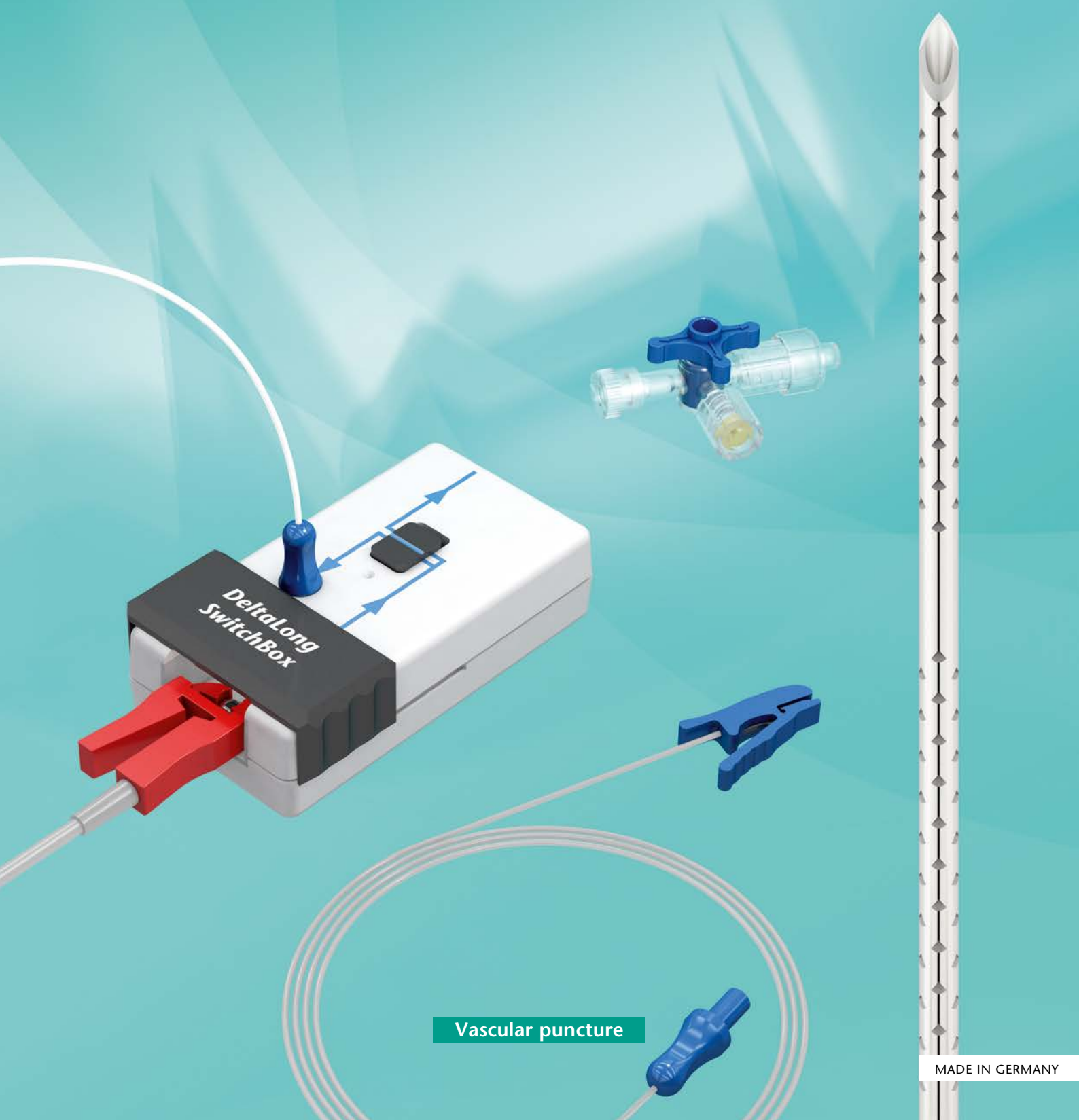
PAJUNK®

VascularSono / DeltaLong

Precise placement and radiation-free position control of the CVC



Vascular puncture

MADE IN GERMANY

VascularSono – the perfect complement

Central venous and arterial puncture under ultrasound

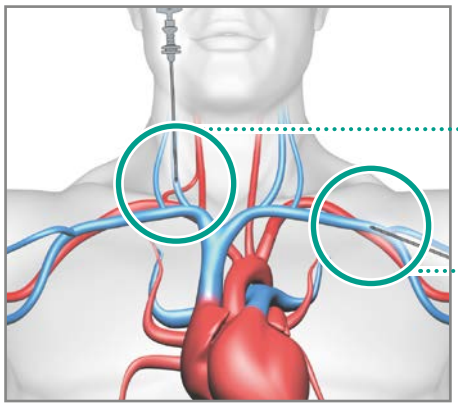
The use of ultrasound for the installation of central venous catheters is an evidence-based measure to improve patient well-being and to reduce puncture attempts. With VascularSono, PAJUNK® offers a vascular puncture cannula that has been specially developed for ultrasound placement and is characterised by its excellent echogenic properties. Thanks to the proven Cornerstone Technology, ultrasound waves are reflected very well by both the tip and the cannula shaft, even at a steep insertion angle in the in-plane as well as out-of-plane.

