

# EWFM

## ***SBCouplings*** ***Safety Break-away Couplings***



## Product Information

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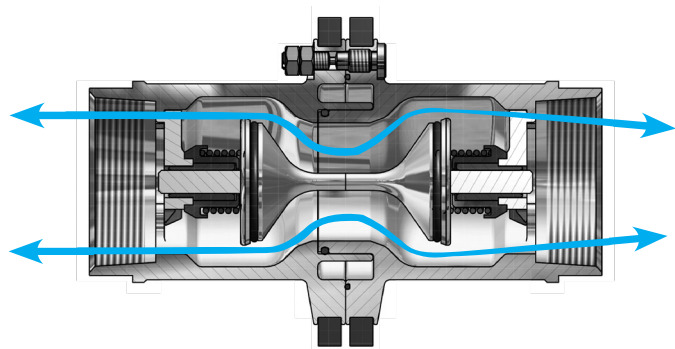
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Safety Break-away couplings are used to prevent pull away accidents, protect terminal and loading/unloading equipment and eliminated unwanted product re-lease.

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.

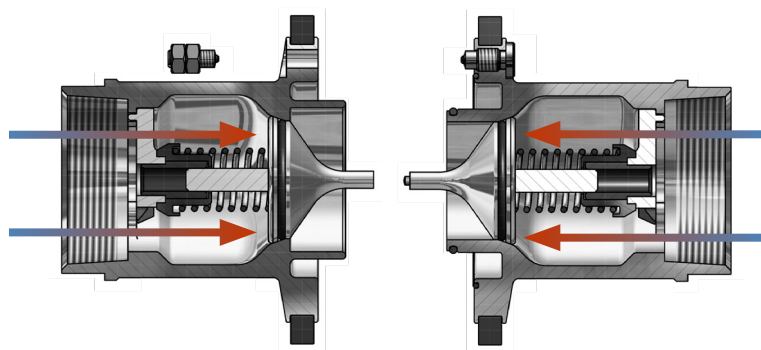
This will in a longer time frame minimize down time, save money, equipment and the environment.

## 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

#### Liquified gases

LPG, Butane, Propane and Blends.  
Co2, DME, LNG

#### Chemicals and Hydrocarbons

Aromatics, Ethylenes and Propylenes,  
VCM, Alcohols and Acids, Diesel, Jet A1.  
Refrigerants Forane.

#### Oil and Petrochemical

Bulk Loading/Unloading, Road Tankers  
Rail Tankers, Process Product Transfer  
Tank Cleaning

#### Marine and Offshore

Ship to Rig Fluid Transfer  
Ship to Shore Fluid Transfer  
Ship to Ship Fluid Transfer  
Bunkering, Marine Refuelling

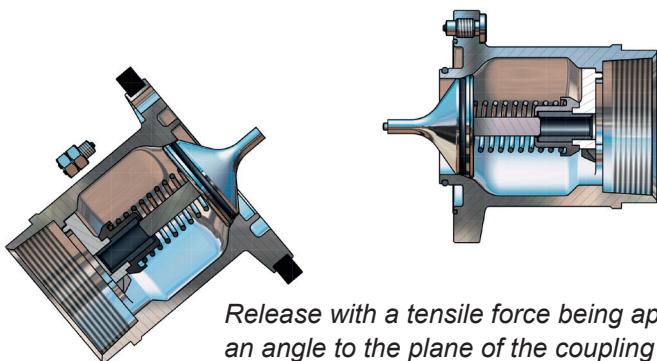
#### Speciality

Hydraulic Oils, Inks, Paints, Solvents,  
Locomotive Fuelling, Helicopter Fuelling,  
Food processing industry  
Plant engineering and construction  
Power plant construction, Food processing industry

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

### Industrial Break-away

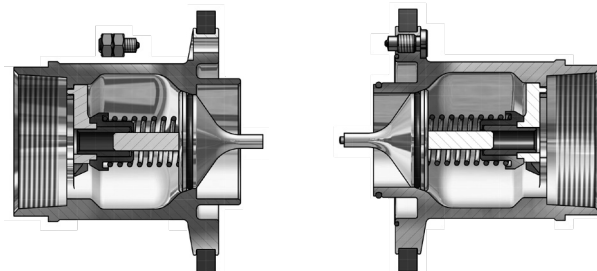
Typically installed into loading arm and hose assemblies, where at least one side of the coupling is attached to a rig and fixed point.



