

CONTENT

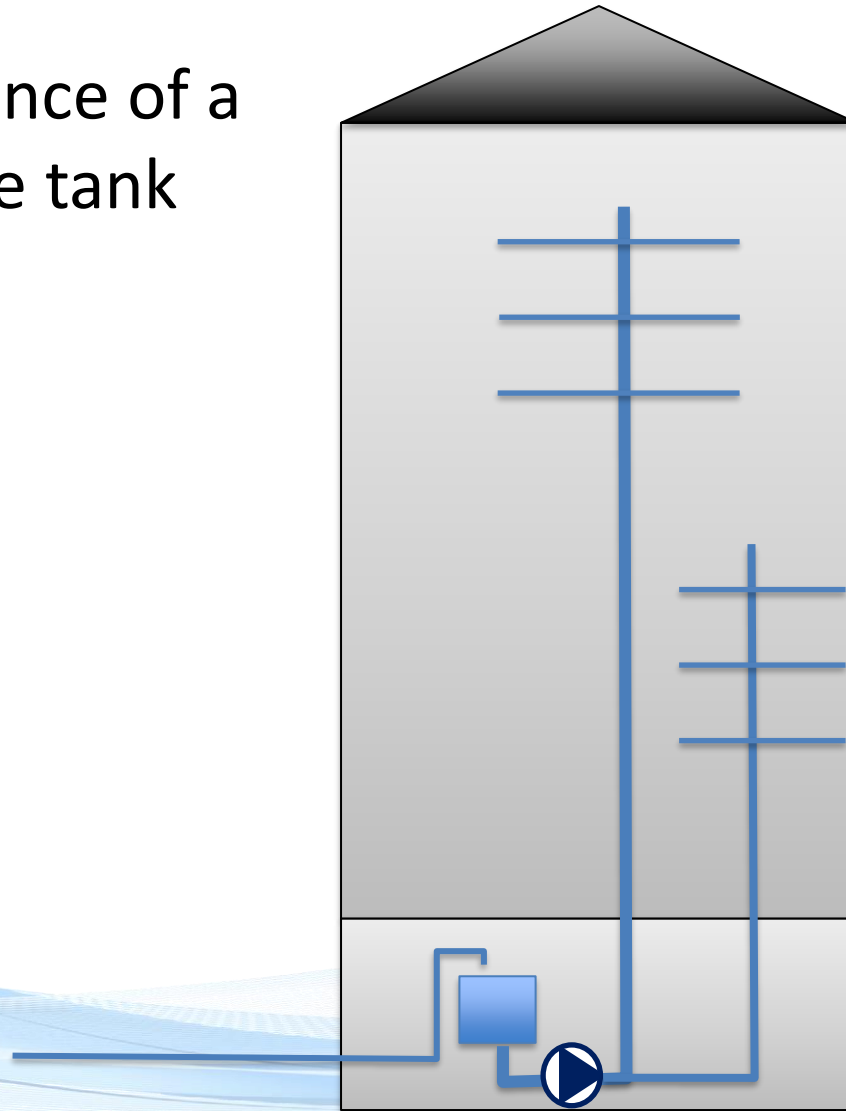
- Application background
- Cause and effect of surge/water hammer
- Product operation
- Product features and benefits
- Installation guidelines
- Maintenance
- Approvals
- Questions





