

**PAJUNK®**

***Plexus NanoLine***

*Systems for single shot and  
continuous plexus anaesthesia*



**Plexus anaesthesia**

MADE IN GERMANY

# NanoLine thin layer technology

## Precise nerve stimulation with NanoLine

The NanoLine thin layer technology developed by PAJUNK® offers considerable benefits with regard to accuracy of stimulation, because it allows the insulating layer to be reduced to a minimum without reducing functionality. This extremely thin plastic layer, which is applied to every internal and external part of the device except the bare tip, allows highly accurate puncture and stimulation.

The accuracy of cannula placement can be checked by nerve stimulation. To this end, the distance from the nerve is deduced from the lowest current strength required for stimulation.

➔ Accurate stimulation and excellent gliding properties with NanoLine (only from PAJUNK®)

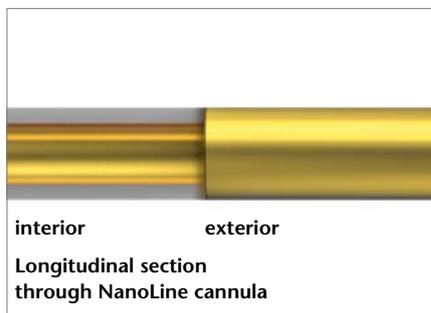
Length graduation



### Echogenic cannula tip

The facet grinding has two inclination angles, and is coated with NanoLine technology, apart from the tip, which is bare.

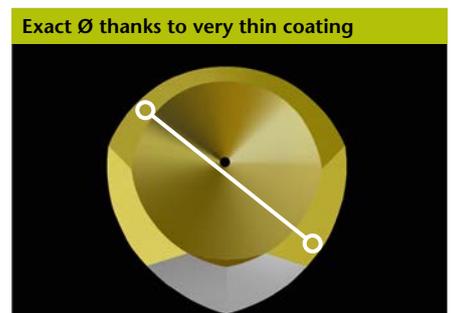
➔ Optimum conditions for outstanding cannula tip visibility.



### Coated inner lumen

The thin layer technology used, means that even the inner lumina of cannulas can be coated.

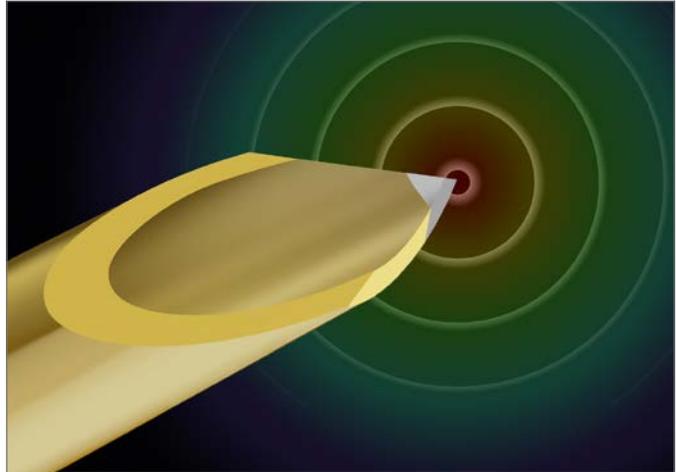
➔ This smooths out any unevenness and allows better flow of the anaesthetic.



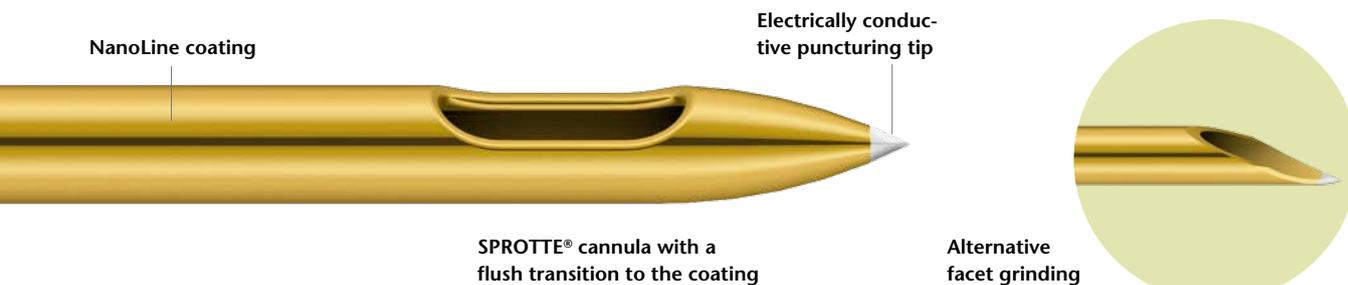
### Reduced puncture force – increased glide properties

Due to the very thin coating the exterior diameter remains the same in contrast to conventional coating techniques. It also produces an extreme surface smoothness.

➔ NanoLine cannulas glide easily through tissue and do not require great puncture force.



**Precise stimulation:** The very thin NanoLine coating guarantees a 100% insulation. The contact point at the cannula tip remains bare.  
 ➔ Stimulation takes place only via the electroconductive puncture tip, generating a highly precise electrical field.



