PAJUNK®

SonoSystem

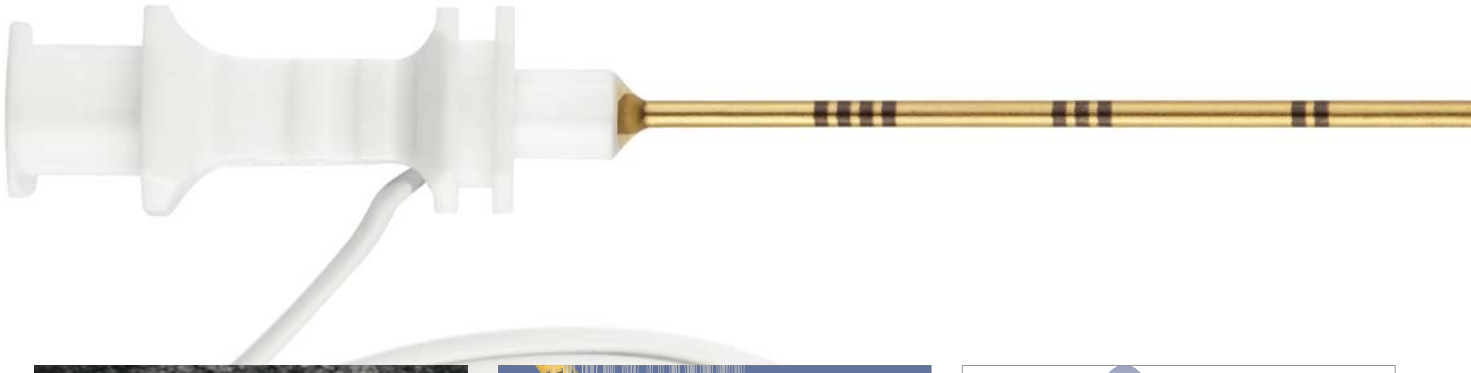
The complete system for ultrasound guided nerve blocks

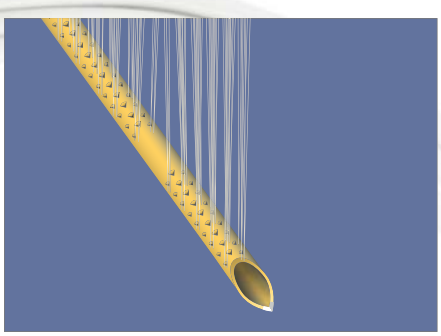
Nerve blocks

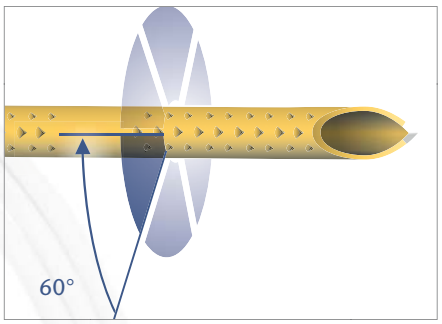
"Cornerstone" reflectors

More visibility and safety under ultrasound

Ultrasound guided regional anaesthesia has become the dominant technique. Today even the finest anatomical structures including peripheral nerves can be identified in detail and anaesthetised selectively under viewing using modern high-resolution ultrasound scanners. Echogenic cannulas are more convenient and contribute to an improved quality of the ultrasound image in use when compared with non-echogenic designs.[1] The cannula is advanced completely under viewing resulting in a minimization of the risk of complications. The visibility of cannulas under ultrasound monitoring has become one of the most important criterion for the selection of a product in clinical practice particularly for steep insertion angles.[2] Based on the "Cornerstone" technology developed together with Dr. Chris Mitchell, PAJUNK® launched the echogenic Sono cannulas a few years ago that exactly meets these requirements.[3]







Convincing cannula tip visibility

The "Cornerstone" reflectors are attached at the distal end of the cannula so that the cannula tip can be clearly identified.

➡ **By means of a real-time display of the cannulas under ultrasound monitoring, the risk of nerve contact by the cannula and thus also the risk of nerve injuries can be reduced.** [4]

Visibility even for steep insertion angles

The "Cornerstone" reflectors are designed so that the ultrasound waves are very well reflected even with an insertion angle of 60° to 70°.

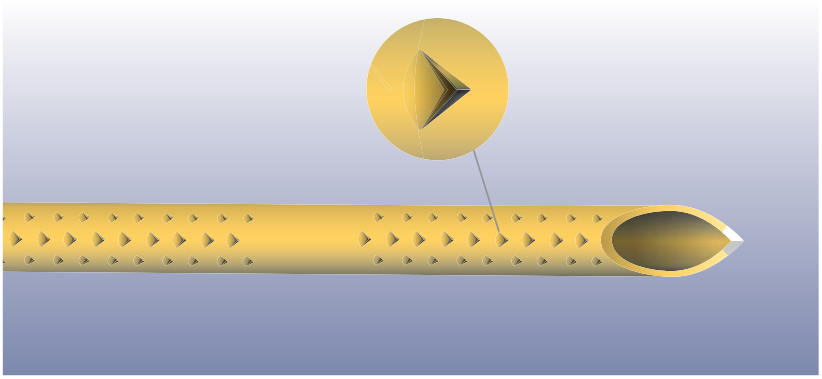
➡ **The Sono cannulas are extremely visible even for a steep insertion angle.** [3]

Sophisticated layout

The "Cornerstone" reflectors are offset at 60° around the cannula and attached at two sections each of 10 mm length.

➡ **The ultrasound waves are reflected along a total length of 20 mm and as a result the cannula tip can be identified with absolute certainty.**

1 Abbal, Choquet, Gourari, Bouic, Massone, Biboulet, Bringuier, Capdevila, Enhanced visual acuity with ..., 2014; 12
2 Abbal, Choquet, Gourari, Bouic, Massone, Biboulet, Bringuier, Capdevila, Enhanced visual acuity with ..., 2014; 13
3 Uppal, Sondekoppam, Ganapathy, Effect of beam steering ..., 2014; 61: 913 f.
4 Schafhalter-Zoppoth, McCulloch, Gray, Ultrasound Visibility of Needles ..., 2004; 480



The patented "Cornerstone" reflectors are decisive for the outstanding reflection of the ultrasound waves and therefore the associated visibility of the Sono cannulas.[3] In this way, Sono cannulas make an important contribution to the safety of the application.[5]

Facet tip

Precise insulation

The Sono cannulas are coated using the innovative NanoLine technology.

