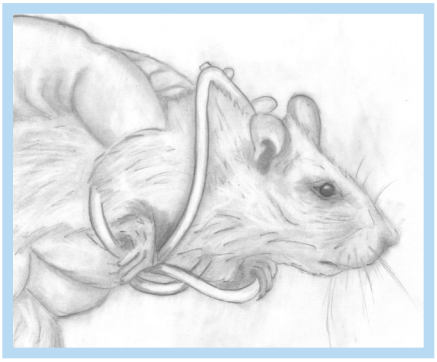
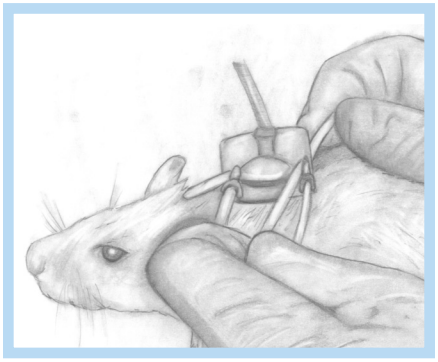
Harness tethers, first developed by Instech in collaboration with Danny Jack at Covance Laboratories in 1997, are made of a soft elastomer saddle with a vented dome that protects the catheter exit site, adjustable belly bands to secure the saddle to the animal, and a stainless steel spring to protect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



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



...then tighten bands for a proper fit .

Dan Nolan, Nolan's Illustrating

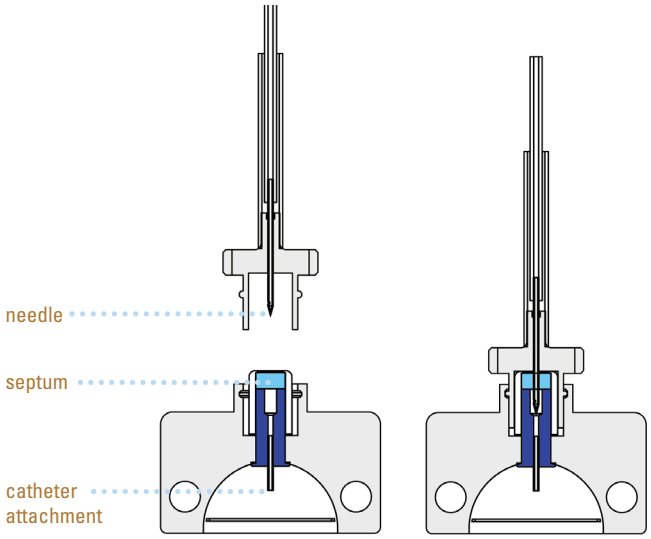
Vascular Access Harness™ for Rats

The VAH™ system permits quick and aseptic connection and disconnection of a catheterized rat and an infusion tether. Instech's VAH is currently the most popular method tethering a rat for infusion or sampling.

The system consists of a small external port 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.

Access the harness manually to sample, dose or check patency using a syringe with a VAH6M injector with needlestick protection.

To begin a continuous infusion or blood sampling study simply plug a mating VAH tether into the harness. A recessed needle built into the tether makes the fluid connection through the 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.



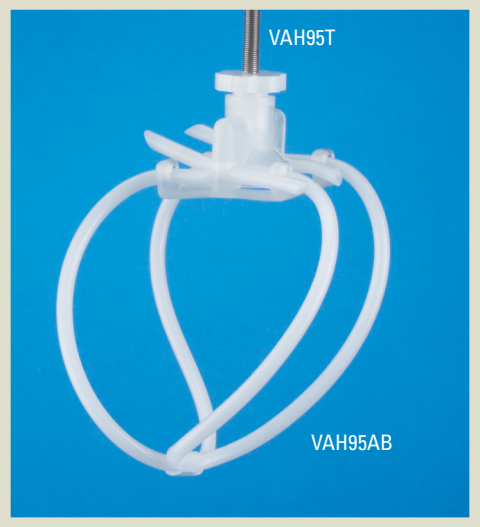
Transport or at rest

Inject or sample manually

Connect tether

Infuse or sample continuously

Vascular Access Harness™ for Rats (cont.)



