

## Catalogue

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# Lined Equipment for Special Service Conditions





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## Lined Equipment for Special Service Conditions

### Catalogue

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## Lined Equipment for Special Service Conditions

### Catalogue

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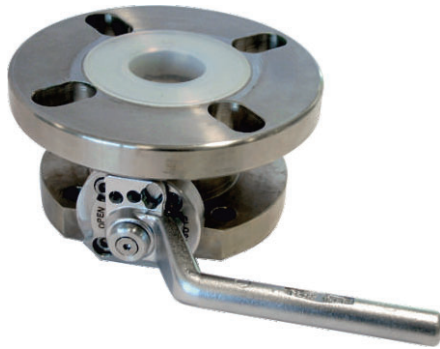
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# DN25 Reduced Bore Flanged Airline Ball Valve - PFA Lined

Part No: 530/P100



## Specification

### Nominal size

DN25

### Tank connection

Flanged: 4 x 11mm holes on a 103.5mm PCD

### Outlet/process connection

Flanged: 4 x 18mm slots on a 100mm to 125mm PCD

### Options

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

### Materials

Contact parts: PFA lined

Main seal: PTFE

Refer to Range for other PFA Lined Ball Valves

Alternatives are available, refer to the Design Options page

## Design Conditions

Weight:	5.0 Kg
Design Pressure (MAWP):	6.9 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 EN14432

## Range

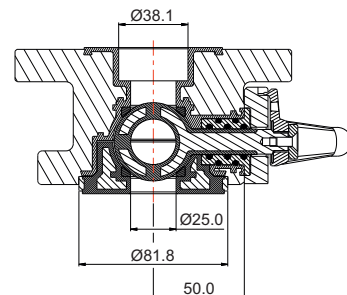
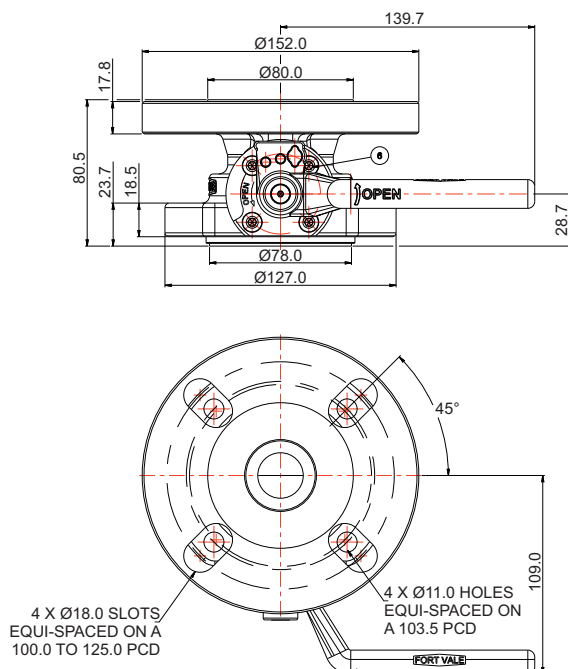
Description	Part No.
DN25 reduced bore ball valve PFA lined	530/P100
DN50 full bore ball valve PFA lined	370/P200
DN80 full bore ball valve PFA lined	360/P030X *

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

## Related Parts

Description	Part No.
Weld-in flange	350/0024
Stud kit	355/1250
Blind flange	530/8053CM
Solid PTFE outlet gasket	5005-348

## Section View

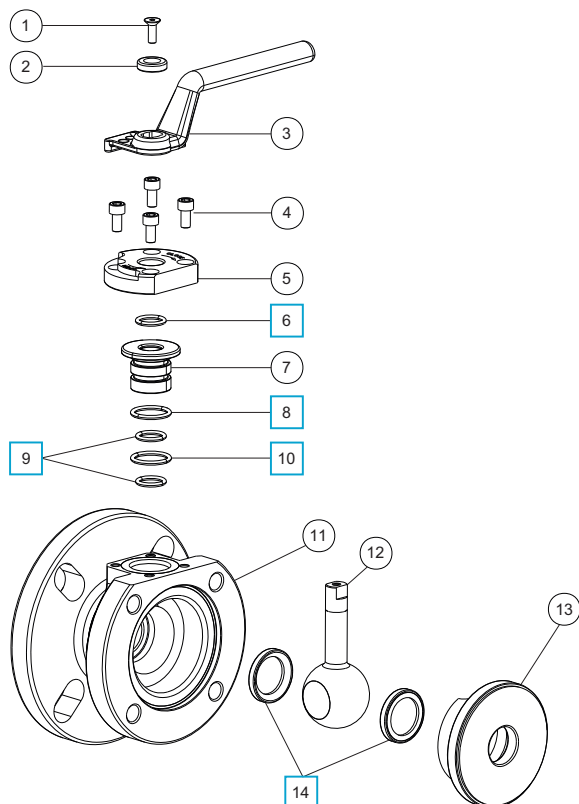




# DN25 Reduced Bore Flanged Airline Ball Valve - PFA Lined

Part No: 530/P100

## Parts Drawing



## Parts List

Item	Description	Part No.
1	M5 socket screw	5111-111
2	Retaining washer	20370/5
3	Handle	530/0020/1
4	M6 button screw (4)	5121-013
5	Stuffing clamp	530/1014
6	Viton O ring	20361 <input type="checkbox"/>
7	Seal carrier (modified 2024)* <b>Note</b>	530/1013
8	Low temp. Viton O ring	5005-336MF <input type="checkbox"/>
9	Perfluoroelastomer O ring (2)	5005-586 <input type="checkbox"/>
10	Perfluoroelastomer O ring	5005-384 <input type="checkbox"/>
11	PFA lined body	530/P110/2
12	PFA lined obturator	530/1010L
13	PFA lined clamp plate	530/1011P
14	PTFE front/rear seal (2)	530/0024 <input type="checkbox"/>

## Seal Kit

Description	Part No.
All parts marked <input type="checkbox"/> in the Parts List	530/P1SK

## NOTE

From January 2024, the spindle seals and seal carrier have changed, items 6 thru 10.

If you buy a seal kit for a valve made before January 2024, you must also replace the seal carrier, item 7.



## DN40 Ball Valve - PFA Lined, Painted Finish

Part No: 370/P680X/XX



### Specification

#### Nominal size

DN40

#### Tank connection

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

#### Outlet/process connection

Flanged: 4 x M16 tapped holes on a 125mm PCD

#### Options

Left or right hand operation

With handle or remote operation lever

#### Materials

Contact parts: PFA lined

Main seal: RTFE

Ball: Refer to the Ball Material Table below

External metal surfaces are painted with Epilife-2

### Design Conditions

Weight:	6.3 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 Codes

BS EN 14432

### Range

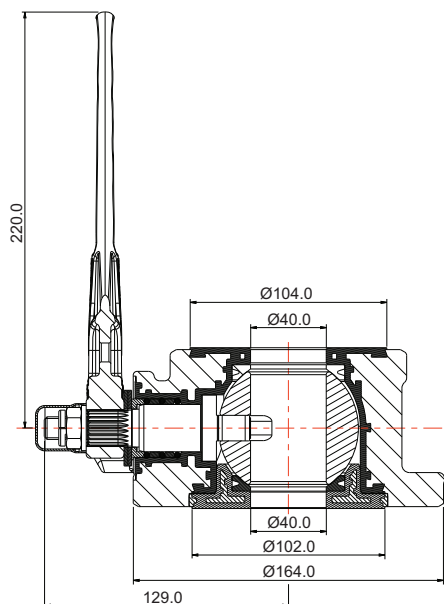
Description	Part No.
With handle, left hand	370/P680L/XX
With handle, right hand	370/P680R/XX
With remote lever, left hand	370/P68RL/XX
With remote lever, right hand	370/P68RR/XX

**Note:** The last two digits are related to the ball material.

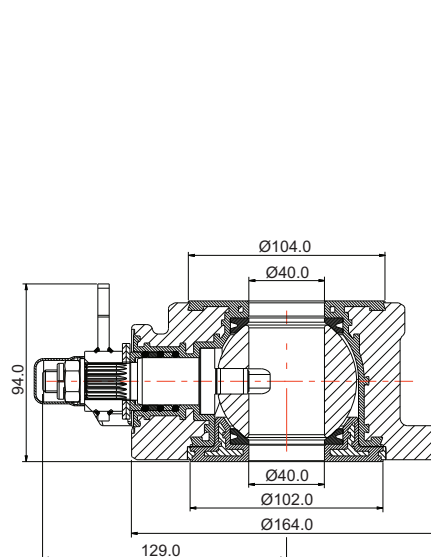
### Ball Material Options

Ball Material	Valve Part No.
PFA lined 316 stainless steel	370/P68XX/PA
Solid PVDF	370/P68XX/PV
Zirconia (ZRO2)	370/P68XX/C1
Aluminium oxide (Al2O3)	370/P68XX/C2
Silicone Nitride (Si3N4)	370/P68XX/C3
Nilcra® Zirconia MS grade	370/P68XX/C4

### Section View: 370/P680X/XX



### Section View: 370/P68RX/XX

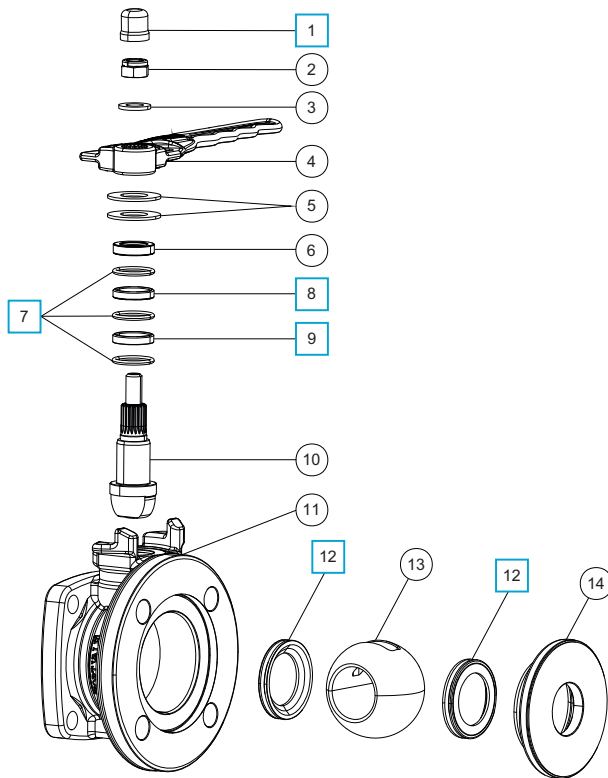




## DN40 Ball Valve - PFA Lined, Painted Finish

Part No: 370/P680X/XX

### Parts Drawing



### Parts List

Item	Description	Part No.
1	LDPE cap	FA-01565 <input type="checkbox"/>
2	M12 self locking nut	5112-007
3	M12 washer	5123-003
4	Handle	370/A0025
5	Belleville washer (2)	5113-041
6	Top stuffing collar	370/P514
7	PTFE O ring (3)	5005-654 <input type="checkbox"/>
8	Top stuffing collar	370/P512 <input type="checkbox"/>
9	Bottom stuffing collar	370/P513 <input type="checkbox"/>
10	PFA lined spindle	370/P606
11	PFA lined body	370/P681
12	RTFE seal (2)	370/P685 <input type="checkbox"/>
13	40mm ball <b>*Note</b>	370/P688XX
14	PFA lined seal clamp plate	370/P684

