

Catalogue

Lined Equipment for Special Service Conditions



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Lined Equipment for Special Service Conditions

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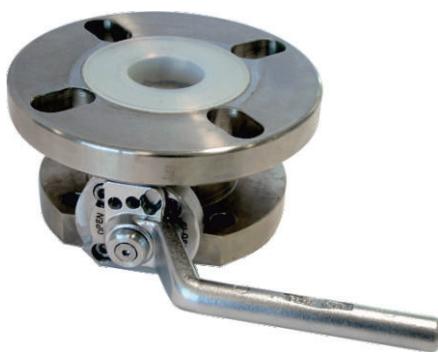
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DN25 Reduced Bore Flanged Airline Ball Valve - PFA Lined

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

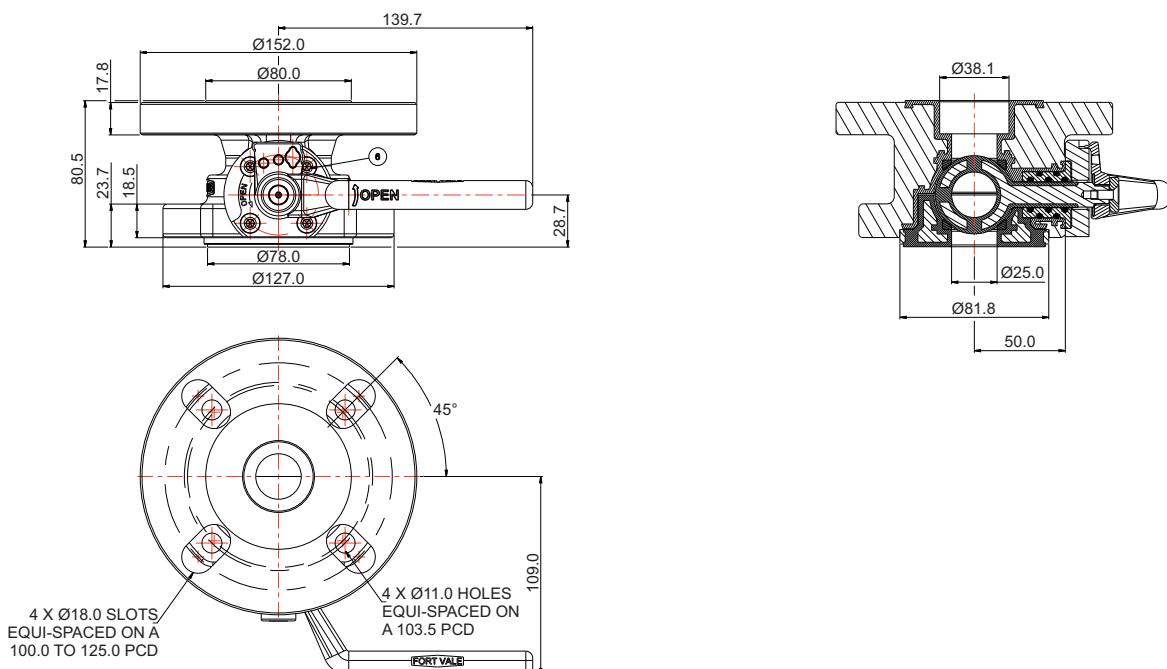
| Description | Part No. |
|--|-------------|
| DN25 reduced bore ball valve PFA lined | 530/P100 |
| DN50 full bore ball valve PFA lined | 370/P200 |
| DN80 full bore ball valve PFA lined | 360/P030X * |

*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

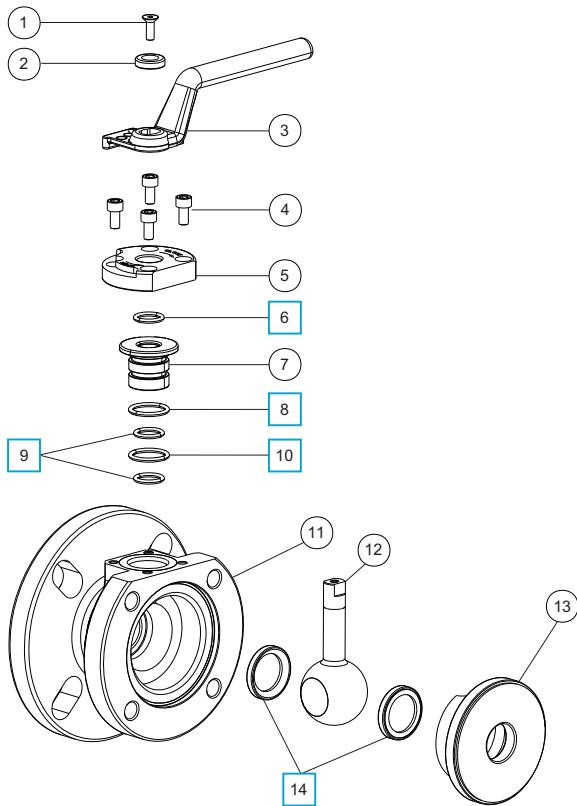




DN25 Reduced Bore Flanged Airline Ball Valve - PFA Lined

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)* Note | 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

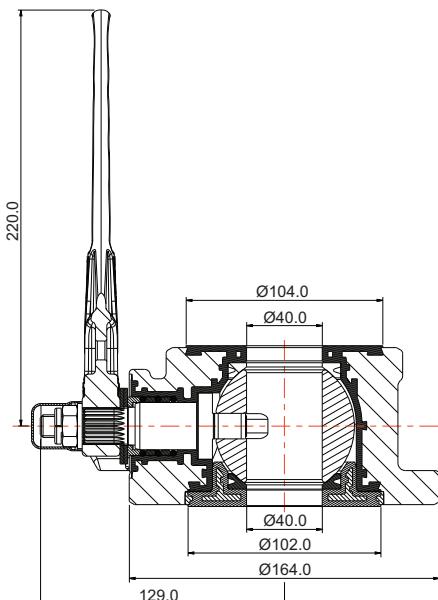
| Description | Part No. |
|-------------------------------|--------------|
| With handle, left hand | 370/P680L/XX |
| With handle, right hand | 370/P680R/XX |
| With remote lever, left hand | 370/P68RL/XX |
| With remote lever, right hand | 370/P68RR/XX |

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

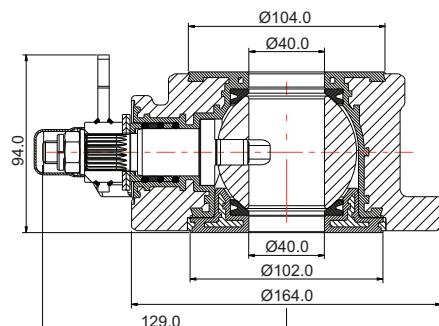
Ball Material Options

| 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

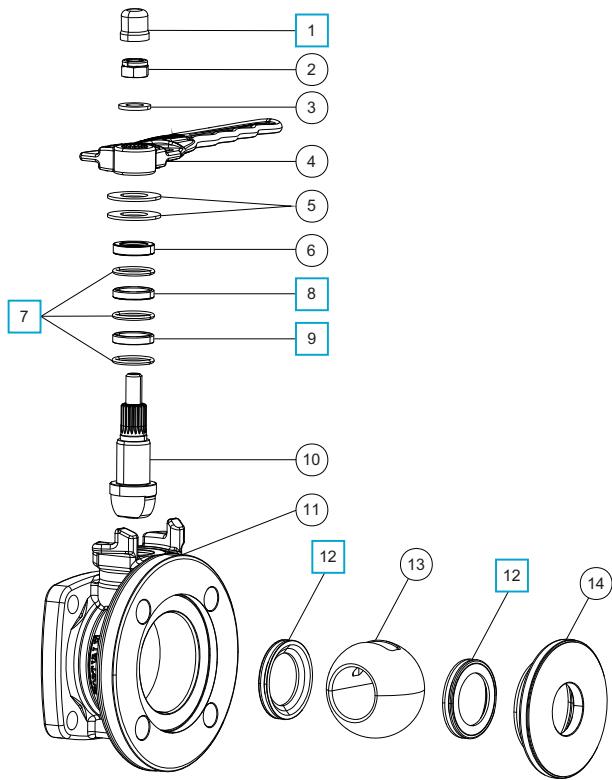




DN40 Ball Valve - PFA Lined, Painted Finish

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 *Note | 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

