

# PLASTIC SWIVELS

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 over 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](http://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 <sup>1</sup>	SS, T	SS, T	SS, T
Compatible tubing	VAHBPU-T25, BTCOEX-25	VAHBPU-T22, BTCOEX-22	BTPE-60, BTPE-90
Compatible tethers <sup>2</sup>	"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		● <sup>3</sup>	
Rat, BP measurement			●
Rat, viscous solutions			●
Larger animals, infusion			●

<sup>1</sup> Material key: SS corrosion-resistant stainless steel (304 and 316); T Teflon®. In luer models, ABS plastic body is also in fluid path.

<sup>2</sup> Plastic clamps included with swivels use press fit to spring tethers. Order metal adjustable CLAMP separately to use other tethers.

# STAINLESS STEEL SWIVELS

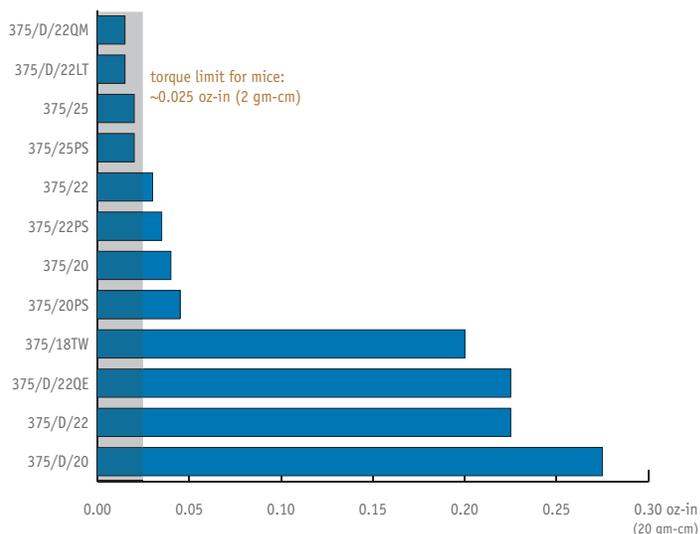
## Single Channel Swivels



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.

SWIVEL FRICTIONAL TORQUE BY MODEL



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

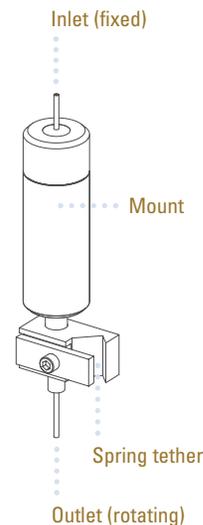
[www.instechlabs.com/Infusion/swivels/375.php](http://www.instechlabs.com/Infusion/swivels/375.php)

## 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 (example)	BTCOEX-25	BTCOEX-22	BTPE-90	PE-160, 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 25ga.

**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.

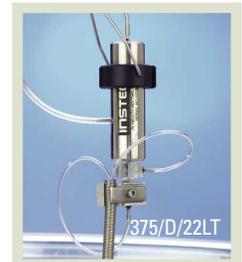
The newer 375/D/22QM uses a completely different seal design with two significant improvements: quartz lining on both the center and side channels, and extremely low frictional torque, making it the first dual channel swivel that can be used with mice. However, the 'QM' model is more fragile than the '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	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](http://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	.015 oz-in	.225 oz-in	.015 oz-in
Materials in fluid path, center <sup>1</sup>	SS, T	SS, T	SS, T	Q, T	Q, T
Materials in fluid path, side <sup>1</sup>	SS, T	SS, T	SS, T	Q, T	Q, T, P, PM
Compatible tubing (example)	BTCOEX-22	BTPE-90	BTCOEX-22	BFEP-T22Q <sup>2</sup>	BFEP-T22Q <sup>2</sup>
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				•	•

<sup>1</sup> 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.  
<sup>2</sup> Note: traditional "blue widget" connectors may damage swivels when removing tubing. Use Instech silicone MC015/10 connectors instead (p 44).

# 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



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](http://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 - $\mu$ D channels	6-7 $\mu$ l
Dead volume - 22ga channels	15-20 $\mu$ l
ID - $\mu$ 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	$\mu$ D	$\mu$ D	$\mu$ D	$\mu$ D	22ga
MCS/5B	22ga	22ga	22ga	22ga	22ga
MCS/5C	$\mu$ D	$\mu$ D	22ga	22ga	22ga

 [www.instechlabs.com/Infusion/swivels/mcs.php](http://www.instechlabs.com/Infusion/swivels/mcs.php)