*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.*

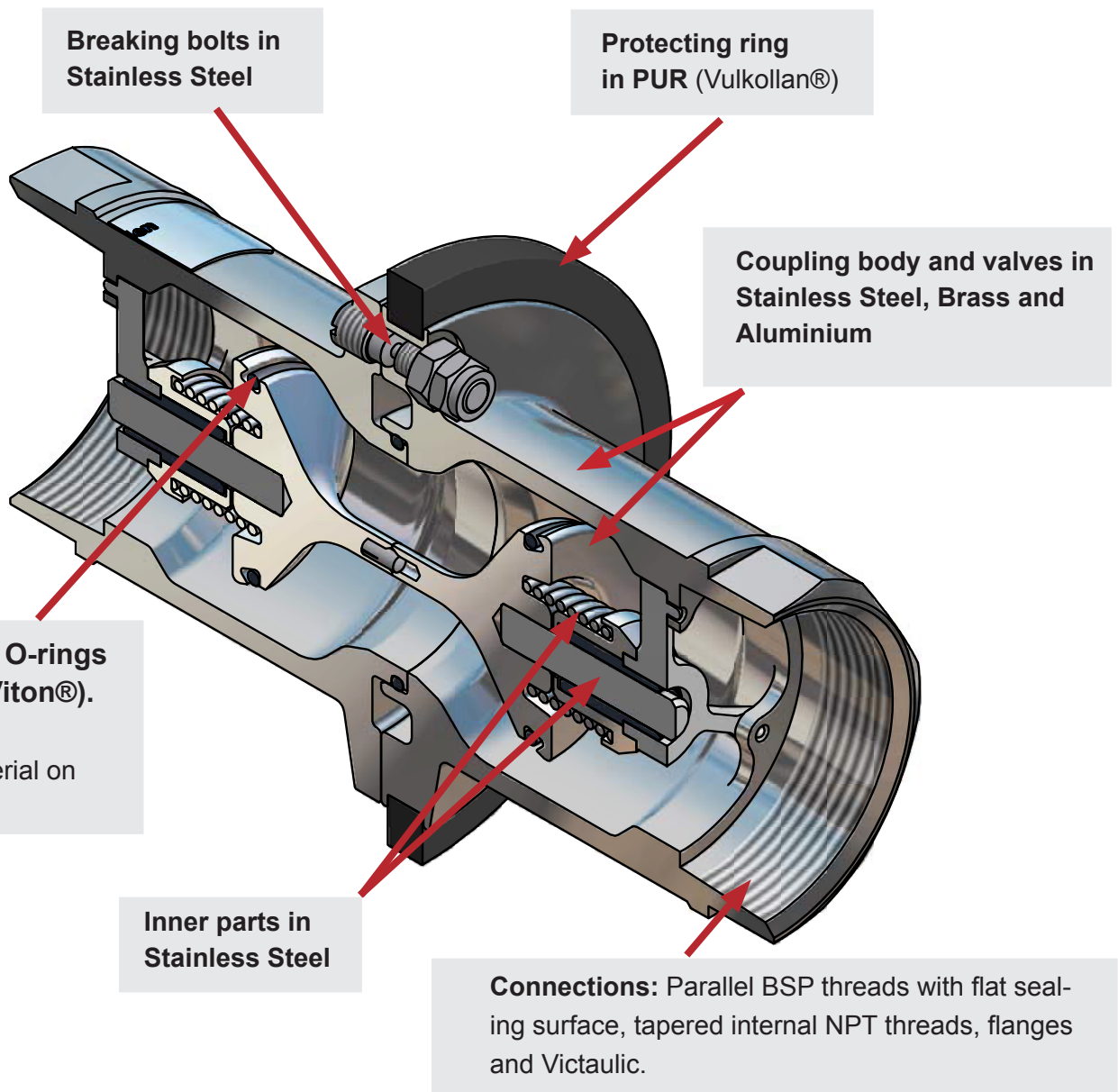
## Industrial Break-away coupling

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



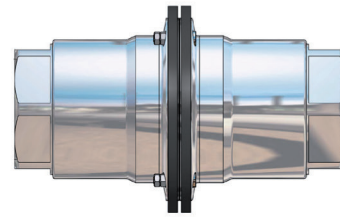


## Examples of Connection combinations

**BSP Female thread / BSP Female thread**



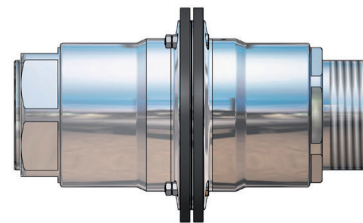
**NPT Female thread / NPT Female thread**



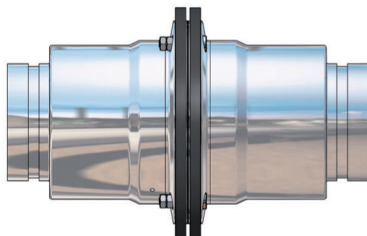
**Male thread / Male thread**



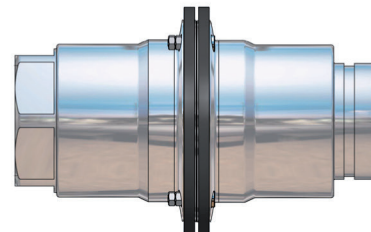
**NPT Female thread / NPT Male thread**  
*also available with BSP*



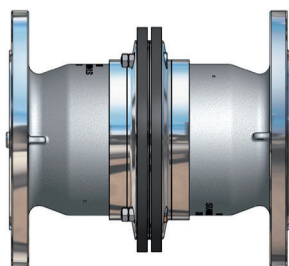
**Victaulic / Victaulic**



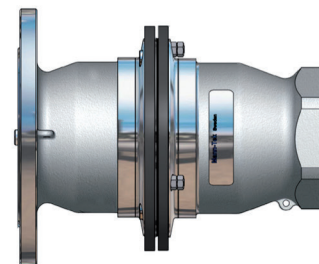
**NPT Female thread / Victaulic**



**Flange / Flange**



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



