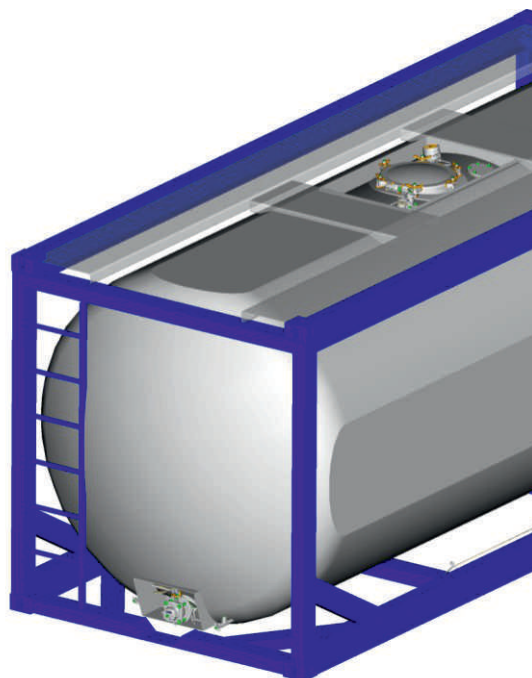




CORE  
SPECIFICATION  
//



4 Bar  
ISO  
Tank  
Container

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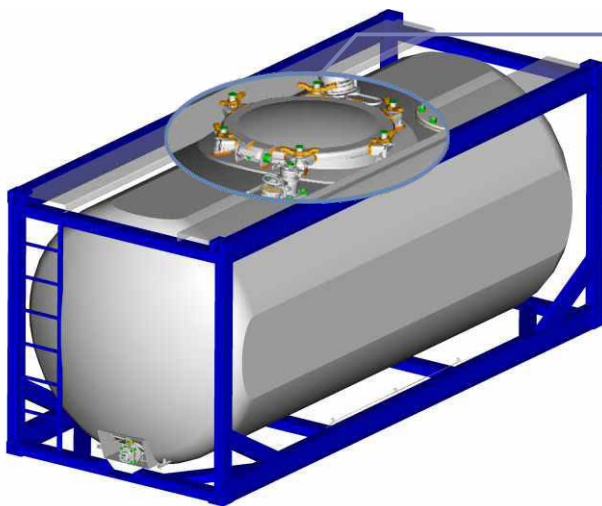
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# MANLID EQUIPMENT

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# MANLID EQUIPMENT



The **500mm Pendle manlid assembly** is a 4 bar MAWP unit available in 6 or 8 point fastening. The cover is a double skin construction which offers excellent thermal insulation. The assembly has no internal welds as the cover and the neckring with integral compensating ring are each made from a one piece pressed item, reducing corrosion risk and optimizing cleanliness.

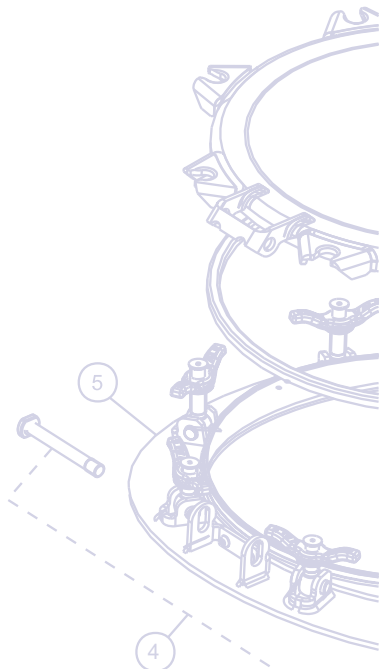
Swingbolts are available with naval brass or stainless steel handnuts. All eyebolts are thread rolled and handnuts are fitted with a thrust washer (patented) as standard. Wide range of seals available to suit, including the **Super Tanktyt** recommended for corrosive and toxic products.

## Options

Pads and sockets can be welded to the manlid cover to accommodate relief valves, fill branches, sight glasses, breather vents or loading and venting valves.

A safebolt can be fitted to one of the points. This item forces the lid to vent before it can be fully opened thus avoiding any risk of injury.

A range of 300mm cleaning hatches is also available with the same options.



**FORT VALE**

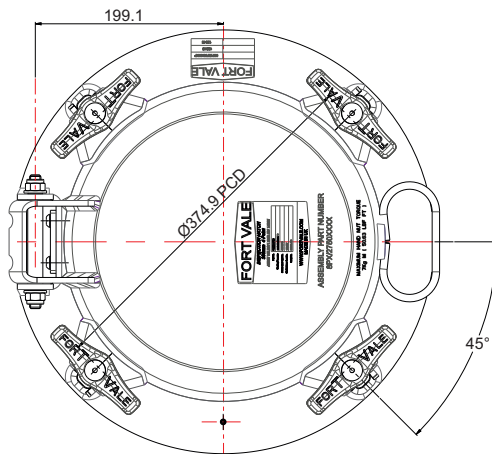
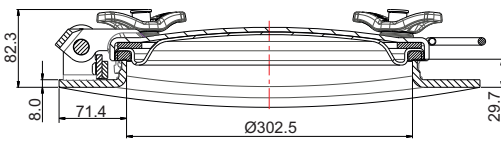


300mm Ultra Low Profile Inspection Hatch Assembly - 4 point fastening double skin cover. 8mm thick pressed neck/compensating ring profiled to suit tank radius range from 750 to 1220mm. Contact parts manufactured in 316 stainless steel. Stainless steel swingbolts with naval brass handnuts. Seal supplied separately.

**Options** - Stainless steel swingbolts with either stainless steel handnuts or low profile stainless steel/brass composite handnuts.

**Fitting Details**

Example shown : 8PB/2750XXXP



**Specification**

Weight	19.8 Kg *See Note
Design Pressure (MAWP)	4 Bar (58 PSI)
Test Pressure	6 Bar (87 PSI)
Design Temperature	-40°C to 200°C (-40°F to 392°F)

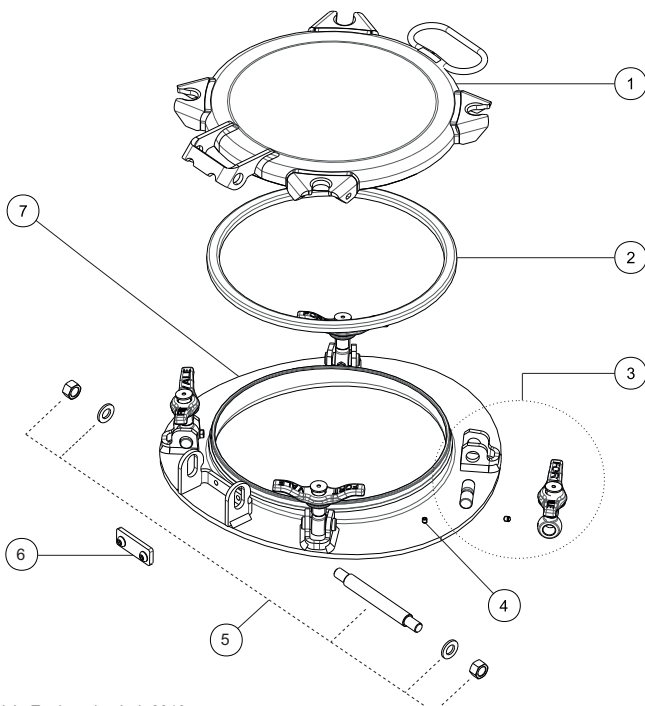
\*Note: Above data varies according to specification  
Manlid cover 703/0600P approved to BS EN14025

**Range**

Part No.	Description
8PB/2750XXXP	Fitted with naval brass handnuts
8PB/2750XXXS	Fitted with stainless steel handnuts

XXX in part number above denotes the radius range:-  
**077** = 750 mm to 800 mm  
**082** = 800 mm to 850 mm  
**087** = 850 mm to 900 mm  
**092** = 900 mm to 950 mm  
**097** = 950 mm to 1005 mm  
**104** = 1005 mm to 1075 mm  
**111** = 1075 mm to 1145 mm  
**118** = 1145 mm to 1220 mm

**Parts drawing**



Item	Description	Part No.
1	Cover	703/0600P
2	Seal	See DS/MAN028
3	Swingbolt assembly (4)	496/X260
4	Grubscrew	5111-009
5	Hinge pin assembly	600/1060
6	Hinge kit – 135° fixed	135B
7	Neck/compensating ring *See Note	63P/2750XXXP

\*Note: Part number varies according to specification

X in swingbolt part number denotes handnut material :  
**1** = naval brass  
**5** = stainless steel  
**E** = low profile stainless steel/brass composite

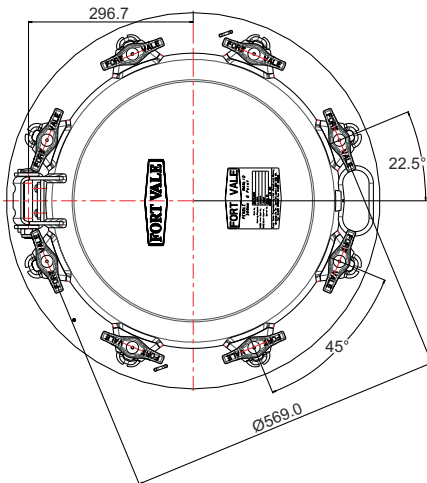
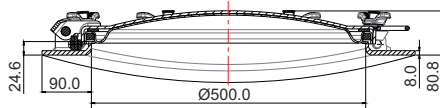


500mm Ultra Low Profile Manlid Assembly - 8 point fastening. 8mm thick pressed neck/compensating ring profiled to suit tank radius. Contact parts manufactured in 316 stainless steel. Stainless steel swingbolts with naval brass handnuts. Seal supplied separately.

Options - 3 Bar 6 point version and 4 Bar 8 point version. Tank radius range from 750mm to 1300mm. Stainless steel swingbolts with either stainless steel handnuts or low profile stainless steel/brass composite handnuts. Cover hinge stop plate may be fitted to adjust opening angle.

**Fitting Details**

Example shown : E4C/85XX025B



**Specification**

Weight	40 Kg
Design Pressure (MAWP)	4 Bar (58 PSI)
Test Pressure	6 Bar (87 PSI)
Design Temperature	-40°C to 200°C -40°F to 392°F

**NB** Above data varies according to specification

Manlid covers 74E/0500 (4 Bar) & 73E/0500 (3 Bar) are approved to BS EN14025.

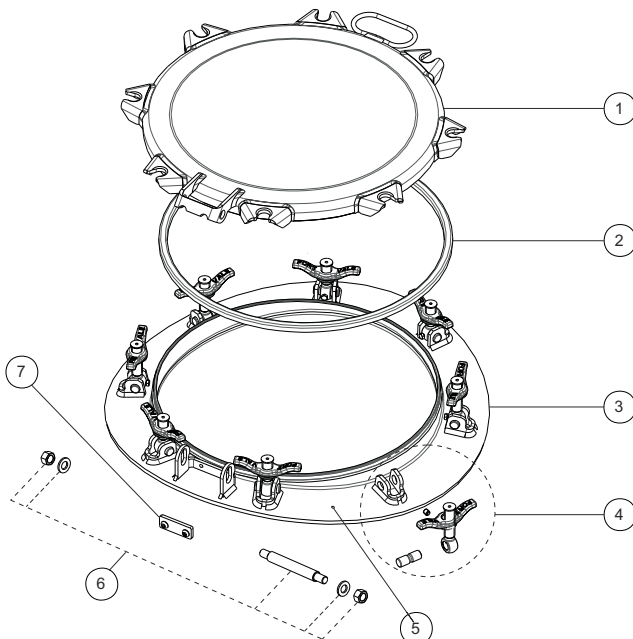
**Range**

Part Number	Points	MAWP
E4C/85XX025B	8	4 Bar
E3C/65XX025B	6	3 Bar

XX in part number above denotes the radius range:-

<b>75</b> = 750 to 800mm	<b>04</b> = 1005 to 1075mm
<b>82</b> = 800 to 850mm	<b>11</b> = 1075 to 1145mm
<b>87</b> = 850 to 900mm	<b>18</b> = 1145 to 1220mm
<b>92</b> = 900 to 950mm	<b>20</b> = 1220 to 1300mm
<b>97</b> = 950 to 1005mm	<b>28</b> = 1280mm

**Parts drawing**



Item	Description	Part No.
1	Cover	74E/0500
2	Seal (sold separately)	See DS/MAN028
3	Neck/compensating ring	6EP/7403XXXXP
4	Long swingbolt assembly (4)	496/XXXX <b>see Note</b>
	Short swingbolt assembly (4)	496/X240 <b>see Note</b>
5	Grubscrew	5111-009
6	Hinge pin assembly	600/1060
7	Hinge kit – 135° fixed	135B

**Note**

496/X in swingbolt part number denotes handnut material

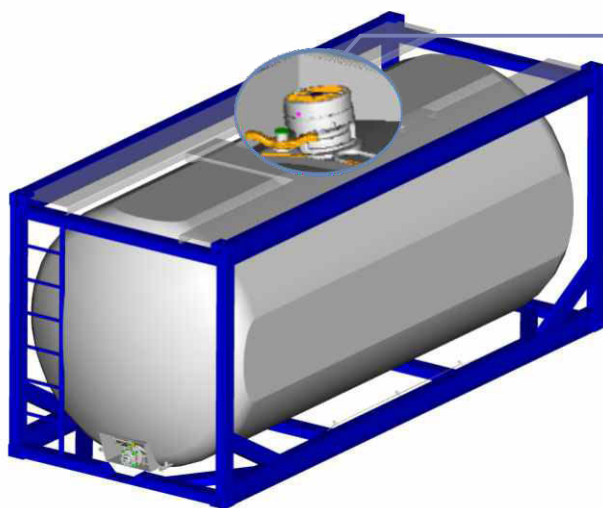
- 1 = naval brass
- 5 = stainless steel
- E = low profile stainless steel/brass composite

496/XXXX - long swingbolt length depends upon tank radius.



# SAFETY EQUIPMENT

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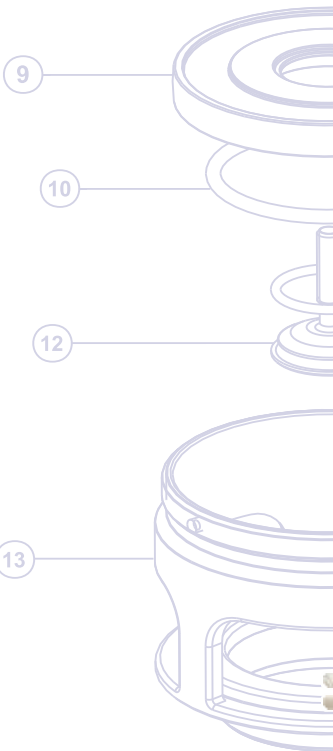
# SAFETY EQUIPMENT



The **2½" BSP Super Maxi Highflow** safety relief valve is the result of 20 years of development.

Our 4 Bar tank model offers a flow capacity in excess of 16,000 sm<sup>3</sup>/h.

If the tank is capable of withstanding a 0.42 bar relative vacuum, a pressure only valve can be used. In this case, there is no requirement to fit a flameproof gauze.



## Options

Pressure and vacuum relief valve.

Flameproof Gauze (compulsory with vacuum relief devices).

65mm and 80mm bursting disc adaptor flanges and co-ordinated weld-in pads.

Stainless steel pressure gauges.

65mm and 80mm stainless steel bursting discs.

## 80mm Flanged Hyper Maxi relief valves:

These valves have a greater flow capacity than standard valves and can accommodate a bursting disc and telltale pressure gauge without the requirement of an adaptor flange.





2 1/2" BSP Super Maxi Emergency Relief Valve - 2 1/2" BSP male connection with 65mm nominal bore. Suitable for a pressure range of between 2 - 75 PSI (0.14 - 5.17 Bar) and a vacuum range of between 0 - 26"Hg (0 - 0.88 Bar). Contact parts manufactured in 316 stainless steel. Fitted with Fortyt seals as standard. Complete with rubber/PTFE tank seal.

**Options** - pressure only version. Flanged connections available. Range of high pressure extended body valves. Manual vent button option. A range of alternative seal materials is available.

## Specification

Weight 4.08 Kg \*Varies  
 Temperature Range Dependant upon seal material

Design Approval by Lloyds Register of Shipping.

Tests may be witnessed and valves individually stamped by an independent inspectorate by arrangement.

Test certificates are supplied as standard.

Valve flow rates are available by request.

**\* Fitting ancillary items in the flow stream will alter the valve flow rate.**

## Range

Part No.	Common Valve Configurations
010/13212	31.8 PSI (2.19 Bar) & 6.2"Hg (-0.21 Bar)
010/14812	48.0 PSI (3.31 Bar) & 6.2"Hg (-0.21 Bar)
010/15412	53.8 PSI (3.71 Bar) & 6.2"Hg (-0.21 Bar)
010/16312	63.8 PSI (4.40 Bar) & 6.2"Hg (-0.21 Bar)

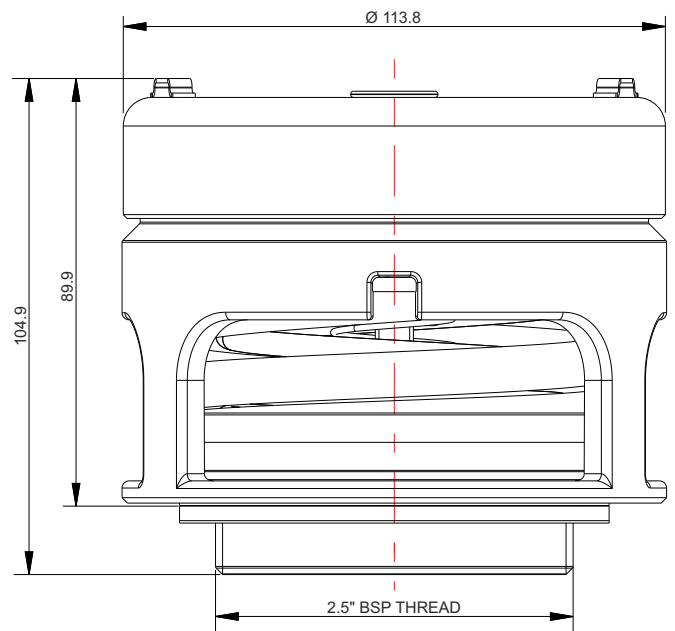
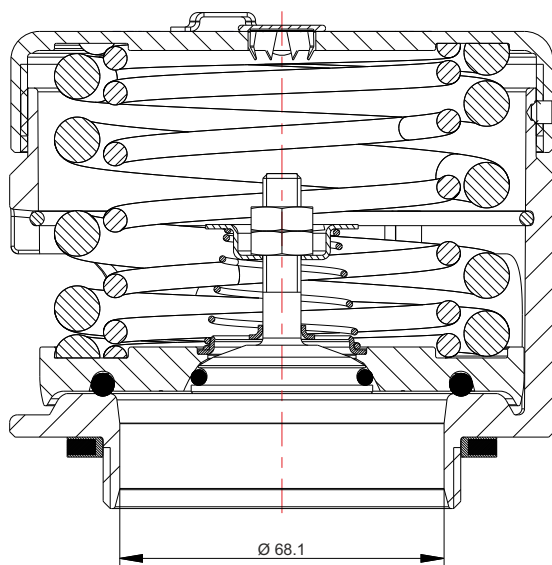
**NB** Above part number varies according to valve pressure and vacuum settings. These are standard settings.

