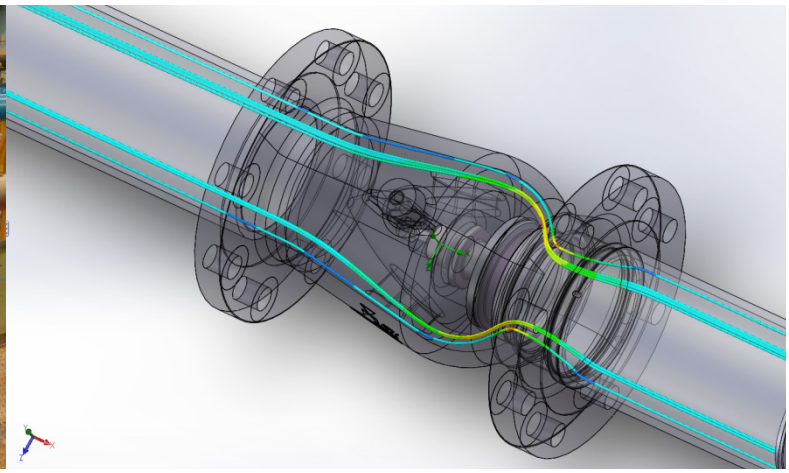
ABACUS
Valves International Ltd

axial non-slam nozzle check valves

www.abacusvalves.com

Abacus Valves International Ltd

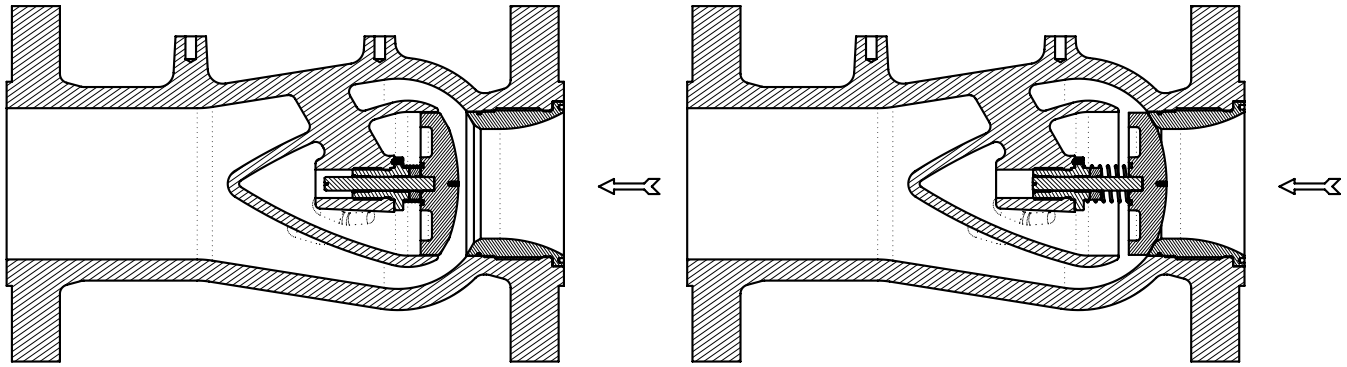
Abacus is a UK engineering company with over 25 years experience in the design and manufacture of industry approved check valves. Utilising existing skills along with the latest computer aided engineering software, our axial nozzle check range has been developed through a combination of sound engineering principles, 3D modelling, finite element analysis (FEA), computational fluid dynamics (CFD) and independent laboratory flow testing. All test data has been documented and utilised to enhance the product as well as benchmark CAE studies.



Operation

The Abacus Nozzle Check Valve works on the following principle:

Axially guided valve disc held against the seat by spring force and back pressure.
When the upstream (inlet) fluid force is greater than the spring force, the disc will move axially off its seat and flow induced.
As flow rate increases the disc is forced towards a fully open position where it sits against the diffuser/backstop.
The contoured body-disc-diffuser arrangement assures venturi flow characteristics ensuring minimal pressure drop across the valve and streamlined axial flow.
When the inlet flow starts to decelerate, the disc reacts immediately, with the aid of the spring, to move back towards the seat.
The disc will fully close just before back-flow starts, ensuring true non-slam performance.



