



# *miniNAV*<sup>®</sup>

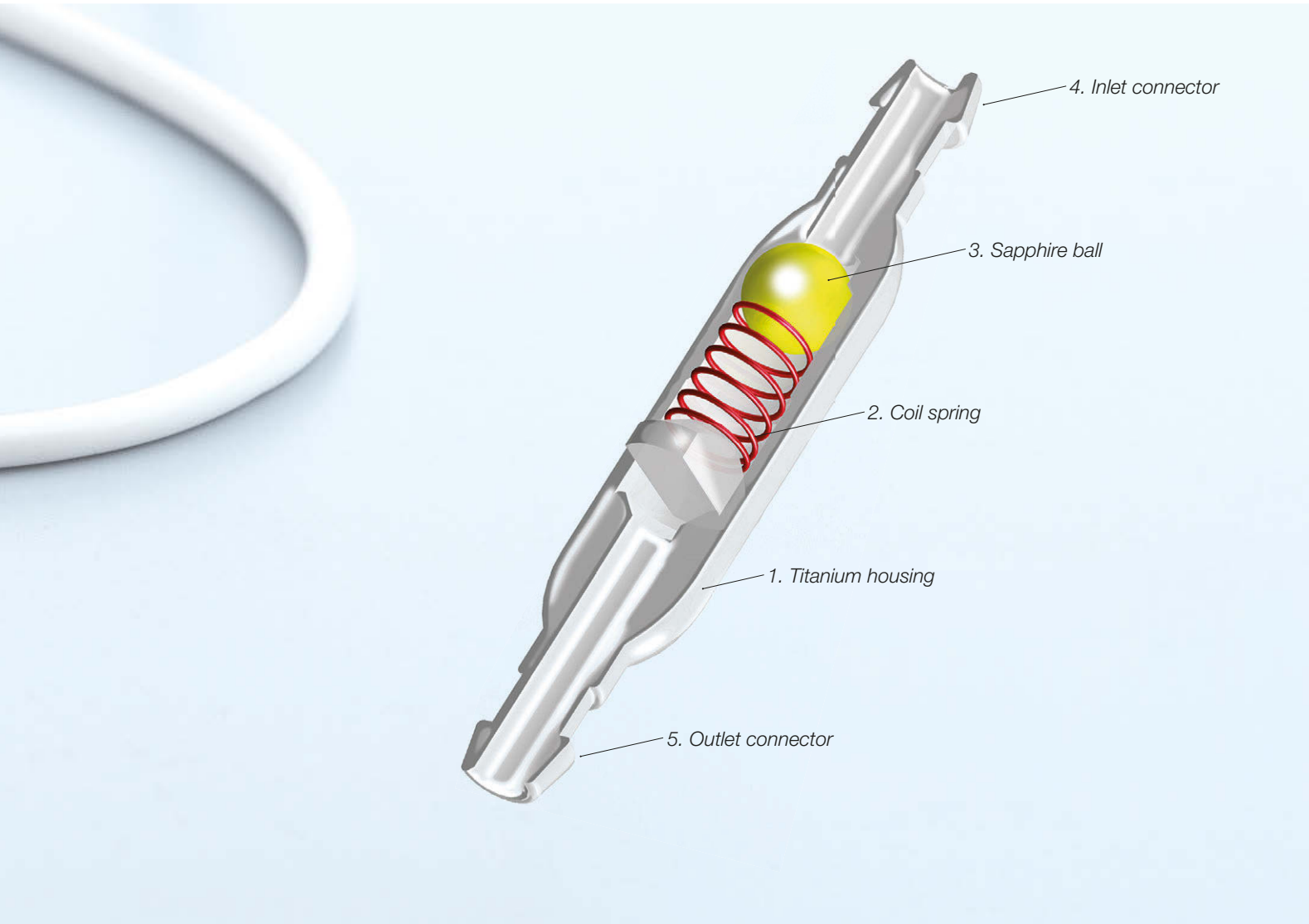
RELIABLE DRAINAGE CONTROL FOR THE  
**TREATMENT OF HYDROCEPHALUS**



## THE VALVE

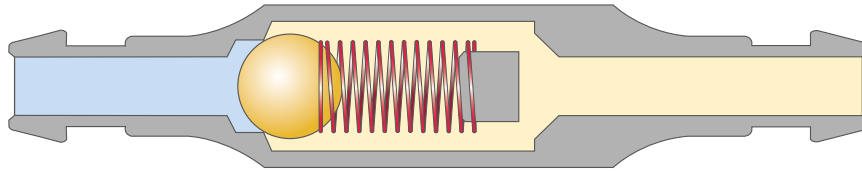
The *miniNAV* is the world's smallest differential pressure valve with reliable drainage control for the treatment of hydrocephalus.

