



Catalogue

Accessories & Spare Parts



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Accessories & Spare Parts

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Venting Device Accessories

Accessories & Spare Parts

0-60 PSIG Air Charge Kit



Part No: US100

Includes all items in the Parts List table.

Parts List

Description	Part No.
0-60 PSIG pressure gauge, 1/4" NPT	US000
3/4" NPT crows foot fitting	US006
3/4" NPT crows foot blank cap	US031
3/4" NPT socket ball valve	US007
3/4" NPT x 1.5" nipple	US017
1/4" NPT x 2" SCH 40 nipple	US025
1/4" NPT 45° elbow	US026

Tankvent Relief Valve Caging Tool



Part No: 400/0104

The Tankvent relief valve caging tool lets you safely compress the spring so that you can service the valve.

Compatibility

1/2" UNC connector: compatible with R407/ and R408/ Hyper Tankvent relief valves.



Female Socket Ball Valves

Accessories & Spare Parts



Specification

Nominal sizes

From DN6 to DN100

Body type options

One piece

Two piece

Three piece

Inlet/outlet connection options

BSP female both ends - all types

Weld prepared both ends - 3 piece valve only

Properties

Lockable handle

Materials

Contact parts: 316 stainless steel

Main seal: PTFE

Part Numbers

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

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



Burst (Rupture) Discs

Accessories & Spare Parts



Specification

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

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

Nominal sizes

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

Other sizes are available, please contact us.

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

Disc options

Forward Acting: a cross-scored solid metal disc

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

Reverse Acting: compatible with gas service

Materials

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

250mm: PTFE/316 stainless steel

Other materials are available, refer to next page.

65mm XL Burst Discs

Compatible with general purpose tank containers and road tankers.

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

NOTE: The specification changes the part no.

80mm XL Burst Discs

Compatible with general purpose tank containers and road tankers.

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

NOTE: The specification changes the part no.

89mm Reverse Acting Burst Discs

Compatible with compressed liquefied gas tank containers.

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

NOTE: The specification changes the part no.

250mm Standard Burst Discs

Compatible with hydrogen peroxide service.

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



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

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

Disc Size

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

Disc Manufacturer

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

Burst Pressure in kPa

- 0484 484 kPa (4.84 Bar)

Burst Temperature in °C

- 020 20°C

Disc Type

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

Special Material/Service: Disc Type A & B Only

Note: No number = Standard Material/Service

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

Special Material/Service: Disc Type G Only

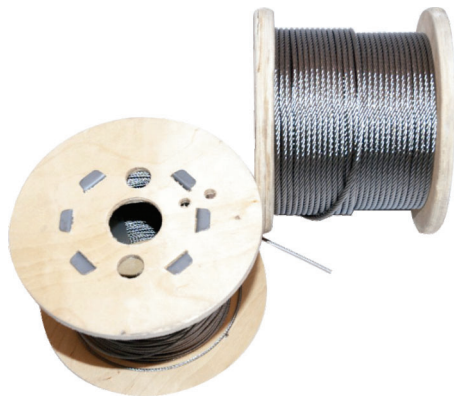
Note: No number = Standard Material/Service

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



Stainless Steel Cable

Accessories & Spare Parts



Specification

Our 7x19 stainless steel cable can be used to assemble remote control assemblies and to secure dust caps, blank caps and plugs

Nominal sizes Ø

2mm, 3mm, 4mm

Material

316 stainless steel

CAUTION: Make sure the cable diameter is compatible with your service conditions

Stainless Steel Cable

Supplied in rolls of 100 metres

Size	Part No.
2mm x 100m	6110-110
3mm x 100m	6110-111
4mm x 100m	6110-112



Threaded Blank Caps

Accessories & Spare Parts



Specification

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

Nominal sizes

From 1/2" to 4"

Thread options

BSP, NPT, NPSL

Material options

Cap: stainless steel, aluminium

Washer: PTFE, leather

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

Stainless Steel Caps - BSP Thread

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

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

Spare Parts - Washers

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

NPT & NPSL Caps

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

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

Aluminium Caps - BSP Thread

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

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



Pressure-Tight Caps for Drytyt Tank Units

Accessories & Spare Parts



Example shown: 119mm cap, Part No. 915/5470X

The pressure-tight cap protects the tank unit outlet face from damage and can be used as a secondary or a tertiary closure. The top cap/seal plate assembly lets you safely release pressure that can be inside the tank unit.

All pressure-tight caps are fire-safe designed and seal metal-to-metal when installed onto the tank unit. The seal plate O ring makes a gas-tight and liquid-tight seal. (Refer to Seal Options NOTE).

Please read the Installation Instructions on the next page.

Design Conditions

56mm, 70mm, 105mm, 119mm only

Design Pressure (MAWP): 25.0 Bar
Test Pressure: 37.5 Bar

164mm only

Design Pressure (MAWP): 10.0 Bar
Test Pressure: 16.0 Bar

Design Temp. Min/Max: -40°C / 200°C (metal parts)

NOTE: The design temperature conditions are for metal parts only. The working temperature of the seal plate O ring can change the design temperature limits. Refer to Seal Options.

Design Codes

BS EN 14432

Specification

Nominal sizes

56mm, 70mm, 105mm, 119mm, 164mm

Compatibility

Fort Vale Drytyt, Todo®, Mann-Tek®, Avery Hardoll®

Properties

Chain point and TIR/padlock hole

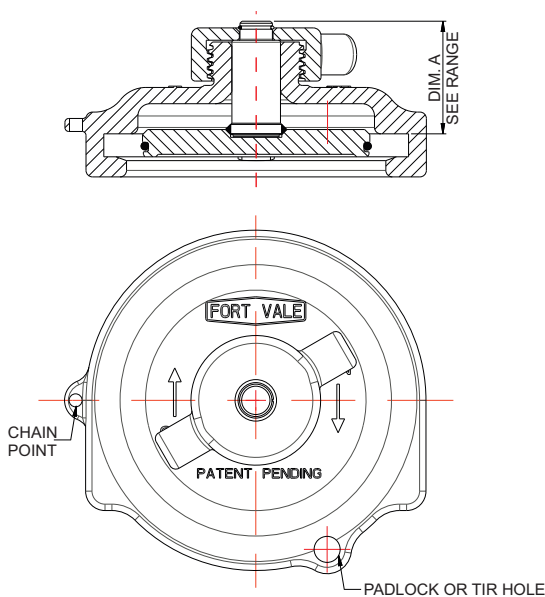
Materials

Contact parts: 316 stainless steel

Seal plate O ring: refer to Seal Options

Section View

119mm cap (915/5470X) shown in the closed position



Range

Size	Weight	Dim.A	Part No.
56mm	0.91 Kg	45.1mm	915/5410X
70mm	1.07 Kg	42.1mm	915/5420X
105mm	1.92 Kg	44.1mm	915/5480X
119mm	2.33 Kg	44.1mm	915/5470X
164mm	3.68 Kg	44.1 mm	915/5490X

The Part No. suffix X refers to the seal material code - refer to Seal Options

Seal Options

Seal Code	Seal Material	Seal Temp.Range
915/54XXB	Butyl	-30°C to +120°C
915/54XXE	EPDM	-20°C to +150°C
915/54XXF	Fortyt *Note	-55°C to +200°C
915/54XXN	Nitrile	-20°C to +100°C
915/54XXP	Perfluoroelastomer	-15°C to +200°C
915/54XXQ	Viton FDA approved	-20°C to +200°C
915/54XXV	Viton	-20°C to +200°C

NOTE: Fortyt is liquid-tight but is not bubble-tight

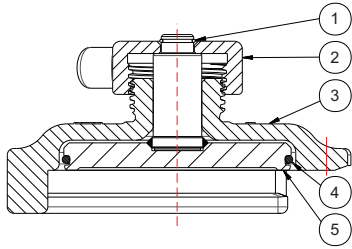


Pressure-Tight Caps for Drytyt Tank Units

Accessories & Spare Parts

Parts Drawing

119mm cap (915/5470X) shown in the open position



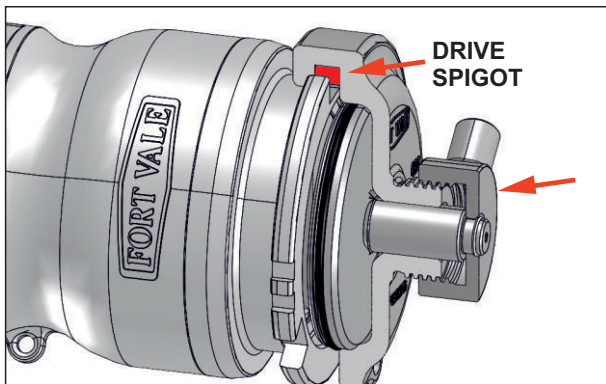
Parts List

Item	Description	Part No.
1	Retaining clip	5120-056
2	Anti-galling top cap *Note	915/54X4
3	Cap body *Note	915/54XX
4	O ring *Note	XXXXXXXX
5	Seal plate *Note	915/54XX

NOTE: The cap specification changes the Part No.