➡ This has excellent gliding qualities, increases visibility under ultrasound monitoring [6] and enables exact stimulation exclusively through the non-insulated tip.

- ➡ *Reflection of ultrasound waves over a 20 mm length*
- ➡ *Visibility even for steep insertion angles*
- ➡ *360° graduation for identification in every position*
- ➡ *Precise stimulation and outstanding gliding qualities with NanoLine*

5 Hocking, Mitchell, Optimizing the safety and practice ..., 2012; 604
6 Edgcombe, Hocking, Sonographic Identification of ..., 2010; 209

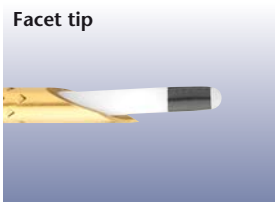
The set variants

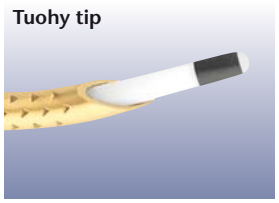
Continuous peripheral nerve block anaesthesia under ultrasound

Together with Dr Meier, PAJUNK® is the first manufacturer to have developed a technique by which 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.
PAJUNK® differentiates between four SonoSystem set variants depending on the catheter properties:

SonoLong Echo for convincing ultrasound visibility

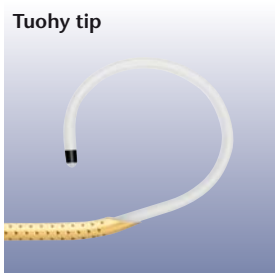
Set consisting of SonoLong Echo catheter + SonoLong NanoLine cannula with





SonoLong Curl Echo for precise catheter placement

Set consisting of SonoLong Curl Echo catheter with coiled tip + SonoLong NanoLine cannula with



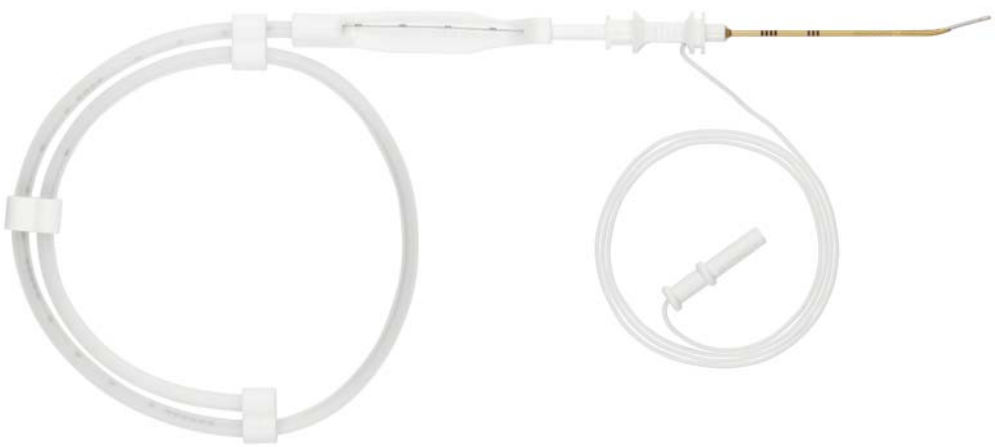
You also have a choice between up to three different cannula types depending on the set variant. While the facet tip cannula exclusively places the catheter parallel to the nerve, the SPROTTE® SPECIAL cannula and the Tuohy cannula are suitable for those cases, where it is necessary to introduce the catheter at an angle to the nerve.

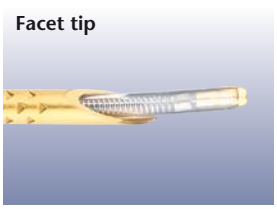
SonoLong Sono for maximum kink resistance

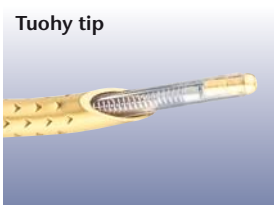
Set consisting of SonoLong Sono catheter with integrated stainless steel helical coil + SonoLong NanoLine cannula with

StimuLong Sono II for additional nerve stimulation

Set consisting of StimuLong Sono catheter with stimulateable tip + SonoLong NanoLine cannula with







SonoLong Echo

Catheter placement directly through the cannula

Ultrasound monitoring has radically changed processes in continuous regional anaesthesia. This has resulted in new requirements for the visibility of cannula and catheters as well as their handling that our development department has been intensively working on for some time. Since PAJUNK® set a milestone in the industry in terms of the ultrasound visibility of cannulas with "Cornerstone" technology, we are pleased that with SonoLong Echo we succeeded in developing an ultrasound visible, MRT visible and radiopaque catheter.

The kit consists of:

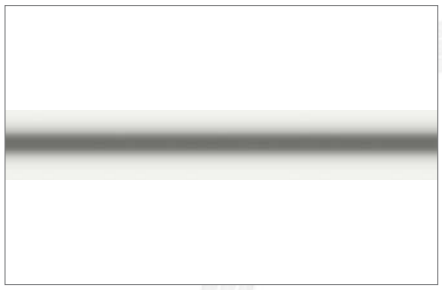
- *SonoLong NanoLine cannula with "Cornerstone" reflectors optionally available with SPROTTE® SPECIAL tip, Tuohy tip or facet tip*
- *SonoLong Echo catheter with catheter container*
- *FixoLong system*
- *Colour coded adapter*

Ascending length indication
The catheter with a length of 50 cm has been provided with an ascending length indication up to a length of 30 cm in intervals of 5 cm. Its position can therefore be determined exactly at any time.