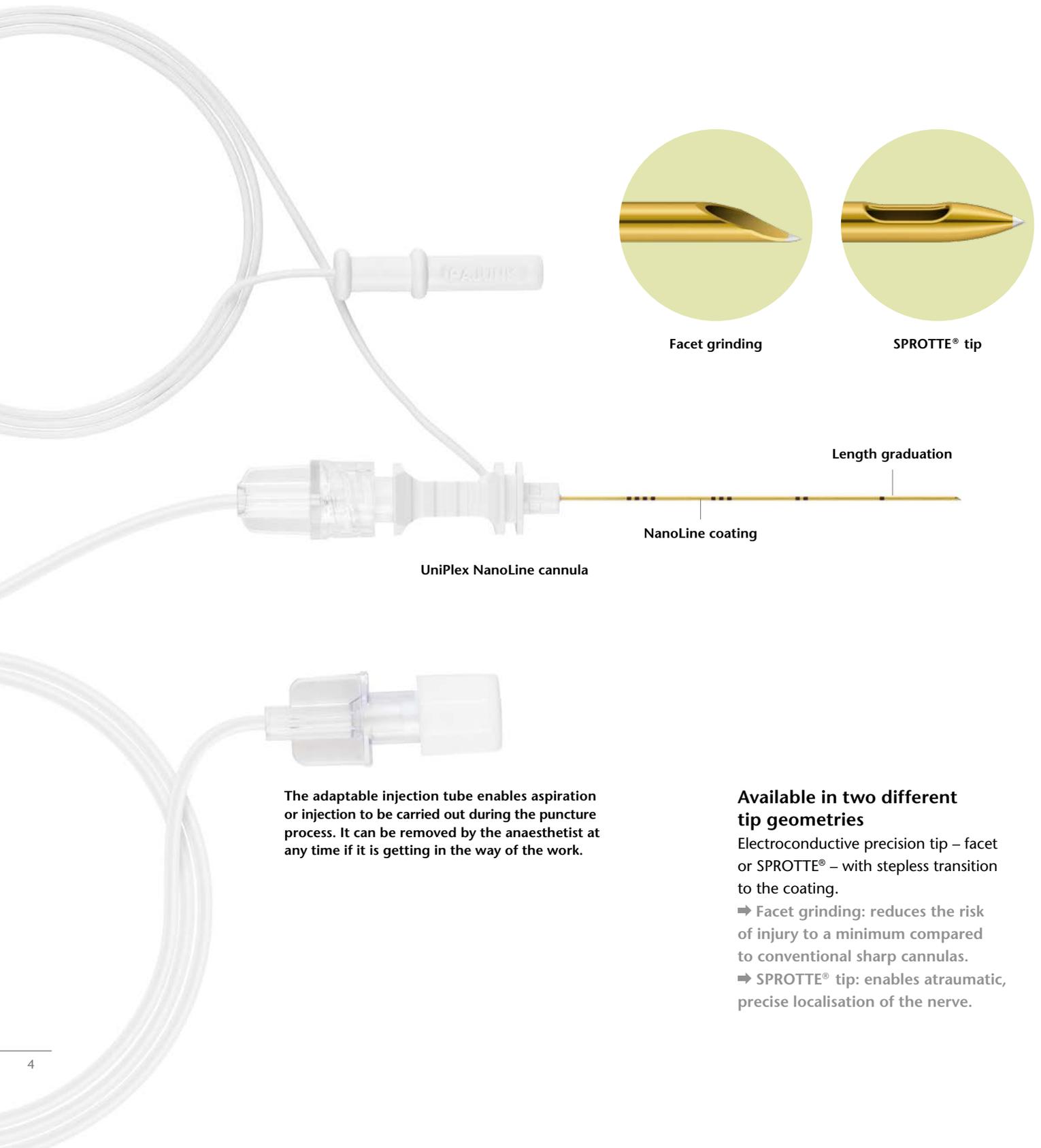
***The advantages of NanoLine:***

- ➔ *Layer thickness is reduced to a minimum*
- ➔ *There is no change to the external diameter of the cannula*
- ➔ *The same excellent insulation properties as with conventional procedures*
- ➔ *A smooth surface to reduce the puncture force*
- ➔ *Extremely accurate stimulation via the contact point at the tip of the cannula*

## UniPlex cannulas

# Single shot peripheral nerve block

UniPlex cannulas were developed by PAJUNK® especially for single shot administration of peripheral block. In addition to the puncture kits, PAJUNK® offers various nerve stimulators for the localisation of the nerve plexus.



The adaptable injection tube enables aspiration or injection to be carried out during the puncture process. It can be removed by the anaesthetist at any time if it is getting in the way of the work.

### Available in two different tip geometries

Electroconductive precision tip – facet or SPROTTE® – with stepless transition to the coating.

- ➔ Facet grinding: reduces the risk of injury to a minimum compared to conventional sharp cannulas.
- ➔ SPROTTE® tip: enables atraumatic, precise localisation of the nerve.



With the MultiStim ECO, PAJUNK® has developed a compact nerve stimulator which is simple to operate.



### MultiStim SENSOR

It supports the patient friendly, percutaneous localisation and identification of nerves with the aid of a **stimulation handle and the PEG electrode** (Percutaneous Electronic Guidance) – a substantial distinctive feature, as opposed to conventional stimulation equipment.



### MultiStim SWITCH

It is the **only nerve stimulator which also can stimulate catheters**. The anaesthetist can select either the cannula or the catheter for stimulation by means of a switch-over function, simply by pressing a button. With the function indicating the patient resistance, the intraneural, intravascular and intrathecal placement of the catheter can be recognized and corrected immediately.



### MultiStim ECO

Small and compact. The settings are adapted to standard applications as well as the intuitively operated keyboard enable one-hand operation. No additional patient cable is needed for the MultiStim ECO – the cannula is connected directly to the device.

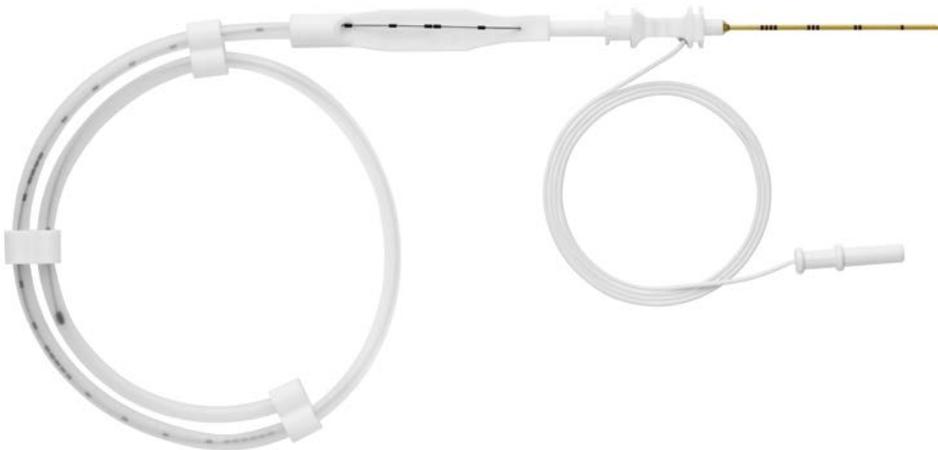
## Kit variants

# Continuous peripheral nerve block

PAJUNK® differentiates between the kits seen below depending on the catheter properties. You also have a choice between three different cannula types. While the facet grinding cannula exclusively places the catheter parallel to the nerve, the SPROTTE® SPECIAL cannula and the Tuohy cannula are suitable for those cases, where it is necessary to introduce the catheter with an exit angle. Together with the rounded and polished lateral eye, the atraumatic tip of the SPROTTE® SPECIAL cannula enables an optimal egress and a precisely guided placement of the catheter.