**NOTE:** The material changes the part number. Refer to the Ball Material table on page 1 of 2.

### Seal Kit

Description	Part No.
All parts marked <input type="checkbox"/> in the Parts List	370/P68SK





## DN50 Ball Valve - PFA Lined, Painted Finish

Part No: 370/P660X/XX



### Specification

#### Nominal size

DN50

#### Tank connection

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

#### Outlet/process connection

Flanged: 4 x M16 tapped holes on a 160mm PCD

#### Options

Left or right hand operation

With handle or remote operation lever

#### Materials

Contact parts: PFA lined

Main seal: RTFE

Ball: Refer to the Ball Material Table below

External metal surfaces are painted with Epilife-2

### Design Conditions

Weight:	9.9 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 Codes

BS EN 14432

### Range

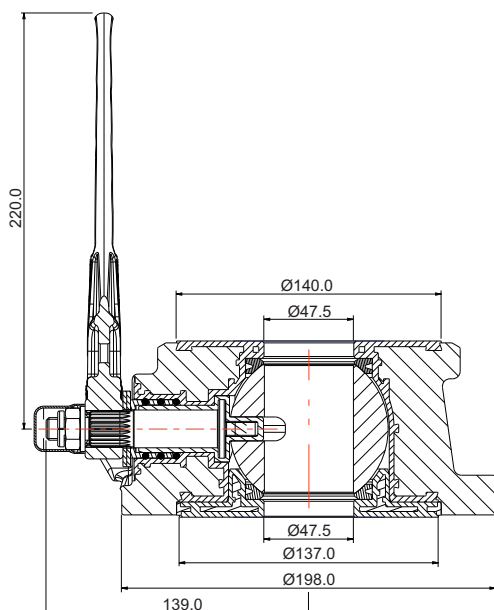
Description	Part No.
With handle, left hand	370/P660L/XX
With handle, right hand	370/P660R/XX
With remote lever, left hand	370/P66RL/XX
With remote lever, right hand	370/P66RR/XX

**Note:** The last two digits are related to the ball material.

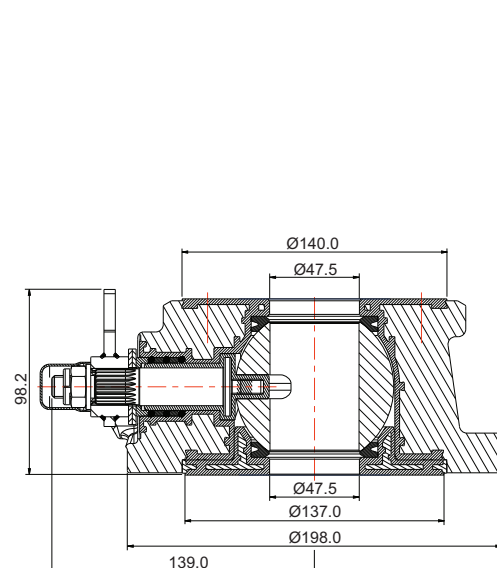
### Ball Material Options

Ball Material	Valve Part No.
PFA lined 316 stainless steel	370/P66XX/PA
Solid PVDF	370/P66XX/PV
Zirconia (ZRO2)	370/P66XX/C1
Aluminium oxide (Al2O3)	370/P66XX/C2
Silicone Nitride (Si3N4)	370/P66XX/C3
Nilcra® Zirconia MS grade	370/P66XX/C4

### Section View: 370/P660X/XX



### Section View: 370/P66RX/XX

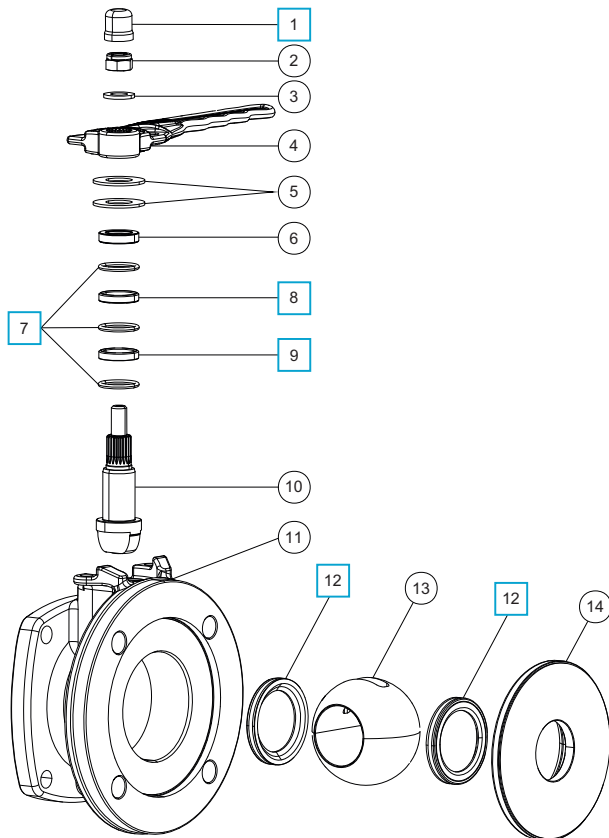




## DN50 Ball Valve - PFA Lined, Painted Finish

Part No: 370/P660X/XX

### Parts Drawing



### Parts List

Item	Description	Part No.
1	LDPE cap	FA-01565 <input type="checkbox"/>
2	M12 self locking nut	5112-007
3	M12 washer	5123-003
4	Handle	370/A0025
5	Belleville washer (2)	5113-041
6	Top stuffing collar	370/P514
7	PTFE O ring (3)	5005-654 <input type="checkbox"/>
8	Top stuffing collar	370/P512 <input type="checkbox"/>
9	Bottom stuffing collar	370/P513 <input type="checkbox"/>
10	PFA lined spindle	370/P666
11	PFA lined body	370/P661
12	RTFE seal (2)	370/P665 <input type="checkbox"/>
13	50mm ball <b>*Note</b>	370/P508XX
14	PFA lined seal clamp plate	370/P664

**NOTE:** The material changes the part number. Refer to the Ball Material table on page 1 of 2.

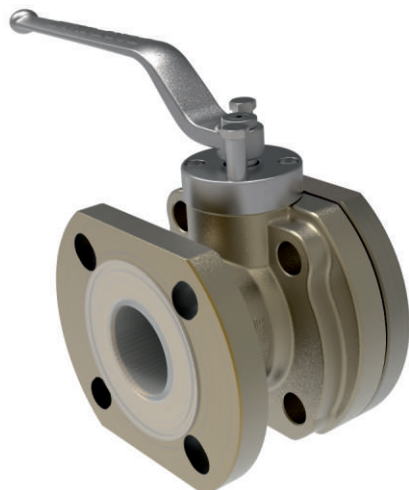
### Seal Kit

Description	Part No.
All parts marked <input type="checkbox"/> in the Parts List	370/P66SK



# DN50 Full Bore Ball Valve - PFA Lined

Part No: 370/P200X



## Specification

### Nominal size

DN50

### Tank connection

Flanged: 4 x 18mm holes on a 126mm PCD

### Outlet/Process connection

Flanged: 4 x 18mm slots on a 120 - 127mm PCD

### Options

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

### Materials

Contact parts: PFA lined

Main seal: PTFE

Refer to Range for other PFA Lined Ball Valves

Alternatives are available, refer to the Design Options page

## Design Conditions

Weight:	9.76 Kg
Design Pressure (MAWP):	6.9 Bar
Test Pressure:	12.6 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 EN14432

RID

## Range

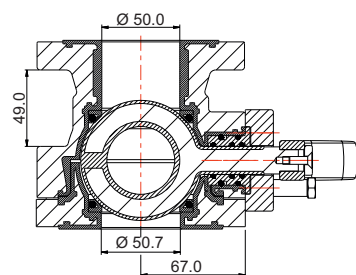
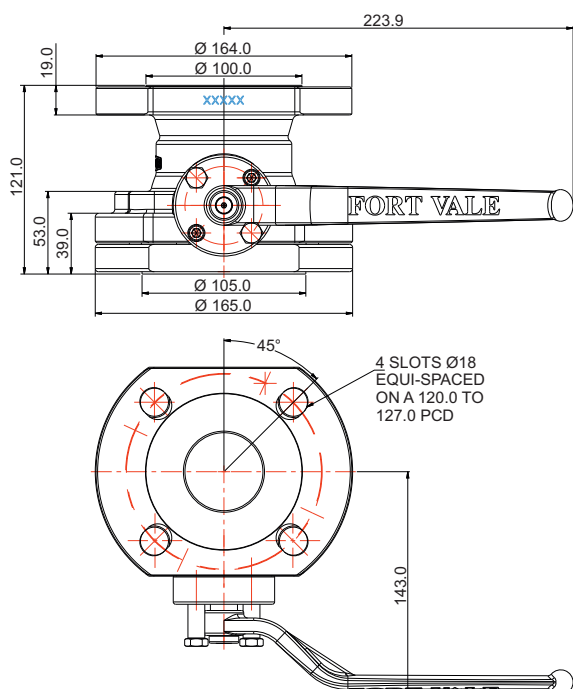
Description	Part No.
DN25 reduced bore ball valve PFA lined	530/P100
DN50 full bore ball valve PFA lined	370/P200X
DN50 ball valve PFA lined, painted body	370/P200PA
DN80 full bore ball valve PFA lined	360/P030X *

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

## Related Parts

Description	Part No.
Stud kit	311/3790

## Section View

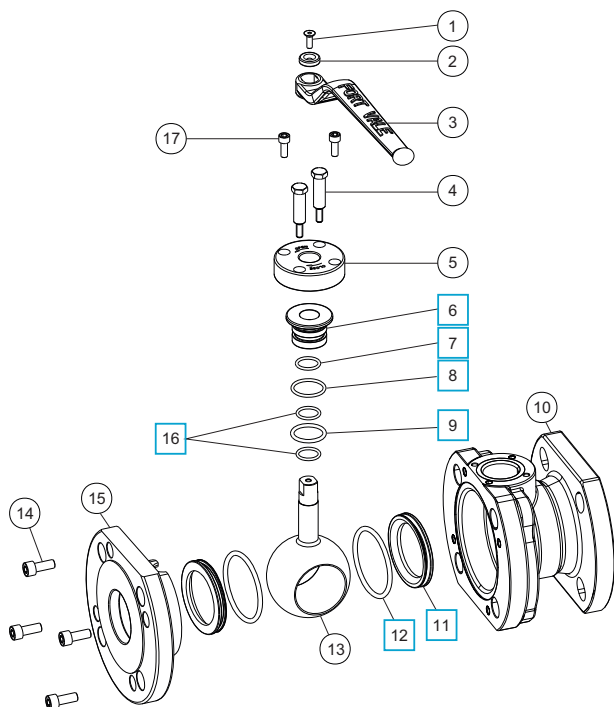




## DN50 Full Bore Ball Valve - PFA Lined

Part No: 370/P200X

### Parts Drawing



### Parts List

Item	Description	Part No.	
1	M5 screw	5111-113	
2	Retaining washer	20370/5	
3	Handle	370/3306/1	
4	Stop pin (2)	370/P107	
5	Stuffing plate	370/P114	
6	Seal carrier	370/P113	<input type="checkbox"/>
7	Viton O ring	ORB115VL	<input type="checkbox"/>
8	Viton O ring	ORB121VL	<input type="checkbox"/>
9	Perfluoroelastomer O ring	5005-214PER	<input type="checkbox"/>
10	PFA lined body	370/P110/2	
11	PTFE ball seal (2)	370/P115	<input type="checkbox"/>
12	Fortyt O ring (2)	ORM0580400F0	<input type="checkbox"/>
13	PFA lined spindle/ball	370/P101	
14	M8 cap screw (4)	5111-010	
15	PFA lined clamp plate	370/P111	
16	Perfluoroelastomer O ring (2)	5005-370P	<input type="checkbox"/>
17	M6 cap screw (2)	5111-015	

### Seal Kit

Description	Part No.
All parts marked □ in the Parts List	370/P100SK



## DN80 Full Bore Ball Valve - PFA Lined

Part No: 360/P030X



### Specification

#### Nominal size

DN80

#### Tank connection

Flanged: 4 x 18mm holes on a 160mm PCD

#### Outlet/Process connection

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

#### Options

Left or right hand operated. Long or short handle.

