



**MANWAYS**  
MANWAYS | ACCESS HATCHES | DOORS  
A HpE Process Company



OVER 25 YEARS OF SUCCESS

[www.hpeprocess.com](http://www.hpeprocess.com)

## Contents

Installation .....	4
Certification.....	4
Seals .....	5
Round External Doors – Single Arm, Hinged.....	6
Round External Doors – Single Arm, Hinged with Hygienic Lip Seal & Retention Free Cover .....	8
Round External Doors – Single Arm, Hinged.....	9
Round External Doors – Multi Hand Wheels, Loose Lid .....	10
Round External Doors – Multi Hand Wheels with Hinge .....	11
Round External Doors – Rim Clamp, Loose Lid .....	12
Round External Doors- Hinged & Hand Fastened.....	13
Other Round External Doors .....	14
Round External Pressure Doors - Design & Approval CODAP 2000.....	16
Round External Pressure Doors – PED Approved .....	17
Oval Doors.....	20
Oval Doors Retention Free Cover .....	22
Oval Doors – Retention Free Cover – Design & Approval CODAP 2000.....	23
Oval, Autoclave Door .....	24
Oval, PED Compliant Doors.....	26
Rectangular, Autoclave Doors.....	27
Rectangular Doors.....	28
Other Options .....	33
SGT Type Weld in Sightglass DIN 8902 .....	34
Versaline RSB Type Rotating Sprayball .....	36
Sprayball Types .....	38
Other Tank Equipment.....	45
Adjustable Tank Feet.....	45
Light Duty Adjustable Feet.....	45
Hygienic Machine Feet.....	46
Medium Duty Adjustable Feet .....	47
Heavy Duty Aseptic Feet .....	48
Heavy Duty Hygienic Feet .....	49
Stainless Steel Stems, Plastic Bases .....	50
Stainless Steel Stems, Stainless Bases.....	51
Tank Safety and Cleaning Systems.....	52
Tank Safety Systems – Application .....	53
Tank Safety Systems – Processes and Functions .....	54

Variants of Cleaning Systems .....	56
Variants of Tank Connections .....	56
Variants of Switching Modules CIP / Gas .....	57
Switching Module – Automatic Switching .....	57
Switching Module – Divert Valve .....	58
Switching Module – Butterfly Valve.....	58
Switching Module – Butterfly Valve and Control Valve .....	59
Cleaning – Tank Safety Systems .....	59
Safety Valves .....	60
Range Vacuum Valve.....	60
Vacuum Valve .....	60
Range Safety Valve.....	61
Safety Valve.....	61
Traditional Top Tank Plate Design VS Evoguard Tank Top Design .....	62
Pressure Equalising Valve .....	63
Pressure Equalising Valve .....	63
Float Valve.....	63
Pressure Relief Valves .....	64
Tank Outlet Valves .....	64
Sampling Valve PEMS IV.....	65
Sampling Valve PEMS II.....	65
Hypodermic Sample Point.....	65
Aseptic Sampling Valve .....	65
Manway Seals and Spares.....	65



## Company Information

Manways was formed to support our dedication to quality regarding the supply of manways and other tank equipment. A dedicated website means that industry professionals have immediate access to required information with the assurance that they are dealing with an established, reputable company.

Manways is part of HpE Process which has been established for over 25 years and with over 150 years combined experience in hygienic fluid handling processes.

Our aim is to provide a first-class service, with quality products, at competitive prices. Our experienced sales team have the wealth of knowledge and are on hand to ensure you find the equipment best suited to your application as well as offering technical advice if needed.

The following statement is to ensure that you get the level of service you need:

- Where possible all enquires will be responded to on the same day. If we are unable to do this we will advise you when we will be able to do so.
- All orders made via [www.manways.co.uk](http://www.manways.co.uk) will generate an acknowledgement when the order is processed.
- Advise if Certificates of Conformity / Material Certificates are required and they will be despatched with the order.
- CAD Drawings for many of the manways are included on the site, these can be downloaded by your own system, for integration into your design.
- Full datasheets on all items are available by email, fax, or post.

If you have any queries, or would like further information please visit [www.manways.co.uk](http://www.manways.co.uk)

## Contact Information

Email: [Info@manways.co.uk](mailto:Info@manways.co.uk)

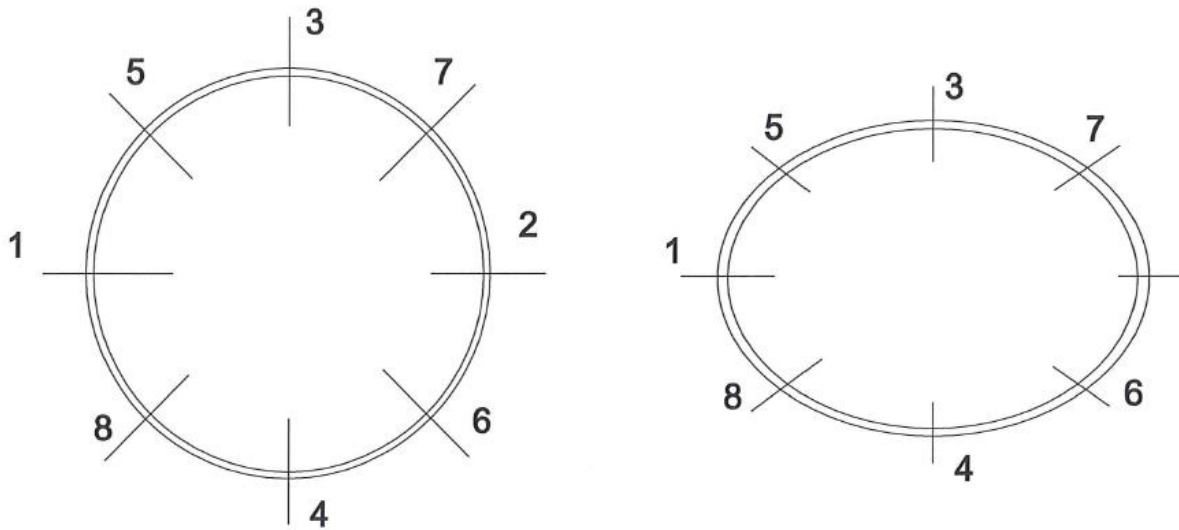
Tel: 0113 252 6712

Fax: 0113 253 8125

NB: Please note all the information given in this catalogue was current at the time of publishing. The catalogue is subject to change at any time. Before ordering, please contact us to ensure all data is current.

## Installation

In order to avoid the possibility of distortion during the welding of the neck ring, it is recommended that the neck ring be tack welded first in eight diametrically opposite positions as shown below before applying the full weld bead.



## Certification

### CODAP2000 Certification

This is the French equivalent of the BSI Standards, or the German TÜV. Design calculations to this standard must conform to the CODAP 2000 specifications and the final design must be approved.

### PED Certification

THE PED applies to the design, manufacture and conformity assessment of pressure equipment and assemblies of pressure equipment with a maximum allowable pressure greater than 0.5 bar.

Guidelines specifically exclude 'covers', collars, gaskets and flanges' and 'sight glasses with frames' from the definition of 'pressure accessory'. Therefore, these items do not need to be CE marked.

These items are classed as 'components of pressure equipment' and are therefore part of an assembly which must be CE marked by the manufacturer.

### Manways Statement

All PED approved doors are designed to recognise standards (eg TÜV / CODAP 2000) for use on vessels to comply with PED 97/23/EC and will be supplied with a documentation package including material certificates, design calculations and test results.

## Seals

Type of Seal	Colour	FDA	Maximum Temperature
<b>Joints Alimentaires – Food Quality Seals</b>			
<b>BUTYL</b>	Orange	Section 21 (CFR 177.2600)	-20°C / +110°C
<b>EPDM</b>	Grey	Section 21 (CFR 177.2600)	-40°C / +130°C
<b>FEP-SILICONE</b>	Red, Transparent core	Section 21 (CFR 1.77.1550)	-50°C / +200°C
<b>FEP-F.P.M (VITON®*)</b>	Black, Transparent core	Section 21 (CFR 1.77.1550)	-10°C / +200°C
<b>F.P.M (VITON®*)</b>	Black	Section 21 (CFR 177.2600)	-10°C / +200°C
<b>NATUREL</b>	Off White	Section 21 (CFR 177.2600)	-40°C / +70°C
<b>NÈOPRÈNE</b>	Green	Section 21 (CFR 177.2600)	-20°C / +90°C
<b>NITRILE (NRB)</b>	Bronze	Section 21 (CFR 177.2600)	-20°C / +110°C
<b>SILICONE</b>	White Yellow	Section 21 (CFR 177.2600)	-50°C / +200°C
<b>SILICONE HIGH TEMPERATURE</b>	Brown	Section 21 (CFR 177.2600)	-50°C / +250°C
<b>SILICONE WATER STREAM</b>	Yellow	Section 21 (CFR 177.2600)	-50°C / +200°C
<b>SILICONE-USP PHARMA</b>	Red	Section 21 (CFR 177.2600) (USP 23 classe VI)	-50°C / +200°C
<b>FPM BNIC</b>	Black	Section 21 (CFR 177.2600)	-10°C / +200°C
<b>Joints Alimentaires – Non Food Grade</b>			
<b>AFLAS</b>	Black and White	-	-10°C / +250°C (Max +300C)
<b>F.S.I</b>	Blue	-	-50°C / +200°C

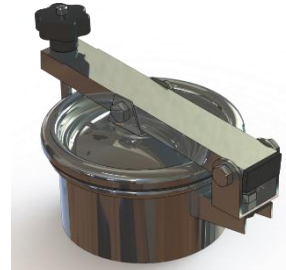
On request rope per meter	Fibre Glass (450°C)	Carbon / Graphite Fiber (650°C)	PTFE + Aramide Fiber (280°C)
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\*Viton® is a registered trademark of DuPont Performance Elastomers.

## Round External Doors - Single Arm, Hinged

### P33 -150

Access Diameter: 150mm  
Door Thickness: 2mm  
Frame Thickness: 2mm  
Frame Height: 80mm  
Weight: 2kg  
Max Working Pressure: 0.4 bar



### P33-200

Access Diameter: 196mm  
Door Thickness: 1.5mm  
Frame Thickness: 2mm  
Frame Height: 80mm  
Weight: 3kg  
Max Working Pressure: 0.3 bar



### P33-114

Access Diameter: 204mm  
Door Thickness: 2mm  
Frame Thickness: 8mm  
Frame Height: 50mm  
Weight: 4kg  
Max Working Pressure (Full Vacuum): 0.8 bar



### P33-255

Access Diameter: 250mm  
Door Thickness: 2mm  
Frame Thickness: 6mm  
Frame Height: 60mm  
Weight: 6kg  
Max Working Pressure: 0.3 bar



### P33-315

Access Diameter: 354mm  
Door Thickness: 2mm  
Frame Thickness: 8mm  
Frame Height: 50mm  
Weight: 9kg  
Max Working Pressure: 0.4 bar



## Round External Doors - Single Arm, Hinged



Material: 316L  
 Finish: Electropolish  
 Seal: EPDM as standard  
 Seal Options: Nitrile, Neoprene, Silicon, Viton, Natural Rubber

### **P33-300**

Access Diameter: 300mm  
 Door Thickness: 1.5mm  
 Frame Thickness: 2mm  
 Frame Height: 80mm  
 Max Working Pressure: 0.2 bar

### **P33-500**

Access Diameter: 500mm  
 Door Thickness: 2mm  
 Frame Thickness: 2mm  
 Frame Height: 80mm  
 Max Working Pressure: 0.05 bar

### **P33-400**

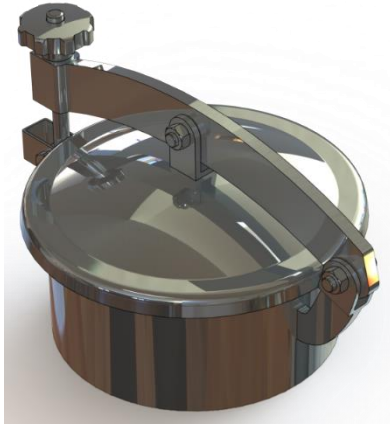
Access Diameter: 400mm  
 Door Thickness: 1.5mm  
 Frame Thickness: 2mm  
 Frame Height: 80mm  
 Max Working Pressure: 0.1 bar

### **P33-600**

Access Diameter: 600mm  
 Door Thickness: 2mm  
 Frame Thickness: 2mm  
 Frame Height: 80mm  
 Max Working Pressure: 0.005 bar



**Round External Doors - Single Arm, Hinged with Hygienic Lip Seal & Retention Free Cover**



Material: 316L  
 Finish: Electropolish  
 Seal: As standard  
 Seal Options: EPDM, Viton

**P31-200**

Access Diameter: 200mm  
 Door Thickness: 3mm  
 Frame Thickness: 3mm  
 Frame Height: 100mm  
 Max Working Pressure: 0.8 bar

**P31-500**

Access Diameter: 500mm  
 Door Thickness: 3mm  
 Frame Thickness: 3mm  
 Frame Height: 100mm  
 Max Working Pressure: 0.1 bar