*Other combinations of connections on request*

## Technical data - Sizes, connections, materials and seals

### Coupling sizes and connections

Nominal width	Protection ring <sup>1</sup>	Breaking force <sup>2</sup>		Connection <sup>3</sup>	Kg (Stainless)	Kg (Aluminium)
		SS	Alu			
1"	PUR	4,8 kN	3,2 kN	1" Thread	1,6	-
				1" Flange	2,7	-
2"	TPU & PUR <sup>4</sup>	13 kN	9 kN	2" Thread	2,6	0,9
				2" Flange	7,3	2,5
2½"	PUR	22 kN	10 kN	2½" Thread	7,4	2,5
				2½" Flange	13,2	4,5
3"	TPU	33 kN	15 kN	3" Thread	8,5	2,9
				3" Flange	15,1	5,1
4"	TPU	52 kN	24 kN	4" Thread	15,5	5,3
				4" Flange	20,7	7,0
5"	PUR	81 kN	37 kN	5" Thread	32,0	12,0
				5" Victaulic	31,0	11,7
6"	PUR	92 kN	54 kN	6" Thread	46,8	15,9
				6" Flange	57,6	19,6
8"	PUR	165 kN	96 kN	8" Thread	-	-
				8" Flange	71,0	25,9
10"	PUR	151 kN	151 kN	10" Flange	120	-
12"	PUR	217 kN	217 kN	12" Flange	185	-

