



# *Cryogenic Couplings* KilltheSpill





## LNG BUNKERING

The Viking Grace, the worlds first large passenger ferry powered by LNG engines, is refuelled safely, quickly and easily with Mann Tek Dry Cryogenic Couplings, DCCouplings.



# MannTek has developed a new era of cryogenic couplings

Dry Cryogenic Couplings (DCCouplings) and Cryogenic Break-away Couplings (CBCouplings) are designed for use wherever it's beneficial to connect and disconnect hoses and pipelines under pressure, quickly without spillage and additional tools.

Dry Cryogenic Couplings and Cryogenic Break-away Couplings are designed primarily for the use of cryogenic liquefied gases, e.g. LNG (-163°C) and e.g. Nitrogen (-196°), where safety and reliability are of highest concern.



## ***DCCouplings*** ***Dry Cryogenic Couplings***



## ***CBCouplings*** ***Cryogenic Break-away Couplings***

The Dry Cryogenic Coupling consist of a “tank” unit wich is a type of a non-return valve and a “hose” unit with a valve driven by an internal cam curve to open both valves at the same time. Operation is a single action using a straight forward turning motion to connect the couplings and open flow path. An initial push and turn action on the hose unit provides engagement with the tank unit, thus locking and sealing the two units together. Further rotation opening the internal valves, thereby allowing full flow with a minimum of pressure drop.

A selectivity (code) system allows the system to be used to a wide range of cryogenic liquefied gases without any risk of failure owing to “human error”.

## Applications

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

## Advantages

- **Easy to handle**  
Push and turn - free flow.  
Turn and pull - closed.
- **Safe**  
The valve cannot be opened until the unit is coupled and closes automatically when disconnecting.
- **Environmentally friendly**  
Accidental spillage eliminated.
- **Reliability**  
No loss or spillage of liquids at connection or disconnection.

# DCCouplings

## Dry Cryogenic Couplings



## Technical information

### Sizes

1" (DN25) to 6" (DN150)

### Working pressure

MWP 25 Bar - 1" (DN25) to 4" (DN100)

MWP 16 Bar - 6" (DN150)

with 5 time safety factor

### Working temperature

Lowest working temperature is -200° C

### Materials

Stainless steel.

### Connections

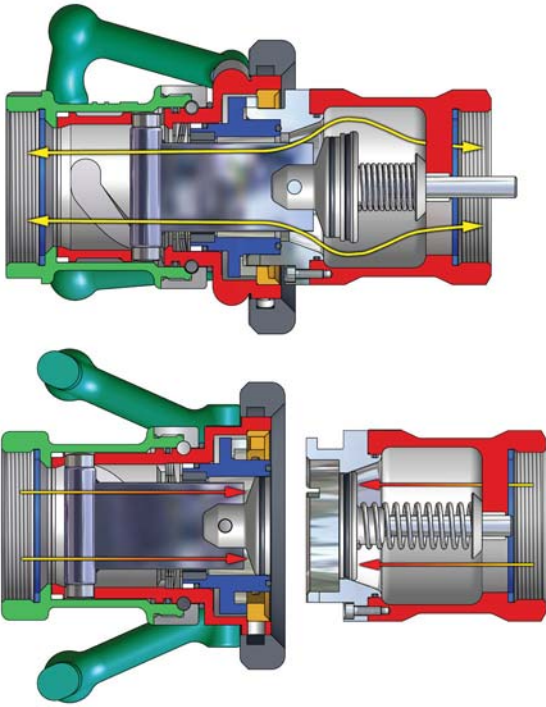
Female NPT, flanged EN and ANSI.

Others on request.



# How it works - The DCCoupling function

The self sealing design of the couplings guarantees both the highest level of safety and also the quickest way of connecting and disconnecting.



## To connect

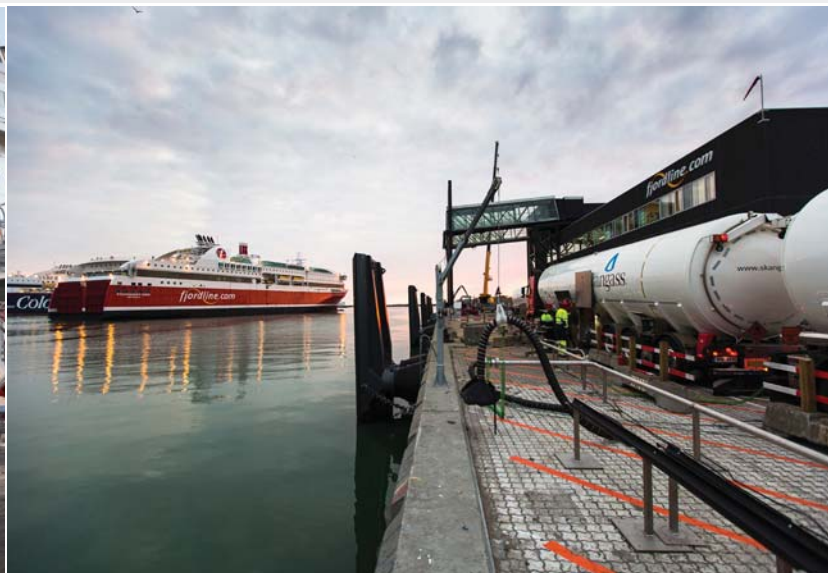
Push and turn

*-It's coupled,  
full flow*

## To disconnect

Turn and pull

*-It's released,  
no spillage*



**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.

## Applications

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

## Features

- Passive security against situations where a hose or loading arm could be subjected to accidental high loads
- 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/EN flanges or threaded (female NPT).

