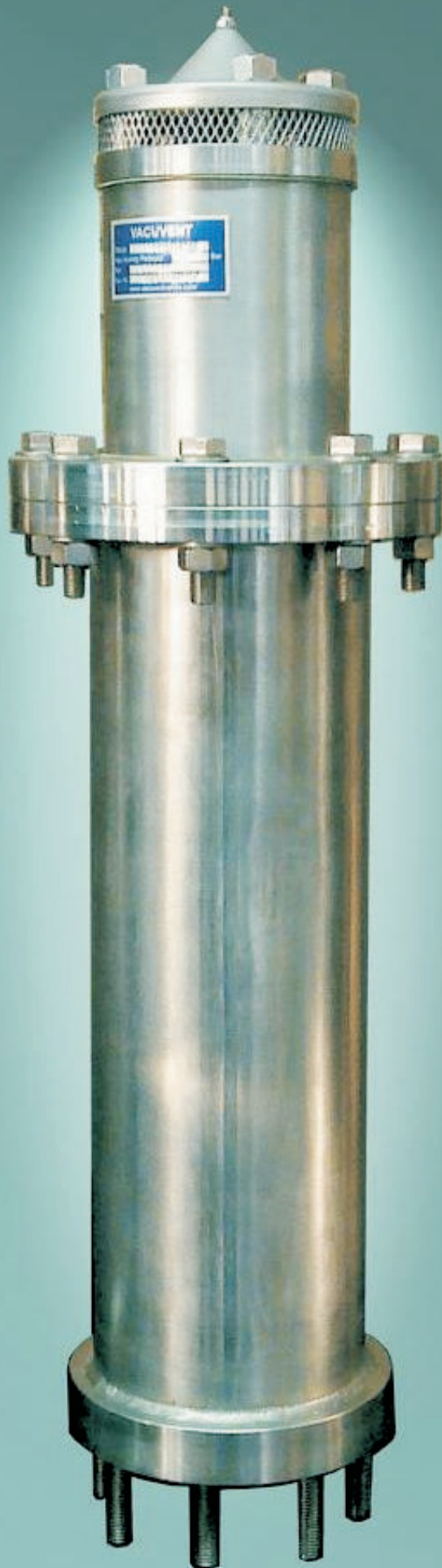


# Sewage

Series  
VG

Air Release and Vacuum Break Valves  
for Sewerage and Slurry Pipelines



Updated June 2015

# Range explanation for VA and VG Series

## VA series ( water )

Vacuum break and air release

Size	Press Bar	Valve ref number	Inlet
025	25	025VA25	Screwed
050	25	050VA25	Screwed
080	25	080VA25	Flanged
100	25	100VA25	Flanged
150	25	150VA25	Flanged
200	25	200VA25	Flanged

### General

This series of valves is designed for releasing air , breaking vacuum and some syphonic applications on pipelines

The VA series are for application on drinking water pipelines ( potable water ) and the VG series are for sewage or slurry pipelines

The basic principle is to vent via an antishock orifice and break vacuum via a full valve size intake orifice .

## VA series ( water )

Vacuum break and air release

Size	Press Bar	Valve ref number	Inlet
025	40	025VA40	Screwed
050	40	050VA40	Screwed
080	40	080VA40	Flanged
100	40	100VA40	Flanged
150	40	150VA40	Flanged
200	40	200VA40	Flanged

### Syphon Option

The range allows for special a syphon application where only an air out function is required and the valve size can be reduced to suit the antishock size

**Note :** By special request only

### Options

#### Digit 1 ( valve material etc)

- 0 = Standard Valve 304 Stainless ( \* see Valve Data sheet )
- 1 = Standard Valve 316 Stainless
- 2 = Full 304 Stainless valve , inc attachment flange
- 3 = Full 316 Stainless valve , inc attachment flange
- 4 = Standard Valve 304 Stainless valve - Flange as option
- 5 = Standard Valve 316 Stainless valve - Flange as option

#### Digit 2 ( porting and screen)

- 0 = None
- 1 = Pressure port
- 2 = Pressure port , screens
- 3 = Flushing port
- 4 = Flushing port , screens
- 5 = Screens

#### Digit 3 ( Spare )

### End Connection

#### Screwed

- 1 inch BSPT = 1 inch BSP tapered male
- 2 inch BSPT = 2 inch BSP tapered male

#### Flanged

- BS 4504 T10
- BS 4504 T16
- BS 4504 T25
- BS 4504 T40
- BS 10 TE
- BS 16 TF
- BS 4504 T10
- BS 4504 T16
- BS 4504 T25
- BS 4504 T40
- SABS 1123 T16
- SABS 1123 T25
- SABS 1123 T40

## VG series ( sewage )

Vacuum break and air release

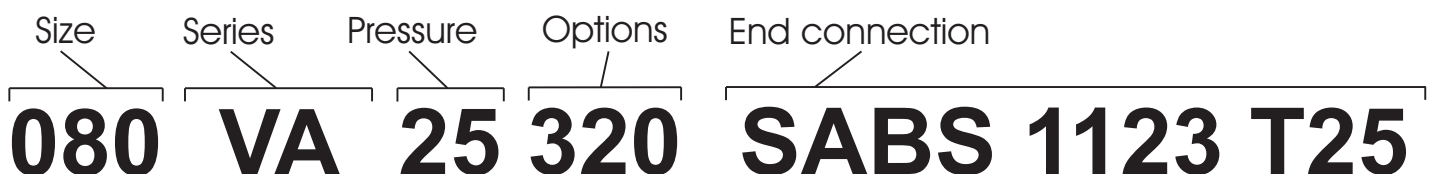
Size	Press Bar	Valve ref number	Inlet
050	10	050VG10	Flg/ Scr
080	10	080VG10	Flanged
100	10	100VG10	Flanged
150	10	150VG10	Flanged
200	10	200VG10	Flanged

## VG series ( sewage )

Vacuum break and air release

Size	Press Bar	Valve ref number	Inlet
050	16/25	050VG16/25	Flanged
080	16/25	080VG16/25	Flanged
100	16/25	100VG16/25	Flanged
150	16/25	150VG16/25	Flanged
200	16/25	200VG16/25	Flanged

### Valve Ref number example



# Software design parameters - metric

We have manufactured and designed air release valves for 30 years . The Vacuvent design allowed us to look at various factors from manufacture , service , materials to performance . The process has been driven largely by the now prevalent use of hydraulic predictive programs . The subsequent software data together with actual testing has led us to a more optimised valve .

## These are the parameters

Through Areas ( large orifice )

A minimum 1:1 ratio of through area versus intake or riser bore , including cover plates and screens . The antishock orifices are spring loaded to the closed position but the spring force is only just enough to hold the upper float in the closed position . Effectively the spring force can be discounted ( the mass of this float acts in a downward direction and assists opening ). The valve is fully open during the vacuum cycle .

Exhaust is always via the antishock orifices .

Valve size ( Water ) <b>Series VA</b>	<b>25</b>	<b>50</b>	<b>75</b>	<b>100</b>	<b>150</b>	<b>200</b>	
Through Area ( valve inlet ) mm <sup>2</sup>	491	1963	4418	7854	17671	31416	
Dia antishock up to 25 Bar	4	6.4	8	10	12.7	16	
Dia antishock up to 40 Bar	3.2	5	6.4	8	10	12.7	
Dia Small Orifice	1.0	1.0	1.7	1.7	1.8	1.8	
Valve size ( Sewage ) <b>Series VG</b>		<b>50</b>	<b>75</b>	<b>100</b>	<b>150</b>	<b>200</b>	
Through Area ( valve inlet ) mm <sup>2</sup>		1963	4418	7854	17671	31416	
Dia antishock up to 25 Bar		6.4	8	10	12.7	16	
Dia Small Orifice		1.0	1.7	1.7	1.8	1.8	
<b>Intake curves Diff Press Bar Gauge</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
Water and Sewage series <b>VA</b> and <b>VG</b>	<b>-0.05</b>	52.7	210.6	539.2	842.5	1895.7	3370.1
Output m <sup>3</sup> /hr	<b>-0.1</b>	71.6	286.2	732.8	1145.0	2576.2	4579.9
	<b>-0.2</b>	104.0	415.9	1064.6	1663.4	3742.7	6653.8
	<b>-0.3</b>	124.8	499.0	1277.5	1996.1	4491.3	7984.5
Suggested Max Diff press	<b>-0.35</b>	132.3	529.3	1354.9	2117.1	4763.5	8468.4
	<b>-0.4</b>	137.7	550.9	1410.3	2203.5	4957.9	8814.1
	<b>-0.5</b>	145.8	583.3	1493.2	2333.1	5249.6	9332.6
	<b>-0.6</b>	149.9	599.5	1534.7	2397.9	5395.4	9591.8
<b>Exhaust Diff Press Bar Gauge</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
Water <b>Series VA</b>	<b>25</b>	221	566	885	1383	2231	3541
	<b>40</b>	224	574	897	1402	2246	3558
<b>Exhaust Diff Press Bar Gauge</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
Sewage <b>Series VG</b>	<b>10</b>	0	236	369	576	929	1475
	<b>25</b>	0	566	885	1383	2231	3541
<b>Coefficient of discharge CD</b>							
For software program inputs			Anti shock Exhaust	<b>CD = 0.82</b>			
			Vacuum intake Large Orifice	<b>CD = 0.4</b>			