PATIENT SAFETY

➡ ***VascularSono:*** *cannula with excellent echogenicity*

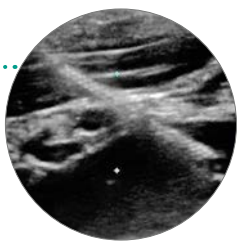
Black marking on the cannula hub makes it easier to check the position of the cannula grinding

Areas of application of the VascularSono cannula out-of-plane and in-plane



Out-of-plane view of the VascularSono in the *vena jugularis interna*

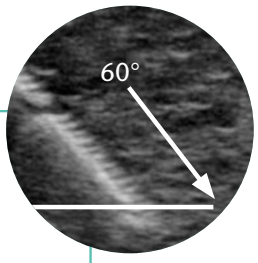
In-plane view of the VascularSono in the *vena subclavia*

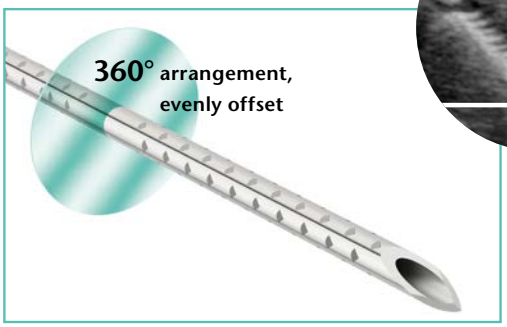


1 Schummer, Ultraschall und Lagekontrolle bei der Anlage zentraler Venenkatheter …, 2009; 682
2 Schummer, Ultraschall und Lagekontrolle bei der Anlage zentraler Venenkatheter …, 2009; 680
3 Edgcombe, Hocking, Sonographic identification of needle tip …, 2010; 35(2): 207–211

