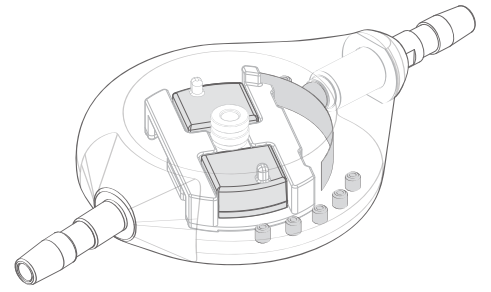


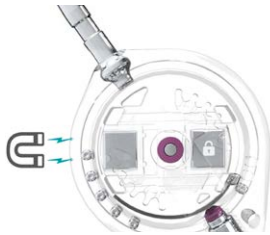
# Polaris<sup>®</sup>

The first MRI-stable  
adjustable valve



# Polaris<sup>®</sup> valve

As the first MRI-stable adjustable valve, **Polaris<sup>®</sup>** has been designed with patients' safety in mind. It offers precision and reliability for greater protection to the patient and more confidence for the clinicians.



## Safety

- Patented magnetic lock for MRI-stability (up to 3 T)
- Transparent body to visually confirm the pressure setting prior to implantation



## Precision & reliability\*

- Ball-in-cone design and flat spring mechanism
- 80,000 + Polaris valve implanted



