



## Catalogue

# Standard Equipment for Road Tankers







# CONTENTS

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### Catalogue

<b>Manlid &amp; Inspection Hatch Assemblies</b>	7
<b>Design Options: Manlid &amp; Inspection Hatch Assemblies</b>	9
300mm Inspection Hatch Assembly	11
500mm Pendle Manlid Assembly - Extended Neck	13
500mm Manlid Assembly with Flash Vacuum Vent	15
Elliptical Manlid Assembly - Low Profile Neckring	17
Elliptical Manlid Assembly - Deep Neckring	19
<b>Manlid &amp; Inspection Hatch Accessories</b>	
Manlid & Inspection Hatch Seals - Introduction	21
Braided Packing	23
Composite Seals	24
Elastomer Seals	25
Safebolt Assembly	26
Swingbolt Assemblies	27
<b>Vacuum Vent</b>	
300mm Flash Vacuum Vent	29

Continued over



# CONTENTS

## Standard Equipment for Road Tankers

### Catalogue

<b>Relief Valves</b>	31
DN50 90° Angled Blower Relief Valve	33
<b>Design Options: Minnow Relief Valves</b>	35
DN25 Minnow Relief Valve - Pressure Only	37
<b>Design Options: Uniact Relief Valves</b>	39
DN40 Uniact Relief Valve - Pressure Only	41
DN40 Uniact Relief Valve - Vacuum Only	43
<b>Design Options: Twinact Relief Valves</b>	45
DN40 Twinact Relief Valve - Pressure Only	47
DN40 Twinact Relief Valve - Pressure/Vacuum	49
DN40 Twinact Relief Valve: DIN11851 - Pressure/Vacuum	51
DN65 Twinact Relief Valve - Pressure Only	53
DN65 Twinact Relief Valve - Pressure/Vacuum	55
DN65 Twinact Relief Valve: DIN11851 - Pressure/Vacuum	57
<b>Design Options: Super Maxi &amp; Hyper Maxi Relief Valves</b>	59
DN65 Super Maxi Relief Valve - Pressure Only	61
DN65 Super Maxi Relief Valve - Pressure/Vacuum	63
Installation Options: Super Maxi & Hyper Maxi Relief Valves	65

Continued over



# CONTENTS

## Standard Equipment for Road Tankers

### Catalogue

---

#### Relief Valve Accessories

Burst (Rupture) Discs	66
DN65 Flanges for Super Maxi Relief Valves	68
Flame Arresters & Debris Protection	69
Pressure Gauges	70
Weld-in Sockets	71

#### Airline Valves

<b>Design Options: Airline Ball Valves &amp; Butterfly Valves</b>	75
DN50 Flanged Blacko Ball Valve - Pneumatically Actuated	77
Female Socket Ball Valves	79
Installation Options: Airline Ball Valves & Butterfly Valves	80

#### Airline Valve Accessories

Blank Caps	81
Pressure Gauges	82
Weld-in Flanges for Airline Valves	83

#### Top Discharge Provision

<b>Design Options: Discharge Butterfly Valves</b>	87
DN80 Flanged Widdop Butterfly Valve	89

Continued over



# CONTENTS

## Standard Equipment for Road Tankers

### Catalogue

DN80 Flanged Widdop Butterfly Valve - Dual Drilled Inlet	91
Installation Options: Butterfly Valve Top Discharge Assembly	93
<b>Bottom Discharge - Primary Closure Valves</b>	<b>95</b>
<b>Design Options: Footvalves</b>	<b>97</b>
DN80 90° Cleanflow Footvalve	99
DN100 90° Cleanflow Footvalve - Pneumatically Actuated	101
DN80 90° Tankstream Footvalve	103
DN100 90° Sealtyt Extended Footvalve - Pneumatically Actuated	105
DN100 Screwdown Valve Assembly	107
DN150 Reedley Horizontal Hot Product Valve	109
DN150 (6") 180° Cleanflow Footvalve - Hydraulically Actuated	111
<b>Bottom Discharge - Secondary Closure Valves</b>	<b>113</b>
<b>Design Options: Discharge Ball Valves</b>	<b>115</b>
DN50 Blacko Ball Valve	117
DN80 Blacko Ball Valve - 3" BSP Outlet	119
DN80 Blacko Ball Valve - Slotted 4 Hole Outlet	121
DN80 Ball Valve with Inlet Seal Clamp	123
DN100 Ball Valve with Inlet Seal Clamp	127

Continued over



# CONTENTS

## Standard Equipment for Road Tankers

### Catalogue

<b>Design Options: Discharge Butterfly Valves</b>	129
DN80 Tank-Pro Butterfly Valve	131
DN80 Unifly Butterfly Valve	133
DN80 Clamped Widdop Butterfly Valve	135
DN80 Clamped Widdop Butterfly Valve - Pneumatically Actuated	137
TW80 Clamped Butterfly Valve	139
DN100 Clamped Butterfly Valve	141
TW100 Clamped Butterfly Valve	143
<b>General Accessories</b>	145
Document Holders	146
Temperature Gauges	147
Valve Gaskets	148
<b>After Sales Service</b>	149
Footvalve Replaceable Seat Kit - Cleanflow & Highlift Footvalve	150
Valve Repair & Maintenance	152
Bolt Torque Guide & Step Loading Procedure	154
Client Responsibilities	156
Fort Vale Worldwide	157

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# Manlid & Inspection Hatch Assemblies



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# Manlid & Inspection Hatch Assembly

## Design Options

### Function

A manlid assembly or inspection hatch assembly is installed on the top of the tank. A manlid assembly is used to give access to personnel to let them clean, examine or repair the inside of the tank. An inspection hatch is used for access to take a sample of cargo and can also be used as access for cleaning equipment.

### Design Options

The design options below are available on our standard range of manlid and inspection hatch assemblies.

#### Nominal Diameter

**Inspection Hatch:**  
170mm, 250mm, 300mm

**Manlid:**  
460mm, 500mm, 600mm



#### Neckring/Compensating Ring

**Height:** From ultra-low to extended

**Straight**

**Profiled:** To be compatible with the tank radius

**Material thickness:** To be compatible with the tank shell thickness

#### Swingbolt Assemblies

**Standard service conditions:**  
Stainless steel swingbolt with naval brass handnut  
Stainless steel swingbolt & handnut  
Safebolt assembly (at one point) ★

**Special service conditions:**  
Quick-release latches  
Hexagonal nuts  
Single arm handnuts



#### Opening Angle

**120°:** Fixed or liftover

**135°:** Fixed or liftover

#### Design Pressure (MAWP)

**Standard service conditions:**  
0 Bar to 4 Bar

**Special service conditions:**  
> 4 Bar



#### Fixing Points

**Standard service conditions:**  
3, 4, 6, 8

**Special service conditions:**  
10, 12, 20

#### Material (Contact Parts)

**Standard service conditions:**  
316 stainless steel

**Special service conditions:**  
High nickel alloys  
Carbon steel: Neckring only



#### Seal

A wide range of seal materials is available.



## Manlid & Inspection Hatch Assembly Design Options

### Special Options

Where compatible, we can also offer:

**Weld-in fittings:** e.g. sockets, flanges, breathers, vents, sight glass

**Customer logo:** laser etched on cover

**Hand polishing:** to ultra-high grade

**Lining:** for corrosive cargo



## Manlid Assemblies for Dedicated Service

We offer a range of manlid assemblies for these service conditions and special cargoes:

- Hydrogen peroxide service
- Flat bolted assemblies for high pressure/dangerous cargo
- U.S. tank trucks
- Rail tank cars
- Side-entry manlid assemblies for hygienic service
- Elliptical manlid assemblies for brewery & hygienic service

Please contact us for more information about these assemblies.

## Related Parts

We recommend our range of compatible ancillary parts:

- Manlid cover seals
- Safebolts
- Fasteners

Please contact us for more information about these parts.



# 300mm Inspection Hatch Assembly

Part No: 34C/43XX051E



## Specification

### Nominal size

DN300

### Cover

4 point

### Neckring/compensating ring

Thickness: 8mm

Height: 51mm from TDC

Tank radius profile range: 850mm to 1220mm

### Materials

Contact parts: 316 stainless steel

Fasteners: stainless steel swingbolts with stainless steel handnuts

Seal: supplied separately

Alternatives are available, refer to the Design Options page

## Design Conditions

Weight:	22.2 Kg
Design Pressure (MAWP):	4 Bar
Test Pressure:	6 Bar
Design Temperature Min:	-40°C
Design Temperature Max:	200°C

**NOTE:** The Design Temperature limits refer to metal parts only. The Design Conditions and Section View dimensions are for the specified part number only.

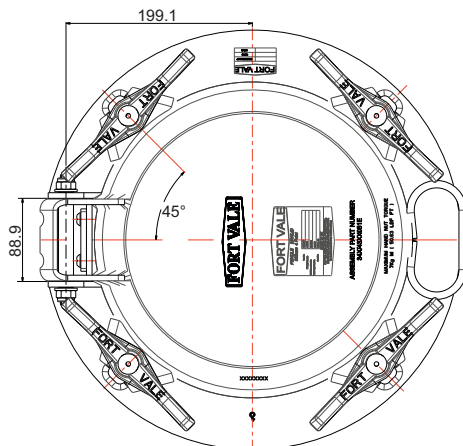
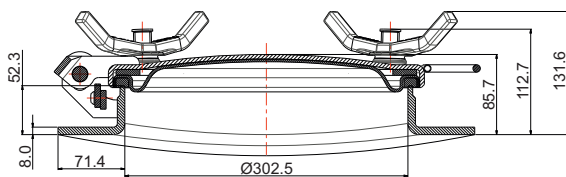
### Design Code

BS EN 14025: 730/0600P cover only

## Range

Standard Radii	Part No.
1040mm	34C/4304051E

## Section View

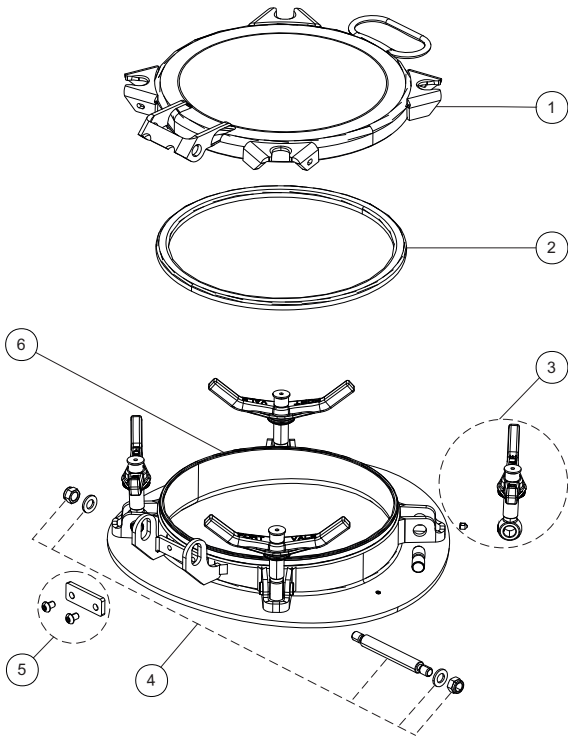




# 300mm Inspection Hatch Assembly

Part No: 34C/43XX051E

## Parts Drawing



## Parts List

Item	Description	Part No.
1	Cover	703/0600P
2	Seal (not included) <b>*Note</b>	5005-XXXX
3	Swingbolt assembly (4)	496/8342
4	Hinge pin assembly	600/1060
5	Hinge kit	135B
6	Neck/compensating ring <b>*Note</b>	673/2852XXXP

**NOTE:** The specification changes the Part No.



# 500mm Pendle Manlid Assembly - Extended Neck

Part No: E3C/64XXXXXC



## Specification

### Nominal size

DN500

### Cover

6 point

### Neckring/compensating ring

Thickness: 8mm/6mm

Height range: 110mm to 200mm high

Tank radius profiling range: 850mm to 1220mm

### Materials

Contact parts: 316 stainless steel

Fasteners: stainless steel swingbolts and low profile handnuts and 1x stainless steel safebolt assembly

Seal: supplied separately

Refer to Range for other neckring height options

Alternatives are available, refer to the Design Options page

## Design Conditions

Weight:	52.8 Kg *Note
Design Pressure (MAWP):	3 Bar
Test Pressure:	4.5 Bar
Design Temperature Min:	-40°C
Design Temperature Max:	200°C

**NOTE:** The assembly specification changes the weight. The Design Temperature limits refer to metal parts only. The Design Conditions and Section View dimensions are for the specified part number only.

### Design Code

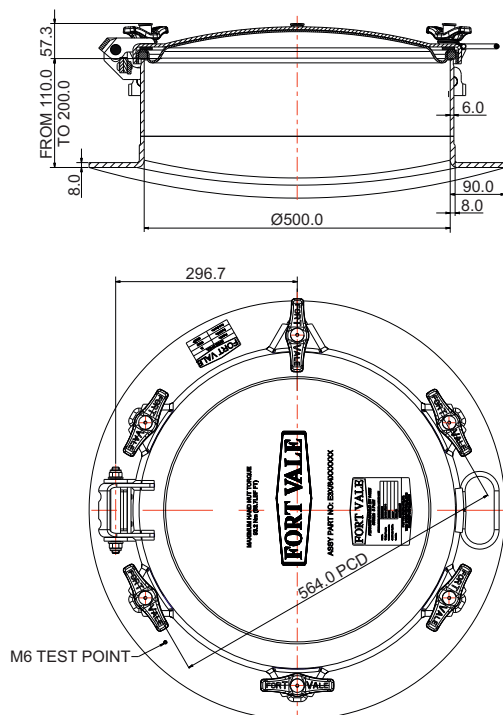
BS EN14025

## Range

Neckring Height Options	Part No.
Extended: 110mm to 200mm *Note	E3C/64XXXXXE
25mm ultra low profile	E3C/65XX025E
51mm standard	E3C/63XX051E

**NOTE:** The neckring height & radius changes the Part No.

## Section View

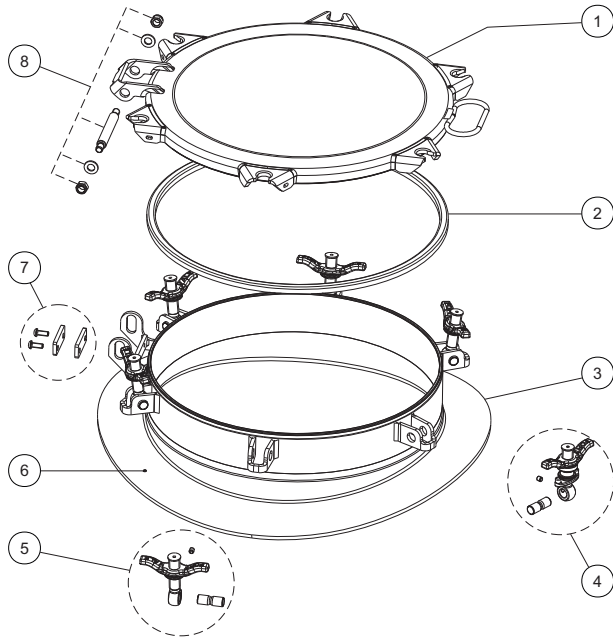




# 500mm Pendle Manlid Assembly - Extended Neck

Part No: E3C/64XXXXXC

## Parts Drawing



## Parts List

Item	Description	Part No.
1	Cover	73E/1600
2	Seal (not included) <b>*Note</b>	5005-50XXX
3	Neck/compensating ring <b>*Note</b>	68E/SXXXXXXP
4	Safebolt assembly	496/4400
5	Swingbolt assembly (5)	496/5379
6	M6 grub screw	5111-009
7	Hinge kit: 135° fixed	135B
8	Hinge pin assembly	600/1060

**NOTE:** The specification changes the Part No.



# 500mm Manlid Assembly with Flash Vacuum Vent

Part No: E1X-410001AA



## Specification

### Nominal size

DN500

### Cover

4 point with a flash vacuum vent set at 1"Hg (0.03 Bar)

### Neckring

Thickness: 6mm

Height: 150mm

### Materials

Manlid cover: 316 stainless steel

Neckring: 304 stainless steel

Fasteners: stainless steel

Seal: supplied separately

Alternatives are available, refer to the Design Options page

## Design Conditions

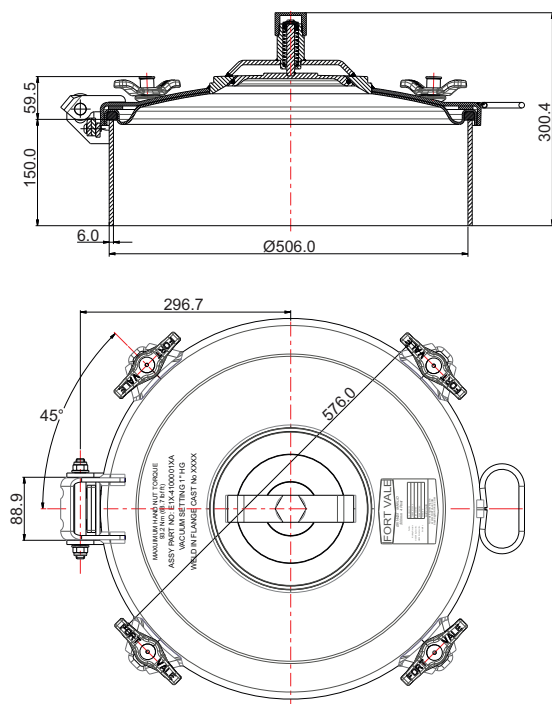
Weight:	36.0 Kg
Design Pressure (MAWP):	1 Bar
Test Pressure:	1.5 Bar
Design Temperature Min:	-20°C
Design Temperature Max:	200°C

**NOTE:** The Design Temperature limits refer to metal parts only. The Design Conditions and Section View dimensions are for the specified part number only.

### Design Codes

BS EN 14025

## Section View

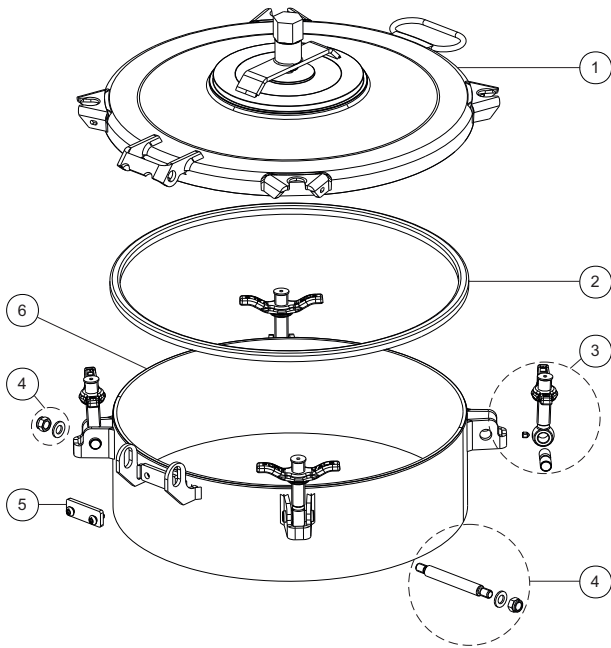




# 500mm Manlid Assembly with Flash Vacuum Vent

Part No: E1X-4100001AA

## Parts Drawing



## Parts List

Item	Description	Part No.
1	Cover with 1"Hg vac vent	71E/0520PV02
2	Seal (not included) * <b>Note</b>	5005-50XXX
3	Swingbolt assembly (4)	496/5379
4	Hinge pin assembly	600/1060
5	Hinge kit	135A
6	Neckring	66E/46150A304

**NOTE:** The specification changes the Part No.



# Elliptical Manlid Assembly - Low Profile Neckring

Part No: 850/7500VXX



## Specification

### Nominal size

508mm x 406mm

### Neckring

Thickness: 10mm

Height: 73.2mm

### Properties

Cross-arm with handnut to clamp and seal the assembly;  
2x handles to move the cover to the open/closed position

### Operation

The cover opens into the vessel and turns to move out of the neckring, clear of the vessel

### Materials

Contact parts: 316 stainless steel, cover surface finish  
0.8um - 0.5um

Seal: vulcanised - refer to Range

## Design Conditions

Weight:	25.3 Kg
Design Pressure (MAWP):	3 Bar
Design Vacuum:	-0.20 Bar *Conditions
Design Temperature Min:	-40°C (metal parts)
Design Temperature Max:	150°C (metal parts)

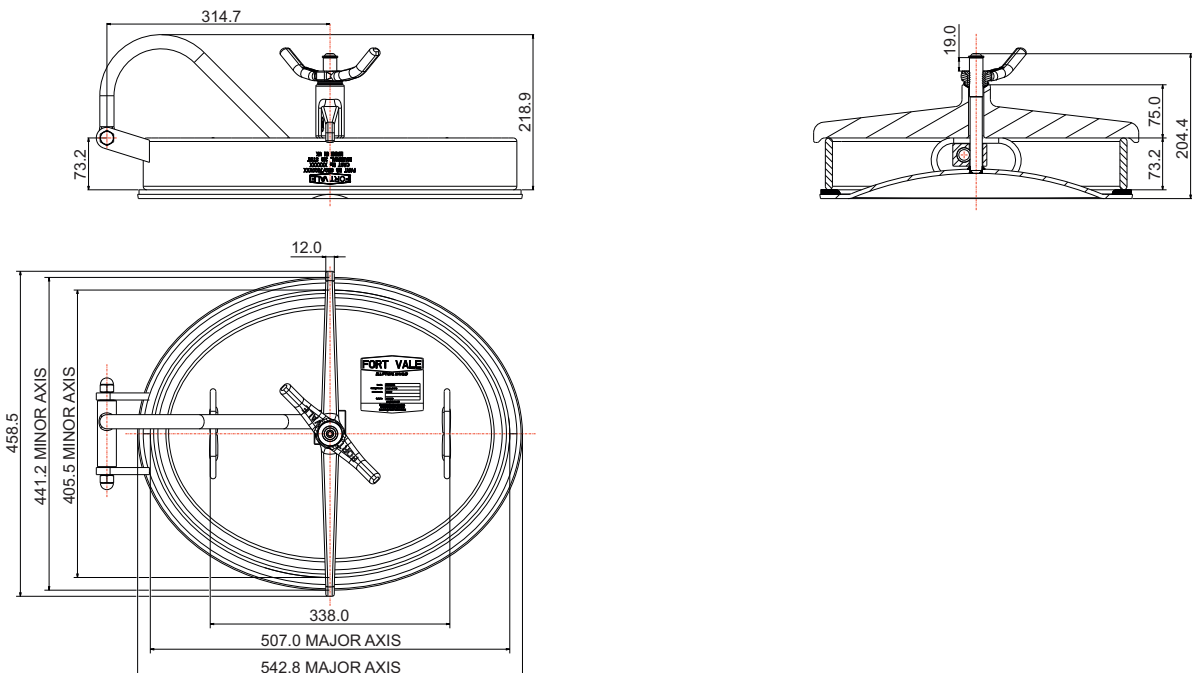
**Vacuum Conditions:** The assembly is compatible with -0.20 Bar vacuum only if neckring distortion caused by welding is kept to a minimum.

**NOTE:** The working temperature of the seal can change the design temperature limits. The Design Conditions and Section View dimensions are for the specified part number only.

## Range

Description	Part No.
With vulcanised black EPDM seal	850/7500VEP
With vulcanised blue nitrile seal	850/7500VBN
With vulcanised sweet white rubber seal	850/7500VSW

## Section View

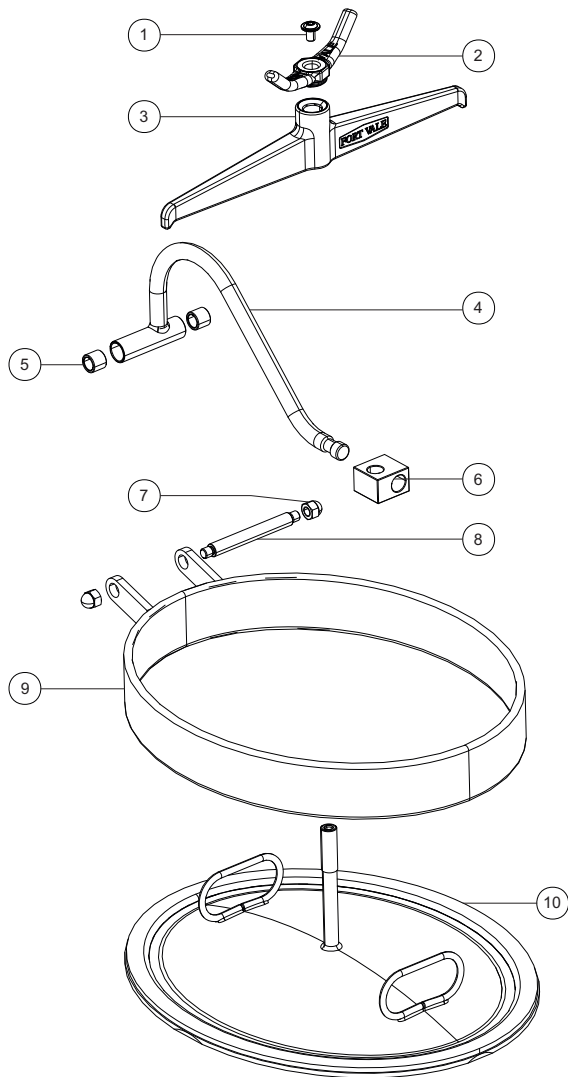




# Elliptical Manlid Assembly - Low Profile Neckring

Part No: 850/7500VXX

## Parts Drawing



## Parts List

Item	Description	Part No.
1	M10 flanged button screw	5111-600
2	3/4" star lock handnut	490/0410
3	Cross arm	750/6020DC
4	Pivot beam assembly	650/6020
5	Gunmetal bush (2)	650/6001
6	Pivot block	750/6001
7	M12 dome nut (2)	5112-050
8	Hinge pin	650/6008
9	Neckring	650/6010
10	Cover with vulcanised seal <b>*Note</b>	750/6070VSXX

**NOTE:** The specification changes the Part No.



# Elliptical Manlid Assembly - Deep Neckring

Part No: 850/7600VXX



## Specification

### Nominal size

508mm x 406mm

### Neckring

Thickness: 10mm

Height: 200.7mm

### Properties

Cross-arm with handnut to clamp and seal the assembly;  
2x handles to move the cover to the open/closed position

### Operation

The cover opens into the vessel and turns to move out of the neckring, clear of the vessel

### Materials

Contact parts: 316 stainless steel, cover surface finish  
0.8um - 0.5um

Seal: vulcanised - refer to Range

## Design Conditions

Weight:	41.3 Kg
Design Pressure (MAWP):	3 Bar
Design Vacuum:	-0.20 Bar *Conditions
Design Temperature Min:	-40°C (metal parts)
Design Temperature Max:	150°C (metal parts)

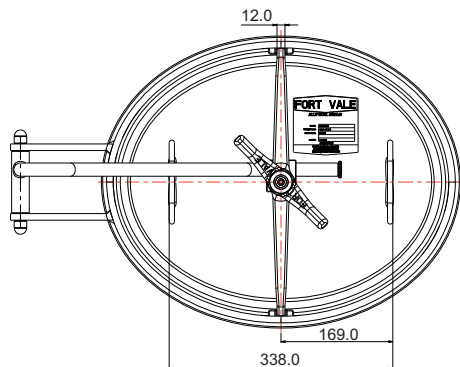
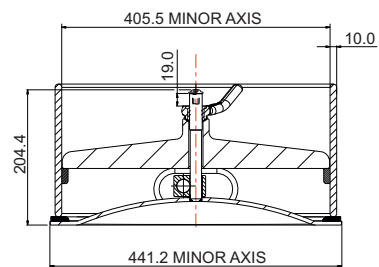
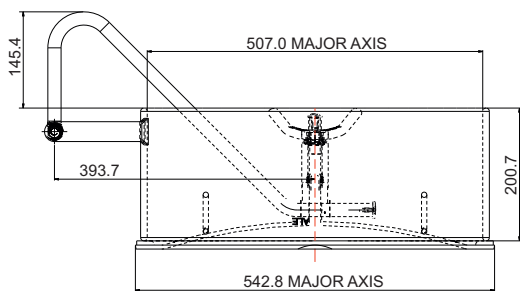
**Vacuum Conditions:** The assembly is compatible with -0.20 Bar vacuum only if neckring distortion caused by welding is kept to a minimum.

**NOTE:** The working temperature of the seal can change the design temperature limits. The Design Conditions and Section View dimensions are for the specified part number only.

## Range

Description	Part No.
With vulcanised black EPDM seal	850/7600VEP
With vulcanised blue nitrile seal	850/7600VBN

## Section View

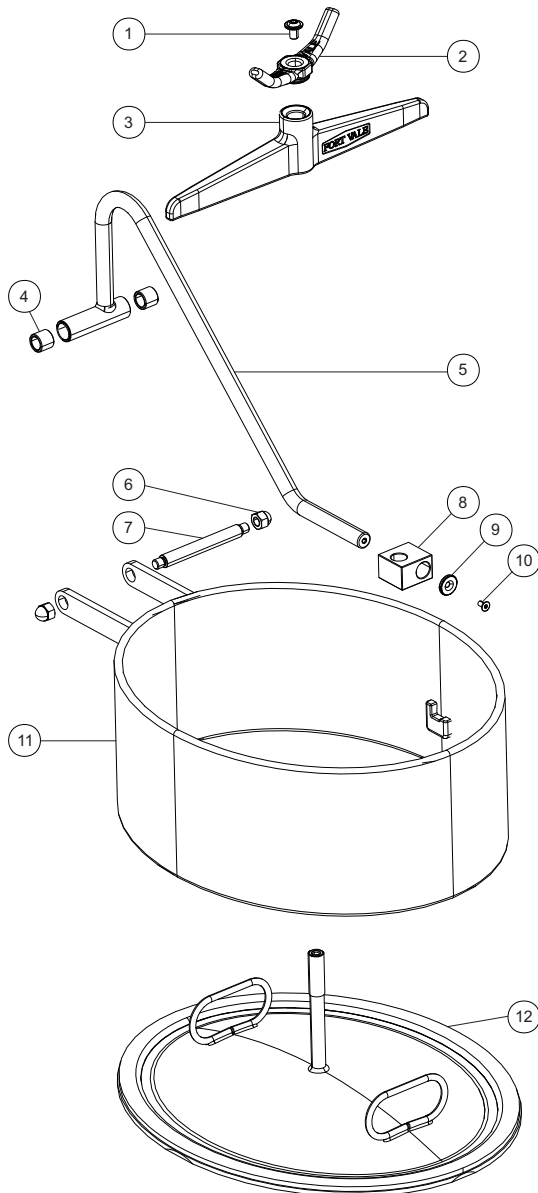




# Elliptical Manlid Assembly - Deep Neckring

Part No: 850/7600VXX

## Parts Drawing



## Parts List

Item	Description	Part No.
1	M10 flanged button screw	5111-600
2	3/4" star lock handnut	490/0410
3	Cross arm	750/6535DC
4	Gunmetal bush (2)	650/6001
5	Pivot beam assembly	650/6535
6	M12 dome nut (2)	5112-050
7	Hinge pin	650/6008
8	Long pivot block	750/2501
9	Retaining washer	20370/2
10	6mm countersunk bolt	5111-018
11	Neckring	650/6530
12	Cover with vulcanised seal <b>*Note</b>	750/6070VSXX

**NOTE:** The specification changes the Part No.



## Manlid & Inspection Hatch Seals - Introduction

### Accessories & Spare Parts



### Specification

We supply a large range of seals in a selection of sizes and materials for compatibility with many different types of cargo and service conditions. Please contact us if the material you want is not on our data sheet.

If you are ordering a manlid or inspection hatch assembly, we can install the seal if you request this at the time of your order.

We supply three seal types:

- Elastomer Seals
- Composite Seals
- Braided Packing (Non Gas-Tight)

### Elastomer Seals

Seals moulded from rubber compounds are suitable for many types of cargo and service conditions. Some advantages of elastomer seals include:

- easy to clean
- good resilience qualities
- excellent sealing performance
- economical to replace regularly

Please refer to data sheet SPA062 for our standard range of elastomer seals.

### Composite Seals

Composite seals have been developed for general purpose tanks where the cargo can vary, therefore a multi-purpose seal is useful. Advantages of composite seals include:

- easy to clean
- good resilience qualities
- excellent sealing performance
- do not become porous
- suitable for a range of cargoes and temperatures

Please refer to data sheet SPA063 for our standard range of composite seals.

### Composite Seal Types:

#### Super Tanktyt

The Super Tanktyt seal has a rubber core with a PTFE envelope bonded to three sides. There are two types:

- high temperature Nitrile core/PTFE envelope
- EPDM core/PTFE envelope

The Super Tanktyt seal is the ideal choice for the chemical industry. The seal's rubber core gives it the resilience to be gas-tight up to 4 Bar, and the PTFE envelope gives it excellent resistance to hazardous cargoes.

Please refer to data sheet SPA074 for more information about Super Tanktyt manlid seals.

#### Fortyt

The Fortyt seal has a silicone rubber core fully encapsulated with a FEP envelope. There are two types:

- round section
- square section

Please refer to data sheet SPA074 for more information about Fortyt manlid seals.



## Manlid & Inspection Hatch Seals - Introduction

### Accessories & Spare Parts

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#### Tuffort

The Tuffort seal has a silicone rubber core fully encapsulated with an advanced fluoroplastic envelope which gives the seal increased resilience. There are two types:

- round section
- square section

Please refer to data sheet SPA074 for more information about Tuffort manlid seals.

#### Braided Packing (Non Gas-Tight)

Braided packing is made from PTFE impregnated fibre that is tightly braided. There are two types:

- PTFE braided fibre with silicone core
- PTFE braided fibre (no core)

We supply PTFE braided fibre packing either as a cut length or in a roll for you to cut to the necessary size.

**CAUTION:** Braided packing is a rigid material that will not give a gas-tight seal. The material is lubricant-free but it does contain a small percentage of the wetting agents used during its manufacturing process. Note that small amounts of these wetting agents can leach during use.

For high temperature service conditions, we also supply a Graphite impregnated fibre seal.

Please refer to data sheet SPA064 for our standard range of braided seals.

### Precautions

#### Seal Gas-Tightness

The seal material, the number of manlid bolt fasteners and neckring distortion can affect seal gas-tightness.

For more information, please refer to the linked document below, or contact us.

[View Handnut Torque Guide - Hinged Manlid Assemblies](#)

**CAUTION:** When the neckring has been welded into the vessel, the neckring must be flat to a maximum tolerance of 2mm and round to a maximum tolerance of 4mm. If the neckring is distorted during welding, the manlid assembly will not seal correctly and it can malfunction during operation. Fort Vale accepts no responsibility for distortion caused by welding.

#### Compatibility

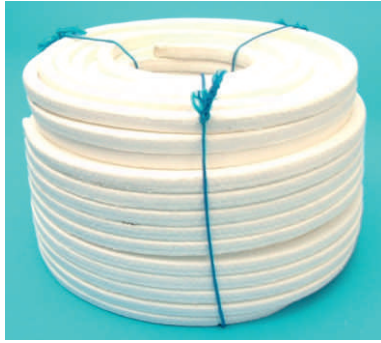
**CAUTION:** Make sure that the seal material is compatible with the cargo and the service conditions. This includes, but is not limited to:

- dimensions
- maximum allowable working pressure
- test pressure
- vacuum conditions
- minimum/maximum design temperatures
- materials of construction.



# Manlid & Inspection Hatch Seals - Braided Packing

## Accessories & Spare Parts



### PTFE Impregnated Braided Fibre

PTFE braided packing is available as a cut length or as a roll of material for you to cut to the necessary size. There are two types:

- PTFE braided fibre with silicone core - see Table 1
- PTFE braided fibre (no core) - see Table 2

**CAUTION:** Braided packing is a rigid material that will not give a gas-tight seal. The material is lubricant-free but it does contain a small percentage of the wetting agents used during its manufacturing process. Note that small amounts of these wetting agents can leach during use.

**Table 1 - With Silicone Core**

Section (mm)	Length (m)	Part No.
14 x 10	1.65	5005-1410S165
15 x 10	1.65	5005-1510S165
14 x 14	1.65	5005-1414S165
14 x 14	50	5005-1414SR50
15 x 15	1.65	5005-1515S165
16 x 16	1.75	5005-1616S175
16 x 16	30	5005-1616SR30

**Table 2 - No Silicone Core**

Section (mm)	Length (m)	Part No.
14 x 10	1.65	5005-1410D165
15 x 10	1.65	5005-1510D165
14 x 14	1.65	5005-1414D165
14 x 14	50	5005-1414DR50
15 x 15	1.65	5005-1515D165
16 x 16	1.75	5005-1616D175
16 x 16	30	5005-1616DR30



### Related Parts

Description	Part No.
Mitre seal cutter - for use with braided packing	400/3100

### Graphite Impregnated Braided Fibre

**CAUTION:** Braided packing is a rigid material that will not give a gas-tight seal.

Material	Compatibility (Example Only) & Minimum/Maximum Temperature	Pendle Manlid Seal Part Number & Section Dimension (mm)			Euro Lid Seal
		300mm (12")	500mm (20")	600mm (24")	500mm (20")
<b>Graphite Impregnated Fibre</b> (Non-asbestos)	Non-corrosive high temperature cargo e.g. tar, bitumen -50°C to 250°C (-58°F to 482°F)	5005-30GA 14.2 x 14.2	5005-50GA 14.2 x 14.2	5005-60GA 14.2 x 14.2	5005-53GA 16 x 16

### Compatibility

**CAUTION:** The compatibility information in the table is for general guidance only. Make sure that the seal material is compatible with the cargo and the service conditions. This includes, but is not limited to:

- dimensions
- maximum allowable working pressure
- test pressure
- vacuum conditions
- minimum/maximum design temperatures
- materials of construction.

For our standard range of elastomer seals and composite seals, please refer to data sheet SPA062 and SPA063.



## Manlid & Inspection Hatch Seals - Composite Seals Accessories & Spare Parts

### Composite Seals

The table shows our standard range. For more information about composite seals, please refer to data sheet SPA074.

If the material you need is not shown, please contact Fort Vale. For our standard range of elastomer seals and braided packing, please refer to data sheet SPA062 and SPA064.

Material	Compatibility (Example Only) & Minimum/Maximum Temperature	Pendle Manlid Seal Part Number & Section Dimension (mm)						Euro Lid Seal
		170mm (7")	300mm (12")	460mm (18")	500mm (20")	600mm (24")	500mm (20")	
<b>Fortyt</b> <b>Round section</b> Silicone/FEP	Corrosive cargo - resistance similar to PTFE -60°C to 205°C (-76°F to 401°F)		5005-30FT Ø14.10		5005-50FT Ø15			
<b>Fortyt</b> <b>Square section</b> Silicone/FEP	Corrosive cargo - resistance similar to PTFE -60°C to 205°C (-76°F to 401°F)		5005-30FTSQ 14 x 12		5005-50FTSQ 14 x 12			
<b>Fortyt</b> <b>Square section</b> White silicone/FEP	Corrosive cargo - resistance similar to PTFE -40°C to 205°C (-40°F to 401°F)				5005-50FTSQWS 14 x 12			
<b>Super Tanktyt</b> Nitrile core	Corrosive cargo - resistance similar to PTFE -25°C to 140°C (-13°F to 284°F)		5005-890 15 x 10	5005-870 14.5 x 10	5005-860 14.5 x 12	5005-850 16 x 10	5005-871 16 x 16	
<b>Super Tanktyt</b> EPDM core	Corrosive cargo - resistance similar to PTFE -50°C to 150°C (-58°F to 302°F)	5005-830EP 15.5 x 10	5005-890EP 15 x 10	5005-870EP 14.5 x 10	5005-860EP 14.5 x 12	5005-850EP 15 x 10		
<b>Tuffort</b> <b>D Section</b> Silicone/FEP	Corrosive cargo - resistance similar to PTFE -60°C to 160°C (-76°F to 320°F)		5005-30TUF 15.1 x 12.5		5005-50TUF 15.1 x 12.5			
<b>PFA</b> White silicone/ PFA	Corrosive cargo - resistance similar to PTFE -40°C to 260°C (-40°F to 500°F)		5005-30PFA Ø15		5005-50PFA Ø15			

### Compatibility

**CAUTION:** The compatibility information in the table is for general guidance only. Make sure that the seal material is compatible with the cargo and the service conditions. This includes, but is not limited to:

- dimensions
- maximum allowable working pressure
- test pressure
- vacuum conditions
- minimum/maximum design temperatures
- materials of construction.



## Manlid & Inspection Hatch Seals - Elastomer Seals

### Accessories & Spare Parts

### Elastomer Seals

The table shows our standard range. Our elastomer seals are colour-coded to identify the material. The applicable colour is marked on the outer edge of the seal.

If the material you need is not shown, please contact Fort Vale. For our standard range of composite seals and braided packing, please refer to data sheet SPA063 and SPA064.

Material	Compatibility (Example Only) & Minimum/Maximum Temperature	Pendle Manlid Seal			Euro Lid Seal			Colour Code	
		Part Number & Section Dimension (mm)	Part Number & Section Dimension (mm)	Part Number & Section Dimension (mm)	Part Number & Section Dimension (mm)	Part Number & Section Dimension (mm)	Part Number & Section Dimension (mm)		
Butyl	Non-corrosive cargo -40°C to 120°C (-40°F to 248°F)	170mm (7")	5005-17B	5005-30B	11536B	5005-50B	5005-60B	5005-53B	Blue
		16 x 10	16 x 10	16 x 10	14.5 x 11.8	15.24 x 11.8	15.25 x 10	16 x 16	
EPDM	Some corrosive cargoes. Do not use with petroleum-cased cargo -50°C to 150°C (-58°F to 302°F)	170mm (7")	5005-17EPD	5005-30EPD	11536EPD	5005-50EPD	5005-60EPD	5005-53EPD	Red/Blue
		16 x 10	16 x 10	16 x 10	14.5 x 11.8	15.24 x 11.8	15.25 x 10	16 x 16	
CSM	Moderately corrosive cargo. Do not use with petroleum-cased cargo -40°C to 85°C (-40°F to 185°F)	170mm (7")	5005-17CSM	5005-30CSM	11536CSM	5005-50CSM	5005-60CSM	5005-53CSM	White
		16 x 10	16 x 10	16 x 10	14.5 x 11.8	15.24 x 11.8	15.25 x 10	16 x 16	
Natural White Rubber	Food products -50°C to 80°C (-58°F to 176°F)	170mm (7")	5005-17SWR	5005-30SWR	11536SWR	5005-50SWR	5005-60SWR	5005-53SWR	Green
		16 x 10	16 x 10	16 x 10	14.5 x 11.8	15.24 x 11.8	15.25 x 10	16 x 16	
Neoprene	Non-corrosive cargo -30°C to 100°C (-22°F to 212°F)	170mm (7")	5005-17NR	5005-30NR	11536NR	5005-50NR	5005-60NR	5005-53NR	Green
		16 x 10	16 x 10	16 x 10	14.5 x 11.8	15.24 x 11.8	15.25 x 10	16 x 16	
Nitrile (Black)	Aliphatic hydrocarbons -25°C to 100°C (-13°F to 212°F)	170mm (7")	5005-17N	5005-30N	11536N	5005-50N	5005-60N	5005-53N	Red
		16 x 10	16 x 10	16 x 10	14.5 x 11.8	15.24 x 11.8	15.25 x 10	16 x 16	
Orange Silicone	High temperature non-corrosive cargo -50°C to 200°C (-58°F to 392°F)	170mm (7")	5005-17S	5005-30S	11536S	5005-50S	5005-60S	5005-53S	Red
		16 x 10	16 x 10	16 x 10	14.5 x 11.8	15.24 x 11.8	15.25 x 10	16 x 16	
White Silicone	Food products. FDA approved -50°C to 200°C (-58°F to 392°F)	170mm (7")	5005-17WS	5005-30WS	11536WS	5005-50WS	5005-60WS	5005-53WS	Red
		16 x 10	16 x 10	16 x 10	14.5 x 11.8	15.24 x 11.8	15.25 x 10	16 x 16	
Viton A	Moderately corrosive cargo -15°C to 200°C (5°F to 392°F)	170mm (7")	5005-17VR	5005-30VR	11536VR	5005-50VR	5005-60VR	5005-53VR	Yellow
		16 x 10	16 x 10	16 x 10	14.5 x 11.8	15.24 x 11.8	15.25 x 10	16 x 16	

### Compatibility

**CAUTION:** The compatibility information in the table is for general guidance only. Make sure that the seal material is compatible with the cargo and the service conditions. This includes, but is not limited to:

- dimensions
- maximum allowable working pressure
- test pressure
- vacuum conditions
- minimum/maximum design temperatures
- materials of construction.



## Safebolt Assembly

Part No: 496/4XXX



A safebolt is a special fastener that lets the operator safely release remaining tank pressure before the manlid cover is operated open. It can be used on all standard hinged manlid assemblies and inspection hatches to prevent the risk of injury to personnel.

### IMPORTANT: Installation Precautions

You must always do the procedure to set the retaining collar and weld it in the correct position before the safebolt is put into service. This includes when a safebolt is supplied as part of a complete manlid assembly, and when a safebolt is supplied as a replacement spare part.

For the procedure to set the retaining collar, please refer to the Installation and Operating Instructions ref.

**OPIN100**, available from Fort Vale.

## Specification

### Description

A safebolt assembly includes an eyebolt with pivot pin, a retaining collar and a captivated safebolt handnut

### Eyebolt Options

Dimensions: 3/4" BSW thread, Ø16mm eye & pivot pin  
Length: From 66mm to 175.3mm (Length is measured from the centre of the eye to the end of the bolt)

### Handnut Options

Low profile stainless steel  
Extended anti-galling - stainless steel with brass thread  
Low-profile anti-galling - stainless steel with brass thread

## Safebolt Assembly Range

Handnut Type	Part No.
Low profile stainless steel	496/4XXX
Extended anti-galling - stainless steel with brass thread insert	496/CXXXSB
Low profile anti-galling - stainless steel with brass thread insert	496/EXXXSB

**NOTE:** The eyebolt length changes the Part No.

## Related Parts (Refer to the next section)

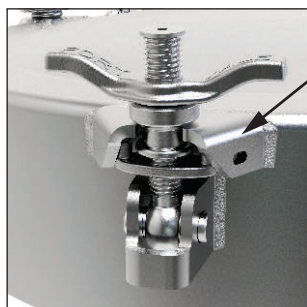
Description	Part No.
Conversion kit: Includes the special retaining bracket and an information label (The safebolt assembly is not included)	701/KIT

## 500mm Manlid Cover Design Update: July 2025

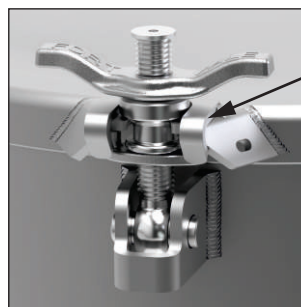
From July 2025, the design of our 500mm manlid covers changed. The new geometry of the manlid cover lug brackets means that a special retaining bracket is welded to the cover lug bracket where a safebolt is installed. Refer to Figure 2. If you order a new manlid assembly with a safebolt, Fort Vale welds the special bracket.

If you want to change a standard fastener to replace it with a safebolt assembly on a manlid made after July 2025, a conversion kit is necessary, part no. 701/KIT. You must weld the special retaining bracket to the cover lug bracket. This procedure is shown in the Installation and Operating Instructions, ref. **OPIN100**.

For help with how to identify the new manlid cover type, please contact Fort Vale.



**Figure 1**  
Manlid cover lug bracket before July 2025



**Figure 2**  
Manlid cover lug bracket after July 2025, with the special retaining bracket



# Swingbolt Assemblies

## Accessories & Spare Parts



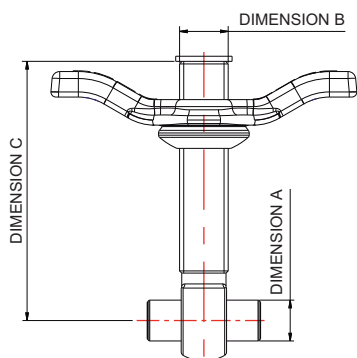
Shown: Swingbolt assemblies with standard handnuts

We supply a range of swingbolt assemblies with different eyebolt lengths and handnut types. Please contact us for help with part numbers and to order parts.