**P31-300**

Access Diameter: 300mm  
 Door Thickness: 3mm  
 Frame Thickness: 3mm  
 Frame Height: 100mm  
 Max Working Pressure: 0.2 bar

**P31-600**

Access Diameter: 600mm  
 Door Thickness: 3mm  
 Frame Thickness: 3mm  
 Frame Height: 100mm  
 Max Working Pressure: 0.05 bar

**P31-400**

Access Diameter: 430mm  
 Door Thickness: 3mm  
 Frame Thickness: 3mm  
 Frame Height: 100mm  
 Max Working Pressure: 0.1 bar

**Round External Doors - Single Arm, Hinged**



Upper lid aseptic in 316 Stainless Steel (304 as an option)

Special frame heights available on request

**D8-200**

Access Diameter: 200mm  
Door Thickness: 2mm  
Frame Thickness: 2.5mm  
Frame Height: 100mm  
Max Working Pressure: 0.2 bar

**D8-460**

Access Diameter: 460mm  
Door Thickness: 2.5mm  
Frame Thickness: 2.5mm  
Frame Height: 100mm  
Max Working Pressure: 0.2 bar

**D8-300**

Access Diameter: 300mm  
Door Thickness: 2mm  
Frame Thickness: 2.5mm  
Frame Height: 100mm  
Max Working Pressure: 0.2 bar

**D8-500**

Access Diameter: 500mm  
Door Thickness: 2.5mm  
Frame Thickness: 2.5mm  
Frame Height: 100mm  
Max Working Pressure: 0.05 bar

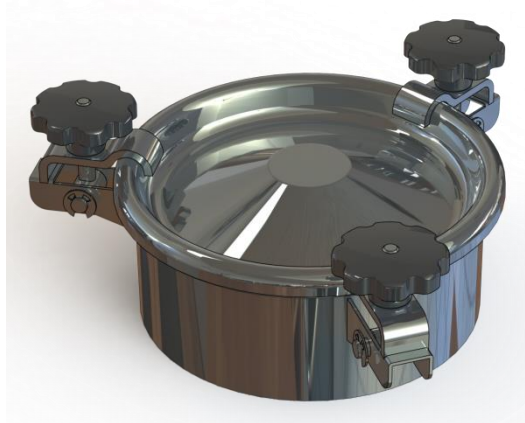
**D8-420**

Access Diameter: 420mm  
Door Thickness: 2.5mm  
Frame Thickness: 2.5mm  
Frame Height: 100mm  
Max Working Pressure: 0.2 bar

**D8-600**

Access Diameter: 600mm  
Door Thickness: 2.5mm  
Frame Thickness: 2.5mm  
Frame Height: 100mm  
Max Working Pressure: 0.05 bar

**Round External Doors - Multi Hand Wheels, Loose Lid**



Material: 316L  
 Finish: Electropolish  
 Seal: EPDM as standard  
 Seal Options: Nitrile, Neoprene, Viton, Natural Rubber, FEP

**P33-196**

Access Diameter: 196mm  
 Door Thickness: 1.5mm  
 Frame Thickness: 2mm  
 Frame Height: 80mm  
 No of Clamps: 3  
 Max Working Pressure: 0.6 bar

**P33-501**

Access Diameter: 500mm  
 Door Thickness: 2mm  
 Frame Thickness: 2mm  
 Frame Height: 80mm  
 No of Clamps: 5  
 Max Working Pressure: 0.3 bar

**P33-301**

Access Diameter: 300mm  
 Door Thickness: 1.5mm  
 Frame Thickness: 2mm  
 Frame Height: 80mm  
 No of Clamps: 3  
 Max Working Pressure: 0.3 bar

**P33-601**

Access Diameter: 600mm  
 Door Thickness: 2mm  
 Frame Thickness: 2mm  
 Frame Height: 80mm  
 No of Clamps: 6  
 Max Working Pressure: 0.1 bar

**P33-401**

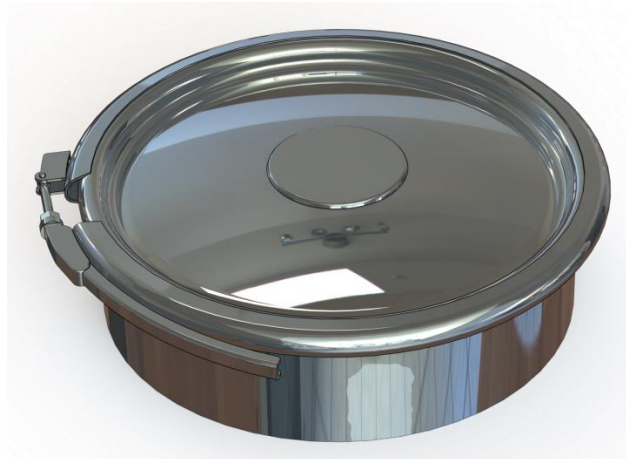
Access Diameter: 430mm  
 Door Thickness: 1.5mm  
 Frame Thickness: 2mm  
 Frame Height: 80mm  
 No of Clamps: 4  
 Max Working Pressure: 0.3 bar

## Round External Doors - Multi Hand Wheels with Hinge



Code	P06D2
Description:	<p>+/-1 bar multi clamp with hinge non PED. Full Vacuum Special frame heights are available on request (minimum quantities will apply) 300mm to 800mm diameter suitable for 1 bar 4mm Lid Thickness 6mm Thick Neckring</p> <p>*150 - 250mm Diameter suitable for -1 to +15 bar 18mm Lid Thickness 8mm Thick Neckring</p>
Material:	316 (304 available as an option)
Finish:	Standard brushed finish, option of polishing to customer specification.

**Round External Doors - Rim Clamp, Loose Lid**



Material: 316L  
 Finish: Electropolish  
 Seal: EPDM as standard  
 Seal Options: Nitrile, Neoprene, Silicon, Natural Rubber, PTFE Braided

**P32-305**

Access Diameter: 300mm  
 Door Thickness: 1.5mm  
 Frame Thickness: 2mm  
 Frame Height: 80mm  
 Max Working Pressure: 1.2 bar

**P32-705**

Access Diameter: 500mm  
 Door Thickness: 2mm  
 Frame Thickness: 2mm  
 Frame Height: 80mm  
 Max Working Pressure: 0.6 bar

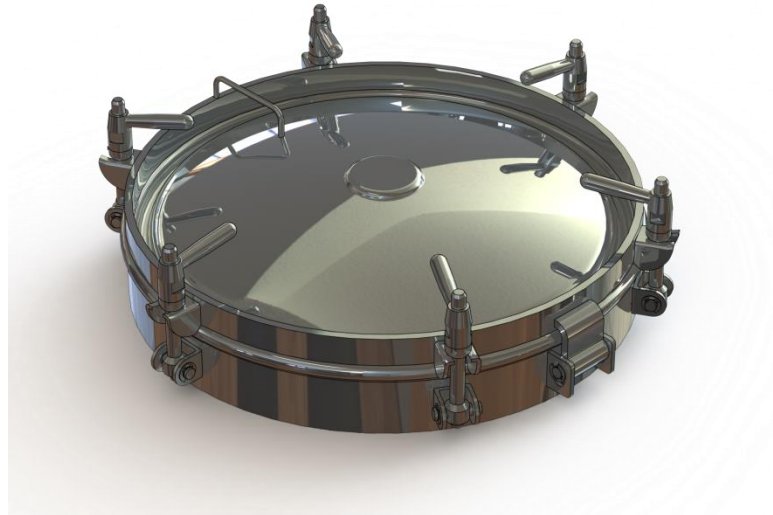
**P32-405**

Access Diameter: 400mm  
 Door Thickness: 1.5mm  
 Frame Thickness: 2mm  
 Frame Height: 80mm  
 Max Working Pressure: 1 bar

**P32-805**

Access Diameter: 600mm  
 Door Thickness: 2mm  
 Frame Thickness: 2mm  
 Frame Height: 80mm  
 Max Working Pressure: 0.6 bar

**Round External Doors - Hinged & Hand Fastened**



Material: 316L  
 Finish: Electropolish  
 Seal: EPDM as standard  
 Seal Options: Nitrile, Neoprene, Silicon, Natural Rubber

**P22-265**

Access Diameter: 504mm  
 Door Thickness: 2mm  
 Frame Thickness: 8mm  
 Frame Height: 50mm  
 No of Clamps: 6  
 Max Working Pressure: 1 bar  
 Vacuum Pressure: -0.9 bar

**P22-286**

Access Diameter: 604mm  
 Door Thickness: 2mm  
 Frame Thickness: 8mm  
 Frame Height: 50mm  
 No of Clamps: 8  
 Max Working Pressure: 1.2 bar  
 Vacuum Pressure: -0.5 bar

**P22-266**

Access Diameter: 604mm  
 Door Thickness: 2mm  
 Frame Thickness: 8mm  
 Frame Height: 50mm  
 No of Clamps: 6  
 Max Working Pressure: 0.9 bar  
 Vacuum Pressure: -0.5 bar

## Other Round External Doors

### P33 -212

Access Diameter: 504mm  
Door Thickness: 2mm  
Frame Thickness: 8mm  
Frame Height: 50mm  
Weight: 13kg  
Max Working Pressure: 0.1 bar  
Vacuum Pressure: -0.8 bar



### P33-213

Access Diameter: 604mm  
Door Thickness: 2mm  
Frame Thickness: 8mm  
Frame Height: 50mm  
Weight: 14kg  
Max Working Pressure: 0.1 bar  
Vacuum Pressure: -0.5 bar



## Other Round External Doors



### **D15-420**

Access Diameter: 420mm  
Door Thickness: 2.5mm  
Frame Thickness: 2.5mm  
Frame Height: 100mm  
Max Working Pressure: 0.3 bar

### **D15-460**

Access Diameter: 460mm  
Door Thickness: 2.5mm  
Frame Thickness: 2.5mm  
Frame Height: 100mm  
Max Working Pressure: 0.3 bar

### **D15-500**

Access Diameter: 500mm  
Door Thickness: 2.5mm  
Frame Thickness: 2.5mm  
Frame Height: 100mm  
Max Working Pressure: 0.2 bar

### **D15-600**

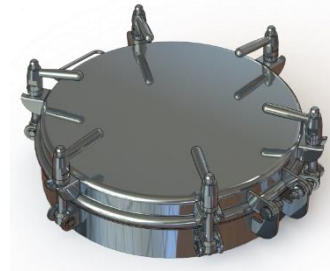
Access Diameter: 600mm  
Door Thickness: 2.5mm  
Frame Thickness: 2.5mm  
Frame Height: 100mm  
Max Working Pressure: 0.1 bar



**Round External Pressure Doors  
Design & Approval CODAP 2000**

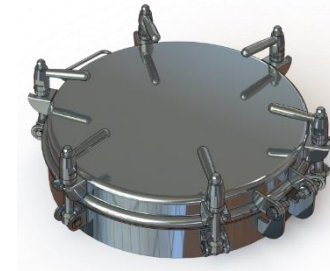
**P22 -238**

Access Diameter: 204mm  
Door Thickness: 2mm  
Frame Thickness: 8mm  
Frame Height: 60mm  
Weight: 6kg  
Max Working Pressure: 8 bar  
Full Vacuum  
Anti-retention cover  
Optional heat insulation



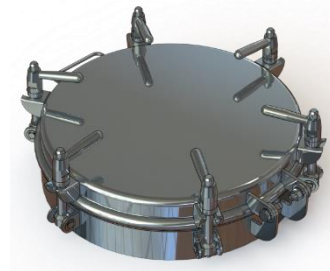
**P22-239**

Access Diameter: 354mm  
Door Thickness: 2.5mm  
Frame Thickness: 8mm  
Frame Height: 50mm  
Weight: 11kg  
Max Working Pressure: 3 bar  
Full Vacuum  
Optional heat insulation



**P22-249**

Access Diameter: 354mm  
Door Thickness: 2.5mm  
Frame Thickness: 8mm  
Frame Height: 50mm  
Weight: 12kg  
Max Working Pressure: 4 bar  
Full Vacuum  
Optional heat insulation



**Round External Pressure Doors  
PED Approved**

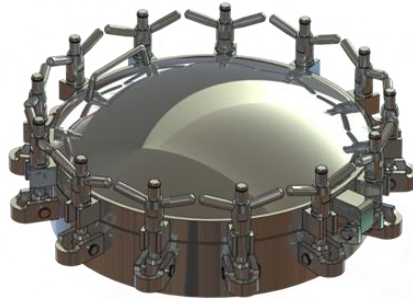


Material: 316L  
 Finish: Electropolish, beadblast or to customers specification  
 Seal: EPDM as standard, various alternatives available  
 Full Vacuum  
 Pressure Rating: Maximum allowed working pressure at 150°C

- These doors are supplied to CODAP 2000 and are complete with PED complaint certification of material and manufacturers calculation.
- Extras available are spring assisted opening, SYJA System, construction to ASME or TUV standards.