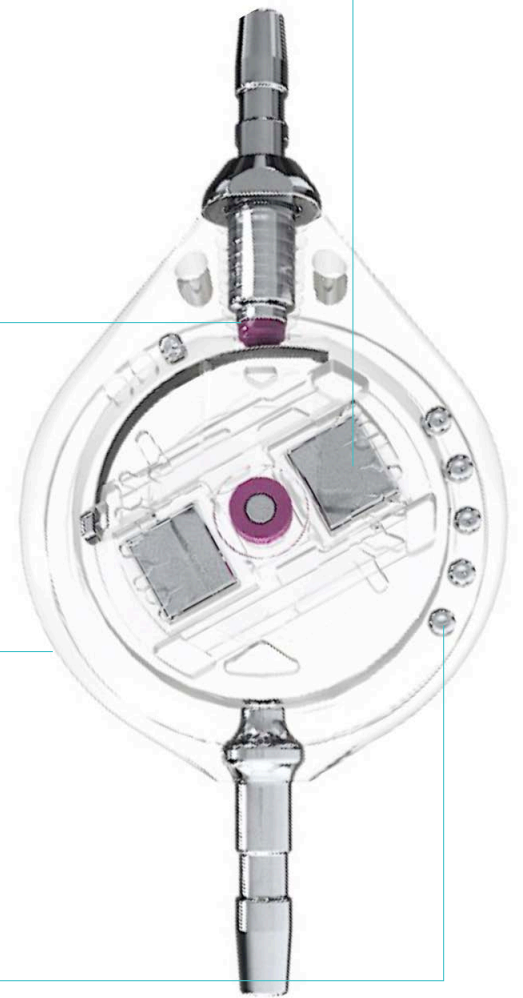
## Comfort for the patient

- Programmable in any patient position
- Low profile valve



## Direct pressure reading

- Indicator light aligns with the pressure value on the locator ring



Polaris<sup>®</sup> video

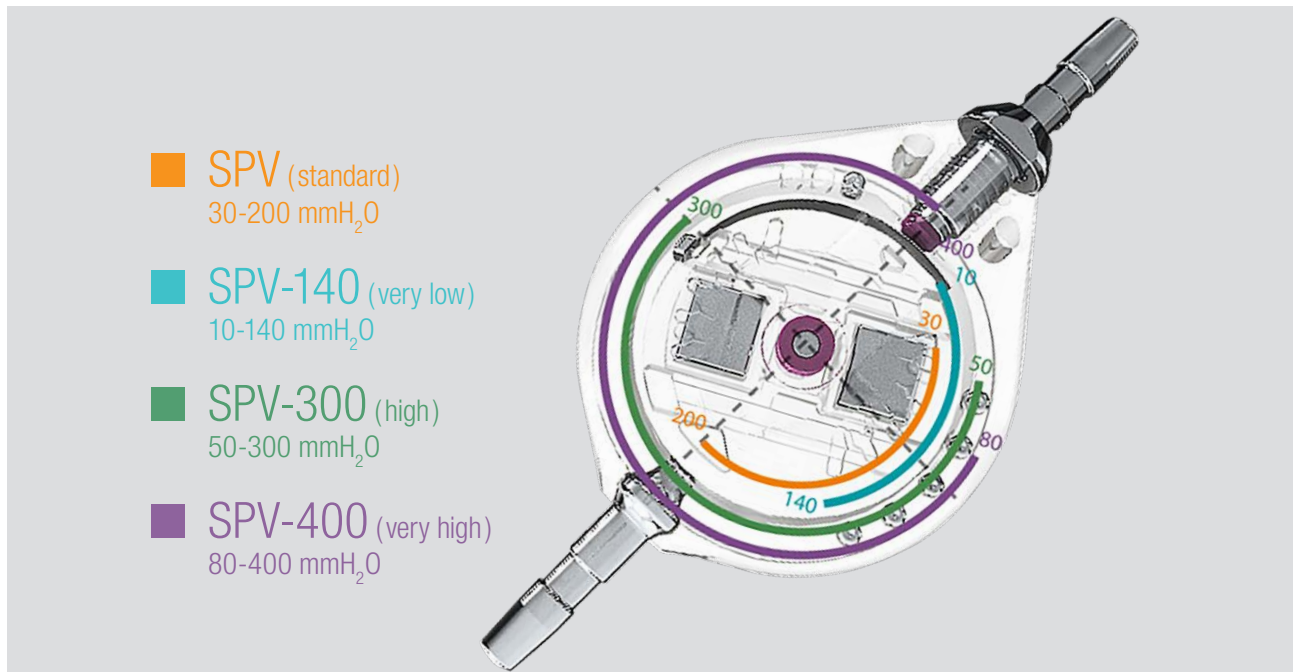
The Polaris<sup>®</sup> valve can be associated with SiphonX<sup>®</sup>, an anti-siphon device, which adds 200 mmH<sub>2</sub>O in vertical position.

\*Example: for a pressure of 200 mmH<sub>2</sub>O, 10 ml/h, the precision is +/-30 mmH<sub>2</sub>O.  
For the other pressures and the measurement protocol, please refer to the Instruction For Use.  
Well-known ball-in-cone and flat spring mechanism used for over 15 years on Polaris range. Refer to Polaris CER410 document.