A complete swingbolt assembly includes the eyebolt, the pivot pin (attached with a set screw) and the handnut with a captivating washer. You can also buy each component separately.

For Safebolt assemblies, please refer to data sheet SPA065 or contact us for more information.

### Standard Swingbolt Assemblies



### Specification

#### Standard eyebolt options

- Ø eye: Dimension A - 16mm
- Thread: Dimension B - 3/4" BSW
- Length: Dimension C - from 49.3mm to 175.3mm
- NOTE: Length is measured from the centre of the eye to the end of the bolt

Material: stainless steel

#### Special eyebolt options

- Ø eye: Dimension A - 3/4"

#### Standard handnut options

- Low profile stainless steel
- Low profile naval brass with stainless steel thrust washer
- Extended stainless steel with anti-galling brass thread

#### Special handnut options

- Extended stainless steel
- Low profile stainless steel with anti-galling brass thread
- Hexagonal stainless steel nut

### Range

#### Standard Ø16mm Eye Swingbolt Assemblies

Includes 3/4" BSW bolt with 16mm pivot pin, and captivated handnut.

NOTE: The eyebolt length changes the part no.

Part No.	Handnut Type	Material
496/0XXX	Hex nut	Stainless steel
496/1XXX	Low profile	Brass with st/st thrust washer
496/5XXX	Low profile	Stainless steel
496/8XXX	Extended	Stainless steel
496/CXXX	Extended anti-galling	Stainless steel with brass thread insert
496/EXXX	Low profile anti-galling	Stainless steel with brass thread insert

### Range

#### Special Ø3/4" Eye Swingbolt Assemblies

Includes 3/4" BSW bolt with 3/4" pivot pin, and captivated handnut.

Eyebolt Length (Dimension C)	Stainless Steel Handnut		Naval Brass Handnut
	mm	inches	
66	2.60	495/1005	495/1081
87	3.42	495/1015	495/1060
95	3.75	495/1059	495/1055
120.7	4.75	495/0210	-

### Related Parts

Description	Part No.
Eyebolt pivot pin Ø16 x 45mm long	10913SS
Eyebolt pivot pin Ø3/4" x 1.82" long	10911SS
Manlid/neckring hinge pin assembly, includes pin, washers & nyloc nuts	600/1060
Handnut torque increase tool, compatible with low profile handnuts	495/10T0

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# 300mm Flash Vacuum Vent Assembly

Part No: 618/6102XXX304



## Specification

### Nominal size

DN300

### Neckring/flange assembly

Neckring thickness: 6mm

Tank radius profiling range: 850mm to 1005mm

### Vacuum setting

1" Hg (0.03 Bar)

### Materials

Neckring/flange: 304 stainless steel

Vacuum vent: 304/316 stainless steel

Vacuum vent seal: EPDM

Gasket: sweet white rubber

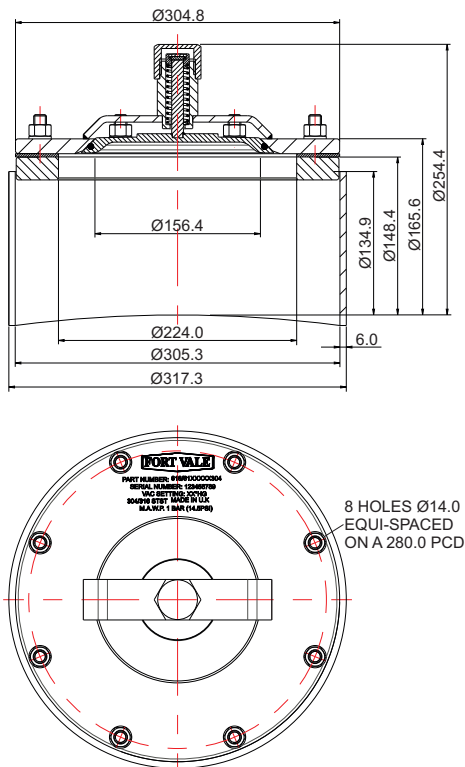
Alternatives are available, please contact Fort Vale

## Design Conditions

Weight:	20.4 Kg
Design Pressure (MAWP):	1 Bar
Test Pressure:	1.5 Bar
Design Temperature Min:	-20°C
Design Temperature Max:	150°C

**NOTE:** The Design Conditions and Section View dimensions are for the specified part number only.

## Section View

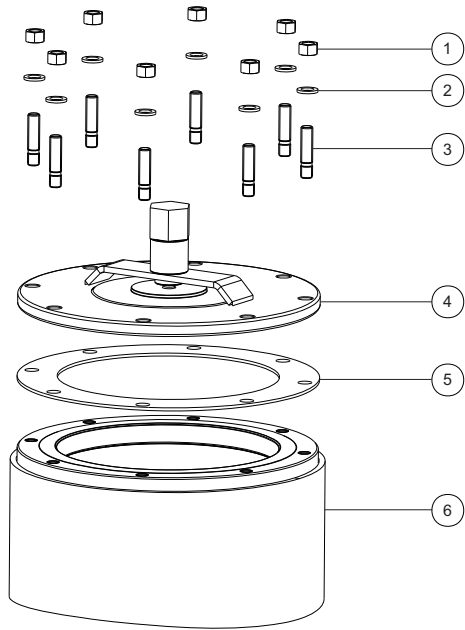




# 300mm Flash Vacuum Vent Assembly

Part No: 618/6102XXX304

## Parts Drawing



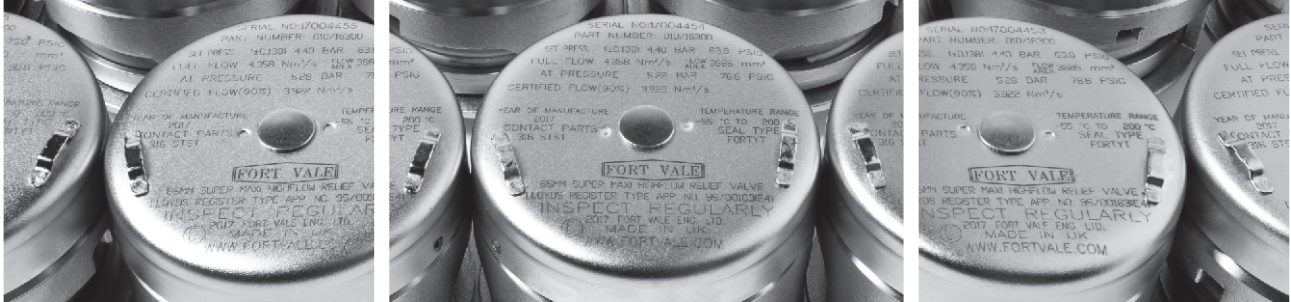
## Parts List

Item	Description	Part No.
1	M12 full nut (8)	5112-006
2	M12 spring washer (8)	5113-010
3	M12 stud (8)	312/1001
4	1" Hg flash vacuum vent <b>*Note</b>	618/620002XXX
5	Sweet white rubber gasket	5005-988
6	Neckring/flange assembly <b>*Note</b>	618/614XXX304

**NOTE:** The specification changes the Part No.



# Relief Valves



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# DN50 90° Angled Blower Relief Valve

Part No: 2B/XXXX00



## Specification

### Nominal size

DN50

### Inlet connection

Threaded: 2" BSPM

### Outlet connection

Threaded: 2½" BSPF

### Set pressure

From 0.5 Bar to 2.0 Bar

### Properties

90° body with cam lever to lift/lock the pressure plate for cleaning or maintenance

### Materials

Contact parts: 304/316 stainless steel

Pressure O ring: Viton or EPDM

## Design Conditions

Weight: 4.02 Kg  
 Design Pressure (MAWP): 4 Bar  
 Test Pressure: 6 Bar

Seal Design Temperature Range:

Material	Min.Temp.°C	Max.Temp.°C
Viton	-20	200
EPDM	-50	150

## Range

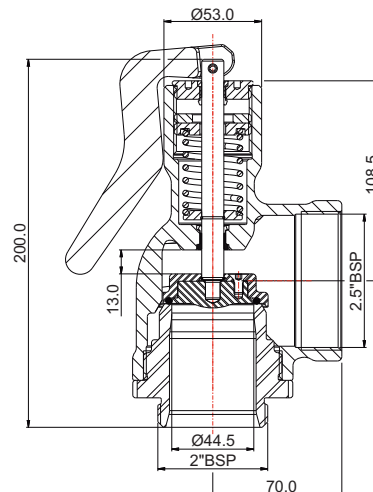
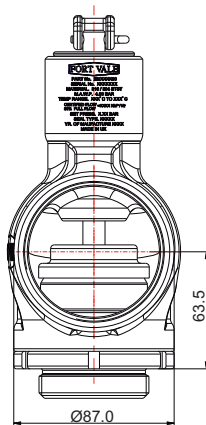
Description	Part No.
With Viton pressure O ring	2B/0XXX00
With EPDM pressure O ring	2B/1XXX00

NOTE: The pressure setting changes the part number

## Flow Rate

Set Pressure Bar	90% Volumetric Flow: Nm <sup>3</sup> /hr	Over Pressure Bar
0.5	726	0.55
0.8	908	0.88
1.0	1015	1.10
1.5	1280	1.65
2.0	1546	2.20

## Section View

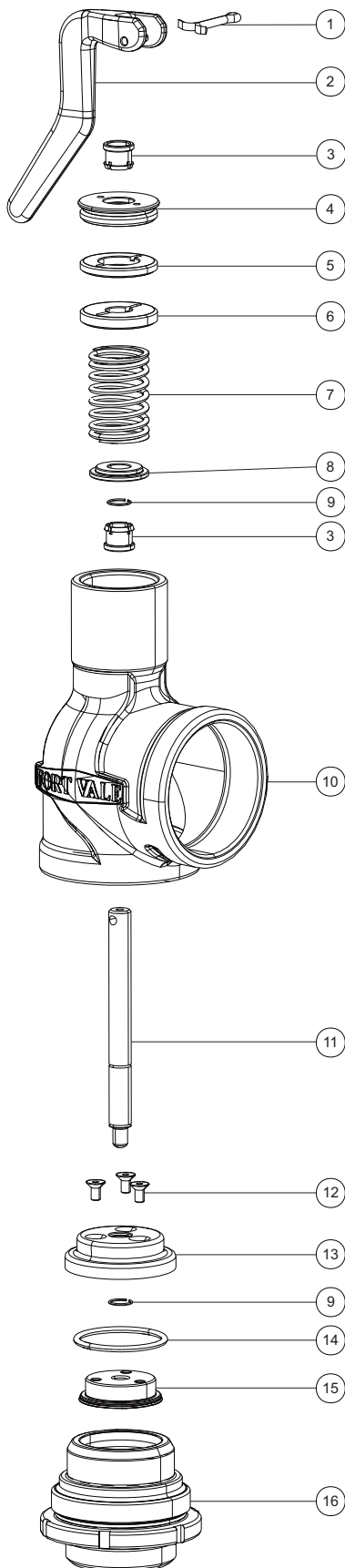




# DN50 90° Angled Blower Relief Valve

Part No: 2B/XXXX00

## Parts Drawing



## Parts List

Item	Description	Part No.
1	Split pin	5118-0121
2	Lifting handle	175/0053
3	Guide bush (2)	175/0039
4	Top cap	175/0049
5	Stuffing nut	175/0047
6	Top spring pad	175/0048
7	Spring *Note	5104-XXX
8	Bottom spring pad	175/0029
9	Retaining ring clip (2)	5120-086
10	2 1/2" BSP 90° angled body	175/0052
11	Guide stem	175/0028
12	M5 countersunk screw (3)	5111-499
13	Outer blowdown plate	175/0027
14	Pressure plate O ring *Note	XXXXXX
15	Inner pressure plate	175/0026
16	2" BSP inlet fitting	175/0024

**NOTE:** The valve specification changes the Part No.



# Minnow Relief Valves

## Design Options

### Function

A relief valve is installed in the vapour space of a tank. It vents to protect the tank from accidental over-pressure or unwanted vacuum conditions. Minnow relief valves are pre-set to give protection against pressure only or against pressure and vacuum.

We offer a range of relief valves for different service conditions and flow requirements. Contact us for more information.

### Design Options

The design options below are available on our standard range of Minnow relief valves.

#### Nominal Bore

25mm (1")



#### Tank Connection

Threaded: 1" BSP male,  
1" BSP female, 1" NPT male

#### Tank Seal

PTFE

#### Pressure Setting

Standard valve:  
From 1 PSIG to 45 PSIG  
(0.07 Bar to 3.10 Bar)

Ventlock valve:  
From 1 PSIG to 9 PSIG only  
(0.07 Bar to 0.62 Bar only)

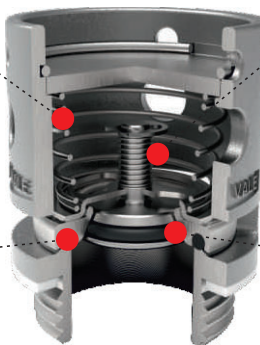
#### Vacuum Setting

From 0.5"Hg to 7"Hg  
(0.02 Bar to 0.24 Bar)

#### Pressure Seal

Viton

**Special service conditions:**  
A range of elastomer seals is available



#### Vacuum Seal

Viton

**Special service conditions:**  
A range of elastomer seals is available

#### Special Options

Ventlock bracket  
Manual vacuum vent button  
Body with TIR bracket





## **Minnow Relief Valves**

### **Design Options**

---

### **Relief Valves for Dedicated Service**

We offer a range of relief valves for these service conditions and special cargoes:

- T50 tank containers for liquefied gas
- Rail tank wagons
- U.S. tank trucks
- IBCs and small capacity tanks
- Steam-heating systems for tanks
- Hygienic service
- Food grade for liquid flow

Please contact us for more information about these valves.

### **Related Parts**

We recommend our range of compatible ancillary parts:

- Flame arrester
- Weld-in sockets and nipples

Please contact us for more information about these parts.



# DN25 Minnow Relief Valve - Pressure Only

Part No: 65/0XX00



## Specification

### Nominal size

DN25

### Tank connection

Threaded: 1" BSPM

### Set pressure

From 1 PSI to 45 PSI (0.07 Bar to 3.10 Bar)

### Materials

Contact parts: 316 stainless steel

Pressure O ring: Viton

Tank seal: PTFE

Alternatives are available, refer to the Design Options page

## Design Conditions

Weight: 0.18 Kg

Seal Temperature Range:

Material	Min.Temp.°C	Max.Temp.°C
EPDM	-50	150
Perfluoroelastomer	-15	240
Viton	-20	200

**NOTE:** The Design Conditions and Section View dimensions are for the specified part number only.

## Range

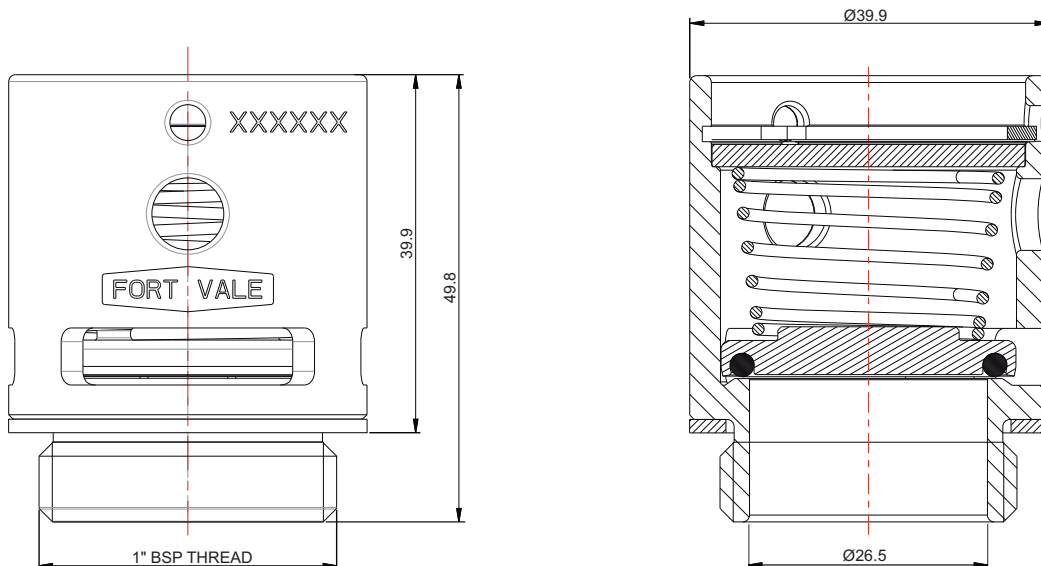
Description	Part No.
1" BSPM standard valve	65/XXXXXX
1" BSPM with vent button	65B/XXXXXX
1" BSPM with vent button & TIR	65BT/XXXXXX
1" BSPM with vent button & ventlock	68/XXXXXX
1" BSPF standard valve	66/XXXXXX
1" BSPF with vent button & ventlock	69/XXXXXX
1" NPT standard valve	65/XXXXXXNPT

**NOTE:** The valve specification changes the part number

## Related Parts

Description	Part No.
1" BSP weld-in socket	600/1025
1" BSP weld-in nipple	600/1026
Flame arrester, DN25 Minnow	179/0300

## Section View

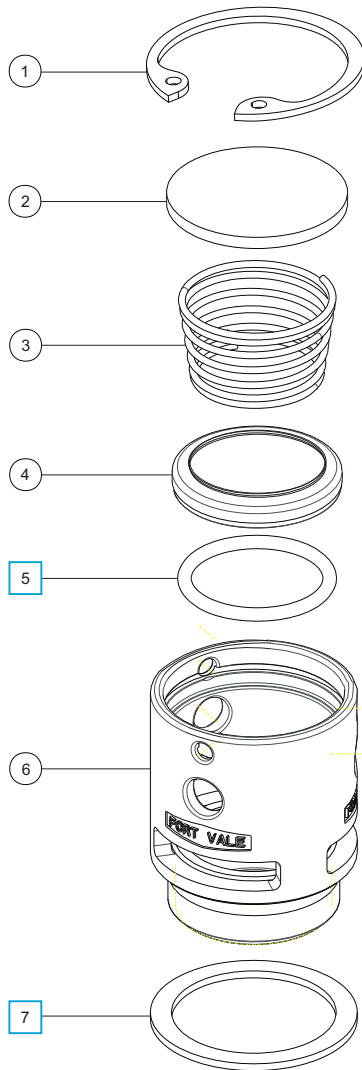




# DN25 Minnow Relief Valve - Pressure Only

Part No: 65/0XX00

## Parts Drawing



## Parts List

Item	Description	Part No.
1	Retaining clip	5120-021
2	Top cap	179/0010
3	Pressure spring	Refer to Table 1
4	Pressure plate <b>*Note</b>	Refer to Table 2
5	Pressure O ring <b>*Note</b>	Refer to Table 2 <input type="checkbox"/>
6	Body	179/0100
7	PTFE gasket	5005-553 <input type="checkbox"/>

**NOTE:** You will need special tools to install an O ring into a pressure plate. We recommend that you order a pressure plate/O ring assembly. Refer to Table 2.

## Table 1

Std. Pressure Settings	Pressure Spring Part No.
3 PSI (0.21 Bar)	5104-653
6 PSI (0.41 Bar)	5104-656
9 PSI (0.62 Bar)	5104-659
30 PSI (2.07 Bar)	5104-695

Available settings: 1 PSI (0.07 Bar) to 45 PSI (3.10 Bar)

## Table 2 - Refer to Note

Seal Material	Pressure O Ring	Pressure Plate/ O Ring Assembly
EPDM	5005-651	179/0050ES
Perfluoroelastomer	5005-585	179/0050PERS
Viton	5005-552	179/0050VS

## Seal Kit - All parts marked in the Parts List

Seal Material	Part No.
EPDM	65/9PSK
Perfluoroelastomer	65/7PSK
Viton	65/0PSK



# Uniact Relief Valves

## Design Options

### Function

A relief valve is installed in the vapour space of a tank. It vents to protect the tank from accidental over-pressure or unwanted vacuum conditions. A Uniact relief valve is a single-acting valve. It is pre-set to give protection against pressure only or against vacuum only conditions.

We offer a range of relief valves for different service conditions and flow requirements. Contact us for more information.

### Design Options

The design options below are available on our standard range of Uniact relief valves.

#### Tank Connection

Threaded: 1¼" BSP, 1½" BSP, 2" BSP

Flanged: 1½" ASA 150

#### Special service conditions:

DIN11851: 50mm, 65mm



#### Nominal Bore

32mm (1¼")

40mm (1½")

50mm (2")

#### Tank Seal

CNAF

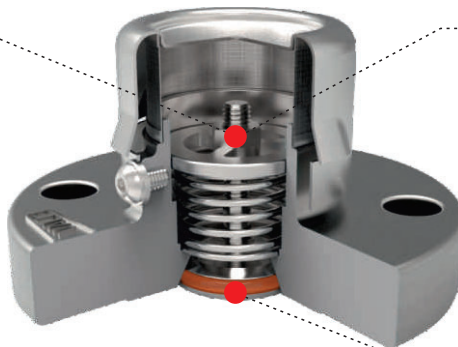
#### Special service conditions:

PTFE

#### Pressure Setting

1½": From 1 PSIG to 72 PSIG  
(0.07 Bar to 4.97 Bar)

2": From 1 PSIG to 60 PSIG  
(0.07 Bar to 4.14 Bar)



#### Vacuum Setting

1½": From 0.5"Hg to 26"Hg  
(0.02 Bar to 0.9 Bar)

2": From 0.5"Hg to 29"Hg  
(0.02 Bar to 0.98 Bar)

#### Pressure or Vacuum Seal

Fortyt

#### Special service conditions:

A range of elastomer seals is available

#### Ancillaries

Cowl

Gauze

Cap

Manual vent button (vacuum valve only)





## Uniact Relief Valves

### Design Options

---

### Relief Valves for Dedicated Service

We offer a range of relief valves for these service conditions and special cargoes:

- T50 tank containers for liquefied gas
- Rail tank wagons
- U.S. tank trucks
- IBCs and small capacity tanks
- Steam-heating systems for tanks
- Hygienic service
- Food grade for liquid flow

Please contact us for more information about these valves.

### Related Parts

We recommend our range of compatible ancillary parts:

- Cap - with or without gauze
- Weld-in sockets
- Weld-in flanges
- Gaskets
- Fasteners

Please contact us for more information about these parts.



# DN40 Uniact Relief Valve - Pressure Only

Part No: 47/1XXX00AGZ - Metric Setting



## Specification

### Nominal size

DN40

### Tank connection

Threaded: 1½" BSP

### Set pressure

From 0.05 Bar to 4.50 Bar

### Properties

With cowl and gauze

### Materials

Contact parts: 316 stainless steel

Pressure O ring: Fortyt

Tank seal: CNAF

Alternatives are available, refer to the Design Options page

## Design Conditions

Weight: 0.8 Kg  
 Design Pressure (MAWP): 4.5 Bar  
 Test Pressure: 7 Bar

For more Design Conditions, please contact Fort Vale and refer to the parts drawing.

## Range

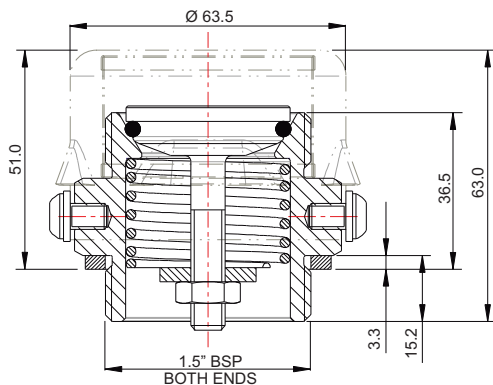
Description	Part No.
1½" BSP standard valve	47/XXXX00A
1½" BSP with cowl	47/XXXX00AC
1½" BSP with cowl and gauze	47/XXXX00AGZ
1½" BSP, alloy C276 contact parts	47H/XXXX00AX
1½" BSP with PTFE tank seal	47V/XXXX00AX
50mm DIN11851 connection	47M/XXXX00AX

NOTE: The valve specification changes the part no.

## Related Parts

Description	Part No.
1½" BSP weld-in socket	600/1010
50mm DIN11851 weld-in socket	176/2660
50mm DIN11851 fitting nut	176/2670
Installation C spanner	400/3000

## Section View

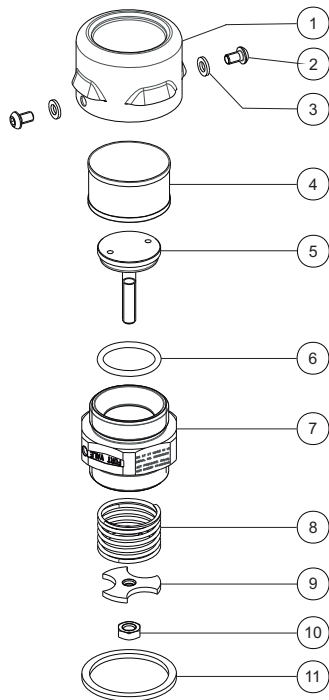




# DN40 Uniact Relief Valve - Pressure Only

Part No: 47/1XXX00AGZ - Metric Setting

## Parts Drawing



## Parts List

Item	Description	Part No.
1	Cap	10217/1
2	M6 button screw (2)	5111-611
3	M6 spring washer (2)	5113-008
4	Gauze ring	10204
5	Poppet	10983V
6	Pressure O ring	Refer to Table 1
7	Body	10213
8	Spring	Refer to Table 2
9	Spring pad	10215
10	M8 half nut	5112-004
11	CNAF tank seal	5005-011

## Table 1

O Ring Material	Part No.
Fortyt	5005-108H
High-temp. Fortyt	5005-108HPFA

## Table 2

Std. Pressure Setting	Pressure Spring Part No.
2.05 Bar	5104-630

Available settings: 0.05 Bar to 4.50 Bar



# DN40 Uniact Relief Valve - Vacuum Only

Part No: 47/1000XXAGZ - Metric Setting



## Specification

### Nominal size

DN40

### Tank connection

Threaded: 1½" BSP

### Set vacuum

From 2 kPa to 88 kPa

### Properties

With cowl and gauze

### Materials

Contact parts: 316 stainless steel

Vacuum O ring: Fortyt

Tank seal: CNAF

Alternatives are available, refer to the Design Options page

## Design Conditions

Weight: 0.8 Kg  
 Design Pressure (MAWP): 4.5 Bar  
 Test Pressure: 7 Bar

For more Design Conditions, please contact Fort Vale and refer to the parts drawing.

## Range

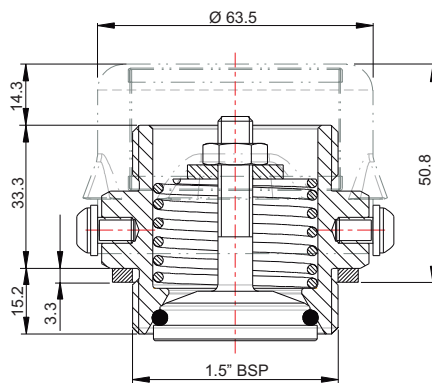
Description	Part No.
1½" BSP standard valve	47/X000XXA
1½" BSP with cowl	47/X000XXAC
1½" BSP with cowl and gauze	47/X000XXAGZ
1½" BSP with vent button	47/X000XXVBA
1½" BSP, alloy C276 contact parts	47H/X000XXAX
1½" BSP with PTFE tank seal	47V/X000XXAX
50mm DIN11851 connection	47M/X000XXAX

NOTE: The valve specification changes the part no.

## Related Parts

Description	Part No.
1½" BSP weld-in socket	600/1010
50mm DIN11851 weld-in socket	176/2660
50mm DIN11851 fitting nut	176/2670
Installation C spanner	400/3000

## Section View

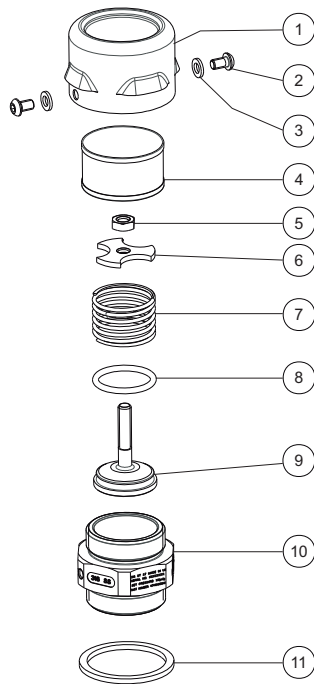




# DN40 Uniact Relief Valve - Vacuum Only

Part No: 47/1000XXAGZ - Metric Setting

## Parts Drawing



## Parts List

Item	Description	Part No.
1	Cap	10217/1
2	M6 button screw (2)	5111-611
3	M6 spring washer (2)	5113-008
4	Gauze ring	10204
5	M8 half nut	5112-004
6	Spring pad	10215
7	Spring	Refer to Table 1
8	Vacuum O ring	Refer to Table 2
9	Poppet	10983V
10	Body	10213VO
11	CNAF gasket	5005-011

## Table 1

Std. Vacuum Settings	Vacuum Spring Part No.
3 kPa	5104-601
20 kPa	5104-605

Available settings: 2 kPa to 88 kPa

## Table 2

O Ring Material	Part No.
Fortyt	5005-108H
High-temp. Fortyt	5005-108HPFA



# Twinact Relief Valves

## Design Options

### Function

A relief valve is installed in the vapour space of a tank. It vents to protect the tank from accidental over-pressure or unwanted vacuum conditions. Twinact relief valves are pre-set to give protection against pressure only or against pressure and vacuum.

We offer a range of relief valves for different service conditions and flow requirements. Contact us for more information.

### Design Options

The design options below are available on our standard range of Twinact relief valves.

#### Tank Connection

Threaded: 1¼" BSP, 1½" BSP, 2½" BSP

**Special service conditions:**  
DIN11851: 50mm, 80mm



#### Nominal Bore

32mm (1¼")  
40mm (1½")  
65mm (2½")

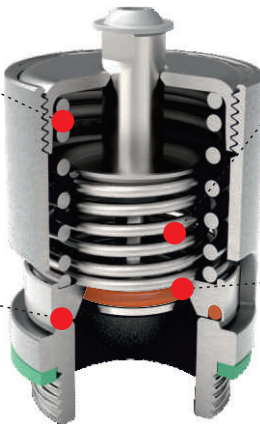
#### Tank Seal

1½": CNAF  
2½": Rubber/PTFE  
**Special service conditions:**  
Other materials are available

#### Pressure Setting

1½": From 1 PSIG to 64 PSIG  
(0.07 Bar to 4.41 Bar)

2½": From 1 PSIG to 63 PSIG  
(0.07 Bar to 4.34 Bar)



#### Vacuum Setting

From 0.5"Hg to 28"Hg  
(0.02 Bar to 0.94 Bar)

#### Pressure Seal

Fortyt

**Special service conditions:**  
A range of seal materials is available

#### Vacuum Seal

Fortyt

**Special service conditions:**  
A range of seal materials is available

#### Valve Materials

316 stainless steel

**Special service conditions:**  
Wetted parts in high-nickel alloys





## Twinact Relief Valves

### Design Options

---

### Relief Valves for Dedicated Service

We offer a range of relief valves for these service conditions and special cargoes:

- T50 tank containers for liquefied gas
- Rail tank wagons
- U.S. tank trucks
- IBCs and small capacity tanks
- Steam-heating systems for tanks
- Hygienic service
- Food grade for liquid flow

Please contact us for more information about these valves.

### Related Parts

We recommend our range of compatible ancillary parts:

- Flame arrester
- Weld-in sockets
- Flanges - weld-in and adaptor
- Gaskets

Please contact us for more information about these parts.



# DN40 MK2 Twinact Relief Valve - Pressure Only

Part No: 3A/XXXX00 - Metric Setting



## Specification

### Nominal size

DN40

### Tank connection

Threaded: 1½" BSP

### Set pressure

From 0.05 Bar to 4.5 Bar

### Materials

Contact parts: 316 stainless steel

Pressure O ring: Fortyt (Fig.1) or Viton (Fig.2)

Vacuum O ring: Fortyt (Fig.1) or Viton (Fig.2)

Tank seal: Rubber/PTFE envelope

Alternatives are available, refer to the Design Options page

## Design Conditions

Weight: 0.84 Kg

For more Design Conditions, please contact Fort Vale and refer to the parts drawing.

**WARNING:** If you install an approved relief valve accessory item, e.g. a flame arrester, cowl, burst disc or baffle, it will decrease the air flow capacity of the relief valve. Thus, you must calculate again to make sure that the decreased air flow capacity will give sufficient protection to your vessel/system. Please refer to Fort Vale for more information.

## Range

Description	Part No.
Standard valve - pressure/vacuum	3A/XXXXXX
Standard valve - pressure only	3A/XXXX00

NOTE: The valve specification changes the Part No.

## Related Parts

Description	Part No.
1½" BSP weld-in socket	600/1010
Flame arrester, DN40 Twinact <b>*Warning</b>	200/5000
PTFE tank seal	5005-012
Installation C spanner	400/3000

## Section View

NOTE: The pressure plate is different for a Fortyt pressure O ring (Figure 1) and a Viton pressure O ring (Figure 2)

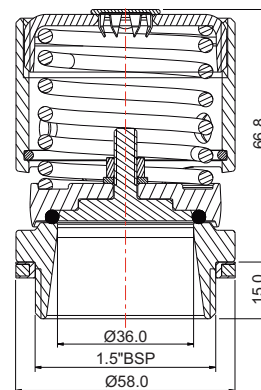
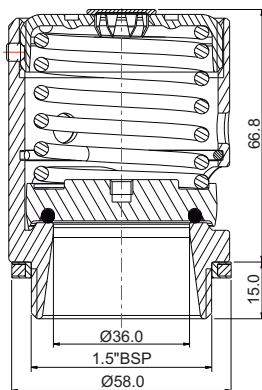


Figure 1. Valve with a Fortyt pressure O ring

Figure 2. Valve with a Viton pressure O ring

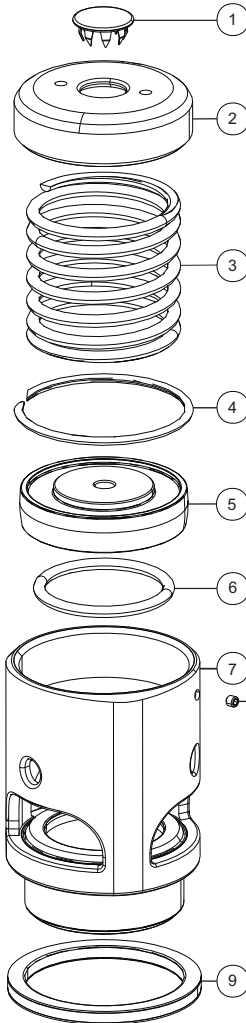


# DN40 MK2 Twinact Relief Valve - Pressure Only

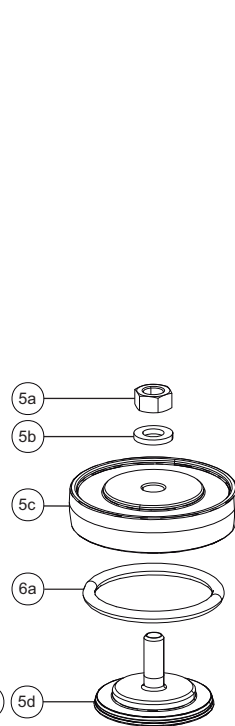
Part No: 3A/XXXX00 - Metric Setting

## Parts Drawing

**Figure 1:** Fortyt pressure plate/O ring



**Figure 2:** Viton pressure plate/O ring



## Parts List

Item	Description	Part No.
1	Stainless steel plug	10978
2	Top cap	11004
3	Pressure spring	Refer to Table 1
4	Retaining ring clip	5120-070
5	Pressure plate for a Fortyt O ring *Note	175/X124 Refer to Table 2
5a-d	Composite pressure plate for a Viton O ring	110/0100X Refer to Table 3
6/6a	Pressure O ring *Note	Refer to Table 4
7	Body	11300
8	Anti-tamper screw	5121-001
9	Rubber/PTFE gasket	5006-006

**NOTE:** You will need special tools to install a Fortyt O ring into a pressure plate. We recommend that you order a pressure plate/O ring assembly. Refer to Table 2.

### Table 1

Std. Pressure Setting	Pressure Spring Part No.
0.2 Bar	5104-0026
2 Bar	5104-0041

Available settings: 0.05 to 4.5 Bar

### Table 2 - Refer to Note

O Ring Material	Pressure Plate Part No.	Pressure Plate/O Ring Assembly Part No.
Fortyt	175/0124	175/F124

### Table 3

Item	Description	Part No.
5a	M6 full nut	5112-012
5b	M6 spring washer	5113-008
5c	Outer pressure plate	110/0100/1
5d	Inner pressure plate	110/0100/2

### Table 4 - Refer to Note

Item	O Ring Material	Part No.
6	Fortyt	ORM0340400F0
6a	Viton	ORB220VR



# DN40 MK2 Twinact Relief Valve - Pressure/Vacuum

Part No: 3A/XXXXXX - Metric Settings



## Specification

### Nominal size

DN40

### Tank connection

Threaded: 1½" BSP

### Set pressure

From 0.05 Bar to 4.5 Bar

### Set vacuum

From 1 kPa to 98 kPa

### Properties

With manual vent button

### Materials

Contact parts: 316 stainless steel

Pressure O ring: Fortyt (Fig.1) or Viton (Fig.2)

Vacuum O ring: Fortyt (Fig.1) or Viton (Fig.2)

Tank seal: Rubber/PTFE envelope

Alternatives are available, refer to the Design Options page

## Design Conditions

Weight: 0.86 Kg

For more Design Conditions, please contact Fort Vale and refer to the parts drawing.

**WARNING:** If you install an approved relief valve accessory item, e.g. a flame arrester, cowl, burst disc or baffle, it will decrease the air flow capacity of the relief valve. Thus, you must calculate again to make sure that the decreased air flow capacity will give sufficient protection to your vessel/system. Please refer to Fort Vale for more information.

## Range

Description	Part No.
Standard valve - pressure/vacuum	3A/XXXXXX
Standard valve - pressure only	3A/XXXX00

NOTE: The valve specification changes the Part No.

## Related Parts

Description	Part No.
1½" BSP weld-in socket	600/1010
Flame arrester, DN40 Twinact <b>*Warning</b>	200/5000
PTFE tank seal	5005-012
Installation C spanner	400/3000

## Section View

NOTE: The pressure plate is different for a Fortyt pressure O ring (Figure 1) and a Viton pressure O ring (Figure 2)

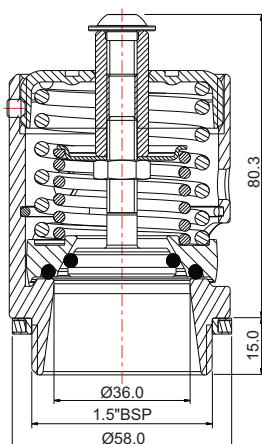


Figure 1. Valve with Fortyt pressure/vacuum O rings

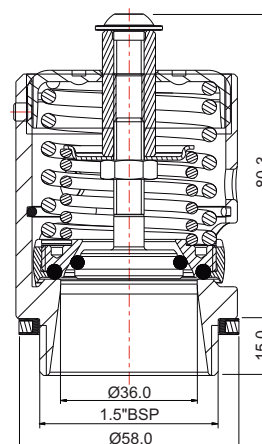


Figure 2. Valve with Viton pressure/vacuum O rings



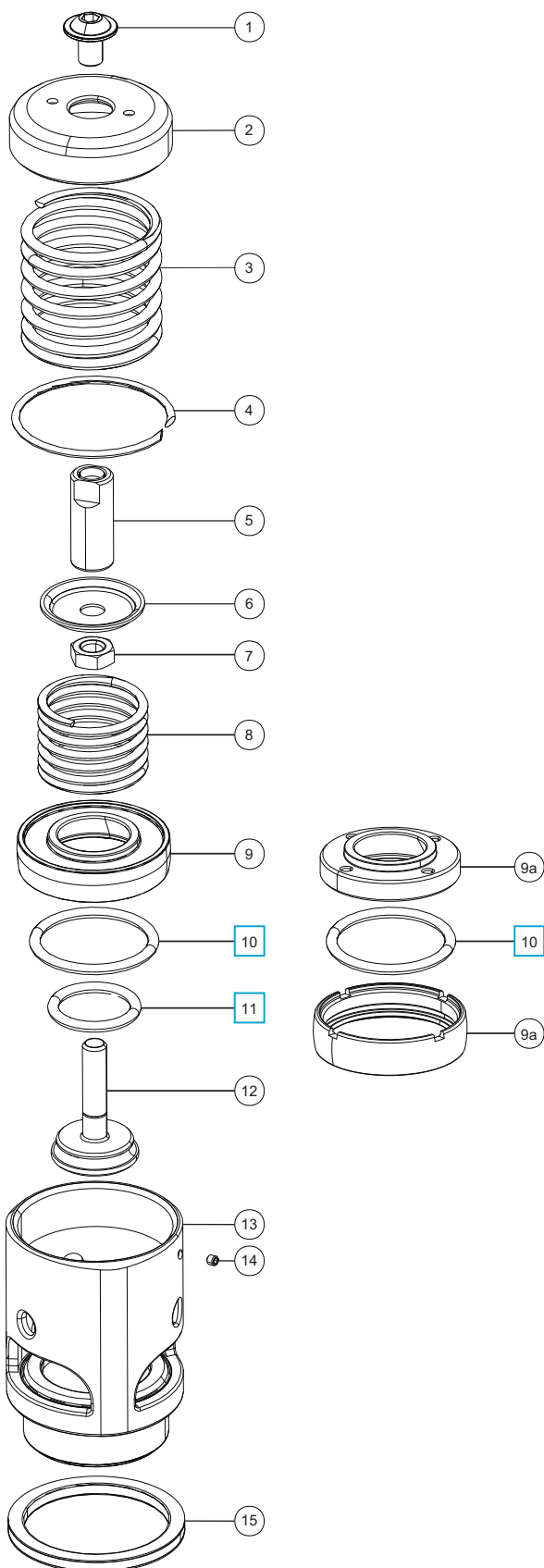
# DN40 MK2 Twinact Relief Valve - Pressure/Vacuum

Part No: 3A/XXXXXX - Metric Settings

## Parts Drawing

**Figure 1:** Fortyt pressure plate/O ring

**Figure 2:** Viton pressure plate/O ring



## Parts List

Item	Description	Part No.
1	Flanged button screw	5111-9812
2	Top cap	11004
3	Pressure spring	Refer to Table 1
4	Retaining ring clip	5120-070
5	Spring stem	10984
6	Spring pad	11006
7	M8 half nut	5112-004
8	Vacuum spring	Refer to Table 2
9/9a	Pressure plate *Note	Refer to Table 3
10	Pressure O ring *Note	Refer to Table 4 <input type="checkbox"/>
11	Vacuum O ring	Refer to Table 4 <input type="checkbox"/>
12	Vacuum poppet	11003
13	Body	11300
14	Anti-tamper screw	5121-001
15	Rubber/PTFE gasket	5006-006

**NOTE:** You will need special tools to install an O ring into a pressure plate. We recommend that you order a pressure plate/O ring assembly. Refer to Table 3.

### Table 1

Std. Pressure Setting	Pressure Spring Part No.
0.2 Bar	5104-0026
2 Bar	5104-0041

Available settings: 0.05 to 4.5 Bar

### Table 2

Std. Vacuum Setting	Vacuum Spring Part No.
2 kPa	5104-760
3 kPa	5104-761
10 kPa	5104-765

Available settings: 1 to 98 kPa

### Table 3 - Refer to Note

O Ring Material	Pressure Plate Part No.	Pressure Plate/O Ring Assembly Part No.
Fortyt	<input type="checkbox"/> 9 175/0125	175/F125
Viton	<input type="checkbox"/> 9a 110/X150	110/0150

### Table 4 - Refer to Note

O Ring Material	Pressure O Ring Part No.	Vacuum O Ring Part No.
Fortyt	ORM0340400F0	5005-114
Viton	ORM0340400VR	5005-112

### Seal Kit - All parts marked in the Parts List

Seal Material	Part No.
Fortyt	3A/1PVSX
Viton	3A/0PVSX



# DN40 Twinact Relief Valve DIN11851 - Pressure/Vacuum

## Part No: 3AM/XXXXXX - Metric Settings



### Specification

**Nominal size**

DN40

**Tank connection**

50mm DIN11851

**Set pressure**

From 0.05 Bar to 4.5 Bar

**Set vacuum**

From 1 kPa to 98 kPa

**Properties**

With manual vent button

**Materials**

Contact parts: 316 stainless steel

Pressure O ring: Fortyt (Fig.1) or elastomer (Fig.2)

Vacuum O ring: Fortyt (Fig.1) or elastomer (Fig.2)

Alternatives are available, refer to the Design Options page

### Design Conditions

Weight: 1.0 Kg

For more Design Conditions, please contact Fort Vale and refer to the parts drawing. The Section View dimensions are for the specified part number only.

**WARNING:** If you install an approved relief valve accessory item, e.g. a flame arrester, cowl, burst disc or baffle, it will decrease the air flow capacity of the relief valve. Thus, you must calculate again to make sure that the decreased air flow capacity will give sufficient protection to your vessel/system. Please refer to Fort Vale for more information.

### Range

Description	Part No.
Standard valve - pressure/vacuum	3AM/XXXXXX
Standard valve - pressure only	3AM/XXXX00

NOTE: The valve specification changes the Part No.

### Related Parts

Description	Part No.
50mm DIN11851 weld-in socket	176/2660
50mm DIN11851 slotted nut	176/2670
Silicone seal for 50mm socket	176/2675S
Clamped flame arrester <b>*Warning</b>	200/5000
Installation C spanner	400/3000

### Section View

NOTE: The pressure plate is different for a Fortyt pressure O ring (Figure 1) and an elastomer pressure O ring (Figure 2)

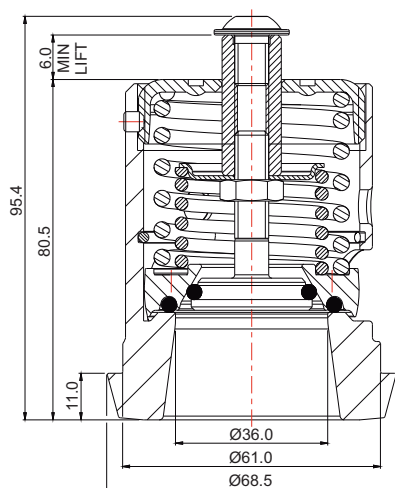


Figure 1. Valve with Fortyt pressure/vacuum O rings

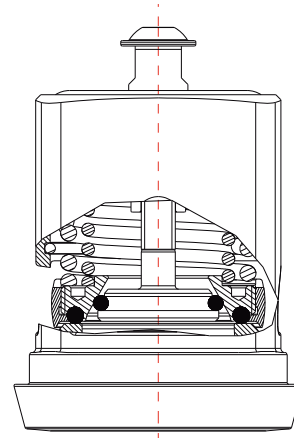


Figure 2. Valve with elastomer pressure/vacuum O rings

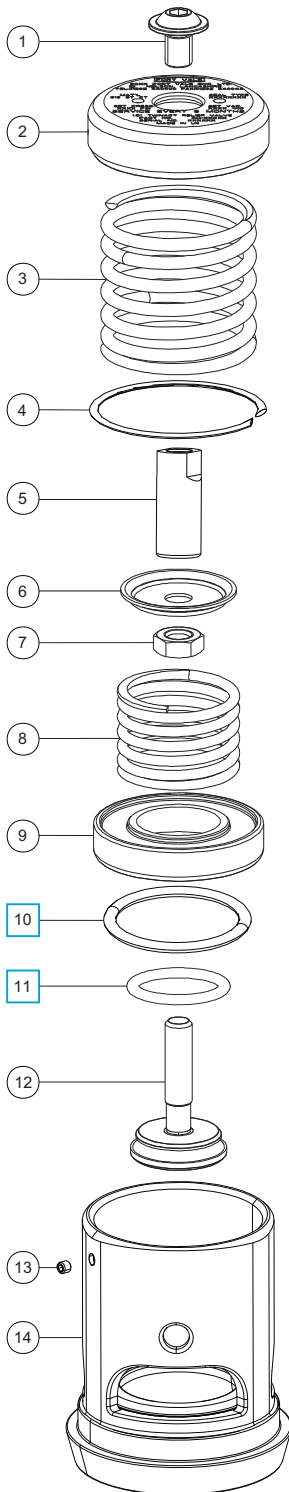


# DN40 Twinact Relief Valve DIN11851 - Pressure/Vacuum

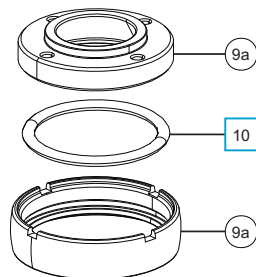
Part No: 3AM/XXXXXX - Metric Settings

## Parts Drawing

**Figure 1:** Fortyt pressure plate/O ring



**Figure 2:** Viton pressure plate/O ring



## Parts List

Item	Description	Part No.
1	Flanged button screw	5111-9812
2	Top cap	11004
3	Pressure spring	Refer to Table 1
4	Retaining ring clip	5120-070
5	Spring stem	10984
6	Spring pad	11006
7	M8 half nut	5112-004
8	Vacuum spring	Refer to Table 2
9/9a	Pressure plate *Note	Refer to Table 3
10	Pressure O ring *Note	Refer to Table 4 <input type="checkbox"/>
11	Vacuum O ring	Refer to Table 4 <input type="checkbox"/>
12	Vacuum poppet	11003
13	Anti-tamper screw	5121-001
14	Body	10990/1

**NOTE:** You will need special tools to install an O ring into a pressure plate. We recommend that you order a pressure plate/O ring assembly. Refer to Table 3.