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

#### Materials

Contact parts: PFA lined

Main seal: PTFE

Refer to Range for other PFA Lined Ball Valves

Alternatives are available, refer to the Design Options page

### Design Conditions

Weight:	12.6 Kg
Design Pressure (MAWP):	6.9 Bar
Test Pressure:	10.34 Bar
Design Temperature Min:	-40°C
Design Temperature Max:	130°C

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

#### Design Codes

BS EN14432

RID

### Range

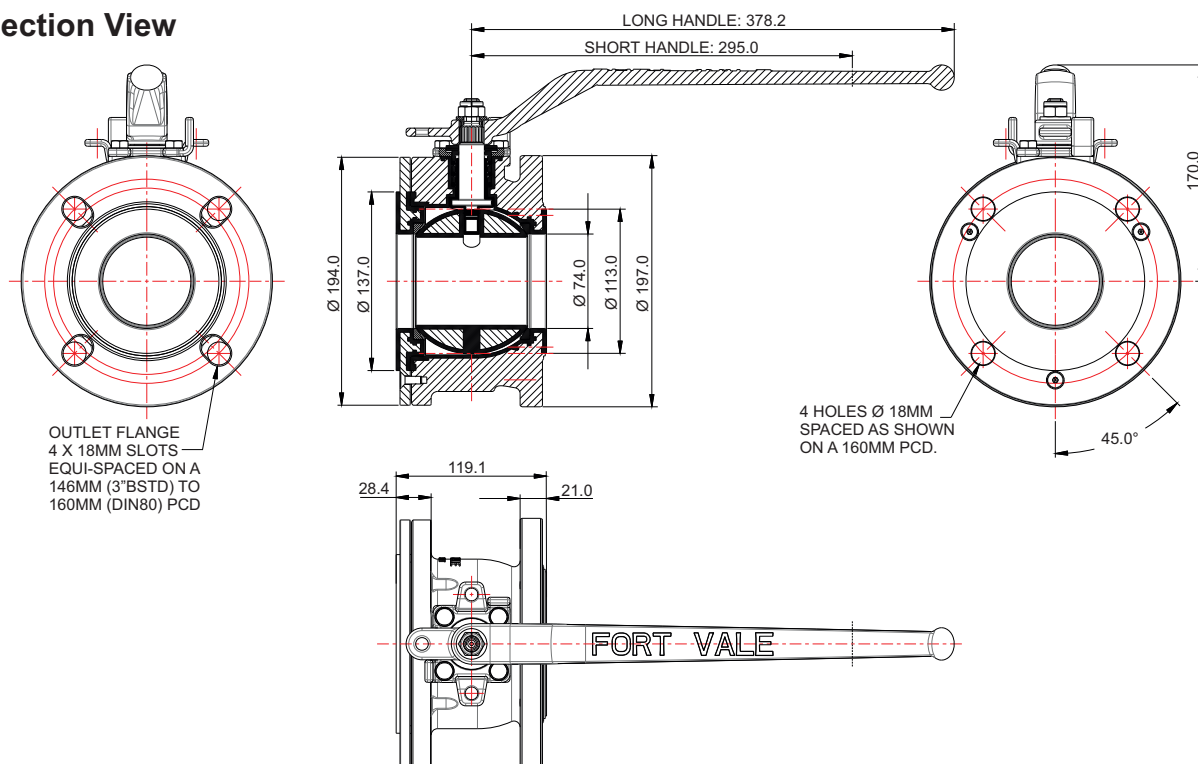
Description	Part No.
DN25 reduced bore ball valve PFA lined	530/P100
DN50 full bore ball valve PFA lined	370/P200
DN80 full bore ball valve PFA lined	360/P030X *

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

### Related Parts

Description	Part No.
3" BSP PFA lined outlet flange	SP368/8047P
Solid PTFE outlet gasket	5005-417
Handle: Refer to Parts List (next page)	360/3416X

### Section View

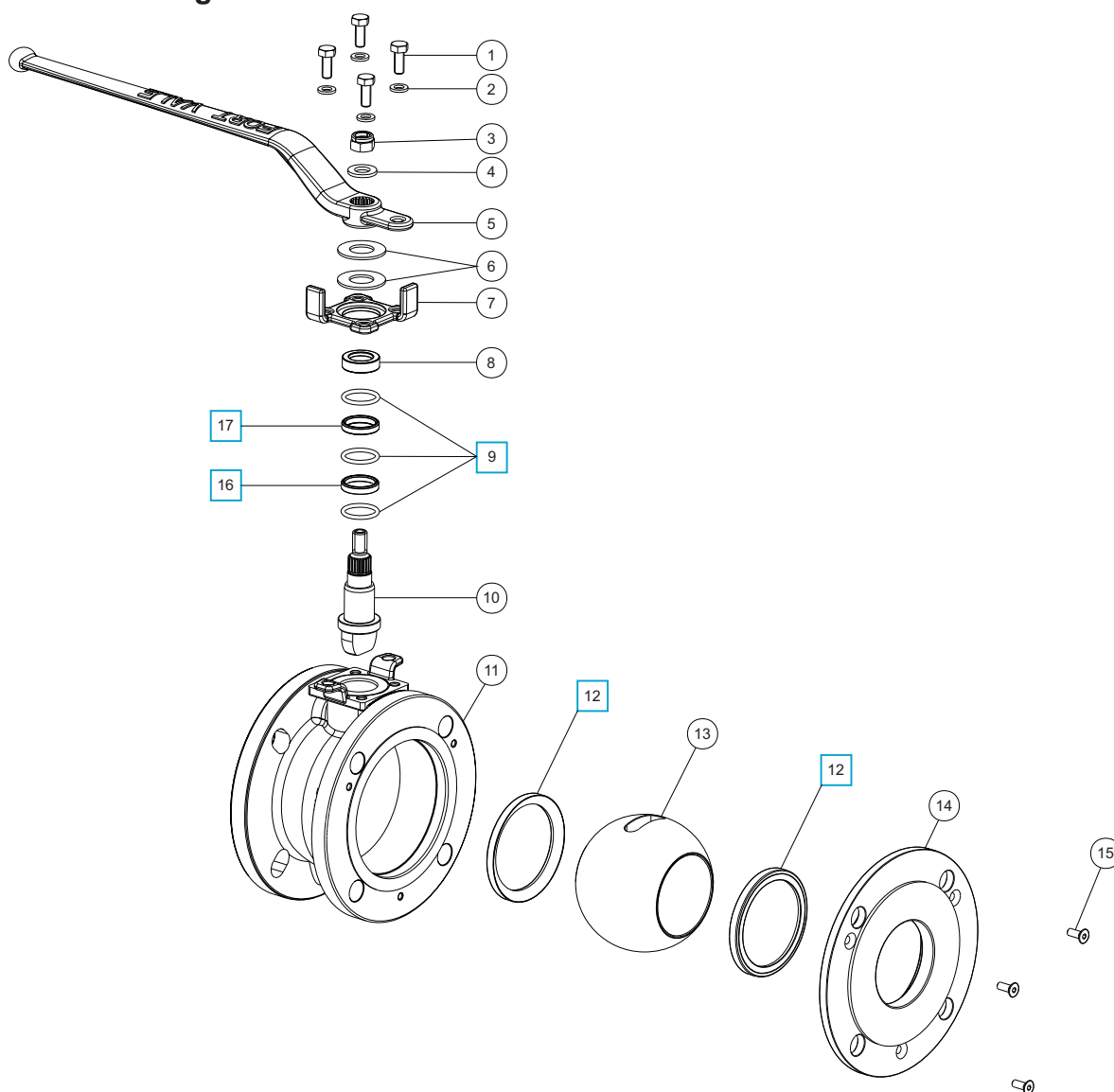




# DN80 Full Bore Ball Valve - PFA Lined

Part No: 360/P030X

## Parts Drawing



## Parts List

Item	Description	Part No.
1	M8 hex bolt (4)	5111-046
2	M8 spring washer (4)	5113-003
3	M12 locking nut	5112-007
4	M12 washer	5123-003
5	Long handle-supplied separate Short handle-supplied separate	360/3416 360/3416S
6	20mm washer (2)	5113-041
7	Clamp plate	360/3406/1
8	Stainless steel stuffing collar	360/3464 <input type="checkbox"/>
9	PTFE O ring (3)	5005-654
10	PFA lined spindle	360/3422PL
11	PFA lined body	360/P020 <input type="checkbox"/>
12	PTFE front & rear seal (2)	360/3402/5
13	PFA coated ball	360/3401PL

## Parts List

Item	Description	Part No.
14	PFA lined clamp plate	360/3462PL
15	M6 countersunk bolt (3)	5111-030 <input type="checkbox"/>
16	Bottom stuffing collar	360/3413/1 <input type="checkbox"/>
17	Top stuffing collar	360/3412/1

## Seal Kit

Description	Part No.
All parts marked <input type="checkbox"/> in the Parts List	360/P0SK



# DN50 Clamped Butterfly Valve - PFA Lined

Part No: 258/P700



## Specification

### Nominal size

DN50

### Body type

Clamped

### Properties

In-line spindle and closure plate

Left hand operated, handle with TIR and padlock slots

### Materials

Contact parts: PFA lined

Alternatives are available, refer to the Design Options page

## Design Conditions

Weight:	2.2 Kg
Design Pressure (MAWP):	4 Bar
Test Pressure:	6.4 Bar
Design Temperature Min:	-40°C
Design Temperature Max:	150°C