Part No.	Description	Unit
VAH95AB	VAH harness for rats with cap and injector	ea
VAH95AB14	VAH harness, 14in belly bands for large rats	ea
VAH95ABH	VAH harness with hole for Culex® tether	ea
VAH95AB-1P	VAH harness with side port	ea
VAH95T	VAH rat tether assembly, 12in (30cm) spring	ea
KVAH95T	VAH rat tether kit with 22ga swivel, 24in PE/PVC, luer stub	ea
VAH6M	VAH injectors	box of 250
VAH6M-50	VAH injectors	box of 50
SIP22/4	Injection ports for VAH harnesses, white	pkg of 12
SIP22P	Plug for VAH tether	pkg of 10

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

BENEFITS 3Rs

- Septum permits aseptic technique
- Simple connection reduces handling
- Minimal backflow for improved patency
- Easy to adjust as animal grows
- Vented to promote healing of surgical wound
- Covers less of the body than jackets – better temperature regulation
- Animals can be ordered with VAH and catheter pre-installed*

* For a list of surgical service vendors and their experience levels see www.instechlabs.com/downloads/InstechSurgSvcVendors.pdf

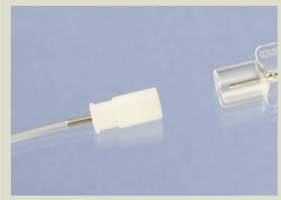
** Older SN22 septum needles are still available for those that prefer them. See www.instechlabs.com/Infusion/tethers/sn.php for part numbers and pricing.

Use 3Fr polyurethane catheters with ID of .024-.025in (.60-.64mm) See p 44.

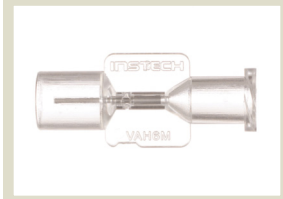
VAH95ABH harness with hole for connection to Culex® tethers

VAH95AB-1P harness with side port for intermittent manual dosing or sampling

SIP22P tether plug



SIP22/4 injection port



VAH6M injector**

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. Access the ports directly using a syringe with a VAH6M injector 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.

Dual Channel VAH™ for Rats (cont.)

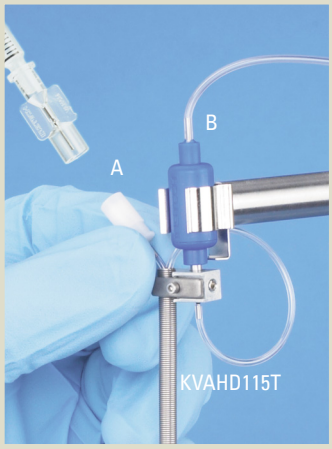
Transport or at rest
(optional VAHD115CAP shown)

Inject or sample manually

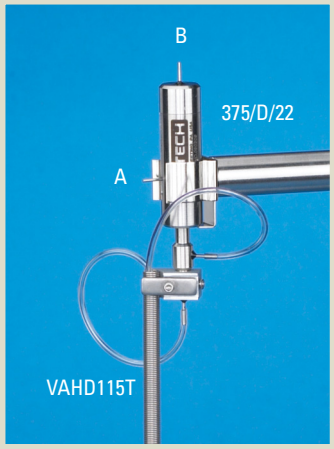
Connect tether

Infuse and/or sample continuously

APPLICATIONS AND OPTIONS



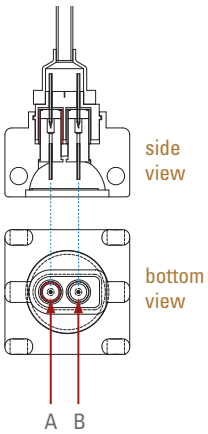
One continuous line with 375/22PS swivel, one line with SIP22/4 port for intermittent access using syringe with VAH6M injector



Two continuous lines with 375/D/22 dual channel swivel

Bile sampling using loop connector
(see p 16 for more information)

Bile sampling and intermittent injection and/or blood sampling on side ports (also available with one side port)



Part No.	Description	Unit
VAHD115AB	Dual channel VAH harness with injector	ea
VAHD115T	Dual channel VAH tether assembly	ea
VAHD115T1	One channel VAH tether assembly	ea
KVAHD115T	Kit: VAHD115T, 375/22PS, SIP22/4, 24in PE/PVC	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, injector	ea
VAHD115AB-2P	Dual VAH with 2 extra injection ports, injector	ea

$ www.instechlabs.com/Infusion/tethers/dualvah.php
www.instechlabs.com/Infusion/tethers/bilesampling.php

TETHERS

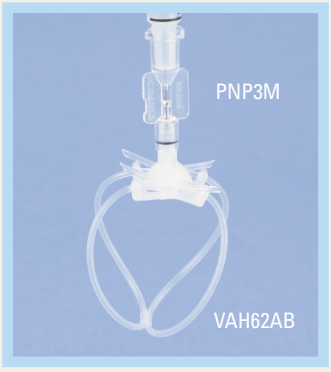
Vascular Access Harness™ for Mice

The mouse VAH is ideal for serial microvolume blood sampling, IV self administration or standard IV drug infusion studies. Like its larger cousin for rats, Instech's mouse VAH is installed at the time of catheterization. For best results, use catheters that can mate with 22ga or 25ga, the two options for connectors on the port in the harness.