## Associated Parts

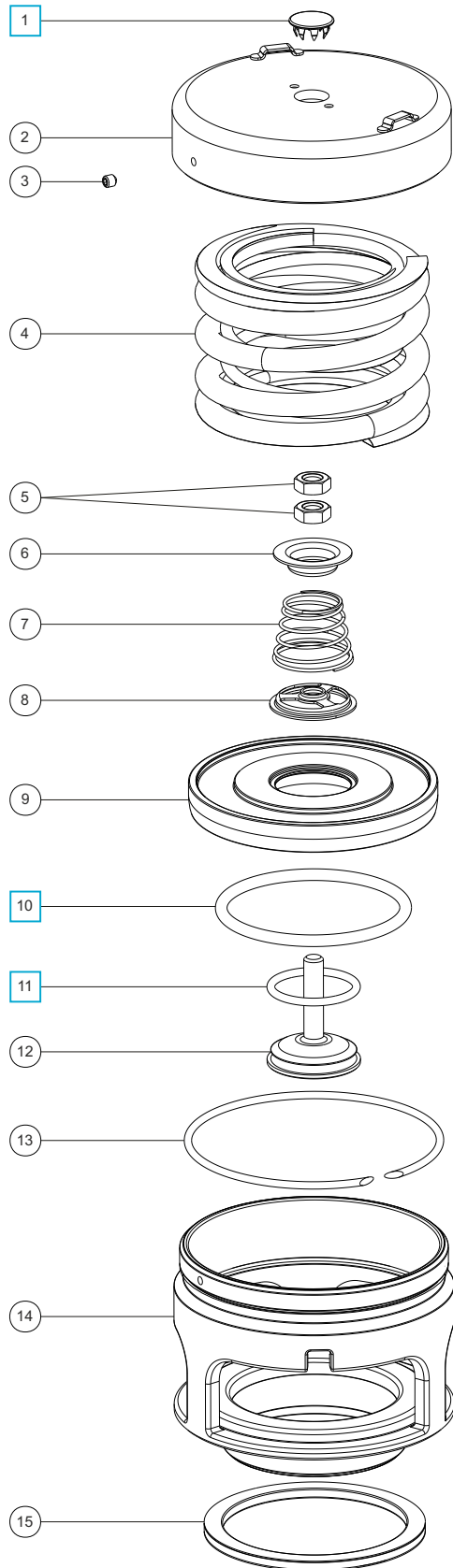
Part No.	Associated Parts
600/1000	2 1/2" BSP weld-in socket
176/3150	Tank weld-in pad
5005-398	CNAF/PTFE gasket to suit weld-in pad/adaptor flange
921/07BBSP	0-100 PSI pressure gauge, bottom entry, brass internal parts
921/07RBSP	0-100 PSI pressure gauge, rear entry, brass internal parts
920/07BBSP	0-100 PSI pressure gauge, bottom entry, stainless steel internal parts
176/2900 *	Removable flameproof gauze
176/6000 *	Gauzed cowl

## Fitting Details

Example shown : 010/1XXXX



Parts drawing



Item	Description	Part No.
1	Stainless steel plug	10978 <input type="checkbox"/>
2	Cap *See Note	1760/0005XX
3	Setting locking grub screw	5121-001
4	Pressure springs *See Table 1	6104-XXXX
5	M8 half nut (2)	5112-004
6	Vacuum spring pad	1860/0005
7	Vacuum spring *See Table 2	7104-XXX
8	Spring pad	10986/3
9	Pressure plate *See 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 : Part number varies according to specification.

SEAL KIT

Part number 000/1PVSK contains all parts marked

TABLE 1

Common Pressure Settings	Pressure Spring Part No.
31.8 PSI (2.19 Bar)	6104-0252
48.0 PSI (3.31 Bar)	6104-0112 & 6104-0252
53.8 PSI (3.71 Bar)	6104-0422 (Pair)
63.8 PSI (4.40 Bar)	6104-0485 (Pair)

Pressure springs are available from 2 PSI (0.14 Bar) up to 75 PSI (5.17 Bar)

TABLE 2

Common Vacuum Setting	Vacuum Spring Part No.
6.2"Hg (0.21 Bar)	7104-012

Vacuum springs are available from 0.5"Hg (0.02 Bar) to 26"Hg (0.88 Bar)

Visual inspection and service (where necessary) is recommended regularly. A detailed step-by-step repair manual is available for our Super Maxi Relief Valves. Please contact our Sales team for further information.



82.5mm Flanged Hyper Maxi Pressure/Vacuum Relief Valve - Flange drilled 4 slots with a 145.0/152.4mm min/max PCD. (See below for drilling details) Suitable for a set pressure range of \*2 to 75 PSI (\*0.14 to 5.17 Bar) \*See Note under Specification, and a set vacuum range of 0.5"Hg to 26"Hg (0.02 to 0.88 Bar). Contact parts manufactured in 316 stainless steel. Fitted with Forty seals as standard.

**Options** - pressure only version. High pressure extended body version. Alternative seal materials are available.

Fort Vale offers a full range of threaded and flanged relief valves.

## Specification

Weight	5.9 Kg *
Design Pressure (MAWP)	5.2 Bar (75 PSIG)
Test Pressure	10.1 Bar (147 PSIG)

\*Weight varies according to valve specification.  
Temperature range : Dependant upon seal material.

Design Approval by Lloyds Register of Shipping.  
\*Note: Scope of Approval covers valves set at 25 PSI (1.7 Bar) and above.

### Valve Flow Data

Please contact sales@fortvale.com and request data sheet reference: 043/049/82/5/FLOW/NORM.  
See below for de-rations.  
Test certificates supplied as standard.

## Drilling Details & Fittings

Specification	PCD	Weld-in Flange	Gasket
DIN65 PN10	145.0mm	176/3250	5005-332
3" Table D	146.1mm	176/3140	5005-013
DIN80 PN6	150.0mm	176/3158	5005-334
3" ASA 150	152.4mm	176/3125	5005-204

## Associated Parts

Part No.	Associated Parts
921/07BBSP	0-100 PSI pressure gauge, bottom entry, brass internal parts
921/07RBSP	0-100 PSI pressure gauge, rear entry, brass internal parts
920/07BBSP	0-100 PSI pressure gauge, bottom entry, stainless steel internal parts
176/2920	Removable clamped gauge
311/3700	Stud kit (4 x M16)
311/3785	Bolt kit (cap screws) - 145/146mm PCD

## De-rations

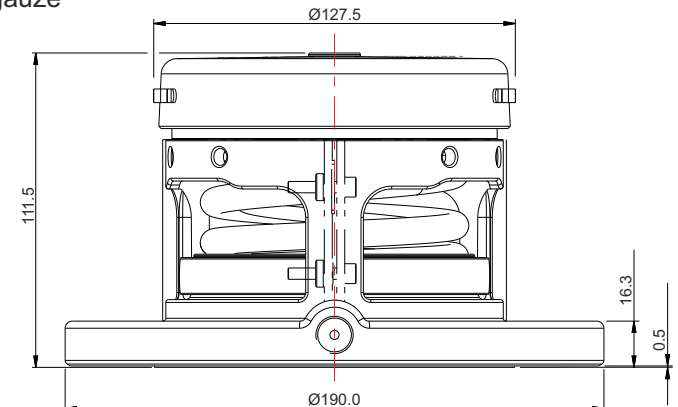
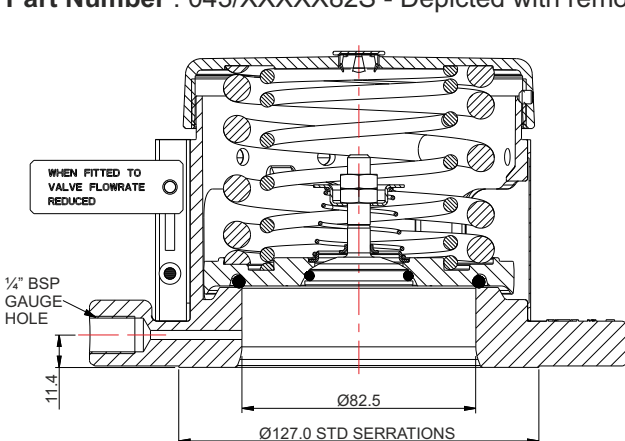
Description	De-ration
Valve with removable gauge (176/2920)	-5.01%

## Range

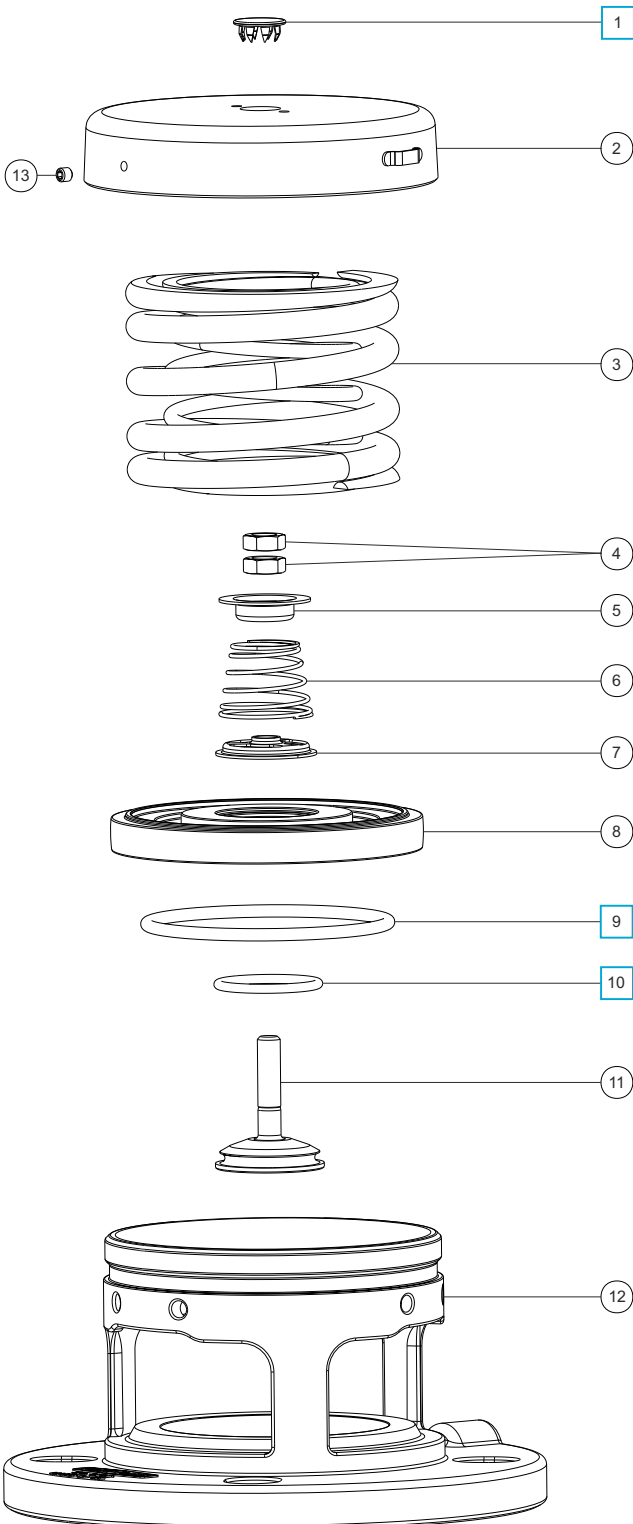
Part No.	Description
043/XXX0082S	82.5mm standard pressure only
043/XXXXX82S	82.5mm standard pressure/vacuum
049/XXX0082S	82.5mm extended pressure only
049/XXXXX82S	82.5mm extended pressure/vacuum

## Fitting Details

Part Number : 043/XXXXX82S - Depicted with removable gauge



## Parts drawing



Item	Description	Part No.
1	Stainless steel plug	10978
2	Top cap *See Note	1860/1008XX
3	Spring *See Table 1	610X-XXXX
4	Half nut (2)	5112-004
5	Vacuum spring pad	1860/0005
6	Vacuum spring *See Table 2	7104-XXX
7	Spring pad	10986/3
8	Pressure plate *See Note	1860/1071XX
9	Fortyt pressure O ring	ORB337F0
10	Fortyt vacuum O ring	5005-108H
11	Vacuum poppet	10983V/3
12	Body	1860/19SL
13	Grubscrew	5121-001

**NOTE :** Part number varies according to specification.

### SEAL KIT

Part number **043/1PVSK** contains all parts marked

**TABLE 1**

Common Pressure Settings	Pressure Spring Part No.
15.0 PSI (1.03 Bar)	6109-0674
31.8 PSI (2.19 Bar)	6104-0048 & 6104-0310
48.0 PSI (3.31 Bar)	6104-0485 (Pair)
53.8 PSI (3.71 Bar)	6104-0570 (Pair)
63.8 PSI (4.40 Bar)	6104-0665 (Pair)

Pressure springs are available from 2 PSI (0.14 Bar) to 75 PSI (5.17 Bar)

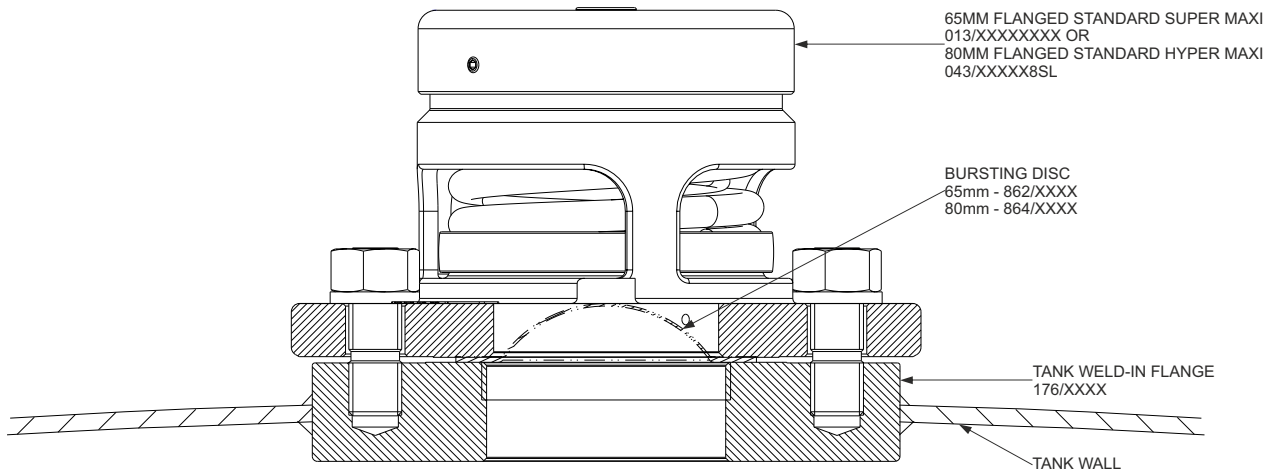
**TABLE 2**

Common Vacuum Setting	Vacuum Spring Part No.
6.2"Hg (0.21 Bar)	7104-012

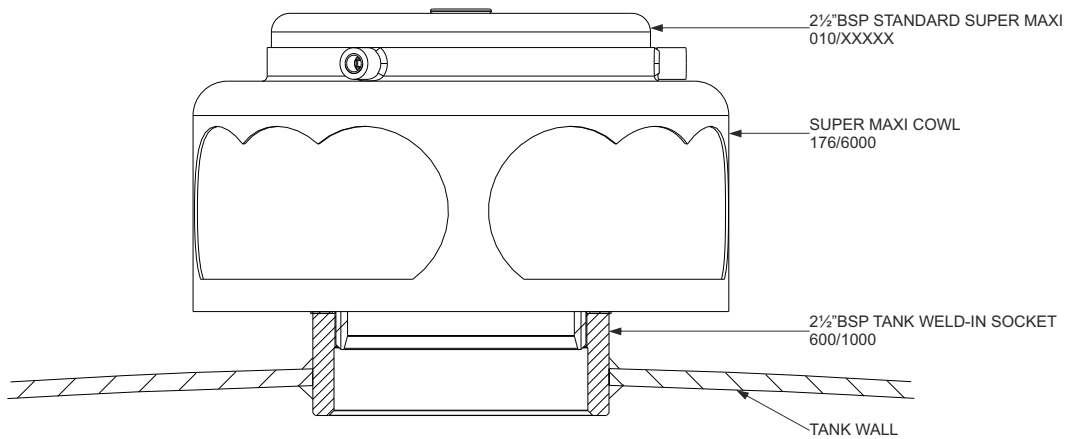
Vacuum springs are available from 0.5"Hg (0.02 Bar) to 26"Hg (0.88 Bar)

Visual inspection and service (where necessary) is recommended on a 6 monthly basis.

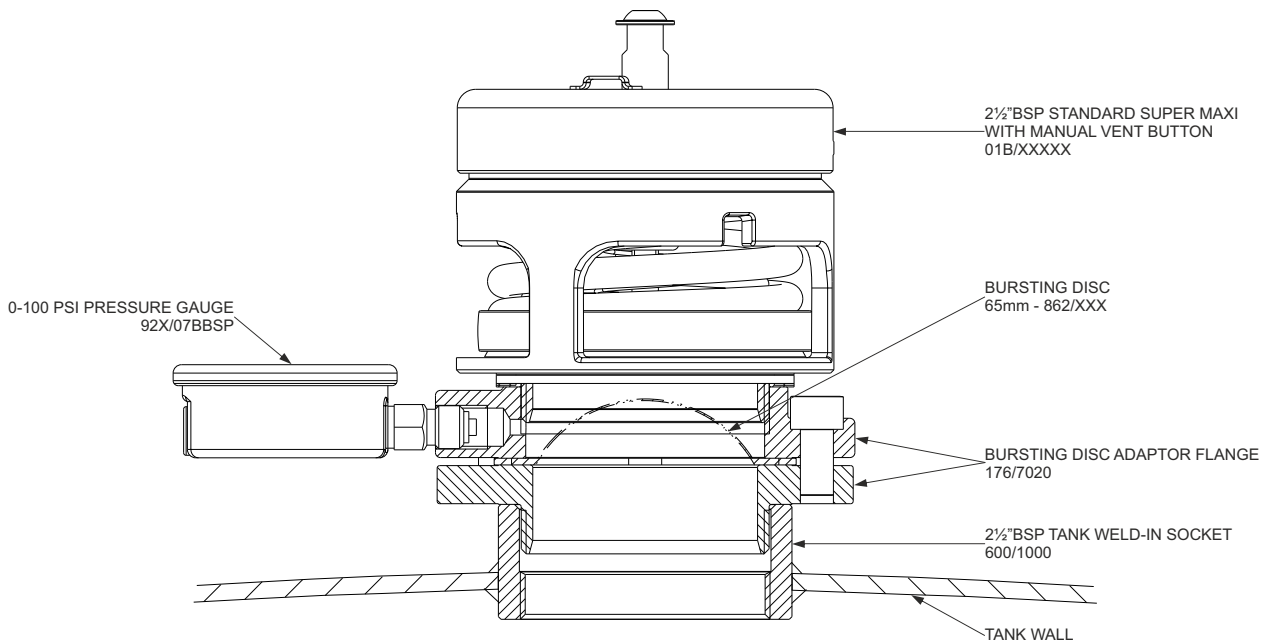
## Flanged Super/Hyper Maxi with bursting disc and tank weld-in flange



## 2 1/2" BSP Super Maxi with weatherproof cowl and tank weld-in socket



## 2 1/2" BSP Super Maxi with bursting disc, gauge, adaptor flange and socket

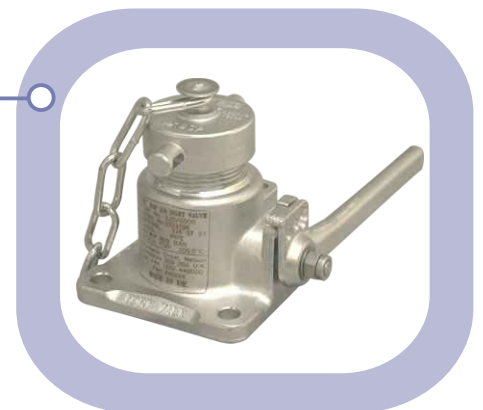
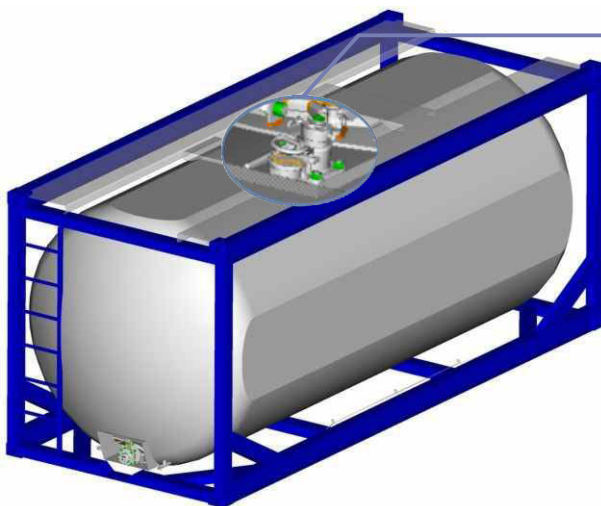






# AIRLINE EQUIPMENT

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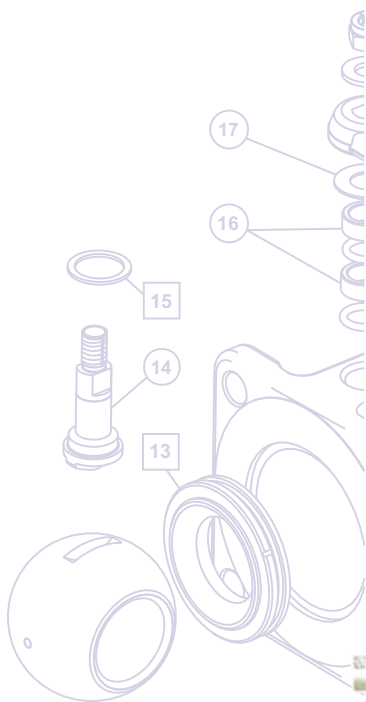


# AIRLINE EQUIPMENT



The **1 1/2" Blacko airline ball valve** is fitted with a solid full bore stainless steel ball floating between solid PTFE seals. The ball has a bleed hole to the tank side to ensure that there is no retention of product or build up of pressure inside the body.

