed for a reliable friction fit with 22 or 25 gauge swivels and couplers. The elasticity and thick wall minimizes the chance of accidental disconnection, kinking or perforation. Used in VAH and VAB tethers. Not for intravascular use.

Part No.	Fits	OD (in)	OD (mm)	ID (in)	ID (mm)
VAHBPU-T22	22ga	.055	1.4	.025	0.6
VAHBPU-T25	25ga	.037	0.9	.017	0.4

Clear, 100 ft (30.5 m) per bag, non-sterile

www.instechlabs.com/Infusion/tubing/pu.php

PVC Tubing

Durable and resistant to kinks. Not for intravascular use.

Part No.	Size	OD (in)	OD (mm)	ID (in)	ID (mm)
BPVC-T30	3 French	.035	0.89	.025	0.64
BPVC-T35	3.5 French	.047	1.19	.030	0.74

Clear, 100 ft (30.5 m) per bag, non-sterile

www.instechlabs.com/Infusion/tubing/pvc.php

MICRODIALYSIS TUBING

FEP Microdialysis Tubing NEW



Designed to connect microdialysis probes to swivels, pumps and fraction collectors, this custom-extruded FEP tubing has the same inner and outer diameters as our 22ga quartz-lined swivels: 0.006x0.028in (0.15x0.71mm) with a tolerance of ±0.001in. Internal volume is approximately 0.18µL/cm. Use MC015/10 tubing connectors to make zero dead-volume connections.

Part No.	Description	Unit
BFEP-T22Q	FEP tubing, .006x.028in, 1m lengths, sterile	pkg of 10

www.instechlabs.com/Infusion/tubing/fep.php

Microdialysis Tubing Connectors



These silicone tubing segments are sized to connect FEP microdialysis tubing to swivels, probes, and syringes with no added dead volume. They do not need to be swelled by soaking in alcohol prior to installation, as do traditional "blue widgets," which in turn eliminates the possibility of damage to the swivel when removing tubing.

Part No.	Description	Unit
MC015/10	Microdialysis tubing connector, .015inIDx10mm	pkg of 100

www.instechlabs.com/Infusion/tubing/mc.php

TUBING CONNECTORS

Luer stubs, couplers, plugs, and injection ports are used to connect and allow access to the various pieces of an infusion system. Instech Solomon supplies these components individually or as part of pre-assembled infusion kits.

See *Tubing Size Reference Chart and Guide to Tubing Fit at the end of this catalog.*

Luer Stubs (Blunt Needles)

Female luer stubs have blunt tips to connect infusion tubing or catheters to syringes or other male luer connectors. Can be sterilized on request.



Description	Part Numbers	
	100 pcs	1000 pcs
Luer stub, 14ga (dark green), 0.5in (13mm)	LS14	LS14K
Luer stub, 15ga (amber), 0.5in (13mm)	LS15	LS15K
Luer stub, 16ga (violet), 0.5in (13mm)	LS16	LS16K
Luer stub, 17ga (white), 0.5in (13mm)	LS17	LS17K
Luer stub, 18ga (green), 0.5in (13mm)	LS18	LS18K
Luer stub, 20ga (pink), 0.5in (13mm)	LS20	LS20K
Luer stub, 21ga (purple), 0.5in (13mm)	LS21	LS21K
Luer stub, 22ga (blue), 0.5in (13mm)	LS22	LS22K
Luer stub, 22ga (blue), 0.25in (6mm)	LS22/6	LS22/6K
Luer stub, 23ga (orange), 0.5in (13mm)	LS23	LS23K
Luer stub, 25ga (red), 0.5in (13mm)	LS25	LS25K
Luer stub, 27ga (gray), 0.5in (13mm)	LS27	LS27K

Provided in a single tube, non-sterile.

www.instechlabs.com/Infusion/tubing/luer.php

Couplers & Plugs



Use couplers to connect catheters to external infusion tubing. Use a plug to seal off an externalized catheter before an infusion experiment begins.

