

Mann

SBCouplings

Safety Break-away Couplings



Product Information

Art. No: PR-010301- 0112 Version: 090828

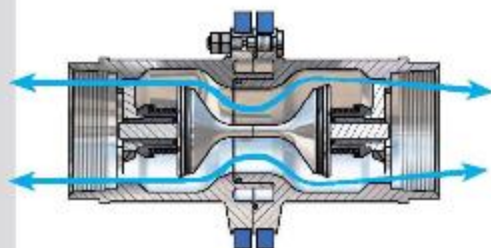


Safety Break-away couplings are used to prevent pull away accidents, protect terminal and loading/unloading equipment and eliminated unwanted product release.

The break-away couplings has a diverted breaking point which will break at a determined break-load where upon the internal valves will automatically close on both sides.

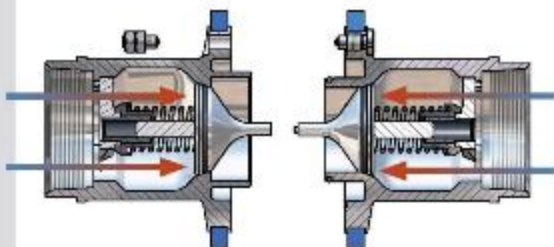
This will in a longer time frame minimize down time, save money, equipment and the environment.

How it works - **before** and **after** emergency disconnect



SBCoupling before emergency disconnect

The safety break-away valve consists of two halves, each with a valve that has a o-ring seal.



SBCoupling after emergency disconnect

When the SBCouplings separate, it allows the valves to close. The two valves closes rapidly, minimizing exposure to personnel and the environment.

The SBCouplings, Safety break-away couplings has three external break bolts. In the case of axial tension all of the bolts take up the force corresponding to the break force on the hose with a safety margin.

Non-axial forces concentrate the tension forces more strongly on one bolt, so that the safety break-away coupling reacts in a natural way to the reduction of the hose break forces.

Features and Applications

Features

- Passive security against situations where a hose or loading arm could be subjected to inadvertent excessive loads.
- Design features are a simple mechanism and no loose components which could be lost after release.
- Operates independently of shut off safety system and does not require an external power source.
- Easy to reset on site with one person
- High flowrate / low pressure drop
- Very low loss, positive shut-off of both coupling halves results in minimum product loss.
- Lightweight and robust design.
- Available with ANSI/DIN flanges or threaded (BSP or NPT).

Applications

Industrial

- Plant engineering and construction
- Power plant construction
- Chemical industry
- Food processing industry
- Process technology
- Tank cleaning
- Filling systems for: airfields, railcars, tanker trucks, tank containers.

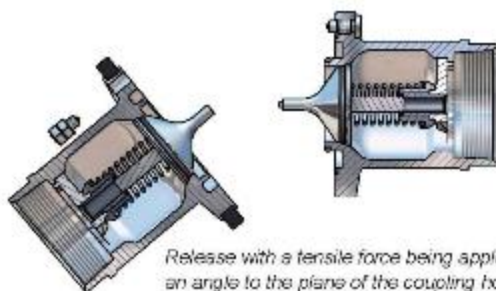
Marine

- Ship to Offshore platform
- Ship to ship product transfer operations.

The Safety Break-away couplings are available as Industrial and Marine type.

Industrial Break-away

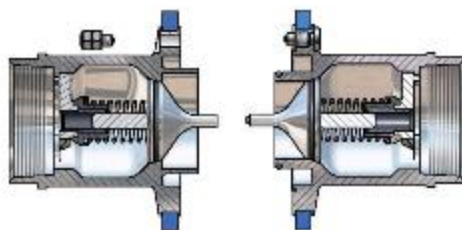
Typically installed into loading arm and hose assemblies, where at least one side of the coupling is attached to a rig and fixed point.



Release with a tensile force being applied at an angle to the plane of the coupling housing, up to 90 degrees.

