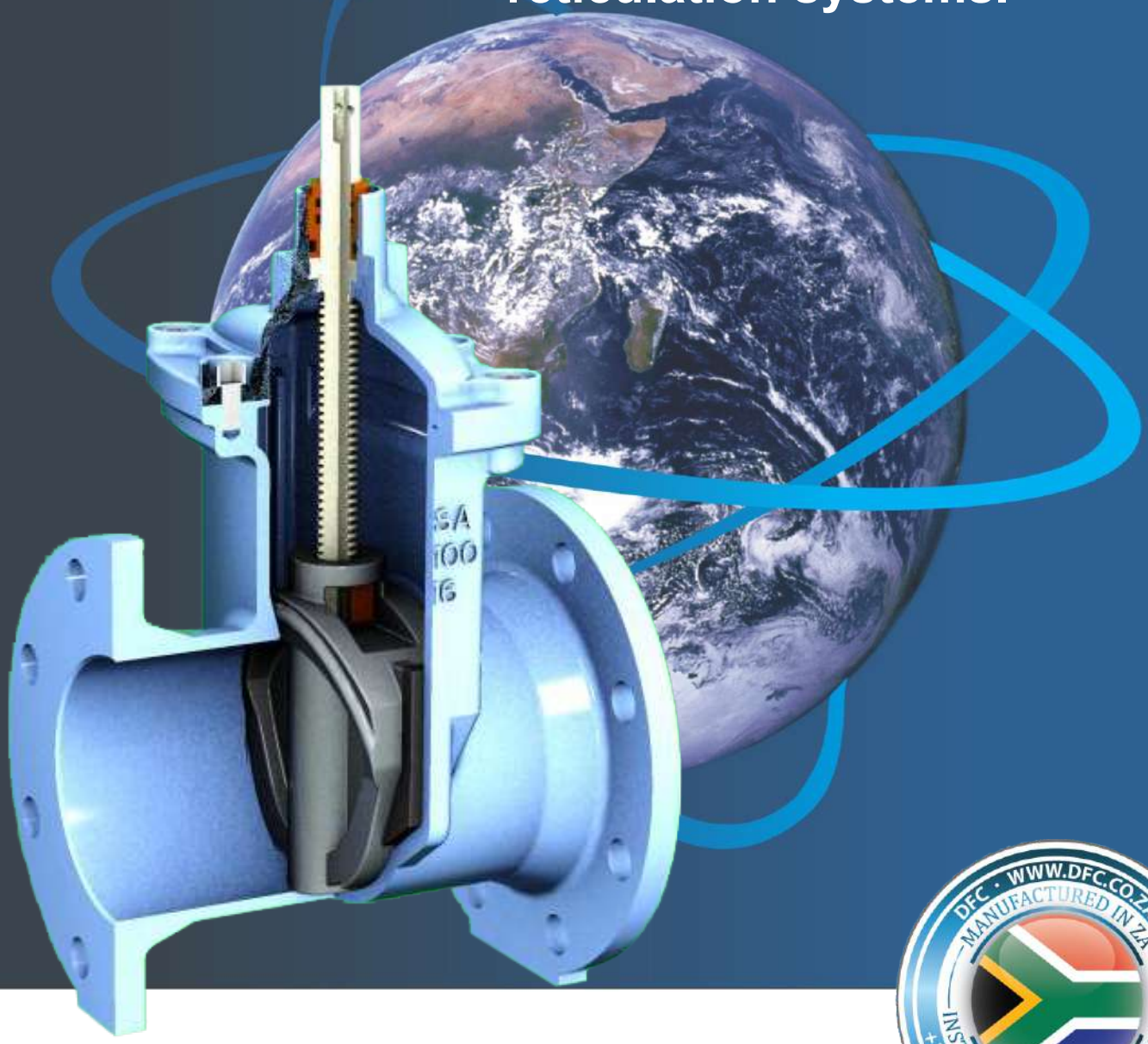
DFC
DYNAMIC
FLUID CONTROL

VOSA®

World class performance in drinking, raw and wastewater reticulation systems.