These are made of medical grade stainless steel and deburred to prevent damage to tubing. Can be sterilized on request.

Part No.	Description	Unit
SC17/15	Stainless steel tubing coupler, 17ga x 15mm	pkg of 100
SC20/15	Stainless steel tubing coupler, 20ga x 15mm	pkg of 100
SC22/15	Stainless steel tubing coupler, 22ga x 15mm	pkg of 100
SC22/8	Stainless steel tubing coupler, 22ga x 8mm	pkg of 100
SC23/8	Stainless steel tubing coupler, 23ga x 8mm	pkg of 100
SC25/10	Stainless steel tubing coupler, 25ga x 10mm	pkg of 100
SC27/8	Stainless steel tubing coupler, 27ga x 8mm	pkg of 100
SP20/12	Stainless steel catheter plug, 20ga x 12mm	pkg of 100
SP22/12	Stainless steel catheter plug, 22ga x 12mm	pkg of 100
SP23/12	Stainless steel catheter plug, 23ga x 12mm	pkg of 100
SP25/12	Stainless steel catheter plug, 25ga x 12mm	pkg of 100

100 pieces per package, non-sterile

www.instechlabs.com/Infusion/tubing/connectors.php

Right Angle Coupler NEW



These 22ga couplers are bent to a right angle; one side is approximately 11mm; the other 5mm. Provided with a sealed segment of tubing to close off one end.

Part No.	Description	Unit
SC22/15RA	Right angle couplers, 22ga, sterile	ea

Individually packaged and sterilized by EtO. Minimum order quantity is 5 pieces.

www.instechlabs.com/Infusion/tubing/ra.php

TUBING CONNECTORS

Pin Plugs NEW

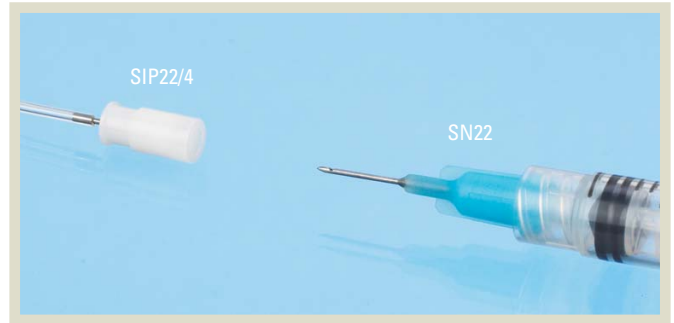


These catheter plugs feature a 22 gauge-12mm medical grade stainless steel plug with a polyethylene handle molded on one end to simplify insertion and removal from catheters.

The pin handle, 3mm diameter x 6mm long, is also designed to fit into the stalk of a DC95 button and thereby seal it when the catheter is not externalized. A raised ring in the middle of the handle prevents the pin plug from advancing too far into the button stalk.

Part No.	Description	Unit
SPP22/12	Stainless steel pin plugs, 22ga x 12mm	pkg of 100
Sterile, in 5 pouches of 20 pieces each.		
www.instechlabs.com/Infusion/tubing/pinplugs.php		

Miniature Injection Port

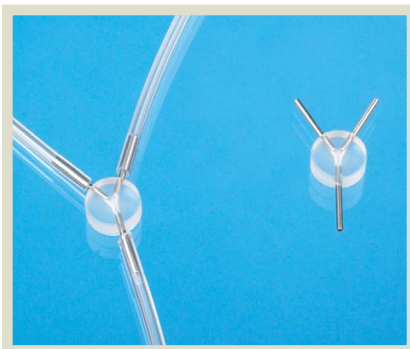


Use the SIP22/4 to terminate infusion tubing or catheters. It is ideal for an intermittent second channel when the primary channel is run through a single channel swivel. Inject, flush or sample using a syringe fitted with an SN22 needle or the mating VAHLS22/30, which offers protection from needle sticks.