Marine Break-away

Marine Safety Break-aways are designed to only release by inline pull and used between two strings of hose.



Release by inline pull only.

Industrial Break-away coupling

Industrial Break-away coupling is utilized all industrial product transfer installations.

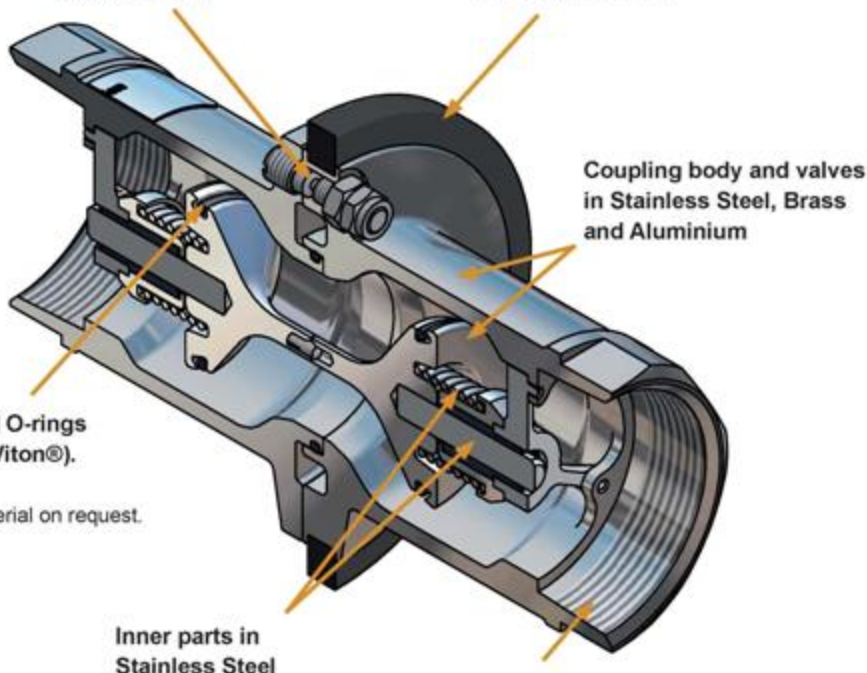
The industrial SBCouplings are specifically designed to be able to activate with a tensile force being applied at an angle to the plane of the coupling housing, up to 90 degrees.



Advantages

Breaking bolts in
Stainless Steel

Protecting ring
in PUR (Vulkollan®)



Standard O-rings
in FPM (Viton®).

Other material on request.

Inner parts in
Stainless Steel

Coupling body and valves
in Stainless Steel, Brass
and Aluminium

Connections: Parallel BSP threads with flat sealing surface, tapered internal NPT threads, flanges and Victaulic.

Examples of Connection combinations

BSP Female thread / BSP Female thread



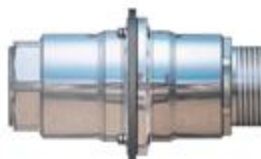
NPT Female thread / NPT Female thread



Male thread / Male thread



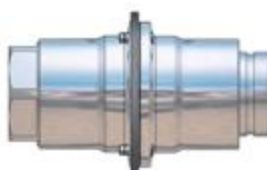
NPT Female thread / NPT Male thread
also available with BSP



Victaulic / Victaulic



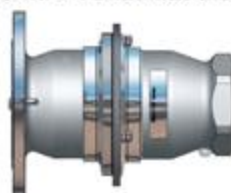
NPT Female thread / Victaulic



Flange / Flange



Flange / Thread
(BSP/NPT -Female/Male and Victaulic)



Other combinations of connections on request

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Coupling sizes and connections

Nominal width	Breaking force ¹⁾	Connection ²⁾	kg (Stainless)	kg (Aluminium)
1"	4 kN	1" Thread	-	-
		1" Flange	-	-
2"	13 kN	2" Thread	2,6	0,9
		2" Flange	7,3	2,5
2½"	22 kN	2½" Thread	7,4	2,5
		2½" Flange	13,2	4,5
3"	33 kN	3" Thread	8,5	2,9
		3" Flange	15,1	5,1
4"	52 kN	4" Thread	15,5	5,3
		4" Flange	20,7	7,0
6"	92 kN	6" Thread	46,8	15,9
		6" Flange	57,6	19,6

1) Mann Tek Standard. Other on request.