The connection to a compressed airline, nitrogen blanketing system or vapour recovery line is a standard BSP thread. The blanking cap is stainless steel with a PTFE seal and is retained on the ball valve by a stainless steel chain. The handle operates the valve by a quarter turn operation.



## Options

Tank pressure monitoring by pressure gauge with valve in open or closed position. A gauge guard is also available.

Gauze filter to valve inlet - a 200 micron stainless steel mesh to retain dust particles. The gauze filter may be changed in-situ.

Flanged valve with slotted connection flange allowing 1 1/2" ASA, 1 1/2" BST"D" and DIN 50 fitting.

Dual connection valve with 1 1/2" BSP and 1 1/2" NPT thread.

Pneumatic remote operation to avoid the operator having to climb on top of the tank.

50mm Nominal Bore butterfly valves are also available with the same options.

**FORT VALE**





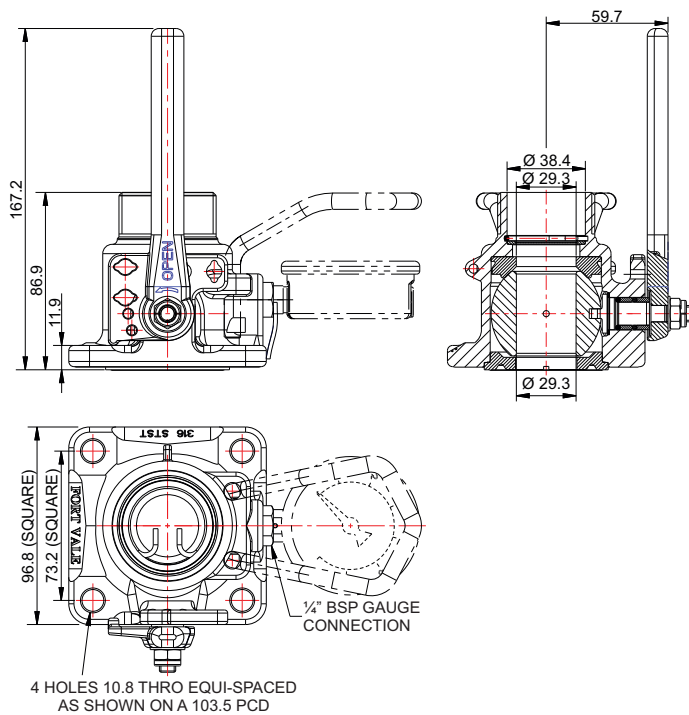
**1½" Airline Ball Valve** - 1½" BSP male inlet.

Complete with pressure gauge connection and TIR facility to handle. Contact parts manufactured in 316 stainless steel with PTFE seals.

**Options** - gauge guard and/or gauze filter, ¼" BSP plug with TIR wire.

**Fitting Details**

Part Number : 530/0000



**Specification**

Weight	2.9 Kg
Design Pressure	MAWP 10 Bar (145 PSIG)
Test Pressure	21.4 Bar (310 PSIG)
Design Temperature	-55°C to 205°C (-67°F to 401°F)

Approved to BS EN14432.

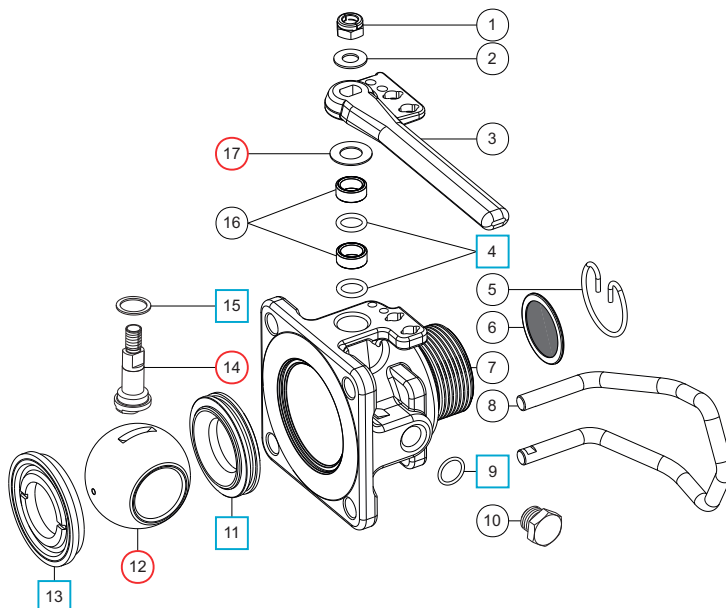
**Range**

Part No.	Description
530/0000	1½" BSP inlet standard valve.
530/0000F	1½" BSP inlet valve with gauze.
530/0000G	1½" BSP inlet valve with gauge guard.
530/0000FG	1½" BSP inlet valve with gauze and gauge guard.
530/0000W	1½" BSP inlet valve with ¼" BSP plug and TIR wire.

**Associated Parts**

Associated Parts	Part No.
Gauge	920/07BBSP
Gauge Adaptor	352/4004
1½" BSP Dust Cap	10300PS
Stud Kit	350/1300
Tank Pad	350/0025

**Parts drawing**



Item	Description	Part No.
1	Self-locking nut	5112-031
2	M8 washer	5113-005
3	Handle	531/0025
4	PTFE O ring (2)	5005-008 <input type="checkbox"/> <input type="radio"/>
5	Snap ring (optional suffix 'F')	5120-017
6	Gauze filter (optional suffix 'F')	353/0010
7	Valve body	530/0100
8	Gauge guard (optional suffix 'G')	530/0040
9	PTFE O ring	5005-048 <input type="checkbox"/> <input type="radio"/>
10	¼" BSP plug	5128-005
11	Front ball seal	5005-006 <input type="checkbox"/> <input type="radio"/>
12	Ball	350/0002 <input type="radio"/>
13	Rear ball seal	5005-007 <input type="checkbox"/> <input type="radio"/>
14	Spindle	530/0001 <input type="radio"/>
15	PTFE washer	5003-002 <input type="checkbox"/> <input type="radio"/>
16	Stuffing boss (2)	530/0003
17	Disc spring	5113-036 <input type="radio"/>

**Repair Kits:** Items marked  are included in Repair Kit 530/00RK  
**Seal Kits:** Items marked  are included in Seal Kit 530/00SK

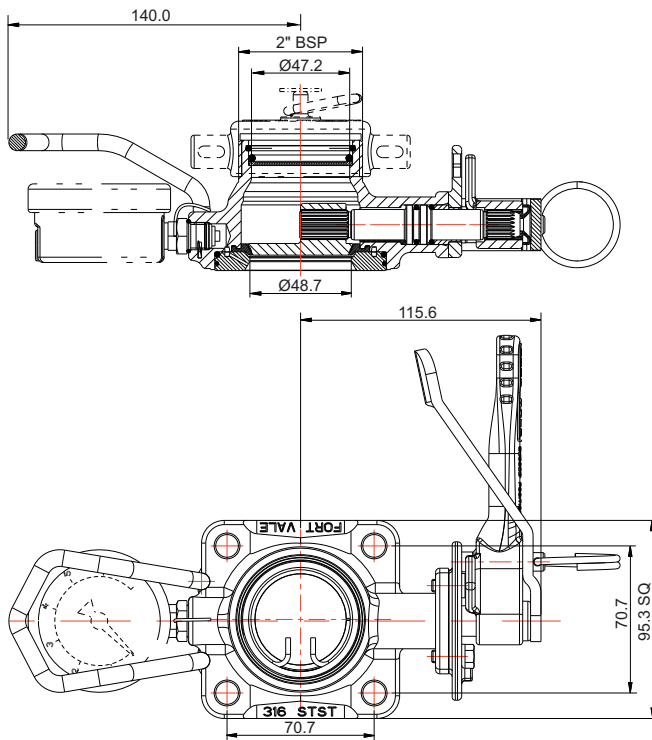


2" Airline Butterfly Valve - 2" BSP male inlet. Complete with pressure gauge connection, gauge guard and TIR facility to handle. Contact parts manufactured in 316 stainless steel with PTFE seals.

Optional extras - gauze filter or sintered filters are available.

### Fitting Details

Example shown : 535/0200X



### Specification

Weight	3.7 Kg *See Note
Design Pressure (MAWP)	6.9 Bar (100 PSIG)
Test Pressure	12.5 Bar (181 PSIG)
Design Temperature	-40°C to +190°C (-40°F to +374°F)

Note : Weight varies according to valve specification

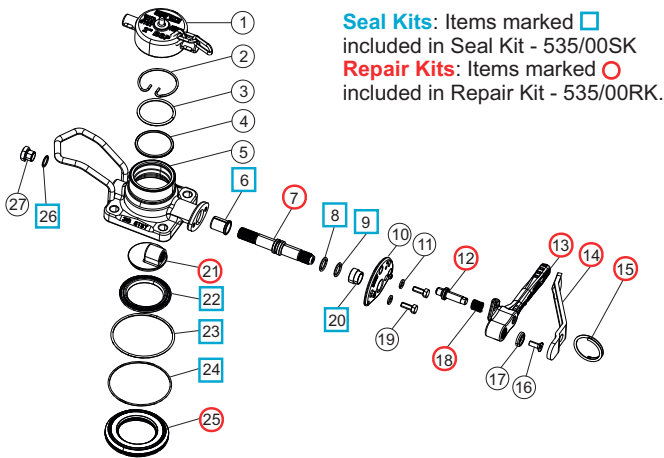
### Range

Size	Inlet	Gauze	Part No.
2"	2" BSP thread	Without	535/0200
2"	2" BSP thread	Gauze Filter	535/0200F
2"	2" BSP thread	Sintered Disc	535/0200S

### Associated Parts

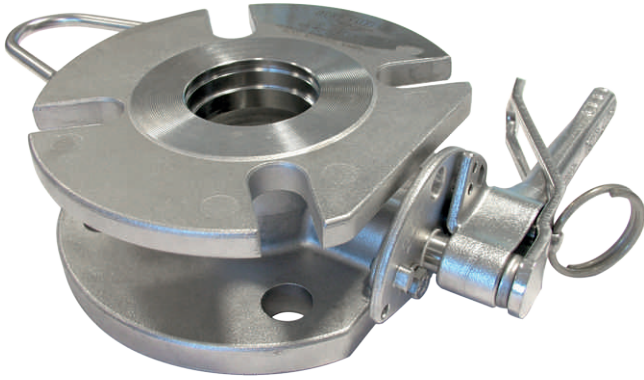
Associated Parts	Part No.
Dust Cap	10301PS
Gauge	920/07BBSP
Gauge Adaptor	352/4004
Stud Kit	350/1300
Gasket	5005-500
Tank Pad	355/1000

### Parts drawing



Item	Description	Part No.
1	2" BSP dust cap (supplied separately)	10301PS
2	Snap ring (Optional F,S)	5120-005
3	Spacer (Optional F,S)	355/0295
4	Gauze filter (Optional F)	355/0010
5	Sintered filter (2) (Optional S)	355/0206
5	Body	535/0215

Item	Description	Part No.
6	PTFE bush	535/0009 <input type="checkbox"/> <input type="radio"/>
7	Spindle	535/0203 <input type="radio"/>
8	Viton O ring	20361 <input type="checkbox"/> <input type="radio"/>
9	PTFE O ring	20363 <input type="checkbox"/> <input type="radio"/>
10	Stuffing clamp	535/0204
11	Spring washer (2)	5113-008
12	Handle location pin	368/0010 <input type="radio"/>
13	Handle	535/0050 <input type="radio"/>
14	Operating lever	368/9838 <input type="radio"/>
15	Split ring	368/0011 <input type="radio"/>
16	Countersunk bolt	5111-030
17	Retaining washer	20370
18	Handle spring	368/0012 <input type="radio"/>
19	Hex bolt (2)	5111-022
20	PTFE stuffing clamp bush	368/0301 <input type="checkbox"/> <input type="radio"/>
21	Closure plate	535/0225 <input type="radio"/>
22	PTFE main seal	355/0202 <input type="checkbox"/> <input type="radio"/>
23	PTFE O ring	5005-659 <input type="checkbox"/> <input type="radio"/>
24	EPDM O ring	5005-664 <input type="checkbox"/> <input type="radio"/>
25	Clamp plate	535/0201 <input type="radio"/>
26	PTFE O ring	5005-048 <input type="checkbox"/> <input type="radio"/>
27	1/4" BSP plug	5128-005



2" Flanged Airline Butterfly Valve - inlet flange slotted to suit 2" BSTD minimum. 4 hole tank connection to DIN50 PN10. Complete with 1/4" BSP pressure gauge connection, gauge guard and TIR facility to handle. Contact parts manufactured in 316 stainless steel with PTFE seals.

Optional extras - gauze filter or sintered filter. TIR wire welded to gauge inlet plug.

## Specification

Weight	5.9 Kg
Design Pressure (MAWP)	6.9 Bar (100 PSIG)
Test Pressure	12.5 Bar (181 PSIG)
Design Temperature Range	-40°C to 190°C (-40°F to 374°F)

Approved to BS EN14432

## Range

Description	Part No.
Standard valve – no gauze/filter	535/3000
Valve with gauze filter	535/3000F
Valve with sintered filter	535/3000S
Valve with TIR wire to gauge inlet plug	535/3000W

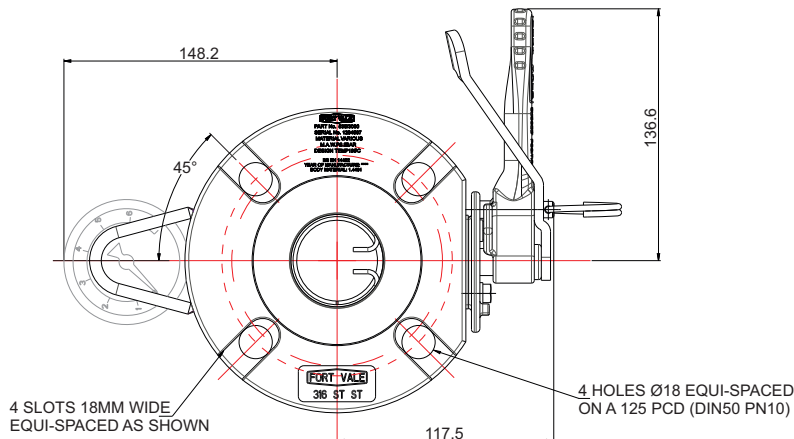
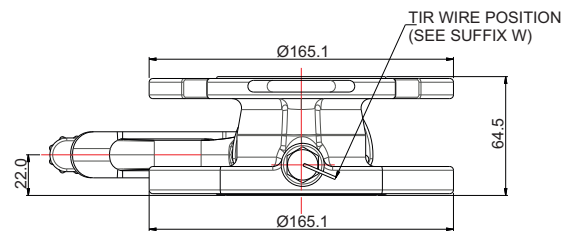
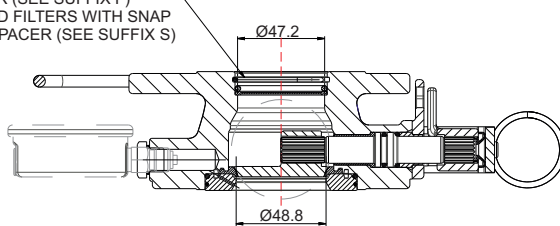
## Associated Parts

Associated Parts	Part No.
Blind Flange	370/4239CM
Inlet Gasket	5005-360
Bolting Kit	311/3000
Pressure gauge	920/07BBSP
Gauge Adaptor	352/4004
Stud Kit	311/3700
Outlet Gasket	5005-361
Tank Pad	355/3100

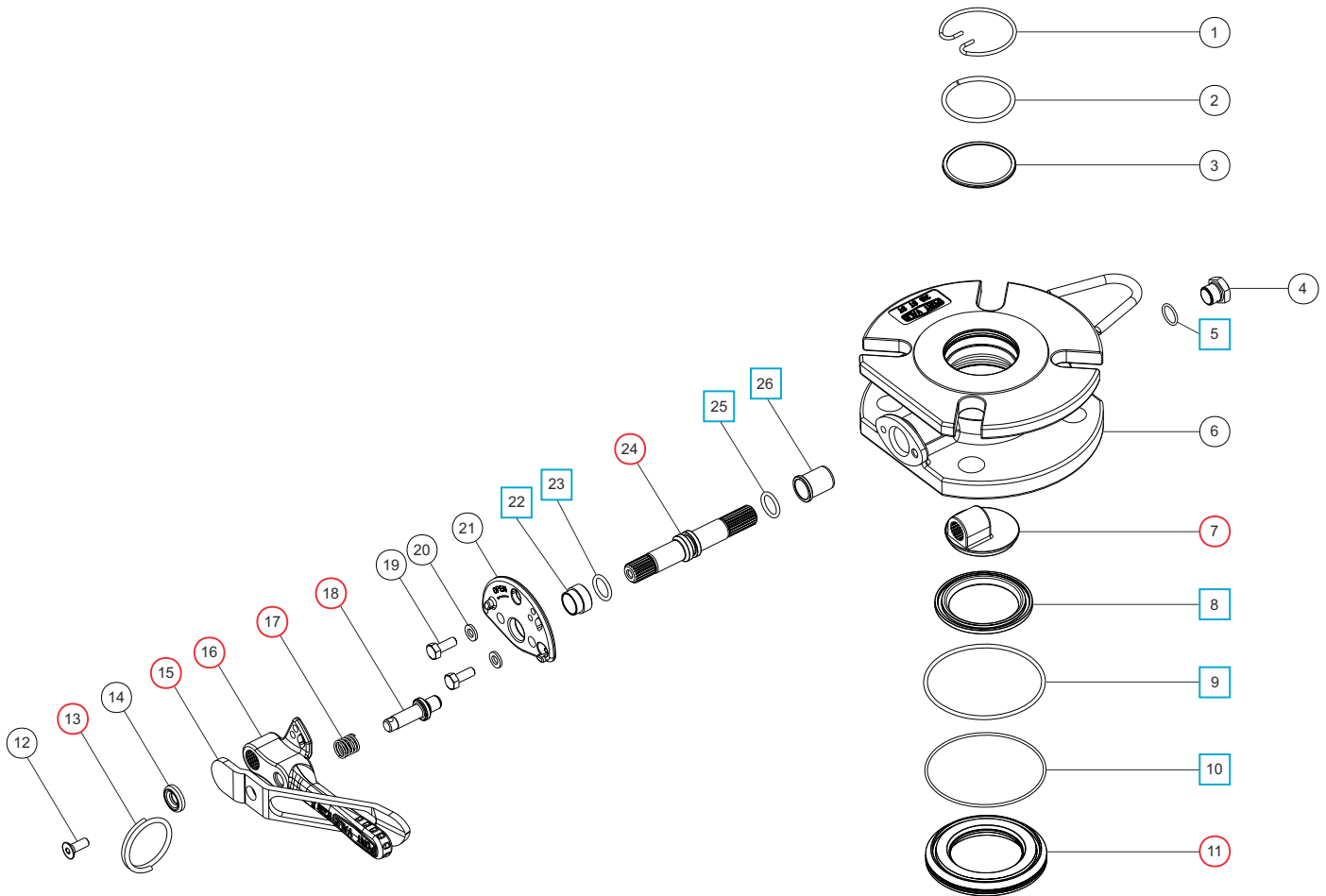
## Fitting Details

Example shown : 535/3000 fitted with pressure gauge.

