

**PAJUNK®**

**SPROTTE®**

*Needles for Atraumatic  
Spinal Anaesthesia*

40  
YEARS of  
SPROTTE®  




MADE IN GERMANY

# The original SPROTTE® needle

## The pioneer of atraumatic dural puncture

Spinal anaesthesia was rehabilitated as a fully accepted alternative to general anaesthesia with the introduction of the first atraumatic Sprotte needle at the end of the 1970s.

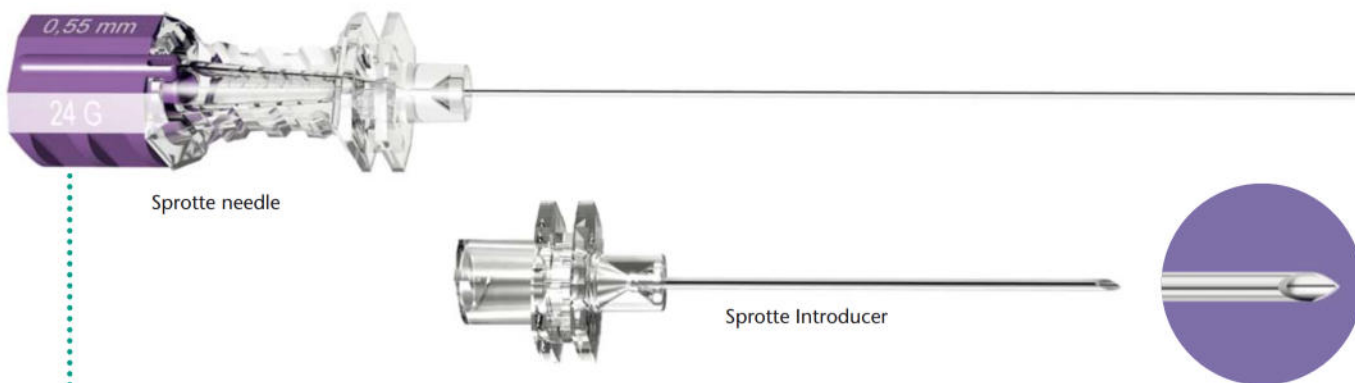
A unique tip geometry is the secret of its success. Sprotte's atraumatic puncture and optimal gliding properties minimise possible injuries and prevent foreign bodies and tissue particles from being carried into the subarachnoid space, while reducing the incidence of post-dural puncture headache (PDPH). Sprotte decreases complications of spinal anaesthesia and increases the safety of application.

### Highest processing quality

- ➔ High quality stainless steel needle for increased stability
- ➔ Smoothly polished and burr-free surface and inner lumen for optimisation of gliding properties and cerebrospinal fluid (CSF) backflow

### Evidence class 1, recommendation level A

Highest scientific award:  
The American Academy of Neurology (AAN) certified in 2005 the original Sprotte needle evidence class 1, recommendation level A.<sup>1</sup>



### Colour coded hub with size indication

22 G = 0.70 mm	■	25 G = 0.50 mm	■
24 G = 0.55 mm	■	27 G = 0.40 mm	■

- ➔ Wide needle range with different diameters and lengths
- ➔ Special designs for pediatrics and obese patients

### Introducer with facet tip

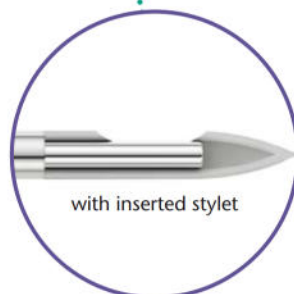
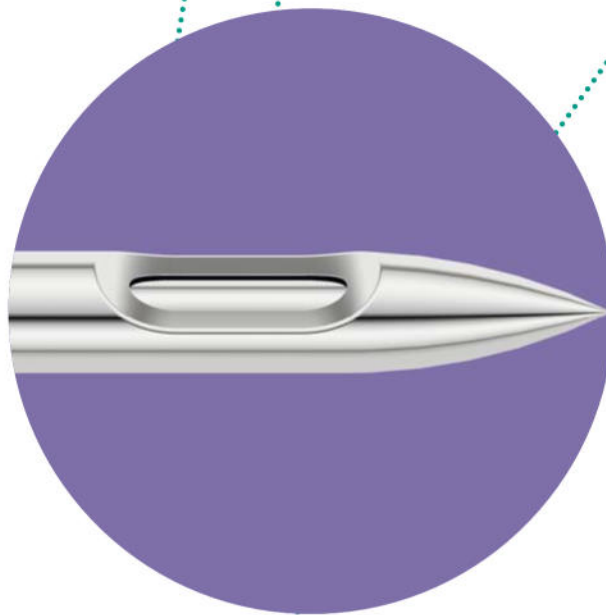
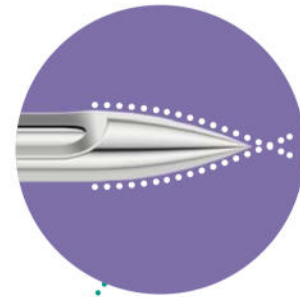
- ➔ Diameter and length perfectly matched to each needle size
- ➔ Useable working length of the spinal needle is reduced only minimally by the Introducer
- ➔ When inserted into the Introducer, the needle tip is not damaged by the funnel-shaped inner contour