2) Threads: Female and Male (F/F - F/M - M/M) BSP, Female and Male (F/F - F/M - M/M) NPT
 Flanges: ANSI 150 psi / ANSI 300 psi, DN 25-150 PN 10/16 and PN 25/40, TW1/50, TW3/80, TW7/150, TT M.A.
 Others: Victaulic

Materials

Component	Material	Standard	Operation temperature ³⁾
Housing Check valve	SS (Stainless Steel)	EN 10270 - 1.4404+AT	-40°C to 250°C
		EN 10213 - 1.4409+AT	
	Br/Gm (Brass/Gun metal)	EN 12164 - CW614N	
		EN 1982 - CB491K-GS	
	AL (Aluminium)	EN 755 - AW-6262-T6	
EN 1706 -AC-42100-T6			
Inner parts	SS (Stainless Steel)	EN 10272 - 1.4401	

Seals

Component	Material	Description ⁴⁾	Operation temperature ³⁾
O-ring	FKM	Viton™	-30°C to 200°C
	EPDM	Buna AP	-40°C to 120°C
	FFKM	Kalrez™ Chemraz™	-15°C to 230°C
	NBR	Perbunan	-38°C to 80°C

Working pressure: 16 bar / 25 bar 150psi / 300 psi
 40 bar / 450 psi on request.

3) For temperature stability of the seal material used must be considered separately for each individual case

4) Kalrez, Viton = Registered Trademarks of DuPont, Chemraz = Registered Trademark of Green Tweed

Marine Break-away coupling - introduction



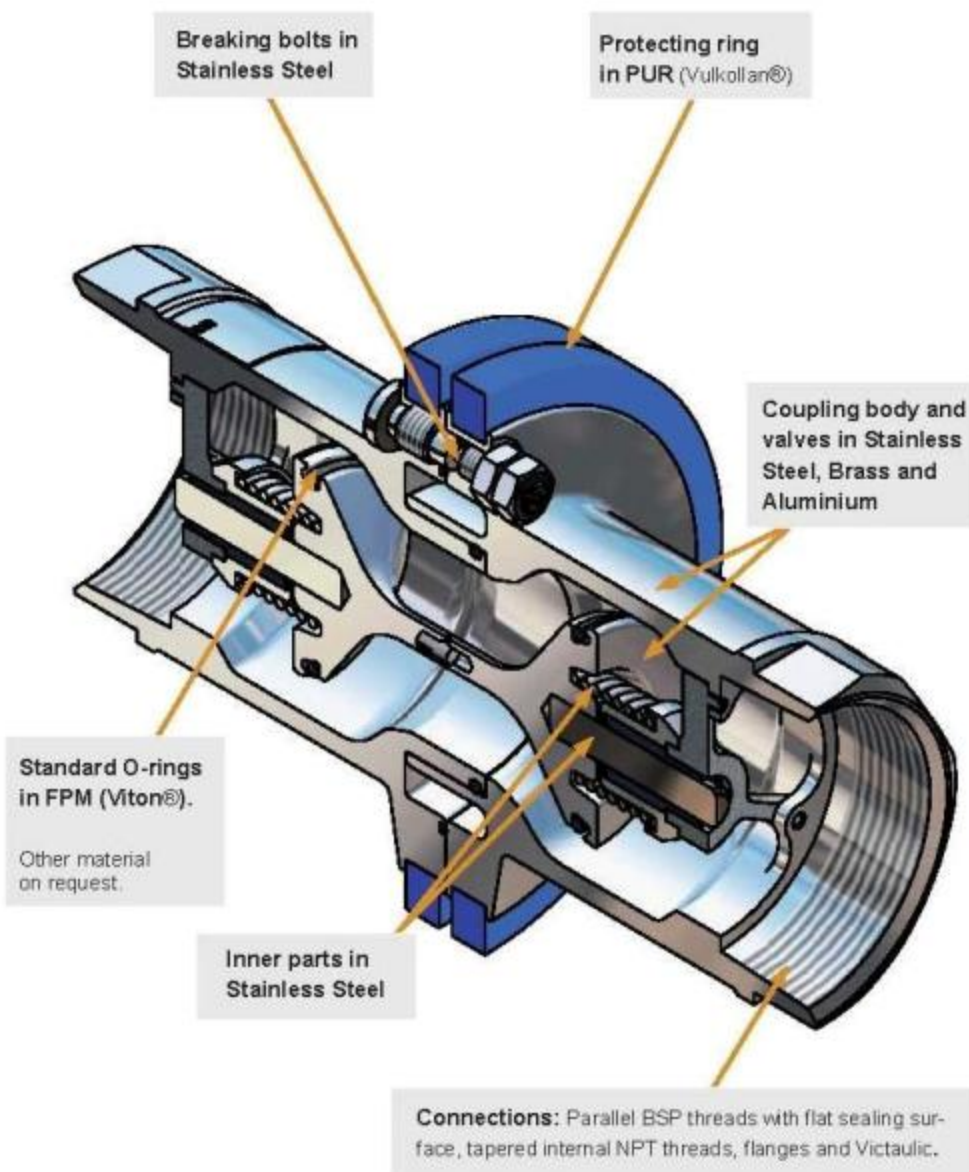
Marine version of SBCouplings are designed specifically to be installed within a hose string, where the coupling would have a length of hose attached to both sides.