GAUZE FILTER WITH SNAP RING & SPACER (SEE SUFFIX F)  
SINTERED FILTERS WITH SNAP RING & SPACER (SEE SUFFIX S)



## Parts drawing

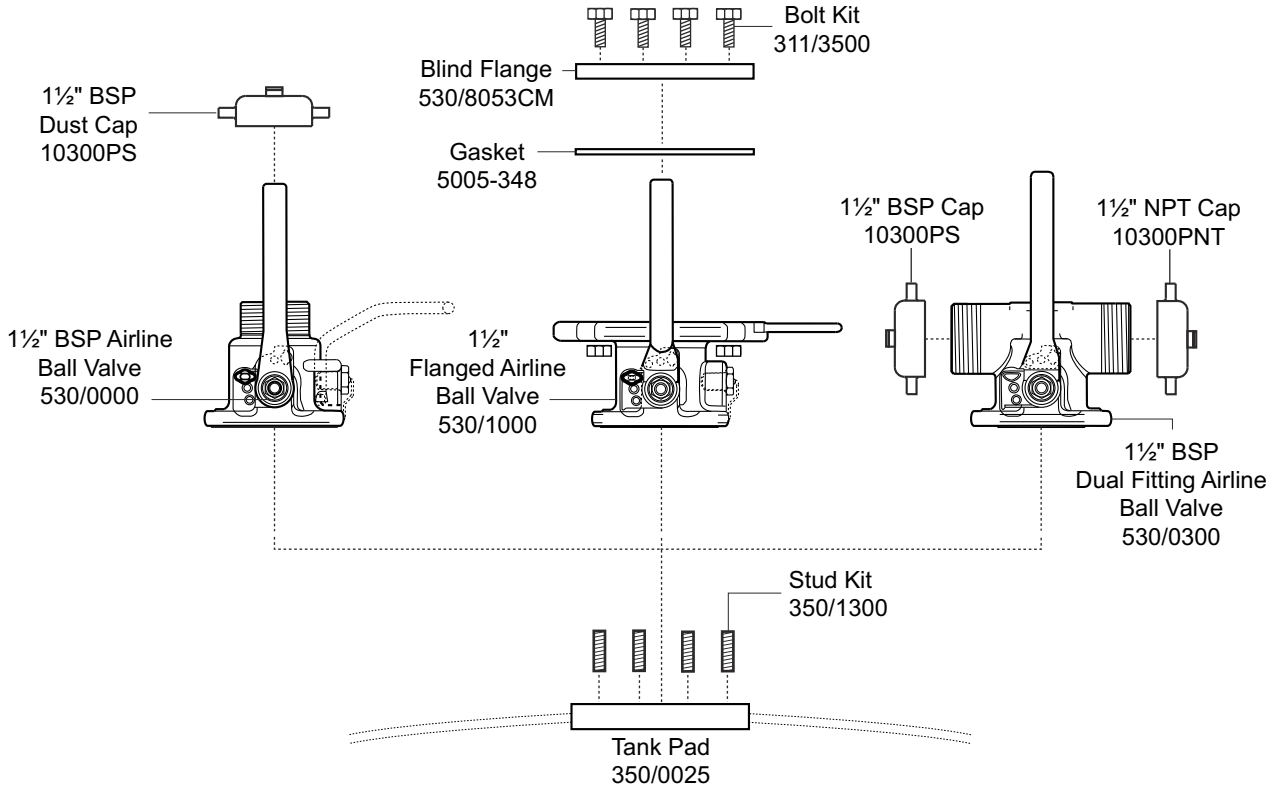


Item	Description	Part No.
1	Snap ring (Optional F,S)	5120-005
2	Spacer (Optional F, S)	355/0295
3	Gauze filter (Optional F) Sintered filter (2) (Optional S)	355/0010 355/0206
4	1/4" BSP plug	5128-005
5	PTFE O ring	5005-048 <input type="checkbox"/> <input type="radio"/>
6	Body	535/3015
7	Closure plate	535/0225 <input type="radio"/>
8	Seal	355/0202 <input type="checkbox"/> <input type="radio"/>
9	PTFE O ring	5005-659 <input type="checkbox"/> <input type="radio"/>
10	O ring	5005-664 <input type="checkbox"/> <input type="radio"/>
11	Seal plate	535/0201 <input type="radio"/>
12	M6 screw	5111-030
13	Split ring	368/0011 <input type="radio"/>
14	Retaining washer	20370
15	Operating lever	368/9838 <input type="radio"/>
16	Handle	535/0050 <input type="radio"/>
17	Location pin spring	368/0012 <input type="radio"/>
18	Location pin	368/0010 <input type="radio"/>
19	M6 x 16mm hex bolt (2)	5111-022
20	Spring washer (2)	5113-008
21	Stuffing clamp	535/0204C
22	Stuffing bush	368/0301 <input type="checkbox"/> <input type="radio"/>
23	PTFE O ring	20363 <input type="checkbox"/> <input type="radio"/>
24	Spindle	535/0203 <input type="radio"/>
25	Viton O ring	20361 <input type="checkbox"/> <input type="radio"/>
26	PTFE bearing	535/0009 <input type="checkbox"/> <input type="radio"/>

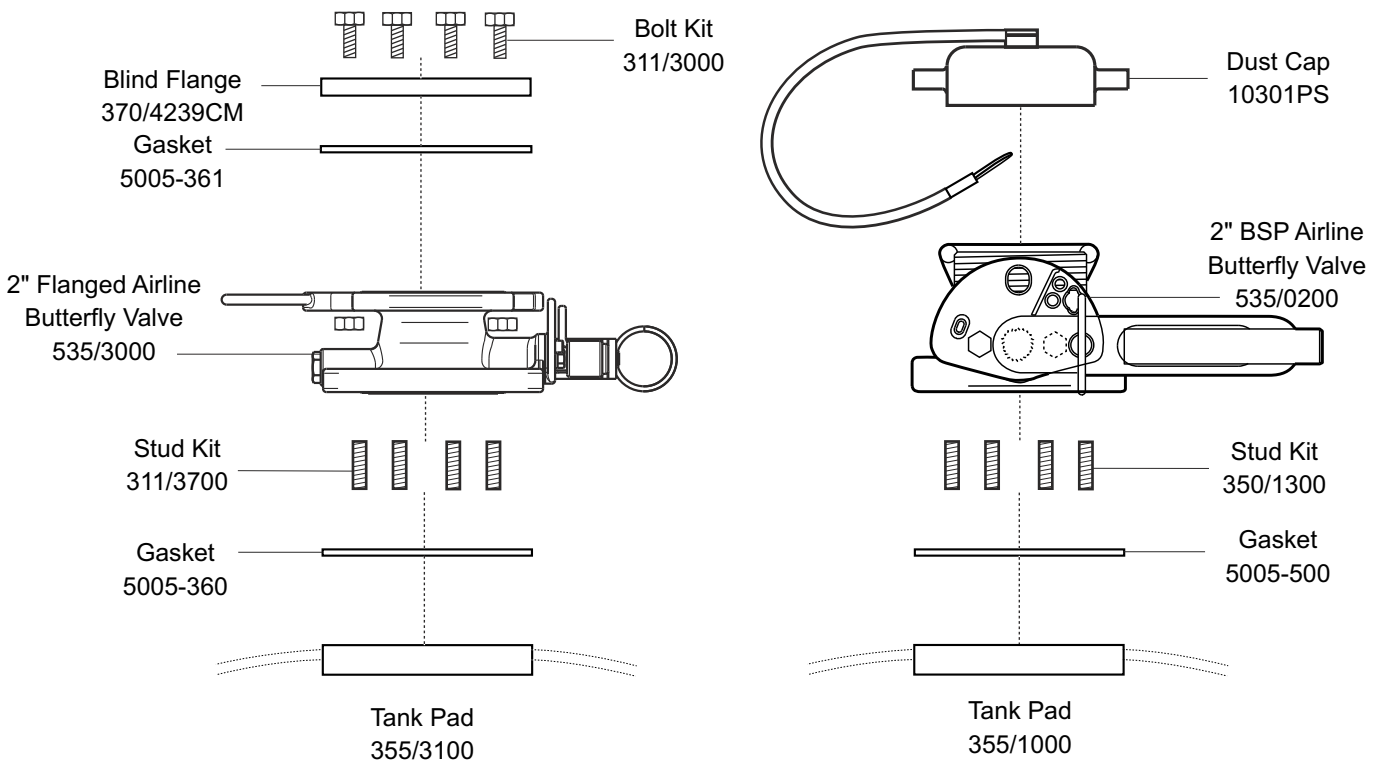
**SEAL KIT**Part number **535/00SK** contains all parts marked **SEAL KIT**Part number **535/00RK** contains all parts marked

**Airline Valve Installation**

**1½" Airline Ball Valves**



**2" Airline Butterfly Valves**

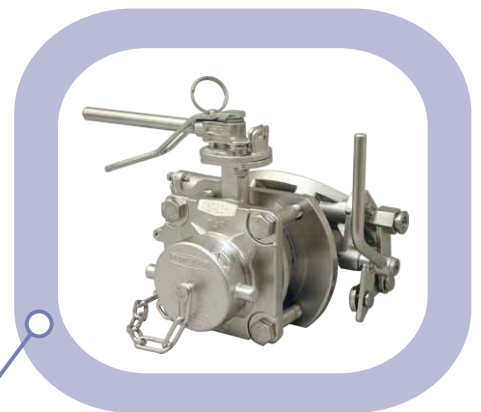
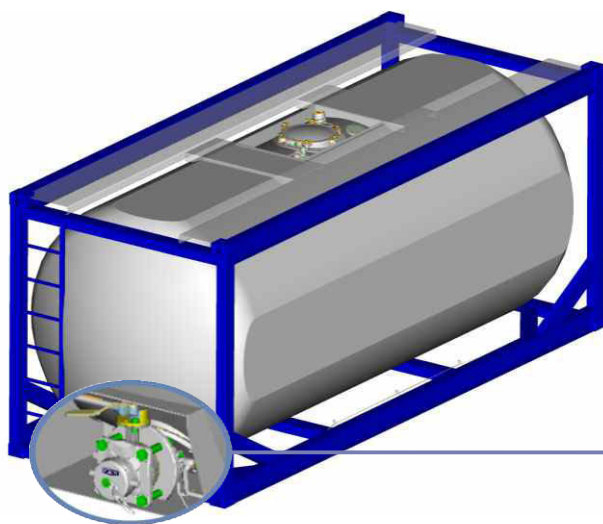
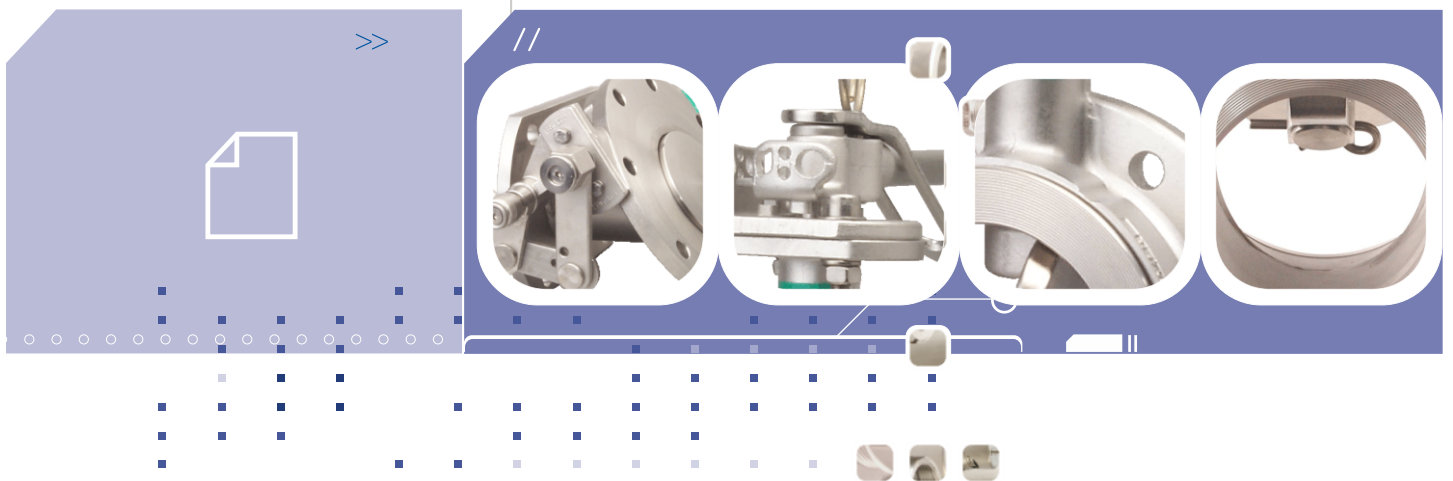






# DISCHARGE EQUIPMENT

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# DISCHARGE EQUIPMENT



Although the **3" Highlift footvalve** remains the cheaper internal emergency device, we have also included our **3" Cleanflow footvalve** as an alternative in this specification.

In the field, the Cleanflow proves more economical in the long term. This is because the valve design makes seal replacement and cleaning times quicker in addition to a much faster discharge time. You may therefore consider the small supplement worth spending.

## Options

In both cases, we can offer 30° and 45° bodies with the following options:

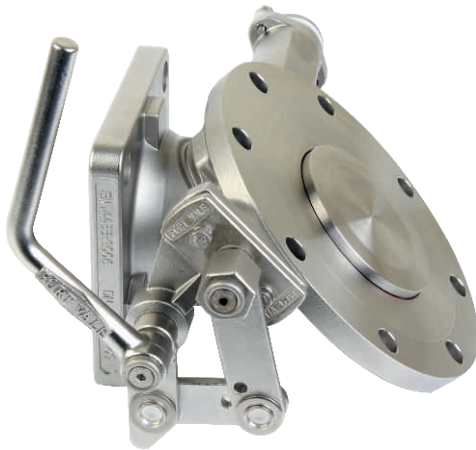
Steam heating tank pads and footvalves to speed the melting of solidified cargoes prior to discharge in the un-insulated area around the bottom outlet.

Solid or cable operated remote closure systems, with or without fusible element.

Replaceable seat valves and valves with seating areas manufactured from exotic metals for corrosive cargoes are available.

**FORT VALE**





3" 45° Cleanflow Footvalve - inlet flange drilled 8 x 14mm holes equi-spaced on a 178mm PCD; outlet flange drilling as shown below. Footvalve body with 'Superseat' (alloy 625) seating area. All other steel contact parts are manufactured in 316 stainless steel. Fitted with a Forty poppet O ring.

Options - Available with alloy C276 seating area. A range of poppet seal materials and outlet flange drillings are available. A conical poppet and steam heating is available for congealing cargoes. The Cleanflow range includes 30°, 45°, 90° and 180° options. A range of bolting kits and outlet gaskets is available.

**Specification**

Weight	9.87 Kg *See Note
Design Pressure (MAWP)	4 Bar (58 PSI)
Test Pressure	6 Bar (87 PSI)
Design Temperature	-40°C to 200°C (-40°F to 392°F)

\*Note Weight and dimensions vary according to valve specification.

Comparison tests between the Cleanflow and the Highlift footvalves conclude that there is a 38% increase in flow and a 27% reduction in discharge time.

Design approval by Lloyds Register of Shipping.

Approved to BS EN14433.

**i** Operating Instructions available - OPIN28 & OPIN47

**Range**

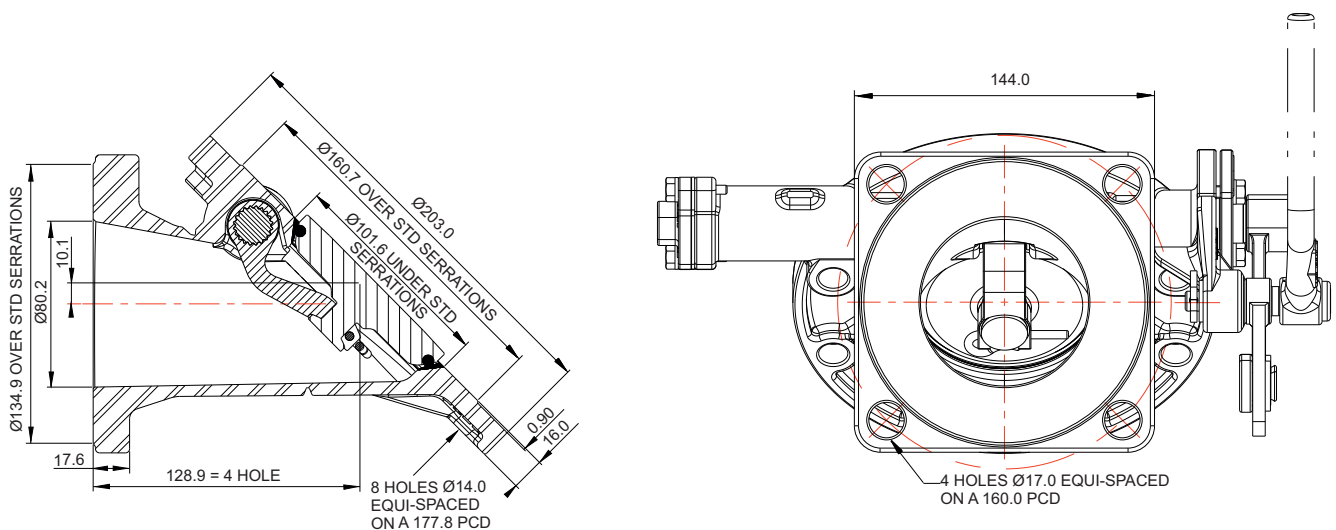
Part No.	Description
845/1200A	Superseat (alloy 625), 4 hole outlet
845/1200AHS	Alloy C276 seat, 4 hole outlet

**Associated Parts**

Associated Parts	Part No.
Tank pad	324/9000
Stud kit	845/2040
Bolting kit – 4 hole outlet	311/3500
Bolting kit – 6 hole outlet	360/0300
Inlet gasket – 8 hole	5005-015
Outlet gasket	5005-049
Outlet gasket – 6 hole	5005-169

**Fitting Details**

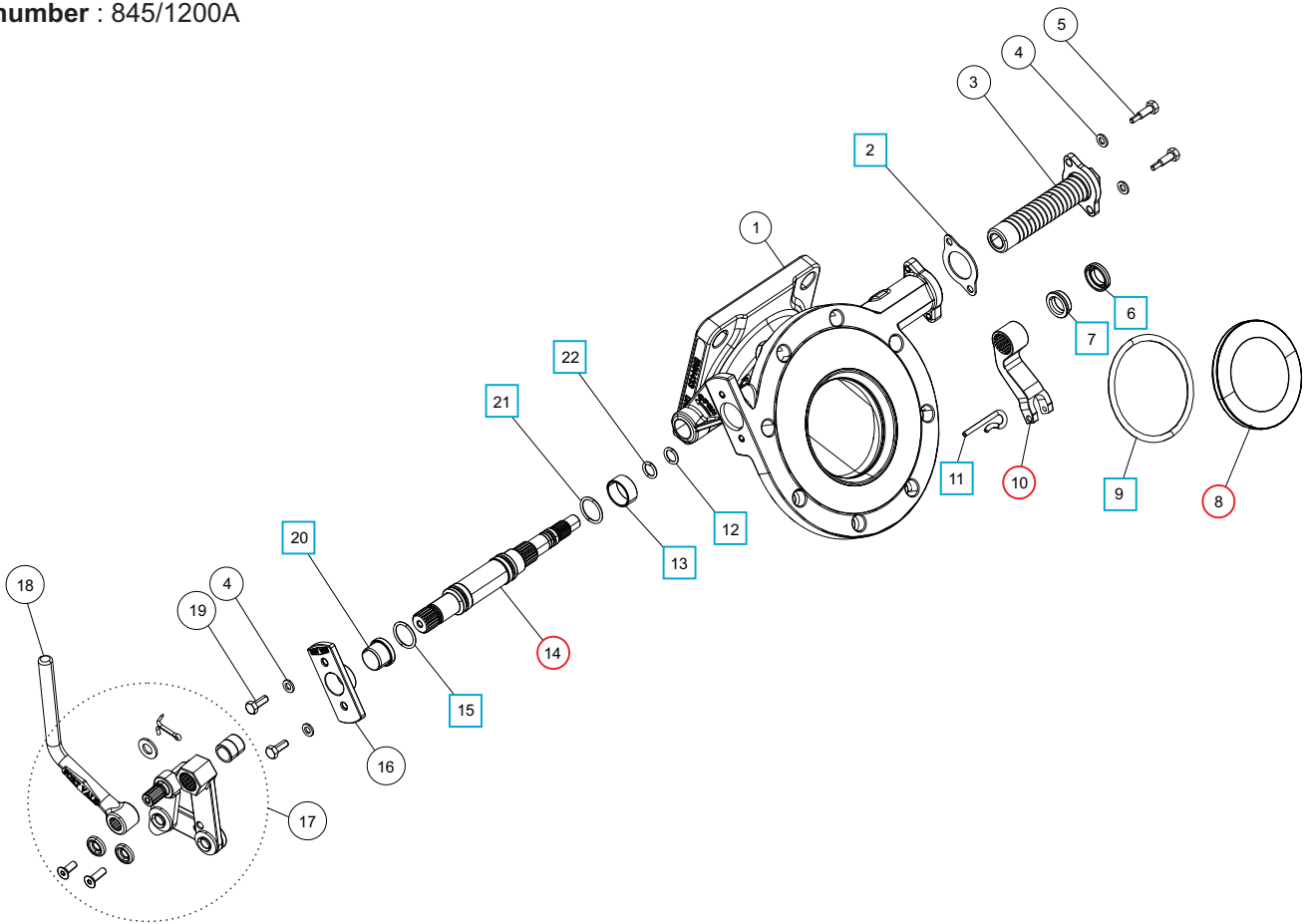
**Standard 3" 45° Cleanflow - Part No. 845/1200A**



**Parts drawing**



Part number : 845/1200A



**SEAL KIT**

Part number **845/00SK** contains all parts marked □

Item	Description	Part No.
1	Body	845/1100B
2	Spring housing gasket	5005-845 □ ○
3	Spring assembly	845/0050
4	M6 spring washer (4)	5113-008
5	M6 hex bolt (2)	845/0017
6	Bush seal	845/0064 □ ○
7	Seal energizer	845/0063 □ ○
8	Poppet	845/0040 ○
9	Fortyt O ring	5005-104 □ ○
10	Lifting fork	845/0010 ○
11	Retaining pin	845/0015 □ ○

**REPAIR KIT**

Part number **845/00RK** contains all parts marked ○

Item	Description	Part No.
12	Perlast O ring	10133PHT □ ○
13	Spindle bearing	845/0062 □ ○
14	Spindle	845/0200 ○
15	Viton O ring	5005-336 □ ○
16	Stuffing clamp flange	845/0016
17	Handle linkage assembly	324/8910
18	Handle *See note below	324/8670
19	M6 x 16mm hex bolt (2)	5111-022
20	Stuffing seal	845/0061 □ ○
21	Perlast O ring	5005-384 □ ○
22	PTFE O ring	5005-008 □ ○

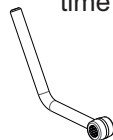


**SELF ADHESIVE DECAL**  
Part No. 845/0320  
Text in English, German & French

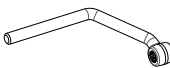
Please see separate data sheet for details on remote closure kits

A detailed step-by-step repair manual is now available for our Cleanflow range of footvalves. Please contact our Sales team for further information.

