

**PAJUNK®**

***SPROTTE® Cannula***

*The original – In a class of its own*



Spinal anaesthesia

## 30 years SPROTTE® cannula

# The Success Story in Spinal Anaesthesia

The partnership between Prof. Sprotte and PAJUNK® began in 1979 with the joint development of the "atraumatic spinal cannula". This combination of clinical experience and innovative medical technology was the catalyst from which spinal anaesthesia established itself as an indispensable practice in the spectrum of modern anaesthesia methods. By the end of the seventies, spinal anaesthesia was hardly of any importance anymore in the range of options open to the anaesthetist.


The limitations which arose from a range of frequent and rare complications were too great: intense headache, nausea, vomiting, low-frequency hearing loss, abducens nerve paresis and subdural haematomas. Spinal anaesthesia could no longer maintain its standing in direct competition with more mature and sophisticated narcosis methods which were additionally readily available.


## Often copied – but never matched


# The Original – In a Class of its Own

The secret of this success is in the unique tip geometry and basic design of the SPROTTE® cannula which has been unequalled to this day. In comparison with other cannulas the original

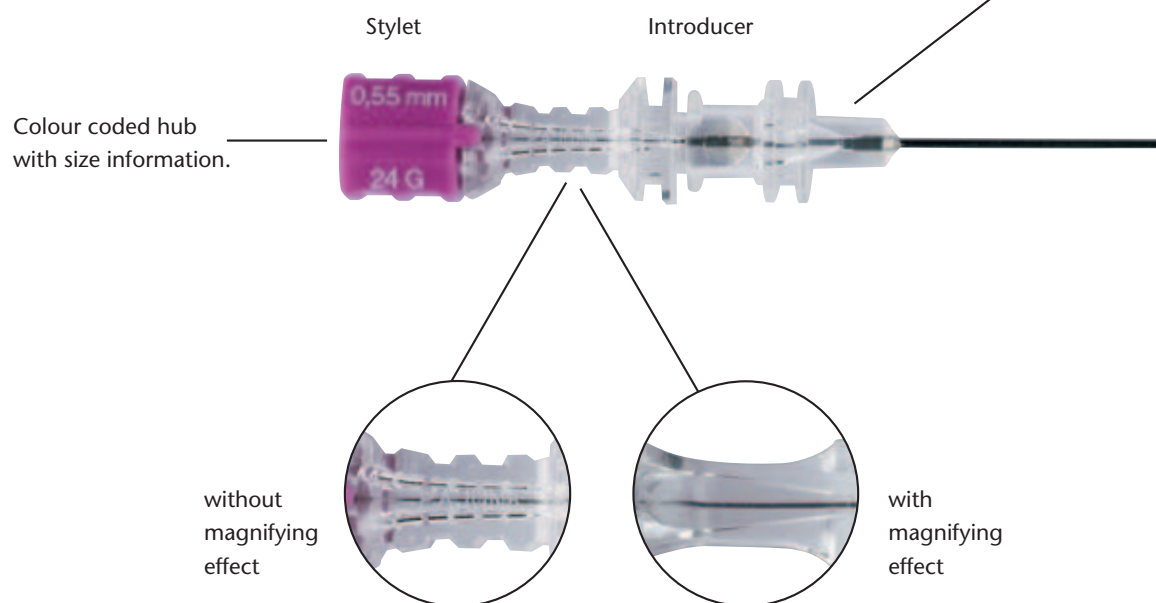
provides both patients and users alike with a considerably greater range of functionality, safety and reliability.

22 G = 0.70 mm 

24 G = 0.55 mm 

25 G = 0.50 mm 

27 G = 0.40 mm 



The optional version with magnifying effect is available so that even the smallest quantities of cerebrospinal fluid are clearly visible.

With the SPROTTE® cannula, the PAJUNK® development team has succeeded in manufacturing a spinal cannula which minimises the numerous side effects and renders spinal anaesthesia a comfortable and safe alternative to general anaesthesia. The proven success story confirms this: For the past 30 years the atraumatic SPROTTE® cannula has remained the unchallenged reference point and standard in spinal anaesthesia and lumbar puncture.

Many more ideas have been derived and perfected from the original SPROTTE® cannula.

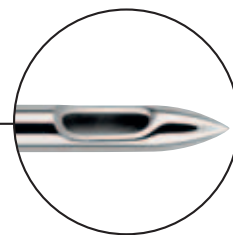
This has led to a group of products which has become the standard in anaesthesia and pain therapy finding use in a wide variety of applications in everyday clinical work. The SPROTTE® cannula has therefore made an essential contribution to the development of the field of spinal anaesthesia.