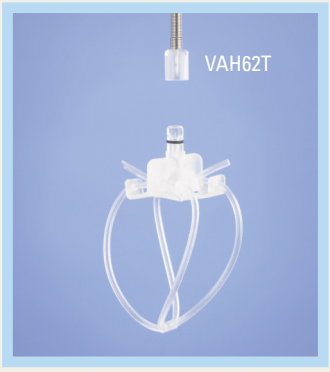
For continuous access, connect a mating mouse VAH tether with tubing that mates with 25ga swivels. When accessing the harness port directly to infuse, withdraw or check patency, use a PNP3M PinPort injector for proper alignment and to avoid damage to the small septum.

Part No.	Description	Unit
VAH62AB	Mouse VAH harness, 22ga, with injector	ea
VAH62AB/25	Mouse VAH harness, 25ga, with injector	ea
PNP3M-50	PinPort injectors	box of 50
VAH62T	Mouse VAH tether assembly, 7in	ea
KVAH62T	Mouse VAH tether, 25ga swivel, 24in PE/PVC, luer	ea
VAH62YT	Mouse VAH tether w/ 2 inputs, Y in connector, 12in	ea

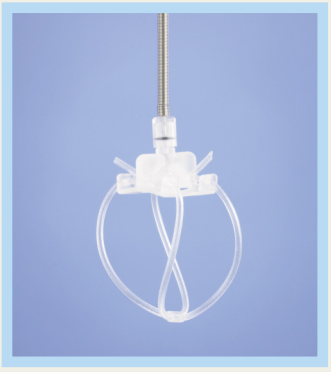
$ www.instechlabs.com/Infusion/tethers/mousevah.php

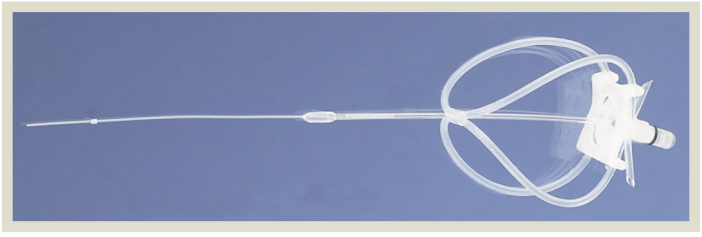


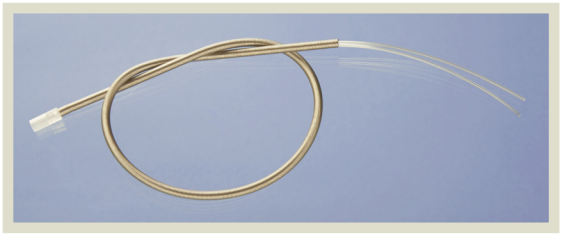
Access directly with PinPort injector



Connect tether


Infuse


Connect catheters that transition to 3Fr, such as the C10PU-MCA1301 mouse CAC, to the 22ga connector on VAH62AB. Connect 2Fr catheters, such as the C20PU-MJV1301 mouse JVC, to the 25ga conector on VAH62AB/25.
(See p 42 for mouse catheters.)

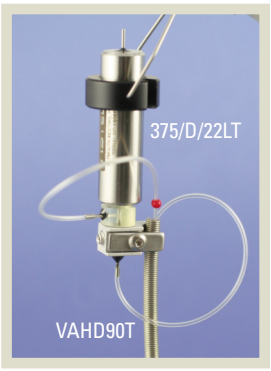

The specialized VAH62YT tether has two inputs that 'Y' together in the connector that mates with the mouse VAH harness.

Dual Channel VAH™ for Mice NEW

This harness tether permits simultaneous blood sampling and continuous infusion of mice. It is ideal for glucose clamp experiments.

Attach two externalized catheters to the two ports in this mouse harness, one red and one white. The ports can be ordered with 22ga connectors for 3Fr catheters or 25ga for 2Fr.