Simple handling
The SonoLong Echo sets 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.

The special catheter material is extremely visible under ultrasound monitoring and in MRT and also radiopaque. – The best requirements for clear identification in all three procedures.

Facet tip



Steel stylet

The catheter of the SonoLong Echo set has a 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 stiffness.**

Catheter with central orifice

The centre of the catheter is open.

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

- ➡ *Catheter material that is extremely visible under ultrasound monitoring and in MRT and also radiopaque*
- ➡ *It is introduced directly over the cannulas in the sterile entry*
- ➡ *Central opening enables a good and continuous flow of anaesthesia*

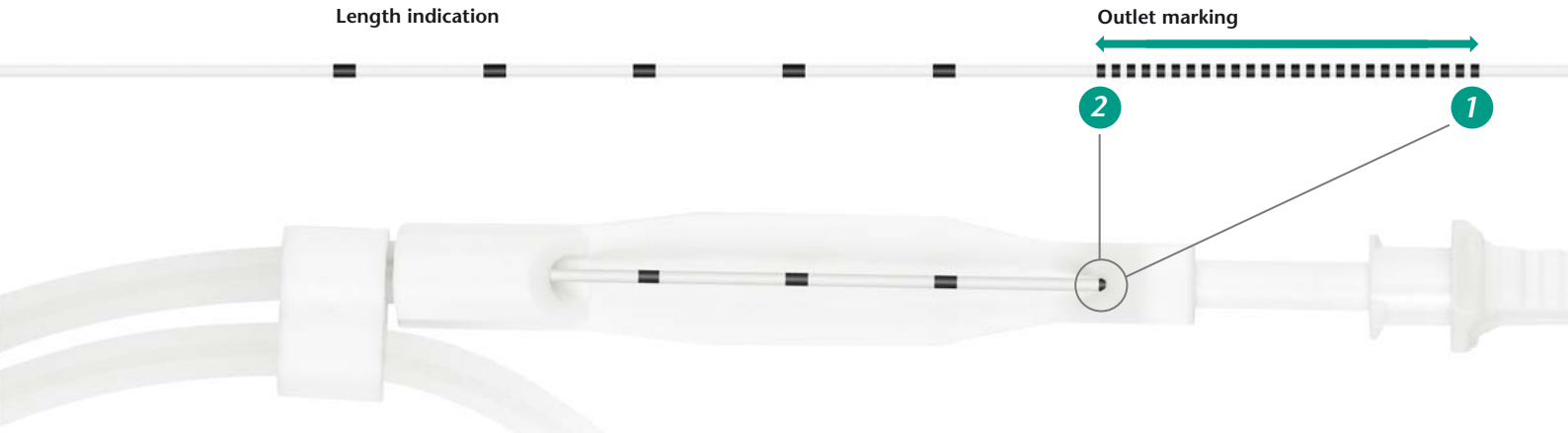
SonoLong Curl Echo

The "on-the-dot" anaesthesia, with a minimum of medication required

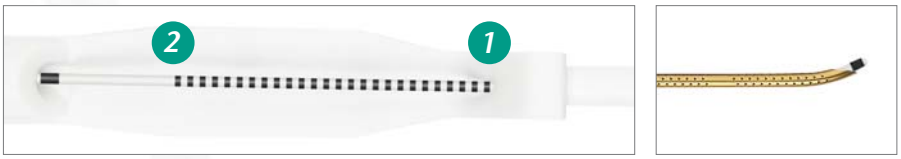
The provision of "Cornerstone" reflectors eases precise positioning of the SonoLong NanoLine cannula in the direct proximity of the nerve under ultrasound monitoring. Since the catheter will follow the path with the least resistance, and this does not always coincide with the neural structures, it is also necessary to monitor the position of the catheter exactly. Against this background, the SonoLong Curl Echo set was developed by PAJUNK® together with Dr. Cedric Luyet, which has a catheter that has been designed in a very special manner. The SonoLong Curl Echo catheter enables precise catheter positioning for a minimum of required medication. As soon as the catheter passes through the opening of the cannula, the soft tip of the Curl catheter tip will roll up and therefore access the point where the cannula tip is positioned. This permits an extremely precise anaesthesia, with a minimum of medication required. The SonoLong Curl Echo catheter is visible under ultrasound and is also radiopaque.

The kit consists of:

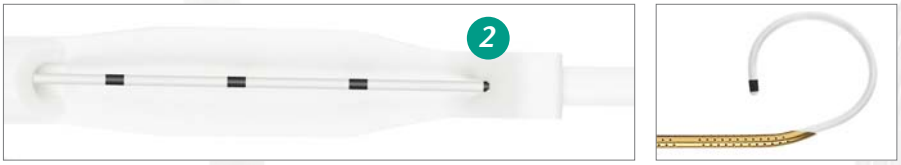
- *SonoLong NanoLine cannula with "Cornerstone" reflectors and Tuohy tip*
- *SonoLong Curl Echo catheter in the catheter container*
- *FixoLong system*
- *Colour coded adapter*



Outlet marking



The SonoLong Curl Echo is pushed out of the cannula tip

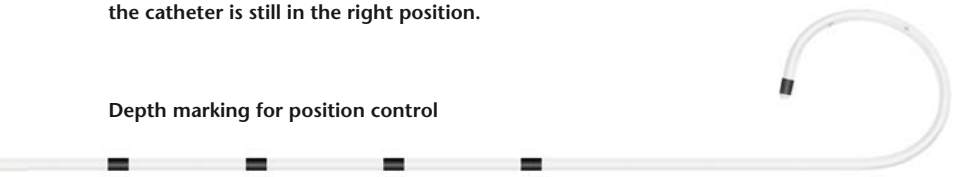


The soft Curl catheter tip is completely curled

The radiopaque SonoLong Curl Echo catheter is extremely visible under ultrasound. It has a curled end, a closed tip and six lateral openings. It can therefore be positioned extremely precisely and also provides an even distribution of anaesthetic.

For position control after catheter placement the catheter has been equipped with a 10 mm depth marking. With this it can be concluded if the catheter is still in the right position.