### PlexoLong NanoLine

Kit consisting of PlexoLong NanoLine cannula optional with three different tip designs and PlexoLong catheter



Facet grinding



SPROTTE® SPECIAL tip

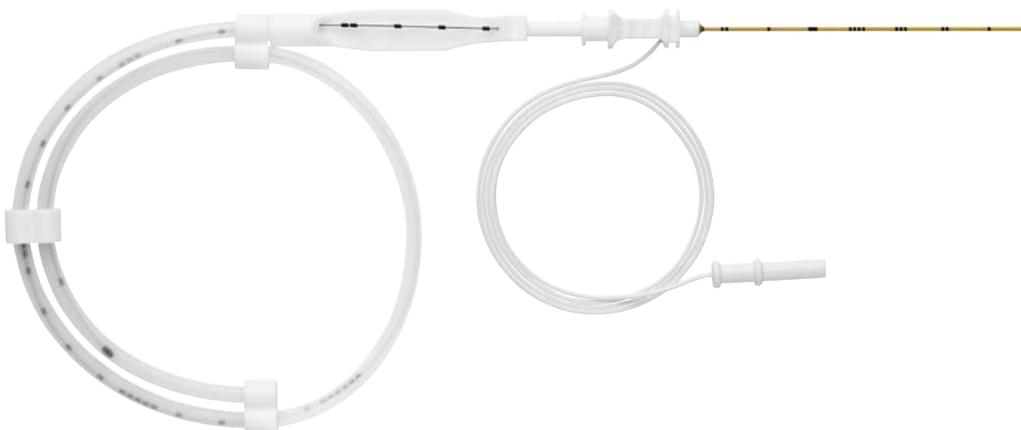


Tuohy tip



### PlexoLong Sono NanoLine

Kit consisting of PlexoLong NanoLine cannula optional with three different tip designs and PlexoLong Sono catheter



Facet grinding



SPROTTE® SPECIAL tip



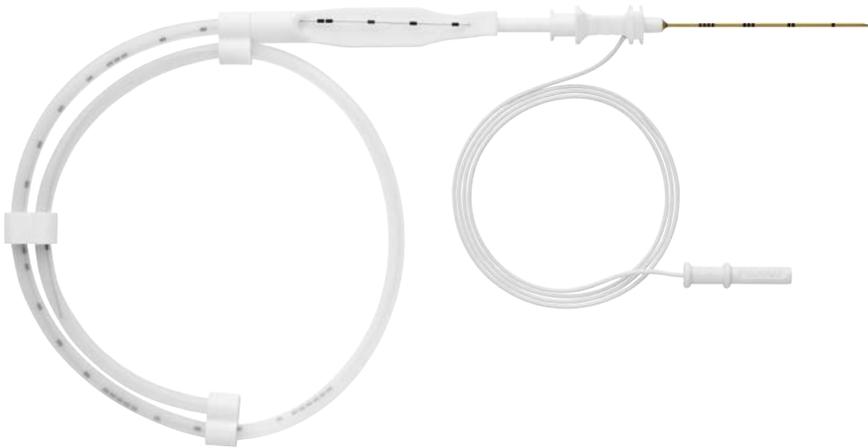
Tuohy tip



 <p><b>SPROTTE® SPECIAL cannula</b></p> <p>Nerve</p>	 <p><b>Tuohy cannula</b></p> <p>Nerve</p>	 <p><b>Cannula with facet grinding</b></p> <p>Nerve</p>
<p>Increased safety for the application. Shearing off of the catheter can be almost excluded.</p>	<p>Tuohy cannula with approved grinding. Particularly suitable for psoas-compartment blocks.</p>	<p>The position of the catheter opening should be directed towards the nerve.</p>

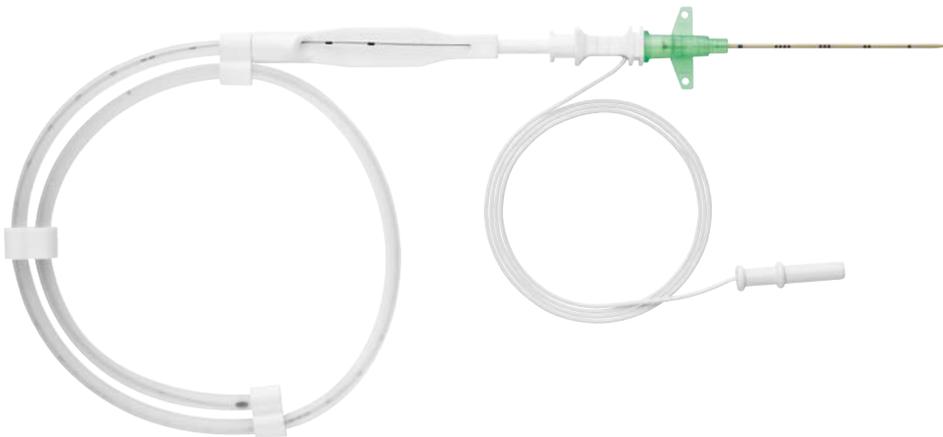
## StimuLong Sono NanoLine

Kit consisting of PlexoLong NanoLine cannula optional with two different tip designs and StimuLong Sono catheter



## MultiSet NanoLine

Kit consisting of UniPlex cannula optional with two different tip designs, indwelling cannula and PlexoLong catheter