Echogenic cannula tip
Facet grinding with two inclination angles

Echogenic cannula shaft
Three-dimensional Cornerstone Reflectors





Optimum sonographic visibility of cannula shaft and tip

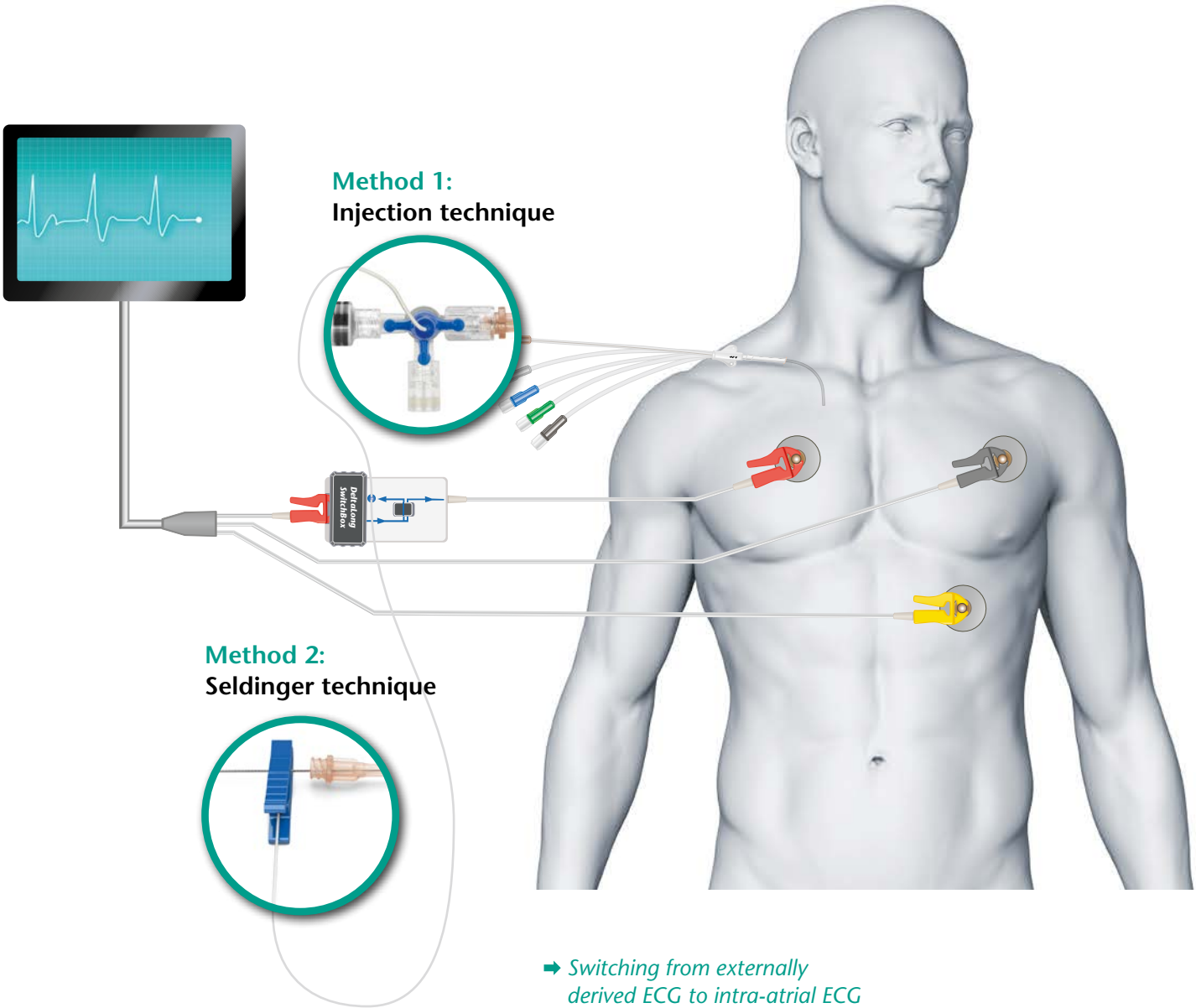
- *Reflection on 20 mm length and 360° around the cannula*
- *Echogenicity especially at steep insertion angle*
- *Clear identification independent of the insertion angle*

Three-dimensional Cornerstone Reflectors

One system – two techniques

DeltaLong – The ECG position control system

The DeltaLong ECG position control system from PAJUNK® is based on a simple basic principle: The intra-atrial ECG potentials are directly derived from the catheter tip. This enables a patient-friendly position control which can be carried out quickly, directly and without exposure to radiation.[4] PAJUNK® supports two alternative techniques for ECG derivation with DeltaLong.



➡ *Switching from externally derived ECG to intra-atrial ECG with the DeltaLong Switch-Box*