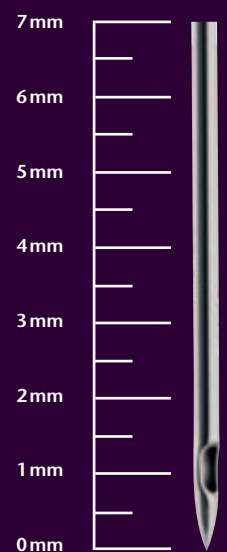
Depending on diameter and length there is a specific introducer available for every cannula size. The inner contours of the introducer hub have been designed so that the atraumatic tip of the SPROTTE® cannula cannot be damaged during the introduction process.



Cannula



The ogive-shaped tip geometry provides the cannula with its atraumatic qualities.



The optimal solution for every application:  
A wide range of cannulas in different diameters and lengths accommodates the most exacting individual requirements. Special designs for paediatrics and SPROTTE® cannulas for overweight adults complete the range.

## The original SPROTTE® cannula

# The Guarantor for Atraumatic Puncture

The atraumatic qualities of the SPROTTE® cannula is proven histologically and functionally:

### Ogive-shaped tip geometry

The closed tip of the cannula has the shape of an ogive. It displaces the tissue during the puncture process without injuring it. The multi-layered texture of the dura consisting of collagen and elastic fibres will close again after the cannula is removed.



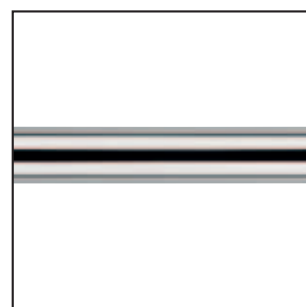
### Lateral eye with rounded edge

The lateral opening of the SPROTTE® cannula is completely free of burrs and has atraumatically rounded edges. This quality characteristic provides perfect and smooth gliding features and minimises coring of tissue into the subaracnoid space.

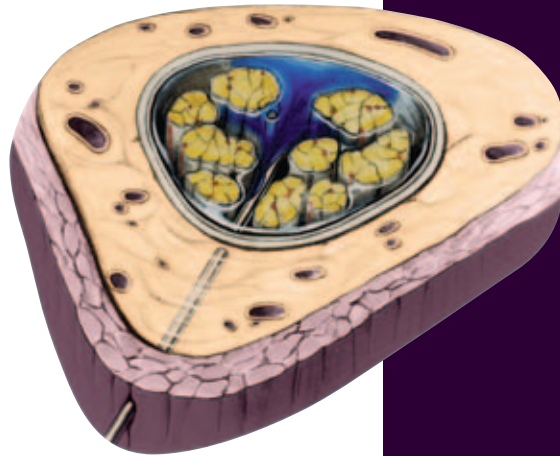


### Polished stainless steel surface

The cannula is manufactured from first-class stainless steel which guarantees optimal stability. The surface and the inner lumen have been polished which reduces any surface roughness to a minimum. This ensures that the SPROTTE® cannula can be positioned optimally to ensure CSF – reflux is optimised by the greatly reduced internal surface roughness.

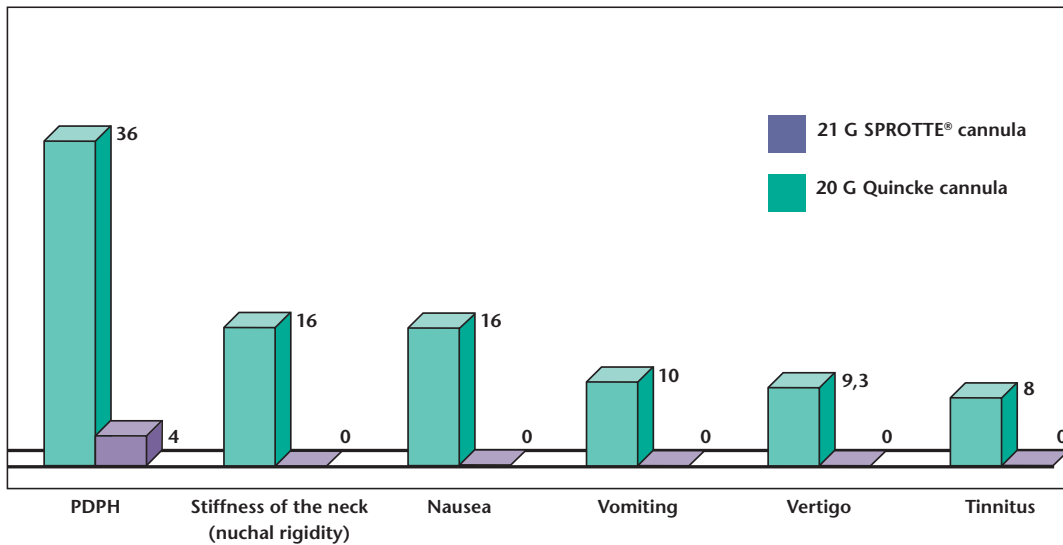


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**The effect is obvious:**

In comparison with conventional cannulas the post spinal headache rate occurring with an original SPROTTE® cannula is reduced by a factor of 10.