Flush or sample directly from the ports using a syringe fitted with a PNP3M injector. Connect the VAHD90T tether to access the two channels simultaneously and run the two channels through a 375/D/22LT low-torque dual channel swivel.



$ www.instechlabs.com/Infusion/tethers/dualmousevah.php

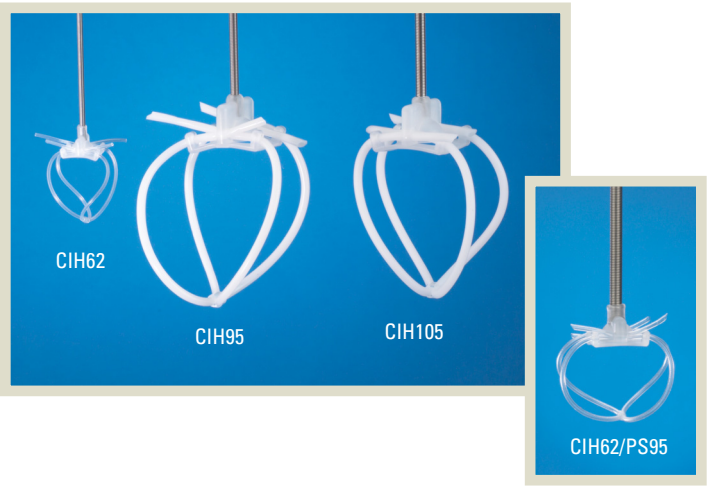
RAT AND MOUSE VAH™ SPECIFICATIONS

	VAH95AB VAH95T	VAHD115AB VAHD115T	VAH62AB (VAH62AB/25) VAH62T	VAHD90-22R22 (-25R25 or -25R22) VAHD90T
No. of channels	1	2	1	2
Port volume	8 µl	8 µl	2 µl	2 µl
Septum durability	~200 sticks	~200 sticks	~200 sticks	~200 sticks
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	.82in² (5.3cm²)	.82in² (5.3cm²)	.20in² (1.3cm²)	.20in² (1.3cm²)
Spring type (standard length[a])	PS95 (12in / 30cm)	PS115 (12in / 30cm)	PS62 (7in / 18cm)	PS95 (7in / 18cm)
Standard belly band length	9in (23cm)[a]	9in (23cm)[b]	4.5in (11cm)	4.5in (11cm)
Compatible plastic swivels	375/22PS	375/22PS with CLAMP	375/25PS	-
Compatible stainless swivels	375/22	375/D/22, 375/22	375/25[c]	375/D/22LT
Tether tubing	VAHBPU-T22	VAHBPU-T22	VAHBPU-T25	VAHBPU-T25 (makes tight fit on 22ga)
Harness connector	22ga	Both 22ga	22ga (25ga)	Both 22ga (or both 25ga or 25ga red/22ga white)
Compatible catheter (proximal end)	3Fr (.60-.64mm ID)	3Fr (.60-.64mm ID)	3Fr (2Fr)	Two 3Fr (or two 2Fr or one 3Fr/one 2Fr)
Harness and tether weight	13g	17g	3g	5g
Applications				
Rat infusion, 1 channel	●			
Rat infusion, 2 channel		●		
Mouse infusion, 1 channel			●	
Mouse infusion, 2 channel				●

[a] Custom length tethers are available on request.
[b] Versions with extra long belly bands (14in / 36cm) is available for large rats or other larger rodent species.
[c] Add a piece of .062in ID silicone tubing over spring tether to fit in metal swivel clamp. Instech will provide if requested with tether.

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.



CIH 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	.82in² (5.3cm²)	.82in² (5.3cm²)	.20in² (1.3cm²)	.20in² (1.3cm²)
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 - stainless steel	 375/22PS, 20PS any	 - any	 375/25PS 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				●

$ www.instechlabs.com/Infusion/tethers/cih.php

TETHERS

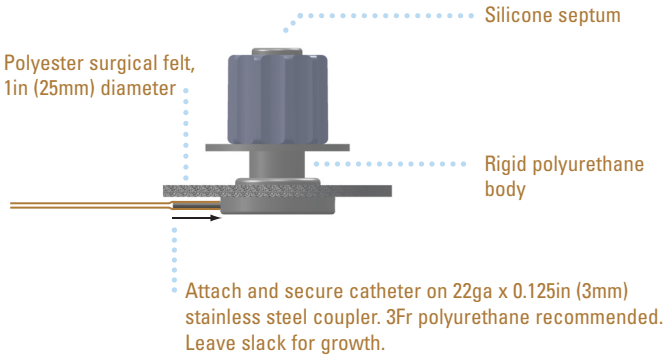
Button tethers are surgically implanted under the skin. In older models the catheter passes through an opening in the stalk of the button through a spring tether and up to a swivel. The newer Vascular Access Buttons™ feature an external port with a septum to create a closed system.