Installation Instructions

Example shown: 119mm cap and tank unit



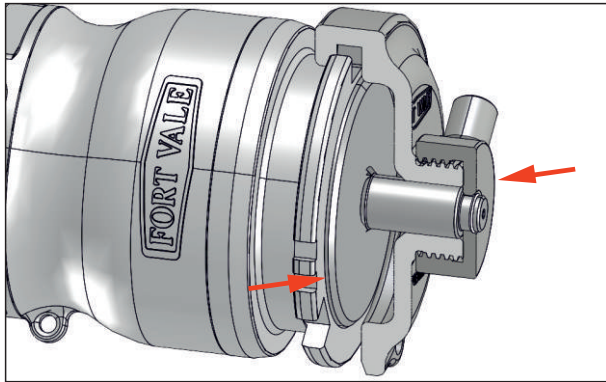
How to install the pressure-tight cap assembly

Move the top cap to the top of its thread.

Note the drive spigot position.

Align the drive spigot with a roller slot on the tank unit and move the cap assembly down to install it onto the tank unit.

Make sure the drive spigot engages with the slot.



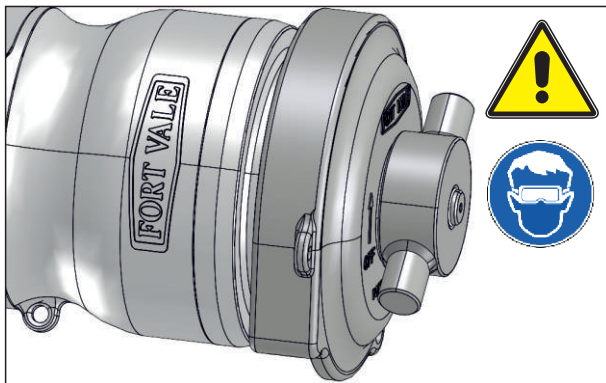
Tighten the top cap.

The seal plate will move into the recess in the tank unit.

When the top cap is fully tight, the assembly is locked and sealed.

NOTE: A Fortyt O ring will give a liquid-tight seal, but will not give a bubble-tight seal.

Attach a chain as necessary.



How to remove the pressure-tight cap assembly

CAUTION: There can be pressure inside the tank unit. Keep your face away from the cap and wear PPE.

Loosen the top cap and unscrew it until it is at the top of its thread.

The seal plate will retract into the cap body. If there is pressure inside the tank unit, it will be safely released.

When the pressure is released, move the cap assembly up to remove it from the tank unit.



Dust Caps & Plugs for Drytyt Dry Disconnect Couplings Accessories & Spare Parts



Specification

Caps for tank units have a ring and tab to attach it to the tank unit.

Plugs for hose units have a 3mm hole to attach a keyring and chain or wire.

Nominal sizes

70mm, 119mm, 164mm

Material

Black EPDM rubber

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

Dust Caps - For Tank Units

Size	Part No.
70mm	915/5172
119mm	915/5175
164mm	915/5176

Dust Plugs - For Hose Units

Size	Part No.
70mm	915/5171
119mm	915/5173
164mm	915/5174



TW Couplings

Accessories & Spare Parts



Specification

TW couplings are a tertiary closure system and are used to connect the valve outlet and hose. The lever locks the female part to the male part for product loading and discharge. TW couplings are supplied with a seal as standard. Compatible plugs and dust caps protect the couplings from dirt and damage.

Nominal sizes

DN50
DN80
DN100

Design Code

TW couplings obey EN 14420-6

Materials

Metal parts: stainless steel

Male Part - Type VK

Supplied as standard with a PTFE seal

Size	Part No.
VK50	90/TWVK50SS
VK80	90/TWVK80SS
VK100	90/TWVK100SS

Cap - Type MB

Compatible with VK couplings

Size	Part No.
MB50	90/TWMB50SS
MB80	90/TWMB80SS
MB100	90/TWMB100SS

Related Parts

Seal for male part, type VK coupling

Size	Material	Part No.
50mm	PTFE	5005-TW50PTFE
80mm	PTFE	5005-TW80PTFE
100mm	CSM	5005-TW100PTFE

Female Part - Type MK

Supplied as standard with a CSM seal

Size	Part No.
MK50	90/TWMK50SS
MK80	90/TWMK80SS
MK100	90/TWMK100SS

Plug - Type VB

Compatible with MK couplings

Size	Part No.
VB50	90/TWVB50SS
VB80	90/TWVB80SS
VB100	90/TWVB100SS

Related Parts

Seal for female part, type MK coupling

Size	Material	Part No.
50mm	CSM	5005-TWMK50HYP
50mm	Natural black rubber	5005-TWMK50NBR
80mm	CSM	5005-TWMK80HYP
100mm	CSM	5005-TWMK100HYP



Document Holders

Accessories & Spare Parts



Specification

Nominal sizes

75mm and 110mm

Body material options

Opaque plastic

Transparent plastic

Fixing bracket options

Plastic

Stainless steel

Cap

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

Document Holders

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

Spare Parts - Plastic Caps

All caps are supplied with a stainless steel cable.

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

Spare Parts - Fixing Brackets

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



Flame Arresters & Debris Protection for Relief Valves

Accessories & Spare Parts

Flame Arresters



Specification

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

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

Nominal sizes

Compatible with DN25, DN40, DN65 and DN80 relief valves

Material

Stainless steel

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

Flame Arresters

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

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

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

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

Debris Protection - Gauzed Cowl

Part No: 176/6000



Specification

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

Nominal sizes

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

Material

Stainless steel

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



ACME Outlet Assemblies

Accessories & Spare Parts



Specification

The ACME outlet assembly is a tertiary closure system for liquefied gas discharge assemblies. It includes a spigot flange and a plug/cap assembly with a PTFE seal and retaining wire.

Nominal sizes

DN25, 1 3/4" ACME thread: compatible with vapour phase
 DN50, 3 3/4" ACME thread: compatible with liquid phase

Connection

4 x 18mm holes on a 125mm PCD

Properties

1/4" NPT connection for a sample/bleed valve or a pressure gauge. Safety bleed hole in the spigot.

Materials

Metal parts: 316 stainless steel
 Seal: PTFE

Design Conditions

Design Pressure (MAWP):	34.5 Bar
Test Pressure:	70.0 Bar
Design Temperature Min:	-50°C
Design Temperature Max:	80°C

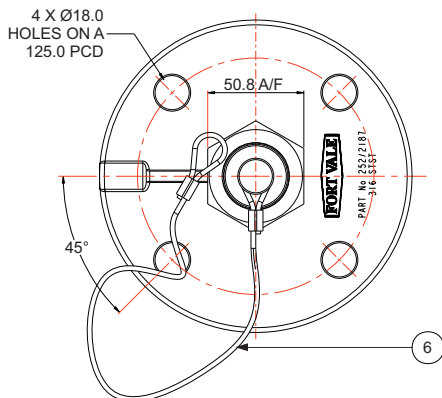
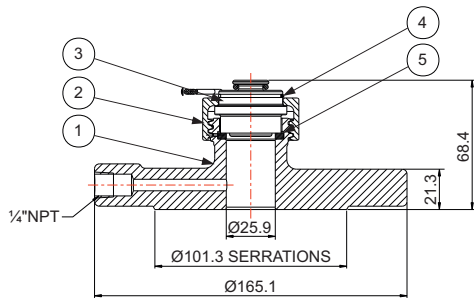
Range

Description	Part No.
DN25 1 3/4" ACME thread	252/2187
DN50 3 3/4" ACME thread	252/2177

