SILICONE BASED SHUNT SYSTEMS

MR or CT Scans Compatible

All the silicone based valves are designed and manufactured using polypropylene and silicone elastomer which decreases the possibility of deformation of the valves due to sticking. None of the valves contain any metal parts which gives them the uniqueness of non-interference with **MRI or CT** scans. The radiopaque barium marks on the valves indicate pressure, flow direction and valve-to-catheter approximation. Furthermore, all the valves are built in with a membrane valve mechanism and incorporated with reservoirs for percutaneous cerebrospinal fluid (CSF) access.

Antibiotic Realise Duration: 28 Days

In addition, all the **BIÇAKCILAR/DESU** valves have high technology version that contains antibiotics in the silicone body of the valves. Antibiotic impregnation of the silicone body is one of a kind quality that none of the other valves in the market has. Controlled release of the impregnated antibiotics from the silicone body for a duration of **28 days** is also the optimum method for prevention of infection which is one of the main problems of shunt surgery.

BIÇAKCILAR/DESU SILICONE SHUNT SYSTEMS ARE MANUFACTURED AND SUPPLIED IN THREE PRESSURE CATEGORIES: LOW PRESSURE, MEDIUM PRESSURE, HIGH PRESSURE.

Pressure Levels	Standard Shunt Pressure Range (mm H20)	Shunt Marking
HIGH PRESSURE	100 - 110	●●●
MEDIUM PRESSURE	50 - 110	●●
LOW PRESSURE	10 - 50	●

Shunt Systems*

SILICONE BASED SHUNT SYSTEMS

Defit Shunts

- Defit Ultra Small (pediatric/infant) shunts (standard valve body / antibiotic impregnated valve body)
- Defit Small shunts (standard valve body / antibiotic impregnated valve body)
- Defit Regular (adult) shunts (standard valve body / antibiotic impregnated valve body)

Decurve Shunts

- Decurve Pediatric shunts (standard valve body / antibiotic impregnated valve body)
- Decurve Adults shunts (standard valve body / antibiotic impregnated valve body)

Silicone Based Shunts Kits

- Defit Shunt Kits (standard / semi antibiotic impregnated / full antibiotic impregnated)
- Decurve Shunt Kits (standard / semi antibiotic impregnated / full antibiotic impregnated)

POLYSULPHONE BASED SHUNT SYSTEMS

Depus Quick Response Shunts

- (standard valve body / antibiotic impregnated valve body)

Depus Quick Response Shunts Kits

- Standart Depus Quick Response Shunt Kits
- Semi antibiotic impregnated Depus Quick Response Shunt Kits
- Full antibiotic impregnated Depus Quick Response Shunt Kits

SHUNT ACCESSORY

Desiphon Antisiphon Device

* All shunt systems are supplied sterile (method: EO-Ethylene Oxide).