Compared to harnesses, buttons require more work in surgery and longer recovery times; however, there are no belly bands to adjust and with proper tissue ingrowth, buttons can be a good option for long-term studies.

Vascular Access Button™ for Rats

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 use a sturdier medical-grade polyester felt. The button is implanted at the time of catheterization; to begin an infusion study disinfect the septum and plug in the mating VAB95T tether. The recessed needle makes 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.



Catheterize and implant

Inject or sample manually

Connect tether


Infuse and/or sample continuously

Optional protective metal cap for group housing


VAH6M injector

Part No.	Description	Unit
VAB95BS	VAB button with injector	ea
VAB95T	VAB tether assembly	ea
KVAB95T	VAB tether plus 22ga swivel, 24in PE/PVC, luer	ea
VAB95CAP	Protective aluminum cap for VAB	ea
VAH6M	VAH/VAB injectors	box of 250
VAH6M-50	VAH/VAB injectors	box of 50

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

Vascular Access Button™ for Mice

Instech's mouse VAB™ permits quick, aseptic connection and disconnection of a catheterized mouse and an infusion tether. The polyester surgical felt disk measures 14mm in diameter.

Catheters attach to a 22ga or 25ga connector under the felt. Access the port built into the button directly using a syringe fitted with a PinPort injector, or connect a tether with a 25ga swivel for continuous access (the same KVAH62T tether kits that are used with the mouse VAH). Use the aluminum VAB62CAP to protect the button when group housing mice.

Part No.	Description	Unit
VAH62BS/22	Mouse VAB button, 22ga, with injector	ea
VAH62BS/25	Mouse VAB button, 25ga, with injector	ea
PNP3M-50	PinPort injectors	box of 50
VAH62T	VAH/VAB tether assembly for mice, 7in	ea
KVAH62T	VAH/VAB tether, 25ga swivel, 24in PE/PVC, luer	ea

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

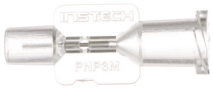
Catheterize and implant

Inject or sample manually

Connect tether


Infuse and/or sample continuously

Optional protective metal cap for group housing


Use the smaller PNP3M injector with mouse VAB

RAT AND MOUSE VAB™ SPECIFICATIONS

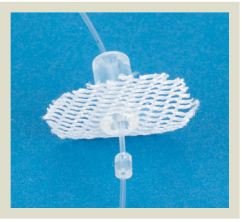
	VAB95BS VAB95T	VAB62BS/22 VAH62T	VAB62BS/25 VAH62T
No. of channels	1	1	1
Port volume	8 µl	2 µl	2 µl
Septum durability	~200 sticks	~200 sticks	~200 sticks
Button diameter	1in (25mm)	0.56in (14mm)	0.56in (14mm)
Spring type (standard length[a])	PS95 (12in / 30cm)	PS62 (7in / 18cm)	PS62 (7in / 18cm)
Compatible plastic swivels	375/22PS	375/25PS	375/25PS
Compatible stainless swivels	375/22	375/25	375/25
Tether tubing	VAHBPU-T22	VAHBPU-T25	VAHBPU-T25
Button connector	22ga	22ga	25ga
Compatible catheter (proximal end)	3Fr (.60-.64mm ID)	3Fr (.60-.64mm ID)	2Fr (.40-.43mm ID)
Button weight	1.5g	0.2g	0.2g
Applications			
Mouse infusion, 1 channel		●	●
Rat infusion, 1 channel	●		

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. 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.

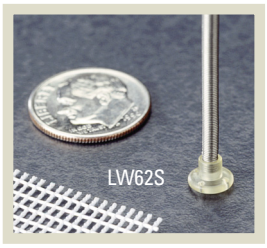
Part No.	Description	Unit
DC95S	Dacron button tether for rats, .090in lumen, sterile (spring, coupler, one button, catheter seal)	ea
DC95BS	Dacron buttons (.090in lumen) and seals, sterile	pkg of 10
DC105S	Dacron button tether for rats, .105in lumen, sterile (spring, coupler, one button)	ea
DC105BS	Dacron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

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



Catheter seal included with DC95BS

Plastic Button Tethers

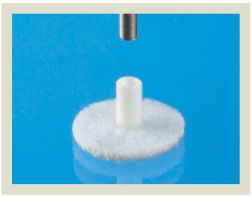


These buttons are designed for short- to medium-term studies. The miniature LW62 for mice includes Dacron® mesh which can be sutured onto the button to expand the attachment area and reduce strain on the incision site.

