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## Axial flow nozzle check valves for pumps and compressors protection



### Applications

Water treatment  
Water distribution network  
Pumping stations  
Cooling-water circuits  
Elevated tanks

### Product Attributes

Compact shape and short overall  
Lightweight and low friction  
Minimum pressure loss  
High-quality corrosion protection  
DN50 to DN600

### Approvals/Standards

Flanges to DIN EN1092 as standard  
Other flange Like ANSI B16.5

### Quality

ISO 9001:2015 Quality Management  
PED approval

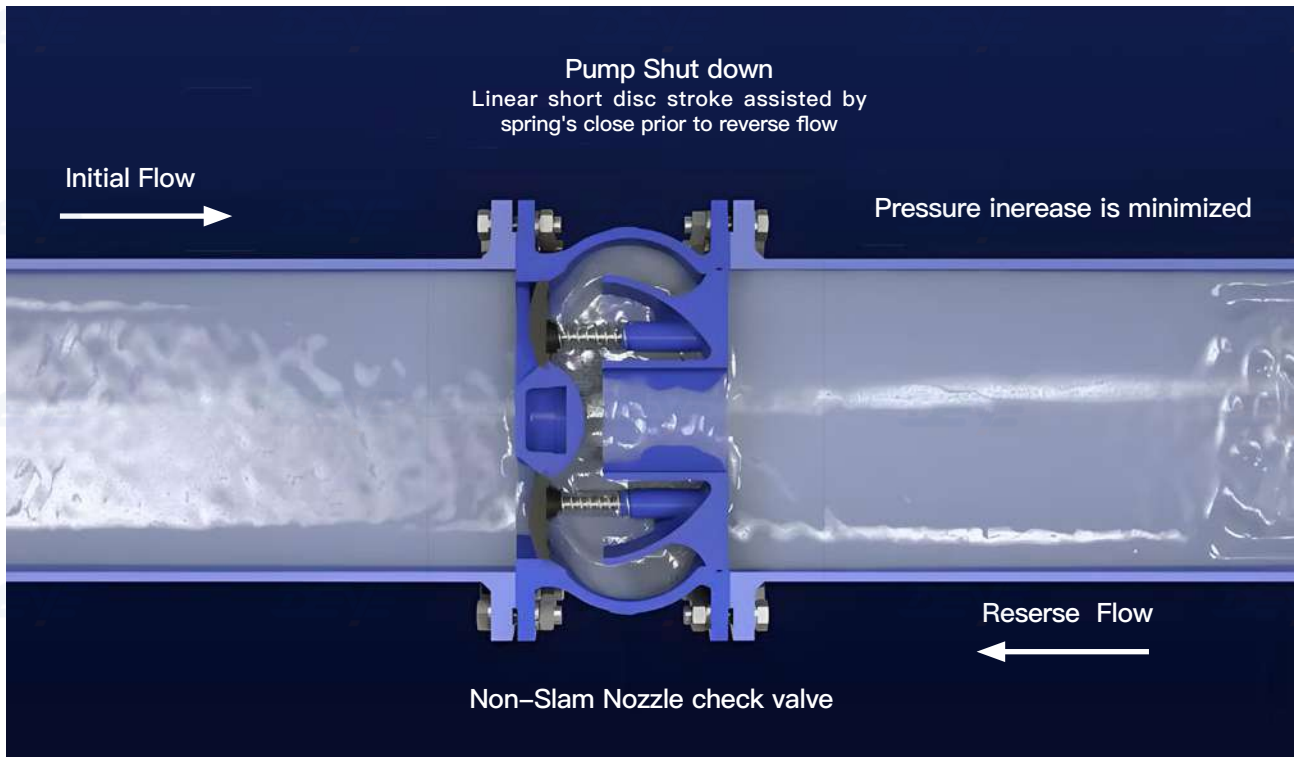


Nozzle Check valves which are also called axial flow check valves are very important for non-return fluid purpose with non-slamming and fast closing characteristics. They are mostly installed downstream of rotating equipment to protect the expensive mechanical equipment from possible damages due to back flow. Although they are costly option compared to other alternatives like swing and dual plate check valves but can save a lot through safe protection of costly rotating equipment and lower pressure drop. These valves are widely used in different sectors of water and oil industry such as top site offshore platforms, subsea, refineries, pipelines, LNG and petrochemical plants.