Typical Boosted Cold Water System (BCWS) In a high rise

Note the absence of a
Break pressure tank



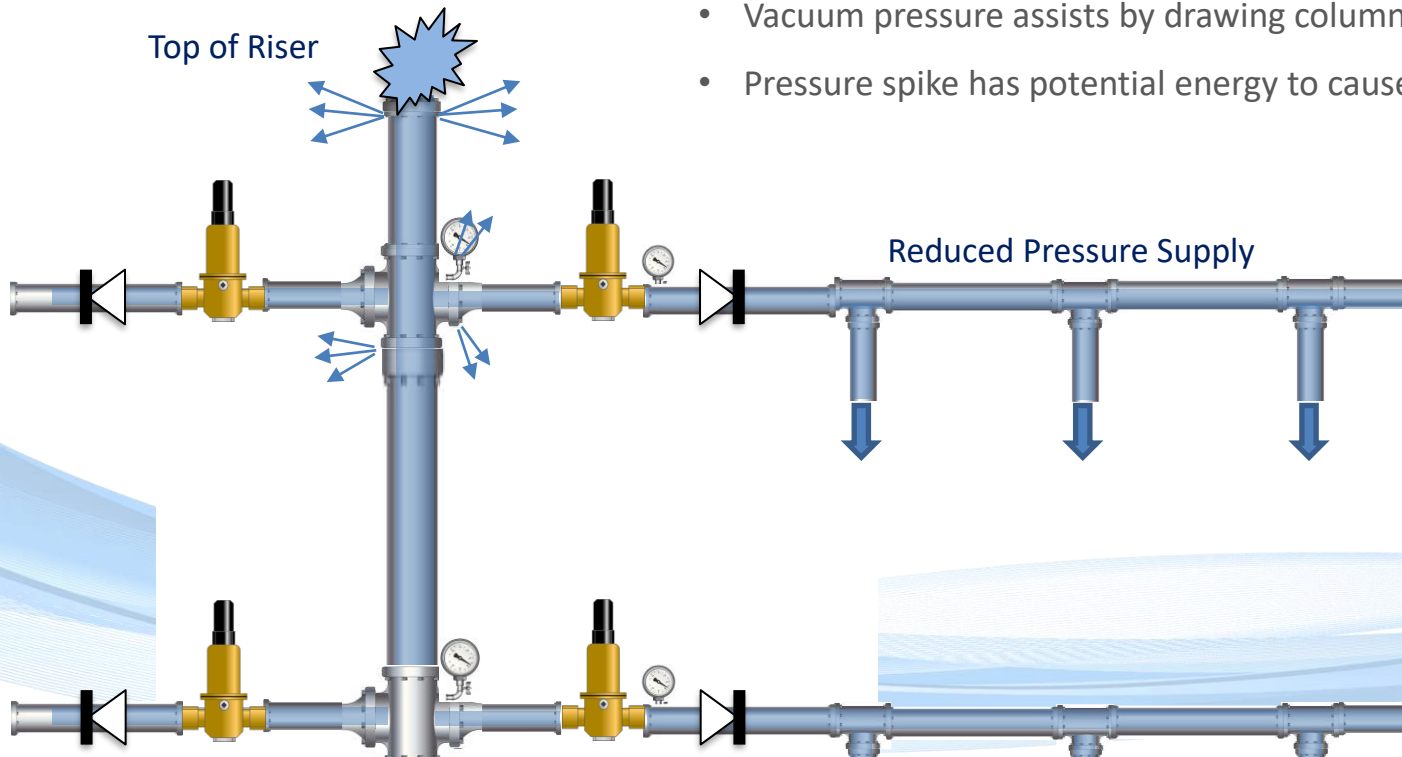
Typical Riser NO Surge Arrestor

Pump Trip Scenario / or intermittent operation (during construction)

- Riser is pressurized and full of water (with no demand)
- As water is taken, the water column drains down
- A vacuum is created above water line putting strain on pipes and fittings

Pump Start

- System pipework is rapidly re-pressurized
- Vacuum pressure assists by drawing column of water upward
- Pressure spike has potential energy to cause burst



Application story
Knightsbridge

Water Hammer – The Science

Pressure and velocity changes in a pipeline are inseparably related in accordance with the Joukowski equation

