



## NuCLEUS™ Line

NuCLEUS™ Line are suitable for percutaneous transluminal valvuloplasty (PTV) and pre-dilatation in transcatheter heart-valve replacement procedures. The balloon is designed with a waist formed into the middle of the balloon. Upon reaching a specified pressure, the waist will expand between 90% to almost 100% of the rated balloon diameter. The innovative balloon design enables accurate positioning prior to and during inflation. NuCLEUS sizes start from 10.0 mm and TYSHAK NuCLEUS sizes already begin with 4.0 mm.

### Benefits

**Balloon** The NuCLEUS™ Line PTV balloons are coaxially constructed with a distally mounted non-compliant high pressure balloon suitable for resistant stenosis.

**Precise positioning** The innovative balloon design of NuCLEUS™ Line facilitates positive positioning while holding the balloon in the correct location prior to and during inflation.

**In- and deflation times** The NuCLEUS™ Line PTV balloons have extremely fast in- and deflation times for a quick procedure.

**Maximum Trackability** The distal shaft through the balloon is highly flexible for exceptional maneuverability. This, combined with the pushability of the coaxial shaft, provides outstanding tracking performance.

**Radiopaque Marker** Platinum marker bands facilitate reliable positioning of the balloon.

**Low profile** The exceptionally low profile of the NuCLEUS™ Line PTV balloons require the smallest introducers possible.

**Biggest range of sizes in market** NuCLEUS™ Line balloon catheters are available in multiple configurations ranging in diameter from **4.0 to 30.0 mm**.

**Customized Sizes upon request** If you don't find the appropriate size for your procedure, we can make customized sizes upon request. Additional regulatory approvals may be needed for customized sizes.

|                             | NuCLEUS™   | NuCLEUS-X™  | TYSHAK NuCLEUS™   |
|-----------------------------|--|---|---|
| Details                     |  | <ul style="list-style-type: none"> <li>• Extra high inner lumen strength</li> <li>• Extra fast guidewire movement (even with balloon inflated)</li> <li>• Increased pushability from new braided inner tubing</li> <li>• Radiopaque inner tubing</li> </ul> | Smaller Introducer sizes and lower rated Burst pressures than NuCLEUS |
| Class III                   |  |   |   |
| Catheter Body               | Polymeric, DEHP-free, Latex-free   |   |   |
| Balloon                     | Thermoplastic Elastomer (Non-compliant – The balloon will not exceed +/- 10% of the given balloon size at Rated Burst Pressure), DEHP-free, Latex-free |   |   |
| Image Band                  | Platinum Iridium   |   |   |
| Balloon Diameter (mm)       | 10.0 – 30.0  | 18.0 – 30.0   | 4.0 – 25.0  |
| Balloon length (cm)         | 3.0 – 6.0  | 4.0 – 6.0   | 2.0 – 4.0   |
| Rated Burst Pressure (ATM)  | 2 – 9  | 2 – 4   | 2 – 5   |
| Introducer Size (FR)        | 7 – 14   | 10 – 14   | 6 – 11  |
| Indication                  | PTV of the Mitral & Aortic Valve   |   | PTV of the Pulmonary Valve  |
| <b>Ordering information</b> | Page 31 – 33   |   |   |