### Table 1

Std. Pressure Setting	Pressure Spring Part No.
0.2 Bar	5104-0026
2.0 Bar	5104-0041

Available settings: 0.05 to 4.5 Bar

### Table 2

Std. Vacuum Setting	Vacuum Spring Part No.
2 kPa	5104-760
3 kPa	5104-761
10 kPa	5104-765

Available settings: 1 to 98 kPa

### Table 3 - Refer to Note

O Ring Material	Pressure Plate Part No.	Pressure Plate/O Ring Assembly Part No.
Fortyt	(9) 175/0125	175/F125
Viton	(9a) 110/X150	110/0150

### Table 4 - Refer to Note

O Ring Material	Pressure O Ring Part No.	Vacuum O Ring Part No.
Fortyt	ORM0340400F0	5005-114
Viton	ORM0340400VR	5005-112

### Seal Kit - All parts marked in the Parts List

Seal Material	Part No.
Fortyt	3A/1PVSK
Viton	3A/0PVSK



# DN65 MK2 Twinact Relief Valve - Pressure Only

## Part No: 2A/XXXX00 - Metric Setting



### Specification

#### Nominal size

DN65

#### Tank connection

Threaded: 2½" BSP

#### Set pressure

From 0.05 Bar to 4.5 Bar

#### Materials

Contact parts: 316 stainless steel

Pressure O ring: Fortyt (Fig.1) or Viton (Fig.2)

Vacuum O ring: Fortyt (Fig.1) or Viton (Fig.2)

Tank seal: Rubber/PTFE envelope

Alternatives are available, refer to the Design Options page

### Design Conditions

Weight: 1.54 Kg

For more Design Conditions, please contact Fort Vale and refer to the parts drawing.

**WARNING:** If you install an approved relief valve accessory item, e.g. a flame arrester, cowl, burst disc or baffle, it will decrease the air flow capacity of the relief valve. Thus, you must calculate again to make sure that the decreased air flow capacity will give sufficient protection to your vessel/system. Please refer to Fort Vale for more information.

### Range

Description	Part No.
Standard valve - pressure/vacuum	2A/XXXXXX
Standard valve - pressure only	2A/XXXX00

NOTE: The valve specification changes the Part No.

### Related Parts

Description	Part No.
2½" BSP weld-in socket	600/1000
Weld-in flange	176/3150
Flame arrester, DN65 Twinact <b>*Warning</b>	130/5000
CNAF tank seal	5005-026
Installation C spanner	400/3000

### Section View

NOTE: The pressure plate is different for a Fortyt pressure O ring (Figure 1) and a Viton pressure O ring (Figure 2)

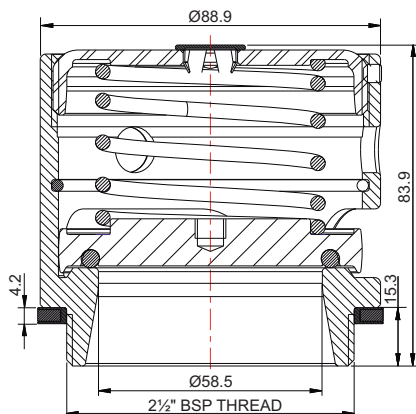


Figure 1. Valve with a Fortyt pressure O ring

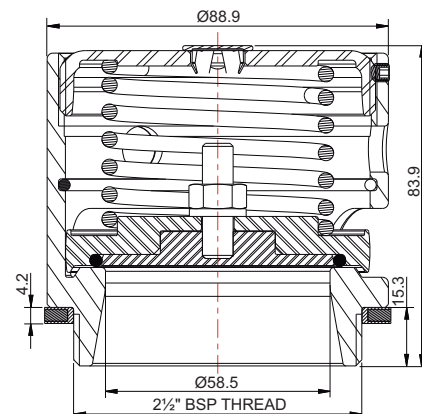


Figure 2. Valve with a Viton pressure O ring

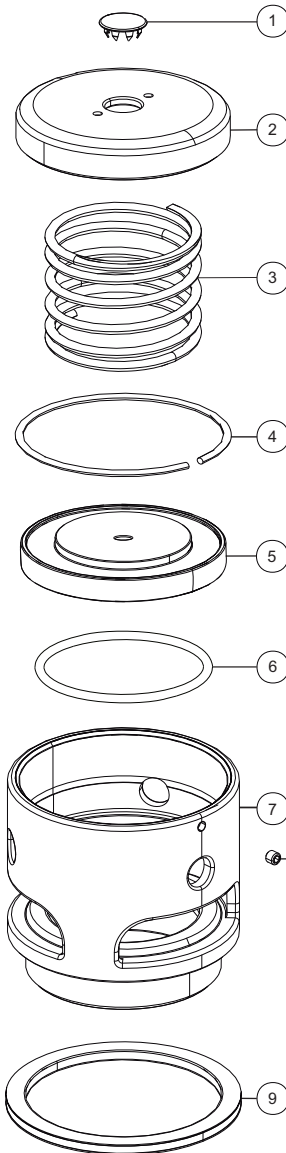


# DN65 MK2 Twinact Relief Valve - Pressure Only

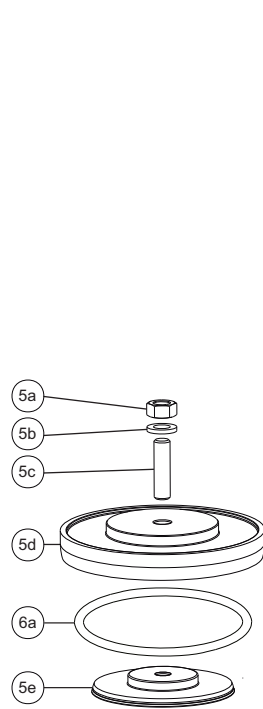
Part No: 2A/XXXX00 - Metric Setting

## Parts Drawing

**Figure 1:** Fortyt pressure plate/O ring



**Figure 2:** Viton pressure plate/O ring



## Parts List

Item	Description	Part No.
1	Stainless steel plug	10978
2	Top cap	10967/1
3	Pressure spring	Refer to Table 1
4	Retaining ring clip	5120-071
5	Pressure plate for a Fortyt O ring *Note	175/X116 Refer to Table 2
5a-e	Composite pressure plate for a Viton O ring	175/X114 Refer to Table 3
6/6a	Pressure O ring *Note	Refer to Table 4
7	Body	10951/1
8	Anti-tamper screw	5121-001
9	Rubber/PTFE gasket	5005-046

**NOTE:** You will need special tools to install a Fortyt O ring into a pressure plate. We recommend that you order a pressure plate/O ring assembly. Refer to Table 2.

## Table 1

Std. Pressure Setting	Pressure Spring Part No.
2 Bar	5104-0020

Available settings: 0.05 to 4.5 Bar

## Table 2 - Refer to Note

O Ring Material	Pressure Plate Part No.	Pressure Plate/O Ring Assembly Part No.
Fortyt	175/0116	175/F116

## Table 3

Item	Description	Part No.
5a	M8 full nut	5112-001
5b	M8 spring washer	5113-003
5c	M8 stud	11426
5d	Outer pressure plate	175/0114/1
5e	Inner pressure plate	175/0114/2

## Table 4 - Refer to Note

Item	O Ring Material	Part No.
6	Fortyt	ORB330F0
6a	Viton	5005-313





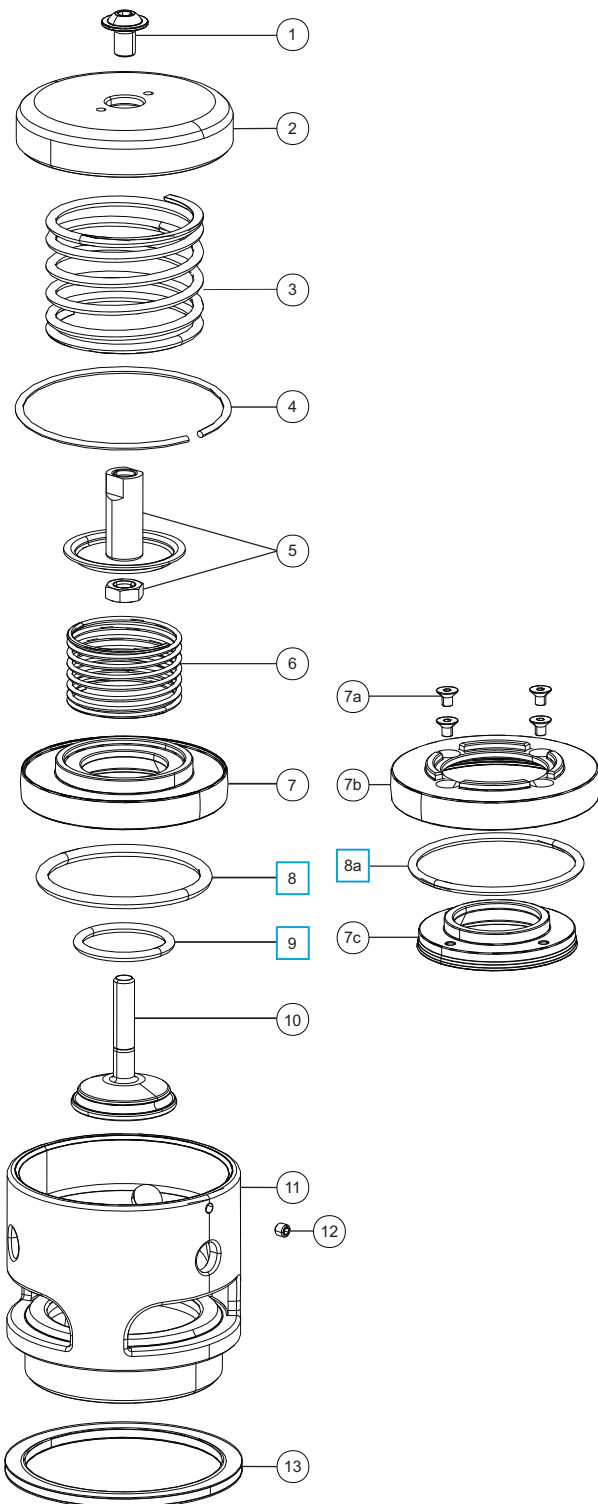
# DN65 MK2 Twinact Relief Valve - Pressure/Vacuum

Part No: 2A/XXXXXX - Metric Settings

## Parts Drawing

**Figure 1:** Fortyt pressure plate/O ring

**Figure 2:** Viton pressure plate/O ring



## Parts List

Item	Description	Part No.
1	Flanged button screw	5111-9812
2	Top cap	10967/1
3	Pressure spring	Refer to Table 1
4	Retaining ring clip	5120-071
5	Spring pad assembly	130/0010
6	Vacuum spring	Refer to Table 2
7	Pressure plate for a Fortyt O ring *Note	Refer to Table 3
7a-c	Pressure plate for a Viton O ring	175/X260 Refer to Table 4
8/8a	Pressure O ring *Note	Refer to Table 5 <input type="checkbox"/>
9	Vacuum O ring	Refer to Table 5 <input type="checkbox"/>
10	Vacuum poppet	10983V
11	Body	10951/1
12	Anti-tamper screw	5121-001
13	Rubber/PTFE gasket	5005-046

**NOTE:** You will need special tools to install a Fortyt O ring into a pressure plate. We recommend that you order a pressure plate/O ring assembly. Refer to Table 3.

## Table 1

Std. Pressure Setting	Pressure Spring Part No.
2 Bar	5104-0020

Available settings: 0.05 to 4.5 Bar

## Table 2

Std. Vacuum Setting	Vacuum Spring Part No.
2 kPa	5104-560
3 kPa	5104-561
10 kPa	5104-563

Available settings: 1 to 98 kPa

## Table 3 - Refer to Note

O Ring Material	Pressure Plate Part No.	Pressure Plate/O Ring Assembly Part No.
Fortyt	175/0117	175/F117

## Table 4

Item	Description	Part No.
7a	M4 countersunk screw (4)	5111-310
7b	Outer pressure plate	175/0260/1
7c	Inner pressure plate	175/0260/2

## Table 5 - Refer to Note

Item	O Ring Material	Pressure O Ring Part No.	Vacuum O Ring Part No.
8	Fortyt *Note	ORB330F0	5005-108H
8a	Viton	5005-313	5005-107

## Seal Kit - All parts marked in the Parts List

Seal Material	Part No.
Fortyt	2A/1PVSK
Viton	2A/0PVSK



# DN65 Twinact Relief Valve DIN11851 - Pressure/Vacuum

Part No: 2AM/XXXXXX - Metric Settings



## Specification

**Nominal size**  
DN65

**Tank connection**  
80mm DIN11851

**Set pressure**  
From 0.05 Bar to 4.5 Bar

**Set vacuum**  
From 1 kPa to 98 kPa

**Properties**  
With manual vent button

**Materials**  
Contact parts: 316 stainless steel  
Pressure O ring: Fortyt (Fig.1) or elastomer (Fig.2)  
Vacuum O ring: Fortyt (Fig.1) or elastomer (Fig.2)

Alternatives are available, refer to the Design Options page

## Design Conditions

Weight: 1.94 Kg

For more Design Conditions, please contact Fort Vale and refer to the parts drawing. The Section View dimensions are for the specified part number only.

**WARNING:** If you install an approved relief valve accessory item, e.g. a flame arrester, cowl, burst disc or baffle, it will decrease the air flow capacity of the relief valve. Thus, you must calculate again to make sure that the decreased air flow capacity will give sufficient protection to your vessel/system. Please refer to Fort Vale for more information.

## Range

Description	Part No.
Standard valve - pressure/vacuum	2AM/XXXXXX
Standard valve - pressure only	2AM/XXXX00

NOTE: The valve specification changes the Part No.

## Related Parts

Description	Part No.
80mm DIN11851 weld-in socket	176/2550
80mm DIN11851 fitting nut	176/2650
Silicone seal for 80mm socket	176/2685S
Clamped flame arrester <b>*Warning</b>	130/5000
Installation C spanner	400/3000

## Section View

NOTE: The pressure plate is different for a Fortyt pressure O ring (Figure 1) and an elastomer pressure O ring (Figure 2)

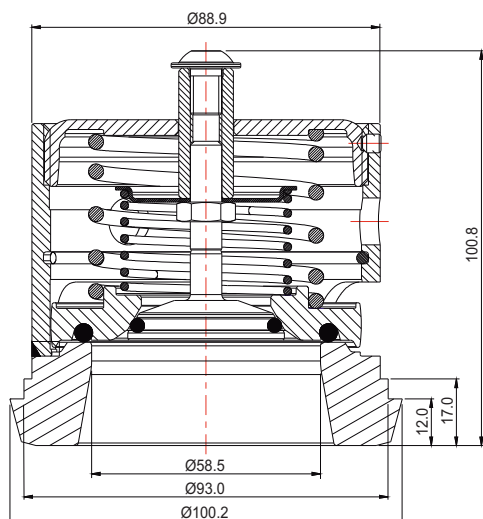


Figure 1. Valve with Fortyt pressure/vacuum O rings

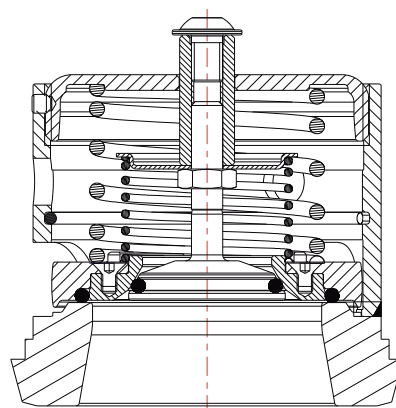


Figure 2. Valve with elastomer pressure/vacuum O rings



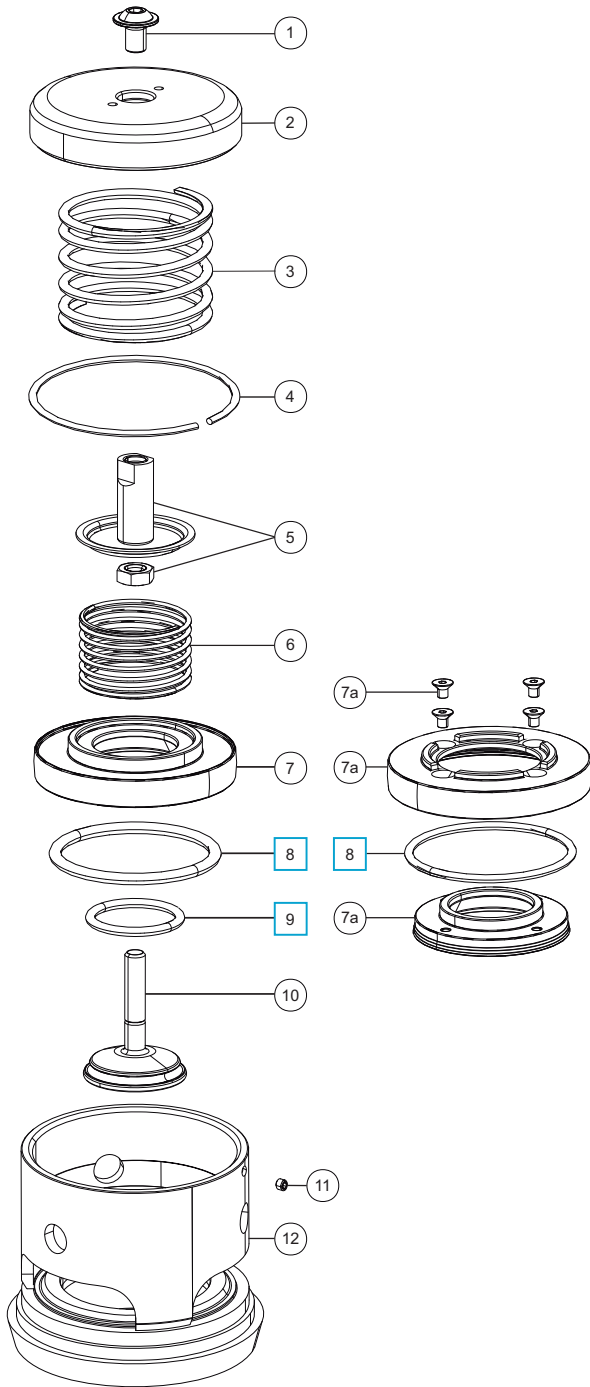
# DN65 Twinact Relief Valve DIN11851 - Pressure/Vacuum

Part No: 2AM/XXXXXX - Metric Settings

## Parts Drawing

**Figure 1:** Fortyt pressure plate/O ring

**Figure 2:** Viton pressure plate/O ring



## Parts List

Item	Description	Part No.
1	Flanged button screw	5111-9812
2	Top cap	10967/1
3	Pressure spring	Refer to Table 1
4	Retaining ring clip	5120-071
5	Spring pad assembly	130/0010
6	Vacuum spring	Refer to Table 2
7/7a	Pressure plate *Note	Refer to Table 3
8	Pressure O ring *Note	Refer to Table 4 <input type="checkbox"/>
9	Vacuum O ring	Refer to Table 4 <input type="checkbox"/>
10	Vacuum poppet	10983V
11	Anti-tamper screw	5121-001
12	Body	175/2203

**NOTE:** You will need special tools to install an O ring into a pressure plate. We recommend that you order a pressure plate/O ring assembly. Refer to Table 3.

### Table 1

Std. Pressure Setting	Pressure Spring Part No.
2 Bar	5104-0020

Available settings: 0.05 to 4.5 Bar

### Table 2

Std. Vacuum Setting	Vacuum Spring Part No.
2 kPa	5104-560
3 kPa	5104-561
10 kPa	5104-563

Available settings: 1 to 98 kPa

### Table 3 - Refer to Note

O Ring Material	Pressure Plate Part No.	Pressure Plate/O Ring Assembly Part No.
Fortyt	(7) 175/0117	175/F117
Viton	(7a) 175/X260	175/0260

### Table 4 - Refer to Note

O Ring Material	Pressure O Ring Part No.	Vacuum O Ring Part No.
Fortyt	ORB330F0	5005-108H
Viton	5005-313	5005-107

### Seal Kit - All parts marked in the Parts List

Seal Material	Part No.
Fortyt	2A/1PVSK
Viton	2A/0PVSK



# Super Maxi & Hyper Maxi Relief Valves

## Design Options

### Function

A Super Maxi or Hyper Maxi is a spring-loaded relief valve which is installed in the vapour space of a tank. It is pre-set to be compatible with the service conditions, and it vents to protect the tank from accidental over-pressure or unwanted vacuum conditions.

Super Maxi & Hyper Maxi relief valves have a high flow performance to prevent the catastrophic failure of a tank. This type of valve is often used on tanks carrying hazardous cargo.

We offer a range of relief valves for different service conditions and flow requirements. Contact us for more information.

### Design Options

The design options below are available on our standard range of Super Maxi & Hyper Maxi relief valves.

#### Tank Connection

2½" BSP

Flanged with holes or slots: a selection of drilling patterns is available

**Special service conditions:**  
DIN11851: DN80



#### Special Options

Manual vacuum vent button

#### Tank Seal

Rubber/PTFE - 2½" BSP only  
Other materials are available

#### Nominal Bore

DN65: Super Maxi  
DN80: Hyper Maxi

**Special service conditions:**  
Tapered bore: DN65 to DN80



#### Body

Standard body:  
Super Maxi: ≤ 4.8 Bar  
Hyper Maxi: ≤ 5.15 Bar

Extended body:  
Super Maxi: ≥ 4.55 Bar  
Hyper Maxi: ≥ 5.15 Bar

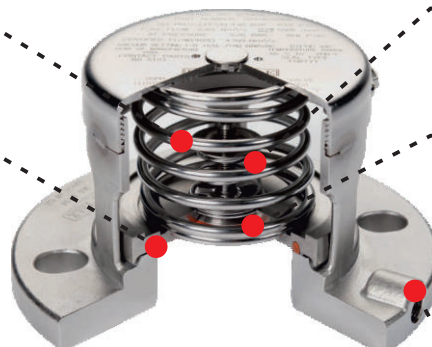
#### Pressure Setting

Super Maxi: 0.15 Bar to 16 Bar  
Hyper Maxi: 0.15 Bar to 14.3 Bar

#### Pressure Seal

Fortyt

**Special service conditions:**  
A range of seal materials is available



#### Vacuum Setting

From 2 kPa to 88 kPa

#### Vacuum Seal

Fortyt

**Special service conditions:**  
A range of seal materials is available

#### Gauge Connection

**Flanged valves only:**  
¼" BSP (standard)  
¼" NPT (special)



## Super Maxi & Hyper Maxi Relief Valves

### Design Options

### Design Options - continued

#### Valve Materials

316 stainless steel

#### Special service conditions:

Lined/coated wetted parts e.g. PFA

High nickel alloys



#### Finish

Electropolished

#### Special service conditions:

Corrosion-resistant paint on external surfaces to prevent damage from corrosive cargo vapour/splash

### Related Parts

We recommend our range of compatible accessories:

- Flame arrester or gauzed cowl **\*Note**
- Rupture discs **\*Note**
- Pressure gauges
- Flanges - weld-in and adaptor
- Weld-in sockets
- Gaskets
- Fasteners

**NOTE:** If you install an accessory item, e.g. a flame arrester, cowl, rupture disc or baffle, it will decrease the air flow capacity of the relief valve. Thus, you must calculate again to make sure that the decreased flow capacity will give sufficient protection to your vessel/system.

Please contact us for more information about these parts.

### Relief Valves for Dedicated Service

We offer a range of relief valves for these service conditions and special cargoes:

- T50 tank containers for liquefied gas
- Rail tank wagons
- U.S. tank trucks
- IBCs and small capacity tanks
- Steam-heating systems for tanks
- Hygienic service
- Food grade for liquid flow

Please contact us for more information about these valves.



# DN65 Super Maxi Relief Valve - Pressure Only

Part No: 010/1XXX00 - Metric Setting



## Specification

### Nominal size

DN65

### Tank connection

Threaded: 2½" BSP

### Set pressure

From 0.15 Bar to 5.15 Bar

### Materials

Contact parts: 316 stainless steel

Pressure O ring: Fortyt

Tank seal: Rubber/PTFE envelope

Alternatives are available, refer to the Design Options page

## Design Conditions

Weight:	2.9 Kg
Design Pressure (MAWP):	5.2 Bar
Test Pressure:	10.1 Bar
Design Temperature Min:	-55°C
Design Temperature Max:	200°C

**NOTE:** The working temperature of the pressure O ring can change the design temperature limits. The Design Conditions and Section View dimensions are for the specified part number only.

**Type Approval**  
Lloyd's Register

**WARNING:** If you install an approved relief valve accessory item, e.g. a flame arrester, cowl, burst disc or baffle, it will decrease the air flow capacity of the relief valve. Thus, you must calculate again to make sure that the decreased air flow capacity will give sufficient protection to your vessel/system. Refer to Fort Vale for more information.

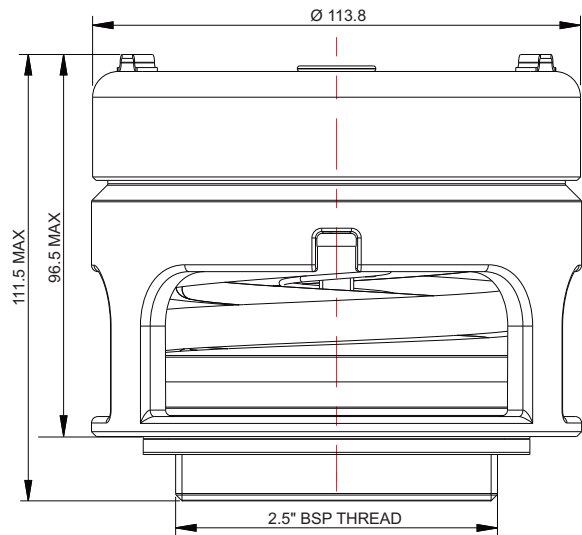
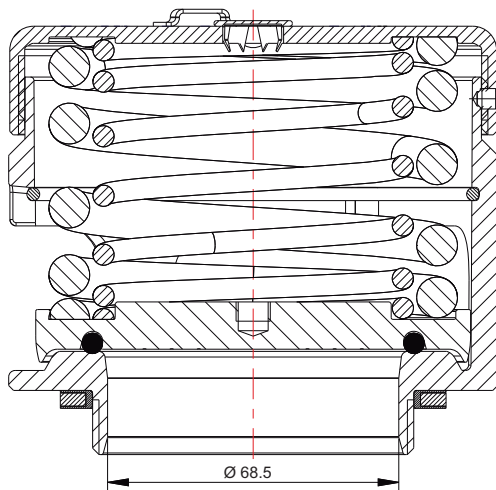
## Range

Standard Settings	Part No.
2.19 Bar	010/121900
3.31 Bar	010/133100
3.71 Bar	010/137100
4.40 Bar	010/144000

## Related Parts

Description	Part No.
2½" BSP weld-in socket	600/1000
2½" BSP burst disc adaptor assembly	176/7020
Weld-in flange	176/3150
Burst disc adaptor flange	176/7001
65mm burst disc - refer to Fort Vale	862/XXXX
CNAF/PTFE gasket (adaptor flange)	5005-398
0-7 Bar pressure gauge, brass internal parts	921/07BBSP
0-7 Bar pressure gauge, stainless steel internal parts	920/07BBSP
Flame arrester <b>*Warning</b>	176/2900
Gauzed cowl <b>*Warning</b>	176/6000

## Section View

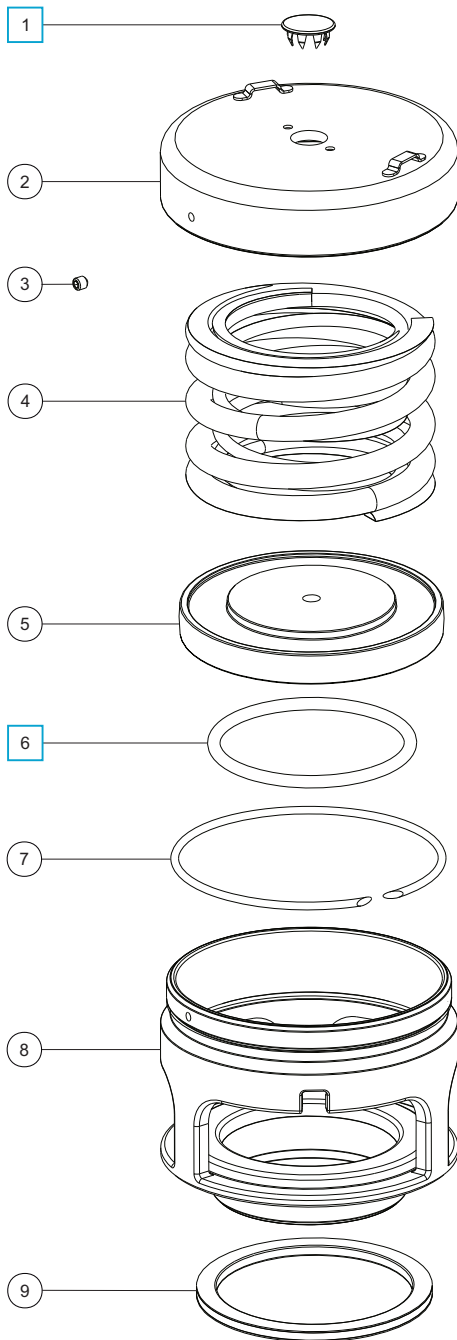




# DN65 Super Maxi Relief Valve - Pressure Only

Part No: 010/1XXX00 - Metric Setting

## Parts Drawing



## Parts List

Item	Description	Part No.
1	Stainless steel plug	10978 <input type="checkbox"/>
2	Cap <b>*Note</b>	1760/0005XX
3	Anti-tamper screw	5121-001
4	Pressure springs	Refer to Table 1
5	Pressure plate <b>*Note</b>	1860/005XXX
6	Fortyt pressure O ring	5005-101 <input type="checkbox"/>
7	Retaining ring clip	5120-067
8	Body	1860/0100
9	Rubber/PTFE envelope seal	5005-046

**NOTE:** The valve specification changes the Part No.

## Table 1

Std. Pressure Settings	Pressure Spring Part No.
2.19 Bar	6104-0252
3.31 Bar	6104-0112 & 6104-0252
3.71 Bar	6104-0422 (Pair)
4.40 Bar	6104-0485 (Pair)

Pressure springs are available from 0.15 Bar to 5.15 Bar

## Seal Kit

Description	Part No.
All parts marked <input type="checkbox"/> in the Parts List	000/1PSK



# DN65 Super Maxi Relief Valve - Pressure/Vacuum

Part No: 010/1XXXXX - Metric Setting



## Specification

### Nominal size

DN65

### Tank connection

Threaded: 2½" BSP

### Set pressure

From 0.15 Bar to 5.15 Bar

### Set vacuum

From 1 kPa to 88 kPa

### Materials

Contact parts: 316 stainless steel

Pressure O ring: Fortyt

Vacuum O ring: Fortyt

Tank seal: Rubber/PTFE envelope

Alternatives are available, refer to the Design Options page

## Design Conditions

Weight:	2.9 Kg
Design Pressure (MAWP):	5.2 Bar
Test Pressure:	10.1 Bar
Design Temperature Min:	-55°C
Design Temperature Max:	200°C

**NOTE:** The working temperature of the pressure and vacuum O rings can change the design temperature limits. The Design Conditions and Section View dimensions are for the specified part number only.

### Type Approval

Lloyd's Register

**WARNING:** If you install an approved relief valve accessory item, e.g. a flame arrester, cowl, burst disc or baffle, it will decrease the air flow capacity of the relief valve. Thus, you must calculate again to make sure that the decreased air flow capacity will give sufficient protection to your vessel/system. Refer to Fort Vale for more information.

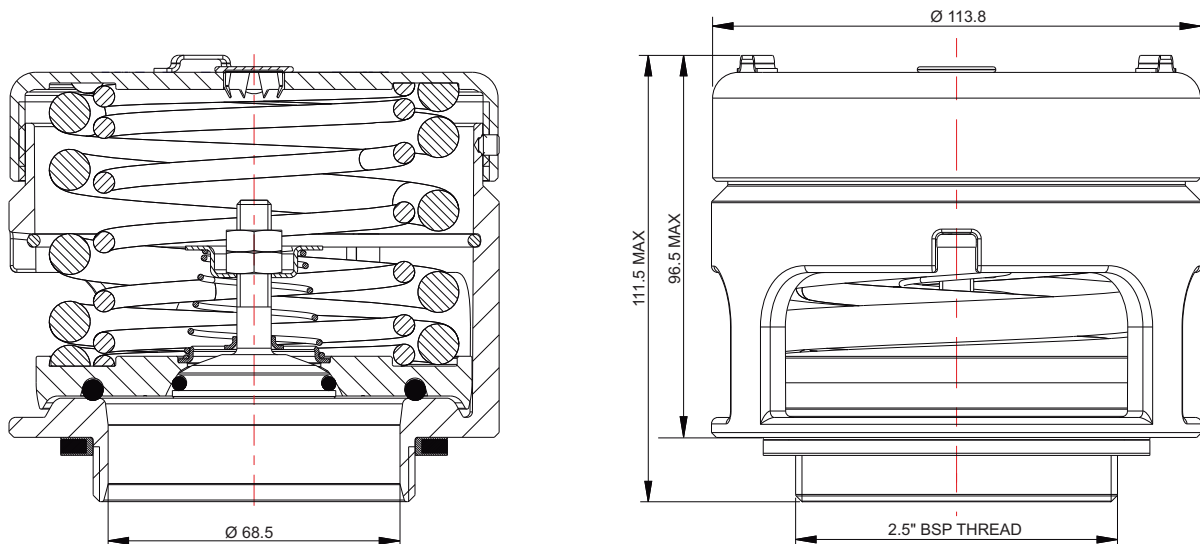
## Range

Standard Settings	Part No.
2.19 Bar & 21 kPa	010/121921
3.31 Bar & 21 kPa	010/133121
3.71 Bar & 21 kPa	010/137121
4.40 Bar & 21 kPa	010/144021

## Related Parts

Description	Part No.
2½" BSP weld-in socket	600/1000
Weld-in flange	176/3150
CNAF/PTFE gasket (adaptor flange)	5005-398
0-7 Bar pressure gauge, brass internal parts	921/07BBSP
0-7 Bar pressure gauge, stainless steel internal parts	920/07BBSP
Flame arrester <b>*Warning</b>	176/2900
Gauzed cowl <b>*Warning</b>	176/6000

## Section View

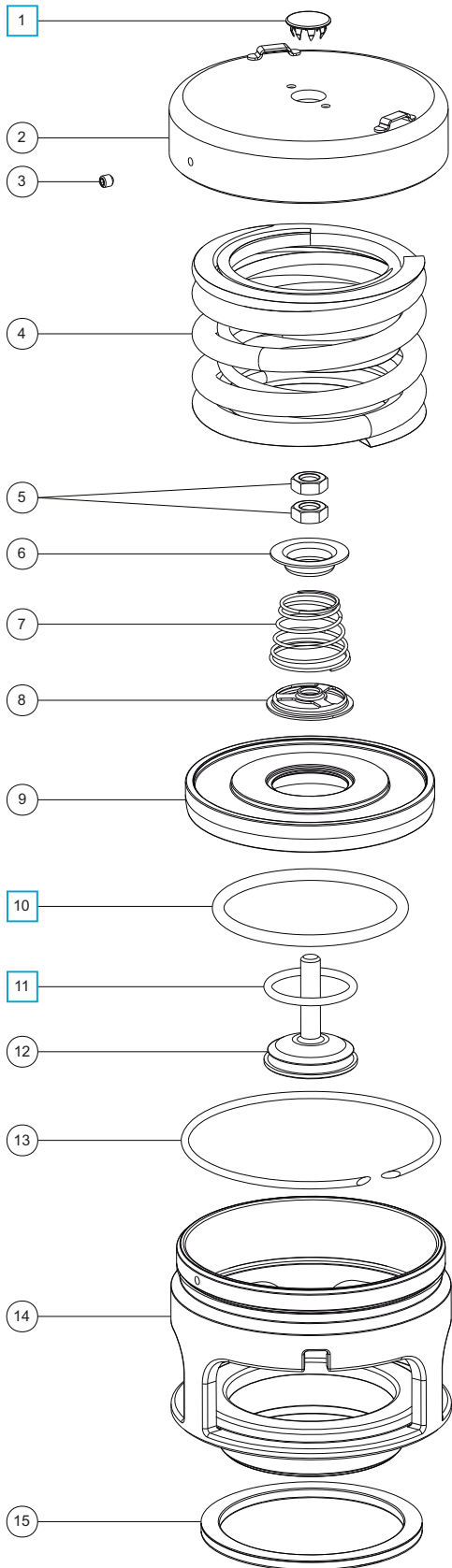




# DN65 Super Maxi Relief Valve - Pressure/Vacuum

Part No: 010/1XXXXX - Metric Setting

## Parts Drawing



## Parts List

Item	Description	Part No.
1	Stainless steel plug	10978 <input type="checkbox"/>
2	Cap *Note	1760/0005XX
3	Anti-tamper screw	5121-001
4	Pressure springs	Refer to Table 1
5	M8 half nut (2)	5112-004
6	Vacuum spring pad	1860/0005
7	Vacuum spring	Refer to Table 2
8	Spring pad	10986/3
9	Pressure plate *Note	1860/005XXX
10	Fortyt pressure O ring	5005-101 <input type="checkbox"/>
11	Fortyt vacuum O ring	5005-108H <input type="checkbox"/>
12	Vacuum poppet	10983V/3
13	Retaining ring clip	5120-067
14	Body	1860/0100
15	Rubber/PTFE envelope seal	5005-046

**NOTE:** The valve specification changes the Part No.

## Table 1

Std. Pressure Settings	Pressure Spring Part No.
2.19 Bar	6104-0252
3.31 Bar	6104-0112 & 6104-0252
3.71 Bar	6104-0422 (Pair)
4.40 Bar	6104-0485 (Pair)

Pressure springs are available from 0.15 Bar to 5.15 Bar

## Table 2

Std. Vacuum Setting	Vacuum Spring Part No.
21 kPa	7104-012

Vacuum springs are available from 1 kPa to 88 kPa

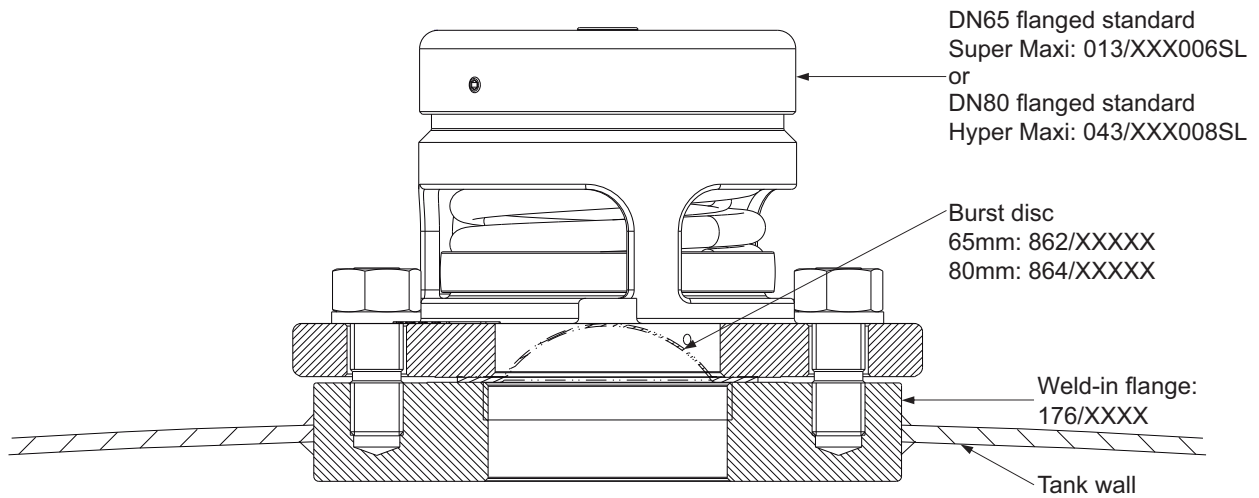
## Seal Kit

Description	Part No.
All parts marked <input type="checkbox"/> in the Parts List	000/1PVSK

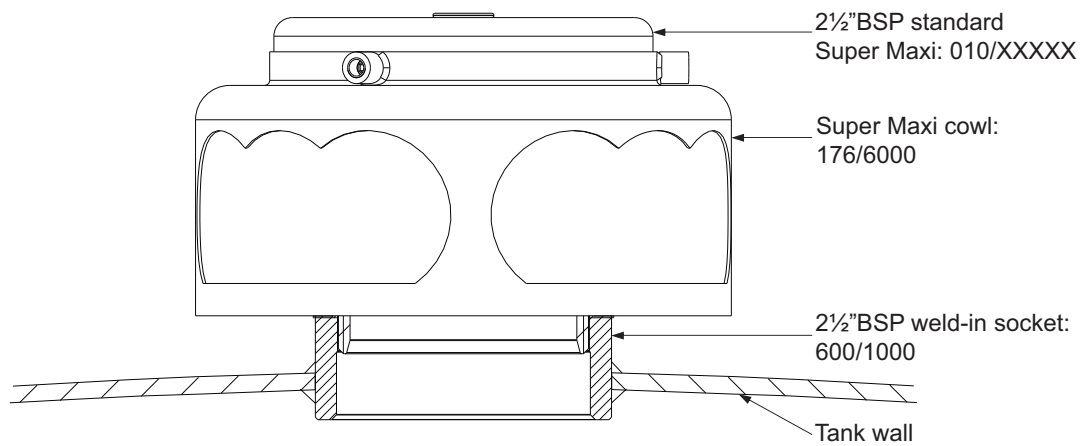


## Super Maxi & Hyper Maxi Relief Valve Installation Options

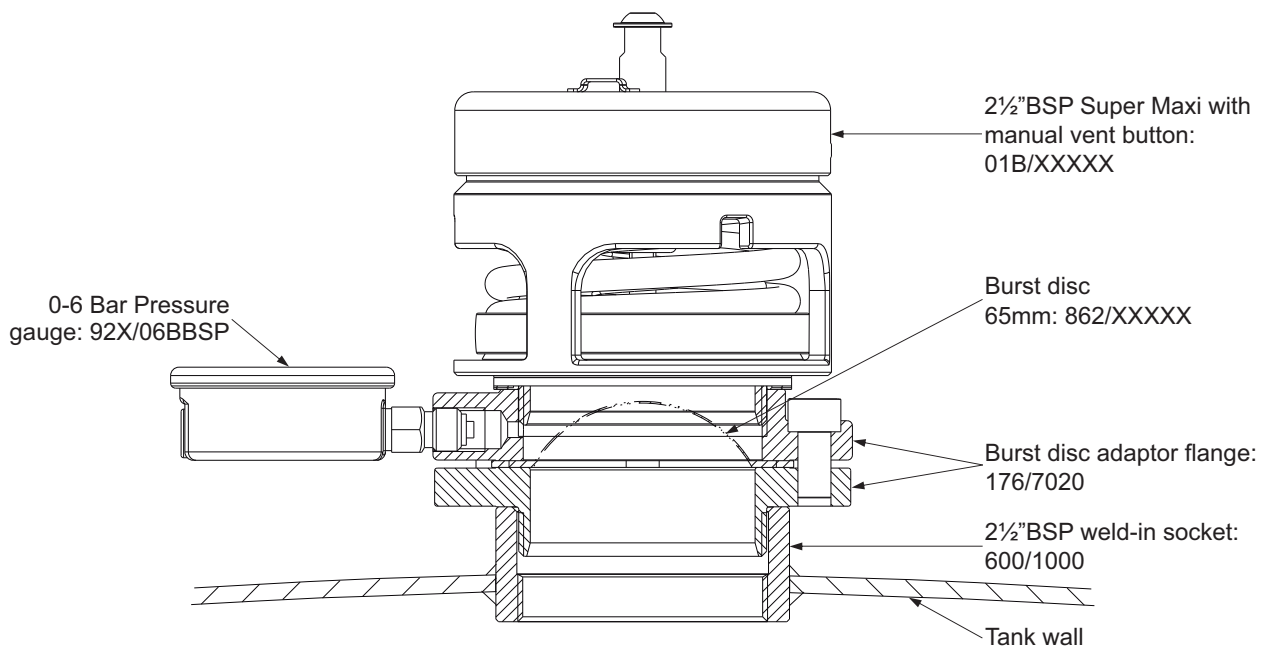
### Flanged Super Maxi/Hyper Maxi relief valve with burst disc and weld-in flange



### 2½" BSP Super Maxi with weatherproof cowl and weld-in socket



### 2½" BSP Super Maxi with burst disc, pressure gauge, adaptor flange & weld-in socket





## Burst (Rupture) Discs

### Accessories & Spare Parts



### Specification

Our range of non-fragmenting burst discs is compatible with Fort Vale relief valves and accessories. If you have other manufacturer's equipment, please contact us.

**WARNING:** A burst disc decreases the air flow capacity of a relief valve. Calculate to make sure that the decreased flow will give sufficient protection to your tank/system. Refer to Fort Vale for more information.

#### Nominal sizes

65mm XL, 80mm XL, 89mm, 250mm

Other sizes are available, please contact us.

**NOTE:** 65mm XL/80mm XL discs replace the original 65mm/80mm discs. We do not recommend 65mm/80mm discs with Fort Vale relief valves.

#### Disc options

Forward Acting: a cross-scored solid metal disc

Forward Composite: a multi-layered disc for burst settings of less than 3.67 Bar

Reverse Acting: compatible with gas service

#### Materials

65XL/80XL/89mm: PTFE/316 stainless steel/Nickel

250mm: PTFE/316 stainless steel

Other materials are available, refer to next page.

### 65mm XL Burst Discs

Compatible with general purpose tank containers and road tankers.

Burst Pressure Bar	Burst Temperature °C	Part No.
2.28	20	862/X0228020B
2.41	20	862/X0241020B
2.69	20	862/X0269020B
3.10	20	862/X0310020B
3.67	20	862/X0367020A
4.10	20	862/X0410020A
4.40	20	862/X0440020A
4.84	20	862/X0484020A

**NOTE:** The specification changes the part no.

### 80mm XL Burst Discs

Compatible with general purpose tank containers and road tankers.