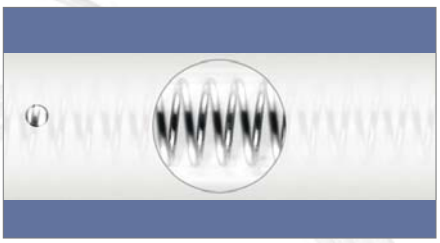
Depth marking for position control



SonoLong Curl Echo catheter

SonoLong Curl Echo catheter with SonoLong NanoLine cannula with Tuohy tip

Exact catheter positioning
The SonoLong Curl Echo catheter curls in the direct proximity of the nerve. This permits a very precise administration of local anesthetic at the intended location.



Integrated stainless steel helical coil

The stainless steel helical coil makes the catheter absolutely kink-proof.
➡ This enables the unhindered flow of the anaesthetic, also and particularly over a longer period of time.

- ➡ *Coiled tip enables precise placement*
- ➡ *Six lateral eyes enable an even distribution of the anaesthesia*
- ➡ *Integrated stainless helical coil for maximum buckle protection and unhindered flow*
- ➡ *Cannula and catheter are extremely visible under ultrasound*

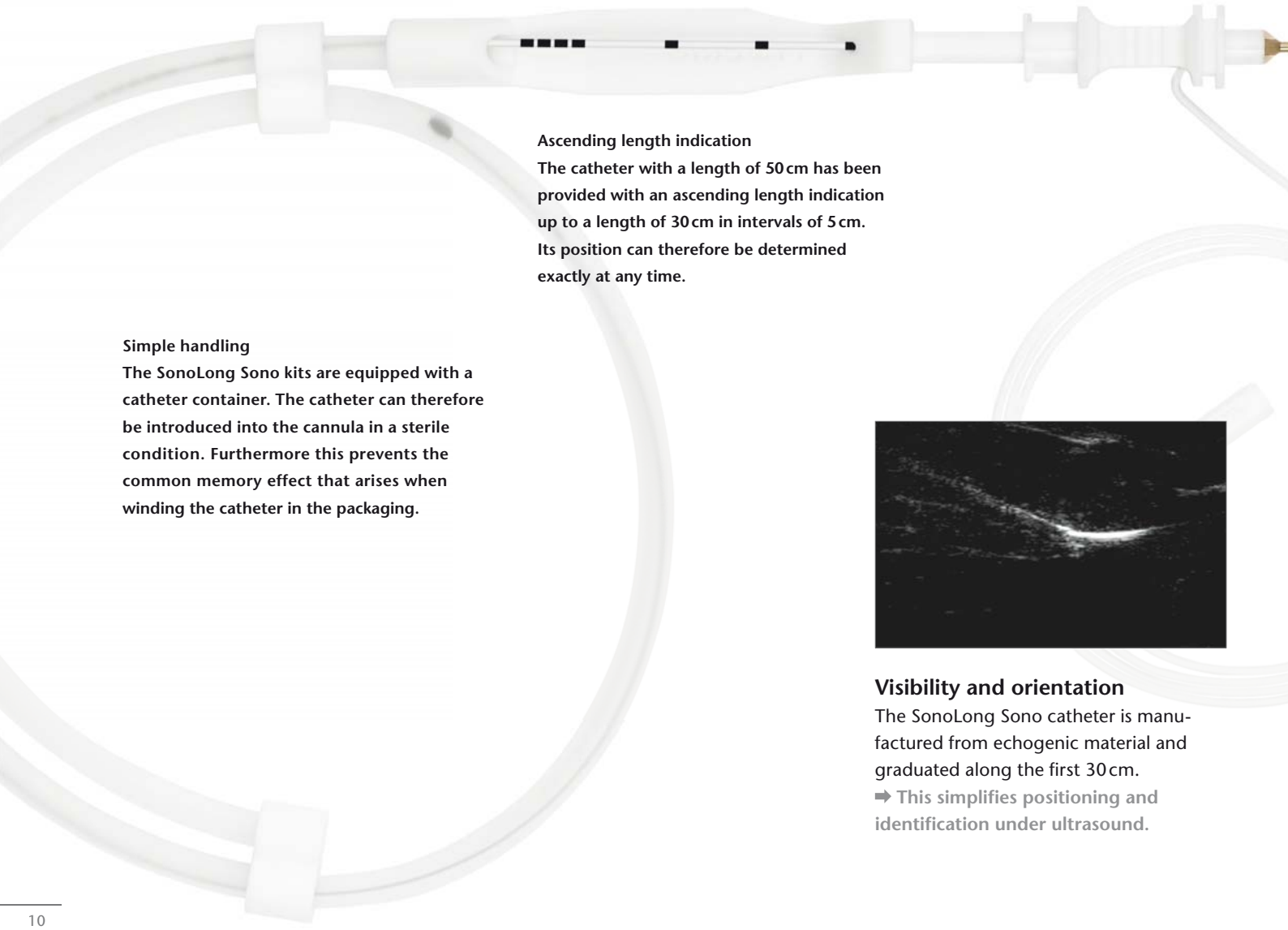
SonoLong Sono

The kink-proof catheter with a stainless steel helical coil

The SonoLong Sono kit is a joint development from PAJUNK® and Dr Meier. It is different from the SonoLong NanoLine kit only through the design of the catheter. It is equipped with an integrated stainless steel helical coil, and is suitable for long-term treatment in pain therapy and plexus anaesthesia. The SonoLong Sono kit is, just as the SonoLong Echo kit, available with three different types of cannulas: with a SPROTTE® SPECIAL tip, with a facet tip or with a Tuohy tip. All three cannula variants are equipped with the proven "Cornerstone" reflectors for improved visibility under ultrasound monitoring. The catheter material itself is characterized by its excellent echogenicity

The kit consists of:

- *SonoLong NanoLine cannula with "Cornerstone" reflectors optionally available with SPROTTE® SPECIAL tip, Tuohy tip or facet tip*
- *SonoLong Sono catheter in catheter container*
- *FixoLong system*
- *Colour coded adapter*