Fully Open Position

Fully Closed Position

Benefits

Efficient Streamlined Axial Flow
The flow path through the converging-diverging valve geometry ensures optimum pressure recovery and minimal pressure drop.

Integral Diffuser
Utilising the structural integrity of an integral diffuser, the Abacus Nozzle Check Valve body combines inherent strength with natural damping characteristic's. Connecting ribs are designed with extensive knowledge of optimum profile geometry and spacing. The one piece body has no leak paths to atmosphere (no fugitive emissions).

Disc Ease of Opening and Stability
The axially guided solid disc design ensures the minimum pressure zone is directly behind the disc and the maximum hydrodynamic force distributed across the profiled front face. This provides an optimum scenario for stable, linear movement which is key for axial valve performance. The disc responds smoothly to flow changes and maintains stability throughout the operating range.

Non Slam Closure
Dynamically responsive performance is a result of the spring assisted closure coupled with the streamlined axial flow and disc design.

Tight Shut-off
Conical mating faces of the axially guided disc and seat components provide exceptional sealing capabilities. Options of metal-metal (inherently fire safe) and resilient, renewable seat's readily available.

The Abacus Nozzle Check Valve is an option in preference to the following types of non return valves:

- Conventional swing check valves (single plate and multi-door recoil)
- Tilting disc check valves
- Closure assisted swing and tilting disc check valves
- Piston check valves
- Annular ring axial check valves
- Dual plate check valves

Applications

The product is specified for critical applications which demand reliable, maintenance free, high performance in standard and severe operating conditions.

Examples:
- Pressurised liquid pumping (power stations, FPSO, desalination Plants, fire water supply)
- Gas transmission (compressor discharge, suction)
- General water transmission (pumping stations, cooling systems)
- Oil & Gas processing (offshore, hydrocarbons, LNG, natural gas, refineries)

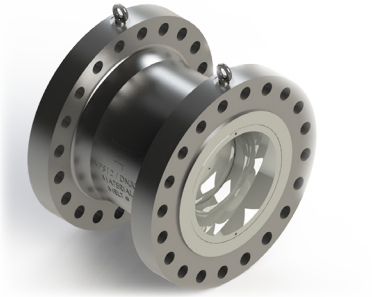
For further information contact Abacus Valves direct.

Standard Product Summary

Alternative pressure ratings, sizes and end connections available upon request
Abacus product is 97/23/EC approved for PED Cat III and below

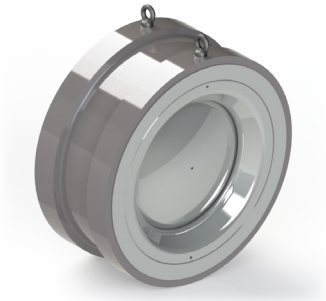
3X7 Range
Integral Flanged Connection
API 6D Face to Face
Sizes 2”-42”
Rating ASME Class 150 - 2500

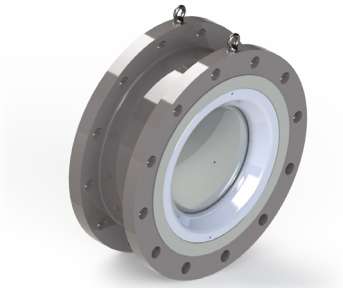
SP3X7 Range
Integral Flanged Connection
Manufacturer’s Short Pattern Face to Face
Sizes 2”-42”
Rating ASME Class 150 - 2500



3X7H Range
Hub End Connection
Manufacturer’s Pattern Face to Face
Sizes 2”-42”
Rating ASME Class 150 - 2500

3X5 Range
Wafer Connection
Manufacturer’s Short Pattern Face to Face
Sizes 2”-42”
Rating ASME Class 150 - 2500





3X5U Range
Double Flanged Wafer Connection
Manufacturer’s Short Pattern Face to Face
Sizes 2”-42”
Rating ASME Class 150 - 2500

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