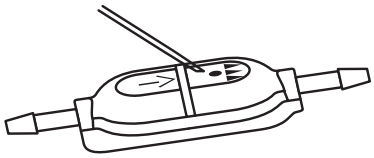
Silicone Based Shunt Systems

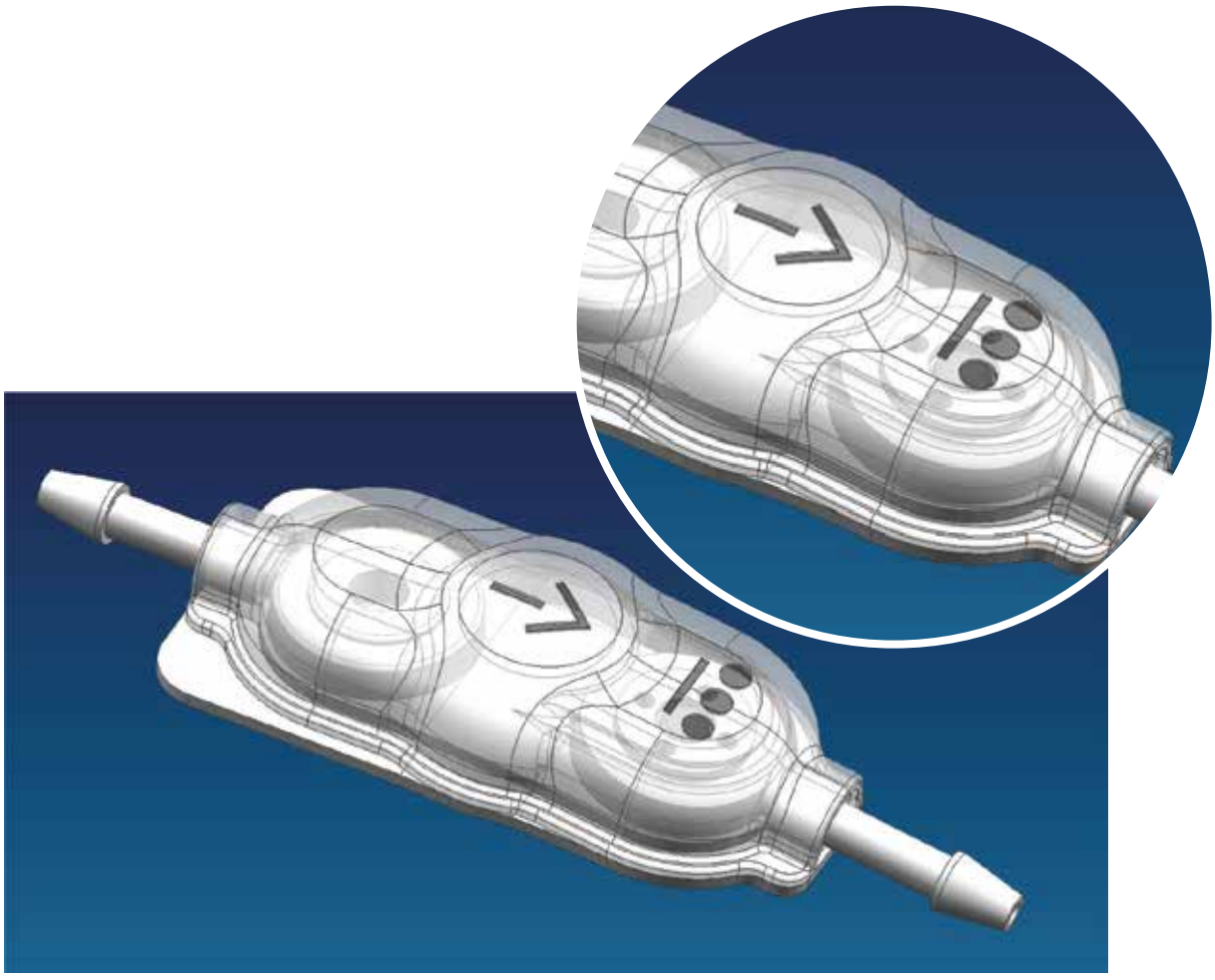
• Defit Shunts

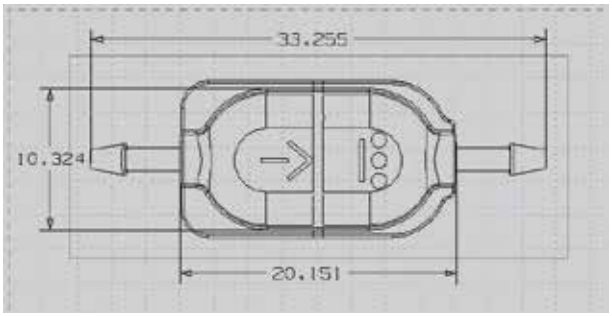
The shunt valve is a mechanical device that regulates flow which is attained through the simple fluid dynamics that requires a pressure drop of fluid while flowing through the obstacles like orifices, and the change of flow across the sectional area is placed intentionally on the flow passage.

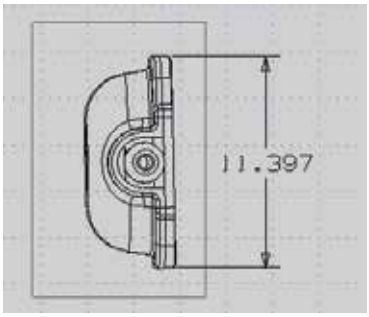
Defit Ultra Small (pediatric/infant) shunts (standard valve body / antibiotic impregnated valve body)

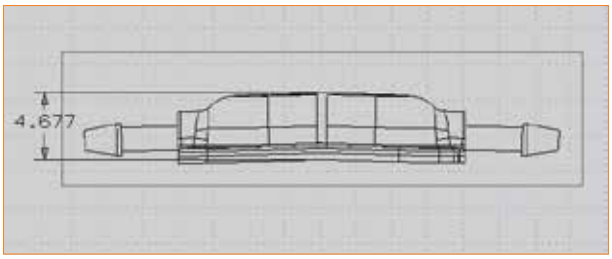
Defit Ultra Small shunts are used in infants and small children during treatment of hydrocephalus, where controlled drainage of CSF is required.

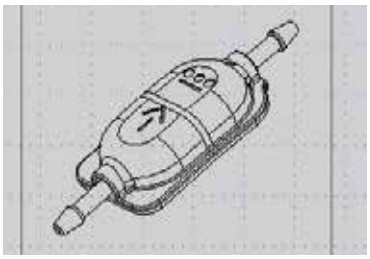












- **Standard Defit Ultra Small Shunts Reference Codes According To Pressure Levels**

●	●●	●●●
DFUS-L-PEB	DFUS-M-PEB	DFUS-H-PEB
Defit Ultra Small Pediatric Silicone Shunt With Reinforced Base **Low Pressure**	Defit Ultra Small Pediatric Silicone Shunt With Reinforced Base **Medium Pressure**	Defit Ultra Small Pediatric Silicone Shunt With Reinforced Base **High Pressure**

- **Antibiotic Impregnated Defit Ultra Small Shunts Reference Codes According To Pressure Levels**

