DFC DYNAMIC FLUID CONTROL

VOSA®

World Class Performance in Abrasive, Scaling and Corrosive Slurries, Sludge, Liquids, and Bulk Solids

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SWING CHECK VALVES

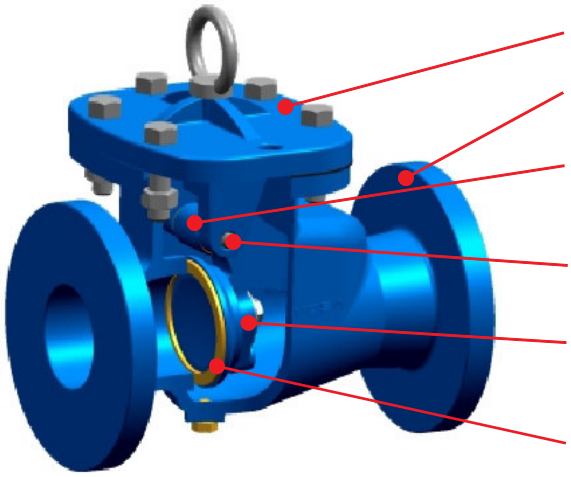
VOSA Swing Check Valve

VOSA single door swing check valves are manufactured in sizes from DN50 to DN400 with the options of bronze trim or all iron trim and working pressures of 16 bar or 25 bar. The valves can be installed in either the horizontal or the vertical position. The angle of the door is designed in such a manner, that it ensures that when the valve is installed either horizontally or vertically, that the door starts to close at the point where the forward momentum start to decline.

Features and Benefits

Body Configuration:	Allows for full flow area during normal operation
Seat:	Hydraulically pressed into body
Door/Hinge:	Designed to adjust itself accurately to the plane of the seating under load

Materials of Construction



Cover
Ductile Iron SG42

Body
Ductile Iron SG42

Hinge
Ductile Iron SG42

Hinge Pin
Stainless Steel 420 or 431

Door
Ductile Iron SG42

Body & Door - Bronze Trim
Both Gunmetal BS Gr. LG2-C

Body & Door - All Iron Trim
Body: Ductile Iron SG42
Door: Nitrile Rubber Lined

PRESSURE RATINGS & FIGURE NUMBERS

Pressure Class	Valve Size (mm)	Seat Pressure Rating	Body Pressure Rating	Flange (PN)	Standard Bronze Trim Fig. No.	Standard All IronTrim Fig. No.	Lever & Weight Bronze Trim Fig. No.	Lever & Weight All Iron Trim Fig. No.
10	50 - 400	10 bar	20 bar	16	6154	6254	616154	626154
16	50 - 400	16 bar	32 bar	16	6154	6254	616154	626154
25	50 - 400	25 bar	50 bar	25	6354	6454	636154	646154

Engineering Data

C_v , K_v and Pressure Drop Calculation

$$Q = C_v \cdot \sqrt{\frac{\Delta P}{SG}}$$

Q : Water Flow Rate (US gpm)
C_v : Valve Flow Co-Efficient (US gpm)
ΔP : Pressure Drop (psi)
SG : Specific Gravity of Water

$$Q = K_v \cdot \sqrt{\frac{\Delta P}{SG}}$$

Q : Water Flow Rate (m³/h)
K_v : Valve Flow co-efficient m³/h)
ΔP : Pressure Drop (bar)
SG : Specific Gravity of Water

SWING CHECK VALVE Cv & Kv VALUES

Valve Size (Inch)	Valve Size (mm)	Cv Value	Kv Value
2	50	6	5.3
3	80	16	14
4	100	25	21
6	150	56	48
8	200	99	85
10	250	155	134
12	300	223	193
14	350	304	263
16	400	399	345

The K_v value expresses the amount of flow (m³/h) through a horizontally mounted check valve without counterweights or damping devices that would result in a pressure drop of 1 bar across a fully open valve at a temperature of 15^{0}C.

The C_v value expresses the amount of flow (usgpm) through a horizontally mounted check valve without counterweights or damping devices that would result in a pressure drop of 1 psi across a fully open valve at a temperature of 60^{0}F.

The minimum expected head loss to keep the valve in the open position is 3.5 kPa for all sizes.

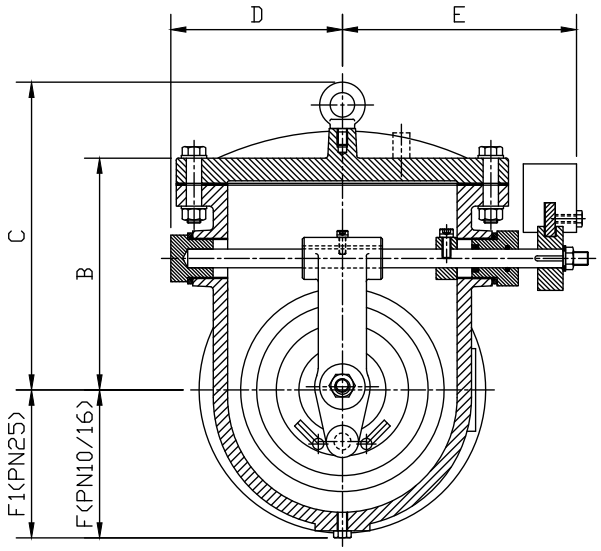
The minimum expected velocity to keep the valve in the fully open position is 1.5 m/s for all sizes.