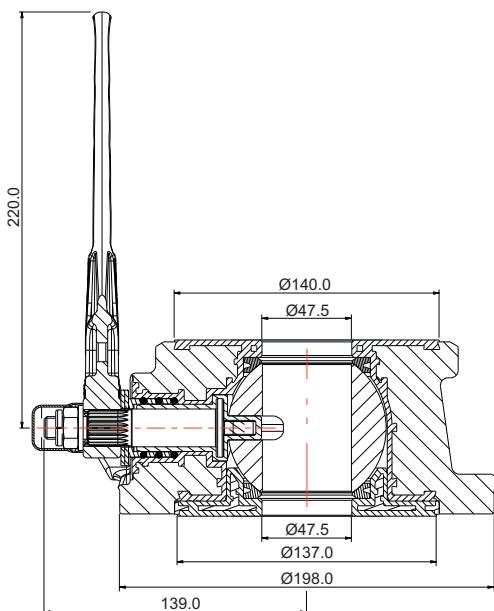
| Description | Part No. |
|-------------------------------|--------------|
| With handle, left hand | 370/P660L/XX |
| With handle, right hand | 370/P660R/XX |
| With remote lever, left hand | 370/P66RL/XX |
| With remote lever, right hand | 370/P66RR/XX |

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

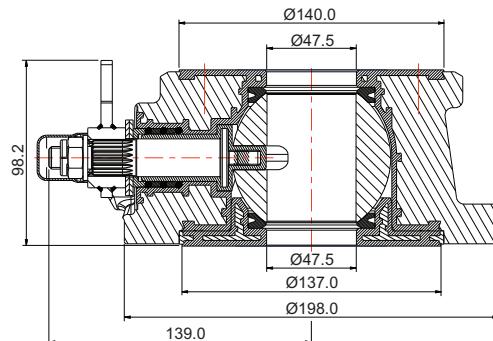
Ball Material Options

| 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

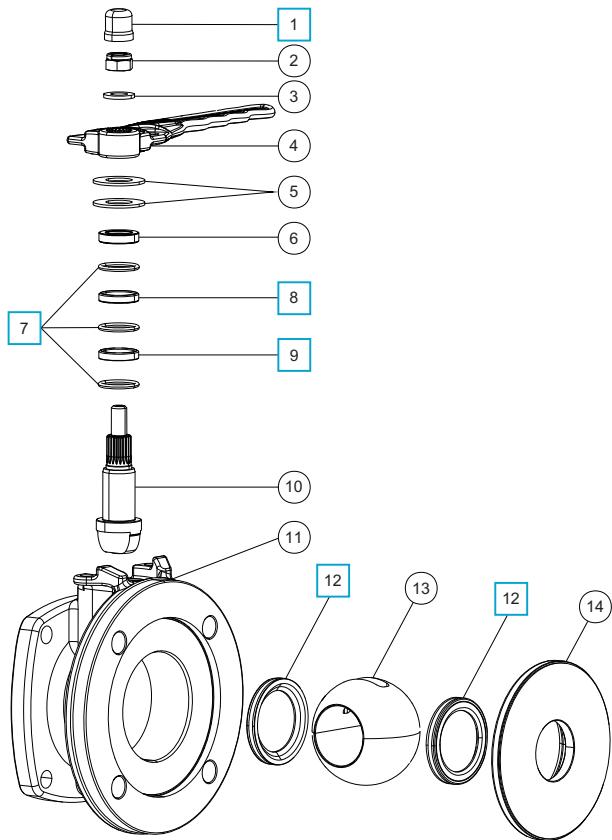




DN50 Ball Valve - PFA Lined, Painted Finish

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 *Note | 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

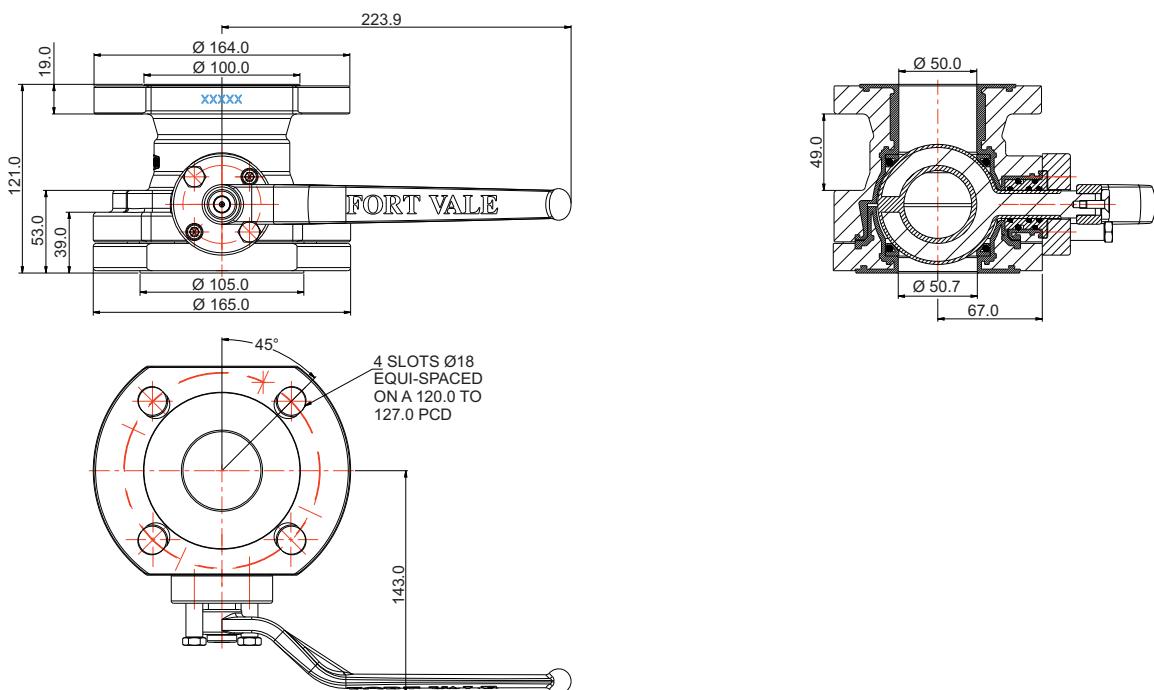
| Description | Part No. |
|---|-------------|
| DN25 reduced bore ball valve PFA lined | 530/P100 |
| DN50 full bore ball valve PFA lined | 370/P200X |
| DN50 ball valve PFA lined, painted body | 370/P200PA |
| DN80 full bore ball valve PFA lined | 360/P030X * |

*The part number changes for left or right hand operated

Related Parts

| Description | Part No. |
|-------------|----------|
| Stud kit | 311/3790 |

Section View

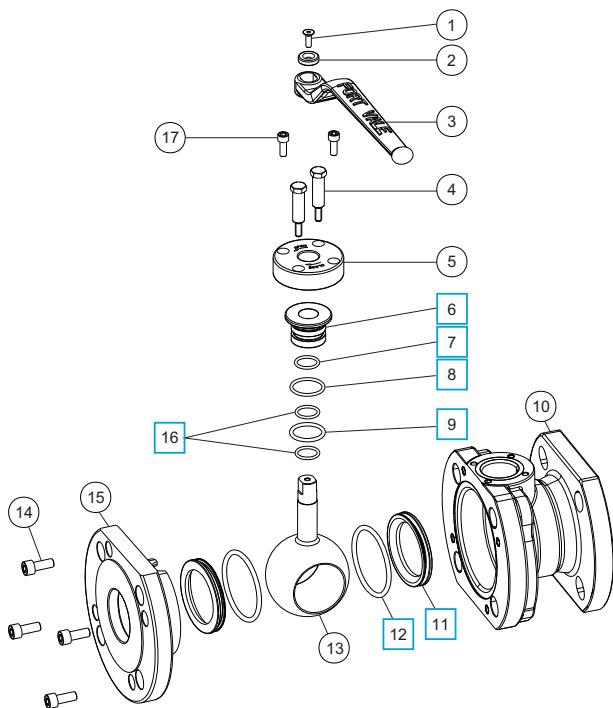




DN50 Full Bore Ball Valve - PFA Lined

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 |
| 7 Viton O ring | ORB115VL |
| 8 Viton O ring | ORB121VL |
| 9 Perfluoroelastomer O ring | 5005-214PER |
| 10 PFA lined body | 370/P110/2 |
| 11 PTFE ball seal (2) | 370/P115 |
| 12 Fortyt O ring (2) | ORM0580400F0 |
| 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 |
| 17 M6 cap screw (2) | 5111-015 |