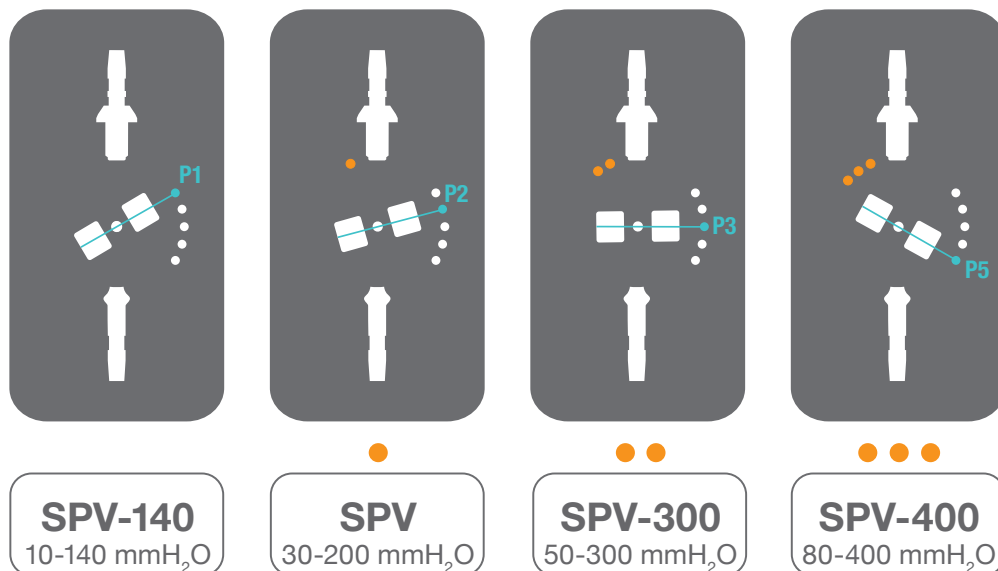
# A Range for Various Clinical Needs

Three special pressure variants complete the standard model (SPV, 30-200 mmH<sub>2</sub>O) to cover a large panel of clinical needs.<sup>(1,2)</sup>

- 4 pressure ranges from 10 to 400 mmH<sub>2</sub>O (standard, very low, high and very high pressure)
- Adjustable valve thanks to the magnetic rotor
- 5 pressure settings per range



## Identifying the valve model and confirming the pressure setting (P1-P5) with an X-Ray



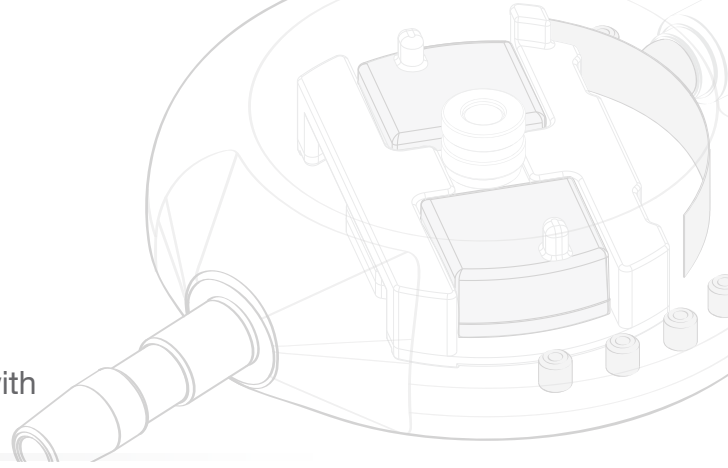
1. Bergsneider, M., Miller, C. *et al.*, 2008. Surgical Management of Adult Hydrocephalus - Neurosurgery - 62, 643-660.

2. Takahashi, Y., 2001 - Withdrawal of shunt systems - clinical use of the programmable shunt system and its effect on hydrocephalus in children. Child's Nervous Syst. 17(8), 472-477.



# Guided and Easy Valve Adjustment

With the new **Electronic Compass**, the Polaris® adjustment kit makes the valve adjustment intuitive and easier in any position by guiding the clinician with clear and simple instructions from the device.



**Locator**  
Location of the valve

**Electronic Compass**  
Locates the valve's magnetic center and pressure setting in any patient position

**Mechanical Compass**  
Locate's the valve magnetic center and pressure setting

**Magnet**  
Unlocks the valve and allows adjustment to desired setting



# Recognized Safety and Efficiency



## The Journal of Neurosurgery

**“This study demonstrated that only the Sophysa Polaris valve retained the pressure settings after exposure to 3-Tesla static and radiofrequency magnetic field”.**

Inoue T., Kuzu Y., *et al.* The Effect of 3-Tesla Magnetic Resonance Imaging on Various Pressure-Programmable Shunt Valves. *The journal of neurosurgery: pediatrics* 2, 2005, 103: 163-165.

## Child's Nervous System

**“This new shunt device offers the diagnostic benefit of high field magnetic resonance imaging in shunt dependant patients who need an adjustable valve”.**

Lüdemann W., Rosahl S., *et al.* Reliability of a new adjustable shunt device without the need for readjustment following 3-Tesla MRI. *Child's nervous system*, 2005, 21: 227-229.