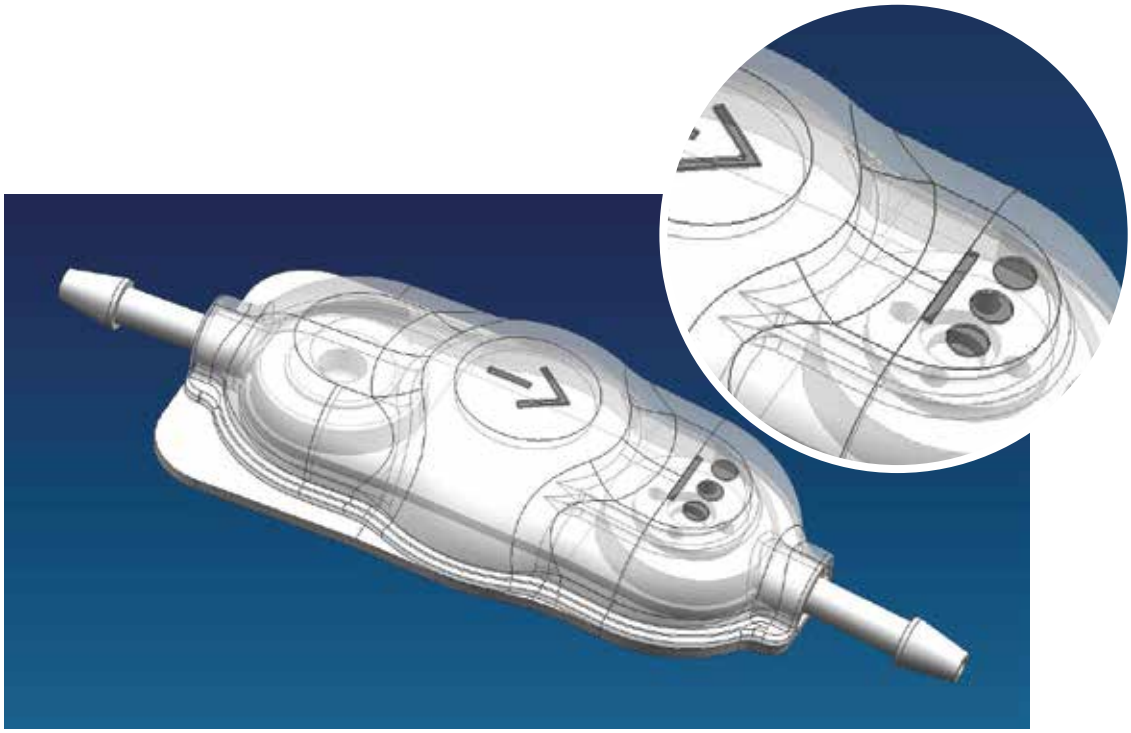
●	●●	●●●
ADFUS-L-PEB	ADFUS-M-PEB	ADFUS-H-PEB
Antibiotic Impregnated Defit Ultra Small Pediatric Silicone Shunt With Reinforced Base **Low Pressure**	Antibiotic Impregnated Defit Ultra Small Pediatric Silicone Shunt With Reinforced Base **Medium Pressure**	Antibiotic Impregnated Defit Ultra Small Pediatric Silicone Shunt With Reinforced Base **High Pressure**

- **Antibiotic Impregnated Defit Small Shunts Reference Codes according to Pressure Levels**

●	●●	●●●
ADFS-L-PEB	ADFS-M-PEB	ADFS-H-PEB
Antibiotic Impregnated Defit Small Pediatric Silicone Shunt With Reinforced Base **Low Pressure**	Antibiotic Impregnated Defit Small Pediatric Silicone Shunt With Reinforced Base **Medium Pressure**	Antibiotic Impregnated Defit Small Pediatric Silicone Shunt With Reinforced Base **High Pressure**

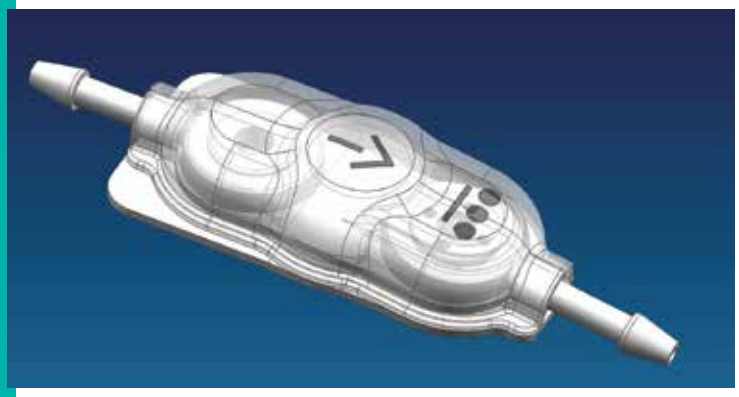
Defit Regular (Adult) shunts (standard valve body / antibiotic impregnated valve body)

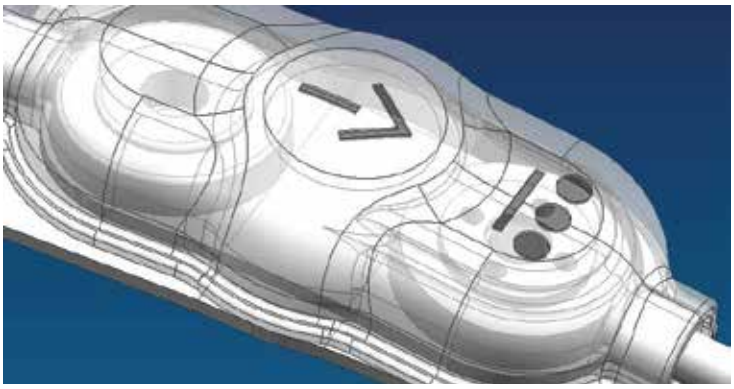
Defit Regular shunts are used in adults during treatment of hydrocephalus where controlled drainage of CSF is required.

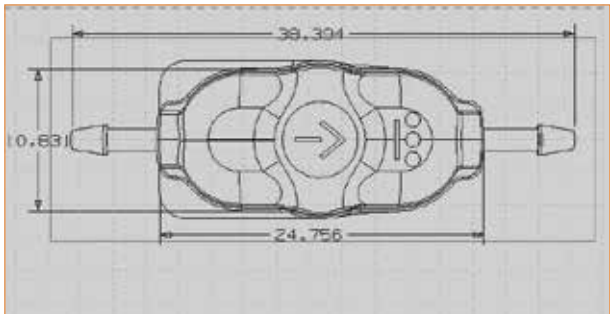


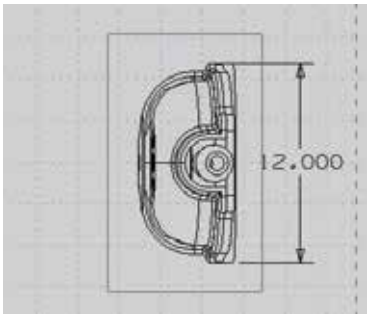
Defit Small shunts (standard valve body / antibiotic impregnated valve body)

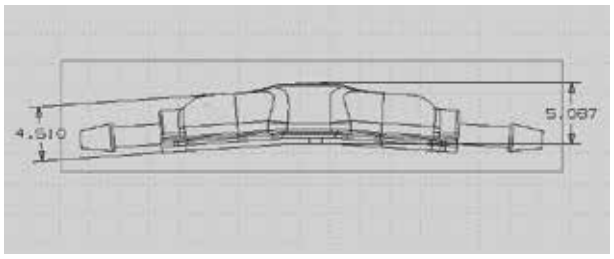
Defit Small shunts are used in children and adults during treatment of hydrocephalus where controlled drainage of CSF is required.