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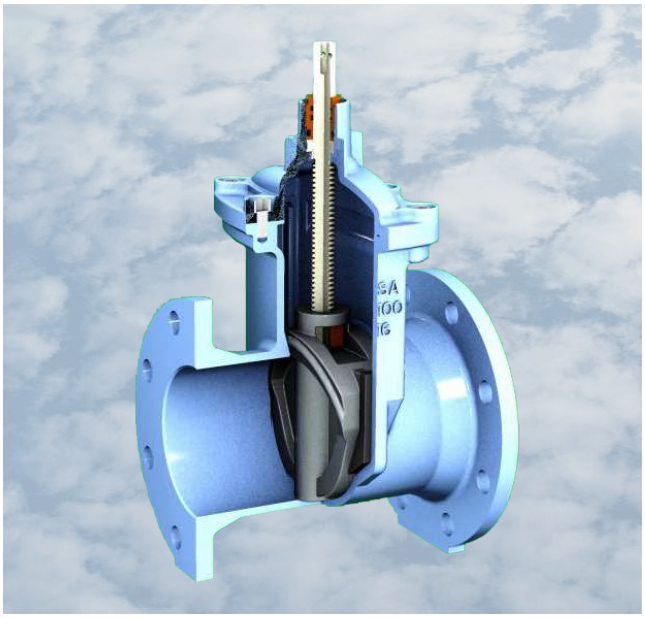
VOSA RSV VALVE



The VOSA Resilient Seal Valve (RSV) is a double flanged resilient seal type valve with a non-rising spindle.

The valve body is designed to have a straight unobstructed flow passage and inclined seats to eliminate deposits from forming inside the valve body. The Nylon gate guides are designed to offer full support to the gate in any position. The valve is capable of withstanding the nominal pressure (PN) and specified test pressures from both sides.

The valve gate is completely encapsulated in VOSA drinking water approved EPDM rubber and is accurately moulded to ensure complete corrosion protection and drop tightness over the valve pressure range.

The VOSA Resilient Seal Valve (RSV) is manufactured in accordance with SANS 664 and SANS 191. The valves will either be fusion bonded epoxy coated or two pack coated internally and externally to ensure durability.

Design Features and Advantages

A triple O ring design on the handwheel side to prevent any media from passing to the atmosphere. The O rings are made of rubber, embedded in non corrosive material.

A Thrust Bush and Washer made of polyoxymethylene / Acetal material guarantees smooth spindle operation.

A bonnet seal is placed between the body and bonnet to prevent any media from passing to the atmosphere.

A gate guide of wear resistant Nylon with low friction coefficient is used to guarantee lowest wear and tear as well as low closing torques.

VOSA RSV Valve Engineering Data

Cv, Kv 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 (m^3/h)
K_v: Valve flow co-efficient (m^3/h)
ΔP: Pressure drop (bar)
SG: Specific Gravity of Water

RSV Cv and Kv Values

Valve Size (inch)	Valve Size (mm)	Cv Value	Kv Value
2	50mm	270	233
3	80mm	669	579
4	100mm	1041	900
6	150mm	2283	1968
8	200mm	4008	3467
10	250mm	6215	5376
12	300mm	8903	7701

The Kv value expresses the amount of flow (m^3/h) through a valve that would result in a pressure drop of 1 bar across a fully open valve at a temperature of 15˚C