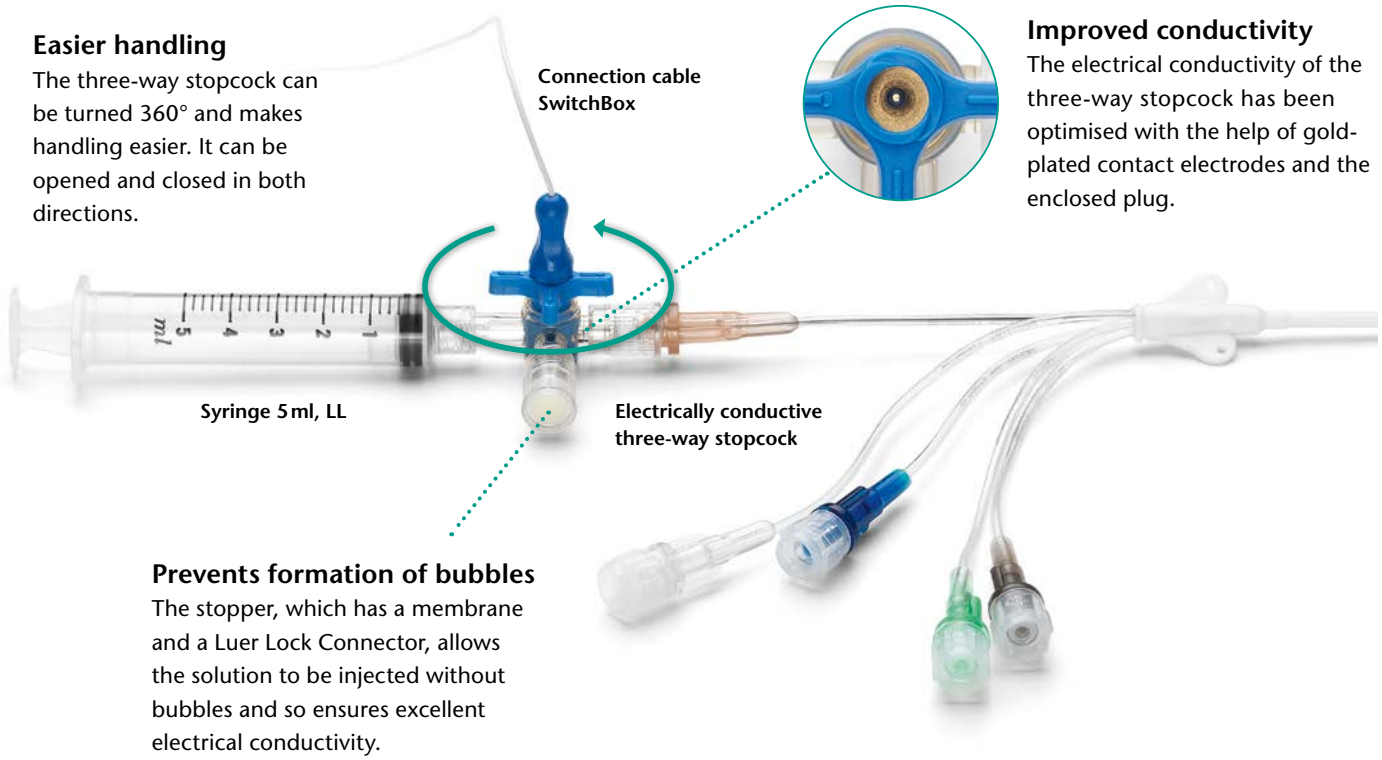
4 Weißauer, Der Cava-Katheter aus medico-legaler Sicht, 1998; 33(2): 117–8

Method 1: Injection technique

In this method, the intra-atrial ECG is derived via a physiological saline solution injected through the vein catheter.

Easier handling

The three-way stopcock can be turned 360° and makes handling easier. It can be opened and closed in both directions.



