

DualSwitch™ Valve

Gravitational valve systems for the treatment of hydrocephalus



Aesculap Neurosurgery

Aesculap and MIETHKE

Alliance for Innovation



Aesculap AG, Tuttlingen, Germany

When two strong partners combine their know-how, it often leads to innovative and groundbreaking solutions which could not be achieved independently by either of the partners.

Following this philosophy, Aesculap and MIETHKE have been working together since 1993. Our aim was and still is to develop better solutions for the complex treatment of hydrocephalus.

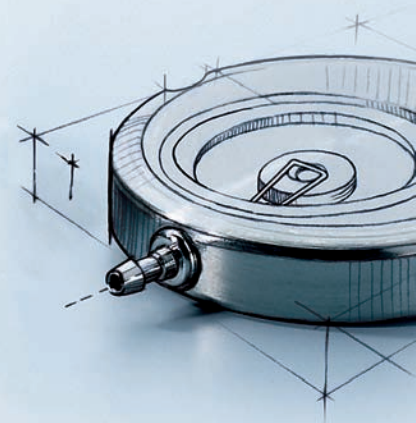
The *DualSwitch™ Valve* was the first gravitational valve developed by MIETHKE. It combines a unique dual-chamber design with a gravitational component to provide both low and high pressures in one valve. The *DualSwitch Valve* is especially useful in lumbar applications where strong, durable valves are needed. With the *DualSwitch Valve*, your lumbar shunt patients can also benefit from a gravitational valve.

DualSwitch Valve Features and Benefits

- Unique gravitational technology provides increased resistance as patients become upright, greatly reducing or eliminating overdrainage.
- Enables the surgeon to use different opening pressures for the supine and standing positions, managing overdrainage complications and patient discomfort.
- Titanium housing allows the *DualSwitch Valve* to be made extremely durable, which is crucial for lumbar placement.
- Large valve chamber design allows for large CSF areas and large flow volumes to help reduce the risk of obstruction.
- Available in different pressure combinations to help manage the complex needs of different patients.

“Our task is to understand the needs of both the patient and the surgeon, so that we may find the best solutions.”

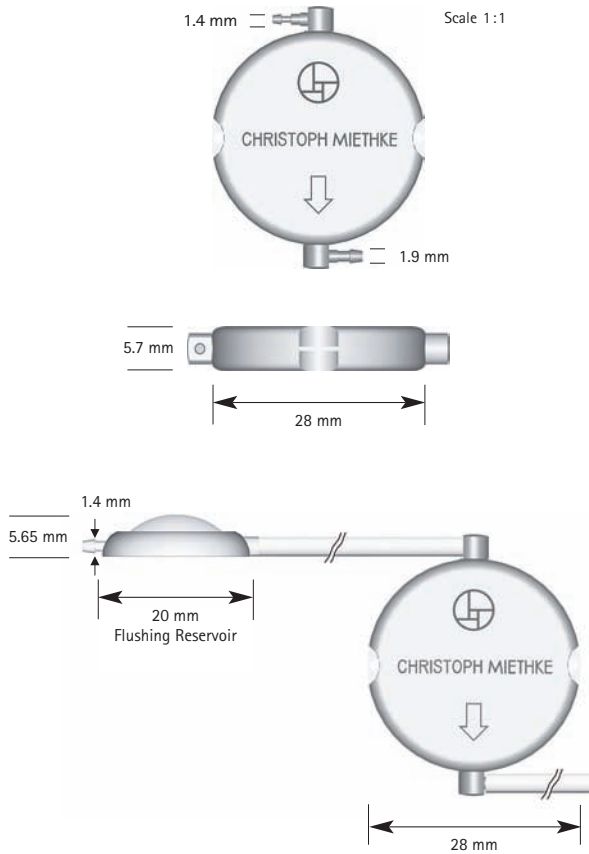
—Christoph Miethke (pictured right)



DualSwitch™ Valve Pressure Selection

The DualSwitch Valve is available separately or with integrated catheters and reservoirs.

See Hydrocephalus Management Systems Brochure (DOC447) for details and ordering information.



The DualSwitch Valve is available in different pressure level settings. Each pressure level is specially coded, enabling the valve to be identified on post-operative x-rays. Refer to product IFU for more information.

Opening Pressure horizontal/vertical (cm H ₂ O)	X-ray marker code DualSwitch Valve
5 / 30	
5 / 40	
5 / 50	
10 / 30	
10 / 40	
10 / 50	
13 / 30	
13 / 40	
13 / 50	



DualSwitch Valve Pressure Selection

Recommended settings only; may vary according to patient and medical history.