## Ordering information

| NuCLEUS™ Line                  |            |                             |                           |                            |                       |                          |                           |                         |
|--------------------------------|------------|-----------------------------|---------------------------|----------------------------|-----------------------|--------------------------|---------------------------|-------------------------|
| NuCLEUS™<br>TYSHAK<br>NuCLEUS™ | NuCLEUS-X™ | Balloon<br>Diameter<br>(mm) | Balloon<br>Length<br>(cm) | Introducer<br>Size<br>(FR) | Shaft<br>Size<br>(FR) | Usable<br>Length<br>(cm) | Guide<br>Wire<br>(Inches) | Rated<br>Burst<br>(ATM) |
| TN001                          |            | 4.0                         | 2.0                       | 6                          | 5,5                   | 100                      | 0.035                     | 5                       |
| TN002                          |            | 4.0                         | 3.0                       | 6                          | 5,5                   | 100                      | 0.035                     | 5                       |
| TN003                          |            | 5.0                         | 2.0                       | 6                          | 5,5                   | 100                      | 0.035                     | 5                       |
| TN004                          |            | 5.0                         | 3.0                       | 6                          | 5,5                   | 100                      | 0.035                     | 5                       |
| TN005                          |            | 5.0                         | 4.0                       | 6                          | 5,5                   | 100                      | 0.035                     | 5                       |
| TN006                          |            | 6.0                         | 2.0                       | 6                          | 5,5                   | 100                      | 0.035                     | 5                       |
| TN007                          |            | 6.0                         | 3.0                       | 6                          | 5,5                   | 100                      | 0.035                     | 5                       |
| TN008                          |            | 6.0                         | 4.0                       | 6                          | 5,5                   | 100                      | 0.035                     | 5                       |
| TN009                          |            | 7.0                         | 2.0                       | 6                          | 5,5                   | 100                      | 0.035                     | 5                       |
| TN010                          |            | 7.0                         | 3.0                       | 6                          | 5,5                   | 100                      | 0.035                     | 5                       |
| TN011                          |            | 7.0                         | 4.0                       | 6                          | 5,5                   | 100                      | 0.035                     | 5                       |
| TN012                          |            | 8.0                         | 2.0                       | 6                          | 5,5                   | 100                      | 0.035                     | 5                       |
| TN013                          |            | 8.0                         | 3.0                       | 6                          | 5,5                   | 100                      | 0.035                     | 5                       |
| TN014                          |            | 8.0                         | 4.0                       | 6                          | 5,5                   | 100                      | 0.035                     | 5                       |
| TN015                          |            | 9.0                         | 2.0                       | 6                          | 5,5                   | 100                      | 0.035                     | 5                       |
| TN016                          |            | 9.0                         | 3.0                       | 6                          | 5,5                   | 100                      | 0.035                     | 5                       |
| TN017                          |            | 9.0                         | 4.0                       | 6                          | 5,5                   | 100                      | 0.035                     | 5                       |
| TN018                          |            | 10.0                        | 2.0                       | 7                          | 6                     | 100                      | 0.035                     | 5                       |
| TN019                          |            | 10.0                        | 3.0                       | 7                          | 6                     | 100                      | 0.035                     | 5                       |
| TN020                          |            | 10.0                        | 4.0                       | 7                          | 6                     | 100                      | 0.035                     | 5                       |
| PVN218                         |            | 10.0                        | 3.0                       | 7                          | 6                     | 110                      | 0.035                     | 9                       |
| PVN219                         |            | 10.0                        | 4.0                       | 7                          | 6                     | 110                      | 0.035                     | 9                       |
| PVN236                         |            | 10.0                        | 5.0                       | 7                          | 6                     | 110                      | 0.035                     | 9                       |
| PVN237                         |            | 10.0                        | 6.0                       | 7                          | 6                     | 110                      | 0.035                     | 9                       |
| TN021                          |            | 12.0                        | 2.0                       | 7                          | 6                     | 100                      | 0.035                     | 4,5                     |
| TN022                          |            | 12.0                        | 3.0                       | 7                          | 6                     | 100                      | 0.035                     | 4,5                     |
| TN023                          |            | 12.0                        | 4.0                       | 7                          | 6                     | 100                      | 0.035                     | 4,5                     |
| PVN220                         |            | 12.0                        | 3.0                       | 7                          | 6                     | 110                      | 0.035                     | 7                       |
| PVN221                         |            | 12.0                        | 3.0                       | 8                          | 6                     | 110                      | 0.035                     | 7                       |
| PVN222                         |            | 12.0                        | 4.0                       | 7                          | 6                     | 110                      | 0.035                     | 7                       |
| PVN223                         |            | 12.0                        | 4.0                       | 8                          | 6                     | 110                      | 0.035                     | 7                       |
| PVN238                         |            | 12.0                        | 5.0                       | 8                          | 6                     | 110                      | 0.035                     | 7                       |
| PVN239                         |            | 12.0                        | 6.0                       | 8                          | 6                     | 110                      | 0.035                     | 7                       |
| TN024                          |            | 14.0                        | 3.0                       | 8                          | 6                     | 100                      | 0.035                     | 3,5                     |
| TN025                          |            | 14.0                        | 4.0                       | 8                          | 6                     | 100                      | 0.035                     | 3,5                     |
| PVN224                         |            | 14.0                        | 3.0                       | 9                          | 7                     | 110                      | 0.035                     | 6                       |
| PVN225                         |            | 14.0                        | 4.0                       | 9                          | 7                     | 110                      | 0.035                     | 6                       |
| PVN240                         |            | 14.0                        | 5.0                       | 9                          | 7                     | 110                      | 0.035                     | 6                       |
| PVN241                         |            | 14.0                        | 6.0                       | 9                          | 7                     | 110                      | 0.035                     | 6                       |
| TN026                          |            | 15.0                        | 3.0                       | 8                          | 7                     | 100                      | 0.035                     | 3,5                     |
| TN027                          |            | 15.0                        | 4.0                       | 8                          | 7                     | 100                      | 0.035                     | 3,5                     |
| TN028                          |            | 16.0                        | 3.0                       | 8                          | 7                     | 100                      | 0.035                     | 3,5                     |
| TN029                          |            | 16.0                        | 4.0                       | 8                          | 7                     | 100                      | 0.035                     | 3,5                     |
| PVN226                         |            | 16.0                        | 3.0                       | 9                          | 7                     | 110                      | 0.035                     | 5                       |