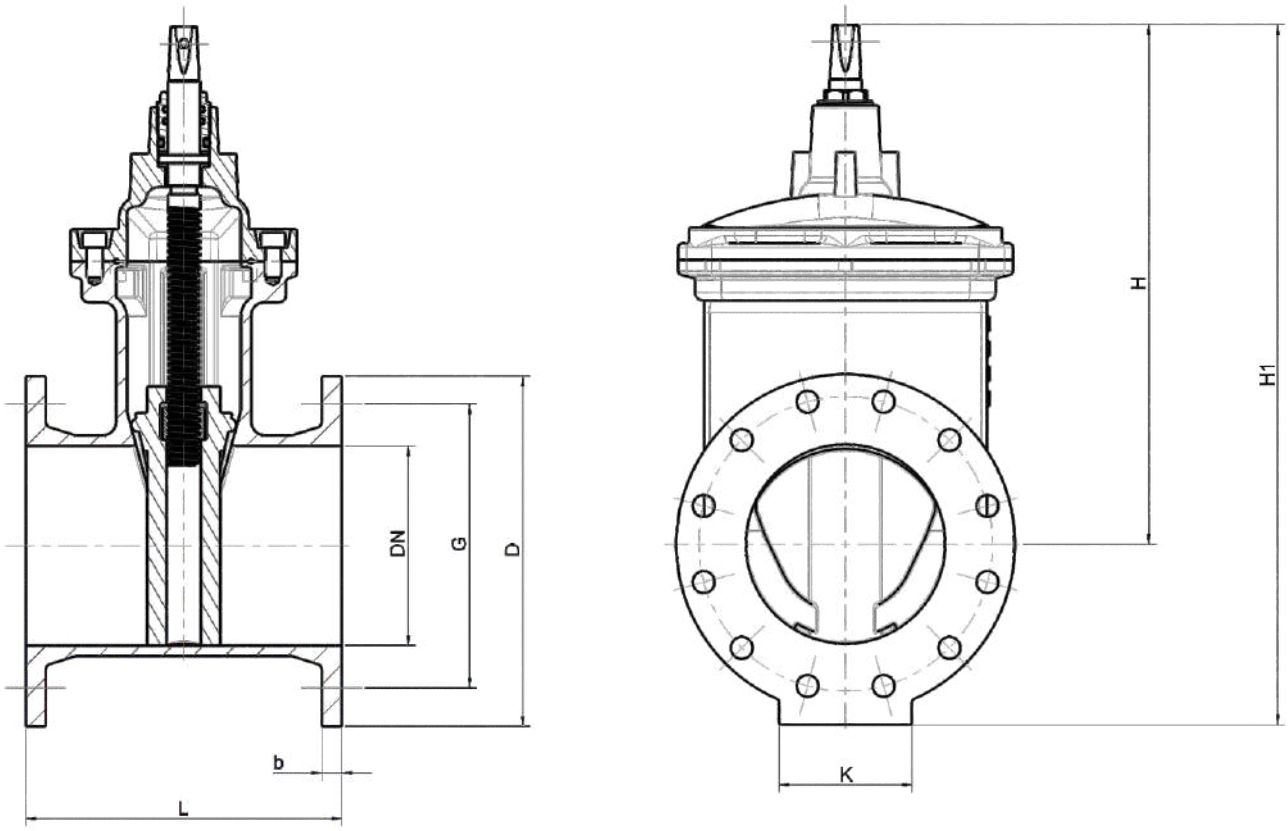
The Cv value expresses the amount of flow (usgpm) through a valve that would result in a pressure drop of 1 psi across a fully open valve at a temperature of 60˚F

Note: Values as depicted above are purely theoretical and are in the process of being tested at the ESKOM Research and Innovation Centre Flow Laboratory.

The tests will be performed on the DN150 VOSA RSV and values for other valves will be theoretically interpreted from these test results.

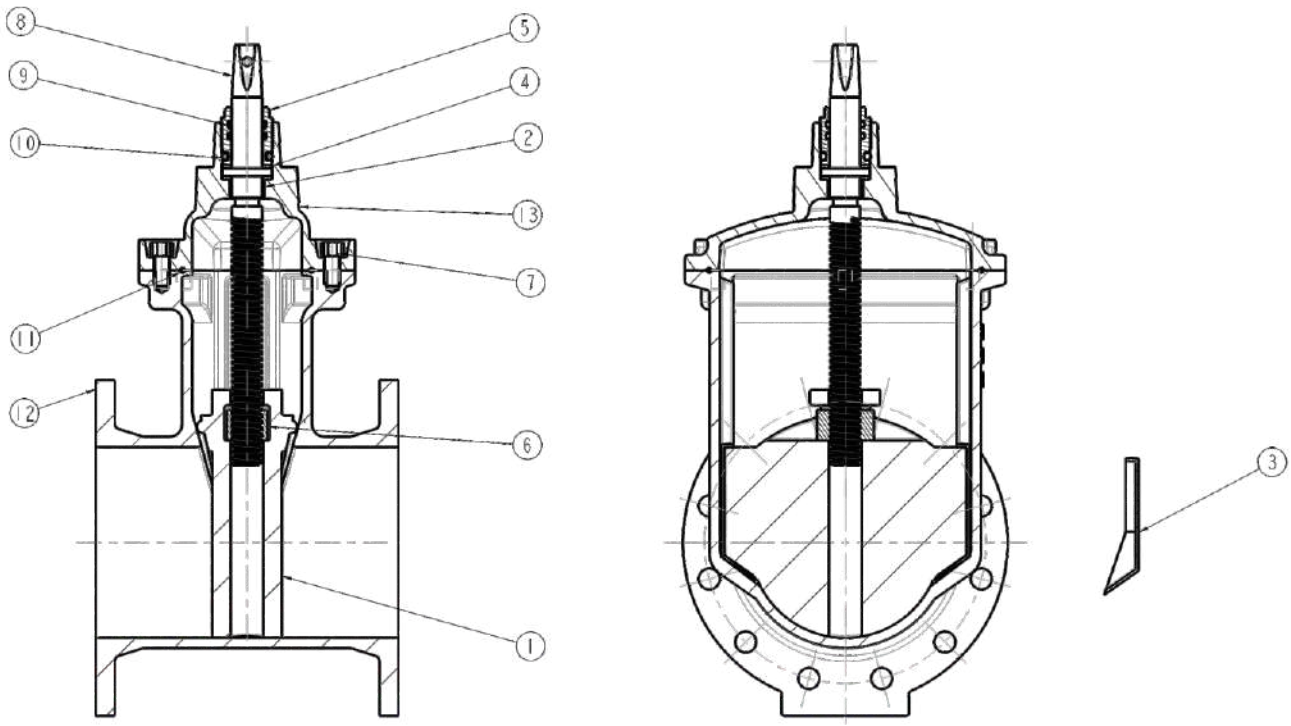
The Laboratory is an ISO 17025 accredited facility and all instrumentation that will be used for the tests will be certified according to the South African National Accreditation System (SANAS).