Seal Kit

| Description | Part No. |
|--|------------|
| All parts marked <input checked="" type="checkbox"/> 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

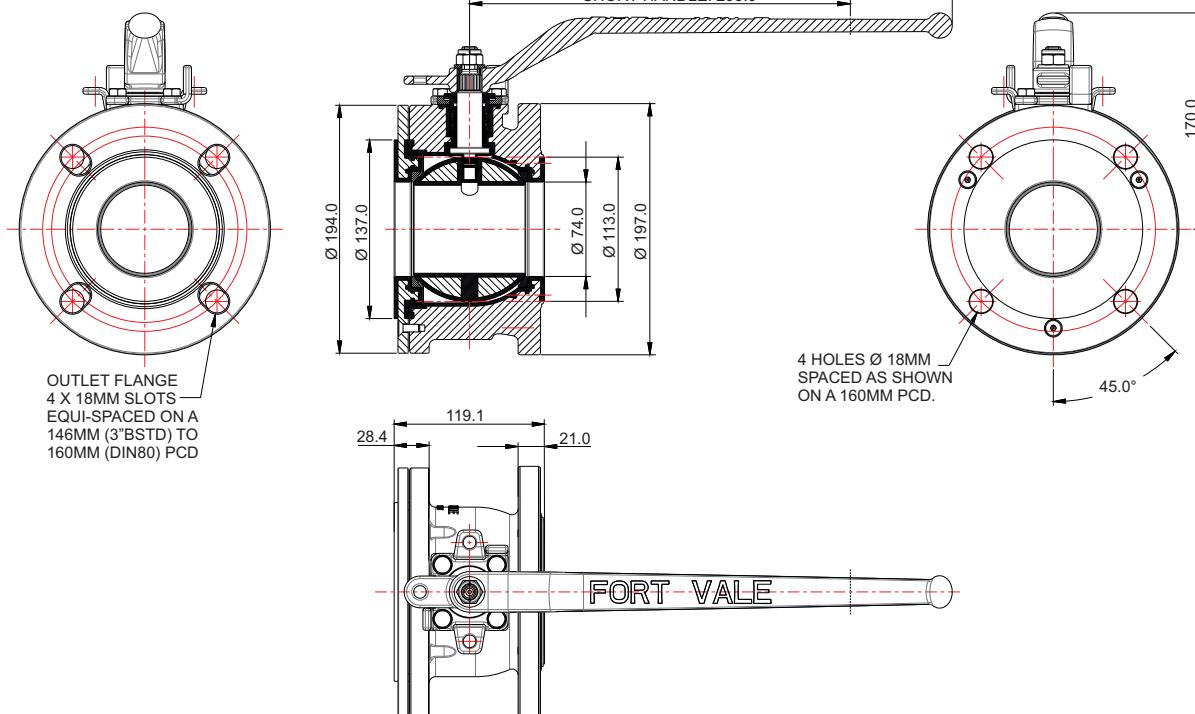
| Description | Part No. |
|--|-------------|
| DN25 reduced bore ball valve PFA lined | 530/P100 |
| DN50 full bore ball valve PFA lined | 370/P200 |
| DN80 full bore ball valve PFA lined | 360/P030X * |

*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

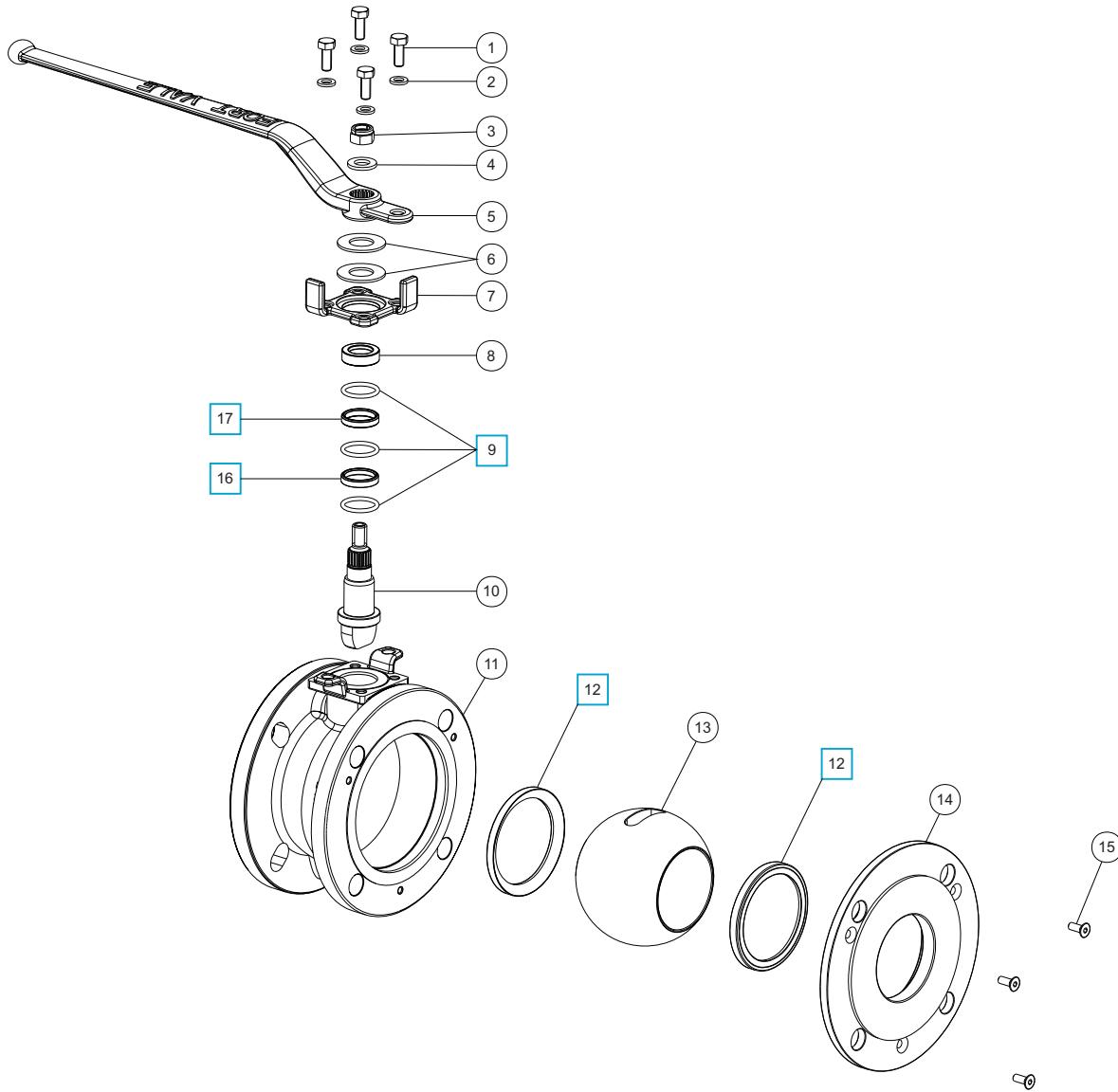




DN80 Full Bore Ball Valve - PFA Lined

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 |
| 9 | PTFE O ring (3) | 5005-654 |
| 10 | PFA lined spindle | 360/3422PL |
| 11 | PFA lined body | 360/P020 |
| 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 |
| 16 | Bottom stuffing collar | 360/3413/1 |
| 17 | Top stuffing collar | 360/3412/1 |

Seal Kit

| Description | Part No. |
|--|----------|
| All parts marked <input checked="" 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 |