The septum is good for approximately 200 sticks. The port measures 5.7mm in diameter by 11.8mm long and weighs 360mg. Dead volume is only 8µl. The 22ga tubing inlet is 4.3mm long and makes a reliable friction fit with 3Fr PU catheters, 3Fr PU tubing, or PE50 tubing.

Part No.	Description	Unit
SIP22/4	Miniature tubing injection port, 22ga x 4mm	pkg of 12
SN22	Septum needle for VAH and SIP, 22ga x 10mm	pkg of 12
VAHLS22/30	Male VAH connector with luer inlet, 3cm tubing	pkg of 12
Individually packaged and EtO sterilized. The SIP22/4 is not designed or intended for implantation.		
www.instechlabs.com/Infusion/tubing/sip.php		

Y Connector (3-Way Connector) NEW



Instech's Y connectors feature three stainless steel tubes and a hub made of PCTFE, a chemically resistant plastic.

Tubes extend approximately 6mm from the hub. Dead volume of the 22ga version from one channel to the next is less than 3µL.



Part No.	Description	Unit
SCY22	Y connector, 22ga, sterile	ea
SCY25	Y connector, 25ga, sterile	ea
Individually packaged and EtO sterilized		
www.instechlabs.com/Infusion/tubing/y.php		

TUBING SIZE REFERENCE CHART

INSTECH SOLOMON SELLS ONLY THE SIZES LISTED IN RED

GAUGE

For swivels, needles and cannulae

Gauge	OD (in)	OD (mm)	ID (in)	ID (mm)	Volume (µl/cm)
13TW	0.095	2.41	0.077	1.96	30.0
13	0.095	2.41	0.071	1.80	25.5
14TW	0.083	2.11	0.067	1.70	22.8
14	0.083	2.11	0.063	1.60	20.1
15TW	0.072	1.83	0.061	1.55	18.9
15	0.072	1.83	0.054	1.37	14.8
16TW	0.065	1.65	0.054	1.37	14.8
16	0.065	1.65	0.047	1.19	11.1
17TW	0.058	1.47	0.048	1.22	11.7
17	0.058	1.47	0.042	1.07	8.99
18TW	0.050	1.27	0.039	0.99	7.70
18	0.050	1.27	0.033	0.84	5.54
19TW	0.042	1.07	0.033	0.84	5.54
19	0.042	1.07	0.027	0.69	3.74
20TW	0.036	0.91	0.026	0.66	3.42
20	0.036	0.91	0.024	0.61	2.92
21TW	0.032	0.81	0.023	0.58	2.64
21	0.032	0.81	0.020	0.51	2.04
22TW	0.028	0.71	0.020	0.51	2.04
22	0.028	0.71	0.016	0.41	1.32
22Q	0.028	0.71	0.006	0.15	0.18
23TW	0.025	0.64	0.017	0.43	1.45
23	0.025	0.64	0.013	0.33	0.86
24TW	0.022	0.56	0.015	0.38	1.13
24	0.022	0.56	0.012	0.30	0.71
25TW	0.020	0.51	0.012	0.30	0.71
25	0.020	0.51	0.010	0.25	0.49
26	0.018	0.46	0.010	0.25	0.49
27	0.016	0.41	0.008	0.20	0.31
28	0.014	0.36	0.007	0.18	0.25
29	0.013	0.33	0.007	0.18	0.25
30	0.012	0.30	0.006	0.15	0.18

TW=thin wall, Q=quartz-lined swivel channel

FRENCH

French scale defines catheter OD (3Fr = 1mm)

French	OD (in)	OD (mm)
1Fr	0.013	0.33
2Fr	0.026	0.67
3Fr	0.039	1.00
4Fr	0.053	1.33
5Fr	0.066	1.67
6Fr	0.079	2.00
7Fr	0.092	2.33
8Fr	0.105	2.67
9Fr	0.118	3.00
10Fr	0.131	3.33
11Fr	0.144	3.67
12Fr	0.158	4.00
13Fr	0.170	4.33
14Fr	0.184	4.67
15Fr	0.197	5.00