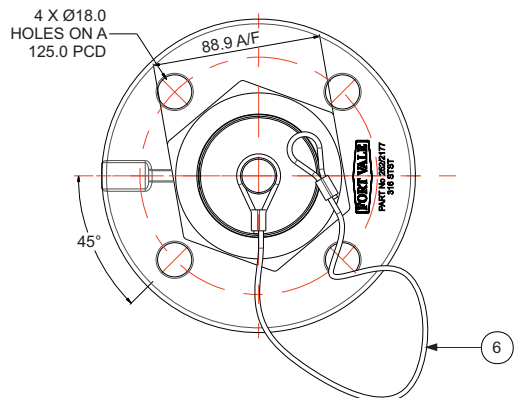
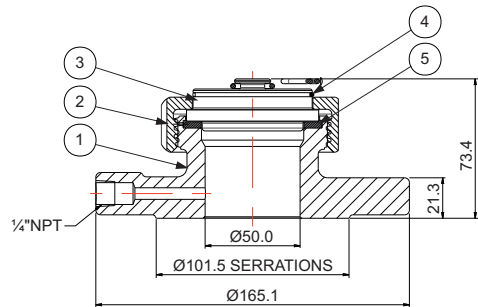
Spare Parts

Item	Description	Part No. 1 3/4" ACME	Part No. 3 3/4" ACME
1.	Outlet flange	252/2084	252/2069
2.	ACME cap	252/2085	252/2075
3.	ACME plug	252/2086	252/2076
4.	Retaining ring clip	5120-028	5120-027
5.	PTFE seal	5005-878	5005-877
6.	Retaining wire	425/0009	425/0004

Section View - 1 3/4", Part No. 252/2187



Section View - 3 3/4", Part No. 252/2177





1½” BSP to Flanged Airline Ball Valve Adaptor Kit

Accessories & Spare Parts



Specification

The 1½” airline ball valve adaptor kit lets you change an airline ball valve with a 1½” BSP outlet/process connection to a DN40 PN16 or DN50 PN16 flanged outlet/process connection.

The kit includes these parts:

- BSP to DN adaptor flange
- blind flange
- bent handle
- envelope gasket
- bolting kit

NOTE: The ball valve is not included in the kit.

You can buy only the adaptor flange if you do not need the complete kit.

Range

Description	Part No.
1½” BSP to DN40 adaptor kit	530/ADAP40KIT
1½” BSP to DN40 adaptor flange only	530/ADAP40
1½” BSP to DN50 adaptor kit	530/ADAP50KIT
1½” BSP to DN50 adaptor flange only	530/ADAP50



Standard Adaptor Flanges

Accessories & Spare Parts

Standard Adaptor Flanges

Compatibility	No. Holes	Hole Ø (mm)	PCD (mm)	Specification	Material	Part No.
2½" BSP relief valve	4	14	130	2½" BSP / DN65 PN6	CF3M	176/3000
2½" BSP relief valve	4	18	145	2½" BSP / DN65 PN10	316 st/steel	176/3091
DN80 bottom discharge valve mating flange	4	18	160	DN80	316 st/steel	294/0081
2½" BSP relief valve/burst disc inlet adaptor	6	M10	105		CF8M	176/7002
2½" BSP relief valve/burst disc	6	11	105		CF8M	176/7001
1½" BSP relief valve/burst disc	6	11	105		316L st/steel	176/7085
1½" BSP airline ball valve	8	M16 x4 18 x4	110 110	1½" BSP / DN40	316L st/steel	530/ADAP40 *Note
1½" BSP airline ball valve	8	M16 x4 18 x4	125 125	1½" BSP / DN50	316/316L st/steel	530/ADAP50 *Note
Top discharge syphon tube	8	14 x6 18 x4	168 160		CF3M	368/0810
Top discharge butterfly valve	8	M16 x4 18 x4	160 160	DN80	316 st/steel	S0404
DN100 bottom discharge valve mating flange	8	18	180	DN100 PN10	316 st/steel	875/4150

Please contact us if the adaptor flange you need is not shown.

NOTE: You can buy a complete kit to change a 1½" BSP connection to DN40 or DN50. Refer to data sheet SPA042.





Standard Blind Flanges

Accessories & Spare Parts

Standard Blind Flanges

Compatibility	No. Holes	Hole Ø (mm)	PCD (mm)	Specification	Material	Part No.
Flanged airline ball valve eg 530/1000	4	17	110	DN40 PN10	CF8M	530/8053CM
Airline connection	4	17	125	DN50 PN10	CF8M	370/4239CM
Top/bottom discharge	4	17	160	DN80	CF8M	312/0022CM
Top/bottom discharge	4	18 slots	146 to 160	DN80 / 3"ASA	316 st/steel	360/8066
Relief valve weld-in flange (176/3150)	6	11	105	N/A	CF8M	176/3160CM
Top discharge weld-in flange (368/0800)	6	14	168	N/A	CF8M	S0206CM

Please contact us if the blind flange you need is not shown.



530/8053CM



370/4239CM



312/0022CM



360/8066



176/3160CM



S0206CM



Standard Outlet Flanges

Accessories & Spare Parts

Standard Outlet Flanges

Description	No. Holes	Hole Ø (mm)	PCD (mm)	Specification	Material	Part No.
3" BSP eccentric spigot, square flange	4	14	130	DN80	CF3M	SP368/5129
3" Camlock	4	17 slots	146 to 160	3" ASA150, 3"BSTD, DN80 PN10	CF8M	SP368/8058
3" BSP eccentric spigot, square flange	4	18	160	DN80	CF8M	SP368/8047
3" BSP offset spigot, square flange	4	19 slots	146 to 160	DN80	CF3M	SP368/8010

Please contact us if the outlet flange you need is not shown.

NOTE: We pressure test the outlet flanges shown.



SP368/5129



SP368/8058



SP368/8047



SP368/8010



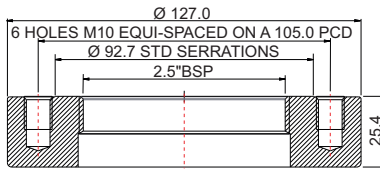
DN65 Flanges for Super Maxi Relief Valves

Accessories & Spare Parts

Part No: 176/3150



Section View



Specification

Flange type

Weld-in flange

Nominal size

DN65 with 2½" BSP thread

Flange drilling

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

Material

316L stainless steel

Compatible valve/part

2½" BSP Super Maxi relief valve

176/7001 adaptor flange with 65mm XL burst disc

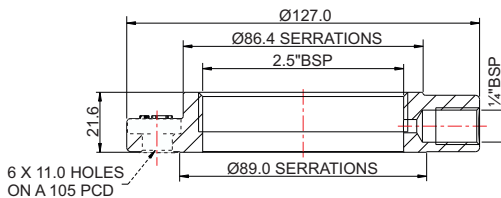
Related Parts

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

Part No: 176/7001



Section View



Specification

Flange type

Burst disc adaptor flange

Nominal size

DN65 with 2½" BSP thread

Flange drilling

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

Properties

¼" BSP gauge connection

Material

316 stainless steel

Compatible valve/part

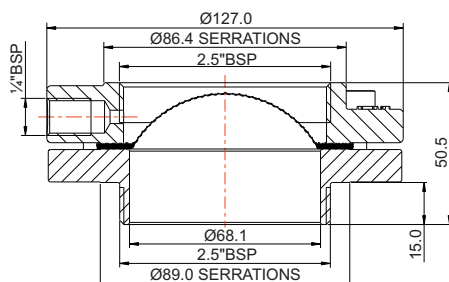
2½" BSP Super Maxi relief valve

65mm XL burst disc

Part No: 176/7020



Section View



Specification

Flange type

Burst disc adaptor flange assembly

Nominal size

DN65 with 2½" BSP thread

Inlet connection

2½" BSP

Properties

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

Material

316 stainless steel

Compatible valve/part

2½" BSP Super Maxi relief valve

65mm XL burst disc

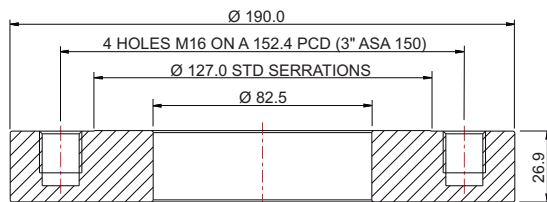


DN80 Flanges for Super Maxi & Hyper Maxi Relief Valves Accessories & Spare Parts

Part No: 176/3125



Section View



Specification

Flange type
Weld-in flange

Nominal size
DN80

Flange drilling
4 x M16 holes equi-spaced on a 152.4mm PCD

Material
316L stainless steel

Compatible valve/part
DN80 Super Maxi & DN80 Hyper Maxi relief valve
80mm XL burst disc