Thanks to its special design and slim housing, it is especially suited for use in paediatric applications with premature babies and newborns. As of one year of age, however, the *miniNAV* should be combined with the gravitational valve *SA 2.0* or the adjustable gravitational valve *M.blue*. Another area of application is the treatment of bedridden patients.

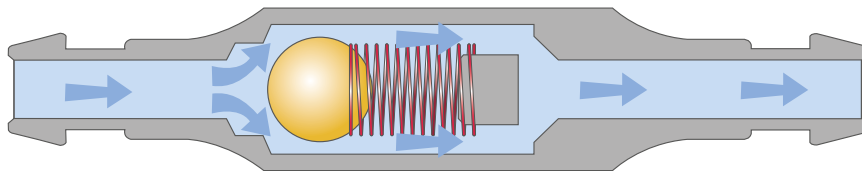


The streamlined valve enables quick and relatively simple implantation and can contribute to a reduced risk of infection.

With the special design of the titanium housing (1), the *miniNAV* achieves a maximum rate of flow with a minimal valve size, thereby reducing the risk of clogging. The coil spring (2) of this ball-cone valve determines the opening pressure, and the sapphire ball (3) ensures precise closing of the valve. The inlet (4) and outlet connectors (5) are also made of titanium.



*miniNAV closed*

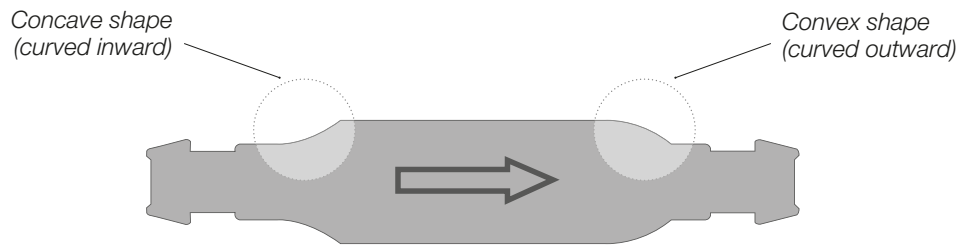


*miniNAV open*





## **OPERATING PRINCIPLE**

If the intraventricular pressure exceeds the valve opening pressure, the spring force that otherwise holds the ball-cone valve closed is overcome.

The spring is compressed, and the ball moves out of the cone, opening up a gap for fluid drainage.



*miniNAV with pressure rating 5 cmH<sub>2</sub>O*

Pressure rating (cmH <sub>2</sub> O)	<i>miniNAV</i> coding in the X-ray image
0	
5	
10	
15	

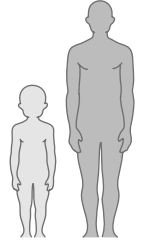
## SELECTION

The *miniNAV* is available in four different pressure ratings.

Each pressure rating can be identified post-operatively in an X-ray image based on the housing shape of the valve.

For example, if the valve has a concave (curved inward) shape on the proximal end and a convex (curved outward) shape on the distal end, it has a pressure rating of 5 cmH<sub>2</sub>O.