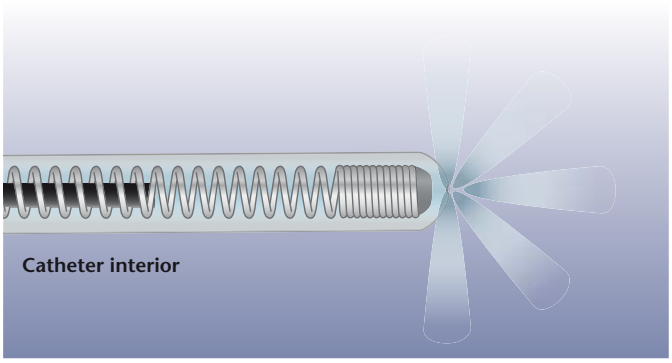


Ascending length indication
The catheter with a length of 50 cm has been provided with an ascending length indication up to a length of 30 cm in intervals of 5 cm. Its position can therefore be determined exactly at any time.

Simple handling
The SonoLong 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.

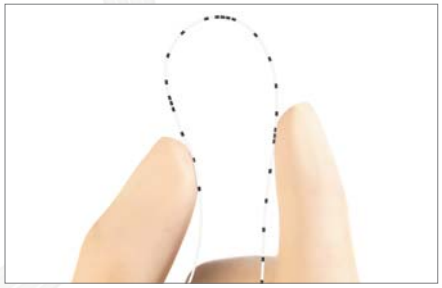
Visibility and orientation

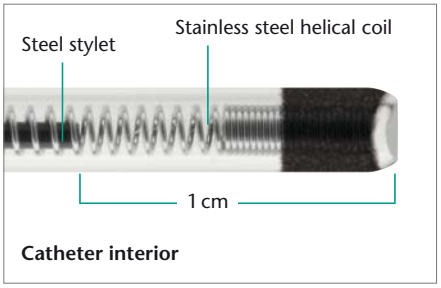
The SonoLong Sono catheter is manufactured from echogenic material and graduated along the first 30 cm.
➡ **This simplifies positioning and identification under ultrasound.**



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

SPROTTE® SPECIAL tip





Unobstructed flow of the anaesthesia

The integrated stainless steel helical coil makes the catheter absolutely kink-proof.

➡ 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.

- ➡ *Maximum mobility and buckle protection thanks to the stainless steel helical coil*
- ➡ *Soft, flexible catheter tip prevents inadvertent injuries*
- ➡ *Cannula and catheter are extremely visible under ultrasound monitoring*