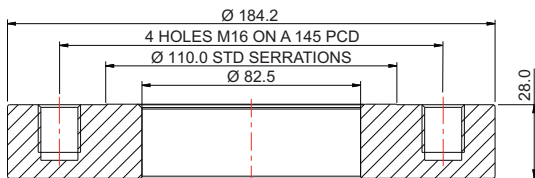
Related Parts

Description	Part No.
CNAF/PTFE gasket	5005-204
Stud kit	311/3700

Part No: 176/3250



Section View



Specification

Flange type
Weld-in flange

Nominal size
DN80

Flange drilling
4 x M16 holes equi-spaced on a 145.0mm PCD

Material
316L stainless steel

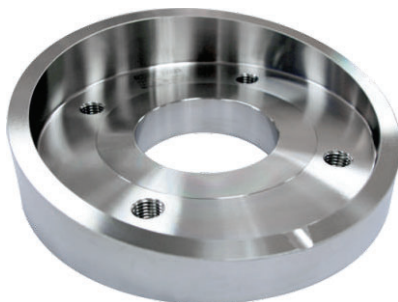
Compatible valve/part
DN80 Super Maxi & DN80 Hyper Maxi relief valve
80mm XL burst disc

Related Parts

Description	Part No.
CNAF/PTFE gasket	5005-332
Bolt kit	311/3785

Special Flanges

We offer a large range of special weld-in flanges and adaptor flanges, such as recessed, low profile and dual drilled. Please contact us for more information.





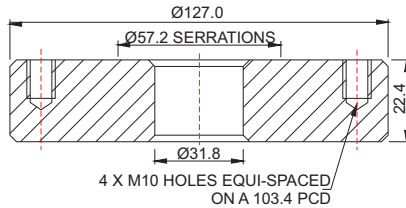
Weld-In Flanges for Airline Valves

Accessories & Spare Parts

Part No: 350/0025



Section View



Specification

Flange type

Weld-in flange

Nominal size

DN32

Flange drilling

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

Material

316L stainless steel

Compatible valve

DN32 airline ball valve

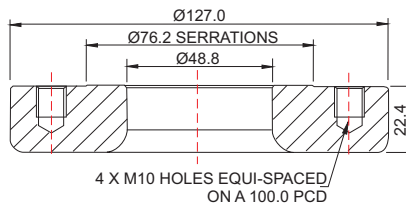
Related Parts

Description	Part No.
Stud kit	350/1300

Part No: 355/1000



Section View



Specification

Flange type

Weld-in flange

Nominal size

DN50

Flange drilling

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

Material

316L stainless steel

Compatible valve

DN50 airline butterfly valve

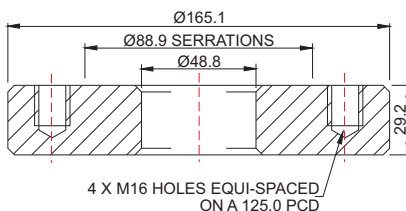
Related Parts

Description	Part No.
Stud kit	350/1300

Part No: 355/3100



Section View



Specification

Flange type

Weld-in flange

Nominal size

DN50

Flange drilling

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

Material

316L stainless steel

Compatible valve

DN50 flanged butterfly valve

DN50 flanged ball valve

Related Parts

Description	Part No.
Stud kit	311/3700



Blind Weld-in Flange: Hydrogen Peroxide

Part No: 324/9007



Specification

The blind weld-in flange is welded into the bottom of the vessel in the normal discharge valve position. If the vessel is changed to standard service, the centre section of the flange can be cut out so that a 45° discharge valve assembly can be installed.

Drilling pattern

8 x M12 holes equi-spaced on a 178mm PCD

Compatible

Standard DN80 45° Cleanflow, Uniflow, Highlift & Univalve footvalves

Material

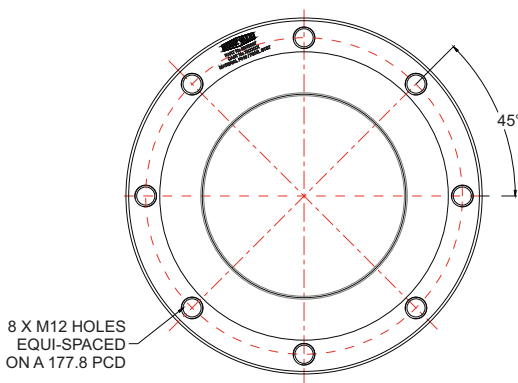
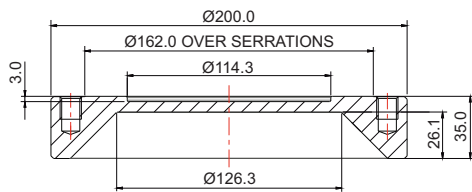
316 stainless steel

Design Conditions

Weight	4.5 Kg
Design Pressure (MAWP):	6.67 Bar
Test Pressure:	10.0 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.

Section View





Footvalve Replaceable Seat Kit - Cleanflow Footvalve

Accessories & Spare Parts



Specification

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

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

Compatibility

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

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

Seating flange materials

316 stainless steel

904L stainless steel

High nickel alloy

Titanium

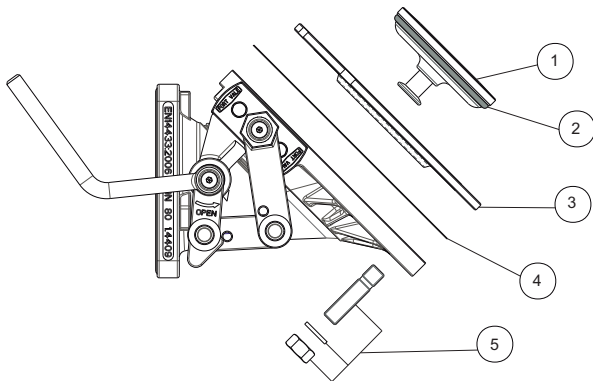
IMPORTANT: A Cleanflow footvalve with a replaceable seat protrudes more from the tank and the outlet centre line is lower than that of a standard valve. Please contact us for dimensions and more information.

Range

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

* The seating flange material changes the Part No.

Kit Parts Drawing



Kit Parts List

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

NOTE: The seating flange material changes the Part No.



Footvalve Replaceable Seat Kit - Highlift Footvalve

Accessories & Spare Parts



Specification

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

Please refer to the Spare Parts Drawing and List.

Seating flange materials

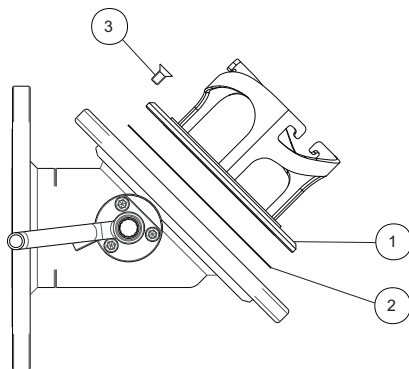
- 316 stainless steel
- High nickel alloy
- Titanium

Range

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

* The seating flange material changes the Part No.

Spare Parts Drawing



Spare Parts List

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

NOTE: The seating flange material changes the Part No.

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



Fusible Link Assembly

Part No: 324/5760



Specification

A fusible link assembly automatically closes a footvalve if there is a fire. The device is installed onto the tank frame and attaches to the footvalve remote closure cable. The fusible element will melt at 100°C. This makes the spring-loaded chain operate the remote closure cable to close the footvalve.

