



The **Ahmed™ Glaucoma Valve**  
Leading the Way in Advanced Glaucoma Drainage Technology



**Dr. A. Mateen Ahmed**

President & CEO - New World Medical, Inc.

New World Medical, Inc. (NWMI) is a high tech medical device company whose goal is to help humanity lead a better life through improved technology and innovation. Presently NWMI's focus is in the areas of Ophthalmology, Tonometry, and Neuro surgery.

The Ahmed Glaucoma Valve has been successfully demonstrated to work in all types of glaucoma cases, particularly Neovascular, Congenital, and Uvietic glaucoma.

New World Medical, Inc. manufactures and markets its own products. In the U.S. NWMI markets its products through a team of sales representatives. In the international market, the company has more than 83 exclusive distributors around the world. Along with its own products, NWMI is licensed as a tissue bank, selling human tissue such as sclera and pericardium.

The R&D division of NWMI is actively involved in developing new products through collaborations with a number of renowned medical universities and individual doctors, in the U.S. and abroad. These partnerships allow NWMI to develop products through a first hand involvement in the medical device industry.

Dr. A. Mateen Ahmed founded New World Medical, Inc. Dr. Ahmed is also the President / CEO and Chairman of the Board of Directors for the company. The vision of Dr. Ahmed and NWMI is to help the lives of people around the world. This has earned the company many accolades, including the "Have a Heart, International Goodwill, and Understanding Award" given by Sorooptimist International.

# Mechanics of the Ahmed™ Glaucoma Valve

## The Venturi Effect:

To reduce internal friction within the valve system, the Ahmed™ Glaucoma Valve (AGV™) utilizes a specially designed, tapered trapezoidal chamber to create a Venturi effect to help aqueous flow through the device. As demonstrated by Bernoulli's equation of hydrodynamic principle, the inlet velocity of aqueous entering the larger port of the Venturi chamber increases significantly as it exits the smaller outlet port of the tapered chamber. In an AGV™ this increased exit velocity greatly helps in evacuating aqueous from the valve, thereby helping to reduce valve friction.

## Non-Obstructive, Self-Regulating Valve Mechanism:

The Ahmed™ Glaucoma Valve has no obstruction in its path of fluid flow. For the flow to be non-obstructive, a particle large enough to pass through the lumen of the tube, will easily pass through the much larger opening of the Venturi-Flow™ chamber. The elastic membranes help to regulate fluid flow at all times, consistently by changing their shape. The tension on these membranes is responsible for reducing hypotony.

$$\frac{P_1}{W} + \frac{V_1^2}{2g} + Z_1 = \frac{P_2}{W} + \frac{V_2^2}{2g} + Z_2$$

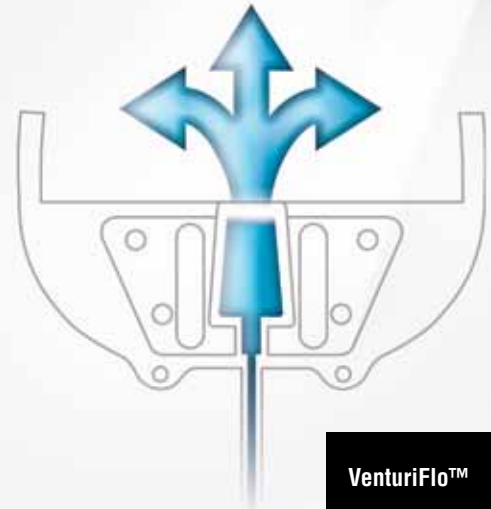
$$\text{SINCE } Z_1 = Z_2,$$

$$\frac{P_1}{W} + \frac{V_1^2}{2g} = \frac{P_2}{W} + \frac{V_2^2}{2g}$$

$$\frac{P_1 - P_2}{W} = \frac{V_2^2 - V_1^2}{2g}$$

$$P_1 - P_2 = \frac{W}{2g} [V_2^2 - V_1^2] \text{ -or-}$$

$$P_1 - P_2 \propto V_2^2 - V_1^2$$





**Model FP7**

Ahmed™ Glaucoma Valve  
Flexible Plate™



**Features:**

- Made of medical grade silicone
- Immediate reduction of intraocular pressure
- Unique, non-obstructive valve system to prevent excessive drainage and chamber collapse
- Implanted in a true, single-stage procedure
- Tapered profile for easy insertion
- Silicone plate
- Aqueous percolation holes
- Thinner Plate