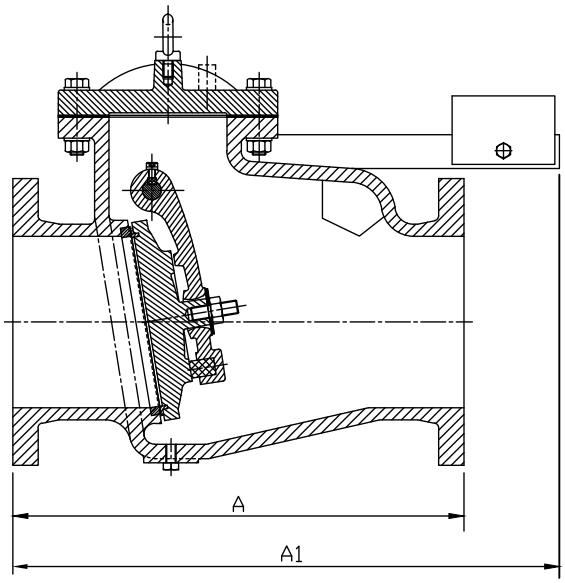
When a lever and counterweight are assembled to the valve the Cv Values will decrease and higher headlosses can be expected. The disc will also no longer be able to move under its own weight as per SANS1551 as the construction of the driving spindle for the counterweight will be different which will keep the disc from falling under its own weight.

Note: Values as depicted above have been tested at the ESKOM Research and Innovation Centre Flow Laboratory in South Africa by an independent third party professional engineering organization.

The tests were performed on the DN200 VOSA Reflux Swing Check valve and values for other valves were theoretically interpreted. The Laboratory is an ISO 17025 accredited facility and all instrumentation used for the tests were certified according to the South African National Accreditation System (SANAS).

Dimensions and Weights of the Swing Check Valve



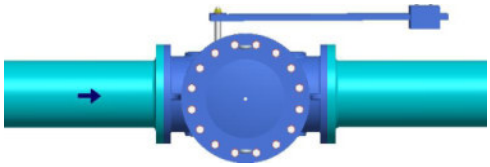


DIMENSIONS & WEIGHTS

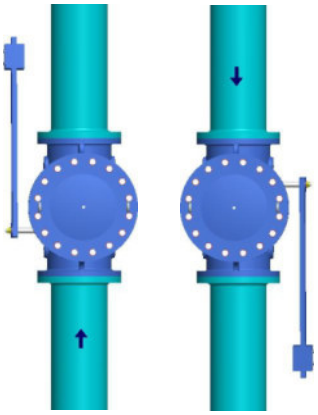
SIZE	50	80	100	150	200	250	300	350	400
A	230	305	355	445	535	635	760	865	865
A1	282	313	356	444	648	702	927	866	1085
B	135	176	198	246	310	366	402	485	560
C	190	231	253	301	365	429	465	548	623
D	84	108	127	166	203	240	280	340	335
E	147	190	228	274	277	374	416	483	495
F (PN10/16)	82.5	100	110	142.5	170	202.5	230	280	314
F1 (PN25)	82.5	100	117.5	150	180	212.5	242.5	280	335
WEIGHT (PN10/16)	16	29	42	84	132	228	320	550	670

Installation Recommendations

Horizontal Flow



VOSA Swing Check Valve most suited for horizontal flow with disc directed towards the flow.

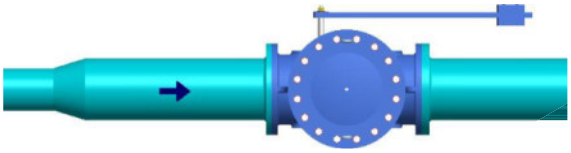


Vertical Flow

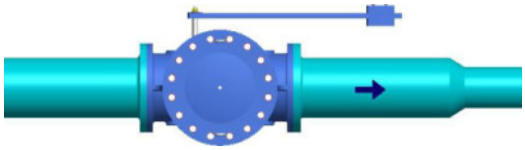
Valves suitable for vertical flow up and down.

For vertical flow please contact DFC with process conditions

6 Diameters Minimum

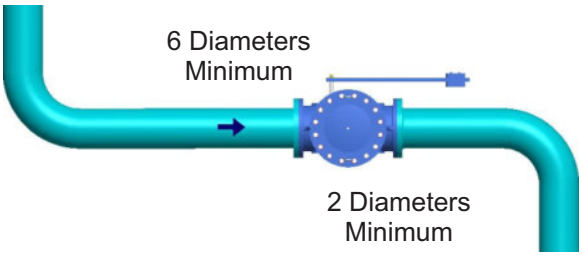


2 Diameters Minimum



Swing Check Valve should be installed a minimum of 6 diameters downstream of a reducer/expander or bend to ensure flow at valve is fully developed and turbulence is minimised.