Code	Diameter (mm)	Pressure Ratings			No of Bolts	Frame Height (mm)	Weight (kg)
		CODAP 2000	ASME	TUV			
P22-233	204	8			3	100	16
P22-333	354	4			3	100	23
P22-354	354	5.6			4	100	25
P22-433	400	3	3	2.8	4	100	33
P22-444	400	4.34	6	3.5	5	100	3.4
P22-449	400	8.5	8.5	6.4	09	100	40

**Round External Pressure Doors  
PED Approved**



Material: 316L  
 Finish: Electropolish, beadblast or to customers specification  
 Seal: EPDM as standard, various alternatives available  
 Full Vacuum  
 Pressure Rating: Maximum allowed working pressure at 150°C

- These doors are supplied to CODAP 2000 and are complete with PED complaint certification of material and manufacturers calculation.
- Extras available are spring assisted opening, SYJA System, construction to ASME or TUV standards.

Code	Diameter (mm)	Pressure Ratings			No of Bolts	Frame Height (mm)	Weight (kg)
		CODAP 2000	ASME	TUV			
P22-443	460	3.6	3.6	2.7	5	100	37
P22-454	460	4.1	4.1	3.3	6	100	39
P22-459	460	7.3	7.3	6	11	100	47
P22-553	500	3.5	3.5	2.7	6	100	43
P22-564	500	4.5	4.5	3.2	7	100	44
P22-569	500	7.5	7.5	6	13	100	54
P22-664	600	3			7	100	50
P22-667	600	5			10	100	54
P22-669	600	7			14	100	58

**Round External Pressure Doors  
PED Approved**

Model: P06/D13  
Material: 316L (304 available as an option)  
Optional: Sight Glass  
Full Vacuum



Working pressure quoted is at 150°C.

Please contact for details of maximum working pressures at alternative temperatures.

Diameter (mm)	No of Clamps	Door Thickness (mm)	Frame Thickness (mm)	Frame Height (mm)	Working Pressure (bar) @150°C
300	4	4	4	100	4.0
	6	4	4	100	7.5
	8	5	4	100	9.0
400	4	4	4	100	1.5
	6	4	4	100	4.0
	8	4	4	100	6.0
	10	5	4	100	7.5
	12	5	4	100	8.5
450	4	4	4	100	1.0
	6	4	4	100	3.0
	8	4	4	100	4.5
	10	4	4	100	6.0
	12	5	4	100	7.0
500	4	4	4	100	1.0
	6	4	4	100	2.0
	8	4	4	100	3.5
	10	4	4	100	4.5
	12	4	4	100	5.5
	14	5	4	100	6.5
600	6	4	4	100	1.0
	8	4	4	100	2.0
	10	4	4	100	3.5
	12	4	4	100	4.0
	14	4	4	100	4.5

## Oval Doors

### P21 -303

Access Opening: 307 x 442mm  
Door Thickness: 2mm  
Frame Thickness: 8mm  
Frame Height: 50mm  
Weight: 9kg  
Max Working Pressure: 0.3 bar  
Full Vacuum



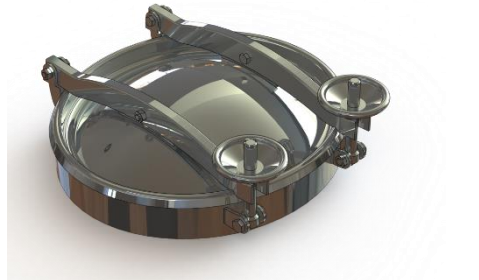
### P21-407

Access Opening: 307 x 442mm  
Door Thickness: 2mm  
Frame Thickness: 8mm  
Frame Height: 50mm  
Weight: 10kg  
Max Working Pressure: 0.3 bar  
Full Vacuum



### P21-116

Access Opening: 407 x 452mm  
Door Thickness: 2.5mm  
Frame Thickness: 8mm  
Frame Height: 50mm  
Weight: 14kg  
Max Working Pressure: 0.5 bar  
Full Vacuum



### P06-A2

Access Opening: 440 x 340mm  
Door Thickness: 3mm  
Frame Thickness: 30mm  
Frame Height: 12mm  
Max Working Pressure: 3.2 bar



## Oval Doors

### P06 -A3

Access Opening: 440 x 310mm  
 Door Thickness: 2.5mm  
 Frame Thickness: 35mm  
 Frame Height: 10 / 12mm  
 Max Working Pressure: 3.2 bar



### P06-A27 – Tapered frame for improved cleaning

Access Opening: 520 x 420mm  
 Above Door Thickness: 3mm  
 Frame Thickness: 3mm  
 Frame Height: 78mm max  
 Max Working Pressure: 3.0 bar



### P06-A15 (60mm frame) P06-A16A (100mm frame)

Access Opening: 520 x 420mm  
 Door Thickness: 3mm  
 Frame Thickness: 12mm  
 Frame Height: \*\*  
 Weight: 14kg  
 Max Working Pressure: 8.0 bar



### P06-A26

Access Opening: 520 x 420mm  
 Door Thickness: 3mm  
 Frame Thickness: 30mm  
 Frame Height: 10mm max  
 Max Working Pressure: 3.0 bar



**Oval Doors**  
**Retention Free Cover**

**P21 -503**

Access Diameter: 307 x 442mm  
Door Thickness: 2mm  
Frame Thickness: 8mm  
Frame Height: 50mm  
Weight: 12kg  
Max Working Pressure: 0.3 bar  
Full Vacuum  
Retention free cover



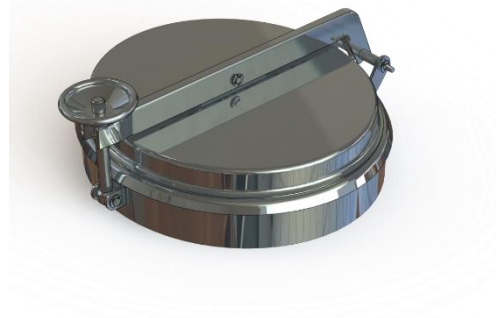
**P21-507**

Access Diameter: 307 x 442mm  
Door Thickness: 2mm  
Frame Thickness: 8mm  
Frame Height: 50mm  
Weight: 13kg  
Max Working Pressure: 0.3 bar  
Full Vacuum  
Retention free cover



**P21-516**

Access Diameter: 407 x 452mm  
Door Thickness: 2.5mm  
Frame Thickness: 8mm  
Frame Height: 50mm  
Weight: 18kg  
Max Working Pressure: 0.3 bar  
Full Vacuum  
Retention free cover, vertical opening



**Oval Doors**

**Retention Free Cover - Design & Approval CODAP 2000**

**P21 -147**

Access Diameter: 407 x 452mm

Door Thickness: 4mm

Frame Thickness: 8mm

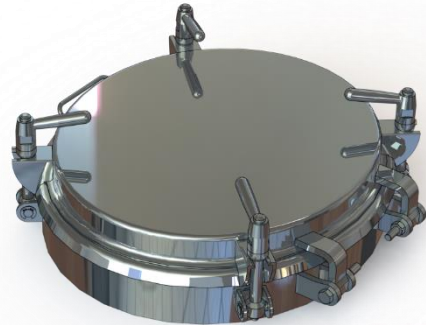
Frame Height: 50mm

Weight: 16kg

Max Working Pressure: 3 bar

Full Vacuum

Retention free cover, vertical opening



**P21-167**

Access Diameter: 407 x 452mm

Door Thickness: 4mm

Frame Thickness: 8mm

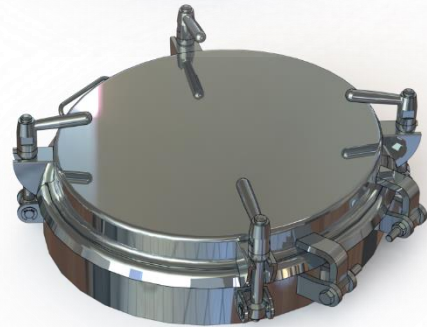
Frame Height: 50mm

Weight: 17kg

Max Working Pressure: 4 bar

Full Vacuum

Retention free cover





## Oval, Autoclave Doors

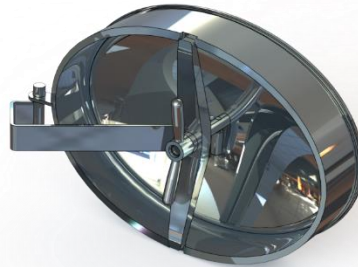
### P11 -101

Access Opening: 307 x 442mm  
Door Thickness: 2mm  
Frame Thickness: 8mm  
Frame Height: 60mm  
Weight: 8kg  
Max Working Pressure: 1.6 bar  
Vertical opening



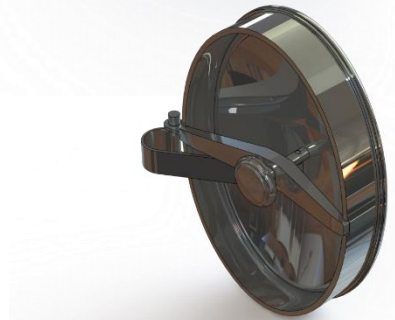
### P11-102

Access Opening: 307 x 442mm  
Door Thickness: 2mm  
Frame Thickness: 8mm  
Frame Height: 60mm  
Weight: 8kg  
Max Working Pressure: 1.6 bar  
Horizontal opening



### P11-103

Access Opening: 307 x 442mm  
Door Thickness: 2mm  
Frame Thickness: 8mm  
Frame Height: 60mm  
Weight: 9kg  
Max Working Pressure: 1.6 bar  
Horizontal opening



### P11-129

Access Opening: 407 x 452mm  
Door Thickness: 4mm  
Frame Thickness: 12mm  
Frame Height: 60mm  
Weight: 16kg  
Max Working Pressure: 5 bar  
Vertical opening



## Oval, Autoclave Doors

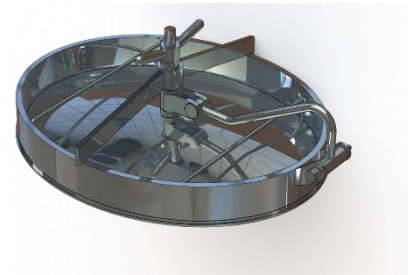
### **P11 -340-440 ED**

Access Opening: 340 x 440mm  
Door Thickness: 3mm  
Frame Thickness: 4mm  
Frame Height: 80mm  
Max Working Pressure: 2.4 bar



### **P11-410-510**

Access Opening: 410 x 510mm  
Door Thickness: 2.5mm  
Frame Thickness: 10mm  
Frame Height: 60mm  
Max Working Pressure: 2 bar



## Oval, PED Compliant Doors

### P06 -A11

Access Opening: 480 x 370mm  
Frame Thickness: 12mm  
Frame Height: 100mm

#### PED

Door Thickness: 4mm  
Max Working Pressure: 3 bar

Door Thickness: 6mm  
Max Working Pressure: 9 bar

Door Thickness: 10mm  
Max Working Pressure: 15 bar



### P06-A17

Access Opening: 440 x 340mm  
Door Thickness: 5mm  
Frame Thickness: 30mm  
Frame Height: 12mm  
Max Working Pressure: 8 bar  
(At working temperature +50°C / -10°C)



### P06-A18

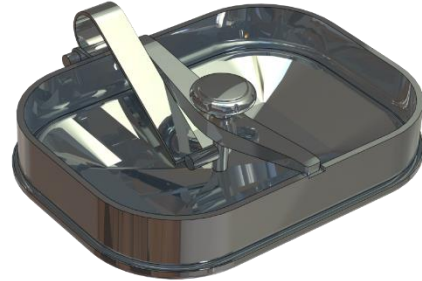
Access Opening: 440 x 340mm  
Door Thickness: 5mm  
Frame Thickness: 5mm  
Frame Height: 80mm  
Max Working Pressure: 8 bar  
(At working temperature +50°C / -10°C)



## Rectangular, Autoclave Doors

### P13-105

Access Opening: 314 x 424mm  
Door Thickness: 2mm  
Frame Thickness: 8mm  
Frame Height: 60mm  
Frame Radius: 98mm  
Weight: 9kg  
Max Working Pressure: 1.3 bar



### P13-409

Access Opening: 410 x 534mm  
Door Thickness: 2.5mm  
Frame Thickness: 8mm  
Frame Height: 60mm  
Frame Radius: 98mm  
Weight: 16kg  
Max Working Pressure: 1.0 bar



### P13-410

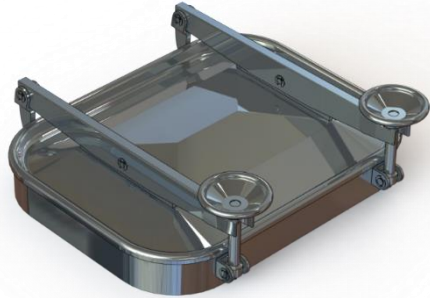
Access Opening: 410 x 534mm  
Door Thickness: 2.5mm  
Frame Thickness: 8mm  
Frame Height: 60mm  
Frame Radius: 98mm  
Weight: 16kg  
Max Working Pressure: 1.0 bar