This coupling incorporates the same internal mechanism as our Industrial couplings, but has additional external features that provide increased resistance to torsional and bending moment forces which may be applied to the coupling, preventing premature activation in the unpredictable marine environment.

Typical applications include ship to offshore platform, and ship to ship product transfer operations.



Marine Break-away coupling - Advantages



Examples of Connection combinations

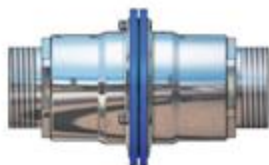
BSP Female thread / BSP Female thread



NPT Female thread / NPT Female thread



Male thread / Male thread



NPT Female thread / NPT Male thread
also available with BSP



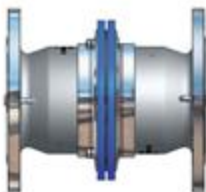
Victaulic / Victaulic



NPT Female thread / Victaulic



Flange / Flange



Flange / Thread
(BSP/NPT -Female/Male and Victaulic)



Other combinations of connections on request

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Coupling sizes and connections

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		1" Flange	-	-
2"	13 kN	2" Thread	2,6	0,9
		2" Flange	7,3	2,5
2½"	22 kN	2½" Thread	7,4	2,5
		2½" Flange	13,2	4,5
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		3" Flange	15,1	5,1
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 Flanges: ANSI 150 psi / ANSI 300 psi, DN 25-150 PN 10/16 and PN 25/40, TW150, TW380, TW7150, T.T.M.A.
 Others: Victaulic

Materials

Component	Material	Standard	Operation temperature ³⁾
Housing Check valve	SS (Stainless Steel)	EN 10270 - 1.4404+AT	-40°C to 250°C
		EN 10213 - 1.4409+AT	
	Br/Gm (Brass/Gun metal)	EN 12164 - CW614N	
		EN 1982 - CB491K-GS	
	AL (Aluminium)	EN 755 - AW-6262-T6	
	EN 1706 - AC-42100-T6		
Inner parts	SS (Stainless Steel)	EN 10272 - 1.4401	