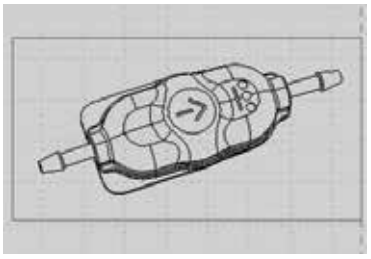






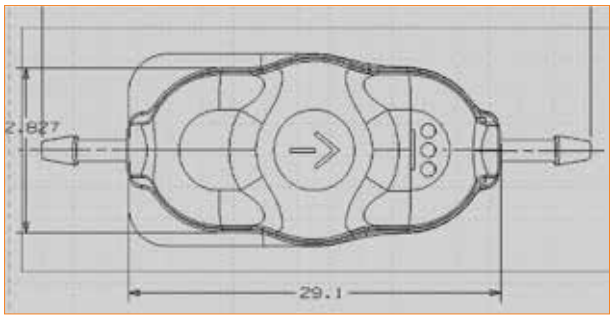


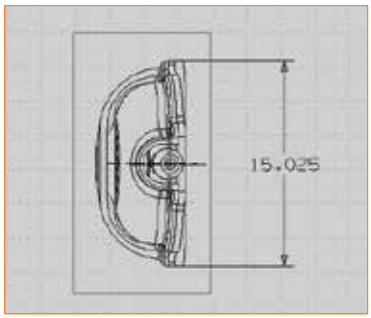


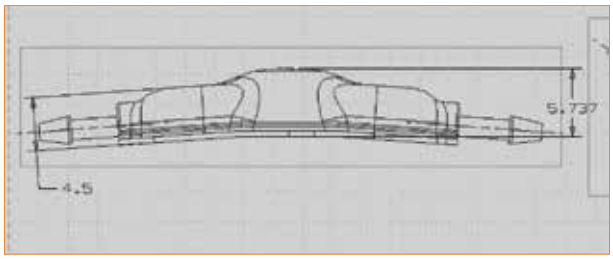


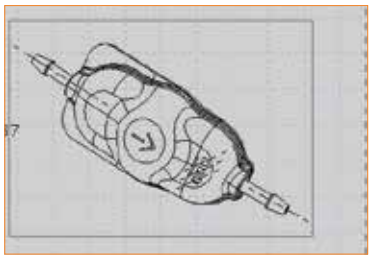
- **Standard Defit Small Shunts Reference Codes according to Pressure Levels**

●	●●	●●●
DFS-L-PEB	DFS-M-PEB	DFS-H-PEB
Defit Small Pediatric Silicone Shunt With Reinforced Base **Low Pressure**	Defit Small Pediatric Silicone Shunt With Reinforced Base **Medium Pressure**	Defit Small Pediatric Silicone Shunt With Reinforced Base **High Pressure**









- Standard Defit Regular Shunts Reference Codes according to Pressure Levels

●	●●	●●●
DFR-L-PEB	DFR-M-PEB	DFR-H-PEB
Defit Regular Silicone Shunt With Reinforced Base **Low Pressure**	Defit Regular Silicone Shunt With Reinforced Base **Medium Pressure**	Defit Regular Silicone Shunt With Reinforced Base **High Pressure**

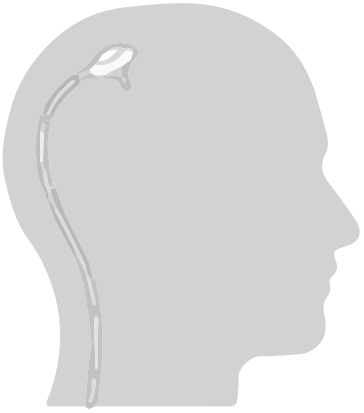
- Antibiotic Impregnated Defit Regular Shunts Reference Codes according to Pressure Levels

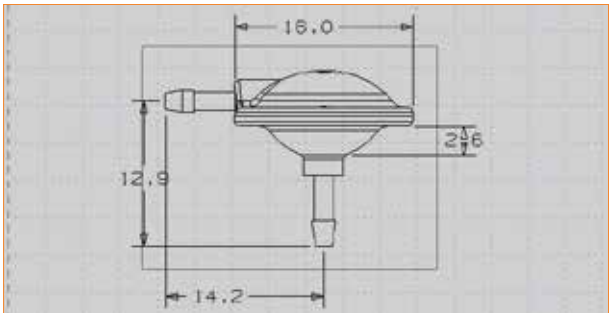
●	●●	●●●
ADFR-L-PEB	ADFR-M-PEB	ADFR-H-PEB
Antibiotic Impregnated Defit Regular Silicone Shunt With Reinforced Base **Low Pressure**	Antibiotic Impregnated Defit Regular Silicone Shunt With Reinforced Base **Medium Pressure**	Antibiotic Impregnated Defit Regular Silicone Shunt With Reinforced Base **High Pressure**

