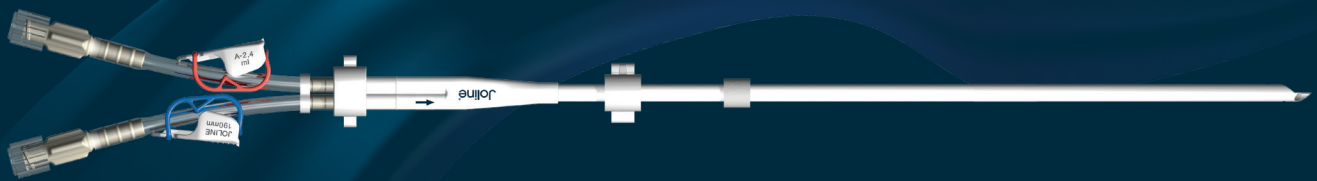


Evolution Flow Retrograde

Long Term Catheters

Evolution Flow Retrograde 15.5 Fr



Evolution Flow Retrograde 15.5 Fr

Implantation procedure 'Over The Wire'



Symmetric Tip-Design

- Patented tip-design for precise tip placement in the right atrium
- Radiopaque twin stylet for supportive insertion

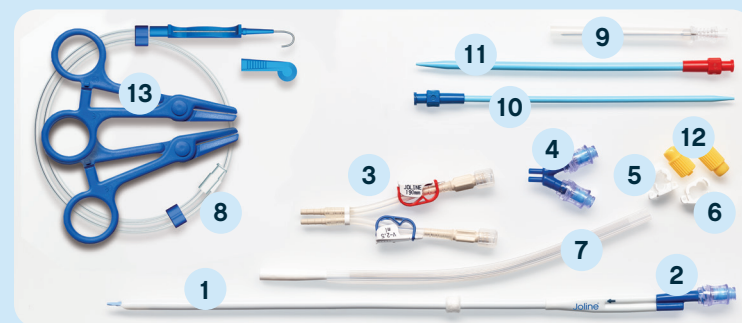
Evolution Flow Retrograde 15.5 Fr with stylet 'Over The Wire'

- Pre-loaded, radiopaque twin stylet to support insertion
- Kit accessories ensure a precise placement of the catheter

Evolution Flow Retrograde 15.5 Fr with stylet 'Over The Wire'

Item No.	Tip-to-cuff	Tip-to-hub	Total length	Pcs per box
PKLTR15C19/40	190 mm	240 mm	412 mm	3
PKLTR15C23/44	230 mm	280 mm	452 mm	3
PKLTR15C28/49	280 mm	330 mm	502 mm	3
PKLTR15C33/54	330 mm	380 mm	552 mm	3
PKLTR15C55/76	550 mm	600 mm	772 mm	3

Example kit



- | | |
|--------------------------------|------------------------------------|
| 1 Catheter | 8 Kink resistant Nitinol guidewire |
| 2 Stylet | 9 Introducer needle |
| 3 Extension set | 10 Dilator 12 Fr |
| 4 Prefill-adaptor | 11 Dilator 16 Fr |
| 5 Shaft-clip with suture wings | 12 Luer-Lock injection caps |
| 6 Hub-clip with suture wings | 13 Forceps |
| 7 Trocar | |

Evolution Flow Retrograde 15.5 Fr

Implantation procedure with Split Sheath



Symmetric Tip-Design

- Average recirculation rate less than 0.25 % in forward flow and 0.6 % in reverse flow

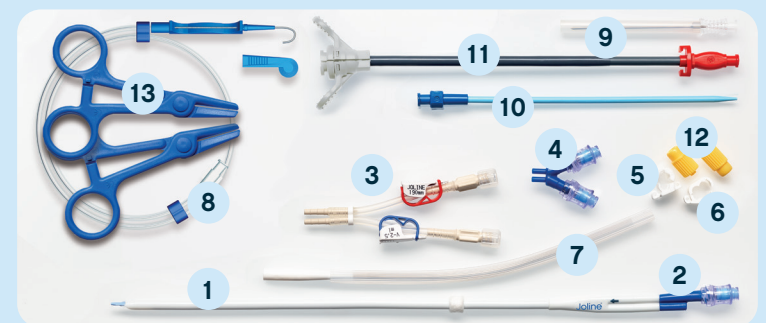
Evolution Flow Retrograde 15.5 Fr with Split Sheath

- Valved Split Sheath protects against blood loss during catheter insertion
- Catheter kit provides “all in one” solution, with “Over The Wire” and Split Sheath technique for flexibility in implantation methods
- Kit accessories ensure a precise placement of the catheter

Evolution Flow Retrograde 15.5 Fr with Split Sheath

Item No.	Tip-to-cuff	Tip-to-hub	Total length	Pcs per box
PKLTRS15C19/40	190 mm	240 mm	412 mm	3
PKLTRS15C23/44	230 mm	280 mm	452 mm	3
PKLTRS15C28/49	280 mm	330 mm	502 mm	3
PKLTRS15C33/54	330 mm	380 mm	552 mm	3
PPKLTRS15C55/76	550 mm	600 mm	772 mm	3