The data shown is at a standard atmosphere 1.01325 Bar @ 20 deg C

If you require further info please contact Shaun Clegg at  
[shaun@ivmsa.co.za](mailto:shaun@ivmsa.co.za) or [info@vacuventvalves.com](mailto:info@vacuventvalves.com)

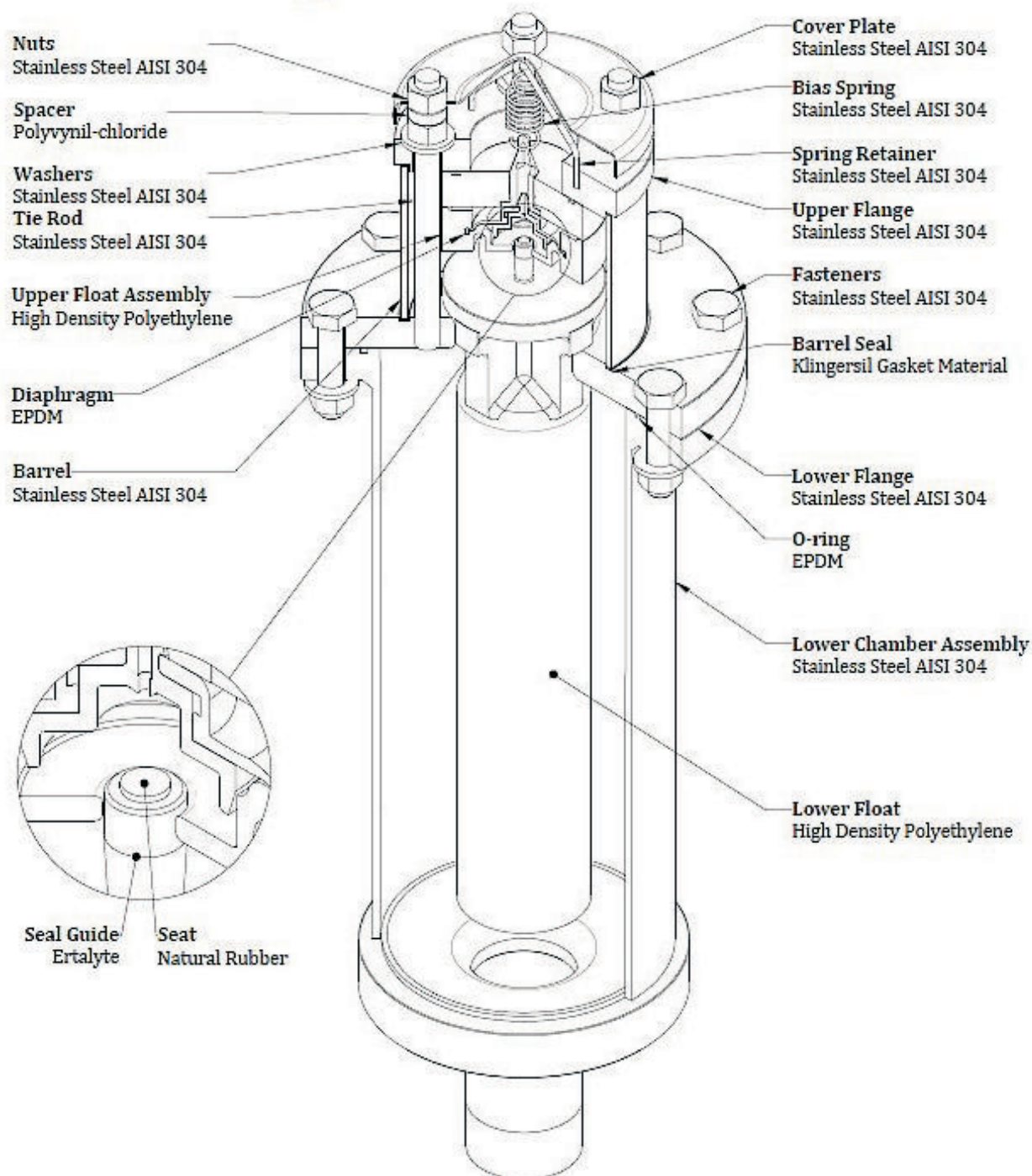
# SEWAGE

Series  
VG

## 050VG10 10 Bar ( Screwed )

50 mm / 2.0 inch

Air release and vacuum break valves  
for Sewerage and Slurry Pipelines



### Specifications

Operating Pressure	0.5 to 10 Bar
Media	Sewage or Slurry
Inlet ( Large Orifice )	2 inch (50 mm) Screwed BSPT
Outlet ( Small Orifice )	Anti shock orifice 6.4 mm Dia

Overall Valve size	208 mm dia x 582 mm long
Mass	17.0 kg
Operating Temperature	4 - 85 Deg C
High pressure test	1.5 X Max Working Pressure
Low pressure test	0.5 Bar

**Note :** The valve and materials shown on this specification sheet are for the **STANDARD** option valve  
For all other options including material and pressure port options see **Range Explanation** sheet