Overall Dimensions



DN(mm)	PN16						
	L	b	G	D	K	H	H1
50	216	19	125	165	50	131	220
80	229	19	160	200	53	208	311
100	254	19	180	220	67	260	375
150	280	19	240	285	100	384	526
200	317	22	295	340	133	521	702
250	356	22	355	405	140	652	867
300	380	24.5	410	500	150	771	1018

Materials Used



Materials of Construction - PN10 & PN16			
Item	**Part Name**	**Material**	**Quantity**
1	Gate	Ductile Iron SG42 EPDM Coated	1
2	Thrust Bush	POM	1
3	Gate Guide	Nylon	2
4	Thrust Washer	POM	1
5	O Ring Housing	BS 1400 GR AB2	1
6	Spindle Nut	BS 1400 GR LG2	1
7	Cap Screw	Stainless Steel 304	6
8	Spindle	Stainless Steel 431	1
9	Internal O Ring	Nitrile	2
10	External O Ring	Nitrile	1
11	Bonnet Gasket	Nitrile	1
12	Body	Ductile Iron SG42	1
13	Bonnet	Ductile Iron Sg42	1

Components may be substituted with equivalent or higher class materials without notification.

Operating Torques

Operating torques are the maximum admissible torques [in Nm] acting on the valve main spindle at full differential pressure. The maximum admissible operating torques are specified in BS EN 1074-2/SANS 664 and for VOSA RSV's they are shown below:

Materials of Construction - PN10 & PN16		
Size (mm)	**Maximum Torque (Nm)**	**Hand Wheel Diameter**
50	50	160
80	80	200
100	100	250
150	150	400
200	200	500
250	250	630
300	300	720

Note:

The torques above is the maximum permissible torques as per the mentioned specifications.

Valves could be operating at lower torques for specific applications.

Hand wheel diameters have been based on a maximum rim effort of 400N as indicated by SANS 664 specification

How to specify VOSA RSV:

Valve Range: DN 050-300, PN 10-16

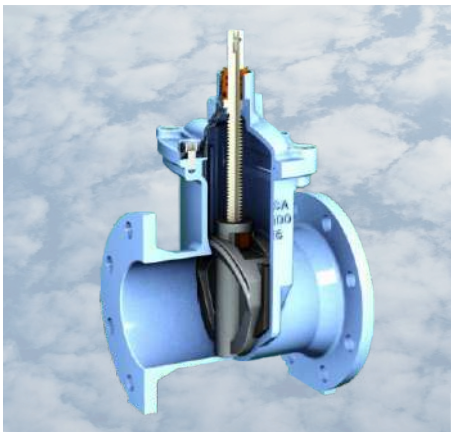
- Design shall be a resilient seal, non-rising spindle type in ductile cast iron with flanged end connections, face-to-face acc. to SANS 664/SANS 191.
- The valve body shall incorporate a straight unobstructed body passage without pockets and shall have inclined seats to eliminate deposits in the valve body.
- Gate shall be fully encapsulated with drinking water approved EPDM rubber.
- The gate guides/shoes shall be manufactured using wear resistant Nylon.
- Shaft material shall be stainless steel 431.
- Coating shall be 250 µm fusion bonded epoxy or two pack epoxy coated, RAL 5015.
- Operation shall be by hand wheel or cap top, clockwise to close as standard orientation.
- Maximum operating temperature shall be 70°C.

Design shall be created and tested in accordance with the following:

- SANS 664 (resilient seal valves for waterworks)
- SANS 191 (cast steel gate valves)
- SANS 664/SANS 191 (face-to-face)
- SANS 1123 (flanges)
- BS EN 12266 (leak test in production)

World Class Performance

Which isolating valve should you choose?