## Eliminates Water Hammer

short axial disk travel to the seat, spring assisted design in addition to low mass disk make nozzle check as a fast-closing valve which is an advantage in critical lines with fast reversing flow. Fast closing response reduces the possibility of equipment damage due to back flow and provides good protection for expensive mechanical facilities. Low static pressure behind the disk in venturi area makes a pressure differential over the disk causing easy opening of the disk as well. The quick and close avoid the shock waves and pressure spikes associated with slamming shut.



## Low pressure drop and high flow capacity

High pressure drop means higher wearing and erosion in the valve as well as more expensive pumps or compressors selection to provide higher head and lower friction loss. The pressure drop for the valve is low and less than 0.1 barg normally. In addition, smooth flow through the valve as a result of venturi effect associated with nozzle design (bore reduction) avoids flow turbulences, minimizes erosion problems, maximizes flow capacity as well as easy opening of the disk.

## Robust Structure & Zero Leakage



Robust body structure of the valve gives more resistant associated with vibration coming from upstream equipment (pumps and compressors) compared to dual plate and swing check valves. Integrated body without bolted body bonnet design reduces the leakage risk through the body close to zero. As a result of zero emission body characteristic, these valves are also used in subsea

## Resilient-seated and FEB Surface for Corrosion Resistance

Streamlined valve disc and valve ring, corrosion resistant material with rubber coated (zinc-free bronze, elastomer), internal and external Surface with Epoxy Powder Coated, coating thickness is 300 Microns to ensure the anti corrosion performance and also it is suitable for drinking water with WRAS approved pigment and rubber.



## Low Maintenance

The smooth operation and minimized wear on components due to the absence of slam translate to lower maintenance needs and reduced downtime.

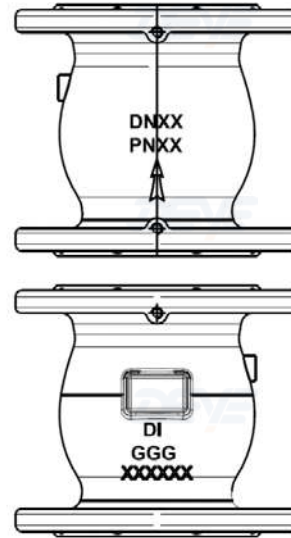
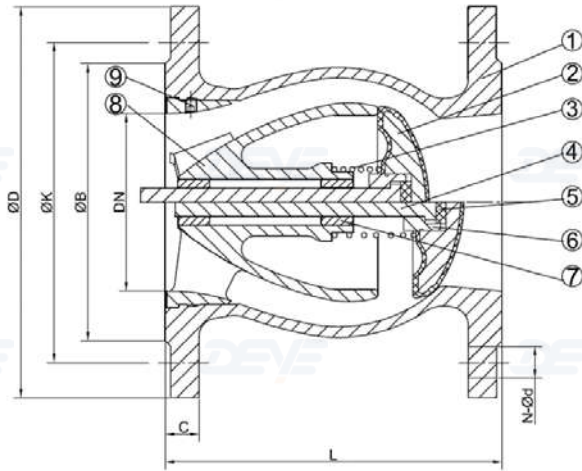


## Application

Service for clean water, precleaned sewage water,  
Fire-fighting, Irrigation,  
Cooling and HVAC System.  
Non-Slam Check Valves are used as protection against reverse flow, with faster disc return water hammer is reduced. The non-slam check valves provides not only quieter performance but also reduced head loss.



# Technical data sheets



## Parts List

No.	Part Name	Material	Standard
1	Body	Ductile Iron	GJS 500-7
2	Disc	Ductile Iron+rubber	GJS 500-7+EPDM
3	Spring	Stainless Steel	AISI 304/ 316
4	Stem	Stainless Steel	AISI 420/ 304/ 316
5	Washer	Rubber	EPDM
6	Nut	Stainless Steel	AIS1420/ 304
7	Bushing	Bronze	C61900
8	Diffuser	Ductile Iron	GJS 500-7
9	Set Screw	Stainless Steel	AISI 304