Seals

Component	Material	Description ⁴⁾	Operation temperature ³⁾
O-ring	FKM	Viton™	-30°C to 200°C
	EPDM	Buna AP	-40°C to 120°C
	FFKM	Kalrez™ Chemraz™	-15°C to 230°C
	NBR	Perbunan	-38°C to 80°C

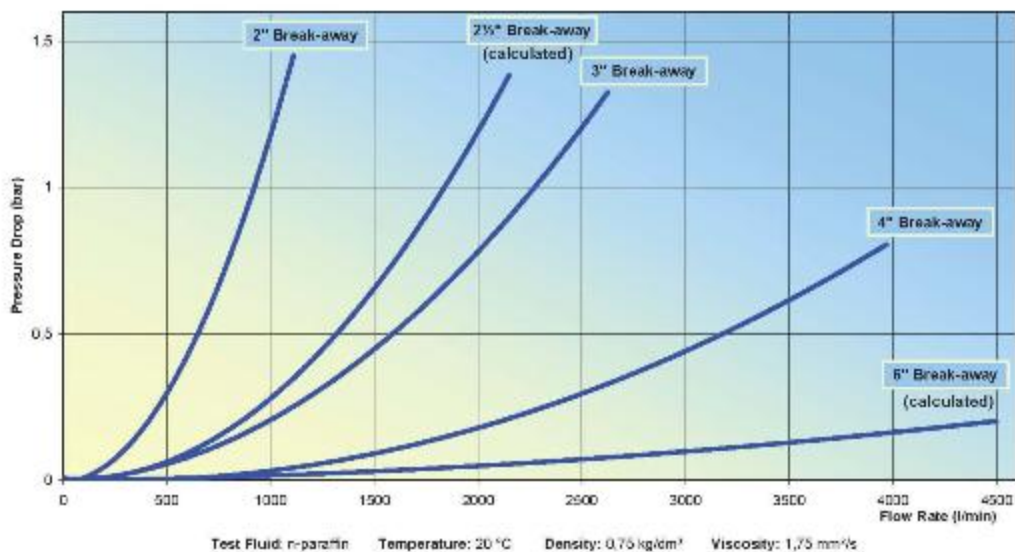
Working pressure: 16 bar / 25 bar 150psi / 300 psi
 40 bar / 450 psi on request.

3) For temperature stability of the seal material used must be considered separately for each individual case

4) Kalrez, Viton = Registered Trademarks of DuPont, Chemraz = Registered Trademark of Green Tweed

Pressure Drop Curve

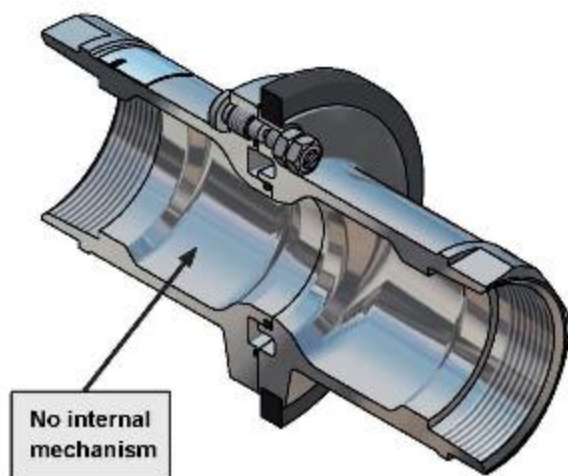
FLOW DIAGRAM (Pressure Drop)
for Industrial and Marine Break-away Couplings



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Non - Closure Break-away couplings

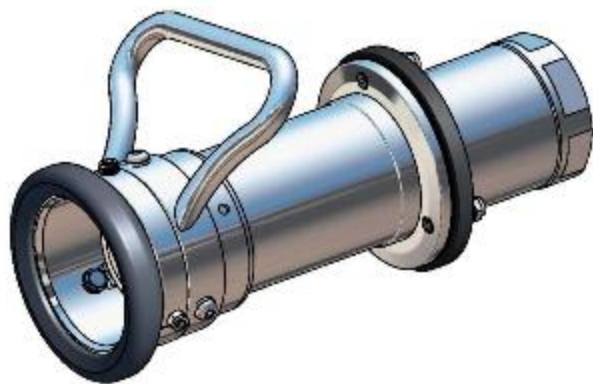
Industrial or Marine Break Away - Non Closure



Non-closure versions are available in both the Industrial and Marine versions of our couplings, the Non-Closure design acts purely as an identified safe parting point within the transfer system, protecting equipment and personnel.