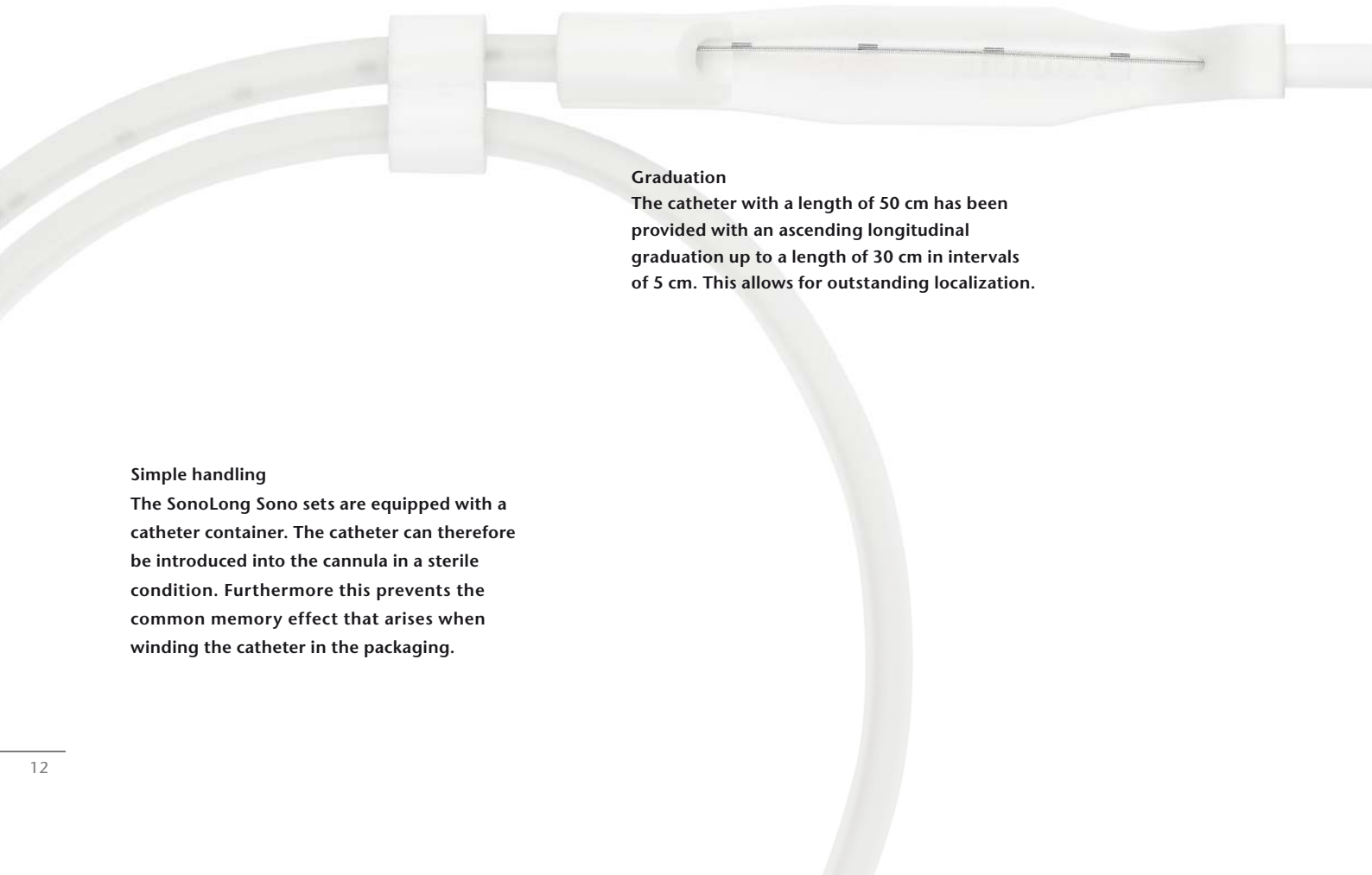
StimuLong Sono II

The combination of ultrasound and nerve stimulation provides double safety

The StimuLong Sono II combines the advantages of a stimulateable catheter with those of echogenic "Cornerstone" cannulas in one set. The StimuLongSono II catheter is characterized by its stimulateable tip. Stimulation is achieved here using an additional electric conductor that remains in the catheter over the entire application period and thus also enables subsequent position control. The relevant nerve is first identified by the echogenic "Cornerstone" cannula. In a second stage, the accuracy of the catheter placement can then be checked using nerve stimulation. The distance to the nerve can be derived at the minimum current strength that is required for stimulation. As the inner lumen is completely NanoLine coated when compared with conventional cannulas, comprehensive insulation can be assumed. Stimulation takes place exactly when the catheter tip comes out of the cannula. A secondary position control of the catheter tip is also possible for intermittent post-operative pain therapy.

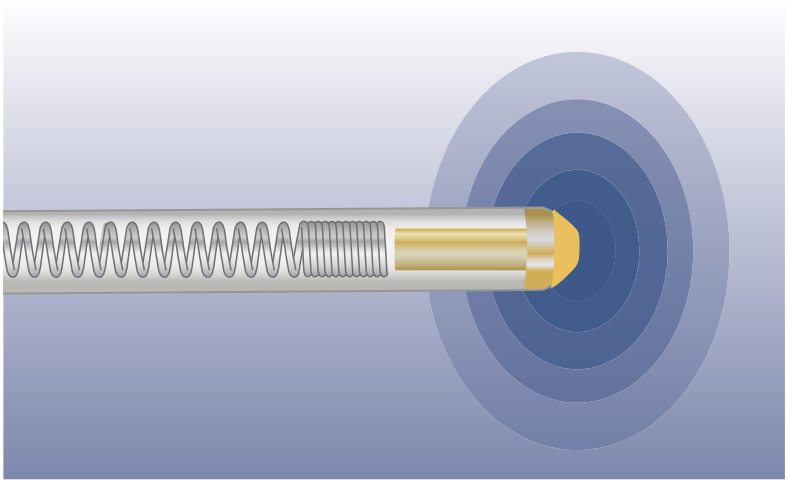
The kit consists of:

- *SonoLong NanoLine cannula with "Cornerstone" reflectors optionally available with Tuohy tip or facet tip*
- *StimuLong Sono catheter in catheter container*
- *FixoLong system*
- *Colour coded adapter*



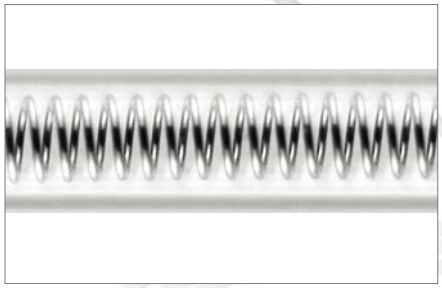
Graduation
The catheter with a length of 50 cm has been provided with an ascending longitudinal graduation up to a length of 30 cm in intervals of 5 cm. This allows for outstanding localization.

Simple handling
The SonoLong Sono sets 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.



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.

Tuohy tip



Integrated stainless steel helical coil

The stainless steel helical coil makes the catheter absolutely kink-proof.

➡ 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 clamping adapter and stimulateable catheter tip.

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

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. It is precisely in continual application where they prevent the catheter from getting pulled out by accident when the patient moves and where the inflow of the anaesthetic is obstructed by an unfavourable position.

FixoLong filter fixation

With FixoLong, the catheter and bacterial filter are fixated near the catheter exit, which enables the patients maximum freedom of movement during all continuous applications.

Art. No. 001151-40

FixoCath catheter fixation

FixoCath is simultaneously a surgical dressing and fixation and is placed directly on the exit point. The aim here is to also provide the maximum freedom of movement for the patient. The FixoCath is sterile packed and available in a packaging unit of 10 pieces.

Art. No. 001151-37Z

Bacterial filter

The 0.2 µm bacterial filter prevents the passage of particles.

Art. No. 001151-37X

Clamping adapter

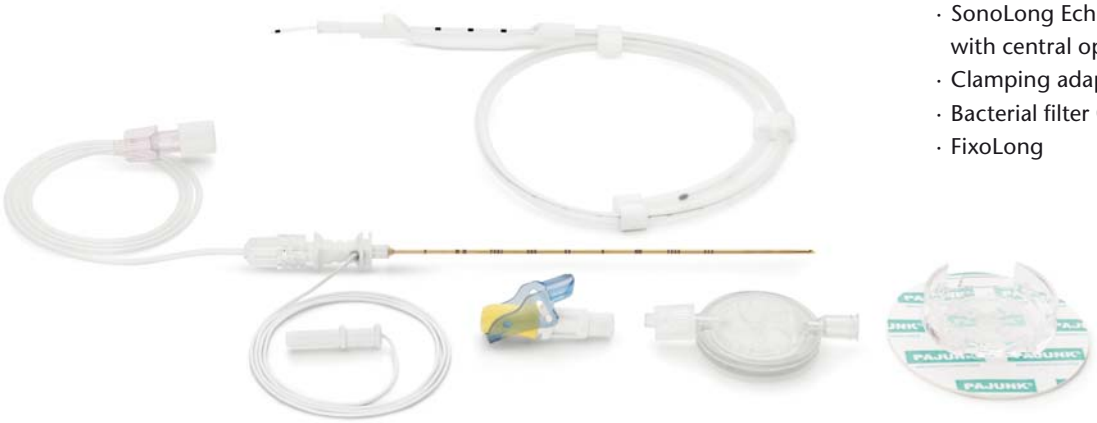
The special PAJUNK® Clamping Adapters safety lock prevents over-tensioning while enabling an unhindered flow of anaesthesia.