· miniNAV



±8.9 mm±  
miniNAV

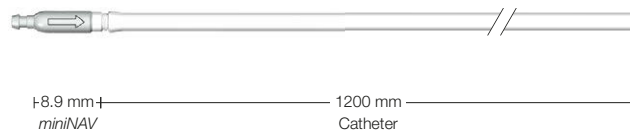
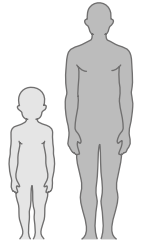
Connector:  $d_o = 1.9$  mm  
Valve:  $d_o = 2.8$  mm

Scale 1:1

Order No.	Pressure rating (cmH <sub>2</sub> O)
<b>FV658T</b>	<b>0</b>
<b>FV659T</b>	<b>5</b>
<b>FV660T</b>	<b>10</b>
<b>FV661T</b>	<b>15</b>

# miniNAV<sup>®</sup> with catheter

· miniNAV with catheter



Connector:  $d_o = 1.9$  mm  
Valve:  $d_o = 2.8$  mm  
Catheter:  $d_i = 1.2$  mm  
 $d_o = 2.5$  mm

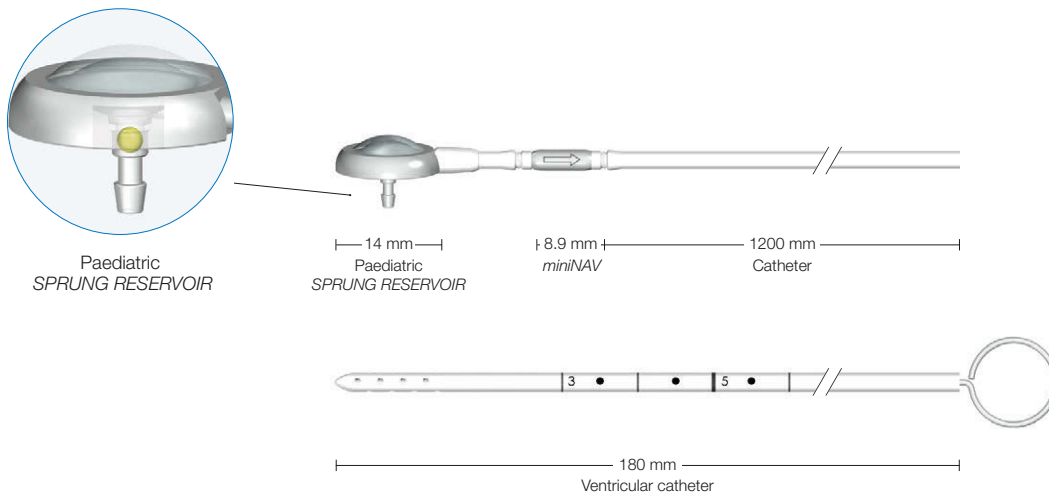
Scale 1:1

Order No.	Pressure rating (cmH <sub>2</sub> O)
<b>FV662T</b>	<b>0</b>
<b>FV663T</b>	<b>5</b>
<b>FV664T</b>	<b>10</b>
<b>FV665T</b>	<b>15</b>

# miniNAV® Shunt System with paediatric SPRUNG RESERVOIR

- miniNAV with paediatric SPRUNG RESERVOIR\* and catheter
- Ventricular catheter with mandrel

\* Pumpable reservoir for controlling the patency of both the ventricular catheter and the distal drainage component.



Connector:  $d_o = 1.9 \text{ mm}$   
 Valve:  $d_o = 2.8 \text{ mm}$   
 Catheter:  $d_i = 1.2 \text{ mm}$   
 $d_o = 2.5 \text{ mm}$

Scale 1:1

## Standard pressure rating

Order No.	Pressure rating (cmH <sub>2</sub> O)
<b>FV692T</b>	<b>0</b>
<b>FV693T</b>	<b>5</b>
<b>FV694T</b>	<b>10</b>
<b>FV695T</b>	<b>15</b>

