Reducing risks of misconnections in Regional Anesthesia

Connecting what belongs together
Medical device connectors for Neuraxial & Regional Anesthesia applications are changing to meet international design standards.

Medication errors during Regional Anesthesia procedures

The universally compatible Luer connector has been identified as a key element in ‘wrong route’ medication errors. Luer connectors are widely used for delivery of infusions. Literature shows that any patient having multiple access systems in place are exposed to higher risks of misconnections.¹

The increasing sensitivity to medication errors in clinical settings is visible in an increasing number of publications on this subject in Pubmed between 2000 and 2014 (Fig. 1).

ISO 80369-6 in detail

The International Organization for Standardization (ISO) has identified several medical application areas for which an ISO standard will be developed. These standards are part of the ISO 80369 series. Each standard will provide design and performance specifications for the specific connectors.²

ISO 80369-6 specifies requirements for small-bore connectors intended to be used for connections in Neuraxial applications. Neuraxial applications involve the use of medical devices intended to administer medications to neuraxial sites, wound infiltration anesthesia delivery, and other Regional Anesthesia procedures or to monitor or remove cerebro-spinal fluid for therapeutic or diagnostic purposes.²

Enhancing patient safety with NRFit®

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The yellow line shows the number of reports for the period from 2000 to 2014.
Observe. Listen. Understand. To find solutions that fit into everyday clinical life, B. Braun conducts a vivid dialog with customers. Learning the importance of clear structures, we identified five major steps that represent customary therapy processes. Each of these steps is mapped with aligned products that are dedicated towards improving comfort and achieving a higher level of safety for users and for patients.

B. Braun, as a true **System Partner**, helps to stay on top of evolving standards and their realization across multiple stakeholders, e.g., nurses, pharmacists, and anesthetists. With access to our comprehensive product portfolio in Pain Therapy and through constructive dialogue, our partners benefit from B. Braun’s know-how and expertise.

**Regional Anesthesia products with NRFit® connector**
In line with the ISO Standard for neuraxial and regional anesthesia devices, B. Braun has developed a comprehensive portfolio with NRFit® connectors for the corresponding process steps:

**PATIENT ACCESS**: Spinal, epidural and PNB needles and LOR syringes
**PREPARATION**: Filter needles, straws and syringes
**APPLICATION**: Catheter, syringes, filter, catheter connector, pump disposables

**User benefits**
- Dedicated connectors intended to help reduce the risks of misconnections
- 20% smaller in diameter
- Yellow color coding where feasible allows faster identification of regional anesthesia devices
Therapeutic and anesthetic decisions depend upon a number of factors, including the type and duration of the surgical intervention, patient status and selected postoperative patient management approaches.

Regional anesthesia can be divided into central and peripheral techniques. When a local anesthetic agent is used next to the spinal cord, this is referred to as neuraxial anesthesia. Neuraxial methods include spinal and epidural anesthesia.

Pencan® spinal needles have an atraumatic Pencil point bevel, which helps reduce PDPH. They are available in adult and pediatric sizes.

A prism included in the spinal needle hub, supports identification of CSF flashback.

Spinocan® spinal needles with Quincke bevel provide sharpness for low puncture force. A prism included in the spinal needle hub, supports identification of CSF flashback.

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Peripheral nerve blocks with NRFit®

Peripheral and plexus nerve blocks are one of the segments of regional anesthesia, where a local anesthetic agent is used next to a nerve to provide sensory and motor blockades.

Peripheral nerve blocks (PNB) can be employed for anesthesia and for postoperative analgesia in order to support early patient mobilization and rehabilitation. PNBs are also used in combination with other forms of anesthesia and where volatile anesthetics are contraindicated.

Peripheral nerve blocks with NRFit®

Stimuplex® Ultra 360® is designed to perform an ultrasound guided peripheral nerve block and nerve stimulation. Due to high visibility of the X-pattern, the needle is easy to visualize under ultrasound with few artefacts.