1. **PUR**- Polyurethane  
**TPU**- Thermoplastic
2. Mann Tek Standard. Other on request.
3. **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, T.T.M.A. **Others:** Victaulic
4. 2" Flanges & male thread uses PUR protection ring

### Materials

Component	Material	Standard	Operation temperature <sup>3)</sup>
Housing Check valve	SS (Stainless Steel)	EN 10272 - 1.4404+AT	-40°C to 250°C
		EN 10213 - 1.4409+AT	
	Br/Gm (Brass/Gun metal)	EN 12164 - CW614N	-40°C to 200°C
		EN 1982 - CB491K-GS	
	AL (Aluminium)	EN 755 - AW-6262-T6	-40°C to 150°C
		EN 1706 -AC-42100-T6	

### Seals

Component	Material	Description <sup>4)</sup>	Operation temperature <sup>3)</sup>
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 / 600 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 couplings

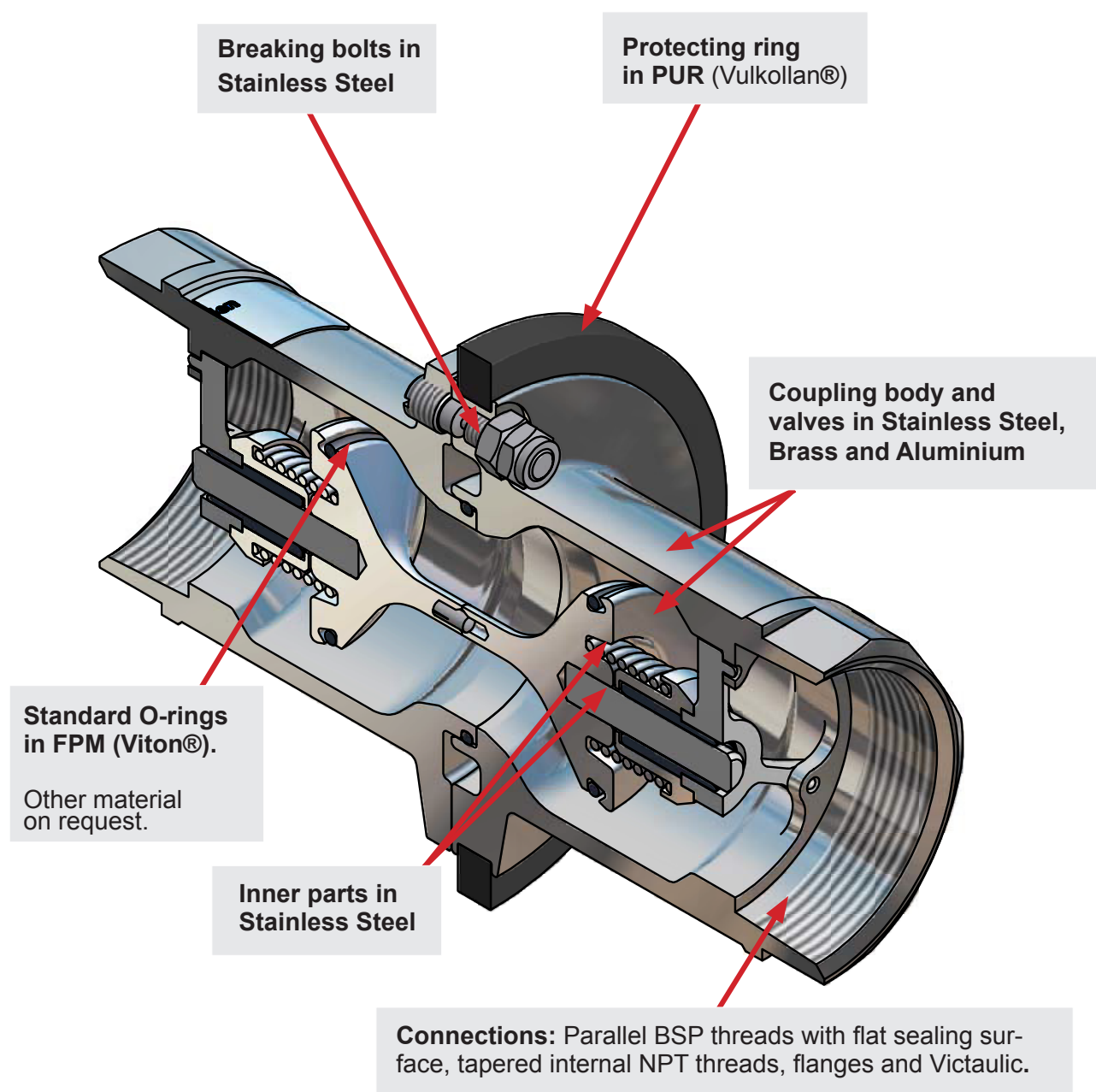
**Marine version** of SBCouplings are designed specifically to be installed within a hose string, where the coupling would have a length of hose attached to both sides.