## Ordering information

| NuCLEUS™ Line                  |            |                             |                           |                            |                       |                          |                           |                         |
|--------------------------------|------------|-----------------------------|---------------------------|----------------------------|-----------------------|--------------------------|---------------------------|-------------------------|
| NuCLEUS™<br>TYSHAK<br>NuCLEUS™ | NuCLEUS-X™ | Balloon<br>Diameter<br>(mm) | Balloon<br>Length<br>(cm) | Introducer<br>Size<br>(FR) | Shaft<br>Size<br>(FR) | Usable<br>Length<br>(cm) | Guide<br>Wire<br>(Inches) | Rated<br>Burst<br>(ATM) |
| PVN227                         |            | 16.0                        | 4.0                       | 9                          | 7                     | 110                      | 0.035                     | 5                       |
| PVN242                         |            | 16.0                        | 5.0                       | 9                          | 7                     | 110                      | 0.035                     | 5                       |
| PVN243                         |            | 16.0                        | 6.0                       | 9                          | 7                     | 110                      | 0.035                     | 5                       |
| TN030                          |            | 18.0                        | 3.0                       | 9                          | 8                     | 100                      | 0.035                     | 3                       |
| TN031                          |            | 18.0                        | 4.0                       | 9                          | 8                     | 100                      | 0.035                     | 3                       |
| PVN228                         |            | 18.0                        | 3.0                       | 10                         | 8                     | 110                      | 0.035                     | 4                       |
| PVN229                         |            | 18.0                        | 4.0                       | 10                         | 8                     | 110                      | 0.035                     | 4                       |
| PVN244                         |            | 18.0                        | 5.0                       | 10                         | 8                     | 110                      | 0.035                     | 4                       |
| PVN245                         |            | 18.0                        | 6.0                       | 10                         | 8                     | 110                      | 0.035                     | 4                       |
|                                | PVN400     | 18.0                        | 4.0                       | 10                         | 9                     | 110                      | 0.035                     | 4                       |
|                                | PVN401     | 18.0                        | 5.0                       | 10                         | 9                     | 110                      | 0.035                     | 4                       |
|                                | PVN402     | 18.0                        | 6.0                       | 10                         | 9                     | 110                      | 0.035                     | 4                       |
| TN032                          |            | 20.0                        | 3.0                       | 10                         | 8                     | 100                      | 0.035                     | 2                       |
| TN033                          |            | 20.0                        | 4.0                       | 10                         | 8                     | 100                      | 0.035                     | 2                       |
| PVN230                         |            | 20.0                        | 4.0                       | 12                         | 8                     | 110                      | 0.035                     | 4                       |
| PVN246                         |            | 20.0                        | 5.0                       | 12                         | 8                     | 110                      | 0.035                     | 4                       |
| PVN247                         |            | 20.0                        | 6.0                       | 12                         | 8                     | 110                      | 0.035                     | 4                       |
|                                | PVN403     | 20.0                        | 4.0                       | 12                         | 9                     | 110                      | 0.035                     | 4                       |
|                                | PVN404     | 20.0                        | 5.0                       | 12                         | 9                     | 110                      | 0.035                     | 4                       |
|                                | PVN405     | 20.0                        | 6.0                       | 12                         | 9                     | 110                      | 0.035                     | 4                       |
| TN034                          |            | 22.0                        | 3.0                       | 11                         | 9                     | 100                      | 0.035                     | 2                       |
| TN035                          |            | 22.0                        | 4.0                       | 11                         | 9                     | 100                      | 0.035                     | 2                       |
| PVN231                         |            | 22.0                        | 4.0                       | 12                         | 9                     | 110                      | 0.035                     | 4                       |
| PVN248                         |            | 22.0                        | 5.0                       | 12                         | 9                     | 110                      | 0.035                     | 4                       |
| PVN249                         |            | 22.0                        | 6.0                       | 12                         | 9                     | 110                      | 0.035                     | 4                       |
|                                | PVN406     | 22.0                        | 4.0                       | 12                         | 9                     | 110                      | 0.035                     | 3                       |
|                                | PVN407     | 22.0                        | 5.0                       | 12                         | 9                     | 110                      | 0.035                     | 3                       |
|                                | PVN408     | 22.0                        | 6.0                       | 12                         | 9                     | 110                      | 0.035                     | 3                       |
| TN036                          |            | 25.0                        | 3.0                       | 11                         | 9                     | 100                      | 0.035                     | 2                       |
| TN037                          |            | 25.0                        | 4.0                       | 11                         | 9                     | 100                      | 0.035                     | 2                       |
| PVN232                         |            | 25.0                        | 4.0                       | 12                         | 9                     | 110                      | 0.035                     | 4                       |
| PVN250                         |            | 25.0                        | 5.0                       | 12                         | 9                     | 110                      | 0.035                     | 4                       |
| PVN251                         |            | 25.0                        | 6.0                       | 12                         | 9                     | 110                      | 0.035                     | 4                       |
|                                | PVN409     | 25.0                        | 4.0                       | 12                         | 9                     | 110                      | 0.035                     | 3                       |
|                                | PVN410     | 25.0                        | 5.0                       | 12                         | 9                     | 110                      | 0.035                     | 3                       |
|                                | PVN411     | 25.0                        | 6.0                       | 12                         | 9                     | 110                      | 0.035                     | 3                       |
| PVN233                         |            | 28.0                        | 4.0                       | 12                         | 9                     | 110                      | 0.035                     | 2                       |
| PVN234                         |            | 28.0                        | 4.0                       | 14                         | 9                     | 110                      | 0.035                     | 2                       |
| PVN252                         |            | 28.0                        | 5.0                       | 14                         | 9                     | 110                      | 0.035                     | 2                       |
| PVN253                         |            | 28.0                        | 6.0                       | 14                         | 9                     | 110                      | 0.035                     | 2                       |
|                                | PVN412     | 28.0                        | 4.0                       | 12                         | 9                     | 110                      | 0.035                     | 2                       |
|                                | PVN413     | 28.0                        | 5.0                       | 12                         | 9                     | 110                      | 0.035                     | 2                       |
|                                | PVN414     | 28.0                        | 6.0                       | 12                         | 9                     | 110                      | 0.035                     | 2                       |
| PVN235                         |            | 30.0                        | 4.0                       | 14                         | 9                     | 110                      | 0.035                     | 2                       |

