



## Vascular Catheter Surgery Options

The majority of pharmacokinetic studies require access to the blood circulation system for sampling, dosing, or both. One of the ways to access this system is by placing a catheter into a blood vessel. There are many types of blood vessels available for catheter placement, and many types of catheters. The selection of blood vessel and catheter type not only depends on the specifics of the pharmacokinetic study, but also on the personal preference of the investigator, based on the perceived advantages and disadvantages. To meet the varying needs of investigators, Charles River provides many options for vascular catheterization models.

**Table 1:** The investigator chooses the species and blood vessel cannulation, and then has the option to choose the catheter material. For assistance in determining the appropriate catheter material and type, catheter specifications are outlined in Table 2. Combination vascular catheterization types are possible. Please contact us for specific combinations.

Catheterization Type	Rats	Mice	Guinea Pigs	Hamsters	
Jugular Vein Catheterization	Polyurethane* Silicone Blended (PU and PE) Blended (PU and Tygon®) Blended (PU and Silicone)	Blended w/ flare end Spooled catheters Culex® catheters PE lined PU Copolymer blend†	Blended (PU and Silicone)* Blended (PU and PE) Culex® catheters	Polyurethane* Blended (PU and PE)	Polyurethane
Carotid Artery Catheterization	Polyurethane* Blended (PU and PE)	Spooled catheters Culex® catheters	Blended (PU and Silicone)* Culex® catheters	Polyurethane* Blended (PU and PE)	N/A
Carotid Artery Catheterization – Cranial Dosing	Polyurethane		Blended (PU and Silicone)	N/A	N/A
Femoral Vein Catheterization	Polyurethane* Silicone Blended (PU and PE) Blended (PU and Tygon®) Blended (PU and Silicone)	Blended w/ flare end Spooled catheters Culex® catheters PE lined PU Copolymer blend†	N/A	N/A	N/A
Femoral Artery Catheterization	Polyurethane* Blended (PU and PE) Blended (PU and Tygon®)	Spooled catheters Culex® catheters	N/A	N/A	N/A
Portal Vein Catheterization	Polyurethane*	Culex® catheters	N/A	N/A	N/A
Vena Cava Catheterization	Polyurethane		N/A	N/A	N/A

\* Charles River default option if the investigator does not specify.

† Copolymer blend of PEBA, Polyether & Polyamide

**Blended Catheters:** Two different materials are combined to meet specific needs. The blended catheters are made with one end using PU vessel tip and the other end using different materials (PE, Silicone, Tygon®).

**Spooled Catheters:** These are generally made up of PU material with a spool (dumbbell shape) placed over the catheter as a sleeve. This can allow easy securing and/or adjustment of the catheter length. This catheter can be made up of blended catheter (PU & PE) as well, upon customer request.

**Culex® Catheters:** Culex® catheters are special catheters made by BASI. These catheters enable connection to the BASI auto blood sampler system.

**Catheter Tip:** The catheters used by Charles River have blunt-cut tips. Upon customer request, we can provide round tips for PU catheters.

**PU** = Polyurethane

**PE** = Polyethylene

**Table 2:** Types of catheter materials and various catheter locking solutions available based on the catheter securing/exit options selected.

Catheterization Material Options	Catheter Securing/Exit Options		Locking Solution Options	
Polyurethane*	SQ pocket (plug face cranial)* SQ pocket (plug face caudal) SQ Button		Heparinized dextrose* Heparinized glycerol Heparinized saline	TCS Sodium citrate Heparinized PVP
	Exposed with plug Exposed with PinPort™ Harness (jacket)		Heparinized glycerol	
Silicone	SQ pocket (plug face cranial)* SQ pocket (plug face caudal) SQ Button		Heparinized dextrose	
Blended (PU and PE)	Exposed with plug* Exposed with PinPort™		Heparinized dextrose* Heparinized glycerol TCS	Sodium citrate Heparinized PVP
Blended (PU and Tygon®) Blended (PU and Silicone) Blended w/ flare end	Exposed with plug* Exposed with PinPort™ Harness (jacket)		Heparinized glycerol	
Spooled Catheters	Exposed PU catheter with plug*		Heparinized glycerol	
	Exposed blended (PU & PE) catheter with plug		Heparinized dextrose* Heparinized glycerol TCS	Sodium citrate Heparinized PVP
Culex® Catheters	Exposed with plug		Heparinized glycerol	
PE Lined PU	SQ pocket (plug face cranial)* SQ pocket (plug face caudal) SQ Button	Exposed with plug Exposed with PinPort™ Harness (jacket)	Heparinized dextrose* Heparinized glycerol Heparinized saline	TCS Sodium citrate Heparinized PVP
Copolymer Blend	SQ pocket (plug face cranial)* SQ pocket (plug face caudal) SQ Button		Heparinized dextrose* Heparinized glycerol Heparinized saline	

\* Charles River default option if the investigator does not specify.

### Catheter Securing/Exit

**SQ Pocket:** The SQ pocket is made in the dorsal area in order to prevent catheter patency issues from the permeability of materials (PU and Silicone).

**SQ Button:** The implantable button features an external port with a septum for quick, aseptic connection and disconnection of a catheterized animal and an infusion tether. They are ideal for long-term studies with protocols that call for intermittent tethering, such as intravenous (IV) self-administration or blood sampling.

**Harness:** Catheter tubing is built in to the tether and luer fittings allow for on-demand quick, aseptic collection of biospecimen samples, infusion of compounds and disconnection of a catheterized animal and an infusion tether. The harnesses can be purchased from many vendors.

**PinPort™:** PinPort™ (Instech) provides fast, aseptic access to externalized laboratory animal catheters, tubing or cannulae for dosing or sampling. The system consists of a lightweight port, just 3 mm in diameter, and a mating injector or connector.

**Plug:** This is a stainless steel wire or plastic fishing line cut into pieces and used to plug the end of the catheter.

### Locking Solutions†

**Heparinized dextrose:** Final concentration of 500 IU heparin in 1 ml of 50% dextrose solution

**Heparinized glycerol:** Final concentration of 500 IU heparin in 1 ml of glycerol solution

**Heparinized saline:** Final concentration of 500 IU heparin in 1 ml 0.9% saline

**Sodium citrate:** 4% sodium citrate and 30% glycerol with pH adjusted to 6.2 (range 6.0 to 6.5) with citric acid

**TCS:** Combines two active ingredients vital to the effective management of vascular access catheters – taurolidine and citrate

**Heparinized PVP:** Final concentration of 500 IU heparin in 1 ml of Polyvinylpyrrolidone (PVP) solution

† Charles River will initially seal the catheters with the requested locking solution, but additional solution is not supplied and is the responsibility of the investigator.

If you need an option that is not listed in this information sheet, contact Charles River at 1.877.274.8371 or email [askcharlesriver@crl.com](mailto:askcharlesriver@crl.com).