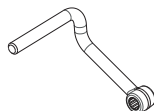
**N.B.** Please specify the style of handle required at the time of order.



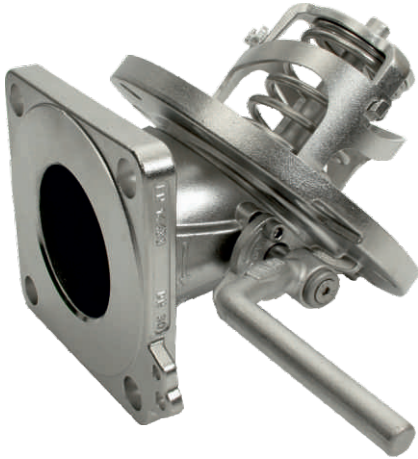
**STANDARD CLEANFLOW HANDLE**  
Part No. 324/8670



**STANDARD HIGHLIFT HANDLES**  
Part No. 330/5010



Part No. 324/8671



3" 45° MKIII Highlift Footvalve - inlet flange drilled 8 x 14mm holes equi-spaced on a 178mm PCD; outlet flange drilled 4 x 17mm holes on a 160mm PCD. Footvalve body with 'Superseat' (alloy 625) seating area. All other contact parts manufactured in 316 stainless steel. Fitted with a Forty poppet O ring.

Options - Available with alloy C276 seating area. A range of poppet O ring materials and outlet flange drillings is available. A steam-heated version is available for congealing cargoes. The Highlift range includes 30°, 45°, 90° and 180° options. A range of bolting kits and outlet gaskets is available.

**Specification**

Weight	8.9 Kgs *See Note
Design Pressure (MAWP)	4 Bar (58 PSI)
Hydraulic Test Pressure	6 Bar (87 PSI)
Design Temperature Range	-40°C to 200°C -40°F to 392°F

**Note:** Weight and dimensions vary according to the valve specification.

To make sure that the tank stays sealed if an accident occurs, the valve body has a shear groove that is designed to break so that the internal part of the valve stays closed and attached to the tank.

Design approval by Lloyds Register of Shipping  
Approved to EN14433:2006

**Range**

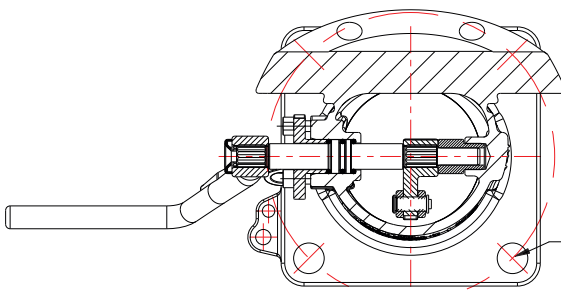
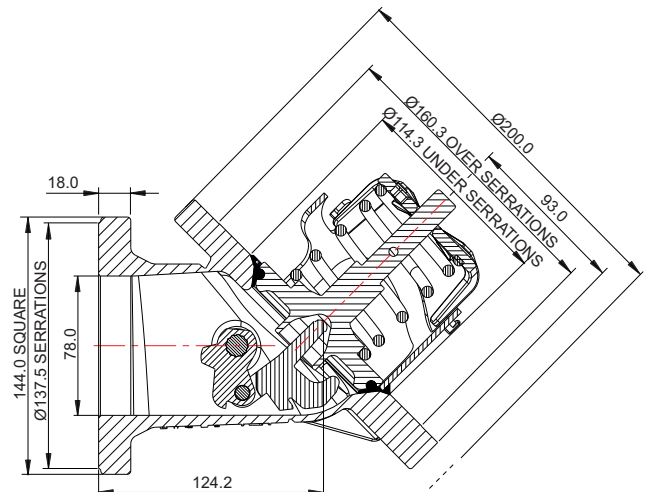
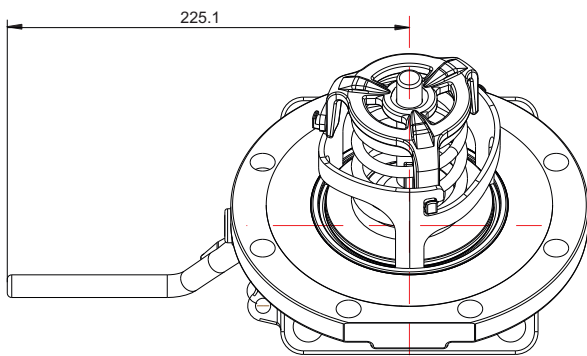
Part No.	Description
826/1200A	Superseat (alloy 625), 4 hole outlet
826/1200AHS	Alloy C276 seat, 4 hole outlet

**Associated Parts**

Associated Parts	Part No.
Tank pad	324/9000
Stud kit	324/2070
Standard bolting kit – 4 hole outlet	311/3500
8 hole inlet gasket – CNAF/PTFE	5005-015
Standard outlet gasket – CNAF/PTFE	5005-049

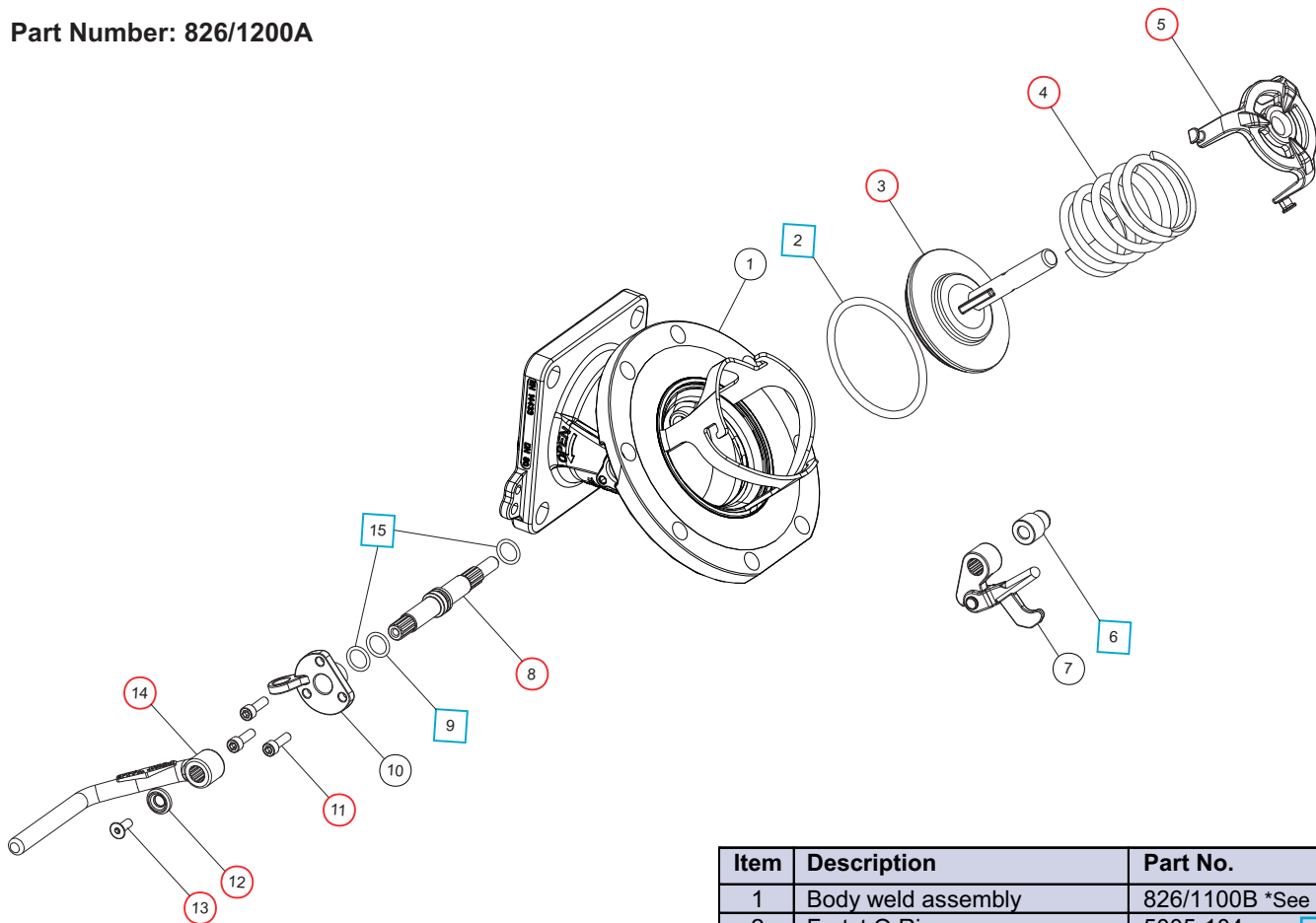
**Fitting Details**

Part Number : 826/1200A



## Parts drawing

Part Number: 826/1200A

**SEAL KIT**

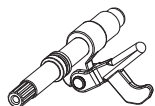
Part number **826/00SK**  
Contains all parts marked

**REPAIR KIT**

Part number **826/00RKA**  
Contains all parts marked

Item	Description	Part No.
1	Body weld assembly	826/1100B *See Note
2	Fortyt O Ring	5005-104 <input type="checkbox"/> <input type="radio"/>
3	Solid poppet	324/2020 <input type="radio"/>
4	Spring	5104-971 <input type="radio"/>
5	Spring top plate	290/6104 <input type="radio"/>
6	PTFE crankshaft end bush	20362 <input type="checkbox"/> <input type="radio"/>
7	Crank block assembly	821/0300
8	Spindle	821/0010 <input type="radio"/>
9	Viton O ring	20361 <input type="checkbox"/> <input type="radio"/>
10	Stuffing clamp	324/1001
11	M6 capscrew (3)	5111-017 <input type="radio"/>
12	Handle retaining washer	20370 <input type="radio"/>
13	Handle retaining screw	5111-030 <input type="radio"/>
14	Handle	330/5010 <input type="radio"/>
15	PTFE O ring (2)	20363 <input type="checkbox"/> <input type="radio"/>

**Note:** Part number varies according to valve specification

**SPINDLE & CRANK BLOCK ASSEMBLY - PART NO. 821/0200**

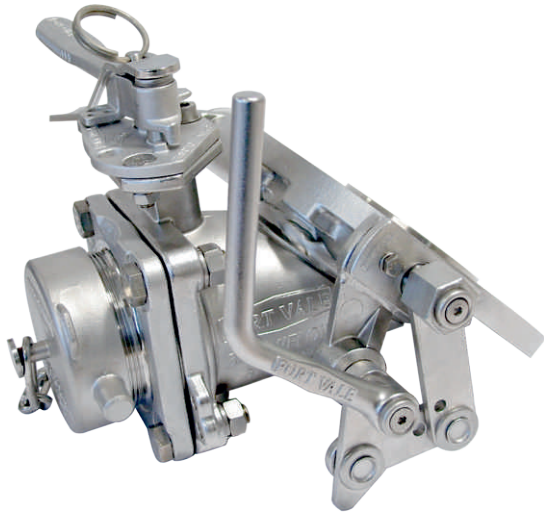
Includes spindle, crank block assembly, O rings and end bush  
(Item nos. 6 7 8 9 & 15)

**SELF ADHESIVE DECAL - PART NO. 326/0300**

Text in English, German and French

Please see separate data sheet for details on remote closure kits

A detailed step-by-step repair manual is available for our Highlift range of footvalves. Please contact our Sales team for further information.



**3" 45° Uniflow Bottom Discharge Assembly** - comprising of a 3" 45° Cleanflow footvalve with integral butterfly valve, terminating with a 3" BSP spigot and stainless steel cap. Inlet flange drilled 8 x 14mm holes equi-spaced on a 178mm PCD. The butterfly valve has a unique CLEAN position which allows access for cleaning equipment without removing the valve from the tank. Footvalve body with 'Superseat' (alloy 625) seating area. All other parts manufactured in 316 stainless steel with a Fortyt main seal to the footvalve and a PTFE main seal to the butterfly valve and cap.

**Options** - Available with alloy C276 seating area to the footvalve. Steam-heated version. 3" 30° Uniflow bottom discharge assembly available.

## Specification

Weight	13 Kg * See Note
Design Pressure (MAWP)	4 Bar (58 PSI)
Test Pressure	6 Bar (87 PSI)
Design Temperature	-40°C to +200°C (-40°F to +392°F)

**\*Note:** Weight and dimensions vary according to the valve specification.

Design approval by Lloyds Register of Shipping.  
Approved to BS EN14433 & EN14432.

**I** Operating Instructions available - OPIN28.

To make sure that the tank stays sealed if an accident occurs, the valve body has a shear groove that is designed to break so that the internal part of the valve stays closed and attached to the tank.

## Range

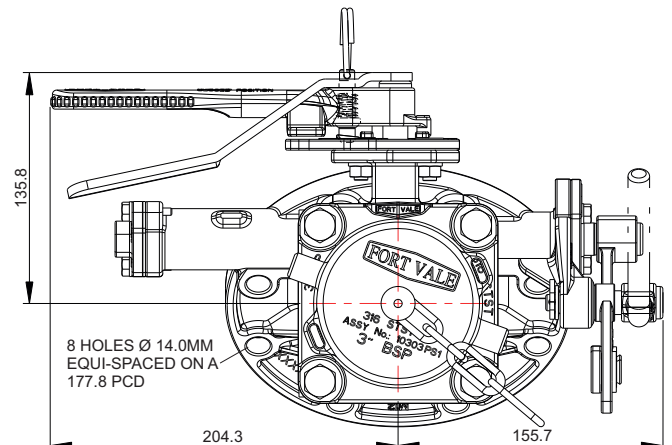
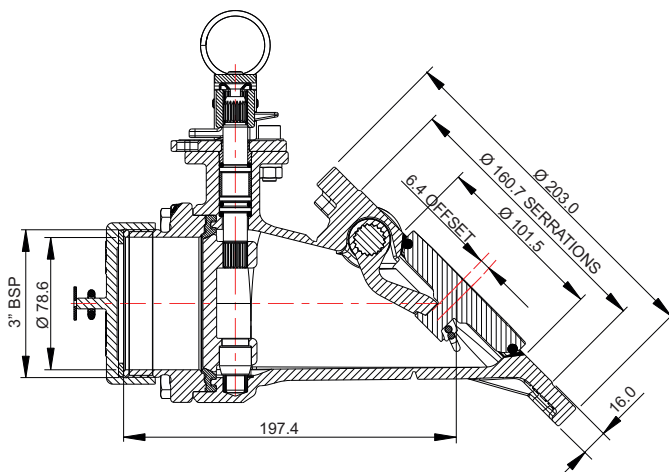
Part No.	Description
806/4000	Superseat with 3" BSP outlet
806/4000HS	Alloy C276 footvalve seat, 3" BSP outlet
807/4000	3" 30° standard assembly with 3" BSP outlet

## Associated Parts

Associated Parts	Part No.
Tank weld-in flange	324/9000
Stud kit	845/2040
Inlet gasket – 8 hole	5005-015
3" BSP Blank cap with PTFE washer	10303PS1
Self-adhesive decal	326/0303

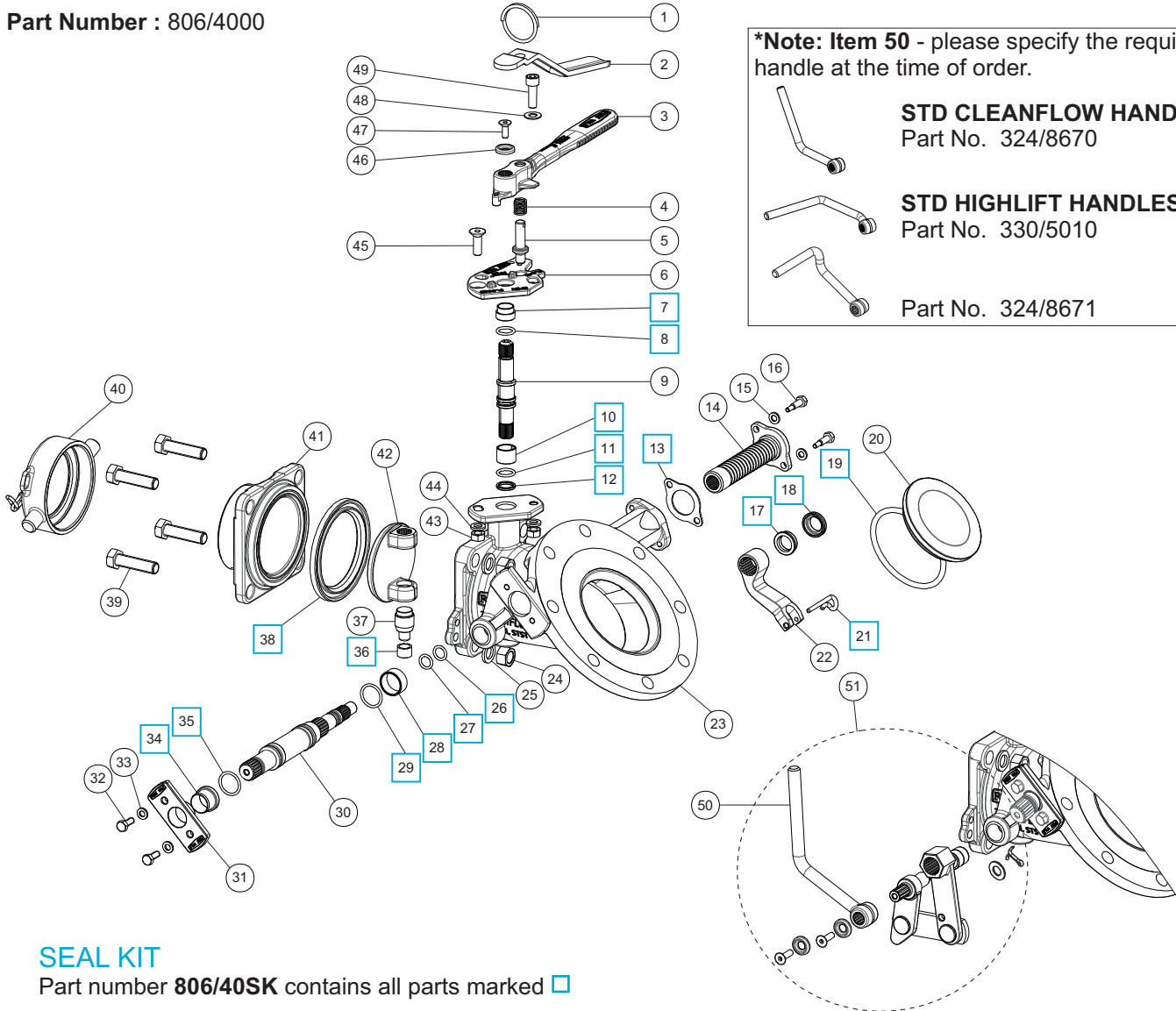
## Fitting Details

**Part Number : 806/4000**



**Parts drawing**

Part Number : 806/4000

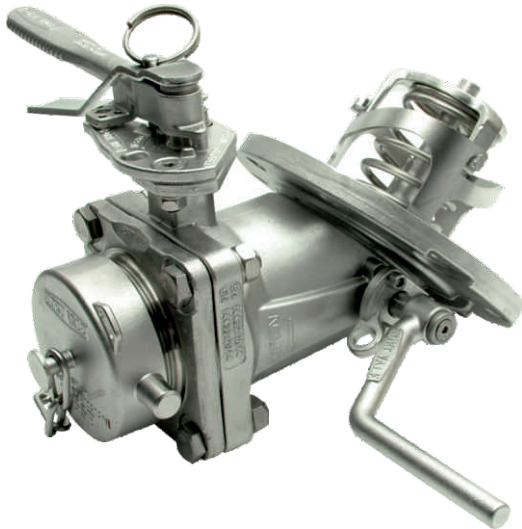


**SEAL KIT**

Part number **806/40SK** contains all parts marked

Item	Description	Part No.
1	Split ring	368/0011
2	Handle lever	368/9837
3	Butterfly valve handle	368/0057
4	Handle location spring	368/0012
5	Handle locator pin	368/0010
6	Stuffing clamp	368/0047
7	Stuffing clamp bush	368/0301 <input type="checkbox"/>
8	PTFE O ring	20363 <input type="checkbox"/>
9	Spindle	368/0201
10	Split bearing	252/0517 <input type="checkbox"/>
11	Viton O ring	20361 <input type="checkbox"/>
12	PTFE spindle seat	368/0009 <input type="checkbox"/>
13	Spring boss gasket	5005-845 <input type="checkbox"/>
14	Spring assembly	845/0050
15	Spring washer (2)	5113-008
16	Clamp screw (2)	845/0017
17	Seal energizer	845/0063 <input type="checkbox"/>
18	Bush seal	845/0064 <input type="checkbox"/>
19	Fortyt O ring	5005-104 <input type="checkbox"/>
20	Poppet	845/0040
21	Retaining pin	845/0015 <input type="checkbox"/>
22	Lifting fork	845/0010
23	Body	845/1107B
24	M12 full nut (4)	5112-006
25	M12 spring washer (4)	5113-010
26	Perfluoroelastomer O ring	10133PHT <input type="checkbox"/>