Evidence shows that post spinal headaches appear less frequent when the SPROTTE® cannula is used. (Results of the first controlled study – Jäger et al 1991 Akt. Neurol. 18: 61-64)

The use of atraumatic cannula will not only reduce post spinal headaches but, as has been proven, nuchal rigidity, nausea and vomiting can also be avoided. The recommendation to use atraumatic cannula can be justified from an economical point of view: the costs of medical treatment can be noticeably reduced by the prevention of unwanted side effects.

The reduction of post spinal headaches by using atraumatic cannula is proven: Class I evidence, Type A recommendation (Neurology 2000; 55... 909-914); this is valid for all diameters of the atraumatic cannula in use, from 20 Gauge (Strupp et al Neurology 2001; 57:2310-2312) to 27 Gauge (Flaatten et al, Acta Anaesthesiol Scand 2000;44:643-644).

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*Safety through precision and cleanliness*

## ***Responsible Handling of Cerebrospinal Fluid***

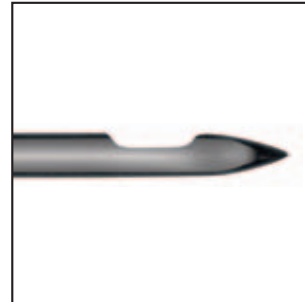
### **Free flow of cerebrospinal fluid**

Time is a major factor in spinal anaesthesia. Great effort was therefore made in the design and manufacture to ensure that cerebrospinal fluid flows freely without obstruction. The time

between puncturing the spinal space and injection of the anaesthetic is substantially reduced when the SPROTTE® cannula is used:

### **Inner lumen of the cannula**

The smooth inner lumen of the cannula provides for maximum reduction in surface roughness. This allows optimal reflux of cerebrospinal fluid.



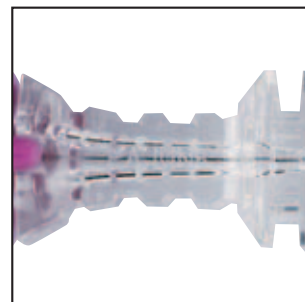
### **Lateral opening**

The lateral opening of the cannula directly behind the tip ensures an unhindered flow of cerebrospinal fluid even if the arachnoidea may be partially blocking the opening.



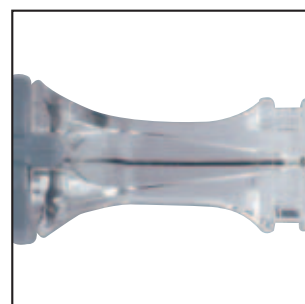
### **Optimal cannula hub**

The small interior lumen of the plastic hub fills quickly with cerebrospinal fluid allowing it to be identified faster.