### Lateral eye

- ➔ Burr-free
- ➔ Rounded atraumatic edges
- ➔ Optimised gliding properties
- ➔ Minimum tissue particle carry-over into the spinal space

### Atraumatic tip

- ➔ Displaces tissue with minimal injury<sup>2</sup>
- ➔ Dura fibres close again
- ➔ Excellent tactile feedback
- ➔ Minimise chance for PDPH



### Custom-fit stylet

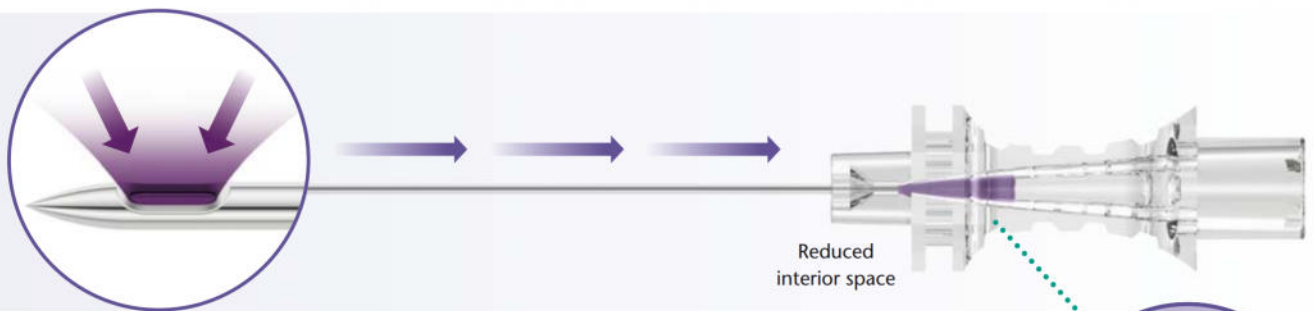
- ➔ Lateral eye closes precisely<sup>3</sup>
- ➔ Polished, rounded tip prevents abrasion on the inner needle tube

<sup>1</sup> Armon, Evans, Addendum to assessment: Prevention of post-lumbar ..., 2005; 65: 510-512

<sup>2</sup> Strupp et al., Atraumatic Sprotte needle reduces the ..., 2001; 57: 2312

<sup>3</sup> Jäger, Schimrigk, Haaß, Das postpunktionelle Syndrom ..., 1991; 18: 61-64

**1. Unhindered backflow** + **2. Rapid CSF recognition**



**Optimal lateral eye size and placement**

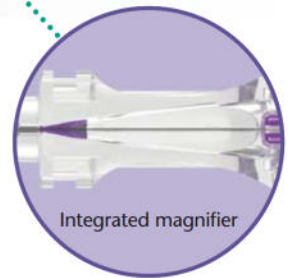
→ *Unobstructed backflow, even if the eye is partially blocked by the arachnoid membrane*