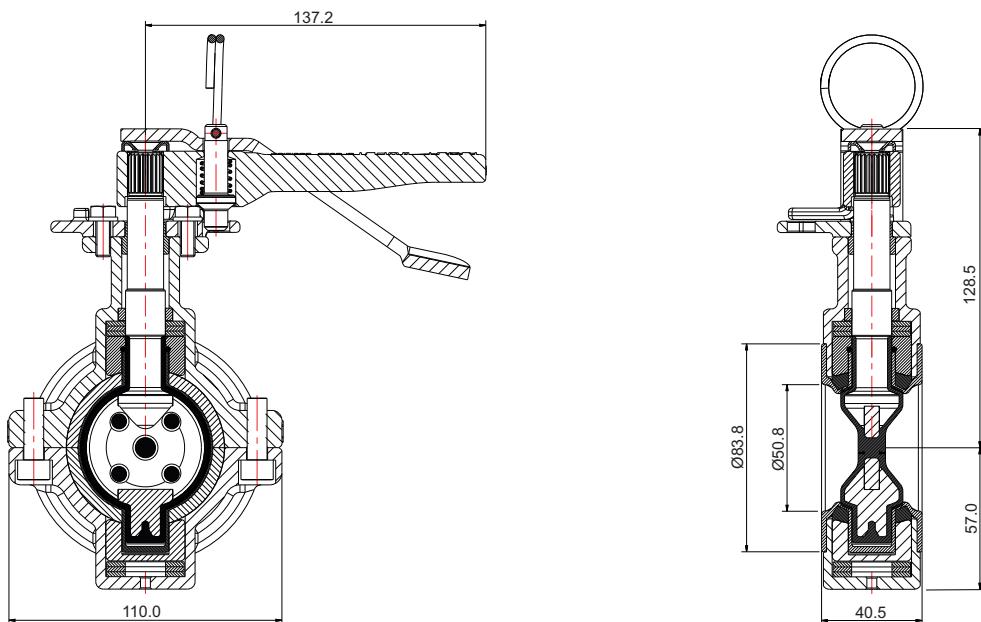
NOTE: The Design Conditions and Section View dimensions are for the specified part number only.