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Products with NRFit® connector

**PATIENT ACCESS: SINGLE SHOT PNB PRODUCTS**

- **Stimuplex® Ultra 360® needles**
  - Stimuplex® Ultra 360® is designed to perform an ultrasound guided peripheral nerve block and nerve stimulation. Due to high visibility of the X-pattern, the needle is easy to visualize under ultrasound with few artefacts.

- **Ultraplex® 360 needles**
  - Ultraplex® 360 is a non-stimulating ultrasound needle, equipped with improved product properties to perform ultrasound guided peripheral nerve blocks, when nerve stimulation is not indicated (e.g. transversus abdominal plane block).

- **Stimuplex® A**
  - Stimuplex® A is a single shot unipolar needle, providing the basic nerve stimulation-supported anesthesia for short-term interventions or additional single nerve blocks in continuous techniques.

- **Stimuplex® Onvision®**
  - Stimuplex® Onvision® is a 30° bevel single shot cannula with tip sensor. Insulated peripheral nerve block needle for use with Philips Onvision® system. Can be used in conjunction with electrical nerve stimulation and/or ultrasound respectively for precise detection of definite nerve areas.

**PATIENT ACCESS: CONTINOUS PNB PRODUCTS**

- **Contiplex® S Ultra 360® needles**
  - Contiplex® S Ultra 360® is a continuous technique needle with a 20° facet bevel, designed to perform ultrasound guided peripheral nerve blocks in combination with nerve stimulation.

- **Contiplex® Tuohy Ultra 360® needles**
  - Contiplex® Tuohy Ultra 360® is a continuous technique needle with Tuohy bevel, designed to perform ultrasound guided peripheral nerve blocks in combination with nerve stimulation.

- **Contiplex® C**
  - Contiplex® C is a patented catheter placement system with the innovative catheter-over-needle design. It is designed to help overcome the limitations associated with peripheral catheters, such as complexity of catheter placement, leakage and catheter displacement.

**PRESCRIPTION**

**PATIENT ACCESS**

**PREPARATION**

**APPLICATION**

**DISCHARGE MANAGEMENT**
Regional Anesthesia accessories and complementary portfolio
Connecting what belongs together

Preparation is a fundamental and irreplaceable part of health care practices. B. Braun preparation devices with NRFit® connectors are designed to reduce risks of wrong route medication errors and particulate contamination from the very beginning in neuraxial and regional anesthesia procedures.

Products with NRFit® connector

PREPARATION: DRAWING-UP DEVICES, FILTER AND CONNECTOR

Sterifix® filter straws
Equipment with a 5 μm filter, Sterifix® filter straws for Regional Anesthesia with a 5 μm integrated filter allow for the withdrawal of solutions whilst filtering particles.

Perifix® filter
Perifix® filters for Regional Anesthesia are pressure resistant up to 7 bar. In combination with Perifix® PinPad, a self-adhesive fixation device, they can easily be attached to the patient’s skin.

Perifix® catheter connector
Perifix® catheter connectors are available in two sizes (19G and 20 / 24G). A viewing window allows for catheter insertion control to ensure successful connection.

APPLICATION: SYRINGES AND PUMP DISPOSABLES

Sterifix® filter needle
Equipped with a 5 μm filter, Sterifix® filter needle allows for filtering particles during the injection or the withdrawal of medication for Regional Anesthesia.

Sterifix® filter straws
Sterifix® filter straws for Regional Anesthesia with a 5 μm integrated filter allow for the withdrawal of solutions whilst filtering particles.

Perifix® filter caps and NRFit® stoppers
NRFit® syringe caps are a single-sterile solution for storage and transport alongside our Omnifix® portfolio. NRFit® stoppers are there to close our NRFit® filter or Perifix® catheter connector.

Omnifix® 1-50 ml
Omnifix® 3-piece syringes are available in a broad portfolio NRFit® Slip and Lock 3-20 ml Lock versions and 50 ml syringes with NRFit® Lock connector can be used in combination with compatible syringe pumps.