## Child's Nervous System

**“The Polaris valve [...] offers the advantage of remaining unmodified during exposure to MRI machines or other external magnets as we observed”.**

Martinez-Lage J., Almagro M. J., *et al.* Management of Neonatal Hydrocephalus: feasibility of use and safety of two programmable (Sophy and Polaris) valves. *Child's nervous system*, 2008, 24: 549-556.

## Cerebrospinal Fluid Research

**“The Polaris valve is a reliable, adjustable valve. [...] the Polaris cannot be accidentally re-adjusted by an external magnetic field”.**

Allin D., Czosnyka M., *et al.* Investigation of the hydrodynamics properties of a new MRI-resistant programmable hydrocephalus shunt. *Cerebrospinal fluid research*, 2008, 21: 5-8.

## Child's Nervous System







**“The settings of the Polaris valve could not be altered by any magnetic toy at any distance, due to its architecture”.**

Zuzack T., Balmer B., *et al.* Magnetic toys: forbidden for pediatric patients with certain programmable shunt valves? *Child's nervous system*, 2009, 25: 161-164.

## Neurol. Med. Chir. (Tokyo)

**“The Polaris valves [...] were immune to unintentional reprogramming by the portable game machine”.**

Nakashima K., Nakajo T. *et al.* Programmable Shunt Valves: In Vitro Assessment of Safety of the Magnetic Field Generated by a Portable Game Machine. *Neurol. Med. Chir. (Tokyo)*, 2011, 51, 635-638.

	Reference	Designation	Position				
	<b>SPV</b>	<b>Polaris® Adjustable Valve, 30-200</b>	<b>30</b>	<b>70</b>	<b>110</b>	<b>150</b>	<b>200</b>
	SPV-140	Polaris® Adjustable Valve, 10-140	10	40	80	110	140
	SPV-300	Polaris® Adjustable Valve, 50-300	50	100	150	220	300
	SPV-400	Polaris® Adjustable Valve, 80-400	80	150	230	330	400
			Pressure (mmH <sub>2</sub> O)				
	<b>SPVA</b>	<b>Polaris® Adjustable Valve, 30-200, Antechamber</b>	<b>30</b>	<b>70</b>	<b>110</b>	<b>150</b>	<b>200</b>
	SPVA-140	Polaris® Adjustable Valve, 10-140, Antechamber	10	40	80	110	140
	SPVA-300	Polaris® Adjustable Valve, 50-300, Antechamber	50	100	150	220	300
	SPVA-400	Polaris® Adjustable Valve, 80-400, Antechamber	80	150	230	330	400
			Pressure (mmH <sub>2</sub> O)				
	SPVB	Polaris® Adjustable Valve, 30-200, Burr-Hole Reservoir, (30, 70, 110, 150, 200 mmH <sub>2</sub> O)					
	SPV-SX	Polaris® Adjustable Valve, 30-200, SiphonX®					
	SPV140-SX	Polaris® Adjustable Valve, 10-140, SiphonX®					
	SPVA-SX	Polaris® Adjustable Valve, 30-200, Antechamber, SiphonX®					
	SPVA140-SX	Polaris® Adjustable Valve, 10-140, Antechamber, SiphonX®					
	SPVB-SX	Polaris® Adjustable Valve, 30-200, Burr Hole Reservoir, SiphonX®					
	SPV-2010	Polaris® SPV Kit					
	SPVA-2010	Polaris® SPVA Kit					
	SPVB-2010	Polaris® SPVB Kit					
	PAK2	Polaris® Adjustment Kit-2 (includes Locator PAK2-LI, Compass PAK2-RI, Magnet PAK2-SI and a Polaris® demo valve SPV-DEMO-00)					
	PAK3-ERI	Electronic Compass					