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**VACUVENT**

Series 050VG10 METRIC June 2015



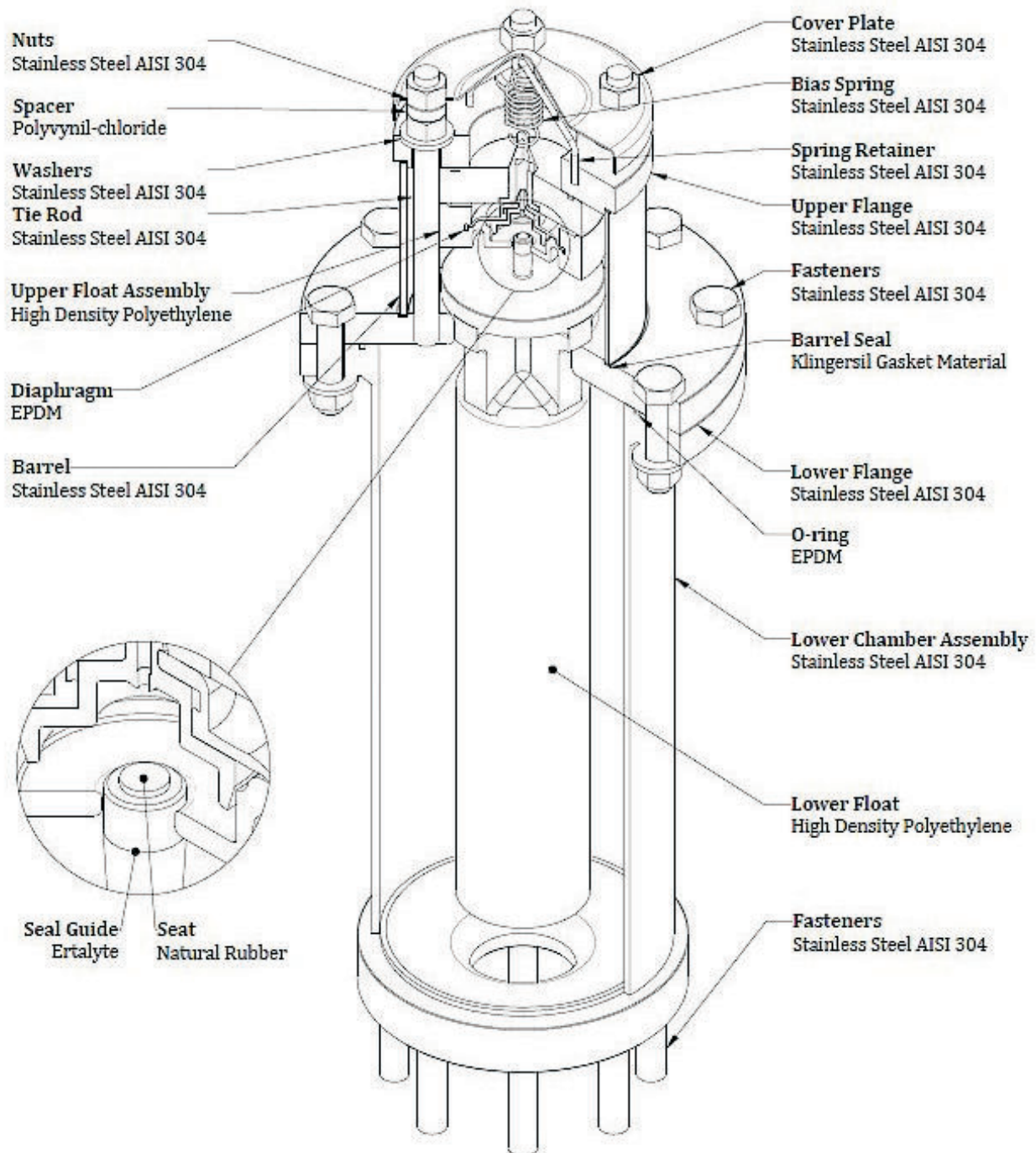
# SEWAGE

Series  
VG

## 050VG10 10 Bar

50 mm / 2.0 inch

Air release and vacuum break valves  
for Sewerage and Slurry Pipelines



### Specifications

Operating Pressure	0.5 to 10 Bar
Media	Sewage or Slurry
Inlet ( Large Orifice )	2 inch (50 mm) Flanged
Outlet ( Small Orifice )	Anti shock orifice 6.4 mm Dia

Overall Valve size	208 mm dia x 529 mm long
Mass	18.0 kg
Operating Temperature	4 - 85 Deg C
High pressure test	1.5 X Max Working Pressure
Low pressure test	0.5 Bar

**Note :** The valve and materials shown on this specification sheet are for the **STANDARD** option valve  
For all other options including material and pressure port options see **Range Explanation** sheet

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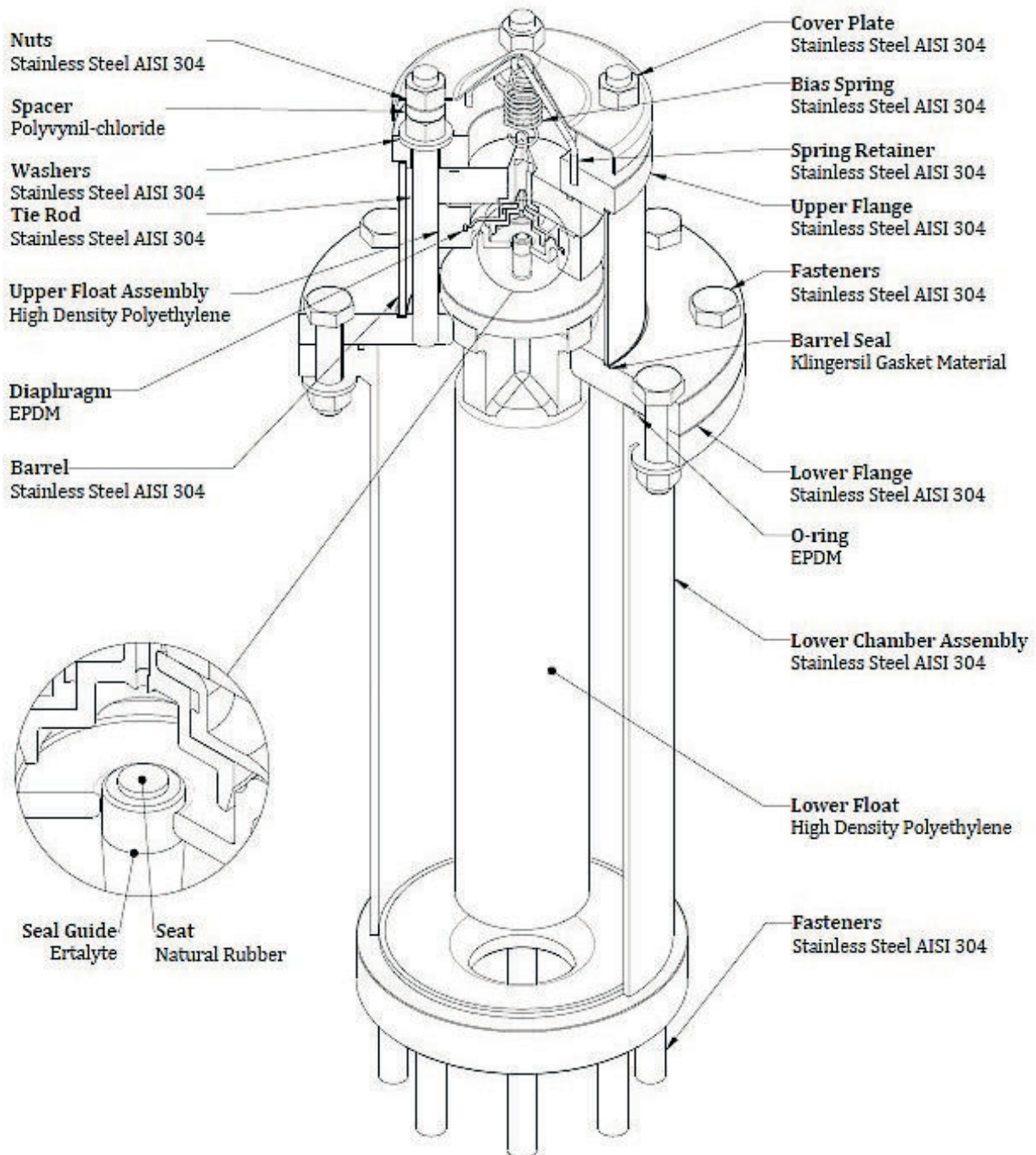
# SEWAGE

Series  
VG

## 050VG25 25 Bar

50 mm / 2.0 inch

Air release and vacuum break valves  
for Sewerage and Slurry Pipelines



### Specifications

Operating Pressure	0.5 to 25 Bar
Media	Sewage or Slurry
Inlet ( Large Orifice )	2 inch (50 mm ) Flanged
Outlet ( Small Orifice )	Anti shock orifice 6.4 mm Dia

Overall Valve size	208 mm dia x 579 mm long
Mass	18.0 kg
Operating Temperature	4 - 85 Deg C
High pressure test	1.5 X Max Working Pressure
Low pressure test	0.5 Bar

**Note :**The valve and materials shown on this specification sheet are for the **STANDARD** option valve  
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Series 050VG10 METRIC June 2015