Burst Pressure Bar	Burst Temperature °C	Part No.
3.67	20	864/X0367020A
4.10	20	864/X0410020A
4.84	20	864/X0484020A

**NOTE:** The specification changes the part no.

### 89mm Reverse Acting Burst Discs

Compatible with compressed liquefied gas tank containers.

Burst Pressure Bar	Burst Temperature °C	Part No.
12.10	55	864/X1210055GX
15.00	55	864/X1500055GX
22.00	55	864/X2200055GX
27.50	55	864/X2750055GX
34.50	55	864/X3450055GX

**NOTE:** The specification changes the part no.

### 250mm Standard Burst Discs

Compatible with hydrogen peroxide service.

Burst Pressure Bar	Burst Temperature °C	Part No.
4.50	20	865/A0450020AD
4.50	60	865/A0450060AD
6.00	20	865/A0600020AD



**Part Number Code: 65mm XL, 80mm XL, 89mm Only**  
**Accessories & Spare Parts**

Example: **8 6 X / X 0484 020 X X**

**Disc Size**

- 862/ 65mm XL
- 864/ 80mm XL or 89mm Reverse Acting

**Disc Manufacturer**

- A CDC (Continental Disc Corporation)
- B BS&B Safety Systems
- C Schlesinger

**Burst Pressure in kPa**

- 0484 484 kPa (4.84 Bar)

**Burst Temperature in °C**

- 020 20°C

**Disc Type**

- A Forward Acting (ICON)
- B Forward Composite (PC-SERT)
- G Reverse Acting: Gas service

**Special Material/Service: Disc Type A & B Only**

**Note:** No number = Standard Material/Service

- 1 PFA Lined
- 2 PTFE Lined
- 3 Tantalum
- 4 Alloy 600
- 5 Oxygen Cleaned
- 6 High Temperature 250°
- 7 Titanium
- 8 Standard 30° Angle
- 9 Monel ®
- A Inconel ® / 316TI
- B Nickel
- C Hastelloy ® C276
- D Standard + Handling Support
- E Monel ® Fluoro Coated

**Special Material/Service: Disc Type G Only**

**Note:** No number = Standard Material/Service

- 1 Hastelloy ® / PTFE
- 2 Monel ®
- 3 Tantalum
- 4 Alloy 400
- 5 Alloy 600
- 6 Monel ® 400 / Sigma ® 500



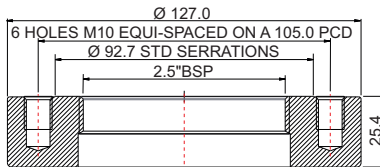
## DN65 Flanges for Super Maxi Relief Valves

### Accessories & Spare Parts

#### Part No: 176/3150



#### Section View



#### Specification

##### Flange type

Weld-in flange

##### Nominal size

DN65 with 2½" BSP thread

##### Flange drilling

6 x M10 holes equi-spaced on a 104.9mm PCD

##### Material

316L stainless steel

##### Compatible valve/part

2½" BSP Super Maxi relief valve

176/7001 adaptor flange with 65mm XL burst disc

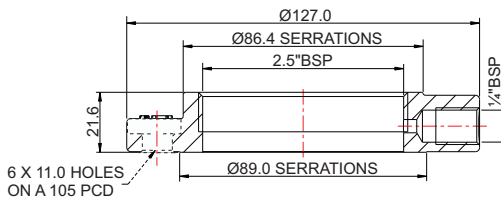
#### Related Parts

Description	Part No.
CNAF/PTFE gasket	5005-398
Bolting kit	176/7021
Adaptor flange	176/7001

#### Part No: 176/7001



#### Section View



#### Specification

##### Flange type

Burst disc adaptor flange

##### Nominal size

DN65 with 2½" BSP thread

##### Flange drilling

6 x 11mm holes equi-spaced on a 105mm PCD

##### Properties

¼" BSP gauge connection

##### Material

316 stainless steel

##### Compatible valve/part

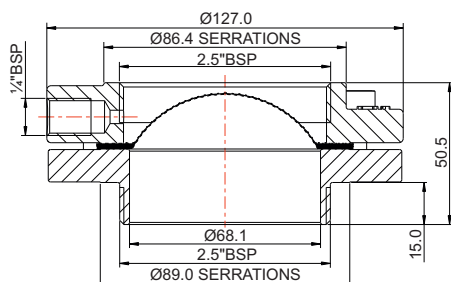
2½" BSP Super Maxi relief valve

65mm XL burst disc

#### Part No: 176/7020



#### Section View



#### Specification

##### Flange type

Burst disc adaptor flange assembly

##### Nominal size

DN65 with 2½" BSP thread

##### Inlet connection

2½" BSP

##### Properties

¼" BSP gauge connection, includes M10 washers & bolts  
Burst disc not included

##### Material

316 stainless steel

##### Compatible valve/part

2½" BSP Super Maxi relief valve

65mm XL burst disc



## Flame Arresters & Debris Protection for Relief Valves

### Accessories & Spare Parts

### Flame Arresters



### Specification

A relief valve flame arrester attaches around the ports of the relief valve body. It prevents an external flame from being transmitted into the tank on relief valves with a vacuum setting of  $\leq 0.21$  Bar (6"Hg).

For relief valves with a vacuum setting of  $> 0.21$  Bar (6"Hg), a flame arrester is frequently used to prevent debris from going into the tank through the relief valve.

#### Nominal sizes

Compatible with DN25, DN40, DN65 and DN80 relief valves

#### Material

Stainless steel

**WARNING:** If you install a flame arrester, it will decrease the air flow capacity of the relief valve. Thus, you must calculate to make sure that the decreased air flow capacity of the relief valve and flame arrester will give sufficient protection to your vessel/system. Refer to Fort Vale for more information.

### Flame Arresters

Each flame arrester is compatible for the specified relief valve type only. Flame arresters are not interchangeable between relief valve types.

**IMPORTANT:** Refer to the air flow decrease data for your valve type. (See **WARNING**)

Compatible Relief Valve	Air Flow Decrease	Part No.
DN25 Minnow	17% to 20%	179/0300
DN40 Twinact	See Note	200/5000
DN65 Twinact	See Note	130/5000
DN65 Super Maxi	1%	176/2900
DN80 Hyper Maxi	5.4%	176/2920

**NOTE:** For the air flow decrease data for Twinact relief valves, please contact Fort Vale.

### Debris Protection - Gauzed Cowl

Part No: 176/6000



### Specification

A gauzed cowl attaches to the DN65 Super Maxi relief valve cap. It is used to prevent debris from going into the tank through the relief valve.

#### Nominal sizes

Compatible with a DN65 Super Maxi relief valve only (threaded or flanged)

#### Material

Stainless steel

**CAUTION:** If you install a gauzed cowl onto a Super Maxi relief valve, it can decrease the relief valve air flow capacity. Refer to Fort Vale for more information.



## Pressure Gauges Accessories & Spare Parts

### Standard Pressure Gauge



### Tell-Tale Pressure Gauge



### Specification

We supply standard pressure gauges and tell-tale pressure gauges. Tell-tale pressure gauges have a secondary pointer to indicate if there has been an increase in pressure, even if the pressure subsequently decreases.

All pressure gauges have a 1/4" BSP bottom connection and are glycerine filled.

#### Pressure range options

0-6 Bar, 0-10 Bar, 0-16 Bar, 0-40 Bar

#### Material options - internal parts

Brass, stainless steel

### Standard Pressure Gauge

Pressure Range Bar	PSI	Internal Parts	Part No.
0-6	0-90	Brass	921/06BBSP
0-6	0-90	St/steel	920/06BBSP
0-10	0-150	Brass	921/10BBSP
0-10	0-150	St/steel	920/10BBSP
0-40	0-580	St/steel	920/40BBSP

### Tell-Tale Pressure Gauge

Pressure Range Bar	PSI	Internal Parts	Part No.
0-6	0-90	Brass	921/06TTBBSP
0-6	0-90	St/steel	920/06TTBBSP
0-10	0-150	Brass	921/10TTBBSP
0-10	0-150	St/steel	920/10TTBBSP
0-16	0-230	St/steel	920/16TTBBSP
0-40	0-580	St/steel	920/40TTBBSP



## Weld-In Sockets for Relief Valves

### Accessories & Spare Parts

#### Threaded Weld-In Sockets



#### Specification

Weld-in sockets are heavy-duty and have an oversized thread so that re-tapping after welding is not necessary

**Nominal sizes**

From DN15 to DN65

**Thread sizes**

From 1/2" BSP to 2 1/2" BSP

**Material**

316 stainless steel

If the type you need is not shown, please contact us

#### Weld-In Sockets

Nominal Size	Thread	Part No.
DN15	1/2" BSP	600/1030
DN20	3/4" BSP	653/1000
DN25	1" BSP	600/1025
DN40	1 1/2" BSP	600/1010
DN50	2" BSP	600/1017
DN65	2 1/2" BSP	600/1000

#### DIN11851 Weld-In Sockets



#### Specification

DIN11851 fittings are compatible with hygienic service conditions. A complete assembly includes a weld-in socket, a slotted nut and a silicone seal

**Nominal sizes**

DN50, DN65, DN80

**Compatible parts**

DN40, DN50 and DN65 relief valves

**Material**

Socket & nut: 316 stainless steel

Seal: Silicone

If the type you need is not shown, please contact us

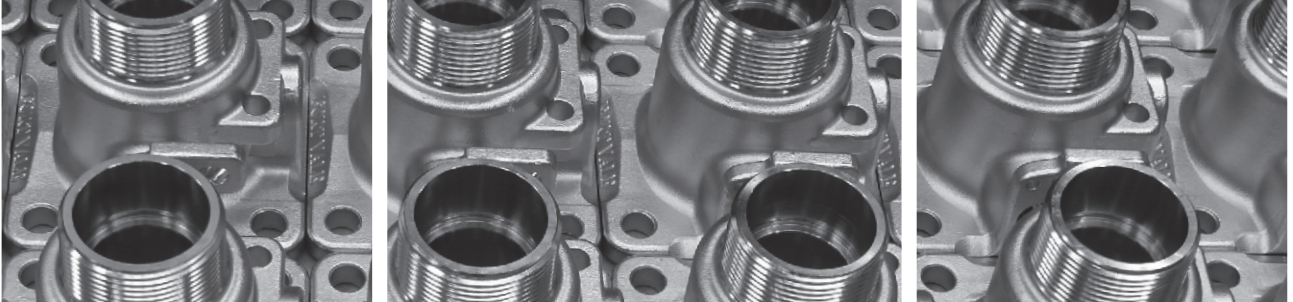
#### DIN11851 Hygienic Fittings

Size	Weld Socket Part No.	Slotted Nut Part No.	Silicone Seal Part No.
DN50	176/2660	176/2670	176/2675S
DN65	176/2645	176/2630	176/2653S
DN80	176/2550	176/2650	176/2685S

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# Airline Valves



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# Airline Valve

## Design Options

### Function

An airline valve is used when the tank is pressurised during testing or discharge and can be used for inert gas blanketing or vapour recovery. We offer ball valves and butterfly valves for airline connections.

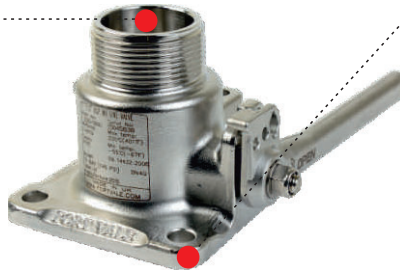
### Design Options

The design options below are available on our standard range of airline valves.

#### Nominal Bore

**DN40 (1½"):** Ball valves

**DN50 (2"):** Ball valves & butterfly valves



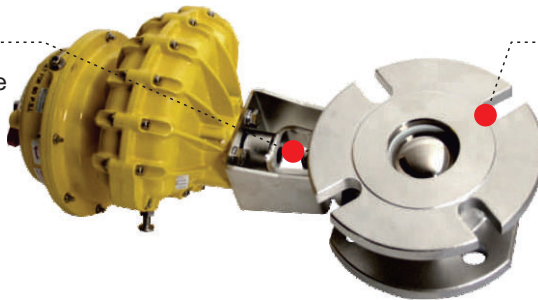
#### Tank Connection

**Flanged:** 4 holes  
Different drilling patterns

#### Operation

**Manually operated:** A range of handles is available

**Pneumatically actuated**



#### Inlet

**Threaded:** 1½" BSP, 2" BSP

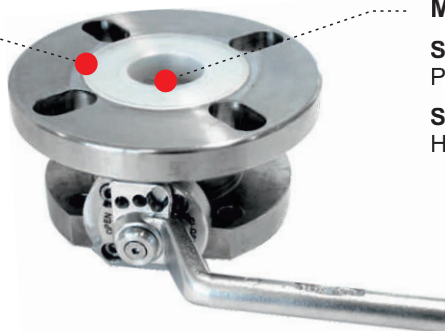
**Dual threaded:** 1½" BSP/1½" NPT

**Flanged:** Closed or open slots

#### Valve Materials

**Standard service conditions:**  
316 stainless steel

**Special service conditions:**  
Lined wetted parts, e.g. PFA



#### Main Seal

**Standard service conditions:**  
PTFE

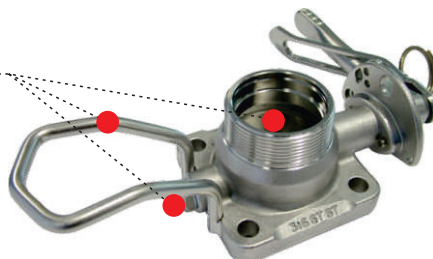
**Special service conditions:**  
High-temperature compatible seals

#### Ancillaries

Gauge guard

Gauze or sintered filter

TIR to gauge inlet plug





## Airline Valve Design Options

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### Related Parts

We recommend our range of compatible ancillary parts:

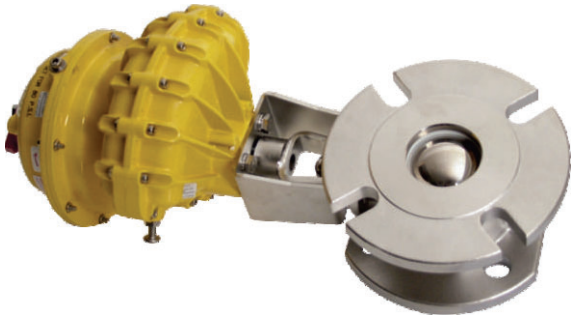
- Pressure gauges
- Filters: gauzed or sintered
- Blank caps
- Flanges - weld-in and adaptor
- Fasteners
- Gaskets

Please contact us for more information about these parts.



# DN50 Flanged Blacko Ball Valve - Pneumatic Actuator

Part No: 370/0100PN/1



## Specification

**Nominal size**  
DN50

**Tank connection**  
Flanged: 4 x 18mm holes on a 125mm PCD

**Outlet/Process connection**  
Flanged: 4 x 18mm open slots on a 120.7mm min. PCD compatible with 2" ASA150/DIN50 PN40

**Properties**  
Kinetrol pneumatic actuator with spring return and 1/4" BSP air inlet

**Materials**  
Contact parts: 316 stainless steel  
Main seal: PTFE

Alternatives are available, refer to the Design Options page

## Design Conditions

Weight:	5.81 Kg
Design Pressure (MAWP):	7.5 Bar
Test Pressure:	13.8 Bar
Design Temperature Min.	Valve: -40°C
Design Temperature Min.	Actuator: -20°C
Design Temperature Max:	Valve: 205°C
Design Temperature Max:	Actuator: 80°C

**NOTE:** The Design Conditions and Section View dimensions are for the specified part number only.

**Design Code**  
BS EN14432

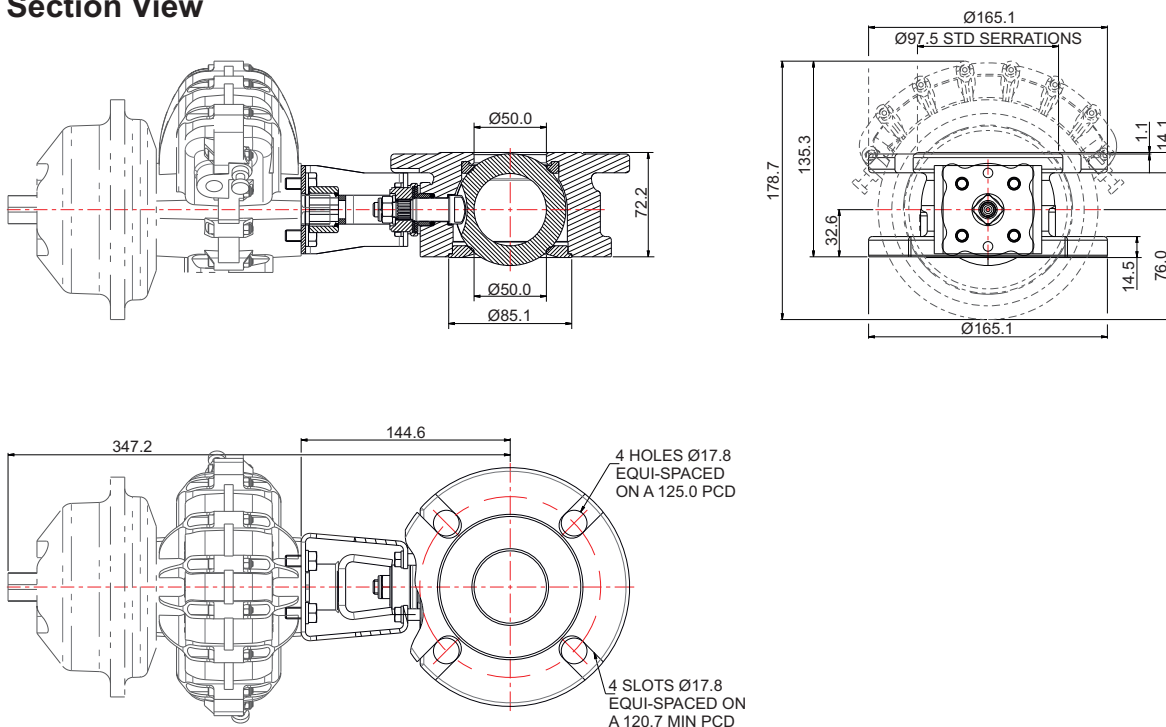
## Range

Description	Part No.
DN50 valve pneumatically actuated	370/0100PN/1
DN50 valve manually operated	370/0100

## Related Parts

Description	Part No.
Mating flange	294/0082
Weld-in flange	355/3100
Stud kit	311/3700
Outlet gasket	5005-361
Blind flange	370/4239CM

## Section View

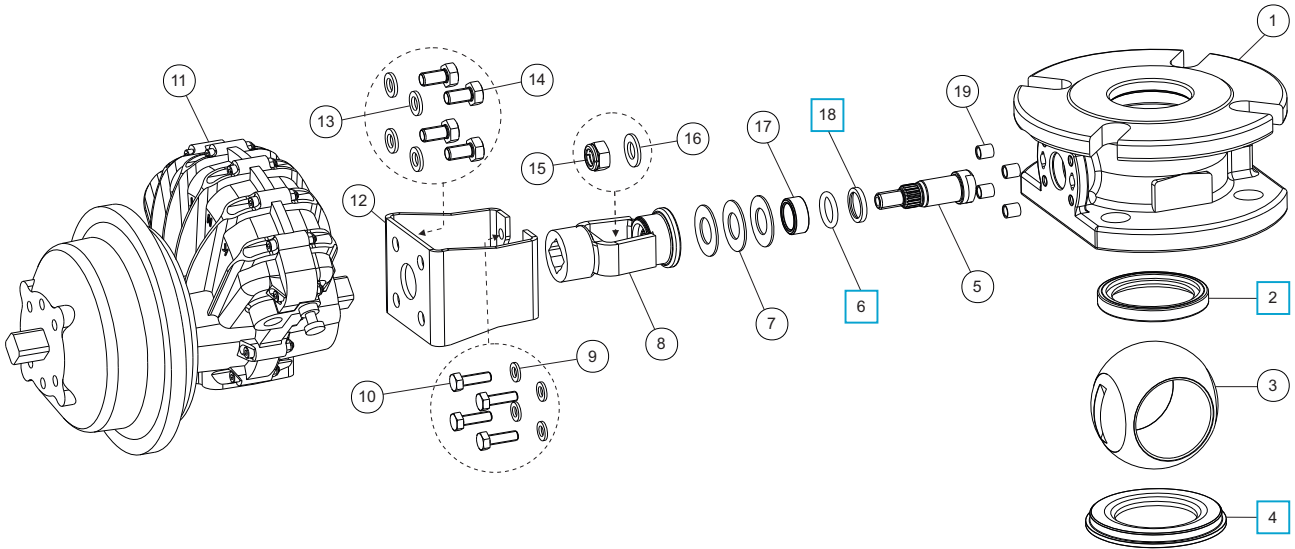




# DN50 Flanged Blacko Ball Valve - Pneumatic Actuator

Part No: 370/0100PN/1

## Parts Drawing



## Parts List

Item	Description	Part No.
1	Body	370/0110
2	PTFE front seal	370/0102 <input type="checkbox"/>
3	Ø50mm ball	370/3301
4	PTFE rear seal	370/0105 <input type="checkbox"/>
5	Spindle	370/0120
6	PTFE O ring	5005-688 <input type="checkbox"/>
7	Belleville washer (3)	5113-038
8	Spline adaptor assembly	370/0209
9	M6 spring washer (4)	5113-008
10	M6 hex bolt (4)	5111-076
11	Kinetrol pneumatic actuator	5127-078
12	Mounting bracket	370/0208
13	M8 spring washer (4)	5113-003
14	M8 hex bolt (4)	5111-822
15	M10 self lock nut	5112-008
16	M10 plain washer	5113-009
17	Stuffing collar	370/0103
18	Bottom bearing bush	370/0104 <input type="checkbox"/>
19	Spacer boss (4)	370/0163

## Seal Kit

Description	Part No.
All parts marked <input type="checkbox"/> in the Parts List	370/01SK



## Female Socket Ball Valves

### Accessories & Spare Parts



### Specification

#### Nominal sizes

From DN6 to DN100

#### Body type options

One piece  
Two piece  
Three piece

#### Inlet/outlet connection options

BSP female both ends - all types  
Weld prepared both ends - 3 piece valve only

#### Properties

Lockable handle

#### Materials

Contact parts: 316 stainless steel  
Main seal: PTFE

### Part Numbers

Size	Size inch	One Piece BSP	Two Piece BSP	Three Piece BSP	Three Piece Weld Prepared
DN6	¼	410/104025	410/204025	410/304025B	410/304025W
DN10	⅜	410/104037	410/204037	410/304037B	410/304037W
DN15	½	410/104050	410/204050	410/304050B	410/304050W
DN20	¾	410/104075	410/204075	410/304075B	410/304075W
DN25	1	410/104100	410/204100	410/304100B	410/304100W
DN32	1¼	410/104125	410/204125	410/304125B	410/304125W
DN40	1½	410/104150	410/204150	410/304150B	410/304150W
DN50	2	410/104200	410/204200	410/304200B	410/304200W
DN65	2½	-	410/204250	410/304250B	410/304250W
DN80	3	-	410/204300	410/304300B	410/304300W
DN100	4	-	-	410/304400B	410/304400W

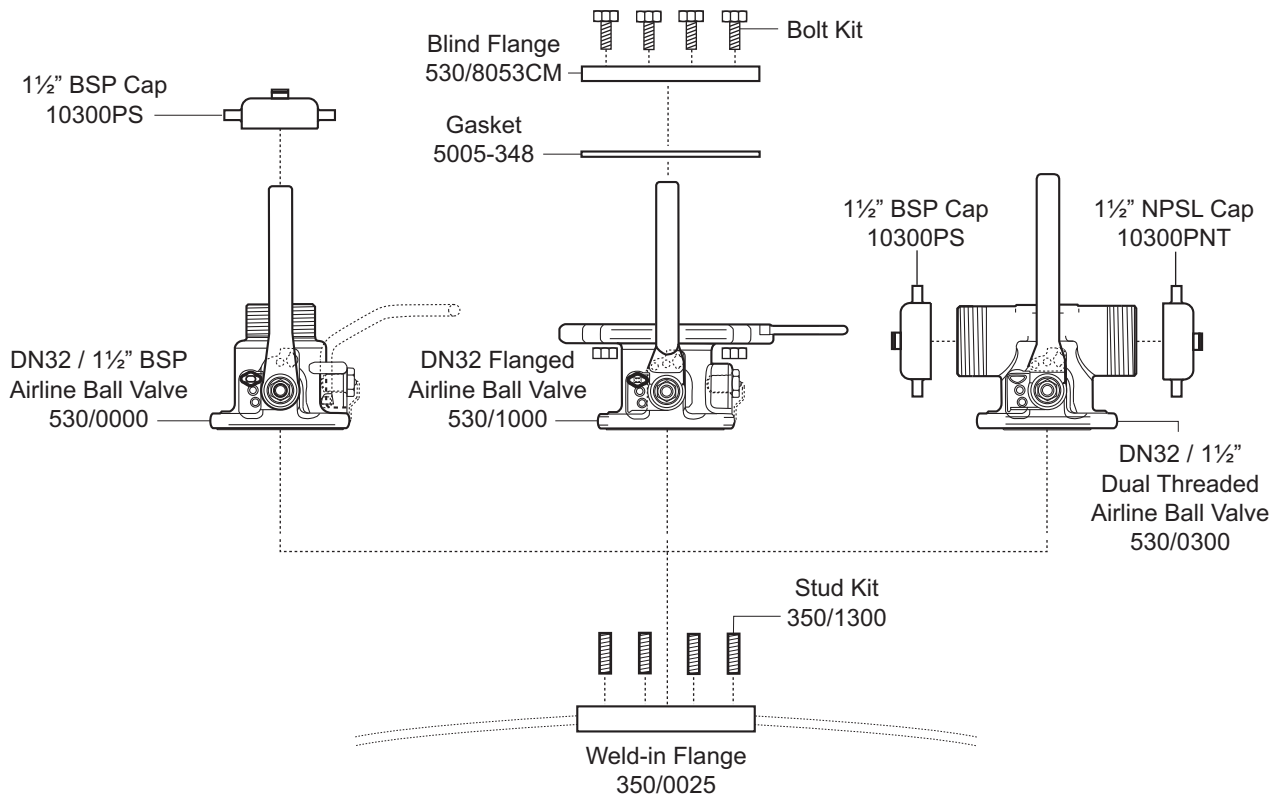
**CAUTION:** During installation, do not tighten the ball valve too much or it will cause the valve to malfunction.



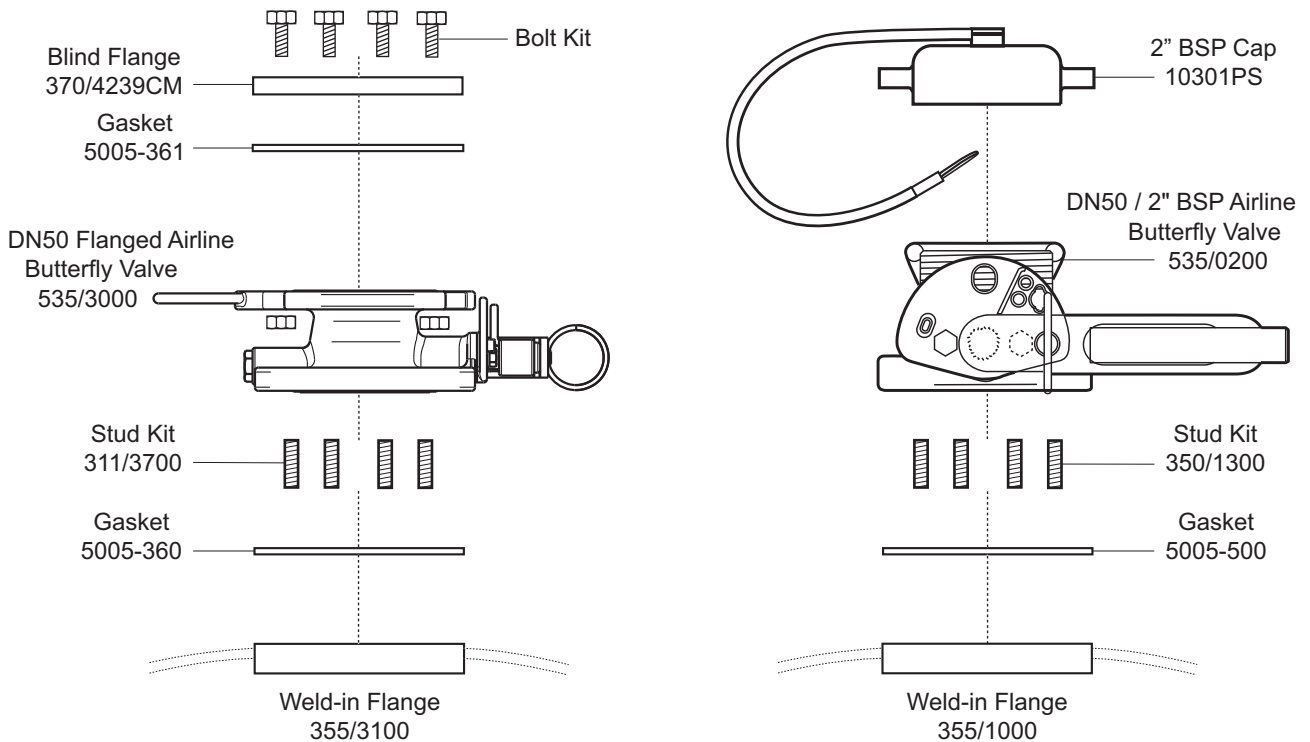
# Airline Ball Valves & Airline Butterfly Valves

## Installation Options

### DN32 Airline Ball Valves



### DN50 Airline Butterfly Valves





## Threaded Blank Caps

### Accessories & Spare Parts



### Specification

Caps are supplied with a washer and a security wire or heavy duty chain as standard.

#### Nominal sizes

From 1/2" to 4"

#### Thread options

BSP, NPT, NPSL

#### Material options

Cap: stainless steel, aluminium

Washer: PTFE, leather

**If the type you need is not shown, please contact us.**

### Stainless Steel Caps - BSP Thread

Supplied as standard with a PTFE washer and a stainless steel chain or wire to prevent loss/theft.

Size	Wire or Chain	Part No.
1/2" BSP	Wire	10316PS
3/4" BSP	Chain	10306PS
1" BSP	Chain	10305PS
1 1/2" BSP	Chain	10300PS
2" BSP	Chain	10301PS
2 1/2" BSP	Wire	10302PS
3" BSP	Chain	10303PS
4" BSP	Wire	10304PSC

### Spare Parts - Washers

Description	Part No. Leather	Part No. PTFE
1/2" washer	-	10335P
3/4" washer	10331L	10331P
1" washer	10319L	10319P
1 1/2" washer	10326L	10326P
2" washer	10327L	10327P
2 1/2" washer	10328L	10328P
3" washer	10329L	10329P

### NPT & NPSL Caps

Supplied as standard with a washer and a chain to prevent loss/theft.

Size	Cap	Washer	Chain	Part No.
1 1/2" NPT	st/st	PTFE	st/st	10300NPTP
2" NPT	st/st	PTFE	st/st	10301NPTP
3" NPSL	st/st	PTFE	st/st	425/3240
3" NPT	aluminium	leather	brass	10711NPT

### Aluminium Caps - BSP Thread

Supplied as standard with a leather washer and a brass chain to prevent loss/theft.

Size	Part No.
3/4" BSP	10706AL
1" BSP	10707AL
1 1/2" BSP	10708AL
2" BSP	10709AL
2 1/2" BSP	10710AL
3" BSP	10711AL



## Pressure Gauges Accessories & Spare Parts

### Standard Pressure Gauge



### Tell-Tale Pressure Gauge



### Specification

We supply standard pressure gauges and tell-tale pressure gauges. Tell-tale pressure gauges have a secondary pointer to indicate if there has been an increase in pressure, even if the pressure subsequently decreases.

All pressure gauges have a 1/4" BSP bottom connection and are glycerine filled.

#### Pressure range options

0-6 Bar, 0-10 Bar, 0-16 Bar, 0-40 Bar

#### Material options - internal parts

Brass, stainless steel

### Standard Pressure Gauge

Pressure Range Bar	Pressure Range PSI	Internal Parts	Part No.
0-6	0-90	Brass	921/06BBSP
0-6	0-90	St/steel	920/06BBSP
0-10	0-150	Brass	921/10BBSP
0-10	0-150	St/steel	920/10BBSP
0-40	0-580	St/steel	920/40BBSP

### Tell-Tale Pressure Gauge

Pressure Range Bar	Pressure Range PSI	Internal Parts	Part No.
0-6	0-90	Brass	921/06TTBBSP
0-6	0-90	St/steel	920/06TTBBSP
0-10	0-150	Brass	921/10TTBBSP
0-10	0-150	St/steel	920/10TTBBSP
0-16	0-230	St/steel	920/16TTBBSP
0-40	0-580	St/steel	920/40TTBBSP



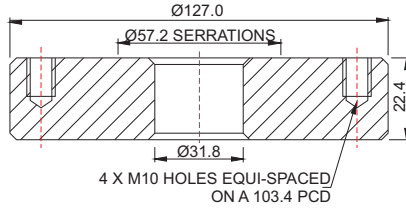
## Weld-In Flanges for Airline Valves

### Accessories & Spare Parts

#### Part No: 350/0025



#### Section View



#### Specification

**Flange type**

Weld-in flange

**Nominal size**

DN32

**Flange drilling**

4 x M10 holes equi-spaced on a 103.4mm PCD

**Material**

316L stainless steel

**Compatible valve**

DN32 airline ball valve

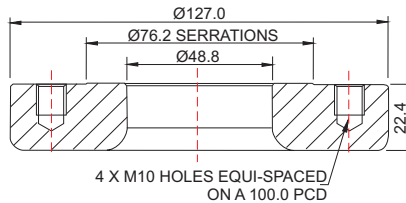
#### Related Parts

Description	Part No.
Stud kit	350/1300

#### Part No: 355/1000



#### Section View



#### Specification

**Flange type**

Weld-in flange

**Nominal size**

DN50

**Flange drilling**

4 x M10 holes equi-spaced on a 100.0mm PCD

**Material**

316L stainless steel

**Compatible valve**

DN50 airline butterfly valve

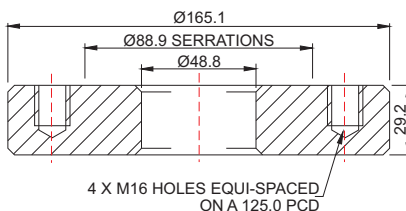
#### Related Parts

Description	Part No.
Stud kit	350/1300

#### Part No: 355/3100



#### Section View



#### Specification

**Flange type**

Weld-in flange

**Nominal size**

DN50

**Flange drilling**

4 x M16 holes equi-spaced on a 125.0mm PCD

**Material**

316L stainless steel

**Compatible valve**

DN50 flanged butterfly valve

DN50 flanged ball valve

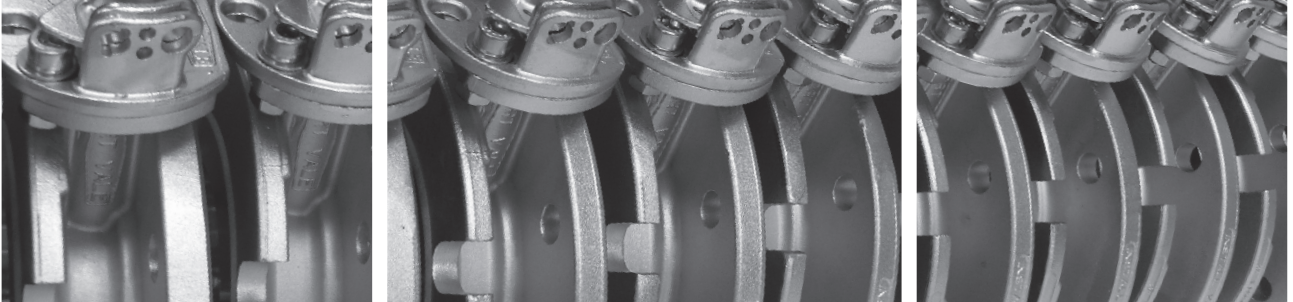
#### Related Parts

Description	Part No.
Stud kit	311/3700

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# Top Discharge Provision



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# Discharge Butterfly Valve

## Design Options

### Discharge Butterfly Valve (Secondary Closure Valve) Function

A discharge butterfly valve is used to load and discharge cargo. It is usually a secondary closure valve that is installed onto a footvalve (primary closure valve) at the drain point of a tank. A butterfly valve can also be used as a primary closure valve on the top of a tank.

**NOTE:** Refer to a separate page for discharge butterfly valves dedicated to Road Tankers.

### Design Options

The design options below are available on our standard range of butterfly valves.

#### Body Style

**Clamped:**

Scrolled face - install between two flanges



#### Body Style

**Flanged:**

4 or 6 hole drilling patterns  
Dual-drilled hole patterns  
Open slots



#### Body Style

**TW:**

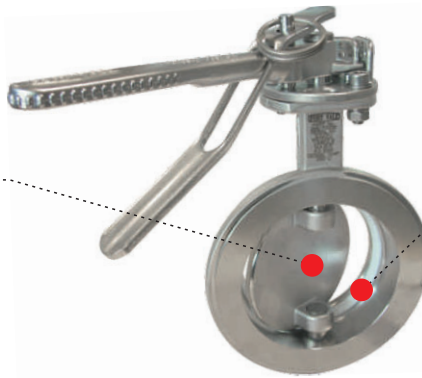
Compatible with Tankwagen drilling pattern



#### Nominal Bore

**Standard service conditions:**

50mm (2"), 80mm (3"),  
100mm (4")



#### Main Seal

**Standard service conditions:**  
PTFE

**Special service conditions:**  
High-temperature compatible seals

#### Operation

**Manually operated:**

Lockable handles are available  
Left hand & right hand operation

**Pneumatically actuated**





## Discharge Butterfly Valve Design Options

### Design Options - continued

#### Valve Materials

**Standard service applications:**  
316 stainless steel

**Special service applications:**  
Lined wetted parts, e.g. PFA  
Wetted parts in high nickel alloys,  
e.g. 904L stainless steel, Alloy C276



#### Special Cargoes

**Solidifying cargo:**  
Body with steam-heating connections  
Hemispherical poppet



### Discharge Butterfly Valves for Dedicated Service

We offer a range of discharge butterfly valves suitable for these service conditions and special cargoes:

- Road Tankers
- Hygienic service

Please contact us for more information about these valves.

### Related Parts

We recommend our range of compatible ancillary parts:

- Flanges - inlet, adapter, outlet, blind
- Tertiary closures
- Fasteners
- Gaskets

Please contact us for more information about these parts.



# DN80 Flanged Widdop Butterfly Valve

Part No: 368/3160A



## Specification

### Nominal size

DN80

### Tank connection

Flanged: 6 x 14mm holes on a 168mm PCD

### Outlet/Process connection

Flanged: 4 x open slots on a 146mm minimum PCD

### Properties

Left hand operated, handle with TIR and padlock slots

### Materials

Contact parts: 316 stainless steel

Main seal: PTFE

Alternatives are available, refer to the Design Options page

## Design Conditions

Weight:	7.0 Kg
Design Pressure (MAWP):	6.9 Bar
Test Pressure:	12.6 Bar
Design Temperature Min:	-55°C
Design Temperature Max:	200°C

**NOTE:** The Design Conditions and Section View dimensions are for the specified part number only.

### Design Code

BS EN 14432

### Design Approvals

LRQA

Rijksdienst

SNCF

RMRS

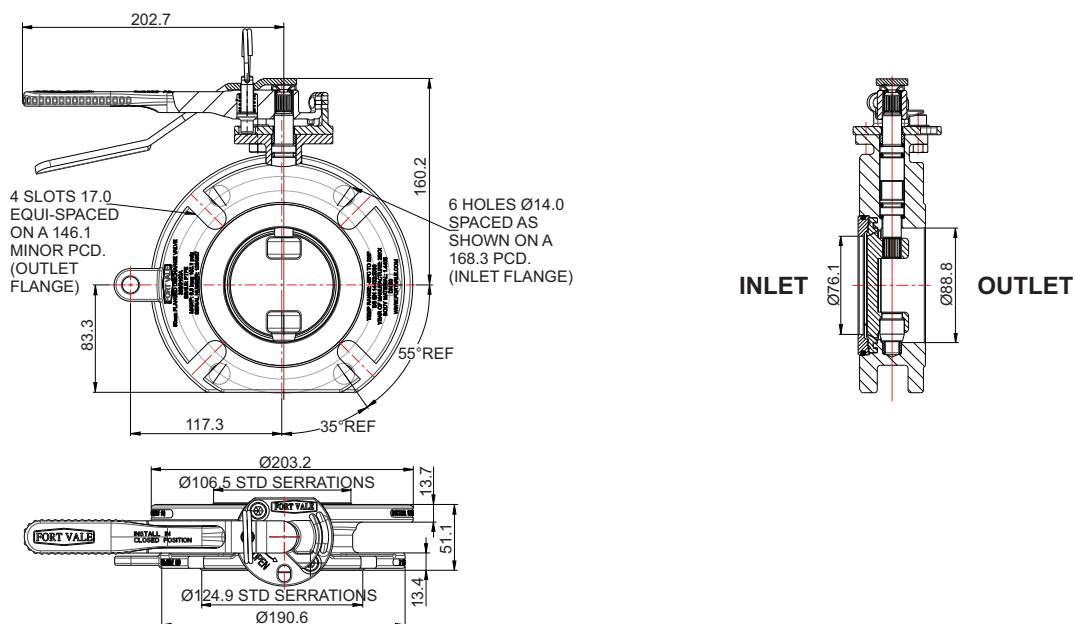
## Range

Description	Part No.
Standard specification	368/3160A
Inlet flange dual drilled: 4 hole/4 hole	368/3180A
Inlet flange dual drilled: 6 hole/4 hole	368/3280A

## Related Parts

Description	Part No.
Weld-in flange	368/0800
CNAF/PTFE syphon tube inlet gasket	5005-222
Syphon tube	368/0810
Stud kit	312/1000
CNAF/PTFE inlet gasket	5005-169
Solid PTFE outlet gasket	5005-417
Dished blind flange	312/0022CM
Pivot pin for blind flange	368/7506

## Section View

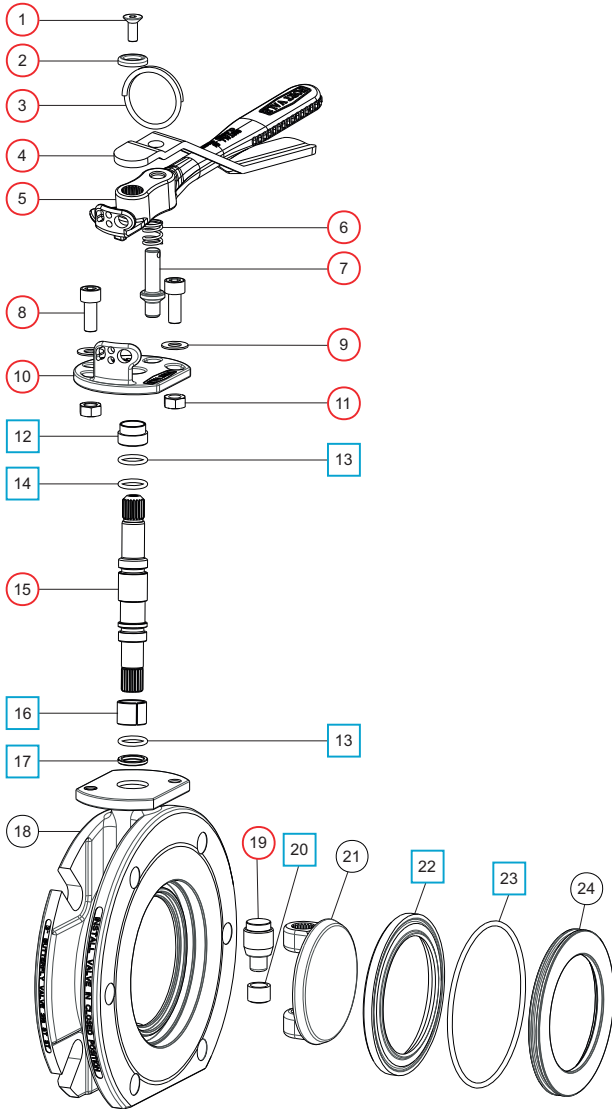




# DN80 Flanged Widdop Butterfly Valve

Part No: 368/3160A

## Parts Drawing



## Parts List

Item	Description	Part No.	
1	M6 set screw	5111-030	○
2	Washer	20370	○
3	Split ring	368/0011	○
4	Operating lever	368/9837	○
5	Handle	368/0050	○
6	Handle location spring	368/0012	○
7	Handle location pin	368/0010	○
8	M8 cap screw (2)	5111-255	○
9	M8 plain washer (2)	5113-005	○
10	Stuffing clamp	368/0040	○
11	M8 full nut (2)	5112-001	○
12	PTFE stuffing clamp bush	368/0301	□ ○
13	PTFE O ring (2)	20363	□ ○
14	Viton O ring	20361	□ ○
15	Spindle	368/0200	○
16	Split bearing	252/0517	□ ○
17	PTFE spindle seat	368/0009	□ ○
18	Body	368/9141	
19	Bottom spindle	368/0036	○
20	PTFE bottom bush	368/0035	□ ○
21	Closure plate	368/0400	
22	PTFE main seal	368/0002	□ ○
23	Nitrile O ring	5005-342	□ ○
24	Seal clamp plate	368/9148	

## Seal Kit

Description	Part No.
All parts marked □ in the Parts List	368/00SK

## Repair Kit

Description	Part No.
All parts marked ○ in the Parts List	368/316RKA



# DN80 Flanged Widdop Butterfly Valve - Dual Drilled Inlet

Part No: 368/3280A



## Specification

**Nominal size**  
DN80

**Tank connection**

Dual-drilled flange: 6 x 14mm holes on a 168.3mm PCD & 4 x 18mm holes on a 160mm PCD

**Outlet/Process connection**

Flanged: 4 x open slots on a 146mm minimum PCD

**Properties**

Left hand operated, handle with TIR and padlock slots

**Materials**

Contact parts: 316 stainless steel  
Main seal: PTFE

Alternatives are available, refer to the Design Options page

## Design Conditions

Weight:	6.9 Kg
Design Pressure (MAWP):	6.9 Bar
Test Pressure:	10.35 Bar
Design Temperature Min:	-40°C
Design Temperature Max:	200°C

**NOTE:** The Design Conditions and Section View dimensions are for the specified part number only.

**Design Code**  
BS EN 14432

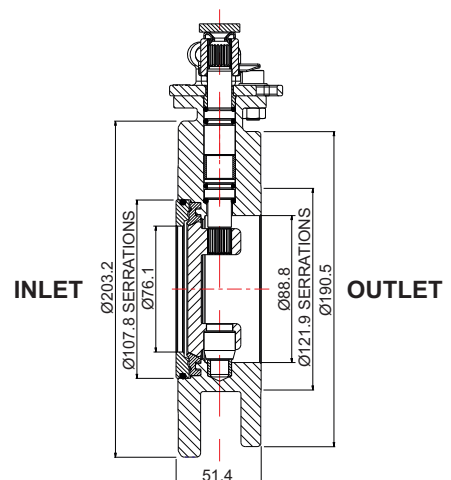
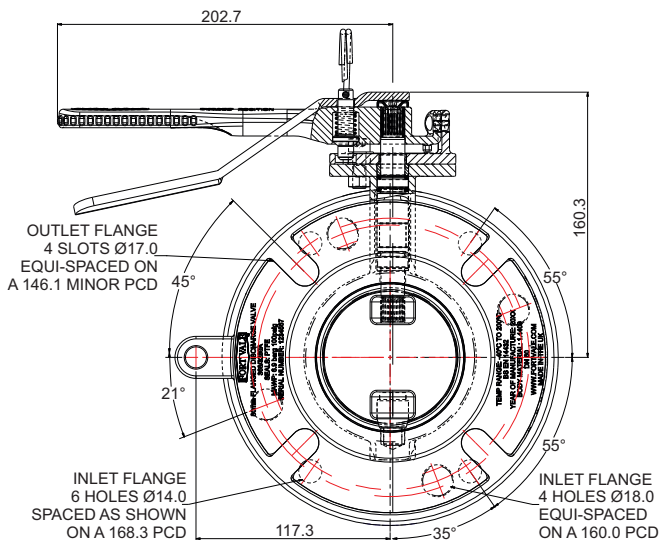
## Range