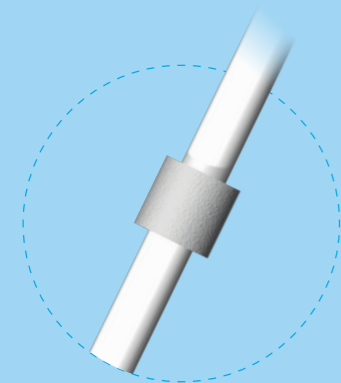
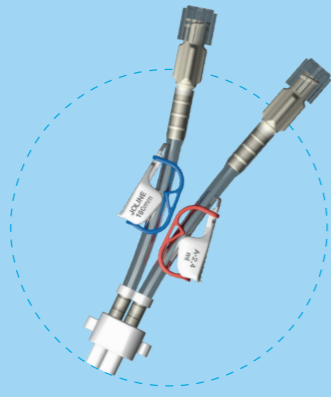
Example kit



- | | |
|--------------------------------|------------------------------------|
| 1 Catheter | 8 Kink resistant Nitinol guidewire |
| 2 Stylet | 9 Introducer needle |
| 3 Extension set | 10 Dilator 12 Fr |
| 4 Prefill-adaptor | 11 Split Sheath |
| 5 Shaft-clip with suture wings | 12 Luer-Lock injection caps |
| 6 Hub-clip with suture wings | 13 Forceps |
| 7 Trocar | |

Extensions

- Connectors made of PEEK (Polyetheretherketone) for high chemical and mechanical stability
- Silicone extensions minimize kinking or crimping
- Safe and lasting connection between extensions and hub
- Repair-Set available

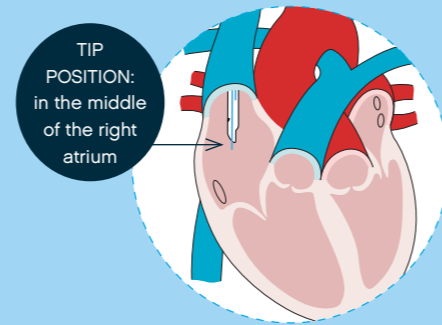


Cuff

- The wide Dacron Cuff provides unhindered healing and safe protection against catheter dislocation
- Cuffed catheters have a low dislocation risk⁴ (PMS)

Patented Tip-Design

- Symmetric tip-design with additional side holes to reduce recirculation



Retrograde Implantation

- For precise placement of the catheter, first the tip is positioned in the middle of the right atrium, followed by subcutaneous tunneling of the catheter

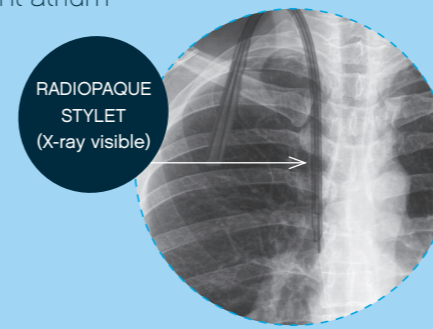
Shaft

- Biocompatible, long lasting thermosensitive Polyurethane (Carbothane™)
- Large Double-D-Design



High X-Ray Visibility

- Radiopaque material of the catheter shaft and of the sytlet allows precise tip positioning in the middle of the right atrium

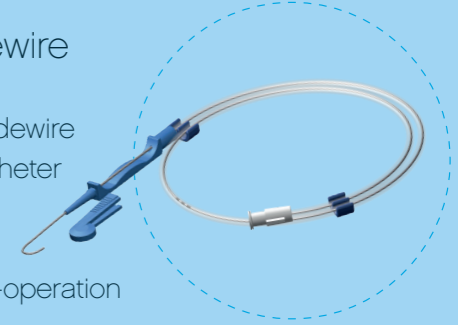


MRI Safe

- Metal free catheter

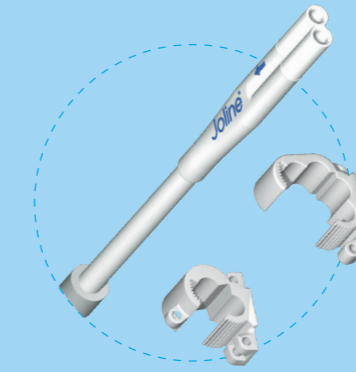
Kink Resistant Guidewire

- Kink resistant Nitinol guidewire for safe and smooth catheter placement
- Dispenser for one-hand-operation