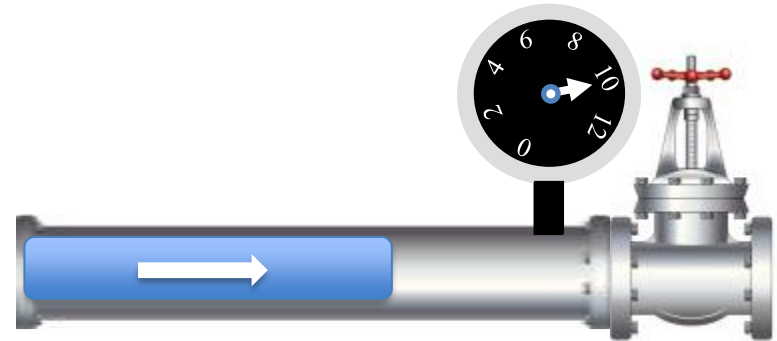
$$\Delta h = \frac{c \Delta v}{g}$$

Δh = Pressure change (Meters Head)

c = Wavespeed (metres/sec)

Δv = Velocity change (meters/sec)

g = Acceleration due to gravity (m/s^2)



Example:

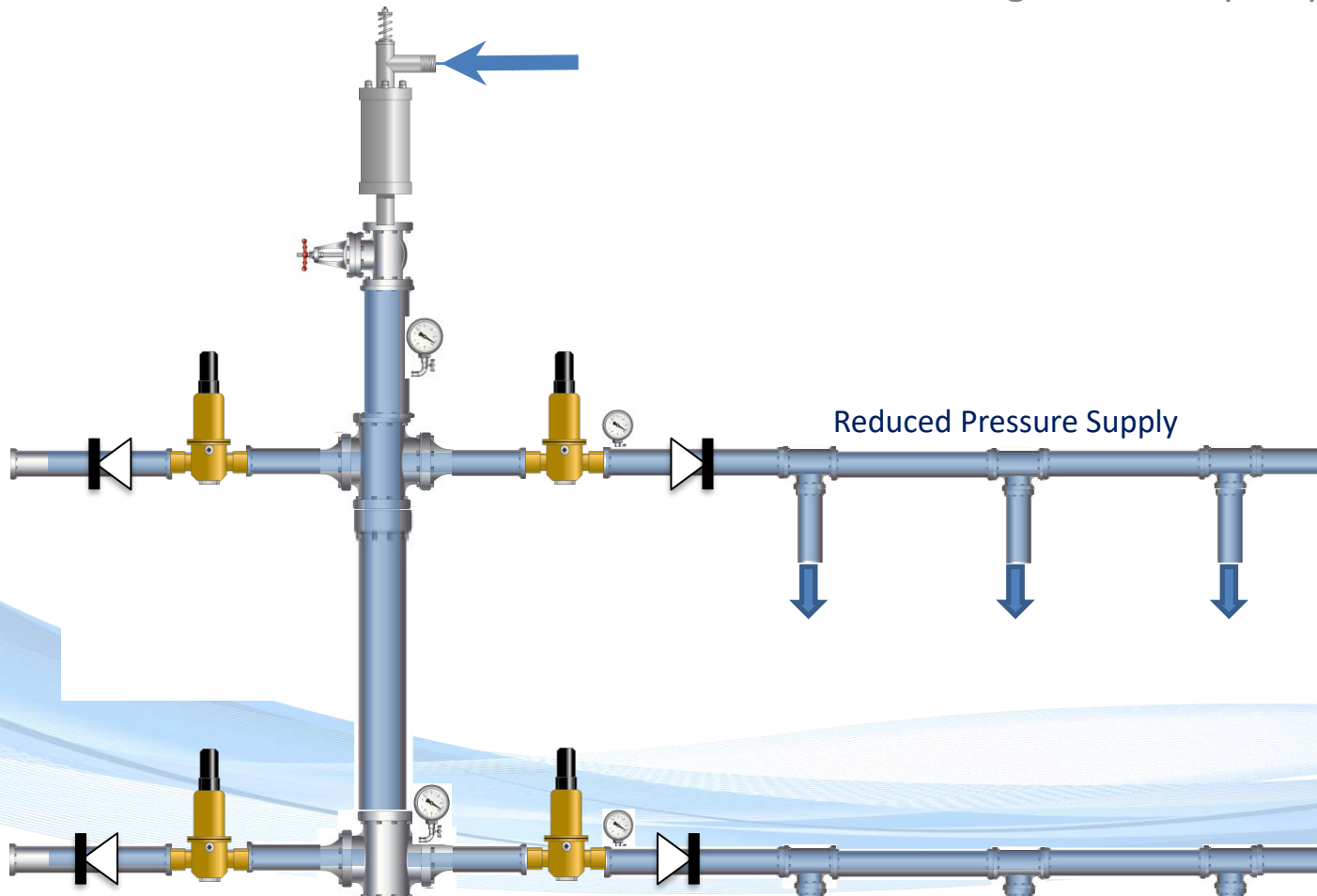
A column of water moving through a metal pipe where $C=1000$ m/s at a velocity of 1 m/s and stopping instantly (Δv) will produce a pressure spike (ΔP) of 100 Meters Head