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.**



## Advantages





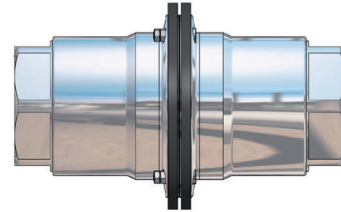
## Examples of Connection combinations

*Other combinations of connections on request*

**BSP Female thread / BSP Female thread**



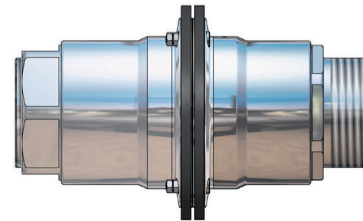
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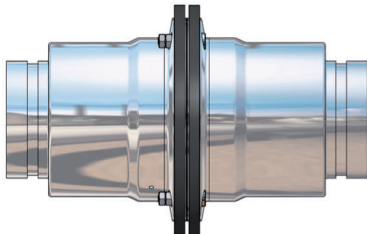
**Male thread / Male thread**



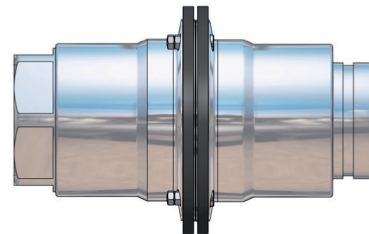
**NPT Female thread / NPT Male thread**  
*also available with BSP*



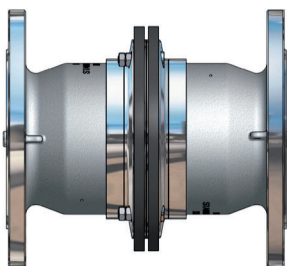
**Victaulic / Victaulic**



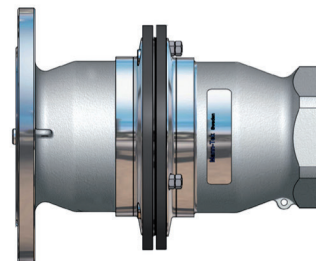
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**Flange / Flange**



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*(BSP/NPT -Female/Male and Victaulic)*