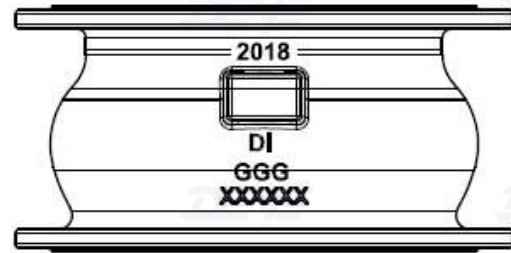
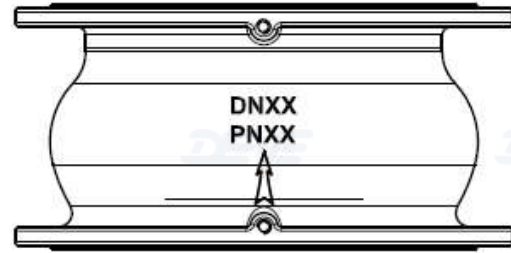
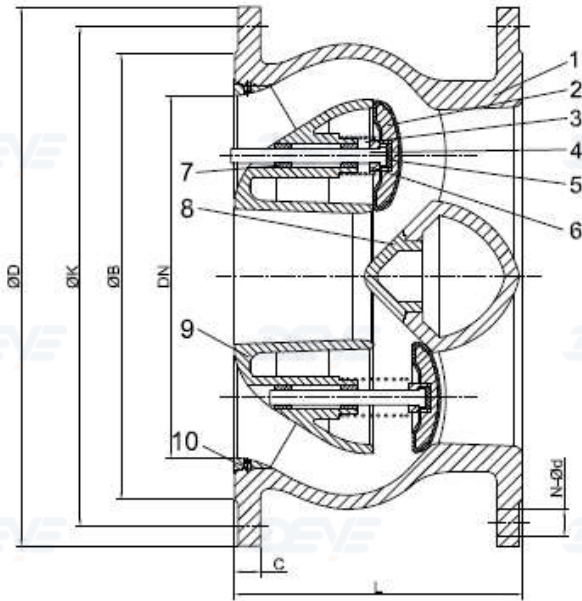
## Technical Data

- Size Range: DN50-1200mm
- Pressure Ratings: 1.0Mpa; 1.6Mpa; 2.5Mpa.
- Working Temperature: -10°C -100°C
- End Connections: PN10, PN16, PN25.
- Flange STD: ISO 5752 and EN 1092-2, ISO 7005-2
- Test Standard: EN12266-1 API598
- The face to face Comply with EN 558-14
- Resistance coefficient :1.8-2
- Pop open pressure: 0.1bar
- Fully open velocity: 1.2m/s.

## Dimension

Unit: mm

DN	Model No	L (F/F)	φD			φK			n-φd			C	
			PN10	PN16	PN25	PN10	PN16	PN25	PN10	PN16	PN25	PN10/16	PN25
50	NSCV-0050	150		165			125			4-φ19			19
65	NSCV-0065	170		185			145		4-φ19		8-φ19		19
80	NSCV-0080	180		200			160		8-φ19		8-φ19		19
100	NSCV-0100	190		220	235	180	190		8-φ19		8-φ23		19
125	NSCV-0125	200		250	270	210	220		8-φ23		8-φ28	19	23.5
150	NSCV-0150	210		285	300	240	250		8-φ23		8-φ28	19	26
200	NSCV-0200	230		340	360	295	310		8-φ23	12-φ23	12-φ31	20	30
250	NSCV-0250	250	395	405	425	350	355	370	12-φ23	12-φ28	12-φ34	22	34.5
300	NSCV-0300	270	445	460	485	400	410	430	12-φ23	12-φ28	16-φ36	24.5	39.5
350	NSCV-0350	290	505	520	555	460	470	490	16-φ23	16-φ28	16-φ37	24.5	44



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7	Bushing	Bronze	C61900
8	Plug	Ductile Iron	GJS 500-7
9	Diffuser	Ductile Iron	GJS 500-7
10	Set Screw	Stainless Steel	AISI 304