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

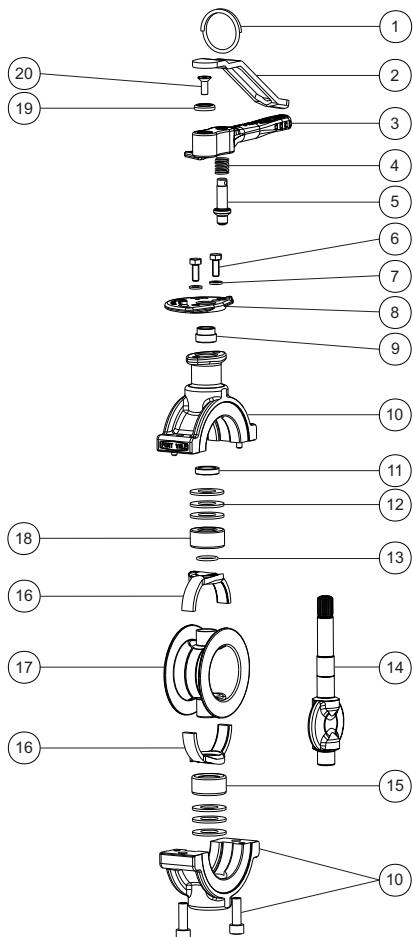




DN50 Clamped Butterfly Valve - PFA Lined

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

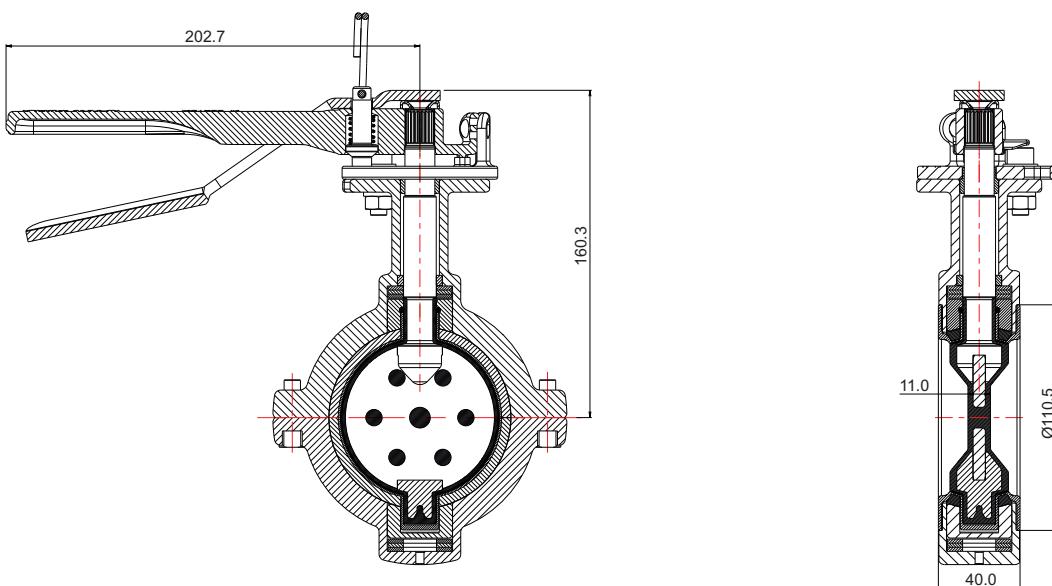
Range

| 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

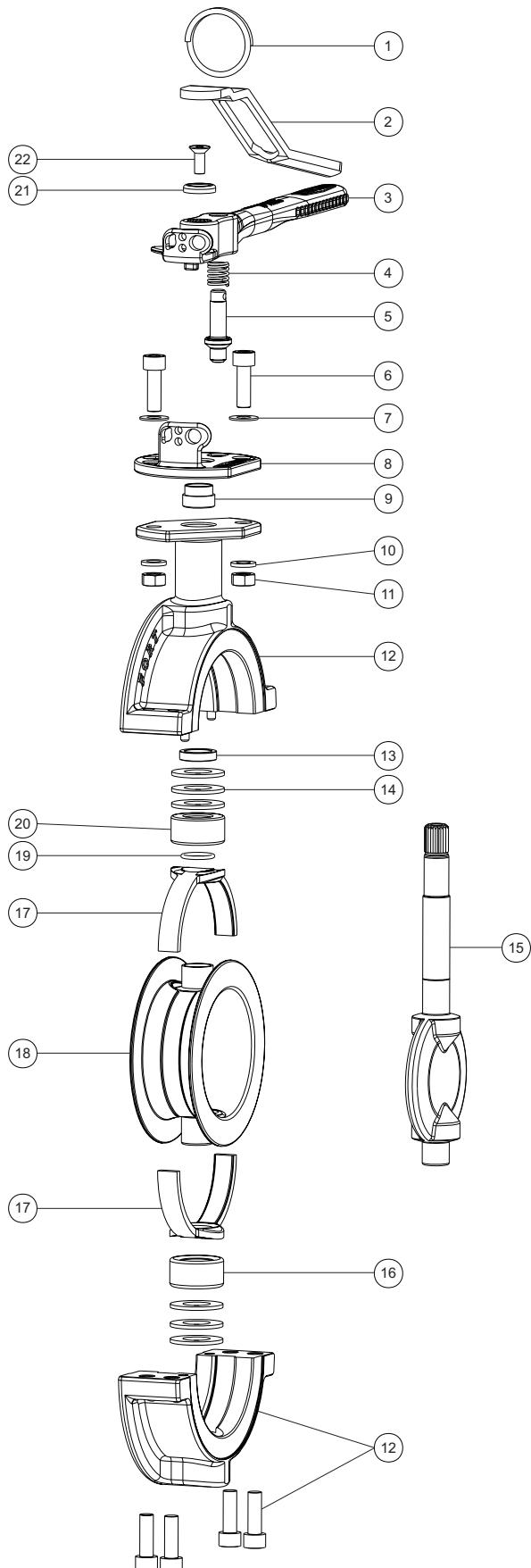




DN80 Clamped Butterfly Valve - PFA Lined

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

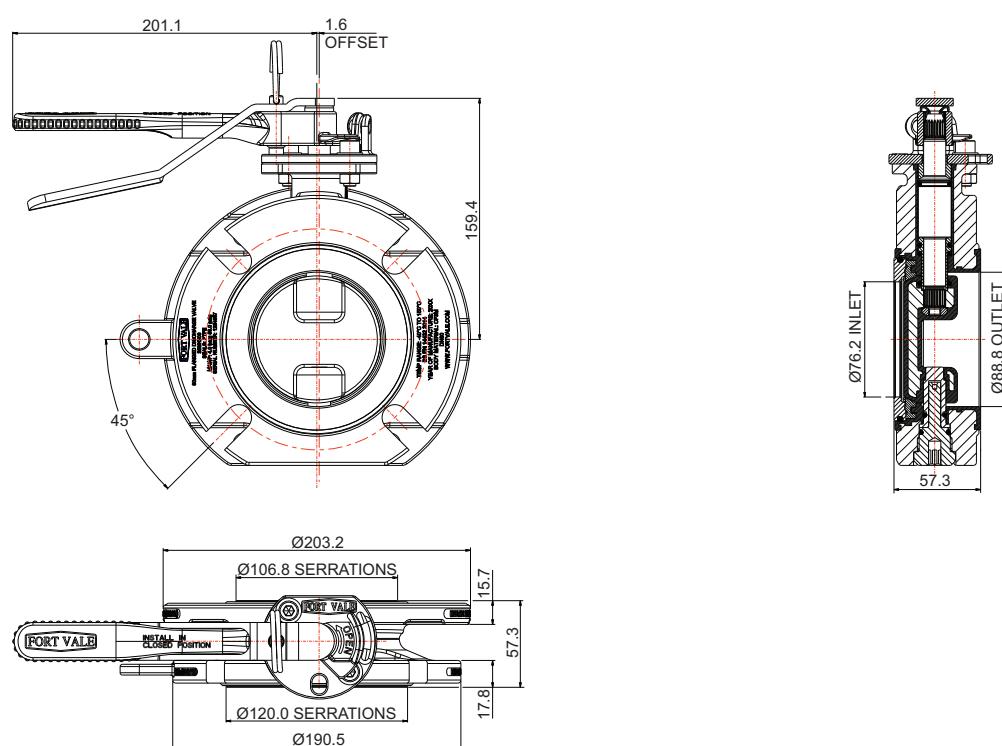
| | |
|-------------------------|---------|
| Weight: | 7.3 Kg |
| Design Pressure (MAWP): | 4 Bar |
| Test Pressure: | 6.8 Bar |
| Design Temperature Min: | -40°C |
| Design Temperature Max: | 150°C |

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

Design Codes

BS EN 14432

Section View

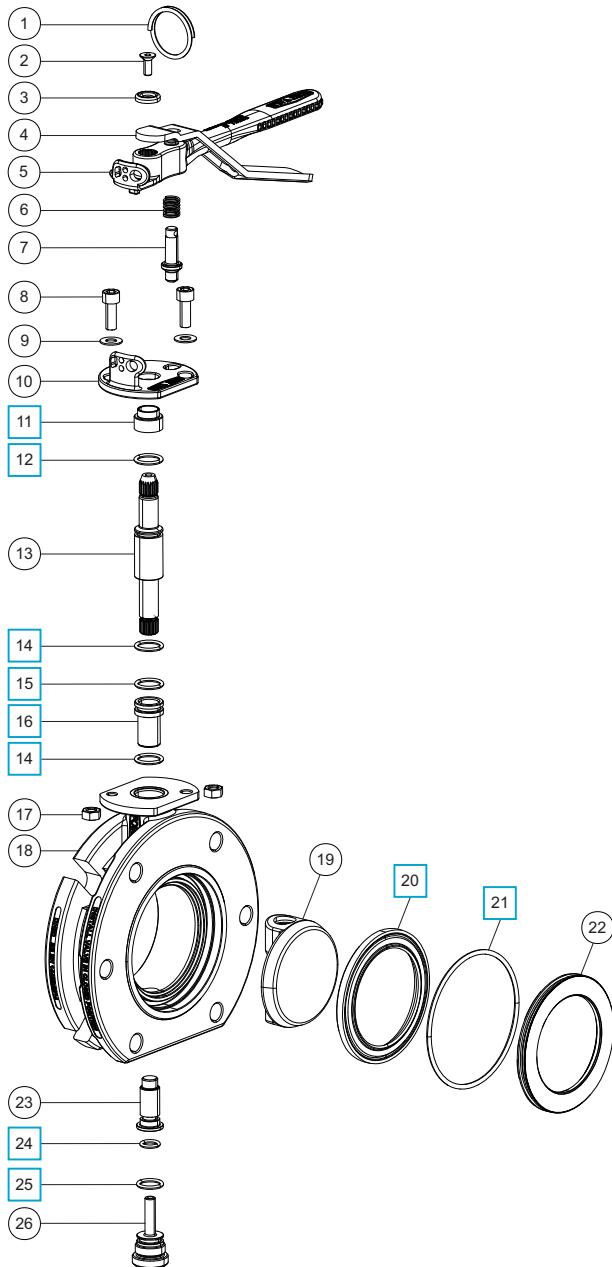




DN80 Flanged Butterfly Valve - PVDF Lined

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 |
| 12 | Viton O ring | ORB115VL |
| 13 | Spindle | 368/K310 |
| 14 | Perfluoroelastomer O ring (2) | 5005-370P |
| 15 | PTFE O ring | ORB115P0 |
| 16 | PVDF top spindle sleeve | 368/K309 |
| 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 |
| 21 | Nitrile O ring | 5005-342 |
| 22 | PVDF seal clamp | 368/9148K |
| 23 | PVDF bottom spindle sleeve | 368/K307 |
| 24 | Perfluoroelastomer O ring | 10133PHT |
| 25 | Viton O ring | 5005-134VLT |
| 26 | Lower spindle | 368/K315 |

Seal Kit

| Description | Part No. |
|--|------------|
| All parts marked <input checked="" 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: Forty

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 |

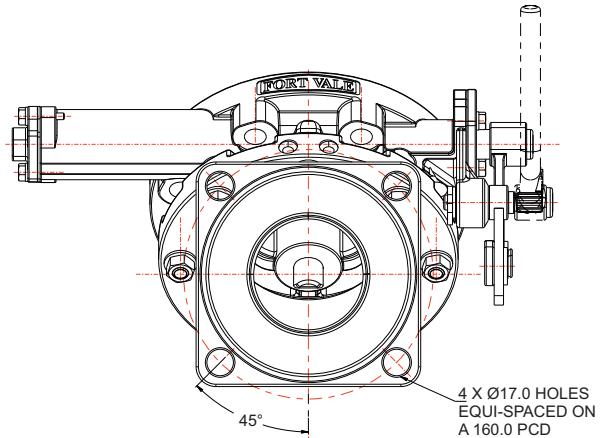
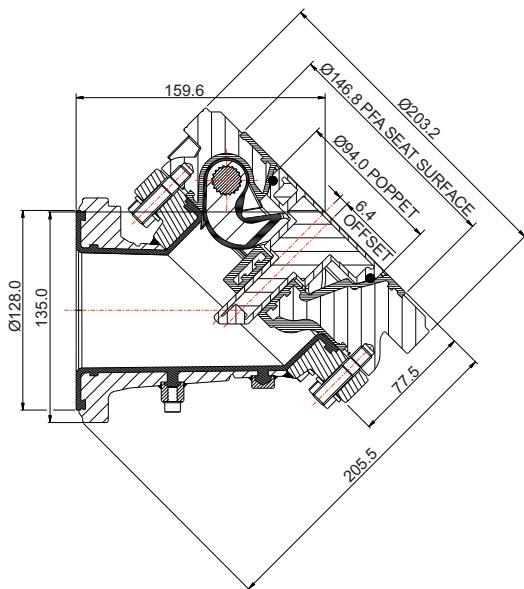
Related Parts