## Rectangular Doors

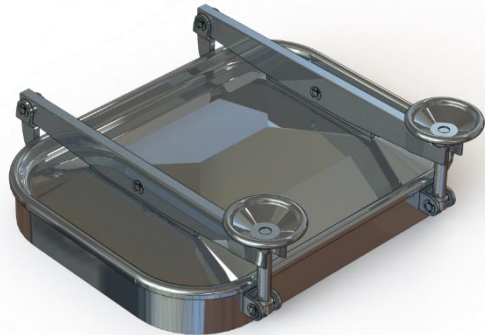
### P23-111

Access Opening: 410 x 534mm  
 Door Thickness: 2mm  
 Frame Thickness: 2mm  
 Frame Height: 60mm  
 Frame Radius: 98mm  
 Weight: 18kg  
 Max Working Pressure: 0.6 bar  
 Vacuum Pressure: -0.5 bar



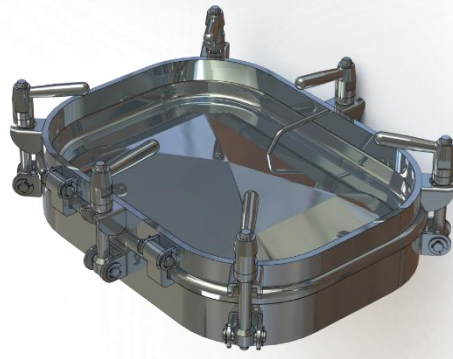
### P23-113

Access Opening: 410 x 534mm  
 Door Thickness: 2mm  
 Frame Thickness: 8mm  
 Frame Height: 50mm  
 Frame Radius: 98mm  
 Weight: 20kg  
 Max Working Pressure: 0.6 bar  
 Vacuum Pressure: -0.5 bar



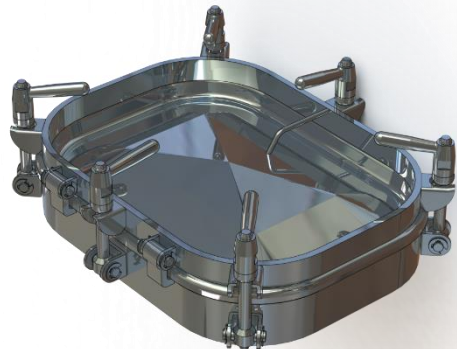
### P23-201

Access Opening: 314 x 424mm  
 Door Thickness: 2mm  
 Frame Thickness: 8mm  
 Frame Height: 50mm  
 Frame Radius: 98mm  
 Weight: 13kg  
 Max Working Pressure: 1.6 bar  
 Vacuum Pressure: -0.8 bar  
 Hinge on long side



### P23-202

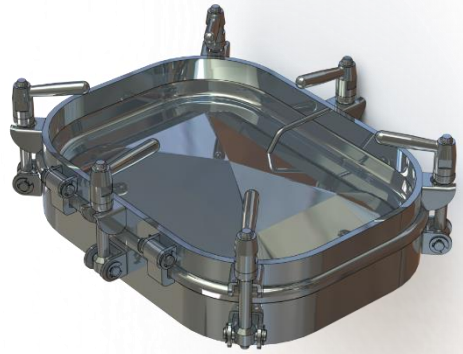
Access Opening: 314 x 424mm  
 Door Thickness: 2mm  
 Frame Thickness: 8mm  
 Frame Height: 50mm  
 Frame Radius: 98mm  
 Weight: 13kg  
 Max Working Pressure: 1.6 bar  
 Vacuum Pressure: -0.8 bar  
 Hinge on short side



## Rectangular Doors

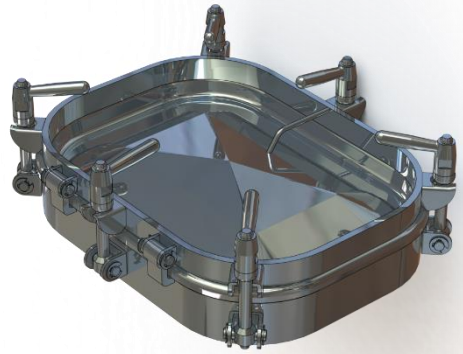
### P23-203

Access Opening: 410 x 534mm  
 Door Thickness: 2.5mm  
 Frame Thickness: 8mm  
 Frame Height: 50mm  
 Frame Radius: 98mm  
 Weight: 18kg  
 Max Working Pressure: 1.2 bar  
 Full Vacuum  
 Hinge on long side



### P23-204

Access Opening: 410 x 534mm  
 Door Thickness: 2.5mm  
 Frame Thickness: 8mm  
 Frame Height: 50mm  
 Frame Radius: 98mm  
 Weight: 18kg  
 Max Working Pressure: 1.2 bar  
 Full Vacuum  
 Hinge on short side



### P23-210

Access Opening: 314 x 424mm  
 Door Thickness: 2mm  
 Frame Thickness: 8mm  
 Frame Height: 50mm  
 Frame Radius: 98mm  
 Weight: 11kg  
 Max Working Pressure: 0.8 bar  
 Vacuum Pressure: -0.8 bar



### P23-211

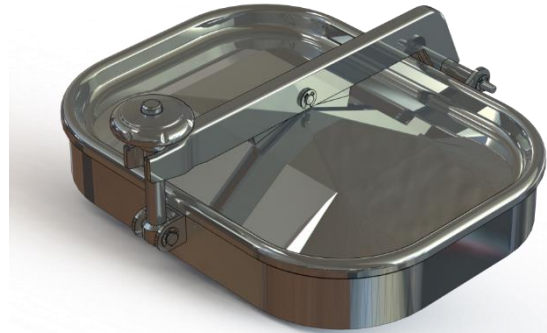
Access Opening: 314 x 424mm  
 Door Thickness: 2mm  
 Frame Thickness: 8mm  
 Frame Height: 50mm  
 Frame Radius: 98mm  
 Weight: 13kg  
 Max Working Pressure: 0.6 bar  
 Vacuum Pressure: -0.8 bar



## Rectangular Doors

### P23-307

Access Opening: 314 x 424mm  
Door Thickness: 2mm  
Frame Thickness: 8mm  
Frame Height: 50mm  
Frame Radius: 98mm  
Weight: 10kg  
Max Working Pressure: 0.3 bar  
Vacuum Pressure: -0.8 bar



### P23-308

Access Opening: 314 x 424mm  
Door Thickness: 2mm  
Frame Thickness: 8mm  
Frame Height: 50mm  
Frame Radius: 98mm  
Weight: 10kg  
Max Working Pressure: 0.3 bar  
Vacuum Pressure: -0.8 bar



### P23-680

Access Opening: 600 x 800mm  
Door Thickness: 3mm  
Frame Thickness: 10mm  
Frame Height: 80mm  
Weight: 54kg  
Max Working Pressure: 0.8 bar



### P23-810

Access Opening: 800 x 1000mm  
Door Thickness: 3mm  
Frame Thickness: 10mm  
Frame Height: 80mm  
Weight: 82kg  
Max Working Pressure: 0.8 bar



## Rectangular Doors

### P03-295

Access Opening: 234 x 184mm  
 Door Thickness: 1.2mm  
 Frame Thickness: 5mm  
 Frame Height: 40mm  
 Frame Radius: 20mm  
 Weight: 3.2kg  
 Max Working Pressure: 0.6 bar  
 Full Vacuum



### P06-B3

Access Opening: 500 x 310mm  
 Door Thickness: 2.5mm  
 Frame Thickness: 10mm  
 Frame Height: 60mm  
 Max Working Pressure: 1.3 bar  
 Full Vacuum



### P06-B4

Access Opening: 420 x 310mm  
 Door Thickness: 2mm  
 Frame Thickness: 10mm  
 Frame Height: 60mm  
 Max Working Pressure: 1.6 bar  
 Full Vacuum



### P06-B5

Access Opening: 420 x 310mm  
 Door Thickness: 2mm  
 Frame Thickness: 10mm  
 Frame Height: 60mm  
 Max Working Pressure: 0.7 bar  
 Full Vacuum



### P06-B6

Access Opening: 530 x 410mm  
 Door Thickness: 2.5mm  
 Frame Thickness: 12mm  
 Frame Height: 60mm  
 Max Working Pressure: 1.1 bar  
 Full Vacuum





## Rectangular Doors

### P06-B7

Access Opening: 420 x 310mm  
 Door Thickness: 2mm  
 Frame Thickness: 10mm  
 Frame Height: 60mm  
 Max Working Pressure: 0.6 bar



### P06-B23

Access Opening: 530 x 410mm  
 Door Thickness: 2.5mm  
 Frame Thickness: 12mm  
 Frame Height: 60mm  
 Max Working Pressure: 0.6 bar  
 Full Vacuum



### P06-B24

Access Opening: 530 x 410mm  
 Door Thickness: 2.5mm  
 Frame Thickness: 12mm  
 Frame Height: 60mm  
 Max Working Pressure: 0.4 bar  
 Full Vacuum



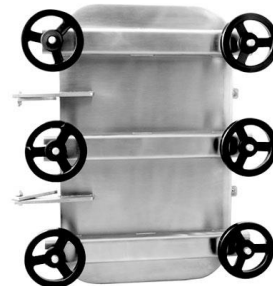
### P06-B1/600600

Access Opening: 600 x 600mm  
 Door Thickness: 4mm  
 Frame Thickness: 10mm  
 Frame Height: 70mm  
 Max Working Pressure: 1.0 bar  
 Full Vacuum



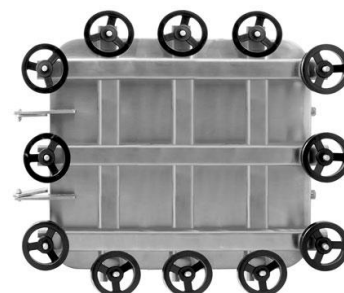
### P06-B1/740450

Access Opening: 740 x 450mm  
 Door Thickness: 4mm  
 Frame Thickness: 10mm  
 Frame Height: 70mm  
 Max Working Pressure: 1.0 bar  
 Full Vacuum



### P06-B1/750750

Access Opening: 750 x 750mm  
 Door Thickness: 4mm  
 Frame Thickness: 10mm  
 Frame Height: 70mm  
 Max Working Pressure: 1.0 bar  
 Full Vacuum



## Other options

Manufactured in 316L stainless steel, these range of doors are specifically made for the water and effluent treatment industries.

For doors mounted below the liquid surface the inward opening door is recommended as the liquid head pressure will aid the sealing. Top mounted, outward opening doors are gas tight, the allowable gas pressure depending on the door size.

Other options include:

- Doors fitted with sight glass
- Available in 2" – 5" viewing diameter
- Safety screens
- Manways for grouting in concrete
- Manways for grouting in wooden vessels
- Company Name Etched



**SGT Type Weld in Sightglass DIN8902**



**Applications:** The compact design of this unit makes it ideal for inspection use in small bio-reactor vessels and the lids of Manways or inspection hatches. Used widely in the food, dairy, beverage, cosmetic and pharmaceutical industries.

**Operating conditions:** These units are available for pressures up to 10 Bar (depending on size, higher pressure ratings are available on request)

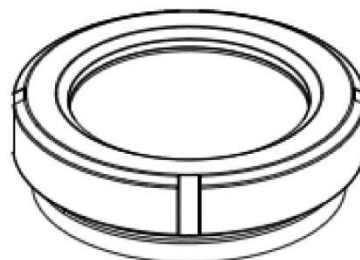
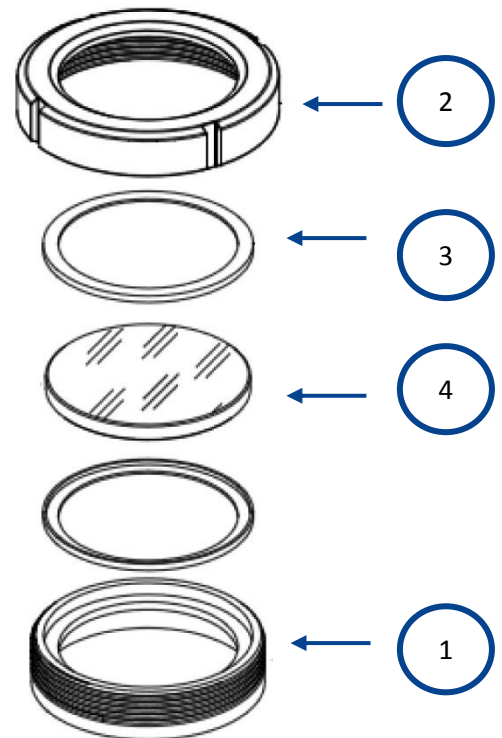
**Parts list:**

1. Welding male (1.43041/1.4404 material)
2. Nut (1.4301 material)
3. Gasket (Silicone, maximum temperature 200°C)
4. Sight glass disk (Borosilicate, maximum temperature 260°C)