Compatibility

All tank designs and most types of footvalve

Material

304/316 stainless steel

Design Conditions

Weight: 0.5 Kg

Fusible Element:

Operating Temperature: 100°C

Maximum Load: 18.14 Kg

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

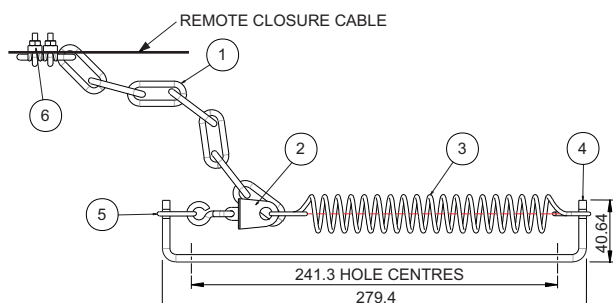
Approvals

Complies with US DOT CFR49 - Ch. 178275 [d]

Related Parts

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

Parts Drawing



Parts List

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

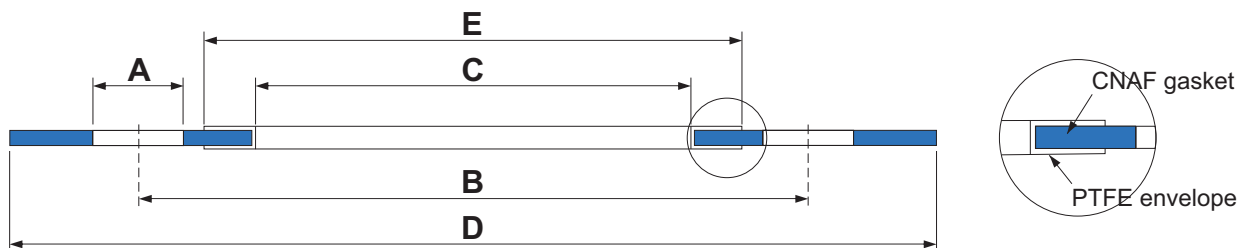
Important Precautions

- A fusible element is designed for a straight pull load. It is not compatible with a radial or twisting load.
- Keep the fusible link assembly in a cool, dry area.
- Do not use the fusible element where the load or temperature will be more than 18.14 Kg and 100°C.
- Do not apply paint or a coating material to the fusible element as this can prevent correct operation.
- Do not apply cleaning chemicals to the fusible element. Cover the element with a clean, wet cloth during cleaning.
- If the fusible link is installed in an atmosphere that can cause stress/strain/corrosion of surfaces, replace the fusible link at least annually if the fusible link shows signs of stress/strain/corrosion.
- Attach the remote closure wire to the chain using cable clamps. There must be the minimum possible amount of slack on the chain when the valve is in the open position.



Valve Gaskets

Accessories & Spare Parts



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

NOTE: All diameters are nominal



Pressure Gauges Accessories & Spare Parts

Standard Pressure Gauge



Tell-Tale Pressure Gauge



Specification

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

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

Pressure range options

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

Material options - internal parts

Brass, stainless steel

Standard Pressure Gauge

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

Tell-Tale Pressure Gauge

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



Temperature Gauges Accessories & Spare Parts

Analogue Temperature Gauge - Capillary



Specification: Analogue

Temperature range options

-20°C to 160°C

-20°C to 200°C

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

Temperature sensor options

2500mm capillary

250mm stainless steel tube with brass thermowell probe

Gauge fill options

Silicone oil filled

Not filled

Analogue Temperature Gauge - Probe



Analogue Temperature Gauges

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

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

Digital Temperature Gauge - Capillary



Specification: Digital

Temperature range options

-200°C to 250°C

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

Temperature sensor options

1000mm capillary

Digital Temperature Gauge

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

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



Safebolt Assembly

Part No: 496/4XXX



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

IMPORTANT: Installation Precautions

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

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

OPIN100, available from Fort Vale.

Specification

Description

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

Eyebolt Options

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

Handnut Options

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

Safebolt Assembly Range

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

NOTE: The eyebolt length changes the Part No.

Related Parts (Refer to the next section)

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

500mm Manlid Cover Design Update: July 2025

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

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

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

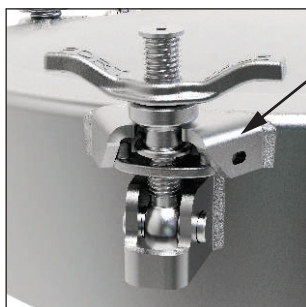


Figure 1
Manlid cover lug bracket before July 2025



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



Swingbolt Assemblies

Accessories & Spare Parts



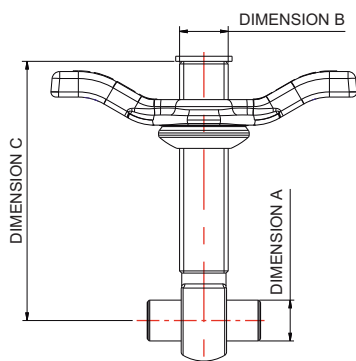
Shown: Swingbolt assemblies with standard handnuts

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

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

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

Standard Swingbolt Assemblies



Specification

Standard eyebolt options

Ø eye: Dimension A - 16mm

Thread: Dimension B - 3/4" BSW

Length: Dimension C - from 49.3mm to 175.3mm

NOTE: Length is measured from the centre of the eye to the end of the bolt

Material: stainless steel

Special eyebolt options

Ø eye: Dimension A - 3/4"

Standard handnut options

Low profile stainless steel

Low profile naval brass with stainless steel thrust washer

Extended stainless steel with anti-galling brass thread

Special handnut options

Extended stainless steel

Low profile stainless steel with anti-galling brass thread

Hexagonal stainless steel nut

Range

Standard Ø16mm Eye Swingbolt Assemblies

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

NOTE: The eyebolt length changes the part no.

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

Range

Special Ø3/4" Eye Swingbolt Assemblies

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

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

Related Parts

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



Manlid & Inspection Hatch Seals - Introduction

Accessories & Spare Parts



Specification

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

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

We supply three seal types:

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

Elastomer Seals

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

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

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

Composite Seals

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

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

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

Composite Seal Types:

Super Tanktyt

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

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

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

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

Fortyt

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

- round section
- square section

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



Manlid & Inspection Hatch Seals - Introduction

Accessories & Spare Parts

Tuffort

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

- round section
- square section

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

Braided Packing (Non Gas-Tight)

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

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

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

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

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

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

Precautions

Seal Gas-Tightness

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

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

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

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

Compatibility

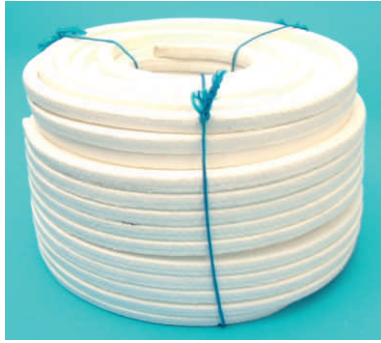
CAUTION: Make sure that the seal material is compatible with the cargo and the service conditions. This includes, but is not limited to:

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



Manlid & Inspection Hatch Seals - Braided Packing

Accessories & Spare Parts



PTFE Impregnated Braided Fibre

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

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

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

Table 1 - With Silicone Core

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

Table 2 - No Silicone Core

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



Related Parts

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

Graphite Impregnated Braided Fibre

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

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

Compatibility

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

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

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

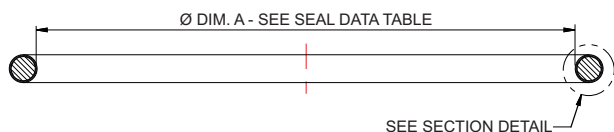


Manlid & Inspection Hatch Seals - Composite Seals

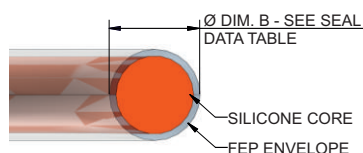
Accessories & Spare Parts

Fortyt: Round Section

Section View



Section Detail



Specification & Design Conditions

Material composition

Core: Silicone
Envelope: FEP - full encapsulation

Standard sizes

Ø300mm, Ø500mm

Design temperature minimum/maximum

-60°C / 205°C (Refer to CAUTION)

Maximum torque

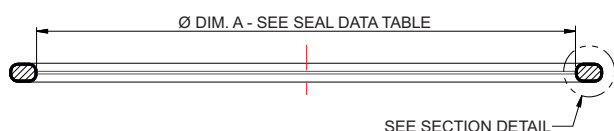
68Nm (Refer to CAUTION)