| 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

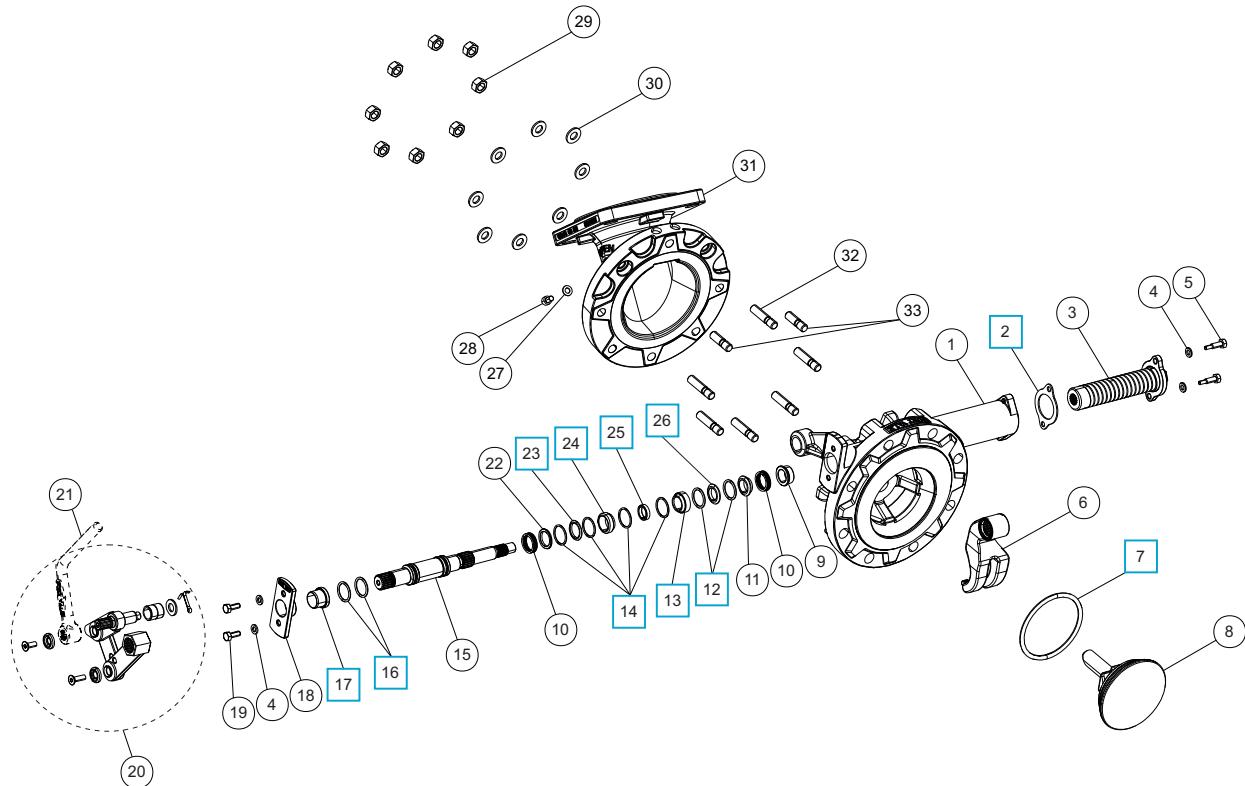




DN80 Cleanflow Footvalve with 45° Outlet - PFA Lined

Part No: 845/P1205

Parts Drawing



Parts List

| Item | Description | Part No. |
|------|-------------------------------|------------|
| 1 | PFA lined body | 845/P137LM |
| 2 | Spring housing gasket | 5005-846 |
| 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 |
| 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 |
| 13 | Spindle bush | 845/P127/2 |
| 14 | Perfluoroelastomer O ring (4) | ORB020KD |
| 15 | Main spindle | 845/P126 |
| 16 | Viton O ring (2) | 5005-336 |
| 17 | RTFE spindle stuffing seal | 845/0061 |
| 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 |

Parts List

| Item | Description | Part No. |
|------|-------------------------------|--------------|
| 24 | Spindle bush | 845/P127/1 |
| 25 | Support ring | 845/P127/8 |
| 26 | Spring side chevron | 845/P127/7 |
| 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 checked="" 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

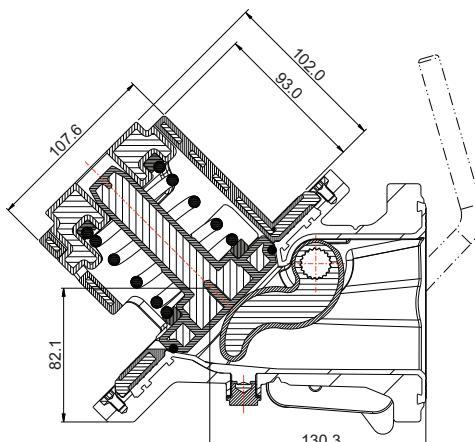
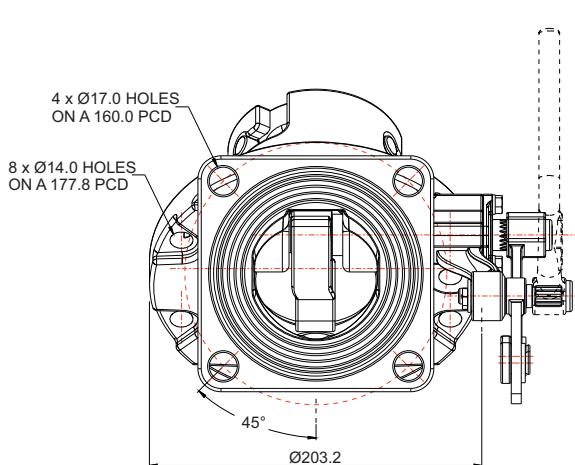
Related Parts

| 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

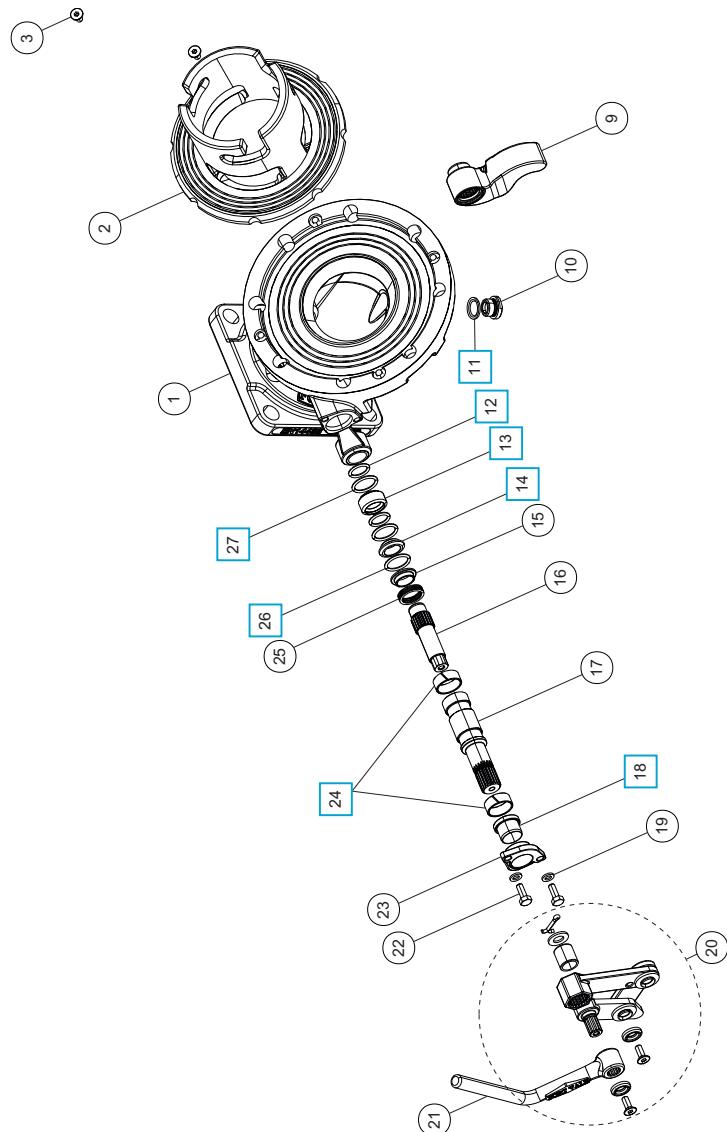
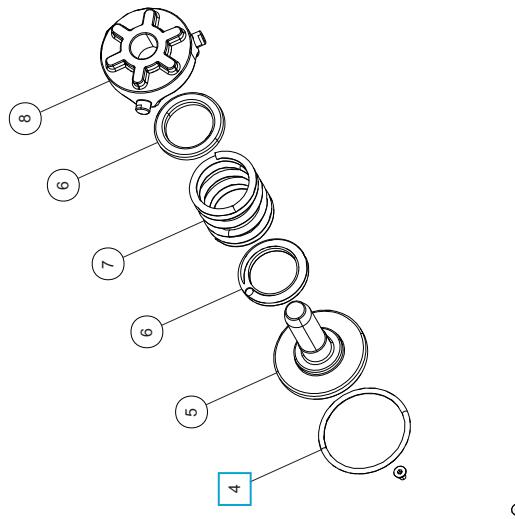




DN80 45° Cleanlift Footvalve - PFA Lined

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 *Note | 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 |



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. $\frac{1}{4}$ " 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: Forty