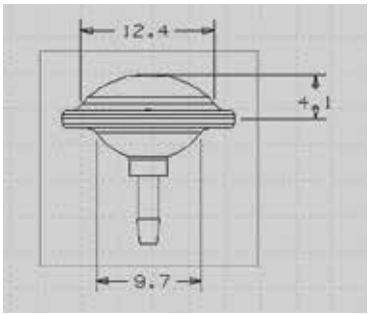
• Decurve Shunts

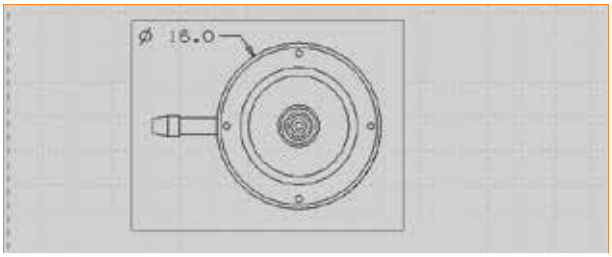
1. Decurve Pediatric Shunts (standard valve body / antibiotic impregnated valve body)

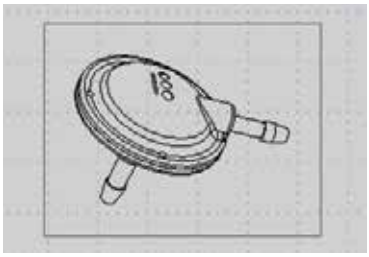
Decurve Pediatric shunts are used in infants and small children during treatment of hydrocephalus where controlled drainage of CSF is required.











- Standard Decurve Pediatric Shunts Reference Codes according to Pressure Levels

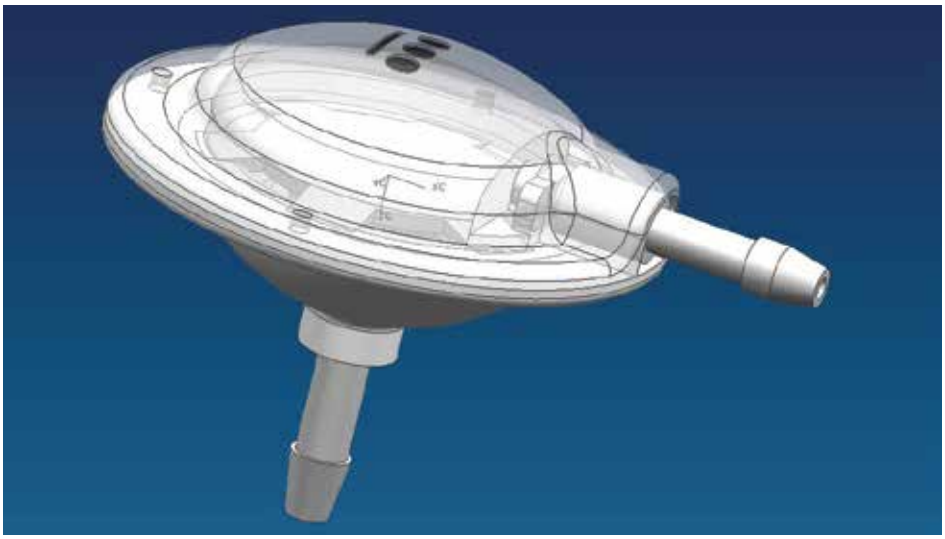
●	●●	●●●
DCP-L	DCP-M	DCP-H
Decurve Pediatric Silicone Shunt **Low Pressure**	Decurve Pediatric Silicone Shunt **Medium Pressure**	Decurve Pediatric Silicon Shunt **High Pressure**

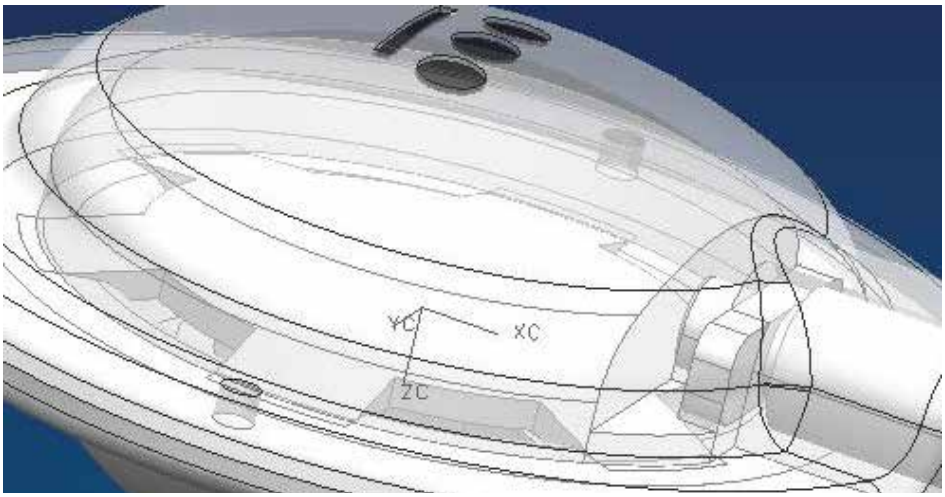
- Antibiotic Impregnated Decurve Pediatric Shunts Reference Codes according to Pressure Levels

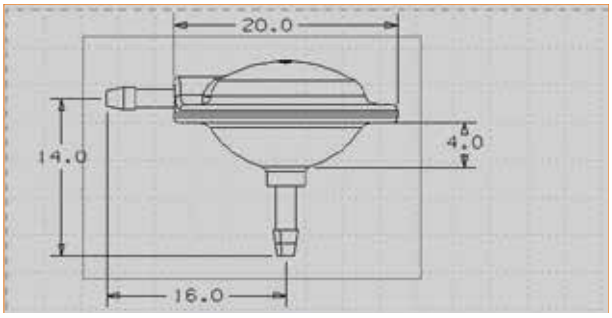
●	●●	●●●
ADCP-L	ADCP-M	ADCP-H
Antibiotic Impregnated Decurve Pediatric Silicone Shunt **Low Pressure**	Antibiotic Impregnated Decurve Pediatric Silicone Shunt **Medium Pressure**	Antibiotic Impregnated Decurve Pediatric Silicone Shunt **High Pressure**