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### Seals

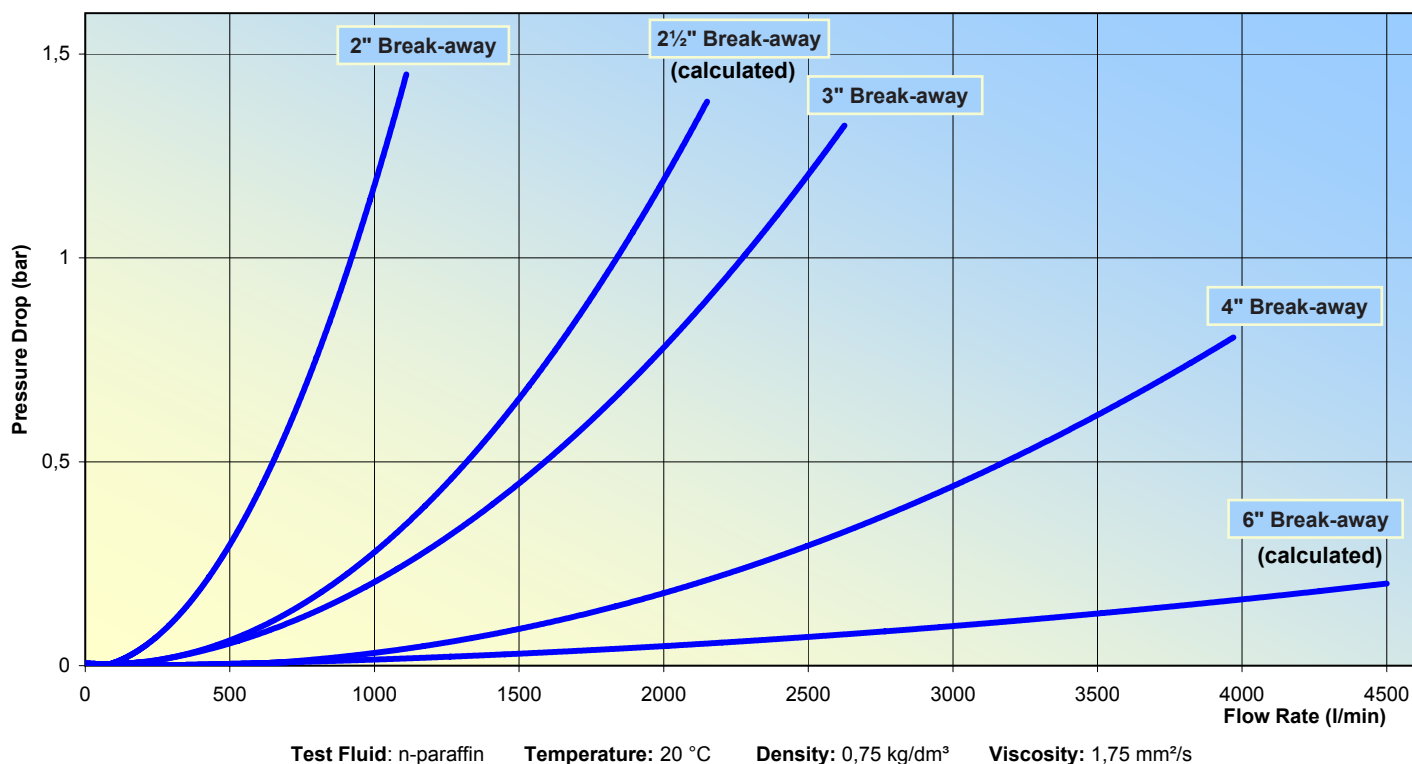
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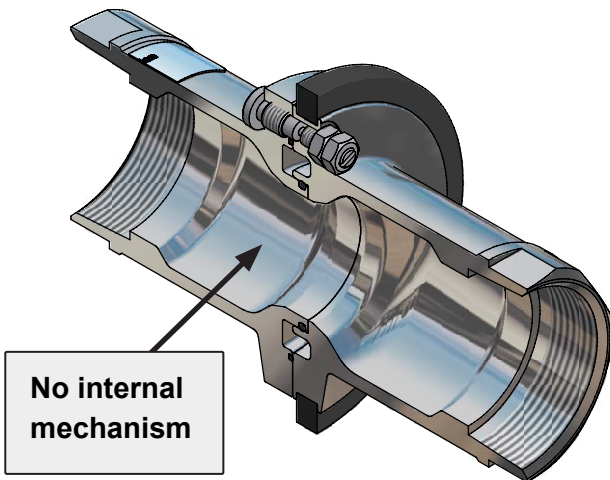
## Flow Diagram (Pressure Drop) for Industrial and Marine Break-away couplings





### 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 - Break-away /Swivel 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 or Swivel with a Safety Break Away coupling.