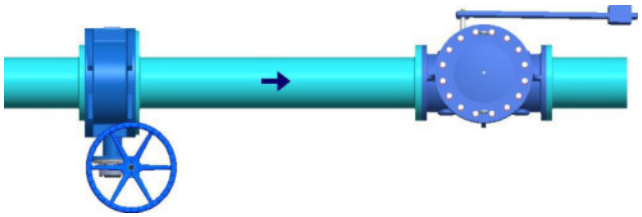
Swing Check Valve should be installed a minimum of 2 diameters upstream of a reducer or bend to avoid choked flow, which would cause the valve to only partially open



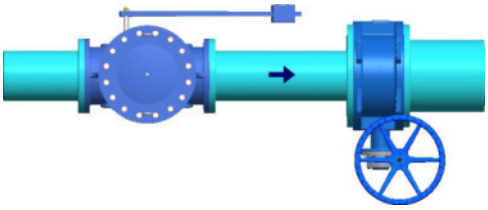
When installed near a throttling valve, the check valve should be installed a minimum of 5 diameters downstream, or 2 diameters upstream of the throttling valve.

Swing Check valves can be installed close to an upstream or downstream non-throttling isolation valve (e.g. VOSA Full Port Wedge Gate Valves).

5 Diameters Minimum



2 Diameters Minimum



Note: DFC Swing Check Valves are piggable

→ Indicates direction of flow

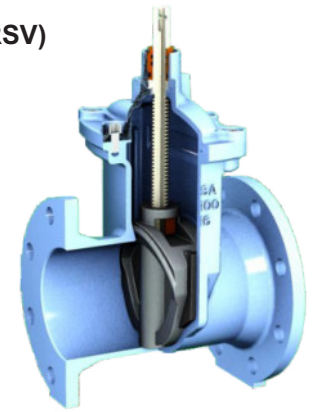
Other DFC World Class Performance Related Valves

VOSA Resilient Seal Valve (RSV)

Robust resilient seal gate valves designed for water, slurry and sewage applications to SANS 664 specifications

- Available in sizes from 50mm to 300mm

- All RSV's rated to PN16

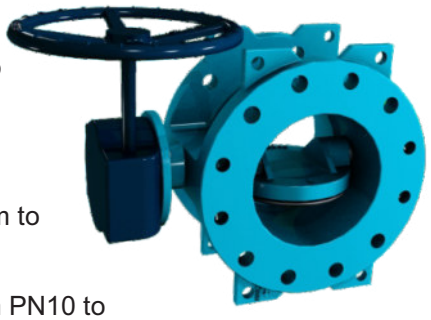


VOSA Butterfly Valve

High performance double eccentric butterfly valves to ensure less wear on seal and lower operating torque requirements.

- Available in sizes of 80mm to 300mm

-Pressure ratings vary from PN10 to PN40



VOSA Wedge Gate Valve

Metal seated wedge gate valves for isolation and scouring purposes and used in water, mining, power, marine and general industries

- Available sizes from DN80 to DN1000

- Pressure range varies up to 64 bar depending on the size of the required valve

VENT-O-MAT Air Valves

Considered the world leaders in air transfer technology in water, slurry, tailings and sewage pipelines with the first ever integral "anti shock" technology for surge protection.

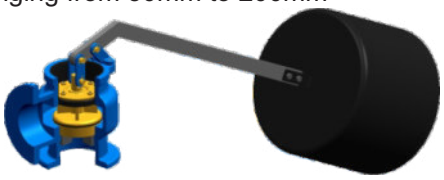
- RBX sizes 25mm to 200mm up to *100 Bar
- RBXc sizes 25mm to 300mm up to 25 Bar Same as RBX but with FBE coated ductile iron bodies
- RGX sizes 50mm to 300mm up to 25 Bar
- RGXII sizes 50mm to 200mm up to 16 Bar
- RPS sizes 15mm to 50mm up to 16 Bar

VOSA Equilibrium Float Valve

Mechanical Float Valves used to control the levels in tanks and reservoirs.

- Pressure range varies up to 20 bar depending on the size of the required valve

- Sizes ranging from 50mm to 200mm

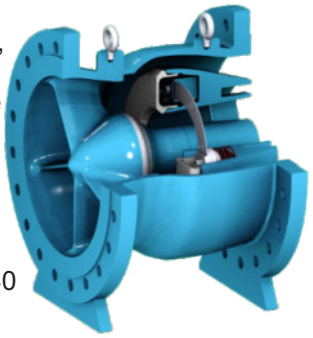


VENT-O-MAT Nozzle Check Valve

Characterized by "non-slam" closure, low pressure loss, metal to metal sealing and considered maintenance free.

- NCV-B (Long F/F) and NCV-BK (Short F/F) sizes DN200 - DN1200

- Pressure ratings from PN10 to PN40



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