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

Polyester Felt Button Tether for Mice



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

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

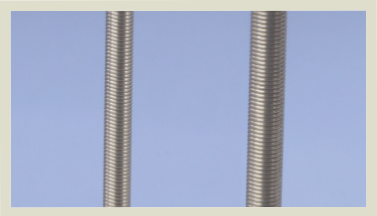
$ www.instechlabs.com/Infusion/tethers/df.php

SPECIFICATIONS

	DC95S	DC105S	DF62BS	LW62S	LW95S	LW105S
Materials	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	1-10 days	1-10 days	1-10 days
Clear lumen	090in (2.3mm)	.105in (2.7mm)	.062in (1.6m m)	.062in (1.6mm)	.090in (2.3mm)	.105in (2.7mm)
Button diameter	1.0in (25mm)	1.0in (25mm)	.563in (14mm)	.250in (6.4mm)	.625in (16mm)	.625in (16mm)
Spring	12in (30cm) PS95	12in (30cm) PS105	12in (30cm) PS95	12in (30cm) PS62	12in (30cm) PS95	12in (30cm) PS105
Button weight	0.5g	0.5g	0.1g	0.2g	0.5g	0.5g
Autoclavable	Yes	Yes	No	No	No	No
Applications						
Mouse, infusion			●	●		
Rat infusion, 1 channel	●				●	
Rat infusion, 2 channel		●				●

TETHERS

Replacement Tether Springs



Instech's infusion tethers use a range of spring types to suit the species and number of channels. 'H' signifies a heavier gauge spring which may be specified on custom tethers for extra protection if the animals can bite the tether (howver, using a counter-balance mount is the best way to avoid problems from biting.)

Replacement springs are available in standard packs of five 12in (30cm) lengths, non-sterile. Custom lengths are available as well.

	PS62	PS95	PS95H	PS105	PS115	PS115H
Inner diameter	.065in (1.6mm)	.093in (2.3mm)	.085in (2.2mm)	.108in (2.7mm)	.118in (3.0mm)	.112in (2.8mm)
Outer diameter	.085in (2.2mm)	.125in (3.2mm)	.125in (3.2mm)	.152in (3.9mm)	.152in (3.9mm)	.152in (3.9mm)
Wire diameter	.010in (0.25mm)	.016in (0.4mm)	.020in (0.5mm)	.022in (0.6mm)	.017in (0.4mm)	.020in (0.5mm)

$ www.instechlabs.com/Infusion/tethers/spring.php

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

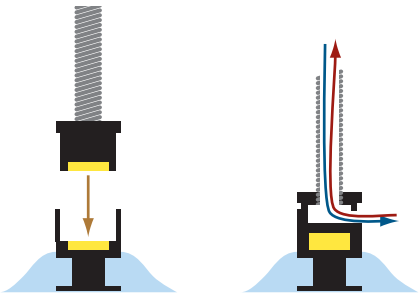
This tether uses a fine .010in diameter looped wire instead of a spring, making it lightweight and allowing it to transmit torque easily to the swivel. Attach the small peg to the animal's skull with dental cement, then connect the wire by inserting it into a hole in the peg and sliding a sleeve over 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

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 lightweight looped wire.



Magnets couple tether to base; tubing exits through a hole in the side of 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

Glass Ionomer Cement for Permanent Head Attachment in Rats and Mice

This cement has advantages over the more commonly used methylmethacrylate cements: it bonds to bone, eliminating the need for bone screws in most cases, it has a lower temperature increase, and it hardens more quickly with no noxious fumes. The cartridge has two chambers and the cement is only mixed in the disposable tips so that a cartridge does not have to be used all at once. An SOP for rodent head attachment is included.

Part No.	Description	Unit
MGIG/AKIT2	Intro kit: 1x 13.3 gmcartridge, 20 tips, plastic dispenser	ea
MGIG/ARFL	Refill kit: 2x 13.3gmcartridges, 44 tips	ea
MGIG/DISP	Metal dispenser	ea

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

Sold for laboratory research applications only.