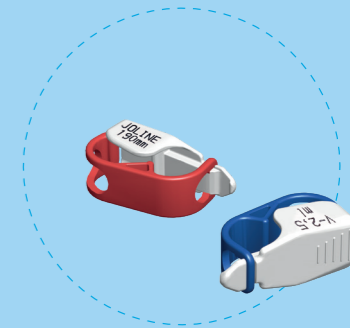
Hub-Clip & optional Shaft-Clip

- Hub-clip with suture wing
- Optional fixation with shaft-clip and suture wing

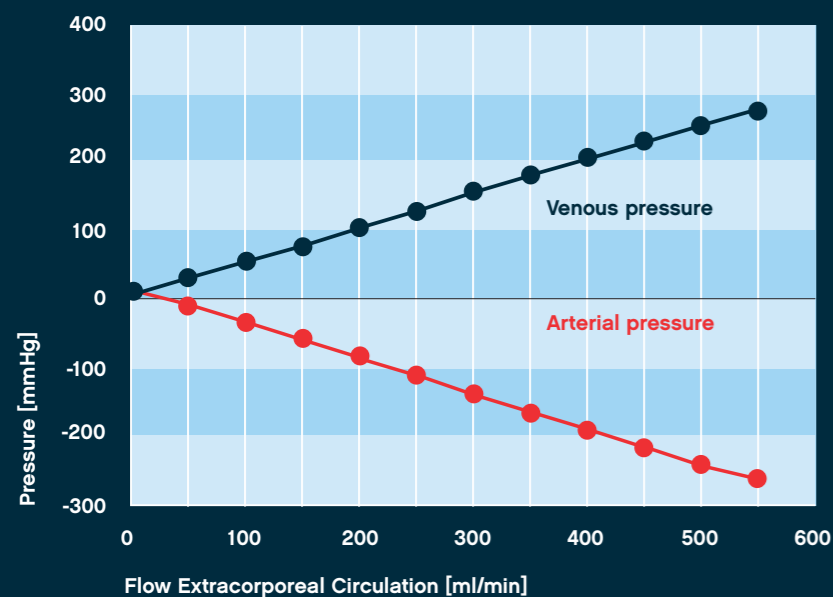


Safety Clamps

- Safety clamps with side protection, prevent the connection tube (Extensions) from slipping out
- Printing on clamps indicate priming volume and length

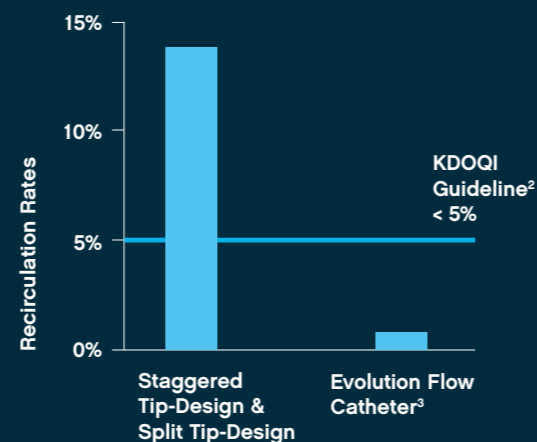


Flow/Pressure¹



Reduced Recirculation³

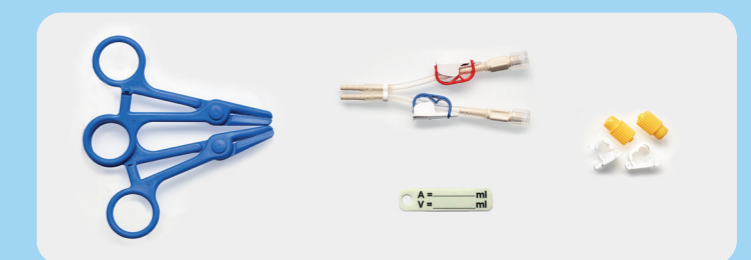
Average recirculation rate less than **0.25 % in forward flow** and **0.60 % in reverse flow**



The best Design for Chronic Dialysis Therapies

- Polyurethane in combination with large Double-D-Design maximizes internal diameter and allows high blood flow rates with 15.5 French (outer diameter)
- Sufficient blood flow rates can be achieved at low pressure rates
- Less local infection (at entry point / exit site) of the catheter⁴
- Reduced complication rate during implantation⁴

Repair-Set for both implantation procedures



- 1 x Extension set
- 1 x Hub-clip with suture wings
- 1 x Shaft-clip with suture wings
- 2 x Luer-Lock injection caps
- 2 x Forceps
- 1 x Info flag "Fill Volume"

Item No.	Pcs per box
KLTR	3

¹ PKLTRI5C55/76 / mean value of 10 catheters, average of 5 measurements each (flow vena cava: 1.7 L/min)

² Kidney Disease Outcomes Quality Initiative
³ Measured ex vivo by LS medcap Biokomp.-Labor

⁴ Customer feedback – Post-Market-Surveillance (PMS) – Clinical Research



About Joline

Joline is an internationally active medical device company located in the South of Germany with more than 20 years experience in minimally invasive therapies.

Joline is an expert provider of catheter, balloon and stent technology for various medical applications and maintains an important tradition of 'Made in Germany' quality in all its products and services.

All Joline products are developed and produced exclusively in Germany. We integrate quality aspects in our daily work and strive to meet the high standards of our customers. The highest priority we place on the health and safety of our patients.

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