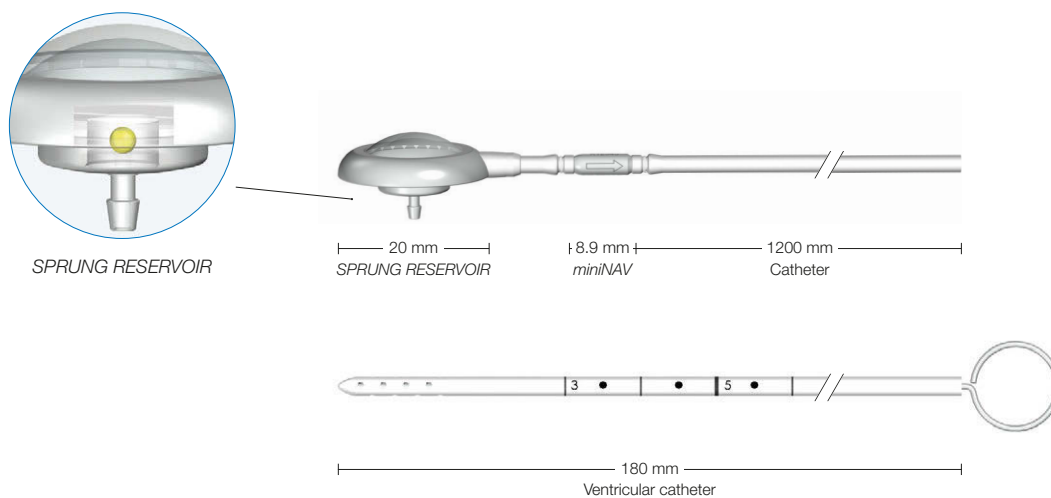


# miniNAV® Shunt System with SPRUNG RESERVOIR



- miniNAV with SPRUNG RESERVOIR\* and catheter
- Ventricular catheter with mandrel

\* Pumpable reservoir for controlling the patency of both the ventricular catheter and the distal drainage component.



Connector:  $d_o = 1.9$  mm  
 Valve:  $d_o = 2.8$  mm  
 Catheter:  $d_i = 1.2$  mm  
 $d_o = 2.5$  mm

Scale 1:1

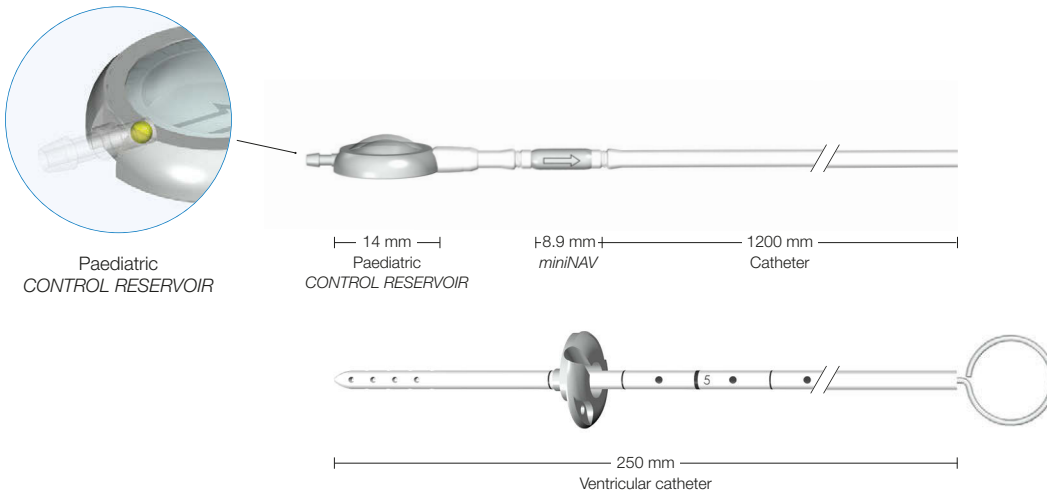
## Standard pressure rating

Order No.	Pressure rating (cmH <sub>2</sub> O)
<b>FV670T</b>	<b>0</b>
<b>FV671T</b>	<b>5</b>
<b>FV672T</b>	<b>10</b>
<b>FV673T</b>	<b>15</b>

# miniNAV® Shunt System with paediatric CONTROL RESERVOIR

- miniNAV with paediatric CONTROL RESERVOIR\* and catheter
- Ventricular catheter with mandrel and paediatric burrhole deflector

\* Pumpable reservoir for controlling the patency of both the ventricular catheter and the distal drainage component.