Item	Description	Part No.
27	PTFE O ring	5005-008 <input type="checkbox"/>
28	Spindle bearing	845/0062 <input type="checkbox"/>
29	Perlast O ring	5005-384 <input type="checkbox"/>
30	Spindle	845/0200
31	Stuffing clamp	845/0016
32	Clamp bolt (2)	5111-022
33	Spring washer (2)	5113-008
34	Stuffing seal	845/0061 <input type="checkbox"/>
35	Viton O ring	5005-336 <input type="checkbox"/>
36	PTFE bottom bush	368/0035 <input type="checkbox"/>
37	Bottom spindle	368/0036
38	PTFE butterfly valve main seal	368/0002 <input type="checkbox"/>
39	M12 hex bolt (4)	5111-023
40	3" BSP cap with chain & washer	10303PS1
41	Outlet flange	368/5129
42	Closure plate	368/0400
43	M8 full nut (2)	5112-001
44	M8 spring washer (2)	5113-003
45	M8 countersunk bolt	5111-085
46	Retaining washer	20370
47	M6 setscrew	5111-030
48	M8 plain washer	5113-005
49	M8 cap screw	5111-148
50	Handle – See illustrations above	*See Note
51	Handle linkage assembly	324/8910



3" Univalve Bottom Discharge Assembly - comprising of 3" 45° Highlift footvalve with integral 3" butterfly valve, terminating with a 3" BSP spigot and cap. Inlet flange drilled 8 x 14mm holes equi-spaced on a 178mm PCD. The butterfly valve has a unique CLEAN position which allows access for cleaning equipment without removing the valve from the tank. Footvalve body with 'Superseat' (alloy 625) seating area. All other parts manufactured in 316 stainless steel with a Fortyt main seal to the footvalve and PTFE main seal to the butterfly valve and cap.

**Options** - Available with alloy C276 seating area to the footvalve. Steam-heated version. Flanged outlet version (drilled 3"BSTD/3"ASA 150/DIN80 PN40). 3" Camlock outlet version.

### Specification

Weight	12.2 Kg *See Note
Design Pressure (MAWP)	4 Bar (58 PSI)
Test Pressure	6 Bar (87 PSI)
Design Temperature	-55°C to +200°C (-67°F to +392°F)

**Note:** Weight and dimensions vary according to the valve specification.

Design approval by Lloyds Register of Shipping  
Approved to EN14433:2006

To make sure that the tank stays sealed if an accident occurs, the valve body has a shear groove that is designed to break so that the internal part of the valve stays closed and attached to the tank.

### Range

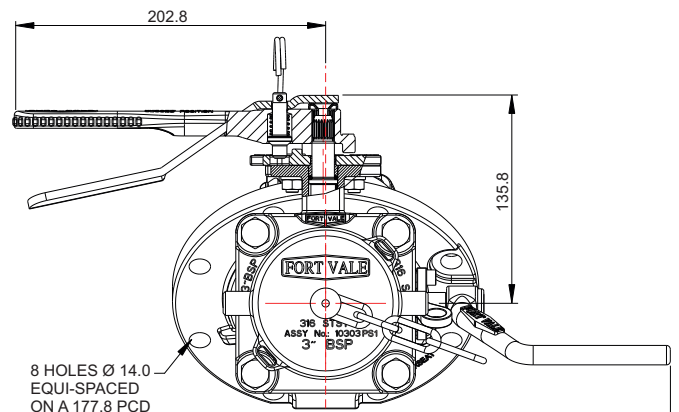
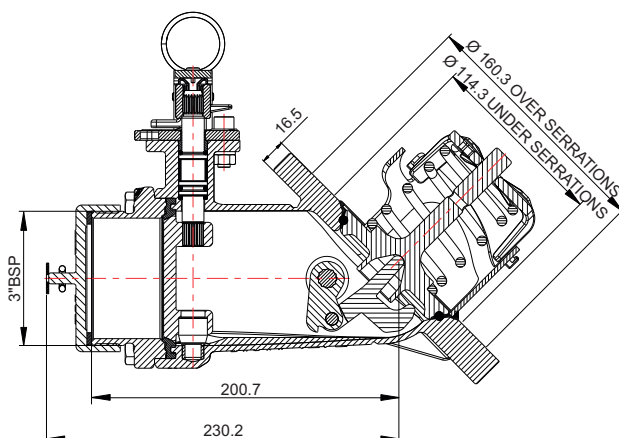
Part No.	Description
804/4000A	Superseat with 3" BSP outlet
804/4000AHS	Alloy C276 footvalve seat, 3" BSP outlet
804/4010A	Superseat with flanged outlet: 3"BSTD/3"ASA150/DIN80 PN40
804/4020A	Superseat with 3" camlock outlet & cap

### Associated Parts

Associated Parts	Part No.
Tank pad	324/9000
Stud kit	324/2070
Inlet gasket – 8 hole	5005-015
3" BSP Blank cap with PTFE washer	10303PS

### Fitting Details

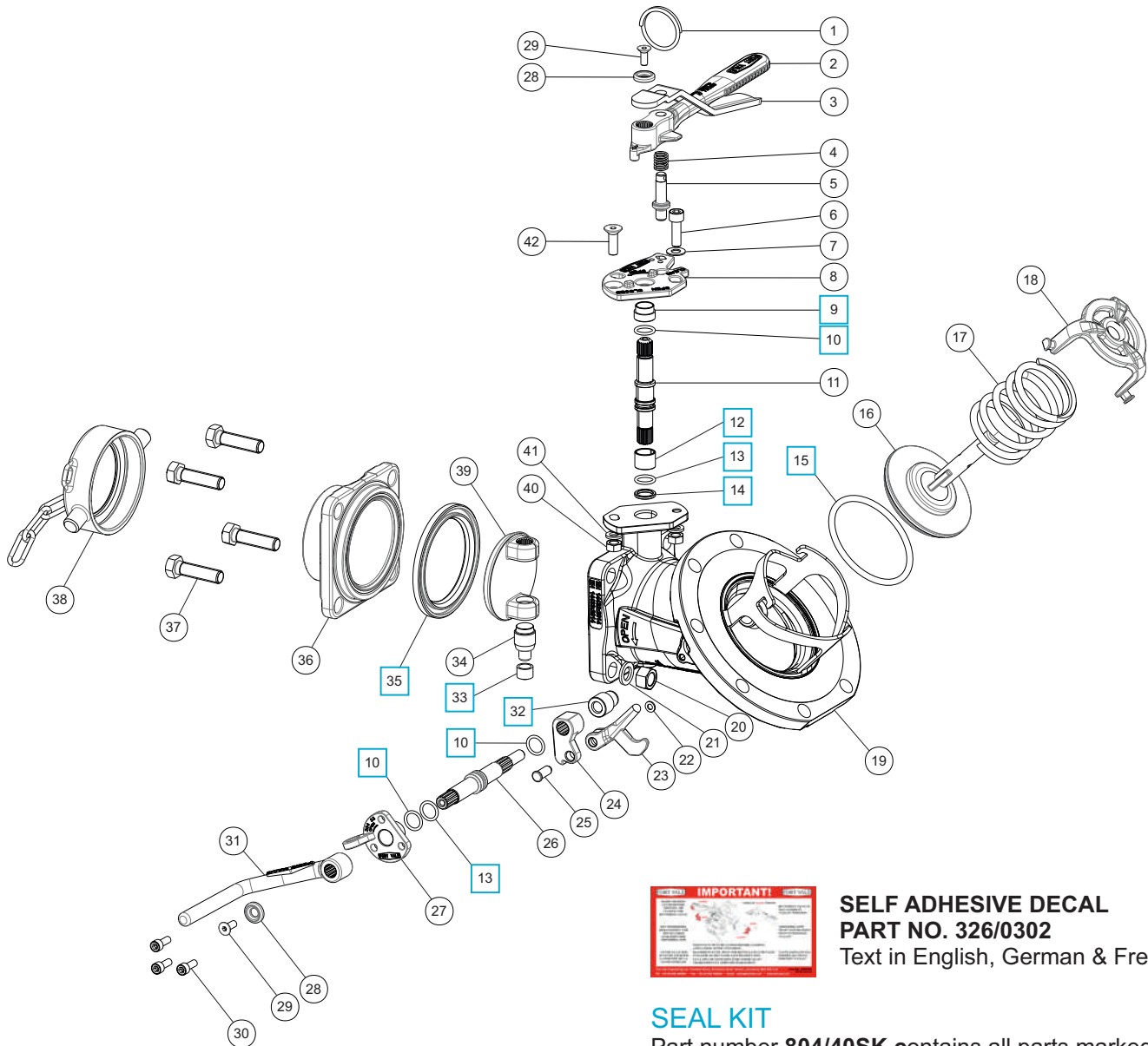
Part Number : 804/4000A



## Parts drawing



Part Number: 804/4000A



**SELF ADHESIVE DECAL**  
**PART NO. 326/0302**  
 Text in English, German & French

### SEAL KIT

Part number **804/40SK** contains all parts marked  

Item	Description	Part No.
1	Split ring	368/0011
2	Butterfly valve handle	368/0057
3	Handle lever	368/9837
4	Handle location spring	368/0012
5	Handle locator pin	368/0010
6	M8 cap screw	5111-148
7	M8 plain washer	5113-005
8	Stuffing clamp	368/0047
9	Stuffing clamp bush	368/0301 <span style="border: 1px solid blue; padding: 0 2px;"> </span>
10	PTFE O ring (3)	20363 <span style="border: 1px solid blue; padding: 0 2px;"> </span>
11	Spindle	368/0201
12	Split bearing	252/0517 <span style="border: 1px solid blue; padding: 0 2px;"> </span>
13	Viton O ring (2)	20361 <span style="border: 1px solid blue; padding: 0 2px;"> </span>
14	PTFE spindle seat	368/0009 <span style="border: 1px solid blue; padding: 0 2px;"> </span>
15	Fortyt footvalve main O ring	5005-104 <span style="border: 1px solid blue; padding: 0 2px;"> </span>
16	Poppet	324/2020
17	Closure spring	5104-971
18	Spring top plate	290/6104
19	Body assembly	826/1252B
20	M12 full nut (4)	5112-006
21	M12 spring washer (4)	5113-010

Item	Description	Part No.
22	5mm plain washer	5113-015
23	Lifting finger	821/0033
24	Crank block	821/0025
25	Pivot pin	821/0034
26	Spindle	821/0010
27	Stuffing clamp	324/1001
28	Retaining washer (2)	20370
29	M6 bolt (2)	5111-030
30	M6 cap screw (3)	5111-017
31	Footvalve handle	330/5010
32	PTFE crankshaft end bush	20362 <span style="border: 1px solid blue; padding: 0 2px;"> </span>
33	PTFE bottom bush	368/0035 <span style="border: 1px solid blue; padding: 0 2px;"> </span>
34	Bottom spindle	368/0036
35	PTFE Butterfly valve main seal	368/0002 <span style="border: 1px solid blue; padding: 0 2px;"> </span>
36	Outlet flange	368/5129
37	M12 hex bolt (4)	5111-023
38	3" BSP cap with chain & washer	10303PS1
39	Closure plate	368/0400
40	M8 full nut (2)	5112-001
41	M8 spring washer (2)	5113-003
42	M8 countersunk bolt	5111-085



# DISCHARGE EQUIPMENT



The secondary closure is ensured by the lightweight and compact **3" Widdop clamped butterfly valve**.

The eccentric disc system minimises seal wear and gives maximum seal compression in the closed position. Replacement of the main seal takes only a few seconds with the pressed on retaining ring.

## Options

Lockable handle.

Hemispherical disc for congealing cargoes. This facility avoids damage to the valve spindle when a core of solidified product would prevent the flat disc from opening freely.

Flanged valves with slotted outlet flanges to connect with ASA, BST"D" and DIN flanges. The flanged valves can be fitted with a steam heating system.

The outlet is fitted with a 3" BSP threaded spigot flange and cap as standard. Camlock, NPT, Tankwagen, RJT, DIN 11851, self sealing, dry break or symmetric coupling outlets are also available.

We also offer a range of 3" full bore ballvalves to fit our footvalves with these same options.

**FORT VALE**





**3" Clamped Butterfly Valve** - left hand operated with TIR to handle and padlock facility. Contact parts manufactured in 316 stainless steel with PTFE main seal.

**Options** - lockable handle. "Congealing cargo" version with semi-spherical closure plate. Right hand operated version. Range of 2" and 4" clamped valves. TW style body available.

**Specification**

Weight	3.5 Kg
Design Pressure (MAWP)	6 Bar (87 PSI)
Test Pressure	10 Bar (145 PSI)
Design Temperature	-40°C to 200°C (-40°F to 392°F)

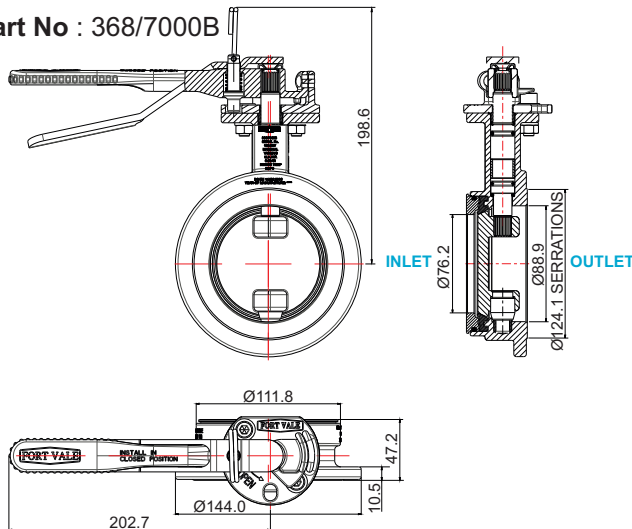
Design approvals by Lloyds Register of Shipping, Rijksdienst, SNCF, RMRS. Approved to BS EN14432

**Range**

Part No.	Description
368/7000B	Left hand standard butterfly valve
368/9110B	Left hand with semi-spherical closure plate
368/4000A	Right hand standard butterfly valve

**Fitting Details**

Part No : 368/7000B

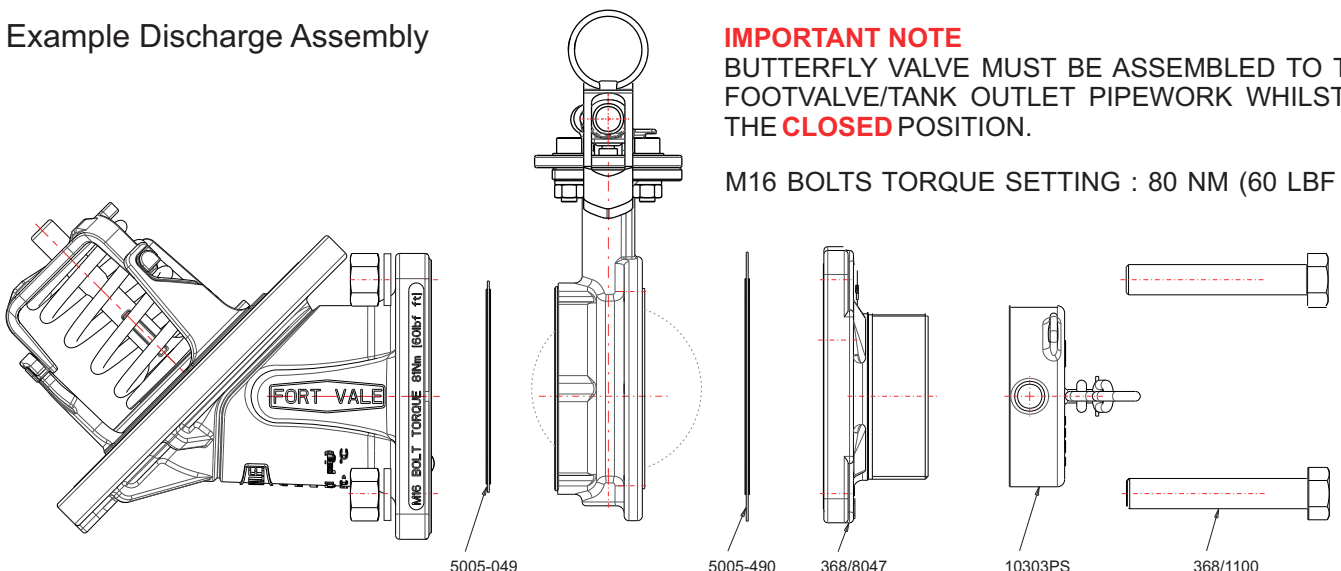


**Associated Parts**

Associated Parts	Part No.
CNAF/PTFE inlet gasket	5005-049
CNAF/PTFE outlet gasket	5005-490
CNAF/PTFE square inlet gasket - 4 hole	5005-198
CNAF/PTFE square outlet gasket - 4 hole	5005-195
Bolting kit	368/1100
3" BSP outlet flange	368/8047
3" BSP blank cap with PTFE washer	10303PS
3" Camlock outlet flange	368/8058
3" Camlock blank cap	90/DC300
3" NPT outlet flange	368/8049
3" NPT blank cap with PTFE washer	425/3250

**Assembly Details**

Example Discharge Assembly

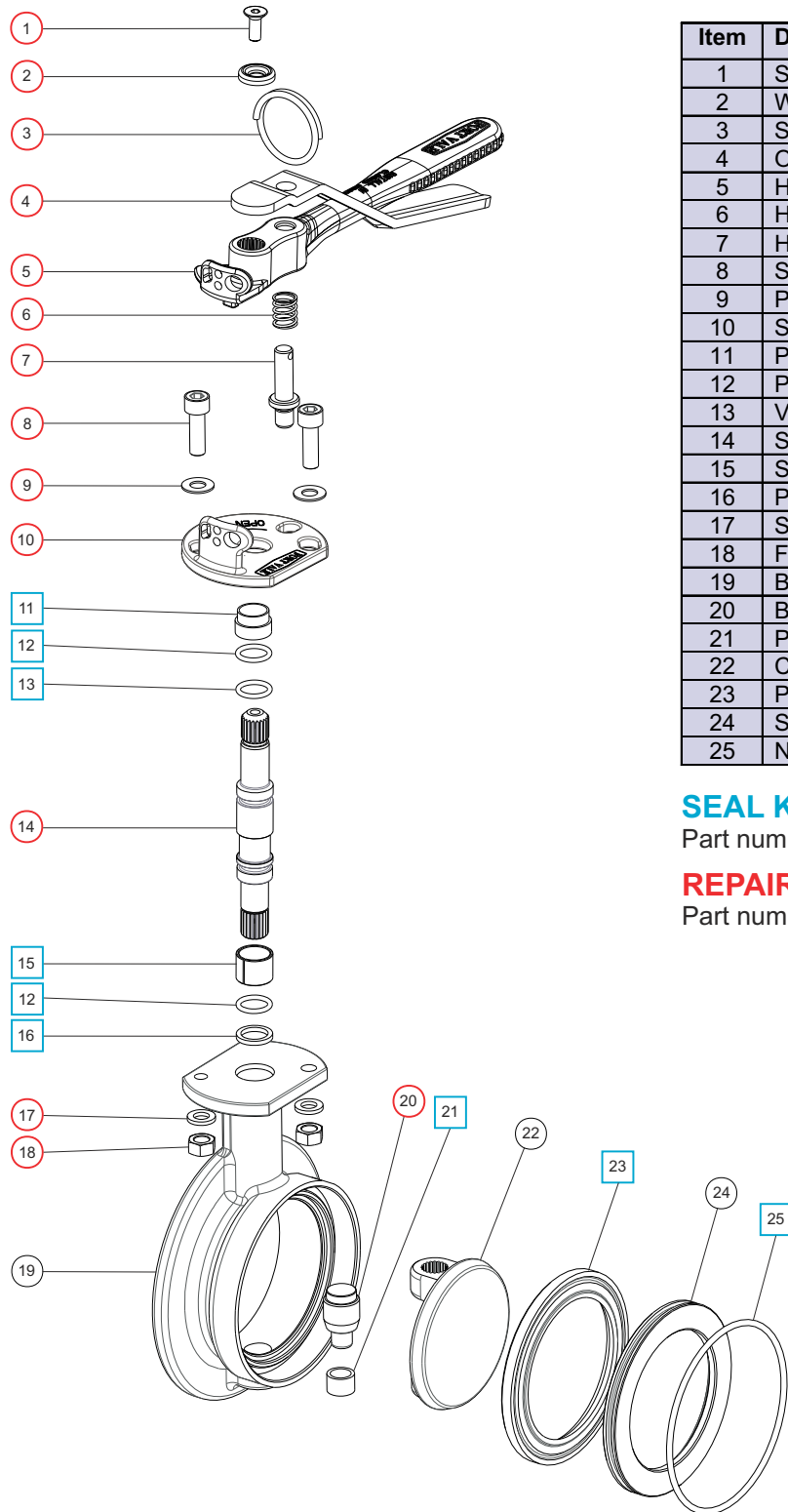


**IMPORTANT NOTE**

BUTTERFLY VALVE MUST BE ASSEMBLED TO THE FOOTVALVE/TANK OUTLET PIPEWORK WHILST IN THE **CLOSED** POSITION.