## Ordering information

| NuCLEUS™ Line                  |            |                             |                           |                            |                       |                          |                           |                         |
|--------------------------------|------------|-----------------------------|---------------------------|----------------------------|-----------------------|--------------------------|---------------------------|-------------------------|
| NuCLEUS™<br>TYSHAK<br>NuCLEUS™ | NuCLEUS-X™ | Balloon<br>Diameter<br>(mm) | Balloon<br>Length<br>(cm) | Introducer<br>Size<br>(FR) | Shaft<br>Size<br>(FR) | Usable<br>Length<br>(cm) | Guide<br>Wire<br>(Inches) | Rated<br>Burst<br>(ATM) |
| PVN254                         |            | 30.0                        | 5.0                       | 14                         | 9                     | 110                      | 0.035                     | 2                       |
| PVN255                         |            | 30.0                        | 6.0                       | 14                         | 9                     | 110                      | 0.035                     | 2                       |
|                                | PVN415     | 30.0                        | 4.0                       | 14                         | 9                     | 110                      | 0.035                     | 2                       |
|                                | PVN416     | 30.0                        | 5.0                       | 14                         | 9                     | 110                      | 0.035                     | 2                       |
|                                | PVN417     | 30.0                        | 6.0                       | 14                         | 9                     | 110                      | 0.035                     | 2                       |