**Needle hub with reduced inner space**

→ *Fast detection of even the smallest quantities of CSF*

Alternatively with integrated magnification

→ *Optimised CSF detection*



**3. Placement and response time is faster and safer**



**Smooth anaesthetic injection**

→ *Anaesthetic is guided in a soft beam over the needle tip by the ogival form*

**Reduction of time between puncture and injection**



**SPROTTE<sup>®</sup>**



Sprotte needle Luer with Introducer



Sprotte needle NRFit with Introducer



**SPROTTE<sup>®</sup> needle**



Size	Without Introducer Item No.	Introducer size	Sprotte Luer Item no.	PU
25 G x 150 mm		40 mm	061151-29A	10
25 G x 123 mm	151151-29A			10
25 G x 120 mm	031151-29A	40 mm	051151-29A	10
25 G x 103 mm		40 mm	041151-29A	25
25 G x 90 mm		30 mm	021151-29A	25
25 G x 35 mm	001151-29E			25
24 G x 150 mm	141151-30A	40 mm	131151-30A	10
24 G x 120 mm	031151-30A	40 mm	041151-30A	10
24 G x 103 mm		40 mm	021151-30A	25
24 G x 90 mm	001151-30A	30 mm	121151-30A	25
24 G x 70 mm		30 mm	021151-30B	25
24 G x 35 mm	001151-30E			25
24 G x 25 mm	001151-30D			25
22 G x 150 mm	041151-30C	40 mm	141151-30C	10
22 G x 120 mm	031151-30C	40 mm	131151-30C	10
22 G x 103 mm	521151-30C	40 mm	221151-30C	25
22 G x 90 mm	001151-30C	30 mm	021151-30C	25
22 G x 70 mm	051151-30C	30 mm	051151-30B	25
22 G x 50 mm	071151-30C			25

**SPROTTE<sup>®</sup> needle NRFit with magnification**



Size	Without Introducer NRFit Item no.	Introducer size	Sprotte NRFit Item no.	PU
27 G x 120 mm	231163-27A	40 mm	031163-27A	10
27 G x 103 mm		40 mm	041163-27A	25
27 G x 90 mm		30 mm	021163-27A	25
25 G x 150 mm	261163-29A	40 mm	061163-29A	
25 G x 120 mm	031163-29A	40 mm	051163-29A	10
25 G x 103 mm		40 mm	041163-29A	25
25 G x 90 mm	501163-29A	30 mm	021163-29A	25
24 G x 150 mm		40 mm	131163-30A	10
24 G x 120 mm		40 mm	041163-30A	10
24 G x 103 mm		40 mm	021163-30A	25
24 G x 90 mm	001163-30A			25
24 G x 90 mm		30 mm	121163-30A	25
24 G x 25 mm	001163-30D			
22 G x 150 mm		40 mm	141163-30C	10
22 G x 120 mm		40 mm	131163-30C	10
22 G x 103 mm		40 mm	221163-30C	25
22 G x 90 mm	001163-30C			25
22 G x 90 mm		30 mm	021163-30C	25

**SPROTTE<sup>®</sup> needle with magnification**



Size	Without Introducer Luer Item No.	Introducer size	Sprotte Luer Item no.	PU
29 G x 90 mm		30 mm	501151-28A	25
27 G x 123 mm	231151-27A			10
27 G x 120 mm		40 mm	151151-27A	10
27 G x 103 mm		40 mm	141151-27A	25
27 G x 90 mm	161151-27A	30 mm	121151-27A	25
27 G x 70 mm		30 mm	121151-27B	25
27 G x 35 mm	111151-27A			25
27 G x 25 mm	101151-27A			25
25 G x 123 mm	251151-29A			10
25 G x 120 mm		40 mm	171151-29A	10
25 G x 103 mm		40 mm	161151-29A	25
25 G x 90 mm	521151-29A	30 mm	511151-29A	25

**Introducer SPROTTE<sup>®</sup>**

Introducer Luer for Sprotte needle



Introducer NRFit for Sprotte needle NRFit



Size	Sprotte size	Introducer Luer Item no.	Introducer NRFit Item no.	PU
0.80 x 30 mm	24 G, 25 G	021151-30L	021163-30L	25
0.80 x 40 mm		021151-30M		
1.00 x 30 mm	22 G	001151-30L	001163-30L	25
1.00 x 40 mm	22 G	001151-30M	001163-30M	25

# Studies *Sprotte needle: evidence class 1, recommendation level A*

## ■ The beginning

- Patentschrift DE 3020926 C2 „Stahlkanüle für die Spinal- und Leitungsanästhesie sowie für die Lumbalpunktion“ eingereicht 1979, Patent erteilt am 3.11.1981 Die Merkmale gegenüber der vorbekannten „Whitacre-Kanüle“: seitliche Öffnung größer als der Innendurchmesser und Spitze in Form einer Ogive, nicht Kreiskegel bzw. „pencil-point“.
- Sprotte G., Schedel R., Pajunk H., Pajunk H. Eine „atraumatische“ Universal-kanüle für einzeitige Regionalanästhesien, Reg Anaesth., Juli 1987; 10(3):104–8 (erstmalige Klassifizierung einer Spinalkanüle als „atraumatisch“)

- Hirasawa Y., Katsumi Y., Küsswetter W., Sprotte G. Experimentelle Untersuchungen zur peripheren Nervenverletzung durch Injektionsnadeln, Reg Anaesth., 1990; 13:11–15 (experimenteller Nachweis des verminderten Gewebetraumas am peripheren Nerven, histologisch und funktionell)