Description	Part No.
Inlet flange dual drilled: 6 hole/4 hole	368/3280A
Inlet flange dual drilled: 4 hole/4 hole	368/3180A
Inlet flange with flat, drilled 6 holes	368/3160A

## Related Parts

Description	Part No.
CNAF/PTFE dual drilled inlet gasket	5005-770
CNAF/PTFE 6 hole inlet gasket	5005-222
CNAF/PTFE 4 hole inlet gasket	5005-034
Solid PTFE outlet gasket	5005-417
Dished blind flange	312/0022CM
Pivot pin for blind flange	368/7506

## Section View

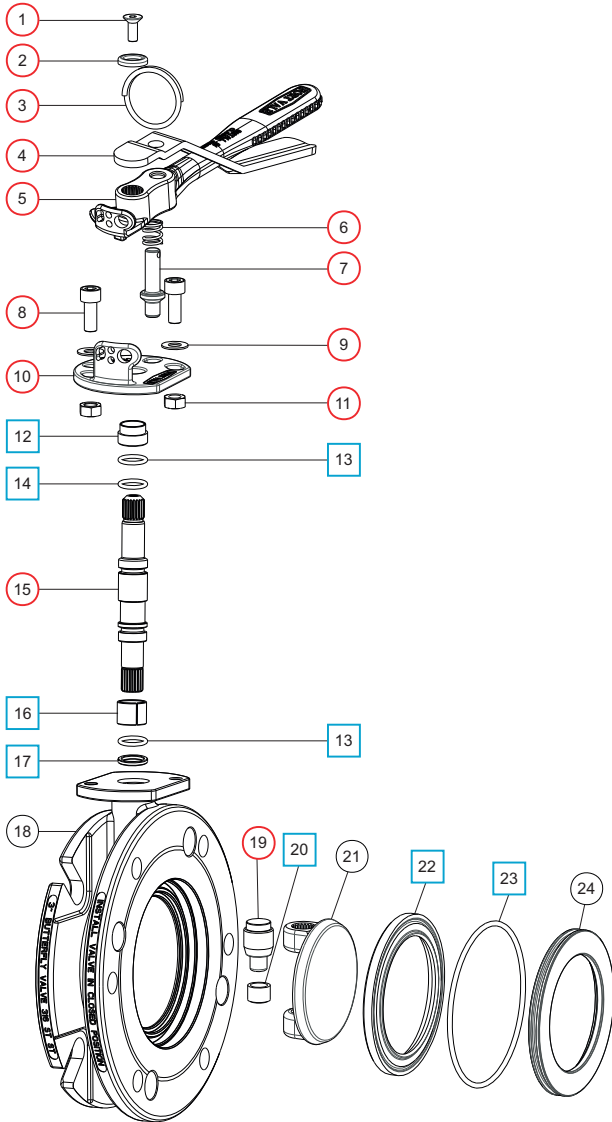




# DN80 Flanged Widdop Butterfly Valve - Dual Drilled Inlet

Part No: 368/3280A

## Parts Drawing



## Parts List

Item	Description	Part No.	
1	M6 set screw	5111-030	○
2	Washer	20370	○
3	Split ring	368/0011	○
4	Operating lever	368/9837	○
5	Handle	368/0050	○
6	Handle location spring	368/0012	○
7	Handle location pin	368/0010	○
8	M8 cap screw (2)	5111-255	○
9	M8 plain washer (2)	5113-005	○
10	Stuffing clamp	368/0040	○
11	M8 full nut (2)	5112-001	○
12	PTFE stuffing clamp bush	368/0301	□ ○
13	PTFE O ring (2)	20363	□ ○
14	Viton O ring	20361	□ ○
15	Spindle	368/0200	○
16	Split bearing	252/0517	□ ○
17	PTFE spindle seat	368/0009	□ ○
18	Body	368/9192	
19	Bottom spindle	368/0036	○
20	PTFE bottom bush	368/0035	□ ○
21	Closure plate	368/0400	
22	PTFE main seal	368/0002	□ ○
23	Nitrile O ring	5005-342	□ ○
24	Seal clamp plate	368/9148	

## Seal Kit

Description	Part No.
All parts marked □ in the Parts List	368/00SK

## Repair Kit

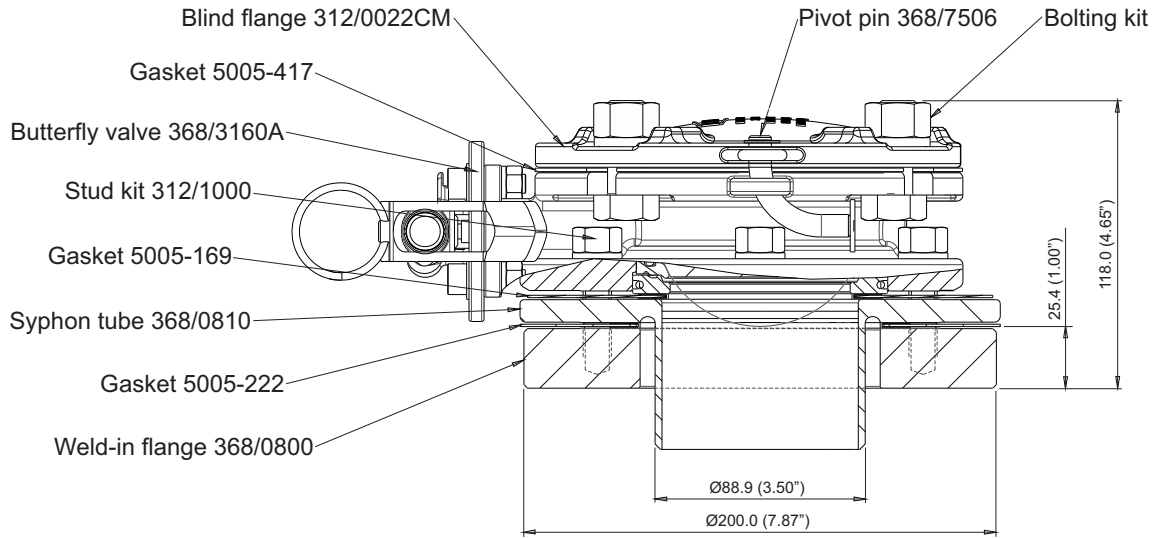
Description	Part No.
All parts marked ○ in the Parts List	368/316RKA



# Butterfly Valve Top Discharge Assembly

## Installation Options

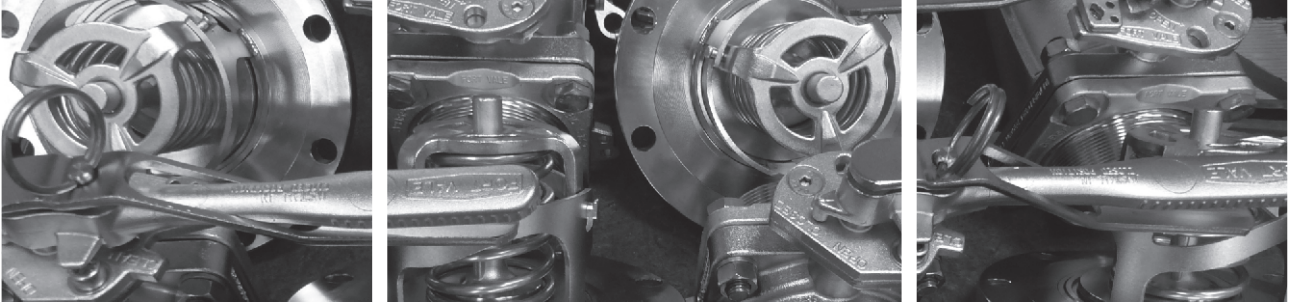
### Example: DN80 Flanged Butterfly Valve Top Discharge Assembly



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## Bottom Discharge: Primary Valves



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# Footvalves

## Design Options

### Function

A footvalve is a primary closure valve that is installed at the drain point of a tank. It is used to load and discharge cargo in combination with a secondary closure valve. The footvalve body has a shear groove. To prevent leakage if there was an accident, the groove will break and keep the internal part of the valve closed and attached to the tank.

In our standard range, we offer two main types of footvalve; Cleanflow and Highlift.



#### Cleanflow

The Cleanflow footvalve does not protrude into the tank. When the valve is open, the poppet does not obstruct the discharge orifice, so the cargo discharges faster.



#### Highlift

The Highlift footvalve has a traditional internal cage and a spring-loaded poppet with a lifting finger.

### Design Options

The design options below are available on our standard range of Cleanflow and Highlift footvalves.

#### Nominal Bore

DN80

DN100

#### Special service conditions:

DN125

DN150

Reduced bore: DN80 to DN50



#### Body Style

Angle between the inlet and outlet flange

30°

45°

90°

180°

#### Special service conditions:

105° - Cleanflow only

#### Outlet Flange

Round and square flanges

4, 6 and 8 hole drilling patterns

Flats milled top and bottom



#### Operation

Manually operated: A range of handles is available

Pneumatically actuated

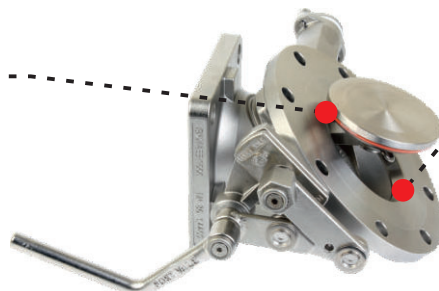
Hydraulically actuated

#### Main Seal

Fortyt

#### Special service conditions:

A range of seal materials is available



#### Inlet/Seat Area

Supersat: Alloy 625 integral seat

#### Special service conditions:

Replaceable seat:

High nickel alloy, e.g. Alloy C276, 904L stainless steel or special metals, e.g. Titanium GR2

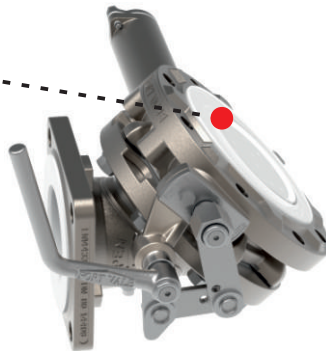
### Design Options - continued

#### Valve Materials

316 stainless steel

#### Special service conditions:

Lined wetted parts, e.g. PFA, Halar ®



#### Special Cargoes

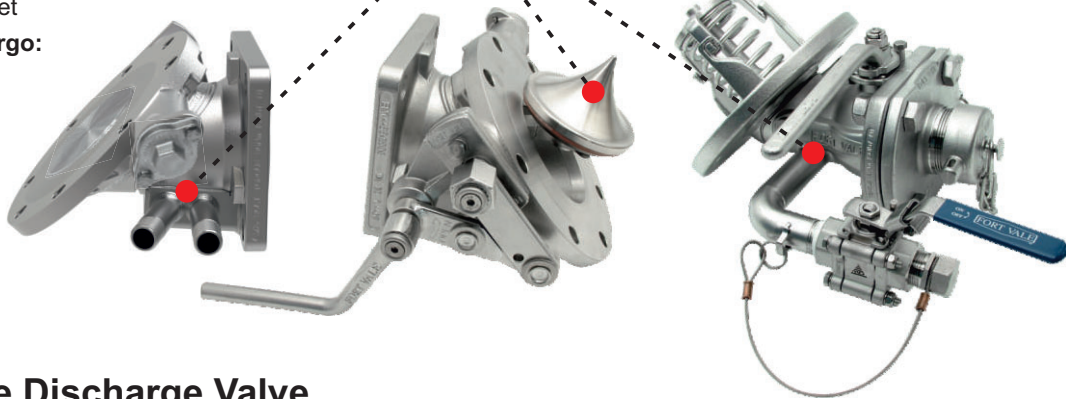
##### Solidifying cargo:

Body with steam-heating chamber

Conical poppet

##### Sensitive cargo:

Sample point



### Composite Discharge Valve

A composite discharge valve is a combined primary and secondary closure valve. It saves space and reduces the number of joints between valves. Many of our design options are available on composite valves.

Please contact us for more information.

### Related Parts

We recommend our range of compatible accessories:

- Remote closure systems and fusible elements
- Flanges - weld-in and adaptor
- Fasteners
- Gaskets

Please contact us for more information about these parts.

### Footvalves for Dedicated Service

We offer a range of footvalves and discharge systems for these service conditions and special cargoes:

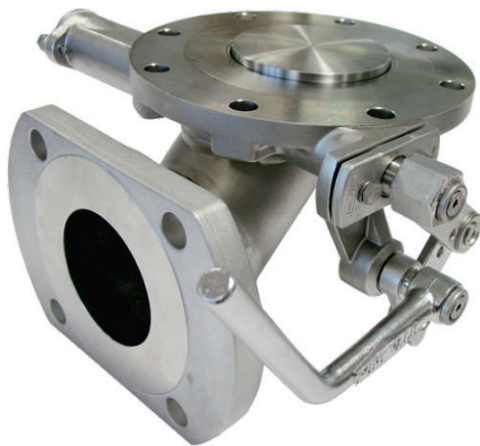
- Offshore fuel and chemical tanks
- T50 tank containers for liquefied gas
- Rail tank wagons
- Road tankers carrying hot product (bitumen)
- Road tankers: top operated screwdown valve

Please contact us for more information about these valves.



# DN80 90° Cleanflow Footvalve

Part No: 844/3000A



## Specification

### Nominal size/body angle

DN80 / 90°

### Inlet connection

Flanged: 8 x 14mm holes on a 178mm PCD

### Outlet connection

Flanged: 4 x 17mm holes on a 160mm PCD

### Materials

Seating area: Superseat (alloy 625)

Contact parts: 316 stainless steel

Main seal: Fortyt

Alternatives are available, refer to the Design Options page

## Design Conditions

Weight:	15.0 Kg
Design Pressure (MAWP):	4 Bar
Test Pressure:	7.3 Bar
Design Temperature Min:	-40°C
Design Temperature Max:	200°C

**NOTE:** The Design Conditions and Section View dimensions are for the specified part number only.

### Design Code

BS EN 14433

### Type Approval

LRQA

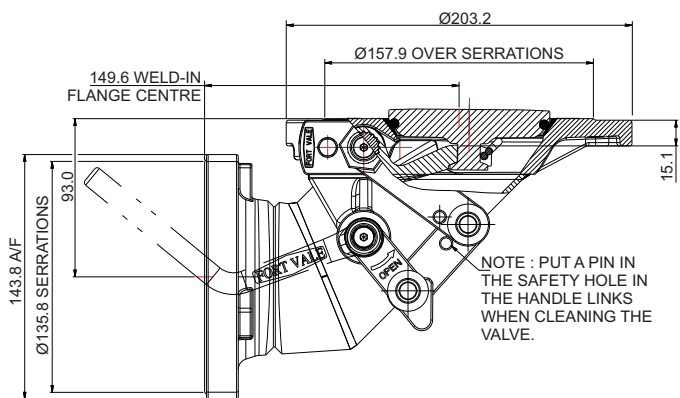
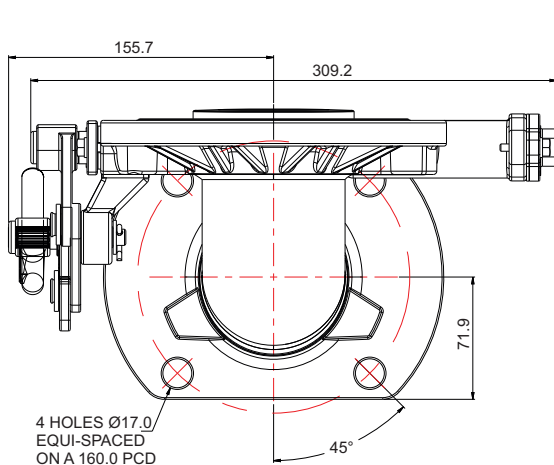
## Range

Description	Part No.
Standard body, manually operated	844/3000A
Extended body, manually operated	844/7400A
Standard body, pneumatically actuated	844/3080ASS
Extended body, pneumatically actuated, slotted outlet	844/7700ASS

## Related Parts

Description	Part No.
Weld-in flange	324/9000
Stud kit	Refer to drawing
CNAF/PTFE inlet gasket	5005-015
CNAF/PTFE ring gasket	5005-049
CNAF/PTFE 4 hole gasket with flats	5005-034
Mating flange	294/0081

## Section View

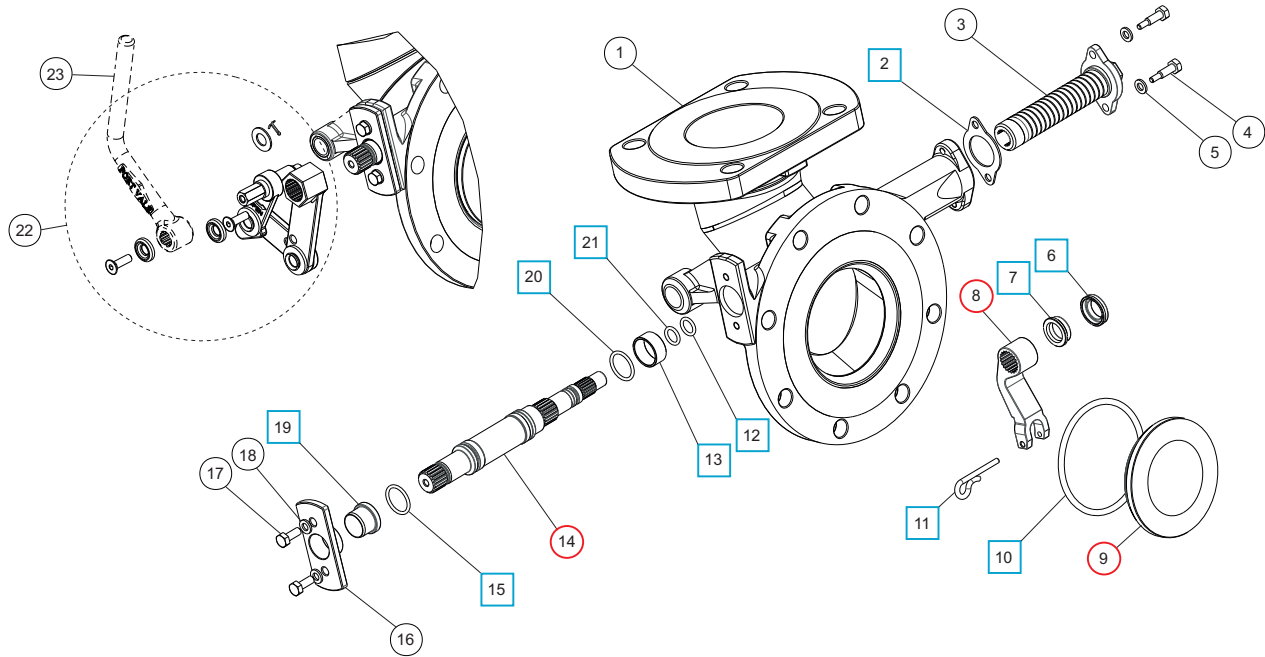




# DN80 90° Cleanflow Footvalve

Part No: 844/3000A

## Parts Drawing



## Parts List

Item	Description	Part No.
1	Body	844/2075B
2	Spring boss gasket	5005-845 <input type="checkbox"/> <input type="radio"/>
3	Spring assembly	845/0050
4	Clamp screw (2)	845/0017
5	Spring washer (2)	5113-008
6	Bush seal	845/0064 <input type="checkbox"/> <input type="radio"/>
7	Seal energizer	845/0063 <input type="checkbox"/> <input type="radio"/>
8	Lifting fork	845/0010 <input type="radio"/>
9	Poppet	845/0040 <input type="radio"/>
10	Fortyt O ring	5005-104 <input type="checkbox"/> <input type="radio"/>
11	Retaining pin	845/0015 <input type="checkbox"/> <input type="radio"/>
12	Perfluoroelastomer O ring	10133PHT <input type="checkbox"/> <input type="radio"/>
13	Spindle bearing	845/0062 <input type="checkbox"/> <input type="radio"/>
14	Spindle	845/0200 <input type="radio"/>
15	Viton O ring	5005-336 <input type="checkbox"/> <input type="radio"/>
16	Stuffing clamp	845/0016
17	Clamp bolt (2)	5111-022
18	Spring washer (2)	5113-008
19	Stuffing seal	845/0061 <input type="checkbox"/> <input type="radio"/>
20	Perlast O ring	5005-384 <input type="checkbox"/> <input type="radio"/>
21	PTFE O ring	5005-008 <input type="checkbox"/> <input type="radio"/>
22	Handle linkage assembly	324/8910
23	Handle *Refer to the Handle Options Table	

## Footvalve Handle Options

Specification	Type	Part No.
Std. Cleanflow handle		324/8670
Std. Highlift handle		330/5010

## Seal Kit

Description	Part No.
All parts marked <input type="checkbox"/> in the Parts List	845/00SK

## Repair Kit

Description	Part No.
All parts marked <input type="radio"/> in the Parts List	845/00RK



# DN100 90° Cleanflow Footvalve - Pneumatic Actuator

Part No: 875/4800SS



## Specification

### Nominal size/body angle

DN100 / 90°

### Inlet connection

Flanged: 8 x 18mm holes on a 210mm PCD

### Outlet connection

Flanged: 8 x 18mm holes on a 180mm PCD

### Properties

With pneumatic actuator

### Materials

Seating area: Superseat (alloy 625)

Contact parts: 316 stainless steel

Main seal: Fortyt

Alternatives are available, refer to the Design Options page

## Design Conditions

Weight:	32.0 Kg
Design Pressure (MAWP):	4 Bar
Test Pressure:	7.3 Bar
Design Temperature Min:	-40°C
Design Temperature Max:	200°C

**NOTE:** The Design Conditions and Section View dimensions are for the specified part number only.

### Design Code

BS EN 14433

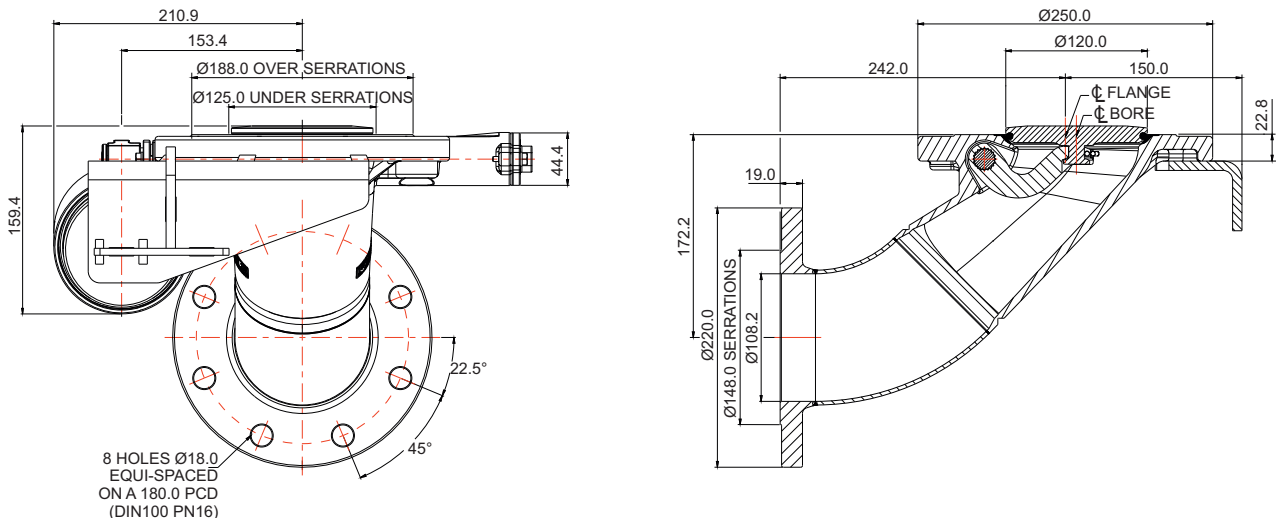
## Range

Description	Part No.
Standard valve	875/4800SS
With replaceable seat inlet	875/4800SSRX
With replaceable seat inlet, conical poppet, steam chamber	875/4800SSHRX

## Related Parts

Description	Part No.
Weld-in flange	854/9000
Stud kit (875/4800SS only)	875/2044
CNAF/PTFE inlet gasket	5005-467
CNAF/PTFE outlet gasket	5005-468
Mating flange - DIN100 PN16	875/4150
Valve operation decal	845/0320

## Section View

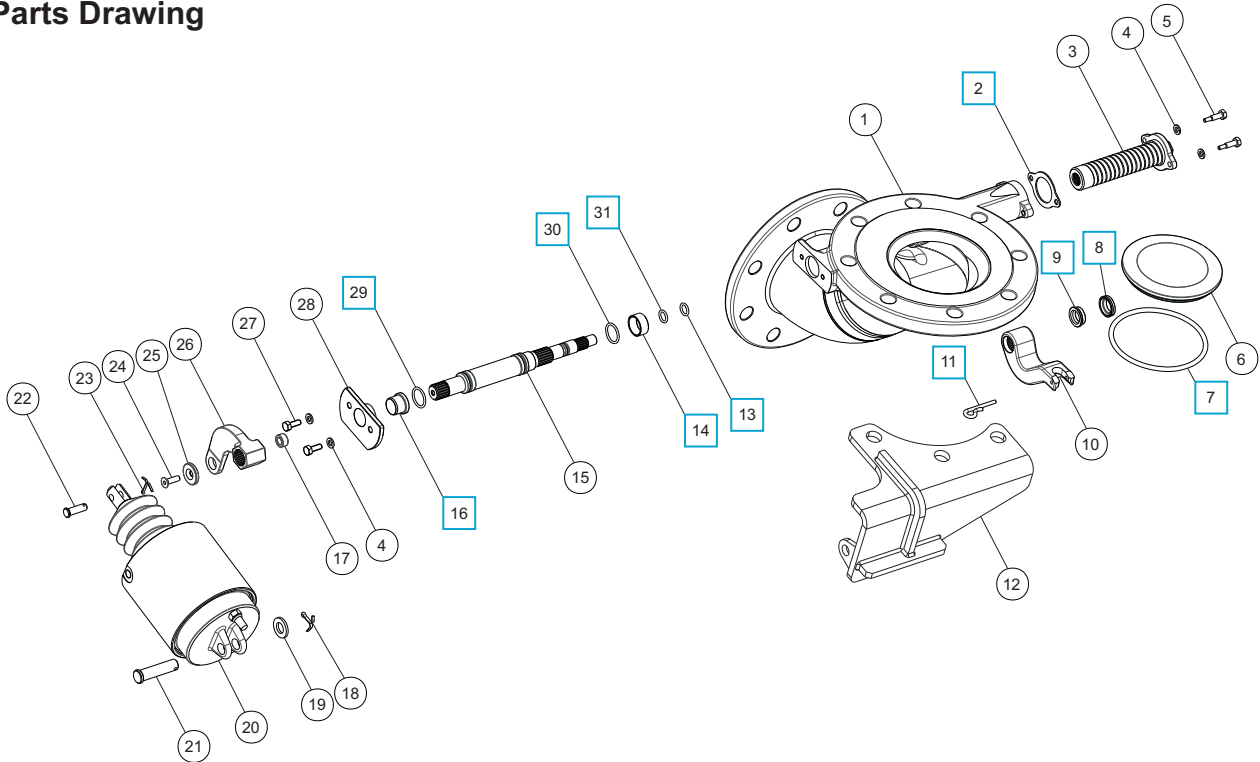




# DN100 90° Cleanflow Footvalve - Pneumatic Actuator

Part No: 875/4800SS

## Parts Drawing



### Parts List

Item	Description	Part No.
1	Body	875/4110B
2	Spring boss gasket	5005-846 <input type="checkbox"/>
3	Spring assembly	875/0050
4	Spring washer (4)	5113-008
5	Clamp screw (2)	845/0017
6	Poppet	875/0040
7	Fortyt O ring	5005-349 <input type="checkbox"/>
8	PTFE bottom bush seal	845/0064 <input type="checkbox"/>
9	Bottom seal energizer	845/0063 <input type="checkbox"/>
10	Lifting fork	875/0010
11	Retaining pin	845/0015 <input type="checkbox"/>
12	Pneumatic cylinder bracket	845/8064
13	Perfluoroelastomer O ring	10133PHT <input type="checkbox"/>
14	PTFE spindle bearing	845/0062 <input type="checkbox"/>
15	Main spindle	875/0200
16	PTFE spindle stuffing seal	845/0061 <input type="checkbox"/>
17	Bronze bush	844/2011
18	Split pin	5220-008
19	Plain washer	5113-006
20	Pneumatic cylinder	875/2125
21	Clevis pin	875/2122
22	Clevis pin	844/2121
23	Split pin	5118-016
24	Countersunk bolt	5111-019

### Parts List

Item	Description	Part No.
25	Retaining washer	20370/2
26	Crank arm	844/2049
27	Hex bolt (2)	5111-022
28	Stuffing clamp flange	845/0066
29	Viton O ring	5005-336 <input type="checkbox"/>
30	Perfluoroelastomer O ring	5005-384 <input type="checkbox"/>
31	PTFE O ring	5005-008 <input type="checkbox"/>

### Seal Kit

Description	Part No.
All parts marked <input type="checkbox"/> in the Parts List	875/00SK



# DN80 90° Tankstream Footvalve

Part No: 28F/0000F



## Specification

### Nominal size/body angle

DN80 / 90°

### Inlet connection

Flanged: 12 x 14mm holes on a 158.8mm PCD (6 inlet holes are plugged with a plastic plug)

### Outlet connection

Flanged: 8 x 10.5mm holes on a 124mm PCD

### Materials

Contact parts: 316 stainless steel

Main seal: Fortyt

Alternatives are available, refer to the Design Options page

## Design Conditions

Weight:	7.3 Kg
Design Pressure (MAWP):	4 Bar
Test Pressure:	7.3 Bar
Design Temperature Min:	-20°C
Design Temperature Max:	200°C

**NOTE:** The Design Conditions and Section View dimensions are for the specified part number only.

### Design Code

BS EN 14433

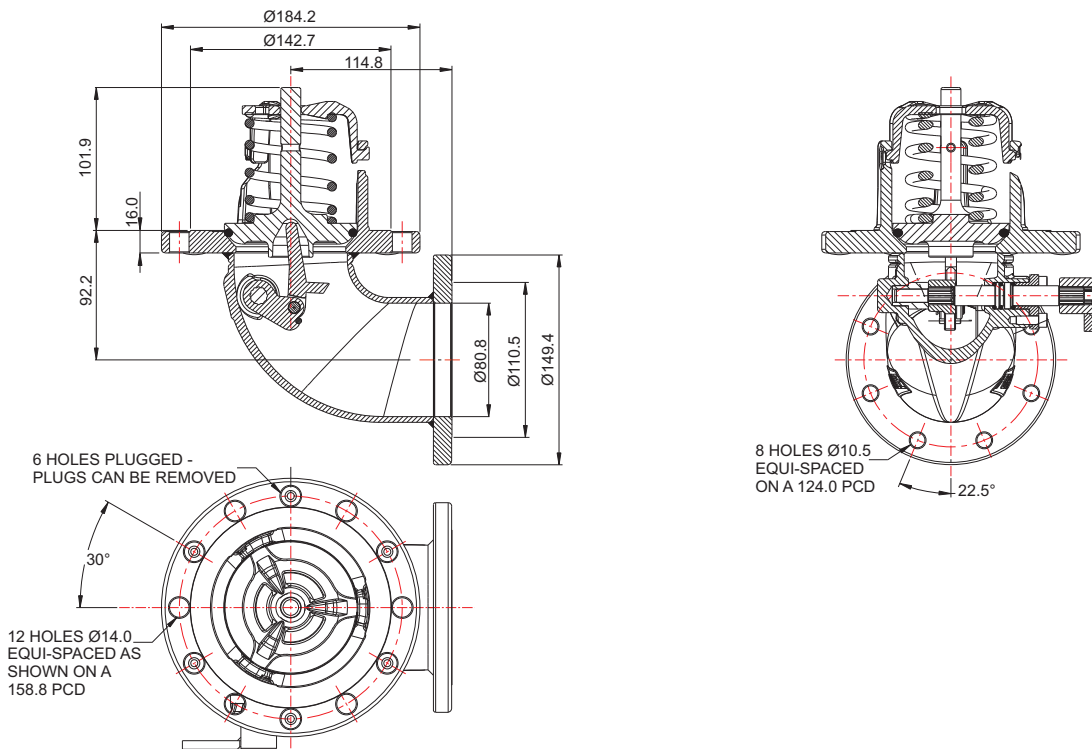
## Range

Description	Part No.
Standard valve, Fortyt seal	28F/0000F
Standard valve, Viton seal	28F/0000V

## Related Parts

Description	Part No.
Weld-in flange	11954/S
Stud kit	290/1300
CNAF/PTFE inlet gasket	5005-016
CNAF/PTFE outlet gasket	5005-445
3" TTMA mating flange	299/7116

## Section View

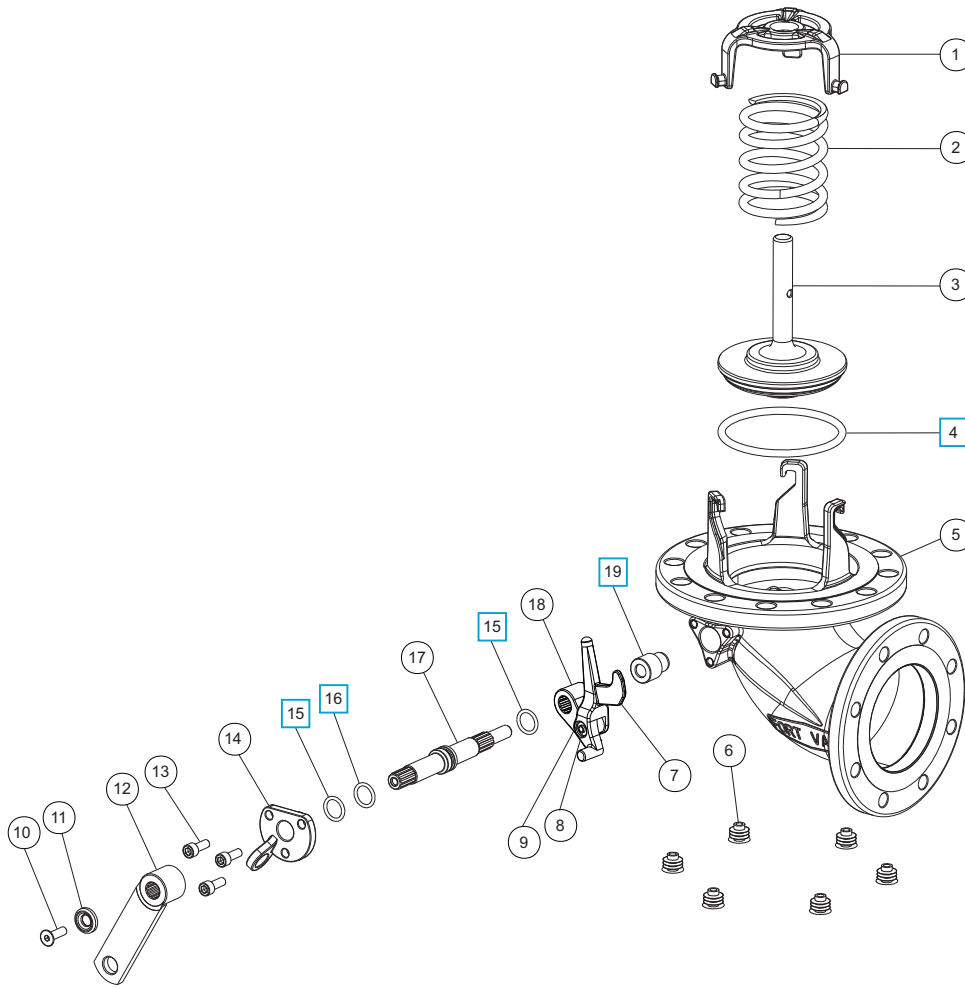




# DN80 90° Tankstream Footvalve

Part No: 28F/0000F

## Parts Drawing



### Parts List

Item	Description	Part No.	
1	Spring top plate	290/6104	
2	Closure spring	5104-971	
3	Solid poppet	324/2020	
4	Fortyt O ring	5005-104	□
5	Body assembly	28F/0003	
6	Plastic plug (6)	5028-227	
7	Lifting finger	821/0056	
8	Pivot pin	821/0034	
9	Plain washer	5113-015	
10	Countersunk bolt	5111-019	
11	Retaining washer	20370	
12	Crank arm	20607	
13	Cap screw (3)	5111-017	
14	Stuffing clamp	324/1001	
15	PTFE O ring (2)	20363	□
16	Viton O ring	20361	□
17	Spindle	821/0010	
18	Crank block	821/0025	
19	Crankshaft end bush	20362	□

### Seal Kit

Description	Part No.
All parts marked □ in the Parts List	826/00SK



# DN100 90° Sealtyt Extended Footvalve - Pneumatic Actuator

Part No: 299/7000PN



## Specification

### Nominal size/body angle

DN100 / 90°

### Inlet connection

Flanged: 8 x 14mm holes on a 190mm PCD

### Outlet connection

Flanged: 8 x 14mm holes on a 150.1mm PCD

### Properties

With pneumatic actuator

### Materials

Contact parts: 316 stainless steel

Main seal: PTFE/elastomer

Alternatives are available, refer to the Design Options page

## Design Conditions

Weight:	22 Kg
Design Pressure (MAWP):	4 Bar
Test Pressure:	6 Bar
Design Temperature Min:	-20°C
Design Temperature Max:	200°C

### Pneumatic Cylinder

Maximum Operating Pressure: 7 Bar

**NOTE:** The Design Conditions and Section View dimensions are for the specified part number only.

### Design Code

BS EN 14433

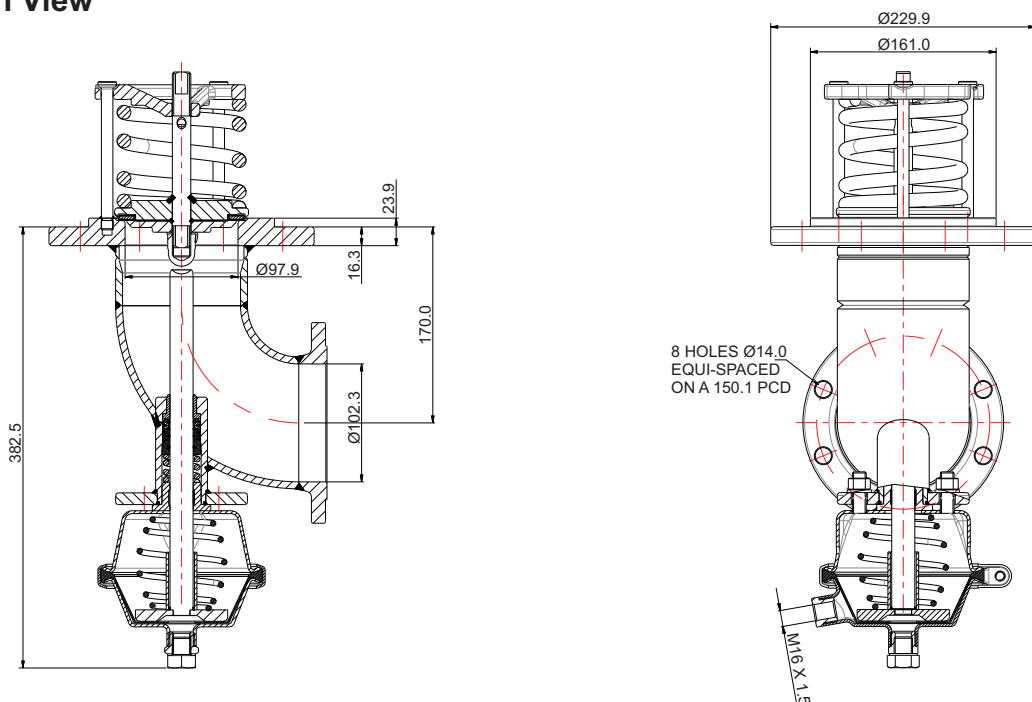
## Range

Description	Part No.
Standard valve	299/7000PN
DN100 105° with pneumatic actuator	299/7200PN

## Related Parts

Description	Part No.
Weld-in flange	299/7001
Stud kit	299/7060
CNAF/PTFE inlet gasket	5005-945
CNAF/PTFE outlet gasket	5005-835

## Section View

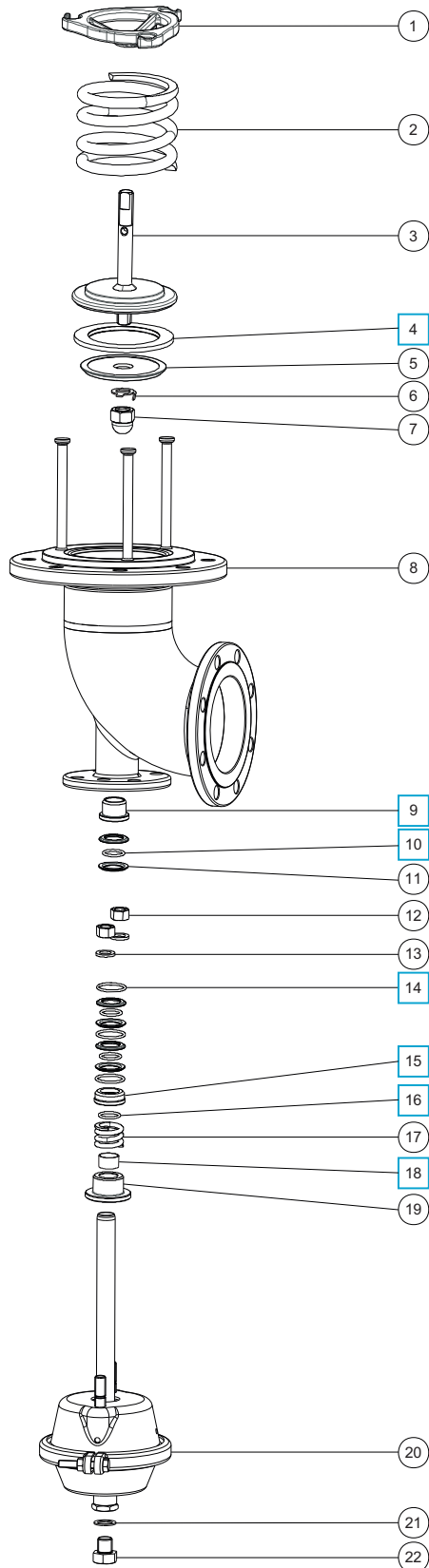




# DN100 90° Sealtyt Extended Footvalve - Pneumatic Actuator

Part No: 299/7000PN

## Parts Drawing



## Parts List

Item	Description	Part No.	
1	Spring top plate	299/7017	
2	Closure spring	5104-981	
3	Poppet seal housing	299/7034	
4	Poppet composite seal	299/7035	<input type="checkbox"/>
5	Poppet seal clamp plate	299/7036	
6	Locking tab washer	299/7031	
7	M12 dome nut	5112-052	
8	Body	299/7010	
9	Top bearing	299/7011	<input type="checkbox"/>
10	PTFE bearing (3)	5005-926	<input type="checkbox"/>
11	Stuffing bush (6)	299/7013	
12	M12 full nut (2)	5112-006	
13	M12 spring washer (2)	5113-010	
14	PTFE O ring (3)	5005-927	<input type="checkbox"/>
15	Bottom bearing bush	299/7015	<input type="checkbox"/>
16	Viton O ring	5005-928	<input type="checkbox"/>
17	Seal housing spring	5104-982	
18	Scarf bearing	299/7032	<input type="checkbox"/>
19	Stuffing bush	299/7016	
20	Pneumatic cylinder	299/7020	
21	M16 Dowty washer	5005-696	
22	M16 bolt	5111-138	

## Seal Kit

Description	Part No.
All parts marked <input type="checkbox"/> in the Parts List	299/70SK



# DN100 Screwdown Valve Assembly

Part No: 270/0000RX



## Specification

### Nominal size

DN100

### Top operator connection

Flanged: 4 x 11mm holes on a 133.4mm PCD

### Bottom outlet connection

Flanged: 8 x M12 holes on a 177.8mm PCD

### Parts included

Top weld-in flange, stud kit, PTFE inlet gasket, spring-loaded top operator, 4" poppet assembly, 4" NB bottom weld-in flange with replaceable seat area

**NOTE:** 1" Sched.10 tube is not included

### Materials

Seating area: 316 stainless steel

Contact parts: 316 stainless steel

Main seal: PTFE

## Design Conditions

Weight:	16.2 Kg
Design Pressure (MAWP):	4 Bar
Test Pressure:	6 Bar
Design Temperature Min:	-40°C
Design Temperature Max:	250°C
Pre-load	4479N @ 5.25mm
Max. solid washers	10.5mm
Stroke	50mm

## Related Parts

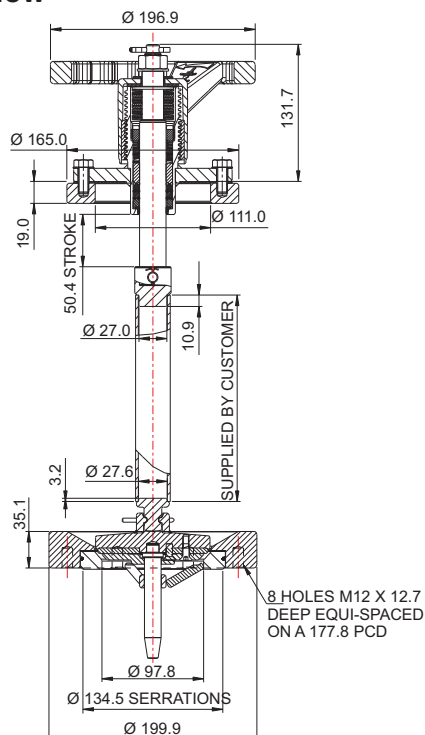
Description	Part No.
Top PTFE gasket	5005-985
High nickel alloy replaceable seat	267/3715H
Outlet mating flange	294/0087
Outlet stud kit	324/2050
CNAF/PTFE outlet gasket	5005-015