Connector:  $d_o = 1.9$  mm  
 Valve:  $d_o = 2.8$  mm  
 Catheter:  $d_i = 1.2$  mm  
 $d_o = 2.5$  mm

Scale 1:1

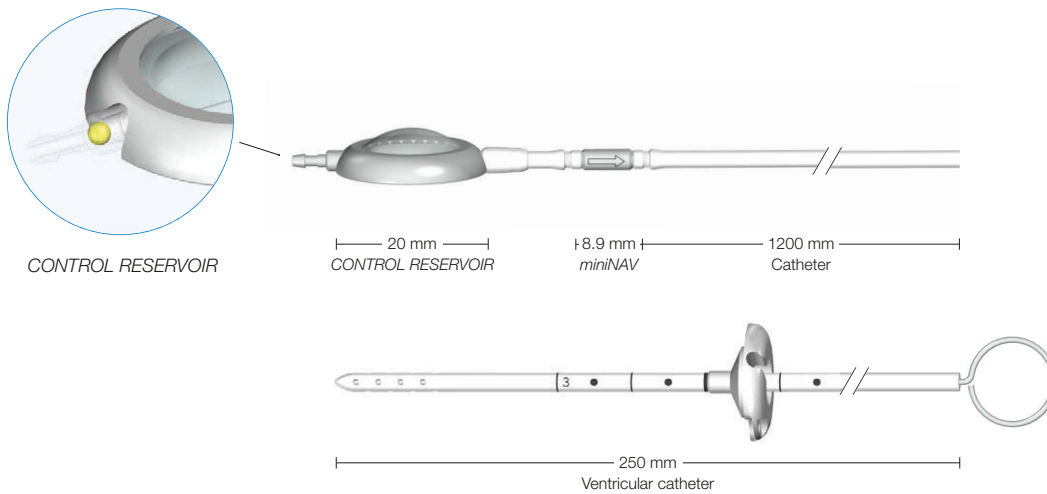
Order No.	Pressure rating (cmH <sub>2</sub> O)
<b>FV696T</b>	<b>0</b>
<b>FV697T</b>	<b>5</b>
<b>FV698T</b>	<b>10</b>
<b>FV699T</b>	<b>15</b>

# miniNAV® Shunt System with CONTROL RESERVOIR



- miniNAV with CONTROL RESERVOIR\* and catheter
- Ventricular catheter with mandrel and burrhole deflector

\* Pumpable reservoir for controlling the patency of both the ventricular catheter and the distal drainage component.



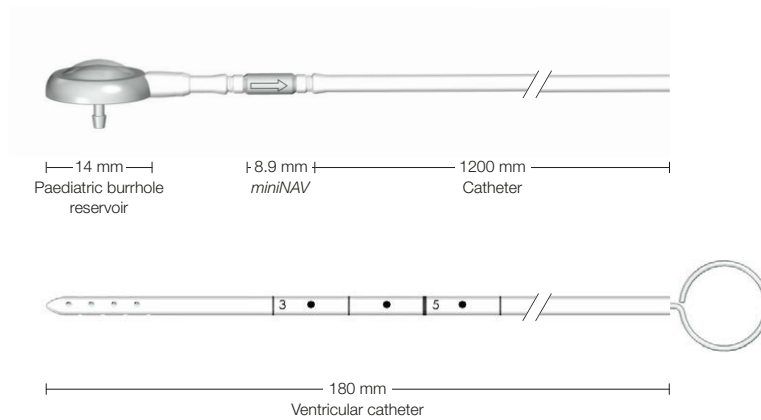
Connector:  $d_o = 1.9$  mm  
 Valve:  $d_o = 2.8$  mm  
 Catheter:  $d_i = 1.2$  mm  
 $d_o = 2.5$  mm

Scale 1:1

Order No.	Pressure rating (cmH <sub>2</sub> O)
<b>FV674T</b>	<b>0</b>
<b>FV675T</b>	<b>5</b>
<b>FV676T</b>	<b>10</b>
<b>FV677T</b>	<b>15</b>

# miniNAV® Shunt System with paediatric burrhole reservoir

- miniNAV with paediatric burrhole reservoir and catheter
- Ventricular catheter with mandrel