Improved conductivity

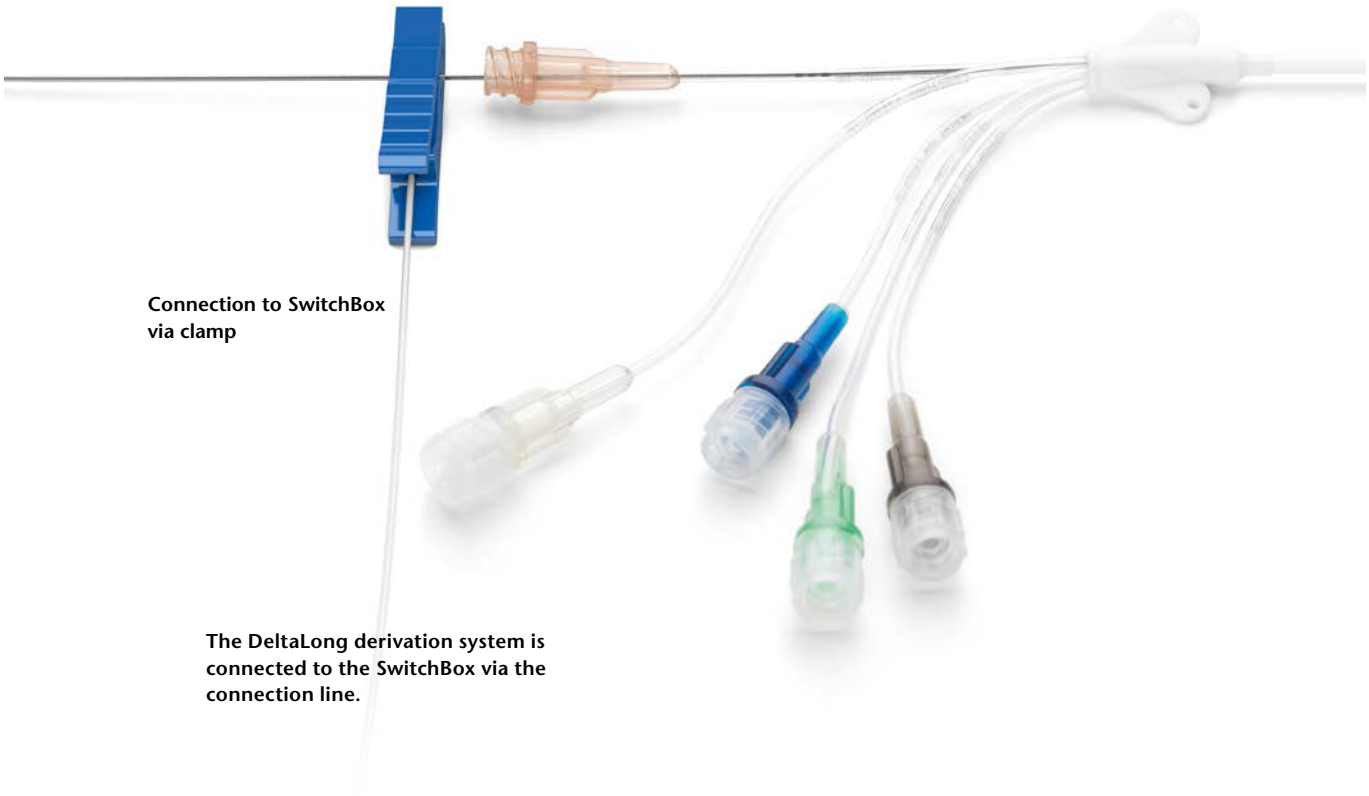
The electrical conductivity of the three-way stopcock has been optimised with the help of gold-plated contact electrodes and the enclosed plug.

Prevents formation of bubbles

The stopper, which has a membrane and a Luer Lock Connector, allows the solution to be injected without bubbles and so ensures excellent electrical conductivity.

Method 2: Seldinger technique

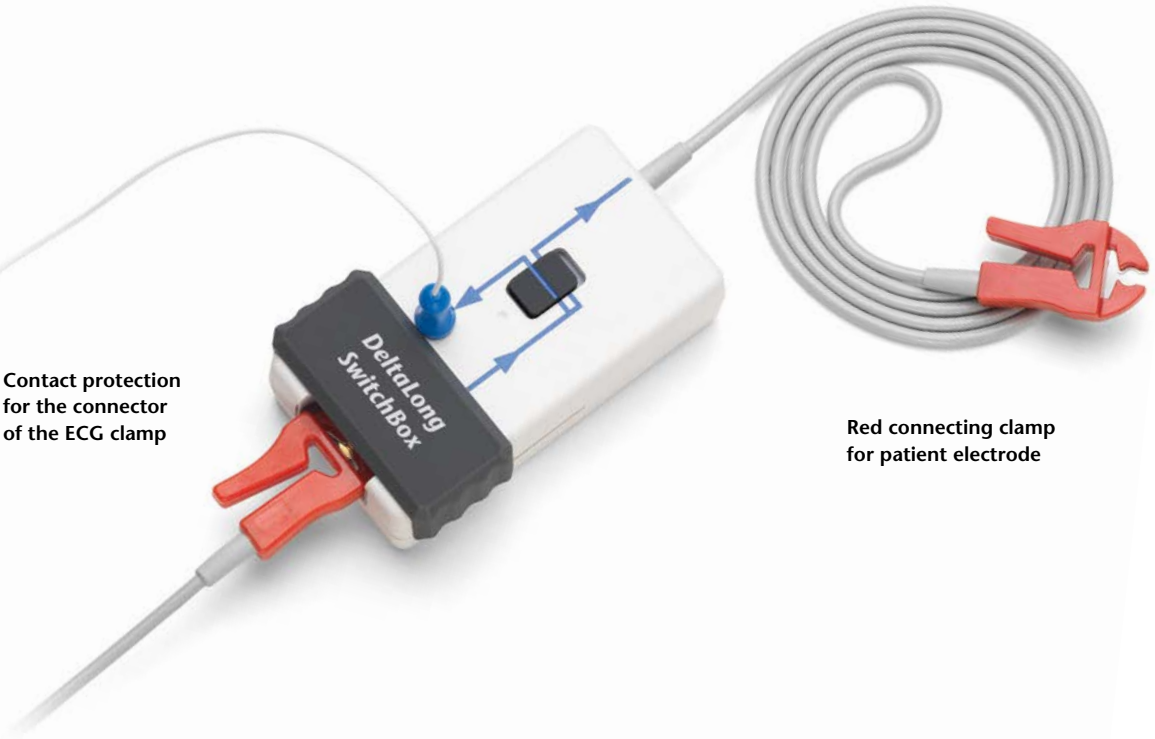
The DeltaLong terminal is connected to the horizontal Seldinger wire.