Isolating valves are either open or closed and are seldom utilised for regulating purposes. RSV's, wedge gate valves and butterfly valves are the most generally utilised forms of isolating valves for water pipelines. Cost, function, pressure and size range are the determining factors when selecting an isolating valve.

RSV:

Resilient seated gate valves are the most cost effective and reliable choice for pipelines up to 300mm and for pipeline pressure up to Pn16.

Pressure drop through a RSV is a lot less than through a butterfly valve, therefore it's more energy efficient, an important consideration. The disc of a butterfly valve is subject to higher wear than the plug/gate of an RSV, particularly if it has to operate at reasonably high pressure differentials.

Applications Include:

- Air Valve isolators
- Small diameter and lower pressure reticulation networks
- Irrigation systems
- Fire protection systems

The choice between butterfly or gate valves for large diameter pipelines are based primarily on cost, pressure rating and whether the pipeline will be pigged or not.

Butterfly Valve:

Butterfly valves can also be used to regulate, but keep in mind this could lead to cavitation in your line at certain pressure differentials. Butterfly valves often have smaller face to face and height dimensions and are therefore used where space is restricted for installation. Butterfly valves cannot be serviced while in-situ and must be removed from the line to replace seals etc.

Applications include:

- Large diameter and High pressure application where pigging would not be done.
- Cooling Water systems
- Water reticulation networks

Wedge Gate Valve:

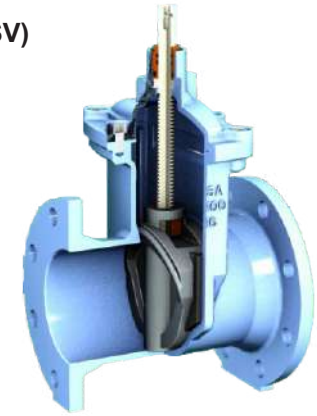
Wedge Gate valves are most often used when the pipeline pressure exceeds 16 bar or when the diameter of the pipeline exceeds 300mm. The initial cost of wedge gate valves might be expensive but the operating and ownership cost of the lifespan of the valve makes it attractive over the long term. Gate valves are large and often very lengthy, which should be kept in mind where space is a restriction.

Applications include:

- Pump suction Isolation Valve
- Pump discharge Isolation Valve
- Large diameter and High pressure application where pigging could be a possibility
- Scour Valves
- Line End Valves
- Water reticulation networks

Other DFC World Class Performance Related Valves

Vosa Resilient Seal Valve (RSV)

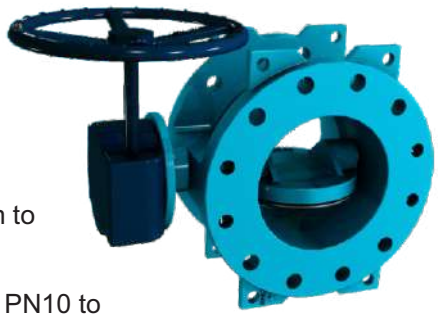


Robust resilient seal gate valves designed for water, slurry and sewage applications to SANS 664 specifications

- Available in sizes from 50mm to300mm

- 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 DN50 to DN1200

- Pressure range vary 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.

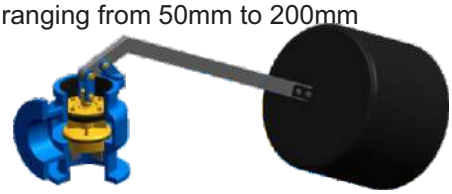
- RBX sizes 25mm to 200mm up to *100 Bar
- RBXc sizes 25mm to 300mm up to 25 Bar Same as RBX but with FBE coated ductile iron bodies
- RGX sizes 50mm to 300mm up to 25 Bar
- RGXII sizes 50mm to 200mm up to 16 Bar
- RPS sizes 15mm to 50mm up to 16 Bar

VOSA Equilibrium Float Valve

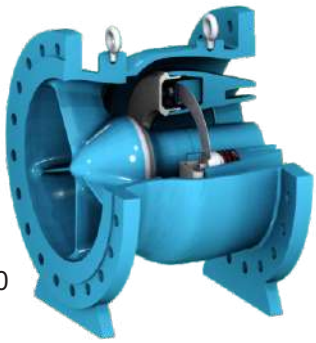
Mechanical Float Valves used to control the levels in tanks and reservoirs.

- 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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