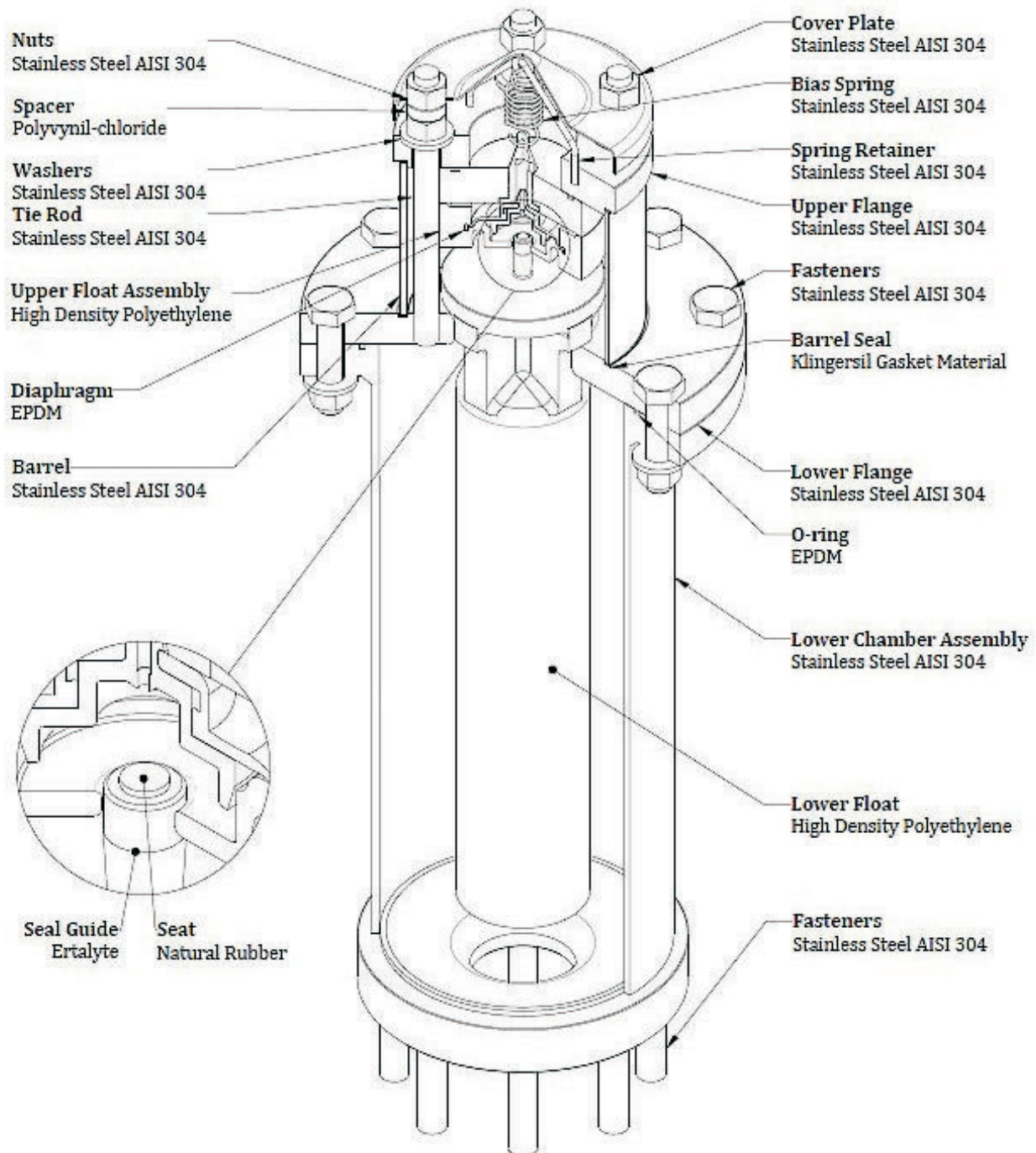
# SEWAGE

Series  
VG

## 080VG10 10 Bar

80 mm / 3.0 inch

Air release and vacuum break valves  
for Sewerage and Slurry Pipelines



### Specifications

Operating Pressure	0.5 to 10 Bar
Media	Sewage or Slurry
Inlet ( Large Orifice )	3 inch ( 80 mm Dia ) Flanged
Outlet ( Small Orifice )	Anti shock orifice 8.0 mm Dia

Overall Valve size	238 mm dia x 630 mm long
Mass	30.0 kg
Operating Temperature	4 - 85 Deg C
High pressure test	1.5 X Max Working Pressure
Low pressure test	0.5 Bar

**Note :** The valve and materials shown on this specification sheet are for the **STANDARD** option valve  
For all other options including material and pressure port options see **Range Explanation** sheet

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**VACUVENT**

Series 050VG10 METRIC June 2015



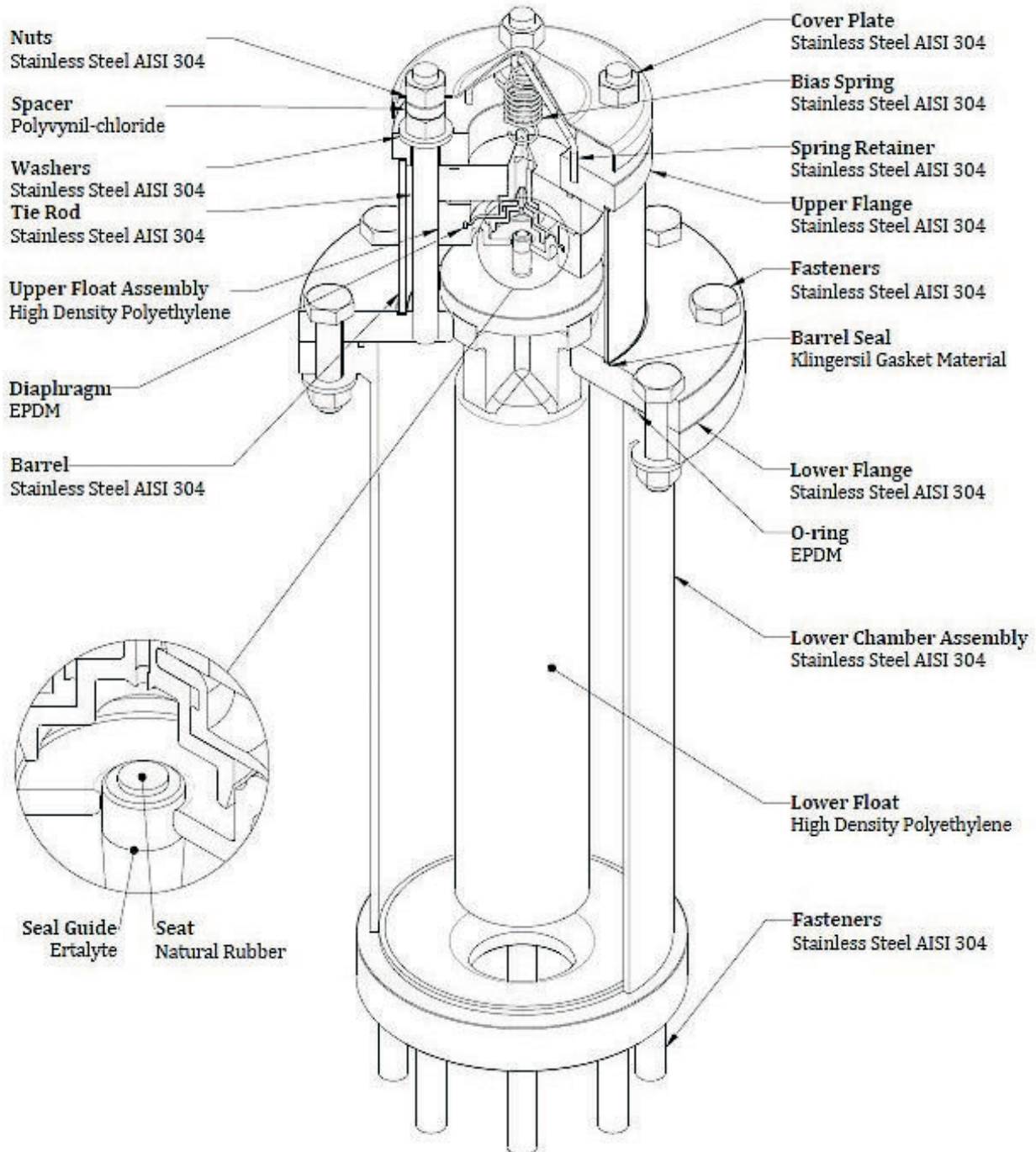
# SEWAGE

Series  
VG

## 080VG25 25 Bar

80 mm / 3.0 inch

Air release and vacuum break valves  
for Sewerage and Slurry Pipelines



### Specifications

Operating Pressure	0.5 to 25 Bar
Media	Sewage or Slurry
Inlet ( Large Orifice )	3 inch (80 mm Dia ) Flanged
Outlet ( Small Orifice )	Anti shock orifice 8.0 mm Dia

Overall Valve size	238 mm dia x 680 mm long
Mass	32.0 kg
Operating Temperature	4 - 85 Deg C
High pressure test	1.5 X Max Working Pressure
Low pressure test	0.5 Bar

**Note :**The valve and materials shown on this specification sheet are for the **STANDARD** option valve  
For all other options including material and pressure port options see **Range Explanation** sheet