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

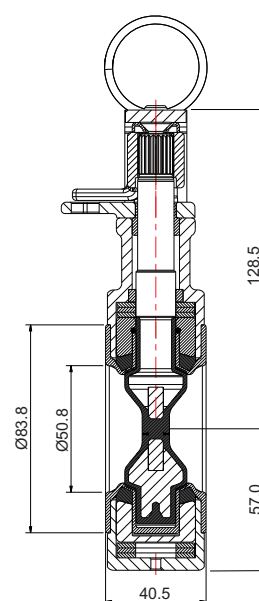
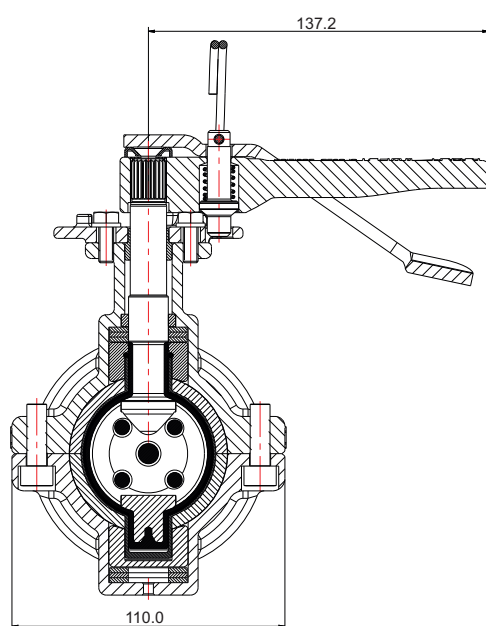
### Design Code

BS EN 14432

## Range

Description	Part No.
DN50 clamped PFA lined butterfly valve	258/P700
DN80 clamped PFA lined butterfly valve	358/P700

## Section View

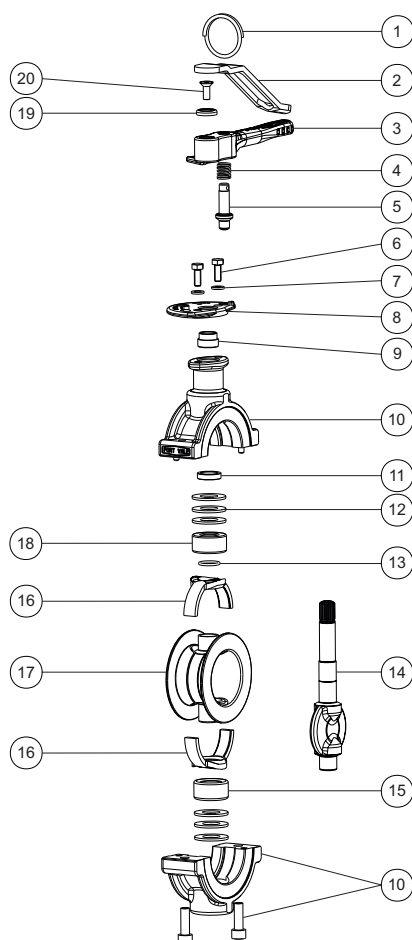




# DN50 Clamped Butterfly Valve - PFA Lined

Part No: 258/P700

## Parts Drawing



## Parts List

Item	Description	Part No.
1	Split ring	368/0011
2	Handle lever	368/9838
3	Handle	535/0050
4	Handle spring	368/0012
5	Handle location pin	368/0010
6	M6 hex bolt (2)	5111-022
7	M6 spring washer (2)	5113-008
8	Stuffing clamp	535/0204
9	Stuffing clamp bush	368/0301
10	Body assembly	258/P253
11	Top guide bush	358/P236
12	Belleville washer (6)	5113-052
13	Perfluoroelastomer O ring	5005-216PER
14	PFA lined spindle/closure plate	258/P235
15	Bottom thrust bearing	358/P233/1
16	Backing rubber (2)	258/P257
17	PFA body seal	258/P250
18	Stem seal housing	358/P233
19	Retaining washer	20370
20	M6 countersunk bolt	5111-030





# DN80 Clamped Butterfly Valve - PFA Lined

Part No: 358/P700



## Specification

### Nominal size

DN80

### Body type

Clamped

### Properties

In-line spindle and closure plate

Left hand operated, handle with TIR and padlock slots

### Materials

Contact parts: PFA lined

Alternatives are available, refer to the Design Options page

## Design Conditions

Weight:	3.7 Kg
Design Pressure (MAWP):	4 Bar
Test Pressure:	6.8 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

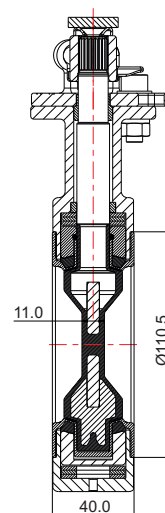
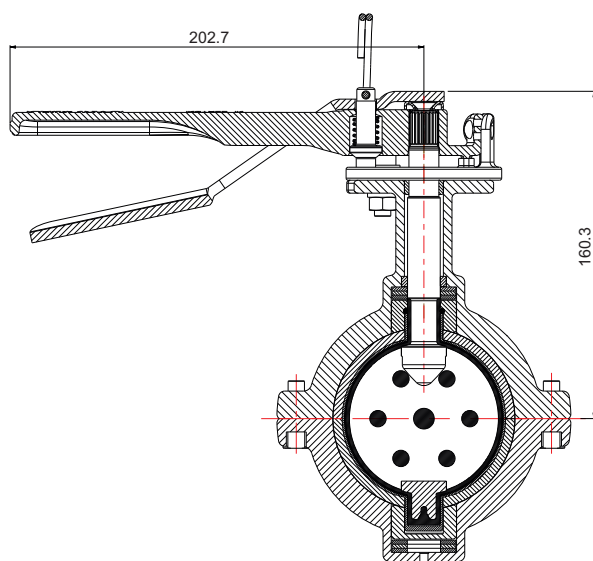
## Range

Description	Part No.
DN50 clamped PFA lined butterfly valve	258/P700
DN80 clamped PFA lined butterfly valve	358/P700

## Related Parts

Description	Part No.
3" BSP outlet flange - Halar lined	368/8047L
3" BSP cap with chain	10303SS
PTFE disc seal for 3" cap	10329P/1

## Section View

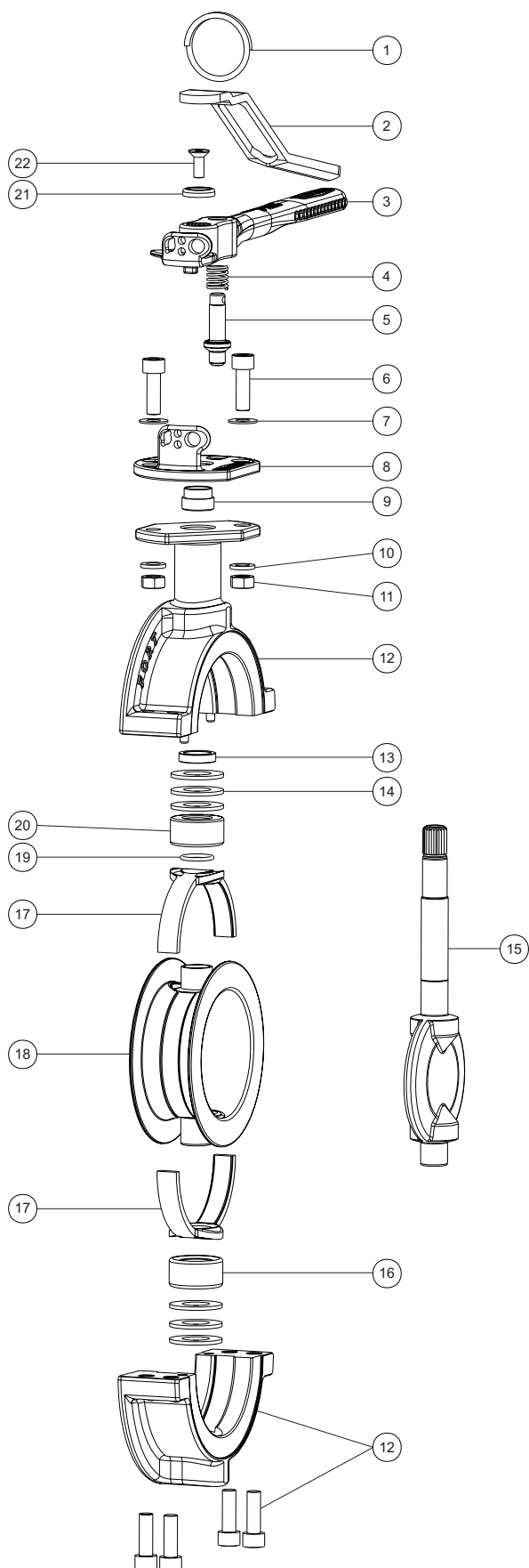




# DN80 Clamped Butterfly Valve - PFA Lined

Part No: 358/P700

## Parts Drawing



## Parts List

Item	Description	Part No.
1	Split ring	368/0011
2	Handle lever	368/9837
3	Handle	368/0050
4	Handle spring	368/0012
5	Handle location pin	368/0010
6	M8 cap screw (2)	5111-148
7	M8 plain washer (2)	5113-005
8	Stuffing clamp	368/0040
9	Stuffing clamp bush	368/0301
10	M8 spring washer (2)	5113-003
11	M8 full nut (2)	5112-001
12	Body assembly	358/P253
13	Top guide bush	358/P236
14	Belleville washer (6)	5113-052
15	PFA lined spindle/closure plate	358/P235
16	Bottom thrust ring	358/P233/1
17	Backing rubber (2)	358/P257
18	PFA body seal	358/P250
19	Perfluoroelastomer O ring	5005-216PER
20	Stem seal housing	358/P233
21	Retaining washer	20370
22	M6 countersunk bolt	5111-030



# DN80 Flanged Butterfly Valve - PVDF Lined

Part No: 368/K300



## Specification

### Nominal size

DN80

### Tank connection

Flanged: 6 x 14mm holes on a 168.3mm 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: PVDF lined

Main seal: PTFE

## Design Conditions

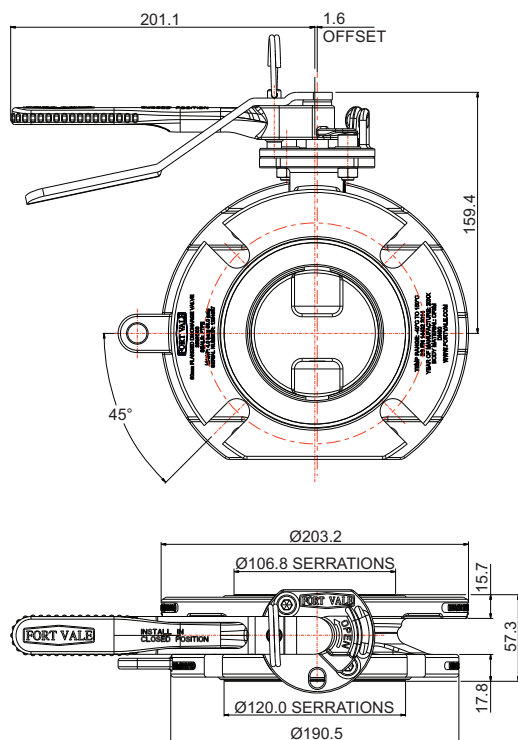
Weight:	7.3 Kg
Design Pressure (MAWP):	4 Bar
Test Pressure:	6.8 Bar
Design Temperature Min:	-40°C
Design Temperature Max:	150°C