Typical Riser With Vent-A-Riser Surge Arrestor

No Surge!!

- Allows air into the riser – Vacuum Break
- Controls discharge of air on pump start up





Vent-A-Riser Functional Overview

3 Functions in 1

1. Vacuum breaking when the pump stops and the riser drains.
2. Controlled air release at pump start-up.
3. Pressurized air release in normal operation

Unlike a
standard air
release valve!

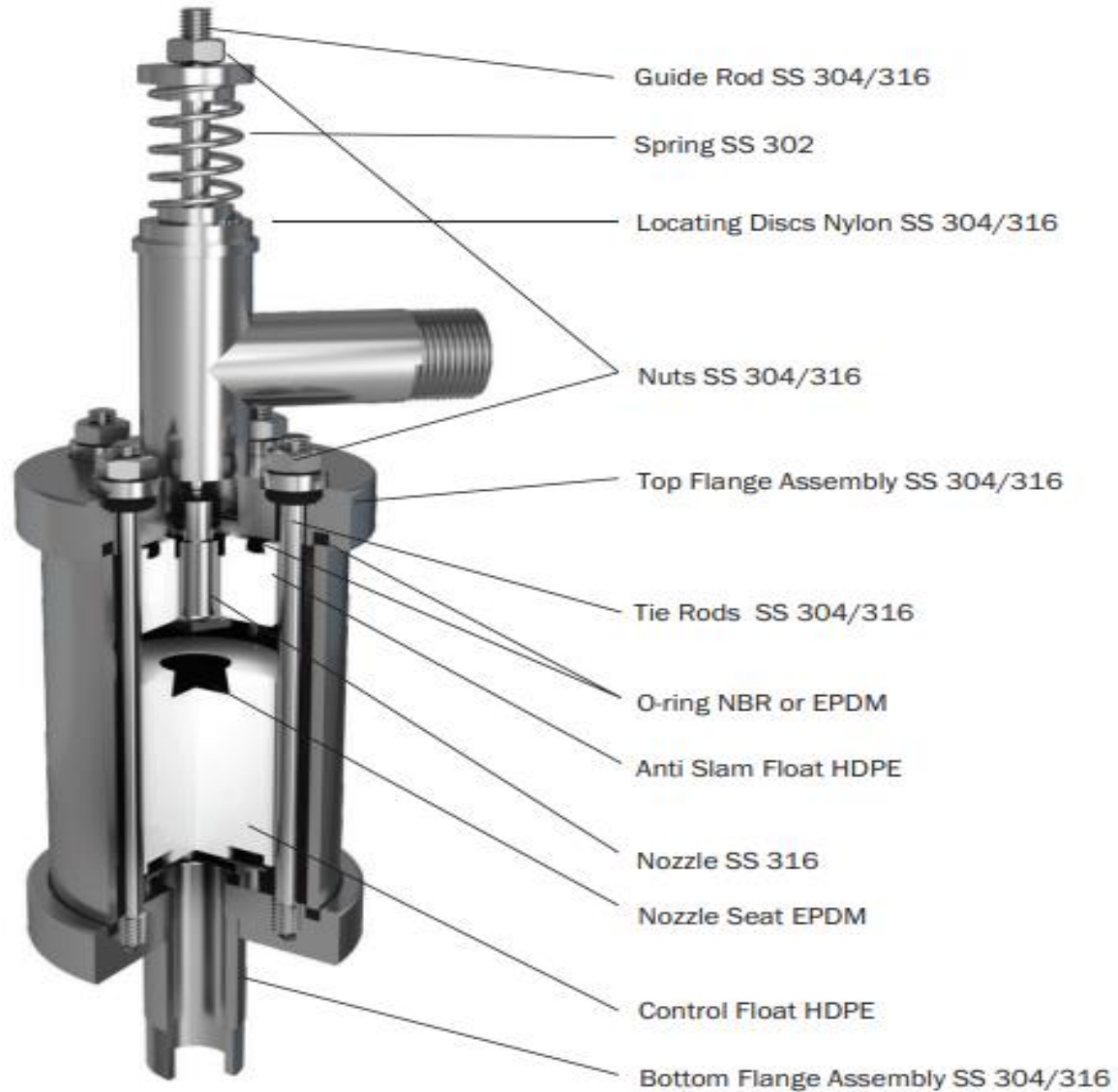




Vent-A-Riser Construction