**Plate/Valve Specifications:**

Thickness: 0.9mm  
Width: 13.00mm  
Length: 16.00mm  
Surface Area: 184.00mm<sup>2</sup>

**Tube Specifications:**

Length: 25.00mm  
Inner Diameter: 0.305mm  
Other Diameter: 0.635mm

**Materials:**

Valved Plate Body: medical-grade silicone  
Drainage Tube: medical-grade silicone  
Valve: medical-grade silicone, elastomer membrane  
Valve Casing: medical-grade polypropylene

**Ordering Information:**

Model: FP7 (Ahmed™ Flexible Plate™)



**Model S2**

Ahmed™ Glaucoma Valve



**Features:**

- Immediate reduction of intraocular pressure
- Unique, non-obstructive valve system to prevent excessive drainage and chamber collapse
- Implanted in a true, single-stage procedure
- Eliminates drainage tube ligature sutures, “rip-chord” sutures, and occluding sutures

**Plate/Valve Specifications:**

Thickness: 1.9mm  
Width: 13.00mm  
Length: 16.00mm  
Surface Area: 184.00mm<sup>2</sup>

**Tube Specifications:**

Length: 25.00mm  
Inner Diameter: 0.305mm  
Other Diameter: 0.635mm

**Materials:**

Valved Plate Body: medical-grade polypropylene  
Drainage Tube: medical-grade silicone  
Valve: medical-grade silicone, elastomer membrane

**Ordering Information:**

Model: S2 (Ahmed™ Glaucoma Valve)

Model S2



**Model FP8**

Ahmed™ Glaucoma Valve  
Flexible Plate™ (Pediatric)



**Features:**

- Made of medical grade silicone
- Used for pediatrics or small globes
- Immediate reduction of intraocular pressure
- Unique, non-obstructive valve system to prevent excessive drainage and chamber collapse
- Implanted in a true, single-stage procedure
- Eliminates drainage tube ligature sutures, “rip-chord” sutures, and occluding sutures
- Thinner Plate

**Plate/Valve Specifications:**

Width: 9.60mm

Length: 10.00mm

Surface Area: 96.00mm<sup>2</sup>

**Tube Specifications:**

Length: 25.00mm

Inner Diameter: 0.305mm

Other Diameter: 0.635mm

**Materials:**

Valved Plate Body: medical-grade silicone

Drainage Tube: medical-grade silicone

Valve: medical-grade silicone, elastomer membrane

Valve Casing: medical-grade polypropylene

**Ordering Information:**

Model: FP8 (Ahmed™ Flexible Plate™ - Pediatric)

Model FP8



**Model S3**

Ahmed™ Glaucoma Valve  
(Pediatric)



### Features:

- Used for pediatrics or small globes
- Immediate reduction of intraocular pressure
- Unique, non-obstructive valve system to prevent excessive drainage and chamber collapse
- Implanted in a true, single-stage procedure
- Eliminates drainage tube ligature sutures, “rip-chord” sutures, and occluding sutures

### Plate/Valve Specifications:

Width: 9.60mm

Length: 10.00mm

Surface Area: 96.00mm<sup>2</sup>

### Tube Specifications:

Length: 25.00mm

Inner Diameter: 0.305mm

Other Diameter: 0.635mm

### Materials:

Valved Plate Body: medical-grade polypropylene

Drainage Tube: medical-grade silicone

Valve: medical-grade silicone, elastomer membrane

### Ordering Information:

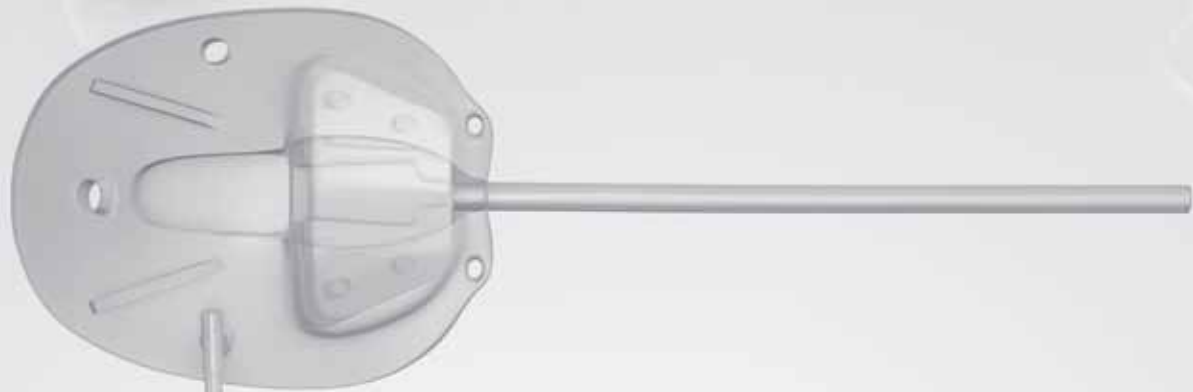
Model: S3 (Ahmed™ Glaucoma Valve - Pediatric)