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

## Design Codes

BS EN 14432

## Section View

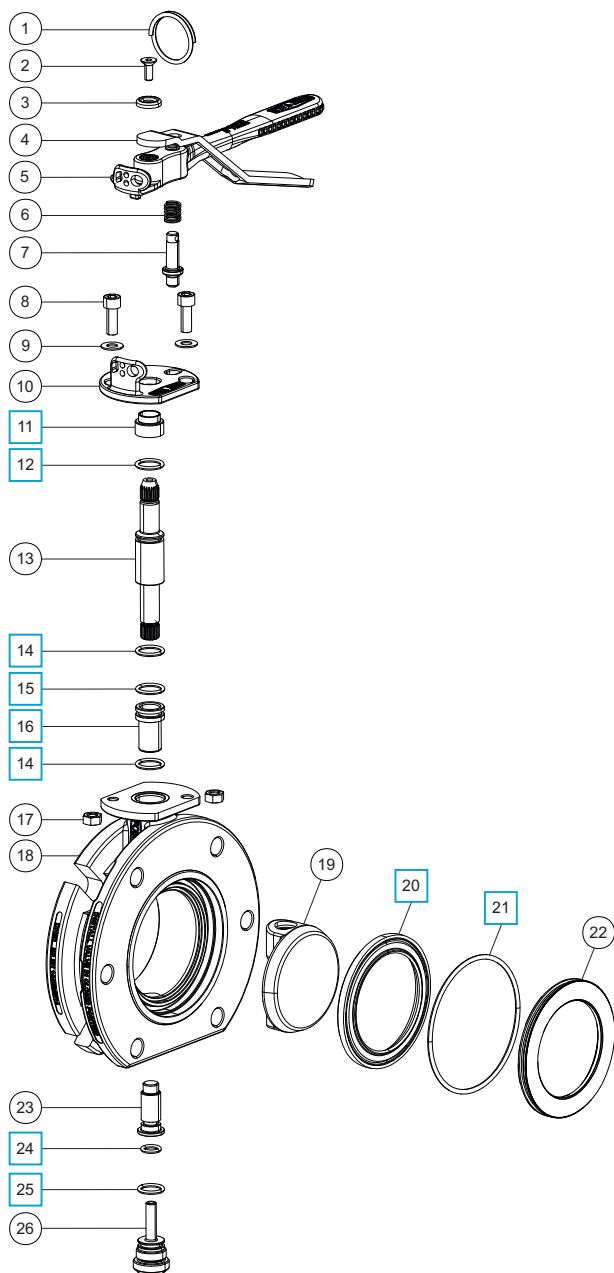




# DN80 Flanged Butterfly Valve - PVDF Lined

Part No: 368/K300

## Parts Drawing



## Parts List

Item	Description	Part No.	
1	Split ring	368/0011	
2	M6 countersunk bolt	5111-030	
3	Retaining washer	20370	
4	Handle lever	368/9837	
5	Handle	368/0050	
6	Handle 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	Top bush	368/K308	<input type="checkbox"/>
12	Viton O ring	ORB115VL	<input type="checkbox"/>
13	Spindle	368/K310	
14	Perfluoroelastomer O ring (2)	5005-370P	<input type="checkbox"/>
15	PTFE O ring	ORB115P0	<input type="checkbox"/>
16	PVDF top spindle sleeve	368/K309	<input type="checkbox"/>
17	M8 full nut	5112-001	
18	PVDF lined body	368/K301	
19	PVDF lined closure plate	368/K306	
20	PTFE main seal	368/0002	<input type="checkbox"/>
21	Nitrile O ring	5005-342	<input type="checkbox"/>
22	PVDF seal clamp	368/9148K	
23	PVDF bottom spindle sleeve	368/K307	
24	Perfluoroelastomer O ring	10133PHT	<input type="checkbox"/>
25	Viton O ring	5005-134VLT	<input type="checkbox"/>
26	Lower spindle	368/K315	

## Seal Kit

Description	Part No.
All parts marked <input type="checkbox"/> in the Parts List	368/K300SK



# DN80 Cleanflow Footvalve with 45° Outlet - PFA Lined

Part No: 845/P1205



## Specification

### Nominal size/body angle

DN80 / 45°

### Inlet connection

Flanged: 8 x 14mm holes equi-spaced on a 178mm PCD

### Outlet connection

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

### Properties

2-part body assembly: inlet cassette with poppet and operating assembly; 45° outlet assembly

### Materials

Inlet cassette and outlet assembly contact parts: 316 stainless steel with PFA moulded lining

Main seal: Fortyt

Alternatives are available, refer to Range

## Design Conditions

Weight:	17.7 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.
DN80 45° valve, PFA lined inlet/outlet	845/P1205
DN80 30° valve, PFA lined inlet, Halar ® lined outlet	848/P1000
DN80 90° valve, PFA lined inlet, Halar ® lined outlet	844/P3000

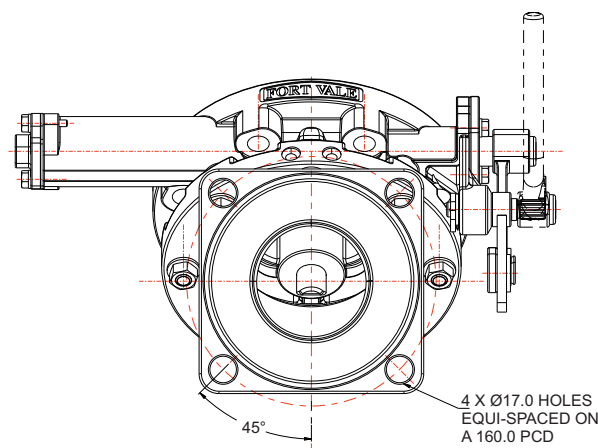
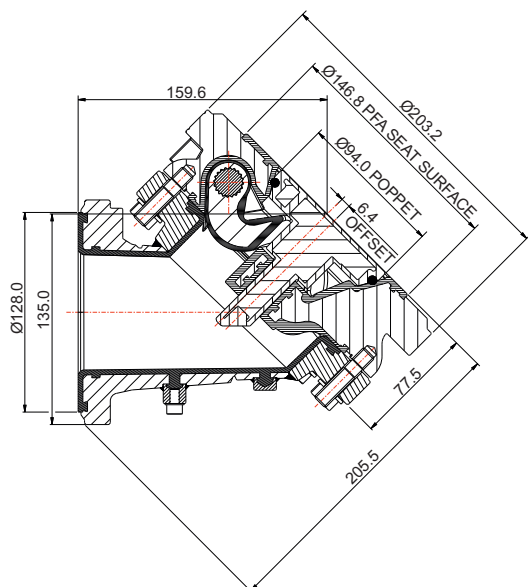
## Related Parts

Description	Part No.
Weld-in flange for lining	324/9000L
Stud kit	845/P128

**GASKETS:** Do not install an inlet gasket. Do not install a gasket between the inlet cassette and the outlet assembly.

If a Fort Vale PFA lined ball valve or PFA lined butterfly valve is installed to the outlet assembly, do not install an intermediate gasket.

## Section View

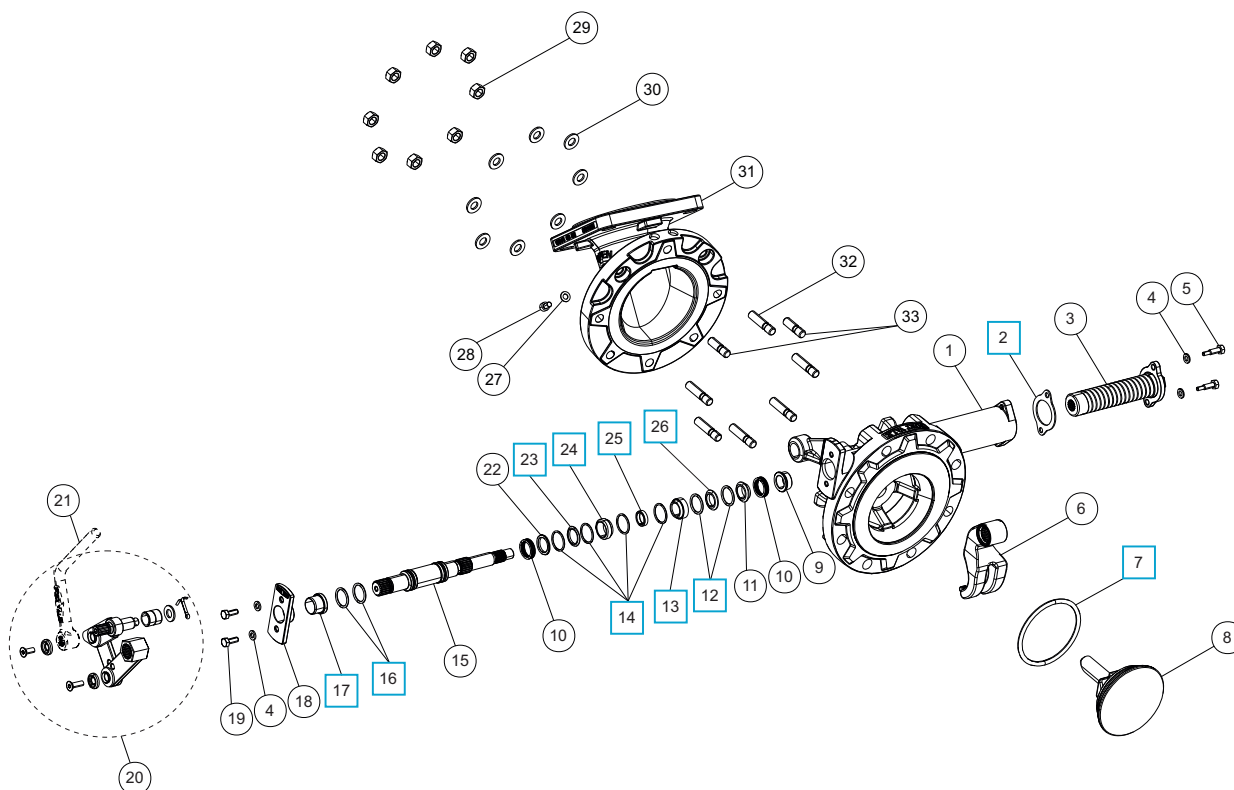




# DN80 Cleanflow Footvalve with 45° Outlet - PFA Lined

## Part No: 845/P1205

### Parts Drawing



### Parts List

Item	Description	Part No.
1	PFA lined body	845/P137LM
2	Spring housing gasket	5005-846 <input type="checkbox"/>
3	Torsion spring assembly	875/0050
4	M6 spring washer (4)	5113-008
5	M6 special hex screw (2)	845/0017
6	PFA lined lifting fork	845/P124L
7	Fortyt O ring	5005-104H <input type="checkbox"/>
8	PFA lined poppet	845/P125LM
9	Spindle bearing	845/P127/3
10	Spirawave spring (2)	5104-027
11	Spring housing bush	845/P127/4
12	Perfluoroelastomer O ring (2)	ORB117KD <input type="checkbox"/>
13	Spindle bush	845/P127/2 <input type="checkbox"/>
14	Perfluoroelastomer O ring (4)	ORB020KD <input type="checkbox"/>
15	Main spindle	845/P126
16	Viton O ring (2)	5005-336 <input type="checkbox"/>
17	RTFE spindle stuffing seal	845/0061 <input type="checkbox"/>
18	Stuffing clamp flange	845/0016
19	M6 x 16mm hex head bolt (2)	5111-022
20	Handle linkage assembly	324/8910
21	Handle - supplied separate	324/8670
22	Wave spring seating washer	845/P127/5
23	Handle side chevron	845/P127/6 <input type="checkbox"/>