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**VACUVENT**

Series 050VG10 METRIC June 2015



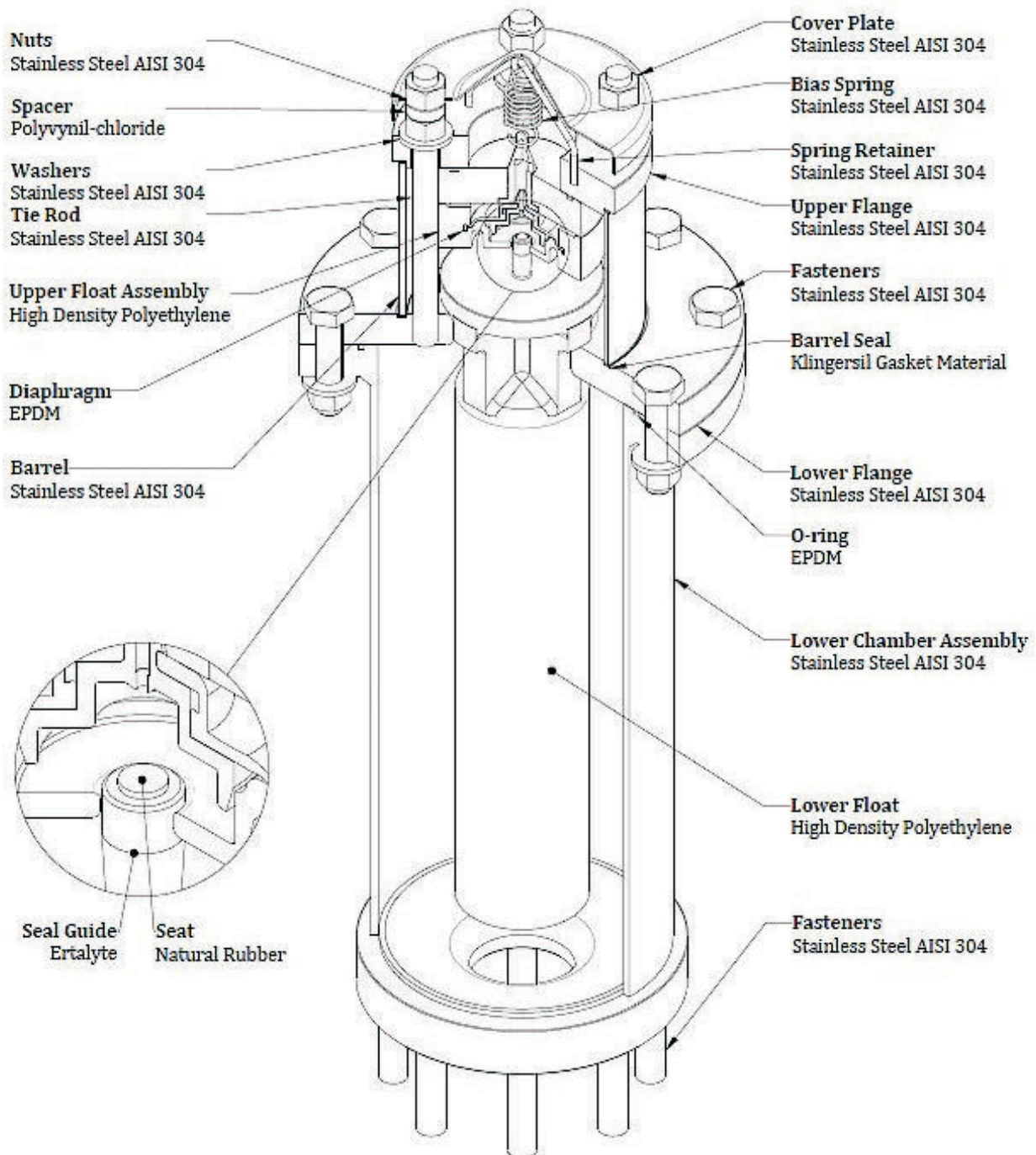
# SEWAGE

Series  
VG

## 100VG10 10 Bar

100 mm / 4.0 inch

Air release and vacuum break valves  
for Sewerage and Slurry Pipelines



### Specifications

Operating Pressure	0.5 to 10 Bar
Media	Sewage or Slurry
Inlet ( Large Orifice )	4 inch (100 mm Dia ) Flanged
Outlet ( Small Orifice )	Anti shock orifice 10.0 mm Dia

Overall Valve size	288 mm dia x 626 mm long
Mass	36.0 kg
Operating Temperature	4 - 85 Deg C
High pressure test	1.5 X Max Working Pressure
Low pressure test	0.5 Bar

**Note :** The valve and materials shown on this specification sheet are for the **STANDARD** option valve  
For all other options including material and pressure port options see **Range Explanation** sheet

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**VACUVENT**

Series 050VG10 METRIC June 2015

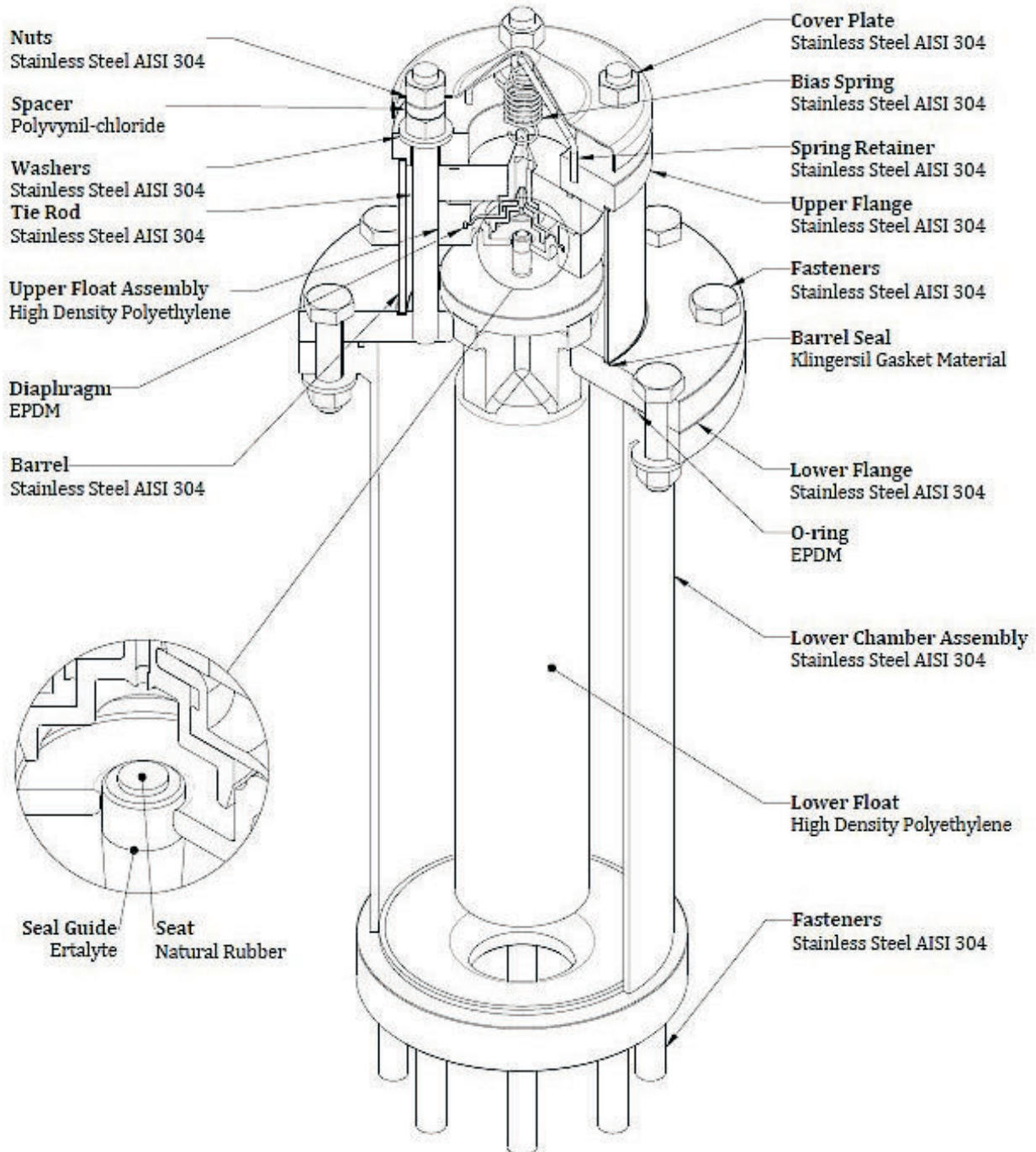
# SEWAGE

Series  
VG

## 100VG25 25 Bar

100 mm / 4.0 inch

Air release and vacuum break valves  
for Sewerage and Slurry Pipelines



### Specifications

Operating Pressure	0.5 to 25 Bar
Media	Sewage or Slurry
Inlet ( Large Orifice )	4 inch (100 mm Dia ) Flanged
Outlet ( Small Orifice )	Anti shock orifice 10.0 mm Dia