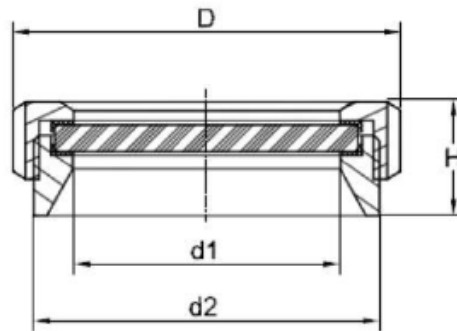
Working pressure 10 Bar

Certificates: EN10204.3.1 certificate

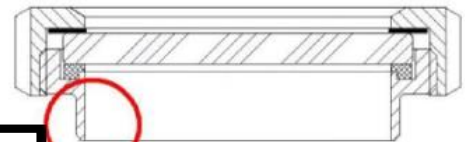
Subject to modification without notice in advance



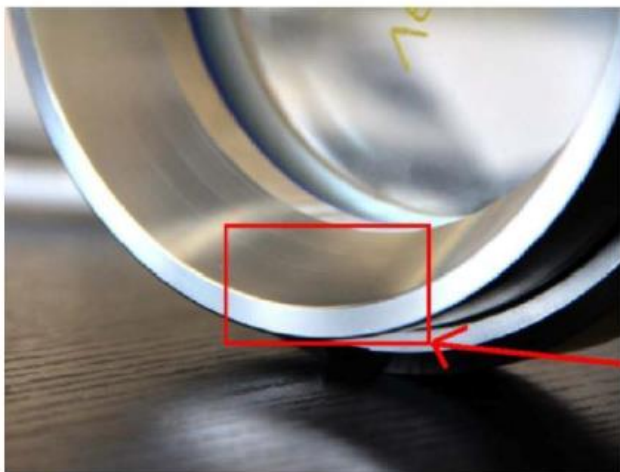
CODE	D1	D2	SG	D	H	P.R
All measurements are in MM						Bar
SGT50DPB/89	50	80 X 3	64.5 X 10	92	35	10
SGT60DPB/89	65	95 X 3	85 X 10	108	39	10
SGT80DPB/89	80	114 X 3	100 X 10	125	42	10
SGT100DPB/89	100	130 X 5	115 X 10	146	45	10
SGT150DPB/89	150	165 X 10	208	60	4	



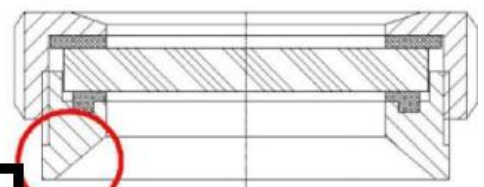
**Standard type design:**



Standard straight edged design is a liquid trap when sight-glass is fitted to the side of a vessel.



**Versaline type design:**



The Versaline design eliminates the possibility of trapped liquid due to its self-draining capability.

## Versaline RSB Type Rotating Sprayball



### Applications

Fluid driven rotating spray nozzles are ideal for use in tanks and vessels where a static sprayball is unable to clean sufficiently. The double bearing design ensures reliability and long service life.

They are available in slip on and BSP connection types. (See chart on following page for application data).

The slip on type comes complete with a retaining pin/clip to eliminate any possible disconnection issues.

### Operating Conditions

Designed to give excellent cleaning performance from relatively low (1 or 2 bar) fluid pressure

### Ordering information

All available sizes and connection options are listed in the chart on the next page.



## Versaline RSB Type Rotating Sprayball

CODE	CONNECTION TYPE	SIZE	FLOW RATE (M <sup>3</sup> / H)		BALL DIAMETER (MM)	H (MM)
			1 BAR	2 BAR		
SB45-360-05C/89	SLIP ON	0.5"	2.6	3.5	45	102
SB45-360-07C/89	SLIP ON	0.7"	4.1	5.5	45	115
SB45-360-02BSP/89	BSP	1/4"	2.6	3.5	45	102
SB45-360-05BSP/89	BSP	1/2"	4.1	5.5	45	115
SB45-360-10C/89	SLIP ON	1"	4.2	5.9	45	120
SB65-360-15C/89	SLIP ON	1.5"	11	15	65	150
SB45-360-07BSP/89	BSP	3/4"	4.2	5.9	45	120
SB65-360-10BSP/89	BSP	1"	11	15	65	150

## Sprayballs

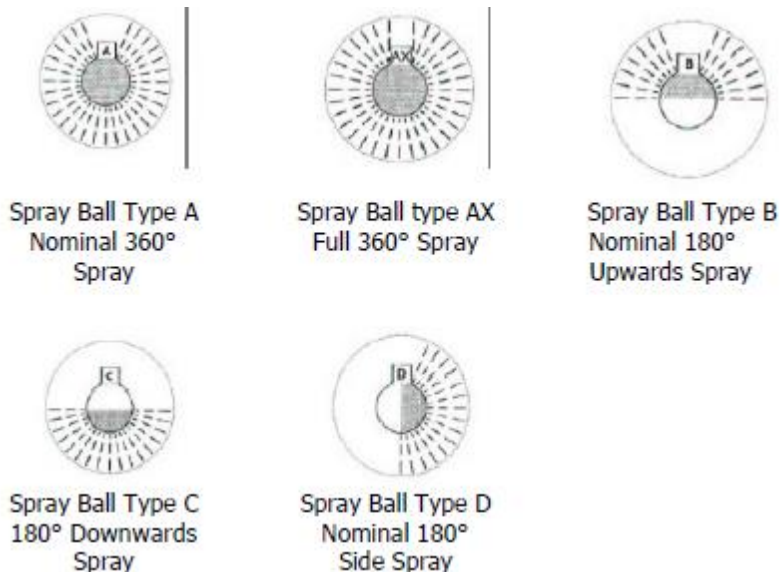
Sprayballs are manufactured in different sizes with options of connections and drilling patterns to suit various applications. The flow rate required will depend on factors such as: duration of the cleaning cycle, type and temperature of the cleaning fluid, the nature of the vessel contents etc.

Most industries have evolved their own cleaning procedures based on trial and experience with their own particular products, however as a general guide the flow rate required and hence the size or number of sprayballs required can be determined such as:

- For vertical tanks – Allow one cubic meter per hour for every meter of tank circumference
- For horizontal tanks – Allow one cubic meter per hour for 2 x diameters + 2 x length in meters

The pressure of the cleaning fluid at the sprayball should be between one and three bar. Higher pressures can result in fluid atomising and reducing the cleaning effect.

Please note that all values quoted in the following table are at 1 bar working pressure.



## Sprayball Selection Chart

REF	HOLE (MM)	DIA (MM)	CONNECTION	H (MM)	FLOW (M3 / HR)	CLEANING RADIUS (M)
1A	2.5	65	1" CLIP	60	15.7	1.8
1B	2.5	65	1" CLIP	60	10.2	3.0
1C	2.5	65	1" CLIP	60	10.5	3.2
1D	2.5	65	1" CLIP	60	10.1	2.9
1AX	2.5	65	1" CLIP	57	15.7	1.8
1BX	2.5	65	1" CLIP	57	10.2	3.0
1DX	2.5	65	1" CLIP	57	10.1	2.9
1A	1.6	65	1" CLIP	60	8.6	3.3
1B	1.6	65	1" CLIP	60	5.3	4.9
1C	1.6	65	1" CLIP	60	5.5	5.3
1D	1.6	65	1" CLIP	60	5.3	5.0
2A	2.5	65	1 ½" CLIP	60	18.8	2.6
2B	2.5	65	1 ½" CLIP	60	8.4	2.0
2C	2.5	65	1 ½" CLIP	60	11.2	3.7
2D	2.5	65	1 ½" CLIP	60	10.2	3.0
2AX	2.5	65	1 ½" CLIP	58	18.8	2.6
2BX	2.5	65	1 ½" CLIP	58	8.4	2.0
2DX	2.5	65	1 ½" CLIP	58	10.4	3.0



## Sprayball Selection Chart

REF	HOLE (MM)	DIA (MM)	CONNECTION	H (MM)	FLOW (M3 / HR)	CLEANING RADIUS (M)
3A	2.5	65	¾" BSPF	45	13.2	1.3
3B	2.5	65	¾" BSPF	45	8.7	2.2
3C	2.5	65	¾" BSPF	45	9.2	2.2
3D	2.5	65	¾" BSPF	45	9.2	2.5
3A	1.6	65	¾" BSPF	45	6.3	1.7
3B	1.6	65	¾" BSPF	45	4.1	3.0
3C	1.6	65	¾" BSPF	45	4.4	3.4
3D	1.6	65	¾" BSPF	45	4.4	3.3
4A	1.6	50	1 ½" CLIP	53	6.6	1.9
4B	1.6	50	1 ½" CLIP	53	4.0	2.8
4C	1.6	50	1 ½" CLIP	53	3.7	2.3
4D	1.6	50	1 ½" CLIP	53	3.9	2.6
6A	2.5	65	1 ¼" CLIP	59	17.9	2.3
6B	2.5	65	1 ¼" CLIP	59	9.3	2.5
6C	2.5	65	1 ¼" CLIP	59	10.5	3.2
6D	2.5	65	1 ¼" CLIP	59	10.1	3.0
6AX	2.5	65	1 ¼" CLIP	56	17.9	2.3
6BX	2.5	65	1 ¼" CLIP	56	9.3	2.5
6DX	2.5	65	1 ¼" CLIP	56	10.1	3.0

## Sprayball Selection Chart

REF	HOLE (MM)	DIA (MM)	CONNECTION	H (MM)	FLOW (M3 / HR)	CLEANING RADIUS (M)
6A	1.6	65	1 ¼" CLIP	59	7.8	2.7
6B	1.6	65	1 ¼" CLIP	59	4.2	3.1
6C	1.6	65	1 ¼" CLIP	59	4.3	3.3
6D	1.6	65	1 ¼" CLIP	59	4.3	3.2
7A	2.5	65	1 ½" CLIP	60	18.3	3.0
7B	2.5	65	1 ½" CLIP	60	8.1	2.4
7C	2.5	65	1 ½" CLIP	60	11.8	4.9
7D	2.5	65	1 ½" CLIP	60	10.4	3.9
8A	1.6	50	¾" CLIP	49	5.5	2.5
8B	1.6	50	¾" CLIP	49	3.4	3.8
8C	1.6	50	¾" CLIP	49	3.2	3.4
8D	1.6	50	¾" CLIP	49	3.5	4.1
8AX	1.6	50	¾" CLIP	46	5.5	2.5
8BX	1.6	50	¾" CLIP	46	3.4	3.8
8DX	1.6	50	¾" CLIP	46	3.5	4.1
9A	1.6	50	½" BSPF	49	5.4	2.4
9B	1.6	50	½" BSPF	49	3.0	3.0
9C	1.6	50	½" BSPF	49	3.1	3.2
9D	1.6	50	½" BSPF	49	3.3	3.6

## Sprayball Selection Chart

REF	HOLE (MM)	DIA (MM)	CONNECTION	H (MM)	FLOW (M3 / HR)	CLEANING RADIUS (M)
10A	1.6	50	1" CLIP	52	7.2	4.3
10B	1.6	50	1" CLIP	52	4.7	7.2
10C	1.6	50	1" CLIP	52	4.7	7.2
10D	1.6	50	1" CLIP	52	4.5	6.7
10AX	1.6	50	1" CLIP	49	7.2	4.3
10BX	1.6	50	1" CLIP	49	4.7	7.2
10DX	1.6	50	1" CLIP	49	4.5	6.7
11A	2.5	90	1 ¼" BSPF	63	29.8	3.1
11B	2.5	90	1 ¼" BSPF	63	12.7	2.2
11C	2.5	90	1 ¼" BSPF	63	15.9	3.4
11D	2.5	90	1 ¼" BSPF	63	15.9	3.1
12A	2.5	90	1 ½" CLIP	75	3.5	4.1
12B	2.5	90	1 ½" CLIP	75	5.5	2.5
12C	2.5	90	1 ½" CLIP	75	3.4	3.8
12D	2.5	90	1 ½" CLIP	75	3.5	4.1
12AX	2.5	90	1 ½" CLIP	75	24.2	2.0
12BX	2.5	90	1 ½" CLIP	75	13.4	2.4
12DX	2.5	90	1 ½" CLIP	75	14.2	2.8

## Sprayball Selection Chart

REF	HOLE (MM)	DIA (MM)	CONNECTION	H (MM)	FLOW (M3 / HR)	CLEANING RADIUS (M)
14A	2	120	2" CLIP	87	19.0	2.0
14B	2	120	2" CLIP	87	10.2	2.3
14C	2	120	2" CLIP	87	8.9	1.7
14D	2	120	2" CLIP	87	10.0	2.2
15A	1.6	40	¾" CLIP	44	3.7	3.8
15B	1.6	40	¾" CLIP	44	2.3	5.5
15C	1.6	40	¾" CLIP	44	2.3	5.9
15D	1.6	40	¾" CLIP	44	2.4	6.1
15AX	1.6	40	¾" CLIP	40	3.7	3.8
15BX	1.6	40	¾" CLIP	40	2.3	5.5
15DX	1.6	40	¾" CLIP	40	2.4	6.1
16A	1.3	40	¾" CLIP	44	5.1	4.7
16B	1.3	40	¾" CLIP	44	3.0	6.4
16C	1.3	40	¾" CLIP	44	3.1	7.0
16D	1.3	40	¾" CLIP	44	3.1	7.1
16AX	1.3	40	¾" CLIP	40	5.1	4.7
16BX	1.3	40	¾" CLIP	40	3.0	6.4
16DX	1.3	40	¾" CLIP	40	3.1	7.1

## Sprayball Selection Chart

REF	HOLE (MM)	DIA (MM)	CONNECTION	H (MM)	FLOW (M3 / HR)	CLEANING RADIUS (M)
17A	1.3	28	¼" BSPF	23	1.8	1.0
17B	1.3	28	¼" BSPF	23	1.2	1.6
17C	1.3	28	¼" BSPF	23	1.4	2.2
17D	1.3	28	¼" BSPF	23	1.4	2.3
17AX	1.3	28	¼" BSPF	23	1.8	1.0
17BX	1.3	28	¼" BSPF	23	1.7	1.6
17DX	1.3	28	¼" BSPF	23	1.4	2.3

## Other Tank Equipment

### Adjustable Tank Feet Light Duty Adjustable Feet



Levelling system planned for Dairy, Pharmaceutical and Food industries, in respect of the strictest hygiene regulations. Brush provided with a gasket which, by adhering to the smooth surface of the screw avoids any dirt intrusion.