Seal Data

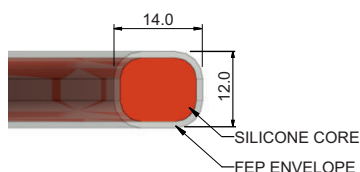
Nominal Ø (mm)	Dim. A (mm)	Dim. B (mm)	Part No.
300	290.0	Ø14.1	5005-30FT
500	485.0	Ø15.0	5005-50FT

Fortyt: Square Section

Section View



Section Detail



Specification & Design Conditions

Material composition

Core: Silicone
Envelope: FEP - full encapsulation

Standard sizes

Ø300mm, Ø500mm

Design temperature minimum/maximum

-60°C / 205°C (Refer to CAUTION)

Maximum torque

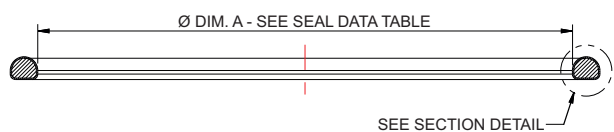
Ø300: 54Nm (Refer to CAUTION)

Ø500: 68Nm (Refer to CAUTION)

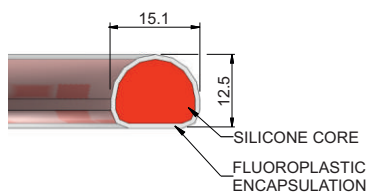
Seal Data

Nominal Ø (mm)	Dim. A (mm)	Part No.
300	292.0	5005-30FTSQ
500	484.0	5005-50FTSQ

Tuffort: D Section



Section Detail



NOTE: Install the Tuffort seal with the curved face down into the seal groove and the flat face up.

Specification & Design Conditions

Material composition

Core: Special silicone
Envelope: Advanced fluoroplastic - full encapsulation

Standard sizes

Ø300mm, Ø500mm

Design temperature minimum/maximum

-60°C / 160°C

Maximum torque

80Nm (Refer to CAUTION)

Seal Data

Nominal Ø (mm)	Dim. A (mm)	Part No.
300	293.0	5005-30TUF
500	485.0	5005-50TUF

CAUTION: Obey the minimum/maximum design temperature and maximum torque limits. If you do not obey these values, it can cause permanent damage to the seal.

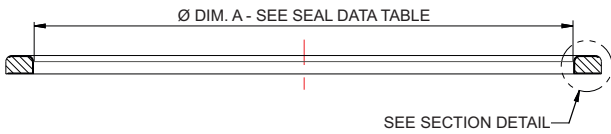


Manlid & Inspection Hatch Seals - Composite Seals

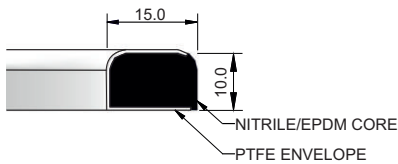
Accessories & Spare Parts

Super Tanktyt

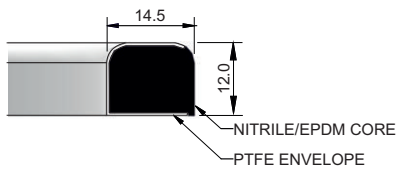
Section View



Section Detail: Ø300



Section Detail: Ø500



NOTE: Install the Super Tanktyt seal with the curved face down into the seal groove and the flat face up.

CAUTION: Obey the minimum/maximum design temperature and maximum torque limits. If you do not obey these values, it can cause permanent damage to the seal.

Specification & Design Conditions

Super Tanktyt is a Fort Vale trade name.
We supply 2 types of core material:

Material composition

Core: High-temperature Nitrile or EPDM
Envelope: PTFE (encapsulated 3 sides)

Standard sizes

Ø300mm, Ø500mm

Design temperature minimum/maximum

High-temp Nitrile: -25°C / 140°C (Refer to CAUTION)
EPDM: -50°C / 150°C (Refer to CAUTION)

Maximum torque

68Nm (Refer to CAUTION)

Seal identification

High-temp Nitrile: The core is marked with the part no.
EPDM: The core is marked with the part no. and a blue/red colour code

Seal Data

Nominal Ø (mm)	Dim. A (mm)	Part No. Nitrile core	Part No. EPDM core
300	293.6	5005-890	5005-890EP
500	483.9	5005-860	5005-860EP

Seal Gas-Tightness

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

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

Compatibility

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

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

For more information about handnut torque values and handnut torque conditions, please refer to the linked document below, or contact us.

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



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

Composite Seals

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

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

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

Compatibility

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

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



Manlid & Inspection Hatch Seals - Elastomer Seals

Accessories & Spare Parts

Elastomer Seals

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

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

Material	Compatibility (Example Only) & Minimum/Maximum Temperature	Pendle Manlid Seal						Euro Lid Seal			Colour Code
		170mm (7")	300mm (12")	460mm (18")	500mm (20")	600mm (24")	Part Number & Section Dimension (mm)	300mm (12")	460mm (18")	500mm (20")	
Butyl	Non-corrosive cargo -40°C to 120°C (-40°F to 248°F)	5005-17B	5005-30B	11536B	5005-50B	5005-60B	5005-33B	5005-47B	5005-53B	Blue	
		16 x 10	16 x 10	14.5 x 11.8	15.24 x 11.8	15.25 x 10	16 x 16	16 x 16	16 x 16		
EPDM	Some corrosive cargoes. Do not use with petroleum-cased cargo -50°C to 150°C (-58°F to 302°F)	5005-17EPD	5005-30EPD	11536EPD	5005-50EPD	5005-60EPD	5005-33EPD	5005-47EPD	5005-53EPD	Red/Blue	
		16 x 10	16 x 10	14.5 x 11.8	15.24 x 11.8	15.25 x 10	16 x 16	16 x 16	16 x 16		
CSM	Moderately corrosive cargo. Do not use with petroleum-cased cargo -40°C to 85°C (-40°F to 185°F)	5005-17CSM	5005-30CSM	11536CSM	5005-50CSM	5005-60CSM	5005-33CSM	5005-47CSM	5005-53CSM	White	
		16 x 10	16 x 10	14.5 x 11.8	15.24 x 11.8	15.25 x 10	16 x 16	16 x 16	16 X 16		
Natural White Rubber	Food products -50°C to 80°C (-58°F to 176°F)	5005-17SWR	5005-30SWR	11536SWR	5005-50SWR	5005-60SWR	5005-33SWR	5005-47SWR	5005-53SWR	Green	
		16 x 10	16 x 10	14.5 x 11.8	15.24 x 11.8	15.25 x 10	16 x 16	16 x 16	16 x 16		
Neoprene	Non-corrosive cargo -30°C to 100°C (-22°F to 212°F)	5005-17NR	5005-30NR	11536NR	5005-50NR	5005-60NR	5005-33NR	5005-47NR	5005-53NR	Red	
		16 x 10	16 x 10	14.5 x 11.8	15.24 x 11.8	15.25 x 10	16 x 16	16 x 16	16 x 16		
Nitrile (Black)	Aliphatic hydrocarbons -25°C to 100°C (-13°F to 212°F)	5005-17N	5005-30N	11536N	5005-50N	5005-60N	5005-33N	5005-47N	5005-53N	Red	
		16 x 10	16 x 10	14.5 x 11.8	15.24 x 11.8	15.25 x 10	16 x 16	16 x 16	16 x 16		
Orange Silicone	High temperature non-corrosive cargo -50°C to 200°C (-58°F to 392°F)	5005-17S	5005-30S	11536S	5005-50S	5005-60S	5005-33S	5005-47S	5005-53S	Red	
		16 x 10	16 x 10	14.5 x 11.8	15.24 x 11.8	15.25 x 10	16 x 16	16 x 16	16 x 16		
White Silicone	Food products. FDA approved -50°C to 200°C (-58°F to 392°F)	5005-17WS	5005-30WS	11536WS	5005-50WS	5005-60WS	5005-33WS	5005-47WS	5005-53WS	Yellow	
		16 x 10	16 x 10	14.5 x 11.8	15.24 x 11.8	15.25 x 10	16 x 16	16 x 16	16 x 16		
Viton A	Moderately corrosive cargo -15°C to 200°C (5°F to 392°F)	5005-17VR	5005-30VR	11536VR	5005-50VR	5005-60VR	5005-33VR	5005-47VR	5005-53VR	Yellow	
		16 x 10	16 x 10	14.5 x 11.8	15.24 x 11.8	15.25 x 10	16 x 16	16 x 16	16 x 16		