Overall Valve size	288 mm dia x 668 mm long
Mass	37.0 kg
Operating Temperature	4 - 85 Deg C
High pressure test	1.5 X Max Working Pressure
Low pressure test	0.5 Bar

**Note :**The valve and materials shown on this specification sheet are for the **STANDARD** option valve  
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Series 050VG10 METRIC June 2015

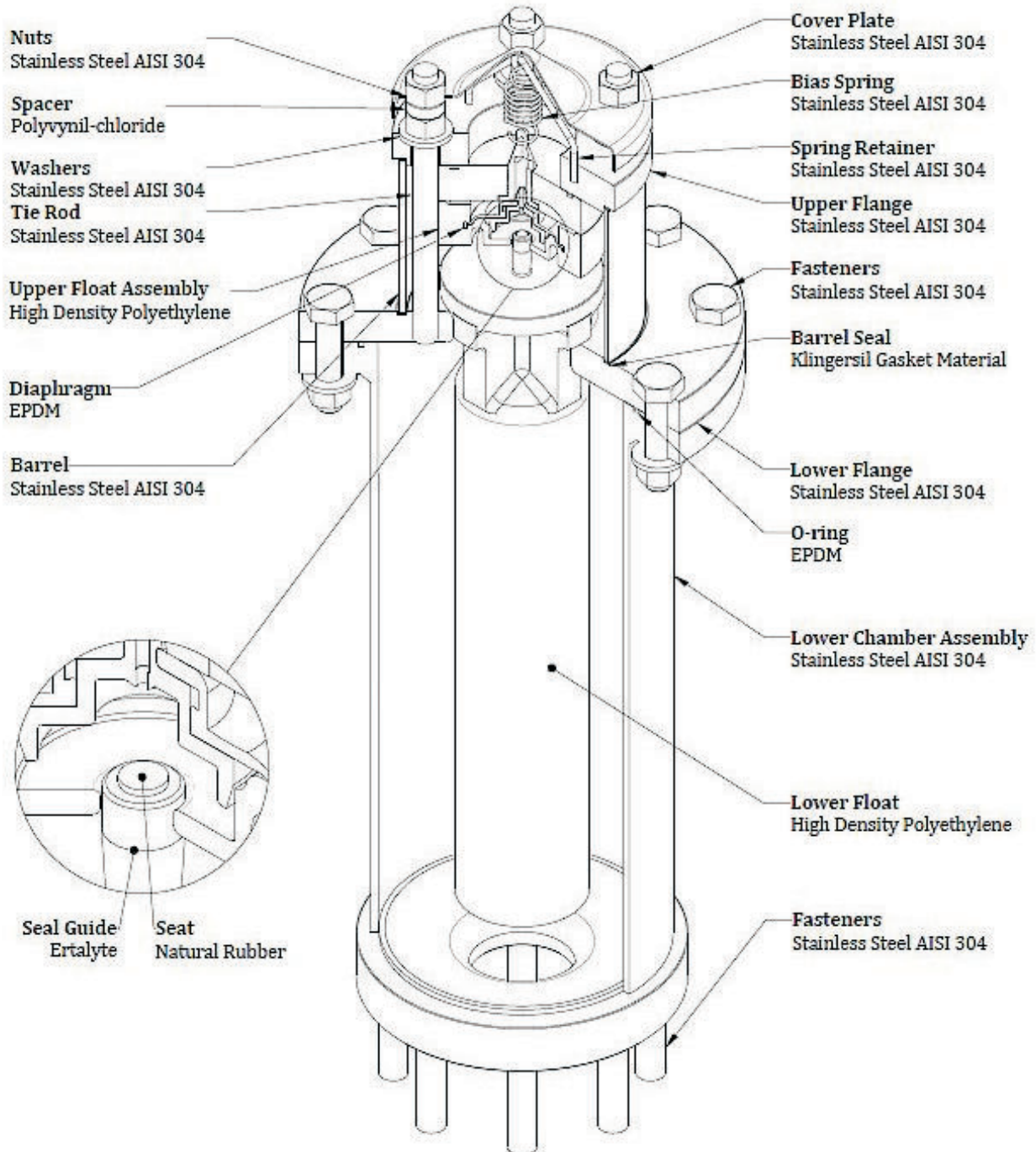
# SEWAGE

Series  
VG

## 150VG10 10 Bar

150 mm / 6.0 inch

Air release and vacuum break valves  
for Sewerage and Slurry Pipelines



### Specifications

Operating Pressure	0.5 to 10 Bar
Media	Sewage or Slurry
Inlet ( Large Orifice )	6 inch (150 mm Dia ) Flanged
Outlet ( Small Orifice )	Anti shock orifice 12.7 mm Dia

Overall Valve size	423 mm dia x 821 mm long
Mass	78.0 kg
Operating Temperature	4 - 85 Deg C
High pressure test	1.5 X Max Working Pressure
Low pressure test	0.5 Bar

**Note :** The valve and materials shown on this specification sheet are for the **STANDARD** option valve  
For all other options including material and pressure port options see **Range Explanation** sheet