**Non
compressible
HPDE floats**





Vent-A-Riser

Technical specification

SIZE: 1" ONLY – Protects up to 8" Riser

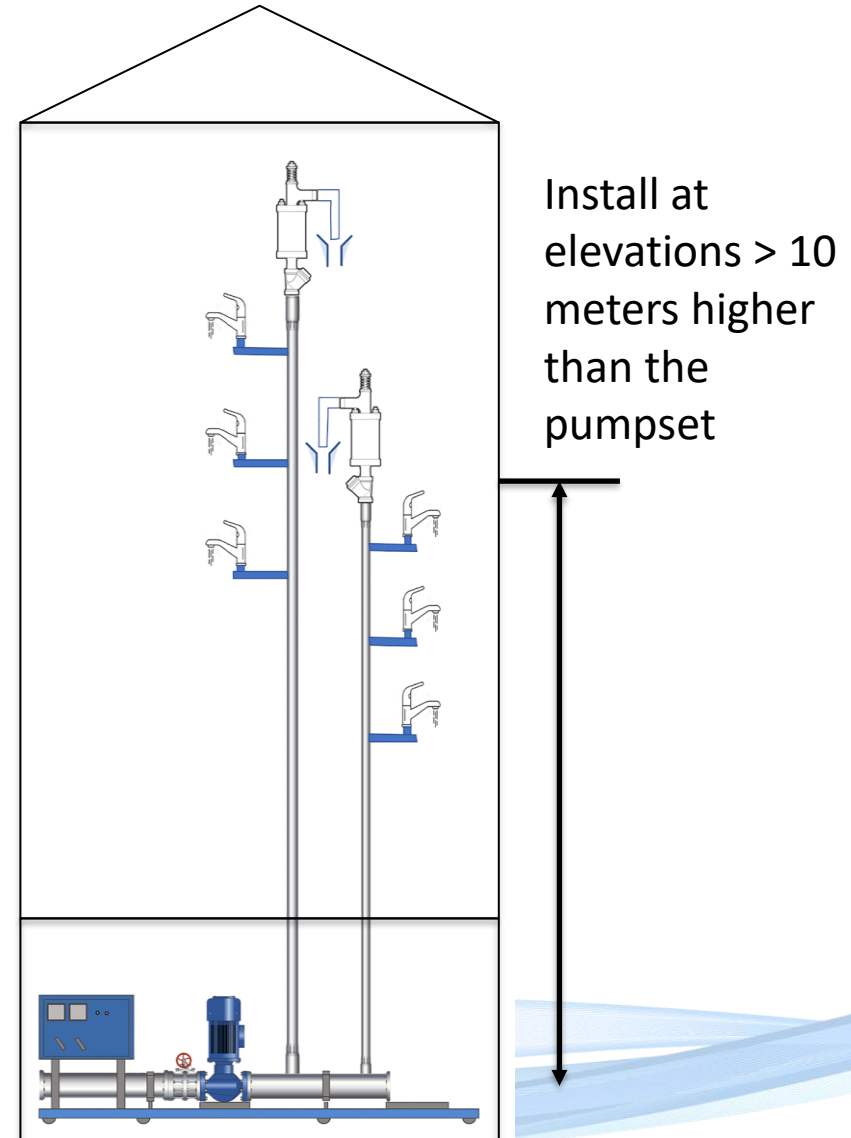
- **Low pressure sealing:**
0.3 Bar g
- **Maximum operating pressure:**
10 Bar g
- **Maximum surge pressure:**
40 Bar g
- **Operating temperatures**
2°C - 60°C
- **High Air intake capacity at -0.1 bar g (1.4 PSI)**
49 Normal l/sec = 176 m³/h
- **End connection**
1" BSP Female
- **Weight (including 'Y' Strainer)**
3.5 Kg