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

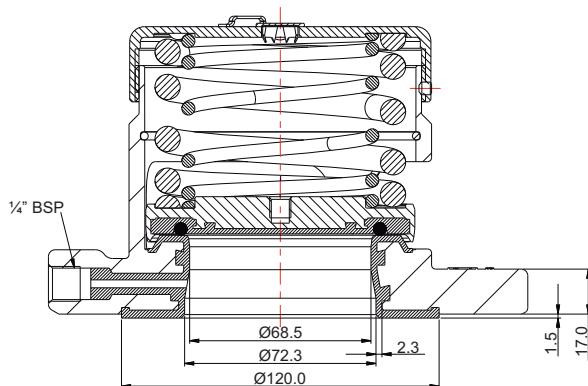
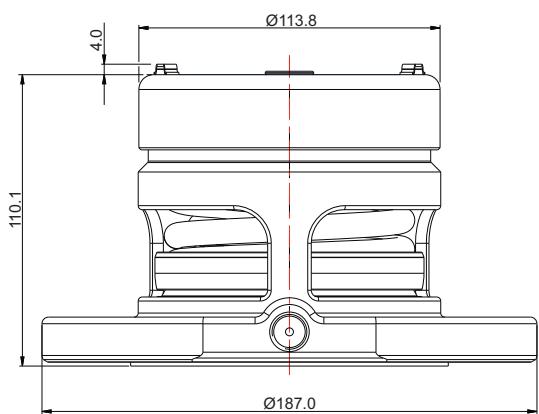
Lloyd's Register

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 *Warning | 176/2900 |
| M16 stud kit: 150 & 152.4 PCD | 311/3700 |
| M16 cap screw bolt kit: 145 & 146 PCD | 311/3785 |

Section View

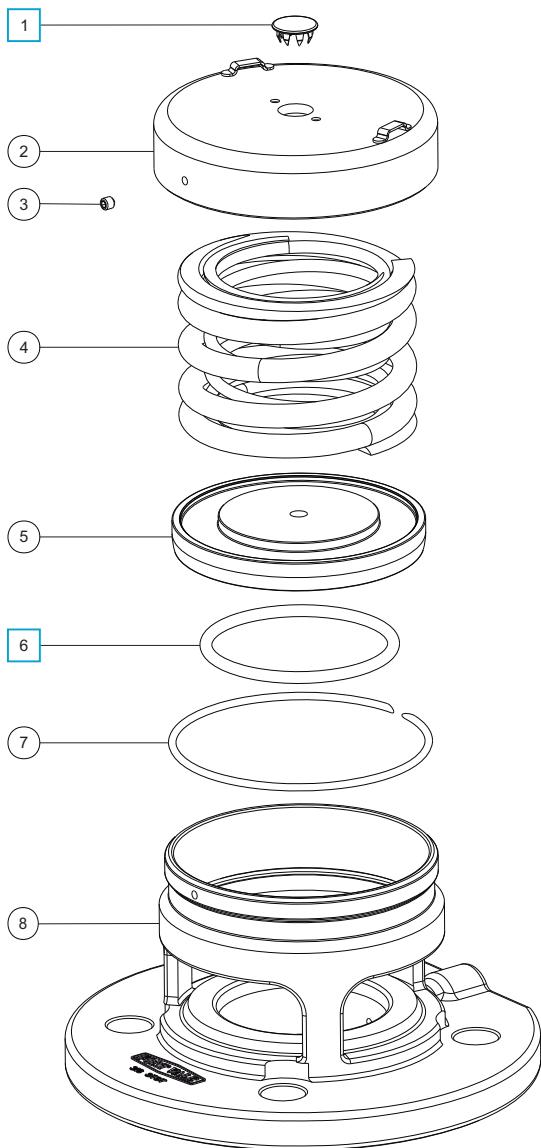




DN65 Super Maxi Relief Valve - PFA Lined, Pressure Only

Part No: 0U3/1XXX006SL - Metric Setting

Parts Drawing



Parts List

| Item | Description | Part No. |
|------|--------------------------------|--|
| 1 | Stainless steel plug | 10978 <input checked="" type="checkbox"/> |
| 2 | Cap *Note | 1860/0046XXX |
| 3 | Anti-tamper screw | 5121-001 |
| 4 | Halar® coated springs *Note | 6104-XXXXX |
| 5 | PFA lined pressure plate *Note | 1860/PX58XXX |
| 6 | Fortyt pressure O ring | 5005-101 <input checked="" type="checkbox"/> |
| 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 checked="" 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: Forty

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 ≥ 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.

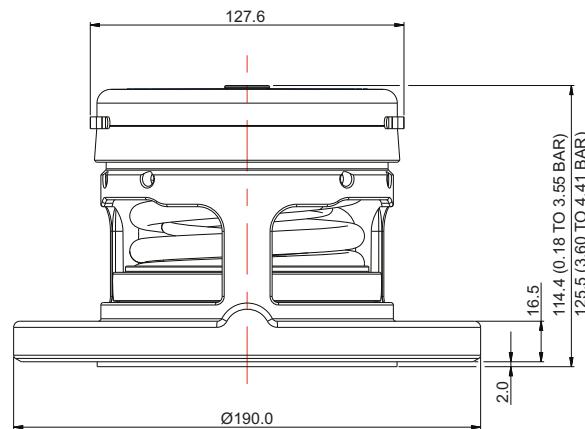
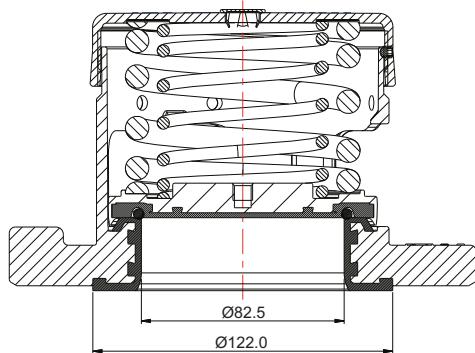
Range

| Description | Part No. |
|-------------------------------------|-----------------|
| No gauge hole | U43/1XXX0082S |
| With $\frac{1}{4}$ " 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 |
| $\frac{1}{4}$ " 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

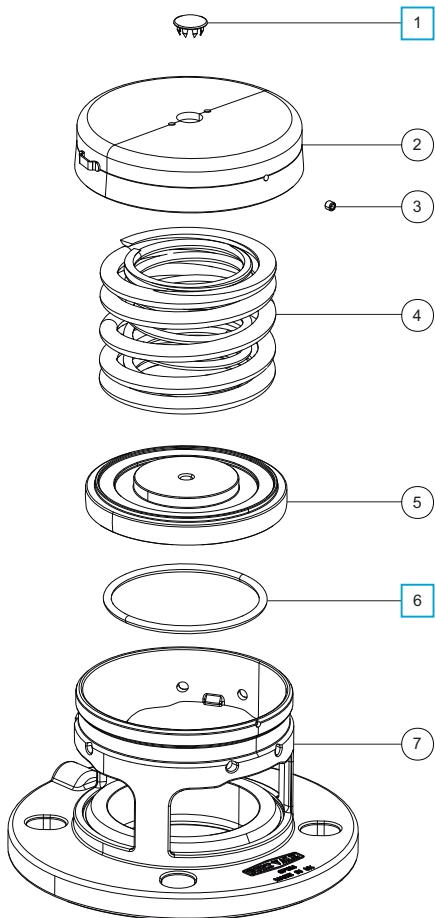




DN80 Hyper Maxi Relief Valve - PFA Lined, Pressure Only

Part No: U43/1XXX0082S

Parts Drawing



Parts List

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

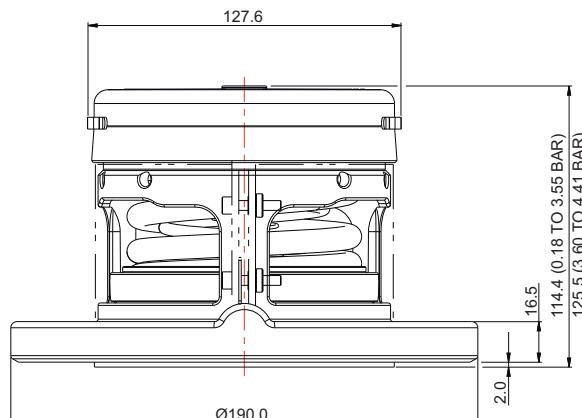
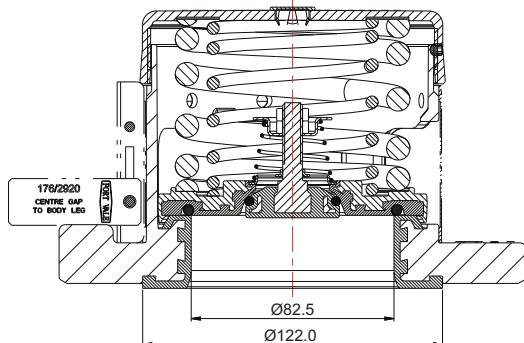
| Description | Part No. |
|-------------------------------------|-----------------|
| No gauge hole | U43/1XXXXX82S |
| With $\frac{1}{4}$ " BSP gauge hole | U43/1XXXXX82SG |
| Alloy C276 cap and painted body | U43/1XXXXX82SPA |