Model S3



**Model FX1**

Ahmed™ Glaucoma Valve  
Flexible Bi-Plate



#### **Features:**

- Made of medical-grade silicone
- Attachable on either right or left side
- Bi-Plate design allows for greater aqueous drainage
- Valve and Bi-Plate combined surface area: 364mm<sup>2</sup>
- Immediate reduction of intraocular pressure
- Unique, non-obstructive valve system to prevent excessive drainage and chamber collapse
- Implanted in a true, single-stage procedure
- Eliminates drainage tube ligature sutures, “rip-chord” sutures, and occluding sutures

#### **Valve Plate Specifications:**

Width: 13.00mm

Length: 16.00mm

Surface Area: 184.00mm<sup>2</sup>

#### **Non-Valved Plate Specifications:**

Width: 12.20mm

Length: 14.80mm

Surface Area: 180.00mm<sup>2</sup>

#### **Tube Specifications:**

Inner Diameter: 0.305mm

Other Diameter: 0.635mm

#### **Materials:**

Valved Plate Body: medical-grade silicone

Non-Valved Plate Body: medical-grade silicone

Drainage Tube: medical-grade silicone

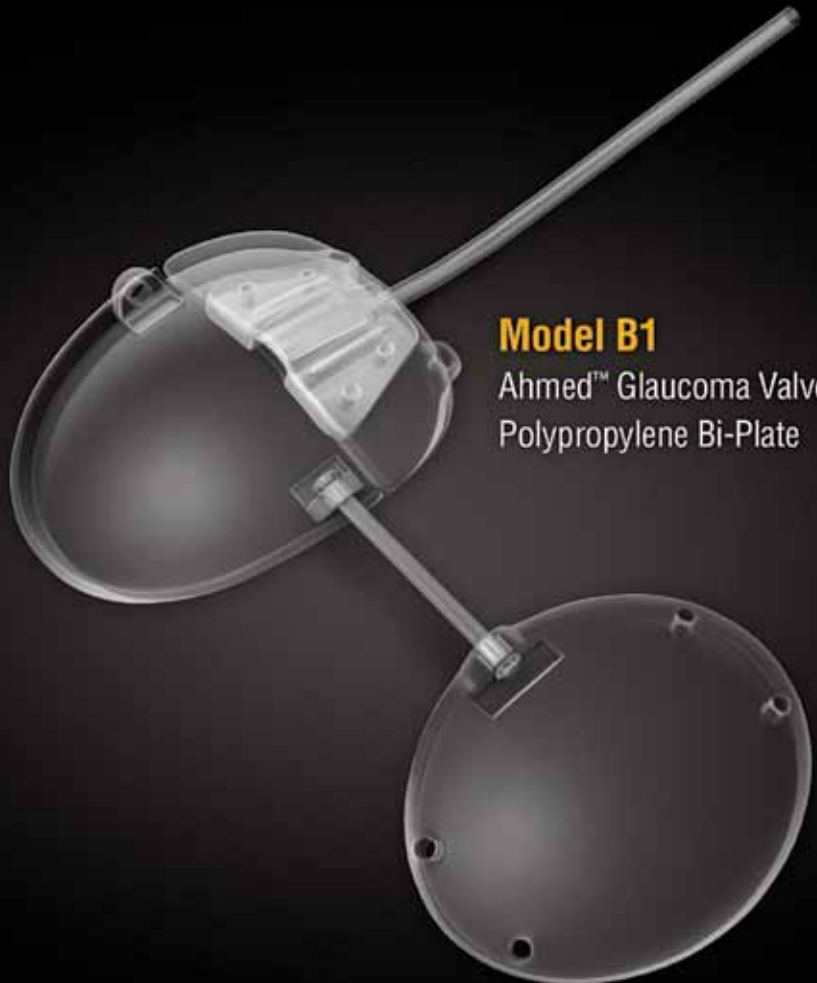
Valve: medical-grade silicone, elastomer membrane