# **CBCouplings**

**Cryogenic Break-away Couplings**



## Technical information

### Sizes

1" (DN25) to 6" (DN150)

### Working pressure

MWP 25 Bar - 1" (DN25) to 4" (DN100)

MWP 16 Bar - 6" (DN150)

*with 5 time safety factor*

### Working temperature

Lowest working temperature is -200° C

### Materials

Stainless steel.

### Connections

Female NPT, flanged EN and ANSI.

Others on request.



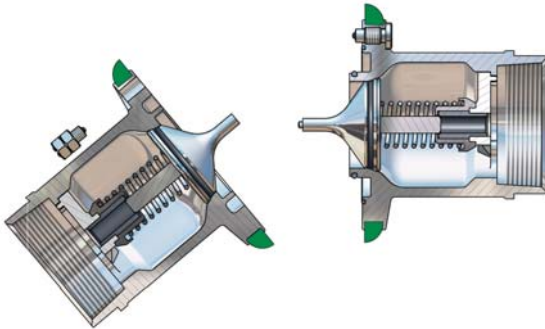


# How it works - The CBCoupling function

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

## Industrial Cryogenic Break-away

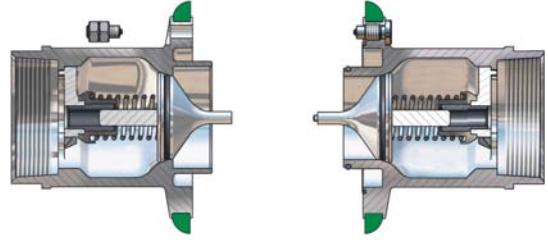
Typically installed into loading arm and hose assemblies, where at least one side of the coupling is attached to a fixed rigid point.



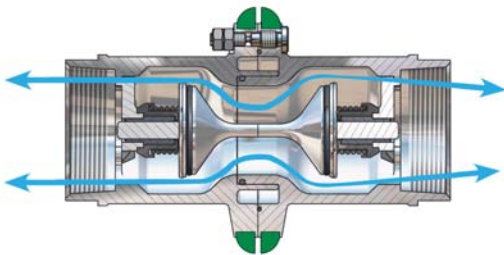
*Release with a tensile force being applied at an angle to the plane of the coupling housing, up to 90 degrees.*

## Marine Cryogenic Break-away

Marine Cryogenic Break-away Couplings are designed to only release by inline pull and used between two strings of hose.

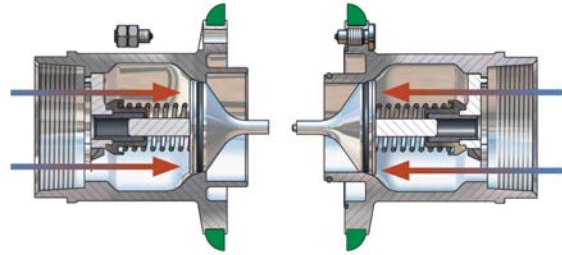


*Release by inline pull only.*



## Cryogenic Break-away Coupling **before** emergency disconnect

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



## Cryogenic Break-away Coupling **after** emergency disconnect

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

**The CBCouplings, Cryogenic 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 Cryogenic Break-away Coupling reacts in a natural way to the reduction of the hose break forces.

## About Mann Tek

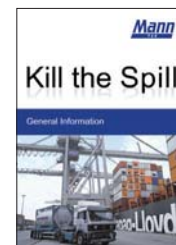
Mann Teknik AB is a Swedish company located in Mariestad, Sweden.

Mann Teknik AB designs, manufactures and markets products for safe and environmentally friendly handling of aggressive fluids for the chemical and petrochemical industries.

The main product is the Dry Disconnect Couplings, DDCouplings®, for spill free liquid handling. The products are marketed through independent representatives in more than 30 countries.



## Product and company information



## Approvals



ISO 9001, PED 97/23/EC, TDT, TÜV, Apragaz, FMV, Gost, ATEX e.t.c

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## Company Approvals

Mann Teknik AB are certified to ISO9001:2008. The products are CE-labeled. The main products are certified to PED, the European Pressure Equipment Directive and ATEX, the European directive for Equipment intended for use in Potentially Explosive Atmospheres.

The products are produced in accordance with several important standards, e.g. the NATO STANAG 3756



# Kill the Spill