Original Perfusor® Line
The Original Perfusor® Line equipped with the NRFit® connector enables compatibility to NRFit® syringes for pump applications. The translucent yellow tubes help to visually differentiate from other lines.

Infusomat® Space Lines
Dedicated Infusomat® Space Lines have a piercing spike and an NRFit® patient connector. The translucent yellow tubes help to visually differentiate from other lines.

The method of drug application depends on the chosen technique of anesthesia and on the selected post-OP pain management approach. Different options require dedicated systems. Whether the chosen method of delivery is a bolus or a continuous application, the variety of B. Braun’s portfolio ensures flexibility.

The yellow product color coding of syringes and lines helps to visually differentiate between regular and NRFit® dedicated equipment.

Dedicated pump disposables with NRFit® connectors are pressure resistant and suitable for use with compatible electronic pumps.

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### Regional Anesthesia products with NRFit®

#### Product specifications

#### SPINAL NEEDLES

**Spinocan®**

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#### EPIDURAL NEEDLES

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#### INTRODUCER

For Spinal Needles 29 G and 27 G

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### Notes

*With Spinal Introducer Needle

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[Image of Spinocan® and Perican® needles]

[Image of Pencan® needle]

[Image of Perican® Paed needle]

[Image of Epican® Paed Caudal needle]
### EPIDURAL CATHETERS

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Catheter gauge sizes according to EN ISO 9626

### ACCESSORIES & COMPLEMENTARY PORTFOLIO

#### Sterifix® filter straws

<table>
<thead>
<tr>
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<th>Particle filter (µm)</th>
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#### Sterifix® filter needle

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#### Perifix® filter

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## Regional Anesthesia products with NRFit®

### Product specifications

#### EPIDURAL ANESTHESIA SETS

**Legend**
- **20 G x 2”, ø 0.9 x 50 mm**
- **18 G x 3½”, ø 1.3 x 80 mm**
- **18 G x 2”, ø 1.3 x 50 mm** (Paed Set)
- **16 G x 3½”, ø 1.7 x 80 mm**

<table>
<thead>
<tr>
<th>Set versions</th>
<th>Perican® Tuohy needle</th>
<th>Perifix® ONE with NRFit®</th>
<th>Perifix® Standard with NRFit®</th>
<th>Perifix® Soft Tip with NRFit®</th>
<th>Perifix® Loss of Resistance syringe</th>
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Catheter gauge sizes according to EN ISO 9626

---

**Units per box**
- Complete Sets: 10
- Filter Sets: 10
- Pediatric Sets: 10
- Mini Set: 10

**Code No. (REF)**
- 4512006N-01
- 4512014N-01
- 4513002N-01
- 4514009N-01
- 4514017N-01
- 4514025N-01
- 4517309N-01
- 45140171N-01
- 45140251N-01
- 4514211N-01
- 4510305N-01
- 4514211N-01
- 4514009N-01
- 4514017N-01
- 4514025N-01
- 4517309N-01
- 45140171N-01
- 45140251N-01
- 4512006N-01
- 4512014N-01
- 4513002N-01

* Sterican® needles
- 25 G, 16 mm, ø 0.5 mm
- 21 G, 40 mm, ø 0.8 mm
- 18 G, 40 mm, ø 1.2 mm

---

**Legend**
- **20 G x 2”, ø 0.9 x 50 mm**
- **18 G x 3½”, ø 1.3 x 80 mm**
- **18 G x 2”, ø 1.3 x 50 mm** (Paed Set)
- **16 G x 3½”, ø 1.7 x 80 mm**