DeltaLong SwitchBox

The flexible connection

The DeltaLong SwitchBox from PAJUNK® offers the right connection and a fast, safe switching option for all common ECG monitors. With just a few simple steps it is possible to create an easy-to-use cable diverter from any standard ECG line – either for diverting a surface electrocardiogram or an intra-atrial ECG via a central venous catheter. The SwitchBox enables "seamless switching" between the two signal sources.



Advantages of the DeltaLong ECG position control system

The ECG potentials derived from the catheter tip are evident. Misalignments can be detected and corrected during placement. The time and cost of radiological position monitoring as well as the radiation exposure of the patient are eliminated.

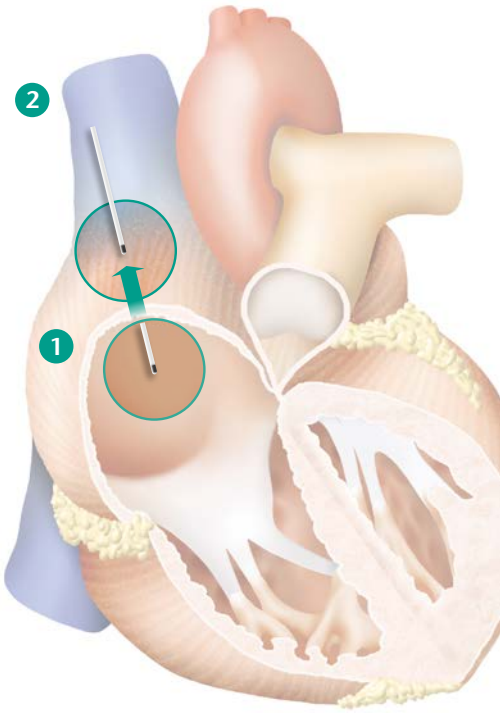
PATIENT SAFETY

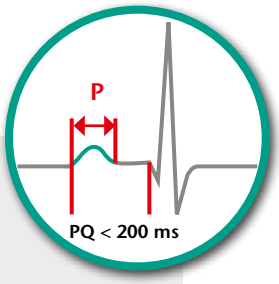
- *Faster*
- *Immediately*
- *Without radiation exposure*
- *Accepted by the DGAI (German Society for Anaesthesiology and Intensive Care Medicine)*[4]

4 Weißauer, Der Cava-Katheter aus medico-legaler Sicht, 1998; 33(2): 117–8

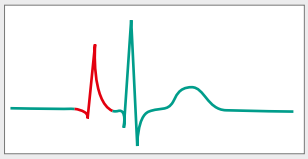
Exact position control

An ECG is transferred between the catheter tip and a surface electrode. This changes characteristically when the central venous catheter is pushed into the right atrium (P wave). The significant difference of the P wave between vena cava and atrium is the basis for the localisation of the catheter tip. When the catheter is pushed into the right atrium, the P wave 1 *increases and returns to normal when the catheter is retracted* 2 *so that the correct position can be easily verified.*[5, 6]