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**VACUVENT**

Series 050VG10 METRIC June 2015



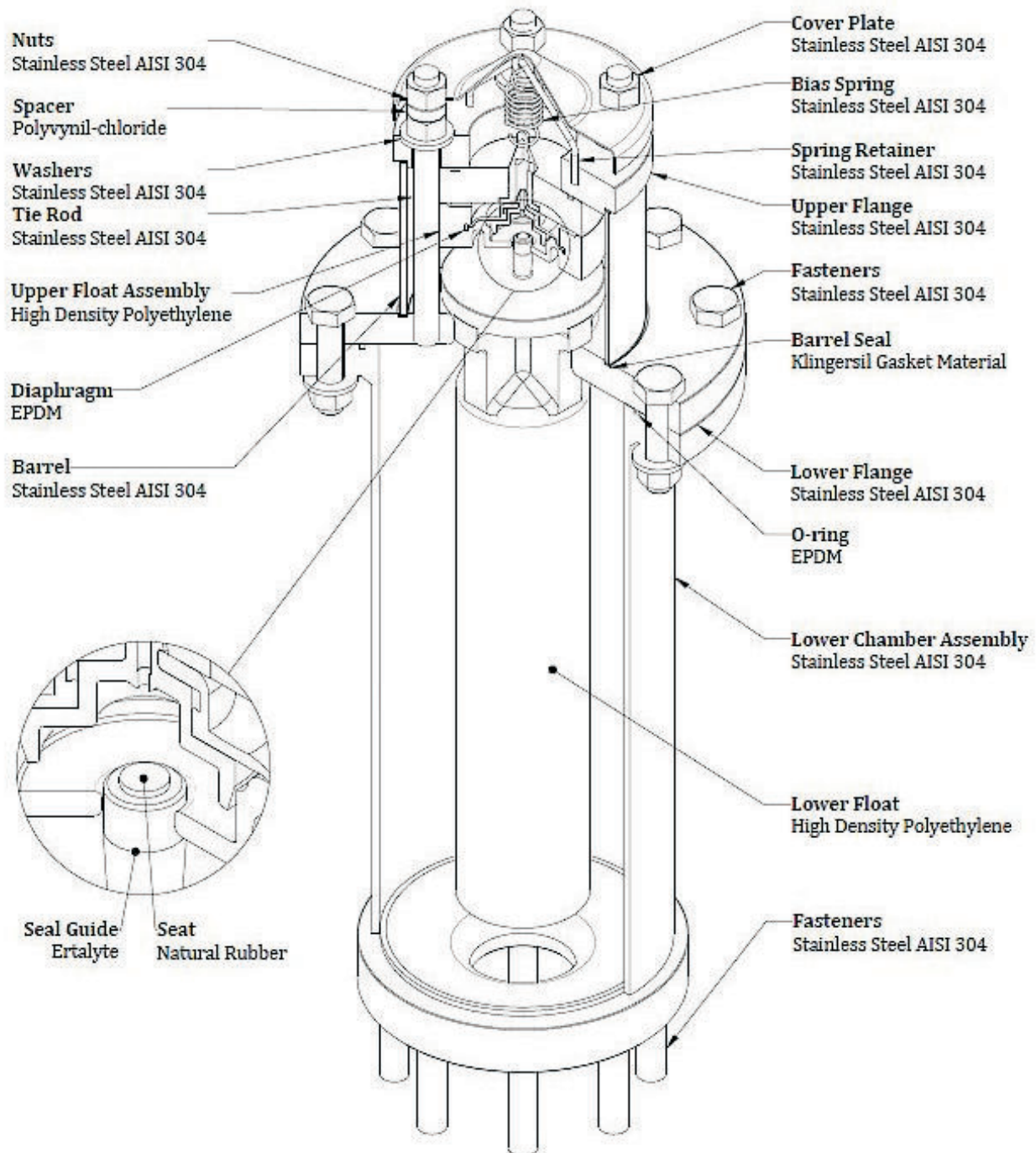
# SEWAGE

Series  
VG

## 150VG25 25 Bar

150 mm / 6.0 inch

Air release and vacuum break valves  
for Sewerage and Slurry Pipelines



### Specifications

Operating Pressure	0.5 to 25 Bar
Media	Sewage or Slurry
Inlet ( Large Orifice )	6 inch (150 mm Dia ) Flanged
Outlet ( Small Orifice )	Anti shock orifice 12.7 mm Dia

Overall Valve size	423 mm dia x 973 mm long
Mass	80.0 kg
Operating Temperature	4 - 85 Deg C
High pressure test	1.5 X Max Working Pressure
Low pressure test	0.5 Bar

**Note :** The valve and materials shown on this specification sheet are for the **STANDARD** option valve  
For all other options including material and pressure port options see **Range Explanation** sheet

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**VACUVENT**

Series 050VG10 METRIC June 2015

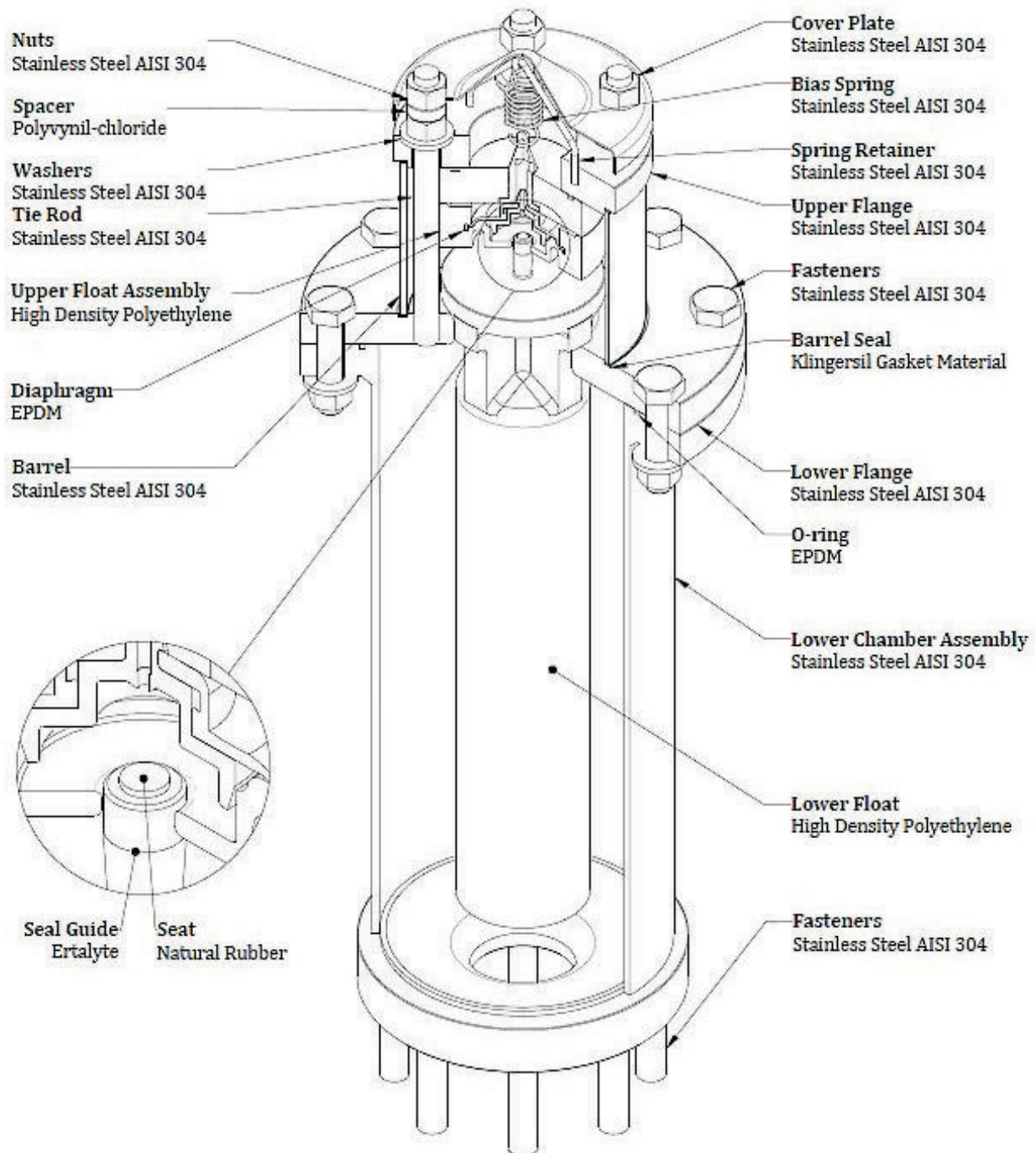
# SEWAGE

Series  
VG

## 200VG10 10 Bar

200 mm / 8.0 inch

Air release and vacuum break valves  
for Sewerage and Slurry Pipelines



### Specifications

Operating Pressure	0.5 to 10 Bar
Media	Sewage or Slurry
Inlet ( Large Orifice )	8 inch (200 mm Dia ) Flanged
Outlet ( Small Orifice )	Anti shock orifice 16.0 mm Dia

Overall Valve size	463 mm dia x 923 mm long
Mass	100.0 kg
Operating Temperature	4 - 85 Deg C
High pressure test	1.5 X Max Working Pressure
Low pressure test	0.5 Bar

**Note :** The valve and materials shown on this specification sheet are for the **STANDARD** option valve  
For all other options including material and pressure port options see **Range Explanation** sheet