## ■ Historical overview of the development of spinal needles

- Calthorpe N. The history of spinal needles: getting to the point. Anaesthesia. 2004; 59:1231–1241

## ■ Evidence-based atraumatic puncture recommendations

- Rochweg B. et al. Atraumatic (pencil-point) versus conventional needles for lumbar puncture: a clinical practice guideline. BMJ Rapid Recommendations BMJ 2018; 361: k 1920
- Van de Beek D. and Brower MC. Atraumatic lumbar puncture needles: practice needs to change. Lancet 2018 Mar 24; 391(10126):1128-1129.
- Nath S. et al. Atraumatic versus conventional lumbar puncture needles: a systematic review and meta-analysis. Lancet 2018 Mar 24; 391(10126):1197-1204
- Armon C., Evans R. W. Addendum to assessment: Prevention of postlumbar puncture headaches Report of the Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology., Neurology., 2005; 65; 510
- Arendt K., Demaerschalk B. M., Wingerchuk D. M., Camann W. Atraumatic Lumbar Puncture Needles After All These Years, Are We Still Missing the Point?, The Neurologist, Volume 15, Number 1, Jan. 2009; 17–20
- American Society of Anesthesiologists Task Force on Obstetric Anesthesia. Practice guidelines for obstetric anesthesia: an updated report by the American Society of Anesthesiologists Task Force on Obstetric Anesthesia., Anesthesiology, 2007; 106:843–863
- Lavi R., Rowe J.M., Avivi I. Lumbar Puncture. It Is Time to Change the Needle, Eur Neurol, 2010; 64:108–113

## Selection of historical and special publications on the atraumatic puncture technique:

### ■ Anaesthesiology: Indication obstetrics/ caesarean section

- Cesarini M., Torrielli R., Lahaye F., Mene J. M., Cabiro C. Sprotte needle for intrathecal anaesthesia for Caesarean section: incidence of postdural puncture headache, Anaesthesia Aug. 1990; 45(8):656–8
- Ross B. K., Chadwick H. S., Mancuso J. J., Benedetti C. Sprotte Needle for Obstetric Anesthesia: Decreased Incidence of Post Dural Puncture Headache, Reg Anaesth., Jan.–Feb. 1992; 17(1):29–33

- Sears D. H., Leeman M. I., Jassy L. J., O'Donnell L. A., Allen S. G., Reisner L. S. The Frequency of Postdural Puncture Headache in Obstetric Patients: A Prospective Study comparing the 24-Gauge versus the 22-Gauge Sprotte Needle, J Clin Anesth., 1994; 6(1):42–6

- Vallejo M. C., Mandell G. L., Sabo D. P., Ramanathan S. Postdural Puncture Headache: A Randomized Comparison of Five Spinal Needles in Obstetric Patients 2000; Anesth. Analg, 2000; 91:916–20

### ■ Indication Urology / ESWL

- Harrison D. A., Langham B.T. Post-dural puncture headache: a comparison of the Sprotte and Yale needles in urological surgery, Eur J Anaesthesiol, 1994; 11:325–327
- Lim M., Cross G. D., Sold M. Postspinaler Kopfschmerz: Ein Vergleich der 24 G Sprotte-Kanüle mit einer 29 G Quincke-Kanüle, Anaesthesist, 1992; 41:539–43

### ■ Indication outpatient spinal anaesthesia

- Pittoni G., Toffoletto F., Calcarella G., Zanette G., Giron G. P. Spinal Anesthesia in Outpatient Knee Surgery: 22-Gauge Versus 25-Gauge Sprotte Needle, Anesth Analg., 1995; 81:73–79

### ■ Interdisciplinary aspects: Carry-over of tissue and cells into the spinal canal by different needle types

- Puolakka R., Andersson L. C., Rosenberg P. H. Microscopic Analysis of Three Different Spinal Needle Tips After Experimental Subarachnoid Puncture In: Regional Anesthesia and Pain Medicine, Vol 25, No 2, März–April 2000: pp 163–169

### ■ Atraumatic puncture technique reduces costs

- Tung C. E., So Y. T., Lansberg M. G. Cost comparison between the atraumatic and cutting lumbar puncture needles, Neurology., 2012; 78; 109

### ■ No deflection of the atraumatic needle tip during feed into the tissue

- Kopacz D. J., Allen H. W. Comparison of needle deviation during regional anesthetic techniques in a laboratory model, Anesth. Analg. 1995 Sep; 81(3): 630–633

- Pua U., CT-guided spinal injection. Initial experience with Sprotte tip needles, Neuroradiology., Sept. 2010; 52(9):847–50



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