M16 BOLTS TORQUE SETTING : 80 NM (60 LBF FT)

## Parts drawing



Item	Description	Part No.	
1	Sockethead setscrew	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	Sockethead capscrew (2)	5111-148	○
9	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	368/0200	○
15	Split bearing	252/0517	□○
16	PTFE spindle seat	368/0009	□○
17	Spring washer (2)	5113-003	○
18	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	□○

### SEAL KIT

Part number **368/00SK** contains all parts marked

### REPAIR KIT

Part number **368/00RKA** contains all parts marked



### SELF ADHESIVE DECAL - PART NO. 368/0300

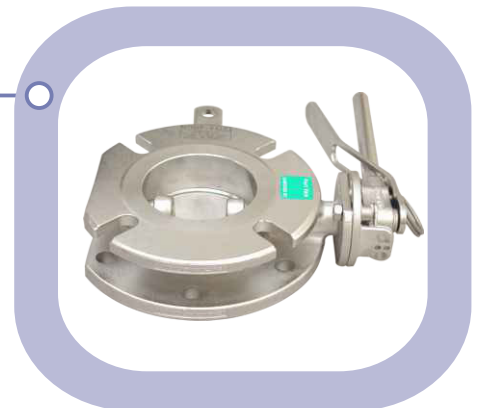
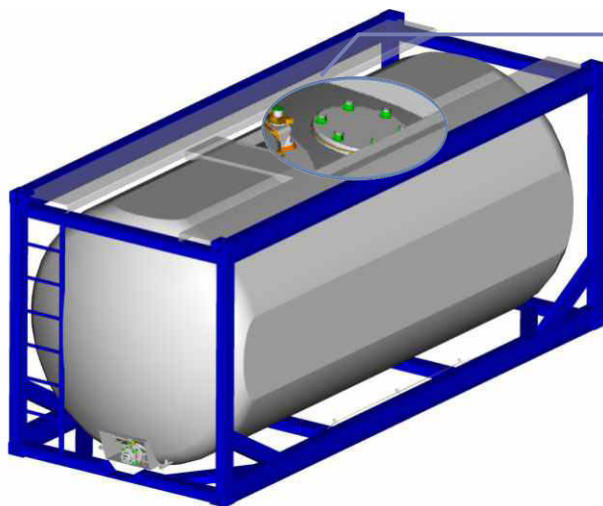
Text in English, German and French

A detailed step-by-step repair manual is now available for our range of discharge butterfly valves. Please contact our Sales team for further information.

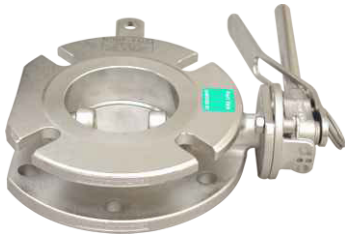


# TOP DISCHARGE PROVISION

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# TOP DISCHARGE PROVISION



On a standard tank, only a provision for top discharge would be provided.

We would recommend that the weld-in pad of this facility is designed to accept our **3" Widdop flanged butterfly valve** which, with its low profile dimensions will fit tanks with a capacity of up to 26,000 litres.

## Options

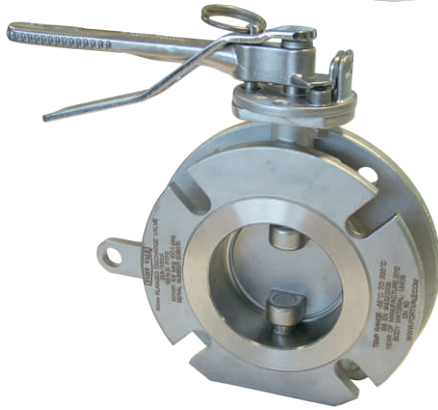
Hemispherical disc to avoid damage when operating the valve with viscous or solidifying products.

Steam heating flange fitted between the tank pad and the valve heats the valve to guarantee maximum flow of viscous products.

Dished blind flange allows the valve to be open and closed with the blind flange in place without damaging the disc.

Lockable handle as an additional safety feature - supplied with a square drive lug key.

Retaining pin to secure the blind flange to the valve, avoiding loss or theft.



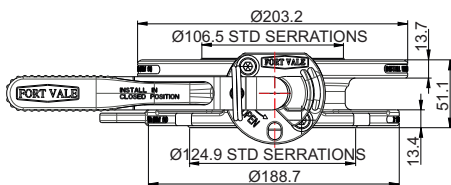
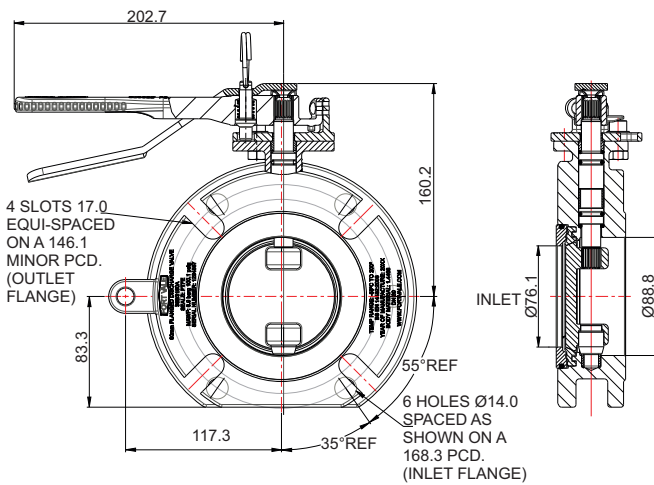
**3" Flanged Butterfly Valve** - inlet flange drilled 6 x 14mm holes spaced as shown below on a 168mm PCD; outlet flange with 4 slots 17mm equi-spaced on a 146mm PCD. Left hand operated with TIR and padlock facility to handle. Contact parts manufactured in 316 stainless steel with PTFE seals.

**Options** - alternative inlet flange drilling. "Congealing cargo" version with semi-spherical closure plate. Steam heated option.

**Fitting Details**

**Part Number : 368/3160A**

**M12 BOLTS TORQUE SETTING : 50 NM (37 LBF FT)**



**Specification**

Weight	7 Kgs
Design Pressure (MAWP)	6.9 Bar (100 PSI)
Test Pressure	10.35 Bar (150 PSI)
Design Temperature	-55°C to 200°C (-67° to 392°F)

Design approvals by Lloyds Register of Shipping, Rijksdienst, SNCF, RMRS. Approved to BS EN14432

**Range**

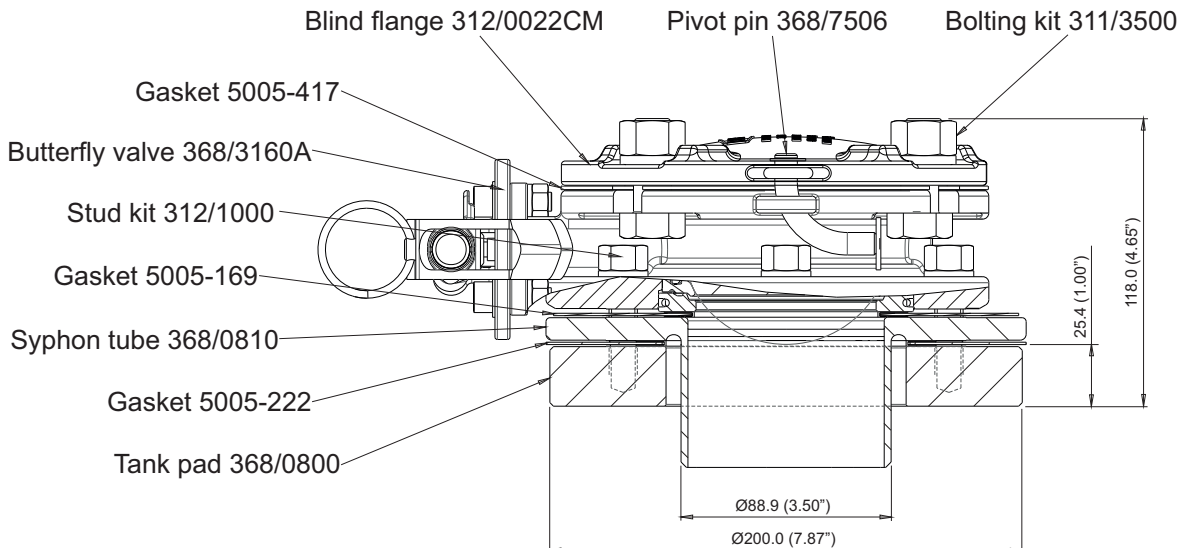
Part No.	Description
368/3160A	Inlet flange with flat, drilled 6 holes
368/3180A	Inlet flange dual drilled, 4 hole/4 hole
368/3280A	Inlet flange dual drilled, 6 hole/4 hole

**Associated Parts**

Associated Parts	Part No.
CNAF/PTFE inlet gasket	5005-169
Solid PTFE outlet gasket	5005-417
Dished blind flange	312/0022CM
Bolting kit	311/3500
Pivot pin	368/7506

**Assembly Details**

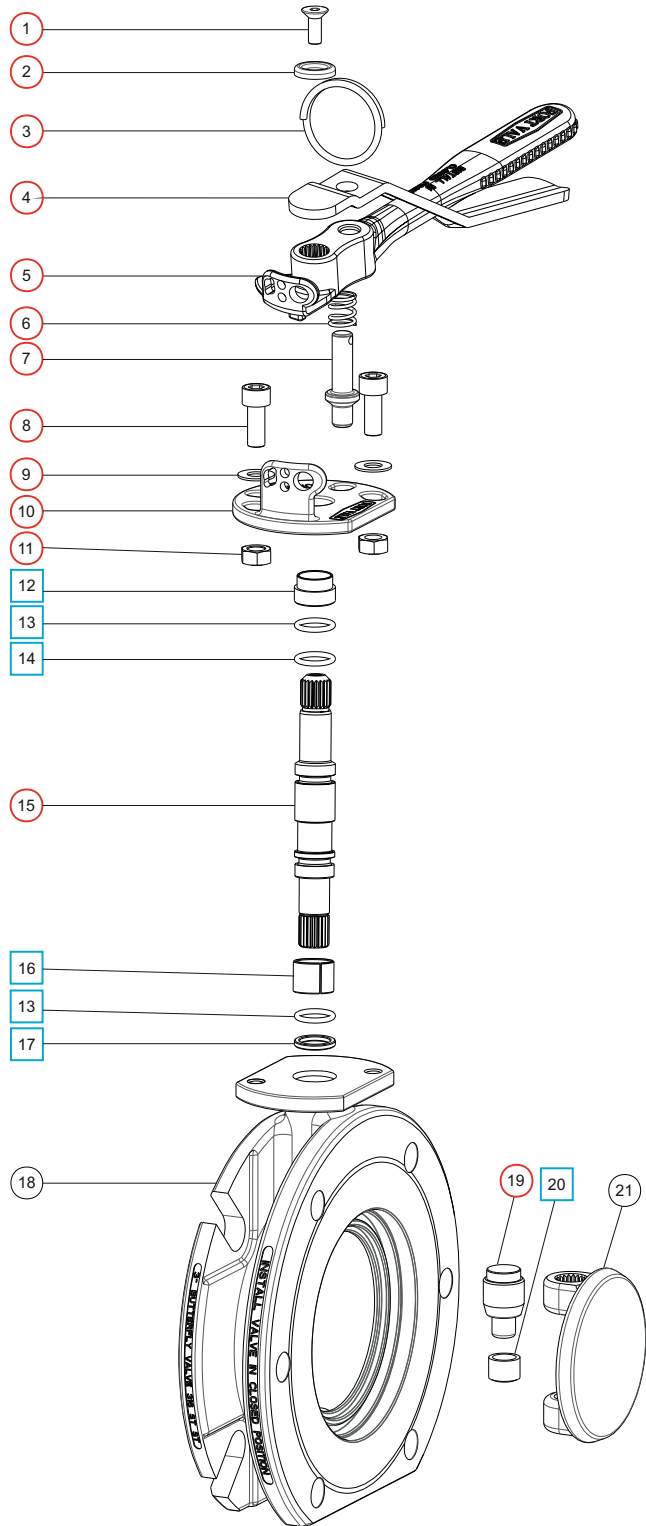
**Example Top Discharge Assembly**



## Parts drawing



Part number: 368/3160A



Item	Description	Part No.	
1	Countersunk setscrew	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	Sockethead capscrew (2)	5111-255	○
9	Plain washer (2)	5113-005	○
10	Stuffing clamp	368/0040	○
11	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

Part number **368/00SK** contains all parts marked □

### REPAIR KIT

Part number **368/316RKA** contains all parts marked ○



### SELF ADHESIVE DECAL Part No. 368/0300

Text in English, German & French





3" Flanged Butterfly Valve - inlet flange dual drilled: 6 x 14mm holes on a 168.3mm PCD and 4 x 18mm holes on a 160mm PCD. Outlet flange with 4 x 17mm open slots on a 146.1mm minor PCD. Left hand operated with TIR and padlock facility to handle. Contact parts manufactured in 316 stainless steel with PTFE main seal.

Options - different flange drillings and seal materials are available. Semi-spherical closure plate for congealing cargo.

**Specification**

Weight	6.9 Kgs
Design Pressure (MAWP)	6.9 Bar (100 PSI)
Test Pressure	10.35 Bar (150 PSI)
Design Temperature	-40°C to 200°C (-40°F to 392°F)

Approved to BS EN14432

**Range**

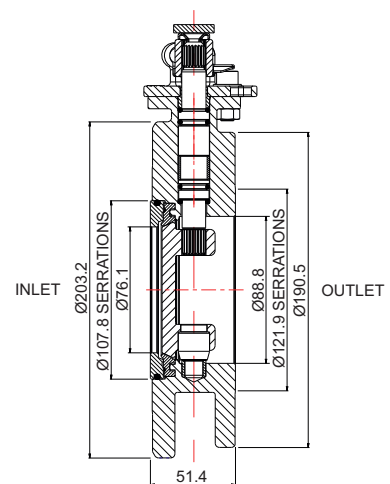
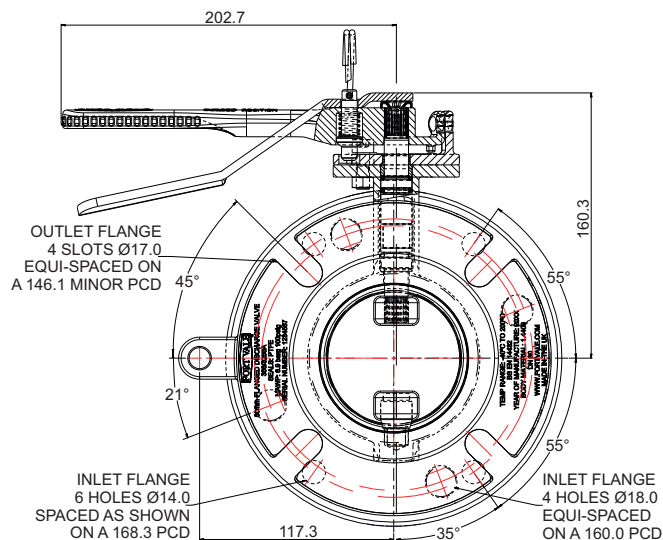
Part No.	Description
368/3280A	Inlet flange dual drilled, 6 hole/4 hole
368/3180A	Inlet flange dual drilled, 4 hole/4 hole
368/3160A	Inlet flange with flat, drilled 6 holes

**Associated Parts**

Associated Parts	Part No.
CNAF/PTFE dual drilled inlet gasket	5005-770
CNAF/PTFE inlet gasket - 6 hole	5005-222
CNAF/PTFE inlet gasket - 4 hole	5005-034
Solid PTFE outlet gasket	5005-417
Dished blind flange	312/0022CM
Outlet bolting kit	311/3500
Pivot pin	368/7506

**Parts drawing**

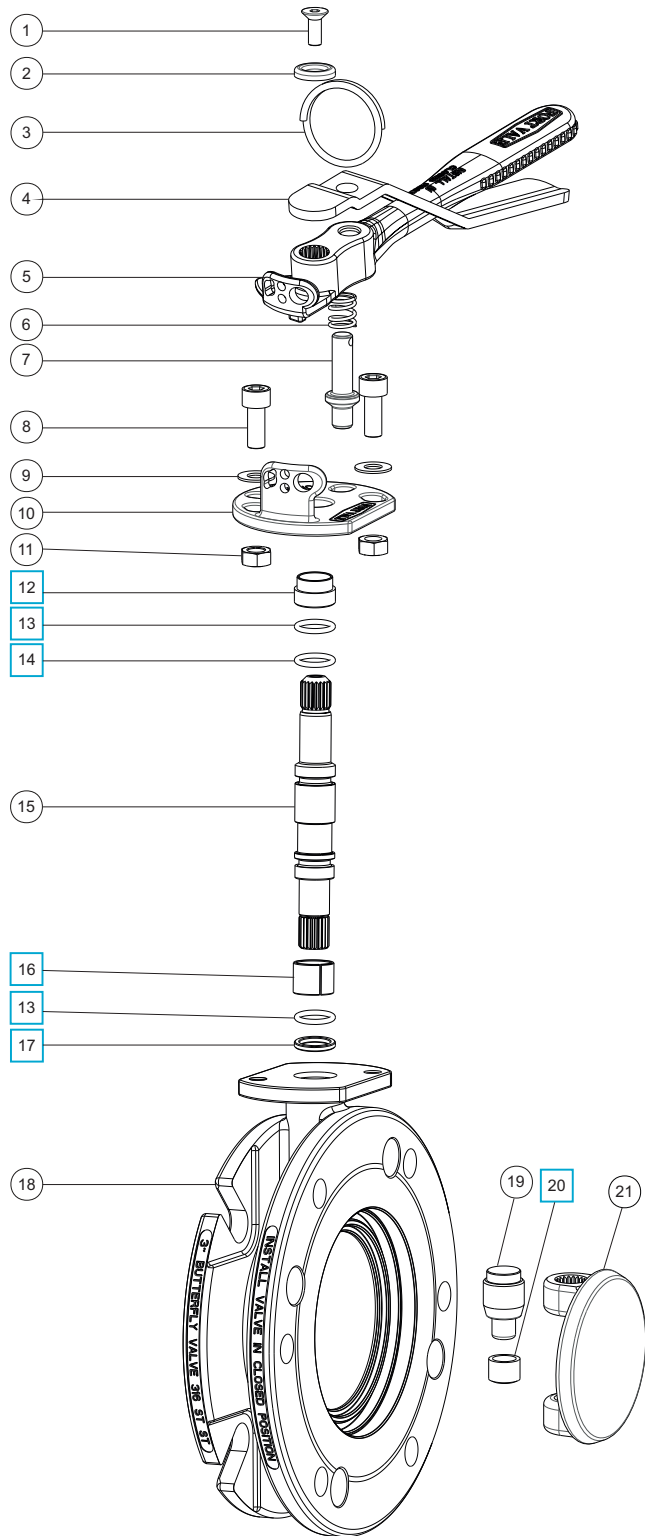
Part number: 368/3280A



Parts drawing



Part number: 368/3280A



Item	Description	Part No.	
1	Sockethead setscrew	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	Sockethead capscrew (2)	5111-255	
9	Plain washer (2)	5113-005	
10	Stuffing clamp	368/0040	
11	Full nut (2)	5112-001	
12	PTFE stuffing clamp bush	368/0301	<input type="checkbox"/>
13	PTFE O ring (2)	20363	<input type="checkbox"/>
14	Viton O ring	20361	<input type="checkbox"/>
15	Spindle	368/0200	
16	Split bearing	252/0517	<input type="checkbox"/>
17	PTFE spindle seat	368/0009	<input type="checkbox"/>
18	Body	368/9192	
19	Bottom spindle	368/0036	
20	PTFE bottom bush	368/0035	<input type="checkbox"/>
21	Closure plate	368/0400	
22	PTFE main seal	368/0002	<input type="checkbox"/>
23	Nitrile O ring	5005-342	<input type="checkbox"/>
24	Seal clamp plate	368/9148	

**SEAL KIT**

Part number **368/00SK** contains all parts marked



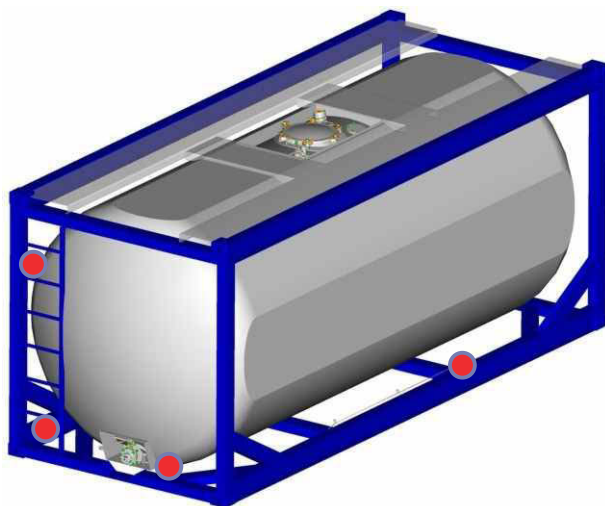
**SELF ADHESIVE DECAL - PART NO. 368/0300**

Text in English, German and French



# ANCILLARIES

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# ANCILLARIES



## Steam relief valve

This 3/4" bore pressure relief valve is fitted on a tee at the inlet connection to the steam heating system to protect it from over-pressure.