**NOTE:** The Design Conditions and Section View dimensions are for the specified part number only.

## Design Code

BS EN 14433

## Section View

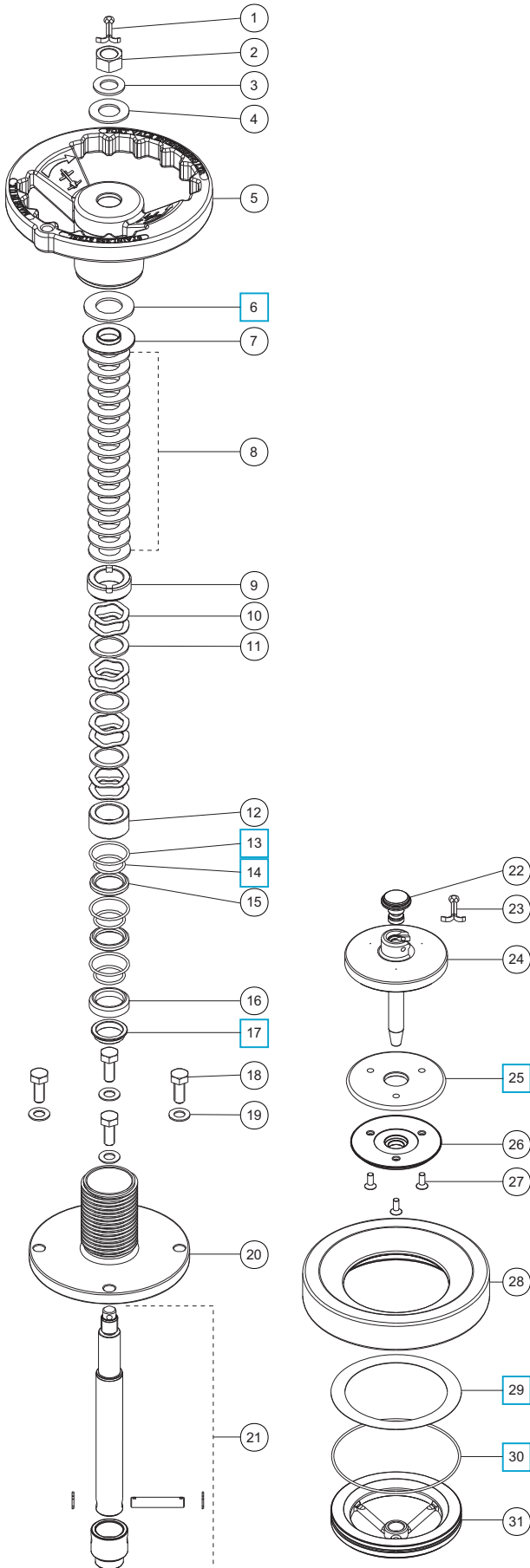




# DN100 Screwdown Valve Assembly

Part No: 270/0000RX

## Parts Drawing



## Parts List

Item	Description	Part No.	
1	Split pin	5118-043	
2	M16 castle nut	5112-026	
3	M16 plain washer	5113-057	
4	Handwheel bearing pad	270/0019	
5	Handwheel assembly	270/0020	
6	PTFE thrust washer	270/0026	☐
7	Handwheel bearing pad	270/0018	
8	Belleville washer (16)	5113-048	
9	Stuffing bush	270/0016	
10	5 wave spring (8)	5104-212	
11	Spacing washer (3)	270/0014	
12	Top bearing bush	270/0015	
13	PTFE O ring (3)	5005-560	☐
14	PTFE O ring (3)	5005-558	☐
15	Stuffing bush (2)	270/0013	
16	Bearing backing ring	270/0012	
17	Bottom bearing	270/0011	☐
18	M10 hex bolt (4)	5111-042	
19	M41 plain washer (4)	5113-009	
20	Body assembly	270/0025	
21	Spindle sub-assembly	270/0032	
22	Bottom stem end	266/1015	
23	Split pin	5118-019	
24	4" poppet weld assembly	269/7019	
25	4" PTFE poppet seal disc	269/7023A	☐
26	4" poppet seal clamp plate	269/7028A	
27	Countersunk set screw (3)	5111-030	
28	4" bottom tank weld-in flange	267/3741	
29	Wafer gasket	267/3719G	☐
30	Silicone O ring	5005-788HT	☐
31	4" replaceable seat	267/3715	

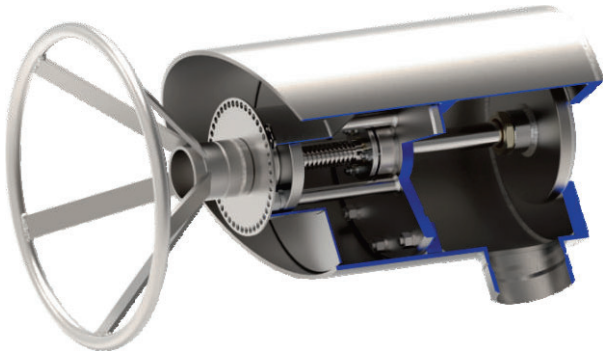
## Seal Kit

Description	Part No.
All parts marked ☐ in the Parts List	270/00SK



# DN150 Reedley Horizontal Hot Product Valve

Part No: 262/2000



## Specification

### Inlet nominal size

DN150

### Outlet connection

DN100 weld prepared, machined with a shear groove

### Operation

Manually operated by a handwheel. The handwheel assembly has a fixed splash-guard, a padlock security system and a machined shear groove

### Materials

Contact parts: 304/316 stainless steel

Spindle: 1.4462 duplex steel

Main seal: RTFE

## Design Conditions

Weight:	65 Kg
Design Pressure (MAWP):	3.5 Bar
Test Pressure:	5.25 Bar
Design Temperature Min:	-40°C
Design Temperature Max:	250°C

**NOTE:** The Design Conditions and Section View dimensions are for the specified part number only.

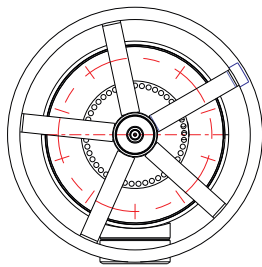
### Design Code

BS EN 14433

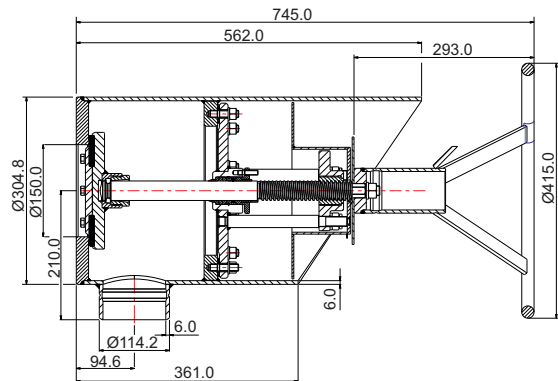
## Related Parts

Description	Part No.
DN100 butterfly valve with hemispherical closure plate - manually operated	468/75HTB
DN100 butterfly valve with hemispherical closure plate - pneumatically actuated	468/75HTBPN

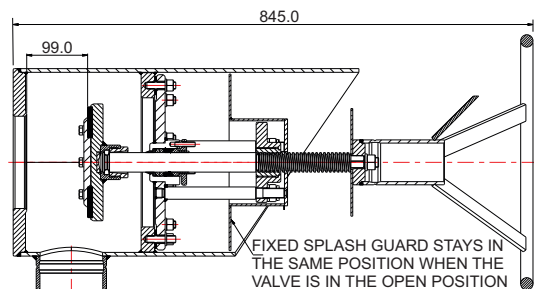
## Section View



Valve shown in the CLOSED position



Valve shown in the OPEN position



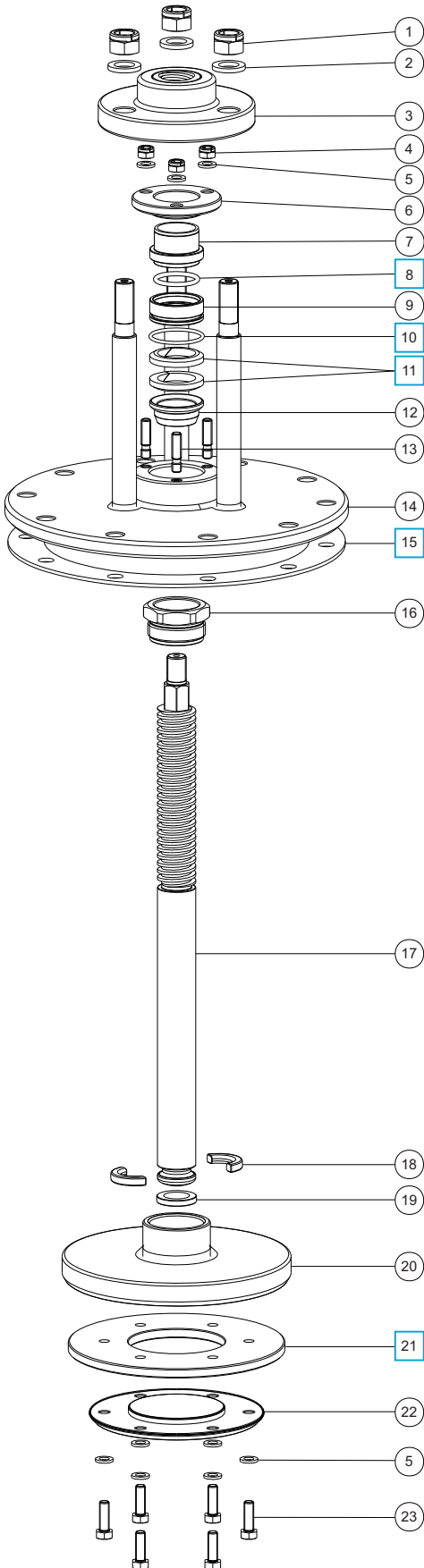


# DN150 Reedley Horizontal Hot Product Valve

Part No: 262/2000

## Parts Drawing: Internal Sub-Assembly

Part No: 262/2150



## Parts List

Item	Description	Part No.
1	M16 self-locking nut (3)	5112-053
2	M16 spring washer (3)	5113-012
3	Threaded flange assembly	262/1037
4	M8 self-locking nut (3)	5112-031
5	M8 spring washer (9)	5113-003
6	Stuffing clamp	262/1035
7	Packing clamp bush	262/1051
8	Viton O ring	ORB218VL <input type="checkbox"/>
9	Wiper bearing	262/1052
10	Viton O ring	ORB129VL <input type="checkbox"/>
11	Gland packing (2)	262/1024 <input type="checkbox"/>
12	Wiper bearing	262/1049
13	M8 x 33mm stud (3)	S0396/10
14	Tie bar weld assembly	262/1059
15	Sigma gasket *Note	262/1007 <input type="checkbox"/>
16	Stuffing nut	262/1033
17	Spindle	262/2003
18	Thrust bearing pair	262/1028
19	Thrust bearing	262/1027
20	Poppet	262/1013
21	Poppet seal disc	262/1026 <input type="checkbox"/>
22	Seal clamp plate	262/1025
23	M8 x 25mm hex bolt (6)	5111-048

NOTE: Item 15 Sigma gasket 262/1007 is not included in the internal sub-assembly 262/2150. Please order it separately.

## Seal Kit

Description	Part No.
All parts marked <input type="checkbox"/> in the Parts List	262/20SK



# 6" 180° Cleanflow Footvalve - Hydraulically Actuated

Part No: 874/0000



## Specification

### Nominal size/body angle

6" / 150mm / 180°

### Inlet connection

Flanged: 12 x 0.6" (14.0) holes equi-spaced on a 9.3" (234.95) PCD - 6" TTMA sump specification

### Outlet connection

Flanged: 12 x 0.44" (11.1) holes equi-spaced on a 8.13" (206.4) PCD - 6" TTMA flange specification

### Properties

Hydraulically actuated with 1/8" NPT connection

### Materials

Contact parts: 316 stainless steel

Main seal: Fortyt

## Design Conditions

Weight: 68.7 Lb (31.2 Kg)  
 Design Pressure (MAWP): 58 PSI (4 Bar)  
 Test Pressure: 100.1 PSI (6.9 Bar)  
 Design Temperature Min: -4°F (-20°C)  
 Design Temperature Max: 302°F (150°C)

Hydraulic Actuator MAWP: 1305.3 PSI (90 Bar)

Max. Internal Pressure on Opening: 20 PSI (1.38 B) Ambient  
 Max. Internal Pressure on Opening: 15 PSI (1.03 B) At Temp.

**NOTE:** The Design Conditions and Section View dimensions are for the specified part number only.

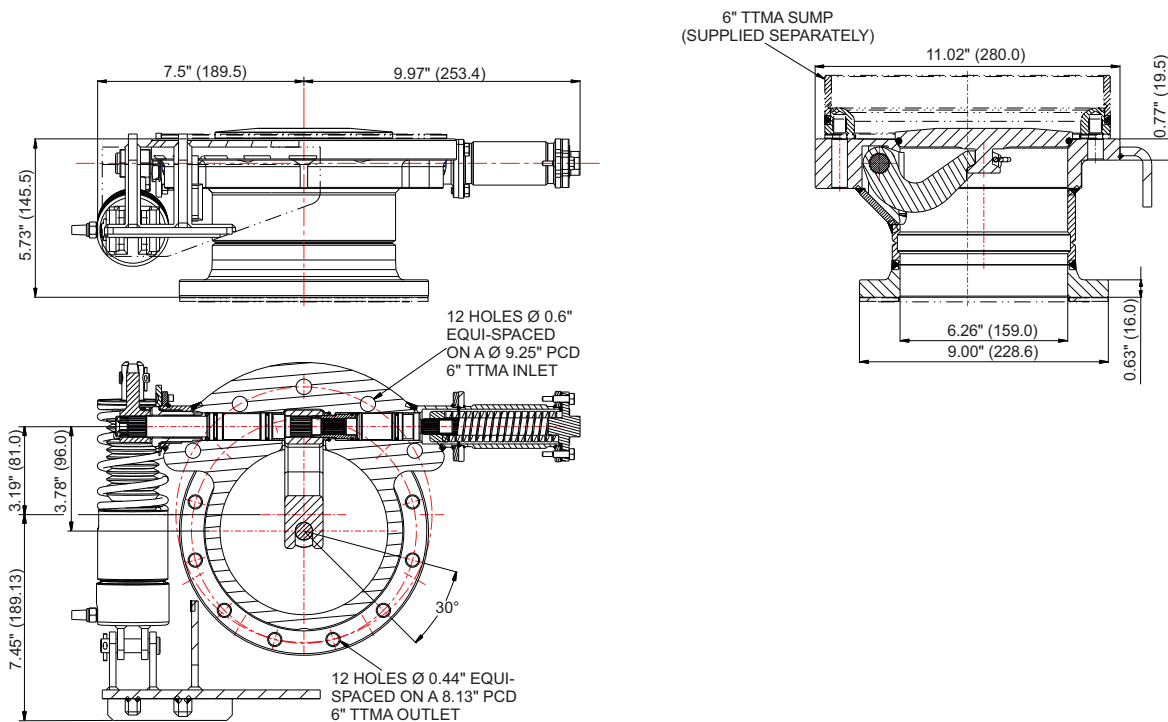
## Design Code

BS EN 14433

## Related Parts

Description	Part No.
Sump weld-in flange - 1/2" UNC holes	874/0040
Sump weld in flange - M12 holes	874/0055
Stud kit - 1/2" UNC	874/00SK
Stud kit - M12	874/00MSK
CNAF/PTFE inlet gasket	874/0041
CNAF/PTFE outlet gasket	874/0042

## Section View

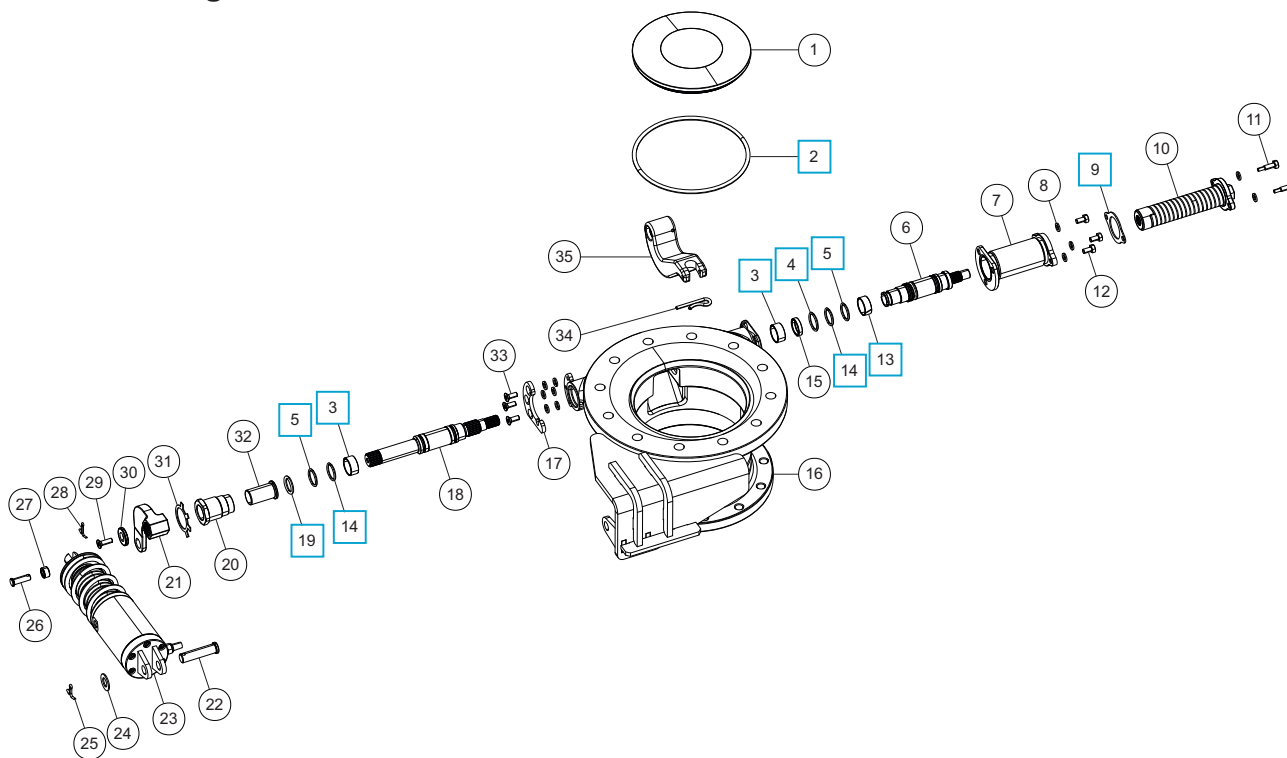




# 6" 180° Cleanflow Footvalve - Hydraulically Actuated

Part No: 874/0000

## Parts Drawing



### Parts List

Item	Description	Part No.
1	Poppet	874/0015
2	Fortyt O ring	ORB360F0 <input type="checkbox"/>
3	Spindle bearing (2)	845/0062 <input type="checkbox"/>
4	PTFE O ring	5005-319 <input type="checkbox"/>
5	Viton O ring (2)	5005-336MF <input type="checkbox"/>
6	Bottom extension spindle	874/0025
7	Spring extension housing	874/0014
8	M6 spring washer (11)	5113-008
9	Spring housing gasket	5005-846 <input type="checkbox"/>
10	Torsion spring	875/0050
11	M6 hex screw (2)	845/0017
12	M6 hex bolt (3)	5111-050
13	Split bearing	874/0023 <input type="checkbox"/>
14	Perfluoroelastomer O ring (2)	5005-384 <input type="checkbox"/>
15	Bottom seal energizer	874/0027
16	Body	874/0100
17	Indicator plate	874/0019
18	Main spindle	874/0020
19	PTFE O ring	5005-113 <input type="checkbox"/>
20	Stuffing gland nut	874/0016
21	Extended crank arm	844/2067
22	Clevis pin	875/2122
23	Hydraulic cylinder <b>*Note</b>	875/2160N <input type="checkbox"/>
24	M12 plain washer	5113-006
25	1/8" split pin	5220-008

### Parts List

Item	Description	Part No.
26	Clevis pin	844/2121
27	Bronze bush	844/2011
28	3/32" split pin	5118-016
29	6mm countersunk bolt	5111-019
30	Retaining washer	20370/2
31	Locking washer	853/7029
32	Spindle guide bush	874/0024
33	M6 countersunk bolt (3)	5111-030
34	Retaining pin	845/0015
35	Lifting fork	874/0018

### Seal Kits

Description	Part No.
Seal kit for footvalve 874/0000: contains all parts marked <input type="checkbox"/> in the Parts List	874/0000SK
<input type="checkbox"/> Seal kit for hydraulic cylinder 875/2160N, includes silencer	875/2160NSK

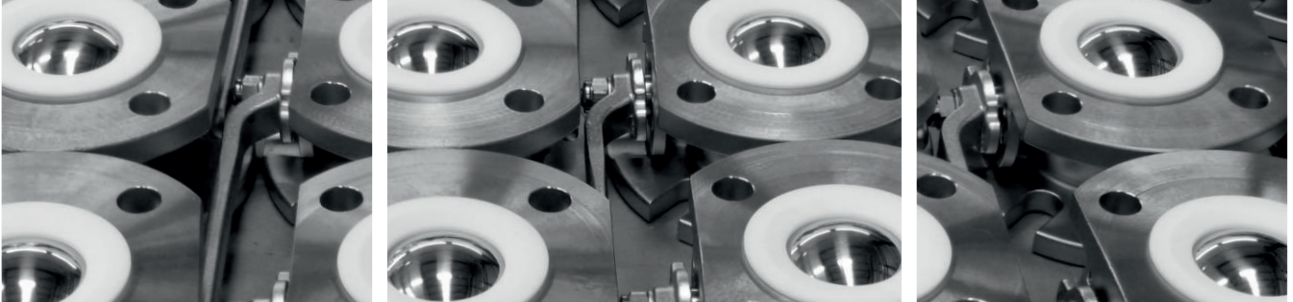
**NOTE:** A hydraulic cylinder with BSP connections and a compatible seal kit is available. Please contact Fort Vale.

**Storage of seal kits:** We recommend that you obey ISO 2230 "Rubber products - Guidelines for storage", section 6: Storage.



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## Bottom Discharge: Secondary Valves



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# Discharge Ball Valves

## Design Options

### Function

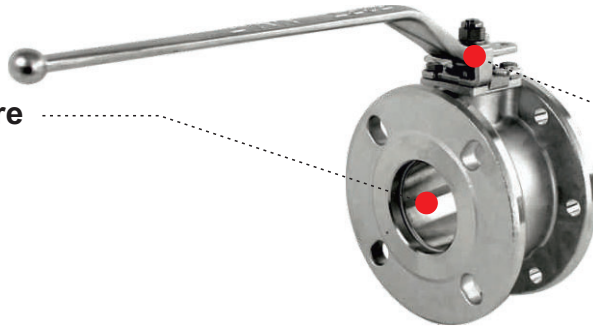
A discharge ball valve is used to load and discharge cargo. It is usually a secondary closure valve that is installed onto a footvalve (primary closure valve) at the drain point of a tank. A ball valve can also be used as a primary closure valve on the top of a tank.

### Design Options

The design options below are available on our standard range of discharge ball valves.

#### Nominal Bore

- 50mm (2")
- 80mm (3")
- 100mm (4")

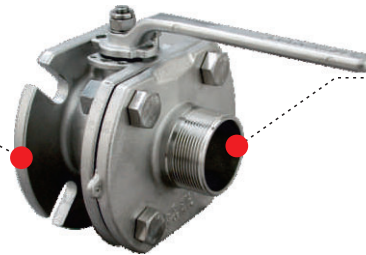


#### Operation

- Manually operated: A range of handles is available
- Left hand, right hand, ambidextrous
- Pneumatically actuated

#### Inlet Flange

- 4, 6 and 8 holes/slots drilling patterns
- Flats milled top and bottom



#### Outlet

- Threaded spigot flange
- Flush fit
- Bobbin flange with a range of drilling patterns
- Flats milled top and bottom
- Camlock

#### Valve Materials

- 316 stainless steel
- Special service conditions:**
- High nickel alloys
- Lined wetted parts, e.g. PFA

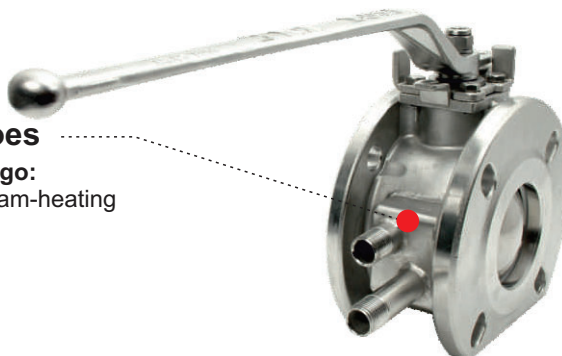


#### Main Seal

- PTFE
- Special service conditions:**
- High-temperature compatible seals

#### Special Cargoes

- For solidifying cargo:**
- Valve body with steam-heating chamber





## Discharge Ball Valves

### Design Options

---

### Discharge Ball Valves for Dedicated Service

We offer a range of discharge ball valves suitable for these service conditions and special cargoes:

- T50 tank containers for liquefied gas
- Rail wagons
- Hydrogen peroxide
- Firesafe/lethal service

Please contact us for more information about these valves.

### Related Parts

We recommend our range of compatible ancillary parts:

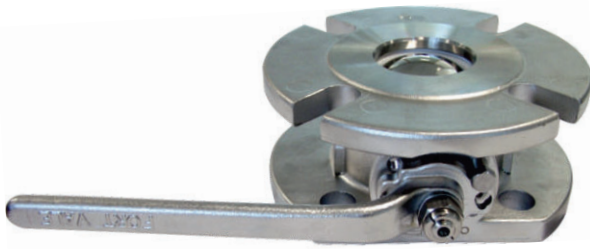
- Flanges - mating, adapter, blind, weld-in, syphon
- Tertiary closures
- Fasteners
- Gaskets

Please contact us for more information about these parts.



# DN50 Flanged Blacko Ball Valve

Part No: 370/0100



## Specification

### Nominal size

DN50

### Tank connection

Flanged: 4 x 18mm holes on a 125mm PCD

### Outlet/Process connection

Flanged: 4 x open slots on a 120.7mm minimum PCD

### Properties

Left hand operated, handle with TIR

### Materials

Contact parts: 316 stainless steel

Main seal: PTFE

Alternatives are available, refer to the Design Options page

## Design Conditions

Weight:	5.5 Kg
Design Pressure (MAWP):	7.5 Bar
Test Pressure:	13.8 Bar
Design Temperature Min:	-40°C
Design Temperature Max:	205°C

**NOTE:** The Design Conditions and Section View dimensions are for the specified part number only.

### Design Codes

Design Approval by Lloyds Register of Shipping  
BS EN14432

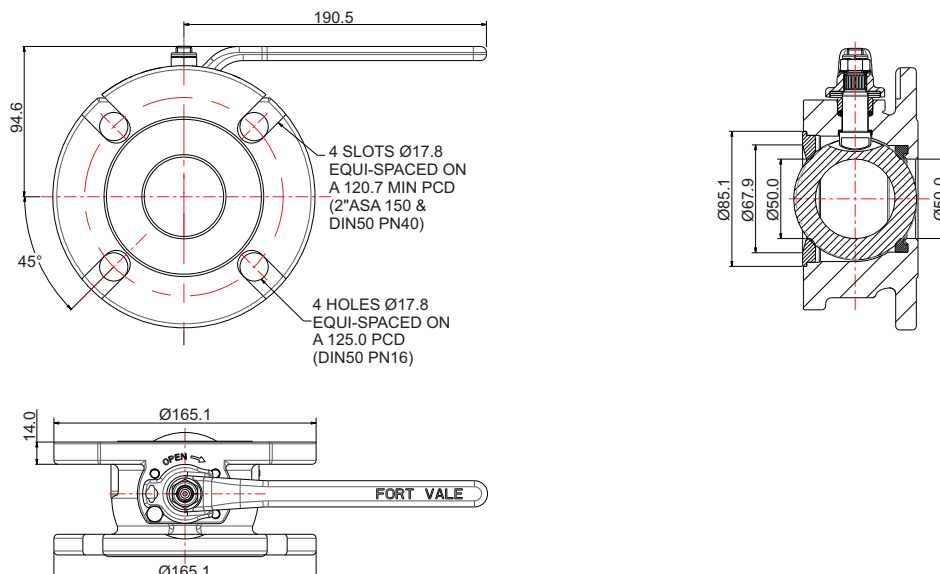
## Range

Description	Part No.
Standard specification	370/0100
With steam heating chamber	370/0100SH
DIN80 inlet adaptor & outlet blind flange	370/0140
With 2" BSP outlet spigot flange	370/0150
With outlet blind flange	370/0180

## Related Parts

Description	Part No.
Weld-in flange	355/3100
Stud kit	311/3700
PTFE outlet gasket	5005-361
Blind flange	370/4239CM

## Section View

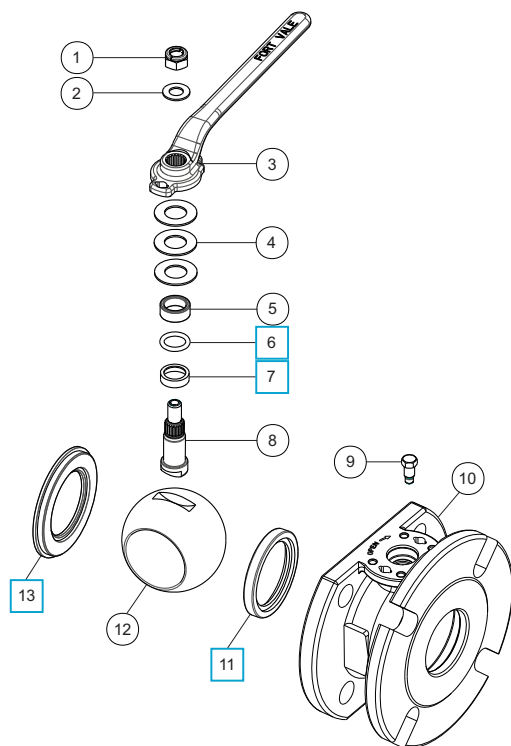




# DN50 Flanged Blacko Ball Valve

Part No: 370/0100

## Parts Drawing



## Parts List

Item	Description	Part No.
1	M10 self locking nut	5112-008
2	M10 plain washer	5113-009
3	Handle	370/0125
4	16mm Belleville washer (3)	5113-038
5	Stuffing collar	370/0103
6	PTFE O ring	5005-688 <input type="checkbox"/>
7	Bottom bearing	370/0104 <input type="checkbox"/>
8	Spindle	370/0120
9	Stop bolt	370/0107
10	Body	370/0110
11	PTFE rear seal	370/0102 <input type="checkbox"/>
12	50mm ball	370/3301
13	PTFE front seal	370/0105 <input type="checkbox"/>

## Seal Kit

Description	Part No.
All parts marked <input type="checkbox"/> in the Parts List	370/01SK



# DN80 Blacko Ball Valve - 3" BSP Outlet

Part No: 360/5000L



## Specification

### Nominal size

DN80

### Tank connection

Flanged: 6 x 14mm holes on a 168.3mm PCD

### Outlet/Process connection

3" BSP

### Properties

Left hand operated, handle with TIR

### Materials

Contact parts: 316 stainless steel

Main seal: PTFE

Alternatives are available, refer to the Design Options page

## Design Conditions

Weight:	16 Kg
Design Pressure (MAWP):	7 Bar
Test Pressure:	12.8 Bar
Design Temperature Min:	-40°C
Design Temperature Max:	200°C

**NOTE:** The Design Conditions and Section View dimensions are for the specified part number only.

### Design Code

BS EN 14432

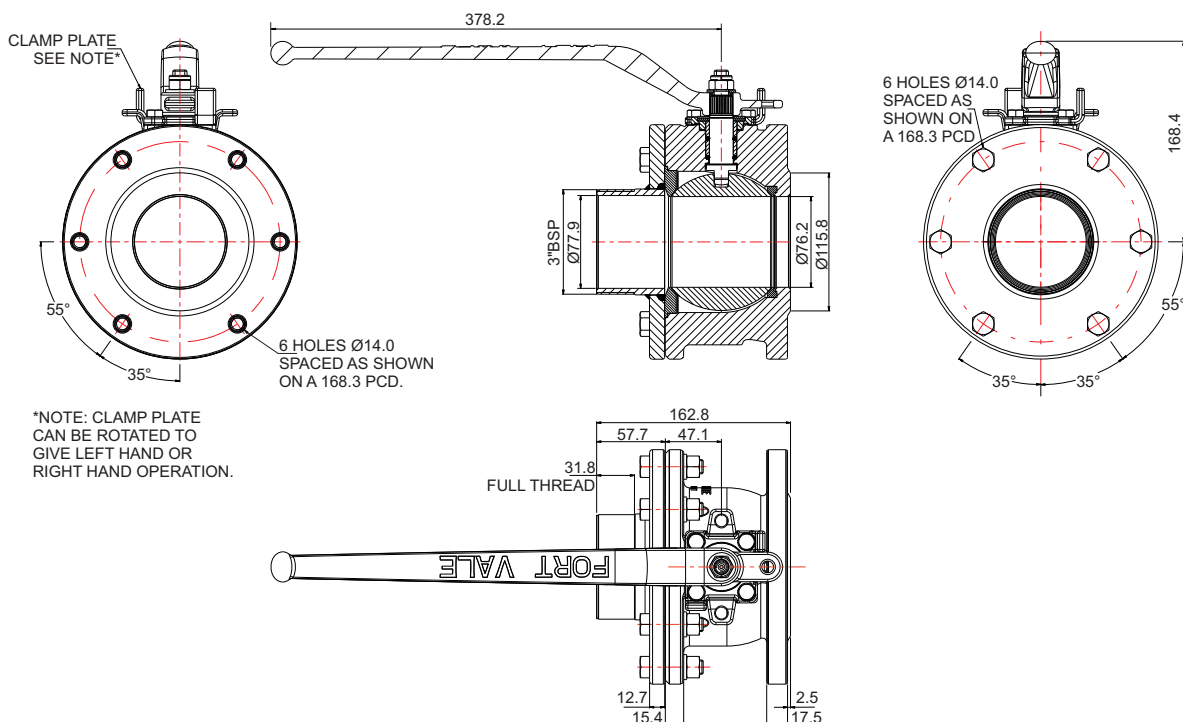
## Range

Description	Part No.
Left hand operated	360/5000L
Right hand operated	360/5000R

## Related Parts

Description	Part No.
Mating flange	20378
Inlet bolting kit	360/0300
3" BSP cap with PTFE washer	10303PS

## Section View

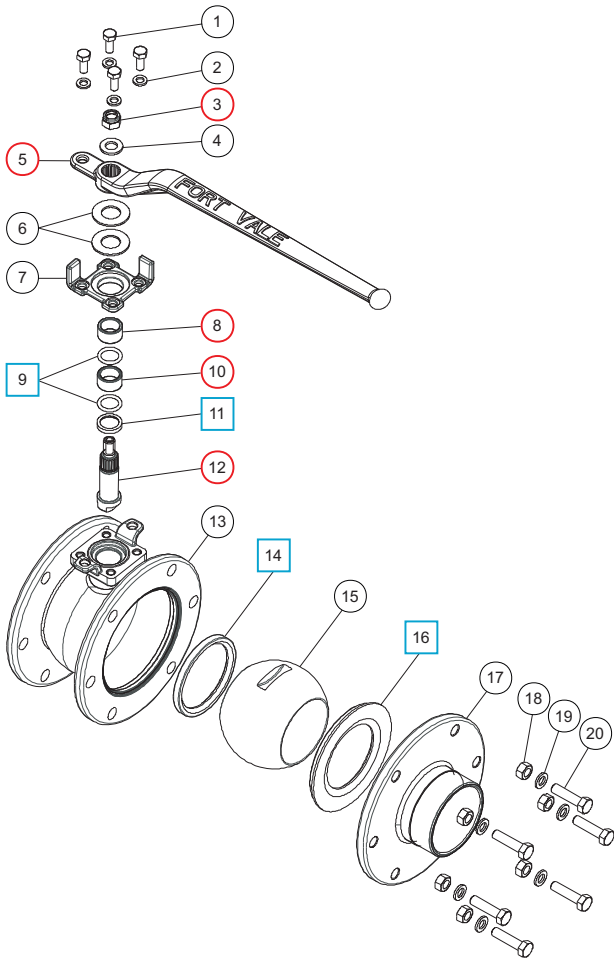




# DN80 Blacko Ball Valve - 3" BSP Outlet

Part No: 360/5000L

## Parts Drawing



## Parts List

Item	Description	Part No.
1	M8 hex head bolt (4)	5111-822
2	M8 flat spring washer (4)	5113-003
3	M12 self-locking nut	5112-007
4	M12 washer	5123-003
5	Handle	360/3416
6	20mm Belleville washer (2)	5113-041
7	Clamp plate	360/5005
8	Top stuffing collar	360/3412
9	PTFE O ring (2)	5005-113
10	Bottom stuffing collar	360/3413
11	Bottom bearing	360/3421
12	Spindle	360/3422
13	Body	360/5014
14	PTFE rear seal	360/3402
15	Solid ball	360/3401
16	PTFE front seal	360/3405
17	3" BSP male outlet flange	20409/14
18	M12 full nut (6)	5112-006
19	M12 flat spring washer (6)	5113-010
20	M12 hex bolt (6)	5111-023

## Seal Kit

Description	Part No.
All parts marked <span style="border: 1px solid blue; padding: 0 2px;"> </span> in the Parts List	360/50SK

## Repair Kit

Description	Part No.
All parts marked <span style="border: 1px solid red; border-radius: 50%; padding: 0 2px;"> </span> in the Parts List	360/50RK



# DN80 Blacko Ball Valve - Slotted 4 Hole Outlet

Part No: 360/5050L



## Specification

### Nominal size

DN80

### Tank connection

Flanged: 6 x 14mm holes on a 168.3mm PCD

### Outlet/Process connection

Flanged: 4 x 18mm slots on a 146-160mm PCD

### Properties

Left hand operated, handle with TIR

### Materials

Contact parts: 316 stainless steel

Main seal: PTFE

Alternatives are available, refer to the Design Options page

## Design Conditions

Weight:	12.5 Kg
Design Pressure (MAWP):	7.5 Bar
Test Pressure:	13.7 Bar
Design Temperature Min:	-40°C
Design Temperature Max:	200°C

**NOTE:** The Design Conditions and Section View dimensions are for the specified part number only.

**Design Code**  
BS EN 14432

## Range

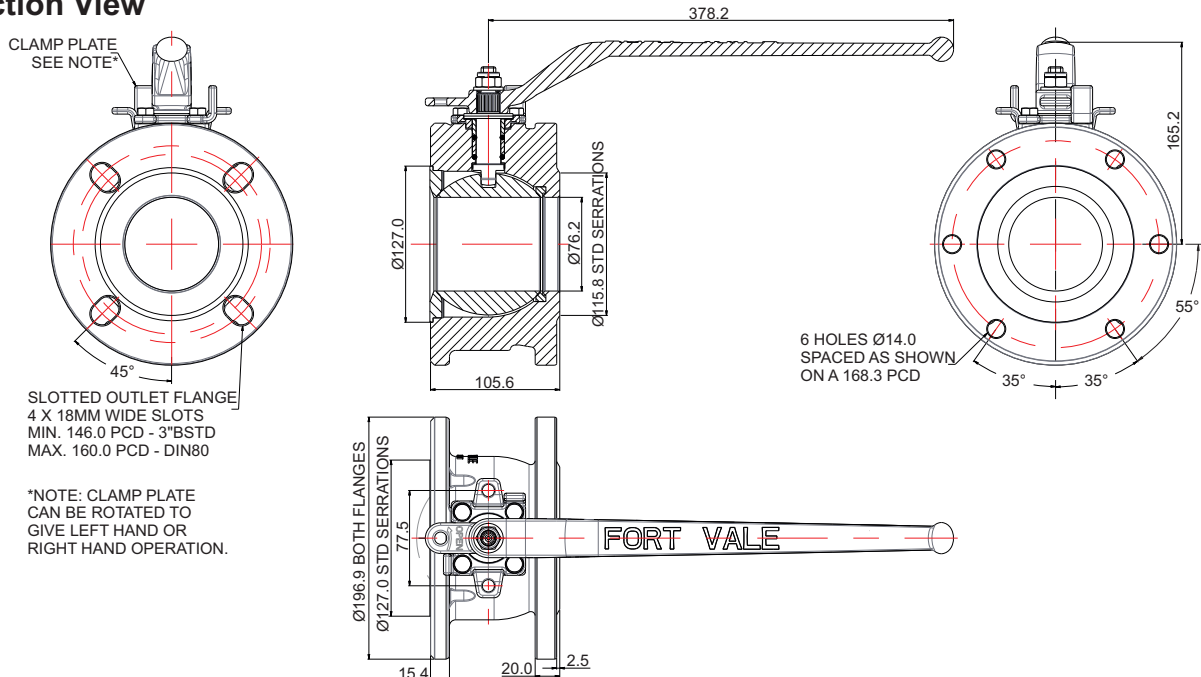
Description	Part No.
6 hole inlet, 4 hole outlet	360/5050X *
6 hole inlet, 4 hole outlet, steam heated	360/5050XSH *
4 hole inlet, 4 hole outlet	360/5030X *
4 holt inlet, 4 hole outlet, steam heated	360/5030XSH *

\*The part number changes for left or right hand operated

## Related Parts

Description	Part No.
3" BSP outlet flange	368/0500
PTFE outlet gasket	5005-417
Blind flange	360/8095
Inlet mating flange	20378
CNAF/PTFE gasket for mating flange	5005-169
Inlet bolting kit	360/0300

## Section View

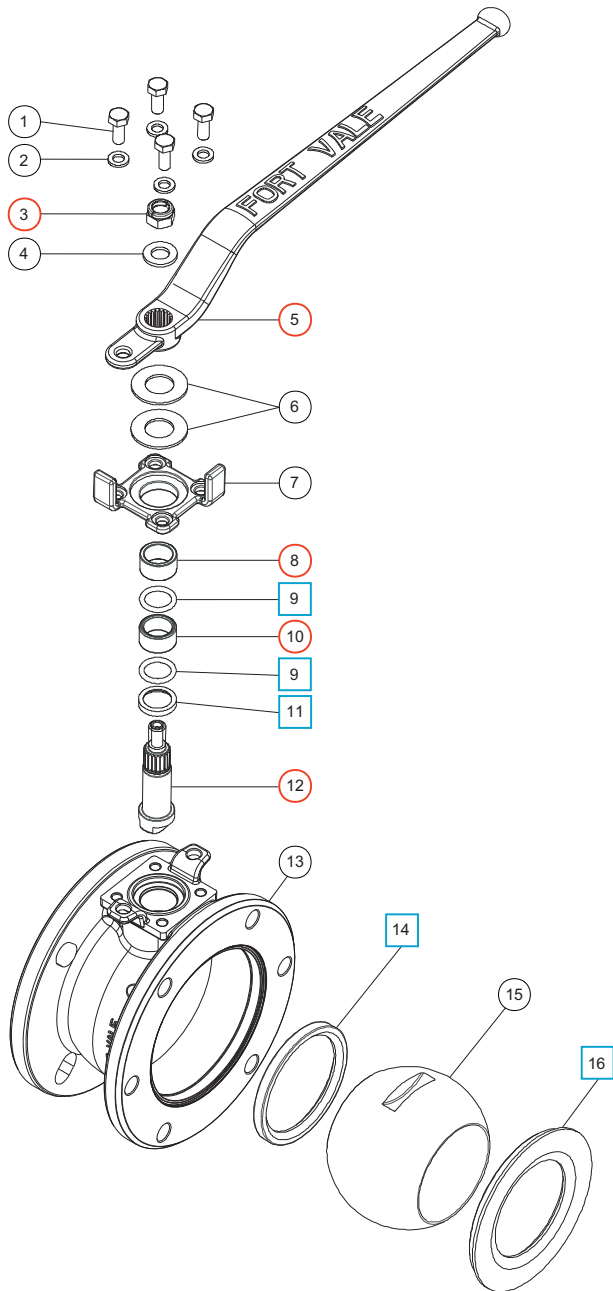




# DN80 Blacko Ball Valve - Slotted 4 Hole Outlet

Part No: 360/5050L

## Parts Drawing



## Parts List

Item	Description	Part No.
1	M8 hex head bolt (4)	5111-822
2	M8 flat spring washer (4)	5113-003
3	M12 self-locking nut	5112-007
4	M12 washer	5123-003
5	Handle	360/3416
6	20mm Belleville washer (2)	5113-041
7	Clamp plate	360/5005
8	Top stuffing collar	360/3412
9	PTFE O ring (2)	5005-113
10	Bottom stuffing collar	360/3413
11	Bottom bearing	360/3421
12	Spindle	360/3422
13	Body	360/5015
14	PTFE rear seal	360/3402
15	Solid ball	360/3401
16	PTFE front seal	360/3405

## Seal Kit

Description	Part No.
All parts marked <input type="checkbox"/> in the Parts List	360/50SK

## Repair Kit

Description	Part No.
All parts marked <input type="radio"/> in the Parts List	360/50RK



# DN80 Ball Valve with Inlet Seal Clamp

Part No: 360/6100X/XX



## Specification

### Nominal size

DN80

### Tank connection

Flanged: a selection is available - Refer to Table 2 on the next page

### Outlet/process connection

Flanged: a selection is available - Refer to Table 3 on the next page

### Options

Left or right hand operation

### Materials

Contact parts: 316 stainless steel

Main seal: PTFE

Part No. 360/6100X/BB shown

Alternatives are available, refer to the Design Options page

## Design Conditions

Weight:	13.6 Kg
Design Pressure (MAWP):	7 Bar
Test Pressure:	12.9 Bar
Design Temperature Min:	-40°C
Design Temperature Max:	200°C

**NOTE:** The Design Conditions and Section View dimensions are for the specified part number only.

### Design Code

BS EN 14432

## Range

Description	Part No.
Left hand operated *Note	360/6100L/XX
Right hand operated *Note	360/6100R/XX

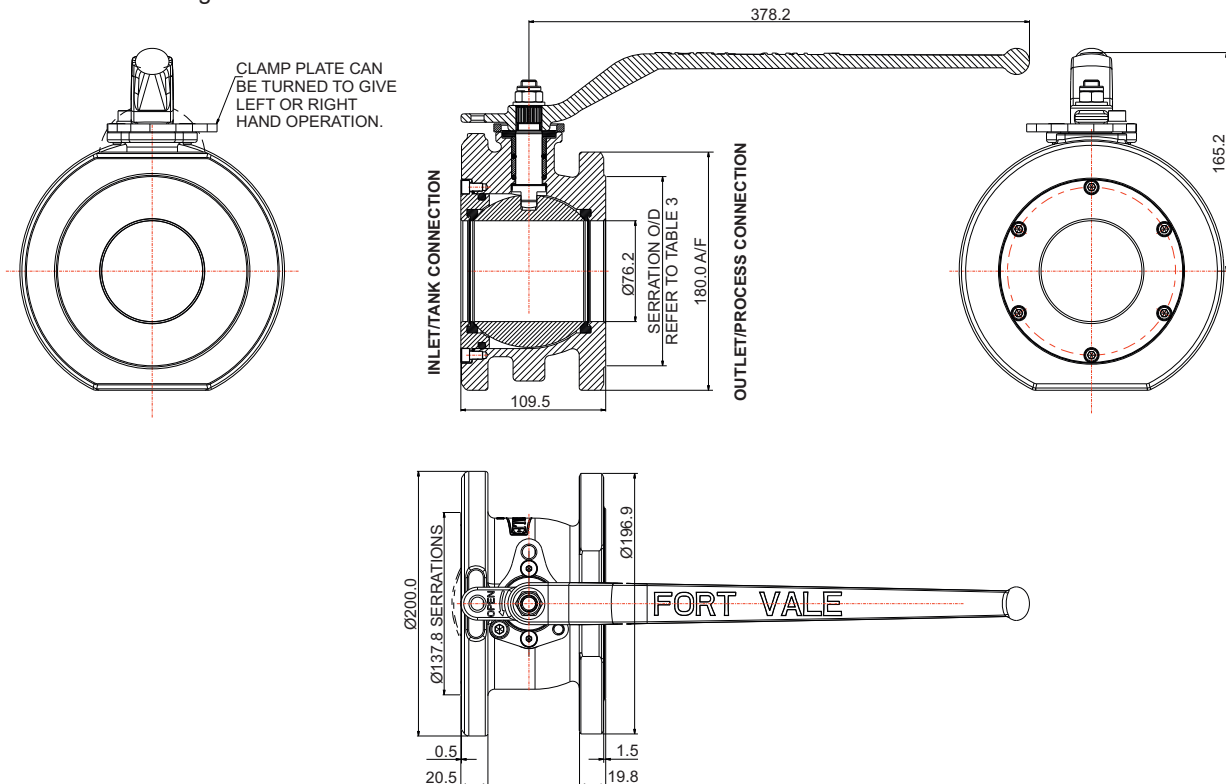
**NOTE:** The specification changes the Part No. Refer to the next page

## Related Parts

Please refer to Fort Vale for Related Parts.