Base: Grey Polyamide

Screw: 304 Stainless Steel (316 on request)

Max Load: 3 tonnes

CODE	BASE DIAMETER (MM)	THREAD	STATIC LOAD (TON)
<b>TFM20/15250</b>	105	M20	2
<b>TFM24/15251</b>	105	M24	2
<b>TFM20/15253</b>	125	M20	3
<b>TFM24/15254</b>	125	M24	3
<b>TFM30/15255</b>	125	M30	3

Full dimensions and data sheet available on request

## Hygienic Machine Feet

### NGI THE XH SERIES

Normally the floor is the last place to be cleaned. If there are unhygienic deposits on the machine feet, there is a considerable risk that these will end up on the machine or system again due to the fact that high pressure cleaning is the most common way of cleaning floors. So, the first step is to ensure that the machine foot doesn't in itself constitute a hygienic risk.



How can fluid, food or powder residues be removed from a thread? Even more important, how can they be prevented from getting onto the thread in the first place?

Finding the answers to these questions through the innovative design of machine feet of uncompromising quality and reliability that also minimise the time needed for cleaning, is the core of NGI's hygiene philosophy.

How to ensure that machine feet are hygienic:

1. Use a foot with a 3A, EHEDG and USDA certificate
2. Use a foot with a spindle which is covered by a sleeve and sealed with O-rings at both ends
3. Use a foot with vulcanised rubber, which accommodates slopes on the floor and is designed to avoid capillary action
4. Use a foot made in Stainless Steel
5. Use a foot that will stand solidly and securely on the floor and will be able to absorb vibration
6. Use a foot with no unnecessary corners and edges; facilitates the cleaning process
7. Use an adjustable foot without an exposed thread

## Other Tank Equipment

### Medium Duty Adjustable Feet

Levelling system planned for Dairy, Pharmaceutical and Food industries, in respect of the strictest hygiene regulations. Round surface that avoids any dust and dirt deposit.

Brush provided with a gasket which, by adhering to the smooth surface of the screw, avoids any dirt intrusion.

Base: Grey Polyamide

Screw: 304 Stainless Steel (316 on request)

Max Load: 5 tonnes



CODE	BASE DIAMETER (MM)	THREAD	STATIC LOAD (TON)
TFM16/15298	75	M16	2
TFM16/15299	100	M16	3
TFM20/15300	100	M20	3
TFM24/15301	100	M24	3
TFM30/15302	100	M30	3
TFM20/15303	120	M20	4
TFM24/15304	120	M24	4
TFM30/15305	120	M30	4
TFM20/15306	150	M20	5
TFM24/15307	150	M24	5
TFM30/15308	150	M30	5

Full dimensions and data sheet available on request



## Other Tank Equipment

### Heavy Duty Aseptic Feet

Levelling system planned for Dairy, Pharmaceutical and Food industries, in respect of the strictest hygiene regulations. Round surface that avoids any dust and dirt deposit.

Brush provided with a gasket which, by adhering to the smooth surface of the screw, avoids any dirt intrusion.

Material: 304 Stainless Steel (316 on request)

Max Load: 20 tonnes



CODE	BASE DIAMETER (MM)	THREAD	STATIC LOAD (TON)
<b>TFM75/16000</b>	100	¾" G	7
<b>TFM75/16002</b>	120	¾" G	9
<b>TFM125/16004</b>	100	1 ¼" G	10
<b>TFM125/16006</b>	120	1 ¼" G	15
<b>TFM125/16008</b>	160	1 ¼" G	20

Full dimensions and data sheet available on request

## Other Tank Equipment

### Heavy Duty Hygienic Feet

Levelling system planned for Dairy, Pharmaceutical and Food industries, in respect of the strictest hygiene regulations. Round surface that avoids any dust and dirt deposit.

Material: 304 Stainless Steel (316 on request)

Max Load: 12 tonnes



CODE	BASE DIAMETER (MM)	THREAD	STATIC LOAD (TON)
<b>TFM20/16010</b>	80	M20	3.5
<b>TFM24/16030</b>	100	M24	7
<b>TFM30/16031</b>	120	M30	8
<b>TFM40/16050</b>	150	M40	12
<b>TFM40/16051</b>	200	M40	12

Full dimensions and data sheet available on request

## Other Tank Equipment

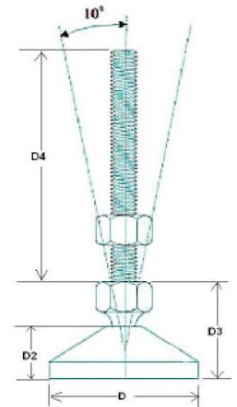
### Stainless Steel Stems, Plastic Bases

Stem: Stainless Steel (304)

Bases: Polypropylene white or black, conical or bolt down

Hole Centres: 80mm bases 55mm (8.5mm)  
105mm bases 74 mm(11mm)

Spanner flats: 12mm stems = 10mm      16mm stems = 13mm  
20mm stems = 17mm                      24mm stems = 20mm



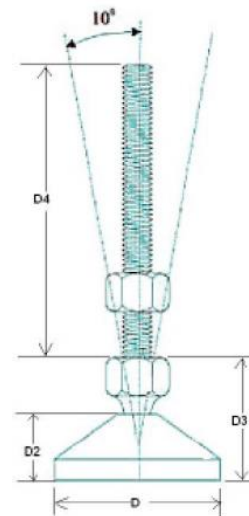
CODE	LOAD RATING (KG)	D	D1	D2	D3	D4
TFM10/75/50WP	200	50	10	19	38	75
TFM10/100/50WP	200	50	10	19	38	100
TFM12/100/80WP	300	80	12	25	41	123
TFM12/150/80WP	300	80	12	25	41	173
TFM16/150/80WP	800	80	16	25	42	170
TFM16/200/80WP	800	80	16	25	42	220
TFM16/250/80WP	800	80	16	25	42	270
TFM16/290/80WP	800	80	16	25	42	310
TFM20/150/80WP	800	80	20	25	44	170
TFM20/200/80WP	800	80	20	25	44	220
TFM20/250/80WP	800	80	20	25	44	270
TFM20/290/80WP	800	80	20	25	44	310
TFM20/350/80WP	800	80	20	25	44	370
TFM24/150/80WP	800	80	24	25	52	165
TFM24/200/80WP	800	80	24	25	52	215
TFM16/150/105WP	800	105	16	25	42	170
TFM16/200/105WP	800	105	16	25	42	220
TFM16/250/105WP	800	105	16	25	42	270
TFM16/290/105WP	800	105	16	25	42	310
TFM20/150/105WP	800	105	20	25	44	170
TFM20/200/105WP	800	105	20	25	44	220
TFM20/250/105WP	800	105	20	25	44	270
TFM20/350/105WP	800	105	20	25	44	370
TFM24/150/105WP	800	105	24	25	52	165
TFM24/200/105WP	800	105	24	25	52	215

## Other Tank Equipment

### Stainless Steel Stems, Stainless Bases

Stainless Steel (304)

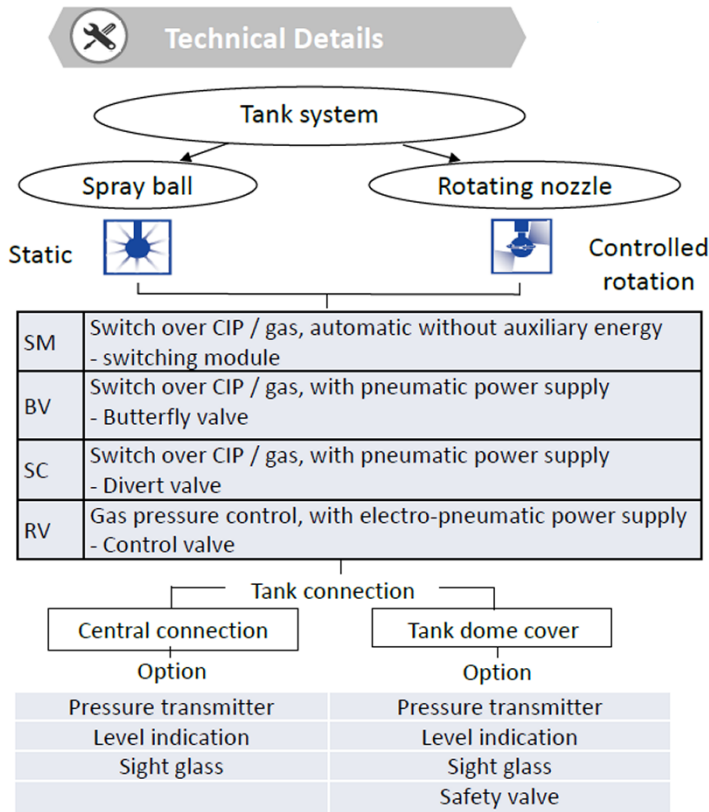
Hole Centres: 102mm bases – 11mm holes at 74mm centre



CODE	BASE TYPE	LOAD RATING (KG)	D	D1	D2	D3	D4
TFM8/25/38SC	CONICAL	300	38	8	14	31	25
TFM8/55/38SC	CONICAL	300	38	8	14	31	55
TFM10/35/38SC	CONICAL	300	38	10	14	31	35
TFM10/55/38SC	CONICAL	300	38	10	14	31	55
TFM10/75/38SC	CONICAL	300	38	10	14	31	75
TFM10/100/38SC	CONICAL	300	38	10	14	31	100
TFM12/100/51SC	CONICAL	500	51	12	15	38	150
TFM16/150/76SC	CONICAL	1500	76	16	22	50	150
TFM16/200/76SC	CONICAL	1500	76	16	22	50	200
TFM20/150/76SC	CONICAL	2000	76	20	22	55	150
TFM20/200/76SC	CONICAL	2000	76	20	22	55	200
TFM24/150/76SC	CONICAL	2000	76	24	22	54	150
TFM24/200/76SC	CONICAL	2000	76	24	22	54	200
TFM16/150/102SB	B/DOWN	1500	102	16	22	51	150
TFM16/200/102SB	B/DOWN	1500	102	16	22	51	200
TFM20/150/102SB	B/DOWN	2000	102	20	22	55	150
TFM20/200/102SB	B/DOWN	2000	102	20	22	55	200
TFM24/150/102SB	B/DOWN	2000	102	24	22	54	150
TFM24/200/102SB	B/DOWN	2000	102	24	22	54	200

## Tank Safety and Cleaning Systems

Used for tank cleaning, protection of the tank against overpressure and vacuum and management of gas and liquid flows.



### Customer Benefits

- Design according to product and process requirements
- Selection according to range
- Compact unit
- Cost saving concept
- Easy assembly and disassembly

## Tank Safety Systems – Application

Tank Safety Systems are employed to clean open (unpressurised) and closed (pressurised) containers (eg: vessels and tanks), and at the same time protect the container against overpressure and vacuum.