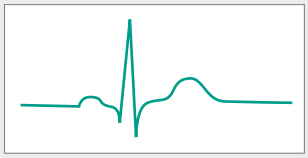




1 **The catheter tip is located in the right atrium. This can be seen in the increased P wave.**



2 **The catheter tip has been retracted from the right atrium, normalising the P wave.**



5 Karaaslan, Altinisik, Peker, Nayir, Ozmen, External jugular vein catheterization ..., 2009; 30; 50(2): 222–6
6 Kerr, Applegate, Accurate placement of the right atrial air aspiration catheter ..., 2006; 103(2): 435–8

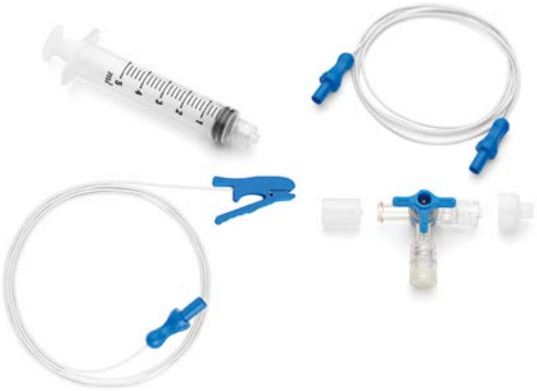
VascularSono / DeltaLong

At a glance

VascularSono

Product	Suitable for guidewires up to	Size	Item No.	PU
VascularSono				
	0.018 inch	21 G x 35 mm	1187-4F035	25
	0.018 inch	21 G x 70 mm	1187-4F070	25
	0.035 inch	18 G x 40 mm	1187-4K040	25
	0.035 inch	18 G x 70 mm	1187-4K070	25
	0.035 inch	18 G x 100 mm	1187-4K100	25

DeltaLong ECG position control system



DeltaLong kit consisting of:

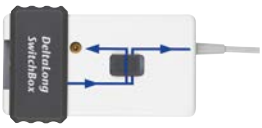
· ECG connecting cable with UNIVERSAL connector

· Luer-Lock syringe 5 ml; 3-part with silicone plunger

· 3-way stopcock, 360° rotatable, with gold-plated contact electrode and encapsulated plug

Product	Item No.	PU
DeltaLong Set for intra-atrial ECG derivation by injection technique, sterile	1151-01-100	10
DeltaLong Clamp Cable for intra-atrial ECG derivation using Seldinger technique, sterile	1151-01-008	10

DeltaLong SwitchBox



Product	Item No.	PU
DeltaLong SwitchBox	1151-01-000	1

**Studies*

- **Hansen E., Kutz N., Keyl C., Taeger K.** ZVK-Lagekontrolle durch EKG-Ableitung über den Einführdraht, Anästhesiol Intensivmed. Notfallmed. Schmerzther. 1wwqw998; 33
- **Karaaslan D., Altinisik U., Peker T.T., Nayir E., Ozmen S.** External jugular vein catheterization using 'intra-atrial electrocardiogram', Yonsei Med J. 2009; 30; 50(2): 222–6
- **Kerr R.H., Applegate R.L.** Accurate placement of the right atrial air aspiration catheter: a descriptive study and prospective trial of intravascular electrocardiography, Anesth. Analg. 2006; 103(2): 435–8
- **März P., Postel J., Zierl O.** Die Lagekontrolle des Cava-Katheters unter Verwendung der intraatrialen EKG-Ableitung, Anaesth. 1984; 33: 123–127
- **Weißauer W.** Der Cava-Katheter aus medico-legaler Sicht, Anasthesiol Intensivmed. Notfallmed. Schmerzther. 1998; 33(2): 117–8
- **Wilson R.G., Gaer J.A.R.** Right atrial electrocardiography in placement of central venous catheters, the Lancet 1988; 462–463
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- **Edgcombe H., Hocking G.** Sonographic identification of needle tip by specialists and novices: a blinded comparison of 5 regional block needles in fresh human cadavers, Reg. Anesth. Pain Med. 2010 March–April; 35(2): 207–211

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

PAJUNK® Medical Produkte GmbH
D.A.CH • 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

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