With no internal mechanism these couplings are utilised when the medium is non-hazardous and spillage is acceptable.

Option - Dry disconnect coupling Hose unit with Break-away integrated



Where there is a risk of excessive force on the hose due to unexpected movement between the loading and unloading station, combining the Dry Disconnect Coupling with a Safety Break Away coupling.

Safety Break-away coupling - Cable release series

General info

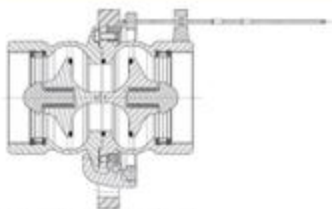
For safe transfer of all your hazardous and non-hazardous products.

The Break-away Cable release series, is designed specifically to minimize spillage and damage associated with drive away **and** pull away incidents.

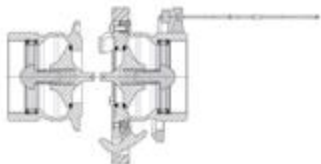
The Coupling automatically senses an excessive load, closes its valves and then permits disconnection.



How it works



SBCouplings before emergency disconnect



SBCouplings after emergency disconnect

Function

The safety break-away valve consists of two halves, each with a valve that has a flat type-sealing surface similar to a dry disconnect coupling.

The valve remains constantly open under normal use.

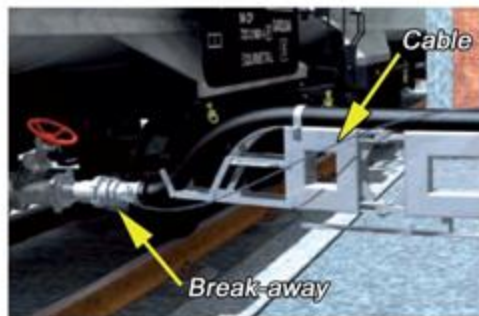
The two halves of the break-away coupling only close when there is excessive force, such as in a Road Tanker, or Rail Car drive away situation.

The release is executed by pulling out the locking bolts with the help of the cable. The locking bolts hold the two pressure clamps in position which press both casing halves of the SBCoupling together. A guiding pin set in between serves the alignment of the locking bolts.

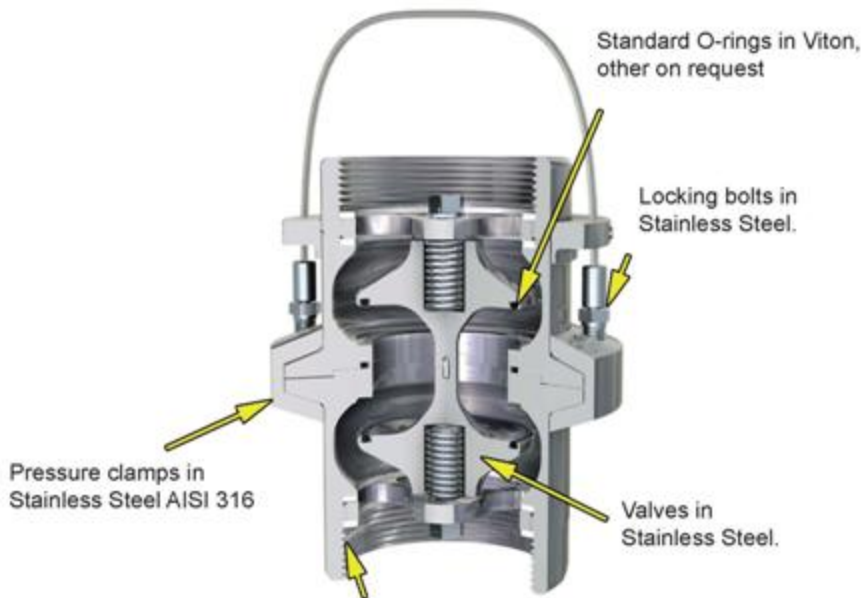
When the SBCouplings separate, this allows the poppets to close. Product loss is minimized because of the two poppets close rapidly, minimizing exposure to personnel and the environment.