other usable lengths available

| COEfficient™   |                |                             |                           |                            |                       |                           |                         |
|----------------|----------------|-----------------------------|---------------------------|----------------------------|-----------------------|---------------------------|-------------------------|
| Usable Lengths | (Shaft Length) | Balloon<br>Diameter<br>(mm) | Balloon<br>Length<br>(cm) | Introducer<br>Size<br>(FR) | Shaft<br>Size<br>(FR) | Guide<br>Wire<br>(Inches) | Rated<br>Burst<br>(ATM) |
| 75 cm          | 150 cm         |                             |                           |                            |                       |                           |                         |
| COE101         | COE128         | 4.0                         | 2.0                       | 4                          | 3.5                   | 0.018                     | 13                      |
| COE102         | COE137         | 4.0                         | 3.0                       | 4                          | 3.5                   | 0.018                     | 13                      |
| COE103         | COE138         | 4.0                         | 4.0                       | 4                          | 3.5                   | 0.018                     | 13                      |
| COE104         | COE129         | 5.0                         | 2.0                       | 4                          | 3.5                   | 0.018                     | 12                      |
| COE105         | COE139         | 5.0                         | 3.0                       | 4                          | 3.5                   | 0.018                     | 12                      |
| COE106         | COE140         | 5.0                         | 4.0                       | 4                          | 3.5                   | 0.018                     | 12                      |
| COE107         | COE130         | 6.0                         | 2.0                       | 5                          | 3.5                   | 0.018                     | 12                      |
| COE108         | COE141         | 6.0                         | 3.0                       | 5                          | 3.5                   | 0.018                     | 12                      |
| COE109         | COE142         | 6.0                         | 4.0                       | 5                          | 3.5                   | 0.018                     | 12                      |
| COE110         | COE131         | 7.0                         | 2.0                       | 5                          | 3.5                   | 0.018                     | 11                      |
| COE111         | COE143         | 7.0                         | 3.0                       | 5                          | 3.5                   | 0.018                     | 11                      |
| COE112         | COE144         | 7.0                         | 4.0                       | 5                          | 3.5                   | 0.018                     | 11                      |
| COE113         | COE132         | 8.0                         | 2.0                       | 6                          | 3.5                   | 0.018                     | 10                      |
| COE114         | COE145         | 8.0                         | 3.0                       | 6                          | 3.5                   | 0.018                     | 10                      |
| COE115         | COE146         | 8.0                         | 4.0                       | 6                          | 3.5                   | 0.018                     | 10                      |
| SN032          | N/A            | 9.0                         | 2.0                       | 5                          | 3.5                   | 0.018                     | 10                      |
| COE116         | N/A            | 9.0                         | 2.0                       | 6                          | 3.5                   | 0.018                     | 10                      |
| COE117         | COE147         | 9.0                         | 3.0                       | 6                          | 3.5                   | 0.018                     | 10                      |
| COE118         | COE148         | 9.0                         | 4.0                       | 6                          | 3.5                   | 0.018                     | 10                      |
| COE119         | COE134         | 10.0                        | 2.0                       | 6                          | 3.5                   | 0.018                     | 10                      |
| COE120         | COE149         | 10.0                        | 3.0                       | 6                          | 3.5                   | 0.018                     | 10                      |
| COE121         | COE150         | 10.0                        | 4.0                       | 6                          | 3.5                   | 0.018                     | 10                      |
| COE122         | COE135         | 11.0                        | 2.0                       | 6                          | 3.5                   | 0.018                     | 8                       |
| COE123         | COE151         | 11.0                        | 3.0                       | 6                          | 3.5                   | 0.018                     | 8                       |
| COE124         | COE152         | 11.0                        | 4.0                       | 6                          | 3.5                   | 0.018                     | 8                       |
| COE125         | COE136         | 12.0                        | 2.0                       | 6                          | 3.5                   | 0.018                     | 7                       |
| COE126         | COE153         | 12.0                        | 3.0                       | 7                          | 3.5                   | 0.018                     | 7                       |
| COE127         | COE154         | 12.0                        | 4.0                       | 7                          | 3.5                   | 0.018                     | 7                       |