### Parts List

Item	Description	Part No.
24	Spindle bush	845/P127/1 <input type="checkbox"/>
25	Support ring	845/P127/8 <input type="checkbox"/>
26	Spring side chevron	845/P127/7 <input type="checkbox"/>
27	M6 plain washer	5113-001
28	M6 cap screw	5111-061
29	M10 full nut (8)	5112-002
30	M10 washer (8)	5113-025
31	45° PFA lined outlet assembly	845/P123/45P
32	M10 x 45mm stud (6)	371/0002
33	M10 x 35mm stud (2)	371/0001

### Seal Kit

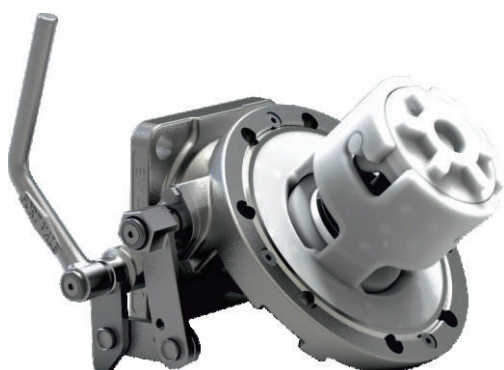
Description	Part No.
All parts marked <input type="checkbox"/> in the Parts List	845/P12SK





## DN80 45° Cleanlift Footvalve - PFA Lined

Part No: 870/P1200



### Specification

#### Nominal size/body angle

DN80 / 45°

#### Inlet connection

Flanged: 8 x 14mm holes equi-spaced on a 178mm PCD

#### Outlet connection

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

#### Materials

Contact parts: 316 stainless steel with PFA moulded lining

Main seal: Fortyt

### Design Conditions

Weight:	11.9 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

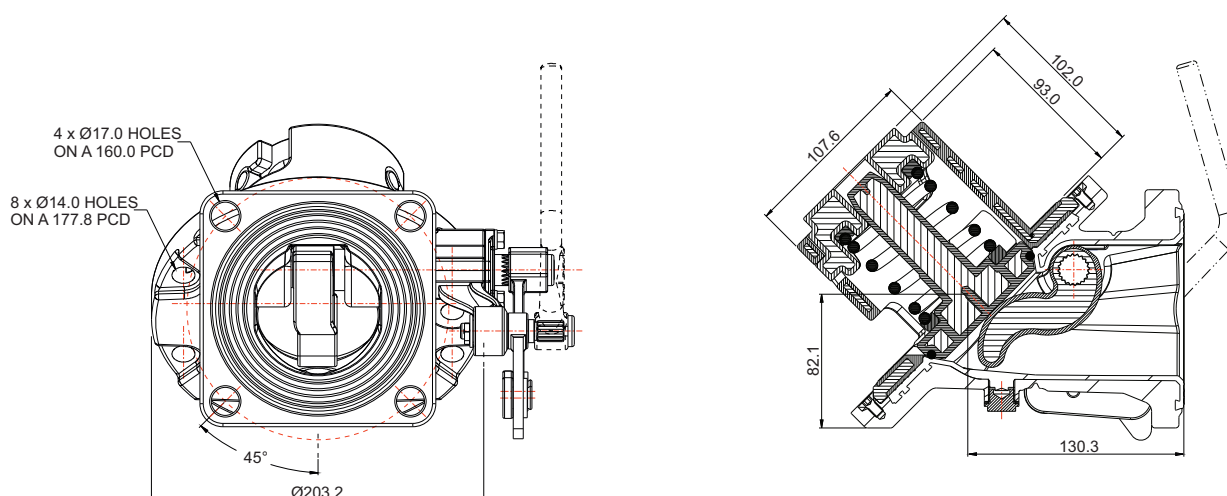
### Related Parts

Description	Part No.
Weld-in flange for lining	324/9000L
Stud kit	312/1177

**GASKETS:** Do not install an inlet gasket.

If you install a Fort Vale PFA lined ball valve or PFA lined butterfly valve to the outlet, do not install an intermediate gasket.

### Section View

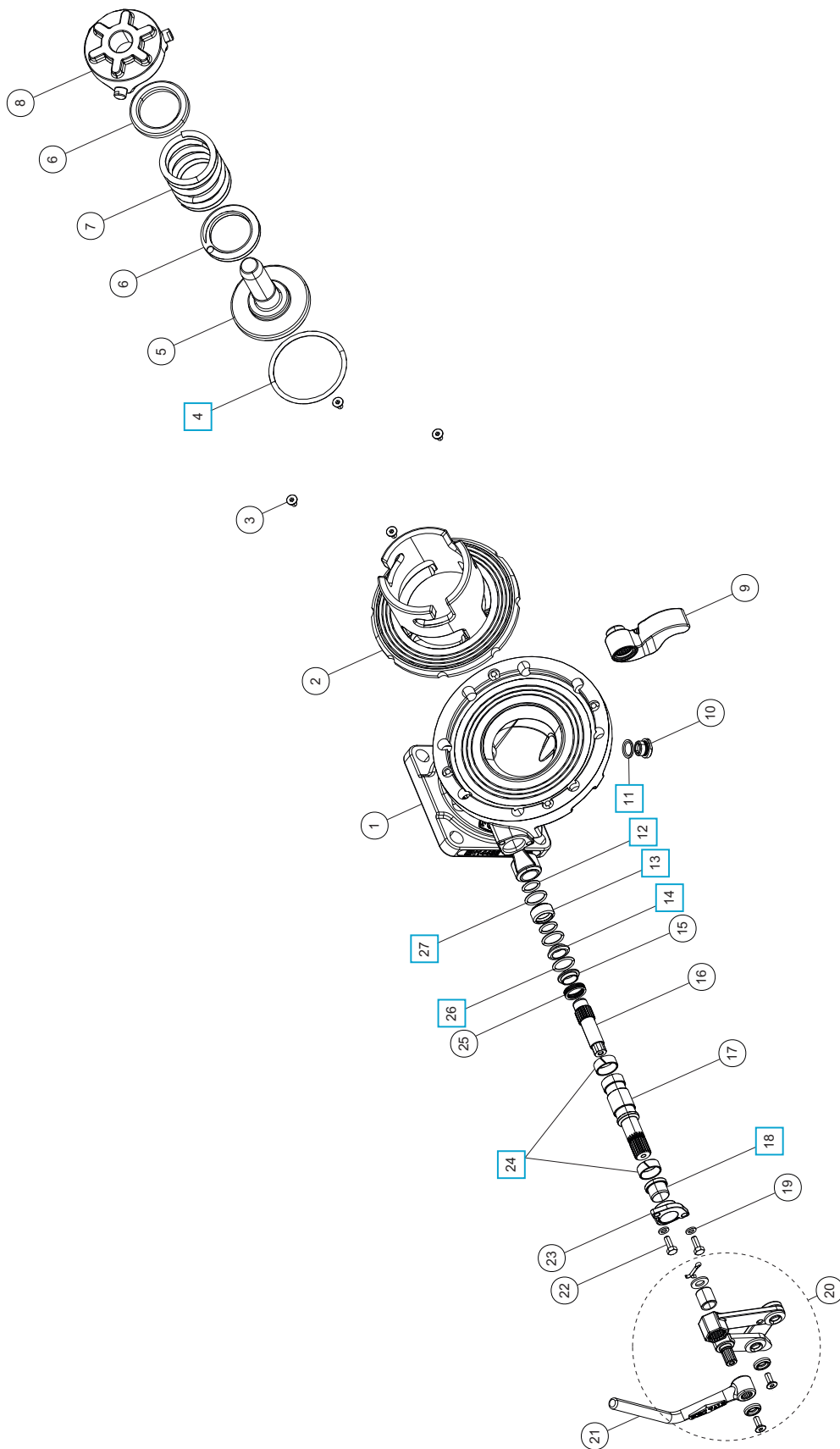




# DN80 45° Cleanlift Footvalve - PFA Lined

Part No: 870/P1200

## Parts Drawing







## DN80 45° Cleanlift Footvalve - PFA Lined

Part No: 870/P1200

### Parts List

Item	Description	Part No.
1	PFA lined body	870/P1370LM
2	PFA lined cage	870/P1371LM
3	6mm countersunk bolt (4)	5111-018
4	Fortyt O ring	ORB337F1 <input type="checkbox"/>
5	PFA lined poppet	870/P125LM
6	PTFE spring support plate (2)	870/1146
7	PFA lined spring	5104-865P
8	PFA lined spring retainer cap	870/P1374LM
9	PFA lined lifting fork	870/P124LM
10	M16 plug	870/P138
11	PTFE gasket	870/P139 <input type="checkbox"/>
12	Viton O ring (2)	5005-134V <input type="checkbox"/>
13	RTFE spindle bush	870/P127/1 <input type="checkbox"/>
14	RTFE spindle bush	870/P127/2 <input type="checkbox"/>
15	Spring housing bush	845/P127/4
16	Spindle section 2	870/P128
17	Spindle section 1	870/P129
18	PTFE spindle stuffing seal	845/0061 <input type="checkbox"/>
19	M6 spring washer (2)	5113-008
20	Handle linkage assembly	324/8910
21	Handle <b>*Note</b>	324/8670
22	M6 hex bolt (2)	5111-022
23	Stuffing clamp flange	870/P1376C
24	Split bearing (2)	874/0023 <input type="checkbox"/>
25	Spirawave spring	5104-027
26	Viton O ring	5005-336 <input type="checkbox"/>
27	Perfluoroelastomer O ring (2)	ORB117KD <input type="checkbox"/>

**NOTE:** The handle is sold separately. We recommend the handle shown, but other types are available.

### Seal Kit

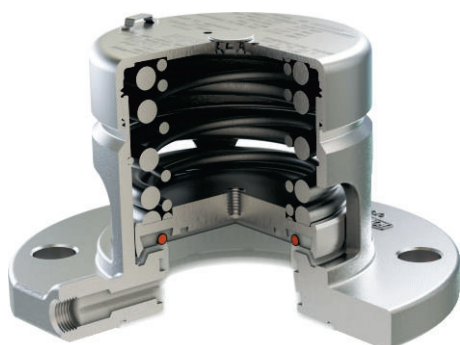
Description	Part No.
All parts marked <input type="checkbox"/> in the Parts List	870/P12SK