- Passive security against situations where a hose or loading arm could be subjected to inadvertent excessive loads.
- Minimal Tension forces on the cable are required to release the SBCouplings-system.
- Design features are a simple mechanism and no loose components which could be lost after release.
- Operates independently of shut off safety system and does not require an external power source.

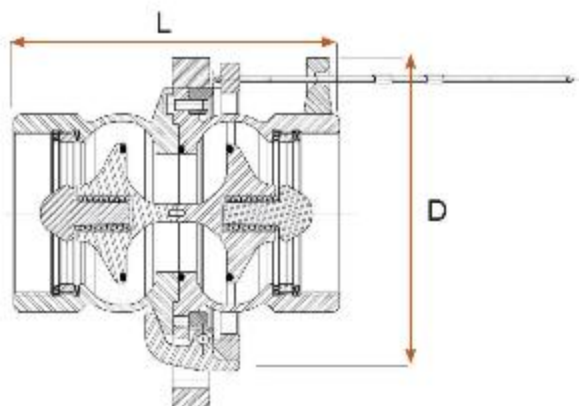


Advantages



The Hose unit are supplied with parallel BSP threads and flat sealing surface. This allows the use of the full thread length for screwed-on parts. Also available with flange and tapered internal NPT threads.

Data, Threaded version



SDC Couplings, Cable release series, with Female BSP-threads (ISO228)

Nominal width BSP-threads	Connection	D (mm)	L(mm)	kg (stainless)
2"	DN 50	125	124	2,5
3"	DN 80	188	175	7,4
4"	DN 100	243	209	13,7

SDC Couplings, Cable release series, with Female NPT-threads (B1.20.3)

Nominal width BSP-threads	Connection	D (mm)	L(mm)	kg (stainless)
2"	DN 50	125	144	4,2
3"	DN 80	188	195	8,6
4"	DN 100	243	229	16,1

1½" and 2½" only on request

Materials:

Stainless Steel AISI 316Ti.

O-rings: FPM (Viton®).

Flat seals in PTFE (Teflon®).

Other materials on request.

Working pressure:
PN 25 (360 psi)

Viton® and Teflon® are Registered Trademarks of DuPont

Data, Flanged version

SDC Couplings, Cable release series, Flanged version)

Size	Connection	D (mm)	L (mm)	kg (stainless)
6"	DN 150 PN 10/16	321	307	51,7
	DN 150 PN 25/40	321	307	51,7
	6" ANSI 150 psi	321	314	51,7
8"	DN 200 PN 10	427	364	97,4
	DN 200 PN 16	427	364	96,8
	8" ANSI 150 psi	427	373	101,9

Materials:

Stainless Steel AISI 316Ti.

O-rings: FPM (Viton®).

Flat seals in PTFE (Teflon®).

Working pressure:

PN 25 (360 psi)