Compatibility

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

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



Weld-In Sockets for Relief Valves

Accessories & Spare Parts

Threaded Weld-In Sockets



Specification

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

Nominal sizes

From DN15 to DN65

Thread sizes

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

Material

316 stainless steel

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

Weld-In Sockets

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

DIN11851 Weld-In Sockets



Specification

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

Nominal sizes

DN50, DN65, DN80

Compatible parts

DN40, DN50 and DN65 relief valves

Material

Socket & nut: 316 stainless steel

Seal: Silicone

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

DIN11851 Hygienic Fittings

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



Valve Repair and Maintenance Accessories & Spare Parts



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

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

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

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

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



Specification

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

Valve connection

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

Test rig supply connection

¼" BSP female socket

Test range

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

Related documents

Operating Instructions: OPIN26. Please contact us

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



Specification

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

Compatible

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

DN100 Kit: compatible with DN100 Cleanflow & Highlift footvalves

Connection

Compatible with power tools with a ½" chuck

Kit contents

Selection of grinding and polishing discs

Selection of face-forming tools

Instruction manual

Related documents

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

Spare Parts: Grinding Discs

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



Valve Repair and Maintenance Accessories & Spare Parts



Relief Valve Tool Kits

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



Footvalve Tool Kits

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



Ball Valve Tool Kits

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

Butterfly Valve Tool Kits

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



Safeload Wear Gauges, Tools & Spares Kits

Accessories & Spare Parts



We supply a selection of wear gauges, special tools and kits to check the condition and do scheduled maintenance on the Safeload range of equipment.

We recommend that you use the correct special tools and only genuine spare parts. These will help you do maintenance and repairs quickly and easily without causing damage.

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

CAUTION: To do maintenance, you must have experience and qualifications related to equipment installation on pressure vessels and systems.

Loading Adaptor Wear Gauge



Part No: 94/2150

Couplers, dump adaptors and caps can cause wear to the diameter and rear contact face of loading adaptors. A worn loading adaptor can cause an incorrect connection and product leakage.

The wear gauge helps you check the condition of the adaptor. It will show:

- if the loading adaptor diameter is under-size.
- if the loading adaptor diameter is over-size (caused by de-lamination of the steel on the rear contact face).
- if there is too much wear to the rear contact face.
- if the wear is less than the permitted limit and the loading adaptor is satisfactory.

The wear gauge is also compatible with the Fort Vale coupler parking nose, part no. 94/25PC.

Related Document: Operating Instructions OPIN32

Safeload Coupler Wear Gauge



Part No: 94/3050

The Safeload coupler wear gauge helps you check the condition of the coupler latches and operating mechanism. It will show:

- if there is too much wear to the latches.
- if there is some wear to the latches and you must schedule maintenance.
- if the wear is less than the permitted limit and the coupler is satisfactory.

The coupler wear gauge is compatible with semi-automatic, high-pressure and manual Safeload couplers.

Related Document: Operating Instructions OPIN33



Safeload Wear Gauges, Tools & Spares Kits

Accessories & Spare Parts

Safeload Coupler Seal Replacement Tool



Part No: 400/94X0

The Safeload coupler seal replacement tool helps you set the coupler in the correct position to give access to replace the seals.

The tool has two different faces, one to let you replace the main seal and seal carrier O rings and the other to let you replace the spindle O rings.

Range

Description	Part No.
Compatible with standard semi-automatic & manual coupler	400/9420
Compatible with high-pressure coupler	400/9440

Seal Kits

We supply seal kits in a range of seal materials for our Safeload couplers, please refer to the coupler data sheet for more information.

Safeload Accessory Kits

Description	Part No.
Seal kit for MK2 Safeload coupler, part no. 94/2000 (pre-2007)	94/20SK
Loading arm assembly kit	94/7AK
Loading arm swivel grease nipple kit	94/7GNK
Loading arm base swivel stop device: stop plate & stop bar	94/7079/XXA 94/7081

Related Parts

We also recommend our range of compatible accessories:

- API coupler parking nose
- Loading arm spools
- Drop hoses

Please contact us for more information about these parts.

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APPENDIX

Accessories & Spare Parts

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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.



Bolt Torque Guide & Step Loading Procedure

Installation & Operating Instructions

Flange Bolting

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

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

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

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

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

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

Bolt Torque

Bolt Torque Values

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

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

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

Bolt Torque Procedure

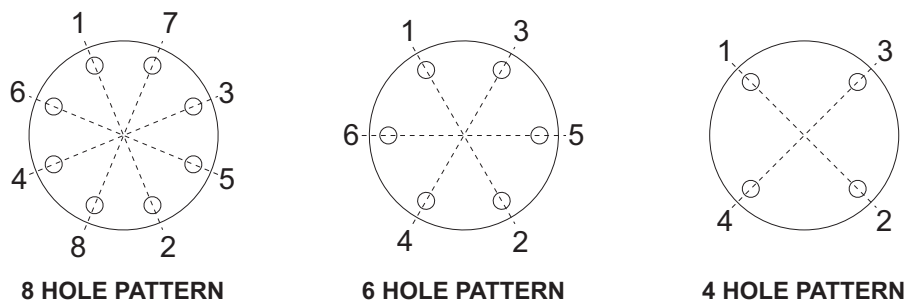
To install flanged parts correctly:

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

Table BT1

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

Figure BT1





Bolt Torque Guide & Step Loading Procedure

Installation & Operating Instructions

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.



Handnut Torque Guide - Hinged Manlid Assemblies

Installation & Operating Instructions

Operating Conditions

- When the vessel is in service, all the swingbolt assemblies on the manlid or inspection hatch assembly must be correctly installed and in the closed position.
- Obey the given Handnut Torque Values.
- Make sure that the seal material is compatible with the cargo and the vessel operating conditions.

Handnut Torque Values

If the manlid cover is marked with a maximum torque value, obey that torque value. If there is no torque value on the manlid cover, obey the torque values given in Table MT1. To apply the recommended handnut torque, use a handnut torque adaptor, part number 495/10T0 and a torque wrench.

NOTE: The information given in Table MT1 is applicable to round, hinged manlid assemblies only. This information is not applicable to flat bolted or elliptical manlid assemblies.

Table MT1 - Manlid Maximum Recommended Torque Values

Manlid Cover Type	MAWP	Handnut Maximum Recommended Torque
Single skin	2.67 Bar	68 Nm (50 Lb.ft)
EN14025 double skin	3 Bar & 4 Bar	93.2 Nm (68.7 Lb.ft) NOTE: Some seals are not compatible - See SEAL CAUTION
ASME double skin	3 Bar & 4 Bar	118 Nm (87 Lb.ft) NOTE: Some seals are not compatible - See SEAL CAUTION
All other manlids	-	50 Nm (37 Lb. ft)

SEAL CAUTION: Some seal materials are not compatible with the Handnut Maximum Recommended Torque value for the Manlid Cover Type given in Table MT1. Please refer to Table MT2 - Seal Maximum Recommended Torque Values. Do not torque the handnuts more than the Handnut Maximum Recommended Torque value applicable to the seal material type. Too much tightening force can cause damage to the seal, which can cause the manlid assembly to leak.

Table MT2 - Seal Maximum Recommended Torque Values

Seal Material Type	Tank Type	Handnut Maximum Recommended Torque
Braided Packing	EN14025	93.2 Nm (68.7 Lb.ft)
	ASME	118 Nm (87 Lb.ft)
Composite E.g. Super Tanktyt, Tuffort, Fortyt	N/A	68 Nm (50 Lb.ft) - See SEAL CAUTION
Elastomers E.g. Viton, EPDM	N/A	Will seal at 20 Nm (14.8 Lb.ft)
	EN14025	93.2 Nm (68.7 Lb.ft)
	ASME	118 Nm (87 Lb.ft)

Handnut Torque Conditions

The given Handnut Maximum Recommended Torque values are based on:

- unlubricated swingbolt assemblies.
- a neckring that is flat to a tolerance of 2mm.
- a neckring that is round to a tolerance of 4mm.

If a lubrication is used, the Handnut Maximum Recommended Torque values will decrease.

CAUTION: If the neckring flatness and roundness does not obey the permitted tolerances, the manlid cover and neckring seal faces will not align correctly and the assembly will leak. Fort Vale accepts no responsibility for distortion caused by welding.