*Used between  
two hoses*



**Hose Swivel with Break-away integrated**



**Dry Gas coupling Hose unit with Break-away integrated**



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



## Safety Break-away coupling - Cable release series



The new Mann Tek Cryogenic breakaway coupling- cable release type is a further development of our reliable breaking pin version which are successfully used world wide in many different types of applications.

The cable release type coupling acts as a safety solution in the supply line of mobile transfer systems, preventing damage to the environment and facilities due to unexpected movement.

The widest range of breakaway couplings gives full flexibility of the cryogenic product range and offers a safe solution for any applications of LNG transfer.

With the use of Mann Tek's breakaways in combination with our reliable and well proven dry cryogenic couplings we offer the market an unbeatable, safe and easy to use combinations for any LNG transfer application.

### TECHNICAL INFORMATION

#### Sizes:

1" (DN25) to 6" (DN150)  
Other on request.

#### Materials:

Stainless steel

#### Seals:

PTFE

#### Maximum working pressure:

MWP PN 10 / 16 / 25.  
MAWP 150 / 300 psi

#### Connections:

NPT-Thread, EN1092 (DIN) - or ANSI B16.5 - Flanges. Other on request.

### DESIGN CALCULATION

The calculation of the required wall thickness is made according to SS-EN 12516-2. Design temperature range: -200°C to +65°C  
Design pressure: PS25 bar

### MATERIAL REQUIRMENTS

The material we specified is suitable for the use with LNG and nitrogen down to -200°C. The specification is according to the recommendations in EN1160.

Size	Nominal size	WP	Temperature range
1"	DN25	WP25	Minimum -200°C
2"	DN50	WP50	Minimum -200°C
4"	DN100	PN25	Minimum -200°C
6"	DN150	PN16	Minimum -200°C
8"	DN200	PN16	Minimum -200°C

Material	Specification
1.4404 316L	EN10272 ANSI A479

### ADVANTAGES

- High quality processing
- Sturdy design
- Low wear
- Tamper-proof
- Safe operation
- Release angle up to 90° through two pressure clamps on activation mechanism
- Maintenance-friendly
- Wide spectrum of applications

## **CBCouplings**

**Cryogenic Break-away Couplings**

**Cryogenic Break-away Couplings** are a further development of our Safety Break-away Couplings which has successfully been used to prevent pull-away accidents in the petroleum, chemical and LPG industry all over the world. The new range of Cryogenic Break-away Couplings can be installed either at fixed points or in the middle of hose strings.

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

Contact us or visit [www.mann-tek.com](http://www.mann-tek.com) for further information about Cryogenic Break-away couplings

### **Technical information**

#### **Sizes**

1" (DN25) to 6" (DN150)