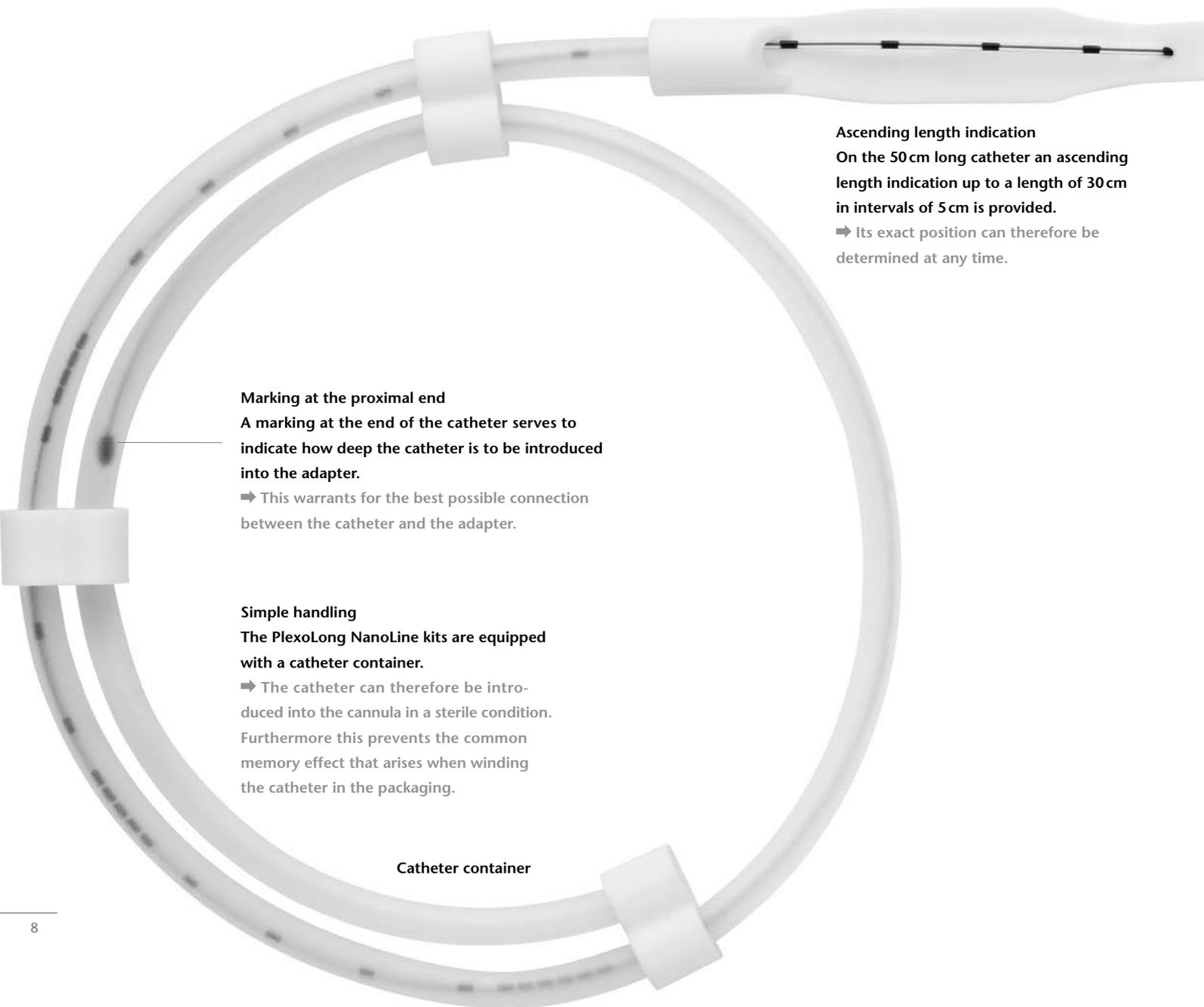
## PlexoLong NanoLine

# Catheter through Needle Technique

The PlexoLong NanoLine kit was developed in collaboration with Dr. Meier especially for the peripheral techniques in regional anaesthesia and pain therapy. With this kit the catheter is introduced in sterile condition directly from a container through the cannula, and the anaesthetic is injected through the catheter. This patented technique has established itself successfully on the market and has aroused a great response and recognition in the professional world.

### The kit consists of:

- ➔ PlexoLong NanoLine cannula optionally available with SPROTTE® SPECIAL tip, Tuohy tip or facet grinding
- ➔ PlexoLong catheter with catheter container
- ➔ FixoLong system
- ➔ ClampingAdapter



### Ascending length indication

On the 50 cm long catheter an ascending length indication up to a length of 30 cm in intervals of 5 cm is provided.

➔ Its exact position can therefore be determined at any time.

### Marking at the proximal end

A marking at the end of the catheter serves to indicate how deep the catheter is to be introduced into the adapter.

➔ This warrants for the best possible connection between the catheter and the adapter.

### Simple handling

The PlexoLong NanoLine kits are equipped with a catheter container.

➔ The catheter can therefore be introduced into the cannula in a sterile condition. Furthermore this prevents the common memory effect that arises when winding the catheter in the packaging.

Catheter container



PlexoLong NanoLine cannula



#### **Stainless steel stylet**

The catheter of the PlexoLong kit has a stainless steel stylet, which is locked in place in the introductory aid at its end, and is removed together with the container after the application of the catheter.

➔ This provides the catheter with outstanding stability.



#### **Catheter with central opening**

The centre of the radiopaque catheter is open.

➔ This permits the free flow of the anaesthetic – particularly in connection with the post-operative injection pump.

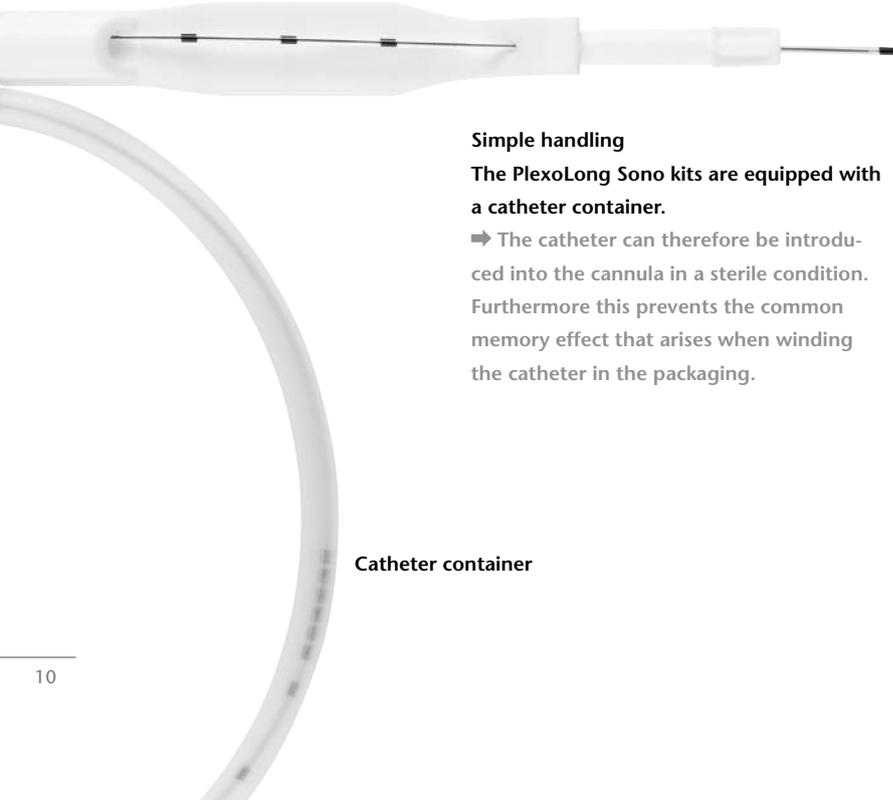
- ➔ Radiopaque catheter material
- ➔ Is introduced into the cannula in a sterile condition
- ➔ Central opening enables a good and continuous flow of anaesthesia

## PlexoLong Sono

# The kink resistant catheter with stainless steel helical coil

The construction of the catheter is decisive for the smooth performance of continuous peripheral nerve blocks. Because the unobstructed flow of the anaesthetic or of the analgesic can only be guaranteed, if the catheter can resist being squeezed off when the patient is in an unfavourable position. Having this in mind, PAJUNK® has developed the PlexoLong Sono catheter. It has been equipped with an integrated stainless steel helical coil, and it is particularly suitable for long-term treatment in pain therapy and plexus anaesthesia.

PlexoLong Sono catheter

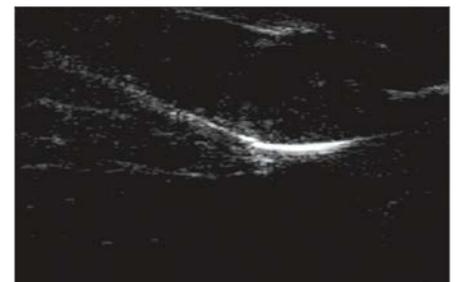


Catheter container

### Simple handling

The PlexoLong Sono kits are equipped with a catheter container.