Viton® and Teflon® are Registered Trademarks of DuPont

Release forces and length on pull cable

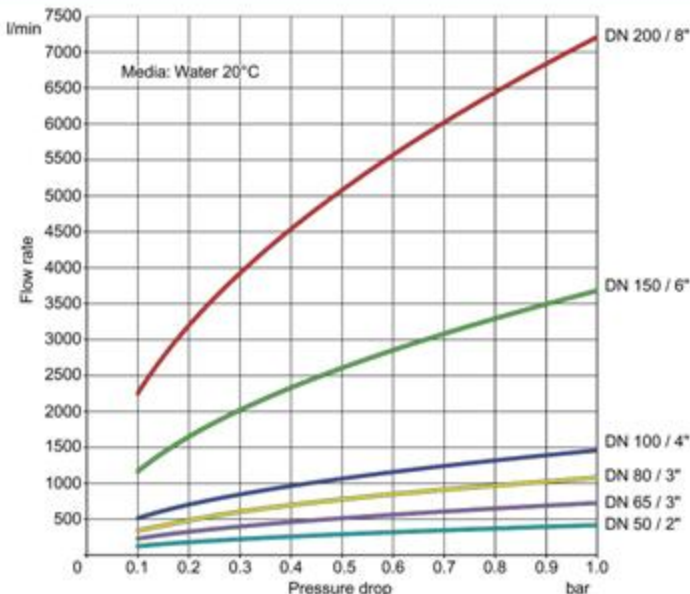
DN / inch	Release force at 25 bar nominal pressure
DN 50 / 2"	0.3 kN
DN 80 / 3"	0.5 kN
DN 100 / 4"	1.5 kN
DN 150 / 6"	2.4 kN
DN 200 / 8"	3.0 kN

The tie rod of the pull cable may be located no more than 0.5 m away from the range side connection of the supply line.

The maximum release angle of the pull cable should not exceed 30°.

Length of the pull cable	
Hose / Pipe length	Pull cable
1000 mm	900 mm
1500 mm	1350 mm
2000 mm	1800 mm
2500 mm	2250 mm
3000 mm	2700 mm
>3000 mm	Supply line minus 0.5 m

Pressure Loss Curve



Range of applications

Industrial

- Plant engineering and construction
- Power plant construction
- Chemical industry
- Food processing industry
- Process technology
- Tank cleaning

Filling systems for:

- airfields
- railcars
- tanker trucks
- ship
- tank containers
- Filling and emptying liquid gas (LPG)

Media

Lyes and acids
 Fuels and oils
 Sea-water
 Tap water, waste water
 Toxic liquid
 Gases, compressed air
 Superheated steam
 Powders, dust
 Foodstuffs
 Pharmaceutical products
 LPG/LNG CNG
 Materials hazardous to the environment

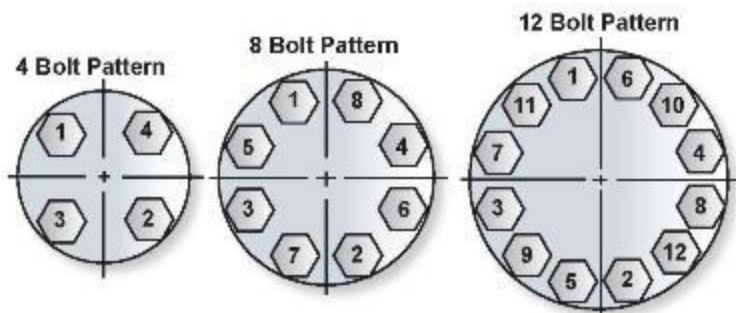
Mounting instruction

- Remove the packaging and the flange protection
- Check the coupling for damages before mounting.
- To prevent damages during mounting a suitable wrench should be used for the intended bolts and nuts
- Ensure that the product line is empty and all valves are close before you connect the coupling into the line.
- Tightening torque for bolts:

Metric	
Size	8.8
M8	24 Nm
M10	50 Nm
M12	85 Nm
M16	210 Nm
M20	410 Nm
M22	550 Nm
M24	700 Nm

Inch	
Size	A 193 B7
5/16 -18 UNC	16 lbf-ft
3/8 -16 UNC	29 lbf-ft
1/2 -13 UNC	70 lbf-ft
5/8 -11 UNC	139 lbf-ft
3/4 -10 UNC	243 lbf-ft
7/8 -9 UNC	389 lbf-ft
1 -8 UNC	582 lbf-ft

- Bolt tightening sequence.



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0506 - 784150.

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