Height of Patient	Recommended Valve
Up to 5' 3"	10/30 cm H ₂ O
5' 3" – 5' 11"	10/40 cm H ₂ O
Over 5' 11"	10/50 cm H ₂ O

- The taller the patient, the higher the pressure level of the gravitational unit to be selected.
- The shorter, more immobile or more overweight the patient, the lower the pressure level of the gravitational unit.

DualSwitch™ Valve

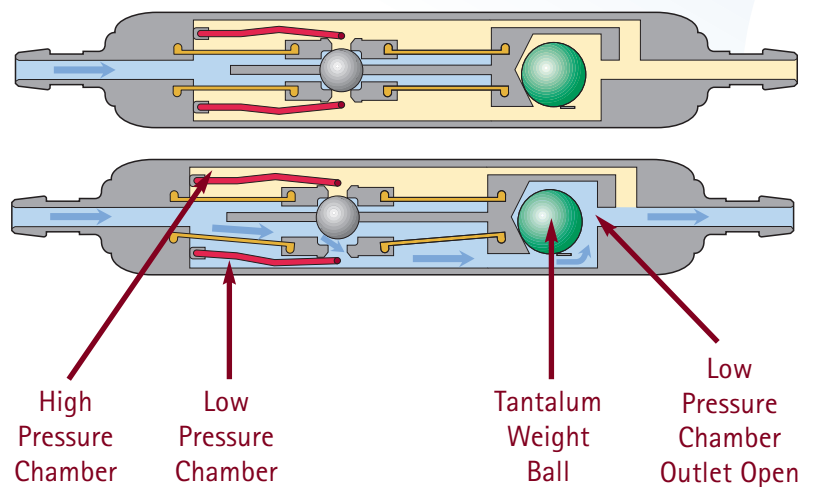
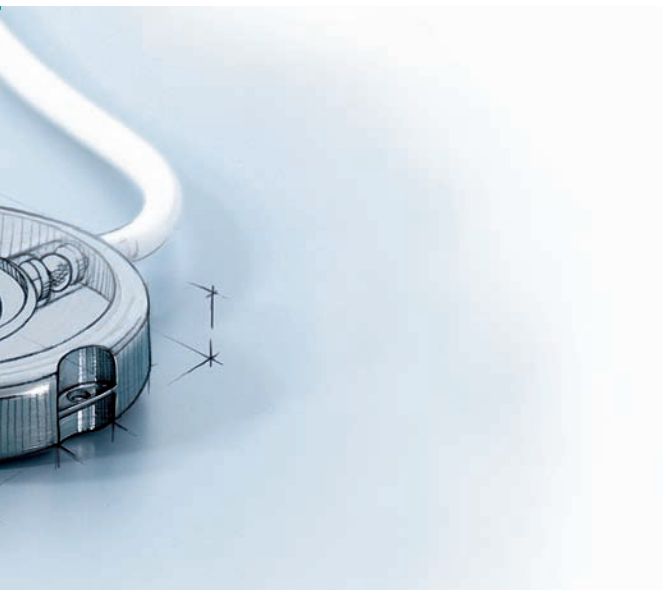
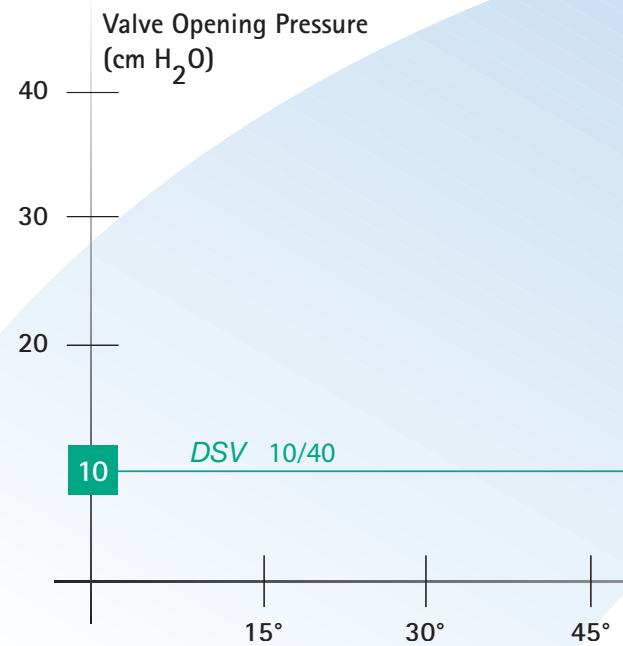
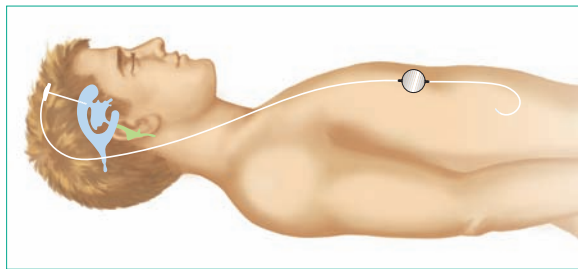
Function