Art. No. 001151-37V

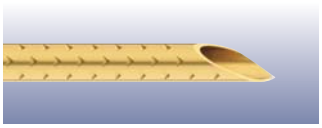
Complete SonoSystem

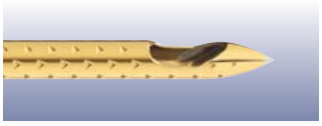
The systems at a glance

SonoLong Echo



Set consisting of:
- SonoLong NanoLine cannula with Luer Lock connector and electrical connecting cable
- Adaptable injection tube
- SonoLong Echo catheter 20 G x 50 cm with central opening and steel stylet
- Clamping adapter (yellow)
- Bacterial filter 0.2 µm
- FixoLong



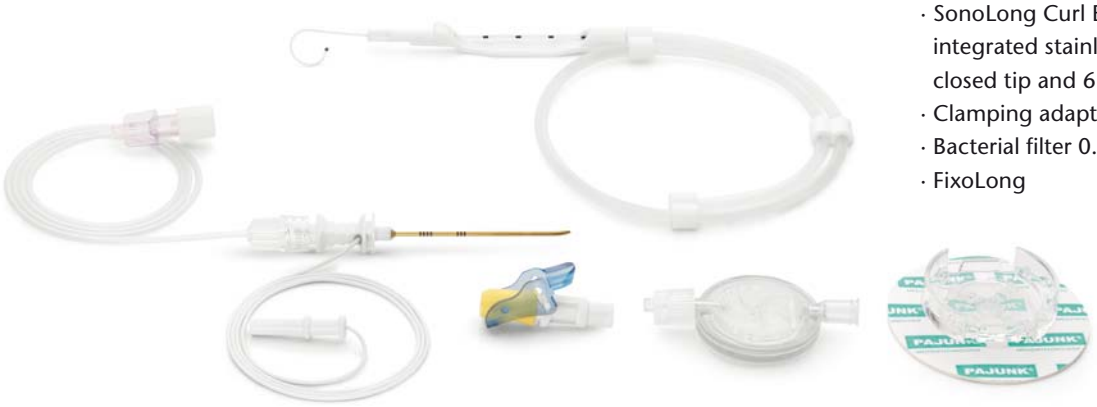


Product	Size	SonoLong Echo catheter	Item No.	PU
SonoLong NanoLine cannula				
Facet tip				
	19 G x 50 mm	20 G x 50 cm	531185-31A	10
	19 G x 75 mm	20 G x 50 cm	561185-31A	10
	19 G x 100 mm	20 G x 50 cm	521185-31A	10
	19 G x 150 mm	20 G x 50 cm	511185-31A	10
SPROTTE® SPECIAL tip				
	19 G x 60 mm	20 G x 50 cm	531185-31B	10
	19 G x 120 mm	20 G x 50 cm	521185-31B	10
Tuohy tip				
	18 G x 50 mm	20 G x 50 cm	531185-31C	10
	18 G x 75 mm	20 G x 50 cm	561185-31C	10
	18 G x 100 mm	20 G x 50 cm	521185-31C	10
	18 G x 150 mm	20 G x 50 cm	511185-31C	10

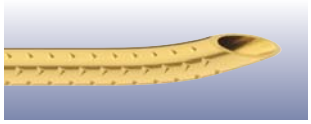
Complete SonoSystem

The systems at a glance

SonoLong Curl Echo

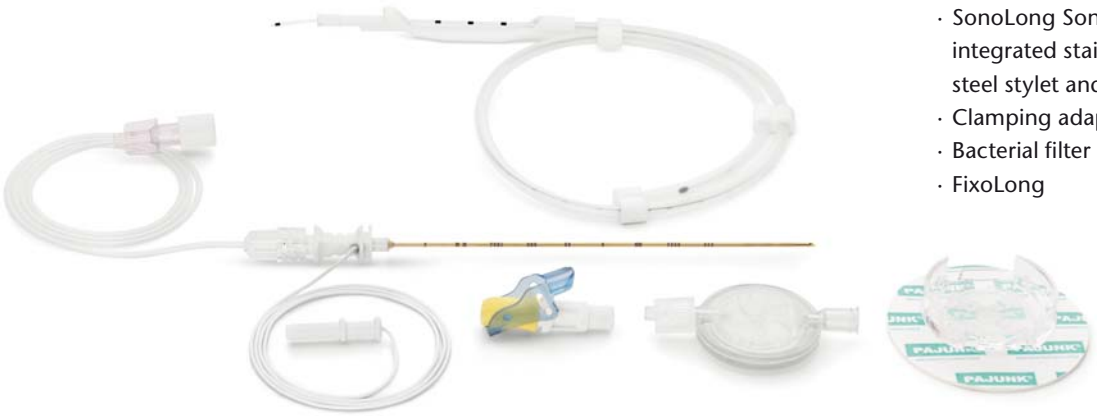


Set consisting of:
- SonoLong NanoLine cannula with Luer Lock connector and electrical connecting cable
- Adaptable injection tube
- SonoLong Curl Echo catheter 20 G with integrated stainless steel helical coil, closed tip and 6 lateral openings
- Clamping adapter (yellow)
- Bacterial filter 0.2 µm
- FixoLong

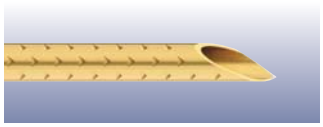


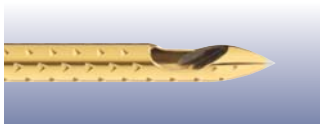
Product	Size	SonoLong Curl Echo catheter	Item No.	PU
SonoLong NanoLine cannula				
Tuohy tip	18 G x 50 mm	20 G x 50 cm	531188-31C	10
		20 G x 90 cm	531188-34C	10
	18 G x 100 mm	20 G x 90 cm	521188-34C	10