POLYURETHANE (PU)

See pages 41, 48

	OD (in)	OD (mm)	ID (in)	ID (mm)	Volume (µl/cm)
2 French	0.025	0.64	0.013	0.33	0.9
3 French	0.036	0.91	0.023	0.58	2.6
3.5 French	0.047	1.20	0.027	0.69	3.7
5 French	0.065	1.65	0.040	1.02	8.2
7 French	0.096	2.43	0.052	1.32	13.7
VAHBPU-T25	0.037	0.94	0.017	0.43	1.5
VAHBPU-T22	0.055	1.40	0.025	0.64	3.2

SILICONE (SIL)

See page 41, 48

	OD (in)	OD (mm)	ID (in)	ID (mm)	Volume (µl/cm)
2 French	0.025	0.64	0.012	0.30	0.7
3 French	0.037	0.94	0.020	0.51	2.0
3.5 French	0.047	1.19	0.025	0.64	3.2
5 French	0.065	1.65	0.030	0.76	4.5
7 French	0.085	2.16	0.040	1.02	8.2
8 French	0.100	2.54	0.054	1.37	14.7
9 French	0.125	3.18	0.062	1.57	19.4

POLYETHYLENE (PE)

See page 48

	OD (in)	OD (mm)	ID (in)	ID (mm)	Volume (µl/cm)
PE-10	0.024	0.61	0.011	0.28	0.6
PE-20	0.043	1.09	0.015	0.38	1.1
PE-25	0.036	0.91	0.018	0.46	1.7
PE-50	0.038	0.97	0.023	0.58	2.6
PE-60	0.048	1.22	0.030	0.76	4.5
PE-90	0.050	1.27	0.034	0.86	5.8
PE-100	0.060	1.52	0.034	0.86	5.8
PE-160	0.062	1.57	0.045	1.14	10.2
PE-190	0.067	1.70	0.047	1.19	11.1
PE-200	0.075	1.91	0.055	1.40	15.4
PE-205	0.082	2.08	0.062	1.57	19.4
PE-240	0.095	2.41	0.066	1.68	22.2
PE-260	0.110	2.79	0.070	1.78	24.9
PE-280	0.128	3.25	0.085	2.16	36.6
PE-320	0.138	3.51	0.106	2.69	56.8
PE-350	0.157	3.99	0.125	3.18	79.4
PE-360	0.190	4.83	0.148	3.76	111