Application range:

- Cleaning / protection of fermenting tank (brewery technology)
- Cleaning / protection of storage tank
- Cleaning / protection of yeast tank
- Cleaning / protection of buffer tank
- Cleaning / protection of vessels for other areas of application



## Tank Safety Systems – Processes and Functions

	Tank condition	Task of the tank safety system	Information
1.	The tank is clean and empty. Filling is carried out separately via a filling unit.	The tank safety system must discharge gases/ liquids accordingly to the filling capacity.	Distinction between: a. Fermenting tank, filled with air and depressurised b. Pressure tanks, under pressure c. Storage tanks, filled with CO <sub>2</sub> , in some cases with air
2.	The tank is filled with medium and e.g. further fermentation processes take place (see a).	(a) CO <sub>2</sub> , in some cases air, must be discharged either slowly or quickly, depending on the process. (b + c) The minimum pressure after the filling must be sustained, the valves /functional units must be leak-proof.	The set pressure of the safety valves should at least be 10% higher than the operating pressure.
3.	The tank is discharged.	Depending on the discharge capacity, gas must be replenished in order to avoid vacuum or to keep up the pressure of the medium.	
4.	The tank is blown out in order to remove the remaining CO <sub>2</sub> or a CO <sub>2</sub> mix.	Gas must be replenished.	See performance requirements.
5.	Cleaning of the tank • The tank outlet is closed.	The tank safety system must perform the cleaning, sometimes the components (Safety valve and vacuum valve) are lifted during cleaning.	Cleaning program, hot (85 °C) and cold • Pre-rinsing • Water rinsing • Rinsing with cold or hot caustic • Water rinsing • Rinsing with acid/disinfectant • Water rinsing

BS-NA

**Übersicht über Manipulationen  
zur Auslegung von Tanktops**

Manipulation	ZKG 400-1500hl	ZKG 1500-4000hl	ZKG 5000-8000hl	Hefetank 20-100hl	Hefetank 150-300hl	Reinzuchtank 5-50hl	Herföhrtank 100-500hl
Befüllung hl/h Gegendruck: 0,3-0,8 bar	200-400	300-600	600-1000	10-30	20-80	100-250	200-600
Entleerung hl/h Spanngasdruck: 0,8-1,8 bar	200-400	300-600	500-600	20-50	30-100	100-250	200-600
Abführ. Gärungs-CO2 Gegendruck: 0,5-1,8 bar	15-60 Nm³/h	60-160 Nm³/h	200-320 Nm³/h				
Durchsatz m³/h Reinig.- system ZSR	18-23	23-28	28				
Durchsatz m³/h Reinig.- system Kugel	12-22	22-30	36-45	12-18	12-18	12	12-18
Manipulation	ZKL 400-1500hl	ZKL 1500-4000hl	ZKL 5000-8000hl	Drucktank 200-1000 hl	Drucktank 1500-3000 hl	Puffertank 20-100 hl	Tank enlg.Wasser 100-1000 hl
Befüllung hl/h Gegendruck:	200-400 0,8-1,0 bar	300-600 0,8-1,0 bar	600-1000 0,8-1,0 bar	200-600 0,8-1,3 bar	400-600 0,8-1,3 bar	200-600 1,0-1,5 bar	10-50 0,5-3,0 bar
Entleerung hl/h Spanngasdruck:	200-400 0,8-1,0 bar	300-600 0,8-1,0 bar	600 0,8-1,0 bar	50-300 0,9-1,3 bar	50-300 0,9-1,3 bar	150-600 1,0-1,5 bar	100-600 0,5-3,0 bar
CO2- Ausblasen v. oben Gegendruck: 0,5 bar Angen. Zeit: 1h	80-300 Nm³/h	300-800 Nm³/h	1000-1500 Nm³/h	80-200 Nm³/h	300-600 Nm³/h	5-20 Nm³/h	80-200 Nm³/h
Durchsatz m³/h Reinig.- system ZSR	18-23	23-28	28		18		
Durchsatz m³/h Reinig.- system Kugel	12-22	22-30	36-45	12-23	16-36	12	12-23

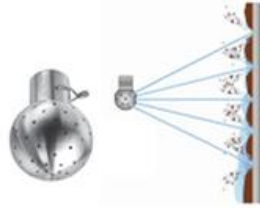


## Variants of Cleaning Systems

### Technical Details

- Spray ball

Static



- Rotating nozzle

Free spinning



Internal regulated drive



Programmed rotation machines



- Optional:  
Rotation monitoring sensor

### Customer Benefits

- Design according to product and process requirements
- Selection according to range
- Maximum process stability
- Shorter cleaning time
- Lower process costs
- Cost saving

## Variants of Tank Connections

### Technical Details

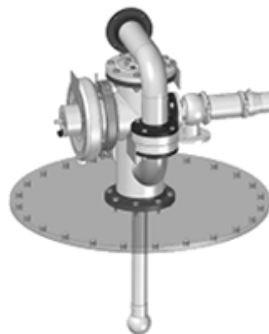
- Central connection



### Customer Benefits

- Design according to product and process requirements
- Selection according to range
- Cost saving

- Tank dome cover

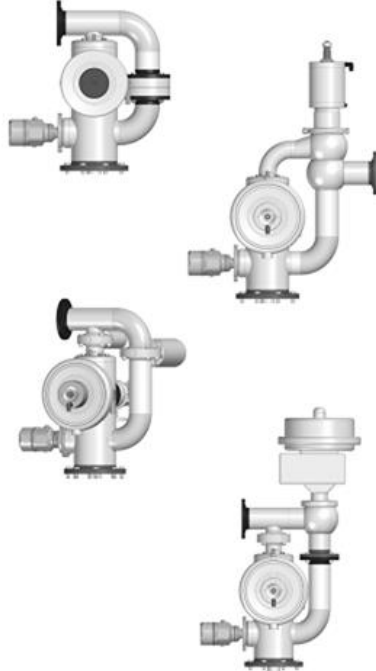


## Variants of Switching Modules CIP / Gas



### Technical Details

- Switch module automatic, without auxiliary energy
- Divert valve with pneumatic power supply
- Butterfly valve with pneumatic power supply
- Control valve / Butterfly valve with electro-pneumatic power supply



### Customer Benefits

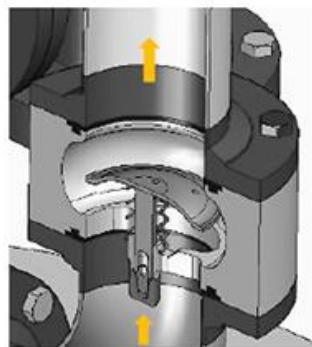


- Design according to product and process requirements
- Selection according to range
- Compact unit
- Cost saving concept

## Switching Module – Automatic Switching

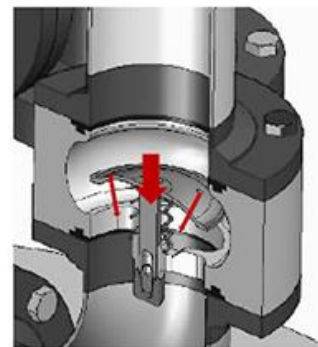


→ Degassing



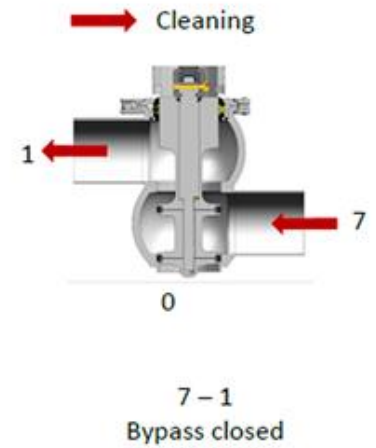
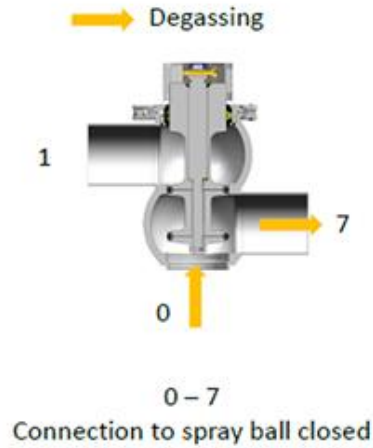
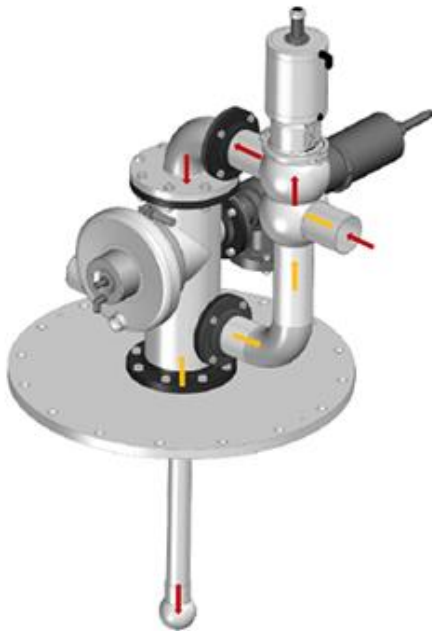
Switching module  
 Position „open“  
 Way to spray ball „open“

→ Cleaning

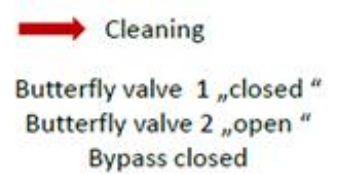
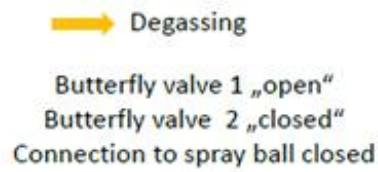
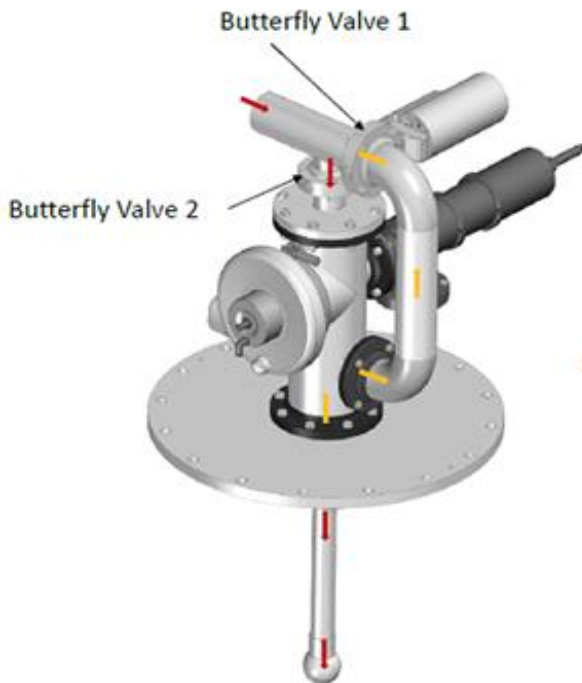


Switching module closes automatically with  
 oncoming flow  
 Holes in the disc for cleaning of the bypass

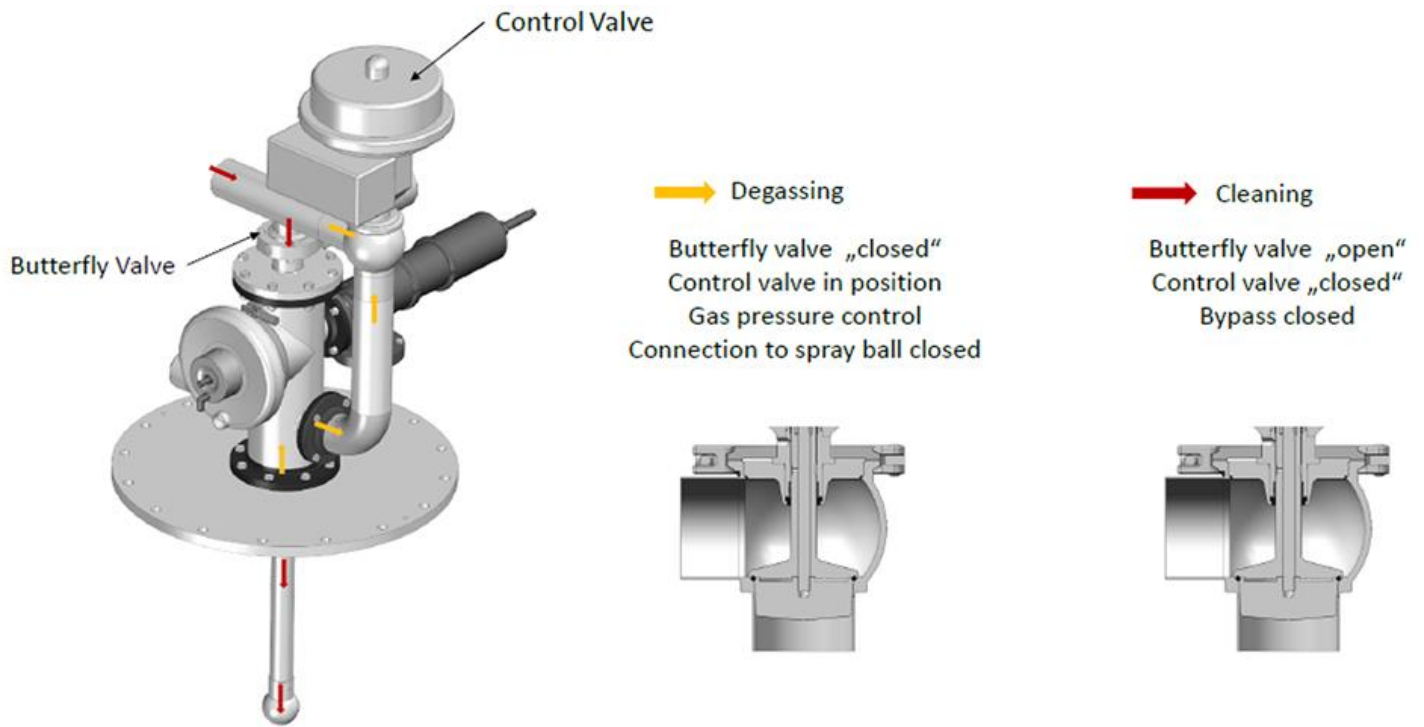
Switching Module – Divert Valve



Switching Module – Butterfly Valve



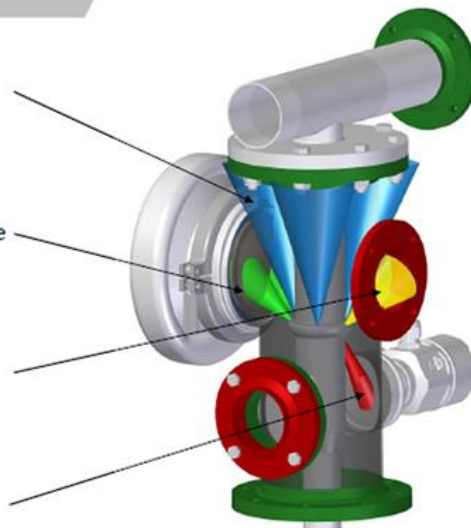
## Switching Module – Butterfly Valve and Control Valve