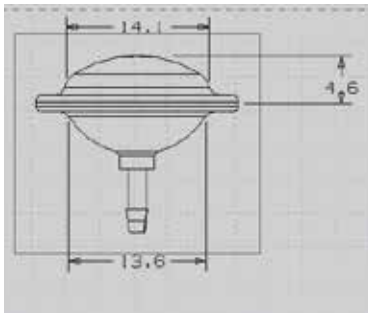
Decurve Adult Shunts
(standard valve body / antibiotic impregnated valve body)

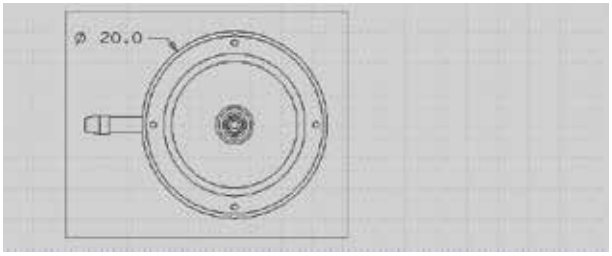
Decurve Adult shunts are used in adults during treatment of hydrocephalus where controlled drainage of CSF is required.

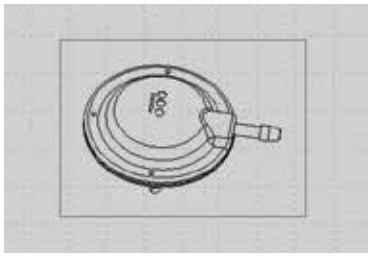












- Standard Decurve Adult Shunts Reference Codes According to Pressure Levels

●	●●	●●●
DCA-L	DCA-M	DCA-H
Decurve Adult Silicone Shunt **Low Pressure**	Decurve Adult Silicone Shunt **Medium Pressure**	Decurve Adult Silicone Shunt **High Pressure**

- Antibiotic Impregnated Decurve Adult Shunts Reference Codes According to Pressure Levels

●	●●	●●●
ADCA-L	ADCA-M	ADCA-H
Antibiotic Impregnated Decurve Adult Silicone Shunt **Low Pressure**	Antibiotic Impregnated Decurve Adult Silicone Shunt **Medium Pressure**	Antibiotic Impregnated Decurve Adult Silicone Shunt **High Pressure**

• Silicone Based Shunt Kits

Defit Shunt Kits (standard / semi antibiotic impregnated / full antibiotic impregnated)

Standard Defit Shunt Kit	Semi Antibiotic Impregnated Defit Shunt Kit	Full Antibiotic Impregnated Shunt Kit
Silicone outer shell and polyproplene inner body design MRI and CT compatible design that does not contain metal parts Radiopaque markings that show direction of flow and pressure level Reservoir design that allows CSF (crania spinal fluid) sampling Ultrasmall, Small and Regular valve types	Major advantage compared to Standard Defit Shunt kits, with antibiotic impregnated catheter content Wide spectrum of protection through joint impregnation of Clindamycin HCl and Rifampicin Prevention of bacteria colonization up to 28 days Low obstruction risk due to hydrophilic nature of catheters Ultrasmall, Small and Regular valve types	Major advantage compared to Standard and Semi impregnated Defit Shunt kits, with antibiotic impregnated catheter and shunt body content Wide spectrum of protection through joint impregnation of Clindamycin HCl and Rifampicin Prevention of bacteria colonization up to 28 days Low obstruction risk due to hydrophilic nature of catheters Ultrasmall, Small and Regular valve types

- **Defit Ultrasmall Shunt Kits Reference Codes According To Pressure Levels**

STANDARD	SEMI ANTIBIOTIC IMPREGNATED	FULL ANTIBIOTIC IMPREGNATED
DFUS-L-VCK-PEB DFUS-M-VCK-PEB DFUS-H-VCK-PEB	DFUS-L-VACK-PEB DFUS-M-VACK-PEB DFUS-H-VACK-PEB	ADFUS-L-VACK-PEB ADFUS-M-VACK-PEB ADFUS-H-VACK-PEB
Defit Ultra Small Pediatric Silicone Shunt With Reinforced Base With Ventriculoperitoneal Catheter Kit **Low-Medium-High Pressure**	Defit Ultra Small Pediatric Silicone Shunt With Reinforced Base With Antibiotic Impregnated Ventriculoperitoneal Catheter Kit **Low-Medium-High Pressure**	Antibiotic Impregnated Defit Ultra Small Pediatric Silicone Shunt With Reinforced Base With Antibiotic Impregnated Ventriculoperitoneal Catheter Kit **Low-Medium-High Pressure**

- **Defit Small Shunt Kits Reference Codes According To Pressure Levels**

STANDARD	SEMI ANTIBIOTIC IMPREGNATED	FULL ANTIBIOTIC IMPREGNATED
DFS-L-VCK-PEB DFS-M-VCK-PEB DFS-H-VCK-PEB	DFS-L-VACK-PEB DFS-M-VACK-PEB DFS-H-VACK-PEB	ADFS-L-VACK-PEB ADFS-M-VACK-PEB ADFS-H-VACK-PEB
Defit Small Pediatric Silicone Shunt With Reinforced Base With Ventriculoperitoneal Catheter Kit **Low-Medium-High Pressure**	Defit Small Pediatric Silicone Shunt With Reinforced Base With Antibiotic Impregnated Ventriculoperitoneal Catheter Kit **Low-Medium-High Pressure**	Antibiotic Impregnated Defit Small Pediatric Silicone Shunt With Reinforced Base With Antibiotic Impregnated Ventriculoperitoneal Catheter Kit **Low-Medium-High Pressure**