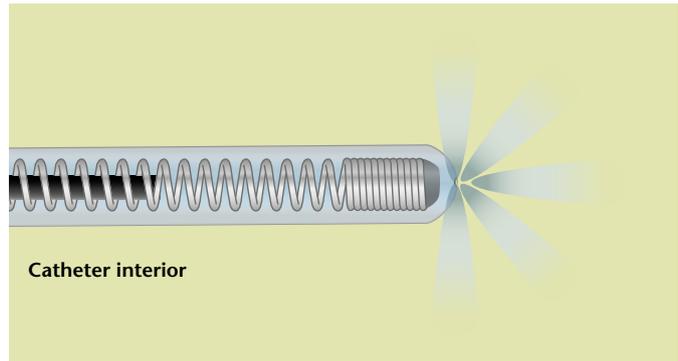
➔ The catheter can therefore be introduced into the cannula in a sterile condition. Furthermore this prevents the common memory effect that arises when winding the catheter in the packaging.



### Visibility and orientation

The PlexoLong Sono catheter is manufactured from echogenic material and graduated along the first 30cm.

➔ This simplifies positioning and identification under ultrasound.

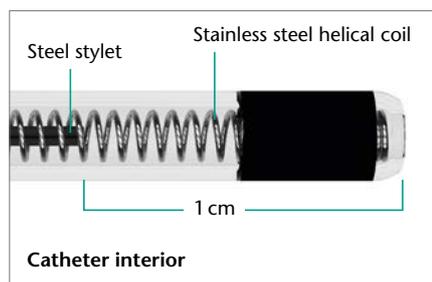
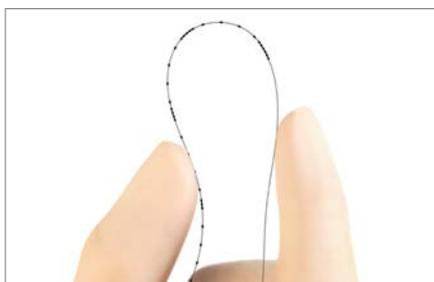


Its integrated stainless steel helical coil provides the PlexoLong Sono catheter with the highest degree of mobility and simultaneous kinking resistancy – an important aspect for continuous applications.

#### Catheter material

The catheter material consists of transparent plastic. The characteristic features of the material are its very high tearing resistance/ tensile strength, as well as excellent tissue compatibility.

➔ If the catheter is misplaced, then the inflow of blood may be immediately detected and the corresponding measures can be taken.



➔ *Maximum mobility and kinking resistancy thanks to the stainless steel helical coil*

➔ *Soft, flexible catheter tip prevents unintentional injuries*

#### Unobstructed flow of the anaesthesia

The integrated stainless steel helical coil provides the catheter with kinking resistancy.

➔ The best requirements for the unobstructed flow of anaesthesia for continuous applications and the safe connection of the catheter to the injection pump.

#### Soft, flexible catheter tip

The steel stylet ends 1 cm before reaching the catheter tip, which leaves the tip soft and flexible.

➔ This raises the flexibility during the insertion of the catheter and reduces the risk of unintentional injuries of vessels.

## StimuLong Sono

# Stimulatable catheter

*The StimuLong Sono catheter – a joint development of PAJUNK® and Dr. Kick – is unique due to its stimulatable tip, the electrically conductive steel stylet, and also because of the integrated metal helical coil. First, the nerve in question is identified using a PlexoLong cannula. Then the StimuLong catheter is advanced forward under nerve stimulation, with continuous adaptation of the intensity of the stimulation current. The stimulation takes place exactly when the tip of the catheter emerges from the cannula. Conclusions regarding the proximate nervous structures may be drawn directly from the stimulation response, and the catheter can be positioned with the corresponding precision. The distance to the nerve can be derived from the minimum current intensity required for stimulation. A secondary positioning check of the catheter tip can also be performed in case of an intermittent post-operative pain therapy.*



StimuLong Sono catheter

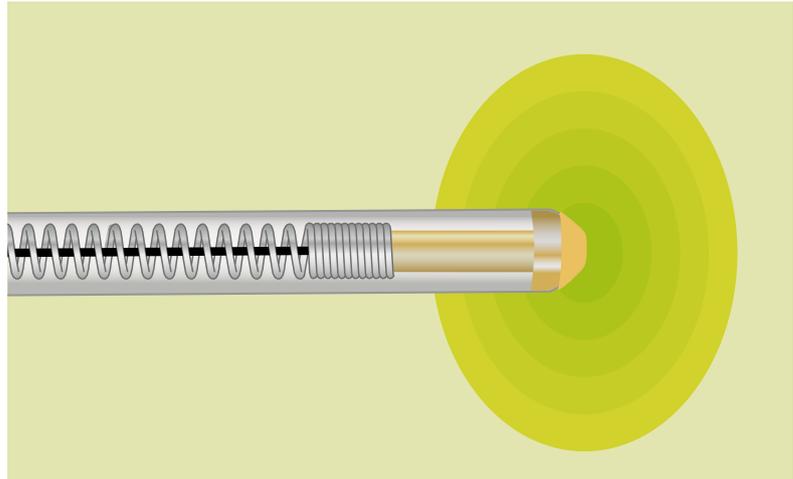
### Simple handling

**The StimuLong Sono kits are equipped with a catheter container.**

➔ The catheter can therefore be introduced into the cannula in a sterile condition. Furthermore this prevents the common memory effect that arises when winding the catheter in the packaging.



Catheter container

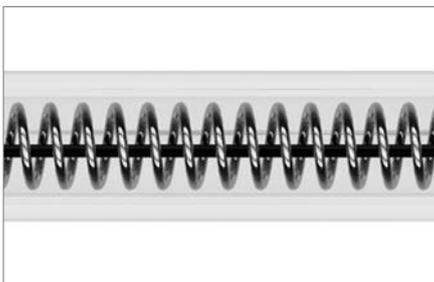


The atraumatically rounded tip of the StimuLong Sono catheter is gold-plated. As a result, the highest possible conductivity and an excellent stimulation capability are guaranteed.

#### Catheter material

The catheter material consists of transparent plastic. The characteristic features of the material are its very high tearing resistance/ tensile strength, as well as excellent tissue compatibility.

➔ If the catheter is misplaced, then the inflow of blood may be immediately detected and the corresponding measures can be taken.



#### Integrated stainless steel helical coil

The stainless steel helical coil provides the catheter with kinking resistancy.

➔ This ensures the unhindered flow of the anaesthetic, also and particularly over a longer period of time.



#### Stimulateable catheter

The catheter has a continuous electrical circuit.

➔ This establishes the electrical connection between the ClampingAdapter and stimulateable catheter tip.