### Dimension

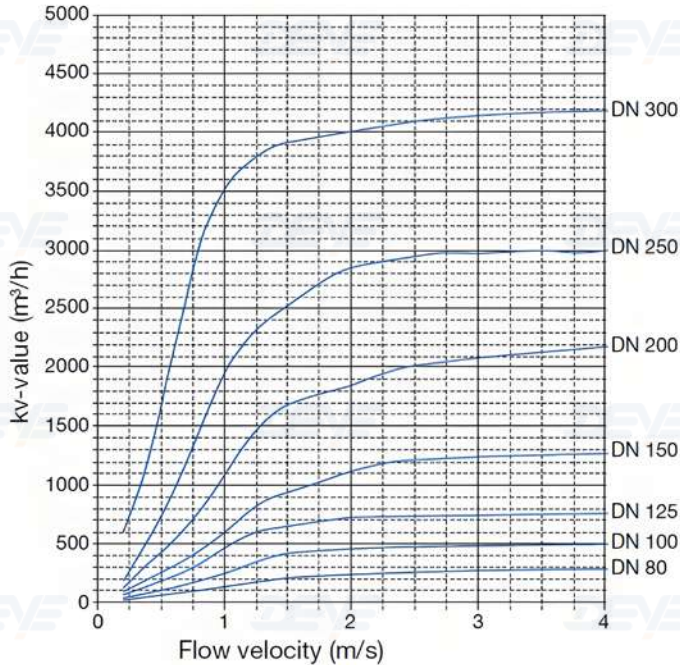
Unit: mm

DN	Model No	L	ØD			ØK			n-Ød			C		
			(F/F)	PN10	PN16	PN25	PN10	PN16	PN25	PN10	PN16	PN25	PN10	PN16
400	NSCV-0400	310	565	580	620	515	525	550	16-Ø28	16-Ø31	16-Ø41	24.5	24.5	48
450	NSCV-0450	330	615	640	670	565	585	600	20-Ø28	20-Ø31	20-Ø41	25.5	25.5	49
500	NSCV-0500	350	670	715	730	620	650	660	20-Ø28	20-Ø34	20-Ø44	26.5	26.5	52
600	NSCV-0600	390	780	840	845	725	770	770	20-Ø31	20-Ø37	20-Ø50	30	30	58
700	NSCV-0700	430	910	910	960	840	840	875	24-Ø31	24-Ø37	24-Ø43	39.5	39.5	46.5
800	NSCV-0800	470	1025	1025	1085	950	950	990	24-Ø34	24-Ø40	24-Ø49	43	43	51
900	NSCV-0900	510	1125	1125	1185	1050	1050	1090	28-Ø34	28-Ø40	28-Ø49	46.5	46.5	55.5
1000	NSCV-1000	550	1230	1255	1320	1160	1170	1210	28-Ø37	28-Ø43	28-Ø56	40	50	60
1200	NSCV-1200	630	1455	1485	1530	1380	1390	1420	32-Ø40	32-Ø49	32-Ø56	45	57	69

# Hydraulic characteristic curves

Calculated flow (m<sup>3</sup>/hr) going through a nominal valve size (DN200=inside dia of 200mm) at different flow velocities

$$\zeta = \left( \frac{\pi \cdot DN^2}{78,57 \cdot K_V} \right)^2 \quad DN \dots mm$$



## Definitions /formulas:

Kv-value:

Actual flow of water (m<sup>3</sup>/ hr) creating pressure loss of 1 bar.

## Pressure loss coefficient Zeta (K)

value:

Ratio of static to dynamic pressure loss.

Zeta(K)= Diff pressure / (500 X V<sup>2</sup>)

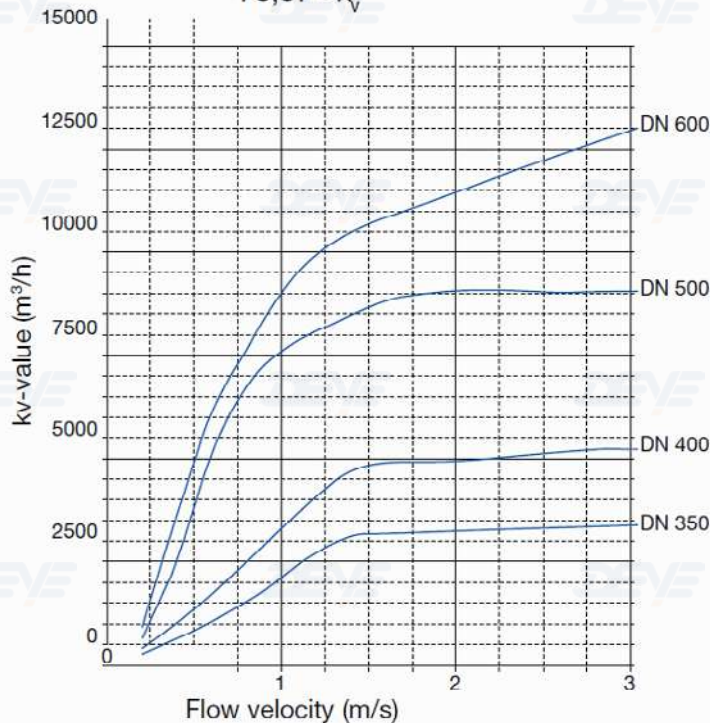
Diff pressure (Pa)

V: Water flow velocity (m/sec)

Actual diff pressure (bar)=(Q / Kv)<sup>2</sup>

Q: Actual water flow (m<sup>3</sup>/hr)

$$\zeta = \left( \frac{\pi \cdot DN^2}{78,57 \cdot K_V} \right)^2 \quad DN \dots mm$$



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