Valve Casing: medical-grade polypropylene

#### **Ordering Information:**

Model: FX1 (Ahmed™ Flexible Bi-Plate)

Model FX1



**Model B1**

Ahmed™ Glaucoma Valve  
Polypropylene Bi-Plate



### Features:

- Attachable on either right or left side
- Bi-Plate design allows for greater aqueous drainage
- Valve and Bi-Plate combined surface area: 364mm<sup>2</sup>
- Immediate reduction of intraocular pressure
- Unique, non-obstructive valve system to prevent excessive drainage and chamber collapse
- Implanted in a true, single-stage procedure
- Eliminates drainage tube ligature sutures, “rip-chord” sutures, and occluding sutures

### Valve Plate Specifications:

Width: 13.00mm

Length: 16.00mm

Surface Area: 184.00mm<sup>2</sup>

### Non-Valved Plate Specifications:

Width: 12.20mm

Length: 14.80mm

Surface Area: 180.00mm<sup>2</sup>

### Tube Specifications:

Inner Diameter: 0.305mm

Other Diameter: 0.635mm

### Materials:

Valved Plate Body: medical-grade polypropylene

Non- Valved Plate Body: medical-grade polypropylene

Drainage Tube: medical-grade silicone

Valve: medical-grade silicone, elastomer membrane

### Ordering Information:

Model: B1 (Ahmed™ Glaucoma Valve Bi-Plate)

Model B1

### **Model PC7**

Ahmed™ Flexible Plate™  
with Pars Plana Clip™



### **Model PC8**

Ahmed™ Flexible Plate™ (Pediatric)  
with Pars Plana Clip™







**Features:**

- Made of medical-grade silicone
- Reduces prep time for posterior chamber insertions
- Clip is fully adjustable along the tube length
- Easily sutured onto sclera
- Clip redirects the tube into the pars plana without bending or kinking

**PC7 Specifications:**

Width: 13.00mm  
Length: 16.00m  
Surface Area: 184.00mm<sup>2</sup>

**PC8 Specifications:**

Width: 9.60mm  
Length: 10.00mm  
Surface Area: 96.00mm<sup>2</sup>

**Tube Specifications:**

Inner Diameter: 0.305mm  
Other Diameter: 0.635mm

**Materials:**

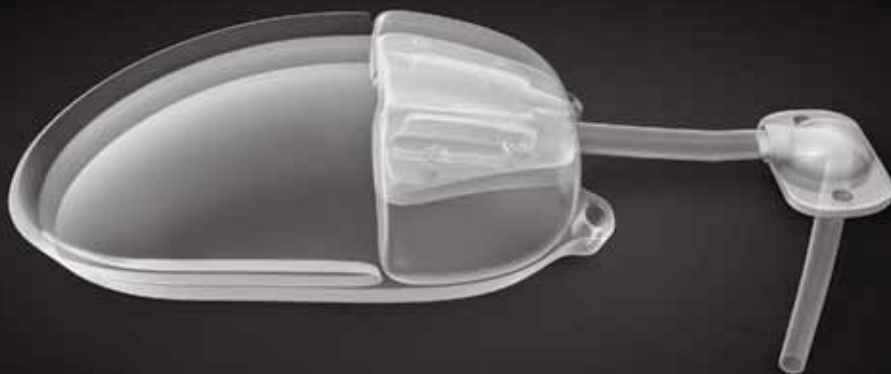
Valved Plate Body: medical-grade silicone  
Drainage Tube: medical-grade silicone  
Valve: medical-grade silicone, elastomer membrane  
Clip: medical-grade silicone

**Ordering Information:**

Model: PC7 (Model FP7 with Pars Plana Clip)  
Model: PC8 (Model FP8 with Pars Plana Clip)

### **Model PS2**

Ahmed™ Glaucoma Valve  
with Pars Plana Clip™



### **Model PS3**

Ahmed™ Glaucoma Valve (Pediatric)  
with Pars Plana Clip™





### Features:

- Reduces prep time for posterior chamber insertions
- Clip is fully adjustable along the tube length
- Easily sutured onto sclera
- Clip redirects the tube into the pars plana without bending or kinking

### PS2 Specifications:

Width: 13.00mm  
Length: 16.00m  
Surface Area: 184.00mm<sup>2</sup>

### PC3 Specifications:

Width: 9.60mm  
Length: 10.00mm  
Surface Area: 96.00mm<sup>2</sup>

### Tube Specifications:

Inner Diameter: 0.305mm  
Other Diameter: 0.635mm

### Materials:

Valved Plate Body: medical-grade polypropylene  
Drainage Tube: medical-grade silicone  
Valve: medical-grade silicone, elastomer membrane  
Clip: medical-grade silicone