- ➔ *Reliable flow of anaesthesia thanks to integrated stainless steel helical coil*
- ➔ *Stimulateable catheter ensures double safety during placement*
- ➔ *Excellent conductivity and stimulation capability due to gold-plated catheter tip*

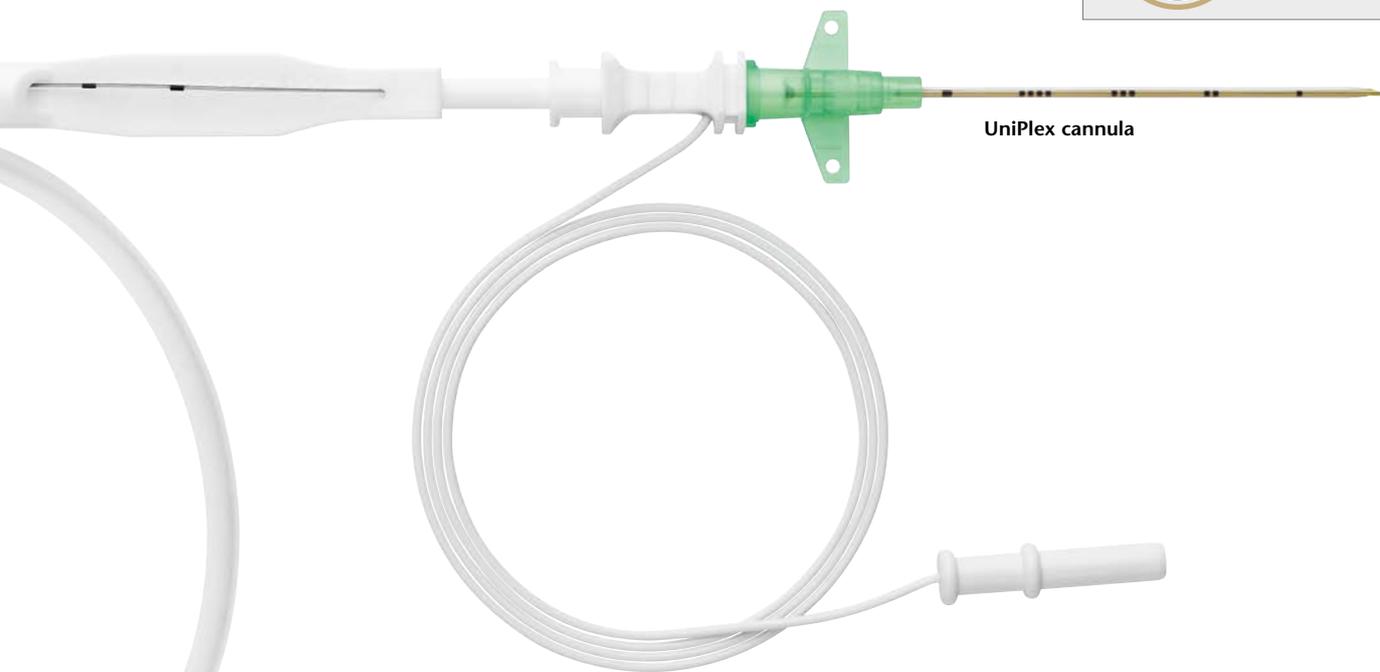
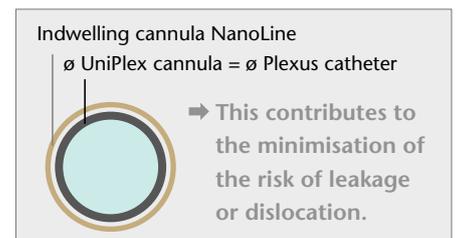
## MultiSet NanoLine

# The classical technique

The UniPlex cannulas of the MultiSet NanoLine kit permit the perineural placement of an indwelling cannula. This indwelling cannula displays very good gliding properties, since it tapers off to the front, and together with the extremely thin NanoLine coating, it creates a fluent and flush transition between the cannula and the indwelling cannula. It is very flexible, and at the same time very sturdy – providing the best prerequisites for simple and safe handling. In this technique, operative anaesthesia is performed using a flexible plexus catheter. The UniPlex cannulas themselves have the same diameter as the catheter, making leakages virtually impossible.

The MultiSet NanoLine technique permits the performance of the puncture using particularly thin cannulas. The UniPlex cannulas are available in various sizes, and with two different tips: SPROTTE®-SPECIAL tip and facet grinding.

### Diameter of Plexus catheter and UniPlex cannula is the same



UniPlex cannula

Catheter container

## *Innovative catheter fixation*

# **FixoLong and FixoCath – ensure freedom of movement**

PAJUNK® developed two different solutions for catheter fixation on patients; FixoLong and FixoCath for catheter sizes 19 G and 20 G. Especially in continuous application, they prevent an accidental removal of the catheter if the patient moves or if there is an obstruction of the anaesthetic flow by an unfavourable position.

### **FixoLong**

With FixoLong, the catheter and filter are fixed close to the catheter exit, enabling greater freedom of movement in all continuous applications.

Item No. 001151-40



### **FixoCath**

FixoCath is simultaneously a transparent adhesive and fixation and is placed directly on the exit point. This also ensures significant freedom of movement for the patient

Item No. 001151-37Z



### **Filter 0.2µm**

The 0.2µm bacterial filter prevents the passage of bacteria.

Item No. 001151-37X



### **ClampingAdapter**

The PAJUNK® ClampingAdapter is a special anchoring device which prevents overstretching and ensures optimum anaesthetic flow.