Fitted with Y Strainer with
Fine mesh (200 microns)

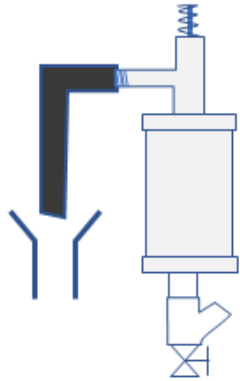
Vent-A-Riser Installation

- Install at the top of *each* riser to ensure adequate Water-Hammer protection.
- Mount as close to the connection supplying the final branch of the riser.
- Ensure adequate ventilation for air intake.
- Fit Isolation valve for maintenance.
- Flush Pipeline before installation.
- The male outlet connection allows any released water to be discharged externally to the building or to drain with a suitable air gap via a tundish.

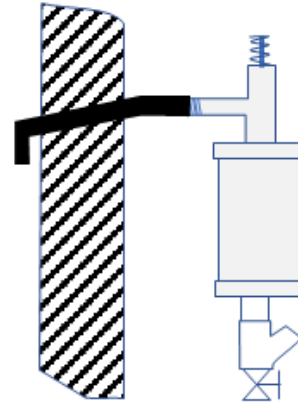


Vent-A-Riser

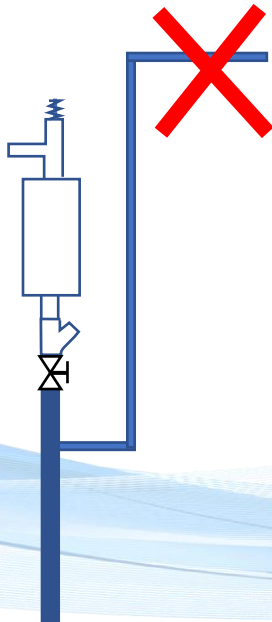
Connection options



Drain via tundish
Allow suitable air
gap to avoid risk of
siphoning



Drain via external wall
Ensure continuous
downward slope to avoid
stagnation and freezing



No drain

Not recommended under
the following conditions:

- 1) Hot water applications
- 2) Where risk of water spills
cannot be tolerated
- 3) If valve is lower than
final connection



Vent-A-Riser Maintenance?

- Seal kits available but designed to be maintenance free
- Periodic inspection of strainer



Approvals



This certifies that

CLA-VAL UK LTD.

*has had the undermentioned product examined, tested and found,
when correctly installed, to comply with the requirements of the
United Kingdom Water Supply (Water Fittings) Regulations and
Scottish Water Byelaws.*

**CLA-VAL TYPE AQUA B70-526, 70-516, CLA-VAL TYPE VENT-A-RISER DN15 &
DN25 AIR RELEASE VALVES**

*The certificate by itself is not evidence of a valid WRAS Approval. Confirmation of the current
status of an approval must be obtained from the WRAS Directory (www.wras.co.uk/directory)*

The product so mentioned will be valid until the end of:

January 2024

1901051

Certificate No.