## Earthing Pin

A rust-free pin in naval brass.

## Document holder

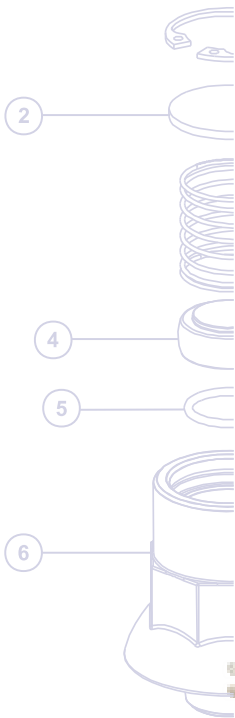
In UPVC with stainless steel fastening brackets and cap retaining cable.

## Stainless steel remote closure kit

Comprising of cable, clamps and tensioning spring.

## Caps

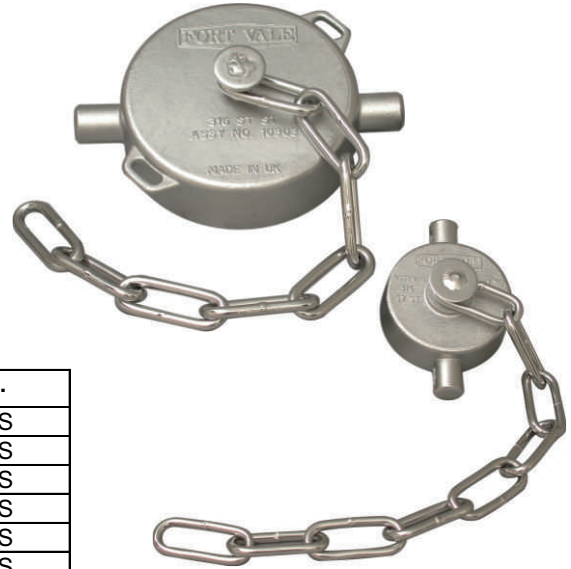
Stainless steel caps with rubber seal and stainless steel retaining cable for steam lines.



## Threaded Blank Caps

A range of stainless steel check caps is also available. The part numbers have a **'CK'** suffix instead of the 'PS'.

Please contact our Sales team if the size or material you require is not listed below.



### BSP - Stainless Steel

Description	Part No.
½" BSP stainless steel cap with wire & PTFE washer	10316PS
¾" BSP stainless steel cap with chain & PTFE washer	10306PS
1" BSP stainless steel cap with chain & PTFE washer	10305PS
1½" BSP stainless steel cap with chain & PTFE washer	10300PS
2" BSP stainless steel cap with chain & PTFE washer	10301PS
2½" BSP stainless steel cap with wire & PTFE washer	10302PS
3" BSP stainless steel cap with chain & PTFE washer	10303PS
4" BSP stainless steel cap with wire & PTFE washer	10304PSC

### BSP - Aluminium

Description	Part No.
¾" BSP aluminium cap with chain & leather washer	10706AL
1" BSP aluminium cap with chain & leather washer	10707AL
1½" BSP aluminium cap with chain & leather washer	10708AL
2" BSP aluminium cap with chain & leather washer	10709AL
2½" BSP aluminium cap with chain & leather washer	10710AL
3" BSP aluminium cap with chain & leather washer	10711AL

### NPT

Description	Part No.
1½" NPT stainless steel cap with chain and Teflon washer	10300NPTP
2" NPT stainless steel cap with chain and Teflon washer	10301NPTP
3" NPSL stainless steel cap with chain and Teflon washer	425/3240
3" NPT aluminium cap with brass chain and leather washer	10711NPT

### Washers

Description	Part No. LEATHER	Part No. PTFE
½" washer	-	10335P
¾" washer	10331L	10331P
1" washer	10319L	10319P
1½" washer	10326L	10326P
2" washer	10327L	10327P
2½" washer	10328L	10328P
3" washer	10329L	10329P

## Bursting Discs

Our range includes stocks of standard 65mm, 65mm XL and 80mm discs as well as more specialised discs for Gas Relief Valves (89mm) and Hydrogen Peroxide applications (250mm).

We can offer the following types:

- Forward Acting - cross scored solid metal disc
- Forward Composite - multi-layered (composite) disc, for settings of less than 3.67 Bar
- Reverse Acting disc
- Standard 250mm disc

**NOTE: Fitting a bursting disc derates the flow capacity of the valve. For deration factors, please contact Fort Vale.**



Part Number	Type	Set to burst at
<b>General Purpose Tank Containers / Road Tankers</b>		
862/X0228	65mm XL	2.28 Bar @ 20°C
862/X0241	65mm XL	2.41 Bar @ 20°C
862/X0269	65mm XL	2.69 Bar @ 20°C
862/X0310	65mm XL	3.10 Bar @ 20°C
862/X0367	65mm XL	3.67 Bar @ 20°C
862/X0410	65mm XL	4.10 Bar @ 20°C
862/X0440	65mm XL	4.40 Bar @ 20°C
862/X0484	65mm XL	4.84 Bar @ 20°C
<b>Compressed Liquefied Gas Tanks</b>		
864/X0367	80mm XL	3.67 Bar @ 20°C
864/X0410	80mm XL	4.10 Bar @ 20°C
864/X0484	80mm XL	4.84 Bar @ 20°C
<b>Hydrogen Peroxide</b>		
864/X1210	89mm Reverse Acting	12.10 Bar @ 55°C
864/X1500	89mm Reverse Acting	15.00 Bar @ 55°C
864/X2200	89mm Reverse Acting	22.00 Bar @ 55°C
864/X2750	89mm Reverse Acting	27.50 Bar @ 55°C
864/X3450	89mm Reverse Acting	34.50 Bar @ 55°C
<b>Hydrogen Peroxide</b>		
865/1200	250mm Std	4.50 Bar @ 20°C
865/1250	250mm Std	4.50 Bar @ 60°C
865/1400	250mm Std	6.00 Bar @ 20°C

"X" in the above part numbers indicates a variable.  
Please contact our Sales Team for more information.



**Fusible Link Assembly** - effects the automatic closure of the footvalve (primary valve) in case of fire. The device incorporates a fusible element designed to operate at 100°C (212°F) and is linked to the remote closure cable.

Quick and easy to fit on the container tank frame and compatible with all tank designs and with most footvalves on the market.

Complies with U.S. DOT CFR49 - ch.178275 [d].

**Specification**

Weight 0.5 Kg  
 Operating Temperature 100°C (212°F)

**Associated Parts**

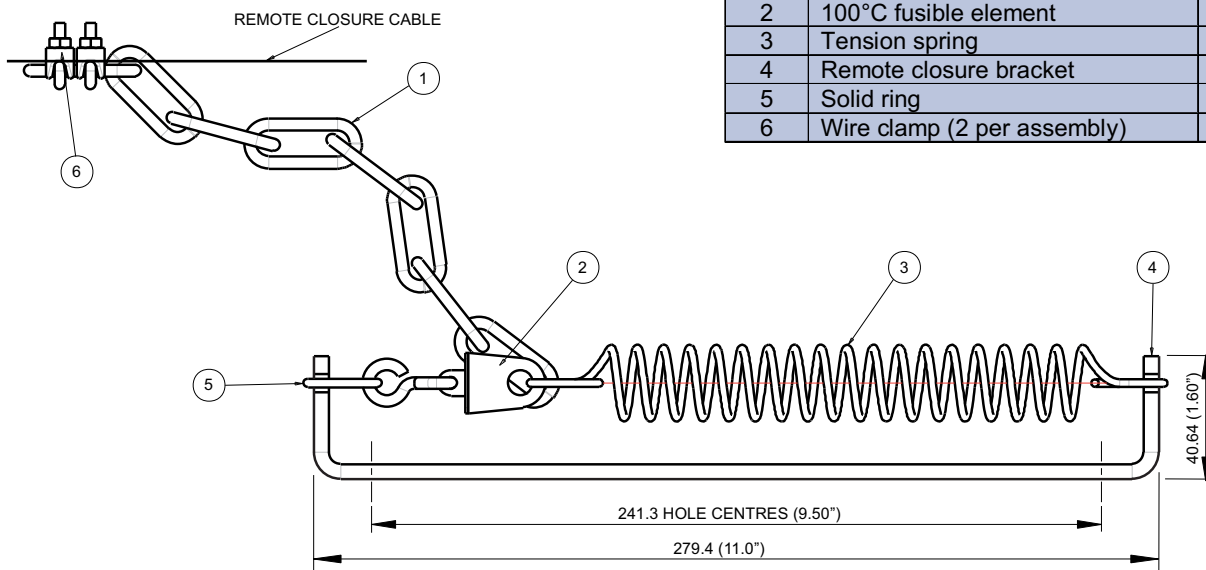
Part No.	Description
6110-022	2.5mm 7x7 strand st/st wire – 6.5 metre length
324/5341	Wire clamp
5104-203	Remote closure tension spring
324/7610	Footvalve handle remote operating lever

**Important Precautions**

Fusible links are designed for straight pull load applications. Do not use these links in applications involving radial or twisting loads. Store in a cool dry area. Do not subject links to loads exceeding those indicated. Do not install links where temperatures exceed those indicated above. Do not paint or coat fuse links as this may prevent operation. The manufacture of the fusible link recommends that, where fusible links are installed in atmospheres which can cause stress/strains or corrosion of surfaces, the fusible links be examined and replaced at least annually if signs of corrosion or stress/strain are evident.

**Parts drawing**

Part Number : 324/5760



Item	Description	Part No.
1	Stainless steel chain (9 links)	6128-016
2	100°C fusible element	324/5616
3	Tension spring	252/3272
4	Remote closure bracket	324/5765
5	Solid ring	613/6150
6	Wire clamp (2 per assembly)	324/5341

**SETTING DETAILS**

**DRILL & TAP TANK FRAME M6 AT CENTRES QUOTED**

**CLAMP REMOTE CLOSURE WIRE TO CHAIN USING CABLE CONNECTORS. ENSURE THAT THERE IS MINIMUM AMOUNT OF SLACK ON THE CHAIN WHEN THE VALVE IS IN THE OPEN POSITION.**

## Document Holders

Description	Part No.
75mm plastic document holder with st.st. cap retaining wire, plastic brackets	360/1101
75mm clear plastic document holder with st.st. cap retaining wire, plastic brackets	360/1101T
75mm plastic document holder with st.st. cap retaining wire and brackets	360/1101ABSS
75mm clear plastic document holder with st.st. cap retaining wire and brackets	360/1101TBSS
110mm plastic document holder with st.st. cap retaining wire, plastic brackets	460/1101
110mm clear plastic document holder, st.st. cap retaining wire, plastic brackets	460/1101T
110mm plastic document holder with st.st. cap retaining wire and brackets	460/1101ABSS
110mm clear plastic document holder with st.st. cap retaining wire and brackets	460/1101TBSS



## Associated Parts

Description	Part No.
75mm PVC cap with stainless steel cable	360/1010
110mm PVC cap with stainless steel cable	460/1010
75mm fixing bracket – plastic	360/1007
75mm fixing bracket – stainless steel	360/1007SS
110mm fixing bracket – plastic	460/1007
110mm fixing bracket – stainless steel	460/1007SS

## Clamped Gauze Rings

Clamped gauze rings are available for our 1", 1½", 2½", 65mm and 80mm relief valves. A clamped gauze fits around the valve body ports and offers flame protection to valves with a vacuum setting of 0.21 Bar (6"Hg) and above. For valves with a vacuum setting of less than 0.21 Bar, a clamped gauze is often fitted to provide dust protection.

Description	Part No.
Clamped gauze – 1" Minnow valves	179/0300
Clamped gauze – 1½" Twinact valves	200/5000
Clamped gauze – 2½" Twinact valves	130/5000
Clamped gauze – 2½"/65mm Super Maxi valves *	176/2900
Clamped gauze – 80mm Hyper Maxi 043/series & 049/series only *	176/2920



Fitting a clamped gauze to a Minnow or a Twinact relief valve reduces the valve flow rate.

Fitting clamped gauze 176/2900 to a 65mm Super Maxi relief valve reduces the valve flow rate by 1%.

Fitting clamped gauze 176/2920 to an 043/series or 049/series 80mm Hyper Maxi relief valve reduces the valve flow rate by 5.4%.

\* Please note that the 176/2900 and 176/2920 are NOT interchangeable. For further advice, please contact our Sales Department.



## Gauges



### Pressure Gauges



Description	Part No.
0-6 Bar (0-90 PSI) Pressure Gauge, 1/4" BSP connection, brass internals, glycerine filled.	921/06BBSP
0-6 Bar (0-90 PSI) Pressure Gauge, 1/4" BSP connection, st.st. internals, glycerine filled.	920/06BBSP
0-10 Bar (0-150 PSI) Pressure Gauge, 1/4" BSP connection, brass internals, glycerine filled.	921/10BBSP
0-10 Bar (0-150 PSI) Pressure Gauge, 1/4" BSP connection, st.st. internals, glycerine filled.	920/10BBSP



### Tell-Tale Pressure Gauges



Description	Part No.
Pressure gauge with Tell-Tale Pointer 0-6 Bar (0-90 PSI), 1/4" BSP connection, brass internals, glycerine filled.	921/06TTBBSP
Pressure gauge with Tell-Tale Pointer 0-6 Bar (0-90 PSI), 1/4" BSP connection, st.st. internals, glycerine filled.	920/06TTBBSP
Pressure gauge with Tell-Tale Pointer 0-10 Bar (0-150 PSI), 1/4" BSP connection, brass internals, glycerine filled.	921/10TTBBSP
Pressure gauge with Tell-Tale Pointer 0-10 Bar (0-150 PSI), 1/4" BSP connection, st.st. internals, glycerine filled.	920/10TTBBSP
Pressure gauge with Tell-Tale Pointer 0-16 Bar (0-230 PSI), 1/4" BSP connection, st.st. internals, glycerine filled.	920/16TTBBSP



### Temperature Gauge



Description	Part No.
Analogue Temperature Gauge with 2500mm capillary. Silicone oil filled. Range : -20°C to 200°C / -4°F to 392°F	922/TEMP200
Analogue Temperature Gauge with 2500mm capillary. Silicone oil filled. Range : -20°C to 160°C / -4°F to 320°F	922/TEMP160
Analogue Temperature Gauge with 250mm st/st tube & brass thermo well probe. Range : -20°C to 200°C / -4°F to 392°F	922/TEMPT200
Analogue Temperature Gauge with 250mm st/st tube & brass thermo well probe. Range : -20°C to 160°C / -4°F to 320°F	922/TEMPT160
Digital Temperature Gauge with 2500mm capillary. Range : -50°C to 200°C / -58°F to 392°F	922/TEMPDIGI



**Please note that the temperature ranges apply to the capillary/probe only.**





AFTER  
SALES  
//



- >> Spares
- >> Repairs
- >> Maintenance
- >> Distributors

## AFTER SALES



The Fort Vale system does not stop at the supply of valves to tank manufacturers, we pride ourselves in offering a worldwide **after sales service** to all our end users.

With Fort Vale subsidiaries in Texas USA, Rotterdam, Moscow, Shanghai and Singapore and a genuine worldwide **distributorship network** holding substantial stocks of spares at controlled retail prices, your container can be repaired anywhere with minimum down-time.

To ensure that your staff can be trained to repair our valves quickly and competently, we offer a series of **maintenance manuals** on compact disc. Each is illustrated with step-by-step photos and concise instructions on how to repair our products and test them before re-fitting.

Sets of specialist **tools** are also available to ensure that all seals are fitted correctly and without damage to the seal or the valve, which in turn keeps costs and down-time to a minimum.

We can also supply a safety valve **test rig** for pressure and vacuum testing on calibrated high quality gauges for 2½ and 5 year tests.

In addition, we offer a **seat lapping** system which allows you to repair the seats of footvalves and safety valves in-house, avoiding expensive sub-contract work.

**FORT VALE**

## Repair & Maintenance Equipment



Fort Vale offer a full range of instruction manuals and proprietary tools for the repair, maintenance and testing of our valves.

Maintenance manuals may be provided electronically and in printed format. Training courses in valve refurbishment and testing are available on application.

**Fort Vale highly recommend the use of proprietary tools to ensure the quick and efficient refurbishment of valves without damaging the seals, and more importantly, to guarantee that the valve passes its pressure test once re-assembled.**

### Test Rig

**Pressure / Vacuum Test Rig** - is used for the testing of any pressure or vacuum Super Maxi, Twinact, Uniact, Minnow and Steam Relief Valve. Connection is by a 2½" BSP socket mounted on top of the rig with adaptors available upon request. The rig comprises of a digital pressure and vacuum gauge and two control valves.

The testing range of the rig is -10 PSI to 100 PSI (-0.7 Bar to 6.9 Bar).

Supply connection to the test rig is via a 1/4" BSP female socket on the back of the rig.



Part No. 400/8000

### Tool Kits

Description	Part No.
Relief Valve Test Rig – digital gauges	400/8000
Test rig adaptor flange, adapts 2½" BSP to 3" ASA150, DIN65 PN10 & DIN80 PN6	425/1000
C Spanner – to fit/remove Twinact relief valves	400/3000
C Spanner – to fit/remove Super Maxi relief valve	400/3001
Tightening tool for MKIII Super Maxi relief valve	400/8380
1½" & 2½" Twinact relief valve Tool Kit	400/2000
2½" BSP Maxi & Highflow relief valve Tool Kit	400/8100
65mm & 80mm Super Maxi Relief Valve Tool Kit	400/8300
Footvalve & Relief Valve Seat Repair Kit	400/2600
Box of 100 x 60 grit grinding discs	400/2610
Box of 100 x 80 grit grinding discs	400/2620
Box of 100 x 180 grit polishing discs	400/2630
Box of 100 x 600 grit polishing discs	400/2640
3" Cleanflow Footvalve Tool Kit	400/2150
3" Highlift Footvalve Tool Kit	400/2450
2" Butterfly Valve Tool Kit	400/2300
3" Butterfly Valve Tool Kit	400/2700
1½" Ball Valve Tool Kit	400/2500
3" Ball Valve Tool Kit	400/2200



Part No. 400/2600



Part No. 400/2000



Part No. 400/8300



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