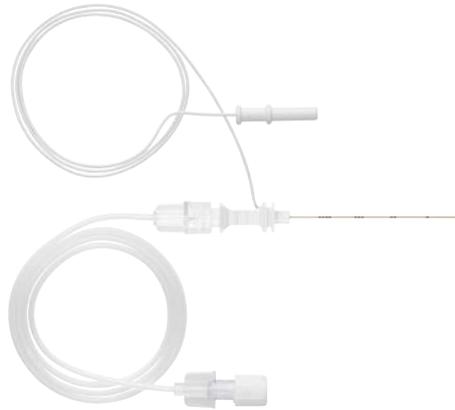
Item No. 001151-37V



# Plexus anaesthesia

## All at a glance

### UniPlex NanoLine

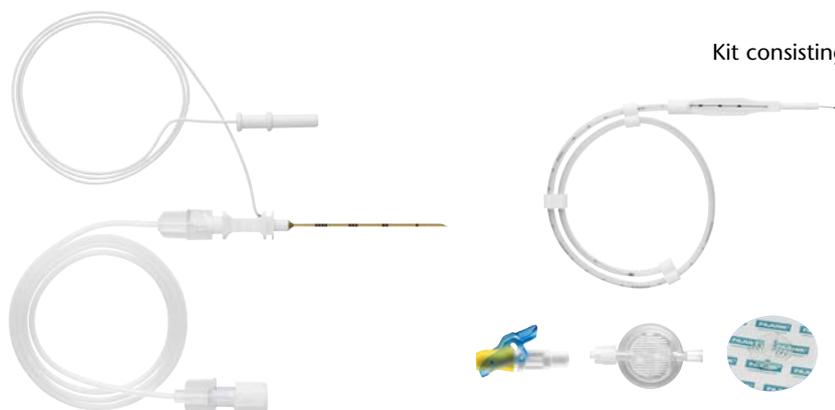


Product	Size	Item No.	PU
<b>UniPlex NanoLine</b>			
Facet grinding			
UP 3/25	24 G x 25 mm	001156-75	10
UP 3/35	25 G x 35 mm	001156-80	10
UP 3/40	22 G x 40 mm	001156-70	10
UP 3/50	25 G x 50 mm	001156-81	10
UP 3/50	22 G x 50 mm	001156-74	10
UP 3/80	25 G x 80 mm	001156-86	10
UP 3/80	22 G x 80 mm	001156-71	10
UP 3/100	22 G x 100 mm	001156-84	10
UP 3/100	21 G x 100 mm	001156-77	10
UP 3/120	22 G x 120 mm	001156-82	10
UP 3/120	20 G x 120 mm	001156-72	10
UP 3/150	20 G x 150 mm	001156-76	10



<b>UniPlex NanoLine</b>			
SPROTTE®			
UPS 3/40	24 G x 40 mm	001156-30G	10
UPS 3/50	25 G x 50 mm	001156-29G	10
UPS 3/50	22 G x 50 mm	001156-31G	10
UPS 3/70	22 G x 70 mm	001156-31H	10
UPS 3/90	22 G x 90 mm	001156-31J	10
UPS 3/150	22 G x 150 mm	001156-28L	10

## PlexoLong NanoLine



- Kit consisting of:
- PlexoLong NanoLine cannula Luer Lock with electrical connector cable
  - Adaptable injecting tube
  - PlexoLong catheter 20 G with central opening and stainless steel stylet
  - ClampingAdapter (yellow)
  - Filter 0.2 µm
  - FixoLong

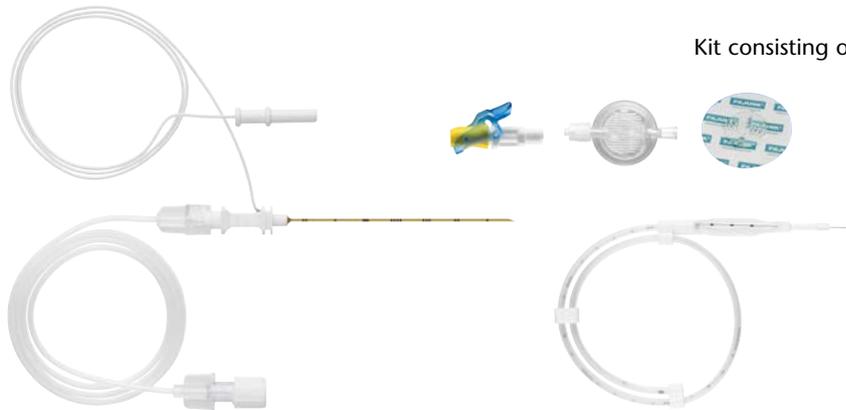
Product	Size	Catheter	Item No.	PU
<b>PlexoLong NanoLine cannula</b>				
 Facet grinding	19 G x 30mm	20 G x 50cm	541156-31A	10
	19 G x 50mm	20 G x 50cm	531156-31A	10
	19 G x 100mm	20 G x 50cm	521156-31A	10
	19 G x 150mm	20 G x 50cm	511156-31A	10
 SPROTTE® SPECIAL tip	19 G x 60mm	20 G x 50cm	531156-31B	10
	19 G x 120mm	20 G x 50cm	521156-31B	10
	19 G x 150mm	20 G x 50cm	511156-31B	10
 Tuohy tip	18 G x 50mm	20 G x 50cm	531156-31C	10
	18 G x 100mm	20 G x 90cm	521156-34C	10
	18 G x 100mm	20 G x 50cm	521156-31C	10
	18 G x 150mm	20 G x 50cm	511156-31C	10



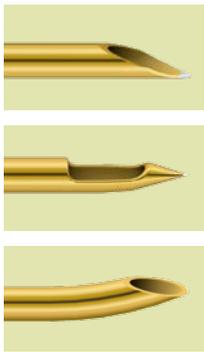
- Kit consisting of:
- 1 PlexoLong NanoLine cannula 19 G x 50mm with facet grinding, Luer Lock and electrical connector cable
  - 1 Adaptable injecting tube
  - 1 PlexoLong catheter 20 G x 50cm with central opening and stainless steel stylet
  - 1 ClampingAdapter (yellow)
  - 1 Filter 0.2µm
  - 1 FixoLong
  - 1 Injection cannula 25 G x 42mm
  - 1 Injection cannula 18 G x 50mm
  - 1 Syringe 5 ml Luer Lock
  - 1 Syringe 20ml Luer Lock
  - 3 Sponge sticks
  - 1 Skin marker
  - 5 Gauze compresses 8-fold, 5 x 5 cm
  - 1 Transparent fenestrated drape, 75 x 60cm
  - 1 Wrapping cloth 90 x 110cm

Product	Item No.	PU
PlexoLong NanoLine	531156-831A	1

## PlexoLong Sono NanoLine

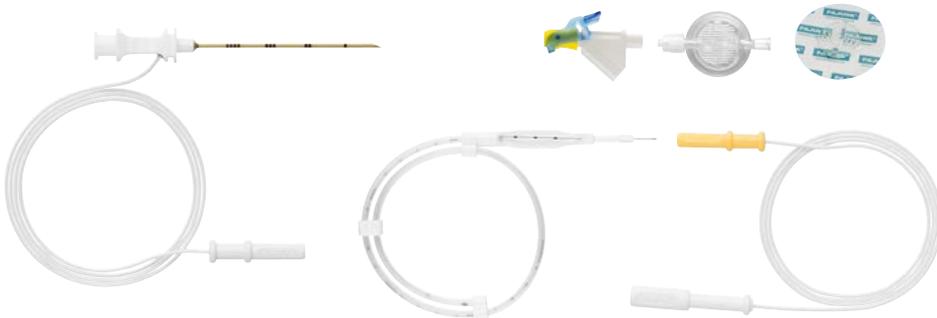


- Kit consisting of:
- PlexoLong NanoLine cannula Luer Lock with electrical connector cable
  - Adaptable injecting tube
  - PlexoLong Sono catheter 20 G x 50 cm with integrated stainless steel helical coil, stainless steel stylet and central opening
  - ClampingAdapter (yellow)
  - Filter 0.2 µm
  - FixoLong