### Ordering Information:

Model: PS2 (Model S2 with Pars Plana Clip)  
Model: PS3 (Model S3 with Pars Plana Clip)

**Model PC**  
Pars Plana Clip™



**Pars Plana Clip Features:**

- Provides for valve tube insertion into the pars plana
- Fully adjustable along the length of the tube
- Does not compromise integrity of valve tube
- Redirects the tube into the pars plana without bending or kinking
- Can be used with any drainage device
- Easily sutured onto sclera

**Ordering Information:**

Model: PC (Pars Plana Clip)

**Model TE**  
Tube Extender™



**Tube Extender Features:**

- Provides extra tube length
- Provides leak-proof junction between tubes
- Helpful when drainage tube is cut too short
- Can be used with any drainage device
- Easily sutured onto sclera

**Ordering Information:**

Model: TE (Tube Extender)

**Model TI**  
Tube Inserter™



**Tube Inserter Features:**

- Notched tip secures valve tube
- Provides rigidity to valve tube for easy insertion into the anterior chamber
- Stainless steel
- Serrated grip
- Shorter tip helps to provide better view through microscope
- Reusable and Very inexpensive
- Can be used with any drainage device

**Ordering Information:**

Model: TI (Tube Inserter)

## Model FX4 Non-Valved Flexible Plate™



## Model B4 Non-Valved Plate



## Human Allograft Tissue Pericardium and Sclera



### Model FX4 Features:

- Made of medical-grade silicone
- Used with existing implants
- Can be inserted in existing bleb
- Attachable on either right or left side
- Increases surface area of existing implant
- Can be placed over or under the muscle
- Easily sutured onto the sclera

### Ordering Information:

Model: FX4  
(Non-Valved Flexible Plate™)

### Model B4 Features:

- Used with existing implants
- Can be inserted in existing bleb
- Attachable on either right or left side
- Increases surface area of existing implant
- Easily sutured onto the sclera

### Ordering Information:

Model: B4  
(Non-Valved Plate)

### Human Allograft Tissue Features:

- Biocompatible human tissue for leaking blebs
- Gamma sterilized
- 2.5 years shelf life
- Nominal thickness 0.5mm
- Available Freeze-Dried or Hydrated
- Available full thickness sclera or pericardium
- Can be used as ocular tissue for other cosmetic uses

### Ordering Information:

TSH: (Human Sclera)  
TPH: (Hydrated Pericardium)  
TPD: (Freeze-Dried Pericardium)

# Surgical Procedure



The implant should be examined and primed prior to implantation. Priming is accomplished by injecting 1cc balanced salt solution or sterile water through the drainage tube and valve, using a blunt **26 gauge cannula**.



A fornix-based incision is made through the conjunctiva and Tenon's capsule. A pocket is formed at the superior quadrant between the medial or lateral rectus muscles by blunt dissection of Tenon's capsule from the episclera.



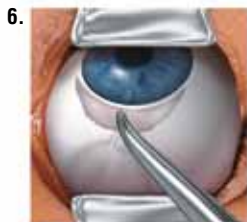
The valve body is inserted into the pocket between the rectus muscles and sutured to the episclera. The leading edge of the device should be at least **8-10mm from the limbus**.



The drainage tube is trimmed to permit a **2-3mm** insertion of the tube into the anterior chamber (AC). The tube should be bevel cut to an anterior angle of **30°** to facilitate insertion.



A paracentesis is performed, and the AC is entered at the limbus with a sharp **23 gauge needle**, parallel to the iris. **Caution:** Care must be taken to insure that the drainage tube does not contact the iris or corneal endothelium after insertion.



The drainage tube is inserted into the AC approximately **2-3mm**, through the needle track and parallel to the iris. The leading edge of the device should be **8-10mm** from the limbus.