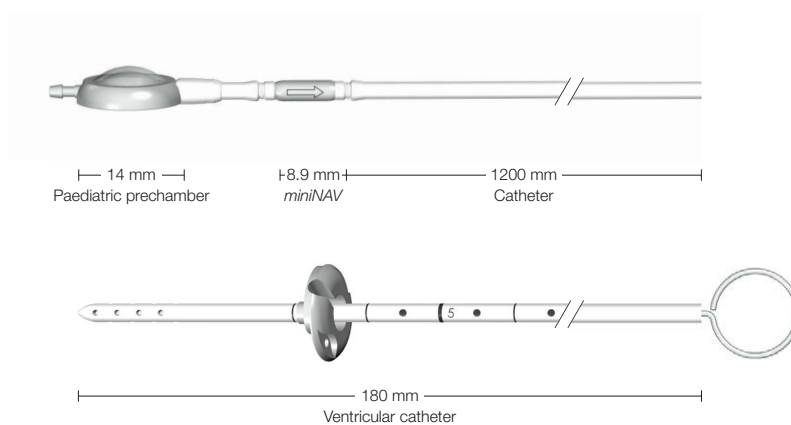
Connector:  $d_o = 1.9$  mm  
 Valve:  $d_o = 2.8$  mm  
 Catheter:  $d_i = 1.2$  mm  
 $d_o = 2.5$  mm

Scale 1:1

Order No.	Pressure rating (cmH <sub>2</sub> O)
<b>FV682T</b>	<b>0</b>
<b>FV683T</b>	<b>5</b>
<b>FV684T</b>	<b>10</b>
<b>FV685T</b>	<b>15</b>

# miniNAV® Shunt System with paediatric prechamber

- miniNAV with paediatric prechamber and catheter
- Ventricular catheter with mandrel and paediatric burrhole deflector



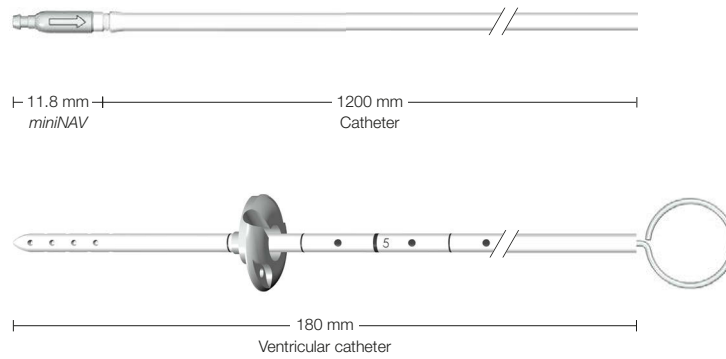
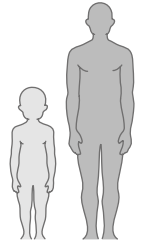
Connector:  $d_o = 1.9$  mm  
 Valve:  $d_o = 2.8$  mm  
 Catheter:  $d_i = 1.2$  mm  
 $d_o = 2.5$  mm

Scale 1:1

Order No.	Pressure rating (cmH <sub>2</sub> O)
<b>FV678T</b>	<b>0</b>
<b>FV679T</b>	<b>5</b>
<b>FV680T</b>	<b>10</b>
<b>FV681T</b>	<b>15</b>

# miniNAV® Shunt System

- miniNAV with catheter
- Ventricular catheter with mandrel and paediatric burrhole deflector



Connector:  $d_o = 1.9$  mm  
 Valve:  $d_o = 2.8$  mm  
 Catheter:  $d_i = 1.2$  mm  
 $d_o = 2.5$  mm

Scale 1:1

Order No.	Pressure rating (cmH <sub>2</sub> O)
<b>FV666T</b>	<b>0</b>
<b>FV667T</b>	<b>5</b>
<b>FV668T</b>	<b>10</b>
<b>FV669T</b>	<b>15</b>

# miniNAV<sup>®</sup> with paediatric prechamber

· miniNAV with paediatric prechamber



— 14 mm —  
Paediatric prechamber

— 11.8 mm —  
miniNAV

Connector:  $d_o = 1.9$  mm  
Valve:  $d_o = 2.8$  mm  
Catheter:  $d_i = 1.2$  mm  
 $d_o = 2.5$  mm

Scale 1:1

Order No.	Pressure rating (cmH <sub>2</sub> O)
<b>FV690T</b>	<b>0</b>
<b>FV686T</b>	<b>5</b>
<b>FV688T</b>	<b>10</b>
<b>FV691T</b>	<b>15</b>



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