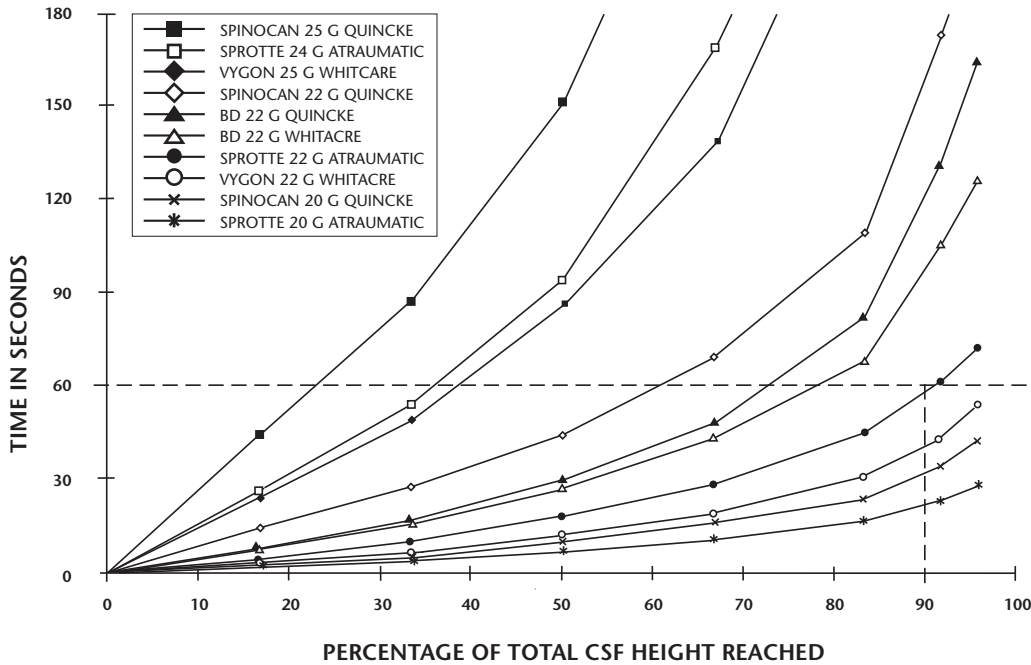


### **Magnifying effect**

Unique to PAJUNK®: the cannula hub with a magnifying effect. Even the smallest amount of fluid is clearly identified through a viewing chamber in the cannula hub.



## The Carson study



Pressure transduction of a simulated cerebrospinal fluid pressure of 24 cm passing through cannula of different manufacturers. According to Carson D.: Choosing the best cannula for diagnostic lumbar puncture *Neurology* 1996; 47:33-37

## Maximum cleanliness

An essential quality aspect and safety feature directly correlates with the need for cleanliness. PAJUNK® operates strict requirements here.

- A special multistage cleaning process guarantees an absolutely clean puncture when using the SPROTTE® cannula and simultaneously minimises the risk to the nervous system. Following the cleaning operation the SPROTTE® cannula is subjected to a special drying process.
- The outer surface, tip of the stylet and lateral eye of the SPROTTE® cannula are all polished extensively. The extremely smooth steel surface obtained by this process minimises the risk of any metal particle detachment and release into the cerebrospinal fluid. Any potential tissue and blood serum protein deposit is also avoided at this time. The latest equipment, comprehensive process control and extensive checks within the PAJUNK® clean room guarantees maximum cleanliness and therefore improved safety for the patient.



# Quality characteristic: an extensive range

## The range in its entirety

The well-balanced range of products provides the anaesthetist with the option to use suitable cannula lengths and diameters for every conceivable indication.

### SPROTTE® cannula



Size	Without introducer		With introducer		PU
	Item no.	Item no.	Item no.	Item no.	
25 G x 150mm			061151-29A		10
25 G x 123mm	151151-29A				10
25 G x 120mm	031151-29A		051151-29A		10
25 G x 103mm			041151-29A		25
25 G x 90mm	501151-29A		021151-29A		25
25 G x 70mm			021151-29B		25
25 G x 35mm	001151-29E				25
24 G x 150mm	141151-30A		131151-30A		10
24 G x 120mm	031151-30A		041151-30A		10
24 G x 103mm	521151-30A		021151-30A		25
24 G x 90mm	001151-30A		121151-30A		25
24 G x 70mm	001151-30B		021151-30B		25
24 G x 35mm	001151-30E				25
24 G x 25mm	001151-30D				25
22 G x 150mm	041151-30C		141151-30C		10
22 G x 120mm	031151-30C		131151-30C		10
22 G x 103mm	521151-30C		221151-30C		25
22 G x 90mm	001151-30C		021151-30C		25
22 G x 70mm	051151-30C		051151-30B		25
22 G x 50mm	071151-30C				25

### SPROTTE® cannula w/magnifying effect



Size	Without introducer		With introducer		PU
	Item no.	Item no.	Item no.	Item no.	
29 G x 90mm			501151-28A		25
27 G x 123mm	231151-27A				10
27 G x 120mm			151151-27A		10
27 G x 103mm			141151-27A		25
27 G x 90mm			121151-27A		25
27 G x 70mm			121151-27B		25
27 G x 35mm	111151-27A				25
27 G x 25mm	101151-27A				25
25 G x 123mm	251151-29A				10
25 G x 120mm			171151-29A		10
25 G x 103mm			161151-29A		25
25 G x 90mm	521151-29A		511151-29A		25

#### Introducers for the SPROTTE® cannula

Size	Item no.	Cannula size	PU
0.70 x 30mm	071151-30L	27 G and 29 G	25
0.70 x 40mm	071151-30M	27 G and 29 G	25
0.80 x 30mm	021151-30L	24 G and 25 G	25
0.80 x 40mm	021151-30M	24 G and 25 G	25
1.00 x 30mm	001151-30L	22 G	25
1.00 x 40mm	001151-30M	22 G	25

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