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# DN65 Super Maxi Relief Valve - PFA Lined, Pressure Only

## Part No: 0U3/1XXX006SL - Metric Setting



### Specification

#### Nominal size

DN65

#### Tank connection

Flanged: 4 x 18mm slots on a 145.0mm/152.4mm min/max PCD. 1/4" BSP gauge connection

#### Set pressure

From 0.15 Bar to 5.15 Bar

#### Options

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

#### Materials

Body & pressure plate: PFA lined

Springs: Halar® coated

Pressure O ring: Fortyt

Alternatives are available, refer to the Design Options page

### Design Conditions

Weight:	5.7 Kg
Design Pressure (MAWP):	6 Bar
Test Pressure:	10.1 Bar
Design Temperature Min:	-55°C
Design Temperature Max:	150°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

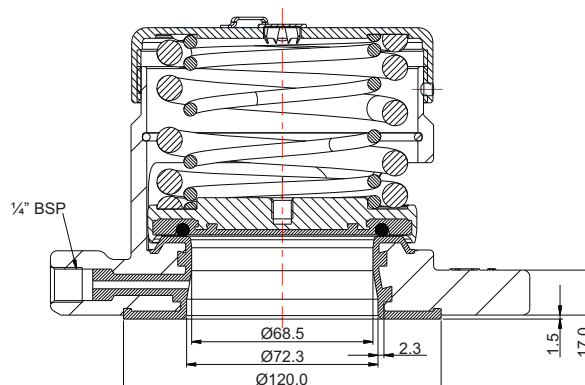
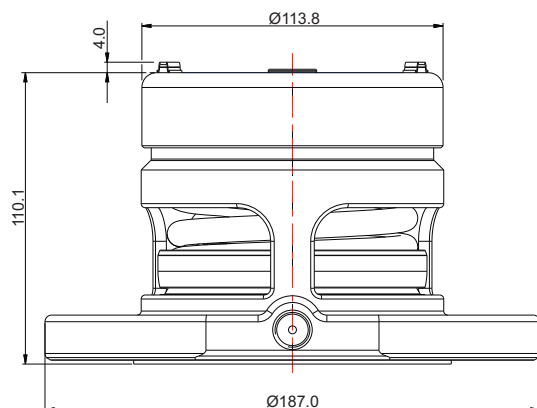
Lloyd's Register

**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.

### Related Parts

Description	Part No.
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
M16 stud kit: 150 & 152.4 PCD	311/3700
M16 cap screw bolt kit: 145 & 146 PCD	311/3785

### Section View

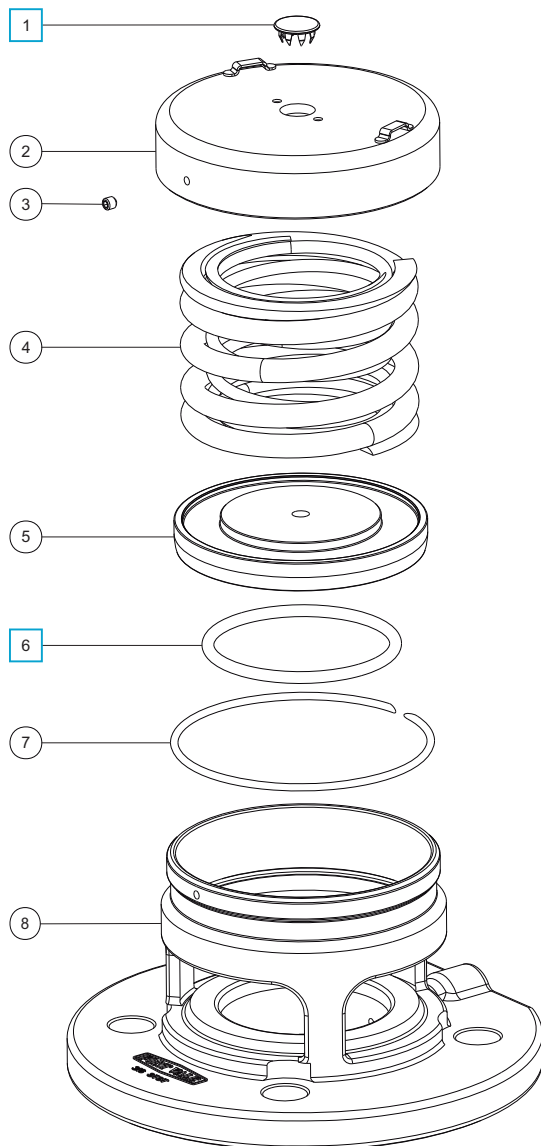




## DN65 Super Maxi Relief Valve - PFA Lined, Pressure Only

Part No: 0U3/1XXX006SL - Metric Setting

### Parts Drawing



### Parts List

Item	Description	Part No.
1	Stainless steel plug	10978
2	Cap <b>*Note</b>	1860/0046XXX
3	Anti-tamper screw	5121-001
4	Halar® coated springs <b>*Note</b>	6104-XXXXX
5	PFA lined pressure plate <b>*Note</b>	1860/PX58XXX
6	Fortyt pressure O ring	5005-101
7	Retaining ring clip	5120-067
8	PFA lined body	1860/06SLU

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

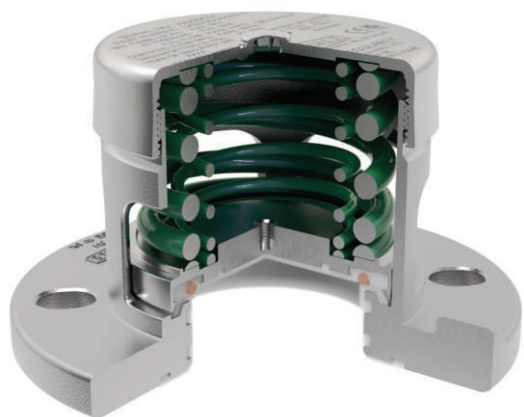
### Seal Kit

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



# DN80 Hyper Maxi Relief Valve - PFA Lined, Pressure Only

Part No: U43/1XXX0082S



## Specification

### Nominal size

DN80

### Tank connection

Flanged: 4 slots equi-spaced on a 145.0/152.4 min/max PCD

### Set pressure

From 0.05 Bar to 5.2 Bar

### Materials

Body & pressure plate: PFA lined

Springs: Halar® coated

Pressure O ring: Fortyt

Alternatives are available, refer to Range

## Design Conditions

Weight:	6.6 Kg
Design Pressure (MAWP):	5.2 Bar
Test Pressure:	10 Bar
Design Temperature Min:	-55°C
Design Temperature Max:	150°C

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

### Type Approval

Lloyd's Register - for valves with a setting of  $\geq 1.7$  Bar

**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.

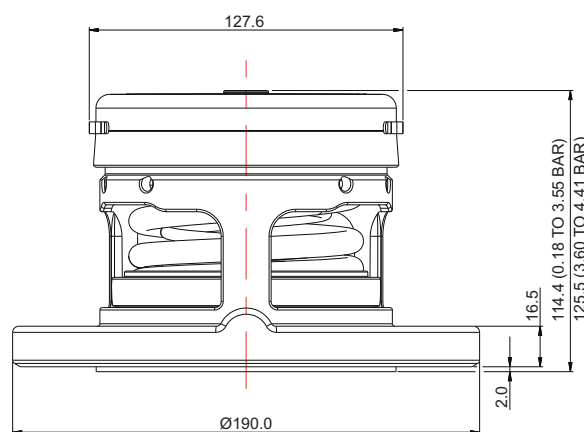
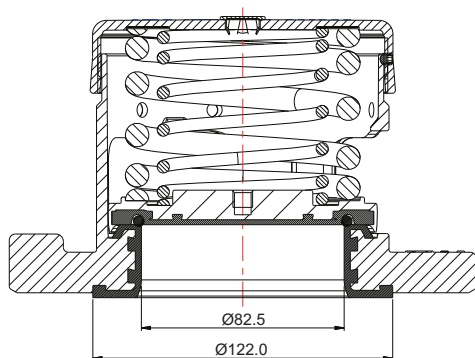
## Range

Description	Part No.
No gauge hole	U43/1XXX0082S
With 1/4" BSP gauge hole	U43/1XXX0082SG
Alloy C276 cap and painted body	U43/1XXX0082SPA

## Related Parts

Description	Part No.
0-7 Bar pressure gauge, brass internal parts	921/07BBSP
0-7 Bar pressure gauge, stainless steel internal parts	920/07BBSP
1/4" BSP gauge adaptor	1860/08BSP/4
M16 stud kit: 150 & 152.4 PCD	311/3700
M16 cap screw bolt kit: 145 & 146 PCD	311/3785

## Section View

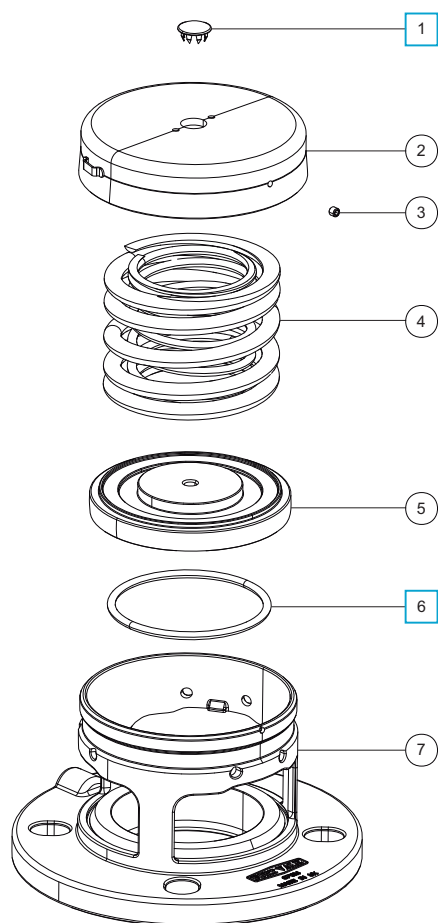




## DN80 Hyper Maxi Relief Valve - PFA Lined, Pressure Only

Part No: U43/1XXX0082S

### Parts Drawing



### Parts List

Item	Description	Part No.
1	Stainless steel plug	10978 <input type="checkbox"/>
2	Cap <b>*Note</b>	1860/1XXXXXX
3	Anti-tamper screw	5121-001
4	Halar® coated springs <b>*Note</b>	6104-XXXX
5	PFA lined pressure plate <b>*Note</b>	1860/P080XXX
6	Fortyt pressure O ring	ORB337F0 <input type="checkbox"/>
7	PFA lined body	1860/19SLP

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

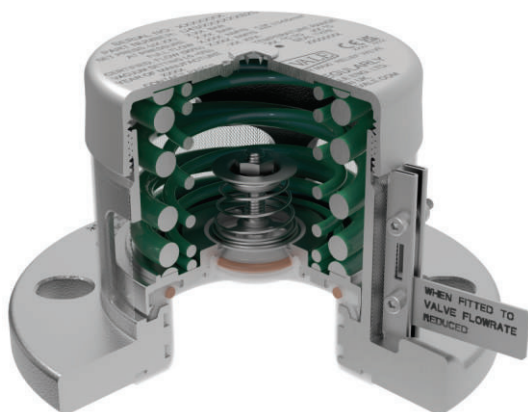
### Seal Kit

Description	Part No.
All parts marked <input type="checkbox"/> in the Parts List	043/1PSK