CO-EX™

See page 49

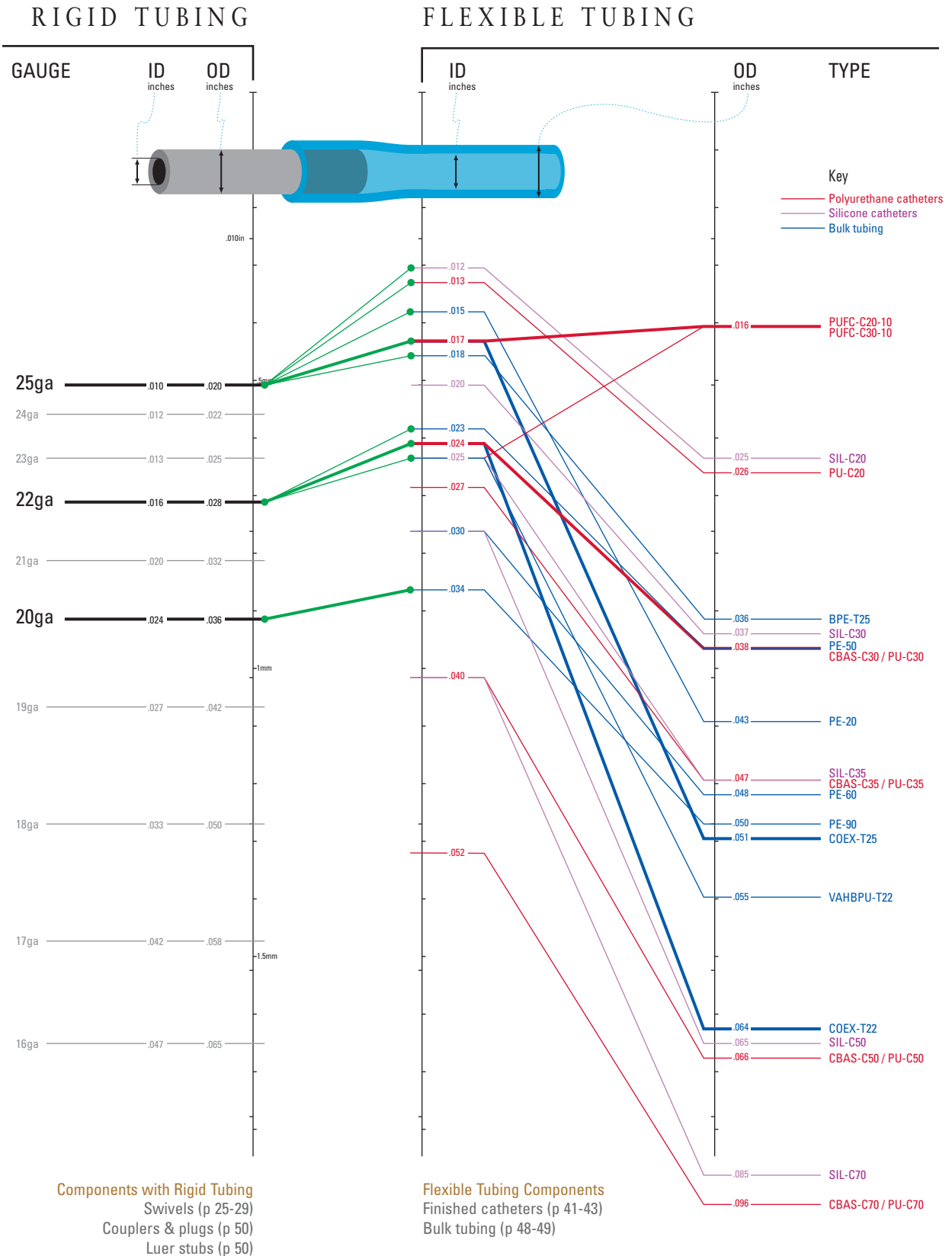
	OD (in)	OD (mm)	ID (in)	ID (mm)	Volume (µl/cm)
BCOEX-T25	0.051	1.30	0.017	0.43	1.5
BCOEX-T22	0.064	1.60	0.024	0.61	2.9

PVC (TYGON®)

See page 49

	OD (in)	OD (mm)	ID (in)	ID (mm)	Volume (µl/cm)
BPVC-T30	0.035	0.89	0.025	0.64	3.2
BPVC-T35	0.047	1.19	0.030	0.74	4.3
S54-HL (stiffer)	0.030	0.76	0.010	0.25	0.5
	0.060	1.52	0.020	0.51	2.0
	0.070	1.78	0.040	1.02	8.2
	0.090	2.29	0.030	0.76	4.5
	0.090	2.29	0.050	1.27	12.7
S50-HL (softer)	0.093	2.36	0.031	0.79	4.9
	0.125	3.18	0.062	1.57	19.4
	0.156	3.96	0.093	2.36	43.7
	0.188	4.77	0.062	1.57	19.4

Values are approximate; in particular IDs of extruded tubing can vary by as much as 15% from nominal value. Tygon is a registered trademark of Saint-Gobain Performance Plastics Corporation. BPVC-T30 and -T35 are not manufactured by Saint-Gobain and do not carry the Tygon trademark. CO-EX is a trademark of Solomon Scientific.



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