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**VACUVENT**

Series 050VG10 METRIC June 2015

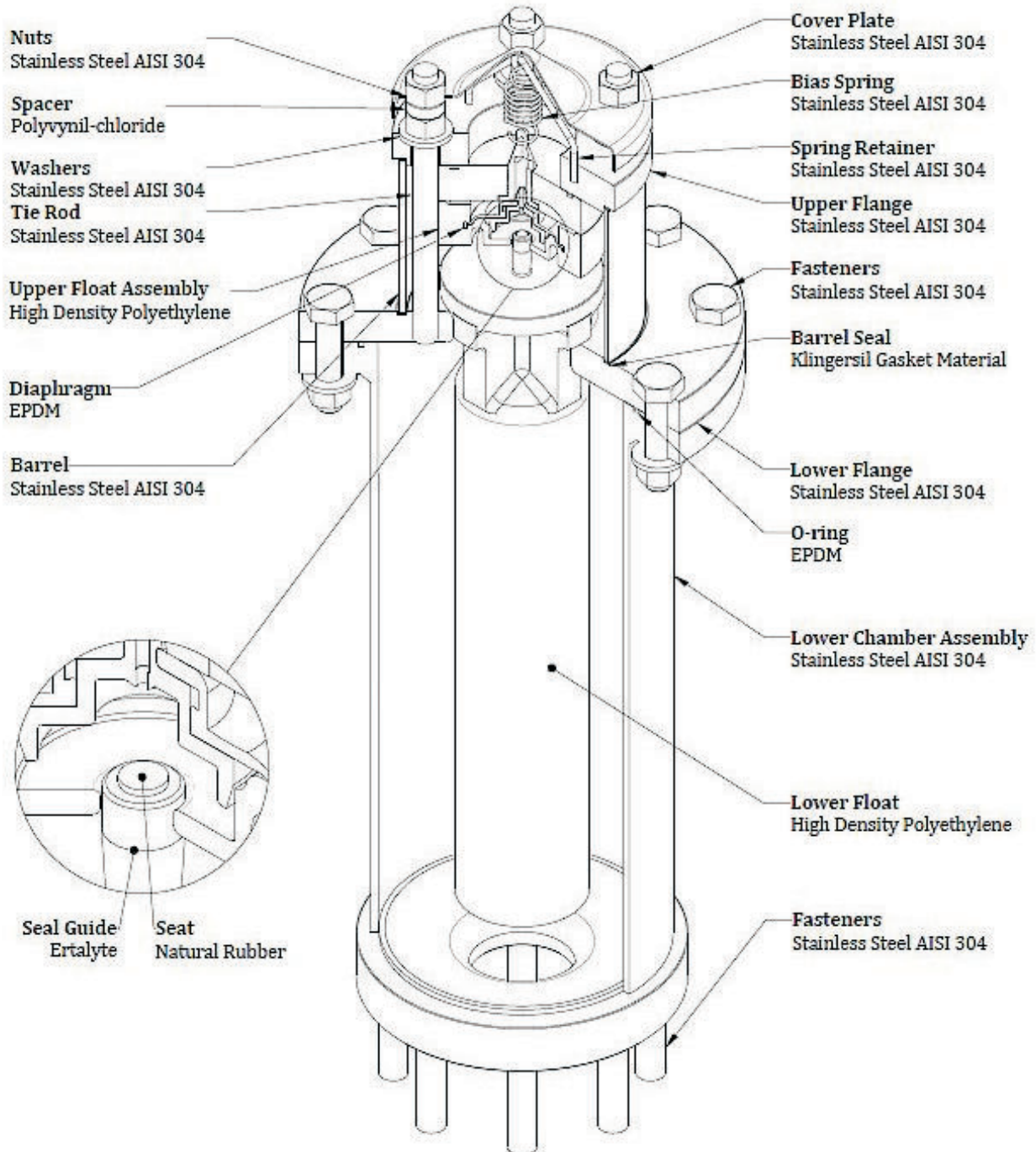
# SEWAGE

Series  
VG

## 200VG25 25 Bar

200 mm / 8.0 inch

Air release and vacuum break valves  
for Sewerage and Slurry Pipelines



### Specifications

Operating Pressure	0.5 to 25 Bar
Media	Sewage or Slurry
Inlet ( Large Orifice )	8 inch (200 mm Dia ) Flanged
Outlet ( Small Orifice )	Anti shock orifice 16.0 mm Dia

Overall Valve size	463 mm dia x 1073 mm long
Mass	108.0 kg
Operating Temperature	4 - 85 Deg C
High pressure test	1.5 X Max Working Pressure
Low pressure test	0.5 Bar

**Note :** The valve and materials shown on this specification sheet are for the **STANDARD** option valve  
For all other options including material and pressure port options see **Range Explanation** sheet

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**VACUVENT**

Series 050VG10 METRIC June 2015



# General sizing and operation notes

## Basic Operation

Vacuvent have full valve size intakes ( large orifices ) but control the exhaust exclusively via the *Anti-Shock* orifices . No exhaust is vented via the large orifice and this function is specifically designed for ( further reading see technical information ). The valve range covers most applications as standard but still allows the designer some scope to specify more accurately .

## Basic Principles

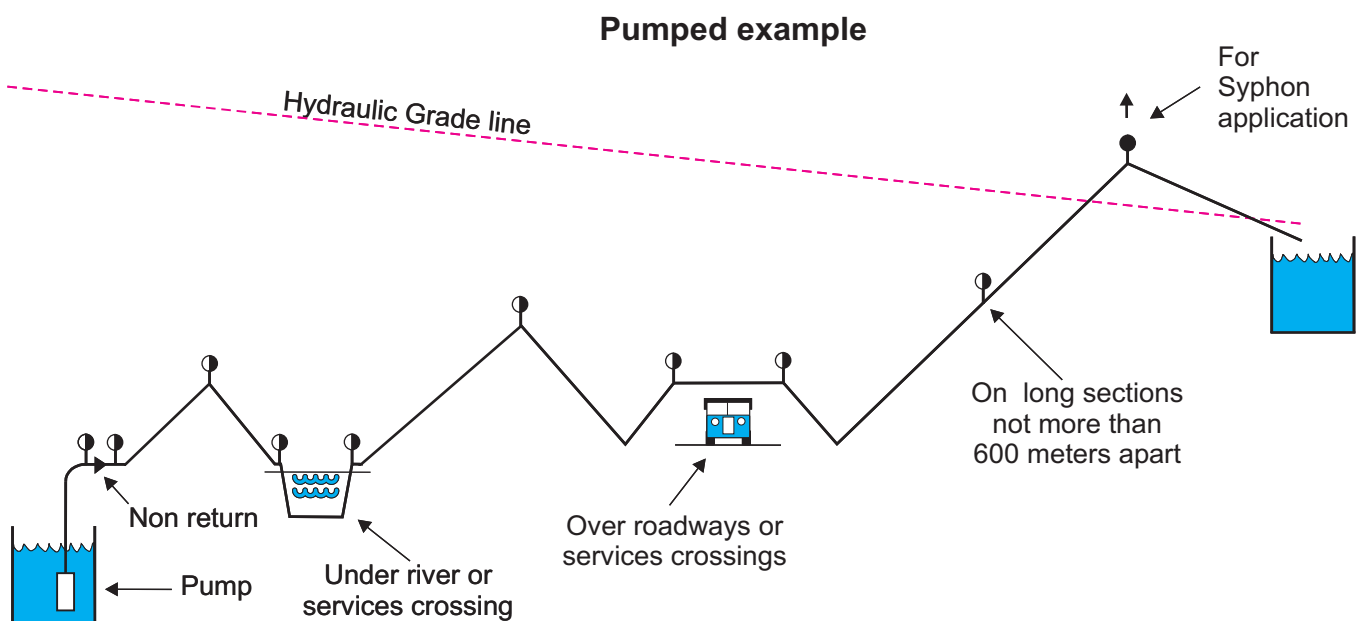
When a section drains down the AV at the apex must be sized to protect the pipe and seals until next valve lower down opens . So intake can not be calculated by adding all the valves on that section . Exhaust however is another matter and its feasible in some instances to add all the anti shock capabilities for one section . Its also important to ensure that enough head ( including dynamic ) is available to seal the valve off otherwise a syphon valve may be required . This is a consideration on pumping systems where the final section after the apex has the possibility of draining down faster than the pumping rate . Another factor is the differentiation between designed flow rates and possible drainage rates . Drainage rates are generally estimated 2 times the designed flow rates ie 1-2 m/sec flow rate and say 2-4 m/sec drainage . If the pipe is protected for vacuum , generally the exhaust capability is more than adequate

## Sizing

Most sizing is based on the need to protect the pipeline from a negative pressure , vent the initial air , and to vent the pressurised air with the importance generally in that order . A good start is to select a scouring or drainage rate based on rupture or draining of 2-3 times the designed flow rate of that particular section . Size the AV to protect the pipeline and seals from low pressure within the pipeline during draining or other pipeline disturbances ( eg pump trip). One accepted method is to limit the internal pressure to  $3.5 \text{ m } \Delta P$  ( 0.35 Bar ) below atmospheric @ sea level . The AV intake data in each individual valve catalogue indicates that point and the resultant inflow of air .

## Placement

The graphic shows most of the common places where AV ( air release valves ) are fitted . High points are a natural start , also where the pipeline crosses obstacles like rivers and roads . Check for syphon application above the hydraulic grade line . To control pump start and pump trip, AV should be placed before and after the check valve.



**Disclaimer :** Sizing , placement and application of Air Release Valves is beyond the scope of this single page and the above is only a basic outline of the methods . For more technical information consult the " Technical section" and " Links " section of the Vacuvent website.