## Section View

Shown with no drilling





# DN80 Ball Valve with Inlet Seal Clamp

Part No: 360/6100X/XX

## Part Number Code: 360/6100X / X X

### Valve Operation

Refer to Table 1

### Inlet Flange Drilling

Refer to Table 2

### Outlet Flange Drilling

Refer to Table 3

**Table 1: Valve Operation**

Description	Part No.
Left hand operated	360/6100L/XX
Right hand operated	360/6100R/XX

**Table 2: Inlet Flange Drilling**

Inlet Holes	Hole Ø (mm)	Hole PCD (mm)	Code
0 holes	N/A	N/A	0
6 holes	14	168.3	A
8 holes	18	160.0	B
4 holes	17	160.0	C
8 slots	18 wide	159.0 to 168.0	D
4 holes and 6 holes	18 14	160.0 168.3	E

Refer to Figure 1 on the next page for more information.

**Table 3: Outlet Flange Drilling**

Outlet Holes	Hole Ø (mm)	Hole PCD (mm)	Serrations O/D (mm)	Code
0 holes	N/A	N/A	143.0	0
4 open slots	18 wide	160.0 to O/D	138.0	A
8 holes	18	160.0	138.0	B
8 slots	18 wide	152.4 to 160.0	130.0	C
4 holes and 4 holes	18 M16	160.0 160.0	143.0	D
4 slots	18 wide	146.0 to 160.0	127.0	E
4 holes and 4 holes	18 M16	160.0 160.0	143.0	F
8 holes and 4 holes	18 18	160.0 152.4	130.0	G
8 holes	M16	160.0	143.0	H
4 holes and 4 holes	18 18	160 152.4	127.0	I
4 slots and 4 holes	18 wide M16	146.0 to 160.0 160.0	127.0	J

Refer to Figure 1 on the next page for more information.

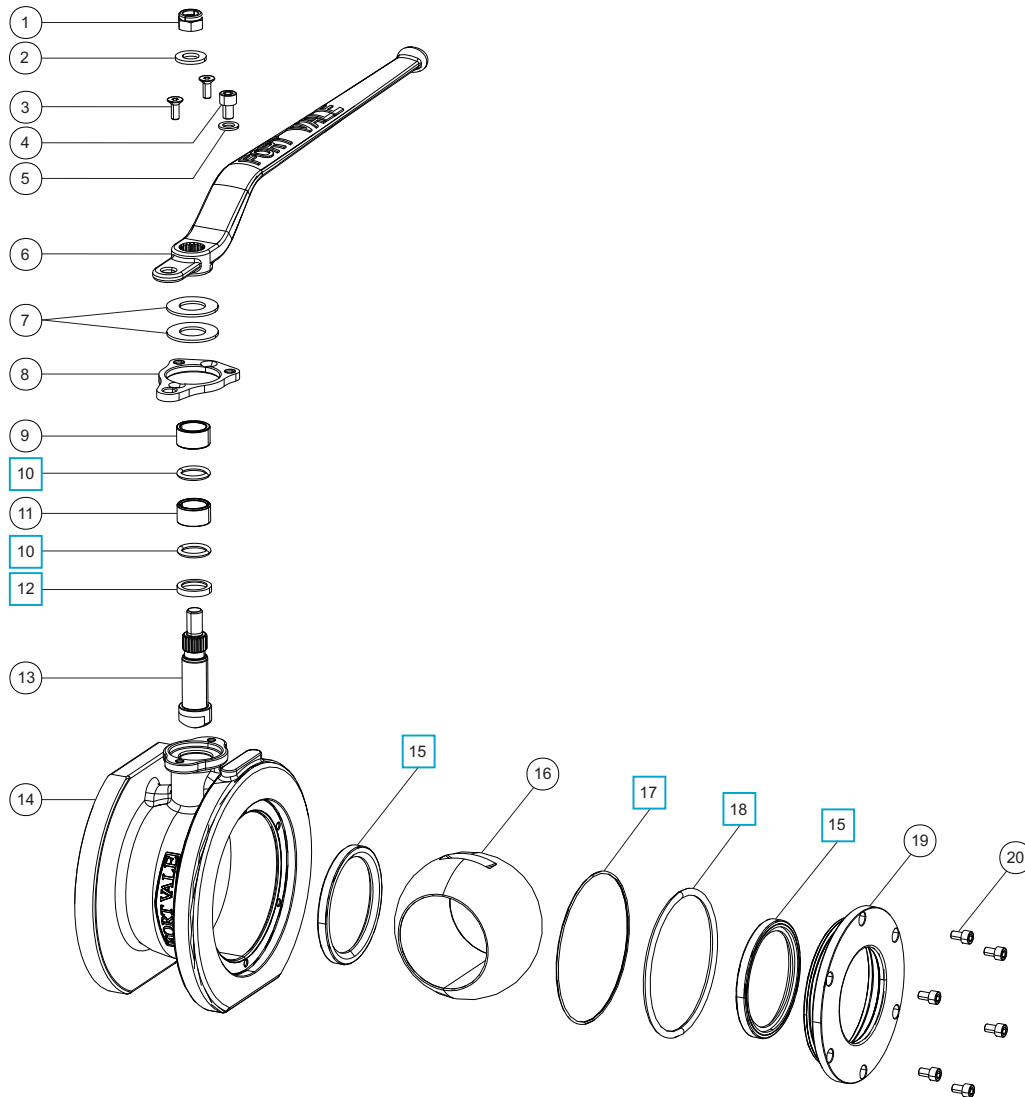




# DN80 Ball Valve with Inlet Seal Clamp

Part No: 360/6100X/XX

## Parts Drawing



### Parts List

Item	Description	Part No.
1	M12 self-lock nut	5112-007
2	M12 washer	5123-003
3	M6 countersunk bolt (2)	5111-030
4	M8 cap screw	5111-215
5	M8 spring washer	5113-003
6	Handle	360/3416
7	Belleville washer (2)	5113-041
8	Stop plate	360/6111
9	Top stuffing collar	360/3412
10	PTFE O ring (2)	5005-113 <input type="checkbox"/>
11	Bottom stuffing collar	360/3413
12	Bottom bearing	360/3421 <input type="checkbox"/>
13	Spindle	360/3422
14	Body * <b>Note</b>	360/6110/XX
15	PTFE main seal (2)	360/3402 <input type="checkbox"/>
16	Ball	360/3401

### Parts List

Item	Description	Part No.
17	PTFE O ring	ORB544P0 <input type="checkbox"/>
18	Fortyt O ring	ORB347F0 <input type="checkbox"/>
19	Seal carrier clamp	360/6105
20	M6 cap screw (6)	5111-061

**NOTE:** The specification changes the Part No.

### Seal Kit

Description	Part No.
All parts marked <input type="checkbox"/> in the Parts List	360/61SK



# DN100 Ball Valve with Inlet Seal Clamp

Part No: 460/E000X



## Specification

### Nominal size

DN100

### Tank connection

Flanged: 8 x M16 holes on a 180mm PCD

### Outlet/process connection

Flanged: 8 x M16 holes on a 180mm PCD

### Options

Left or right hand operation

### Materials

Contact parts: 316 stainless steel

Main seal: PTFE

Alternatives are available, refer to the Design Options page

## Design Conditions

Weight:	25.2 Kg
Design Pressure (MAWP):	7.5 Bar
Test Pressure:	13.7 Bar
Design Temperature Min:	-40°C
Design Temperature Max:	200°C

**NOTE:** The Design Conditions and Section View dimensions are for the specified part number only.

### Design Codes

BS EN 14432  
BS EN 12516-2

## Range

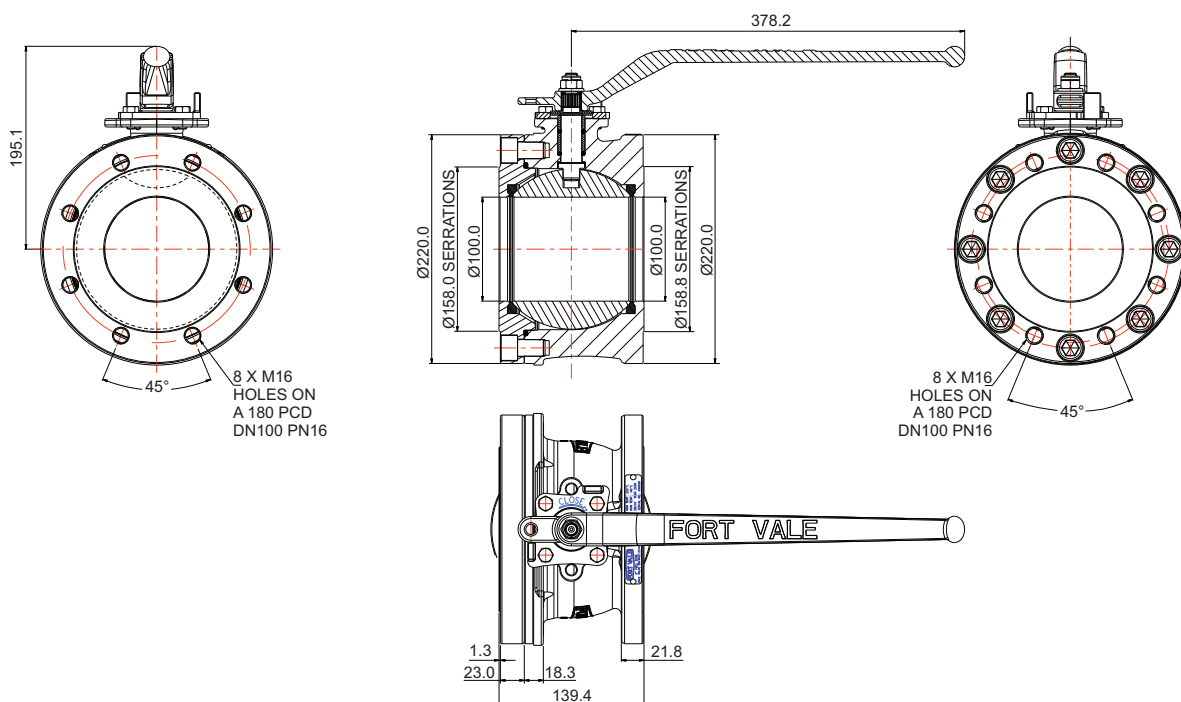
Description	Part No.
Manually operated *Note	460/E000X
Pneumatically actuated	460/E000PN
Carbon steel body *Note	460/E000XM

**NOTE:** The valve specification changes the part number

## Related Parts

Description	Part No.
4" BSP eccentric outlet flange	SP468/8047
4" BSP blank cap	10304PSC
Blind flange	360/8108
CNAF/PTFE gasket	5005-468
Solid PTFE gasket	5005-468P

## Section View

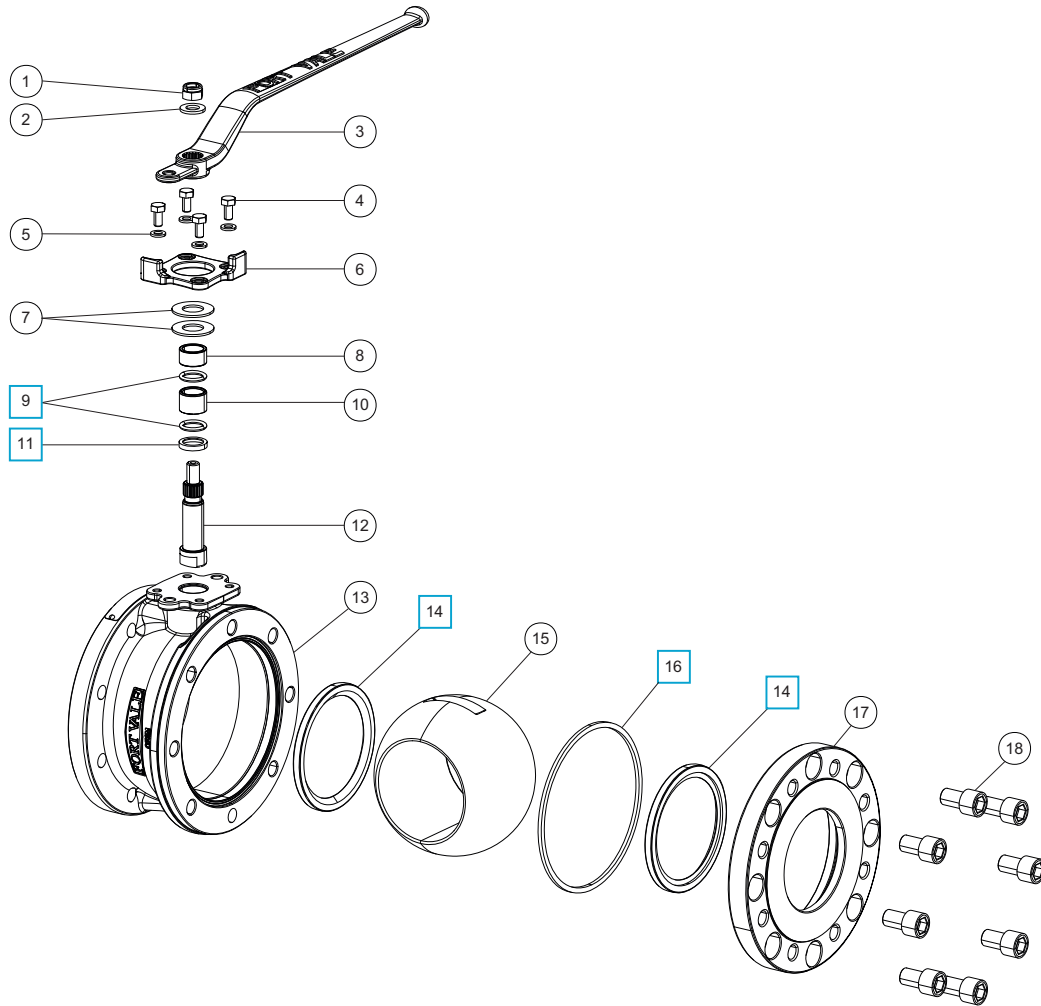




# DN100 Ball Valve with Inlet Seal Clamp

Part No: 460/E000X

## Parts Drawing



## Parts List

Item	Description	Part No.
1	M12 self-lock nut	5112-007
2	M12 washer	5123-003
3	Handle	360/3416
4	M8 hex bolt (4)	5111-822
5	M8 spring washer (4)	5113-003
6	Stop plate	460/A0027X
7	20mm Belleville washer (2)	5113-041
8	Top stuffing collar	360/3412
9	PTFE O ring (2)	5005-113 <input type="checkbox"/>
10	Bottom stuffing collar	460/A0010
11	Bottom bearing	360/3421 <input type="checkbox"/>
12	Spindle	460/A0009
13	Body	460/A0008
14	PTFE main seal (2)	5005-0010 <input type="checkbox"/>
15	Ø100mm bore ball	460/5051S1
16	PTFE body seal	5005-0011 <input type="checkbox"/>
17	Inlet flange	460/A0002
18	M16 cap screw (8)	5111-079

## Seal Kit

Description	Part No.
All parts marked <input type="checkbox"/> in the Parts List	460/E0SK



# Discharge Butterfly Valves - Road Tanker Specification

## Design Options

### Function

A discharge butterfly valve is used to load and discharge cargo. It is usually a secondary closure valve that is installed after a footvalve (primary closure valve) at the drain point of a tank. Our road tanker discharge butterfly valves are designed to weld to the discharge pipework so that there is no need to centralise the valve.

We offer two types of road tanker discharge butterfly valves:

- DN80 (3") Tankpro - 3 piece valve
- DN80 (3") Unifly - 2 piece valve

**NOTE:** Refer to a separate page for discharge butterfly valves dedicated to tank containers and transportable tanks.

### Design Options

The design options below are available on our standard range of Tankpro and Unifly discharge butterfly valves.

#### DN80 (3") Tankpro

##### Operation

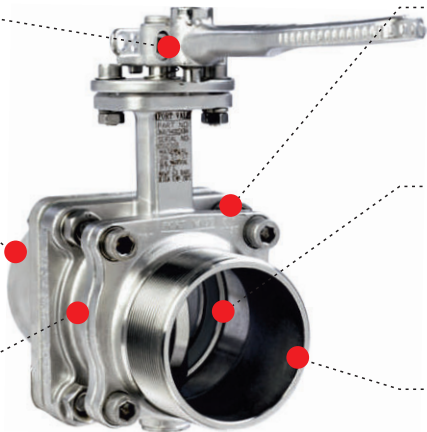
Manually operated  
Pneumatically actuated

##### Inlet

None  
Straight  
Angled

##### Valve Materials

316 stainless steel  
**Special service conditions:**  
High nickel alloys



##### Body

Non-vented  
Vented: 3/8" BSP  
Vented: 3/8" NPT

##### Main Seal

PTFE  
**Special service conditions:**  
High-temperature compatible seals

##### Outlet

3" BSP  
3" BSP extended  
3" NPT  
Weld prepared

#### DN80 (3") Unifly

##### Operation

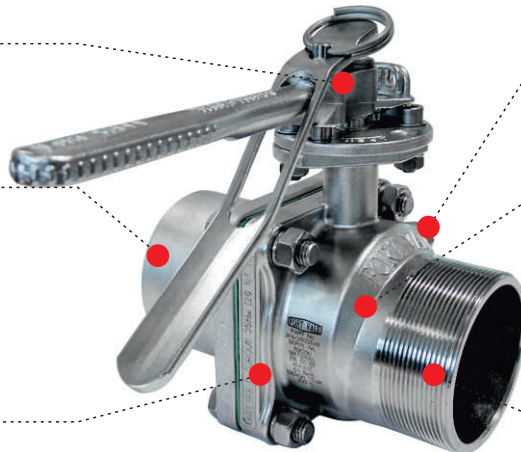
Manually operated  
Pneumatically actuated

##### Inlet

None  
Straight  
Angled  
85mm I/D

##### Valve Materials

316 stainless steel  
**Special service conditions:**  
High nickel alloys



##### Body

Non-vented  
Vented: 3/8" BSP

##### Main Seal

PTFE  
**Special service conditions:**  
High-temperature compatible seals

##### Outlet

3" BSP  
3" BSP extended



## Discharge Butterfly Valves - Road Tanker Specification

### Design Options

---

### Discharge Butterfly Valves for Dedicated Service

We offer a range of discharge butterfly valves suitable for these service conditions and special cargoes:

- Tank containers & transportable tanks
- Hygienic service

Please contact us for more information about these valves.

### Related Parts

We recommend our range of compatible ancillary parts:

- Flanges - inlet, adapter, outlet
- Tertiary closures
- Fasteners

Please contact us for more information about these parts.



# DN80 Tankpro Road Tanker Butterfly Valve

Part No: 368/9400SXBA



## Specification

### Nominal size

DN80

### Body type

Weld-prepared inlet, 3" BSP threaded outlet

### Properties

Left hand operated, lockable handle with TIR

### Materials

Contact parts: 316 stainless steel

Main seal: PTFE

Alternatives are available, refer to the Design Options page

## Design Conditions

Weight:	6.15 Kg
Design Pressure (MAWP):	6 Bar
Test Pressure:	11 Bar
Design Temperature Min:	-40°C
Design Temperature Max:	200°C

**NOTE:** The Design Conditions and Section View dimensions are for the specified part number only.

### Approvals

BS EN 14432

LRQA Design Appraisal: DCF9376/1

Rijksdienst voor het Wegverkeer Approval: VLG S-9301

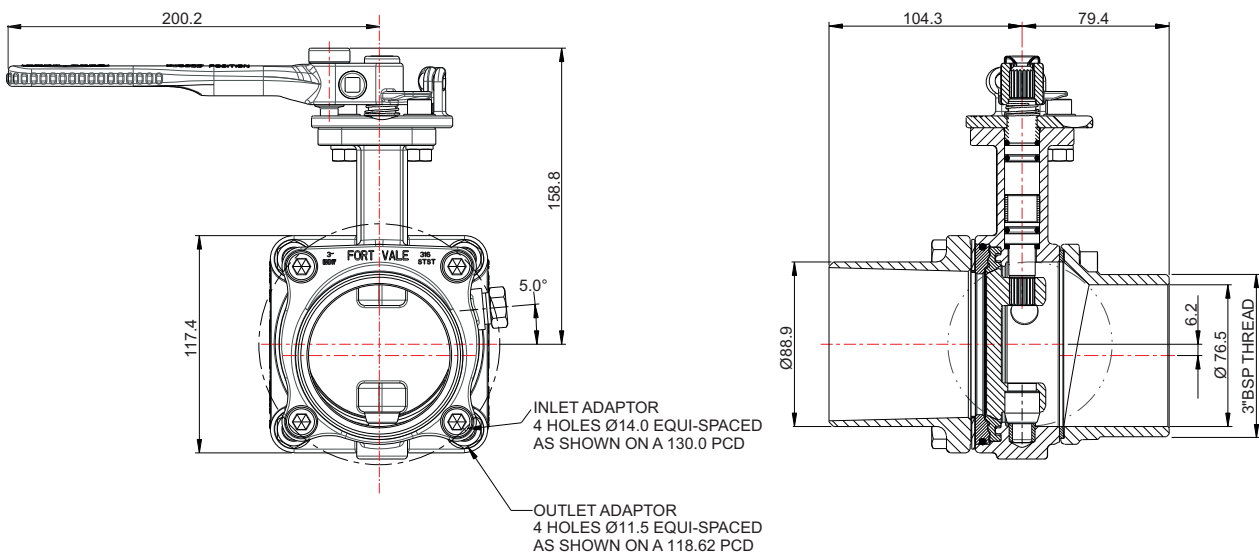
## Range

Body	Outlet	Part No.
Non-vented	3" BSP standard	368/9400SXBA
Vented 3/8" BSP	3" BSP standard	368/9400SVBA
Non-vented	3" BSP extended	368/9400SXEA
Vented 3/8" BSP	3" BSP extended	368/9400SVEA

## Related Parts

Description	Part No.
3" BSP blank cap with PTFE seal	10303PS
Conversion mounting kit	368/9401KIT

## Section View

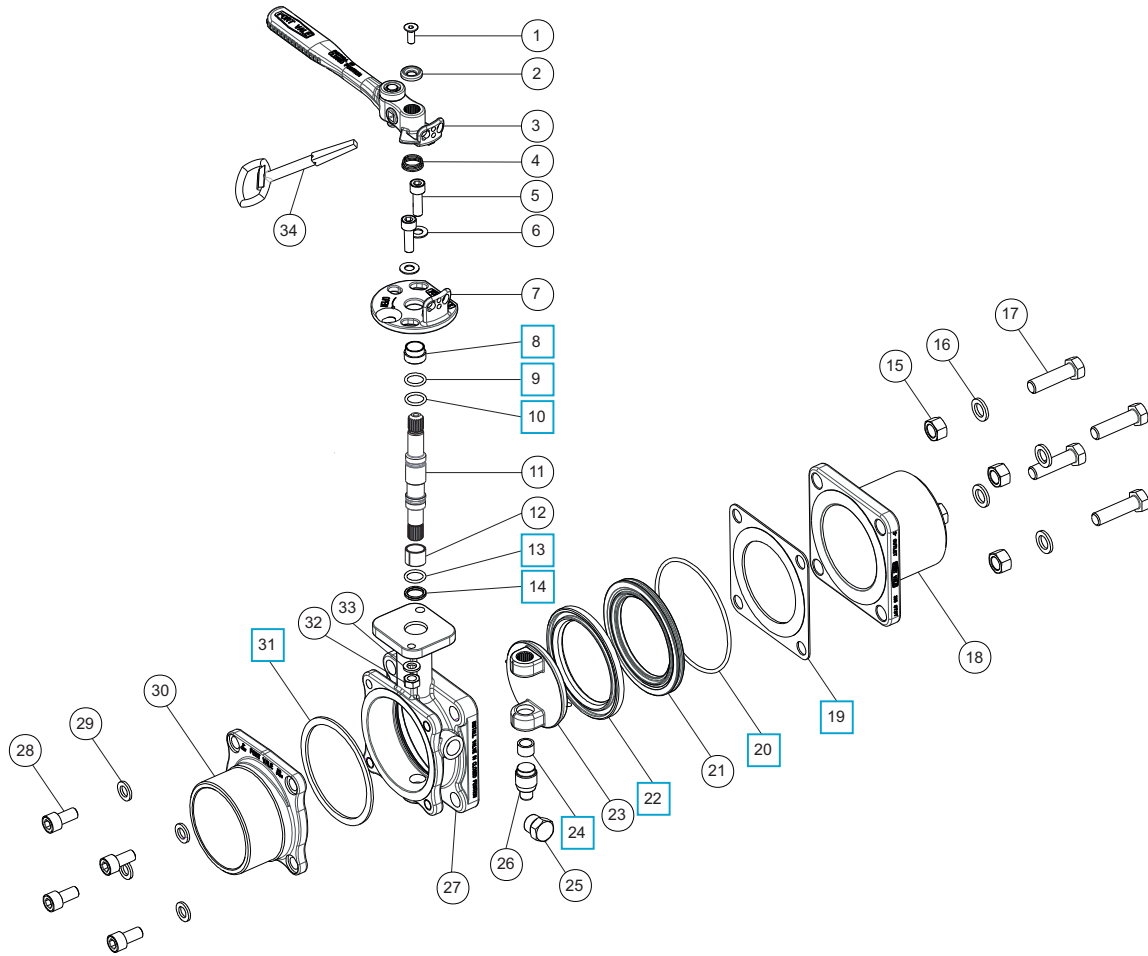




# DN80 Tankpro Road Tanker Butterfly Valve

Part No: 368/9400SXBA

## Parts Drawing



### Parts List

Item	Description	Part No.
1	M6 socket head set screw	5111-030
2	Washer	20370
3	Handle	368/0075
4	Electrical continuity spring	368/0014
5	M8 socket head cap screw (2)	5111-148
6	M8 plain washer (2)	5113-005
7	Stuffing plate	368/0041
8	Stuffing clamp bush	368/0301 <input type="checkbox"/>
9	PTFE O ring	20363 <input type="checkbox"/>
10	Viton O ring	20361 <input type="checkbox"/>
11	Spindle	368/0200
12	Split bearing	252/0517
13	Perfluoroelastomer O ring	5005-586 <input type="checkbox"/>
14	PTFE spindle seat	368/0009 <input type="checkbox"/>
15	M12 full nut (4)	5112-006
16	M12 spring washer (4)	5113-010
17	M12 hex head set screw (4)	5111-023
18	Inlet adaptor *Note	368/9410
19	CNAF/PTFE inlet gasket	5005-707 <input type="checkbox"/>
20	Nitrile O ring	5005-342 <input type="checkbox"/>

### Parts List

Item	Description	Part No.
21	Seal clamp	368/9148
22	PTFE main seal	368/0002 <input type="checkbox"/>
23	Closure plate	368/0400
24	Bottom spindle bush	368/0035 <input type="checkbox"/>
25	3/8" taper plug *Note	5128-0XX
26	Bottom spindle	368/0036
27	Body (non-vented) *Note	368/9420A
28	M10 socket head cap screw (4)	5111-053
29	M10 spring washer (4)	5113-002
30	3" BSP outlet *Note	368/9430
31	PTFE outlet seal	5005-706 <input type="checkbox"/>
32	M8 full nut (2)	5112-001
33	M8 spring washer (2)	5113-003
34	Key	368/4625

NOTE: The valve specification changes the part number

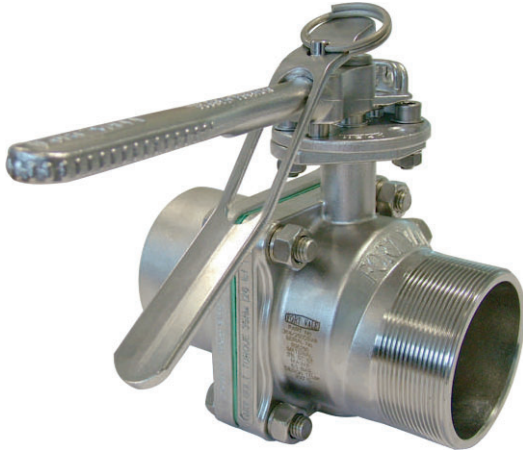
### Seal Kit

Description	Part No.
All parts marked <input type="checkbox"/> in the Parts List	368/94SK



# DN80 Unify Road Tanker Butterfly Valve

Part No: 368/2500SVA



## Specification

### Nominal size

DN80

### Body type

Weld-prepared inlet, 3" BSP threaded outlet

### Properties

Left hand operated, handle with TIR

### Materials

Contact parts: 316 stainless steel

Main seal: PTFE

Alternatives are available, refer to the Design Options page

## Design Conditions

Weight:	5.76 Kg
Design Pressure (MAWP):	6 Bar
Test Pressure:	11 Bar
Design Temperature Min:	-40°C
Design Temperature Max:	200°C

**NOTE:** The Design Conditions and Section View dimensions are for the specified part number only.

### Design Code

BS EN 14432

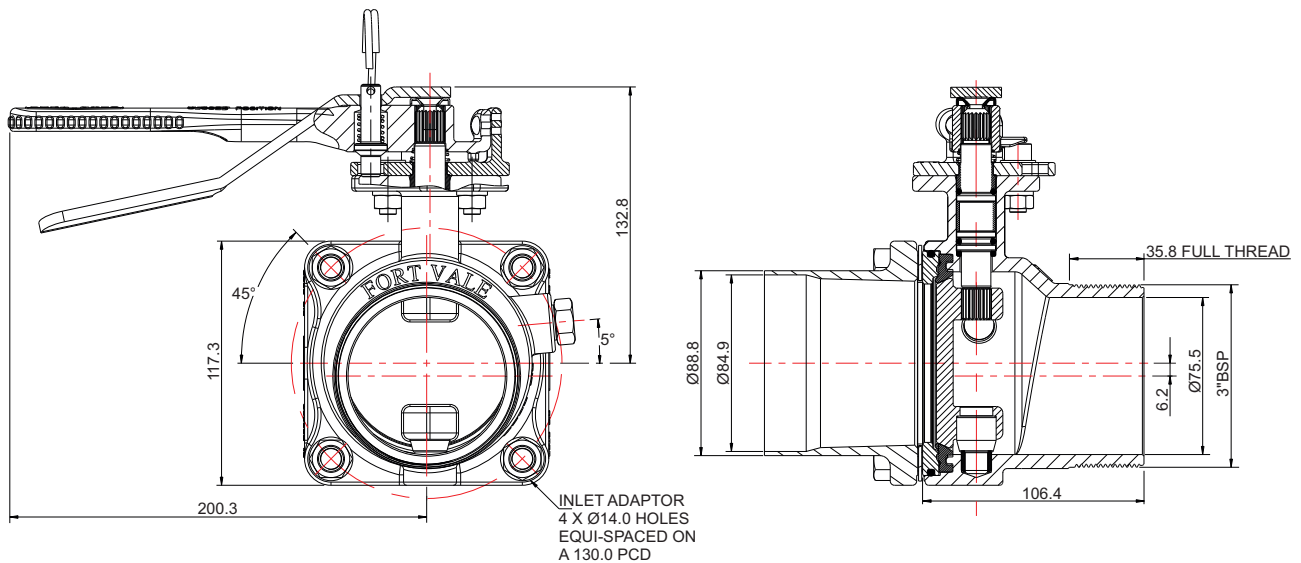
## Range

Body	Inlet Adaptor	Part No.
Vented 3/8" BSP	Straight	368/2500SVA
Non-vented	Straight	368/2500SNA
Vented 3/8" BSP	None	368/2500NVA
Non-vented	None	368/2500NNA
Vented 3/8" BSP	Angled	368/2500AVA
Non-vented	Angled	368/2500ANA
Vented 3/8" BSP	85mm I/D	368/2500BVA
Non-vented	85mm I/D	368/2500BNA

## Related Parts

Description	Part No.
3" BSP blank cap with PTFE seal	10303PS

## Section View

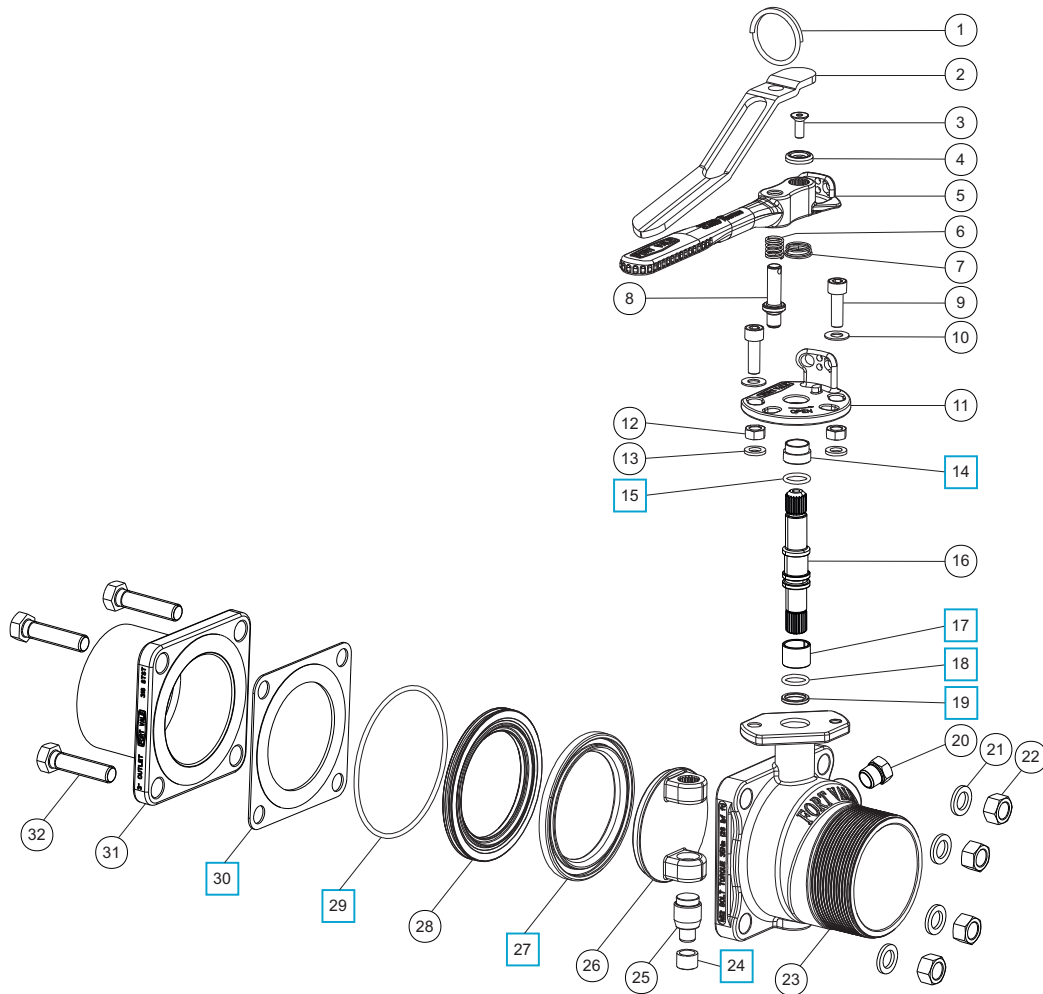




# DN80 Unify Road Tanker Butterfly Valve

Part No: 368/2500SVA

## Parts Drawing



### Parts List

Item	Description	Part No.	
1	Split ring	368/0011	
2	Handle lever	368/9837	
3	Countersunk bolt	5111-030	
4	Retaining washer	20370	
5	Handle	368/0050	
6	Handle spring	368/0012	
7	Electrical continuity spring	368/0014	
8	Handle location pin	368/0010	
9	M8 cap screw (2)	5111-148	
10	M8 plain washer (2)	5113-005	
11	Stuffing clamp	368/0040	
12	M8 full nut (2)	5112-001	
13	M8 spring washer (2)	5113-003	
14	Stuffing clamp bush	368/0301	<input type="checkbox"/>
15	PTFE O ring	20363	<input type="checkbox"/>
16	Spindle	368/0201	
17	Split bearing	252/0517	<input type="checkbox"/>
18	Viton O ring	20361	<input type="checkbox"/>
19	PTFE spindle seat	368/0009	<input type="checkbox"/>

### Parts List

Item	Description	Part No.	
20	3/8" taper plug	5128-011	
21	M12 spring washer (4)	5113-010	
22	M12 full nut (4)	5112-006	
23	Vented body *Note	368/2520	
24	Bottom bush	368/0035	<input type="checkbox"/>
25	Bottom spindle	368/0036	
26	Closure plate	368/0400	
27	PTFE main seal	368/0002	<input type="checkbox"/>
28	Seal clamp	368/9148	
29	Nitrile O ring	5005-342	<input type="checkbox"/>
30	CNAF/PTFE gasket	5005-707	<input type="checkbox"/>
31	Inlet flange *Note	368/9410	
32	M12 hex bolt (4)	5111-032	

NOTE: The valve specification changes the part number

### Seal Kit

Description	Part No.
All parts marked <input type="checkbox"/> in the Parts List	368/25SK



# DN80 Clamped Widdop Butterfly Valve

Part No: 368/7000B



## Specification

### Nominal size

DN80

### Body type

Clamped

### Properties

Left hand operated, handle with TIR and padlock slots

### Materials

Contact parts: 316 stainless steel

Main seal: PTFE

Alternatives are available, refer to the Design Options page

## Design Conditions

Weight:	3.5 Kg
Design Pressure (MAWP):	6 Bar
Test Pressure:	10.2 Bar
Design Temperature Min:	-40°C
Design Temperature Max:	200°C

**NOTE:** The Design Conditions and Section View dimensions are for the specified part number only.

### Design Code

BS EN 14432

### Design Approvals

LRQA  
Rijksdienst  
SNCF  
RMRS

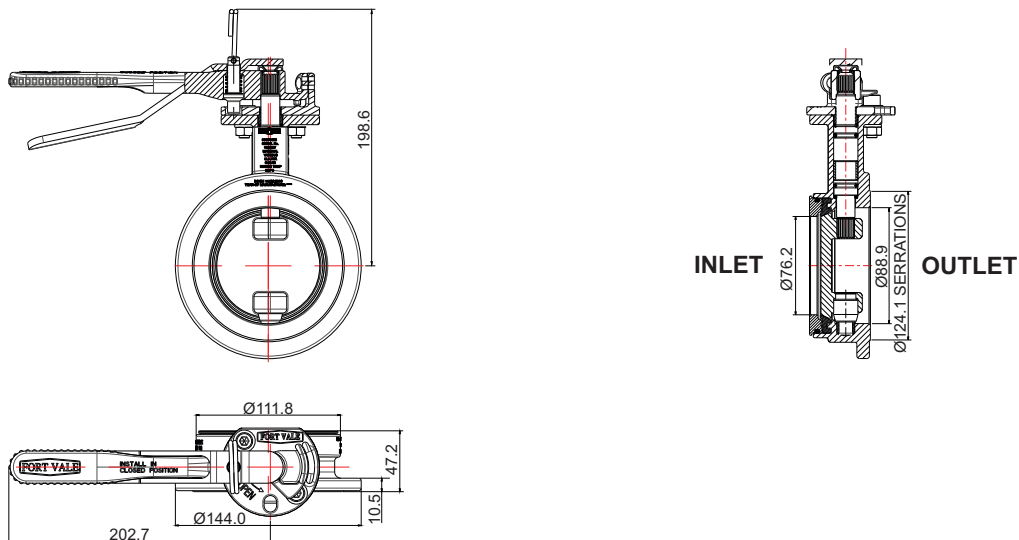
## Range

Description	Part No.
Standard specification	368/7000B
With hemi-spherical closure plate	368/9110B
Std. specification, right hand operated	368/4000A

## Related Parts

Description	Part No.
CNAF/PTFE inlet gasket	5005-049
CNAF/PTFE outlet gasket	5005-490
CNAF/PTFE 4 hole square inlet gasket	5005-198
CNAF/PTFE 4 hole square outlet gasket	5005-195
Bolting kit	368/1100
3" BSP outlet flange	SP368/8047
3" BSP blank cap with PTFE seal	10303PS
DN80 camlock outlet flange	368/8058
DN80 camlock blank cap	90/DC300
DN80 mating flange	294/0081

## Section View

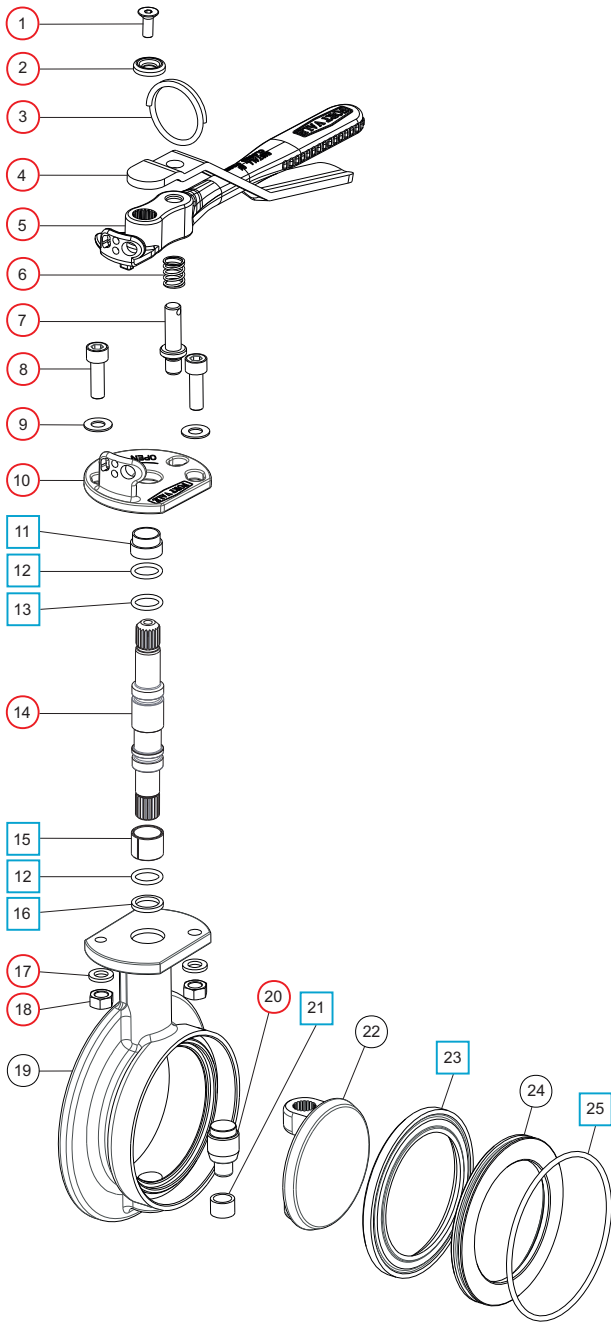




# DN80 Clamped Widdop Butterfly Valve

Part No: 368/7000B

## Parts Drawing



## Parts List

Item	Description	Part No.	
1	M6 set screw	5111-030	○
2	Washer	20370	○
3	Split ring	368/0011	○
4	Operating lever	368/9837	○
5	Handle	368/0050	○
6	Handle location spring	368/0012	○
7	Handle location pin	368/0010	○
8	M8 cap screw (2)	5111-148	○
9	M8 plain washer (2)	5113-005	○
10	Stuffing clamp	368/0040	○
11	PTFE stuffing clamp bush	368/0301	□ ○
12	PTFE O ring (2)	20363	□ ○
13	Viton O ring	20361	□ ○
14	Spindle <b>*Note</b>	368/0200	○
15	Split bearing	252/0517	□ ○
16	PTFE spindle seat	368/0009	□ ○
17	M8 spring washer (2)	5113-003	○
18	M8 full nut (2)	5112-001	○
19	Body	368/0150	
20	Bottom spindle	368/0036	○
21	PTFE bottom bush	368/0035	□ ○
22	Closure plate	368/0400	
23	PTFE main seal	368/0002	□ ○
24	Seal clamp plate	368/0045	
25	Nitrile O ring	5005-342	□ ○

**NOTE:** We can supply the spindle with the seals installed. Part no. **368/0200S** includes item 11 thru 16.

## Seal Kit

Description	Part No.
All parts marked □ in the Parts List	368/00SK

## Repair Kit

Description	Part No.
All parts marked ○ in the Parts List, includes 368/0200S (see <b>NOTE</b> )	368/00RKA



# DN80 Clamped Widdop Butterfly Valve - Pneumatic Actuator

Part No: 368/7000BPN



## Specification

### Nominal size

DN80

### Body type

Clamped

### Properties

With spring-return pneumatic actuator and anti-clockwise opening

### Materials

Contact parts: 316 stainless steel

Main seal: PTFE

Alternatives are available, refer to the Design Options page

## Design Conditions

Valve Assembly Weight: 16.6 Kg

### Butterfly Valve

Design Pressure (MAWP): 6 Bar  
 Test Pressure: 10.5 Bar  
 Design Temperature Min: -40°C  
 Design Temperature Max: 200°C

### Actuator

Actuator Maximum Pressure: 8 Bar  
 Design Temperature Min: -20°C  
 Design Temperature Max: 80°C

### Actuator Operating Conditions

Start to open: 3.1 Bar  
 Fully open: 3.8 Bar

**NOTE:** The Design Conditions and Section View dimensions are for the specified part number only.

### Design Code

BS EN 14432

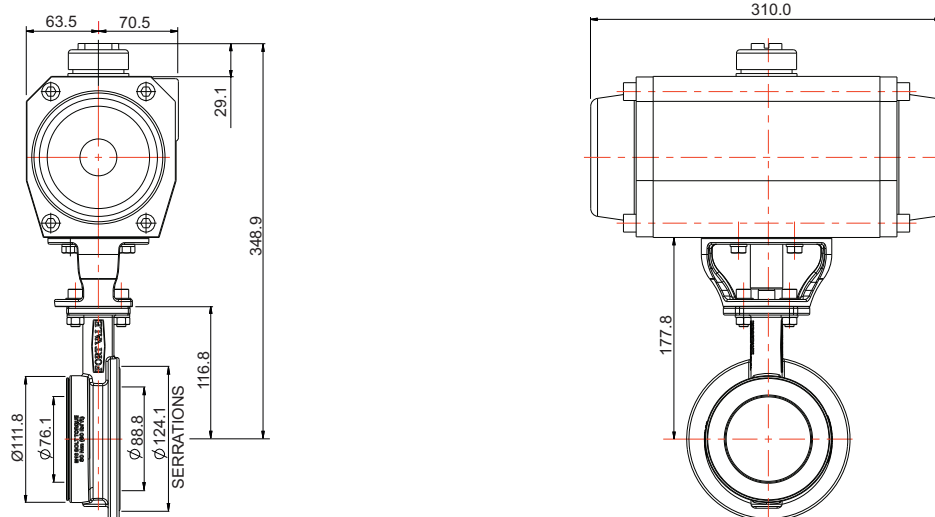
## Range

Description	Part No.
Std. specification - pneumatic actuator	368/7000BPN
Std. specification - manually operated	368/7000B

## Related Parts

Description	Part No.
CNAF/PTFE inlet gasket	5005-049
CNAF/PTFE outlet gasket	5005-490
Bolting kit	368/1100
3" BSP outlet flange	368/8047
3" BSP blank cap with PTFE seal	10303PS