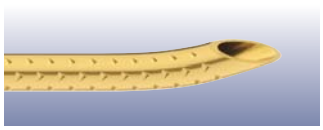
SonoLong Sono



Set consisting of:
- SonoLong NanoLine cannula with Luer Lock connector and electrical connecting cable
- Adaptable injection tube
- SonoLong Sono catheter 20 G with integrated stainless steel helical coil, steel stylet and central opening
- Clamping adapter (yellow)
- Bacterial filter 0.2 µm
- FixoLong







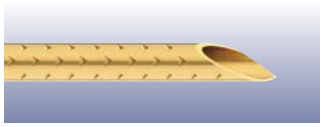
Product	Size	SonoLong Sono catheter	Item No.	PU
SonoLong NanoLine cannula				
Facet tip	19 G x 50 mm	20 G x 50 cm	531187-31A	10
	19 G x 75 mm	20 G x 50 cm	561187-31A	10
	19 G x 100 mm	20 G x 50 cm	521187-31A	10
	19 G x 150 mm	20 G x 50 cm	511187-31A	10
SPROTTE® SPECIAL tip	19 G x 60 mm	20 G x 50 cm	531187-31B	10
	19 G x 120 mm	20 G x 50 cm	521187-31B	10
Tuohy tip	18 G x 50 mm	20 G x 50 cm	531187-31C	10
	18 G x 75 mm	20 G x 50 cm	561187-31C	10
	18 G x 100 mm	20 G x 50 cm	521187-31C	10
	18 G x 150 mm	20 G x 50 cm	511187-31C	10

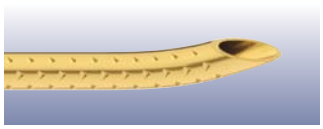
Complete SonoSystem

The systems at a glance

StimuLong Sono II

Set consisting of:
- SonoLong NanoLine cannula with Luer Lock connector and electrical connecting cable
- Adaptable injection tube
- StimuLong Sono catheter 20 G x 50 cm with central opening, electrically conductive stylet and integrated metal helical coil
- StimuLong clamping adapter (yellow) with integrated stimulation connection
- Connecting cable
- Bacterial filter 0.2 µm
- FixoLong





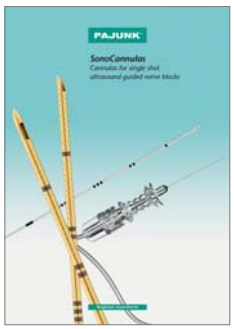
Product	Size	StimuLong catheter	Item No.	PU
SonoLong NanoLine cannula				
Facet tip				
	19 G x 50 mm	20 G x 50 cm	531187-32A	10
	19 G x 100 mm	20 G x 50 cm	521187-32A	10
Tuohy tip				
	18 G x 50 mm	20 G x 50 cm	531187-32C	10
	18 G x 100 mm	20 G x 50 cm	521187-32C	10

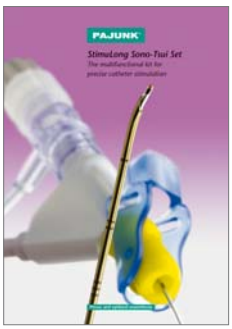
Ultrasound cover

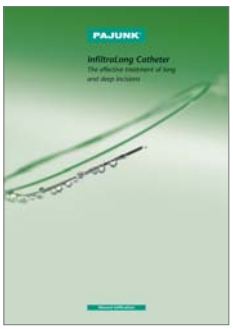
Ultrasound cover

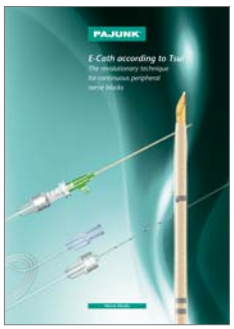
Product	Size	Item No.	with adhesive strips	with two elastic bands	with ultrasound gel	with 3D chamber	Sterile
Ultrasound cover	15 x 30 cm	021151-1530	•	•	•		•
Ultrasound cover	15 x 60 cm	021151-1560	•	•	•		•
Ultrasound cover	15 x 100 cm	021151-1501	•	•	•		•
Ultrasound cover	15 x 30 cm	011151-1530	•	•		•	•
Ultrasound cover	15 x 60 cm	011151-1560	•	•		•	•
Ultrasound cover	15 x 100 cm	011151-1501	•	•		•	•
Ultrasound cover	15 x 30 cm	031151-1530	•	•	•	•	•
Ultrasound cover	15 x 60 cm	031151-1560	•	•	•	•	•
Ultrasound cover	15 x 100 cm	031151-1501	•	•	•	•	•
Ultrasound cover	15 x 30 cm	001151-1530	•	•			•
Ultrasound cover	15 x 60 cm	001151-1560	•	•			•
Ultrasound cover	15 x 100 cm	001151-1501	•	•			•

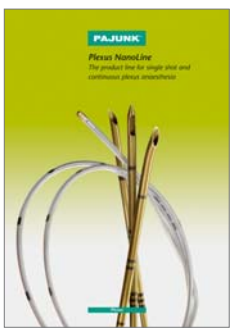
Product	Size	Item No.	PU
Ultrasound gel	20 ml	001151-38J	25

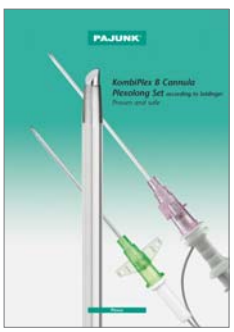


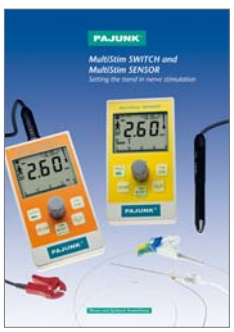












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- **Uppal V., Sondekoppam R. V., Ganapathy S.** Effect of beam steering on the visibility of echogenic and nonechogenic needles: a laboratory study, Can. J. Anesth./J. Can. Anesth. 2014; 61: 909–915

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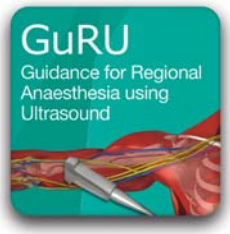

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