- **Defit Regular Shunt Kits Reference Codes According To Pressure Levels**

STANDARD	SEMI ANTIBIOTIC IMPREGNATED	FULL ANTIBIOTIC IMPREGNATED
DFR-L-VCK-PEB DFR-M-VCK-PEB DFR-H-VCK-PEB	DFR-L-VACK-PEB DFR-M-VACK-PEB DFR-H-VACK-PEB	ADFR-L-VACK-PEB ADFR-M-VACK-PEB ADFR-H-VACK-PEB
Defit Regular Pediatric Silicone Shunt With Reinforced Base With Ventriculoperitoneal Catheter Kit **Low-Medium-High Pressure**	Defit Regular Pediatric Silicone Shunt With Reinforced Base With Antibiotic Impregnated Ventriculoperitoneal Catheter Kit **Low-Medium-High Pressure**	Antibiotic Impregnated Defit Regular Pediatric Silicone Shunt With Reinforced Base With Antibiotic Impregnated Ventriculoperitoneal Catheter Kit **Low-Medium-High Pressure**

Decurve Shunt Kits (standard / semi antibiotic impregnated / full antibiotic impregnated)

Standard Decurve Shunt Kit	Semi Antibiotic Impregnated Decurve Shunt Kit	Full Antibiotic Impregnated Decurve Shunt Kit
Silicone outer shell and olyproplene inner body design MRI and CT compatible design that does not contain metal parts Radiopaque markings that show direction of flow and pressure level Reservoir design that allows CSF (crania spinal fluid) sampling 12 mm Pediatric and 16 mm Adult valve types	Major advantage compared to Standard Defit Shunt kits, with antibiotic impregnated catheter content Wide spectrum of protection through joint impregnation of Clindamycin HCl and Rifampicin Prevention of bacteria colonization up to 28 days Low obstruction risk due to hydrophilic nature of catheters 12 mm Pediatric and 16 mm Adult valve types	Major advantage compared to Standard and Semi impregnated Defit Shunt kits, with antibiotic impregnated catheter and shunt body content Wide spectrum of protection through joint impregnation of Clindamycin HCl and Rifampicin Prevention of bacteria colonization up to 28 days Low obstruction risk due to hydrophilic nature of catheters 12 mm Pediatric and 16 mm Adult valve types

- **Decurve Pediatric Shunt Kits – Reference Codes According To Pressure Levels**

STANDARD	SEMI ANTIBIOTIC IMPREGNATED	FULL ANTIBIOTIC IMPREGNATED
DCP-L-VCK DCP-M-VCK DCP-H-VCK	DCP-L-VACK DCP-M-VACK DCP-H-VACK	ADCP-L-VACK ADCP-M-VACK ADCP-H-VACK
Decurve Pediatric Silicone Shunt With Ventriculoperitoneal Catheter Kit **Low-Medium-High Pressure**	Decurve Pediatric Silicone Shunt With Antibiotic Impregnated Ventriculoperitoneal Catheter Kit **Low-Medium-High Pressure**	Antibiotic Impregnated Decurve Pediatric Silicone Shunt With Antibiotic Impregnated Ventriculoperitoneal Catheter Kit **Low-Medium-High Pressure**

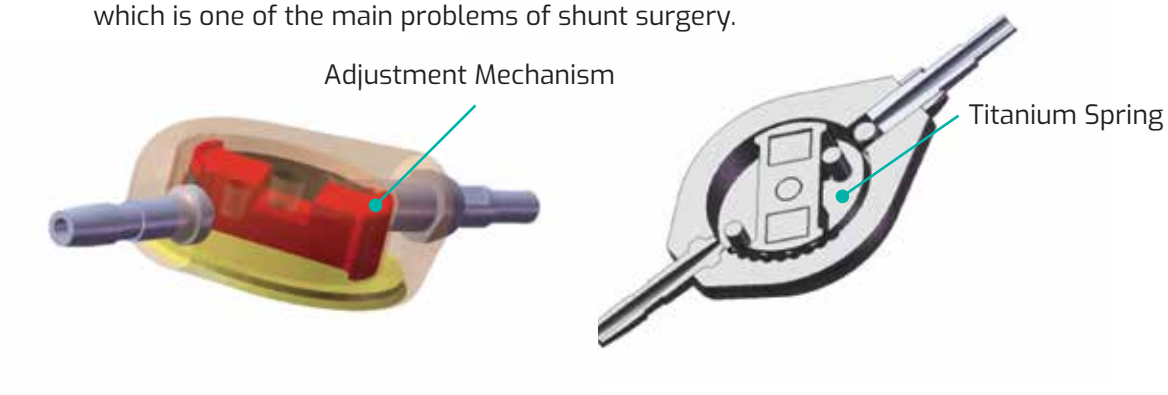
- **Decurve Adult Shunt Kits – Reference Codes According To Pressure Levels**

STANDARD	SEMI ANTIBIOTIC IMPREGNATED	FULL ANTIBIOTIC IMPREGNATED
DCA-L-VCK DCA-M-VCK DCA-H-VCK	DCA-L-VACK DCA-M-VACK DCA-H-VACK	ADCA-L-VACK ADCA-M-VACK ADCA-H-VACK
Decurve Adult Silicone Shunt With Ventriculoperitoneal Catheter Kit **Low-Medium-High Pressure**	Decurve Adult Silicone Shunt With Antibiotic Impregnated Ventriculoperitoneal Catheter Kit **Low-Medium-High Pressure**	Antibiotic Impregnated Decurve Adult Silicone Shunt With Antibiotic Impregnated Ventriculoperitoneal Catheter Kit **Low-Medium-High Pressure**

• Polysulphone Based Shunt Systems

Depus Quick Response shunt is designed to regulate and sustain the intra-ventricular pressure (IVP) of the patient via controlled drainage of the CSF (cerebrospinal fluid). The shunt has two versions according to intention of use: ventriculoperitoneal and lumboperitoneal. The mechanism within the shunt is triggered by positive ventricular pressure and the valve opens immediately. The ruby ball and the titanium spring valve are the essentials of this adjustable system that works on the theory of hydrodynamic leverage. The shunt body is designed to have uniquely smaller dimensions than its competitors. Inner diameter of the valve is 10 mm, outer diameter is 13,5 mm and the length is 16 mm.