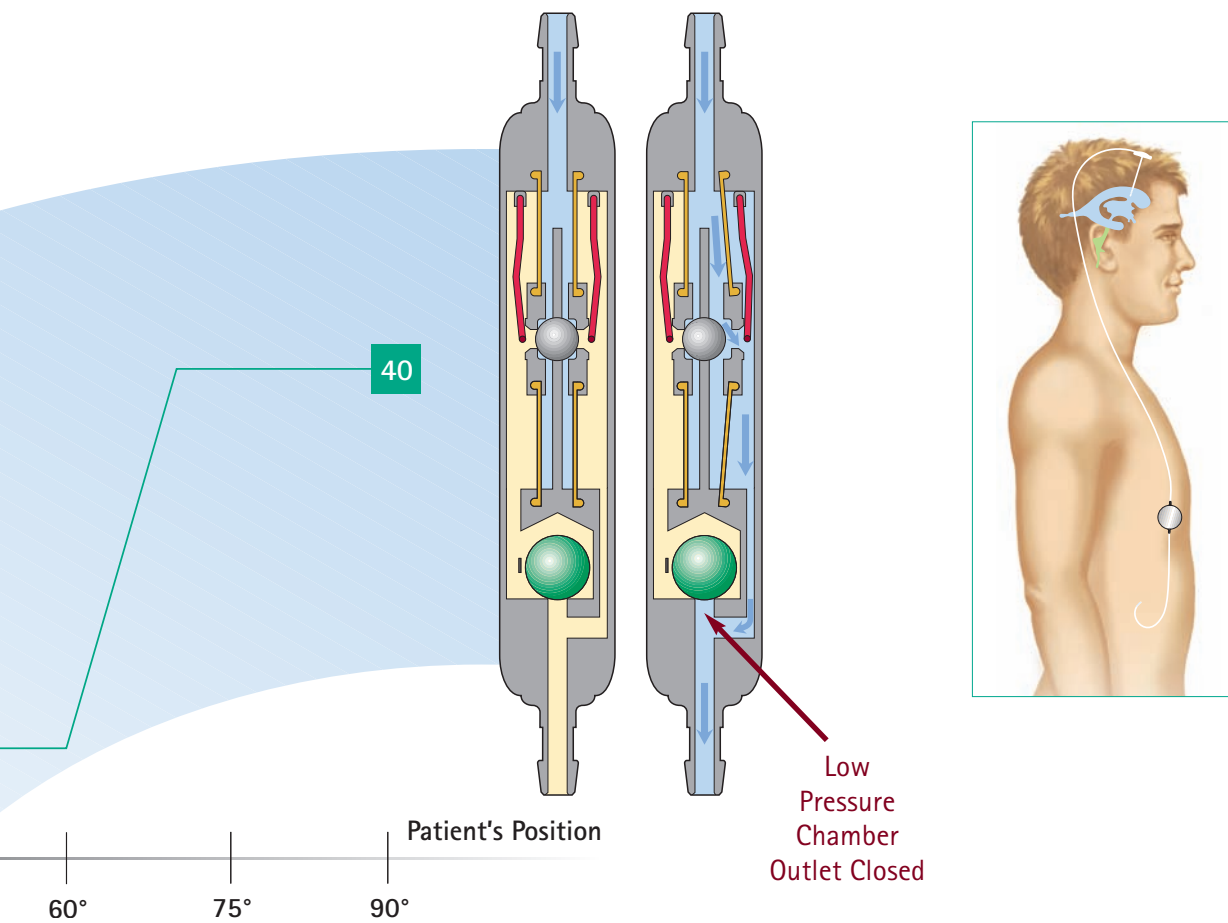
For proper function of the gravitational unit, the DualSwitch Valve must be implanted in line with the patient's body axis.

Supine Function

When the patient is in the lying position, intraventricular pressure is maintained by the low pressure chamber of the *DualSwitch Valve*.

- The low-pressure setting of the low pressure chamber keeps the intraventricular pressure within physiological limits.
- The tantalum ball in the gravitational unit moves freely, keeping the flow path open and adding no resistance to shunt system.





Upright Function

When the patient moves to an upright position, the gravitational unit of the *DualSwitch™ Valve* is automatically activated and resistance is added.

- At approximately 60°, the Tantalum Weight Ball of the gravitational unit is pulled down by gravity, closes the low pressure chamber, and directs CSF flow into the high pressure chamber.
- CSF flow must now overcome the higher opening pressure of the high pressure chamber, thus the overall pressure of the shunt system is increased, keeping the intraventricular pressure within physiological limits.
- The increased opening pressure in the upright position effectively prevents overdrainage, which can occur as a result of siphoning.

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