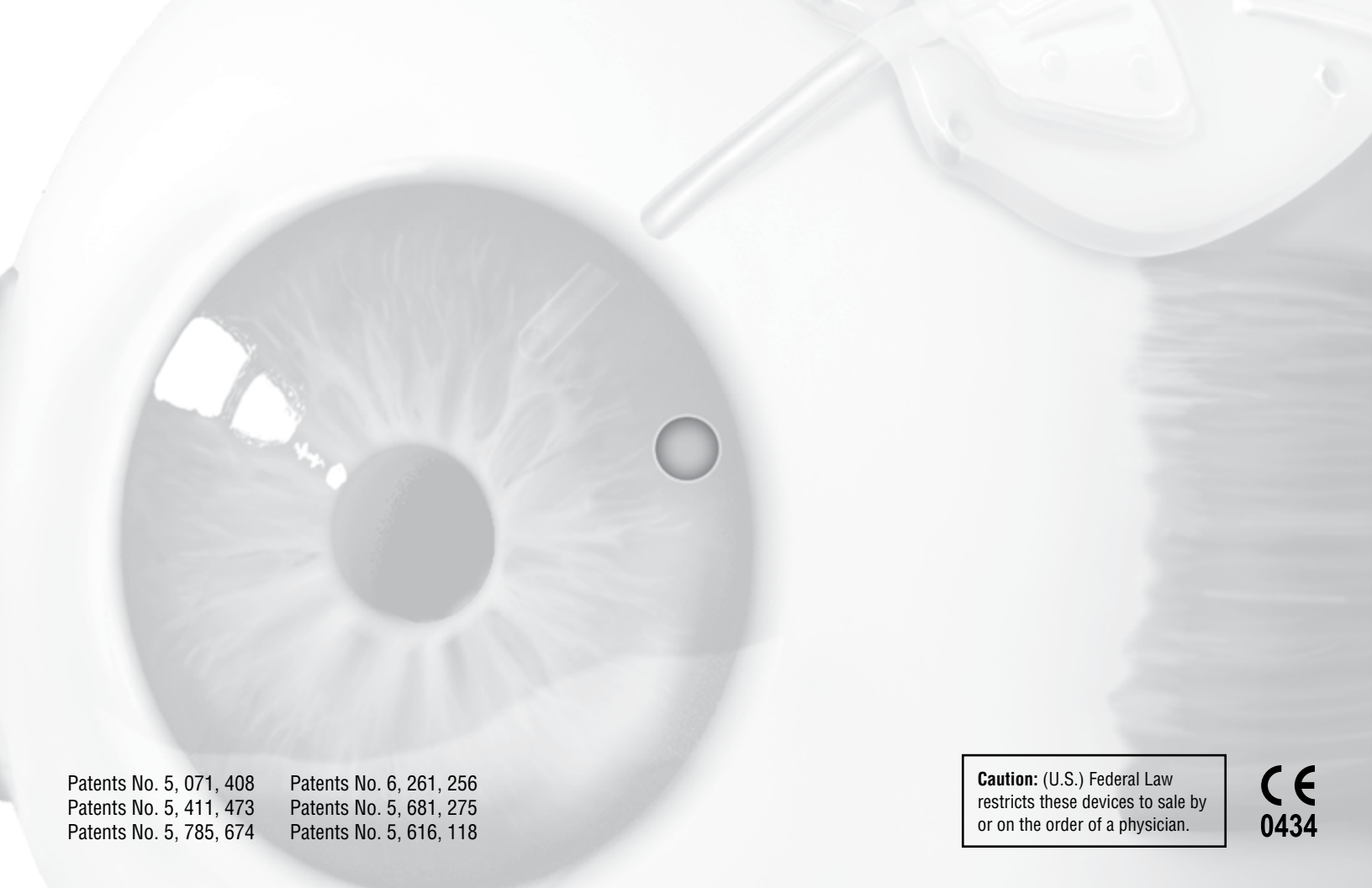


The exposed drainage tube is covered with a small piece of preserved, donor sclera or pericardium, which is sutured into place and the conjunctiva is closed.



**NOTE:** As an alternative to Step 7, a **2/3 thickness** limbal-based scleral flap may be made. The tube is inserted into the AC through a **23 gauge needle** puncture made under the flap. The flap is sutured closed.

The steps illustrated here are intended as a **guideline only**, and do not represent recommended treatment for any particular patient. The use of any specific surgical technique or maneuver is at the sole discretion of the surgeon. Surgeons should be familiar with the use of glaucoma drainage devices and post-operative care considerations before implanting any drainage device. Reference papers and surgical video tapes are available upon request.



Patents No. 5, 071, 408  
Patents No. 5, 411, 473  
Patents No. 5, 785, 674

Patents No. 6, 261, 256  
Patents No. 5, 681, 275  
Patents No. 5, 616, 118

**Caution:** (U.S.) Federal Law  
restricts these devices to sale by  
or on the order of a physician.

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0434





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