# DN80 Hyper Maxi Relief Valve - PFA Lined, Pressure/Vacuum

Part No: U43/1XXXXX82S



## Specification

### Nominal size

DN80

### Tank connection

Flanged: 4 slots equi-spaced on a 145.0/152.4 min/max PCD

### Set pressure

From 0.05 Bar to 5.2 Bar

### Set vacuum

From 1 kPa to 88 kPa

### Materials

Body, pressure plate, vacuum poppet: PFA lined

Pressure springs: Halar® coated

Vacuum spring: Alloy 276

Pressure/vacuum O rings: Fortyt

Alternatives are available, refer to Range

## Design Conditions

Weight:	6.7 Kg
Design Pressure (MAWP):	5.2 Bar
Test Pressure:	10 Bar
Design Temperature Min:	-55°C
Design Temperature Max:	150°C

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

### Type Approval

Lloyd's Register - for valves with a setting of  $\geq 1.7$  Bar

**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

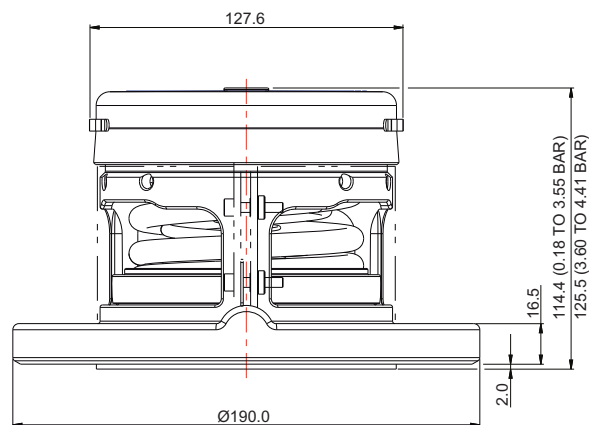
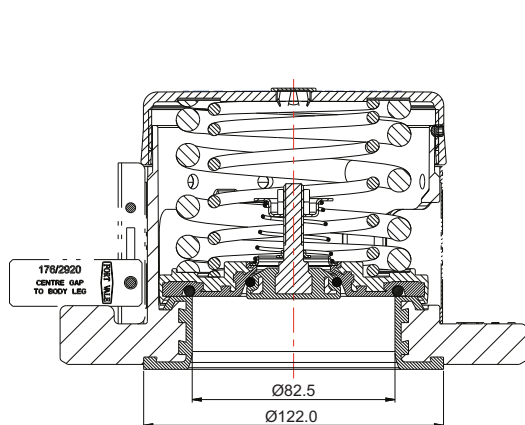
Description	Part No.
No gauge hole	U43/1XXXXX82S
With 1/4" BSP gauge hole	U43/1XXXXX82SG
Alloy C276 cap and painted body	U43/1XXXXX82SPA

## Related Parts

Description	Part No.
0-7 Bar pressure gauge, brass internal parts	921/07BBSP
0-7 Bar pressure gauge, stainless steel internal parts	920/07BBSP
1/4" BSP gauge adaptor	1860/08BSP/4
Flame arrester <b>*Warning</b>	176/2920
M16 stud kit: 150 & 152.4 PCD	311/3700
M16 cap screw bolt kit: 145 & 146 PCD	311/3785

## Section View

Shown with a flame arrester installed

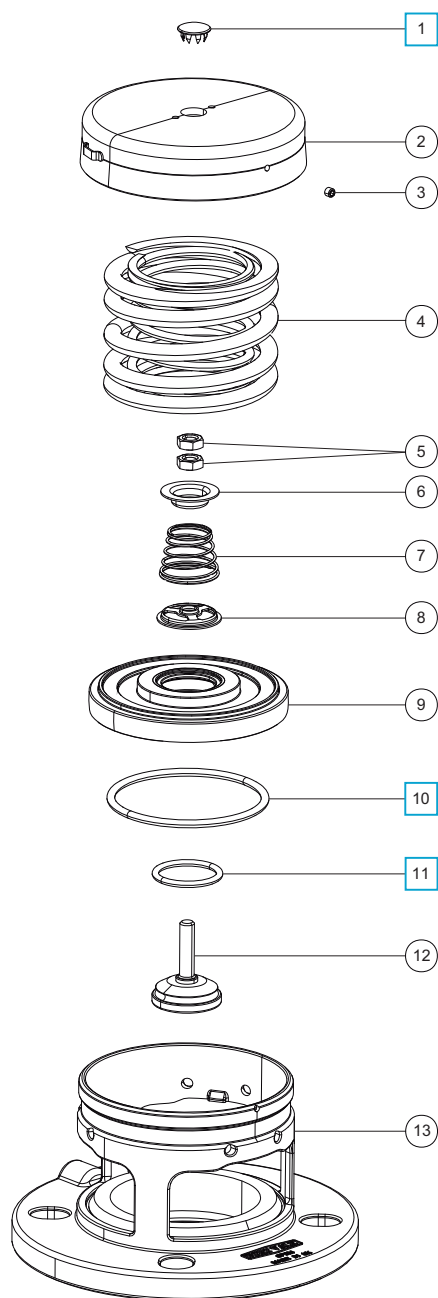




# DN80 Hyper Maxi Relief Valve - PFA Lined, Pressure/Vacuum

Part No: U43/1XXXXX82S

## Parts Drawing



## Parts List

Item	Description	Part No.
1	Stainless steel plug	10978
2	Cap <b>*Note</b>	1860/1XXXXX
3	Anti-tamper screw	5121-001
4	Halar® coated springs <b>*Note</b>	6104-XXXX
5	M8 half nut (2)	5112-039H
6	Vacuum spring pad	1860/0005H
7	Alloy 276 vacuum spring <b>*Note</b>	7104-XXXH
8	Spring pad	10986/3H
9	PFA lined pressure plate <b>*Note</b>	1860/P081XXX
10	Fortyt pressure O ring	ORB337F0
11	Fortyt vacuum O ring	5005-108H
12	PFA lined vacuum poppet	10983V/P
13	PFA lined body	1860/19SLP

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

## Seal Kit

Description	Part No.
All parts marked <input type="checkbox"/> in the Parts List	043/1PVSK





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# APPENDIX

## Catalogue

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A	Bolt Torque Guide & Step Loading Procedure
B	Client Responsibilities - Valves & Accessories

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# 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

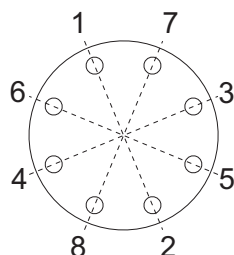
To install flanged parts correctly:

- 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.

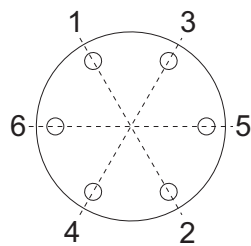
Table BT1

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

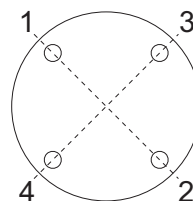
Figure BT1



8 HOLE PATTERN



6 HOLE PATTERN



4 HOLE PATTERN



## **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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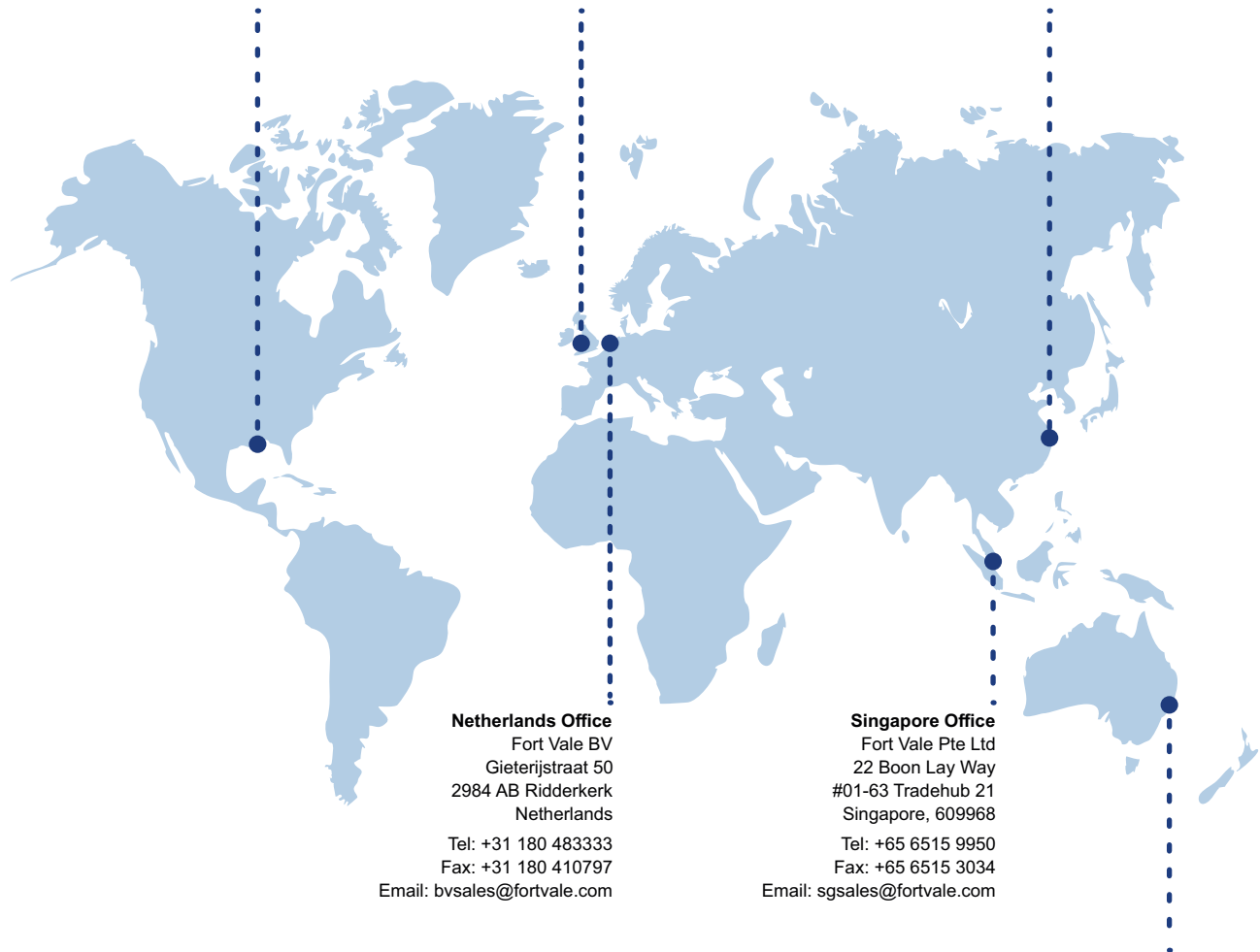
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