**Units per box**
- 10

**Code No. (REF)**
- 4512006N-01
- 4512014N-01
- 4513002N-01
### Regional Anesthesia products with NRFit®

#### Product specifications

<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
<th>Size (G) / Length (inch)</th>
<th>ø / Length (mm)</th>
<th>Bevel (º)</th>
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| **PNB NEEDLES** | only for use in combination with Onvision®/Xperius® | | | |
| **Stimuplex® Onvision® single shot needles** |                                                                                                    | 22 x 2"                 | 0.70 x 50       |           |               | 4892705NR-01  |
|                  |                                                                                                    | 22 x 3½"                | 0.70 x 80       |           |               | 4892708NR-01  |
|                  |                                                                                                    | 20 x 4"                 | 0.90 x 100      |           | 30            | 4892710NR-01  |
|                  |                                                                                                    | 20 x 4½"                | 0.90 x 120      |           |               | 4892712NR-01  |
|                  |                                                                                                    | 20 x 6"                 | 0.90 x 150      |           |               | 4892715NR-01  |

| **NERVE STIMULATOR** | | | | |
| **Stimuplex® HNS 12** | Description                                                                 |                        |               |               | Code No. (REF) |
|                    | Stimuplex® HNS 12 nerve stimulator for Stimuplex® and Contiplex® needles |                        |               |               | 4892098        |
|                    | Units per box                                                                 |                        |               |               |               |
|                    | 1                                                                           |                        |               |               |               |

---
## Regional Anesthesia products with NRFit®

### Product specifications

#### PERIPHERAL NERVE BLOCK SETS

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<tr>
<th>Set versions</th>
<th>Size (G)/Length (inch)</th>
<th>ø/Length (mm)</th>
<th>Bevel</th>
<th>Cannula Length (mm)</th>
<th>Perifix® Standard with NRFit®</th>
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#### Additional accessories:

- **Perifix® ONE catheter**, 6 lateral eyes
- **Perifix® ONE catheter connector** 19G or 20/24G
- **Perifix® PinPad filter fixation** 0.2 µm, pressure resistant up to 7 bar
- **Omnifix® three part syringe, 5 ml**

### Code Numbers

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<th>Perifix® catheter connector with NRFit®</th>
<th>Perifix® PinPad with NRFit®</th>
<th>Perifix® Filter with NRFit®</th>
<th>Omnifix® with NRFit®</th>
<th>Units per box</th>
<th>Code No. (REF)</th>
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# Regional Anesthesia products with NRFit®

## Product specifications

### SETS FOR COMBINED SPINAL AND EPIDURAL ANESTHESIA

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<th>Size (G)</th>
<th>Length (inch)</th>
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<th>Length (mm)</th>
<th>Units per box</th>
<th>Code no. (REF)</th>
<th>NRFit®</th>
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<td>Pencil-Point Cannula: Pencan®</td>
<td>27 x 5&quot;</td>
<td>0.42 x 127.5&quot;</td>
<td>10</td>
<td>4556666N-01</td>
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</table>

All sets contain

- Perifix® Standard catheter, 3 lateral eyes
- Perican® epidural cannula ø 1.3 mm, 18 G x 90 mm
- Perifix® LDR-syringe, Luer-Slip
- Perifix® epidural flat filter 0.2 μm
- Perifix® PinPad
- Perifix® catheter connector

<table>
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<tr>
<th>Espocan® and Perifix® Standard with docking System</th>
<th>Size (G)</th>
<th>Length (inch)</th>
<th>ø</th>
<th>Length (mm)</th>
<th>Units per box</th>
<th>Code no. (REF)</th>
<th>NRFit®</th>
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</thead>
<tbody>
<tr>
<td>With Quincke-Bevel: Spinocan®</td>
<td>27 x 5 ½&quot;</td>
<td>0.42 x 136.5&quot;</td>
<td>10</td>
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<tr>
<td>Pencil-Point Cannula: Pencan®</td>
<td>27 x 5 ½&quot;</td>
<td>0.42 x 138.5&quot;</td>
<td>10</td>
<td>455663N-01</td>
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</tr>
</tbody>
</table>

All sets contain

- Perifix® Soft-Tip catheter, 3 lateral eyes
- Docking system
- Perican® epidural cannula ø 1.3 mm, 18 G x 90 mm
- Perifix® LDR-syringe, Luer-Slip
- Perifix® epidural flat filter 0.2 μm
- Perifix® PinPad
- Perifix® catheter connector
LITERATURE

3. For information please visit: https://www.iso.org/standard/50734.html