#### **Working pressure**

MWP 25 bar- 1"-4" couplings

MWP 16 bar- 6" coupling

#### **Working temperature**

Minimum -200°C

#### **Materials**

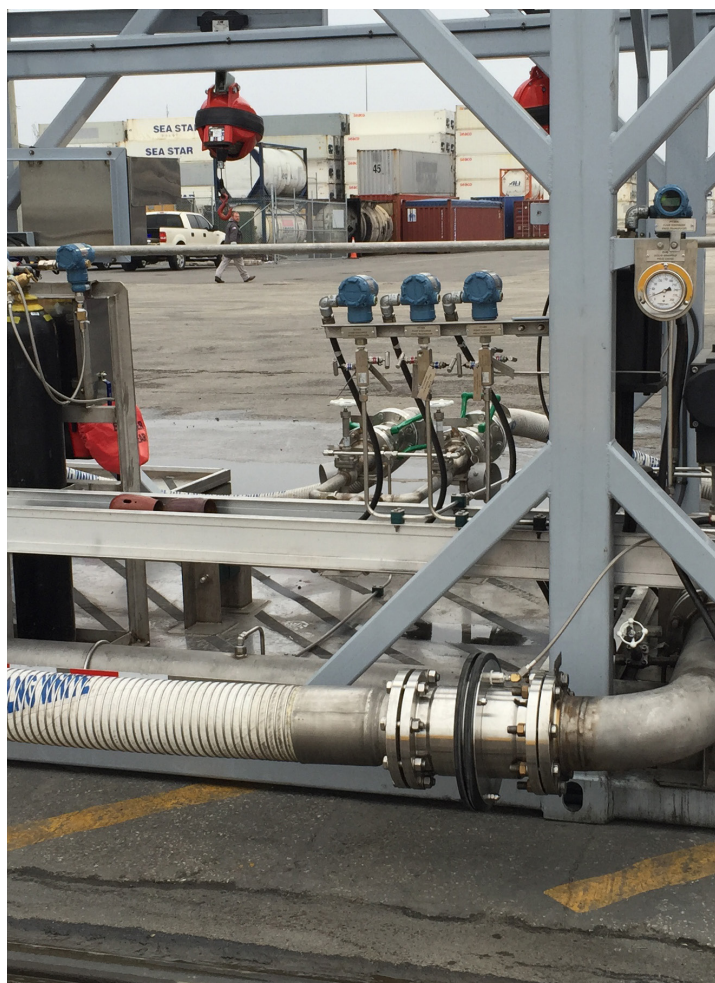
Stainless steel

#### **Connections**

Female NPT thread, EN1092 (DIN) and ANSI flanges. Other on request.

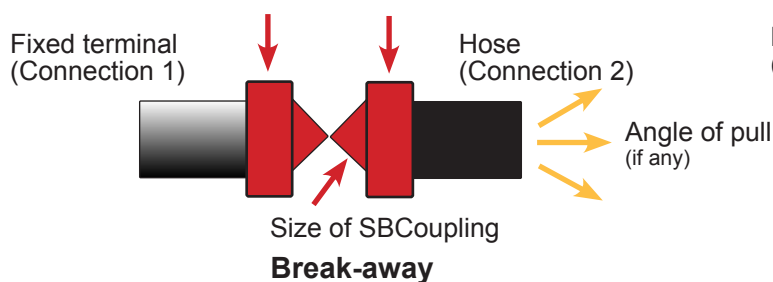
### **Applications**

- *Container discharge*
- *Fuel bunkering*
- *Loading/unloading of tank trucks, rail tankers, bunkering and tank vessels*
- *Vapor recovery lines*



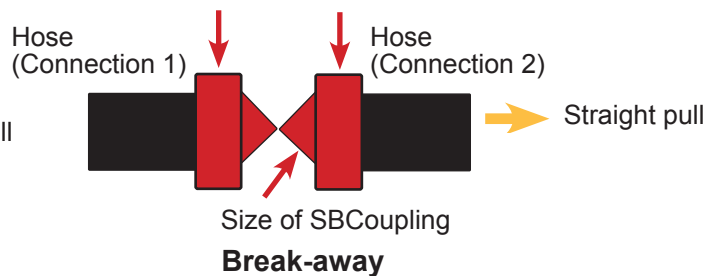
## Industrial Break-away

Required end connections (flange/threaded)



## Marine Break-away

Required end connections (flange/threaded)



Date	Name	
Title	Company :	Department:
Address	Country	
E-mail	Telephone	Fax

### Plant data

DN / inch:	Quantity:
Connection1:	Connection 2:
Housemake/type:	

### Flow data (Media CAS No)

### Cleaning process

1	:		
2	:		
3	:		
4	:		
5	:		
Working Pressure (bar)	Working Temperature (°C)	Concentration (%)	Viscosity (10 <sup>-5</sup> pa s)
Specific weight (kg/dm <sup>3</sup> )	Solid particle quantity:	Hardening	Flow rate (l/min)

### Special points

Conditions of mounting:	Legal regulations:	Specialized designs:
Pull force (kN):	Angle of pull (if any):	Other requests:

### Customers note

Customers note
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