NOTE: Bolt stress can decrease after initial tightening. The cause of this can be deformation of the seal, particularly with soft materials such as elastomers. We recommend that you check the handnut torque again after a period of time - a minimum of 4 hours.



Troubleshooting - Valves

Installation, Operation & Maintenance Instructions

Important Safety Notice

If you disassemble a valve from a vessel to solve a problem or a leak, do a risk assessment and obey the **Maintenance Safety Precautions**. You will need torque spanners that are compatible with the stud kits and bolting kits.

If you disassemble a flanged connection, we recommend that you always install a new gasket when you assemble the parts again.

Read **Client Responsibilities - Valves & Accessories**.

If there is a leak from a flanged connection, do these inspections:

- Make sure that the fasteners are tightened to the correct torque. If necessary, tighten the fasteners in a diametrically opposite sequence. Refer to **Bolt Torque Guide & Step Loading Procedure**.
- Examine the scrolled sealing faces of the flanges. Make sure they are clean and that there is no damage.
- Examine the flanges for distortion caused by welding, over-tightening or impact. Flanges must be flat to 0.15mm.
- Examine the gasket for signs of damage or wear. Always install a new gasket.

If there is a leak from a threaded connection, do these inspections:

- Make sure that the connection is tightened to the correct torque. Use the correct tightening tool.
- **WARNING:** If you must tighten or loosen a relief valve, do not hold the cap to turn the valve. Only hold the valve body to turn the valve. The valve is spring-loaded and turning the cap is dangerous.
- Examine the seal area for signs of damage or debris. Install a new seal.
- Examine the male and female threads for signs of damage.

If there is a leak from the valve main seal, do these inspections:

- Make sure that there is no debris or solid cargo in the main seal area.
- Examine the main seal for signs of damage.
- Examine the sealing face for signs of damage or corrosion.
- Make sure that the vessel operating pressure is compatible with the valve operating pressure.

If the valve will not open/close, do these inspections:

- Make sure there are no TIR fasteners.
- If there is a handle, make sure it is correctly installed.
- Make sure that the valve is correctly aligned to the mating flange.
- Make sure that there is no debris or solid cargo in the closure plate/poppet area,
- Examine the spindle area for signs of cargo in the spindle assembly.
- Make sure that the vessel operating pressure is compatible with the valve operating pressure.

Technical Support

If the problem continues after you have done the inspections, please contact us.



Troubleshooting - Relief Valves

Installation, Operation & Maintenance Instructions

Important Safety Notice

If you disassemble a valve from a vessel to solve a problem or a leak, do a risk assessment and obey the **Maintenance Safety Precautions**. You will need torque spanners that are compatible with the stud kits and bolting kits.

If you disassemble a flanged connection, we recommend that you always install a new gasket when you assemble the parts again.

Read **Client Responsibilities - Valves & Accessories**.

If there is a leak from a flanged connection, do these inspections:

- Make sure that the fasteners are tightened to the correct torque. If necessary, tighten the fasteners in a diametrically opposite sequence. Refer to **Bolt Torque Guide & Step Loading Procedure**.
- Examine the scrolled sealing faces of the flanges. Make sure they are clean and that there is no damage.
- Examine the flanges for distortion caused by welding, over-tightening or impact. Flanges must be flat to 0.15mm.
- Examine the gasket for signs of damage or wear. Always install a new gasket.

If there is a leak from a threaded connection, do these inspections:

- Make sure that the connection is tightened to the correct torque. Use the correct tightening tool.
- **WARNING:** If you must tighten or loosen a relief valve, do not hold the cap to turn the valve. Only hold the valve body to turn the valve. The valve is spring-loaded and turning the cap is dangerous.
- Examine the seal area for signs of damage or debris. Install a new seal.
- Examine the male and female threads for signs of damage.

If there is a leak from the pressure plate/vacuum poppet area, do these inspections:

- Make sure that there is no debris or solid cargo in the pressure plate/vacuum poppet area.
- Examine the pressure/vacuum O ring for signs of damage.
- Examine the valve seating face for signs of damage or corrosion.
- If there is a composite pressure plate, make sure the nut/screws are tightened to the correct torque.

If the valve does not open/close at the correct pressure, do these inspections:

- Make sure that there is no debris or solid cargo in these areas: pressure plate/vacuum poppet area, body ports and bore, between the spring guide.
- Examine the spring for signs of damage.
- Make sure that there is no blockage in the mating flange/socket.
- Do a pressure test to the valve on a calibrated test rig and adjust the settings if necessary.

Technical Support

If the problem continues after you have done the inspections, please contact us.



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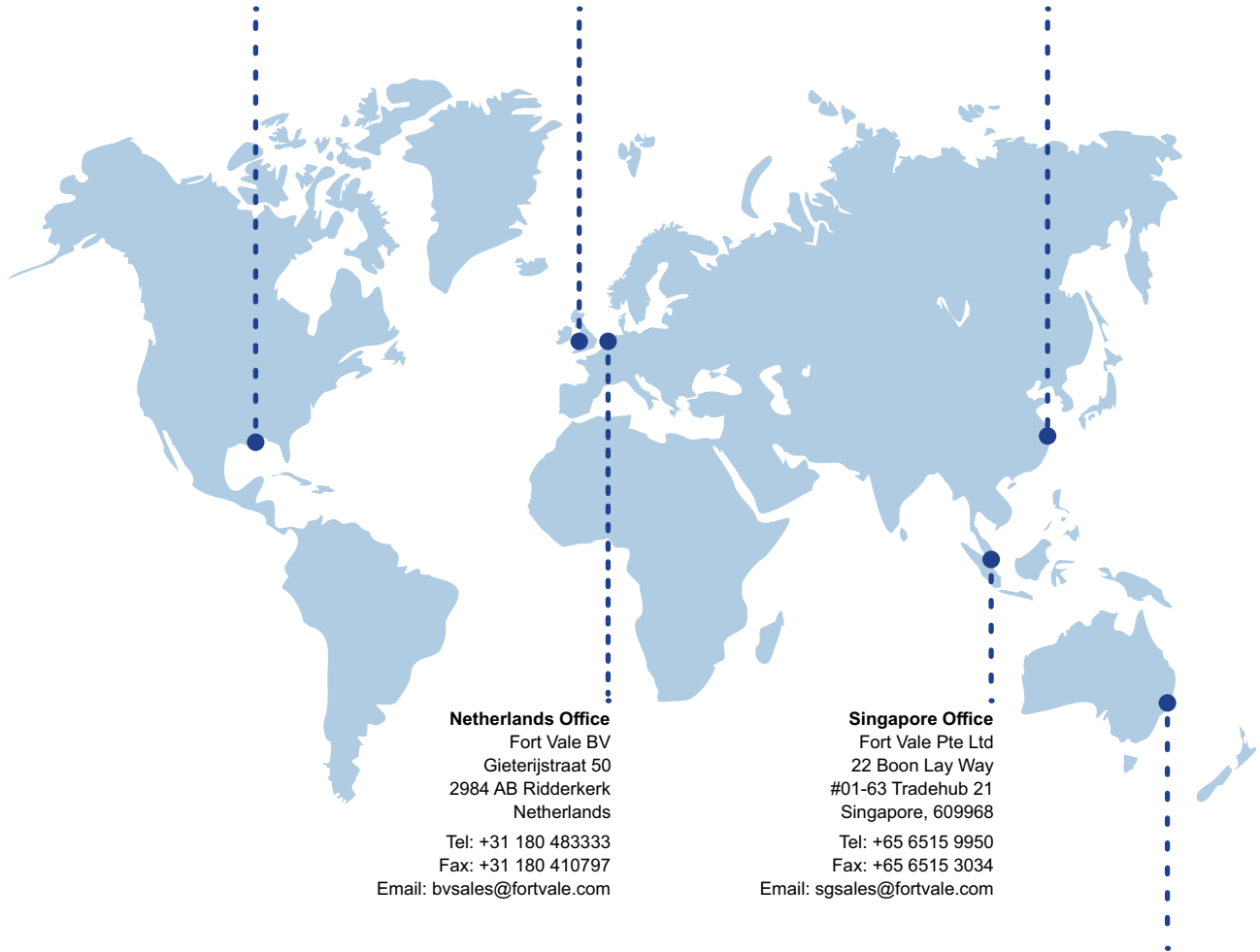
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