NOREVA nozzle check valves are used in applications where the reverse flow of a fluid has to be avoided. These valves are suitable for all kinds of liquid and gaseous fluids and fire safe by design.

Typical applications are for example: oil pipelines, steel mills, chemical plants, water works, pumping stations, water distribution plants, power plants, compressor stations, etc.

The high economic efficiency of our nozzle check valves is a result of very low pressure losses and the maintenance-free design. Due to short strokes and low moving masses the valves can close slam-free within fractions of seconds.

Competence, best possible customer service and flexibility are the basis of our success.

“The quality remains long after the price has been forgotten”
(Sir F. Henry Royce)

NOREVA NOZZLE CHECK VALVES

3 Valve Types
Solid Disc Type Z Sizes DN25 - DN250 (1” - 10”)  
Ring Disc Type N Sizes DN 300 - DN 2200 (12” - 88”)  
Ring Disc Type NG Sizes DN 300 - DN 600 (12” - 24”)

3 Face-to-Face Options
Type ZS and NK - Compact Face-to-Face  
Type ZB, NB and NG - Noreva Standard Face-to-Face  
Type ZD and ND - API 6D Face-to-Face

Sizes
DN 25 - DN 2200 (1” - 88”)

Pressure Classes and Connections
ASME 150 - 4500, API 2000 - 20000, PN 10 - PN 400  
Wafer; Flanged; Solid Lug; Hub-Ended; Butt Weld End

Materials
Ductile Irons; Carbon Steels; Stainless Steels; Duplex and Super Duplex Stainless Steels; Aluminium Bronze;  
High Nickel Alloys; Titanium

Features
Designed, manufactured, assembled and tested in accordance with Quality Assurance System accredited to EN ISO 9001:2008.
Certifiable in compliance with European Pressure Directive (PED) 97/23/EC to meet customer requirements when specified.
All bodies are certified to EN 10204 3.1 as a minimum.
No leak path to atmosphere - No fugitive emissions.
Firesafe by design.
Fast Response
Low weight discs, short stroke lengths and spring assistance combined to ensure that the Nozzle Check Valve responds quickest to change in flow direction. This exceptionally fast response ensures reverse velocity cannot build up to a level that can damage pumps, pipes or related equipment. As pressure surges can occur when a valve is closed against a moving body of fluid, the quick closure results in a considerably lower pressure peak than any other type of check valve.

Low Pressure Loss
The streamlined internals of the nozzle check valve range allows for a turbulence free flow around the disc in the Type Z valve or through and around the disc in the Type N valve.

The high capacity, smooth flow path results in low pressure drops across the whole range of Noreva Nozzle Check valves with exceptionally low pressure drop in the Type G valve range. Unlike other check valve designs, the low pressure loss is achieved at low flow rates which can be equated to significant pump energy savings, making the Noreva Nozzle Check Valve a competitive check valve solution when considering whole life costs.

Comparison of total life cycle costs
Valve Size DN 400 at a water flow rate of 1500 m³/h.

A total life cycle cost comparison based on the values of your system can be obtained from Noreva upon request.

Comparison of valve types in installations with different system decelerations

Dynamic Performance Characteristics

Check Valves installed in horizontal pipe
NOZZLE CHECK VALVE SPECIFICATIONS

Type Z

Size range: 1” - 10” (DN 25 - DN 250)
Pressure Class: PN 10 - PN 400, ASME 150 - ASME 4500, API 2000 - API 20000

- Non-slam closure
- Choice of face-to-face length
- Low pressure loss
- Low weight
- Metal sealing
- Maintenance free

The axial design allows for a streamlined flow path around the disc and high pressure recovery, minimising pressure drop across the valve. This efficient design combined with the highly responsive non-slam operation make this valve ideal for high head, critical pump applications.

Type ZB - The ZB is the standard valve for sizes 1” - 10”. Its optimum designed aerodynamic flow path through the valve results in very low pressure losses. It is also available with API 6D face-to-face dimensions (ZD).

Type ZS - With a shorter face-to-face (wafer type) than the ZB and where pressure loss across the valve is not such a significant consideration, the ZS is installed where space and weight is at a premium.

The Z range is suitable for all kinds of liquid and gaseous fluids and all installation positions.

Type N

Size range: 12” - 88” (DN 300 - DN 2200)
Pressure Class: PN 10 - PN 400, ASME 150 - ASME 4500, API 2000 - API 20000

- Non-slam closure
- Friction-free valve disc guiding
- Choice of face-to-face length
- Very low pressure loss
- Metal sealing
- Maintenance free
- Low weight

The unique ring disc design ensures that the disc remains light and responsive even in large sizes, which is essential for rapid non-slam closure. Mounted on a multiple spring and radial guide assembly, the disc moves freely without the frictional forces. Combining two ring-shaped annular flow paths with the excellent pressure recovery properties provided by the diffuser, the minimal pressure drop across the Type N valves gives lifetime energy savings when compared to more conventional check valve designs.

Type NB - The NB is the Noreva standard long face to face for 12” and larger, providing optimum pressure recovery performance and, hence minimum pressure loss. It is also available with API 6D face-to-face dimensions (ND).

Type NK - Providing the customer a shorter face-to-face length and reduced weight, the NK is the Noreva standard lower cost solution where marginally higher pressure drops can be accepted.

The N range is suitable for all kinds of liquid and gaseous fluids and all installation positions.

Type NG

Size range: 12” - 24” (DN 300 - DN 600)
Pressure Class: PN 10 - PN 16

- Non-slam closure
- Friction-free valve disc guiding
- Very low pressure loss
- Metal sealing
- Maintenance free

Pressure recovery is further enhanced within the Type G valve. Whilst using the same Ring Disc format, the Type G valve has a wider, split body design facilitating even greater flow efficiency and throughput performance.

The NG type has been on the world market for more than 70 years. Today they are mainly used by the water industry.
TECHNICAL ADVANTAGES

Horizontal or Vertical
Lightweight discs and spring assisted closure combine to allow the Noreva Nozzle Check Valve to maintain the same high performance regardless of vertical or horizontal installation.

Optimised Design
Typically, systems are operated at low flow rates to minimise pressure losses and maximise plant efficiencies. To help operators achieve this, Noreva designs each nozzle check valve to be fully open at a flow velocity of 1.5m/s, ensuring minimal pressure drop across the valve.

Space and Weight Savings
The short face to face of the ZS compact design allows for installation in applications where space and weight are at a premium.

The Type NK, with its reduced body length and its consequent reduced weight, offers significant cost savings compared to the NB Type. The savings in capital purchase costs are further complimented by low lifecycle cost afforded by the low pressure loss ring disc design.

Maintenance Free
The Noreva Nozzle Check Valve designs use no soft parts. Also as there are no wearing parts, it is maintenance free. The springs are sized according to the flow rates to ensure that the valves are in the fully open position during normal use. This minimises cycling of the spring, giving the valves a long design life without regular maintenance.

INDUSTRIES SERVED

• Power
• Oil & Gas
• Water
• Chemical & Petrochemical
NOZZLE CHECK VALVES

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