## Section View

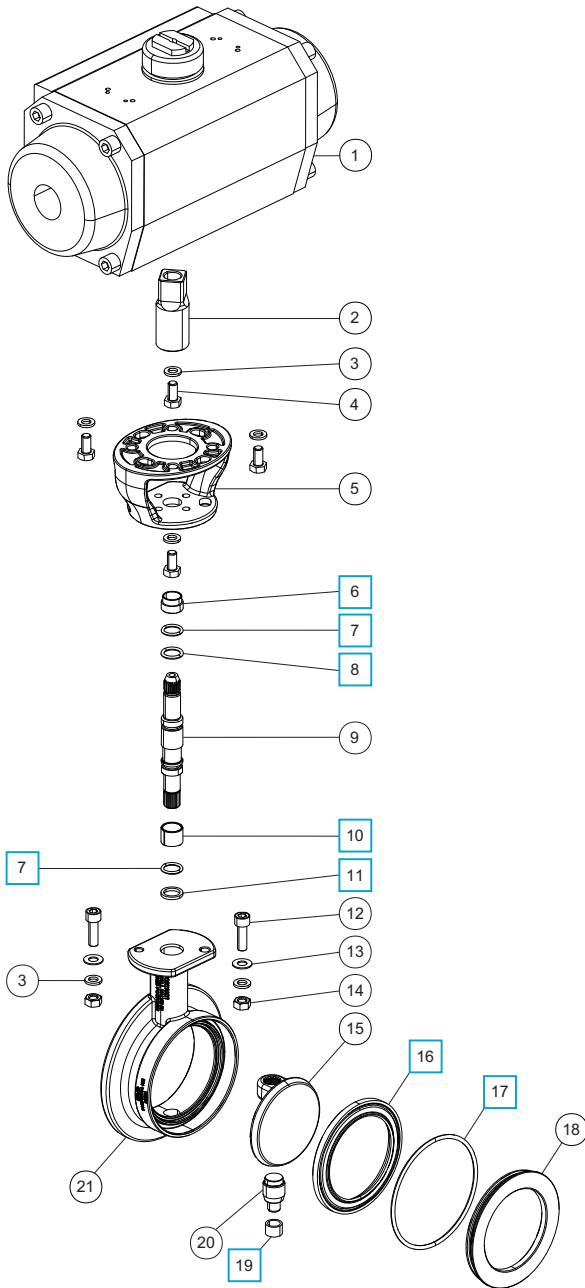




# DN80 Clamped Widdop Butterfly Valve - Pneumatic Actuator

Part No: 368/7000BPN

## Parts Drawing



## Parts List

Item	Description	Part No.	
1	Pneumatic actuator	5127-115	
2	Drive adaptor assembly	368/2824	
3	M8 flat spring washer (6)	5113-003	
4	M8 x 20mm bolt (4)	5111-822	
5	Bridge assembly	368/2820	
6	Stuffing clamp bush	368/0301	<input type="checkbox"/>
7	PTFE O ring (2)	20363	<input type="checkbox"/>
8	Viton O ring	20361	<input type="checkbox"/>
9	Spindle	368/0200/2	
10	Split bearing	252/0517	<input type="checkbox"/>
11	PTFE spindle seat	368/0009	<input type="checkbox"/>
12	M8 x 25mm cap screw (2)	5111-148	
13	M8 plain washer (2)	5113-005	
14	M8 full nut (2)	5112-001	
15	Closure plate	368/0400	
16	Main seal	368/0002	<input type="checkbox"/>
17	Nitrile O ring	5005-342	<input type="checkbox"/>
18	Seal clamp plate	368/0045	
19	Bottom bush	368/0035	<input type="checkbox"/>
20	Bottom spindle	368/0036	
21	Body	368/0150	

## Seal Kit

Description	Part No.
All parts marked <input type="checkbox"/> in the Parts List	368/00SK



# TW80 Clamped Butterfly Valve

Part No: 368/5500B



## Specification

### Nominal size

DN80

### Body type

Drilled 8 x 12mm holes on a 130mm PCD (TW80)

### Properties

Left hand operated, lockable handle with TIR

### Materials

Contact parts: 316 stainless steel

Main seal: PTFE

Alternatives are available, refer to the Design Options page

## Design Conditions

Weight:	5.4 Kg
Design Pressure (MAWP):	6 Bar
Test Pressure:	10 Bar
Design Temperature Min:	-40°C
Design Temperature Max:	200°C

**NOTE:** The Design Conditions and Section View dimensions are for the specified part number only.

### Design Code

BS EN 14432

### Design Approval

AIB Vincotte

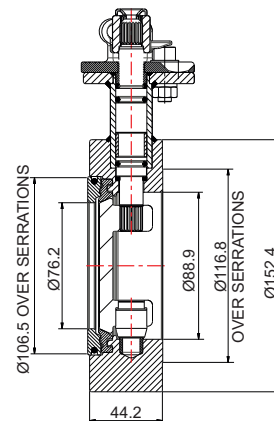
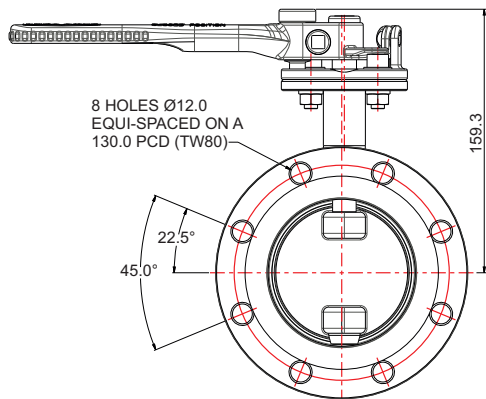
## Range

Description	Part No.
TW80 clamped valve	368/5500B
TW100 clamped valve	468/5600B

## Related Parts

Description	Part No.
CNAF/PTFE TW80 gasket	5005-715
TW80 mating flange	845/8001
3" BSP eccentric TW80 outlet flange	368/5513

## Section View

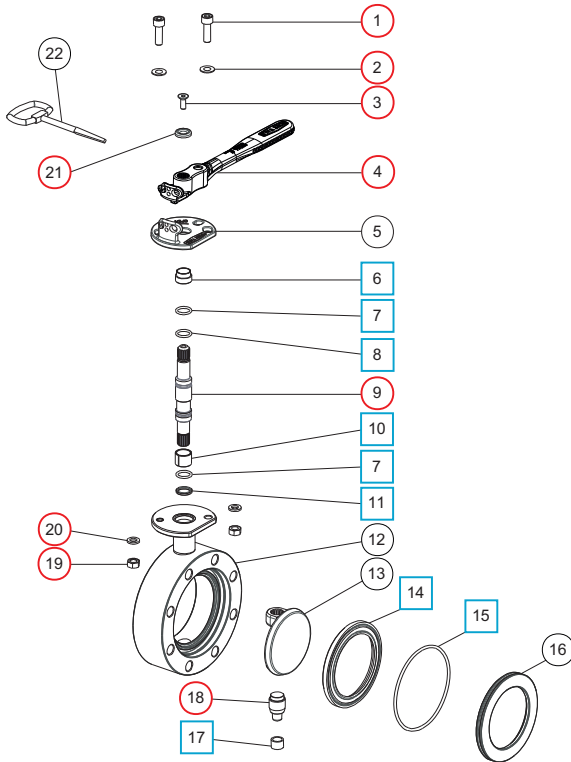




# TW80 Clamped Butterfly Valve

Part No: 368/5500B

## Parts Drawing



## Parts List

Item	Description	Part No.	
1	M8 cap screw (2)	5111-148	○
2	M8 plain washer (2)	5113-005	○
3	M6 countersunk set screw	5111-030	○
4	Barrel lock handle	368/0075	○
5	Stuffing clamp	368/0041	
6	PTFE stuffing clamp bush	368/0301	□ ○
7	PTFE O ring (2)	20363	□ ○
8	Viton O ring	20361	□ ○
9	Spindle	368/0200	○
10	Split bearing	252/0517	□ ○
11	PTFE bearing	368/0009	□ ○
12	Body	368/5510	
13	Closure plate	368/0400	
14	Main seal	368/0002	□ ○
15	Nitrile O ring	5005-342	□ ○
16	Seal clamp	368/9148	
17	PTFE bottom bush	368/0035	□ ○
18	Bottom spindle	368/0036	○
19	M8 full nut (2)	5112-001	○
20	M8 spring washer (2)	5113-003	○
21	Retaining washer	20370	○
22	Key	368/4625	

## Seal Kit

Description	Part No.
All parts marked □ in the Parts List	368/00SK

## Repair Kit

Description	Part No.
All parts marked ○ in the Parts List	368/50RKB



# DN100 Clamped Butterfly Valve

Part No: 468/7250B



## Specification

### Nominal size

DN100

### Body type

Clamped

### Properties

Left hand operated, handle with TIR and padlock slots

### Materials

Contact parts: 316 stainless steel

Main seal: Flexityt

Alternatives are available, refer to the Design Options page

## Design Conditions

Weight:	4 Kg
Design Pressure (MAWP):	6 Bar
Test Pressure:	10.2 Bar
Design Temperature Min:	-40°C
Design Temperature Max:	200°C

**NOTE:** The Design Conditions and Section View dimensions are for the specified part number only.

### Design Code

BS EN 14432

### Design Approval

LRQA

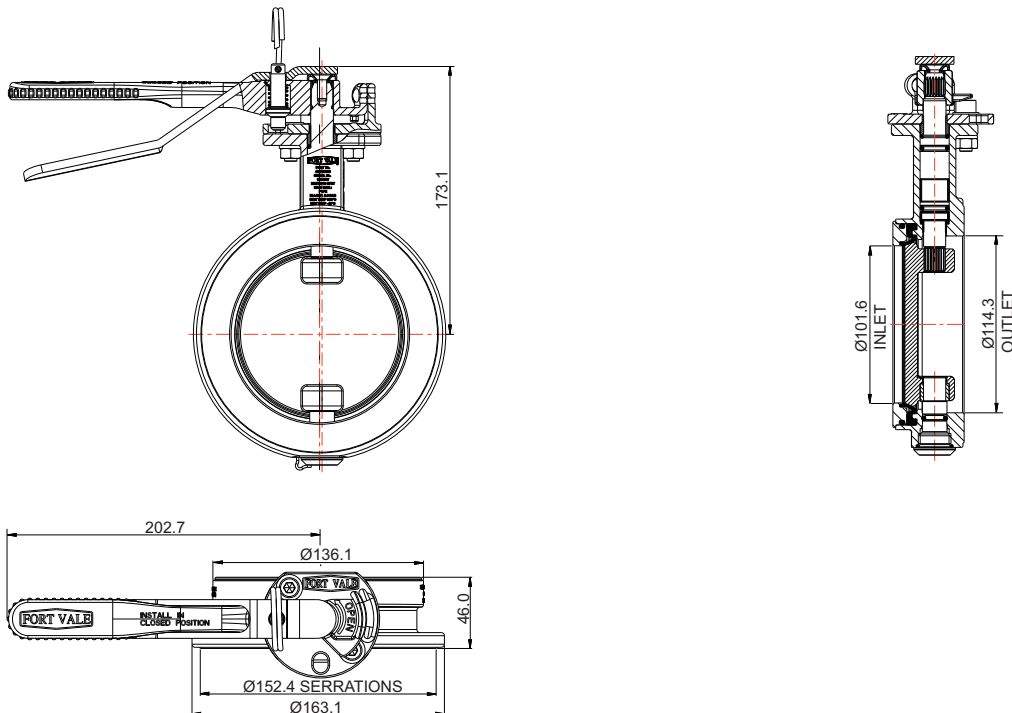
## Range

Description	Part No.
Standard specification	468/7250B
Pneumatically actuated	468/7200BPN
With high-temperature seals	468/725HTB

## Related Parts

Description	Part No.
CNAF/PTFE inlet gasket	5005-468
CNAF/PTFE outlet gasket	5005-469
Bolting kit (8x bolts, nuts, washers)	468/1100
4" BSP outlet flange	468/8047
4" BSP blank cap with PTFE seal	10304PSC

## Section View

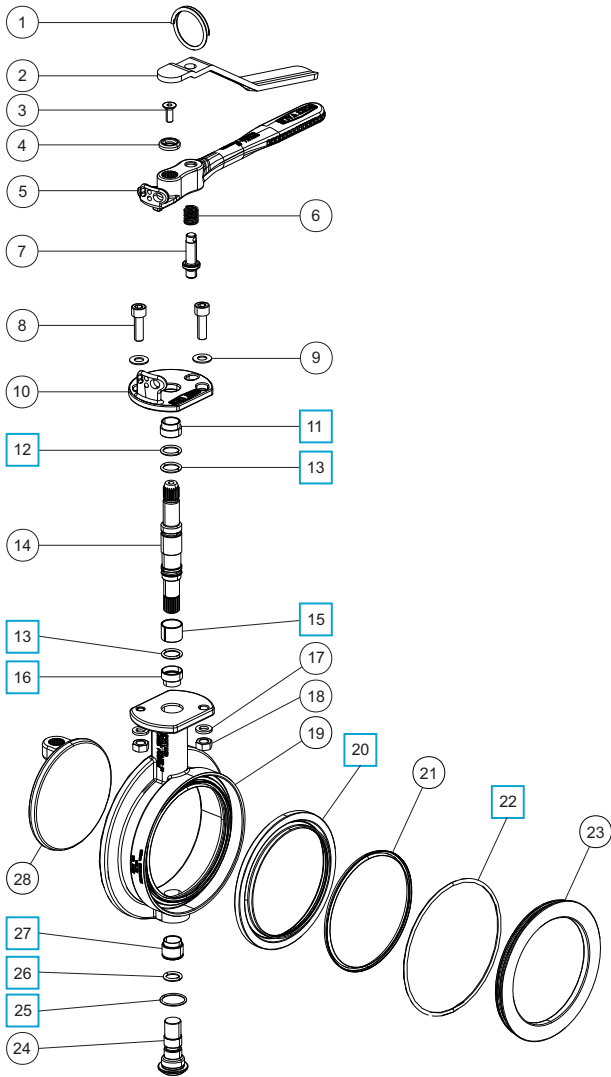




# DN100 Clamped Butterfly Valve

Part No: 468/7250B

## Parts Drawing



## Parts List

Item	Description	Part No.	
1	Split ring	368/0011	
2	Operating lever	368/9837	
3	Countersunk set screw	5111-030	
4	Washer	20370	
5	Handle	368/0050	
6	Handle spring	368/0012	
7	Handle location pin	368/0010	
8	M8 cap screw (2)	5111-148	
9	M8 plain washer (2)	5113-005	
10	Stuffing clamp	368/0040	
11	PTFE stuffing clamp bush	368/0301	<input type="checkbox"/>
12	PTFE O ring	20363	<input type="checkbox"/>
13	Viton O ring (2)	20361	<input type="checkbox"/>
14	Spindle	368/0205	
15	Split bearing	368/0039	<input type="checkbox"/>
16	PTFE bearing	368/0009HT/1	<input type="checkbox"/>
17	M8 spring washer (2)	5113-003	
18	M8 full nut (2)	5112-001	
19	Body	468/0200	
20	Flexityt PTFE main seal	468/0030	<input type="checkbox"/>
21	Flexityt seal spring	468/0031	
22	Nitrile O ring	5005-357	<input type="checkbox"/>
23	Seal clamp plate	468/0033	
24	Bottom spindle	468/0005	
25	PTFE O ring	5005-160	<input type="checkbox"/>
26	High temperature seal	ORB614K1	<input type="checkbox"/>
27	PTFE bottom bush	468/0035	<input type="checkbox"/>
28	Closure plate	468/0400	

## Seal Kit

Description	Part No.
All parts marked <input type="checkbox"/> in the Parts List	468/725SKB



# TW100 Clamped Butterfly Valve

Part No: 468/5600B



## Specification

### Nominal size

DN100

### Body type

Drilled 8 x 14mm holes on a 150mm PCD (TW100)

### Properties

Left hand operated, lockable handle with TIR

### Materials

Contact parts: 316 stainless steel

Main seal: Flexityt

Alternatives are available, refer to the Design Options page

## Design Conditions

Weight:	4 Kg
Design Pressure (MAWP):	6 Bar
Test Pressure:	11 Bar
Design Temperature Min:	-40°C
Design Temperature Max:	200°C

**NOTE:** The Design Conditions and Section View dimensions are for the specified part number only.

### Design Code

BS EN 14432

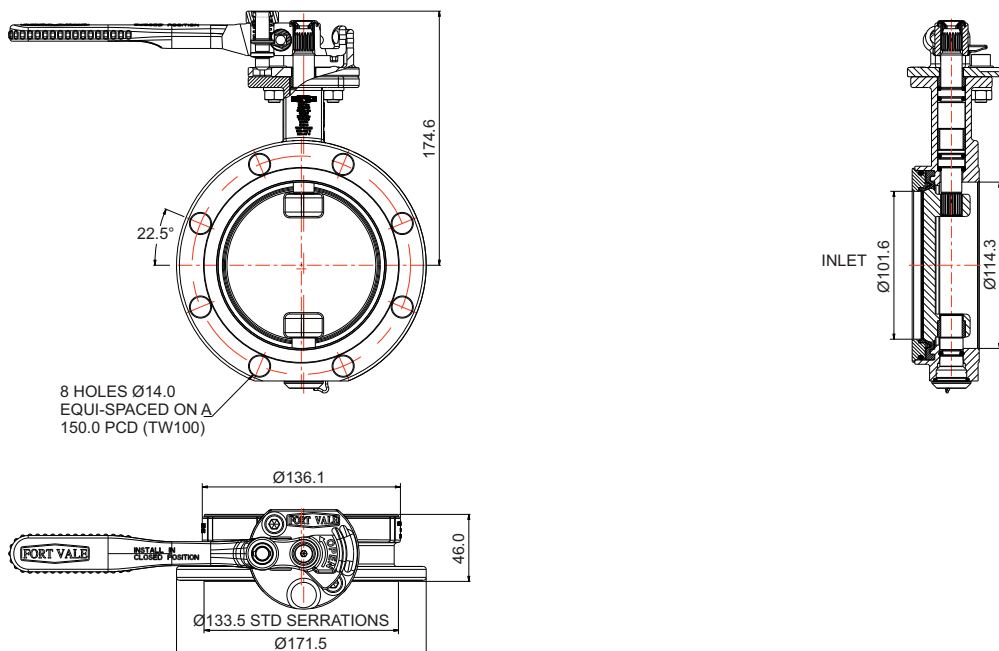
## Range

Description	Part No.
TW100 clamped valve	468/5600B
TW80 clamped valve	368/5500B

## Related Parts

Description	Part No.
CNAF/PTFE TW100 inlet gasket	5005-832
CNAF/PTFE TW100 outlet gasket	5005-832/1
TW100 mating flange	875/8001
4" BSP eccentric TW100 outlet flange	468/5175

## Section View

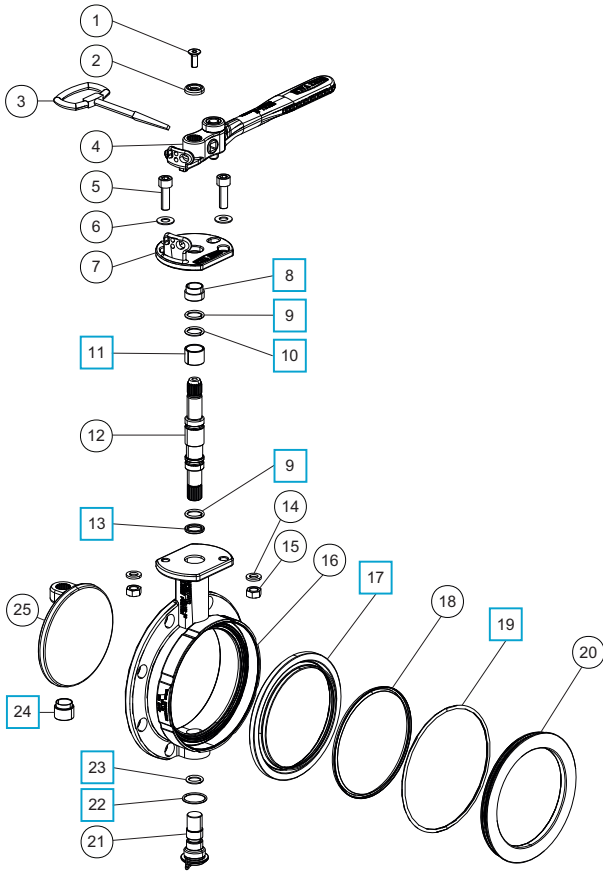




# TW100 Clamped Butterfly Valve

Part No: 468/5600B

## Parts Drawing



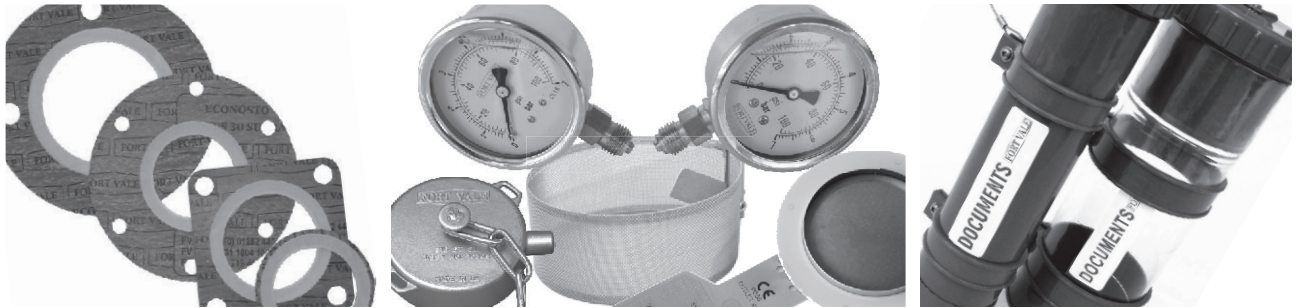
## Parts List

Item	Description	Part No.	
1	Countersunk set screw	5111-030	
2	Retaining washer	20370	
3	Key	368/4625	
4	Barrel lock handle	368/0075	
5	M8 cap screw (2)	5111-148	
6	M8 plain washer (2)	5113-005	
7	Stuffing clamp	368/0041	
8	PTFE stuffing clamp bush	368/0301	<input type="checkbox"/>
9	PTFE O ring (2)	20363	<input type="checkbox"/>
10	Viton O ring	20361	<input type="checkbox"/>
11	Split bearing	252/0517	<input type="checkbox"/>
12	Spindle	368/0200	
13	PTFE bearing	368/0009	<input type="checkbox"/>
14	M8 flat spring washer (2)	5113-003	
15	M8 full nut (2)	5112-001	
16	TW100 body	468/0170	
17	Flexityt PTFE main seal	468/0030	<input type="checkbox"/>
18	Flexityt seal spring	468/0031	
19	Nitrile O ring	5005-357	<input type="checkbox"/>
20	Seal clamp plate	468/0033	
21	Bottom spindle	468/0005	
22	PTFE O ring	5005-160	<input type="checkbox"/>
23	Perfluoroelastomer O ring	ORB614K1	<input type="checkbox"/>
24	Bottom bush	468/0035	<input type="checkbox"/>
25	Closure plate	468/0400	

## Seal Kit

Description	Part No.
All parts marked <input type="checkbox"/> in the Parts List	468/56SKB

# Accessories





## Document Holders

### Accessories & Spare Parts



### Specification

**Nominal sizes**

75mm and 110mm

**Body material options**

Opaque plastic

Transparent plastic

**Fixing bracket options**

Plastic

Stainless steel

**Cap**

All document holders are supplied with a plastic cap as standard which is attached by a stainless steel wire to prevent loss/theft.

### Document Holders

Size	Body	Brackets	Part No.
75mm	Opaque	Plastic	360/1101
75mm	Transparent	Plastic	360/1101T
75mm	Opaque	St/steel	360/1101ABSS
75mm	Transparent	St/steel	360/1101TBSS
110mm	Transparent	Plastic	460/1101T
110mm	Transparent	St/steel	460/1101TBSS

### Spare Parts - Plastic Caps

All caps are supplied with a stainless steel cable.

Size	Part No.
75mm	360/1010
110mm	460/1010

### Spare Parts - Fixing Brackets

Size	Material	Part No.
75mm	Plastic	360/1007
75mm	Stainless steel	360/1007SS
110mm	Plastic	460/1007
110mm	Stainless steel	460/1007SS



## Temperature Gauges Accessories & Spare Parts

### Analogue Temperature Gauge - Capillary



### Specification: Analogue

#### Temperature range options

-20°C to 160°C

-20°C to 200°C

**NOTE:** The temperature range refers to the capillary or probe only

#### Temperature sensor options

2500mm capillary

250mm stainless steel tube with brass thermowell probe

#### Gauge fill options

Silicone oil filled

Not filled

### Analogue Temperature Gauge - Probe

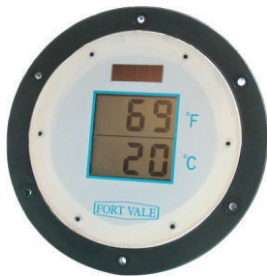


### Analogue Temperature Gauges

Temperature Range		Capillary or Probe	Oil Filled	Part No.
°C	°F			
-20 to 200	-4 to 392	Capillary	Yes	922/TEMP200
-20 to 160	-4 to 320	Capillary	Yes	922/TEMP160
-20 to 200	-4 to 392	Probe	No	922/TEMPT200
-20 to 160	-4 to 320	Probe	No	922/TEMPT160

**NOTE:** The temperature range refers to the capillary/probe only.

### Digital Temperature Gauge - Capillary



### Specification: Digital

#### Temperature range options

-200°C to 250°C

**NOTE:** The temperature range refers to the capillary or probe only

#### Temperature sensor options

1000mm capillary

### Digital Temperature Gauge

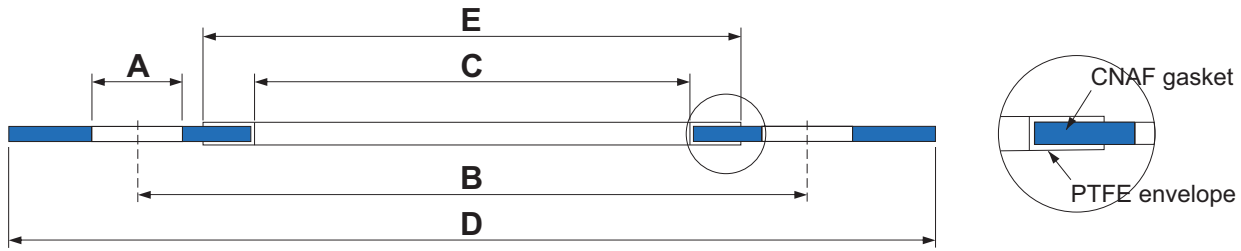
Temperature Range		Capillary or Probe	Part No.
°C	°F		
-200 to 250	-328 to 482	Capillary	922/TEMPDIGI250

**NOTE:** The temperature range refers to the capillary/probe only.



## Valve Gaskets

### Accessories & Spare Parts

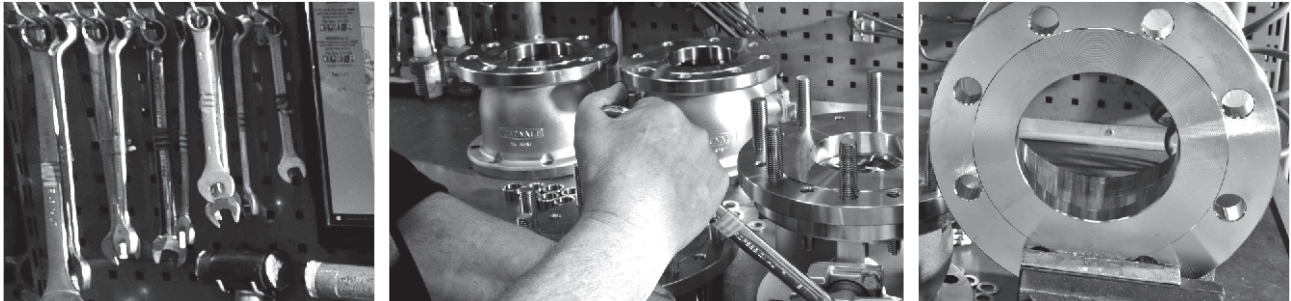


Part No	No. of holes	Ø A Hole mm	B PCD mm	Ø C Internal mm	Ø D External mm	Ø E Envelope mm	Material	Compatible with
5005-046	-	-	-	75	90	90	Rubber/PTFE	2½" BSP relief valve tank seal
5005-191	-	-	-	75	90	90	CNAF/PTFE	2½" BSP relief valve tank seal
5005-049	-	-	-	78	112	103	CNAF/PTFE	DN80 clamped butterfly valve inlet
5005-052	-	-	-	78	142	103	CNAF/PTFE	DN80 clamped butterfly valve inlet
5005-490	-	-	-	89	142	114	CNAF/PTFE	DN80 clamped butterfly valve outlet
5005-193	4	14	98	50	127	-	Solid PTFE	1½" ASA150 & 1½" BSTD
5005-500	4	11	100	50	95 SQUARE	-	Solid PTFE	DN50/2" BSP butterfly valve inlet
5005-348	4	18	110	37	152	-	Solid PTFE	DN40 flanged ball valve outlet
5005-361	4	18 open slot	114 minimum	50	165	-	Solid PTFE	DN50 flanged butterfly valve outlet
5005-055	4	17	114	55	152	80	CNAF/PTFE	2" BSTE
5005-360	4	18	125	49	165	-	Solid PTFE	DN50 flanged butterfly valve inlet
5005-036	4	18	146	80	184	-	Solid PTFE	3" BSTD
5005-427	4	18 open slot	146 minimum	83	190	103	CNAF/PTFE	3" ASA/BSTD/DIN80 DN80 ball/butterfly valve outlet
5005-417	4	18 open slot	146 minimum	83	190	-	Solid PTFE	3" ASA/BSTD/DIN80 DN80 ball/butterfly valve outlet
5005-875	4	18	146	89	184	114	CNAF/PTFE	DN80 clamped butterfly valve outlet 3" BSTD
5005-288	4	18	152	78	184	-	Solid PTFE	3" ASA150
5005-195	4	18	160	89	144 SQUARE	114	CNAF/PTFE	DN80 clamped butterfly valve outlet
5005-023	4	18	172	127	203	152	CNAF/PTFE	DN80 top discharge valve & 30° footvalve inlet
5005-177	4	18	172	136	203	152	CNAF/PTFE	DN80 top discharge ball valve inlet
5005-032	4	19	178	114	216	141	CNAF/PTFE	DN80 30° footvalve inlet
5005-398	6	11	105	75	127	90	CNAF/PTFE	DN65 flanged relief valve weld-in flange
5005-345	6	11	119	89	140	-	Solid PTFE	DN80 composite butterfly valve outlet
5005-016	6	14	159	127	184	146	CNAF/PTFE	DN80 Parkfield footvalve inlet
5005-169	6	13 not equi-spaced	168	78	197	103	CNAF/PTFE	DN80 flanged butterfly & DN80 ball valve inlet
5005-222	6	14 not equi-spaced	168	102	203	127	CNAF/PTFE	DN80 top discharge butterfly valve inlet
5005-015	8	14	178	114	203	141	CNAF/PTFE	DN80 45° & 90° Cleanflow and Highlift footvalve inlet

**NOTE:** All diameters are nominal



## After Sales Service



We offer a refurbishment and repair services for all our valves. We can also provide you with technical support if you want to do your own maintenance. Please contact us for more information about maintenance instruction manuals and special tools and equipment.

We keep a wide range of spare parts and ancillary items in stock at our Fort Vale worldwide locations. We also have authorised distributors around the world who can supply you with replacement and consumable parts, and help you with after sales service.



# Footvalve Replaceable Seat Kit - Cleanflow Footvalve

## Accessories & Spare Parts



### Specification

The Cleanflow footvalve replaceable seat kit lets you replace the footvalve seating area if there is damage or corrosion. This saves time and avoids the cost of replacing a complete valve.

We also supply a complete DN80 45° Cleanflow footvalve assembly with replaceable seat, please refer to Range.

### Compatibility

DN80 Cleanflow footvalve: 30°, 45°, 90°, 180°

DN100 Cleanflow footvalve: 30°, 45°, 90°, 180°

### Seating flange materials

316 stainless steel

904L stainless steel

High nickel alloy

Titanium

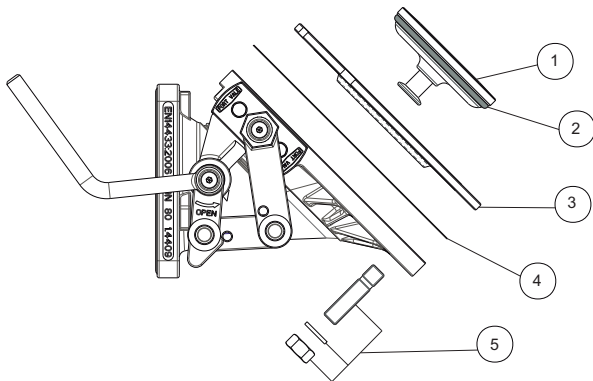
**IMPORTANT:** A Cleanflow footvalve with a replaceable seat protrudes more from the tank and the outlet centre line is lower than that of a standard valve. Please contact us for dimensions and more information.

### Range

Description	Part No.
DN80 Cleanflow replaceable seat kit	845/16CKX *
DN100 Cleanflow replaceable seat kit	875/16CKX *
DN80 45° Cleanflow with replaceable seat	845/16RXX *

\* The seating flange material changes the Part No.

### Kit Parts Drawing



### Kit Parts List

Item	Description	DN80 Kit Part No.	DN100 Kit Part No.
1	Extended poppet	845/0042	875/0042
2	Fortyt O ring	5005-104	5005-349
3	Seating flange *Note	845/0090X	875/0090S
4	PTFE gasket	5005-829	5005-855
5	Stud kit	845/2055	875/2055

**NOTE:** The seating flange material changes the Part No.



# Footvalve Replaceable Seat Kit - Highlift Footvalve

## Accessories & Spare Parts



### Specification

The DN80 45° Highlift footvalve assembly with replaceable seat lets you replace the footvalve seating flange assembly if there is damage or corrosion. This saves time and avoids the cost of replacing a complete valve.

Please refer to the Spare Parts Drawing and List.

### Seating flange materials

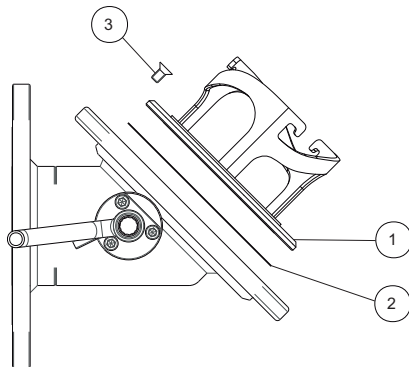
316 stainless steel  
High nickel alloy  
Titanium

### Range

Description	Part No.
DN80 45° Highlift with replaceable seat	826/0800XA *

\* The seating flange material changes the Part No.

### Spare Parts Drawing



### Spare Parts List

Item	Description	Part No.
1	Seating flange *Note	826/0817X
2	PTFE gasket	5005-828
3	Retaining screw (3)	5111-018

**NOTE:** The seating flange material changes the Part No.

**IMPORTANT:** Some of the spare parts for a replaceable seat Highlift footvalve are different from a standard Highlift footvalve. Please contact Fort Vale for footvalve spare parts.



## Valve Repair and Maintenance Accessories & Spare Parts



We supply a range of special tools and repair kits to do scheduled maintenance and repair procedures to our valves.

We recommend that you use the correct special tools to help you do maintenance and repairs quickly and easily without causing damage to the valve or the new spare parts.

A selection of step-by-step maintenance instruction manuals is also available, please contact us.

**CAUTION:** Valve maintenance and repair can be dangerous. To do maintenance, you must have experience and qualifications related to valve installation on pressure vessels and systems.

### Relief Valve Pressure/Vacuum Test Rig Part No: 400/8000



#### Specification

You can use the relief valve test rig to test the pressure and vacuum settings of Hyper Maxi, Super Maxi, Twinact, Uniact, Minnow and Steam relief valves.

#### Valve connection

2½" BSP: We supply adaptors to change to other BSP and flanged connections

#### Test rig supply connection

¼" BSP female socket

#### Test range

From -0.7 Bar to 6.9 Bar (-10 PSI to 100 PSI)

#### Related documents

Operating Instructions: OPIN26. Please contact us

### Footvalve & Relief Valve Seat Repair Kit Part No: DN80 Kit - 400/2600 Part No: DN100 Kit - 400/2900



#### Specification

You can use the seat repair kit to re-surface the seating face of a valve if there is damage caused by corrosion.

#### Compatible

**DN80 Kit:** compatible with DN65 Super Maxi relief valves and DN80 Cleanflow and Highlift footvalves

**DN100 Kit:** compatible with DN100 Cleanflow & Highlift footvalves

#### Connection

Compatible with power tools with a ½" chuck

#### Kit contents

Selection of grinding and polishing discs

Selection of face-forming tools

Instruction manual

#### Related documents

Operating Instructions: OPIN70 (DN80), OPIN77 (DN100). Please contact us.

#### Spare Parts: Grinding Discs

Description	Part No. DN80	Part No. DN100
Box of 100 x 60 grit	400/2610	400/2615
Box of 100 x 80 grit	400/2620	400/2625
Box of 100 x 180 grit	400/2630	400/2635
Box of 100 x 500 grit	400/2640	400/2645



## Valve Repair and Maintenance Accessories & Spare Parts



### Relief Valve Tool Kits

Description	Part No.
Test rig adaptor flange: Adapts 2½" BSP to 3" ASA150, DIN65 PN10 & DIN80 PN6	425/1000
C spanner: To install/remove threaded Twinact relief valves	400/3000
C spanner: To install/remove threaded Super Maxi relief valves	400/3001
Tightening tool for threaded MKIII Super Maxi relief valves	400/8380
Tool kit: DN40 & DN65 Twinact valves	400/1000
Tool kit: DN65 & DN80 Super Maxi & Hyper Maxi relief valves	400/8300



### Footvalve Tool Kits

Description	Part No.
Tool kit: DN80 Cleanflow footvalve	400/2150
Tool kit: DN80 MKIII Highlift footvalve	400/2455
Tool kit: DN80 MK1 Highlift footvalve	400/2450



### Ball Valve Tool Kits

Description	Part No.
Spindle O ring stuffing tool: DN32 MKIII airline ball valve - 530/type	FIX/A/0075/2
Tool kit: DN32 MKII airline ball valve - 353/type	400/2500
Tool kit: DN80 ball valve spindle O ring tools - 360/5XXX type valves	400/2200STK
Tool kit: DN80 ball valve - 360/0000 type valves, pre-2003	400/2200

### Butterfly Valve Tool Kits

Description	Part No.
Tool kit: DN50 butterfly valve	400/2300
Tool kit: DN80 butterfly valve	400/2700



# Bolt Torque Guide & Step Loading Procedure

## Installation & Operating Instructions

### Flange Bolting

**CAUTION:** Weld-distortion and too much tightening force will cause damage to a flange.

It is important not to cause damage to weld-in flanges and mating flanges. If a flange is damaged it will not give a satisfactory seal when a gasket and secondary mating flange is installed.

Bolt-stress can decrease after initial tightening. The cause can be deformation of the gasket material, particularly with soft materials such as a CNAF/PTFE envelope gasket.

Best procedure recommends that, after initial bolting, the flange joint is tightened again after a period of time. Most gasket manufacturers advise a period of 24 hours. ASME PCC-1-2000 GUIDELINES FOR PRESSURE BOUNDARY BOLTED FLANGE JOINT ASSEMBLY advises a minimum period of 4 hours.

Bolt torque calculations are based on a flat flange to within 0.15mm.

Recommended bolt torque values will be reduced if a lubrication is used.

### Bolt Torque

#### Bolt Torque Values

Fort Vale bolt torque values are given as a reference guide only and are based on:

- the use of a CNAF/PTFE gasket.
- unlubricated fasteners.
- a flange flat to within 0.15mm.

**CAUTION:** If you use a different gasket material, a lubricant or a flange with distortion, you must re-calculate the torque value.

#### Bolt Torque Procedure

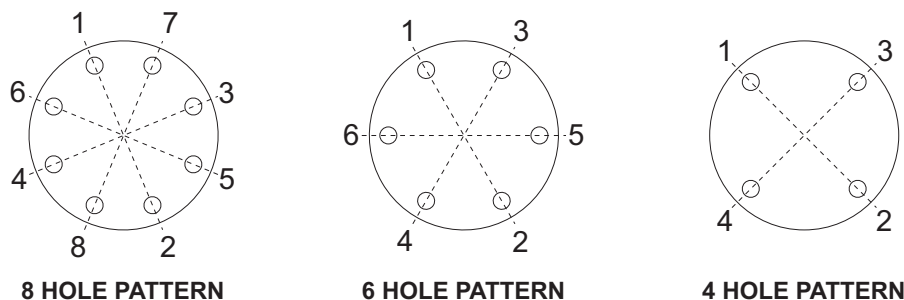
To install flanged parts correctly:

- Examine the mating flange of the part.
- If the flange is marked with a torque value, obey that torque value.
- If there is no torque value marked on the mating flange, obey the bolt torque values given in Table BT1.
- Tighten the bolts evenly in sequence. Refer to Figure BT1.
- Obey the Step Loading Procedure (ASME PCC-1-2000). Refer to the next page.

**Table BT1**

Thread	Torque Value
M10	30 Nm (22 lbf.ft)
M12	65 Nm (48 lbf.ft)
M16	81 Nm (60 lbf.ft)

**Figure BT1**





## **Bolt Torque Guide & Step Loading Procedure**

### **Installation & Operating Instructions**

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## **Step Loading Procedure**

To install flanged parts correctly, obey the Step Loading Procedure extract from ASME PCC-1-2000:

### **Install**

Hand tighten, then “snug up” to 15 Nm (10 lbf.ft) to 30 Nm (20 lbf.ft) (not to exceed 20% of Target Torque). Check flange gap around circumference for uniformity. If the gap around the circumference is not reasonably uniform, make the appropriate adjustments by selective tightening before proceeding.

### **Round 1**

Tighten to 20% to 30% of Target Torque. Check flange gap around circumference for uniformity. If the gap around the circumference is not reasonably uniform, make the appropriate adjustments by selective tightening before proceeding.

### **Round 2**

Tighten to 50% to 70% of Target Torque. Check flange gap around circumference for uniformity. If the gap around the circumference is not reasonably uniform, make the appropriate adjustments by selective tightening before proceeding.

### **Round 3**

Tighten to 100% of Target Torque. Check flange gap around circumference for uniformity. If the gap around the circumference is not reasonably uniform, make the appropriate adjustments by selective tightening before proceeding.

### **Round 4**

Continue tightening the bolts, but on a rotational clockwise pattern until no further nut rotation occurs at the Round 3 Target Torque value. For indicator bolting, tighten bolts until the indicator rod retraction readings for all bolts are within the specified range.

### **Round 5**

Time permitting, wait a minimum of 4 hr and repeat Round 4; this will restore the short-term creep relaxation/embedment losses. If the flange is subjected to a subsequent test pressure higher than its rating, it may be desirable to repeat this round after the test is completed.



## Client Responsibilities - Valves & Accessories

### Installation, Operation & Maintenance Instructions

## Compatibility

Make sure that the function and technical specification of the valve/accessory is compatible with the vessel service conditions and the cargo. This includes, but is not limited to:

- dimensions.
- pressure/vacuum setting.
- air/vapour/liquid flow capacity.
- maximum allowable working pressure.
- test pressure.
- minimum/maximum design temperatures.
- materials of construction.

## Maintenance and Inspection

Fort Vale valves and accessories have a long life if you use them correctly in compatible service conditions. It is not necessary to lubricate the parts, but we recommend that you do the inspections that follow:

### Inspections at regular intervals:

1. Examine the valve to make sure there is no damage, wear or corrosion.
2. Examine the valve and adjacent area to make sure there is no leakage of cargo.
3. Examine the fasteners to make sure they are not loose.
4. Make sure the valve operates correctly.

**CAUTION:** If you operate the valve with very corrosive cargo, or near its temperature and/or pressure limit (very high or very low temperature and/or pressure), do the inspections more frequently.

Also, schedule regular maintenance based on how frequently the valve is used, the type of cargo and the service conditions.

### Inspections after 2½ years of service or a minor incident:

1. Examine the valve to make sure there is no damage, wear or corrosion.
2. Make sure the valve operates correctly.
3. Do a pressure test on the valve.

### Inspections after 5 years of service or a major incident:

1. Disassemble and clean the valve.
2. Replace all the valve seals and do a pressure test.

## Replacement Parts

Do not adapt or change the valve. If you install a replacement part, it must be a genuine Fort Vale part.

**WARNING:** If you install a part that is not genuine, there is a risk of:

- injury to personnel.
- permanent damage to the valve.
- permanent damage to the vessel.
- valve malfunction.

## External Fire

If you install the valve in an area where there is a risk of external fire, you must install compatible accessories to prevent damage to the valve.

## Compatibility of Accessories

Accessory components must cause no interference with the valve's function. Accessories must be made from compatible materials that will cause no damage to the valve materials. Do not install an accessory that will cause an increased load on the valve, such as mechanical, static, dynamic or thermal load.

## Mis-use

Obey the instructions and recommended procedures in the installation and operating instructions. Obey the pressure and temperature markings on the valve and on the drawing. Use the valve/accessory for its correct function only. Fort Vale accept no liability or responsibility for incorrect use of the valve/accessory.



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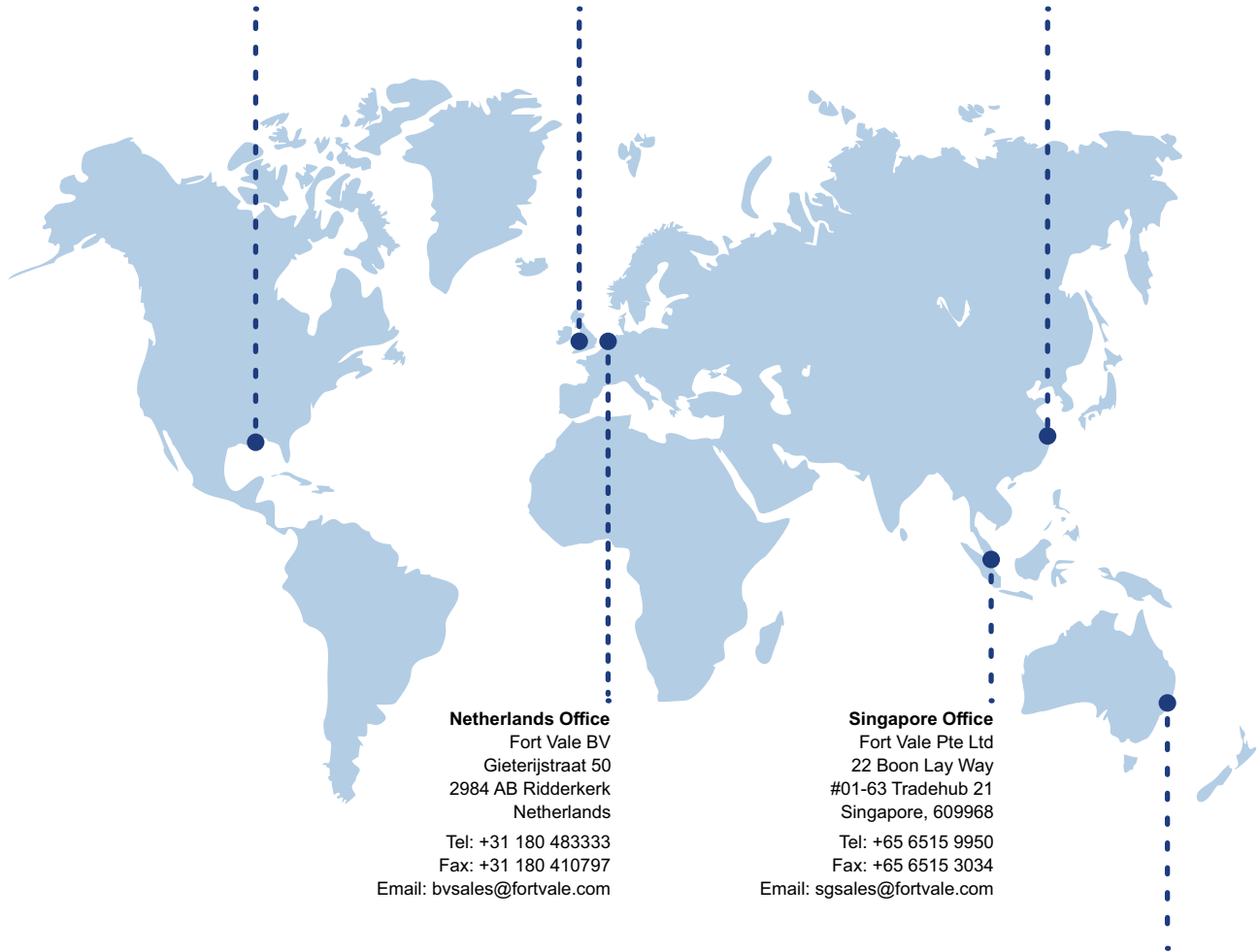
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