DeltaLong
Rapid, radiation-free CVC position control

Intra-atrial ECG lead
**One system – two techniques**

**The DeltaLong ECG position control system**

Positioning central venous catheters has long been a routine procedure. The correct position of the catheter tip is in front of the right atrium in the vena cava. In the past, practitioners used to perform a chest X-ray after positioning the catheter, but the intra-atrial lead now allows the position to be checked without exposing the patient to this procedure. It is faster, direct, and does not involve radiation.

The DeltaLong ECG position control system developed by PAJUNK® is based on a simple fundamental principle. The intra-atrial ECG signals are directly detected from the catheter tip. PAJUNK® offers practitioners the choice of two ECG derivation techniques when using DeltaLong:

- **Method 1: The Seldinger technique**
- **Method 2: Injection of an appropriate solution**

The DeltaLong lead system is connected to the SwitchBox by a connecting cable.
Advantages of the DeltaLong ECG position control system

- The ECG potentials derived from the catheter tip are evident. Incorrect positioning is detected and corrected during the positioning process.
- There is no longer any need to perform an X-ray to check the position, which saves time and money and avoids exposing the patient to radiation.

- Faster
- Direct
- No radiation
- Approved by the DGAi (German Society for Anaesthesiology and Intensive Care Medicine)¹

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² Karaaslan, Altinisik, Peker, Nayir, Ozen, External jugular vein catheterization ..., 2009; 30; 50(2): 222–6
³ Kerr, Applegate, Accurate placement of the right atrial air aspiration catheter ..., 2006; 103(2): 435–8
Method 1: 
The Seldinger technique

The puncture is performed after the practitioner has identified the anatomical landmarks and examined the site under ultrasound if necessary. The central venous catheter is placed using the Seldinger technique and the DeltaLong clamp is connected to the Seldinger wire in position. Once positioning has been successfully completed, the Seldinger wire is withdrawn as far as the tip of the catheter, complying with the instructions for use of the central venous catheter at all times. The direct connection to the SwitchBox then allows an intra-atrial ECG to be derived, enabling the practitioner to determine the precise position of the catheter tip.

Switching from externally derived ECG to intra-atrial ECG by means of the DeltaLong SwitchBox

Connecting the SwitchBox
The DeltaLong clamp is connected to the Seldinger wire in position.
**Method 2: Injection technique**

In this case the ECG is derived through a fluid column. The catheter is first connected with a three-way valve, which is in turn connected to the DeltaLong SwitchBox via a connecting cable. The syringe is then filled with an electrically conductive solution and connected to the DeltaLong three-way valve. When the valve is opened, the catheter can be completely filled with the electrically conductive solution. This creates a fluid column by which an intra-atrial ECG can be derived.

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**Better conductivity**
The electrical conductivity of the three-way valve has been optimised by the use of gold-plated contact electrodes and an encapsulated plug.

**Easier to use**
The three-way valve rotates through 360° for greater ease of use. It can be opened and closed in both directions.

**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.
The DeltaLong SwitchBox provides the right connection and allows fast and safe switching for all common ECG monitors. Just a few steps allow it to convert any standard ECG lead into an easy-to-use cable switch which practitioners can then use to derive a surface ECG or an intra-atrial ECG via a central venous catheter. “Switching” between the two signal sources is a seamless process.

For ease of use a SwitchBox is inserted to allow practitioners to switch between a surface ECG and an intra-atrial ECG.

The DeltaLong SwitchBox has a connection housing to prevent contact when the intra-atrial ECG is being derived. The connecting cable can only be connected when the cover is pushed back, concealing the connection plug for the ECG clamp.
DeltaLong

All the components at a glance

DeltaLong ECG position control system

DeltaLong set comprising:
· ECG connecting cable with universal connector
· Three-part 5-ml Luer Lock syringe with silicon plunger
· Three-way valve, capable of rotating through 360°, with gold-plated contact electrode and encapsulated plug

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DeltaLong SwitchBox

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