Secretary



Chairman, Product Assessment Group

Summary

- System protection for unmanaged events
- Robust - requiring minimal maintenance
- Corrosion free materials
- One Size fits all
- WRAS Approved
- 3 Year Warranty



QUESTIONS?





THANK YOU



Vent-A-Riser vs Vent-O-Mat

Comparison



Differences	Cla-Val Vent-A-Riser	Vent-O-Mat RBXb211
Outlet connection	Threaded Outlet – Drain	Vented Grill
Minimum operating pressure	0.3 bar	0.5 bar
Maximum operating pressure	10 bar (40 bar surge pressure)	25 bar
Materials of construction	All Stainless steel with HPDE floats and EPDM rubber parts	Fusion bonded epoxy coated mild steel and Stainless steel, with HPDE floats and EPDM rubber parts
Weight	3.5 kg	5 kg
Warranty Period	3 years	1 year

Common functions:

- Dampens effect of Water-Hammer at pump startup.
- Provides full vacuum protection when the pump stops and the riser drains.
- Pressurised air discharge during normal operation



Vent-A-Riser vs Vent-O-Mat

Comparison

Gyproc ceiling

Minimal risk
with Tee outlet

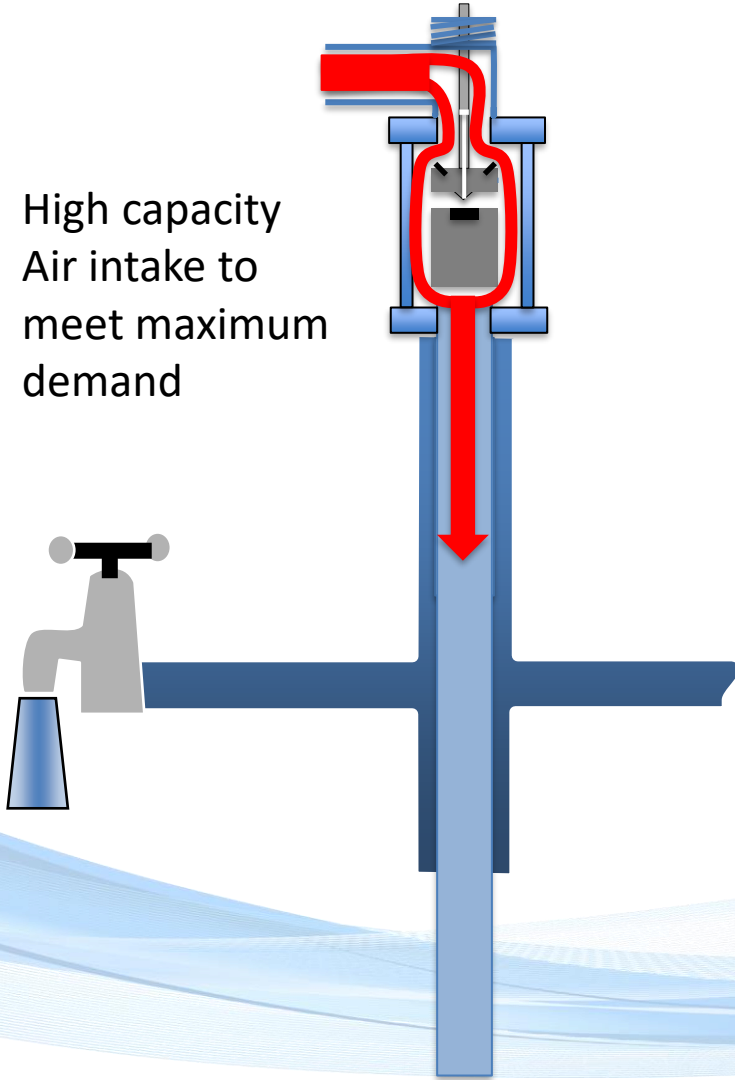
Susceptible to
ceiling debris and dust being
ingested through
the grills





Vent-A-Riser Operation

High capacity
Air intake to
meet maximum
demand



Slow to
Exhaust to
limit high
discharge
velocities