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 |
| $\frac{1}{4}$ " BSP gauge adaptor | 1860/08BSP/4 |
| Flame arrester *Warning | 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

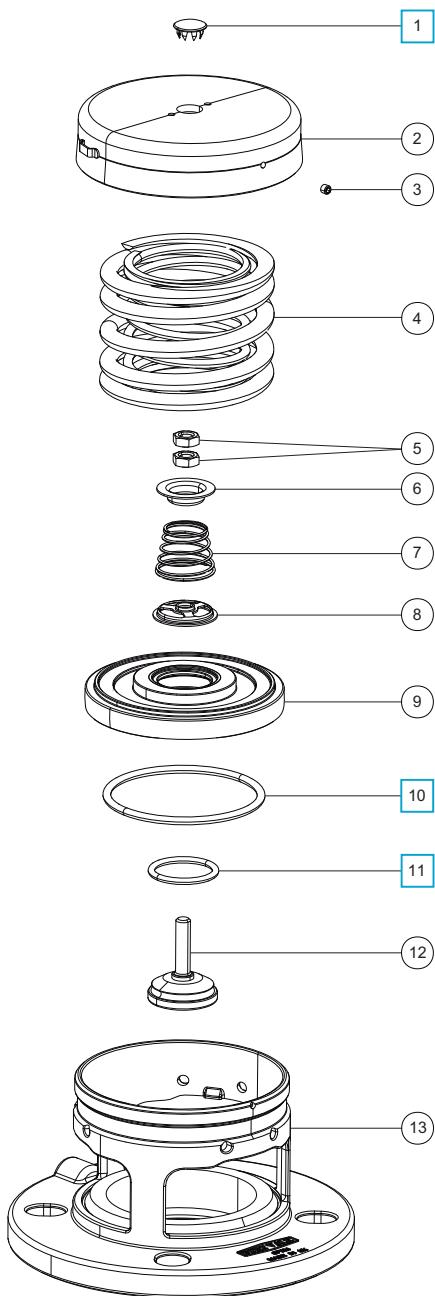




DN80 Hyper Maxi Relief Valve - PFA Lined, Pressure/Vacuum

Part No: U43/1XXXXX82S

Parts Drawing



Parts List

| Item | Description | Part No. |
|------|--------------------------------|---|
| 1 | Stainless steel plug | 10978 <input checked="" type="checkbox"/> |
| 2 | Cap *Note | 1860/1XXXXXX |
| 3 | Anti-tamper screw | 5121-001 |
| 4 | Halar® coated springs *Note | 6104-XXXX |
| 5 | M8 half nut (2) | 5112-039H |
| 6 | Vacuum spring pad | 1860/0005H |
| 7 | Alloy 276 vacuum spring *Note | 7104-XXXH |
| 8 | Spring pad | 10986/3H |
| 9 | PFA lined pressure plate *Note | 1860/P081XXX |
| 10 | Fortyt pressure O ring | ORB337F0 <input checked="" type="checkbox"/> |
| 11 | Fortyt vacuum O ring | 5005-108H <input checked="" type="checkbox"/> |
| 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 checked="" type="checkbox"/> in the Parts List | 043/1PVSK |



APPENDIX

Catalogue

- **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

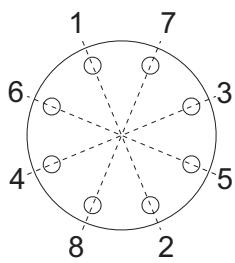
To install flanged parts correctly:

- 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.

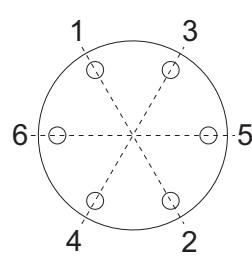
Table BT1

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

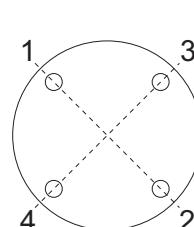
Figure BT1



8 HOLE PATTERN



6 HOLE PATTERN



4 HOLE PATTERN



Bolt Torque Guide & Step Loading Procedure

Installation & Operating Instructions

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.

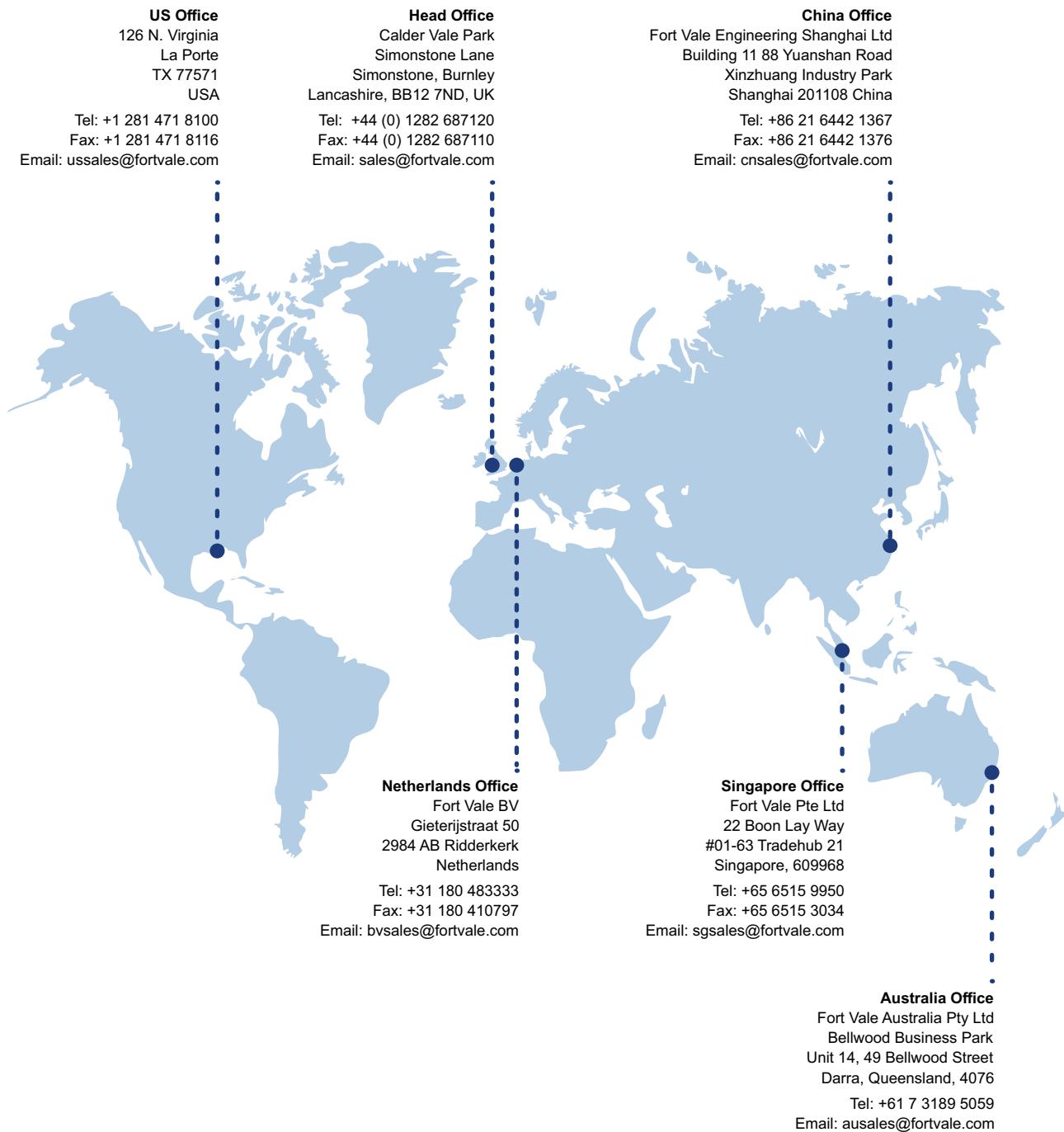
Mis-use

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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Our subsidiaries are located in:



We also have Authorised Distributors around the world to provide you with product sales and after-market services.
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