BIÇAKCILAR/DESU Depus Quick Response shunt is also designed with an infection-preventing version which includes an antibiotic impregnated silicone cover. This antibiotic impregnated body design of the Depus valve is unique in the current shunt market. Controlled release of the impregnated antibiotics from the silicone body for 28 days is also the ultimate method for infection prevention, which is one of the main problems of shunt surgery.



Polysulphone Based Shunt Systems

DEPUS QUICK RESPONSE SHUNTS (STANDARD VALVE BODY / ANTIBIOTIC IMPREGNATED SILICONE COVER)

Polysulphone shunts are manufactured using radiopaque titanium, ruby ball and polysulphone (long term implantable) and are supplied sterile (ETO). The shunt pressure levels are marked with tantalum which allows MRI visibility.

- **Standard Depus Quick Response Shunts Reference Codes According To Pressure Levels**

●	●●	●●●
DP-L	DP-M	DP-H
Depus Quick Response Shunt **Low Pressure**	Depus Quick Response Shunt **Medium Pressure**	Depus Quick Response Shunt **High Pressure**

- **Depus Quick Response Shunt With Antibiotic Imrpregnated Silicone Cover Reference Codes According to Pressure Levels**

●	●●	●●●
ADP-L	ADP-M	ADP-H
Depus Quick Response Shunt With Antibiotic Impregnated Silicone Cover **Low Pressure**	Depus Quick Response Shunt With Antibiotic Impregnated Silicone Cover **Medium Pressure**	Depus Quick Response Shunt With Antibiotic Impregnated Silicone Cover **High Pressure**

DEPUS QUICK RESPONSE SHUNT KITS

Standard Depus Quick Response Shunt Kits	Semi Antibiotic impregnated Depus Quick Response Shunt Kits	Full Antibiotic Impregnated Depus Quick Response Shunt Kits
Polysulphone body design enhanced with titanium spring and ruby ball MRI and CT compatible design that does not contain metal parts Tantalum markings to indicate direction of flow	Major advantage compared to Standard Depus Quick Response shunts due to antibiotic impregnated catheters Wide spectrum of protection through joint impregnation of Clindamycin HCl and Rifampicin Prevention of bacteria colonization up to 28 days Low obstruction risk due to hydrophilic nature of catheters	Antibiotic impregnated catheters and antibiotic impregnated silicone cover on valve body Wide spectrum of protection through joint impregnation of Clindamycin HCl and Rifampicin Prevention of bacteria colonizatio-nup to 28 days Low obstruction risk due to hydrophilic nature of catheters and shunt body

- **Depus Quick Response Shunt Kits Reference Codes According To Pressure Levels**

STANDARD	SEMI ANTIBIOTIC IMPREGNATED	FULL ANTIBIOTIC IMPREGNATED
DP-L-VCK DP-M-VCK DP-H-VCK	DP-L-VACK DP-M-VACK DP-H-VACK	ADP-L-VACK ADP-M-VACK ADP-H-VACK
Depus Quick Response Shunt With Ventriculoperitoneal Catheter Kit **Low-Medium-High Pressure**	Depus Quick Response Shunt With Antibiotic Impregnated Ventriculoperioneal Catheter Kit **Low-Medium-High Pressure**	Depus Quick Response Shunt With Antibiotic Impregnated Silicone Cover and Antibiotic Impregnated Ventriculoperioneal Catheter Kit **Low-Medium-High Pressure**

- **Depus Quick Response Lumboperitoneal Shunt Kits Reference Codes According To Pressure Levels**

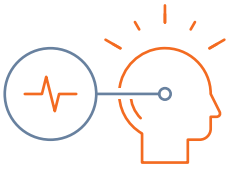
STANDARD	LUMBOPERITONEAL DEPUS QUICK RESPONSE SHUNT KIT
LPDP-L-LPCK LPDP-M-LPCK LPDP-H-LPCK	LPDP-L-LPACK LPDP-M-LPACK LPDP-H-LPACK
Depus Quick Response Lumboperitoneal Shunt With Lumboperitoneal Catheter Kit and Polyproplene Connector **Low-Medium-High Pressure**	Depus Quick Response Shunt Lumbar Catheter Peritoneal Catheter

• Shunt Accessory

Desiphon Anti-siphon Device

Antisiphon is used to prevent the siphon effect which might occur during hydrocephalus treatment when the CSF requires drainage or shunting and the peritoneal catheter's position suddenly changes from horizontal to vertical.

Major principle is to create a sudden closure effect in order to overcome the over-drainage that occurs under siphon effect.



CATEGORY	STANDARD SHUNT PRESSURE LEVELS (mmH20)	SHUNT PRESSURE LEVELS WHEN SHUNT IS USED TOGETHER WITH THE ANTISIPHON DEVICE (mmH20)
High Pressure	110 - 180	135 - 210
Medium Pressure	50 - 110	65 - 135
Low Pressure	10 - 50	25 - 65

- **Difference in Shunt Pressure Levels During Antisiphon Device Use**