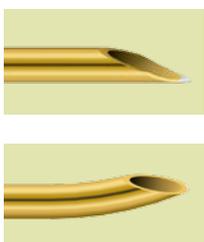


Product	Size	Catheter	Item No.	PU
<b>PlexoLong NanoLine cannula</b> Facet grinding	19 G x 50mm	20 G x 50cm	531157-31A	10
	19 G x 75mm	20 G x 50cm	561157-31A	10
	19 G x 100mm	20 G x 50cm	521157-31A	10
<b>SPROTTE® SPECIAL tip</b>	19 G x 60mm	20 G x 50cm	531157-31B	10
	19 G x 120mm	20 G x 50cm	521157-31B	10
<b>Tuohy tip</b>	18 G x 50mm	20 G x 50cm	531157-31C	10
	18 G x 75mm	20 G x 50cm	561157-31C	10
	18 G x 100mm	20 G x 50cm	521157-31C	10

## StimuLong Sono NanoLine

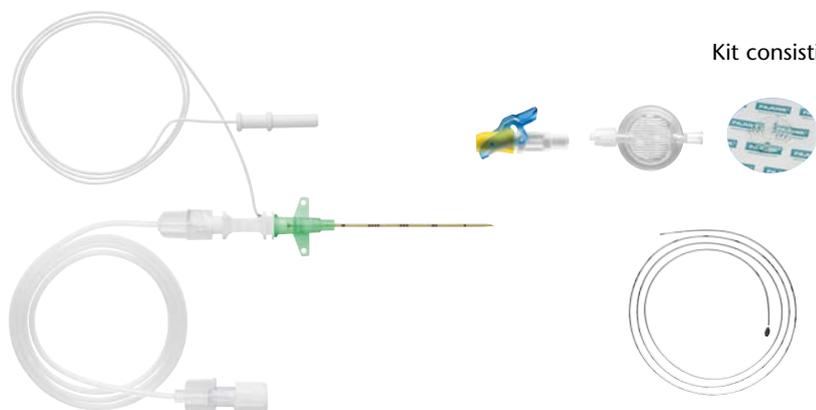


- Kit consisting of:
- PlexoLong NanoLine cannula with electrical connector cable
  - Adaptable injecting tube
  - StimuLong Sono catheter 20 G x 50 cm with electrically conductive stylet, integrated stainless steel helical coil and central opening
  - StimuLong ClampingAdapter (yellow) with integrated stimulation connection
  - Connecting cable
  - Filter 0.2 µm
  - FixoLong



Product	Size	Catheter	Item No.	PU
<b>PlexoLong NanoLine cannula</b> Facet grinding	19 G x 50mm	20 G x 50cm	531157-32A	10
	19 G x 100mm	20 G x 50cm	521157-32A	10
	19 G x 150mm	20 G x 50cm	511157-32A	10
<b>Tuohy tip</b>	18 G x 50mm	20 G x 50cm	531157-32C	10
	18 G x 100mm	20 G x 50cm	521157-32C	10

## MultiSet NanoLine



- Kit consisting of:
- UniPlex cannula Luer Lock with electrical connector cable
  - Indwelling cannula
  - PlexoLong catheter 20 G x 50 cm with closed tip
  - ClampingAdapter (yellow)
  - Filter 0.2 µm (optional)
  - FixoLong (optional)



Product	Size	Catheter	Indwelling cannula	Item No.	Filter 0.2 µm	FixoLong	Stainless steel stylet	PU
<b>UniPlex cannula</b> Facet grinding	21 G x 64 mm	20 G x 50 cm	18 G x 51 mm	201156-30E			•	10
	21 G x 64 mm	20 G x 50 cm	18 G x 51 mm	201156-31E	•	•	•	10
	21 G x 64 mm	20 G x 50 cm	18 G x 51 mm	201156-32E	•	•		10
	21 G x 80 mm	20 G x 50 cm	18 G x 75 mm	211156-30E			•	10
	21 G x 80 mm	20 G x 50 cm	18 G x 75 mm	211156-31E	•	•	•	10
<b>SPROTTE® SPECIAL tip</b>	21 G x 60 mm	20 G x 50 cm	18 G x 51 mm	301156-30E			•	10



Product	Size	Opening	Item No.	PU
<b>PlexoLong Cath</b> without stainless steel stylet, radiopaque, ClampingAdapter (yellow), insertion aid	20 G x 50 cm	closed tip, 3 lateral openings	121151-37C	10
<b>PlexoLong Cath</b> with stainless steel stylet, radiopaque, ClampingAdapter (yellow), insertion aid	20 G x 50 cm	closed tip, 3 lateral openings	001151-37B	10

## MultiStim



MultiStim SENSOR

Product	Item No.	PU
---------	----------	----

### MultiStim SENSOR

incl. equipment case, patient cable for the connection of stimulation cannulas

1151-94-30	1
------------	---

incl. equipment case, PEG-cable for the connection of stimulation cannulas and monopolar handle

1151-94-32	1
------------	---



MultiStim SWITCH

Product	Item No.	PU
---------	----------	----

### MultiStim SWITCH

incl. equipment case, SWITCH cable for the connection of cannula and StimuLong catheter

1151-94-40	1
------------	---



MultiStim ECO

Product	Item No.	PU
---------	----------	----

### MultiStim ECO

incl. equipment case

1151-94-50	1
------------	---

## Components

Product	Item No.	PU
---------	----------	----

### MultiStim SENSOR PatientCable

1151-94-13	1
------------	---

1.20m with plug 2.0mm; patient cable for the connection of stimulation cannulas, clamp adapter for adhesive electrodes

### MultiStim SENSOR PatientCable

1151-94-14	1
------------	---

1.20m with plug 2.0mm; PEG cable for the connection of stimulation cannulas and monopolar handle; clamp adapter for adhesive electrode, connector for PEG stimulation handles

### MultiStim SENSOR StimuGrip

1151-94-17	1
------------	---

1.00m; percutaneous, monopolar stimulation handle, autoclavable

### MultiStim SWITCH PatientCable

1151-94-07	1
------------	---

1.20m with plug 2.0mm; patient cable for the connection of stimulation cannulas and stimulation catheter

Product	Item No.	PU
---------	----------	----

### ExtensionCable 40 cm (SWITCH/SENSOR)

01151-861F	1
------------	---

Extension cable for the connection of stimulation cannulas, autoclavable

### ExtensionCable 60 cm (SWITCH/SENSOR/ECO)

01151-861Q	1
------------	---

Disposable extension cable for the connection of stimulation cannulas, sterile

**PAJUNK® GmbH**  
 Medizintechnologie  
 Karl-Hall-Strasse 1  
 D-78187 Geisingen/Germany  
 Phone +49 (0) 77 04/92 91-0  
 Telefax +49 (0) 77 04/92 91-6 00  
[www.pajunk.com](http://www.pajunk.com)

**PAJUNK® Medical Produkte GmbH**  
 Germany • Austria • Benelux  
 Karl-Hall-Strasse 1  
 D-78187 Geisingen/Germany  
 Phone +49 (0) 77 04/80 08-0  
 Telefax +49 (0) 77 04/80 08-150  
[www.pajunk.com](http://www.pajunk.com)