## Cleaning – Tank Safety Systems

### Technical Details

- Cleaning the cross piece
- Cleaning the vacuum valve
- Cleaning the safety valve
- Cleaning the sensor



### Customer Benefits

- Design according to product and process requirements
- Selection according to range
- Compact unit
- Optimal cleaning conditions without extra nozzles
- Cost saving concept

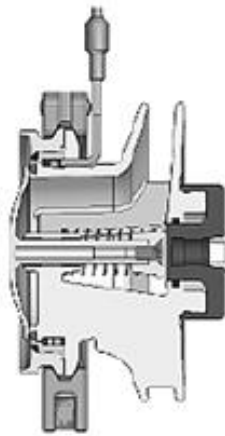
## Safety Valves

### Range Vacuum Valve

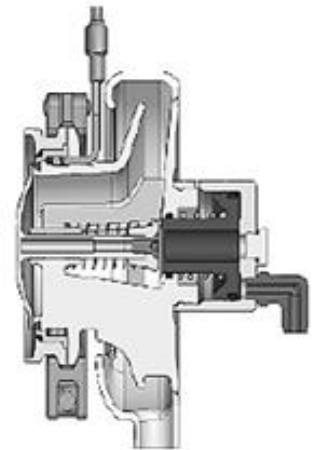
NEW

Used for protection of the tank against vacuum

#### Variants



Vacuum Valve



Vacuum Valve with  
drip cup and  
pneumatic actuation

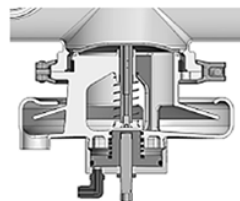
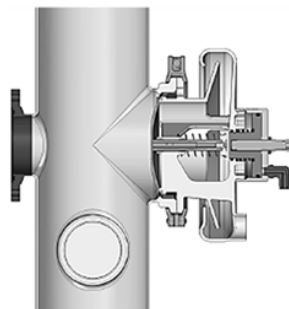
### Vacuum Valve



#### Technical Details

- Horizontal installation position  
- connection welded directly to the crosspiece
- Vertical installation position  
- connection directly to the housing
- Seal material EPDM compliant with FDA 21 CFR 177.2600 and VMQ
- Opening pressure 0.033 psi (2.3 mbar) to 0.061 psi (4.2 mbar)
- Variants:  
- not liftable, without drip cup  
- liftable, with drip cup
- Options:  
- heater  
- monitoring via proximity switch

NEW



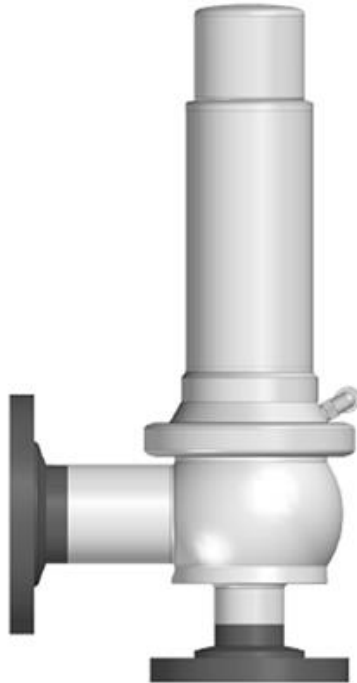
#### Customer Benefits

- Standard connection for welding
- Optimal cleaning conditions
- No dead space
- Outlet defined over drip cup  
- targeted discharge of fluid  
- no spraying
- Sediments from outside do not get into the tank because of horizontal installation position
- Easy assembly

Range Safety Valve

NEW

Used protection of the tank against overpressure



**Variants**



Safety Valve  
manual lifting device



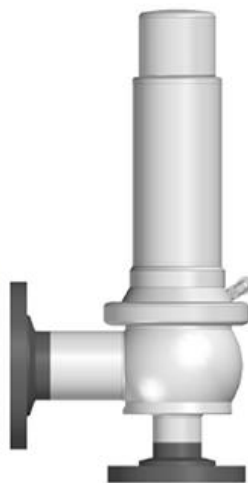
Safety Valve  
pneumatic lifting device

Safety Valve

NEW

**Technical Details**

- TÜV-approvals
  - for steam, gases and liquids
- Mounting horizontal / vertical
- Seal material EPDM, FDA-compliant
- Set pressure according to specification
- Variants:
  - liftable with manual lifting device
  - liftable with pneumatic lifting device
- Option:
  - heater
  - monitoring via proximity switch

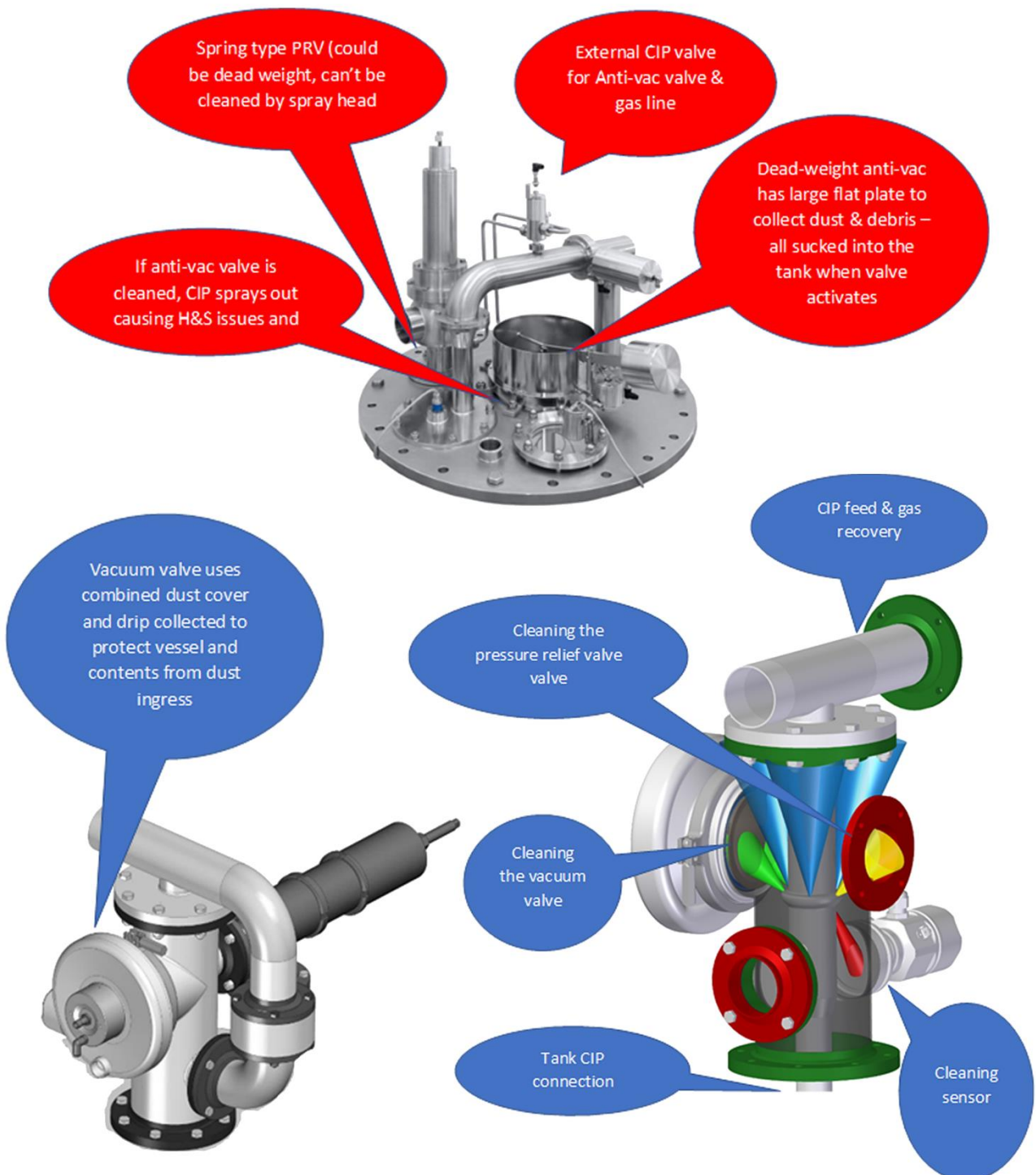


**Customer Benefits**

- Design and sealing systems analogous to seat valve
- Set pressure selectable
- Standard connections
- Outlet horizontal / vertical
- Easy assembly
  - change seals in the product room without recertification from control board
- Everything from one source

## Traditional Top Tank Plate Design VS Evoguard Tank Top Design

### Traditional Top Tank Plate Design VS EVOGUARD Tank Top Design



## Other Tank Equipment

### Pressure Equalising Valve

High flow type HSV. Designed for vessel protection during fill/empty and during CIP.

Pressure: -2 bar to +4 bar

Discs are PTFE and seat seals are EPDM.

Available: 150-450mm



### Pressure Equalising Valve

Dead Weight.

Designed for low pressure applications, this dead weight valve will open at a vacuum of 2m bar and a positive pressure of 100m bar (50m bar for 40mm model), the valve will be fully sealed at atmospheric pressure.

Discs are PTFE and seat seals are EPDM.

Available: 40 to 150mm in 316L Stainless Steel

Optional: Pressure settings, insect screen, collected exhaust.

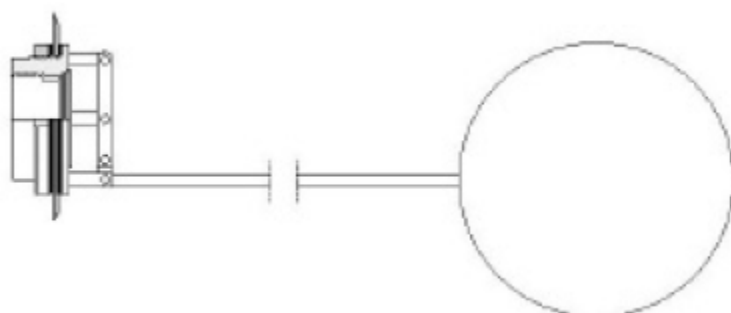


### Float Valve

Used to maintain a level in a tank. The Stainless Steel float rises with the liquid and closes off the valve on the feed line. As the liquid level falls the valve opens, thus maintaining a set level.

Available: 1" to 3" 304 stainless steel. Maximum 4 bar line pressure.

Optional: Splash screen.





## Other Tank Equipment

### Pressure Relief Valves

Generally, overflow valves are non PED as the operation is not critical to the safety of the system. Where PED approval is required the valve is classed as a safety relief valve.



### Tank Outlet Valves

Tank outlet valves are available in various patterns, single seat or double seat mix proof, from a number of manufacturers to suit the particular application. Please call to discuss your specific requirements.



## Other Tank Equipment

### Sampling Valve PEMS IV

316 Stainless Steel sampling valve, with 25mm weld process connection, 6mm plain outlet, simple lever plain outlet, simple lever operation. Options of 2 outlets for CIP and threaded outlets.



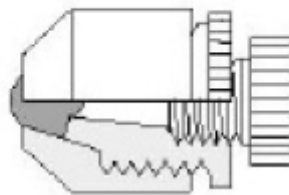
### Sampling Valve PEMS II

316L sampling valve with replaceable rubber membrane and 6mm draw off. In addition to sealing the draw off, the membrane also seals off the working parts of the valve from the products.



### Hypodermic Sample Point

304 with Silicon rubber membrane



### Aseptic Sampling Valve

The 316L Aseptic sampling valve can be sterilised before and after sampling, and, if required continuously between samples.

Available in three sizes and for tank pipe, clamp or socket mounting. Also with Knob or lever, for hand operation, or air actuator for pneumatic operation.



### Manway Seals and Spares

As we supply Manways and Tank Equipment, we highly recommend purchasing a Seals and Spares kit as part of the purchase of a Manway Door. For more information, please contact our office on +44 (0)113 252 6712.



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